[redacted] LLB(Hons)
DE&S Secretariat (Land Equipment)

Ministry of Defence

de&s

[redacted]

Via:

[redacted]

DESSEC-PolSecLE-JSC-WPNS@mod.uk

Defence Equipment & Support
Maple 0a # 2043
MOD Abbey Wood
Bristol BS34 8JH

January 16th 2018 Our Ref: FOI2017/13198

Dear [redacted],

Thank you for your email of 14th December 2017 requesting the following information:

I would like to make a freedom of information request for the following, Harley Davidson MT 360 dispatch Rider Motorcycle;

1. *Operation Manual*
2. *Parts manual*
3. *Maintenance manual*

Thanking you in anticipation.
If it helps will accept electronic copies

I am treating your correspondence as a request for information under the Freedom of Information Act 2000 (FOIA).

A search for the information has now been completed within the Ministry of Defence, and I can confirm that information in scope of your request is held including AESPs 2340-H-200-302, 2340-H-200-601, 2340-H-200-721 and 2340-H-200-821.

The information you have requested can be found below, but some of the information falls entirely within the scope of the absolute exemption provided for at section 40 (Personal Data) of the FOIA and has been redacted.

Section 40(2) has been applied to some of the information in order to protect personal information as governed by the Data Protection Act 1998. Section 40 is an absolute exemption and there is therefore no requirement to consider the public interest in making a decision to withhold the information.

Under Section 16 of the Act (Advice and Assistance) you may find it helpful to note that Harley Davidson own the copyright on some of the enclosed material and it should not be duplicated without their express permission.

If you have any queries regarding the content of this letter, please contact this office in the first instance.

If you wish to complain about the handling of your request, or the content of this response, you can request an independent internal review by contacting the Information Rights Compliance team, Ground Floor, MOD Main Building, Whitehall, SW1A 2HB (e-mail CIO-FOI-IR@mod.gov.uk). Please note that any request for an internal review should be made within 40 working days of the date of this response.

If you remain dissatisfied following an internal review, you may raise your complaint directly to the Information Commissioner under the provisions of Section 50 of the Freedom of Information Act. Please note that the Information Commissioner will not normally investigate your case until the MOD internal review process has been completed. The Information Commissioner can be contacted at: Information Commissioner's Office, Wycliffe House, Water Lane, Wilmslow, Cheshire, SK9 5AF. Further details of the role and powers of the Information Commissioner can be found on the Commissioner's website at https://ico.org.uk/.

Yours sincerely,

[redacted]

[redacted]
DES SEC Pol Sec Land Equipment

ARMY EQUIPMENT
SUPPORT PUBLICATION

2340-H-200-302
October 1993

MOTOR CYCLE, GENERAL PURPOSE, HARLEY - DAVIDSON

TECHNICAL DESCRIPTION

REPRINTED INCORPORATING AMDTS Nos 1 and 2

This publication covers the requirements of Category 3 and Category 5, Sub-categories 1 and 2 at levels 2 and 3.

BY COMMAND OF THE DEFENCE COUNCIL

Ministry of Defence
Issued by
LAND SYSTEMS TECHNICAL PUBLICATIONS AUTHORITY
Repository Road, Woolwich,
London SE18 4QA

AMENDMENT RECORD

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PREFACE

Sponsor : ES52c

INTRODUCTION

1 Service users should forward any comments on this publication through the channels prescribed in AESP 0100-P-011-013. An AESP Form 10 is provided at the end of this publication; it should be photocopied and used for forwarding comments on this AESP.

2 The subject matter of this publication may be affected by Defence Council Instructions (DCIs), Standing Operating Procedures (SOPs) or by local regulations. When any such Instruction, Order or regulation contradicts any portion of this publication it is to be taken as the overriding authority.

3 For periods of servicing and lubricants to be used reference must be made to the Maintenance Schedule.

RELATED AND ASSOCIATED PUBLICATIONS

Related publications

4 The Octad for the subject equipment consists of the publications shown below. All references are prefixed with the first eight digits of this publication. The availability of the publications can be checked by reference to the relevant Group Index (see AESP 0100-A-001-013).

CATEGORIES AND INFORMATION LEVELS

Category / Level	1	2			3	4		5				6		7		8	
	0	0	1	2	0	1	2	1	2	3	4	0	1	1	2	1	2
1 USER/OPERATOR	101	201	-	-	201	-	-	-	-	-	-	601	-	-	721	-	-
2 UNIT MAINTENANCE	*	*	*	*	302	*	*	302	302	*	*	*	*	*	*	*	*
3 FIELD MAINTENANCE	*	*	*	*	302	*	*	302	302	*	*	*	*	*	*	*	*
4 BASE MAINTENANCE	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

1.0 Purpose & Planning Information
2.0 Operating Information
2.1 Special to Arms
2.2 Training Aids
3.0 Technical Description
4.1 Installation Instructions
4.2 Prep for Special Environments
5.1 Failure Diagnosis
5.2 Repair Instructions
5.3 Inspection Standards
5.4 Calibration Procedures
6.0 Maintenance Schedules
6.1 Maintenance Schedules (RAF)
7.1 Illustrated Parts Catalogue
7.2 Commercial Parts List
8.1 Modification Instructions
8.2 General Instructions

* Not published

Associated publications

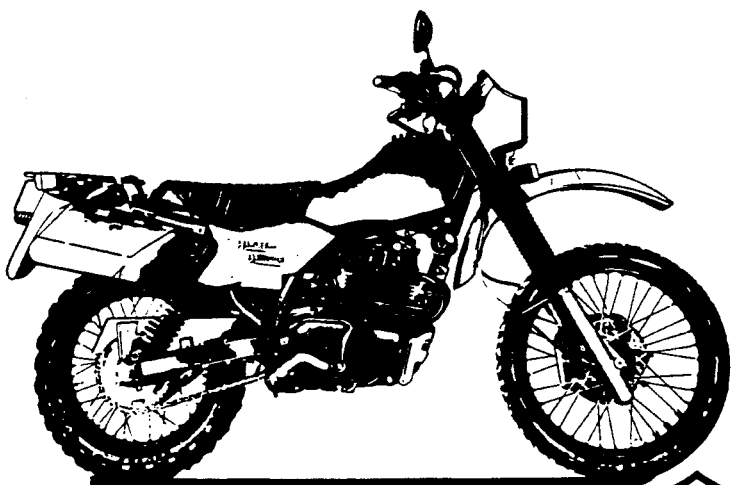
5

Code No	Type	Title
P/31927	CES	Motor cycle, General Purpose, L/H Dip Headlight

SERVICE MANUAL

MILITARY MOTORCYCLE

HARLEY-DAVIDSON INC.



MOTOR HARLEY-DAVIDSON COMPANY ®

OFFICIAL FACTORY MANUAL

SERVICE MANUAL

MT - 350

84771039

IMPORTANT NOTICE

Harley-Davidson motorcycles conform to all applicable U.S.A. Federal Motor Vehicle Safety Standards and U.S.A. Environmental Protection Agency regulations effective on the date of manufacture.

To maintain the safety, dependability and emission and noise control performance it is essential that the procedures, specifications and service instructions in this manual are followed.

Any substitution, alteration or adjustment of emission system and noise control components outside of factory specifications may be prohibited by law.

ON/OFF ROAD MILITARY VEHICLE

SERVICE MANUAL

The information in this manual applies to the ON / OFF ROAD MILITARY VEHICLE

Printed in U.S.A.

FOREWORD

This service and repair manual has been prepared with two purposes in mind. First, it will acquaint the reader with the construction of the Harley-Davidson on/off road military motorcycle and assist him in performing basic maintenance and repair. Secondly, it will introduce to the professional Harley-Davidson technician the latest field-tested and factory-approved major repair methods. We sincerely believe that this manual will make your association with Harley-Davidson products more pleasant and profitable.

HOW TO USE YOUR SERVICE MANUAL

Your Service Manual is arranged for quick, easy reference. This manual is divided into numbered sections. Sections are then divided into subjects. Use this manual as follows:

1. Check the TABLE OF CONTENTS located in the front of each section to find subject desired.
2. Page number is listed across from subject. Page number consists of section number and page number.
3. Information is presented in a definite order as follows:

   Specifications
   General
   Adjustments
   Removal/Installation
   Disassembly/Assembly
   Cleaning, Inspection and Repair
   Testing
   Troubleshooting

In figure legends, the number following a name of a part indicates the quantity necessary for one complete assembly.

NOTE

All information for servicing a part should be read ***before*** *repair work is started to avoid needless disassembly.*

PREPARATION FOR SERVICE

Proper preparation is very important for efficient service work. A clean work area at the start of each job will allow you to perform the repair as easily and quickly as possible, and reduce the incidence of misplaced tools and parts. A motorcycle that is excessively dirty should be cleaned before work starts. Cleaning will occasionally uncover trouble sources. Tools, instruments and parts needed for the job should be gathered before work is started. Interrupting a job to locate tools or parts is a needless delay. Special tools required for a job are listed at the end of Section 1.

WARNING

Gasoline is extremely flammable and highly explosive under certain conditions. Always stop engine and do not smoke or allow open flame or sparks when refueling or servicing the fuel system.

SERVICE BULLETINS

In addition to the information given in this Service Manual, Service Bulletins are issued to Harley-Davidson Dealers from time to time, which cover interim engineering changes and supplementary information. Service Bulletins should be consulted for complete information on the models covered by this manual.

USE GENUINE REPLACEMENT PARTS

WARNING

When replacement parts are required, we recommend using only genuine Harley-Davidson parts. Other parts may appear to have equivalent characteristics including type, strength and material, but may be of inferior quality. Failure to use genuine Harley-Davidson parts may result in product malfunction and possible personal injury.

To ensure a satisfactory and lasting repair job, follow the manual instructions carefully and use only genuine Harley-Davidson replacement parts. Behind the emblem bearing the words GENUINE HARLEY-DAVIDSON is more than three quarters of a century of designing, research, manufacturing, testing and inspecting experience.

This is your insurance that the parts you are using will fit right, operate properly and last longer. When you use genuine Harley-Davidson parts, you use the best.

PRODUCT REFERENCES

When reference is made in this manual to a specific brand name product, tool or instrument, an equivalent product, tool or instrument may be used in place of the one mentioned.

All tools mentioned in this SERVICE MANUAL with HD or J preceding the part number must be ordered through:

Kent-Moore Tool Division

29784 Little Mack

Roseville, Michigan 48066-2239

(i)

Loctite Products

The Loctite products listed are designed to increase the reliability of fasteners and to aid in minor repairs.

If you have any further questions, please call Loctite Corp. at 1-203-246-1223.

WARNING

Follow the directions listed on all Loctite products. Read all labels, warnings and cautions carefully *before* using.

CONTENTS

All photographs and illustrations may not necessarily depict the most current model or component, but are based on the latest production information available at the time of publication.

Since product improvement is our continual goal, Harley-Davidson Motor Co. , Inc. reserves the right to change specifications, equipment, or designs at any time without notice and without incurring obligation.

WARNINGS AND CAUTIONS

Statements in this manual preceded by the words WARNING or CAUTION and printed in bold face are very important.

WARNING

Means there is the possibility of personal injury to yourself or others.

CAUTION

Means there is the possibility of damage to the vehicle.

We recommend you take special notice of these items.

WARNING

Proper service and repair is important for the safe, reliable operation of all mechanical products. The service procedures recommended and described in this Service Manual are effective methods for performing service operations. Some of these service operations require the use of tools specially designed for the purpose. These special tools should be used when and as recommended.

It is important to note that some warnings against the use of specific service methods which could damage the motorcycle or render it unsafe are stated in this Service Manual. However, please remember that these warnings are not all inclusive. Since Harley-Davidson could not possibly know, evaluate and advise the service trade of all possible ways in which service might be done or of the possible hazardous consequences of each way, we have not undertaken any such broad evaluation. Accordingly, anyone who uses a service procedure or tool which is not recommended by Harley-Davidson must first thoroughly satisfy himself that neither his nor the operator's safety will be jeopardized by the service methods selected.

WARNING

Wear eye protection while using any of these tools: hammers, arbor or hydraulic presses, gear pullers, spring compressors, and slide hammers. Be especially cautious when using pulling, pressing or compressing equipment. The forces involved can cause parts to "flyout" with considerable force and cause bodily injury.

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GENERAL

SUBJECT PAGE NO.

MILITARY ON/OFF ROAD MOTORCYCLE

IDENTIFICATION

1. See Figures 1-1 and 1-2. The motorcycle is identified by the V.I.N. number stamped on the identification plate mounted on the L.H.S. of the steering head.

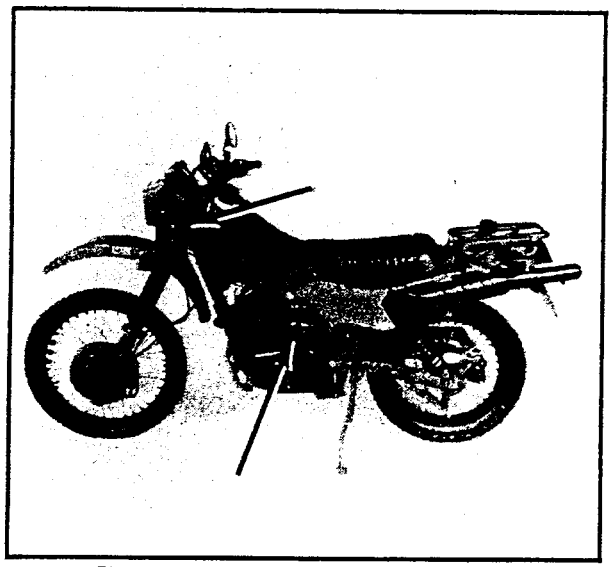


Figure 1-1. Motorcycle Identification

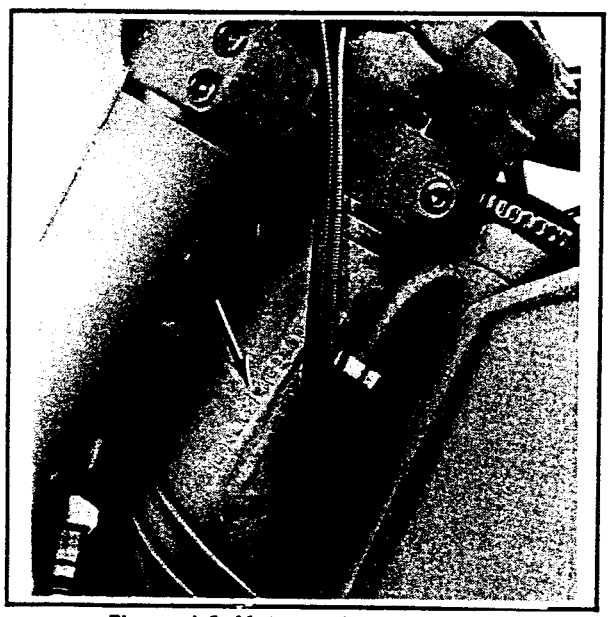


Figure 1-2. Motorcycle V.I.N.

2. See Figure 1-3. The engine number is also stamped on the RH. crankcase of the engine, to the rear of the cylinder, just inboard of the exhaust pipe.

Before starting any work on the machine be sure that:

- The motorcycle or component part(s) to be worked on is clean.

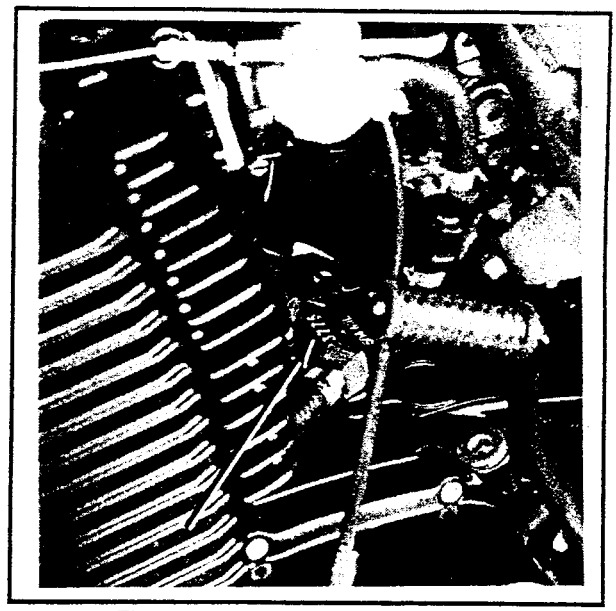


Figure 1-3. Engine Serial Number

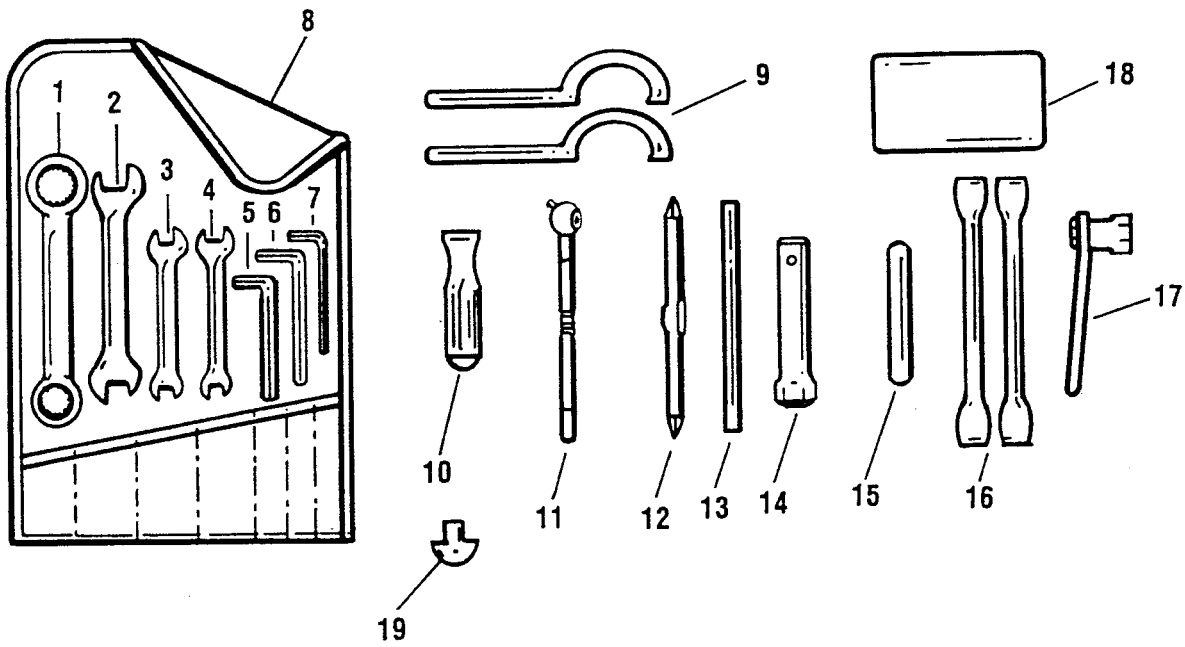
- The workplace is well ventilated and there is a fire extinguisher, particularly where fuel or solvents are being poured, drained, stored or contained.
- The motorcycle is on its stand or firmly secured to prevent it falling over.
- There is complete understanding and familiarity with the particular procedure to be done by reading the manual.
- All tools including special tools and equipment such as clean rags, receptacles for oil, containers/boxes for temporary storage of removed parts or components are available to do the work with maximum efficiency.
- Any anticipated required spare parts are available to minimize vehicle downtime.

SERVICE TOOLS

See Figure 1-4. Every vehicle is supplied with a tool kit sufficient to carry out normal routine servicing and maintenance. For major operations and overhaul there are a number of special tools and service products available.

The additional tools that may be required are generally found within a well-equipped workshop.

1. Wrench, box, 22 and 24 mm
2. Wrench, open end, 17 and 19 mm
3. Wrench, open end, 11 and 13 mm
4. Wrench, open end, 10 and 13 mm
5. Hex, socket-head, screw, 5 mm
6. Hex, socket-head, screw, 6 mm



7. Hex, socket-head screw, 8 mm
8. Pouch, tool storage
9. Wrenches, shock absorber (2)
10. Grip, screwdriver
11. Air Pressure Gauge
12. Shaft, screwdriver, crosstip
13. Bar, lever
14. Socket, 18 mm, spark plug
15. Gauge, feller, .05 mm
16. Irons, tire (2)
17. Wrench, clutch adjustment
18. Kit, repair, tire puncture (incl. instructions)
19. Plug remover

Figure 1-4. Vehicle Tool Kit

VEHICLE SPECIFICATIONS

GENERAL

Weight, Dry .....162 kg (358 lb.)
Weight, GVWR (gross vehicle weight) ...366 kg (808 lb.)
Overall Length .....2,240 mm (88.2)
Overall Width .....835 mm (32.9 in.)
Overall Height .....1,346 mm (53 in.)
Ground Clearance .....254 mm (10.0 in.)
Weight Distribution .....37.5% Front, 62.5% Rear

ENGINE

Manufacturer.....Harley - Davidson / Bombardier
Type.....Internal Combustion, Four-Stroke, Gasoline
Weight, Dry (as installed).....46 kg (101.41 lb.)
Number of Cylinders 1
Fuel Type .....87 Octane, Unleaded
Oil Type .....H-D Multi-Grade,
API grade SF or SG, 15W-40 or 15W-50 or OMD80
Displacement.....349cc (21.297 cu. in.)
Bore .....79.5 mm (3.130 in.)
Stroke .....70.4 mm (2.772 in.)
Compression Ratio 9:1
Idle Speed.....1200 rpm
Cylinder Cooling .....Air
Spark Plug Type .....12mm NGK D8E-A
Champion 12 A6YC
Spark Plug Electrode Gap .....0.7 mm (0.027 in.)

TRANSMISSION

Manufacturer.....Harley - Davidson / Bombardier
Type .....Constant mesh
Gear Ratios:
First.....1:2.9
Second.....1:2.0
Third.....1:1.4
Fourth.....1:1.1
Fifth .....1:0.9 (Overdrive)

ALTERNATOR

Voltage.....12
Amperage 15.8
Drive .....Direct From End of Crankshaft
Control .....Solid State Regulator
Alternator Output.....3 Phase A.C. Flywheel Generator
12V 190W

BATTERY

Voltage.....12
Capacity.....14 Amp - Hours
Ground Connection Polarity.....Negative

PERFORMANCE

Acceleration
0-100km/hr (62 mph) .....9.5 Secs.
Max. Speed .....127 km/hr (79 mph)

Braking Distance
50-0 km/hr (31-0 mph) .....13.1m (43 ft.)
Turning Radius .....4.25m (14 ft.)
Minimum Constant Speed .....5-8 km/hr (3-5 mph)
Fuel Consumption (on-road) .....18.5 km/ltre (53 mpg)
Fuel Consumption (off-road) .....12.7 km/ltre (30 mpg)
Range (approx.) .....240 km (150 miles)
Gradability .....26.5 deg.
Side Slope 40%
Vertical Step (maximum) .....0.38m (15 in..)
Fording Depth.....30.5cm (12 in.)

FUEL AND OIL CAPACITIES

Fuel Tank (Total).....13.0 litres (2.85 gallons)
Oil - Tank Capacity
(Tank and Engine).....3.2 litres (0.85 gallons)

BULB CHART

Headlamp .....H4 Quartz Halogen
Turn Signals .....Osram 7506 P21W37R
Tail / Brake / License .....Osram 7528 P21/5W

TIRES

Manufacturer.....Metzeler or Equivalent
Model.....Enduro 3 Sahara
Type .....Inner Tube
Size, Front.....90/90--21:54
Maximum Load, Front.....211 kg (465 lb.)
Size, Rear.....4.00-18
Inflation Pressures:
Front, on-road.....152kPa (22 psi.)
Front, off-road.....124kPa (18 psi.)
Rear, on-road .....165kPa (24 psi.)
Rear, off-road .....124kPa (18 psi.)

NOTE

Increase inflation pressures by 21kPa (3 psi.) when vehicle is loaded to full gross weight.

BRAKE FLUID

Fluid Type .....Dot 3

DIMENSIONS

See Figure 1 - 5

ORDERING SPARE PARTS

The vechicle componets and parts are identified by part number and description, found in the illustrated Parts Book. **#84771047**

HARLEY DAVIDSON U.K. LTD
The Bell Tower
High St. Brackley
Northamptonshire NN13 5DT
England, U.K.

Tel: 011 - 44 - 280 - 700101

Fax: 011 - 44 - 280 - 706752

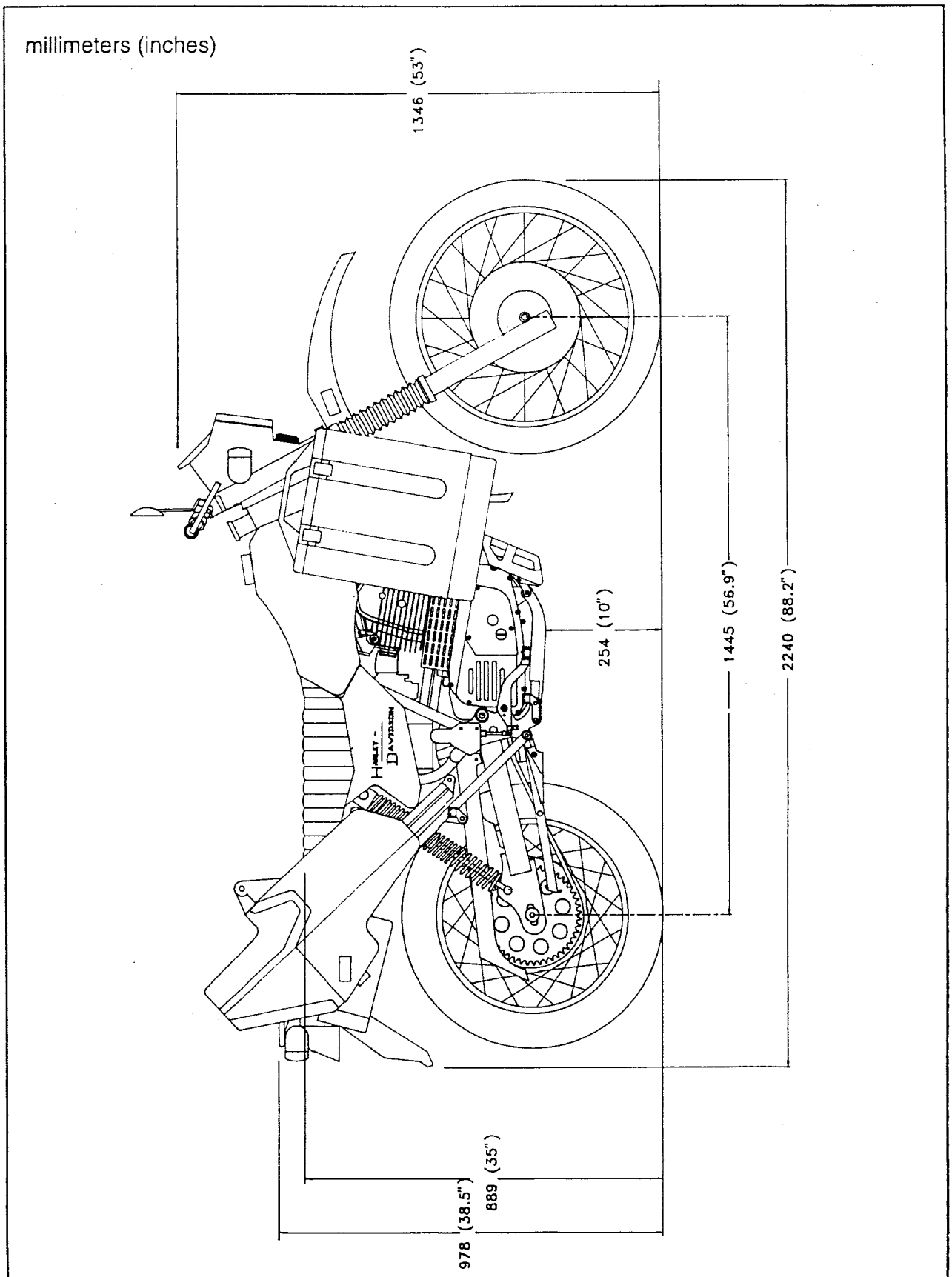


Figure 1-5. Machine Overall Dimensions (1 of 2)

millimeters (inches)

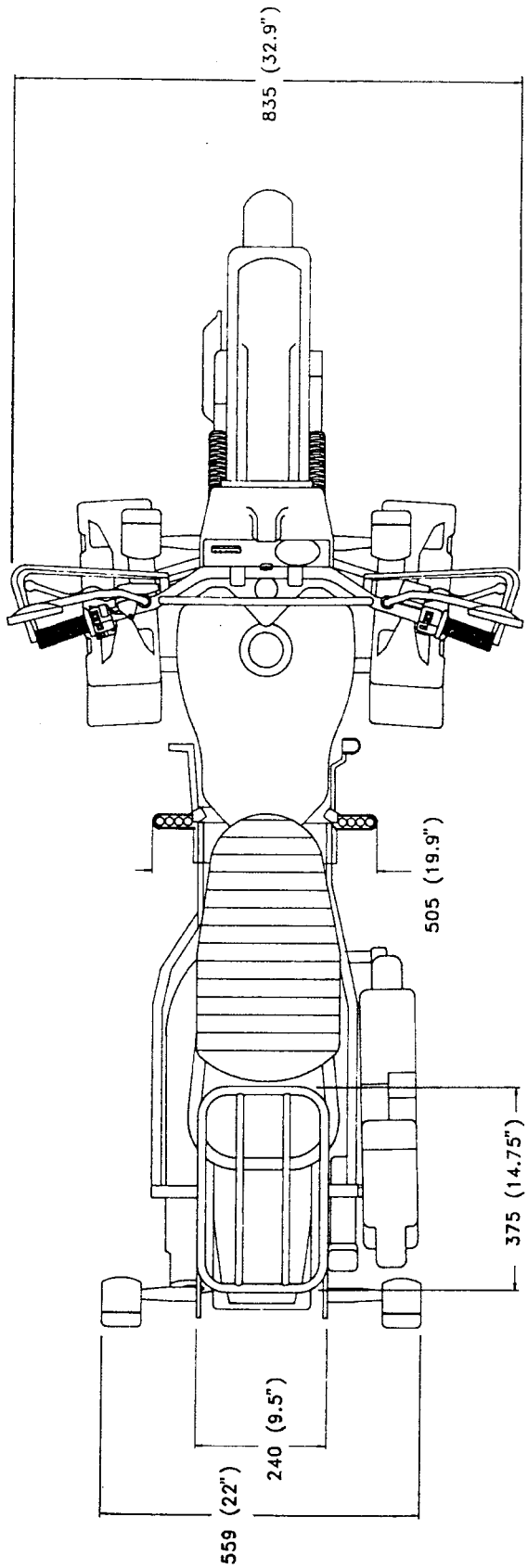


Figure 1-5. Machine Overall Dimensions (2 of 2)

REGULAR MAINTENANCE INTERVAL CHART

MT-350 MILITARY MOTORCYCLE

SECTION	MILES / KILOMETERS	500 / 800	3500 / 5600	7000 / 11250	1050 / 1640	14000 / 22500
2	ENGINE OIL	R	R	R	R	R
2	OIL FILTER	R	R	R	R	R
2	OIL STRAINER	I	I	I	I	I
3	AIR FILTER	I	I	R	I	R
2	CLUTCH	I	I	I	I	R
2	TIMING BELT	I	I	I	I	R
2	CHAIN	I	I	I	I	R
2	FRONT SPROCKET	I	I	I	I	R
5	REAR SPROCKET	I	I	I	I	R
5	BRAKE PADS	I	R	R	R	R
5	BRAKE DISC	I		I	I	R
5	FRONT & REAR BRAKE HOSES	I	I	I	I	R
5	BRAKE FLUID	I	I	I	I	R
5	CALIPER'S & MASTER CYLINDERS	I	I	I	I	I
5	ALL CONTROL CABLES	I L	I L	I L	I L	R
5	THROTTLE CONTROL SLEEVE & GRIPS	I	I	I L	I L	R
3	CARBURETOR	I	I	I	I	I
3	FUEL FILTER	I	I	I	I	R
5	SPEEDOMETER, DRIVE & CABLE	I	I	I	I	R
4	BATTERY	I	I C		I C	R
4	ELECTRICAL SWITCHES & CONNECTORS	I	I	I	I	I
4	SPARK PLUG		I	I	I	R
4	ALL LIGHT BULBS	I	I	I	I	R
5	FRONT FORK SEAL	I	I	I	I	C
5	FRONT FORK SEAL	I	I	I	I	C
5	HEAD BEARINGS	I	I	R	I	R
5	REAR SHOCK	I	I		I	I
5	SWING ARM BEARING	I L	I L	I L	I L	I L
5	REAR DRIVE CUSHION	I	I	R	I	R
5	WHEEL BEARINGS	I	I	I	I	I
5	FRONT & REAR SPOKES	I	R	I	I	R
5	FRONT & REAR TIRE	I	R	I	I	R
*	ALL FASTENERS EXCEPT HEAD BOLTS					
3	CARB BOOTS & ROLL OVER VALVE	I	I	I	I	R
3	EXHAUST SEALS	I	I	I	I	I
3	AIR BOX LID	I	I	I	I	R
5	BRAKE PEDAL PIVOT	I L	I L	I L	I L	I L

I= INSPECT AND IF NECESSARY REPLACE
R= REPLACE WITH NEW
C= CLEAN

T= TIGHTEN TO PROPER TORQUE
L= LUBRICATE
X= PERFORM

SHOP PRACTICES

REPAIR NOTES

NOTE

- *General maintenance practices are given in this section. This information will not be repeated in any other part of this manual.*
- *Repair = Disassembly/Assembly*
- *Replace = Removal/Installation*

All special tools and torque values are noted at the beginning of the procedure. Where none are required there will be no notes.

All necessary torque values are given at the beginning of a procedure and are given again after the step in which they occur. If none are required, none are noted.

Torque values and measurements are given in metric followed by english equivalents in parenthesis.

If you disassemble something and intend to re-use the parts, follow good shop practice and clean them thoroughly before assembly.

SAFETY - Safety is always the most important consideration when working on this vehicle. Completely understand the job to be done; use common sense and proper tools. Don't just do the job. Do it safely.

REMOVING PARTS - Always respect the weight of a part. Use a hoist whenever necessary. Don't left heavy parts by hand. A hoist and adjustable lifting beam or sling are needed to remove some parts. The lengths of chains or cables from the hoist to the part being lifted whould be equal and parallel and should be positioned directly over the center of the part. Never leave a part hoisted in mid-air.

- Always use blocking to support the part that has been hoisted. If you cannot remove a part, check to see that all bolts and attaching hardware have been removed. Check to see if any parts are in the way of the part being hoisted.
- When removing hoses, wiring or tubes, always tag each part to ensure proper installation.

CLEANING - Keep all dirt out of parts. The unit will perform better. Seals, filters, and covers are used in this vehicle to keep it clean. They must be kept in good shape to help the vehicle run well.

- Clean and look at all parts when removing them. Be sure all holes and passages are clean and open. After cleaning parts, be sure to cover them with clean cloth, paper, or other clean material. Be sure the part is clean when it is installed.
- Always clean around lines or covers before removing them. Plug, tape, or put caps on holes and openings to keep dirt out.

DISASSEMBLY AND ASSEMBLY - Always assemble or disassemble one part at a time. Do not work on two assemblies at the same time. Be sure to make all adjustments. Always check your work when you are finished. Be sure everything is done.

- Check the adjustments for the last time by operating the vehicle. If all adjustments are correct, the vehicle is ready to go back to the customer.

REPAIR AND REPLACMENT PROCEDURES

HARDWARE AND THREADED PARTS - Install helical thread inserts when inside threads in castings are stripped, damaged, or not able to withstand desired torque.

- Replace bolts, nuts, studs, washers, spacers, and small common hardware if missing or damaged in any way. Repair minor thread damage by cleaning out the threads using a tap or die.
- Replace all damaged or missing lubrication fittings.
- Use Teflon tape on all pipe fitting threads.

BELTS, WIRING, HOSES AND LINES - Replace belts, hoses, clamps, electrical wiring, electrical switches, or fuel lines if they fail to meet specifications.

INSTRUMENTS AND GAUGES - Replace defective or broken instruments and gauges. Replace dials and glass that are so scratched or discolored that it is difficult to read the gauges.

BALL AND ROLLER BEARINGS - Anti-friction bearings must be handled in a special way. To keep out dirt and abrasives, cover the bearings as soon as they are removed from package.

CAUTION

NEVER attempt to re-use a removed bearing. Once a bearing has been removed, it is destroyed and must be replaced.

- Wash bearings in a non-flammable cleaning solution. Knock out packed lubricant inside by tapping the bearing against a wooden block. Wash bearings again. Cover bearings with clean material, and set them down to dry.
- Coat bearings with oil. Wrap them in clean paper.
- Be sure that the chamfered side of the bearing faces the shoulder when installing bearings against shoulders. Before pressing bearings into place, lubricate them and all metal surfaces they contact. Put pressure only on the part of the bearing that directly contacts the mating part.

- Always use the proper tools and fixtures for removing and installing bearings.
- Bearings do not usually need to be removed. Remove bearings only if it is necessary.

BUSHINGS – Do not remove a bushing unless it is damaged, very worn, or loose in its bore. If you must remove a bushing, press it out.

- When pressing or driving, put pressure right in line with the bore. Use a bearing driver or a bar with a smooth flat end to drive a bushing. Never use a hammer.
- If there are oil holes, be sure they are aligned.

GASKETS – Always replace used gaskets with new gaskets. Never use the same gasket twice. Be sure that gasket holes match up with holes in the mating part.

- If gasket must be made, be sure to cut holes to match up with the mating part. Use material that is the right type and thickness.
- Serious damage to the vehicle can result if any holes on the flanges are blocked by the gasket.

LIP TYPE SEALS – Lip seals are used to seal oil or grease. To seal in oil, the lip is installed facing toward oil to be sealed. To seal grease, the lip usually faces away from grease.

- Seals should not be removed. Only remove seals to get at other parts or if the seal is damaged or worn.
- Leaking oil or grease usually means that a seal is damaged and needs to be replaced. Replace leaking seals so that bearings don't overheat. Do not use the same seal twice.

PACKING SEALS AND O-RINGS (PREFORMED PACKINGS) – Packing seals and O-rings should always be replaced if they are removed from the mated part. To prevent leaks, put a coating of the same lubricant being sealed on seals before putting them on the part.

GEARS – Always watch for damaged or worn teeth on gears.

- Burrs and rough spots should be removed with a honing stone or crocus cloth before putting gear in place. Lubricate mating surfaces before pressing gear on shafts.

SHAFTS – If a shaft does not come out easily, check that all nuts and bolts have been removed. See if other parts are in the way before using force.

- Shafts fitted to tapered splines should be very tight. If shafts are not tight, disassemble and check tapered splines. Discard parts that are worn. Be sure tapered splines are clean, dry, and free of burrs before putting them in place. Press mating parts together tightly.
- Clean off rust from all machined surfaces of new parts.

PART REPLACEMENT – Always replace worn or damaged parts with new parts.

CLEANING.

PART PROTECTION – Before cleaning, protect rubber items (hoses, boots, electrical insulation) from cleaning solutions. Protect them with a grease-proof barrier material. Remove the rubber part if it cannot be protected.

CLEANING PROCESS – Any cleaning method may be used as long as it does not damage a part. Cleaning is necessary so that parts can be checked. Rusted paint areas must be stripped to bare metal before repainting.

RUST OR CORROSION REMOVAL – Rust and corrosion can be removed with a wire brush, abrasive cloth, sand blasting, vapor blasting, or rust remover. Use buffing crocus cloth on highly polished parts that are rusted.

BEARING – Remove shields and seals from bearings before cleaning. Bearings with permanent shields and seals must be cleaned in a solution.

- Clean open bearings by soaking them in a petroleum cleaning solution. Never use a solution with chlorine in it.
- Bearings should stand and dry. Do not use compressed air to dry. Do not spin bearings while they are drying.

ENGINE / TRANSMISSION

SUBJECT PAGE NO.

ENGINE THEORY

BASIC FOUR STROKE ENGINE PRINCIPLE

DEFINITIONS:

T.D.C. ..... Top Dead Center position.
B.D.C. ..... Bottom Dead Center position.
B.T.D.C. ..... Before Top Dead Center position.
A.T.D.C. ..... After Top Dead Center position.

Volumetric Efficiency

Volumetric efficiency is the ratio between the amount of fuel/air mixture that actually enters the cylinder at the intake stroke and the amount required to completely fill the cylinder to atmospheric pressure. It is expressed as a percentage. Theoretically an engine should be able to draw 100% of its volume but practically the percentage varies from 80% to 90% depending on the engine type.

NOTE

It is possible to obtain a percentage of 100% or more by "helping" the intake charge to fill the cylinder(s). This is done by using devices such as turbochargers or superchargers to compress the fuel/air mixture going into the cylinder.

Compression Ratio

The compression ratio for a cylinder is the ratio between the TOTAL VOLUME of a cylinder and the CLEARANCE VOLUME. It is calculated by dividing the total volume by the CLEARANCE VOLUME and is expressed as a ratio (10 to 1, 9 to 1 etc.).

A. The TOTAL VOLUME of a cylinder is the volume above the piston when the piston is at B.D.C. and is equal to the CLEARANCE VOLUME plus PISTON DISPLACEMENT.

B. The CLEARANCE VOLUME for a cylinder is the volume of the combustion chamber above the piston when the piston is at T.D.C.

C. The PISTON DISPLACEMENT for a cylinder refers to the volume that the piston displaces as it travels from B.D.C. to T.D.C. or from T.D.C. to B.D.C and is expressed in cubic inches or cubic centimetres.

FOUR STROKE ENGINE CYCLE

A four-stroke engines' piston(s) complete four strokes in one operating cycle, hence "4-stroke". The four strokes are:
INTAKE STROKE
COMPRESSION STROKE
POWER STROKE
EXHAUST STROKE

INTAKE STROKE

1. The intake stroke fills the cylinder with a fresh charge of fuel/air mixture. The intake valves open as the piston travels down from T.D.C. to B.D.C.

2. See Figure 2-1. The piston downward movement creates a partial vacuum in the cylinder. Air at atmospheric pressure enters through the air cleaner and is mixed with fuel in the carburetor. The volatile fuel/air mixture then passes into the cylinder through the intake valves. The exhaust valve(s) remain closed during this stroke and the crankshaft turns half a revolution (180°).

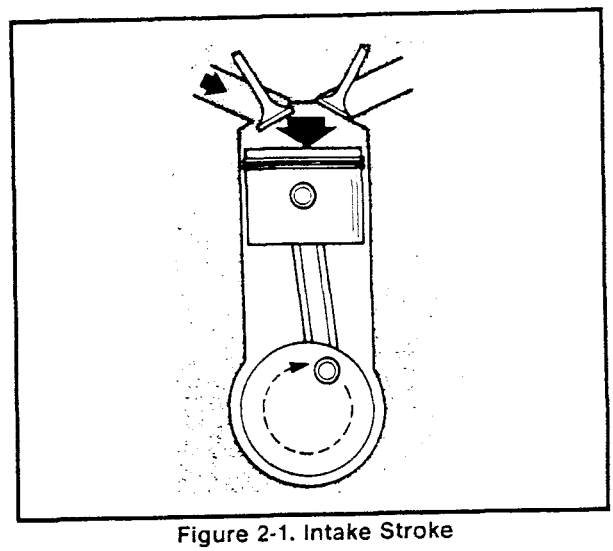


Figure 2-1. Intake Stroke

COMPRESSION STROKE

See Figure 2-2. As the intake valves close, the piston moves from B.D.C. to T.D.C. and the fuel/air mixture in the cylinder is compressed in the combustion chamber. All the valves close and remain closed. The crankshaft has completed one revolution.

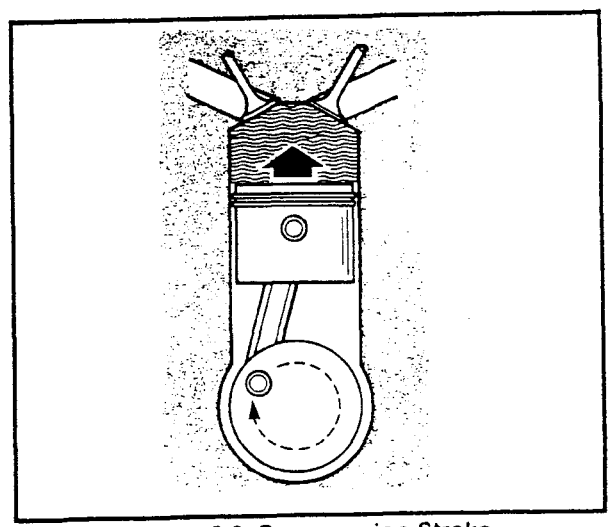


Figure 2-2. Compression Stroke

POWER STROKE

1. See Figure 2-3. At the end of the compression stroke, the fuel/air mixture is ignited. Fuel/air mixture ignition is caused by an electric spark from the spark plug.

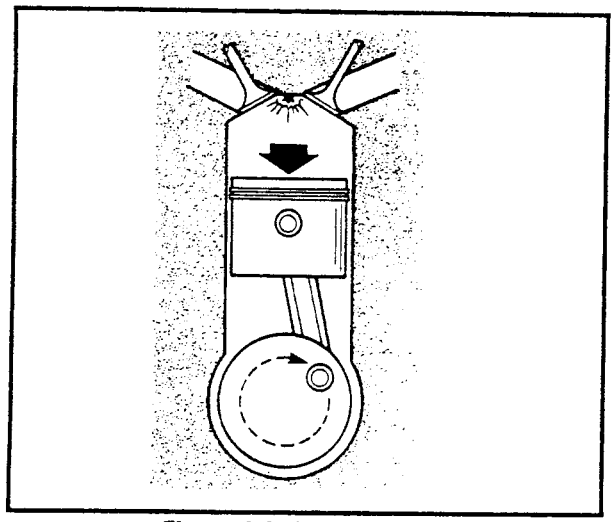


Figure 2-3. Power Stroke

2. Because the ignition of the compressed charge is a critical factor in how well the four stroke engine runs, the ignition point varies from 8° to 30° B.T.D.C. depending on the engine R.P.M. By the time the piston reaches T.D.C. the fuel charge is burning enough to complete combustion on the power stroke.
3. The rapid expansion of the burning gases causes great pressure in the cylinder and forces the piston downward from T.D.C. to B.D.C. All the valves remain closed.

EXHAUST STROKE

1. See Figure 2-4. The crankshaft has now rotated one and one-half revolutions, and the burned gases must be removed. The exhaust valves open and the piston moves from B.D.C. to T.D.C. forcing the burned gases out of the cylinder through the exhaust ports. During this stroke, the intake valves remain closed until intake and exhaust valves' movement overlaps. The crankshaft has completed two revolutions. The piston is at T.D.C. and the engine is ready to repeat the cycle.

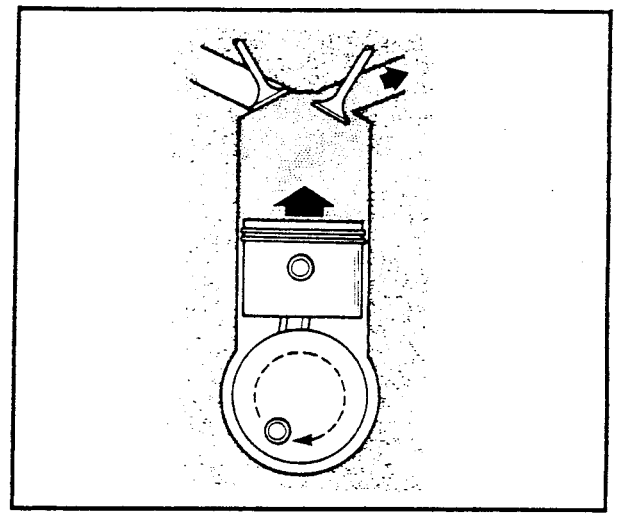


Figure 2-4. Exhaust Stroke

2. The overlap between the exhaust and the intake valves lasts for a few degrees of crankshaft rotation. This overlap period is always between the exhaust stroke and the intake stroke. The overlap period is very important. Leaving the exhaust valves open a few degrees A.T.D.C. takes advantage of the moving gases' inertia to further remove burned gases from the cylinder.
3. As the exhaust gases rush past the area of the intake valve, they create low pressure in that area. Opening the intake valves a few degrees B.T.D.C. of the intake stroke utilizes this low pressure to start a new fuel/air mixture flowing into the cylinder.
4. Flywheel momentum is used to keep the engine operating continuously through the exhaust, intake and compression strokes.

BALANCER THEORY

The reciprocating masses in a four stroke single cylinder engine create inertia forces and vibration which are partially counteracted by the crankshaft counterweights. There is a balancer shaft in the engine which helps cancel most of the remaining inertia forces.

NOTE

The secondary inertia forces created by the piston, pin and connecting rod movement are not completely cancelled but they are negligible.

1. See Figure 2-5. When the piston is at T.D.C., the inertia force value at the piston is 100%. To counteract this force, the crankshaft counterweights cancel 50% and the balancer cancels almost all the remaining 50%.

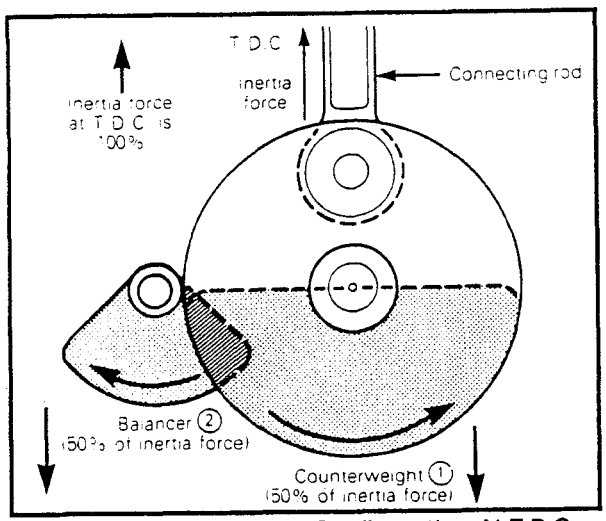


Figure 2-5. Inertia Force Configuration At T.D.C.

2. The counterweights create a centrifugal force to neutralize one-half of the inertia force. Almost all the remaining inertia will be cancelled by the balancer.

3. When the piston position is 90° A.T.D.C. (half stroke) the primary inertia force value at the piston is 0%.

4. See Figure 2-6. The crankshaft counterweights' rotation creates a centrifugal force. The opposite rotation of the balancer neutralizes this centrifugal force. The crankshafts' counterweight centrifugal force is cancelled by the balancers' opposite centrifugal force.

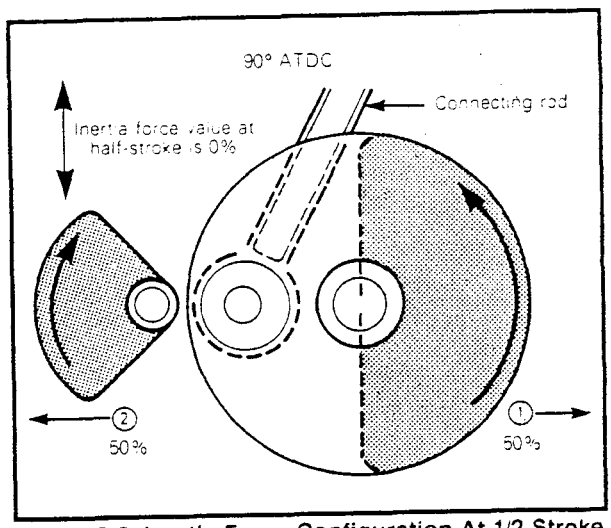


Figure 2-6. Inertia Force Configuration At 1/2 Stroke

5. The centrifugal force value at counterweight and balancer is 0% because when the centrifugal force at the counterweight is 50%, the centrifugal force at the balancer is 50% in the opposite direction. This cancels the centrifugal force.

6. When the piston is at B.D.C. the inertia force value at the piston is 100%.

7. See Figure 2-7. To counteract this force, the centrifugal force of the counterweights cancel 50% and the balancer cancels nearly all the remaining 50%.

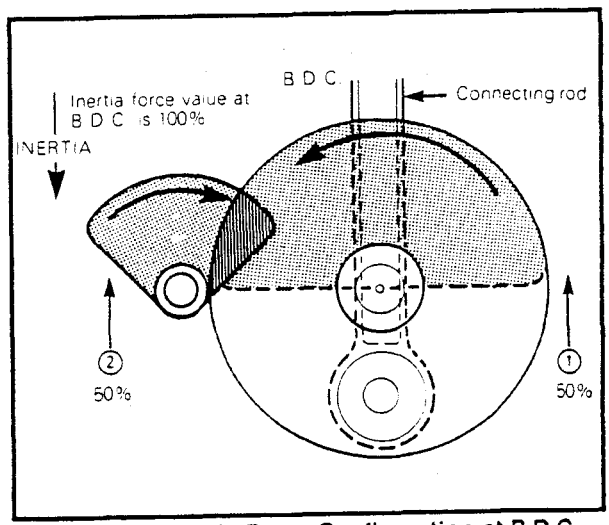


Figure 2-7. Inertia Force Configuration at B.D.C.

8 The centrifugal force on the counterweight neutralizes one-half the downward inertia force. The balancer counteracts the remaining inertia force.

9. When the piston position is 90° B.T.D.C. (half stroke) the secondary inertia force value at the piston is 0%. Because of the crankshaft rotation, the counterweights and the balancer are in opposite directions, thus balancing each other.

NOTE

The centrifugal forces work opposite each other.

10. See Figure 2-8. Inertia force value at counterweight and balancer is 0% because when the centrifugal force on the counterweight is 50%, the centrifugal force on the balancer is 50% in the opposite direction. This cancels the inertia force.

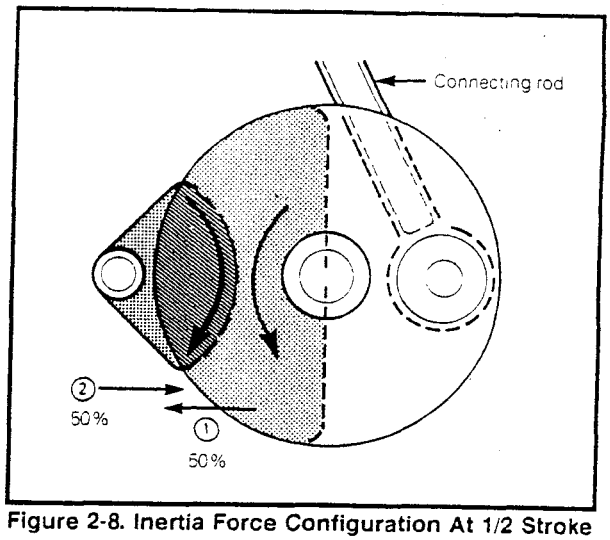


Figure 2-8. Inertia Force Configuration At 1/2 Stroke

NOTE

The secondary inertia forces are not completely cancelled but they are negligible.

TROUBLESHOOTING - ENGINE/TRANSMISSION UNIT

Symptom	Fault	Remedy
1. Engine will not (or is hard) to start and/or runs poorly.	Operator insufficiently experienced in starting technique.	Practice correct technique.
	Poor, intermittant, incorrectly-timed or nonexistant sparks at plug because of:	
	- Ignition switch off	Switch on
	- Spark plug dirty, incorrectly set or wrong type	Clean, reset or replace as necessary.
	Fault with ignition system	See Chapter 6.
		See Chapter 6.
	Fuel/air mixture not reaching engine because of:	
	- Out of fuel	
	- Fuel tap turned off	Refuel
	- Blocked fuel line	Turn on
	- Air filter element clogged	Unblock
	- Fault with carburetor and/or setting	Replace
		See Chapter 4
	Engine compression low because of:	
	- Decompressor lever stuck "on"	Free to "off" position
	- Improperly tightened spark plug	Tighten
	- Improperly tightened cylinder head	Tighten
	- Damaged/leaking cylinder head gasket	Repair/replace
	- Valve sticking	Repair/free. Replace as necessary
	Excessive carbon deposits in engine, causing pre-ignition.	Strip down, remove deposits, check for wear.
	No oil in engine.	Add oil, check for evidence of damage.
	Valve timing wrong	Check timing pulleys setting. Reset as necessary.
2. Clutch slips, drags or is noisy in operation.	Problem because of:	
	- Incorrect adjustment	Adjust according to specification
	- Worn or buckled clutch plates	Replace
	- Miscellaneous fault	Strip down, investigate
3. Transmisson jumps out of gear/poor gear engagement.	Worn dogs on gears	Stripdown, replace
	Improper engagement because of:	
	- Bent or worn shifting forks	Replace
	- Bent shift fork shaft	Replace
	- Shift drum channels worn	Replace
	- Shift drum index spring brakes, worn.	Replace
4. Abnormal noises from engine.	Component adjustment, wear or failure.	Investigate, replace
5. Excessive clicking from cylinder head vicinity.	Foreign body in combustion chamber.	Investigate, if possible, by looking through spark plug hole
6. Ticking noise, excessive oil consumption, low power.	Broken piston ring(s)	Strip down, replace

ROTAX - Engine Type 348 E MIL Harley Davidson

design no. 38.348.1909

DESCRIPTION:	Single cylinder, 4-stroke motorcycle engine, air-cooled, single overhead camshaft, timing delt drive, with integrated 5-speed transmission, with balance shaft
BORE:	79,5 mm (3,130 in.)
STROKE:	70,4 mm (2,772 in.)
DISPLACEMENT:	349 c.c. (21,297 cu. in.)
PERFORMANCE:	21,7kW (29,5 hp) at 8000 r.p.m., performance sheet Lb. 384
MAX. TORQUE	27,9 Nm (20,6 ft. lb.) at 6500 r.p.m., performance sheet Lb. 384
IDLE R.P.M.:	1500 1/min.
MAX ADMISSIBLE R.P.M.	8200 1/min
CYLINDER:	light alloy cylinder GILNISIL plated
CYLINDER/PISTON CLEARANCE:	0,00-0,024 mm (.0-.0001 in.)
PISTON:	light metal, solid skirt, cast
PISTON RING:	1 compression ring (chrome plated) 1 tapered compression ring 1 oil strainer ring assembly
CYLINDER HEAD:	monoblock design, 4 valves, forked inlet port, 2 separate exhaust ports
COMPRESSION RATIO:	9,3 : 1

ROTAX - Engine Type 348 E MIL Harley Davidson

design no. 38.348.1909

VALVE TRAIN:	timing belt, break proof design, camshaft on ball bearing, rocker arm with rollers
INTAKE VALVE:	2 x 30 mm (1,181 in.)
EXHAUST VALVE:	2 x 27 mm (1,603 in.)
VALVE GAP / COLD ENGINE	0,05 mm (.00197 in.), intake and exhaust
CAM SHAFT:	229°
VALVE STROKE:	7,9 mm (.311 in.)
VALVE TIMING: (at 1 mm / .0394 in. valve gap)	inlet opens 3° BTDC outlet opens 46° BBDC inlet closes 46° ABDC oulet closes 3° ATDC
IGNITION UNIT:	Capacitor discharge ignition, fully electronic, with timing advance
IGNITION TIMING:	idling 3° BTDC, full load 29° BTDC at 7000 r.p.m. continuous variable timing from 2000 r.p.m.
GENERATOR OUTPUT:	3-phase A.C. flywheen generator 12V 190W
SPARK PLUG:	12 mm NGK D8 EA
ELECTRODE GAP:	0,7 mm (.0275 in.)
CARBURETOR:	Dell'orto 34 mm dia. (1,3386 in.)
WEIGHT:	approx. 46 kg (101,41 lb.)

ROTAX - Engine Type 348 E MIL Harley Davidson

design no. 38.348.1909

FUEL:	unleaded fuel RON 91
ENGINE LUBRICATION:	dry sump lubrication, oil HD 30W-50
TRANSMISSION LUBRICATION:	splash lubrication
OIL PUMP:	double trochoid pump, driven by primary drive
CLUTCH:	multi-plate clutch in oil bath
PRIMARY DRIVE:	straight tooth spur gearing 32/76 = 2,375
TRANSMISSION:	integrated 5-speed transmission, constant mesh, with dogs
TRANSMISSION RATIO:	i prim = 32/76 = 2,375 total ratio (i prim x i speed) 1st speed = 32/11 = 2,909 1st speed: 6,909 2nd speed = 24/12 = 2,0 2nd speed: 4,75 3rd speed = 21/15 = 1,4 3rd speed: 3,325 4th speed = 19/17 = 1,118 4th speed: 2,654 5th speed = 21/23 = 0,913 5th speed: 2,168
SPROCKET:	15 teeth, 5/8 x 1/4 x 10,16 (standard), also available sprockets with 13 - 20 teeth
GEAR SHIFTING:	shift lever on left engine side, neutral between 1st and 2nd gear, electronic neutral gear indication
STARTER:	Kick starter and electric starter
INTAKE SILENCER:	sample ROTAX
EXHAUST SYSTEM:	sample ROTAX

GENERAL DESCRIPTION

The engine/transmission is manufactured as a unit. The engine is a four stroke, single cylinder with a belt driven overhead cam operating two exhaust and two inlet valves. The transmission is a constant mesh five speed type driven by a multiplate wet clutch.

ENGINE REMOVAL/INSTALLATION

1. Remove the engine/transmission unit from the motorcycle as follows: Refer to the applicable sections for more detailed information if neccessary.

2. Place the motorcycle on a stand and drain the oil from the frame as described in LUBRICATION SYSTEM.

3. Remove or disconnect the following:
   Seat - See SEAT.
   Gas tank - See GAS TANK.
   Clutch cable - See CLUTCH.
   Throttle and enrichener cable - See CARBURETOR.
   Carburetor - See CARBURETOR.
   Engine sprocket - See BOTTOM END.
   Chain guard, drive chain - See CHAIN GUARD, DRIVE CHAIN.
   Exhaust system - See EXHAUST.
   Oil lines; feed return and top vent - See LUBRICATION SYSTEM.
   Engine breather hose - See LUBRICATION SYSTEM.
   Front engine guard - See CHASSIS.
   Sump guard - See CHASSIS.
   Front engine plate - See CHASSIS.
   Both footrest brackets and footrest cross tube - See CHASSIS.
   Spark plug cap - See ELECTRICAL SYSTEM.
   Engine wiring harness and vent tube - See ELECTRICAL and LUBRICATION SYSTEM.

4. Support the engine on a suitable stand.

5. Partially remove the swing arm spindle using the special drift (service tool kit) to gauge how far to push the spindle out. Remove the spindle up to the line on the drift.

6. At this point, remove the top engine mount. This will allow the motorcycle to be lifted clear of the engine.

7. Replacement is the reverse of the removal procedure. For more complete information for particular components, refer to the applicable Sections.

8. Adjust clutch cable and refill vehicle engine oil as described in CLUTCH and ENGINE OIL CHANGE.

PROCEDURES WITH ENGINE IN FRAME

1. Most engine maintenance can be performed without removing the engine/transmission unit from the frame. these tasks include:
   - Tappet adjustment - See VALVE CLEARANCE.
   - Cam/rocker arm removal - See CYLINDER AND CYLINDER HEAD.
   - Cam drive belt adjustment/removal - See CYLINDER AND CYLINDER HEAD.
   - Ignition timing verification - See ENGINE TIMING.
   - Engine oil filter change - See ENGINE OIL CHANGE.
   - Oil sump removal - See BOTTOM END.
   - Clutch removal/adjustment - See CLUTCH.
   - Starter motor and idler gear removal - See STARTER MOTOR and BOTTOM END.
   - Clutch cover removal – allows access to:

     Oil pump drive gear - See OIL PUMP.
     Kickstart rachet assembly - See KICKSTART.
     Balancer shaft drive gear and starter motor drive gear assembly - See BOTTOM END.

2. The engine/transmission unit will have to be removed from the motorcycle to allow access to the following internal engine parts:
   - Heads (related components) - See CYLINDER AND CYLINDER HEAD.
   - Pistons - See CYLINDER AND PISTON.
   - Crankshaft - See CRANKSHAFT.
   - Balancer shaft - See BALANCER SHAFT.
   - Transmission; including all shafts, gears and bearings - See TRANSMISSION.

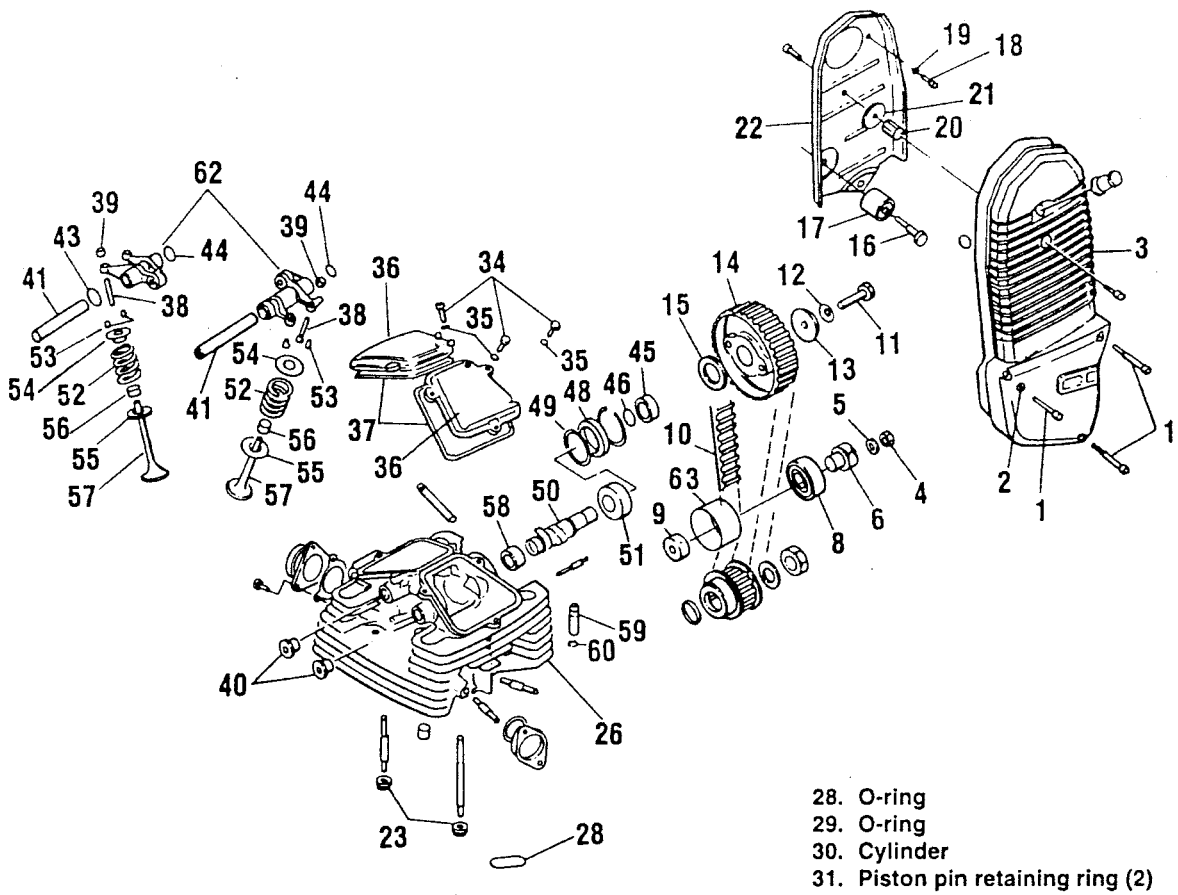
CLEANING, INSPECTION AND REPAIR

WARNING

Solvents with a low flash point, such as gasoline, naphtha, benzol, etc. should not be used because they are flammable and explosive. Remove old sealant from mating surface of crankcase with acetone, wood alcohol or equivalent.

CAUTION

- **Never use a sharp object to scrape away old sealant. This will cause score marks on cylinder head or cylinder.**
- **Be sure all oil passages are clean.**

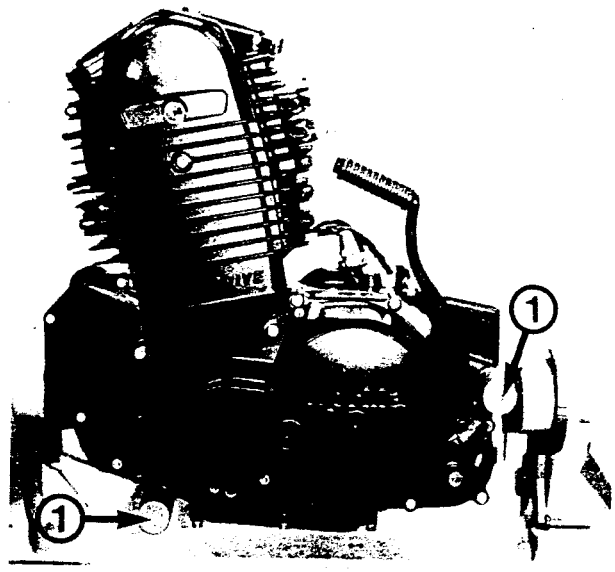


1. Allen head bolt (3)
2. Washer
3. Timing belt cover
4. Tension pulley nut
5. Washer
6. Eccentric
7. Tensioner pulley nut
8. Ball bearing
9. Spacer
10. Timing belt
11. Camshaft pulley retainer bolt
12. Spring washer
13. Washer
14. Timing belt pulley
15. Shim
16. Guide pulley bolt
17. Guide pulley
18. Housing bolt (2)
19. Washer
20. Hex nut
21. Washer
22. Timing belt housing
23. Cylinder head retaining nut (2) (Bottom)
24. Cylinder head retaining nut (3) (Top)
25. Cap nut
26. Cylinder head
28. O-ring
29. O-ring
30. Cylinder
31. Piston pin retaining ring (2)
32. Piston pin
33. Piston
34. Valve cover cap screw (3)
35. Valve cover washer (3)
36. Valve cover (2)
37. Valve cover gasket (2)
38. Valve adjustment screw (4)
39. Valve adjuster nut (4)
40. Rocker arm shaft plug screw (2)
41. Rocker arm shaft (2)
42. Rocker arm (2)
43. Rocker arm spring washer (2)
44. Rocker arm thrust washer (2)
45. Camshaft spacer sleeve
46. O-ring
47. Lock ring
48. Camshaft seal
49. Shim
50. Camshaft
51. Ball bearing
52. Valve spring (3)
53. Valve keeper (3)
54. Spring collars (top) (3)
55. Spring collars (bottom) (3)
56. Seal (3)
57. Valve (3)
58. Camshaft needle bearing
59. Cylinder base gasket
60. Dowel pins
61. Valve guide (3)
62. Retaining ring (3)

Figure 2-9. Engine - Cylinder and Head Assembly

Engine removal

Clean machine and drain off engine oil, disconnect battery. Dismount exhaust manifold, remove chain cover and chain, disconnect clutch and decompressor control cable, remove carburetor, disconnect oil suction pipe at frame, disconnect oil return line and venting hose from engine, disconnect generator cables, remove engine mounting on cylinder head and engine housing, and lift engine out of frame.

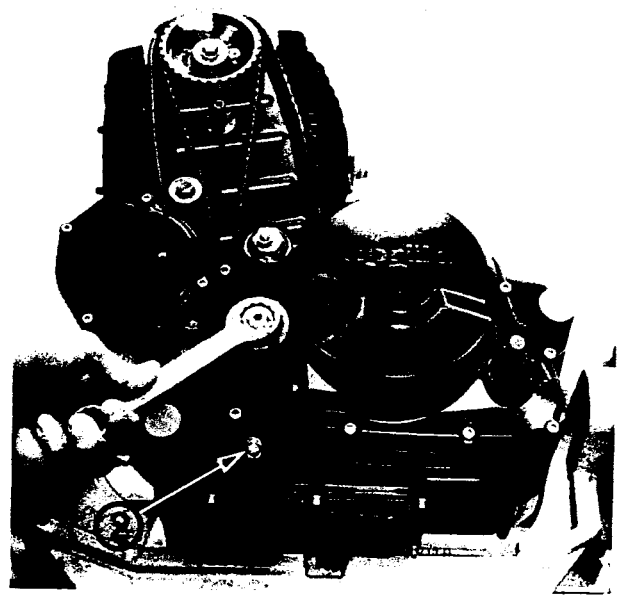


Disassembly of engine

Remove electric starter.
Set up the cleaned engine on trestle (277 917) and secure with two fixing bolts ❶.
Remove gearshift and kickstart levers.

Timing belt drive

Remove timing belt cover (4 Allen screws M6). Remove plug screw M8 for crankshaft locking, then set piston to top dead centre so that the locking bolt groove can be seen through the crankcase aperture.
Fit crankshaft locking screw ❷ (241 965) by hand until it engages firmly in the crankshaft recess (move the crankshaft gently to and fro by means of a wrench 24).



Scomposizione del motore

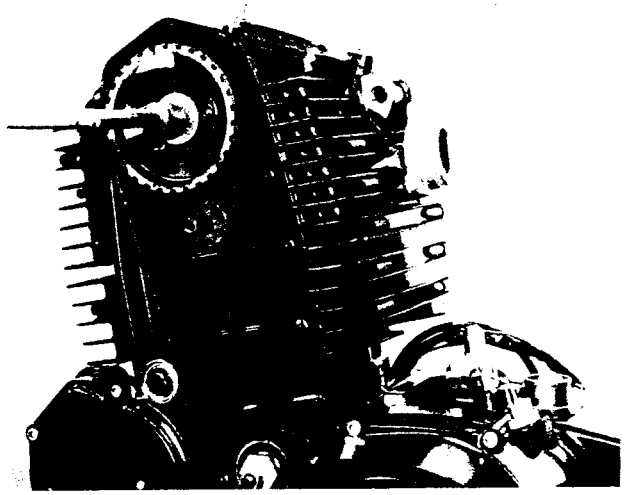
Smontare l'avviamento elettrico.
Portare il motore pulito sulla staffatura (277 917) e bloccarlo con due viti di fissaggio ❶. Svitare la leva cambio e la leva messa in moto.

Distribuzione

Levare il coperchio della distribuzione (4 brugole M6). Togliere il tappo a vite M8 per bloccaggio albero motore. Mettere il pistone al punto morto di accensione (la gola di bloccaggio nell'albero motore deve essere visibile attraverso il foro).
Avvitare a mano la vite di bloccaggio albero motore ❷ (241 965) in modo che sia chiaramente percepibile l'innesto della vite nella gola dell'albero motore (muovere contemporaneamente l'albero nei due sensi per mezzo di una chiave ad anello da 24.)

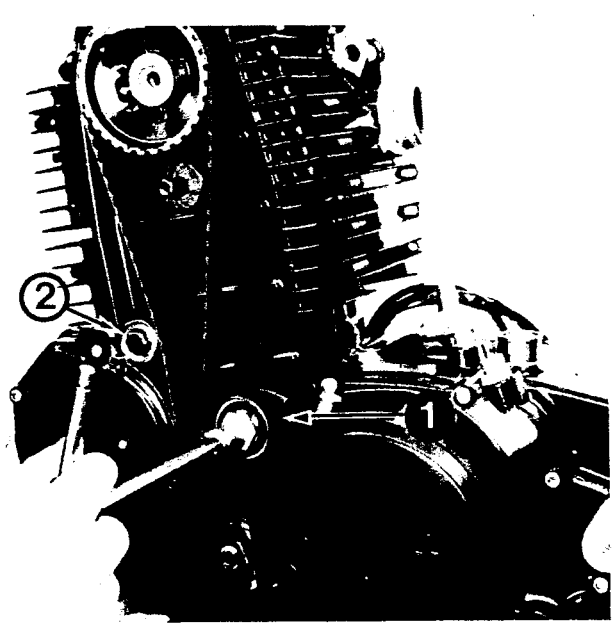
Befestigungsschraube M8 des Steuerrades mit Steckschlüssel SW 13 abschrauben.

Mutter M8 für Spannrolle mit Steckschlüssel SW 13 abschrauben und Spannrolle ❶ mit Distanzhülse abnehmen. Drehrichtung des Zahnriemens markieren und abnehmen. Bandspannrolle ❷ abschrauben.



Unscrew fixing screw M8 of timing pulley with socket wrench 13.

Unscrew nut M8 of tensioning pulley with socket wrench 13 and take off tension roller ❶ with spacer. Mark sense of rotation of timing belt and take it off. Screw off guide pulley ❷.



Svitare la vite di fissaggio M8 della puleggia distribuzione per mezzo di una chiave a tubo da 13.

Svitare il dado M8 per il rullo tendicinghia con una chiave a tubo da 13 e togliere il rullo ❶ assieme al distanziatore.
Marcare il senso di rotazione della cinghia distribuzione e toglierla. Svitare il rullo tenditore ❷.

Steuerrad mit Abzieher 276 360 von Nockenwelle ziehen und dahinterliegende Anlaufscheibe abnehmen. Distanzmutter M6 mit Steckschlüssel SW 10 abschrauben und Scheibe entfernen. Die 2 Innensechskantschrauben M6 entfernen und Steuertriebgehäuse abnehmen.

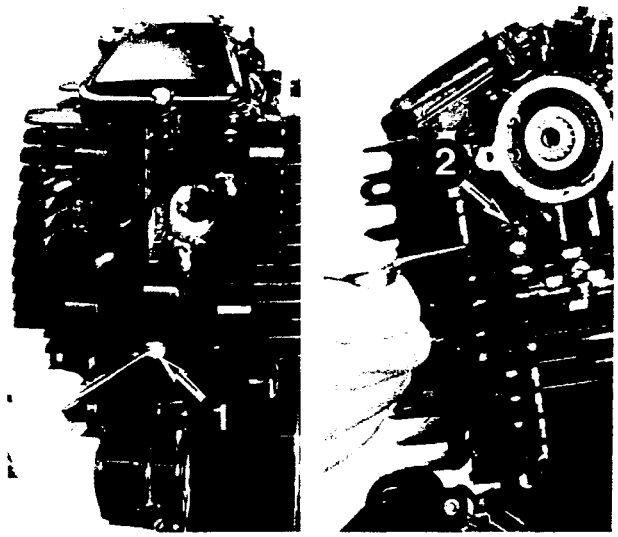
Zylinderkopf und Zylinder

2 Bundmuttern M8 ❶ mit Ringschlüssel SW 13 an der Zylinderunterseite abschrauben.
3 Bundmuttern M10 ❷ und 1 Bundhutmutter M10 mit Ringschlüssel SW 15 abschrauben.

Remove timing pulley from camshaft with puller and remove thrust washer. Unscrew spacer nut M6 with socket wrench 10 and take off washer. Remove the 2 Allenhead screws M6 with wrench 5. Remove timing belt housing with guide roller.

Cylinder and cylinder head

Unscrew the 2 collar-nuts M8 ❶ with ring wrench 13 and remove from below.
Unscrew the 3 collar-nuts M10 ❷ and one cap nut M10 with ring wrench 15.



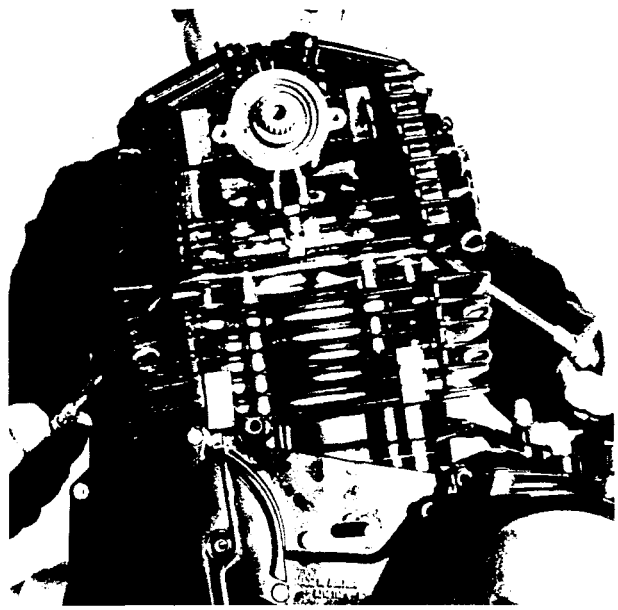
Togliere la puleggia distribuzione a mezzo dell' estrattore 276 360 dall'albero a camme e togliere la rondella. Svitare il dado distanziatore M6 con una chiave a tubo da 10 e togliere lo spessore. Togliere le 2 brugole M6 e levare il carter distribuzione.

Testata e cilindro

Svitare i 2 dadi con spallamento M8 ❶ per mezzo di una chiave ad anello da 13 dalla parte inferiore del cilindro. Svitare i 3 dadi con spallamento M 10 ❷ e il dado cieco con spallamento M10 per mezzo di una chiave ad anello da 15.

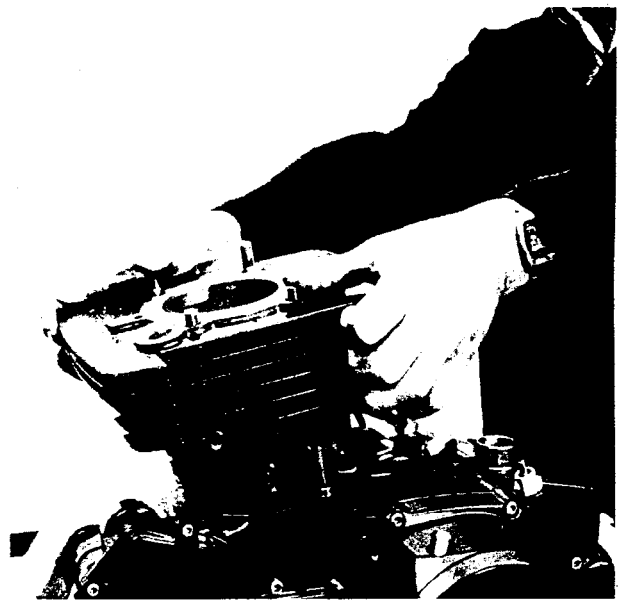
Kompletten Zylinderkopf mit 2 Schraubenziehern von den Paßhülsen abdrücken und abnehmen.
Achtung: Nicht auf der Dichtfläche abdrücken!

Zylinderkopfdichtung und O-Ring mit O-Ring-Abstützung entfernen. Zylinder abnehmen.



Take off complete cylinder head, levering it off the dowel pins with 2 screwdrivers.
Attention: Don't place levers between the joint faces.

Remove cylinder head gasket and O-ring with O-ring support. Remove the cylinder, taking care to prevent piston falling against crankcase.



Far leva sollevando la testata con 2 cacciaviti dalle bussole e toglierla.
Attenzione: Non agire sulle superfici di guarnizione.

Togliere la guarnizione testata e l'OR con la piastrina sostegno OR.

Sfilare lentamente il cilindro senza danneggiare il pistone.

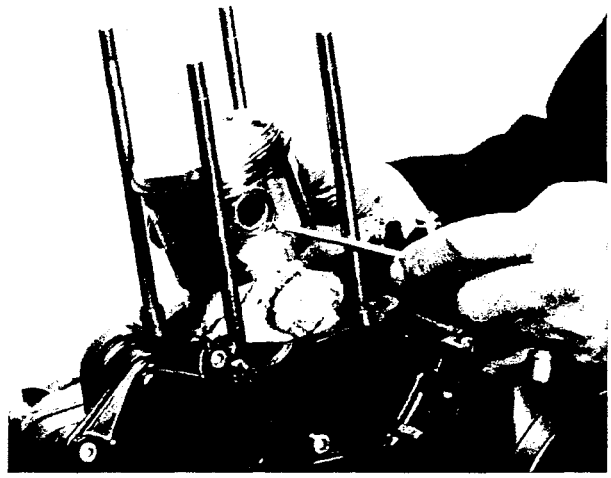
Kurbelgehäuse abdecken und 2 Kolbenbolzensicherungen mit schmalem Schraubenzieher herausheben. Kolbenbolzen mit Führungsdorn herausdrücken, nötigenfalls vorsichtig auf den Führungsdorn klopfen.

Achtung:

Kolben mit Hand abstützen, damit Pleuelstange nicht verbogen wird.
Zylinderfußdichtung abnehmen.

Zündanlage

Motor mit Montagebock verdrehen, damit Zünderseite oben zu liegen kommt. 4 Innensechskantschrauben M6 mit Stiftschlüssel 5 abschrauben und Leitungshalter und Zünderdeckel abnehmen.



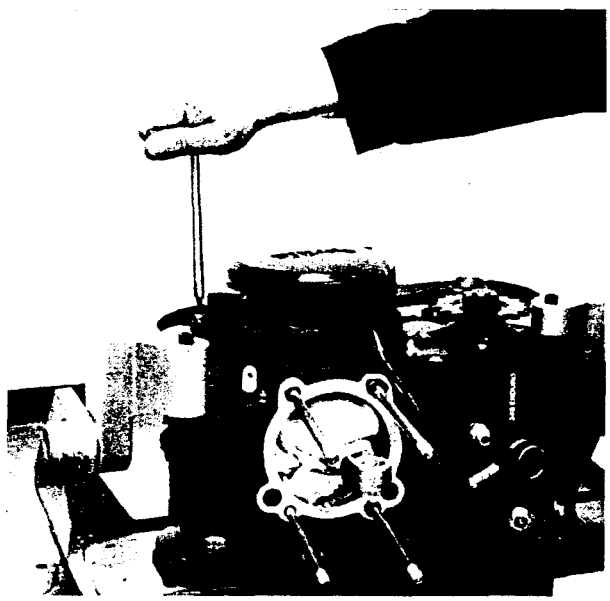
Cover crankcase opening with a cloth and prise out the 2 piston pin circlips using a narrow-blade screwdriver. Press out piston pin with guide bolt, tapping the guide bolt carefully if necessary.

Caution:

Support piston by hand to avoid bending the connecting rod.
Remove cylinder base gasket.

Ignition system

Turn engine on trestle magneto side upwards. Unscrew 4 Allen screws M6 with wrench 5 and take off cable clamp and ignition cover.



Coprire il carter motore con un panno ed estrarre i 2 anellini spinotto con un cacciavite stretto.
Premere in fuori lo spinotto col bullone guida, se necessario battere cautamente sul bullone di guida.

Attenzione:

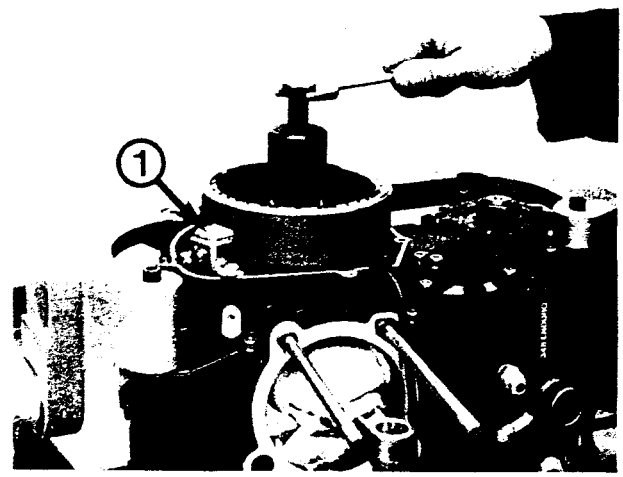
Sostenere il pistone con la mano affinchè la biella non venga piegata.
Togliere la guarnizione della base del cilindro.

Accensione

Girare il blocco motore sulla staffatura in modo che il lato accensione venga a trovarsi in alto. Togliere le 4 brugole M 6 con una chiave da 5 e levare il giuntacavi ed il coperchio accensione.

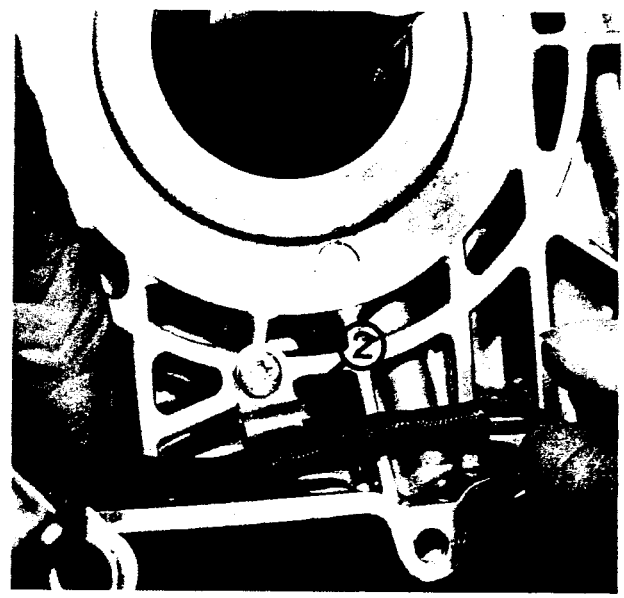
SK-Mutter M18 mit Schlüssel SW 27 abschrauben und Federring abnehmen.
Abzieher (277 807) ganz auf Gewinde des Magnetrades aufschrauben und Magnetrad abziehen.
Scheibenfeder aus der Kurbelwelle nehmen.

2 Taptite-Schrauben M6 mit Steckschlüssel SW 10 herausschrauben, Geberleitung aus der Leitungsschelle heben, Außengeber ❶ und Verschlußgummi abnehmen.
Achtung: Leitungsschelle ❷ muß nur bei Demontage der Kurbelwelle abgeschraubt werden.



Unscrew hex. nut M18 with wrench 27 and remove lockwasher.
Screw tool (277 807) fully onto the flywheel thread by screwing in the extractor bolt with wrench 22. Remove Woodruff key from crankshaft.

Unscrew 2 Taptite screws M6 with socket wrench 10, lift trigger cable off the cable clamp. Take off trigger coil ❶ and the rubber plug.
Attention: The cable clamp ❷ need not be removed unless it is also necessary to remove the crankshaft.



Svitare il dado M18 con una chiave da 27 e togliere la rondella elastica.
Avvitare completamente l'estrattore (277 807) sulla filettatura del volano ed estarre il volano.
Levare la linguetta dall'albero motore.

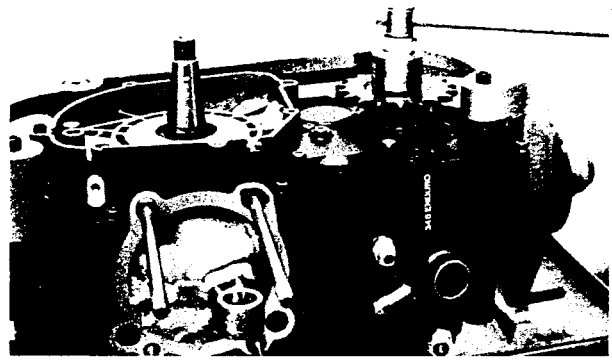
Svitare 2 viti Taptite (= autofilettante) M6 con una chiave a tubo da 10, sollevare il cavo del pick-up dal giuntacavi.
Rimuovere il pick-up ❶ ed il tappo gomma.
Attenzione: Il giuntacavi ❷ deve essere svitato solo nel caso di smontaggio dell'albero motore.

Kettenrad

1. Gang einlegen, Sicherungsblech aufbiegen und Sechstkantmutter SW 30 abschrauben. Sicherungsblech und Kettenrad abnehmen.

Kupplung und Primärbetrieb

Motor im Montagebock verdrehen, damit Kupplungsseite oben zu liegen kommt.
SK-Mutter M16 des Steuerritzels mit Schlüssel SW 24 abschrauben und Federring entfernen.
Steuerritzel mit Abzieher (276 445) abziehen.

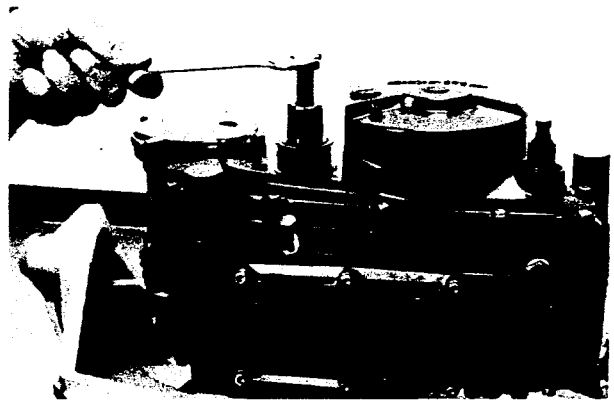


Sprocket

Engage 1st gear, bend back tab-washer and unscrew hex. nut M20 with wrench 30. Remove tab-washer and sprocket.

Clutch and primary drive

Turn engine on trestle so that clutch side faces upwards.
Unscrew hex. nut M16 of timing pulley with wrench 24 and take off lock washer.
Use puller (276 445) to remove timing pulley.



Pignone per catena

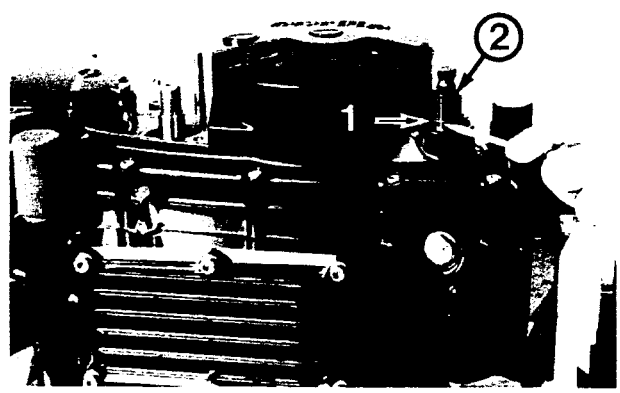
Inserire la prima marcia.
Piegare la rondella di sicurezza e svitare il dado esagonale M 20 con chiave da 30. Togliere la rondella di sicurezza e il pignone.

Frizione e trasmissione primaria

Girare il blocco motore sulla staffatura in modo che il lato frizione venga a trovarsi in alto. Svitare il dado esagonale M16 della puleggia comando con una chiave da 24 e togliere la puleggia comando.
Estrarre la puleggia comando con l'estrattore (276 445).

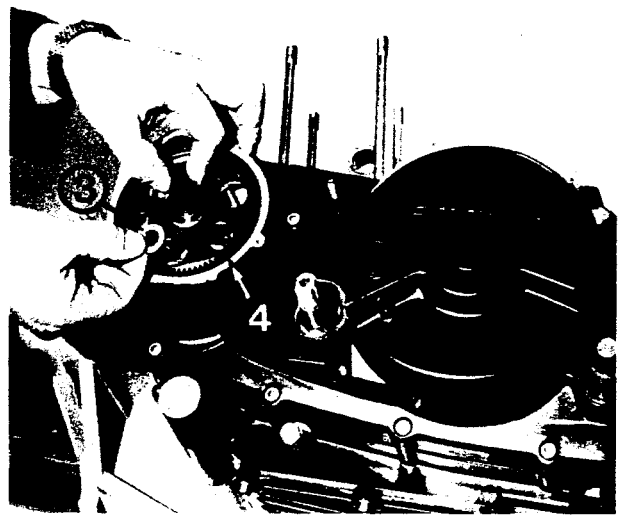
Drahtsprengring ❶ von der Kickstarterwelle und O-Ring ❷ von der Schaltwelle entfernen.

4 Innensechskant-Schrauben M5 herausschrauben und Startertriebdeckel mit O-Ring abnehmen. Anlaufscheibe ❸ und Zwischenrad ❹ mit darunter liegender Anlaufscheibe abnehmen.



Remove circlip ❶ from kickstart shaft and O-ring ❷ from shift shaft.

Remove the 4 Allen screws M5 and the electric starter drive cover. Lift thrust washer ❸ and idler wheel ❹ and thrust washer beneath.



Togliere l'anello di sicurezza ❶ dall'albero messa in moto e l'OR ❷ dall'albero cambio.

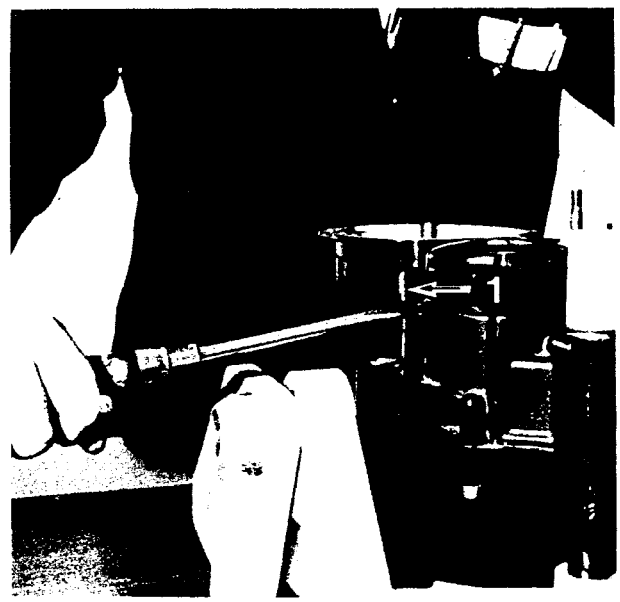
Svitare le 4 brugole M5 e togliere il coperchio per l'avviamento elettrico con OR. Rimuovere lo spessore ❸ e l'ingranaggio intermedio ❹ con lo spessore sottostante.

12 Innensechskantschrauben M6 des Kupplungsdeckels mit Stiftschlüssel 5 herausschrauben.
Kupplungsdeckel mit 2 großen Schraubenziehern an den dafür vorgesehenen Angüssen ❶ abheben.
Nicht auf Dichtfläche drücken!

Achtung:

Beim Abnehmen des Kupplungsdeckels auf die Anlaufscheiben des Schraubenrades ❷ achten. Diese können am Kupplungsdeckel kleben.

6 SK-Schrauben M5 der Kupplungsdruckplatte mit Steckschlüssel SW 8 kreuzweise lösen.
SK-Schrauben, Federringe, Kupplungsdruckplatte und Kupplungsfedern entfernen.



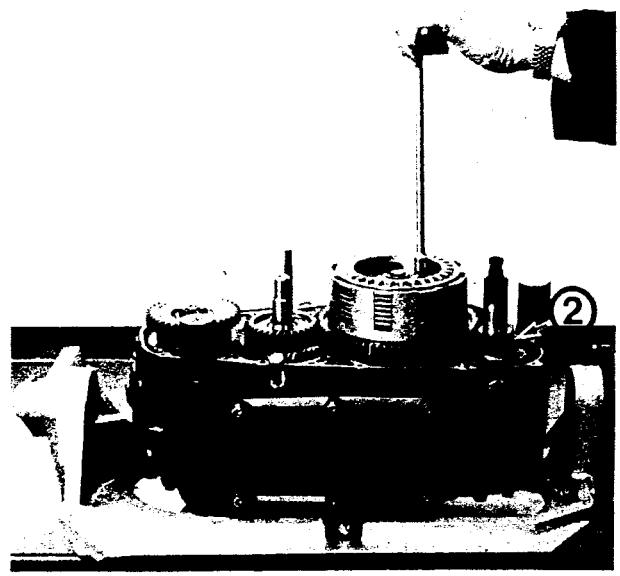
Unscrew 12 Allen screws M6 of clutch cover using wrench 5.
Lift off clutch cover using 2 large screwdrivers applied at the lugs ❶ provided. Don't lever between sealing surfaces.

Caution:

When taking off the clutch cover, check that the thrust washers of the helical gear ❷ for revolution counter drive are not stuck to the clutch cover.

Remove 6 Allen screws M5 of clutch thrust plate with wrench 8 crosswise.

Remove hexagon screws lock washers, clutch thrust plate and clutch springs.



Svitare le 12 brugole M6 del coperchio frizione con una chiave da 5.
Sollevare il coperchio con 2 grandi cacciaviti per le apposite materozze ❶.

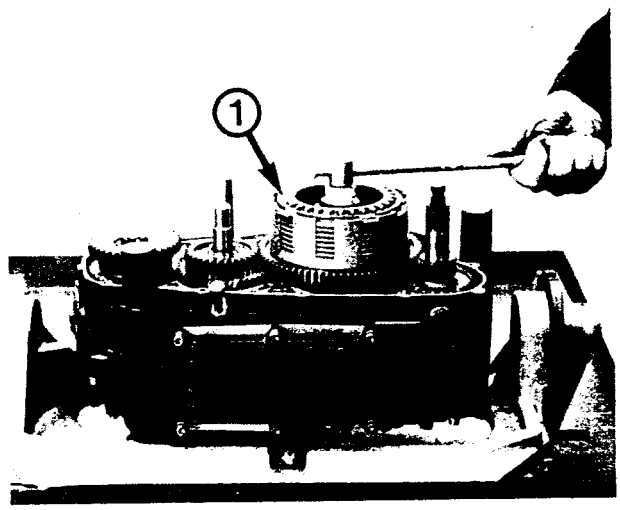
Attenzione:

Togliendo il coperchio della frizione, fare attenzione l'eventuale incollaggio/adesione della rondella di spessoramento dell'ingranaggio elicoidale ❷.

Allentare diagonalmente le 6 viti M5 del piattello di spinta per mezzo di una chiave a tubo da 8.
Togliere le viti, le rondelle, il piattello di spinta e le molle della frizione.

Sicherungsblech auf der Vorgelegewelle aufbiegen. Mitnehmerfixierung ❶ (277 887) auf Mitnehmer aufsetzen und SK-Mutter M18 mit Schlüssel SW 27 abschrauben.

Mitnehmerfixierung und Sicherungsblech entfernen. Kupplungskorb mit Mitnehmer und Lamellenpaket abheben.



Bend back tab washer on clutch shaft.
Place clutch hub locking tool ❶ (277 887) on clutch hub and unscrew hex. nut M18 with wrench 27. Remove tab washer and locking tool.

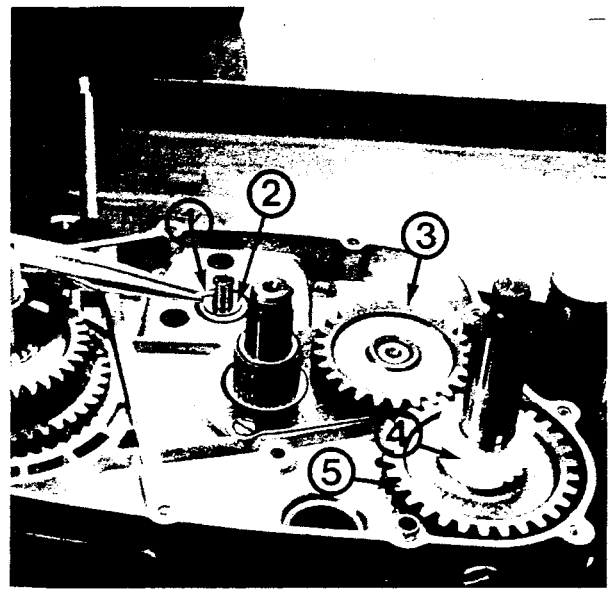
Lift off clutch drum complete with hub and all plates.

Piegare la rondella di sicurezza sull'albero primario. Sovrapporre l'attrezzo bloccaggio frizione ❶ (277 887) al tamburello frizione e svitare il dado M18 con chiave da 27.

Sollevare l'attrezzo bloccaggio frizione e togliere la rondella di sicurezza.
Sollevare il tamburello coi dischi frizione.

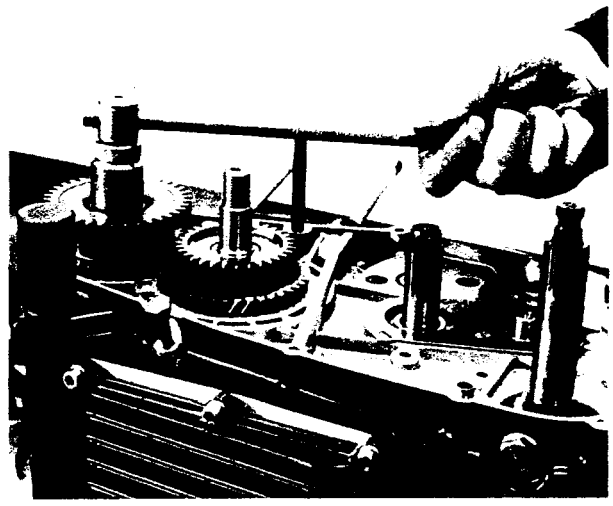
2 Nadelkäfige, Innenring und Anlaufscheibe von der Vorgelegewelle nehmen. Ölpumpenrad abheben, Nadelrolle ❶ aus der Pumpenwelle herausziehen und falls vorhanden, Anlaufscheibe ❷ entfernen.
Zwischenrad ❸, Schraubenrad ❹ mit Anlaufscheiben und Starterrad ❺ mit darunterliegender Anlaufscheibe entfernen. Scheibenfeder und O-Ring von der Kurbelwelle abnehmen.

SK-Mutter M14 mit Schlüssel SW 22 von der Ausgleichswelle abschrauben, Federscheibe und Freilaufrad abnehmen, beide Nadellager abziehen.



Remove 2 needle cages, bearing sleeve and thrust washer. Remove oil pump gear, extract drive peg ❶ and remove thrust washer ❷ if fitted.
Remove idler gear ❸, helical gear ❹ with thrust washers and starter gear ❺ and thrust washer underneath. Remove Woodruff key and O-ring from crankshaft.

Unscrew hex. nut M14 with wrench 22 from balance shaft, take off spring washer and free-wheel gear, withdraw the 2 needle bearings.

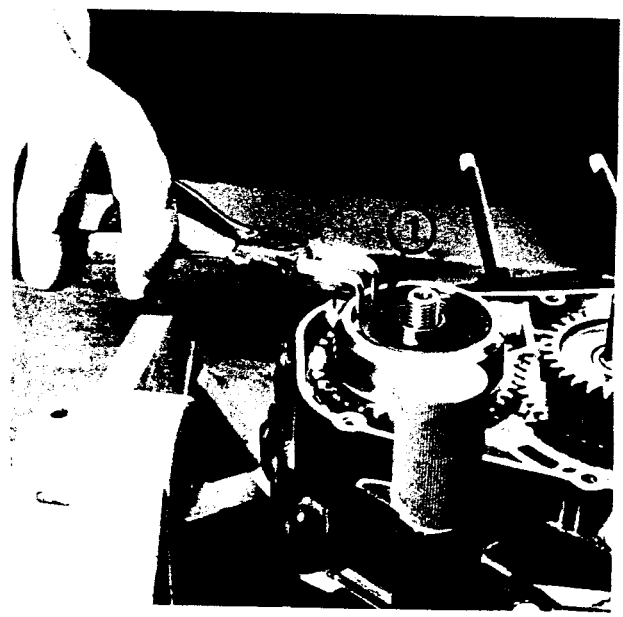


Togliere le 2 gabbie a rullini, la bussola cuscinetto e la ralla dall'albero primario. Sollevare la ruota dentata della pompa olio, estrarre il grano ❶ dall'albero della pompa e, se c'è, togliere la ralla ❷.

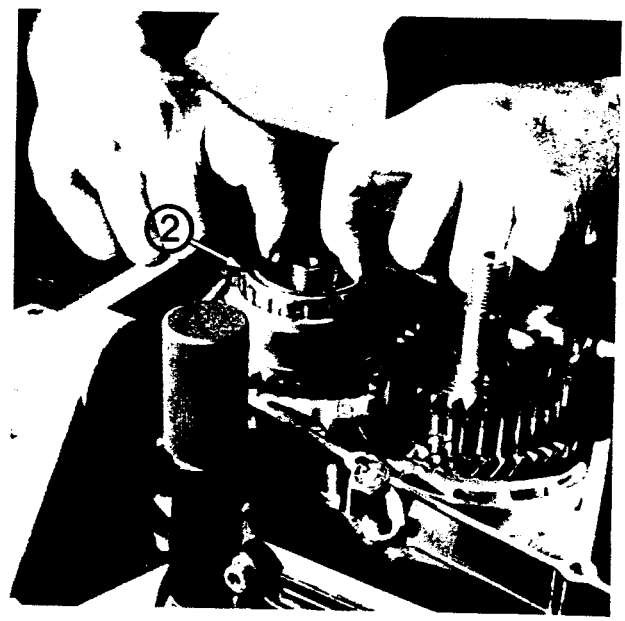
Rimuovere l'ingranaggio della ruota libera ❸, l'ingranaggio elicoidale ❹ con ralla e l'ingranaggio m/m ❺ con la ralla sottostante. Rimuovere la linguetta e l'OR dall'albero motore.

Svitare il dado M14 con chiave da 22 dall'albero di compensazione, rimuovere la rondella elastica e l'ingranaggio della ruota libera, togliere le 2 gabbie a rullini.

Seeger-Ring ❶ entfernen und Freilauf ❷ herausnehmen.



Remove snapring ❶ and sprag clutch ❷.



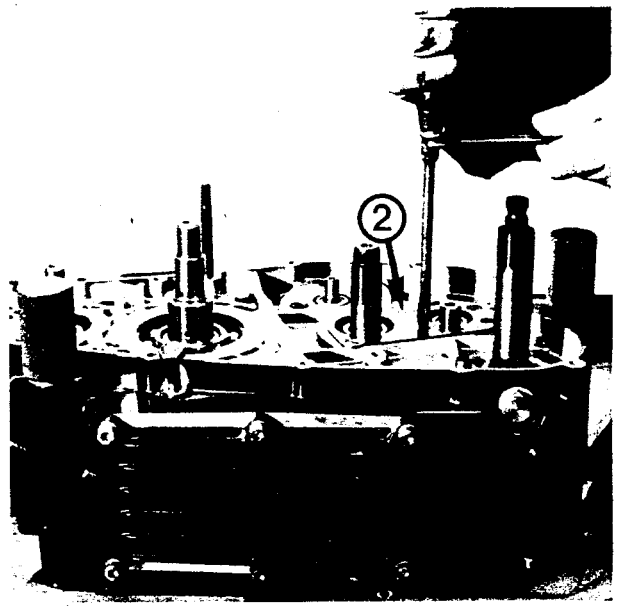
Togliere il seeger ❶ e la ruota libera ❷.

Ausgleichsrad mit Abzieher ❶ 277 085 abziehen. Dazu ist der zuvor entfernte Seeger-Ring als Abstützung zu verwenden.
Antriebsrad und Gegenrad von der Kurbelwelle abziehen. Scheibenfedern von Kurbelwelle und Ausgleichswelle entfernen.

4 Senkschrauben M5 mit Schraubenzieher herausschrauben und Halteblech ❷ für Getriebelager mit darunterliegenden Ausgleichsscheiben der Haupt- und Vorgelegewelle abnehmen.

Extract balancer gear with puller ❶ (277 085). Use the snap-ring previously removed to retain the puller.
Pull drive gear and balancer drive gear from crankshaft. Remove Woodruff keys from crankshaft and balance shaft.

Unscrew 4 counter-sunk screws M5 with screwdriver and remove retaining plate ❷ for transmission bearings and the shims underneath for mainshaft and clutch shaft.



Estrarre l'ingranaggio compensazione con l'estrattore ❶ 277 085. Utilizzare il seeger rimosso prima, per estrarre l'ingranaggio.

Estrarre l'ingranaggio primario e quello sottostante (per l'albero di compensazione) dall'albero motore.

Rimuovere le linguette dall'albero motore e dall'albero di compensazione.

Svitare le 4 viti M5 e rimuovere la piastra di fissaggio ❷ dei cuscinetti e gli spessori di sotto per albero secondario e primario.

Ölsumpfdeckel

Kurbelwellenfixierschraube ❶ herausschrauben, 6 Innensechskantschrauben M6 des Ölsumpfdeckels mit Stiftschlüssel 5 entfernen und Ölsumpfdeckel ❷ mit Magnetschraube ❸, Ölsieb, Dichtung und 2 O-Ringen abnehmen.

Gehäusehälften trennen

Motor im Montagebock verdrehen, damit Zünderseite nach oben zu liegen kommt.
10 Innensechskantschrauben M6 und Federringe mit Stiftschlüssel 5 herausschrauben. Motor im Montagebock wieder mit Kupplungsseite nach oben drehen. Abdrückplatte (276 435) mit 6 Innensechskantschrauben M6 x 25 (vom Ölsumpfdeckel) auf kupplungsseitige Gehäusehälfte aufschrauben. Beide Fixierschrauben ❹ vom Montagebock entfernen. Die 4 Druckschrauben der Abdrückplatte von Hand aus einschrauben.
Mit Schlüssel SW 22 alle 4 Schrauben gleichmäßig einschrauben, bis linke Gehäusehälfte abzuheben ist. Linke Gehäusehälfte abheben und Abdrückplatte abschrauben. Achtung auf die Ausgleichsscheiben der Kurbelwelle und der Ausgleichswelle. Ölabscheider der linken und rechten Gehäusehälfte herausziehen.

Oil sump cover

Remove crankshaft locking screw ❶.
Remove 6 Allen head screws M6 of oil sump cover with wrench 5 and take off oil sump cover ❷, with magnetic plug ❸, oil screen, gasket and 2 O-rings.

Separating crankcase halves

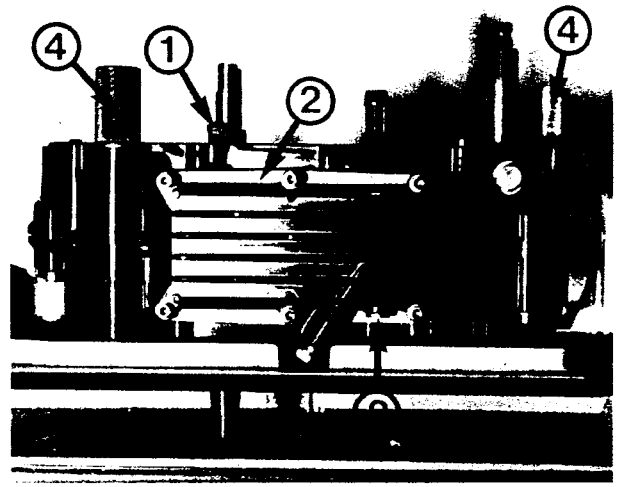
Turn engine on trestle so that ignition side faces upwards.
Unscrew the 10 Allen-head screws M6 and spring washers with wrench 5.
Turn engine on trestle again so that clutch side faces upwards. Screw puller plate (276 435) with 6 screws M6 x 25 onto the clutchside half of the crankcase. Remove both fixing screws ❹ from trestle. Screw the 4 screws into puller plate by hand.
With wrench 22 tighten the 4 screws uniformly until left crankcase half can be raised. Take it off and remove puller plate. Take care of the shims on crankshaft and balance shaft.
Take oil separator foam blocks out of right and left crankcase halves.

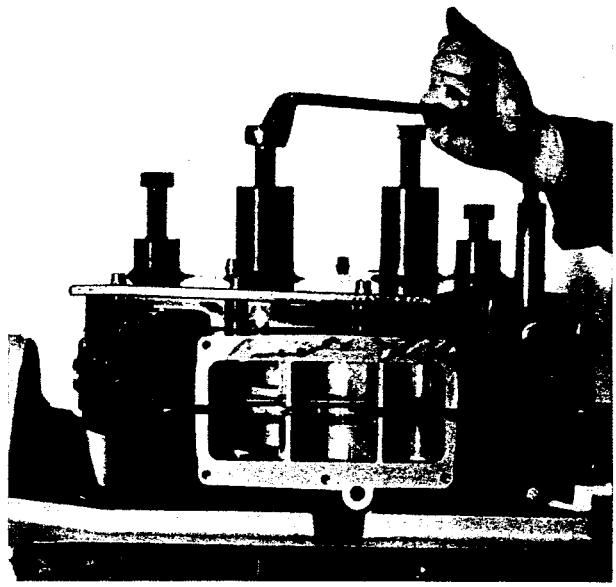
Coperchio della coppa dell'oilo

Svitare la vite di fissaggio dell'albero motore ❶.
Togliere le 6 brugole M6 del coperchio della coppa con una chiave da 5 e levare il coperchio ❷ con la vite magnetica ❸, il retino, la guarnizione ed i 2 OR.

Separazione della coppia carter

Girare il motore sulla staffatura in modo che il lato accensione sia in alto.
Svitare le 10 brugole M6 con una chiave da 5 e togliere le rondelle elastiche.
Girare nuovamente il motore sulla staffatura in modo che il lato frizione sia in alto.
Avvitare la piastra di estrazione (276 435) sul carter, lato frizione, con 6 brugole M6 x 25 (del coperchio olio). Svitare le 2 viti ❹ dalla staffatura. Avvitare a mano le 4 viti di spinta alla staffatura.
Avvitare uniformemente le 4 viti per mezzo di una chiave 22 fino a che il semi-carter, lato sinistro, si possa rimuovere. Rimuovere il semi-carter sinistro e togliere la piastra di estrazione. Far attenzione agli spessori dell'albero motore e dell'albero di compensazione (per il rimontaggio).
Togliere le spugne di trattenimento olio dai semi-carter.





Schaltung und Getriebe

❶ Ausgleichswelle
❷ Kurbelwelle
❸ Vorgelegewelle
❹ Hauptwelle
❺ Schaltwalze
❻ Schaltstangen
❼ Schaltwelle
❽ Schaltgabel
❾ Schaltklinke

Rechte Gehäusehälfte mit beiden Fixierschrauben und Distanzbüchsen am Montagebock befestigen. Beide Schaltstangen ❻ herausziehen und die 3 Schaltgabeln ❽ herausnehmen.
Indexhebel mittels Schraubenzieher in die Haltenase der Gehäusehälfte einhängen. Schaltklinke ❾ von der Schaltwalze ❺ wegdrücken und Schaltwalze herausnehmen.

Achtung

Bei Ausführung ohne Leerganganzeige befindet sich unter der Schaltwalze eine Stahlscheibe, die im Gehäuse liegenbleiben kann.
Scheibe herausnehmen.
Schaltwelle ❼ komplett mit Rollenindexhebel, Indexfeder und darunterliegender Scheibe herausziehen.

Transmission

❶ balance shaft
❷ crankshaft
❸ clutch shaft
❹ main shaft
❺ shift drum
❻ shift fork spindle
❼ shift shaft
❽ shift fork
❾ pawl

Mount right crankcase half on trestle with 2 fixing screws and spacers.
Remove the 2 shift fork spindles ❻ and the 3 shift forks ❽.
Hook index lever with screwdriver into projecting lug in crankcase half. Disengage gearshift pawl ❾ from the shift drum ❺ and remove shift drum.

Attention

On model without neutral gear indicator, there is a steel plate in the crankcase under the shift drum which might remain in position. Remove this plate.
Pull out shift shaft assy ❼ with roller index lever, index spring and the shim placed below.

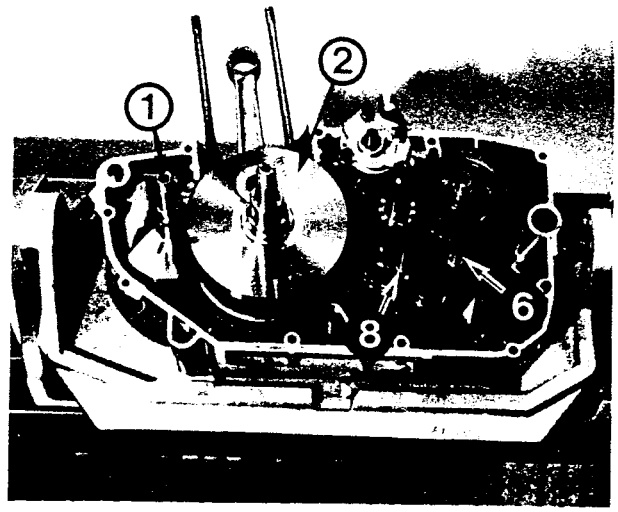
Comando cambio

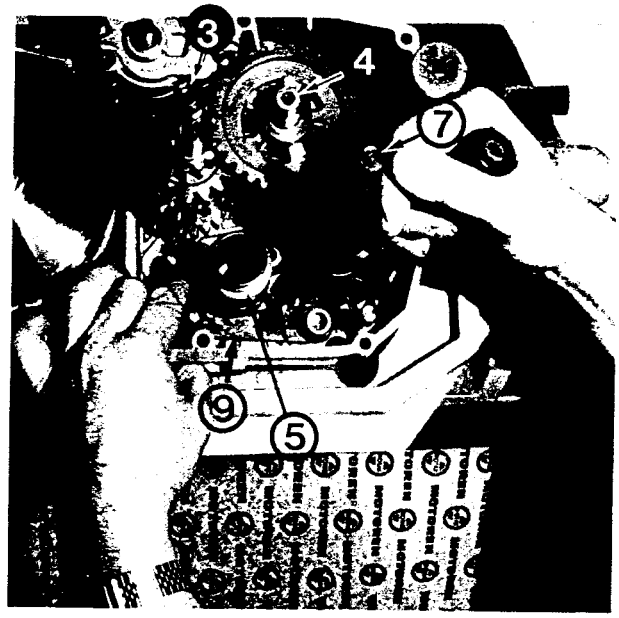
❶ albero di compensazione
❷ albero motore
❸ albero primario
❹ albero secondario
❺ desmodromico
❻ asta forchetta
❼ albero cambio
❽ forchetta cambio
❾ arpionismo

Fissare il semi-carter con 2 viti e bussole distanziale sulla staffatura. Togliere le 2 aste forchetta ❻ e le 3 forchette cambio ❽.
Agganciare la leva index nel nasello del semi-carter destro con un cacciavite.
Abbassare l'arpionismo ❾ dal desmodromico ❺ e togliere il desmodromico stesso.

Attenzione

Nel caso dell'esecuzione motore senza spia del folle, si trova un disco d'acciaio sotto il desmodromico che rischia di rimanere nel carter. Togliere il disco.
Estrarre l'albero cambio compl. ❼ con leva index, molla index e rondella sottostante.

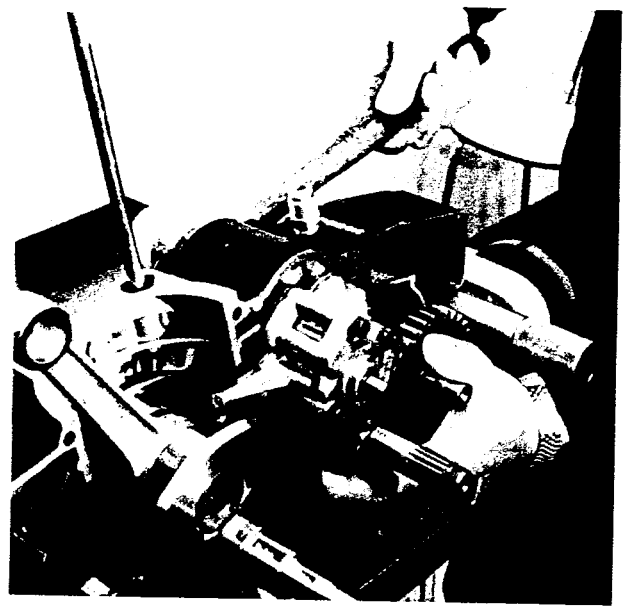




Ausgleichswelle aus dem Rillenkugellager herausziehen. Gehäusehälfte im Montagebock in Vertikalposition drehen. Hauptwelle und Vorgelegewelle mit einer Hand festhalten und mit Schonhammer von außen leicht auf die Hauptwelle klopfen, dadurch gehen beide Wellen samt Getrieberädern aus den Lagersitzen.

Extract balance shaft from the ball bearing. Turn crankcase half on trestle into vertical position. Hold mainshaft and clutch shaft by hand and with a mallet knock gently from outside onto main shaft. Then you can withdraw the two shafts with gears out of their bearings.

Estrarre l'albero di compensazione dal cuscinetto a sfere.
Girare il semi-carter sulla staffatura nella posizione verticale. Sostenere con la mano l'albero secondario e l'albero primario contemporaneamente, e con un mazzuolo (di rame o plastica) battere leggermente dall'esterno sull'albero secondario, cosí tutti e due gli alberi escono dalle sedi dei loro cuscinetti.



Kurbelwelle

Rechte Gehäusehälfte im Montagebock mit Zünderseite nach oben drehen. Einziehring ❷ in Abdrückplatte ❸ schieben und Einziehspindel ❶ in den Einziehring einschrauben. Abdrückplatte mit 4 Schrauben M6 x 25 an der magnetseitigen Gehäusefläche befestigen. Einziehspindel in Einziehring einschrauben, bis diese an der Kurbelwelle anliegt. Einziehspindel auf Kurbelwelle aufschrauben und Einziehring nach links herausschrauben, bis Handgriff ❹ in die Bohrungen des Einziehringes gesteckt werden kann. Einziehspindel mit der Hand in dieser Stellung festhalten und Einziehring mit dem Handgriff nach links drehen, bis Kurbelwelle aus der Gehäusehälfte herausgedrückt ist.
Es ist von Vorteil, die Gehäusehälfte auf 60—80 ° C gleichmäßig zu erwärmen (nach Möglichkeit im Wärmeofen).
Sobald die Kurbelwelle aus dem Lagersitz gedrückt ist, ist diese mit der Hand festzuhalten und die Einziehspindel von der Kurbelwelle abzuschrauben.

Achtung

Beim Herausziehen der Kurbelwelle Wellendichtring nicht beschädigen!
Abdrückplatte von Kurbelgehäuse abmontieren und Einziehspindel vom Einziehring abschrauben.

Albero motore

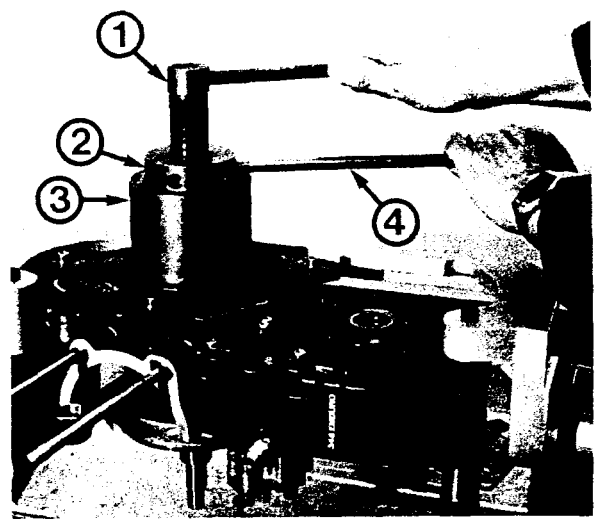
Girare il semi-carter sulla staffatura in modo che il lato accensione sia in alto. Inserire la ghiera ❷ nel piatto estrattore ❸ ed avvitare l'asta a vite ❶ nella ghiera. Fissare il piatto estrattore con 4 viti M6 x 25 sulla superficie del carter motore, lato accensione.
Avvitare l'asta a vite nella ghiera fino a toccare l'albero motore. Avvitare l'asta a vite sull'albero motore e svitare la ghiera verso sinistra fino a che la maniglia ❹ si possa inserire nei fori della ghiera.
Tenere l'asta a vite in questa posizione con la mano e girare la ghiera con la maniglia a sinistra fino a che l'albero motore esca dal semi-carter.
È un vantaggio poter riscaldare uniformemente il semicarter a 60—80 ° C (se possibile nel forno).
Appena l'albero motore è uscito dalla sede cuscinetto, bisogna tenerlo con la mano e svitare l'asta a vite dall'albero motore.

Attenzione:

Estraendo l'albero motore, non danneggiare il corteco.
Smontare il piatto estrattore dal carter e svitare l'asta a vite dalla ghiera.

Crankshaft

Turn right crankcase half on trestle ignition side upwards. Insert puller ring ❷ into puller plate assy ❸ and screw pull-in spindle ❶ into puller ring.
Fix puller plate with 4 screws M6 x 25 on magneto side crankcase surface. Screw pull-in spindle into puller ring, screw pull-in spindle onto crankshaft and screw out the pull-in ring anticlockwise until bolt ❹ can be inserted in the holes of the pull-in ring.
Hold pull-in spindle by hand in this position and turn pull-in ring anticlockwise by means of the bolt until crankshaft is pressed out of the crankcase half.
It is advisable to warm the crankcase half evenly to 60—80 ° C (if possible in oven).



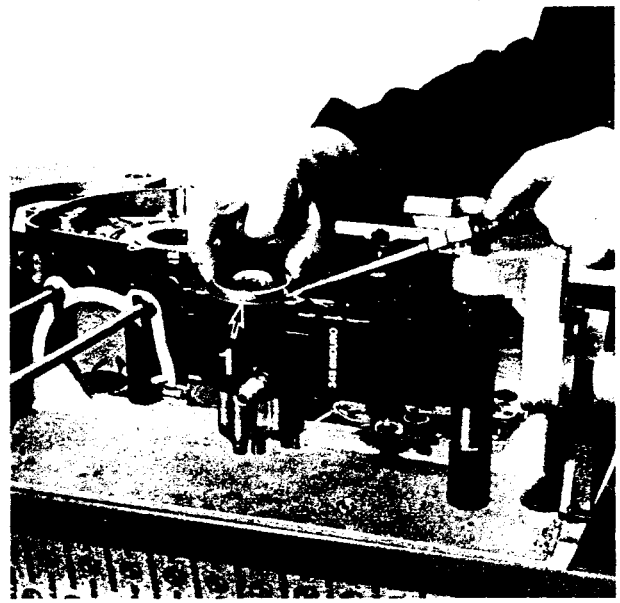
When the crankshaft has been pressed out of the bearing seat, hold the crankshaft by hand and screw pull-in spindle off the crankshaft.

Attention

When pulling out crankshaft, take care not to damage the oil seal!
Remove puller plate from crankcase and unscrew pull-in spindle from pull-in ring.

Ölpumpe und Ölfilterdeckel

Die 3 Innensechskantschrauben M6 mit Stiftschlüssel 5 herausschrauben und Ölfilterdeckel samt O-Ring abnehmen. Ölfilter ❶ mit Schraubenzieher herausheben und Druckhalteventil ❷ mit Schraubenzieher herausschrauben.

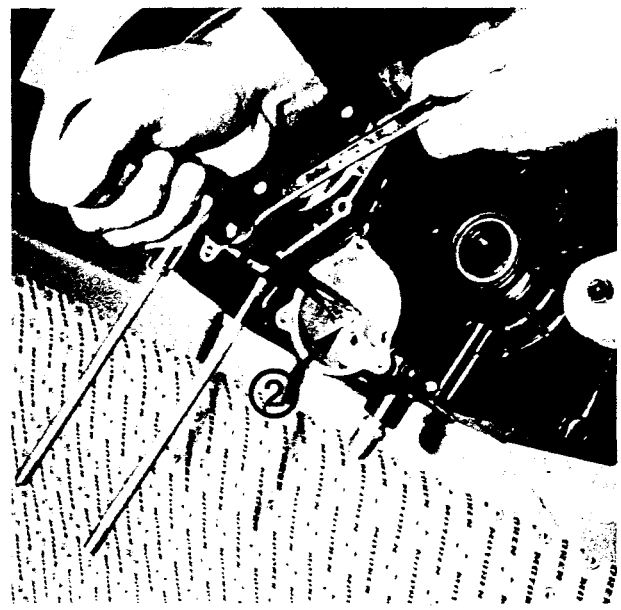


Oil pump and oil filter cover

Unscrew the 3 Allen-head screws M6 with wrench 5 and take off oil filter cover together with O-ring.
Lift oil filter element ❶ with screwdriver and unscrew pressure retaining valve ❷.

Pompa dell'olio e coperchio del filtro olio

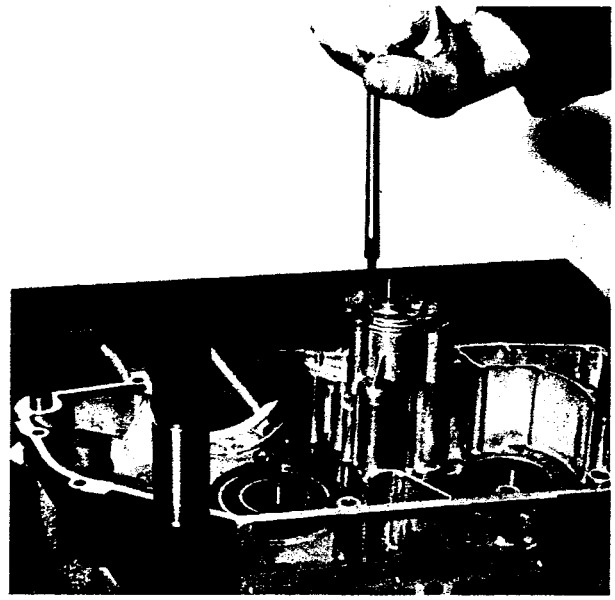
Svitare le 3 brugole M6 per mezzo di una chiave da 5 e togliere il coperchio del filtro olio compreso l'OR di tenuta.
Sollevare il filtro olio ❶ con un cacciavite e svitare la valvola di pressione ❷ con un cacciavite.



Rechte Gehäusehälfte im Montagebock mit Innenseite nach oben drehen, die 3 Innensechskantschrauben M6 samt Federringen abschrauben und komplette Ölpumpe abnehmen.

Turn right crankcase half on trestle so that inside faces upwards, unscrew the 3 Allen-head screws M6, remove lock washers and take off oil pump assy.

Girare il semi-carter destro sulla staffatura con il lato interno verso l'alto, svitare le 3 brugole M6. Togliere le rondelle elastiche e la pompa dell'olio completa.



Arbeiten an einzelnen Teilen

Motorgehäuse

Sämtliche Rillenkugellager sind ausnahmslos mit Benzin oder Petroleum zu reinigen — nicht mit Entfettungsmittel oder Kaltreiniger.
Beim Herauspressen der Rillenkugellager ist das Gehäuse auf ca. 60—80 ° C zu erwärmen, dabei Gehäusehälfte auf große Planfläche legen (vorher Paßhülsen entfernen), um Beschädigungen der Dichtflächen zu vermeiden.

Rechte Gehäusehälfte

Bei Erneuerung des Rillenkugellagers der Vorgelegewelle ist dieses mit Lagerauszieher ❶ (276 360) auszuziehen, für das Lager der Ausgleichswelle ❷ ist die Spreizhülse 276 375 zu verwenden. Kurbelwellenlager und Hauptwellenlager sind nach Entfernung der Wellendichtringe mit entsprechendem Dorn von außen nach innen zu klopfen.
Gehäusehälfte sauber reinigen.

Achtung:

Sämtliche Lagersitze und Dichtflächen überprüfen. Sämtliche Ölkanäle (Kurbelwellenlager, Getriebespritzbohrungen ❸) mit Preßluft ausblasen und auf freien Durchgang kontrollieren.

Individual component maintenance

Crankcase

All ball-bearings must be cleaned with gasoline or kerosene only, not with degreasing or cold cleaning agent. Heat crankcase to 60—80 ° C, place crankcase half on a flat surface (having removed dowel pins) to avoid damage to the sealing surfaces.

Right crankcase half

To remove the clutch shaft ball-bearing, extract it with puller ❶ (276 360). For the balance shaft bearing ❷ use the split dowel 276 375.
Crankshaft bearing and mainshaft bearing are tapped from outside towards the inside with an appropriate punch, after removal of the oil seals.
Clean crankcase half.

Attention:

Check all bearing seats and sealing surfaces. Clean oil bores (for lubrication of crankshaft bearing, gearbox ❸) with compressed air and check for free passage.

Lavori sulle varie parti

Carter motore

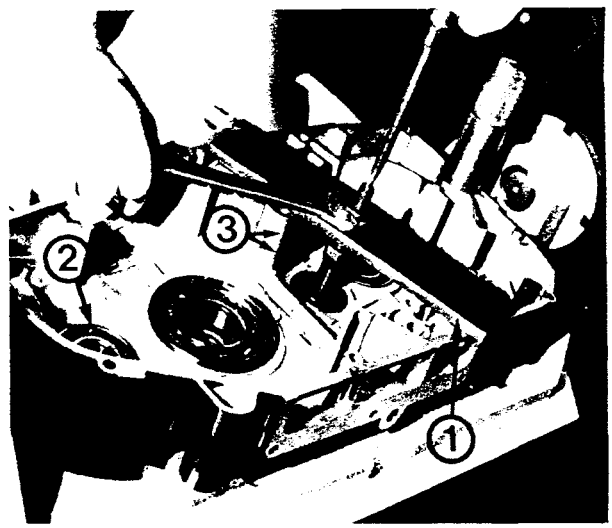
Tutti i cuscinetti a sfere sono da pulire con benzina o petrolio — non con detergenti o diluenti.
Per estrarre i cuscinetti, il carter deve essere riscaldato a ca. 60—80 ° C posando il semicarter su una grande superficie piana (togliere prima le spine carter) al fine di evitare danneggiamenti delle superfici di guarnizione.

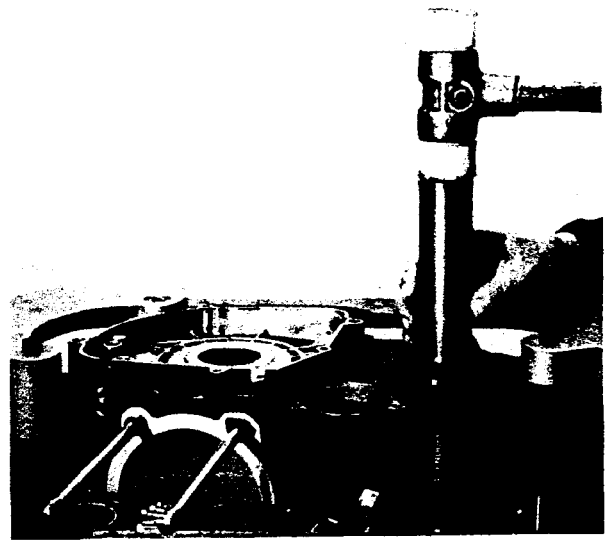
Semicarter destro

Per sostituire il cuscinetto dell'albero primario, bisogna usare l'estrattore per cuscinetti ❶ (276 360). Per il cuscinetto dell'albero di compensazione ❷ utilizzare la bussola spaccata 276 375.
Dopo l'allontanamento dei cortechi, i cuscinetti per l'albero motore e l'albero secondario devono essere battuti dall'esterno all'interno mediante una apposita spina.
Pulire accuratamente il semicarter.

Attenzione

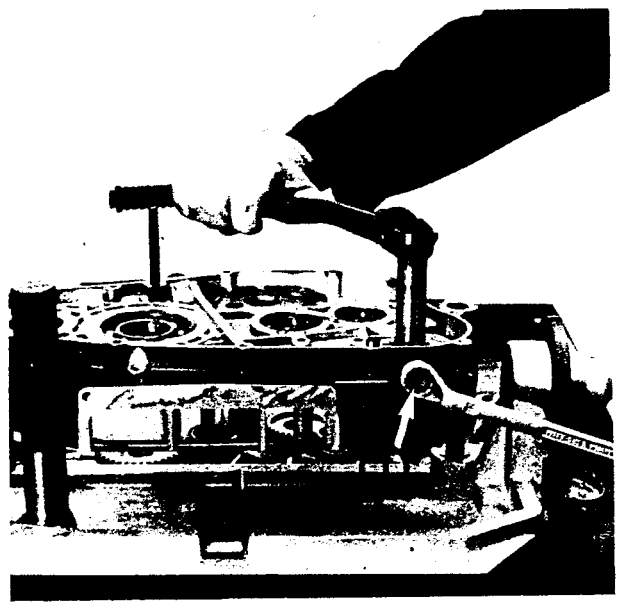
Controllare tutte le sedi cuscinetti. Pulire tutti i fori di lubrificazione (per cuscinetto albero motore, spruzzaolio per cambio ❸) con aria compressa e controllare per passaggio libero.





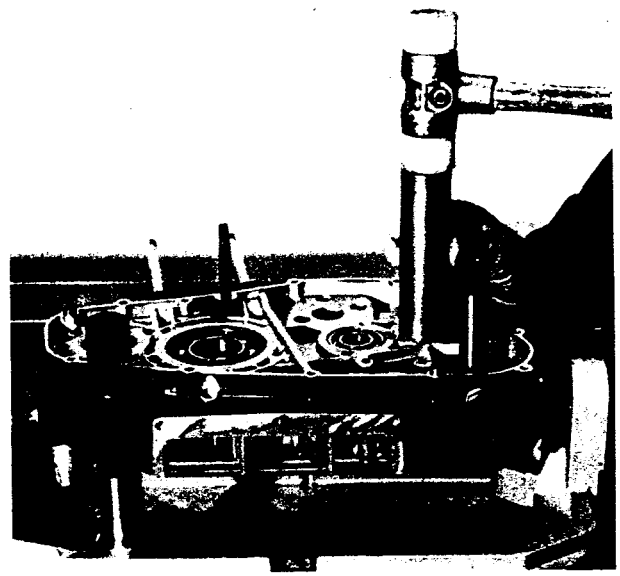
Linke Gehäusehälfte

Demontieren der Starterwelle erfolgt nur dann, wenn diese oder das Sperrad bzw. die Feder erneuert wird. Kickstarterhebel auf Starterwelle stecken, festhalten und Ausrückschraube ❶ aus der Gehäuseunterseite herausschrauben. Feder entspannen. Kickstarterhebel, Sperrad und Kickstarterfeder abnehmen. Seegerring der Kickstarterwelle und Scheibe an der Gehäuseinnenseite entfernen und Starterwelle mit Scheibe herausziehen.
Paßhülsen mit Seitenschneider herausziehen, Gehäusehälfte auf plane Holzplatte legen und Rillenkugellager von außen nach innen mit geeignetem Dorn am Außenring herausklopfen.
Gehäusehälfte mit Benzin oder Petroleum reinigen.



Left crankcase half

Disassembly of kick start shaft is only necessary if the kickstart shaft, ratchet gear or spring has to be replaced.
Mount the lever on the kickstarter shaft, hold it firmly and unscrew the stop screw ❶ from crankcase, bottom side. Relieve spring. Remove kickstart lever, ratchet gear and kickstart spring. Remove snap ring from kickstart shaft and washer from crankcase inside, pull kickstart shaft and washer out. Pull out dowel pin with pliers, place crankcase half on flat wooden board and knock out ball bearing from outside towards inside, tapping on the outer ring with an appropriate tool.
Clean crankcase half with gasoline or kerosene.



Semicarter sinistro

Non è necessario lo smontaggio dell'albero messa in moto tranne quando si deve sostituire un componente del gruppo avviamento. In questo caso mettere la leva messa in moto (m/m) sull'albero m/m e trattenendolo, svitare la vite/fermo ❶ dalla parte inferiore del carter. Scaricare la molla. Togliere la leva m/m, l'innesto m/m e la molla. Togliere il seeger dell'albero m/m, la rondella all'interno del carter ed estrarre l'albero m/m con la rondella.
Togliere le spine carter con una pinza, posare il semicarter su un pannello di legno piano e, con una spina adatta, battere fuori il cuscinetto dall'esterno all'interno, battendo sull'anello esterno del cuscinetto.
Pulire il semicarter con benzina o petrolio.

Kurbelwellen-Axialspiel ausmessen

Wurde das Motorgehäuse oder die Kurbelwelle erneuert, so ist das Axialspiel der Kurbelwelle auszumessen. Beide Gehäusehälften mit der Innenseite nach oben auflegen und mit dem Tiefenmaß den Abstand der Gehäusetrennflächen auf den Grund der Lagersitze messen.
Beide Meßergebnisse addieren.
Distanzring zünderseitig auf die Kurbelwelle schieben, Einbauweite ermitteln und mit Breite der beiden Kurbelwellenlager addieren.
Das Axialspiel von 0,1—0,3 mm wird durch Beilegen entsprechender Ausgleichsscheiben auf der Kupplungsseite erreicht.

Ausgleichswellen-Axialspiel ausmessen

Wurde das Motorgehäuse oder die Ausgleichswelle erneuert, ist das Axialspiel der Ausgleichswelle auszumessen. Mit dem Tiefenmaß den Abstand der Gehäusetrennfläche auf den Grund der Lagersitze messen (in beiden Gehäusehälften).
Beide Meßergebnisse addieren.
Abmessungen der Ausgleichswelle und Breite der beiden Ausgleichswellenlager addieren.
Das Axialspiel von 0,1—0,2 mm wird durch Beilegen von Ausgleichsscheiben an der Kupplungsseite erreicht.

Measuring crankshaft axial play

If crankcase or crankshaft are to be replaced, crankshaft axial play must be measured. Both crankcase halves are placed with the inside facing upwards, and a depth gauge is used to measure the distance from the crankcase joint surfaces to the base of the bearing seats.
Add both measurements.
Push distance ring onto crankshaft magneto side, then measure the width over crankblades (including distance ring) and add the width of the 2 crankshaft bearings.
The axial play should be 0,1—0,3 mm. If it is more, place shims as required, but only on the clutch side.

Measuring balance shaft axial play

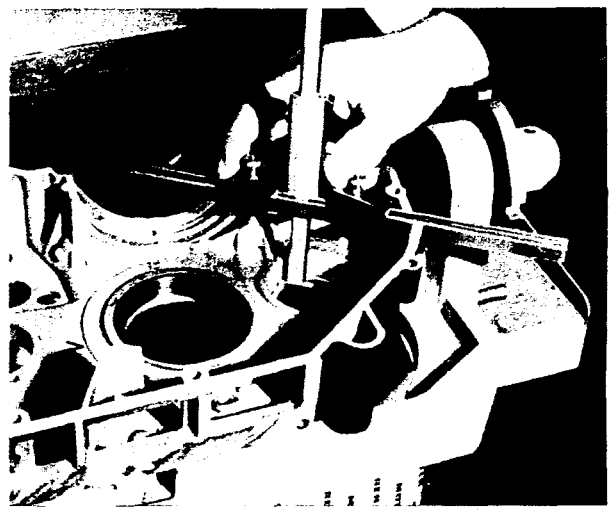
If crankcase or balance shaft has to be replaced, measure the axial play of the balance shaft.
With a depth gauge measure the distance between the sealing surface on both crankcase halves and the bottom of the bearing seat.
Add the 2 dimensions.
Add the dimensions measured on balance shaft and the width of the 2 balance shaft bearings.
The axial play should be 0,1—0,2 mm and is achieved by adding shims on the clutch side.

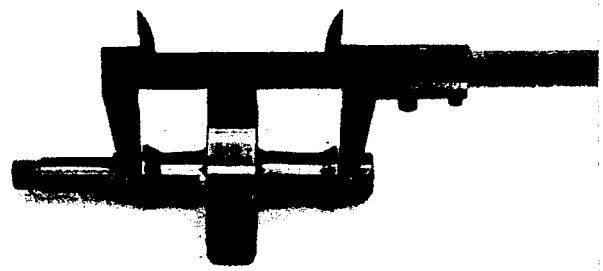
Misurazione del giuoco assiale dell'albero motore

Se è stato sostituito il carter oppure l'albero motore, bisogna misurare il giuoco assiale dell'albero motore. Posare ambedue i semicarter con la parte interna verso l'alto e, con il calibro di profondità, misurare la distanza delle superfici di separazione del semicarter fino al fondo delle sedi dei cuscinetti.
Fare la somma dei due risultati di misurazione.
Spingere lo spessore sull'albero motore, lato accensione, misurare la larghezza di montaggio e sommare con la larghezza dei due cuscinetti dell'albero motore.
Il giuoco assiale di 0,1—0,3 mm si ottiene applicando degli spessori di compensazione sul lato frizione.

Misurazione del giuoco assiale dell'albero di compensazione

Se è stato sostituito il carter motore oppure l'albero di compensazione, bisogna misurare il giuoco assiale dell'albero di compensazione.
Misurare, con il calibro di profondità, la distanza delle superfici di separazione dei 2 semicarter fino al fondo delle sedi dei cuscinetti.
Fare la somma dei due risultati di misurazione. Sommare le misurazioni sull'albero di compensazione con la larghezza dei due cuscinetti dell'albero.
Il giuoco assiale di 0,1—0,2 mm si ottiene applicando degli spessori sul lato frizione.

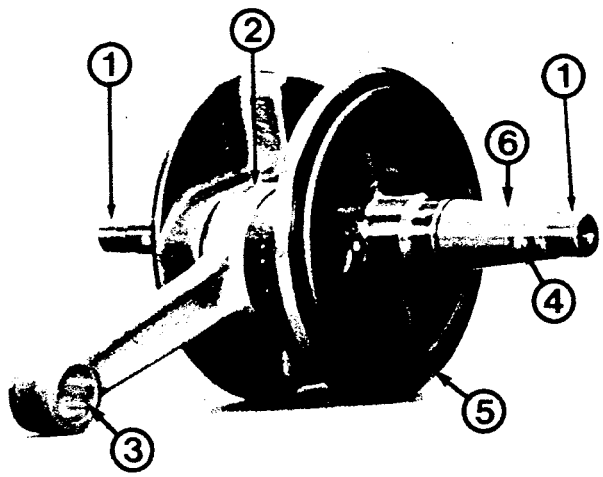




Kurbelwelle

An der Kurbelwelle sind folgende Punkte zu kontrollieren:
— Schlag der Kurbelwelle ❶ zwischen Spitzen (max. 0,03 mm),
— Radialluft im Pleuellager ❷ (max. 0,05 mm),
— Axialspiel im Pleuellager (0,62—0,83 mm),
— Kolbenbolzenlagerung im Pleuel ❸ (max. Spiel 0,08 mm),
— Nuten ❹ für Scheibenfedern,
— Ölschleuderblech ❺ innen von Ablagerungen reinigen,
— Konusfläche ❻
— Lagersitze und Oberfläche für Wellendichtring.

Beim Ausdrücken der Kurbelwelle kann es vorkommen, daß das Rillenkugellager auf der Kurbelwelle bleibt. In diesem Fall ist das Rillenkugellager mit Lagerabzieher 876 296, Ringhälften 977 472 und Ring 977 492 abzuziehen.



Crankshaft

Check the following points on the crankshaft:
— Check crankshaft between centres for eccentricity ❶ max. 0,03 mm
— Radial play in con rod bearing ❷ max. 0,05 mm
— Con rod axial play 0,62—0,83 mm
— Piston pin bore in con rod ❸ max. play 0,08 mm
— Grooves ❹ for Woodruff keys.
— Clean oil slinger ❺ inside from deposits.
— Check taper surface ❻.
— Check bearing seats and surface for oil seals.

When pressing out the crankshaft, the ball bearing may remain on the crankshaft. If this happens, pull it off with bearing puller 876 296, ring halves 977 472 and ring 977 492.

Albero motore

Controllare i seguenti punti dell'albero motore:
— l'eccentricità dell'albero motore ❶ misurata sulle sedi dei cuscinetti (0,03 mm max.)
— il giuoco radiale nel cuscinetto biella ❷ (0,05 mm max.)
— il giuoco assiale nel cuscinetto biella (0,62—0,83 mm)
— il giuoco tra bronzine e spinotto pistone ❸ (0,08 mm max.)
— le incavature per le linguette ❹
— pulire l'interno del coperchio semialbero (lamiera convogliatrice olio del sistema di lubrificazione) ❺ dai depositi d'olio
— controllare la superficie del cono ❻ e pulirla
— controllare le sedi dei cuscinetti e le superfici di lavoro dei cortechi.

Estraendo l'albero motore può succedere che il cuscinetto rimanga sull'albero. In questo caso togliere il cuscinetto per mezzo dell'estrattore 876 296 con i semianelli 977 472 e l'anello 977 492.

Ausgleichwelle

Beide Lagerstellen ❶ auf Verschleiß und Rundheit prüfen. Die Nut für die Scheibenfeder ist ebenfalls zu kontrollieren. Welle zwischen Spitzen auf Schlag kontrollieren (0,03 mm).

Achtung:

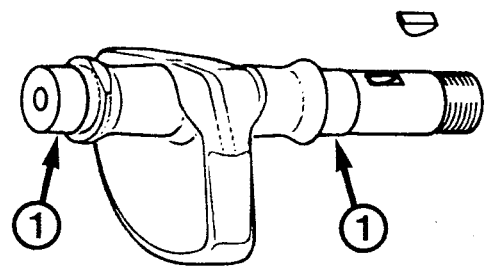
Lagersitze ❶ sind Schiebesitze.

Balance shaft

Check the 2 bearing seats ❶ for wear and concentricity. Also check the Woodruff key groove. Check balance shaft between centres of a lathe or similar device for truth (0,03 mm).

Attention:

Bearing seats ❶ are a sliding fit.



Albero di compensazione

Controllare le due sedi cuscinetti ❶ all'usura ed eventuale ovalità. Verificare l'incavatura per la linguetta. Controllare l'eccentricità sedi cuscinetti ❶ su contropunte mediante comparatori (0,03 mm).

Attenzione:

Il calettamento dei cuscinetti sugli alberi di norma è libero (comunque mai forzato).

Getriebe

Hauptwelle bzw. Vorgelegewelle im Schraubstock fixieren (Schonbacken verwenden). Zahnräder abnehmen und folgende Teile auf Verschleiß prüfen:

a) Nadellager
b) Lagerstellen der Haupt- und Vorgelegewelle sowie der Losräder
c) Klauen der Zahnräder
d) Zahnflanken sämtlicher Zahnräder
e) Zahnprofile der Vorgelegewelle, der Hauptwelle sowie der dazugehörigen Zahnräder
f) sämtliche Schalträder auf Leichtgängigkeit im Profil prüfen.

Teile sorgfältig reinigen, schadhafte Teile auswechseln. Zahnräder sollen immer paarweise erneuert werden. Vorgelege- und Hauptwelle zwischen Spitzen auf Schlag kontrollieren.

Transmission

Fix mainshaft/clutch shaft in a vice (use protective jaws). Remove gears, and observe the following points:

a) Check needle bearings for wear.
b) Check bearing seats on main and clutch shaft.
c) Check gear dogs for wear.
d) Check tooth flanks of all gears for wear.
e) Check tooth profile of clutch shaft and mainshaft as well as their matching gears for wear.
f) Check all gears for easy movement along their splines.

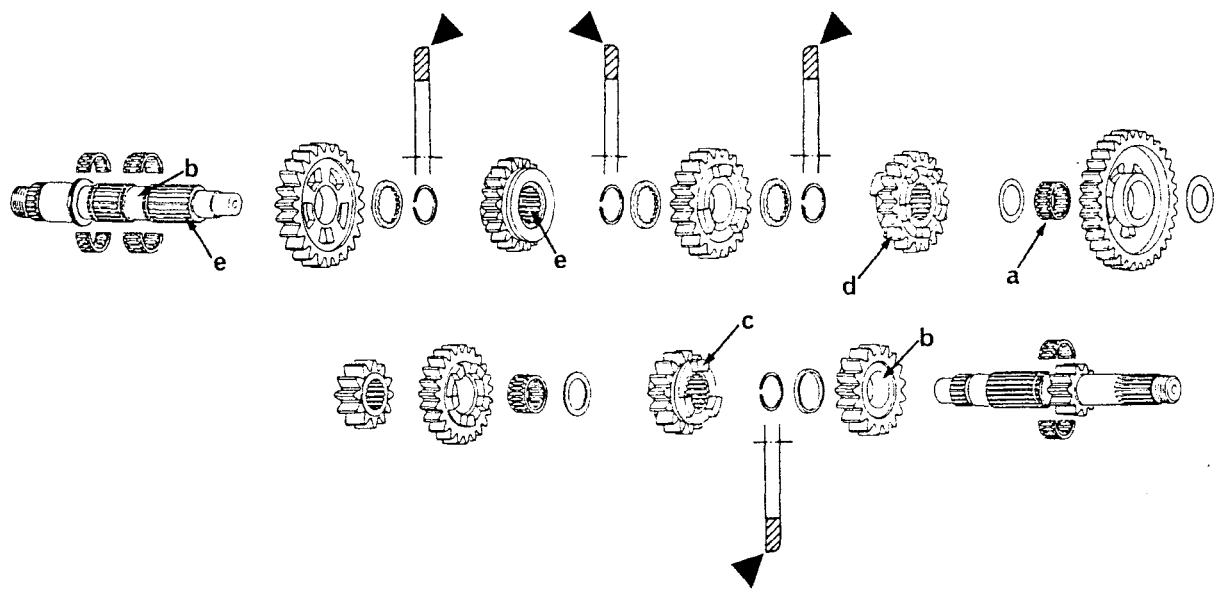
Carefully clean all components, replacing any damaged items. Gears should always be replaced in pairs. Check clutch shaft and mainshaft for truth between centers.

Cambio

Fissare uno per volta l'albero primario e quello secondario sulle estremità filettate, usando ganasce morbide, su una morsa.
Smontare gli ingranaggi e controllare lo stato delle seguenti parti:

a) Cuscinetti a rullini
b) Sedi cuscinetti dell'albero secondario e primario nonché le sedi degli ingranaggi folli
c) Innesti degli ingranaggi
d) Fianchi dei denti di tutti gli ingranaggi
e) Profili dell'albero secondario, dell'albero primario nonché degli ingranaggi ivi calettati
f) Controllare il buon scorrimento di tutti gli ingranaggi nei loro profili.

Pulire accuratamente i pezzi e sostituire quelli difettosi. Eventuale sostituzione di un ingranaggio dovrebbe sempre comportare la sostituzione della „coppia completa" (ruota dentata condotta e conduttrice del rapporto in questione).
In questi casi controllare sempre fra contropunte che gli alberi del cambio, primario e secondario, non si siano storti.



Hauptwelle zusammenbauen

Hauptwelle mit Gewinde nach unten im Schraubstock fixieren, geteilten Nadelkäfig (10 mm breit) einölen, auf die Welle legen, 2.-Gang-Losrad mit Bund nach unten darüberschieben und mit Anlaufscheibe und Sprengring (scharfe Kante oben) fixieren.
5.-Gang-Schaltrad mit Klauen nach unten aufstecken. Sprengring mit scharfer Kante unten montieren, Anlaufscheibe aufschieben, geteilten Nadelkäfig (13 mm breit) eingeölt montieren, 3.-Gang-Losrad mit Klauen nach oben darüberschieben und mit Anlaufscheibe und Sprengring (scharfe Kante oben) fixieren.
4.-Gang-Schaltrad mit 5-Klauen-Seite nach oben aufsetzen, Anlaufscheibe und eingeölten Nadelkäfig montieren, 1.-Gang-Losrad mit Bund nach oben darüberschieben und Anlaufscheibe auflegen.

Vorgelegewelle zusammenbauen

Vorgelegewelle mit Gewinde nach unten im Schraubstock fixieren, geteilten Nadelkäfig (12 mm breit) eingeölt auf Welle legen, 4.-Gang-Losrad mit Klauen nach oben darüberschieben und mit Anlaufscheibe und Sprengring (scharfe Kante oben) fixieren.
3.-Gang-Schaltrad mit 5 Klauen nach oben aufstecken, Anlaufscheibe darauflegen, eingeöltes Nadellager aufschieben und 5.-Gang-Losrad mit Klauen nach unten darüberschieben. Zum Schluß 2.-Gang-Festrad aufstecken.

Main shaft assembly

Fix mainshaft in vice with threaded end downwards and lubricate the split bearing (10 mm wide), fit it on shaft, slide 2nd gear freewheel, collar downwards, over the bearing, and fix with thrust-washer and snap-ring (sharp edge facing upwards).
Push on 5th gear with dogs downwards. Mount snap-ring with sharp edge downwards, slide on thrust-washer, fit and lubricate the split bearing (13 mm wide), slide on 3rd gear free wheel with dogs upwards, and fix with thrust-washer and snap-ring (sharp edge upwards).
Mount 4th gear wheel with five-dog side upwards, mount thrust-washer and lubricated needle-cage, slide over 1st gear free wheel with collar upwards and mount thrust-washer.

Clutch shaft assembly

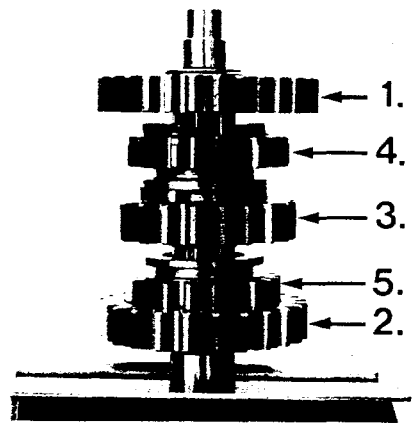
Fix clutch shaft with threaded end downwards in vice, fit and lubricate the 12 mm split bearing, then slide on 4th gear free wheel with dogs upwards, and fix with thrust-washer and snap-ring (sharp edge upwards).
Mount 3rd gear wheel with five dogs upwards, fit thrust-washer, slide on lubricated needle bearing, and slide on 5th gear free wheel with dogs downwards. Finally fit 2nd gear fixed-wheel.

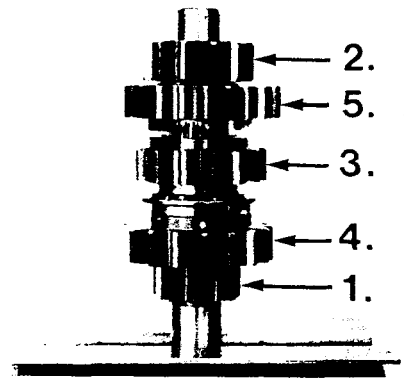
Riassemblaggio dell'albero secondario

Fissare l'albero secondario nella morsa con la filettatura verso il basso, oliare la gabbia a rullini divisa (larghezza 10 mm), posarla sull'albero, sovrapporvi la ruota folle della 2a marcia con lo spallamento verso il basso e fissare con la ralla e con l'anello elastico (spigolo vivo in alto).
Montare l'ingranaggio della 5a marcia con gli innesti verso il basso. Montare l'anello elastico con lo spigolo vivo in basso, mettere la ralla, montare la gabbia a rullini divisa e oliata (larghezza 13 mm), sovrapporvi la ruota folle della 3a marcia con gli innesti verso l'alto e fissare con la ralla e con l'anello elastico (spigolo vivo in alto).
Montare l'ingranaggio della 4a marcia con il lato a 5 innesti verso l'alto, montare la ralla e la gabbia a rullini oliata, sovrapporvi la ruota folle della 1a marcia con lo spallamento verso l'alto e infine montare la ralla.

Riassemblaggio dell'albero primario

Fissare l'albero primario nella morsa con la filettatura verso il basso, posare la gabbia a rullini oliata (larghezza 12 mm) sull'albero, sovrapporvi la ruota folle della 4a marcia con gli innesti verso l'alto e fissare con la ralla e con l'anello elastico (spigolo vivo in alto).
Infilare l'ingranaggio della 3a marcia con i 5 innesti verso l'alto, mettere la ralla, montare la gabbia a rullini oliata e sovrapporvi la ruota folle della 5a marcia con gli innesti verso il basso. Montare infine la ruota fissa della 2a marcia.





Schaltung

a) Schaltgabeln am Blatt und Mitnehmerbolzen für Schaltwalze auf Verschleiß prüfen.
b) Kulissen der Schaltwalze auf Abnützung prüfen und auf festen Sitz der Indexscheibe achten.
c) Rolle des Indexhebels muß leicht drehbar sein.
d) Schaltklinke auf Verschleiß prüfen.
e) Indexfeder, Klinkenfeder und Haarnadelfeder auf Funktion prüfen.
f) Schaltwelle auf Schlag kontrollieren.
g) O-Ring soll immer erneuert werden.

Schaltwalze

❶ Schaltkontakt für Leerganganzeige
❷ Isolierscheibe (nur bei Ausführung mit Leerganganzeige) kontrollieren
❸ Leergangstellung der Indexscheibe (zwischen 1. und 2. Gang)

Comando del cambio

a) Controllare l'usura delle forchette e delle spine di trascinamento.
b) Controllare lo stato d'usura delle gole sul desmodromico e assicurarsi della buona tenuta del disco index sul desmodromico.
c) La rotellina index (c) deve girare liberamente.
d) Controllare l'usura dell'arpionismo e comunque di non averlo svergolato durante lo smontaggio.
e) Controllare il buon funzionamento delle 3 molle.
f) Controllare che l'albero cambio non sia storto.
g) Sempre sostituire l'anello OR.

Desmodromico

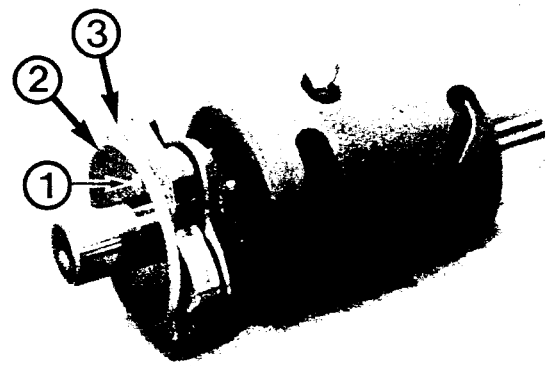
❶ Contatto per indicazione del folle.
❷ Controllare la rondella isolante (esiste solo all'esecuzione motore con indicazione del folle)
❸ Posizione del folle sul disco index (fra 1a e 2a marcia).

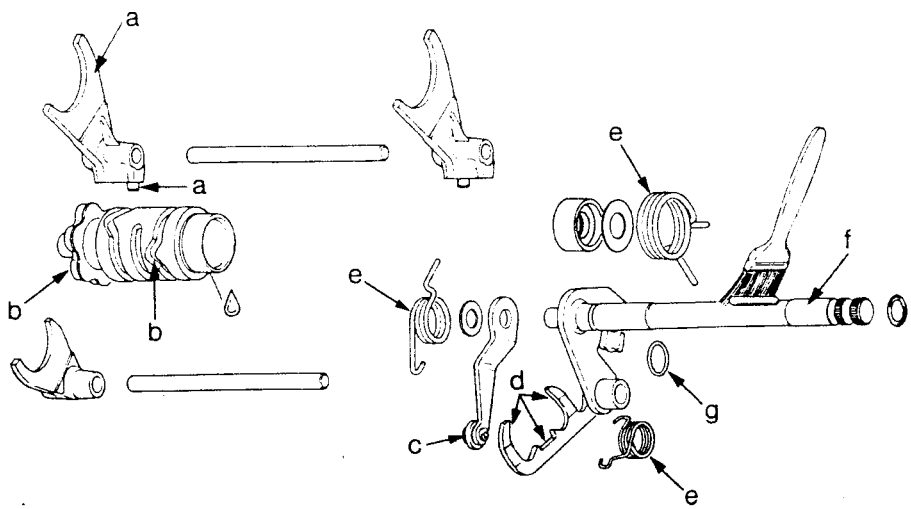
Gear shift mechanism

a) Check shift forks for wear on their blades and engagement pins
b) Check tracks on shift drum for wear and make sure that index profile disk is securely fastened to the shift drum body.
c) The index lever roller must turn freely.
d) Check pawl for wear.
e) Check index, pawl and hairpin springs carefully for cracks and tension.
f) Check shiftshaft for eccentricity.
g) O-ring should always be replaced.

Gear shift drum

❶ Peg for neutral gear indication
❷ Isolating shim (only for engines with neutral gear indicator) has to be checked.
❸ Neutral position of index disk (between 1st and 2nd gear).





Ölpumpe

Zerlegen der Ölpumpe

Durch leichten Schlag mit Schonhammer auf die Pumpenwelle, Pumpendeckel und Saugpumpengehäuse trennen.

Ölpumpendeckel abnehmen, Druckdrehkolben und Druckpumpenrotor herausnehmen, Nadelrolle aus der Pumpenwelle ziehen, Druckpumpengehäuse abnehmen, Pumpenwelle mit Saugdrehkolben und Nadelrolle herausziehen, Saugpumpenrotor herausnehmen.
Teile reinigen und auf Verschleiß prüfen.

Axialspiel zwischen Saugpumpenrotor bzw. Druckpumpenrotor und der Planfläche 0,1 mm.

Druckpumpengehäuse und Ölpumpendeckel müssen plan sein.

Max. Verschleißtiefe: 0,2 mm.

Saugpumpengehäuse und Druckpumpengehäuse mit Preßluft ausblasen und sämtliche Ölbohrungen auf freien Durchgang kontrollieren.

Ölpumpe zusammenbauen siehe Seite 48.

Oil pump

Disassembly of the oil pump

By gently tapping the pump shaft with a mallet, separate pump cover and suction pump housing.

Remove oil pump cover, take out inner and outer pressure rotor, withdraw pin, take out pump shaft with inner suction rotor and pin, take out outer suction rotor.
Clean parts and check for wear.

Axial clearance between outer suction and pressure rotors and the pump housing surfaces should be max. 0,1 mm.

All surfaces of the oilpump housings must be checked for perfect flatness.

Max. wear: 0,2 mm.

Clean suction pump housing and pressure pump housing with compressed air and check oil bores for free passage.

For oil pump assembly, see page 48.

Pompa dell'olio

Scomponimento della pompa dell'olio

Separare il coperchio e il corpo della pompa aspirante, battendo leggermente sull'albero della pompa per mezzo di un mazzuolo (di rame o plastica).

Togliere il coperchio della pompa dell'olio, estrarre la girante e il rotore eccentrico della pompa premente (pompa piccola), togliere il grano dall'albero della pompa, togliere il corpo della pompa con la girante della pompa grande, estrarre il secondo rotore (grande).

Pulire i pezzi e verificare che non siano stati scalfiti da corpi estranei malauguratamente finiti nell'olio e nel sistema di lubrificazione.

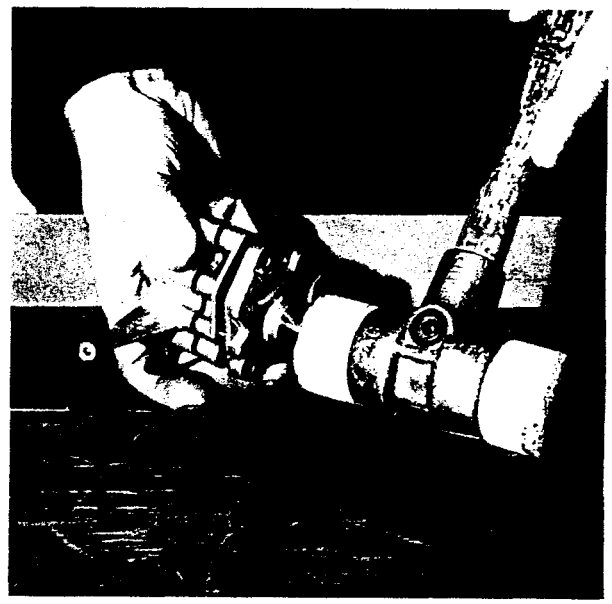
Giuoco assiale tra il rotore eccentrico della pompa aspirante o il rotore eccentrico della pompa premente e la superficie piana: 0,1 mm.

Il corpo della pompa ed il suo coperchio devono essere piani.

Usura max.: 0,2 mm.

Soffiare i corpi della pompa premente ed aspirante con aria compressa e controllare tutti i fori per passaggio libero.

Rimontaggio della pompa dell'olio vedi pagina 48.



Kupplung

Kupplungskorb, Nadellager, Belaglamellen, Innenlamellen, Lager mit Druckplatte und Mitnehmer auf Verschleiß prüfen.
Gewinde M5 im Stützteller kontrollieren.
Stahllamellen müssen plan sein.

Die Kupplungsdruckfedern müssen in entspanntem Zustand eine minimale Länge von 34,1 ±0,4 mm haben. Gegebenenfalls immer alle 6 Stück austauschen.

Führungsnuten ❶ für Stahllamellen im Mitnehmer auf Verschleiß kontrollieren.

Führungsnuten ❷ für Belaglamellen im Kupplungskorb auf Verschleiß überprüfen.

Zähne und Zahnflanken des Primärtriebes ❸ auf Verschleiß kontrollieren.

Achtung:

Kupplungskorb kpl. (mit Zahnrad) und Antriebsrad nur paarweise = Primärtrieb kpl. austauschen.

Frizione

Controllare l'usura della campana frizione, del cuscinetto a rullini, dei dischi guarniti, dei dischi acciaio, del cuscinetto, del piatto di spinta e del mozzo frizione.
Controllare le filettature M5 del tamburello.
I dischi d'acciaio devono essere piani.
Le molle di spinta della frizione devono presentare una lunghezza minima di 34,1 ±0,4 mm.
Se necessario, sostituire tutte le 6 molle.
Controllare le scanalature di guida ❶ dei dischi in acciaio nel mozzo frizione e verificare il normale scorrimento assiale (che non siano presenti segni di piantaggio).
Controllare gli incastri di guida ❷ anche per i dischi guarniti nella campana frizione che non siano intaccati. Eventualmente correggere con lima fine.
Controllare accoppiamento e dentatura della trasmissione primaria ❸.

Attenzione:

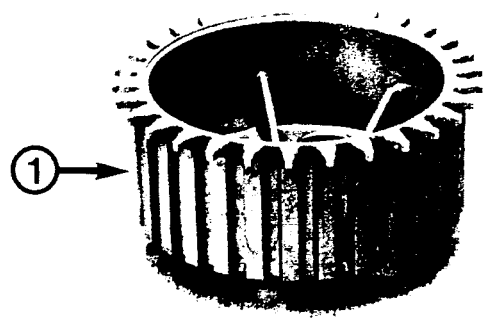
Sostituire esclusivamente la campana frizione con la relativa ruota dentata accoppiata.

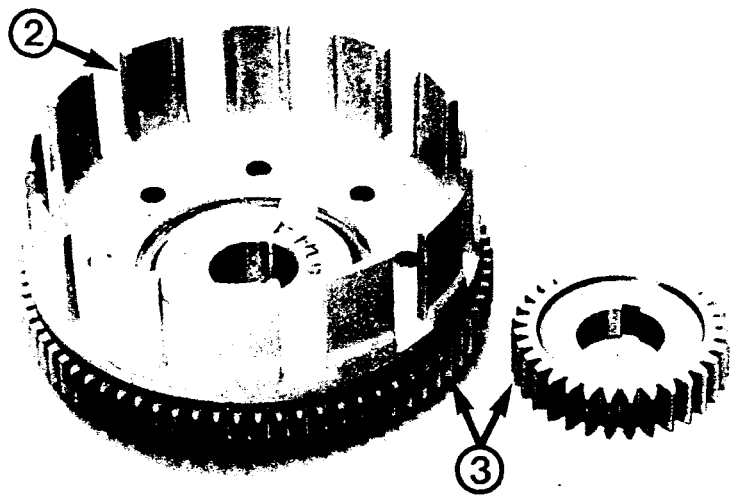
Clutch

Check clutch drum, needle bearing, all clutch plates, thrust bearing and clutch hub for wear.
Check threads M5 in inner pressure plate.
All clutch plates must be completely flat.
The clutch springs must have a free length of 34,1 ±0,4 mm.
Never change individual springs, always replace complete sets of 6.
Check the clutch hub splines ❶ and corresponding slots in the clutch drum ❷ for wear.
Check teeth and tooth flanks of primary drive gears ❸ for wear.

Attention:

The primary drive gears are a matched pair, and must not be replaced individually.





Zusammenbau der Kupplung

Mit einer Stützlamelle (A) (1,5 mm stark) beginnend und abwechselnd 7 Belaglamellen (B) (3 mm stark) und 6 Stützlamellen (A) (1,5 mm stark) auf Mitnehmer (E) schieben. Anschließend wird der Stützteller (C) aufgesteckt.
Das Lamellenpaket (7 Belaglamellen + 7 Stützlamellen) hat eine Höhe von 31,5 mm. Die Verschleißgrenze beträgt 30 mm.
Die Kupplungsfeder hat eine entspannte Länge von 34,1 ±0,4 mm.
Bei Bedarf Kupplungsfedern (D) nur satzweise austauschen.

Kupplungsausrücker

Zylinderschraube ❶ M5 mit Schraubenzieher lösen, Blattfeder ❷ und Zugfeder ❸ entfernen und Ausrückteller ❹ an den Kugellaufbahnen auf Verschleiß prüfen, gegebenenfalls erneuern und wieder zusammenbauen.

Clutch assembly

Place clutch disks on clutch hub (E), starting with steel disk (A) (1·25mm thick) and then alternately 7 friction disks (B) (2·5mm thick) and 6 steel disks (A) (1·25mm).
Then fit the inner pressure plate (C).
The disk package (7 friction plates + 7 steel plates) is 31,5 mm thick. The wear limit is 30 mm. The clutch springs have a free length of 34,1 ±0,4 mm. If necessary, exchange the springs (D) but only as complete set.

Clutch release

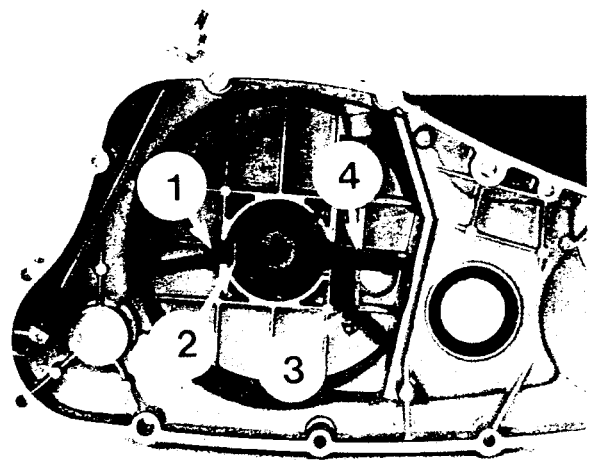
Remove screw M5 ❶ with screwdriver, remove leaf-spring ❷ and tension-spring ❸, and check release plate ❹ at ball races for wear, replacing if necessary. Reassemble.

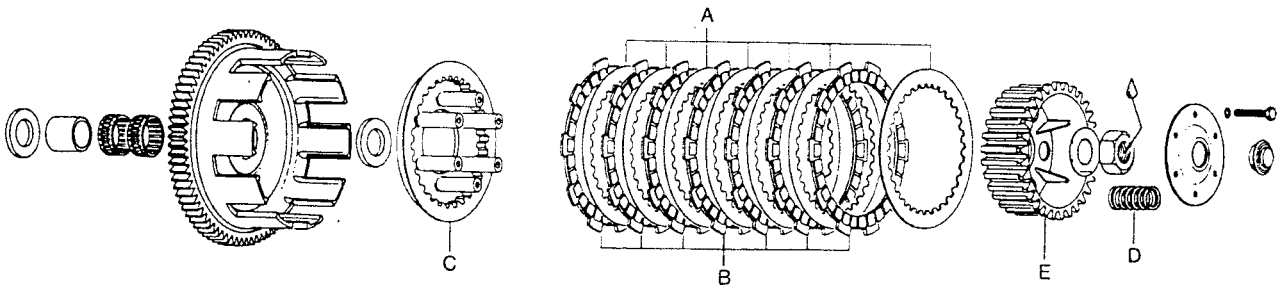
Riassemblaggio della frizione

Mettere i dischi sul mozzo frizione, iniziando con un disco in acciaio (A) (spessore 1,5 mm), quindi alternativamente 7 dischi guarniti (B) (spessore 3 mm) e 6 dischi acciaio (A) (spessore 1,5 mm). Quindi si monta il tamburello.
Il pacco dei dischi (7 dischi guarniti + 7 dischi acciaio) è 31,5 mm.
Limite d'usura: 30 mm.
Lunghezza (scaricata) delle molle frizione: 34,1 ±0,4 mm.
Sostituire le molle frizione (D) solo in serie completa.

Chiocciola comando frizione

Allentare la brugola M5 ❶, e per mezzo di un cacciavite, togliere la molla a balestra ❷ e la molla di trazione ❸. Controllare l'usura della chiocciola frizione ❹ sulle sedi per le sfere. Eventualmente sostituire e riassemblare.





Drehzählerantrieb

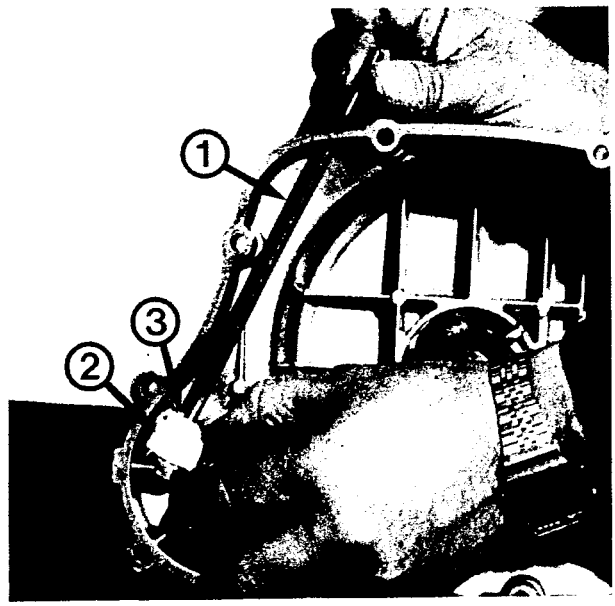
Beim Ausbau des Drehzählerantriebes ist nach Herausschrauben der Hohlschraube die Antriebswelle ❶ so weit aus dem Schraubenrad ❷ herauszuziehen, bis die Nadelrolle ❸ sichtbar wird. Dabei das Schraubenrad nach unten festhalten.
Ausgebaute Teile auf Verschleiß kontrollieren und gegebenenfalls erneuern.
Der Zusammenbau erfolgt in umgekehrter Reihenfolge.
Neuen Wellendichtring für Antriebswelle verwenden.

Revolution counter drive

Unscrew banjo bolt, pull the cable drive shaft ❶ out of the worm gear ❷ until the pin ❸ can be seen. Hold the worm gear down.
Check disassembled parts for wear and replace if necessary.
Reassemble in reverse sequence.
Replace the cable drive shaft oil seal.

Comando contagiri meccanico

Smontando il comando contagiri, togliere il raccordo cavo, sollevare l'alberino contagiri ❶ dall'ingranaggio ❷ fino a vedere il grano ❸. Trattenere l'ingranaggio verso il basso.
Controllare lo stato dei pezzi smontati e sostituire se necessario.
Rimontaggio nell'ordine inverso.
Montare sempre un nuovo corteco per l'alberino.

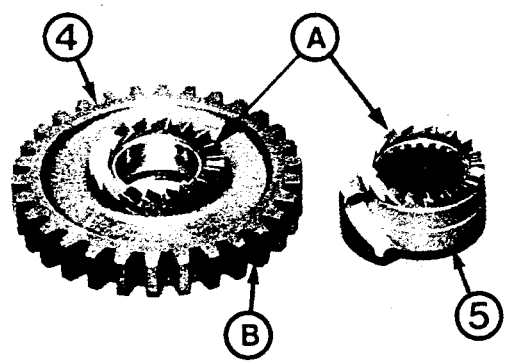


Kickstartertrieb

Zähne Ⓐ des Starterrades ❹ und Sperrades ❺ sowie die Zahnflanken Ⓑ des Starterrades und die Bronzebuchse überprüfen.
Bei Erneuerung sollen beide Räder zusammen ausgetauscht werden.

Elektrostarter-Antrieb

Zahnflanken des Ausgleichstriebes (Ausgleichsrad ❶ und Gegenrad ❷) sowie des Freilaufrades und des Zwischenrades kontrollieren.
Freilauf ❸ und beide Nadellager überprüfen.
Ausgleichsrad ❶ und Gegenrad ❷ nur gemeinsam austauschen.



Kick start drive

Check the teeth Ⓐ of starter gear ❹ and ratchet gear ❺ and the tooth flanks Ⓑ of the starter gear, as well as the bronze bushing.
If replacement is necessary, exchange the 2 gears only in pairs.

Electric starter drive

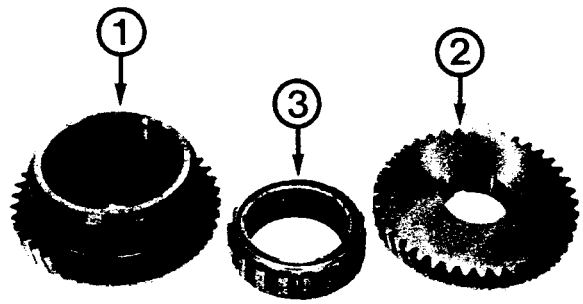
Check tooth flanks of balance drive (= balance gear ❶ and counter-gear ❷), of the free-wheel gear and of the idle wheel.
Check sprag clutch ❸ and the 2 needle bearings.
Exchange balance gear ❶ and counter-gear ❷ only in pairs.

Ruotismo della messa in moto

Controllare i denti Ⓐ dell'ingranaggio messa in moto (m/m) ❹ e dell'ingranaggio-innesto ❺.
Controllare i fianchi dei denti Ⓑ dell'ingranaggio m/m e lo stato della bronzina.
Eventuale sostituzione ingranaggi va fatta in coppia.

Ruota libera e gruppo riduzione dell'avviamento elettrico

Controllare i fianchi denti del congegno compensazione (= ingranaggio di compensazione ❶ e dell'opposto ingranaggio ❷, dell'ingranaggio libero e dell'ingranaggio intermedio).
Controllare la ruota libera ❸ e i 2 cuscinetti a rulli.
Attenzione: Anche qui eventuali sostituzioni ingranaggi da farsi in coppia ❶ + ❷.



Kolben

Verbrennungsrückstände vom Kolbenboden und Feuersteg entfernen, Kolben auf Risse prüfen, Kolbenlauffläche auf etwaige Druckstellen (Kolbenfresser) untersuchen, gegebenenfalls erneuern.
Kolbenringnuten und Ölrücklaufbohrungen reinigen und mit Preßluft ausblasen.
Ringnutbreite darf maximal 0,2 mm größer sein als der Kolbenring.

Kolbeneinbauspiel:	
Type 348—506:	0,04—0,06 mm
Type 560:	0,05—0,07 mm

Zum Ermitteln des Kolbeneinbauspiels ist für den Kolbendurchmesser das am Kolbenboden eingestempelte Maß (A = Nenndurchmesser) zu verwenden.
Verschleißgrenze des Kolbens:
Die Differenz zwischen dem Größtmaß des Kolbenhemdes und des Zylinderdurchmessers darf nicht größer als 0,17 mm sein.
Verschleißgrenze des Kolbenbolzenauges:
Der Kolbenbolzen darf im Kolbenbolzenauge des Pleuels ein maximales Spiel von 0,08 mm haben.

Pistone

Eliminare i residui carboniosi dal cielo del pistone, verificare se vi siano delle crepe nel pistone, controllare per eventuali ammaccature sulla superficie di scorrimento (grippaggi), se necessario sostituirlo.
Pulire le scanalature per i segmenti ed i fori per il ritorno d'olio e soffiarli con aria compressa.
La scanalatura per il segmento non deve superare il segmento di più di 0,2 mm.

Giuoco pistone/cilindro:	
tipo 348—506:	0,04—0,06 mm
tipo 560:	0,05—0,07 mm

Per determinare il giuoco di montaggio, come diametro del pistone utilizzare la misura incisa nel cielo del pistone (A = dimensione nominale).
Limite di usura del pistone:
La differenza tra la dimensione massima della camicia del pistone, e il diametro del cilindro, non deve superare 0,17 mm.
Limite di usura del foro per lo spinotto:
Lo spinotto puó avere un giuoco max. di 0,08 mm.

Piston

Remove combustion residues from piston crown, and check carefully for cracks and signs of seizure. Replace if necessary.
Clean piston ring grooves and oil drain bores and blast with compressed air.
The piston ring groove / ring clearance must not exceed 0,2 mm max.

Piston/cylinder clearance:	
types 348—506:	0,04—0,06 mm
type 560:	0,05—0,07 mm

To determine piston/cylinder clearance, take piston diameter as stamped on piston top (A).
Wear limit of piston:
Difference between maximum skirt dimension and cylinder diameter must not be greater than 0,17 mm.
Wear limit of piston pin bore clearance: 0,08 mm.

Kolbenringe

Die Kolbenringe sind auf saubere Lauffläche zu kontrollieren. Das Ringstoßspiel (B) beträgt 0,3—0,5 mm, max. zulässiges Stoßspiel 1,0 mm.
Gegebenenfalls neue Kolbenringe verwenden.
Der verchromte Rechteckring ❶ gehört in die oberste, der Minutenring ❷ in die mittlere Ringnut.
Der zweiteilige Ölabstreifring ❸ (Dachfasenring) kommt in die unterste Ringnut.
Alle Kolbenringe mit Aufschrift nach oben montieren (unbedingt erforderlich beim Minutenring ❷).

Stoßspiel

Kolbenring in den Zylinder stecken und mit dem Kolben ausrichten. Mit einer Fühllehre kann nun das Stoßspiel B, welches maximal 1,0 mm betragen darf, gemessen werden. Ist das Stoßspiel größer, sind Kolben und Zylinder auf Verschleiß zu prüfen. Falls Kolben- und Zylinderverschleiß innerhalb der Toleranzen liegen, Kolbenring erneuern.

Fasce elastiche

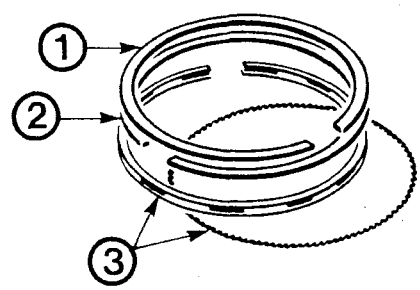
Controllare che le superfici di scorrimento delle fasce elastiche siano pulite. Il giuoco di giunto (B) fasce è di 0,3—0,5 mm, giuoco max. ammissibile: 1,0 mm.
Utilizzare, se necessario, fasce elastiche nuove. La fascia cromata ❶ va messo nella scanalatura superiore, la fascia conica ❷ nella scanalatura media e la fascia raschiaolio ❸ nella scanalatura inferiore.
Montare tutte le fasce elastiche con le scritte stampigliate verso l'alto (assolutamente necessario per la fascia conica ❷).

Luce della fascia elastica

Inserire la fascia elastica nel cilindro ed allinearla col pistone. Con uno spessimetro si puó ora misurare la luce B che puó essere di 1,0 mm al massimo. Se la luce supera detto valore, è necessario verificare l'usura del pistone e del cilindro.
Se l'usura del pistone e del cilindro si trova entro i limiti di tolleranza, sostituire la fascia elastica.

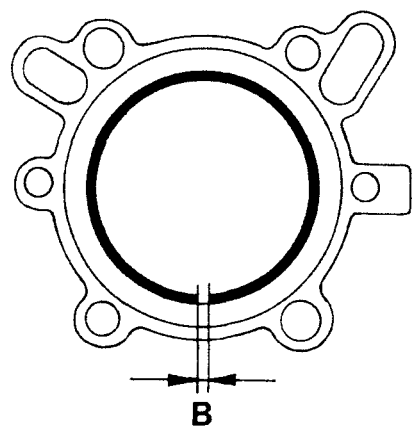
Piston rings

Check piston rings for clean working surfaces. Ring end gap (B) 0,3—0,5 mm, max. permissible ring end gap 1,0 mm.
Replace piston rings if necessary.
The chrome plated compression ring ❶ must be placed in top ring groove, the tapered ring ❷ in the middle, and the double oil control ring ❸ in the bottom groove.
All rings must be fitted with the marked side upwards — this is particularly important in case of the middle (tapered) ring ❷.



Piston ring end gap

Insert piston ring squarely into cylinder, using the bare piston. The end gap B should not exceed 1,0 mm and can be checked with a feeler gauge. If the end gap is greater, check piston and cylinder for wear. If piston and cylinder wear are within tolerance limits, replace the piston rings only.



Zylinder

Zylinderlauffläche auf Verschleiß prüfen. Zylinderdurchmesser darf max. um 0,15 mm größer als der Nenndurchmesser sein. Ist der Zylinderdurchmesser größer, so ist dieser nachzuschleifen.
Die max. zulässige Ovalität und Konizität beträgt 0,03 mm.

Zylinder-Durchmesser für 1. Schliff

Type 348	Type 506	Type 560	für
79,76—79,77 79,77—79,78	89,25—89,26 89,26—89,27	94,25—94,26 94,26—94,27	„roten" Kolben „grünen Kolben

Die kopfseitige Dichtfläche des Zylinders muß plan sein. Gegebenenfalls kann die Dichtfläche bis max. 0,3 mm nachgearbeitet werden.

Zerlegen des Zylinderkopfes

Verbrennungsrückstände vorsichtig mit stumpfem Werkzeug entfernen. Zylinderkopf an den beiden Stiftschrauben M8 im Schraubstock mit Schutzbacken einspannen. Beide Ventildeckel ❶ abschraubén und die 4 Ventileinstellschrauben ❷ lockern. Beide Verschlußschrauben ❸ mit Stiftschlüssel 8 herausschrauben.

Cylinder

Check cylinder working surfaces for wear. If cylinder diameter exceeds nominal diameter by more than max. 0,15 mm it must be rebored. Ensure that sealing surfaces are clean.
Ovality and taper max. tolerance 0,03 mm.

Cylinder diameter for 1st oversize

Type 348	Type 506	Type 560	for
79,76—79,77 79,77—79,78	89,25—89,26 89,26—89,27	94,25—94,26 94,26—94,27	"red" piston "green" piston

The sealing surface of cylinder, cylinder head side, must be plane. If necessary, the sealing surface can be reworked up to max. 0,3 mm.

Dismantling of cylinder head

Carefully remove combustion residues with blunt tool. Clamp cylinder head at the 2 studs M8 in the vice with protective jaws. Remove the 2 valve covers ❶ and slacken the 4 valve adjusting screws ❷. Unscrew the 2 plug screws ❸ with wrench 8.

Cilindro

Controllare l'usura della superficie di scorrimento del cilindro. Il diametro del cilindro può superare al massimo di 0,15 mm il diametro nominale. Se il diametro del cilindro è più grande, bisogna rettificarlo. Assicurarsi che le superfici di tenuta siano pulite.
Ovalità e conicità max. 0,03 mm.

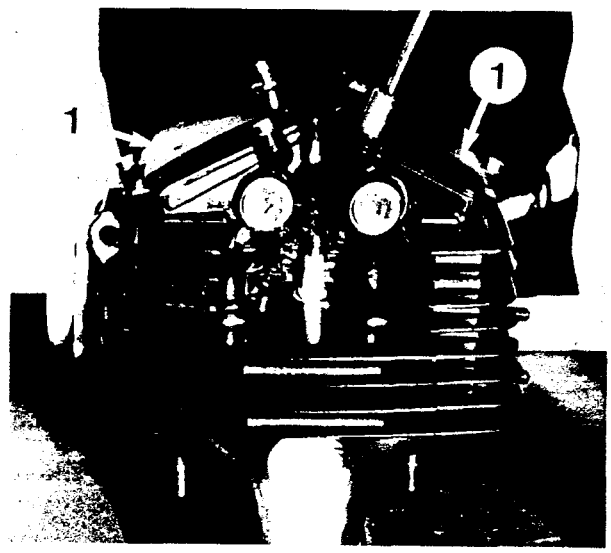
Diametro cilindro per 1ª maggiorazione

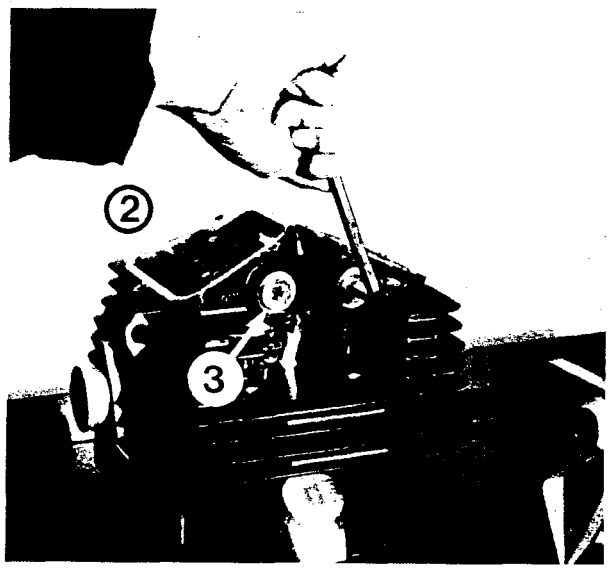
Tipo 348	Tipo 506	Tipo 560	per
79,76—79,77 79,77—79,78	89,25—89,26 89,26—89,27	94,25—94,26 94,26—94,27	pistone „rosso" pistone „verde"

La superficie di tenuta, lato testa cilindro, deve essere piana. Se necessario, abbassare per spianatura al massimo 0,3 mm.

Smontaggio della testata

Eliminare con cura i residui di combustione. Fissare la testata nella morsa sui prigionieri M8. Svitare i 2 coperchi delle valvole ❶ e allentare le 4 viti di aggiustaggio delle valvole ❷. Svitare i 2 tappi filettati ❸ con una chiave da 8.





Beide Kipphebelbolzen Ⓐ mit Schraube M10 Ⓑ herausziehen. Beide Kipphebel mit je 1 Anlaufscheibe und 1 Federscheibe herausnehmen. Zum Ausbau der Nockenwelle Sicherungsring ❶ abnehmen und Distanzhülse ❷ herausziehen.
Nach Einschrauben des Nockenwellenabziehers ❸ (276 400), SK-Schraube M8 ❹ festhalten und durch vorsichtiges Rechtsdrehen der SK-Mutter ❺ Nockenwelle herausziehen.

Achtung:

Beim Herausziehen der Nockenwelle kann es vorkommen, daß die Ausgleichscheibe hinter dem WD-Ring in die Seegerringnut rutscht und somit das Herausziehen der Nockenwelle verhindert.

Abhilfe:

Abziehvorrichtung abnehmen, WD-Ring entfernen und Ausgleichscheibe herausnehmen. Nun kann die Nockenwelle ohne Schwierigkeiten mit dem Abzieher herausgezogen werden.
Zylinderkopf aus dem Schraubstock nehmen, Stiftschrauben und Paßhülsen entfernen.

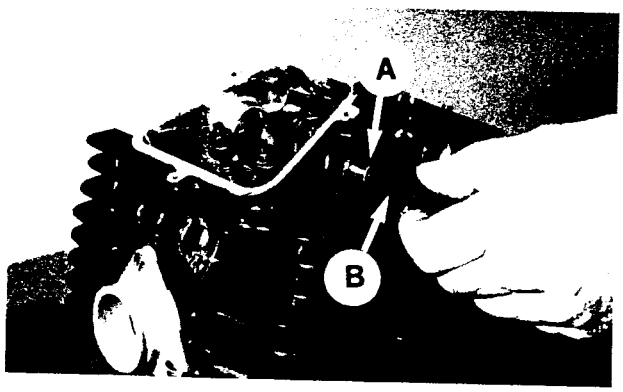
Remove both rocker spindles Ⓐ with a screw M10 Ⓑ. Take out both rocker arms with one thrust-washer and one spring-washer each. To remove the camshaft, take off lock ring ❶ and remove spacer ❷.
After screwing in camshaft extractor ❸ (276 400), hold hex. schrew M8 ❹ and take out camshaft by carefully turning hexagon nut ❺ clockwise.

Caution:

When the camshaft is extracted, the shim behind the oil seal sometimes drops into the lock-ring groove thus hindering complete removal of camshaft.

Remedy:

Take off extractor, remove oil seal and take out shim. Now the camshaft can be taken out with the extractor easily.
Remove cylinder head from vice, take out studs and remove dowel pins.



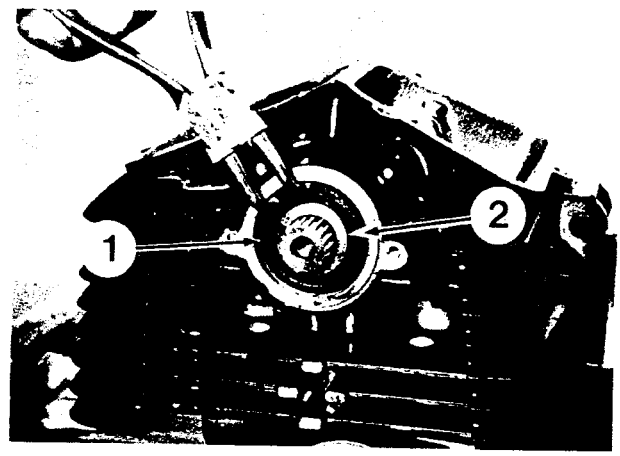
Estrarre i due perni dei bilancieri Ⓐ con una vite M10 Ⓑ. Togliere i due bilancieri con 1 ralla e 1 rondella elastica di ciascun bilanciere. Per smontare l'albero a camme, togliere l'anello di arresto ❶ ed estrarre il distanziatore ❷.
Dopo aver avvitato l'estrattore dell'albero a camme ❸ (276 400), tenere fissa la brugola M8 ❹ ed estrarre l'albero a camme girando prudentemente il dado esagonale ❺ in senso orario.

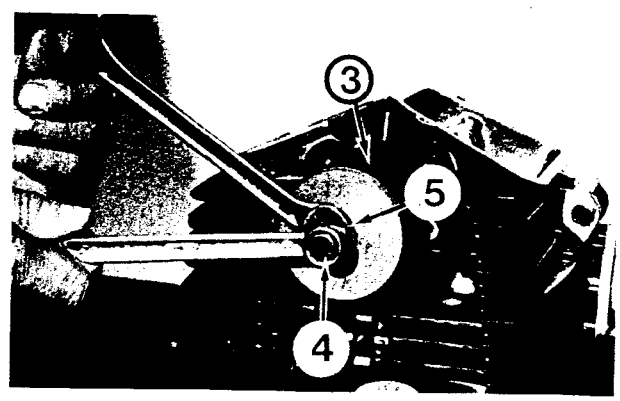
Attenzione:

Estraendo l'albero a camme può succedere che lo spessore dietro il corteco slitti nella scanalatura dell'anello Seeger, impedendo così l'estrazione dell'albero a camme.

Rimedio:

Togliere l'estrattore, quindi il corteco e togliere lo spessore. Ora l'albero a camme può essere tolto senza impedimenti con l'estrattore.
Togliere la testata dalla morsa, quindi togliere i prigionieri e le spine.

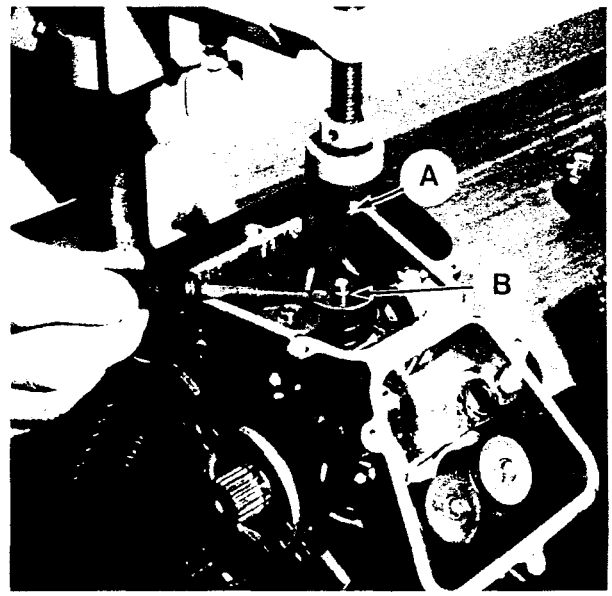




Mit Ventilfederspanneinsatz Ⓐ (276 470) und die Ventilfederspannzange oder ähnlichem Werkzeug die Ventilfeder niederdrücken und Ventilkegelstücke Ⓑ entfernen. Ventilfeder entspannen, Ventilfederteller, Ventilfeder und Ventil entfernen.

Achtung:

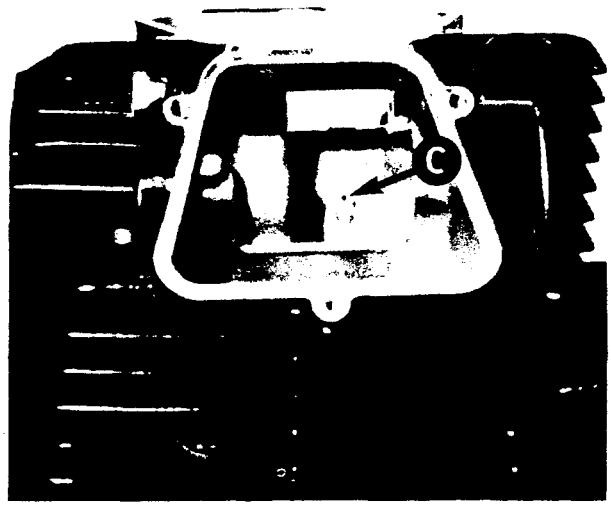
Vor dem Herausnehmen der Ventile sind diese zu markieren.
Dieser Arbeitsgang ist bei allen 4 Ventilen durchzuführen.
Zylinderkopf und Einzelteile mit Benzin oder Petroleum reinigen. Ölkanal Ⓒ sorgfältig reinigen, mit Preßluft ausblasen und auf freien Durchgang prüfen.
Zylinderkopf-Dichtfläche überprüfen, gegebenenfalls auf geeigneter Platte planen. Planfläche darf um max. 0,2 mm gekürzt werden.



With valve spring push tool Ⓐ (276 470) and valve spring pliers or similar, compress the valve spring and remove the split cotters Ⓑ. Relieve valve spring, take out valve spring compression jig, valve spring and valve.

Caution:

Before valves are removed, they should be numbered. This operation must be carried out on all 4 valves. Clean cylinder head and components with gasoline or kerosene. Clean oil duct Ⓒ carefully with compressed air and check for free passage.
Check cylinder head sealing surface. If necessary, dress on appropriate plate. Rework must not exceed 0,2 mm.



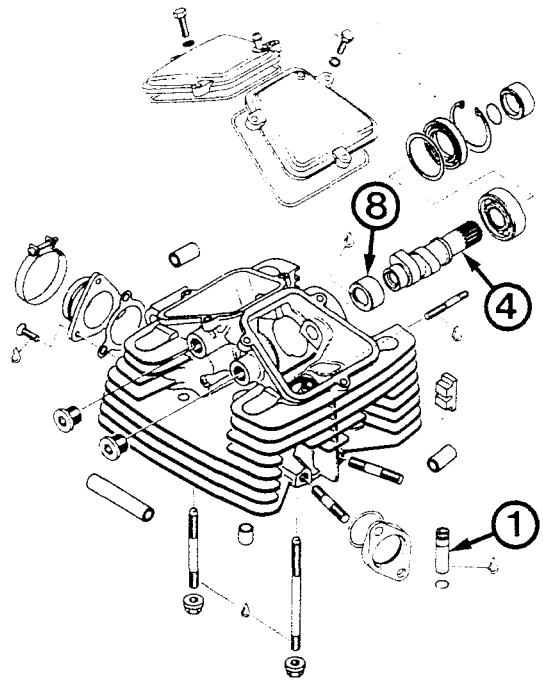
Comprimere la molla della valvola con l'attrezzo compressione molla valvola Ⓐ (276 470) e una pinza o un altro uttensile adatto e togliere i semiconi Ⓑ. Scaricare la molla, togliere il piattello, la molla e la valvola stessa.

Attenzione:

Contrassegnare le valvole prima di estrarle.
La suddetta operazione deve essere effettuata su tutte e 4 le valvole.
Pulire la testata e i pezzi tolti con benzina o petrolio. Pulire accuratamente il canaletto dell'olio Ⓒ, soffiarlo con aria compressa e controllare che sia libero da intoppi. Controllare la superficie di tenuta della testa. Se necessario spianare su una piastra adatta. Non togliere più di 0,2 mm.

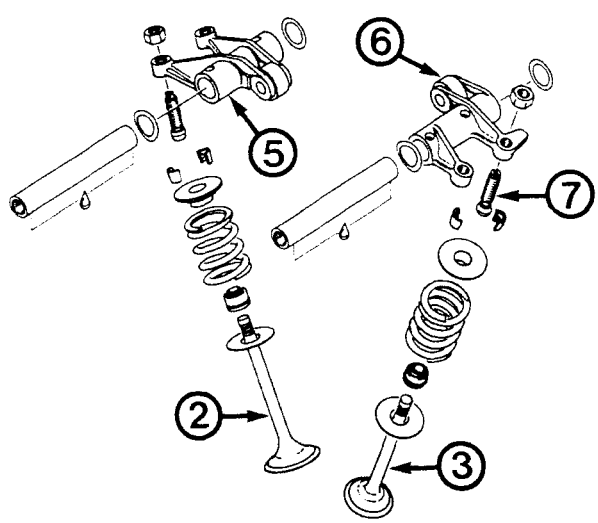
Folgende Teile sind zu prüfen:

Ventilführungen ❶: max. Innendurchmesser 7,25 mm, Ventilführungen mit größerem Innendurchmesser sind gegen neue auszutauschen.
Ventilsitze: auf sauberen Dichtsitz achten, nötigenfalls nachschleifen.
Dichtsitzbreite: Einlaßventil ❷ max. 1,5 mm
Auslaßventil ❸ max. 2,0 mm
Ventil: Ventilteller auf Verschleiß und Schlag prüfen, gegebenenfalls nachschleifen oder erneuern (max. zulässiger Schlag 0,03 mm am Ventilteller).
Nockenwelle ❹: Beide Nocken und die Lagerstellen sind auf Verschleiß zu prüfen, gegebenenfalls neue Nockenwelle einbauen.
Kipphebel ❺: Kipphebelrolle ❻ auf Leichtgängigkeit kontrollieren, bei vorhandenem Radialspiel ist der Kipphebel zu erneuern. Planfäche der Einstellschraube ❼ auf Verschleiß prüfen.
Nadelbüchse ❽: Nadeln und Käfig auf Schäden prüfen, gegebenenfalls erneuern.
Rillenkugellager und Planfläche des Zylinderkopfes kontrollieren. Es ist empfehlenswert, die Ventilschaftdichtungen und den WD-Ring der Nockenwelle zu erneuern.



The following components must be checked:

Valve guides ❶: max. internal diameter 7,25 mm, valve guide with larger internal diameter must be replaced.
Valve seats: Ensure clean sealing seat, grind if necessary.
Sealing seat width: intake valve ❷ max. 1,5 mm
exhaust valve ❸ max. 2,0 mm
Valve: Check valve head for wear and eccentricity, grind or replace if necessary (max. admissible eccentricity 0,03 mm at valve head).
Camshaft ❹: Check both lobes and bearing seats for wear, fit new camshaft if necessary.
Rocker arm ❺: Check rocker arm roller ❻ for easy movement, and if there is noticeable radial play, the rocker arm must be replaced. Check flat surface of adjusting screw ❼ for wear.
Needle cage ❽: Check needles and cage for damage, replace if necessary.
Check ballbearing and joint surfaces of cylinder head. It is advisable to fit new valve stem seals and to replace the camshaft oil seal.



Controllare i seguenti pezzi:

Guidavalvole ❶: diametro interno max. 7,25 mm, sostituire quelli con diametro maggiore.
Sedi delle valvole: assicurarsi che le sedi a tenuta siano pulite, se necessario rettificarle.
Larghezze sedi a tenuta:
valvola di aspirazione ❷ max. 1,5 mm
valvola di scarico ❸ max. 2,0 mm
Valvola: controllare l'usura e l'eccentricitá della testa valvola, se necessario rettificarla o sostituirla (valori massimi dell'eccentricità ammessa: 0,03 mm sulla testa valvola).
Albero a camme ❹: controllare l'usura profili delle due camme e delle sedi cuscinetti, se necessario montare un nuovo albero a camme.
Bilanciere ❺: controllare se il rullo del bilanciere ❻ gira liberamente, in caso di giuoco radiale sostituire il bilanciere. Verificare l'usura della superficie piana della vite di aggiustaggio ❼.
Gabbia a rulli ❽: controllare se i rullini e la gabbia presentano danni, se necessario sostituirli.
Controllare il cuscinetto a sfere e la superficie piana della testata. E consigliabile sostituire le guarnizioni degli steli delle valvole e il corteco dell'albero a camme.

Ventilführungen wechseln

Der in den Nockenwellenraum ragende Teil der Ventilführung ist abzuschlagen. Die Ventilführung bricht dadurch am Einstich (A) und die Ventilführung kann ohne Beschädigung der Bohrung mit einem geeigneten Stufendorn in Richtung Brennraum herausgepreßt werden.
Beim Einpressen der neuen Ventilführungen ist die Gleitpaste Molykote GN zu verwenden. Die eingepreßte Ventilführung ist mit einer Reibahle auf einen ∅ 7,06 bis 7,13 zu reiben. Anschließend sind die Ventilsitze zu überprüfen, gegebenenfalls neu zu fräsen.
Aus- und Einpressen erfolgt bei kaltem Zylinderkopf.

Nadelbüchse wechseln

Zylinderkopf auf ca. 60—80° C erwärmen. Nadelbüchse ❶ mit geeignetem Dorn von außen nach innen klopfen. Die neue Nadelbüchse ist am Büchsenboden mit dauerelastischer Silicongummi-Dichtmasse einzustreichen und in den 60—80° C vorgewärmten Zylinderkopf mit einem geeigneten Dorn einzupressen.

Achtung:

Einpreßdorn darf nur auf die Schulter der Nadelbüchse drücken, nicht auf Büchsenboden.

Sostituzione dei guidavalvole

Staccare la parte del guidavalvola che entra nel vano albero a camme. Il guidavalvola allora rompe alla scanalatura (A) e il guidavalvola si può premere verso la camera di combustione con un tampone adatto, senza danneggiarne la sede.
Per il montaggio di un nuovo guidavalvola, utilizzare della pasta antibloccaggio Molycote GN.
Alesare il guidavalvola con alesatore a diam. 7,06—7,13 mm. Poi controllare le sedi valvole; se necessario, rifresare. Sostituzione dei guidavalvole sempre a testata fredda.

Sostituzione della gabbia a rulli

Battere dall'esterno verso l'interno sulla gabbia ❶ per mezzo di un punteruolo appropriato.
Spalmare l'anello esterno della nuova gabbia a rulli con del Silicone. Con uno spezzone cilindrico o un distanziale adatto, bisogna inserire la bussola nella testata preriscaldata a 60—80° C.

Attenzione:

L'attrezzo di inserimento deve premere solo sulla spalla (corona esterna) della bussola, non sul bassorilievo del fondo.

Replacing of valve guides

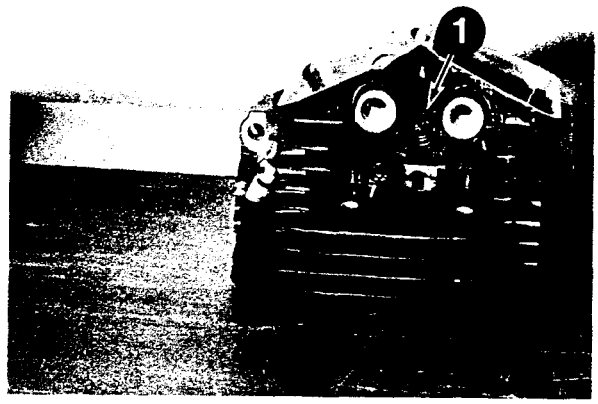
The part of the valve guide projecting into the camshaft chamber must be knocked off. The valve guide breaks easily at the groove (A) and the guide can be driven out with a suitable punch towards combustion chamber without damaging the valve guide bore.
When pressing in the new valve guides, use slide paste Molycote GN. After installation, the guides must be reamed to 7,06—7,13 mm dia.
Then check valve seats. If necessary, re-cut them.
Removal and replacement of valve guides should only be done when the cylinder head ist cold.

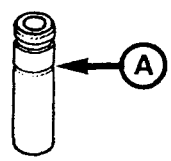
Replacement of needle bearing

Warm cylinder head to approx. 60—80° C. Drive needle bearing ❶ with suitable punch from outside inwards. Coat the bottom of new needle bearing with R. T. V. sealing compound and press with a suitable punch into cylinder head pre-heated to 60—80° C.

Attention:

Don't press on bottom but only against shoulder of needle bearing.





Zylinderkopf zusammenbauen

Anlaufscheiben auf Ventilführungen schieben, neue eingeölte Ventilschaftdichtungen auf alle 4 Ventilführungen drücken. Eingeöltes Ventil einführen, Ventilfeder, Ventilfederteller aufsetzen, mit Ventilfederspannzange und Spanneinsatz zusammendrücken und die beiden Ventilkegelstücke einsetzen. Ventile auf Dichtheit prüfen (Leckageprüfgerät). Zylinderkopf auf 60—80 ° C erwärmen, Nadelbüchse einölen, Nockenwelle einschieben und kaltes Rillenkugellager mit geeignetem Dorn ❶ montieren. O-Ring auf Nockenwelle schieben, Ausgleichscheibe auflegen, neuen eingefetteten WD-Ring mit Montagestempel (276 310) einpressen und mit Sicherungsring fixieren. Distanzhülse aufstecken und Nockenwelle auf Leichtgängigkeit und Axialspiel prüfen.
Kipphebel, Federscheibe, Scheibe und Kipphebelbolzen (mittels Schraube M10 ❷) montieren.

Achtung:

Federscheiben auf Seite der Verschlußschrauben. Beide Verschlußschrauben mit Stiftschlüssel SW 8 eindrehen und festziehen.
Stiftschrauben M8 x 119 mit langem Gewinde auspuffseitig, Stiftschraube M8 x 94 mit langem Gewinde ansaugseitig in Zylinderkopf einschrauben.

Assembly of cylinder head

Fit spring seat washers over valve guides, press new valve stem seals onto the 4 valve guides. Insert lubricated valve, fit valve spring and valve spring retainer, press together with valve spring pliers and valve spring compressing jig and fit both split cotters. Check valves for tightness (leak tester). Heat cylinder head to 60—80 ° C, lubricate needle bearing, insert camshaft and install cold ballbearing with appropriate punch ❶. Slide O-ring onto camshaft, fit shim, press in new greased oil seal with assembly punch (276 310) and fix with locking ring. Fit spacer and check camshaft for easy movement and axial play.
Install rocker arm, bevel washer, shim and rocker arm pin (with screw M10 ❷).

Caution:

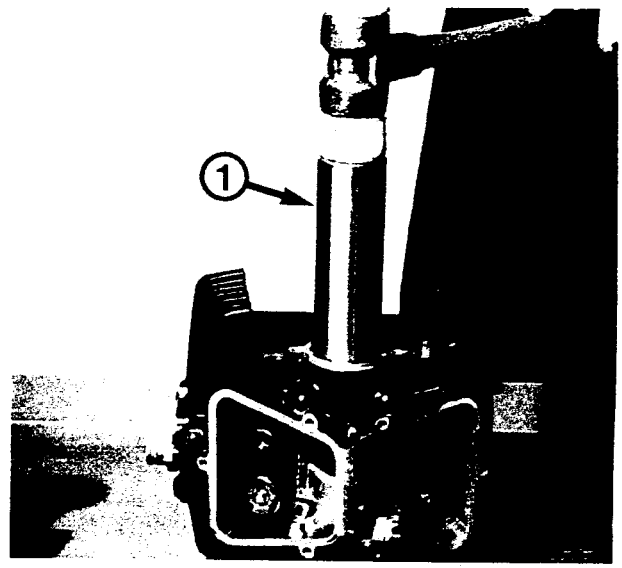
Spring washers on screw plug side. Turn and tighten both screw plugs with wrench 8.
M8 x 119 stud with long thread on exhaust side, M8 x 94 stud with long thread on intake side, screwed into cylinder head.

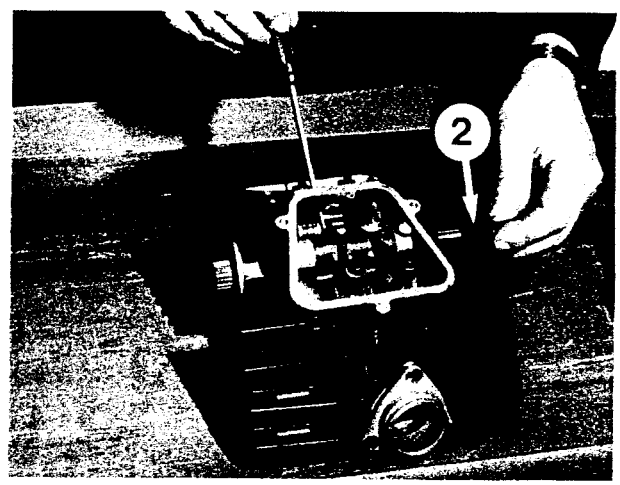
Riassemblaggio della testata

Rimettere le rondelle base molla sui guidavalvole. Premere un nuovo corteco sui 4 guidavalvole fino all'aggancio sul guidavalvola. Inserire la valvola oliata, applicare la molla, il piattello, comprimere con una pinza e l'attrezzo compressione molla e inserire i due semiconi. Controllare la tenuta delle valvole (misuratore perdite).
Scaldare la testata a 60—80 °, oliare la gabbia a rulli, inserire l'albero a camme e montare il cuscinetto a sfere per mezzo di un punteruolo appropriato ❶.
Montare l'anello di tenuta OR sull'albero a camme, applicare lo spessore, introdurre il nuovo corteco opportunamente ingrassato con tampone di montaggio (276 310) e fissare con l'anello di arresto.
Montare il distanziatore e controllare il funzionamento libero e il giuoco assiale dell'albero a camme.
Montare il bilanciere, lo spessore, la rondella elastica e il perno del bilanciere (per mezzo di una vite M10 ❷).

Attenzione:

Rondelle elastiche sul lato dei tappi a vite. Serrare i due tappi per mezzo di una chiave da 8.
Avvitare i prigionieri M8 x 119 con la filettatura lunga sul lato di scarico, e il prigioniere M8 x 94 con la filettatura lunga sul lato di aspirazione nella testa.





Ventilspiel einstellen

Die Nockenstellung zum Ventileinstellen für jeweils 1 Ventilpaar (2 Einlaß bzw. 2 Auslaß) ist aus der Skizze ersichtlich. Das Ventilspiel wird zwischen Ventilschaft und Einstellschraube gemessen.

Ventilspiel kalt: Einlaß: 0,05 mm, Auslaß: 0,05 mm.

O-Ringe in den Ventildeckeln kontrollieren, gegebenenfalls erneuern.

Für Ausführung mit Ventilausheber:

Ventildeckel mit Deko-Welle auspuffseitig montieren.

Achtung:

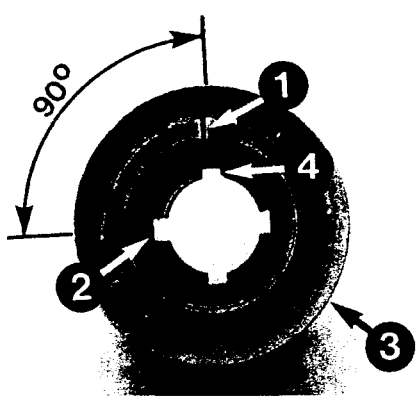
Nach dem Montieren des Ventildeckels muß beim Deko-Hebel ein Leerweg spürbar sein.
Steuerritzel, Steuerrad und Steuerriemen, Zahnprofile, Lauffläche für WD-Ring und Zahnriemen überprüfen, gegebenenfalls erneuern. Auf festen Sitz der Bordscheiben ❸ achten.
❶ Werkseitig eingeschlagene Marke
❷ Nut für Type 348
❹ Nut für Type 504, 506, 550 und 560

Adjustment of valve clearance

The cam position to adjust the valves for one pair of valves (2 intake, 2 exhaust) is shown on the illustration. The valve clearance is measured between the valve stem and the adjusting screw.
Valve clearance cold: Intake: 0,05 mm, exhaust: 0,05 mm.
Check O-rings in valve covers, replace if necessary.
For engines with valve lifter: Mount valve cover with decompressor shaft on exhaust side.

Attention:

After fitting the valve cover, check for free movement of decompressor lever.
Check upper and lower timing pulleys, timing belt, tooth profiles, mating surface for oil seal, and timing belt. Replace if necessary. Ensure that the belt guide washers of the lower pulley ❸ are tigthly fastened to the pulley body.
❶ punch mark by factory
❷ groove for type 348
❹ groove for type 504, 506, 550 and 560



Registro del giuoco delle valvole

La posizione della camma per registrare, 2 per volta le valvole (2 valvole d'aspirazione risp. 2 valvole di scarico) si vede dall'illustrazione.
Il giuoco valvola si misura fra estremità stelo della valvola e la vite di registro.
Giuoco valvole a freddo:
aspirazione: 0,05 mm
scarico: 0,05 mm
Controllare gli OR nei coperchi valvole, sostituirli se necessario.

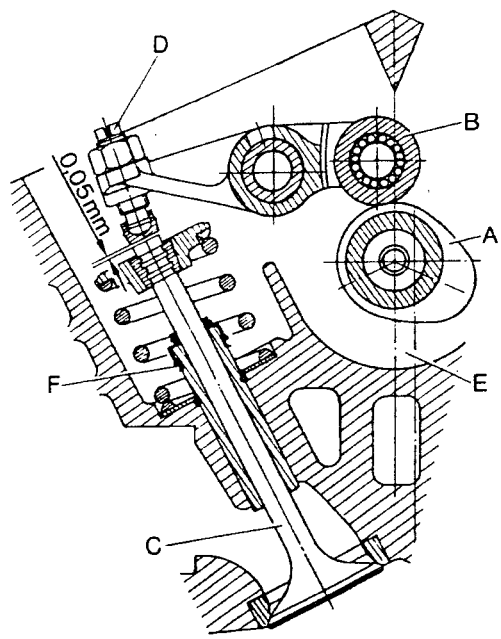
Su versione motore con alzavalvola:

Montare il coperchio valvole con alberino decompressione al lato scarico.

Attenzione:

Dopo aver montato il coperchio valvole, controllare che la leva del decompressore abbia una certa corsa a vuoto.
Controllare la puleggia comando superiore ed inferiore, la cinghia dentata, i profili dei denti e la superficie di scorrimento per il corteco puleggia albero motore.
Sostituire se necessario.
Controllare che le rondelle di spallamento ❸ della puleggia albero motore siano fisse.
❶ Marchio fatto dalla fabbrica
❷ Gola per tipo 348
❹ Gola per tipo 504, 506, 550 e 560

A = Nockenwelle / camshaft / albero a camme
B = Kipphebelrolle / rocker arm roller / rullino bilanciere
C = Ventil / valve / valvola
D = Stellschraube / adjustment screw / vite di registro
E = Öltasche / oil tray / tasca olio
F = Ventilschaftdichtung / valve seal / corteco guidavalvola



Zündanlage und Generator

Der ROTAX-4-Takt-Motor ist mit einer kontaktlosen Hochspannungs-Kondensator-Zündanlage (Nippondenso) mit elektronischer Zündverstellung und einem 3-Phasen-Wechselstromgenerator 12 V 190 W ausgerüstet.
Die wesentlichen Vorteile gegenüber kontaktgesteuerten Magnetzünder-Generatoren:
Erhöhte Funktionssicherheit, da keinerlei Verschleißteile, wie z. B. Unterbrecher, Schmierfilz, vorhanden und die Anlage mit der außenliegenden Zündspule vor allen Dingen feuchtigkeits- und staubunempfindlicher sowie vollkommen wartungsfrei sind.
Eine Überprüfung der Zündanlage darf mit den herkömmlichen Testgeräten nicht durchgeführt werden. Derartige Prüfversuche führen zur Zerstörung der Anlage.
Die einzelnen Spulen sind mit einem Ohmmeter zu überprüfen. Die Meßwerte sind aus der nachfolgenden Tabelle ersichtlich. Der Zündzeitpunkt kann nur mit einer Zündlichtpistole bei laufendem Motor kontrolliert werden.

Achtung:

Zum Abstellen des Motors darf auf keinen Fall das Kerzenkabel abgeklemmt werden. Zur Überprüfung des Zündfunkens muß auf jeden Fall das Hochspannungskabel mit Masse verbunden werden. Am besten durch eine Zündkerze. Die Prüffunkenstrecke beträgt ca. 7 mm.

Ignition system and generator

The ROTAX-4-stroke engine is equipped with a breakerless C. D. ignition system (Nippondenso) with electronic ignition timing and 12 V 190 W 3-phase A. C. generator.

The main advantages compared with breaker units are: Greater reliability, because there are no wearing parts such as breaker or lubricating felt. The ignition system with external trigger is unaffected by moisture and dust and is completely maintenance-free.
The ignition system must not be tested with conventional test equipment, because this will cause serious damage. The individual coils should be tested with an ohmmeter.
Compare the readings with following data sheet.
Ignition timing can only be checked with a stroboscope while engine is running.

Caution: Never disconnect the spark plug cable when the engine is running — serious damage to the ignition system will result. To test the spark, the H. T. cable must always have free passage to earth, with the air gap not exceeding 7 mm.

Impianto di accensione e generatore

Sul motore ROTAX 4 tempi è istallata una accensione elettronica senza contatti (Nippondenso) con anticipo automatico e un generatore trifase 12 V 190 W corrente alternata.
L'accensione elettronica presenta diversi vantaggi rispetto a quella a puntine, per esempio:
Maggior affidabilità e assenza di manutenzione, in quanto non presenta alcun particolare a contatto e quindi soggetto ad usura.
Un controllo dell'accensione non deve essere effettuato con i convenzionali strumenti di misura. Tali misurazioni causerebbero la distruzione dell'impianto.
Le singole bobine devono essere verificate con un ohmmetro. I valori di misura possono essere rilevati nella tabella che segue. Il punto di accensione può essere controllato solamente con una pistola stroboscopica.

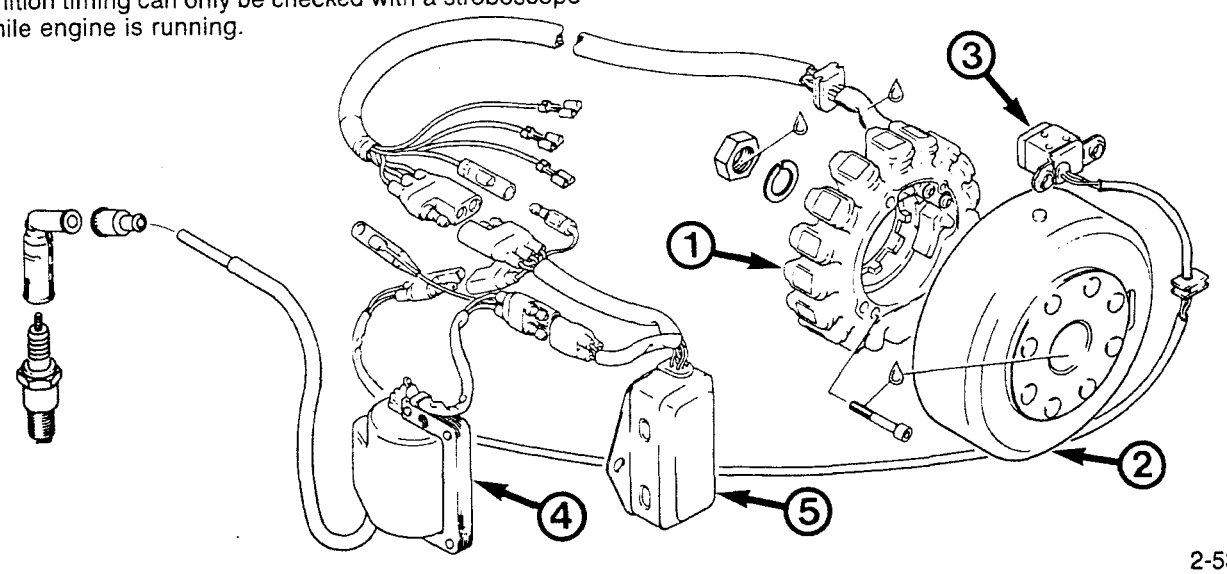
Attenzione:

Per fermare il motore non si deve in nessun caso staccare il cavo della candela. Per verificare la scintilla è in ogni caso necessario collegare il cavo di alta tensione a massa, opportunamente tramite una candela (distanza scintilla ca. 7 mm).

1 Stator
2 Magnetrad
3 Außengeber
4 Zündspule
5 Amplifier-Box

1 Stator
2 Magneto flywheel
3 External trigger
4 Ignition coil
5 Amplifier Box

1 Statore
2 Volano magnete
3 Pick-up esterno
4 Bobina di accensione
5 Centralina



Meßwerttabelle zur Überprüfung von Zündanlage und Generator

Hinweis	Leitungsfarben	Widerstand Ω
Geberspule für niedere Drehzahl (Außengeber)	schwarz-blau	120—180
Geberspule für hohe Drehzahl (Innengeber)	schwarz-rosa	12—20
Generator — Ladespule für niedere Drehzahl	schwarz-braun	230—350
Ladespule für hohe Drehzahl	braun-rot	4—6
Lichtspulen	weiß-orange weiß-grün grün-orange	0,6—0,9 0,54—0,8 0,8—1,6
Zündspule Primär-Wicklung	schwarz-orange (Masse)	0,85
Zündspule Sekundär-Wicklung	Zünd- schwarz kabel (Masse)	8—16 kΩ
Zündschloß bzw. Kurzschlußtaster Zündung „ein"	schwarz/weiß -blau	kein Durchgang
Zündschloß bzw. Kurzschlußtaster Zündung „aus"	schwarz/weiß -blau	0

Tabella dei valori misurati per la verifica dell'accensione e del generatore

Designazione	Colore del cavo	Resistenza Ω
Bobina trasduttore per basso regime (trasduttore esterno)	nero-azzuro	120—180
Bobina trasduttore per alto regime (trasduttore interno)	nero-rosa	12—20
Generatore — bobina di carico per basso regime	nero-marrone	230—350
Bobina di carico per alto regime	marrone-rosso	4—6
Bobine luce	bianco-arancio bianco-verde verde-arancio	0,6—0,9 0,54—0,8 0,8—1,6
Bobina di accensione avvolgimento primario	nero-arancio (massa)	0,85
Bobina di accensione avvolgimento secondario	Cavo di accensione nero (massa)	8—16 kΩ
Serratura dell'accensione o tasto di spegnimento Accensione: „acceso"	nero/bianco-blu (massa impianto)	senza passaggio
Serratura dell'accensione o tasto di spegnimento Accensione: „spento"	nero/bianco-blu (massa impianto)	0

Table of measuring values for testing ignition system and generator

Designation	Wire colours	Resistance Ω
Trigger coil for low speed (external transmitter)	black-blue	120—180
Trigger coil for high speed (internal transmitter)	black-pink	12—20
Generator — charging coil for low speed	black-brown	230—350
Charging coil for high speed	brown-red	4—6
Lighting coils	white-orange white-green green-orange	0,6—0,9 0,54—0,8 0,8—1,6
Ignition coil Primary winding	black-orange (earth)	0,85
Ignition coil Secondary winding	ignition cable-black (earth)	8—16 kΩ
Ignition key/short-circuit switch Ignition „on"	black/white -blue	no passage
Ignition key/short-circuit switch Ignition „off"	black/white -blue	0

Reglergleichrichter prüfen

Erforderliches Meßgerät: Gleichspannungsmeßgerät Meßbereich ca. 20 V
Die Spannung ist zwischen Batterie + und — Pol bei etwa 3000 1/min des Motors zu messen.

a) Bei eingeschaltetem Scheinwerfer muß die gemessene Spannung zwischen 12,5 und 14,5 V liegen.
b) Bei ausgeschalteten Stromverbrauchern muß die Spannung zwischen 13 und 14,5 V liegen.

Ist der Reglergleichrichter defekt, werden diese Werte nicht annähernd erreicht.

Checking regulator-rectifier

Measuring instrument:
DC voltmeter, measuring range ~ 20 V
Battery voltage between + and — should be measured at 3000 rpm engine speed.

a) With headlight switched on, the voltage should be between 12,5 and 14,5 V.
b) With lights switched off, the voltage should be between 13 and 14,5 V.

If the measured voltages are less than this, the regulator-rectifier is defective.

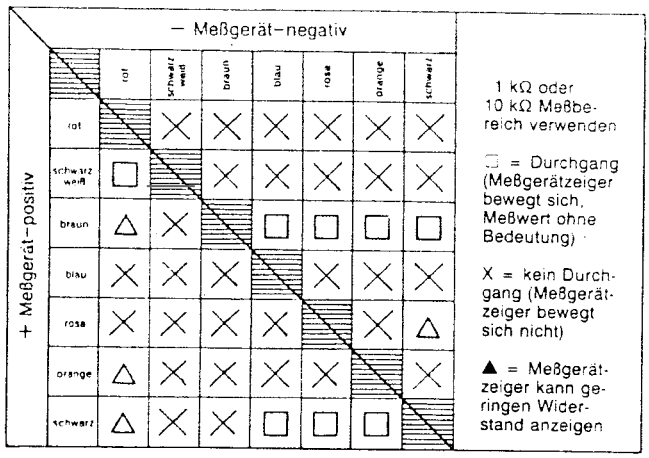
Controllo del regolatore-raddrizzatore

Strumento di misura necessario: strumento per la misurazione di tensione continua circa 20 V.
La tensione deve essere misurata tra i poli + e — della batteria a circa 3000 giri/min. del motore.

a) A luci accese, la tensione misurata deve trovarsi entro 12,5 e 14,5 V.
b) Con utilizzatori spenti, la tensione deve trovarsi entro 13 e 14,5 V.

Se il regolatore-raddrizzatore è difettoso, i valori di misura saranno di molto differenti rispetto a quelli indicati.

Meßwerttabelle zur Überprüfung der Amplifier-Box



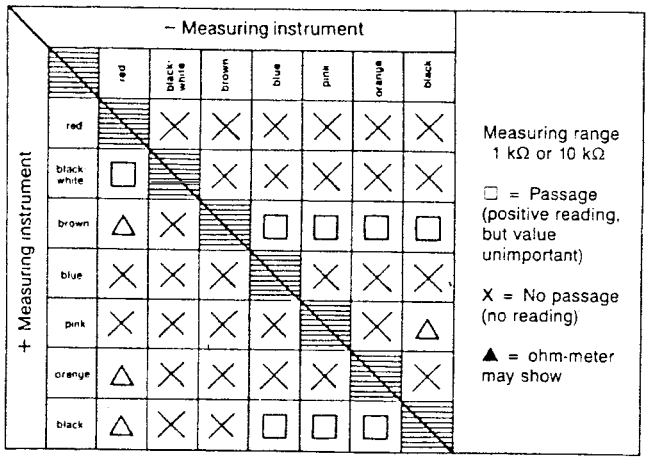
Meßvorgang

Ampl.-Box ausbauen. Gemessen wird der Widerstand zwischen zwei Kabeln. Dabei ist die jeweilige Polarität am Meßgerät zu beachten.

Z. B. Plus-Kabel des Meßgerätes mit braunem Kabel der Ampl.-Box verbinden.
Minus-Kabel des Meßgerätes mit blauem Kabel der Ampl.-Box verbinden.
Laut Tabelle muß der Meßgerätzeiger jetzt einen Durchgang anzeigen (□ Zeiger bewegt sich).

Insgesamt sind so 42 mögliche Meßpunkte zu kontrollieren.

Table of measuring values for testing amplifier box



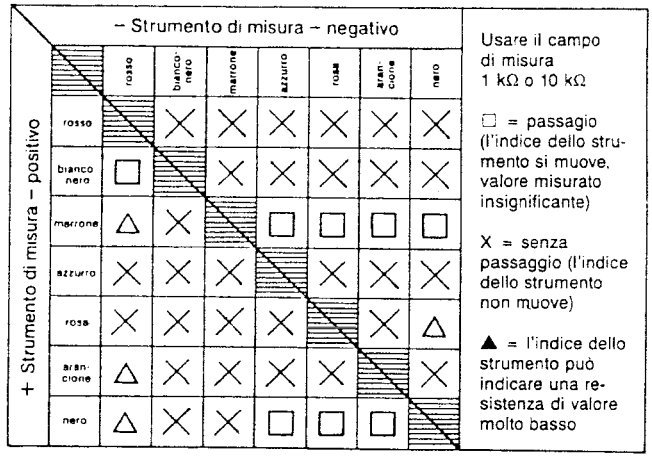
Measuring procedure

Remove amplifier box. Resistance is measured between two cables. Carefully note polarity on the measuring instrument!

e.g.: Connect brown cable from the amplifier box with + cable of the ohm-meter.
Connect blue cable from the amplifier box with — cable of the ohm-meter.
As shown on the table, the ohm-meter must show a reading (□ indicator moves).

Altogether 42 possible measuring points must be checked.

Tabella dei valori misurati per la verifica della centralina



Procedimento di misurazione

Smontare la centralina. Si misura la resistenza tra due cavi. Osservare la rispettiva polarità sullo strumento di misura.

Es.: Collegare il cavo positivo dello strumento col cavo marrone della centralina.
Collegare il cavo negativo dello strumento col cavo azzurro della centralina.
Secondo la tabella, l'indice dello strumento deve indicare un passaggio di corrente (□ indice muove).
In tutto possono essere controllati 42 possibili punti di misura in questa maniera.
Se una misura dovesse dare un risultato diverso da quelli indicati in tabella, la centralina dovrá essere sostituita.

Elektrostarter

Nach dem Zerlegen sind folgende Teile zu überprüfen:

❶ Anker
Kollektor reinigen, auf Schlag kontrollieren, sichtprüfen, gegebenenfalls fein überdrehen und Kollektorlamellen unterschneiden (siehe Bild Ⓐ). Die Isolation soll 0,5 mm tiefer als die Lamellen sein.
Anker mit 220 Volt und Prüflampe zwischen Kollektor und Blechpaket auf Masseschluß prüfen. Leuchtet die Lampe auf, muß der Anker ersetzt werden.
Ankerwicklungen mit 2 bis 4 Volt und zwischengeschaltetem Amperemeter (Meßbereich 60 A) auf Unterbrechung kontrollieren (siehe Bild Ⓑ).
Zeigt das Amperemeter starke Unterschiede zwischen den einzelnen Lamellen an, muß der Anker erneuert werden.
Verzahnung kontrollieren.

❷ RK-Lager: gegebenenfalls erneuern.

❸ Lagerbüchse: bei Verschleiß Kollektorlager kpl. austauschen.

❹ Kohlebürsten: müssen frei beweglich sein. Zu kurze Bürsten erneuern, Federdruck überprüfen.

❺ Startergehäuse
Erregerwicklung mit 220 Volt und Prüflampe zwischen Windungsanschluß und Gehäuse auf Masseschluß überprüfen. Leuchtet die Prüflampe auf bzw. sind die Wicklungen verschmort, muß es ausgetauscht werden.

❻ Nadellager: gegebenenfalls erneuern.

❼ O-Ringe und WD-Ringe sind zu erneuern.

Electric starter

After dismantling check the following parts:

❶ Armature
Check for out of round, inspect visually, if necessary rework finely and separate the commutator segments by cutting (see ill. Ⓐ). The insulation should be 0,5 mm deeper than the segments.
Check armature at 220 Volt with test lamp between commutator and iron core for connection to earth. If the lamp lights up, the armature has to be replaced.
Check armature windings at 2 to 4 Volts and Ammeter (measuring range 60 A) for open circuit (see ill. Ⓑ).
If the Ammeter indicates big differences between the single segments, the armature has to be replaced. Check the splines.

❷ Ball bearing: Replace if necessary.

❸ Bearing bushing:
If worn, replace rotor support assy.

❹ Carbon brushes: Must be able to move freely. Replace any which are too short.

❺ Starter housing
Check starter coil at 220 Volts with test lamp between connection of windings and housing for mass connection. If test lamp lights up, the windings are burned out, so replace starter housing.

❻ Needle bearing: Replace if necessary.

❼ O-rings and oil seals should be replaced.

Avviamento elettrico

Dopo lo smontaggio, controllare i pezzi seguenti:

❶ Rotore
Pulire e controllare che il rotore sia perfettamente cilindrico. Tornire se necessario.
Separare le lamelle del collettore, tagliandole (vedi ill. Ⓐ). Lo strato isolante dovrebbe essere 0,5 mm più basso rispetto alle lamelle.
Controllare il rotore utilizzando una lampada e due terminali collegati ad una tensione di 220 V inseriti fra il collettore ed il nucleo di ferro.
Qualora la lampada si illuminasse, il rotore dovrá essere sostituito perché in corto circuito.
Controllare le bobine del rotore con una tensione di 2—4 Volt e un amperometro inserito fra i terminali delle bobine (vedi illustrazione Ⓑ).
Se l'amperometro indica differenze importanti fra le singole lamelle, il rotore è da cambiare.
Controllare la dentatura.

❷ Cuscinetto a rulli: Sostituire se necessario.

❸ Appoggio rotore: Sostituire se usurato.

❹ Spazzole di carbone: Devono scorrere liberamente nelle loro sedi. Sostituire spazzole troppo corte. Controllare la pressione delle molle.

❺ Controllare lo statore utilizzando una lampada a 2 terminali collegati ad una tensione di 220 V e inseriti fra le singole bobine ed il corpo dello statore.
Qualora la lampada si accendesse, lo statore dovrà essere sostituito, perché in corto circuito.

❻ Gabbia a rulli: Sostituire se necessario.

❼ Sostituire gli OR ed i cortechi.

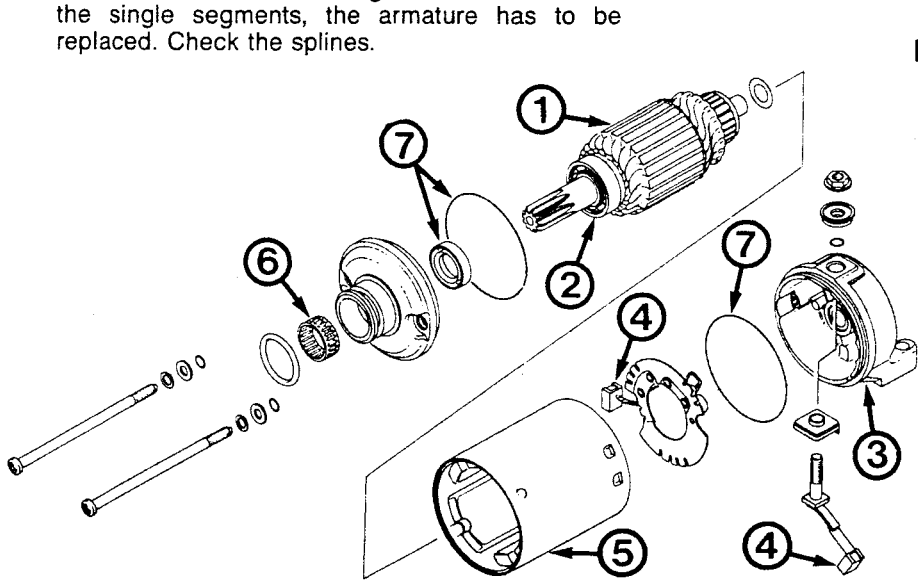


Bild A

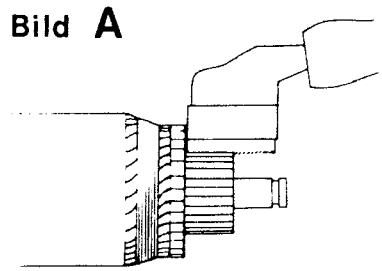
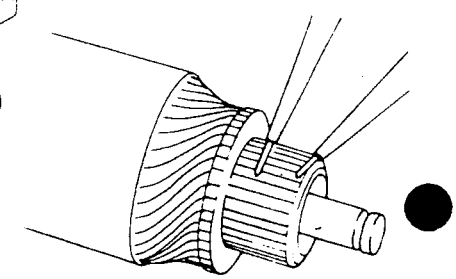


Bild B



Motor zusammenbauen

Rechte Gehäusehälfte auf 80—100 ° C erwärmen und in Montagebock mit Fixierschrauben und Distanzbüchsen befestigen. Neuen WD-Ring für Kurbelwelle mit Montagestempel (276 310) und neuen WD-Ring für Hauptwelle mit Montagestempel (277 861) von innen montieren. Kalte Rillenkugellager der Kurbelwelle, Ausgleichswelle, Vorgelegewelle sowie der Hauptwelle mit geeignetem Montagestempel montieren.

Einbau der Kurbelwelle

Ist die Gehäusehälfte noch ausreichend warm, kann die Kurbelwelle von Hand aus eingeschoben werden. Sonst ist die Kurbelwelle mit Kurbelwelleneinziehwerkzeug wie folgt einzuziehen:
Rechte Gehäusehälfte im Montagebock mit Zünderseite nach oben drehen. Einziehglocke ❶ auf Gehäusehälfte stellen. Einziehring ❷ auf Einziehspindel ❸ so weit aufschrauben, daß die von unten eingeführte Kurbelwelle in die Einziehspindel eingeschraubt werden kann.

Achtung:

Distanzring 35,2 x 50 x 4 auf der Kurbelwelle nicht vergessen. Wellendichtring nicht beschädigen.

Kurbelwelle in dieser Position festhalten und Einziehring mit Hand so weit nach rechts drehen, bis Kurbelwelle in Einziehposition ist. Einziehspindel mit der Hand festhalten, Handgriff ❹ in den Einziehring stecken und diesen nach rechts drehen, bis Kurbelwelle zur Gänze im Lager sitzt.

Achtung:

Pleuel muß in Richtung Zylinder stehen, da es sonst verbogen werden kann.
Einziehspindel von Kurbelwelle abschrauben und Einziehglocke abnehmen. Gehäusehälfte mit Trennfläche nach oben schwenken.

Engine assembly

Heat right crankcase half to 80—100° C and fix on trestle with screws and spacers. Install new crankshaft and mainshaft oil seals using assembly jigs 276 310 and 277 861 respectively. Sealing lips must face inwards. Fit cold ballbearings on crankshaft, balance shaft, clutch shaft and mainshaft with appropriate assembly jigs.

Installing the crankshaft

If the crankcase half is still sufficiently warm, the crankshaft can be inserted by hand. Otherwise the crankshaft must be pulled in with the crankshaft pull-in tool as follows:
Turn right crankcase half on trestle so that ignition side faces upwards. Mount puller bell ❶ on crankcase half. Screw puller ring ❷ onto pull-in spindle ❸ until the crankshaft inserted from underneath can be screwed into the pull-in spindle.

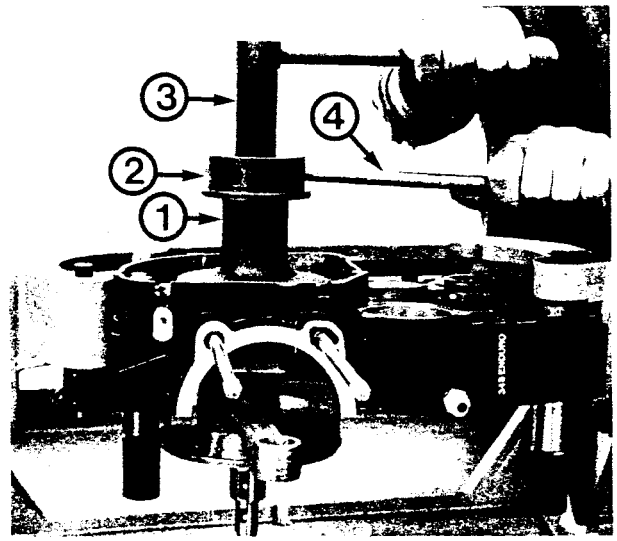
Caution:

Don't forget spacer 35,2 x 50 x 4 on crankshaft and take care not to damage oil seal.

Hold crankshaft in this position and turn pull-in ring by hand clockwise until the crankshaft is drawn into position. Hold pull-in spindle by hand, insert handle ❹ into pull-in ring and turn handle clockwise until the crankshaft is fully seated in the bearing.

Caution:

Take care not to trap the connection rod against the crankcase faces as the crankshaft is drawn into position, otherwise it may be bent.
Unscrew pull-in spindle from crankshaft and remove pull-in bell. Turn crankcase half so that joint surface faces upwards again.



Riassemblaggio del motore

Scaldare il semicarter destro a 80—100° C e fissarlo sulla staffa con viti di fissaggio e distanziatori. Montare un nuovo corteco per l'albero motore con tampone di montaggio (276 310) e un nuovo corteco per l'albero secondario con tampone di montaggio (277 861) dall'interno. Montare i cuscinetti a sfere freddi dell'albero motore, dell'albero di compensazione, dell'albero primario e secondario con un tampone adatto.

Montaggio dell'albero motore

Se il semicarter è ancora sufficientemente caldo, l'albero motore può essere inserito a mano. Altrimenti bisogna montarlo come segue mediante gli appositi attrezzi:
Girare il semicarter destro sulla staffa in modo che il lato accensione sia in alto. Mettere la campana d'inserimento ❶ sul semicarter. Avvitare la ghiera ❷ sull'asta a vite ❸ fino a che l'albero motore, inserito dal basso, possa essere avvitato nell'asta.

Attenzione:

Non dimenticare il distanziatore 35,2 x 50 x 4 sull'albero motore. Non danneggiare il corteco.
Tener fisso l'albero in questa posizione e girare manualmente la ghiera in senso orario fino a che l'albero sia in posizione d'inserzione. Tener ferma con la mano l'asta a vite, introdurre la maniglia ❹ nella ghiera e girare quest'ultima fino a che l'albero motore sia stato portato completamente nel cuscinetto.

Attenzione:

La biella deve essere orientata verso il cilindro, altrimenti rischia deformazione.
Svitare l'asta a vite dall'albero motore e togliere la campana. Girare il semicarter con la superficie di divisione verso l'alto.

Ölpumpe zusammenbauen

Bei Erneuerung der WD-Ringe ist darauf zu achten, daß beim Druckpumpengehäuse sowie beim Pumpendeckel die WD-Ringe mit den Lippen nach innen montiert werden. Die Ölpumpe ist zwischen Druckpumpengehäuse, Saugpumpengehäuse und Pumpendeckel mit Flanschdichtmittel „Loctite 574" hauchdünn zu bestreichen.

Achtung:

Dichtmasse darf nicht in Ölkanäle quellen!
Folgende Vorgangsweise ist empfehlenswert:
Sauberen Karton auf Planfläche legen, dünn mit Flanschdichtmittel bestreichen und mit Haarlineal abziehen. Dadurch ensteht ein Dichtfilm. Saugpumpengehäuse und Druckpumpengehäuse nur mit der oben liegenden Seite (siehe Skizze) auf den Karton drücken und so den Dichtfilm übertragen. Zwischen Saugpumpengehäuse und Motorgehäuse Papierdichtung geben, kein Loctite 574 verwenden.

Assembly of oil pump

When replacing the oil seals make sure that they are fitted with lips inwards on pressure-pump housing and on pump cover. Seal mating surfaces of the oilpump using a thin film of „Loctite 574".

Caution:

Do not use excess sealant, particles could block oil passages.
Recommended procedure:
Put clean cardboard on a flat surface, coat with thin film of sealing compound and spread out using a straight-edge. This gives a sealing film. Press suction pump and pressure pump housings onto cardboard (see drawing) and thus transfer the sealing film.
Place paper gasket between suction pump housing and crankcase. Don't use Loctite 574 at this point.

Riassemblaggio della pompa dell'olio

In caso di sostituzione dei cortechi dell'albero far attenzione che nel corpo della pompa premente nonché nel coperchio della pompa gli anelli di tenuta vengano montati con gli spigoli verso l'alto. Sulla pompa dell'olio deve essere applicato un sottile strato di ermetico „Loctite 574" tra il corpo della pompa premente e della pompa aspirante e del coperchio della pompa.

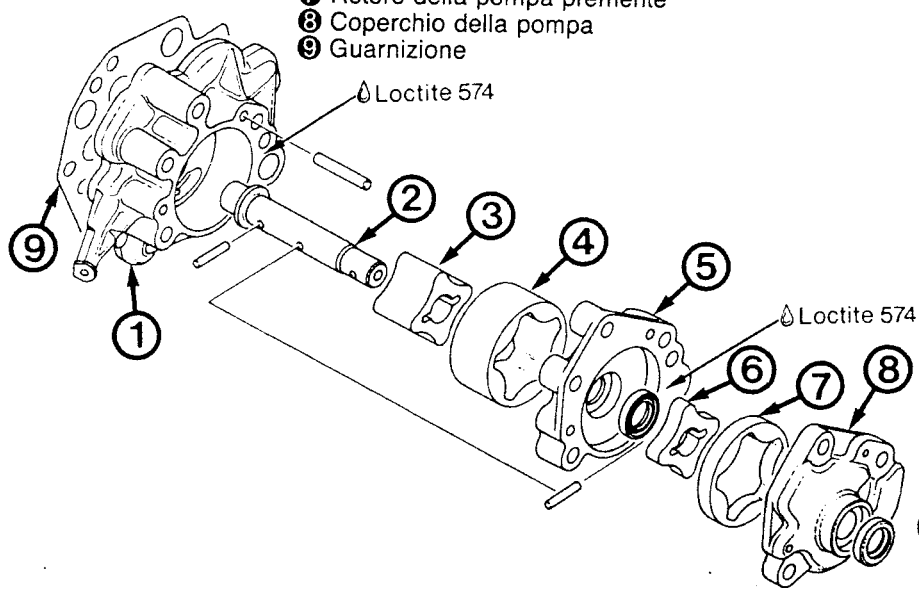
Attenzione:

L' ermetico non deve entrare nei canaletti dell'olio!
Consigliamo procedere come segue:
Mettere un cartone pulito sulla superficie piana, applicare un sottile strato di ermetico per flange e rimuovere con una riga a coltello. In questo modo si crea una pellicola di ermetico. Premere il corpo della pompa aspirante e della pompa premente solo con il lato superiore (vedi schizzo) sul cartone e trasferirvi in questo modo la pellicola di ermetico.
Mettere guarnizione di carta fra il corpo della pompa aspirante ed il carter motore. Non utilizzare Loctite 574.

❶ Saugpumpengehäuse
❷ Pumpenwelle
❸ Saugdrehkolben
❹ Saugpumpenrotor
❺ Druckpumpengehäuse
❻ Druckdrehkolben
❼ Druckpumpenrotor
❽ Pumpendeckel
❾ Dichtung

❶ Suction pump housing
❷ Pump shaft
❸ Suction inner rotor
❹ Suction outer rotor
❺ Pressure pump housing
❻ Pressure inner rotor
❼ Pressure outer rotor
❽ Pump cover
❾ Gasket

❶ Corpo della pompa aspirante
❷ Albero della pompa
❸ Stantuffo rotante della pompa aspirante
❹ Rotore della pompa aspirante
❺ Corpo della pompa premente
❻ Stantuffo rotante della pompa premente
❼ Rotore della pompa premente
❽ Coperchio della pompa
❾ Guarnizione



Saugpumpengehäuse auf rechte Gehäusehälfte legen, Saugpumpenrotor, Pumpenwelle mit Nadelrolle und Saugdrehkolben in Saugpumpengehäuse stecken. Führungshülse ❶ auf Pumpenwelle stecken und Druckpumpengehäuse aufsetzen. Beide Paßstifte 4 x 25,8 in Pumpengehäuse einschieben. Nadelrolle in Pumpenwelle stecken, Druckpumpenrotor und Druckdrehkolben in Druckpumpengehäuse stecken und Pumpendeckel aufsetzen.

Achtung:

Unbedingt Führungshülse ❶ verwenden!
Pumpe mit Innensechskantschrauben M6 mit Federringen anschrauben und von Hand mehrere Male zur Kontrolle durchdrehen.

Getriebe einbauen

Führungshülse ❷ auf Hauptwelle stecken, Hauptwelle und Vorgelegewelle zusammen in Gehäusehälfte durch leichtes Klopfen mit Schonhammer einführen. Auf Lagersitze Gleitpaste zur Verhinderung von Passungsrost auftragen (z. B. Loctite Antiseize).

Porre il corpo della pompa aspirante sul semicarter destro, inserire il rotore della pompa aspirante, l'albero della pompa con il grano e lo stantuffo rotante della pompa aspirante nel corpo della pompa aspirante. Mettere la bussola di guida ❶ sull'albero della pompa e montare il corpo della pompa premente. Inserire i due grani 4 x 25,8 nel corpo della pompa. Inserire il grano nell'albero della pompa, inserire il rotore e lo stantuffo rotante della pompa premente nel rispettivo corpo pompa e montare il coperchio.

Attenzione:

Utilizzare assolutamente una bussola di guida ❶.
Avvitare la pompa completa con brugole M6 con rondelle elastiche e girare più volte a mano per controllo.

Montaggio del cambio

Mettere la bussola di guida ❷ sull'albero secondario, inserire contemporaneamente gli alberi primario e secondario nel semicarter battendo leggermente con un mazzuolo di rame. Applicare della pasta di scorrimento sulle sedi dei cuscinetti per impedire la formazione di „tabacco" (p. es. Loctite Antiseize).

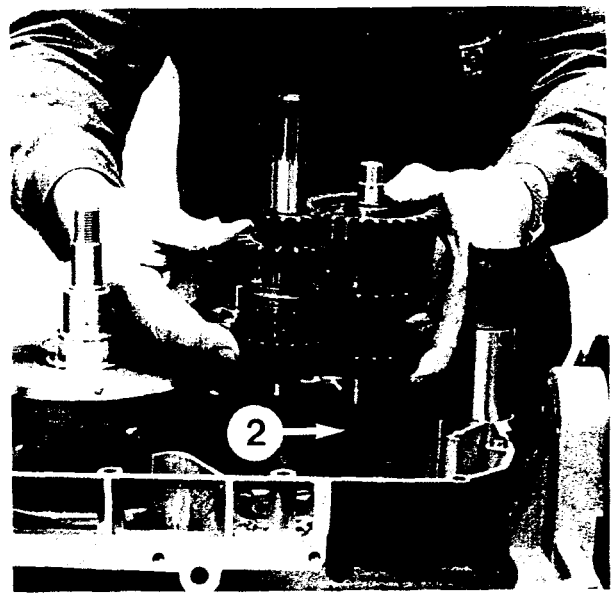
Install suction pump housing in right crankcase half, fit suction outer rotor, pump shaft with pin and suction inner rotor in suction pump housing. Fit guide sleeve ❶ on pump shaft and fit pressure pump housing. Insert both dowel pins 4 x 28,5 in pump housing. Fit pin in pump shaft, mount pressure outer rotor and pressure inner rotor in pressure pump housing, and fit pump cover.

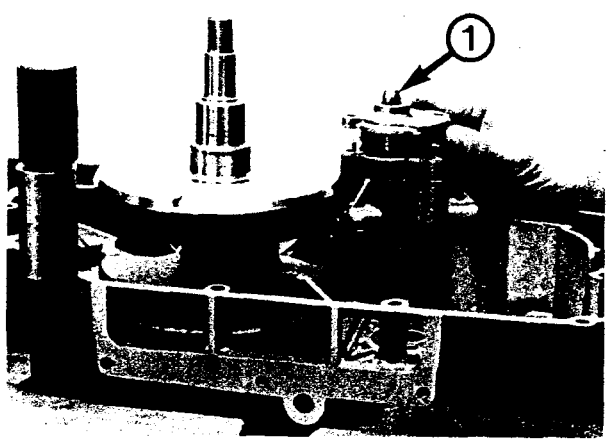
Caution:

Always use guide sleeve ❶.
Fit pump assy with Allen head screws M6 with spring-washers and test by turning several times by hand.

Gear-box assembly

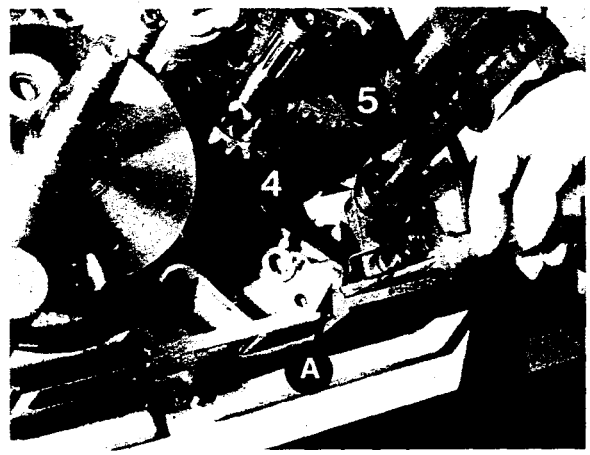
Mount guide sleeve ❷ on mainshaft, insert mainshaft and clutch shaft together in crankcase half, by light taps with a mallet. Apply slide paste (e. g. Loctite Antiseize) on bearing seats to prevent fretting corrosion.





Schaltung einbauen

Indexfeder in Gehäusehälfte einlegen, Schaltwelle, Indexhebel mit Kröpfung nach unten und Anlaufscheibe in die Gehäusehälfte stecken. Indexfeder in Indexhebel einhängen und in der Gehäusenase Ⓐ fixieren. Schaltklinke ❶ nach außen drücken und Schaltwalze ❷ einsetzen. Durch leichten Schlag auf die Schaltwelle rastet der Indexhebel ❸ in die Funktionsstellung ein. Bei Ausführung ohne Leerganganzeige ist unter der Schaltwalze eine Scheibe 12,5 x 21,5 x 2 einzulegen. Distanzhülse und Scheibe auf Schaltwelle schieben, Haarnadelfeder ❹ einhängen, O-Ring ❺ in die Nut der Schaltwelle schieben und Schaltwelle einfetten.

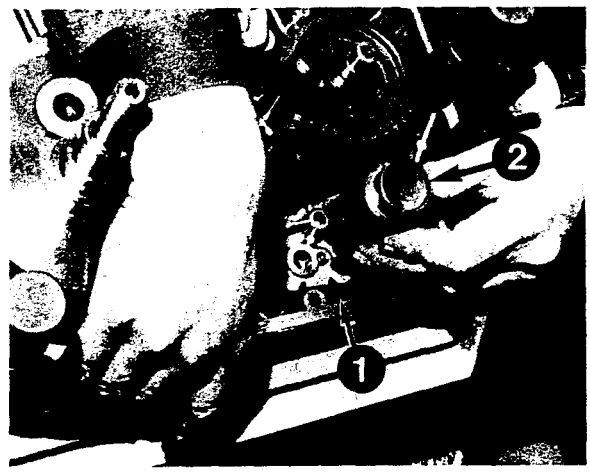


Assembly of gear shift mechanism

Place index spring in crankcase half, together with gear shift shaft, index lever with bend facing downwards and thrust-washer. Suspend index spring in index lever and fix in crankcase nose Ⓐ. Press pawl ❶ outwards and insert shift drum ❷. Tap gently on gear shift shaft so that index lever ❸ engages in operating position. On models without neutral indicator, insert a washer 12,5 x 21,5 x 2 under the shift drum.
Place distance sleeve and washer on shift shaft, hook hairpin spring ❹, place O-ring ❺ in groove of shift shaft and grease shift shaft.

Montaggio del gruppo comando del cambio

Posare la molla index nel semicarter, inserire l'albero cambio, la leva index con il gomito verso il basso e la ralla nel semicarter. Agganciare la molla index alla leva e fissarla nella sporgenza Ⓐ del carter. Premere l'arpionismo ❶ verso l'esterno ed introdurre il desmodromico ❷. Battere leggermente sull'albero cambio in modo che la leva index ❸ si innesti nella posizione di funzionamento.
In caso di esecuzione motore senza spia del folle, uno spessore 12,5 x 21,5 x 2 deve essere inserito sotto il desmodromico.
Infilare il distanziale e la rondella sull'albero cambio, agganciare la molla ❹, mettere l'OR ❺ nella gola dell'albero cambio ed ingrassare l'albero cambio.



Schaltgabel 2. Gang und Schaltgabel 1./3. Gang in Schalträder der Hauptwelle und Schaltwalze einhängen. Schaltgabel 4./5. Gang in Schaltrad der Vorgelegewelle und Schaltwalze einhängen. Beide Schaltstangen einschieben.

Schaltung überprüfen

Vorgelegewelle, Hauptwelle, Schaltwelle, Schaltstangen und Schaltwalze müssen zur Gänze in den Lagern sitzen. Schalthebel auf Schaltwelle aufstecken und alle 5 Gänge der Reihe nach durchschalten. Dabei darf keine der 3 Schaltgabeln unter Druck stehen (siehe Bild Ⓐ. Schaltwelle bis Schaltanschlag nach links bzw. rechts verdrehen. In dieser Position gehalten, muß die Schaltklinke ❶ Spiel haben. Dieses soll in beiden Richtungen gleich groß sein.
Wenn nicht, Schaltwelle, Schaltklinke und Schaltwalze überprüfen bzw. austauschen.

Engage shift fork for 2nd gear and shift fork for 1st/3rd gear in gears of mainshaft and shift drum. Engage shift fork for 4th/5th gear in gear of clutch shaft and shift drum. Slide in both guide pins.

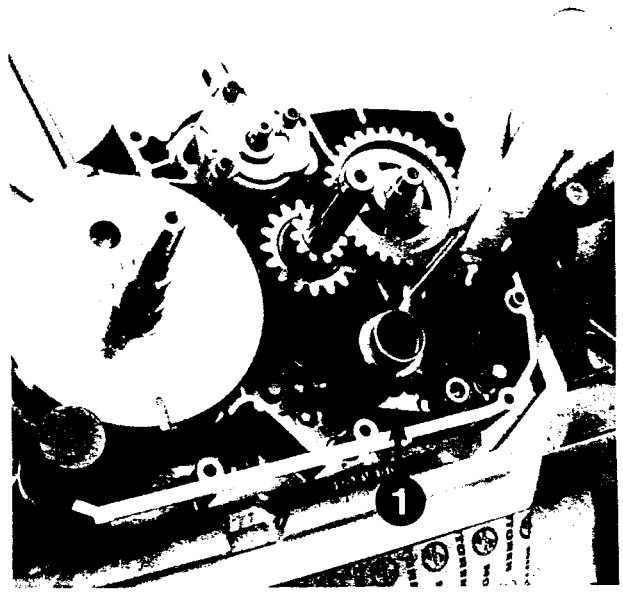
Checking of gear shift mechanism

Clutch shaft, mainshaft, gear shift shaft, guide pins and shift drum must all be pressed fully into position. Fit gear shift lever on shift shaft and shift all 5 gears. When this is done, select, none of the 3 gear shift forks must be under pressure (see ill. Ⓐ).
Turn shift shaft to left and right until stop. In this position, the shift pawl ❶ must have some play which should be equal in both directions.
If not, check shift shaft, shift pawl and shift drum and replace defective parts.

Posizionare le forchette della 2a e della 1a/3a marcia nelle gole degli ingranaggi del cambio dell'albero secondario e nel desmodromico. Posizionare la forchetta della 4a/5a marcia nella gola dell'ingranaggio dell'albero primario e nel desmodromico. Inserire i 2 perni delle forchette.

Controllo del funzionamento del cambio

Gli alberi secondario e primario, l'albero cambio, i perni delle forchette e il desmodromico devono essere ben inseriti nei loro cuscinetti. Mettere la leva cambio sull'albero cambio e innestare tutte le 5 marce, una dopo l'altra. Nessuna delle 3 forchette deve forzare (ill. Ⓐ).
Controllare che il giuoco dell'arpionismo ❶ sia lo stesso in entrambi le direzioni, ruotando l'albero del cambio nei due sensi possibili. Se no, controllare l'albero cambio, l'arpionismo ed il desmodromico. Cambiare se difettoso.



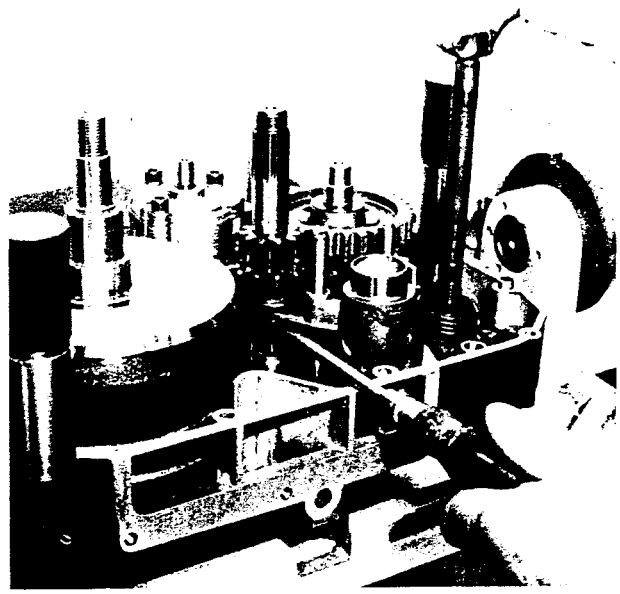


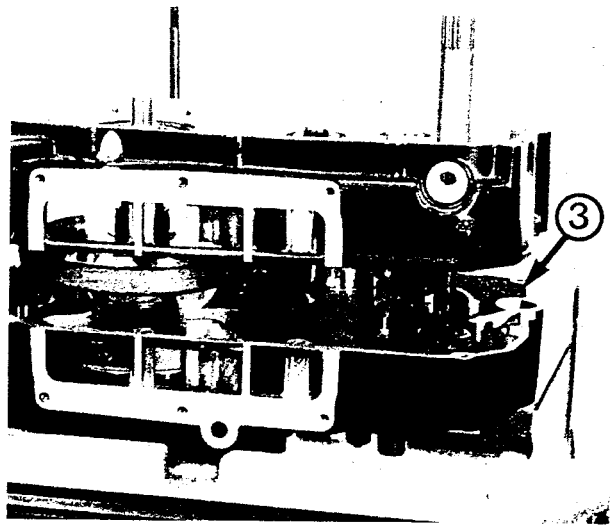
Bild Ⓐ

Ausgleichswelle

Ausgleichswelle ❶ in rechte Gehäusehälfte stecken und erforderliche Ausgleichsscheiben ❷ auf Ausgleichswelle geben. Auf Lagersitz Gleitpaste zur Verhinderung von Passungsrost auftragen (z. B. Loctite Antiseize).

Gehäuse zusammensetzen

In linke Gehäusehälfte Starterwelle montieren. Große und kleine Paßhülse in rechte Gehäusehälfte einsetzen. Erforderliche Ausgleichsscheiben auf Kurbelwelle geben. Auf Lagersitz Loctite Antiseize auftragen. Beide Fixierschrauben mit Distanzhülse von Montagebock herausschrauben. Linke Gehäusehälfte 60—80° C erwärmen, Rillenkugellager der Kurbelwelle und der Ausgleichswelle mit geeignetem Dorn in das Gehäuse montieren. Dichtfläche der rechten Gehäusehälfte mit Flanschdichtmittel „Loctite 574" bestreichen. Den breiteren Ölabscheider ❸ in rechte Gehäusehälfte, den schmalen Ölabscheider in linke Gehäusehälfte entsprechend der Form einlegen und nach innen drücken, um ein Einklemmen in der Dichtfläche zu verhindern. Linke Gehäusehälfte aufsetzen und eventuell mit Schonhammer leicht auf die Motoraufhängungspunkte klopfen. (Nicht auf Dichtfläche klopfen!)

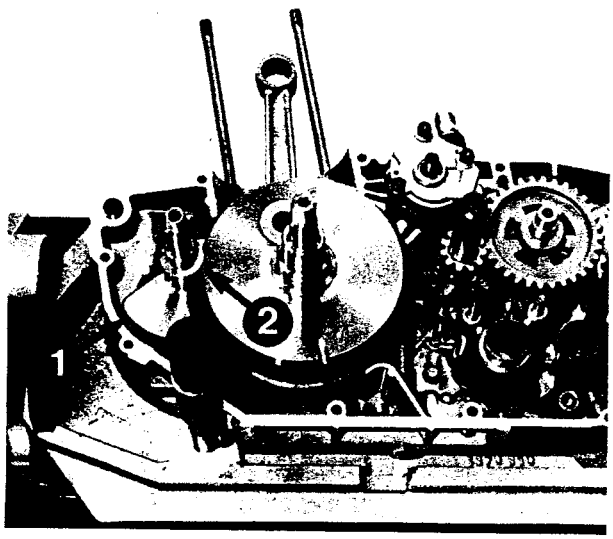


Balance shaft

Fit balance shaft ❶ in right crankcase half and fit shims ❷ as required on balancing shaft. Apply slide paste (e. g. Loctite Antiseize) on bearing seat to prevent fretting corrosion.

Crankcase assembly

Fit starter shaft in left crankcase half. Install large and small dowel pins in right crankcase half. Fit shims on crankshaft if necessary. Apply "Loctite Antiseize" on bearing seats. Unscrew 2 fixing screws with spacers from trestle. Heat left crankcase half to 60—80° C, fit crankshaft and balance shaft ballbearings in crankcase with appropriate jig. Coat sealing surfaces of right crankcase half with "Loctite 574" flange sealing compound. Place large oil separator ❸ in right crankcase half, and small oil separator in left crankcase half, according to shape, avoid trapping between the sealing surfaces. Fit left crankcase half, if necessary tapping gently with a mallet on engine mounting points (do not tap on sealing surfaces!).



Albero di compensazione

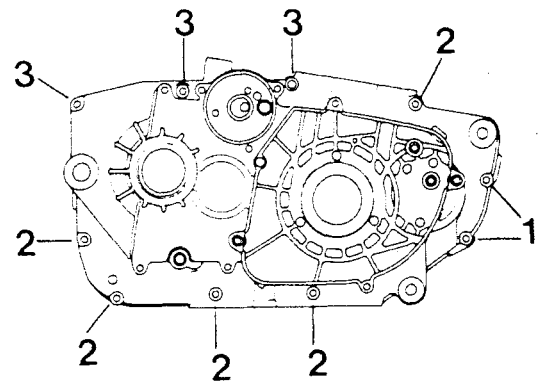
Inserire l'albero di compensazione ❶ nel semicarter destro e mettere i necessari spessori ❷ sull'albero. Applicare della pasta di scorrimento sulla sede del cuscinetto per evitare la formazione di „tabacco" (p.es. Loctite Antiseize).

Riassemblaggio del carter motore

Montare l'albero messa in moto nel semicarter sinistro. Inserire la spina grande e quella piccola nel semicarter destro. Mettere i necessari spessori sull'albero motore. Applicare „Loctite Antiseize" sulla sede del cuscinetto. Svitare le due viti di fissaggio coi distanziatori dalla staffatura.
Riscaldare il semicarter sinistro a 60—80° C, montare i cuscinetti a sfere dell'albero motore e dell'albero di compensazione nel semicarter per mezzo di un tampone appropriato. Verniciare la superficie di tenuta del semicarter destro con ermetico „Loctite 574". Introdurre la spugna più larga ❸ nel semicarter destro e quella stretta nel semicarter sinistro, in dipendenza della loro forma, e premerle verso l'interno al fine di evitare che rimangano bloccate nella superficie di tenuta. Posare sopra il semicarter sinistro e, eventualmente, per mezzo di un mazzuolo di rame, battere leggermente sui punti di sospensione del motore. (Non battere sulla superficie di tenuta!)

Motorgehäuse mit Fixierschrauben wieder am Montagebock befestigen. Gehäuse im Montagebock mit Zünderseite nach oben drehen. Mit 10 Innensechskantschrauben und Federringen Gehäuse zusammenschrauben (Schraubenpositionen lt. Skizze).

Motorgehäuse im Montagebock wieder auf Kupplungsseite drehen. Rillenkugellager der Hauptwelle und der Vorgelegewelle mit geeignetem Stempel in das noch warme Motorgehäuse montieren.
Sämtliche Wellen auf Leichtgängigkeit prüfen, gegebenenfalls mit Schonhammer leicht auf Lagerboden klopfen.



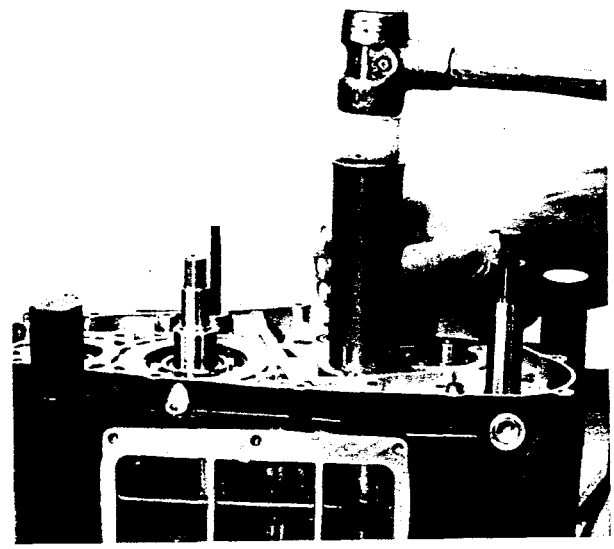
1 = M6 x 40
2 = M6 x 60
3 = M6 x 70

Fit crankcase with fixing screws on assembly trestle. Turn crankcase so that ignition side faces upwards. Connect crankcase halves with 10 Allen screws and spring-washers (see illustration for screw positions).

Turn crankcase on trestle again to clutch side. Fit ball-bearings for mainshaft and clutch shaft in crankcase using an appropriate punch. The crankcase should still be warm.
Check that all shafts turn easily, tapping gently on bearing inner races if necessary.

Fissare nuovamente il carter motore sulla staffatura con le viti di fissaggio. Girare il carter con il lato accensione verso l'alto. Avvitare il carter con 10 brugole e rondelle elastiche (posizioni e misure viti secondo disegno).

Girare sotto-sopra il carter motore sulla staffatura. Con un tampone appropriato, montare i cuscinetti a sfere degli alberi primario e secondario, nel carter ancora caldo. Controllare il funzionamento regolare di tutti gli alberi, eventualmente battere un poco sulle spalle dei cuscinetti con un mazzuolo (di rame o plastica).



Die Rillenkugellager der Vorgelegewelle und Hauptwelle mit entsprechendem Dorn nochmals auf Anschlag klopfen. Vorgelegewelle und Hauptwelle mit entsprechenden Ausgleichsscheiben (A) distanzieren (Spiel 0,1—0,2 mm). Halteblech auflegen, 4 Senkschrauben M5 mit „Loctite 221" bestreichen, einschrauben und festziehen.

Achtung:

Ausgleichsscheiben dürfen nicht verschoben werden. Eventuell mit Fett in Position halten.

Knock ballbearings of clutch shaft and mainshaft firmly into position using an appropriate punch. Use shims (A) as required for clearance between clutch shaft and mainshaft (clearance 0,1—0,2 mm). Fit retaining plate, coat 4 countersunk screws M5 with "Loctite 221", screw in and tighten.

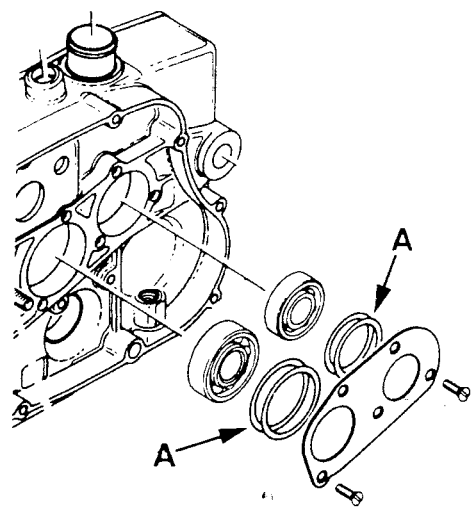
Caution:

Shims must not be displaced. If necessary keep them in position with grease.

Con un tampone appropriato battere nuovamente i cuscinetti a sfere degli alberi secondario e primario in sede. Distanziare gli alberi secondario e primario con appositi spessori (A) (giuoco 0,1—0,2 mm). Applicare la rondella di sicurezza, verniciare 4 viti a testa svasata M5 con „Loctite 221", avvitarle e serrarle.

Attenzione:

Gli spessori non devono essere spostati. Eventualmente incollarli con grasso.



Kickstartereinrichtung

Ausrückschraube ❶ ca. 4 Gänge in Motorgehäuse einschrauben. Kickstarterfeder über Starterwelle schieben und in der Bohrung des Gehäuses einhängen. Sperrrad ❷ mit Verzahnung nach oben auf Starterwelle schieben und in Kickstarterfeder einhängen. Sperrad so auf die Verzahnung der Starterwelle ❸ schieben, daß die Punkte A + B (siehe Skizze) fluchten.

Sperrad in dieser Stellung festhalten, mit aufgesecktem Kickstarterhebel die Starterwelle soweit im Uhrzeigersinn verdrehen, daß die Ausrückschraube zur Gänze eingeschraubt werden kann und somit das Sperrad arretiert (siehe Bild).
Ausrückschraube mit 75 Nm festziehen.

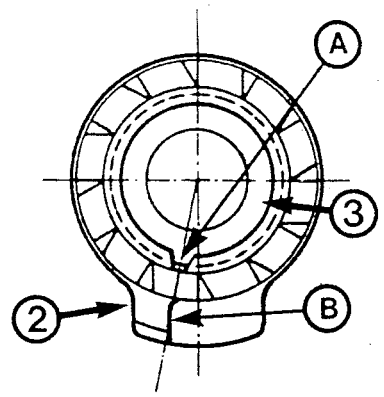
Kickstarter

Turn release screw ❶ into crankcase by about 4 turns. Slide kickstarter spring over starter shaft and hook into hole of crankcase. Slide ratchet gear ❷ onto starter shaft with ratchet teeth outwards, and hook in kickstarter spring. Engage ratchet gear over starter shaft splines ❸ so that points A + B (see drawing) are aligned.

Hold ratchet gear in this position, and with kickstarter lever fitted turn the starter shaft clockwise until the stop screw can be fully installed, thus locking the ratchet gear (see illustration).
Tighten stop screw (75 Nm).

Dispositivo di messa in moto

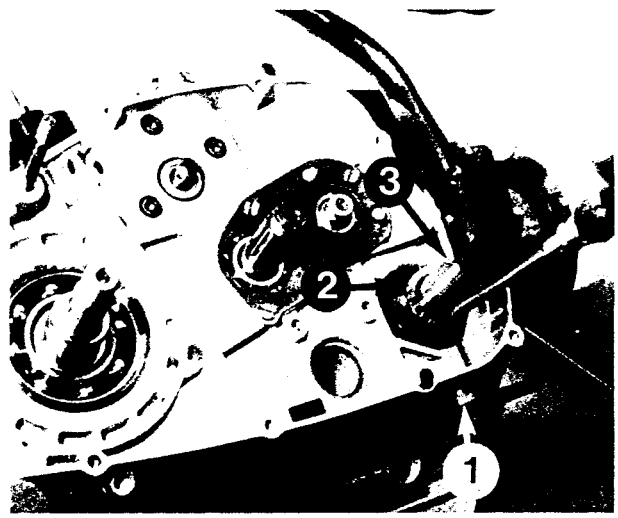
Avvitare per circa 4 passi la vite di distacco ❶ nel carter motore. Spingere la molla sull'albero m/m e agganciarla nel foro del carter. Spingere l'innesto m/m ❷ con la dentatura verso l'alto sull'albero m/m e agganciare la molla nel carter. Spingere l'innesto m/m sulla dentatura dell'albero m/m ❸ in modo che i punti A e B siano allineati (vedi disegno).
Tenere fisso l'innesto m/m in questa posizione, girare l'albero m/m con la leva m/m provvisoriamente inserita, in senso orario fino a che la vite di distacco possa essere completamente avvitata e l'innesto m/m rimanga cosí bloccato.
Serrare la vite di distacco.



A = Ausnehmung im Zahnprofil der Starterwelle
B = Anschlagkante des Sperrades

A = recess in spline of starter shaft
B = stop-edge of ratchet gear

A = incavo nella dentatura dell'albero m/m
B = spigolo di arresto dell'innesto m/m



Sperrad-Anschlag
Ratchet gear stop
Arresto innesto m/m

Elektrostarter-Antrieb, Primärtrieb

Scheibenfedern in Kurbelwelle und Ausgleichswelle einsetzen. Mit Kurbelwellenfixierschraube ❶ Kurbelwelle fixieren. Diese muß in der Ausnehmung der Kurbelwelle exakt einrasten. Schraube nur mit der Hand eindrehen. Ausgleichstrieb (= Gegenrad ❷ mit Ausgleichsrad ❸) so aufsetzen, daß die Markierungen ❹ der beiden Räder übereinstimmen. Freilauf ❺ mit der runden Schulter nach außen (breite L-förmige Anlauffläche nach innen) einlegen. In die Keilnut des Ausgleichsrades ❸ einen Tropfen Loctite 648 geben, eingeölten Innenring aufschieben, beide Nadellager aufschieben und einölen. Freilauf mit Seegerring sichern. Freilaufrad drehend auf die Ausgleichswelle schieben. Federscheibe auflegen und SK-Mutter M14 x 1,5 (SW 22) der Ausgleichswelle mit Loctite 221 sichern und mit 75 Nm festziehen.

Achtung:

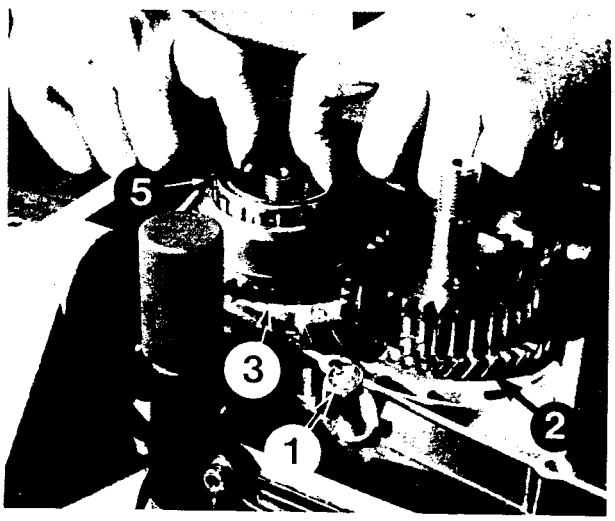
Beim Durchdrehen des Freilaufrades im Uhrzeigersinn muß dieses durch den Freilauf gesperrt werden. Freilaufrad muß 0,2 mm Axialspiel haben. Antriebsrad ❻ aufschieben. Zwischenrad ❼ auf Hauptwelle stecken, Anlaufscheibe auf Starterwelle und Starterrad ❽ mit Verzahnung nach innen aufstecken. Beide Räder durchdrehen und auf Leichtgängigkeit prüfen. Schraubenrad ❾ und Anlaufscheibe ❿ auf Starterwelle schieben. Axiales Spiel des Schraubenrades beträgt 0,2 mm. Ist der Leerweg des Kickstarterhebels zu groß, ist dieses Axialspiel zu überprüfen.
Anlaufscheibe auf Pumpenwelle schieben, Nadelrolle ⓫ in die Welle schieben und Pumpenrad mit Bund nach innen aufstecken.

Electric starter drive, Primary drive

Place Woodruff keys in crankshaft and balance shaft.
Lock crankshaft with crankshaft locking screw ❶. This screw has to engage firmly in the groove in crankshaft. Screw in only by hand.
Fit balancer drive (= counter-gear ❷ with balancer gear ❸) so that marks ❹ of the two gears correspond.
Insert sprag clutch ❺ with the rounded shoulder towards outside (wide L-shaped guide surface towards inside).
Put a drop of Loctite 648 into the keyway of balancer gear ❸, insert lubricated bushing, then the two needle bearings, and lubricate.
Secure sprag clutch with snap-ring.
Push free-wheel gear by turning movement onto balance shaft. Place spring washer and secure hex. nut M14 x 1,5 (wrench 22) of balance shaft with Loctite 221 and tighten to 75 Nm.

Attention:

When turning the free-wheel gear clockwise, it has to be locked by the sprag clutch but must be completely free to turn anticlockwise.
The free-wheel gear must have an axial play of 0,2 mm.
Install drive gear ❻ on crankshaft, intermediate gear ❼ on mainshaft, thrust washer on starter shaft and starter gear ❽ with tooth section inwards.
Check the two gears for easy movement. Fit helical gear ❾ and thrust washers ❿ on starter shaft.
Axial play of helical gear 0,2 mm.
If the free-play of kickstart lever is too much, check this axial play.
Slide thrust washer on pump shaft, place pin ⓫ in shaft and fit pump gear with shoulder inwards.

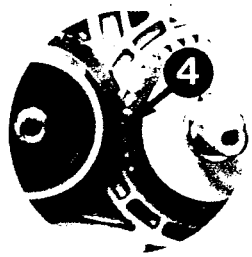


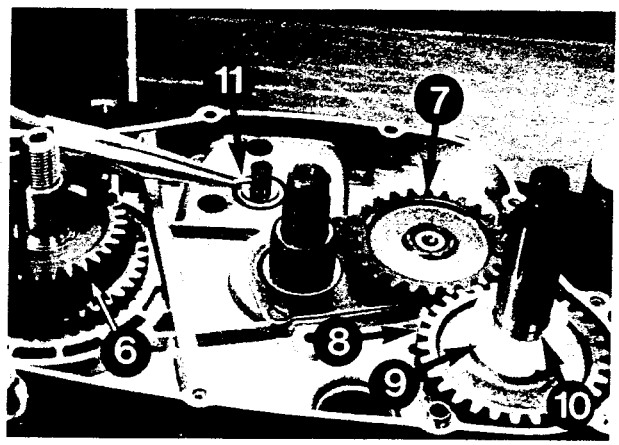
Congegno dell'avviamento elettrico e trasmissione primaria

Mettere le linguette nell'albero motore e nell'albero compensazione. Bloccare l'albero motore con la vite di bloccaggio ❶. Questa vite deve ben inserirsi nell'incastro dell'albero motore. Avvitare solo a mano, senza l'impiego di chiavi.
Montare l'ingranaggio ❷ sull'albero motore, inserire l'ingranaggio ❸ sull'albero di compensazione in modo che i due segni di riferimento ❹ siano allineati.
Inserire la ruota libera ❺ con lo spallamento arrotondato verso l'esterno (superficie di guida col profilo „L" verso l'interno).
Mettere una goccia di Loctite 648 nell'incastro dell'ingranaggio compensazione ❸, inserire la bussola, quindi i 2 cuscinetti a rulli precedentemente lubrificati.
Fissare la ruota libera con seeger. Inserire l'ingranaggio libero sull'albero di compensazione ruotandolo in senso antiorario. Mettere la linguetta e bloccare il dado M14 x 1,5 (chiave da 22) dell'albero compensazione con una coppia di fissaggio di 75 Nm applicando una goccia di Loctite 221 sul filetto.

Attenzione:

Girando l'ingranaggio libero in senso orario, questo deve essere bloccato dalla ruota libera.
L'ingranaggio libero deve avere un giuoco assiale di 0,2 mm.
Montare l'ingranaggio ❻ sull'albero motore, l'ingranaggio m/m ❼ sull'albero secondario, la rondella sull'albero m/m e l'ingranaggio m/m ❽ con la sezione dentata verso l'interno.
Controllare che i 2 ingranaggi ruotino liberamente.
Infilare l'ingranaggio contagiri ❾ e le rondelle ❿ sull'albero m/m.
Giuoco assiale dell'ingranaggio contagiri 0,2 mm. Se il giuoco della leva m/m è eccessiva, controllare il giuoco assiale suddetto.
Infilare la rondella sull'albero pompa, inserire il grano ⓫ nell'albero e montare l'ingranaggio pompa con lo spallamento verso l'interno.





Kupplung

Anlaufscheibe 20,2 x 35 x 3 auf Vorgelegewelle schieben. Vorgelegewelle mit „Loctite Antiseize" bestreichen. Lagerhülse und eingeölte Nadelkäfige aufschieben. Kupplungskorb und Anlaufscheibe 20,2 x 35 x 3 aufschieben und vormontiertes Kupplungspaket in Kupplungskorb einlegen. Als Montagehilfe 2 Sechskantschrauben M5 in Stützteller einschrauben, Gang einlegen, um durch Verdrehen der Hauptwelle ein Übereinstimmen der Verzahnung von Mitnehmer und Vorgelegewelle zu erreichen.

Achtung:

Zahnprofil der Vorgelegewelle muß ca. 1 mm aus dem Mitnehmer vorstehen.

Mitnehmerfixierung (277 887) aufstecken, Sicherungsblech auflegen, SK-Mutter M18 x 1,5 mit „Loctite 648" sichern und mit 120 Nm festziehen. Kurbelwellenfixierschraube lockern, Kurbelwelle durchdrehen und sämtliche Räder auf Leichtgängigkeit kontrollieren. Kurbelwelle wieder fixieren. Sicherungsblech aufbiegen und Mitnehmerfixierung abnehmen. 6 Kupplungsfedern einsetzen, Druckplatte mit Drucklager nach außen auflegen und mit 6 Sechskantschrauben M5 x 25 und Federringen kreuzweise festziehen. 2 Paßhülsen im Gehäuse einsetzen.

Clutch

Slide thrust-washer 20,2 x 35 x 3 over clutch shaft, coat shaft with "Loctite Antiseize", install bushing and lubricated needle-cages. Slide on clutch drum and thrust-washer 20,2 x 35 x 3, fit preassembled set of clutch plates in clutch drum. To facilitate assembly screw 2 hex. screws M5 into pressure plate. Shift gear so that by turning the mainshaft the clutch hub and clutch shaft splines engage.

Caution:

Clutch shaft splines must project by about 1 mm from clutch hub.

Using clutch hub locking tool (277 887), place tab-washer, secure hex. nut M18 x 1,5 with "Loctite 648" and tighten to 120 Nm. Slacken crankshaft locking screw, turn crankshaft and check all gears for easy movement. Lock crankshaft again. Bend up tab-washer and remove clutch hub locking tool. Install the 6 clutch springs, fit thrust-plate with thrust-bearing outwards and tighten crosswise with 6 hex. screws M5 x 25 and spring washers. Insert 2 dowel pins in crankcase.

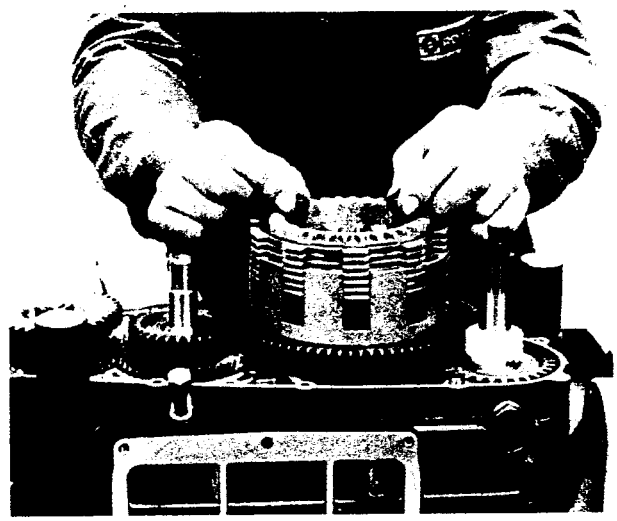
Frizione

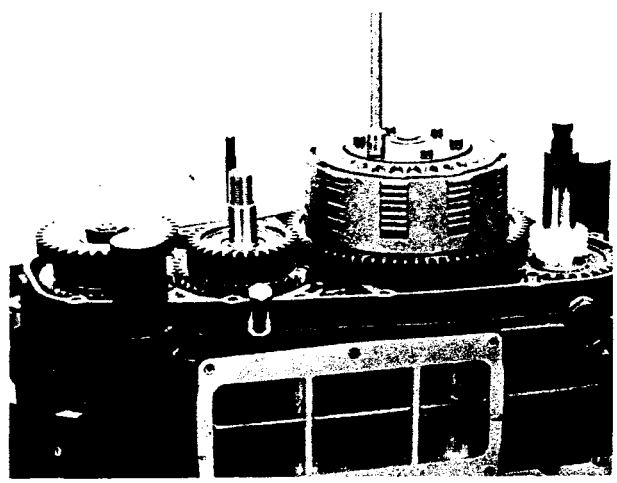
Spingere la ralla 20,2 x 35 x 3 sull'albero primario e quindi la bussola del cuscinetto e le gabbie a rullini oliate. Montare la campana frizione e la ralla 20,2x35x3 e inserirvi il pacco frizione premontato. Come aiuto al montaggio avvitare 2 viti a testa esagonale M5 nel tamburello, innestare una marcia per ottenere che, girando l'albero secondario la dentatura del tamburello e dell'albero primario ingranano.

Attenzione:

Il profilo dentato dell'albero primario deve sporgere di circa 1 mm dal tamburello.

Attaccare l'attrezzo di bloccaggio frizione (277 887), applicare la rondella di sicurezza, assicurare il dado esagonale M18 x 1,5 con „Loctite 648" e serrare con 120 Nm. Allentare la vite di bloccaggio dell'albero motore, girare l'albero motore e controllare il regolare funzionamento di tutte le ruote dentate. Bloccare nuovamente l'albero motore. Piegare la rondella di sicurezza e togliere l'attrezzo bloccaggio frizione. Inserire 6 molle di spinta, applicare il piattello col cuscinetto di spinta verso l'esterno e serrare diagonalmente con 6 viti a testa esagonale M5 x 25 e rondelle elastiche. Inserire 2 spine nel carter.



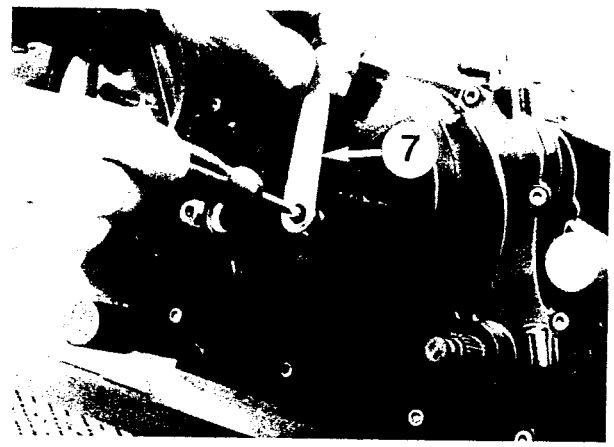


Kupplungsdeckel montieren

WD-Ringe der Kurbelwelle und der Starterwelle kontrollieren, gegebenenfalls neue WD-Ringe mit Montagestempel (276 322 bzw. 276 330) montieren (Dichtlippen nach innen). Drehzählertrieb montieren (siehe Seite 32). Dichtfläche mit Flächendichtmittel „Loctite 574" gleichmäßig dünn bestreichen. Kupplungsdeckel aufsetzen und mit 12 Innensechskantschrauben lt. Skizze montieren. Drahtsprengring auf Starterwelle und O-Ring auf Schaltwelle montieren.

Einstellen der Kupplung

Beide Kunststoff-Verschlußschrauben ❺ herausschrauben, Kontermutter SW 11 ❻ mit Konterschlüssel ❼ lockern. Gewindestift M8 ❽ auf Anschlag eindrehen, dann ½ Umdrehung herausschrauben und Kontermutter ❻ wieder festziehen. Am Hebel ❾ für Kupplungsseil muß ein Leerweg von ca. 6 mm sein. Verschlußschrauben wieder einschrauben. Ab Mot.-Nr. 194.203 werden die Verschlußschrauben ❺ mit O-Ring 18—1,5 verbaut.



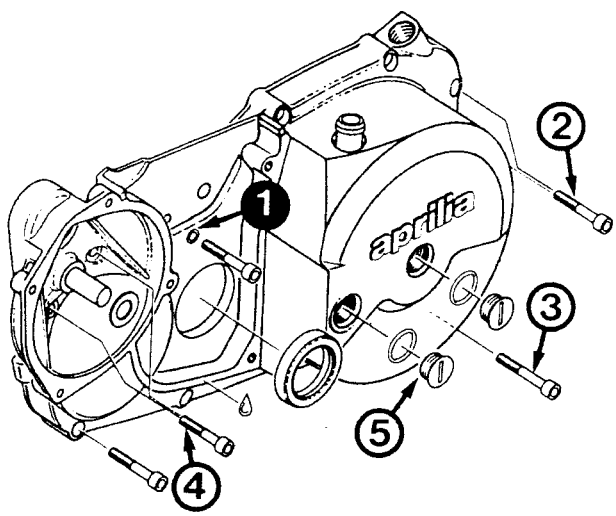
❶ Dichtring 6,2 x 8,9 x 1 / sealing ring / anello gurarnizione
❷ M6 x 35
❸ M6 x 40
❹ M6 x 30

Fitting the clutch cover

Check oil seals of crankshaft and starter shaft, fitting new seals if necessary with assembly jigs (276 322, 276 330 resp.) (sealing lips towards inside). Mount revolution counter drive (see page 32). Apply "Loctite 574" in an even film over joint face. Fit clutch cover and fix with 12 Allen screws according to illustration. Fit circlip on starter shaft and O-ring on shift shaft.

Clutch adjustment

Unscrew the 2 plastic plugs ❺, loosen lock-nut 11 ❻ with wrench ❼. Turn adjustment screw M 8 ❽ fully inwards, then slacken by ½ turn, finally tighten lock-nut ❻ again.
The lever ❾ for clutch cable must have approx. 6 mm free-play.
Tighten plugs again.
From engine no. 194.203 the plugs ❺ are fitted with O-ring 18—1,5.

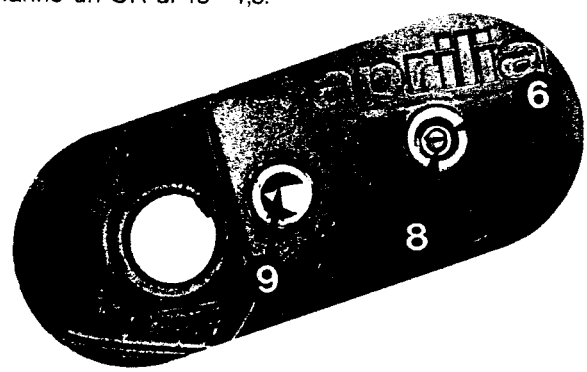


Montaggio del coperchio frizione

Controllare i cortechi dell'albero motore e dell'albero m/m, se necessario montare nuovi cortechi, con tampone di montaggio 276 322 risp. 276 330 (labbro di tenuta verso l'interno). Montare il comando contagiri (vedi pag. 32). Applicare uno strato sottile e uniforme di ermetico „Loctite 574" sulla superficie di tenuta. Posarvi sopra il coperchio frizione e montarlo con 12 brugole secondo il disegno. Montare il seeger sull'albero m/m e l'OR sull'albero cambio.

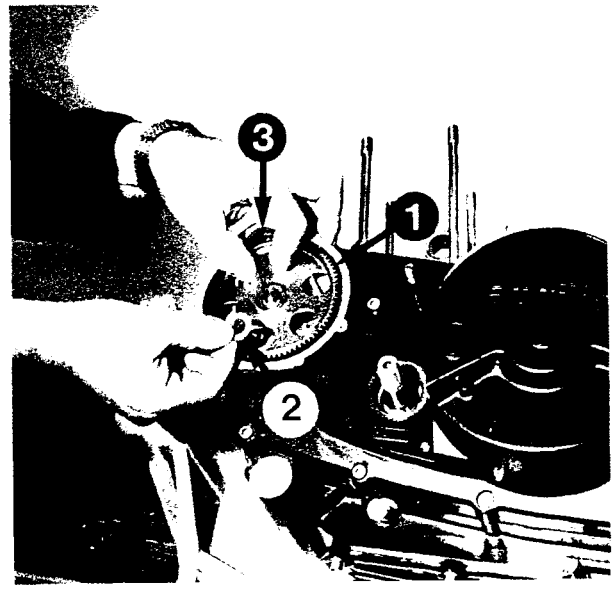
Registrazione della frizione

Svitare le 2 viti in materiale plastico ❺, allentare il controdado 11 ❻ con chiave registro frizione ❼. Avvitare il prigioniero M8 ❽ al fondo, poi svitarlo per ½ giro, e riserrare il controdado ❻.
Alla leva ❾ per la trasmissione frizione bisogna sentire un giuoco di ca. 6 mm. Serrare le 2 viti in materiale plastico.
Nota:
A partire del n. motore 194.203, le viti in plastica ❺ hanno un OR di 18—1,5.



Zwischenrad montieren

Anlaufscheibe auf Lagerbolzen geben, Lagerbolzen mit „Loctite Antiseize" bestreichen, Zwischenrad ❶ aufstecken und Zahnflankenspiel kontrollieren. Anlaufscheibe ❷ auflegen. Zahnrad einölen.
Zwischenrad muß sich im Uhrzeigersinn durchdrehen lassen, nach links muß es sperren.
Axialspiel des Zwischenrades kontrollieren (Soll = 0,2 mm).
O-Ring in Startertriebdeckel legen und mit 4 Innensechskantschrauben M5 x 16 festschrauben.
Bei Ausführung ohne E-Starter ist die Öffnung ❸ im Kupplungsdeckel mit einer Verschlußscheibe verschlossen.



Assembly of idler gear

Place thrust washer over journal and coat with "Loctite Antiseize", fit idler gear ❶ and check backlash. Fit thrust washer ❷.
Lubricate gear.
The idler gear must turn freely clockwise, but must lock when turned counter-clockwise.
Check axial play of idler gear (should be 0,2 mm).
Place O-ring in starter drive cover and fix with 4 Allen head screws M5 x 16.
On engines without electric starter, the starter aperture has a plain cover ❸.

Montaggio dell'ingranaggio intermedio motorino/ruota libera

Mettere la rondella sulla spina nel coperchio frizione, coprire la spina di „Loctite Antiseize", montare l'ingranaggio intermedio ❶ e controllare il giuoco dei fianchi denti. Posare la ralla ❷. Lubrificare l'ingranaggio.
L'ingranaggio deve girare in senso orario e bloccarsi nel senso contrario.
Controllare il giuoco assiale dell'ingranaggio intermedio (dovrebbe essere 0,2 mm).
Posare l'OR nel coperchio dell'avviamento elettrico e fissare il coperchio con 4 brugole M5 x 16.
Sui motori senza avviamento elettrico, il foro ❸ nel coperchio frizione è coperto da un tappo.

Ölsumpfdeckel montieren

Sämtliche Dichtungen kontrollieren, gegebenenfalls erneuern. Gummidichtung ❶ auf Ölsieb ❷ kleben und so einlegen, daß die Stege ❸ der Gummidichtung auf den Stegen des Ölsumpfdeckels aufliegen. O-Ringe ❹ u. ❺ einlegen und Ölsumpfdeckel mit 6 Innensechskantschrauben und Federringen montieren. Ölablaßschraube und Magnetschraube eindrehen.

Ölfilter montieren

Motor mit Zündungsseite nach oben schwenken. Dichtfläche des Druckhalteventils ❻ kontrollieren, gegebenenfalls erneuern. Zusammengebautes Druckhalteventil einschrauben. O-Ring des Ölfiltereinsatzes einölen und mit O-Ring-Seite nach innen einsetzen. Ölfilterdeckel samt O-Ring mit 3 Innensechskantschrauben montieren. ❼ = Anschluß für Öldruckmanometer.

Kettenrad montieren

Verzahnung von Hauptwelle und Kettenrad entfetten, mit „Loctite 221" bestreichen und Kettenrad mit Bund nach innen montieren. Zahnprofil der Hauptwelle ❽ muß ca. 1 mm vorstehen. Sicherungsblech auflegen, Sechskantmutter M20 x 1,5 mit „Loctite 221" bestreichen, mit Freistellung nach unten montieren und festziehen. Auszugsdrehmoment 100 Nm. Sicherungsblech aufbiegen.

Fitting the oil sump cover

Check all gaskets, replace if necessary. Stick rubber gasket ❶ to oil strainer ❷ and position it so that the webs ❸ of the gasket rest allong the ribs of the oil sump cover. Place O-rings ❹ and ❺ and fit oil sump cover with 6 Allen screws and spring-washers. Install oil drain and magnetic screws.

Fitting the oil filter

Turn engine so that ignition side faces upwards. Check sealing surface of pressure retaining valve ❻, replace if necessary. Install assembled pressure-retaining valve. Lubricate O-ring of oil filter element and fit it with O-ring side inwards. Fit oil filter cover together with O-ring with 3 Allen-head screws. ❼ = connection for oil pressure gauge.

Fitting of sprocket

Degrease splines of mainshaft and sprocket, coat with "Loctite 221" and fit sprocket with shoulder facing inwards. Mainshaft splines ❽ must project by about 1 mm. Fit tab washer, and install the hex. nut M20 x 1,5 (recessed side inwards) using "Loctite 221". Tightening torque 100 Nm. Bend up tab-washer.

Montaggio del coperchio della coppa dell'olio

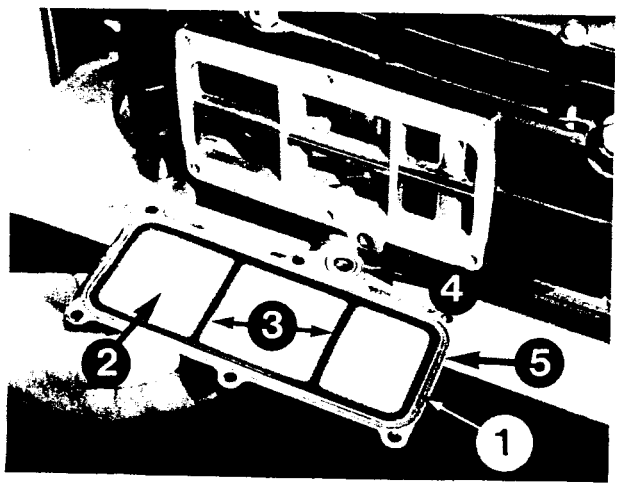
Controllare tutte le guarnizioni, se necessario sostituirle. Incollare la guarnizione di gomma ❶ sul retino olio, posare il retino in modo che le costole della guarnizione di gomma si trovino sopra quelle della coppa dell'olio Inserire gli OR ❹ e ❺ e montare il coperchio con 6 brugole e rondelle elastiche. Avvitare la vite spurgo olio e la vite magnetica.

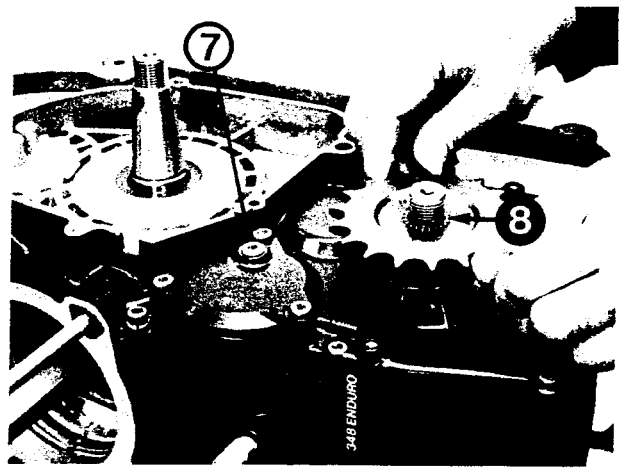
Montaggio del filtro dell'olio

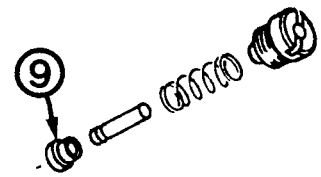
Girare il motore con il lato di accensione verso l'alto. Controllare la superficie di tenuta della valvola regolatrice di pressione ❻, se necessario sostituirla. Avvitare la valvola regolatrice di pressione premontata. Oliare l'OR della cartuccia del filtro e montarlo con il lato OR verso l'interno. Montare il coperchio, compreso l'OR, con 3 brugole. ❼ = raccordo per manometro di pressione olio.

Montaggio del pignone catena

Sgrassare le dentature dell'albero secondario e del pignone, applicare „Loctite 221" e montare il pignone con la spalla verso l'interno. Il profilo della dentatura dell'albero secondario ❽ deve sporgere di circa 1 mm. Inserire la rondella di sicurezza, verniciare il dado esagonale M20 x 1,5 con „Loctite 221", montarlo con il lato scaricato verso il basso e serrarlo. Coppia di serraggio 100 Nm. Piegarvi sopra la rondella di sicurezza.



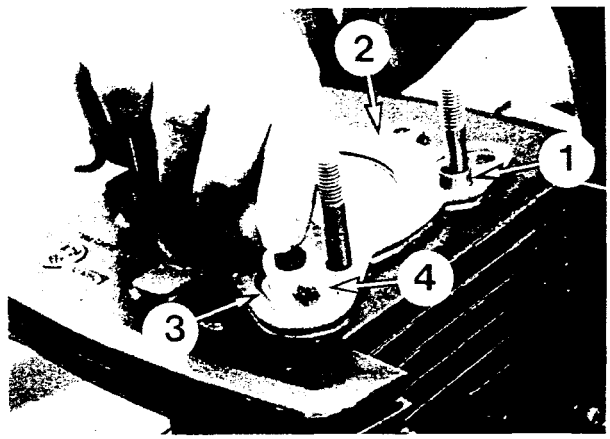




Montagering entfernen und Zylinder auf Paßhülsen stecken. 2 Paßhülsen ❶ oben in den Zylinder stecken, Zylinderkopfdichtung ❷ auflegen, O-Ring ❸ mit O-Ring-Abstützung ❹ in Ausnehmung der Zylinderkopfdichtung einlegen und kompletten Zylinderkopf aufsetzen. Zylinderkopf mit 3 Bundmuttern M10 ❺, 1 Hutmutter M10 ❻ mit 35 Nm und 2 Bundmuttern M8 ❼ mit 20 Nm festziehen. Position der Hutmutter in Fahrtrichtung rechts hinten.

Achtung:

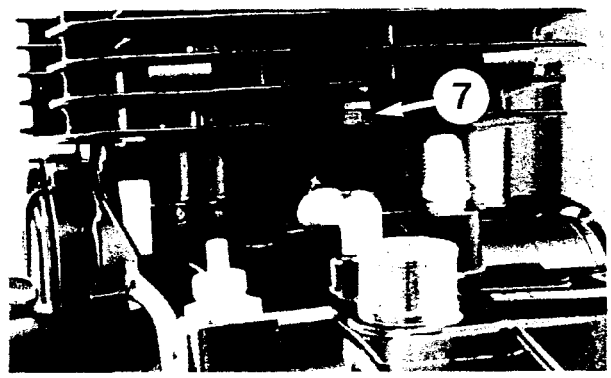
Zylinderkopfmuttern kreuzweise festziehen. Nach den ersten 500 km Muttern in kaltem Zustand nachziehen.



Remove piston ring clamp and fit cylinder on dowel pins. Insert 2 dowels ❶ on cylinder top, fit cylinder head gasket ❷, place O-ring ❸ with O-ring retainer ❹ in recess of cylinder head gasket and mount complete cylinder head. Fasten cylinder head with 3 collar-nuts M10 ❺, 1 cap-nut M10 ❻ at 35 Nm and 2 collar-nuts M8 ❼ at 20 Nm. Position of cap-nut, in direction of travel, rear, right hand side.

Attention:

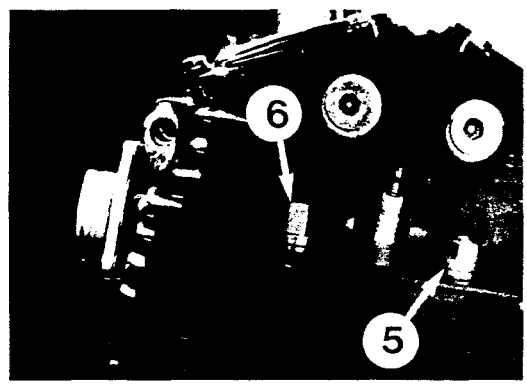
Only when the engine is cold, tighten cylinder head nuts crosswise. Re-torque after first 500 km/300 miles.



Togliere lo stringifasce dal pistone e montare il cilindro sulle spine nel carter. Inserire 2 spine ❶ in alto del cilindro, porre la guarnizione testa cilindro ❷, l'OR ❸ ed il sostegno OR ❹ nel ritaglio della guarnizione e montare la testa completa. Serrare la testa con 3 dadi M10 ❺, 1 dado cieco M10 ❻ con 35 Nm e 2 dadi con spallamento M8 ❼ con 20 Nm. Posizione del dado cieco, dietro, a destra, visto in direzione di marcia.

Attenzione:

Serrare a croce i dadi della testa. Riserrare dopo i primi 500 km a motore freddo.



Ventilsteuerung

O-Ring, Steuerritzel ❶ und Federring auf Kurbelwelle schieben, SK-Mutter M16 x 1,5 mit „Loctite 221" sichern, aufschrauben und mit 100 Nm festziehen. Steuertriebgehäuse ❷ im gesamten Bereich des Kupplungsdeckels mit dauerelastischer Silicongummi-Dichtmasse bestreichen und aufstecken. Steuertriebgehäuse mit 2 Innensechskantschrauben M6 ❸ und Federringen sowie Scheibe 6,4 x 30 x 3 und Distanzmutter M6 ❹ befestigen. Bandspannrolle ❺ mit SK-Schraube M8 festschrauben. Distanzhülse 8,4 x 22 x 11 und Spannrolle auf Stiftschraube M8 schieben und mit SK-Mutter und Federring vorerst leicht befestigen.

Achtung:

Für Type 348, Steuerritzel mit der um 90° versetzten Keilnut Ⓑ auf Kurbelwelle schieben (siehe Bild); für Type 504—560 ist die werkseitig markierte Keilnut Ⓐ zu verwenden.

Valve train

Fit O-ring, timing pulley ❶ and spring-washer on crankshaft, secure hex. nut M16 x 1,5 with "Loctite 221" and tighten to 100 Nm. Coat timing gear cover ❷ over whole clutch cover area with RTV Silicon compound, and fit it. Fix timing belt cover with 2 Allen-head screws M6 ❸ and spring washers, washer 6,4 x 30 x 3 and spacer nut M6 ❹. Fix guide pulley ❺ with hex. screw M8. Slide distance-sleeve 8,4 x 22 x 11 and tensioner pulley on stud M8, and tighten gently with hex. nut and spring washer.

Attention:

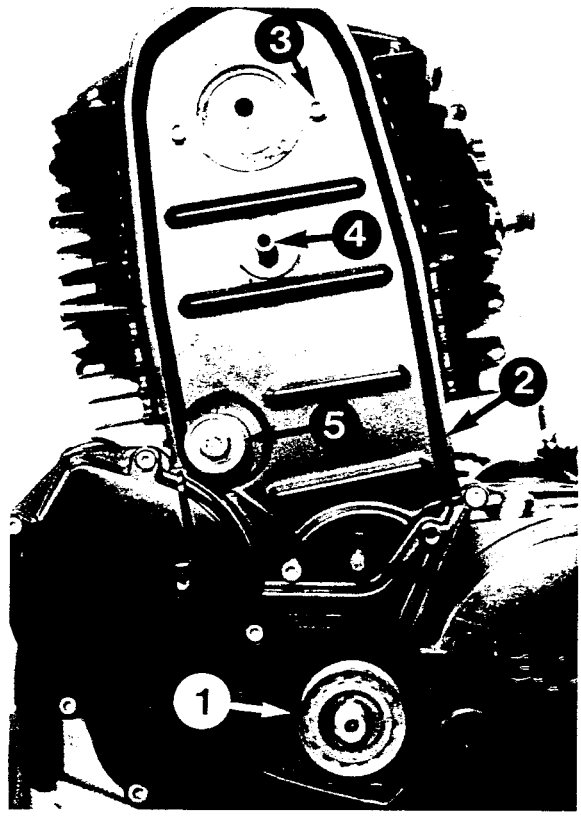
For type 348, place timing pulley on crankshaft using keyway Ⓑ which is displaced by 90° (see illustration). For types 504—560, use keyway Ⓐ marked by factory.

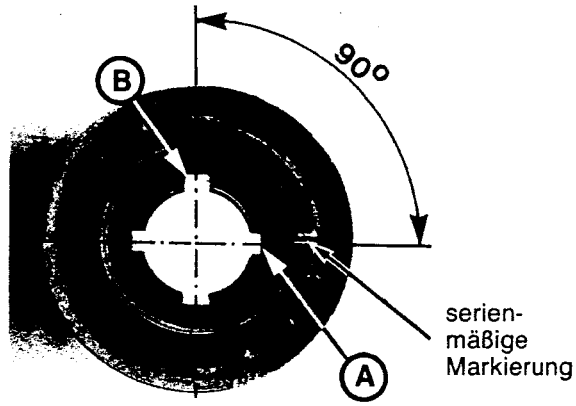
Distribuzione valvole

Infilare l'OR, la puleggia ❶ e la rondella elastica sull'albero motore, avvitare il dado M16 x 1,5 trattato con „Loctite 221", serrarlo con 100 Nm. Applicare ermetico silicone sul carter distribuzione ❷ in tutto l'ambito per il coperchio frizione e montarlo. Montare il carter distribuzione con 2 brugole M6 ❸ e rondelle elastiche, la rondella 6,4 x 30 x 3 ed il dado distanziale M6 ❹, ed il rullo tenditore ❺ con vite M8. Infilare lo spessore 8,4 x 22 x 11 ed il rullo tenditore sul prigioniero M8 e fissare leggermente con dado e rondella elastica.

Attenzione:

Per il tipo 348 inserire la puleggia distribuzione sull'albero motore utilizzando la golla Ⓑ posizionata a 90° dal segno di riferimento (verdi ill). Per i tipi 504—560 utilizzare la gola Ⓐ.

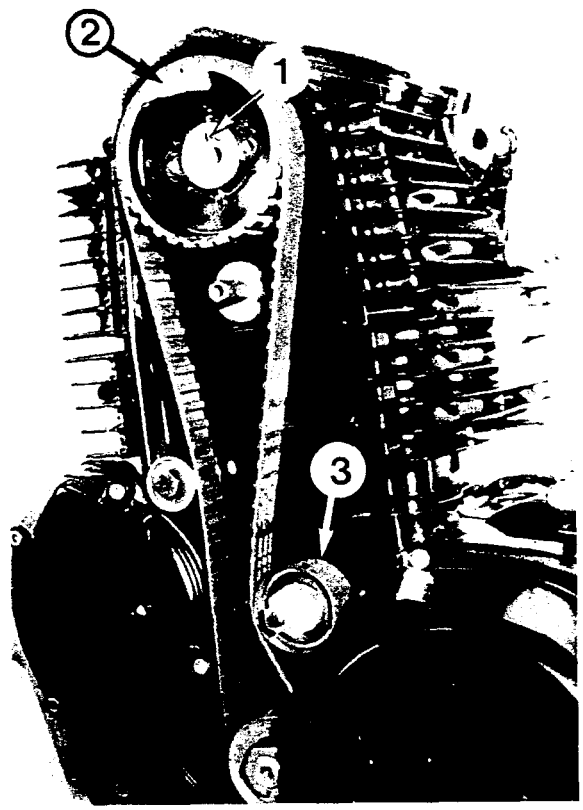




Anlaufscheibe 20,2 x 35 x 3 und Steuerrad auf Nockenwelle schieben. Markierung ❶ am Steuerrad muß mit Markierung auf der Nockenwelle übereinstimmen. Farbmarkierung ❷ gilt für ideale Startposition für Kickstarter. Sichtbar am Steuertriebdeckel.

Achtung:

Steuerrad keinesfalls auf Nockenwelle aufklopfen, da sonst das Nadellager beschädigt wird.
Gegebenenfalls Steuerrad mit Sechskantschraube M8 x 30 hineinziehen.
❸ = Spannexzenter für Riemenspannung.



Slide thrust-washer 20,2 x 25 x 3 and timing pulley on to camshaft. Mark ❶ on timing pulley must align with mark on camshaft. Colour mark ❷ means ideal crankshaft position for kickstarting. Visible through timing belt cover.

Caution:

Never knock timing pulley onto camshaft, because this can damage the needle bearing.
If necessary, draw the pulley over the splines using hex. srew M8 x 30.
❸ = eccentric for belt tensioning.

Montare la ralla 20,2 x 35 x 3 e la puleggia distribuzione sull'albero a camme. La marchiatura ❶ sulla puleggia distribuzione deve trovarsi in corrispondenza con la marchiatura sull'albero a camme.
La marchiatura ❷ serve al posizionamento ideale di partenza dell'albero a camme e quindi dell'albero motore, tramite l'apposito oblò, per l'operazione di messa in moto a pedale.

Attenzione:

Non montare la puleggia distribuzione sull'albero a camme battendola con un martello o altro, altrimenti si danneggerebbe il cuscinetto a rulli.
Inserire eventualmente la puleggia distribuzione con una vite esag. M8 x 30.
❸ = eccentrico per tensione della cinghia.

Zahnriemen montieren

Beim Auflegen des Zahnriemens muß die Kurbelwelle unbedingt mit der Kurbelwellenfixierschraube ❻ in OT-Stellung fixiert sein. Steuerrad mit Markierung (lt. Skizze) in Position bringen und Zahnriemen so auflegen, daß Schrift am Zahnriemen lesbar ist.
Steuerrad ❶ mit Scheibe ❷, Spannscheibe ❸ und SK-Schraube M8 x 30 ❹ (mit „Loctite 221") einschrauben.

Achtung:

Spannscheibe ❸ in richtiger Position montieren (siehe Skizze).

Zahnriemen spannen (nur bei kaltem Motor)

Spannexzenter so weit nach links verdrehen, daß bei einem Druck von 20 N zwischen Zahnriemen und Bandspannrolle ein Abstand von 6 mm entsteht. Sechskantmutter M8 des Spannexzenters in dieser Position festziehen. SK-Schraube M8 x 30 für Steuerrad mit 35 Nm festziehen. Kurbelwellenfixierschraube entfernen, Innensechskantschraube M8 mit Dichtring einschrauben. Steuertriebdeckel mit 4 Innensechskantschrauben M6 montieren.
Achslinie ❼ muß bei richtiger Einstellung durch die Nockenwellenmitte in Verbindung der beiden Markierungen ❺ verlaufen.

Fitting of tooth belt

When fitting the tooth belt, the crankshaft must be fixed with crankshaft locking screw ❻ at T. D. C. position. Rotate pulley to align timing marks (as shown on drawing) and mount tooth belt so that the lettering on the belt can be read.
Fix timing pulley ❶ with shim ❷, spring washer ❸ and hex. screw M8 x 30 ❹ (with "Loctite 221").

Attention:

Fit spring washer ❸ in correct position (see illustration).

Tensioning of tooth belt (only on cold engine)

Turn tensioner eccenter as far to the left as to obtain a gap of 6 mm between tooth belt and guide pulley when applying a pressure of 20 N.
Tighten hex. nut M8 of tensioner eccenter in this position. Tighten hex. screw M8 x 30 for timing pulley at 35 Nm.

Remove crankshaft fixation screw, insert Allen screw M8 with gasket. Fix timing belt cover with 4 Allen screws M6.
The centre line ❼ must align, if valve timing ist correct, with camshaft centre and the 2 marks ❺.

Montaggio della cinghia dentata

Al montaggio della cinghia dentata, l'albero motore deve assolutamente essere bloccato in posizione PMS con l'apposita vite di bloccaggio ❻.
Posizionare la puleggia distribuzione (vedi disegno) e montare la cinghia in modo che si possano leggere le scritte stampigliate sulla cinghia stessa.
Se si riutilizza la cinghia, attenzione a prevedere lo stesso senso di rotazione precedentemente rilevato e contrassegnato (rif. pagina 3).
Montare la puleggia distribuzione ❶, la rondella ❷, la rondella elastica ❸ e fissare con la vite a testa esag. M8 x 30 ❹ (ungere con „Loctite 221").

Attenzione:

Montare la rondella elastica ❸ nella posizione corretta (vedi schizzo).

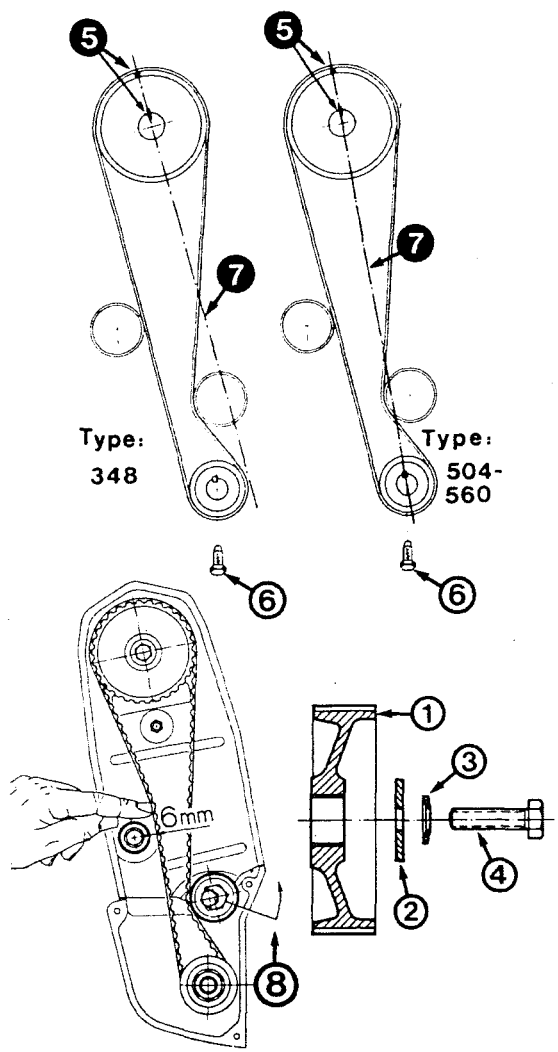
Tensione della cinghia dentata (solo a motore freddo)

Girare l'eccentrico tenditore a sinistra fino a che ci sia una distanza di 6 mm fra il rullo tenditore e la cinghia, applicando una pressione di 20 N. Serrare il dado M8 dell'eccentrico tenditore in questa posizione. Serrare la vite a testa esag. M8 x 30 della puleggia distribuzione con 35 Nm.
Togliere la vite di bloccaggio albero motore, avvitare la brugola M8 con la guarnizione.
Montare il coperchio distribuzione con 4 brugole M6.
L'asse centrale ❼ deve corrispondere, se la fasatura delle valvole è giusta, con il centro dell'albero a camme ed i 2 segni di riferimento ❺.

Attenzione:

La tensione della cinghia aumenta a motore caldo, pertanto la registrazione va eseguita esclusivamente a motore freddo.

❺ Markierungen / marks / contrassegni
❼ Verlauf der Mittelachse in OT-Position / thought centre line, with crankshaft in top dead centre position / asse centrale, con albero motore al PMS
❽ Spannrichtung / tensioning direction / senso di tensione



Kickstarterhebel und Schalthebel montieren

Der Kickstarterhebel soll in montiertem Zustand so nahe wie möglich am Kupplungsdeckel sein, darf jedoch an diesem nicht anstehen. Mit Innensechskantschraube M8 festziehen. Schalthebel auf Schaltwelle aufstecken und mit Innensechskantschraube fixieren.

Motor von Montagebock abnehmen. O-Ring des Elektrostarters leicht einfetten und E-Starter drehend von der rechten Seite in den Kupplungsdeckel einführen, in Position drehen, Distanzbrücke darunterschieben und Elektrostarter mit 2 Innensechskantschrauben festziehen.

Motor einbauen

Vor dem Einbauen Ölsieb im Öltank reinigen. Nach dem Einbau des Motors ist das Ölsystem zu entlüften. Zum Schluß ist noch der Zündzeitpunkt und die Zündverstellung zu kontrollieren.

Ölsystem entlüften

Ein Entlüften des Ölsystems ist nach dem Einbau des Motors bzw. nach Abschrauben des Saugschlauches vom Motor notwendig.
Ölschläuche an Motor und Ölreservoir anschließen. Ca. 1,5 Liter Motoröl in das Ölreservoir einfüllen. Ölfilterdeckel und Ölfilter entfernen. Druckhalteventil im Ölfilterraum mit Schraubenzieher herausdrehen und entfernen. Bei ausgeschraubter und auf Masse liegender Zündkerze Motor mit Kickstarter durchdrehen, bis Öl aus der Bohrung des Druckhalteventils austritt. Druckhalteventil wieder einschrauben, Ölfilter einsetzen und Ölfilterdeckel mit O-Ring montieren.

Fitting kickstart and gearshift levers

The kickstarter lever should be as close as possible to the clutch cover but must not touch it. Tighten with Allenhead screw M8. Fit gearshift lever on gearshift shaft and fix with Allen-head screw.

Remove engine from trestle. Grease O-ring of electric starter, insert electric starter with a turning movement from the right side into the clutch cover, place distance block and secure electric starter with 2 Allen screws.

Engine installation

Before installing the engine, clean oil screen of the oil tank. After engine installation, vent the oil system before fitting the chain cover.

Venting the oil system

Whenever the engine is removed, or the oil lines are disconnected, it is necessary to vent the oil system.
Connect oil lines to engine and oil tank. Fill the oil tank with about 1,5 litre engine oil.
Remove oil filter cover and oil filter. Unscrew and remove pressure retaining valve in oil filter chamber.
With spark plug removed and short-circuited ignition, crank engine with kickstarter until oil flows out of the pressure retaining valve orifice.
Refit pressure retaining valve, fit oil filter and oil filter cover with O-ring.

Montaggio della leva m/m e della leva cambio

Quando è montata, la leva messa in moto deve trovarsi il più vicino possibile al coperchio frizione, ma senza toccarlo. Fissarla con una vite a brugola M8. Montare la leva cambio sull'albero cambio e fissarla con la brugola. Smontare il motore dalla staffa. Ingrassare leggermente l'OR del motorino d'avviamento ed infilare il motorino dal lato destro nel coperchio, distanziarlo col blocco distanziale e fissarlo con 2 brugole.

Istallazione del motore

Prima del montaggio pulire il filtro nella tubazione aspirazione motore dal serbatoio dell'olio. Dopo il montaggio del motore bisogna provvedere alla disaerazione del sistema di lubrificazione. Controllare infine il punto di accensione el la variazione del punto di accensione.

Disaerazione del sistema di lubrificazione

Dopo ogni montaggio del motore o scollegamento del tubo aspirazione olio dal motore è necessaria la disaerazione.
Collegare i tubi al motore e al serbatoio dell'olio. Versare circa 1,5 litri di olio motore nel serbatoio.
Togliere il coperchio del filtro dell'olio e il filtro stesso. Svitare la valvola di pressione nel vano del filtro mediante un cacciavite e toglierla. Con la candela svitata e posata a massa, far girare il motore fino a che fuoriesca dell'olio dal foro della valvola di pressione. Riavvitare la valvola di pressione, rimettere il filtro dell'olio e montare il coperchio del filtro con l'OR.

Zündzeitpunkt und Zündverstellung kontrollieren

Das Einstellen des Zündzeitpunktes entfällt, da keine Möglichkeit vorgesehen ist. Die Zündverstellung erfolgt elektronisch.
Zur Kontrolle der ordnungsgemäßen Funktion der Zündanlage sind mit einer Zündlichtpistole zwei Vorzündungswerte zu kontrollieren. Dazu ist die PVC-Verschlußschraube am Zünderdeckel zu entfernen. In dieser Öffnung ❶ werden die beiden Markierungen am Magnetrad sichtbar.

a) Leerlaufvorzündung: Motordrehzahl 1500 1/min ± 100
   Zündzeitpunkt 3° v. OT
   = stirnseitig eingeschlagene Marke ❷ am Magnetrad.
b) Vollastzündung:
   Motordrehzahl 6000 — 7000 1/min
   Zündzeitpunkt 29°v. OT
   = zweite eingeschlagene Markierung.

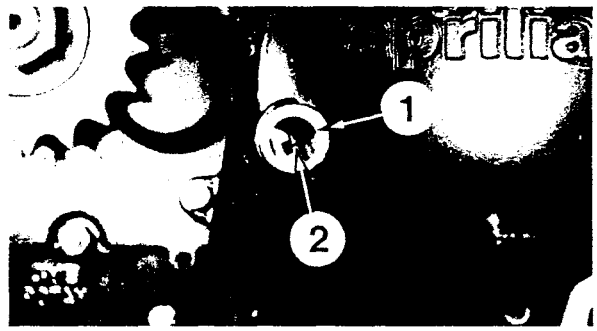
Die Verstellung des Zündzeitpunktes erfolgt ab etwa 2000 1/min kontinuierlich auf den angegebenen Wert bei 6000 1/min und bleibt dann fast konstant.

Checking the ignition timing

There is no provision for ignition timing adjustment, timing control is electronic.
To check whether the ignition system is working correctly, take 2 ignition readings with stroboscope. To do so, remove the inspection plug on the magneto cover. In this opening ❶ the two marks on the magneto flywheel are visible.

a) Idle ignition timing:
   Engine speed 1500 rpm ± 100
   Ignition timing 3° before top dead centre
   =mark ❷ stamped on front of magneto flywheel
b) Full load ignition timing:
   Engine speed 6000 — 7000 rpm
   Ignition timing 29° before top dead centre
   = second mark.

Ignition timing advances steadily from 2000 — 6000 rpm, but remains constant above this speed.



Controllo del punto di accensione e della variazione del punto di accensione

Non c'è possibilità di agguistare il punto d'accensione. La variazione avviene elettronicamente.
Per controllare il regolare funzionamento dell'impianto di accensione, bisogna verificare due valori di accensione anticipata per mezzo di una pistola stroboscopica. Per questo levare la vite di chiusura in PVC sul coperchio. Nell'apertura ❶ che ne deriva sono visibili i due contrassegni sul volano.

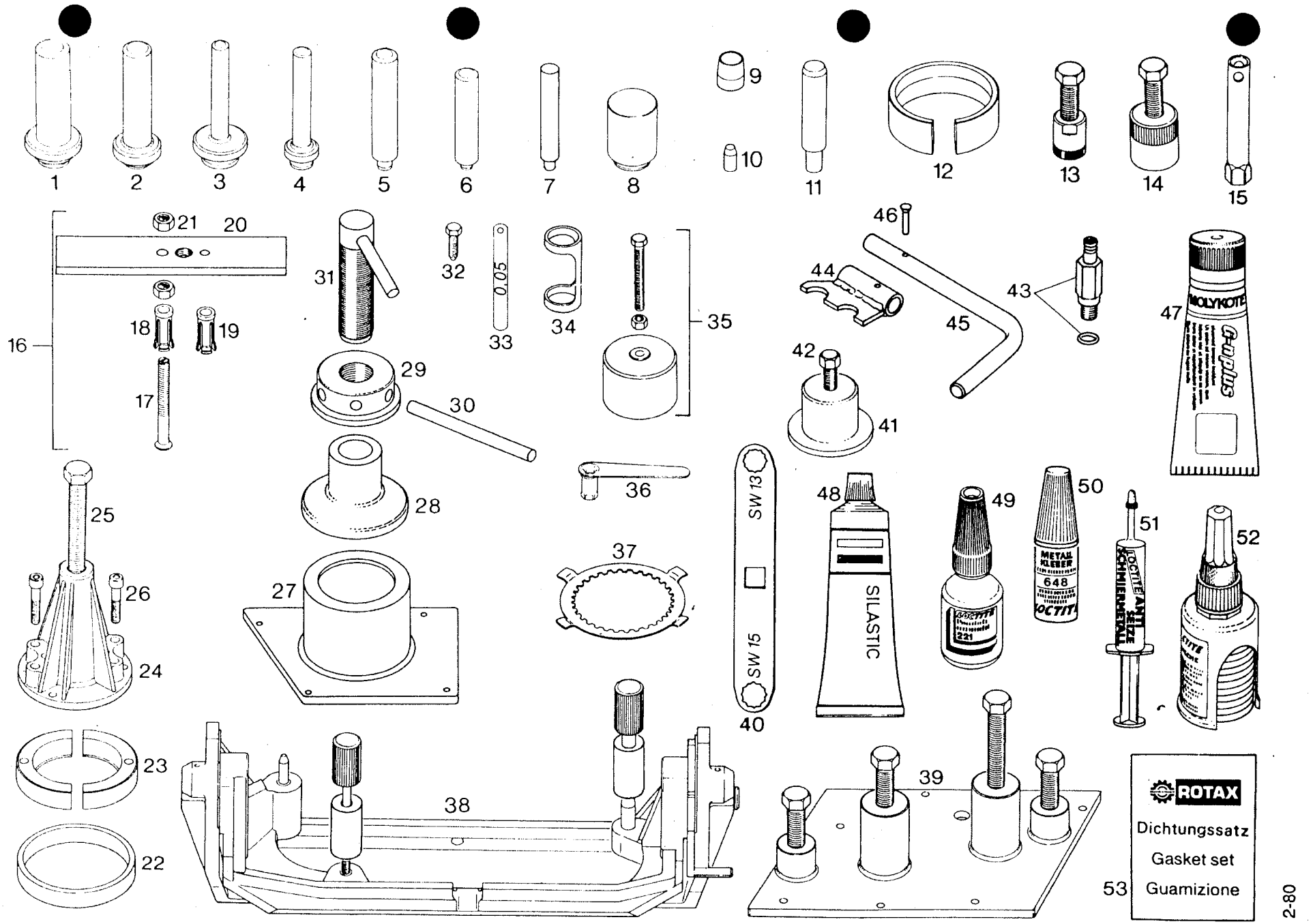
a) Anticipo accensione con regime motore 1500 giri/min. ± 100
   punto di accensione 3° prima del punto morto superiore = contrassegno ❷ inciso frontalmente sul volano.
b) Anticipo accensione con regime motore 6000 — 7000 giri/min.
   punto di accensione 29° prima del punto morto superiore = secondo contrassegno inciso.

Lo spostamento del punto di accensione avviene in modo continuo dai ca. 2000 giri/min al valore indicato per i 6000 giri, e dopo rimane pressoché costante.

ANZUGSDREHMOMENTE		Sicherungsmittel bzw. Dichtungsmittel
Sechskantmutter Steuerritzel M16x1,5	100 Nm	Loctite 221 violett
Sechskantmutter Magnetrad M18x1,5	100 Nm	Loctite 221 violett
Sechskantmutter Ausgleichswelle M14x1,5	75 Nm	Loctite 221 violett
Sechskantmutter Kettenritzel M20 x 1,5	100 Nm	Loctite 221 violett
Sechskantmutter Kupplungsmitnehmer M18x1,5	120 Nm	Loctite 648 grün
Sechskantschraube Steuerrad M8	35 Nm	Loctite 221 violett
Bundmuttern Zylinderkopf M10	35 Nm	Molykote GN
Bundmuttern Zylinderkopf M8	20 Nm	Molykote GN
Sechskantschraube M8, Bandspannrolle		Loctite 221 violett
Senkschrauben M5 Halteblech Getriebelager	—	Loctite 221 violett
Stiftschraube für Zahnriemen-Spannrolle	—	Loctite 221 violett
Anschlußstutzen für Ölleitungen	—	Loctite 648 grün
Verschlußschraube im Ölfilterdeckel	—	Loctite 221 violett
Zylinderschraube M5 Blattfeder, Kupplungsdeckel		Loctite 221 violett
Ausrückschraube, Kickstarter M12	75 Nm	Loctite 221 violett
Stiftschraube M6 zur Befestigung des Steuertriebgehäuses	—	Loctite 221 violett
Dichtflächen am Motorgehäuse, Kupplungsdeckel und Ölpumpe	—	Loctite 574 orange
Abdichtung Nadelbüchse der Nockenwelle Abdichtung Steuertriebgeh.—Kupplungsdeckel	—	dauerelastische Silicongummi-Dichtmasse

TIGHTENING TORQUES		Sealing/locking Compound
Hexagon nut, timing pulley M16x1,5	100 Nm	Loctite 221 violet
Hexagon nut, flywheel M18x1,5	100 Nm	Loctite 221 violet
Hexagon nut, balancer shaft M14x1,5	75 Nm	Loctite 221 violet
Hexagon nut, sprocket M20 x 1,5	100 Nm	Loctite 221 violet
Hexagon nut, clutch hub, M18x1,5	120 Nm	Loctite 648 green
Hexagon screw, timing gear M8	35 Nm	Loctite 221 violet
Collar nuts, cylinder head M10	35 Nm	Molykote GN
Collar nuts, cylinder head M8	20 Nm	Molykote GN
Hexagon screw M8, guide pulley		Loctite 221 violet
Countersunk screws M5, transmission bearing retaining plate	—	Loctite 221 violet
Stud for belt tensioner pulley	—	Loctite 221 violet
Oil pipe connections	—	Loctite 648 green
Screw plug in oil filter cover	—	Loctite 221 violet
Screw M5, clutch release cam leaf spring	—	Loctite 221 violet
Kickstarter stop screw M12	75 Nm	Loctite 221 violet
Timing belt cover fixing stud M6	—	Loctite 221 violet
Sealing surfaces on crankcase, clutch cover and oil pump	—	Loctite 574 orange
Camshaft needle bearing seal Sealing of timing belt housing — clutch cover	—	silicon rubber RTV

COPPIE DI SERRAGGIO		Elemento di sicurezza o ermetizzazione
Dado esagonale pignone comando M16x1,5	100 Nm	Loctite 221 violetto
Dado esagonale ruota magnetica M18x1,5	100 Nm	Loctite 221 violetto
Dado esagonale albero di compensazione M14x1,5	75 Nm	Loctite 221 violetto
Dado esagonale pignone catena M20 x 1,5	100 Nm	Loctite 221 violetto
Dado esagonale tamburello frizione M18x1,5	120 Nm	Loctite 648 verde
Vite a testa esagonale M8, puleggia distr.	35 Nm	Loctite 221 violetto
Dadi con spallamento M10, testa cilindro	35 Nm	Molykote GN
Dadi con spallamento M8, testa cilindro	20 Nm	Molykote GN
Vite esagonale M8, rullo tenditore		Loctite 221 violetto
Viti a testa svasata M5 piastra fiss. cuscinetti	—	Loctite 221 violetto
Prigioniero rullo tenditore	—	Loctite 221 violetto
Raccordo per tubi d'olio	—	Loctite 221 violetto
Vite tappo nel coperchio del filtro dell'olio	—	Loctite 648 verde
Vite cilindrica M5, molla a balestra, coperchio friz.		Loctite 221 violetto
Fermo messa in moto M12	75 Nm	Loctite 221 violetto
Prigioniero M6 per il fissaggio del carter distribuzione	—	Loctite 221 violetto
Superfici di tenuta del carter, coperchio frizione e pompa dell'olio	—	Loctite 574 arancio
Guarnizione cuscinetto rullini dell'albero a camme Guarnizione carter distribuzione — coperchio frizione	—	ermetico silicone ad elasticità permanente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SW 15
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METAL KLEBER
648
LOCTITE ANTI SEIZE SCHMIERMETALL
MOLYKOTE
Paste
ROTAX
Dichtungssatz
Gasket set
Guamizione
2-80

Spezialwerkzeuge

	Benennung	Stk.	Teile-Nr.
1	Montagestempel für WD-Ring 850 055	1	876 660
2	Montagestempel für WD-Ring 230 395	1	277 861
3	Montagestempel für WD-Ring 930 715	1	276 322
4	Montagestempel für WD-Ring 831 260	1	276 330
5	Montagestempel für WD-Ring 230 690	1	276 250
6	Montagestempel für WD-Ring 230 870	1	276 340
7	Montagestempel für WD-Ring 930 500	1	277 090
8	Montagestempel für WD-Ring 850 055	1	276 310
9	Führungshülse für Hauptwelle	1	277 970
10	Führungshülse für Ölpumpenwelle	1	276 450
11	Führungsdorn für Kolbenbolzen	1	276 300
12	Montagering für Kolben 79,5 mm	1	276 720
13	Abzieher kompl.	1	276 445
14	Abzieher kompl. M35 x 1,5	1	277 807
15	Kerzenschlüssel 18	1	276 280
16—21	Lagerauszieher kompl.	1	276 360
17	Ausziehbolzen	1	276 380
18	Spreizhülse für RK-Lager 6303	1	276 370
19	Spreizhülse für RK-Lager 6304	1	276 375
20	Abstützleiste	1	276 390
21	SK-Mutter M10	2	242 090
22	Ring	1	977 492
23	Ringhälfte	2	977 472
24—25	Abzieher kompl.	1	876 296
25	SK-Schraube M16 x 1,5 x 145	1	940 755
26	Zyl. Schraube M8 x 40	2	840 681
27	Abdrückplatte kompl.	1	276 535
28	Einziehglocke	1	276 560
29	Einziehring	1	276 550
30	Handgriff 12 x 250	1	276 155
31	Einziehspindel M18 x 1,5 kompl.	1	276 127

Special tools

	Description	Qty.	Part-No.
1	insertion jig for oil seal 850 055	1	876 660
2	insertion jig for oil seal 230 395	1	277 861
3	insertion jig for oil seal 930 715	1	276 322
4	insertion jig for oil seal 831 260	1	276 330
5	insertion jig for oil seal 230 690	1	276 250
6	insertion jig for oil seal 230 870	1	276 340
7	insertion jig for oil seal 930 500	1	277 090
8	insertion jig for oil seal 850 055	1	276 310
9	guide sleeve for mainshaft	1	277 970
10	guide sleeve for oil pump shaft	1	276 450
11	guide for piston pin	1	276 300
12	piston ring clamp 79,5 mm	1	276 720
13	puller assy.	1	276 445
14	puller assy. M35 x 1,5	1	277 807
15	spark plug wrench 18	1	276 280
16—21	puller assy.	1	276 360
17	bolt M10	1	276 380
18	extractor sleeve for bearing 6303	1	276 370
19	extractor sleeve for bearing 6304	1	276 375
20	support bar	1	276 390
21	hex. nut M10	2	242 090
22	ring	1	977 492
23	ring half	2	977 472
24—25	puller assy.	1	876 296
25	hex. screw M16 x 1,5 x 145	1	940 755
26	cyl. screw M8 x 40	2	840 681
27	puller plate assy.	1	276 535
28	puller bell	1	276 560
29	puller ring	1	276 550
30	bolt 12 x 250	1	276 155
31	pull-in spindle M18 x 1,5 assy.	1	276 127

Attrezzi speciali

	Descrizione	Qtà	Codice
1	tampone mont. per corteco 850 055	1	876 660
2	tampone mont. per corteco 230 395	1	277 861
3	tampone mont. per corteco 930 715	1	276 322
4	tampone mont. per corteco 831 260	1	276 330
5	tampone mont. per corteco 230 690	1	276 250
6	tampone mont. per corteco 230 870	1	276 340
7	tampone mont. per corteco 930 500	1	277 090
8	tampone mont. per corteco 850 055	1	276 310
9	bussola guida per albero secondario	1	277 970
10	bussola guida per albero pompa olio	1	276 450
11	bullone guida per spinotto	1	276 300
12	stringifasce	1	276 720
13	estrattore cpl.	1	276 445
14	estrattore cpl. M35 x 1,5	1	277 807
15	chiave candela 18	1	276 280
16—21	estrattore cpl.	1	276 360
17	bullone M10	1	276 380
18	bussola spaccata	1	276 370
19	bussola spaccata	1	276 375
20	regolo	1	276 390
21	dado M10	2	242 090
22	anello	1	977 492
23	semi-anello	2	977 472
24—25	estrattore cpl.	1	876 296
25	vite M16 x 1,5 x 145	1	940 755
26	brugola fissaggio M8 x 40	2	840 681
27	piatto estrattore cpl.	1	276 535
28	campana per inserire albero motore	1	276 560
29	ghiera	1	276 550
30	perno 12 x 250	1	276 155
31	asta a vite M18 x 1,5 cpl.	1	276 127

Spezialwerkzeuge

32	Fixierschraube M8 x 30	1	241 965
33	Ventilfühllehre 0,05	1	276 295
34	Ventilfederspanneinsatz	1	276 470
35	Nockenwellenauszieher kompl.	1	276 400
36	Konterschlüssel 11 mm	1	276 040
37	Mitnehmerfixierung für 133 mm	1	277 887
38	Montagebock kompl.	1	277 917
39	Abdrückplatte kompl.	1	276 435
40	Schlüsseleinsatz SW 13/15	1	277 070
41—42	Abzieher kpl. für Ausgleichsrad 14 mm	1	277 085
41—42	Abzieher kpl. für Ausgleichsrad 18 mm	1	277 087
42	SK-Schraube M10 x 60	1	841 700
43	Drucknippel kompl.	1	276 855
44	Ventilfederspanner kompl.	1	276 880
45	Ventilfederspannhebel	1	276 990
46	Senkniet 5 x 25	1	243 360
47	Schmierpaste Molykote G-N	1	297 433
48	Silastic 732 RTV	1	297 386
49	Schraubensicherung niedrigfest	1	899 785
50	Loctite 648 grün	1	899 788
51	Loctite Antiseize 10 g	1	297 431
52	Locite 574	1	899 784
53	Dichtungssatz für Type 348	1	292 746

Special tools

32	locating bolt M8 x 30	1	241 965
33	valve clearance feeler gauge 0,05	1	276 295
34	valve spring push tool	1	276 470
35	puller assy.	1	276 400
36	wrench 11 mm	1	276 040
37	clutch locking tool for 133 mm	1	277 887
38	trestle assy.	1	277 917
39	puller plate assy.	1	276 435
40	ring wrench 13/15	1	277 070
41—42	puller assy. for balancer gear 14 mm	1	277 085
41—42	puller assy. for balancer gear 18 mm	1	277 087
42	hex. screw M10 x 60	1	841 700
43	pressure nipple assy.	1	276 855
44	valve spring spanner assy.	1	276 880
45	lever for valve spring spanner	1	276 990
46	pin 5 x 25	1	243 360
47	Molykote G-N 100 g, slide paste	1	297 433
48	Silastic 732 RTV / 100 g	1	297 386
49	Loctite 221 violet 10 cc. locking comp.	1	899 785
50	Loctite 648 green 6 cc. locking comp.	1	899 788
51	Loctite Anti-Seize 10 g	1	297 431
52	Locite 574 orange 50 cc. sealing comp.	1	899 784
53	gasket set for type 348	1	292 746

Attrezzi speciali

32	fermo bloccaggio	1	241 965
33	calibro spessore valvola 0,05	1	276 295
34	attrezzo compress. molla valvola	1	276 470
35	estrattore cpl.	1	276 400
36	chiave frizione 11 mm	1	276 040
37	attrezzo bloccaggio frizione per 133 mm	1	277 887
38	staffatura cpl.	1	277 917
39	piatto estrattore cpl.	1	276 435
40	chiave 13/15	1	277 070
41—42	estrattore cpl.	1	277 085
41—42	estrattore cpl.	1	277 087
42	vite M10 x 60 DIN 931	1	841 700
43	bocciolo cpl. per aria compressa	1	276 855
44	tenditore per molla valvola	1	276 880
45	leva per tenditore	1	276 990
46	spina 5 x 25	1	243 360
47	Molykote G-N, pasta di scorriment	1	297 433
48	Silastic 732 RTV/100 g	1	297 386
49	Loctite 221 violetto, flacone 10 cc.	1	899 785
50	Loctite 648 verde, flacone 6 cc.	1	899 788
51	Loctite Anti-Seize 10 g	1	297 431
52	Locite 574 arancio, flacone 50 cc.	1	899 784
53	Serie guarnizioni per tipo 348	1	292 746

Technische Daten

Motortype	348 Enduro
Bauart	1 Zylinder, 4-Takt, fahrtwindgekühlt
Hubraum	348 ccm
Bohrung/Hub	79,5 / 70,4
Leistung	24,25 kW (33 DIN PS)
Nenndrehzahl	7000 1/min.
Drehmoment	28 Nm / 5600 1/min.
Verdichtung	9,6 : 1
Kraftstoff	Super
Steuerung	SOHC, Zahnriemen
Steuerzeit bei 1 mm Ventilspiel	EÖ 2,5° v.OT. ES 42,5° n.UT. AÖ 42,5° v.UT. AS 2,5° n.OT.
Nockenwelle	225°
Einlaßventil	2 x 30 Ø
Auslaßventil	2 x 27 Ø
Ventilspiel kalt	Einlaßventil 0,05 mm Auslaßventil 0,05 mm
Kurbelwellenlagerung	2 Rillenkugellager
Pleuellager	Nadellager
Kolben	Leichtmetall — Vollschaft
Kolbenringe	1 Kompressionsring verchromt, 1 Minutenring, 1 Ölabstreifring mit Federring
Ölpumpe	2-fach Trochoid-Pumpe
Motorschmierung	Trockensumpfschmierung
Getriebeschmierung	Pumpen-Spritzölschmierung
Primärantrieb	gerade verzahnt 32/76
Kupplung	Mehrscheiben-Ölbadkupplung
Getriebe	5-Gang klauengeschaltet
Zündanlage	kontaktlose Kondensator-Zündanlage
Generatorleistung	12 V/190 W ~
Zündzeitpunkt Verstellung	3° v.OT. bei 1500 1/min. 29° v.OT. bei 6000 1/min. kontinuierlich ab 2000 1/min.
Zündkerze	NGK D 8 EA
Elektrodenabstand	0,7 mm
Starthilfe	Ventilausheber

Technical Data

Engine type	348 Enduro
Engine design	single cylinder, air-cooled 4-stroke
Displacement	348 cc
Bore/stroke	79,5 / 70,4
Power	24,25 kW (33 HP DIN)
Nominal speed	7000 rpm
Torque	28 Nm / 5600 rpm
Compression	9,6 : 1
Fuel	Premium
Valve train	SOHC, tooth belt drive
Valve timing measured with 1 mm valve clearance	IO 2,5° BTDC IC 42,5° ABDC EO 42,5° BBDC EC 2,5° ATDC
Camshaft overlap	225°
Intake valve	2 x 30 Ø
Exhaust valve	2 x 27 Ø
Valve clearance cold	Intake valve 0,05 mm Exhaust valve 0,05 mm
Crankshaft bearing	2 ballbearings
Connecting rod bearing	needleroller-bearing
Piston	light-alloy, solid-skirt
Piston rings	1 compression ring, chrome-plated 1 tapered ring, 1 oil control ring
Oil pump	double trochoid pump
Engine lubrication	dry sump lubrication system
Transmission lubrication	pump splash lubrication
Primary drive	straight-tooth gears 32/76
Clutch	multi-plate, in oil-bath
Transmission	5-speed, constant-mesh, dog engagement
Ignition	electronic C.D.I.
Generator output	12 V/190 W AC
Ignition timing Automatic advance	3° BTDC at 1500 rpm 29° BTDC at 6000 rpm Continuous between 2000 — 6000 rpm
Spark plug	NGK D 8 EA
Electrode gap	0,7 mm
Starting aid	valve-lifter

Dati tecnici

Motore tipo	348 Enduro
Costruzione	monocilindro, 4 tempi, raffreddamento ad aria
Cilindrata	348 cm³
Alesaggio/corsa	79,5/70,4 mm
Potenza	24,25 kW (33 CV DIN)
Numero di giri nominale	7000 giri/min.
Coppia	28 Nm/5600 giri/min.
Compressione	9,6 : 1
Carburante	Super
Comando	albero camme in testa, cinghia dentata
Fasatura con 1 mm di giuoco valvole	AA 2,5° PPMS AC 42,5° DPMI SA 42,5° PPMI SC 2,5° DPMS
Albero a camme	225°
Valvola di aspirazione	2 x 30 Ø
Valvola di scarico	2 x 27 Ø
Giuoco valvole a freddo	Valvola di aspirazione 0,05 mm Valvola di scarico 0,05 mm
Cuscinetti di banco	2 cuscinetti a sfere
Cuscinetto di biella	cuscinetto a rullini
Pistone	lega leggera
Fascie elastiche	1 segmento compr. cromato 1 segmento conico 1 segmento raschiaolio
Pompa dell'olio	doppia pompa trocoidale
Lubrificazione motore	Lubrificazione a carter secco
Lubrificazione trasmissione	Lubrificazione a sbattimento
Trasmissione primaria	dentatura diritta, 32/76
Frizione	a dischi multipli, in bagno d'olio
Cambio	5 marce, innesti frontali
Impianto di accensione	accensione elettronica
Potenza generatore	12 V/190 W CA
Punto di accensione variazione	3° PPMS a 1500 giri/min. 29° PPMS a 6000 giri/min. lineare dai 2000 giri/min.
Candela	NGK D 8 EA
Distanza elettrodi	0,7 mm
Ausilio di avviamento	alzavalvole

GETRIEBEÜBERSETZUNGEN

Primär-übersetzung	Getriebeübersetzung
32:76	1. Gang 32:11 = 2,909 2. Gang 24:12 = 2,000 3. Gang 21:15 = 1,400 4. Gang 19:17 = 1,118 5. Gang 21:23 = 0,913
Option	5. Gang 21:22 = 0,955

GEAR RATIOS

Primary Ratio	Transmission
32:76	1st gear 32:11 = 2,909 2nd gear 24:12 = 2,000 3rd gear 21:15 = 1,400 4th gear 19:17 = 1,118 5th gear 21:23 = 0,913
Option	5th gear 21:22 = 0,955

RAPPORTI DI TRASMISSIONE

Rapporto primario	Rapporto di trasmissione
32:76	1a marcia 32:11 = 2,909 2a marcia 24:12 = 2,000 3a marcia 21:15 = 1,400 4a marcia 19:17 = 1,118 5a marcia 21:23 = 0,913
Optional	5a marcia 21:22 = 0,955

Schmier- und Wartungstabelle

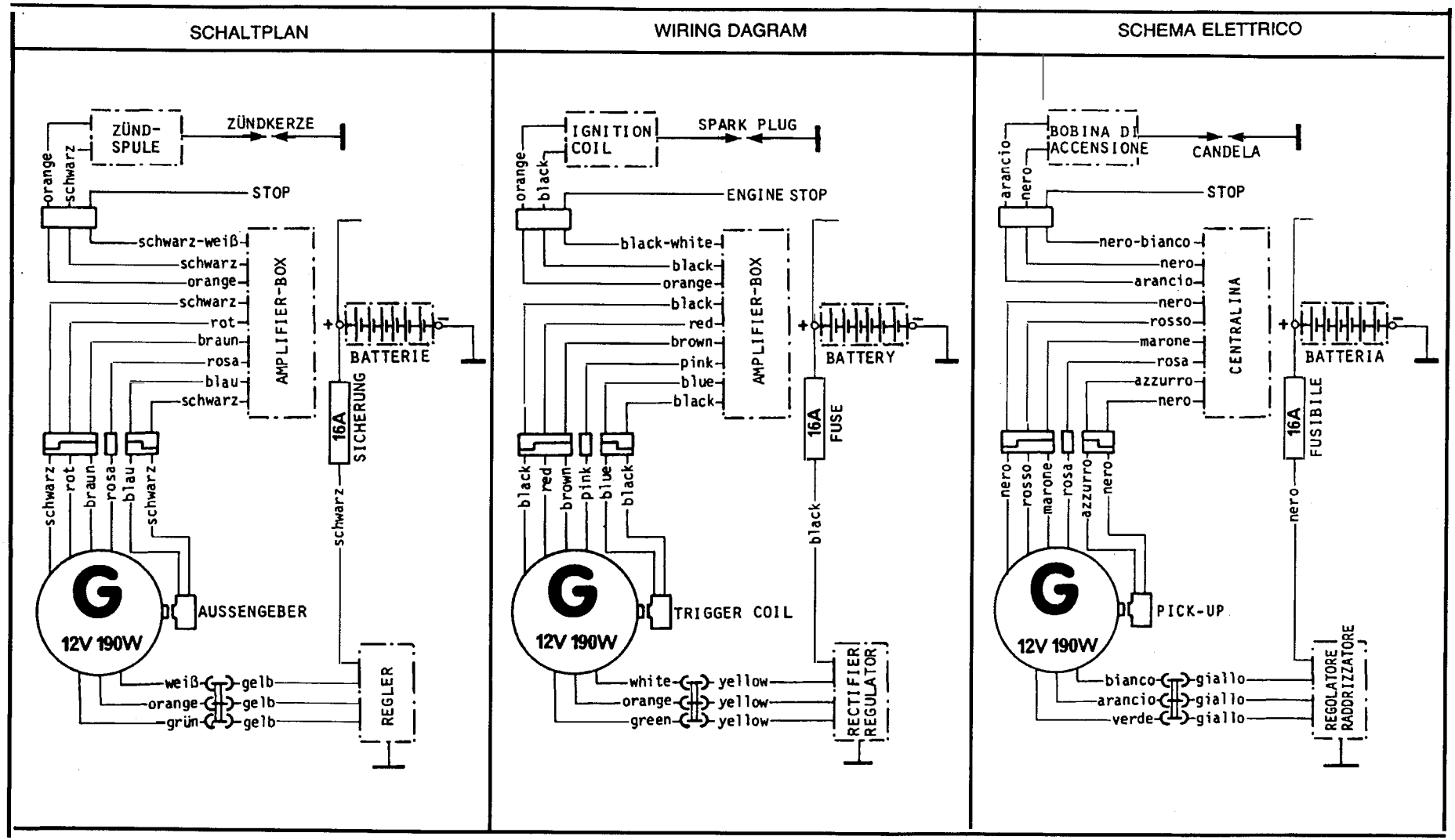
	nach 500 km	nach Bedarf	nach je 6000 km	nach je 12.000 km	mind. 1 x jährlich
Motoröl und Ölfiltereinsatz wechseln	X		X		X
Ölsieb im Ölsumpfdeckel reinigen			X		
Ventile einstellen	X		X		
Zahnriemenzustand prüfen, Spannung einstellen	X		X		
Zahnriemen erneuern				X	
Spiel der Kupplungsausrückung prüfen		X	X		
Ölleitungen kontrollieren	X	X	X		
Vergaser reinigen und Leerlauf einstellen		X	X		
Elektronische Zündverstellung kontrollieren		X	X		
Zündkerze reinigen, Elektrodenabstand einstellen			X		
Zündkerze erneuern		X		X	
Zylinderkopf nachziehen	X				

Service table

	After 500 km / 300 miles	As required	Every 6000 km / 4000 miles	Every 12.000 km / 8000 miles	At least once a year
Change engine oil and oil filter element	X		X		X
Clean oil screen in oil sump cover			X		
Adjust valve clearances	X		X		
Check condition and adjust tension of timing belt	X		X		
Replace timing belt				X	
Check play of clutch release		X	X		
Check oil lines	X	X	X		
Clean carburetor and adjust idling		X	X		
Check electronic ignition variation		X	X		
Clean spark plug, adjust electrode gap			X		
Replace spark plug		X		X	
Re-torque cylinder head nuts	X				

Tabella di lubrificazione e manutenzione

	dopo i primi 500 km	se necessario	ogni 6000 km	ogni 12.000 km	almeno una volta all'anno
Cambio olio e cartuccia filtro olio	X		X		X
Puliziraetino olio nella coppa			X		
Registrazione valvole	X		X		
Controllo stato cinghia dentata, regolazione tensione	X		X		
Sostituzione cinghia dentata				X	
Controllo giuoco disinnesto frizione		X	X		
Controllo tubi olio del motore e pulizia filtrino in aspirazione	X	X	X		
Pulizia carburatore e regolazione minimo		X	X		
Controllo variazione punto di accensione elettronica		X	X		
Pulizia candela, regolazione distanza tra gli elettrodi			X		
Sostituzione candela		X		X	
Riserraggio dadi testa cilindro	X				


SCHALTPLAN
ZÜND-SPULE
ZÜNDKERZE
orange
schwarz
STOP
schwarz-weiß
schwarz
orange
schwarz
rot
braun
rosa
blau
schwarz
AMPLIFIER-BOX
BATTERIE
16A
SICHERUNG
schwarz
schwarz
rot
braun
rosa
blau
schwarz
G
12V 190W
AUSSENGEBER
weiß
orange
grün
gelb
gelb
gelb
REGLER
WIRING DAGRAM
IGNITION COIL
SPARK PLUG
orange
black
ENGINE STOP
black-white
black
orange
black
red
brown
pink
blue
black
AMPLIFIER-BOX
BATTERY
16A
FUSE
black
red
brown
pink
blue
black
black
G
12V 190W
TRIGGER COIL
white
orange
green
yellow
yellow
yellow
RECTIFIER REGULATOR
SCHEMA ELETTRICO
BOBINA DI ACCENSIONE
CANDELA
arancio
nero
STOP
nero-bianco
nero
arancio
nero
rosso
marone
rosa
azzurro
nero
CENTRALINA
BATTERIA
16A
FUSIBILE
nero
nero
rosso
marone
rosa
azzurro
nero
G
12V 190W
PICK-UP
bianco
arancio
verde
giallo
giallo
giallo
REGOLATORE RADDRIZZATORE

Fehlersuche

Motor springt nicht an URSACHE	ABHILFE
Bedienungsfehler	Zündung einschalten, Kraftstoffhahn öffnen, Kraftstoff auffüllen
Kraftstoffleitung verstopft	Kraftstoffhahn, Leitung und Tank reinigen
Zündkerze verrußt, naß oder überbrückt	Zündkerze reinigen bzw. erneuern
Elektrodenabstand zu groß	Elektrodenabstand einstellen
Zündkabel bzw. Kerzenstecker beschädigt	Zündspule bzw. Kerzenstecker erneuern
Kurzschlußkabel im Kabelstrang aufgescheuert Zündschloß bzw. Kurzschlußtaster defekt	Einfachstecker mit schwarz-weiß/schwarzem Kabel trennen und Zündfunke prüfen. Wenn Zündfunke vorhanden (also Zündanlage in Ordnung), etwaige Isolierschäden an Kabeln, Zündschloß bzw. Kurzschlußschalter beheben.
Zündfunke zu schwach	Zündanlage überprüfen
Wasser im Vergaser bzw. Düsen verstopft	Vergaser ausbauen und reinigen

Motor hat keinen Leerlauf URSACHE	ABHILFE
Leerlaufdüse verstopft	Leerlaufdüse reinigen
Einstellschrauben am Vergaser verstellt	Leerlauf einstellen
Zündanlage beschädigt	Zündanlage überprufen

Motor hat zu wenig Leistung URSACHE	ABHILFE
Kraftstoffzufuhr teilweise unterbrochen oder Vergaser verlegt	Kraftstoffsystem und Vergaser reinigen
Luftfilter verlegt	Luftfilter reinigen bzw. erneuern
Kompressionsverlust durch lockere Zündkerze, lockeren Zylinderkopf, defekte Kopfdichtung	Leckage prüfen und defekte Teile erneuern
kein Ventilspiel, Dekompressor zu knapp eingestellt	Ventilspiel einstellen, Dekoseilzug einstellen
Elektronische Zündverstellung defekt	Zündverstellung kontrollieren
Auspuffanlage undicht oder verstopft	Auspuff-Flansche nachziehen, defekte Teile erneuern

Trouble-shooting

Engine fails to start CAUSE	REMEDY
Incorrect handling	Ensure full fuel supply, fuel cock open, and ignition switch on.
Fuel line blocked	Clean fuel cock, fuel tank and fuel line
Spark plug sooty, wet or bridged	Clean or replace spark plug
Electrode gap too large	Adjust electrode gap
Ignition cable or spark plug protector damaged	Fit new ignition coil or spark plug protector
Wire chafed in cable harness (short circuit). *Ignition switch or kill button* faulty	Disconnect plug with black-white/black cable and test for spark. If there is a spark (i. e. ignition unit is in order), check for possible cable damage (short-circuit), check ignition switch and kill-button.
Insufficient ignition voltage	Check ignition system
Water in carburetor or jets obstructed	Dismantle and clean carburetor

Engine will not idle CAUSE	REMEDY
Idling jet blocked	Clean idle jet
Idle mixture screw incorrect adjustment	Adjust idle mixture screw.
Ignition system damaged	Check ignition system

Lack of engine performance CAUSE	REMEDY
Fuel supply intermittent or water/dirt in carburetor	Clean fuel system and carburetor
Air filter dirty	Clean or replace air filter
Loss of compression due to loose spark plug, loose cylinder head, defective gasket,	Check for leaks and replace faulty parts
no valve clearance, no clearance at decompressor lever	Adjust valve clearances, adjust decompressor cable
Electronic ignition timing faulty	Check electronic ignition timing advance
Exhaust leaking or blocked	Tighten exhaust flange, replace faulty parts.

Diagnosi dei difetti

Il motore non s'avvia CAUSA	RIMEDIO
Errore di comando	Mettere in circuito l'accensione, aprire il rubinetto del carburante, fare il pieno di carburante
Tubo alimentazione carburante ostruito	Pulire il rubinetto, i tubi e il serbatoio del carburante
Candela imbrattata, bagnata o cortocircuitata	Pulire o sostituire la candela
Distanza tra gli elettrodi troppo grande	Correggere la distanza
Cavo di accensione o cappuccio della candela danneggiato	Sostituire il cavo di accensione o il cappuccio della candela
cavo di corto-circuito nel gruppo dei cavi in corto circuito	Staccare la spina singola col cavo nero-bianco/nero e controllare la scintilla di accensione. Se la scintilla è regolare (vuol dire che l'accensione è in ordine), riparare il punto difettoso sul cavo, sulla serratura di accensione o sul pulsante di arresto motore.
Scintilla troppo debole	Controllare l'impianto di accensione
Acqua nel carburatore o getti intasati	Smontare e pulire il carburatore

Il motore non funziona al minimo CAUSA	RIMEDIO
Getto del minimo intasato	Pulire il getto del minimo
Viti di regolazione del carburatore fuori taratura	Regolare il minimo
Impianto di accensione danneggiato	Controllare l'impianto di accensione

Potenza del motore troppo bassa CAUSA	RIMEDIO
Alimentazione carburante parzialmente interrotta o carburatore sporco	Pulire l'impianto di alimentazione e il carburatore
Filtro dell'aria sporco	Pulire o sostituire il filtro dell'aria
Perdita di compressione a causa della candela allentata o della testata allentata o della guarnizione della testata difettosa	Controllare la perdita e sostituire le parti difettose
Mancanza di giuoco valvole, decompressore regolato in modo troppo basso	Regolare il giuoco valvole, regolare il comando di decompressione
Variazione del punto di accensione elettronica difettosa	Controllare la variazione del punto di accensione.
Impianto di scarico rotto che sfiata o intasato	Serrare le flange di scarico, sostituire le parti difettose

Fehlersuche

Trouble-shooting

Diagnosi dei difetti

Motor dreht nicht hoch URSACHE	ABHILFE	**Engine will not reach full speed** CAUSE	REMEDY	**Il motore non raggiunge il pieno regime** CAUSA	RIMEDIO
Vergaser läuft über, weil Niveau zu hoch eingestellt, Dichtkonus der Schwimmernadel verschmutzt oder ausgeschlagen, lockere Vergaserdüsen, elektronische Zündverstellung defekt	Vergaser reinigen, Schwimmernadel eventuell erneuern und Niveau einstellen Düsen festziehen Zündverstellung kontrollieren	Carburetor flooding, level set too high, float needle seat dirty or damaged, loose carburetor jets, float punctured, defective electronic ignition timing	Clean carburetor, replace float if necessary and adjust float level. Tighten jets Check ignition timing	Il carburatore trabocca perchè il livello è regolato troppo alto, il cono di tenuta dell'ago del galleggiante è sporco o danneggiato, i getti sono allentati, la variazione del punto di accensione. elettronica è difettosa	Pulire il carburatore, sostituire eventualmente l'ago del galleggiante e regolare il livello. Serrare i getti. Controllare la variazione del punto di accensione.
Motor klingelt bei Vollast URSACHE	ABHILFE	**Engine knocks under full load** CAUSE	REMEDY	**Il motore batte a pieno carico** CAUSA	RIMEDIO
Vergaser zu mager eingestellt	Vergaser einstellen	Carburetor setting too lean	Adjust carburetor	Il carburatore è regolato per una miscela troppo povera	Regolare il carburatore
Motor wird zu heiß, weil Kühlrippen an Zylinder und Zylinderkopf stark verschmutzt sind	Motor reinigen	Engine overheating due to excess dirt in cylinder / cylinder head cooling fins	Clean engine	Il motore si surriscalda perchè le alette di raffreddamento sul cilindro e sulla testata sono eccessivamente sporche	Pulire il motore
Motor hat zu viel Vorzündung	Zündverstellung bei Vollast kontrollieren	Ignition timing too advanced	Check ignition timing at max. rpm	Il motore ha l'accensione troppo anticipata	Controllare la variazione del punto di accensione a pieno carico
Kraftstoff nicht klopffest	Kraftstoff mit mehr Oktan tanken	Fuel octane rating too low	Use fuel with higher octane rating	Il carburante non è della gradazione corretta	Mettere carburante con più ottani nel serbatoio (Super)
Motor patscht in den Vergaser URSACHE	ABHILFE	**Engine splutters in carburetor** CAUSE	REMEDY	**Ritorno di fiamma dal motore nel carburatore** CAUSA	RIMEDIO
Kraftstoffmangel	Kraftstoffsystem und Vergaser überprüfen und reinigen	Insufficient fuel	Check and clean fuel system and carburetor	Manca carburante	Controllare e pulire l'impianto del carburante e il carburatore
Ansaugventile undicht	Ventilspiel kontrollieren bzw. Ventile erneuern	Intake valves leaking	Check valve clearance and / or replace valves.	Valvola di aspirazione con tenuta difettosa	Controllare il giuoco delle valvole, sostituire le valvole
Ventilsteuerung verstellt (durch falsche Montage des Zahnriemens)	Ventilsteuerung kontrollieren Zahnriemen ggf. erneuern	Valve timing faulty (incorrect belt fitment, or belt loose)	Check valve timing, adjust belt or replace if necessary.	Distribuzione spostata (causa erroneo montaggio della cinghia dentata)	Controllare la distribuzione o sostituire eventualmente la cinghia dentata
Motor saugt falsche Luft an	Dichtungen und Flansche der Saugseite kontrollieren bzw. erneuern	Engine air intake faulty	Check or replace seals and flanges on intake side	Il motore aspira aria nel condotto di aspirazione	Controllare ed eventualmente sostituire le guarnizioni, le flange ed il manicotto del lato aspirazione

CHAIN & SPROCKETS

CHAIN MAINTENANCE, IN-SPECTION

The chain is a heavy duty O-ring sealed type and should be checked periodically. Sprocket wear is greater if the chain is worn beyond its useful life. The only maintenance required is to spray periodically, as required, with a chain spray suitable for O-ring chains.

1. See Figure 2-116A. If the chain can be lifted away from the rear sprocket more than shown, the chain should be replaced.

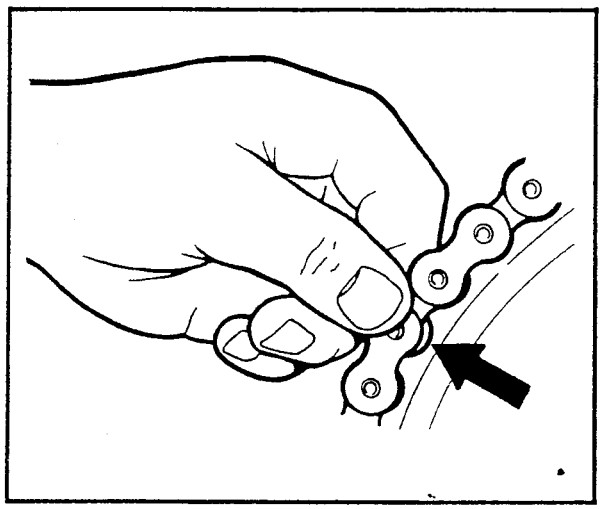


Figure 2-116A. Chain Wear

2. See Figure 2-117. The length of 16 pitches of a new chain is 25.4 cm (10 in.). If the chain has stretched to more than 25.9 cm (10 7/32 in.) for 16 pitches, it should be replaced.

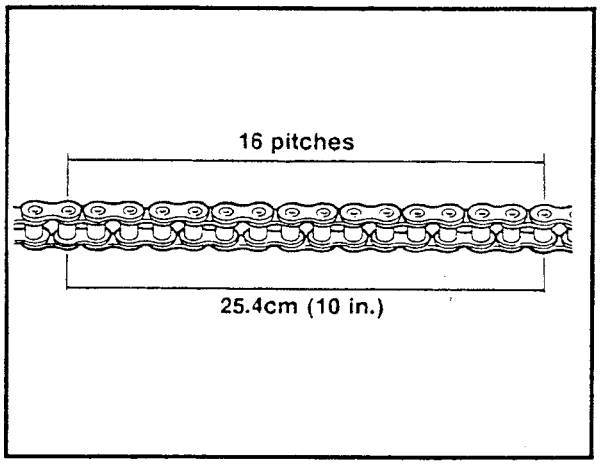


Figure 2-117. Chain Wear Measurement

3. See Figure 2-118. At installation, be sure the master link clip is installed with its closed end facing the direction of chain travel.

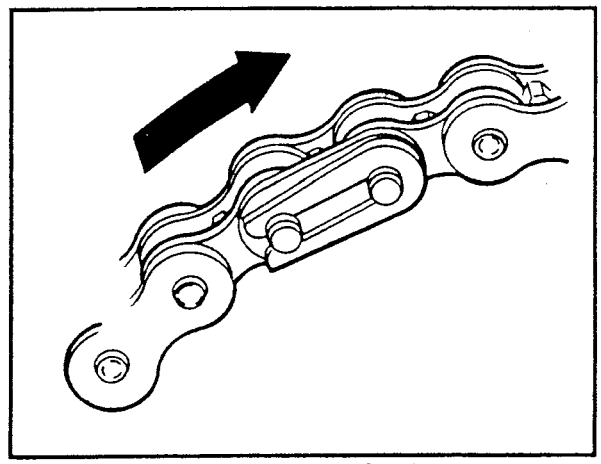


Figure 2-118. Master Link Clip Installation

CHAIN ADJUSTMENT

Special Tools	Torque Values N·m (ft-lbs)
None	Axle nut 101 (75)

1. Place motorcycle on center stand.
2. Loosen LH axle section.
3. Loosen RH axle head.
4. Loosen rear brake torque arm at torque plate.
5. See Figure 2-119. Adjust rear wheel position with snail cams to give chain free play of **55-65 mm (2.2 - 2.6 in)** when measured at the center of its run.
10-15 mm (0.4 - 0.6 in) freeplay must be evident when the weight o machine is on the wheels.

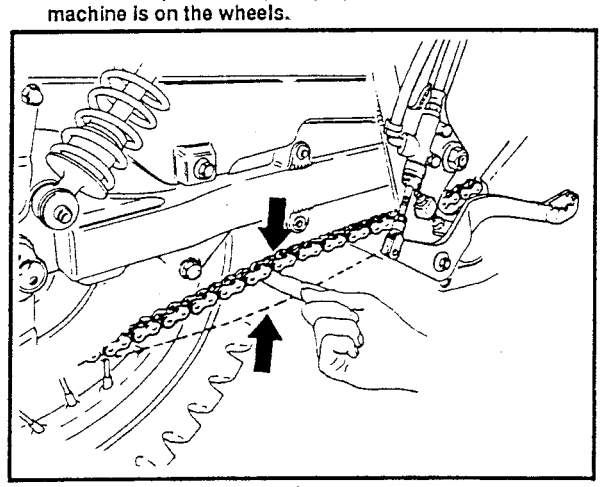


Figure 2-119. Chain Free Play

NOTE

Be sure cam positions are equal for correct wheel alignment.

CAUTION

DO NOT loosen (turn counterclockwise) axle nut to align hole in axle with slots of nut or clamping force will be lost. Always tighten nut clockwise so that clamping force is maintained.

6. Tighten axle nut to 101 N·m (75 ft-lbs) torque.

7. Tighten axle nut (2) just enough to align hole in axle with slots in nut so that cotter pin (1) can be installed.

8. Install a new cotter pin (1). Bend ends to lock in position.

9. Recheck chain.

SPROCKETS

Special Tools	Torque Values N·m (ft-lbs)
None	Transmission sprocket retaining nut 100 (75) Drive sprocket mounting bolts 24 (18)

Transmission Sprocket Removal

NOTE

The Transmission Sprocket must be removed from the mainshaft before the crankcases can be separated. It is easier to remove the sprocket before separating the crankcases.

1. Lock crankshaft at top dead center and put transmission in gear.

2. Bend down lockwasher tabs and remove sprocket retaining nut.

3. Remove transmission sprocket.

Cleaning, Inspection and Repair (Both)

1. Clean sprocket(s) of all grease and dirt using solvent.

2. See Figure 2-120. If teeth are worn to a fish hook shape, sprocket(s) must be replaced. Replace sprocket(s) if there is any damage or cracks.

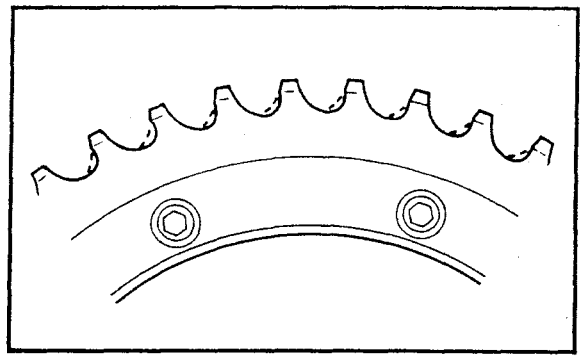


Figure 2-120. Worn Sprocket

Transmission Sprocket Installation

1. See Figure 2-121. Put Loctite 242 (blue) on mainshaft splines. Place sprocket on shaft with the largest flange facing outwards.

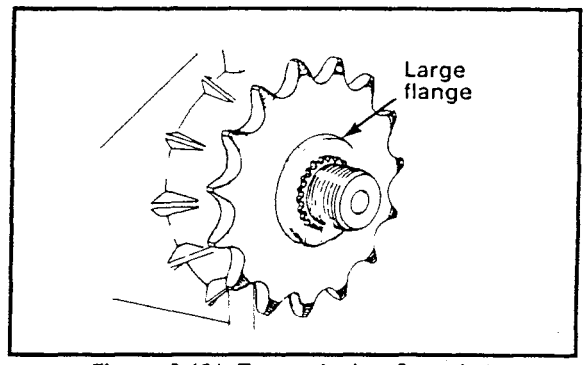


Figure 2-121. Transmission Sprocket

CAUTION

Replace lockwasher if it has been used more than twice or is damaged.

2. Place lockwasher in position on shaft. Use Loctite Loctite 242 (blue) on nut threads and install sprocket retaining nut.

3. Tighten nut to 100 N·m (75 ft-lbs) torque. Bend up tabs on lockwasher.

Drive Sprocket Removal

1. Disconnect drive chain as described earlier.

2. Apply rear brake and remove the sprocket fastening hardware.

Drive Sprocket Installation

1. Place sprocket on wheel flange, apply a drop of 242 blue Loctite to threads and install fastening hardware.

2. Install rear chain as described earlier. Be sure spring clip open end trails the direction of chain travel.

3. Apply rear brake and tighten sprocket fastening hardware to N·m 24 (18 ft- lbs) torque.

LUBRICATION SYSTEM

SPECIFICATIONS

OIL PUMP

Type	Trochoidal
Details	Refer to Chapter 2

OIL FILTER

Type	Barrel paper element
Size	50 mm dia. x 45 mm long

OIL STRAINER

Type	Gauze (Fine Mesh)

OIL LINES

Type	Gas/oil resistant
TOTAL OIL CAPACITY	3.2 litres (3.4 qts)
OIL TYPE	Use good quality Multigrade oil or HD 20W-50

TORQUE VALUES

ITEM	TORQUE N·m (ft-lbs)
Downtube drain plug	20 (15)
Engine crankcase drain plug	20 (15)
Filter cover screws	8 (6)

GENERAL (Figure 2-122, 3, 4)

The engine lubricating system is a dry sump type. This means there is no oil reservoir (sump) in the lower crankcase. The oil reservoir is the frame backbone and front downtube.

The engine oil pump takes suction from the reservoir after being filtered by the primary oil filter.

The oil is returned to the reservoir through an oil pipe line after circulating through the engine.

The oil pump is installed inside the R.H. crankcase half. The oil pump is a rotor pump assembly which has two pumps made up of inner and outer rotors; one pump is for discharge (feed) and the other is for suction (scavenging) oil.

NOTE

The scavenger pump capacity is three times the feed pump capacity.

The inner rotors of each pump are driven by the oil pump drive shaft, which is mounted off-center in the pump housing. The inner rotors drive the outer rotors. As the units rotate, the spaces between the inner and outer rotors are filled with oil. Within half a revolution, the lobes of the inner rotors move into the spaces of the outer rotors. This forces the oil out of the scavenger pump outlets. Some of the oil goes into the feed pump rotors, which work the same way. The feed pump forces the oil into the engine.

OIL FLOW (Figure 2-122, 3, 4)

The oil from the oil reservoir enters at the L.H. crankcase half INLET and goes to the R.H. crankcase half through an inside passage. The oil flows through this passage to the oil pump assembly scavenger side.

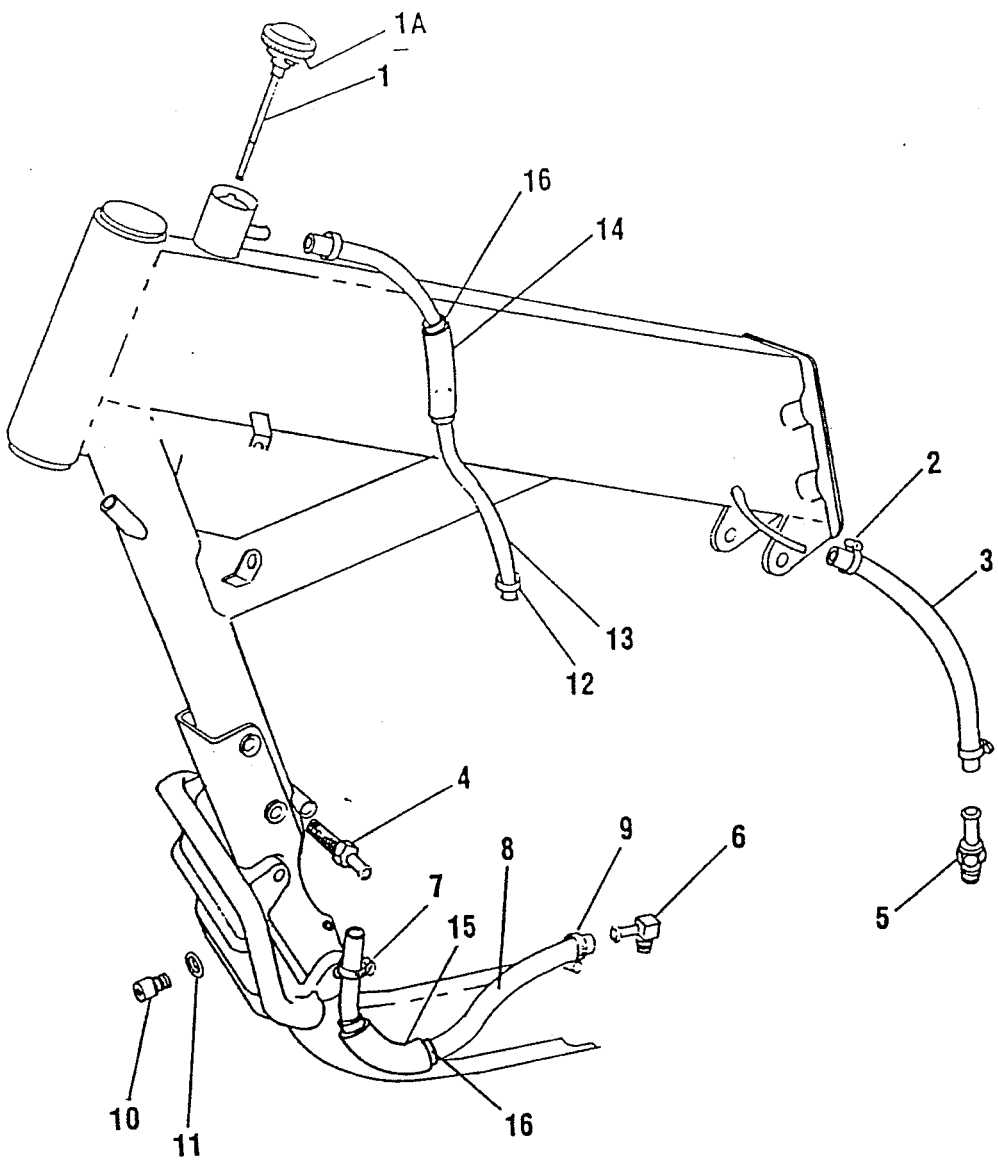
From the feed pump, the oil flows through a check valve, which opens under pressure, to the oil filter. It flows from the oil filter, through a RH crankcase half passage, to a rear cylinder/cylinder head stud oil passage.

From there, it goes to the cylinder head, lubricating all cylinder head components. The camshaft rotates in an oil bath fed by a small hole beneath the camshaft. As the oil bath level increases, oil fows through the cylinder head and cylinder passages to the L.H. crankcase half passages. From there, oil enters the clutch cover, lubricating the clutch, balancer gear, crankshaft gear, oil pump drive gear, idler gears and all other clutch cover components.

The L.H. crankcase half lower passages also lubricate the transmission, crankshaft, balancer, and shifter mechanism. To maintain proper crankshaft component lubrication, the R.H. crankshaft has an oil slinger.

The rotating components (crankshaft, balancer, etc.) splash oil on the cylinder wall for cylinder/piston lubrication. The oil pump has a small discharge nozzle that sprays oil at the underside of the piston and wrist pin. The piston oil ring scrapes the oil in the cylinder and forces oil into the lower crankcase assembly. Some oil enters four small piston holes, lubricating the connecting rod small end (piston pin). All the pressure-fed oil goes to the engine bottom through an oil strainer.

The scavenger pump sucks oil from the engine bottom through the cover upward to a R.H. crankcase half passage to the scavenger pump. Most of the oil leaves the scavenger pump through the R.H. crankcase half outlets (180° couplings) to the oil reservoir. The remaining oil is splashed through two oil pump body and two L.H. crankcase half holes over the transmission gears. Gravity fed, the oil returns to the engine bottom completing the lubricating circuit.



1	Dipstick assembly	9	Rad hose clamp
1A	Dipstick seal	10	Oil plug
2	Hose clamp	11	Washer
3	Oil return hose	12	Hose clamp
4	Oil strainer	13	Rocker arm hose
5	Hosr fitting	14	Small sleeve 130 mm length
6	MOD 90 DEG fitting	15	Large sleeve
7	Rad hose clamp	16	Tye wrap
8	Supply hose		

Figure 2-9. Oil Tank (Frame) & Hoses

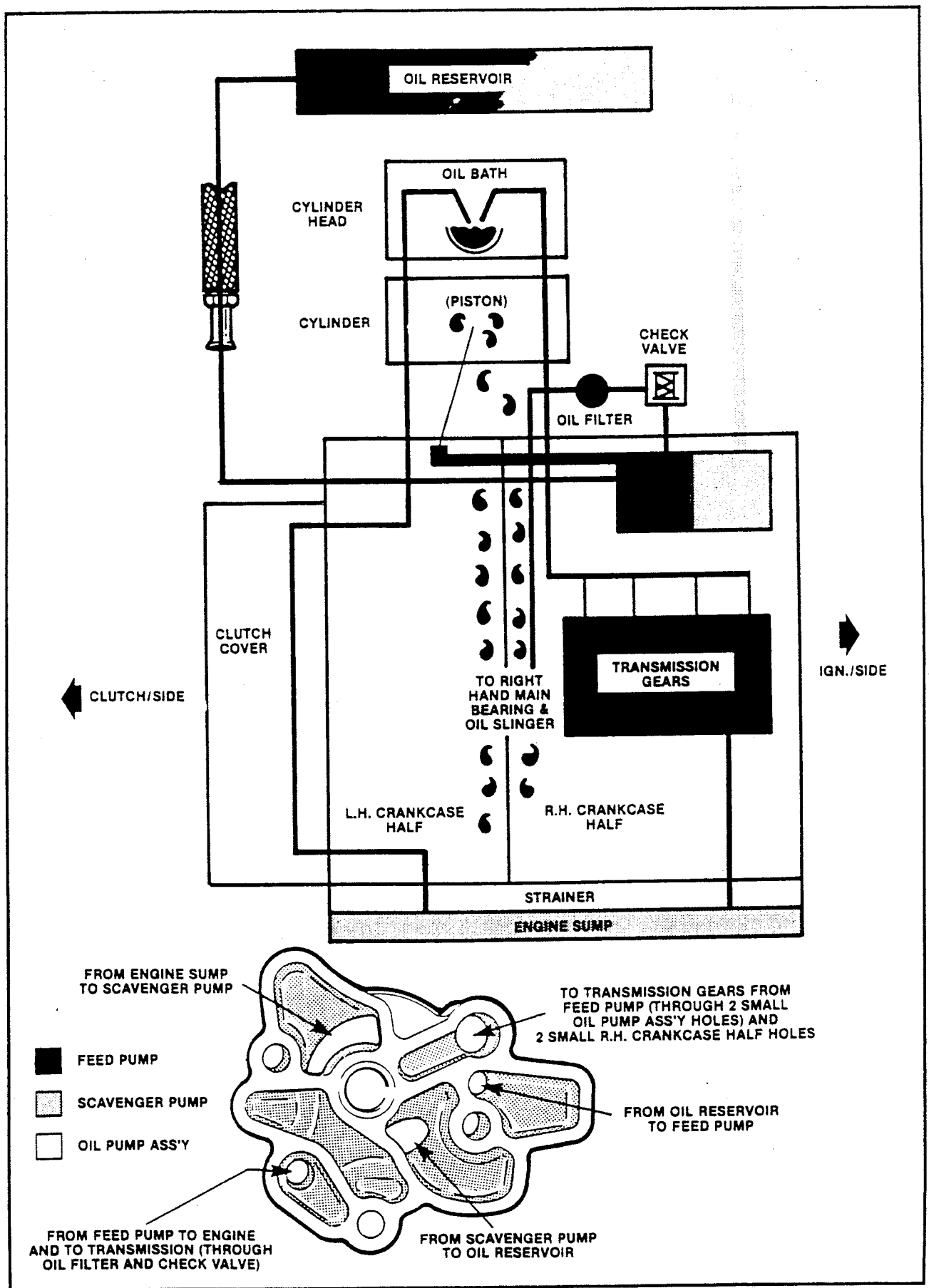
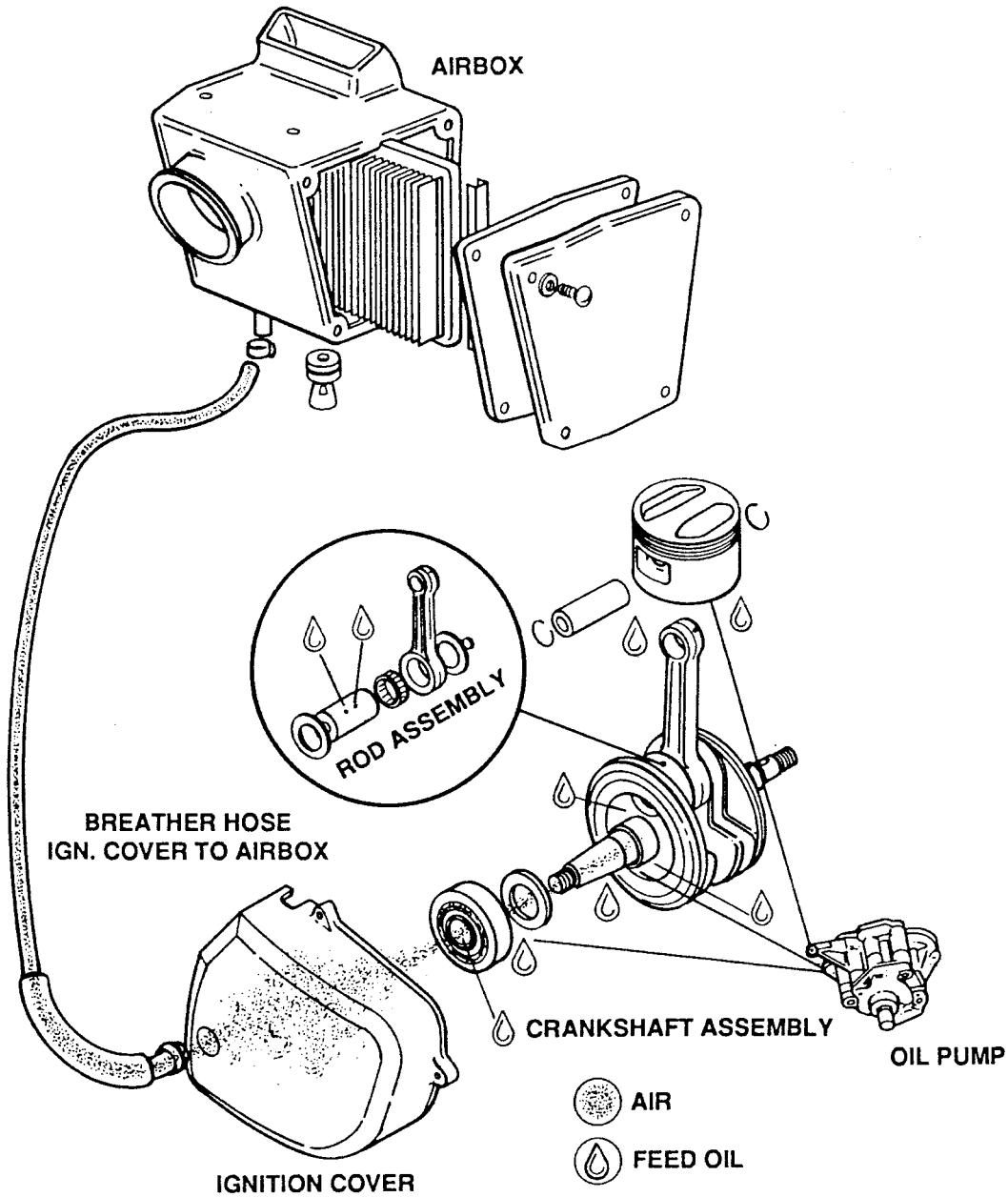


Figure 2-123. Engine Oil Flow Schematic



MT-350 BREATHER SYSTEM

Figure 2-124.

ENGINE OIL SERVICE

Engine oil is a major factor in the performance and service life of the engine. Use the proper grade of oil for the lowest temperature expected before the next oil change as shown below.

Use Harley-Davidson MULTI-GRADE OIL for normal and severe usage in air temperatures between 20°F and 100°F. For other conditions, or if MULTI-GRADE is not available, use oils as shown in chart, below.

Recommended Engine Oils

Oil Type	Viscosity	Harley-Davidson Rating	Ambient Temperature °F	Cold Weather Starts Below 50° F.
Harley-Davidson Multi-grade	SAE 20W50	HD 240	Above 20° to 100°	Excellent
Harley-Davidson Regular Heavy	SAE 50	HD 240	Above 80° to 100 + °	Poor
Multi-grade API grade SF or SG	SAE 15W40	—	-10° to 80°	Acceptable
Multi-grade API grade SF or SG	SAE 15W50	—	Above 80° to 100°	Acceptable

Check Engine Oil Level

Engine oil level should be checked only when engine is at normal operating temperature. The engine will require a longer warm up period in colder weather. The motorcycle should be driven to ensure oil is hot and is at normal operating oil pressure. When the above conditions are met, turn the engine off and check oil level.

CAUTION

Do not allow hot oil level to fall below lower mark on dipstick. Do not overfill oil tank. Overfilling may cause oil carryover to the air cleaner.

CAUTION

Do not switch brands indiscriminately because some oils interact chemically when mixed. Use of inferior oils or non-detergent oils can damage the engine.

The dipstick is an integral part of the oil filler cap and is used to check the engine oil level in the frame backbone.

Check the oil level only by the following procedure.

NOTE

Some oil will drain into the bottom of the crankcase when the engine is off and will be pumped back into the reservoir when the engine is started, raising the level.

1. Start the engine and let it run until it will idle evenly without choke.
2. Let engine idle for at least 45 seconds. This will allow the engine oil level to become steady.
3. Stop the engine and be sure the machine is upright.
4. Press and rotate reservoir oil cap counter-clockwise to release.
5. Remove and wipe oil cap dipstick.
6. See Figure 2-125. Insert dipstick, remove and check to see that the level is between the upper and lower marks.

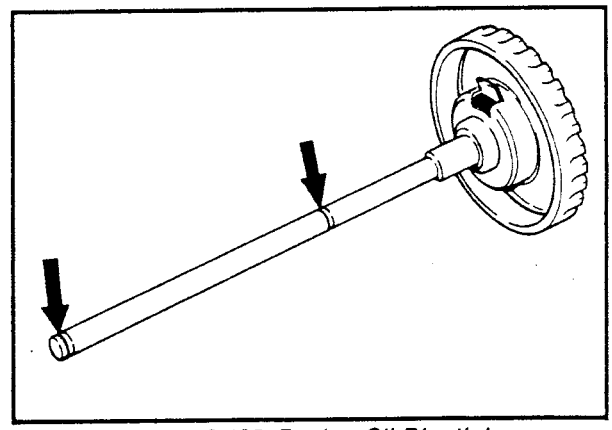


Figure 2-125. Engine Oil Dipstick

CAUTION

Do not overfill. Overfilling will cause oil to overflow the reservoir.

7. Add oil if necessary.
8. Replace cap.

Change Engine Oil and Service/Replace Oil Filters

Usually, most of the oil is in the frame reservoir while a small portion is in the engine and oil lines.

The engine oil and oil filter should be changed and the primary oil filter serviced at the specified service interval.

Drain Engine Oil

The engine must be warm to properly drain the oil.

1. See Figure 2-126. Drain the frame reservoir by removing the plug on the front frame downtube.

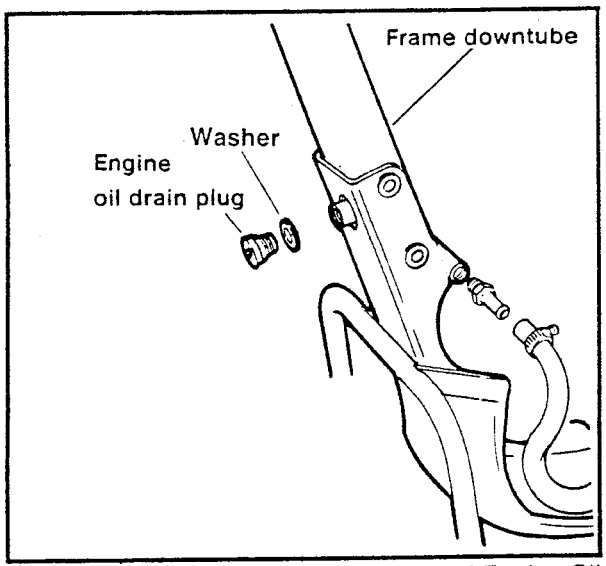


Figure 2-126. Front Frame Drain Plug and Engine Oil Strainer

NOTE

The oil tends to spray forward when plug is removed.

2. See Figure 2-127. Drain the engine oil by removing the engine oil plug.

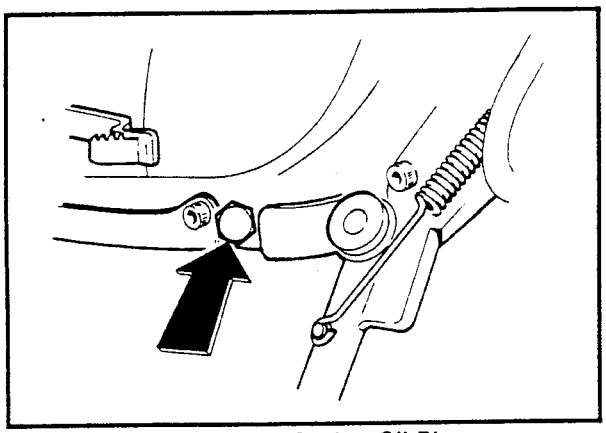


Figure 2-127. Engine Oil Plug

Clean/Service Engine Oil Strainer (Figure 2-128)

The oil strainer is located behind the engine cylinder on the left hand side. Clean every 16,000 Km (10,000 miles). To service, remove as follows:

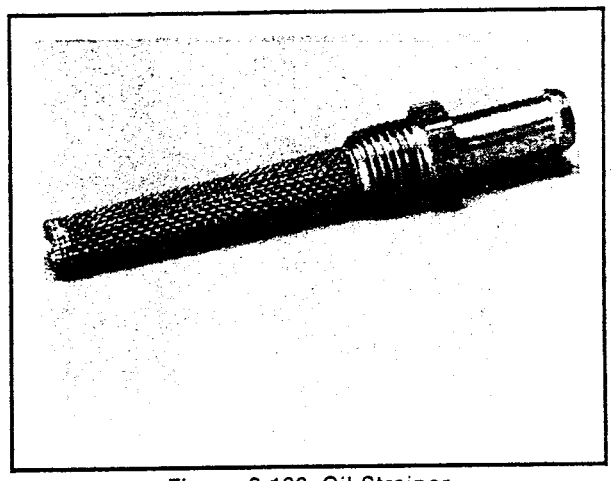
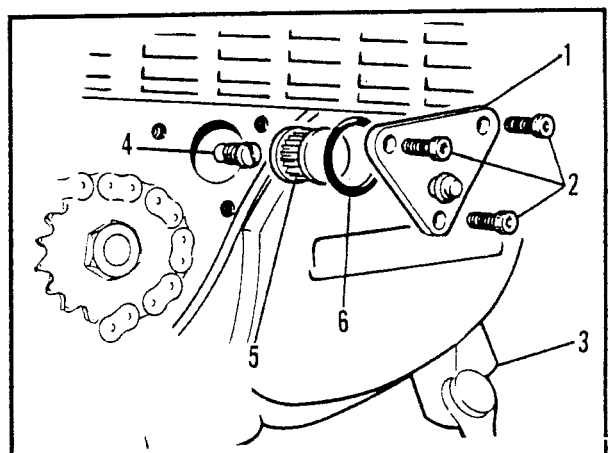


Figure 2-128. Oil Strainer

1. With the machine completely drained of oil, remove the oil pipe hose clamps.
2. The oil strainer can now be unscrewed from the machine for servicing.
3. Thoroughly clean with a suitable solvent or cleaner. Wash all debris from the inside and outside of the filter. Clean threads and sealing lips.
4. As a precaution, the oil delivery line to the primary oil filter may be disconnected at the 90° fitting at the frame and throughly rinsed to remove any debris.
5. When installing, apply Loctite pipe sealant to threads.

Engine Oil Filter (Figure 2-129)

At each oil change, replace the engine oil filter. Inspect the O-ring for wear or damage.



1. Engine oil filter cover
2. Retaining screws
3. Pivot plate
4. Safety valve
5. Filter
6. O-ring

Figure 2-129. Engine Oil Filter

The oil filter type is equipped with a safety valve to prevent lack of oil in the engine caused by a blocked oil filter. To check, depress the safety valve with a finger. It should move freely.

The oil filter is behind the sprocket cover on the right-hand side of the engine. To gain access, remove the rear brake pedal and sprocket cover

Removal/Installation

1. Remove rear brake pedal lever and let dangle from clevis.
2. Remove transmission output sprocket cover.
3. Remove cover (2), and O-ring (6). The engine oil filter is housed behind the cover.
4. Replace filter.

CAUTION

The oil filter is equipped with a check valve to prevent lack of oil in the engine caused by a blocked oil filter. To inspect, depress the check valve with a finger. It should move freely.

5. Install the new filter and replace the cover. Replace the O-ring, if necessary. Tighten the filter cover screws to 8 N·m (6 ft-lbs) torque.
6. Install sprocket cover and brake pedal lever.
7. Be sure that all oil lines are connected and drain plugs installed. See specifications for torque values.
8. See Figure 2-130. Fill the reservoir with oil until the level is between the upper and lower marks on the dipstick.

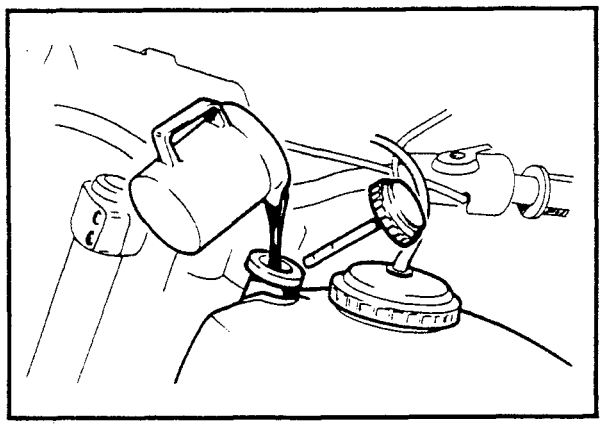


Figure 2-130. Oil Replacement

9. Run the engine and be sure that oil is circulating and is being returned to the reservoir by looking through the filler neck. If no oil appears within 20 seconds, stop engine and investigate. Probable fault is an air lock in the oil lines, release this air lock by loosening the oil inlet line until oil appears.
10. install the oil inlet line.
11. After running the engine, add oil as described in the previous section. The total quantity of oil replaced should be between 2.8 - 3.1 litres (2.96 - 3.3 qts), depending on whether or not both filters have been serviced.
12. Check for oil leaks.

CHECK VALVE (Figure 2-131)

Check valve is located behind oil filter.

1. Remove oil filter cover and filter. See OIL FILTER
2. Use a screwdriver to remove the check valve retaining screw and pull out the check valve.
3. Inspect for dirt on the check valve or on the check valve seat. Clean if necessary.
4. Check the valve operation by pushing the spring, it should come back freely. The spring must not be broken.

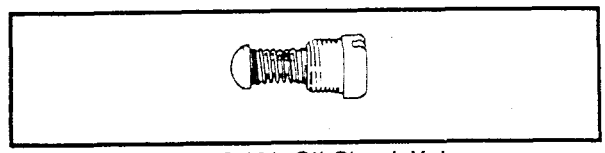


Figure 2-131. Oil Check Valve

5. Replace the rubber part.
6. Install in reverse order and tighten the check valve to 7 N·m (5 ft-lbs) torque.

OIL LINES (Figure 2-132)

1. The oil lines inlet and outlet is located directly behind the cylinder, on top of the crankcase.

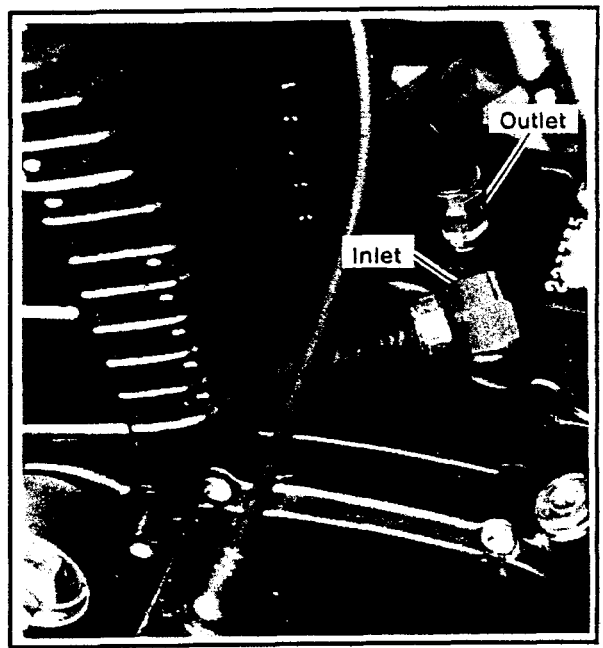


Figure 2-132. Engine Oil Pipe Fittings

CAUTION

After assembling the engine, be sure the oil is circulating properly. Start the engine then look in the backbone filler neck, using a flashlight, and see if the oil is flowing to the reservoir. If not, there is probably an air lock in the oil pipes, release this air lock by loosening the oil inlet line until oil appears, then install the oil inlet line.

3. This procedure must be repeated each time the inlet hose is drained or the oil pump disassembled or severe engine damage will result.

OIL PUMP REMOVAL/ DISASSEMBLY

Special Tools	Torque Values
None	Oil pump bolts 11 - 13.6 N·m (8 - 10 ft-lbs)

NOTE

Before disassembling oil pump, check tolerances as described in OIL PUMP TOLERANCES AND MEASUREMENTS, following.

1. Remove engine. See ENGINE REMOVAL/ INSTALLATION.
2. Remove cylinder and cylinder head. See CYLINDER HEAD & CYLINDER REMOVAL/INSTALLATION.
3. Seperate crankcase halves. See CRANKCASE DISASSEMBLY/ASSEMBLY.
4. See Figure 2-133. Remove bolts (1) and lockwashers (2).
5. Remove pump cover (3). Remove washer (4) and oil seal (5).
6. Remove inner discharge rotor (6) and outer discharge rotor (7). Remove pin (8).
7. Remove discharge pump housing (9). Remove oil seal (10).
8. Remove inner suction rotor (11) and outer suction rotor (12). Remove pin (13).
9. Remove drive shaft (14) from pump housing (15). Remove dowel pin (16).
10. Remove pump housing (15).
11. Remove and discard gasket (17).

Check all parts for wear or damage. Replace as necessary. Clean all parts including flange surfaces.

OIL PUMP ASSEMBLY/ INSTALLATION

NOTE

- *Before assembling oil pump, lubricate all parts with engine oil.*
- *Lubricate only the inside of the oil seals (13 & 8).*

1. See Figure 2-133. Install pin (13) in shaft (14) and place shaft in pump housing (15). Install pin (19).

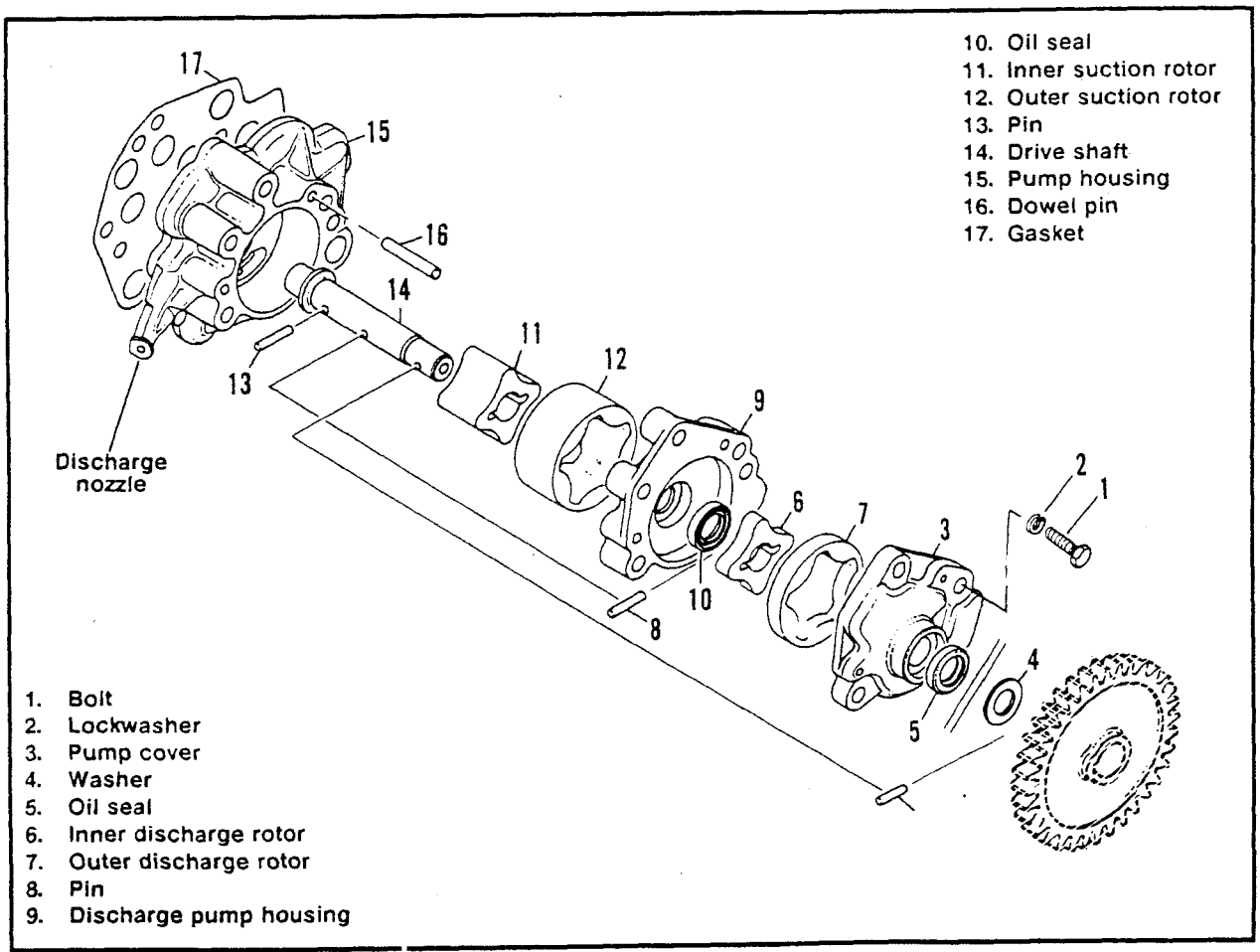


Figure 2-133. Oil Pump

2. Assemble inner suction rotor (11) and outer suction rotor (12) and slide onto shaft so inner rotor engages pin.
3. Apply a suitable sealant to flange surfaces and place discharge pump housing (9) in position on oil pump housing.
4. Install oil seal (10) in discharge pump housing.
5. Install pin (8) in shaft. Assemble inner discharge rotor (6) and outer discharge rotor (7) and slide onto shaft so inner rotor engages pin.
6. Apply a suitable sealant to flange surfaces and place pump cover (3) in position on discharge pump housing.
7. Install oil seal (5) in pump cover. Install washer (4). Place oil pump assembly and new gasket (17) in position.
8. Install bolts (1) and lockwashers (2). Tighten the bolts to 11 - 13.6 N·m (8 - 10 ft-lbs) torque.

CAUTION

Before assembling crankcase, turn oil pump shaft to be sure pump turns freely with no binding.

9. Assemble crankcase halves. See CRANKCASE DISASSEMBLY/ASSEMBLY.
10. Install cylinder and cylinder head. See CYLINDER HEAD & CYLINDER REMOVAL/INSTALLATION.
11. Install engine. See ENGINE REMOVAL/INSTALLATION.

OIL PUMP TOLERANCES AND MEASUREMENTS

1. See Figure 2-134. Measure the oil pump tip clearance.

Standard clearance:
Min: 0.01 mm (0.0004 in.)
Max: 0.10 mm (0.0039 in.)

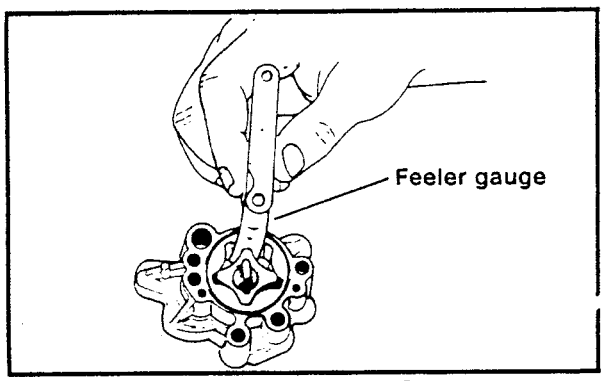


Figure 2-134. Oil Pump Tip Clearance

2. See Figure 2-135. Measure the oil pump body clearance.

Standard clearance:
Min: 0.11 mm (0.0043 in.)
Max: 0.19 mm (0.0074 in.)

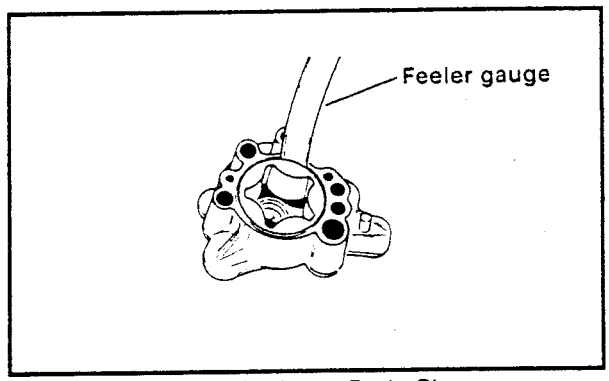


Figure 2-135. Oil Pump Body Clearance

1. See Figure 2-136. Measure the oil pump end clearance.

Standard Clearance:
Min: 0.02 mm (0.0008 in.)
Max: 0.09 mm (0.0035 in.)

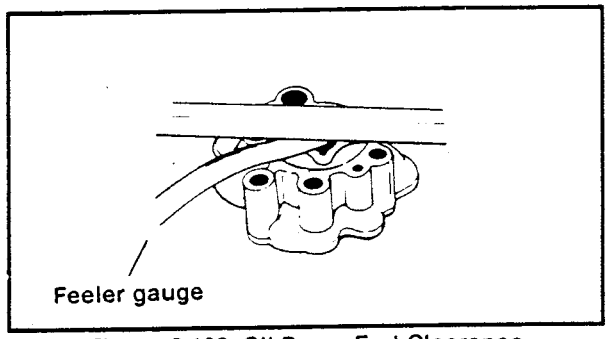


Figure 2-136. Oil Pump End Clearance

CAUTION

The inner and outer rotors should be replaced if they are scratched.

CHECK OIL PRESSURE

1. To check oil pressure, remove the oil filter cover plug. Install an oil pressure guage and start the engine.

Pressure should be:
Cold engine 100-200 kPa (14-29 PSI)
Warm engine 50 kPa (7 PSI)

NOTE

Use a 0-200 kPa (0-30 PSI) oil pressure gauge.

2. See Figure 2-137. A fuel pump pressure gauge may be used instead. A special fitting is required such as Snap-on coupling 1/4 in. pipe threads or equivalent.

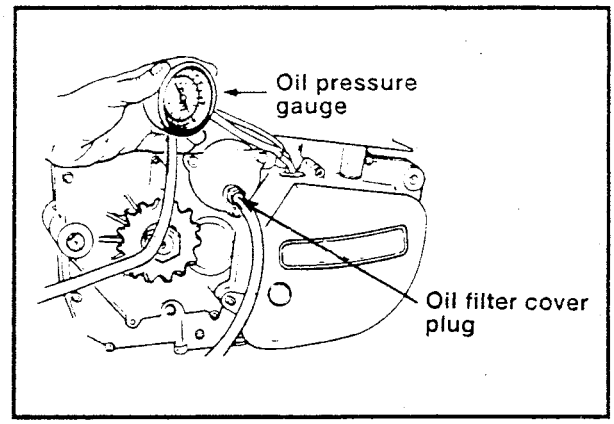


Figure 2-137. Oil Pressure Gauge Installation

LUBRICATION SYSTEM TROUBLESHOOTING

Symptom	Fault	Remedy
1. Oil on external surface of machine.	Overfilled with oil. Oil pipe coupling loose. Split oil pipe.	Check according to oil filling procedure. Check, retighten Replace
2. Oil not returning to reservoir.	No oil in machine. Crushed, broken or disconnected oil return pipe- perhaps giving symptom No. 1. No supply to oil pump because of: A. Crushed, broken or disconnected oil feed lines.-perhaps giving symptom No. 1. B. Completely blocked primary oil filter. Oil pump ineffective, because of: A. Oil pump drive gear broken. B. Oil pump worn out.	Check, add oil according to procedure. See section three. Investigate, replace/connect as required. Investigate, replace/connect as required. Check, clean/replace as necessary. Investigate, replace. Investigate, compare to specification. Replace as necessary
3. Oil level drops dramatically when standing with engine off.	Non-return valve stuck/broken.	Check, replace.

FUEL / EXHAUST SYSTEM

SUBJECT PAGE NO.

CARBURETOR

GENERAL (Figure 3-1)

The carburetor is a constant velocity, gravity fed type with a float operated inlet valve, a variable venturi, a throttle stop screw for idle speed adjustment and a fuel enrichment system for starting.

Idle and transfer ports provide a balanced fuel mixture during the transition period from stop to mid-range. A vacuum piston controls venturi opening.

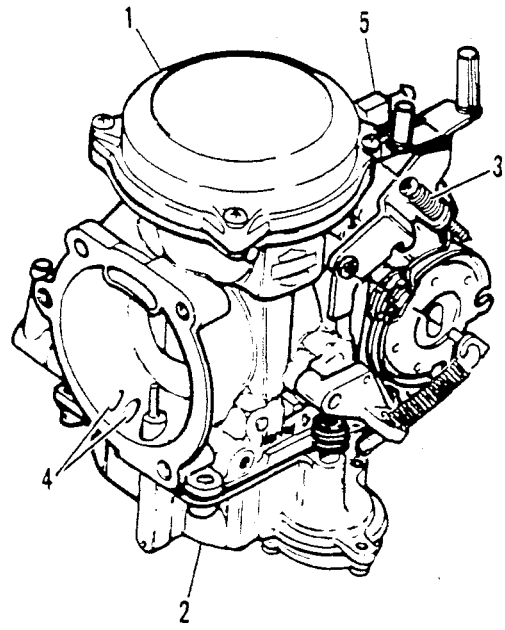
The carburetor is specifically designed to control exhaust emissions. All jets are fixed. The idle mixture has been preset at the factory.

The idle (air/fuel) mixture screw is recessed in the carburetor casting. The opening is sealed with a plug because it is intended that the idle mixture be non-adjustable.

NOTE

Adjusting mixture setting by procedures other than specified in this section may be in violation of E.P.A. regulations.

This system partially compensates for changes in the mixture that are normally caused by changes in altitude. Because atmospheric pressures drop as altitude increases, The pressure difference in the upper and lower chambers is reduced, which provides less fuel to the engine.



1. Vacuum piston chamber
2. Float chamber
3. Screw, idle speed
4. Air jets
5. Vacuum fitting

Figure 3-1. Carburetor

TROUBLESHOOTING

OVERFLOW

Check for:	Remedy:
1. Damaged or non-venting fuel tank cap.	1. Replace cap.
2. Loose float bowl screws.	2. Tighten screws.
3. Damaged float bowl O-ring.	3. Replace O-ring
4. Damaged or leaking float assembly.	4. Replace float assembly
5. Particle contamination in inlet fitting cavity.	5. Clean and clear cavity and fuel supply tract
6. Worn or dirty inlet valve or seat.	6. Clean or replace valve and clean seat.
7. Improper fuel level in float bowl.	7. Adjust float tab for correct fuel level.
8. Misaligned float halves.	8. Align and adjust float level.

POOR IDLING

Check for:	Remedy:
1. Idle speed improperly adjusted.	1. Adjust operating idle speed.
2. Inlet system air leak	2. Correct as required.
3. Loose low speed jet	3. Tighten jet.
4. Plugged low speed jet	4. Clean contaminants and clear passages.
5. Contaminated or plugged low speed system.	6. Adjust, clean, or replace.
6. Enrichener valve not seated or leaking.	7. Repair
7. Leaking accelerator pump	

POOR FUEL ECONOMY

Remedy:	Remedy:
1. Excess use of enrichment system.	1. Limit system use.
2. Enrichener valve not seated or leaking.	2. Adjust, clean or replace.
3. Dirty air cleaner element.	3. Clean or replace as required.
4. Damaged or non-venting fuel tank cap.	4. Replace cap.
5. High speed riding style.	5. Modify riding habits.
6. Idle speed improperly adjusted.	6. Adjust operating idle speed.
7. Loose jets.	7. Tighten jets.
8. Fuel level too high.	8. Adjust float level.
9. plugged or restricted bowl vent.	9. Clean and clear passages.
10. Worn or damaged needle or needle jet.	10. Replace needle or needle jet.
11. Vacuum piston assembly malfunction.	11. See Vacuum Piston troubleshooting.
12. Plugged air jets or passages.	12. Clean and clear passages.
13. Excessive accelerator pump output	13. Replace accelerator pump nozzle

POOR ACCELERATION

Check for:	Remedy:
1. Throttle cables misaligned.	1. Adjust throttle cables.
2. Inlet system air leak.	2. Correct as required.
3. Damaged or non-venting fuel tank cap.	3. Replace cap.
4. Restricted fuel supply passages.	4. Correct and clear restriction.
5. Plugged bowl vent or overflow.	5. Clean and clear passages.
6. Enrichener valve not seated or leaking.	6. Adjust, clean or replace.
7. Worn or damaged needle or needle jet.	7. Replace assembly.
8. Vacuum piston malfunction.	8. See Vacuum Piston troubleshooting.
9. Plugged jets or passages.	9. Clean and clear as required.
10. Fuel level (float chamber) too low.	10. Adjust float level.
11. Accelerator pump leaking or no output	11. Repair as necessary

TROUBLESHOOTING (cont)

Hard Starting

Check for:	Remedy:
1. Enrichener system plugged, not properly functioning or improperly operated.	1. Clean adjust, replace or read Owners Manual
2. Inlet system air leak.	2. Correct as required.
3. Restricted fuel supply.	3. Correct fuel supply or passages.
4. Fuel overflow.	4. See Overflow troubleshooting.
5. Plugged slow jet or passages.	5. Clean and clear jet or passages.

Poor Performance on Road

Check for:	Remedy:
1. Idle speed improperly adjusted.	1. Adjust operating idle speed.
2. Inlet system air leak.	2. Correct as required.
3. Damaged or non-venting fuel tank cap.	3. Replace cap.
4. Dirty or damaged air cleaner element.	4. Clean or replace.
5. Enrichener valve not seated or leaking.	5. Adjust, clean or replace.
6. Restricted fuel supply tract.	6. Correct and clear restriction.
7. Plugged bowl vent or overflow.	7. Clean and clear passages.
8. Loose or plugged fuel and air jets or passages.	8. Clean, clear and correct as required.
9. Worn or damaged needle or needle jet.	9. Replace assembly.
10. Vacuum piston assembly malfunction.	10. See Vacuum Piston Troubleshooting.
11. Accelerator pump inoperative.	11. Repair as required.

POOR HIGH SPEED PERFORMANCE

Check for:	Remedy:
1. Inlet system air leak.	1. Clean or replace.
2. Enrichener valve not seated or leaking.	2. Adjust, clean or replace.
3. Damaged or non-venting fuel tank cap.	3. Replace cap.
4. Restricted fuel supply tract.	4. Correct and clean restriction.
5. Dirty or damaged air cleaner element.	5. Clean or replace.
6. Plugged bowl, vent or overflow.	6. Clean and clear passages.
7. Worn or damaged needle or needle jet.	7. Replace assembly.
8. Vacuum piston assembly malfunction.	8. See Vacuum Piston troubleshooting.
9. Loose or plugged main jets or passages.	9. Tighten, clean, clear as required.
10. Improper fuel level.	10. Adjust float level.
11. Accelerator pump inoperative	11. Repair as required

VACUUM PISTON ASSEMBLY TROUBLESHOOTING

PISTON DOES NOT RAISE PROPERLY	
Check for:	**Remedy:**
1. Enrichener valve open, not seated or leaking.	1. Adjust, clean or replace.
2. Piston atmosphere vent blocked.	2. Clear vent.
3. Diaphragm cap loose, damaged or leaking.	3. Tighten or replace cap.
4. Spring binding.	4. Correct or replace spring.
5. Diaphragm pinched at lip groove.	5. Reposition diaphragm lip.
6. Torn diaphragm.	6. Replace piston diaphragm assembly.
7. Piston binding.	7. Clean piston slides and body or replace piston.
8. Piston vacuum passage plugged.	8. Clean and clear passage.
PISTON DOES NOT CLOSE PROPERLY	
Check for:	**Remedy:**
1. Spring damaged.	1. Replace spring.
2. Piston binding.	2. Clean piston slides and body or replace piston.
3. Piston diaphragm ring dirty or damaged.	3. Clean or replace piston.

OPERATION

Enrichener (Figure 3-2)

The handlebar mounted enrichener lever, next to the ignition switch, controls the opening and closing of the enrichener valve at the carburetor. The enrichener knob has two positions at full open, and 1/2 way closed.

Cool Engine

BE SURE THROTTLE IS CLOSED. Pull enrichener lever fully back. Turn the ignition switch on and press starter switch to operate the electric starter.

CAUTION

You must pay close attention to a C. V. carburetor equipped vehicle's warm up time. Both excessive use and insufficient use of the enrichener may cause poor performance, erratic idle, poor fuel economy and spark plug fouling.

Outside Temperature Less than 50°

The vehicle should be allowed to warm up for only 15-30 seconds before being driven. Initial warm-up periods longer than 30 seconds are not recommended.

1. If the outside temperature is less than 50° F., ride for 5 minutes or 3 miles with enrichener lever fully back.
2. After 5 minutes or 3 miles push the enrichener lever in to the 1/2 way position. Ride another 2 minutes or 2 miles.

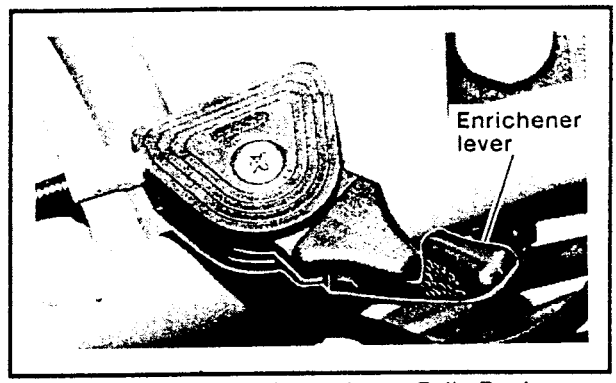


Figure 3-2. Enrichener Lever Fully Back

3. After 2 minutes or 2 miles push enrichener Lever fully back.

Outside Temperature Greater than 50° F.

The vehicle should be allowed to warm up for only 15-30 seconds before being driven. Initial warm-up periods longer than 30 seconds are not recommended.

1. If the outside temperature is greater than 50° F., ride for 3 minutes or 2 miles with enrichener lever fully back.
2. Push the enrichener lever in to the 1/2 way position. Ride another 2 minutes or 2 miles.
3. After 2 minutes or 2 miles push enrichener lever fully in.

Warm or Hot Engine

Open throttle 1/8-1/4. Turn on ignition switch and operate electric starter. DO NOT USE ENRICHENER.

Fuel Supply System (Figure 3-3)

Theory of Operation

Fuel from the fuel tank passes through the inlet valve into the float chamber. The fuel entering the chamber causes the float to rise until it shuts off the fuel valve, stopping flow at a level pre-determined by float level setting.

The float chamber is vented to atmosphere through an air passage opening in the air cleaner mounting flange

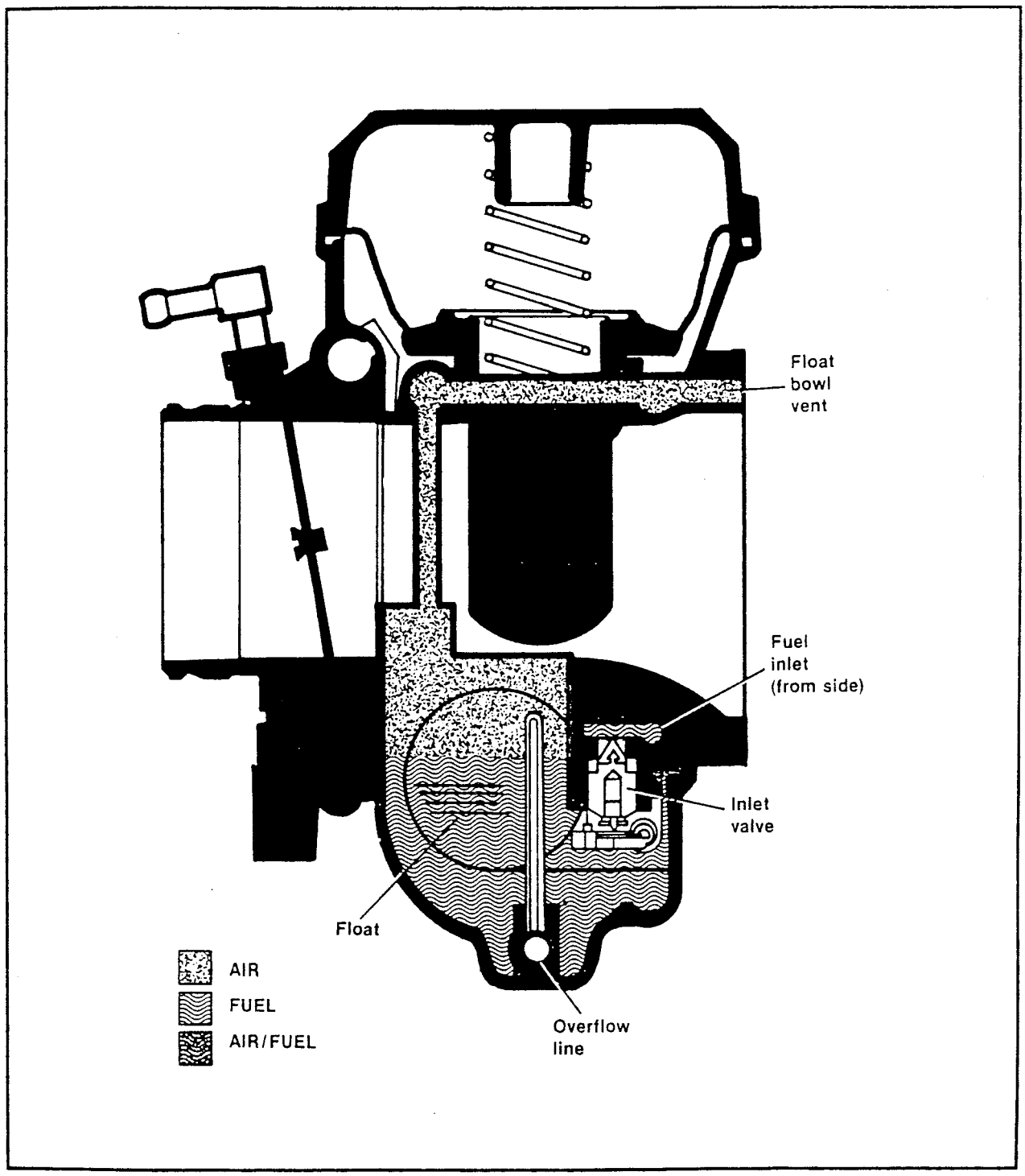


Figure 3-3. Fuel Supply System

Starter System (Figure 3-4)

The starting circuit consists of a cable actuated starter valve and converging fuel and air passages in the carburetor body.

Fuel metered through the enrichener jet is directed upward through a passage to the valve chamber. The starter valve opens the fuel passage to the carburetor venturi (vacuum side) when the enrichener knob is pulled outward. The engine draws air through a molded plastic airbox containing a rectangular paper element air filter, air intake system, and the carburetor venturi. Air from an opening in the carburetor inlet is directed to the valve chamber, where it mixes with incoming fuel.

Low pressure, (vacuum) created by the downward stroke of the engine pistons, causes the higher pressure in the float chamber to force the fuel/air mixture through the fuel/air outlet passage in the carburetor venturi.

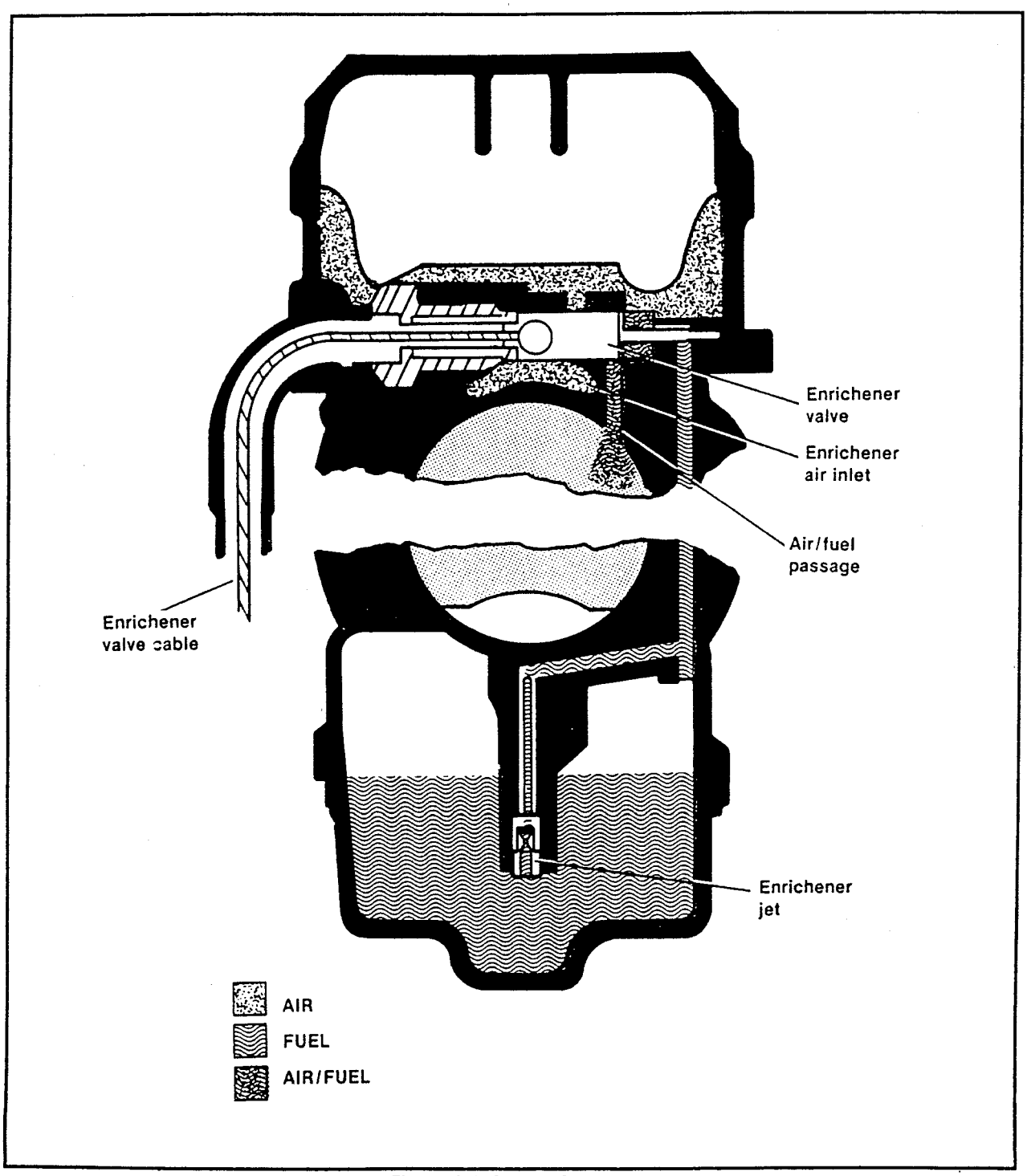


Figure 3-4. Starter System

Idle and Low Speed Circuit (Figure 3-5)

At idle with the throttle plate closed and the air stream cut off, idle speed is maintained by fuel metered through the slow jet. Air from the slow air jet mixes with the fuel and is delivered to the idle port at the vacuum side of the throttle plate. At low speed as the throttle plate is cracked open the transfer ports are exposed to the vacuum side of the throttle plate and additional fuel is directed to the barrel of the carburetor. With the throttle plate cracked open a quantity of fuel also enters the air stream from the needle jet. The idle and transfer ports supply additional fuel to the carburetor barrel to assist during the transition period from idle to mid range.

The venturi opening is reduced by the low position of the vacuum piston. This enables initial air stream velocities to be higher than normally attainable with fixed venturi carburetors. The higher air stream velocities provide greater quantities of fuel necessary for good acceleration.

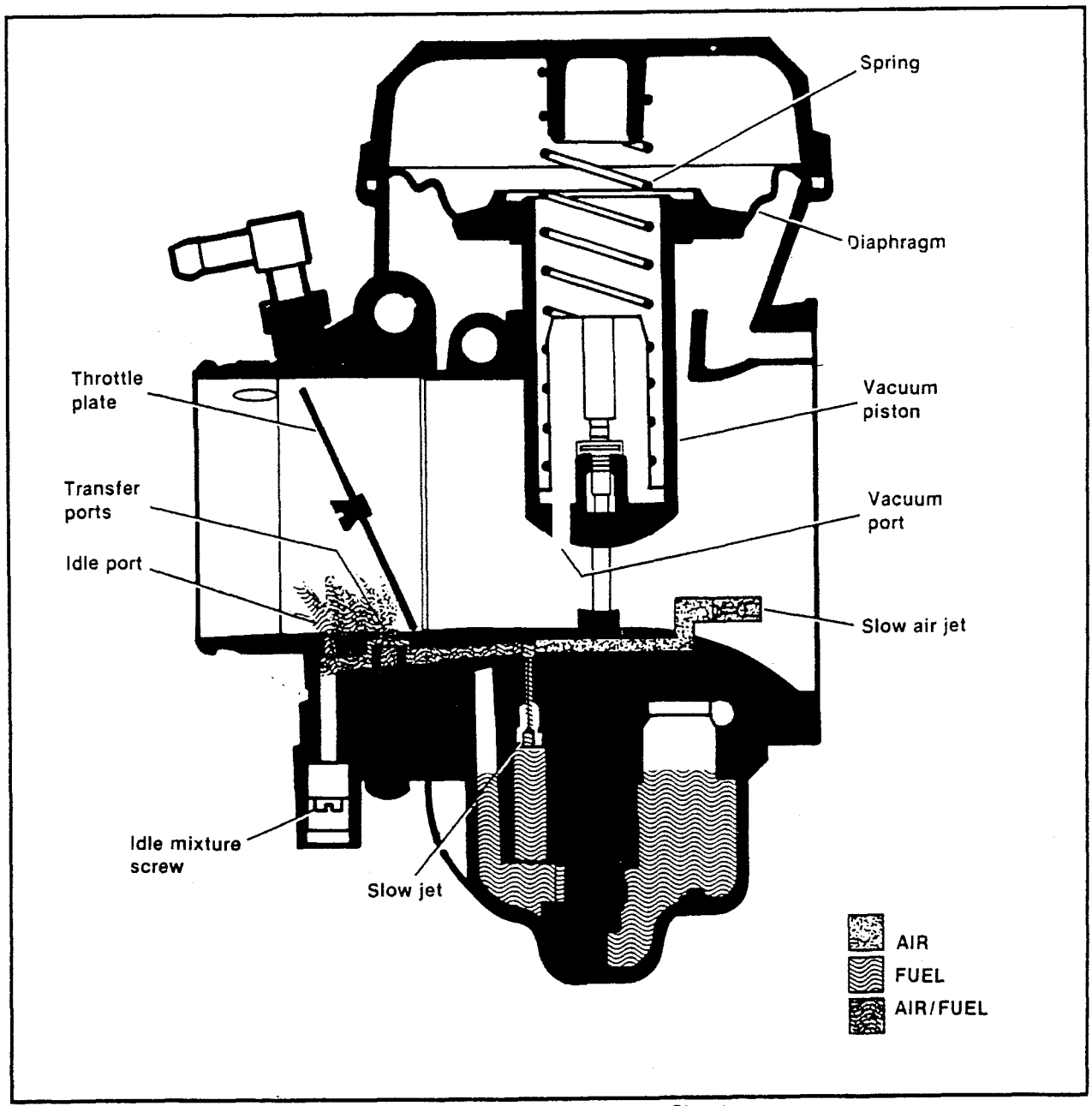


Figure 3-5. Idle and Low Speed Circuit

Mid Range Slide Position and Fuel Discharge (Figure 3-6)

As the throttle plate is opened air flow increases through the carburetor and the pressure drop in the venturi near the needle jet increases.

The low pressure in the venturi travels through the vacuum port in the vacuum piston to the chamber above the diaphragm. The chamber beneath the diaphragm is vented to atmospheric pressure by a passage from the chamber to the carburetor inlet. The higher pressure at the underside of the diaphragm overcomes spring pressure and moves the vacuum piston upward in proportion to the pressure difference between chambers.

The tapered needle moves upward with the vacuum piston, opening the needle jet. The higher pressure in the float chamber forces fuel into the needle jet passage. Air at atmospheric pressure from the main air jet is forced through the main bleed tube openings and mixes with the fuel. The fuel air mixture is then delivered through the needle jet into the air stream.

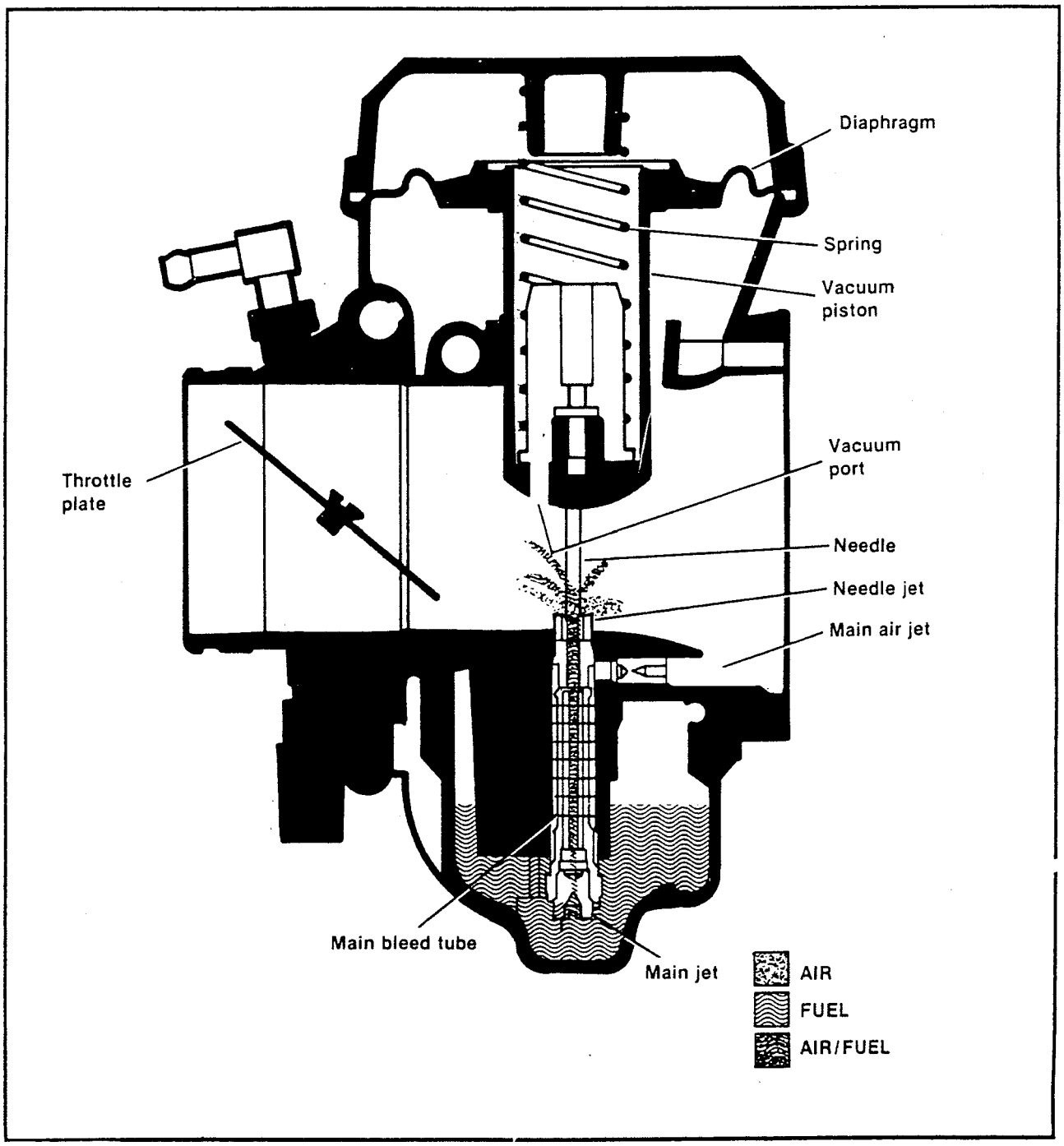


Figure 3-6. Mid Range Slide Position and Fuel Discharge

High Speed Circuit Slide Position and Fuel Discharge (Figure 3-7)

As the throttle plate is opened, the pressure difference between the chambers above and below the diaphragm increases and the vacuum piston moves further upward.

The venturi opening increases and the needle is lifted further out of the the needle jet. The quantity of fuel and the volume of air are simultaneously increased and metered to the proportions of engine demand by the variable venturi and needle lift. With the vacuum piston fully upward, the venturi opening is fully enlarged and the needle jet opening exposure to the air stream is at its maximum. Air and fuel supplies are now available in quantities sufficient to meet all engine demands.

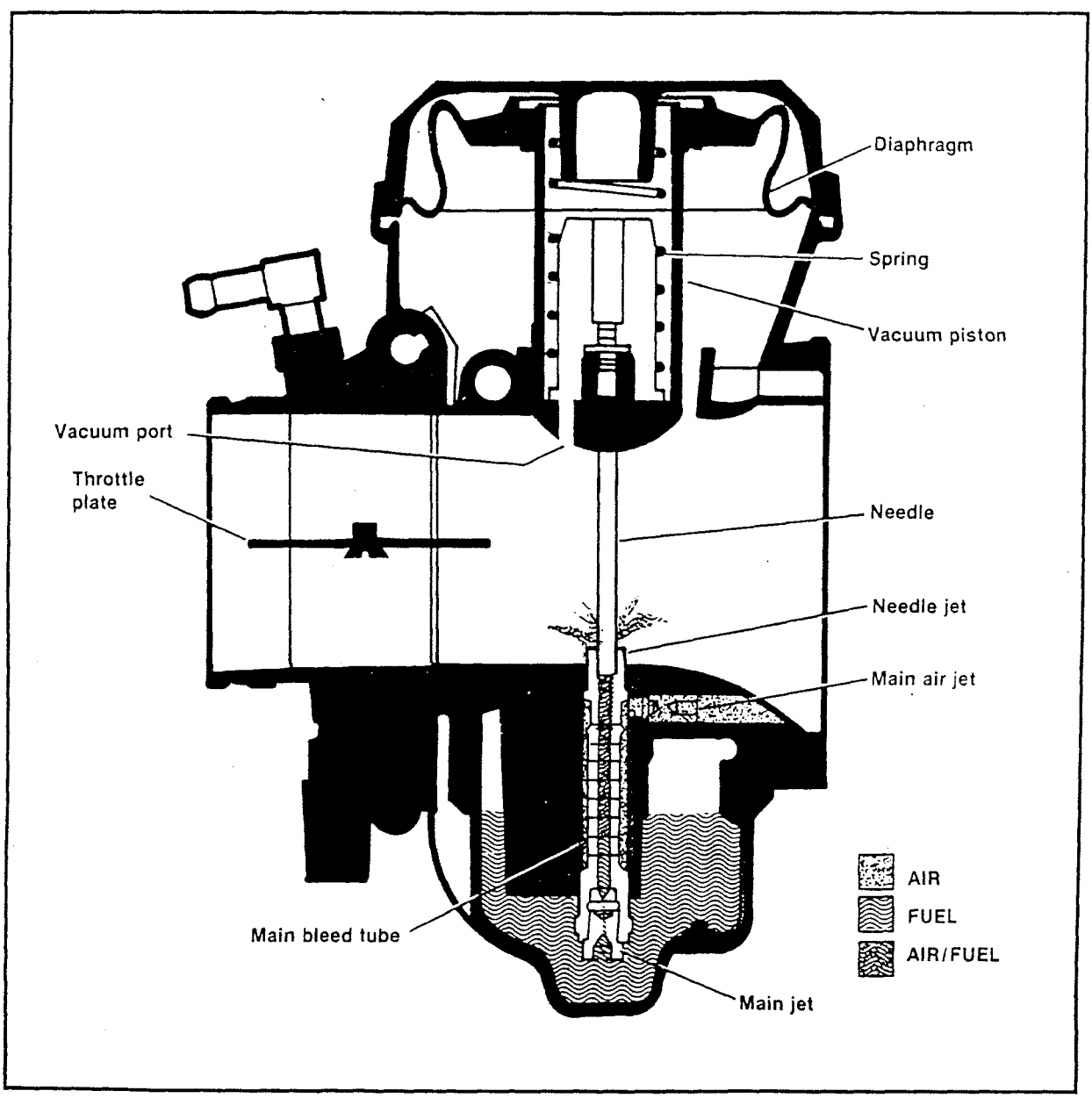


Figure 3-7. High Speed Circuit Slide Position and Fuel Discharge

Accelerator Pump System (Figure 3-8)

The accelerator pump system uses sudden throttle openings (rapid accelerations) to quickly inject fuel into carburetor venturi to provide extra fuel for smooth acceleration. This fuel also assists engine operation during cold engine warm-up when the enrichener is turned off prematurely.

Rapid throttle action during the first third of throttle travel, pushes the pump rod down, flexing a diaphragm. This flexing action forces fuel past a check valve into the venturi. The check valve prevents backflow during this stroke. A spring then returns diaphragm to its original position and a new supply of fuel flows in under the diaphragm from the float chamber for the next acceleration.

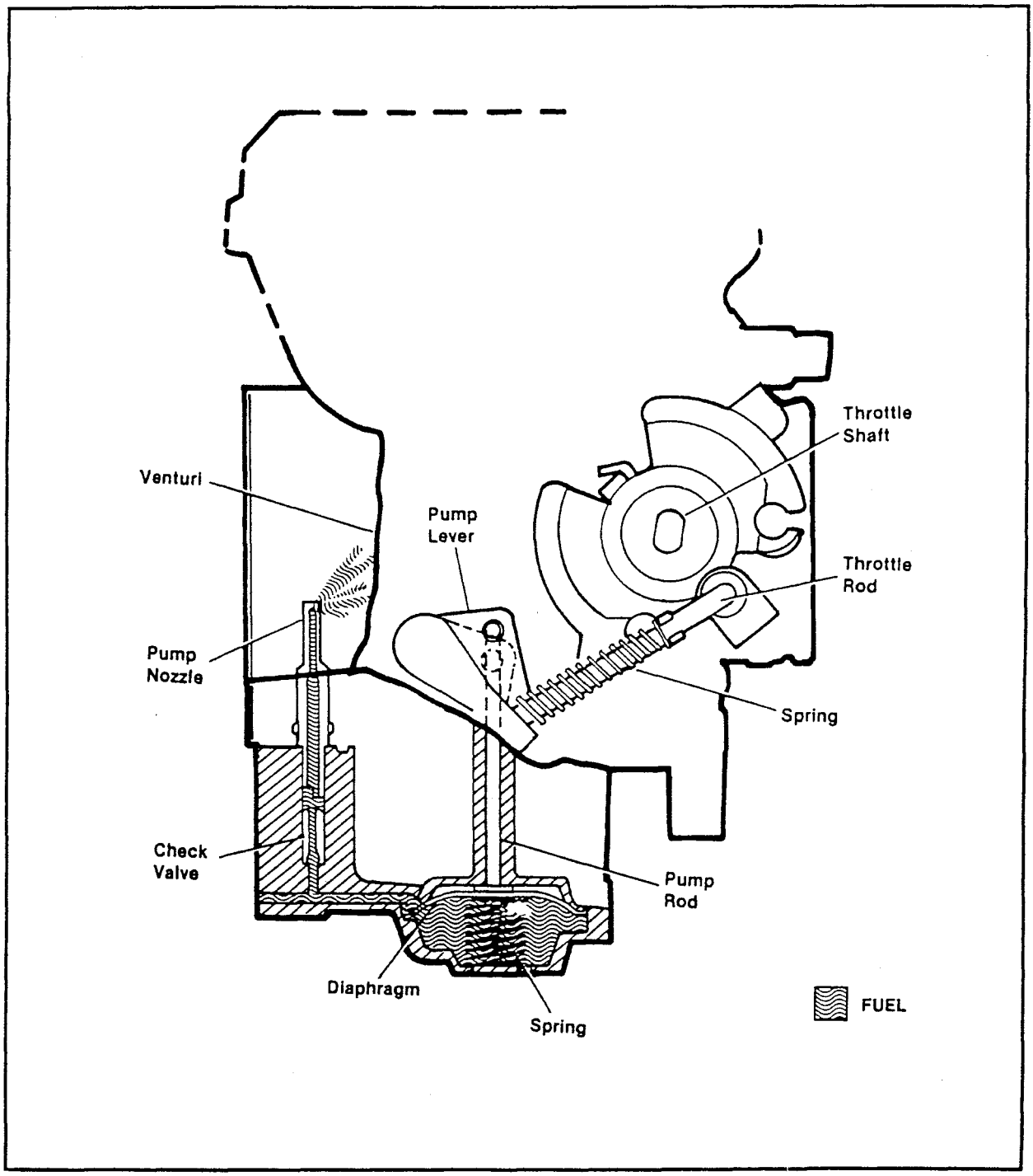


Figure 3-8. Accelerator Pump System

ADJUSTMENTS

Slow Idle

With the engine at normal operating temperature and the enrichener all the way in (enrichener valve closed) adjust the throttle stop screw so the engine idles at 900-1050 rpm.

NOTE

Use an inductive-type tachometer to check engine rpm.

Enrichener Control

See Figure 3-9. Check fuel enrichener operation. The fuel enrichener should open and remain open and close without binding. The hex adjuster in the enrichener cable controls the ease or difficulty with which the cable slides within the cable conduit. If adjustment is needed:

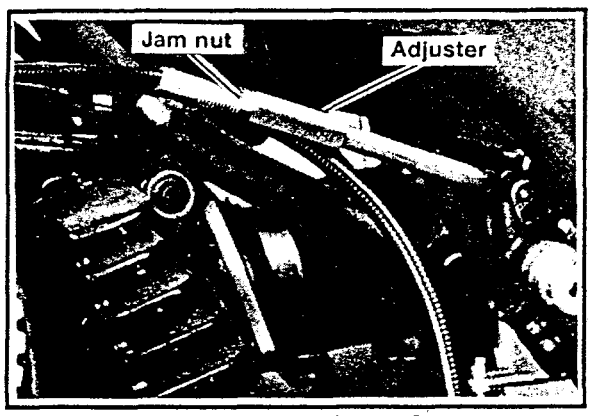


Figure 3-9. Fuel Enrichener Control

1. Loosen jam nut next to adjuster.
2. Turn adjuster counterclockwise by hand, to reduce sliding resistance.
3. Turn adjuster clockwise to increase sliding resistance until enrichener remains fully open without holding lever, and closes with relative ease.
4. Tighten jam nut against adjuster.

NOTE

Do not lubricate the cable or inside of conduit, the cable must have sliding resistance to work properly.

Float Level

1. Remove the carburetor as described under CARBURETOR REMOVAL.
2. See Figure 3-13. Remove screws and washers (18). Remove float bowl.

NOTE

Prior to float adjustment check that float halves are properly aligned and at equal height. Lightly bend to realign if necessary.

3. See Figure 3-10. Use a vernier or dial caliper depth rod to measure from the carburetor flange face to the perimeter of the float. Be careful not to push on float while measuring.

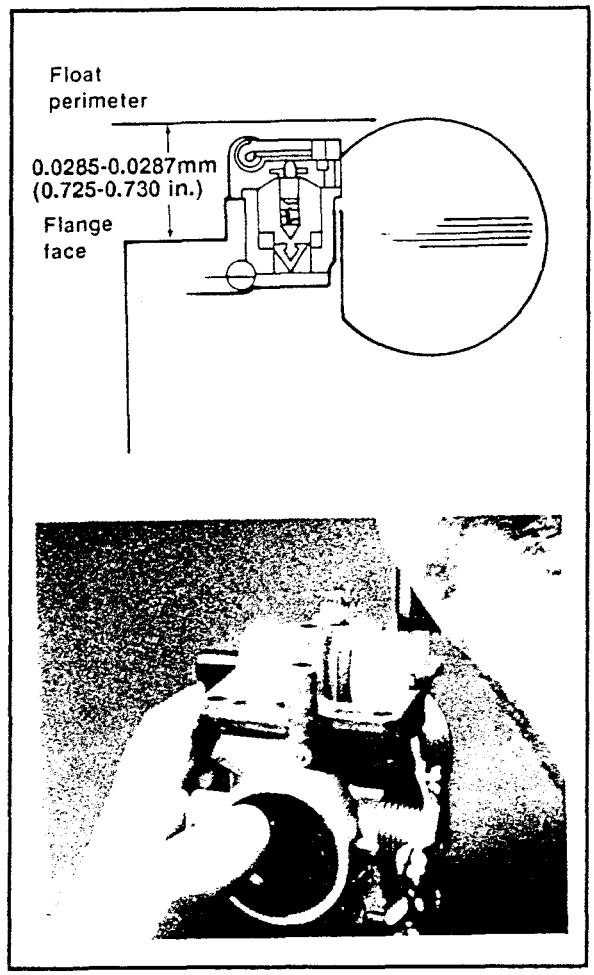


Figure 3-10. Float Adjustment

4. If measurement is not within 0.0285-0.0287mm (0.725-0.730 in.) carefully bend tab to position float to proper level.
5. See Figure 3-13. Position the float bowl on carburetor body. Install screws and washers (18).
6. Install carburetor as described under CARBURETOR INSTALLATION.

OPERATION CHECK – VACUUM PISTON

Opening Malfunction

WARNING

While observing piston slide movement be sure to maintain a safe distance from the carburetor and wear suitable eye protection. An unexpected engine backfire could cause serious burns or eye injury.

1. With air cleaner cover off and engine running, partially open and close throttle control several times to observe whether vacuum piston has upward movement. If piston does not rise, see Vacuum Piston Troubleshooting.
2. With engine not running, lift vacuum piston with finger. Feel whether piston lifts fully and smoothly or whether it binds.

Closing Malfunction

1. With engine not running, lift vacuum piston to full open position, then release. Observe whether piston slides downward smoothly and fully to stop.
2. Observe position of piston slide at its lowest downward point. Lower edge of slide should rest at horizontal groove at lower end of slide track. See Vacuum Piston Troubleshooting if any problems are observed.

CARBURETOR REMOVAL

WARNING

Gasoline is extremely flammable and highly explosive under certain conditions. Do not smoke or allow open flame or sparks anywhere in the area when refueling or servicing the fuel system.

1. Turn the fuel supply valve off.
2. Remove the airbox. See INTAKE SYSTEM, DISASSEMBLY/ASSEMBLY in this section.
3. See Figure 3-11. Disconnect the fuel line (1), throttle cables (2), enrichener valve and vacuum hose from the carburetor.
4. Remove the fuel tank. See FUEL TANK later in this section.
5. See Figure 3-13. Loosen hose clamps (56). Compress airbox boot to make room to remove carburetor. Pull carburetor free of manifold (Fig. 3-12).

CARBURETOR INSTALLATION

1. See figure 3-12. Place the manifold and gasket in position on the cylinder head.
2. Install the countersunk screws.

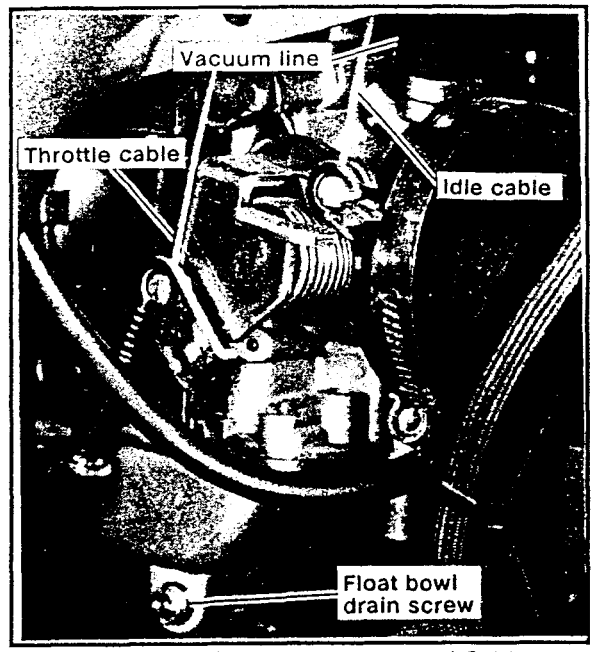


Figure 3-11. Carburetor Hoses and Cable Connections

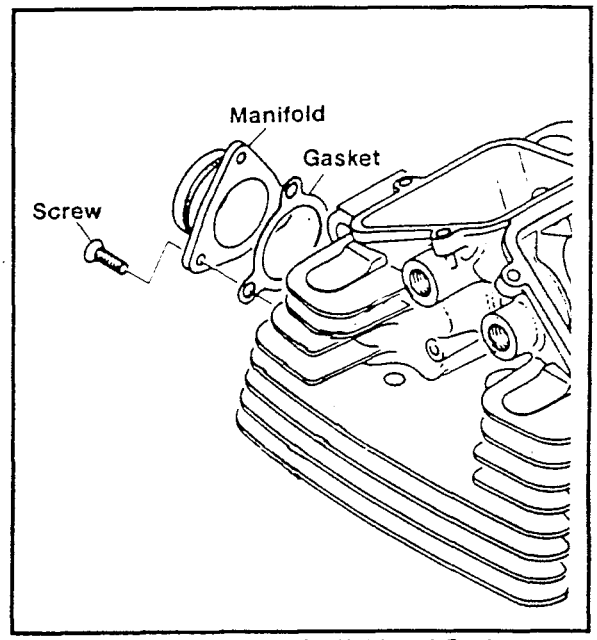


Figure 3-12. Intake Manifold and Gasket

3. Place boot and hose clamp in position on carburetor inlet. Tighten hose clamp securely.
4. Connect throttle cables. Connect enrichener valve and vacuum hose to carburetor.
5. Install fuel tank. See FUEL TANK later in this section. Connect fuel line to carburetor. Install air cleaner. See AIR CLEANER later in this section.
6. Route the float bowl overflow line behind front cylinder push rods, then down between front cylinder and crankcase.

DISASSEMBLY (Figure 3-13)

Vacuum Piston Chamber

1. Remove carburetor. See CARBURETOR REMOVAL.
2. Remove screws (25, 26) and bracket (24)
3. Remove screws and washers (2). Remove cover (1) and spring (3).
4. Lift out vacuum piston (4) with needle (6) and spring seat (5). Remove loose parts from vacuum piston.

Carburetor Body

1. Remove screws and washers (18). Remove float bowl assembly (17).
2. Remove pin (14), float (15) and valve (13).
3. Unscrew main jet (11) and needle jet holder (10). Needle jet (9) is now free to be removed from bottom end of passage.
4. Insert thin bladed screw driver into slow jet passage and turn out slow jet (12).

Accelerating Pump

1. Remove screws and lockwashers (47), accelerating pump housing (36), spring (37) and diaphragm (35). Remove O-ring (38) from housing (36).

CLEANING, INSPECTION AND REPAIR (Figure 3-13)

Vacuum Piston Components

The entire carburetor should be cleaned with carburetor cleaner and dried before disassembly. Carburetor body and jets should be cleaned in clean fuel.

1. Hold vacuum piston up to strong light. Examine diaphragm at top of vacuum piston (4) for evidence of pinching, holes or tears. Replace if damaged.
2. Examine vacuum passage through bottom of piston (4). Clean passage if restricted.
3. Examine spring (3) for stretching, crimping or any distortion or damage. Replace if damaged.
4. Examine slide on sides of piston (4) to be sure surface is smooth and clean. Clean or buff out any rough surfaces.
5. Examine needle for evidence of bending or damage. Examine tip of float needle for grooves. Needle should be straight and surface of taper smooth and even. Examine float for holes.

Carburetor Body Components

1. Check float bowl O-ring (16) for any distortion or damage. Replace if seating surfaces are damaged.
2. Examine inlet valve (13) and inlet valve seat. Clean with carburetor cleaner. Replace if seating surfaces are damaged.
3. Clean low speed jet (12) with carburetor cleaner. Check to be sure all orifices are open.
4. Check enrichener valve (22). Be sure needle guide is clean, straight and undamaged. Check composition seating surface for wear or damage. Replace if damaged.
5. Check *enrichener valve chamber*. Clean with carburetor cleaner. Check that all passages are open and free of obstruction.
6. Clean needle jet (9). Replace if damaged.
7. Clean all internal fuel/air passages and jets. Check that all passages and jets are open and free of obstruction.
8. Check needle jet holder (10). Clean bleed tube orifices. Replace holder if damaged.
9. Check *float* (15) for cracks or other leaks. Replace if damaged.
10. Clean main jet with carburetor cleaner and inspect for damage. Replace if damaged.

ASSEMBLY (Figure 3-13)

Vacuum Piston Chamber

1. Place needle (6) through center hole in vacuum piston (4). Place *spring seat* (5) over top of needle.
2. Insert vacuum piston into carburetor body. The slides on the piston are off center and the piston will fit into the slide track grooves one way only. If piston does not fit, rotate 180 degrees
3. Check to be sure diaphragm is seated evenly into groove at top of carburetor body.

   Place spring (3) over spring seat (5) and carefully lower top (1). Keep spring straight while lowering top.
4. After top is seated, hold top while lifting up on vacuum piston. Piston should rise to top smoothly. If piston movement is restricted, spring is cocked. Lift up on top and lower carefully, keeping spring coils straight.
5. Once top is installed correctly, install screws and washers (2). Place bracket (24) in position with idle screw resting on top of throttle cam stop. Install body screw and washer (26) first, then top screw (25) to prevent bending bracket or throttle cam.

Carburetor Body

1. Screw slow jet (12) into slow jet passage with narrow bladed screwdriver.

2. Turn carburetor upside down. Place needle Jet (9) in main jet passage with needle passing through center hole. Be sure end of jet with larger opening and chamfered surface enters passage first.

3. Insert needle jet holder (10) into main jet passage with needle inserted into center of holder. Thread holder into passage and tighten. Thread main jet (11) into tapped hole in holder (10) and tighten.

4. Place float assembly (15) into position with fuel valve (13) inserted into valve seat and pivot arm aligned with holes in mounting posts at bottom of carburetor body. Insert pin (14) through float pivot arm and float mounting posts.

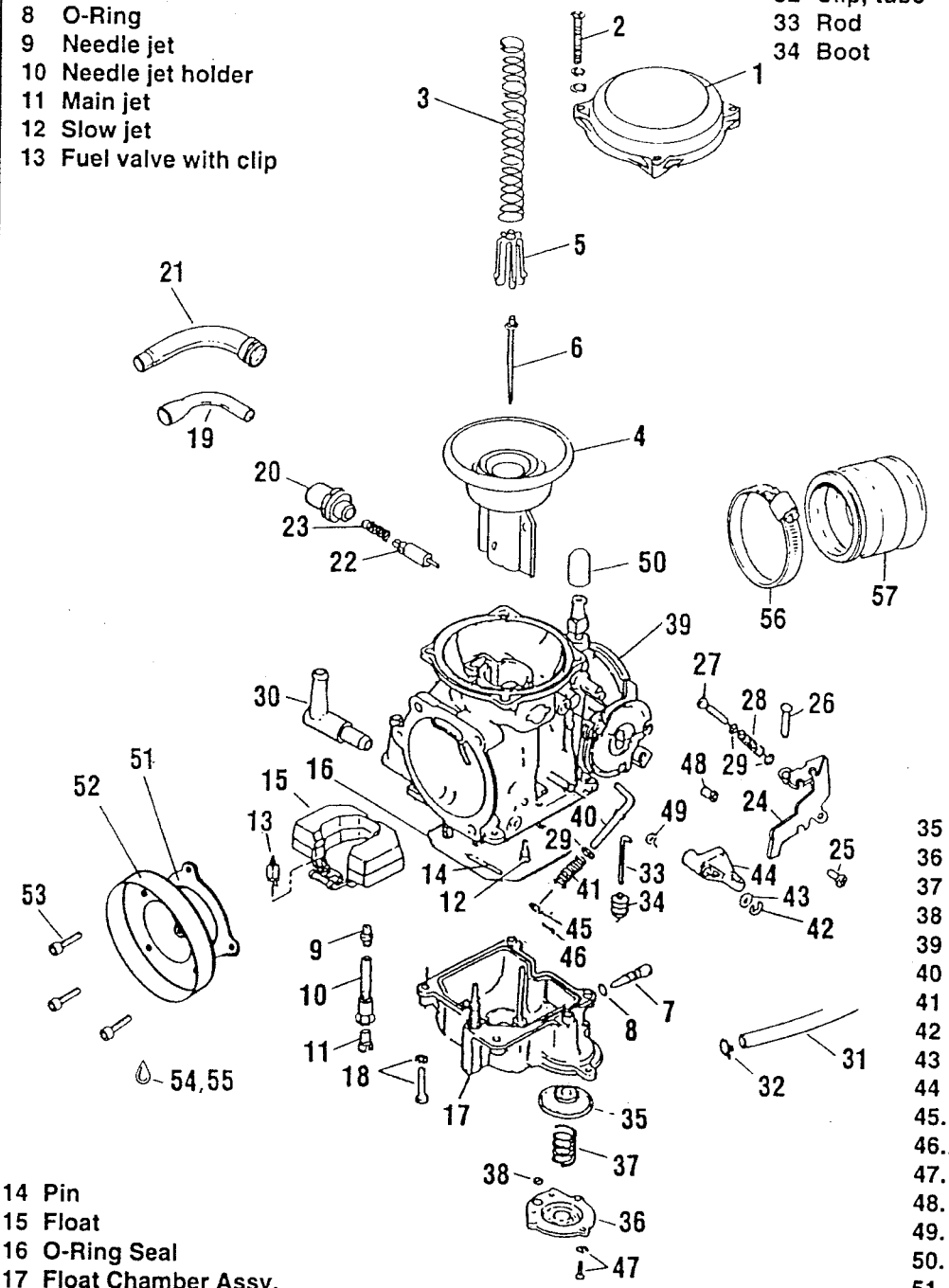
5. Place float bowl (17) over float and onto carburetor body flange. Bowl will only fit in one position. Install screws and washers (18) and tighten.

Accelerator Pump

Install diaphragm (35), spring (37), O-ring (38) and housing (36). Secure with screws and lockwashers (47).

1-55 Carburetor assembly
1-50 Carburetor
1 Top
2 Screw top
3 Spring
4 Vacuum piston
5 Spring seat
6 Jet needle
7 Drain screw
8 O-Ring
9 Needle jet
10 Needle jet holder
11 Main jet
12 Slow jet
13 Fuel valve with clip

24 Bracket, Throttle wire
25 Screw, throttle cable bracket
26 Screw, throttle cable bracket
27 Screw, idle speed adjust
28 Spring
29 Washer
30 L-Joint
31 Rubber tube
32 Clip, tube
33 Rod
34 Boot



14 Pin
15 Float
16 O-Ring Seal
17 Float Chamber Assy.
18 Screw
19 Cable guide
20 Starter cap
21 Cable sealing cap
22 Enrichener valve
23 Spring

35 Diaphragm assy.
36 Pump housing
37 Spring
38 O-Ring
39 Carburetor body
40 Rod
41 Spring
42 E-Clip
43 Washer
44 Lever
45. Washer
46. Cotter Pin
47. Screw, Washer (3)
48. Collar
49. Washer
50. Cap - (OBS)
51. Gasket
52. Adaptor
53. Screws
54. Primer
55. Loctite
56. Hose Clamp
57. Manifold Boot

Fig. 3-13

AIR CLEANER

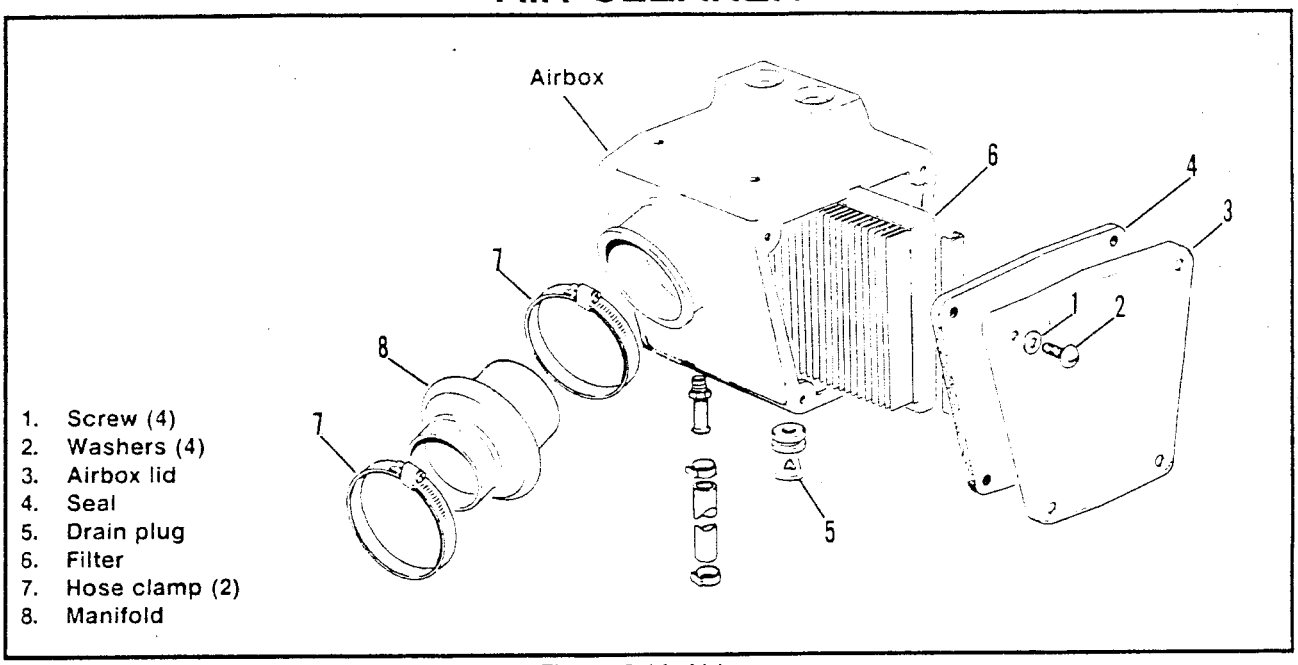


Figure 3-14. Airbox

REMOVAL

1. Remove L.H. sidepanel.
2. See Figure 3-14. Unscrew the airbox lid retaining screws (1) and washers (2) remove lid (3) and seal (4).
3. See Figure 3-15. Remove the filter and clean the inside of the airbox.

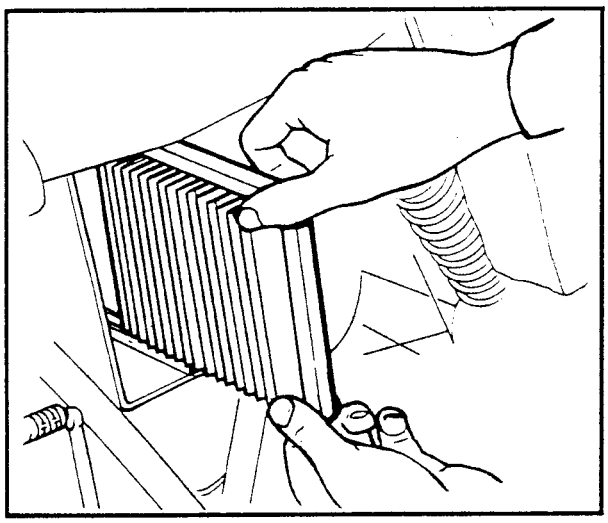


Figure 3-15. Air Filter

4. Be sure the rubber drain bladder at the bottom of the airbox is clean.

AIR CLEANER INSTALLATION

1. Lightly grease edges of new filter to ease installation in airbox.
2. Carefully slide in replacement filter. Be sure edge is seated correctly in channel. Be sure rear vertical edge is fully engaged.
3. Place lid in position and install retaining screws.
4. Install sidepanel.

INTAKE SYSTEM DISASSEMBLY

1. Remove the battery and battery plate. See ELECTRICAL.
2. Remove the fasteners inside the airbox which fasten the airbox to the rear fender.
3. Remove the circuit breaker plate assembly. Remove the crankcase breather line from the bottom of the airbox. Loosen the airbox manifold hose clamp.
4. Rotate airbox onto its left side. Remove the airbox from the right side, through the frame tubes.

CLEANING AND INSPECTION

1. Inspect the airbox manifold and the carburetor intake manifold for tears, holes and signs of deterioration.
2. Be sure the rubber drain bladder at the bottom of the airbox is clear of debris.
3. The airbox lid is lined with a rubber seal. The seal should be in good condition where it seals airbox, to prevent dirt and debris from entering the airbox.

INTAKE SYSTEM ASSEMBLY

1. Assembly is the reverse of the disassembly procedure. Be sure that all hose clamps on the intake manifold and airbox manifold are tight. Replace hose clamps throughout if necessary.

FUEL TANK

FUEL TANK REMOVAL (Figure 3-16)

Place vehicle on centerstand and proceed as follows:

1. Remove seat. Seat is secured by a screw on the rea fender.
2. Switch fuel valve to OFF position. Disconnect fuel hose from valve outlet by loosening clamp. Remove fuel tank retaining bolt and washers.
3. If vehicle is equipped with plastic tank, remove screws and "U" bracket located next to the steering lock stops on the frame.
4. Grasping rear of tank, gently pull up and back to remove. At the same time, be sure control cables are clear.

FUEL TANK INSPECTION

1. Before inspection, clean the external surfaces with a solution of soapy water or mild solvent.
2. Inspect for sediment in the tank. If necessary, flush with clean fuel.
3. Inspect the mounting rubbers for damage or deterioration.
4. Inspect the fuel hose for cracks or deterioration.
5. Inspect the fuel cap and gasket.
6. Replace parts as necessary.

FUEL TANK INSTALLATION

When installing the fuel tank be sure the cables are routed correctly in relation to the mounting rubbers on the frame.
SEE THROTTLE CABLES.

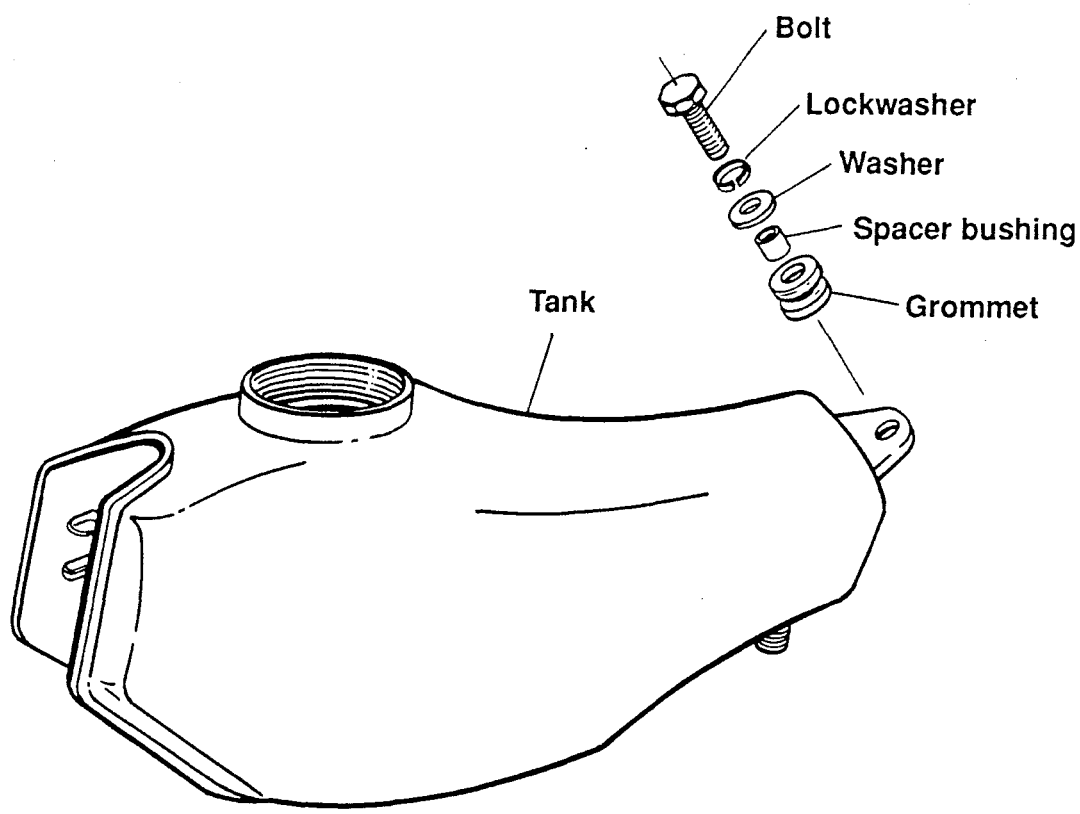


Figure 3-16. Fuel Tank

FUEL VALVE

FUEL VALVE REMOVAL/ INSTALLATION

1. See Figure 3-17. The fuel valve may be removed from the tank by unscrewing the valve fitting.

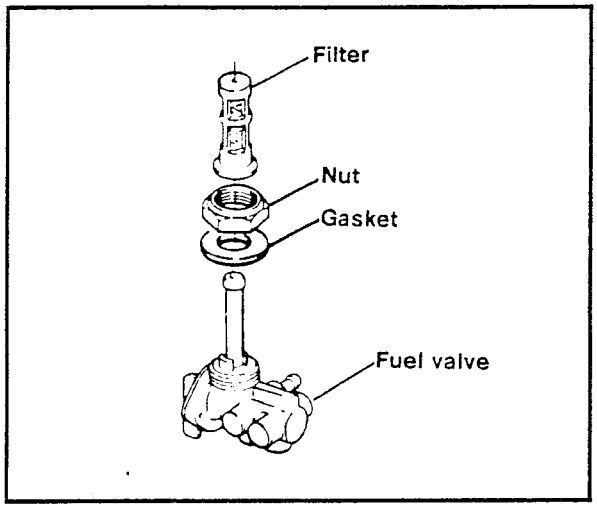


Figure 3-17. Fuel Valve

2. The fuel valve has a plastic, pillar-type fuel filter which should be cleaned by rinsing in fuel. Check for tears or rips in the filter. If damaged, replace.
3. When installing the fuel valve, check to be sure the gasket is in good condition.

EXHAUST SYSTEM

EXHAUST SYSTEM SPECIFICATIONS

Manifold/Midsection:

Type:	Curved Tubular Steel
Finish:	Black Chrome
Muffler:	
Type:	Welded Pressed Steel Sections
Finish:	Heat Resistant Black Paint

TORQUE VALUES

Item	Torque Value N.m (ft-lbs)
Muffler Mounting Bolt M10	56 (38)
Exhaust/Muffler Clamp Bolt M8	28 (15)
Exhaust Engine Nut	38 (18)
Exhaust Manifold Clamp Bolt M6	11.7 (9)
Heat Shield Screw M6	11.7 (7.5)

GENERAL

The exhaust system consists of two manifold pipes, a midsection pipe including a heat shield and a muffler. The muffler incorporates a spark arrester. Three clamps fasten the four main sections together.

WARNING

To prevent burns, allow time for the exhaust system to cool before working on or near it. If adjustments are made with the engine running, do not touch the exhaust system.

REMOVAL (Figure 3-18)

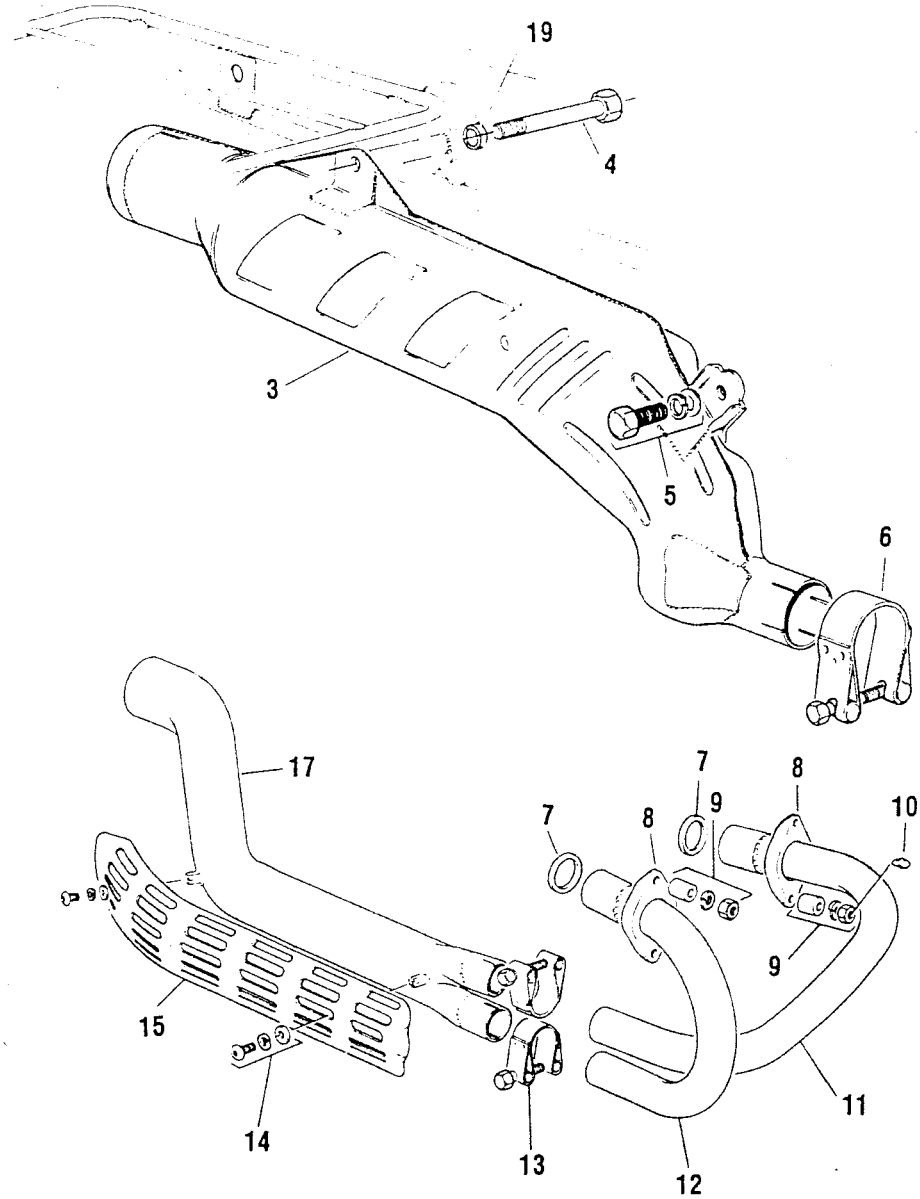
1. Remove L.H. Sidepanel.
2. Remove L.H. Shock Absorber retaining bolts. Remove shock absorber.
3. Loosen exhaust clamp (6) on midsection (17) muffler joint.
4. Remove muffler retaining bolt (4), spacer and washer (19).
5. Remove exhaust flange nuts, lockwashers, and spacers (9) on cylinder head studs.
6. Slide exhaust flanges (8) along manifold pipes (11 and 12) and off cylinder head studs.
7. Loosen clamps (13) on manifold pipe/midsection joints.
8. Remove button head screws, lockwasher and washers (14). Remove heat shield (15).
9. Remove bolt , lockwasher and washer (5). Remove exhaust system. Remove and discard exhaust manifold gaskets. (7).

CLEANING, INSPECTION AND REPAIR (Figure 3-18)

1. Use a solution of soapy water to clean exhaust system. Remove surface rust with a wire brush or emory cloth.
2. Inspect the exhaust pipes and muffler (3) for cracked or broken brackets or crushed surfaces. Be sure the muffler does not rattle. Replace or repair as necessary.
3. The spark arrestor is removable and can be cleaned of exhaust residue(if applicable).
4. If the surface finish has deteriorated, apply a good quality black exhaust paint. This will prolong exhaust system life.

INSTALLATION:

1. Installation is the reverse of removal.
2. Replace the exhaust manifold gaskets.
3. Use a good quality high temperature silicon compound on all joints.
4. Cylinder head exhaust flange nuts (-) must be tightened alternately so the exhaust flanges are square with the cylinder head. Use Loctite Anti-seize on the cylinder head studs.



3. Exhaust silencer
4. See plate 2-39
5. Hex set screw M10X20
   Spring washer M10
   Plain washer M10
6. Clamp midsection
7. Seal, exhaust/head
8. Exhaust clamp
9. Exhaust spacer
   hex nut M8
   Lock washer M8
10. Copper grease
11. LH exhaust pipe
12. RH exhaust pipe
13. Clamp exhaust
14. Screw M6X10
    Flat washer M6
    Lock washer M6
15. Exhaust shield
17. Exhaust midsection
18. Exhaust joining compound as rqd.
19. Spacer M10 ID

Figure 3-18. Exhaust System

EXHAUST SYSTEM TROUBLESHOOTING

SYMPTOM	FAULT	REMEDY
Rusty exhaust.	Failure to clean regularly or aged system	Repaint with good quality black exhaust paint after removing all loose scale/rust according to instructions; or replace system.
Excessive noise.	Leaking from:	
	Holes in system.	Replace or repair exhaust.
	Cracked or broken joints.	Seal joints using good quality silicon compound and gaskets at the cylinder head.
	Muffler broken/worn.	Replace.
Exhaust pipes glow red.	Overheating. Fault not because of exhaust system but;	
	Incorrect carburetion.	Check against specifications. See CHAPTER 4.
	Or	
	Incorrect ignition timing	Check timing See CHAPTER 6.

SUBJECT PAGE NO.

ELECTRICAL

SPECIFICATIONS - IGNITION SYSTEM

IGNITION

Make	Nippondensdo
Type	Capacitor discharge
Basic timing	28°, full advance at 6000 r.p.m. 3° start ignition

MAGNETO GENERATOR (for lighting)

Output Power	190w (AC13, 5v) above 3000 r.p.m.
Voltage	12V

SPARK PLUG

Make	NGK or Equivalent
Model	D8EA
Gap	0.7mm

COIL RESISTANCES

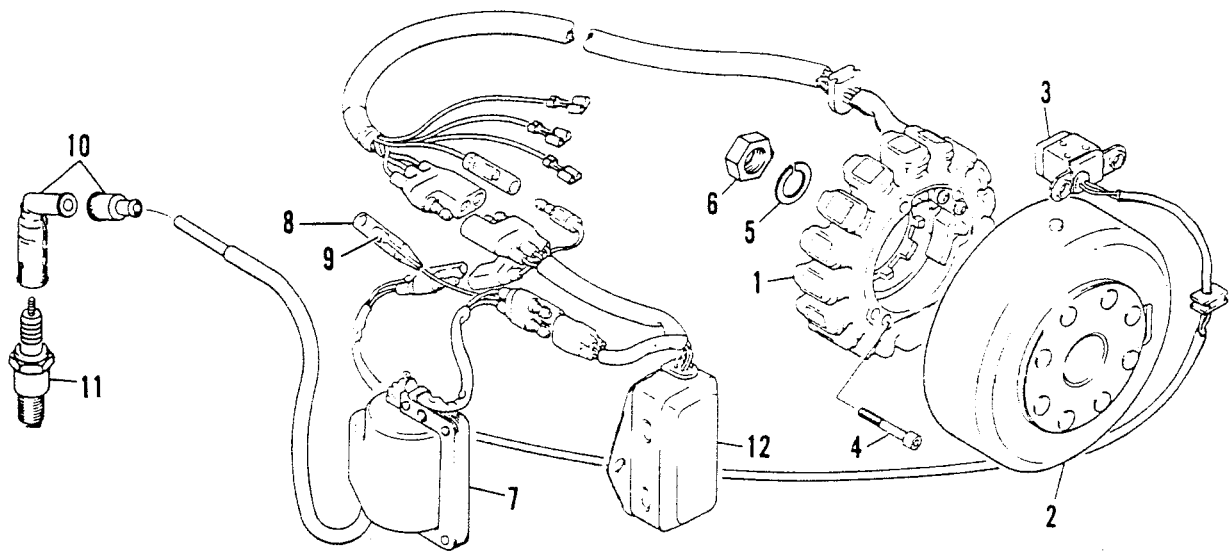
High speed trigger coil	12-20 OHMS
Low speed trigger coil	120-180 OHMS
Low speed charging coil	230-350 OHMS
High speed charging coil	4-6 OHMS

LIGHTING COILS

White-orange	0.6-0.9 OHMS
White-green	0.54-0.8 OHMS
Green-orange	0.8-1.6 OHMS

IGNITION COIL

Primary winding	0.95-1.1 OHMS
Secondary winding	11-12 k OHMS



1. Magneto
2. Stator
3. Trigger coil
4. Screw (3)
5. Lockwasher
6. Nut
7. Ignition coil
8. Cap
9. Connector
10. Spark plug protector
11. Spark plug
12. Amplifier

Figure 4-1. Ignition System

GENERAL

The motorcycle ignition is a Capacitor Discharge Ignition (C.D.I.) magneto generator type consisting of the following:

- Stator plate
- Magneto (Flywheel)
- C.D.I. control unit (amplifier box)
- Trigger coil assembly
- Ignition coil assembly

The ignition system operates by one of two ignition charging coils (high or low speed), charging a capacitor in the amplifier box. The capacitor is discharged at the correct time, triggered by one of two trigger coils, (high or low speed). The energy released is changed by the ignition coil to a high voltage spark at the spark plug.

A lighting coil is separate from the ignition system and powers the motorcycle's main electrical devices.

NOTE

On a C.D. Ignition ignition system, the timing is not adjustable.

DISASSEMBLY

Special Tools	Torque Values N·m (ft-lbs)
Flywheel puller	Flywheel retaining nut 95 (70) Magneto cover screws 10 (7) Stator assembly screws 8 (6)

CAUTION

- **Before attempting adjustments or repairs on or near the C.D. ignition system, stop the engine to avoid electric shocks.**
- **If an adjustment has to be performed with the engine running, do not touch components related to the C.D. ignition system: ignition coil, high tension wire, wiring harness etc.**
- **The stator and magneto (flywheel) assembly can be replaced only as a unit. This will maintain correct ignition operation and prevent damage.**

1. To remove the magneto, lock the crankshaft at top dead center using the crankshaft lock bolt. See Engine Section.
2. See Figure 4-2. Remove the flywheel retaining nut and washer and install the puller from the service tool kit on the magneto. Tighten puller bolt, while tapping gently on the bolt head with a soft-faced hammer, to pull the magneto from the tapered crankshaft.

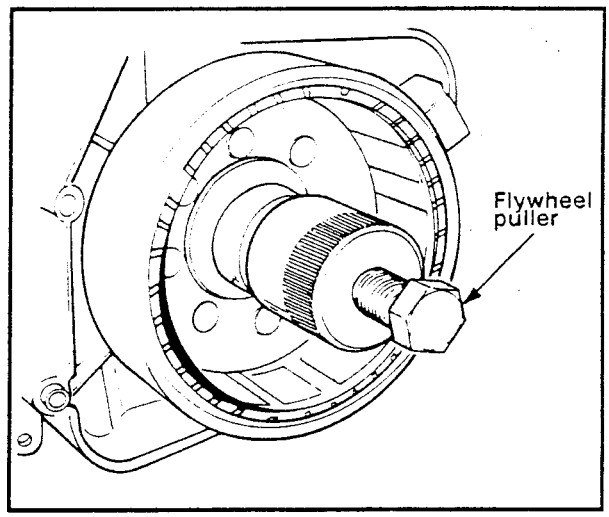


Figure 4-2. Flywheel (Magneto) Removal

3. Remove the magneto cover and the crankshaft nut. Clean threads.

CLEANING, INSPECTION AND REPAIR

1. Clean the stator plate and flywheel only with a clean cloth.

CAUTION

- **Because the built-in components are very sensitive, always handle ignition parts with care.**
- **It is important that all the electrical connections be clean and free of grime or corrosion. Use dielectric grease or equivalent to prevent moisture.**
- **To prevent corrosion, be sure no air is trapped in the connections. Do not use silicone sealants because contacts may corrode.**

2. Frequently inspect the ignition cover and crankcase unpainted surfaces for corrosion. If corroded, clean, then spray with LPS 3 or equivalent.

ASSEMBLY

CAUTION

Be sure to use Loctite, and properly tighten the fasteners or they will loosen during engine operation and the ignition unit will be damaged.

1. Before assembly, apply a light coat of Loctite 242 blue on the crankshaft threads Tighten flywheel retaining nut to 95 N·m. (70 ft-lbs) torque.
2. Apply Loctite 242 blue on the threads of the magneto retaining nut and tighten to 95 N·m.(70 ft-lbs) torque.
3. Apply a light coat of a suitable sealant on the magneto cover mating surfaces.

4. Use Loctite 242 blue on the magneto cover screws. Tighten to 10 N·m. (7 ft-lbs) torque.

5. See Figure 4-3. Position the stator assembly in the magneto cover as shown.

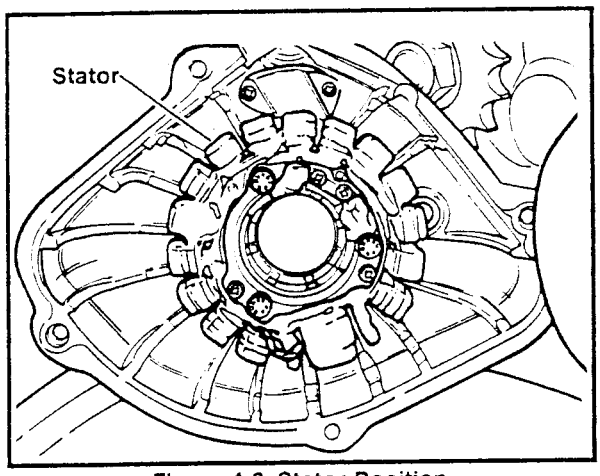


Figure 4-3. Stator Position

CAUTION

- **Be sure that the trigger coil wire will not rub against the magneto.**
- **Be sure to properly position the cable holder or the magneto will rub on the stator assembly wires.**

6. See Figure 4-4. Position the trigger coil wire as shown.

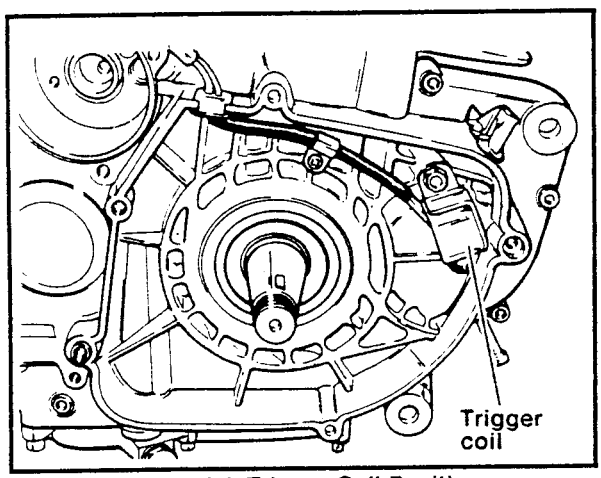


Figure 4-4. Trigger Coil Position

7. Be sure that the locating dowels are in position in either crankcase or magneto cover.

8. Apply a small drop of oil or a thin coat of grease on screw threads and tighten to 8 N·m (6 ft-lbs) torque.

9. See Figures 4-5 and 4-6. When assembling the module box and ignition coil, position as shown.

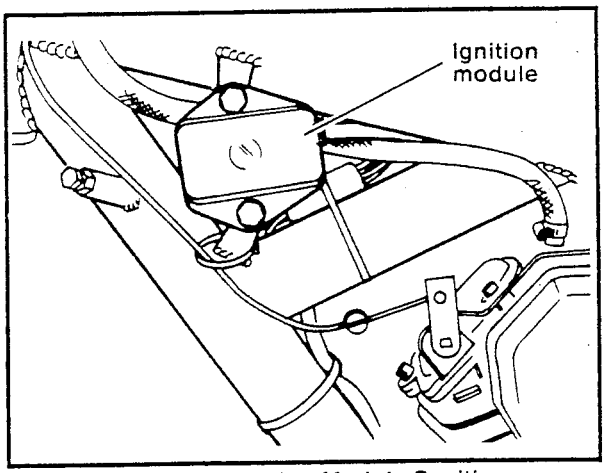


Figure 4-5. Ignition Module Position

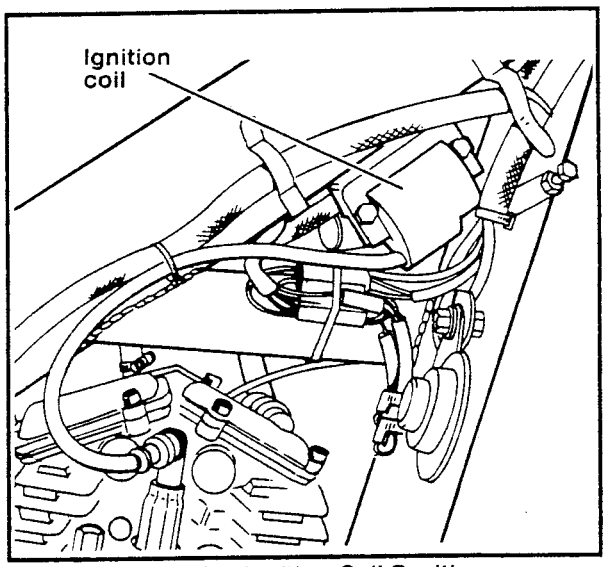


figure 4-6. Ignition Coil Position

NOTE

The shortest retaining screws (25 mm (1 in.) long) must be fitted in the top and bottom cover holes.

TESTING PROCEDURE

CAUTION

Do not stop the engine by pulling the spark plug wire from the spark plug. The amplifier box could be severely damaged.

1. The charging coils, trigger coils, lighting coils and the high tension coil can be tested for continuity using a standard ohmeter.

NOTE

Values should taken at or near 20° C (68° F). Keep in mind that resistance increases when the temperature increases.

2. See Figures 4-7 thru 4-12. Disconnect the connectors of each part and check the resistance or continuity between each terminal.

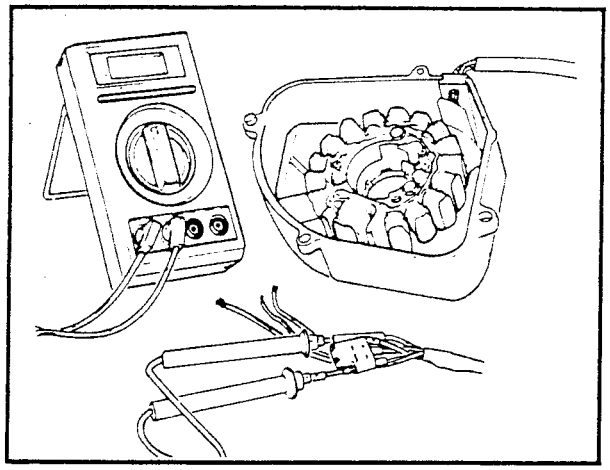


Figure 4-7. High Speed Trigger Coil Continuity Test

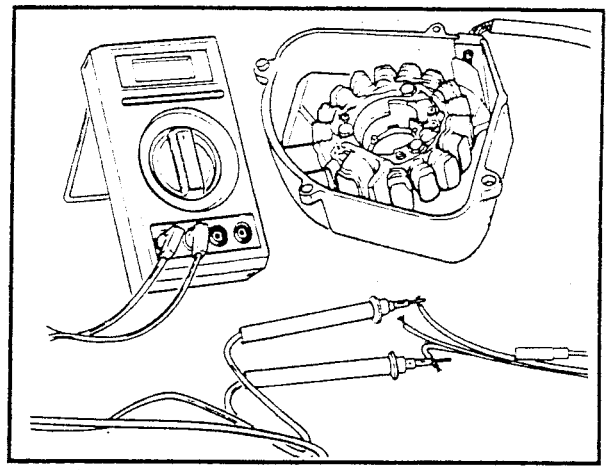


Figure 4-10. Lighting Coil Continuity Test

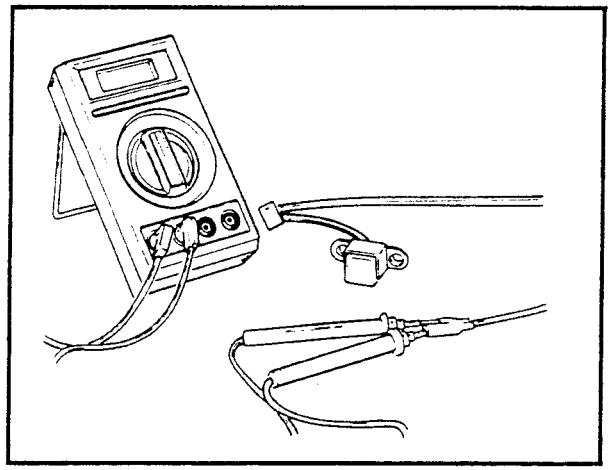


Figure 4-8. Low Speed Trigger Coil Continuity Test

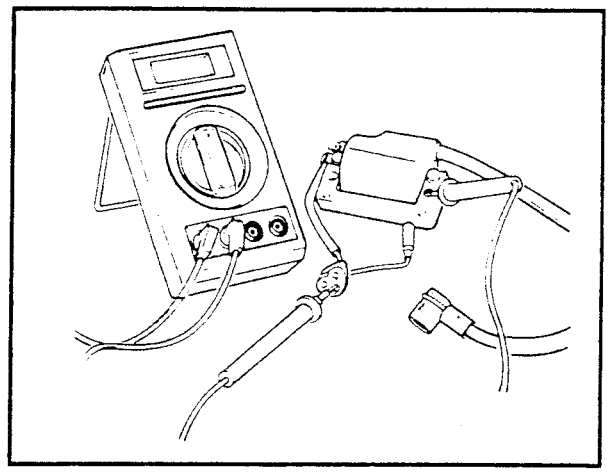


Figure 4-11. Ignition Coil Primary Winding Test

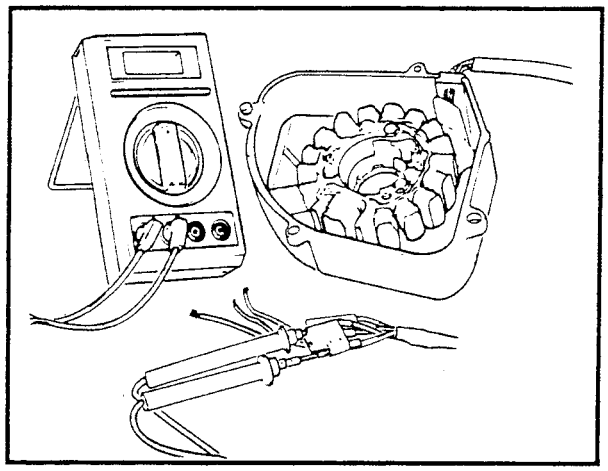


Figure 4-9. Charging Coil Continuity Test

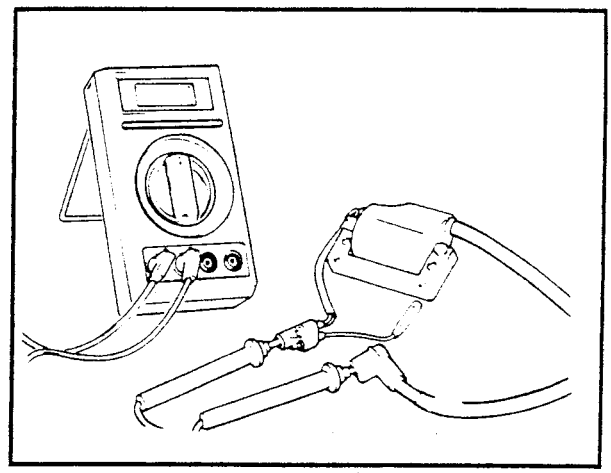


Figure 4-12. Ignition Coil Secondary Winding Test

TRIGGER COIL TEST

PART		WIRE COLOR	RESISTANCE	
Item	Circuit		Ohms	Figure #
Ignition timing sensor	High speed trigger coil	Black-pink	12 - 20	4 - 7
Ignition timing sensor	Low speed trigger coil	Black-blue	120 - 180	4 - 8

MAGNETO TEST

PART		WIRE COLOR	RESISTANCE	
Item	Circuit		Ohms	Figure #
Magneto	Low speed charging coil	Black-brown	230 - 350	4 - 9
Magneto	High speed charging coil	Brown-red	4 - 6	4 - 10
Magneto	Lighting coils	White-orange White Green Green-orange	0.6 - 0.9 0.54 - 0.8 0.8 - 1.6	4 - 12

IGNITION COIL TEST

PART		WIRE COLOR	RESISTANCE	
Item	Circuit		Ohms	Figure #
Ignition coil	Primary winding	Core-orange	.85	4 - 13
Ignition coil	Secondary winding	Spark plug wire-black	8 - 16K	4 - 14

TIMING CHECK USING A STROBOSCOPIC TIMING LAMP

GENERAL:

The ignition timing cannot be adjusted on the MT 500, but it can be checked for electrical malfunction. To check the ignition timing, an induction type tachometer must be connected to the high tension wire.

Only stroboscopic timing lights using capacitor or inductive pickup can be used to indicate correct spark setting without disturbing the electronic equilibrium of the ignition circuit. Remove the timing inspection plug, and connect the timing light pick-up at the spark plug lead.

Use a vehicle's battery to supply timing lamp. Start the engine and allow it to warm.

WARNING

To avoid electric shock, do not touch the spark plug wire while the engine is running.

NOTE

See Figure 4-13. The flywheel has two timing marks, one for minimum advance, the other for maximum advance. Facing the flywheel, the right hand mark is the maximum advance timing mark and the left hand mark is the minimum timing mark. Point the timing light beam straight into the inspection hole and rev the engine briefly to 1200 R.P.M minimum advance timing mark.

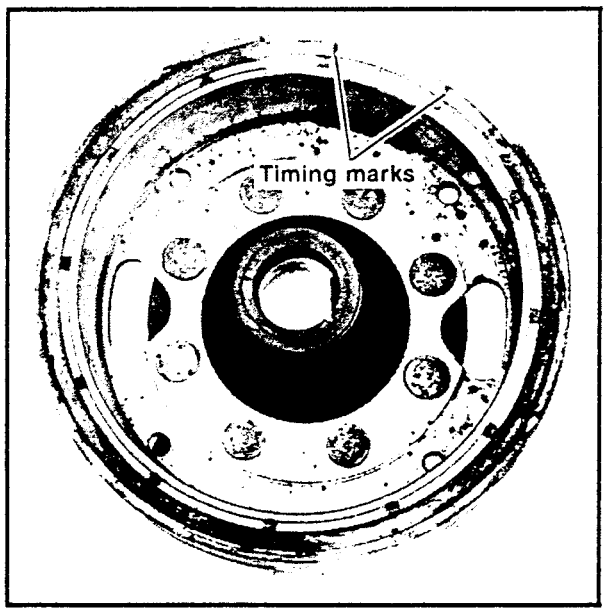


Figure 4-13. Flywheel Timing Marks

See Figure 4-14. Check the timing mark's alignment at 1200 R.P.M. and 6000 R.P.M. If the timing is correct, the magneto cover mark and flywheel mark will align as shown. If the timing is incorrect, it is an indication of an ignition problem and should be investigated further.

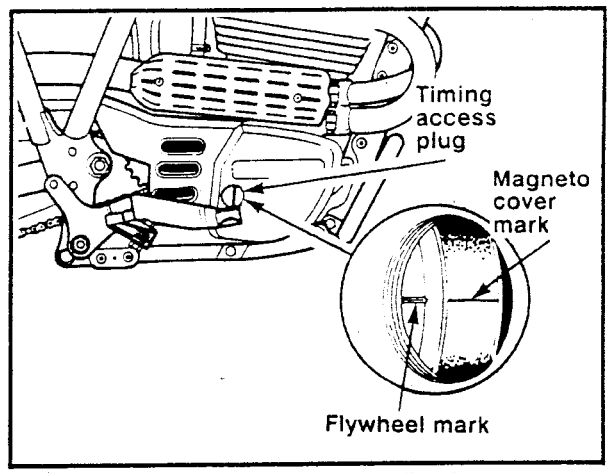


Figure 4-14. Timing Verification

The magneto cover's timing mark is inside the timing hole, at the extreme left, in the 8:00 position.

NOTE

Use an inductive-type tachometer to check engine rpm.

SPARK PLUGS

CAUTION

When installing the spark plug cap, be sure you screw the spark plug wire centrally onto the insulator, directly into the wire core. Do not screw into the insulation, causing poor contact.

For installation and removal of the spark plug use the screwdriver grip end, provided with motorcycle kit.

See Figure 4-15. Use a NGK D8EA spark plug.

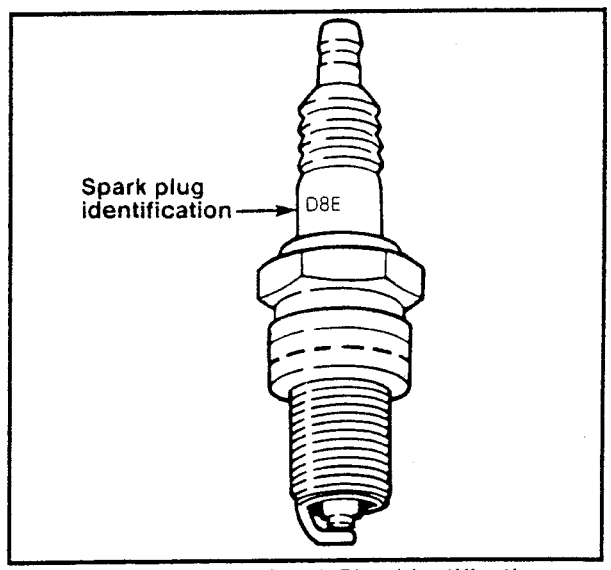


Figure 4-15. NGK Spark Plug Identification

Spark plug requirements may differ slightly with ignition and carburetion adjustments and with different riding conditions.

When the correct spark plug heat range is used, the spark plug electrode will stay hot enough to burn off all the carbon and will also stay cool enough to prevent overheating or red-hot points which are harmful to the engine and to the plug itself.

See Figure 4-16. Inspection of the condition and the color of the ceramic insulator around the center electrode will show you if the plug has the proper heat range. The ideal condition is when the ceramic is clean and a light brown color.

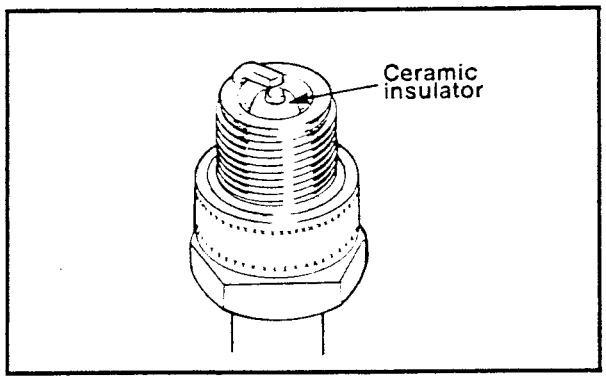


Figure 4-16. Spark Plug Tip

Difference between "cold" and "hot" spark plug types:

a. A "cold" plug has a relatively short insulator nose and transfers heat very rapidly into the cylinder head. Such a plug is used in heavy duty or continuous high speed operation, to avoid overheating.

b. See Figure 16A. The "hot" plug has a longer insulator nose and transfers heat more slowly away from its firing end. It runs hotter and burns off combustion deposits which might foul the plug during prolonged idle or low speed operation.

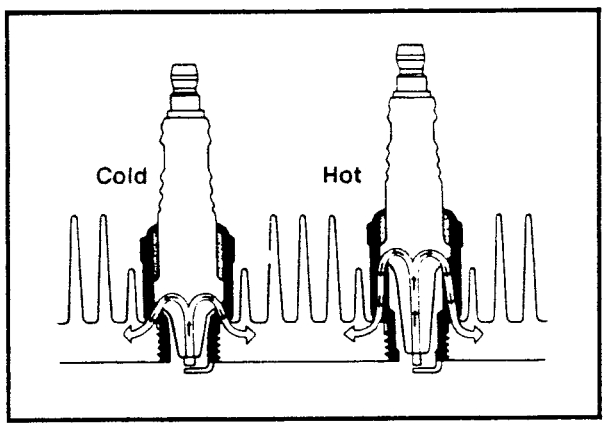


Figure 4-16A. Spark Plug Types

CAUTION

Severe engine damage can occur if a spark plug with the wrong heat range is used.

c. A too "hot" plug will result in overheating and red-hot points, pre-ignition, etc.

d. A too "cold" plug will result in fouling or may create carbon build up which can become red-hot and also cause pre-ignition or detonation.

SPARK PLUG ANALYSIS

The plug face (the part of the plug projecting into the combustion chamber) shows the type of engine operating conditions, method of driving, and fuel mixture. For this reason, you should inspect the spark plug at regular intervals. The plug face generally reveals trouble symptoms.

- See Figure 4-17. A brownish tip reflects ideal conditions.

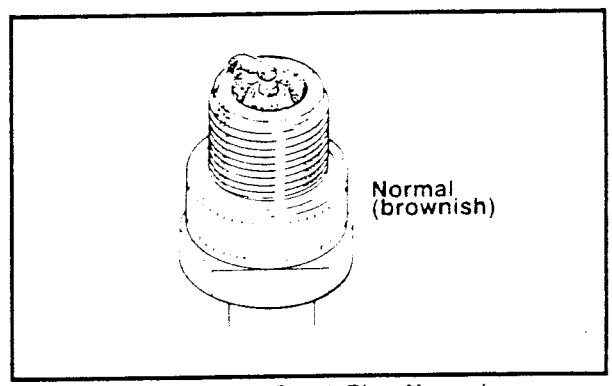


Figure 4-17. Spark Plug Normal

- See Figure 4-18. A black insulator tip indicates fouling caused by:
  Dirty air cleaner element
  Wrong spark plug heat range (too cold)
  Fuel/air mixture too rich, wrong jetting.
  Faulty ignition system
  Oil consumption

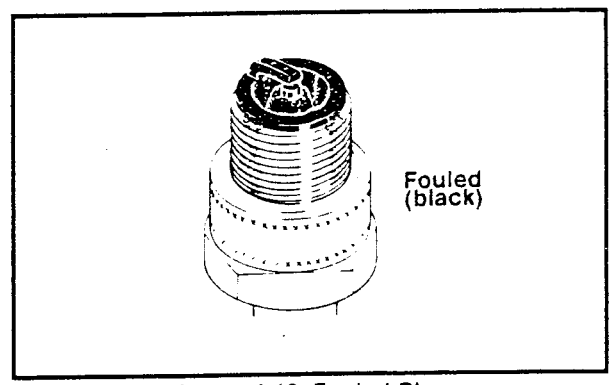


Figure 4-18. Fouled Plug

- See Figure 4-19. A light grey, ash white insulator tip indicates a lean mixture caused by:
  Ignition timing too advanced
  Insufficient lubrication
  Clogged carburetor jets or lean jetting.
  Wrong spark plug heat range (too cold)
  Spark plug loose in head
  No gasket installed
  Leaking seal or gasket.

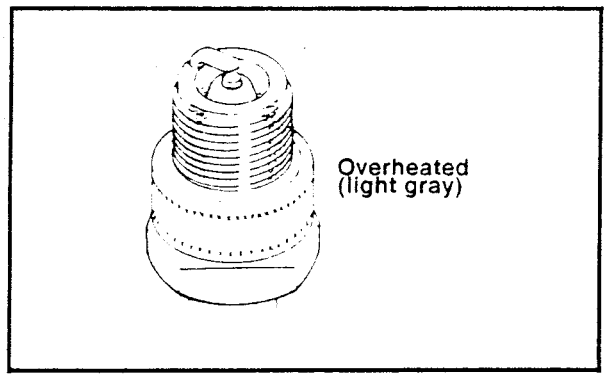


Figure 4-19. Overheated Plug.

- See Figure 4-20. Lead or carbon particles wedged or fused between the electrodes are caused by:

  Excessive carbon in cylinder

  Improper brand of fuel or oil

  Dirt particles entering through the carburetor with the air flow.

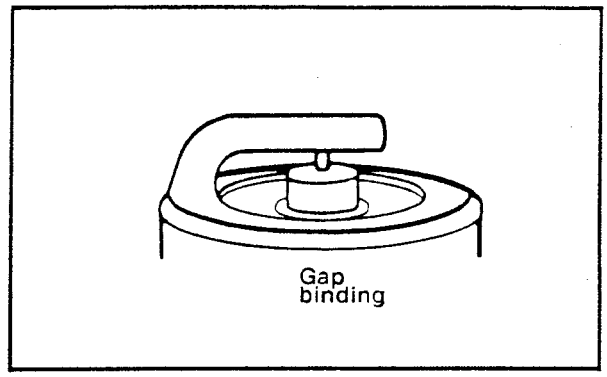


Figure 4-20. Gap Binding

SPARK PLUG MAINTENANCE/ INSTALLATION

1. Clean the electrodes, the ceramic insulator and the plug.
2. Prior to the installation be sure that the cylinder head contact surface and spark plug are free of grime.

a. Use only a wire feeler gauge. Set electrode gap at 0.7 mm (0.028 in.)

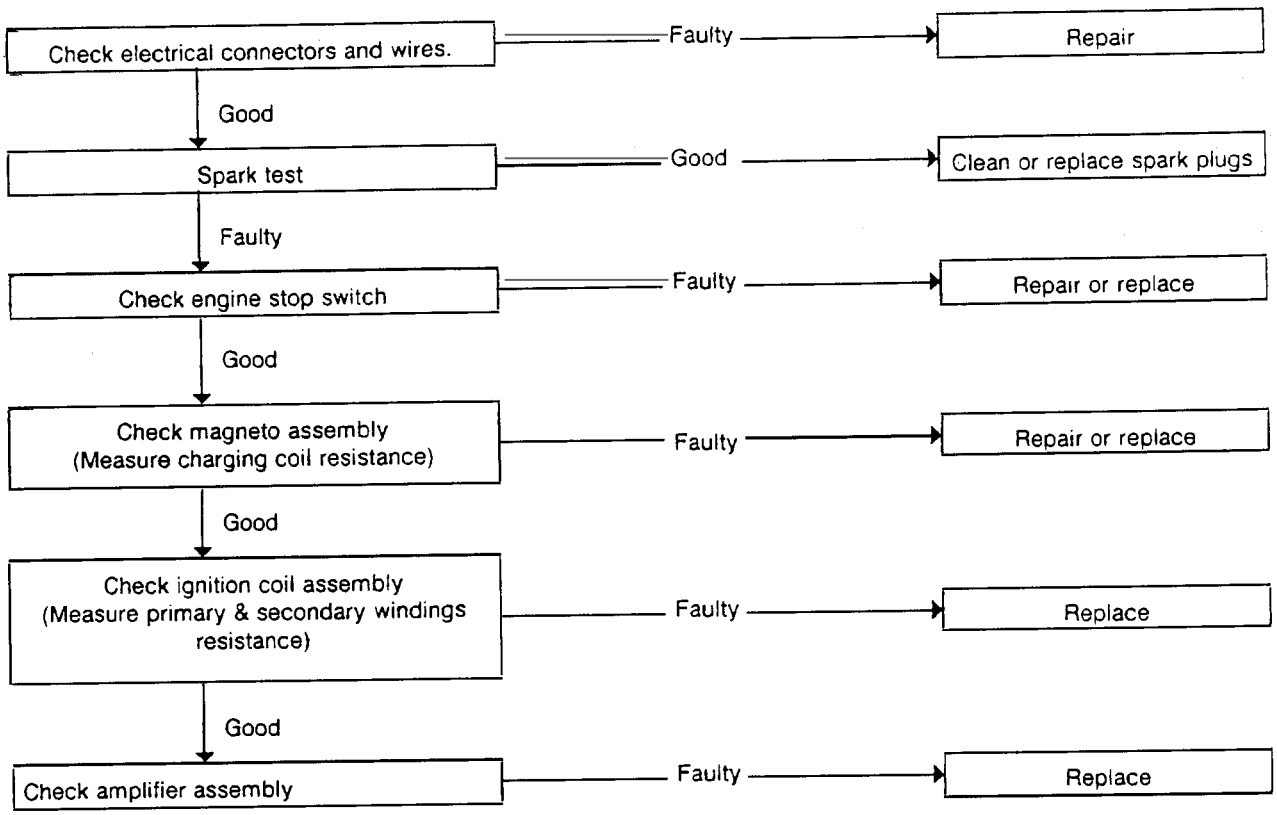
b. Apply a light coat of graphite grease on the spark plug threads to prevent possible seizure.

c. Hand screw plug into cylinder head and tighten 1/4 turn more.

NOTE

A used spark plug needs more voltage to spark than a new one, but when cleaned and regapped the voltage needed drops to near specification and the plug service life is extended.

IGNITION SYSTEM TROUBLESHOOTING



SYMPTOM	MAGNETO ASSEMBLY			IGNITION COIL ASSEMBLY	
	Low speed charging coil	High speed charging coil	Lighting coil	Primary winding	Secondary winding
Engine does not start	Winding open	Winding open		Winding open or shorted	Winding open or shorted
Engine stalls at low speed	Winding shorted				
Engine irregular at low speed	Winding shorted			Winding shorted	Winding shorted
Engine irregular at high speed	Winding shorted			Winding shorted	Winding shorted
Load is not charged			Winding open		

SPECIFICATIONS - BATTERY, CHARGING CIRCUIT & LIGHTS

Flywheen Magneto

Circuit 12V/190w

Battery

Rating ..... 12V, 11 Amp hr.

Bulb Ratings (Watts)

Headlamp 45/40
Indicator 21
Console Warning 2
Rear Light Tail 4
Front Pilot 5
Rear Light Stop 10
Speedometer 4

Flasher Unit

Rating 12V
Regulator/Rectifier ..... Solid Sate

Circuit Breakers

Four:
Main 12V/10A
Lighting 12V/10A
Spare 12V/10A
Electric Start 12V/10A

Front Stop Switch

Type ..... Pressure release makes contact

Rear Stop Switch

Type ..... Application of pressure makes contact

GENERAL

Alternating current from the generator is supplied to a rectifier/regulator from where a direct current charges the battery. The 12 volt battery supplies all electrical equipment with the exception of the ignition system, which is independent.

There are three seperate circuits in operation when the ignition switch is in th "ON" position. They are the circuits supplying:

The brake light, horn, indicators, console lights, headlamp flasher

The rear lamp and front lamp

The headlamp - The blackout switch cuts off the supply to all lamps.

An independent circuit supplies the starter relay, allowing operation during black-out conditions.

A main wiring harness connects the various electrical components.

GENERAL MAINTENANCE PROCEDURES

The vehicle's electrical system should not require attention in normal use. A malfunction usually occurs because of damaged or corroded connections or failed bulbs.

1. Regularly inspect the wiring for loose connections, chafing, rubbing or other damage.
2. Keep the battery terminals protected and free of corrosion. Clean battery terminals and apply petroleum jelly.

BATTERY

Battery Removal

WARNING

- Be sure all electrical switches are OFF.
- Do not smoke or bring an open flame near the battery.
- Batteries contain sulfuric acid which is highly corrosive and can cause chemical burns. Avoid contact with skin, eyes or clothing. Always wear approved eye protection when working around batteries.

ANTIDOTE

External: Flush with water.

Internal: Drink large quantities of milk or water, followed by Milk of Magnesia®, vegetable oil or beaten eggs. Call doctor immediately.

Eyes: Flush with water, get immediate medical attention.

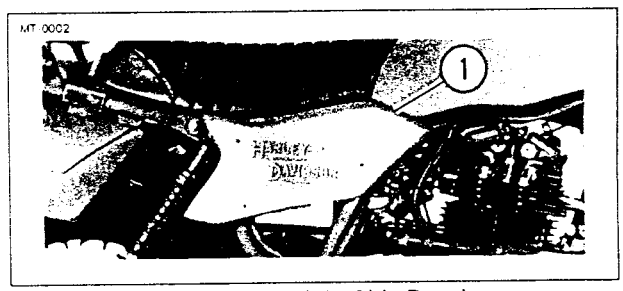


Figure 5-7. Right Side Panel

1. See Figure 4-21. Remove right side panel (1).

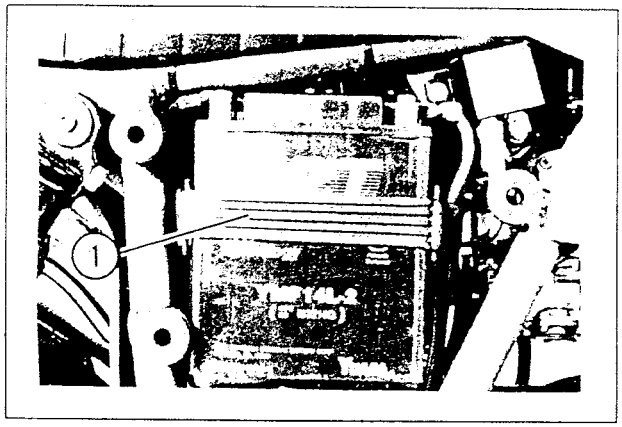


Figure 5-8. Battery Retaining Strap

2. See Figure 4-22. Unlatch battery retaining strap (1).

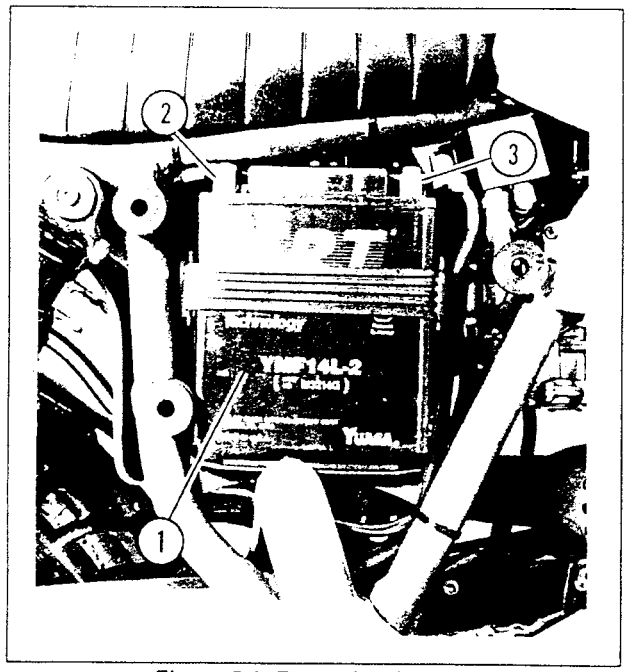


Figure 5-9. Removing Battery

3. See Figure 4-23. Gripping battery (1) by sides of case, slide out of frame just far enough to gain access to negative terminal (2) and positive terminal (3).

NOTE

If battery terminals and cable ends are corroded, clean off corrosion with a stiff metal brush and a sloution of water and sodium bicarbonate (baking soda) before disconnecting cables.

WARNING

Always remove ground (negative, or black) cable first when disconnecting battery cables to prevent sparking and short circuits.

4. See Figure 5-9. Using a 10mm open end wrench or a cross tip screwdriver, loosen negative terminal screw (2) and disconnect negative (-) cable.

5. In a similar manner, disconnect positive (+) cable (3) from battery.

6. Remove battery (1) from vehicle. See Figure 5-9.

Corrosion

Corrosion is a greenish "fuzz" that builds up on the battery, terminals and cables. This corrosion not only can prevent starting, but will also damage the cables and connectors.

WARNING

Battery Corrosion is an acid and will eat holes in clothing and will burn skin. Wash any corrosion off your skin and clothing immediately with plenty of fresh water.

CAUTION

Be sure battery cell caps are installed tightly and that there are no cracks visible in the battery case, so that no acid-neutralizing cleaning solution can enter to damage electrolyte.

1. Remove corrosion with an alkaline solution of bicarbonate of soda (baking soda) and water. Use a stiff metal brush to scrub corroded areas with solution.

2. After cables are dry and connections have been made, apply petroleum jelly to clean metal parts of terminals to retard formation of corrosion.

3. If battery cables overheat, there may be corrosion or a break within the stranded wiring which is causing resistance. Always remove corrosion as soon as it begins to form.

4. Clean any corrosion from vehicle frame or battery tray.

5. Rinse battery connections, battery case, and cables with clean water to remove alkaline cleaning solution and allow to air dry completely.

6. Keep top of battery clean and dry to prevent current drain (battery electrical discharge) between terminals.

Battery Installation

1. See figure 5-9. Place battery (1) on tray in vehicle, leaving enough distance to connect cables.

2. Using a 10mm open end wrench or crosstip screwdriver, connect positive (+) cable to postive battery terminal (3) and coat terminal with petroleum jelly.

3. In a similar manner, connect negative (-) cable to negative terminal (2).

4. Slide battery (1) all the way onto tray in vehicle frame.

5. See Figure 5-8. Latch elastic retaining strap (1) to catch on frame to secure battery.

6. See Figure 5-7. Install right side panel (1).

MAINTENANCE WHILE IN STORAGE

1. Take the battery out of the motorcycle and store it in a dry, cool (but not too cold), constant temperature location. Keep battery away from rain, dew, high moisture and direct sunlight. Keep battery fully charged and maintain electrolyte level when the battery is not in use.

2. The battery should be trickle-charged once a month during the off-service period.

3. Remember, most battery failures occur after a battery is allowed to stand in a discharged condition during its off-season.

HEADLAMP BEAM ADJUSTMENT

For optimum headlight effectiveness under different loading conditions, a headlight beam adjustment device is incorporated into the headlamp assembly. Perform the procedure with the rider on the vehicle and the vehicle with its normal load. The procedure for adjustment is as follows:

1. See Figure 4-24. Position the vehicle on a flat surface pointing directly at a wall at a distance of 7.6m (25 ft.).

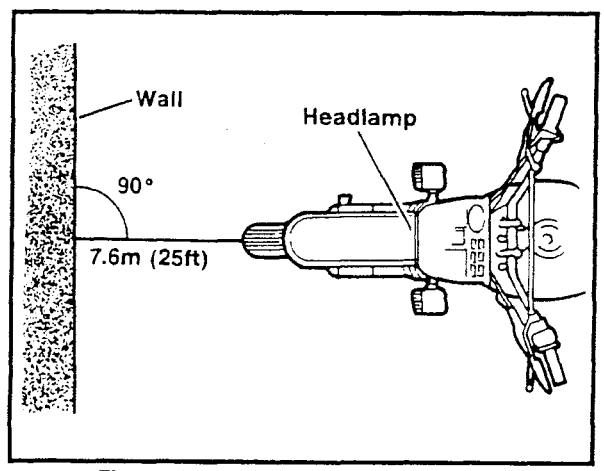


Figure 4-24. Adjust Headlamp Beam

2. See Figure 4-25. Draw a horizontal line on the wall that is the same height as the horizontal center of the vehicle headlamp. Adjust beam with the driver in a riding position and the headlamp on high beam. The setting is correct when the center of the beam is the same as the horizontal line (on the wall).

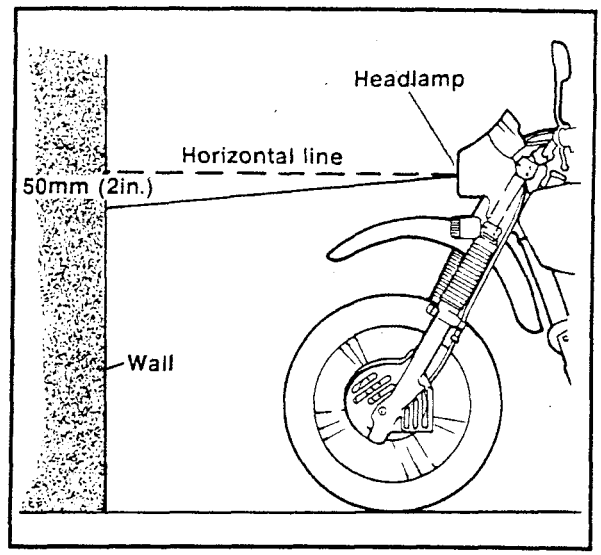


Figure 4-25. Adjust Headlamp Beam

3. See Figure 4-26. To change vertical setting adjust screw marked A. To change horizontal setting adjust screw marked B.

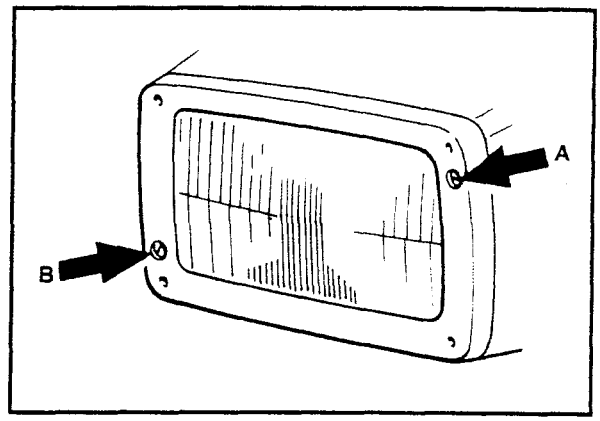


Figure 4-26. Headlamp Beam Adjustment Screws

HEADLAMP UNIT BULB REPLACEMENT

1. Remove the headlamp assembly from the cowling.

2. Unhook the rubber boot, sliding it along the electrical cable. Disconnect the cable from the bulb terminals.

3. See Figure 4-27. Release the bulb clip.

4. The bulb is in its own holder. It is a push fit into the headlamp assembly.

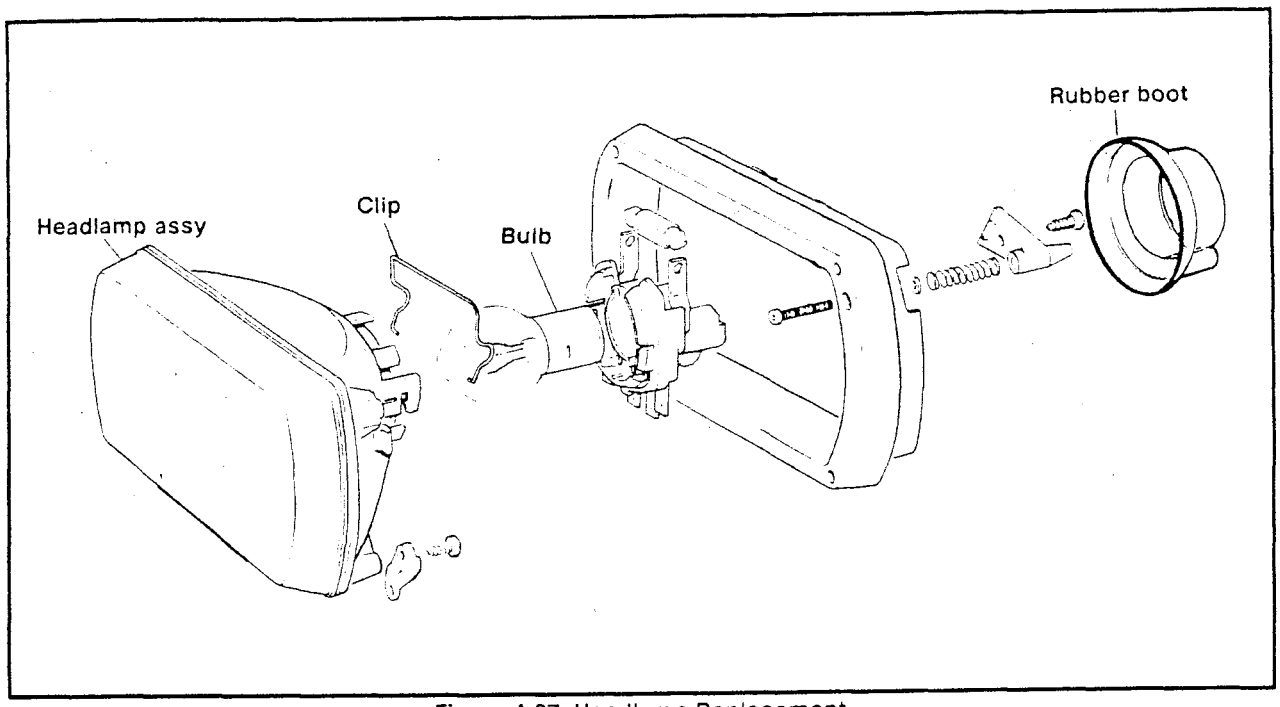


Figure 4-27. Headlamp Replacement

REAR LAMP UNIT REMOVAL/ REPLACEMENT

1. The rear light unit is fastened to the rear fender by nylock nuts and large washers.
2. Disconnect the electrical cable under the rear fender.

NOTE

When removing, mark the wires.

3. See figure 4-28. If the rear light unit terminals are dirty or corroded, clean with fine emery paper. To do this, carefully pry off the snap fitting terminal cap.

BULB REPLACEMENT

Both the rear tail and rear stop bulbs in the rear light unit are push and turn bayonet type fittings. The rear lens has to be removed to allow access.

INDICATORS, FRONT & REAR

The turn signal indicator system is made up of four complete indicators each installed on an indicator stem assembly. At the rear the stems attach to luggage rack. At the front the stems attach to brackets mounted to the lower fork yoke.

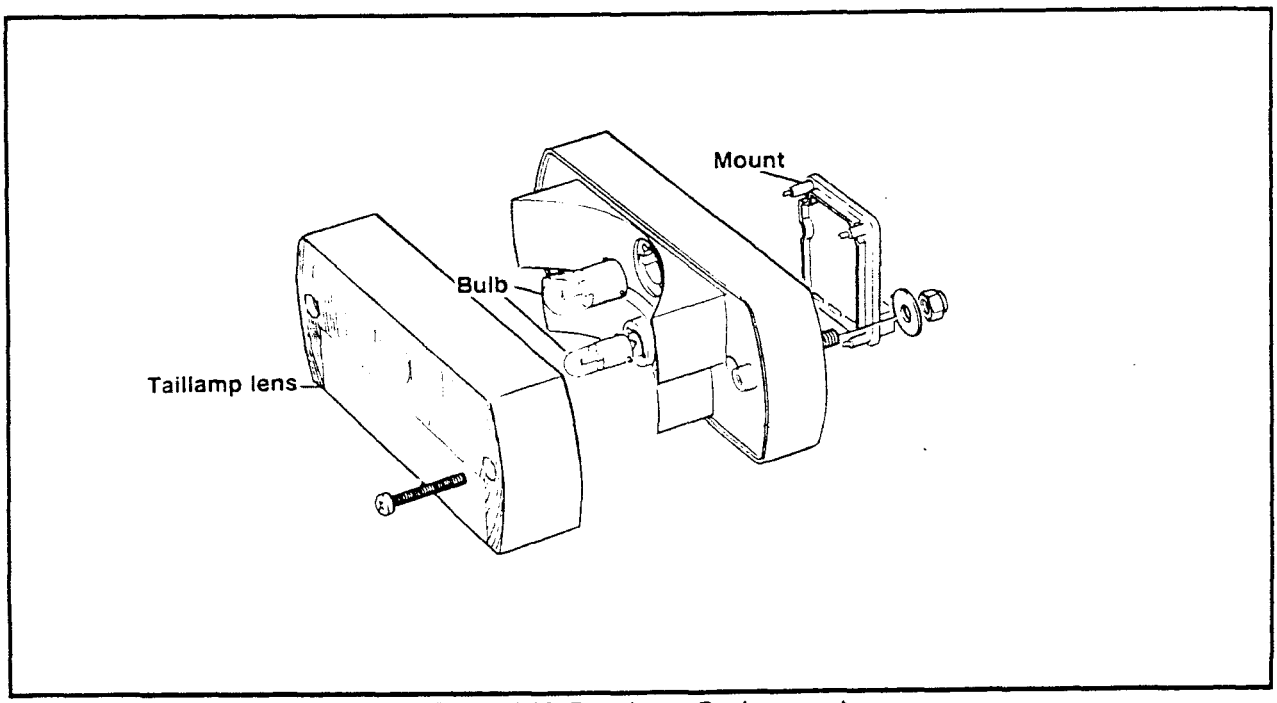


Figure 4-28. Rear Lamp Replacement

REMOVAL/REPLACEMENT

1. Remove the rear indicators from the rear carrier by disconnecting the electrical wiring and unscrewing the retaining nut. The cable can then be threaded through the nut and washer to allow removal.

2. The front indicator assembly has to be removed as a complete assembly. To further disassemble, (remove the stems from the bracket) the terminals on the cable will have to be cut off to allow the cable to be threaded through the bracket.

3. Disassemble the indicators by removing the lens, bulb and reflector to allow access to the screws (-). These screws tighten the clamp around the end of the indicator stem.

NOTE

When assembling, be sure the clamp protrusion locates in the groove on the indicator stem end.

HORN

1. The horn is rubber mounted on a bracket on the RH side of the front frame downtube, below the fuel tank.

2. The horn is a non-maintenance unit and does not require attention. Check to be sure the electrical connections are clear and tight, and occasionally adjust tone (if necessary) as follows:

Tone optimization

3. The horn tone can change with age. Optimize the tone for loudness by loosening the locknut and turning the adjuster screw. Re-tighten the locknut.

NOTE

Battery condition can affect the horn tone. Be sure battery is fully charged before testing horn.

CIRCUIT BREAKERS

The circuit breakers are located on a panel bolted to the top of the air box. There is one circuit breaker for each circuit and an auxilliary circuit breaker.

RECTIFIER/REGULATOR

1. The rectifier/regulator is directly under the headlamp, mounted to the cowl.

2. The rectifier/regulator is a solid state, non-adjustable electronic device. A faulty unit must be replaced with a new one.

3. See figure -. When replacing, be sure the wires are connected as shown in the electrical diagram.

STARTER MOTOR RELAY

The starter motor relay is located behind the RH sidepanel, next to and forward of the battery and next to the flasher unit.

1. Maintenance of the relay is restricted to ensuring that the terminals are free of corrosion and smeared lightly with petroleum jelley.
2. When pressing the starter motor button on the RH handlebar a click should be audible as the relay operates, and switches current to the starter motor. If there is no click, check the wires to the terminals.

CHARGE SIGNAL DETECTOR

An electronic device, the charge signal detector, lights the generator warning light on the console if there is a supply failure from the generator. Under blackout conditions however, this light will not operate even if the generator fails.

No maintenance of this unit is necessary

REAR STOP SWITCH

The rear stop switch is in the rear brake hydraulic line.

ADJUSTMENT

1. The rear brake light should come on when the rear brake is just beginning to be operated.
2. The switch position can be changed slightly by shifting its position in its elongated mounting hole.

FLASHER UNIT

See Figure 4-29. The flasher unit is located behind the RH sidepanel, next to and forward of the battery.

1. Faulty units cannot be repaired they must be replaced.
2. Install the unit with the terminals on its underside as shown.

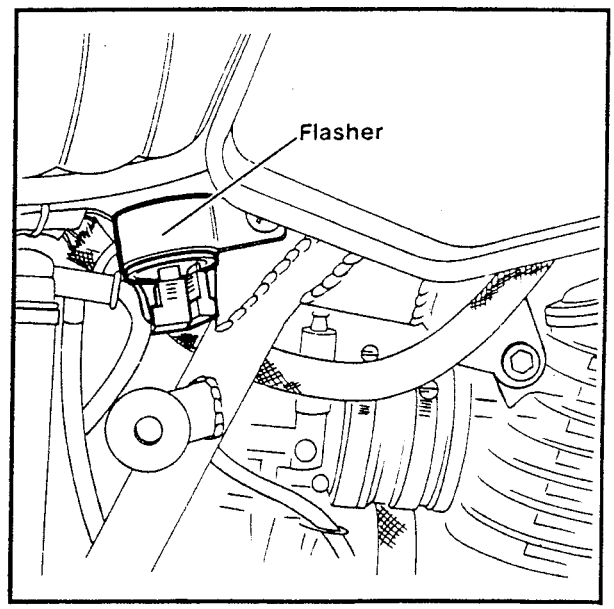


Figure 4-29. Flasher Unit Location

ELECTRIC STARTER

STARTER MOTOR

GENERAL: See Figures 4-30, 4-31. The starter motor is continuously engaged, driving an idler gear which drives a one-way (sprag) gear clutch mounted on the end of the balancer shaft. See BOTTOM END.

REMOVAL, DISASSEMBLY, INSPECTION AND REPAIR

1. See Figure 4-31. Disconnect the electrical cable. Remove support screws (1), washers (2) and support (3). Remove starter motor (4).

2. See Figure 4-32. Disassemble by unscrewing the two thru bolts (1).

3. If the brushes are severely worn, a new brush assembly (2) should be installed.

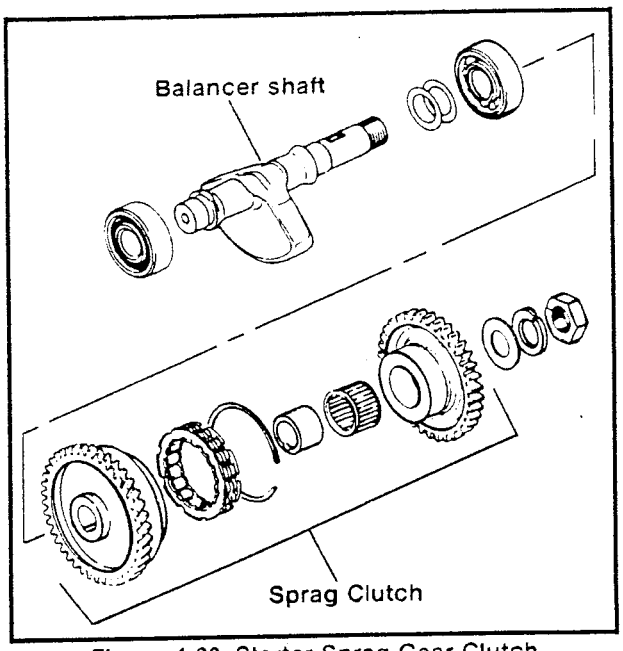


Figure 4-30. Starter Sprag Gear Clutch

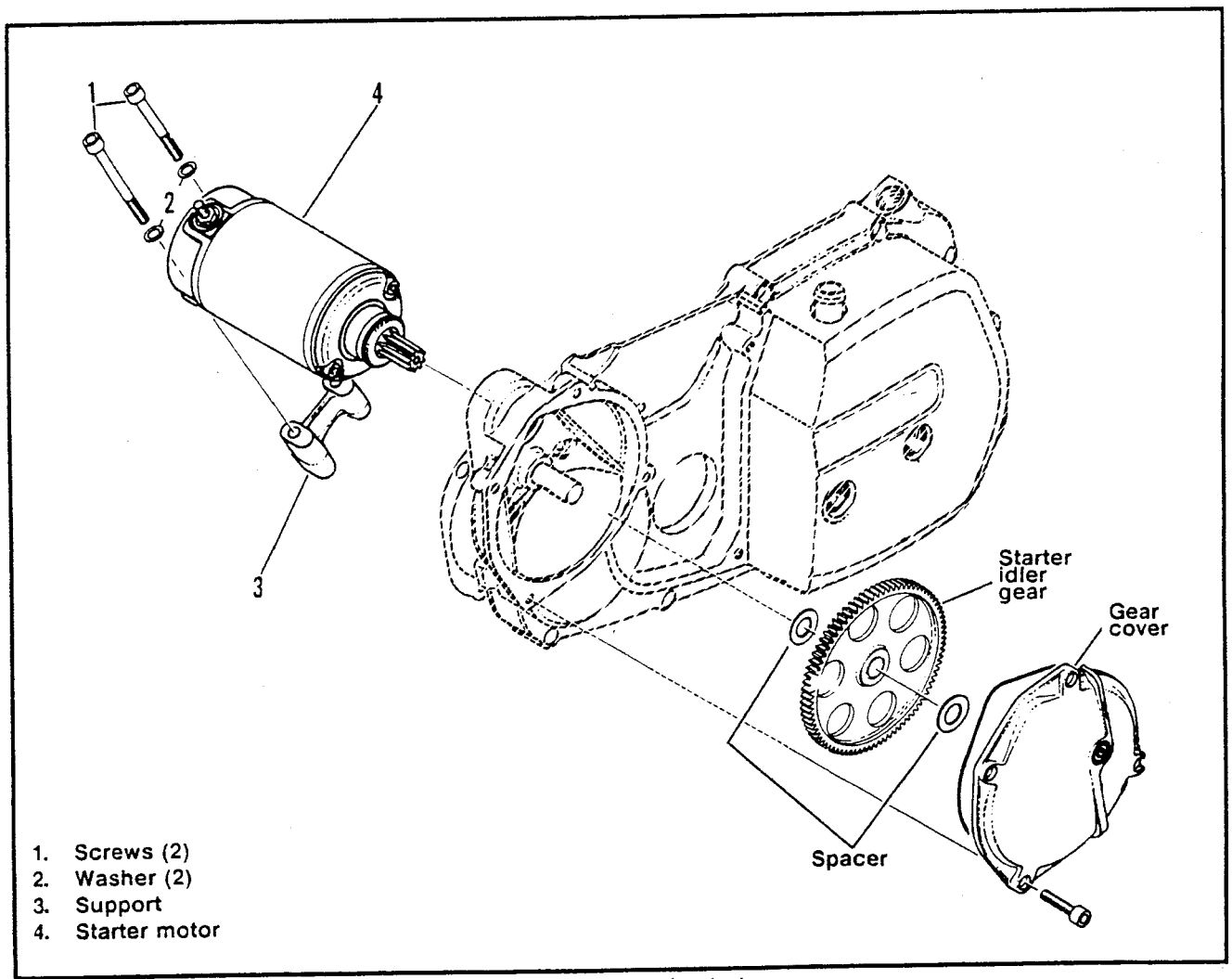


Figure 4-31. Electric starter

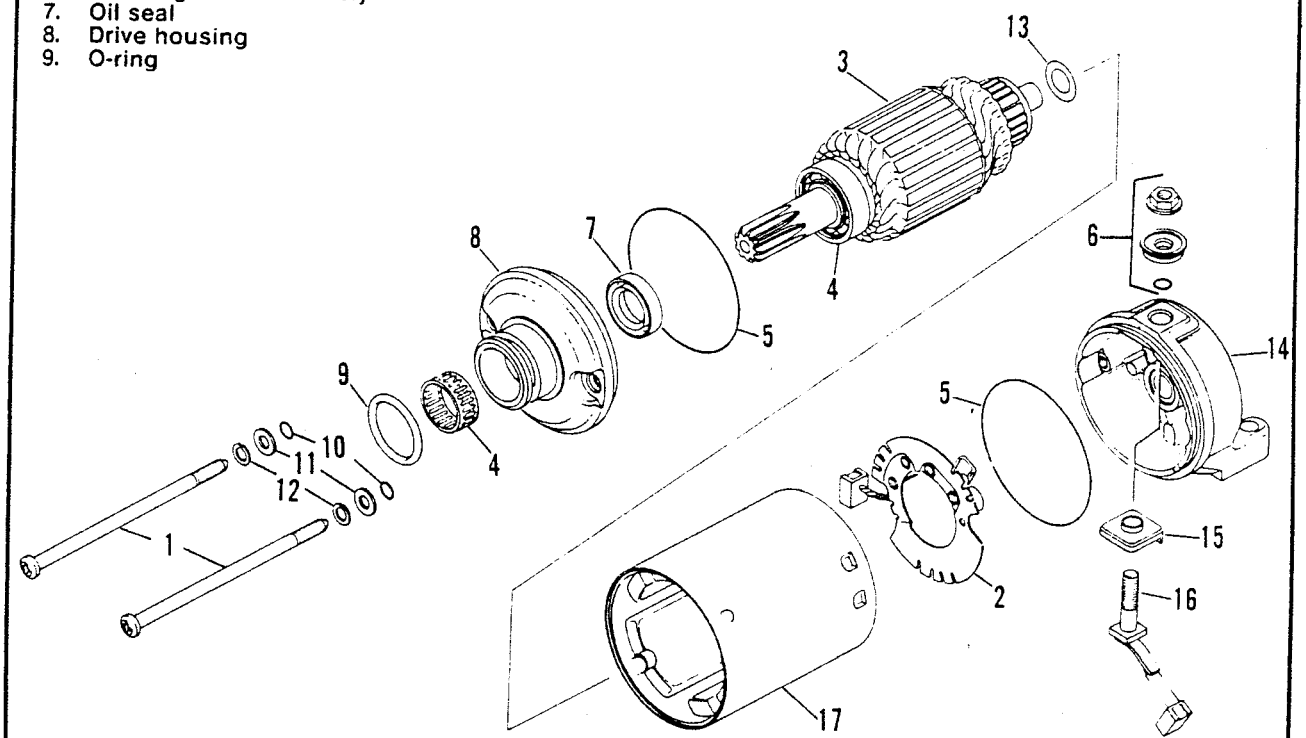
4. Clean the surface of the armature (3) segments, and the area between the segments, of loose dust which can cause arcing and poor motor performance.

5. Check that the rotor runs smoothly in the bearings (4). Be sure all O-rings (5) are intact and lightly greased and that the arrangement of the isolating bush assembly (6) is correct. The oil seal (7) should be ingood condition. When assembling, be sure the brush holder assembly is located correctly.

Installation is the reverse of removal.

STARTER MOTOR TESTS

1. Place armature in lathe or truing stand and check runout of commutator. Commutators with more than 0.002 in. runout should be replaced or machined on a lathe. Commutators should be replaced when diameter is less than 1.141 in.



1. Thru-bolt (2)
2. Brush holder
3. Armature
4. Armature bearings
5. O-ring (2)
6. Isolating bush assembly
7. Oil seal
8. Drive housing
9. O-ring
10. O-ring (2)
11. Washer (2)
12. Lockwasher (2)
13. Spacer
14. End cap
15. Isolating bush
16. Isolating bush stud assy
17. Field coil

Figure 4-32. Electric Starter

2. Check depth of mica on commutator. If undercut is less than 0.008 in., use an undercutting machine to undercut the mica to 1/32 in. deep. The slots should then be cleaned to remove any dirt or copper dust.

2. See Figure 4-33. If an undercutting machine is not available, undercutting can be done satisfactorily using a thin hacksaw blade. After undercutting, lightly sand the armature with crocus cloth to remove any burrs.

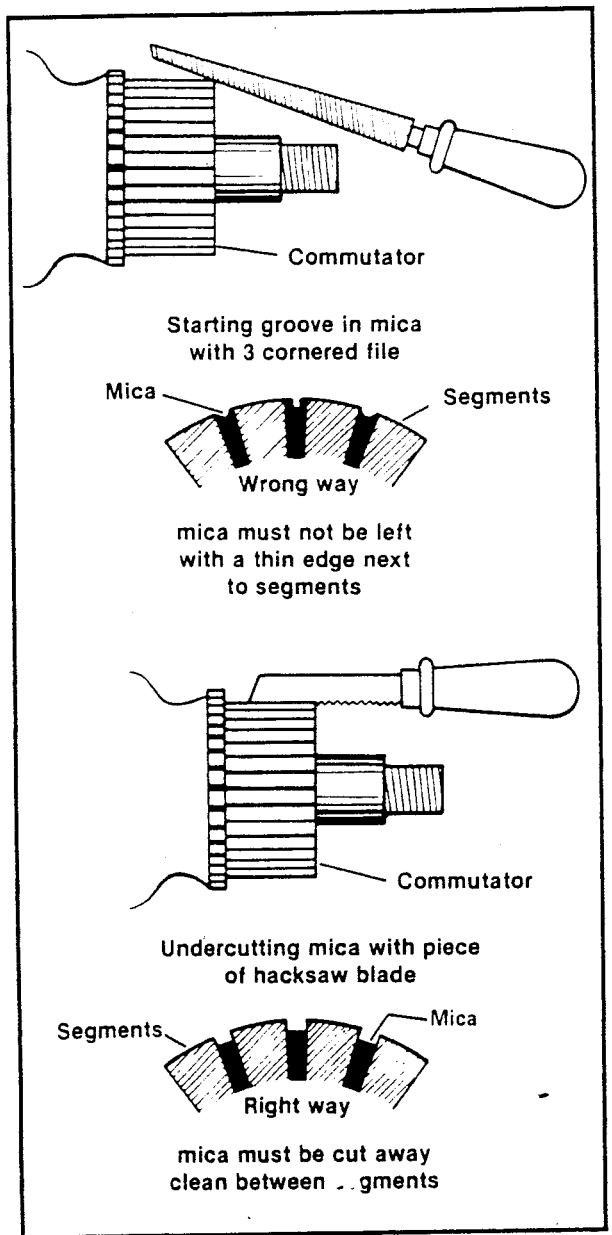


Figure 4-33. Undercutting the Mica Separators

3. See Figure 4-34. Check for SHORTED ARMATURE with a growler. Place armature on growler. Hold a thin steel strip (hacksaw blade) against armature core and slowly turn armature. A shorted armature will cause the steel strip to vibrate and be attracted to the core. Shorted armatures should be replaced.

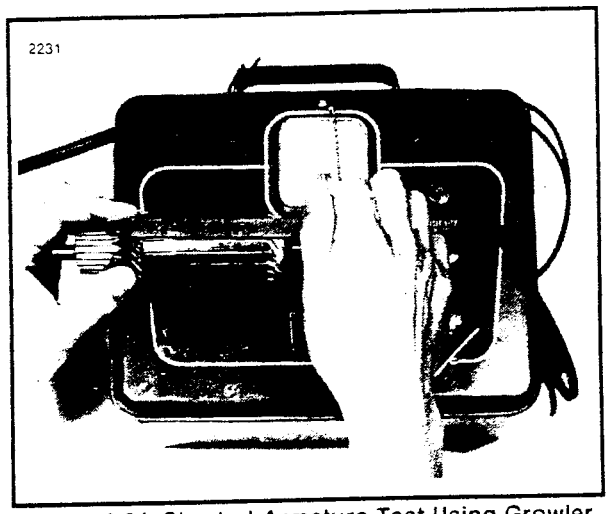


Figure 4-34. Shorted Armature Test Using Growler

4. See Figure 4-35. Check for a GROUNDED ARMATURE with an ohmmeter or continuity tester. Touch one probe to any commutator segment, and the other probe to the armature core. There should be no continuity (infinite ohms). If there is any continuity the armature is grounded and should be replaced.

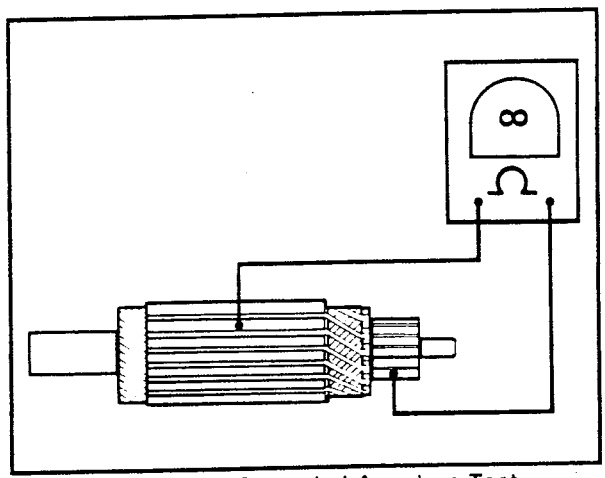


Figure 4-35. Grounded Armature Test

5. See Figure 4-36. Check for OPEN ARMATURE with an ohmmeter or continuity tester. Check for continuity between all commutator segments. There should be continuity (0 ohms) at all test points. No continuity at any test point indicates armature is open and should be replaced.

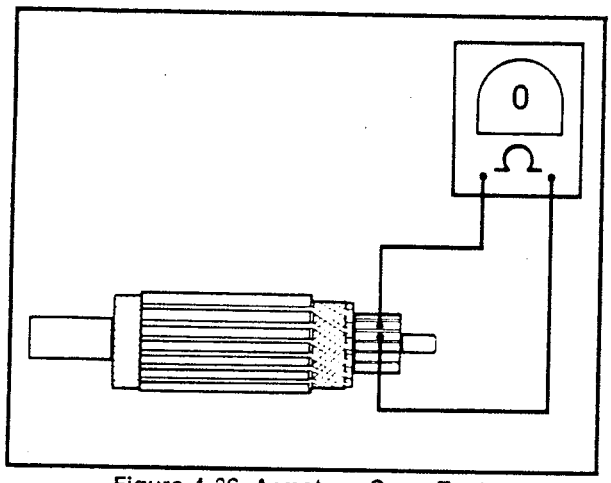


Figure 4-36. Armature Open Test

6. See Figure 4-37. Check for GROUNDED FIELD WINDING with an ohmmeter or continuity tester. Touch one probe to the frame, and the other probe to each of the brushes attached to the field winding. There should be no continuity (infinite ohms). If there is any continuity at either brush, the field winding(s) are grounded and the field frame should be replaced.

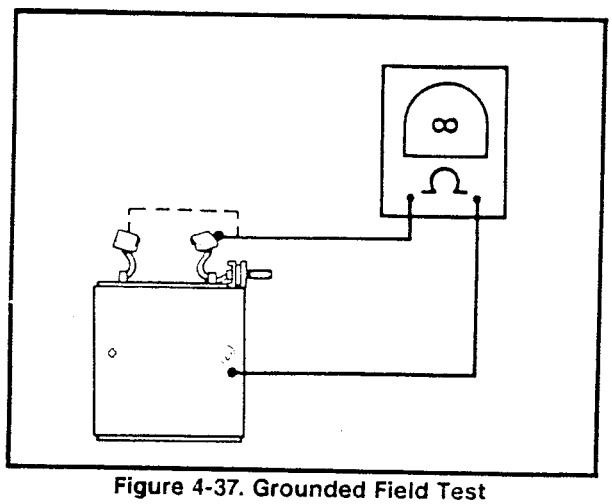


Figure 4-37. Grounded Field Test

7. See Figure 4-38. Check for OPEN FIELD WINDING with an ohmmeter or continuity tester. Touch one probe to the field wire, and the other probe to each of the brushes attached to the field coils. There should be continuity. If there is no continuity at either brush, the field winding(s) are open and the field frame should be replaced.

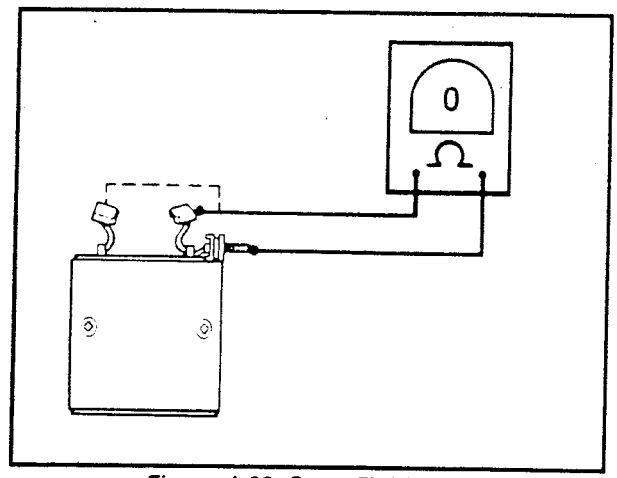


Figure 4-38. Open Field Test

8. See Figure 4-39. Test BRUSH HOLDER INSULATION with an ohmmeter or continuity tester. Touch one probe to holder plate and the other probe to each of the positive (insulated) brush holders. There should be no continuity (infinite ohms). If there is continuity at either brush holder, the brush holder assembly should be replaced.

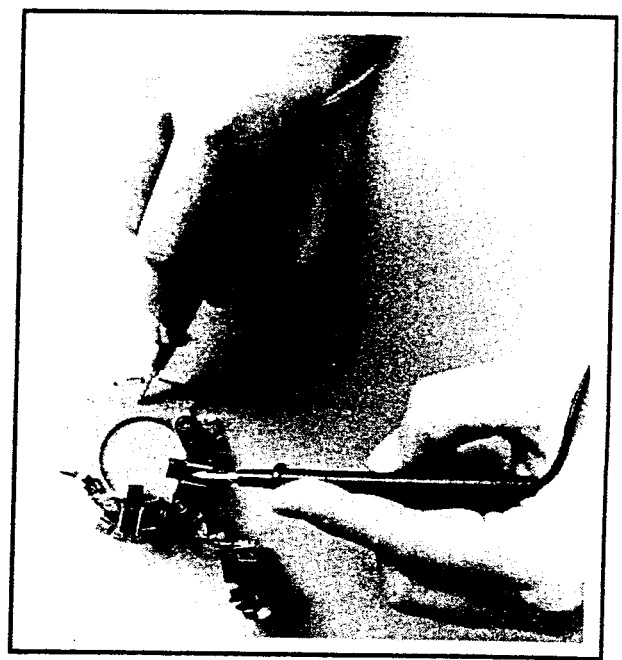


Figure 4-39. Brush Holder Insulation Test

Zündanlage montieren

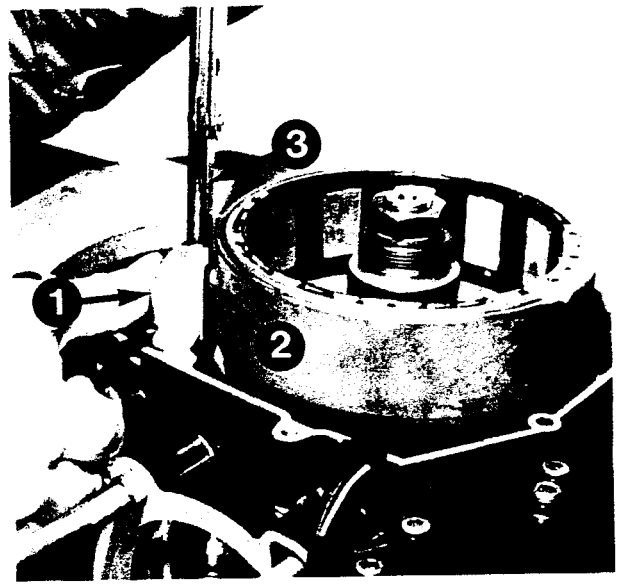
Die Geberleitung des Außengebers ❶ mit Leitungsschelle und Taptite-Schraube M4 fixieren bzw. Geberleitung in Leitungsschelle einhängen. Scheibenfeder 4 x 5 in Kurbelwelle einsetzen. Konus der Kurbelwelle und des Magnetrades entfetten, mit „Loctite 221" bestreichen. Magnetrad auf Kurbelwelle stecken, Federring auflegen, Sechskantmutter M18 x 1,5 mit „Loctite 221" sichern und mit 100 Nm festziehen. Kurbelwellenfixierschraube lockern, damit sich die Kurbelwelle durchdrehen läßt.
Fühllehre ❸ zwischen Außengeber ❶ und Impulsgeber ❷ stecken. Außengeber andrücken und mit 2 Taptite-Schrauben M6 montieren. Geberspalt auf 0,4 bis 0,5 mm einstellen.
Wurde der Stator vom Zünderdeckel abgeschraubt, so sind bei Wiedermontage die 3 Innensechskantschrauben M6 mit „Loctite 221" zu sichern. 2 Paßhülsen einsetzen. Dichtfläche mit dauerelastischer Silicongummi-Dichtmasse bestreichen, Zünderdeckel aufsetzen und mit Innensechskantschrauben M6 festziehen. Verschlußschraube für Zündungskontrolle einschrauben.

Installation of ignition system

Fix cable of external trigger coil ❶ with cable clamp and Taptite screw M4. Fit Woodruff key 4 x 5 in crankshaft. Degrease tapers of crankshaft and flywheel, coat with „Loctite 221". Install flywheel on crankshaft, fit spring-washer, secure hex. nut M18 x 1,5 with „Loctite 221" and tighten to 100 Nm. Slacken crankshaft locking screw so that crankshaft can be turned.
Place feeler gauge ❸ between external trigger coil ❶ and trigger pin ❷.
Fit external trigger coil with 2 Taptite screws M6. Set transmitter gap to 0,4—0,5 mm.
If the stator has been unscrewed from the magneto cover, secure the 2 Allen screws M6 with "Loctite 221" when refitting. Mount 2 dowel pins. Coat sealing surface with Silicon RTV sealing compound, fit magneto cover and tighten with Allen-head screws M6. Close ignition inspection opening with PVC-plug.

Montaggio dell'accensione

Fissare il cavo del pick-up ❶ con la fascetta e la vite autofilettante Taptite M4.
Inserire la linguetta 4 x 5 nell'albero motore.
Sgrassare il cono dell'albero motore e del volano, quindi applicarvi „Loctite 221". Infilare il volano sull'albero motore, mettere la rondella elastica, applicare sul dado esagonale M18 x 1,5 della „Loctite 221", avvitare e serrarlo con 100 Nm.
Allentare la vite di bloccaggio albero motore in modo che l'albero possa essere girato.
Mettere un calibro di spessore ❸ fra il pick-up ❶ ed il piolo pick-up ❷. Premere sul pick-up e fissarlo con 2 viti Taptite M6. Regolare la distanza fra pick-up e piolo a 0,4—0,5 mm.
Se lo statore è stato smontato dal coperchio accensione, ungere le 3 brugole M6 con „Loctite 221" al rimontaggio.
Applicare ermetico silicone ad elasticità permanente sulla superficie di tenuta, mettere il coperchio accensione e fissarlo con brugole M6. Avvitare la vite tappo per controllo dell'accensione.



Hubraumteile montieren

Die 2 Paßhülsen in den Zylinderflansch des Motorgehäuses einstecken und Fußdichtung auflegen. Kurbelwelle wieder in O.T.-Position fixieren.

Achtung:

Öldüse bei rechter hinterer Stiftschraube ❹ sauberhalten.
Kolbenbolzenauge einölen, Kolben auf Pleuel aufsetzen und Kolbenbolzen ❶ mit Führungsdorn ❷ montieren. Pfeil auf Kolbenboden muß in Fahrtrichtung zeigen. (Die größere Ventiltasche am Kolbenboden ist auf der Einlaßseite.) Kurbelraum abdecken.
Kolbenbolzen mit neuen Sicherungsringen sichern (siehe Bild). Kurbelraumabdeckung entfernen, Kolben einölen, Kolbenringe zueinander um je 120° verdrehen, Montagering ❸ auf Kolben aufziehen und eingeölten Zylinder so weit aufschieben, daß Montagering entfernt werden kann.

Fitting cylinder components

Insert 2 dowel pins in cylinder flange of crankcase, and install cylinder base gasket. Lock crankshaft at top dead centre.

Caution:

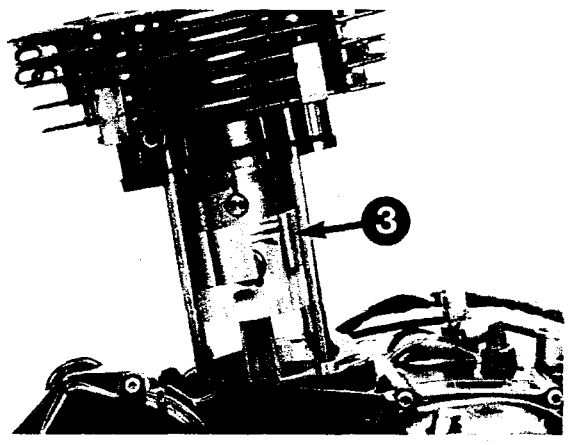
Keep oil bore at right-hand rear stud bolt ❹ clean.
Lubricate piston pin bore, fit piston on connecting rod, and install piston pin ❶ with guide tool ❷. The arrow on the piston crown must point forwards. (Note that the larger valve pocket is on the intake side). Cover crankcase opening with a cloth. Fix piston pin with new circlips (see illustration).
Remove cloth covering crankcase. Lubricate piston, turn piston ring gap 120° to each other, put piston ring clamp ❸ over piston and slide lubricated cylinder over piston until piston ring clamp can be removed.

Montaggio dei particolari del cilindro

Inserire le 2 spine nella flangia cilindro del carter e applicare la guarnizione base cilindro. Bloccare nuovamente l'albero motore al punto morto superiore.

Attenzione:

Tenere pulito il getto d'olio dietro il prigioniero posteriore destro ❹.
Oliare l'occhio spinotto della biella, mettere il pistone sulla biella e montare lo spinotto ❶ con una spina di guida ❷. La freccia sul cielo del pistone deve essere orientata con la punta verso la direzione di marcia (le cavità per ingombri valvole di dimensioni maggiori sul cielo del pistone vanno dietro, lato aspirazione).
Coprire l'apertura del carter con un panno.
Assicurare lo spinotto con seeger nuovi (vedi illustrazione).
Togliere il panno, oliare il pistone, posizionare i segmenti a 120° l'uno rispetto all'altro, mettere lo stringifasce ❸ sul pistone e porvi sopra il cilindro oliato fino a che lo stringifasce si possa rimuovere.



STOPLAMP SWITCH

FRONT BRAKE SWITCH

The front stoplamp switch is located in the right side handlebar switch assembly. If the stop lamp fails to light when the front brake is applied, check to see if the bulb is burned out. If the bulb is good, unscrew the switch assembly and replace the stoplamp switch. If lamp stays on, be sure the master cylinder assembly is properly positioned with throttle control.

REAR BRAKE SWITCH

The rear switch is mounted on top of the rear brake master cylinder. If stoplamp fails to light when rear brake is applied, check the bulb to see if it is good. If bulb is good, replace the stoplamp switch.

CAUTION

Do not contaminate switches with brake fluid or switch failure could occur.

ELECTRICAL TROUBLESHOOTING

Electrical system troubleshooting requires a systematic approach. Most faults tend to be corroded, loose connections or improperly mounted components and/or wiring that has rubbed or chafed or become trapped between other components. Therefore, always do a thorough visual inspection of the electrical equipment.

In cases where visual inspection reveals nothing, use a multi-meter with the wiring schematics to trace ground or line-toline faults.

If a faulty component is suspected, substitute a known good component and test.

The following table is a guide.

ELECTRICAL TROUBLESHOOTING

SYMPTOM	CAUSE	SOLUTION
Particular light (or lights) inoperative.	Blackout switch on.	Turn blackout switch OFF.
	Bad ground.	Clean.
	Burnt out filament(s) because of: a. Worn out bulb(s).	Replace.
	b. Excessive electrical supply (electrical surging).	Replace bulb but check output of rectifier/regulator and alternator.
	No current reaching bulb(s) because of: a. Bad contact(s).	Clean.
	b. Fuse blown on circuit feeding bulb.	Replace fuse, but check for reason for failure.
	c. Circuit feeding bulb(s) not switched in at ignition switch (faulty).	Check ignition switch with ohmmeter; replace if necessary.
	d. Circuit feeding bulb(s) not switched in at handlebar switches.	Check switches with ohmmeter.
	e. Battery disconnected.	Check battery connections. Check for loose connections from alternator to rectifier/regulator and alternator. If that fails, check output of rectifier/regulator and alternator.
Lights dim, particularly when engine rev's drop.	Corroded or loose battery terminals.	Check, reconnect battery connections.
	battery output low because of: a. Low electrolyte level.	Top up level.
	b. Failing battery.	Replace.
Lights completely inoperative.	See Symptom #1.	–
Poor horn note.	Low battery voltage.	See Symptom #2.
	Horn out of adjustment.	Adjust.
Flashers inoperative.	See Symptom #1.	–
	Flasher unit broken.	Replace
Brake light inoperative.	See Symptom #1.	–
	Switch broken.	Check, replace.
	Switch(es) out of adjustment.	Check, adjust.

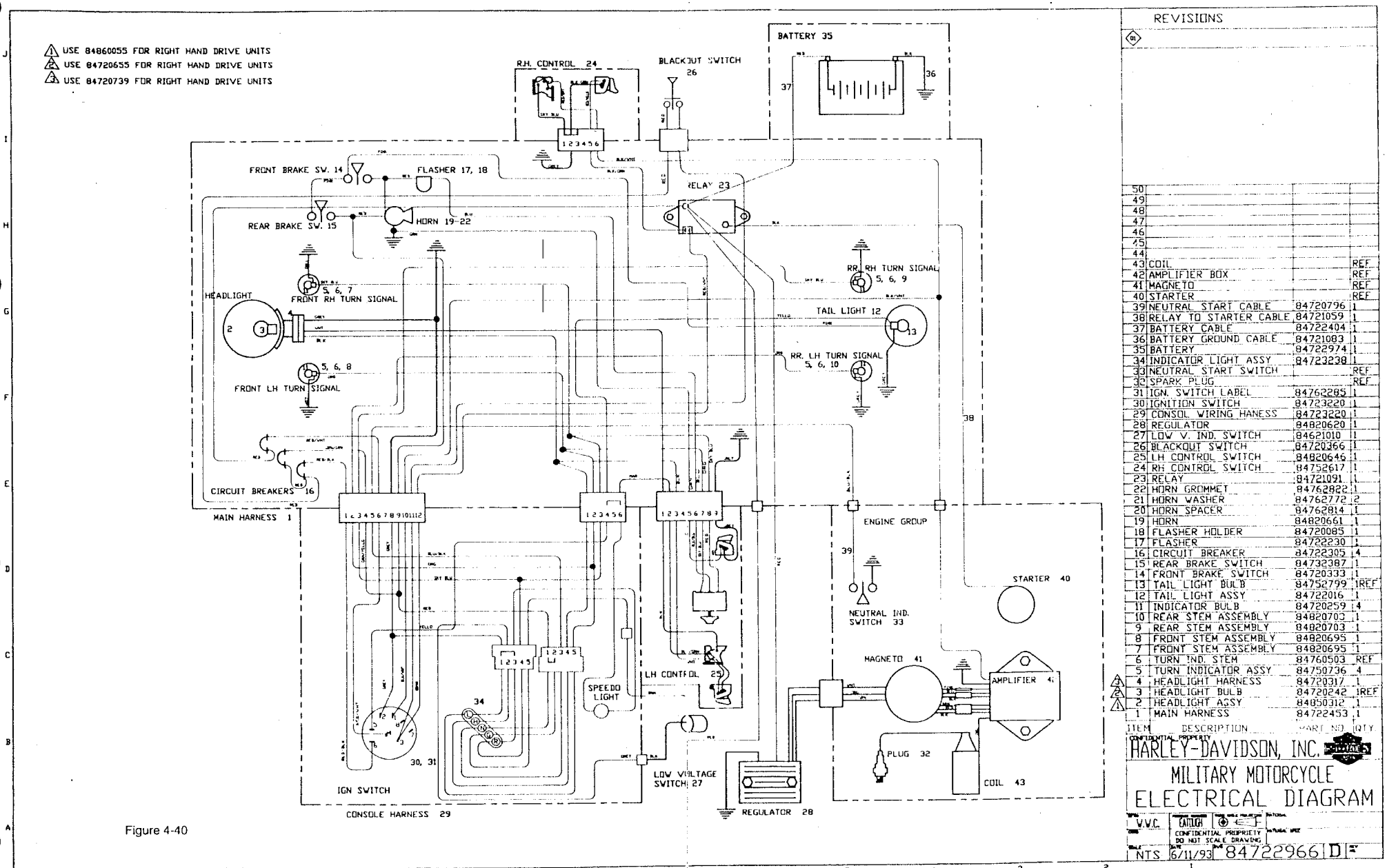


Figure 4-40

REVISIONS

ITEM	DESCRIPTION	PART NO.	QTY
50			
49			
48			
47			
46			
45			
44			
43	COIL		REF
42	AMPLIFIER BOX		REF
41	MAGNETO		REF
40	STARTER		REF
39	NEUTRAL START CABLE	84720796	1
38	RELAY TO STARTER CABLE	84721059	1
37	BATTERY CABLE	84722404	1
36	BATTERY GROUND CABLE	84721083	1
35	BATTERY	84722974	1
34	INDICATOR LIGHT ASSY	84723238	1
33	NEUTRAL START SWITCH		REF
32	SPARK PLUG		REF
31	IGN. SWITCH LABEL	84762285	1
30	IGNITION SWITCH	84723220	1
29	CONSOL WIRING HANESS	84723220	1
28	REGULATOR	84820620	1
27	LOW V. IND. SWITCH	84621010	1
26	BLACKOUT SWITCH	84720366	1
25	LH CONTROL SWITCH	84820646	1
24	RH CONTROL SWITCH	84752617	1
23	RELAY	84721091	1
22	HORN GROMMET	84762822	1
21	HORN WASHER	84762772	2
20	HORN SPACER	84762814	1
19	HORN	84820661	1
18	FLASHER HOLDER	84720085	1
17	FLASHER	84722230	1
16	CIRCUIT BREAKER	84722305	4
15	REAR BRAKE SWITCH	84732387	1
14	FRONT BRAKE SWITCH	84720333	1
13	TAIL LIGHT BULB	84752799	1REF
12	TAIL LIGHT ASSY	84722016	1
11	INDICATOR BULB	84720259	4
10	REAR STEM ASSEMBLY	84820703	1
9	REAR STEM ASSEMBLY	84820703	1
8	FRONT STEM ASSEMBLY	84820695	1
7	FRONT STEM ASSEMBLY	84820695	1
6	TURN IND. STEM	84760503	REF
5	TURN INDICATOR ASSY	84750736	4
4	HEADLIGHT HARNESS	84720317	1
3	HEADLIGHT BULB	84720242	1REF
2	HEADLIGHT ASSY	84050312	1
1	MAIN HARNESS	84722453	1

CONFIDENTIAL PROPRIETY

HARLEY-DAVIDSON, INC.

MILITARY MOTORCYCLE ELECTRICAL DIAGRAM

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CHASSIS

CHASSIS

FRAME & FITTINGS (Figure 5-1)

GENERAL

The fame is made up of a single tubular steel weldment. It also contains several smaller pieces that support various components.

The front section has a welded steel box section spine serving as the engine oil reservoir tank. It also incorporates the steering head and bearings.

The rear subframe welds to the front section and is welded steel tube.

An engine guard is mounted in front of the engine. The vehicle has both a center stand and sidestand to support it when stationary.

MAINTENANCE/OVERHAUL

The ability of a normal workshop to repair damaged frame components is limited without specialized jigs and equipment. If this specialized equipment is not available, replace broken, twisted or bent frame parts.

When cleaning, remove the accumulation of dirt and water that can promote rust and hide cracks. Inspect all frame tubes and weld joints for cracks while cleaning.

Be sure painted surfaces are kept clean. Touch up scratches.

STRIPDOWN

Because the framework holds the vehicle together, removal of the mainframe assembly requires complete stripdown. This involves unfastening and detaching any component or groups of components directly attached to or restricting access to the frame as described in the applicable sections. When assembling, tighten all fasteners to their torque specifications.

CENTER STAND REMOVAL/INSTALLATION

1. Support the machine on a suitable stand to keep the machine steady.
2. Unscrew and remove pivot bolts (47), lockwashers and spacer (46) from both sides of the frame.
3. Unhook the return springs (44) and detach center stand. If the pivot is a tight fit between the two frame sideplates it is helpful to loosen the front footrest arm retaining bolts (18).
4. Reassembly is accomplished by reversing the removal procedure.

CENTER STAND MAINTENANCE

1. Greasing regularly is important to prevent the stand seizing on its pivot.
2. Inspect the chain slipper pad (45) retained by the two bolt assemblies for excessive wear and replace if necessary.
3. Be sure the return springs (44) stay closely coiled when not under tension, and that they hold the stand in the upward position satisfactorily.

ENGINE GUARD, SIDESTAND, SUMP GUARDS, ENGINE CARRIER

1. Keep the sidestand pivot well greased and be sure the return spring works correctly. The engine guard (37), sump guard (13) and engine carrier (36) can be detached by removing the retaining bolts.

FOOTRESTS MAINTENANCE, INSPECTION

1. The pegs should fold upwards easily on their pivots.
2. Check that the spring returns peg freely.
3. Any wear in the pivot will show by a sagging peg. Replace the appropriate parts. When assembling do not overtigten the bolt and nut (20-25). The locknut will prevent loosening.

BATTERY TRAY

1. The screws (35) retaining the battery tray (32) have flat heads to prevent battery damage.
2. Whenever positioning the battery tray, be sure that the battery retaining strap is away from the airbox, and the sidepanel is clear of the battery.

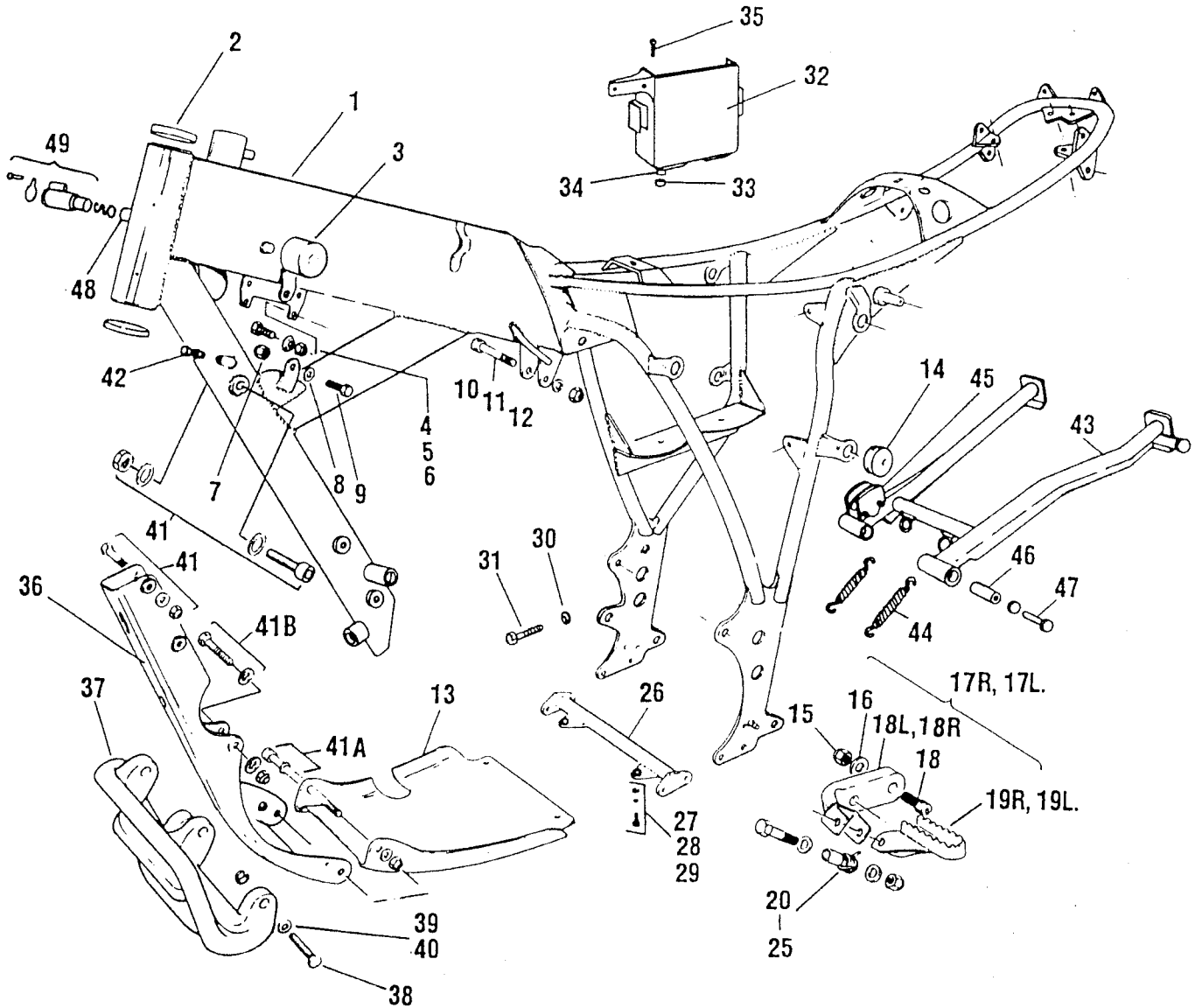


Figure 5-1. Frame and Chassis Components

LEGEND - FIGURE 5-1

1 One Piece Frame, GRN
2 Head Stock Bearing Seal
3 Tank Cushion, Extended (4)
4 Soc Head Screw M6X30 (2)
5 Plain Washer M6 (4)
6 Nut, Self Locking M6 (2)
Washer, Serrated (2)
7 Nut, Self Locking M6(2)
8 Plain Washer M6 (4)
9 Hex Head Screw M6X16 (2)
10 Bolt, Soc Cap Head M10X70
11 Washer M10 (2)
12 Nut, Self Locking
13 Sump Guard, Grn.
14 Grommet (6)
15 Nut, Self Locking M8(4)
16 Plain Washer M8(4)
17R RH Footpeg Assembly
17L LH Footpeg Assembly
18R Mounting, RH Footrest, Grn.
18L Mounting, LH Footrest, Grn.
18 Screw, Soc Cap Head
M8X30 (4)
19R Footrest Peg, RH, Grn.
19L Footrest Peg, LH, Grn.
20 Nut Self Locking M8 (2)
21 Plain Washer (2)
22R Spring, RH
22L Spring, LH
23 Bushing, Footpeg (2)
24 Plain Washer (2)
25 Hex Head Bolt M8X45 (2)
26 Crosstube, Grn.
27 Hex, Head Screw M8X16 (2)
28 Spring Washer M8 (2)
29 Plain Washer M8 (2)
30 Plain Nut M6
31 Hex Head Screw M6X30
32 Battery Tray, Grn.
33 Nut, Self Locking M6 (2)
34 Plain Washer M6 (2)
35 Truss Head Bolt M6x20 (2)
36 Engine Carrier, Grn.
37 Engine Guard, Grn.
38 Hex Head Screw, M6X30 (4)
39 Nut, Self Locking M6 (4)
40 Plain Washer M6 (4)
41 Sochdcap Screw
M10X85 (3)
41A Sochdcap Screw, M10X150
41B Sochdcap Screw, M10X100
Plain Washer M10 (10)
Nut, Self Locking (5)
42 Steering Lock Bolt
M8X30 (2)
Standard Nut M8 (2)
43 Center Stand
44 Center Stand Spring (2)
45 Chain Slipper
46 Inner Bushing (2)
47 Plain Flat Washer M8 (2)
Nut, Self Locking M8 (2)
Hex Head Screw M8X65
48 Lock Housing
49 Steering Lock Assembly
50 Cap
51 Rivet
52 C Washer
53 Barrel
54 Spring

FRAME TROUBLESHOOTING

SYMPTOM	FAULT	REMEDY
Center stand does not retract smoothly,without assistance.	Center stand pivot partially seized because of lack of grease. Weak or broken return springs.	Grease, dismantle and clean if necessary. Replace
Footrests do not fold smoothly and/or return without assistance.	Broken return spring. Pivot bolt too tight. Damaged/bent bracket.	Replace Loosen, but be sure self-locking nut is in order. Replace
Components do not fit together without excessive force.	Damaged/bent components.	Replace
Machine exhibits peculiar handling tendencies.	Fault lies in other areas, check: (a) Front forks (b) Front & rear wheels (c) Rear suspension Twisted frame	– – – – Visually examine, refer to factory or replace.
Steering lock difficult to operate.	Jammed spring. Rusty housing.	Remove lock, replace. Remove lock, clean and reassemble
Steering lock operational only when steering in wrong position.	Fault lies with incorrect steering stem spindle and lower steering yoke.	Refer to CHAPTER 11.

SPECIFICATIONS - REAR SUSPENSION

SWING ARM

Pivot Bearings

Type .....Needle
Quantity 2
Bore Size .....28mm o.d. x 22mm (1.1 x 0.8647 in.)
Width .....22mm (0.867 in.)

Journals

Type .....Flange Ground Hardened
Quantity 2

Seals

Type .....O-Ring
Quantity 8
Bore Size .....28mm o.d. x 22mm (1.1 x 0.867 in.)

Thrust Washers

Type .....Nylotron
Quantity 2

Shick Absorbers

Type.....Oil Emulsion, Load Adjustable
Quantity 2

TORQUE VALUES

Item	Torque	
	N-m	(ft-lbs)
Damper retaining bolt	15	(10)
Side stand pivot bolt/nut	33	(20)
Swing arm pivot nut	56	(50)

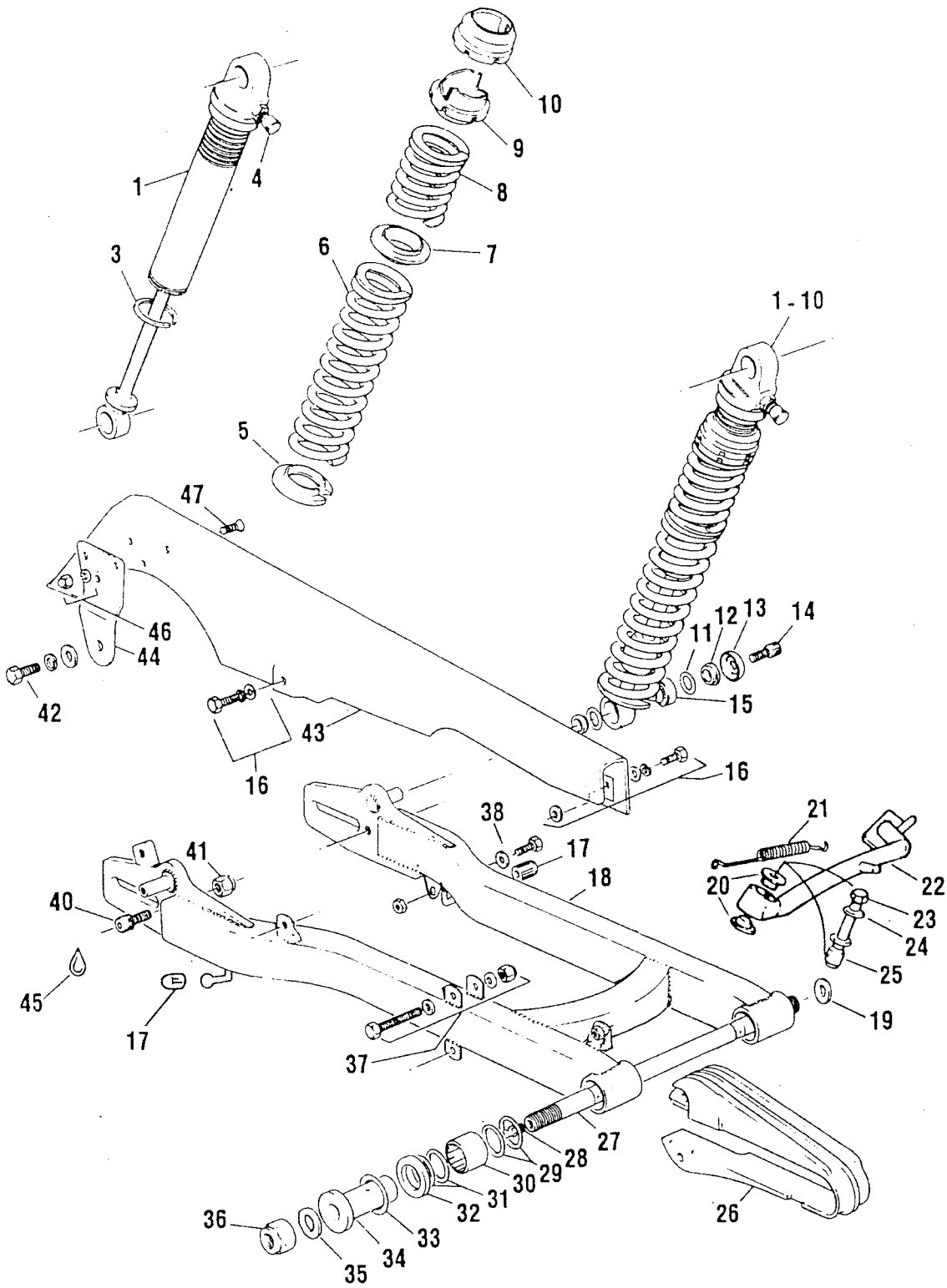


Figure 5-2. Rear Suspension

LEGEND - FIGURE 5-2

1 Bare Shock
3 Circlip
5 Collet
6 Main Spring
7 Spring Spacer Collar
8 Auxiliary Spring
9 Adjuster
10 Adjuster Stop
11 O-Ring (8)
12 Spacer (8)
13 Washer Retaining (4)
14 Screw, Socket Cap Head M6X12 (4)
15 Bearing (4)
16 Hex Head Screw M6X16 (2)
Spring Washer M6 (2)
Plain Washer M6 (2)
17 Stand Buffer (2)
18 Swing Arm, Grn.
19 Jam Nut M14
20 Bush, Sidestand (2)
21 Spring
22 Sidestand, Grn.
23 Bolt, Hex Head M8X50
24 Washer M8 (2)
25 Nut, Self Locking M8
26 Slipper, Chain Swing Arm
27 Spindle, Swing Arm
28 Grease Nipple
29 O-Ring Seal (4)
30 Bearing, Swing Arm (2)
31 O-Ring Seal (8)
32 Washer, Thrust (2)
33 Shims, Swing Arm
34 Journal, Swing Arm
35 Washer, Swing Arm
36 Nut, Swing Arm
37 Hex Head Screw M6X35 (2)
Plain Washer (4)
Nut, Self Locking M6
38 See Plate 6 Item 48
40 Socket Head Cap Screw M8X6 (2)
42 Hex Head Screw M8X16
43 Chainguard, Grn.
44 Chainguard Bracket, Grn.
45 Blue Loctite 242
46 Dome Nut M5 (3)
Plain Washer M5 (3)
47 Csk. Screw M5X12 (3)

REAR SUSPENSION

GENERAL

The rear suspension is made up of a steel fork mounted on the rear of the engine, pivoting on needle bearings and supporting shock absorbers.

The bearings rotate on flanged journals which are held between the frame sideplates and the rear engine mount.

The swing arm pivot passes through the center of the journals.

A shock absorber/spring unit is mounted on each arm of the fork. Their upper ends pivot on the frame.

The chainguard and chain slipper are attached to the swing arm.

SWING ARM DISSASEMBLY

1. Place the motorcycle on the center stand.
2. Remove chainguard rear fasteners and pivot chainguard up.
3. Remove rear wheel sprocket and disc assembly. See REAR WHEEL.
4. Disconnect the chain at master link and remove.
5. Remove both shock absorbers, spacers and O-ring seals.
6. Remove the swing arm pivot nut and washer from the LH side.

CAUTION

If the pivot is removed from the LH side, be sure the grease nipple in the end of the pivot is removed before using the drift.

7. Carefully drive out the pivot using a suitable drift.

PIVOT INSPECTION, REPAIR

Journal bearings

1. With the swing arm clear of the vehicle, the journals with their thrust washers can be removed from the pivot. Wipe with a clean rag.
2. See Figure 5-3. The journal surfaces should be smooth and free from damage. Check for ridges caused by the needle rollers in the journal surface.

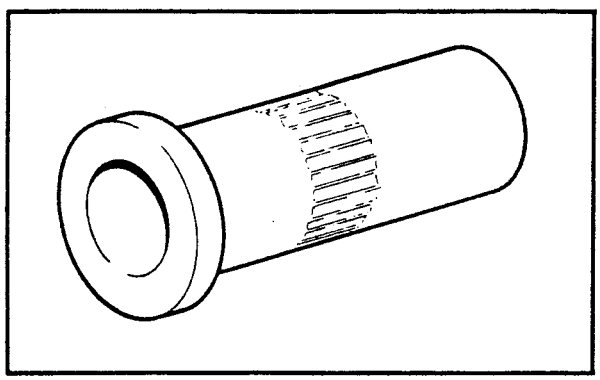


Figure 5-3. Journal Damage

O-rings, Bearings

1. See Figure 5-4. there are two O-ring seals on each side of the two bearings. Pry the seals out with a seal remover or large screwdriver and discard.

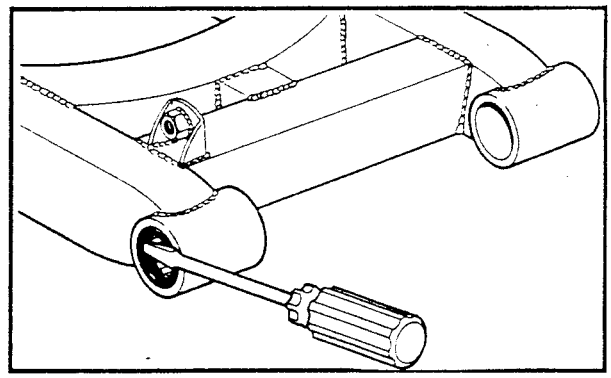


Figure 5-4. O-Ring seal Removal

2. See Figure 5-5. Use a suitable drift to remove swing arm bearings.

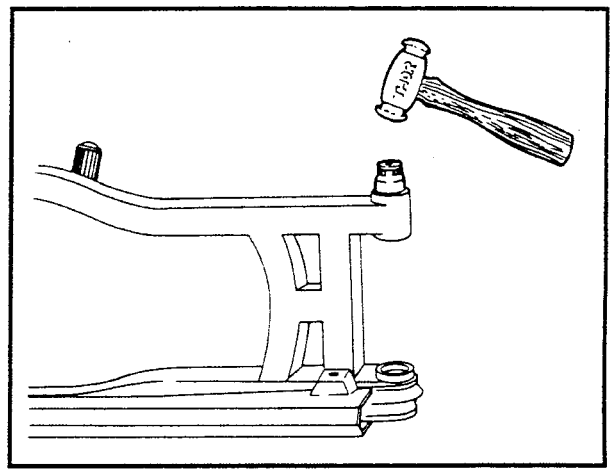


Figure 5-5. Swing Arm Bearing Removal

3. Inspect the bearings for seized, damaged or pitted rollers. Place the bearings in their journals and rotate them. There should be no noticeable roughness.
4. Replace O-ring seals.
5. Replacement is the opposite of the removal procedure. Be sure the bearing is centered in the housing tube. Loctite the outside of the outer bearing race. Allow room on each side of each bearing for the O-ring seals.

SWING ARM ASSEMBLY

1. The swing arm and journals are a tight fit between the frame sideplates.
2. To ease assembly, loosen the bolts securing the footrest arm and crosstube.

3. Thoroughly grease the bearings and journals and slide into position.

4. Side to side free play of the swing arm is controlled by a nylotron thrust washer and shims, positioned on the journal, against the flange. The shims are 0.25 mm (0.010 in.) thickness. The swing arm is individually shimmed when manufactured.

5. See Figure 5-6. When assembled there should be no more than 0.25 mm (0.010 in.) and zero minimum end float. Shims can be inserted or removed between the journal flange and the nylotron washer to achieve this. Although zero end float is acceptable the swing arm should not be tight and should always be able to drop under its own weight, with the pivot bolts tightened.

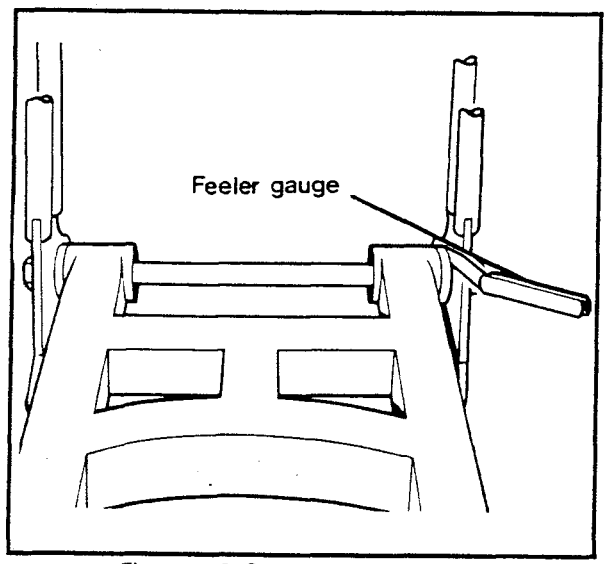


Figure 5-6. Swing Arm Free Play

SHOCK ABSORBER

1. The only shock absorber service required is to periodically inspect for general condition and performance.

2. Damaged units should be either replaced or returned to the factory for rebuilding.

3. The shock absorber consists of two springs separated by a double collar and fitted over a shock absorber unit. A collet and a spring pre-load adjuster hold the spring on the shock absorber.

Spring Replacement

1. Move adjuster to its shortest position.

2. See Figure 5-7. Clamp the shock absorber in a shock absorber spring compressor and compress the springs. Remove the spring collar and springs.

3. Assembly is the reverse of the removal procedure. Note that the circlip on the Shock absorber body acts as a stop for the spring preload adjuster and is normally positioned in the sixth groove of the ten from the shock absorber end.

WARNING

The shock absorber is gas pressurized. Do not touch the pressurization valve.

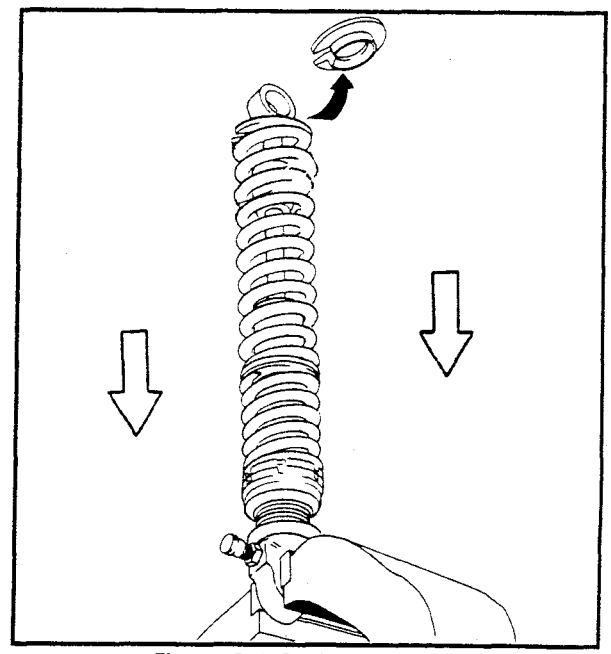


Figure 5-7. Spring Removal

Shock Absorber Inspection

Inspect the shock absorber for any obvious damage, bent shock absorber rod or pitted rod surface.

Oil leakage.

Check the bearings in the shock absorber eyes. They should rotate freely with negligible free play. If the bearing is seized or worn, press out with a suitable sized socket and replace.

When compressed without spring, the rod should extend under internal gas pressure. If it does not, then loss of gas pressure is indicated. The shock will still work but with reduced effectiveness.

REAR SUSPENSION TROUBLESHOOTING

SYMPTOM	FAULT	REMEDY
Rear ride height too low.	Increased vehicle loading.	Alter spring preload setting with wrenches provided in tool kit.
	Shock absorber springs weakened with age.	Shift circlip position in groove to give greater spring compression.
Vehicle has peculiar handling characteristics.	Fault with rear wheel or front of vehicle.	Refer to Chapter 14 and other appropriate chapters.
	Shock absorbers damaged.	Remove and test.
	Excessive swing arm sideplay.	Check and remedy.
	Swing arm pivot components worn, or seized.	Strip, clean, replace parts if necessary. Grease.
	Swing arm twisted.	Replace.

SPECIFICATIONS - FRONT FORKS

FORKS

Type	Marzocchi Telescopic Fork Oil Damped
Travel	230mm (9.06 in.)
Tube Diameter	42mm (1.65 in.)
Overall Length	879mm +/- 2 (34.63 +/- 0.08 in.) (Spindle Center to top nut)

FORK OIL

Type	SAE 15W Hydraulic oil
Oil Qty. / leg (dry)	500 cc (16.9 oz.)
Oil Qty. / leg (wet)	475 cc (16 oz.)

STEERING HEAD BEARINGS

Type	Taper Roller
Size	47mm O.D. 25mm Bore (1.85X0.985 in.)

TORQUE VALUES

ITEM	TORQUE	
	N-m	(ft-lbs)
Front axle nut	647	(50)
Upper yoke steering stem pinch bolt	20-27	(10-15)
Handlebar clamp nut/stud	13-16	(10-12)
Pinch bolt	24	18
Spindle camp nut/stud	12	(8.8)
Steering stem nut	105	(78)
Main fork retaining screw	60	(45)
Oil drain screw	11	(8)

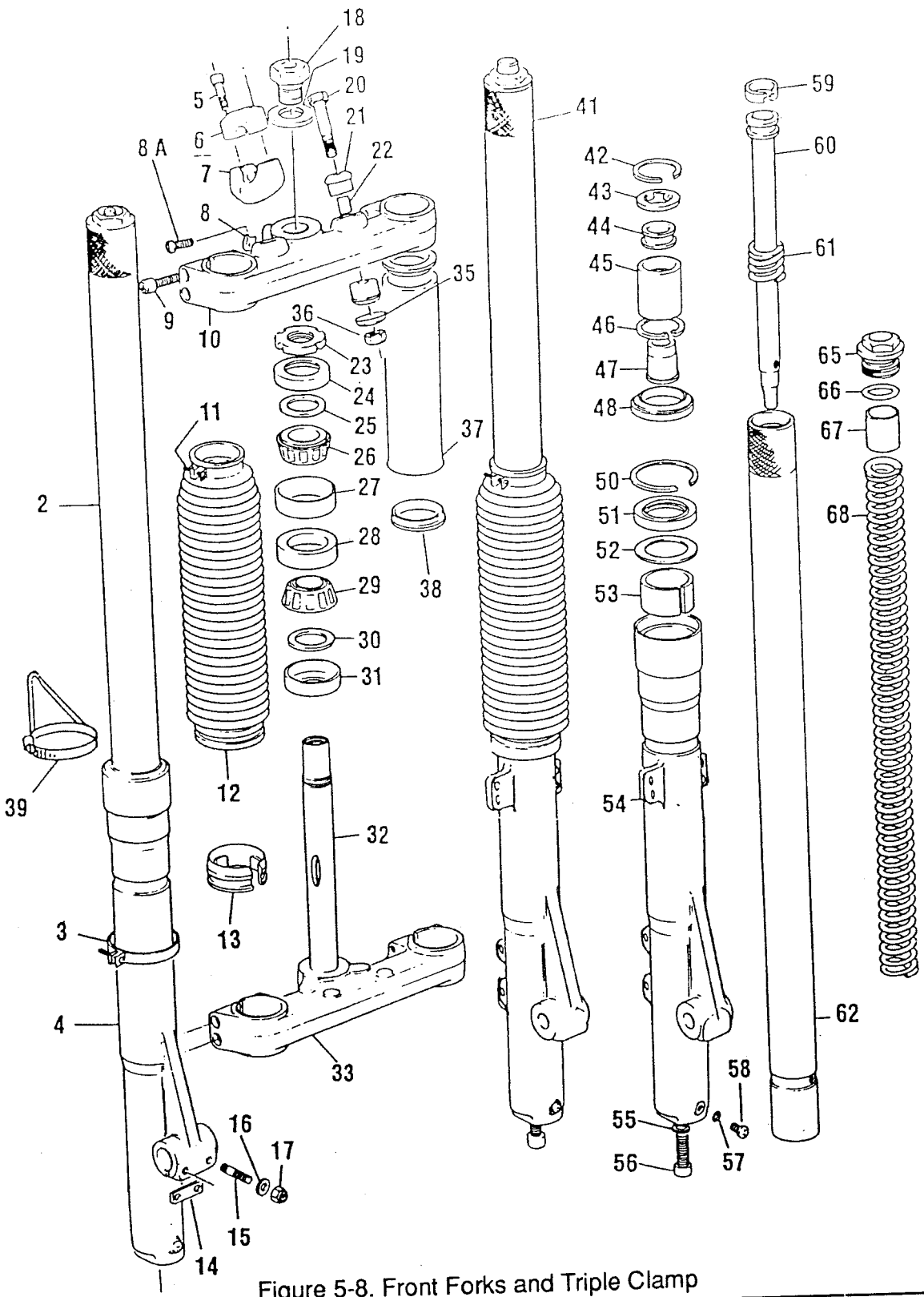


Figure 5-8. Front Forks and Triple Clamp

LEGEND - FIGURE 5-8

2	RH Fork Leg Assy., Grn.
3	Clamp (2)
4	RH Slider, Grn.
5	Bolt, Handlebar Clamp (4)
6	Clamp Top, Grn. (2)
7	Clamp Base (2)
8	Spacer Steering Stem Clamp
8A	Screw, Pinch
9	Bolt, Pinch-Yoke
10	Yoke, Top
11	Clamp, Top Gaiter (2)
12	Gaiter (2)
13	Ring, Bottom Gaiter Fixing (2)
14	Spacer
15	Stud (2)
16	Plain Washer (2)
17	Nut, Self Locking (2)
18	Nut, Steering Stem
19	Washer, Steering Stem
20	Bolt, Handlebar Clamp (2)
21	Grommet (4)
22	Spacer, Sleeve (2)
23	Ring Adjuster
24	Seal Bearing (2)
25	Spacer, Headstock Bearing (2)
26, 27	Bearing Complete (2)
28, 29	Refer to Key 26, 27
30	Refer to Key 25
31	Refer to Key 24
32	Steering Tube
33	Bottom Yoke Assy.
35	Washer, Dished (2)
36	Nut, Self Locking (2)
37	Headlight Mount, Grn.
38	Rubber Mount, Anti-Vibration (4)
39	Speedo Cable Guide
41	LH Fork Leg Assy., Grn.
42	Circlip (2)
43	Washer, 3 Pointed (2)
44	Valve (2)
45	Bush, VLV Housing (2)
46	Circlip, Bush Retainer (2)
47	Seat, Dampner Rod (2)
48	Dust Cap (2)
50	Circlip (2)
51	Oil Seal (2)
52	See Key 49
53	Upper Bushing (2)
54	LH Slider, Grn.
55	Washer, Sealing (2)
56	Screw, Fork Main Retaining (2)
57	O-Ring, Oil Drain Screw (2)
58	Screw (2)
59	Nylon Bushing
60	Dampner Rod, W/ Bushing (2)
61	Spring, Topping (2)
62	Stanchion (2)
65	Fork Cap Body (2)
66	O-Ring, Fork Cap (2)
67	Spacer, Preload (2)
68	Fork Spring (2)

FRONT FORKS

GENERAL

The front forks are hydraulically damped sliding tube type with protective rubber gaiters. The steering stem pivots on taper roller bearings protected from dirt by rubber seals.

STEERING HEAD BEARING ADJUSTMENT

"1 – 2 Inch Fall-Away" Method

Special Tools	Torque Values N·m (ft-lbs)
Stand-mounted pointer 2 in. masking tape or similar material Marking pen or pencil	Steering head cap nut - 100-110 (75-80) Steering stem pinch bolt - 40-47 (30-35) Handlebar cap bolts - 13.5-16 (10-12)

1. See Figure 5-9. Support motorcycle in an upright position with front wheel off floor.

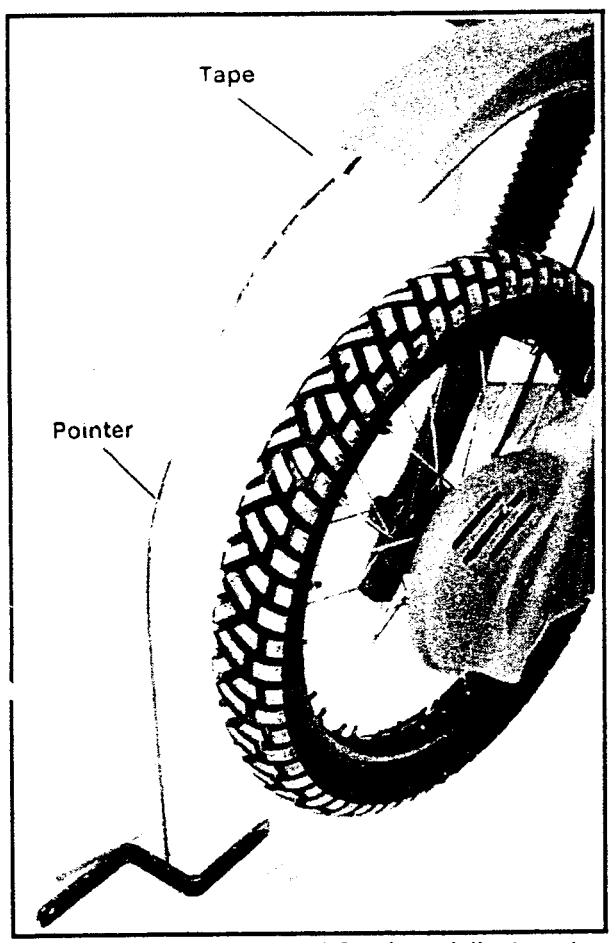


Figure 5-9. Steering Head Bearings Adjustment

2. Point wheel straight ahead and place a 2 in. strip of masking tape horizontally across the wheel/fender.
3. Place pointer in front of and pointing towards wheel.
4. Loosen steering stem pinch bolt.

NOTE

Put a rag on the fuel tank to prevent paint scratches.

5. Remove handlebars and lay them on the fuel tank.
6. Loosen the steering head cap nut 1 to 2 turns.
7. Install handlebars.
8. Rotate wheel until pointer is pointed at the center of the tape strip. If necessary, tie front brake lever down so front brake immobilizes front wheel.
9. Use a drift pin and hammer and tighten or loosen the fork adjuster nut.
10. Remove handlebars and lay them on the fuel tank.
11. Tighten the steering head cap nut to 100-110 N·m (75-80 ft-lbs) torque.
12. Install handlebars.
13. Gently tap the wheel on one side until the wheel begins to "fall-away" by itself. Mark this point on the masking tape. Repeat in the other direction.

NOTE

- *The distance between the "fall-away" marks must be 1 - 2 inches.*
- *If the "fall-away" point is more than two inches, loosen the adjuster nut. If it is less than one inch, tighten the adjuster nut.*
- *Each time you tap the wheel to check "fall-away", first tighten the steering head cap nut to 100-110 N·m (75-80 ft-lbs) torque after adjusting the fork adjuster nut. The "fall-away" will not be correct if the cap nut is not tightened to the correct torque.*

14. Tighten steering head cap nut to 100-110 N·m (75-80 ft-lbs) torque.
15. Install handlebars. Adjust to rider's preferred position and tighten handlebar cap bolts to 13.5-16 N·m (10-12 ft-lbs) torque.
16. Tighten steering stem pinch bolt to 40-47 N·m (30-35 ft-lbs) torque.
17. Repeat the "fall-away" procedure to be sure the adjustment is correct.

STEERING HEAD BEARINGS CHECK

The steering head bearings should be checked and greased at regular intervals. Determine if adjustment is necessary as follows:

1. Place motorcycle on center stand with front wheel raised in the air.
2. See Figure 5-10. Grasping the lower ends of the fork sliders, pull backwards and forwards to detect any play. If there is any play, the bearings should be adjusted. See STEERING HEAD BEARINGS ADJUSTMENT.

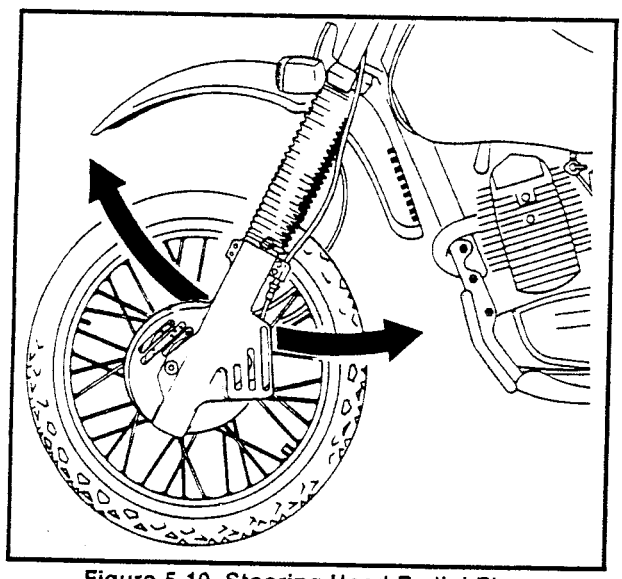


Figure 5-10. Steering Head Radial Play

3. When adjustment is completed, any roughness or stiffness in the assembly indicates dirt, lack of grease or a deteriorated bearing, requiring disassembly, cleaning and parts replacement.

FRONT FORK REMOVAL/ INSTALLATION

Special Tools	Torque Values N·m (ft-lbs)
None	Fork bracket pinch bolts 24 (18) Caliper mounting bolts 24 (18) Axle nut (if required) 12 (9) Oil drain screw 11 (8)

Remove individual fork legs using the following procedure:

1. Support motorcycle so front wheel is off floor.
2. Remove the front wheel as described in FRONT WHEEL.
3. Disconnect the front brake line bracket from the LH side and remove caliper. Remove the speedometer cable guide from the RH fork leg
4. Drain fork oil. See FRONT FORK OIL CHANGE
5. See Figure 5-8. loosen the fork bracket pinch bolts (11) and carefully withdraw the leg(s).
5. Reverse procedure for installation.

FRONT FORK DISASSEMBLY (Figure 5-8)

NOTE

It is not necessary to remove the fork legs to dissassemble them.

1. Loosen the bottom fork gaiter clamps (3, 39).
2. See Figure 5-11. Remove fork main retaining screw (56) and washer (55).

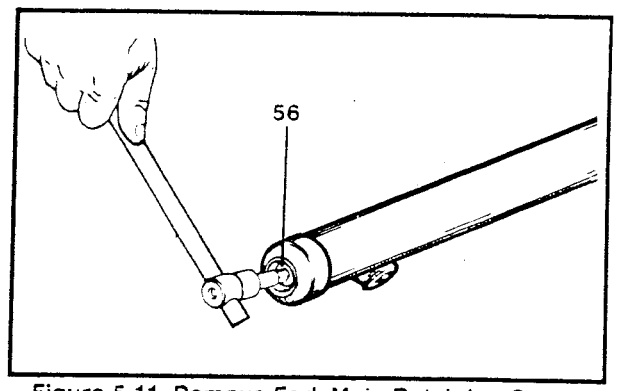


Figure 5-11. Remove Fork Main Retaining Screw

3. See Figure 5-12. Unscrew the fork cap (65).

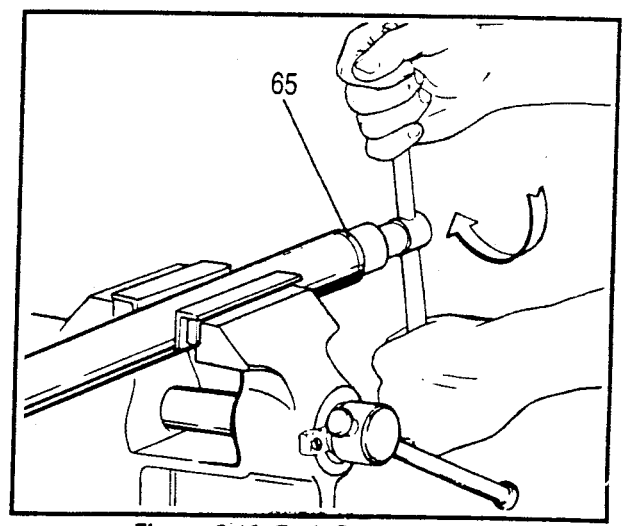


Figure 5-12. Fork Cap Removal

4. See Figure 5-13. Remove the pre-load spacer (67) and spring (68).

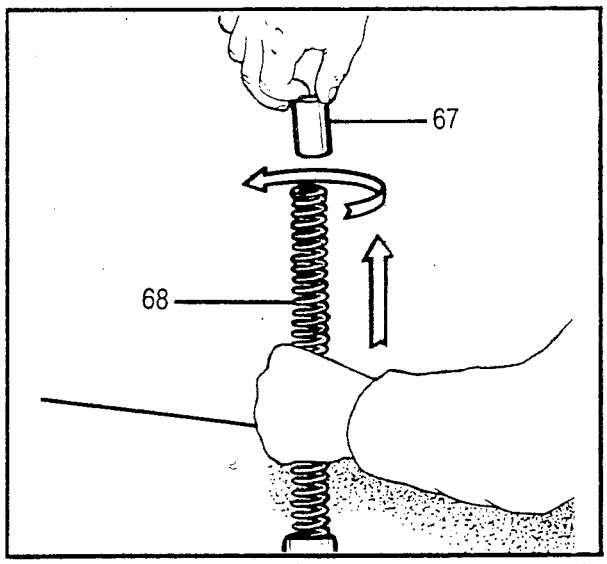


Figure 5-13. Fork Spring/Pre-load Sleeve Removal

5. S See Figure 5-14. Remove the fork tube (62) from the slider.

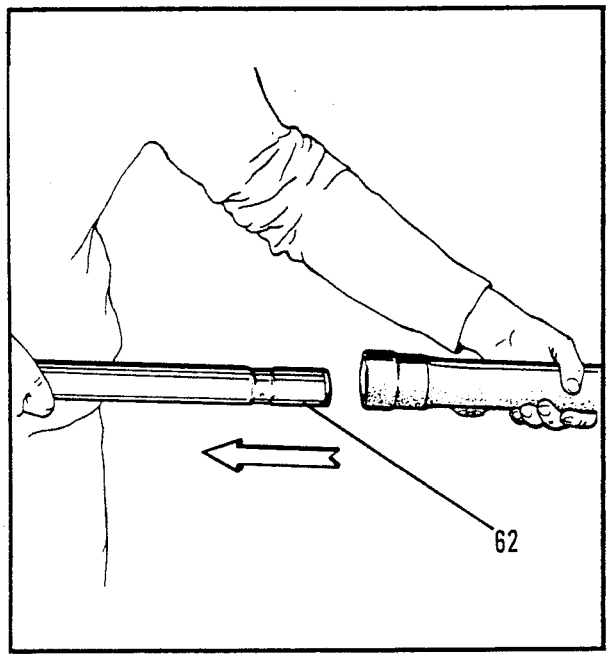


Figure 5-14. Tube Removal

6. See Figures 5-15. Carefully pry the dust cap (48) from the top of the slider with a screwdriver, and remove the washer.

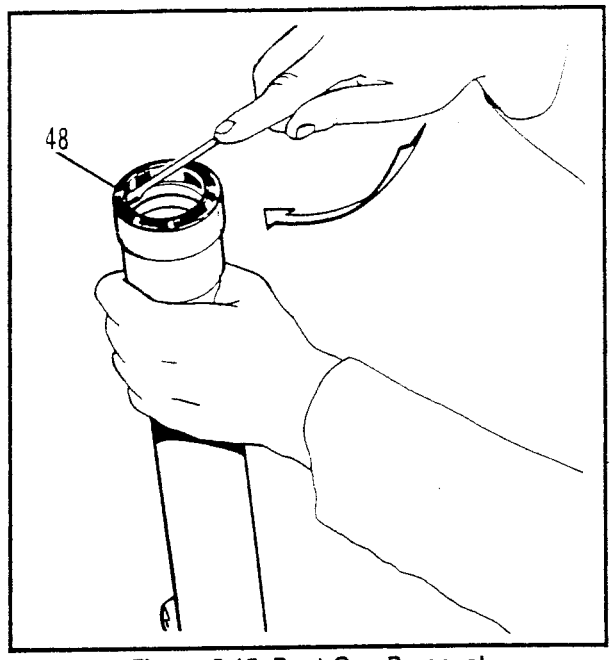


Figure 5-15. Dust Cap Removal

7. See Figures 5-16, 5-17. To remove the oil seal (51) first remove the circlip (50) with a screwdriver by exerting pressure under it. Then exert pressure under the oil seal itself until it comes out completely. Be careful not to scratch its seat in the slider.

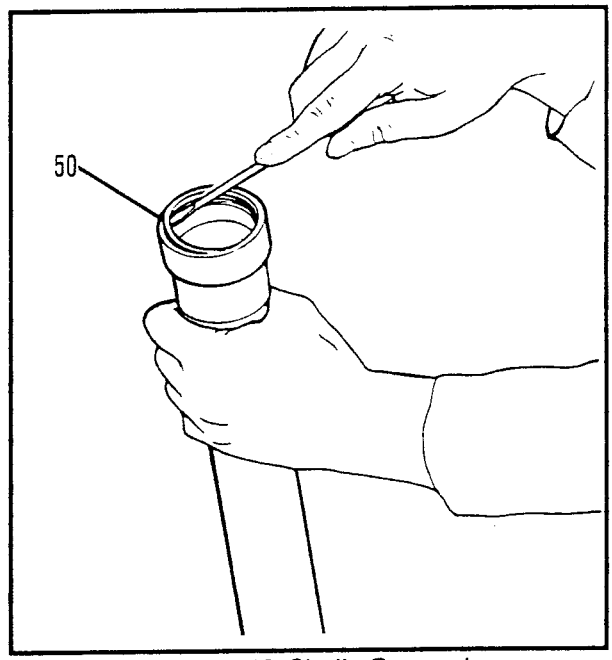


Figure 5-16. Circlip Removal

NOTE

Before assembly, clean the inside of the slider with an appropriate cleaner. Oil the seal seat and slider.

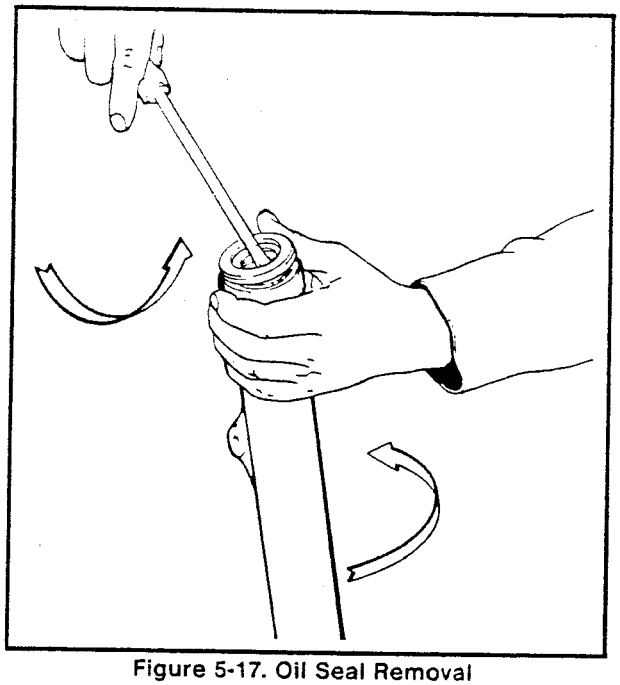


Figure 5-17. Oil Seal Removal

8. See Figures 5-18. Insert the oil seal using an appropriately sized plug of wood or metal to seat the seal on its seat in the slider. Use a rubber hammer or mallet.

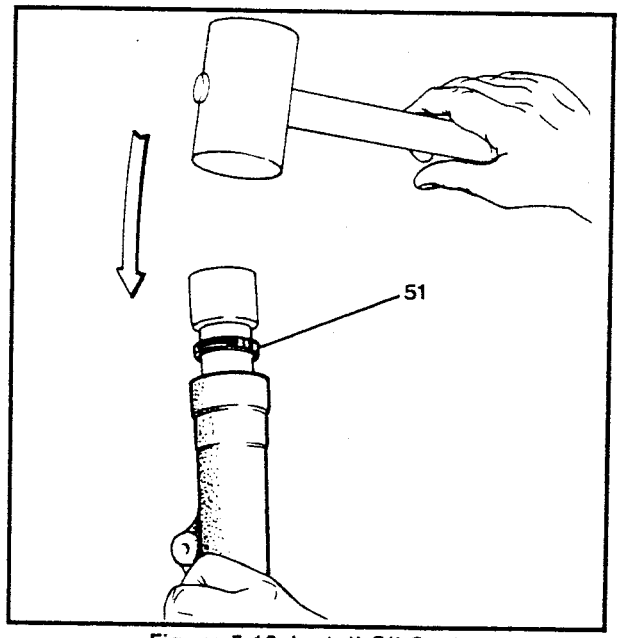


Figure 5-18. Install Oil Seal

DAMPER TUBE AND TUBE REPLACEMENT

1. See Figure 5-19. Remove the damper tube seat (47). Turn the tube upside down and shake it until the damper tube (60) comes out.

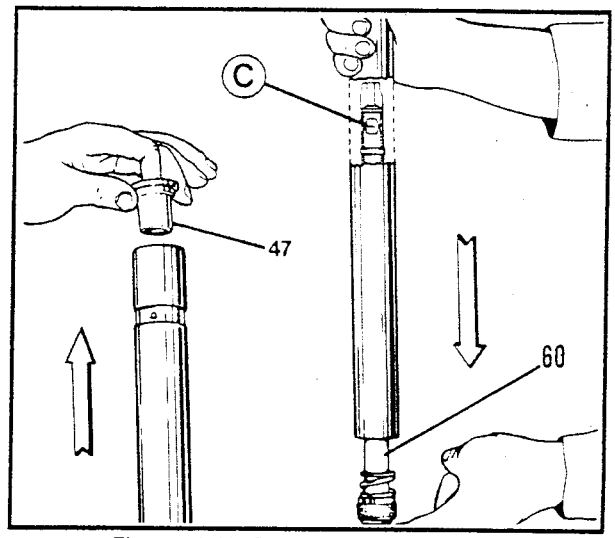


Figure 5-19. Damper Rod Removal

2. Replace necessary parts.

3. If the small plastic ball (c) inside the tube is damaged, replace the damper rod.

4. See Figure 5-20. To assemble, use a guide ring, (A), inserted on the top (Threaded part) of the tube. Install the rebound spring (61). Slide the damper tube into the fork tube, moving the fork tube itself until the piston meets with the counterbore.

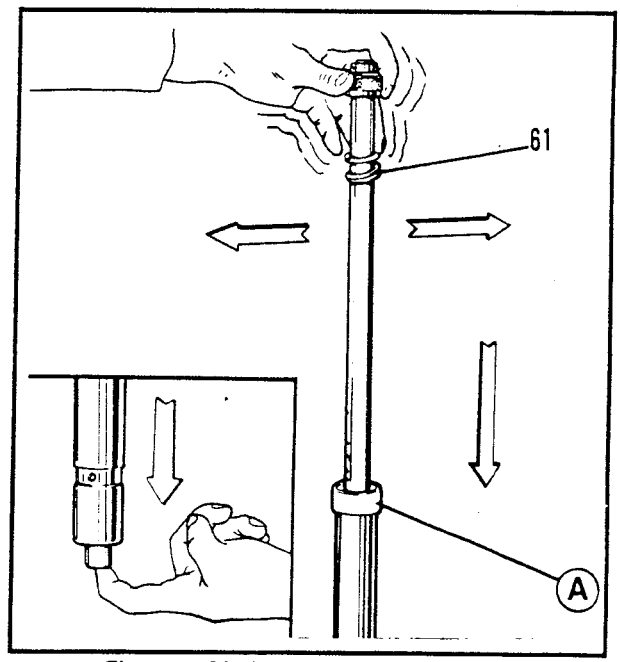


Figure 5-20. Damper Rod Assembly

5. See Figure 5-21. Assemble the damper tube seat (47) onto the damper tube (60). Be sure it is fully seated.

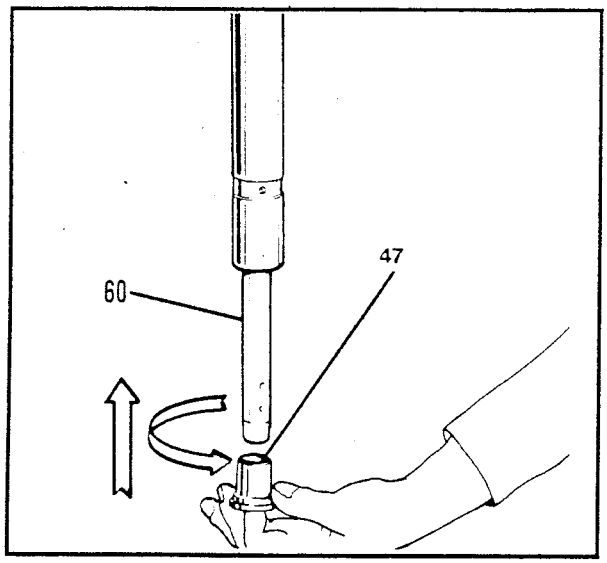


Figure 5-21. Damper Rod Seat Reassembly

VALVE UNIT REPLACEMENT

To check that the valve unit is operating correctly, it is necessary to work on the inside of the tube.

1. See Figure 5-22. Remove the circlip (46) with circlip pliers. Pull the valve unit out of the tube in the same sequence as shown.

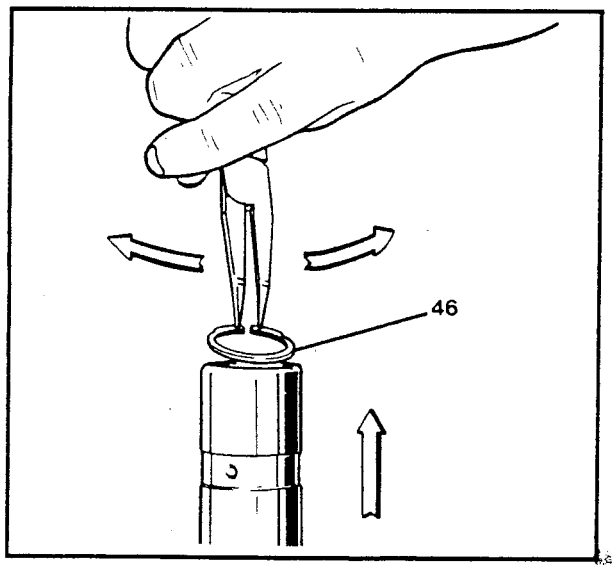


Figure 5-22. Valve Circlip Removal

2. See Figure 5-23. After replacing the valve unit and cleaning the inside of the tube, assemble them in the sequence shown.

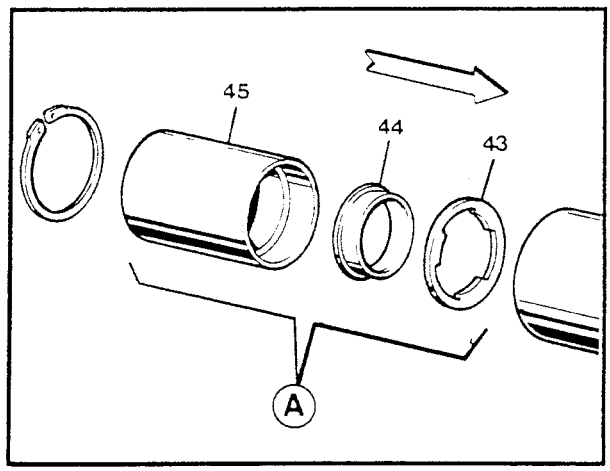


Figure 5-23. Damper Valve Unit

3. See Figure 5-24. Hold the valve unit in with a finger. Turn the tube upside down on a flat surface and and push the valve unit (A) against the counterbore. Install the circlip (46).

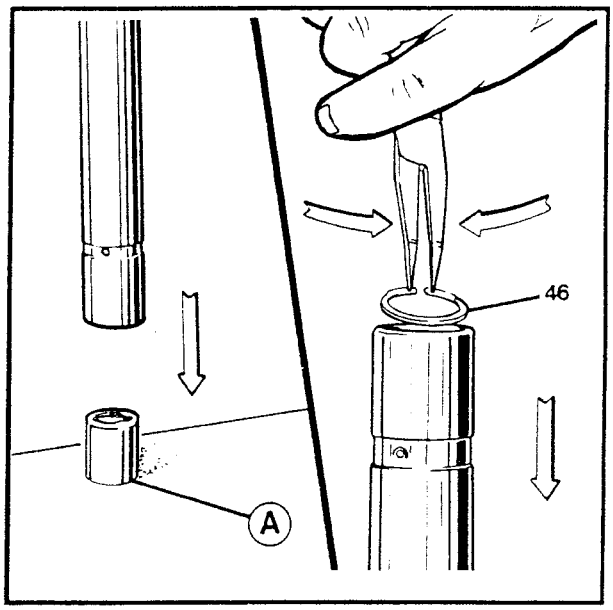


Figure 5-24. Valve Unit Assembly

FRONT FORK ASSEMBLY (Figure 5-8)

1. See Figure 5-25. Insert the tube (62) into the slider.

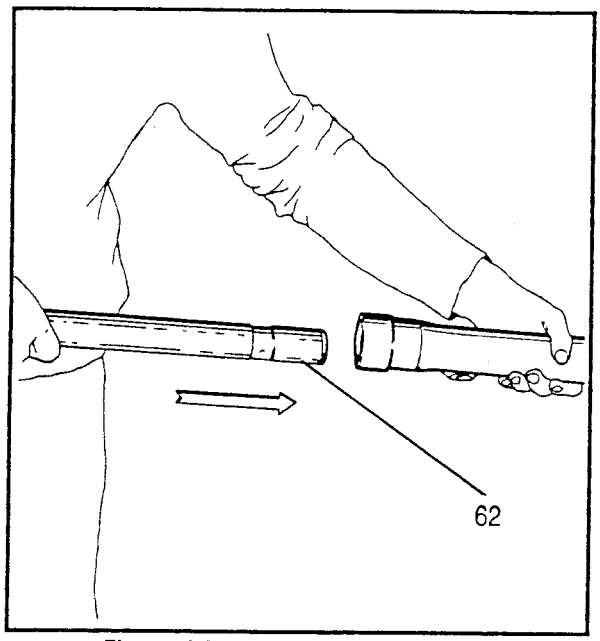


Figure 5-25. Assemble Slider/Tube

2. Insert the damper rod assembly with topping spring and replace parts as necessary.
3. If the small plastic ball (c) inside the rod is damaged, replace the damper rod.

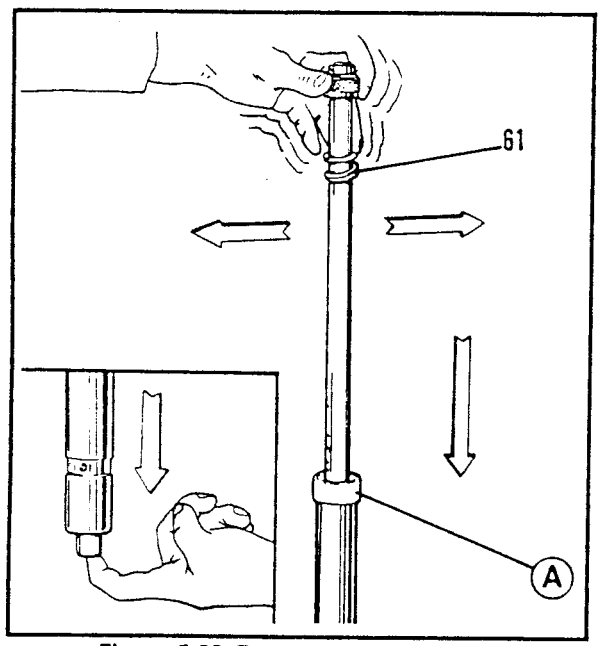


Figure 5-26. Damper Rod Assembly

4. See Figure 5-26. To assemble, use a guide ring, (A), inserted on the top of the tube. Install the rebound spring (61). Slide the damper tube into the fork tube, moving the fork tube itself until the piston meets with the counterbore
5. See Figure 5-27. Assemble the damper tube seat (47) onto the damper tube (60). Be sure it is fully seated.

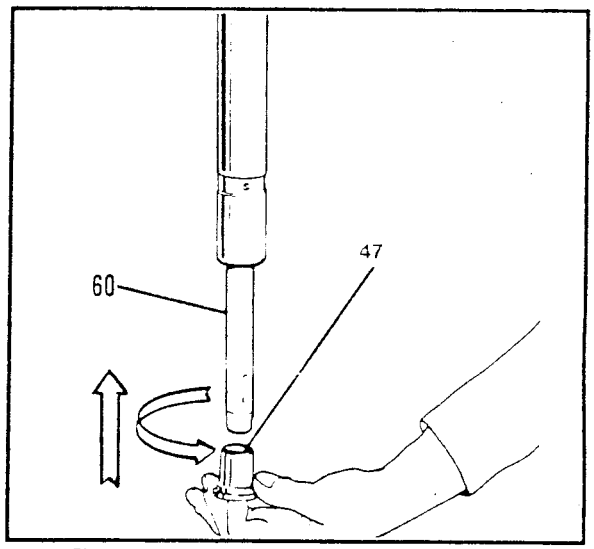


Figure 5-27. Damper Rod Seat Assembly

6. See Figure 5-28. Install and tighten main fork screw (56) and washer (55) from the bottom, ensuring that the damper tube foot is correctly located in the bottom of the slider.

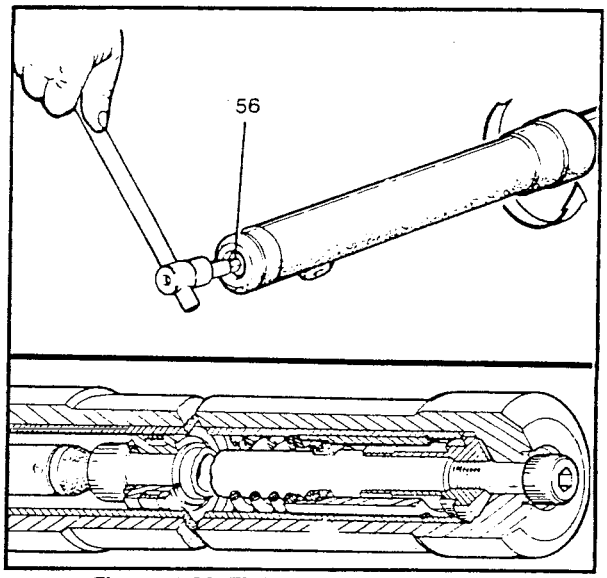


Figure 5-28. Tighten Main Fork Screw

7. Fill the tubes with the correct quantity of oil - 500 cc (16.9 oz.).
8. Install spring (68). Install preload sleeve (67) on top of the spring.
9. Install and tighten the plug (65).
10. Install the fork legs on the vehicle as described in FRONT FORK REMOVAL/INSTALLATION.

FRONT FORK OIL CHANGE

CAUTION

Be sure no fork oil gets on the front brake assembly. Lubricant will impair vehicle braking and endanger the rider. If lubricant does get on brake assembly, dissassemble and clean thoroughly. See FRONT BRAKE.

1. See Figure 5-8. Remove fork caps (65).
2. Remove drain screw (58, 57).
3. Pump the fork up and down until all the oil is out.
4. Refill with the correct quantity of oil. Each leg requires 475 cc (16 oz.). Be sure the drain screw is Installed correctly.

REPLACE STEERING HEAD BEARINGS

1. Remove front forks as described earlier. Remove headlamp nacelle, handlebar instrument console, front indicators, front fender, and any other components restricting working access.
2. Remove the steering stem nut. Loosen the clamp screw and fork tube pinch bolts and remove the top fork bracket .
3. Unscrew the notched ring adjuster on the stem. The lower fork bracket may now be removed.

NOTE

Use a soft faced hammer or mallet to free the steering stem from the inner bearing races.

REPLACE BEARING CUPS

CAUTION

If the bearings require replacment, always replace both cup and cone.

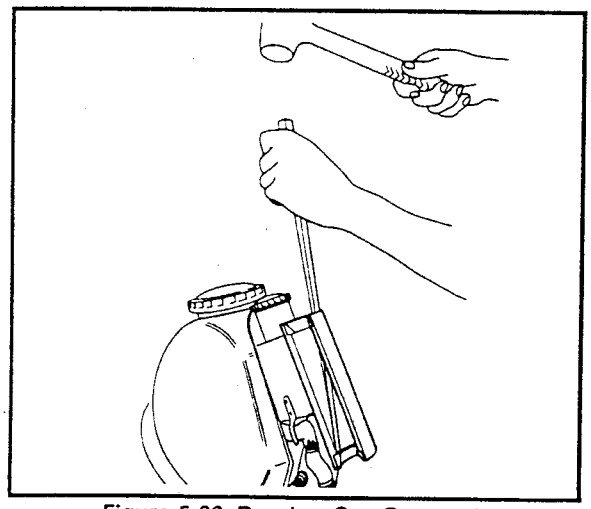


Figure 5-29. Bearing Cup Removal

1. See Figure 5-29. Use a hammer and a punch to remove the bearing cup.
2. At installation, press the new bearing cup into the steering head. Be sure the new bearing cup is fully seated. Use the old bearing cup as a driver to properly seat the new cup against the counterbore in the steering head.

BEARING CONE REPLACEMENT

Special Tools	Torque Values
Fabricated tool - See Figure 5-31	None

1. The upper bearing cone (26) is released when removing the steering bracket. The lower bearing cone (29) is an interference fit on the steering stem (32).

CAUTION

Before installing the steering stem, be sure the fork crown is properly supported and square to the arbor press.

2. See Figure 5-30. To replace the lower bearing, it is necessary to remove the steering stem from the lower fork bracket using an arbor press. This will release the bearing (29), spacer (30) and rubber cap seal (31). To protect the threaded end of the stem during the pressing operation, screw the nut fully onto the steering stem.

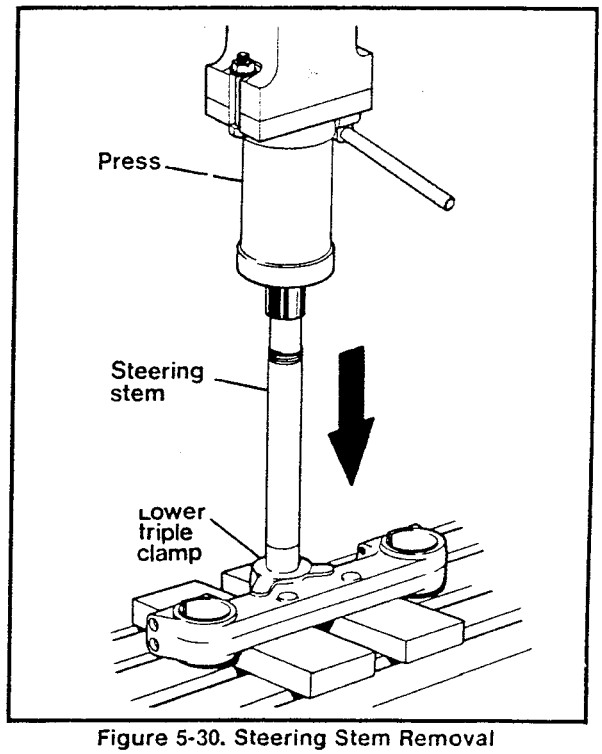


Figure 5-30. Steering Stem Removal

CAUTION

Apply pressure only to the bearing inner race. Be careful not to damage the rollers and/or the bearing cage.

3. See Figure 5-31. Install a new lower bearing using a cylindrical steel tube or other tool to avoid bearing damage.

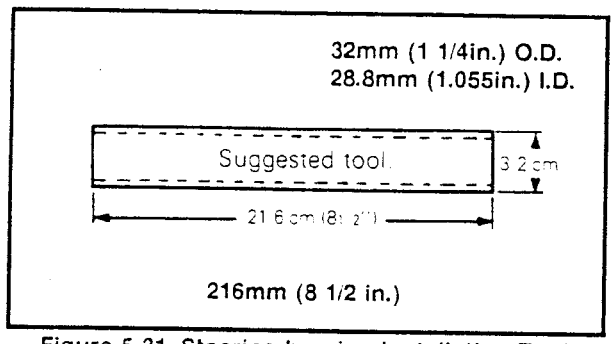


Figure 5-31. Steering bearing Installation Tool

4. See Figure 5-32. Place the rubber seal and spacer on the shaft. Use an arbor press on the steel tube and install the bearing.

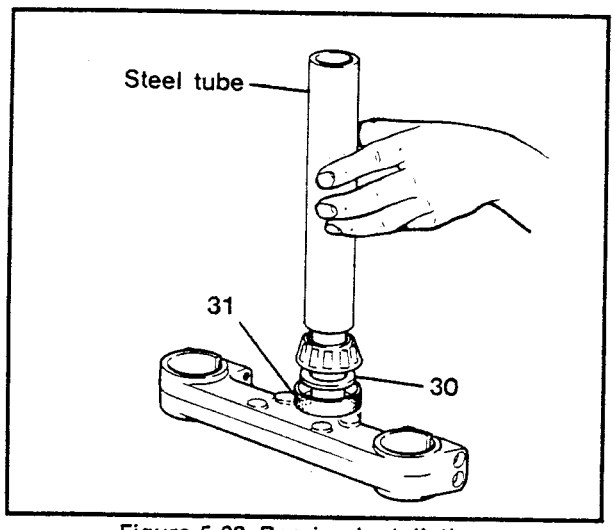


Figure 5-32. Bearing Installation

STEERING HEAD ASSEMBLY

1. See Figure 5-32. At assembly, liberally grease both conical bearings and assemble the steering head components as shown.

2. Tighten the adjuster ring (23).

3. Complete assembly by installing the top fork bracket. This operation affects installing the headlamp carrier brackets so the two operations must be done together.

4. See Figure 5-33. Place the the top fork bracket in position, but before tightening the top steering stem nut, carefully install the headlamp carrier and anti-vibration mounting rubbers between the upper and lower fork brackets.

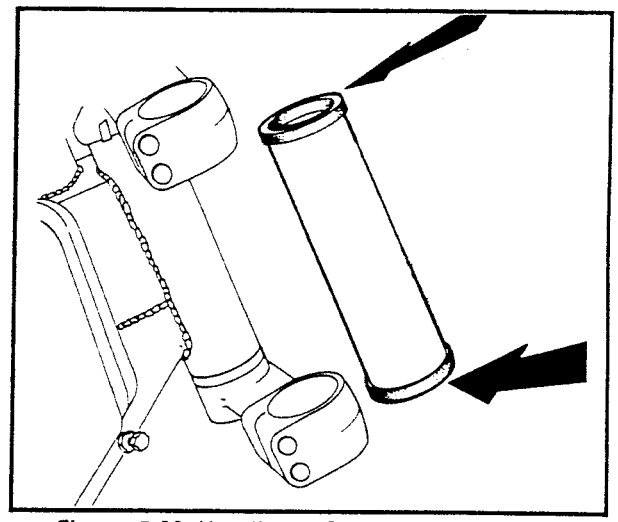


Figure 5-33. Headlamp Carrier Replacement

5. This assembly is a tight fit in the gap between the fork brackets, squashing the rubber. To ease installation, lift the top fork bracket slightly to create extra clearance; then slide both fork leg assemblies into position.

NOTE

It is helpful to lightly grease the bore of the anti-vibration rubbers so the fork tubes can slide through them.

6. When everything is correctly positioned, apply Loctite 242 (blue) to the top steering nut threads. Install cap nut. Adjust steering head bearings. See STEERING HEAD BEARINGS ADJUSTMENT.

7. Install all parts previously removed in accordance with the procedures described in the applicable sections of the manual.

FRONT FORKS AND STEERING TROUBLESHOOTING

SYMPTOM	CAUSE	REMEDY
Vehicle is unduly sensitive to road conditions	Defective damping.	Check oil quantity. If no improvement, disassemble forks for investigation.
Fork action is stiff.	Crash damage resulting in fork legs twisted in yokes.	Loosen axle pinchbolt nuts, yoke pinch bolts, top steering stem nut, stem pinch bolt. Realign forks by pumping several times. Tighten all bolts.
	Incorrect front wheel installation (spacer absent on axle).	Check, strip and reassemble correctly.
	Bent forks.	Investigate, replace as necessary.
	Ambient temperature very cold.	Replace front fork oil with less viscous grade.
Forks shake when front brake is applied.	Steering head bearings too loose.	Readjust accordingly.
	Front brake caliper loose.	Tighten mounting bolts.
Vehicle tends to wobble at low speeds.	Steering head bearings too loose or damaged.	
Vehicle tends to weave at high speeds.	Steering head bearings too tight, contaminated, worn or damaged.	Perform steering head bearing adjustment. If no improvement, dismantle and inspect bearings.
	Front wheel unbalanced.	Balance front wheel. See WHEEL BALANCING.
Steering imprecise.	Fault with front and/or rear wheel and/or swing arm. E.g. punctures, worn swing arm bearings,. worn wheel bearings, buckled wheels.	Refer to appropriate sections.
	Incorrect weight distribution	Redistribute loaded weight.
	Frame twisted or incorrect spoke tension.	Replace/Refer to factory.

SPECIFICATIONS - SEAT, SIDEPANELS, FENDERS, HEADLAMP COWL

TORQUE VALUES

ITEM	TORQUE	
	N·m	(ft-lbs)
Seat bracket screws	8	(6)
Fender retaining screws	8	(6)
Headlamp retaining screws	6.8	(5)

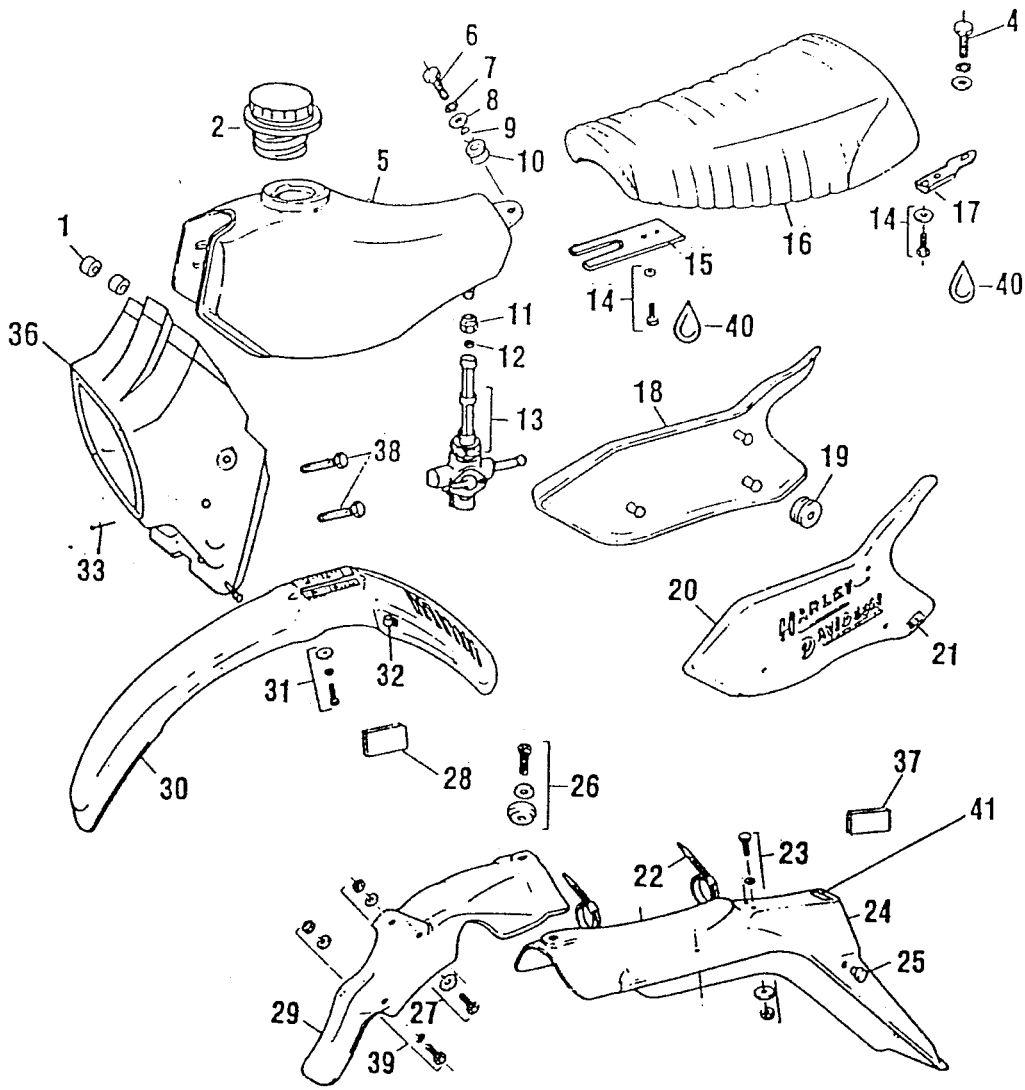


Figure 5-34. Seat, Sidepanels, Fenders, Headlamp Cowl

LEGEND - FIGURE 5-34

1	Isolator Mount, Rubber
2	Filler Cap
4	Rear Seat Bolt M8X16
	Flat Washer M8
	Lock Washer M8
5	Fuel Tank, Grn.
6	Hex Head Bolt M8X35
7	Spring Washer M8
8	Plain Washer, Large M8
9	Spacer, Bush
10	Grommet
11	Nut, Fuel Valve
12	Fuel Valve Gasket
13	Fuel Valve Body
13A	Fuel Valve Filter
14	Hex Head Bolt 6X16 (4)
	Plain Washer M6 (4)
15	Front Bracket
16	Seat
17	Rear Seat Bracket
18	RH Side Panel, Grn.
19	Grommet (6)
20	LH Side Panel, Grn.
21	Label (2)
22	Tye Wrap (2)
23	Hex Screw M6X20 (4)
	Plain Washer M6 (6)
	Large Washer CB M6 (2)
	Nut, Locking M6 (4)
24	Rear Fender, Grn.
25	Rubber Bumper
26	Truss Head Bolt M6X25
	Large Washer M6 (2)
	Nut, Locking M6
27	Hex Screw M6X20 (2)
	Large Washer M6 (2)
	Nut, Self Locking M6 (2)
	Washer, Plain M6 (2)
28	Reflector, Amber (2)
29	Rear Splashguard, Grn.
30	Front Fender, Grn.
31	Hex Screw M6X16 (4)
	Spring Washer M6 (4)
	Washer, Fender Retainer M6 (4)
32	Hose Clip (2)
33	Screw, Headlamp Retainer M3X25 (4)
34	Truss Head Screw M6X16 (4)
35	Auto Body Washer M6 (4)
36	Headlight Cowl, Grn.
37	Reflector, Red (2)
38	Truss Head M6X16 (40
39	Hexhead M6X16
	Lock Washer M6
	Washer Car Body M6
40	Blue Loctite 242
41	Fender Decal

GENERAL (Figure 5-34)

The fenders, sidepanels, headlamp cowl and seat base are high density colored plastic.

Maintence consists of regular washing with a mild detergent and water.

REPLACE SEAT

1. See Figure 5-34. The seat is retained by a hexagon headed bolt (26) that screws into a hex nut on top the rear fender.

2. See Figure 5-35. When replacing, be sure the seat sits squarely on the machine and is not skewed.

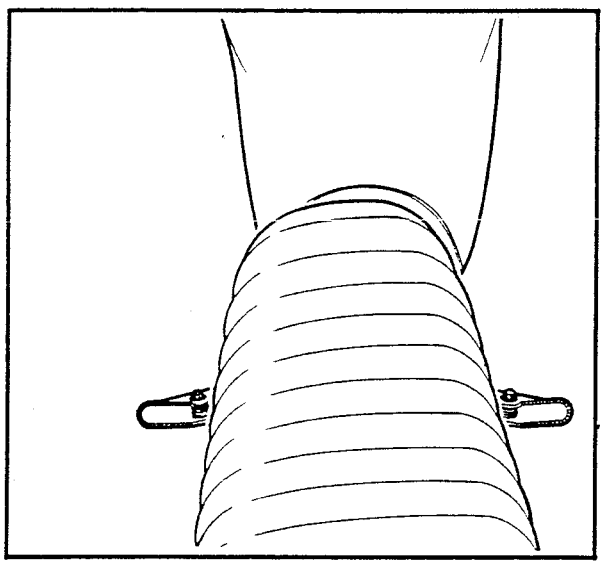


Figure 5-35. Improperly Installed Seat

3. If the seat does not fit properly, readjust seat bracket (17) position. The seat bracket has larger holes than its screws (14), to allow adjustment.

REPLACE SIDEPANELS

1. The sidepanels are a snap-fit. Grommets (19) held in frame brackets accept the pegs moulded to the inside of the sidepanel.

2. A little grease on the grommets or pegs will ease removal/installation.

3. When replacing, check visually that the pegs locate correctly in the grommets, to avoid bending the frame brackets.

REPLACE FRONT FENDER

The front fender (30) is fastened to the underside of the vehicle's lower steering yoke by screws with large washers under their heads, to spread the load. These screws also serve to fasten the indicator mounting bracket.

Before the fender can be detached, unfasten the "P" clips (32) securing the speedometer cable and brake line to the fender.

REPLACE HEADLAMP COWL

1. The headlamp cowl (36) is retained on the front forks carrier brackets by flat headed screws (38). Be sure you install the plastic washers under the screw heads to protect the cowl from excessive stress.

2. To detach the cowl, the headlamp assembly must be removed and the front brake cable disconnected and threaded through its hole in the cowl.

3. Install in the reverse manner of removal.

REPLACE REAR FENDER

1. The rear fender is fastened to the frame at four points by screws, nuts and washers (23).

2. To remove the fender from the vehicle, it is necessary to remove the seat, disconnect the rear lamp unit and remove any other components or groups of components restricting access.

3. See Figure 5-36. Installation is the reverse of the removal procedure, but check that the exhaust heat protection rubber (25) is in place to hold the fender clear of the exhaust. Install the tail lamp cable through the holes in the fender using cable ties.

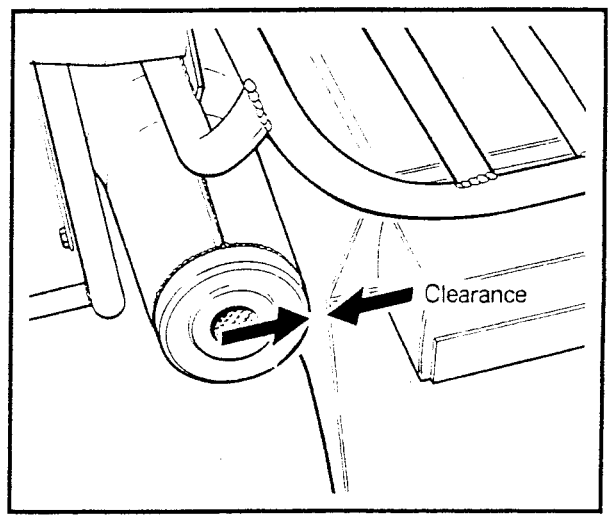


Figure 5-36. Rear fender/Exhaust Area

REPLACE AIRBOX MUDGUARD

1. The airbox mudguard (29) is secured back to back with the airbox, with bolts and washers. Two of them pass through the frame bracket. When installing, replace the washers as shown.
2. Remove any components restricting access to the mudguard during its removal.
3. Install in the same manner as removal.

TROUBLESHOOTING

SYMPTOM	REASON	REMEDY
Component difficult to install and/or failure to line up correctly on vehicle.	Component damaged: With plastics this can result from having been overstressed and is evidenced by whitish marks in the damaged area.	Replace if damage affects vehicle function excessively.
	Fault because of interference from other part on the vehicle. E.g. for the sidepanels, this interference might be from the seat.	Readjust component position on vehicle as required.
	For the sidepanels, fitting difficulty because of:	
	Brackets on frame bent.	Straighten
	Damaged rubber grommets.	Replace
	Dry rubber grommets.	Grease
	For the seat, fitting difficulty because of:	
	Fault with seat bracket.	Replace, straighten, realign as required.
	Damaged seat.	

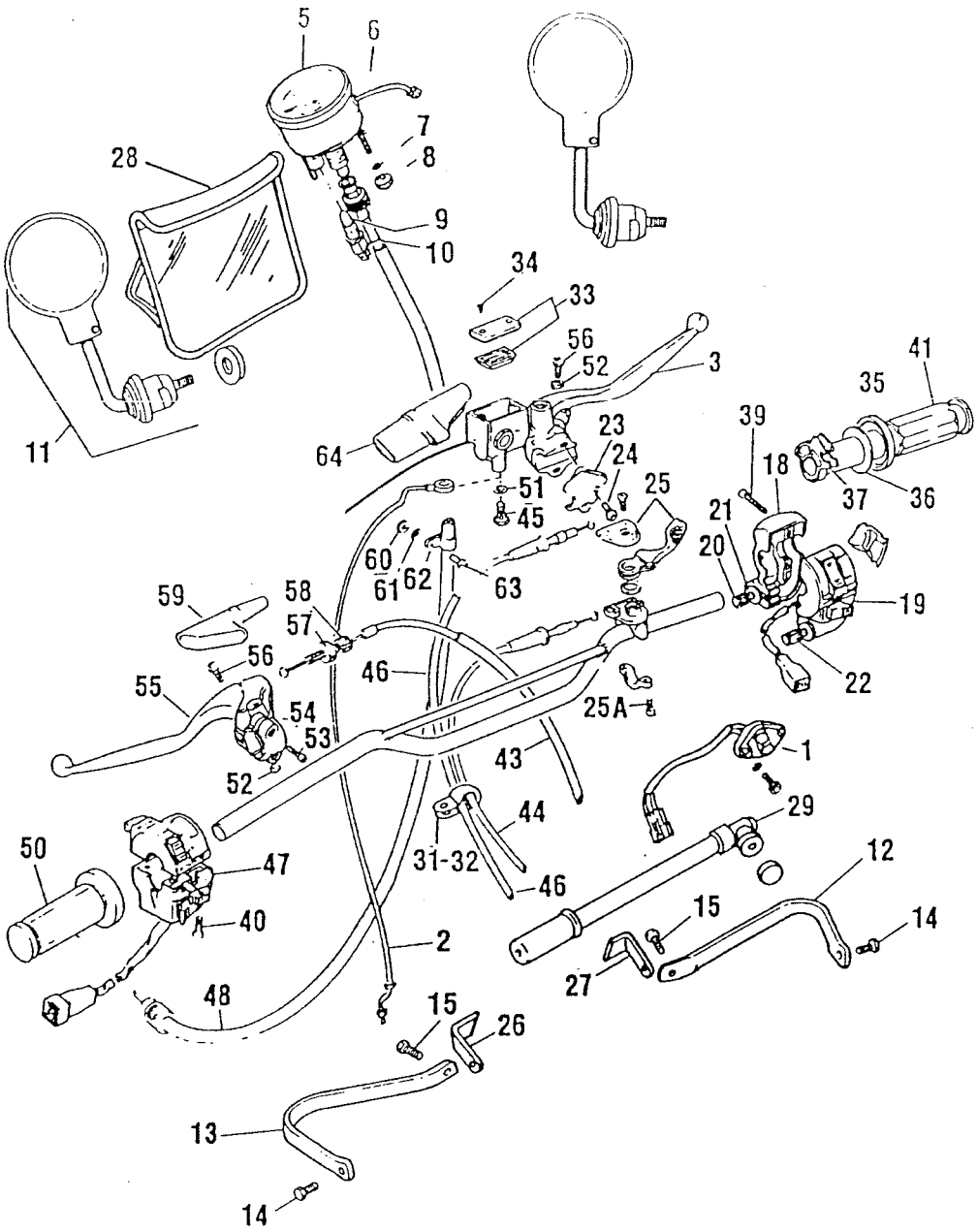


Figure 5-37. Controls and Indicators

LEGEND - FIGURE 5-37

1	Blackout Switch
	Phillips Pan Head M5X14 (2)
	Lockwasher (2)
2	Front Brake Hose
3	Front Master Cylinder Assembly
5	Speedometer
6	Tripmeter
7	Washer, Lock M5 (2)
8	Nut, Lock M5 (2)
9	Bulb, Speedometer
10	Bulb Holder
11	Mirror Assembly (2)
	Lock Washer M10 (2)
13	Lever Protector, Grn. (2)
14	Screw M8X20 CSK (2)
15	Hex Head Screw M8X25 (2)
	Flat Washer M8 (2)
	Washe,r Locking M8 (2)
18	Upper Body RH Control
19	Lower Body RH Control
20	Adjuster Assembly Push
21	Adjuster Nut, Small
22	Adjuster Assembly Pull
23	U Clamp
24	Socket Head Cap Screw M6X20 (2)
25	Choke Lever Assembly
25A	Pan Head M5X16 (2)
26	LH Air Pump Mount
27	Rh Air Pump Mount
28	Map Holder
29	Air Pump
30	U Clamp
31	Clamp
32	See Plate 1 Items 7-9
33	Mst Cylinder Cover
34	Cap Screw M4X12.3
35	Throttle Control Assembly
36	Twist Grip
37	Cable Track
38	Nut, Hex M4 (2)
39	Screw, M4X20 SHCS (2)
40	Cap Screw M5X14 SHCS
40A	Socket Head Cap Screw M5X20 (2)
41	Hand Grip W/Hole RH
42	Handlebar, Grn.
43	Clutch Cable
44	Choke Cable
45	Banjo Bolt
46	Throttle Cable
47	LH Control Switch
48	Speedo Cable
50	LH Handgrip W/Hole
51	Banjo Bolt Washer
52	Hex Nut M6 (2)
53	Screw M6X18 (2)
54	Clutch Lever Clamp
55	Clutch Lever Assembly
56	Pivot Screw M6X22 (2)
57	Adjuster Nut
58	Adjuster Screw
59	Shroud, Clutch Cable
60	Nut M5
61	Washer M5 (2)
62	Clamp
63	Screw M5X16 Pan
64	Cable Boot, Throttle

CONTROLS & INDICATORS

GENERAL (Figure 5-37)

The controls consist of the handlebars, brake lever, clutch lever and throttle control. Cables connect the controls with their respective controlled parts. An instrument pod holds the instruments. The instrument pod has a dash in which is mounted the Speedometer and six warning lights. The mirrors are fastened on the handlebars.

INSTRUMENT PANEL REMOVAL

1. Remove the screws retaining the headlamp cowl assembly. Let cowl rest on front fender to allow access to the underside of the pod.

NOTE

See Figure 5-38. It is not necessary to completely detach the head cowl assembly. It may be rested on the front fender without disconnecting the electrical cable.

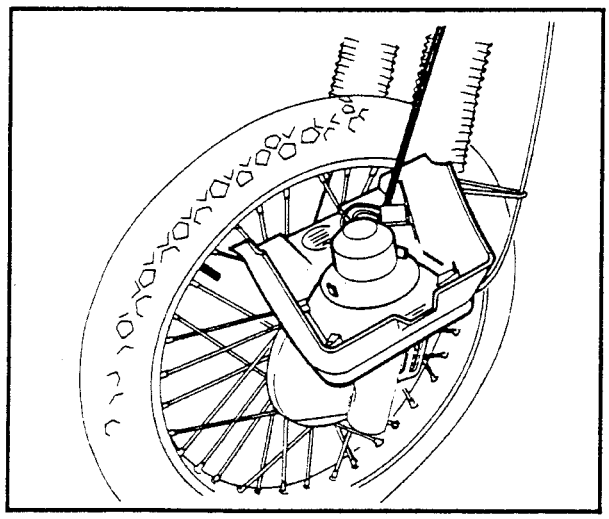


Figure 5-38. Headlamp Cowl Rest Position

Detach Speedometer light bulb with holder and wiring.

Detach Speedometer cable at Speedometer.

Remove fuel tank. See FUEL TANK.

See Figure 5-39. Disconnect ignition switch and cowl electrical cables at the connection blocks.

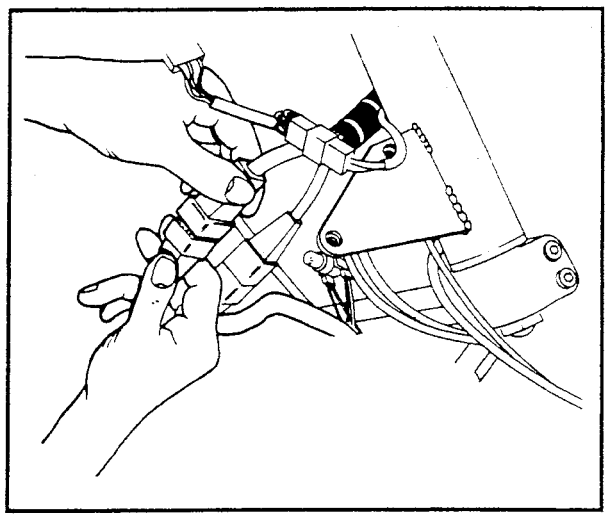


Figure 5-39. Disconnect Instrument Pod Cable

SPEEDOMETER REMOVAL

1. See Figure 5-40. To remove the Speedometer, remove the tripmeter knob. To remove knob, unscrew knurled ringnut and slide cable and knob through frame bracket. Knob and cable are an integral part of speedometer

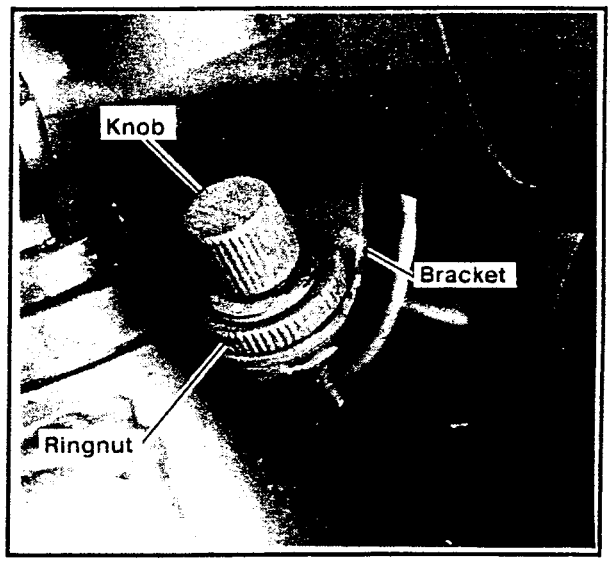


Figure 5-40. Remove Tripmeter Knob

2. See Figure 5-41. Remove the Speedometer from housing.

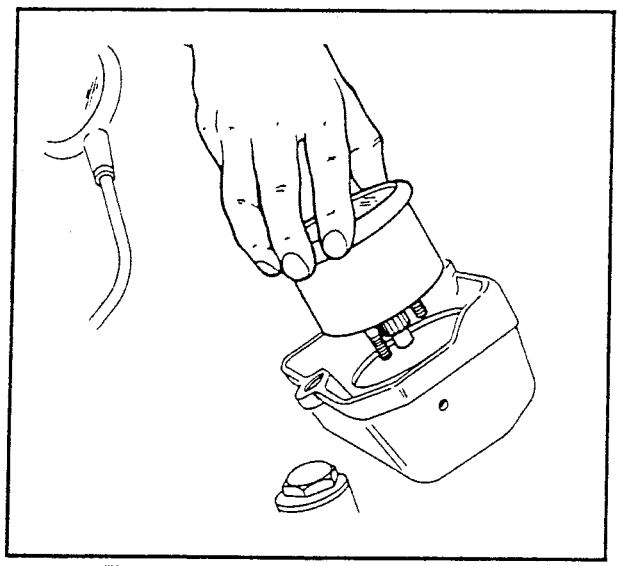


Figure 5-41. Speedometer Removal

SPEEDOMETER INSPECTION

1. The Speedometer is a non-servicable item and should be replaced if damaged.

IGNITION SWITCH

1. The ignition switch is held in the instrument pod by a threaded retaining ring. Unscrew the ring and remove the switch from underneath the pod.

2. See Figure 5-42. When assembling, be sure the ignition switch washers are installed as shown.

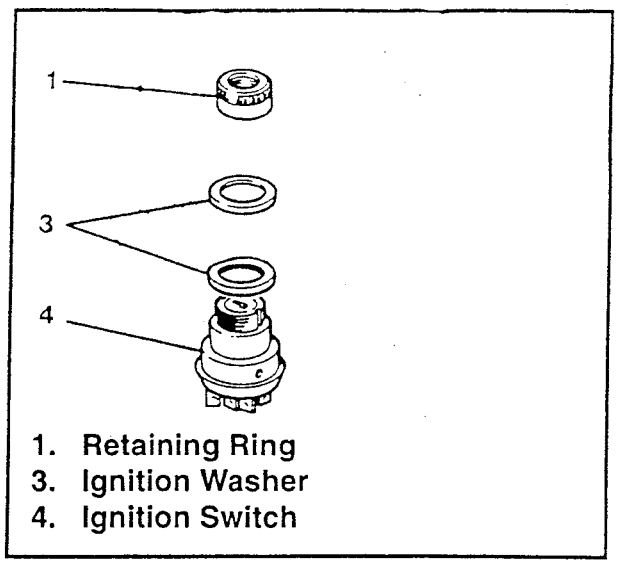


Figure 5-42. Ignition Switch

HANDLEBARS

Special Tools	Torque Values N·m (ft-lbs)
None	Handlebar clamp bolts 13-16 (10-12)

1. See Figure 5-43. The handlebars should be adjusted to the most comfortable position for the rider. Tighten the handlebar clamp bolts to 13-16 N·m (10-12 ft-lbs).

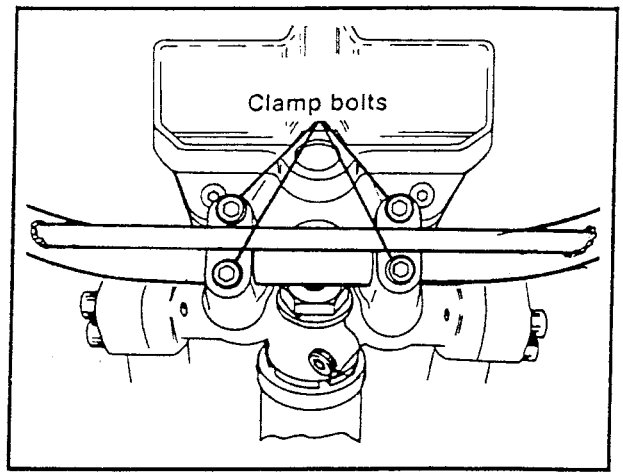


Figure 5-43. Handlebar Installation

NOTE

Be sure to tighten the bolts equally with an equal gap on each side of the clamps.

CONTROL LEVERS

1. The control levers are maintenance free, except for occasionally cleaning the pivots.
2. Check for any sloppiness and/or lateral play in the levers. The levers should pull in towards the center line of the handlebars.
3. Be sure the lever clamps are tight.
4. Lubricate occasionally with a good quality silicon lubricant.

THROTTLE CONTROL

1. The throttle control does not normally require maintanance except for ensuring the internal pulley housing and pulley are free of dirt.
2. Tighten the set screw in the throttle clamp to prevent the throttle rotating around the handlebar. The throttle control should be installed so there is a space between the handlebar grip end and the handlebar end. If handlebar grip end and the handlebar end are together, the throttle action is stiff.

MIRRORS

The mirrors should be adjusted for rider preference and are replaceable as complete units.

HANDLEBAR GRIPS

The handlebar grips should be secure on the handlebars. Glue them on with a water resisting glue, suitable for rubber.

CABLE CARE

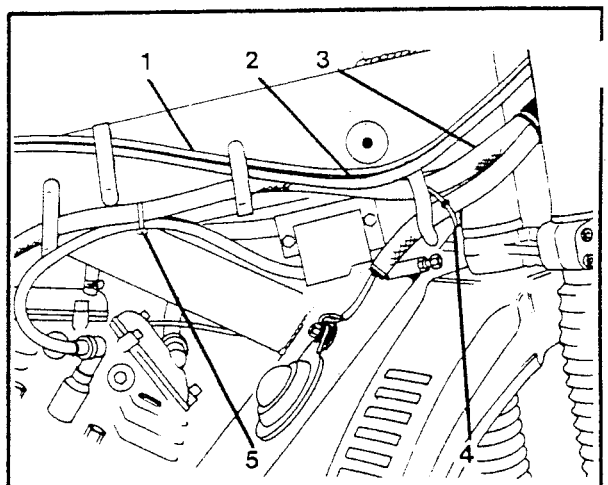
1. Inspect cables regularly for damage such as cracking, fraying, rusting, kinks or excessive stiffness Replace if necessary.
2. Keep the lever shrouds in place to shield the inner cable from dirt and water. Maintain the specified adjustments in the applicable sections of this manual.
3. Lubricate occasionally with a good quality silicon lubricant.

CABLE ROUTING

CAUTION

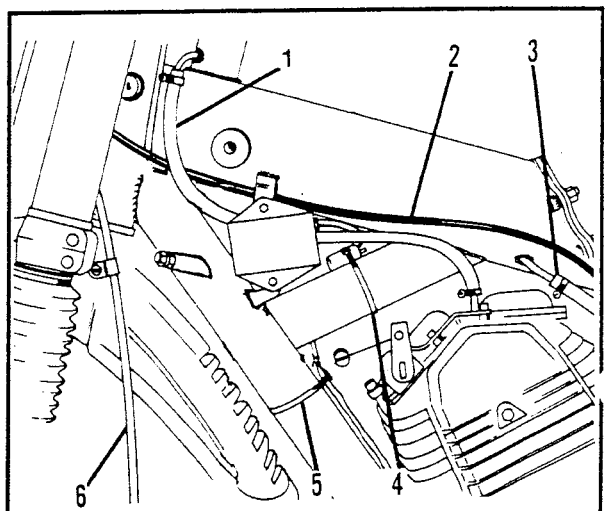
All control cables must be routed correctly to ensure smooth, trouble free operation.

1. All cables must be routed clear of any moving or component parts of the machine where they could be pulled, trapped or crushed in normal operation. Bends must be as large as possible.
2. See Figures 5-44, 5-45. Route cables as shown.



1. Choke control cable
2. Throttle control cable
3. Main electrical loom
4,5 Cable Tie

Figure 5-44. Cable Routing - RH Side



1. Oil line to rocker box
2. Clutch control cable
3. Oil return line
4,5. Cable tie
6. Speedometer drive cable

Figure 5-45. Cable Routing - LH Side

TROUBLESHOOTING

SYMPTOM	REASON	REMEDY
Speedometer inoperative or malfunctioning.	Insufficient speed.	Increase speed.
	Broken or disconnected Speedometer cable.	Replace or reconnect.
	Speedometer drive or worm gear(s) misaligned/worn/incorrectly assembled.	Check for rotation of worn gear by spinning wheel. Disassemble/ assemble correctly with replacement parts as necessary.
Stiff Throttle.	Throttle grip fouling end of handlebar.	Reposition throttle control.
	Incorrect cable routing, ie cable kinked, trapped.	Reroute cable.
	Damaged cable.	Replace
Particular control or instrument awkward to use or read.	Incorrect positioning.	Reposition

FRONT WHEEL REMOVAL

NOTE

Vehicle must be supported under frame so that front tire is off ground.

1. See Figure 5-46. Remove socket head screw, lock washer, flat washer, and front brake dust shield (2).

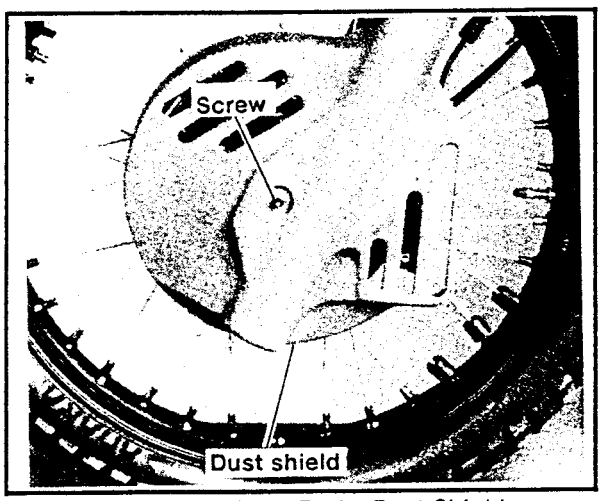


Figure 5-46. Front Brake Dust Shield

2. See Figure 5-47. Loosen pinch bolt nuts on right slider. Do not remove nuts.

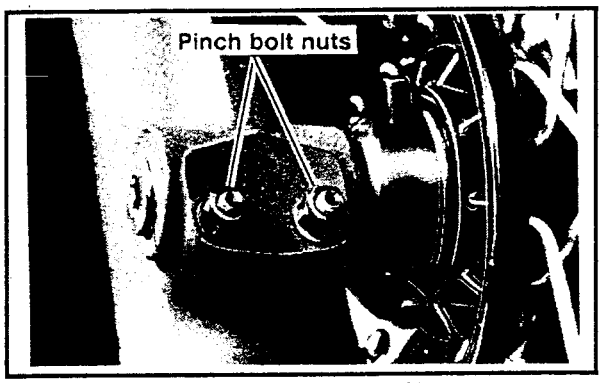


Figure 5-47. Pinch Bolt Nuts

3. See Figure 5-48. Support wheel by hand and remove front axle.

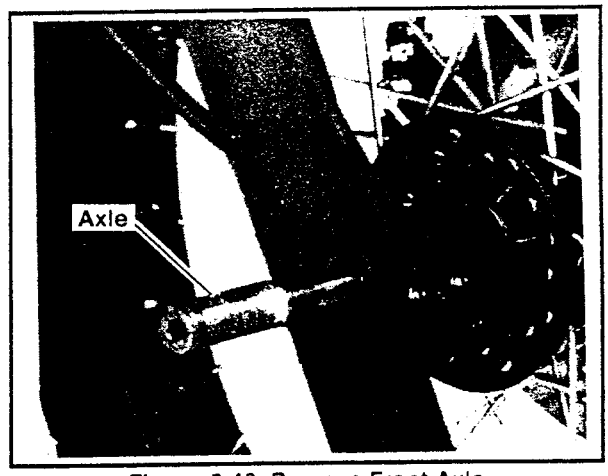


Figure 5-48. Remove Front Axle

NOTE

See Figure 5-49. When axle is removed, axle spacer on left side of front hub will fall free of hub. Retrieve and clean spacer for use during front wheel installation.

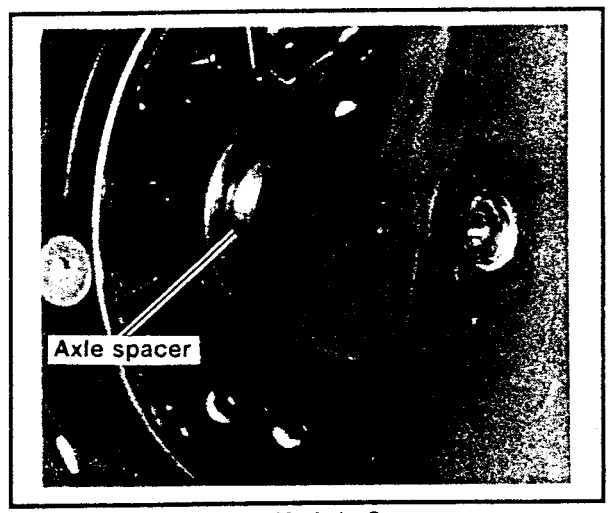


Figure 5-49. Axle Spacer

4. Remove wheel from between fork sliders, disengaging speedometer drive as wheel is lowered.

CAUTION

DO NOT operate the front brake lever when front wheel is removed. Caliper pistons will be forced out of their bores, requiring disassembly of caliper to install pistons.

FRONT WHEEL INSTALLATION

Special Tools	Torque Values N·m (ft-lbs)
None	Axle nut 68 (50) Slider pinch bolt nuts 6.9 (60 in-lb)

1. See Figure 5-50. Position speedometer cable drive unit on wheel hub. Be sure both parts are completely engaged.

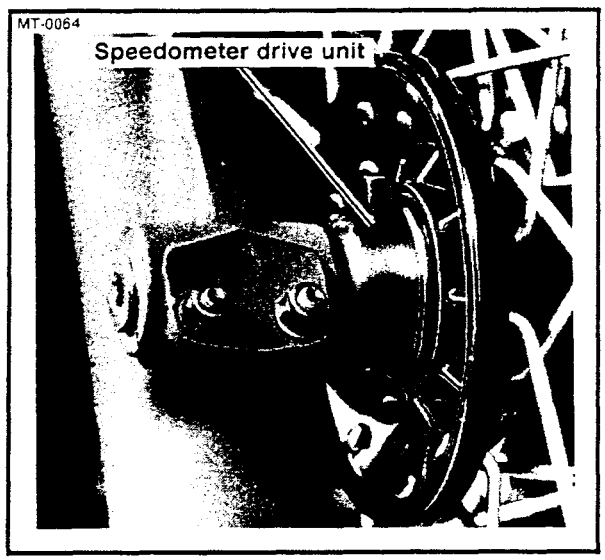


Figure 5-50. Speedometer Drive Unit

2. Keep speedometer cable drive engaged with wheel hub while positioning wheel between sliders. Be sure that brake disc is installed between brake caliper pads.

3. Support wheel between sliders and install axle until it just begins to exit from left side of wheel hub.

4. See Figure 5-47. Position axle spacer between left side of wheel hub and left slider, then drive axle through spacer and slider, tapping axle with a soft-faced mallet.

5. Tighten axle nut to 68 N•m (50 ft-lb).

6. Remove frame support from vehicle and set vehicle on ground so normal weight is on front axle.

7. See Figure 5-47. Tighten right slider pinch bolt nuts to 6.9 N•m (60 in-lb).

8. See Figure 5-46. Install front brake dust shield, flat washer, lock washer, and socket head screw.

REAR WHEEL REMOVAL

Special Tools	Torque Values
Tool kit bar	None
Vehicle center stand	

NOTE

Rear wheel removal can be performed more easily if vehicle is supported under frame so that rear tire is at least 100 mm (4 in.) off ground. If vehicle cannot be supported in vertical position, lay vehicle down on left or right side, as required, to remove rear wheel.

1. See Figure 5-51. Remove and discard cotter pin (1).

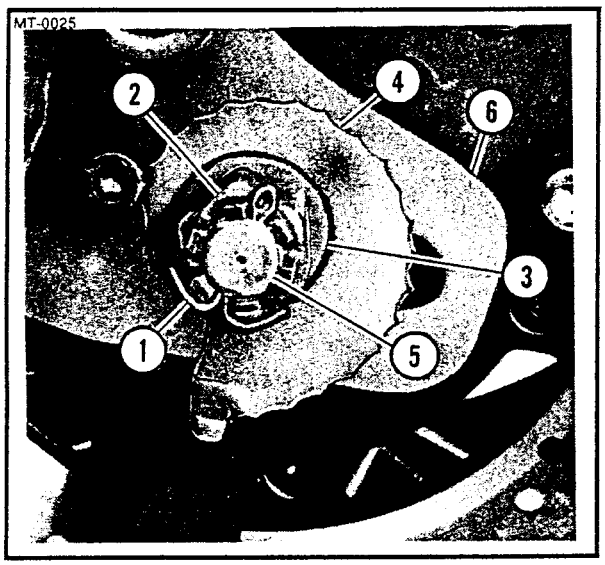


Figure 5-51. Rear Axle Cotter Pin

2. See Figure 5-52. Remove axle nut (2), flat washer (3), and left chain tension adjustment cam (4).

3. Use a soft-faced mallet and drive axle (5) toward right side of vehicle until end of axle is flush with swing arm (6).

4. See Figure 5-52. Using bar (1) from tool kit, remove axle (2), flat washer (3), and right chain tension adjustment cam (4).

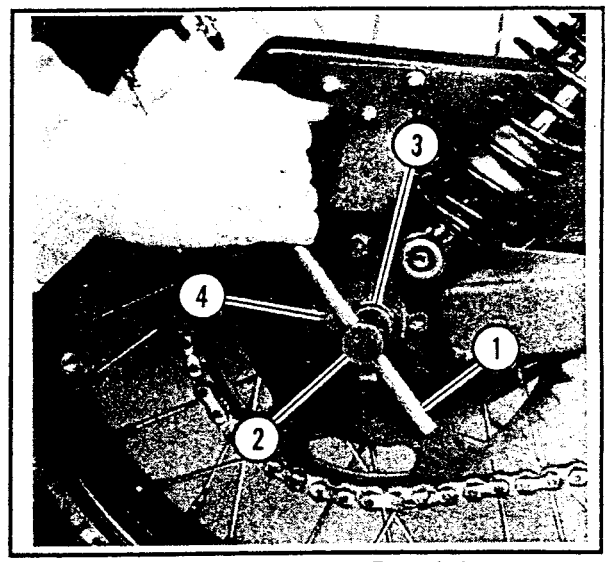


Figure 5-52. Remove Rear Axle

NOTE

It may be necessary to lift up on tire when removing axle to prevent axle from binding in swing arm.

5. See Figure 5-57. Remove screw (1) and flat washer, screw (2) and flat washer, and swing chain guard (3) up and away from sprocket.

6. See Figure 5-53. Push wheel forward so brake disc clears caliper. Lower wheel from swing arm (1) and tilt top of tire to right. Remove spacer (2) from sprocket hub. Disengage drive chain (4) from sprocket (3).

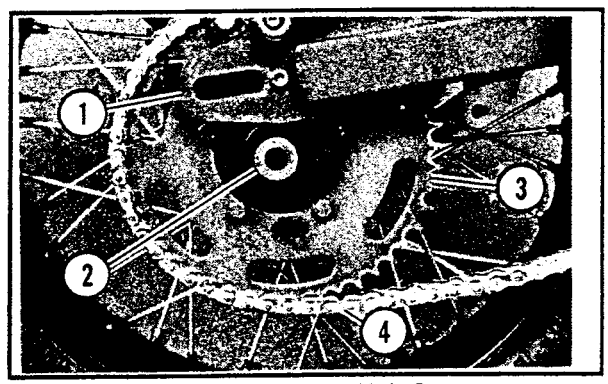


Figure 5-53. Remove Hub Spacer

CAUTION

DO NOT operate the rear brake foot lever when caliper and pads are not in position over disc. Caliper pistons will be forced out of their bores, requiring disassembly of caliper to install pistons.

7. See Figure 5-54. Remove rear wheel and tire from swing arm.

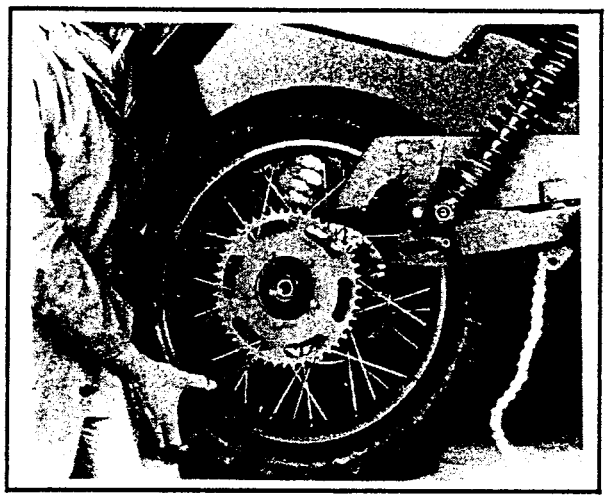


Figure 5-54. Remove Rear Wheel and Tire

REAR WHEEL INSTALLATION

Special Tools	Torque Values N·m (ft-lbs)
Tool kit bar Vehicle center stand	Axle nut 101 (75)

1. See Figure 5-55. If cushion drive rubber was separated from sprocket hub when wheel was removed, install in hub. Be sure rubber segments match arrangement of compartments cast into hub.

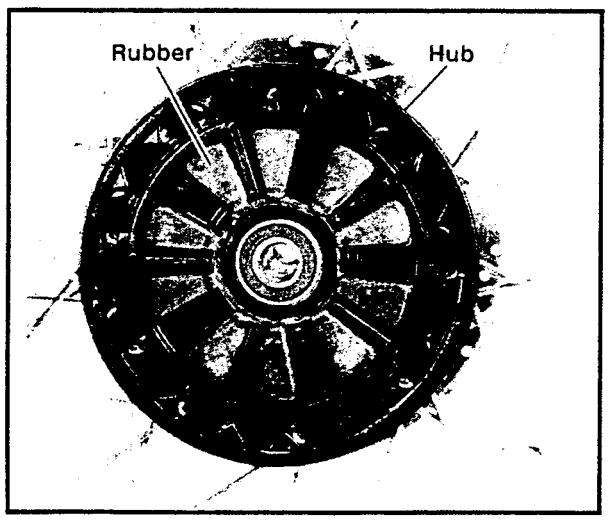


Figure 5-55. Cushion Drive Rubber and Hub

2. See Figure 5-56. Position rear wheel and tire in swing arm.

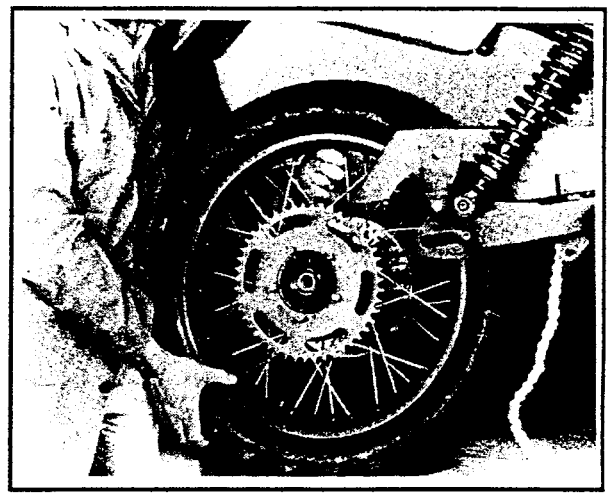


Figure 5-56. Position Wheel and Tire

3. See Figure 5-53. Place drive chain (4) over teeth of sprocket (3). Install spacer (2) onto sprocket hub (2). Raise wheel and tire, pulling wheel toward rear of vehicle while inserting brake disc between pads of brake caliper.

4. See Figure 5-57. Swing chain guard (3) back into position and install small screw (2) and flat washer, and large screw (1) and flat washer.

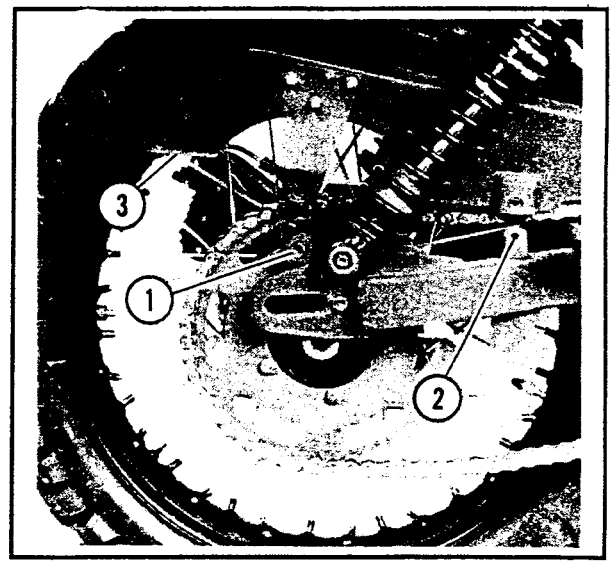


Figure 5-57. Chain Guard

5. See Figure 5-52. Install right chain tension adjustment cam (4), flat washer (3), and axle (2). Support tire and wheel with one hand while tapping axle into hub with a soft-faced mallet.

6. See Figure 5-51. Install left chain tension adjustment cam (4), flat washer (3), and axle nut (2), but do NOT tighten axle nut at this time.

7. See DRIVE CHAIN ADJUSTMENT. Adjust drive chain tension so that chain free play is **55-65 mm (2.2 - 2.6 in)** in.) at the midpoint between the sprockets.

10-15 mm (0.4 - 0.6 in) freeplay must be evident when the weight of the machine is on the wheels.

8. See Figure 5-51. Tighten axle nut (2) to 101 N•m (75 ft-lb).

CAUTION

DO NOT loosen (turn counterclockwise) axle nut to align hole in axle with slots of nut or clamping force will be lost. Always tighten nut clockwise so that clamping force is maintained.

9. Tighten axle nut (2) just enough to align hole in axle with slots in nut so that cotter pin (1) can be installed.

10. Install a new cotter pin (1). Bend ends to lock in position.

LACING WHEELS

GENERAL: the wheels are laced in a 36 spoke, cross three pattern (each spke crosses three others).

Special Tools	Wheel Offset Dimension
Wheel Truing Stand Part No. HD-95500-80	Brake flange rim-to-hub Front 1.375 in.
Spoke Wrench Part No. HD-94681-80	Brake flange rim-to-hub Rear 2.075 in.

FRONT WHEEL

NOTE

- RADIAL Dimension should be within 0.076mm (0.030 in.) of 0.
- Front Wheen RIM-TO-HUB dimension should be within 0.38mm (0.015 in.) of 34.9mm (1.375 in.).
- RIM CONCENTRICITY dimension for both wheels should be within 0.7mm (0.030 in.) of 0.

1. Lay the front wheel hub on a 4X4X6 wooden block; brake disc side down
2. Place spokes in all hub holes facing up (18).
3. Arrange spokes on inside of hub in a counter clockwise direction.
4. Arrange spokes on outside of hub in a clockwise direction.
5. Turn hub and spokes over with disc side up.
6. Place remaining (18) spokes in hub holes.
7. Arrange spokes on inside of hub in a clockwise direction.
8. Arrange spokes on outside of hub in a counter clockwise direction.
9. Place rim with the stamped letters down and begin lacing spokes in a 3 cross pattern or every 1st and 6th spoke; 1st being inner and clockwise and the 6th being outer and counter clockwise.
10. Install nipples 'finger tight' on all spokes as you lace them.
11. Turn rim hub assembly over.
12. Lace this side also with a 3 cross pattern using every 1st and 6th spoke, 1st being inner and counter clockwise and 6th being outer and clockwise, install nipples as in step 11.
13. Make sure all spokes have nipples and tighten all spokes evenly.
14. Off set disc side 32mm to edge of rim.
15. Turn the wheel and check for concentricity (up and down motion) of the wheel rim.
16. Tichten and loosen spokes until the wheel rim is roughly concentric.

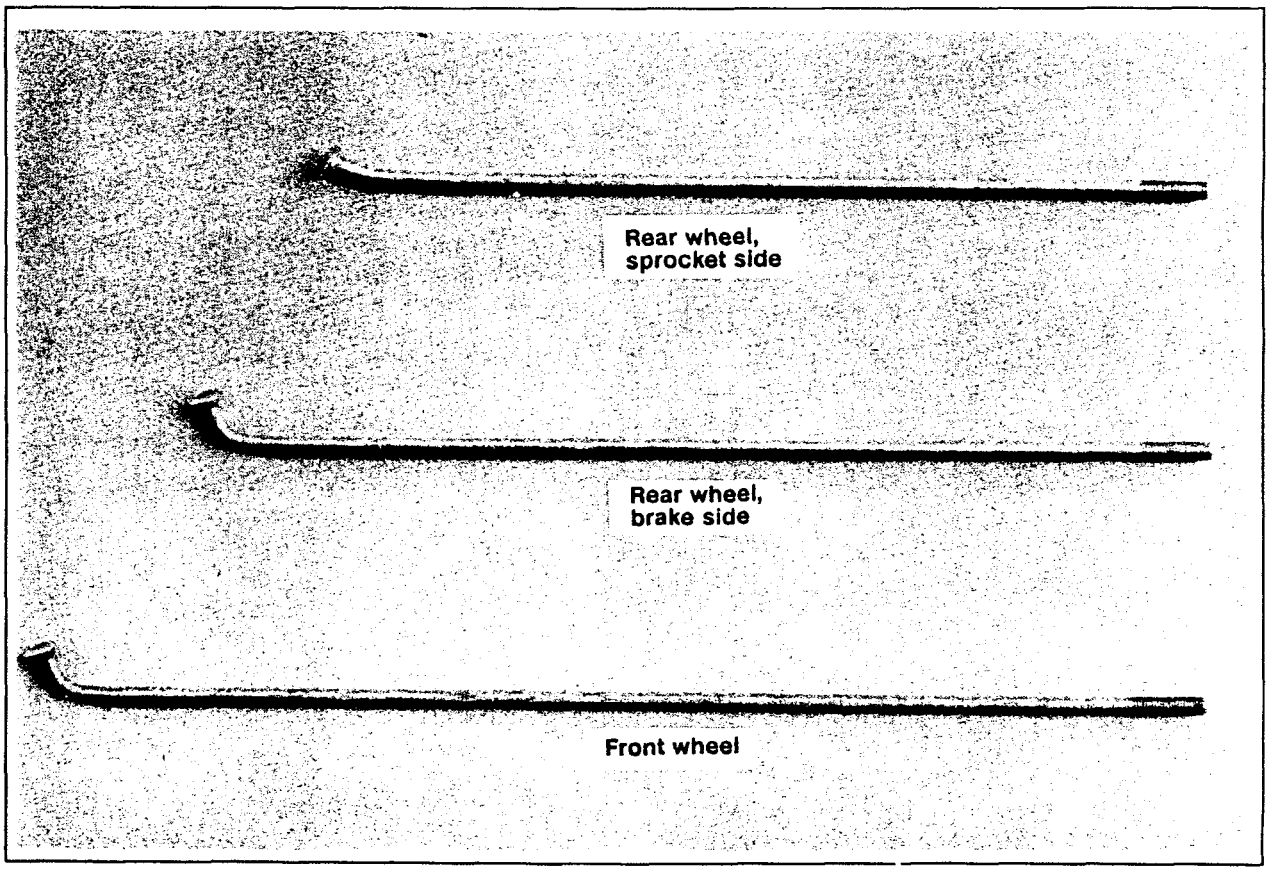
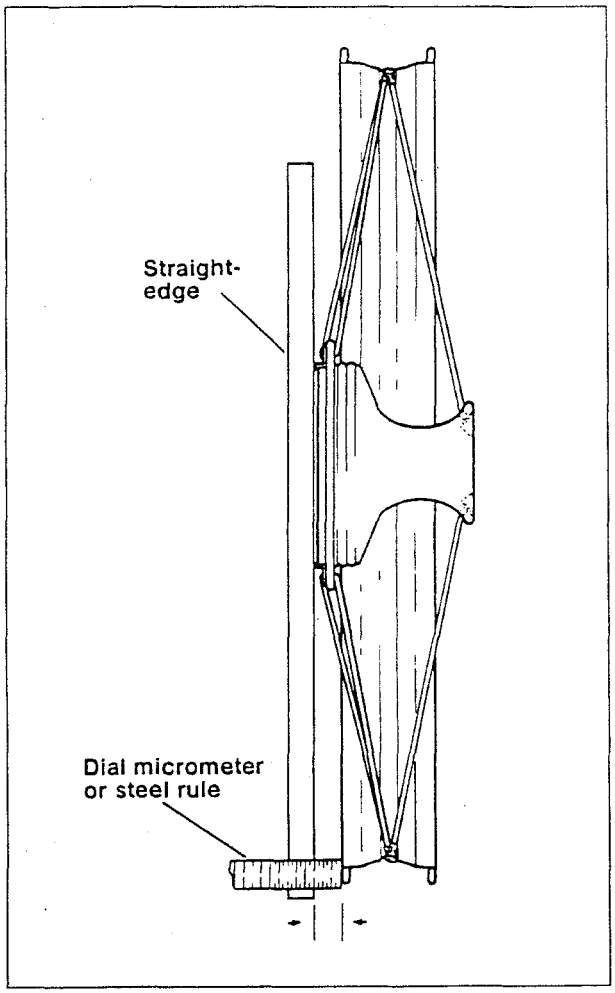


Figure 5-58. Spoke types

SET THE RIM-TO-HUB DIMENSION

1. See figure 5-59. May a straightedge across the hub brake disc flange and up to , but not touching the outside edge of the wheel rim.



2. Use a dial micrometer or steel rule and measure from the inside edge of the starightedge to the rim outer bead retention wall. This dimension is the RIM-TO-HUB diemnsion.

CAUTION

Always loosen the appropriate spokes before tightening the others. Reversing this procedure will cause the rim to become out-of-round.

3. Use the spoke wrench and loosen and tighten spokes until RIM-TO-HUB dimension is 32mm (1.375 in.) +/- 0.038 (0.015 in.) Loosen and tighten groups of two opposite spokes at a time.

4. Check the rim concentricity. Rim concentricity should be within 0.76mm (0.030 in.) of 0.

5. True the wheel radially. See TRUING LACED WHEELS.

REAR WHEEL

NOTE

- Rear wheel RIM-TO-HUB dimension should be within 48mm (0.015 in.) of 52.7 mm (2.075 in.).
- Radial dimension should be within 0.76mm (0.030 in.) of 0.
- RIM CONCENTRICITY dimension for both wheels should be within 0.76mm (0.030 in.).

The procedure for lacing the rear wheel is the same as for the front wheel except for the following.

- BRAKE DISC SIDE UP - The spokes on the inside of the hub are arranged counter clockwise. The spokes on the outside of the hub are arranged clockwise.
- SROCKET SIDE UP - The spokes on the inside of the hub are arranged clockwise. The spokes on the outside of the hub are arranged counter clockwise.
- The rear wheel RIM-TO-HUB dimension is (2.075 in.) +/- 0.38mm (0.015 in.).
- The outside spokes have a greater spoke head angle and are longer than the inside spokes. The inside spokes' spoke head angle is 5° and the outside spokes' spoke head angle is 20°.
- The long spokes go on the brake disc side of the hub and the short spokes go on the spocket side of the hub.

After lacing and truing the wheels, install tubes and tires. SEE TIRES.

TRUING LACED WHEEL

Special Tools	Torque Values N·m (ft-lbs)
Wheel Truing Stand Part No. HD-95500-80 SPOKE WRENCH Part No. HD-94681-80	None

True Wheel Radially

NOTE

The rim should be trued within 0.76mm (0.030 in.) of 0.

1. See Figure 5-60. After rim has been trued to the rim-to-hub dimension and concentrically, it must be trued radially. Adjust truing stand gauge to the rim's tire bead seat as shown.

2. Spin the rim slowly. If the rim contacts the gauge on or near a spot, mark that spot. Loosen the spokes in the marked area on the opposite side of the rim. Now tighten the spokes in the group where the rim makes contact. Loosen and tighten spokes an equal number of turns. Loosen and tighten groups of two opposite spokes at a time.

EXAMPLE: If the measurement on the non-brake flange side of the rim is greater than the brake flange side, loosen two spokes attached to the hub brake flange side and tighten the two spokes attached to the hub opposite side. Turn all four spokes an equal number of turns until dimension is equal to within 0.76mm (0.030 in.) of 0. for both sides.

3. If the rim contacts the gauge between two marked areas, loosen the spokes in both opposite areas and tighten the spokes on the side of the rim that makes contact.

4. When the wheel is centered and trued, start at the valve hole and tighten the rest of the spoke nipples one turn at a time until they are snug.

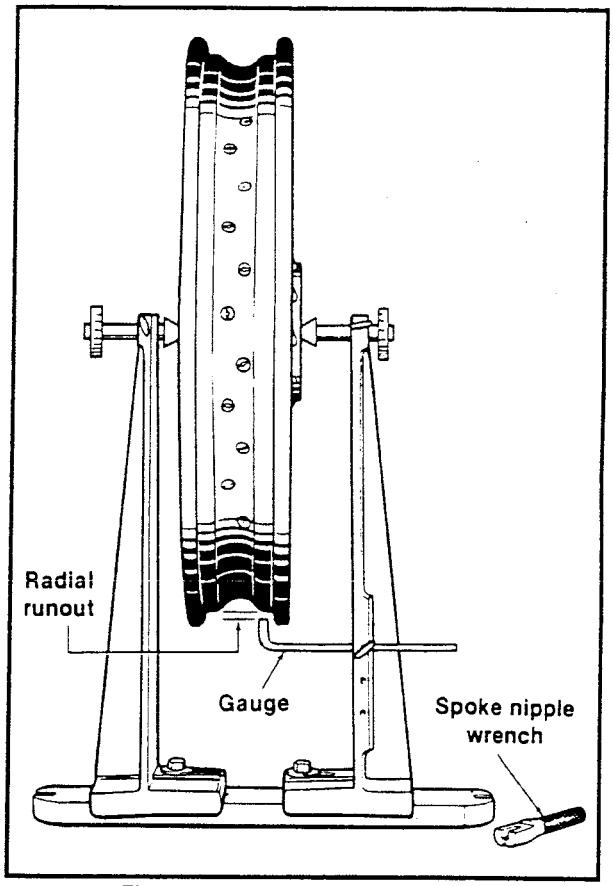


Figure 5-60. Truing Rim Radially

5. Seat each spoke head in the hub flange using a flat nose punch and mallet. Then check wheel trueness again and tighten the nipples accordingly.

CAUTION

Do not tighten spokes too tight, or nipples may be drawn through rim, or hub flanges may be distorted. If spokes are left too loose, they will continue to loosen when wheel is put into service.

6. File or grind off ends of spokes protruding through nipples to prevent puncturing tube when tire is mounted.

FRONT WHEEL HUB DISASSEMBLY (Figure 5-62)

Special Tools	Torque Values N·m (ft-lbs)
Fabricated wheel hub bearing removal/installation tool Arbor press	Front brake disc crews 14-16 (10-12)

See Figure 5-61. Fabricate a special tool as shown.

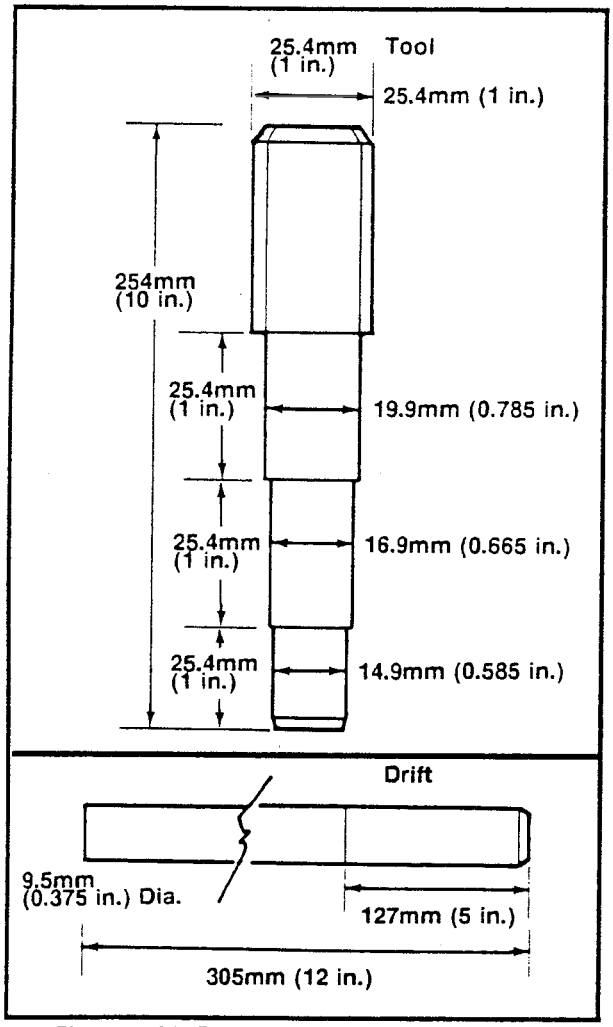


Figure 5-61. Fabricated Wheel Hub Bearing Removal/Installation Tool

1. Remove front wheel. See FRONT WHEEL REMOVAL/INSTALLATION.

CAUTION

NEVER attempt to re-use a removed bearing. Once a bearing has been removed, it is destroyed and must be replaced.

NOTE

If bearings do not come out, carefully apply heat to the hub.

2. See Figure 5-61. Use a 9.5 × 305mm (3/8 × 12 in.) hardened steel rod and hammer and drive the opposite side wheel hub bearing (1) out from the inside. Move the inner spacer (2) aside and drive against the edge of the inner bearing race. Work your way around the edge, gradually driving out the bearing.

3. Turn the hub (3) over and drive the other bearing out, using the fabricated tool and the inner spacer.

CLEANING, INSPECTION AND REPAIR

1. Clean all parts in solvent and inspect for damage or wear.

2. Replace the brake disc if it is warped, scored or worn beyond the minimum thickness stamped on the disc. See SPECIFICATIONS.

3. Replace bearings in sets only.

4. Replace the spokes, rim or hub if damaged.

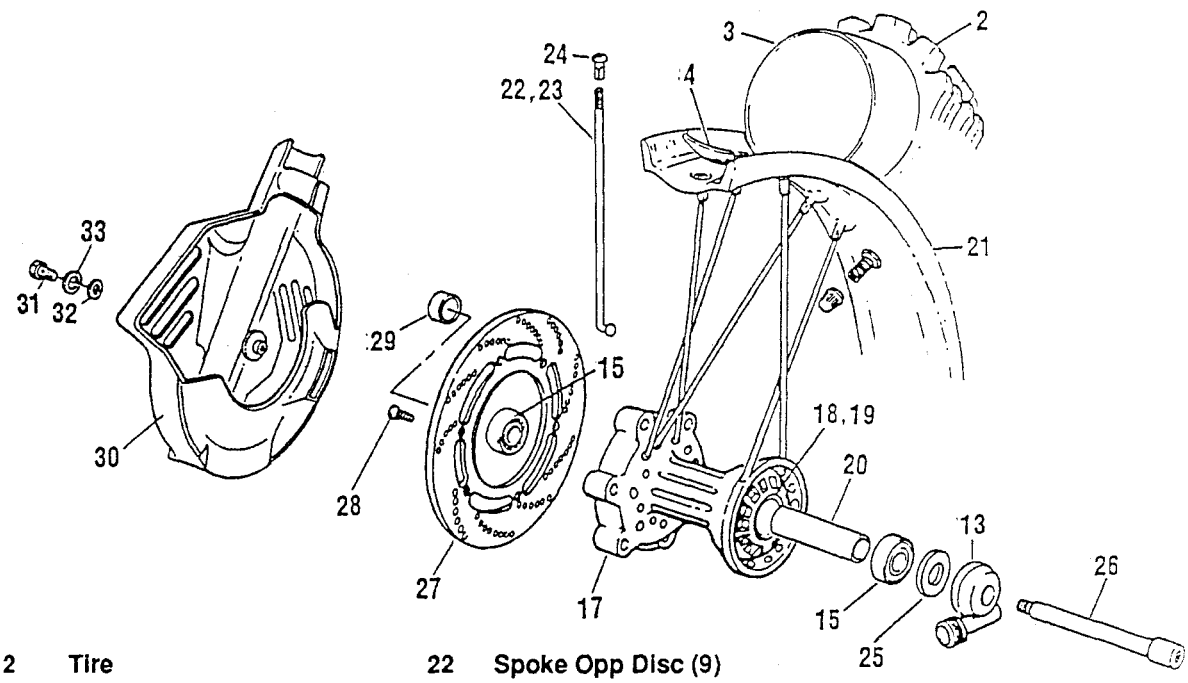
FRONT WHEEL HUB ASSEMBLY

1. Grind down the outer race O.D. of one of the old bearings. Use the fabricated tool, old bearing and arbor press to press a new bearing into the hub. Press bearing into hub until the bearing edge bottoms on shoulder.

2. Turn hub over and place inner spacer into hub. Use the fabricated tool, one of the old bearings and arbor press to press a new bearing into the hub. Press bearing into hub until the bearing edge bottoms on shoulder.

3. If the hub and rim were disassembled, assemble the hub, spokes and rim as described under LACING WHEELS, later in this section. WHEEL TRUING and WHEEL BALANCING procedures are also covered later in this section.

4. Clean the brake disc surfaces of any dirt or grease. Assemble the brake disc to the hub flange by inserting screws through holes in brake disc and hub flange. Use Loctite 242 (blue) and tighten screws to 16 N•m (12 ft-lbs) torque.



2	Tire	22	Spoke Opp Disc (9)
3	Inner Tube	23	Spoke (27)
4	Rim Strip	24	Nipple (36)
11	Front Wheel Sub Assy	25	Speedo Drive Washer
12	Hub Assy	26	Front Axle
12A	Hub Sub Assy	27	Brake Disc
13	Speedo Drive	28	Soc Hd Csk Screw M6X20 (6)
14	Hub	29	Spacer
15	Bearing (2)	30	Disc Guard, Grn.
17	Hub, Cast	31	Screw, Disc Guard M6X25
18	Drive Seal	32	Washer M6
19	Drive Ring	33	Lock Washer M6
20	Internal Spacer		
21	Rim		

Figure 5-62. Front Wheel

REAR WHEEL HUB DISASSEMBLY (Figure 5-63)

Special Tools	Wheel Offset Dimension
Fabricated wheel hub bearing removal/ installation tool Arbor press	Brake Disc Crews 16-24 (12-18) Rear Axle Nut 68-80 50-60 Front Axle 68 50 Calip Mtg Bolt 27 20

1. Remove rear wheel. SEE REAR WHEEL REMOVAL/INSTALLATION

CAUTION

Never attempt to re-use a removed bearing. Once a bearing has been removed, it is destroyed and must be replaced.

NOTE

If bearings do not come out, carefully apply heat to the hub.

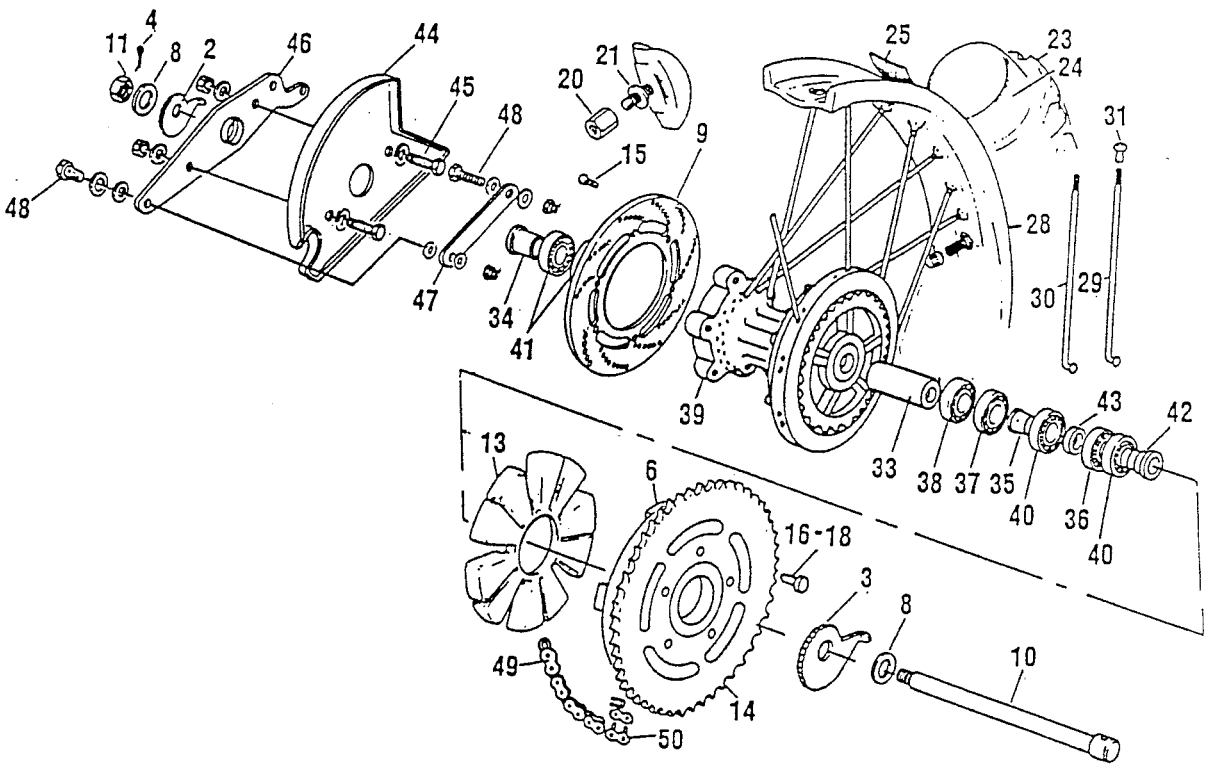
2. See Figure 5-63. Use fabricated wheel hub bearing removal/installation tool and hammer and drive the opposite side wheel hub bearing out from the inside. Center the inner spacer and drive spacer against the edge of the inner bearing race with the tool.
3. Turn the hub over and drive the other bearing out, using the fabricated tool and the inner spacer.

CLEANING, INSPECTION & REPAIR

1. Clean all parts in solvent and inspect for damage or wear.
2. Replace the brake disc if it is warped, scored or worn beyond the minimum thickness stamped on the disc. See SPECIFICATIONS.
3. Replace the bearings in sets only.
4 Replace the spokes, rim or hub if damaged.

REAR WHEEL HUB ASSEMBLY

1. Grind down the outer race O.D. of one of the old bearings. Use the fabricated tool, old bearing and arbor press to press a new bearing into the hub. Press bearing into hub until the bearing edge bottoms on the shoulder.
2. See Figure 5-63. Turn hub over and place inner spacer into the hub. Use the fabricated tool, one of the old bearings and arbor press to press a new bearing into the hub. Press bearing into the hub until the bearing edge is flush with hub flange.



2 Rear Wheel Adj. LH	16 Lock Washer M8 (5)	30 Spoke, Rear Non Drive	43 Spacer
3 Rear Wheel Adj. RH	17 Screw M8X40 (5)	31 Rear Nipple	44 Rear Disc Guard, Grn.
4 Cotter Key (2)	18 Lock Nut M8 (5)	33 Sleeve	45 Screw M6X16 (2)
6 Spider Housing	19 Rear Wheel Sub-Assy	34 Rear Wheel Spacer, LH	Flat Washer M6 (2)
7 Spider Housing Assy.	20 Security Nut	35 Rear Hub Spacer,	46 See Plate 14-26
8 Rear Wheel Washer (2)	21 Security Bolt Assy	Bearing	47 See Plate 14-26
9 Brake Disc	22 Wheel Weight 0.50 oz.	36 Bearing	48 Hex Screw M8X30 (2)
10 Rear Axle	23 Rear Tire	37 Bearing, Hub Right	Lock Nut M8 (2)
11 Rear Axle Nut	24 Rear Inner Tube	38 Bearing, Hub Center	Flat Washer M8 (4)
12 Rear Hub Sub-Assy	25 Rim Strip	39 Rear Hub, Cast	49 Drive Chain w/ Link
13 Rear Spider	26 Wheel Weight 1.00 oz.	40 Bearing (2)	50 Chain Link
14 Sprocket	28 Black Rim	41 Bearing Hub Left (2)	
15 Screw M6X20 (6)	29 Spoke Rear Drive	42 Rear Hub Spacer, RH	

Figure 5-63. Rear Wheel

3. If the hub and rim were disassembled, assemble the hub, spokes and rim as described under LACING WHEELS, later in this section. Wheel Truing and Balancing procedures are also covered later in this section.

4. Clean the brake disc surfaces of any dirt or grease. Assemble the brake disc to the hub flange by inserting screws through holes in brake disc and hub flange. Use Loctite 242 (blue) and tighten screws to 16 N•m (12 ft-lbs) torque.

TIRES

GENERAL

WARNING

Inner tubes should only be repaired as an emergency measure. Replace a damaged or patched inner tube with a new one as soon as possible. Whenever a tire is replaced, the inner tube and rim strip must also be replaced.

Acceptable repair methods include a patch and plug combination, chemical or hot vulcanizing patches or head-type plugs. TIRE REPAIR KIT, Part No. HD-20000 contains acceptable repair materials.

REMOVAL

1. Remove the wheel with the flat tire. See WHEEL REMOVAL/INSTALLATION.
2. See Figure 5-64. Remove protective cover (1) and valve stem cap (2).

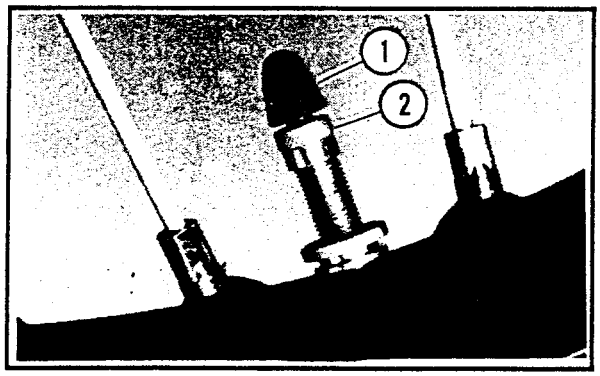


Figure 5-64. Valve Stem Cap, Protective Cover

NOTE

Jaws on valve stem cap are used to engage core to screw and unscrew it in valve stem.

3. Remove valve stem core and deflate tire.
4. See Figure 5-65. Remove valve stem nut (1) from valve stem.

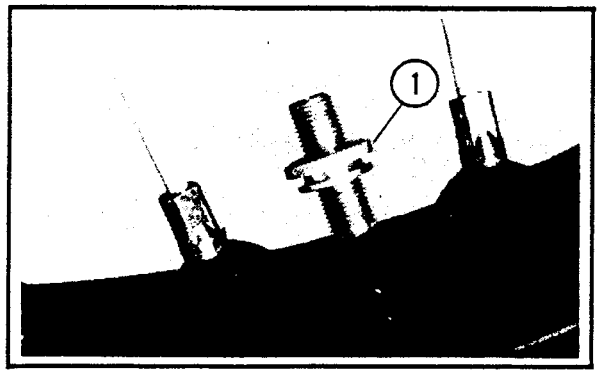


Figure 5-65. Valve Stem Nut

WARNING

Do NOT use screwdrivers or pry bars to remove or install tires. Such tools have sharp edges that could damage the inner tube or sidewall of the tire, causing failure of the tube and/or tire and injury to the operator.

5. See Figure 5-66. Loosen, but do not remove the bead lock nut (1).

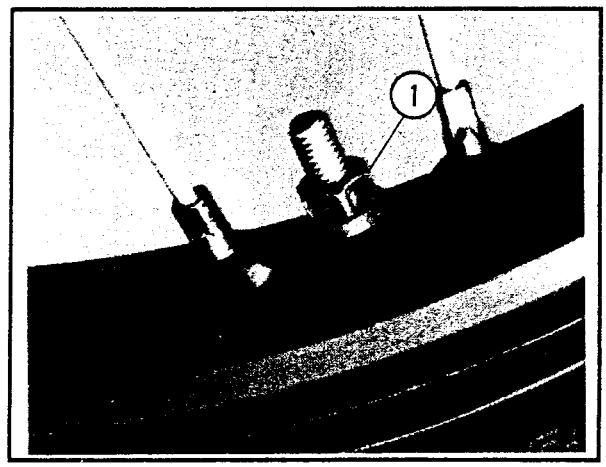


Figure 5-66. Bead Lock Nut

6. See Figure 5-67. Starting on side of wheel on which brake disc (1) is mounted, use two tire irons (2) from vehicle tool kit to break tire bead away from wheel rim. Start at bead lock (3) and work around wheel rim toward valve stem (4). Stand on the tire sidewall or push it with your hands as required to separate it from the wheel.

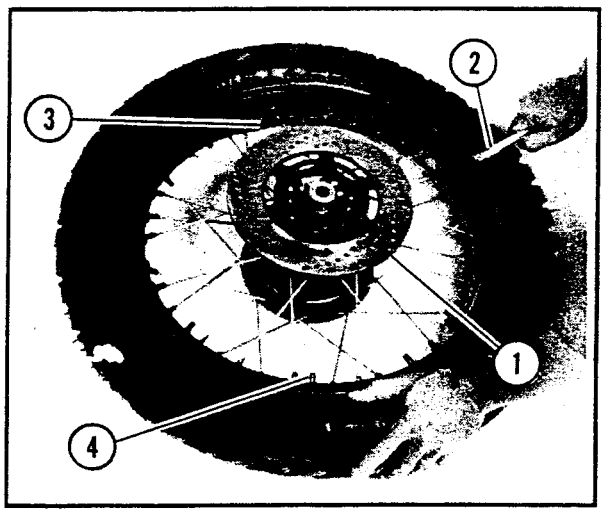


Figure 5-67. Breaking Tire Bead

7. Turn wheel over and repeat the actions of Step 6 to break the bead on the other side of the tire.

8. Check that bead lock is fully retracted (nut loosened fully, but not removed), then push tire bead into center, dropped section of wheel rim.

9. See Figure 5-68. Use one tire iron (1) to begin pulling tire bead over edge of wheel rim. Stop and place second tire iron (2) under disc (3) and tire bead to prevent bead from slipping back onto wheel rim.

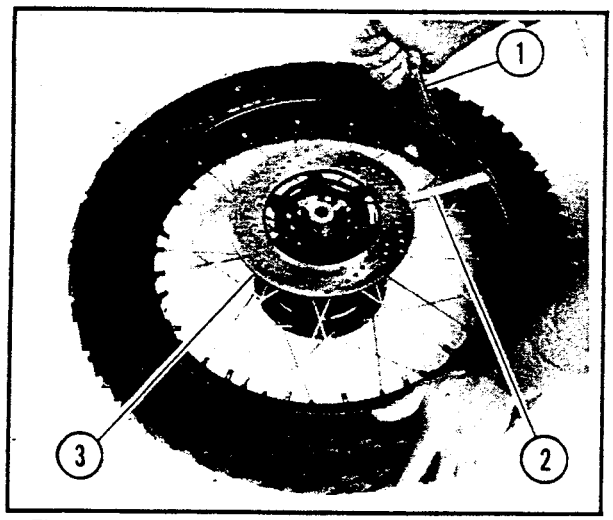


Figure 5-68. Pulling Tire Bead Over Edge of Rim

10. Continue to use first tire iron to pull tire bead over wheel rim, working around entire circumference of wheel rim. Remove tire irons.

11. See Figure 5-69. Remove inner tube (1) from tire.

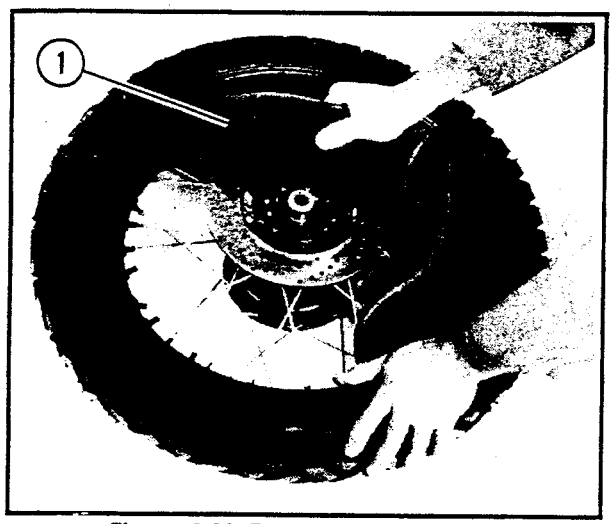


Figure 5-69. Removing Inner Tube

12. See Figure 5-70. Turn wheel over. Using a tire iron (1), pry tire (2) over wheel rim (3) and remove tire. If necessary, tire sidewall may be struck with a soft-headed mallet to assist removal.

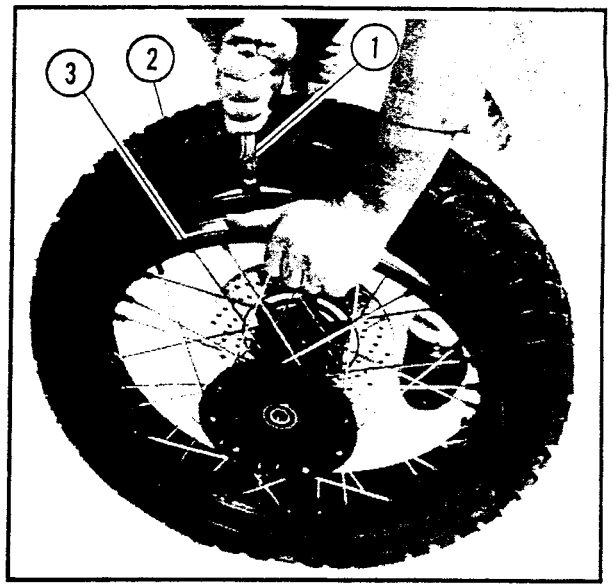


Figure 5-70. Removing Tire

13. See Figure 5-71. Remove bead lock (1) from wheel rim (2).

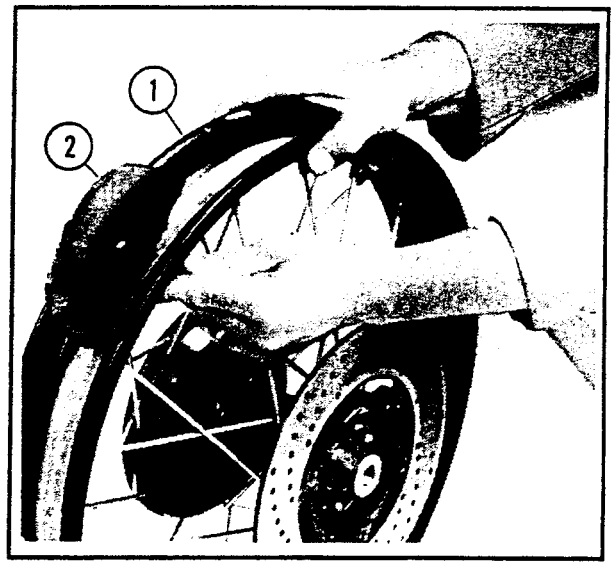


Figure 5-71. Removing Bead Lock

14. See Figure 5-72. Remove and discard rubber rim strip (1) from wheel rim (2).

INSPECTION

Check area of wheel under rubber rim strip for rust. If you find rust, remove and repaint wheel.

Check for spokes protruding beyond nipples. File or grind ends of spokes until they are flush with nipples to prevent damage to inner tube.

INSTALLATION

Tire pressure - on-road use	276 kPa (40 psi)
Tire pressure - off-road use	124 kPa (18 psi)
Tire runout	Less than 0.76mm (0.030 in.)
Tire tread runout	2mm (0.080 in.)

WARNING

Use the correct inner tube and tire as specified. See TIRE DATA in SPECIFICATIONS. Use of non-standard parts will adversely affect handling.

CAUTION

Be sure to install tire on wheel in direction of forward rotation indicated by arrow and wording molded into sidewall of tire.

1. See Figure 5-54. Install a new rim strip (1) onto wheel rim (2), aligning hole in rim strip with inner tube valve hole in rim.

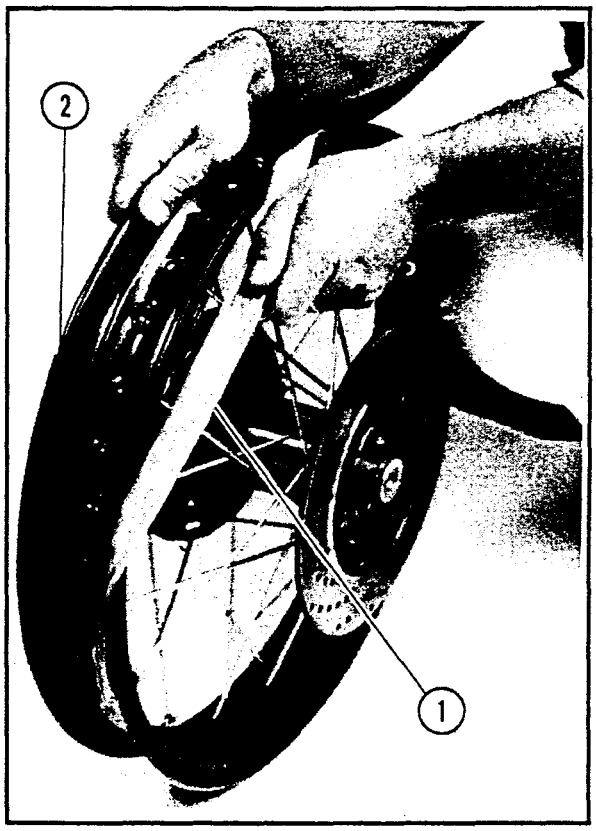


Figure 5-72. Removing Rim Strip

2. Inflate inner tube just enough to round it out, removing folds and wrinkles.
3. See Figure 5-73. Position one-half of inner tube (1) inside tire (2) and place tire with tube onto wheel rim (3).
4. See Figure 5-65. Install valve stem nut (3) to engage a few threads and prevent valve stem from being drawn into tire.

NOTE

Lubricate tire bead generously with rubber lubricant, or solution of detergent and water, to aid in installation.

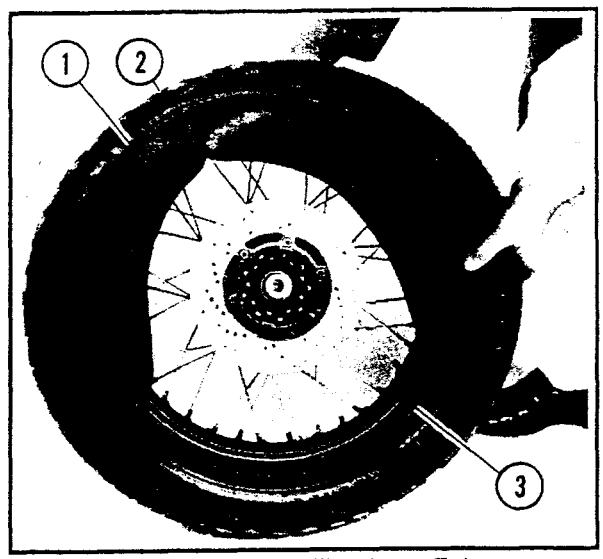


Figure 5-73. Installing Inner Tube

5. Use a tire iron and work tire bead onto wheel rim on side of wheel facing upward.
6. Install bead lock, lockwasher, and nut.
7. Work inner tube into tire by hand. Be sure that tube goes over bead lock and is not pinched between lock and rim.
8. Turn wheel over. Use a soft-headed mallet as necessary. Install remaining tire bead onto wheel rim, starting 90 degrees from bead lock and working toward it. Then continue around 90 degrees more until one-half of the tire bead circumference is mounted on rim.
9. Check that bead lock is completely inside the tire bead.
10. Using soft-headed mallet, continue around remaining one-half of tire, as in Step 8, to install it onto wheel rim.
11. See Figure 5-65 Tighten valve stem nut (1).
12. Use valve stem cap and install valve core.

WARNING

Do not inflate tire to more than 276 kPa (40 psi) to seat the beads. Inflating the tire beyond 276 kPa (40 psi) to seat the beads can cause the tire to burst with force sufficient to cause personal injury. If the beads fail to seat when inflated to 276 kPa (40 psi), deflate the tire and relubricate the bead and rim, then reinflate to seat the beads, but do not exceed 276 kPa (40 psi).

13. Inflate tire to 276 kPa (40 psi) to seat beads on wheel rim, then adjust tire pressure to 152 kPa (22 psi) for on-road use, or 124 kPa (18 psi) for off-road use.

14. See Figure 5-66. Use a 13 mm wrench and tighten bead lock nut (1).

CHECK TIRE LATERAL RUNOUT

1. See Figure 2-74. Check lateral runout by turning wheel on axle, measuring amount of sideways displacement from a fixed point near the tire.

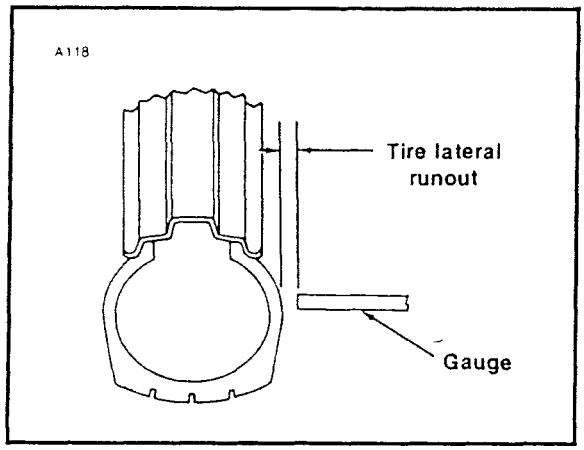


Figure 5-74. Checking Tire Lateral Runout

2. Tire tread runout should be no more than 2mm (0.080 in.) If tire tread runout is more than 2mm (0.080 in.), remove tire from rim and check rim bead side runout to see if rim is at fault.

3. If rim side runout is less than 0.76mm (0.030 in.), tire is at fault and should be replaced. If rim side runout is more than 0.76mm (0.030 in.), correct by tightening selected spoke nipples on wheels. Install tire and recheck tire tread lateral runout.

CHECK TIRE RADIAL RUNOUT

1. See Figure 2-75. Check radial runout by turning wheel on axle, measuring tread runout.

2. Tire tread runout should be no more than 2.3mm (0.090 in.) If tire tread runout is more than 2.3mm (0.090 in.), remove tire from rim and check rim runout to see if rim is at fault.

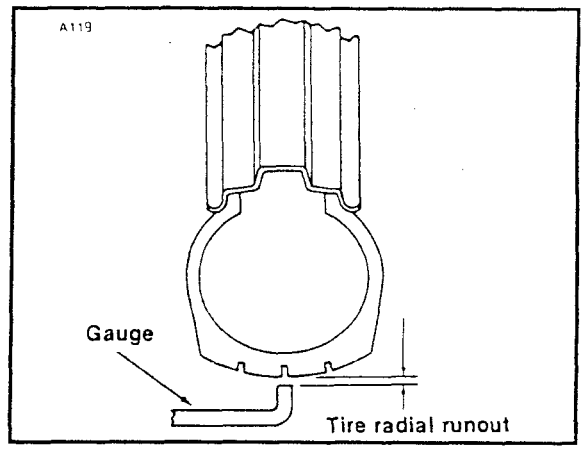


Figure 5-75. Checking Tire Radial Runout

3. If rim runout is less than 0.76mm (0.030 in.), tire is at fault and should be replaced. If rim runout is more than 0.76mm (0.030 in.), correct by tightening selected spoke nipples on laced wheels. Install tire and recheck tire tread runout.

WHEEL BALANCING

1. Wheel balancing is recommended to improve handling and reduce vibration, especially at high road speeds. In most cases, static balancing using WHEEL TRUING STAND, Part No. HD-95599-80 will produce satisfactory results. However, dynamic balancing, utilizing a wheel spinner, should be used to produce finer tolerances for best high speed handling characteristics. Follow the instructions supplied with the balance machine you are using. The maximum weight permissible to accomplish balance is 3-1/2 oz. total weight applied in one place on the rim. Wheels should be balanced to within 1/2 oz. at 60 mph.

2. Harley-Davidson has made available the following spoke balance weights which press over the spoke nipple.
   1 oz. weight, Part No. 95582-47
   3/4 oz. weight, Part No. 95581-47
   1/2 oz. weight, Part No. 95578-41

BRAKES

GENERAL

The front and rear brakes are fully hydraulic disc brakes and require little maintenance. Every 5000 miles, check master cylinders for proper fluid levels and check brake pads' and discs for wear. If brake pads friction material is worn to 1/16 in. or less they should be replaced. Minimum brake disc thickness is stamped on the side of the disc. When filling master cylinders, use only D.O.T. 3 Hydraulic Brake Fluid which is approved for use in hydraulic brake systems. When removing master cylinder/reservoir filler plug or cover, be sure that all dirt is removed from the area to prevent dirt getting into reservoir. Rear brake reservoir should be filled to the "MAX" line. Front brake master cylinder should be filled to half way in reservoir sight glass with the reservoir in a level position.

The front brake master cylinder is an integral part of the brake hand lever assembly. The rear brake master cylinder is located on the right side of the motorcycle near the brake pedal.

WARNING

Because brake performance is a critical safety item, brake system servicing requires special tools, correct replacement parts and procedures. We recommend that the following procedures be performed by a qualified Harley-Davidson technician. Whenever the brake system is serviced, it should be tested on dry, clean pavement at slow speeds before putting the motorcycle in regular service.

ADJUSTMENT

FRONT BRAKE LEVER

The front brake lever can be adjusted to the rider.

1. See Figure 5-76. Loosen jam nut (1).
2. Turn adjusting screw (2) until lever is comfortable for rider.

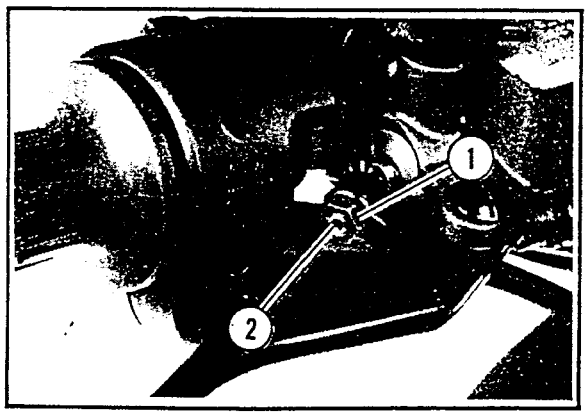


Figure 5-76. Front Brake Control Lever Free Play Adjustment

3. Hold adjusting screw (2) stationary and tighten lock nut (1).

REAR BRAKE PEDAL

1. See Figure 5-77. Loosen lock nut (1) and adjust stop screw (2) until brake pedal (3) is at desired height. Tighten locknut (1).

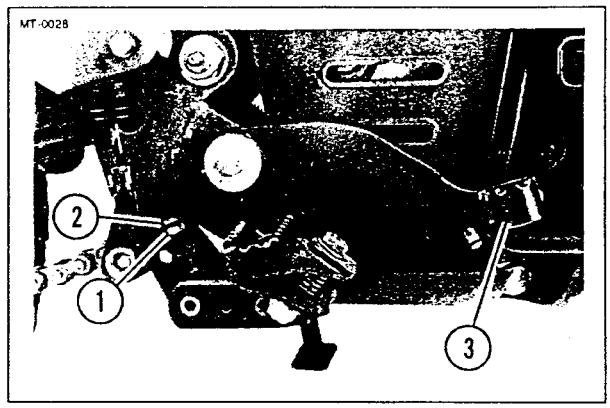


Figure 5-77. Rear Brake Pedal Height Adjustment

2. See Figure 5-78. Depress brake pedal only as far as necessary for push rod (1) to contact master cylinder piston (a significant resistance can be felt). Hold pedal in this position while making adjustment in Steps 3 through 7.

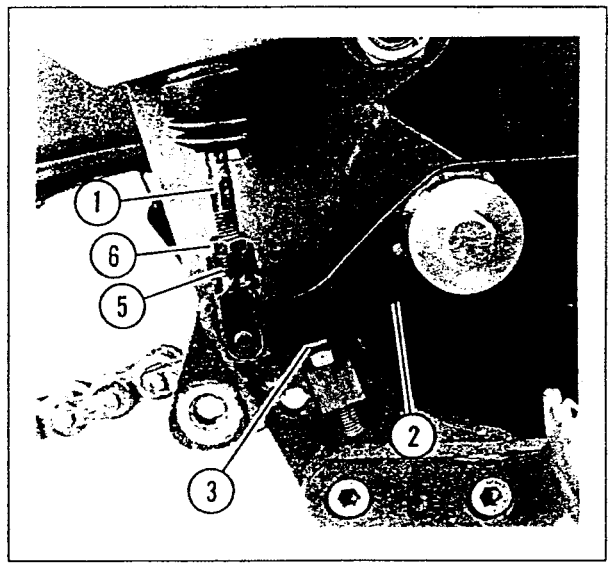


Figure 5-78. Free Play Adjustment

3. Measure clearance between brake pedal (2) and adjusting screw (3). Clearance should be 1.6 mm (1/16 in.).
4. If clearance is not 1.6 mm (1/16 in.), use long nose pliers and remove and discard locking wire (4).

5. See Figure 5-78. Remove lock wire, unsnap clevis lock (5) and swing out of way.
6. Loosen lock nut (6).
7. Lengthen or shorten push rod (1) by rotating it until clearance is 1.6 mm (1/16 in.).
8. Tighten lock nut (6).
9. Snap clevis lock (5) over clevis.
10. Install new lock wire (4).

BLEEDING THE HYDRAULIC BRAKE SYSTEM

NOTE

Hydraulic brake fluid bladder type pressure equipment can be used to fill brake master cylinder through the bleeder fitting if master cylinder cover is removed so that system cannot pressurize. The ball check in the bleeder fitting must also be removed. Do not use pressure bleeding equipment when the hydraulic system is sealed with master cylinder cover and gasket in place.

1. See Figure 5-79. Slip a length of appropriate size clear plastic tubing over wheel cylinder bleeder valve with other end in a clean container. Turn handlebars so that bleeder valve is nearly vertical.
2. Depress brake pedal or lever once to build up pressure. Open bleeder valve by rotating counterclockwise about one-half turn.
3. Keep master cylinder full of fluid at all times. Slowly depress brake pedal or lever once until fluid stops flowing from tubing. Close the bleeder valve. Allow pedal or lever to return slowly to release position.
4. Repeat operation until brake system is free of air bubbles. Add fluid to master cylinder to bring to original level. Do not reuse fluid. Tighten brake bleeder nipple to 32-40 in-lbs torque.

NOTE

If, after bleeding the brake(s) it still feels spongey, remove the brake caliper. Lift the caliper and bleeder higher than the brake reservoir, purge the brake light switch, and resume normal bleeding operation. Install the caliper when finished. See REMOVE/INSTALL BRAKE CALIPER.

NOTE

If rear brake continues to feel spongey:

- *See Figure 5-79. Clamp supply line.*
- *Remove brake switch, turn over and fill with brake fluid. Install brake switch.*

WARNING

D.O.T. 3 brake fluid can cause eye irritation. In case of contact with eyes, flush with plenty of water and get medical attention. KEEP BRAKE FLUID OUT OF THE REACH OF CHILDREN!

CAUTION

Whenever a hydraulic brake line or fitting is opened the fitting should be flushed with brake fluid and the brake system must be bled. Do this to eliminate any air or contaminants from the brake system. Air in the fluid will cause the brake pedal to have a spongy feel. If a contaminant becomes lodged in the seat of a fitting, leakage of fluid could occur, and/or air could be drawn into the system.

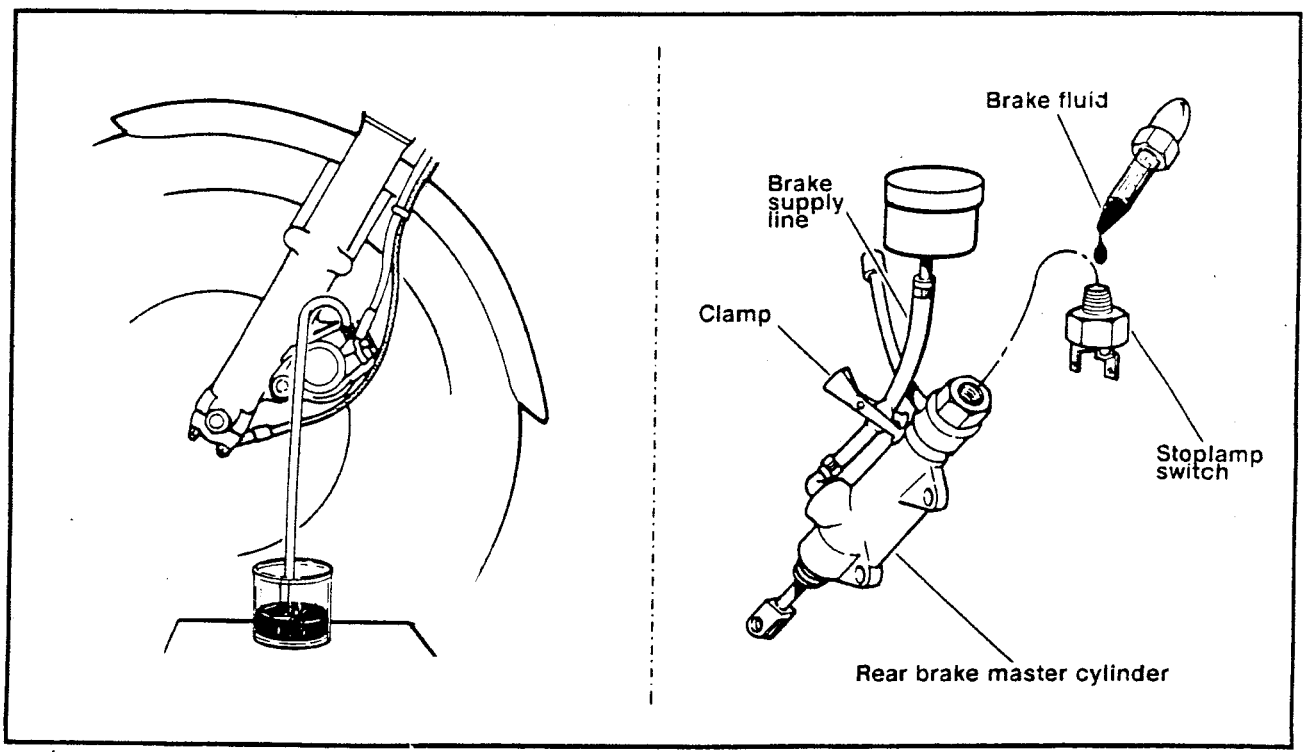


Figure 5-79. Bleeding Brakes (Typical)

FRONT BRAKE MASTER CYLINDER REMOVAL/DISASSEMBLY (Figure 5-80)

The master cylinder is located on the right side of the handlebar. Remove and disassemble as follows.

1. Open the bleeder nipple on the front caliper and drain the brake fluid by pumping the handlever.
2. Disconnect the hydraulic brake line from the master cylinder by removing banjo bolt (1) and washer (2).
3. Remove the master cylinder screws (3), cover (4) and gasket (5). (Gasket includes plastic plate).
4. Remove nut (6). Unscrew pivot pin (7) and remove bushings (8). Remove brake lever (9), nut (10) and reaction pin (11).
5. Remove master cylinder from handlebar by removing screws (12) and clamp (13).
6. Pull out the dust boot (14), piston (15), O-ring (16) and spring (17).
7. If necessary, remove sight glass (18) and O-ring (19).

CLEANING, INSPECTION AND REPAIR (Figure 5-80)

1. Inspect piston (15), O-ring (16), dust boot (14) and pivot pin (7) for wear, softening or enlarging. Replace if necessary.
2. Examine the cylinder walls for scratches and grooves. If damaged, replace master cylinder/reservoir (20).
3. The gasket (5) should be replaced if torn or punctured.

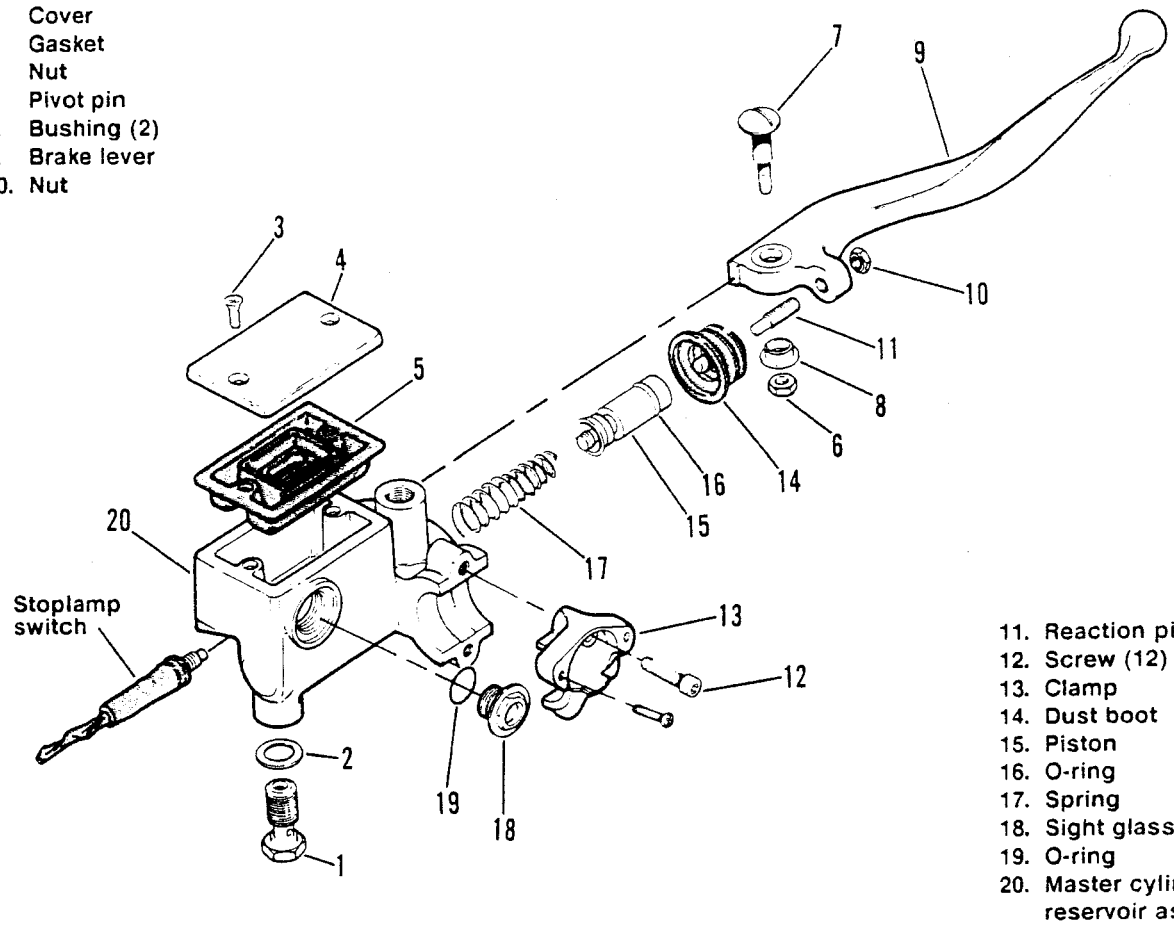


Figure 5-80. Front Master Cylinder

ASSEMBLY/INSTALLATION

1. Dip all internal parts in D.O.T. 5 Hydraulic Brake Fluid.
2. See Figure 5-80. Coat O-ring (19) with D.O.T. 3 Hydraulic Brake Fluid and install sight glass (18) and O-ring, if removed.
3. Install spring (17). Assemble piston (15) with O-ring (16) and dust boot (14).
4. See Figure 5-81. Lightly coat pivot pin (7) and bushings (8) with Loctite ANTI-SEIZE. Assemble the brake lever (9) to the master cylinder/reservoir assembly (20) using pivot pin and bushings. Check front brake lever for proper operation. Wipe off excess ANTI-SEIZE.

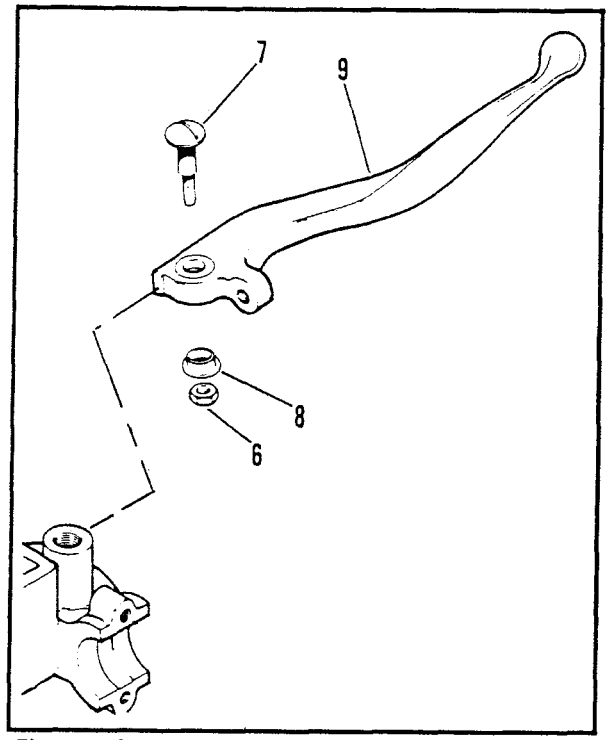


Figure 5-81. Front Brake Hand Lever and Reservoir

5. See Figure 5-80. Install master cylinder to handlebar by installing clamp (13) and screws (12). Tighten screws to 70-80 in-lbs torque.

CAUTION

See Figure 5-82. Be sure washer (2), banjo bolt (1), hydraulic brake line and master cylinder bore are free of D.O.T. 3 hydraulic brake fluid, dirt and metal chips before assembly to avoid leakage.

6. Install banjo bolt (2), washer (2) and hydraulic brake line in master cylinder/reservoir.

NOTE

Before adding hydraulic fluid, check to see that the relief port in the master cylinder is uncovered when the hand lever is released.

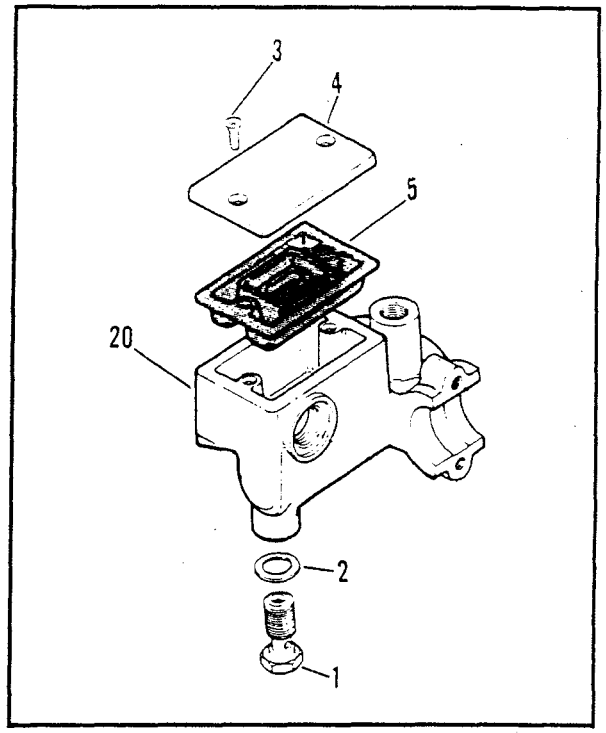


Figure 5-82. Master Cylinder/reservoir Assembly

7. Fill the master cylinder with D.O.T. 3 HYDRAULIC BRAKE FLUID. Bleed the brake system using the procedure outlined in BLEEDING THE HYDRAULIC BRAKE SYSTEM.

WARNING

Be sure the relief port in the cylinder is operating properly. After servicing the master cylinder, always check the operation of the internal components with the reservoir cover removed. Actuate the brake lever. A slight spurt of fluid will break through the fluid surface if all internal components are working properly. Improper operation of brake components can endanger the operator.

8. Install gasket (5), cover (4) and screws (3). Tighten screws (3) to 6-8 in-lbs torque.
9. Test ride motorcycle. If brakes feel spongy, repeat procedure outlined in BLEEDING THE HYDRAULIC BRAKE SYSTEM.

NOTE

The front brake lever is designed to have no free play before moving the push rod. See ADJUSTMENT.

10. This master cylinder assembly is equipped with a sight glass to visually check fluid level without removing cover. With the correct amount of brake fluid, the sight glass is filled half way with reservoir as level as possible.

REAR BRAKE MASTER CYLINDER REMOVAL/DISASSEMBLY (Figure 5-83)

1. Loosen jamnut (1). Bend clevis pin (2) retainer and remove clevis pin from clevis (3). Remove clevis.
2. Disconnect brake hose fitting (4) and washer (5) at master cylinder (6) bottom and drain fluid from reservoir. Disconnect brake hose elbow (7) from grommet (8). Remove grommet.
3. Remove mounting screws (9), washers (10), spacers (11) and nuts (12). Master cylinder (6) may now be removed and disassembled on a clean work bench.
4. Remove push rod (13) and dust cover (14).
5. Remove retaining ring (15), piston (16), O-ring (17) and spring (18).

CLEANING, INSPECTION AND REPAIR (Figure 5-83)

WARNING

Clean brake system components in denatured alcohol or brake fluid DO NOT use mineral base cleaning solvents such as gasoline or paint thinner. Use of mineral base solvents causes deterioration of rubber parts that continues after assembly and can result in component failure.

1. Inspect piston cup and piston (11) for softening, enlarging or wear. Replace piston if necessary.
2. Inspect cylinder bore for scratches and grooves. Replace if necessary.
3. Be sure push rod (11) and pedal assembly are not bent. Bent parts should be replaced

ASSEMBLY/INSTALLATION (Figure 5-83)

1. Dip all master cylinder internal parts in D.O.T. 3 HYDRAULIC BRAKE FLUID.
2. Install O-ring (17) on piston (16). Install spring (18), and insert into master cylinder bore. Install retaining ring (15) and push rod (13).
3. Install master cylinder on motorcycle using bolts (9), washers (10), spacers (11) and nuts (12).
4. Install grommet (8) and brake hose elbow (7).
5. Install brake line (4) and washer (5). Tighten fitting to 70-80 in-lbs torque. Install jamnut (1), clevis (3) and clevis pin (2).
6. Fill reservoir with D.O.T. 3 HYDRAULIC BRAKE FLUID and bleed system following the procedure outlined under BLEEDING THE HYDRAULIC BRAKE SYSTEM.
7. Check and adjust brake pedal height and push rod free play as described under ADJUSTMENT given earlier.

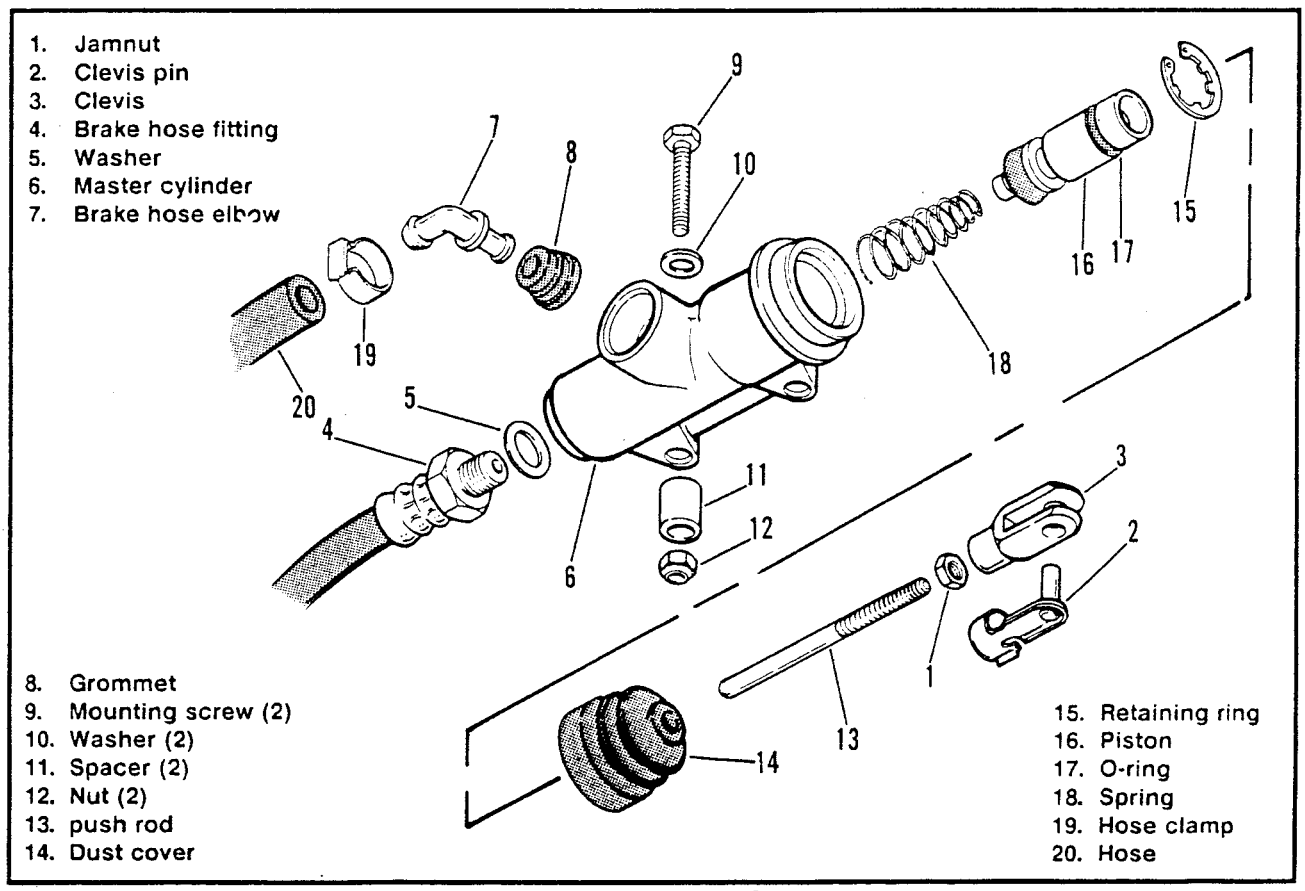


Figure 5-83. Rear Brake Control

BRAKE PAD REPLACEMENT

REMOVAL (Figure 5-84)

NOTE

The brake calipers do not have to be removed to replace the brake pads. However, before replacing ONLY the pads, inspect the assembly and be sure the other components do not need replacement.

WARNING

Brake pads must be replaced only in sets for correct and safe brake operation.

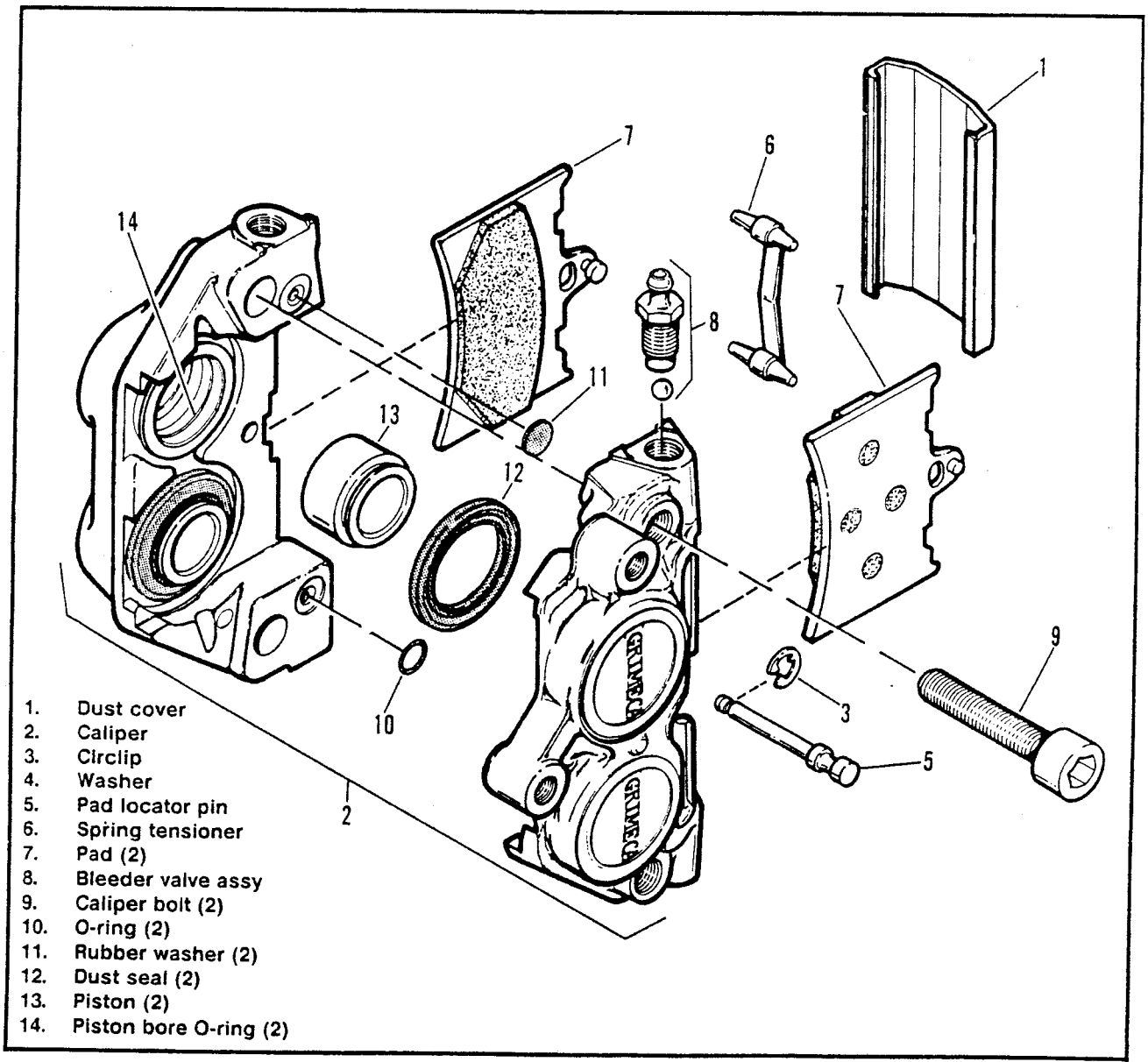
1. Use a screwdriver to remove dust cover (1) from caliper (2).
2. Remove circlip (3) and washer (4) from pad locator pin (5).
3. Remove spring tensioner (6).
4. Slide pads (7) out of caliper halves.

INSTALLATION

1. Slide pads into position in caliper.
2. Install spring tensioner.
3. Install pad locator pin (5). Be sure pin is ON TOP of the spring tensioner. Install washer and circlip on pin.
4. Snap dust cover into place on caliper.

FRONT BRAKE CALIPER REMOVAL

1. Disconnect brake line fitting and drain brake fluid.
2. Remove retaining bolts and washers.
3. Remove caliper.



1. Dust cover
2. Caliper
3. Circlip
4. Washer
5. Pad locator pin
6. Spring tensioner
7. Pad (2)
8. Bleeder valve assy
9. Caliper bolt (2)
10. O-ring (2)
11. Rubber washer (2)
12. Dust seal (2)
13. Piston (2)
14. Piston bore O-ring (2)

Figure 5-84. Brake Caliper

FRONT BRAKE CALIPER INSTALLATION

1. Place caliper in position on fork leg and install retaining bolts and washers. Tighten to 28 ft-lbs torque.
2. Install brake line fitting.
3. Fill with D.O.T. 3 brake fluid and bleed the brake line. See BLEEDING THE HYDRAULIC BRAKE SYSTEM.

REAR BRAKE CALIPER REMOVAL

1. Disconnect brake line banjo bolt and drain brake fluid. If necessary, remove brake line clamp screw.
2. Remove retaining bolts, washers and locknuts.
3. Remove caliper.

REAR BRAKE CALIPER INSTALLATION

1. Place caliper in position on brake torque arm and install retaining bolts, washers and locknuts. Tighten to 28 ft-lbs torque.
2. Install brake line banjo bolt.
3. Fill with D.O.T. 3 brake fluid and bleed the brake line. See BLEEDING THE HYDRAULIC BRAKE SYSTEM.

BRAKE CALIPER DISASSEMBLY (Front & rear) (Figure 8-84)

1. Remove caliper. See CALIPER REMOVAL.
2. Remove caliper bolts (9) and seperate the the caliper halves. Use a catch basin to catch remaining brake fluid.
3. Remove O-rings (10) and rubber washer (11).
4. Remove dust seal(s) (12).
5. Use internal expanding pliers and remove the pistons (13).
6. Remove piston bore O-ring(s) (14).

CLEANING, INSPECTION AND REPAIR

1. If the brake pad friction material is worn to 1/16 in. or less, replace the pads as a set.
2. Replace any parts that appear worn or damaged. Always replace dust seal if piston is removed.

WARNING

Always use alcohol for cleaning metal parts. DO NOT use gasoline or other flammable substances.

3. Clean all metal parts with alcohol and blow dry with compressed air.

WARNING

Always clean brake system rubber parts by washing in denatured alcohol or D.O.T. 3 Hydraulic Brake Fluid. DO NOT use mineral base cleaning solvents such as gasoline or paint thinner. Use of mineral base solvents will cause deterioration of the parts. Parts would continue to deteriorate after assembly which could result in component failure.

4. Clean all rubber parts in denatured alcohol or brake fluid.

BRAKE CALIPER ASSEMBLY (Figure 8-84)

CAUTION

Lubricate all parts in D.O.T. 3 Hydraulic Brake Fluid before assembly. This will ease assembly and help ensure parts are not damaged during assembly.

1. Install piston bore O-ring(s) (15). Be sure they are seated in their grooves.
2. Install pistons (14).
3. Install dust seal(s) (13).
4. Install O-rings (11) and rubber washer (12).
5. Install caliper bolts (10). Tighten front caliper bolts to 35 ft-lbs torque. Tighten rear caliper bolts to 25 ft-lbs torque.
6. Install caliper. See FRONT or REAR BRAKE CALIPER INSTALLATION.

SUBJECT PAGE NO.

ACCESSORIES / INDEX

SPECIFICATIONS - ACCESSORIES

1. Pannier

Material: Rotomolded, Crosslink Polyethelyne
Size: 136 mm (5.35") Tall x 463.5 mm (18.25") Deep,
x 368 mm (14.5") Wide, Each.
Capacity: 15kg. (33 lbs.) Per Bag. 2 Bags Per Bike.
Approximately 5.5 l (1.5 gal.) Liquid Volume Each.
Location: Front Mounted Bags One Right and One Left Hand.

2. Rear Carrier Rack

Welded Tubular Steel Structure.
241 mm (9.5") x 136 mm (15") Top Surface Area.
15 kg (33 lbs.) Maximum Carrying Capacity.

3. Gun Box

Material: Rotomolded, Crosslink Polyethelene.
Capacity: One SA80 Firearm (Custom Made To Fit).
Location: Rear Right Hand Side Of Vehicle.

PANNIER, REAR RACK, & GUN MOUNT

GENERAL

Pannier

The pannier Boxes are front mounted for better vehicle stability, handling & control. They are durable, impact resistant, easily and quickly removable and are fastened by a rubber "T" handle latch. The Latches' are easily unfastened and remain with the bike when the panniers are removed. Each pannier's lock is located in the approximate middle of the lid, under the handle, and is locked and unlocked with the ignition key.

Rear Carrier Rack

The rear carrier rack is designed to carry a 15kg load, strapped or bungee corded to the top surface. A warning label is directly below the carrier on the rear fender, for loading instructions.

Gun Box

The gun box mounted on the right hand rear side of the bike is specifically designed for the SA80 firearm used by the United Kingdom military. Attempting to carry any other firearm or other material could cause damage to the box and/or the firearm/material. The gunbox is removable, bur it is recommended that the hardware not be remounted without the box too the bike after removing the gun box. The lid of this box uses a semi-hard foam which applies pressure which locate and fix the firearm in place when the lid is closed and fastened. The lid is fastened by a rubber "T" handle latch. This latch should be fastened at all times, except when removing or inserting the firearm.

Loading Instructions

The maximum weight limit is 15 kg (33 lbs.) for each pannier and 15 kgs (33 lbs.) for the rear carrier. Loads should be evenly distributed favoring the front of the vehicle. Load panniers as evenly as possible left to right and then place excess on the rear also as evenly as possible to the center of the vehicle, being careful not to exceed 15 kg at any one of these three load carrying points of the bike.

Disassembly

Pannier mount (refer to figure 6-1)

1. Place bike on the center stand or bike lift.
2. Removal bolt (13), button head cap screw (10) attaching lower center support (20) to both donuts (9). Remove center support (20) forward and down.
3. Remove four bolts (58) from support tubes (31A, 31B) Remove right and left support tubes (31A, 31B).
4. Remove frame nuts in lower L.H. mount (17), push frame bolt out of R.H. lower mount (18) & R.H. upper mount (16). Remove pannier mount assy. (16-20) forward and down.

Assembly

1. Loosen but do not remove twelve screws (10) remaining on both donuts (9).
2. Reverse disassembly instructions above for assembly after all parts are assembled, tighten all fastener to proper torques (See torque table on page 6-5).

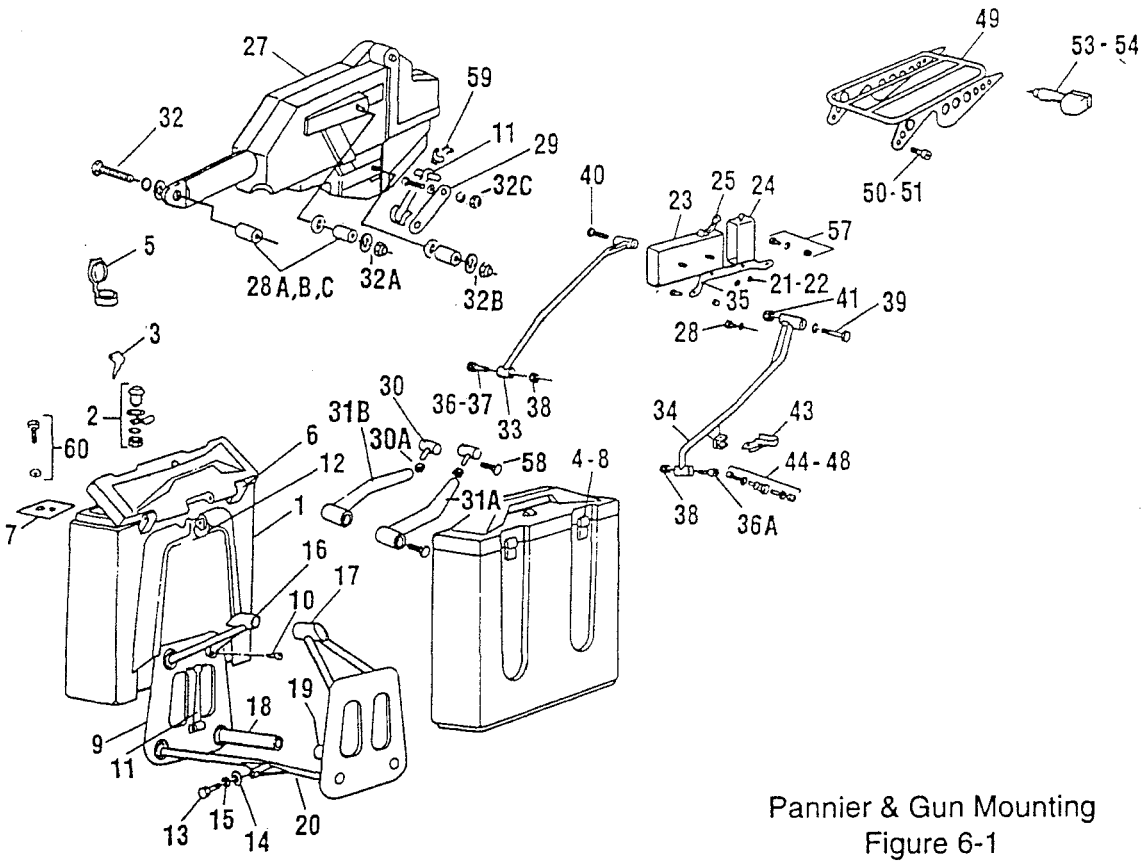
Disassembly

Rear Carrier Rack

1. Disconnect rear indicator light cables (under seat on right side) and remove any tye wraps.
2. Remove four nut, bolt, & washer (50-52), remove rack (49).

Assembly

1. Reverse disassembly instructions above for assembly after all parts are assembled, tighten all fastener to proper torques (See torque tables on page 6-5).



Pannier & Gun Mounting
Figure 6-1

1 Pannier Box, Green
2 Lock Assembly
3 Key
4 Latch
5 Key Cover
6 Hinge Bolt
7 Support Plate w/Decal
8 Rivet
9 Donut
Washers M6
10 Button Head Cap Screw M6X16
11 Hold Down Strap Assy.
12 Capscrew M6X16
13 Lower Ctr Bolt M8X65 HH
14 Plain Washer M8
15 Lock Washer M8
16 Mount, Front Upper RH
17 Mount, Front Upper LH
18 Mount, Front Lower RH
19 Mount, Front Lower LH
20 Mount Center
21 Nut, Self Locking M6
22 Plain Washer M6
23 Toolbox Body
24 Toolbox Lid
25 Rubber Strap
27 Plastic Gun Scabbard
28A Spacer 1 Lower Front 1.97 Inch
28B Spacer 2 Mid. Lower 1.10 Inch
28C Spacer 3 Rear 1.77 Inch
Latch T
29 Scabbard Mounting Plate
30 Support Tube, End
30A Jam Nut
31A LH Support Tube, Grn.
31B RH Support Tube, Grn.
32 Scabbard Mounting
Bolt Hex M8X90
Washer Car Body M8
Lockwasher M8
32A Hex Head Bolt M8X100
Washer Car Body M8
Flat Washer M8
Nut Self Locking M8
32B Hex Head Bolt M8X60
Washer Car Body M8
Flat Washer M8
Nut, Self Locking M8
32C Hex Head Bolt M8X65
Washer Car Body M8
Nut Self Locking M8
33 RH Strut Tube
34 LH Strut Tube
35 Tool Box Bracket
36A Front Soc HD Bolt LH M8X25
36 Front Hex HD Bolt RH M8X100
37 Flat Washer M8
38 Nut, Locking M8
39 Rear Hex Head Bolt M10X90
Washer M10
40 Hex Head Screw M10X60
41 M10 Lock Nut
FLT Washer M10
43A RH Foot Peg
43B LH Foot Peg
44 Hex Bolt M8X50
45 Flat Washer M8
46 Nut M8
48 Long Spacer M8X.97 Inches
49 Rear Carrier
50 Socket Head Cap Screw M8X20
51 Flat Washer M8
52 Nut, Self Locking M8
53 See Plate 10 (LH Indicator)
54 See Plate 10 (RH Indicator)
57 Hex Head Bolt M6X16
Flat Washer M6
Lock Nut M6
Car Body Washer M6
58 Hex Head Bolt M8X45
Flat Washer M8
Lock Nut M8
59 Button Head Cap Screw M6X16
Flat Washer M6
60 Button Head Cap Screw M6X16
Flat Washer M6

6-3 GUN BOX

CAUTION

This gun box is the approved method for carrying the SA 80 weapon. If any other weapon is carried in the gun box, either the gun box or the weapon or both will be damaged.

1. See Figure 6-2. Pull rubber "T" strap (1) up and away from receptacle (4). Open gun box cover (3). Remove weapon.

2. To close gun box cover place cover (3) on gun box (2). Stetch rubber "T" strap (1) up and over recepticle (4).

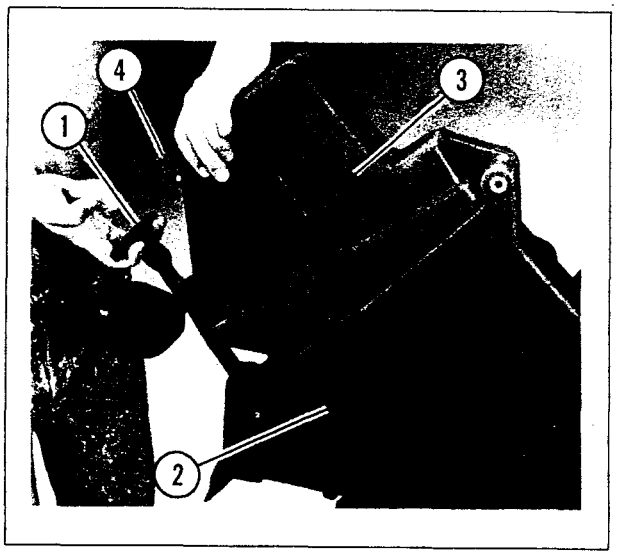


Figure 6-2. Gun Box

6-4 PANNIER

WARNING

Maximum load is 7.5 kg per pannier. Maximum load on rear carrier is 20 kg. Distribute loads evenly left to right. Failure to comply could result in vehicle instability and injury.

1. See Figure 6-3. Remove pannier (1) from vehicle by pulling rubber "T" strap (4) up and away from receptacle (3). Lift pannier (1) up and off pannier retaining bracket (5).

2. Install pannier (1) on vehicle by aligning pannier retainer groove (2) with pannier retaining bracket (5). Slide pannier (1) down until it seats firmly on pannier retaining bracket (5). Stretch rubber "T" strap (4) up and over receptacle (3).

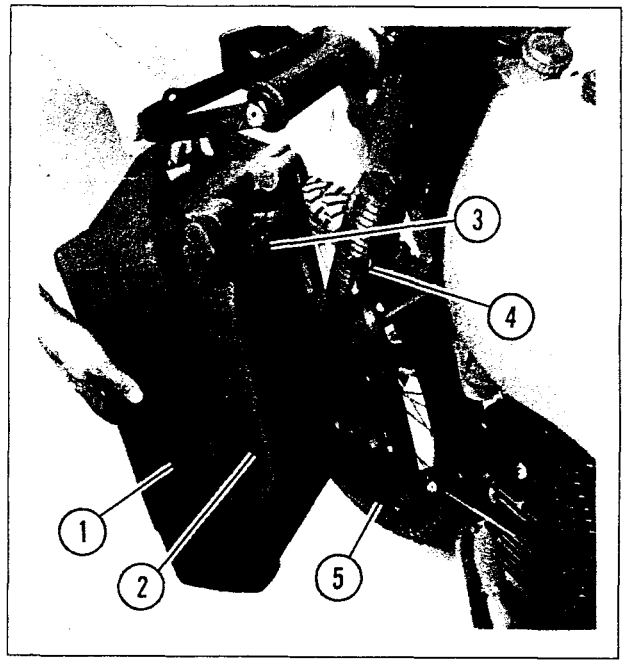


Figure 6-3. Pannier

TORQUE TABLE

PAGE	LOCATION/DESCRIPTION	TORQUE VALUES	
		N m	Ft-lbs
2-6	CYLINDER HEAD NUT M10	35 N m	26 Ft-lbs
	CYLINDER HEAD NUT M8	20 N m	15 Ft-lbs
	FLYWHEEL NUT	100 N m	74 Ft-lbs
	GEARBOX SPROCKET NUT	100 N m	74 Ft-lbs
	KICKSTARTER STOP HEX SCREW	75 N m	55 Ft-lbs
	CLUTCH SHAFT NUT	120 N m	89 Ft-lbs
	COUNTERSHAFT NUT	60 N m	44 Ft-lbs
	TIMING PULLEY NUT, 15 TOOTH	100 N m	74 Ft-lbs
	TIMING PULLEY NUT, 30 TOOTH	35 N m	26 Ft-lbs
2-63	TRANSMISSION SPROCKET RETAINING NUT	100 N m	75 Ft-lbs
	DRIVE SPROCKET MOUNTING BOLTS	24 N m	18 Ft-lbs
2-64	DOWNTUBE DRAIN PLUG	20 N m	15 Ft-lbs
	ENGINE CRANKCASE DRAIN PLUG	20 N m	15 Ft-lbs
	FILTER COVER SCREWS	8 N m	6 Ft-lbs
3-19	MUFFLER MOUNTING BOLT M10	51 N m	38 Ft-lbs
	EXHAUST/MUFFLER CLAMP BOLT M8	20 N m	15 Ft-lbs
	EXHAUST ENGINE NUT	24 N m	18 Ft-lbs
	EXHAUST MANIFOLD CLAMP BOLT M6	12 N m	9 Ft-lbs
	HEAT SHIELD SCREW M6	10 N m	7.5 Ft-lbs
4-3	FLYWHEEL RETAINING NUT	95 N m	70 Ft-lbs
	MAGNETO COVER SCREWS	10 N m	7 Ft-lbs
	STATOR ASSEMBLY SCREWS	8 N m	6 Ft-lbs
5-5	DAMPER RETAINING BOLT	14 N m	10 Ft-lbs
	SIDESTAND PIVOT BOLT/NUT	27 N m	20 Ft-lbs
	SWING ARM PIVOT NUT	68 N m	50 Ft-lbs
5-11	FRONT AXLE NUT	68 N m	50 Ft-lbs
	UPPER YOKE STEERING STEM PINCH BOLT	20-27 N m	15-20 Ft-lbs
	HANDLEBAR CLAMP, BOLT M8	24-27 N m	18-20 Ft-lbs
	PINCH BOLT	24 N m	18 Ft-lbs
	SPINDLE CLAMP NUT/STUD	14 N m	10 Ft-lbs
	STEERING STEM NUT	102 N m	75 Ft-lbs
	MAIN FORK RETAINING SCREW	61 N m	45 Ft-lbs
	OIL DRAIN SCREW	11 N m	8 Ft-lbs
	STEERING STEM PINCH SCREW M8	24 N m	18 Ft-lbs
	HANDLEBAR CLAMP, BOLT M10	51 N m	38 Ft-lbs

TORQUE TABLE

PAGE	LOCATION/DESCRIPTION	TORQUE VALUES	
		N m	Ft-lbs
5-23	SEAT BRACKET SCREWS	8 N m	6 Ft-lbs
	FENDER RETAINING SCREWS	8 N m	6 Ft-lbs
	HEADLAMP RETAINING SCREWS	6.8 N m	5 Ft-lbs
	INDICATOR LIGHT JAM NUT	41 N m	30 Ft-lbs
5-43	BRAKE DISC SCREWS	14-16 N m	10-12 Ft-lbs
	FRONT AXLE	68 N m	50 Ft-lbs
	REAR AXLE NUT	68-81 N m	50-60 Ft-lbs
	CALIPER MOUNTING BOLT	27 N m	20 Ft-lbs
FIGURE			
5-37	ITEM #24	7 N m	5 Ft-lbs
5-37	ITEM #53	7 N m	5 Ft-lbs
2-122	ITEM #9	20 N m	15 Ft-lbs

FOR ALL OTHER FASTENERS NOT SPECIFIED ABOVE, USE FOLLOWING VALUES FOR STANDARD SIZES:

M5.....	7-8 N m	5-6 Ft-lbs
M6.....	11-14 N m	8-10 Ft-lbs
M8.....	24-27 N m	18-20 Ft-lbs
M10.....	51-54 N m	38-40 Ft-lbs

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ARMY EQUIPMENT
SUPPORT PUBLICATION

2340-H-200-302

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Date .....

Title of AESP - Motor Cycle, General Purpose Harley Davidson

COMMENT

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TO: .....

.....

.....

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London SE18 4QA

Thank you for commenting on AESP 2340-H-200-302

* Action is being taken to:

  * (i) Revise the AESP
  * (ii) Amend the AESP

* No action is considered necessary for the following reasons:

*Delete as necessary

Signed .....

AESP Form 10

Date .....

ARMY EQUIPMENT
SUPPORT PUBLICATION

2340-H-200-601
October 1993

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MOTORCYCLE, GENERAL PURPOSE,

HARLEY-DAVIDSON

MAINTENANCE SCHEDULE

(JOINT SERVICE)

REPRINTED INCORPORATING AMDTS 1-6

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AMENDMENT RECORD

Amdt No.	Incorporated By (Signature)	Date	Amdt No.	Incorporated By (Signature)	Date
1	[redacted]	20-12-96	32		
2	[redacted]	20-12-96	33		
3	[redacted]	10/11/97	34		
4	[redacted]	12/10/98	35		
5	[redacted]	4/9/00	36		
6	[redacted]	10/3/03	37		
7			38		
8			39		
9			40		
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PRELIMINARY MATERIAL

PREFACE

Sponsor:
DGES(A)
File ref: Tpt Eng (RAF)

Publications Approving Authority:
Vehs & Wpns Br REME
Project No: ES52c(2) 4104(114)
File ref: DGES(A)/548/1/4

INTRODUCTION

1 Service users should forward any comments on this publication through the channels prescribed in AESP 0100-P-011-013. An AESP Form 10 is provided at the end of this publication; it should be photocopied and used for forwarding comments on this AESP.

2. The subject matter of this publication may be affected by Defence Council Instructions (DCIs), Standing Operating Procedures (SOPs) or by local regulations. When any such instruction, Order or regulation contradicts any portion of this publication it is to be taken as the overriding authority.

RELATED AND ASSOCIATED PUBLICATIONS

Related publications

3 The Octad for the subject equipment consists of the publications shown below. All references are prefixed with the first eight digits of this publication. The availability of the publications can be checked by reference to the relevant Group Index (see AESP 0100-A-001-013).

CATEGORIES AND INFORMATION LEVELS																	
Category	1	2			3	4		5				6		7		8	
Level	0	0	1	2	0	1	2	1	2	3	4	0	1	1	2	1	2
1 USER/OPERATOR	101	201	•	•	•	•	•	•	•	•	•	601	•	711	•	•	•
2 UNIT MAINTENANCE	•	•	•	•	302	•	•	512	522	•	•	•	•	711	•	•	•
3 FIELD MAINTENANCE	•	•	•	•	•	•	•	512	522	•	•	•	•	•	•	•	•
4 BASE MAINTENANCE	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

1.0 Purpose & Planning Information
2.0 Operating Information
2.1 Special to Arms
2.2 Training Aids
3.0 Technical Description
4.1 Installation Instructions
4.2 Prep for Special Environments
5.1 Failure Diagnosis
5.2 Repair Instructions
5.3 Inspection Standards
5.4 Calibration Procedures
6.0 Maintenance Schedules
6.1 Maintenance Schedules (RAF)
7.1 Illustrated Parts Catalogue
7.2 Commercial Parts List
8.1 Modification Instructions
8.2 General Instructions

• Not published

Associated publications

4	Reference	Title
	JSP 341	Road Transport Regulations
	AP 3260 Book 1	Mechanical Transport Maintenance Regulations for the Royal Air Force
	AP 4545 Volume 2	Mechanical Transport - General Orders and Modifications (RAF only)

ARMY EQUIPMENT
SUPPORT PUBLICATION

2340-H-200-601

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AESP Form 10 (Issue 4.1 dated Aug 99)

MAINTENANCE SCHEDULE

Introduction

1 This Maintenance Schedule is the authority for carrying out all scheduled maintenance tasks on the subject equipment and takes precedence over any other conflicting publication.

2 The Unit Commander/MT Officer is responsible for ensuring that the operations detailed in this Maintenance Schedule are properly carried out. He may order any operation to be carried out more frequently than is specified if the conditions under which the equipment operates render it necessary. For Army equipment he should consult his REME advisor before ordering such changes.

3 Scheduled Maintenance is to be recorded in the appropriate equipment document in accordance with JSP 341, Chap 16, and AP 3260, Book 1, Chap 3 (RAF only).

4 Serial numbers left blank in the tables may be taken up by amendment action at a later date.

Definitions

5 As far as this document is concerned, the following definitions apply:

5.1 Examine. Carry out a survey of the condition of an item. For example, the condition of an item can be impaired by the following:

NOTE

The term Examine does not call for dismantling unless specifically instructed to do so in the relevant Operation.

5.1.1 Insecurity of attachment.

5.1.2 Cracks or fractures.

5.1.3 Corrosion, contamination or deterioration.

5.1.4 Distortion.

5.1.5 Loose or missing fasteners.

5.1.6 Chafing, fraying, scoring or wear.

5.1.7 Faulty or broken locking devices.

5.1.8 Loose clips or packing, obstruction of, or leakage from pipelines.

5.1.9 Discolouration due to overheating or leakage of fluids.

5.1.10 Damage due to external sources.

5.2 Check. Make a comparison of measurement of time, pressure, temperature, resistance, dimension or other quantity, with a known figure.

5.3 Operate. As far as possible, ascertain that a component or system functions correctly without the use of test equipment or reference to measurement.

5.4 Replenish. Refill a container to a pre-determined level, pressure or quantity, this includes any necessary cleaning of orifices, examination of caps, covers, gaskets and washers, renewal of locking devices and clearing of vents.

5.5 Replace. Remove an item and then fit a new or reconditioned item.

Warnings, Cautions and Maintenance Notes

6 Before any maintenance task is carried out, the WARNINGS, CAUTIONS and Maintenance Notes preceding the appropriate Table must be read and understood.

Maintenance Intervals and Areas of Responsibility

7 Table 4 - Action on Receipt. The maintenance detailed in Table 4 covers the action taken when the equipment arrives on a unit. These operations will normally be of a once-only nature, eg the recording of lifting equipment with the appropriate test authority, actions that are necessary to be undertaken before the equipment is put into service or actions that are only required during the running in period. The tasks are to be carried out by the Tradesmen annotated against the operation.

8 Table 5 - Out of Phase Maintenance. The maintenance detailed in Table 5 covers tasks that do not fall into line with the manufacturer's standard time/usage intervals. The tasks are to be carried out by REME, RAF MT Mechanic/Technician, General Electrical Mechanic/Technician or Qualified Tradesmen unless annotated otherwise.

9 Table 6 - Driver/Operator Maintenance

9.1 The maintenance detailed in Table 6, Columns A, B and C is to be carried out by the driver/operator or their civilian equivalent at the following intervals:

9.1.1 A - Daily before use (only on days used).

9.1.2 B - Daily after use (after the equipment has been operated).

9.1.3 C - Weekly whether the equipment is used or not.

9.2 The maintenance detailed in Table 6, Column D is to be carried out by an Army Driver Class 1 or RAF NCO Driver, Qualified Tradesman or their civilian equivalent at least every 3 months.

10 Table 7 - Time/Usage Maintenance

10.1 The maintenance detailed in Table 7, Columns 1st, A, B and C is to be carried out at the following intervals:

10.1.1 1st (RAF Initial) - After the first 500 miles (800 km).

10.1.2 A (RAF Lubrication) - Every 2500 miles (4000 km) or 6 months whichever occurs first.

10.1.3 B (RAF Minor) - Every 5000 miles (8000 km) or 12 months whichever occurs first.

10.1.4 C (RAF Major) - Every 10000 miles (16000 km) or 24 months whichever occurs first.

10.1.5 Column D contains the Area Maintenance indicator which may be used, at the discretion of the Unit Commander or MT Officer, to carry out Area Maintenance at the appropriate time/usage intervals.

NOTES (RAF only)

(1) Vehicles that do less than 6000 miles annually and are on Area Maintenance are to have a Lubrication Maintenance at 6 monthly intervals in accordance with AP 3260, Chapter 3.

(2) The number in the Area Maintenance column indicates which Area is to be carried out.

(3) The Area Maintenance detailed is to be carried out in conjunction with its associated prime mover/specialist equipment scheduled maintenance if applicable.

10.2 The maintenance detailed in Table 7 will be carried out by:

10.2.1 REME Vehicle Mechanic (VM) where annotated (VM) in the table.

10.2.2 Unit appointed personnel, supervised by an Army Class 1 Driver. Where it is specifically indicated (VM), the task should be undertaken by a REME tradesman.

10.2.3 RAF MT Mechanic/Technician or General Mechanic/Technician Electrical as appropriate to the operation.

10.2.4 Qualified Tradesman (QT) - A person is qualified to carry out any task designated 'QT' when he/she has been formally taught how to carry out that task during a trade training course.

10.2.5 The civilian equivalent of the above tradesmen.

11 Table 8 - Out of Use Maintenance

11.1 For RAF equipment, Out of use vehicles or vehicles in Second Echelon are to be maintained in accordance with AP 3260, Book 1, Chap 1, Para 9 and Chap 2, Para 27. Any specific operation appertaining to this equipment will be listed in Table 8.

11.2 For Army equipment, this maintenance is to be carried out as follows:

11.3 When the equipment is taken out of use for periods exceeding one month on the advice of the local REME advisor/MT Officer.

11.3.1 Any equipment taken out of use for periods exceeding 4 months is to be put into preservation in accordance with EMER Wheeled Vehicles A 019 Miscellaneous Instruction No 9.

11.3.2 The equipment is to be cleaned, dried and stored under cover where possible.

11.3.3 Any overdue maintenance is to be carried out when the equipment is brought back into use.

TABLE 1 EQUIPMENT APPLICABILITY

Ser No (1)	Equipment Asset Code (2)	Designation (3)	Contract Numbers (4)
1	1010-4105	Motorcycle, general purpose, left hand dip (Harley Davidson)	
2	1010-9103	Motorcycle, general purpose, right hand dip (Harley Davidson)	

TABLE 2 FUELS, LUBRICANTS AND ASSOCIATED PRODUCTS

NOTES

(1) Only the products listed below are to be used on this equipment.

(2) Oil changes at the -15 deg C point shall only be made on the advice of the MT Officer.

(3) The capacities listed are to be used as a guide only. A physical check is to be carried out to ensure that all fluid levels are correct. This check should be carried out with the vehicle unladen and standing on level ground whenever possible.

Ser	Assembly/System	Product		Capacity	
		Above -15 deg C	Below -15 deg C	Litres	Pints
(1)	(2)	(3)	(4)	(5)	(6)
1	Oil tank	OMD 90	OMD 90	3.2	6.0
2	Front forks (each leg)	OM 33	OM 33	0.5	0.75
3	Drive chain	OMD 90	OMD 90	-	-
4	Swinging arm	XG 279	XG 279	-	-
5	Oil can lubrication	OMD 90	OMD 90	-	-
6	General greasing	XG 279	XG 279	-	-
7	Fuel tank	Civgas	Civgas	13.0	23.0
8	Brake reservoir	OX 8	OX 8	-	-
9	Battery terminals	PX7	PX7	-	-

TABLE 3 EQUIPMENT DATA

Ser (1)	Item (2)	Detail (3)	
	ADJUSTMENTS		
1	Sparking plug gap	0.7 mm	(0.028 in.)
2	Drive chain free play on engine stand Drive chain free play on sidestand	55-65 mm 10-15 mm	(2.2-2.6 in.) (0.4-0.6 in.)
3	Clutch free play	3-5 mm (at lever tip)	(0.12-0.20 in.)
4	Rear brake free play	1.6 mm (at pedal)	(0.063 in.)
5	Valve clearance (cold)	Exhaust 0.05 mm Inlet 0.05 mm	 (0.0020 in) (0.0020 in.)
6	Timing belt deflection	7 mm	(0.275 in.)
	TORQUE WRENCH SETTINGS		
7	Swinging arm nut	56 Nm	(41.3 lbf ft)
8	Front wheel spindle nut	67 Nm	(50 lbf ft)
9	Brake torque arm nuts		
10	Cylinder head nuts	M8 20 Nm M10 35 Nm	(15 lbf ft) (26 lbf ft)
11	Rear brake disc screws	16-24 Nm	(12-18 lbf ft)
	TYRES		
12	Tyre pressures	Front 1.5 bar (22 lbf/in^2)	Rear 1.7 bar (24 lbf/in^2)
13	Unladen weight	161 kg	(354 lb)

TABLE 4 ACTION ON RECEIPT

Table 4 Maintenance is to be carried out in accordance with the instructions shown at Page 2, Para 6 and 7.

Ser (1)	Action (2)
1	NOT TAKEN UP

TABLE 5 OUT OF PHASE MAINTENANCE

Ser (1)	Action (2)	Interval (3)
1	Renew engine timing belt	Every 14,000 miles (22,500 kms)

TABLE 6 DRIVER/OPERATOR MAINTENANCE

Table 6 Maintenance is to be carried out by the tradesmen and at the intervals shown at Page 2, Para 9.1 and 9.2 of this publication.

The following WARNINGS, CAUTIONS and Maintenance Note must be read and understood before commencing these maintenance tasks.

WARNINGS

(1) PERSONAL INJURY. ALL PERSONNEL ARE TO CONSULT THEIR CONTROL OF SUBSTANCES HAZARDOUS TO HEALTH (COSHH) REGULATIONS BEFORE CARRYING OUT ANY MAINTENANCE OR REPLENISHMENT ON THIS VEHICLE AND WEAR THE APPROPRIATE CLOTHING/BARRIER CREAM.

(2) PERSONAL INJURY. DO NOT INHALE THE DUST FROM THE CLUTCH OR BRAKE LININGS OR USE COMPRESSED AIR TO CLEAN AWAY THE DUST.

CAUTIONS

(1) Before starting the motorcycle, ensure that the steering is unlocked.

(2) Since the engine cooling is only effective whilst the motorcycle is in motion, DO NOT allow the engine to idle unnecessarily.

MAINTENANCE NOTES

(1) Check that the oil is circulating and being returned to the reservoir by looking through the filler neck. If no oil appears within 20 seconds, stop engine and investigate.

(2) Brake fluid levels must be checked with reservoirs as level as possible.

Ser	Task	Maintenance Interval			
		A	B	C	D
(1)	(2)	(3)	(4)	(5)	(6)
1	Ensure that the motorcycle has sufficient fuel and oil for the journey or task. (See Maintenance Note).	X			X
2	Examine the motorcycle for obvious damage.	X	X		X
3	Driving controls: Examine for security of attachments and operate.	X			X
4	Rear view mirrors: Examine for cracks, deterioration of reflective surface and security of attachments.	X			X
5	Horn, lamps direction indicators, warning lamps, instruments, gauges: Operate.	X			X
6	Tyres: Check tread depth and for cuts and other damage.	X			X
7	Tyre pressures: Check.	X			X
8	Brakes and steering: Examine for security of attachment and operate.	X			X
9	Drive chain: Check adjustment, lubricate.			X	X
10	Panniers: Examine, check for security of attachment.	X			X
11	Battery: Examine terminals for security of attachment, check electrolyte level, replenish as required.			X	X
12	Front wheel axle nuts: Check tightness.			X	X

TABLE 6 DRIVER/OPERATOR MAINTENANCE (continued)

Ser	Task	Maintenance Interval			
		A	B	C	D
(1)	(2)	(3)	(4)	(5)	(6)
13	Drive sprocket: Check for wear.			X	
14	Examine the motorcycle for fluid leaks.		X		X
15	Brakes: Front and rear reservoir check level and replenish (See Maintenance Note 2).	X		X	
16	After off road use: Remove plastic brake disc guards and pressure wash brakes to remove mud, dirt, sand etc, replace guards.		X		
17					
18					
19					
20	F 658A (MT ON DETACHMENT DUTY) or F 814 (VEHICLE RUNNING RECORD) as appropriate: Sign.		X		
21	CES Equipment: Examine for serviceability and correct stowage.				X
22	AF G1084 (Worksheet): Sign.				X

TABLE 7 TIME/USAGE MAINTENANCE

Table 7 Maintenance is to be carried out by the tradesmen and at the intervals shown at Pages 2 and 3, Para 10.1 and 10.2 of this publication.

The following WARNINGS and Maintenance Note must be read and understood before commencing these maintenance tasks.

WARNINGS

(1) PERSONAL INJURY. ALL PERSONNEL ARE TO CONSULT THEIR CONTROL OF SUBSTANCES HAZARDOUS TO HEALTH (COSHH) REGULATIONS BEFORE CARRYING OUT ANY MAINTENANCE OR REPLENISHMENT ON THIS VEHICLE AND WEAR THE APPROPRIATE CLOTHING/BARRIER CREAM.

(2) PERSONAL INJURY. DO NOT INHALE THE DUST FROM THE CLUTCH OR BRAKE LININGS OR USE COMPRESSED AIR TO CLEAN AWAY THE DUST.

MAINTENANCE NOTES

(1) When the engine oil secondary filter is renewed, the safety valve in the filter housing must be checked for freedom of operation.

(2) If the brake pad friction material is worn to 1.6mm (1/16 in.) or less they should be replaced.

(3) Brake pedal height adjustment is detailed in AESP 2340-H-200-302, section 5, page 50, and AESP 2340-H-200-201, section 5-10, page 5-22.

Ser	Task	Fig No	Prod	Maintenance Period				
				1st	A	B	C	D
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	ENGINE							
1	Engine sump: Drain and replenish.	8	OMD 90	X	X	X	X	
2	Oil feed pipelines: Examine for leaks, chafing and security of attachment.			X		X	X	
3	Engine oil filters: Replace. (See Maintenance Note 1).	9		X	X	X	X	
4	Engine oil strainer: Remove, clean and refit.					X	X	
5	Air filter: Remove, clean and refit.					X	X	
6	Fuel system: Examine for leaks.			X	X	X	X	
7	Fuel valve strainer: Remove, clean and refit. (VM).			X		X	X	
8	Carburettor air muff: Examine for security of attachment.			X	X	X	X	
9	Engine idling speed: Check and adjust as necessary. (VM).			X	X	X	X	
10	Ignition timing: Check and adjust as necessary. (VM).			X		X	X	
11	Cylinder head nuts: Check tightness.			X			X	
12	Tappets: Check and adjust as necessary. (VM).			X			X	
13	Timing belt: Check and adjust as necessary. (VM).			X			X	

(continued)

TABLE 7 TIME/USAGE MAINTENANCE (continued)

Ser	Task	Fig No	Prod	Maintenance Period				
				1st	A	B	C	D
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
14	Exhaust system: Examine for security of attachment.			X		X	X	
15	Cooling fins: Examine for damage and blocked fins.			X		X	X	
16	Spark plugs: Check and adjust. (VM).					X	X	
17								
18								
19								
	STEERING AND SUSPENSION							
20	Handlebars: Examine for damage and security of attachment.			X	X	X	X	
21	Front forks: Examine for damage, leaks and security of attachment.			X	X	X	X	
22	Front forks: Drain and replenish. Check alignment.		OM 33	X			X	
23	Front forks: Examine for correct adjustment.			X		X	X	
24	Steering head bearings: Check and adjust as necessary.			X		X	X	
25	Swinging arm: Examine for damage and security of attachment.		XG 279	X	X	X	X	
26	Shock absorbers: Examine for damage, leaks and security of attachment.			X		X	X	
27	Gaiters and protective covers: Examine for damage and security of attachment.			X	X	X	X	
	TRANSMISSION							
28	Clutch: Check for correct adjustment and security of attachment of the operating mechanism.			X		X	X	
29	Gearbox: Examine for leaks and security of attachment.			X	X	X	X	
30	Drive chain: Clean examine, lubricate and adjust (See Table 3 Sec 2).		OMD 90	X	X	X	X	
31	Gear change pedal: Examine for wear and security of attachment and condition of shaft O-ring.			X	X	X	X	
32	Kick start: Examine for wear and security of attachment.			X	X	X	X	
33	Drive sprocket: Examine for wear and security of attachment.			X	X	X	X	
34								
35								
36								
37								

(continued)

TABLE 7 TIME/USAGE MAINTENANCE (continued)

Ser	Task	Fig No	Prod	Maintenance Period				
				1st	A	B	C	D
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	WHEELS, HUB AND BRAKES							
38	Road wheels and tyres: Examine for wear, damage deterioration, correct size and type. Check for play in wheel spokes adjust spokes as necessary. (VM).			X	X	X	X	
39	Rear wheel sprocket: Examine for wear and security of attachment.			X	X	X	X	
40	Wheel bearings: Check for play, renew as necessary. (VM).		XG 279	X		X	X	
41	Brake pads: Check for wear. (See Maintenance Note (2)).	4		X		X	X	
42	Brake callipers: Check for security of attachment.			X		X	X	
43	Brake levers and pipes: Examine for leakage and security of attachment.	2	XG 279 OMD 90	X	X	X	X	
44	Brake pedal: Check pedal height, adjust as necessary. (VM) (See Maintenance Note (3)).	7		X		X	X	
45	Brake hydraulic fluid: Renew. (VM)	2 & 7	OX8				X	
46	Wheels, axle nuts: Check for tightness.			X	X	X	X	
47	Braking system: Functional test and check levels.			X	X	X	X	
48								
	ELECTRIC							
49	Batteries: Examine. Clean terminals and smear with protective. Check electrolyte level and replenish as necessary.	5	PX 7/ Demin water	X	X	X	X	
50	Battery compartment: Examine, clean and repaint as necessary.						X	
51	Lamps: Examine and ensure correct operation.			X		X	X	
52	Headlamp alignment: Check adjustment in accordance with AP 3260 Book 3, Chap 5-1, Gen Instr No. 1.			X		X	X	
53	Instruments and switches: Examine and ensure correct operation.			X	X	X	X	
54	Fuses: Ensure fuses of correct rating are fitted.			X		X	X	
55	Wiring and termination: Examine for signs of deterioration and security of attachment.			X		X	X	
56								
57								

(continued)

TABLE 7 TIME/USAGE MAINTENANCE (continued)

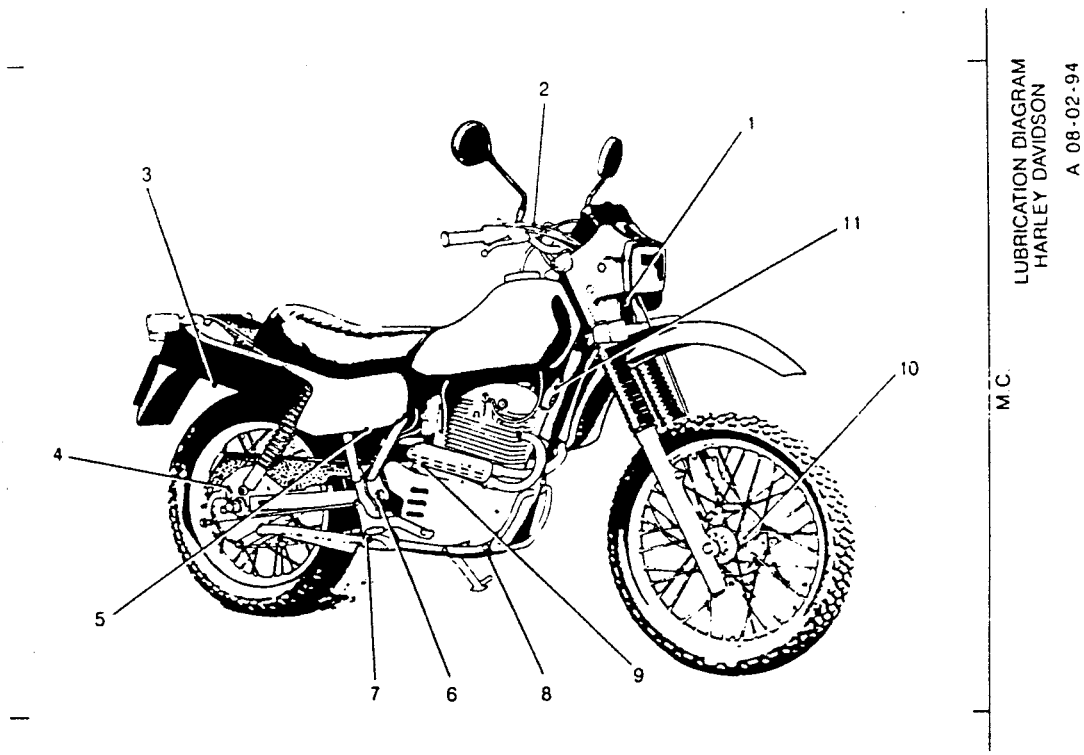
Ser	Task	Fig No	Prod	Maintenance Period				
				1st	A	B	C	D
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	FRAME AND BODY							
58	Frame: Examine for damage, corrosion and condition of paintwork.			X		X	X	
59	Skid-plate: Examine for damage and security of attachment.			X		X	X	
60	Frame nuts: Check tightness.			X	X	X	X	
61	Centre and side stand: Examine for damage and security of attachment. Lubricate.		XG 279 OMD 90	X	X	X	X	
62	Foot rests: Examine for damage and security of attachment.			X	X	X	X	
63	Mudguards: Examine for damage and security of attachment.			X		X	X	
64	Registration plate: Examine for condition of paint surface, letters, numerals and security of attachment.			X	X	X	X	
65	Tank: Examine for damage, leaks and security of attachment.			X	X	X	X	
66	Seat: Examine for damage and security of attachment.			X	X	X	X	
67	Dataplate: Examine for details, correct location and security of attachment.			X			X	
68	Oil can lubrication: General lubrication of all controls, levers, linkages, pivot pins, locks, catches and hinges.		OMD 90	X	X	X	X	
69	AF G1084A Work Sheet or STAMA (Tradesmen and Countersigning NCO): Sign. (RAF only).			X	X	X	X	
70	Brake test (NCO MT Technician only): Carry out (RAF in accordance with AP 3260, Book 3, Chap 4.1, Gen Instr No. 1). (VM)			X		X	X	
71	Road test (NCO MT TECHNICIAN only): Carry out.			X	X	X	X	
72	AF G1084A Work Sheet: Insert co-ordinating signature or STAMA (RAF only).			X	X	X	X	
73	Record action in AB 562 (Army only).			X	X	X	X	

TABLE 8 OUT OF USE MAINTENANCE

Table 8 Maintenance is to be carried out in accordance with the instructions shown at Page 3, Para 11.1 and 11.2.

WARNINGS, CAUTIONS and Maintenance Notes preceding Tables 6 and 7 must be read and understood before commencing these maintenance tasks.

Ser (1)	Operation (2)
	Prior to vehicle entering storage:
1	Carry out Table 6, Columns A, B and C maintenance, check coolant specific gravity and patch paint.
2	Carry out next maintenance due if it falls during out of use period.
3	Rectify all faults affecting road/task worthiness.
4	Fill fuel tanks.
5	Isolate batteries by master switch or disconnecting earth lead.
6	Drain pre-mix tank, flush tank, pump and pipework with clean water.
	Monthly whilst vehicle in storage:
7	Carry out Table 6, Columns A and B maintenance.
8	Operate equipment and all systems.
9	Carry out road test over 8 km (5 miles) if possible.
10	Update AB 562.



V11502/1

1 Voltage regulator
2 Front brake fluid reservoir
3 Tool kit storage box
4 Rear disc brake
5 Battery
6 Trailing arm pivot
7 Rear brake pedal
8 Crankshaft drain plug
9 Engine oil filter
10 Front disc brake
11 Frame reservoir drain plug

Fig 1 Lubrication diagram

MOTORCYCLE, GENERAL PURPOSE HARLEY DAVIDSON

COMMERCIAL PARTS LIST

REPRINTED INCORPORATING AMDTS Nos 1 to 3

BY COMMAND OF THE DEFENCE COUNCIL

Ministry of Defence
Issued by
LAND SYSTEMS TECHNICAL PUBLICATIONS AUTHORITY
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London SE18 4QA

AMENDMENT RECORD

Amdt No.	Incorporated By (Signature)	Date
1	[redacted]	13-11-97
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LIST OF ABBREVIATIONS

A	ampere
ac	alternating current
A/F	cross flats
Ah	Ampere hour
ANC	American National Coarse Thread
ANP	American National Pipe Thread
ANPT	American National Pipe Taper Thread
ANF	American National Fine Thread
AR	as required
assy	assembly
BA	British Association Screw Thread
BC	bayonet cap
BSF	British Standard Fine Thread
BSP	British Standard Pipe Thread
BSPP	British Standard Pipe Parallel Thread
BSPT	British Standard Pipe Taper Thread
BSW	British Standard Whitworth Thread
C	Celsius (Centigrade)
cc	cubic centimetre(s)
c to c	centre to centre
CH	chassis
CI	cast iron
circ	circumference
contd	continued
cres	Corrosion resistant steel
c/s	cycles per second
csk	countersunk
Cts	Contracts
cu in.	cubic inch(s)
c/w	complete with
dc	direct current
deg	degree(s)
dia	diameter
dim	dimensions(s)
dpdt	double pole, double throw
dpst	double pole, single throw
Eng	engine
ext	external
F	Fahrenheit
ft	foot (feet)
gal	gallon
galv	galvanised
gm	gramme
h	high (height)
hd	head
hex	hexagon
HT	high tension
id	internal diameter
in.	inch
int	internal
IPC	Illustrated Parts Catalogue
KPH	Kilometres per hour
lg	long (length)
lh	left hand
LHD	left hand drive
LM	Local manufacture

PREFACE

1. Any communication regarding this IPC should be made in accordance with 0100-P-011-013 to the publication agency at the following address :- ASCA (C), VWD, Bldg 105, Chilwell, Beeston, Nottingham, NG9 5HA , using a copy of the AESP form 10 located at the last page of this IPC.

2. Other publications may be applicable to this equipment. For availability please refer to the Army Equipment Support Publication 0100-A-001-013, Structure and Index to System Management Publications.

3. ***Equipment Identity***

   This publication covers the following :-

   Contract : LV2A/067

   Catalogue Numbers : 2340-99-893-8379 LH/DIP
   2340-99-893-8846 RH/DIP

   Asset Code : 1010-4105 LH/DIP
   1010-9103 RH/DIP

4. Equipment sponsor JSOR BV

5. Publication sponsor JSOR BV

6. Publication Agency : ASCA (C), VWD, Bldg 105, Chilwell, Beeston, Nottingham, NG9 5HA

LIST OF ABBREVIATIONS - contd

m	*metre(s)*
max	maximum
MCC	miniature centre contact
MES	miniature Edison screw
min	minimum
mm	millimetre(s)
MPH	miles per hour
mtd	mounted
mtg	mounting
mtl	material
neg	negative
NI	*not Illustrated*
No.	numbers
NP	non-Provided as a spare
NPTF	American Standard Taper Pipe Thread
o/a	overall
od	outside diameter
pos	positive
psi	pounds per square inch
PTFE	polytetrafluoroethylene
PVC	polyvinyl chloride
qty	quantity
rev/min	revolution per minute
rd hd	round head
rh	right hand
RHD	right hand drive
SBC	single bayonet cap
SCC	single centre contact
sect	section
SI	Systeme International (thread)
spdt	single pole, double throw
spst	single pole, single throw
sq	square
std	standard
SWL	Safe Working Load
syn	synthetic
temp	temperature
thd	thread
thk	thick(ness)
tpi	threads per inch
UNC	Unified Coarse Thread
UNF	Unified Fine Thread
UNS	Unified Special Thread
u/o	used on
u/w	used with
V	volts
veh	vehicle(s)
W	watt(s)
w	width
w/	with
w/o	without
whit	Whitworth
Zn	Zinc

GENERAL CONTENTS

CHAPTER 1

Parts List for the

MT-350 MILITARY MOTORCYCLE PARTS CATALOGUE PART NO 84771047 DATED SEPTEMBER 1993

MT-350 MILITARY MOTORCYCLE

PARTS CATALOGUE

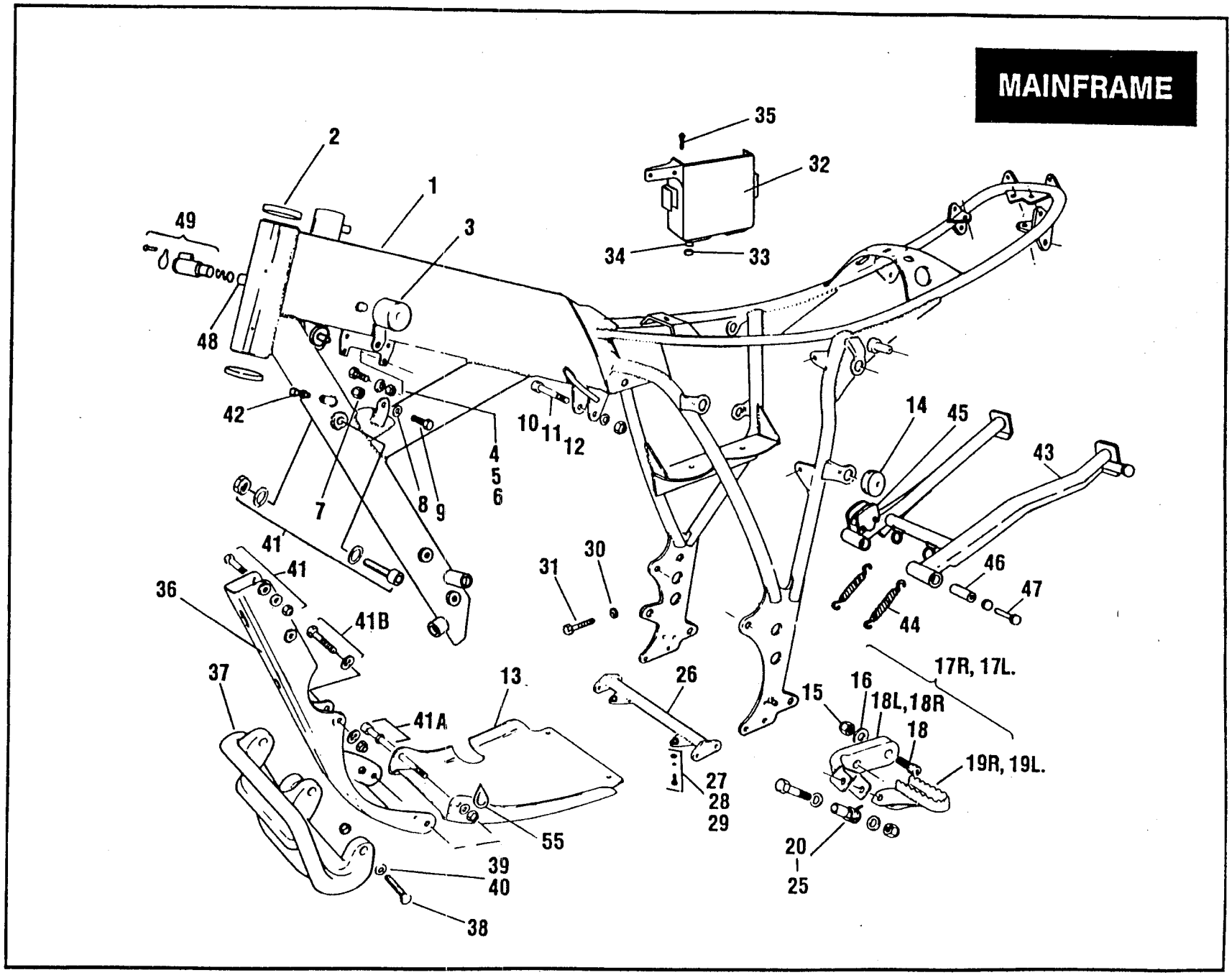
3

DATE: SEPT. 1993
PART NO. 84771047

HARLEY DAVIDSON - BRITISH MT350
PARTS CATALOG INDEX 74154135

PLATE NO	COMPONENTS	ASSEMBLY NUMBERS
1	MAINFRAME	84702539
2	LUGGAGE EQUIPMENT	84851153
3	REAR SUSPENSION (& FITTINGS)	84702554
4	FRONT SUSPENSION (& FITTINGS)	84841204
5	FRONT WHEEL & TIRE	84732833
6	REAR WHEEL & TIRE	84732981
7	TANK, PLASTICS AND FASTENERS	84753227
8	CONTROLS AND INSTRUMENTS	84762913
9	ELECTRICAL SYSTEM	84722958
10	LIGHTING	84723204
11	AIR/FUEL AND INTAKE	84753177
11A	CARBURETOR	84315027
12	EXHAUST	84710870
13	OIL PIPING	84711472
14	BRAKE SYSTEM	84732890
14A	REAR MASTER CYLINDER	84732395
14B	FRONT MASTER CYLINDER	82830050
14C	BRAKE CALIPER	84732015
15 A-N	350 ENGINE	84315035

MAINFRAME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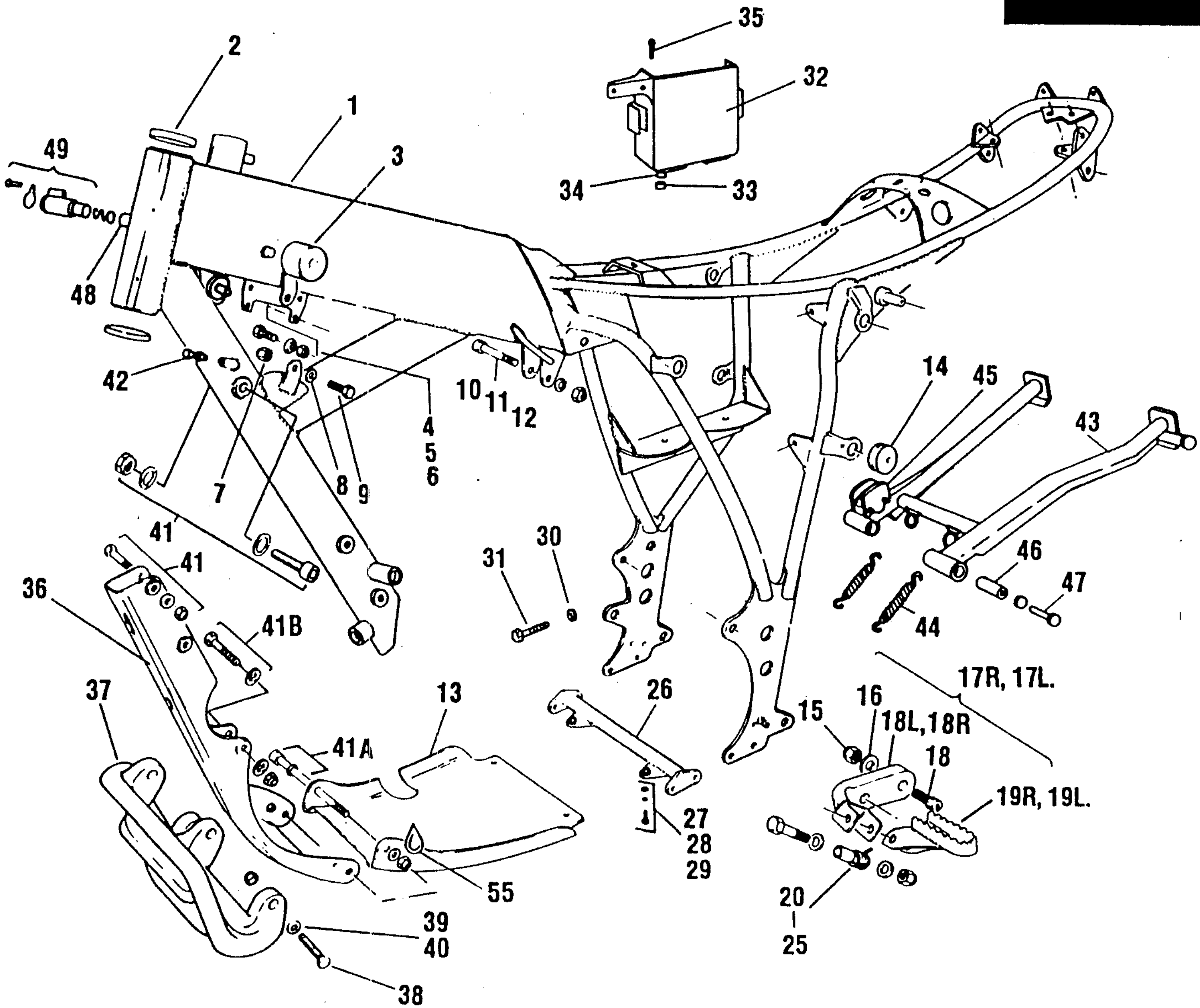
MAINFRAME 84702539

PLATE 1

INDEX NO.	PART NO.	NAME	QTY.	MT-350 BRIT
1	84702455	ONE PIECE FRAME, GRN.	1	
2	84700368	HEAD STOCK BEARING SEAL	REF	
3	84750371	TANK CUSHION, EXTENDED	4	
4	87998258	SOC HEAD SCREW M6X30	2	
5	84997865	PLAIN WASHER M6	4	
6	87997185	NUT, SELF LOCKING M6	2	
	87998241	WASHER, SERRATED	2	
7	87997185	NUT, SELF LOCKING M6	2	
8	84997865	PLAIN WASHER M6	4	
9	84990456	HEX HEAD SCREW M6X16	2	
10	84992023	BOLT, SOC. CAP HEAD M10X70	1	
11	84997915	WASHER M10	2	
12	87997326	NUT, SELF LOCKIN M10	1	
13	84700103	SUMP GUARD , GRN.	1	
14	84750579	GROMMET	6	
15	87997235	NUT, SELF LOCKING M8	4	
16	84997998	PLAIN WASHER M8	4	
17R (18R, 19R-25)	84801232	RH FOOTPEG ASSEMBLY	1	
17L (18L, 19L-25)	84801240	LH FOOTPEG ASSEMBLY	1	
18R	84700038	MOUNTING, RH FOOTREST, GRN.	1	
18L	84700046	MOUNTING, LH FOOTREST, GRN.	1	
18	84991900	SCREW, SOC. HD CAP M8X30	4	
19R	84703669	FOOTREST PEG, RH, GRN.	1	
19L	84703685	FOOTREST PEG,LH, GRN.	1	
20	87997243	NUT, SELF LOCKING M8	2	
21	84997998	PLAIN WASHER M8	2	
22R	84760016	SPRING, RH	1	
22L	84760024	SPRING, LH	1	
23	84763366	BUSHING, FOOTPEG	2	
24	84997998	PLAIN WASHER	2	
25	87998423	HEX HEAD BOLT M8X45	2	
26	84700053	CROSSTUBE, GRN.	1	
27	84992544	HEX, HEAD SCREW M8X16	2	
28	84992494	SPRING WASHER M8	2	
29	84997998	PLAIN WASHER M8	2	

MAINFRAME



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19R, 19L.
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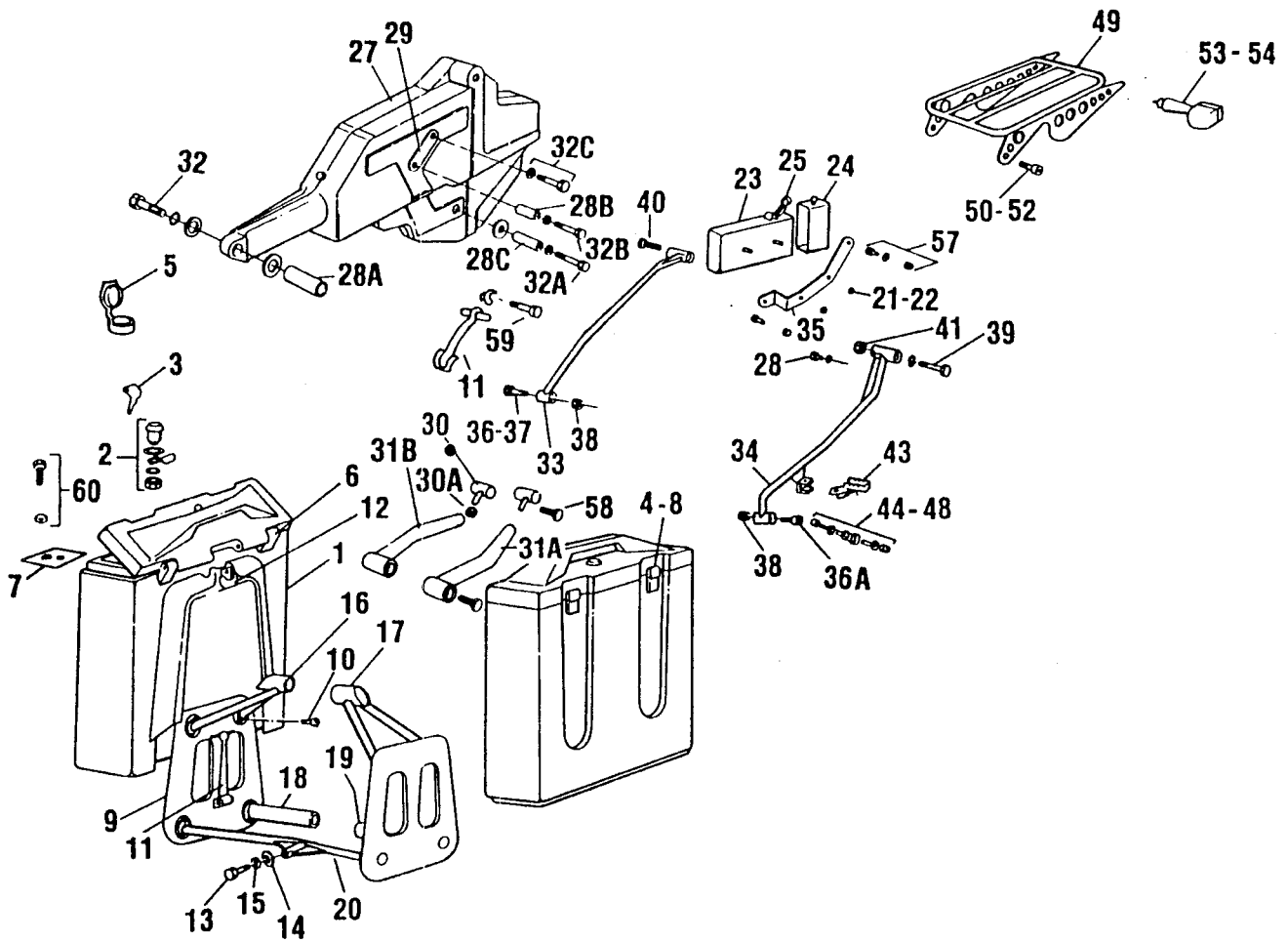
MAINFRAME 84702539 — PLATE 1

INDEX NO.	PART NO.	NAME	QTY.	MT-350 BRIT
30	84997170	PLAIN NUT M6	1	
31	84992445	HEX SET SCREW M6X30	1	
32	84762939	BATTERY TRAY, GRN.	1	
33	87997185	NUT, SELF LOCKING M6	2	
34	84997865	PLAIN WASHER M6	2	
35	87998290	TRUSS HEAD BOLT M6X20	2	
36	84702182	ENGINE CARRIER, GRN.	1	
37	84702240	ENGINE GUARD, GRN.	1	
38	84992445	HEX HEAD SCREW M6X30	4	
39	87997193	NUT, SELF LOCKING M6	4	
40	84997865	PLAIN WASHER M6	4	
41	84992585	SOC. HD CAP SCREW, M10X85	3	
41A	87998233	SOC. HD CAP SCREW, M10X150	1	
41B	84992593	SOC. HD CAP SCREW, M10X100	1	
	84997915	PLAIN WASHER M10	10	
	87997326	NUT SELF LOCKING M10	5	
42	84992437	STEERING LOCK BOLT M8X30	2	
	84997220	STANDARD NUT M8	2	
	84763424	PLASTIC CAP	2	
43	84702505	CENTER STAND	1	
44	84702919	CENTER STAND SPRING	2	
45	84700533	CHAIN SLIPPER	1	
	84992452	HEX HEAD M6x35	2	
	84997865	FLAT WASHER M6	4	
	87997185	FULL NUT M6	2	
46	84702638	INNER BUSHING	2	
47	84997998	PLAIN FLAT WASHER M8	2	
	87997235	NUT, SELF LOCKING M8	1	
	87998456	HEX HEAD SCREW M8X65	1	
48	84601756	LOCK HOUSING	REF	
49(50-54)	84861046	STEERING LOCK ASSY.	1	
50	NAS	CAP	REF	
51	NAS	RIVET	REF	
52	NAS	C WASHER	REF	
53	NAS	BARREL	REF	
54	NAS	SPRING	REF	
55	89570048	RED LOCTITE 262	ASREQ	

*** NAS = PART OF AN ASSEMBLY – NOT AVAILABLE SEPARATELY

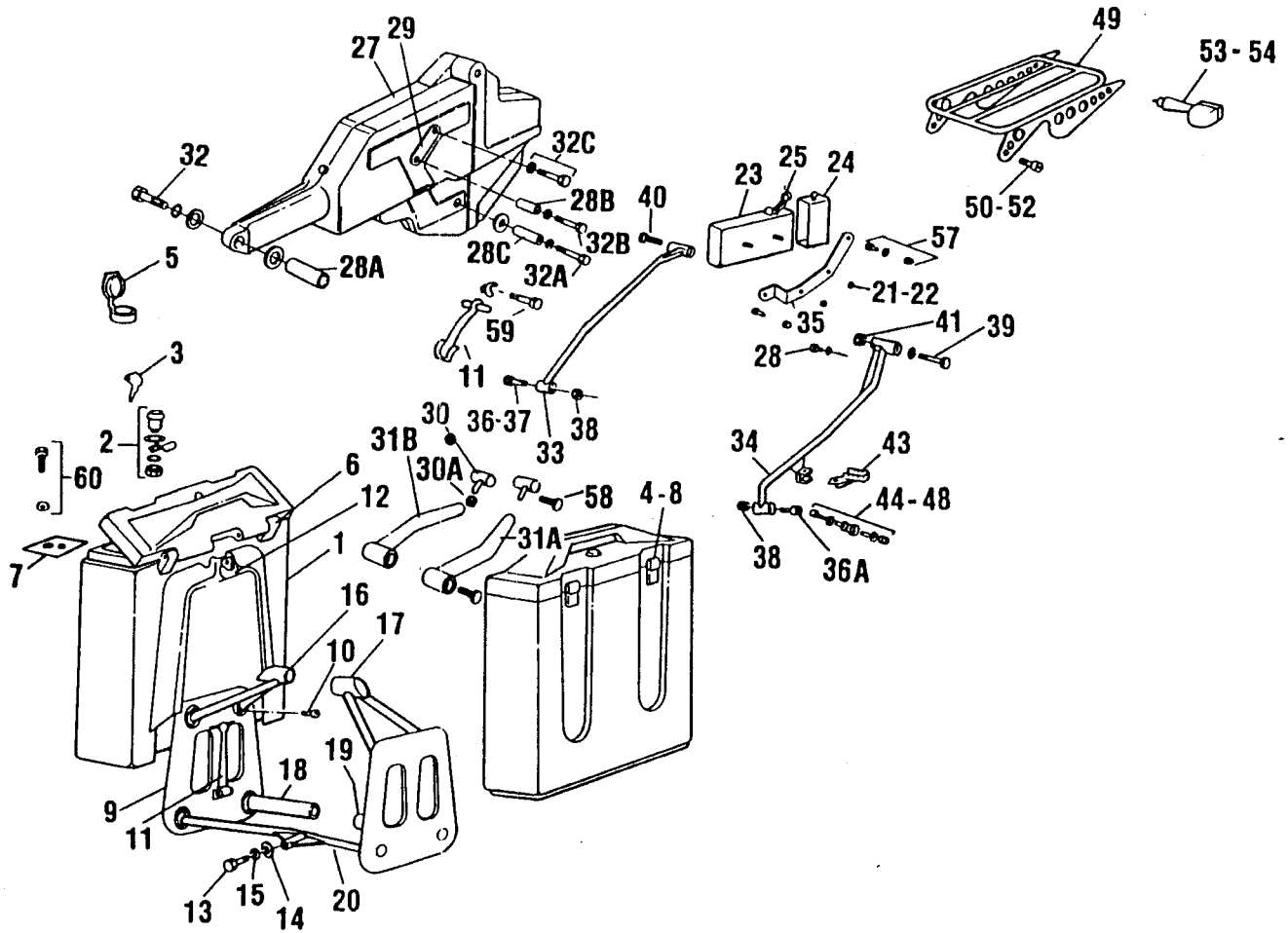
TOOLS LUGGAGE



LUGGAGE EQUIPMENT, 84851153 PLATE 2

INDEX NO.	PART NO.	NAME	QTY.	MT-350 BRIT
1,2,4-8	84702273	PANNIER BOX, GRN.	2	
2	84762962	LOCK ASSEMBLY	2	
2A	250-010	SEAL WASHER	2	
3	84762426	KEY	2	
4	NAS	LATCH	REF	
5	84652155	KEY COVER	2	
6	84652163	HINGE BOLT	2	
7	84753200	SUPPORT PLATE W/ DECAL	2	
8	84652213	RIVET	6	
9	84702489	DONUT	2	
	84997865	WASHERS M6	20	
10	87998449	BUTTON HEAD CAP SCREW M6X20	20	
11	84762988	HOLD DOWN STRAP ASSY.	3	
12	84763093	LATCH T	3	
	84991173	CAPSCREW M6X10	4	
	89570022	BLUE LOCTITE 242	AS REQ	
13	84991355	LOWER CTR BOLT M8X50 HH	1	
14	84997998	PLAIN WASHER M8	1	
15	84992494	LOCK WASHER M8	1	
(16-20)	84702497	FRONT PANNIER MOUNT ASSY.,GRN.	1	
16	84703511	MOUNT, FRONT UPPER RH	1	
17	84703529	MOUNT, FRONT UPPER LH	1	
18	84703545	MOUNT, FRONT LOWER RH	1	
19	84703537	MOUNT, FRONT LOWER LH	1	
20	84703552	MOUNT, CENTER	1	
21	87997185	NUT, SELF LOCKING M6	2	
22	84997865	PLAIN WASHER M6	2	
(21-25)	84850122	TOOLBOX ASSEMBLY, GRN	1	
23	NAS	TOOLBOX BODY	REF	
24	NAS	TOOLBOX LID	REF	
25	84760255	RUBBER STRAP	1	
27	84703438	PLASTIC GUN SCABBARD	1	
28A	84703628	SPACER 1 LOWER FRONT 1.97 "	1	
28B	84703636	SPACER 2 MID. LOWER 1.10 "	1	
28C	84703701	SPACER 3 REAR 1.77 "	1	
29	84733013	SCABBARD MOUNTING PLATE	1	

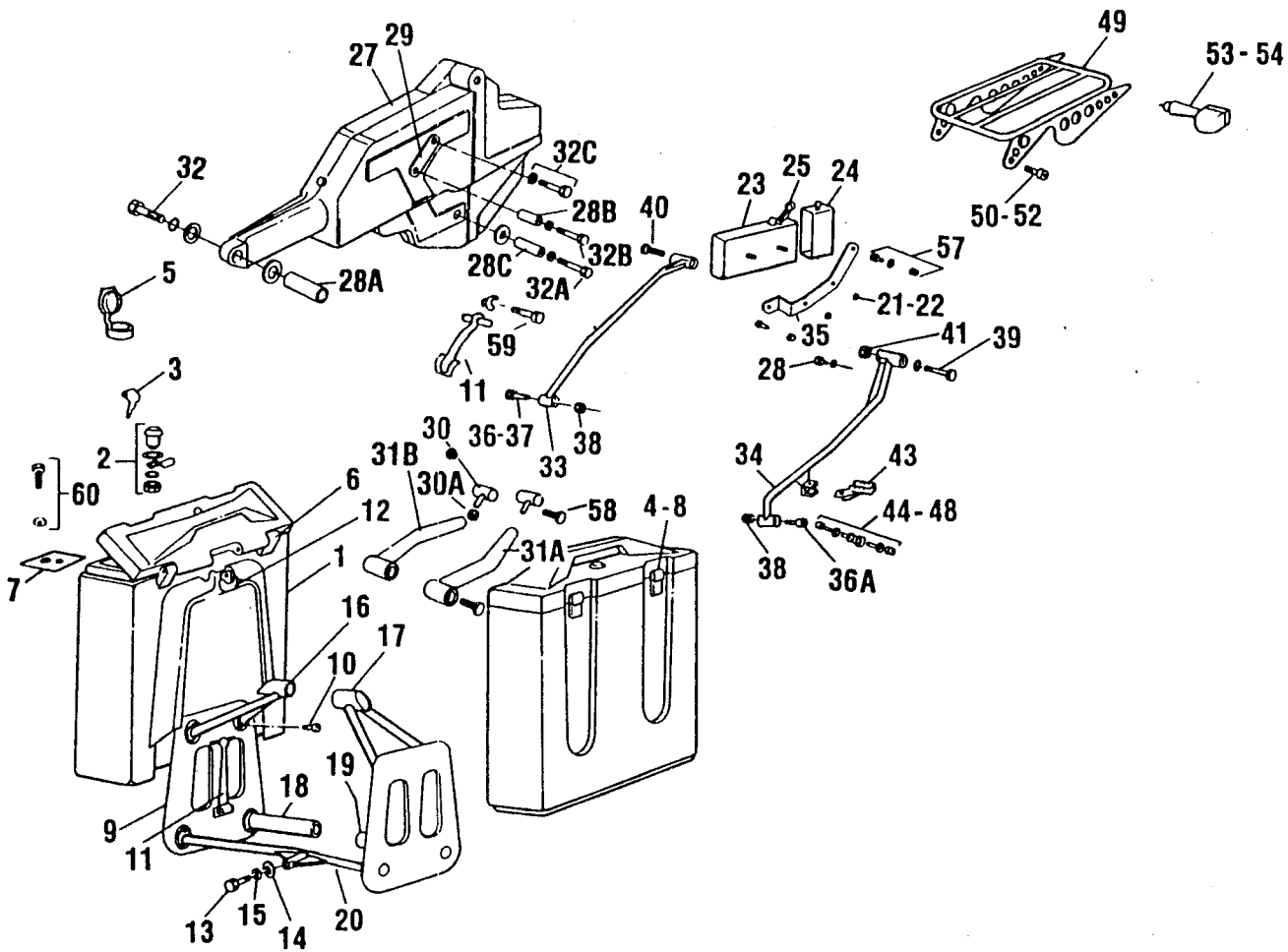
TOOLS LUGGAGE



LUGGAGE EQUIPMENT, 84851153 PLATE 2

INDEX NO.	PART NO.	NAME	QTY.	MT-350 BRIT
30	84703560	SUPPORT TUBE, END	2	
30A	84997220	JAM NUT	2	
31A	84702943	LH SUPPORT TUBE, GRN.	1	
31B	84703727	RH SUPPORT TUBE, GRN.	1	
32	84992684	SCABBARD MNT'G BOLT HEX M8X100	1	
	84997725	WASHER CAR BODY M8	2	
	84992494	LOCK WASHER M8	1	
32A	87992152	HEX HEAD BOLT M8X60	1	
	84997725	WASHER CAR BODY M8	1	
	84997998	FLAT WASHER M8	1	
	87997235	NUT SELF LOCKING M8	1	
32B	87998456	HEX HEAD BOLT M8X65	1	
	84997725	WASHER CAR BODY M8	2	
	84997998	FLAT WASHER M8	1	
	87997243	NUT SELF LOCKING M8	1	
32C	84990464	HEX HEAD BOLT M8X20	1	
	84997725	WASHER CAR BODY M8	1	
	87997243	NUT SELF LOCKING M8	1	
	84997998	FLAT WASHER M8	1	
33	84703586	RH STRUT TUBE	1	
34	84703826	LH STRUT TUBE	1	
35	84703578	TOOL BOX BRACKET	1	
36A	87998381	FRONT SOC HD BOLT LH M8X25	1	
36	84992684	FRONT HEX HD BOLT RH M8X100	1	
37	84997998	FLAT WASHER M8	3	
38	87997243	NUT, LOCKING M8	2	
39	87998514	REAR HEX HEAD BOLT M10X90	1	
	84997915	WASHER M10	1	
40	84740216	HEX HEAD SCREW M10X60	1	
41	87997326	M10 LOCK NUT	1	
	84997915	FLT WASHER M10	2	
43A	84703669	RH FOOT PEG	1	
43B	84703685	LH FOOT PEG	1	
44	87998423	HEX BOLT M8X45	2	
45	84997998	FLAT WASHER M8	4	
46	87997243	NUT M8	2	
48	84703610	LONG SPACER M8 X.97 INCHES	2	

TOOLS LUGGAGE



LUGGAGE EQUIPMENT, 84851153 PLATE 2

INDEX NO.	PART NO.	NAME	QTY.	MT-350 BRIT
49	84703016	REAR CARRIER	1	
50	87998381	SOCKET HEAD CAP SCREW M8X25	3	
51	84997998	FLAT WASHER M8	6	
52	87997243	NUT, SELF LOCKING M8	3	
53		SEE PLATE 10 (LH INDICATOR)		
54		SEE PLATE 10 (RH INDICATOR)		
57	84990456	HEX HEAD BOLT M6X16	2	
	84997865	FLAT WASHR M6	3	
	87997193	LOCK NUT M6	2	
	84997980	CAR BODY WASHER M6	1	
58	87998423	HEX HEAD BOLT M8X45	4	
	84997998	FLAT WASHER M8	8	
	87997235	LOCK NUT M8	4	
59	84920164	BUTTON HEAD CAP SCREW M5X10	4	
	84997816	FLAT WASHER M5	4	
60	84991173	BUTTON HEAD CAP SCREW M6X10	2	
	84997865	FLAT WASHER M6	2	

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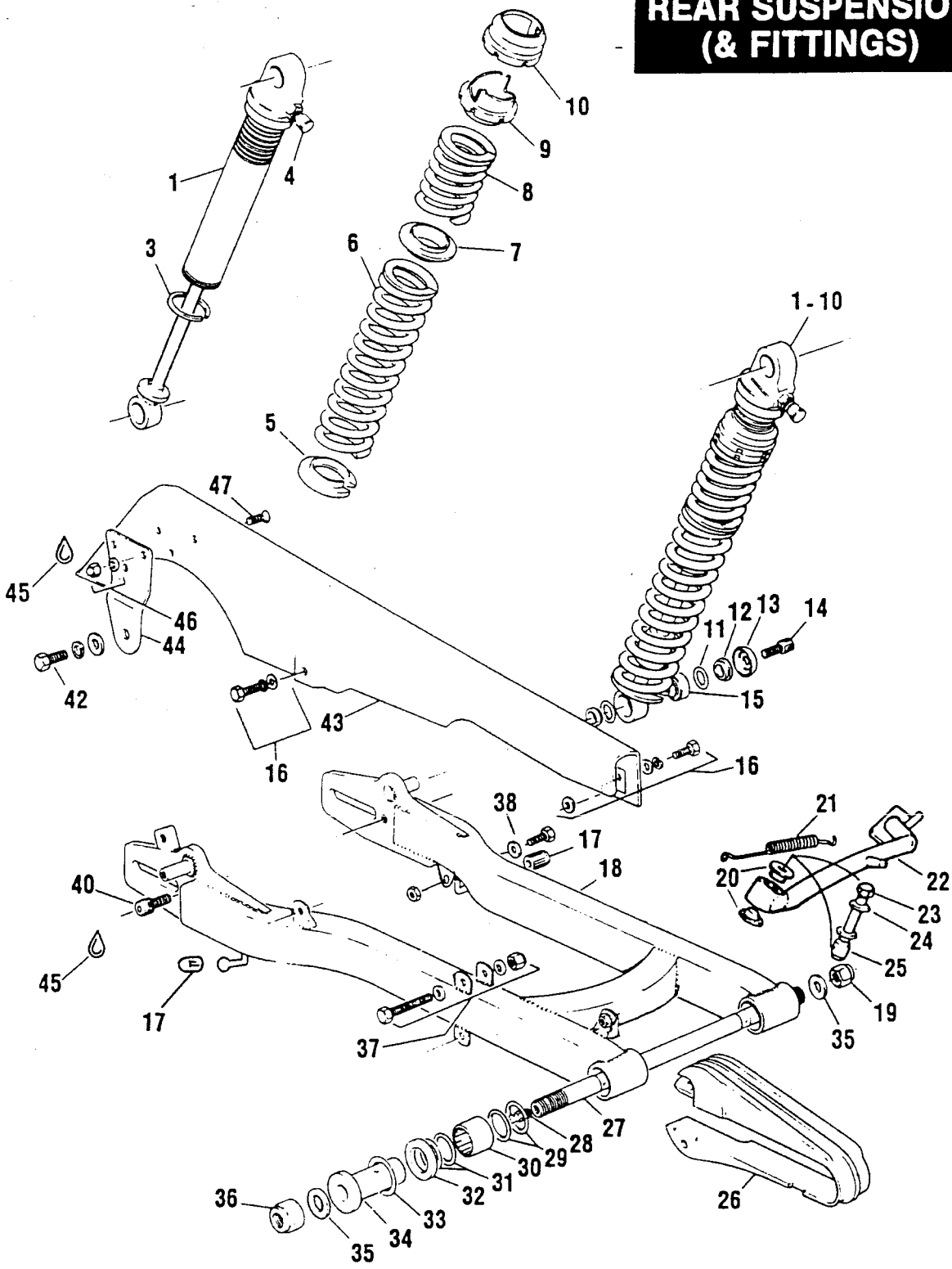
REAR SUSPENSION (& FITTINGS)



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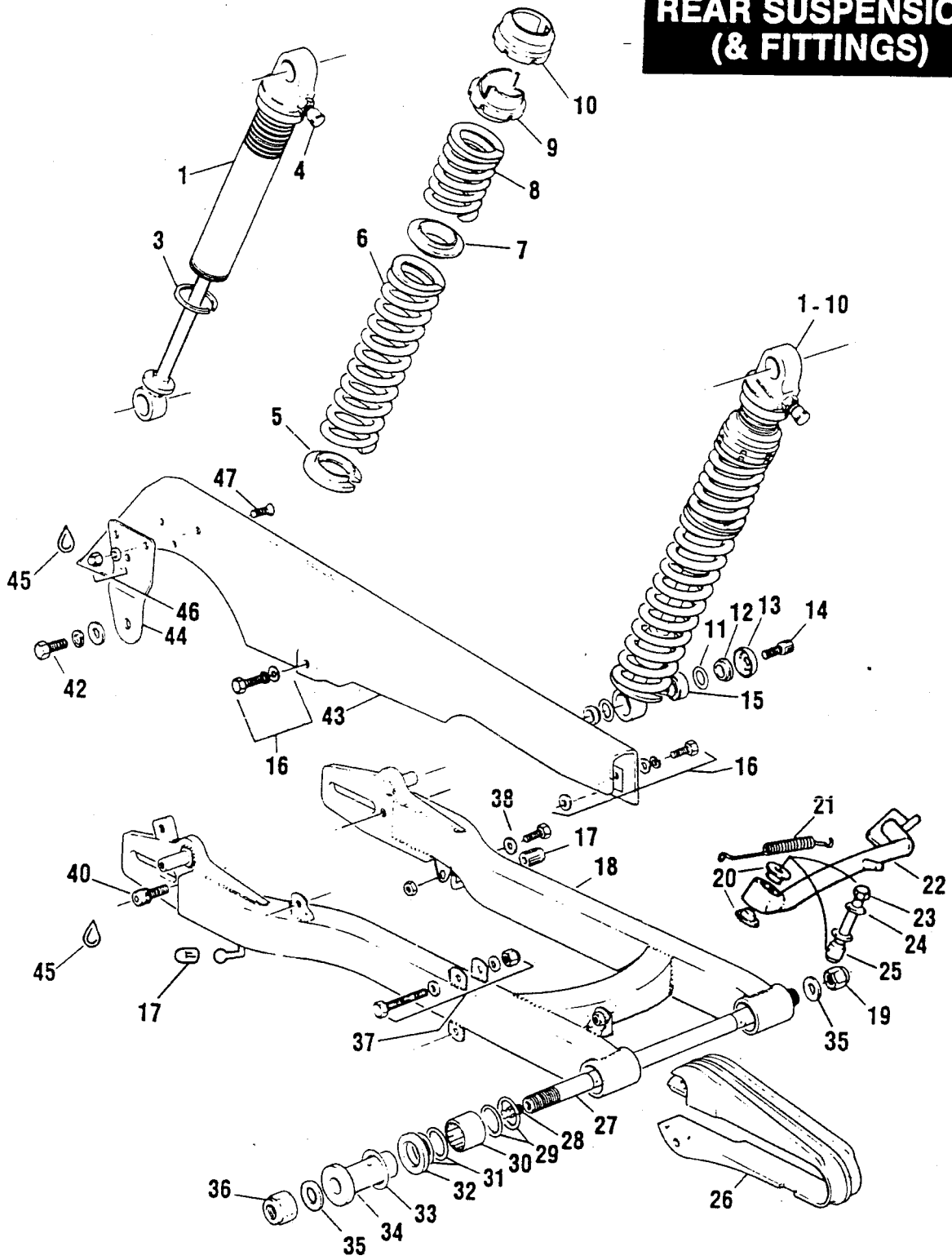
REAR SUSPENSION 84702554 PLATE 3

INDEX NO.	PART NO.	NAME	QTY.	MT-350 BRIT
(1-10,15)	84841378	SHOCK ABSORBER ASSEMBLY	2	
1	NAS	BARE SHOCK	REF	
3	NAS	CIRCLIP	REF	
5	NAS	COLLET	REF	
6	NAS	MAIN SPRING	REF	
7	NAS	SPRING SPACER COLLAR	REF	
8	NAS	AUXILIARY SPRING	REF	
9	NAS	ADJUSTER	REF	
10	NAS	ADJUSTER STOP	REF	
11	84740695	O-RING	8	
12	84740687	SPACER	8	
13	84740018	WASHER, RETAINING	4	
14	84991793	SCREW, SOCKET CAP HEAD M6X12	4	
15	84740042	BEARING	4	
16	84990456	HEX HEAD SCREW M6X16	2	
	84998087	SPRING WASHER M6	2	
	84997865	PLAIN WASHER M6	2	
17	84760719	STAND BUFFER	2	
18	84702646	SWING ARM, GRN.	1	
19	84702232	JAM NUT M14	1	
20	84700384	BUSH, SIDESTAND	2	
21	84760099	SPRING	1	
22	84702562	SIDESTAND, GRN.	1	
23	84991355	BOLT, HEX HEAD M8X50	1	
24	84997998	WASHER M8	2	
25	87997235	NUT, SELF LOCKING M8	1	
26	84750058	SLIPPER, CHAIN SWING ARM	1	
27	84702075	SPINDLE, SWING ARM	1	
28	84760081	GREASE NIPPLE	1	
29	84700160	O-RING SEAL	4	
30	84700186	BEARING, SWING ARM	2	
31	84700160	O-RING SEAL	4	

REAR SUSPENSION (& FITTINGS)



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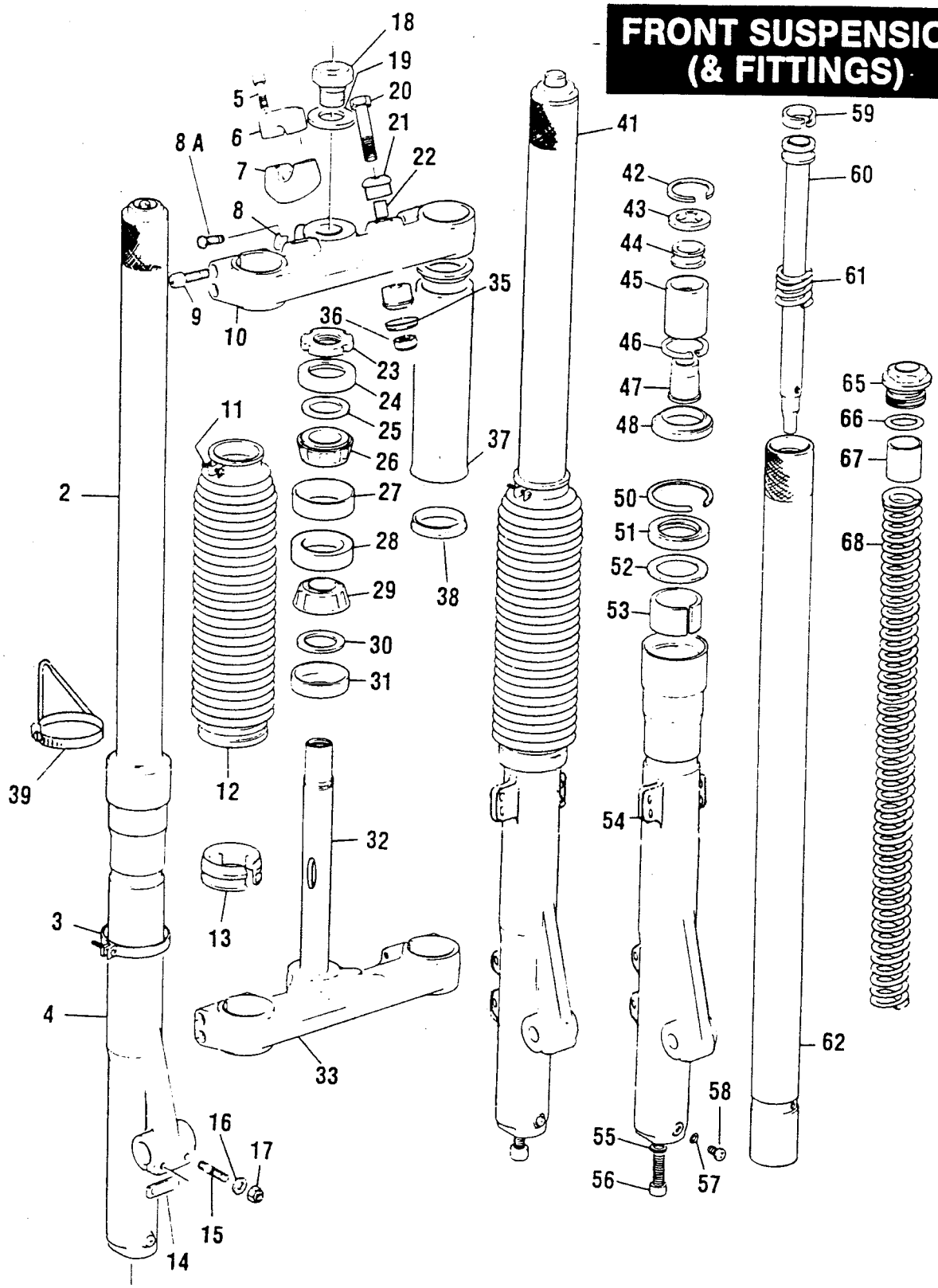
REAR SUSPENSION 84702554 PLATE 3

INDEX NO.	PART NO.	NAME	QTY.	MT-350 BRIT
32	84990100	WASHER, THRUST	2	
33	84700202	SHIMS, SWING ARM	AS RQD	
34	84700194	JOURNAL, SWING ARM	2	
35	84990126	WASHER, SWING ARM M14	2	
36	87990112	NUT, SWING ARM M14	1	
37	84992452	HEX, HEAD SCREW M6X35	2	
	84997865	PLAIN WASHER M6	4	
	87997185	NUT, SELF LOCKING M6	2	
38		SEE PLATE 6 ITEM 48	REF	
40	87998530	SOCKET HEAD CAP SCREW M8X6	2	
42	84992544	HEX HEAD SCREW M8X16	1	
	84992494	SPRING WASHER M8	1	
	84997998	PLAIN WASHER M8	1	
42-47	84851245	CHAINGUARD ASSY	1	
43	84750033	CHAINGUARD, GRN.	1	
44	84750066	CHAINGUARD BRACKET, GRN.	1	
45	89570022	BLUE LOCTITE 242	ASRQD	
46	87950039	DOME NUT M5	3	
	84997816	PLAIN WASHER M5	3	
47	84991215	CSK. SCREW M5X12	3	

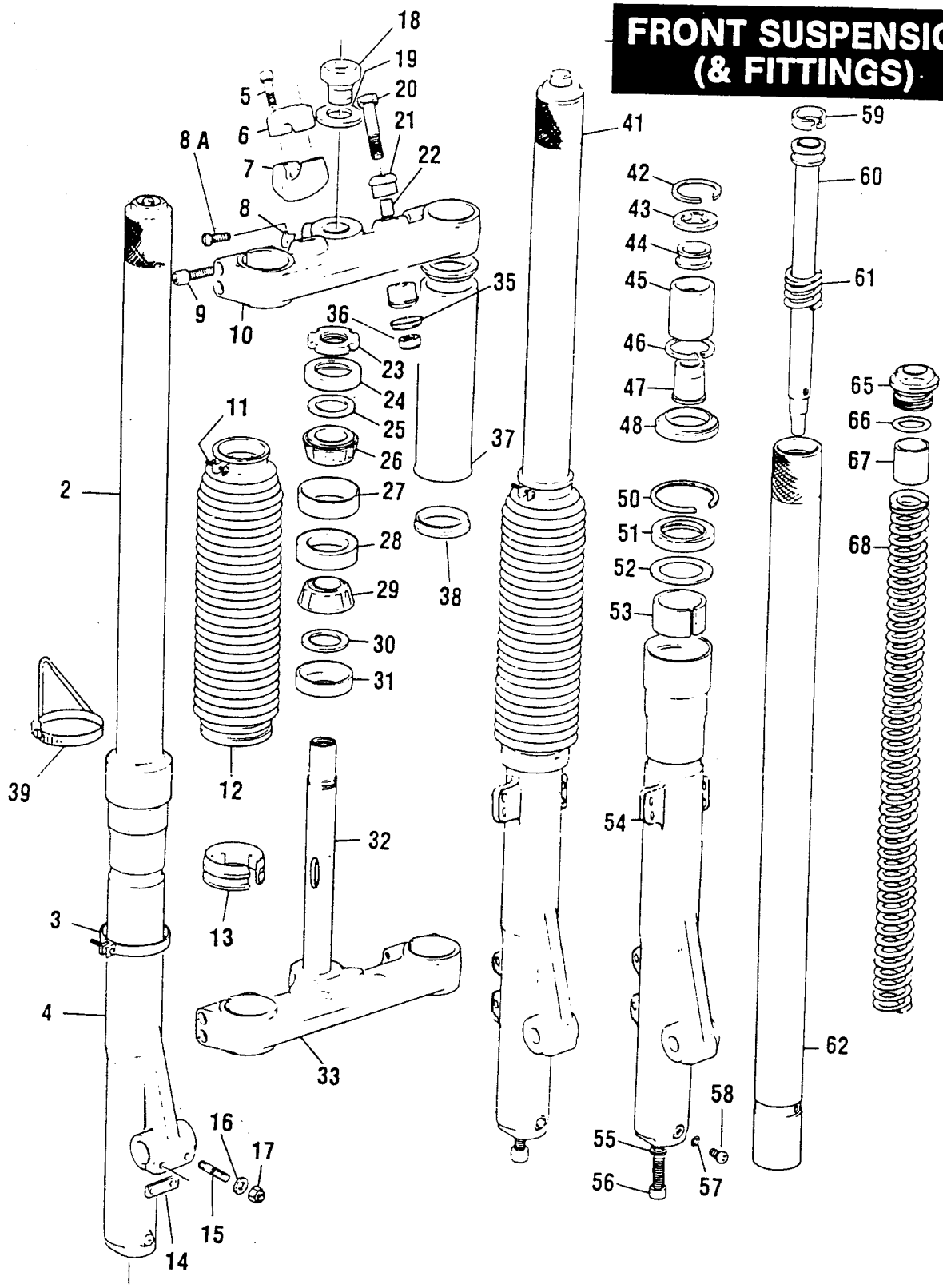
FRONT SUSPENSION (& FITTINGS)



FRONT SUSPENSION 84841204 PLATE 4

INDEX NO.	PART NO.	NAME	QTY.	MT-350 BRIT
1	84841204	FRONT SUSPENSION ASSEMBLY	REF	
2	84841212	RH FORK LEG ASSY., GREEN	1	
1-23,32-36 41-68	84841394	FORK ASSEMBLY, BASIC	1	
3	84740141	CLAMP	2	
4	84740562	RH. SLIDER, GRN.	1	
4,14-17 48-53,57,58	84841071	SLIDER ASSEMBLY RH, GRN	1	
5	84991900	BOLT, HANDLEBAR CLAMP	4	
6	84740265	CLAMP, TOP GRN.	2	
7	84741305	CLAMP, BASE	2	
8	84740794	SPACER STEERING STEM CLAMP	1	
8A	84991900	SCREW, PINCH	1	
9	84740158	BOLT, PINCH-YOKE	8	
10	84740075	YOKE, TOP	1	
11	84740802	CLAMP, TOP GAITER	2	
12	84740125	GAITER	2	
13	84740828	RING, BOTTOM GAITER FIXING	2	
14	84740786	SPACER	1	
15	84740471	STUD	2	
16	84997865	PLAIN WASHER	2	
17	87997185	NUT, SELF LOCKING	2	
18	84740174	NUT, STEERING STEM	1	
19	84740182	WASHER, STEERING STEM	1	
20	84740216	BOLT, HANDLEBAR CLAMP	2	
21	84740208	GROMMET	4	
22	84740232	SPACER, SLEEVE	2	
23	84740190	RING ADJUSTER	1	
24	84700368	SEAL, BEARING	2	

FRONT SUSPENSION (& FITTINGS)



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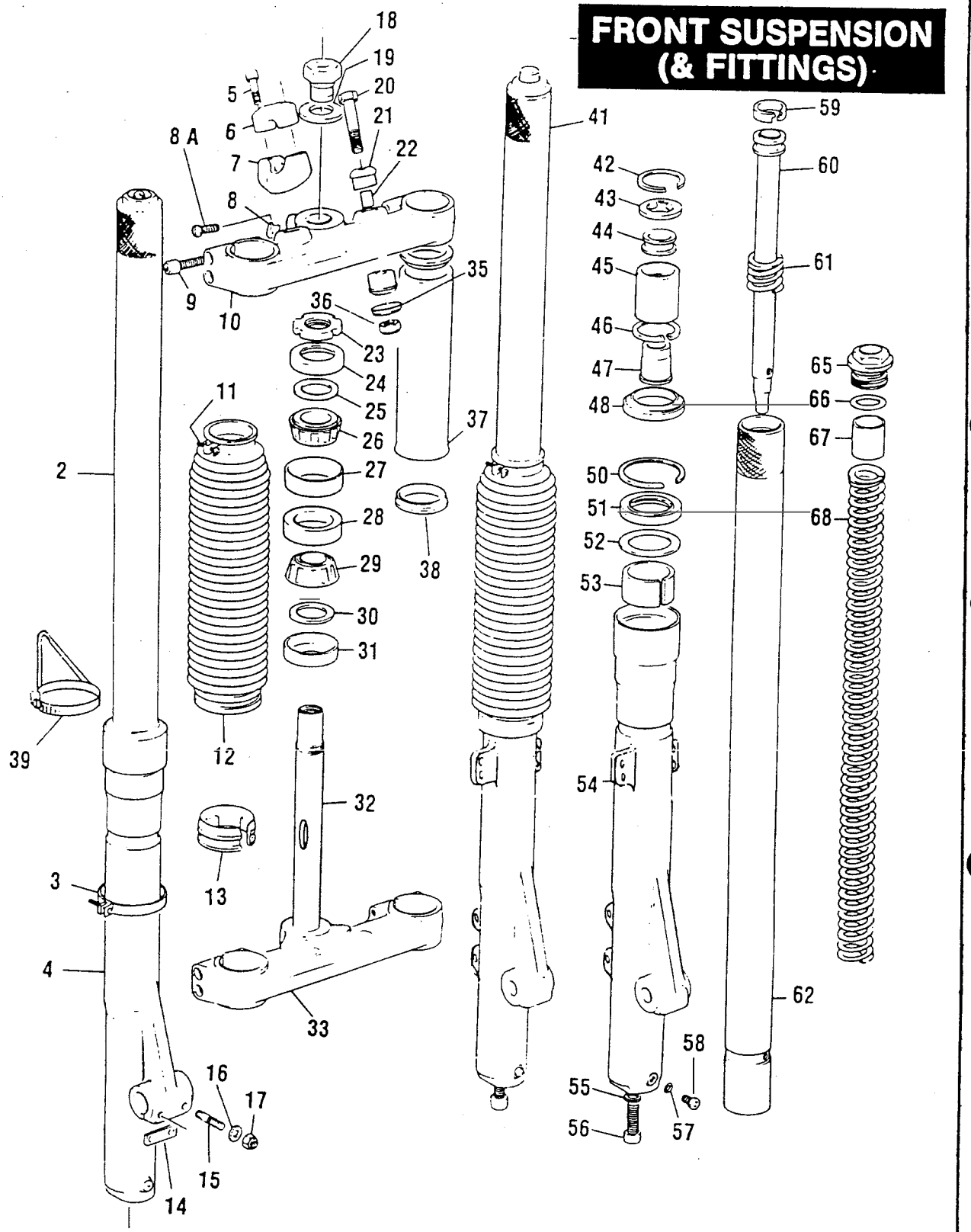
FRONT SUSPENSION 84841204 PLATE 4

INDEX NO.	PART NO.	NAME	QTY.	MT-350 BRIT
25	84740661	SPACER, HEADSTOCK BEARING	2	
26,27	84740653	BEARING (COMPLETE)	2	
28,29		REFER TO KEY 26,27		
30		REFER TO KEY 25		
31		REFER TO KEY 24		
32	84740091	STEERING TUBE	REF	
33	84840065	BOTTOM YOKE ASSY.	1	
35	84740240	WASHER, DISHED	2	
36	87997334	NUT, SELF LOCKING	2	
37	84722446	HEADLIGHT MOUNT, GRN.	1	
38	84700244	RUBBER MOUNT, ANTI VIBRATION	4	
39	84760289	SPEEDO CABLE GUIDE	1	
41	84841220	LH FORK LEG ASSY., GREEN.	1	
42	84740554	CIRCLIP	2	
42-47,55, 56,60	84841246	DAMPING UNIT	2	
43	84740364	WASHER, 3 POINTED	2	
44	84740372	VALVE	2	
45	84740380	BUSH, VLV HOUSING --OPTION--	2	
46	84740398	CIRCLIP, BUSH RETAINER	2	
47	84740406	SEAT, DAMPNER ROD	2	
48	84740588	DUST CAP	2	
48-54,57,58	84841022	SLIDER ASSEMBLY LH. GRN.	1	
50	84740307	CIRCLIP	2	
51	84740299	OIL SEAL	2	
52	84740539	WASHER	1	
53	84740463	UPPER BUSHING	2	
54	84741008	LH. SLIDER GRN.	1	
55	84740448	WASHER, SEALING	2	
56	84740414	SCREW, FORK MAIN RETAINING	2	
57	84740604	O-RING, OIL DRAIN SCREW	2	

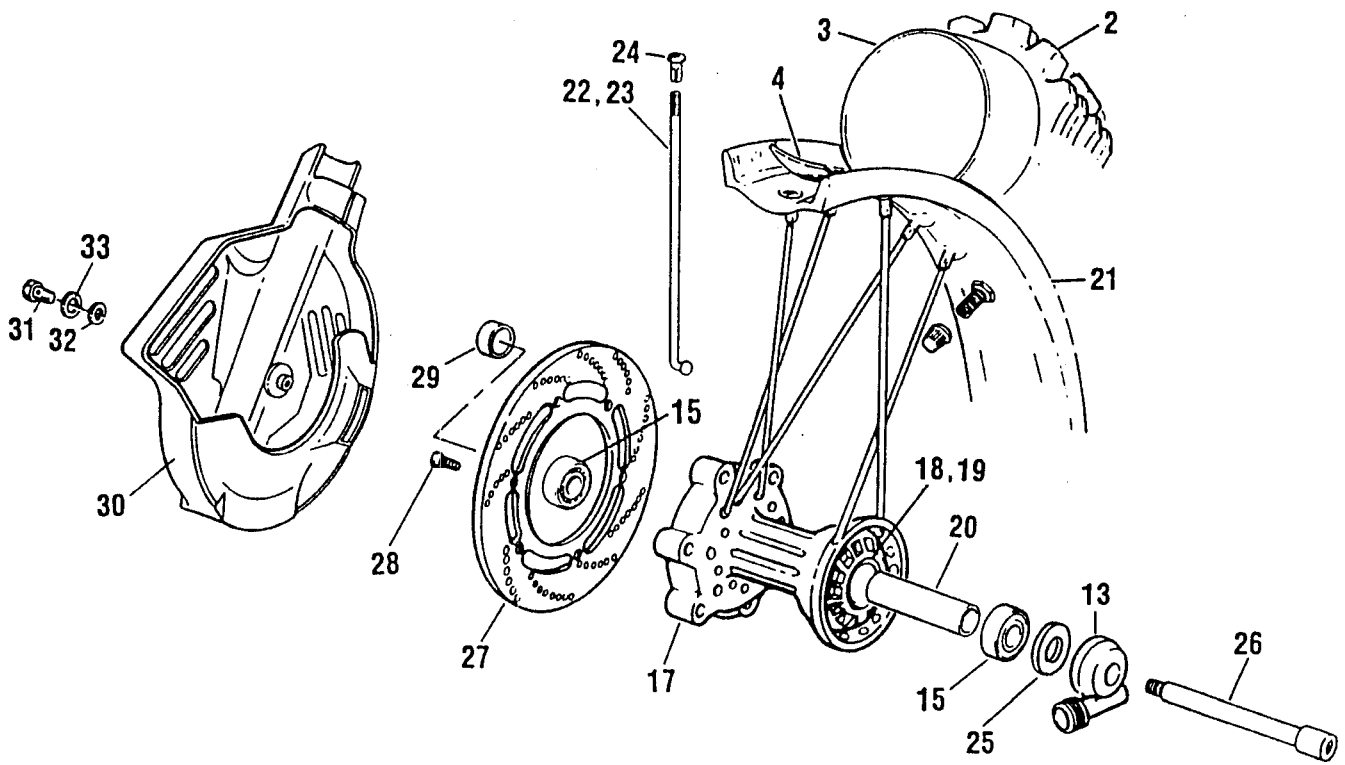
FRONT SUSPENSION (& FITTINGS)



FRONT SUSPENSION 84841204 PLATE 4

INDEX NO.	PART NO.	NAME	QTY.	MT-350 BRIT
57,58	84840081	SCREW, OIL DRAIN COMPLETE	2	
58	84740620	SCREW	2	
59	84740836	NYLON BUSHING	REF	
60,59	84741322	DAMPNER ROD, W/ BUSHING	2	
61	84740356	SPRING, TOPPING	2	
62	84740281	STANCHION	2	
65	84741420	FORK CAP BODY	2	
65,66	84840073	FORK CAP ASSY	2	
66	84740596	O-RING, FORK CAP	2	
67	84740497	SPACER, PRELOAD	2	
68	84740273	FORK SPRING	2	

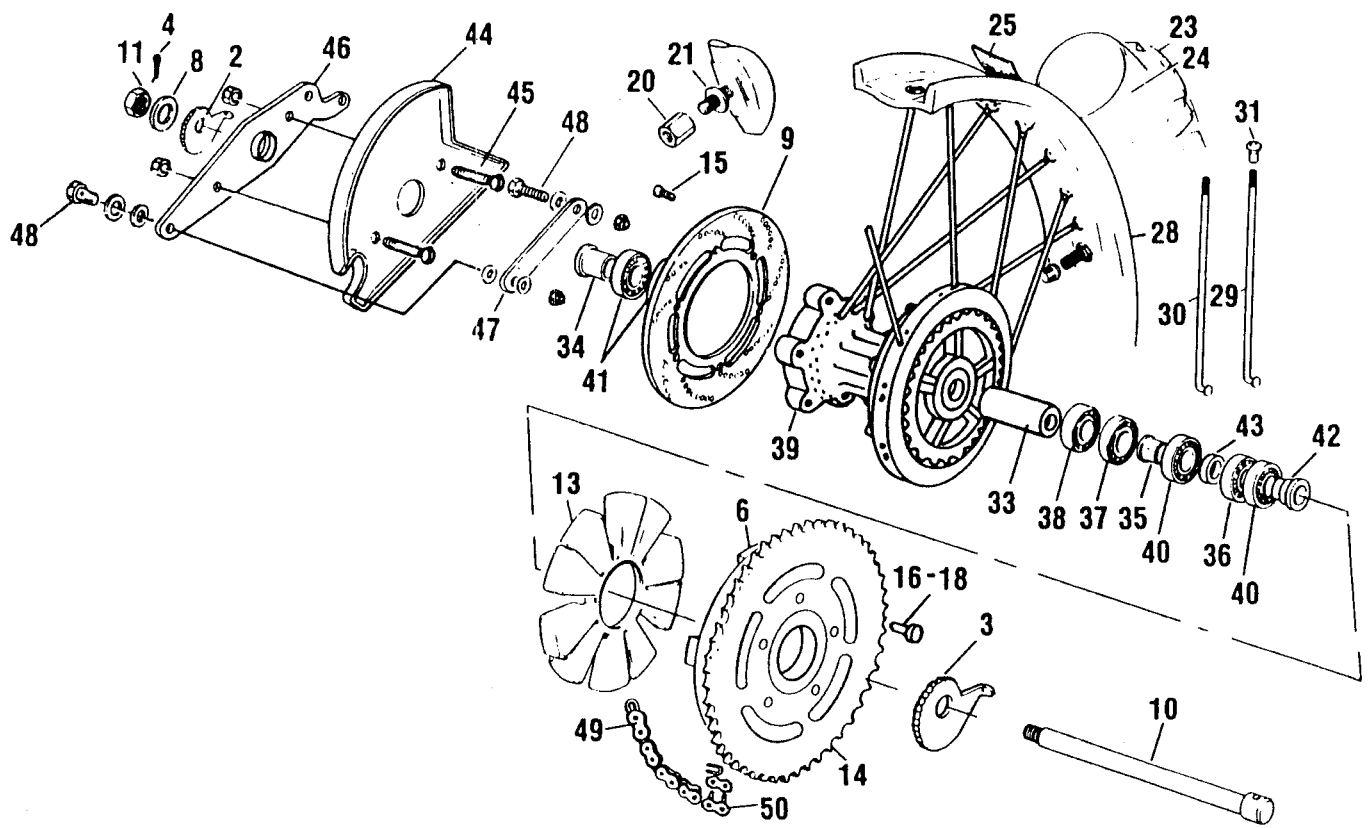
FRONT WHEEL & TIRE



FRONT WHEEL ASSY. 84732833 PLATE 5

INDEX NO.	PART NO.	NAME	QTY.	MT-350 BRIT
1(2-25, ,27-29)	84830793	COMPLETE WHEEL & TIRE ASSEMBLY	1	
(2-29)	84732833	WHEEL AND TIRE + AXLE		
2	84732080	TIRE	1	
3	84732098	INNER TUBE	1	
4	84732106	RIM STRIP	1	
11	84830801	FRNT WHEEL SUB ASSY	1	
(12,21-24)				
12	84830967	HUB ASSY. — COMPLETE	REF.	
(12A,26-29)				
12A(13,14)	84830900	HUB SUB ASSEMBLY	REF.	
13	84732585	SPEEDO DRIVE	1	
14 (15-20)	84732221	HUB	REF.	
15	84732619	BEARING	2	
17	84732924	HUB, CAST	1	
18	84733443	DRIVE SEAL	1	
19	84733435	DRIVE RING	1	
20	84733427	INTERNAL SPACER	1	
21	84731546	RIM	1	
22	84732882	SPOKE OPP DISC	9	
23	84732189	SPOKE	27	
24	84730159	NIPPLE	36	
25	84732262	SPEEDO DRIVE WASHER	1	
26	82730011	FRONT AXLE	1	
27	84732205	BRAKE DISC	1	
28	84999002	SOC HD CSK SCREW M6X20	6	
29	84733203	SPACER	1	
30	84731496	DISC GUARD, GRN.	1	
31	84991447	SCREW, DISC GUARD M6X25	1	
32	84997865	WASHER M6	2	
33	84998087	LOCK WASHER M6	1	
	84730191	WHEEL WEIGHT .50 OUNCE	REF	
	84730282	WHEEL WEIGHT .75 OUNCE	REF	
	84732213	WHEEL WEIGHT 1.00 OUNCE	REF	

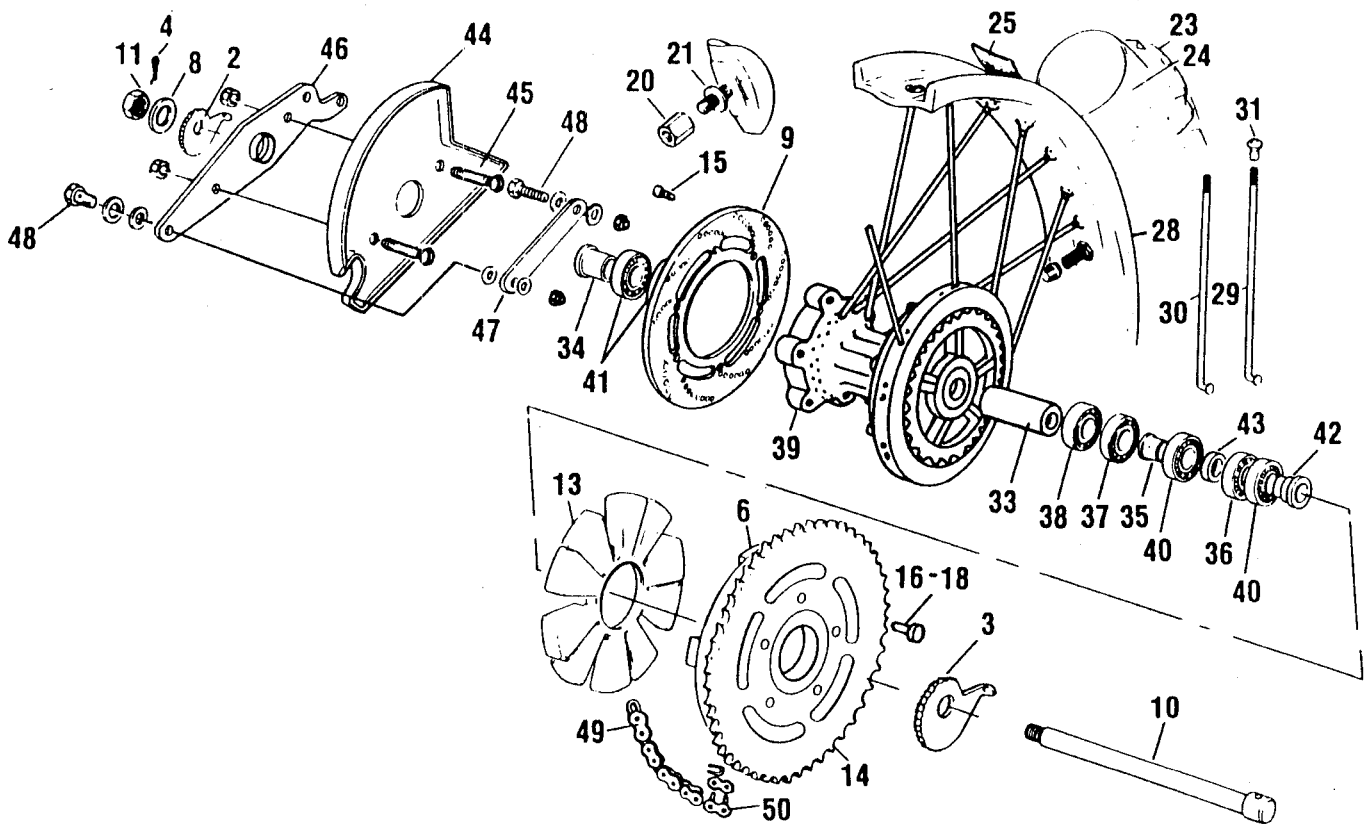
REAR WHEEL & TIRE



REAR WHEEL ASSY. 84732981 PLATE 6

INDEX NO.	PART NO.	NAME	QTY.	MT-350 BRIT
1(2-43)	84830942	COMPLETE WHEEL & TIRE ASSEMBLY	1	
2	84730712	REAR WHEEL ADJ. LH	1	
3	84732288	REAR WHEEL ADJ. RH	1	
4	87998167	COTTER KEY	1	
5 (4,8-18)	84733302	REAR HUB ASSEMBLY, MODIFIED	REF	
6	84733260	SPIDER HOUSING	1	
6A	84733294	SPIDER HSG SLEEVE	1	
7 (6,35,36, 40,42,43)	84733252	SPIDER HOUSING ASSY.	REF	
8	84731098	REAR WHEEL WASHER	1	
9	84732205	BRAKE DISC	1	
10	84732304	REAR AXLE	1	
11	84732312	REAR AXLE NUT	1	
12 (33,34 37-39,41)	84732528	REAR HUB SUBASSEMBLY	1	
13	84732544	REAR SPIDER	1	
14	84733005	SPROCKET	1	
15	84999002	SCREW M6X20	6	
16A	84733534	3 HOLE TAB RING	1	
16B	84733526	2 HOLE TAB RING	1	
17	84992486	SCREW M8X40	5	
18	84997220	LOCK NUT, M8	5	
19(28-31,12)	84830959	REAR WHEEL SUBASSEMBLY	1	
20	84930023	SECURITY NUT	REF.	
21	84730258	SECURITY BOLT ASSY.	1	
	84997998	FLAT WASHER M8	1	
22	84730191	WHEEL WEIGHT 0.50 OUNCES	AR	
23	84732114	REAR TIRE	1	
24	84732122	REAR INNER TUBE	1	
	84730282	WHEEL WEIGHT 0.75 OUNCES	AR	
25	84732130	RIM STRIP	1	
26	84732213	WHEEL WEIGHT 1.00 OUNCES	AR	
28	84730266	BLACK RIM	1	
29	84732346	SPOKE REAR DRIVE	18	
30	84732353	SPOKE, REAR NON DRIVE	18	
31	84732767	REAR NIPPLE	36	
33	84733328	SLEEVE		
34	84732338	REAR WHEEL SPACER, LH	1	

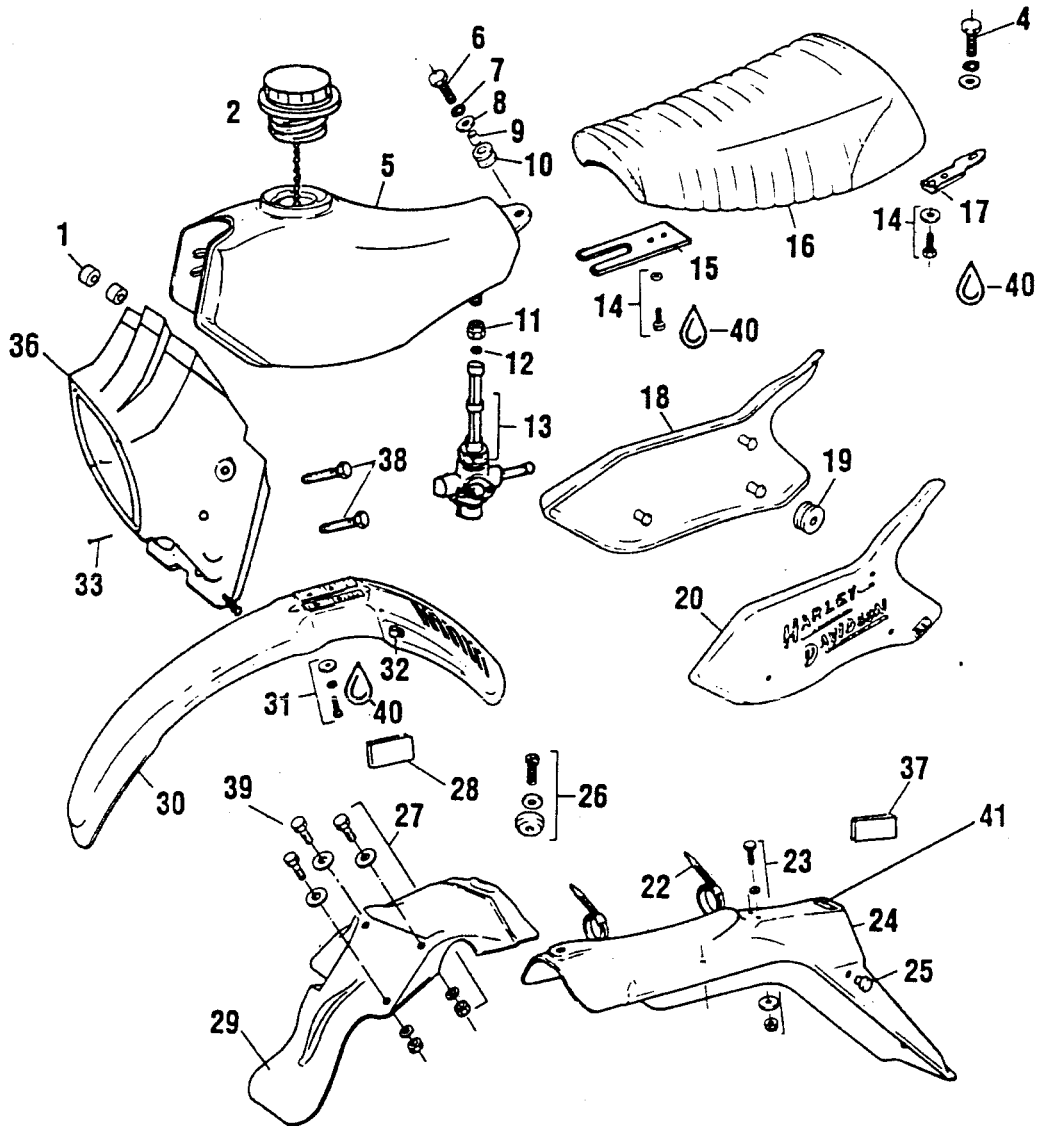
REAR WHEEL & TIRE



REAR WHEEL & BRAKE — PLATE 6

INDEX NO.	PART NO.	NAME	QTY.	MT-350 BRIT
35	84732361	REAR HUB SPACER, BEARING	1	
36	84733237	BEARING,	1	
37	84732593	BEARING, HUB RIGHT	1	
38	84732601	BEARING, HUB CENTER	1	
39	84732916	REAR HUB, CAST	1	
40	84733229	BEARING	2	
41	84733310	BEARING, HUB LEFT	2	
42	84733278	REAR HUB SPACER, RH	1	
43	84733245	SPACER	1	
44	84733096	REAR DISC GUARD, GRN.	1	
45	84992601	SCREW M6X16	2	
	84997865	FLAT WASHER M6	2	
	87997193	LOCK NUT M6	2	
46		SEE PLATE 14-27	REF	
47		SEE PLATE 14-26	REF	
48	84992437	HEX SCREW M8X30	2	
	87997235	LOCK NUT M8	2	
	84997998	FLAT WASHER M8	4	
49	84750041	DRIVE CHAIN W/LINK	1	
50	84750611	CHAIN LINK	1	

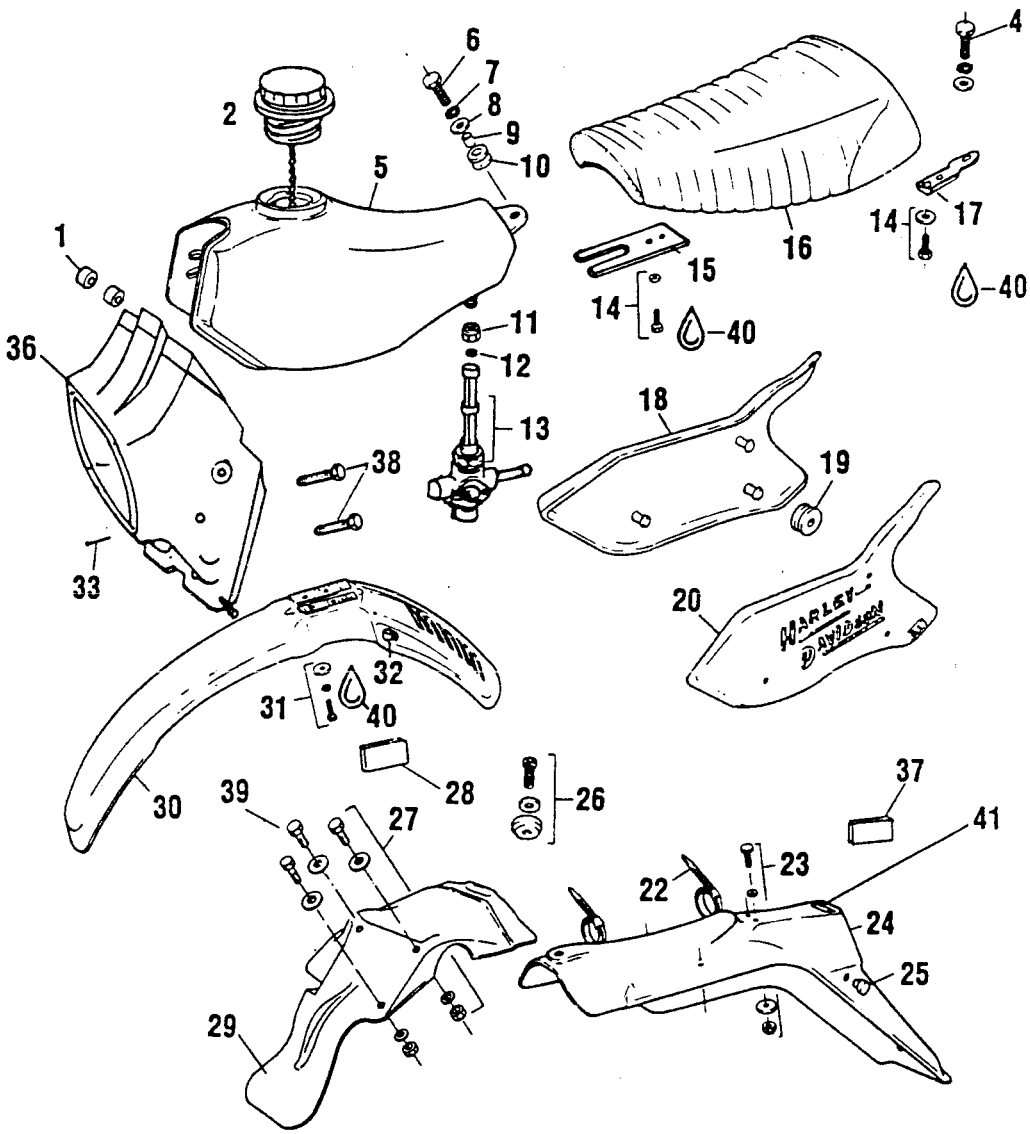
TANK, SEAT, SIDEPANELS, FENDERS, HEADLAMP COWL



TANK & PLASTICS 84753227 PLATE 7

INDEX NO.	PART NO.	NAME	QTY.	MT-350 BRIT
1	84750371	ISOLATOR MOUNT, RUBBER	REF	
2	84851252	FILLER CAP ASSY	1	
4	84992544	REAR SEAT BOLT M8X16	1	
	84997998	FLAT WASHER M8	1	
	84992494	LOCK WASHER M8	1	
5	84753268	FUEL TANK, GRN.	1	
6	84992569	HEX HEAD BOLT M8X35	1	
7	84992494	SPRING WASHER M8	1	
8	84997725	PLAIN WASHER, LARGE M8	1	
9	84760826	SPACER, BUSH	1	
10	84750579	GROMMET	1	
11	84752666	NUT, FUEL VALVE	1	
12	84752690	FUEL VALVE GASKET	1	
13	84752682	FUEL VALVE BODY	1	
13A	84752674	FUEL VALVE FILTER	1	
(14-17)	84851237	MP SEAT ASSEMBLY, COMPLETE	1	
14	84990456	HEX HEAD BOLT 6X16	4	
	84997865	PLAIN WASHER M6	4	
15	84753292	FRONT BRACKET	1	
16	84753854	SEAT	1	
17	84752864	REAR SEAT BRACKET	1	
18	84753284	RH SIDE PANEL, GRN.	1	
19	84750579	GROMMET	6	
20	84753276	LH SIDE PANEL, GRN.	1	
22	84740133	TYE WRAP	2	
23	84990993	HEX SCREW M6X20	4	
	84997865	PLAIN WASHER M6	6	
	84997980	LARGE WASHER CB M6	2	
	87997185	NUT, LOCKING M6	4	
24	84753060	REAR FENDER, GRN.	1	
25	84750553	RUBBER BUMPER	1	
26	87998290	TRUSS HEAD BOLT M6X20	1	
	84997980	LARGE WASHER M6	1	
	87997185	NUT, LOCKING M6	1	

TANK, SEAT, SIDEPANELS, FENDERS, HEADLAMP COWL



TANK & PLASTICS 84753227 PLATE 7

INDEX NO.	PART NO.	NAME	QTY.	MT-350 BRIT
27	84991447	HEX SCREW M6X25	2	
	84997980	LARGE WASHER M6	2	
	87997185	NUT, SELF LOCKING M6	2	
	84997865	WASHER, PLAIN M6	2	
28	84722214	REFLECTOR, AMBER	2	
29	84752633	REAR SPLASHGUARD, GRN.	1	
30	84732692	FRONT FENDER, GRN.	1	
31	84990456	HEX SCREW M6X16	4	
	84998087	SPRING WASHER M6	4	
	84997980	WASHER, FENDER RETAINER M6	4	
32	84760982	HOSE CLIP	2	
33	84995075	SCREW, HEADLAMP RETAINER M3X25	4	
36	84762921	HEADLIGHT COWL, GRN.	1	
37	84722222	REFLECTOR, RED	2	
38	84992601	TRUSS HEAD M6X16	4	
39	84990456	HEXHEAD M6X16	1	
	84998087	LOCK WASHER M6	1	
	84997980	WASHER CAR BODY M6	1	
40	89570022	BLUE LOCTITE 242	AS RQD	
41	84753938	FENDER DECAL	1	

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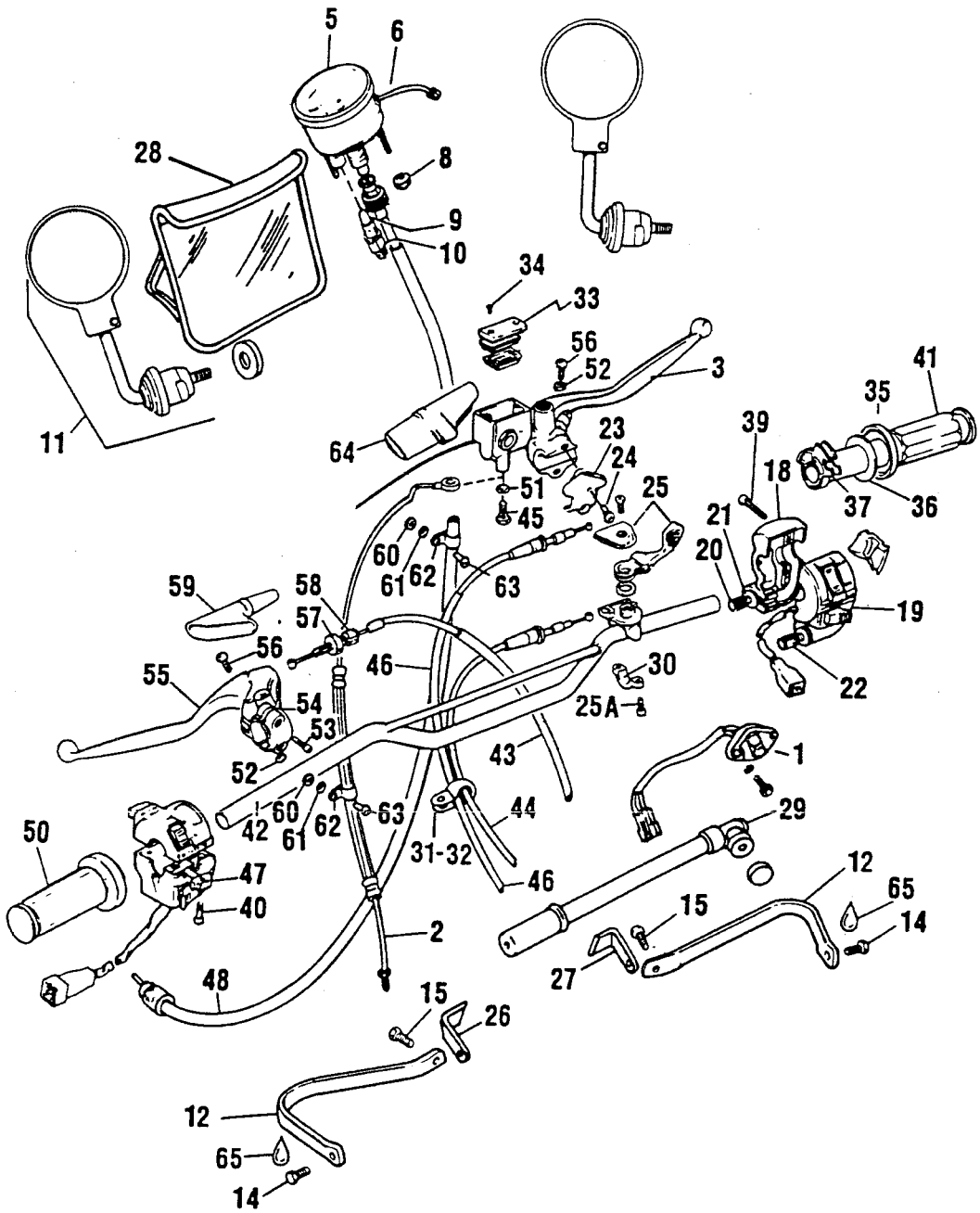
CONTROLS & INSTRUMENTS



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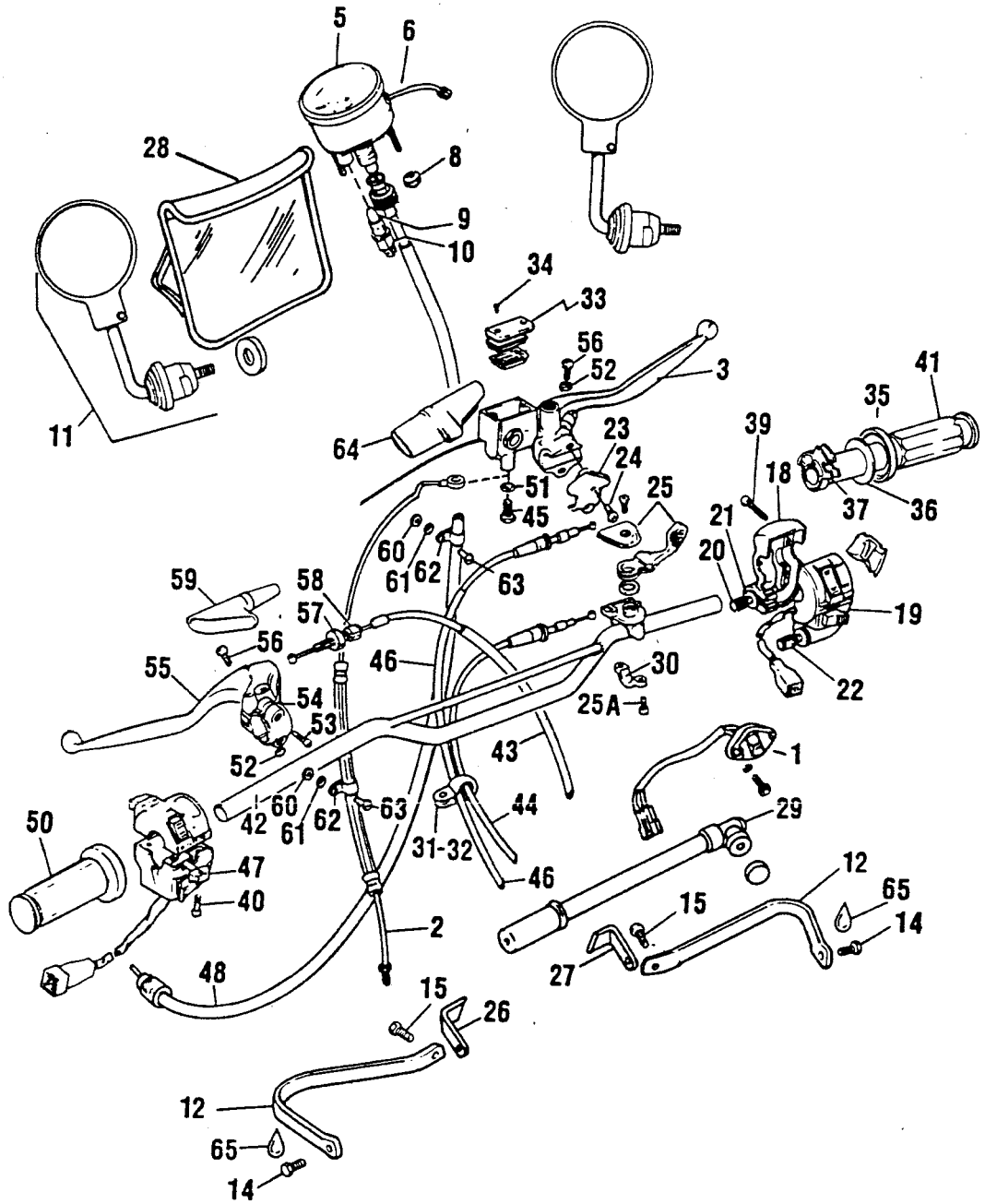
CONTROLS 84762913 PLATE 8

INDEX NO.	PART NO.	NAME	QTY.	MT-350 BRIT
1	84720366	BLACKOUT SWITCH	1	
	84920073	PHILLIPS PAN HEAD M4x14	2	
2		SEE PLATE 14-22	REF	
3		SEE PLATE 14-1	REF	
5 (6-10)	84753870	SPEEDOMETER, MPH/KPH	1	
6	84753615	TRIPMETER	1	
	84753623	NUT	1	
8	87997367	NUT, LOCK M5	2	
	84997816	FLAT WASHER M5	2	
9	84720036	BULB, SPEEDOMETER	1	
10	84720721	BULB HOLDER	1	
11	84762244	MIRROR ASSEMBLY	2	
	84998111	LOCK WASHER M10	2	
12	84753300	LEVER PROTECTOR, GRN.	2	
14	87991139	SCREW M8X20 CSK	2	
15	87998415	HEX HEAD SCREW, M8X25	2	
	84997998	FLAT WASHER M8	2	
	84992494	WASHER, LOCKING M8	2	
18	84762541	UPPER BODY,RH CONTROL	1	
19	84762616	LOWER BODY,RH CONTROL	1	
20-21	84762624	ADJUSTER ASSEMBLY PUSH	1	
21	84762798	ADJUSTER NUT, SMALL	1	
22	84762632	ADJUSTER ASSEMBLY PULL	1	
23	84761048	U CLAMP	1	
24	84960111	SOCKET HEAD CAP SCREW M6X20	2	
25	84760388	CHOKE LEVER ASSEMBLY	1	
25A	84992403	PAN HEAD M5X16	2	
26	84703024	LH AIR PUMP MOUNT	1	
27	84703032	RH AIR PUMP MOUNT	1	
28	84702471	MAP HOLDER	1	
29	84750744	AIR PUMP	1	
30	84761147	U CLAMP	1	
31	84763416	CLAMP	1	
32		SEE PLATE 1 ITEMS 7-9	REF	
33	84732031	MST CYLINDER COVER	1	
34	87998225	CAP SCREW M4X12.3	2	

CONTROLS & INSTRUMENTS



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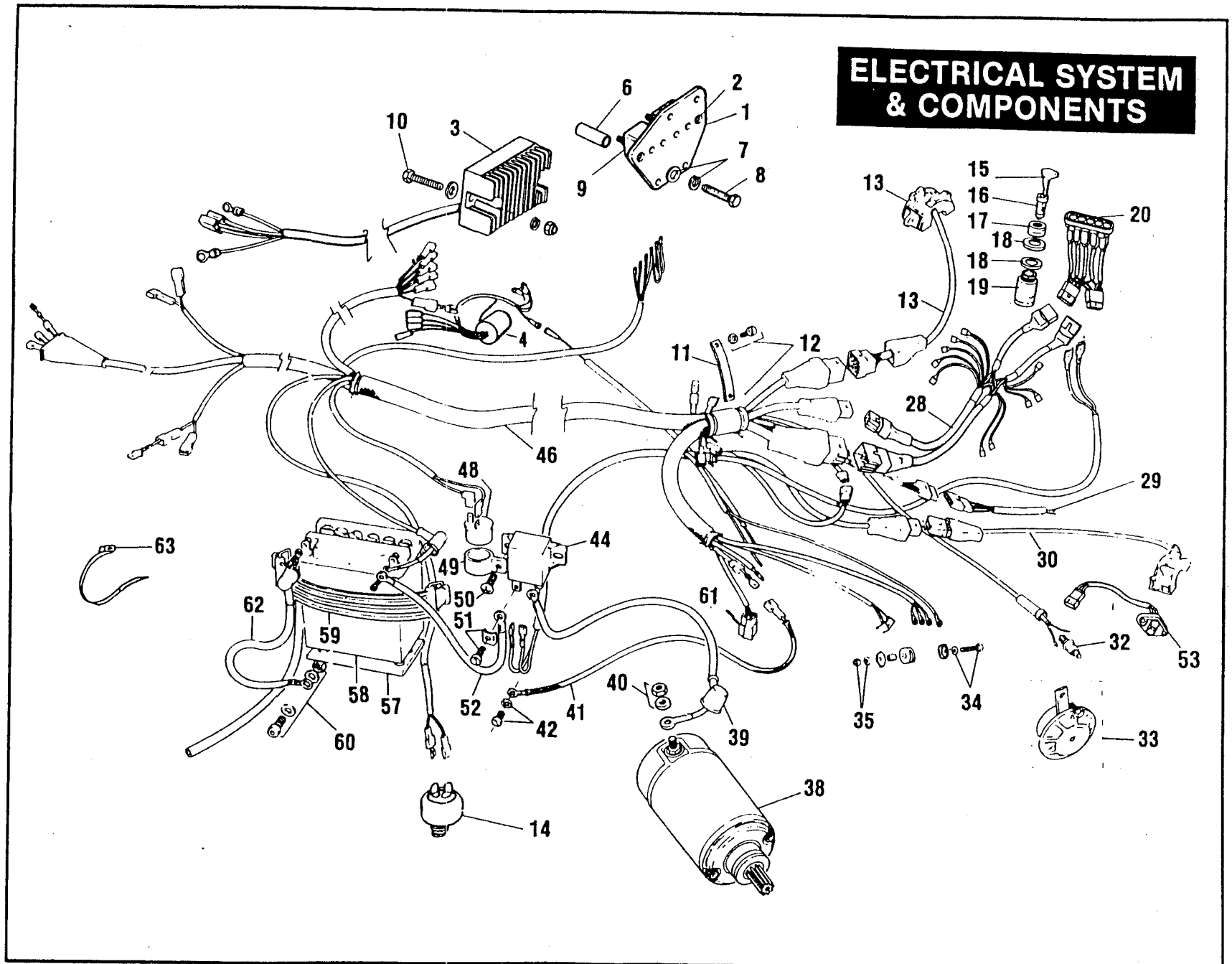
CONTROLS 84762913 PLATE 8

INDEX NO.	PART NO.	NAME	QTY.	MT-350 BRIT
35 (18-22, 37-42)	84752617	THROTTLE CONTROL ASSEMBLY	1	
36	84762608	TWIST GRIP	REF	
37	84762640	CABLE TRACK	1	
38	87998472	NUT, HEX M4	2	
39	84995034	SCREW, M4 X 20 SHCS	2	
40	84995059	CAP SCREW M5X14 SHCS	1	
40A	84960079	SOCKET HEAD CAP SCREW M5X20	2	
41	84763374	HAND GRIP W/HOLE RH	1	
42	84753094	HANDLEBAR, GRN.	1	
43	84760602	CLUTCH CABLE	1	
44	84763101	CHOKE CABLE	1	
45		SEE PLATE 14-6	REF	
46	84763002	THROTTLE CABLE	2	
47	84820646	SEE PLATE 9-13	REF	
		SEE ELECTRICAL		
48	84763010	SPEEDO CABLE	1	
50	84763382	LH HANDGRIP W/HOLE	1	
51		SEE PLATE 14-7	REF	
52	87997193	HEX NUT, M6	2	
53	84995018	SCREW M6X18	2	
54	84762517	CLUTCH LEVER CLAMP	1	
55(52,53,54, 56,57,58)	84762210	CLUTCH LEVER ASSEMBLY	1	
	84762509	CLUTCH LEVER BODY	1	
56	84960012	PIVOT SCREW M6X22	2	
(58,57)	84761063	ADJUSTER ASSEMBLY	1	
57	84761071	ADJUSTER NUT	1	
58	84761055	ADJUSTER SCREW	1	
59	84760305	SHROUD, CLUTCH CABLE	1	
60	87997367	NUT M5	2	
61	84997816	WASHER M5	4	
62		SEE PLATE 7 ITEM 32	REF	
63	84992403	SCREW M5X16 PAN	2	
64	84250216	CABLE BOOT, THROTTLE	1	
65	89570022	BLUE LOCTITE # 242	AS REQ	

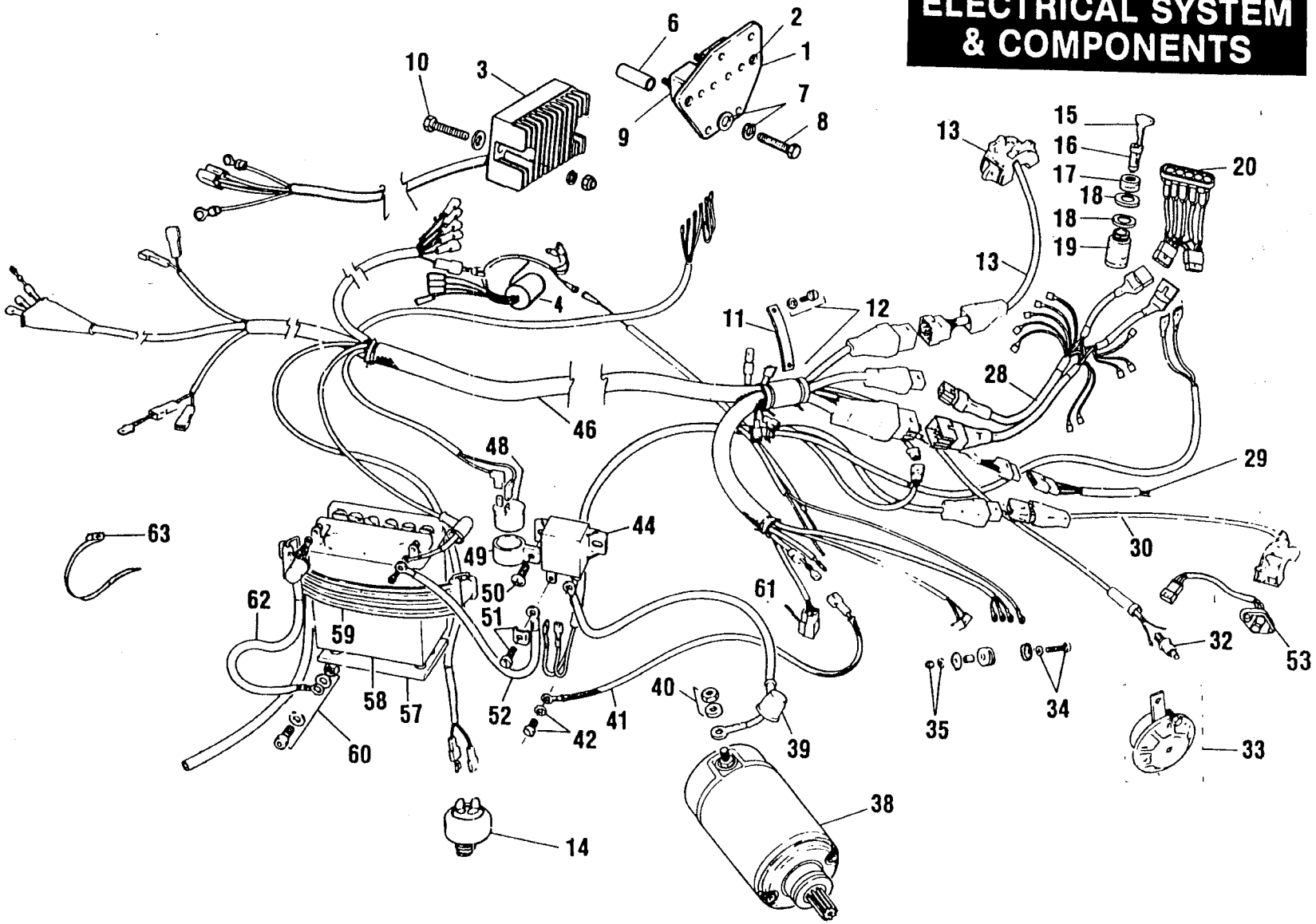
ELECTRICAL SYSTEM & COMPONENTS



ELECTRICAL SYSTEM 84722958 PLATE 9

INDEX NO	PART NO.	NAME	QTY.	MT-350 BRIT
1	84722248	CIRCUIT BREAKER PLATE	1	
2	87998266	RIVET + WASHER	8	
3	84820620	REGULATOR	1	
(1,2,9)	84820711	CIRCUIT BREAKER PANEL ASSY.	1	
4	84621010	LOW VOLTAGE INDICATOR SWITCH	1	
6	84722255	CIRCUIT BREAKER SPACER	2	
7	84997865	FLAT WASHER	2	
	84998087	LOCK WASHER	2	
8	87991360	SCREW M6x45	2	
9	84722305	CIRCUIT BREAKER	4	
10	84990993	SCREW M6X20	2	
	84997865	FLAT WASHER M6	4	
	87997193	NUT, LOCKING M6	2	
11	84761535	HARNESS STRAP	1	
12	84920164	CHEESE HEAD SCREW M5X10	2	
	84997816	PLAIN WASHER M5	2	
13	84820646	LH CONTROL SWITCH	1	
14	84732387	MASTER CYLINDER SWITCH	1	
15-16	84861053	KEY & BARREL	1	
(15-19)	84763283	IGN. SWITCH ASSEMBLY	1	
15	84762426	IGNITION KEY	1	
16	84762418	LOCK BARREL	1	
17	84720937	IGN. SWITCH NUT LARGE	1	
18	84720929	WASHER	2 REF	
19	84720945	IGNITION SWITCH HOUSING	1	
(19,18,17)	84720275	IGNITION SWITCH ASSY.	REF	
20	84723238	WARNING LIGHT PANEL	1	
23	84997865	FLAT WASHER M6	1	
28	84723220	CONSOLE HARNESS	1	
29	84720739	HEADLIGHT HARNESS RH DRIVE	1	
	84720317	HEADLIGHT HARNESS LH DRIVE	1	
30	84820638	RH CONTROL SWITCH (THROTTLE)	1	
32	84720333	FRONT BRAKE SWITCH	1	

ELECTRICAL SYSTEM & COMPONENTS



ELECTRICAL SYSTEM 84722958 PLATE 9

INDEX NO	PART NO.	NAME	QTY.	MT-350 BRIT
33	84820661	HORN(MOD)	1	
34	84991447	HEX BOLT M6X25	1	
	84997865	FLAT WASHER M6	1	
	84998087	LOCK WASHER M6	1	
	87998241	SERRATED WASHER	1	
35	84762814	SPACER M6	1	
	84762772	WASHER CUP M6	2	
	84762822	GROMMET	1	
38	SEE PLATE 15	NEUTRAL INDICATOR SWITCH		
	SEE PLATE 15	MAGNETO		
	SEE PLATE 15	STARTER		
	SEE PLATE 15	AMPLIFIER		
	SEE PLATE 15	COIL		
	SEE PLATE 15	SPARK PLUG		
39	84721059	RELAY CABLE	1	
40	87997193	NUT M6	1	
	84997865	WASHER M6	1	
41	84720796	NEUTRAL START CABLE	1	
42	87998555	SLOTTED PAN HEAD	1	
	87998563	BEVELED WASHER M3	1	
44,51	84721091	RELAY	1	
46	84722453	MAIN HARNESS	1	
48	84722230	FLASHER	1	
49	84720085	FLASHER MOUNT	1	
50	84992601	TRUSS SCREW M6X16	3	
51	84721190	HOLDING CLIP	2	
	84920164	PAN HEAD SLOTTED M5X10	2	
52	84722404	BATTERY CABLE	1	
53	84720366	BLACK OUT SWITCH	1	
57	84762491	BATTERY MAT	1	
58	84722974	BATTERY	1	
59	84760065	BATTERY STRAP	1	

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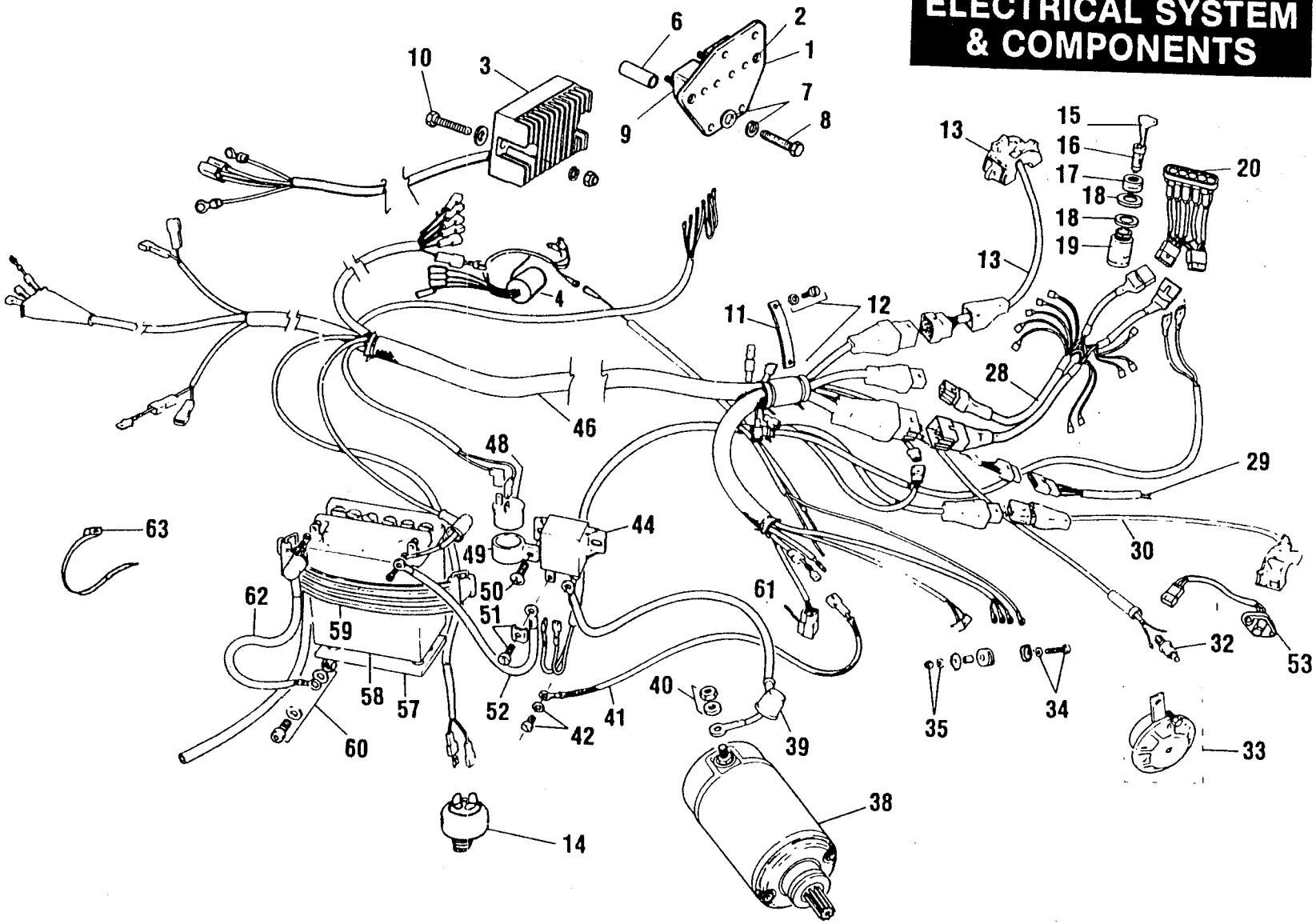
ELECTRICAL SYSTEM & COMPONENTS



ELECTRICAL SYSTEM 84722958 PLATE 9

INDEX NO	PART NO.	NAME	QTY.	MT-350 BRIT
60	84990456	GROUND SCREW M6X16 HEX	1	
	84997865	WASHER M6	2	
	87998241	STAR WASHER M6	1	
	87997185	LOCK NUT M6	1	
61	84723246	3 POSITION FEMALE RECEPTACLE	1	
62	84721083	BATT GROUND CABLE	1	
63	84740133	TYE WRAP	11	

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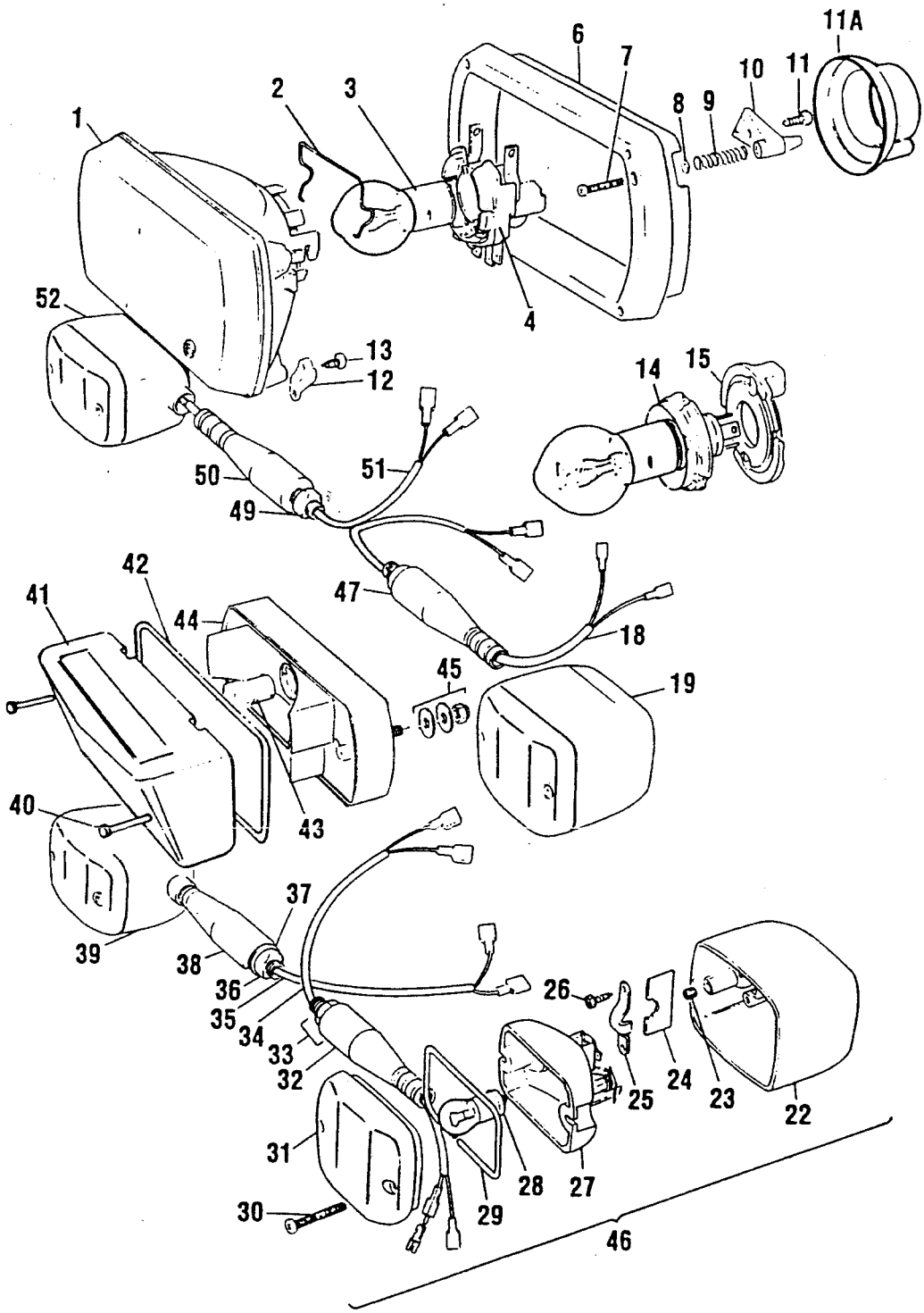
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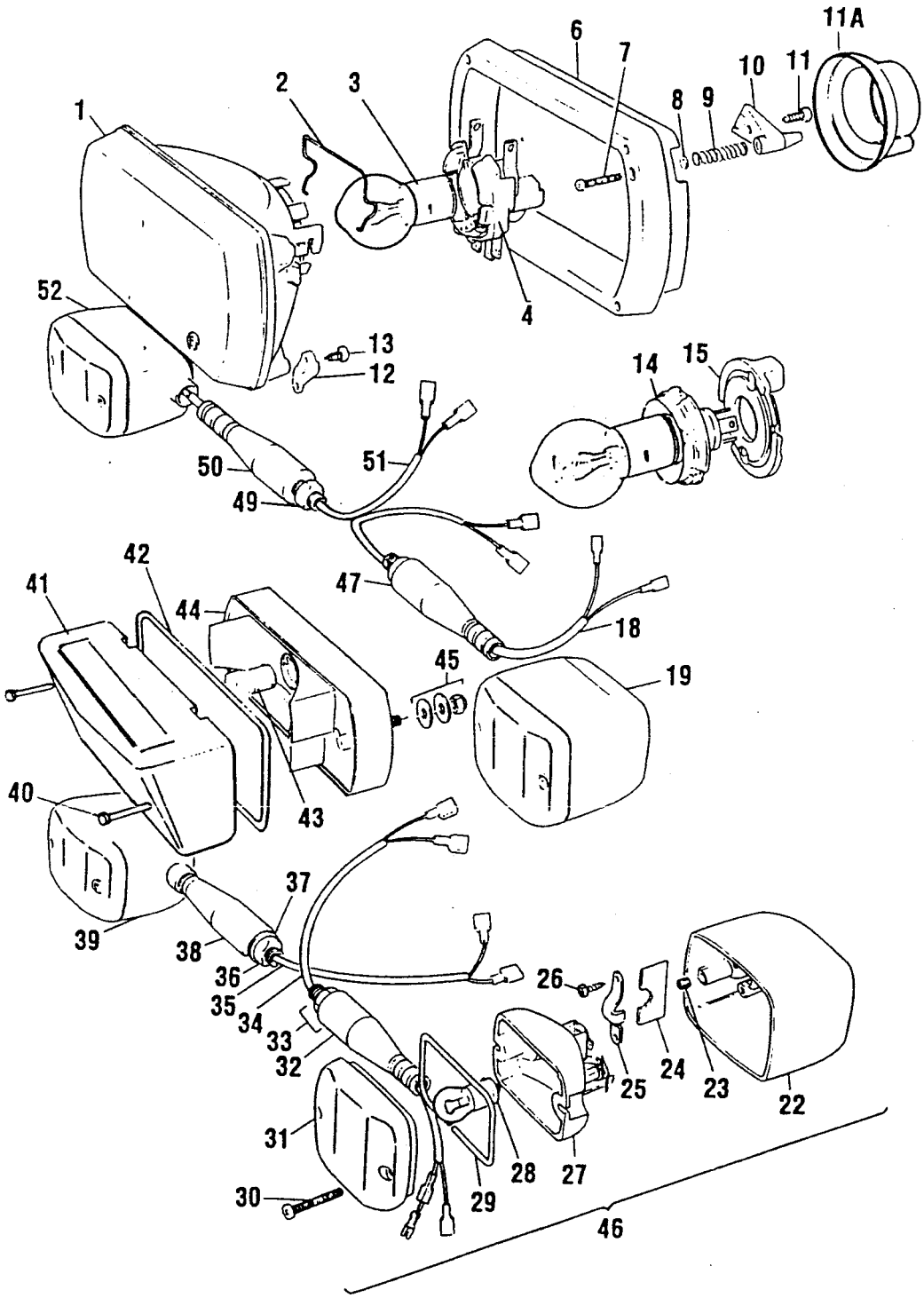
ELECTRICAL LIGHTING 84723204 PLATE 10

INDEX NO.	PART NO.	NAME	QTY.	MT-350 BRIT
1-2, 6-15	84860055	HEADLIGHT ASSEMBLY, RHD	1	
1-13	84850312	HEADLIGHT ASSEMBLY, LHD	1	
1	NAS	LENS	REF	
2	NAS	CLIP	REF	
3	84720242	BULB, LHD	1	
4	NAS	RETAINER, LHD	REF	
6	NAS	HEADLIGHT SURROUND	REF	
(7-11)	NAS	HEADLIGHT ADJUSTER ASSEMBLY	REF	
7	NAS	SCREW M4.2X16	REF	
8	NAS	ADJUSTER WASHER	REF	
9	NAS	ADJUSTER SPRING	REF	
10	NAS	HEADLAMP ADJUSTER	REF	
11	NAS	ADJUSTER SCREW	REF	
11A	84722262	HEADLIGHT BOOT	1	
12	NAS	HEADLAMP RETAINER	REF	
13	NAS	SCREW (SEE KEY 11)	REF	
14	84720655	HEADLIGHT BULB RHD	1	
15	NAS	BULB RETAINER	REF	
18	NAS	CABLE, LH FRONT INDICATOR	REF	
19 (22-31)	84750736	INDICATOR LIGHT ASSEMBLY	4	
22	NAS	INDICATOR HOUSING	REF	
23	NAS	INSERT	REF	
24	NAS	CLAMP PLATE	REF	
25	NAS	CLAMP	REF	
26	NAS	CLAMP SCREW	REF	
27	NAS	BODY	REF	
28	84720259	BULB, IND	1	
29	NAS	GASKET	REF	
30	NAS	SCREW	REF	
31	NAS	LENS	REF	
32	84820703	REAR STEM ASSY.	2	
33	NAS	JAM NUT	REF	
	NAS	PLAIN WASHER	REF	
34	NAS	CABLE, RH REAR INDICATOR	REF	
35	NAS	CABLE, LH REAR INDICATOR	REF	

*** NAS = PART OF AN ASSEMBLY - NOT AVAILABLE SEPARATELY
*** LHD AND RHD REFER TO DIP

LIGHTING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ELECTRICAL LIGHTING 84723204 — PLATE 10

INDEX NO.	PART NO.	NAME	QTY.	MT-350 BRIT
36	84992429	JAM NUT M12	4 REF	
37	84997949	WASHER	REF.	
38	NAS	STEM	REF.	
39 (32-19)		RH REAR INDICATOR LIGHT	REF.	
(40-44)	84722016	TAILLIGHT ASSEMBLY	1	
40	84752781	MOUNTING SCREW M3X36	2	
41	NAS	LENS	1	
42	NAS	GASKET	1	
43	84752799	BULB TAILLIGHT	1	
44	NAS	HOUSING	1	
45	84992445	SCREW M6X30 HEX	2	
	84997865	FLAT WASHER M6	2	
	84997980	WASHER CAR BODY M6	2	
	87997185	LOCK NUT M6	2	
46 (32,19)	84820703	LH REAR INDICATOR ASSY.	REF	
47 (50,19)	84820695	LH FRONT INDICATOR ASSEMBLY	1	
49	SEE KEY 33			
50	84820695	FRONT STEM ASSEMBLY	REF	
51	NAS	CABLE, RH FRONT INDICATOR	REF	
52 (50,19)	84820695	RH FRONT INDICATOR ASSY.	1	

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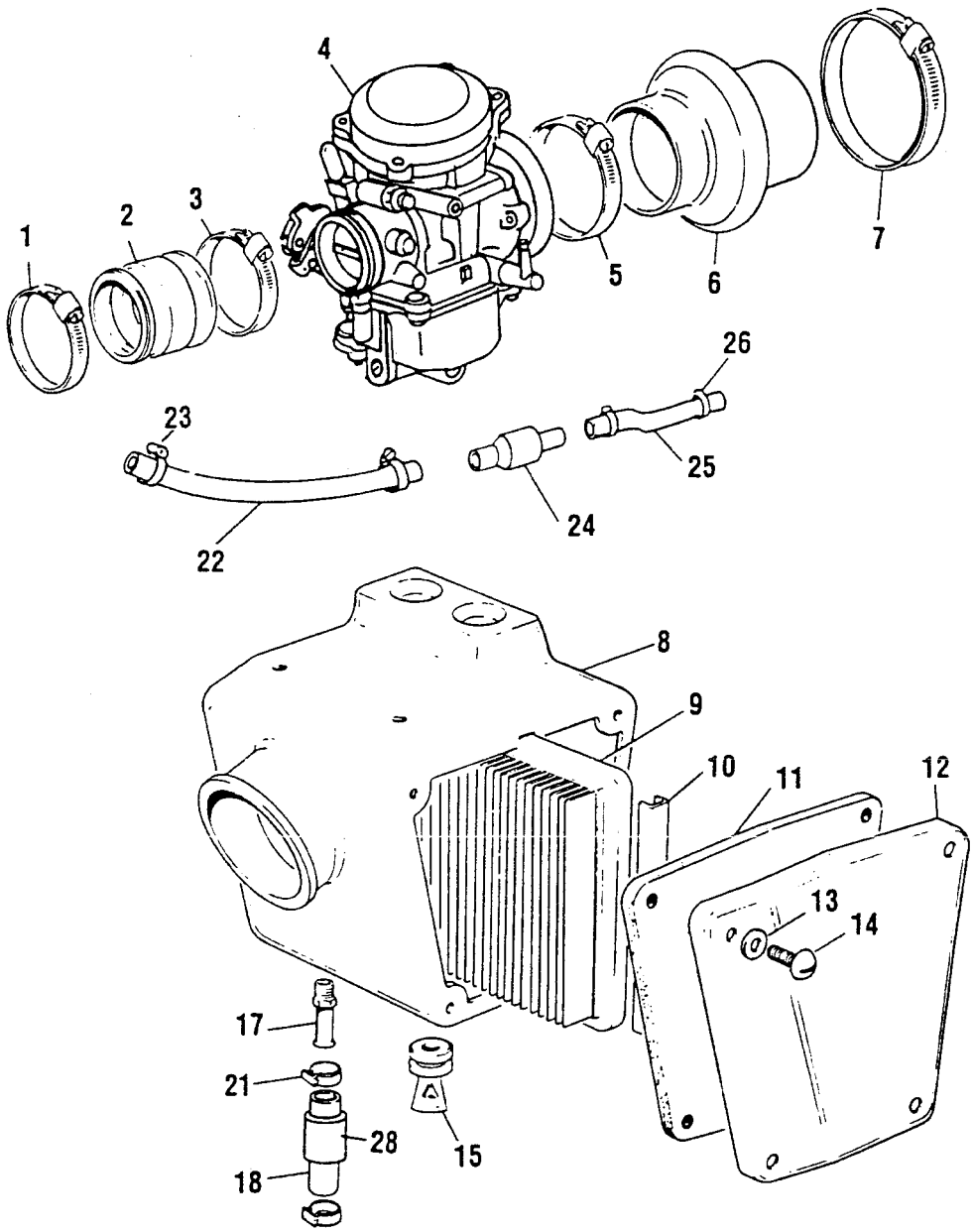
*** NAS = PART OF AN ASSEMBLY - NOT AVAILABLE SEPARATELY

*** LHD AND RHD REFER TO DIP

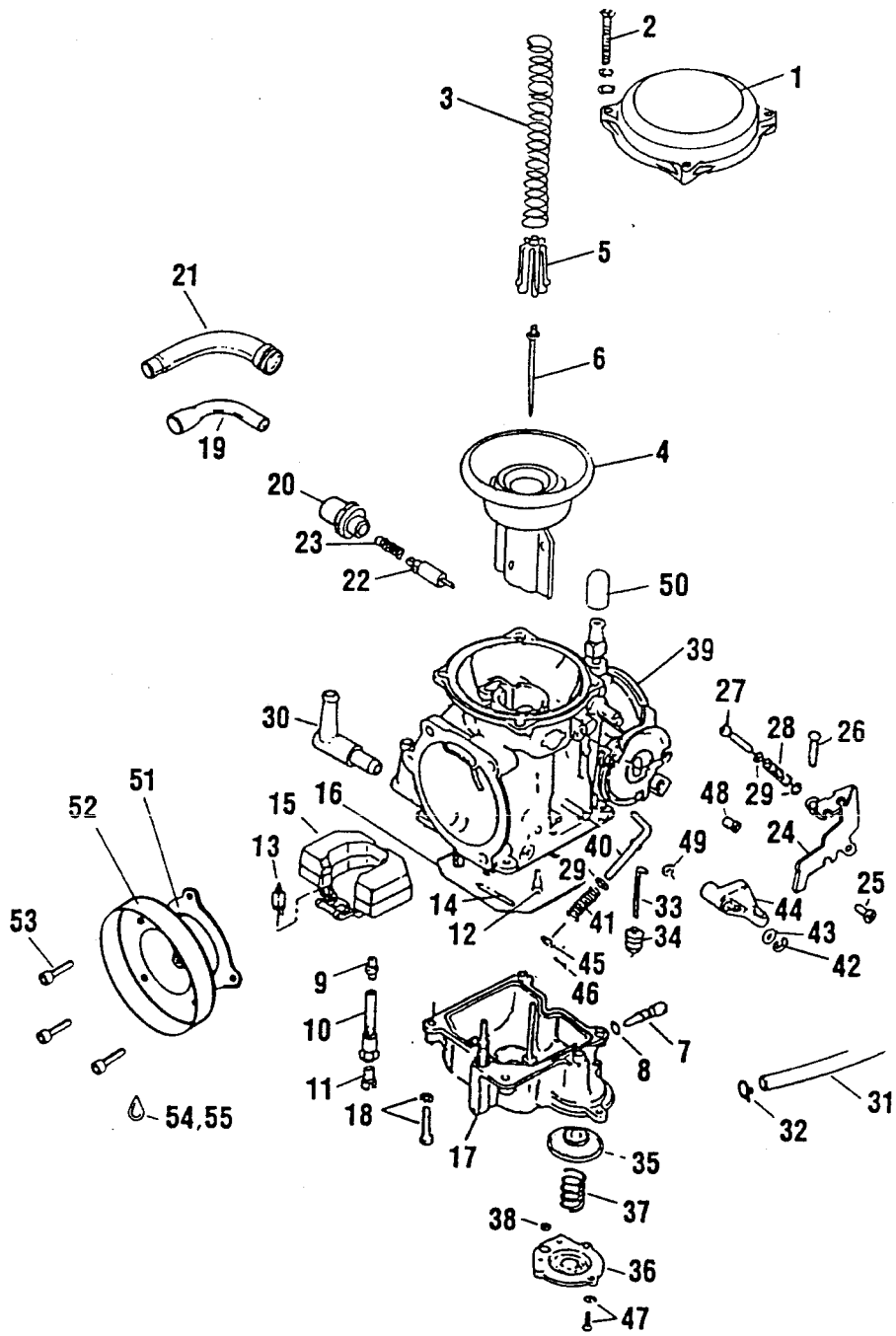
AIR/FUEL INTAKE



AIR / FUEL & INTAKE 84753177 PLATE 11

INDEX NO.	PART NO.	NAME	QTY.	MT-350 BRIT
1	84710029	RAD HOSE CLAMP	1	
2	84710805	BOOT, CARB TO ENGINE	1	
3	84710029	RAD HOSE CLAMP	1	
4	84315027	CARBURETOR (SEE PLATE 11A)	1	
5	84710037	RAD HOSE CLAMP	1	
6	84753235	BOOT, CARB TO AIRBOX	1	
7	84710037	RAD HOSE CLAMP	1	
8	84752518	AIR BOX, GRN.	1	
9	84750124	AIR FILTER ELEMENT	1	
10	84650407	ELEMENT CHANNEL	1	
11	84650720	LID SEAL	1	
12	84650712	AIR BOX LID, GRN.	1	
(11,12)	84752526	AIR BOX LID ASSEMBLY	1	
13	87998155	PLASTIC WASHER	4	
14	84992601	TRUSS HEAD SCREW	4	
15	84750132	DRAIN BLADDER	1	
17	84710318	TUBE, AIRBOX	1	
18	84752989	AIR BOX BREATHER HOSE	1	
21	84753805	HOSE CLAMP	2	
22	84753904	FUEL HOSE TANK TO VALVE	1	
23	84753011	WORM CLAMP	1	
24	84752948	ROLLOVER VALVE	1	
25	84753896	FUEL HOSE VLV TO CARB	1	
26	84752997	HOSE CLAMP	3	
28	84733468	LARGE SLEEVE 9 INCHES	1	

CARBURETOR



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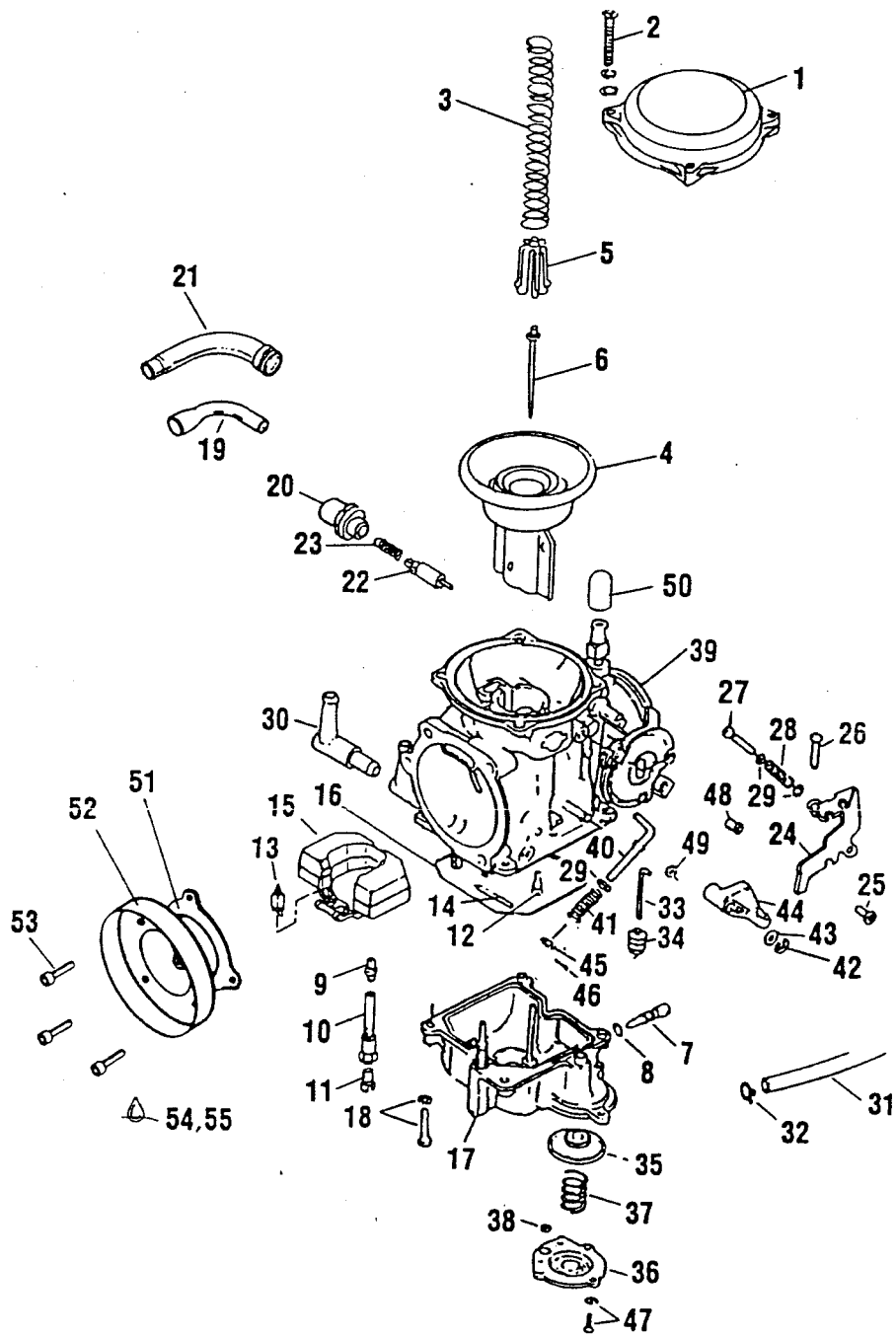
CARBURETOR 84315027 PLATE 11A

INDEX NO.	PART NO.	NAME	QTY.	MT350 - BRIT
1-55	84315027	CARBURETOR ASSEMBLY	1	
1-50	27650-94	CARBURETOR	REF	
1	27040-88	TOP	1	
2	27129-88	SCREW TOP	3	
3	27162-89	SPRING	1	
4	27585-88	VACUUM PISTON	1	
5	27586-88	SPRING SEAT	1	
6	27276-94	JET NEEDLE	1	
7	27158-89	DRAIN SCREW	1	
8	27157-89	O-RING	1	
9	27277-94	NEEDLE JET	1	
10	27101-88	NEEDLE JET HOLDER	1	
11	27115-88	MAIN JET	1	
12	27281-92	SLOW JET	1	
13	27886-78A	FUEL VALVE WITH CLIP	1	
14	27575-88A	PIN	1	
15	27576-92	FLOAT	1	
16	27577-92	O-RING	1	
17	27346-94	FLOAT CHAMBER ASSY.	1	
18	27579-88A	SCREW M4 X 14	4	
19	27580-88	CABLE GUIDE	1	
20	27581-88	STARTER CAP	1	
21	27582-88	CABLE SEALING CAP	1	
22	27583-88	STARTER VALVE	1	
23	27315-88A	SPRING	1	
24	27345-94	BRACKET, THROTTLE WIRE	1	
25	27317-88	SCREW (THROTTLE WIRE BRACKET)	1	
26	27587-88	SCREW (THROTTLE WIRE BRACKET)	1	
27	27130-90	SCREW, IDLE SPEED ADJUST	1	
28	27136-90	SPRING	1	
29	27137-81	WASHER	3	
30	27371-76	L-JOINT	1	
31	27343-94	RUBBER TUBE	1	
32	27368-76	CLIP, TUBE	1	
33	27156-89	ROD	1	
34	27311-76	BOOT	1	
35	27361-76	DIAPHRAGM ASS'Y	1	
36	27160-89	PUMP HOUSING	1	
37	27362-76	SPRING	1	
38	27360-76	U-RING	1	
39	NAS	CARBURETOR BODY	REF	
40	27122-89	ROD	1	
41	27123-89	SPRING	1	
42	27124-89	E-CLIP	1	
43	27125-89	WASHER	1	
44	27126-89	LEVER	1	

CARBURETOR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CARBURETOR 84315027 — PLATE 11A

INDEX NO.	PART NO.	NAME	QTY.	MT350 - BRIT
45	27127-89	WASHER	1	
46	27128-89	PIN	2	
47	27146-89	SCREW W/ WASHER	3	
48	27147-89	COLLAR	1	
49	27148-89	WASHER	1	
50	27344-94	CAP	1	
51	84753219	GASKET	1	
52	84753201	CARBURETOR ADAPTOR	1	
53	84711415	CARBURETOR SCREWS	3	
55	89570022	LOCTITE 242 BLUE	AS REQ	
54	89570055	LOCTITE PRIMER 7649	AS REQ	

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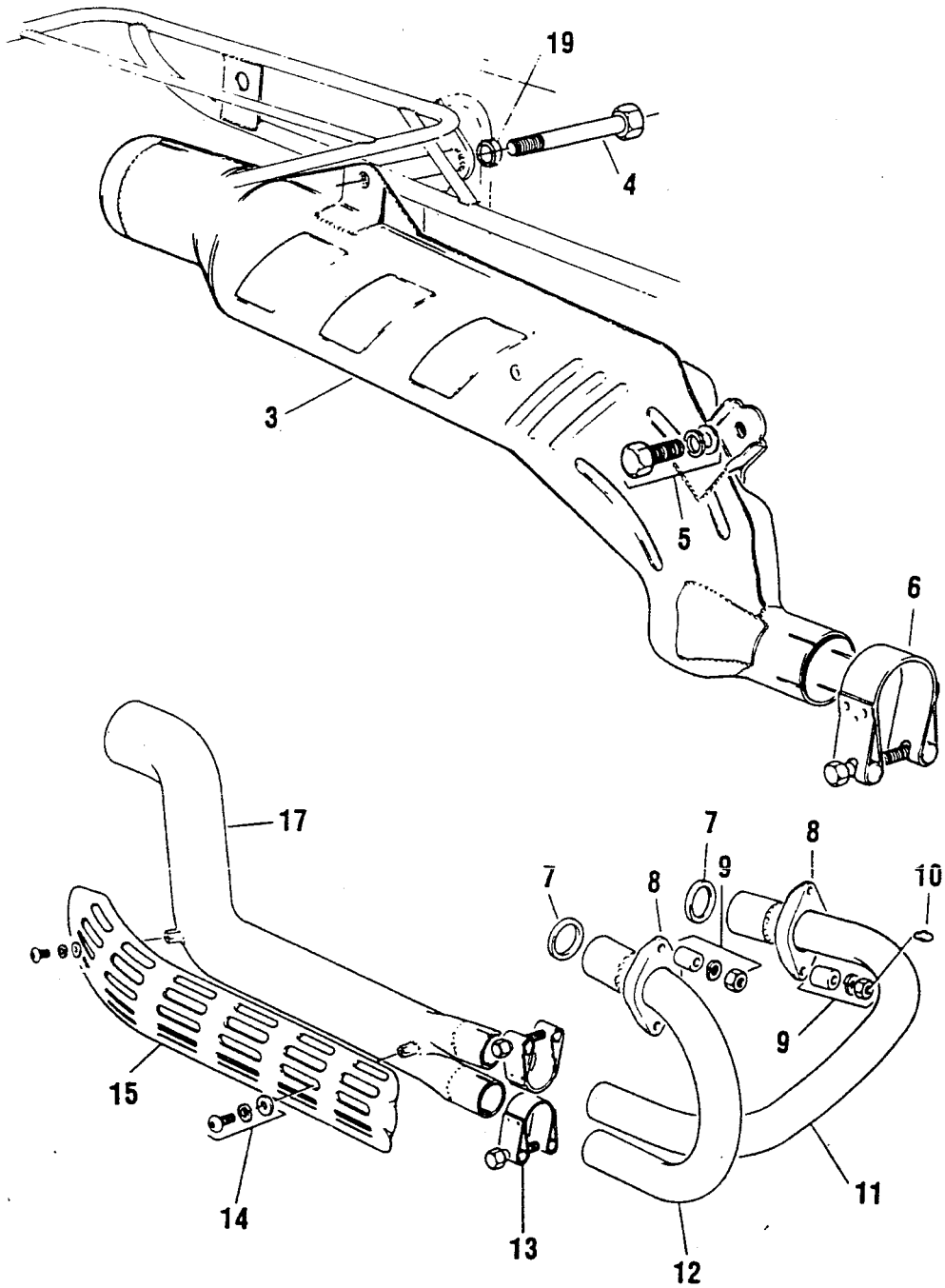
EXHAUST



EXHAUST 84710870 PLATE 12

INDEX NO.	PART NO.	NAME	QTY.	MT-350 BRIT
3	84711506	EXHAUST SILENCER	1	
4		SEE PLATE 2 - 39		
5	84990472	HEX SET SCREW M10X20	1	
	84998111	SPRING WASHER M10	1	
	84997915	PLAIN WASHER M10	1	
6	84710151	CLAMP, MIDSECTION	1	
7	230-080	SEAL, EXHAUST/HEAD	2	
8	84710060	EXHAUST CLAMP	2	
9	84710276	EXHAUST SPACER	4	
	84997220	HEX NUT M8	4	
	84992494	LOCKWASHER M8	4	
10	89510010	COPPER GREASE	AS RQD	
11	84710045	LH EXHAUST PIPE	1	
12	84710052	RH EXHAUST PIPE	1	
13	84710144	CLAMP, EXHAUST	2	
14	84991173	SCREW M6X10	2	
	84997865	FLAT WASHER M6	2	
	84998087	LOCK WASHER M6	2	
15	84710078	EXHAUST SHIELD	1	
17	84710086	EXHAUST MIDSECTION	1	
18	84510031	EXHAUST JOINING COMPOUND	ASRQD	
19	84711480	SPACER M10 ID	1	

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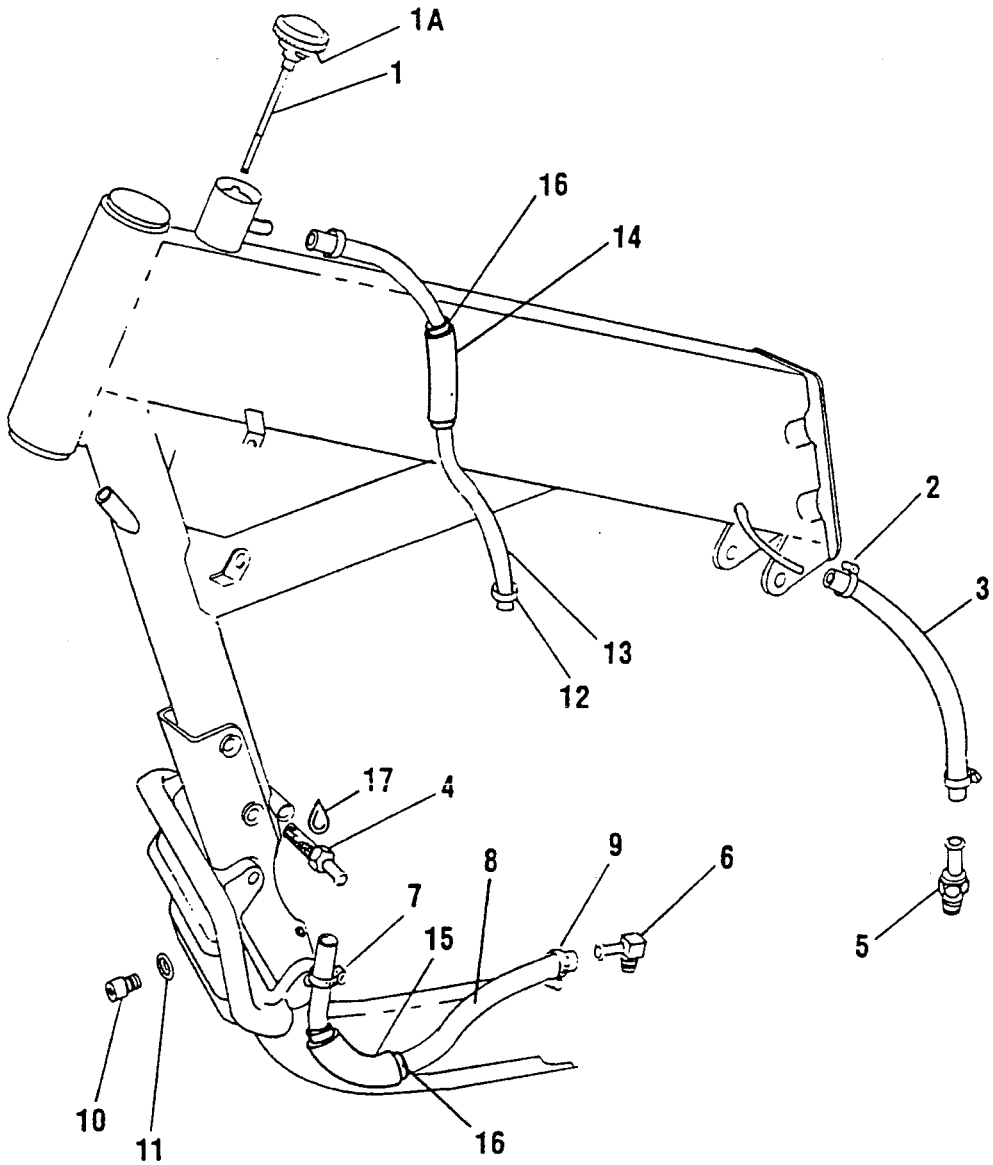
OIL PIPING

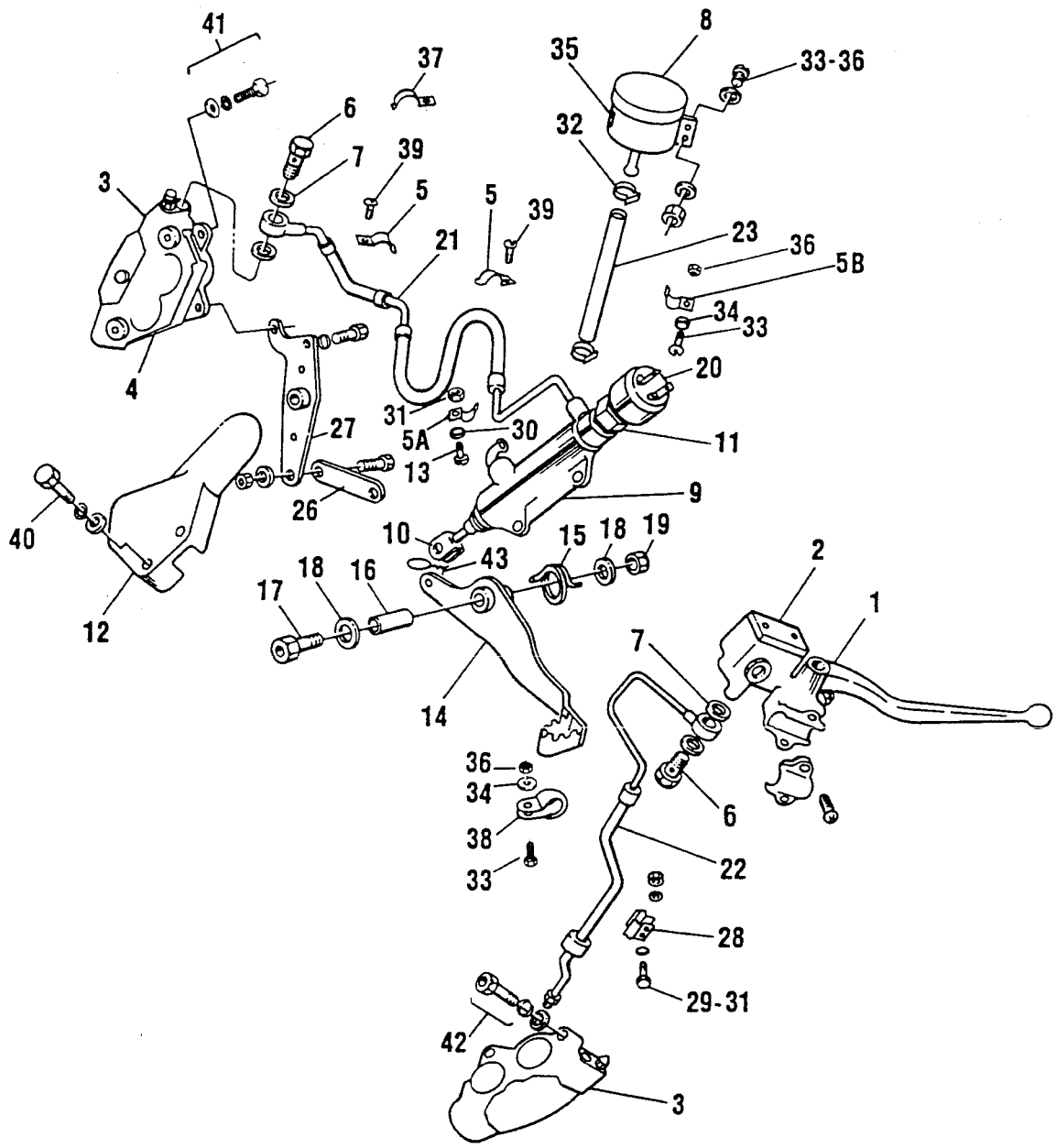


OIL PIPING 84711472

PLATE 13

INDEX NO.	PART NO.	NAME	QTY.	MT-350 BRIT
1	84851104	DIPSTICK ASSEMBLY	1	
1A	84700277	DIPSTICK SEAL	1	
2	84753003	HOSE CLAMP	2	
3	84752971	OIL RETURN HOSE	1	
4	84710839	OIL STRAINER	1	
5	84710854	HOSE FITTING	1	
6	84830934	MOD 90 DEG FITTING	1	
7	84710367	RAD HOSE CLAMP MED.	1	
8	84710813	SUPPLY HOSE	1	
9	84753003	RAD HOSE CLAMP	1	
10	241-781	OIL PLUG	1	
11	250-110	WASHER	1	
12	84752997	HOSE CLAMP	2	
13	84732551	ROCKER ARM HOSE	1	
14	84733476	SMALL SLEEVE 130 mm LENGTH	1	
15	84733468	LARGE SLEEVE	1	
16	84740133	TYE WRAP	4	
17	89570063	LOCTITE PST - 592	AS REQ	

BRAKE SYSTEM



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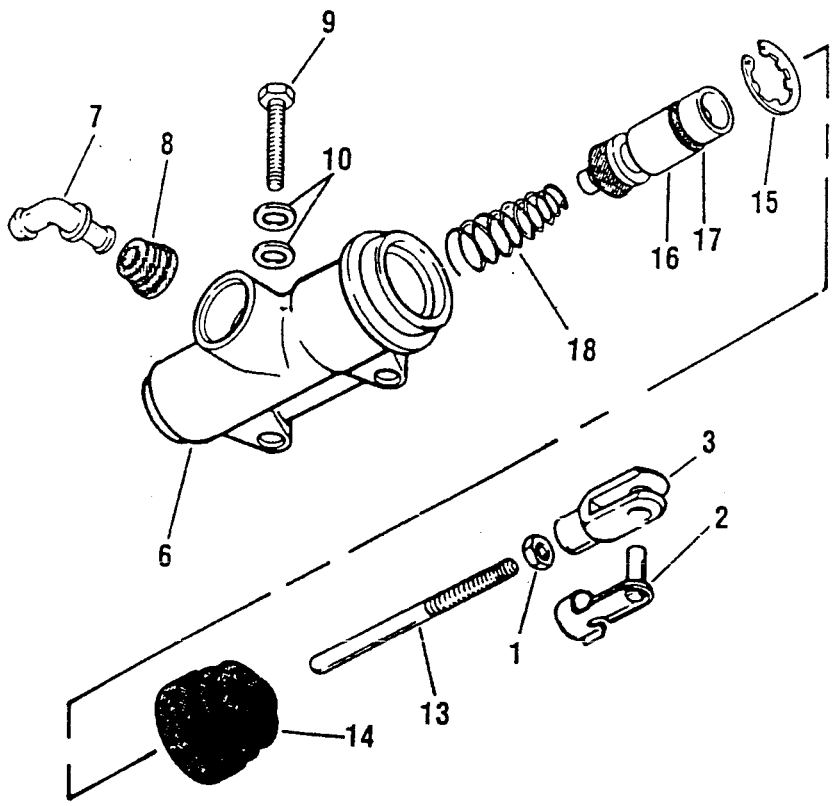
BRAKE SYSTEM 84732890 PLATE 14

INDEX NO	PART NO.	NAME	QTY.	MT-350 BRIT
28	84732171	FORK HOSE CLIP	2	
29	84990993	SCREW M6X20 HEX	2	
30	84997865	FLAT WASHER M6	5	
31	87997193	NUT, LOCKING M6	3	
32	84752997	RESERVOIR HOSE CLAMP	2	
33	84992403	SCREW M5X16	4	
34	84997816	WASHER, FLAT M5	8	
35	84733500	RESERVOIR DECAL	1	
36	87997367	NUT, LOCKING M5	4	
37	84753789	OVERSIZED HOSE CLIP	1	
38		SEE PLATE 7 ITEM 32		
39	84920016	SELF TAPPING SCREW	2	
40	84992452	HEX HEAD BOLT M6X35	2	
	84998087	LOCK WASHER M6	2	
	84997865	FLAT WASHER M6	2	
41	87998415	REAR CAL HEX BOLT M8X25	2	
42	84992569	FRNT CAL HEX BOLT M8X35	2	
	84992494	LOCK WASHER M8	4	
	84997998	FLAT WASHER M8	4	
43	87998282	SAFETY WIRE	ASREQ	

REAR MASTER CYLINDER



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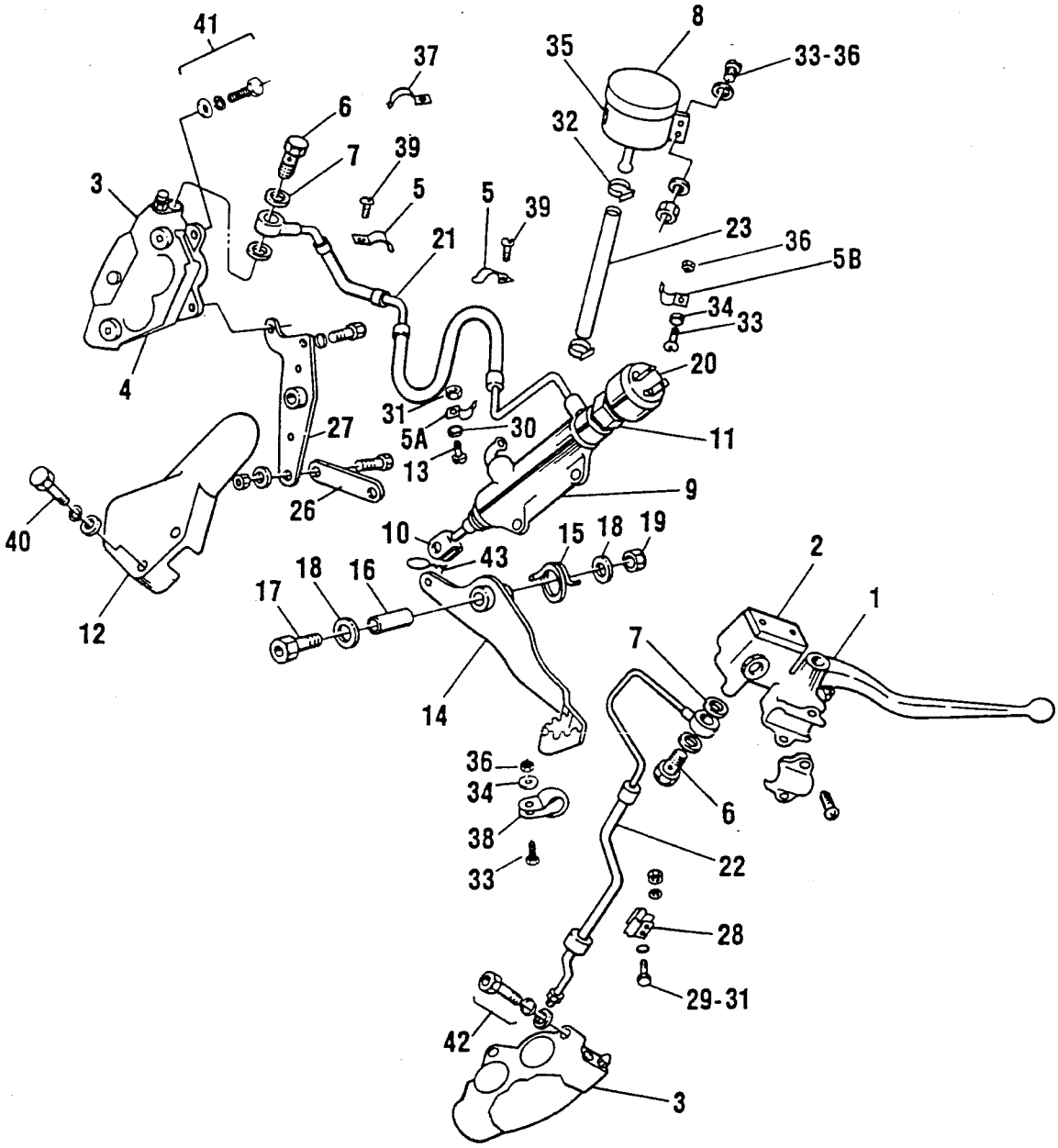
BRAKE SYSTEM 84732890 PLATE 14

INDEX NO	PART NO.	NAME	QTY.	MT-350 BRIT
1	82830050	FRONT MASTER CYLINDER	1	
2	84732031	MASTER CYLINDER CAP	1	
3	84732015	BRAKE CALIPER	2	
4	84831049	BRAKE PAD	4	
5	84753037	HOSE CLIP	3	
5A	84753797	MOD HOSE CLIP	1	
6	84732239	BANJO BOLT	2	
7	84732247	BANJO BOLT WASHER	6	
8	84732270	REAR BRAKE RESERVOIR ASSY	1	
(9,10)	84732395	RR MASTER CYL. ASSY	1	
9	84732999	REAR MASTER CYLINDER	1	
10	84732569	PUSH ROD ASSEMBLY	1	
11	84732668	MODIFIED BANJO BOLT	1	
12	84732676	MASTER CYL. COVER, GRN.	1	
13	87998290	TRUSS HEAD M6X20	2	
	84997865	FLAT WASHER M6	2	
14	84733047	BRAKE PEDAL, GRN.	1	
15	84732429	BRAKE PEDAL SPRING	1	
16	84733211	PIVOT	1	
17	84991355	SCREW M8X50 HEX	1	
18	84997998	WASHER M8	1	
	84997725	CAR BODY WASHER M8	1	
19	87997235	LOCK NUT M8	1	
20	84732387	REAR BRAKE SWITCH	REF	
21	84733021	REAR BRAKE HOSE	1	
22	84733039	FRONT BRAKE HOSE	1	
23	84752922	RESERVOIR HOSE	1	
26	84733013	TORQUE ARM, GRN.	1	
27	84733062	CALIPER BRACKET, GRN.	1	

BRAKE SYSTEM



REAR MASTER CYLINDER 84732395 PLATE 14A

INDEX NO.	PART NO.	NAME	QTY.	MT-350 BRIT
1	NAS	JAM NUT	REF	
2	NAS	CLEVIS PIN	REF	
3	NAS	CLEVIS	REF	
6	84630466	MASTER CYL BODY	1	
7	84630474	ELBOW	1	
8	NAS	GROMMET	1	
9	84992452	MOUNTING BOLT	REF	
10	84997865	WASHER	REF	
	84998087	LOCK WASHER	REF	
13	NAS	PUSH ROD	REF	
14	NAS	DUST COVER	REF	
15	NAS	SNAP RING	REF	
16	NAS	PISTON	REF	
17	NAS	O-RING	REF	
18	84630540	SPRING	1	
8,14-17	84831064	REPAIR KIT, RR MST CYLINDER	1	
1-3,13	84732569	PUSH ROD ASSEMBLY	1	

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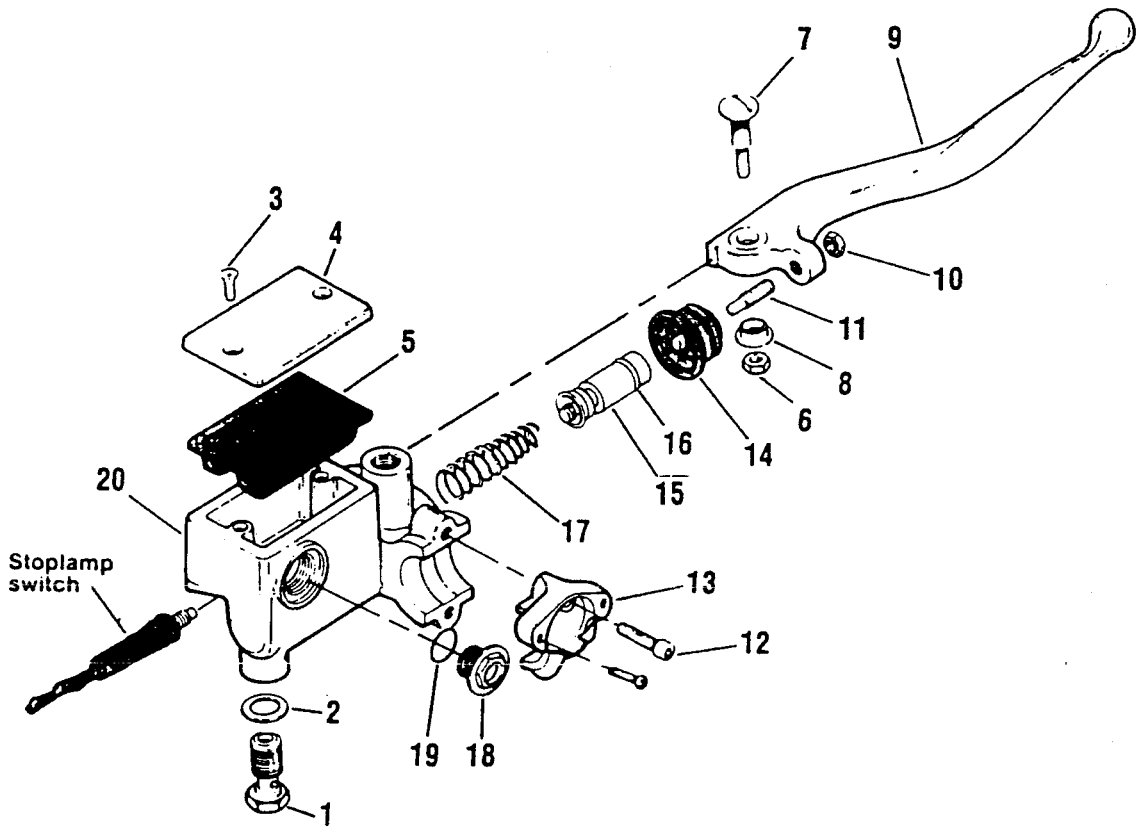
FRONT MASTER CYLINDER



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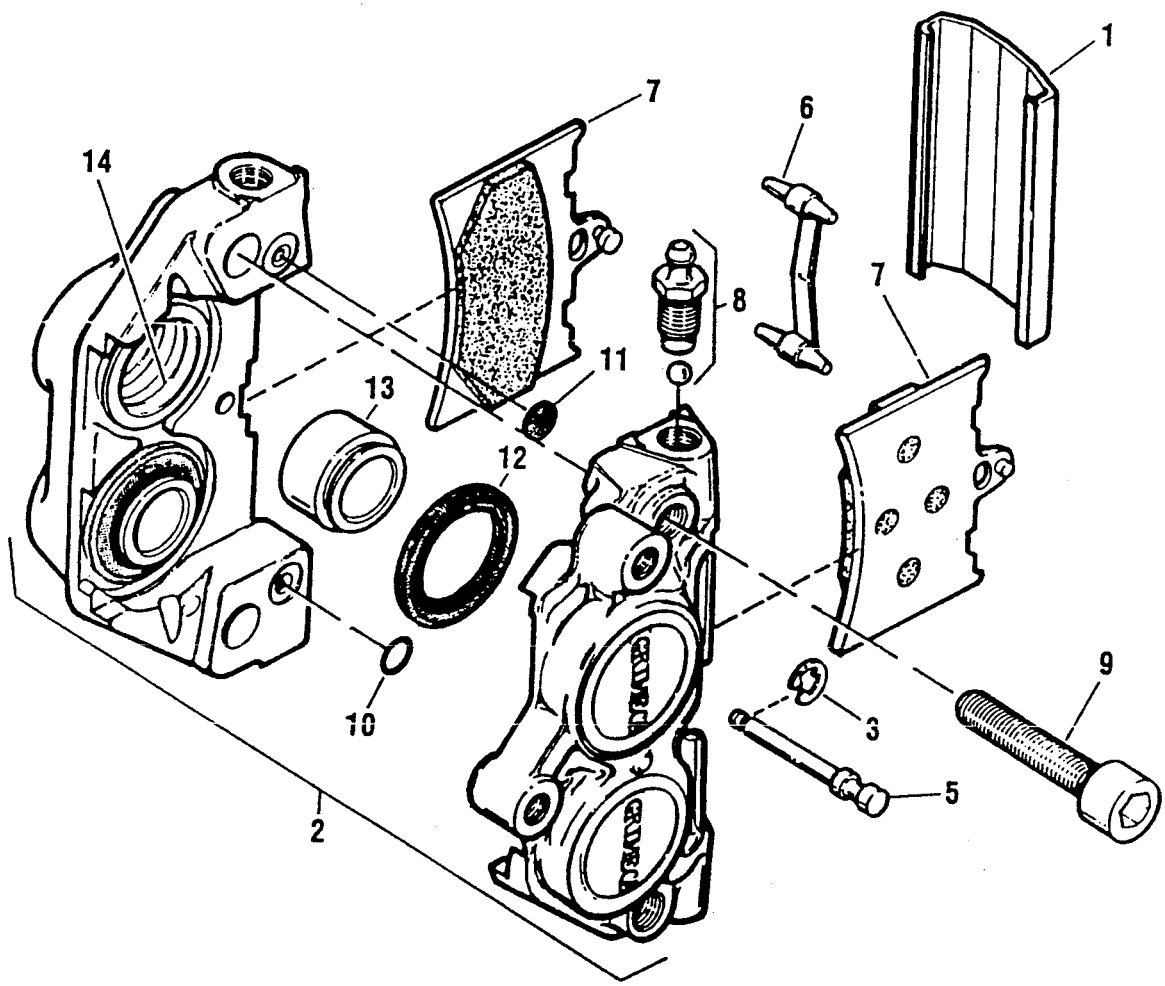
FRONT MASTER CYLINDER 82830050 PLATE 14B

INDEX NO.	PART NO.	NAME	QTY.	MT-350 BRIT
1	84732239	BANJO BOLT	1	
2	84732247	COPPER WASHER	2	
3	87998225	CAP SCREW	2	
4	84732031	RESERVOIR CAP	1	
5	84630698	SEAL	1	
6	84630703	HEX NUT	1	
7	84762574	PIVOT SCREW	1	
8	84762566	BUSHING	1	
9	84762558	LEVER	1	
10	84630714	JAM NUT	1	
11	84762582	ADJUSTER STUD	1	
12	87998449	SOCKET HEAD CAP SCREW	2	
13	84761048	U CLAMP	1	
14	NAS	DUST CAP	REF	
15	NAS	PISTON	REF	
16	NAS	O'RING	REF	
17	84630755	SPRING	1	
18	84630771	SIGHT PLUG	1	
19	NAS	O'RING	REF	
20	84762525	CYLINDER HOUSING	1	
14-16,19	84831080	REPAIR KIT, FRONT MST. CYLINDER	1	

CALIPER



BRAKE CALIPER 84732015 PLATE 14C

INDEX NO.	PART NO.	NAME	QTY.	MT-350 BRIT
1	84630557	DUST COVER	1	
2	84630565	CALIPER	1	
3	84630573	SNAP RING	1	
5	84630599	PIN	1	
6	84630607	TENSIONER	1	
7	84831049	PAD	2	
8	84630615	BLEEDER VALVE	1	
9	84630623	BOLT	2	
10	NAS	O-RING	REF	
11	NAS	WASHER, RUBBER	REF	
12	NAS	SEAL	REF	
13	NAS	PISTON	REF	
14	NAS	PISTON BORE O-RING	REF	
10-14	84831072	REPAIR KIT, CALIPER	1	

HARLEY DAVIDSON MT350 ENGINE INDEX

MT350 ENGINE COMPLETE PART NO.84315035

PLATE NO.	DESCRIPTION	MT350 - BRIT
15A	CRANKCASE	
15B	OIL PUMP	
15C	CRANKSHAFT, BALANCER DRIVE, PISTON AND CYLINDER	
15D	5 SPEED TRANSMISSION	
15E	CLUTCH, KICK START	
15F	CLUTCH COVER (ELECTRIC START)	
15G	CYLINDER HEAD, CAM SHAFT	
15H	VALVES, ROCKER ARMS, ADJUSTMENT SCREWS	
15I	TIMING BELT HOUSING, TIMING BELT COVER, (W/ELECTRIC START)	
15J	CAM SHAFT DRIVE	
15K	IGNITION UNIT, 12V 190W	
15L	ELECTRIC STARTER	
15M	VALVE, OIL FILTER, IGNITION COVER	
15N	REPAIR TOOLS, GASKET SETS	

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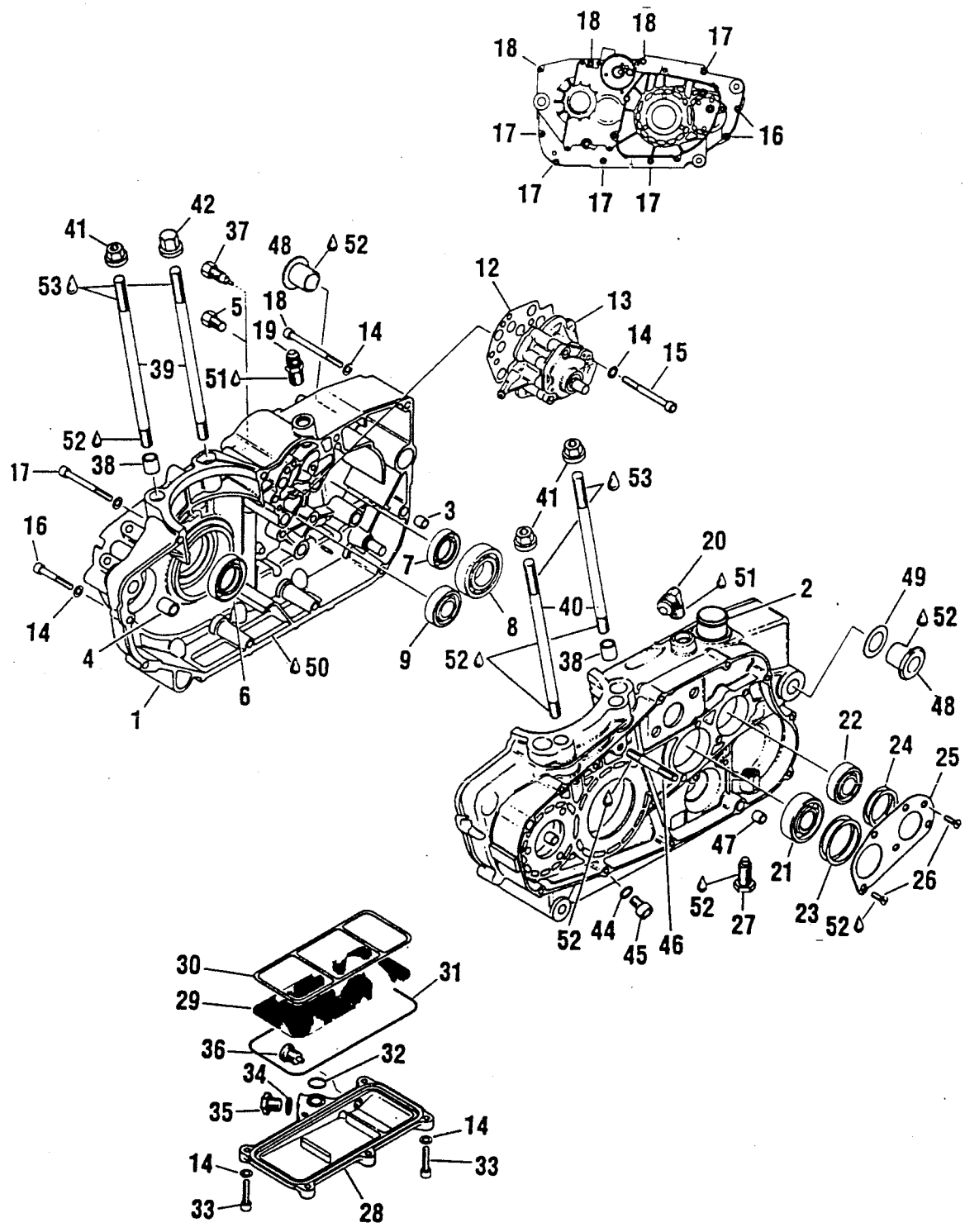
CRANKCASE



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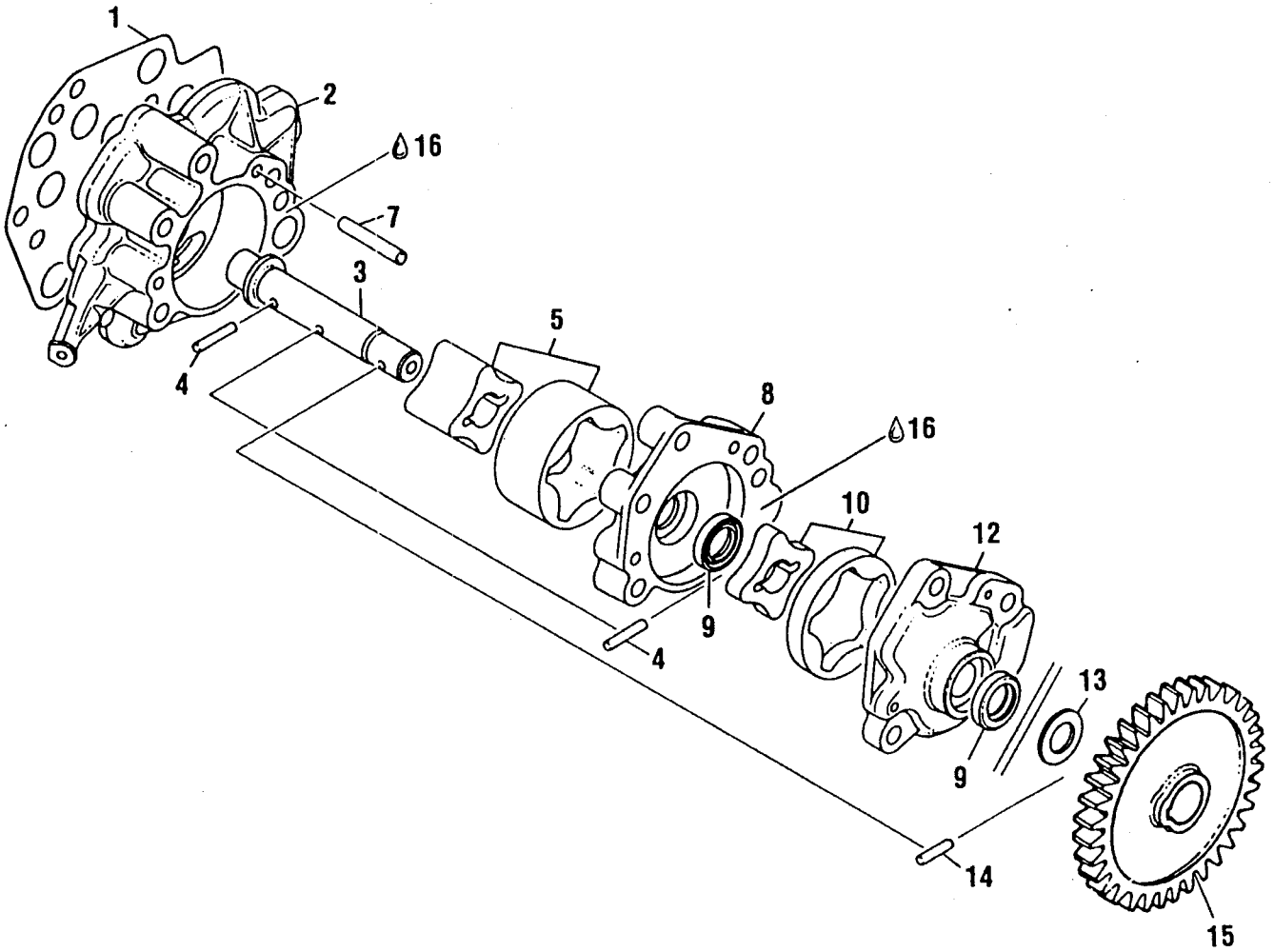
CRANKCASE 84315068 PLATE 15A

INDEX NO.	PART NO.	NAME	QTY.	BRIT-MT350
A31	831-762	O-RING SEAL 145-2,52	1	
A32	230-880	O-RING 13,3-2, 4	1	
A33	840-861	ALLEN SCREW M6X25	6	
A34	250-010	GASKET RING C 12X18	1	
A35	241-401	HEX.SCREW M12X12	1	
A36	241-782	MAGNETIC DRAIN PLUG M12X1, 5	1	
A37	241-850	CONTACT SCREW M10 ASSY	1	
A38	229-160	DOWEL 13, 8X15	2	
A39	240-440	STUD M10X197 MAG. SIDE	2	
A40	240-430	STUD M10X185 CLUTCH SIDE	2	
A41	242-690	HEX. NUT M10	3	
A42	242-695	CAP NUT M10	1	
A44	950-141	GASKET RING A M8X12	1	
A45	841-521	ALLEN SCREW M8X12	1	
A46	940-370	STUD M8X61/15	1	
A47	229-140	DOWEL 9, 8X10	2	
A48	247-320	SLEEVE	2	
A49	246-150	SHIM 16, 3/25, 8/0 ,3	AS REQ.	
A49	246-151	SHIM 16, 3/25, 8/0 ,5	AS REQ.	
A50	899-784	LOCTITE 574 ORANGE SEAL COMP.	AS REQ.	
A51	89570030	LOCTITE PST-565	AS REQ.	
A52	899-785	LOCTITE 221 VIOLET LOW STR. BOND	AS REQ.	
A53	297-433	MOLYKOTE G-N100GR, SLIDE PASTE	AS REQ.	

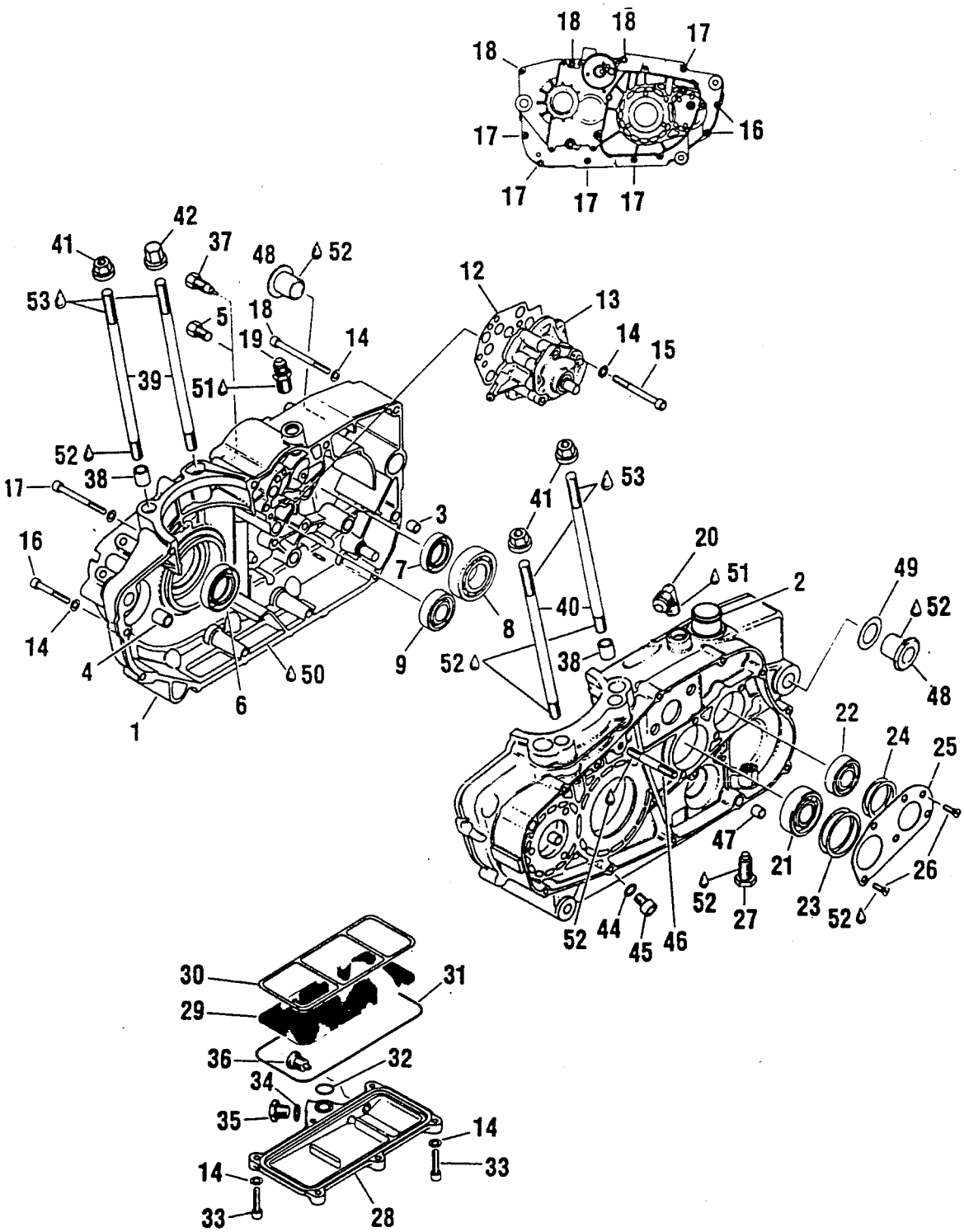
OIL PUMP



CRANKCASE 84315068 PLATE 15A

INDEX NO.	PART NO.	NAME	QTY.	BRIT-MT350
A1-4	293-798	CRANKCASE ASSY	1	
A3	229-140	DOWEL 9 , 8X10	1	
A4	229-160	DOWEL 13 , 8X15	1	
A5	241-905	PLUG SCREW M 10X10	1	
A6	850-055	OIL SEAL,CRNKSHFT, 30X47X7/7,5	1	
A7	230-395	OIL SEAL, MN SHFT, 25X40X7	1	
A8	232-092	BALL BEARING MN SHFT,25-52-15	1	
A9	932-815	BALL BEARING, CLTCH,17-47-14	1	
A12	250-370	GASKET	1	
A13		OIL PUMP ASSY--AVAIL. ONLY AS PARTS	1	
A14	945-751	LOCK WASHER, A6	19	
A15	240-370	ALLEN SCREW, M6X60	3	
A16	241-816	ALLEN SCREW, M6X40	2	
A17	240-371	ALLEN SCREW, M6X60	5	
A18	241-871	ALLEN SCREW, M6X70	3	
A19	84710854	SEE PLATE 13 ITEM 5	REF	
A20	84830934	SEE PLATE 13 ITEM 6	REF	
A21	932-430	BALL BEARING 20-47-14	1	
A22	932-033	BALL BEARING 20-47-14, MN SHFT	1	
A23	227-610	SHIM 40/46, 5/0, 5 CLTCH SHFT	AS REQ.	
A23	227-611	SHIM 40/46, 5/0, 3 CLTCH SHFT	AS REQ	
A23	227-612	SHIM 40/46, 5/0, 1 CLTCH SHFT	AS REQ	
A24	227-520	SHIM 34/39, 5/0, 5 MAIN SHFT	AS REQ	
A24	227-521	SHIM 34/39, 5/0, 3 MAIN SHFT	AS REQ	
A24	227-522	SHIM 34/39, 5/0, 1 MAIN SHFT	AS REQ	
A25	227-110	RETAINING PLATE	1	
A26	940-315	CSK SCREW M5X12	4	
A27	241-777	HEX.SCREW M12	1	
A28	212-595	OIL SUMP COVER	1	
A29	256-160	OIL SIEVE	1	
A30	230-840	GASKET	1	

CRANKCASE



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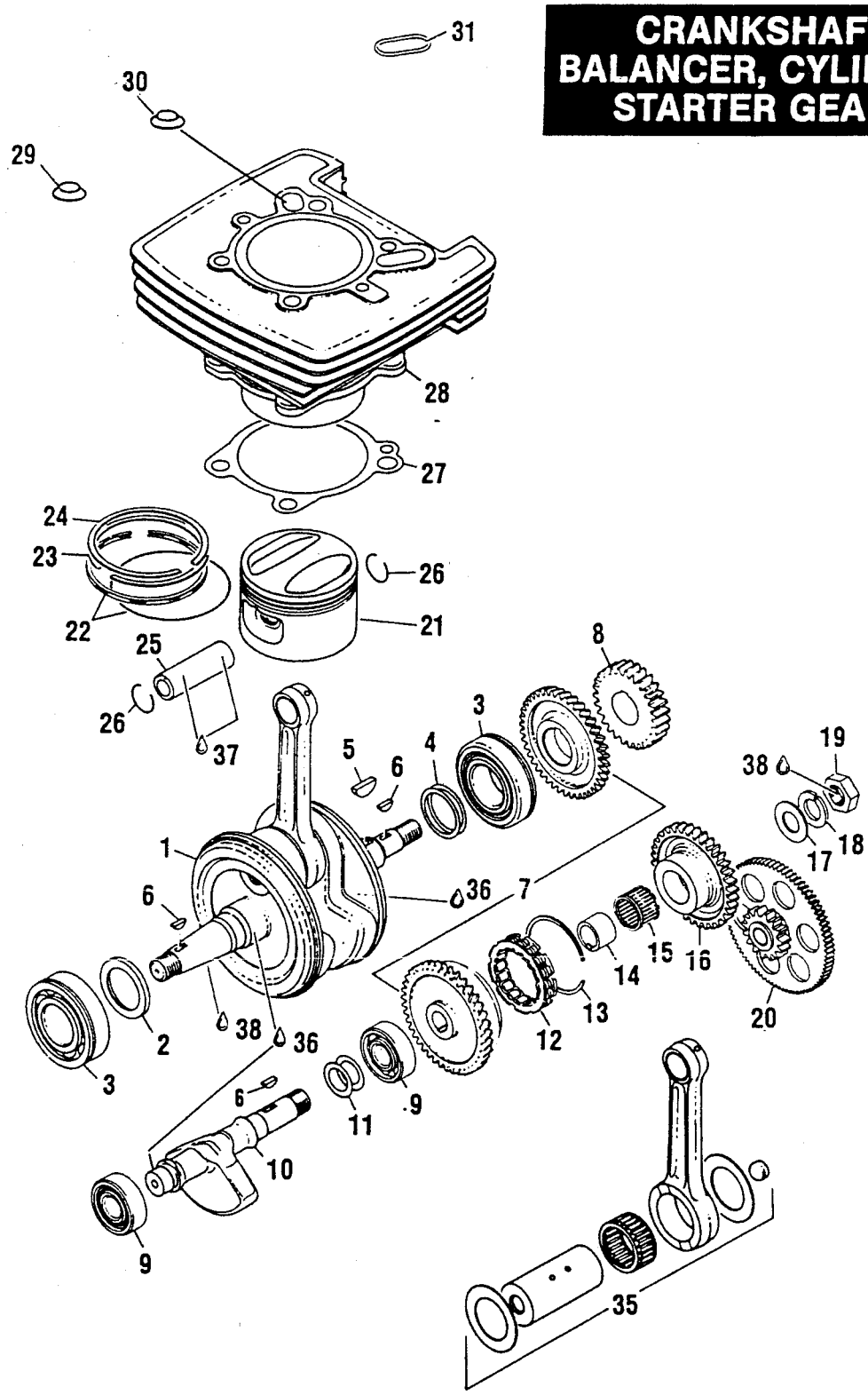
OIL PUMP

PLATE 15B

INDEX NO.	PART NO.	NAME	QTY.	BRIT-MT350
B1	250-370	GASKET	1	
B2	212-569	SUCTION PUMP HOUSING ASSY	1	
B3	237-647	PUMP SHAFT	1	
B4	232-980	NEEDLE PIN 3X15, 8	2	
B5	256-137	SUCTION INNER AND OUTER ROTOR	1	
B7	232-970	NEEDLE PIN 4X25, 8	2	
B8	212-572	PRESSURE PUMP HOUSING	1	
B9	230-870	OIL SEAL 11X17X4	2	
B10	256-117	PRESSURE INNER & OUTER ROTOR	1	
B12	212-580	PUMP COVER	1	
B13	827-590	THRUST WASHER 10, 1/17/1	AS REQ.	
B14	932-840	NEEDLE PIN 3X19, 8 G2 DIN5402	1	
B15	235-777	PUMP GEAR 27 T	1	
B16	899-784	LOCTITE 574 ORANGE SEAL. COMPOUND	AS REQ	

CRANKSHAFT, BALANCER, CYLINDER, STARTER GEARS



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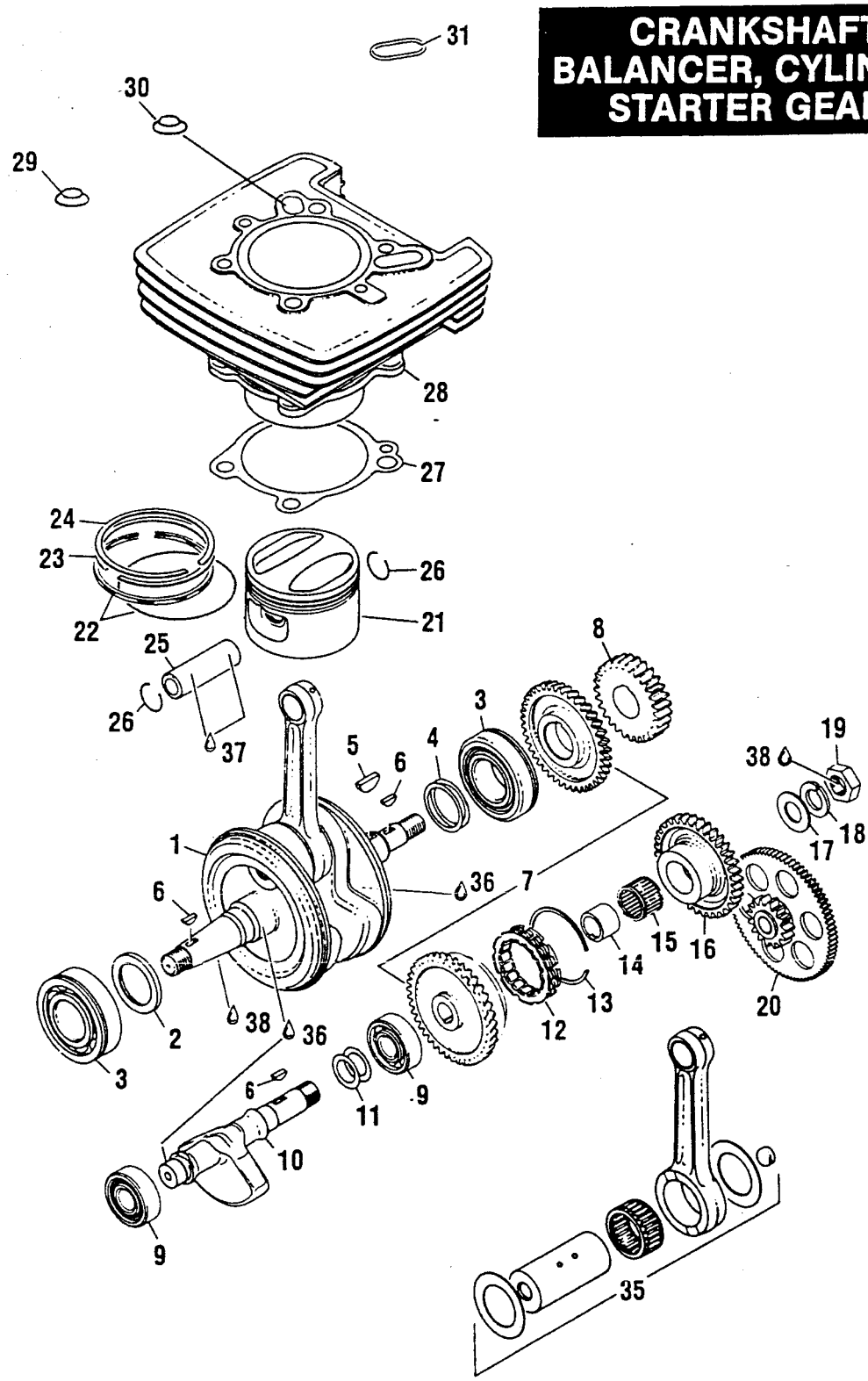
CRANKSHAFT, BALANCER DRIVE, CYLINDER — PLATE 15C

INDEX NO.	PART NO.	NAME	QTY.	BRIT-MT350
C1	294-040	CRANKSHAFT ASSY.	1	
C2	247-390	DISTANCE RING 35,2/50/4	1	
C3	832-235	BALL BEARING 35-72-17	2	
C4	927-400	SHIM 35,4/43/0,1	AS REQ	
C4	927-401	SHIM 35,4/43/0,2	AS REQ	
C5	946-015	WOODRUFF KEY 6X9	1	
C6	246-570	WOODRUFF KEY 4X5	3	
C7	293-459	BALANCE DRIVE ASSY	1	
C8	293-490	PRIM. DRIVE ASSY	1	
C9	932-095	BALL BEARING 20-52-15	2	
C10	237-885	BALANCE SHAFT	1	
C11	944-461	SHIM 20,5/30/0,3	AS REQ	
C11	944-462	SHIM 20,5/30/0,5	AS REQ	
C11	944-465	SHIM 20,5/30/0,15	AS REQ	
C12	259-075	SPRAG CLUTCH 45,665X62,332X13	1	
C13	245-620	SNAP RING 62	1	
C14	232-165	BUSHING	1	
C15	232-890	NEEDLE BEARING 25X29X17	1	
C16	234-350	FREE WHEEL GEAR 37 T	1	
C17	227-230	THRUST WASHER 18, 2/34/2	1	
C18	245-720	FRICTION WASHER	1	
C19	242-790	HEX. NUT M18X1, 5	1	
C20	234-052	IDLE GEAR 81/15 T	1	
C21-24	295-245	PISTON ASSY. 79,50/79,51 mm WITH RINGS, STANDARD "A" 79,50 STANDARD "B" 79,51	1	
C22	215-400	OIL SCRAPER RING 79,5 mm	1	
C23	215-420	TAPERED COMPRESSION RING 79,5 mm	1	
C24	215-590	RECTANGULAR RING 79,5/72,9,9X1,5	1	
C25	216-115	PISTON PIN 22X15X55	1	
C26	245-430	CIRCLIP 22	2	
C27	230-825	GASKET	1	
C28	223-161	CYLINDER (A) 79,50-79,512 mm (B) 79'512-79,524 mm	1	

CRANKSHAFT, BALANCER, CYLINDER, STARTER GEARS



CRANKSHAFT, BALANCER DRIVE, CYLINDER — PLATE 15C

INDEX NO.	PART NO.	NAME	QTY.	BRIT-MT350
C29	250-290	O-RING 12-3	1	
C30	250-300	O-RING 23,4-3,53	1	
C31	250-320	O-RING 31,34-3,53	1	
C35	294-049	CRANKSHAFT REPAIR KIT	1	
C36	297-431	LOCTITE ANTI-SEIZE 10 GR	AS REQ	
C37	297-433	MOLYKOTE G-N 100 GR SLIDE PASTE	AS REQ	
C38	899-785	LOCTITE 221 VIOLET LOW STR. BOND	AS REQ	

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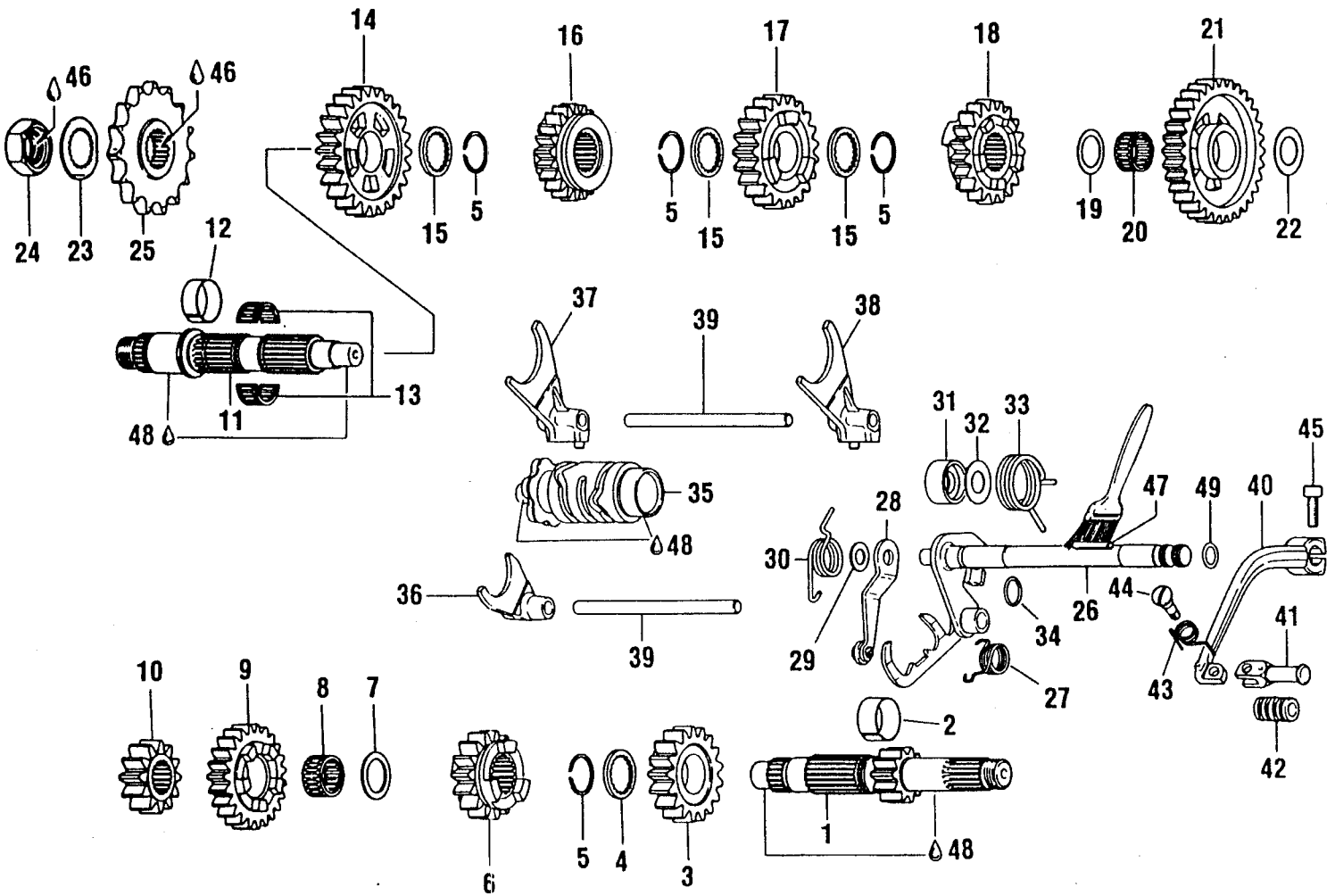
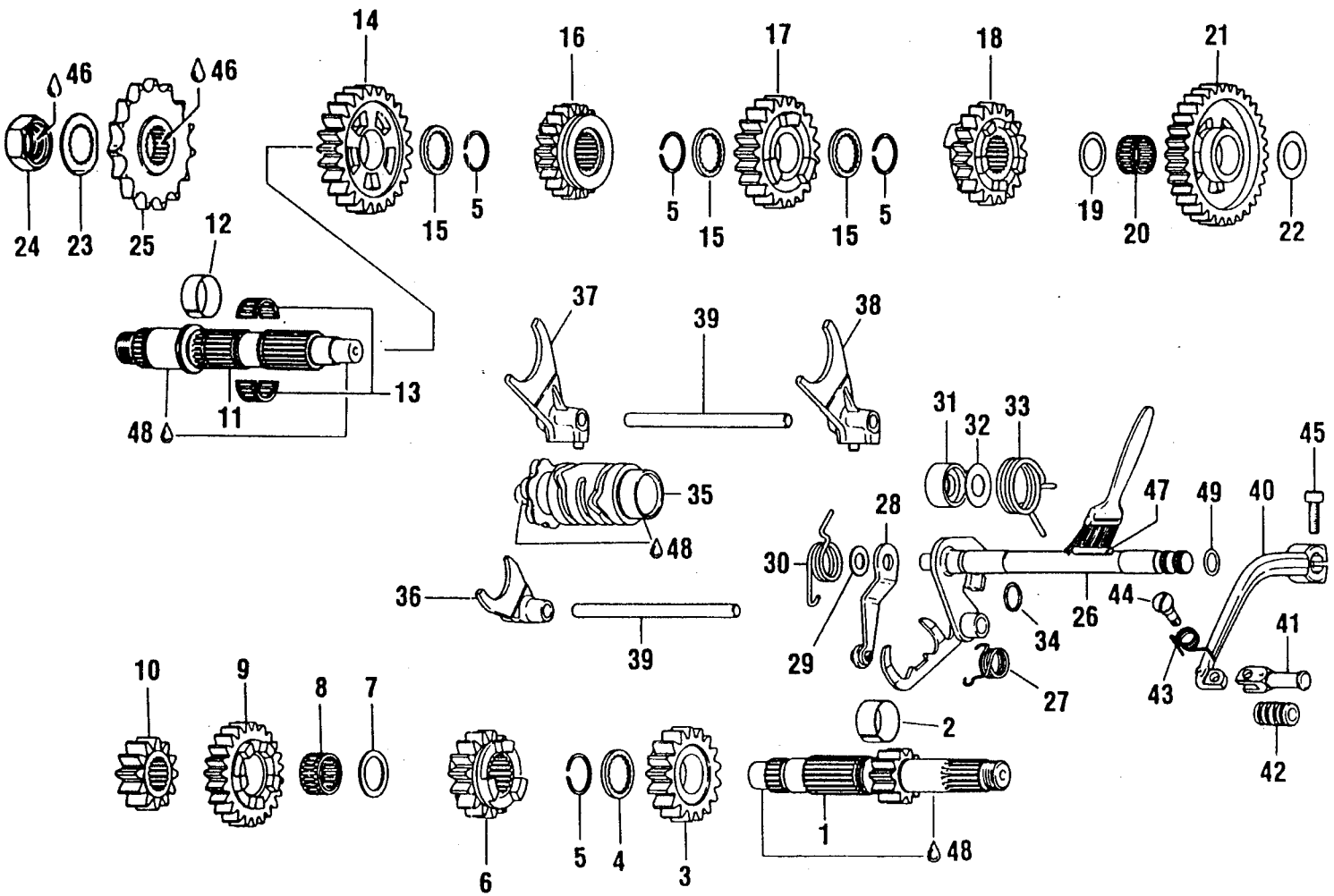
TRANSMISSION



5 SPEED TRANSMISSION — PLATE 15D

INDEX NO.	PART NO.	NAME	QTY.	BRIT-MT350
D1-24	281-068	TRANSMISSION SET, 5 SPEED	1	
D1	237-712	CLUTCH SHAFT	1	
D2	233-510	BUSHING 22,8X26X11,7	1	
D3	235-620	FREE PINION 17 T 4TH SP. CS	1	
D4	227-080	THRUST WASHER 21,2/27,5/1	1	
D5	245-340	SNAP RING 24	4	
D6	235-603	GEAR PINION 15 T 3RD SP. CS	1	
D7	227-445	THRUST WASHER 21,2//27,5/1	1	
D8	232-805	NEEDLE BEARING 21X25X13	1	
D9	235-665	FREE PINION 23 T 5TH SP. CS	1	
D10	235-644	FIXED GEAR 12 T 2ND SPEED CS	1	
D11	237-720	MAIN SHAFT	1	
D12	233-500	BUSHING 23,8X25X9,8	1	
D13	232-800	NEEDLE BEARING 21X25X13	1	
D14	235-654	FREE PINION 24 T 2ND SP. MS	1	
D15	227-465	THRUST WASHER 22/30/2,6	3	
D16	235-113	GEAR PINION 21 T5TH SP. MS	1	
D17	235-610	FREE PINION 21 T3RD SP. MS	1	
D18	235-632	GEAR PINION 19 T 4TH SP. MS	1	
D19	944-468	THRUST WASHER 20,5/30/1	1	
D20	232-790	NEEDLE BEARING 20X24X12	1	
D21	235-527	FREE PINION 32 T 1ST SP MS	1	
D22	227-430	THRUST WASHER 17,2/30/1	1	
D23	245-390	TAB WASHER NA24	1	
D24	242-650	HEX. NUT M20X1,5	1	
D25	236-023	SPROCKET 17 T., 5/8X1/4X10,16	REF.	
D25	236-020	SPROCKET 14 T., 5/8X1/4X10,16	REF.	
D25	236-021	SPROCKET 15 T., 5/8X1/4X10,16	1	
D25	236-022	SPROCKET 16 T., 5/8X1/4X10,16	REF.	
D25	236-024	SPROCKET 18 T., 5/8X1/4X10,16	REF.	
D26	237-636	SHIFT SHAFT WITH PAWL ASSY	1	
D27	239-830	SPRING	1	

TRANSMISSION



5 SPEED TRANSMISSION — PLATE 15D

INDEX NO.	PART NO.	NAME	QTY.	BRIT-MT350
D28	248-925	INDEX LEVER ASSY	1	
D29	827-590	THRUST WASHER 10,1/17/1	1	
D30	239-820	INDEX SPRING	1	
D31	247-570	SPACER	1	
D32	946-870	WASHER 14,5/22,5/1	1	
D33	239-640	SPRING	2	
D34	250-460	O-RING 11-2,7	1	
D35	258-797	SHIFT DRUM ASSY	1	
D36	258-775	SHIFT FORK ASSY 4TH-5TH GEAR	1	
D37	258-765	SHIFT FORK ASSY 2ND GEAR	1	
D38	258-755	SHIFT FORK ASSY 1ST-3RD GEAR	1	
D39	258-780	GUIDE PIN	2	
D40-45	248-260	SHIFT LEVER ASSY	1	
D40	NAS	SHIFT LEVER	1	
D41	NAS	FOLDING LEVER	1	
D42		RUBBER	1	
D43	NAS	SPRING	1	
D44	NAS	BEARING SCREW M6X19	1	
D45	241-930	ALLEN SCREW M6X20	1	
D46	899-785	LOCTITE 221 VIOLET 10 CC	AS REQ	
D47		BP-ENERGREASE LS3	AS REQ	
D48	297-431	LOCTITE ANTI-SEIZE 10 GR	AS REQ	
D49	430-110	O-RING 10 x 27	1	

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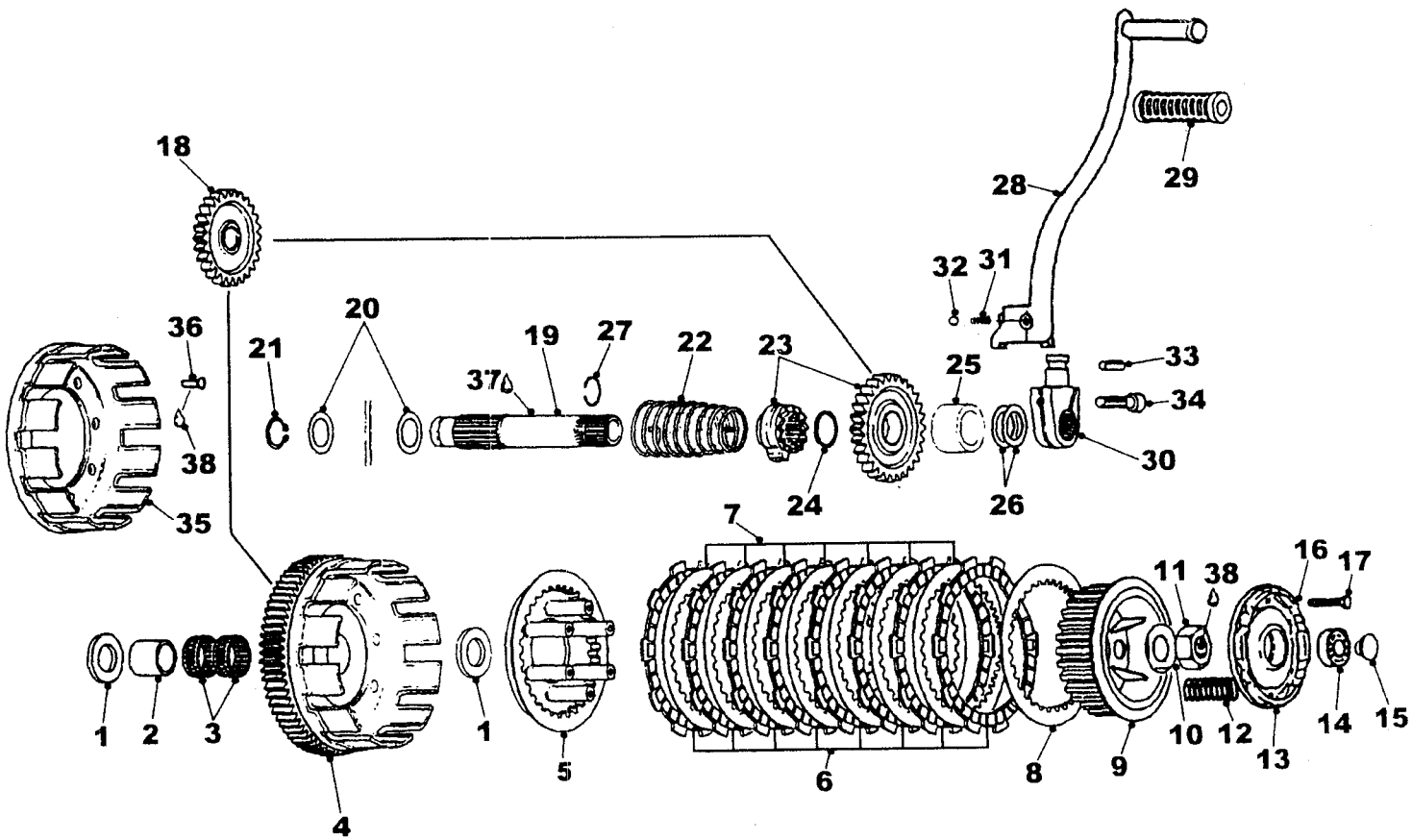
CLUTCH, KICK START



CLUTCH

PLATE 15E

INDEX NO.	PART NO.	NAME	QTY.	BRIT – MT350
E1	227-600	THRUST WASHER 20, 2/35/3	2	
E2	232-700	INNER RACE	1	
E3	232-650	NEEDLE BEARING 25X29X10	2	
E4 35,36	293-490	PRIM. DRIVE ASSY.	1	
E5	259-885	INNER PLATE	1	
E6	259-905	FRICTION PLATE 2,6mm	8	
E7	259-913	CLUTCH PLATE 1,25mm	7	
E8	259-915	DISC,CLUTCH	1	
E9	259-876	CLUTCH HUB	1	
E10	245-320	TAB WASHER NA20	1	
E11	242-605	HEX.NUT M18X1,5	1	
E12	239-625	CLUTCH SPRING 34,1	6	
E13	259-130	RETAINING PLATE ASSY	1	
E14	232-400	BALL BEARING 6001 C3, 12-28-8	1	
E15	259-140	THRUST HUB	1	
E16	945-750	LOCK WASHER A5	6	
E17	241-770	HEX.SCREW M5X25	6	
E18	235-767	IDLE GEAR ASSY	1	
E19	237-621	KICK START SHAFT	1	
E20	944-468	THRUST WASHER 20,5/30/1	2	
E21	945-660	RETAINING RING 20X1,2	1	
E22	239-762	KICK START SPRING	1	
E23	293-620	KICK START DRIVE ASSY.	1	
E24	227-880	THRUST WASHER 22,2/25,5/1	1	
E25	247-600	SPACER 22,2/30/19	1	
E26	927-475	THRUST WASHER 22,5/30/0,5	AS REQ	
E27	245-350	CIRCLIP 19,5X1	1	
E28-33	248-180	KICK START LEVER ASSY	1	
E28	248-175	KICK START LEVER	1	
E29	260-210	RUBBER SLEEVE	1	
E30	248-959	KICK START HUB	1	
E31	239-537	COMPRESSION SPRING 8mm	1	
E32	232-440	BALL 5,556mm	1	
E33	229-210	DOWEL TUBE 6X20	1	
E34	840-991	ALLEN SCREW M8X30	1	
E35	259-852	CLUTCH DRUM	1	
E36	243-340	RIVET 5X12	8	
E37	297-431	LOCTITE ANTI-SEIZE 10 GR	AS REQ	
E38	899-788	LOCTITE 648 GREEN 5 GR	AS REQ	

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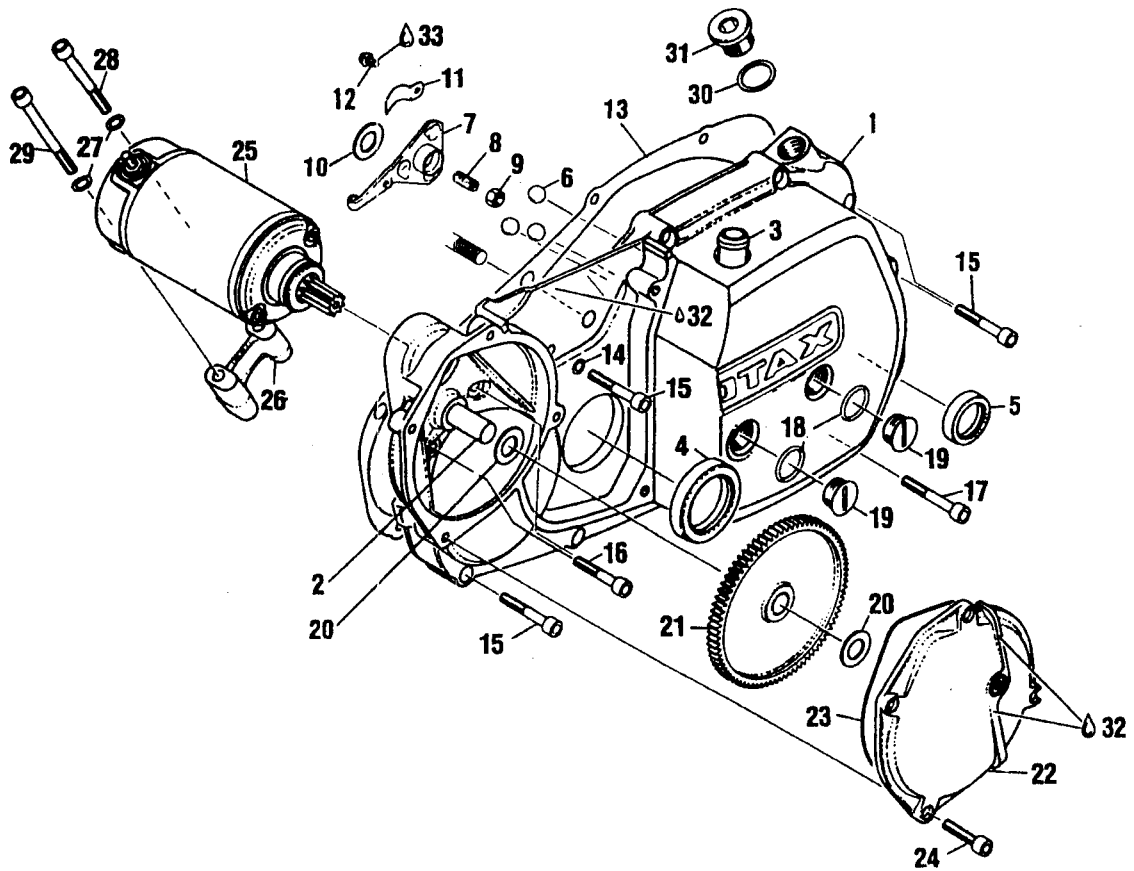
CLUTCH COVER, ELECTRIC STARTER



CLUTCH COVER, ELECTRIC STARTER — PLATE 15F

INDEX NO.	PART NO.	NAME	QTY.	BRIT-MT350
F1-3	210-496	CLUTCH COVER ASSY	1	
F2	229-230	JOURNAL BOLT	1	
F3	224-230	CLUTCH CABLE TUBE	1	
F4	930-715	OIL SEAL 35X47X7	1	
F5	831-260	OIL SEAL 22X32X7	1	
F6	232-150	BALL 12 mm	3	
F7	259-185	RELEASE CAM, 30 DEGREE	1	
F8	240-310	ADJUSTMENT SCREW M8X19,5	1	
F9	942-670	HEX. NUT M8	1	
F10	227-945	THRUST WASHER 8,1/15/0,5	1	
F11	239-905	LEAF SPRING		
F12	841-680	TAPTITE SCREW M5X8	1	
F13	250-380	GASKET	1	
F14	230-415	GASKET RING A 6X10	1	
F15	241-811	ALLEN SCREW M6X35	9	
F16	840-880	ALLEN SCREW M6X30	2	
F17	241-816	ALLEN SCREW M6X40	1	
F18	230-400	O-RING 18-1,5	2	
F19	241-800	PLUG SCREW M18X1,5	2	
F20	827-261	THRUST WASHER 12,5/21,5/1	2	
F21	234-052	IDLE GEAR 81/15 T	1	
F22	212-960	STARTER DRIVE COVER, BLACK	1	
F23	230-310	O-RING 114-2	1	
F24	840-511	ALLEN SCREW M5X16	4	
F25	293-151	ELECTRIC STARTER ASSY	1	
F26	251-910	DISTANCE BLOCK	1	
F27	945-751	LOCK WASHER A6	2	
F28	241-821	ALLEN SCREW M6X45	1	
F29	240-331	ALLEN SCREW M6X55	1	
F30	230-905	GASKET RING 1 16X20	1	
F31	240-230	PLUG SCREW M16X1,5	1	
F32	297-386	SILASTIC 732 RTV, 100GR	AS REQ	
F33	899-785	LOCTITE 221 VIOLET 10 CC	AS REQ	

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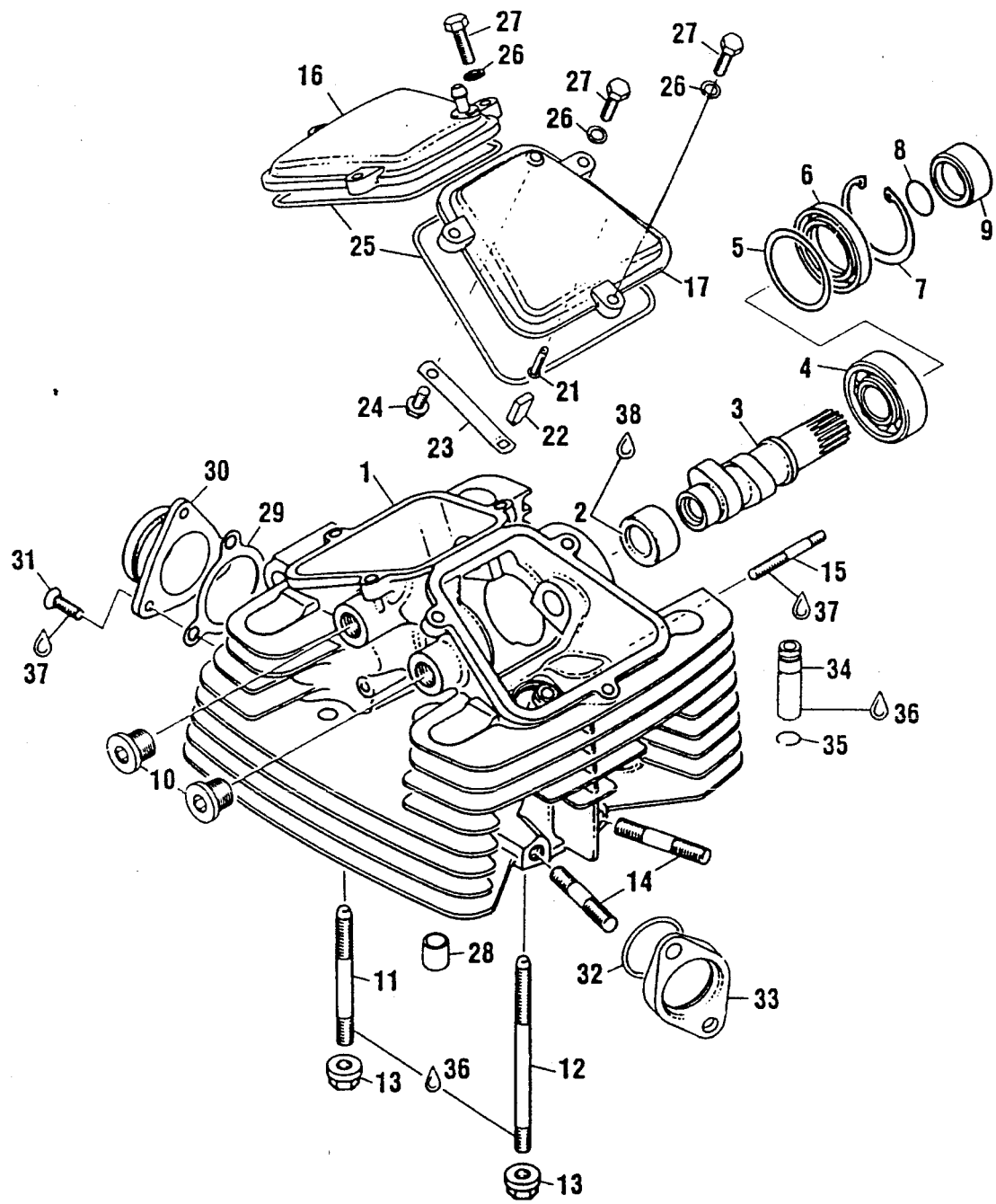
CYLINDER HEAD, CAMSHAFT



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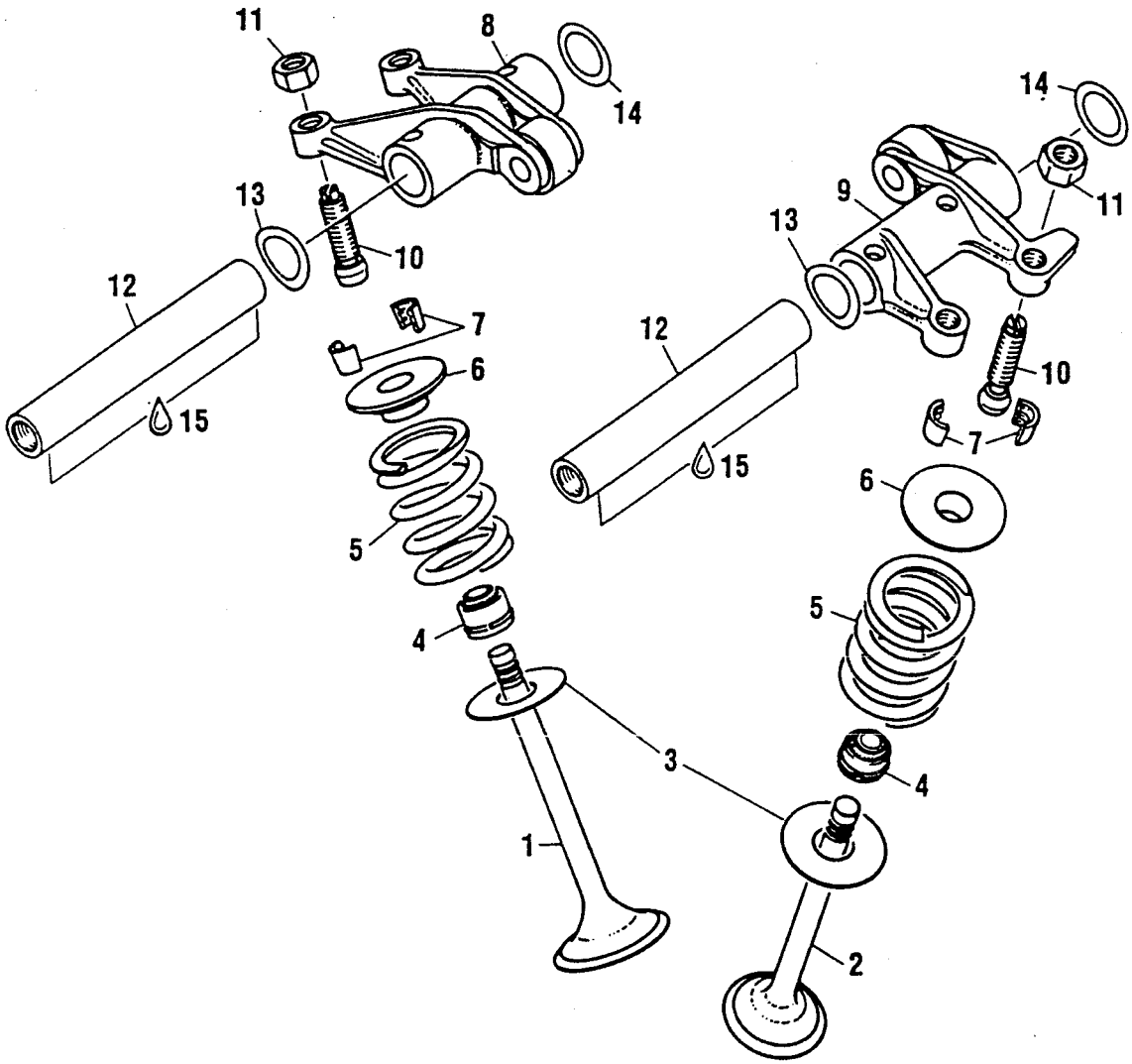
CYLINDER HEAD, CAM SHAFT, VALVE COVER — PLATE 15G

INDEX NO.	PART NO.	NAME	QTY.	BRIT-MT350
G1	223-299	CYLINDER HEAD ASSY		
G2	232-920	NEEDLE BUSHING 22X28X12	1	
G3	237-667	CAM SHAFT 225/240 DEGREES	1	
G4	932-432	BALL BEARING 6204 C3	1	
G5	927-222	SHIM 38/46,8/1,0	1	
G6	850-055	OIL SEAL 30X47X7/7,5	1	
G7	945-690	RETAINING RING 47X1,75	1	
G8	230-405	O-RING 18-1,5	1	
G9	247-420	DISTANCE SLEEVE 20/30/13	1	
G10	240-230	PLUG SCREW M16X1,5	2	
G11	240-415	STUD M8X94	1	
G12	240-420	STUD M8X119	1	
G13	242-700	COLLAR HEX. NUT M8	2	
G14	240-365	STUD M8X50	4	
G15	940-000	STUD M6X40/11	1	
G16	212-546	VALVE COVER ASSY	1	
G17	212-543	VALVE COVER	1	
G21	229-170	GROOVE PIN 4X20	1	
G22	231-010	DECOMPRESSION PLATE	1	
G23	239-790	FLAT SPRING	1	
G24	240-385	TAPTITE-SCREW M6X12	1	
G25	230-860	O-RING 107-2,5	1	
G26	945-751	LOCK WASHER A6	6	
G27	940-561	HEX. SCREW M6X20	6	
G28	229-160	DOWEL 13,8X15	2	
G29	230-010	GASKET	1	
G30	267-857	INTAKE FLANGE	1	
G31	941-041	COUNTERSUNK SCREW M6X16	3	
G32	230-080	COPPER GASKET RING 26X32	2	
G33	273-851	EXHAUST FLANGE	2	
G34	253-117	INLET VALVE GUIDE	2	
	253-116	EXHAUST VALVE GUIDE	2	
G35	245-440	CIRCLIP 12	4	
G36	297-433	MOLYKOTE G-N 100GR	AS REQ	
G37	899-785	LOCTITE 221 VIOLET 10 CC	AS REQ	
G38	297-386	SILASTIC 732 RTV, 100GR	AS REQ	

VALVES, ROCKER ARMS



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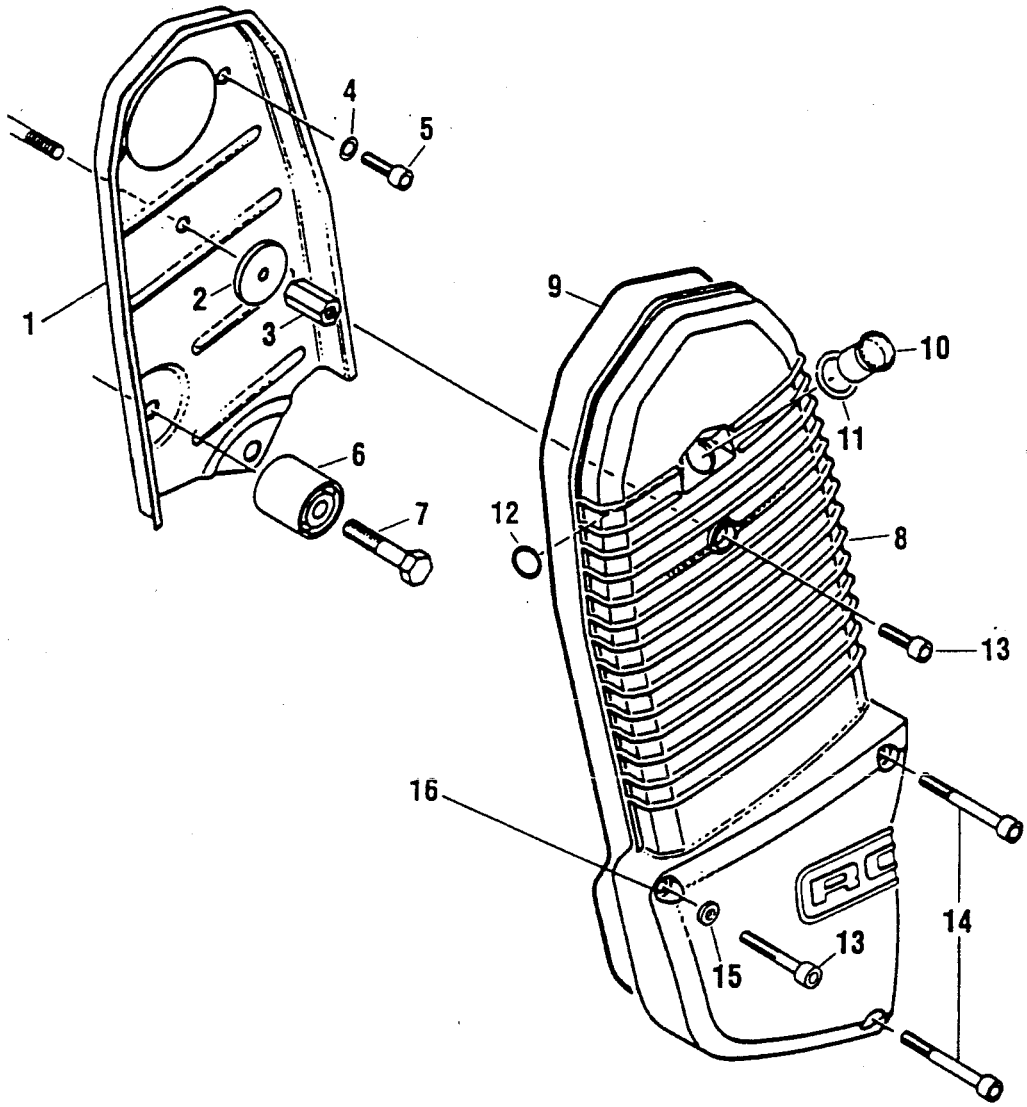
VALVES, ROCKER ARM

PLATE 15H

INDEX NO.	PART NO.	NAME	QTY.	BRIT-MT350
H1	253-160	INTAKE VALVE 30 mm	2	
H2	253-170	EXHAUST VALVE 27 mm	2	
H3	227-980	THRUST WASHER12,2/29,5/1	4	
H4	230-810	VALVE STEM SEAL	4	
H5	239-780	VALVE SPRING 36,6 mm	4	
H6	253-101	VALVE SPRING RETAINER	4	
H7	253-090	VALVE COTTER	8	
H8	253-305	ROCKER ARM ASSY (INTAKE)	1	
H9	253-335	ROCKER ARM ASSY (EXHAUST)	1	
H10	240-205	ADJUSTMENT SCREW M7 ASSY	4	
H11	242-591	HEX. NUT M7	4	
H12	253-050	ROCKER ARM SHAFT	2	
H13	227-950	SPRING WASHER 14,3/20/0,5	2	
H14	227-955	THRUST WASHER 14,3/20/0,5	2	
H15	297-433	MOLYKOTE G-N 100GR	AS REQ	

TIMING COVER, CLUTCH COVER



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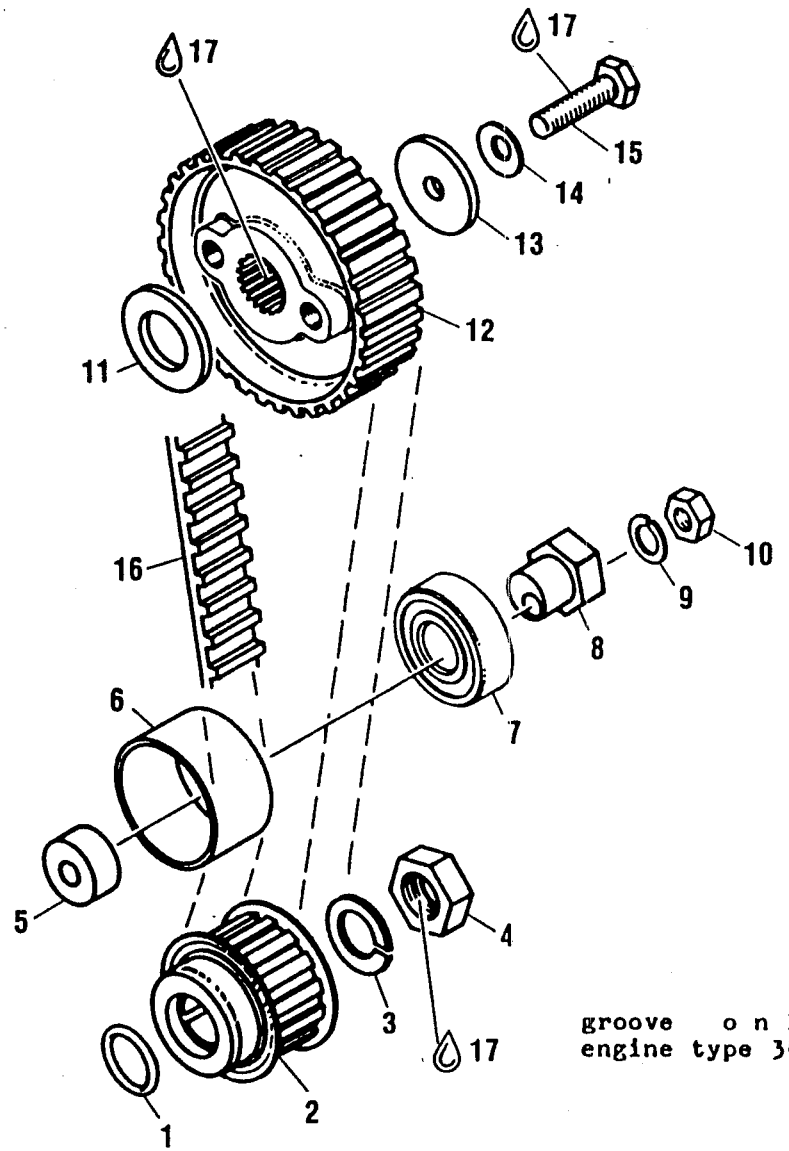
TIMING COVER, CLUTCH COVER

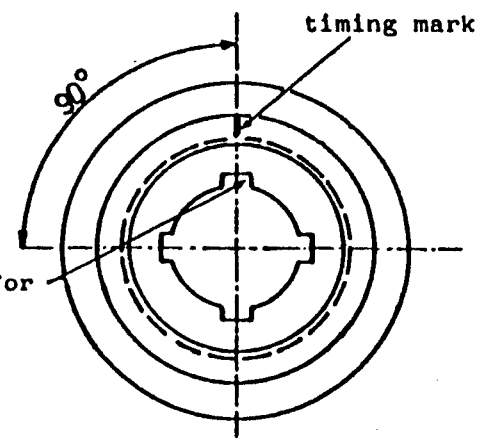
PLATE 15I

INDEX NO.	PART NO.	NAME	QTY.	BRIT-MT350
I1	212-527	TIMING BELT HOUSING	1	
I2	227-920	WASHER 6,4/30/3	1	
I3	242-680	DISTANCE NUT M6X22	1	
I4	945-751	LOCK WASHER A6	2	
I5	241-930	ALLEN SCREW M6X20	2	
I6	232-130	GUIDE PULLEY 28X27X30	1	
I7	240-281	HEX. SCREW M8X50	1	
I8	212-955	TIMING BELT COVER	1	
I9	230-852	O-RING 2,5X820	1	
I10	260-550	LENS	1	
I11	250-090	GASKET RING 14/19/0,5	1	
I12	430-020	O-RING 9,3-2,4	1	
I13	840-401	ALLEN SCREW M6X22	2	
I14	241-761	ALLEN SCREW M6X50	2	
I15	230-415	GASKET RING A 6X10	1	
I16	297-386	SILASTIC 732 RTV, 100GR	AS REQ	

CAM SHAFT DRIVE



Front view



groove only for engine type 348

CAM SHAFT DRIVE

PLATE 15J

INDEX NO.	PART NO.	NAME	QTY.	BRIT-MT350
J1	230-890	O RING 17-2,5	1	
J2	253-017	TIMING PULLEY ASSY 15T	1	
J3	945-756	LOCK WSHER 16	1	
J4	242-710	HEX. NUT M16X1,5	1	
J5	247-430	SPACER 8,4/24/11	1	
J6	280-030	GUIDE PULLEY	1	
J7	932-037	BALL BEARING, 17-40-12	1	
J8	280-020	TENSIONER ECCENTER	1	
J9	945-752	LOCK WASHER	1	
J10	242-206	HEX. NUT M8	1	
J11	227-600	THRUST WSHER 20,2/35/3	1	
J12	253-023	TIMING PULLEY 30 T	1	
J13	227-930	WASHER 8,4/32/3	1	
J14	245-460	SPRING WASHER 8	1	
J15	940-485	HEX SCREW M8X30	1	
J16	280-015	TIMING BELT 9,525X19X86	1	
J17	899-785	LOCTITE 221 VIOLET 10 CC	AS REQ	

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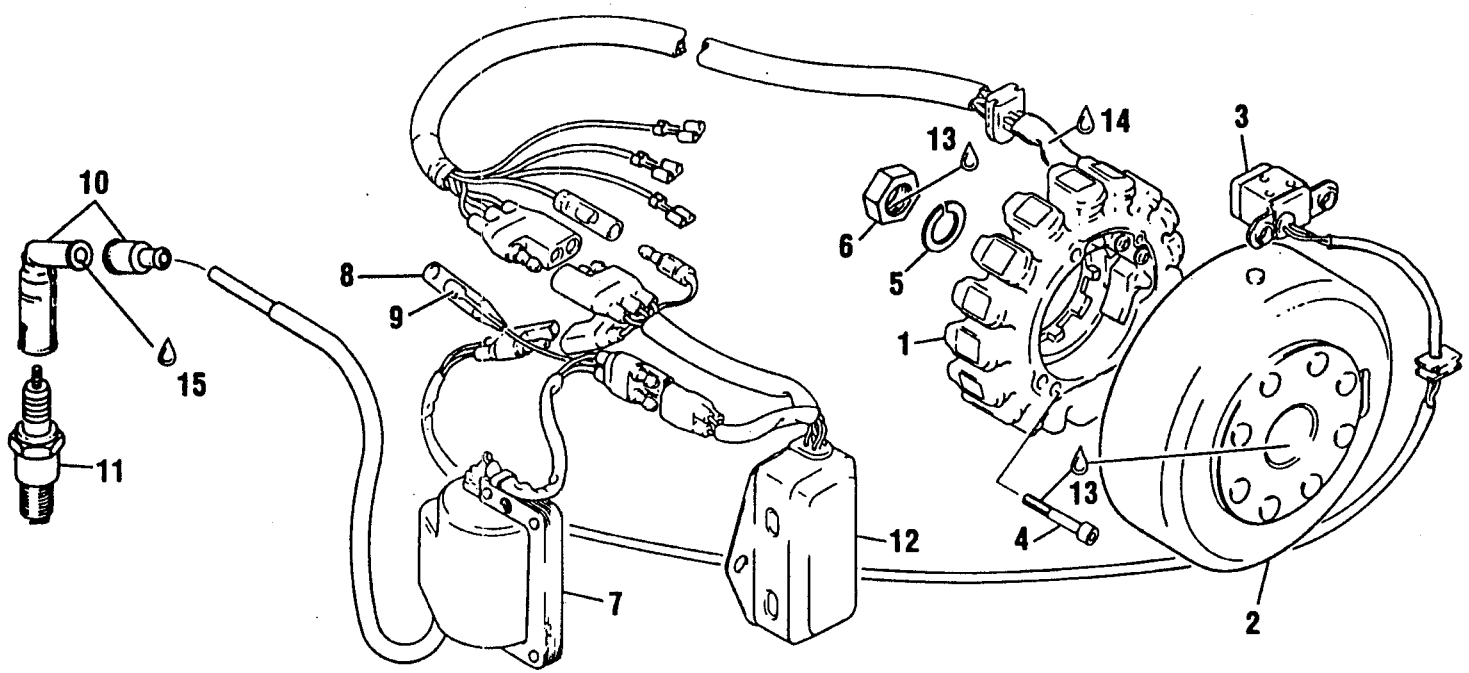
IGNITION UNIT



IGNITION UNIT

PLATE 15K

INDEX NO.	PART NO.	NAME	QTY.	BRIT-MT350
K1-3	293-123	IGNITION UNIT 12 V 190W	1	
K1-2	293-128	STATOR ASSY. W. MAG. FLYWHEEL	1	
K3	264-750	TRIGGER COIL	1	
K4	241-816	ALLEN SCREW M6X40	3	
K5	945-757	LOCK WASHER 18	1	
K6	942-220	HEX. NUT M18X1,5	1	
K7-10	264-737	IGNITION COIL ASSY	1	
K8	964-070	INSULATION SHEATH	1	
K9	964-067	FASTON CONNECTOR	1	
K10	264-861	SHIELDED SPARK PLUG CONNECTOR	1	
K11	297-540	SPARK PLUG 12 NGK D8EA	1	
K12	264-740	AMPLIFIER-BOX	1	
K13	899-785	LOCTITE 221 VIOLET 10 CC	AS REQ	
K14	297-386	SILASTIC 732 RTV, 100GR	AS REQ	
K15	897-330	LITHIUM-BASE GREASE, 250 GR	AS REQ	

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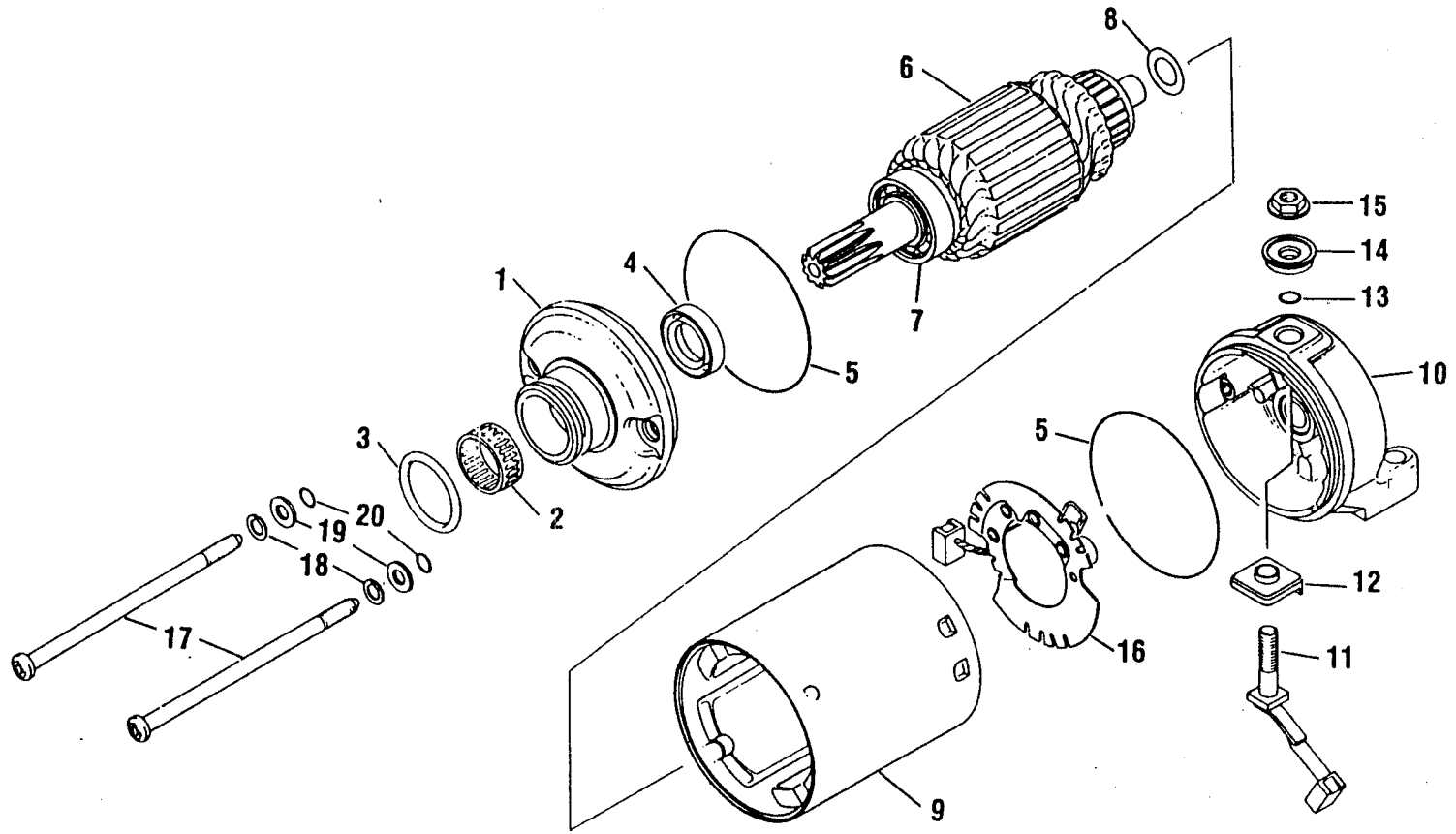
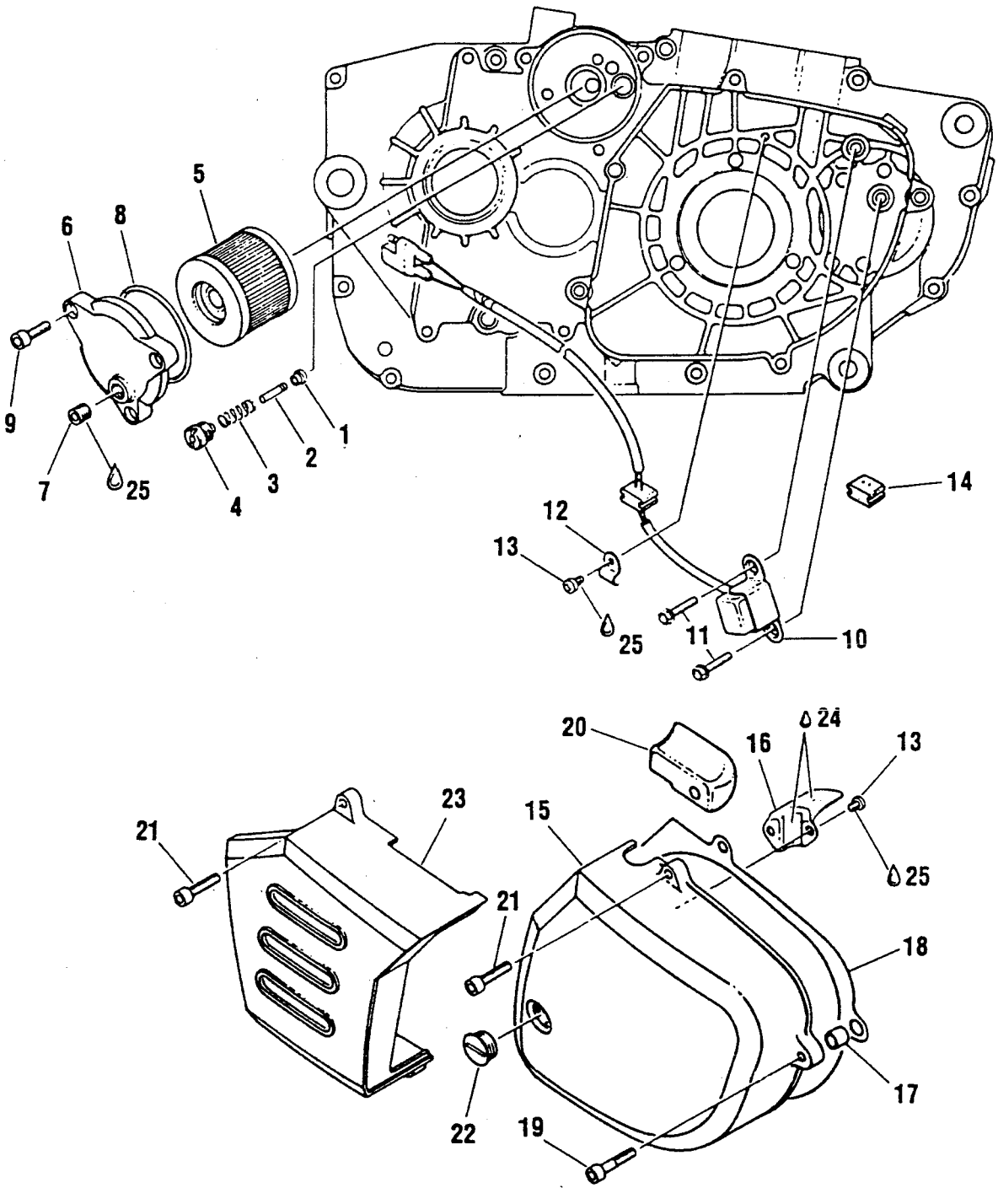
MOTOR, ELECTRIC START



ELECTRIC STARTER 293-151 PLATE 15L

INDEX NO.	PART NO.	NAME	QTY.	BRIT-MT350
L1	264-135	SUPPORT	1	
L2	232-250	NEEDLE BRUSHING 15X21X12	1	
L3	250-140	O-RING 25-3	1	
L4	250-130	OIL SEAL 15X24X5	1	
L5	850-500	O-RING 62-1,5	2	
L6	264-140	ROTOR ASSSY	1	
L7	232-260	BALL BEARING 6002 Z / 15-32-9	1	
L8	827-600	SHIM	AS REQ	
L9	264-150	STATOR YOKE ASSY	1	
L10	264-170	ROTOR SUPPORT ASSY	1	
L11	264-180	CARBON BRUSH ASSY	1	
L12	260-810	ISOLATING BUSHING	1	
L13	230-530	O-RING 6-1,7	1	
L14	260-800	ISOLATING BUSHING	1	
L15	242-780	COMBINED NUT M6	1	
L16	866-890	BRUSH HOLDER ASSY	1	
L17	241-130	CYL. SCREW M5X113	2	
L18	945-750	LOCK WASHER	2	
L19	827-660	WASHER 5,3/10/1,5	2	
L20	850-510	O-RING 4,7-1,4	2	

OIL FILTER, IGNITION & SPROCKET COVERS

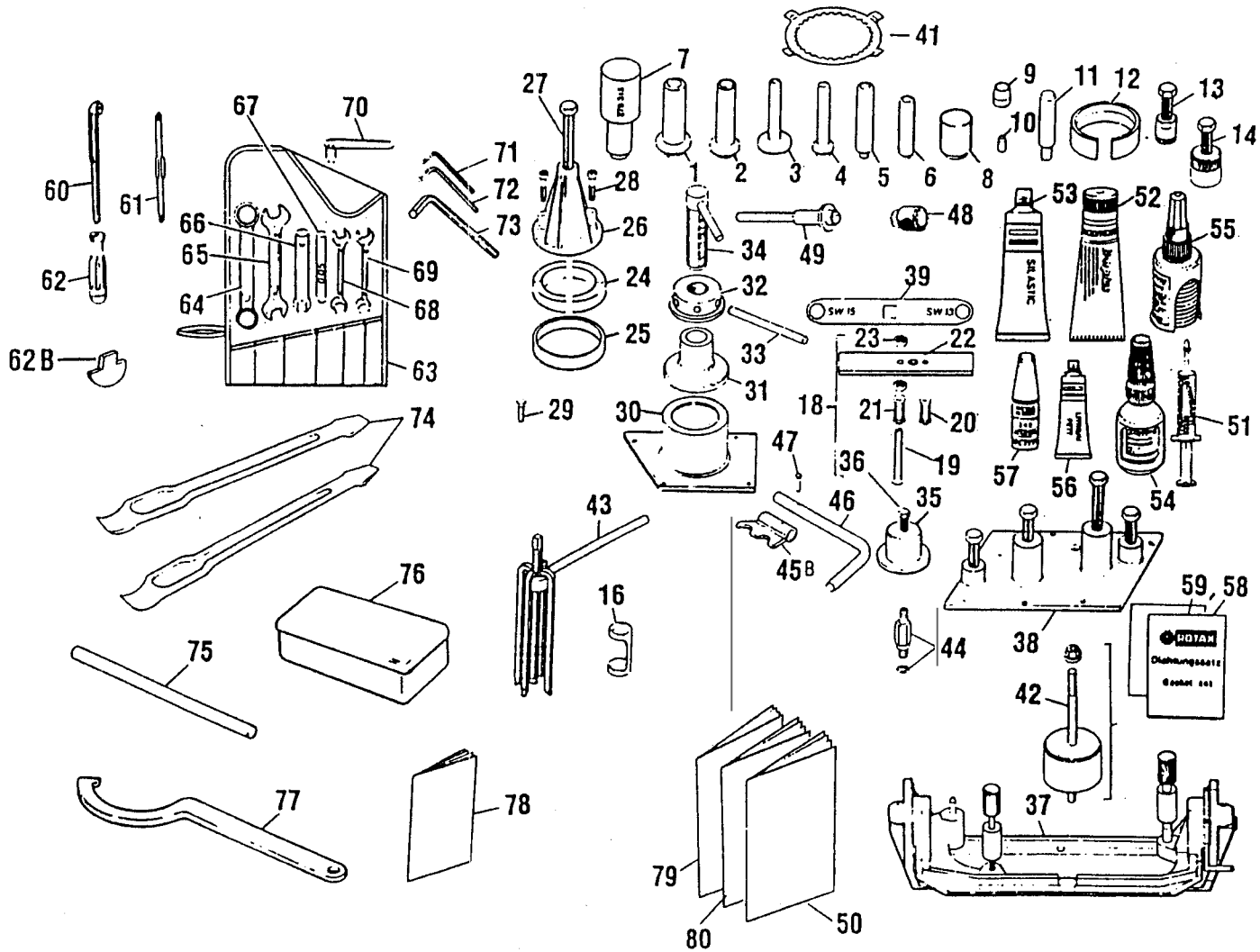


VALVE, OIL FILTER, IGNITON COVER

PLATE 15M

INDEX NO.	PART NO.	NAME	QTY.	BRIT-MT350
M1	260-570	PRESSURE RETAINING VALVE	1	
M2	256-150	VALVE PIN	1	
M3	239-815	COMPRESSION SPRING 13,0 MM	1	
M4	256-170	VALVE PIN SCREW	1	
M5	256-180	OIL FILTER ELEMENT	1	
M6	212-620	OIL FILTER COVER	1	
M7	240-480	PLUG SCREW 1/8-27NPT	1	
M8	230-920	O-RING 60-2,5	1	
M9	241-930	ALLEN SCREW M6X20	3	
M10	264-750	TRIGGER COIL	1	
M11	240-580	TAPTITESCREW M6X16	2	
M12	251-890	CABLE CLAMP	1	
M13	240-195	TAPTITE-SCREW M4X8	3	
M14	260-760	RUBBER PLUG	1	
M15	212-515	IGNITION COVER	1	
M16	251-880	CABLE HOLDER, INNER	1	
M17	229-140	DOWEL 9,8X10	2	
M18	250-390	GASKET	1	
M19	840-880	ALLEN SCREW M6X30	2	
M20	251-885	CABLE HOLDER, OUTER	1	
M21	840-861	ALLEN SCREW M6X25	5	
M22	241-800	PLUG SCREW M18X1,5	1	
M23	212-610	CHAIN COVER	1	
M24	297-386	SILASTIC 732 RTV, 100GR	AS REQ	
M25	899-785	LOCTITE 221 VIOLET 10 CC	AS REQ	

TOOLS, SERVICE ITEMS



TOOLS, SERVICE ITEMS — PLATE 15N

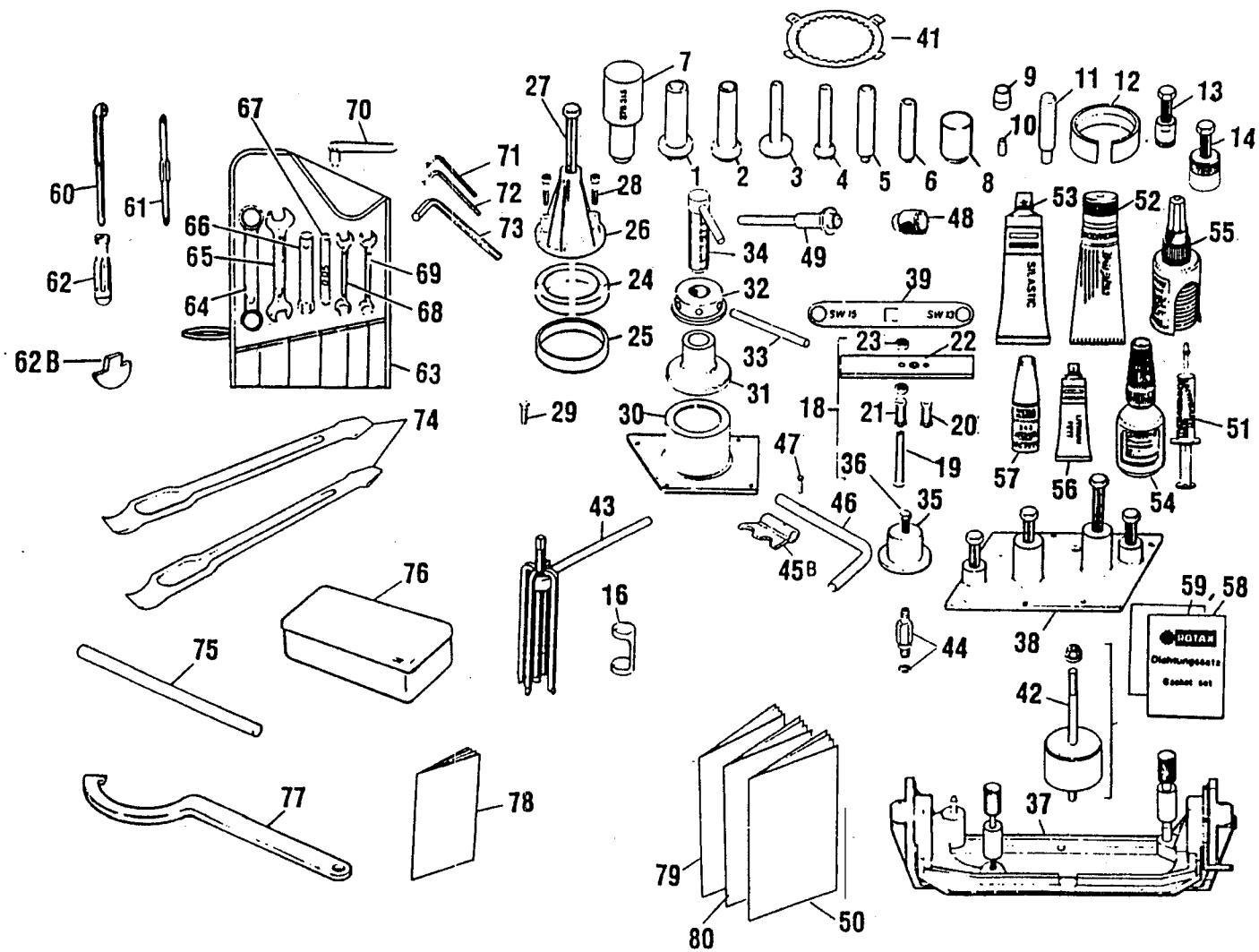
INDEX NO.	PART NO.	NAME	QTY.	BRIT-MT350
N42	276-405	CAMSHAFT PULLER ASSY	1	
N43	277-180	BALL BEARING PULLER SET	1	
N44	276-855	PRESSURE NIPPLE ASSY COMP. AIR	1	
N45	276-880	VALVE SPRING SPANNER ASSY	1	
N46	276-990	SPRING SPANNER LEVER	1	
N47	243-360	RIVET 5X25	1	
N48-49	877-017	CIRCLIP INSTALL. TOOL ASSY	1	
N48	877-022	CIRCLIP INSTALL. SLEEVE 22 mm	1	
N49	877-012	CIRCLIP INSTALL. PUSHER 22 mm	1	
N50	299-035	REPAIR MANUAL ASSY, ENGINE	1	
N51	297-431	LOCTITE ANTI-SEIZE 10 GR	1	
N52	297-433	MOLYKOTE G-N 100 GR, SLIDE PASTE	1	
N53	297-386	SILASTIC 732 RTV, 100GR	1	
N54	899-785	LOCTITE 221 VIOLET 10 CC	1	
N55	899-784	LOCTITE 574 ORANGE 50 CC	1	
N56	897-330	LITHIUM-BASE GREASE, 250 GR	1	
N57	899-788	LOCTITE 648 GREEN 5 GR	1	
N58	295-301	GASKET SET, CYLINDER HEAD	1	
N59	295-300	GASKET SET HEAD (ENGINE)	1	
N(60-77)	84771062	TOOL KIT MT350	1	
N60	84753479	AIR PRESSURE GUAGE	1	
N61	277-837	SCREW DRIVER BLADE - COMB'N	1	
N62	277-845	GRIP FOR SCREW DRIVER	1	
N62B	277-340	PLUG REMOVER	1	
N63	876-195	TOOL BAG	1	
N64	277-825	RING WRENCH 22/24 MM	1	
N65	276-090	FORK WRENCH 17/19 MM	1	
N66	84770171	SPARK PLUG WRENCH 18 MM	1	
N67	276-295	VALVE GAUGE .05 MM	1	
N68	876-230	FORK WRENCH 11/13 MM	1	
N69	276-065	FORK WRENCH 10/13 MM	1	
N70	276-040	WRENCH CLUTCH ADJUSTMENT	1	
N71	876-360	WRENCH 5, INT. HEX SCREW	1	
N72	277-810	WRENCH 6, INT. HEX SCREW	1	
N73	84770114	WRENCH 8, INT. HEX SCREW	1	
N74	84770197	TYRE LEVER	2	
N75	84770163	TOMMY BAR	1	
N76	84770205	PUCTURE REPAIR KIT	1	
N77	84770213	"C" WRENCH REAR SHOCK ABSORBER	2	
N78	84771054	OPERATOR'S MANUAL MT350	1	
N79	84771039	MT350 SERVICE MANUAL	1	
N80	84771047	MT350 PART BOOK	1	

TOOLS, SERVICE ITEMS

PLATE 15N

INDEX NO.	PART NO.	NAME	QTY.	BRIT-MT350
N1	876-660	INSERTION JIG ASSY 850 055 CS	1	
N2	277-861	INSERTION JIG ASSY 230 395, MS	1	
N3	276-322	INSERTION JIG ASSY 930 715 CS	1	
N4	276-330	INSERTION JIG ASSY KICK START	1	
N5	276-340	INSERTION JIG 230 870 OIL PUMP	1	
N6	276-250	INSERTION JIG OIL SEAL 230-690	1	
N7	276-315	INSERTION JIG NEEDLE BUSHING,CAM	1	
N8	276-310	INSERTION JIG 850 055 CAM	1	
N9	277-970	GUIDE SLEEVE MS	1	
N10	276-450	GUIDE SLEEVE OIL PUMP SHAFT	1	
N11	276-300	GUIDE BOLT	1	
N12	276-720	PISTON RING SPANNER, 79,5 mm	1	
N13	276-445	PULLER ASSY	1	
N14	277-807	PULLER ASSY M35X1,5	1	
N16	276-470	VALVE SPRING PUSH TOOL	1	
N18-23	276-360	PULLER ASSY, CL. & BALANCER SHFT	1	
N19	276-380	BOLT M10	1	
N20	276-370	EXTRACTOR SLEEVE 6303	1	
N21	276-375	EXTRACTOR SLEEVE 6304	1	
N22	276-390	SUPPORT PLATE	1	
N23	242-090	HEX. NUT M10	2	
N24	977-477	RING HALF 6207 E	2	
N25	977-490	RING	1	
N26-28	876-298	PULLER ASSY, BALL BEARINGS	1	
N27	940-755	HEX. SCREW M16X1,5X150	1	
N28	840-681	ALLEN SCREW M8X40	4	
N29	241-965	FIXATION SCREW M8X40	1	
N30	276-535	PULLER PLATE ASSY	1	
N31	276-560	PULLER BELL	1	
N32	276-550	PULLER RING	1	
N33	276-155	BOLT 12X250	1	
N34	276-127	PULL-IN SPINDLE M18X1,5 ASSY	1	
N35-36	277-087	PULLER ASSY BALANCER GEAR	1	
N36	841-700	HEX.SCREW M10X60	1	
N37	277-917	TRESTLE ASSY	1	
N38	276-436	PULLER PLATE ASSY, CS HALVES	1	
N39	277-070	RING WRENCH 13/15	1	
N41	277-887	CLUTCH HUB LOCKING TOOL	1	

TOOLS, SERVICE ITEMS



ANNEX 'A'

Cross Reference List for the

109

MOTORCYCLE,GENERAL PURPOSE, HARLEY DAVIDSON

ITEM NO	Manufacturers Part Number	Catalogue Number	Item Name	Remarks
1	210-496	7AMG/2520-99-864-6874	HOUSING, FRICTION CLUTCH	
2	212-515	7AMG/2510-99-734-7806	COVER PLATE, ACCESS	
3	212-543	7AMG/2805-99-156-4771	COVER,VALVE	
4	212-546	7AMG/2805-99-996-0774	COVER ASSEMBLY,VALVE	
5	212-595	7AMG/2805-99-734-9726	COVER, ACCESS	
6	212-610	7AMG/2520-99-734-7816	CHAIN CASE	
7	212-620	7AMG/2940-99-726-5367	COVER PLATE, ACCESS	
8	212960	7AMG/5340-99-902-3757	COVER STARTER MOTOR	
9	212-960	7AMG/5340-99-902-2757	COVER	
10	215-400	7AMG/2805-99-553-1598	RING, PISTON	
11	215-420	7AMG/2805-99-794-9465	RING, PISTON	
12	215-590	7AMG/2805-99-551-2456	RING, PISTON	
13	216-115	7AMG/2805-99-734-7808	PIN GUDGEON	
14	223-161	7AMG/2805-99-595-4456	CYLINDER, ENGINE, GASOLINE	Standard A
15	227-880	7AMG/3120-99-726-5433	WASHER, THRUST	
16	227-930	7AMG/5310-99-726-5409	WASHER, FLAT	
17	227-945	7AMG/5310-99-821-8741	SPACER	
18	227-955	7AMG/2805-99-726-5403	WASHER, THRUST	
19	227-980	7AMG/2805-99-726-5397	WASHER, FLAT	
20	229-140	7AMG/5315-99-837-2368	PIN, STRAIGHT, HEADLESS	
21	229-160	7AMG/5315-99-838-3091	PIN, STRAIGHT, HEADLESS	
22	230-010	7AMG/5330-99-726-6256	GASKET	
23	230-080	7AMG/2805-99-726-6259	GASKET, COPPER	
24	230-310	7AMG/5330-21-878-2488	PACKING, PREFORMED	
25	230-395	7AMG/5330-99-793-6114	SEAL	
26	230-400	7AMG/5330-21-879-9083	PACKING, PREFORMED	
27	230-405	7AMG/5330-99-147-0709	RING, SEALING, TOROIDAL	
28	230-415	7AMG/5330-99-382-6238	GASKET	
29	230-530	7AMG/5330-99-757-0437	PACKING, PREFORMED	
30	230-810	7AMG/2805-99-727-0548	SEAL, POPPET VALVE	
31	230-825	7AMG/5330-99-979-0508	GASKET	
32	230-840	7AMG/5330-99-726-5358	GASKET	
33	230-852	7AMG/5330-99-757-0438	PACKING, PREFORMED	
34	230-860	7AMG/5330-99-734-9723	RING, SEALING, TOROIDAL	
35	230-880	7AMG/5330-99-727-0534	RING, SEALING, TOROIDAL	
36	230-890	7AMG/5330-99-727-0551	RING, SEALING, TOROIDAL	
37	230-905	7AMG/5330-99-776-5924	GASKET	
38	230-920	7AMG/5330-99-726-4568	RING, SEALING, TOROIDAL	
39	232-130	7AMG/3020-99-726-5418	PULLEY, FLAT	
40	232-150	6MT7/3110-99-805-9067	BALL, BEARING	
41	232-165	7AMG/3120-99-851-0496	BUSHING,SLEEVE	
42	232-250	7AMG/3110-99-754-2368	BEARING	
43	232-400	6MT7/3110-99-956-8168	BEARING, BALL, ANNULAR	
44	232-650	7AMG/2510-21-879-1980	NEEDLE BEARING	
45	232-890	7AMG/5365-99-663-9497	BEARING,SLEEVE	
46	234-052	7AMG/3020-99-302-3014	GEAR,BEVEL	
47	234-350	7AMG/3020-99-169-0917	GEAR,BEVEL	
48	235-113	6MT4/5325-99-804-8119	GROMMET, RUBBER	
49	235-603	6MT14/5310-99-815-3290	NUT, PLAIN, CONE SEAT, HEXAGON	
50	236-020	7AMG/2520-99-978-3170	SPROCKET	
51	236-021	7AMG/3020-99-831-2880	SPROCKET WHEEL	

ITEM NO	Manufacturers Part Number	Catalogue Number	Item Name	Remarks
52	237-621	7AMG/3020-99-726-5431	SHAFT, STRAIGHT	
53	237-636	7AMG/2520-99-978-3172	SHIFT SHAFT	
54	239-537	7AMG/5360-99-726-6249	SPRING, HELICAL, COMPRESSION	
55	239-625	7AMG/5360-99-839-3879	SPRING, HELICAL, COMPRESSION	
56	239-780	7AMG/5360-99-734-9729	SPRING, HELICAL, COMPRESSION	
57	239-790	7AMG/5360-99-726-5394	SPRING, FLAT	
58	239905	7AMG/5360-99-973-4430	SPRING,LEAF	
59	240-195	G1/5305-99-737-9743	SCREW, TAPPING, THREAD FORMING	
60	240-205	7AMG/2805-99-726-5402	SCREW, ADJUSTING, VALVE TAPPET	
61	240-230	7AMG/5365-99-727-0545	PLUG, SCREWED	
62	240-331	7AMG/5305-99-757-0369	SCREW	
63	240-365	7AMG/5307-99-401-8358	STUD, PLAIN	
64	240-371	7AMG/5305-99-726-5353	SCREW, SOCKET HEAD	
65	240-385	8REGC/5305-99-139-5311	SCREW, TAPPING, THREAD FORMING	
66	240-415	7AMG/5307-99-726-5384	STUD, PLAIN	
67	240-420	7AMG/5307-99-726-5385	STUD, PLAIN	
68	240-440	7AMG/5307-99-727-0532	STUD, PLAIN	
69	240-480	7AMG/5365-99-083-2784	PLUG, SCREW	
70	240-580	G1/5305-99-737-9742	SCREW, TAPPING, THREAD FORMING	
71	241-761	7AMG/5305-21-878-0914	SCREW, CAP, SOCKET HEAD	
72	241-777	7AMG/5305-99-757-0213	SCREW	
73	241-781	7AMG/2805-21-877-2944	PLUG, DRAIN, MAGNETIC	
74	241-782	7AMG/4730-99-258-1630	PLUG,PIPE,MAGNETIC	
75	241-800	7AMG/5365-99-219-5987	PLUG,MACHINE THREAD	
76	241-811	7AMG/5305-21-878-0931	SCREW, CAP, SOCKET HEAD	
77	241-816	7AMG/5305-21-878-0932	SCREW, CAP, SOCKET HEAD	
78	241-821	7AMG/5305-21-878-0915	SCREW, CAP, SOCKET HEAD	
79	241-850	7AMG/2805-21-878-3348	CONTACT SCREW ASSEMBLY	
80	241-871	7AMG/5305-99-727-0527	SCREW, SOCKET HEAD	
81	241-905	7AMG/5365-99-726-5354	PLUG, SCREWED	
82	241-965	7AMG/5306-21-879-6022	BOLT, MACHINE	
83	242-605	7AMG/5310-21-880-7054	NUT	
84	242-650	7AMG/5310-99-734-7514	NUT, PLAIN, HEXAGON	
85	242-680	7AMG/5310-99-726-5421	NUT, SLEEVE	
86	242-690	7AMG/5310-99-734-8888	NUT, EXTENDED WASHER, HEXAGON	
87	242-695	7AMG/5310-99-734-7511	NUT, EXTENDED WASHER, CAP	
88	242-710	7AMG/5310-99-726-5405	NUT, PLAIN, HEXAGON	
89	245-320	7AMG/2520-21-879-1475	WASHER	
90	245-390	7AMG/5310-99-734-8889	WASHER, KEY	
91	245-430	7AMG/5365-99-734-7815	RING, RETAINING	
92	245-440	7AMG/5365-99-726-5396	RING, RETAINING	
93	245-620	7AMG/5325-99-331-1616	RING,RETAINING	

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94	246-150	7AMG/5365-99-726-5423	SHIM	
95	246-151	7AMG/5365-99-739-7205	SHIM	
96	246-570	7AMG/5315-21-880-3985	KEY, WOODRUFF	
97	247-320	7AMG/3120-99-726-5373	BUSHING, SLEEVE	
98	247-390	7AMG/2805-99-277-6163	RING	
99	247-420	7AMG/5365-99-726-5383	SPACER, SLEEVE	
100	247-430	7AMG/5365-99-726-5406	SPACER, SLEEVE	
101	248-180	7AMG/2540-99-147-0941	PEDAL, CONTROL	
102	248-260	7AMG/2520-99-753-6358	SHIFT LEVER, ASSEMBLY	
103	250-010	7AMG/5330-99-727-0535	GASKET	
104	250-090	7AMG/5330-99-726-5420	GASKET	
105	250-110	7AMG/5310-99-258-0690	WASHER	
106	250-130	7AMG/5330-99-757-0434	SEAL	
107	250-140	7AMG/5330-99-757-0439	PACKING, PREFORMED	
108	250-290	7AMG/5330-99-056-3376	SEAL	
109	250-300	7AMG/5330-99-983-0441	SEAL	
110	250-320	7AMG/5330-99-950-1582	SEAL	
111	250-370	7AMG/5330-99-744-1283	GASKET	
112	250-380	7AMG/5330-99-744-1284	GASKET	
113	250-390	7AMG/5330-99-744-1285	GASKET	
114	251-890	7AMG/5340-99-726-5369	STRAP, RETAINING	
115	251-910	7AMG/2805-99-754-2391	SPACER BLOCK	
116	253-090	7AMG/2805-99-726-5399	LOCK, VALVE SPRING RETAINER	
117	253-101	7AMG/2805-99-726-5398	RETAINER, HELICAL COMPRESSION SPRING	
118	253-116	7AMG/2805-99-726-6261	GUIDE, VALVE STEM	
119	253-117	7AMG/2805-99-727-0547	GUIDE, VALVE STEM	
120	253-160	7AMG/2805-99-563-5495	VALVE, POPPET, ENGINE	
121	253-170	7AMG/2805-99-020-6968	VALVE, POPPET, ENGINE	
122	256-150	7AMG/2940-99-726-5365	PIN, GROOVED, HEADLESS	
123	256-160	7AMG/2940-99-726-5359	STRAINER ELEMENT, SEDIMENT	
124	256-170	7AMG/5365-99-726-5366	PLUG, SCREWED	
125	256-180	7AMG/2940-99-734-8882	FILTER ELEMENT, FLUID, PRESSURE	
126	258-797	7AMG/3040-99-377-5260	SHIFT DRUM ASSEMBLY	
127	259-075	7AMG/2805-99-450-4295	CLUTCH, SPRAG	
128	259-140	7AMG/2520-99-110-1961	HUB, THRUST	
129	259-185	7AMG/2520-99-702-3285	CAM, RELEASE	
130	259-876	7AMG/2520-99-810-2967	HUB, CLUTCH	
131	259-885	7AMG/2520-99-192-4615	PLATE, PRESSURE, FRICTION CLUTCH	
132	259-905	7AMG/2520-99-583-1312	DISK, CLUTCH	
133	259-915	7AMG/2520-99-739-7204	DISK, CLUTCH	
134	259-913	7AMG/2520-99-599-0430	PLATE, INTERMEDIATE, FRICTION CLUTCH	
135	260-550	7AMG/2805-99-734-7813	LENS, TIMING COVER	
136	260-570	7AMG/2940-99-726-5364	VALVE HEAD	
137	260-810	7AMG/3120-99-754-2524	BUSHING	
138	264-135	7AMG/2920-99-754-2273	END SHIELD, ELECTRICAL ROTATING EQUIPMENT	
139	264-180	7AMG/5977-99-701-5825	BRUSH, ELECTRICAL	

ITEM NO	Manufacturers Part Number	Catalogue Number	Item Name	Remarks
			CONTACT	
140	264-737	7AMG/2920-99-734-9731	COIL, IGNITION	
141	264-740	7AMG/2920-99-734-8887	AMPLIFIER, BOX	
142	264-750	7AMG/2920-99-734-9724	COIL ASSEMBLY	
143	264-861	7AMG/2920-99-727-0570	SHIELD, SPARKING PLUG	
144	267-857	7AMG/2805-99-726-6257	FLANGE, INTAKE	
145	27101-88	7AMG/4810-01-386-4166	RETAINER, DISK, VALVE	
146	27115-88	7AMG/2910-01-387-0726	NOZZLE, CARBURETOR	
147	27124-89	7AMG/5325-01-385-4848	RING, RETAINING	
148	27129-88	7AMG/5305-99-442-6207	SCREW,MACHINE	
149	27157-89	7AMG/5330-01-385-5743	O-RING	
150	27276-94	7AMG/2910-01-387-3570	NEEDLE, TAPERED, CARBURETOR	
151	27277-94	7AMG/2910-99-179-9291	NOZZLE, CARBURETOR	
152	27281-92	7AMG/2910-01-387-0782	NOZZLE, CARBURETOR	
153	27343-94	7AMG/4720-99-356-7364	HOSE, RUBBER	
154	27360-76	7AMG/5330-01-385-5453	O-RING	
155	27361-76	7AMG/2910-01-387-2981	DIAPHRAGM, ACTUATOR VALVE, SPECIAL SHAPED	
156	27371-76	7AMG/4730-99-244-8421	ELBOW	
157	27576-92	7AMG/2910-01-385-6325	FLOAT, CARBURETOR	
158	27577-92	7AMG/5330-01-385-5136	GASKET	
159	27583-88	7AMG/2910-01-387-3407	NEEDLE, TAPERED, CARBURETOR	
160	27585-88	7AMG/2910-99-786-2529	PISTON, VACUUM	
161	276-040	7AMG/5120-99-799-7679	WRENCH, SPANNER	
162	276-065	7AMG/5120-21-878-2463	WRENCH, OPEN END	
163	276-090	7AMG/5120-99-721-6818	WRENCH, OPEN END	
164	276-295	7AMG/5210-01-338-0760	GAGE, GAP SETTING	
165	276-310	7AMG/5120-99-725-9384	INSTALLER, OIL SEAL	
166	276-322	7AMG/5120-99-306-3829	INSTALLER, OIL SEAL	
167	276-330	7AMG/5120-01-338-0858	INSTALLATION TOOL, SEAL	
168	276-405	7AMG/5120-99-950-2516	PULLER, CAMSHAFT	
169	276-445	7AMG /5120-99-725-9388	PULLER ASSEMBLY, TIMING PULLEY	
170	276-720	7AMG/5120-99-300-8422	COMPESSOR, PISTON RING	
171	277-340	7AMG/5120-99-020-7001	REMOVER, PLUG	
172	277-807	7AMG/5120-21-879-9082	PULLER ASSEMBLY	
173	277-810	F1/5120-99-124-3483	KEY, SOCKET HEAD SCREW	
174	277-825	7AMG/5120-99-139-8692	WRENCH, BOX	
175	277-837	7AMG/5120-99-549-7341	BIT, SCREWDRIVER	
176	277-845	7AMG/5120-99-663-3593	GRIP, SCREWDRIVER	
177	27886-78A	7AMG/2910-01-385-5907	NEEDLE, CARBURETOR	
178	280-015	7AMG/3030-99-464-1671	BELT, POSITIVE DRIVE	
179	280-020	7AMG/2805-99-727-0554	CAM, CONTROL	
180	293-128	7AMG/2920-99-734-7814	STATOR ASSEMBLY	
181	293-151	7AMG/2920-99-803-7667	STARTER, ENGINE, ELECTRICAL	
182	293459	7AMG/3020-99-663-8944	GEAR,BEVEL	
183	293-490	7AMG/2520-99-726-5374	CLUTCH HALF, POSITIVE	
184	295-245	7AMG/2805-99-721-5186	PISTON, INTERNAL COMBUSTION ENGINE	Standard A
185	295-245	7AMG/2805-99-179-9348	PISTON, INTERNAL	Standard B

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ITEM NO	Manufacturers Part Number	Catalogue Number	Item Name	Remarks
			COMBUSTION ENGINE	
186	295-300	7AMG/5330-99-667-1223	GASKET AND SEAL SET	
187	295-301	7AMG/5330-99-814-9370	GASKET AND SEAL SET	
188	297-540	6MT4/2920-99-891-6161	PLUG, SPARKING	
189	31500HA7725	7AMG/6140-99-500-8752	BATTERY	
190	430-020	7AMG/5330-99-727-0564	RING, SEALING, TOROIDAL	
191	82730011	7AMG/2530-15-117-8959	SPINDLE, WHEEL, DRIVING-NONDRIVING	
192	82830050	7AMG/2530-99-429-1346	CYLINDER ASSEMBLY, HYDRAULIC BRAKE, MASTER	
193	831-260	7AMG/5330-99-726-5415	SEAL, PLAIN	
194	831-762	7AMG/5330-99-726-5360	RING, SEALING, TOROIDAL	
195	832-235	7AMG/3110-12-327-8347	BEARING, BALL, ANNULAR	
196	840 401	7AMG/5305-99-776-5922	SCREW	
197	840-511	7AMG/5305-99-757-0214	SCREW	
198	840-861	7AMG/5305-99-726-5361	SCREW, SOCKET HEAD	
199	840-880	7AMG/5305-99-726-5372	SCREW, SOCKET HEAD	
200	84250216	7AMG/5340-99-721-5104	BOOT, DUST AND MOISTURE SEAL	
201	84315027	7AMG/2910-99-786-2527	CARBURETOR, FLOAT	
202	84315035	7AMG/2805-99-957-0643	ENGINE, GASOLINE	
203	84621010	7AMG/5930-01-384-3848	SWITCH, SOLID STATE	
204	84630508	7AMG/2530-99-398-7327	BOOT DUST AND MOISTURE SEAL	
205	84630557	7AMG/5340-99-168-8378	COVER, ACCESS	
206	84630565	7AMG/2530-99-219-5029	CALIPER ASSEMBLY,DISC BRAKE	
207	84630573	7AMG/5365-99-156-4416	RING, RETAINING	
208	84630599	7AMG/5315-99-728-6818	PIN, STRAIGHT, HEADED	
209	84630607	7AMG/2530-99-989-0781	TENSIONER	
210	84630615	7AMG/2530-99-051-7032	VALVE, BLEEDER, HYDRAULIC SYSTEM	
211	84630698	7AMG/5330-01-387-3376	SEAL,PLAIN	
212	84630714	7AMG/2530-99-258-0689	NUT, ADJUSTER STUD	
213	84650407	7AMG/2940-99-733-8198	PLASTICS CHANNEL	
214	84650712	7AMG/5340-99-810-4824	COVER, ACCESS	
215	84650720	7AMG/5330-01-387-3527	SEAL, PLAIN	
216	84700038	7AMG/2510-99-733-5631	MOUNTING, FOOTREST	
217	84700046	7AMG/2510-99-733-5630	MOUNTING, FOOTREST	
218	84700053	7AMG/2510-99-733-5644	SPACER-SUPPORT TUBE	
219	84700103	7AMG/2510-99-734-7522	SUMP GUARD	
220	84700160	6MT1/5330-99-554-5917	RING,SEALING, TOROIDAL	
221	84700186	6MT7/3110-99-734-7539	BEARING, NEEDLE ROLLER, JOURNAL	
222	84700194	7AMG/2510-99-734-7538	JOURNAL, BEARING	
223	84700202	7AMG/5365-99-733-6122	SHIM	
224	84700244	7AMG/5340-99-733-6164	MOUNT, RESILIENT	
225	84700277	7AMG/5330-01-387-3493	SEAL, PLAIN	
226	84700368	7AMG/5330-99-733-6154	SEAL, BEARING	
227	84700384	7AMG/3120-99-733-6117	BUSHING, SLEEVE	
228	84700533	7AMG/2510-99-733-5643	CHAIN SLIPPER, MAINSTAND	
229	84702182	7AMG/2510-99-573-5112	CARRIER,ENGINE	
230	84702240	7AMG/2990-99-310-0858	GUARD, CRANKCASE	

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231	84702273	7AMG/2540-99-660-6282	BOX, ACCESSORIES STOWAGE	
232	84702455	7AMG/2510-99-911-6102	FRAME, MOTORCYCLE	
233	84702471	7AMG/2540-99-227-2906	HOLDER, MAP	
234	84702489	7AMG/5340-99-701-5740	PLATE, MOUNTING	
235	84702497	7AMG/2540-99-325-0375	CARRIER BRACKET, PANNIER	
236	84702505	7AMG/2510-01-387-5540	OUTRIGGER, MAIN FRAME	
237	84702562	7AMG/2510-99-396-1191	STAND, MOTOR CYCLE	
238	84702638	7AMG/3120-99-147-0683	BUSHING SLEEVE	
239	84702646	7AMG/2530-99-573-1944	ARM, SWINGING	
240	84702919	7AMG/5360-99-300-7332	SPRING, HELICAL, EXTENSION	
241	84702943	7AMG/2510-99-477-5809	SUPPORT TUBE	
242	84703016	7AMG/5340-99-911-1951	REAR CARRIER	
243	84703024	7AMG/5340-99-302-0948	BRACKET,ANGLE	
244	84703032	7AMG/5340-99-173-0757	BRACKET,ANGLE	
245	84703438	7AMG/2540-99-111-1052	SCABBARD, GUN	
246	84703511	7AMG/5340-99-215-3765	BRACKET, MOUNTING	
247	84703529	7AMG/5340-99-386-7153	BRACKET, MOUNTING	
248	84703537	7AMG/5340-01-387-3546	BRACKET, MOUNTING	
249	84703545	7AMG/5340-99-160-4152	BRACKET, MOUNTING	
250	84703552	7AMG/5340-99-956-9997	BRACKET, MOUNTING	
251	84703560	7AMG/2510-99-814-9365	END SUPPORT TUBE	
252	84703578	7AMG/2590-99-851-2100	BRACKET,VEHICULAR COMPONENT	
253	84703586	7AMG/2510-99-581-6651	STRUT TUBE	
254	84703628	7AMG/5365-99-126-4246	SPACER, SLEEVE	
255	84703636	7AMG/5365-99-421-9342	SPACER, SLEEVE	
256	84703669	7AMG/2540-99-234-3443	FOOT REST, VEHICULAR	
257	84703685	7AMG/2540-99-701-5739	FOOT REST, VEHICULAR	
258	84703701	7AMG/5365-99-500-6153	SPACER, SLEEVE	
259	84703727	7AMG/2510-99-300-7345	SUPPORT TUBE	
260	84703826	7AMG/2510-01-388-2551	STRUT ASSEMBLY, VEHICULAR SUSPENSION	
261	84703917	7AMG/3040-01-388-2748	SHAFT, STRAIGHT	
262	84710029	46MT1/4730-99-533-2968	CLAMP, HOSE	
263	84710037	6MT1/4730-99-533-2970	CLAMP, HOSE	
264	84710045	7AMG/2990-99-733-8585	PIPE, EXHAUST	
265	84710052	7AMG/2990-99-733-8586	PIPE, EXHAUST	
266	84710060	7AMG/2990-99-733-8583	CLAMP RING	
267	84710078	7AMG/2990-99-733-8589	GUARD, MUFFLER-EXHAUST PIPE, NONAIRCRAFT	
268	84710086	7AMG/2990-99-733-8580	PIPE, EXHAUST	
269	84710144	7AMG/5340-01-338-1168	CLAMP, LOOP	
270	84710151	7AMG/5340-99-733-8579	CLAMP, LOOP	
271	84710276	7AMG/2990-99-733-8584	SPACER, SLEEVE	
272	84710318	7AMG/4730-99-733-8204	ADAPTER, STRAIGHT, PIPE TO TUBE	
273	84710367	46MT1/4730-99-533-2957	CLAMP, HOSE	
274	84710805	7AMG/4720-01-384-5649	HOSE, PREFORMED	
275	84710813	7AMG/4720-01-387-5529	DUPLEX HOSE, RUBBER	
276	84710839	7AMG/4730-99-011-2637	STRAINER ELEMENT,	

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			SEDIMENT	
277	84711415	7AMG/5305-01-387-3394	SCREW, MACHINE	
278	84711480	7AMG/5365-99-702-3397	SPACER, RING	
279	84711506	7AMG/2990-99-410-2716	MUFFLER, EXHAUST	
280	84720036	X5/6240-99-995-2615	LAMP, FILAMENT	
281	84720085	7AMG/5340-99-734-7542	MOUNT, RESILIENT	
282	84720242	X5/6240-99-255-5238	LAMP, FILAMENT	
283	84720259	X5/6240-99-995-3281	LAMP, FILAMENT	
284	84720275	7AMG/2920-99-733-8125	SWITCH, IGNITION	
285	84720317	7AMG/2590-99-733-8131	WIRING HARNESS	
286	84720333	7AMG/5930-99-733-8135	SWITCH, PUSH	
287	84720366	7AMG/2590-99-733-8133	SWITCH, BLACKOUT	
288	84720655	X5/6240-99-734-5828	LAMP, FILAMENT	
289	84720721	7AMG/6220-99-733-6935	LAMPHOLDER	
290	84720739	7AMG/2590-99-733-8132	WIRING HARNESS	
291	84720796	7AMG/2590-99-733-8138	LEAD, ELECTRICAL	
292	84720929	7AMG/5310-99-733-8127	WASHER, FLAT	
293	84720937	7AMG/2920-99-733-8126	RETAINER, IGNITION LOCK	
294	84720945	7AMG/2920-99-733-8128	SWITCH, IGNITION	
295	84721059	7AMG/6150-99-454-0370	CABLE ASSEMBLY, POWER, ELECTRICAL	
296	84721091	6MT4/5945-12-333-2725	RELAY, ELECTROMAGNETIC	
297	84722016	7AMG/6220-01-384-3771	TAILLIGHT, VEHICULAR	
298	84722214	7AMG/9905-99-957-0000	REFLECTOR, INDICATING, CLEARANCE	
299	84722222	7AMG/9905-99-110-1942	REFLECTOR, INDICATING, CLEARANCE	
300	84722230	7AMG/5945-01-384-3728	FLASHER, THERMAL	
301	84722248	7AMG/5340-99-377-5197	PLATE, MOUNTING	
302	84722305	7AMG/5925-01-387-0763	CIRCUIT BREAKER	
303	84722404	7AMG/6150-99-872-9179	CABLE ASSEMBLY,POWER, ELECTRICAL	
304	84722446	7AMG/2540-99-235-4438	SHROUD, FORK	
305	84722453	7AMG/6150-99-535-7224	WIRING HARNESS, BRANCHED	
306	84722974	6MT4/6140-01-386-5811	BATTERY, STORAGE	
307	84723220	7AMG/6150-99-126-4318	WIRING HARNESS, BRANCHED	
308	84723238	7AMG/6210-01-388-2498	LIGHT ASSEMBLY, INDICATOR	
309	84730159	7AMG/2530-99-733-6193	NIPPLE, SPOKE	
310	84730191	7AMG/2530-99-411-3946	WEIGHT, WHEEL BALANCING	
311	84730258	7AMG/2530-99-733-6228	BOLT, SECURITY, TYRE	
312	84730266	7AMG/2530-99-733-6233	RIM, WHEEL, PNEUMATIC TYRE	
313	84730282	7AMG/2530-99-168-6709	WEIGHT, WHEEL BALANCING	
314	84730712	7AMG/2530-99-733-6237	CAM, ADJUSTER, CHAIN	
315	84731098	7AMG/5310-99-737-6150	WASHER	
316	84731496	2530/2540-99-215-3773	GUARD, DISC BRAKE	
317	84731546	7AMG/2530-99-709-1428	WHEEL RIM	
318	84732015	7AMG/2530-15-119-7702	CALIPER ASSEMBLY, DISC BRAKE	
319	84732080	6MT14/2610-99-623-8007	TIRE, PNEUMATIC	

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ITEM NO	Manufacturers Part Number	Catalogue Number	Item Name	Remarks
320	84732098	6MT14/2610-99-780-4513	INNER TUBE, PNEUMATIC TIRE	
321	84732106	6MT14/2640-01-387-3287	FLAP, INNER TUBE, PNEUMATIC TIRE	
322	84732114	6MT14/2610-99-885-0957	TIRE, PNEUMATIC	
323	84732122	6MT14/2610-99-905-9510	INNER TUBE, PNEUMATIC TIRE	
324	84732130	7AMG/2640-99-325-0105	FLAP, INNER TUBE, PNEUMATIC TIRE	
325	84732171	7AMG/5340-99-374-7375	BRACKET, PIPE	
326	84732189	7AMG/2530-99-572-6034	SPOKE, WIRE WHEEL	
327	84732205	7AMG/2530-15-119-7701	ROTOR, DISC BRAKE	
328	84732213	7AMG/2530-99-562-7453	WEIGHT, WHEEL BALANCING	
329	84732239	7AMG/4730-99-591-2640	BOLT, FLUID PASSAGE	
330	84732247	7AMG/5310-01-387-5496	WASHER, FLAT	
331	84732262	7AMG/5310-99-131-7761	WASHER, SPEEDOMETER DRIVE	
332	84732270	7AMG /2530-99-320-4959	RESERVOIR, BRAKE FLUID	
333	84732288	7AMG/2530-99-372-8741	CAM, ADJUSTER, CHAIN	
334	84732304	7AMG/2530-15-117-8960	SPINDLE, WHEEL, DRIVING-NONDRIVING	
335	84732312	7AMG/5310-99-179-9284	NUT, PLAIN CASTELLATED, HEXAGON	
336	84732338	7AMG/5365-99-513-6566	SPACER, SLEEVE	
337	84732346	7AMG/2530-99-192-4597	SPOKE, WIRE WHEEL	
338	84732353	7AMG/2530-99-660-6302	SPOKE, WIRE WHEEL	
339	84732361	7AMG/5365-99-701-5755	SPACER, SLEEVE	
340	84732387	7AMG/5930-99-588-0649	SWITCH, PRESSURE	
341	84732395	7AMG/2530-15-117-8964	CYLINDER ASSEMBLY, HYDRAULIC BRAKE, MASTER	
342	84732429	7AMG/5360-99-496-1267	SPRING, HELICAL, TORSION	
343	84732544	7AMG/2530-15-117-8961	SPIDER	
344	84732551	7AMG/4720-99-846-1912	HOSE, RUBBER	
345	84732569	7AMG/2530-01-388-2520	PUSH ROD, HYDRAULIC BRAKE MASTER CYLINDER	
346	84732585	7AMG/2530-99-477-6087	DRIVE UNIT, SPEEDOMETER	
347	84732593	7AMG/3110-99-234-3445	BEARING, BALL, ANNULAR	
348	84732601	7AMG/3110-01-387-3267	BEARING, BALL, ANNULAR	
349	84732619	7AMG/3110-99-660-6296	BEARING, BALL, ANNULAR	
350	84732668	7AMG/4730-99-430-6729	BOLT, FLUID PASSAGE	
351	84732676	7AMG/5340-99-325-2670	COVER,ACCESS	
352	84732692	7AMG/2510-99-202-9845	FENDER, VEHICULAR	
353	84732767	7AMG/2530-99-349-5311	NIPPLE, SPOKE	
354	84732882	7AMG/2530-99-895-9551	SPOKE, WIRE WHEEL	
355	84732916	7AMG/2530-99-371-0452	HUB, WHEEL, VEHICULAR	
356	84733005	7AMG/3020-15-117-8962	SPROCKET WHEEL	c/w tab washers and bolts
357	84733013	7AMG/5340-99-404-9240	PLATE SCABBARD MOUNT	
358	84733021	7AMG/4720-99-075-5211	HOSE ASSEMBLY, RUBBER	
359	84733039	7AMG/4720-99-660-6354	HOSE ASSEMBLY, RUBBER	
360	84733047	7AMG/2540-99-168-8266	PEDAL, CONTROL	
361	84733062	7AMG/5340-99-060-4244	MOUNTING BRACKET	

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ITEM NO	Manufacturers Part Number	Catalogue Number	Item Name	Remarks
362	84733096	7AMG/2540-99-320-4743	GUARD, DISC BRAKE	
363	84733203	7AMG/5365-99-387-3472	SPACER, SLEEVE	
364	84733211	7AMG/5365-99-300-7428	SPACER, SLEEVE	
365	84733229	7AMG/3110-99-256-4355	BEARING, BALL, ANNULAR	
366	84733237	7AMG/3110-99-300-7359	BEARING, BALL, ANNULAR	
367	84733245	7AMG/5365-99-743-6557	SPACER, SLEEVE	
368	84733252	7AMG/2530-99-133-5007	SPIDER ASSEMBLY, WHEEL	
369	84733260	7AMG/2530-99-905-5064	HOUSING, SPIDER	
370	84733278	7AMG/5365-99-870-5716	SPACER, SLEEVE	
371	84733294	7AMG/2530-99-001-6978	SLEEVE, SPIDER HOUSING	
372	84733310	7AMG/3110-99-001-6098	BEARING, BALL, ANNULAR	
373	84733443	7AMG/5330-99-496-1226	SEAL	
374	84733500	7AMG/7690-99-740-7081	DECAL	
375	84733534	7AMG/2540-99-244-8284	TAB RING	
376	84733534	7AMG/2540-99-244-8284	TAB RING	
377	84740018	7AMG/5310-99-733-5687	WASHER, RETAINING, SHOCK ABSORBER	
378	84740042	7AMG/3110-99-733-6114	BEARING, SELF-ALIGNING	
379	84740075	7AMG/2530-99-733-6141	YOKE, FORK LEGS	
380	84740125	7AMG/2510-99-734-7556	BOOT, DUST AND MOISTURE SEAL	
381	84740133	7AMG/5340-99-733-6277	STRAP, LINE SUPPORTING	
382	84740141	7AMG/4730-99-733-6134	CLAMP, HOSE	
383	84740158	7AMG/5306-99-733-6142	BOLT, CLAMP	
384	84740174	7AMG/2530-99-733-6148	INVERTED NUT, STEERING STEM	
385	84740182	7AMG/5310-99-733-6149	WASHER, FLAT	
386	84740190	7AMG/2530-99-733-6153	RING, ADJUSTING	
387	84740208	7AMG/5340-99-733-6151	BUSHING, NONMETALLIC	
388	84740216	7AMG/5306-99-733-6150	BOLT, SECURING	
389	84740232	7AMG/5365-99-733-6152	SPACER, SLEEVE	
390	84740240	7AMG/5310-99-733-6160	WASHER, CONCAVE	
391	84740265	7AMG/2530-99-733-6138	CLAMP, BRIDGE	
392	84740273	7AMG/5360-99-733-6186	SPRING, HELICAL, COMPRESSION	
393	84740281	7AMG/2530-99-734-7518	STANCHION	
394	84740299	7AMG/5330-99-939-0920	SEAL, PLAIN	
395	84740307	7AMG/5365-99-733-6174	RING, RETAINING	
396	84740356	7AMG/5360-99-733-6181	SPRING, HELICAL, COMPRESSION	
397	84740372	7AMG/2530-99-733-6169	VALVE, SLIDER	
398	84740380	7AMG/3120-99-733-6170	BUSHING, SLEEVE	
399	84740398	7AMG/5365-99-733-6171	RING, RETAINING	
400	84740406	7AMG/2530-99-733-6172	SEAT, DAMPER ROD	
401	84740414	7AMG/5305-99-722-6345	SCREW	
402	84740448	7AMG/5330-99-733-6177	GASKET	
403	84740463	7AMG/3120-99-327-4224	BEARING SLEEVE	
404	84740471	7AMG/5307-99-722-6344	STUD	
405	84740497	7AMG/5365-99-733-6185	SPACER, SLEEVE	
406	84740539	7AMG/2530-99-733-6175	WASHER, LOCATING	
407	84740554	7AMG/5365-99-733-6167	RING, RETAINING	
408	84740562	7AMG/2530-99-733-6135	SLIDER, FORK LEG	
409	84740588	7AMG/2530-99-733-6173	EXCLUDER, DUST	

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ITEM NO	Manufacturers Part Number	Catalogue Number	Item Name	Remarks
410	84740596	7AMG/5330-99-733-6184	RING, SEALING, TOROIDAL	
411	84740604	7AMG/5330-99-733-6188	RING, SEALING, TOROIDAL	
412	84740620	7AMG/5305-99-757-0331	SCREW	
413	84740653	7AMG/3110-99-733-6157	BEARING, TAPERED, ROLLER	
414	84740661	7AMG/5365-99-733-6156	SPACER, RING	
415	84740687	7AMG/5365-99-733-5686	SPACER, SLEEVE	
416	84740695	7AMG/5330-99-733-5685	RING, SEALING, TOROIDAL	
417	84740786	7AMG/5365-99-733-6136	SPACER, PLATE	
418	84740794	7AMG/5365-99-733-6140	SPACER, CLAMP	
419	84740802	7AMG/4730-99-733-6143	CLAMP, HOSE	
420	84740828	7AMG/2530-99-733-6144	RING, LOCATING	
421	84740836	7AMG/5340-99-733-6179	BUSHING, NONMETALLIC	
422	84741305	7AMG/2530-99-010-0764	CLAMP, BASE	
423	84741420	7AMG/2510-99-807-1771	CAP, FORK	
424	84750033	7AMG/2530-99-734-7534	CHAINGUARD	
425	84750041	7AMG/3020-99-799-6243	CHAIN, ROLLER	
426	84750058	7AMG/2510-99-734-7537	SLIPPER BLOCK, CHAIN	
427	84750066	7AMG/5340-99-733-6128	BRACKET, CHAINGUARD	
428	84750124	7AMG/2940-99-799-6214	FILTER ELEMENT, AIR, INTAKE	
429	84750132	7AMG/2940-99-733-8202	DRAIN BLADDER, AIRBOX	
430	84750371	7AMG/5340-99-734-7545	MOUNT, RESILIENT	
431	84750553	7AMG/5340-99-362-6699	MOUNT, RESILIENT	
432	84750579	7AMG/5325-99-734-7529	GROMMET, RUBBER	
433	84750611	7AMG/3020-99-799-6244	LINK, ROLLER CHAIN	
434	84750736	7AMG/6220-99-799-6236	DIRECTIONAL LIGHT, VEHICULAR	
435	84750744	6MT1/4320-99-780-7293	PUMP, HAND	
436	84752518	7AMG/2940-99-990-8850	FILTER BODY, INTAKE AIR CLEANER	
437	84752526	7AMG/2940-99-020-8148	LID ASSEMBLY, AIR BOX	
438	84752617	7AMG/2510-01-419-4321	FRAME SECTION, STRUCTURAL, VEHICULAR	Incorrect item name: this is Throttle Control Assembly
439	84752633	7AMG/2540-99-360-4649	GUARD, SPLASH, VEHICULAR	
440	84752666	7AMG/5310-99-179-9285	NUT	
441	84752674	7AMG/4730-99-988-3944	STRAINER ELEMENT, SEDIMENT	
442	84752682	7AMG/4820-99-401-8355	VALVE	
443	84752690	7AMG/5330-99-147-0690	GASKET	
444	84752799	7AMG/6240-01-387-1823	LAMP, INCANDESCENT	
445	84752922	7AMG/4720-99-219-2606	HOSE, RUBBER	
446	84752948	7AMG/2910-01-387-2940	VALVE, FUEL SYSTEM	
447	84752971	7AMG/4720-99-721-5142	HOSE, RUBBER	
448	84752989	7AMG/4720-99-051-6767	HOSE, PREFORMED	
449	84753011	7AMG/4730-99-940-6437	CLAMP,HOSE	
450	84753060	7AMG/2510-99-420-4303	FENDER, VEHICULAR	
451	84753094	7AMG/2530-99-300-7367	HANDLEBAR	
452	84753201	7AMG/2910-99-660-6336	ADAPTOR, CARBURETOR	
453	84753219	7AMG/5330-99-372-8744	GASKET	
454	84753235	7AMG/4720-99-567-0613	HOSE, PREFORMED	

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ITEM NO	Manufacturers Part Number	Catalogue Number	Item Name	Remarks
455	84753268	7AMG/2910-01-390-4938	TANK, FUEL, ENGINE	
456	84753276	7AMG/5340-99-384-0271	COVER, ACCESS	
457	84753284	7AMG/5340-99-976-1685	COVER, ACCESS	
458	84753300	7AMG/2540-99-562-7626	LEVER PROTECTOR	
459	84753479	7AMG/4910-01-387-4617	GAGE, TIRE PRESSURE, SELF-CONTAINED	
460	84753615	7AMG/6680-99-846-0564	TRIPMETER	
461	84753623	7AMG/5310-99-219-5378	NUT	
462	84753805	7AMG/4730-99-702-6103	CLAMP,HOSE	
463	84753854	7AMG/2540-99-567-0937	SEAT,DUAL,MOTOR REPORT	
464	84753870	7AMG/6680-99-227-8470	SPEEDOMETER	
465	84753896	7AMG/4720-99-911-1287	HOSE, RUBBER	
466	84753904	7AMG/4720-99-168-8259	HOSE, RUBBER	
467	8475398	7AMG/9905-99-573-5110	PLATE,IDENTIFICATION	
468	84760016	7AMG/2510-99-734-7526	SPRING, HELICAL, TORSION	
469	84760024	7AMG/2510-99-734-7525	SPRING, HELICAL, TORSION	
470	84760065	7AMG/5340-99-733-8147	BATTERY STRAP	
471	84760081	7AMG/4730-99-733-5640	LUBRICATING NIPPLE	
472	84760099	7AMG/5360-99-734-7535	SPRING, HELICAL, EXTENSION	
473	84760255	7AMG/2540-99-733-5674	STRAP, TOOLBOX	
474	84760289	7AMG/5340-99-733-6165	GUIDE, SPEEDOMETER CABLE	
475	84760305	7AMG/2590-99-733-8111	BOOT, DUST AND MOISTURE SEAL	
476	84760388	7AMG/2910-99-733-6951	LEVER ASSEMBLY, CHOKE	
477	84760602	7AMG/2510-99-799-6222	CABLE ASSEMBLY, CONTROL	
478	84760719	7AMG/5340-99-733-6115	BUMPER, RUBBER	
479	84760826	7AMG/5365-99-733-6282	SPACER, SLEEVE	
480	84760982	7AMG/5340-99-733-8113	CLAMP, LOOP	
481	84761048	7AMG/2530-99-733-6949	CLAMP, LEVER BRACKET	
482	84761055	7AMG/2530-99-733-6947	ADJUSTER, CONTROL CABLE ASSEMBLY	
483	84761063	7AMG/2530-99-733-6946	ADJUSTER, CONTROL CABLE ASSEMBLY	
484	84761071	7AMG/2530-99-733-6948	LOCKNUT, CABLE ADJUSTER	
485	84761147	7AMG/5340-99-733-8094	STRAP, RETAINING	
486	84761535	7AMG/5340-99-577-4130	STRAP,RETAINING	
487	84762210	7AMG/2520-99-125-8618	LEVER ASSEMBLY, CLUTCH	
488	84762244	7AMG/2540-99-613-9488	MIRROR ASSEMBLY, REARVIEW	
489	84762426	7AMG/2540-15-117-8941	KEY	
490	84762525	7AMG/2530-99-623-9232	CYLINDER, HYDRAULIC BRAKE, MASTER	
491	84762541	7AMG/2590-99-442-5671	BODY HALF, CONTROL	
492	84762558	7AMG/5340-01-387-5536	LEVER, MANUAL CONTROL	
493	84762566	7AMG/3120-99-904-4119	BUSHING, SLEEVE	
494	84762574	7AMG/5305-99-662-7985	SCREW, PIVOT	
495	84762582	7AMG/2530-99-083-4010	ADJUSTER STUD	
496	84762616	7AMG/2590-99-401-8888	CONTROL, MULTIFUNCTION, AUTOMOTIVE	
497	84762624	7AMG/2590-01-387-3676	ADJUSTER ASSY PUSH	

ITEM NO	Manufacturers Part Number	Catalogue Number	Item Name	Remarks
498	84762632	7AMG/2590-99-439-0503	ADJUSTER, CONTROLLER CABLE ASSEMBLY	
499	84762640	7AMG/2540-99-988-3945	TWISTGRIP, MOTORCYCLE	
500	84762772	7AMG/5310-99-325-2574	WASHER	
501	84762798	7AMG/2520-99-702-6536	ADJUSTER NUT,SMALL	
502	84762798	7AMG/2520-99-702-6536	ADJUSTER NUT,SMALL	
503	84762921	7AMG/2540-99-794-9304	COWL	
504	84762962	7AMG/2540-99-748-2884	CYLINDER,LOCK,VEHICULAR	
505	84762988	7AMG/5340-99-341-1031	STRAP, HOLD DOWN	
506	84763002	7AMG/2590-99-760-8732	CABLE ASSEMBLY, CONTROL	
507	84763010	7AMG/6680-99-549-7415	SHAFT ASSEMBLY, FLEXIBLE	
508	84763101	7AMG/2990-99-383-4128	CABLE ASSEMBLY, CONTROL	
509	84763283	7AMG/2920-01-384-3700	SWITCH, LOCK, IGNITION	
510	84763374	7AMG/5340-01-387-5511	GRIP, HANDLE	
511	84763382	7AMG/5340-15-117-8940	GRIP, HANDLE	
512	84763416	7AMG/5340-99-127-4759	CLAMP LOOP	
513	84763424	7AMG/ 5340-01-450-7907	BUMPER,NONMETALLIC	
514	84763648	7AMG/2530-99-517-4854	ADJUSTER,CONTROL CABLE ASSEMBLY	
515	84770114	F1/5120-99-122-6467	KEY, SOCKET HEAD SCREW	
516	84770163	7AMG/5120-99-721-5695	TOMMY BAR	
517	84770171	7AMG/5120-01-387-4710	WRENCH, BOX	
518	84770197	6MT2/5120-99-401-3139	TYRE LEVER	
519	84770205	6MT6/2640-99-805-7604	REPAIR KIT, PUNCTURE, PNEUMATIC TYRE	
520	84770213	7AMG/5120-99-799-7678	WRENCH, SPANNER	
521	84801232	7AMG/2540-99-851-0168	FOOT REST, VEHICULAR	
522	84801240	7AMG/2540-01-387-3420	FOOT REST, VEHICULAR	
523	84820620	7AMG/2920-01-384-3744	REGULATOR, ENGINE GENERATOR	
524	84820638	7AMG/5930-01-387-0731	SWITCH ASSEMBLY	
525	84820646	7AMG/5930-01-384-3791	SWITCH ASSEMBLY	
526	84820661	7AMG/2590-99-384-0273	HORN, ELECTRICAL	
527	84820695	7AMG/2540-99-794-9314	STEM ASSEMBLY	
528	84820703	7AMG/2540-99-756-4070	STEM ASSEMBLY	
529	84830793	7AMG/2530-99-925-3068	WHEEL, PNEUMATIC TYRE	
530	84830793	7AMG/2530-99-573-5109	WHEEL,PNEUMATIC TYRE	
531	84830801	7AMG/2530-99-547-7988	WHEEL, PNEUMATIC TIRE	
532	84830934	7AMG/4730-99-702-4789	ADAPTOR,PIPE,90 DEG FITTING	
533	84830959	7AMG/2530-99-373-0373	WHEEL, PNEUMATIC TIRE	
534	84831049	7AMG/2530-15-117-8963	DISK BRAKE SHOE	
535	84831064	7AMG/2530-01-387-5048	PARTS KIT, HYDRAULIC BRAKE MASTER CYLINDER ASSEMBLY	
536	84831072	7AMG/2530-99-496-1667	PARTS KIT, CALIPER, DISC BRAKE	
537	84831080	7AMG/2530-01-387-5037	PARTS KIT, HYDRAULIC BRAKE MASTER CYLINDER ASSEMBLY	
538	84840065	7AMG/2530-99-733-6159	YOKE ASSEMBLY, FORK LEGS	
539	84840073	7AMG/2530-99-733-6183	CAP ASSEMBLY, FORK LEG	

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540	84840081	7AMG/5305-99-722-6346	SCREW	
541	84841022	7AMG/2540-99-126-4247	SLIDER ASSEMBLY	
542	84841071	7AMG/2530-01-337-2888	SLIDER ASSY, R.H.	
543	84841204	7AMG/2530-99-549-8719	FRONT SUSPENSION ASSY	
544	84841212	7AMG/2510-99-588-0645	FORK LEG ASSEMBLY	
545	84841220	7AMG/2510-01-387-3747	FORK LEG ASSEMBLY	
546	84841378	7AMG/2510-99-563-5489	SHOCK ABSORBER, DIRECT ACTION	
547	84841394	7AMG/2510-99-500-6162	FORK ASSEMBLY, BASIC	
548	84850122	7AMG/5140-99-721-5692	TOOL BOX, PORTABLE	
549	84850312	7AMG/6220-99-733-8150	HEADLIGHT ASSEMBLY	
550	84851104	7AMG/2910-12-333-5479	CAP, FILLER OPENING	
551	84851237	7AMG/2540-99-883-5758	SEAT, DUAL, MOTORCYCLE	
552	84851252	7AMG/5340-99-810-6222	CAP, FILLER OPENING	
553	84860055	7AMG/6220-99-799-6231	LAMP UNIT, HEADLIGHT	
554	84861046	7AMG/2540-99-883-5972	CYLINDER, LOCK, VEHICULAR	
555	84861053	7AMG/2540-99-244-9128	CYLINDER,LOCK,VEHICULAR	
556	84920016	7AMG/5305-99-733-6923	SCREW, MACHINE	
557	84920073	7AMG/5305-99-722-6727	SCREW	
558	84920164	7AMG/5305-99-757-0345	SCREW, MACHINE	
559	84930023	7AMG/5310-99-733-6190	NUT, PLAIN, HEXAGON	
560	84960012	7AMG/5305-99-722-6364	SCREW	
561	84960079	7AMG/5305-99-733-8102	SCREW, MACHINE	
562	84960111	7AMG/5305-99-733-8108	SCREW, SOCKET HEAD	
563	84990100	7AMG/3120-99-733-6121	WASHER, THRUST	
564	84990126	G1/5310-99-122-6478	WASHER, FLAT	
565	84990456	G1/5305-99-122-5360	SCREW, CAP, HEXAGON HEAD	
566	84990464	G1/5305-99-122-5366	SCREW, CAP, HEXAGON HEAD	
567	84990472	G1/5305-99-122-4909	SCREW, MACHINE	
568	84990993	G1/5305-99-122-5361	SCREW, CAP, HEXAGON HEAD	
569	84991173	7AMG/5305-99-733-8591	SCREW, MACHINE	
570	84991215	G1/5305-99-722-6341	SCREW, SOCKET HEAD	
571	84991355	G1/5305-99-122-5256	SCREW, CAP, HEXAGON HEAD	
572	84991447	G1/5305-99-122-5362	SCREW, CAP, HEXAGON HEAD	
573	84991793	G1/5305-99-135-1371	SCREW, SOCKET HEAD	
574	84991900	G1/5305-99-722-6313	SCREW, GRUB	
575	84992023	7AMG/5306-99-978-3175	BOLT	
576	84992403	G1/5305-99-122-5356	SCREW, CAP, HEXAGON HEAD	
577	84992429	G1/5310-99-122-5304	NUT, PLAIN, HEXAGON	
578	84992437	G1/5305-99-122-5368	SCREW, CAP, HEXAGON HEAD	
579	84992445	G1/5305-99-122-5363	SCREW, CAP, HEXAGON HEAD	
580	84992452	G1/5305-99-122-8666	SCREW, CAP, HEXAGON HEAD	

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ITEM NO	Manufacturers Part Number	Catalogue Number	Item Name	Remarks
581	84992486	G1/5306-99-122-5254	BOLT, MACHINE	
582	84992494	G1/5310-99-135-9293	WASHER, LOCK	
583	84992544	G1/5305-99-122-5365	SCREW, MACHINE	
584	84992569	G1/5305-99-122-8667	SCREW, CAP, HEXAGON HEAD	
585	84992585	G1/5306-99-138-6243	BOLT, MACHINE	
586	84992593	G1/5306-99-122-2783	BOLT, MACHINE	
587	84992601	7AMG/5305-99-722-6321	FLAT HEADED SCREW	
588	84992684	7AMG/5306-99-968-2208	BOLT, MACHINE	
589	84995034	7AMG/5305-99-500-8319	SCREW,MACHINE	
590	84995059	7AMG/5305-99-442-6280	SCREW,CAP	
591	84995075	7AMG/5305-99-440-4945	SCREW, MACHINE	
592	84997170	G1/5310-99-122-5295	NUT, PLAIN, HEXAGON	
593	84997220	G1/5310-99-122-5296	NUT, PLAIN, HEXAGON	Lock Nut not required
594	84997725	G1/5310-99-135-7200	WASHER, FLAT	
595	84997816	G1/5310-99-122-3032	WASHER, FLAT	
596	850-055	7AMG/5330-99-726-5380	SEAL, PLAIN	
597	850-500	7AMG/5330-99-757-0432	PACKING, PREFORMED	
598	850-510	7AMG/5330-99-757-0433	PACKING, PREFORMED	
599	866-890	7AMG/5977-99-885-0956	HOLDER, ELECTRICAL CONTACT BRUSH	
600	876-195	7AMG/5140-21-878-2505	ROLL, TOOLS AND ACCESSORIES	
601	876-230	7AMG/5120-99-721-5693	WRENCH, OPEN END	
602	876-360	F1/5120-99-122-6466	KEY, SOCKET HEAD SCREW	
603	87991139	7AMG/5305-99-372-4417	SCREW, MACHINE	
604	87997193	G1/5310-99-139-6097	NUT, SELF-LOCKING, HEXAGON	
605	87997235	G1/5310-99-624-7018	NUT, SELF-LOCKING, HEXAGON	
606	87997243	G1/5310-99-139-6098	NUT, SELF-LOCKING, HEXAGON	
607	87997326	7AMG/5310-99-968-2601	NUT, SELF LOCKING	
608	87997334	7AMG/5310-99-410-3322	NUT, SELF-LOCKING, HEXAGON	
609	87997367	G1/5310-12-122-1219	NUT, SELF-LOCKING, HEXAGON	
610	87998155	7AMG/5310-99-733-8201	WASHER, FLAT	
611	87998167	7AMG/5315-99-126-3705	PIN, COTTER	
612	87998225	7AMG/5305-99-873-2361	SCREW, CAP	
613	87998233	7AMG/5305-99-083-7116	SCREW MACHINE	
614	87998381	7AMG/5305-99-423-1375	SCREW,CAP,SOCKET HEAD	
615	87998415	7AMG/5305-99-861-9443	SCREW MACHINE	
616	87998449	7AMG/5305-99-917-6207	SCREW, CAP, SOCKET HEAD	
617	87998456	7AMG/5306-99-096-4568	BOLT, MACHINE	
618	87998530	7AMG/5305-99-500-8309	SCREW, CAP, SOCKET HEAD	
619	899785	7AMG/8030-12-191-8668	SEALING COMPOUND	
620	930-715	7AMG/5330-99-726-5414	SEAL, PLAIN	
621	932-037	6MT7/3110-99-950-0052	BEARING, BALL, ANNULAR	
622	932-095	6MT7/3110-99-327-8996	BEARING, BALL, ANNULAR	
623	932-432	7AMG/3110-99-837-5345	BEARING, BALL, JOURNAL	
624	940-370	7AMG/5307-99-726-5362	STUD, PLAIN	

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ITEM NO	Manufacturers Part Number	Catalogue Number	Item Name	Remarks
625	940-485	7AMG/5305-99-726-5411	SCREW, MACHINE	
626	940-561	7AMG/5305-99-757-0367	SCREW	
627	941-041	7AMG/5305-99-726-6258	SCREW, MACHINE	
628	942-670	7AMG/5310-99-258-1629	NUT,PLAIN,HEXAGON	
629	944-462	6MT1/5330-12-156-4510	GASKET	
630	945-660	7AMG/5365-21-878-2458	RING, RETAINING	
631	945-750	7AMG/2540-21-879-1983	LOCKWASHER	
632	945-751	7AMG/2540-21-879-1984	LOCKWASHER	
633	945-752	7AMG/2540-21-879-1985	LOCKWASHER	
634	945-757	7AMG/5310-21-880-7044	WASHER, APPL CAN-AM	
635	946-015	6MT10/5340-99-400-3064	CAP, PROTECTIVE, DUST AND MOISTURE SEAL	
636	950-141	7AMG/2540-21-879-1935	GASKET, RING	
637	964-070	7AMG/2920-99-754-2272	CAP, PROTECTION, CONNECTOR	

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ARMY EQUIPMENT
SUPPORT PUBLICATION

2340-H-200-721

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COMMENT ON AESP

To: TS 2.12 [redacted]

From .....

Sender's Reference

Tel No: .....

Date:

Title of AESP : MOTORCYCLE,GENERAL PURPOSE,HARLEY DAVIDSON

Signed .....

To: .....

From: TS 2.12, [redacted]

Thank you for commenting on AESP : 2340-H-200-721

* Action being taken to:

* (i) Revise the AESP
* (ii) Amend the AESP

* No action is considered necessary for the following reasons:

* Delete as necessary

Signed .....

Date .....

AESP FORM 10

Jun 99 (Amdt 3)

MOTOR CYCLE, GENERAL PURPOSE, HARLEY - DAVIDSON

GENERAL INSTRUCTION AND INDEX

BY COMMAND OF THE DEFENCE COUNCIL

Ministry of Defence
Issued by
ARMY TECHNICAL SUPPORT AGENCY
DIRECTORATE OF TECHNICAL SERVICES

AMENDMENT RECORD

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PREFACE

Sponsor:
DGES(A)
File ref:

Publication Agency:
ATSA Chertsey
Project No:
File ref: 72212(156)

INTRODUCTION

1 The Publication Agency is responsible for the allocation of instruction numbers.

2 All instructions (when issued) issued are to be recorded in manuscript by the recipient on the Numerical Instruction Index provided. Amendments to individual instructions are to be recorded on the Instruction Amendment record. All extant instructions and amendments can be found listed in the main AESP index.

NOTE

The Publication Agency is responsible for the preparation and maintenance of the Instruction Index and will advise the Distribution Authority on the issue of completed and subsequent blank index pages necessary.

3 Service users should forward any comments on this publication through the channels prescribed in AESP 0100-P-001-013. An AESP Form 10 is provided after the preliminary pages of the publication; it should be photocopied and used for forwarding comments on this AESP.

4 AESPs are issued under Defence Council authority and where AESPs specify action to be taken, the AESP will of itself be sufficient authority for such action and also for the demanding of the necessary stores.

INSTRUCTION INDEX

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2		REPLACEMENT DISC BRAKE PADS	
3		FRONT BRAKE SWITCH SHROUD	
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ARMY EQUIPMENT
SUPPORT PUBLICATION

2340-H-200-821

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COMMENT ON AESP

To: ARMY TECHNICAL SUPPORT AGENCY

[redacted]

S

From: .....
.....
.....
.....
.....

Tel No: .....

Date:

Title of AESP: Motor Cycle, General Purpose, Harley - Davidson

COMMENT

Signed .....

To: .....
.....
.....
.....
.....

From: ARMY TECHNICAL SUPPORT AGENCY

[redacted]

Thank you for commenting on AESP 2340-H-200-821

* Action is being taken to:
  * (i) Revise the AESP
  * (ii) Amend the AESP
* No action is considered necessary for the following reasons:

* Delete as necessary

Signed: .....

AESP Form 10

Date .....

ARMY EQUIPMENT
SUPPORT PUBLICATION

2340-H-200-821

MOTOR CYCLE, GENERAL PURPOSE,

HARLEY - DAVIDSON

GENERAL INSTRUCTION NO. 1

Sponsor:
DGES(A)

Publication Agency:
ATSA Chertsey
Project No:
File ref: 72212(156)

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Amdt No.	Incorporated By (Signature)	Date
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SUBJECT: Front brake disc guard - security

INTRODUCTION

1 This instruction introduces an additional fixing to improve the security of the front brake disc guard.

1.1 Limitations on use of equipment. Nil.

APPLICABILITY

2 Motor Cycle, General Purpose, Harley - Davidson.

IMPLEMENTATION PLAN

3 Secure the upper section of the disc guard to the suspension fork leg using a 45 - 60 mm dia hose clamp NSN 6MT1/4730-99-533-2967 or similar.

MOTOR CYCLE, GENERAL PURPOSE,

HARLEY - DAVIDSON

GENERAL INSTRUCTION NO. 2

Sponsor:
DGES(A)

Publication Agency:
ATSA Chertsey
Project No: 97/52c/4613/LVG(559)
File ref:

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SUBJECT: Replacement disc brake pads.

INTRODUCTION

1 The instruction introduces replacement disc brake pads, which have improved performance and better wear characteristics than the original brake pads.

1.1 Limitations on use of equipment. Nil.

APPLICABILITY

2 Motor Cycle, General Purpose, Harley Davidson.

IMPLEMENTATION

3 When the disc brake pads require replacement, demand and fit disc brake pad NSN 7AMG/2530-99-973-3854. The new pads are a direct replacement for the original pads, the method of fitting is the same.

MOTOR CYCLE, GENERAL PURPOSE,

HARLEY - DAVIDSON

GENERAL INSTRUCTION NO. 3

Sponsor:
DGES(A)

Publication Agency:
ATSA Chertsey
Project No: 97/52c/4597/LVG(624)
File ref:

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SUBJECT: Front brake switch shroud.

INTRODUCTION

1 This instruction introduces a shroud over the front brake switch to prevent premature wear of the switch plunger caused by the ingress of dust and grit. The shroud need only be fitted if premature wear is experienced, this condition is associated with vehicles operating in adverse off road conditions.

1.1 Limitations on use of equipment. Nil.

APPLICABILITY

2 Motor Cycle, General Purpose, Harley - Davidson.

IMPLEMENTATION

3 Demand Brake Lever Shroud NSN 7AMG/2590-99-733-8115.

4 Modify the shroud as shown in Fig 1.

5 Fit the shroud over the brake lever and secure with a cable tie NSN 5340-99-933-3089 or similar as shown in Fig 1.

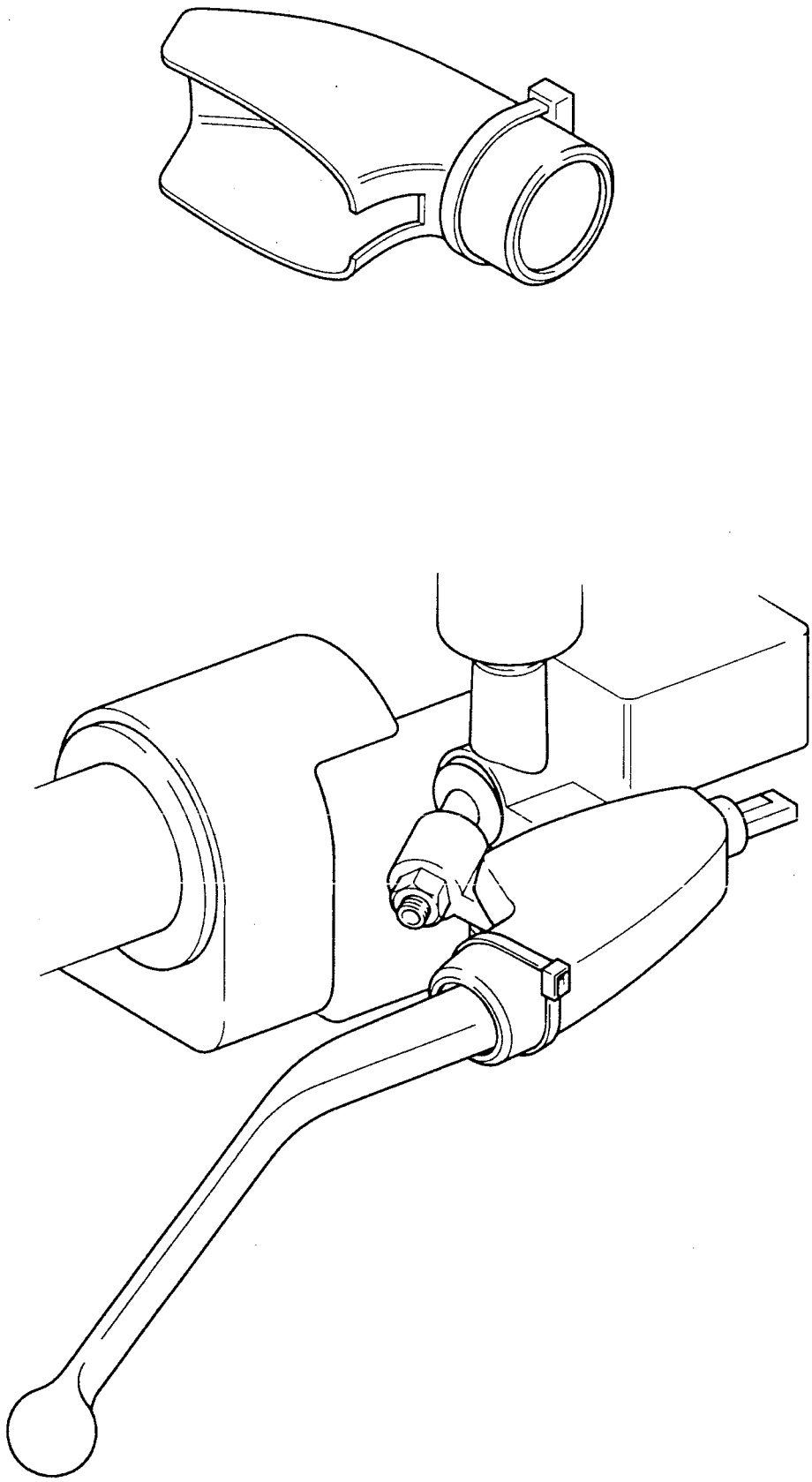

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Fig 1 Front brake switch shroud

MOTOR CYCLE, GENERAL PURPOSE,

HARLEY - DAVIDSON

GENERAL INSTRUCTION NO. 4

Sponsor:
DGES(A)

Publication Agency:
ATSA Chertsey
Project No: 98/52c/5260(90)
File ref: DE/LVG/5800A

AMENDMENT RECORD

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SUBJECT: Rear wheel drive sprocket

INTRODUCTION

1 This instruction details the procedure for ensuring the security of the rear wheel drive sprocket.

1.1 Limitations on use of equipment. Nil.

APPLICABILITY

2 Motor Cycle, General Purpose, Harley Davidson 350.

IMPLEMENTATION

3 Examine rear wheel drive sprocket for security of attachment at intervals as detailed in the maintenance schedule.

4 If the sprocket is found to be loose or worn, remove the sprocket and examine the fixings for damage or wear.

5 Renew worn or damaged items and tighten fixing nuts to 24 Nm. Ensure that new locking tabs are fitted. It should be noted that new lock tabs are supplied when a drive sprocket is demanded.

NOTE

Although the commercial parts list AESP Cat 721 describes the fixings as lock nuts M8, the correct fixings are plain nuts secured by lock tabs, as detailed at Annex A to the parts list.

6 NSNs for the drive sprocket and locking tabs are as follows:

Serial (1)	Description (2)	NSN (3)
1	Drive sprocket complete with locking tabs	7AMG/3020-15-117-8962
2	Locking tab three hole	7AMG/2540-99-244-8284
3	Locking tab two hole	7AMG/5365-99-859-1902

7 Ensure that new lock tabs are fitted each time the fixings are disturbed.