PREFACE

This Service Manual for TVS-SUZUKI range of Motorcycles has been prepared so as to provide a reference and guidance for various types of repairs on the Motorcycles. Its contents include technical data, special features, periodic maintenance, overhauling procedures, use of special tools and trouble shooting techniques.

TVS-SUZUKI Motorcycles are products of the latest Japanese technology and it has some very special features. It is hoped that this Service Manual will fulfill the needs of understanding the products and will come as a handy reference book.

The basic material for preparing this manual has been taken from Suzuki Motor Company's Service Manual for AX-100 Motorcycle and the same has been modified to suit TVS-SUZUKI range of Motorcycles in all respects. While every care has been taken to avoid any errors in data, description and illustration, any information regarding such defects will be gratefully accepted. The users of this manual are requested to provide their suggestions so that this Manual can be further improved for its best possible utilisation. The readers are also welcome to seek any further information or clarification regarding the contents of this manual.

Please address all your communications in this regard to us at the following address :

Service Department
TVS-SUZUKI LIMITED
Post Box No.4, HARITA,
HOSUR - 635 109.
Dharmapuri District, Tamilnadu.

Phone : 76780 - 4 (5 lines)
76715, 16, 18,19 (4 lines)
Telex : 0458 - 236 ISMH
0458 - 240 SCL
Fax : 04344 - 76011, 77311

FOR EXCLUSIVE USE OF
TVS - SUZUKI
AUTHORISED DEALERS & SERVICE CENTRES.

Issued with Sl.No.....

TSL/MKTG/SER/MC-MANUAL/MAR.1997

GROUP INDEX

GENERAL INFORMATION

CONTENTS

VIEW OF TVS-SUZUKI RANGE OF MOTORCYCLES

AX-100

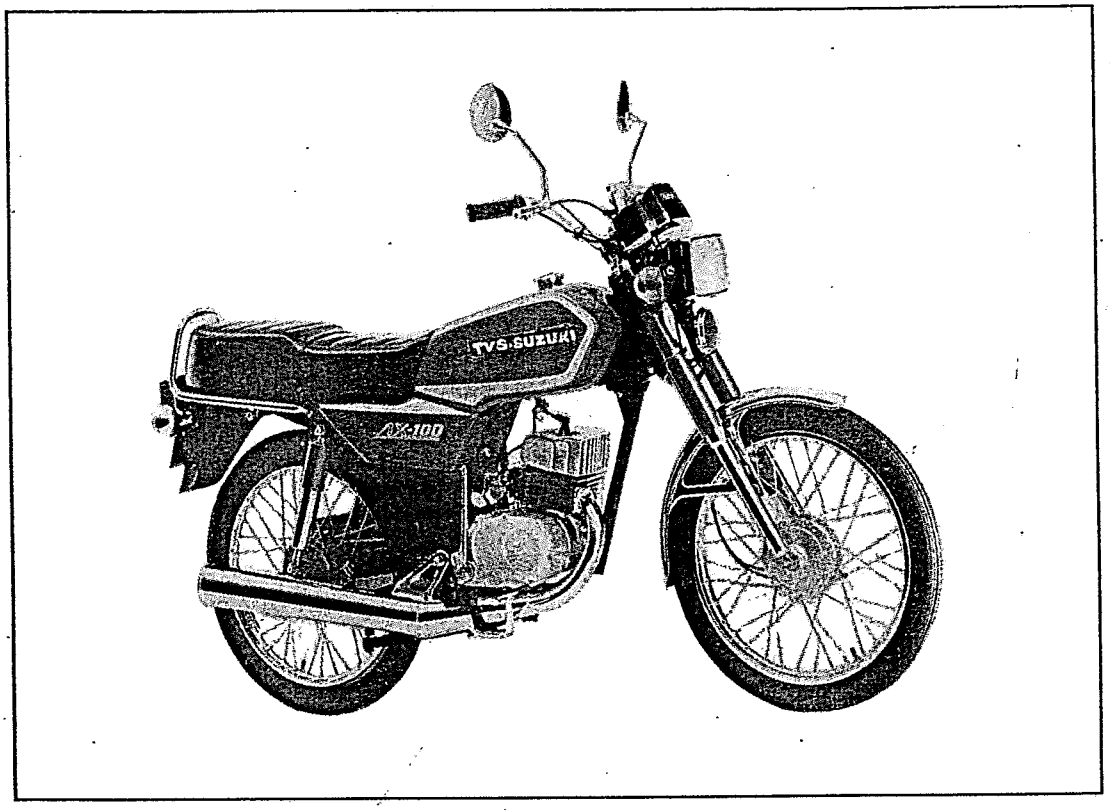


Fig 1.1

RIGHT SIDE VIEW

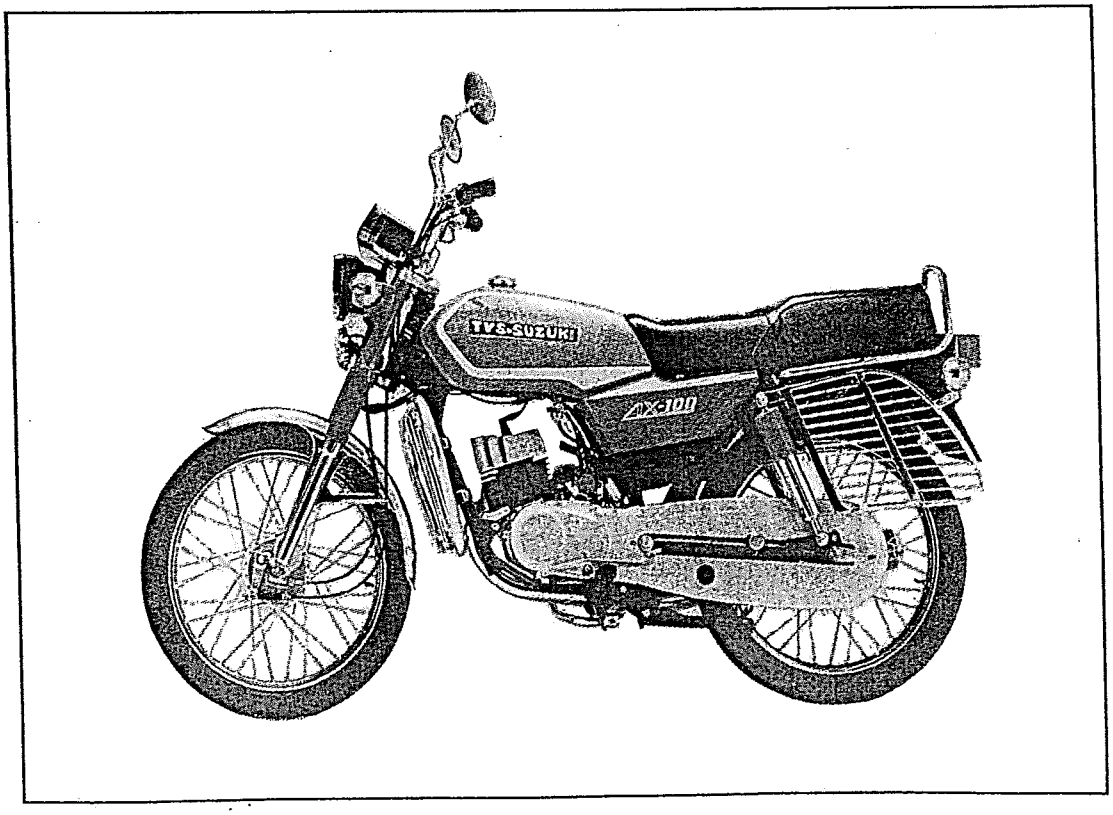


Fig 1.2

LEFT SIDE VIEW

AX-100 AC

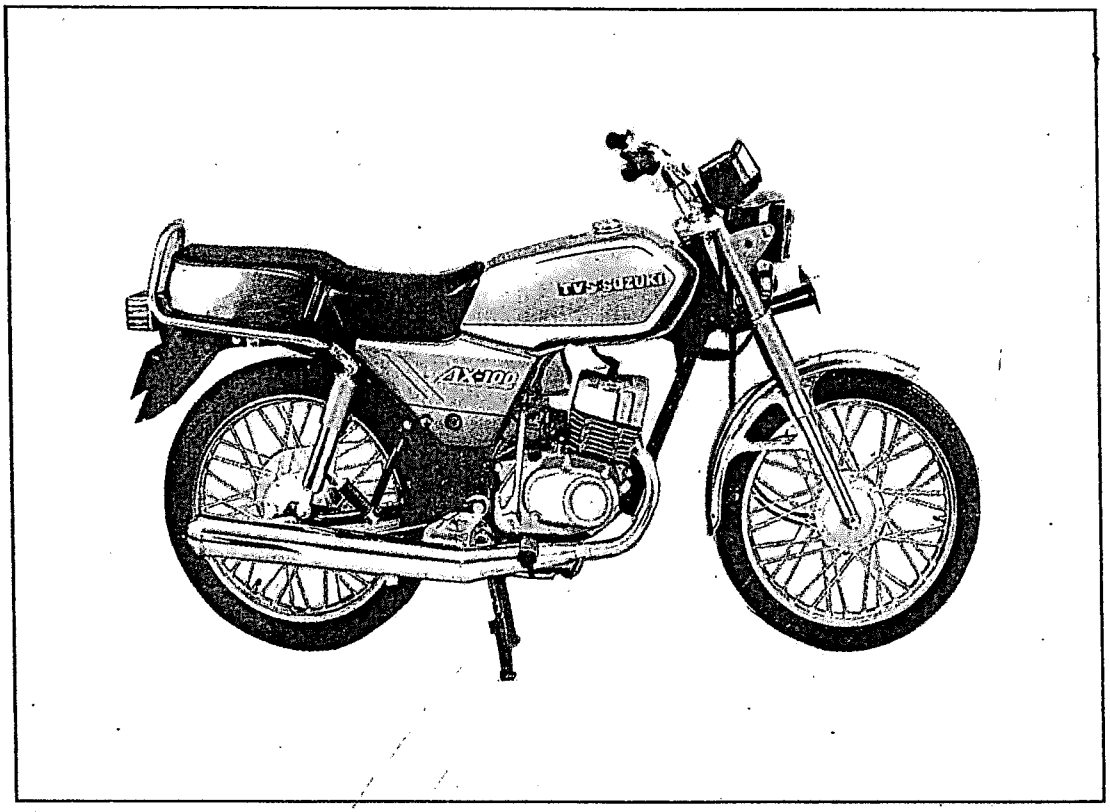


Fig 1.3

RIGHT SIDE VIEW

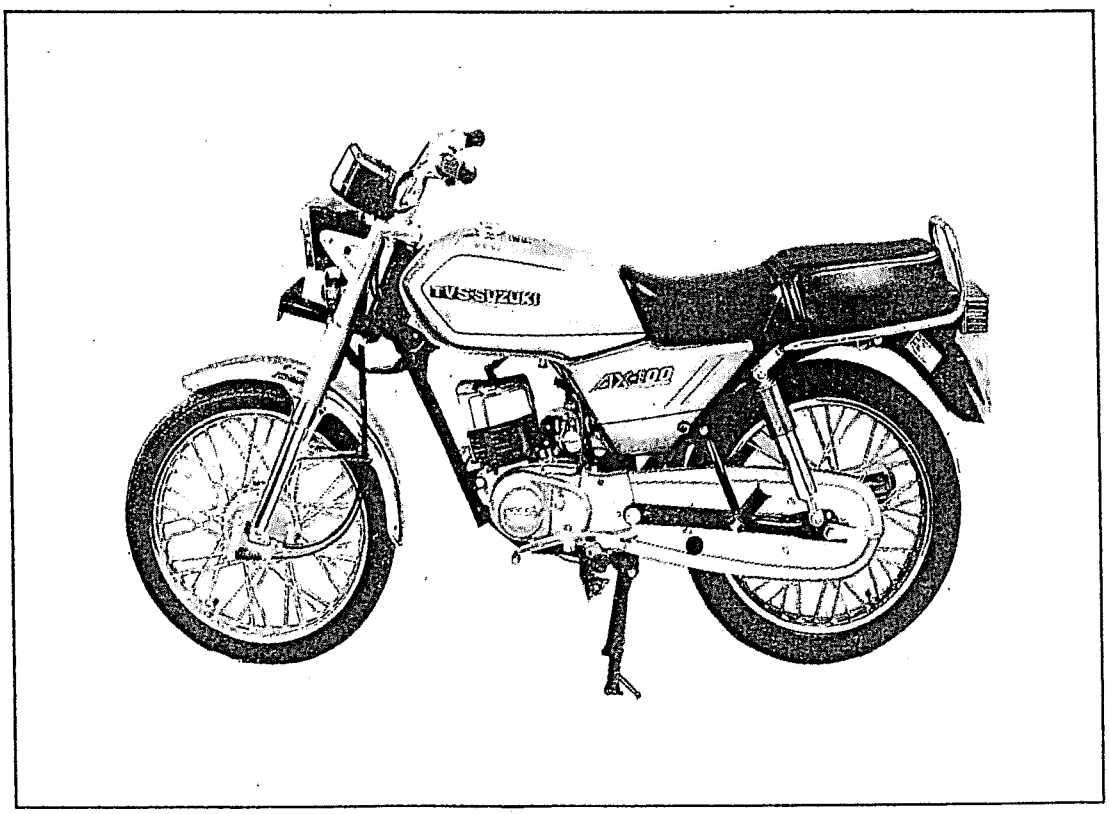


Fig 1.4

LEFT SIDE VIEW

AX-100 R

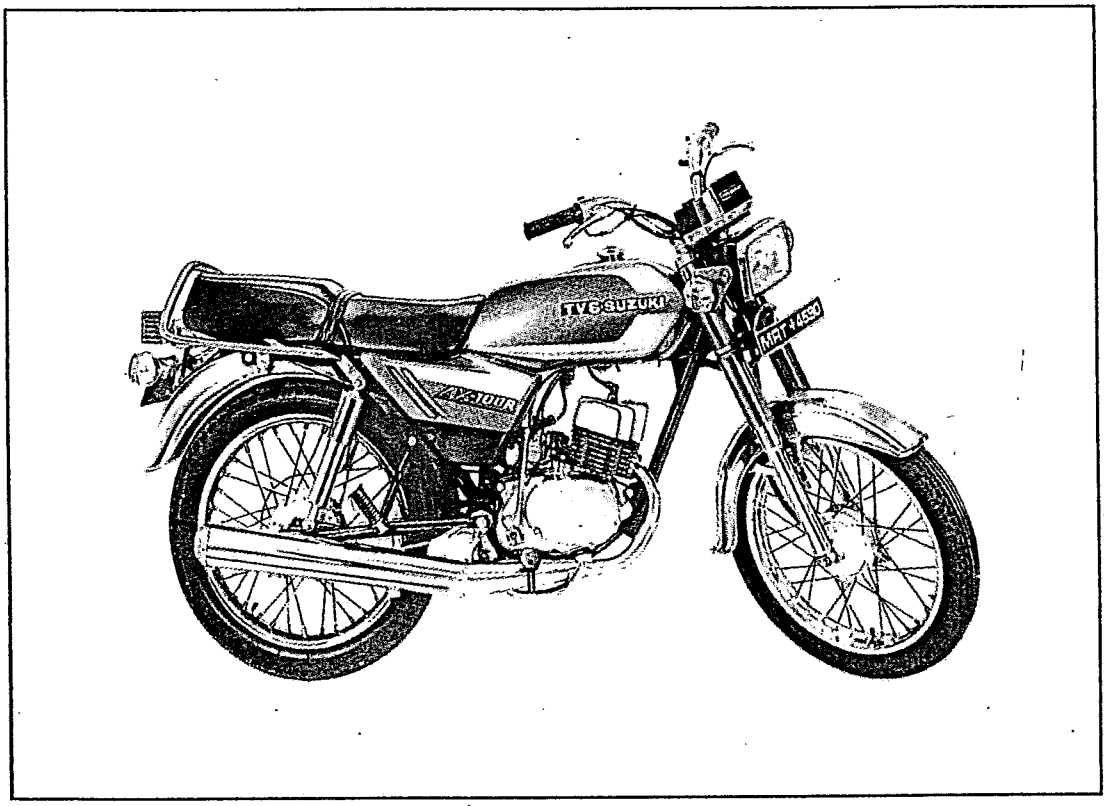


Fig 1.5

RIGHT SIDE VIEW

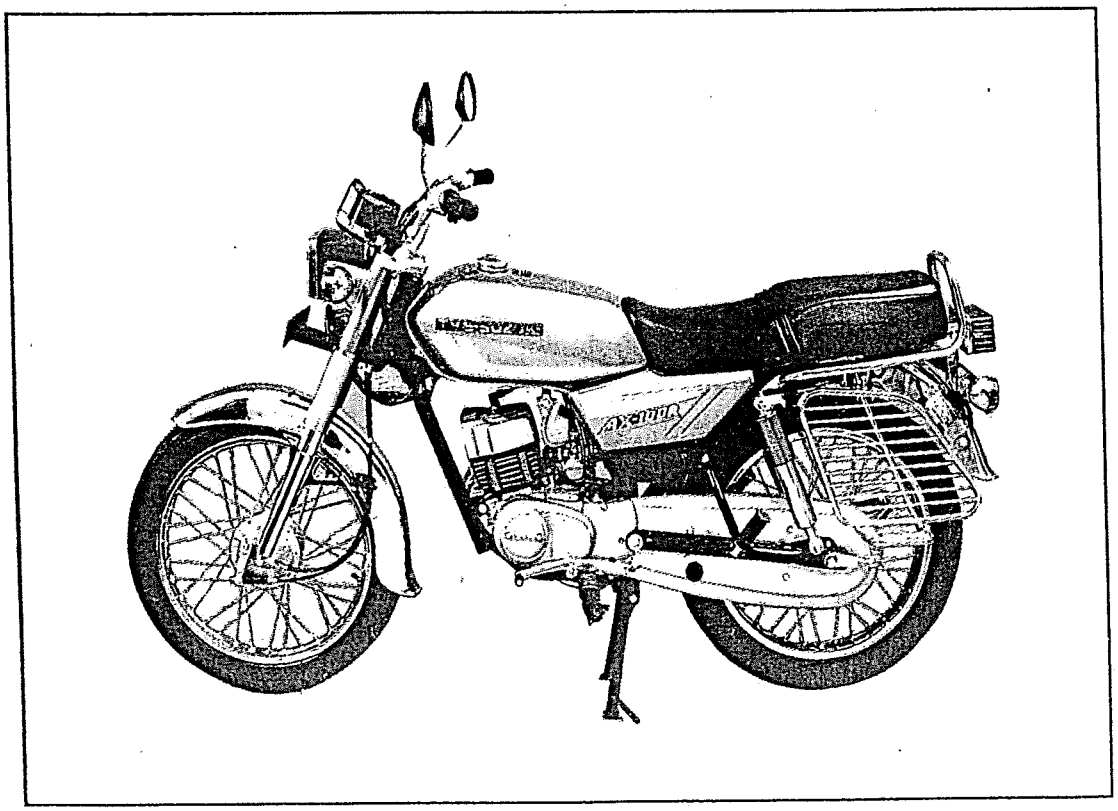


Fig 1.6

LEFT SIDE VIEW

AX-100 RAC

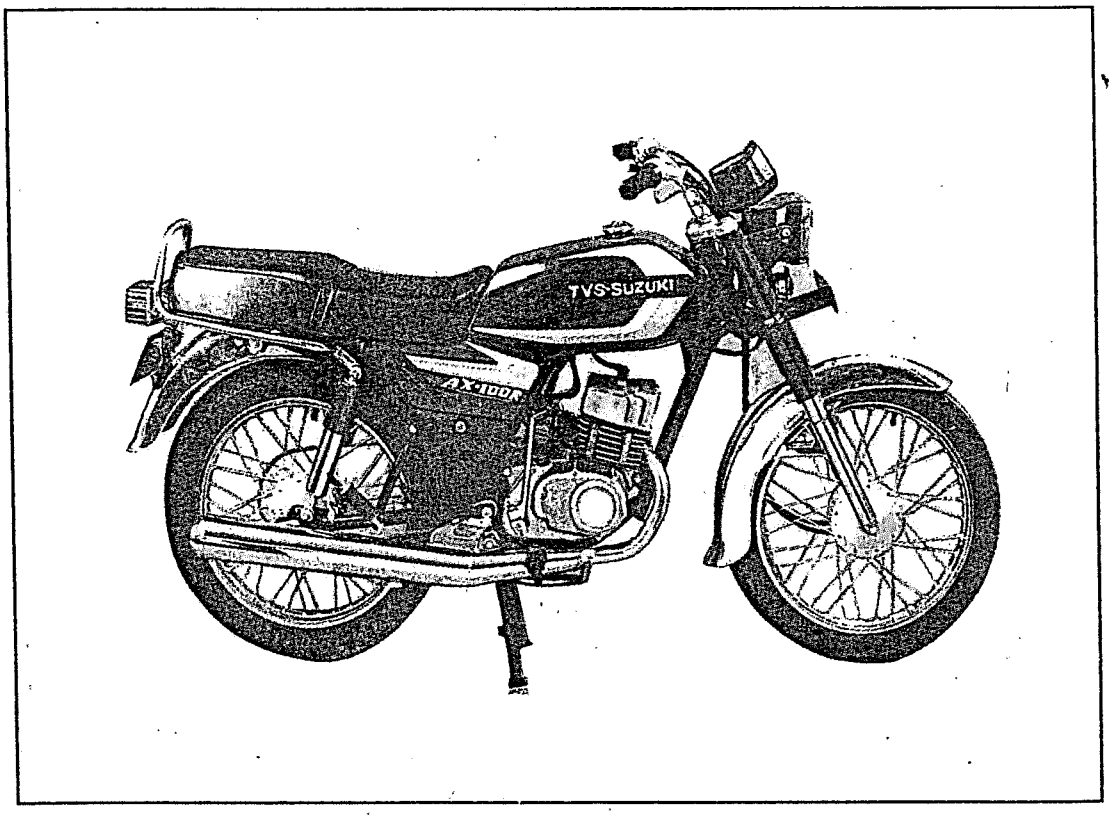


Fig 1.7

RIGHT SIDE VIEW

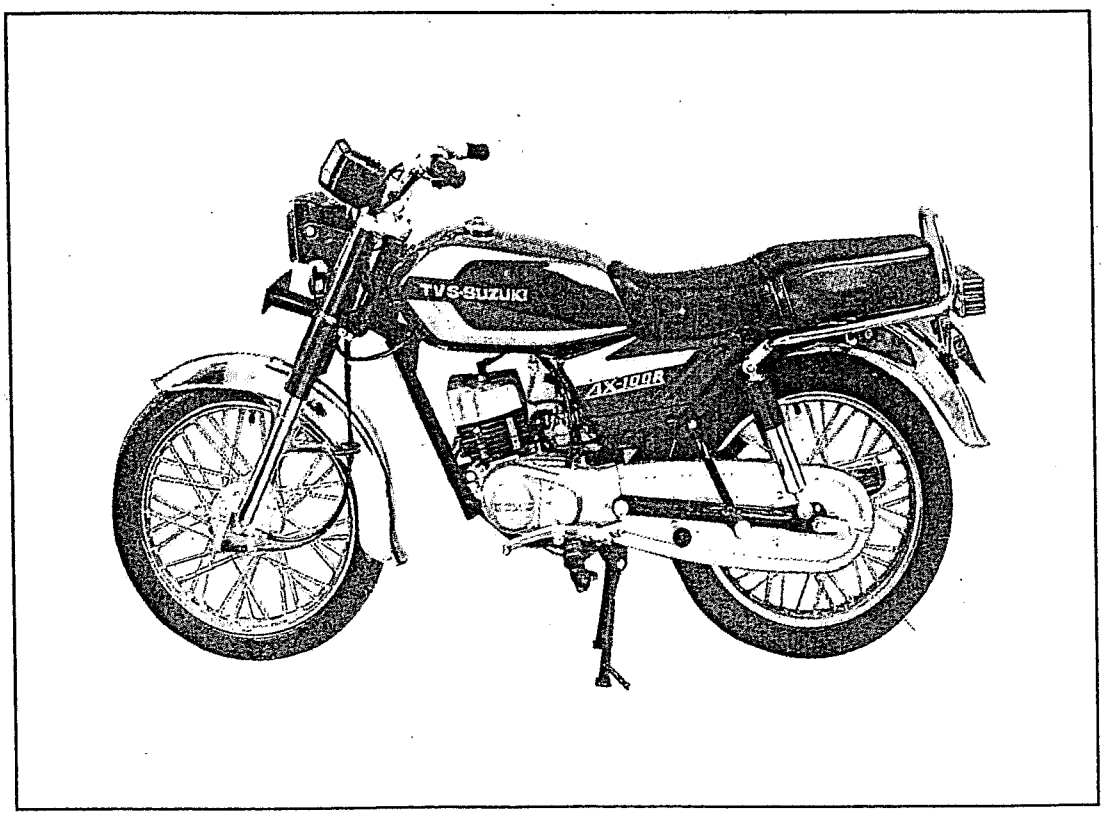


Fig 1.8

LEFT SIDE VIEW

MAX 100

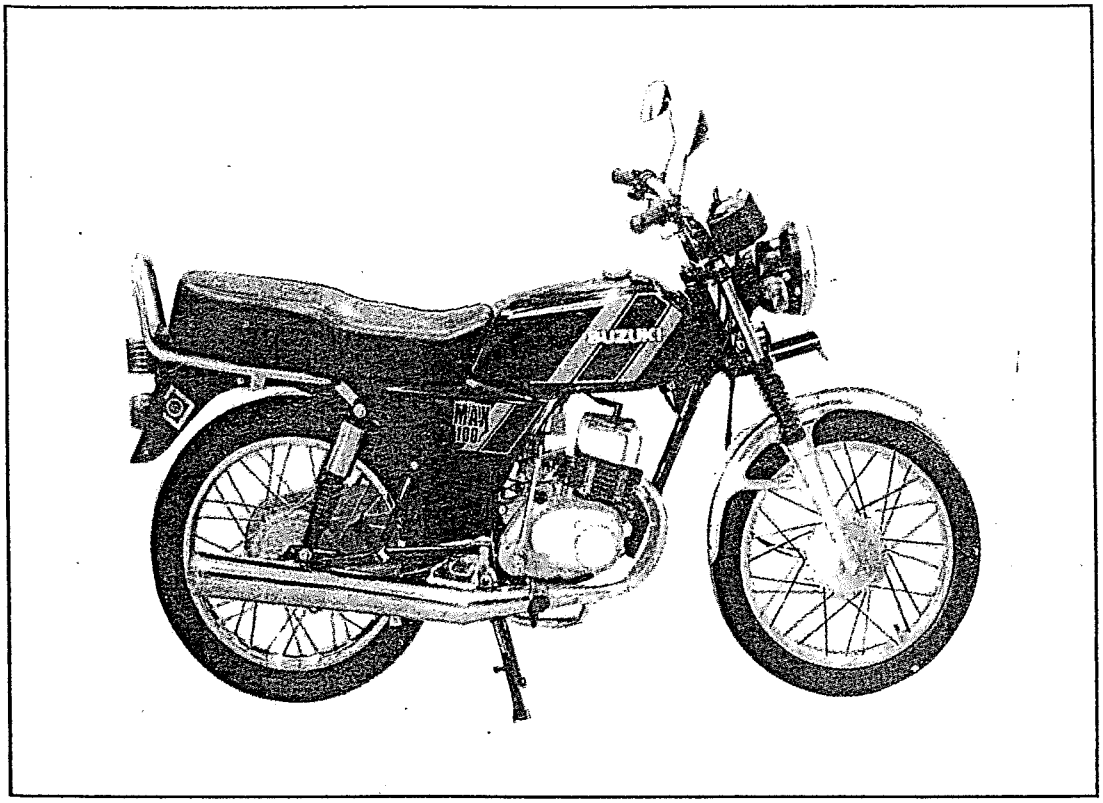


Fig 1.9

RIGHT SIDE VIEW

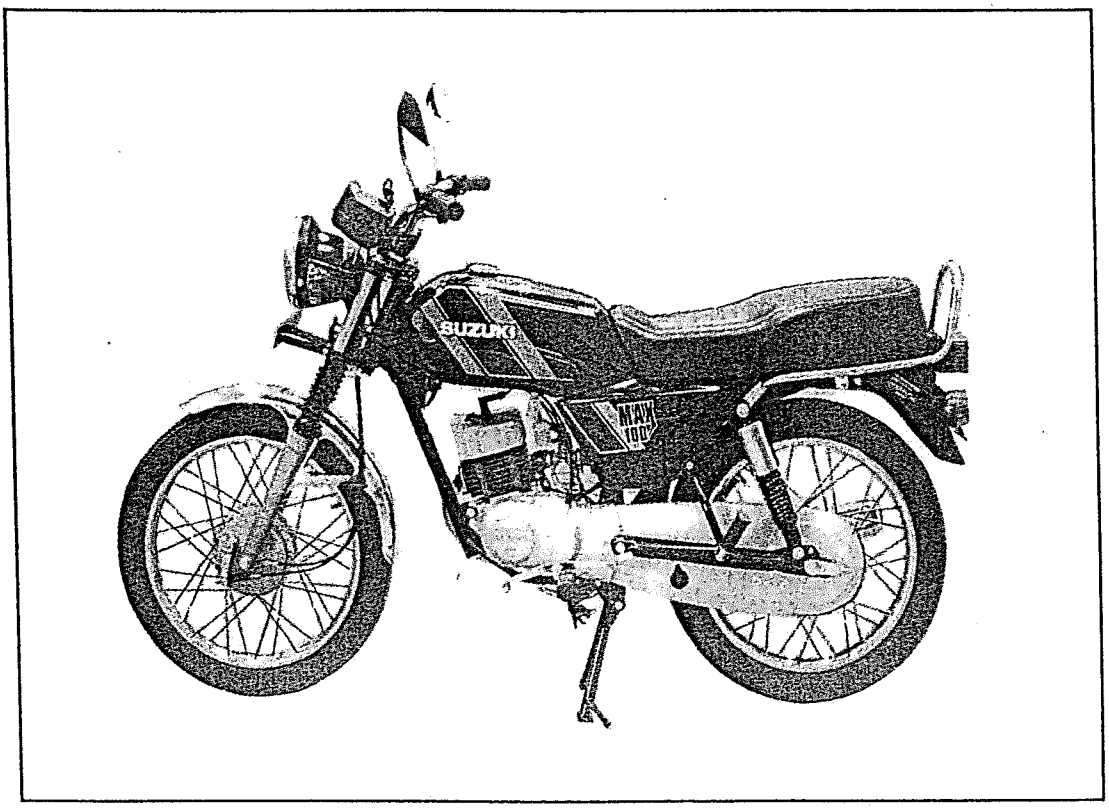


Fig 1.10

LEFT SIDE VIEW

MAX 100 R

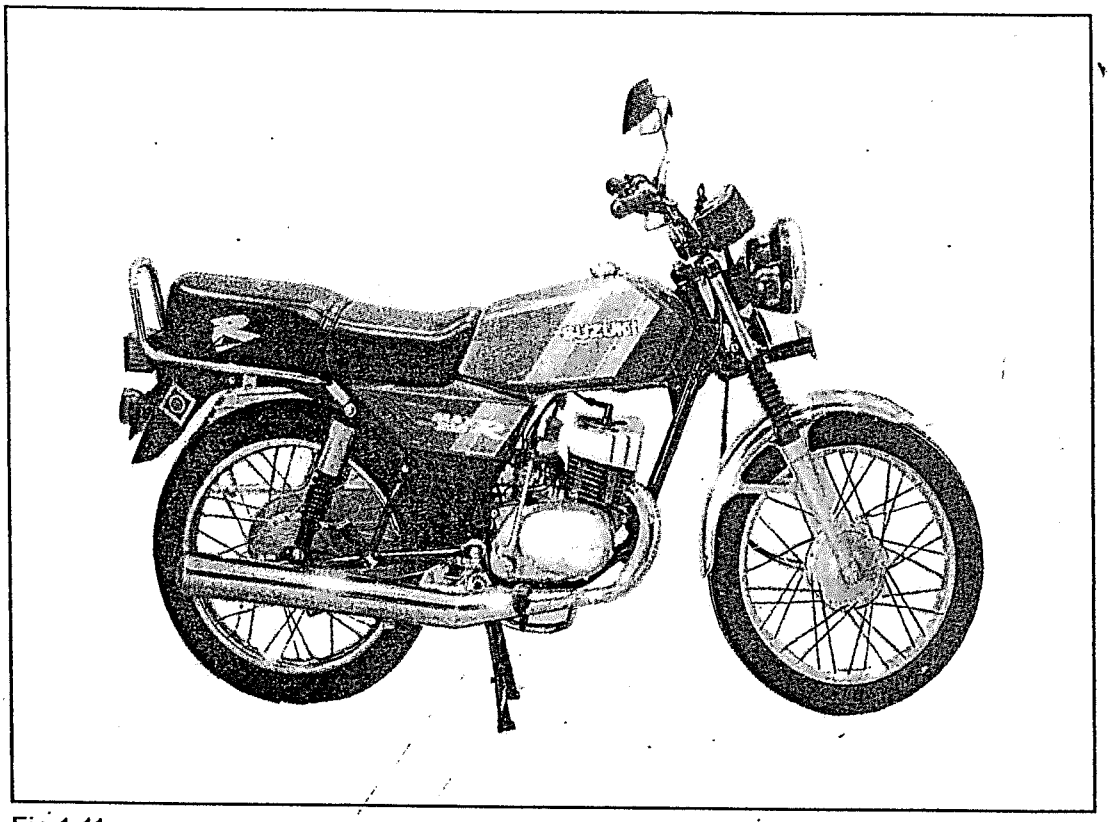


Fig 1.11

RIGHT SIDE VIEW

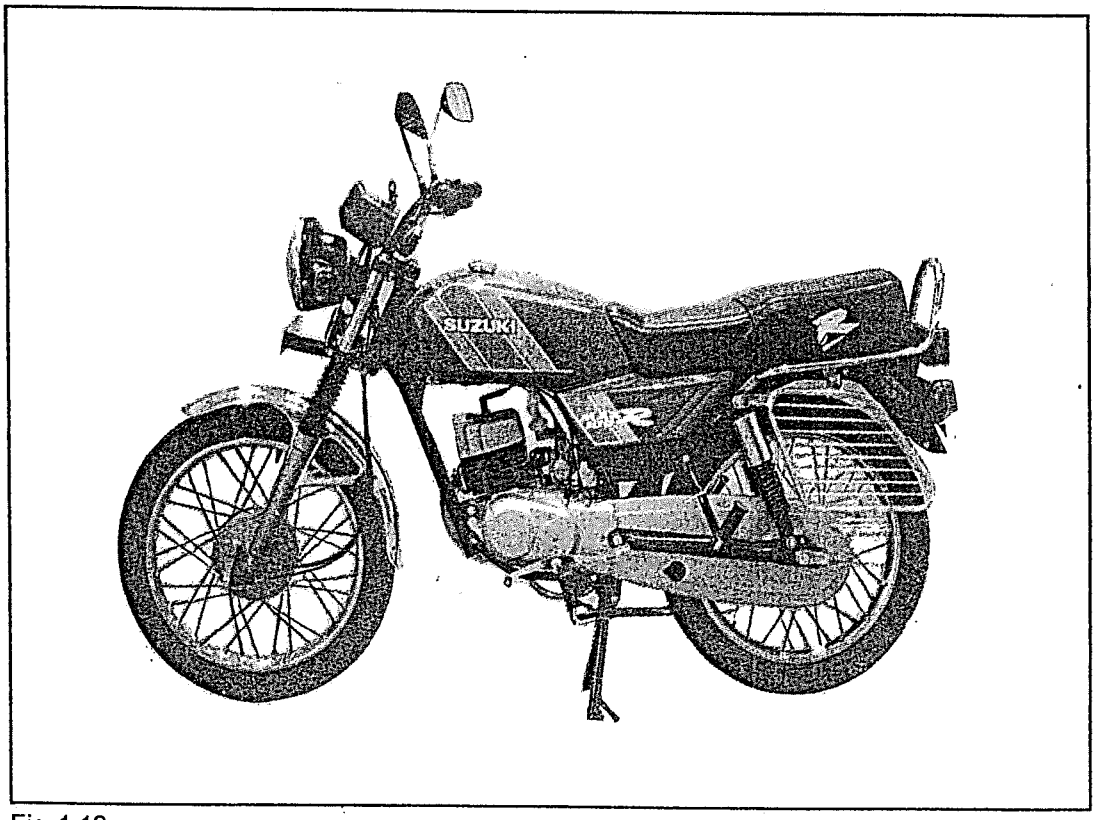


Fig 1.12

LEFT SIDE VIEW

SAMURAI

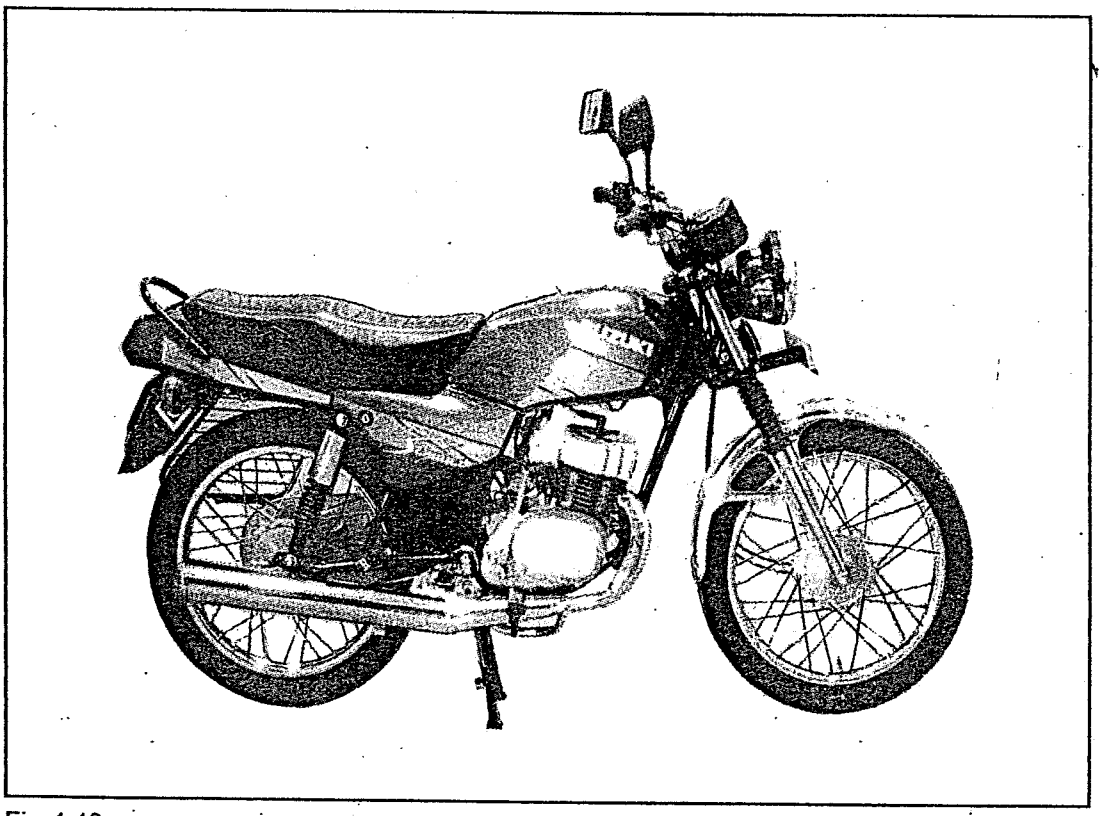


Fig 1.13

RIGHT SIDE VIEW

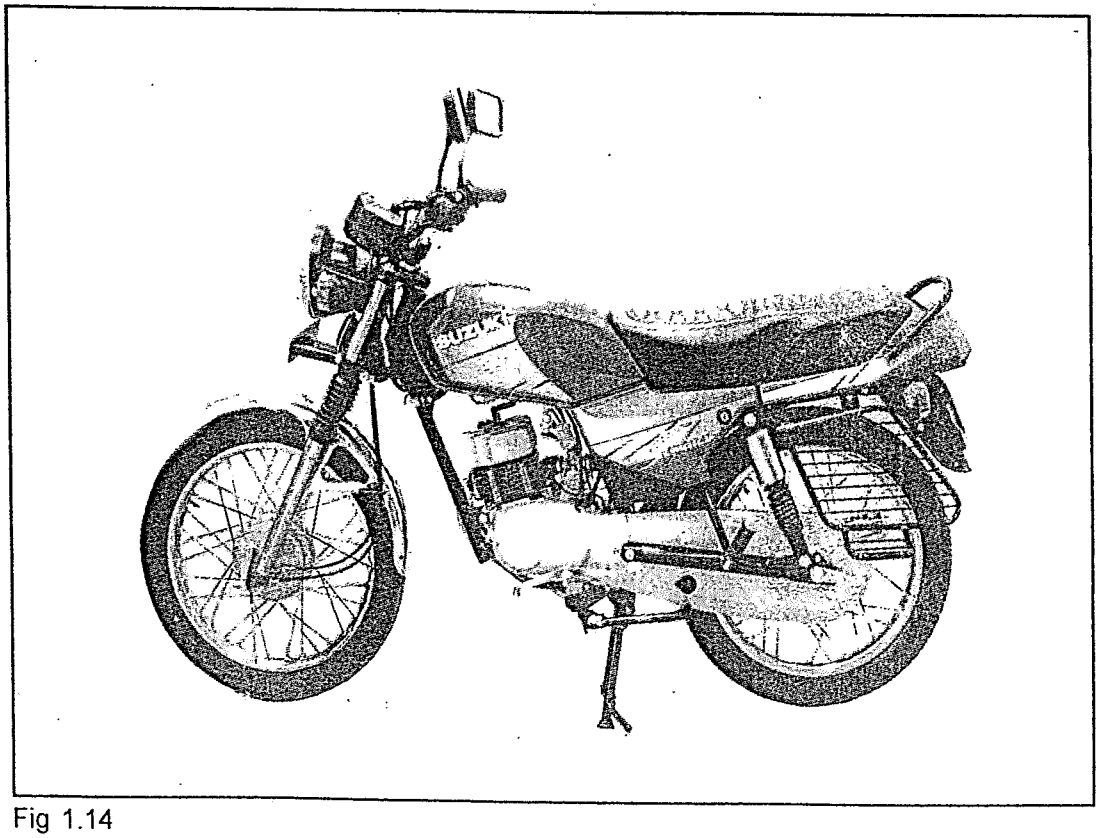


Fig 1.14

LEFT SIDE VIEW

SHOGUN

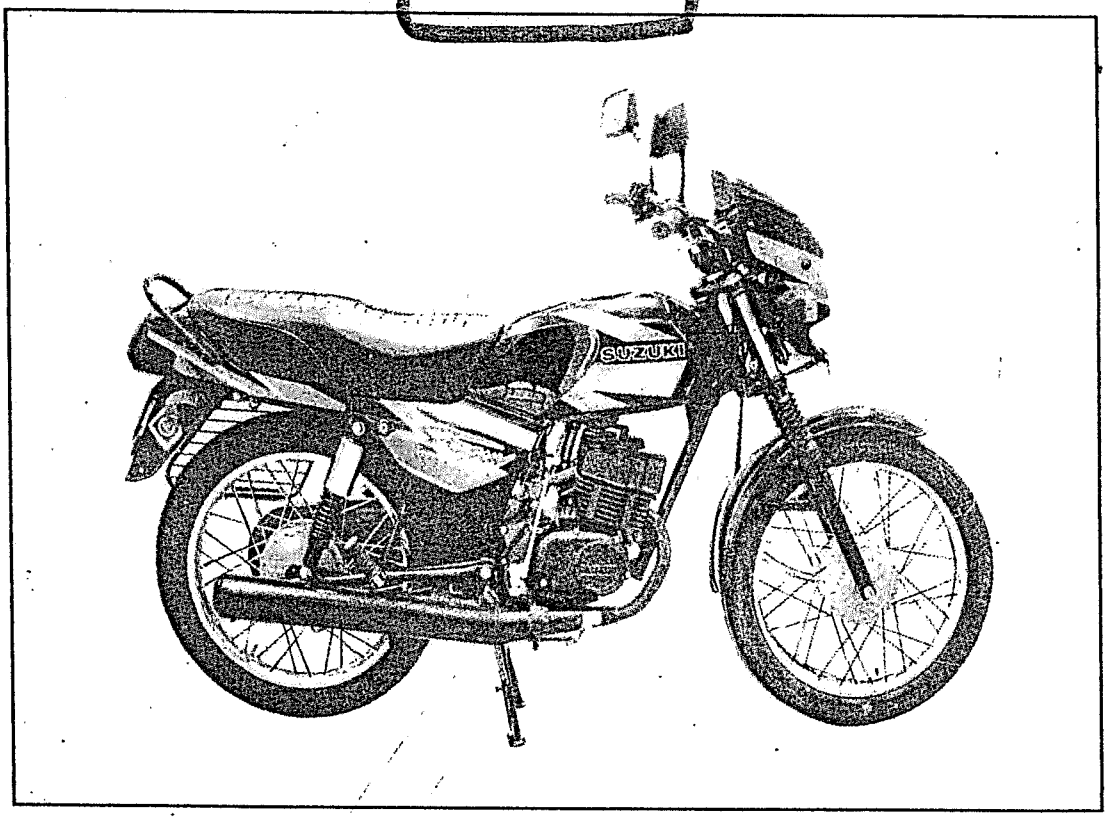


Fig 1.15

RIGHT SIDE VIEW

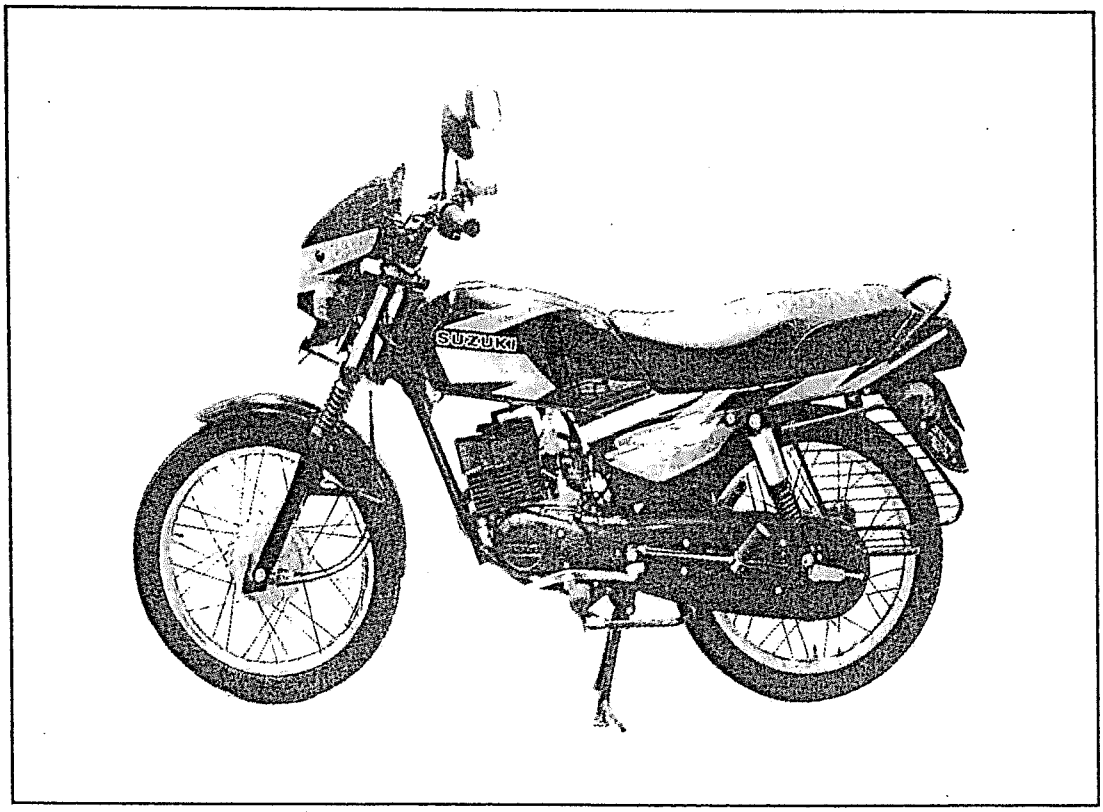


Fig 1.16

LEFT SIDE VIEW

VIEW OF SERIAL NUMBER LOCATIONS

FRAME NUMBER

The frame serial number is stamped on the left side of the steering head pipe. (Fig 1.17)

7608 F 686364

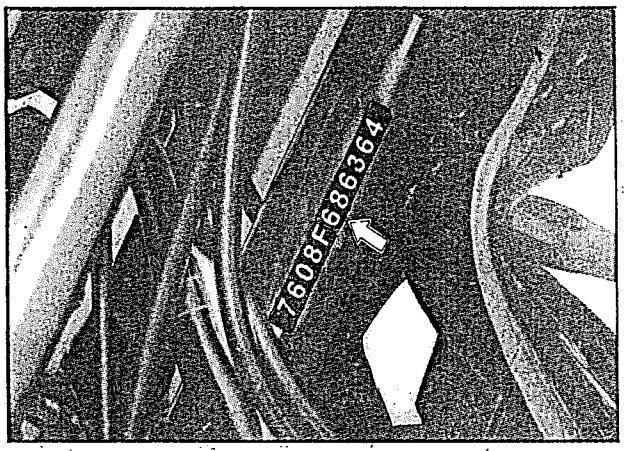


Fig 1.17

ENGINE NUMBER

Engine serial number is stamped on the left side of the crankcase. (Fig 1.18)

7608 M 731464

Fig 1.18

FRAME & ENGINE NUMBER

X X XX X XXXXXX

Model Code

Year of Mfg.
4 — 1984
5 — 1985
6 — 1986
0 — 1990
6 — 1996

Month of Manufacturing
01 January
02 February....,
12 December

F - Frame Number

M - Enigne Number

Manufacturing Sl. No.

Model Code

Code	Model	Code	Model
1.	AX-100 R / MAX 100 R	6.	NEW AX-100 AC
2.	AX-100 SUPRA	7.	SAMURAI
3.	AX-100 STD	8.	SHOGUN
4.	AX-100 AC	9.	MAX 100
5.	AX-100 R AC		

TECHNICAL SPECIFICATIONS

SPECIFICATION	AX-100 STD	AX-100 AC	AX-100 R	AX-100 RAC
DIMENSIONS AND WEIGHT				
Overall length	1865 mm	1865 mm	2057 mm	2057 mm
Overall width	725 mm	725 mm	725 mm	725 mm
Overall height	1050 mm	1050 mm	1053 mm	1053 mm
Wheel base	1215 mm	1215 mm	1217 mm	1217 mm
Ground clearance	152 mm	152 mm	156 mm	156 mm
Dry mass (without fuel)	88 kg	88 kg	98 kg	98 kg
Pay load	130 kg	130 kg	130 kg	130 kg
ENGINE				
Type	Two stroke, Air cooled	Two stroke, Air cooled	Two stroke, Air cooled	Two stroke, Air cooled
Intake system	Reed valve	Reed valve	Reed valve	Reed valve
Number of cylinders	One	One	One	One
Bore	50.00 mm	50.00 mm	50.00 mm	50.00 mm
Stroke	50.00 mm	50.00 mm	50.00 mm	50.00 mm
Piston displacement	98.2 cc	98.2 cc	98.2 cc	98.2 cc
Carburettor	Mikuni VM 20 SS	Mikuni VM 20 SS	Mikuni VM 18 SS	Mikuni VM 18 SS
Air cleaner	Polyurethane foam element	Polyurethane foam element	Polyurethane foam element	Polyurethane foam element
Starting system	Primary kick	Primary kick	Primary kick	Primary kick
Lubricating system	Suzuki CCI	Suzuki CCI	Suzuki CCI	Suzuki CCI
Compression ratio	6.6 : 1	6.6 : 1	6.6 : 1	6.6 : 1
Fuel consumption	Around 65 kmpl under standard specified test conditions (at a steady speed of 40 kmph with a pay load of 130kg)	Around 65 kmpl under standard specified test conditions (at a steady speed of 40 kmph with a pay load of 130kg)	Around 68 kmpl under standard specified test conditions (at a steady speed of 40 kmph with a pay load of 130kg)	Around 68 kmpl under standard specified test conditions (at a steady speed of 40 kmph with a pay load of 130kg)
	Around 55 kmpl under normal city riding conditions	Around 55 kmpl under normal city riding conditions	Around 57 kmpl under normal city riding conditions	Around 57 kmpl under normal city riding conditions

TECHNICAL SPECIFICATIONS

SPECIFICATION	AX-100 SUPRA 9.65 BHP	AX-100 RAC (12V)	NEW AX-100 AC	SUPRA POWER UP 11 BHP
DIMENSIONS AND WEIGHT				
Overall length	1865 mm	2057 mm	1865 mm	1865 mm
Overall width	725 mm	725 mm	725 mm	725 mm
Overall height	1053 mm	1053 mm	1050 mm	1050 mm
Wheel base	1217 mm	1217 mm	1215 mm	1208 mm
Ground clearance	156 mm	156 mm	152 mm	156 mm
Dry mass (without fuel)	95 kg	98 kg	88 kg	99 kg
Pay load	130 kg	130 kg	130 kg	130 kg
ENGINE				
Type	Two stroke, Air cooled	Two stroke, Air cooled	Two stroke, Air cooled	Two stroke, Air cooled
Intake system	Reed valve	Reed valve	Reed valve	Reed valve
Number of cylinders	One	One	One	One
Bore	50.00 mm	50.00 mm	50.00 mm	50.00 mm
Stroke	50.00 mm	50.00 mm	50.00 mm	50.00 mm
Piston displacement	98.2 cc	98.2 cc	98.2 cc	98.2 cc
Carburettor	Mikuni VM 18 SS	Mikuni VM 18 SS	Mikuni VM 18 SS	Mikuni VM 20 SS
Air cleaner	Polyurethane foam element	Polyurethane foam element	Polyurethane foam element	Polyurethane foam element
Starting system	Primary kick	Primary kick	Primary kick	Primary kick
Lubricating system	Suzuki CCI	Suzuki CCI	Suzuki CCI	Suzuki CCI
Compression ratio	6.6 : 1	6.6 : 1	6.6 : 1	6.6 : 1
Fuel consumption	Around 58 kmpl under standard specified test conditions (at a steady speed of 40 kmph with a pay load of 130kg)	Around 68 kmpl under standard specified test conditions (at a steady speed of 40 kmph with a pay load of 130kg)	Around 68 kmpl under standard specified test conditions (at a steady speed of 40 kmph with a pay load of 130kg)	–
	Around 55 kmpl under normal city riding conditions	Around 55 kmpl under normal city riding conditions	Around 55 kmpl under normal city riding conditions	–

TECHNICAL SPECIFICATIONS

SPECIFICATION	MAX 100	MAX 100 R	SAMURAI	SHOGUN
DIMENSIONS AND WEIGHT				
Overall length	2057 mm	2057 mm	1925 mm	1865 mm
Overall width	725 mm	725 mm	725 mm	725 mm
Overall height	1053 mm	1053 mm	1053 mm	1053 mm
Wheel base	1217 mm	1217 mm	1217 mm	1208 mm
Ground clearance	156 mm	156 mm	156 mm	156 mm
Dry mass (without fuel)	98 kg	98 kg	100 kg	104 kg
Pay load	130 kg	130 kg	130 kg	130 kg
ENGINE				
Type	Two stroke, Air cooled	Two stroke, Air cooled	Two stroke, Air cooled	Two stroke, Air cooled
Intake system	Reed valve	Reed valve	Reed valve	Reed valve
Number of cylinders	One	One	One	One
Bore	50.00 mm	50.00 mm	50.00 mm	52.50 mm
Stroke	50.00 mm	50.00 mm	50.00 mm	50.00 mm
Piston displacement	98.2 cc	98.2 cc	98.2 cc	108.2 cc
Carburettor	Mikuni VM 18 SS	Mikuni VM 18 SS	Mikuni VM 18 SS	Mikuni VM 20 SS
Air cleaner	Polyurethane foam element	Polyurethane foam element	Polyurethane foam element	Polyurethane foam element
Starting system	Primary kick	Primary kick	Primary kick	Primary kick
Lubricating system	Suzuki CCI	Suzuki CCI	Suzuki CCI	Suzuki CCI
Compression ratio	6.7 : 1	6.7 : 1	6.7 : 1	7.7 : 1
Fuel consumption	Around 68 kmpl under standard specified test conditions (at a steady speed of 40 kmph with a pay load of 130kg) Around 57 kmpl under normal city riding conditions	Around 68 kmpl under standard specified test conditions (at a steady speed of 40 kmph with a pay load of 130kg) Around 57 kmpl under normal city riding conditions	Around 68 kmpl under standard specified test conditions (at a steady speed of 40 kmph with a pay load of 130kg) Around 57 kmpl under normal city riding conditions	–

TECHNICAL SPECIFICATIONS

SPECIFICATION	AX-100 STD	AX-100 AC	AX-100 R	AX-100 RAC
Maximum horse power	6.2 kw (8.25 BHP) at 6500 rpm	6.2 kw (8.25 BHP) at 6500 rpm	5.9 kw (7.8 BHP) at 5500 rpm	5.9 kw (7.8 BHP) at 5500 rpm
Maximum Speed	Top gear 90 kmph	Top gear 90 kmph	Top gear 87 kmph	Top gear 87 kmph
Cruising speed (recommended for best fuel average)	Around 45 kmph	Around 45 kmph	Around 45 kmph	Around 45 kmph
Maximum Torque	0.98 kgm at 5500 rpm	0.98 kgm at 5500 rpm	0.98 kgm at 5000 rpm	0.98 kgm at 5000 rpm
Acceleration	0 - 60 kmph in 9 secs	0 - 60 kmph in 9 secs	0 - 60 kmph in 8.3 secs	0 - 60 kmph in 8.3 secs
Idling Engine rpm	1350 ± 150 rpm	1350 ± 150 rpm	1350 ± 150 rpm	1350 ± 150 rpm
Maximum Engine rpm	8000 rpm	8000 rpm	8000 rpm	8000 rpm
Oil consumption (Average)	1200 kmpl	1200 kmpl	1200 kmpl	1200 kmpl
Gradability	1 in 2.6 (21.5)	1 in 2.6 (21.5)	1 in 2.6 (21.5)	1 in 2.6 (21.5)
TRANSMISSION				
Clutch	Wet multi-plate type	Wet multi-plate type	Wet multi-plate type	Wet multi-plate type
Transmission	4 speed constant mesh	4 speed constant mesh	4 speed constant mesh	4 speed constant mesh
Gear shift pattern	All down, heel-toe shift	All down, heel-toe shift	All down, heel-toe shift	All down, heel-toe shift
Primary reduction	3.125 (50 / 16)	3.125 (50 / 16)	3.125 (50 / 16)	3.125 (50 / 16)
Final reduction	3.154 (41 / 13)	3.154 (41 / 13)	3.154 (41 / 13)	3.154 (41 / 13)
Gear ratio, First	2.909 (32 / 11)	2.909 (32 / 11)	2.909 (32 / 11)	2.909 (32 / 11)
Second	1.800 (27 / 15)	1.800 (27 / 15)	1.800 (27 / 15)	1.800 (27 / 15)
Third	1.277 (23 / 18)	1.277 (23 / 18)	1.277 (23 / 18)	1.277 (23 / 18)
Fourth (top)	0.954 (21 / 22)	0.954 (21 / 22)	0.954 (21 / 22)	0.954 (21 / 22)
Drive chain	1/2" X 5/16"	1/2" X 5/16"	1/2" X 5/16"	1/2" X 5/16"
Links	112 links	112 links	112 links	112 links
CHASSIS				
Front suspension	Telescopic, Oil damped	Telescopic, Oil damped	Telescopic, Oil damped	Telescopic, Oil damped

TECHNICAL SPECIFICATIONS

SPECIFICATION	AX-100 SUPRA 9.65 BHP	AX-100 RAC (12V)	NEW AX-100 AC	SUPRA POWER UP 11 BHP
Maximum horse power	7.2 kw (9.65 BHP) at 7000 rpm	5.9 kw (7.8 BHP) at 5500 rpm	5.9 kw (7.8 BHP) at 5500 rpm	8.1 kw (11 BHP) at 7500 rpm
Maximum Speed	Top gear 100 kmph	Top gear 87 kmph	Top gear 87 kmph	Top gear 100kmph
Cruising speed (recommended for best fuel average)	Around 45 kmph	Around 45 kmph	Around 45 kmph	Around 45 kmph
Maximum Torque	0.98 kgm at 6500 rpm	0.98 kgm at 5000 rpm	0.98 kgm at 5000 rpm	1.06 kgm at 7000 rpm
Acceleration	0 - 60 kmph in 7.35 secs	0 - 60 kmph in 8.3 secs	0 - 60 kmph in 8.3 secs	0 - 60 kmph in 7.35 secs
Idling Engine rpm	1350 ± 150 rpm	1350 ± 150 rpm	1350 ± 150 rpm	1350 ± 150 rpm
Maximum Engine rpm	8700 rpm	8000 rpm	8000 rpm	-
Oil consumption (Average)	1200 kmpl	1200 kmpl	1200 kmpl	1200 kmpl
Gradability	1 in 2.6 (21.5)	1 in 2.6 (21.5)	1 in 2.6 (21.5)	1 in 2.6 (21.5)
TRANSMISSION				
Clutch	Wet multi-plate type	Wet multi-plate type	Wet multi-plate type	Wet multi-plate type
Transmission	4 speed constant mesh	4 speed constant mesh	4 speed constant mesh	4 speed constant mesh
Gear shift pattern	All down, heel-toe shift	All down, heel-toe shift	All down, heel-toe shift	All down, heel-toe shift
Primary reduction	3.125 (50 / 16)	3.125 (50 / 16)	3.125 (50 / 16)	3.125 (50 / 16)
Final reduction	3.307 (43 / 13)	3.154 (41 / 13)	3.154 (41 / 13)	3.307 (43 / 13)
Gear ratio, First	2.909 (32 / 11)	2.909 (32 / 11)	2.909 (32 / 11)	3.083 (37 / 12)
Second	1.800 (27 / 15)	1.800 (27 / 15)	1.800 (27 / 15)	1.867 (28 / 15)
Third	1.277 (23 / 18)	1.277 (23 / 18)	1.277 (23 / 18)	1.277 (23 / 18)
Fourth (top)	0.954 (21 / 22)	0.954 (21 / 22)	0.954 (21 / 22)	0.954 (21 / 22)
Drive chain	1/2" X 5/16"	1/2" X 5/16"	1/2" X 5/16"	1/2" X 5/16"
Links	112 links	112 links	112 links	112 links
CHASSIS				
Front suspension	Telescopic, Oil damped	Telescopic, Oil damped	Telescopic, Oil damped	Telescopic, Oil damped

TECHNICAL SPECIFICATIONS

SPECIFICATION	MAX 100	MAX 100 R	SAMURAI	SHOGUN
Maximum horse power	5.9 kw (7.8 BHP) at 5500 rpm	5.9 kw (7.8 BHP) at 5500 rpm	5.9 kw (7.8 BHP) at 5500 rpm	10.3 kw (14 BHP) at 8500 rpm
Maximum Speed	Top gear 87 kmph	Top gear 87 kmph	Top gear 87 kmph	Top gear 105kmph
Cruising speed (recommended for best fuel average)	Around 45 kmph	Around 45 kmph	Around 45 kmph	Around 45 kmph
Maximum Torque	0.98 kgm at 5000 rpm	0.98 kgm at 5000 rpm	0.98 kgm at 5000 rpm	1.14 kgm at 8250 rpm
Acceleration	0 - 60 kmph in 9 secs	0 - 60 kmph in 9 secs	0 - 60 kmph in 9 secs	0 - 60 kmph in 5.9 secs
Idling Engine rpm	1350 ± 150 rpm	1350 ± 150 rpm	1350 ± 150 rpm	1500 ± 200 rpm
Maximum Engine rpm	8000 rpm	8000 rpm	8000 rpm	-
Oil consumption (Average)	1200 kmpl	1200 kmpl	1200 kmpl	900 kmpl
Gradability	1 in 2.6 (21.5)	1 in 2.6 (21.5)	1 in 2.6 (21.5)	1 in 1.9 (28)
TRANSMISSION				
Clutch	Wet multi-plate type	Wet multi-plate type	Wet multi-plate type	Wet multi-plate type
Transmission	4 speed constant mesh	4 speed constant mesh	4 speed constant mesh	4 speed constant mesh
Gear shift pattern	All down, heel-toe shift	All down, heel-toe shift	All down, heel-toe shift	All down, heel-toe shift
Primary reduction	3.125 (50 / 16)	3.125 (50 / 16)	3.125 (50 / 16)	3.40 (51 / 15)
Final reduction	3.154 (41 / 13)	3.154 (41 / 13)	3.154 (41 / 13)	3.385 (44 / 13)
Gear ratio, First	2.909 (32 / 11)	2.909 (32 / 11)	2.909 (32 / 11)	3.083 (37 / 12)
Second	1.800 (27 / 15)	1.800 (27 / 15)	1.800 (27 / 15)	1.867 (28 / 15)
Third	1.277 (23 / 18)	1.277 (23 / 18)	1.277 (23 / 18)	1.277 (23 / 18)
Fourth (top)	0.954 (21 / 22)	0.954 (21 / 22)	0.954 (21 / 22)	0.954 (21 / 22)
Drive chain	1/2" X 5/16"	1/2" X 5/16"	1/2" X 5/16"	1/2" X 5/16"
Links	112 links	112 links	112 links	112 links
CHASSIS				
Front suspension	Telescopic, Oil damped	Telescopic, Oil damped	Telescopic, Oil damped	Telescopic, Oil damped

TECHNICAL SPECIFICATIONS

SPECIFICATION	AX-100 STD	AX-100 AC	AX-100 R	AX-100 RAC
Rear Suspension	Swing arm, Hydraulic shock absorber with coaxial spring	Swing arm, Hydraulic shock absorber with coaxial spring	Swing arm, Hydraulic shock absorber with coaxial spring	Swing arm, Hydraulic shock absorber with coaxial spring
Steering angle	42°	42°	42°	42°
Caster	63°	63°	63°	63°
Trial	74 mm	74 mm	74 mm	74 mm
Turning radius	1.8 metre	1.8metre	1.8 metre	1.8 metre
Front brake	Internally expanding	Internally expanding	Internally expanding	Internally expanding
Rear brake	Internally expanding	Internally expanding	Internally expanding	Internally expanding
Front tyre size	2.5" X 18" - 4PR	2.5" X 18" - 4PR	2.75" X 18" - 4PR	2.75" X 18" - 4PR
Rear tyre size	2.75" X 18" - 6PR	2.75" X 18" - 6PR	3.00" X 18" - 4PR	3.00" X 18" - 4PR
Rim width : Front	1.4" X 18"	1.4" X 18"	1.6" X 18"	1.6" X 18"
Rear	1.6" X 18"	1.6" X 18"	1.85" X 18"	1.85" X 18"
Front tyre pressure: Solo	1.75 kg/cm² (24 psi)	1.75 kg/cm² (24 psi)	1.75 kg/cm² (24 psi)	1.75 kg/cm² (24 psi)
Dual	1.75 kg/cm² (24 psi)	1.75 kg/cm² (24 psi)	1.75 kg/cm² (24 psi)	1.75 kg/cm² (24 psi)
Rear tyre pressure: Solo	2.00 kg/cm² (28 psi)	2.00 kg/cm² (28 psi)	2.00 kg/cm² (28 psi)	2.00 kg/cm² (28 psi)
Dual	2.25 kg/cm² (32 psi)	2.25 kg/cm² (32 psi)	2.25 kg/cm² (32 psi)	2.25 kg/cm² (32 psi)
ELECTRICAL				
System	AC & DC type	AC type	AC & DC type	AC type
Ignition type	CDI (Electronic)	CDI (Electronic)	CDI (Electronic)	CDI (Electronic)
Ignition timing	24° ± 2° BTDC at 3000 rpm	24° ± 2° BTDC at 3000 rpm	24° ± 2° BTDC at 3000 rpm	24° ± 2° BTDC at 3000 rpm
Spark plug	MICO W 5 D1 MODI N9YC NGK BP7ES (for non squish cylinder head)	MICO W 5D1 MODI N9YC NGK BP7ES (for non squish cylinder head)	MICO W5BC MODI L82YC NGK BP7HS	MICO W5BC MODI L82YC NGK BP7HS
	MICO W5BC MODI L82YC NGK BP7HS (for squish cylinder head)	MICO W5BC MODI L82YC NGK BP7HS (for squish cylinder head)		

TECHNICAL SPECIFICATIONS

SPECIFICATION	AX-100 SUPRA 9.65 BHP	AX-100 RAC (12V)	NEW AX-100 AC	SUPRA POWER UP 11 BHP
Rear Suspension	Swing arm, Hydraulic shock absorber with coaxial spring	Swing arm, Hydraulic shock absorber with coaxial spring	Swing arm, Hydraulic shock absorber with coaxial spring	Swing arm, Hydraulic shock absorber with coaxial spring
Steering angle	42°	42°	42°	42°
Caster	63°	63°	63°	63°
Trial	74 mm	74 mm	74 mm	74 mm
Turning radius	1.8 metre	1.8metre	1.8 metre	1.8 metre
Front brake	Internally expanding	Internally expanding	Internally expanding	Internally expanding dia 130 mm
Rear brake	Internally expanding	Internally expanding	Internally expanding	Internally expanding dia 130 mm
Front tyre size	2.75" X 18" - 4PR	2.75" X 18" - 4PR	2.5" X 18" - 6PR	2.75" X 18" - 4PR
Rear tyre size	3.00" X 18" - 4PR	3.00" X 18" - 4PR	2.75" X 18" - 6PR	3.00" X 18" - 4PR
Rim width : Front	1.6" X 18"	1.6" X 18"	1.4" X 18"	1.6" X 18"
Rear	1.85" X 18"	1.85" X 18"	1.6" X 18"	1.85" X 18"
Front tyre pressure: Solo	1.75 kg/cm² (24 psi)	1.75 kg/cm² (24 psi)	1.75 kg/cm² (24 psi)	1.75 kg/cm² (24 psi)
Dual	1.75 kg/cm² (24 psi)	1.75 kg/cm² (24 psi)	1.75 kg/cm² (24 psi)	1.75 kg/cm² (24 psi)
Rear tyre pressure: Solo	2.00 kg/cm² (28 psi)	2.00 kg/cm² (28 psi)	2.00 kg/cm² (28 psi)	2.00 kg/cm² (28 psi)
Dual	2.25 kg/cm² (32 psi)	2.25 kg/cm² (32 psi)	2.25 kg/cm² (32 psi)	2.25 kg/cm² (32 psi)
ELECTRICAL				
System	AC & DC type	AC type	AC type	AC & DC type
Ignition type	CDI (Electronic)	CDI (Electronic)	CDI (Electronic)	CDI (Electronic)
Ignition timing	24° ± 2° BTDC at 3000 rpm	24° ± 2° BTDC at 3000 rpm	24° ± 2° BTDC at 3000 rpm	24° ± 2° BTDC at 3000 rpm
Spark plug	MICO W5DC MODIIN 6 YC NGK BP 8 ES	MICO W5BC MODI L 82 YC NGK BP 7 HS	MICO W5BC MODI L 82 YC NGK BP 7 HS	MICO W5DC MODI N 6 YC NGK BP 8 ES

TECHNICAL SPECIFICATIONS

SPECIFICATION	MAX 100	MAX 100 R	SAMURAI	SHOGUN
Rear Suspension	Swing arm, Hydraulic shock absorber with coaxial spring	Swing arm, Hydraulic shock absorber with coaxial spring	Swing arm, Hydraulic shock absorber with coaxial spring	Swing arm, Hydraulic shock absorber with coaxial spring
Steering angle	42°	42°	42°	42°
Caster	63°	63°	63°	63°
Trial	74 mm	74 mm	74 mm	74 mm
Turning radius	1.8 metre	1.8metre	1.8 metre	1.8 metre
Front brake	Internally expanding dia 130 mm	Internally expanding dia 130 mm	Internally expanding dia 130 mm	Internally expanding dia 130 mm
Rear brake	Internally expanding dia 130 mm	Internally expanding dia 130 mm	Internally expanding dia 130 mm	Internally expanding dia 130 mm
Front tyre size	2.75" X 18" - 4PR	2.75" X 18" - 4PR	2.75" X 18" - 4PR	2.75" X 18" - 4PR
Rear tyre size	3.00" X 18" - 4PR	3.00" X 18" - 4PR	3.00" X 18" - 4PR	3.00" X 18" - 4PR
Rim width : Front	1.6" X 18"	1.6" X 18"	1.6" X 18"	1.6" X 18"
Rear	1.85" X 18"	1.85" X 18"	1.85" X 18"	1.85" X 18"
Front tyre pressure: Solo	1.75 kg/cm² (24 psi)	1.75 kg/cm² (24 psi)	1.75 kg/cm² (24 psi)	1.75 kg/cm² (24 psi)
Dual	1.75 kg/cm² (24 psi)	1.75 kg/cm² (24 psi)	1.75 kg/cm² (24 psi)	1.75 kg/cm² (24 psi)
Rear tyre pressure: Solo	2.00 kg/cm² (28 psi)	2.00 kg/cm² (28 psi)	2.00 kg/cm² (28 psi)	2.00 kg/cm² (28 psi)
Dual	2.25 kg/cm² (32 psi)	2.25 kg/cm² (32 psi)	2.25 kg/cm² (32 psi)	2.25 kg/cm² (32 psi)
ELECTRICAL				
System	AC type	AC & DC type	AC & DC type	AC & DC type
Ignition type	CDI (Electronic)	CDI (Electronic)	CDI (Electronic)	CDI (Electronic)
Ignition timing	25° ± 1° BTDC at 3000 rpm	25° ± 1° BTDC at 3000 rpm	25° ± 1° BTDC at 3000 rpm	25° ± 1° BTDC at 3000 rpm
Spark plug	MICO WR5BC MODI L 82 YC NGK BP 7 HS	MICO WR5BC MODI L 82 YC NGK BP 7 HS	MICO WR5BC MODI L 82 YC NGK BP 7 HS	NGK BP 8 HS

TECHNICAL SPECIFICATIONS

SPECIFICATION	AX-100 STD	AX-100 AC	AX-100 R	AX-100 RAC
Battery	6V 4 AH/10 hours	-	6V 4 AH/10 hours	-
Body Earthing	Negative	-	Negative	-
Generator	Fly wheel magneto (40 W)	Fly wheel magneto (40 W)	Fly wheel magneto (40 W)	Fly wheel magneto (40 W)
Fuse	10 A	-	10 A	-
Head light	6V 25/25W	6V 25/25W	6V 25/25W	6V 25/25W
City light	6V 3W	-	6V 3W	-
Tail/Brake light	6V 3/10W	6V 3/10W	6V 3/10W	6V 3/10W
Turn signal light	6V 8W	-	6V 8W	-
Speedometer light	6V 3W	6V 3W	6V 3W	6V 3W
Turn signal indicator light	6V 3W	-	6V 3W	-
Neutral indicator light	6V 3W	-	6V 3W	-
High beam indicator light	6V 1.7W	-	6V 1.7W	-
Oil level warning light	6V 3W	-	6V 3W	-
CAPACITIES				
Fuel tank including reserve Reserve	12.00 litres 02.00 litres	12.00 litres 02.00 litres	12.00 litres 02.00 litres	12.00 litres 02.00 litres
Engine oil tank with reserve Reserve	1.30 litres 0.10 litre	1.30 litres 0.10 litre	1.30 litres 0.10 litre	1.30 litres 0.10 litre
Front fork oil	155 ml each leg	155 ml each leg	250 ml each leg	250 ml each leg
Transmission oil	900 ml (approx)	900 ml (approx)	900 ml (approx)	900 ml (approx)

(THESE SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE)

TECHNICAL SPECIFICATIONS

SPECIFICATION	AX-100 SUPRA 9.65 BHP	AX-100 RAC (12V)	NEW AX-100 AC	SUPRA POWER UP 11 BHP
Battery	6V 4 AH/10 hours	-	-	12V 2.5 AH/15 hours
Body Earthing	Negative	-	-	Negative
Generator	Fly wheel magneto (40 W)	Fly wheel magneto (40 W)	Fly wheel magneto (40 W)	Fly wheel magneto (.60 W)
Fuse	10 A	-	-	10 A
Head light	6V 25/25W	12V 25/25W	6V 25/25W	12V 35/35W
City light	6V 3W	12V 3.4W	-	12V 3.4W
Tail/Brake light	6V 3/10W	12V 5/10W	6V 3/10W	12V 5/10W
Turn signal light	6V 8W	-	-	12V 10W
Speedometer light	6V 3W	12V 3.4W	6V 3W	12V 3.4W
Turn signal indicator light	6V 3W	-	-	12V 3.4W
Neutral indicator light	6V 3W	-	-	12V 3.4W
High beam indicator light	6V 1.7W	-	-	12V 1.7W
Oil level warning light	6V 3W	-	-	12V 3.4W
CAPACITIES				
Fuel tank including reserve Reserve	12.00 litres 02.00 litres	12.00 litres 02.00 litres	12.00 litres 02.00 litres	12.00 litres 02.00 litres
Engine oil tank with reserve Reserve	1.30 litres 0.10 litre	1.30 litres 0.10 litre	1.30 litres 0.10 litre	1.30 litres 0:10 litre
Front fork oil	250 ml each leg	250 ml each leg	155 ml each leg	160 ml each leg
Transmission oil	900 ml (approx)	900 ml (approx)	900 ml (approx)	900 ml (approx)

(THESE SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE)

TECHNICAL SPECIFICATIONS

SPECIFICATION	MAX-100	MAX-100 R	SAMURAI	SHOGUN
Battery	-	12V 2.5AH/15 hours	12V 2.5AH/15 hours	12V 2.5AH/15 hours
Body Earthing	-	Negative	Negative	Negative
Generator	Fly wheel magneto (45 W)	Fly wheel magneto (60 W)	Fly wheel magneto (60 W)	Fly wheel magneto (60 W)
Fuse	-	10 A	10 A	10 A
Head light	12V 35/35W	12V 35/35W	12V 35/35W	12V 35/35W
City light	12V 3.4W	12V 3.4W	12V 3.4W	12V 3.4W
Tail/Brake light	12V 5/10W	12V 5/10W	12V 5/10W	12V 5/10W
Turn signal light	12V 10W	12V 10W	12V 10W	12V 10W
Speedometer light	12V 3.4W	12V 3.4W	12V 3.4W	12V 3.4W
Turn signal indicator light	-	12V 3.4W	12V 3.4W	12V 3.4W
Neutral indicator light	-	12V 3.4W	12V 3.4W	12V 3.4W
High beam indicator light	-	12V 1.7W	12V 1.7W	12V 1.7W
Oil level warning light	-	12V 3.4W	12V 3.4W	12V 3.4W
CAPACITIES				
Fuel tank including reserve Reserve	12.00 litres 02.00 litres	12.00 litres 02.00 litres	12.00 litres 02.00 litres	12.00 litres 02.00 litres
Engine oil tank with reserve Reserve	1.30 litres 0.10 litre	1.30 litres 0.10 litre	1.30 litres 0.10 litre	1.30 litres 0.10 litre
Front fork oil	160 ml each leg	160 ml each leg	160 ml each leg	160 ml each leg
Transmission oil	900 ml (approx)	900 ml (approx)	900 ml (approx)	900 ml (approx)

(THESE SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE)

FUEL AND OIL RECOMMENDATIONS

Be sure to use the specified fuel and oil. The following are the specifications :

FUEL

Unleaded or low lead type petrol is recommended. The petrol should be atleast 85-95 octane by the Research Method. If your engine pinks, a regular grade of fuel, may be substituted.

CAUTION :
Use petrol only, do not mix oil with it (fig 1.19). For Shogun fitted with catalytic converter silencer, Use only unleaded petrol.

Fig 1.19

ENGINE OIL

Use good quality TWO-STROKE OIL. Recommended oils are Castrol Super TT, Indian Oil Servo, 2T Supreme, Bharat 2-Stroke Oil. (fig 1.20)

CAUTION :
For Shogun fitted with catalytic converter silencer, use FT grade 2T oil (Mitsubishi low smoke 2T oil).

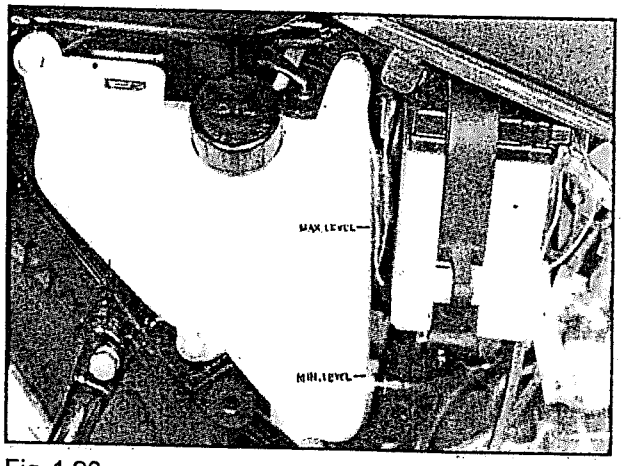


Fig 1.20

TRANSMISSION OIL

Use any one of the following oils :
Indian Oil Servo Super 20W40, B.P. Bharat Automol 20W30 Castrol CRB plus 20W40, Castrol Deusol Super. (fig 1.21)

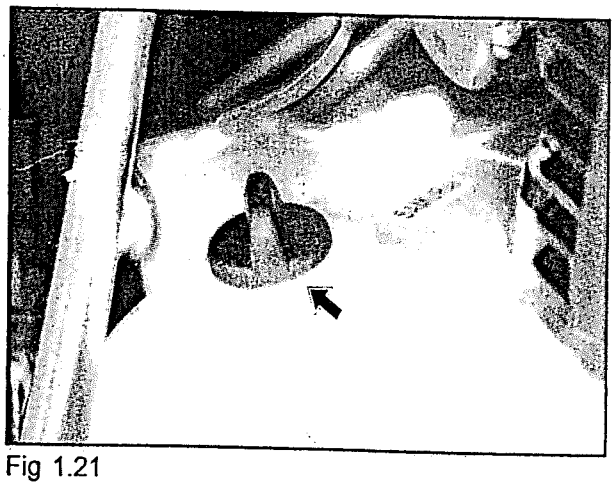


Fig 1.21

FORK OIL

Fork oil SAE 20W20

GREASE

SERVO GEM 3 (Indian Oil) M.P. Grease No. 3 (BHARAT PETROLEUM). For wheel bearings, oil seal lip, swing arm shaft, centre stand spacer, cam gear shift, brake pedal and head pipe inner race.

SPECIAL FEATURES

REED VALVE INTAKE SYSTEM

A reed valve is used in the intake system. The reed valve has thin, flexible sheet steel pieces and are fitted into the top of the crankcase. As the Piston moves up and down, the pressure in the crankcase alternately changes to negative and positive, thus causing the reed valve to open and close. The reed valve timing and opening vary depending on the engine speed and throttle opening. In other words, it can be said that the intake timing is ideally matched to the operating condition of the engine. The reed valve is operated by the vacuum and pressure in the crank chamber as shown in the illustration. It improves the torque at low and medium speeds for better pick up and gradeability.

Reed Valve System

In this system, reed valve controls intake of fuel and piston controls exhaust of burnt gases. (fig 1.22)

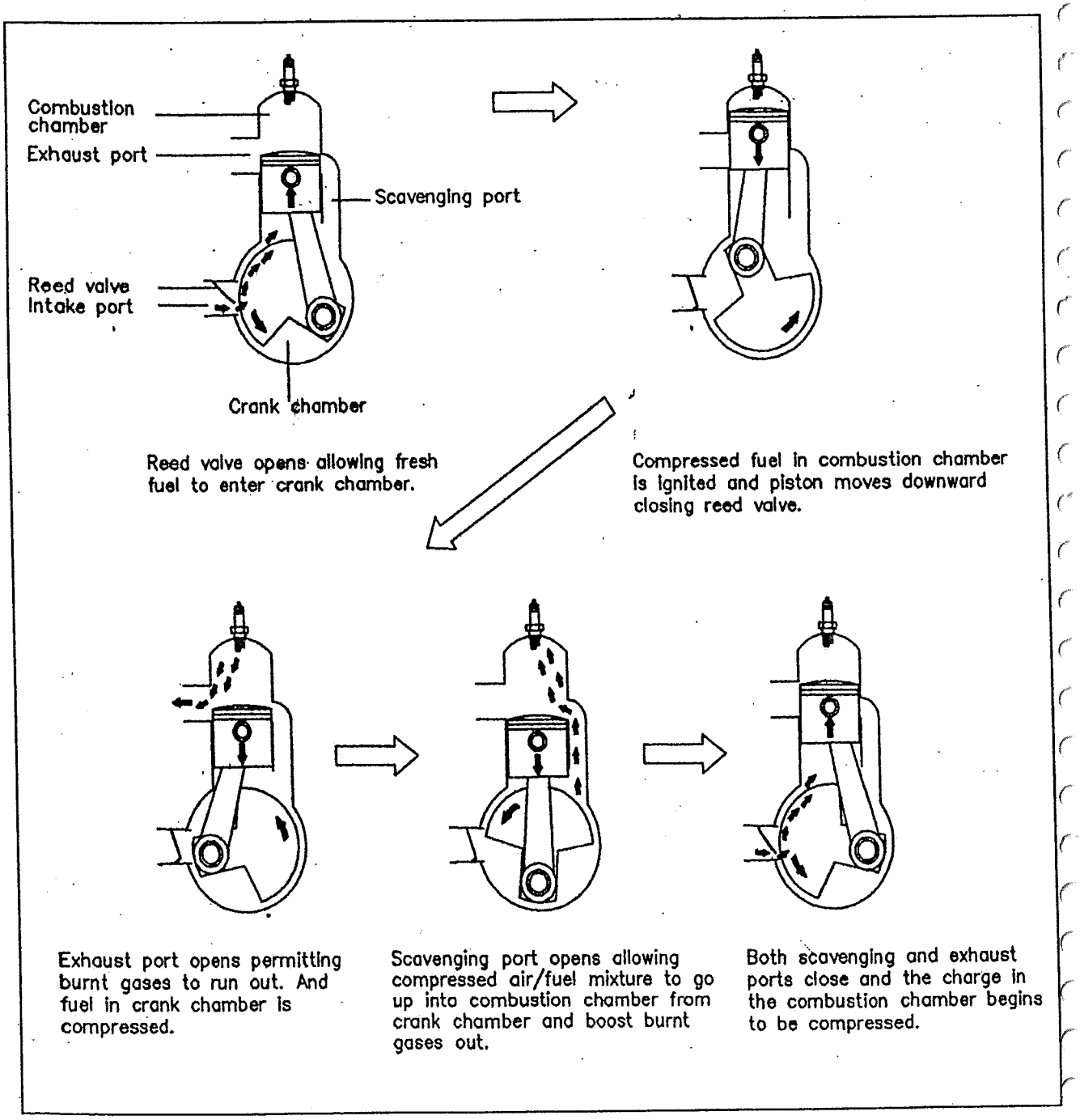


Fig 1.22

C D I SYSTEM (CAPACITOR DISCHARGE IGNITION SYSTEM)

In the Suzuki ignition system, the CDI system is used. The CDI system uses magneto as the power source and the capacitor (Condenser) momentarily stores charge upto hundreds of volts. The Capacitor instantly discharges at the specified ignition timing to the ignition coil primary winding, thus inducing a high surge of voltage in the secondary winding. As a result, a spark occurs at the spark plug gap. The CDI system comprises of source coil, magneto, CDI (Capacitor Discharge Ignition) unit, ignition coil and spark plug.

The CDI Magneto has no breaker points and therefore it is free from mechanical trouble. This ensures a stabler secondary high voltage and better spark performance.

This system incorporates an automatic ignition advance for optimum performance at all operating speeds.

Features of CDI System

1) **Possible to leave system unattended for long time.**
   Due to absence of contact points, maintenance and adjustment work concerned with contact points are no longer required.

2) **Improved sparking performance.**
   Due to smaller voltage drop, the increased sparking energy makes it more advantageous as far as plug fouling is concerned.

3) **Improved starting performance.**
   Since the ignition timing has been provided with the characteristic of advancing in relation to engine speed, starting becomes easier and moreover, ignition timing to match high speed operation can be obtained.

4) **Outstanding durability.**
   High durability due to simplicity of construction and no wear of parts through elimination of contact points.

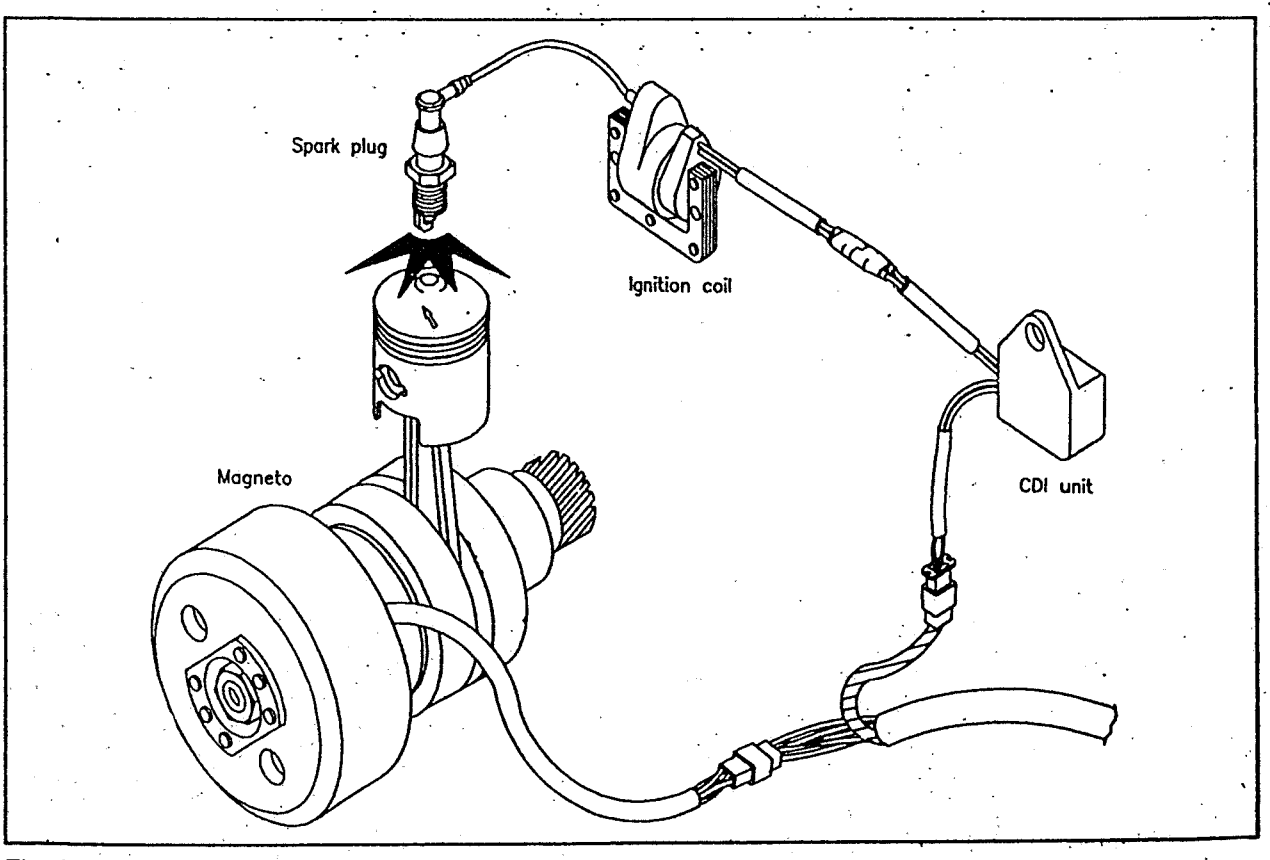


Fig 1.23

CRANKCASE INJECTION LUBRICATION SYSTEM (CCI SYSTEM)

The engine is lubricated by the CCI system. The oil pump output is connected to the intake port of the cylinder. In shogun vehicle oil pump output is connected to the carburettor. Oil is pumped under pressure into the air - fuel mixture. This mixture lubricates all moving parts. The Oil pump is driven by primary drive and driven gears, kick idler gear and kick drive gear.

Since the oil discharge rate of oil pump is regulated by the throttle opening through throttle cable and control lever on the oil pump, necessary amount of the oil which the engine requires is always metered and supplied.

1. FEATURES

- With a simple mechanism the oil pump is capable of delivering a very small amount of accurately metered oil. It is unique in that oil can be delivered, even with an extremely small stroke, with a high degree of precision.
- Delivery rate can be controlled consecutively while the pump is in operation, with lever operation.
- The pump is designed to meet working conditions under a wide range of temperatures from 40° C to over 100° C.
- The pump being compact in construction, is very light in weight.
- CCI oil pumps are easy to operate and yet are highly reliable and durable.

2. CONSTRUCTION

The pump, made of a light alloy, consists of the following components : A driving worm, a plunger, a sub plunger, a spring, a control shaft, an operating lever mounted on the camshaft and a pump body.

The construction of the oil pump is shown in fig 1.24. The plunger rotates 1/22 turn to every one turn of the driving worm so that its overall reduction ratio to the crankshaft is 1 to 133.54. A circular ramp is machined into the bottom of the plunger. This ramp section engages the plunger guide and the plunger moves up and down by utilising the plunger rotating action.

Oil Pump Construction

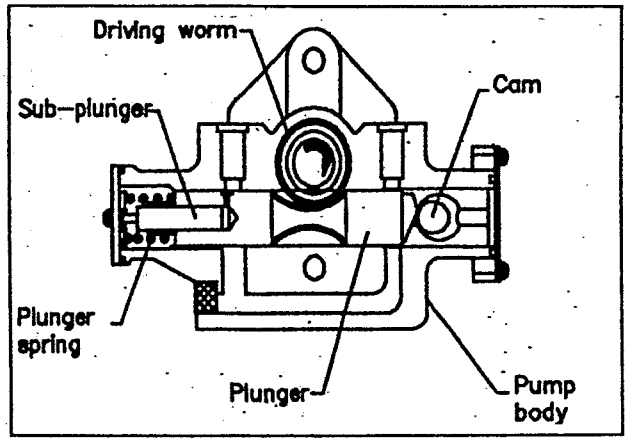


Fig 1.24

The combination of rotating action and up and down movement opens and closes the intake port and discharge port, changes the volume between the plunger and the sub-plunger and changes the pressure of oil.

The control lever is pulled in accordance with throttle opening and turns a camshaft fitted to the lever. When the throttle is opened slightly, the cam limits the oil pump plunger stroke. When the throttle opening is increased, the cam turns and allows a longer plunger stroke, so that the amount of oil discharged increases.

Every one turn of the plunger can be divided into four stages as follows :

1. When the plunger is on upstroke (90° by the plunger rotating angle), the volume between the plunger and the sub plunger increases and the vacuum is created in its space.

2. In the next rotating angle of 90°, the intake port opens and oil is sucked into the plunger in which vacuum was created in the above process.

3. Oil intake is finished and the plunger begins to move downward. On downstroke of the plunger (90° by the rotating angle), the oil in the plunger is compressed.

4. In the final stage (90° by the rotating angle), the discharging port opens and the compressed oil is discharged.

In this stage, the plunger remains in the bottom dead centre.

Controlling discharge by throttle opening

The amount of oil pumped must vary in accordance with changes in the loads which the engine receives, as well as the engine rpm. To fulfil these requirements of the engine, a camshaft which synchronizes with the throttle, is provided below the plunger tip so that the plunger displacement varies with the throttle opening and the proper amount of oil is always supplied to the engine.

1. At minimum throttle opening the stroke of the plunger is shortened by the cam so that a small amount of oil is discharged.

2. At maximum throttle opening the cam does not restrict the plunger stroke so that the plunger makes a full stroke along with the plunger guide and takes in and discharges more oil.

LUBRICATION FLOW

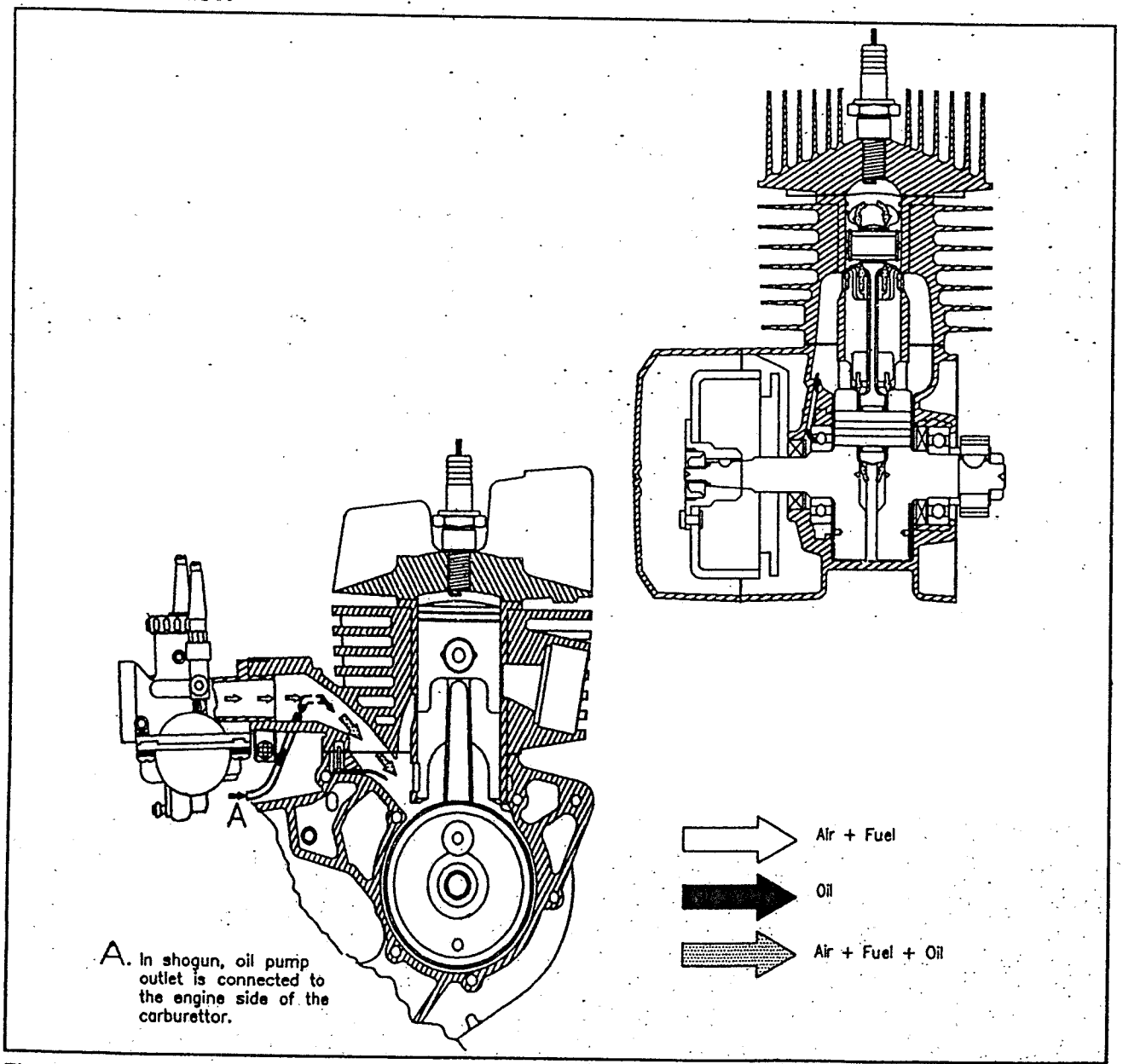


Fig 1.25

PRECAUTIONS AND GENERAL INSTRUCTIONS

Observe the following items without fail when dismantling and reassembling motorcycles.

- Be sure to replace packings, gaskets, circlips, 'O' rings and cotter pins with new ones, for safe riding.

> **CAUTION :**
> **Never re-use a circlip after it has been removed from a shaft.**
> **When installing a new circlip, care must be taken not to expand the end gap larger than required, to slip the circlip over the shaft.**
> **After installing a circlip, always ensure that it is completely seated in its groove and securely fitted.**

- Tighten bolts and nuts, starting from larger diameter ones to those of smaller diameter, and from inside to outside diagonally, with specified tightening torque.
- Use special tools wherever specified.
- Use genuine parts and recommended oils only.
- When more than 2 persons work together, pay attention to the safety of each other.
- After reassembly check parts for tightness and operation.
- When checking torque of any bolt or nut always loosen it by half a turn then tighten it to the specified torque.
- Treat petrol, which is extremely flammable and highly explosive, with greatest care. Never use petrol as cleaning solvent.

Warning, caution and note are included in this manual occasionally, describing the following contents.

> **WARNING .....Where personal safety of the rider is involved. Disregarding this information could result in his injury.**
>
> **CAUTION .....These instructions point out special service procedures or precautions that must be followed to avoid damaging the machine.**
>
> **NOTE .....This provides special information to make operation or maintenance easier or important instructions clear.**

PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES

CONTENTS

PERIODIC MAINTENANCE SCHEDULE

Vehicle should be inspected after a certain period of running for wear of parts, carbon deposits, elongated cables, etc. Inspections should be made periodically and defects should be repaired or adjusted beforehand to prevent trouble and to prolong the motorcycle's service life.

Inspect and adjust the vehicle as indicated below :

NOTE :

- **More frequent maintenance may be performed on motorcycles that are used in severe conditions like dusty environment, dense traffic conditions, sustained full throttle operation and running on un-metalled roads etc.**

PERIODIC MAINTENANCE SCHEDULE CHART

ENGINE

Item/Interval	Initial 1000 km	Every 3000 km	Every 6000 km	Every 12000 km
Engine oil level	INSPECT / TOP-UP EVERY 800 KM			
Engine bolts and nuts	Inspect	Inspect	–	–
Cylinder head, cylinder	–	–	Remove carbon	–
Muffler	–	Check carbon	Remove carbon	–
Air cleaner	Check & clean	* Check & clean	–	–
Spark plug	Clean & adjust	Clean & adjust	* * Check & replace	–
Ignition timing	Inspect	Inspect	–	–
Carburettor	Inspect	Inspect	–	Overhaul
Throttle cable	Adjust	Adjust	–	–
Oil pump	Check	Check	–	Clean banjo and hose pipe connections
Fuel hoses	Inspect	* * * Inspect	–	–
Fuel cock sediment cup	Clean	Clean	–	–
Fuel cock filter	–	–	Clean	–
Clutch	Adjust	Adjust	–	–
Transmission oil	Change	–	Change	–

* Clean at every 2000 km in dusty road conditions
* * Replace if found worn out
* * * Replace if found hard

CHASSIS

Item/Interval	Initial 1000 km	Every 3000 km	Every 12000 km
Drive chain	Lubricate and adjust every 1000 km Inspect, clean and adjust every 6000 km		
Brakes	Inspect	Inspect	–
Tyres	Inspect	Inspect	–
Steering	Inspect	Inspect	–
Front fork oil	Inspect for leakage	Inspect	Change
Bolts and nuts	Inspect	Inspect	–
Spokes & Nipples	Check and adjust	Check and adjust	–

ELECTRICALS

Item/Interval	Initial 1000 km	Every 3000 km	Every 12000 km
Battery *	Inspect	Inspect	–
Bulbs and Horn	Check operation	Check operation	–
Brake light switch	Check and adjust	Check and adjust	–

* Not applicable to AC Model

LUBRICATION CHART

Rotating and rubbing parts must be lubricated periodically. Insufficient lubrication will cause rapid wear and severe damage may result.

Lubricate the following parts periodically.

Item/Interval	Initial and every 3000 km	Every 12000 km
Throttle and oil pump control cable	Engine oil	–
Throttle grip	–	Grease
Clutch cable	Engine oil	–
Clutch worm	Grease	–
Speedometer cable	–	Grease
Speedometer drive gear	–	Grease
Drive chain	SAE 40 or SAE 50 oil every 1000 km	
Brake pedal shaft	Grease or oil	–
Brake camshaft	–	Grease
Steering stem bearings, Swing arm shaft	Grease every 2 years or 20,000 km (whichever is earlier)	
Front brake cable	Engine oil	–
Choke cable	Engine oil	–
Kick starter pedal pivot	Engine oil	–

WARNING :
Be careful not to apply too much grease to the brake cam shafts. If grease gets on the linings, brake slippage will result.

NOTE :
Before lubricating each part, clean off any rusty spots and wipe off any grease, oil, dirt, etc. Lubricate exposed parts which are subject to rust, with either engine oil or grease whenever the motorcycle has been operated under wet or rainy conditions.

MAINTENANCE AND TUNE-UP PROCEDURES

AIR CLEANER

Check and clean every 3000 km
Dusty environment every 2000 km

If the air cleaner is clogged with dust, intake resistance will be increased with a resultant decrease in output and an increase in fuel consumption. Check and clean the filter element in the following manner :

- Remove the left side frame cover (fig 2.1)
- Unscrew the retaining screws and take off the air cleaner housing cover (fig 2.2)
- Fill a washing pan of a proper size with non-flammable cleaning solvent (kerosene). Immerse the element in the solvent and wash it clean (fig 2.3)
- Squeeze the solvent off the washed element by pressing it between the palms of hand (fig 2.3). Do not twist and wring the element as it will develop fissures.
- Immerse the element in a pool of 2T oil, and squeeze the oil off the element to make it slightly wet with oil (fig 2.3)
- Reinstall the cleaned element in reverse order of removal.

CAUTION :

- **Before and during the cleaning operation, examine the filter element to see if it has a tear or cut. A torn element must be replaced.**
- **Be sure to position the filter element snugly and correctly, so that no incoming air will bypass it (fig 2.4). Remember, rapid wear of piston rings and cylinder bore is often caused by a defective or poorly fitted element.**
- **Check that the sealing gasket of the air cleaner housing cover is intact all round.**

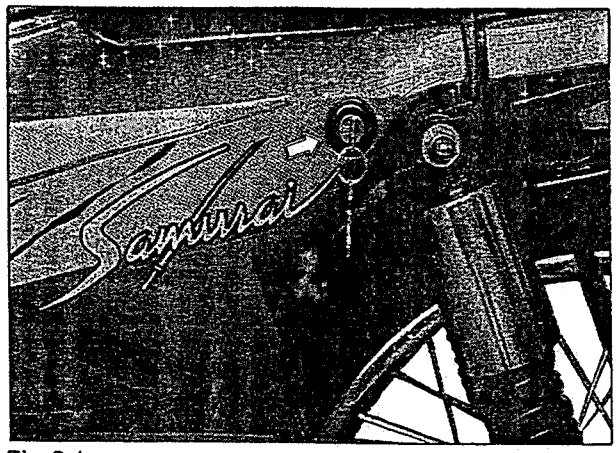


Fig 2.1

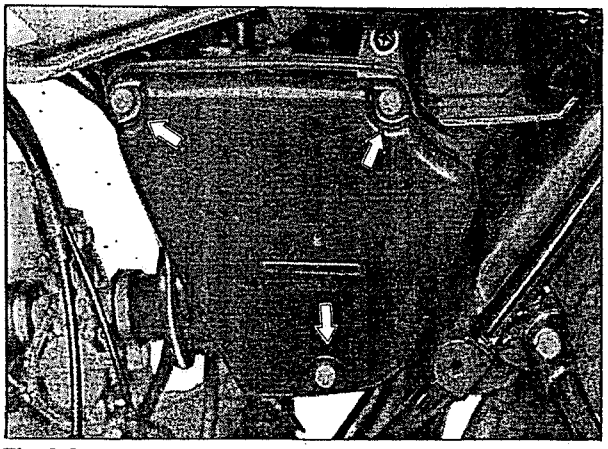


Fig 2.2

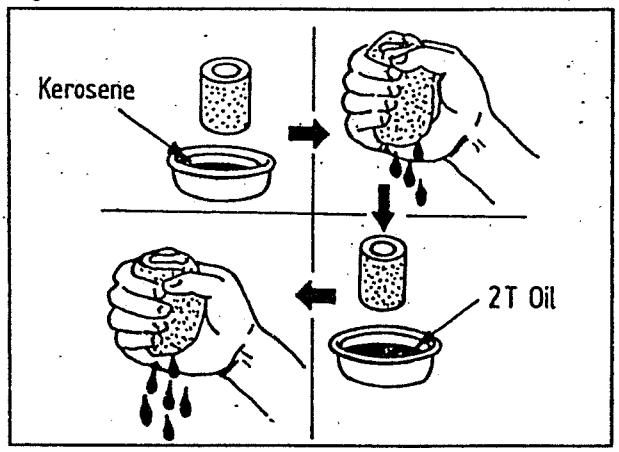


Fig 2.3

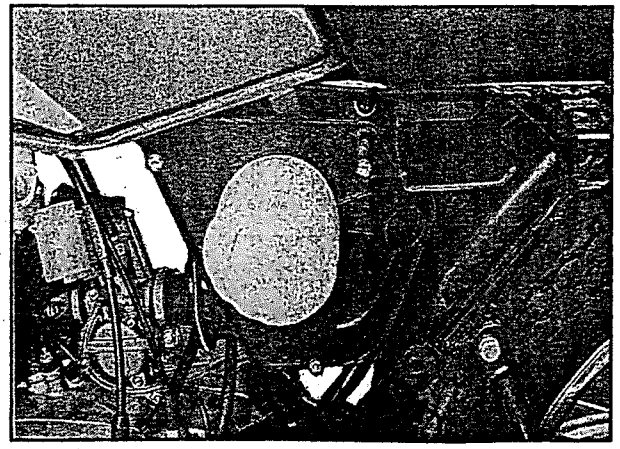


Fig 2.4

CARBURETTOR

Inspect at initial 1000 km and every 3000 km

Adjust the engine idle speed as follows :

- Start the engine and allow it to warm up.

NOTE :
A warm engine means an engine which has been run averaging 50 km/h in top gear for 9 minutes.

- Turn the throttle valve stop screw (1) (fig 2.5) so that engine idles at 1500 rpm.
- Turn the pilot air screw (2) (fig 2.5) in or out around 1/4 turn from the initial setting (refer to table). The engine rpm will increase or decrease in accordance with the turning of the pilot air screw. Set this screw in a position that allows the engine to idle at the highest rpm.
- Turn the throttle valve stop screw again and adjust the idle rpm between 1200-1500 rpm.

Idle rpm	1350 ± 150 rpm

CARBURETTOR OVERHAUL AND CLEANING

Overhaul and clean every 12000 km

- Wash the carburettor and components in a cleaning solvent after dismantling.
- Then blow compressed air through all the jets to make sure they are not clogged. Do not use wire to clear the passages.
- Before reassembly, inspect the float level and needle valve.

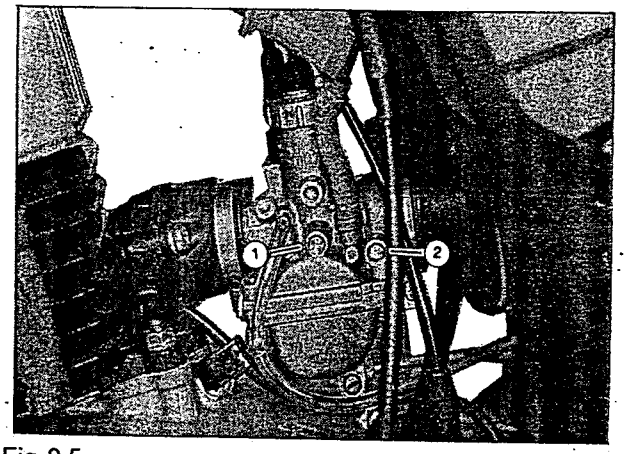


Fig 2.5

MODEL	INITIAL SETTING PILOT AIR SCREW
AX-100 STD AX-100 AC (Upto Aug'86)*	2 TURNS OUT
AX-100 STD AX-100 AC Sept'86 onwards *	1 1/4 TURNS OUT
AX-100 R AX-100 R AC NEW AX-100 AC SAMURAI MAX 100 MAX 100 R	1 3/8 TURNS OUT
AX-100 SUPRA	1 1/4 TURNS OUT
SUPRA POWERUP 11 BHP	1 1/2 TURNS OUT
SHOGUN	2 TURNS OUT
SHOGUN WITH CATALYTIC CONVERTER	1 TURN OUT

* Refers to motorcycle manufacture date.

THROTTLE CABLE

There should be 0.5 - 1.0 mm play (A) (fig 2.6) on the throttle cable. To adjust the throttle cable play:

- Tug on the throttle cable to check the amount of play.
- Loosen the lock nut 1 (fig 2.6) and turn the adjuster 2 in or out until the specified play is obtained.
- Secure the lock nut while holding the adjuster in place.

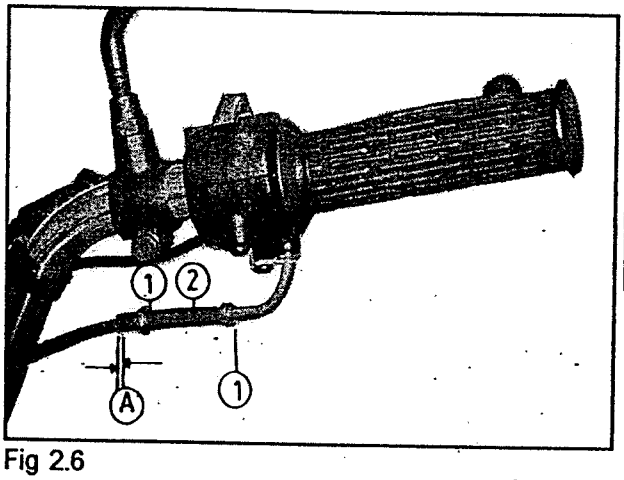


Fig 2.6

CAUTION :
This adjustment could affect the oil pump adjustment. Therefore, readjust the oil pump lever cable as necessary.

OIL PUMP

Adjust at initial 1000 km and every 3000 km

- Turn the throttle grip full open.
- Check whether the mark on the oil pump control lever is aligned with the index mark (fig 2.7) when the throttle valve is positioned as above.

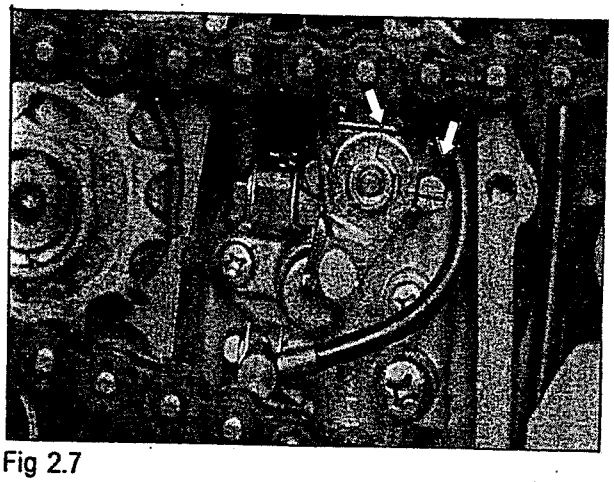


Fig 2.7

- If the marks are not aligned, adjust by means of the cable adjuster (1) (fig 2.8) to align them.

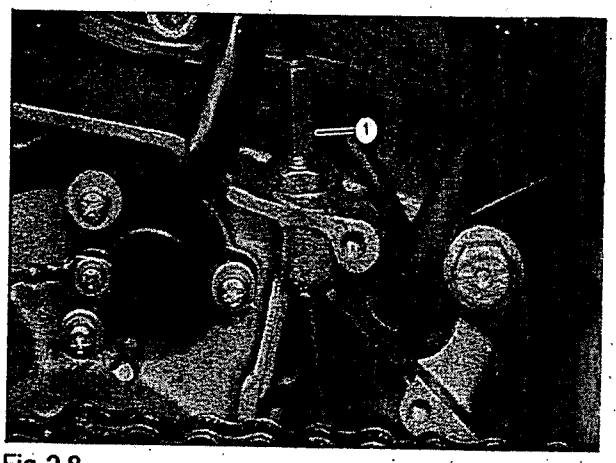


Fig 2.8

NOTE :
Oil pump cable adjustment must be done after throttle cable adjustment. If the throttle valve stop screw is altered, the cable free play should be re-checked.

CLUTCH

Clutch adjustment is done in two stages i.e. adjustment of play in clutch and that of clutch release mechanism.

Adjust at initial 1000 km and every 3000 km

- Loosen the lock nut (1) (fig 2.9) and screw in the clutch cable adjuster (2) to give sufficient play to the clutch cable.
- Temporarily loosen the lock nut (3) (fig 2.9) and tighten the release adjusting screw (4) until resistance is felt, then loosen it 1/4 - 1/2 turn.
- Secure the lock nut (3) (fig 2.9)
- Adjust the clutch cable adjuster (2) (fig 2.9) again until approximately 4 mm of play remains at the bottom of the clutch lever (fig 2.10)
- Secure the lock nut (1) (fig 2.9)

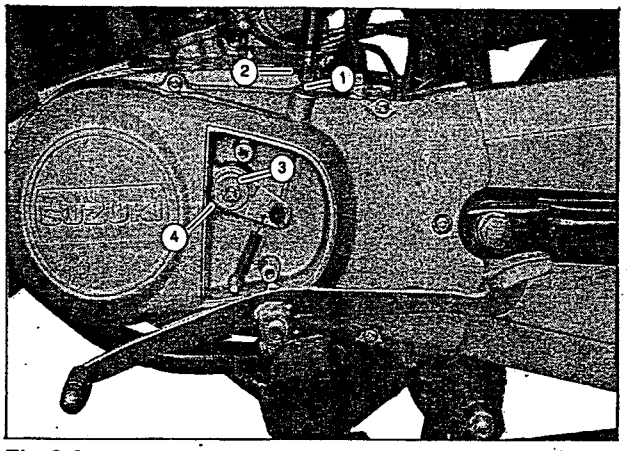


Fig 2.9

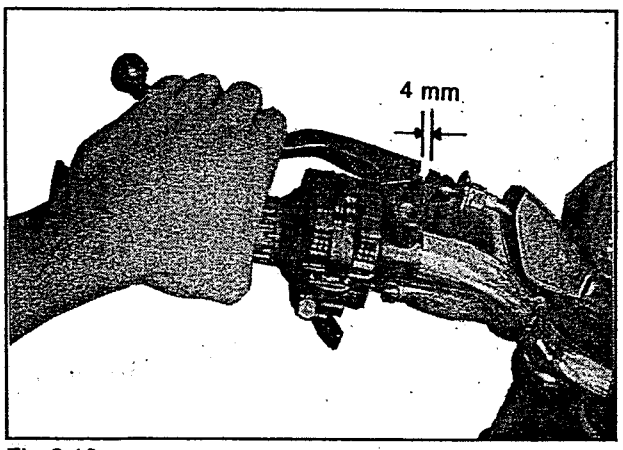


Fig 2.10

SPARK PLUG

WHAT DOES THE SPARK PLUG FACE REVEAL ?

One of the easiest ways to check an engine's operating conditions is to inspect the spark plug's face. The combustion residues left on the tip give an indication of the engine performance. Thereby corrective action can be taken.

1. NORMAL : (fig A)

If insulator tip is greyish-yellow to light brown it indicates :

- Correct running of the engine
- Plug is perfectly matched for optimum engine performance.

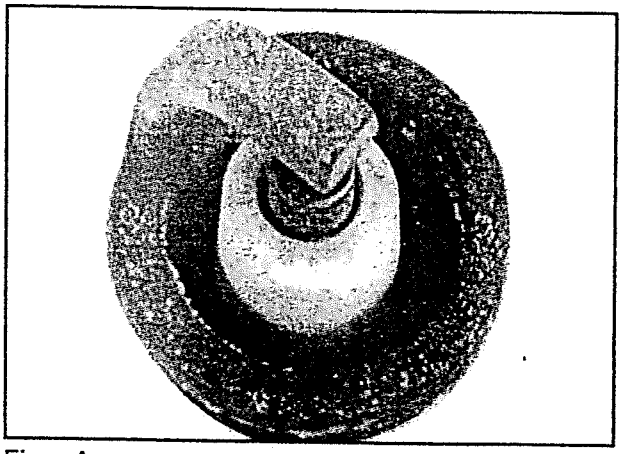


Fig : A

2. FOULED BY SOOT : (fig B)

Dull black, velvety carbon deposits on plug face indicates one or more of the following :

- Fuel-air mixture is too rich
- Electrode gap is too wide
- Too cold a plug (high heat value)
- Clogged air cleaner
- Poor compression
- Insufficient high tension voltage
- Continuous low speeds/"light" load operation.

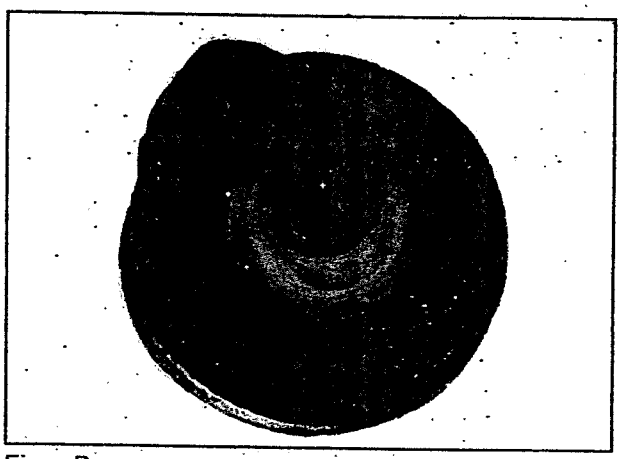


Fig : B

REMEDY :
Correct the defects or use a 'hotter' plug as an interim measure.

3. FOULED BY OIL : (fig C)

Shining black 'wet' carbon deposits indicate :
- too much oil in the fuel mixture

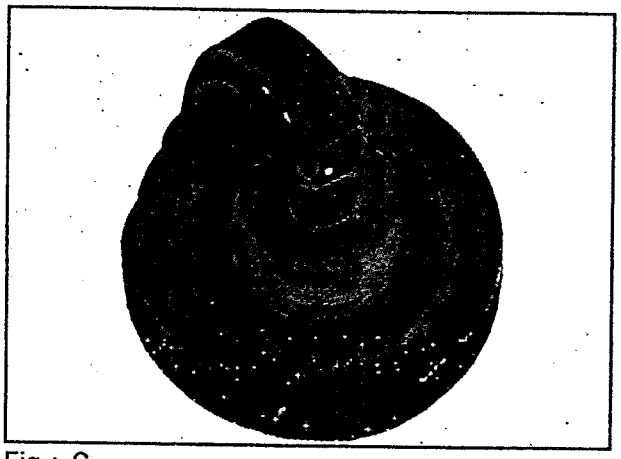


Fig : C

REMEDY :
Correct the above defects or fit a 'hotter' spark plug as an interim measure.

4. OVERHEATED : (fig D)

Metal particles on insulator tip, eroded electrodes, insulator burnt white, with pearly deposits of metallic enamel beads indicate :

- Overheated engine/too lean a mixture
- Spark plug not tightened properly leading to compression leak
- too 'hot' a plug

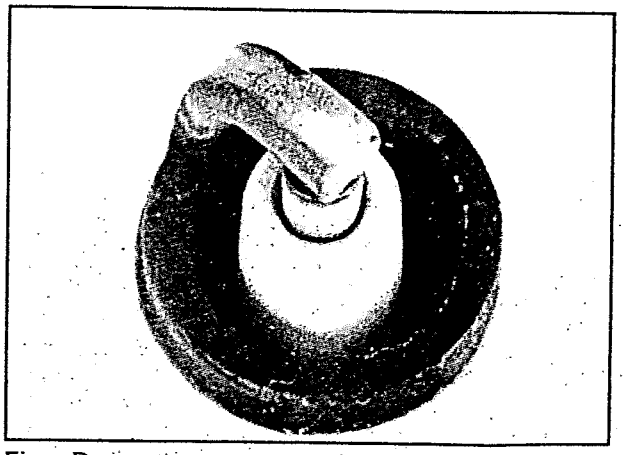


Fig : D

REMEDY
Rectify the above defects or fit a 'colder' plug as an interim measure.

SPARK PLUG

Check and clean at initial 1000 km and every 3000 km

Neglecting the spark plug eventually leads to difficult starting and poor performance. If the spark plug is used for a long period, the electrode gradually burns away and carbon builds up along the inside part. In accordance with the periodic inspection chart, the plug should be removed for inspection, cleaning and to reset the gap (fig 2.11)

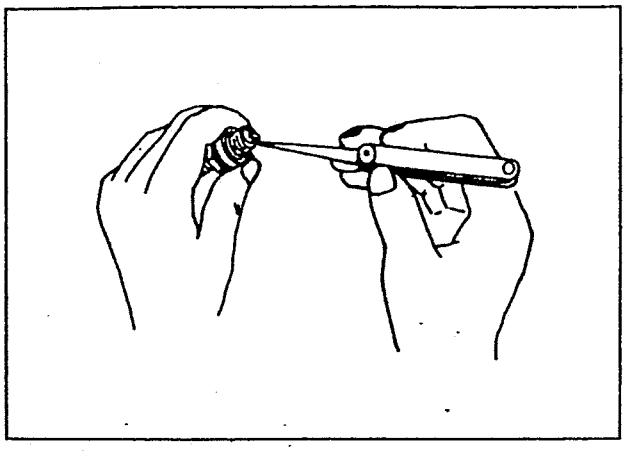


Fig 2.11

- Carbon deposits on the spark plug will prevent good sparking and cause misfiring. Clean the deposits off periodically, with small wire brush or with spark plug cleaning machine.

- If the centre electrodes is fairly worn down, the plug should be replaced and the plug gap set, to the specified gap using a feeler gauge (fig 2.12)

031 010 0	Feeler gauge
Spark plug gap	0.6 - 0.8 mm

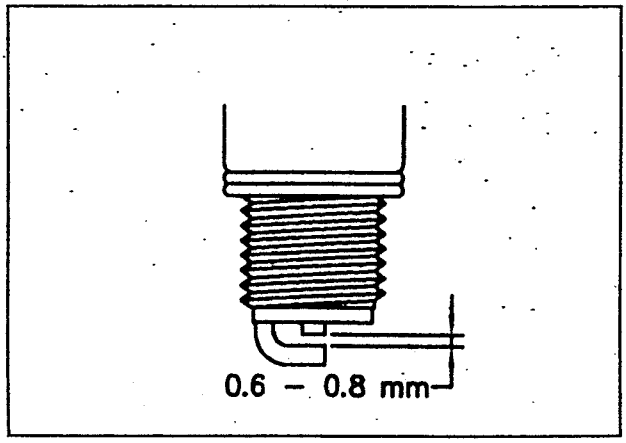


Fig 2.12

- Check spark plug for wearout on earth and centre electrode. If the earth electrode has worn off to a knife edge and centre electrode has receded in height, replace the plug as per recommendation chart.

CAUTION :

- **Always use only the recommended make and type of spark plugs.**
- **Do not over torque or cross thread the spark plug otherwise the aluminium threads of cylinder head will be damaged. Do not allow dirt to enter the engine through the spark plug hole when the plug is removed.**

SPARK PLUG

MODEL	MICO	NGK	MODI CHAMPION	CYLINDER HEAD TYPE
AX-100 STD/AC	W 5 D1	BP7ES	N9YC	NON-SQUISH
AX-100 STD/AC	W 5 BC	BP7HS	L82YC	* SQUISH
AX-100 R/R AC, NEW AX-100 AC SAMURAI, MAX 100, MAX 100 R	W 5 BC WR5BC	BP7HS	L82YC	SQUISH
AX-100 SUPRA 9.65 BHP SUPRA POWER UP 11 BHP	W 5 DC	BP8ES	N6YC	NON-SQUISH
SHOGUN	–	BP8HS	–	SQUISH

* Introduced from engine No.118990 onwards.

FUEL HOSE

Inspect at initial 1000 km and every 3000 km. Replace if found damaged or hardened.

FUEL COCK SEDIMENT CUP

Clean at initial 1000 km and every 3000 km

If the fuel cock is dirty with sediment or water, petrol will not flow smoothly and a loss in engine power may result. Clean the cup, leaving the fuel cock in OFF position (fig 2.13)

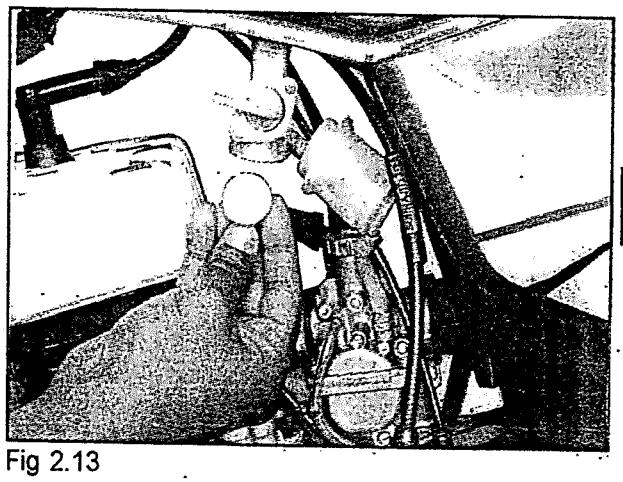


Fig 2.13

FUEL TANK AND FUEL COCK FILTER

Clean every 6000 km

ENGINE OIL

Inspect at initial 1000 km and top up every 800 km

Before starting the engine, ensure that there is oil in the oil tank by the oil level indicator light in the instrument panel. If the oil level indicator light remains 'ON' in 'DAY' or 'NIGHT' switch positions replenish the oil tank with the recommended engine oil. (fig 2.14)

OIL TANK CAPACITY	1.3 LITRES

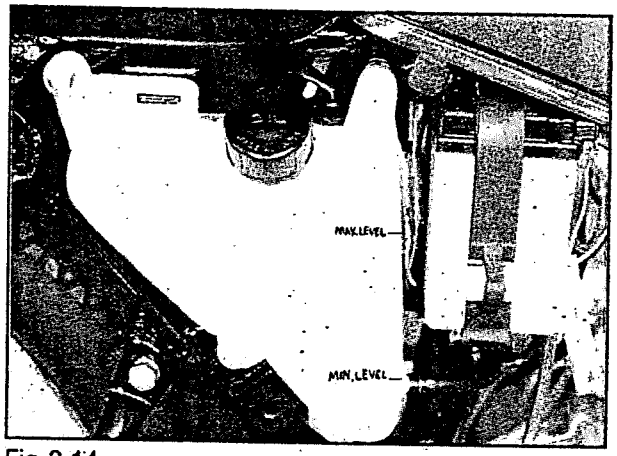


Fig 2.14

For AX-100 AC, NEW AX-100 AC, RAC, MAX 100 and MAX 100 R models, oil level in the oil tank is indicated by the oil level gauge provided on the oil tank. The level can be viewed through the window provided on the right hand side frame cover (fig 2.15)

Fig 2.15

CYLINDER HEAD, CYLINDER AND MUFFLER

Remove carbon every 6000 km

Carbon deposits in the combustion chamber of the cylinder head and on the piston crown will raise the compression ratio and may cause pre-ignition or overheating. Carbon deposited at the exhaust port of the cylinder will prevent the smooth flow of exhaust, reducing the engine power out-put. Remove carbon deposits periodically. (fig 2.16)

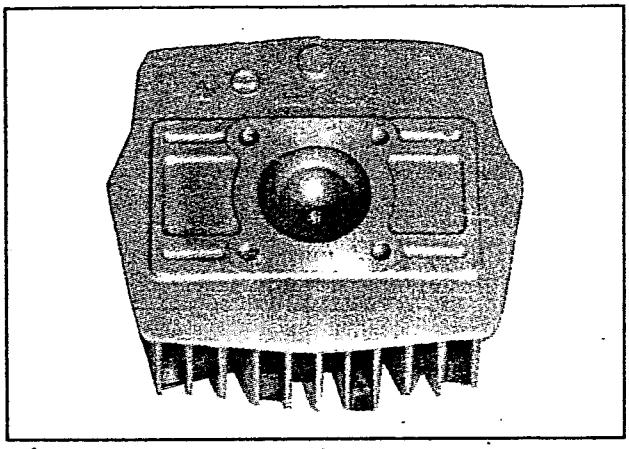


Fig 2.16

Be careful not to damage the surface of the combustion chamber and exhaust port when removing carbon. Also clean the muffler baffle pipe periodically by taking it out after unscrewing the lock screw.

BATTERY

Inspect at initial 1000 km and every 3000 km

- Check to be sure that the vent pipe is secured properly and routed correctly. (fig 2.17)

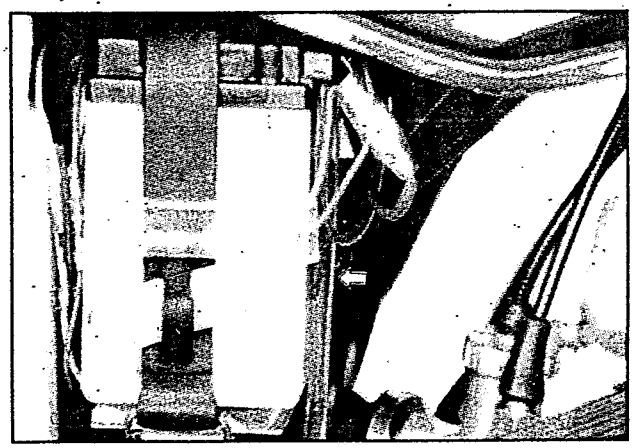


Fig 2.17

- Add distilled water, as necessary, to keep the surface of the electrolyte above the LOWER level line but not above the UPPER level line. (fig 2.17A)

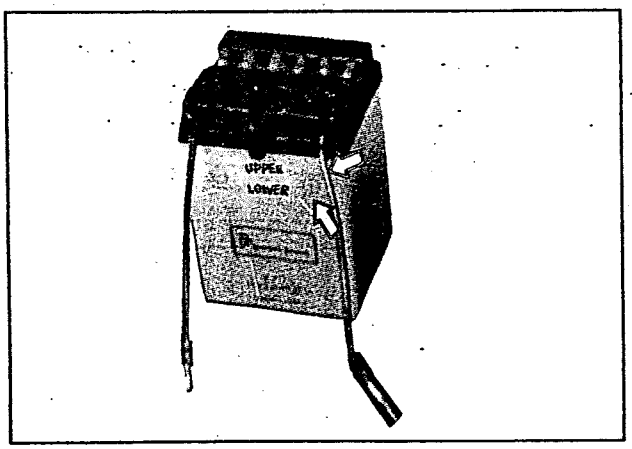


Fig 2.17A

- If the electrolyte level falls rapidly and requires frequent addition of distilled water, check the charging system for proper charging rate.

Battery specification					
Type	AMCO 6N4-2A	NICCO 3Z4	EXIDE 6MX4-2A	AMCO YB2.5L-C	CROMPTON GREAVES / GERMANIA
Voltage	6V	6V	6V	12V	12V
Capacity	4Ah/10HR	4Ah/10HR	4Ah/10HR	2.5Ah/10HR	2.5Ah/10HR
Electrolyte specific gravity	1.24 at 30° C				

CAUTION :
Ensure that the battery is linked to the electrical circuit. If the engine is to be started without the Battery disconnect the rectifier.

- Periodically, check the electrolyte for specific gravity by using a hydrometer to find the state of charge.

- Specific Gravity reading under 1.22 at 30° C means that the battery needs recharging off the machine: take it off the vehicle and charge it on a constant current charger otherwise it can damage the rectifier.

031 310 0	Hydrometer

CAUTION :
- **Do not add tap water or acid for battery topping up. Use only distilled water. Reconnect the battery vent hose after reinstalling the battery.**

TRANSMISSION OIL

Change at initial 1000 km and every 6000 km

After long periods of use, the transmission oil will deteriorate and quicken the wear of sliding and interlocking surfaces. Replace the transmission oil periodically following the procedure below.

- Start the engine to warm up the oil (this will facilitate draining of oil).

- Unscrew the oil filler plug (1) (fig 2.18) and drain plug (2) (fig 2.19) and drain the oil completely.

- Tighten the drain plug.

- Fill with a good quality SAE 20W40 multigrade motor oil.

Capacity	900 ml approx

- Check the oil level with oil level screw (3) (fig 2.20)

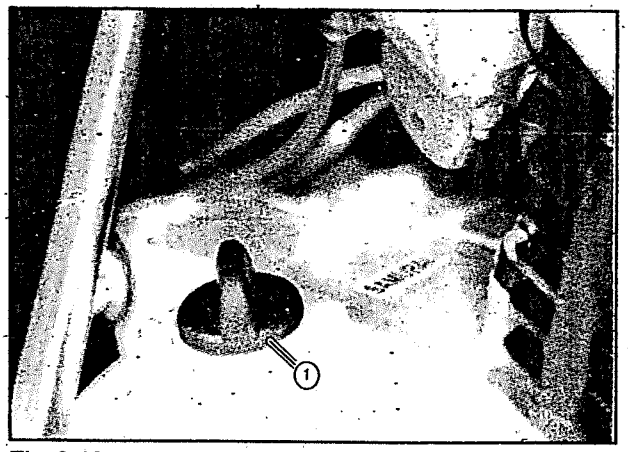


Fig 2.18

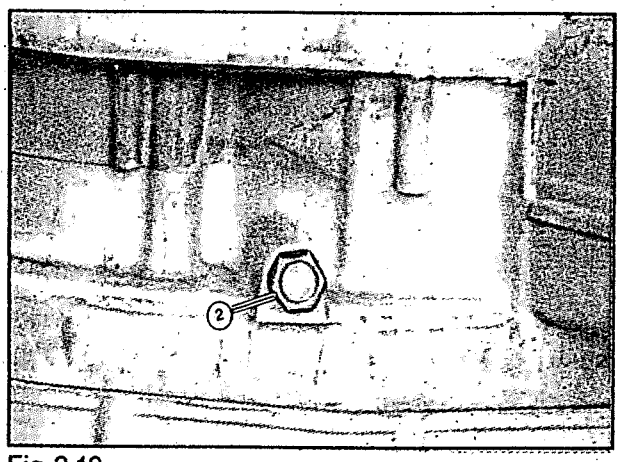


Fig 2.19

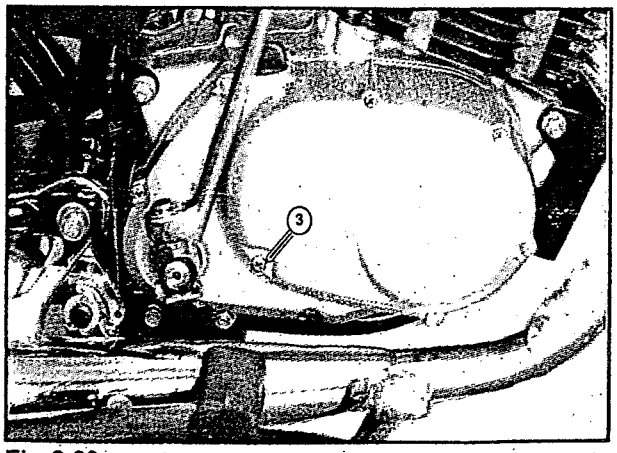


Fig 2.20

IGNITION TIMING

Inspect at initial 1000 km and every 3000 km

Remove magneto cover and clip the timing light cord to the high tension lead.

Start the engine. Aim the light from the timing light (fig 2.21) at the aligning mark (1) (fig 2.22) on the crankcase.

Raise the engine speed to 3000 rpm. At this time, the ignition timing is proper if the aligning mark (1) is aligned with the line (2) (fig2.22) on the magneto rotor when the timing light flashes.

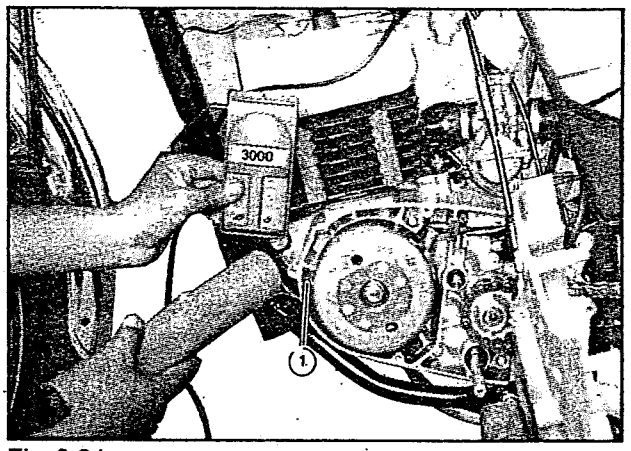


Fig 2.21

031 340 0	Timing light
031 309 0	Tachometer
331 011 00	Rotor remover

If the ignition timing is not correct, adjustment of the timing is required.

NOTE :
In shogun, magneto rotor consist of two timing marks. First mark and Second mark coincide with crankcase mark at 3000 rpm and 8000 rpm respectively.

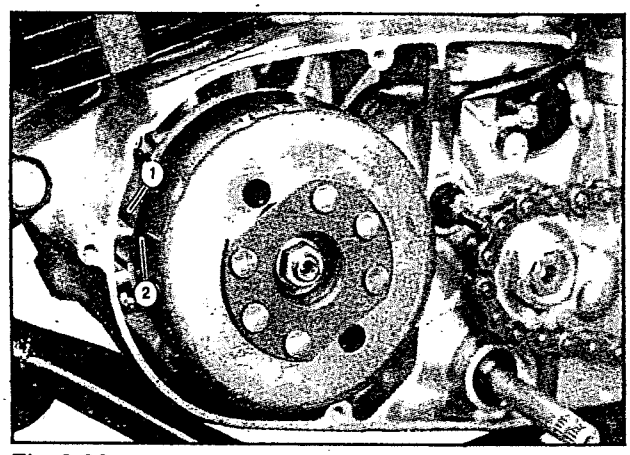


Fig 2.22

The ignition timing may have to be advanced or retarded. Reference marks (3) and (4) (fig 2.23) have been provided on the crankcase and stator plate respectively. These marks are to be used as reference whenever the stator plate setting is disturbed. Initially these marks should be in alignment. If the timing is to be advanced, rotate the stator plate in the clock-wise direction. If the timing is to be retarded, rotate the stator plate in the anti-clock wise direction.

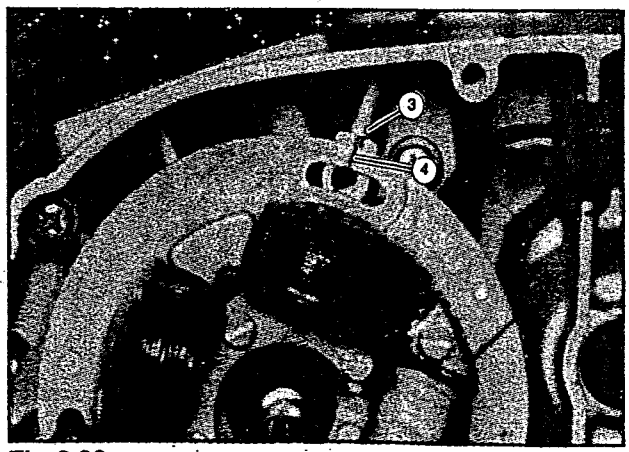


Fig 2.23

BRAKES

Adjust at initial 1000 km and every 3000 km

WARNING :
Brakes are items of personal safety and should always be maintained in proper adjustment.

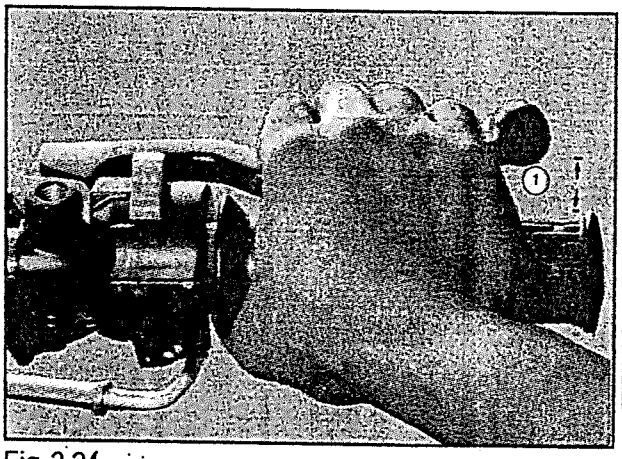


Fig 2.24

Front Brake

- Measure the clearance between the brake lever end and throttle grip when brake is fully applied. Adjust the clearance (1) (fig 2.24) 20-30 mm by turning the front brake adjusting nut (2) (fig 2.25)

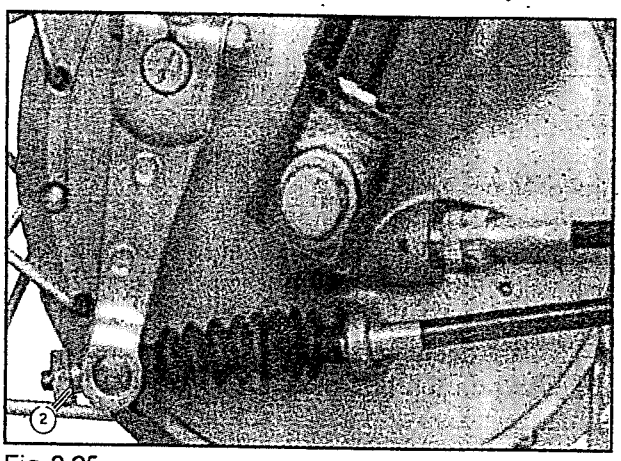


Fig 2.25

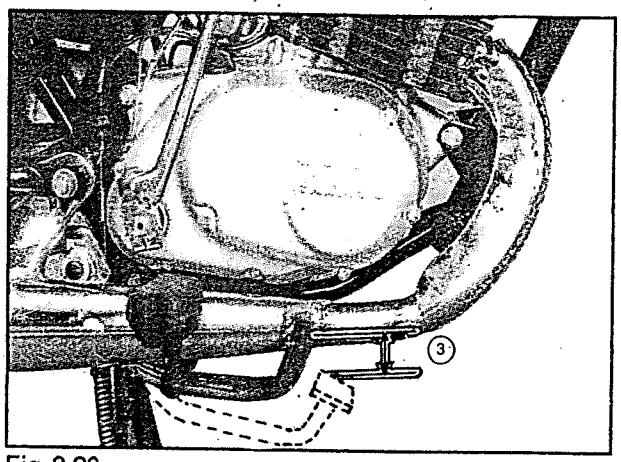


Fig 2.26

Rear Brake

- Adjust the free travel of the brake pedal (3) (fig 2.26) to 20-30 mm by turning the rear brake adjusting nut (4) (fig 2.27)

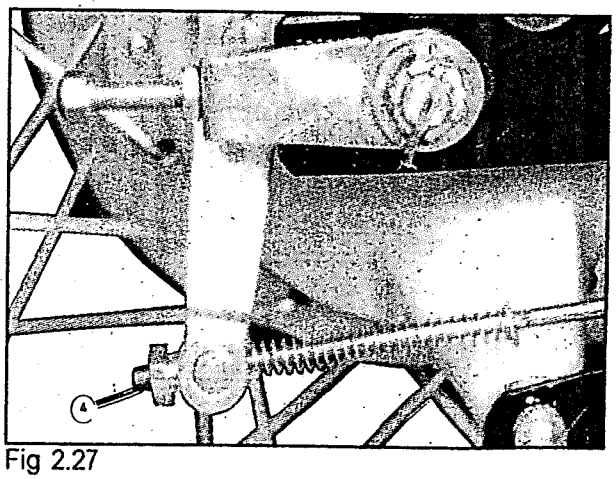


Fig 2.27

Rear Brake light switch

- The rear brake light switch is located under the right frame cover. To adjust brake light switch, raise or lower the switch by rotating the nut (1) (fig 2.28) so that the brake light will come on just before a pressure rise is felt when the brake pedal is depressed.

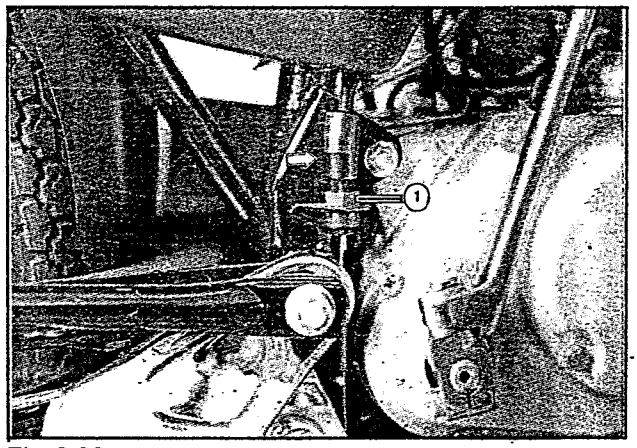


Fig 2.28

Brake Shoe Wear

This motorcycle is equipped with brake lining wear limit indicator on front and rear as shown in (fig 2.29). The extension line of the index mark on the brake camshaft should be within the range embossed on the brake panel with brake **'ON'**

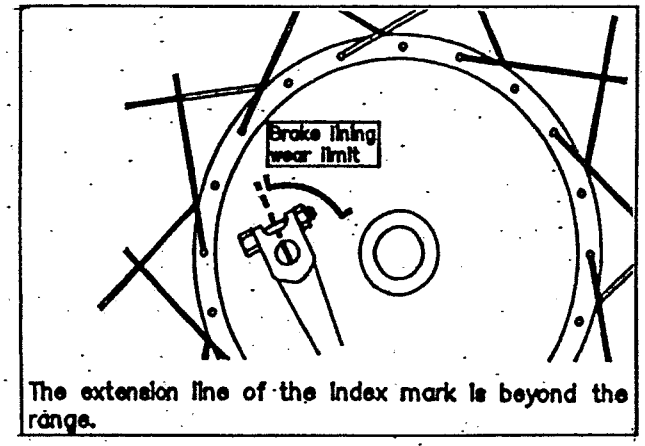


Fig 2.29

To check wear of the brake lining, perform the following steps :

- First check if the brake system is properly adjusted.
- While operating the brake, check to see that the extension line of the index mark is within the range on the brake panel.
- If the index mark is beyond the range as shown in (fig 2.30) the brake shoe assembly should be replaced with a new one, as a set.

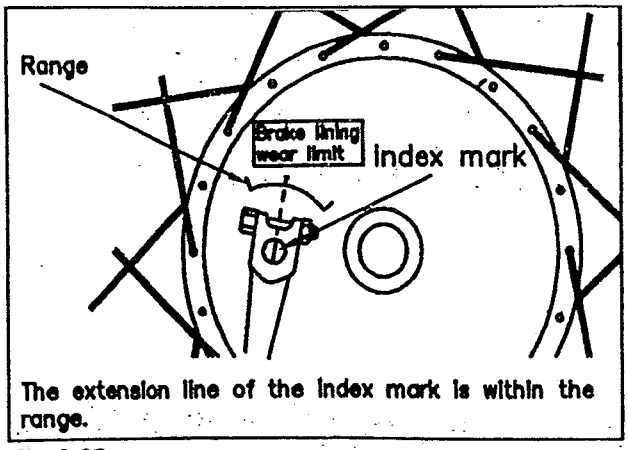


Fig 2.30

DRIVE CHAIN

Lubricate on the vehicle every 1000 km.
Use SAE 40 or SAE 50 oil only (fig 2.31)

WARNING :
These recommendations are at the maximum interval between the adjustment penods. The drive chain adjustment should be checked every time the machine is operated. Excessive chain slack could cause the chain to come off the sprockets and result in accident or serious engine damage.

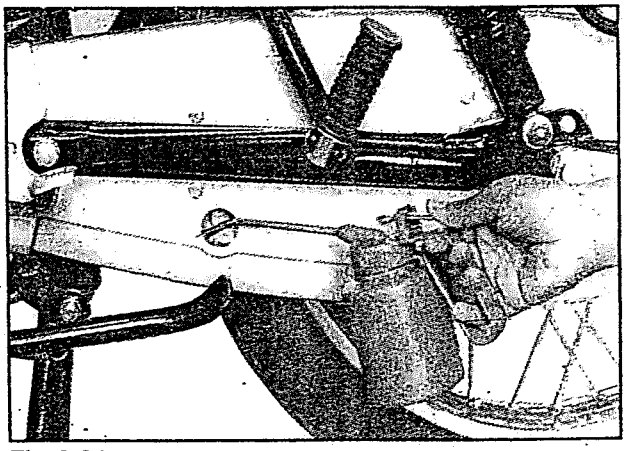


Fig 2.31

Visually inspect the drive chain for the below listed possible defects. (Lift the rear wheel by placing the vehicle on the centre stand, and turn the rear wheel slowly by hand, with the transmission in NEUTRAL)

Inspect for :

1. Loose pins
2. Damaged rollers
3. Rusted links
4. Twisted or seized links
5. Excessive wear

If any of the above defects are found, the drive chain must be replaced.

Clean and lubricate chain off the vehicle every 3000 km

Drive chain cleaning and lubrication

- Remove the drive chain off the vehicle. Clean by dipping in kerosene. Brush off any dirt sticking to it and dry.
- Dip the chain in molten Servo Grease MP (fig 2.32). Remove the chain and allow it to cool before refitting. Ensure that the sprockets are clean.

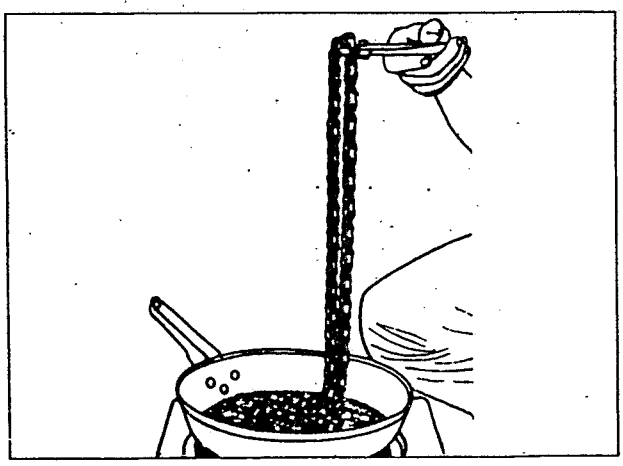


Fig 2.32

CAUTION :
The drive chain joint clip should be fitted in such a way that the split end should face the opposite direction of rotation of the chain (fig 2.33).

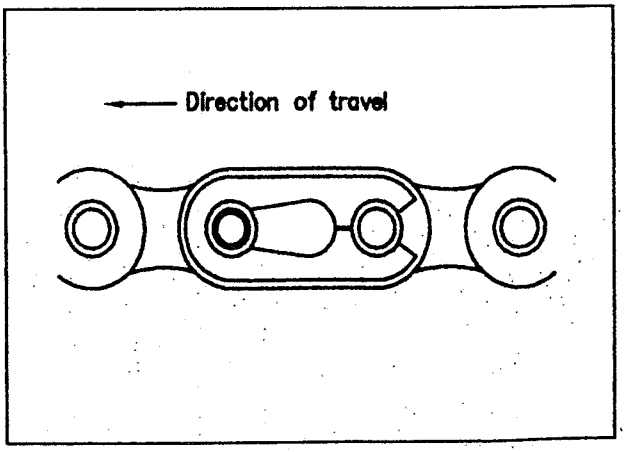


Fig 2.33

NOTE :
The two sprockets should be inspected for wear when a new chain is installed. Replace worn sprockets before fitting the chain.

Check the drive chain for wear and adjust the chain tension as follows :

- Loosen axle nut (1) after pulling out cotter pin (2) on the right hand side of the vehicle (fig 2.34).
- Loosen the lock nut (3) of both sides of the vehicle (fig 2.34) and (fig 2.35)
- Loosen sprocket nut (6) (fig 2.35) on the left hand side of the vehicle.

Chain Wear

- Tense the drive chain carefully by tightening the adjuster bolts (4) on left as well as on the right hand side.
- Count out 21 pins (over 20 pitches) on the chain and measure the distance. If the distance exceeds 259.0 mm, the chain must be replaced (fig 2.36)

Chain Sag

- Loosen the adjuster bolts (4) (fig 2.34) until the chain has 25-35 mm of sag at the middle between engine and rear sprockets (fig 2.37)
- The notch (7) on both chain adjusters must be at the same position on the scale (5) to ensure that the front and rear wheels and the sprockets are correctly aligned (fig 2.34 and fig 2.35).
- After adjusting the drive chain, tighten the axle nut (1) and sprocket nut(s) securely and lock with cotter pin (2). Always use a new cotter pin.

SPROCKETS

These should be examined for any damage, breakage or excessive wear on teeth and looseness of sprocket mounting nut(s).

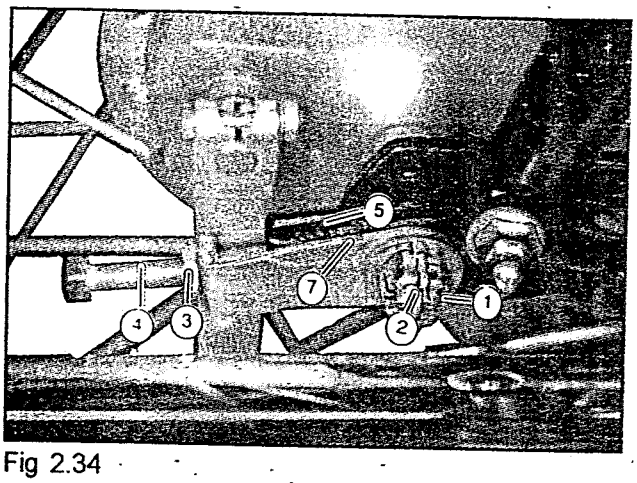


Fig 2.34

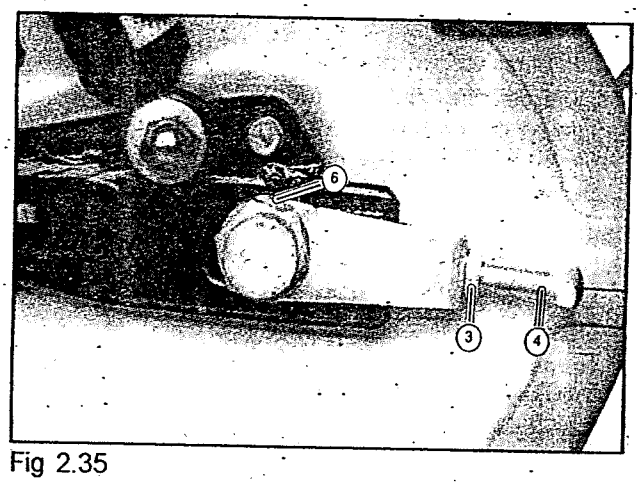


Fig 2.35

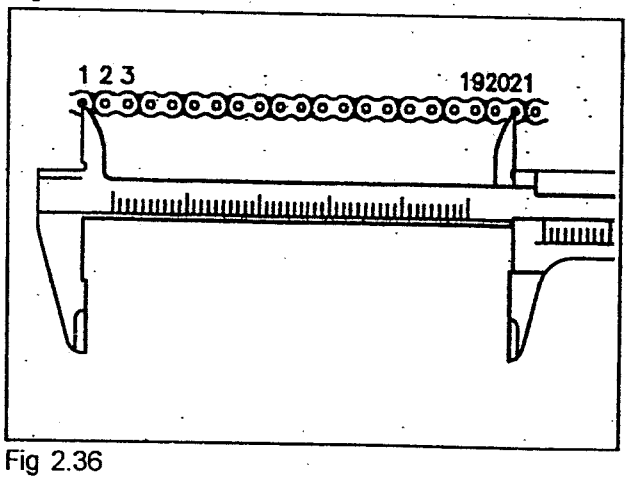


Fig 2.36

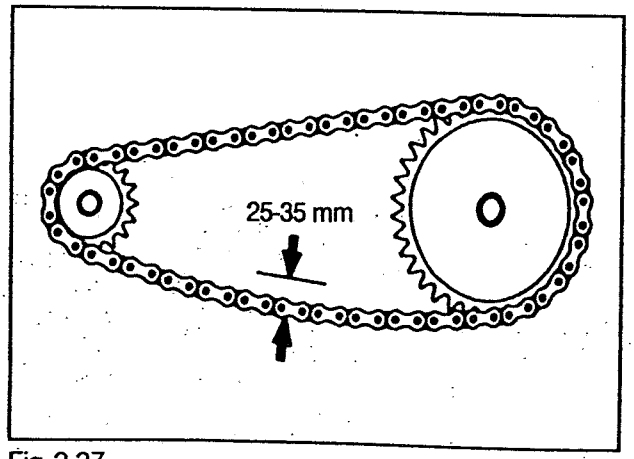


Fig 2.37

STEERING

Check at initial 1000 km and every 3000 km

Steering should be adjusted correctly for smooth movement of handlebar and for safe riding. Stiff steering prevents smooth movement of handlebar and loose steering will cause poor directional stability.

Check to see that there is no play in the steering bearings (fig 2.38).

If any play is found, adjust the steering as follows:

- Support the motorcycle on the centre stand so that the front wheel is off the ground.
- Dismount the fuel tank from the frame.
- Loosen the steering stem head bolt (1) the fork cap bolts (2) (fig 2.39) and lower clamp bolts (3) (fig 2.40)
- Turn the steering stem nut (4) clockwise or anti-clockwise to tighten or loosen the steering respectively. Use special tool (5). (fig 2.39)

031 380 1	Universal clamp wrench

- Re-tighten the steering stem head bolt and then the cap bolts and clamp bolts. Check that the handle bar moves smoothly on either side.

NOTE :
Tighten the steering so that the handlebar pivots freely by its own weight.

- Tighten the bolts to the following torque :

	Dia 110mm wheel hub	Dia 130mm wheel hub
Steering stem head bolt	4.5 kgm	3.5-5.5 kgm
Front fork cap bolt	4.5 kgm	2.3-3.2 kgm
Lower clamp bolt	2.0-2.7 kgm	2.0-2.7 kgm

If any play is still found, inspect the following items and replace the affected parts, if necessary.

- Wear of the inner and outer races (fig 2.41)
- Wear or damage of steel balls
- Number of steel balls
- Distortion of steering stem

NUMBER OF STEEL BALLS	
Upper race	22 pcs
Lower race	22 pcs

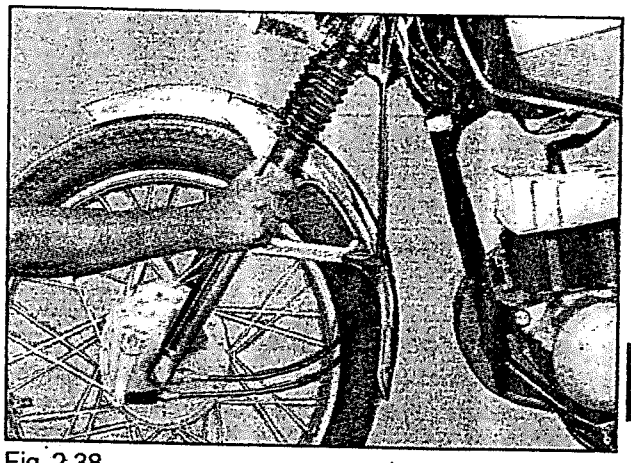


Fig 2.38

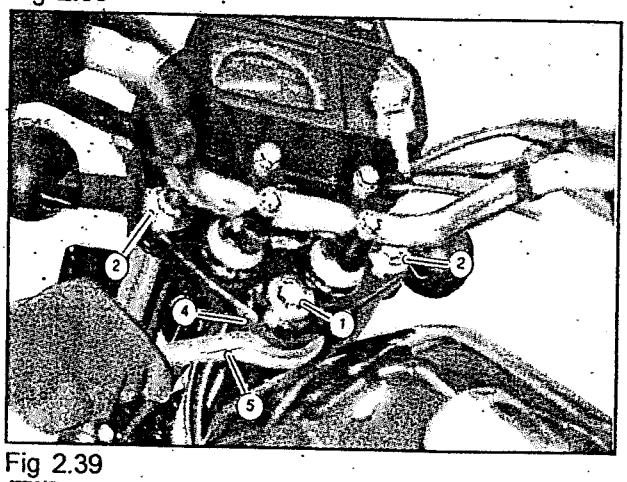


Fig 2.39

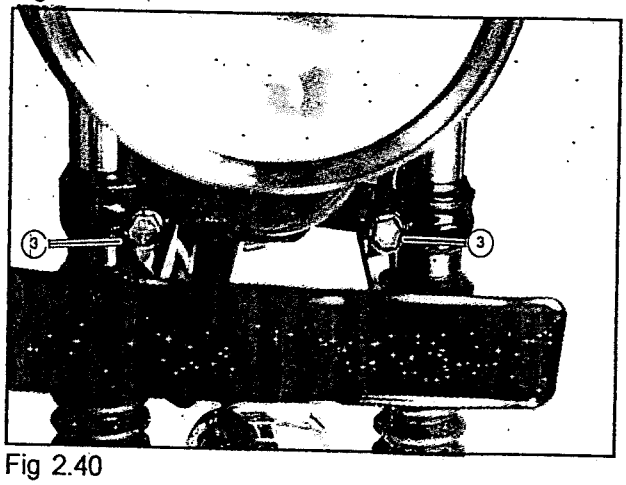


Fig 2.40

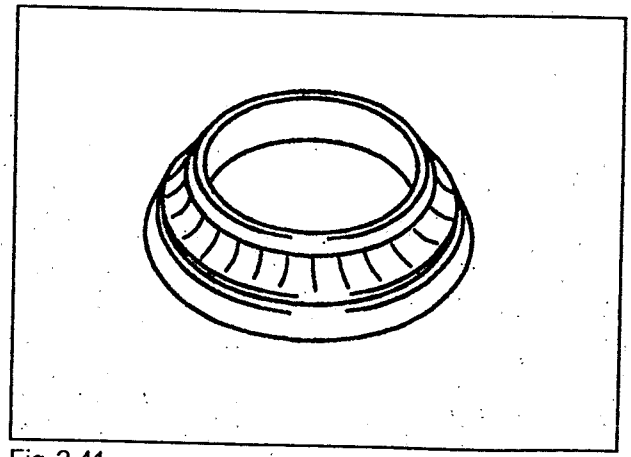


Fig 2.41

TYRES

Inspect at initial 1000 km and every 3000 km

Tyre tread condition

Operating the motorcycle with excessively worn tyres will decrease riding stability and consequently invite a dangerous situation due to loss of control. It is highly recommended to replace the tyre when the groove depth of tyre from tread surface reaches the following specifications.

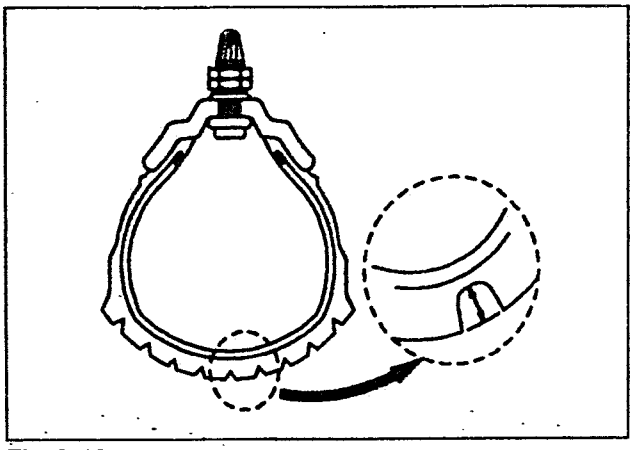


Fig 2.42

Under, inflated tyres wear faster, affect stability and make smooth cornering difficult. Over inflated tyres decrease area of tyre contact with ground causing skid or loss of control.

Therefore, maintain the correct tyre pressure for good road stability and longer tyre life. Cold inflation tyre pressure as follows :

Minimum groove depth tyre (fig 2.42)	
FRONT 1.0 mm	REAR 1.0 mm

TYRE PRESSURE	FRONT		REAR	
	Kg/cm²	Psi	Kg/cm²	Psi
Solo riding	1.75	24	2.0	28
Dual riding	1.75	24	2.25	32

FRONT FORK OIL

Change every 12,000 km

Use fork oil 20W20 for all models.

Use 155 ml / leg for AX-100 STD, AX-100 AC, New AX-100 AC model

Use 250 ml / leg for AX-100 R, AX-100 RAC, AX-100 Supra

Use 160 ml / leg for MAX 100, MAX 100 R, SAMURAI, SHOGUN

CHASSIS
Bolts & Nuts

ENGINE
Mounting Bolts

Inspect at initial 1000 km and 3000 km

The nuts and bolts listed are important parts, and they must be in good condition, for safety. They must be retightened, as necessary, to the specified torque with a torque wrench (fig 2.43 to 2.52).

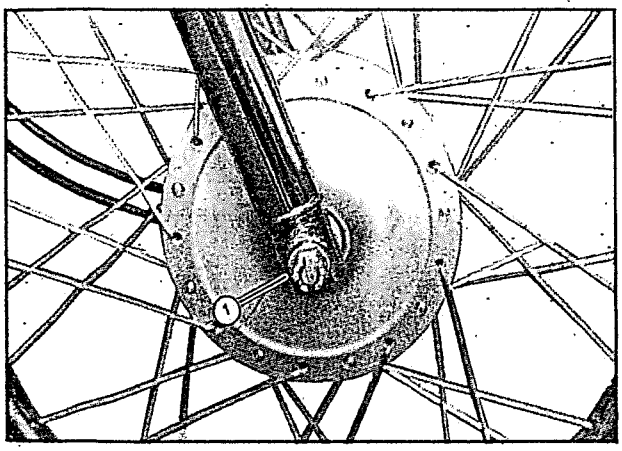


Fig 2.43

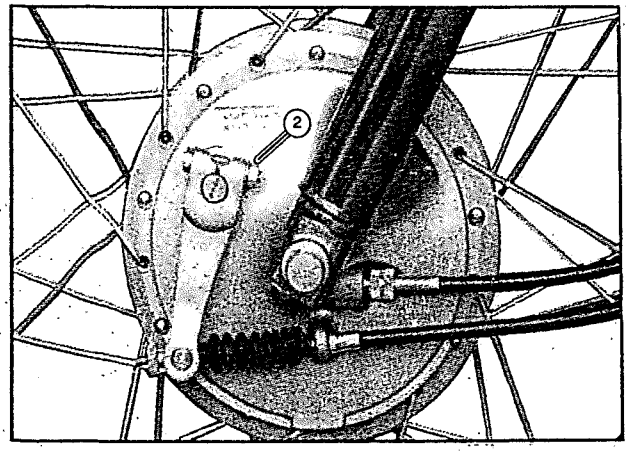


Fig 2.44

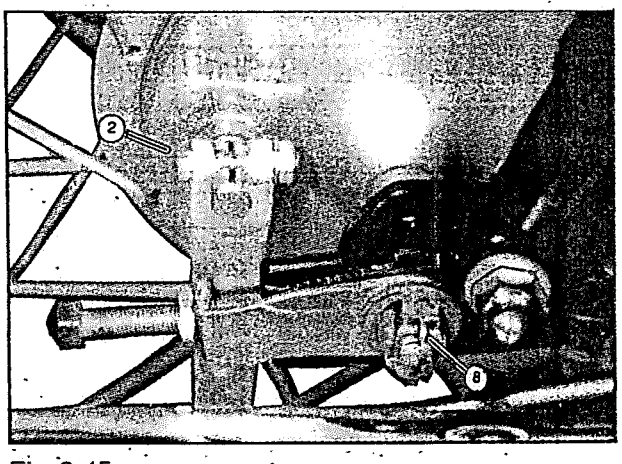


Fig 2.45

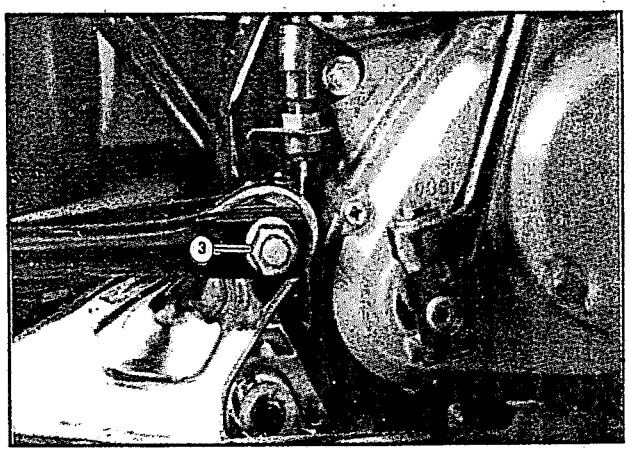


Fig 2.46

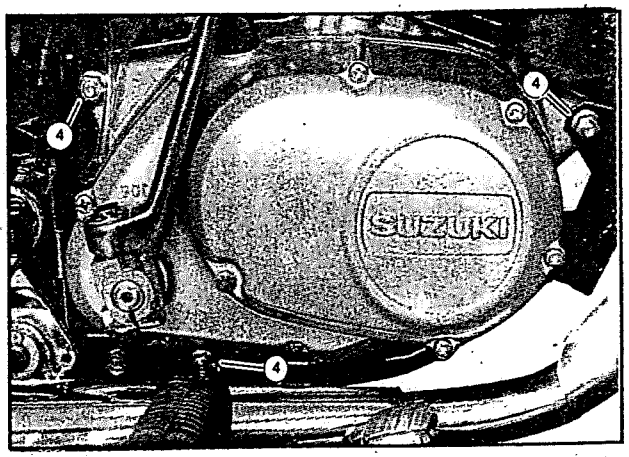


Fig 2.47

Unit : kgm

Item	Part Name	No.of Nuts	Dia 110mm wheel hub	Dia 130mm wheel hub
1.	Front axle nut	1	3.50	5.0 - 7.0
2.	Brake cam lever bolts	2	0.65	0.65
3.	Swing arm pivot nut	1	4.5 - 7.0	4.5 - 7.0
4.	Engine mounting bolt	3	3.0 - 3.5	3.0 - 3.5
5.	Cylinder head nut	4	2.0 - 2.5	2.0 - 2.5
6.	Cylinder nut	2	1.0	1.0
7.	Rear shock absorber nut	4	2.0 - 3.0	2.0 - 3.0
8.	Rear axle nut	1	3.5	5.0 - 7.0
9.	Handlebar clamp bolt	4	1.2 - 2.0	1.2 - 2.0
10.	Front fork lower clamp bolt	2	2.0 - 2.7	2.0 - 2.7
11.	Front fork cap bolt	2	4.5	2.3 - 3.2
12.	Steering stem head bolt	1	4.5	3.5 - 5.5
13.	Sprocket drum nut	1	4.5	4.5 - 6.0

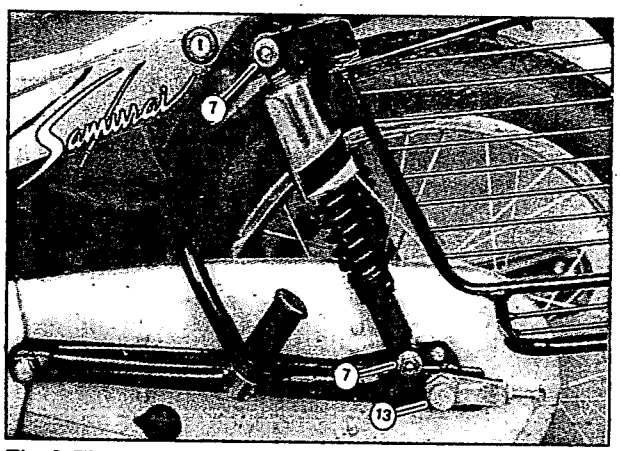


Fig 2.50

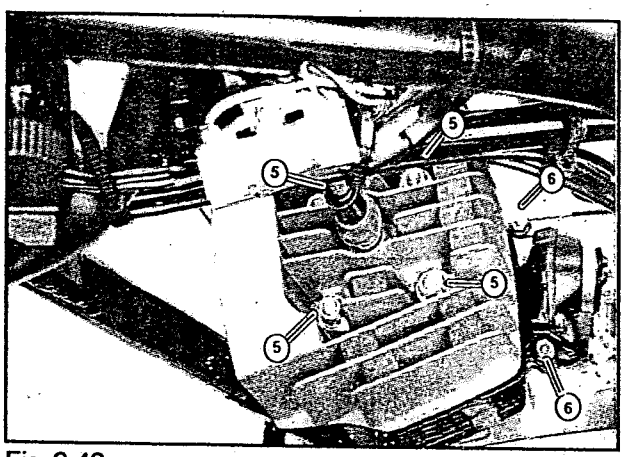


Fig 2.48

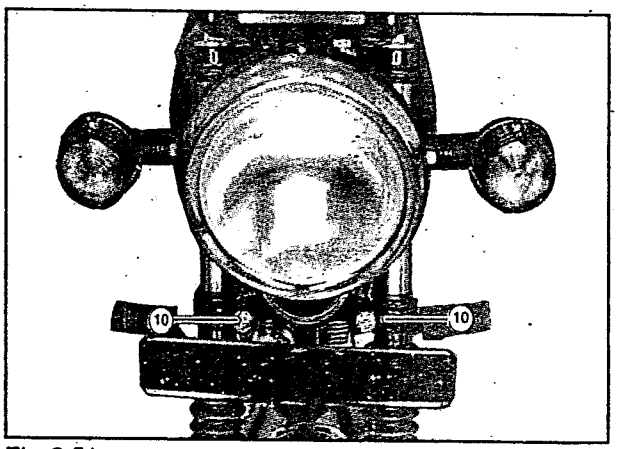


Fig 2.51

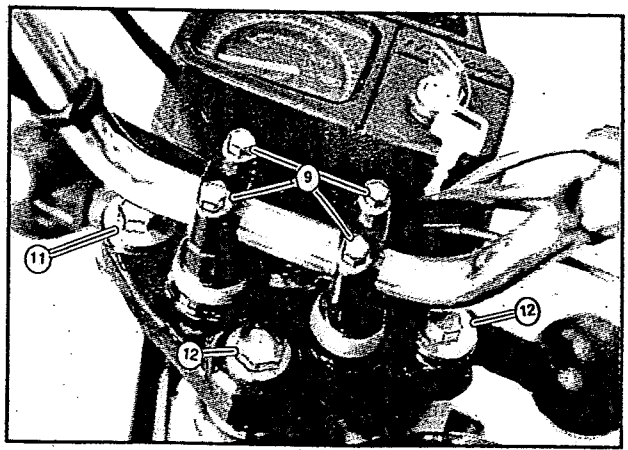


Fig 2.49

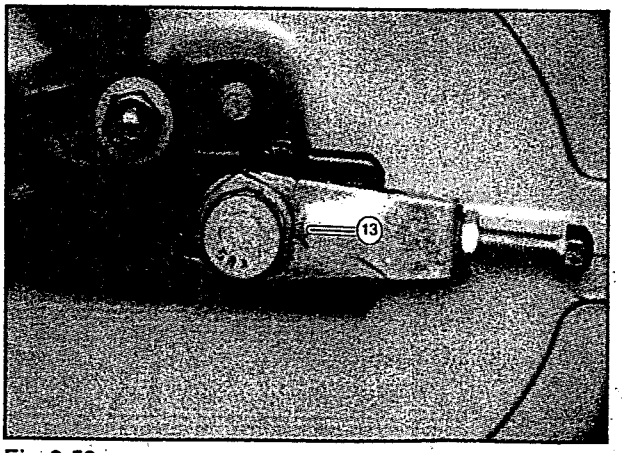


Fig 2.52

WHEEL RIM SPOKES

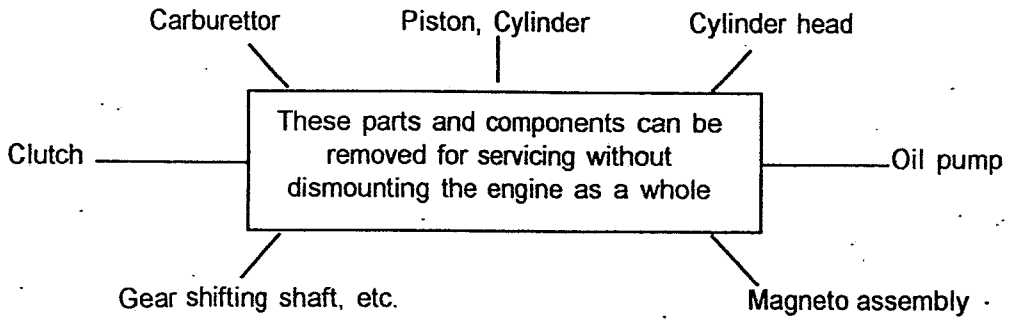
Loose wheel rim spokes and/or a run-out wheel rim is extremely dangerous. Road stability and tyre life are afftected if any of these conditions are allowed to exist.

Inspect at initial 1000 km and every 3000 km

SERVICING ENGINE

CONTENTS

ENGINE COMPONENTS REMOVABLE WITH THE ENGINE IN PLACE



ENGINE REMOVAL

Before taking the engine out of the frame, wash the engine thoroughly and drain transmission oil etc. The procedure of engine removal is sequentially explained in the following steps, and engine installation is effected by reversing the removal procedure.

- Turn the fuel cock to OFF position and disconnect fuel hose (fig 3.1)

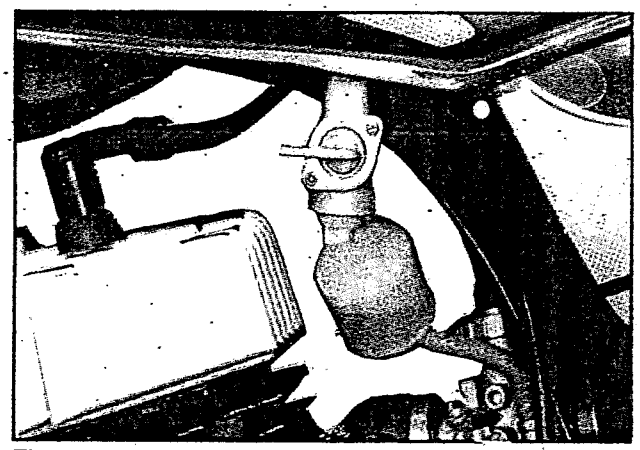


Fig 3.1

- Take off the left and right frame covers (fig 3.2 and fig 3.3)

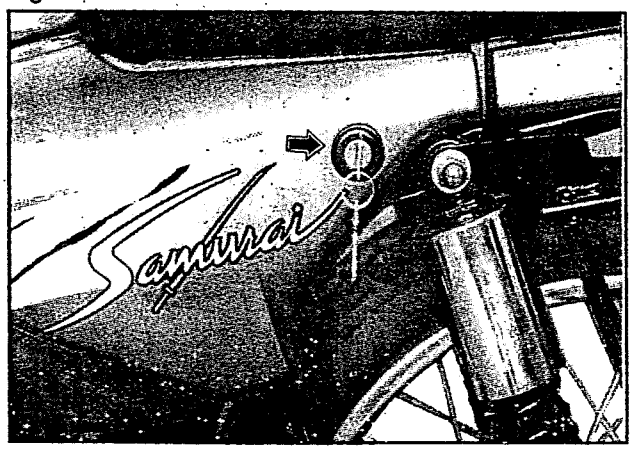


Fig 3.2

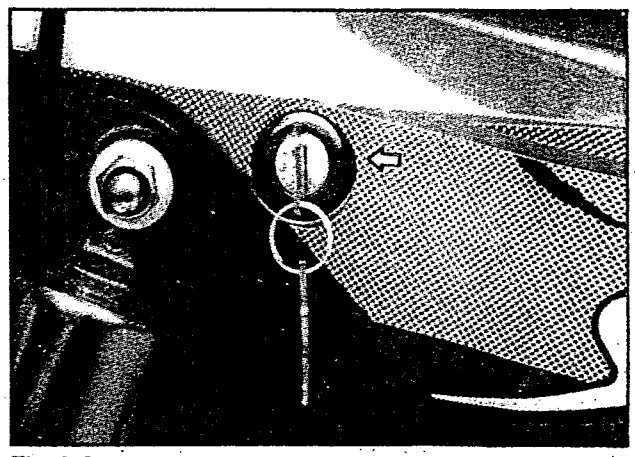


Fig 3.3

Flat screw driver medium
Philips head screw driver No.3

- Remove the seat by loosening the mounting bolts (fig 3.4)

12 / 13 mm Spanner

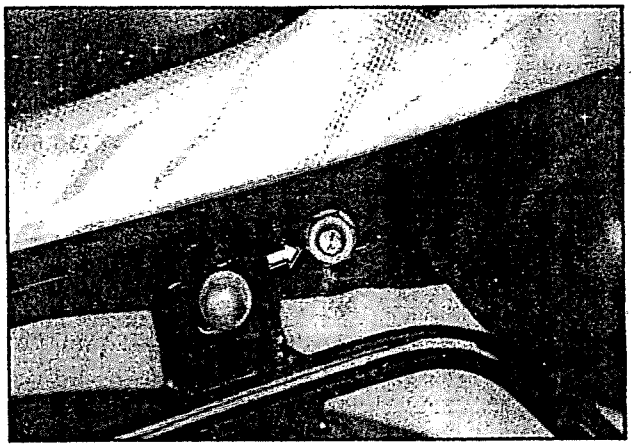


Fig 3.4

- Take off the fuel tank by loosening the mounting bolts (2 nos) (fig 3.5)

10 mm Spanner

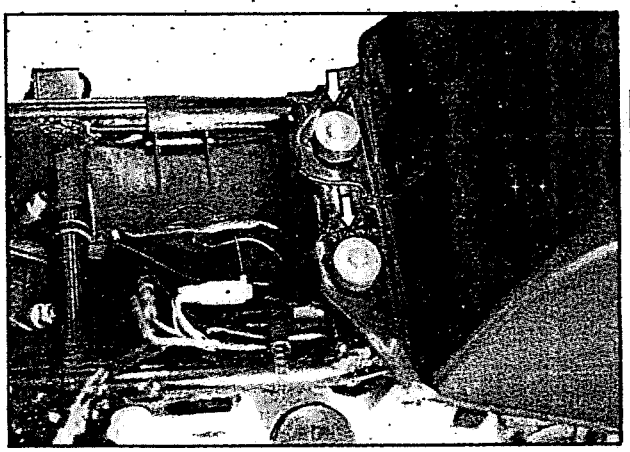


Fig 3.5

- Take off the harness clamps. (fig 3.6 and fig 3.7)

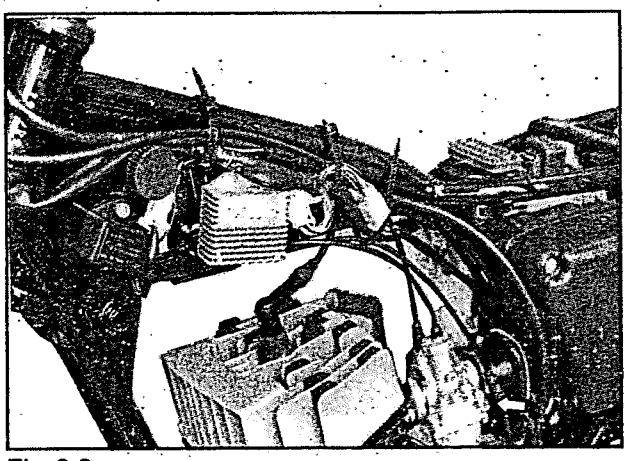


Fig 3.6

- Disconnect the magneto lead wire socket and detach the spark plug cap (fig 3.7)

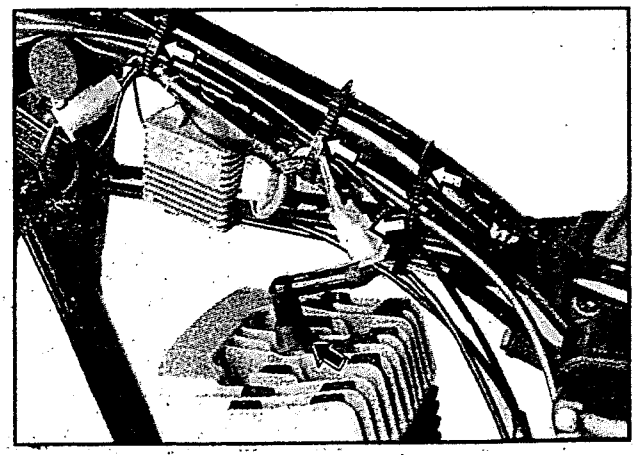


Fig 3.7

- Take off the gearshift lever and magneto cover screws (6 nos) (fig 3.8)

10 mm Spanner
Philips head screw driver No 2

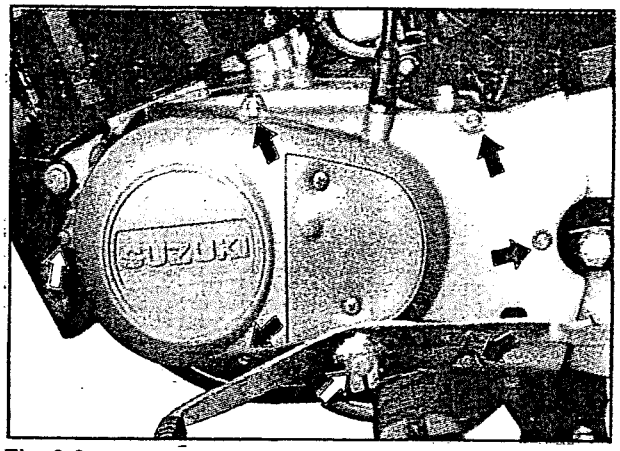


Fig 3.8

- Take off the chain (fig 3.9) by disconnecting the chain lock

Cutting plier

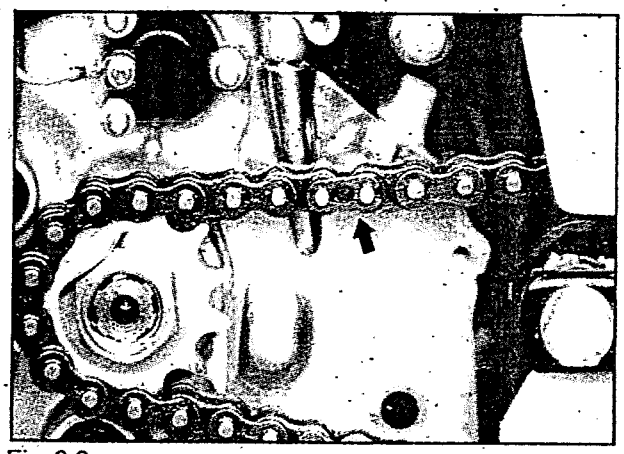


Fig 3.9

- Remove the oil pump cover screw (1no) (fig 3.10)
- Disconnect the oil pump cable (fig 3.11)

Philips head screw driver No 2

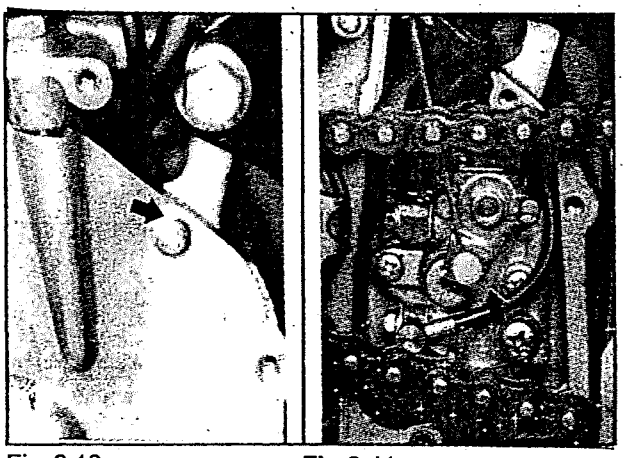


Fig 3.10 Fig 3.11

- Detach the oil hose and plug the oil outlet (fig 3.12)

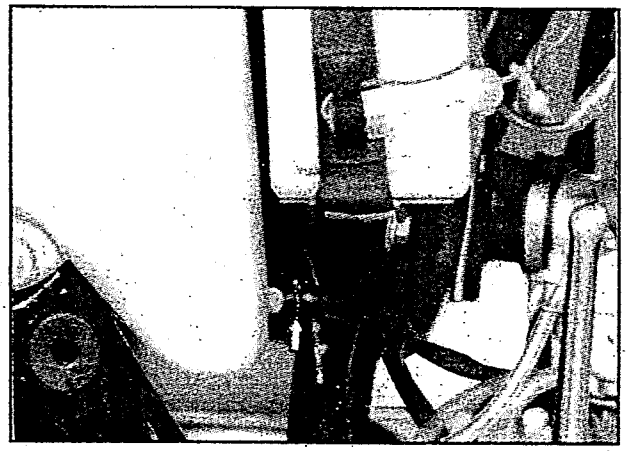


Fig 3.12

- Remove the muffler by loosening the bolts or nuts (2 nos) (fig 3.13) and swing arm pivot nut (fig 3.13A)

12 or 13 mm	Socket Spanner
17 mm	Socket Spanner

CAUTION :
Muffler bolts on cylinder should be loosened only when engine is cold to avoid damage to threads in cylinder.

Fig 3.13

Fig 3.13A

- Unscrew the carburettor clamp screws (fig 3.14)

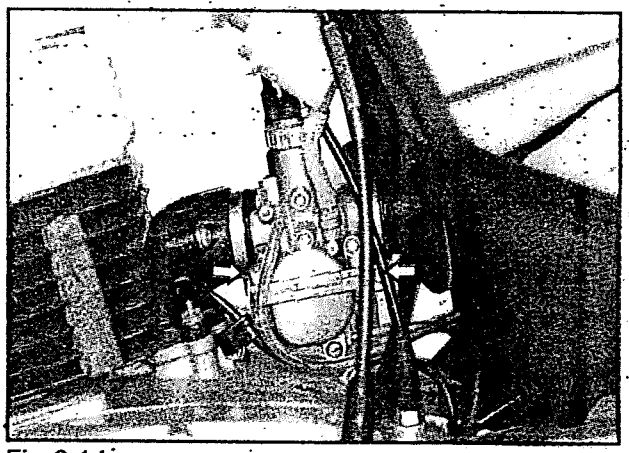


Fig 3.14

- Unscrew Air Cleaner Housing mounting screws (2 nos)Take off the Air Cleaner Housing (fig 3.15)
- Take off the carburettor

Philips head screw driver No 2
Philips head screw driver No 1

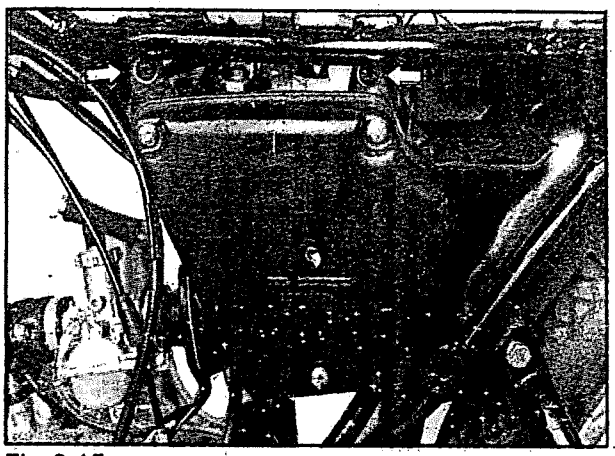


Fig 3.15

- Loosen the three engine mounting bolts (fig 3.16)

Tightening torque 3.0 - 3.5 kgm

- Dismount the engine assembly from the right side of motorcycle

CAUTION :
Self-locking nuts are used for engine mounting. Do not re-use them.

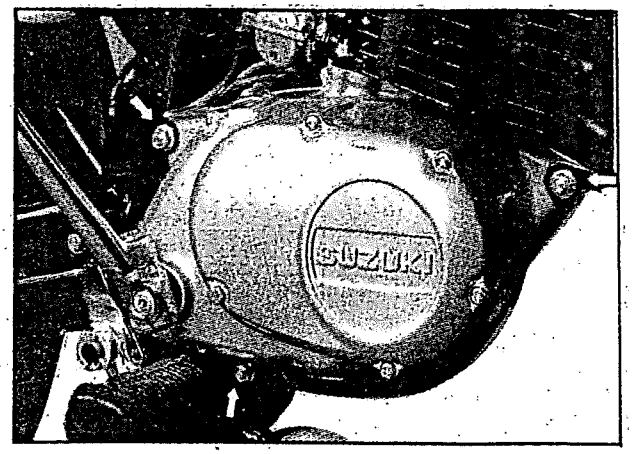


Fig 3.16

ENGINE DISASSEMBLY,

The procedure for engine disassembly is sequentially explained in the following steps :

- Loosen the nuts (2 nos) shown in (fig 3.17)
- Detach oil hose from intake pipe

10 mm Spanner

Tightening torque 1.0 kgm

- Loosen & remove nuts of cylinder head (fig 3.18)

12mm or 13mm Socket spanner (as applicable)

Tightening torque 2.0 - 2.5 kgm

- Remove cylinder assembly

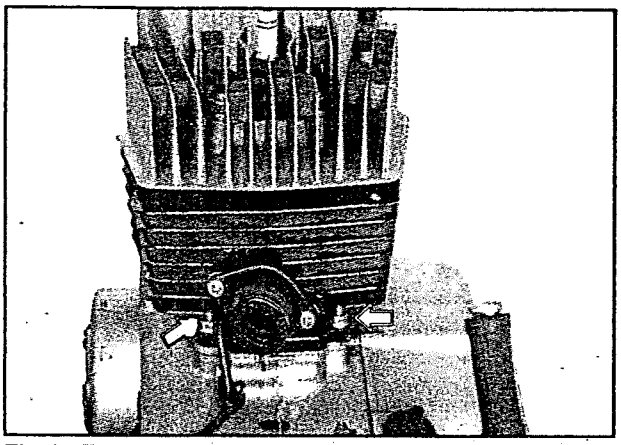


Fig 3.17

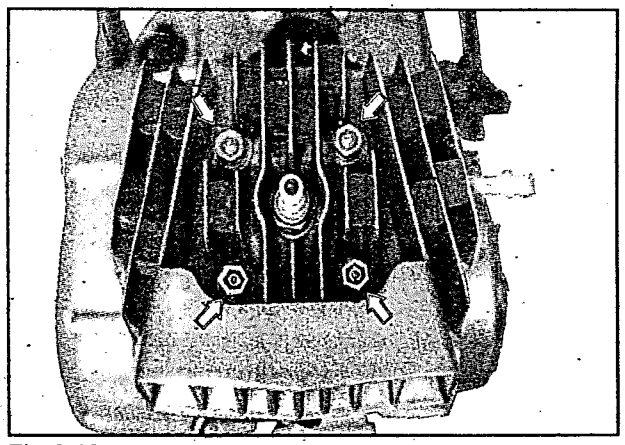


Fig 3.18

CAUTION :

- **While removing cylinder or cylinder head, loosen the cylinder bottom nuts (2 nos) and then the cylinder head nuts (4 nos), Reverse sequence should be followed while assembling.**
- **Place the removed cylinder on the table upside down to prevent distortion of the reed valve stopper (fig 3.19 and 3.19A)**

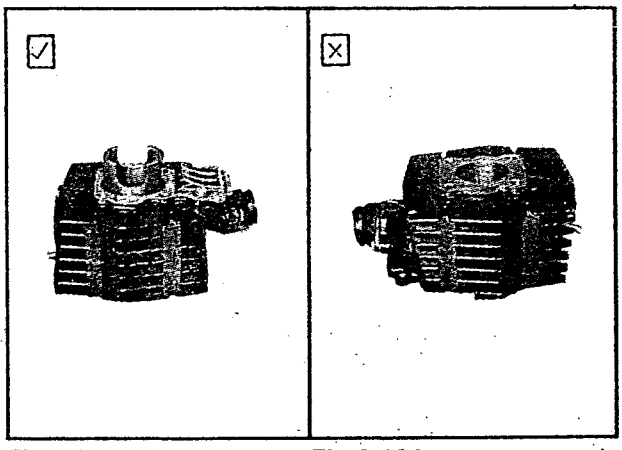


Fig 3.19 Fig 3.19A

- Remove the piston pin circlips and draw out the piston pin (fig 3.20)

Nose plier

- Take off the piston

- Take off the kick starter lever

12 mm Spanner

- Remove the clutch cover by unscrewing the screws (fig 3.21) (8 nos)

Philips head screw driver No 3

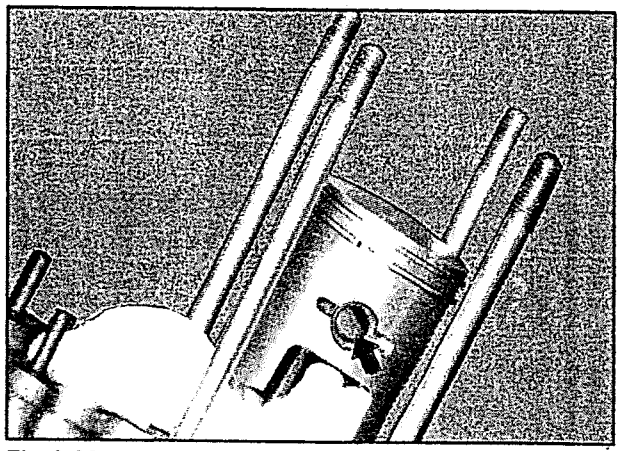


Fig 3.20

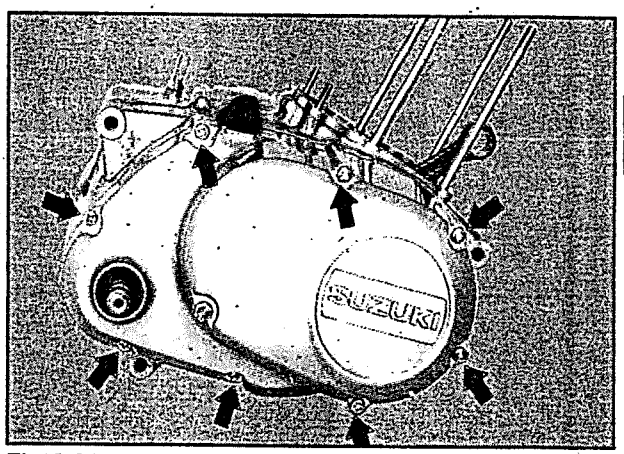


Fig 3.21

- Pull the clutch spring by using the special tool and take off the pressure plate pins (fig 3.22) in a crosswise manner.

- Take off the pressure plate, push piece, drive plates and driven plates

Nose plier	
031 250 8	Clutch spring hook

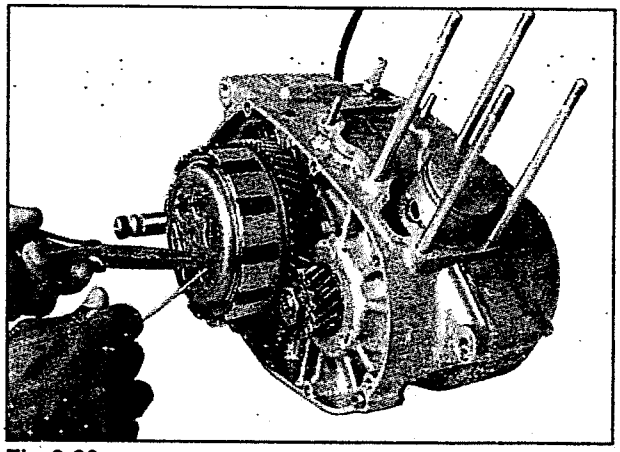


Fig 3.22

- Flatten the lock washer, and remove the hub nut by using the special tool (fig 3.23)

22 mm Socket spanner	
031 320 6	Clutch sleeve hub holder
Tightening torque	3.5 - 4.5 kgm

- Take off the clutch hub nut and washer

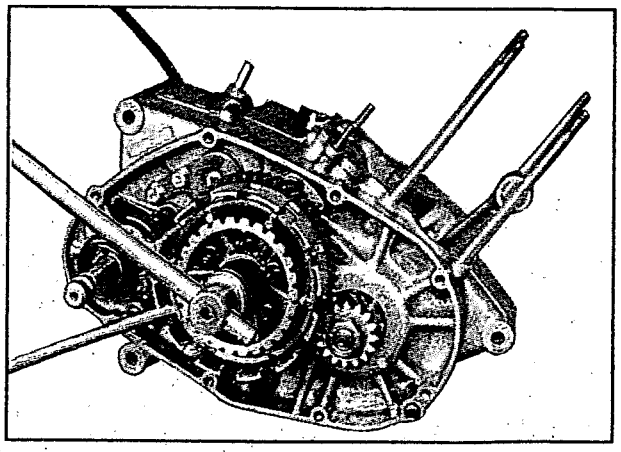


Fig 3.23

- Pull the primary driven gear off its coupling by supporting as shown in (fig 3.24)

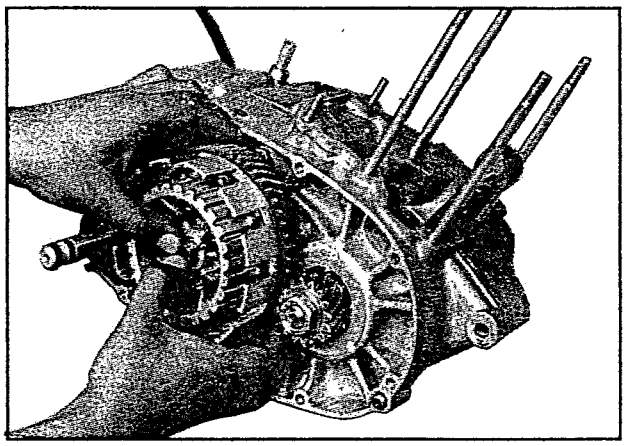


Fig 3.24

- Loosen the bolt and take off the cam stopper, spring and washer (fig 3.25)

Nose plier
12 mm Socket spanner

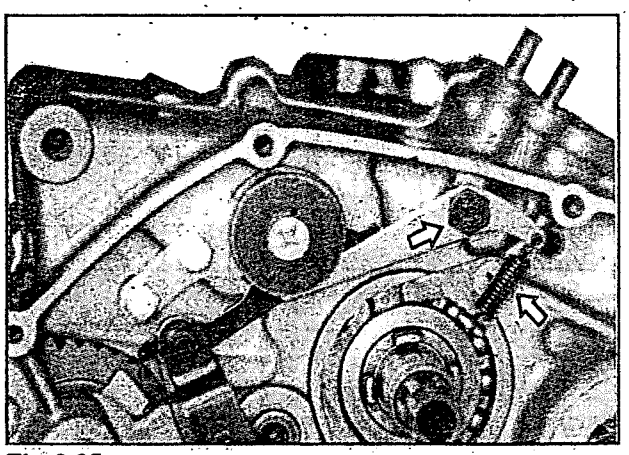


Fig 3.25

- Remove the two screws of the bearing retainer by using the impact driver (fig 3.26)
- Take off the bearing retainer

031 301 0	Impact driver set

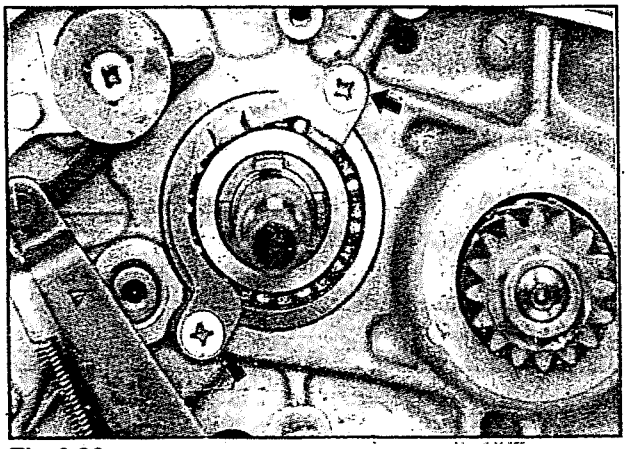


Fig 3.26

- Take off the gear shift arm assembly (fig 3.27)

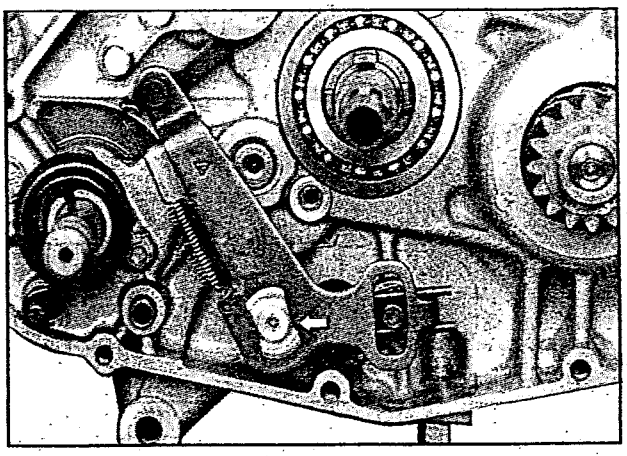


Fig 3.27

- Loosen the cam guide bolts (2 nos) and remove the cam guide (fig 3.28)

- Take off the kick starter lever return spring guide and then the spring (fig 3.28)

Nose plier or clutch spring hook
10 mm Socket spanner

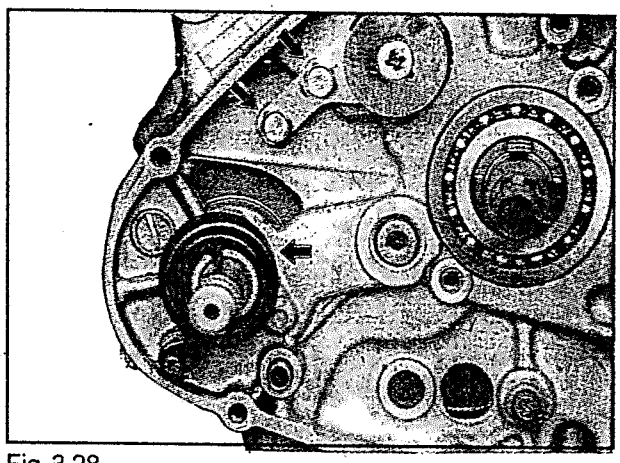


Fig 3.28

- Flatten the primary drive gear nut lock washer

- Loosen the primary drive gear nut by using the special tool (fig 3.29)

22 mm Socket spanner	
031 020 7.	Conrod stopper
Tightening torque	6.0 - 8.0 kgm

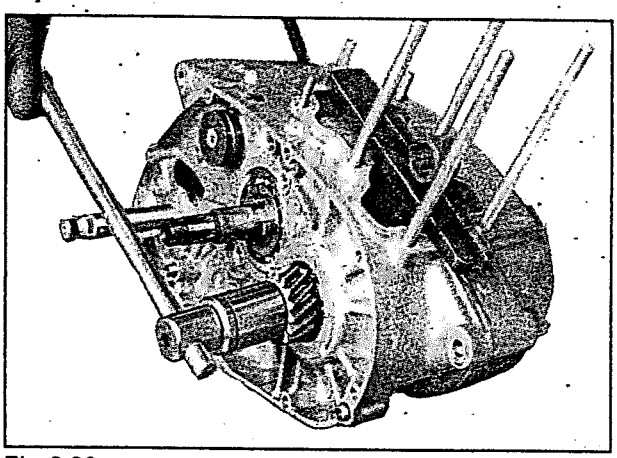


Fig 3.29

- Remove the primary drive gear, washer, key and spacer

NOTE :
Punch mark the primary gear face and reassemble in the same direction

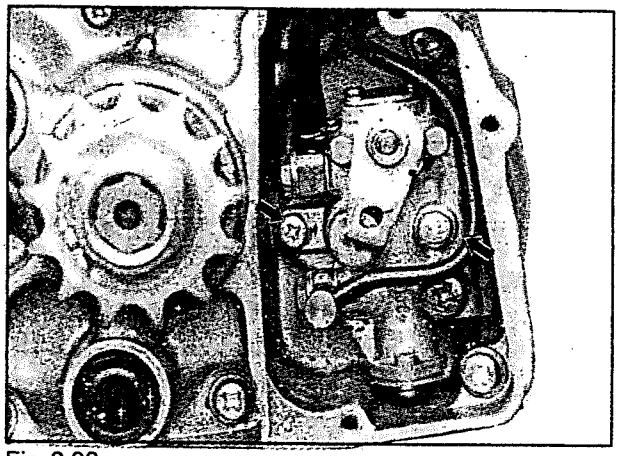


Fig 3.30

- Remove the oil pump and oil pump drive piece by loosening the 2 screws (fig 3.30 and fig 3.31)

Philips head screw driver No 2

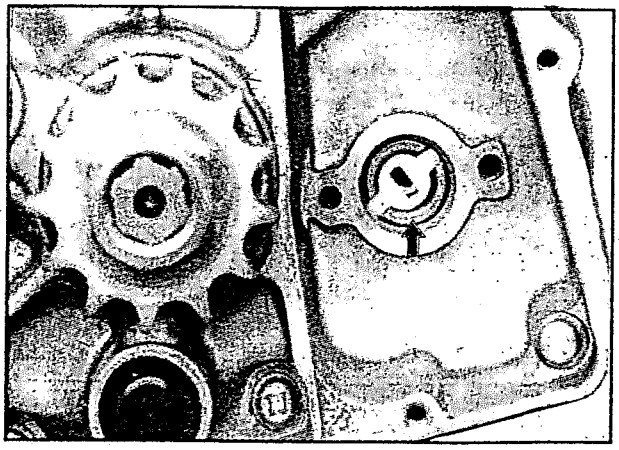


Fig 3.31

- Flatten the lock washer of the engine sprocket
- Loosen engine sprocket nut by using the special tool (fig 3.32)

27 mm Socket spanner	
F 31 017 0	Holder - Clutch housing
Tightening torque	8.0 - 11.0 kgm

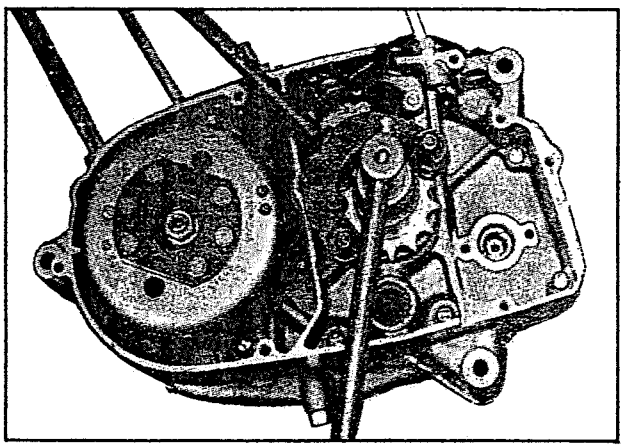


Fig 3.32

- Take off the engine sprocket, spacer and 'O'ring
- Loosen the rotor nut by using special tool (fig 3.33)

14 mm Socket spanner	
F 31 017 0	Holder - Clutch housing
Tightening torque	4.0 - 6.0 kgm

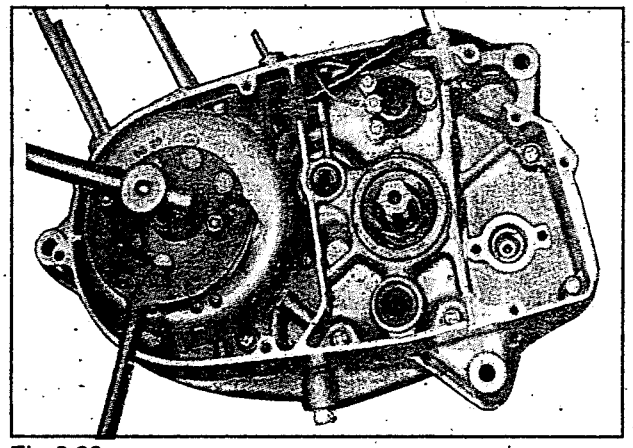


Fig 3.33

- Remove the rotor by using the special tool (fig 3.34)
- Remove the key

031 011 00	Rotor remover

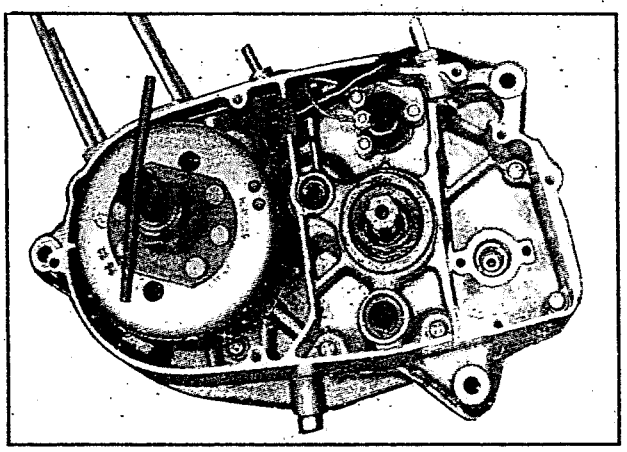


Fig 3.34

- Unscrew the stator retaining screws (3 nos) and neutral lead wire screw (fig 3.35 and fig 3.36) (applicable only to AX-100 STD, AX-100 R, AX-100 SUPRA, SUPRA POWER UP 11 BHP, SAMURAI, MAX 100 R and SHOGUN

Philips head screw driver No 2
Philips head screw driver No 1

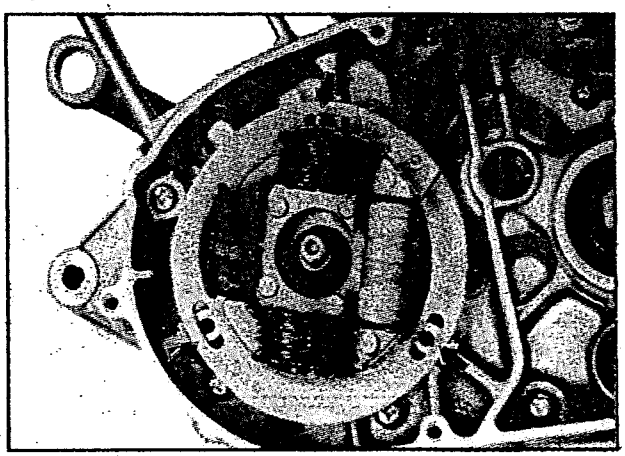


Fig 3.35

- Remove the neutral switch cover screws (3 nos) (fig 3.36) and switch contact screw (fig 3.37) (applicable to AX-100 STD, AX-100 R and AX-100 SUPRA, SUPRA POWER UP 11 BHP, MAX 100 R, SAMURAI and SHOGUN)

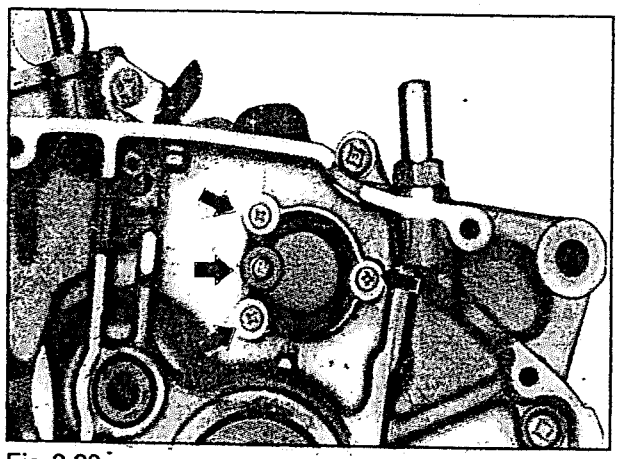


Fig 3.36

Philips head screw driver No 2
Philips head screw driver No 3

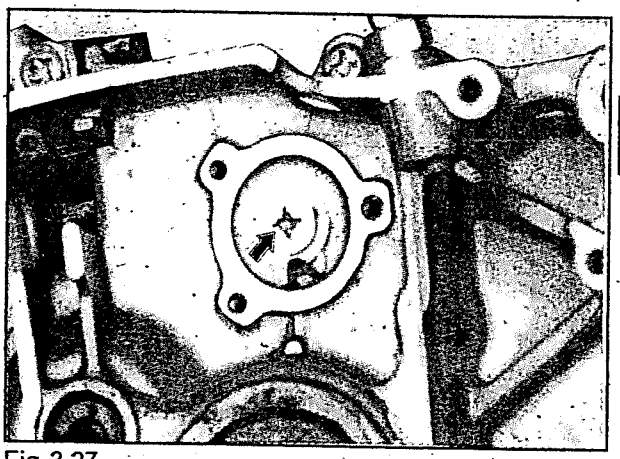


Fig 3.37

- Loosen the crankcase securing screws (11 nos) (fig 3.38)

NOTE : **Observe the screw lengths and place them in their respective positions while assembling**

Philips head screw driver No 3

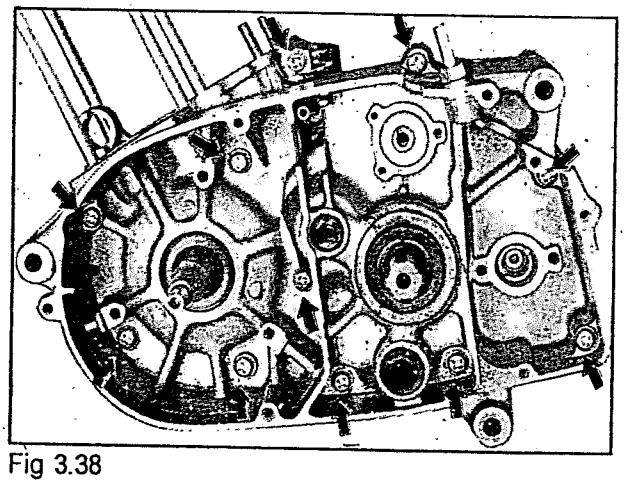


Fig 3.38

- Locate the special tool on crankshaft magneto side
- Seperate the crankshaft by using the special tool and plastic hammer (fig 3.39)

Plastic hammer
17 mm Ring spanner

031 260 0	Crankcase seperating tool

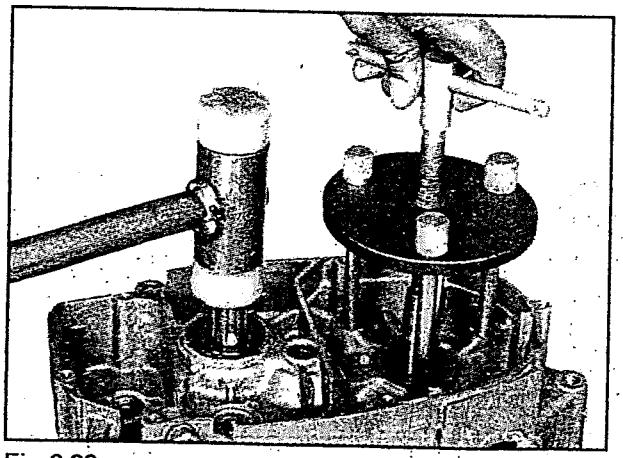


Fig 3.39

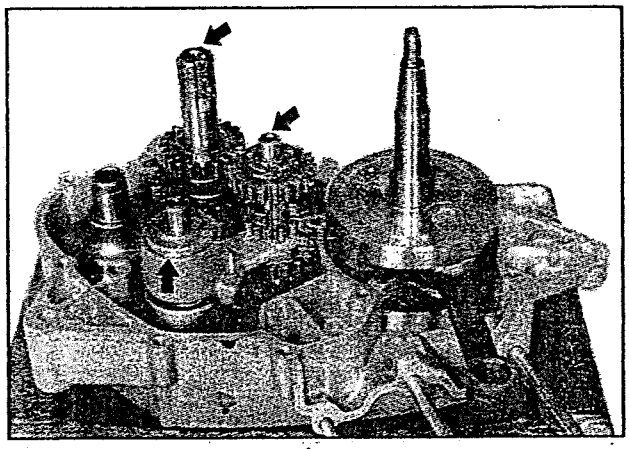


Fig 3.40

- Take off the counter shaft, drive shaft with kick starter idler gear and gear shift cam all together at the same time (fig 3.40 and fig 3.41)

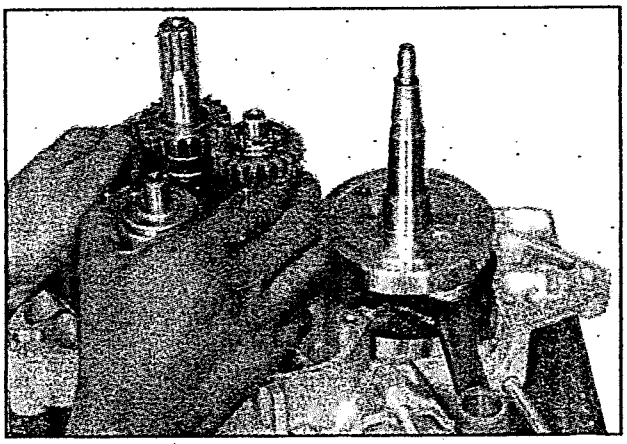


Fig 3.41

- Remove the kick starter drive gear and shaft assembly (fig 3.42)

NOTE :
The kick starter drive gear has a spring loaded pawl. It has to be removed from bottom side by pressing. Be careful while seperating the gear from the shaft.

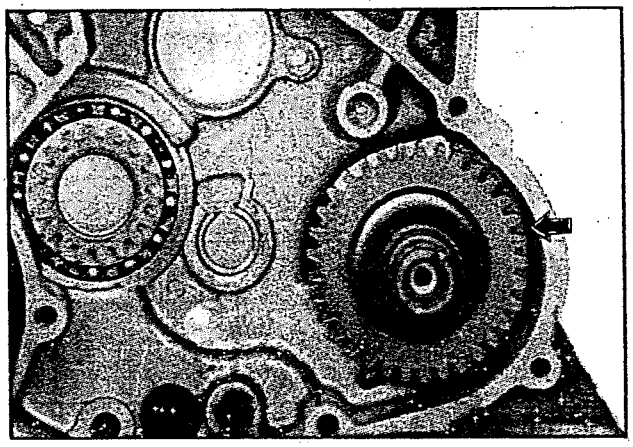


Fig 3.42

- Remove the crankshaft by using the plastic hammer (fig 3.43)

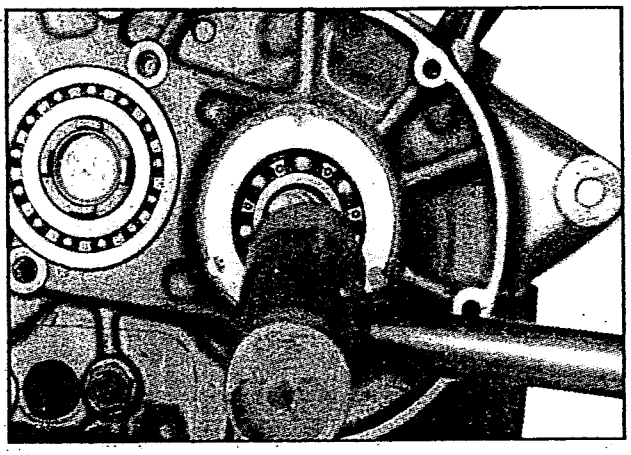


Fig 3.43

COUNTERSHAFT DISASSEMBLY

- Take off the circlip ring and then remove the top and 2nd drive gears from the countershaft (fig 3.44)

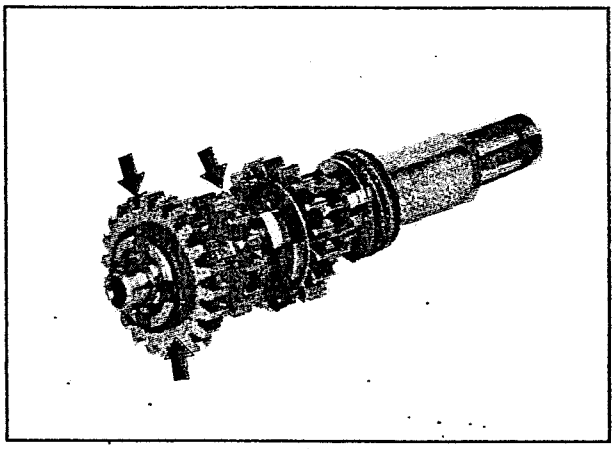


Fig 3.44

- Take off the circlip, and then remove the 3rd drive gear and washer (fig 3.45)

031 001 70	Snap ring plier – External

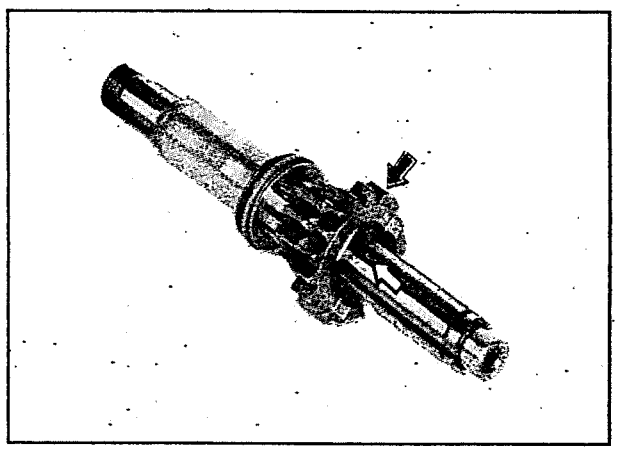


Fig 3.45

- Remove the thrust washers and thrust bearing (fig 3.46)

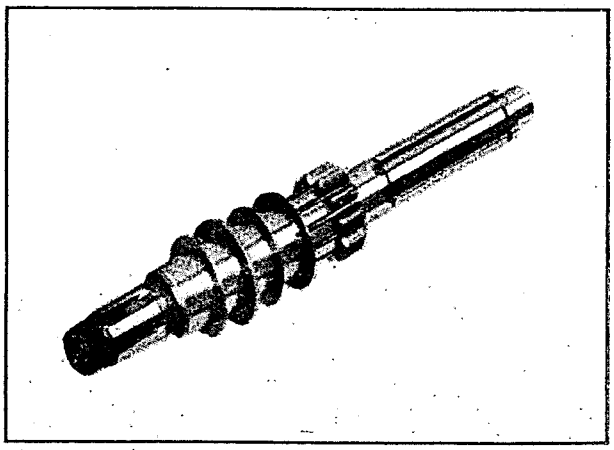


Fig 3.46

DRIVE SHAFT DISASSEMBLY

- Remove kickstarter idler gear, first driven gear and third driven gear (fig 3.47)

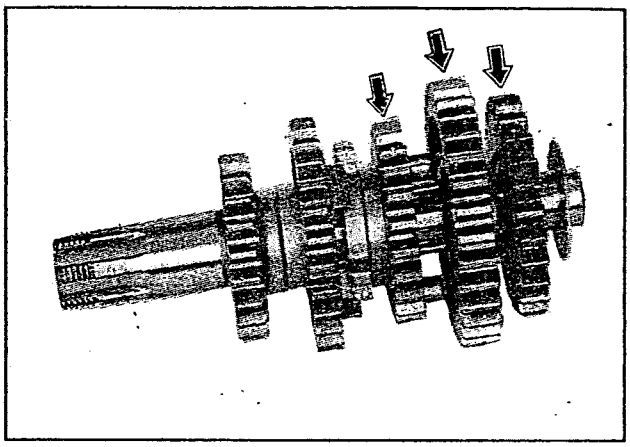


Fig 3.47

- Remove the circlip and then take off the second driven gear (fig 3.48)

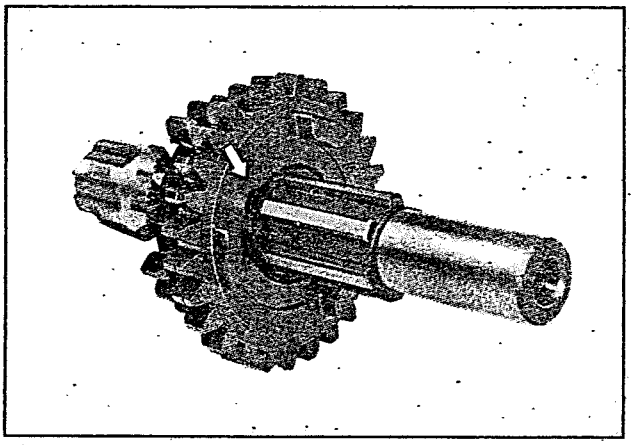


Fig 3.48

031 001 70	Snap ring plier – External

GEAR SHIFT CAM DISASSEMBLY

- Remove the cotter pins and separate the shift forks and cam (fig 3.48A and fig 3.48B)

CAUTION :
Fix smaller pin No. 1 on smaller fork No. 1 only.

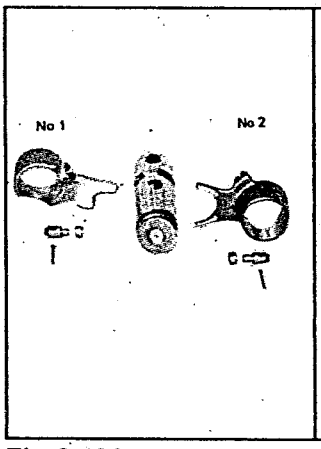


Fig 3.48A

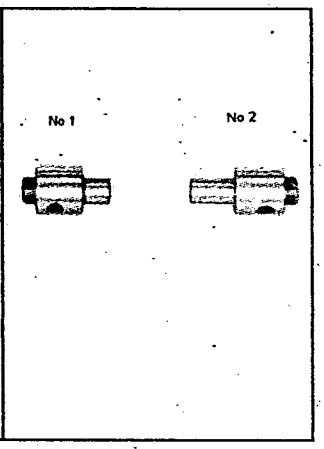


Fig 3.48B

Use special tools to remove oil seals (fig 3.49)

031 240 1	Oil seal remover

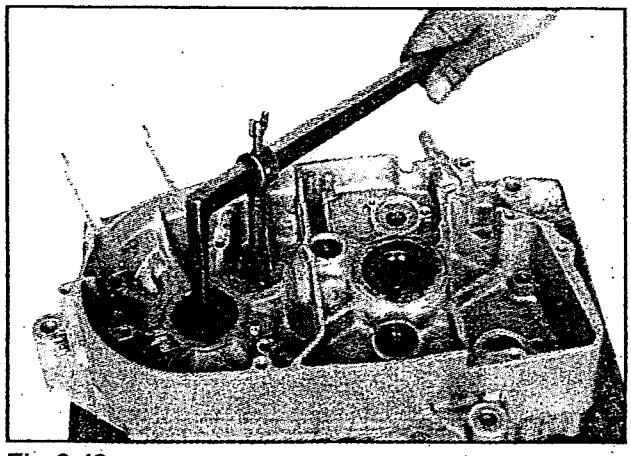


Fig 3.49

- Use the following special tools to remove the bearings and drive shaft bush from the crankcase halves (fig 3.50 to fig 3.53)

031 060 8	Bearing remover
031 080 1	Bearing remover
031 371 1	Handle for installer, drive shaft bush
031 372 1	Installer, drive shaft bush

For bearing removal use special tool with arbor press.

NOTE :
Unnecessary removal of a bearing should be avoided. Removal can damage the bearing and in some instances cause deterioration of the interference fit. Very often it is sufficient to clean and lubricate the bearing in its fitted position. Only remove a bearing if you need to inspect it closely. Symptoms that guide are, the condition of the lubricant, the bearing temperature and the noise level.

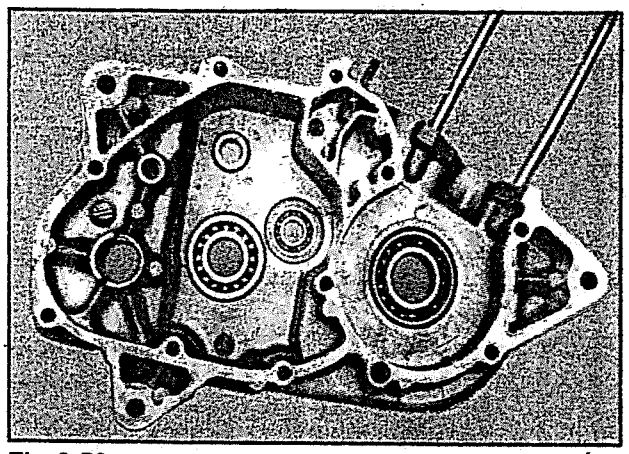


Fig 3.50

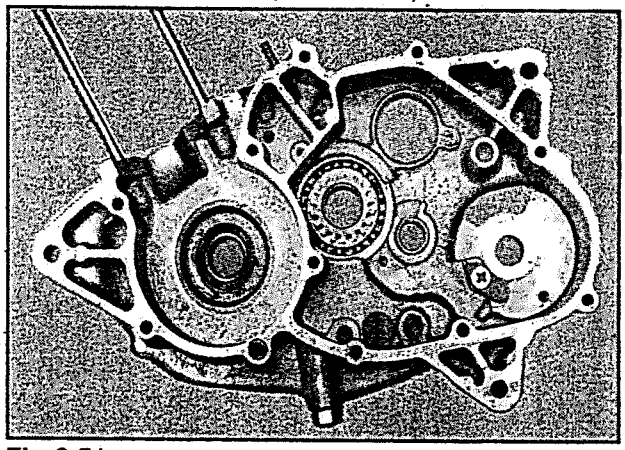


Fig 3.51

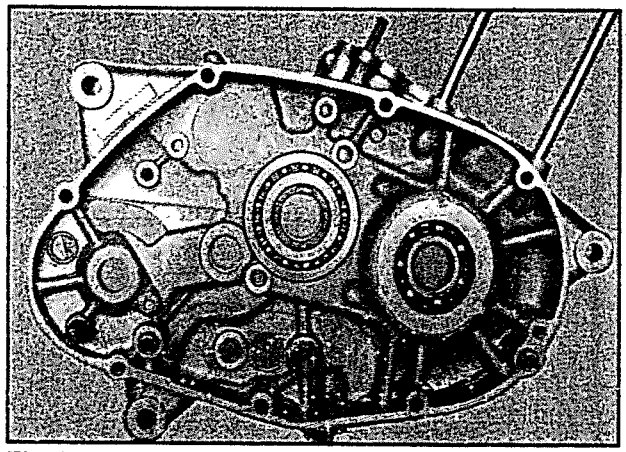


Fig 3.52

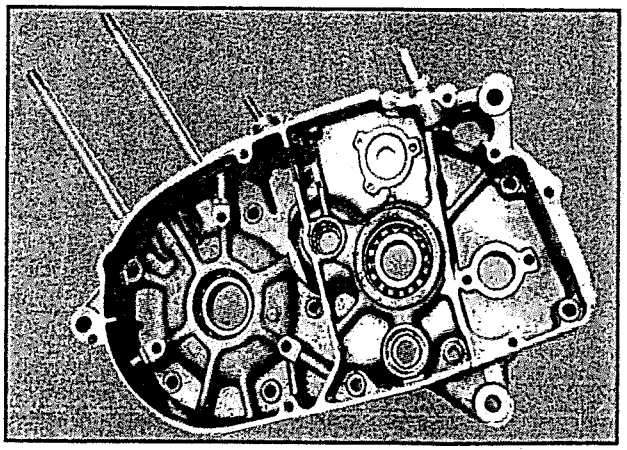


Fig 3.53

ENGINE COMPONENTS INSPECTION AND SERVICING

BEARING

Wash the bearing with a cleaning solvent and lubricate with engine oil before inspecting.

Inspect the play of each bearing inner race by hand before fixing it in the crankcase (fig 3.54). Rotate the outer race by hand to inspect for any abnormal noise and ensure a smooth rotation. Replace the bearing if there is something unusual.

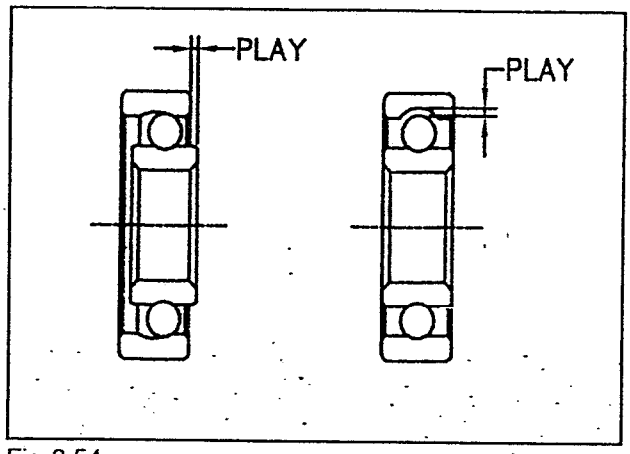


Fig 3.54

OIL SEALS

Damage to the lip (1) of the oil seal (fig 3.55) may result in leakage of the mixture or oil. Inspect for damage and be sure to replace the damaged oil seals.

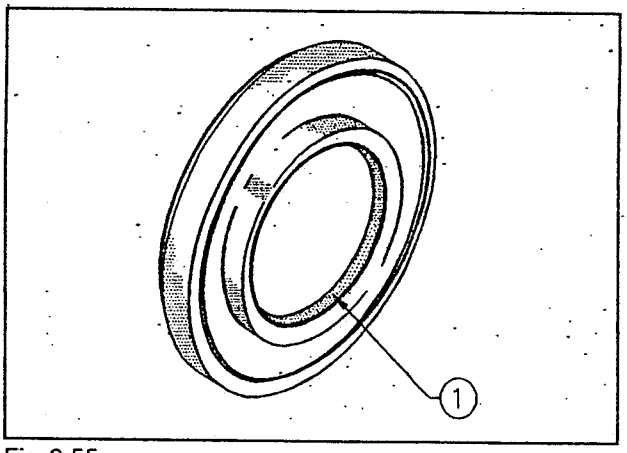


Fig 3.55

CRANKSHAFT

CRANKSHAFT RUNOUT (fig 3.56)

Support the crankshaft with 'V' blocks (1) Mount the dial indicator (2) at the positions shown to read the runout. Runout should be within the following limit:

031 307 0	V-block set
031 305 0	Dial gauge (1/100 mm)
031 306 0	Magnetic stand

Service limit	0.05 mm

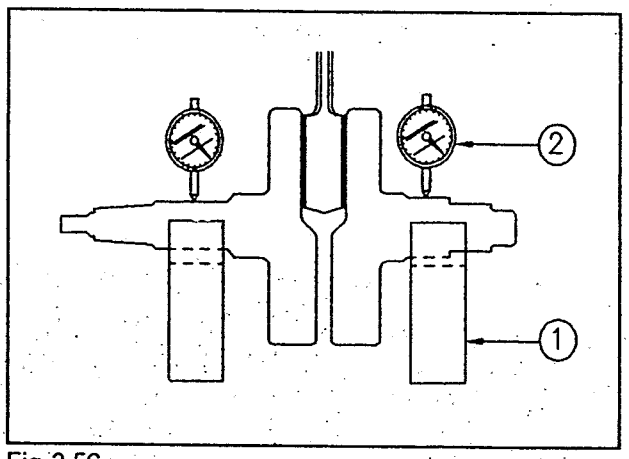


Fig 3.56

Excessive crankshaft runout is often responsible for abnormal engine vibration. Such vibration shortens engine life.

- Use the following special tools to remove the bearings and drive shaft bush from the crankcase halves (fig 3.50 to fig 3.53)

031 060 8	Bearing remover
031 080 1	Bearing remover
031 371 1	Handle for installer, drive shaft bush
031 372 1	Installer, drive shaft bush

For bearing removal use special tool with arbor press.

NOTE :
Unnecessary removal of a bearing should be avoided. Removal can damage the bearing and in some instances cause deterioration of the interference fit. Very often it is sufficient to clean and lubricate the bearing in its fitted position. Only remove a bearing if you need to inspect it closely. Symptoms that guide are, the condition of the lubricant, the bearing temperature and the noise level.

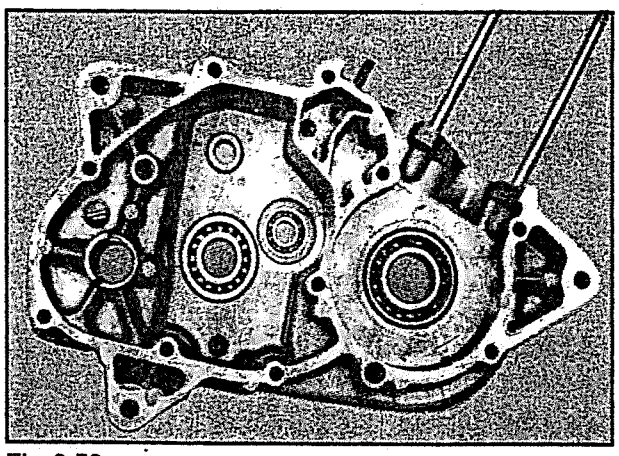


Fig 3.50

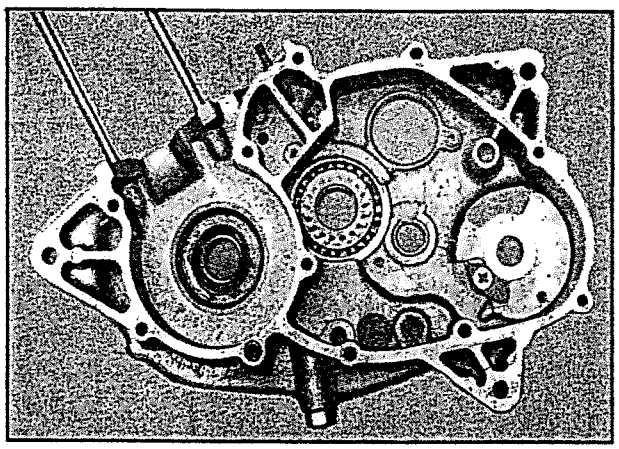


Fig 3.51

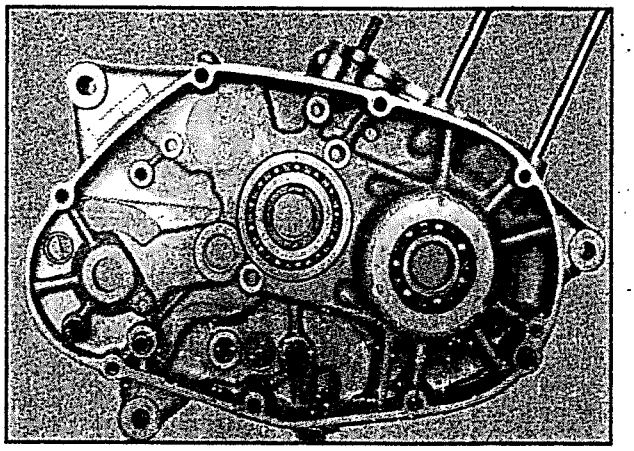


Fig 3.52

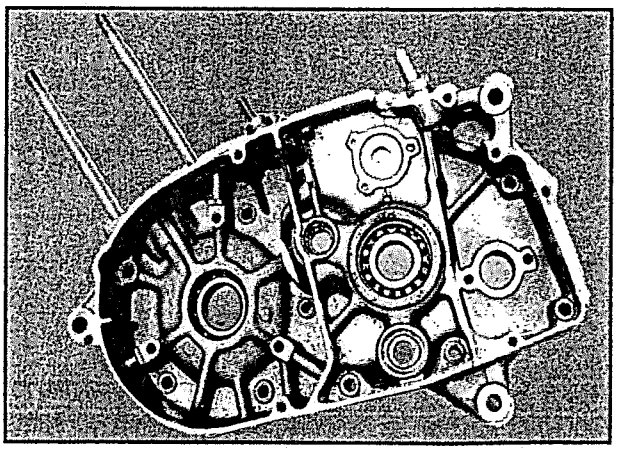


Fig 3.53

ENGINE COMPONENTS INSPECTION AND SERVICING

BEARING

Wash the bearing with a cleaning solvent and lubricate with engine oil before inspecting.

Inspect the play of each bearing inner race by hand before fixing it in the crankcase (fig 3.54). Rotate the outer race by hand to inspect for any abnormal noise and ensure a smooth rotation. Replace the bearing if there is something unusual.

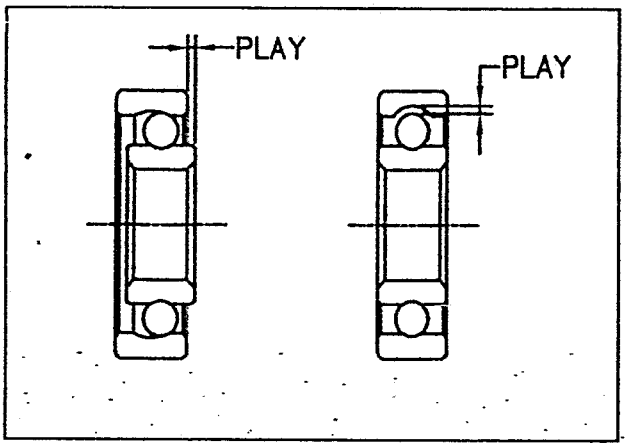


Fig 3.54

OIL SEALS

Damage to the lip (1) of the oil seal (fig 3.55) may result in leakage of the mixture or oil. Inspect for damage and be sure to replace the damaged oil seals.

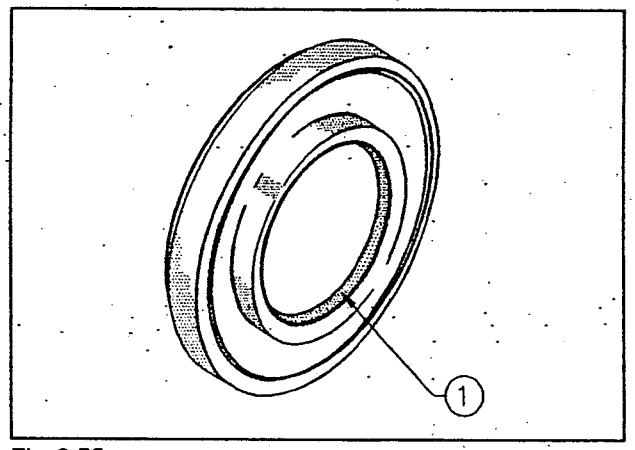


Fig 3.55

CRANKSHAFT

CRANKSHAFT RUNOUT (fig 3.56)

Support the crankshaft with 'V' blocks (1) Mount the dial indicator (2) at the positions shown to read the runout. Runout should be within the following limit:

031 307 0	V-block set
031 305 0	Dial gauge (1/100 mm)
031 306 0	Magnetic stand

Service limit	0.05 mm

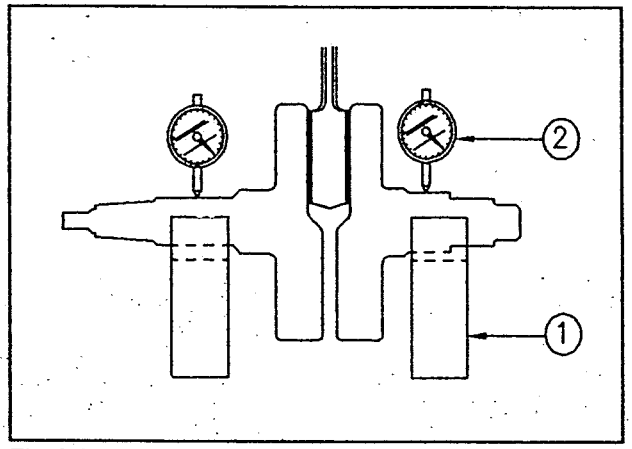


Fig 3.56

Excessive crankshaft runout is often responsible for abnormal engine vibration. Such vibration shortens engine life.

CYLINDER HEAD

Using a surface plate and red lead paste or mechanist blueing/marking dye, check the gasketed surface of the cylinder head for flatness. If high and low spots are noted, remove them by rubbing the surface against emery paper (of about No.400) laid flat on the surface plate in a lapping manner (fig 3.64). The gasket seating surface must be smooth and perfectly flat in order to secure a tight joint; a leaky joint can be the cause of reduced power output and increased fuel consumption.

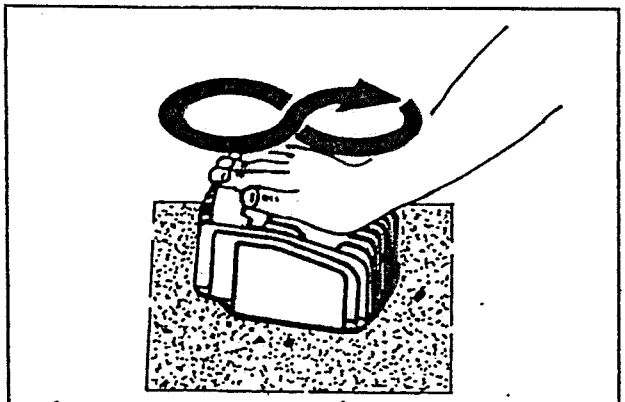

Repairing warped surface of cylinder head

Fig 3.64

Cylinder head warpage

Service limit	**0.05 mm**

CYLINDER

The wear of the cylinder wall is determined from diameter reading taken at 20 mm from the top of the cylinder with a cylinder gauge (fig 3.65). If the wear thus determined exceeds the limit indicated below, rework the bore to the next oversize by using a boring machine or replace the cylinder with a new one. Also the bore is to be honed. Oversize pistons are available in two sizes : 0.5 and 1.0 is marked on the crown of the first and second oversize pistons respectively.

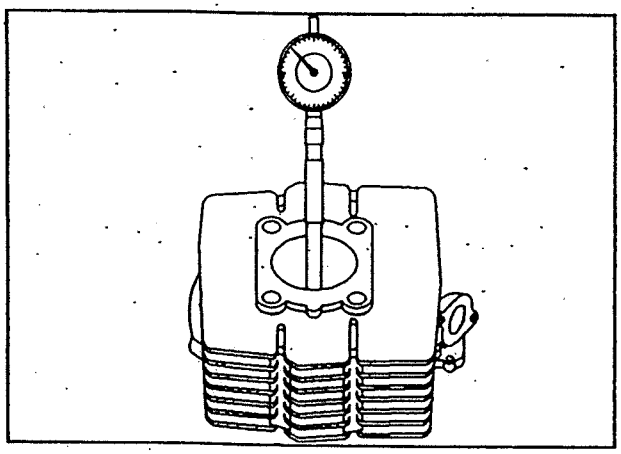


Fig 3.65

Service limit	**0.095 mm**

After reworking the bore to an oversize, be sure to chamfer the edges of ports and smoothen the chamfered edges with emery paper. To chamfer, use a scraper, taking care not to nick the wall surface (fig 3.66)

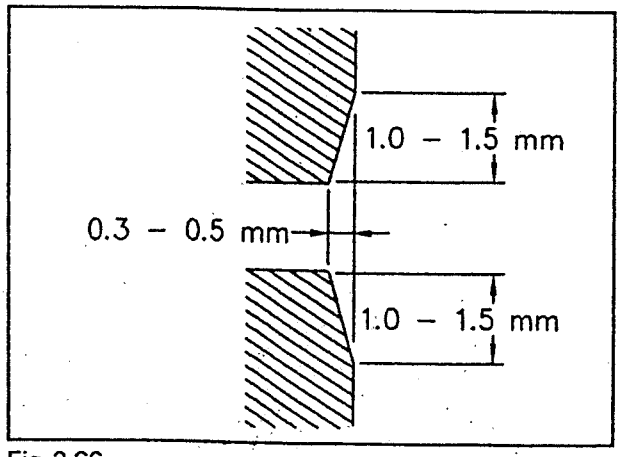


Fig 3.66

NOTE :
Minor surface flaws on the cylinder wall due to seizure or similar abnormalities can be corrected by grinding the flaws off with fine grain sand-paper. If the flaws are deep grooves, the cylinder must be reworked with a boring machine to the next oversize.

PISTON

Cylinder to piston clearance

Cylinder to piston clearance is the difference between piston diameter and bore diameter. Be sure to measure the diameter at right angles to the piston pin and at a point 'A' which is 21 mm from the bottom (fig 3.67)

The measurement for the bore diameter should be made at 'B' 20 mm from the cylinder top surface (fig 3.68)

For 100 CC Engines Unit : mm

ITEM	STD	Service Limit
Cylinder	49.995-50.020	0.095
Piston	49.955-49.980	0.085
Cylinder to piston Clearance	0.035-0.045	0.120

For 110 CC Engines Unit : mm

ITEM	STD	Service Limit
Cylinder	52.505-52.515	0.095
Piston	52.460-52.470	0.05
Cylinder to piston Clearance	0.040-0.050	0.120

De-carbonise the piston and piston ring grooves, as shown in fig 3.69. After cleaning the grooves, fit the rings and rotate them in their respective grooves to be sure that they move smoothly.

Carbon in the groove is liable to cause the piston ring to get stuck in the groove, and this condition will lead to reduced engine power output.

If a piston sliding surface is badly grooved or scuffed due to the overheating it must be replaced. Shallow grooves or minor scuff can be removed by smoothening with emery paper of No.400 (fig 3.69A)

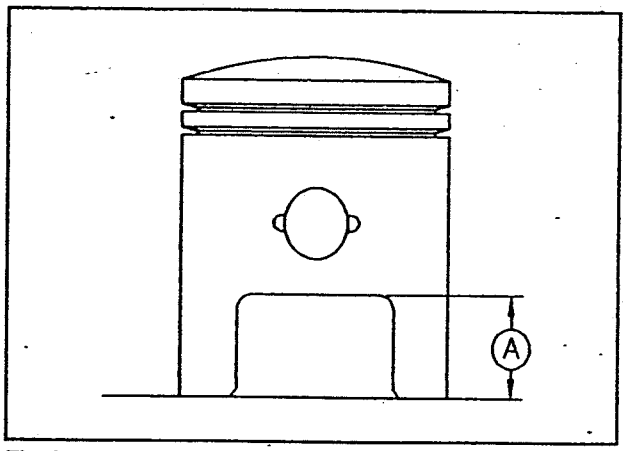


Fig 3.67

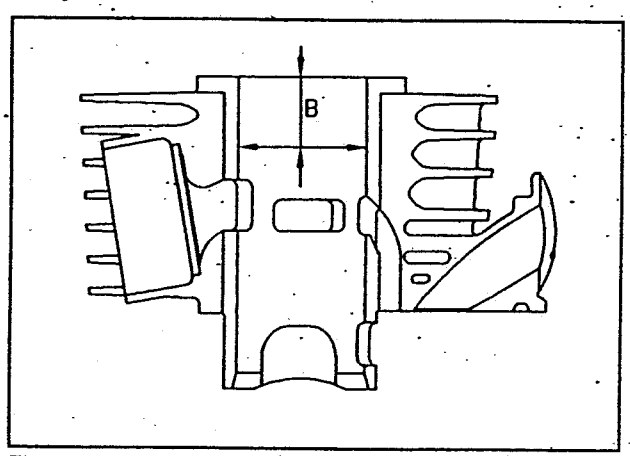


Fig 3.68

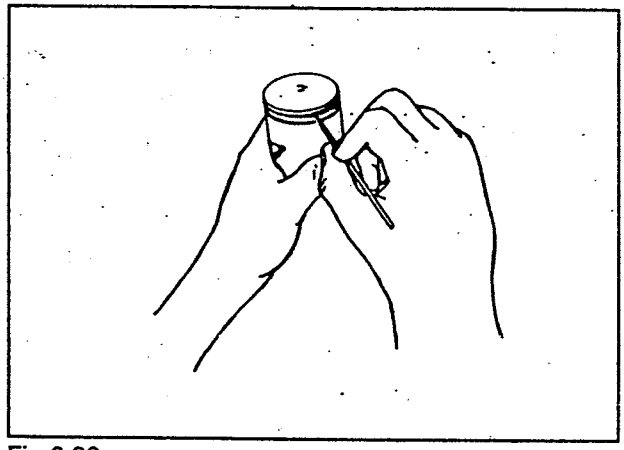


Fig 3.69

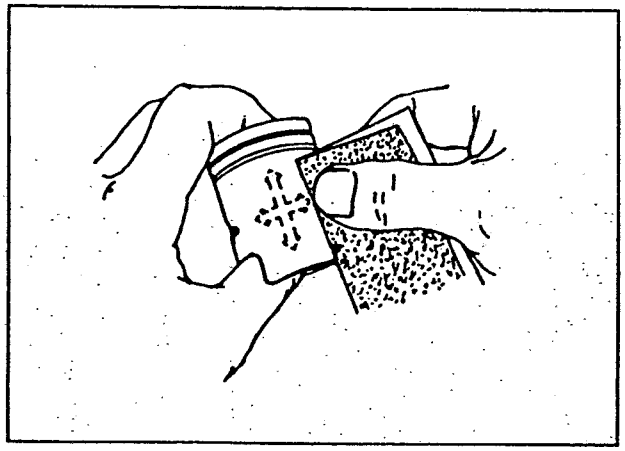


Fig 3.69A

CYLINDER HEAD

Using a surface plate and red lead paste or mechanist blueing/marking dye, check the gasketed surface of the cylinder head for flatness. If high and low spots are noted, remove them by rubbing the surface against emery paper (of about No.400) laid flat on the surface plate in a lapping manner (fig 3.64). The gasket seating surface must be smooth and perfectly flat in order to secure a tight joint; a leaky joint can be the cause of reduced power output and increased fuel consumption.

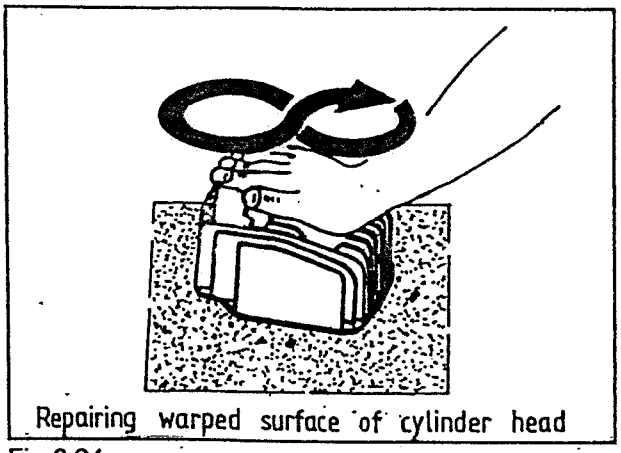

Repairing warped surface of cylinder head

Fig 3.64

Cylinder head warpage

Service limit	**0.05 mm**

CYLINDER

The wear of the cylinder wall is determined from diameter reading taken at 20 mm from the top of the cylinder with a cylinder gauge (fig 3.65). If the wear thus determined exceeds the limit indicated below, rework the bore to the next oversize by using a boring machine or replace the cylinder with a new one. Also the bore is to be honed. Oversize pistons are available in two sizes : 0.5 and 1.0 is marked on the crown of the first and second oversize pistons respectively.

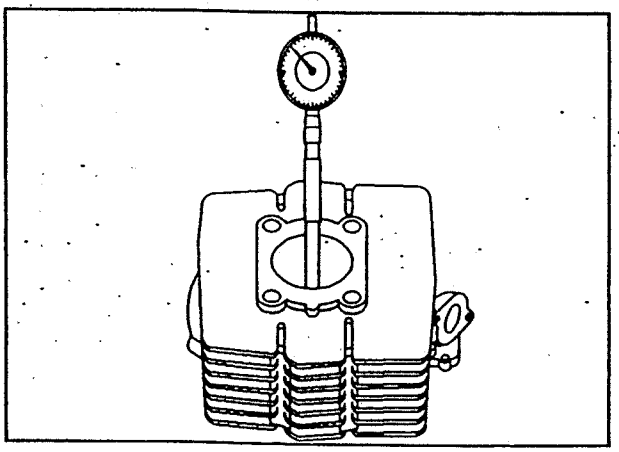


Fig 3.65

Service limit	**0.095 mm**

After reworking the bore to an oversize, be sure to chamfer the edges of ports and smoothen the chamfered edges with emery paper. To chamfer, use a scraper, taking care not to nick the wall surface (fig 3.66)

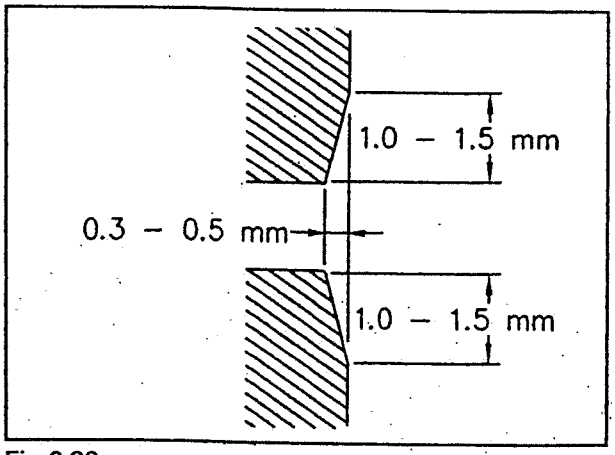


Fig 3.66

NOTE :
Minor surface flaws on the cylinder wall due to seizure or similar abnormalities can be corrected by grinding the flaws off with fine grain sand-paper. If the flaws are deep grooves, the cylinder must be reworked with a boring machine to the next oversize.

PISTON

Cylinder to piston clearance

Cylinder to piston clearance is the difference between piston diameter and bore diameter. Be sure to measure the diameter at right angles to the piston pin and at a point 'A' which is 21 mm from the bottom (fig 3.67)

The measurement for the bore diameter should be made at 'B' 20 mm from the cylinder top surface (fig 3.68)

For 100 CC Engines Unit : mm

ITEM	STD	Service Limit
Cylinder	49.995-50.020	0.095
Piston	49.955-49.980	0.085
Cylinder to piston Clearance	0.035-0.045	0.120

For 110 CC Engines Unit : mm

ITEM	STD	Service Limit
Cylinder	52.505-52.515	0.095
Piston	52.460-52.470	0.05
Cylinder to piston Clearance	0.040-0.050	0.120

De-carbonise the piston and piston ring grooves, as shown in fig 3.69. After cleaning the grooves, fit the rings and rotate them in their respective grooves to be sure that they move smoothly.

Carbon in the groove is liable to cause the piston ring to get stuck in the groove, and this condition will lead to reduced engine power output.

If a piston sliding surface is badly grooved or scuffed due to the overheating it must be replaced. Shallow grooves or minor scuff can be removed by smoothening with emery paper of No.400 (fig 3.69A)

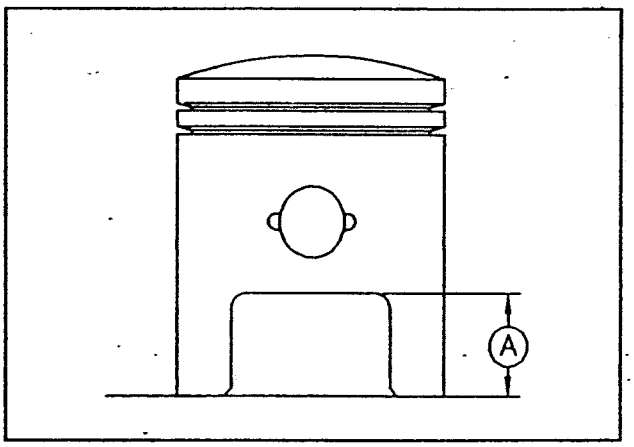


Fig 3.67

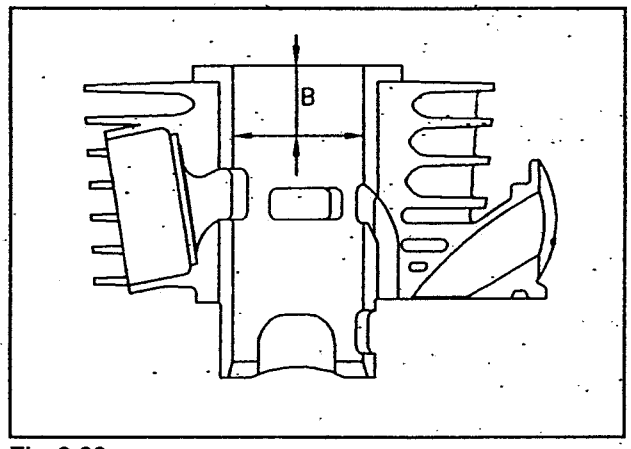


Fig 3.68

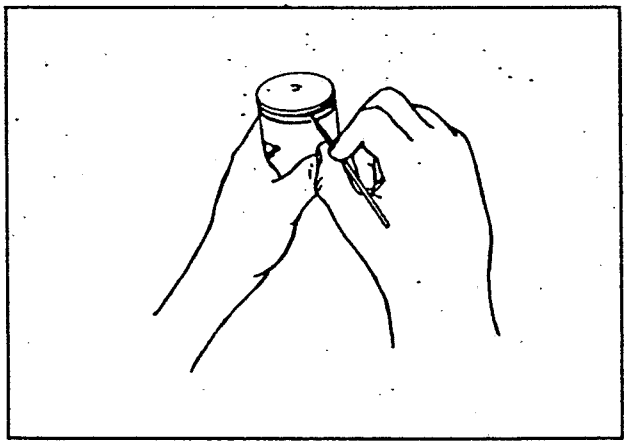


Fig 3.69

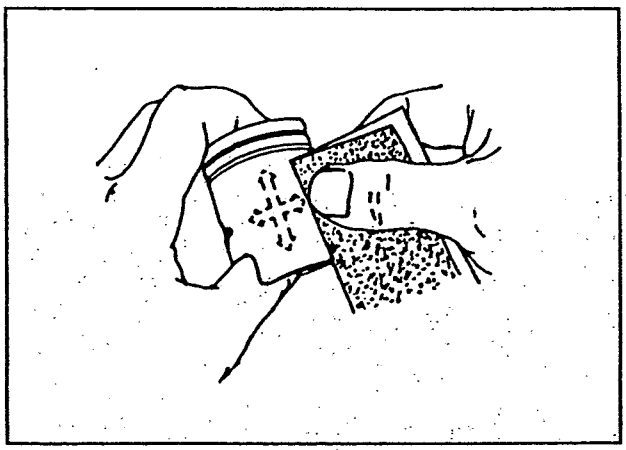


Fig 3.69A

OIL SEALS

Fit the oil seals to the crankcase following the procedure below.

Replace removed oil seals with new ones.

- Apply grease to the lip of the oil seal.
- Be sure to apply an adhesive sealant to outer surfaces of right and left crankshaft oil seals, to prevent them from movement (fig 3.72)
- When fitting the oil seal in the crankcase, insert it slowly using the special tool.
- After the oil seal is fitted over the shaft check that the lip seats over the shaft perfectly all around the circumference without any distortion.

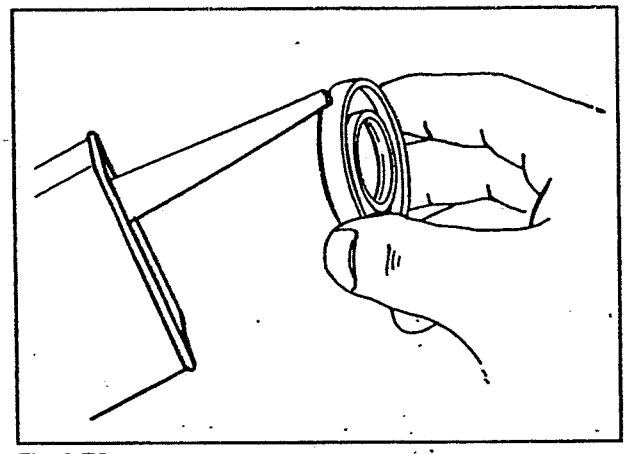


Fig 3.72

NOTE :
Apply engine oil to each running and sliding part before installing them during reassembly.

CRANKSHAFT

Ensure the length between the webs of the crankshaft is as given below (fig 3.73)

STD width between webs	49.9 - 50.1 mm

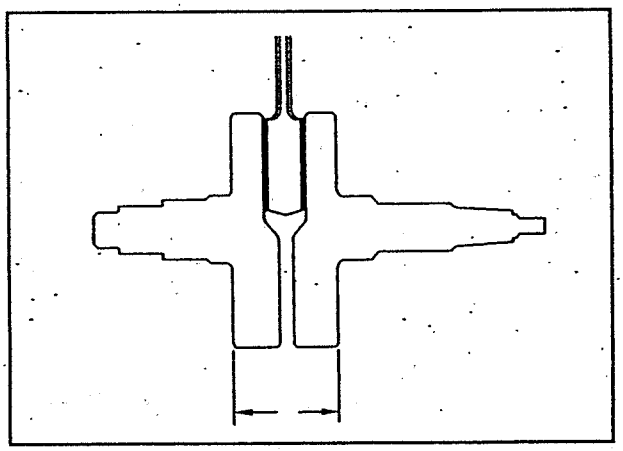


Fig 3.73

When mounting the crankshaft in the crankcase it is necessary to drive its right end into the crankcase. Use a plastic or soft material hammer for the purpose (fig 3.74)

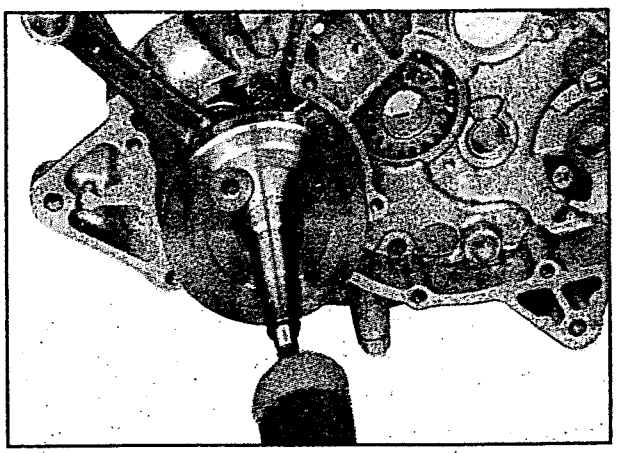


Fig 3.74

KICK STARTER

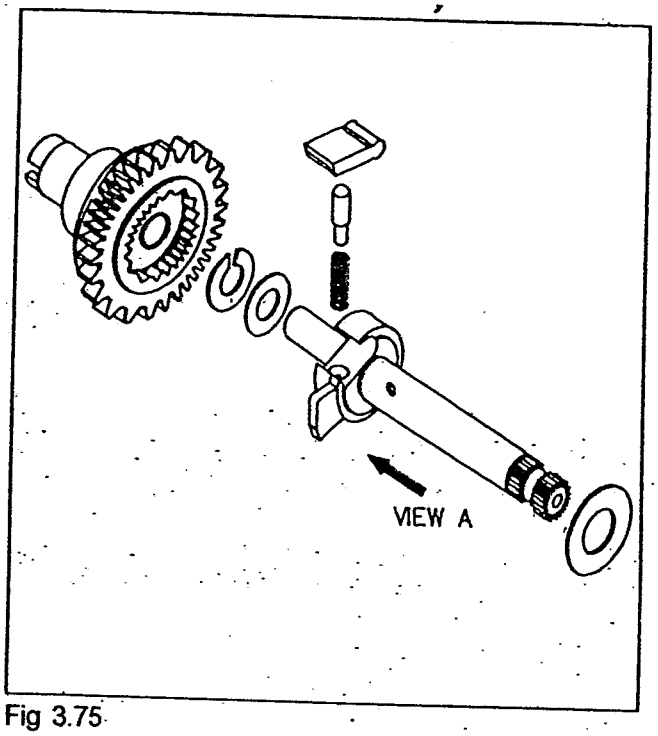


Fig 3.75

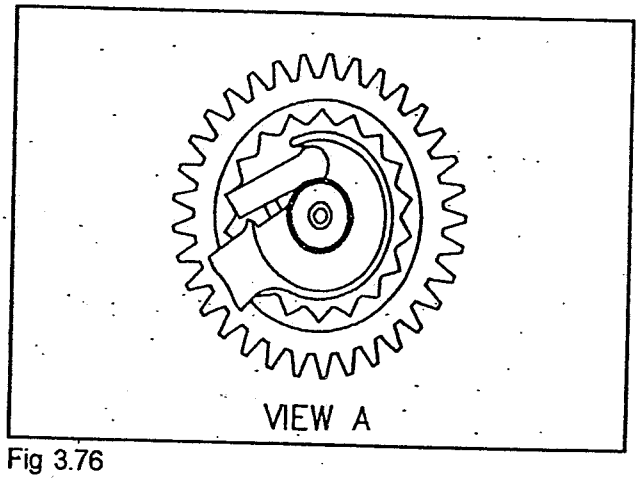


Fig 3.76

OIL SEALS

Fit the oil seals to the crankcase following the procedure below.

Replace removed oil seals with new ones.

- Apply grease to the lip of the oil seal.
- Be sure to apply an adhesive sealant to outer surfaces of right and left crankshaft oil seals, to prevent them from movement (fig 3.72)
- When fitting the oil seal in the crankcase, insert it slowly using the special tool.
- After the oil seal is fitted over the shaft check that the lip seats over the shaft perfectly all around the circumference without any distortion.

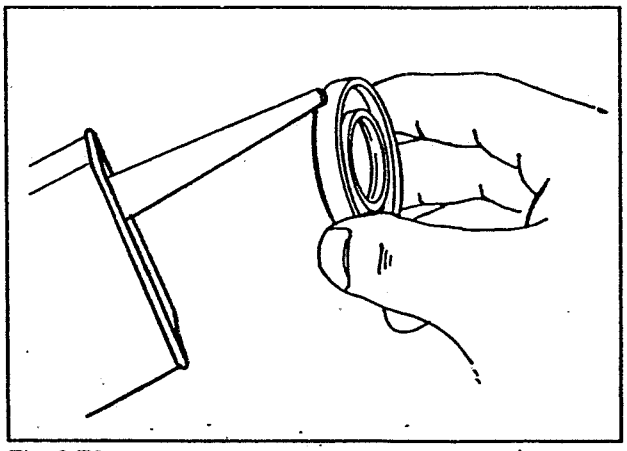


Fig 3.72

NOTE :
Apply engine oil to each running and sliding part before installing them during reassembly.

CRANKSHAFT

Ensure the length between the webs of the crankshaft is as given below (fig 3.73)

STD width between webs	49.9 - 50.1 mm

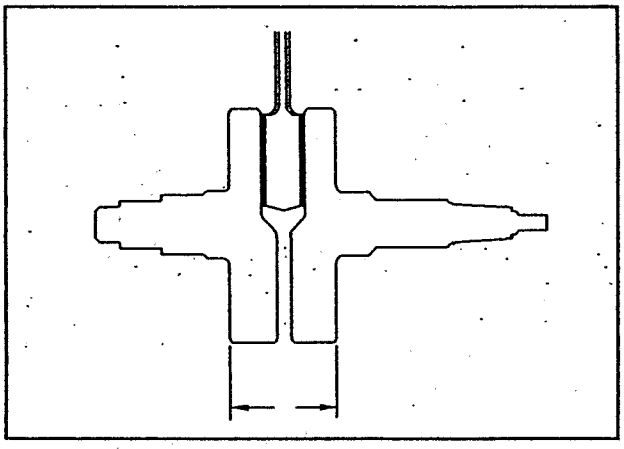


Fig 3.73

When mounting the crankshaft in the crankcase it is necessary to drive its right end into the crankcase. Use a plastic or soft material hammer for the purpose (fig 3.74)

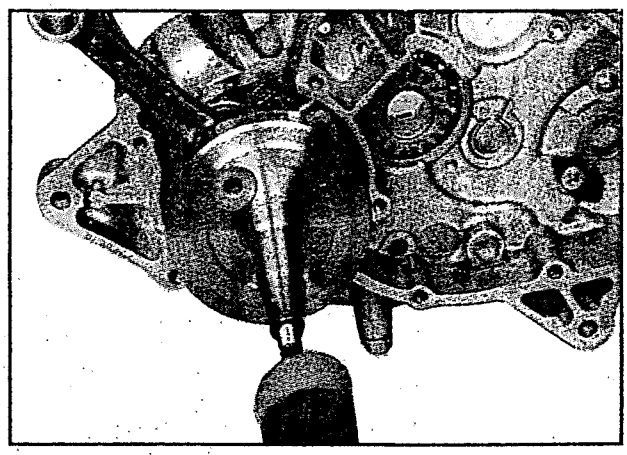


Fig 3.74

KICK STARTER

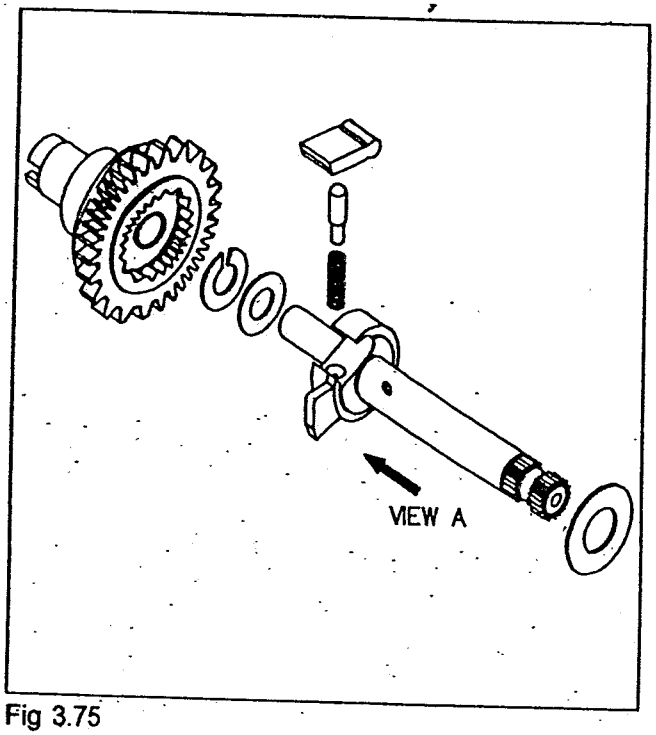


Fig 3.75

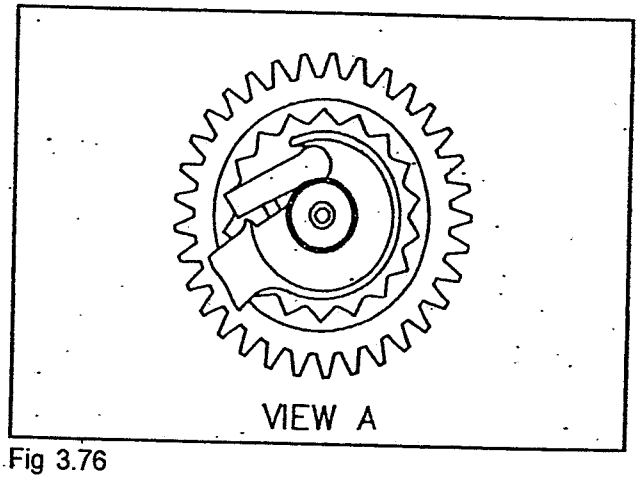


Fig 3.76

STATOR

When fitting the stator, align the index mark (1) of the crankcase with index line (2) on the stator (fig 3.80)

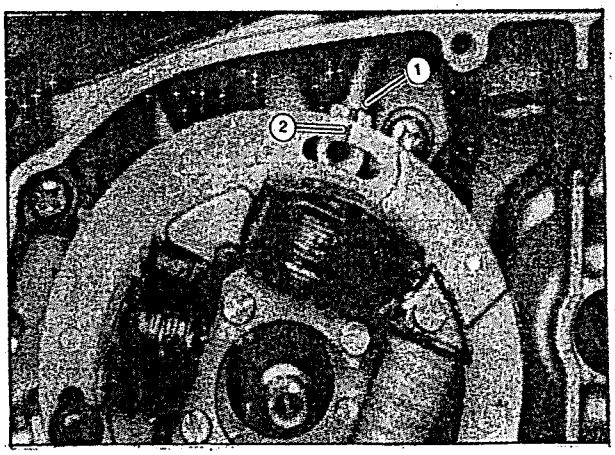


Fig 3.80

ROTOR

Clean thoroughly both mating surfaces of the rotor and crankshaft, fix the stator to the crankcase. Then fix the rotor with the key, apply anabond thread locker to the rotor nut and tighten the nut by using special tool (fig 3.81)

F 310 170	Holder - Clutch Housing

Tightening torque	4.0 - 6.0 kgm

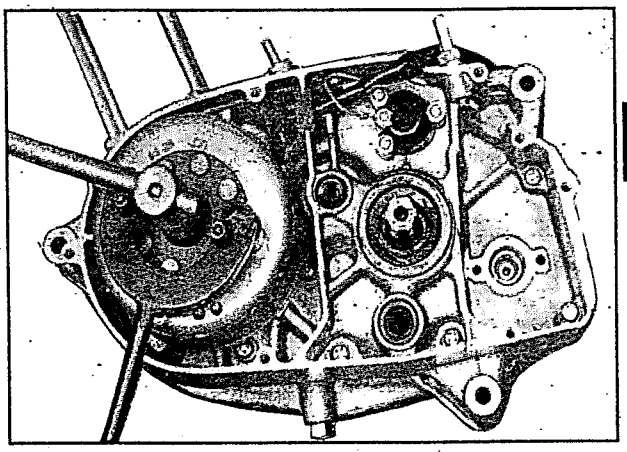


Fig 3.81

ENGINE SPROCKET

The 'O' ring (1) located next to the spacer (2) on the drive shaft is for sealing the clearance between the drive shaft and the spacer. (fig 3.82) Tighten the engine sprocket nut with specified torque by using special tool.

F 310 170	Holder - Clutch Housing

Tightening torque	8.0 - 11.0 kgm

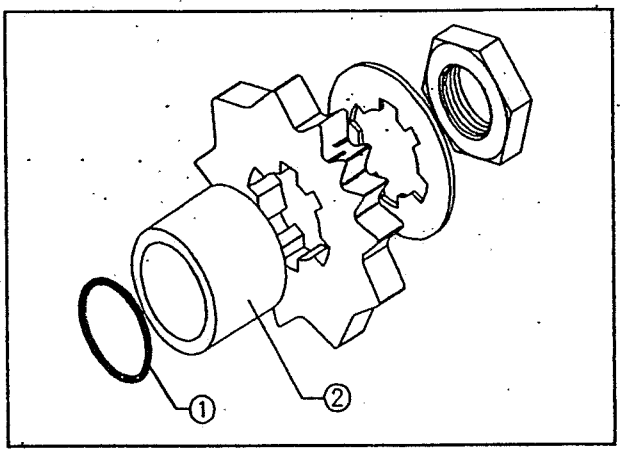


Fig 3.82

Assemble the neutral switch and give connection.

PRIMARY DRIVE GEAR NUT

Fit the spacer, the primary drive gear with key, washer and nut on the crankshaft.

Using special tool, tighten the nut (fig 3.83)

031 020 7	Conrod stopper

Tightening torque	6.0 - 8.0 kgm

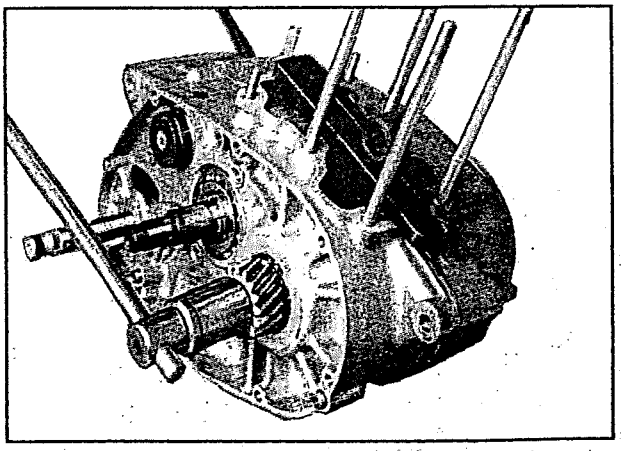


Fig 3.83

RETURN SPRING

Rotate the kick shaft fully clockwise; insert the inner end of return spring into the hole provided in kick starter shaft; install the spring guide: hitch the other end of the spring to stopper hook bolt (fig 3.84).

NOTE :
Install the spring guide with its chamfered face end towards the crankcase

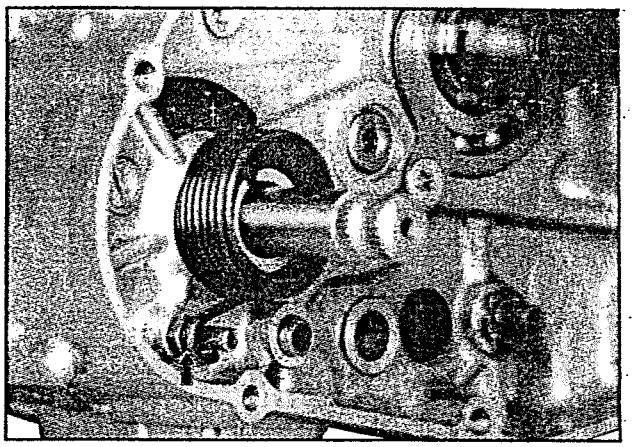


Fig 3.84

CAM GUIDE AND CAM STOPPER

Be sure to fit washer when installing gear shifting cam stopper (1). Hitch the spring (2) to the cam stopper lever (fig 3.85)

Tightening torque	0.6 - 1.0 kgm

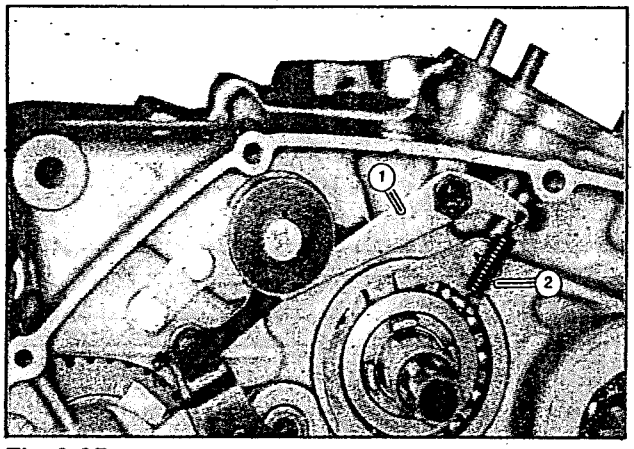


Fig 3.85

CLUTCH HOUSING

Match the Dogs (A) of countershaft with slots B of primary driven gear (fig 3.86)

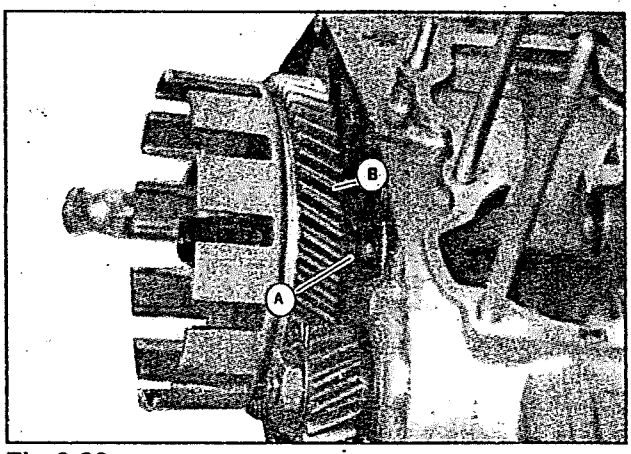


Fig 3.86

Install the clutch housing by using the plastic hammer (fig 3.87)

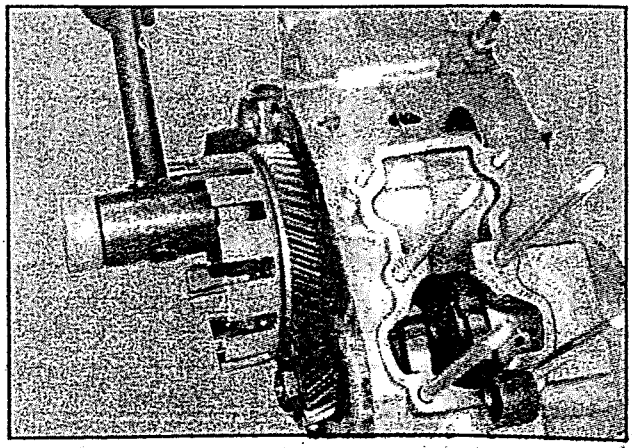


Fig 3.87

Check the circlip is installed securely in its groove (fig 3.88)

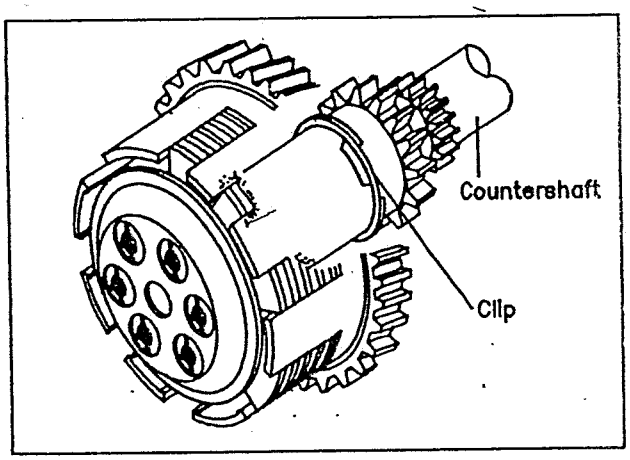


Fig 3.88

Be sure that the ends of the clutch spring bottom are kept at the same height as the bottom surface of the clutch sleeve hub (fig 3.89).

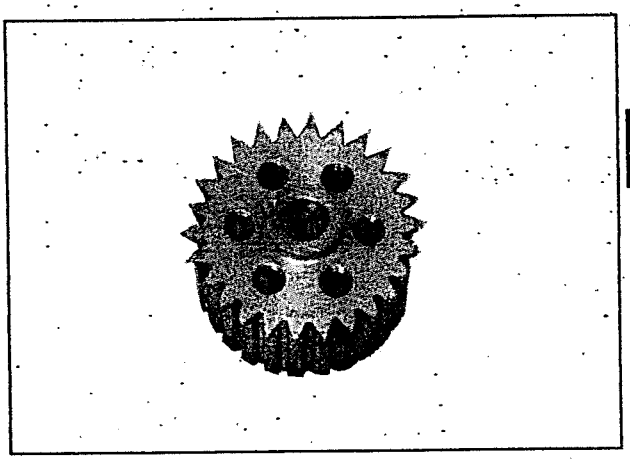


Fig 3.89

NOTE :
Always insert the spring as shown in fig 3.90 At the same time of inspection if the clutch spring seating is not aligned (see fig 3.89) with the bottom surface of the clutch hub, remove the spring as shown in diagram. Do not adjust the spring if alignment is not proper by rotating the spring. The sharp edge in the spring might damage the clutch sleeve hub, reassemble as described in (fig 3.90)

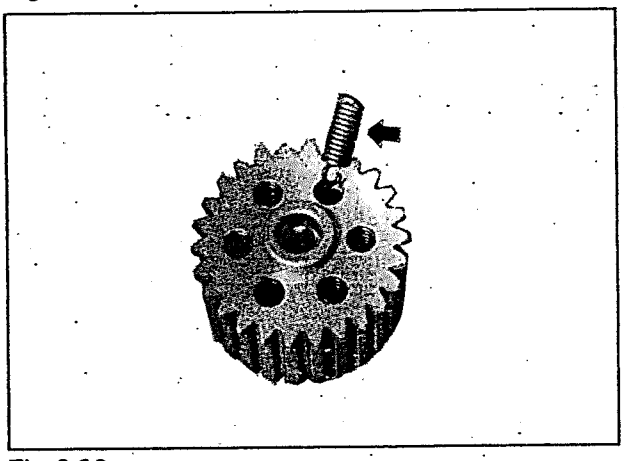


Fig 3.90

CLUTCH SLEEVE HUB

Using special tool, tighten the clutch sleeve hub nut to specified torque (fig 3.91)

731 003 0	Clutch sleeve hub holder

Tightening torque	3.5 - 4.5 kgm

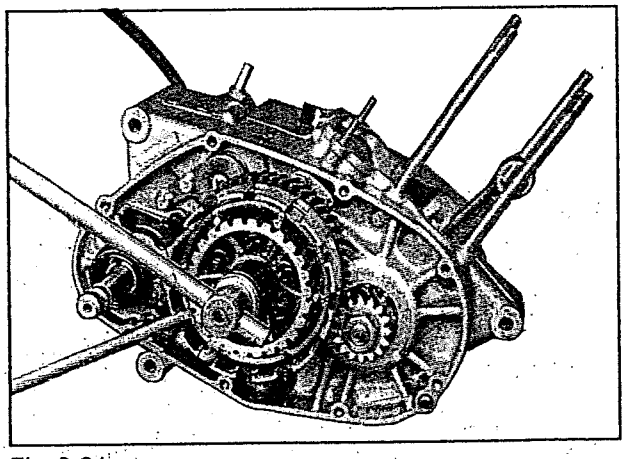


Fig 3.91

PUSH ROD

When inserting the push rod, round end should be installed as shown in the figure (fig 3.92)

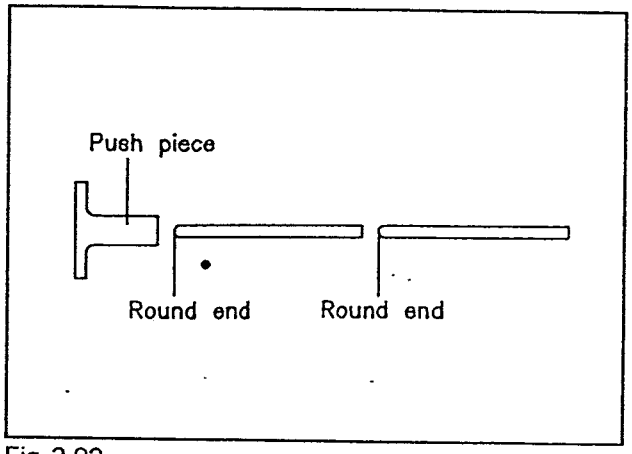


Fig 3.92

PRESSURE PLATE

Install the clutch pressure plate so that boss (1) in the clutch sleeve hub is aligned with mark (2) on the pressure plate (fig 3.93)

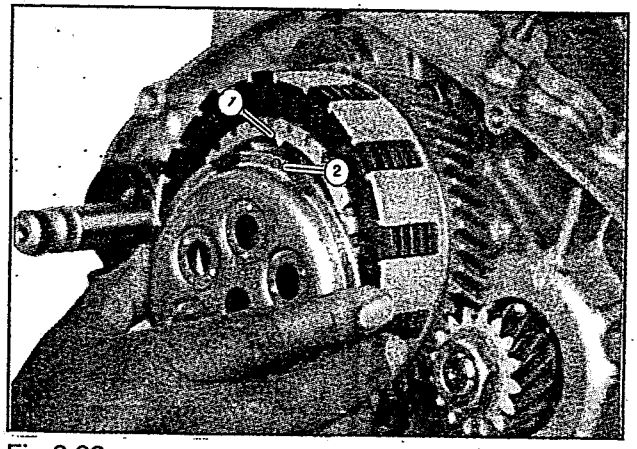


Fig 3.93

PISTON RING

Install expander ring (fig 3.94) into the 2nd ring groove. The two piston rings, 1st and 2nd, are identical in shape and are key-stone type with the stamped mark "RN" or "T" or "R" on their upper sides (fig 3.95). Each ring in place should be so positioned as to hug the locating pin (fig 3.96). Service oversize rings are marked as 0.5 or 1.00 mm on top.

CAUTION :
(1) In Supra 11 BHP engine only 'R' mark has to be used. (2) The mark should face top side of the piston otherwise piston ring may break while assembling in the cylinder block.

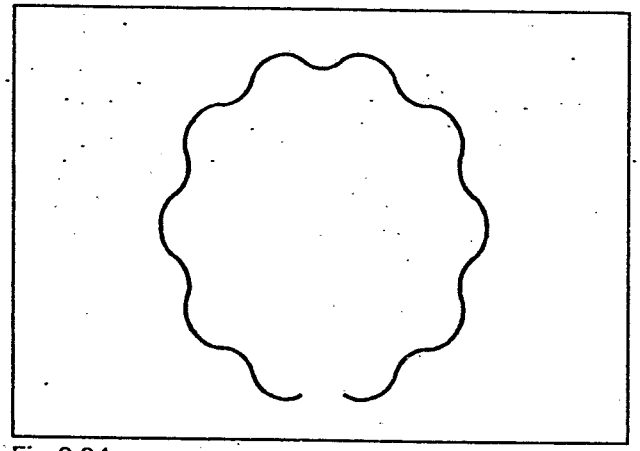


Fig 3.94

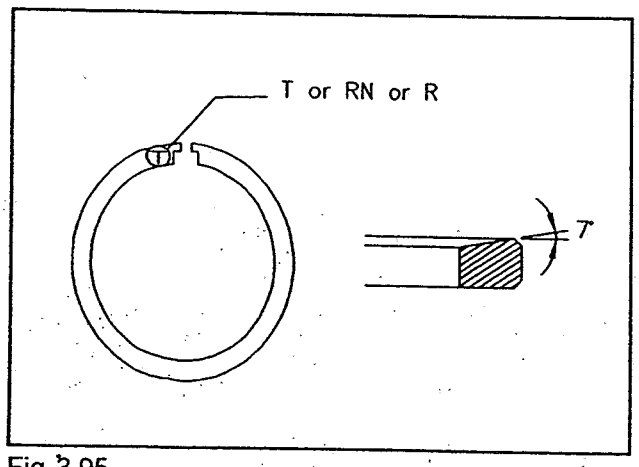


Fig 3.95

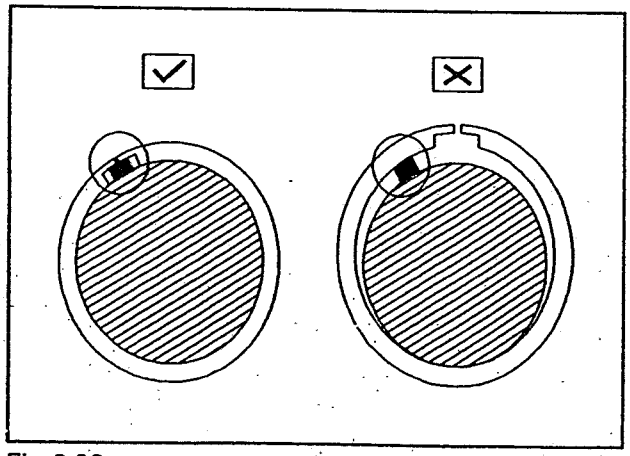


Fig 3.96

PISTON

Before connecting the piston to the connecting rod, be sure to apply two stroke oil to the connecting rod big end and small end bearings.

The arrow mark on the piston crown points to the exhaust port side (fig 3.97)

CAUTION :
In Supra 11 BHP engine only use new type of piston which is having locating pin opposite to arrow mark. All latest vehicle (Shogun, Samurai, Max 100 & Max 100R) the locating pin is towards carburettor side.

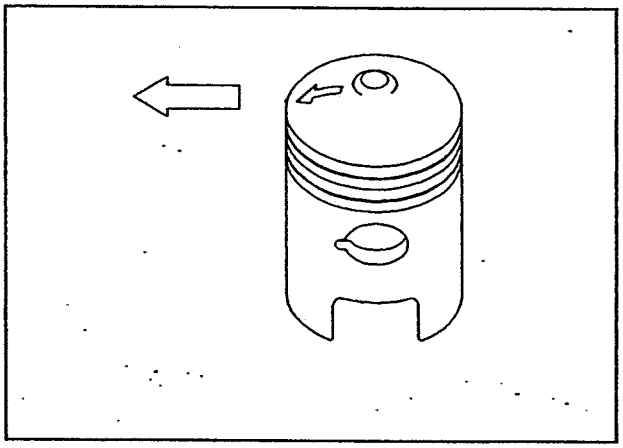


Fig 3.97

REED VALVE

The reed valve is located on the inside of the inlet port. Before securing the cylinder to the crankcase, examine the reed valve carefully, make sure that there is no foreign matter (A) stuck between reed valve and valve stopper (fig 3.98). Poor engine performance is often due to neglect of this attention.

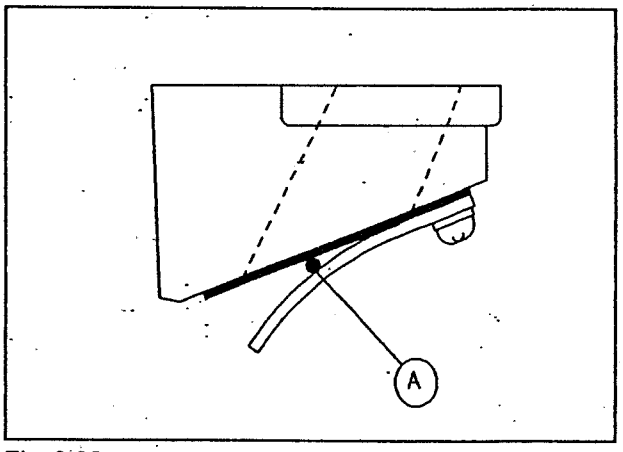


Fig 3.98

CYLINDER HEAD

Tighten the cylinder head nuts in the order as shown in fig 3.99 to the specified torque.

Tighten torque	2.0 - 2.5 kgm

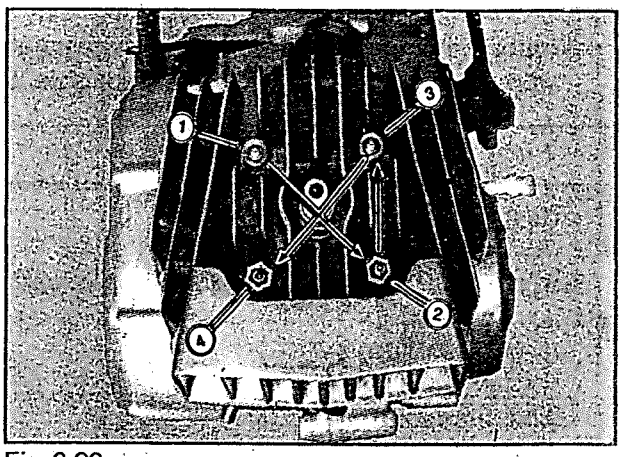


Fig 3.99

OIL PUMP

- Clean both the oil pump and crankcase mating surfaces.
- Place a new gasket onto the pump mating surfaces.
- Align central driven spigot of the pump with the slot in the oil pump drive piece which is positioned on the end-slot of kick starter gear (fig 3.100)

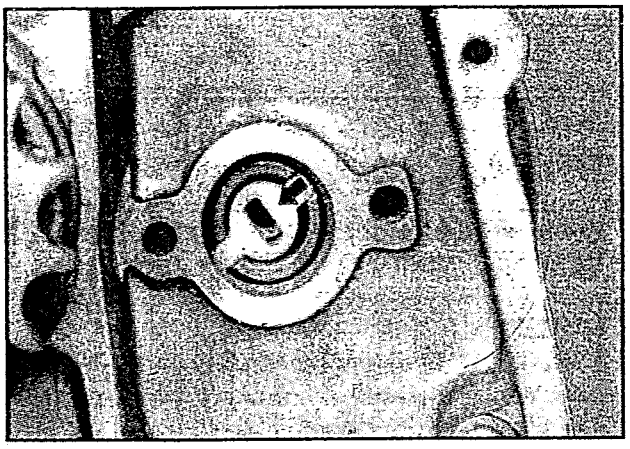


Fig 3.100

- With the pump properly seated, fit and tighten its two retaining screws (fig 3.101)

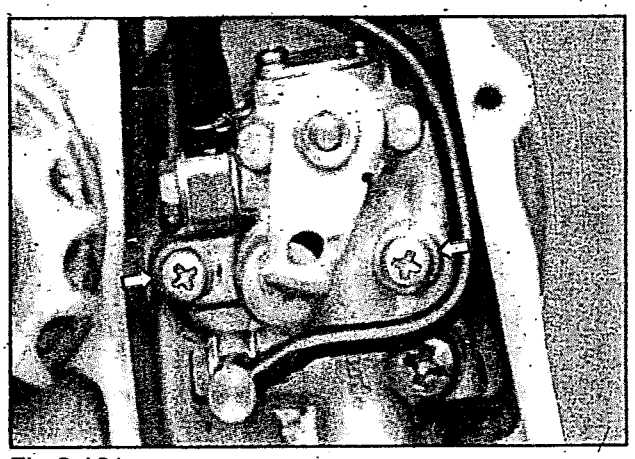


Fig 3.101

NOTE :

- **Two retaining screws must have a serviceable spring washer located beneath their heads.**
- **If the oil pump feed and delivery pipes were detached from the pump during removal of the assembly, they should now be unplugged and reconnected.**
- **Ensure that both pipes are a good push fit on their respective stubs and correctly retained by their spring clips.**
- **Route both pipes through their original locations, taking to care ensure that they are neither twisted nor crimped between any engine components.**

NOTE :

After engine installation, the following adjustments are required :

- **Throttle cable play**
- **Oil pump control cable**
- **Clutch cable play**
- **Drive chain sag**

FUEL, OIL AND EXHAUST SYSTEM

CONTENTS

FUEL TANK AND FUEL COCK

The fuel tank is provided with a tank cap and fuel cock. An air vent is provided in the tank cap. The fuel cock has the structure as shown in fig 4.1. A valve is provided at the top of the fuel cock lever and can switch over to "OFF", "ON", and "RES". With the valve ON (Normal) the main passage opens. With the valve OFF, both holes close.

Generally, water or other impurities are contained in petrol. A filter is provided to remove them and a sediment cup to deposit them.

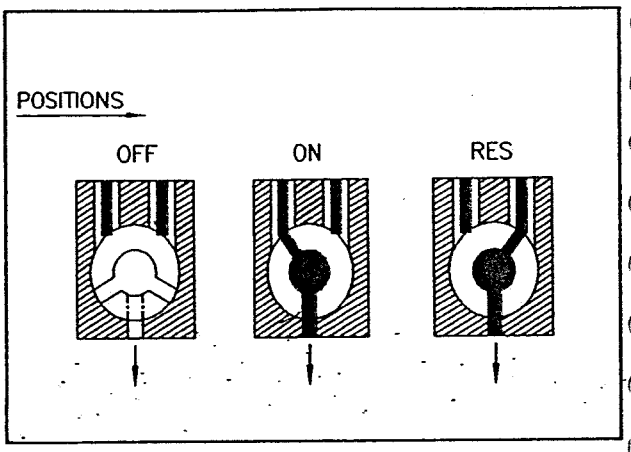


Fig 4.1

CLEANING

The fuel cock filter will collect impurities, and therefore must be periodically checked and cleaned. The fuel tank, the fuel cock filter and sediment cup are to be cleaned every 6000 km. Use compressed air to clear any obstruction.

INSPECTION

If the fuel leaks from the cup or from around the fuel cock, the cup gasket (fig 4.2) or cock gasket may be damaged. Visually inspect these parts, and replace them if necessary.

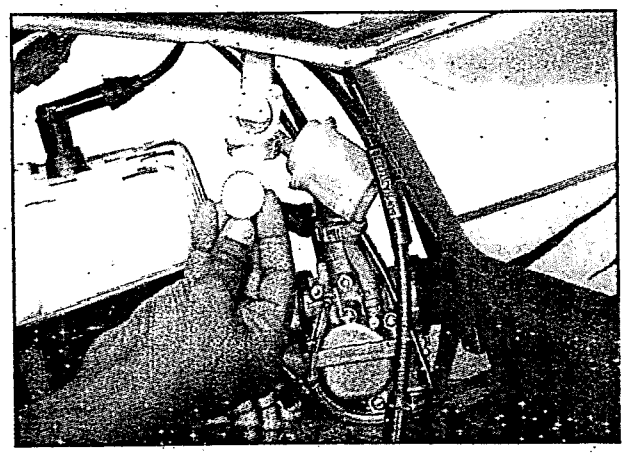


Fig 4.2

CARBURETTOR

I.D.number location fig 4.3

CLEANING

All carburettor parts and air fuel passage of carburettor body can be cleaned by using a cleaning solvent. Finally clean with compressed air.

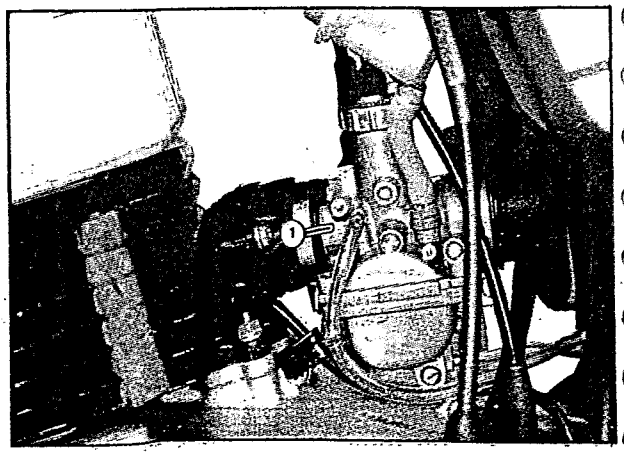


Fig 4.3

FLOAT HEIGHT ADJUSTMENT

To check the float height, invert the carburettor body, holding the float arm pin so that the pin will not slip off. With the float arm kept free, measure the height (A) (fig 4.4) while float arm is just in contact with needle valve by using the caliper. Bend the tongue (1) as necessary to maintain the float height.

Float height	21.4 ± 1.0 mm for AX-100 STD, AX-100 AC, SUPRA 11 BHP, SHOGUN

Float height	21.9 ± 1.0 mm for AX-100 R, AX-100 R AC, SAMURAI, MAX 100, MAX 100R

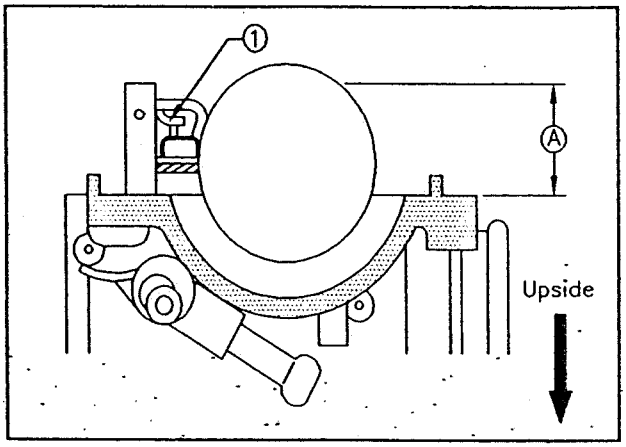


Fig 4.4

NEEDLE VALVE INSPECTION

If foreign matter is lodged in between the valve seat and the needle, the petrol will continue flowing and cause it to overflow. If the seat and needle are wornout beyond the permissible limits, similar trouble will occur. Conversely, if the needle sticks, the petrol will not flow into the float chamber.

Remove the carburettor, float chamber and float, and clean the float chamber and float parts with petrol. If the needle is worn as shown below (fig 4.5) replace it together with a valve seat. Clean the fuel passage of the mixing chamber with compressed air.

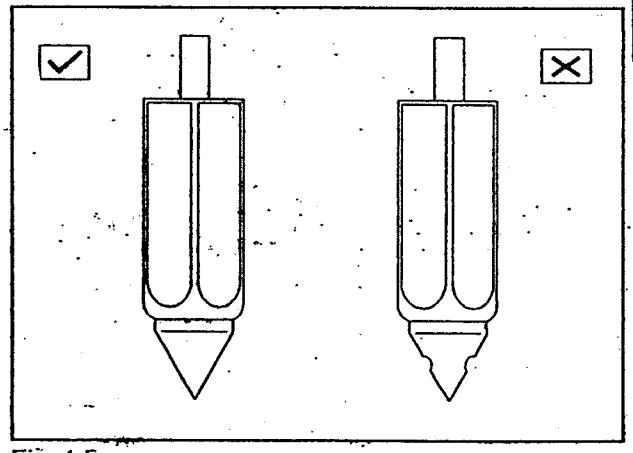


Fig 4.5

DIAGNOSIS OF CARBURETTOR

Whether the carburettor is producing a proper mixture of fuel and air can be checked by making a road test (simulating the way the user operates the machine) with a standard sparkplug (refer to service data) fitted to the engine. After the road test, remove the sparkplug, and observe the appearance of the plug as well as the surfaces of the piston crown. The colour observed tells whether the mixture is too rich or too lean.

CARBURETTOR DATA

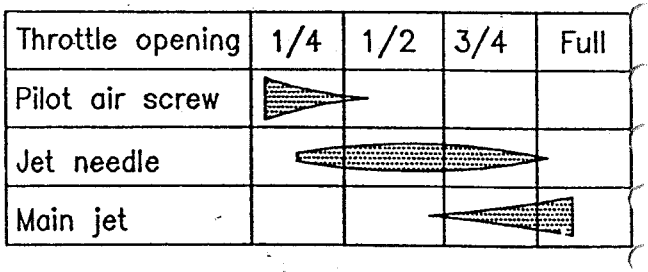
Model	Type	Identification No.	Main Jet	Pilot Jet	Starting Jet	Float height in mm	Slide colour	'E'clip position from top	Needle	Diffuser	Air Screw No. of turns out	Valve	Idling rpm
AX-100 upto Aug.86	MIKUNI VM20SS	234-40	90	15	30	21.4 ± 1	2.0 Gold	4th	4JL43	0-0	2 turns	1.5	1350 ± 150
AX-100 Sept.86 onwards	MIKUNI VM20SS	234-40	90	15	30	21.4 ± 1	2.5 Gold	4th	4JL43	0-0	1.25 turns	1.5	1350 ± 150
AX-100R AX-100 RAC MAX100 MAX100R SAMURAI	MIKUNI VM18SS UCAL VM18SS	234-60 or 234-61	87.5	15	30	21.9 ± 1	2.5 Black	3rd	3FL17	E-1	1.40 turns	1.2	1350 ± 150
AX-100 Supra 9.65BHP	MIKUNI VM18SS	234-50 or 234-51	90	15	30	21.9 ± 1	2.5 Black	2nd	3Q10	E-8	1.25 turns	1.2	1350 ± 150
Supra 11 BHP	MIKUNI VM20SS	234-70	92.5	15	30	21.4 ± 1	2.0 Gold	4th	4JL43	0-0	2.50 turns	1.5	1350 ± 150
Shogun	MIKUNI VM20SS UCAL VM20SS	23-48	100	20	30	21.4 ± 1	1.5 Gold	2nd with shim	4DO4	0-8	2 turns	1.5	1500 ± 200
Shogun (Catalytic Converter)	MIKUNI VM20SS UCAL VM20SS	23-48	97.5	17.5	30	21.4 ± 1	2.0 Black	2nd with shim	4DO1	0-8	1 turn	1.5	1500 ± 200

MIXTURE ADJUSTMENT

- This adjustment is effected mainly by main jet and jet needle.
  Before doing so, check to be sure that the float level is correctly set and that the overflow pipe, inlet hose and air cleaner are in sound condition.

- Find out at which throttle position the engine lacks power or otherwise performs poorly. Drive the machine at that throttle position for a distance of about 10 km, after which the spark plug and piston crown should be inspected for colour and appearance.

- This mixture can be made 'richer' or 'leaner' in three ways : namely, by altering main jet, jet needle or air adjusting screw. Effectiveness of these ways depends on the throttle position, as shown in this chart.



NOTE :
If the machine is tested at 1/2 throttle resulting in a colour and appearance indicating a mixture that is too rich or too lean, perform adjustment by means of jet needle and air adjusting screw.

CARBURATION

Correct carburation is determined according to the results of various tests, mainly concerning engine power, fuel consumption and cooling effect of fuel on engine. Jet settings are made so as to satisfy and balance all of these conditions. Therefore, the jet should not be replaced with a size other than the original, and the positions of adjustable parts should not be changed except when compensating for the mixture ratio due to altitude differences or other climatic conditions. When adjustment is necessary, refer to the following (fig 4.6) chart.

Fuel - air mixture ratio can be changed as follows

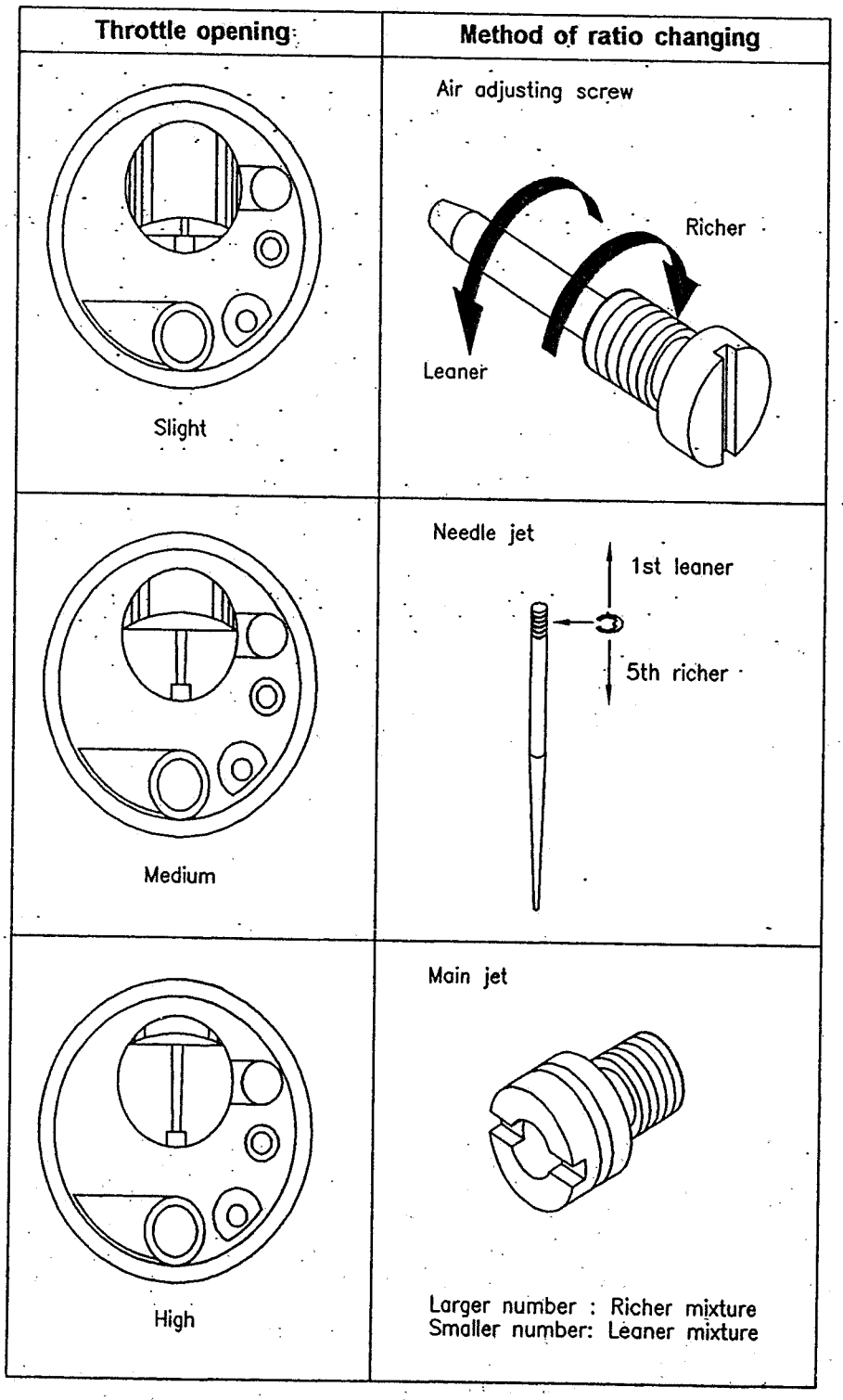


Fig 4.6

OIL PUMP

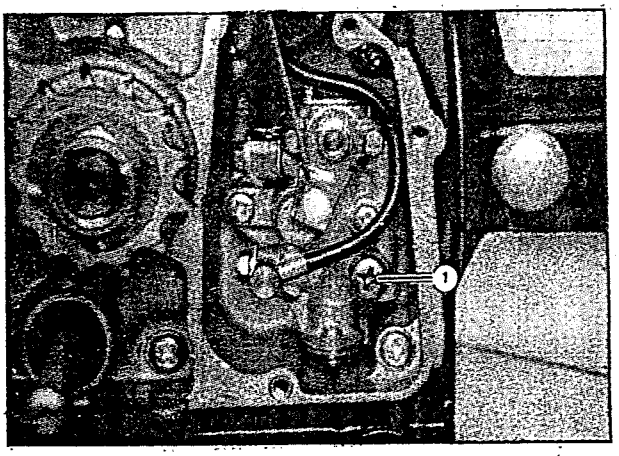


Fig 4.7

Whenever oil pump is removed and refitted make sure to carry out air bleeding opertion.

To bleed the air, hold the machine in standstill condition. Loosen the screw (1) (fig 4.7) to let out the air after making sure that all the trapped air has been bled, tighten the screw firmly.

CHECKING OIL PUMP

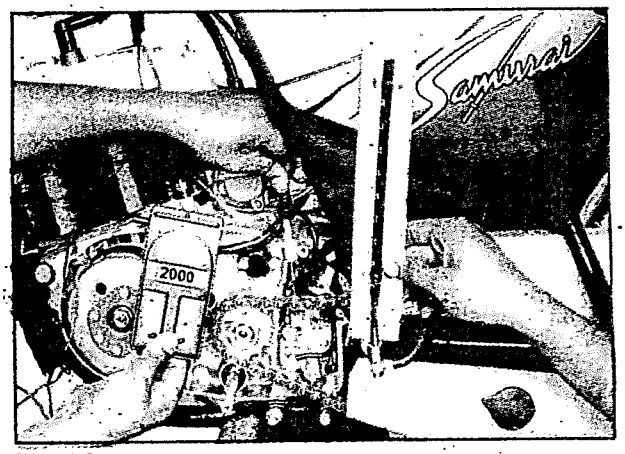


Fig 4.8

Use the special tool, to check the pump for capacity by measuring the amount of oil, the pump draws during the specified interval (fig 4.8)

031 330 0	CCI oil gauge

The checking procedure is as follows :

- Have the tool filled with recommended 2T oil and connect it to the suction side of the pump
- Run the engine at 2000 rpm
- Holding engine speed at the same 2000 rpm move the oil pump lever so as to align the maximum delivery mark on the lever with the mark on pump body (fig 4.9)

  For this operation the reading taken on the device should be from 1.5 to 1.8 ml

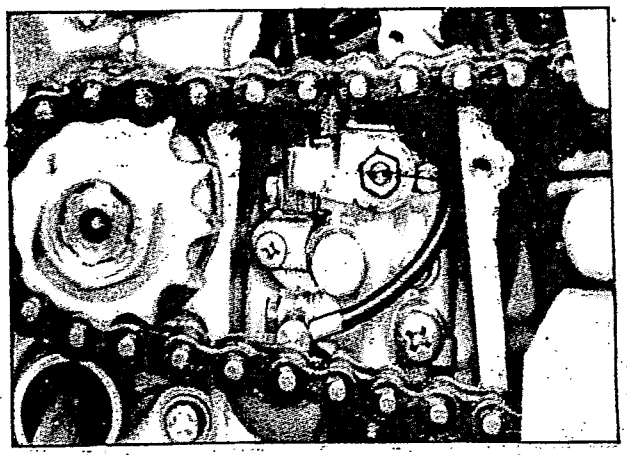


Fig 4.9

2 minutes at 2000 rpm Oil discharge amount	1.5 - 1.8 ml

NOTE :
Adjust both throttle and oil pump control cable play after checking oil pump

MUFFLER ASSEMBLY

Muffler Removal

- Remove the muffler mounting nut (2 nos) (fig 4.10)

13 mm Socket spanner

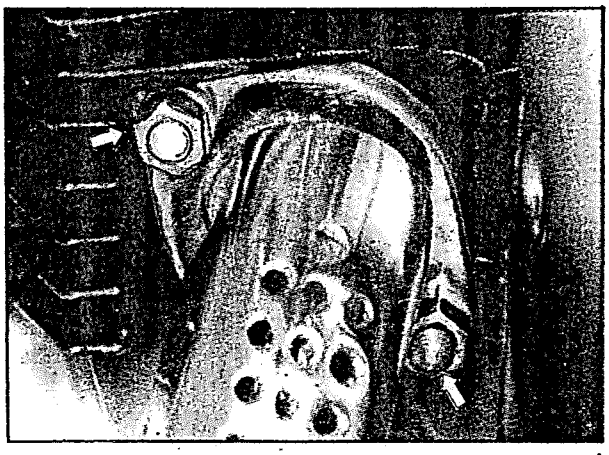


Fig 4.10

- Remove the swing arm shaft nut (fig 4.11)

17 mm Ring spanner

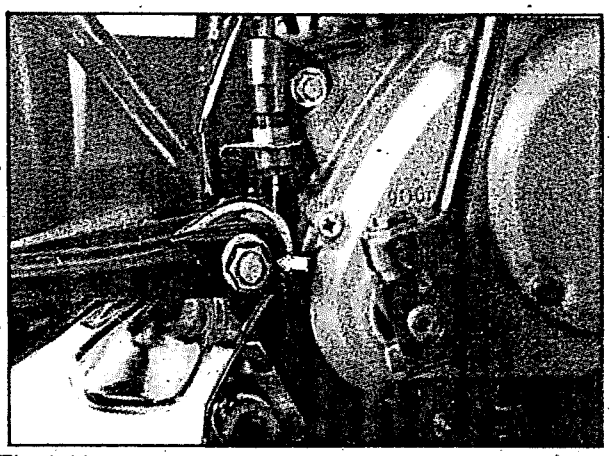


Fig 4.11

- Remove the muffler (fig 4.12)

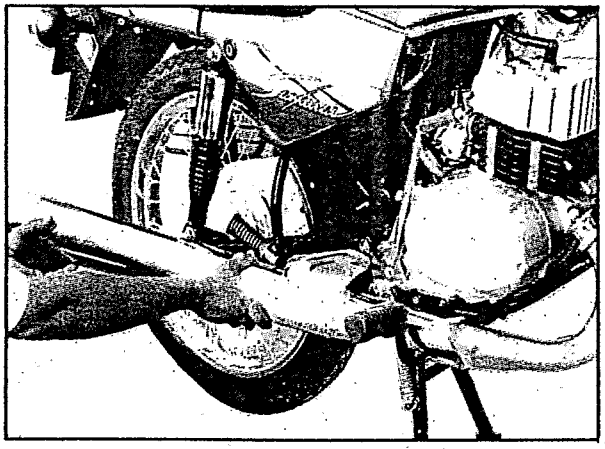


Fig 4.12

SERVICING OF MUFFLER ASSEMBLY

- Inspect for any crack or failure on the muffler and muffler mounting bracket.

CLEANING PROCEDURE FOR MUFFLER USING C-CLEAN

The carbonising matter along with unburnt oil and gummy matter gets deposited on the walls of the muffler. The cleaning solution contains polar constituents which enables the dissolution of gummy mass and burnt oil. The porous carbon particles will get loosened which can be cleaned. The details of cleaning procedure is as follows :

CLEANING SOLUTION C-CLEAN

HOW TO USE C-CLEAN

1. Take out the muffler assembly and close the tail end.
2. Shake c-clean well before use.
3. Pour the cleaner (750 ml) through the exhaust tube flange into the muffler.
4. Shake well for 3-4 mts.
5. Place the muffler for minimum of 12 hrs.
6. Now invert the muffler assembly and gently tap the sides of the muffler walls so that the clogged carbon matter falls out.
7. Re-assemble the muffler assembly and run the engine on stand. All loose particles get washed away completing the decarbonising action.

NOTE :

- **During handling if the solution is in contact with body it may give a soapy feeling which is harmless.**
- **Running the engine on the stand should be done in well ventilated area.**
- **Avoid inhaling the gas during running the engine on the stand.**

CAUTION :
For Shogun fitted with catalytic silencer, remove the baffle assembly before cleaning the silencer with c-clean solution.

MUFFLER ASSEMBLY WITH CATALYTIC CONVERTER (SHOGUN ONLY)

The Catalytic converter is fitted on to the Suzuki Shogun, to confirm to the 1996 emission norms, retaining the same power & acceleration. The Catalytic converter oxidises the harmful unburnt hydro carbons and carbon monoxide to carbon dioxide and water, bringing down the pollution levels.

The catalytic converter is placed at the front end of the baffle pipe (fig 4.13). Because of the oxidation reaction taking place in the muffler assembly, heat is generated. The muffler assembly is provided with a full length insulated guard (Protector muffler) for protection and safety against burns.

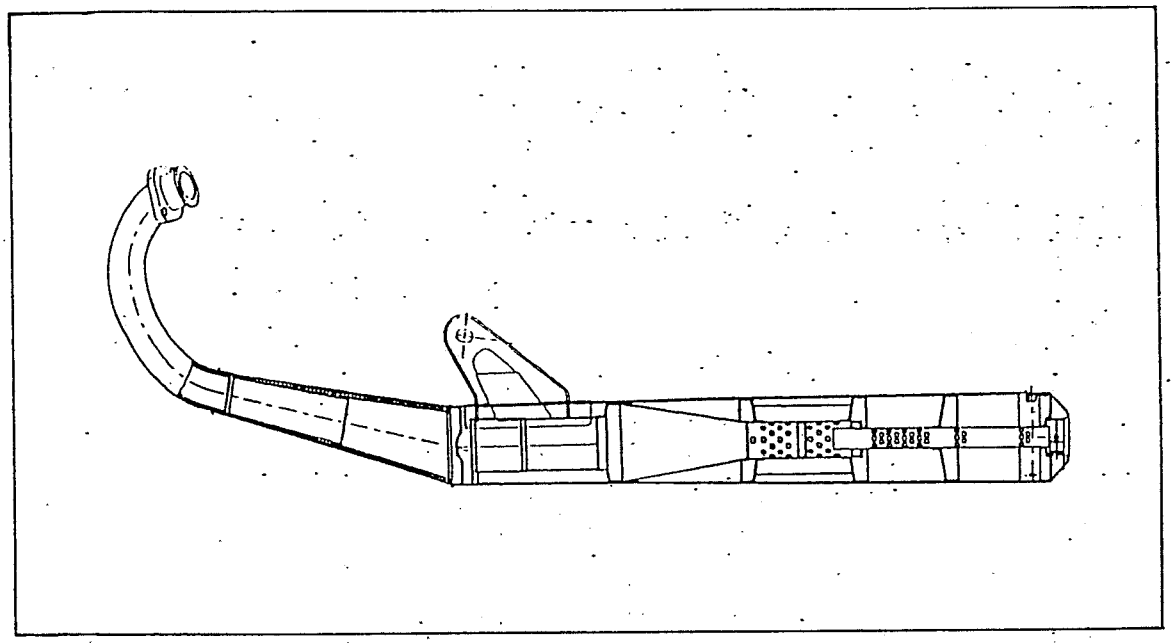


Fig 4.13

WARNING :
The Catalytic converter Shogun, should be used with the guard provided on the silencer. Violation will result in burn injuries.

CAUTION :
For Shogun with catalytic converter use unleaded petrol only. Even one tank full of leaded petrol will permanently damage the catalytic converter.

ELECTRICAL SYSTEM

CONTENTS

IGNITION SYSTEM

The ignition system consists of a flywheel magneto, a capacitor discharge ignition unit (CDI), ignition coil and a spark plug.

WIRING CIRCUIT

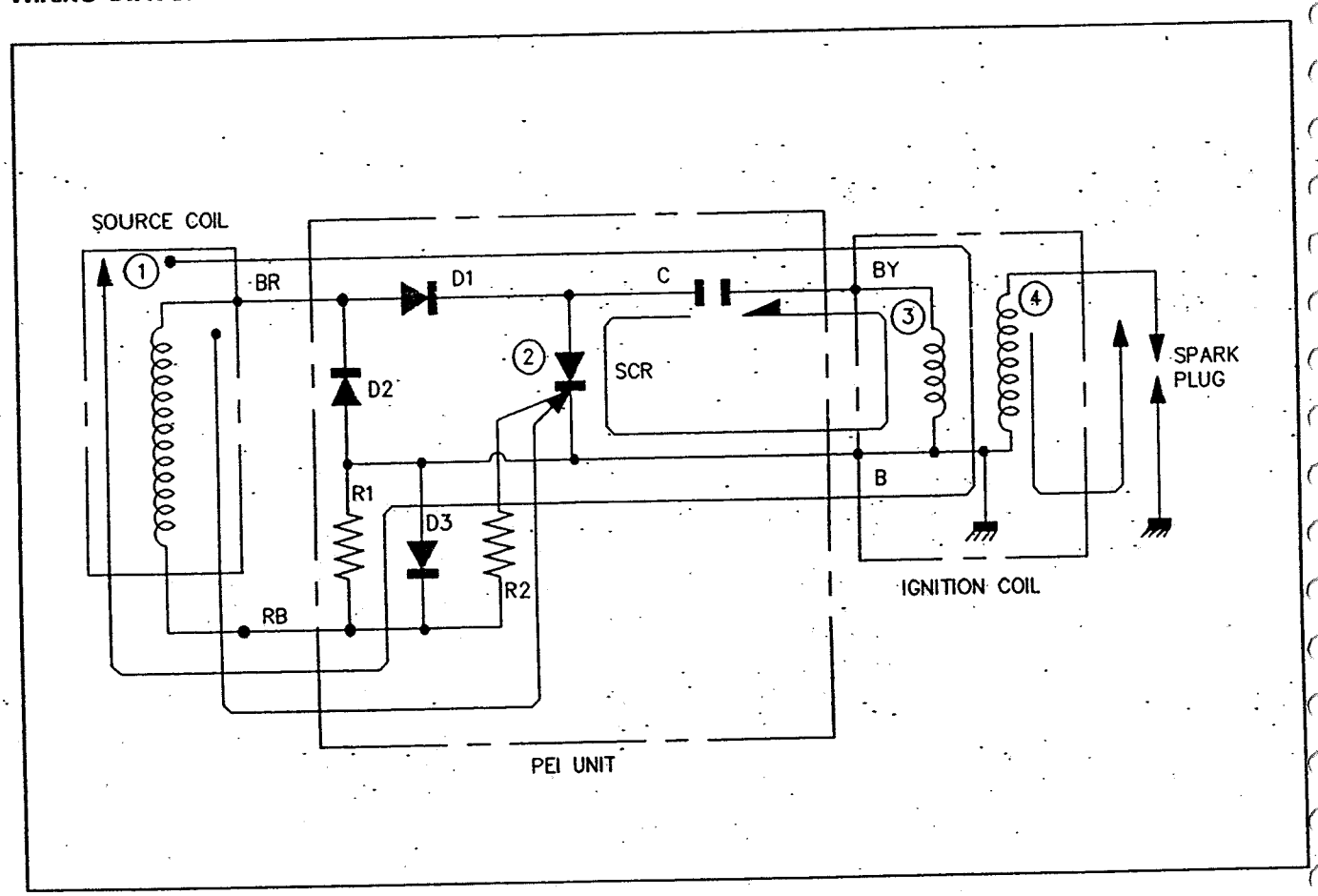


Fig 5.1

Description

1. As the Magneto Rotor (1) rotates, the voltage induced in the source coil flows through diode D1 to charge the capacitor. (c)
2. Further rotation of rotor, reverses the current direction. Through resistor R2, a voltage is applied to SCR gate (2). It makes SCR conduct (Turned on).
3. When SCR conducts, the capacitor discharges the stored energy, rapidly through the primary coil (3) of ignition coil.
4. In this way, a high surge of voltage quickly builds up in the secondary winding, (4) causing a high energy spark to jump across the spark plug gap.

WIRE COLOUR CODE INDEX

SL.NO.	CODE	WIRE COLOUR
01	B	BLACK
02	Bl	BLUE
03	Br	BROWN
04	G	GREEN
05	Gr	GREY
06	Lg	LIGHT GREEN
07	Lbl	LIGHT BLUE
08	Or	ORANGE
09	R	RED
10	W	WHITE
11	Y	YELLOW
12	V	VIOLET
13	BW	BLACK WITH WHITE TRACER
14	BR	BLACK WITH RED TRACER
15	BY	BLACK WITH YELLOW TRACER
16	BlW	BLUE WITH WHITE TRACER
17	BrW	BROWN WITH WHITE TRACER
18	GW	GREEN WITH WHITE TRACER
19	RB	RED WITH BLACK TRACER
20	WR	WHITE WITH RED TRACER
21	WB	WHITE WITH BLACK TRACER
22	YW	YELLOW WITH WHITE TRACER
23	YR	YELLOW WITH RED TRACER

INSPECTION

CDI UNIT WITH THE MULTIMETER

Check for continuity of the CDI unit as given below :

INSPECT WITH MULTIMETER					
NEGATIVE POINTER TO TOUCH (- VE)	POSITIVE POINTER TO TOUCH (+ VE)				
		BR	RB	B	BY
	BR	-	OFF	OFF	OFF
	RB	ON	-	ON	OFF
	B	ON	ON	-	OFF
	BY	OFF	OFF	OFF	-

CDI UNIT AND IGNITION COIL

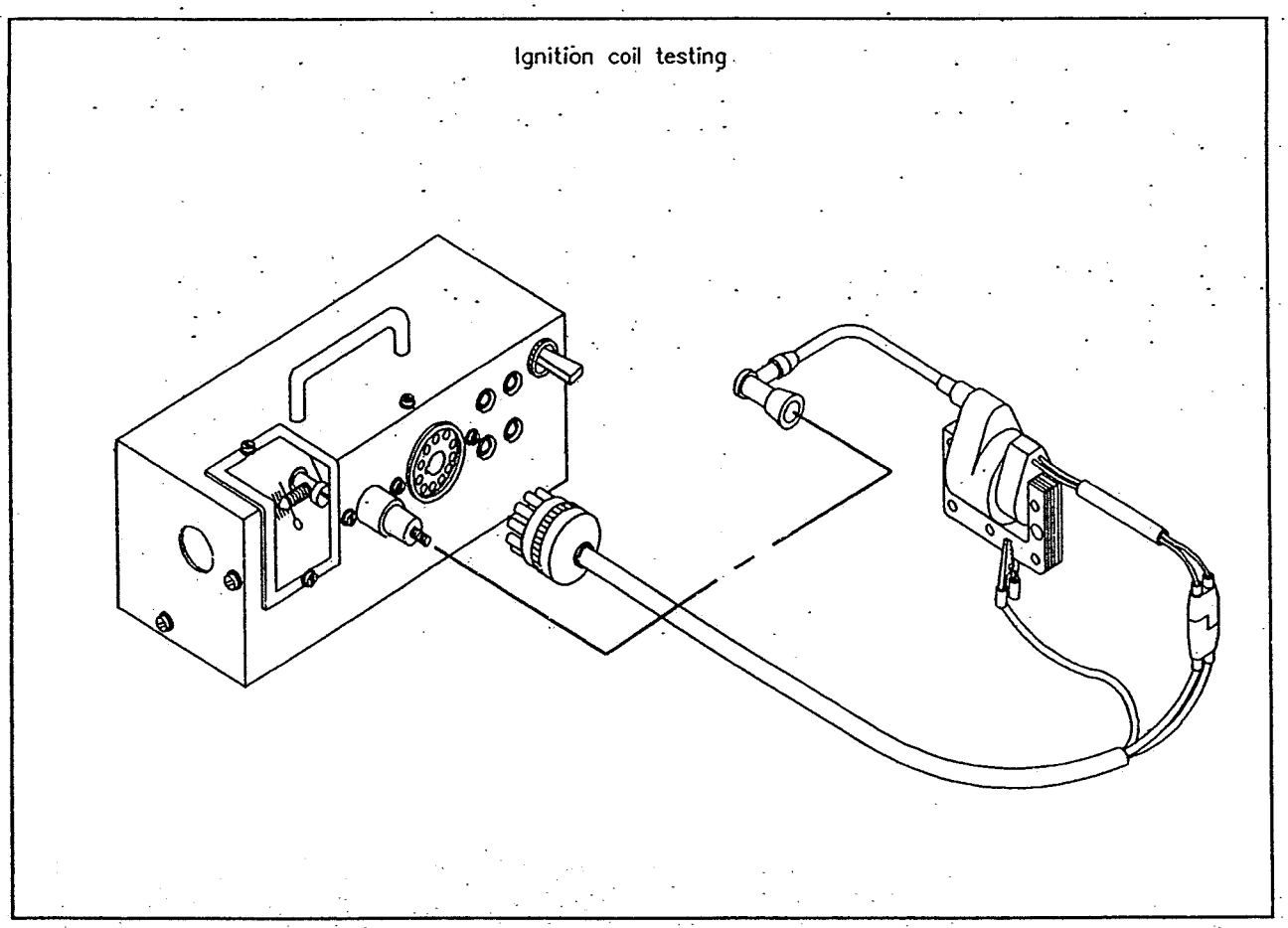


Fig 5.2

CDI unit checking

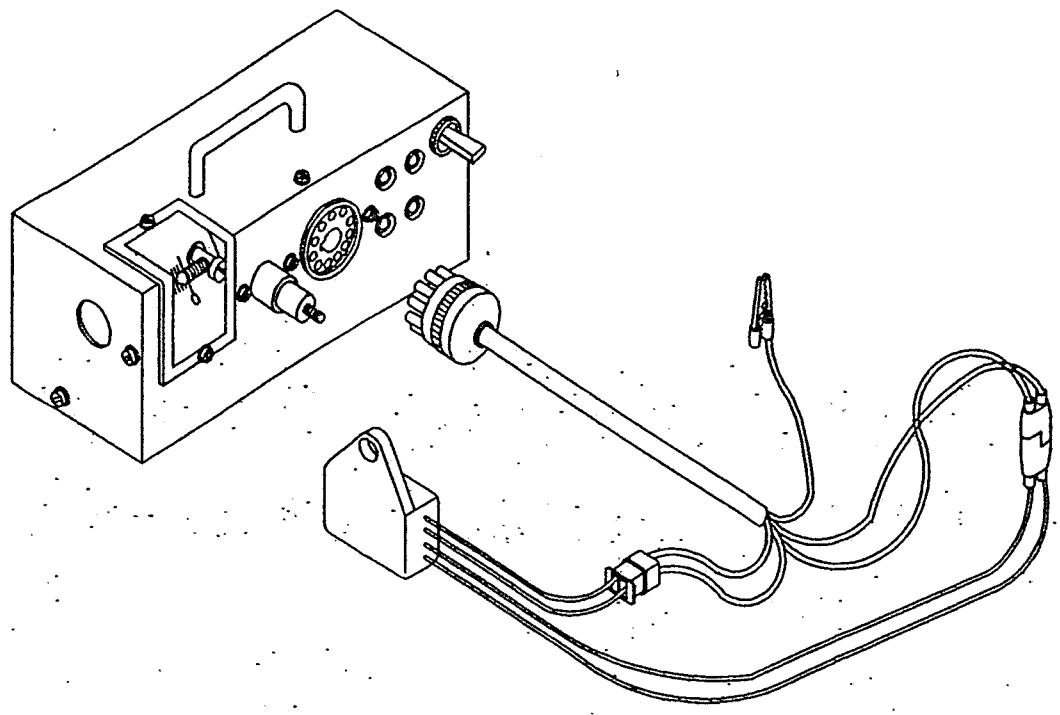


Fig 5.2A

Ignition coil & CDI unit testing

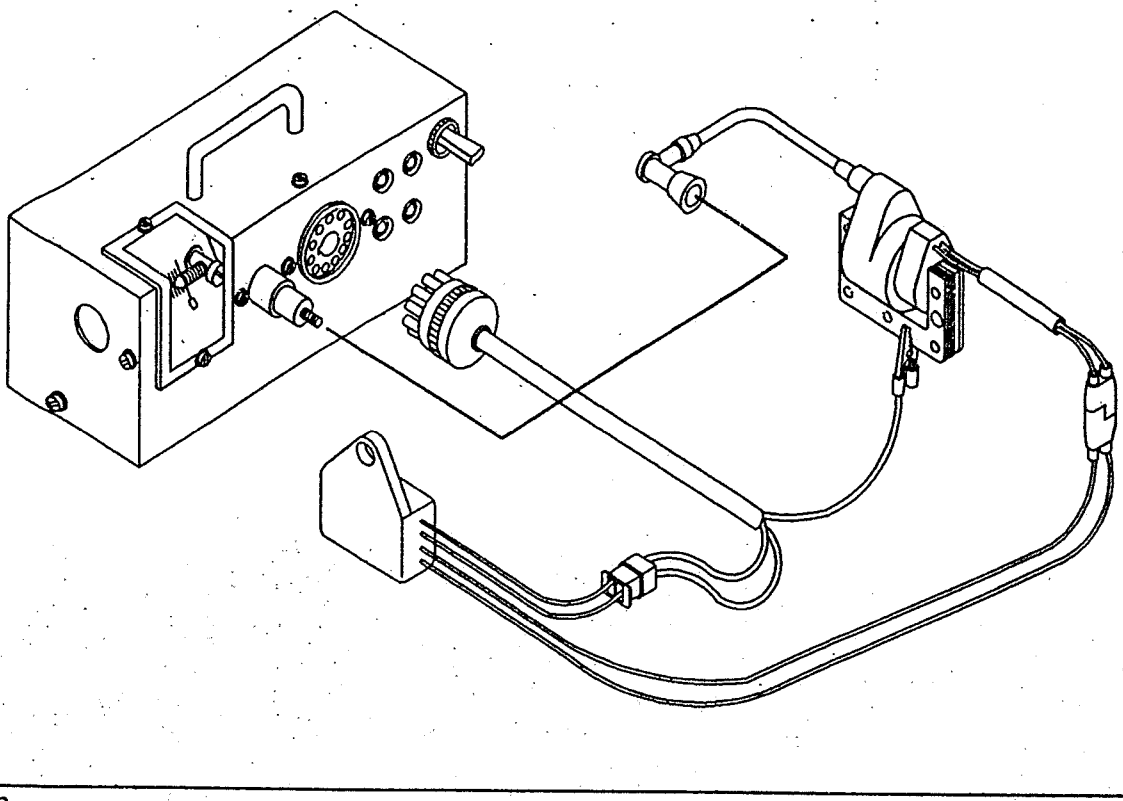


Fig 5.2B

Checking with the ignition coil and CDI tester

031 410 0	Ignition coil & CDI Tester

Connect the test lead of the tester to the CDI unit to be checked. The indicator light on the tester panel will indicate the condition of the CDI unit being tested (fig 5.2).

Ignition coil is checked by connecting the ignition coil checking test lead of the tester to the ignition coil unit and checking the spark produced in the spark gap window (fig 5.2A).

Both the CDI unit and ignition coil can be checked together by using the CDI test lead and giving the earth connection of the ignition by connecting the crocodile clip to the ignition coil mounting bracket (fig 5.2B).

- Note the spark in the spark gap window. It should be strong and continuous and not intermittent, across a pre-set 8 mm gap (fig 5.3). Allow the spark to jump the test gap for atleast five minutes continuously, to ensure proper operation under the temperature conditions of actual riding.

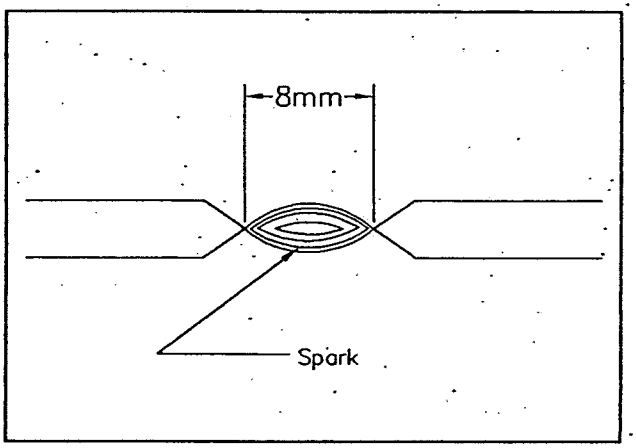


Fig 5.3

CHECKING THE IGNITION COIL WITH MULTIMETER

031 220 0	MULTIMETER

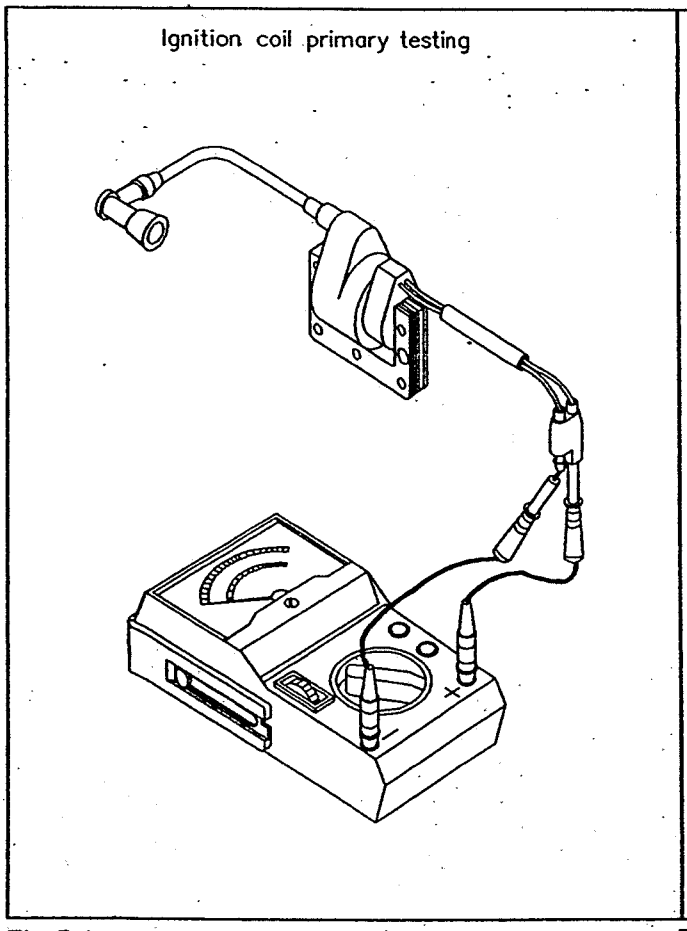


Fig 5.4

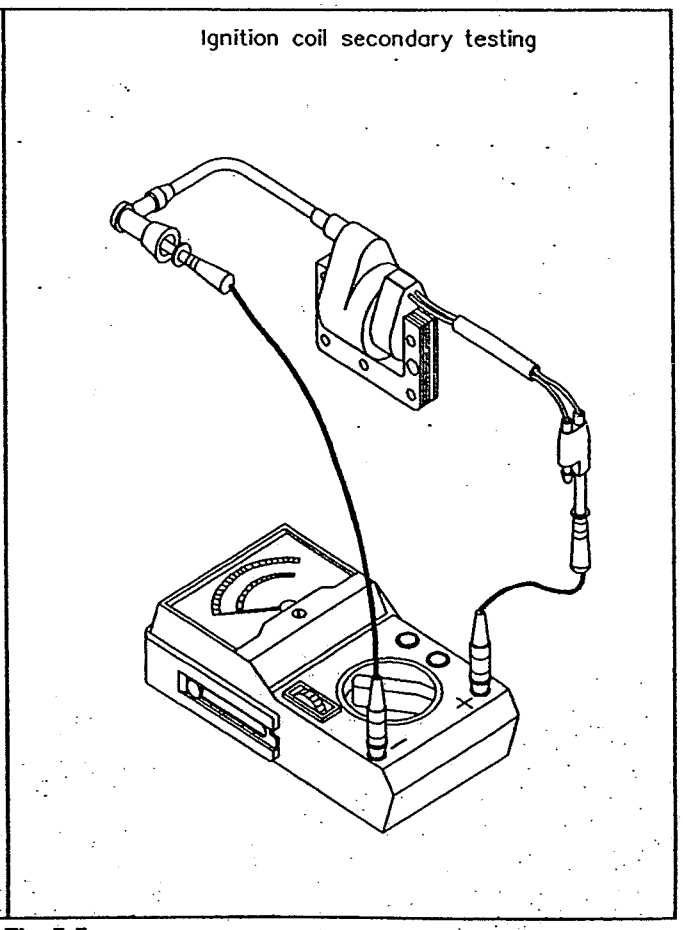


Fig 5.5

1. Check resistance of the primary winding by connecting a multimeter between the two primary leads viz: the black and black yellow wire; the value of primary resistance should be in the order of 0.5 ohm (fig 5.4). If the primary resistance is okay, proceed to check the secondary resistance as given below (fig 5.5)

2. Check resistance of the secondary winding by connecting a multimeter between the HT cord and the primary black wire. The value of the secondary resistance should be in the order of 3.8 k ohm. If the secondary resistance is okay, proceed to check the earthing of black wire as indicated below. (fig 5.5)

3. Ensure that the primary black wire is properly earthed by checking continuity between the primary black wire terminal and the core of the coil.

4. If all the above checks are okay, remove the plug cap from HT cable, hold the cable end at a **distance of about 6 mm** from the engine head, turn the ignition switch on and kick the kick starter lever in the usual manner. If a spark is obtained on kicking, the coil is okay.

Ignition coil	Standard Resistance	Models applicable
Primary Coil	By - B 0.2 - 1 ohm	All models
Secondary Coil	Plug Cap - B 3.2 - 4.8 k ohm	All models

5

STARTING COIL

Using the multimeter, measure the resistance between the lead wires as given in the following table (fig 5.6). If the resistance checked is incorrect, replace the coil.

Standard resistance for all models

BR - RB	85 - 135 ohm

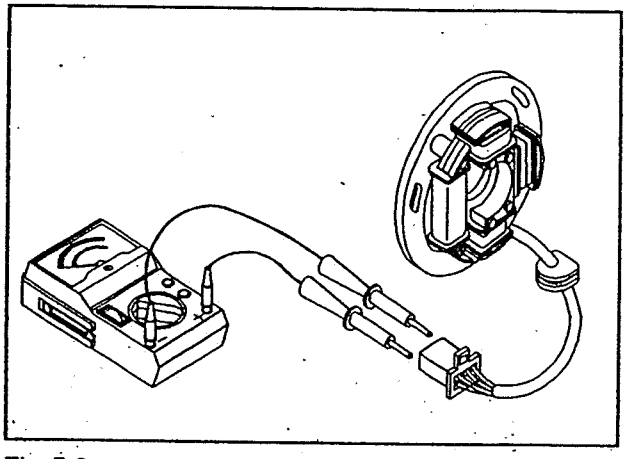


Fig 5.6

CHARGING SYSTEM

CHARGING CIRCUIT

AX-100 STD, AX-100 R and AX-100 Supra

The charging system uses the flywheel magneto as shown in figure (fig 5.7). The charging/lighting coil is mounted on the stator and generates Alternating Current (AC) as the flywheel rotor turns. Alternating Current (AC) generated in the charging coil flows to the rectifier in 6V and RR unit in 12V where it is converted to Direct Current (DC). This Direct Current (DC) serves to charge the battery which is in turn connected to the horn, turn signal light, brake light, neutral indicator light, turn signal indicator lights, oil level indicator light and speedo meter light in 12V (fig 5.7A).

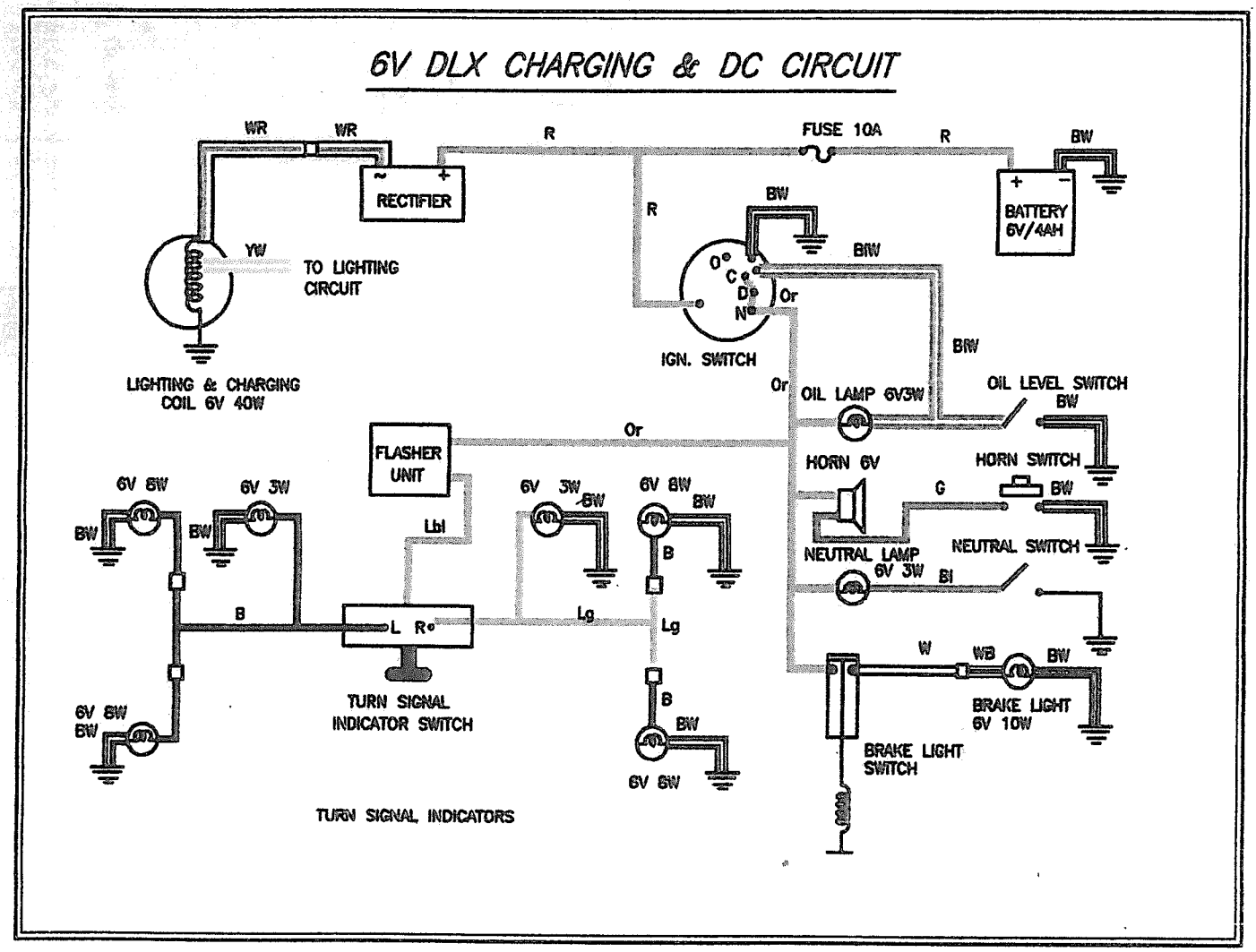


Fig 5.7

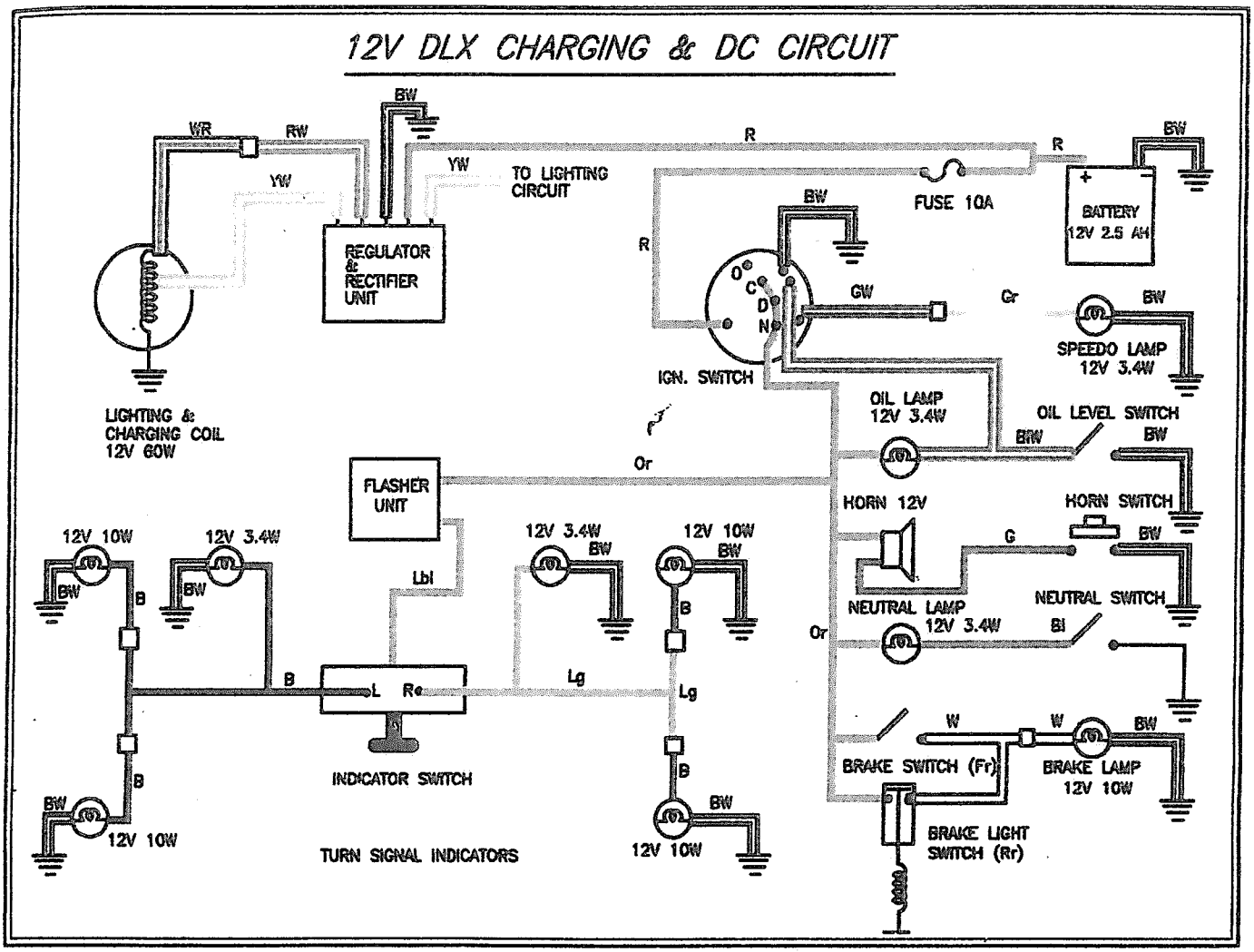


Fig 5.7A

INSPECTION

CHECKING CHARGING AND LIGHTING

Use a Multimeter and check both charging and lighting coils for continuity (fig 5.8)

COILS	CONNECTION	RESISTANCE
Charging Coil	WR - BW	0-1 ohm
Lighting Coil	YW - BW	0-1 ohm
Horn Coil	WR - BW	0-1 ohm

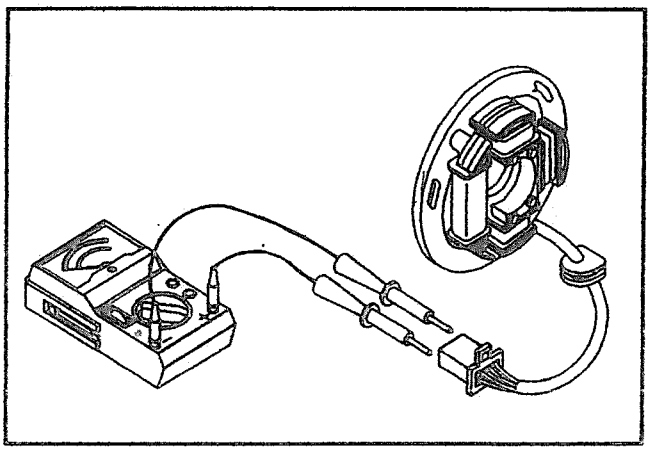


Fig 5.8

SILICON RECTIFIER

The silicon rectifier converts AC to DC by allowing current to pass in one direction only.

Check the silicon rectifier for continuity (fig 5.9)

- Set the multimeter.
- Connect the multimeter plus terminal (+) to the rectifier AC terminal (~) and minus terminal (-) to rectifier DC terminal (+).
- Reverse the test connections.
- If first step shows no continuity and the reverse step shows continuity, the rectifier is in sound condition.

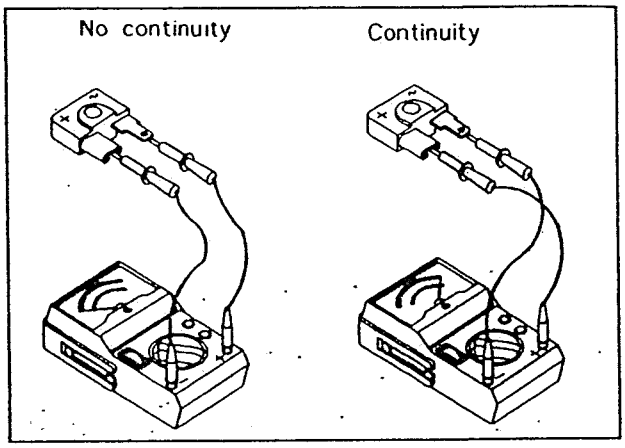


Fig 5.9

CHARGING PERFORMANCE CHECK

- Set the multimeter knob to DC Ampere range 10 A (fig 5.8)
- Start the engine
- Check that the proper charging occurs at the various engine speeds shown in the table. (Values listed below are slightly different from actual values due to load conditions).

AX-100 STD, AX-100 R and AX-100 Supra	
Switch position	Performance
Night running position	Above 0.4 A at 4000 rpm Below 2 A at 8000 rpm

SUPRA 11BHP, AX-100 R 12V, MAX 100 R, SAMURAI and SHOGUN	
Switch position	Performance
Night running position	0.25A - 1A at 4000 - 8000 rpm

LIGHTING PERFORMANCE CHECK

- Set the multimeter knob to AC volt range 20V
- Connect the terminal as shown in (fig 5.8)
- Start the engine
- Check that the voltmeter reads as per the table.

AX-100 STD, AX-100 AC, AX-100R, AX-100R AC AX-100 Supra and New AX-100 AC	
Lighting performance	Above 6 V at 2500 rpm Below 9 V at 8000 rpm

SUPRA 11BHP, AX-100 R 12V, MAX 100 R, SAMURAI and SHOGUN	
Lighting performance	Above 12 V at 2500 rpm Below 14± 1V at 4000 rpm and above

LIGHTING SYSTEM

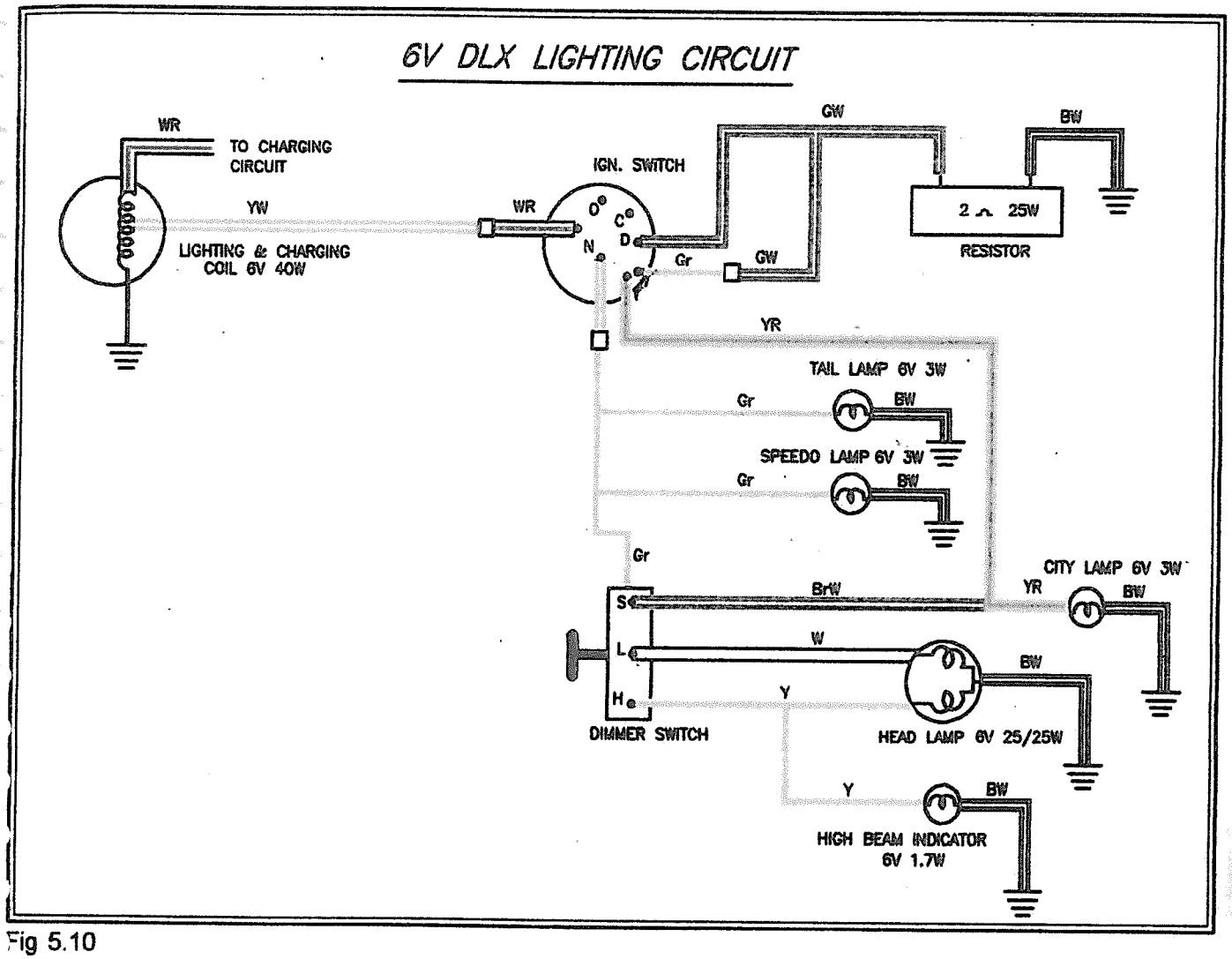


Fig 5.10

In 6V DLX system the lighting/charging coil supplies Alternating Current (AC) to the following bulbs (fig 5.10)

1) Head light
2) Speedometer light
3) City light
4) Tail light
5) High beam indicator light

These lights are operating in "NIGHT" position of the ignition switch.
The same coil also supplies Direct Current (DC) through the rectifier to the following :

1) Battery
2) Horn
3) Turn signal light
4) Turn signal indicator light
5) Brake light
6) Neutral indicator light

5

Since one single coil supplies power to both the AC and DC circuits, the ouput to either circuit is affected by the load in the other circuit.

The resistor in 6V DLX and RR unit in 12V DLX helps to maintain equal load in either circuit under all operating conditions. Thus the resistor / RR unit helps :

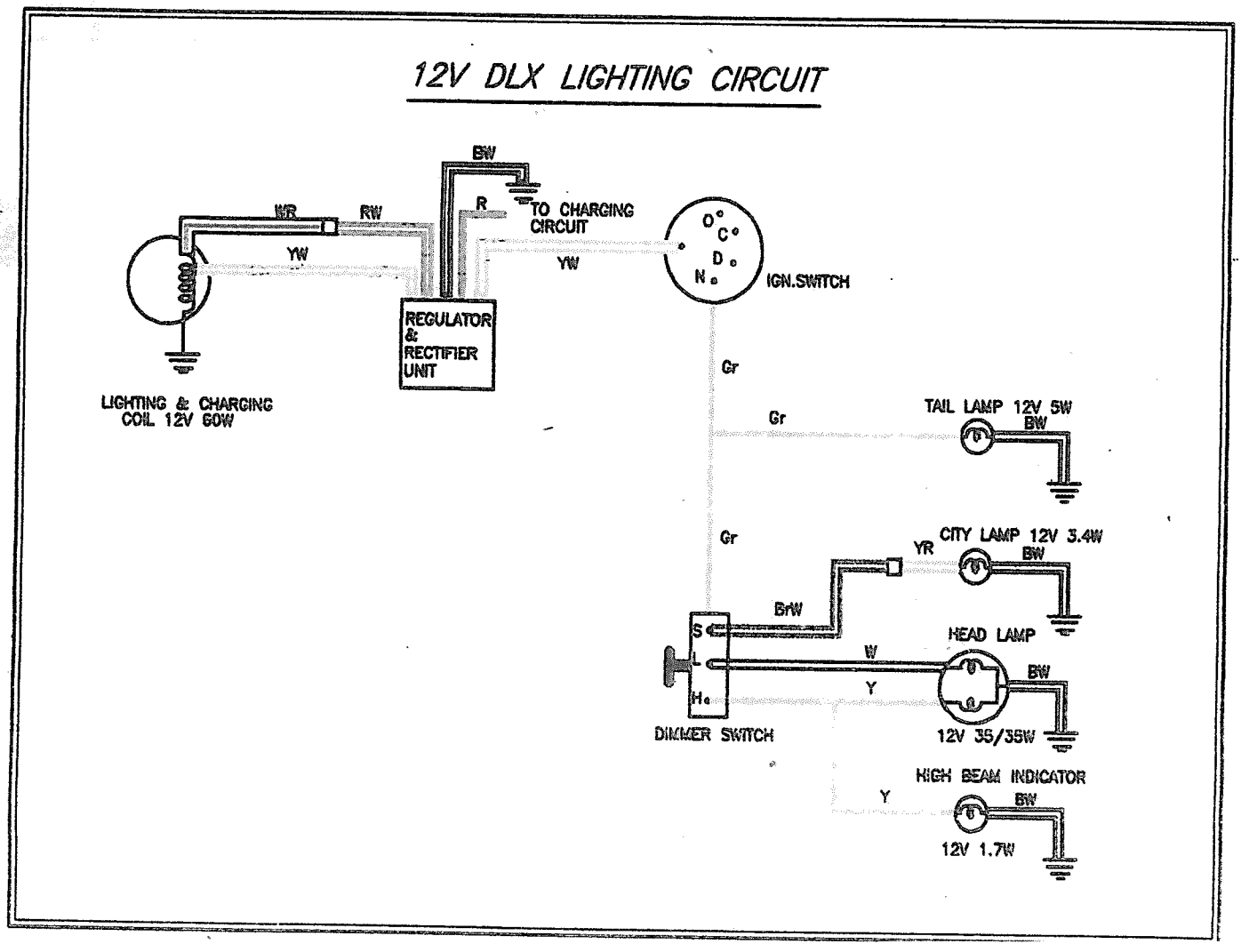
1) To avoid overcharging the battery

2 Provide protection to bulbs from fusing

INSPECTION

Checking resistor

031 220 0	Multimeter
6 V DLX	2 + 0.2 OHM



In 12 V DLX system the lighting/ charging coil supplies Alternating Current (AC) to the following bulbs (fig5.10A)

1) Head Light

2) City Light

3) Tail Light

4) High Beam Indicator Light

These lights are operating only in "NIGHT" position of the Ignition switch.

The same coil supplies Direct Current (DC) through the RR unit to the following :

1) Battery

2) Horn

3) Turn Signal Light

4) Turn Signal Indicator Light

5) Brake Light

6) Neutral Indicator Light

7) Oil Level Indicator Light

8) Speedometer Light

Regulator cum Rectifier unit Performance check

- Set the multimeter knob to voltage range 50 volts.
- For checking Lighting Performance connect the terminals to the Yellow White wire (YW) which is output from RR unit and ground (Black White wire)
- For checking charging performance connect the terminals to the Red wire (R) which is output from RR unit and ground (Black White wire)
- Start the engine and run it at 4000 rpm approximately
- The meter reading under any of the loading conditions shall be 14 $\pm$ 1V at 4000 rpm

031 220 0	Multimeter

LIGHTING/CHARGING PERFORMANCE	14 $\pm$ 1V 4000 rpm

LIGHTING AND HORN SYSTEM

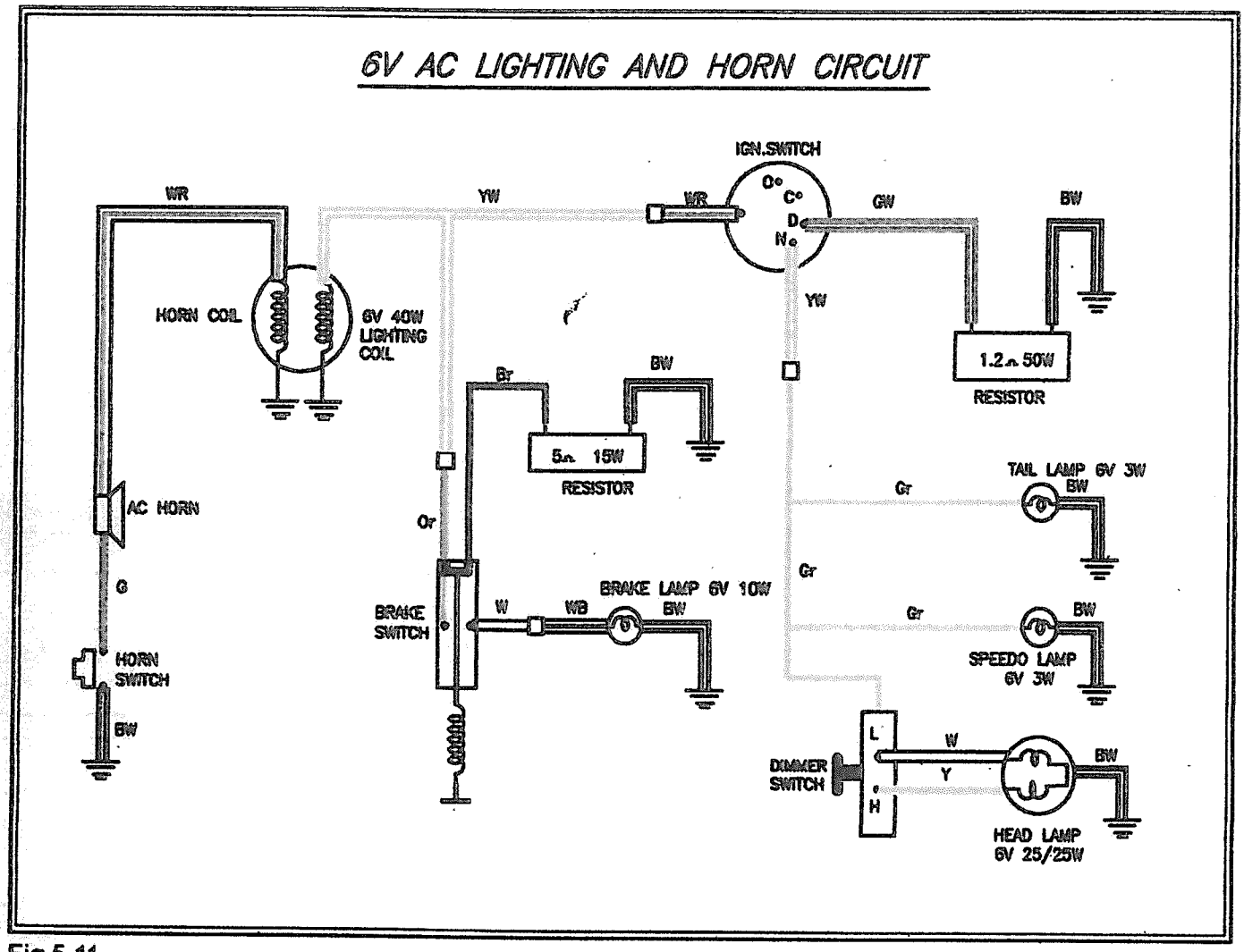


Fig 5.11

Two resistors are provided in the lighting circuit in this system. One resistor is provided in the brake light circuit. The other resistor is provided in the lighting circuit consisting of the following bulbs (fig 5.11)

1) Head light

2) Speedometer light

3) Tail light

Both these resistors serve to protect the respective bulbs from fusing.
A seperate coil is provided in the flywheel magneto to supply current to the horn.

AX-100 AC, AX-100 R AC, NEW AX-100 AC	
Resistor No 1	1.2 ± 0.2 ohm

INSTRUMENT PANEL

12 V REGULATION SYSTEM

The regulator maintains the output voltage to a constant irrespective of changes of speed and load. This function is achieved by bypassing the output of the magneto during a fraction of a cycle when the voltage exceeds a predetermined value (14 ± 1 Volt). Once this value is exceeded, the control circuit applies a pulse to the gate of the Silicon Controlled Rectifier (SCR) which bypasses the output of the lighting coil of the magneto thereby limiting the ouput to within limits (fig 5.12).

The advantages of the 12 V AC regulation system are :

- Uniform light output throughout the normal speed range
- Harmful effects of high voltage which causes fusing of bulbs are eliminated

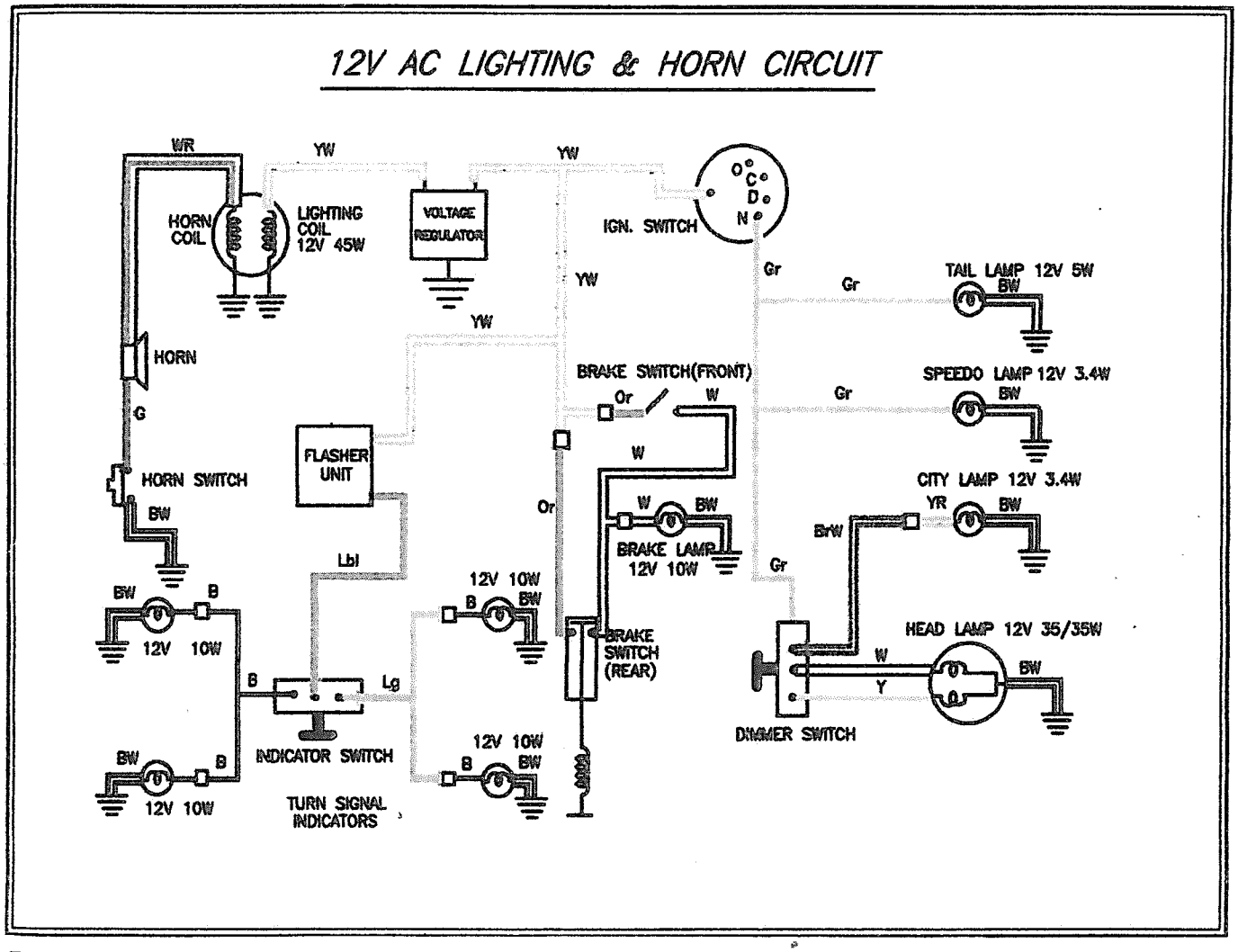


Fig 5.12

The lighting, horn and ignition systems use the flywheel magneto as shown in (fig 5.12). Alternating Current (AC) generated in the lighting coil is regulated by the electronic regulator and powers the head lamp, tail lamp, city lamp, meter lamp and brake lamp. The horn is powered by a separate magneto coil which output is matched to the horn coil. The source coil output is fed into CDI/Ignition coil system to provide the necessary

Regulator Performance check

- Set the multimeter knob to voltage range 50 Volts
- Connect the terminals to the brake light switch wire (orange) and ground.
- Start the engine and run it at 4000 rpm approximately
- Switch on all lamps
- The meter reading under any of the loading conditions shall be 14 ± 1 volt at 4000 rpm

031 220 0	Multimeter

LIGHTING PERFORMANCE	12 V AC	12 V AT 2500 rpm
		14 ± 1 V at 4000 rpm and above

SWITCHES

Inspect each switch for continuity with the multi meter referring to respective switches (fig 5.13 & fig 5.14) and their continuity charts. If it is found incorrect replace the defective switch assembly with a new one.

031 220 0	Multimeter

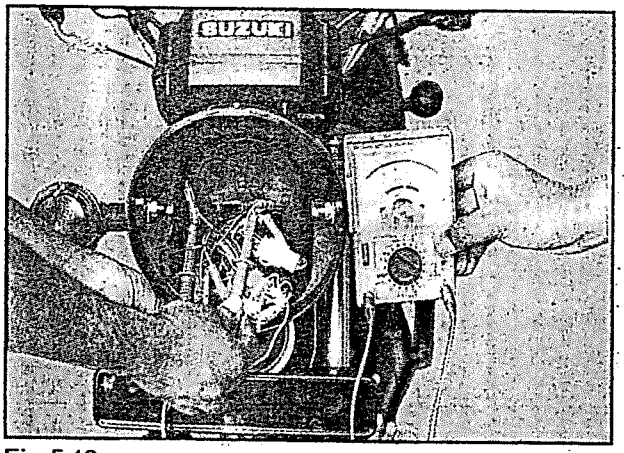


Fig 5.13

IGNITION SWITCH

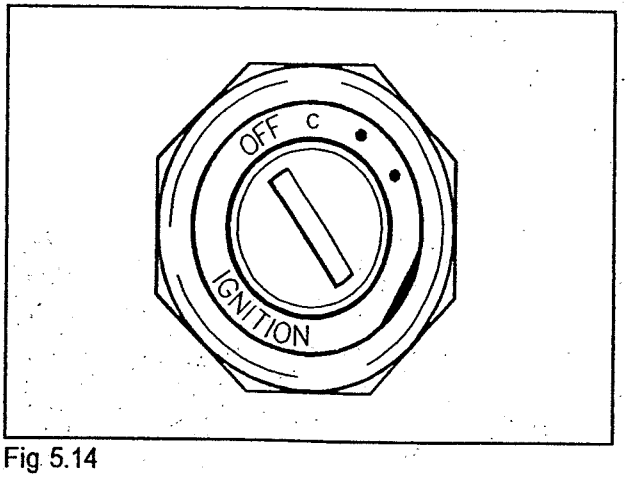


Fig 5.14

IGNITION SWITCH

6V DLX (Models AX-100 STD, AX-100 R & AX-100 SUPRA)

Switch position	BlW	BW	BR	R	Or	Br	GW	WR	YW	YR	Gr
Off		O—O									
Check	O	O—O	O	O—O							
Day				O—O			O—O				
Night				O	O—O	O		O—O		O—O	

6V AC (Models AX-100 AC, AX-100 RAC & NEW AX-100 AC)

Switch position	BW	BR	GW	WR	YW	YR	BlW	Gr	R	Or
Off	O—O					Dummy Wires				
Day			O—O							
Night				O—O						

12V DLX (Models AX-100 R, AX-100 SUPRA & MAX 100 R)

Switch position	BlW	BR	BW	YW	Gr	R	Or	GW
Off		O—O						
Check	O	O—O	O			O—O		
Day						O—O		
Night				O—O		O	O—O	

12V AC (Models AX-100 RAC & MAX 100)

Switch position	BW	BR	YW	Gr
Off	O	O		
Day				
Night			O—O	

IGNITION SWITCH

12V DLX (Models SAMURAI and SHOGUN)

Switch position	BlW	BW	BR	R	Or	Gr
Off		O——	——O			
Check	O——	—O	—O	O——	—O	
Day				O——	—O	
Night				O——	—O	—O

TURN SIGNAL SWITCH (All Models)

Switch position	B or V	Lbl	Lg
Centre			
Right		O——	——O
Left	O——	——O	

HEAD LIGHT SWITCH

(6V DLX 12 V AC, 12 V DLX)

Switch position	Gr	BrW	W	Y
S - City Light	O——	——O		
L - Low Beam	O——		—O	
H - High Beam	O——			—O

6V AC

Switch position	G	W	Y
L - Low Beam	O——	——O	
H - High Beam	O——		—O

HEAD LIGHT SWITCH (SAMURAI & SHOGUN)

Switch position	YW	BrW	WR	Internal Connection	Y
Off					
PO - City Lamp	O	O			
On	O	O		O	
L - Low Beam	O	O	O	O	
H - High Beam	O	O		O	O

HORN SWITCH

Switch position	G	BW
Off		
On	O	O

BRAKE LIGHT SWITCH (All Models Expect 6V AC)

Switch position	Or	W
Off		
On	O	O

BRAKE LIGHT SWITCH (6V AC Models)

Switch position	w	Or	Br
Off		O	O
On	O	O	O

ENGINE STOP SWITCH (SAMURAI & SHOGUN)

Switch position	BR	Body Earth
Off	O	O
On		

BATTERY

SPECIFICATIONS

Type	Voltage	Capacity	Electrolyte Specific gravity
AMCO 6N4 - 2A	6V	4Ah / 10 HR	1.24 at 30° c
NICCO 324	6V	4Ah / 10 HR	"
EXIDE 6MX4-2A	6V	4Ah / 10 HR	"
AMCO - YB 2.5L - C	12V	2.5Ah / 10 HR	"
CROMPTON GREAVES 6Z 2.5 / GERMANIA	12V	2.5Ah / 10 HR	"

FUSE 10 A

PREPARATION OF ELECTROLYTE

Mix one part of acid with three parts of distilled water approximately (fig 5.15)

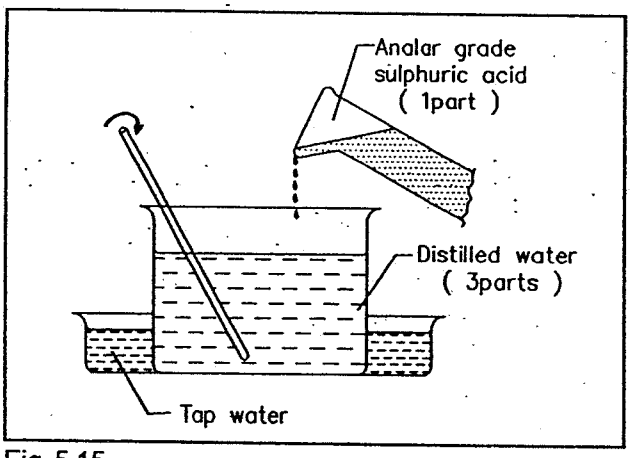


Fig 5.15

WARNING :
Add Sulphuric acid to distilled water and not viceversa.

Stir and check specific gravity of the electrolyte. Add sulphuric acid till the specific gravity reads 1.240 on a hydrometer (fig 5.15A)

031 311 0	Hydrometer

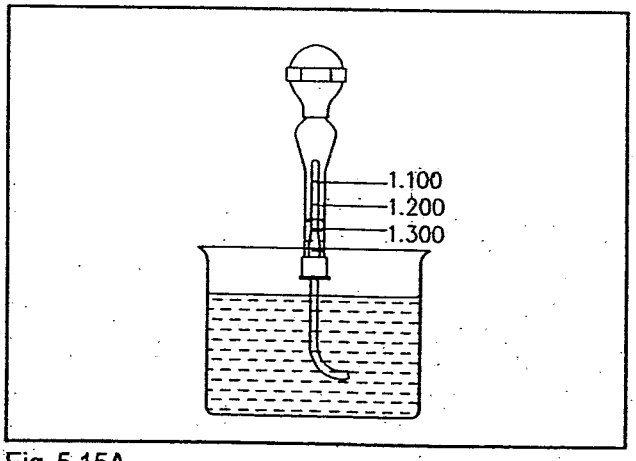


Fig 5.15A

Allow the electrolyte prepared to cool down to about 30° C

Fill up the battery cells with this electrolyte and allow the battery electrolyte to settle for about 30 minutes. Ensure that no air bubbles remain between the plates of the battery if the electrolyte level drops during this period. Top up the electrolyte level upto the upper level mark on the battery case.

Filling electrolyte

Remove short sealed tube (A) before filling electrolyte (fig 5.16).

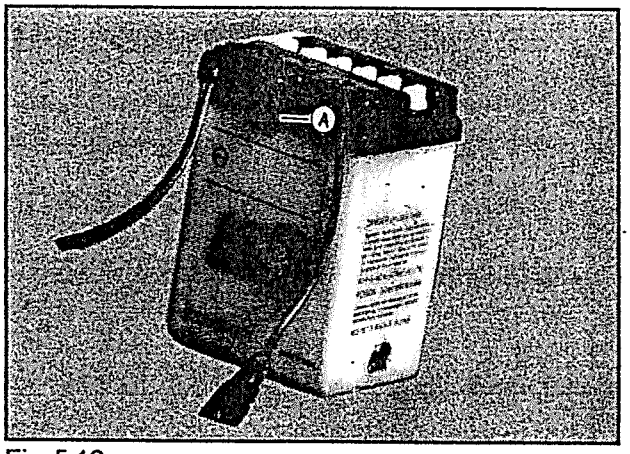


Fig 5.16

INITIAL CHARGING

BATTERY MAKE	DURATION OF CHARGING
AMCO	15 hours
NICCO	8 hours
EXIDE	8 - 20 hours
CROMPTON GREAVES / GERMANIA	15 hours

Note : The above specified charging times should be followed for initial charging only.

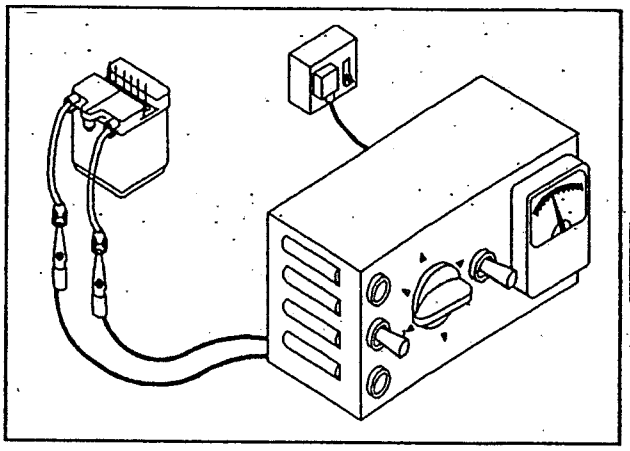


Fig 5.17

CHARGING PROCEDURE (FIG 5.17 & 5.17A)

Connect battery to the charger as mentioned below:

Black lead (-) of the terminal from charger to (-) of the battery, Red lead (+) of the terminal from the charger to (+) of the battery. Switch on the power. Green light indicates correct connection and red light indicates the connections to be reversed.

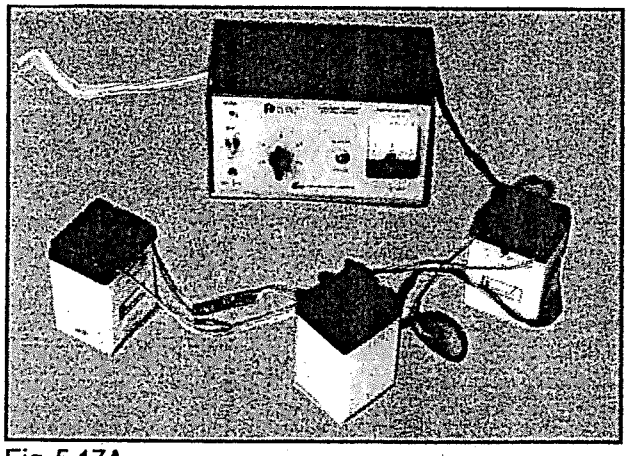


Fig 5.17A

029 009 0	Constant current battery charger

Maximum charging current	0.4 amps for 6V Battery
	0.25 amps for 12V Battery

5

CAUTION :

- **Use only constant current battery charger of 0.4 amps for 6V battery and 0.25 amps for 12V battery charging rate.**
- **Never remove the short seal tube or filler caps, till you are ready to charge the battery.**
- **Keep the filler caps removed while charging.**
- **Use only distilled water to top up the level after initial charging.**
- **During charging, the electrolyte temperature should not be allowed to exceed 45° C. If necessary, discontinue the charging to cool the electrolyte.**
- **Ensure that the batteries are kept on a non metallic surface while charging.**
- **Keep fire and sparks away from a battery when it is being charged.**

INDICATION OF FULL CHARGE

A battery should be disconnected from the charger after it has been allowed to gas freely for more than 30 minutes.

CONFIRMATION OF FULL CHARGE

A battery can be considered to be fully charged when three consecutive specific gravity (SG) readings taken at intervals of 30 minutes each, indicate a reading of 1.240.

HYDROMETER

To read the SG on the hydrometer, bring the electrolyte in the hydrometer to eye level (fig 5.18) and read the graduations on the float scale bordering on the lower meniscus as shown in figure.

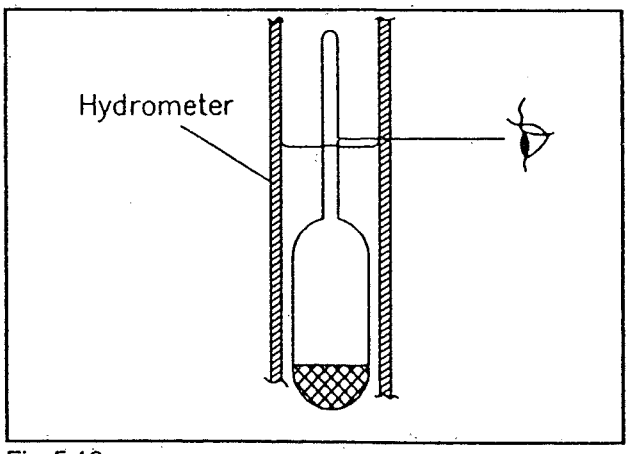


Fig 5.18

SPECIFIC GRAVITY (SG)

Specific gravity value readings depend on the temperature of the electrolyte.

In general, the lower the temperature of the electrolyte, the higher the SG reading and the higher the temperature of the electrolyte, the lower the SG reading.

Refer to fig 5.19 for Sg readings in relation to temperature.

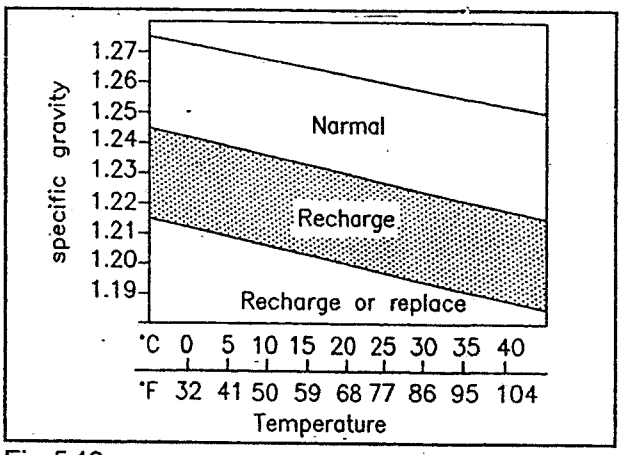


Fig 5.19

BATTERY INSTALLATION

Ensure that the battery casing is clean and dry before installing it on the motorcyle.

Always apply petroleum gelly on terminals to prevent corrosion.

NOTE :
Strap the battery firmly in its cradle by the rubber strap provided.

CAUTION :

- **Avoid running the motorcyle without connecting the battery. Rectifier should be disconnected to start the engine without battery.**
- **Do not bend, obstruct or change the routing of the air vent tube from the battery. Make certain that the vent tube is firmly attached to the battery vent fitting and that the opposite end is always open. Route the battery vent tube properly. (Fig 5.20)**
- **When attaching the wiring harness battery leads to the battery terminals, observe the correct polarity. The red lead must go to the positive terminal and the black (or black with tracer) lead must go to the negative terminal. Reversing the connections will damage the charging system and the battery.**

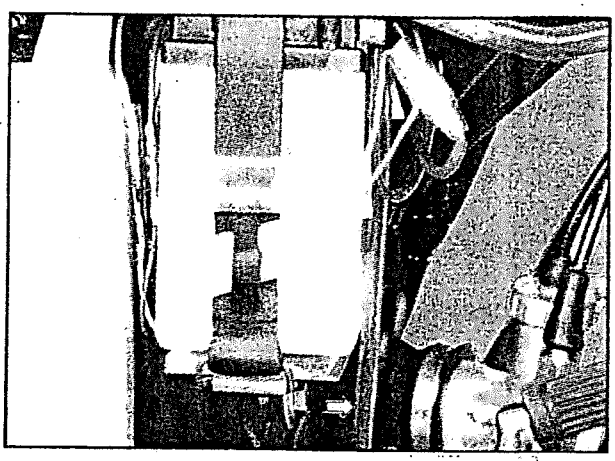


Fig 5.20

5

SERVICING

Visually inspect the surface of the battery container. If any signs of cracking or electrolyte leakage from the sides of the battery have occured, replace the battery with a new one.

If the battery lead terminals are found to be coated with rust or an acidic white powdery substance, then clean it with sandpaper.

Check the battery charge condition by taking the electrolyte SG reading (fig 5.21). If the reading is 1.22 or less, as corrected to 30° C (86° F), it means that the battery is still in a rundown condition and needs recharging.

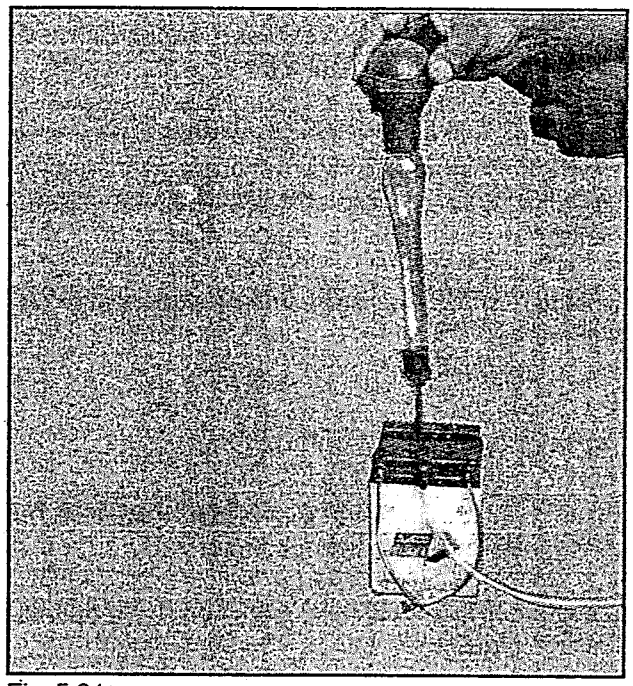


Fig 5.21

Electrolyte specific gravity at 30° C

Specific Gravity	Condition	Action
1.240 and above	Normal	–
1.220 and below	Under charged	Recharge

BATTERY MAINTENANCE

- Check the electrolyte level and top up if necessary with distilled water every fortnight. Do not use any other water or acid.
- Keep the battery surface clean and dry.
- Never over charge the battery.
- Remove the battery from the motorcycle and store it separately when the motorcycle is not in operation for more than a month.
- Recharge stored batteries once in a month.

RECHARGING

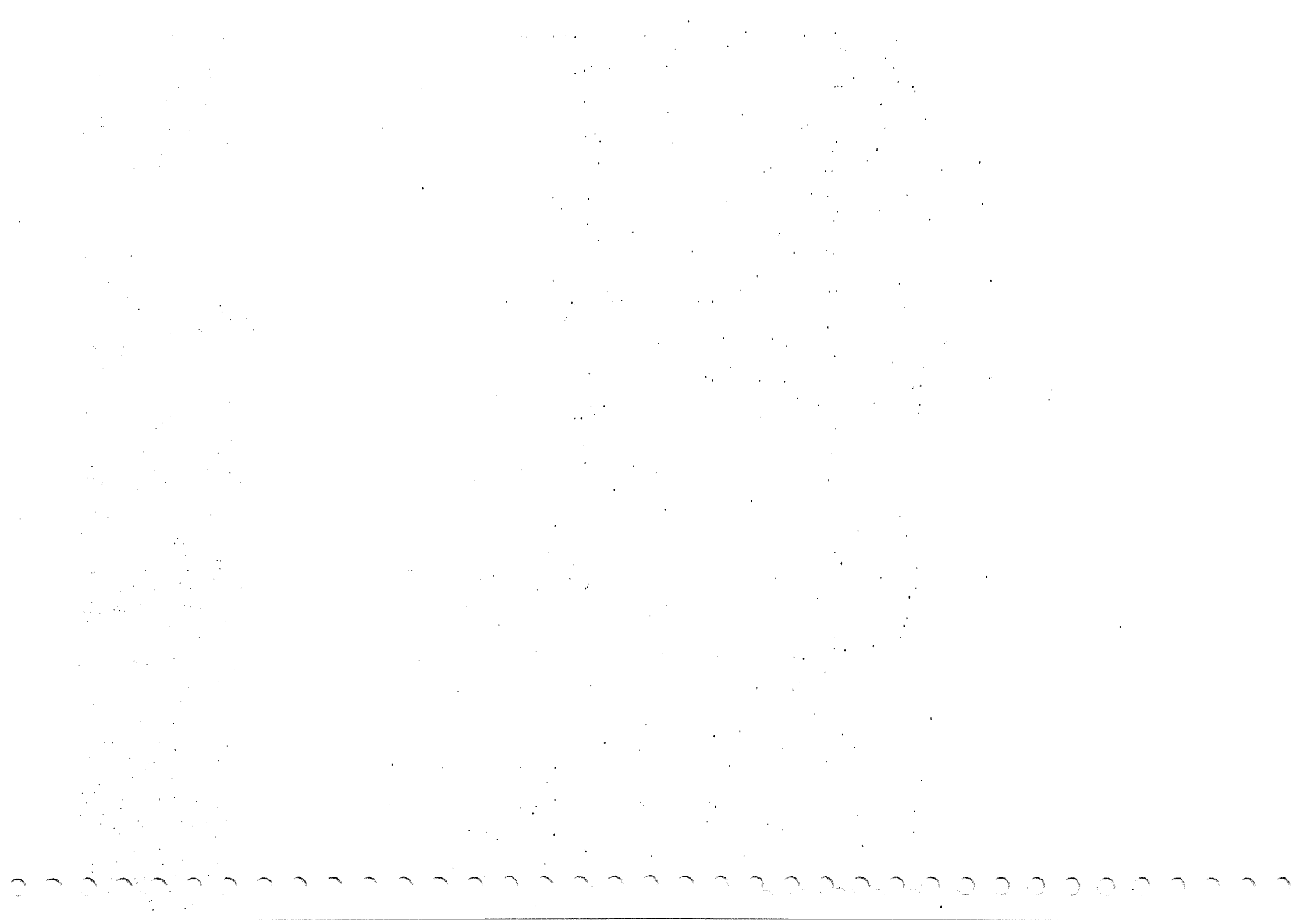
Check the specific gravity of the electrolyte of the battery. If the reading is less than 1.220, then recharging of the battery is required. Top up the battery with distilled water only. Ensure that the battery-lead terminals are clean and shiny in appearance. Connect the battery to the constant current charger. Disconnect the battery from the charger after ensuring that the battery is fully charged. The specific gravity should read 1.240.

029 009 0 Constant current battery charger

NOTE :
Always use distilled water only, to top up a battery after initial charging

CAUTION :
Constant voltage charging, otherwise called 'Quick' charging, is not recommendable for it could shorten the life of the battery.

When a battery is left for a long time without using, it is subject to sulphation. When the motorcycle is not used for more than one month (especially during the winter season), recharge the battery at least, once in a month.



CHASSIS

CONTENTS

FRONT WHEEL AND FRONT BRAKE

REMOVAL AND DISASSEMBLY

Front Wheel

- Support the motorcycle on the centre stand.
- Disconnect the speedometer and front brake cables (fig 6.1)

Combination plier
14 mm spanner

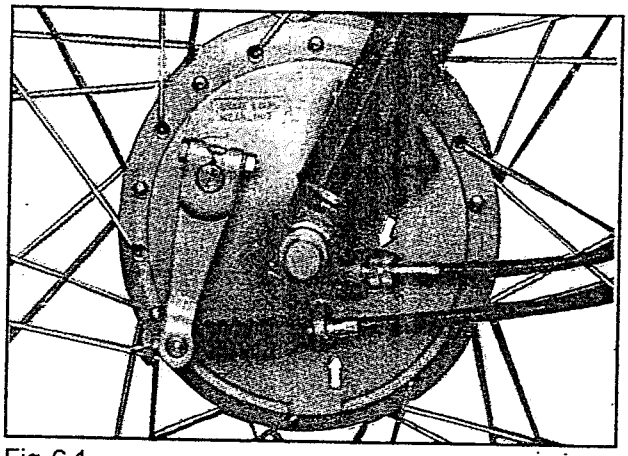


Fig 6.1

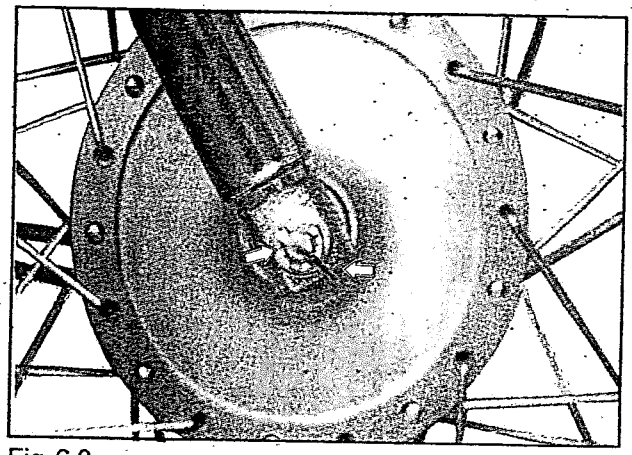


Fig 6.2

- Remove the cotter pin (fig 6.2)
- Loosen and remove the front axle nut

Tightening Torque	Dia 110mm Wheel Hub 3.5 kgm
	Dia. 130mm Wheel Hub 5.0 - 7.0 kgm

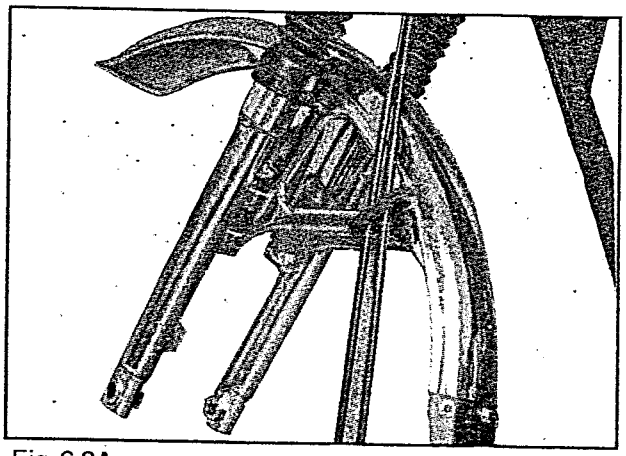


Fig 6.2A

- Draw out the axle shaft (fig 6.2A)
- Remove the spacer and oil seal (fig 6.3)

031 240 1	Oil seal remover

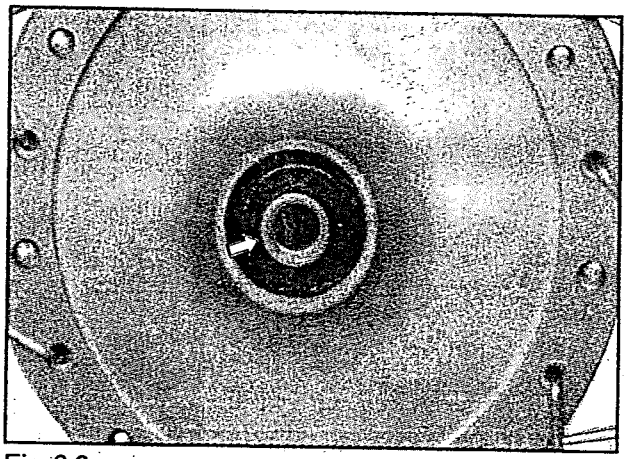


Fig 6.3

- Heat the hub assembly on a hot plate upto 125° C. (fig 6.4)

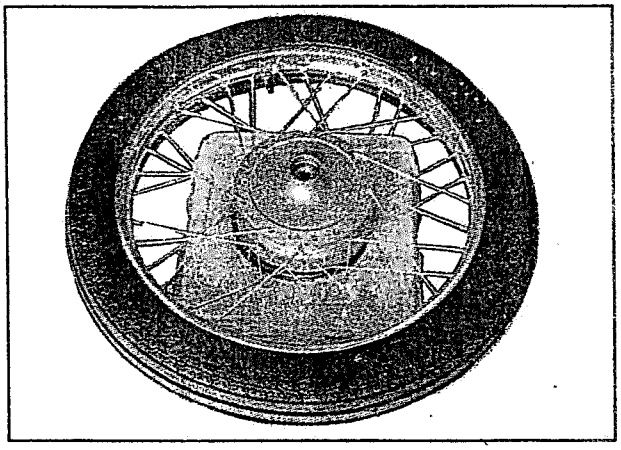


Fig 6.4

- Tap out the right and left wheel bearings with a suitable mandrel (fig 6.5)

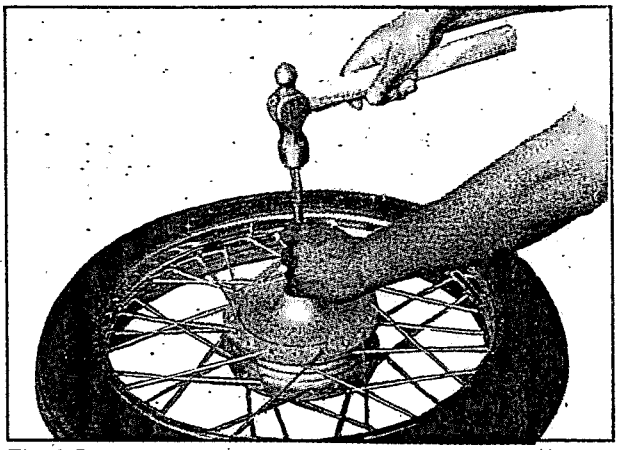


Fig 6.5

Front Brake

- Remove the brake shoes (fig 6.6)

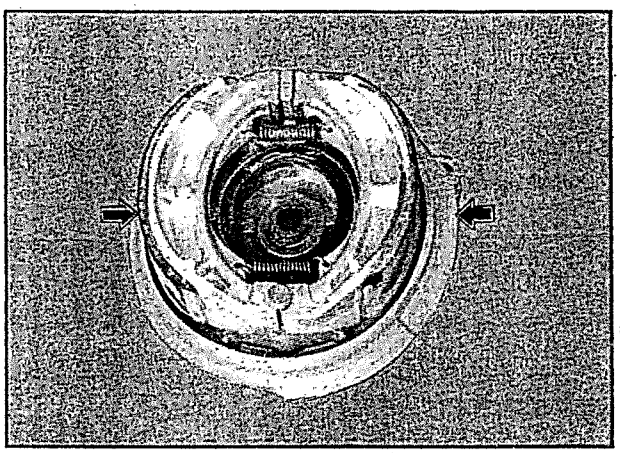


Fig 6.6

- Remove the brake cam lever (fig 6.7 and 6.8)

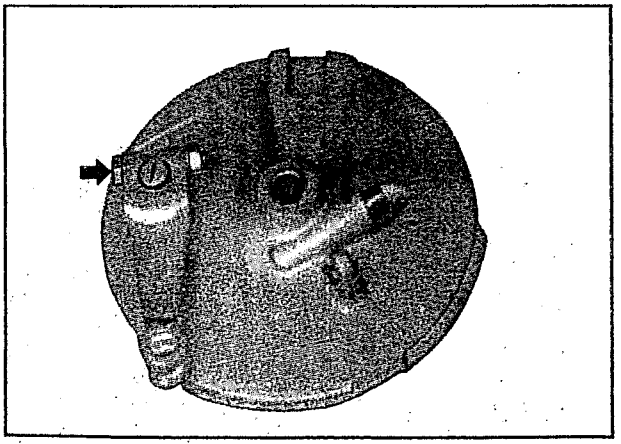


Fig 6.7

Tightening torque	0.65 kgm

10 mm spanner

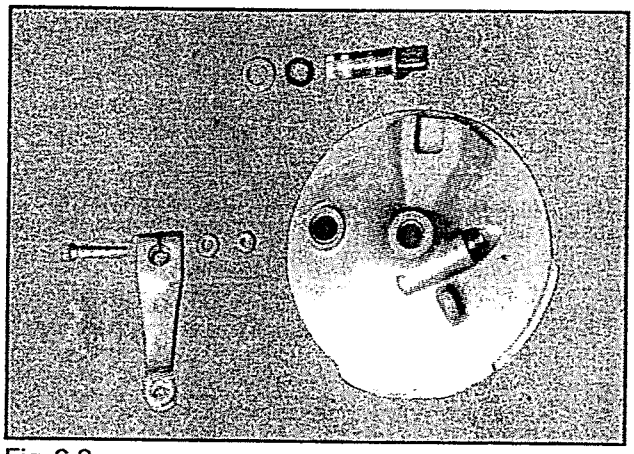


Fig 6.8

- Remove the oil seal by using the special tool (fig 6.9)

031 240 1	Oil seal remover

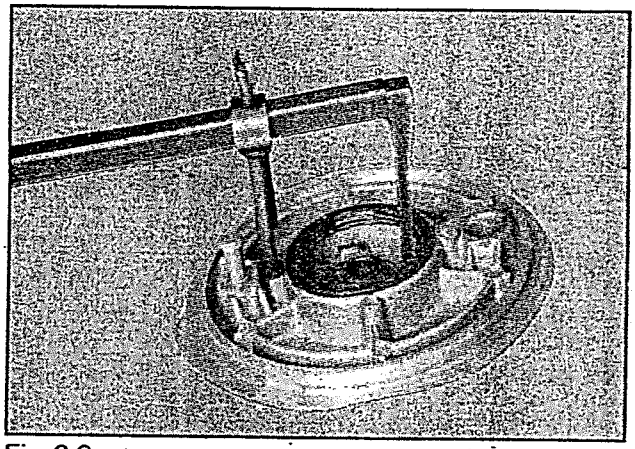


Fig 6.9

- Remove the circlip by using the special tool and remove the speedometer gear (fig 6.10)

031 001 7	Snap ring plier external

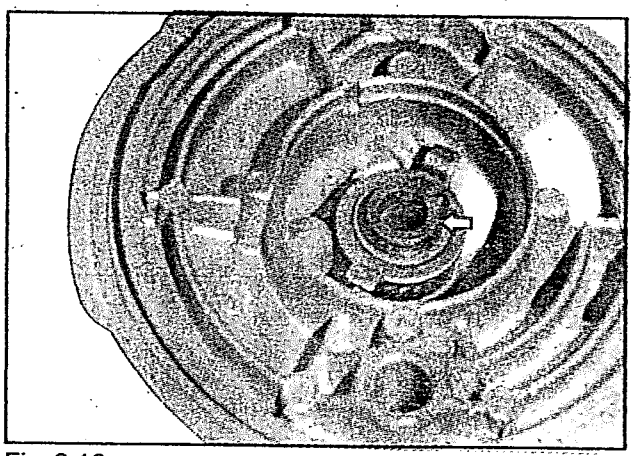


Fig 6.10

- Unscrew the securing screw of the bush (fig 6.11)

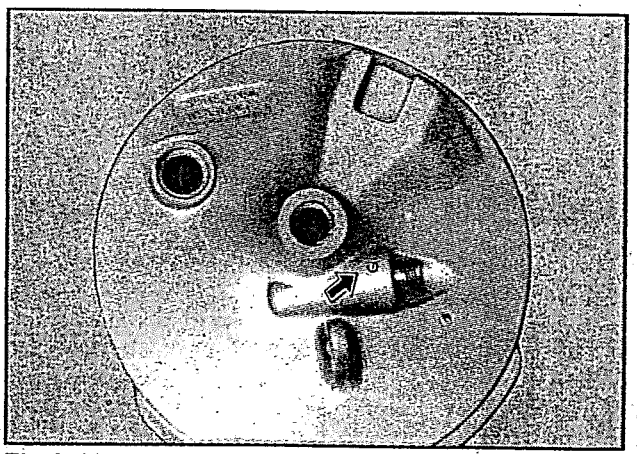


Fig 6.11

- Pull out the bush using the special tool (fig 6.12)

031 003 0	Speedometer pinion bush puller

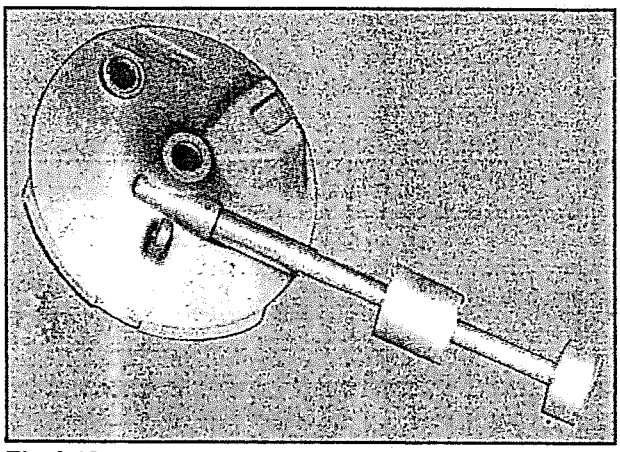


Fig 6.12

- Pull out the speedometer pinion (fig 6.13)

Nose plier

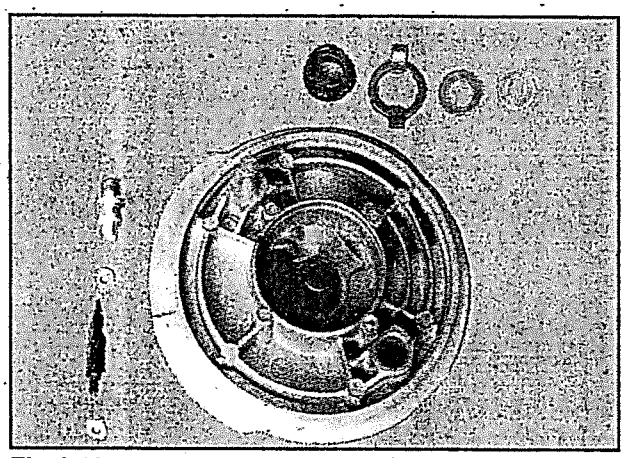


Fig 6.13

INSPECTION

Wheel bearing

Inspect the play of wheel bearings inner race by hand, before fixing them in the wheel hub (fig 6.14). Rotate the outer race by hand to inspect whether abnormal noise occurs during rotation and that the bearing rotates freely without sticking. Replace the bearing if some abnormality is noticed.

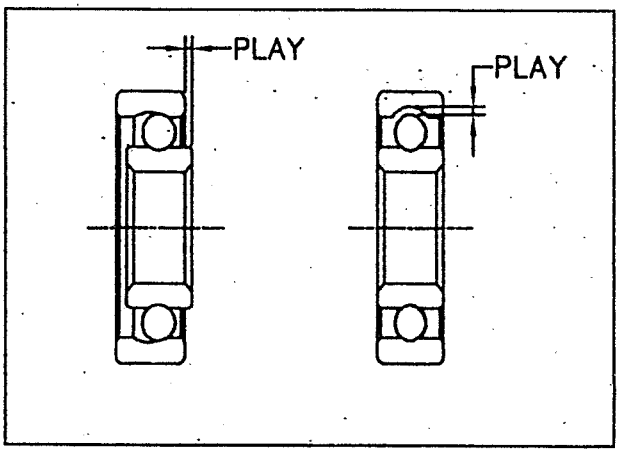


Fig 6.14

AXLE SHAFT

Using a dial gauge, check the axle shaft for runout and replace it if the runout exceeds the limit (fig 6.15)

031 307 0	V-block
031 306 0	Magnetic stand

Service limit	0.25 mm

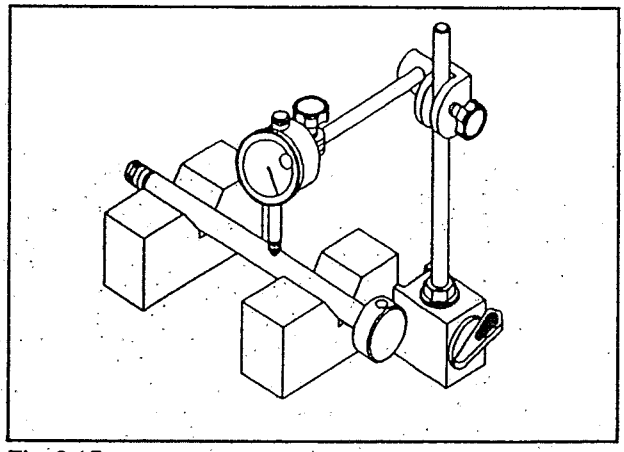


Fig 6.15

WHEEL RIM

Make sure that the wheel rim runout checked as shown (fig 6.16) does not exceed the service limit. An excessive runout is usually due to wornout or loose wheel bearings and can be reduced by replacing the bearings.

If bearing replacement fails to reduce the runout, adjust the tension of spokes, and if this proves to be of no effect, replace the wheel rim.

031 306 0	Magnetic stand
Service limit (Axial and Radial)	2.00 mm

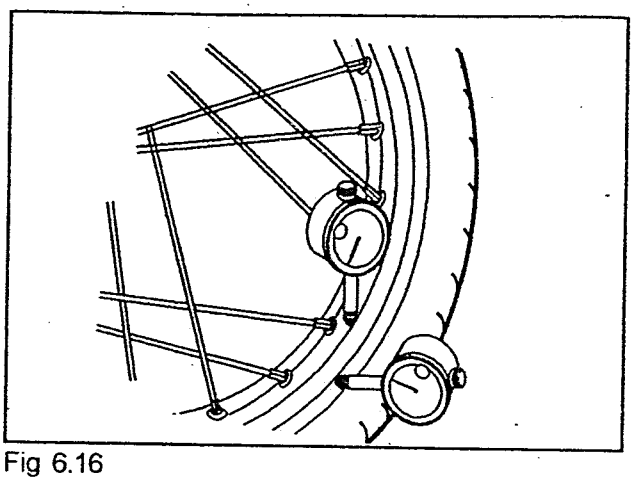


Fig 6.16

SPOKES NIPPLE

Check to be sure that all nipples are tight, and retighten them as necessary using special tool (fig 6.17)

Tightening torque	0.45 kgm

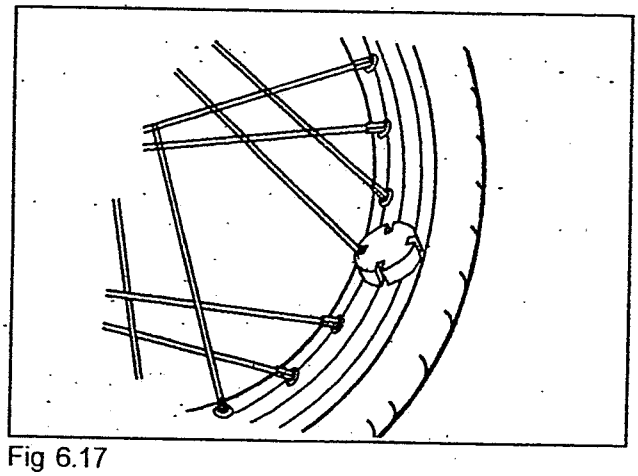


Fig 6.17

TYRES - Front & Rear

For efficient braking and riding stability, the tyres should have sufficient groove depth from the tread surface (fig 6.18). If the groove depth measure as shown in the figure, reaches the wear limit, replace the tyre.

Service limit	1.0 mm

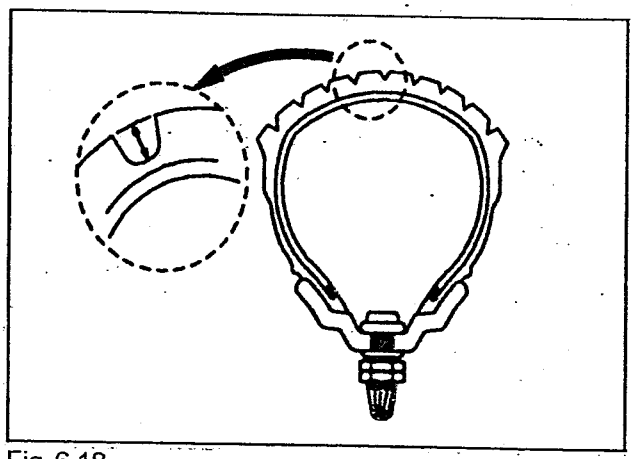


Fig 6.18

TYRE INFLATION PRESSURE

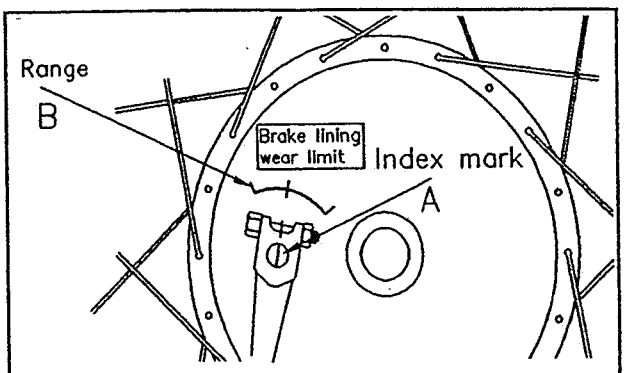
Inflation pressure affects tyre life to a great extent. So it is necessary to maintain proper inflation pressure.

NOTE :
Tyre pressure should be checked when tyre is cold.

TYRE PRESSURE	FRONT		REAR	
	Kg/cm²	Psi	Kg/cm²	Psi
Solo riding	1.75	24	2.00	28
Dual riding	1.75	24	2.25	32

BRAKE SHOE

The brake panels incorporate a brake lining wear limit indicator. If the brake lining condition is normal, the brake camshaft index mark line A, will be within the range B embossed on the brake panel, when the brake is applied (fig 6.19)

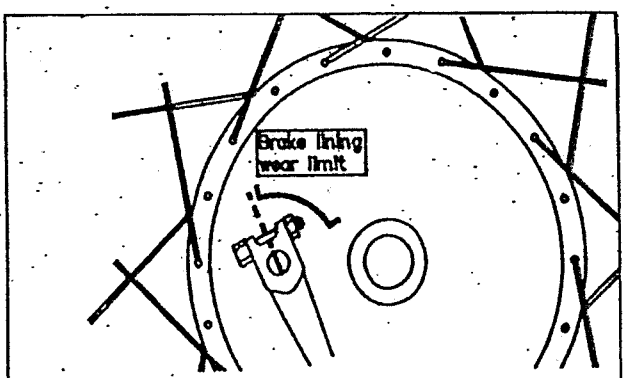


The extension line of the index mark is within the range.

Fig 6.19

- First check that the brake system is properly adjusted.
- Then check the mark extension line; the brake should be on at this time

If the extended line falls outside the indicated range (fig 6.20) check the brake shoe lining and replace if required.



The extension line of the index mark is beyond the range.

Fig 6.20

NOTE :
Replace the brake shoes as a set, otherwise braking performance will be adversely affected.

CAUTION :
When reassembling the brake shoe, be sure to grease the sliding face of the brake cam. Make sure the shoe linings are absolutely free of grease stains. Poor efficiency of the brake is usually due to careless handling of these parts at the time of reassembling.

- Check the brake shoe and decide whether it should be replaced or not, after measuring the thickness of the brake shoe lining (fig 6.21)

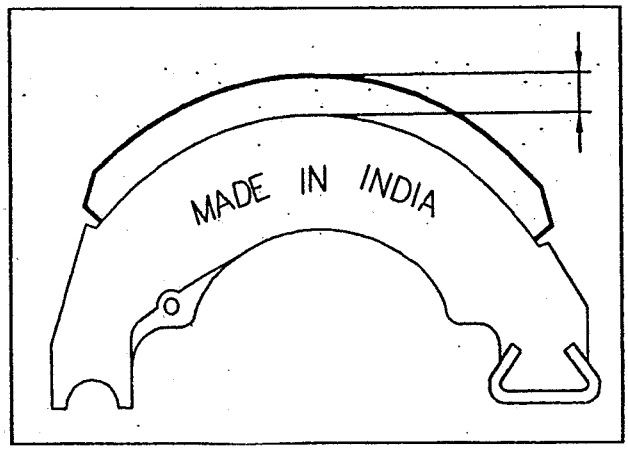


Fig 6.21

Service limit	1.5 mm

BRAKE DRUM

Measure the brake drum inner diameter (ID) to determine the extent of wear and if the limit is exceeded, replace the drum. The value of this limit is indicated inside the drum (fig 6.22)

Service limit	110 Dia 110.7 mm
	130 Dia 130.7 mm

Inspect the drum ID for score marks. If the ID surface is scratched or roughened, smoothen it with emery paper.

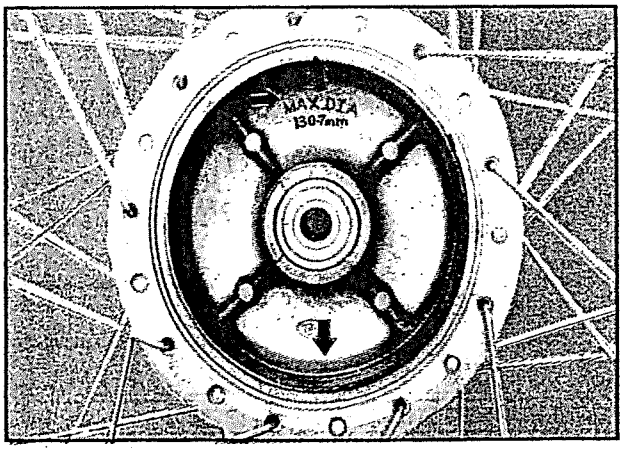


Fig 6.22

6

REASSEMBLY

Reassemble and mount the front wheel in the reverse order of disassembly and removal, and also adhere to the following steps :

WHEEL BEARINGS

- Apply the recommended grease to wheel bearings (fig 6.23)

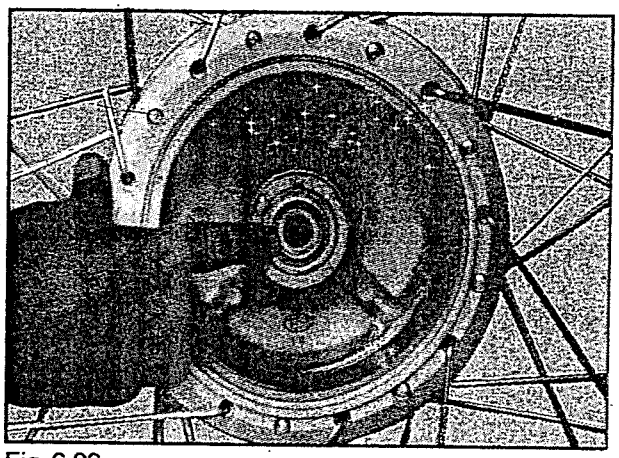


Fig 6.23

- Install the brake cam lever as shown in illustration (fig 6.24)

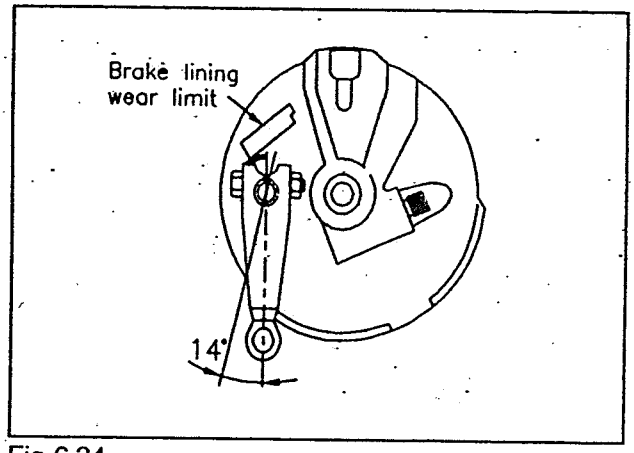


Fig 6.24

FRONT FORK

1. STD model for AX-100 STD, AX-100 AC and NEW AX-100 AC (Lesser fork inner tube diameter)
2. R-model for AX-100 R, AX-100 R AC and AX-100 SUPRA (Larger fork inner tube diameter)
3. Ceriani model for SAMURAI, MAX 100, MAX 100 R and SHOGUN

The AX-100 R, AX-100 R AC and AX-100 Supra front fork components have larger dimensions that the front fork components of AX-100 STD, AX-100 AC and New AX-100 AC. The AX-100 R, AX-100 R AC and AX-100 Supra front forks have higher impact resistance. New Ceriani front suspension (Ceriani type telescopic front fork assembly) used in Samurai, Max 100 R, Max 100 and Shogun.

REMOVAL AND DISASSEMBLY

- Remove the front wheel
- Remove the front fender (fig 6.25)

10 mm Socket

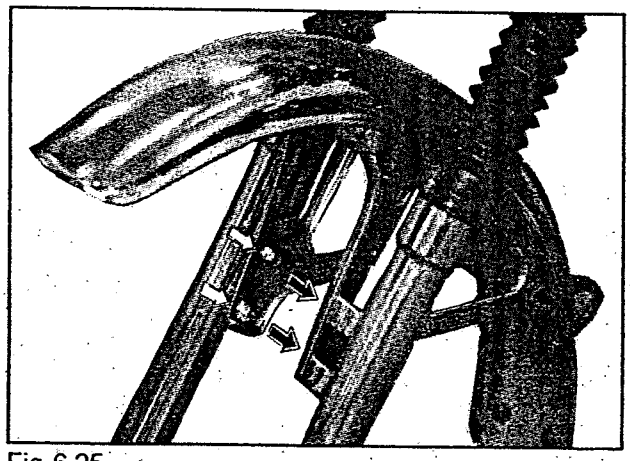


Fig 6.25

- Loosen and remove the front fork cap bolts (fig 6.26)
- Loosen the front fork lower bracket bolts (fig 6.26)

17 mm Socket
14 mm Socket

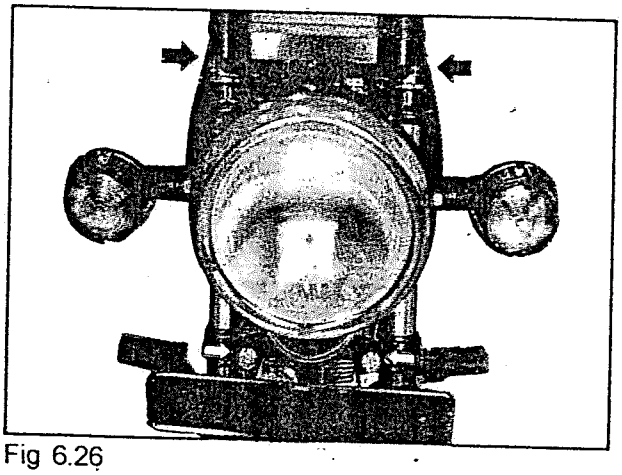


Fig 6.26

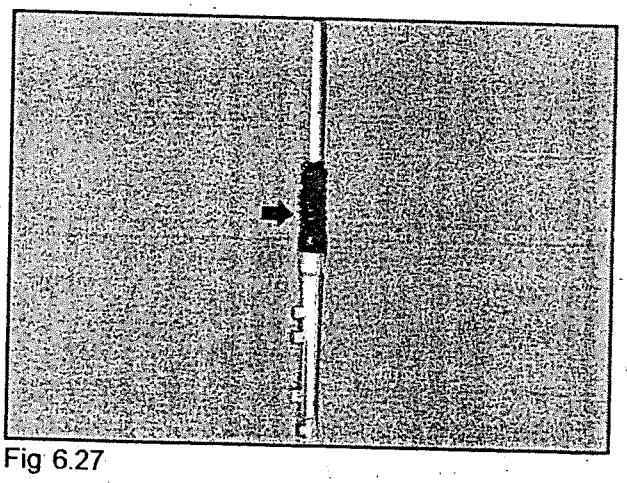


Fig 6.27

- Pull out the tube assembly
- Remove dust bellow (fig 6.27)
- Drain the fork oil complete
- Remove inner tube nut using special tool (fig 6.28 and fig 6.28A)

231 502 0	T Rod Nut

- Use the special tool to hold the fork cylinder and remove bottom bolt using 8 mm allen key

131 502 0	Holder front fork cylinder

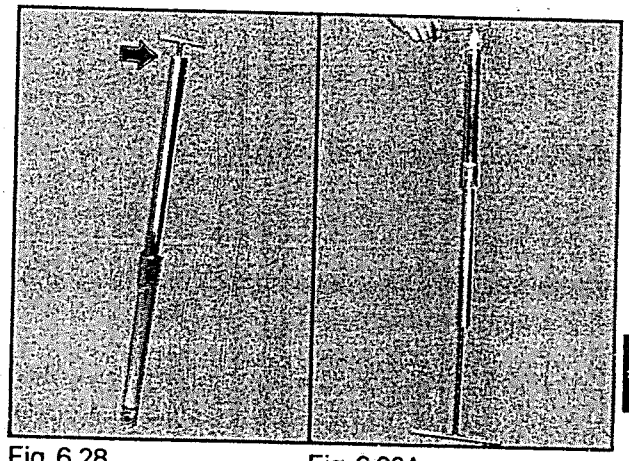


Fig 6.28

Fig 6.28A

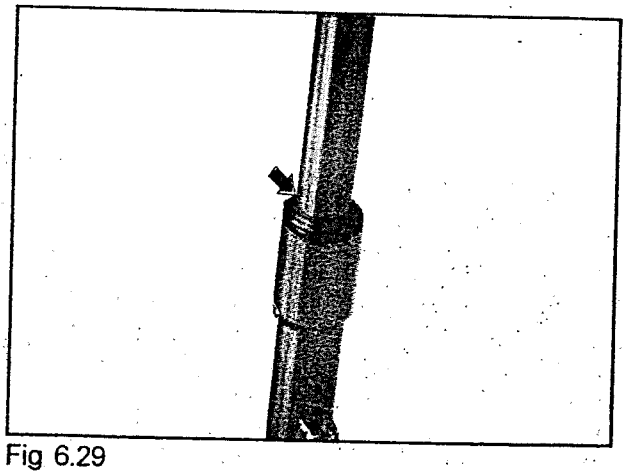


Fig 6.29

- Remove dust seal (fig 6.29)
- Remove snap ring and washer

- Use the special tool to separate the inner tube from the outer tube (fig 6.30)

031 420 2	Front fork and shock absorber Disassembly / Assembly tool

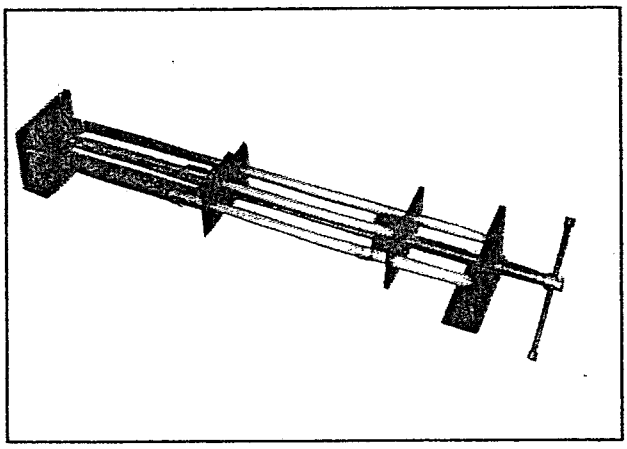


Fig 6.30

INSPECTION

FORK SPRING

Measure the fork spring free length (fig 6.31 and 6.32). If it is shorter than the service limit, replace it.

SERVICE LIMIT Unit : mm

FORK SPRING	STANDARD MODEL AND R-MODEL	136.8
	CERIANI MODEL	291
SPRING SUB	CERIANI MODEL	23

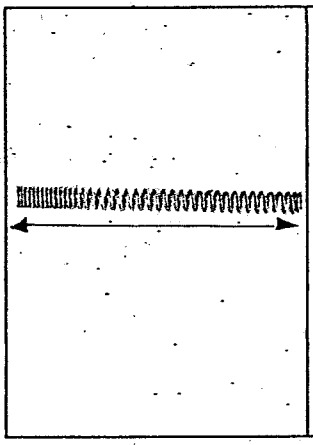


Fig 6.31

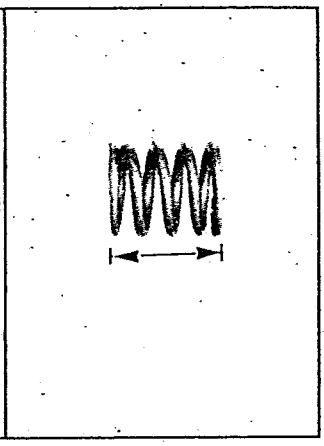


Fig 6.32

INNER TUBE AND OUTER TUBE

Inspect the inner tube outer surface and outer tube inner surface for any scuffing (fig 6.33)

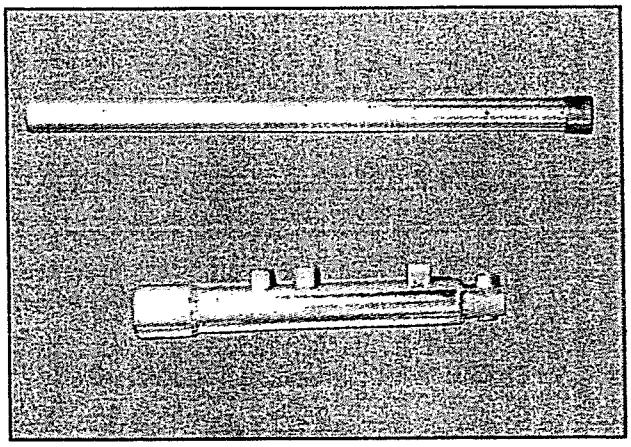


Fig 6.33

REASSEMBLY

Reassemble and remount the front fork in the reverse order of disassembly and removal and also carry out the following steps :

- Install the oil seal in the outer tube by using the special tool (fig 6.34)

For standard model

031 350 1	Front fork oil seal installer

For R and Ceriani model

131 350 1	Front fork oil seal installer

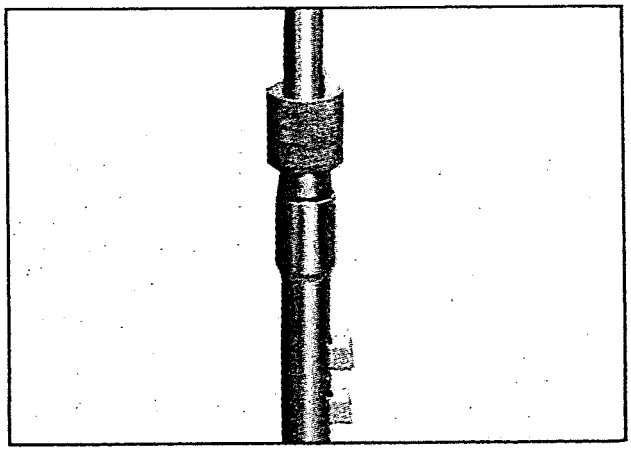


Fig 6.34

FORK OIL

Pour recommended quantity and grade of fork oil as per model

Model	Quantity	Grade
Standard model AX 100 STD, AX 100 AC, and NEW AX 100 AC	155 ml	20 W 20
R model AX 100 R, AX 100 R AC and AX 100 Supra	250 ml	20 W 20
Ceriani model Supra 11 BHP, MAX 100, MAX 100 R, Samurai & Shogun	160 ml	20 W 20

NOTE :

- **During reassembly of the front fork, install the washer and the circlip with the flat surface of the washer towards the oil seal.**
- **The sealing ring of the front fork of AX-100 R, AX-100 R AC & AX-100 Supra should be fitted with the conical side towards the tube (fig 6.35)**

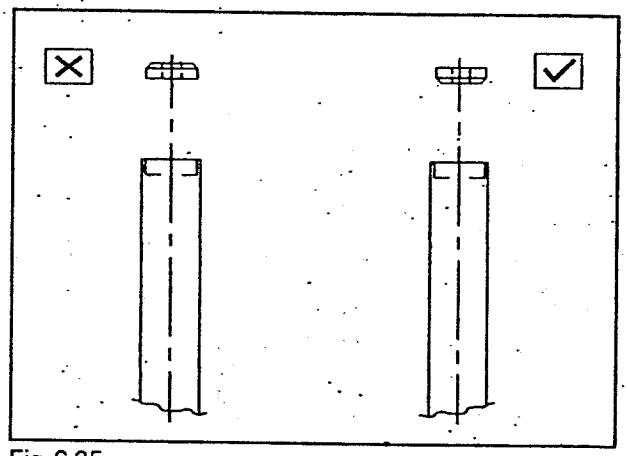


Fig 6.35

- After pulling the inner tube by using the special tool (fig 6.36), tighten the front fork lower bracket bolt temporarily (Only for STD model and R model forks).

14 mm Spanner

031 140 0	Front fork assembly tool

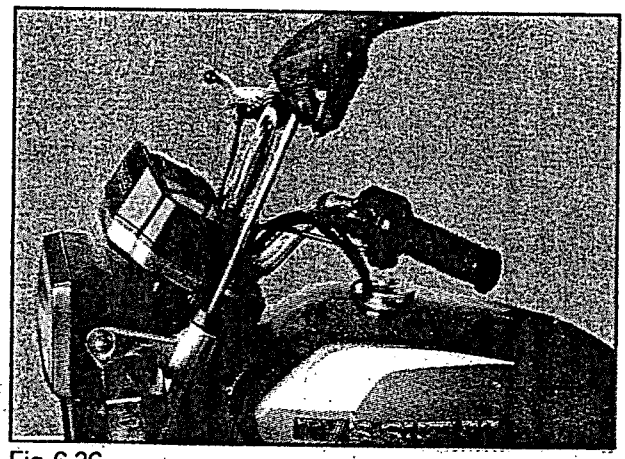


Fig 6.36

- Tighten the front fork cap bolts

17 mm Socket

- Retighten the front fork lower bracket bolts to specified torque (fig 6.37)

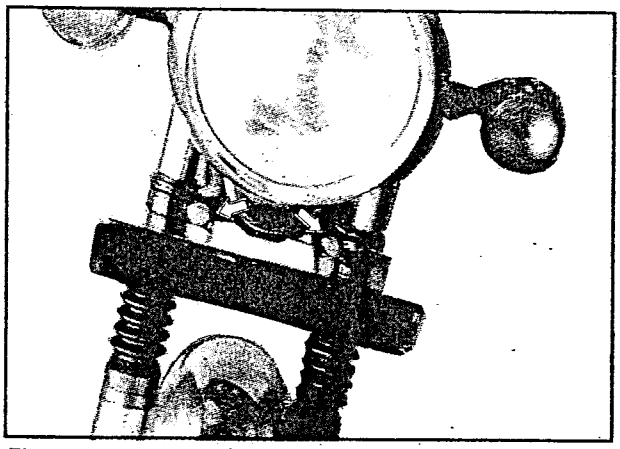


Fig 6.37

STEERING

STEERING STEM

REMOVAL AND DISASSEMBLY

- Take off the front wheel (see page 6-1)
- Take off the front fork (see page 6-7)
- Remove the two screws and take off the headlight (fig 6.38)
- Disconnect the lead wires (fig 6.39)

031 443 0	Philips head screwdriver

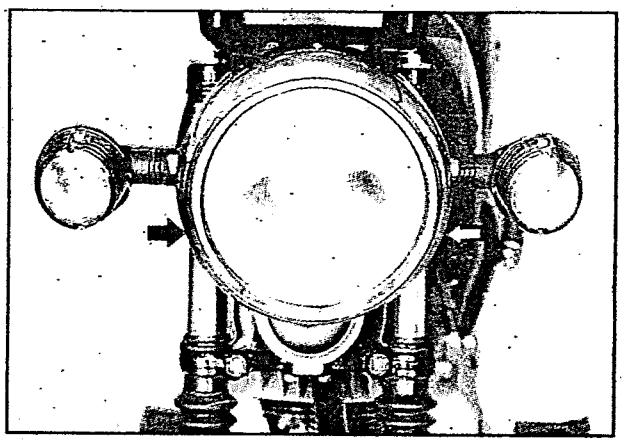


Fig 6.38

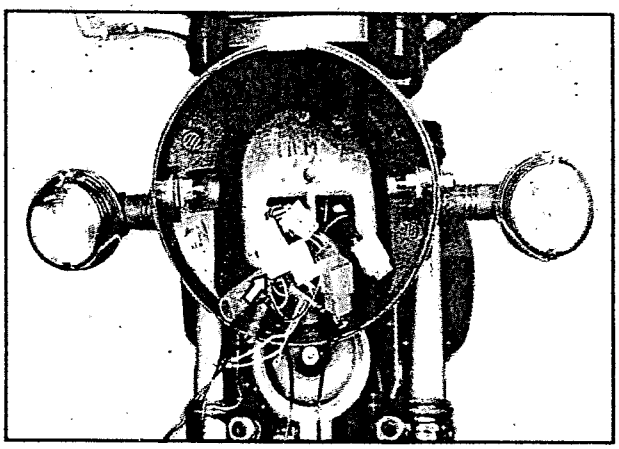


Fig 6.39

- Remove the headlight mounting bolts (fig 6.40)

12 mm spanner

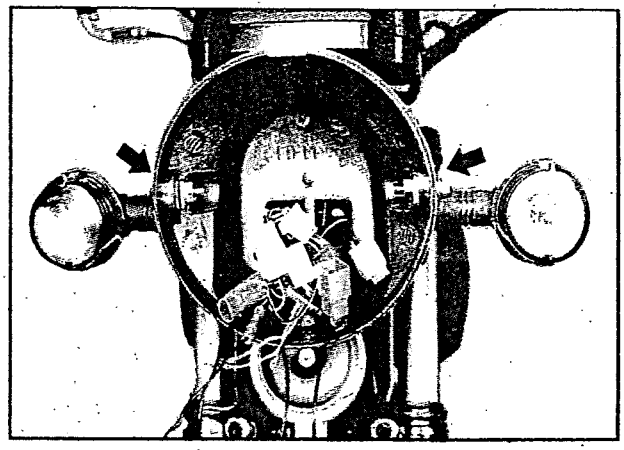


Fig 6.40

- Remove the horn bracket bolts, (2 nos) (fig 6.41)

10 mm Ring spanner

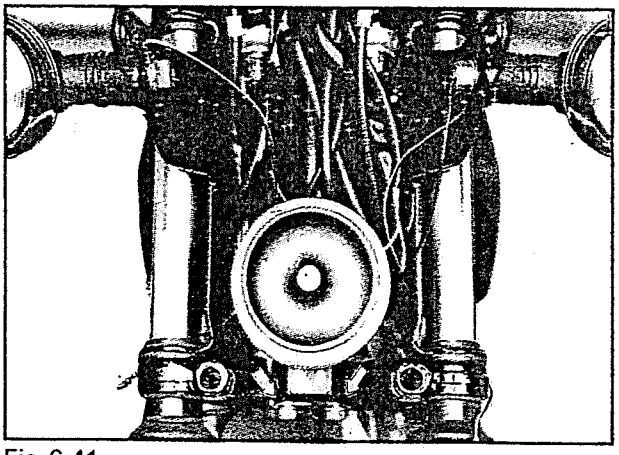


Fig 6.41

- Remove the cable bracket (fig 6.42)

031 301 0	Impact driver set Bit No 3

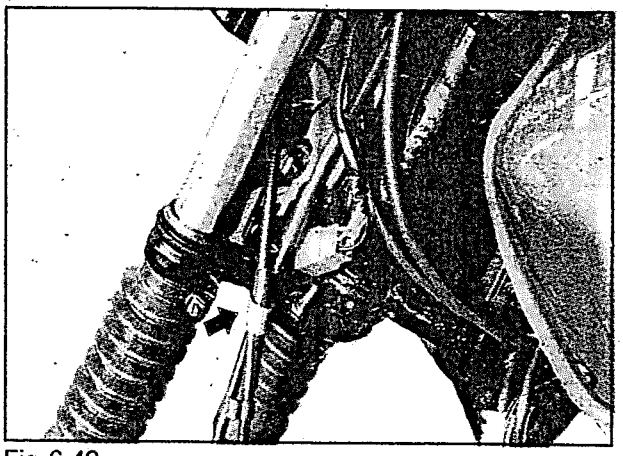


Fig 6.42

- Remove the instrument panel bolts, (2 nos) (fig 6.43)

10 mm Socket spanner

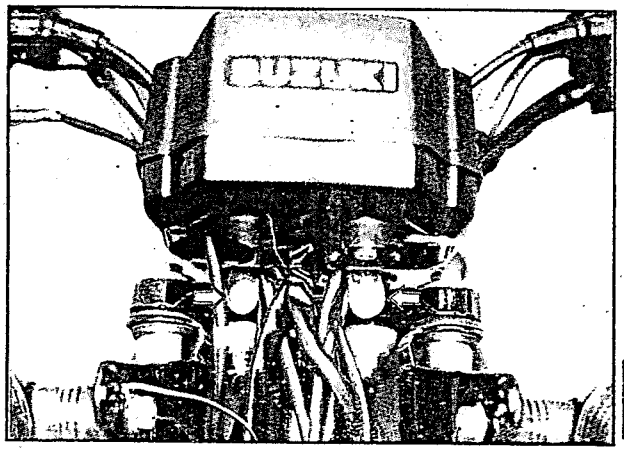


Fig 6.43

- Loosen and remove the steering stem head bolt (fig 6.44)

22 mm Socket spanner

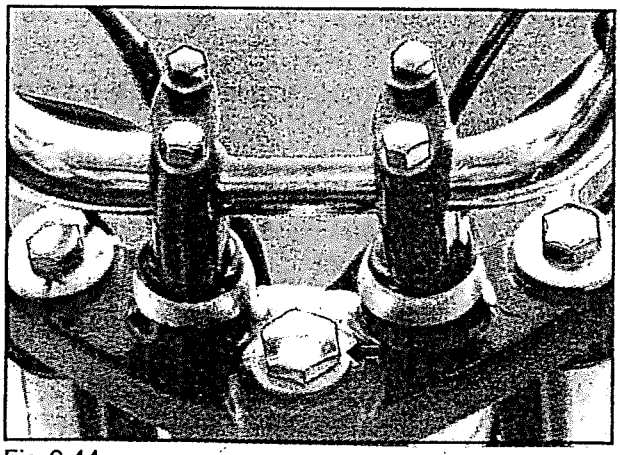


Fig 6.44

- Take off the handlebar along with steering stem upper bracket.
- Remove the steering stem nut by using the special tool (fig 6.45)

031 380 1	Universal clamp wrench

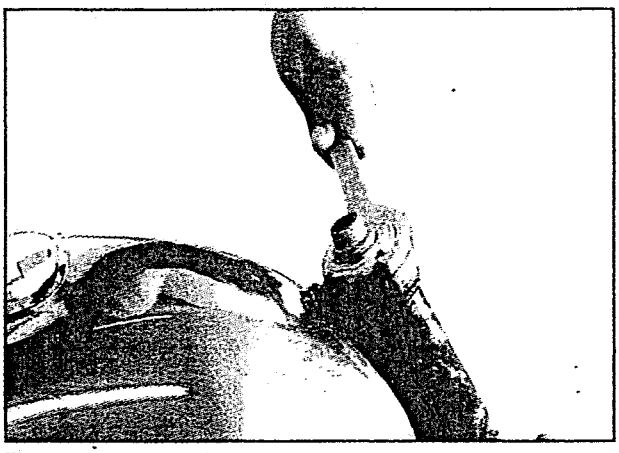


Fig 6.45

- Slide off the steering stem. Be careful not to lose any of the steel balls.

NUMBER OF STEEL BALLS	
Upper race	22 pcs
Lower race	22 pcs

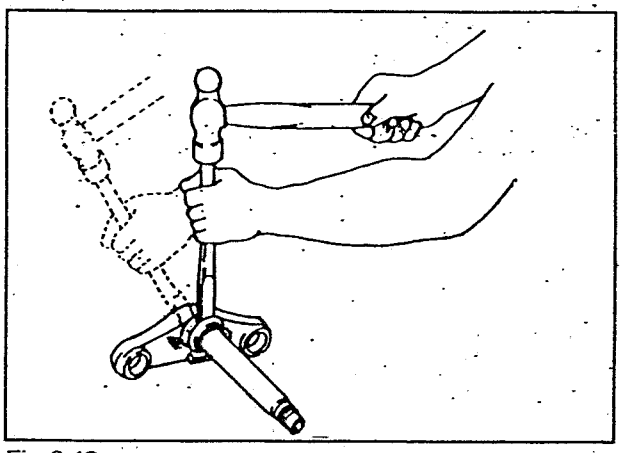


Fig 6.46

- Remove the outer race (fig 6.46)

Chisel and hammer

- Remove the top and bottom inner race using suitable mandrel (fig 6.47)

331 028 000	Mandrel

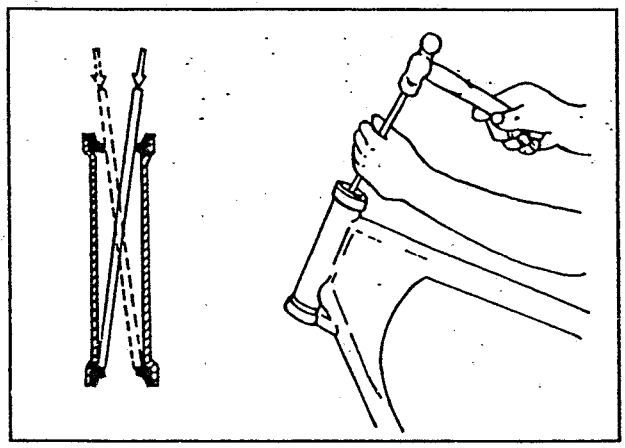


Fig 6.47

INSPECTION

Inspect and check the dismantled parts for the following abnormalities.

- Handlebar distortion
- Handlebar clamp wear
- Race wear and brinelling (fig 6.48)
- Worn or damaged steel balls
- Distortion of steering stem

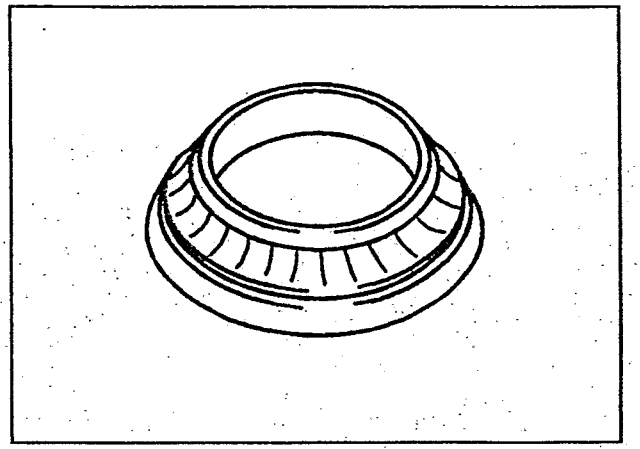


Fig 6.48

REASSEMBLY

Reassemble and remount the steering stem in the reverse order of disassembly and removal, and also carry out the following steps.

Install the steering inner race by using the special tool (fig 6.49)

231 030 000	Steering cup assembling tool

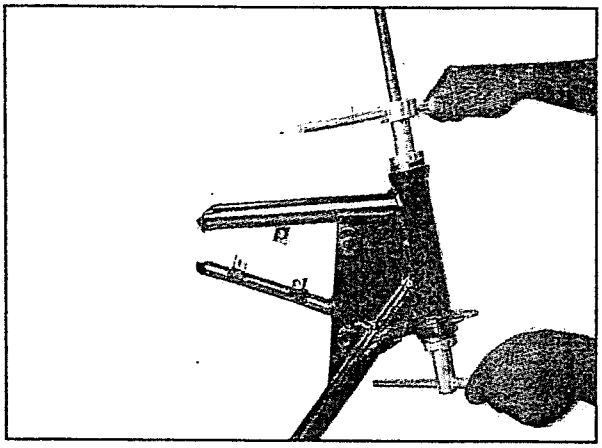


Fig 6.49

Apply grease to upper and lower bearing race before remounting the steering stem (fig 6.50)

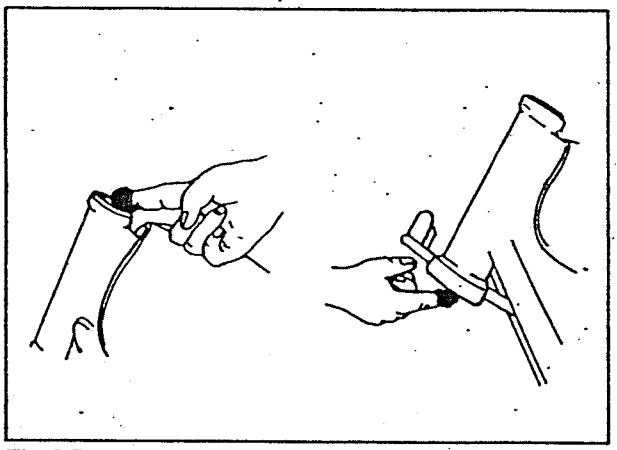


Fig 6.50

Tighten the steering stem nut by using the special tool (fig 6.51), until resistance is felt, then loosen it by 1/8 - 1/4 turn.

031 380 1	Universal clamp wrench

NOTE :
This adjustment will vary from motorcycle to motorcycle.

Make sure that the steering turns smoothly and easily left to right.

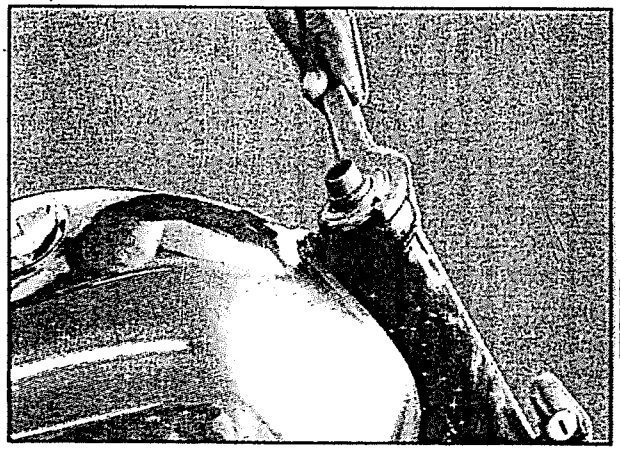


Fig 6.51

Tighten the following bolts to specified torque

	Dia 110mm Wheel Hub	Dia 130mm Wheel Hub
Handlebar clamp bolt	1.2 - 2.0 kgm	1.2 - 2.0 kgm
Steering stem head bolt	4.5 kgm	3.5 - 5.5 kgm
Front fork cap bolt	4.5 kgm	2.3 - 3.2 kgm
Front fork lower bracket bolt	2.0 - 2.7 kgm	2.0 - 2.7 kgm
Wheel axle nut	3.5 kgm	5.0 - 7.0 kgm

REAR WHEEL

REMOVAL AND DISASSEMBLY OF REAR WHEEL

- Remove the split pin and remove the axle nut, (1) (fig 6.52)

Combination plier
14 mm Spanner

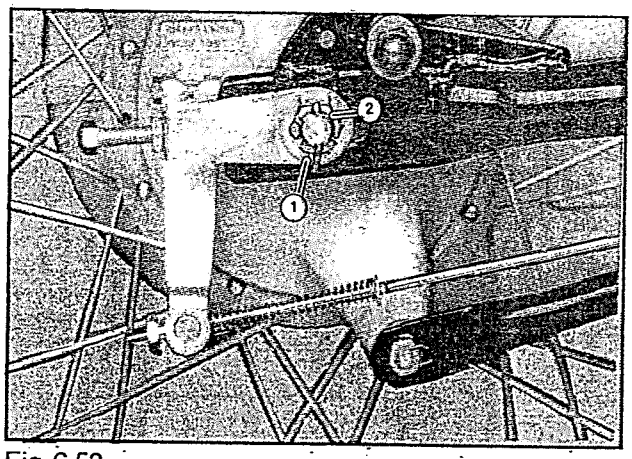


Fig 6.52

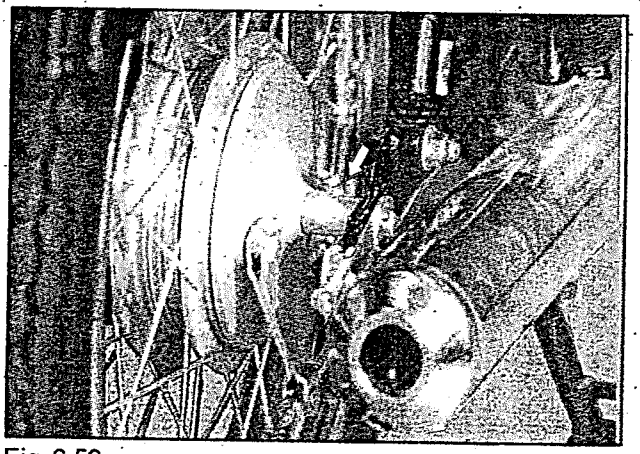


Fig 6.53

- Pull out the axle shaft (fig 6.53 & 6.54) and remove spacer.

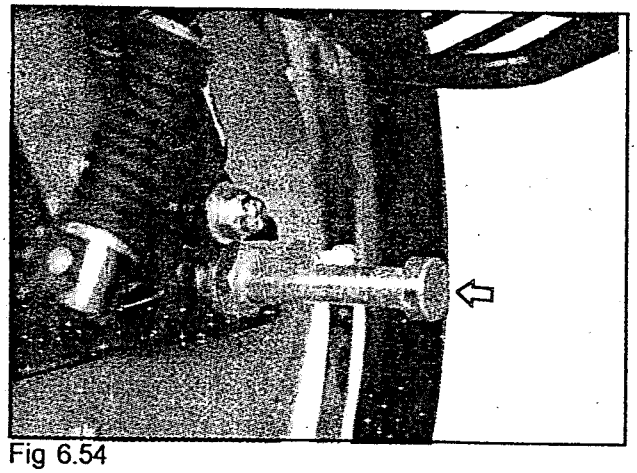


Fig 6.54

- Tilt the motorcycle to the left side and dismount the rear wheel (fig 6.55)
- Pull out the brake panel (fig 6.55)

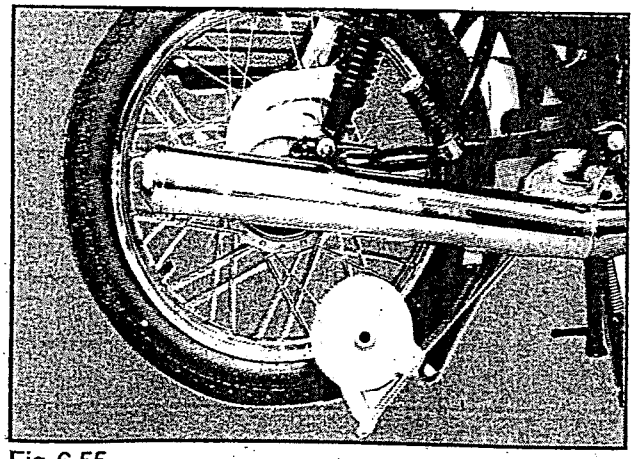


Fig 6.55

- Remove the chain cover bolts (5 nos), chain and rear sprocket drum nut (fig 6.56)

Combination plier
10 mm Spanner
27 mm Ring spanner

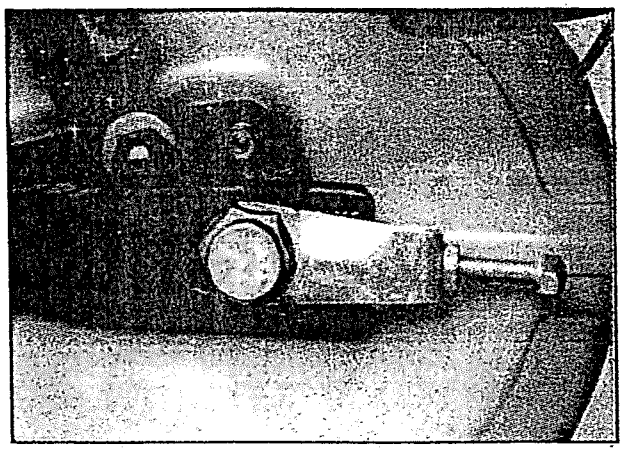


Fig 6.56

- Flatten the lock washer of the 4 nuts (1) and remove the sprocket (fig 6.57)

12 mm Ring spanner

- Remove the oil seal (2) (fig 6.57)

Plastic hammer, suitable drift and hot plate	
031 240 1	Oil seal remover

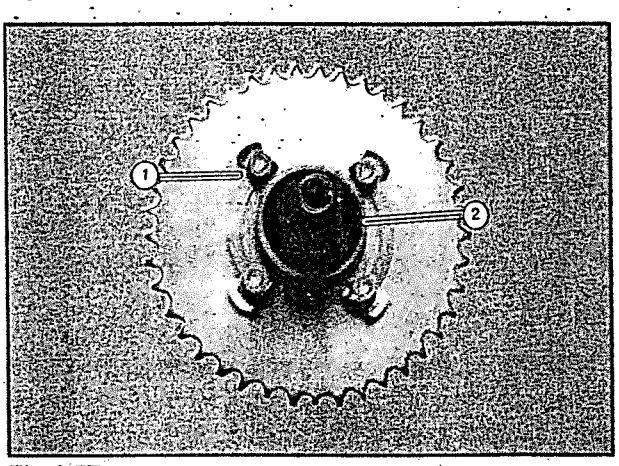


Fig 6.57

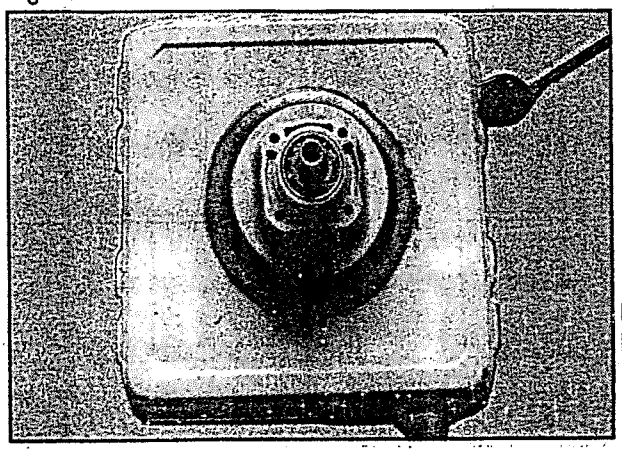


Fig 6.58

- Heat the sprocket drum on a hot plate to approximately 125° C and then draw out the bearing along with shaft rear sprocket mounting drive by a suitable mandrel (fig 6.58 and fig 6.59)

- Separate bearing and shaft rear sprocket mounting drive

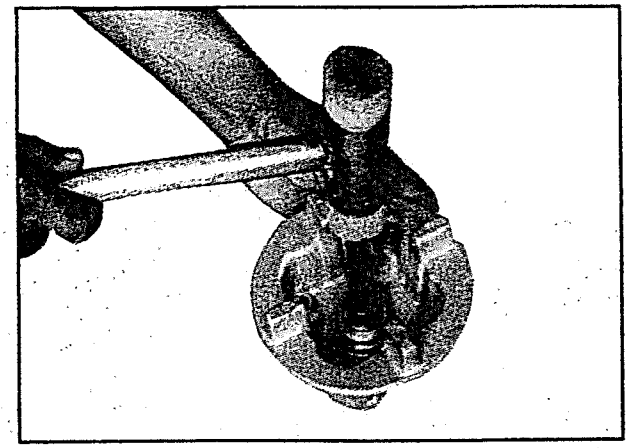


Fig 6.59

REAR BRAKE

- Remove the brake panel after removing the torque link nut (2) and brake adjusting nut (3) (fig 6.52)

- Remove the brake shoes (fig 6.60)

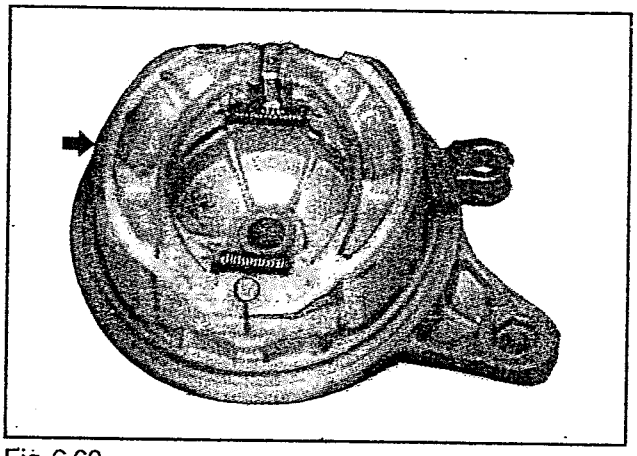


Fig 6.60

- Remove brake cam lever (fig 6.61 and fig 6.62)

10 mm Ring and open end spanner.

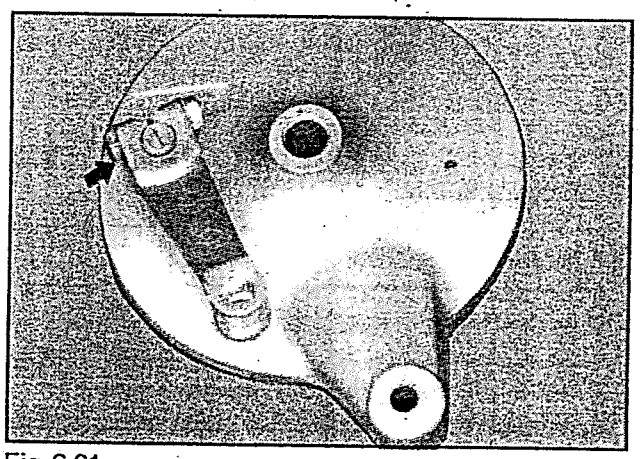


Fig 6.61

INSPECTION

- Wheel Bearing (see page 6-4)
- Axle Shaft (see page 6-4)
- Wheel Rim (see page 6-5)
- Spokes Nipple (see page 6-5)
- Brake Shoe (see page 6-6)
- Brake Drum (see page 6-6)

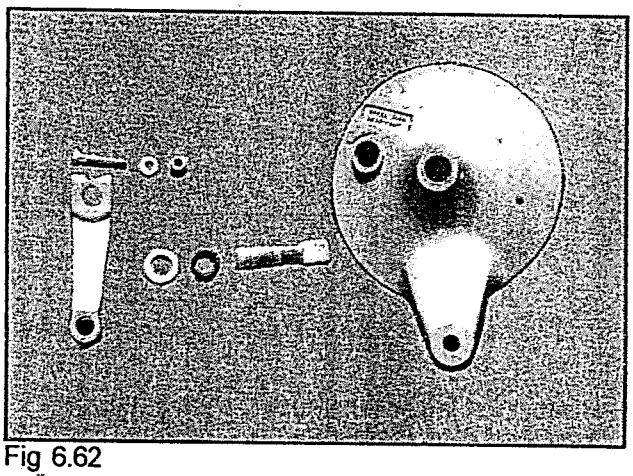


Fig 6.62

REAR SPROCKET

Excessively worn chain sprockets generate chain noise and hasten chain wear. The sprocket should be checked for wear when the chain is removed. Visually inspect the sprocket teeth and replace the sprocket if they are worn as illustrated (fig 6.63)

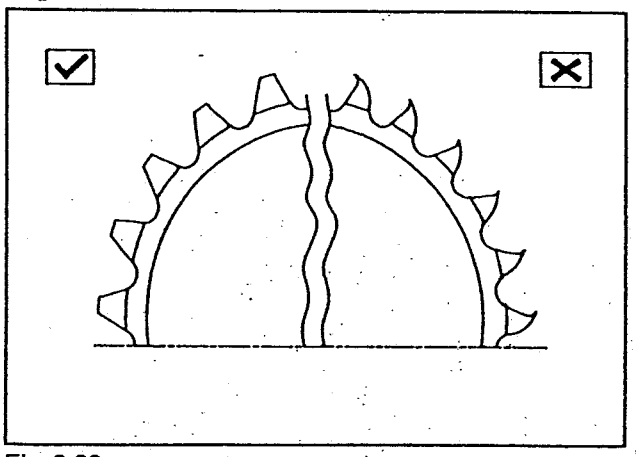


Fig 6.63

REAR SPROCKET CUSHION

Inspect the damper wear (fig 6.64)

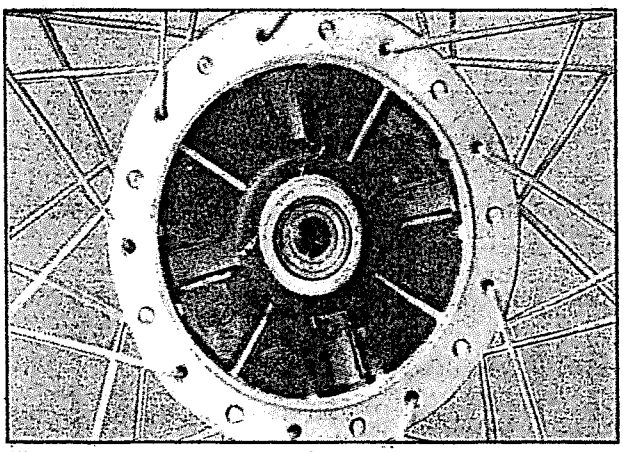


Fig 6.64

TYRE

Refer Page (6-5)

TYRE INFLATION PRESSURE

Refer Page (6-5)

REASSEMBLY

Reassemble the rear wheel and rear brake, in the reverse order of disassembly and removal, and also carry out the following steps.

BRAKE

Install the brake cam lever as shown in illustration (fig 6.65)

BRAKE SHOE

Refer Page (6-6)

NOTE :
When installing the chain adjuster, the notch mark on adjuster should be kept on the upper side (fig 6.66)

Tighten the following bolts and nuts specified torque.

Unit : kgm

Rear torque link nut		1.25
Sprocket mounting nuts		2.50
Brake cam lever nuts		0.65
Rear axle nut	Dia 110 mm Wheel hub	3.5
	Dia 130 mm Wheel hub	3.8

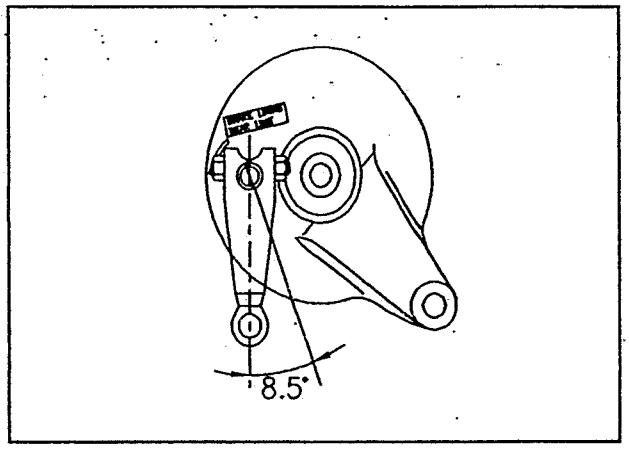


Fig 6.65

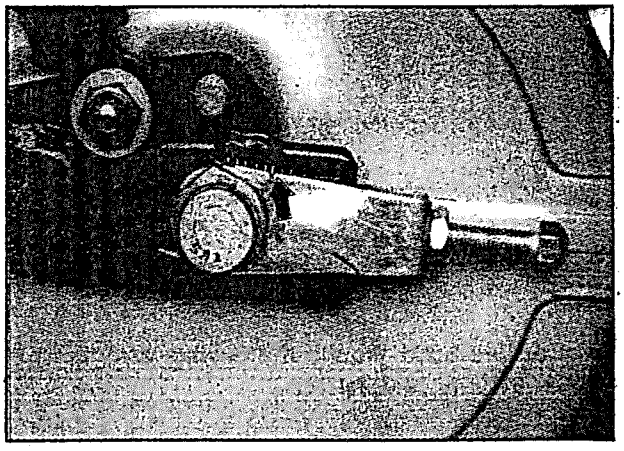


Fig 6.66

REAR SUSPENSION

REMOVAL

- Remove the rear wheel (see page 6-16)
- Remove bottom nut of both the shock absorbers.
- Loosen and remove the pivot nut (fig 6.67)
- Remove the silencer
- Draw out the pivot shaft

17 mm Ring spanner

Tightening torque 2.0 - 3.0 kgm

- Take off the swing arm (fig 6.68)

17 mm Ring spanner

Tightening torque 4.5 - 7.0 kgm

- Remove the split pin of the torque link nut (front end) and remove the nut (fig 6.70)

14 mm Spanner
Combination plier

INSPECTION

- Inspect the distortion of the swing arm (fig 6.69)
- Inspect the wear of the bushes (fig 6.70)

REASSEMBLY

Reassemble and mount the swing arm in the reverse order of removal.

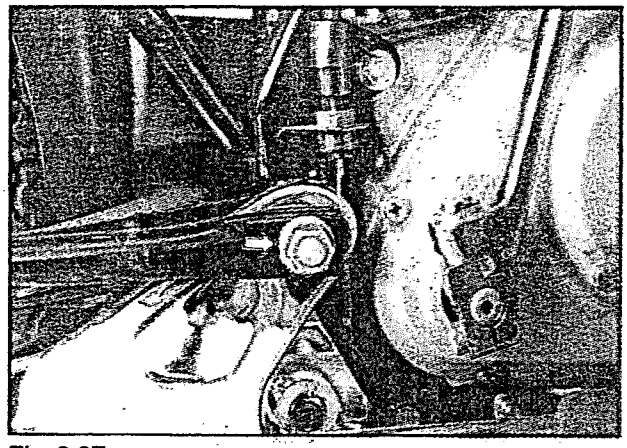


Fig 6.67

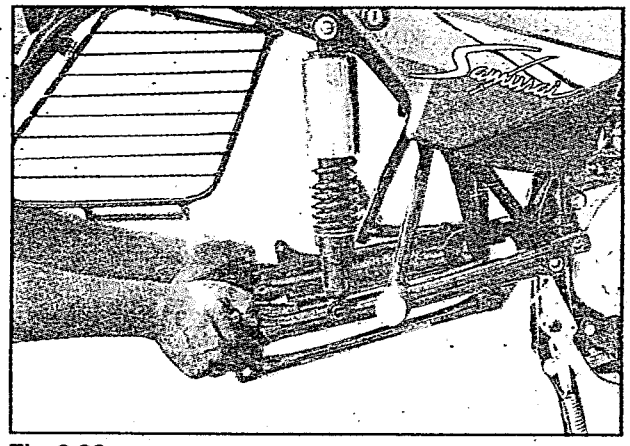


Fig 6.68

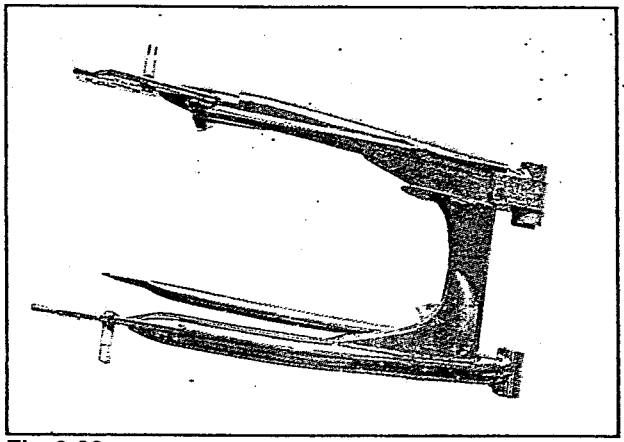


Fig 6.69

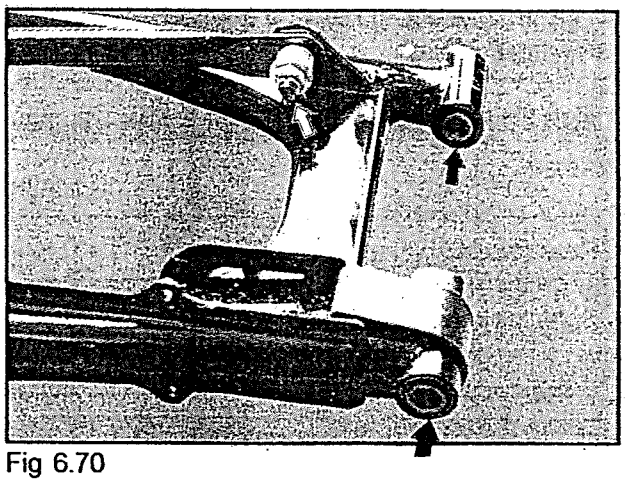


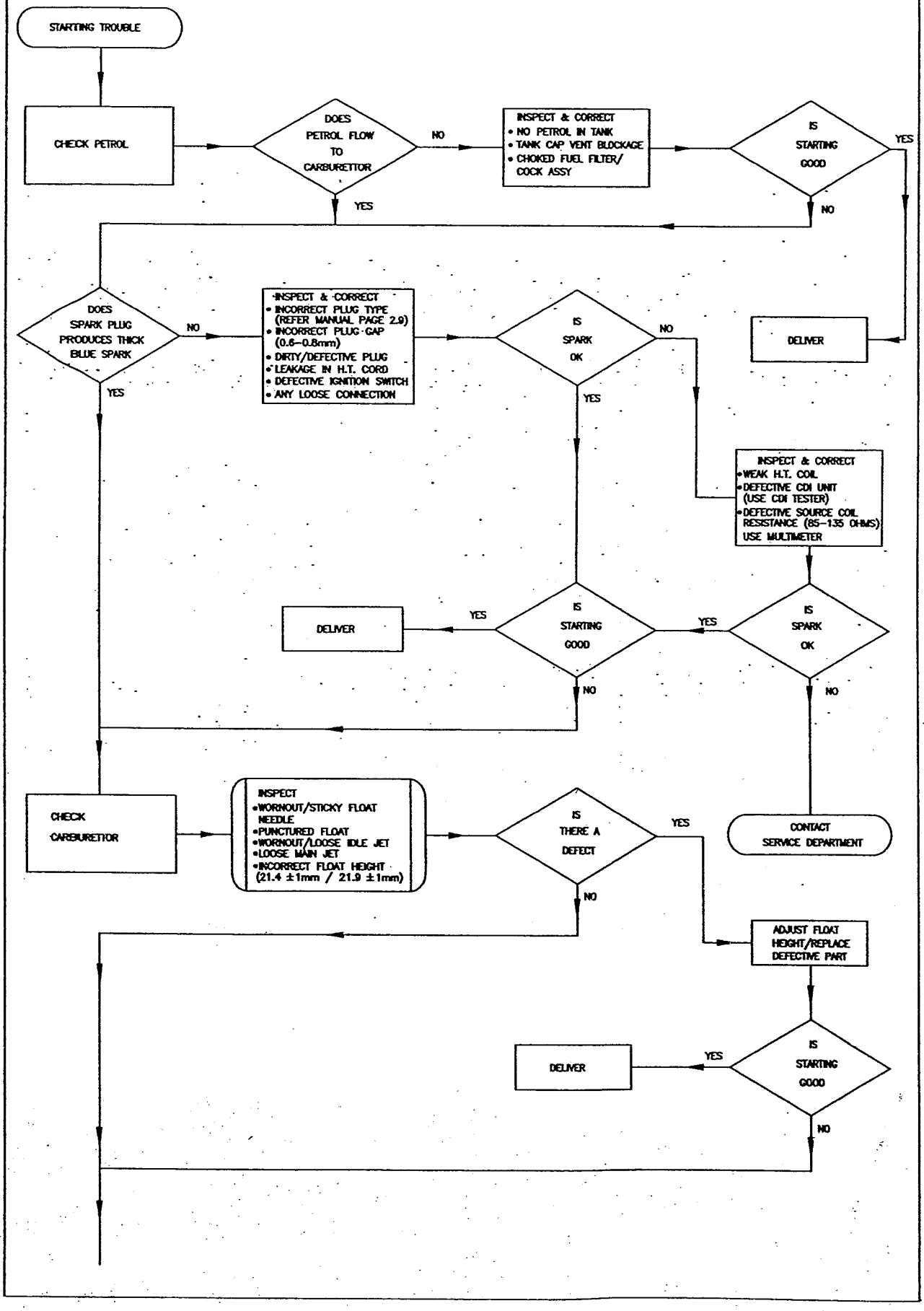
Fig 6.70

SERVICE INFORMATION

CONTENTS

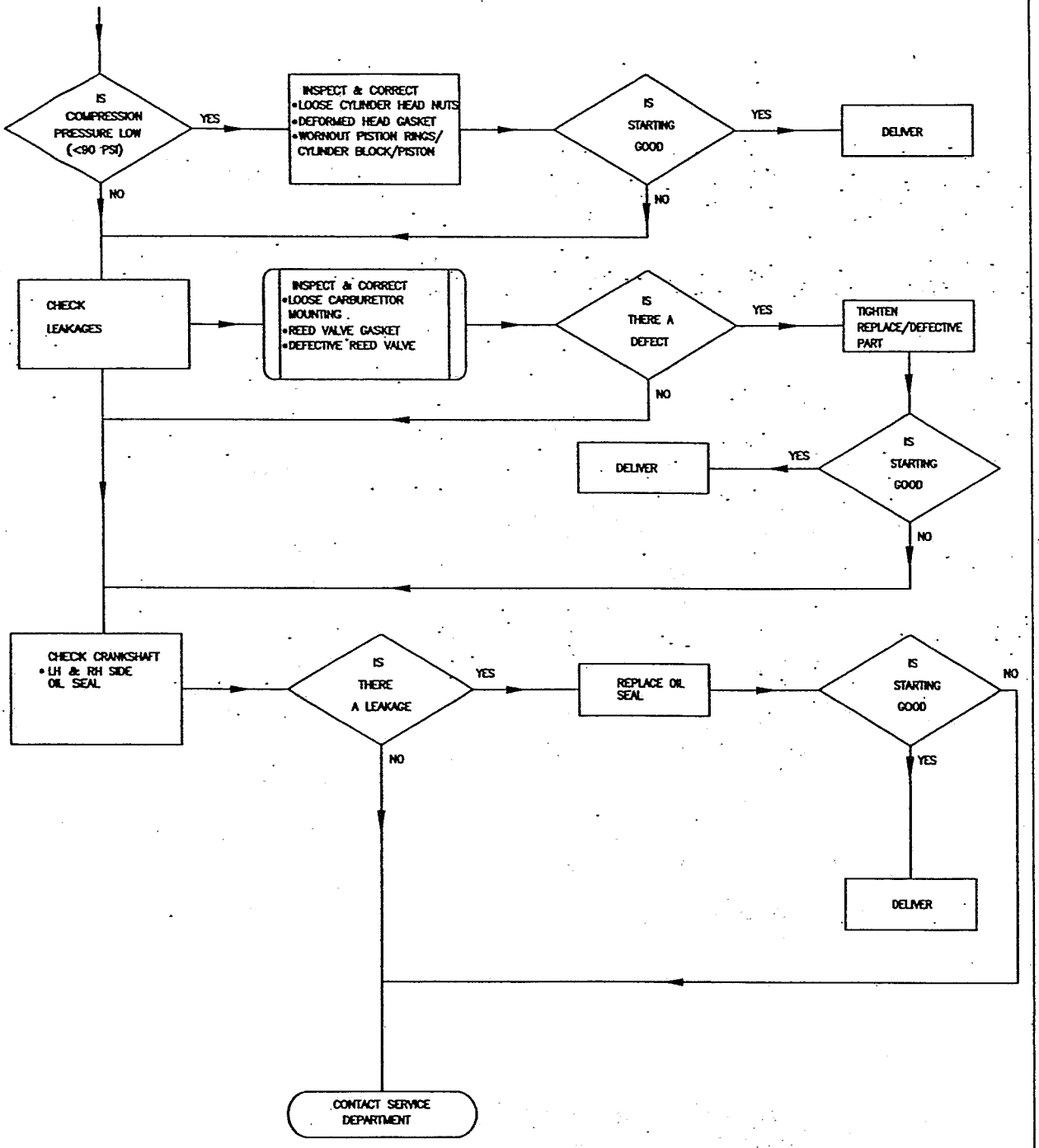
01 STARTING TROUBLE

TROUBLE SHOOTING



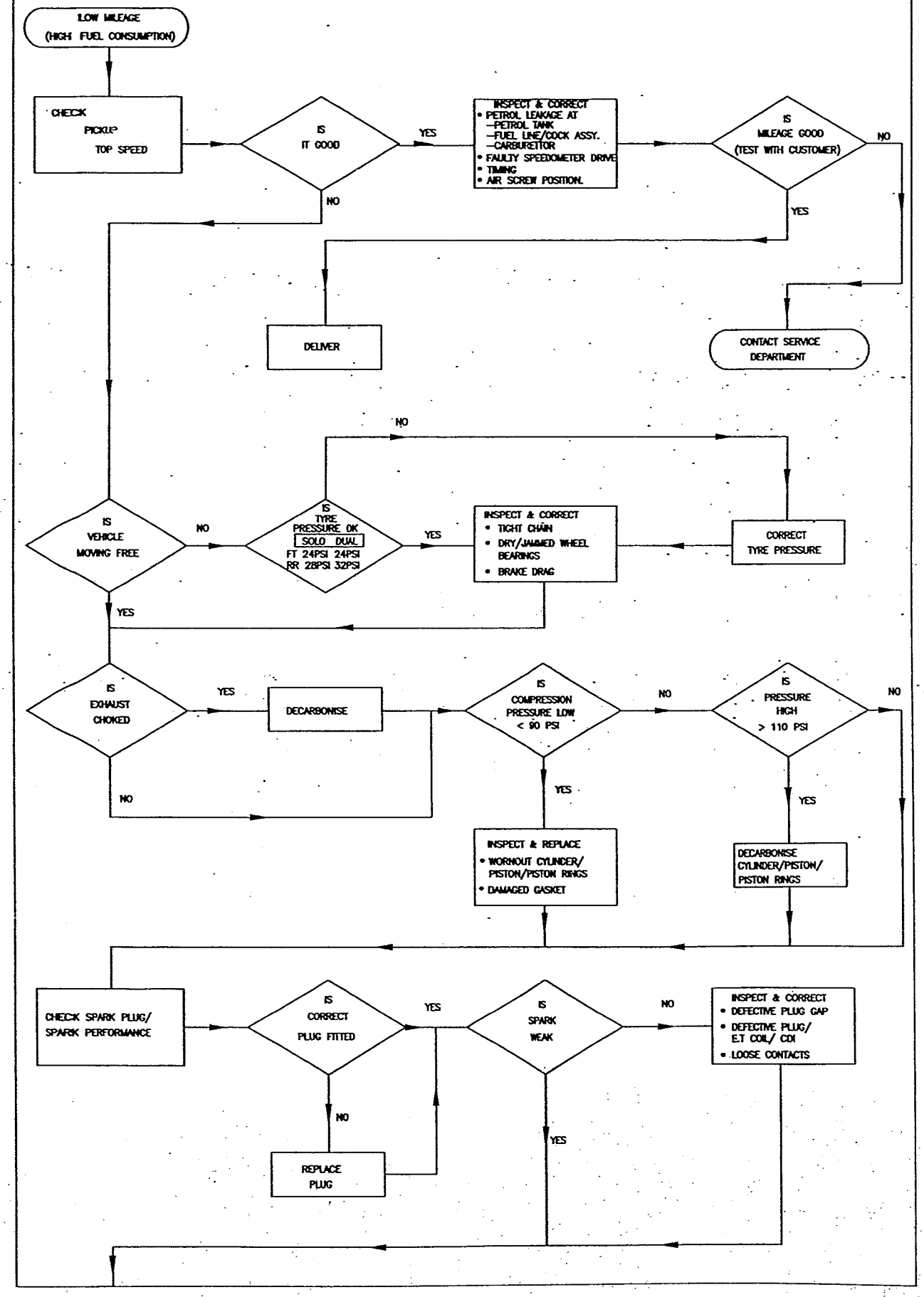
TROUBLE SHOOTING

01A. STARTING TROUBLE



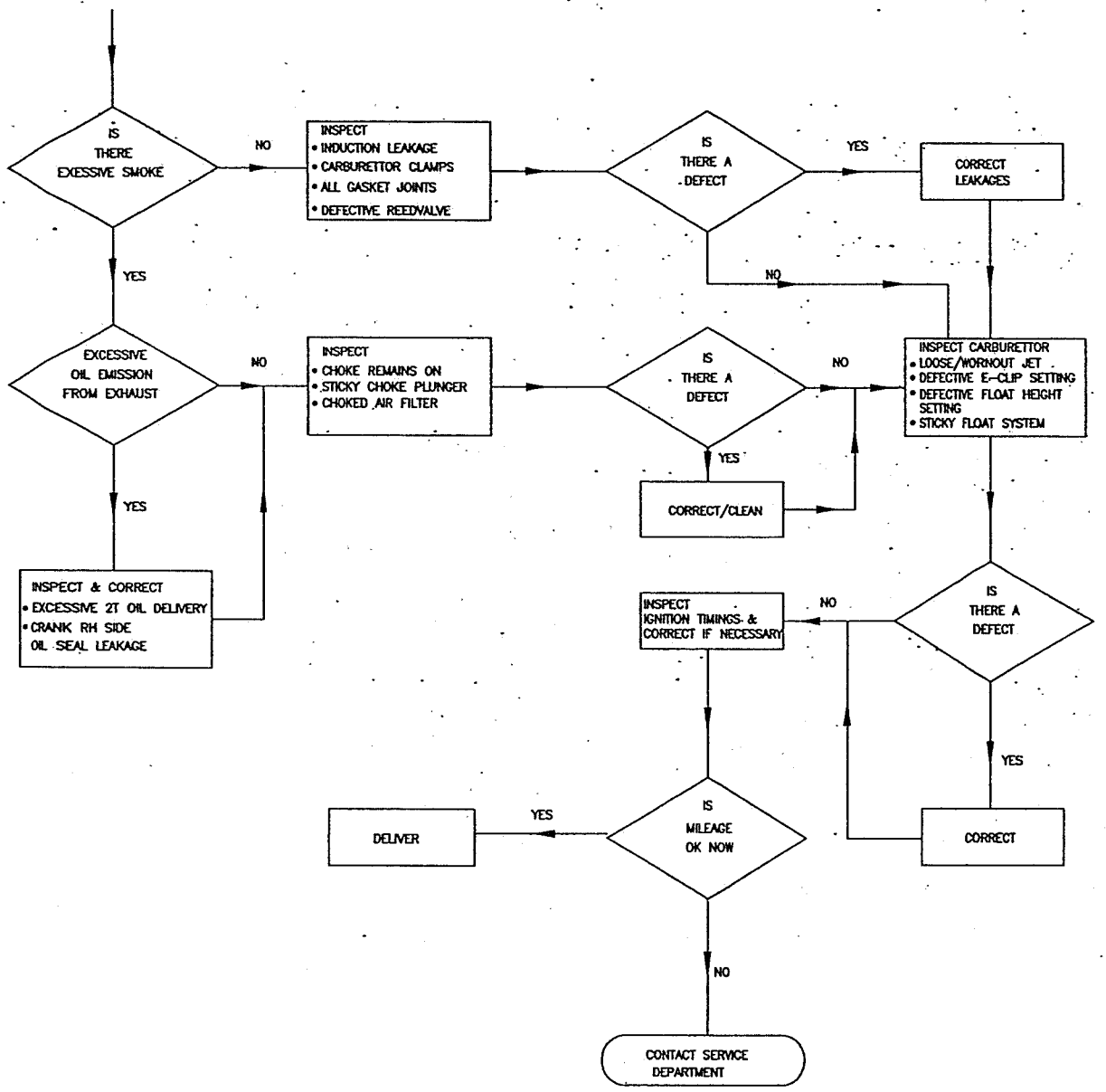
02. HIGH FUEL CONSUMPTION

TROUBLE SHOOTING



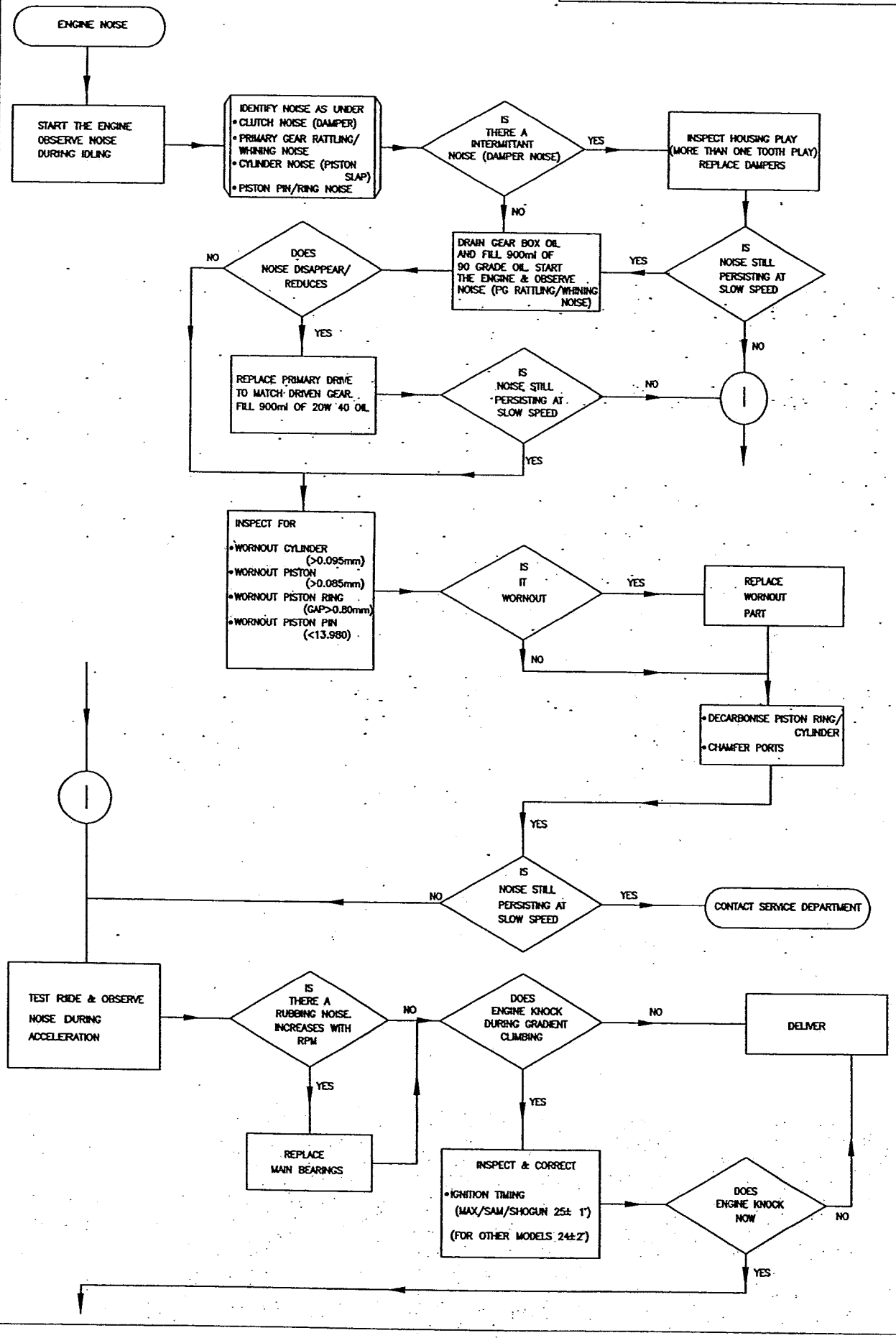
02A. HIGH FUEL CONSUMPTION

TROUBLE SHOOTING



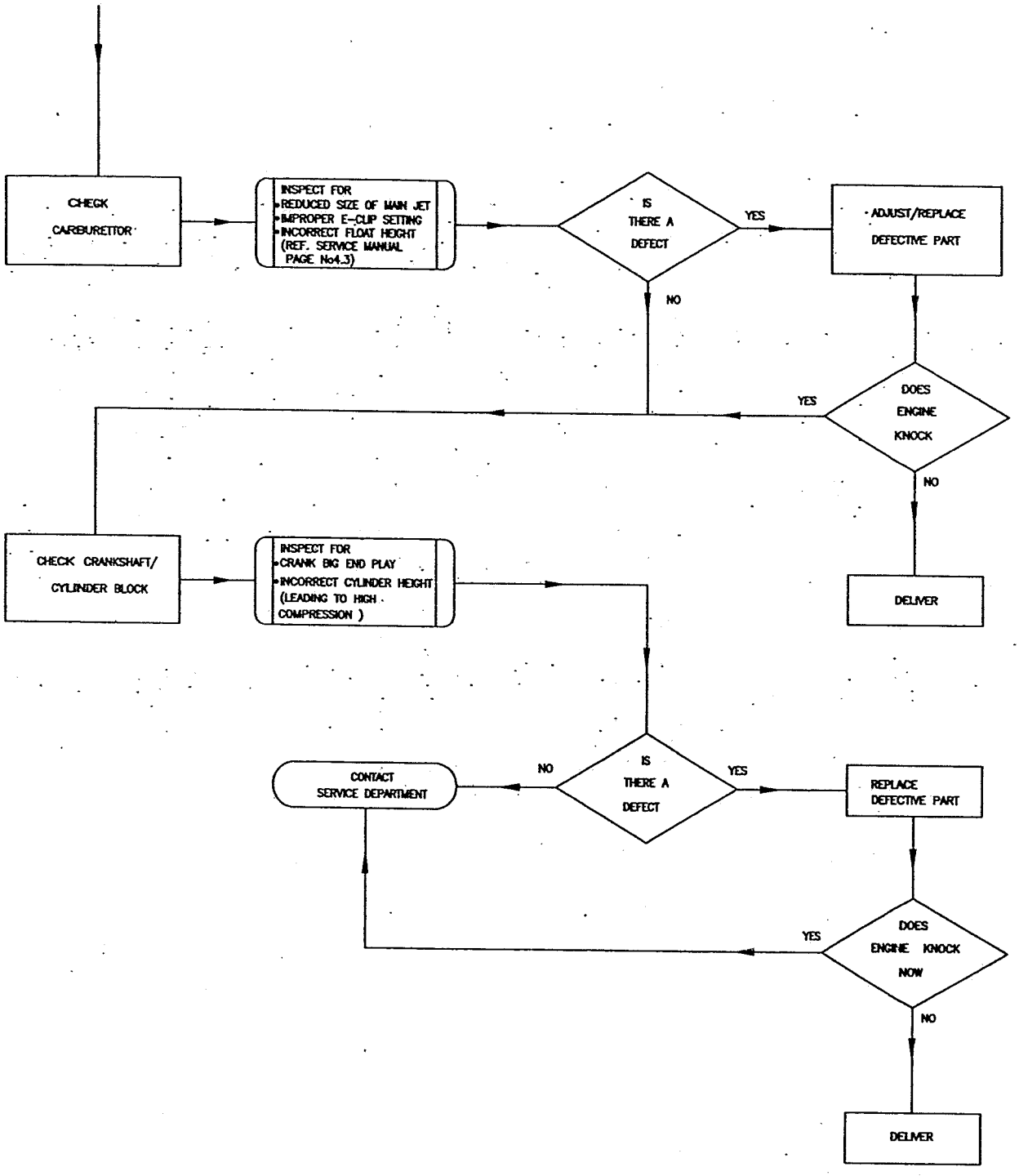
03. ENGINE NOISE

TROUBLE SHOOTING



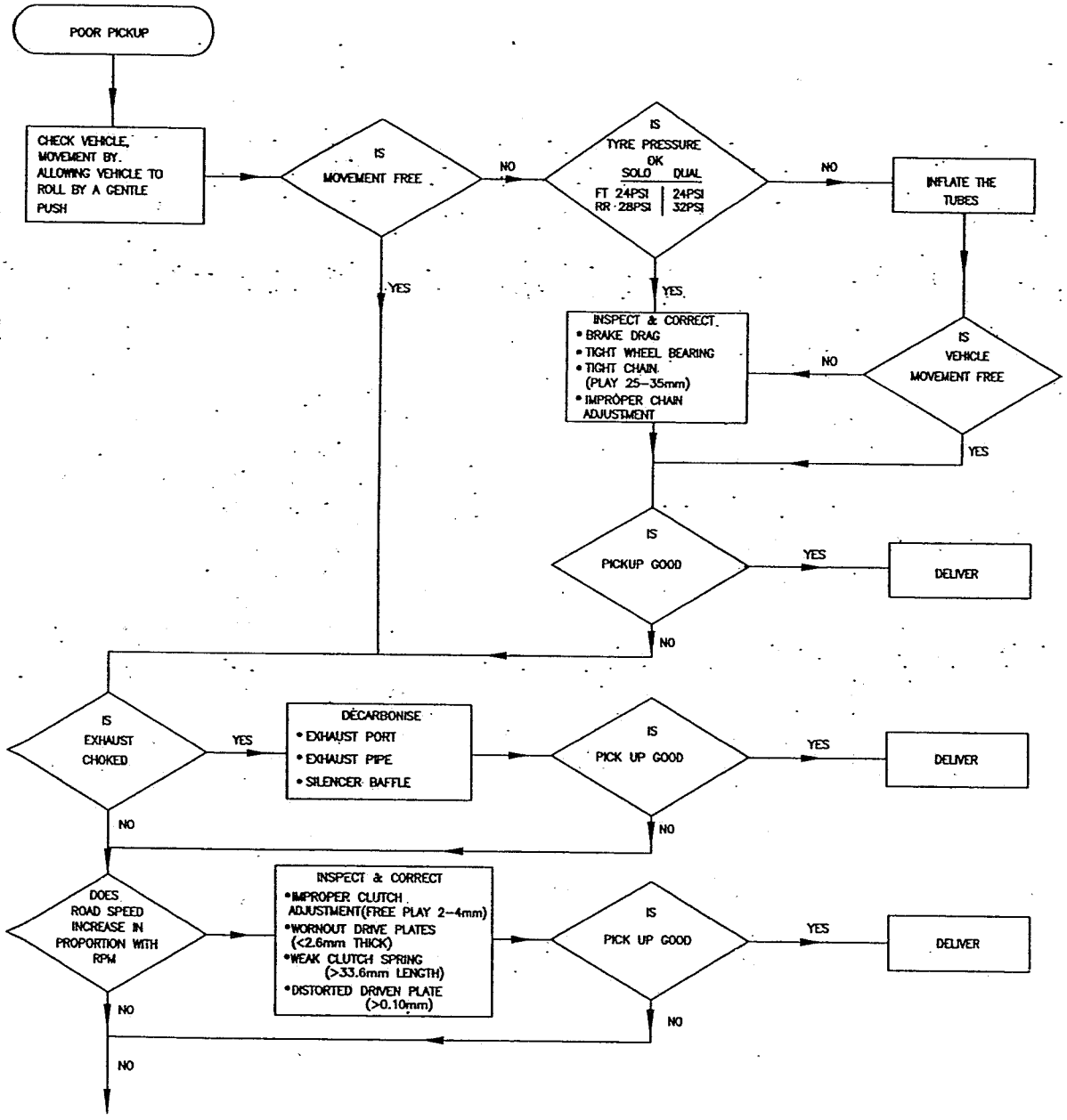
TROUBLE SHOOTING

03A. ENGINE NOISE



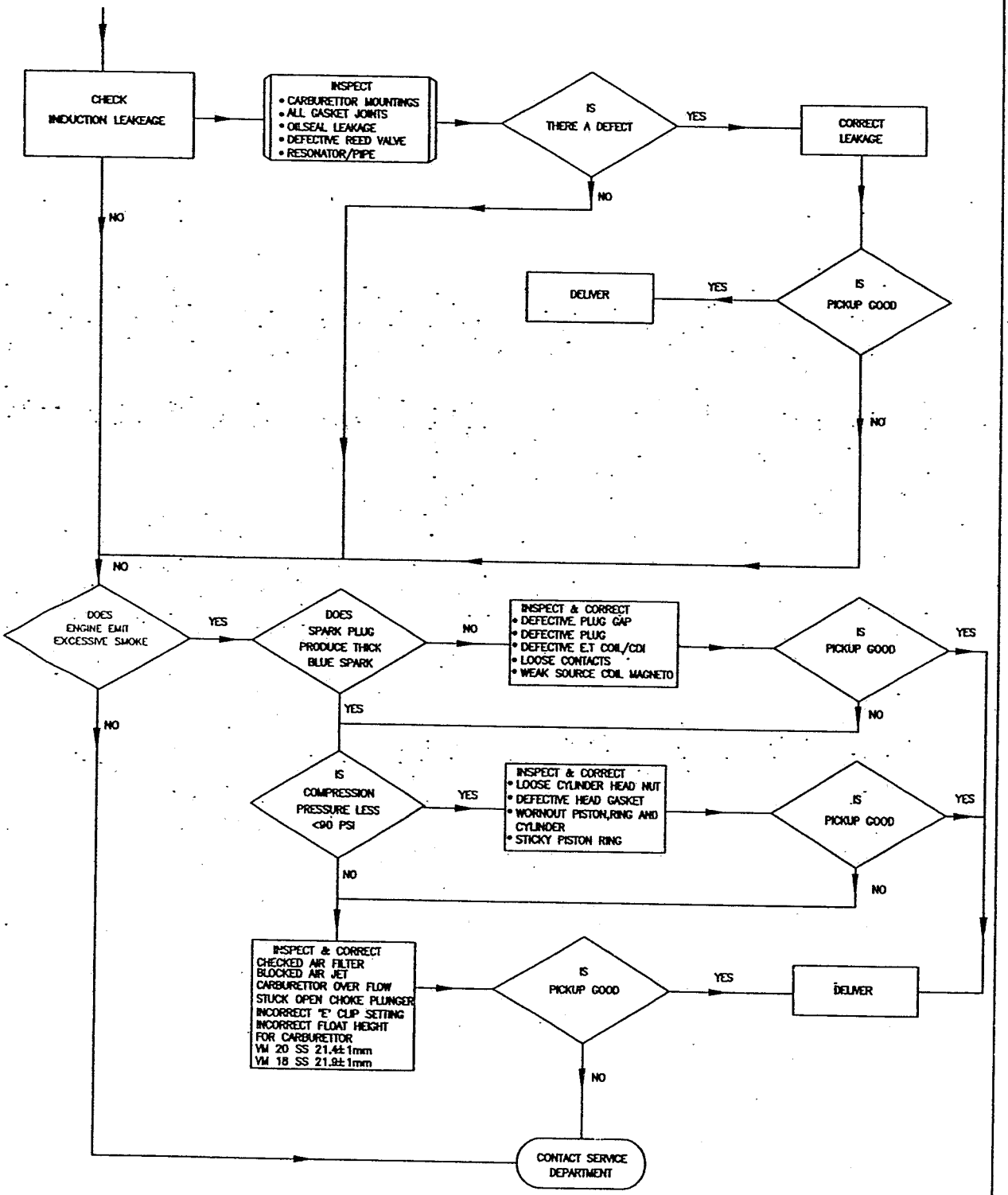
04. POOR PICKUP

TROUBLE SHOOTING



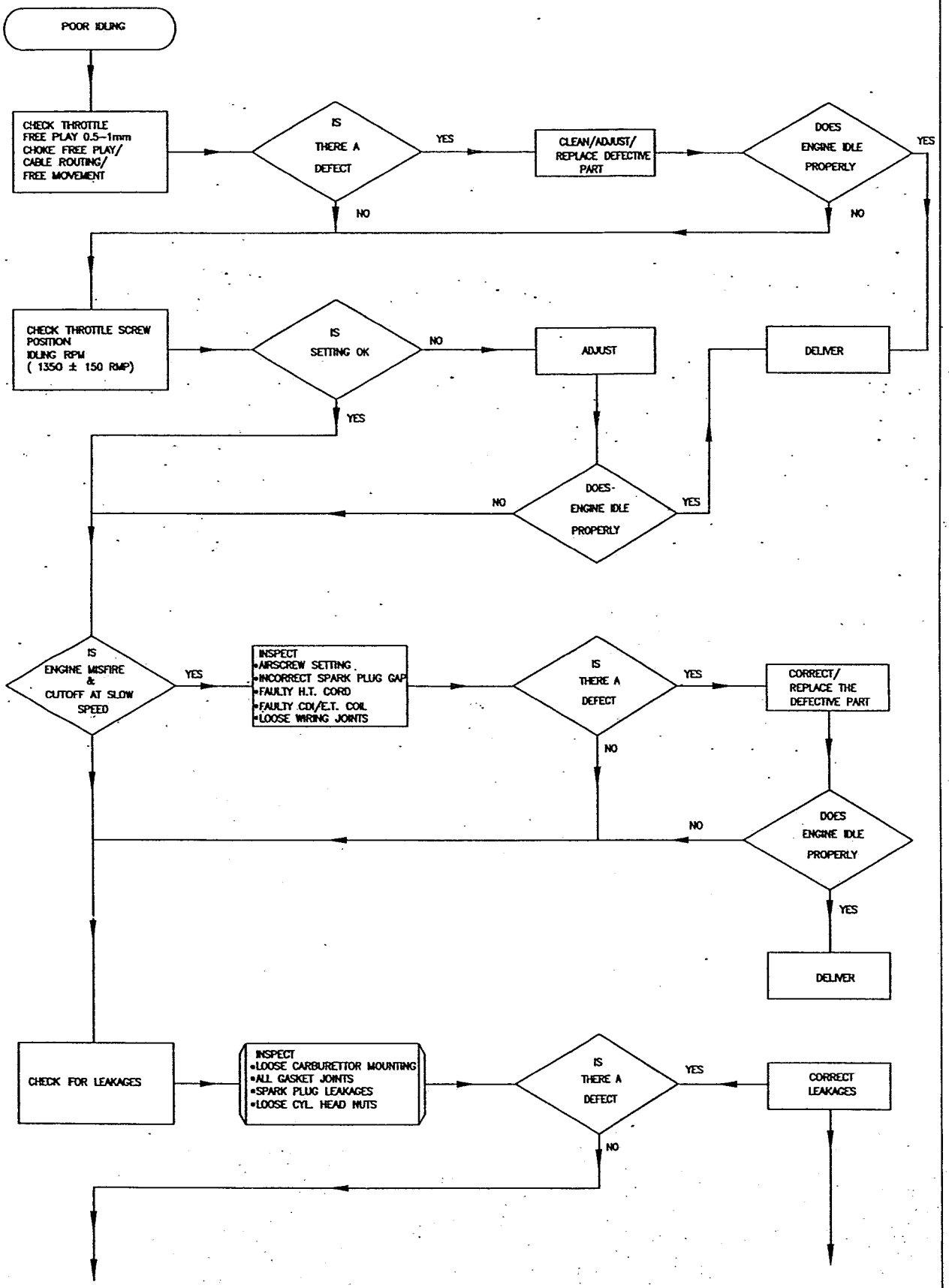
TROUBLE SHOOTING

04A. POOR PICKUP



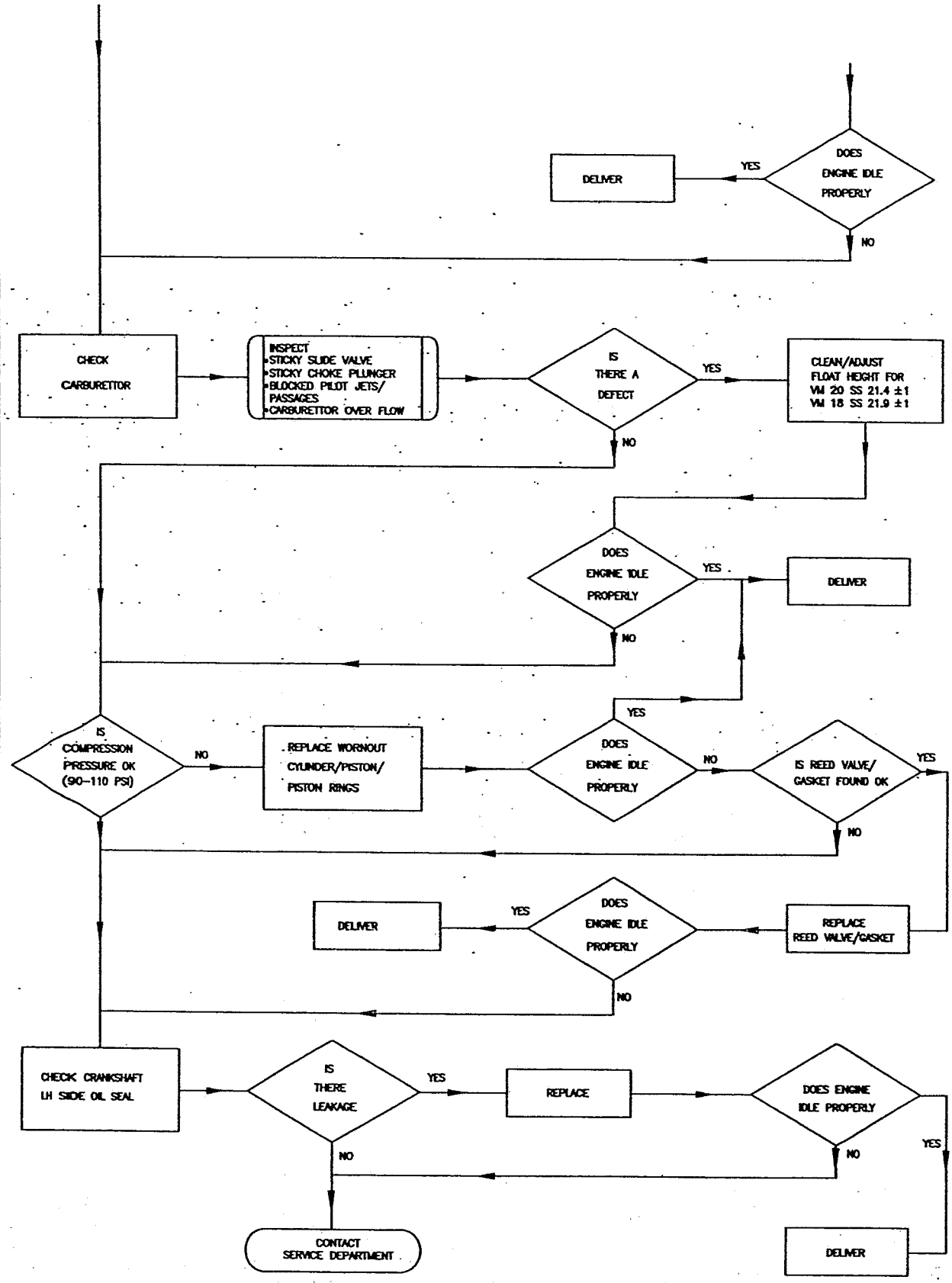
TROUBLE SHOOTING

05. POOR IDLING



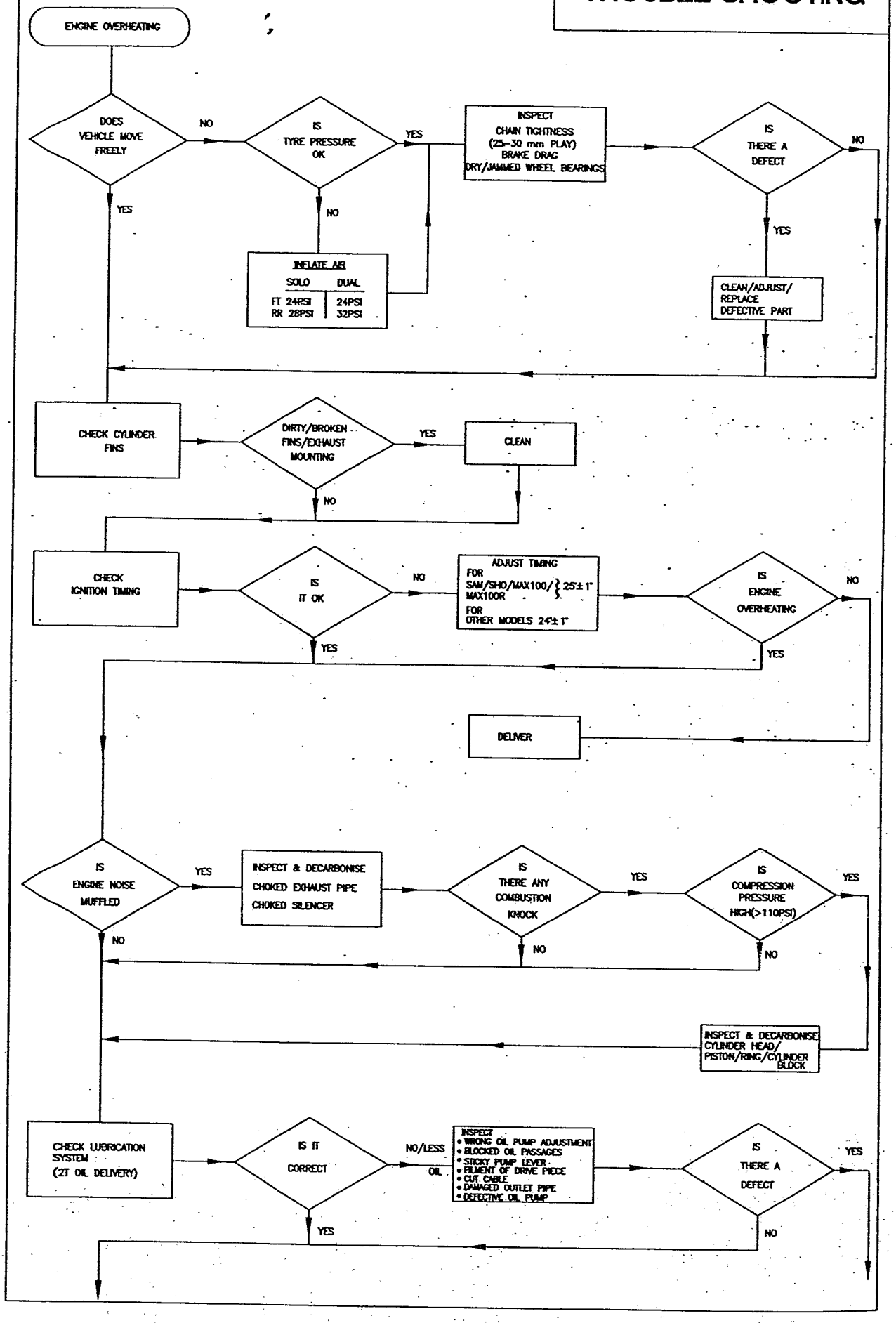
TROUBLE SHOOTING

05A. POOR IDLING



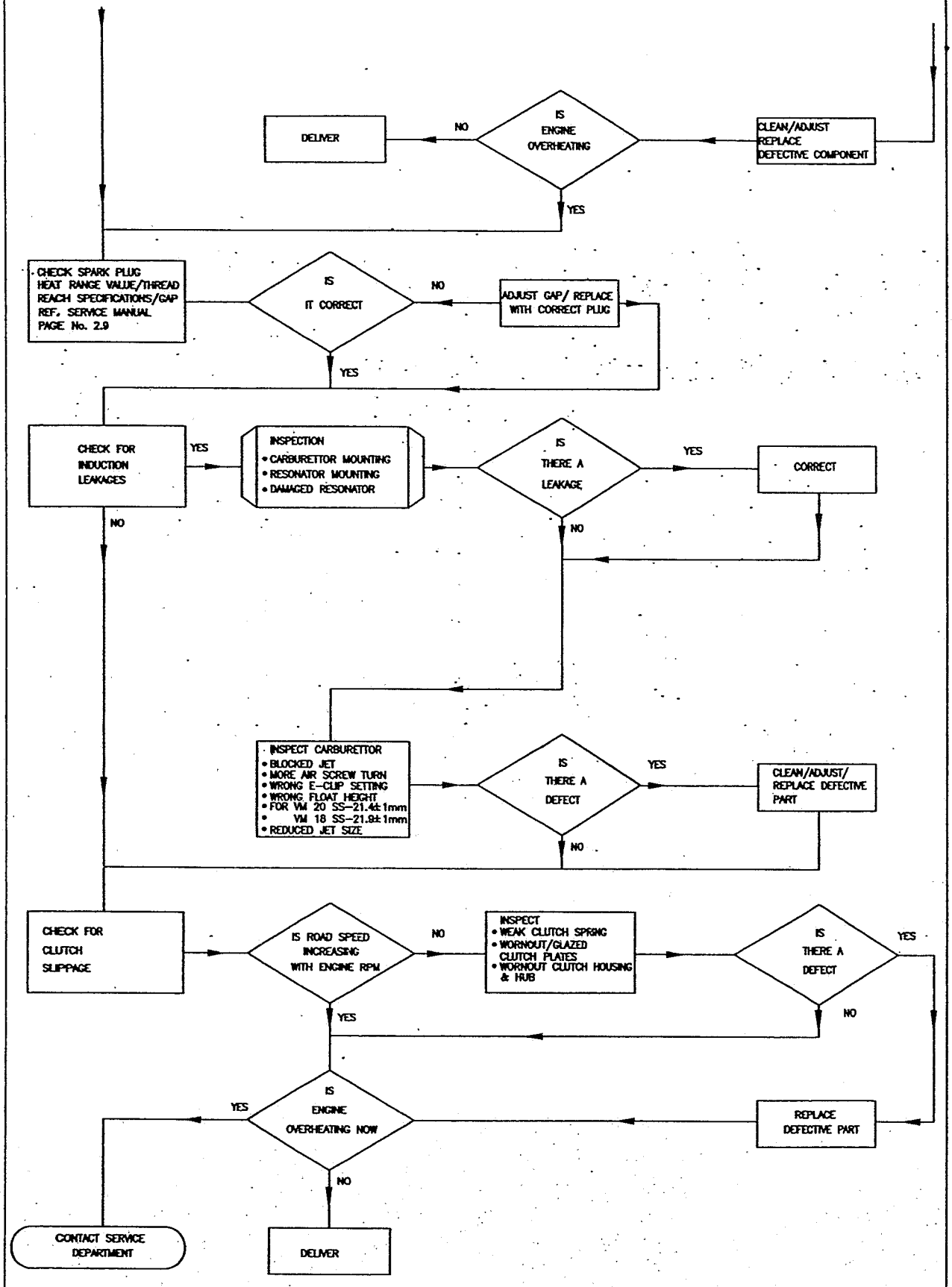
06. ENGINE OVERHEATING

TROUBLE SHOOTING



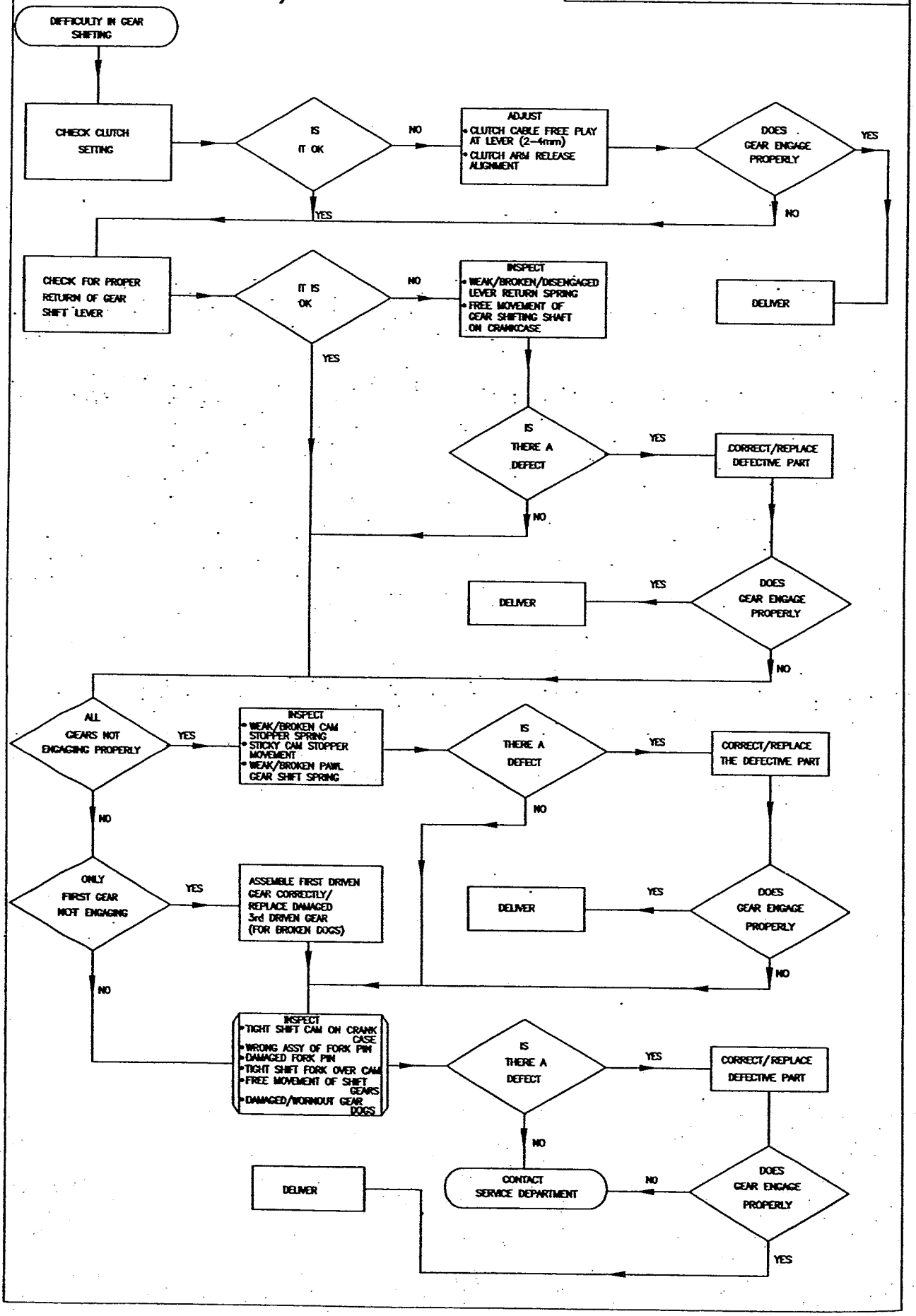
06A. ENGINE OVERHEATING

TROUBLE SHOOTING



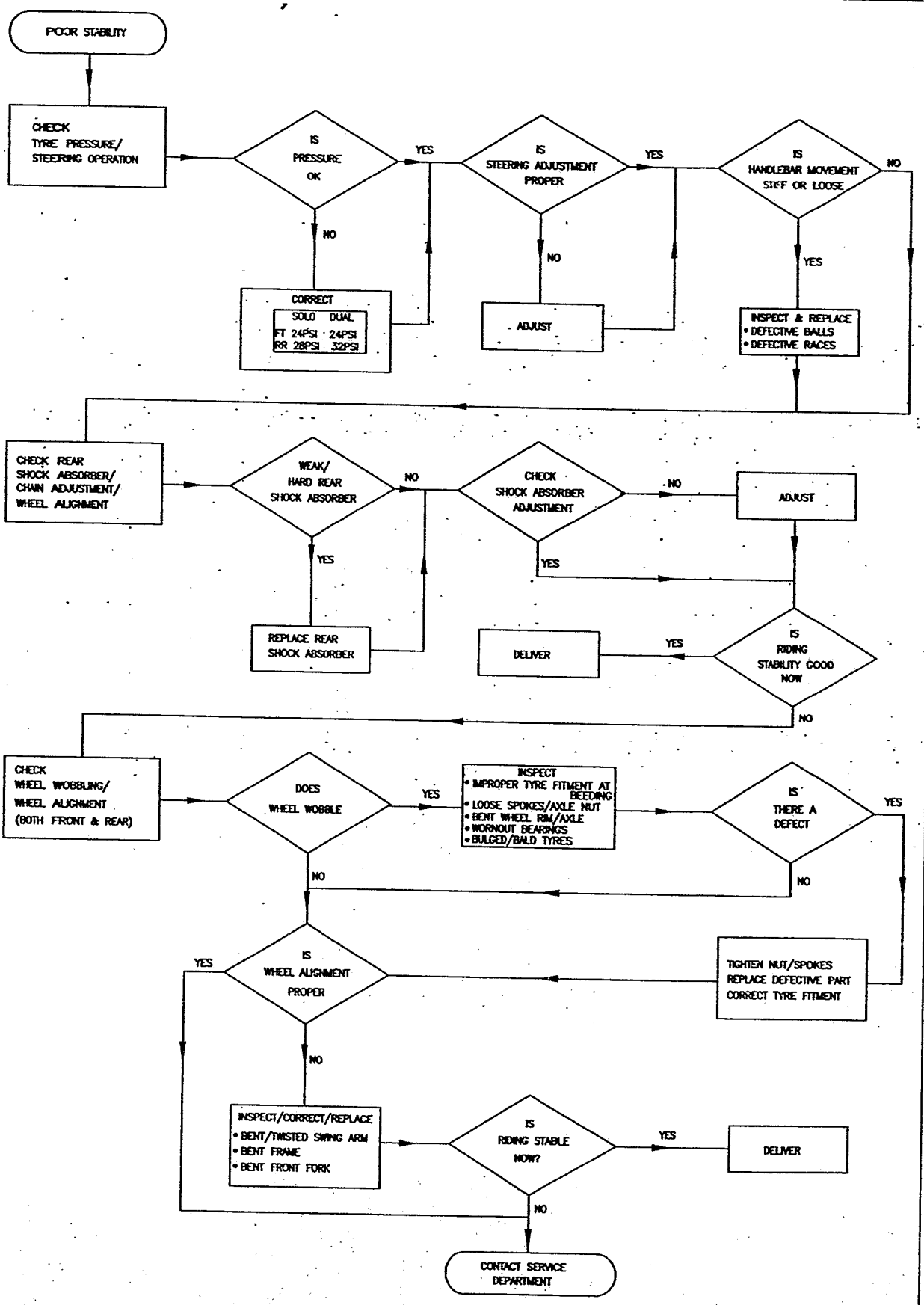
07. DIFFICULTY IN GEAR SHIFTING

TROUBLE SHOOTING



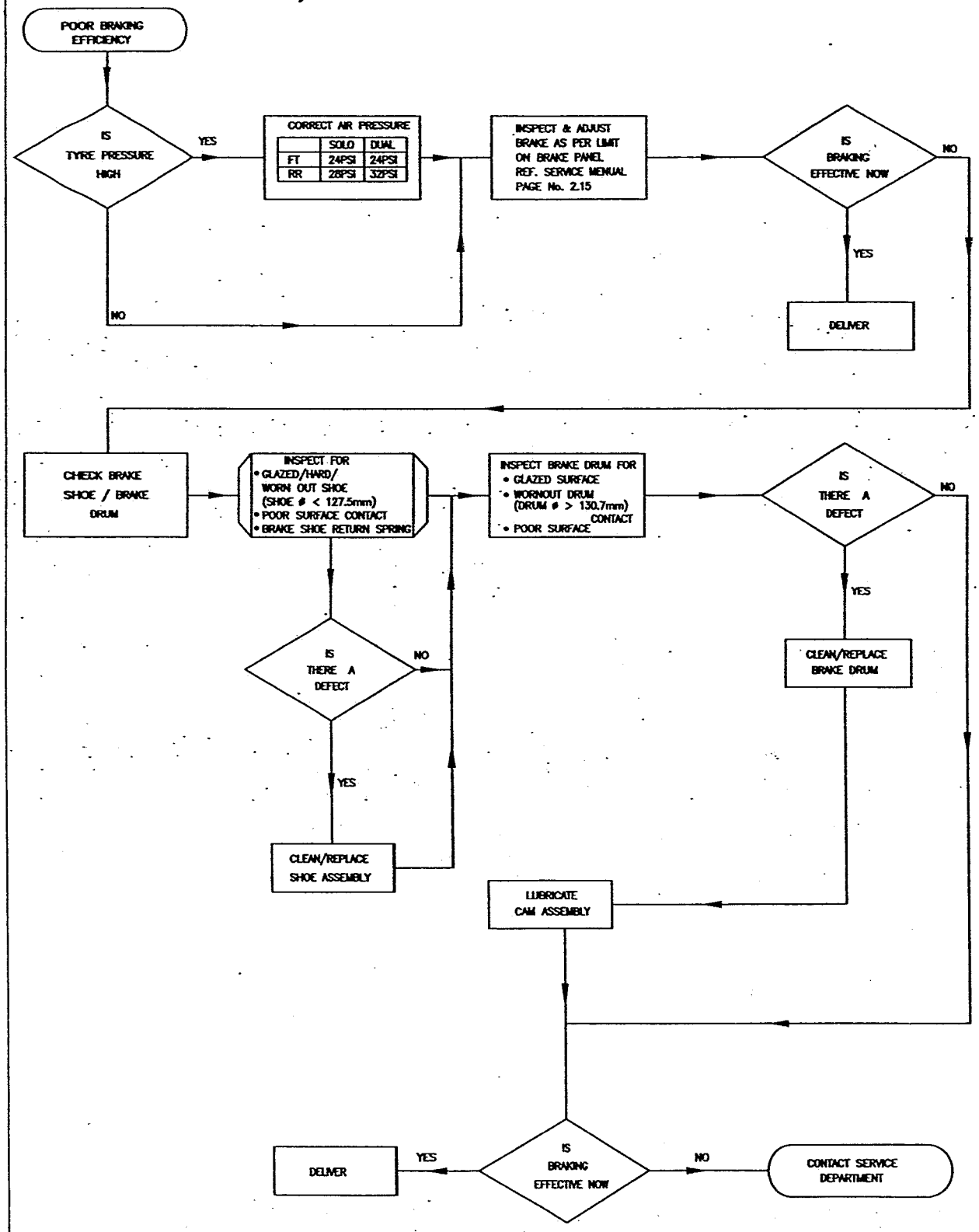
08. POOR STABILITY

TROUBLE SHOOTING



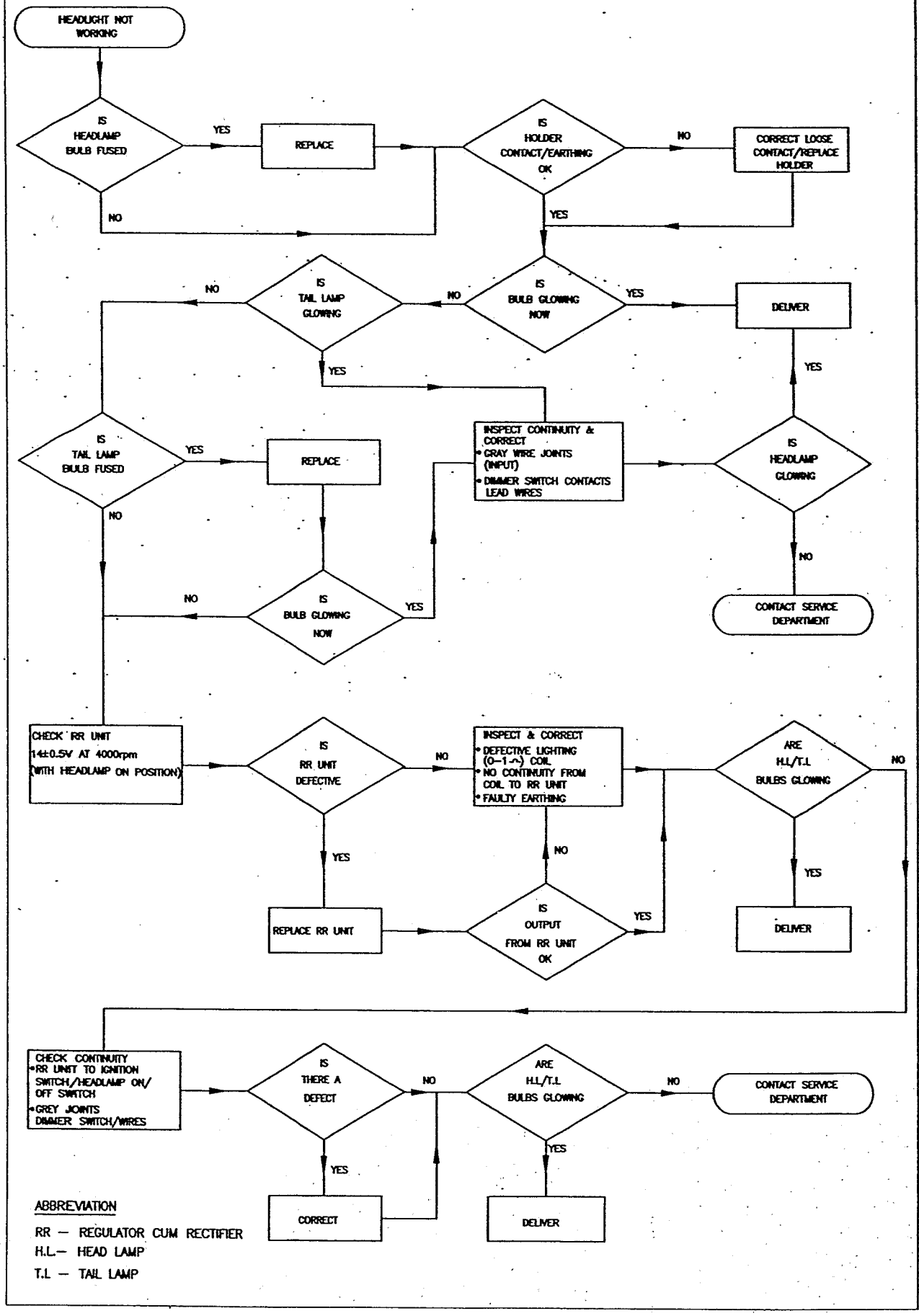
09. POOR BRAKING EFFICIENCY

TROUBLE SHOOTING



10. HEADLIGHT NOT WORKING

TROUBLE SHOOTING



MATERIALS REQUIRED FOR MAINTENANCE

The following recommended materials are required for maintenance work on the TVS-SUZUKI range of motorcycles and should be kept on hand for ready use.

USE OF GENUINE TVS-SUZUKI PARTS

When replacing any part of the machine, the use of genuine TVS-SUZUKI parts are highly recommended. Non genuine parts will lower the performance of the motorcycle and cause mechanical failure.

Sl.No.	Application	Material
	LUBRICATION	
01.	Oil seal lip groove, swing arm shaft, centre stand spacer, brake pedal head pipe inner race	BP MP Grease No 3, Servo Gem (IOC) No 3
02.	Transmission gears	BP Bharat Automal 20W30, Castrol CRB-plus 20 W 40, Castrol Deusol Super
03.	Engine oil and Crankshaft bearings	IOC Servo 2T Supreme, Castrol Super TT, HP Super 2T, Bharat 2 - stroke oil, Bharat Super 2T, Gulf Pride 2T, JASO FC Grade, JASO FB Grade
	ADHESIVES	
01.	Fastening nuts adhesion	Anabond Thread locker (112 Stud Grade)
02.	Fastening Rubber, Plastic, Ceramic adhesion	Anabond (Eng) Cyanocrylate adhesive 202 and 201 DENDRITE adhesive
03.	Bearing fitment adhesive	Specfit
	CLEANING SOLVENTS	
01.	Crankcase, Shafts, Gears, Air filter element, etc.	Inflammabe solvent
02.	Pistons, Rings (to clean off carbon deposit)	Carbon tetra chloride, Acetone, Carbon chloride
03.	Carburettor	Carbon tetra chloride (CTC)

SERVICE DATA - CYLINDER AND PISTON

SERVICE LIMITS

MOTORCYCLES - 100 CC ENGINES

Unit : mm

SIZE	COLOUR	BORE	SERVICE LIMIT	PISTON	SERVICE LIMIT	PISTON TO CYLINDER CLEARANCE	SERVICE LIMIT
STD	WHITE	49.995		49.995			
STD	GREEN	50.000		49.960			
STD	BLUE	50.005		49.965			
STD	YELLOW	50.010	+ 0.095	49.970	- 0.085	0.035-0.045	0.120
STD	RED	50.015		49.975			
STD	ORANGE	50.020		49.980			
Ist O/S	-	50.500		50.460			
IInd O/S	-	51.000		50.960			

SHOGUN 110 CC ENGINE

Unit : mm

SIZE	COLOUR	BORE	SERVICE LIMIT	PISTON	SERVICE LIMIT	PISTON TO CYLINDER CLEARANCE	SERVICE LIMIT
STD	BLUE	52.505		52.460			
STD	YELLOW	52.510		52.465			
STD	RED	52.515	+ 0.095	52.470	- 0.085	0.040-0.050	0.120
Ist O/S	-	53.015		52.970			
IInd O/S	-	53.515		53.470			

Note : Cylinder bore measured at 20 mm from the top surface
Piston Dia measured at 21 mm from skirt end

Cylinder block top surface distortion		0.05
Cylinder head warpage		0.05

PISTON RING AND PISTON PIN

Unit : mm

ITEM	STANDARD	SERVICE LIMIT
Piston ring end gap		
• All models except Shogun	0.15 to 0.35	0.8
• Shogun	0.1 to 0.25	0.8
Piston pin bore	14.002 - 14.010	14.030
Piston pin OD	13.994 - 14.000	13.980

CRANKSHAFT ASSEMBLY

Unit : mm

ITEM	STANDARD	SERVICE LIMIT
Conrod small end I D	18.000 - 18.008	18.040
Conrod deflection	—	3.00
Crank web to web width	50.00 ± 0.1	—
Crankshaft runout	—	0.05

OIL PUMP

ITEM	SPECIFICATION
Oil pump discharge rate	1.50 - 1.80 ml in 2 minutes at 2000 rpm with the pump marks aligned

CLUTCH

Unit : mm

ITEM	STANDARD	SERVICE LIMIT
Clutch cable play	2 - 4	–
Clutch release screw	1/4 - 1/2 turn back	–
Drive plate thickness	2.9 - 3.1	2.6
Drive plate claw width	9.8 - 10.0	9.3
Driven plate thickenss	1.6 ± 0.1	–
Driven plate distortion	–	0.10
Clutch spring free length	31.5 - 32	33.6

DRIVE CHAIN

Unit : mm

ITEM	STANDARD	SERVICE LIMIT
Drive chain - 20 pitch length (Type 12.7 X 7.94 mm No. of links - 112)	254.0	259.0
Drive chain slackness	25 - 35	—

ELECTRICAL

ITEM	SPECIFICATION		
Ignition timing	For Samurai/Shogun/Max 100/Max 100R - 25° ± 1° BTDC at 3000 rpm For other Models - 24° ± 2° BTDC at 3000 rpm		
Spark plug	Type		Refer to table below
	Gap		0.6 - 0.8 mm
Spark performance			Over 8 mm at 1 atm.pr
Ignition coil resistance	Secondary plug cap - B Primary By - B		2.5 - 4 K ohms 0 - 1 ohms
Charging rate	Night running position	6V	Above 0.4A at 4000 rpm Below 2.0 A at 8000 rpm
		12V	0.25A - 1A at 4000 - 8000 rpm
Lighting coil	6V		Above 6V at 2500 rpm Below 9V at 8000 rpm
Output	12V		Above 12V at 2500 rpm 14 ± 1V at 4000 rpm and above
Resistor	AX-100 STD, AX-100 R AX-100 Supra		2 ohm / 25W
	AX-100 AC AX-100 R AC New AX-100 AC	1.2ohm / 50W MAG Resistor	5 ohm / 15W Brake light Resistor

SPARKPLUG

TYPE / MODEL	CYLINDER HEAD TYPE	MICO	MODI CHAMPION	NGK
AX-100 STD / AC	NON-SQUISH	W5D1	N9YC	BP7ES
AX-100 STD / AC, AX-100 R/ AC, NEW AX-100 AC MAX 100, MAX 100 R, SAMURAI	SQUISH	W5BC WR5BC	L82YC	BP7HS
AX-100 SUPRA, SUPRA 11 BHP- SHOGUN	NON-SQUISH SQUISH	W5DC –	N6YC –	BP8ES BP8HS

BRAKE AND WHEEL

Unit : mm

ITEM		STANDARD	LIMIT
Front brake lever distance		20 - 30	—
Rear brake pedal free travel		20 - 30	—
Brake drum I D	Front DIA 110 DIA 130	—	110.7 130.7
	Rear DIA 110 DIA 130	—	110.7 130.7
Brake lining thickness	Front and Rear	—	1.5
Wheel rim runout	Axial	—	2.0
	Radial	—	2.0
Wheel axle runout	Front and Rear	—	0.25
Tyre tread depth	Front and Rear	—	1.0

TYRE SIZE

Front	AX-100 STD / AX-100 AC	2.5" X 18" 4 PR
	AX-100R /R AC/SUPRA/MAX 100/MAX 100R/SAMURAI/SHOGUN	2.75" X 18" 4 PR
	NEW AX-100 AC	2.5" X 18" 6 PR
Rear	AX-100 STD/AX-100 AC/NEW AX-100AC	2.75" X 18" 6 PR
	AX-100 R/R AC/SUPRA/MAX 100/MAX 100R/SAMURAI/SHOGUN	3.00 " X 18" 4 PR

TYRE PRESSURE FOR ALL MODELS

	FRONT		REAR	
	Kg/cm^2	Psi	Kg/cm^2	Psi
Solo riding	1.75	24	2.00	28
Dual riding	1.75	24	2.25	32

FRONT FORK

Unit : mm

ITEM	TYPE	STANDARD	SERVICE LIMIT
Front fork spring free length	Standard Model	139 ± 2	136.8
	R - Model	139 ± 2	136.8
	Ceriani Model	297 ± 2	291
Spring sub	Ceriani Model	29 ± 2	23

FUEL + OIL

ITEM	SPECIFICATION
Fuel Type	Unleaded or low lead type petrol is recommended. The petrol should be at least 85 - 95 octane by research method. Use only unleaded petrol for Shogun fitted with Catalytic Convertes
Fuel tank including reserve	12 litres
Reserve	2 litres
Engine oil type	Indian Oil Servo 2 T Supreme, Castrol Super TT, HP Super 2 T, Bharat 2 - Stroke oil
Engine oil tank capacity including reserve	1.3 litres.
Reserve	0.1 litre
Transmission oil	BP- Bharat Automol 20 W 30 / Castrol CRB Plus 20 W 40 / IOC Super 20 W 40 / Castrol Deusol Super
Transmission oil capacity	900 ml (approx)
Chain transmission	Engine oil
Front fork oil type	20 W 20 (any brand)
Front fork oil capacity (each leg)	AX-100 STD / AX-100 AC / NEW AX-100 AC - 155 ml
	AX-100 R / R AC / SUPRA - 250 ml, Ceriani type - 160 ml
Grease	IOC Servo Gem No.3, BP MP Grease NO.3

TIGHTENING TORQUE

ENGINE

Unit : kgm

DESCRIPTION	QUANTITY	Dia 110 mm Wheel Hub	Dia 130 mm Wheel Hub
Engine sprocket nut	1	8.0 - 11.0	8.0 - 11.0
Primary drive gear nut	1	6.0 - 8.0	6.0 - 8.0
Clutch sleeve hub nut	1	3.5 - 4.5	3.5 - 4.5
Magneto nut	1	4.0 - 6.0	4.0 - 6.0
Engine mounting bolt	3	3.0 - 3.5	3.0 - 3.5
Kick starter lever bolt	1	2.0 - 2.8	2.0 - 2.8
Spark plug	1	2.0 - 2.5	2.0 - 2.5
Cylinder head nut	4	2.0 - 2.5	2.0 - 2.5
Gear shifting arm stopper bolt	1	2.0 - 2.5	2.0 - 2.5
Gear cam guide bolt	2	0.6 - 1.0	0.6 - 1.0
Cam stopper bolt	1	0.6 - 1.0	0.6 - 1.0
Cylinder nut	2	0.6 - 1.0	0.6 - 1.0
Reed valve screws	2	0.6 - 1.0	0.6 - 1.0
Oil pump screws 2	2	0.3 - 0.6	0.3 - 0.6

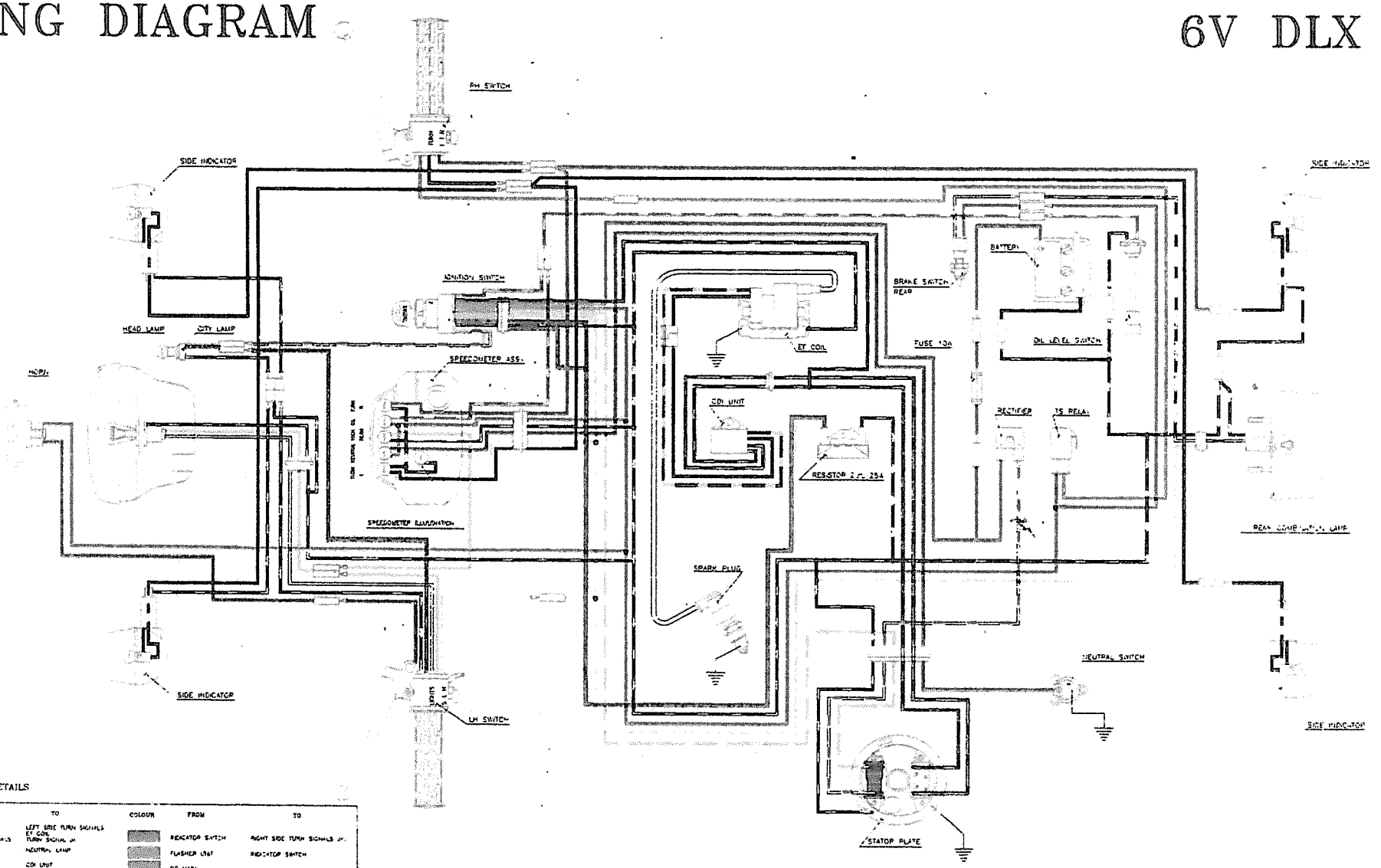
CHASSIS

Unit : kgm

DESCRIPTION	QUANTITY	Dia 110 mm Wheel Hub	Dia 130 mm Wheel Hub
Rear Swing Arm pivot nut	1	4.5 - 7.0	4.5 - 7.0
Steering stem head bolt	1	4.5	3.5 - 5.5
Front fork cap bolt	2	4.5	2.3 - 3.2
Nut for shaft sprocket drum	1	4.5	4.5 - 6.0
Front axle nut	1	3.5	5.0 - 7.0
Rear axle nut	1	3.5	5.0 - 8.0
Rear sprocket nut	4	2.0 - 2.7	2.0 - 2.7
Front fork lower clamp bolt	2	2.0 - 2.7	2.0 - 2.7
Rear shock abosorber nut	4	2.0 - 3.0	2.0 - 3.0
Exhaust pipe clamp bolt	2	1.0 - 1.6	1.0 - 1.6
Handle bar clamp bolt	4	1.2 - 2.0	1.2 - 2.0
Rear torque link nut	2	1.0 - 1.5	1.0 - 1.5
Front foot rest bolt - rear	1	1.0 - 1.5	1.0 - 1.5
Brake cam lever nut	2	0.65	0.65
Spokes nipple	36	0.45	0.45

WIRING DIAGRAM

6V DLX



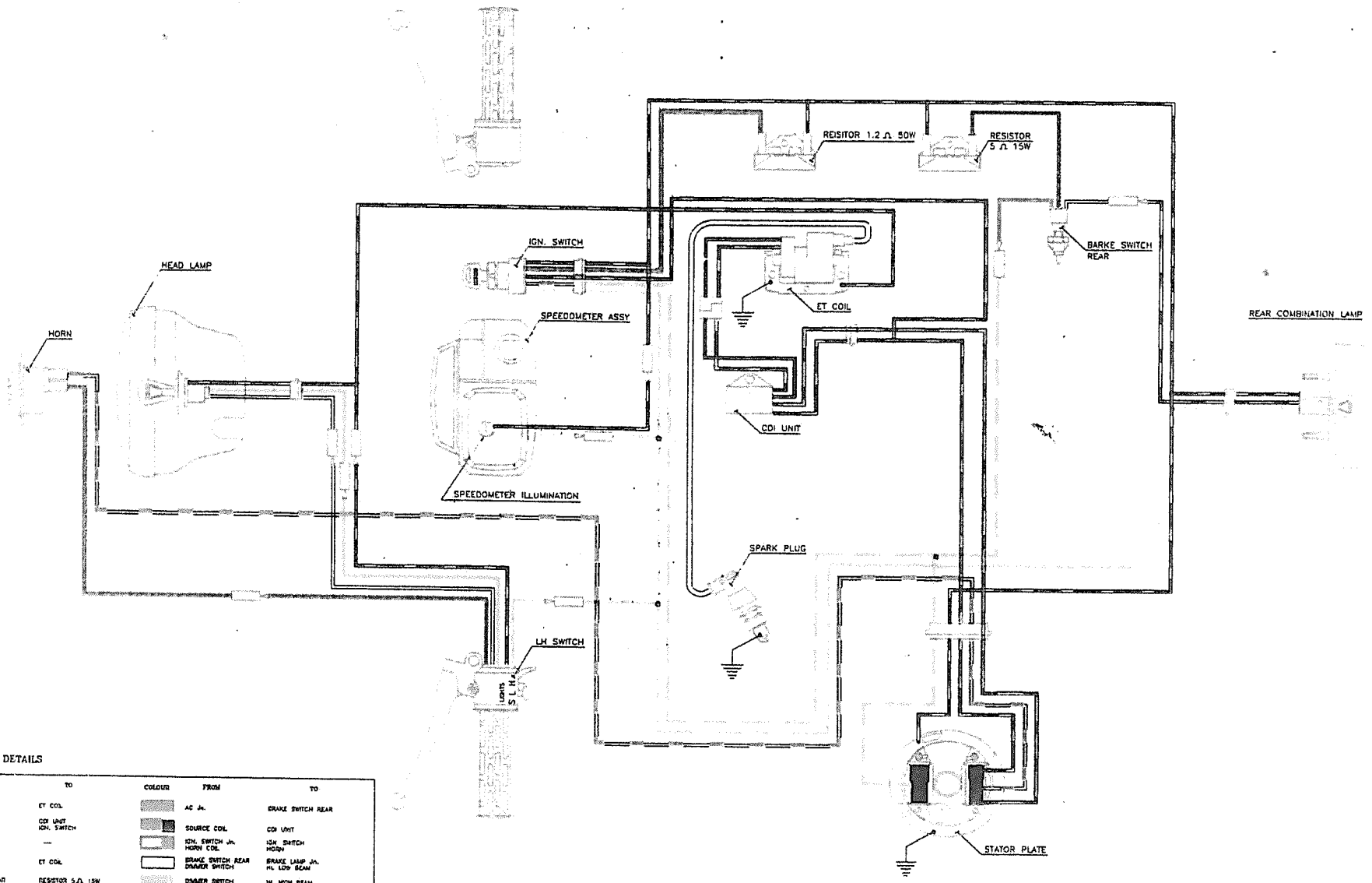
WIRING DETAILS

COLOUR	FROM	TO
	INDICATOR SWITCH CDI UNIT RIGHT SIDE TURN SIGNALS	LEFT SIDE TURN SIGNALS ET COIL TURN SIGNAL JP.
	NEUTRAL SWITCH	NEUTRAL LAMP
	SOURCE COIL CDI UNIT JP.	CDI UNIT IGN SWITCH
	EARTH	—
	CDI UNIT	ET COIL
	OIL LAMP SWITCH IGN SWITCH	OIL LAMP OIL LAMP JP.
	DIMMER SWITCH	CITY LAMP
	HORN SWITCH	HORN
	IGN SWITCH RESISTOR 4.5Ω JP.	RESISTOR 4.5Ω IGN SWITCH JP.
	TH SWITCH LH SWITCH JP.	IGN SWITCH JP. SPEEDO LAMP DIMMER SWITCH TAIL LAMP

COLOUR	FROM	TO
	REACTOR SWITCH	RIGHT SIDE TURN SIGNALS JP.
	FLASHER UNIT	INDICATOR SWITCH
	DC MAIN	—
	RECTIFIER BATTERY	BATTERY IGN SWITCH
	SOURCE COIL	CDI UNIT
	CHARGING COIL IGN SWITCH JP.	RECTIFIER IGN SWITCH
	BRAKE SWITCH REAR DIMMER SWITCH	BRAKE LAMP HI, LOW BEAM
	DIMMER SWITCH	HI, HIGH BEAM INDICATOR HIGH BEAM
	IGN SWITCH	CITY LAMP JP.
	LIGHTING COIL IGN SWITCH	IGN SWITCH JP. IGN SWITCH JP.

WIRING DIAGRAM

6V AC

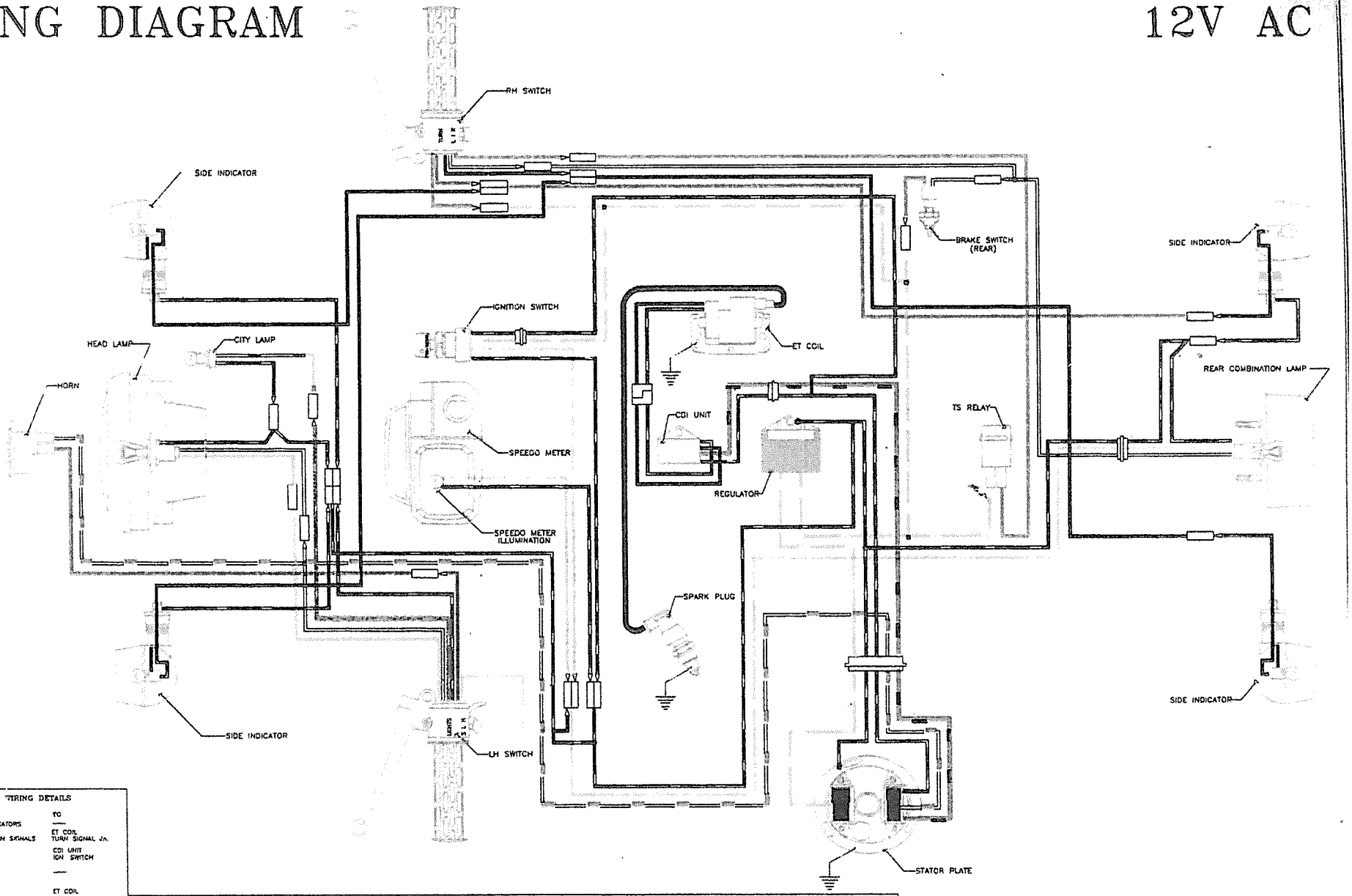


WIRING DETAILS

COLOUR	FROM	TO	COLOUR	FROM	TO
	CDI UNIT	ET COIL		AC Jn.	BRAKE SWITCH REAR
	SOURCE COIL CDI UNIT Jn.	CDI UNIT IGN. SWITCH		SOURCE COIL	CDI UNIT
	EARTH	—		IGN. SWITCH Jn. HORN COIL	IGN. SWITCH HORN
	CDI UNIT	ET COIL		BRAKE SWITCH REAR DIMMER SWITCH	BRAKE LAMP Jn. HL LOW BEAM
	BRAKE SWITCH REAR	RESISTOR 5 Ω 15W		DIMMER SWITCH	HL HIGH BEAM
	HORN SWITCH	HORN		LIGHTING COIL	IGN SWITCH Jn. BRAKE SWITCH REAR Jn.
	IGN. SWITCH	RESISTOR ASSY 1.2 Ω 50W			
	IGN. SWITCH	SPEEDO LAMP DIMMER SWITCH TAIL LAMP			

WIRING DIAGRAM

12V AC



WIRING DETAILS

COLOUR	FROM	TO
	LEFT SIDE INDICATORS CDI UNIT RIGHT SIDE TURN SIGNALS	— ET COIL TURN SIGNAL Jn.
	SOURCE COIL CDI UNIT Jn.	CDI UNIT IGN. SWITCH
	EARTH	—
	CDI UNIT	ET COIL
	DIMMER SWITCH	CITY LAMP Jn.
	HORN SWITCH	HORN
	IGN. SWITCH	SPEEDO LAMP, DIMMER SWITCH, TAIL LAMP

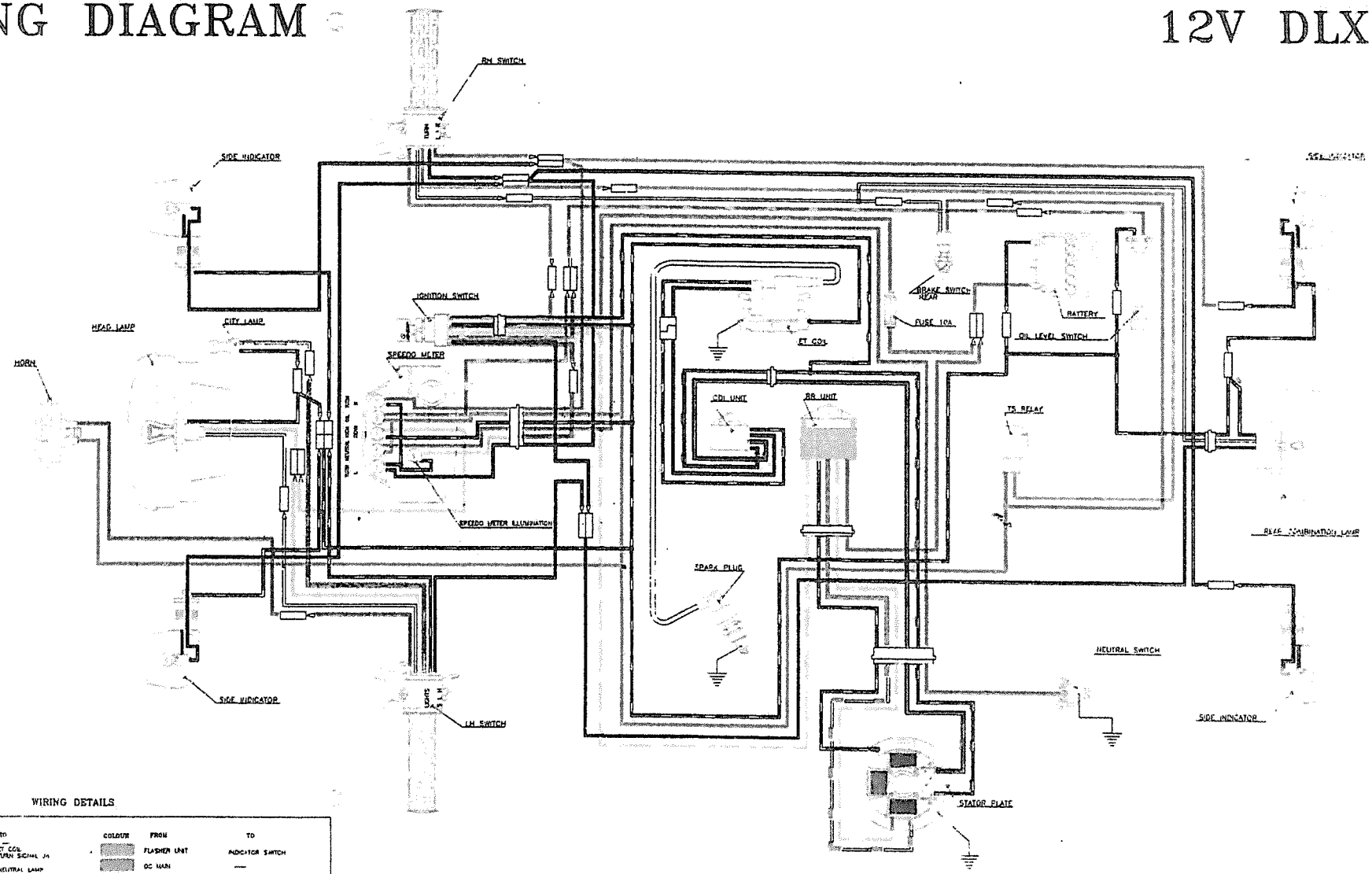
COLOUR	FROM	TO
	INDICATOR SWITCH	RIGHT SIDE INDICATORS Jn.
	FLASHER UNIT	INDICATOR SWITCH
	BRAKE LAMP SWITCHES	AC MAIN Jn.

COLOUR	FROM	TO
	SOURCE COIL	CDI UNIT
	BRAKE LAMP SWITCHES DIMMER SWITCH	BRAKE LAMP HL LOW BEAM
	HORN COIL	HORN

COLOUR	FROM	TO
	DIMMER SWITCH	HL HIGH BEAM
	CITY LAMP Jn.	CITY LAMP
	LIGHTING COIL RR UNIT	RR UNIT BRAKE SWITCHES, FLASHER UNIT, IGN. SWITCH

WIRING DIAGRAM

12V DLX



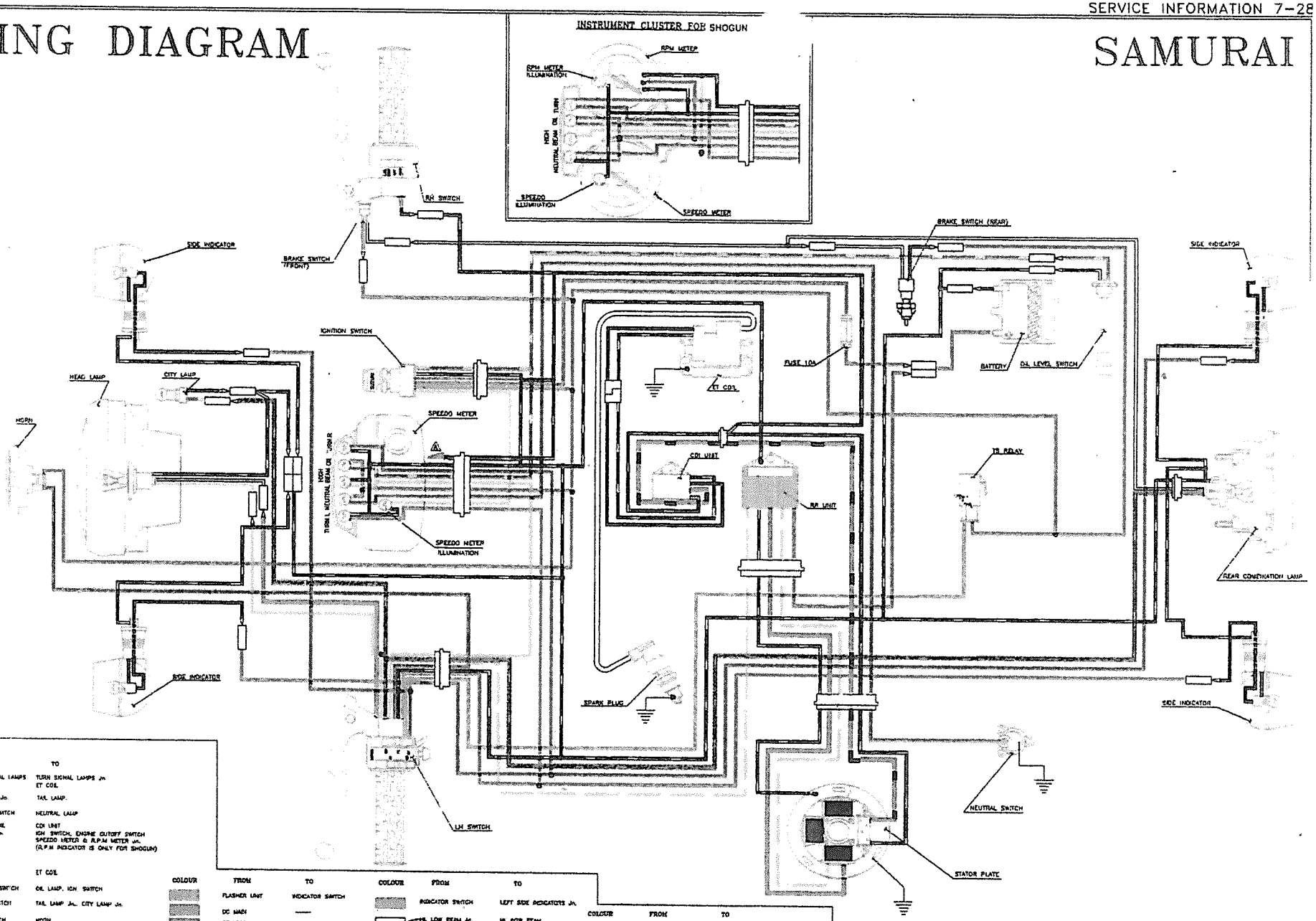
WIRING DETAILS

COLOUR	FROM	TO
	LEFT SIDE INDICATORS CDI UNIT RIGHT SIDE TURN SIGNALS	— ET COIL TURN SIGNAL JA.
	NEUTRAL SWITCH	NEUTRAL LAMP
	SOURCE COIL CDI UNIT JA.	CDI UNIT IGN. SWITCH
	EARTH	—
	CDI UNIT	ET COIL
	OIL LAMP SWITCH IGN. SWITCH	OIL LAMP OIL LAMP JA.
	DIMMER SWITCH	CITY LAMP JA.
	HORN SWITCH	HORN
	IGN. SWITCH SPEEDO LAMP	DIMMER SWITCH, TAIL LAMP SPEEDO LAMP JA.
	IGN. SWITCH	SPEEDO LAMP JA.
	INDICATOR SWITCH	RIGHT SIDE INDICATORS JA.

COLOUR	FROM	TO
	FLASHER UNIT	INDICATOR SWITCH
	DC MAIN	—
	RR UNIT BATTERY	BATTERY IGN. SWITCH
	SOURCE COIL	CDI UNIT
	CHARGING COIL JA.	RR UNIT
	BRAKE LAMP SWITCHES DIMMER SWITCH	BRAKE LAMP HL LOW BEAM
	CHARGING COIL	CHARGING COIL JA.
	DIMMER SWITCH	HL HIGH BEAM, HIGH BEAM INDICATOR
	CITY LAMP JA.	CITY LAMP
	LIGHTING COIL RR UNIT	RR UNIT IGN. SWITCH

WIRING DIAGRAM

SAMURAI



WIRING DETAILS

COLOUR	FROM	TO
	TURN SIGNAL LAMPS CDI UNIT	TURN SIGNAL LAMPS Jn. ET COIL
	TAIL LAMP Jn.	TAIL LAMP.
	NEUTRAL SWITCH	NEUTRAL LAMP
	SOURCE COIL CDI UNIT Jn.	CDI UNIT IGN. SWITCH, ENGINE CUTOFF SWITCH SPEEDO METER & R.P.M METER Jn. (R.P.M INDICATOR IS ONLY FOR SHOGUN)
	EARTH	
	CDI UNIT	ET COIL
	OIL LEVEL SWITCH	OIL LAMP, IGN. SWITCH
	DIMMER SWITCH	TAIL LAMP Jn., CITY LAMP Jn.
	HORN SWITCH	HORN
	IGN. SWITCH	SPEEDO LAMP (R.P.M LAMP)
	INDICATOR SWITCH	RIGHT SIDE INDICATORS Jn.

COLOUR	FROM	TO
	FLASHER UNIT	INDICATOR SWITCH
	DC MAIN	——
	RR UNIT BATTERY	BATTERY IGN. SWITCH
	SOURCE COIL	CDI UNIT
	RR UNIT Jn.	RR UNIT

COLOUR	FROM	TO
	INDICATOR SWITCH	LEFT SIDE INDICATORS Jn.
	HL LOW BEAM Jn. BRAKE LAMP SWITCHES	HL BOTH BEAM BRAKE LAMP Jn.
	BRAKE LAMP Jn.	BRAKE LAMP
	CHARGING COIL DIMMER SWITCH	RR UNIT Jn. HL LOW BEAM Jn.

COLOUR	FROM	TO
	DIMMER SWITCH	HL HIGH BEAM, HIGH BEAM INDICATOR
	LIGHTING COIL RR UNIT	RR UNIT DIMMER SWITCH
	CITY LAMP Jn.	CITY LAMP

NOTE:-
TERMINAL ⚠ IS USED ONLY IN SHOGUN

SPECIAL TOOLS

CONTENTS

EXCLUSIVE SPECIAL TOOLS FOR TVS-SUZUKI MOTORCYCLES

ITEM	PART NO.	PART NAME
01.	131 504 0	DIP STICK
02.	031 003 0	SPEEDOMETER PINION - BUSH PULLER
03.	031 015 6	SOCKET SPANNER 28 mm
04.	031 040 8	BEARING INSTALLER
05.	031 050 8	BEARING INSTALLER
06.	031 060 8	BEARING REMOVER
07.	031 070 6	BEARING INSTALLER
08.	031 080 1	BEARING REMOVER
09.	031 090 1	HANDLE FOR BEARING INSTALLER
10.	031 030 4	BEARING INSTALLER
11.	031 140 0	FRONT FORK ASSEMBLY TOOL
12.	031 250 8	CLUTCH SPRING HOOK
13.	131 501 0	CRANKCASE SEPARATING TOOL
14.	031 311 0	HYDROMETER
15.	031 312 8	STUD BOLT INSTALLER (8 mm)
16.	731 003 0	CLUTCH SLEEVE HUB HOLDER
17.	031 330 0	CCI OIL GAUGE
18.	031 350 1	FRONT FORK OIL SEAL INSTALLER (STD MODEL)
19.	031 380 1	UNIVERSAL CLAMP WRENCH
20.	031 371 1	VALVE GUIDE INSTALLER
21.	031 372 1	ATTACHMENT VALVE GUIDE INSTALLER
22.	029 009 0	BATTERY CHARGER
23.	131 350 1	FRONT FORK OIL SEAL INSTALLER (R & C MODEL)
24.	031 420 2	FRONT FORK AND REAR SHOCK ABSORBER SERVICE TOOL
25.	131 502 0	HOLDER FOR FORK CYLINDER
26.	231 502 0	T - ROD NUT

SPECIAL TOOLS APPLICATIONS

01. **131 504 0**
DIP STICK
For checking the front fork oil level (fig 8.1)

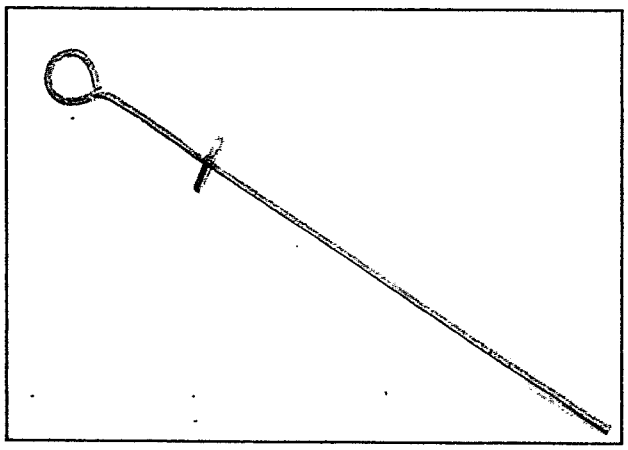


Fig 8.1

02. **031 003 0**
SPEEDOMETER PINION - BUSH PULLER
To pull out the speedometer pinion bush (fig 8.2)

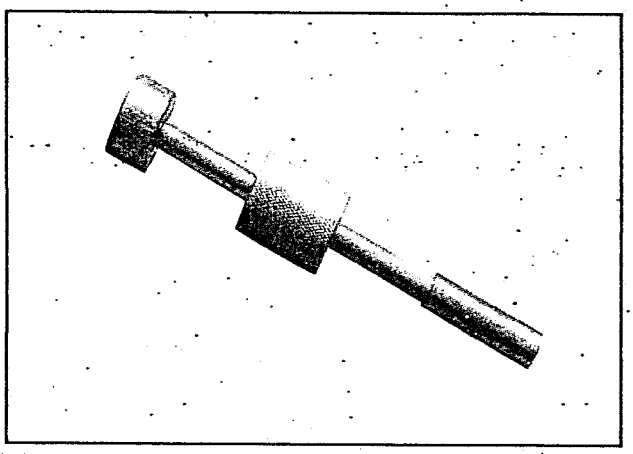


Fig 8.2

03. **031 015 6**
SOCKET SPANNER 28 mm
For assembly / disassembly of oil tank view piece in AX-100 AC, New AX-100 AC and R AC Models (fig 8.3)

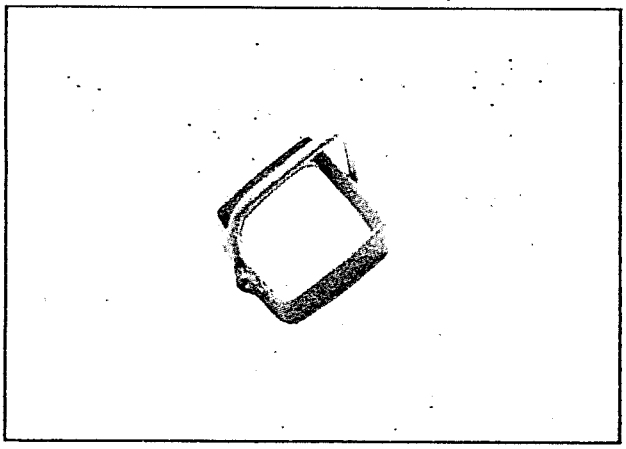


Fig 8.3

04. **031 040 8**
BEARING INSTALLER
For assembly of bearing LH & RH, on crankshaft (fig 8.4)

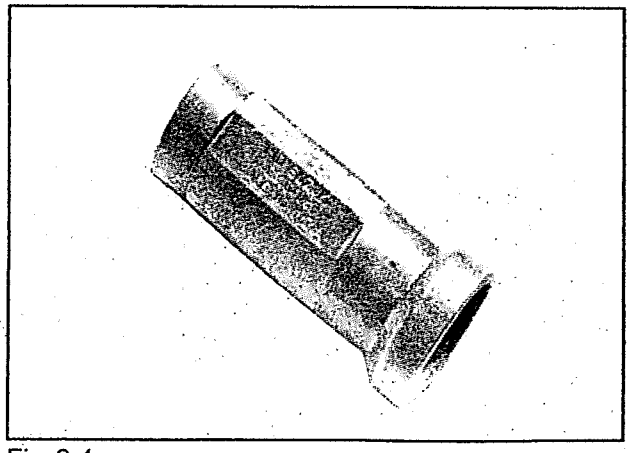


Fig 8.4

05. **031 050 8**
BEARING INSTALLER
For assembly of bearing LH, on drive shaft
For assembly of oil seal LH, on crankshaft
For assembly of oil seal LH, on drive shaft
(fig 8.5)

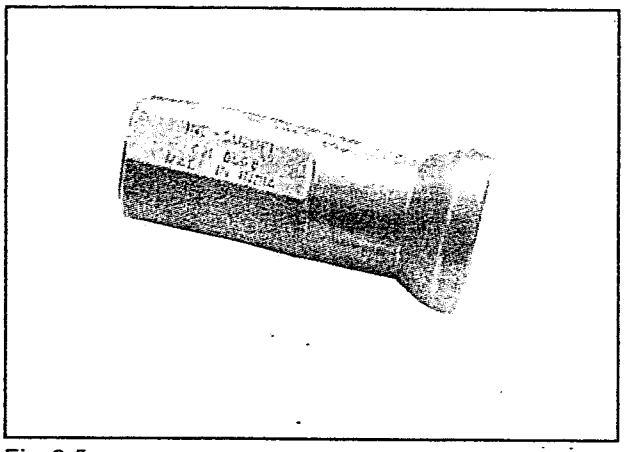


Fig 8.5

06. **031 060 8**
BEARING REMOVER
For removal of bearing LH, on crankshaft
(fig 8.6)

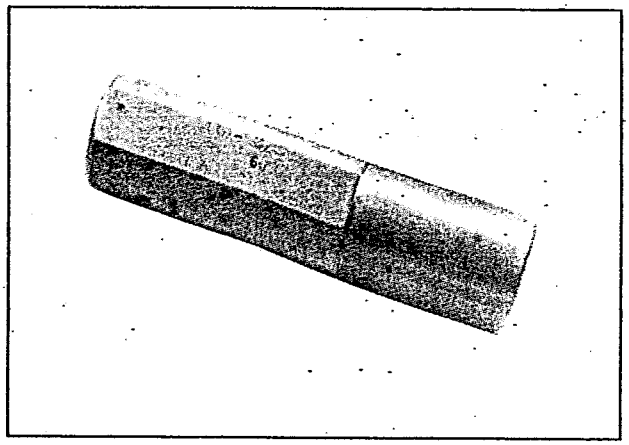


Fig 8.6

07. **031 070 6**
BEARING INSTALLER
For assembly of bearing RH, on counter shaft
For assembly of oil seal RH, on crankshaft
(fig 8.7)

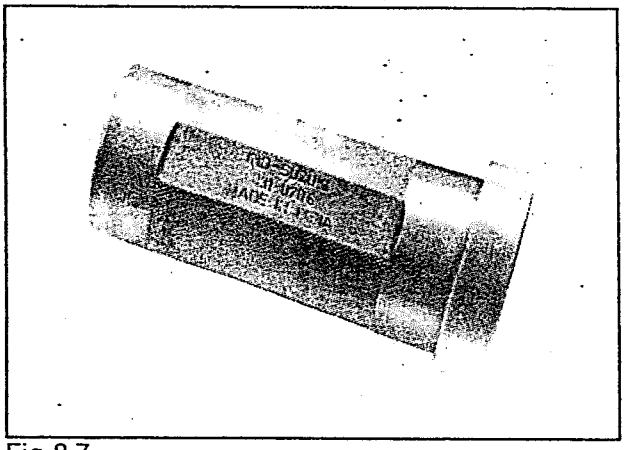


Fig 8.7

08. **031 080 1**
BEARING REMOVER
For removal of bearing on RH, crankshaft
For removal of bearing on RH, counter shaft
For removal of bearing on LH, drive shaft
(fig 8.8)

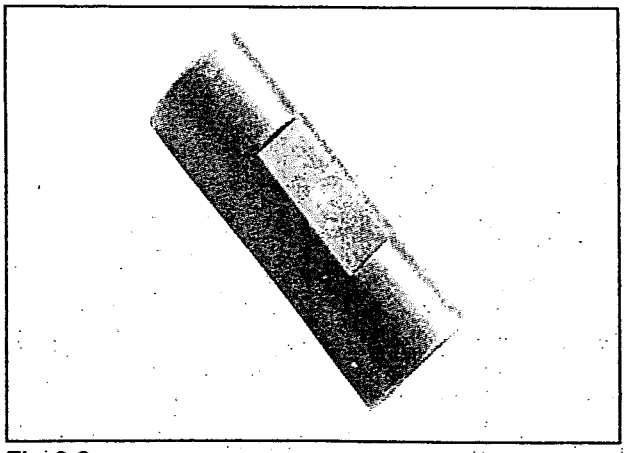


Fig 8.8

09. **031 090 1**
HANDLE FOR BEARING INSTALLER
For assembly of oil seal LH, on counter shaft (fig 8.9)

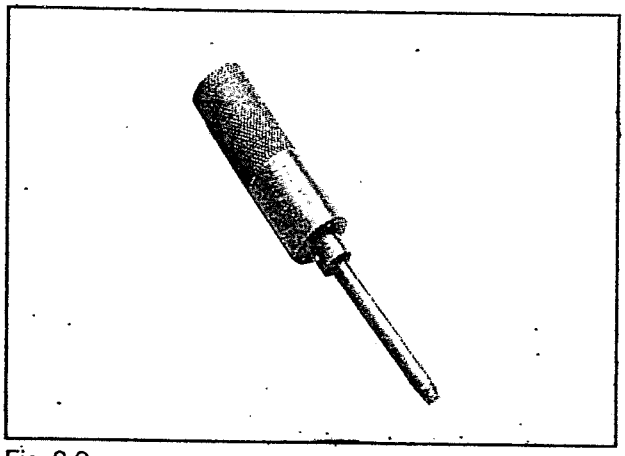


Fig 8.9

10. **031 030 4**
BEARING INSTALLER
For assembly of bearing LH, on counter shaft (fig 8.10) To be used with the tool 031 090 1

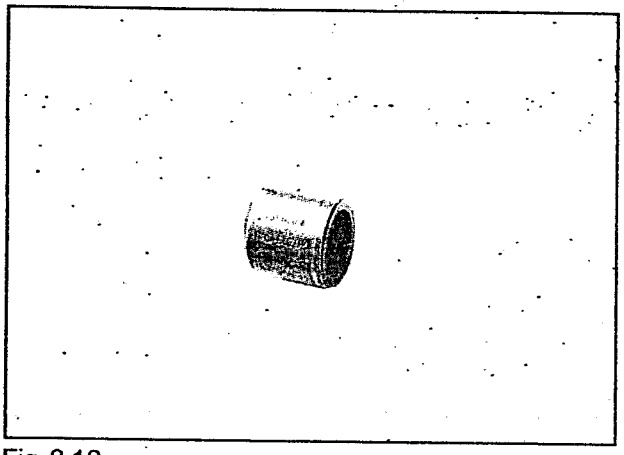


Fig 8.10

11. **031 140 0**
FRONT FORK ASSEMBLY TOOL
For pulling the inner tube during assembly of front fork assembly (fig 8.11)

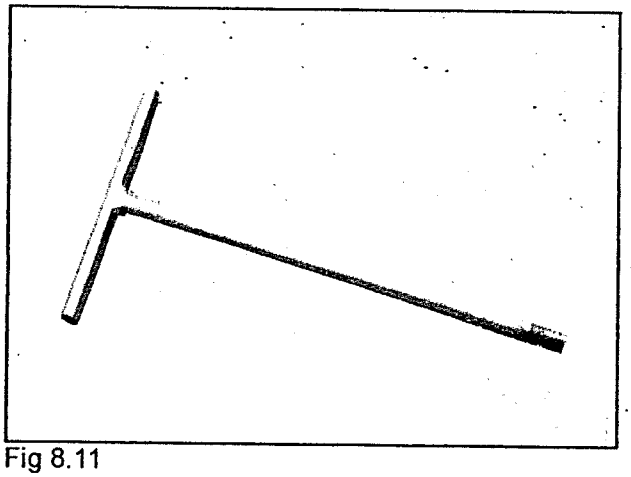


Fig 8.11

12. **031 250 8**
CLUTCH SPRING HOOK
For pulling the clutch spring during assembly / disassembly of stopper pin (fig 8.12)

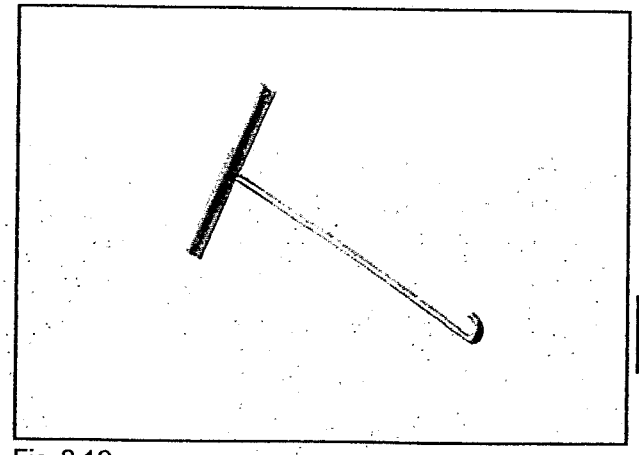


Fig 8.12

13. **131 501 0**
CRANKCASE SEPARATING TOOL
For dismantling crankcases (fig 8.13)

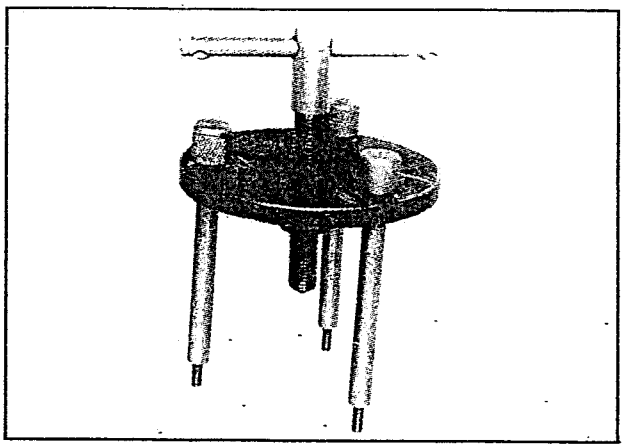


Fig 8.13

14. **031 311 0**
HYDROMETER
For checking the specific gravity of the battery electrolyte (fig 8.14)

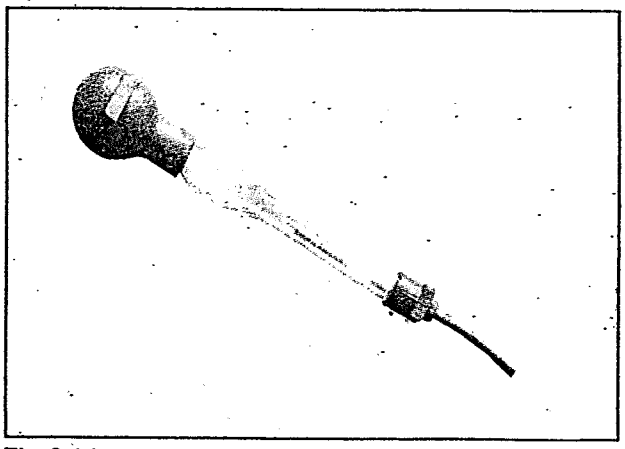


Fig 8.14

15. **031 312 8**
STUD BOLT INSTALLER (8 mm)
For installation of 8 mm size stud (fig 8.15)

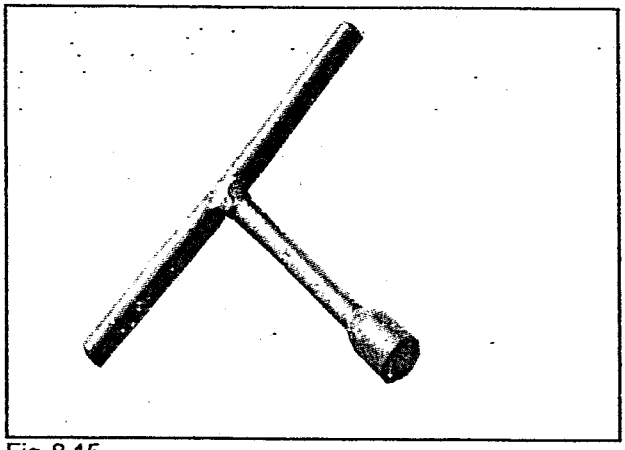


Fig 8.15

16. **731 003 0**
CLUTCH SLEEVE HUB HOLDER
To hold the clutch hub while loosening / tightening the clutch hub nut (fig 8.16)

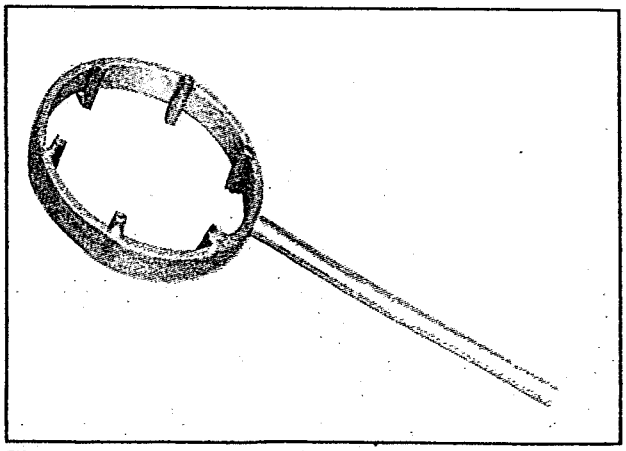


Fig 8.16

17. **031 330 0**
CCI OIL GAUGE
For oil pump calibration (fig 8.17)

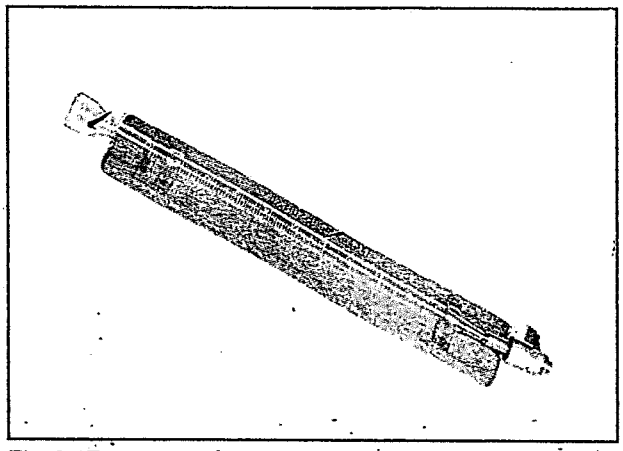


Fig 8.17

18. **031 350 1**
FRONT FORK OIL SEAL INSTALLER
For assembly of oil seal in "STD" fork (fig 8.18)

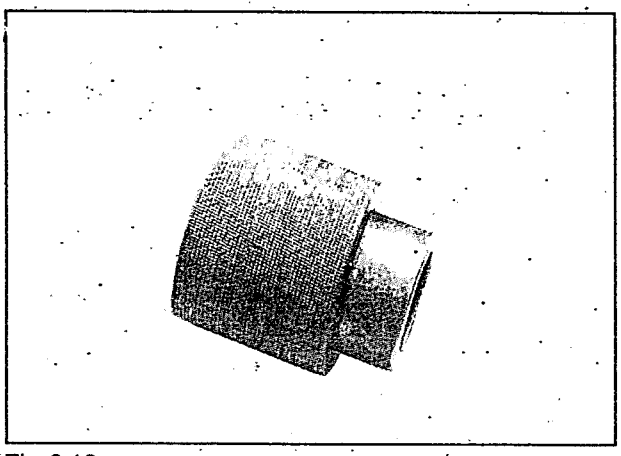


Fig 8.18

19. **031 380 1**
UNIVERSAL CLAMP WRENCH
For loosening / tightening the steering stem nut (fig 8.19)

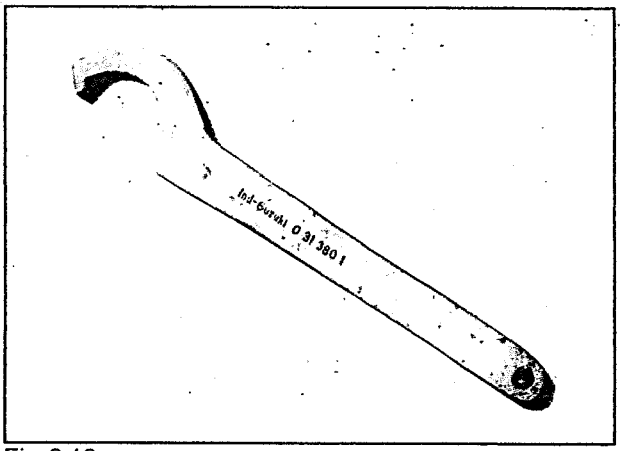


Fig 8.19

20. **031 371 1**
VALVE GUIDE INSTALLER
To be used with tool No 031 372 1 (fig 8.20)

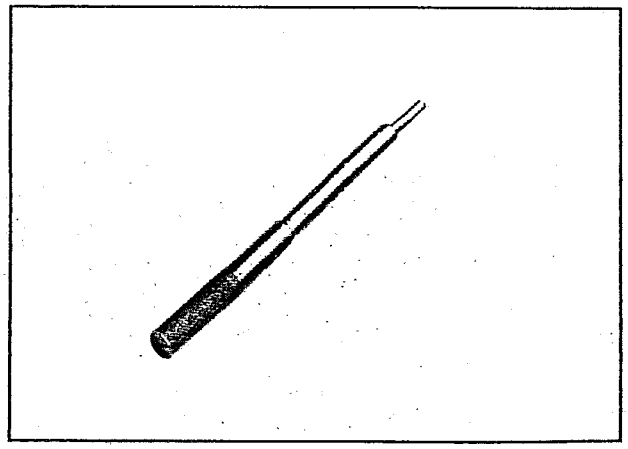


Fig 8.20

031 372 1
ATTACHMENT VALVE GUIDE INSTALLER
For assembly / disassembly on bush RH, drive shaft (fig 8.21)

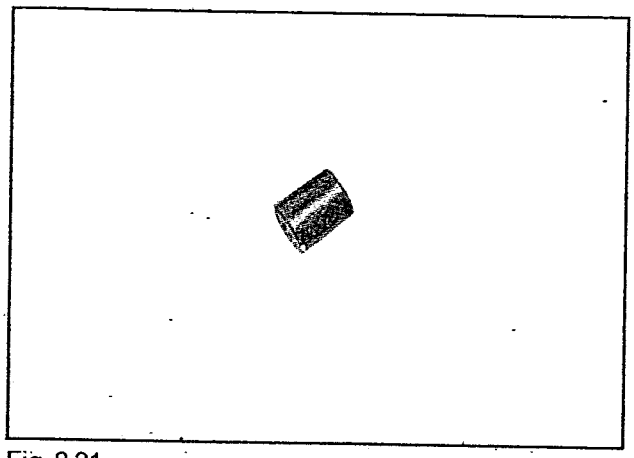


Fig 8.21

22. **029 009 0**
BATTERY CHARGER
To charge batteries at a constant current of 0.4 Amps for 6V and 0.25 Amps for 12V (fig 8.22)

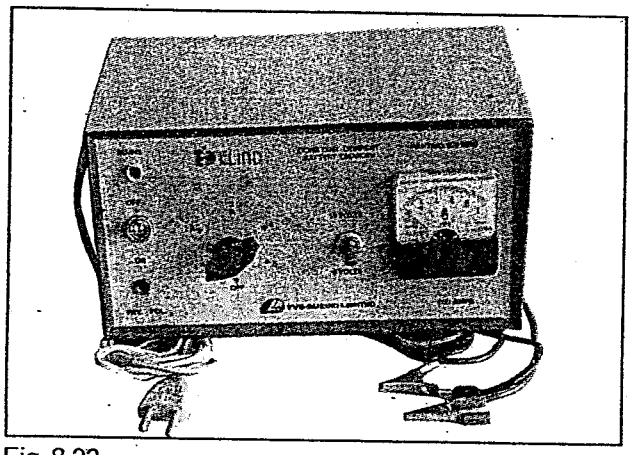


Fig 8.22

23. **131 350 1**
FRONT FORK OIL SEAL INSTALLER
For assembly of oil seal in "R" & "S" front fork (fig 8.23)

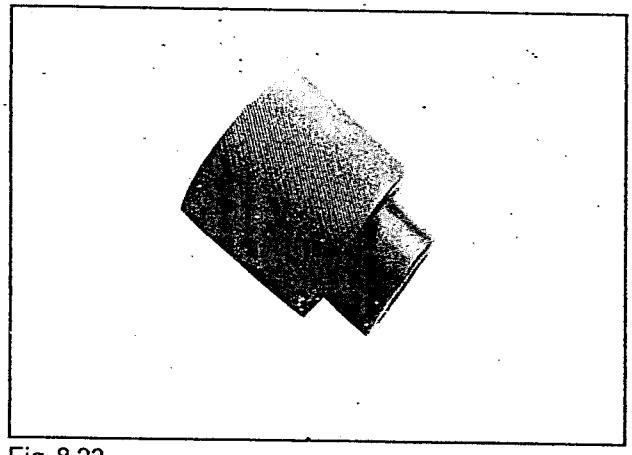


Fig 8.23

24. **031 420 2**
FRONT FORK AND REAR
SHOCK ABSORBER SERVICE TOOL
To service front fork assembly and rear shock absorbers (fig 8.24)

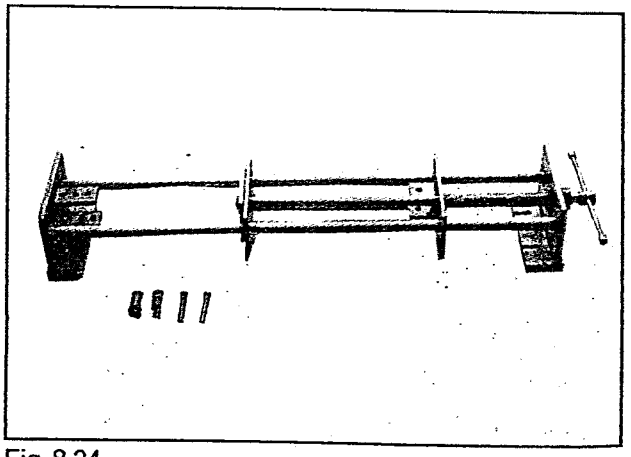


Fig 8.24

25. **131 502 0**
HOLDER FOR FORK CYLINDER
(fig 8.25)

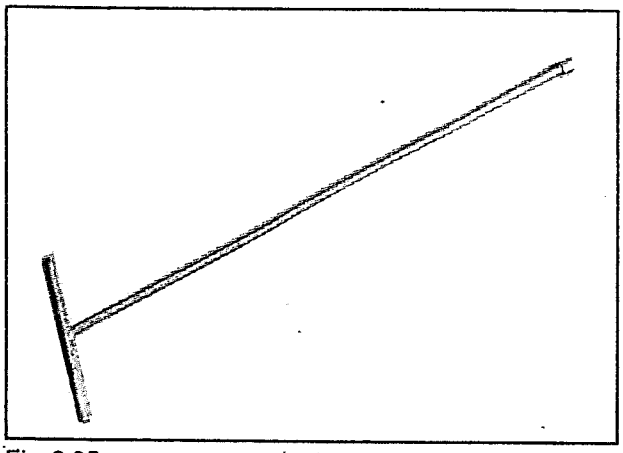


Fig 8.25

26. **231 502 0**
T - ROD NUT
(fig 8.26)

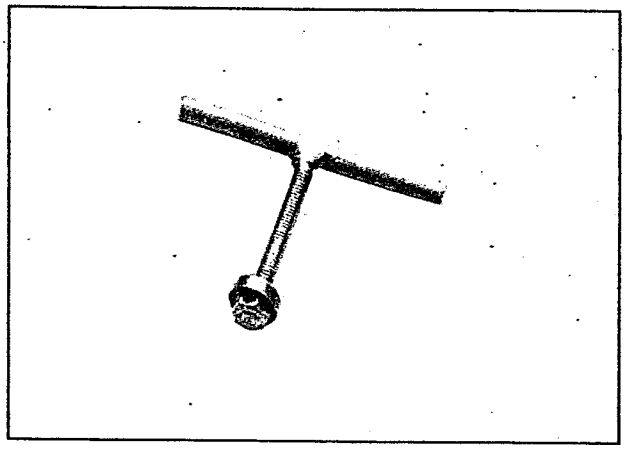


Fig 8.26

TVS-SUZUKI MOTORCYCLES TOOLS THAT ARE COMMON WITH TVS-MOPEDS, TVS-SUPERCHAMP AND TVS-SCOOTY

ITEM	PART NO.	PART NAME
01.	031 001 7	SNAP RING PLIER - EXTERNAL
02.	031 010 0	FEELER GAUGE
03.	031 220 0	MULTIMETER
04.	031 240 1	UNIVERSAL OIL SEAL REMOVER
05.	031 301 0	IMPACT DRIVER SET
06.	031 306 0	MAGNETIC STAND (7")
07.	031 307 0	" V " BLOCK SET (4" X 3" X 3")
08.	031 309 0	TACHOMETER
09.	031 340 0	TIMING LIGHT (STROBOSCOPE)
10.	031 385 0	TORQUE WRENCH (0.5 TO 3.5 KGM)
11.	031 386 0	TORQUE WRENCH (3 TO 14 KGM)
12.	031 404 0	LONG BIT NO 2
13.	031 405 0	LONG BIT NO 3
14.	031 410 0	IGNITION COIL AND CDI TESTER
15.	331 011 0	ROTOR REMOVER
16.	331 028 0	MANDREL STEERING CUPS
17.	031 020 7	CONNECTING ROD STOPPER
18.	231 030 000	ASSEMBLY TOOL (FOR STEERING CUPS)
19.	F 31 017 0	HOLDER - MAGNETO AND 13 T SPROCKET

COMMON TOOLS APPLICATIONS

01. **031 001 7**
SNAP RING PLIER - EXTERNAL
For removal / fitment of external circlips (fig 8.27)

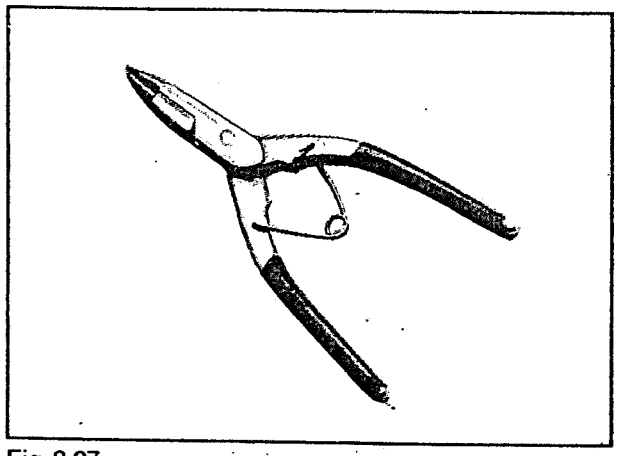


Fig 8.27

02. **031 010 0**
FEELER GAUGE
For measurements of parallel gaps (fig 8.28)

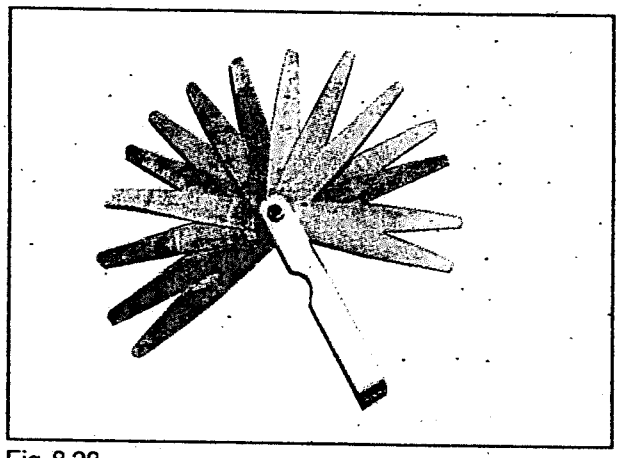


Fig 8.28

03. **031 220 0**
MULTIMETER
For checking electrical voltage, amps, resistance and continuity (fig 8.29)

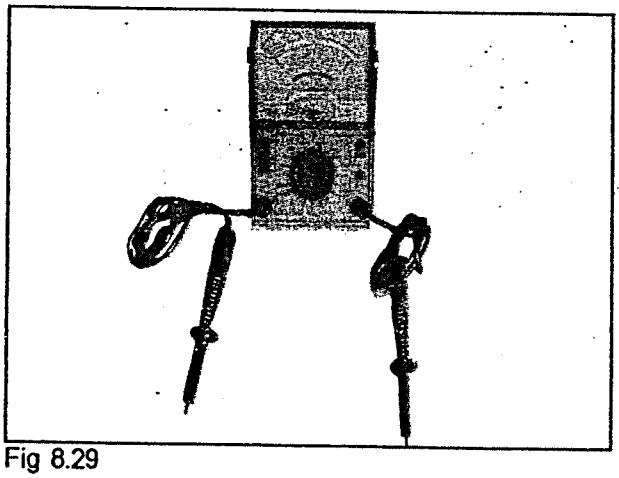


Fig 8.29

04. **031 240 1**
UNIVERSAL OIL SEAL REMOVER
For removing the oil seals (fig 8.30)

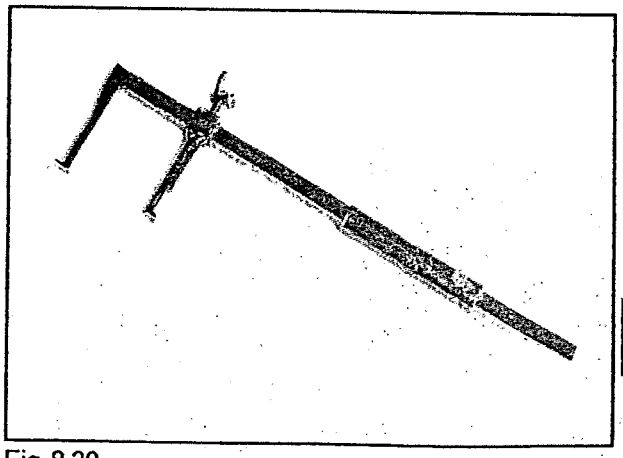


Fig 8.30

05. **031 301 0**
IMPACT DRIVER SET
To be used only for loosening screws. (fig 8.31)

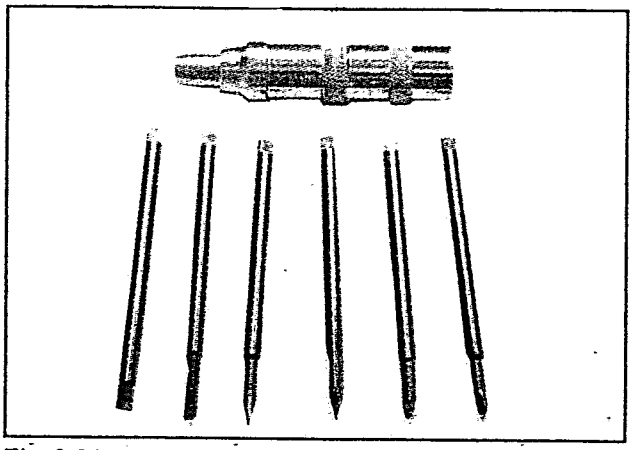


Fig 8.31

06. **031 306 0**
MAGNETIC STAND (7")
To support shaft while checking runout (fig 8.32)

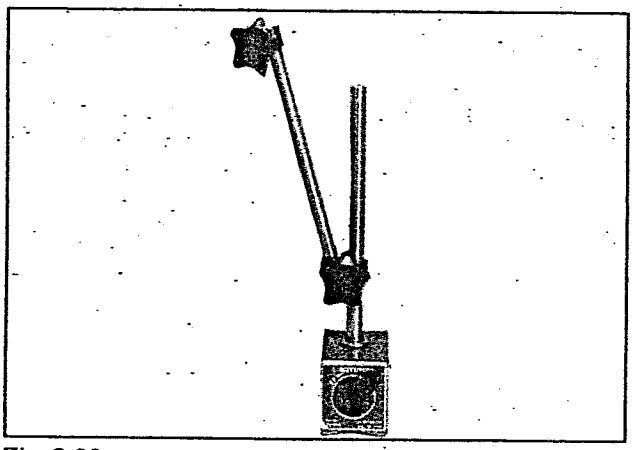


Fig 8.32

07. **031 307 0**
'V' BLOCK SET (4" X 3" X 3")
To hold the crankshaft (fig 8.33)

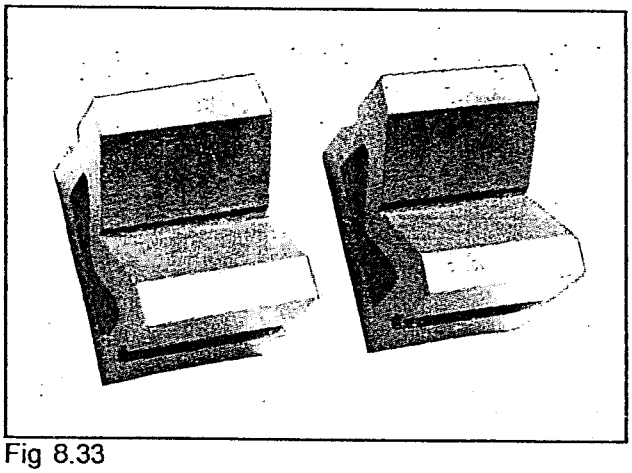


Fig 8.33

08. **031 309 0**
TACHOMETER
To find out engine rpm (fig 8.34)

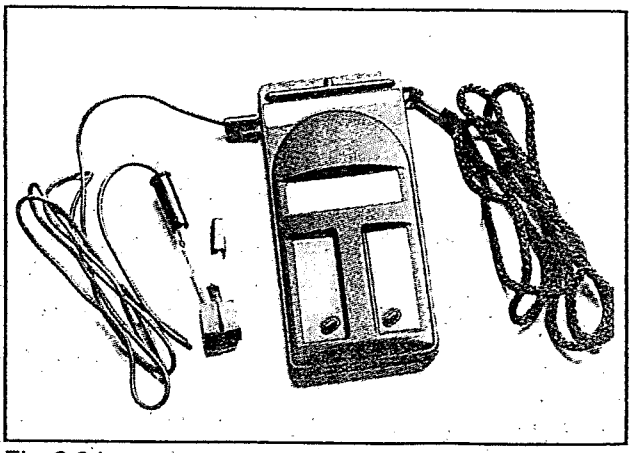


Fig 8.34

09. **031 340 0**
TIMING LIGHT (STROBOSCOPE)
To check the ignition timing (fig 8.35)

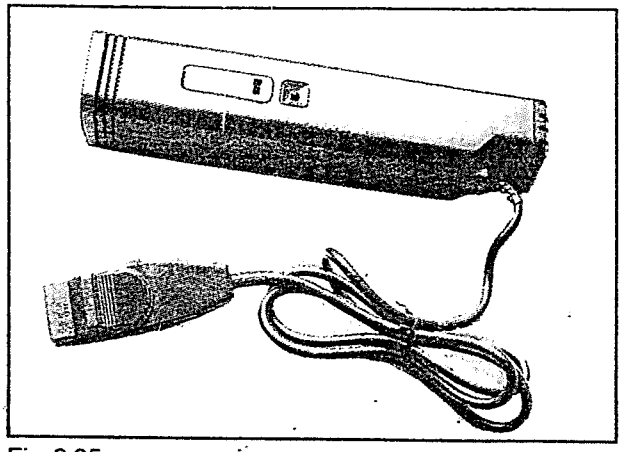


Fig 8.35

10. **031 385 0**
TORQUE WRENCH (0.5 TO 3.5 KGM)
For tightening of nuts to correct torque (fig 8.36)

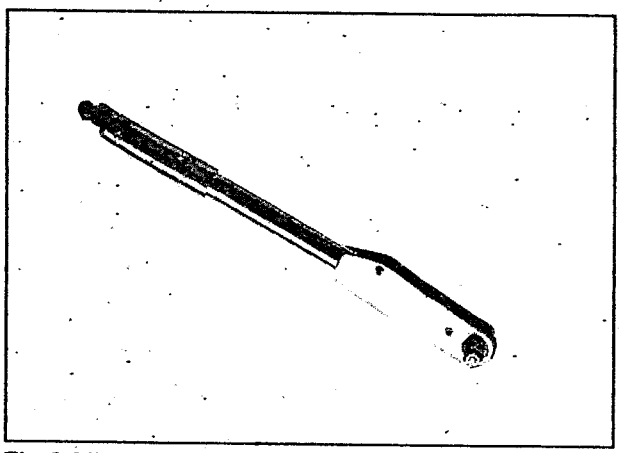


Fig 8.36

11. **031 386 0**
TORQUE WRENCH (3 TO 14 KGM)
For tightening of nuts to correct torque (fig 8.37)

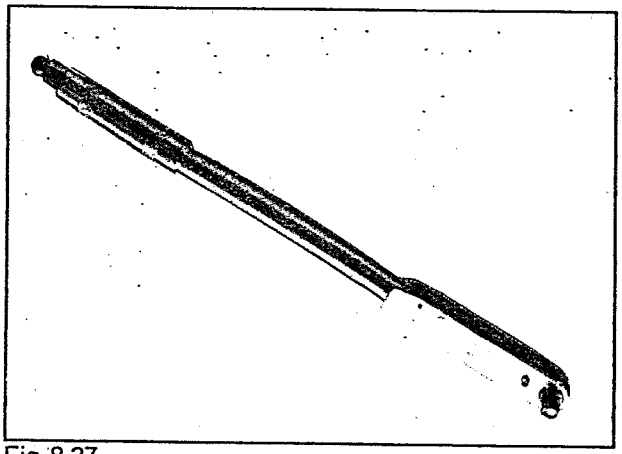


Fig 8.37

12. **031 404 0**
LONG BIT NO 2
Spare bit for impact driver set (fig 8.38)

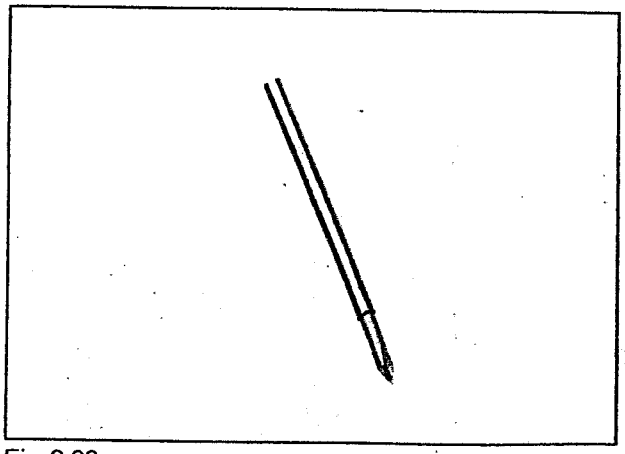


Fig 8.38

13. **031 405 0**
LONG BIT NO 3
Spare bit for impact driver set (fig 8.39)

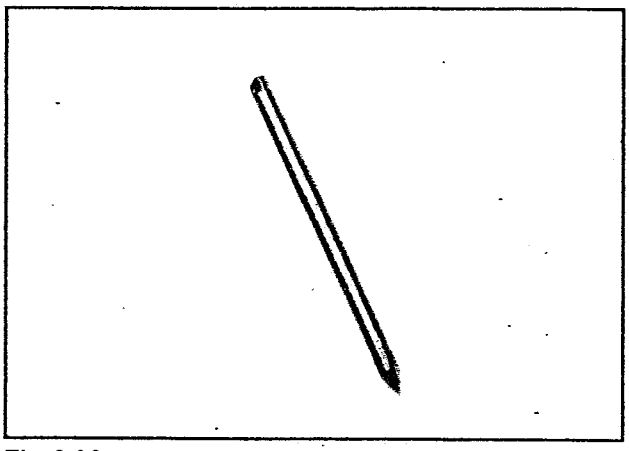


Fig 8.39

14. **031 410 0**
IGNITION COIL AND CDI TESTER
For checking H T coil and CDI unit for serviciability (fig 8.40)

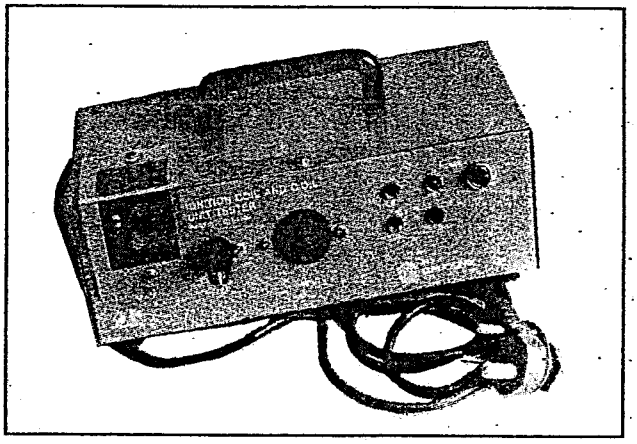


Fig 8.40

15. **331 011 00**
ROTOR REMOVER
To remove rotors of mopeds and motorcycles (fig 8.41)

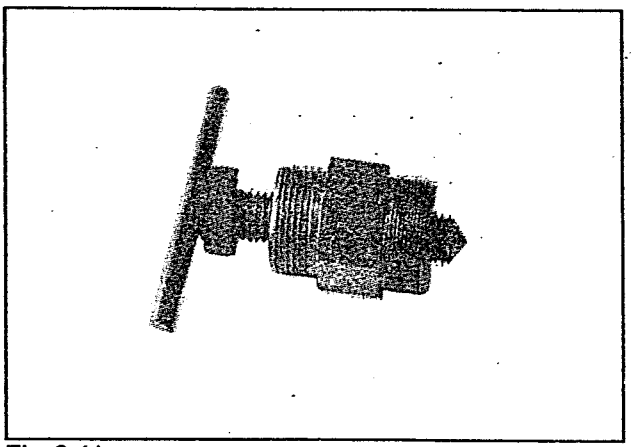


Fig 8.41

16. **331 028 0**
MANDREL STEERING CUPS
To remove steering cups (fig 8.42)

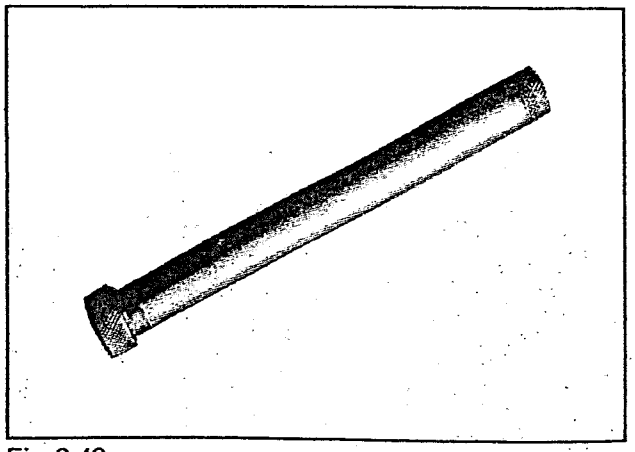


Fig 8.42

17. **031 020 7**
CONNECTING ROD STOPPER
To hold the connecting rod while working on crankshaft (fig 8.43)

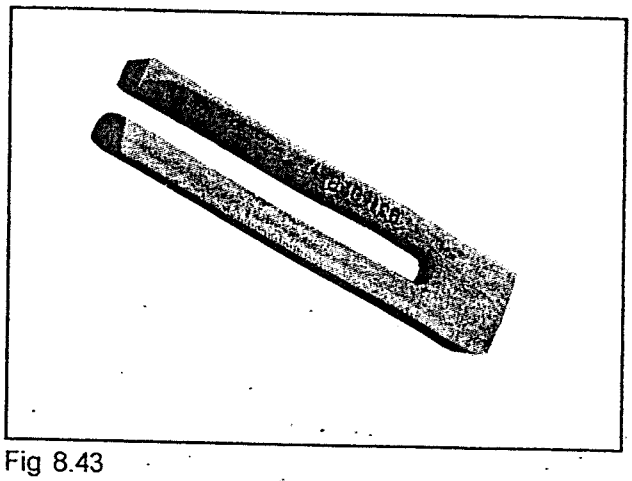


Fig 8.43

18. **231 030 000**
ASSEMBLY TOOL FOR STEERING CUPS
(fig 8.44)

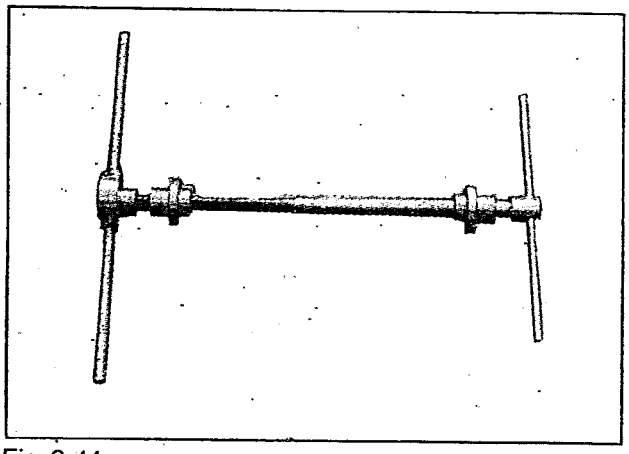


Fig 8.44

19. **F 310 170**
ROTOR CUM SPROCKET HOLDER
For holding the rotor and sprocket (fig 8.45)

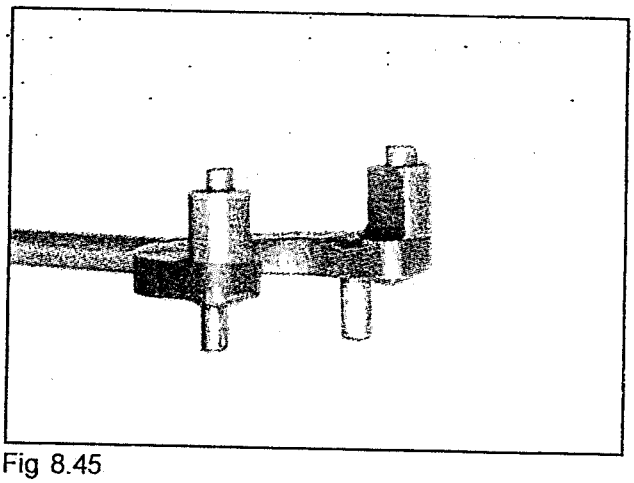


Fig 8.45

All information included in this publication is based on the latest product information available at the time of approval for printing.

TVS-SUZUKI LIMITED reserves the right to make changes at any time without notice and without incurring any obligation whatsoever.

No part of this publication may be reproduced without written permission of TVS-SUZUKI LIMITED