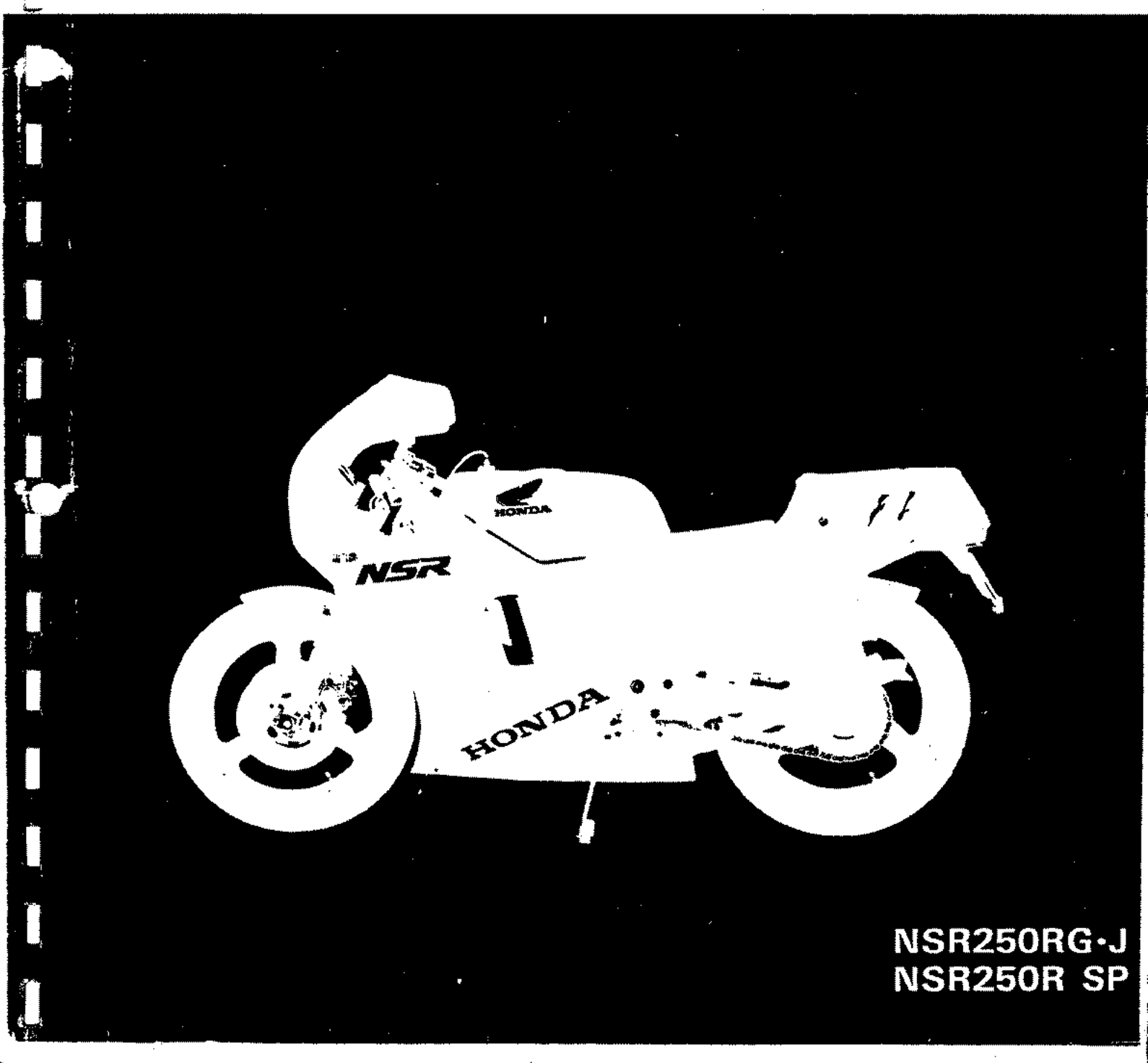
H'N Robin - Horaby
Honda.

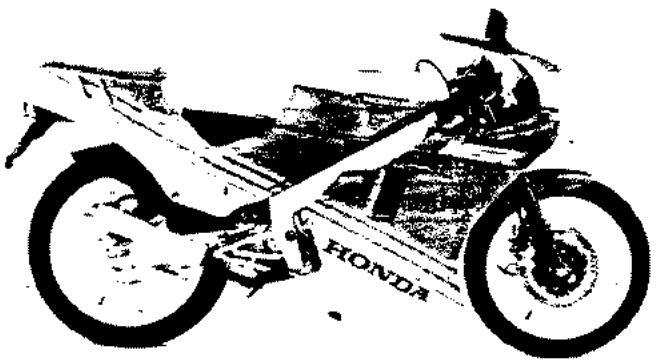
ホンダ
NSR250R・NSR250R SP
サービスマニュアル

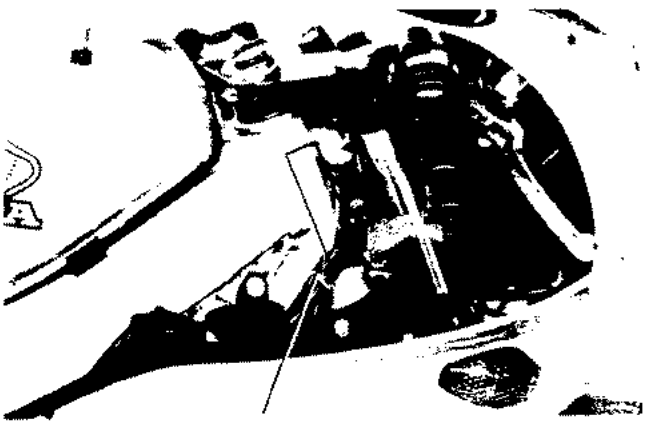


NSR250RG・J
NSR250R SP

MAINTENANCE INFORMATION 1.

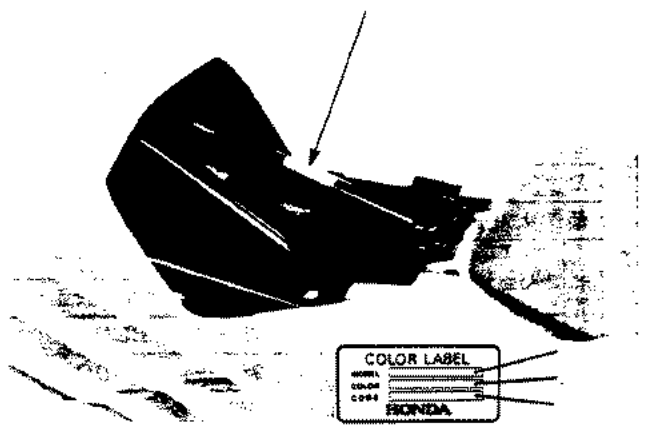
IDENTIFICATION SYSTEM, COLOUR LABELS





FRAME NUMBER

ENGINE NUMBER



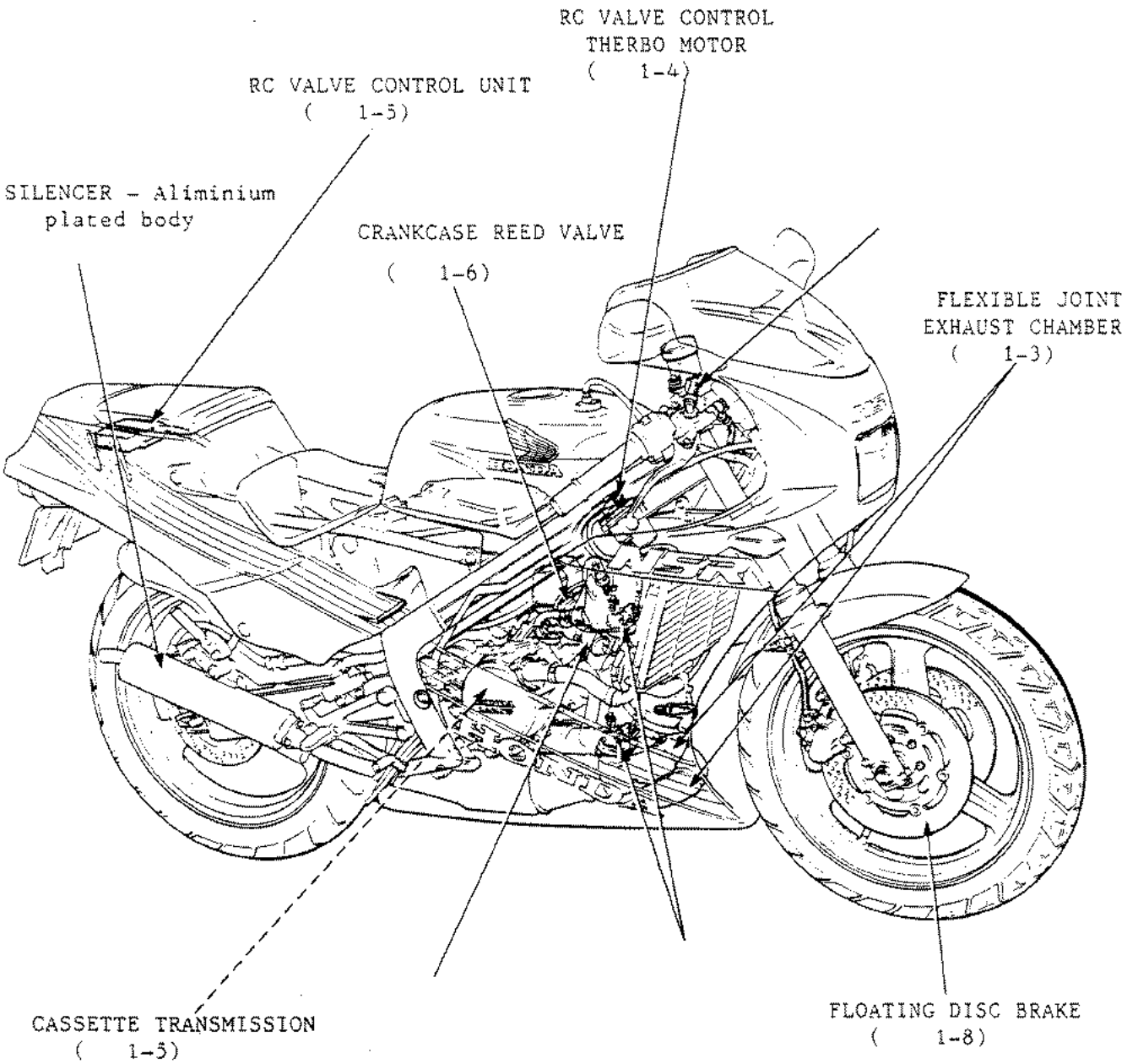
WHEN PAINTING ITEMS, USE THIS MODEL NAME AND COLOUR CODE

Make		Honda MC16
Length		2.035m
Width		0.705m
Height		1.105m
Wheel base		1.360m
Engine Type		MC16E
Engine capacity		249cm³
Motive Power		Petrol
Vehicle Weight	Frt	70kg
	Rr	71kg
	Ttl	141kg
Rider No.		2人
Gross Weight	Frt	91kg
	Rr	160kg
	Ttl	251kg
Tires	Frt	100/80－17 52H
	Rr	130/70－18 63H
Ground clearance		0.135m
Braking Distance (50K/h)		14.0m (50)
Turning circle		2.9m
Starting		Kickstart
Fuel		Petrol 2 cycle
Cyl.Configuration		V 2
Com. Type		Half ball
Bore X stroke		54.0×54.5mm
Comp. ratio		6.2
Cyl. Comp		12.0kg/cm²－400rpm
Max Horsepower		45PS/9500rpm
Torque		3.6kgm/8500rpm
Port Timing	Open	Movement Automatic
	Close	Movement Automatic
Intake	Open	78°－94° (BBDC)
	Closed	78°－94° (ABDC)
Exhaust	Open	62° (BBDC)
	Closed	62° (ABDC)
Idle speed		1200rpm
Lubrication		Forced pressure wet sump
Oil pump		Plunge type,Tricoid type
Oil capacity		*2.2ℓ

Cooling system		Water cooled
Air cleaner type		Foam
Fuel tank cap.		16ℓ
Type		TA10
Gas intake		28mm
Venturi bore		28mm
Type		CDI式
Ign Timing		15°BTDC/1200rpm
Spark Plug	NGK	B8ECS, B9ECS, B10ECS, B8ES, B9ES
	ND	W24ES-C, W27ES-C, W31ES-C, W24ES-U, W27ES-U
Plug Gap		0.7－0.8mm
Battery		12V 3 AH
Clutch - type		Wet coil spring
operation		manual
Primary Reduction		2.652
Trans - type		Usual method
1st gear		2.642
2nd gear		1.800
3rd gear		1.380
4th gear		1.125
5th gear		1.000
6th gear		0.916
Reduction - method		Chain
Final		2.800
Frt Wheel Caster		26°00′
Trail		103mm
Tire pressures	Frt	2.25kg/cm²
	Rear	2.50kg/cm²
Strg angle	Left	32°
	Right	32°
Brakes	Frt	Pressurised disc
	Rear	Pressurised disc
Suspension	Frt	Telescopic
	Rear	Swing arm
Frame type		Diamond
Frame No. NO.		MC16－1000001～
Engine No. NO.		MC16E－1000001～

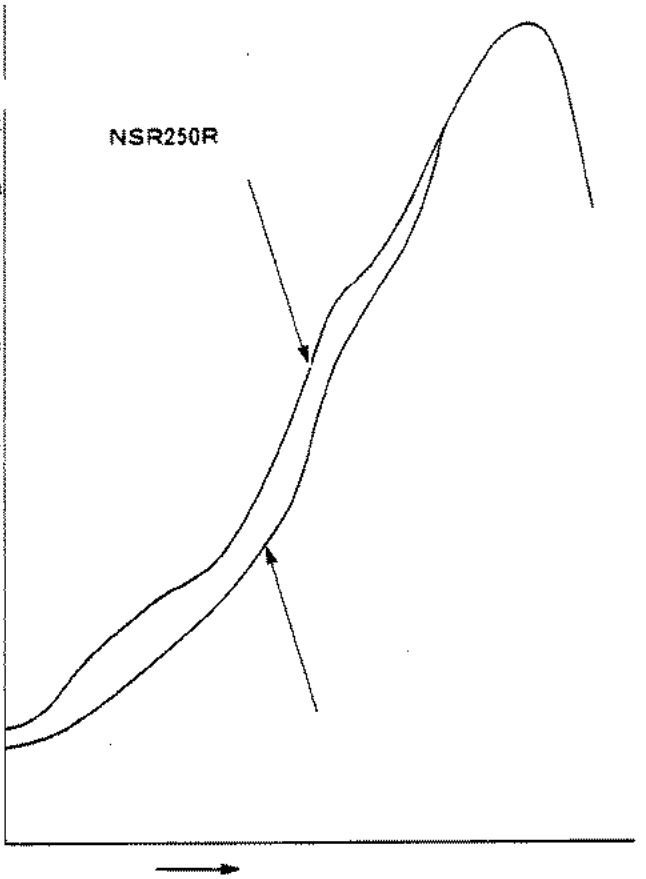
*:Transmission Oil 0.9ℓ

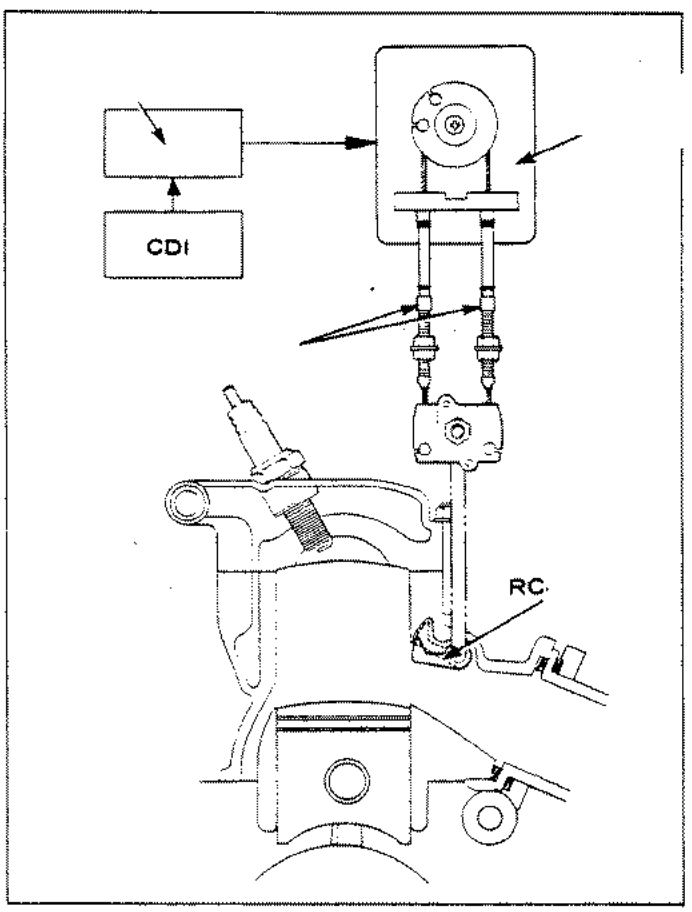
Engine oil 1.3ℓ

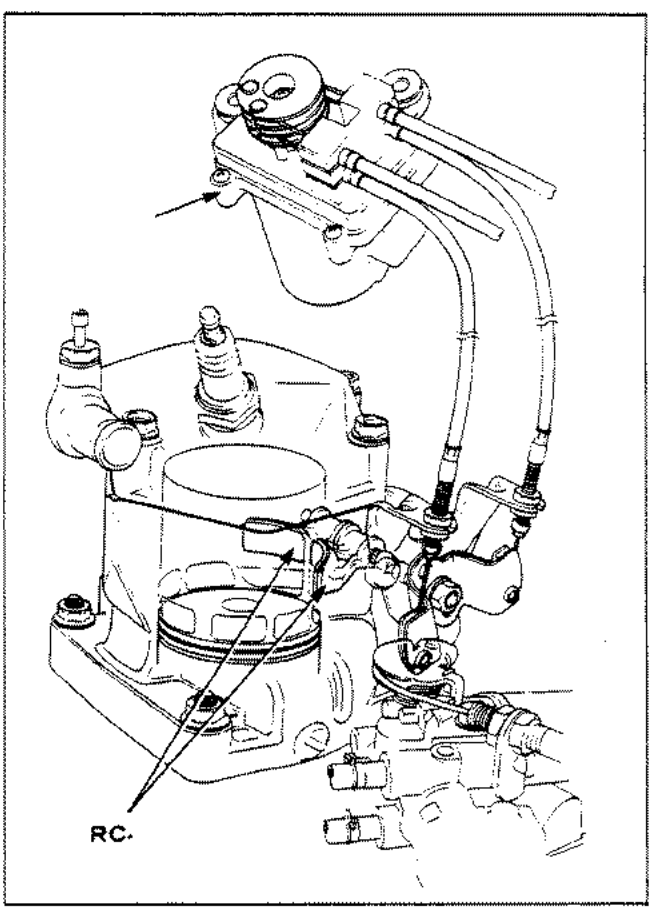

RC VALVE CONTROL
THERBO MOTOR
(1-4)
RC VALVE CONTROL UNIT
(1-5)
SILENCER - Aliminium
plated body
CRANKCASE REED VALVE
(1-6)
FLEXIBLE JOINT
EXHAUST CHAMBER
(1-3)
CASSETTE TRANSMISSION
(1-5)
FLOATING DISC BRAKE
(1-8)

VARIABLE EXHAUST PORT VALVE SYSTEM

Set Valves in cyl. exhuast port, and these valve will move in proportion to the engine revolutions.According to the change in height of the exhaust port the exhaust timing will be varied and power increase from low to high revolutions is shown here.
This system is totally controlled by the PGM control unit. Current will flow into the Servo Motor according to engine revolutions and Servo Motor resistance by calculating the engine revolutions from the front cylinder CDI
The Servo Motor will move by means of current from the control unit and by means of the control cable, move the RC valve

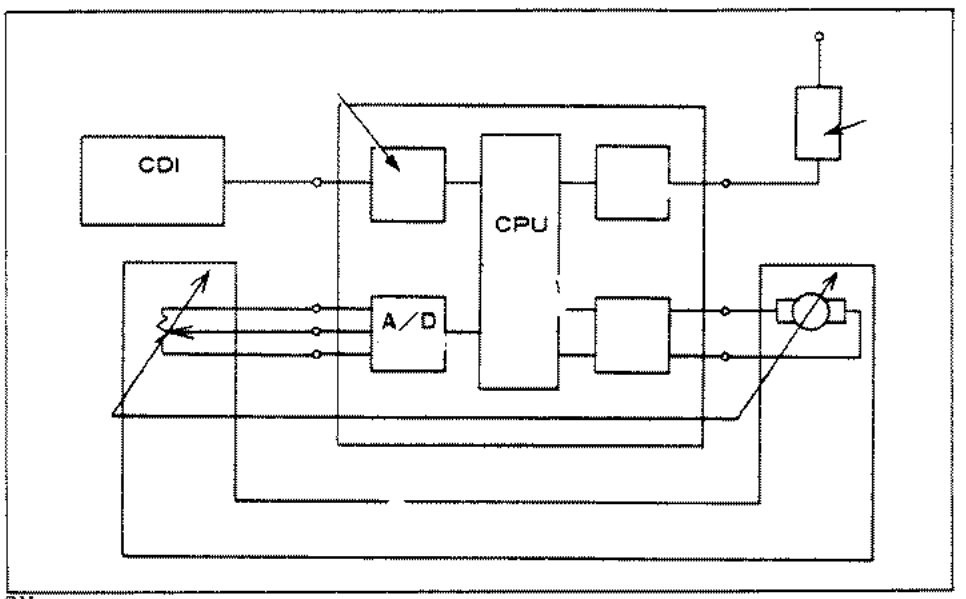






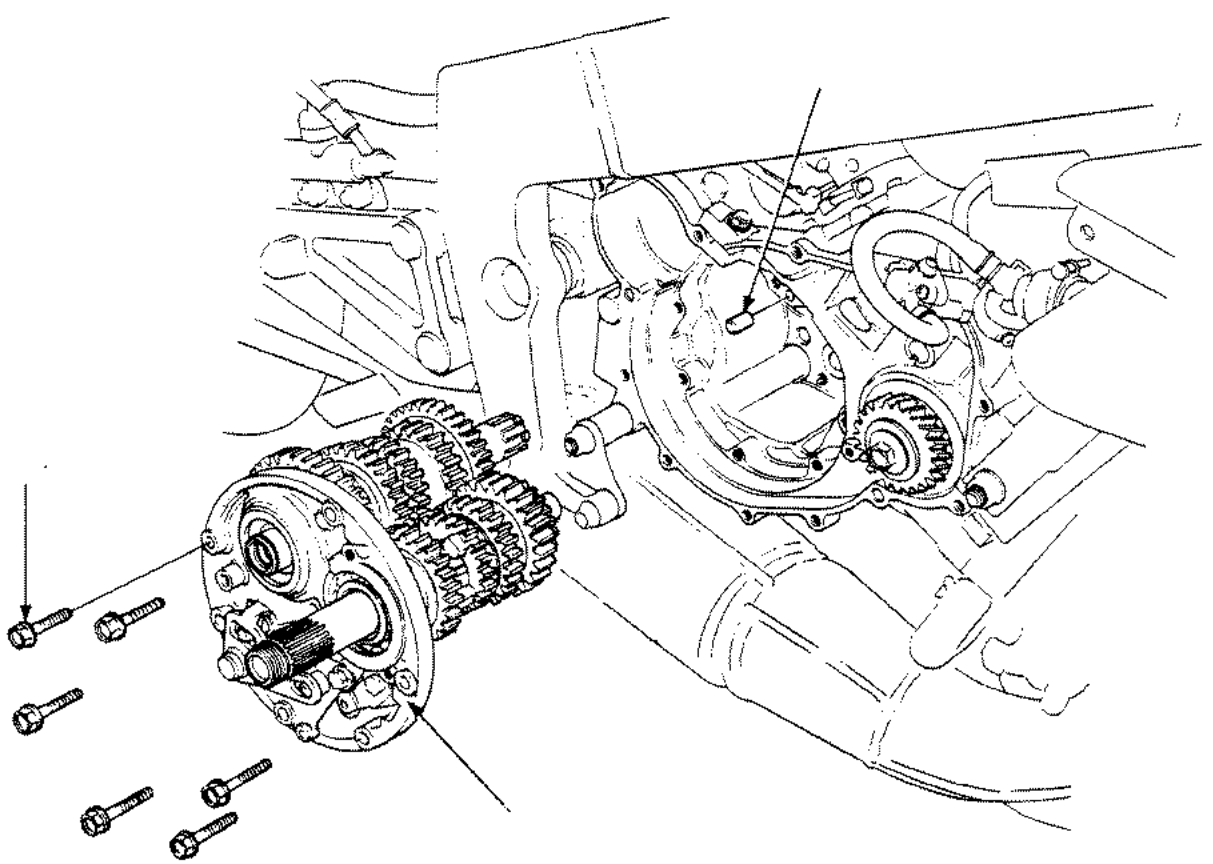
CONTROL UNIT

The control unit calculates the pulse (eng. Revs) from the CDI unit, and allots the flow of current to the RC Valve Servo Motor and Oil Pump Solenoid
The pulse from the CDI unit is calculated according to the units internal revolutions calculation circuit, and is inputted into the micro computer.
According to theses engine revolutions, the micro computer will flow current through the solenoid driver and motor driver to the Servo Motor and Oil Pump Solenoid



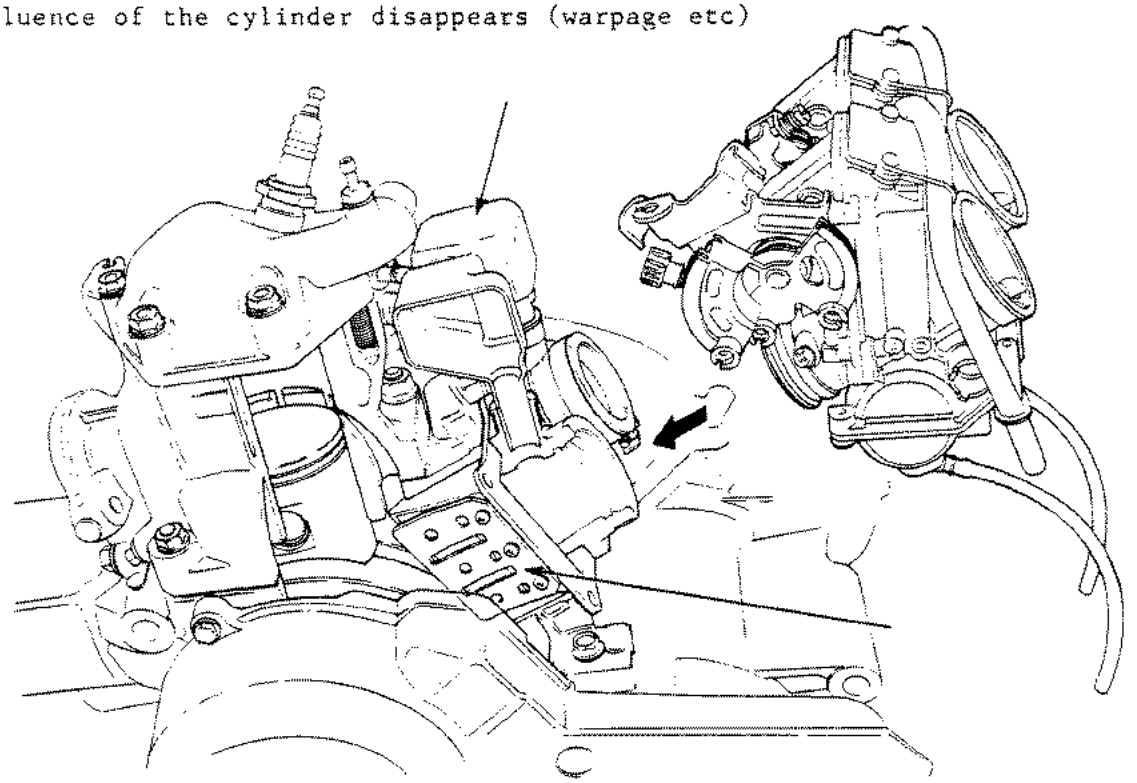
CASSETE TRANSMISSION

Depending on how the transmission bearing holder is held in the crankcase with the knock pin and bolt, the transmission can be adjusted while the engine is in the frame



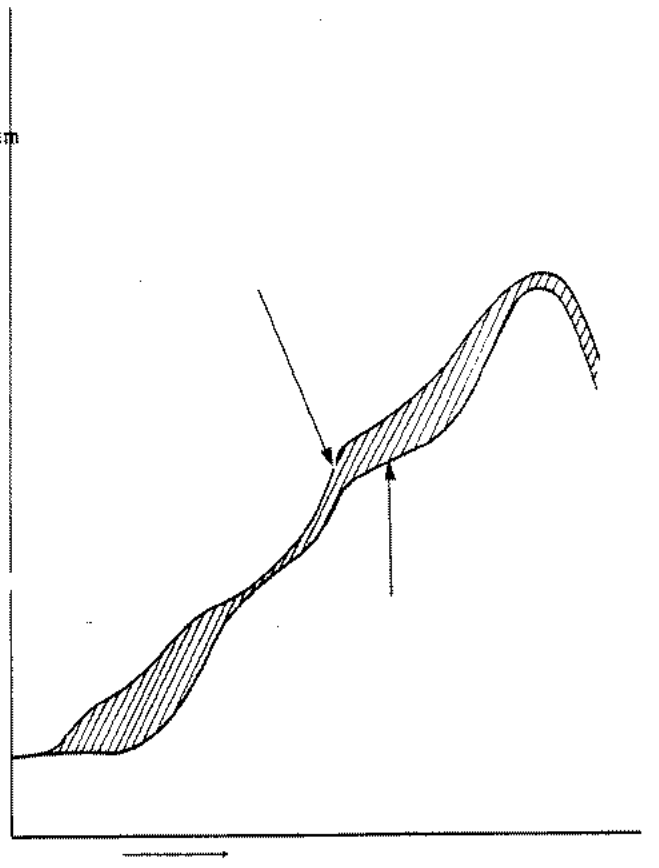
CRANKCASE REED VALVE

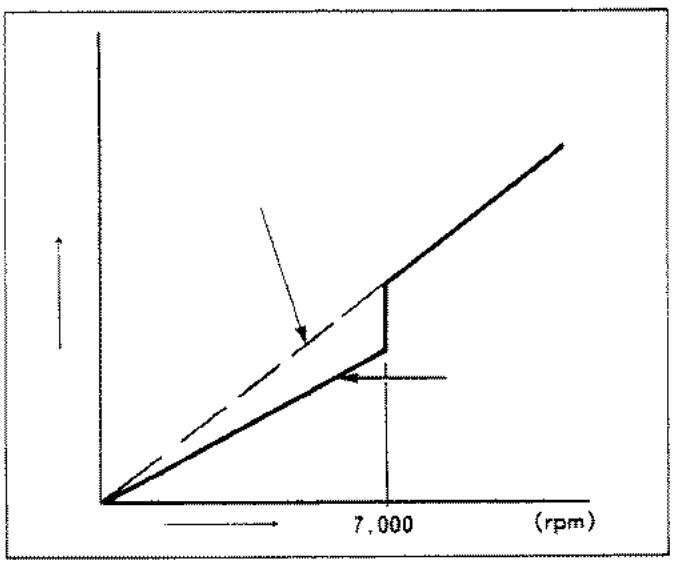
Depending on the set-up of the reed valve in the crankcase, a large intake valve will increase, and will supply air mixture into the crankcase
Also if there is no reed valve in the cylinder, because there is no intake port hole, the influence of the cylinder disappears (warpage etc)

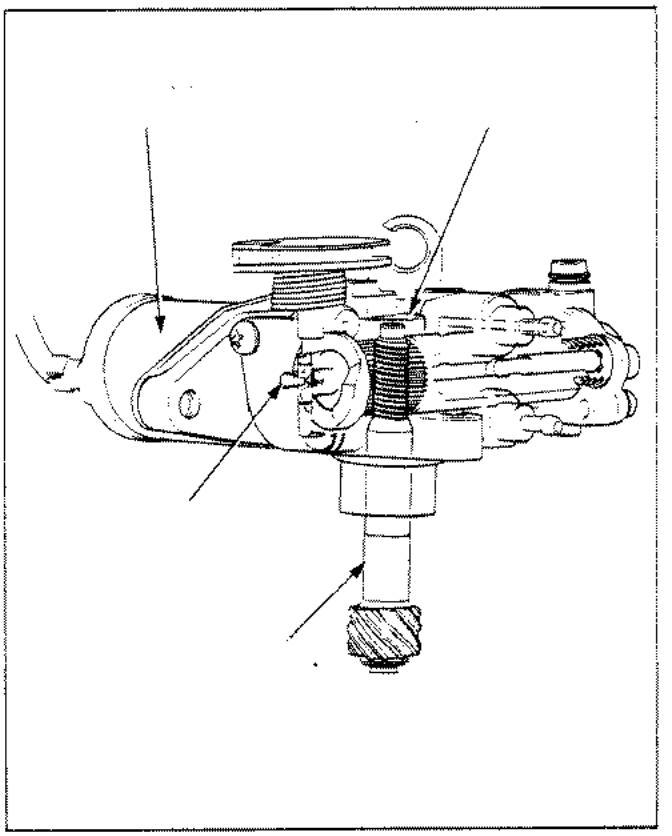


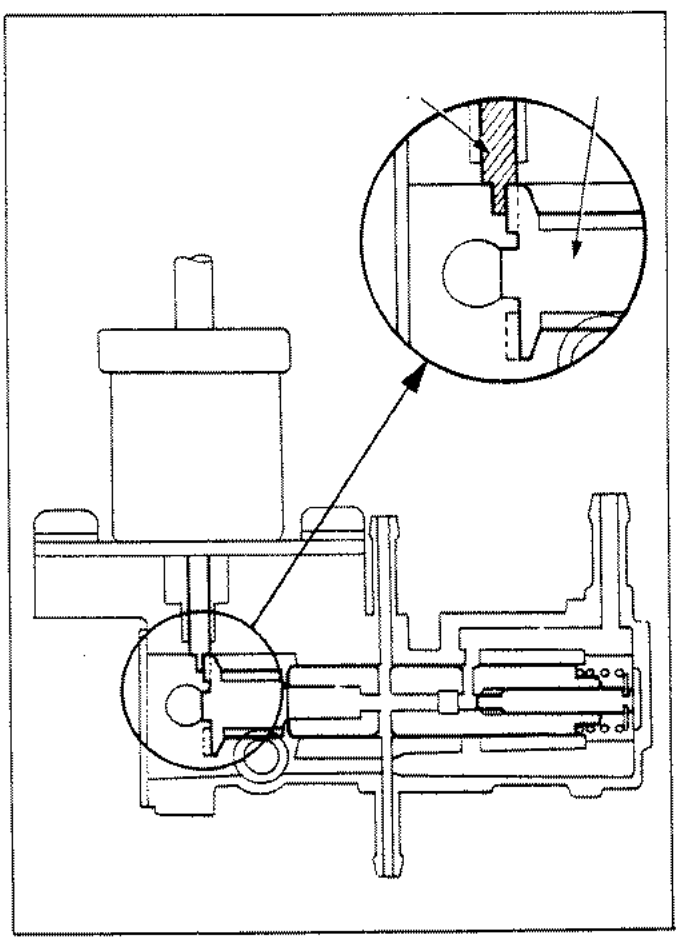
INTAKE CAHMBER

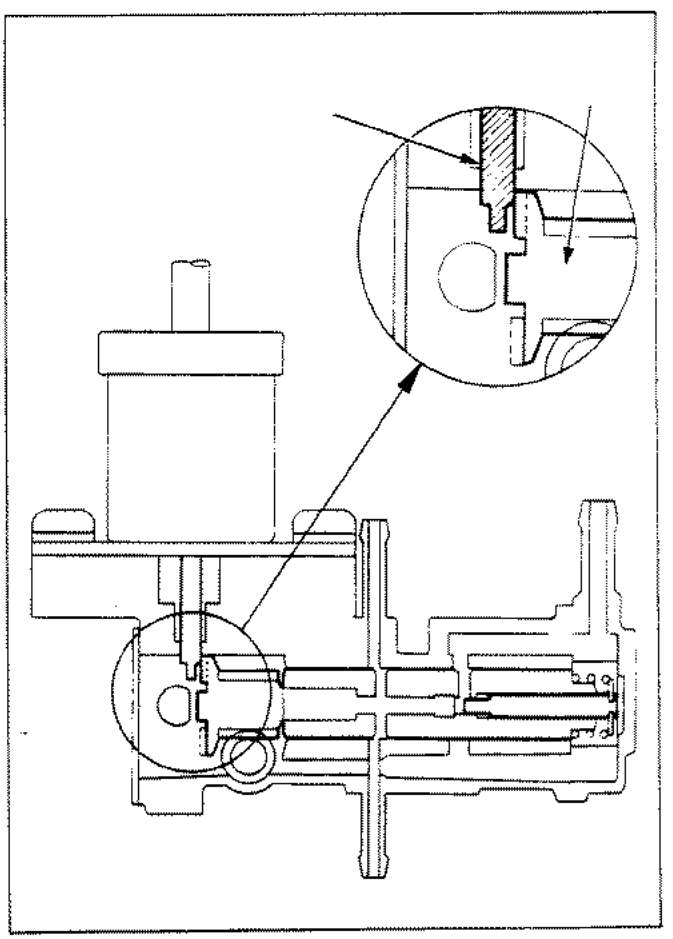
When the reed valve pressure is to the maximum limit, the intake air capcity will increase and the output will increase. However, at partial throttle, depending on the throttle valve resistance, the insulator internal pressure will increase and the intake air pressure will completely decrease

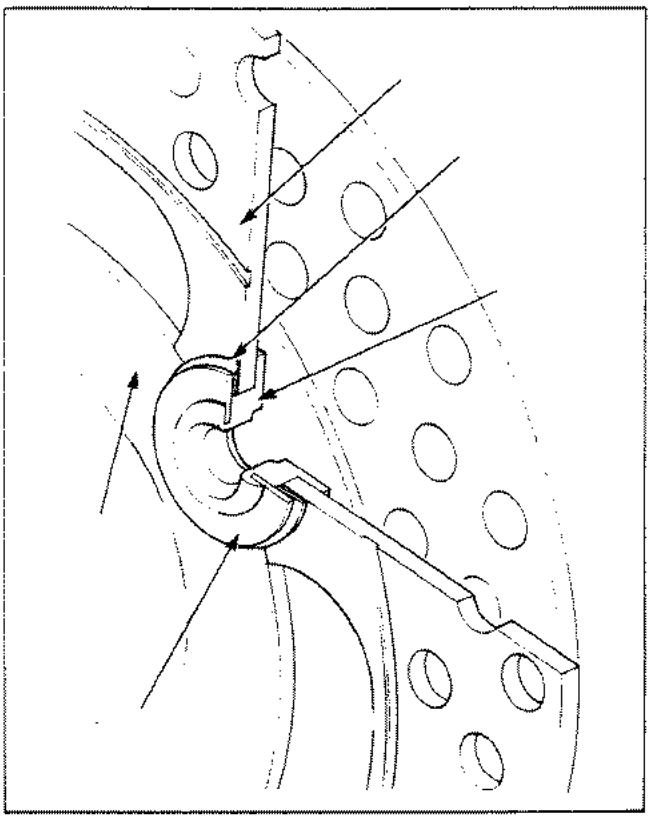


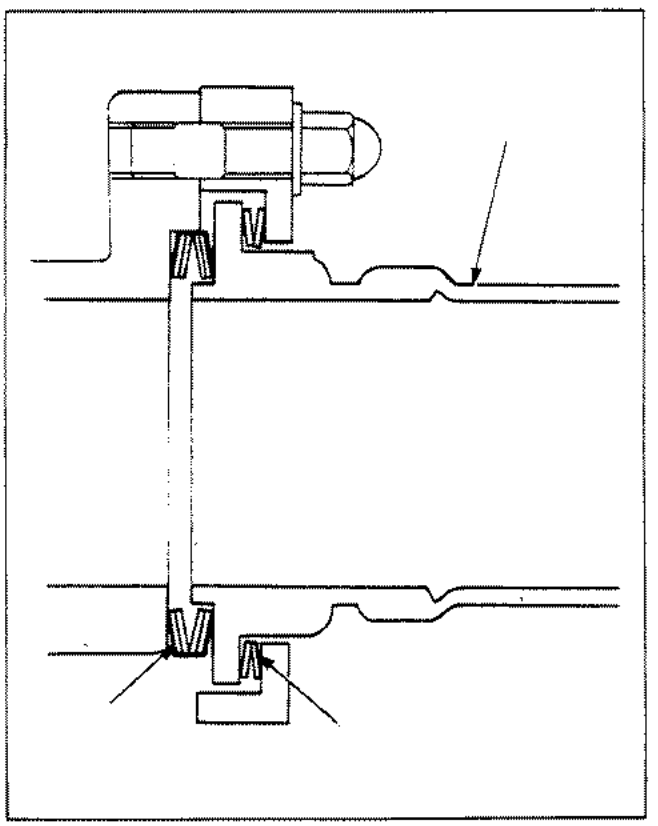

7,000
(rpm)

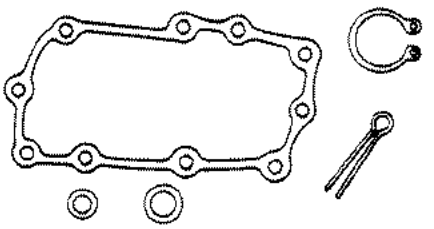


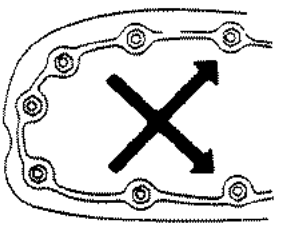


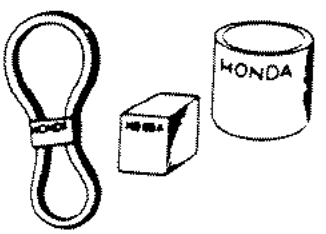


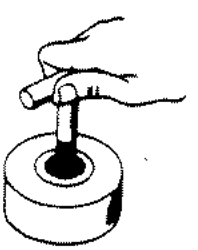


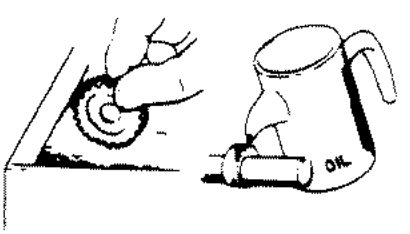


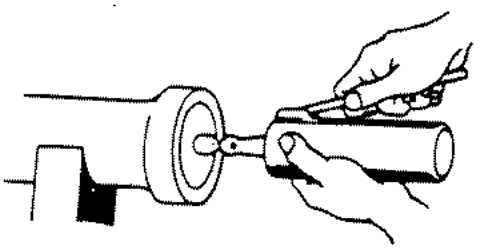


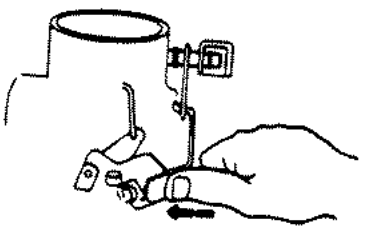


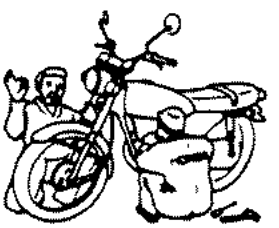

HONDA

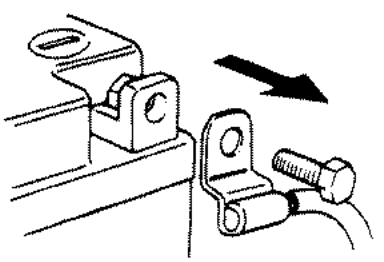


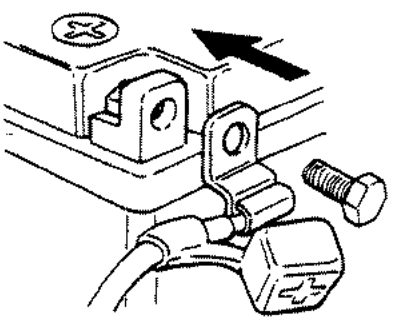

OIL

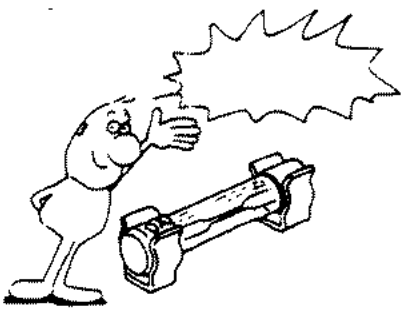


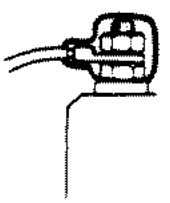


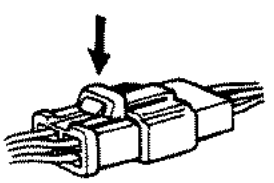


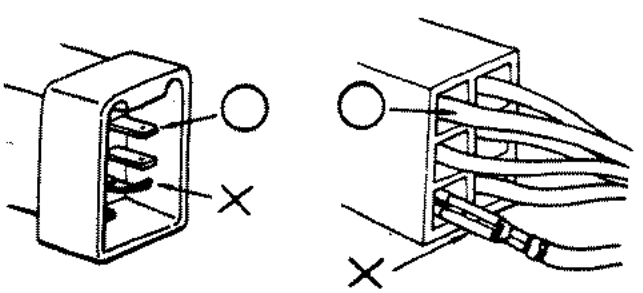


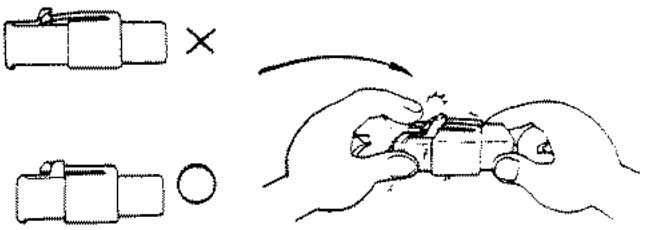


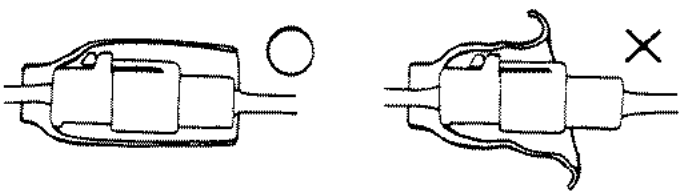


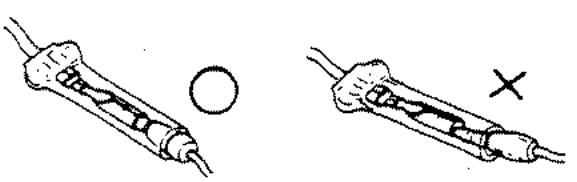


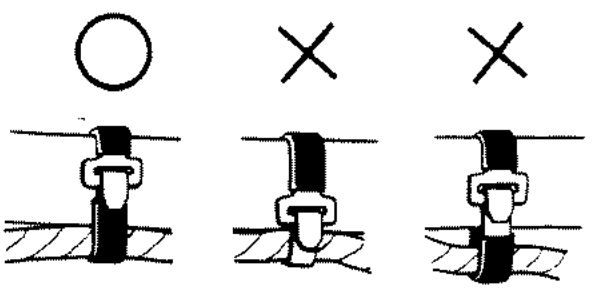


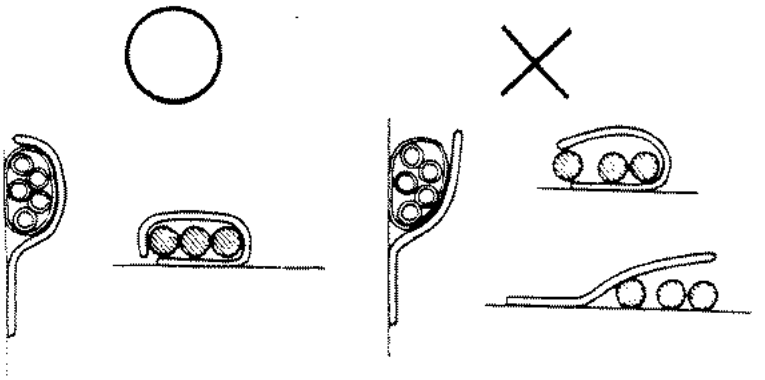


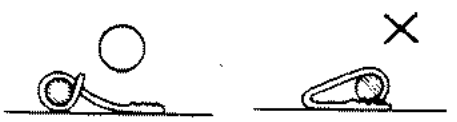


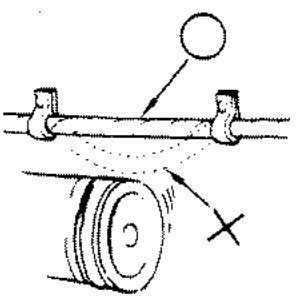


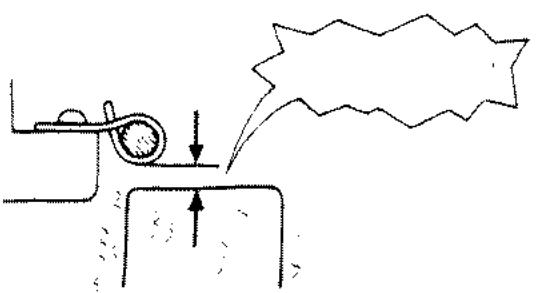


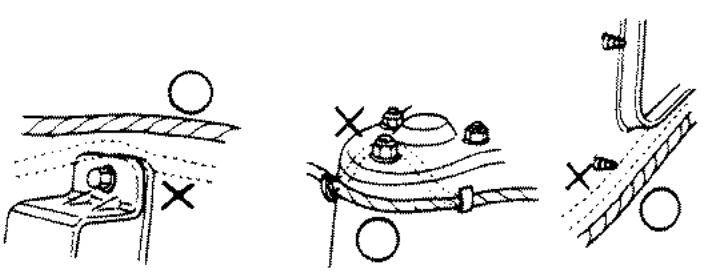


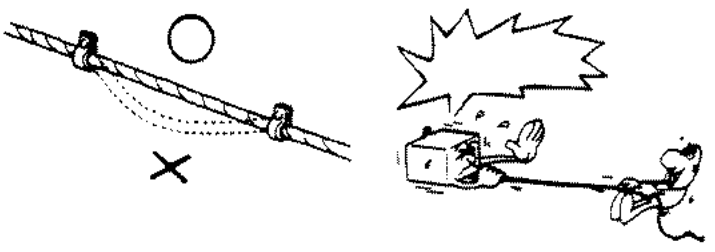


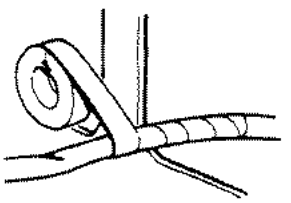


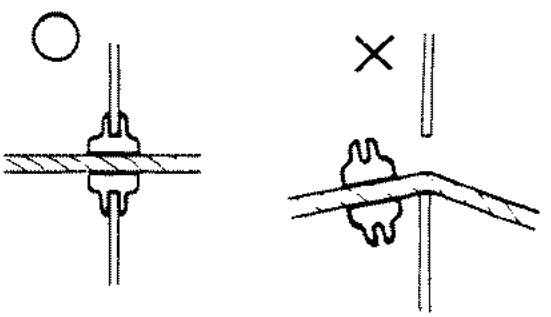


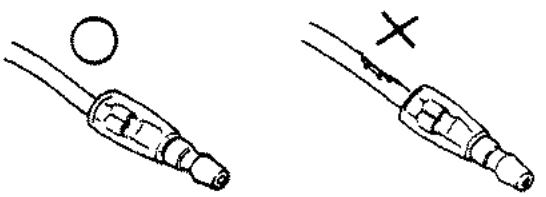


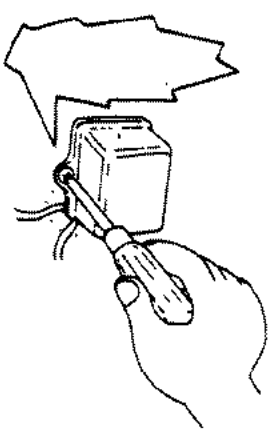


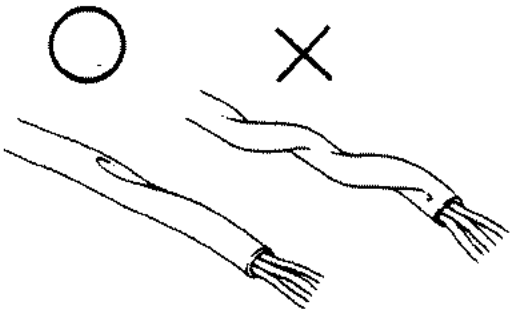


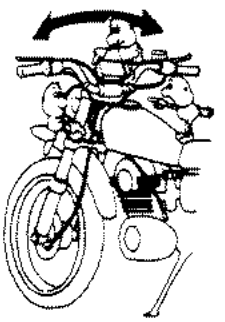


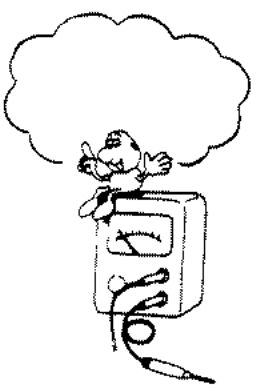


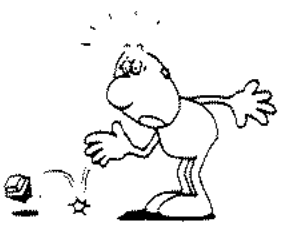


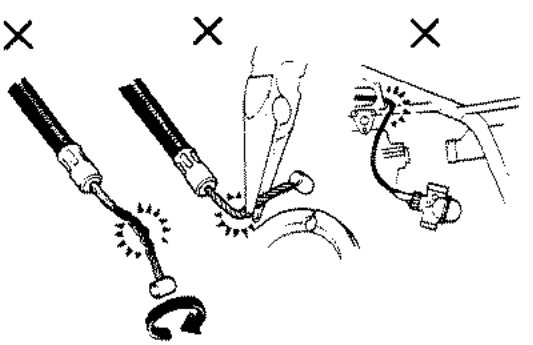












下記のシンボル マークは，このマニュアルを通しての注意事項や，作業方法を示している。

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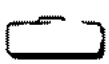
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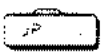


：OP.

TORQUE SETTINGS:

ENGINE

Item	Nbr	Screw dia (mm)	Torque (kg-m)	Note
Spark plug	2	14	1.5–2.0	
Cylinder head nut	12	7	1.2–1.6	
Cylinder nut	8	8	2.3–2.7	
Clutch lock nut	1	18	5.5–6.5	
Shift drum/stopper arm	1	6	0.8–1.2	
Shifter pin	1	8	2.1–2.5	Apply locking agen
AC Generator, flywheel bolt	1	10	8.0–9.0	UBS
AC Generator, stator bolt	3	6	1.0–1.4	
Crankcase 8mm bolt	6	8	2.1–2.5	
Primary drive gear bolt	1	10	9.0–10.0	Left thread
Neutral switch	1	10	1.4–1.8	
Clutch lifter arm stopper bolt	1	6	0.8–1.2	
Water pump impellor	1	14	1.0–1.4	
Oil drain bolt	1	12	3.0–4.0	
RC Valve shift nut	2	6	0.8–1.0	Left thread
Cylinder head bi-pass tube joint	1	6	0.25–0.45	

FRAME

Item	Nmbr	Screw Dia (mm)	Torque (kg-m)	Note
Front axle pinch bolt	4	7	1.5–2.0	
Front axle bolt	1	14	5.5–6.5	
Rear axle nut	1	16	8.0–10.0	
Engine hanger plate bolt (8mm)	4	8	2.4–3.0	
Engine hanger bolt (10mm)	3	10	4.5–5.5	
Side stand bolt	1	10	1.0–2.0	
Side stand lock nut	1	10	3.0–4.0	
Side stand bracket bolt	2	8	2.4–3.0	
Sub frame bolt	4	10	3.5–4.5	
Step stay bolt	4	8	2.4–3.0	
Rear brake reservoir bolt	1	6	0.7–1.1	
Rear brake master cylinder bolt	2	6	1.0–1.4	
Exhaust chamber pinch bolt	2	8	2.4–3.0	
Silencer pinch bolt	2	8	2.4–3.0	
Chamber/silencer joint bolt	6	6	1.0–1.4	
Shift changepedal bolt	1	6	1.0–1.4	
Kick starter pedal bolt	1	8	3.5–4.5	
Fairing stay bolt	2	8	2.4–3.0	
Fairing sub stay bolt	4	6	1.0–1.4	

		mm	kg-m
Handle bar bolts	2	8	2.4—3.0
Main switch bolts	2	8	2.4—3.0
Seat bolts	1	8	2.0—2.4
Fule cock	1	22	2.0—2.5
Clutch lever bracket bolt	2	6	0.7—1.1
Rear fork pivot bolt	1	14	6.0—7.0
Rear fork pivot lock nut	1	26	6.0—7.0
Rear fork pivot adjust bolt	1	26	1.0—2.0
Steering stem nut	1	24	9.0—12.0
Steering adjustment nut	1	26	2.3—2.7
Top bridge bolt	2	7	0.9—1.3
Bottom bridge bolt	2	10	4.5—5.5
Front brake barcket caliper bolt	4	8	2.4—3.0
Front brake master cylinder bolt	2	6	1.0—1.4
Brake hose bolt	5	10	2.5—3.5
Front axle hose stay bolt	3	6	1.0—1.4
Front brake pipe	2	10	1.6—1.8
Bleeder valve bolt	3	7	0.4—0.7
Cushion conrod bolt (frame)	1	10	6.0—7.0
(cushion arm)	1	10	6.0—7.0
Cushion arm bolt	1	10	6.0—7.0
Rear cushion upper bolt	1	12	6.0—7.0
Rear cushion lower bolt	1	10	6.0—7.0
Front brake disc bolt	6	6	1.4—1.6
Front fork socket bolt	2	8	1.5—2.5
Front fork bolt	2	35	1.5—3.0
Driven sprocket nut	6	8	2.8—3.4
Rear cushion lwr joint lock nut	1	12	6.0—7.5
Rear cushion lower joint	1	12	3.8—6.0
Rear brake disc bolt	3	8	3.7—4.3
Front brake hangler pin	4	10	1.5—2.0
Rear brake hanger pin retainer bolt	1	6	0.8—1.3
Rear caliper pin bolt	1	10	2.4—3.0
Rear caliper bolt	1	8	2.0—2.5

STANDARD TORQUES

6 mmSH : 8 mm

Size	Torque (kg-m)	Size	Torque (kg-m)
5 mm bolt, nut	0.45—0.6	5 mm screw	0.35—0.5
6 mm bolt, nut	0.8—1.2	6 mm screw 6 mm SH	0.7—1.1
8 mm bolt, nut	1.8—2.5	6 mm flange bolt, nut	1.0—1.4
10mm bolt, nut	3.0—4.0	8 mm flange bolt, nut	2.4—3.0
12mm bolt, nut	5.0—6.0	10mm flange bolt, nut	3.5—4.5

SPECIAL TOOLS, STANDARD TOOLS

New special tools	Tool	Use	
Gear holder	07HMB-KV30100	Primary drive gear removal	8
Rotor puller attachment	07HMC-KV30100	Flywheel removal	10
Needle bearing driver attachment	07HMD-KV30100	Rear fork L. pivot brg instal	13

Special Tools

Pilot screw wrench	07908-4220201	Carburettor synchronization	4
Snap ring plier	07914-3230001	Brake M/cyl separation/assy	14
Steering stem socket	07916-3710100	Steering separation/assembly	12
Lock nut wrench	07GMA-KT70200	Rear fork removal	13
Steering stem wrench	07946-MB00000	Steering separation/assembly	12
Ball race remover set	07946-KM90000	Ball race removal	12
- Driver attachment A	07946-KM90100		
- Driver attachment B	07946-KM90200		
- Driver shaft assembly	07946-KM90300		
- Bearing remover A	07946-KM90400		
- Bearing remover B	07946-KM90500		
- Assembly case	07946-KM90600		
Rear cushion compressor attach	07959-MB10000	Rear cushion separation/assy	13
Mechanical seal driver	07945-4150400	Water pump mechanical inserter	5
Needle bearing remover	07GMD-KT80100	Rear fork cushion arm bearing cushion conrod bearing, rear cushion bearing removal	13
Fork seal driver	07947-4630100	Front fork oil seal inserter	12
Driver handle	07949-3710001	L. main shaft, L.counter shaft bearing inserter, rear fork L.pivot bearing removal	9, 13
Driver shaft (B)	07964-MB00200	Rear fork cushion arm brg removal	13
Bearing Remover set (10mm)	07936-GE00000	Water pump brg removal	5
Bearing remover (15mm)	07936-KC10000	rear fork R. Pivot brg removal	13
- Removerassy (15mm)	07936-KC10500		
- Remover shaft (15mm)	07936-KC10100		
- Remover head (15mm)	07936-KC10200		
- Remover steering weight	07741-0010201		
Bearing remover	07936-3710300	Cushion conrod brg removal	13
Remover handle	07936-3710100		
Remover steering weight	07741-0010201		
OUter driver (28x30mm)	07946-1870100	Rear fork L.Pivot brg removal	13

Standard Tools

Float level gauge	07401-0010000	Carburettor float measurement	4
Lock nut wrench (30x32mm)	07716-0020400	Steering stem nut removal	12
Extension Bar	07716-0020500	Lock nut wrench bar	12

Item	Number	Usage	Ref
Clutch centre holder	07725-0050001	Clutch lock nut removal	8
Universal holder	07725-0030000	Flywheel holder	10
Flywheel puller	07733-0010000	Flywheel removal	10
Outer driver (32x35mm)	07746-0010100	Rear fork R.brg insertion	13
Outer driver (42x47mm)	07746-0010300	Driven flange, rear wheel, frt wheel, R.countershaft bearing insertion	9, 12, 13
Outer driver (37x40mm)	07746-0010200	L.Main shaft brg insertion	9
Outer driver (62x68mm)	07746-0010500	L.countershaft brg insertion	9
Outer driver (24x26mm)	07746-0010700	Rear fork cushion arm brg cushion conrod, rear cushion water pump brg insertion	5, 13
Pilot (10mm)	07746-0040100	Water pump brg insertion	5
Pilot (15mm)	07746-0040300	Swing arm R.pivot brg insert	13
Pilot (17mm)	07746-0040400	Rear fork cushion arm brg rear cushion conrod brg insertion	13
Pilot (20mm)	07746-0040500	Wheel driver flange, R/countershaft brg insert.	9, 12, 13
Pilot (25mm)	07746-0040600	Shift drum bearing insertion	9
Bearing remover shaft	07746-0050100	Wheel brg, collar removal	12, 13
Bearing remover head (17mm)	07746-0050500	R.wheel collar removal	13
Bearing remover head (20mm)	07746-0050600	Wheel bearing removal	12, 13
Driver handle A	07749-0010000	Brg, brg race insertion	5, 9, 12, 13
Driver handle C	07746-0030100	R.mainshaft brg insertion	9
Inner driver (25mm)	07746-0030200	" " "	
Rear cushion compressor	07GME-0010000	Rear cushion sep/assy	13
- Compressor screw assy	07GME-1010100	" " "	13
Torque driver	07703-0010500	Carburettor separation/assy	4

METERS

Digital circuit tester	07411-0020000	Alternatively Showa Circuit Tester (TH-SH) or Showa Circuit Tester (07308-0020000) * Always do MF battery charging performance test with digital circuit tester	16, 17, 18, 19
Compression Gauge	07305-0010000	Cylinder compression test	2

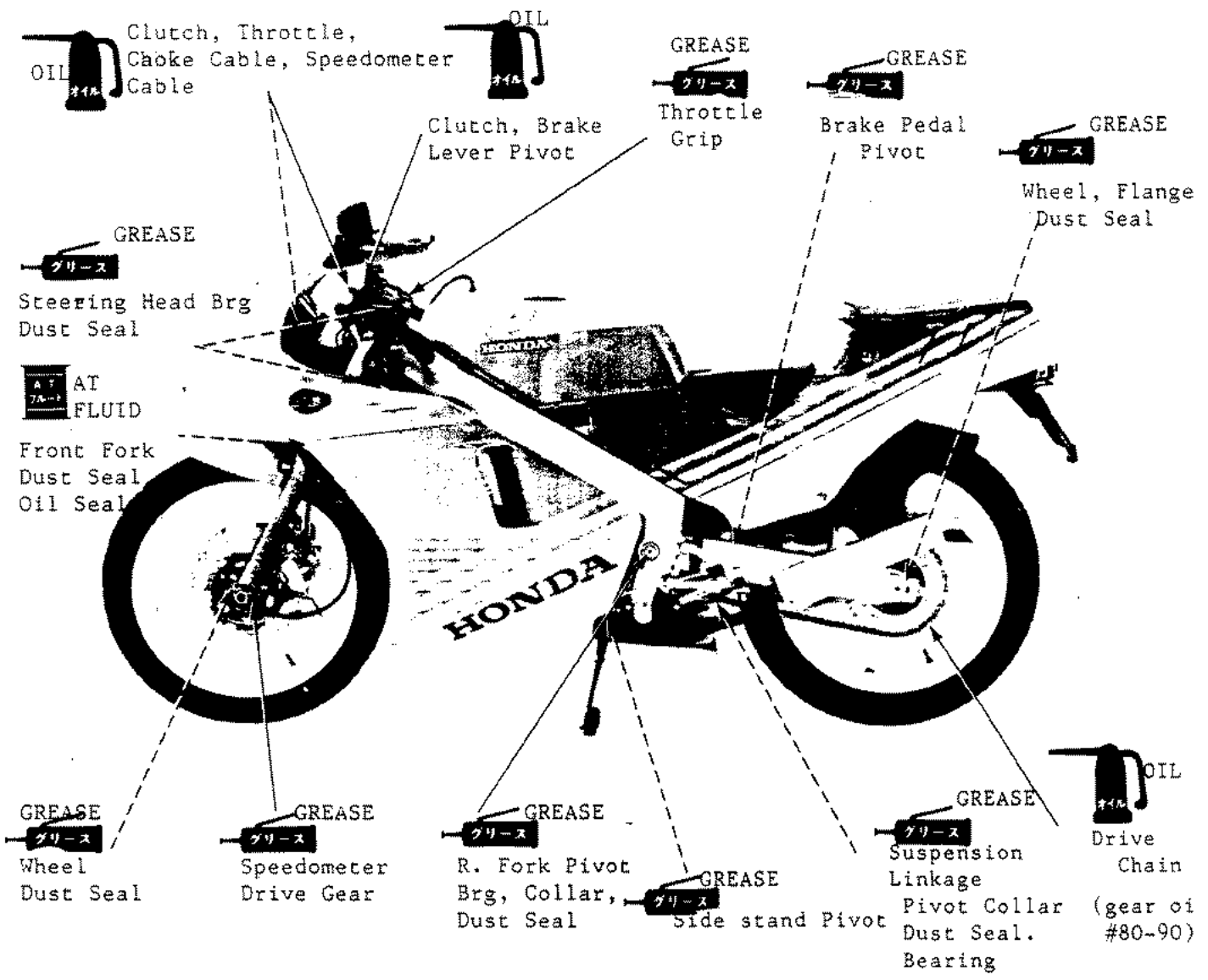
LUBRICATION MAP

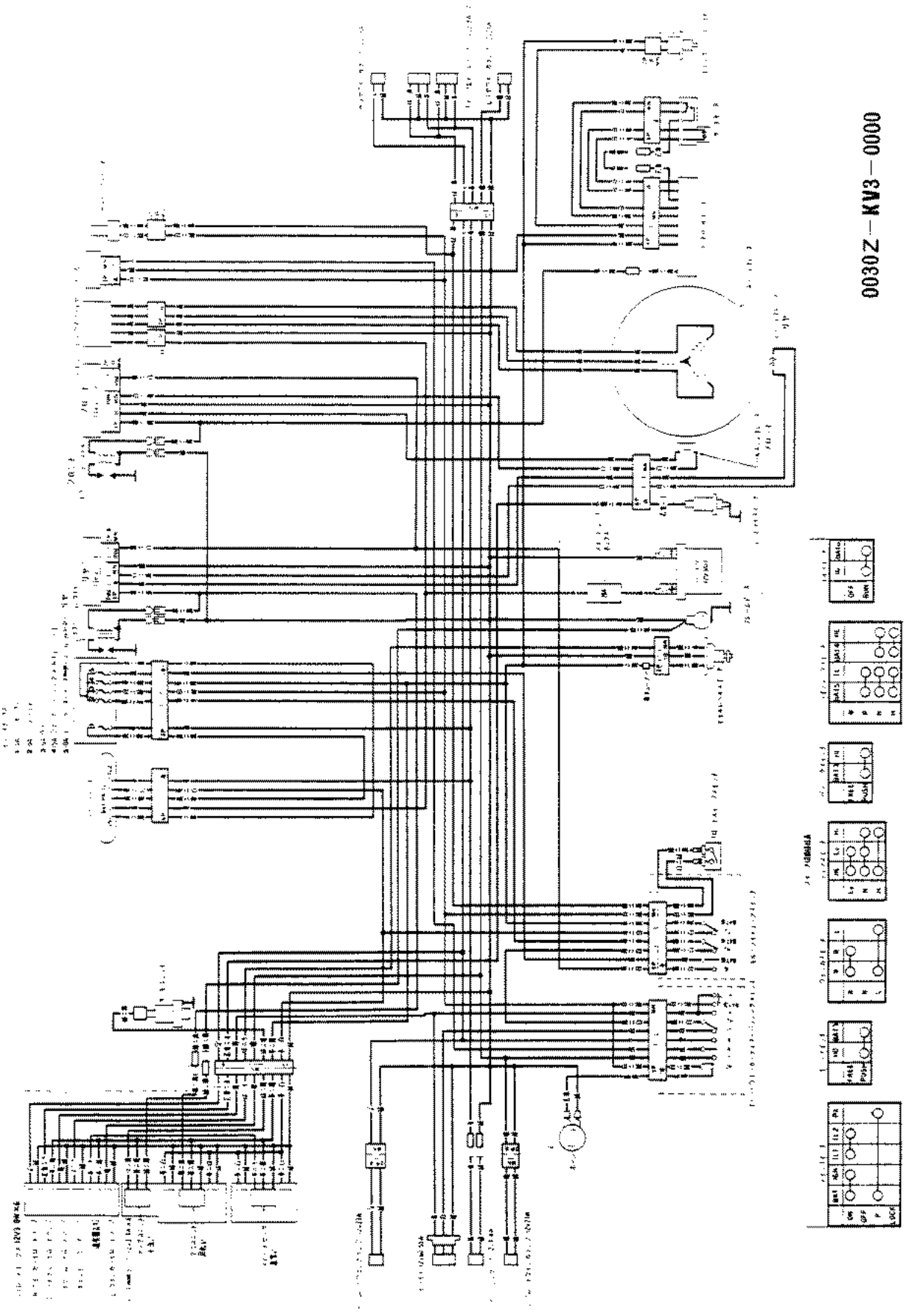
Engine

Cylinder, piston, crankshaft	Honda Ultra 2 super, or Honda Ultra GP2	Tank Capacity : 1.3ℓ
Crankcase	Honda Ultra U (4 cycle m/cycle, SAE10W-30) or API SE 10W-30 engine oil	Total Capacity : 0.9ℓ

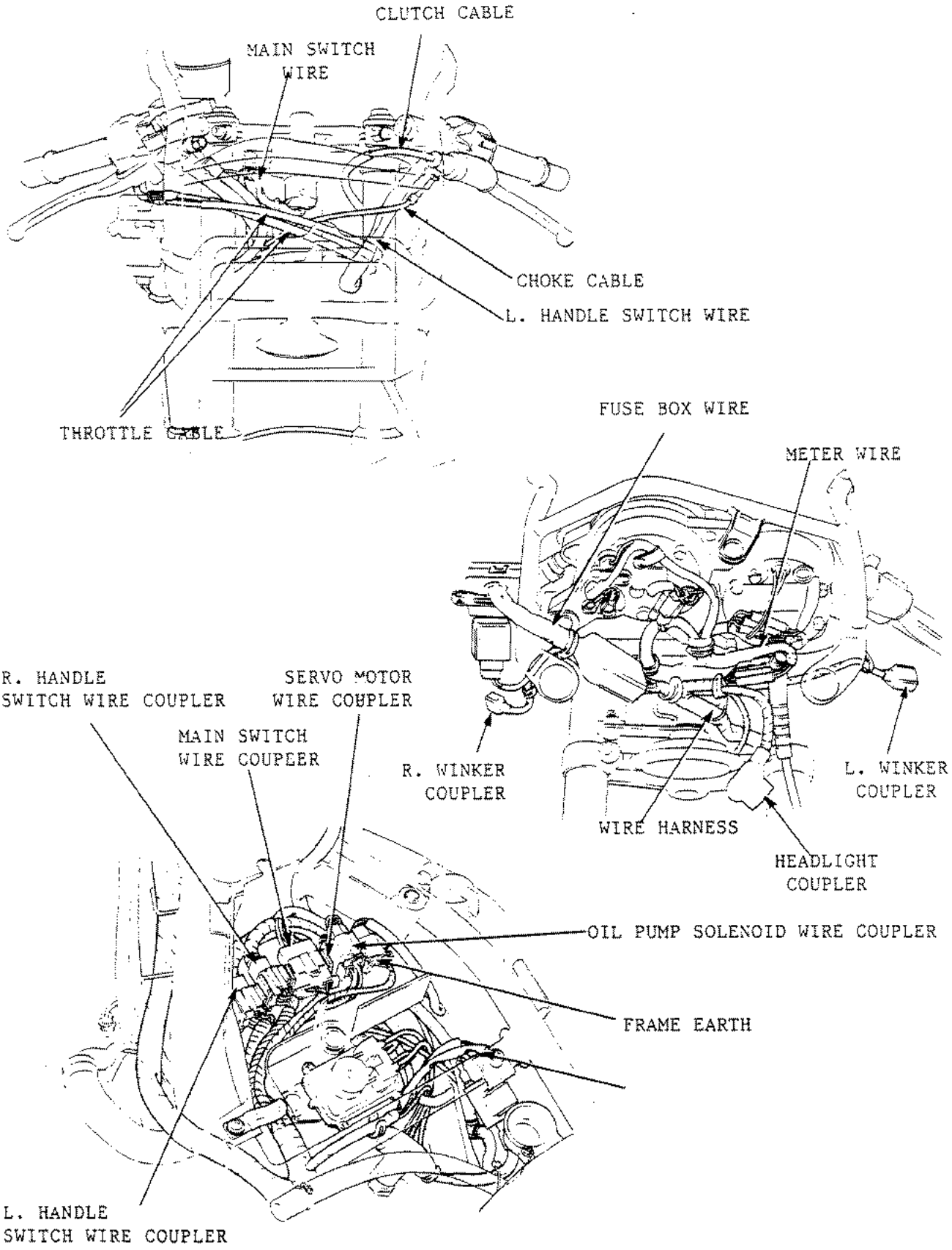
FRAME

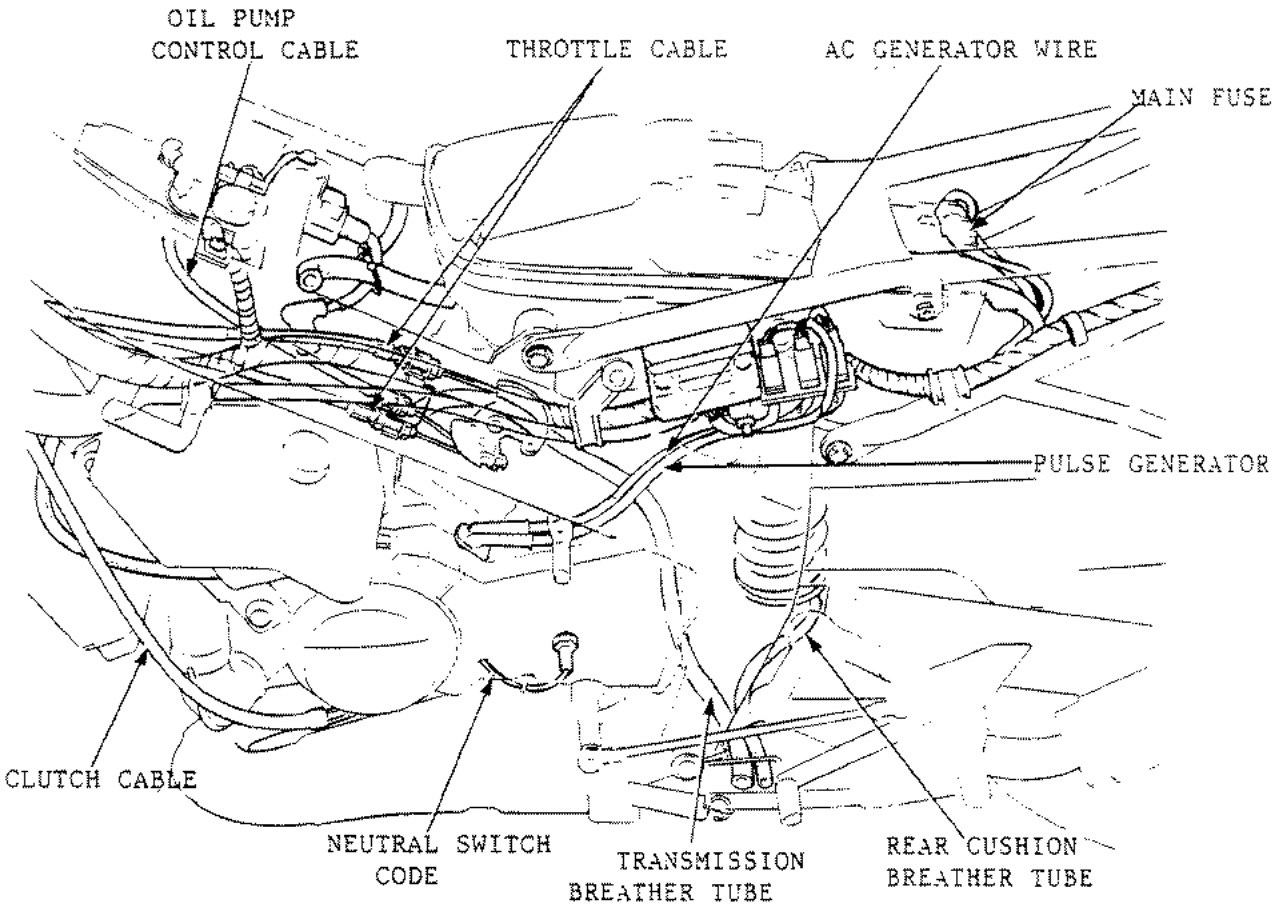
Do as shown below
Apply multipurpose grease to those points shown

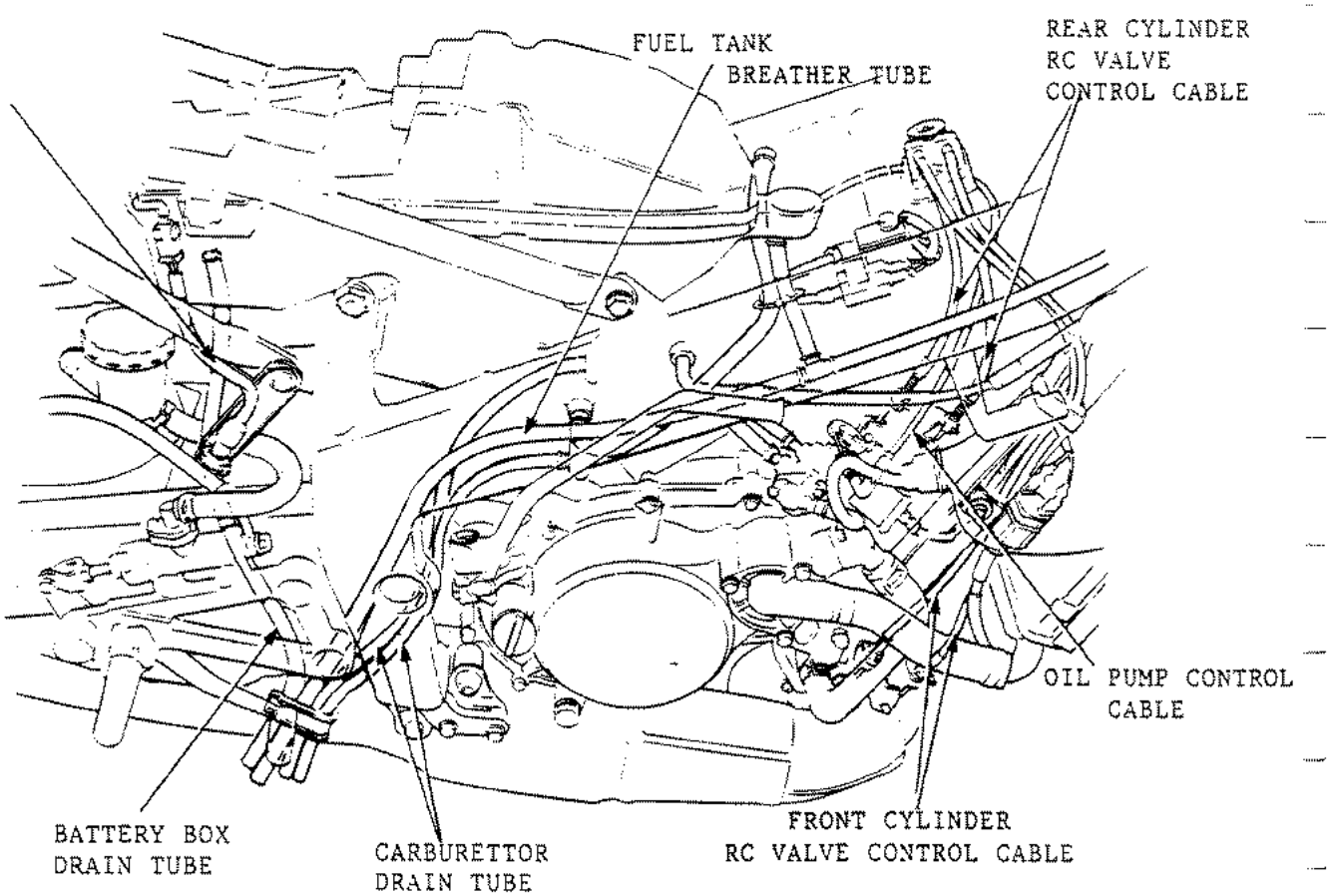


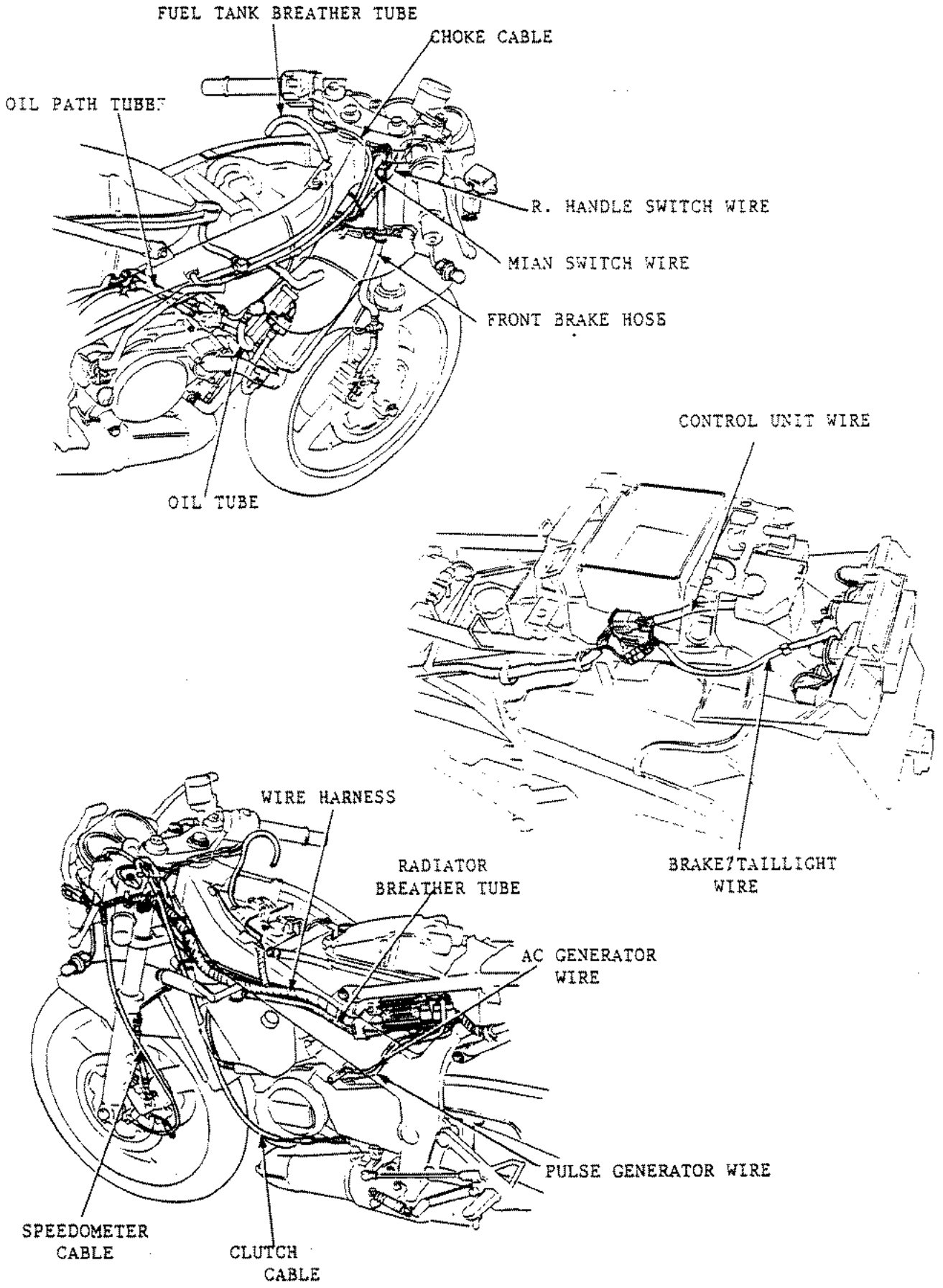

0030Z-KV3-0000

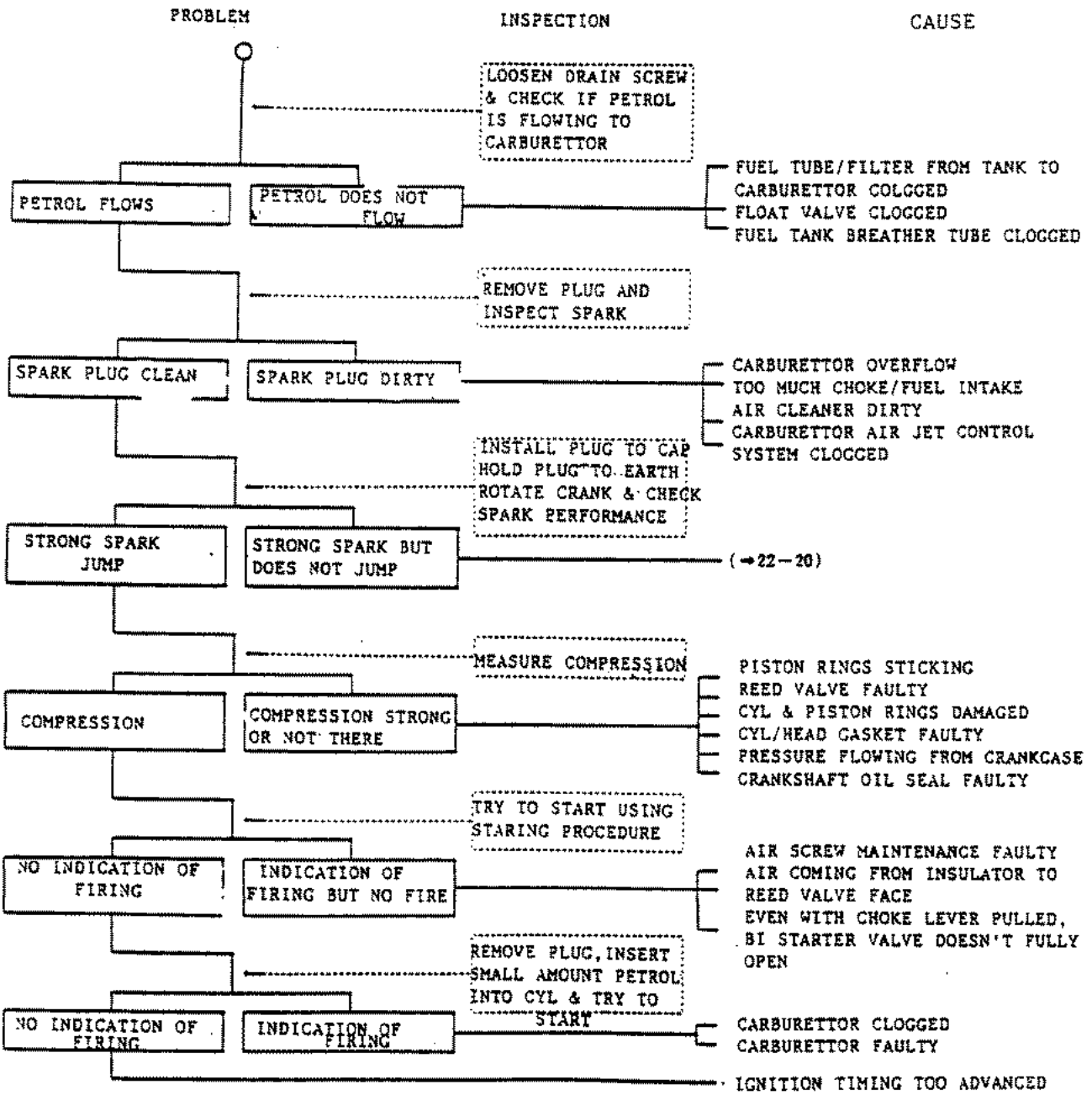
WIRING MAP

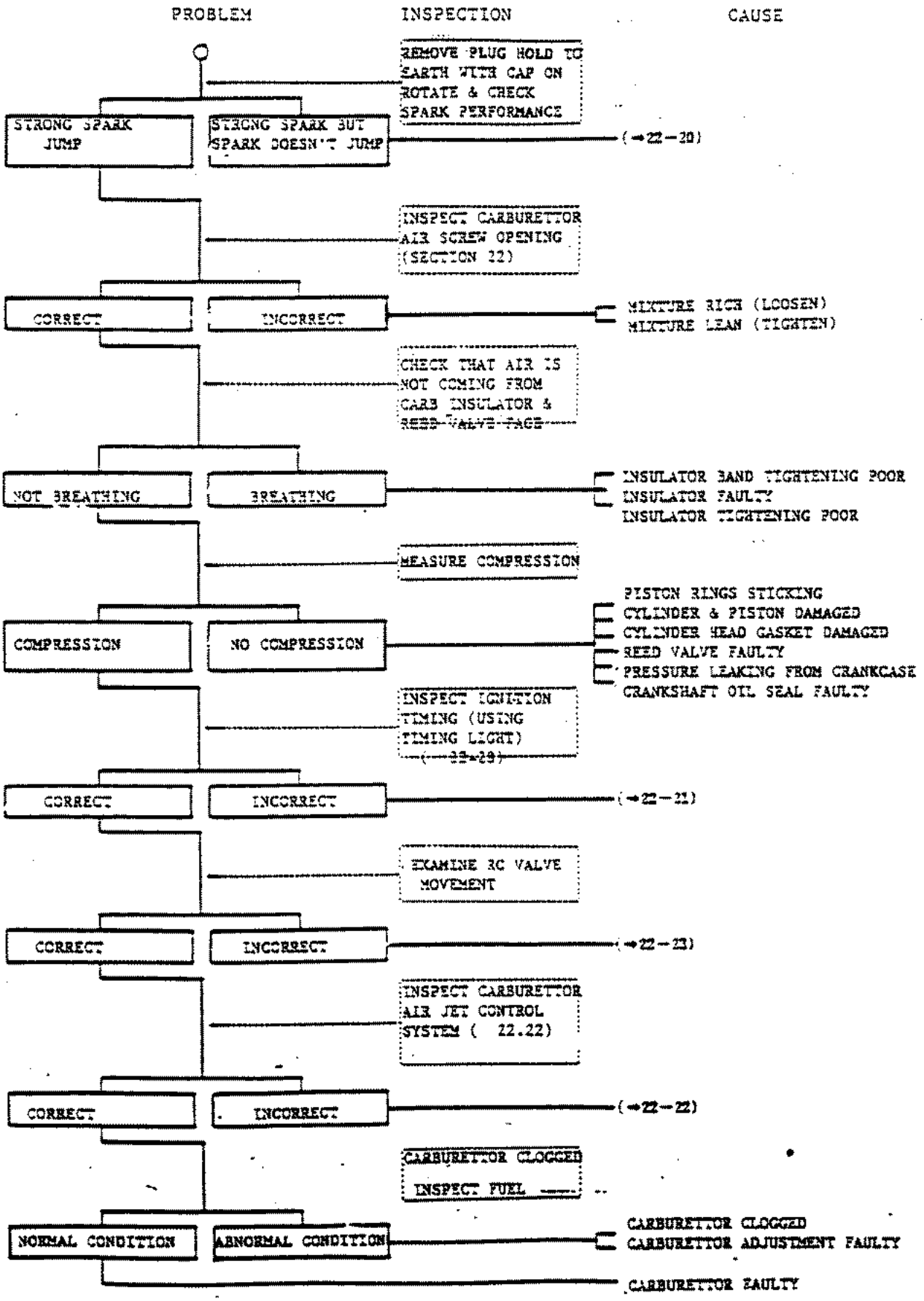

CLUTCH CABLE
MAIN SWITCH WIRE
CHOKE CABLE
L. HANDLE SWITCH WIRE
THROTTLE CABLE
FUSE BOX WIRE
METER WIRE
R. WINKER COUPLER
L. WINKER COUPLER
WIRE HARNESS
HEADLIGHT COUPLER
R. HANDLE SWITCH WIRE COUPLER
SERVO MOTOR WIRE COUPLER
MAIN SWITCH WIRE COUPLER
OIL PUMP SOLENOID WIRE COUPLER
FRAME EARTH
L. HANDLE SWITCH WIRE COUPLER


OIL PUMP
CONTROL CABLE
THROTTLE CABLE
AC GENERATOR WIRE
MAIN FUSE
PULSE GENERATOR
CLUTCH CABLE
NEUTRAL SWITCH
CODE
TRANSMISSION
BREATHER TUBE
REAR CUSHION
BREATHER TUBE

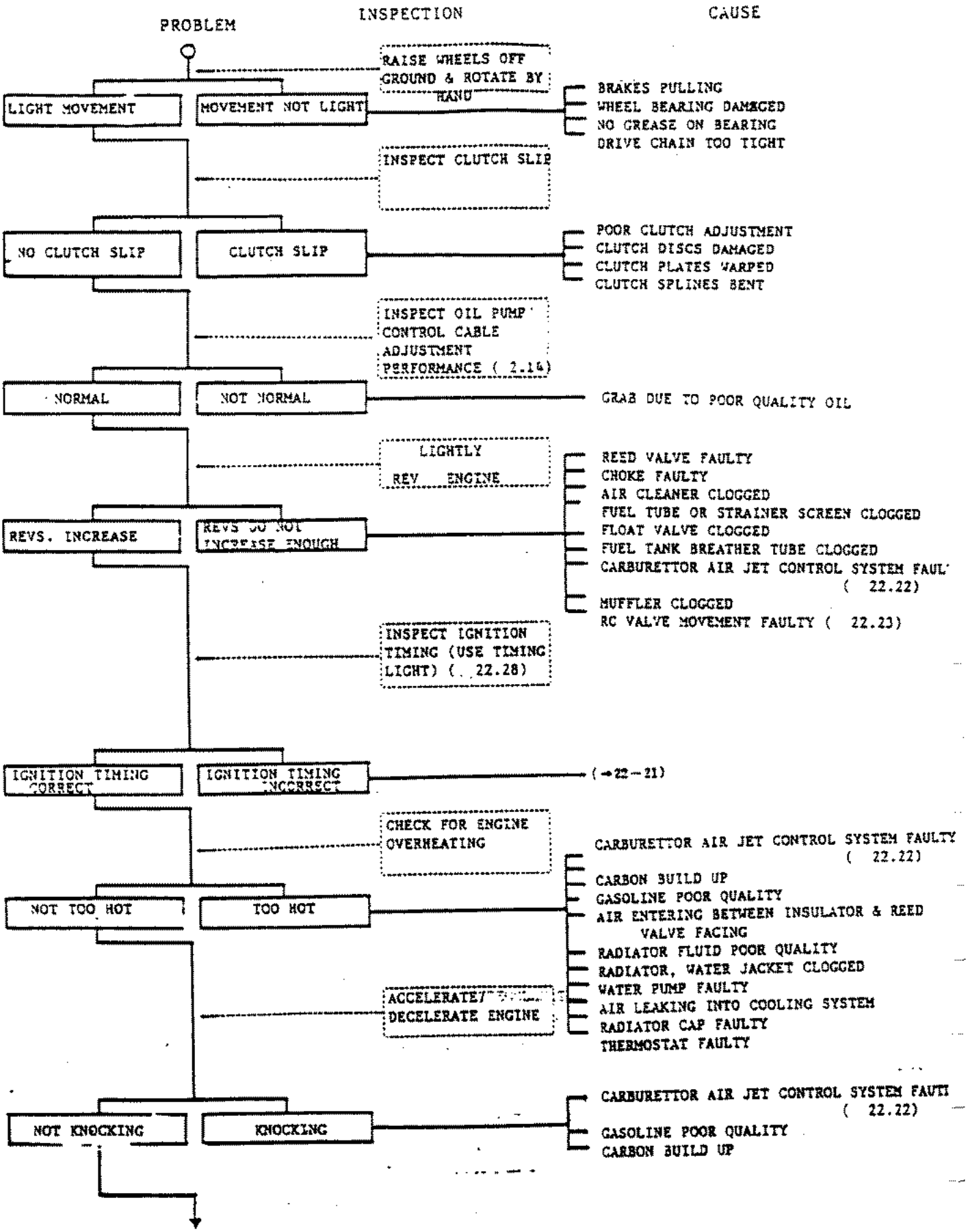

FUEL TANK
BREATHER TUBE
REAR CYLINDER
RC VALVE
CONTROL CABLE
OIL PUMP CONTROL
CABLE
BATTERY BOX
DRAIN TUBE
CARBURETTOR
DRAIN TUBE
FRONT CYLINDER
RC VALVE CONTROL CABLE

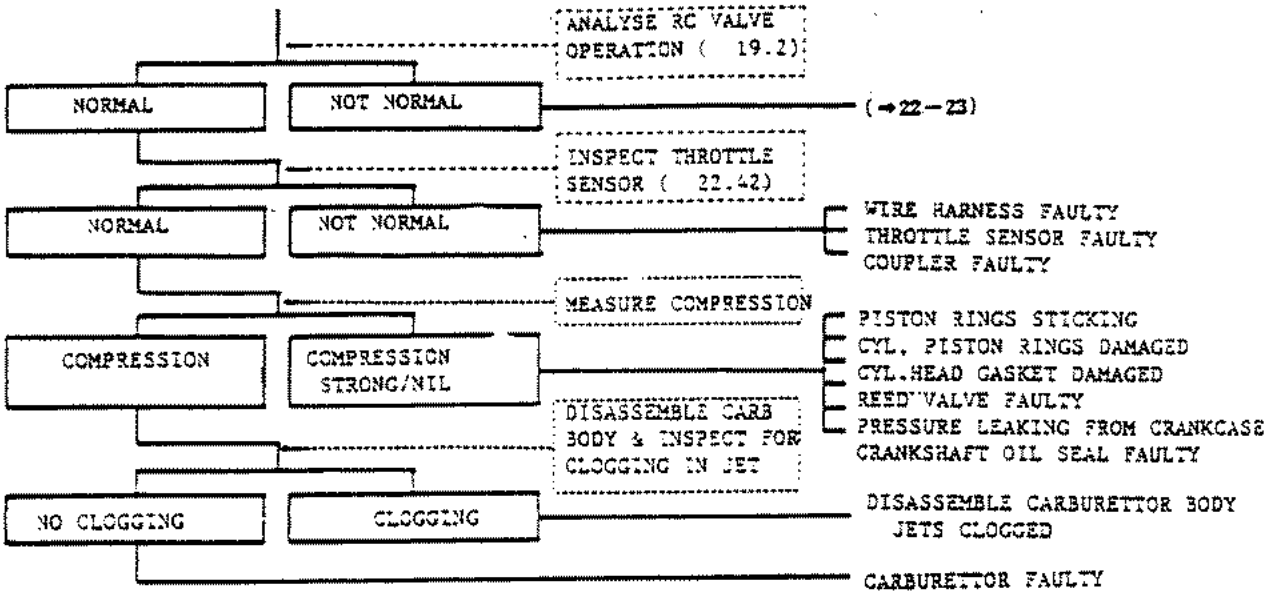

FUEL TANK BREATHER TUBE
CHOKE CABLE
OIL PATH TUBE
R. HANDLE SWITCH WIRE
MIAN SWITCH WIRE
FRONT BRAKE HOSE
OIL TUBE
CONTROL UNIT WIRE
WIRE HARNESS
RADIATOR
BREATHER TUBE
BRAKE/TAILLIGHT
WIRE
AC GENERATOR
WIRE
PULSE GENERATOR WIRE
SPEEDOMETER
CABLE
CLUTCH
CABLE


PROBLEM
INSPECTION
CAUSE
LOOSEN DRAIN SCREW & CHECK IF PETROL IS FLOWING TO CARBURETTOR
PETROL FLOWS
PETROL DOES NOT FLOW
FUEL TUBE/FILTER FROM TANK TO CARBURETTOR COLGGED
FLOAT VALVE CLOGGED
FUEL TANK BREATHER TUBE CLOGGED
REMOVE PLUG AND INSPECT SPARK
SPARK PLUG CLEAN
SPARK PLUG DIRTY
CARBURETTOR OVERFLOW
TOO MUCH CHOKE/FUEL INTAKE
AIR CLEANER DIRTY
CARBURETTOR AIR JET CONTROL SYSTEM CLOGGED
INSTALL PLUG TO CAP HOLD PLUG TO EARTH ROTATE CRANK & CHECK SPARK PERFORMANCE
STRONG SPARK JUMP
STRONG SPARK BUT DOES NOT JUMP
(→22—20)
MEASURE COMPRESSION
COMPRESSION
COMPRESSION STRONG OR NOT THERE
PISTON RINGS STICKING
REED VALVE FAULTY
CYL & PISTON RINGS DAMAGED
CYL/HEAD GASKET FAULTY
PRESSURE FLOWING FROM CRANKCASE
CRANKSHAFT OIL SEAL FAULTY
TRY TO START USING STARING PROCEDURE
NO INDICATION OF FIRING
INDICATION OF FIRING BUT NO FIRE
AIR SCREW MAINTENANCE FAULTY
AIR COMING FROM INSULATOR TO REED VALVE FACE
EVEN WITH CHOKE LEVER PULLED, BI STARTER VALVE DOESN'T FULLY OPEN
REMOVE PLUG, INSERT SMALL AMOUNT PETROL INTO CYL & TRY TO START
NO INDICATION OF FIRING
INDICATION OF FIRING
CARBURETTOR CLOGGED
CARBURETTOR FAULTY
IGNITION TIMING TOO ADVANCED

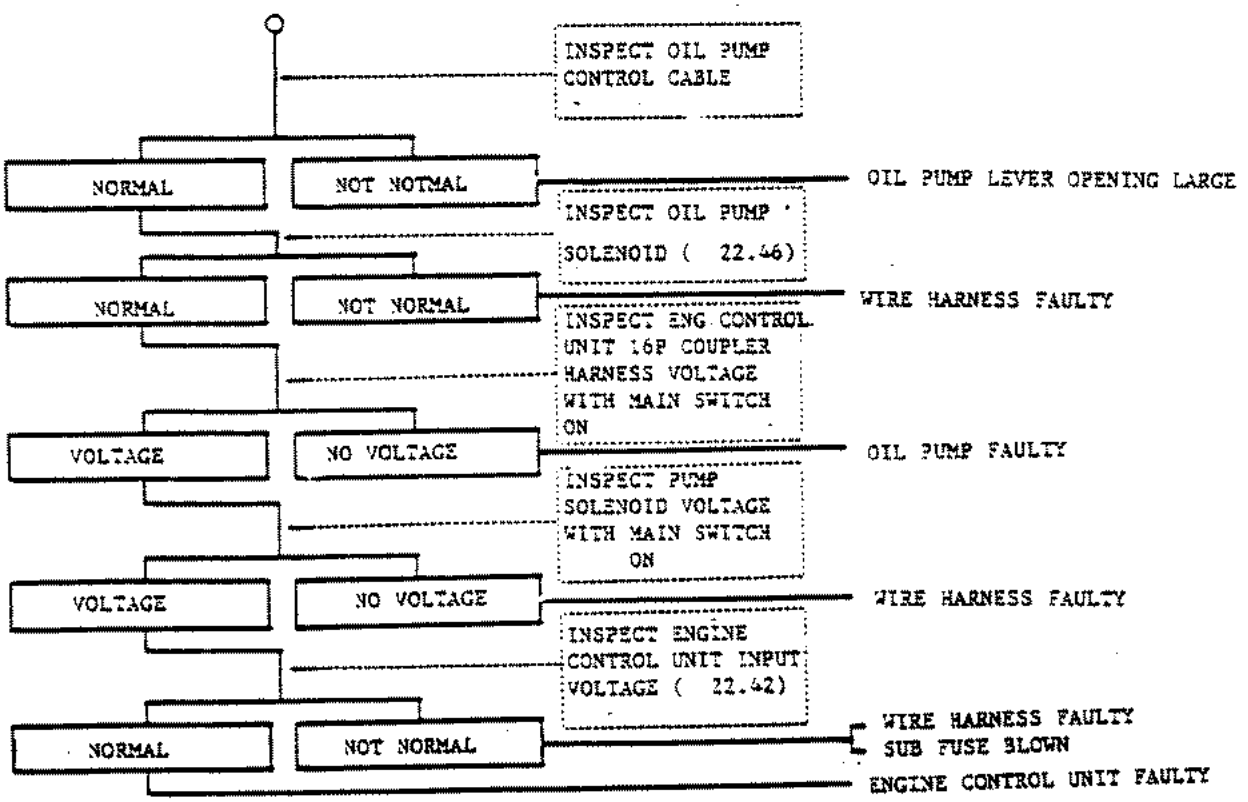

PROBLEM
INSPECTION
CAUSE
REMOVE PLUG HOLD TO EARTH WITH CAP ON ROTATE & CHECK SPARK PERFORMANCE
STRONG SPARK JUMP
STRONG SPARK BUT SPARK DOESN'T JUMP
(→22-20)
INSPECT CARBURETTOR AIR SCREW OPENING (SECTION 22)
CORRECT
INCORRECT
MIXTURE RICH (LOOSEN)
MIXTURE LEAN (TIGHTEN)
CHECK THAT AIR IS NOT COMING FROM CARB INSULATOR & REED VALVE FACE
NOT BREATHING
BREATHING
INSULATOR BAND TIGHTENING POOR
INSULATOR FAULTY
INSULATOR TIGHTENING POOR
MEASURE COMPRESSION
COMPRESSION
NO COMPRESSION
PISTON RINGS STICKING
CYLINDER & PISTON DAMAGED
CYLINDER HEAD GASKET DAMAGED
REED VALVE FAULTY
PRESSURE LEAKING FROM CRANKCASE
CRANKSHAFT OIL SEAL FAULTY
INSPECT IGNITION TIMING (USING TIMING LIGHT)
(→22-29)
CORRECT
INCORRECT
(→22-21)
EXAMINE RC VALVE MOVEMENT
CORRECT
INCORRECT
(→22-23)
INSPECT CARBURETTOR AIR JET CONTROL SYSTEM (22.22)
CORRECT
INCORRECT
(→22-22)
CARBURETTOR CLOGGED
INSPECT FUEL
NORMAL CONDITION
ABNORMAL CONDITION
CARBURETTOR CLOGGED
CARBURETTOR ADJUSTMENT FAULTY
CARBURETTOR FAULTY

POOR ADJUSTMENT TO ENGINE – NO POWER





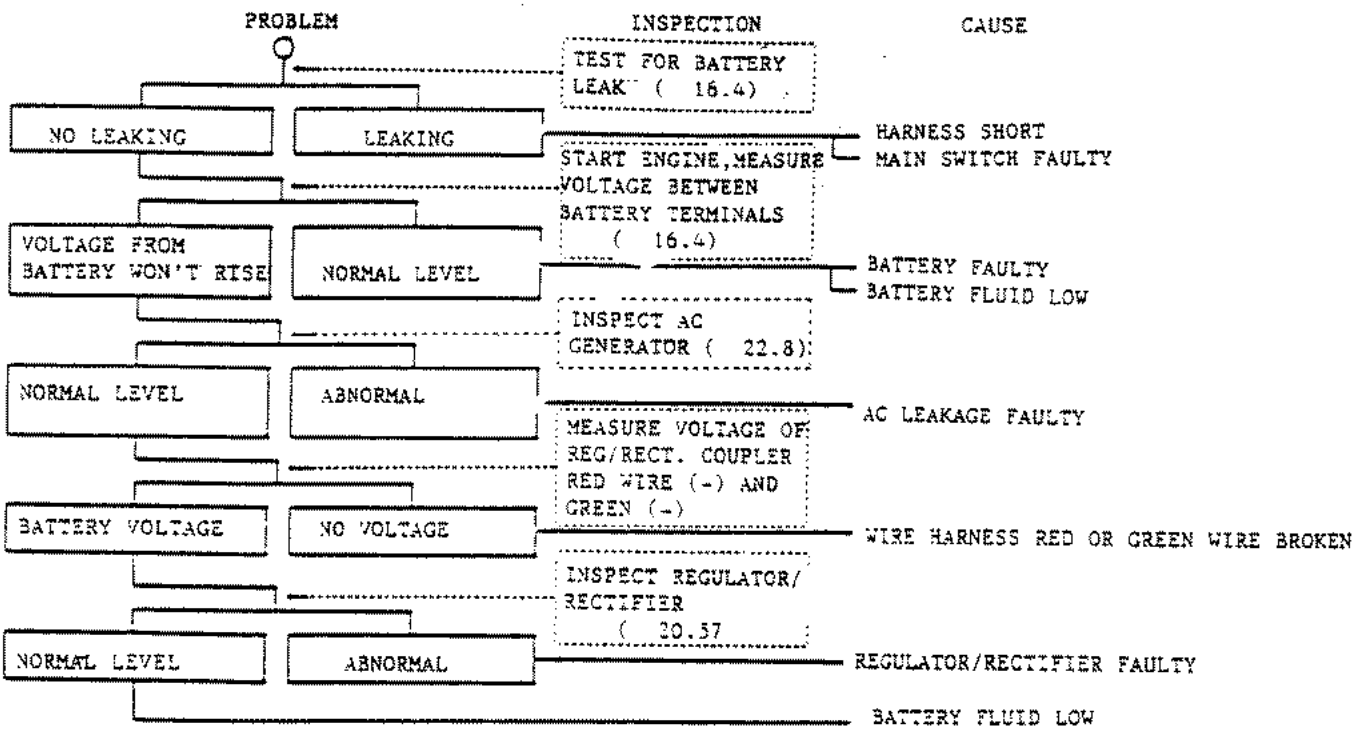
AT LOW REVS, LOTS OF EXHAUST NOISE



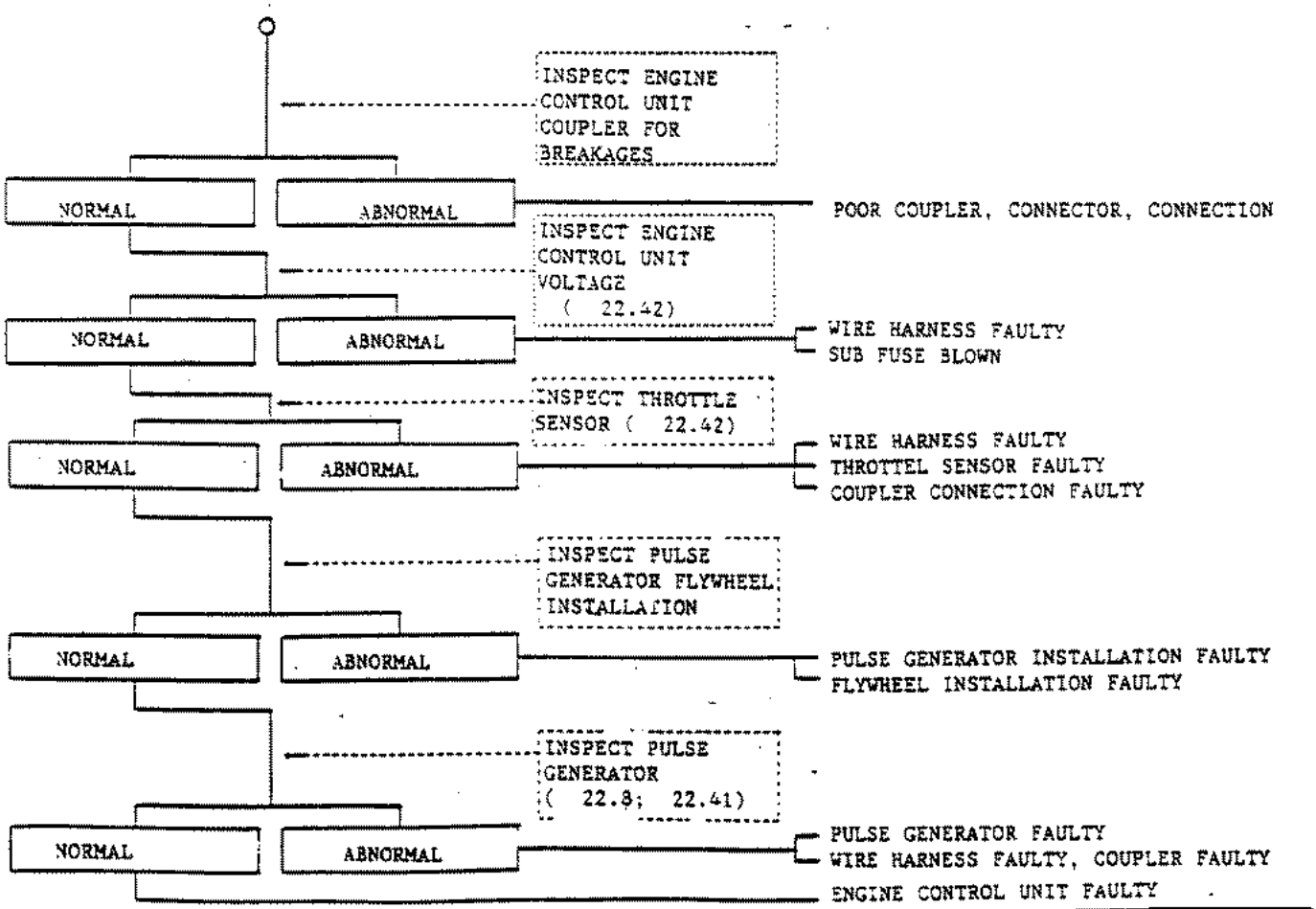
NO SPARK FROM SPRAK PLUG
If there is no spark, conduct spark test on ignition coil. Measure the ignition coils primary voltage. If there is difficulty with the coil but still normal spark, the ignition coil has been faulty from beginning

	PERFORMANCE PROBLEM	CHECK THE FOLLOWING. POSSIBLE CAUSES FROM 1.
	PEAK VOLTAGE IS LOW	1. USE TESTER TO CHECK FOR LOW INTERNAL RESISTANCE 2. TESTING SAMPLING TIME CONSEQUENCES 3. IGNITION WIRING CUT, POOR CONTACT 4. IGNITION COIL FAULTY 5. ENGINE CONTROL UNIT FAULTY (1-4 If no abnormal conditions, no spark from plugs)
	NO PEAK VOLTAGE PEAK VOLTAGE USUALLY NOT THERE	1. ADAPTOR MISCONNECTED 2. FUSE,MAIN SWITCH,KILL SWITCH FAULTY 3. ENGINE CONTROL UNIT COUPLER CONNECTION POOR 4. NO VOLTAGE IN ENGINE CONTROL UNIT 16P COUPLER BLACK/WHITE WIRES (22.42) 5. ENGINE CONTROL UNIT 4P COUPLER WIRE BROKEN, POORLY CONNECTED 6. CRANKING SPEED TOO LOW (KICK POWER TOO STRONG) 7. PULSE GENERATOR POOR QUALITY (MEASURE PEAK VOLTAGE) 8. PEAK VOLTAGE ADAPTOR FAULTY 9. ENGINE CONTROL UNIT FAULTY (1-8 If no abnormal condition, no spark from plugs)
	PEAK VOLTAGE NORMAL BUT NO SPARK FROM PLUGS	1. SPARK PLUGS POOR QUALITY, OR IGNITION COIL SECONDARY CURRENT LEAK 2. IGNITION COIL FAULTY
	PEAK VOLTAGE LOW	1. USE TESTER TO CHECK FOR LOW INTERNAL RESISTANCE 2. CRANKING SPEED TOO LOW (KICK POWER TOO STRONG) 3. TESTING SAMPLING TIME CONSEQUENCES (MEASURE REVOLUTIONS - NORMAL IF VALVE ABOVE STANDARD) 4. PULSE GENERATOR FAULTY (1-3 No abnormal conditions
	NO PEAK VOLTAGE OR USUALLY NOT THERE	1. PEAK VOLTAGE ADAPTOR FAULTY 2. PULSE GENERATOR FAULTY

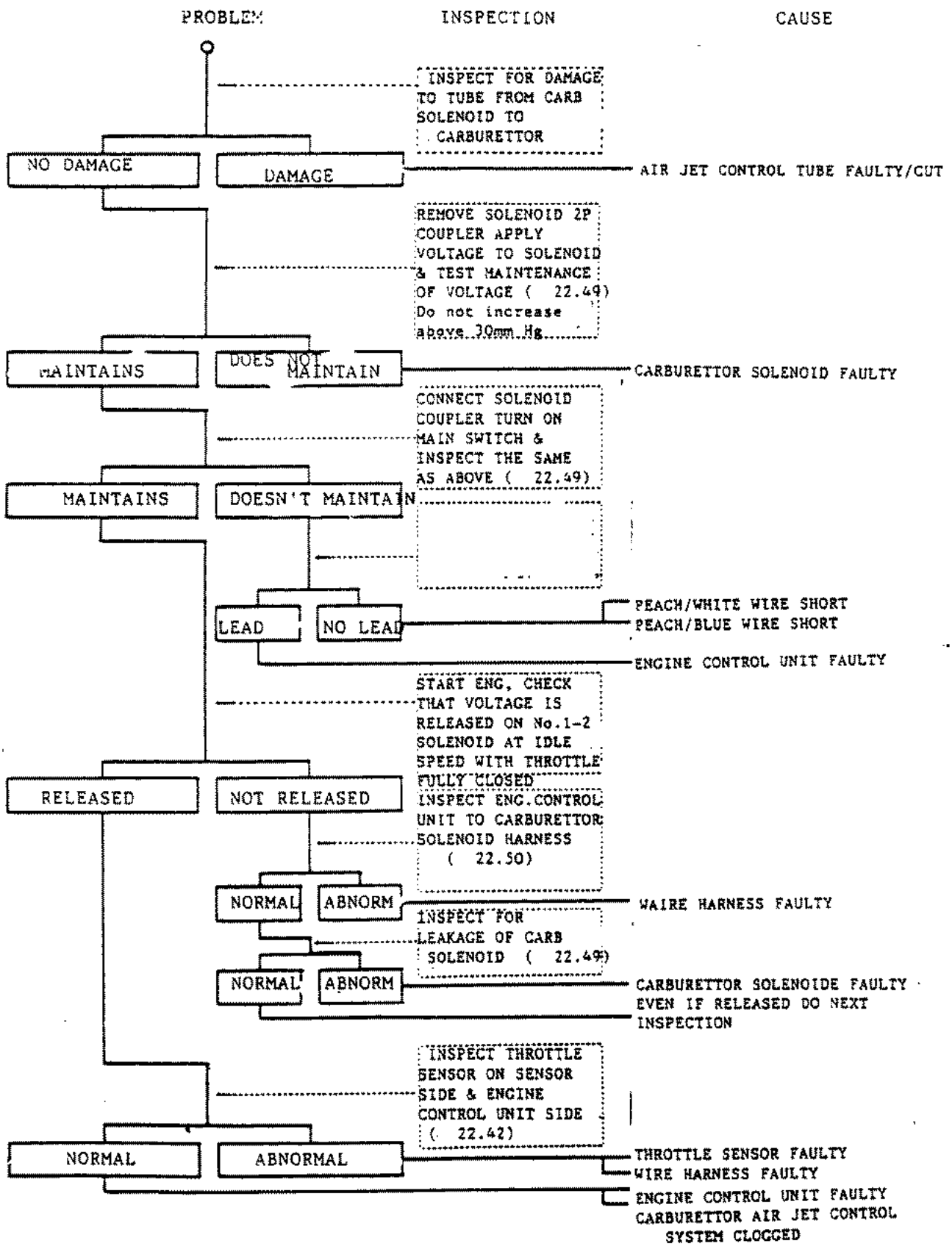
POOR CHARGING



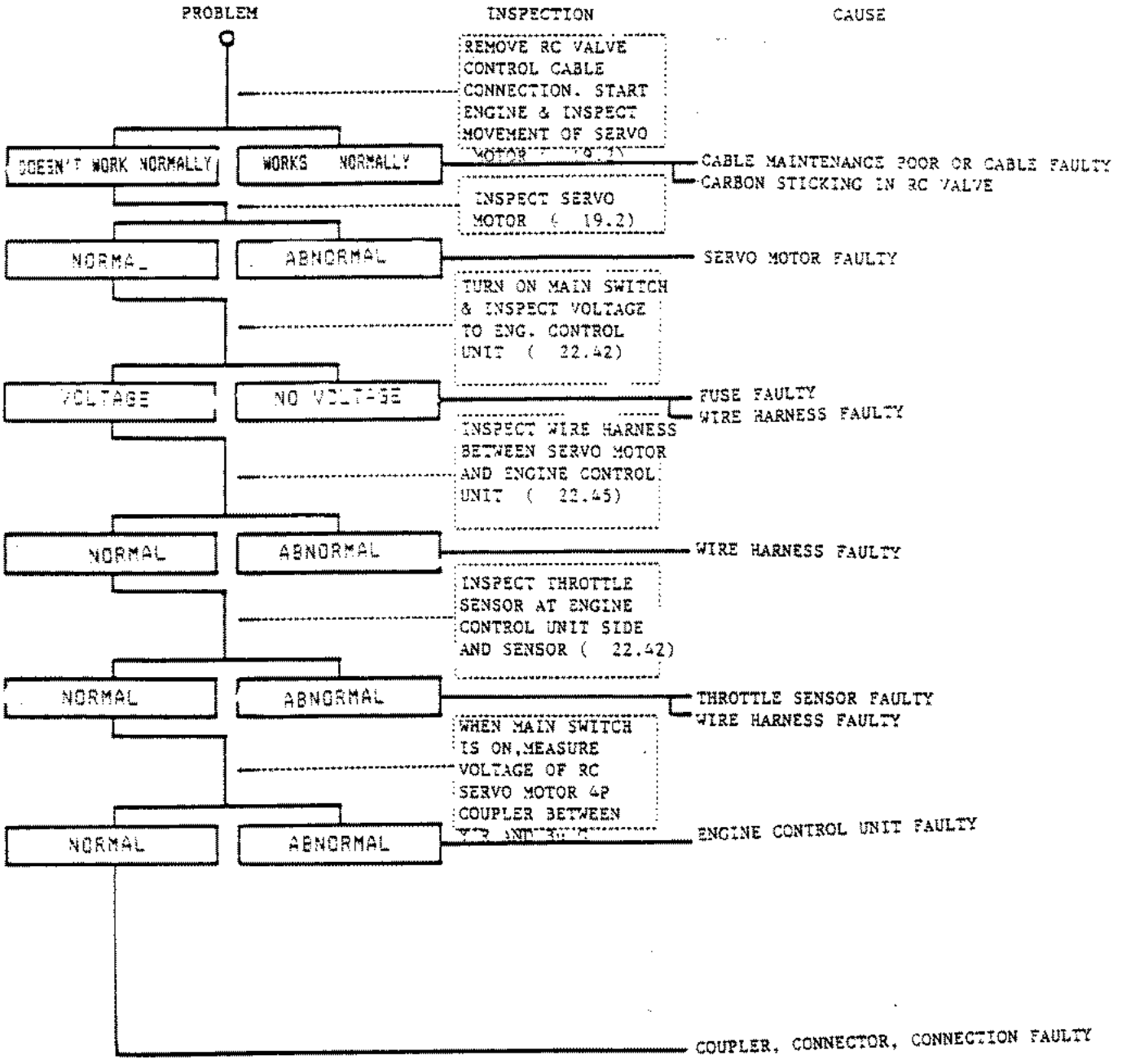
IGNITION TIMING POOR



CARBURETTOR AIR JET CONTROL SYSTEM



RC VALVE MOVEMENT POOR

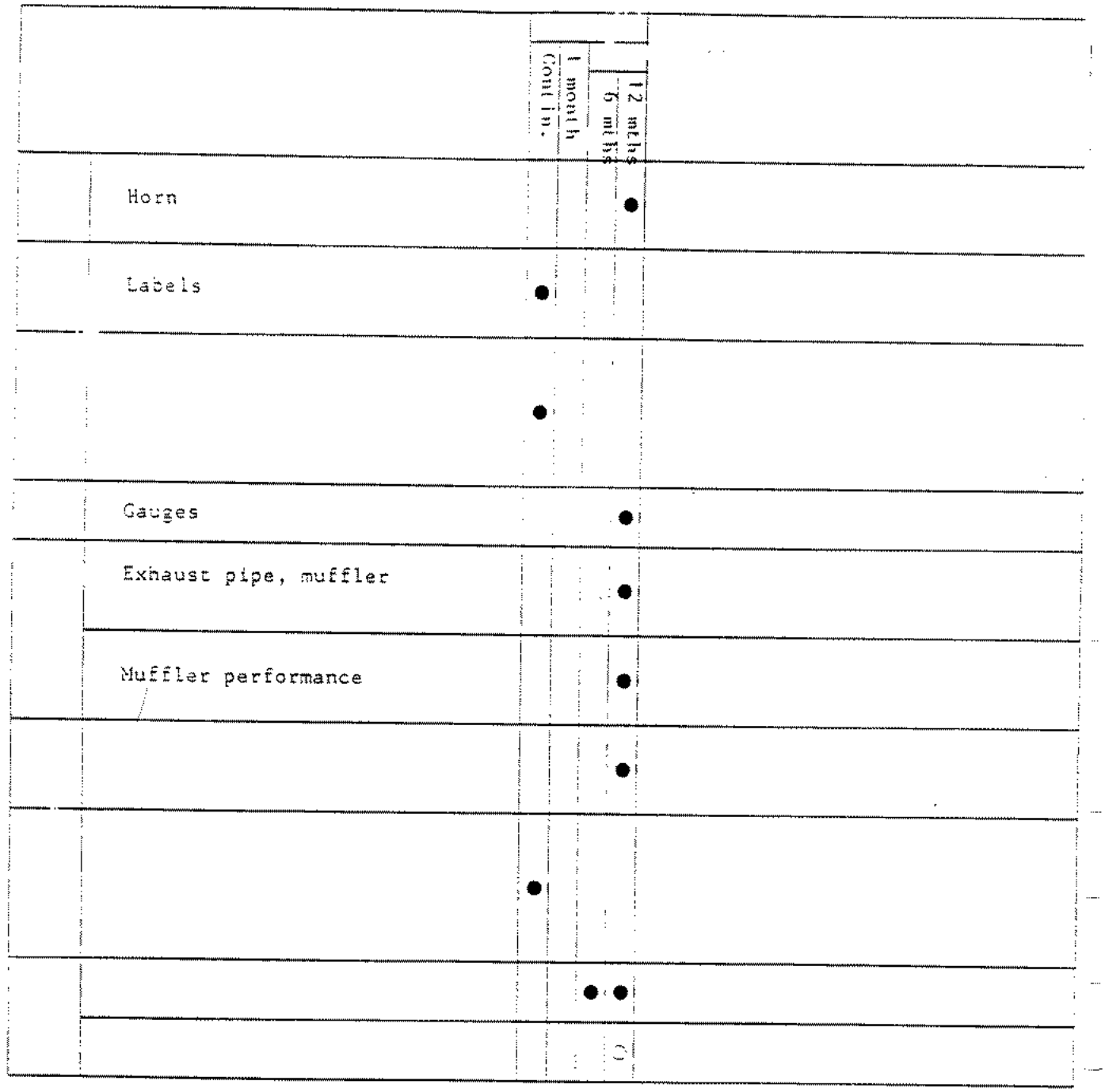


MAINTENANCE SCHEDULE

		Cont inuous	1 Mths	6 Mths	12 Mths	
STEERING	Play				●	
	Damage				●	
	Left, Right turning				●	
Front Forks	Damage			●	●	
	Fork spindle installation			●	●	Tighten steering stem
	Fork spindle movement				●	Tighten steering stem
Brake Pedal	Play and performance when pushed			●	●	Play 10-20mm Pedal 20-30mm Lever
	Noise	●				
	Brake noise		○	●	●	
	Leakage, damage, installation		○	●	●	
	Brake hose replacement					Every 4 years
Fuel Tank	Fluid capacity	●		●	●	Fluid level Front between top & bottom mark Rear between top & bottom amrk
M/cyl, Wheel cyl, Disc caliper	Damage, wear				●	
	Master cylinder, cylinder cap, dust seal, disc caliper replacement					☆ Every two years
Brake Disc/Pads	Disc to pad clearance				●	
	Pad wear			○	●	Indicator
	Disc wear and damage				●	Standard : F - 4.0mm R -5.0mm Ser.limit : F - 3.5mm R -4.0mm
	Brake fluid replacement					Every year

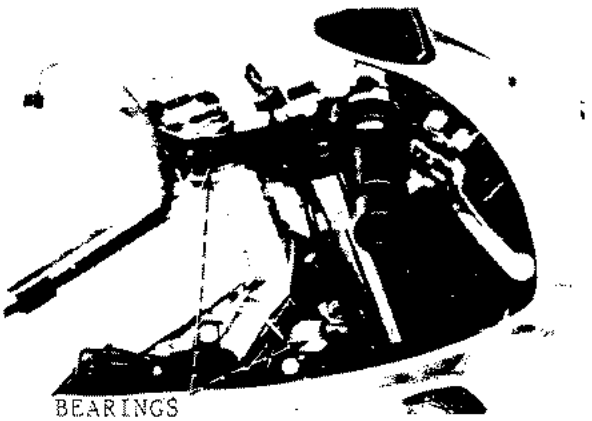
			1	6	12	
WHEEL	Tire Pressures			●	●	Frt / Rear 1 rider: 2.25 / 2.25 2 riders: 2.25 / 2.50 Tire type: 110/70R17 54H / 150/60R18 67H
	Tire wear and damage			●	●	
	Tire tread depth			●	●	Min - Frt 0.8mm Rear 0.8mm
	Foreign articles stuck in tires			●	●	
	Wheel nut, wheel bolt loosening			●	●	Tighten axle nut, axle holder front axle holder torque 1.8-2.5 Kg.m Fro axle bolt torque 5.5-6.5 Kg.m Rr axle nut torque 8.5-10.5 Kg.m
	Rim, side rim, wheel disc damage			C	●	Wheel rim runout, warpage Front 2.0mm axial 2.0mm radial Rear 2.0mm axial 2.0mm radial
	Front wheel bearings				●	
	Rear wheel bearing				●	
Swingarm	Damage				●	Tighten cushion, spring
Swingarm	Arm damage				●	
Shock Mb	Fluid leakage, damage				●	
Shock Mb	Busnese				●	
Clutch	Lever play			●	●	Play - lever 10-20mm
Clutch	Use		C	●	●	
Trans	Fluid leakage, oil capacity			●	●	Oil capacity - between upper and lower marks
Trans	Gear movement				●	
Oil	Transmission oil replacement					Every two years

		1 Month	6 Mths	12 mths	
		Break in.			
CHAIN AND STROKER	Chain slack	○	●	●	Use side stand and measure play in middle 15-25mm
	Sprocket installation & damage			●	
IGN	Ignition plug performance		●	●	Plug gap 0.7-0.8mm
	Ignition plug replacement				5,000km (every)
BAT WIRE	Terminal connections			●	
	Connections & wire damage			●	
BODY	Twisting, foreign sounds		●	●	
	Low/High speed performance	○	●	●	Idle speed 1200±100rpm
	Exhaust gas		●	●	
	Air cleaner element		●	●	
FUEL SYS	Oil leakage and capacity		●	●	Oil capacity Check that pilot lamp does not shine
	Oil leakage		●	●	
	Oil capacity	●			
	Oil cleaner clogging			●	
	Oil pump performance	○		○	
	Fuel leakage		●	●	
	Carburettor link			●	
	Throttle cable & choke cable			●	
	Fuel filter clogging			●	
	Fuel capacity	●			
	Fuel hose replacement				Every 4 years
COOLING SYS	Water capacity	●	●	●	Between upper and lower levels in reserve tank
	Water leakage	●		●	
	Radiator cap			●	Pressure 1.1-1.4 K/cm^2
	Cooling agnet replacement				Every two years
			●	●	
		●			


Cont'inu.
1 month
6 mths
12 mths
Horn
Labels
Gauges
Exhaust pipe, muffler
Muffler performance

STEERING SYSTEM

Steering fork:
Look at front wheel, move frt forks up/down & Left/right & inspect for smooth movement
If there is movement up/down, inspect steering head bearings & replace if abnormal(12-17)
If there is movement left/right inspect front fork installation
Recheck wiring & cable routings.

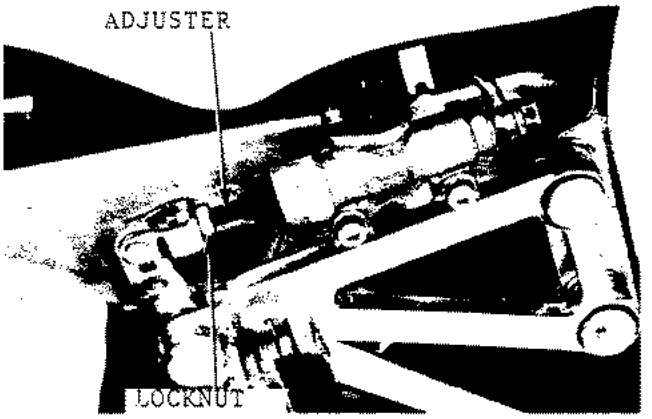


BRAKE SYSTEM

Brake Pedal
Play
Operate front brake level & rear brake pedal & inspect for brake noise & whether air has entered system or not.
If air has entered then bleed (14-3)

Pedal Height Adjustment

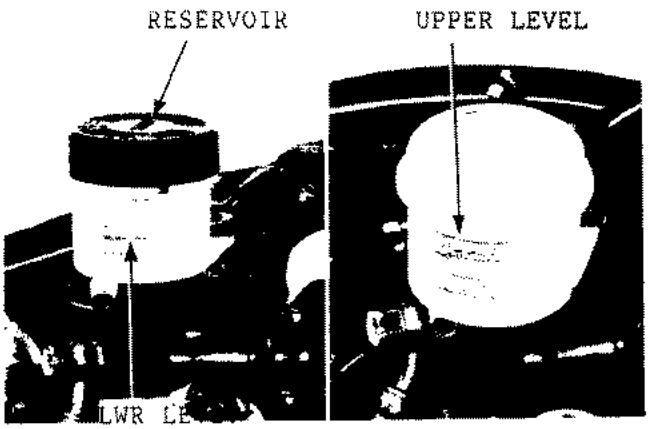
Loosen rear master cylinder push rod lock nut, turn oush rod and the pedal height can be adjusted. After adjusting check rear stop light switch operation timing & adjust if necessary (2-17)



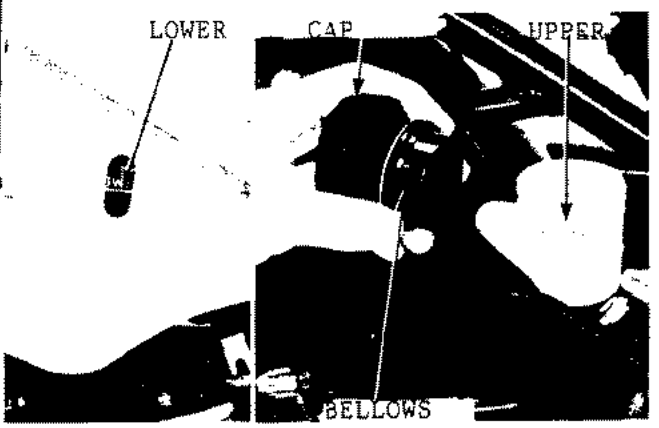
RESERVOIR TANK

Fluid Capacity

Inspect brake fluid capacity
If below lower mark, remove reservior cover, set plate & diaphragm & refill front with DOT 4 & rear with DOT3 fluid to upper level
Inspect for brake pressure & leakage



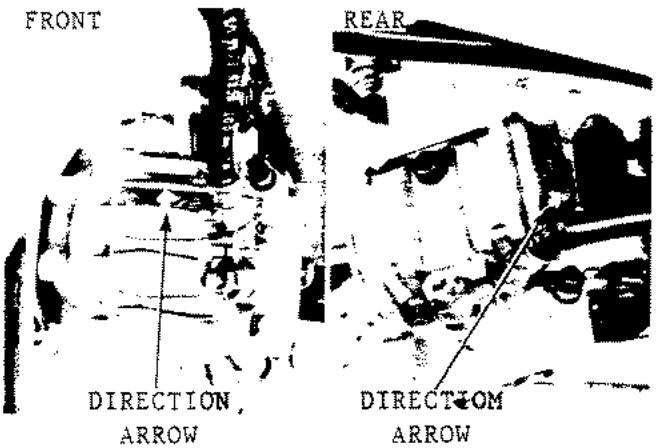
* Ensure rubbish does not enter brake fluid when filling
* Do not fill reservoir with any item that could contaminate brake fluid
* Rear brake fluid inspection can be done without removing side cover



BRAKE DISC, PADS

Pad Wear

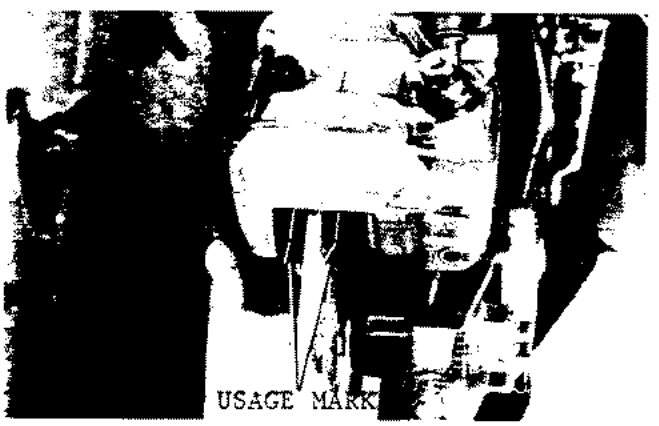
Inspect pad wear using the marks and direction arrows.



Replace if worn to the usage mark (14-4)

* Replace brake pads as a set

Inspect brake disc face for damage & wear (14-7)



Brake Fluid Replacement

Replace brake fluid once a year (14-3)

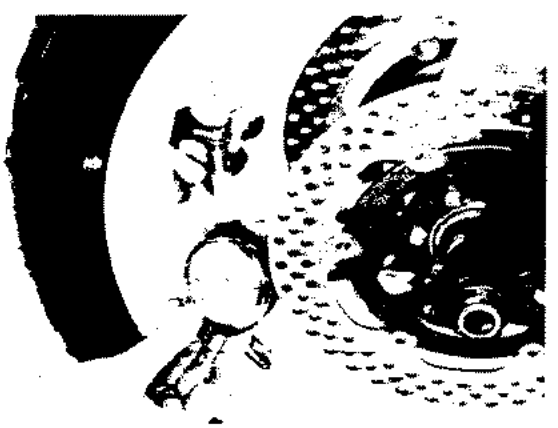
MOVEMENT SYSTEM

Wheels

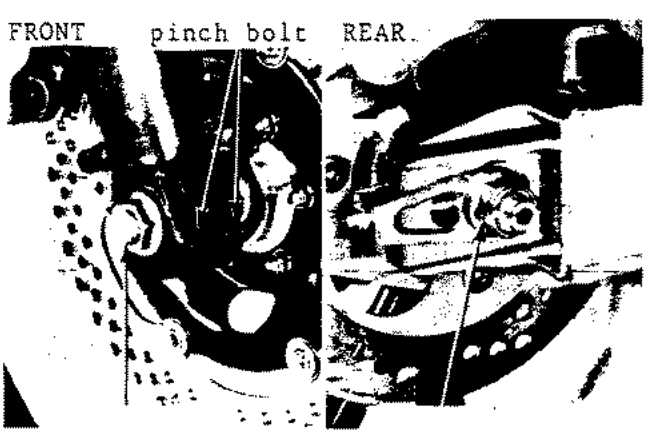
Tire pressures

Stu pressures : kg/cm²

		FRT	REAR
1 rider		2.25	2.25
		2.25	2.25
2 riders		2.25	2.50
Tire size		100/80-17 52H	130 70-18 63H



Inspect tire pressures with wheels on the ground



Wheel nut & wheel bolt loosening
Inspect frt axle bolt & axle pinch bolt for loosening
Inspect rear axle nut for loosening
If loose tighten to torques below:

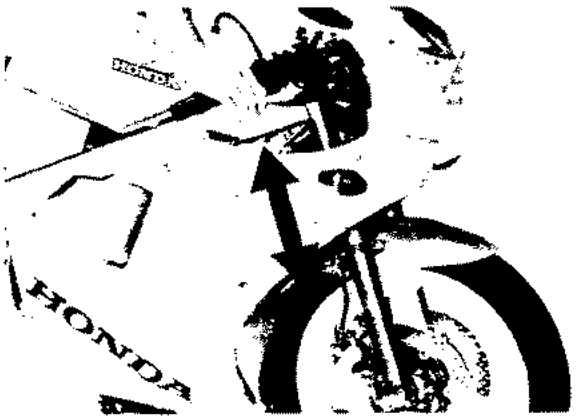
Frt axle bolt	5.5-6.5Kg-m
Axle pinch bolt	1.5-2.0Kg-m
Rear axle nut	8.0-10.0Kg-m

Inspect frt/rear wheels for warpage and damage (12-6; 13-3)

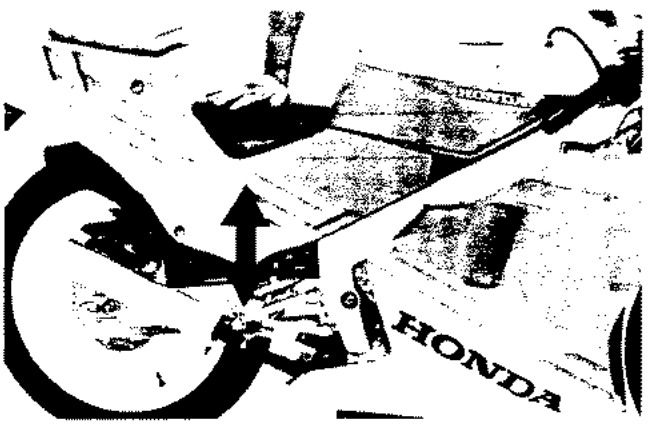
SUSPENSION

Shock Absorber
Oil leakage, damage

Apply front brake and inspect front suspension by moving it up & down
Inspect for front fork oil leakage, damage and loosening



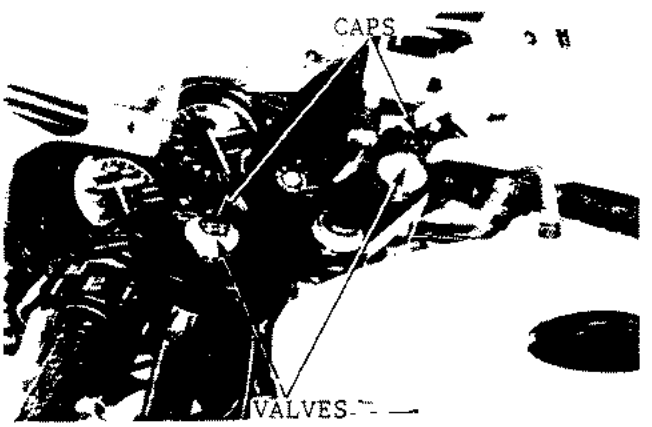
Inspect rear cushion by moving it up & down
Inspect for rear cushion oil leakage, damage and loosening
Hold rear wheel and push rear fork from left to right, and inspect rear fork pivot bearing condition. If there is movement then replace bearing (7-13-14)



Front Fork Air Pressure

Do not move front wheel
Remove valve cap
Measure air pressure using standard air pressure gauge (std pressure 0-0.4Kg-cm^2)
When adjusting air pressures, insert air using a hand pump and adjust so that left and right pressures are even

* When adjusting air pressure do not insert air all at one time
* The air mixes with the oil so pressure will drop



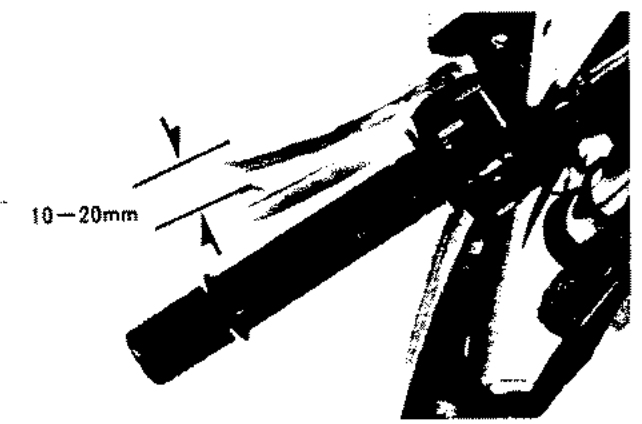
GEARBOX SYSTEM

Clutch

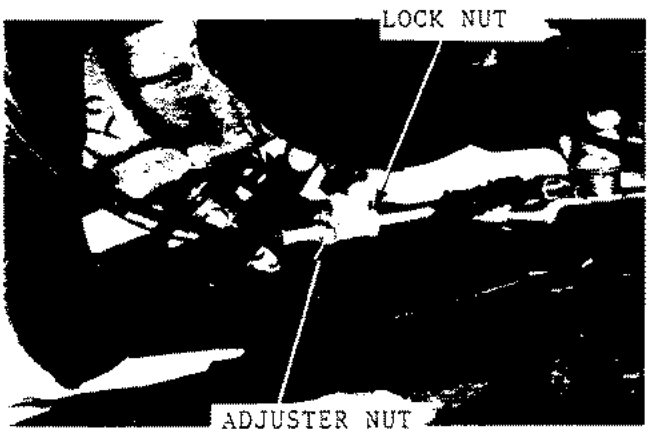
Lever Play

Inspect clutch lever play

Play: 10-20mm

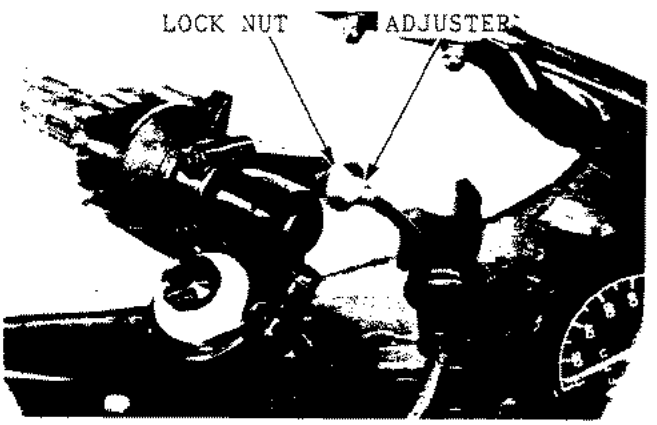


For the main adjustment, remove lower fairing (15-3), loosen lock nut and turn adjuster nut.



For final adjustment, loosen handle lock nut and turn adjuster

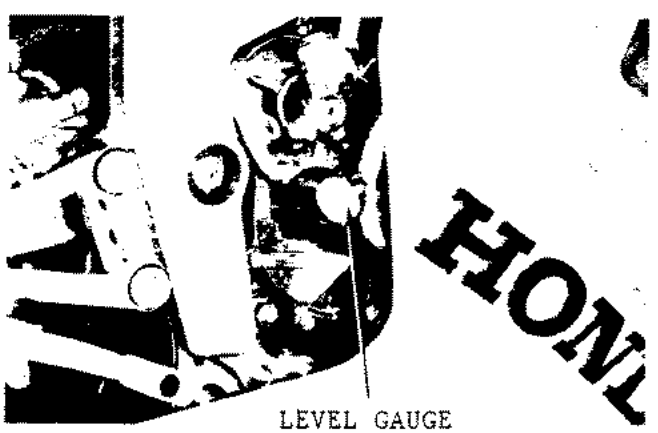
* Do not increase adjuster thread more than 8mm



TRANSMISSION

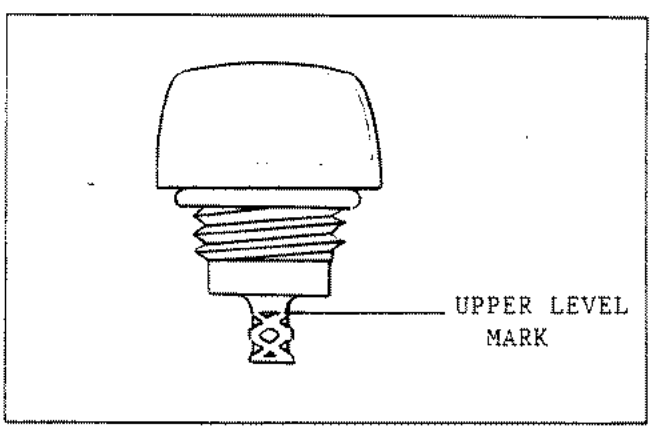
Oil Leakage & Oil Capacity

* Inpsect level, with motorcycle on level ground
If below upper level mark, fill with recommended oil to upper level mark

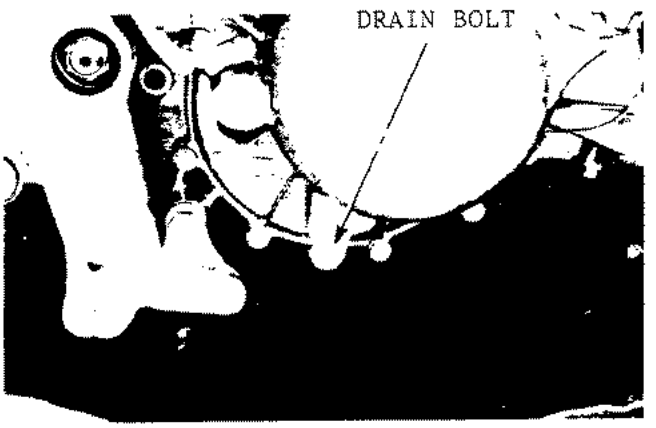


Recommended Transmission Oil

Honda standard oil Ultra U (4 cycle motorcycle SAE10W-30) or AP SE 10W-30 engine oil)



TRANSMISSION OIL REPLACEMENT



* Run engine & drain while still warm

Remove R lower fairing (15-3)
Remove oil level gauge
Remove oil drain bolt & drain all oil
Clean drain bolt & reinstall

Torque: 3.0-4.0Kg-m

* Replace sealing washer if damaged

Insert recommended oil

Transmission capacity
Oil Replacement 0.55 L
Total Replacment 0.9 L

Oil replacement time is every 2 years

After confirming no leakages, inspect oil level and reinstall R. lower fairing (15-5)

CHAIN & SPROCKETS

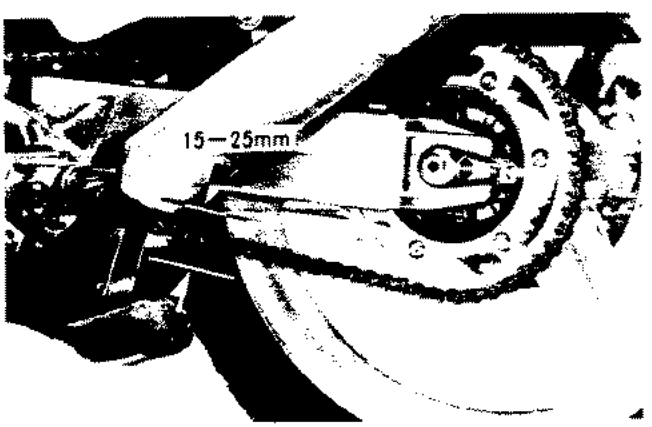
* Always inspect/adjust drive chain with engine stopped

If there is O-ring damage, chain damage, chain roller wear, or pin loosening, then replace chain

Drive Chain Slack

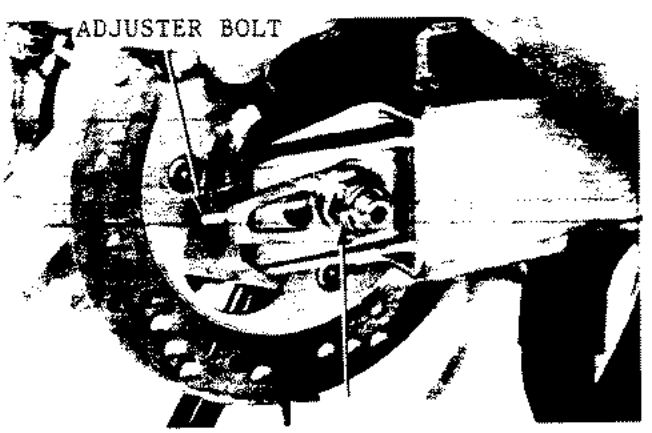
Stop engine
Place gears in nuetral, pull bike up on side stand and check drive chain movement or sprockets

Maximum Play 15-25mm (on side stand)



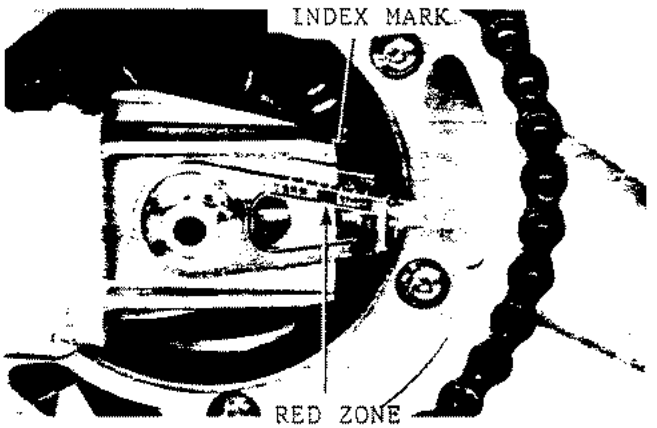
Adjust by hand as below

Loosen rear axle nut
Turn adjuster bolt to adjust



After adjusting, check adjuster plate index mark is in the same position with the index mark on the rear fork on both sides

* If the rear fork final groove meets the red portion of the indicator label then replace the drive chain
* When replacing drive chain, inspect chain slider also and if necessary replace

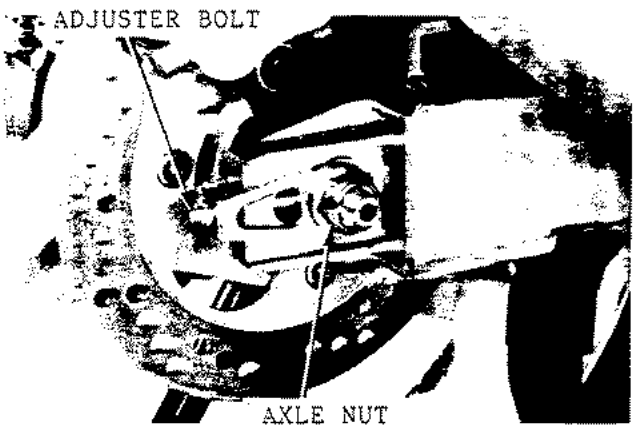


Tighten axle nut

Torque: 8.0-10.0 Kg-m

Tighten adjuster bolt
Apply SAE #80-90 gear oil to drive chain

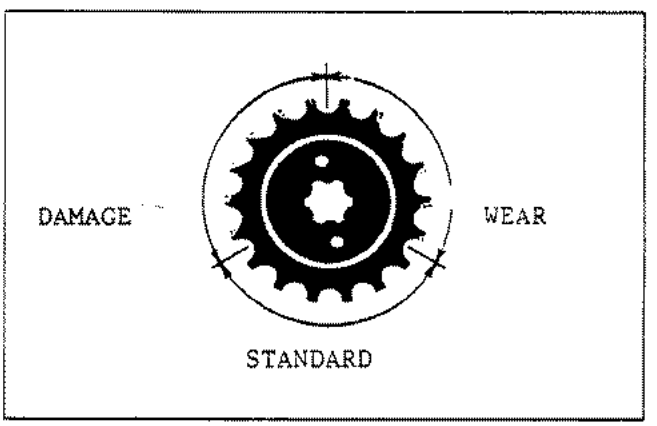
* Do not use steam cleaner, high pressure cleaner, or oil cleaner on chain as it will cause damage
* Do not use penetration oils that will cause damage to O-ring



Sprocket Installation & Damage

Inspect drive and driven sprocket for damage and wear, if necessary then replace

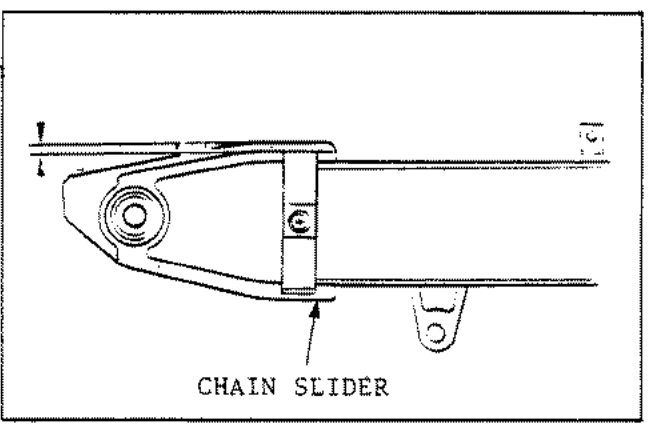
* Always replace drive chain and sprockets as a set.



Chain Slider Damager

Inspect chain slider and replace if worn

* If the chain and rear fork hit, this will cause wear and damage to rear fork and chain, therefore requiring replacment

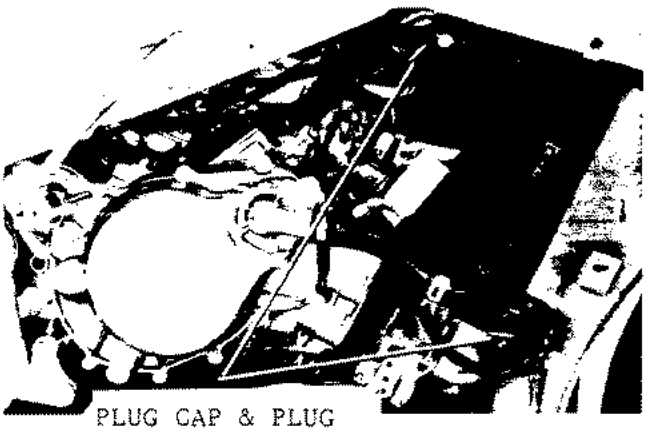


ELECTRICAL SYSTEM

Ignition System

Remove lower fairing (15-3)
Remove plug cap

* The front cylinder spark plug can be removed with removing the R. lower fairing


PLUG CAP & PLUG

Ignition Plug Performance

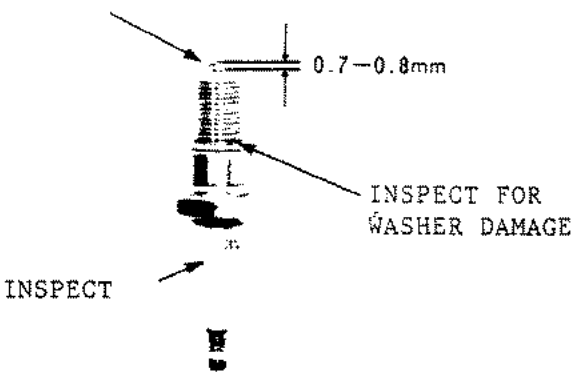
Remove spark plug
Inspect plug for wear and build ups
If there are any build-ups, clean with plug cleaner or a wire brush

Recommended Plugs:

NGK =B8ECS, B9ECS, B10ECS, B8ES, B9ES

ND = W24ES-C, W27ES-C, W31ES-C, W24ES-U
W27ES-U

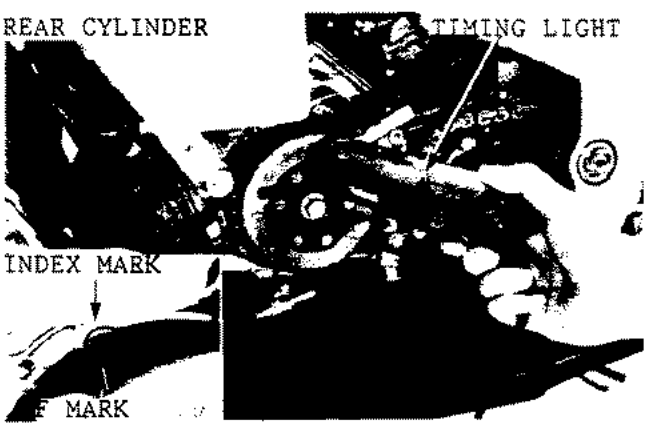
* When installing plug, after inserting it tighten with a plug wrench



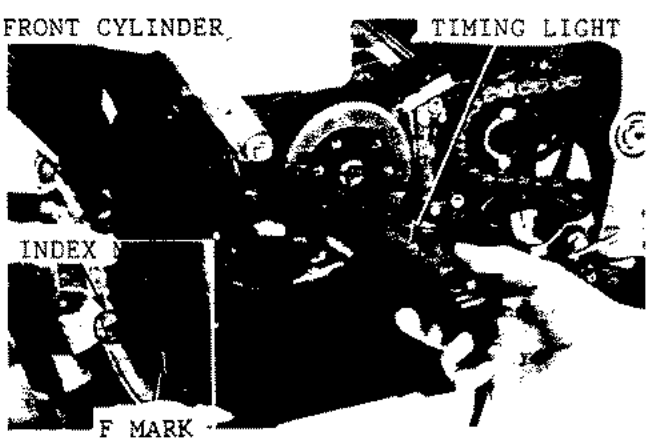
Torque : 1.5-2.0 Kg-m

Ignition Timing

* This machine uses CDI ignition system so adjustment of ignition timing is not necessary
If ignition timing is worng inspect CDI unit and pulse generator, if poor then replace



Remove lower fairing (15-3)
Warm engine
Remover L. crankcase cover (10-2)
Connect timing light cord to rear cylinder high tension cord. Start engine, idle at 1200± 100 rpm, and if F mark meets index mark, then rear cylinder timing is okay.
In the same way, connect timing light cord to front cylinder high tension cord
Idle at 1200± 100rpm and if F mark meets the index mark then front cylinder timing is okay
Increase revolutions and if the F mark exceeds the timing directions the it is okay



ENGINE

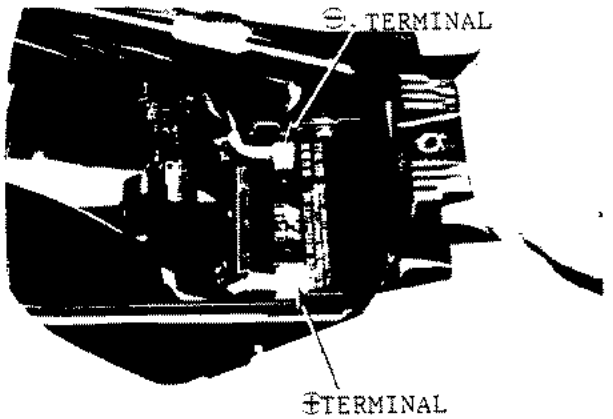
Low Speed/high Speed Performance

* Adjust idling once the engine is warm
* Synchronize carbs after overhauling them

Start engine
Place gears in neutral. Turn throttle stop screw to adjust idling speed.

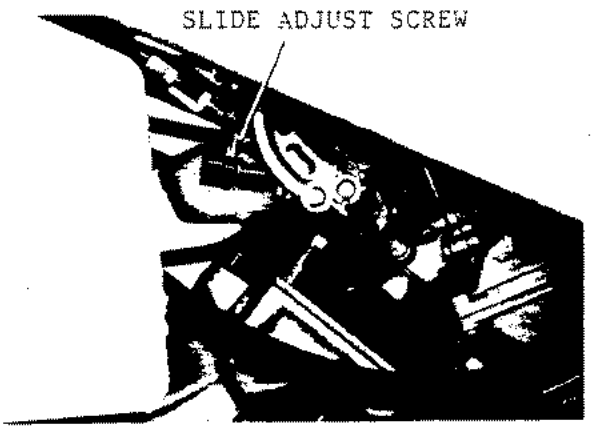
Idle Speed: 1200± 100 rpm

If idling speed is imbalanced or there is a snapping then synchronize carbs
(4-16)



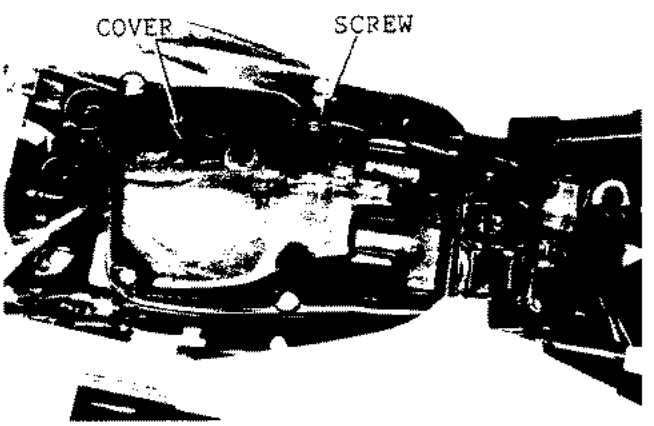
Air Cleaner Element

Remove seat tna fuel tank
Remove screws and air cleaner case
Remove element from air cleaner case

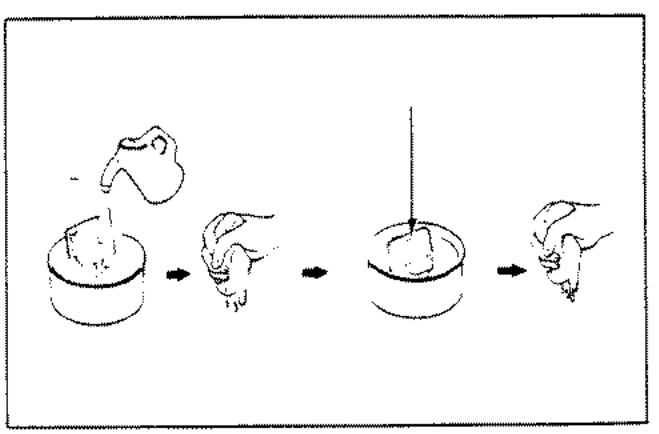


Inspect element for dirt and wear
If dirty then clean it. If worn then replace it
Wash eleement with oil cleaner in a safe way.

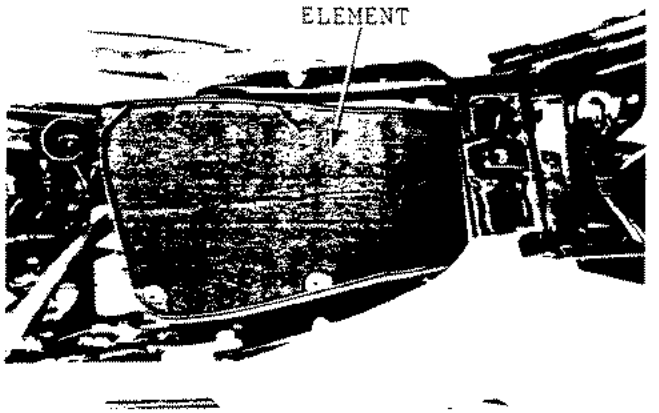
* Do not clean element with petrol, solvnets or alkalis
* If element is installed squashed then it will become easily worn thus needing replacement



After completing this, then apply Ultra U (4 cylce motorcycle SAE 10W-30 or AP SE 10W-30 engine oil spread over element evenly and reinstall



Install element into air cleaner case



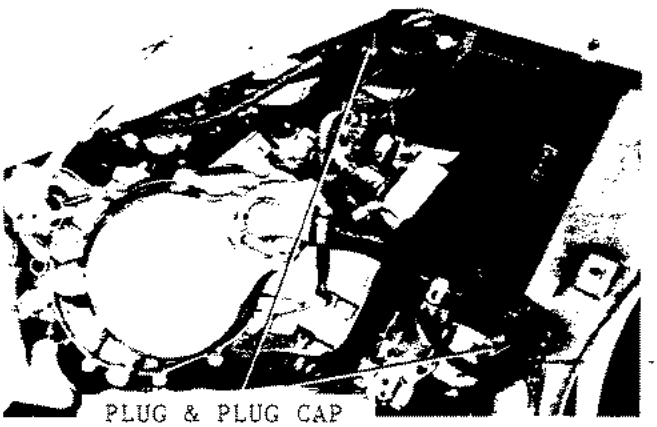
* Check that there is no clearance between cleaner case and element
* Install elelment on case side, making sure it fits totally inside case

Install the 6 screws in the air cleaner case
Reinstall fuel tank and seat

Cylinder Compression

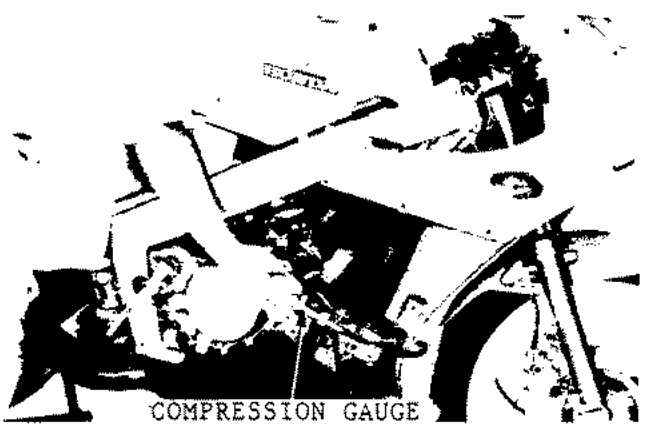
* Measure while engine is warm

Remove R. lower fairing (15-3)
Pull of spark plug cap
Remove spark plug
Insert compression gauge attachment into plug hole and connect compression gauge
Trun main switch and kill switch off
Open throttle valve fully and kick kickstarter 5 times & measure each cylinders compresiion



Compression: 12± 2Kg/cm^2
Cylinder difference: 4Kg cm^2 (under)

METER COMPRESSION GAUGE 07305-0010000



If compresssion is low, inspect the following:

- Cylinder head gasket damage
- Piston ring damage (7-7)
- Piston, cylinder damage (7-6.7)

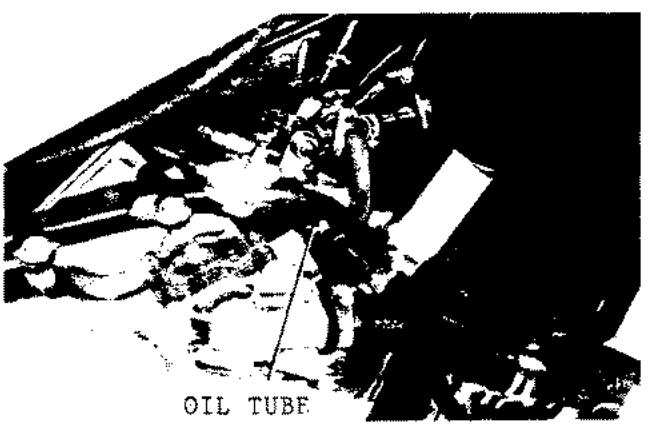
If compression is high inspect the following:

- Carbon build-up in piston head, cylinder head (7)

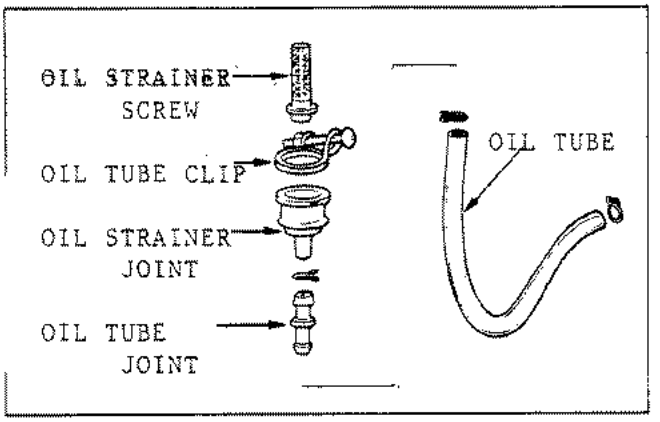
LUBRICATION SYSTEM

Oil STrainer Screen (oil cleaner, clogging)

Remover R.lower fairing (15-3)
Remove oil tube from oil pump side, and drain engine oil into a clean container



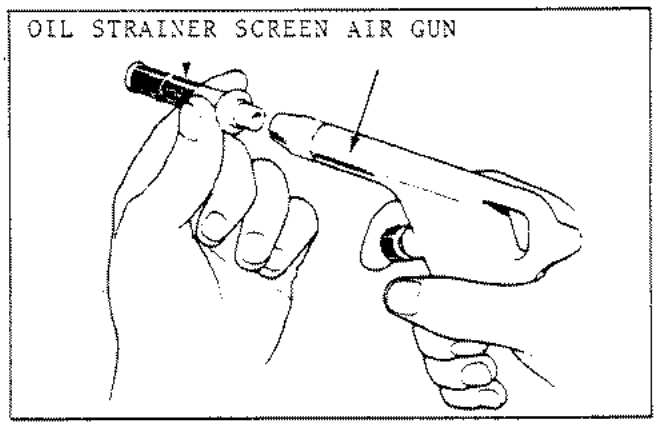
Loosen oil tube clips unt the oil tank as a set.
Pull the oil strainer joint from the tank
Remove the oil strainer screen from the rank.



* After removing each item, ensure no foreing particles enter the system before installation

Clean strainer screen with pressurised air
Reinstall in reverse to removal procedure
Refill the engine oil into the tank and you must bleed air from air tube and oil pump (3-4)

Engine Oil Tank Capacity: 1.3 L

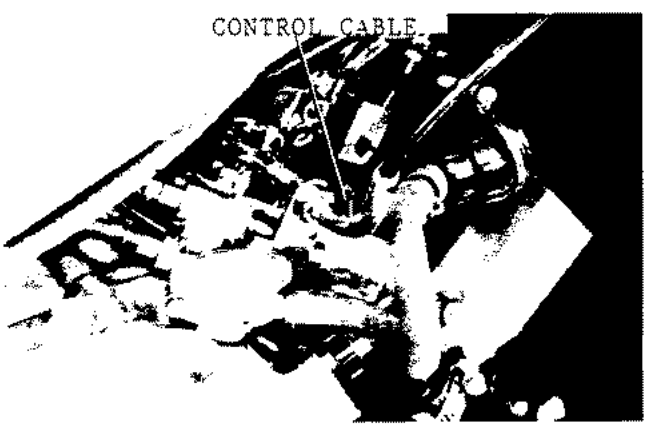


Reinstall in reverse order of removal

* After completing this proces, check each part for oil leakages
* After installing tube you must install tube clip

Oil Pump Control Cable Adjustment

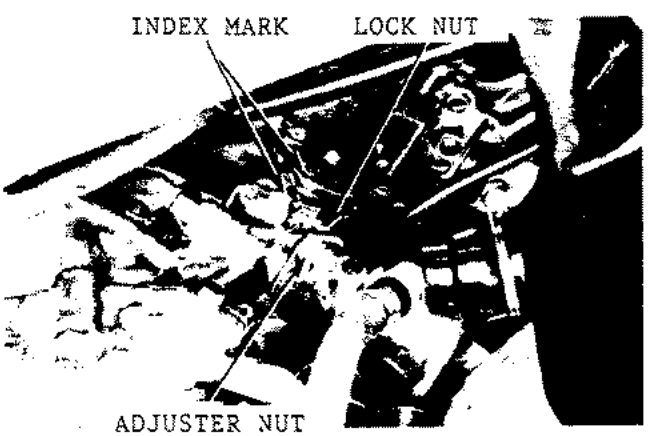
Remove r. lower fairing (15-3)
Adjust throttle grip play (2-15)
Turn throttle grip, in order to turn throttle drum.
At this time, inspect if the oil control lever moves into the oil pump body and that there are no restrictions with the oil pump control cable.
Also inspect that when the throttle drum starts to move, at the same time the oil control cable moves. If it does not move as above, loosen the oil control cable lock nut and turn adjuster nut
Afteradjusting, open the throttle fully, and confirm that the oil pump body index mark and the oil pump control lever index mark meet



If synchronization is poor the cause may be;

- Oil pump lever, open position is too big white smoke or movement faulty
- Oil pump lever open position is too small even with adjustment of piston adjuster nut there is no regular movement or no smooth movement

If so replace the oil pump control cable

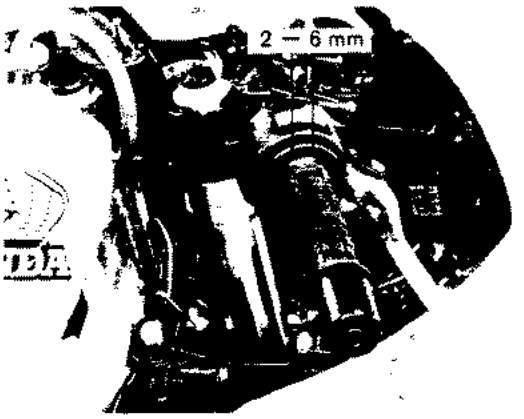


FUEL SYSTEM

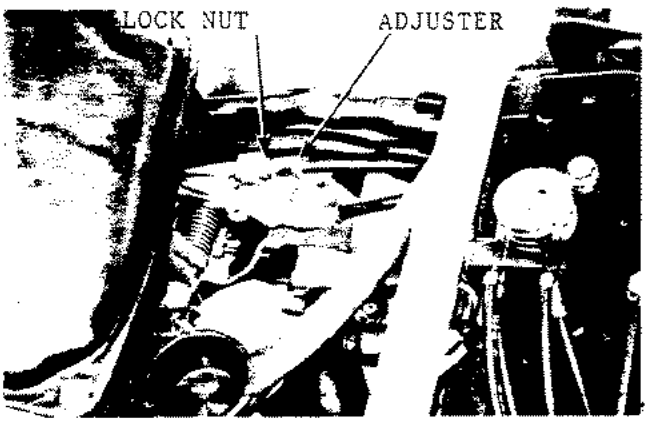
Throttle Valve and Choke Lever

Inspect throttle cable condition, damage and thread
Inspect the throttle grip slides around handle properly.
Inspect the play between the throttle grip and throttle grip flange

Play : 2-6mm

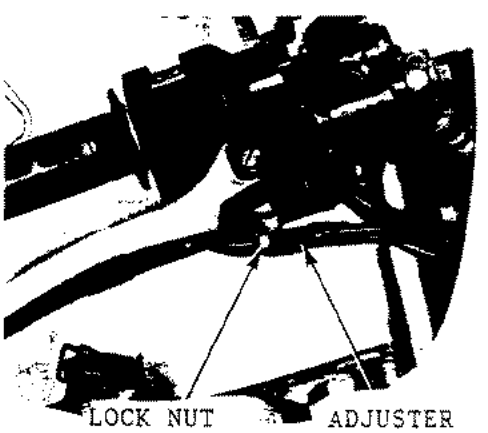


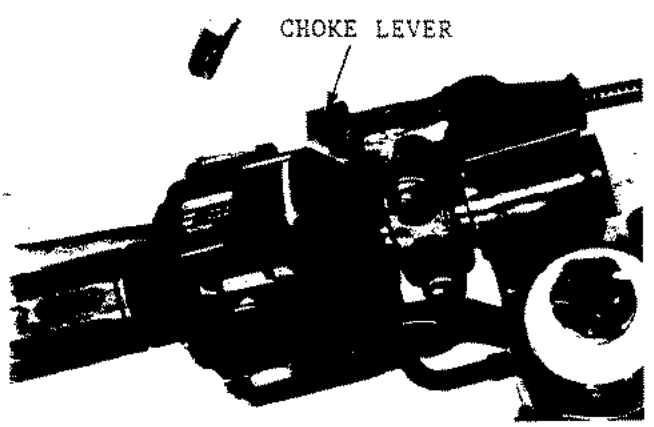
Main adjustment can be done at the carburettor.
Remove fuel tank (4-2)
Loosen the pull through throttle cable lock nut, and turn adjuster.



Final adjustment can be done at the handle bars.
Loosen the lock nut and turn the adjuster
Even with adjustment using adjuster, if the play is not taken up or operation is not smooth the replace the cable.

Inspect the choke cable condition, damage and thread
inspect for smooth operation from a fully closed to fully open position.

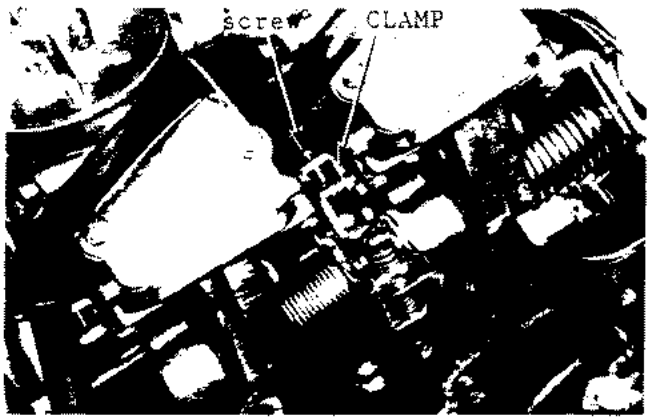




Check that the choke lever will fully open/fully close.

Check that the carburettor bi-starter valve will fully close/open

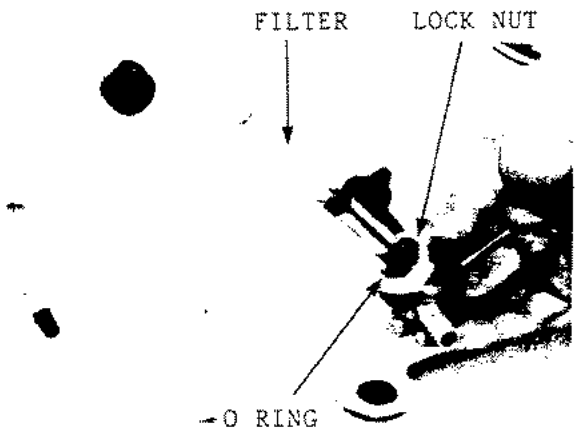
Adjustment can be done at the carburettor
Remove the fule tank (4-2)
Remove the air cleaner (4-3)
Loosen choke cable clamp and hold cable in position with a clamp



Fuel Filter Clogging

Remove seat (15-1)
Remove tank (4-2)
Remove fuel cock and fuel filter
If necessary replace with new parts
tighten lock nut

Torque : 2.0-2.5Kg-m



COOLING SYSTEM

Water

* Place motorcycle on level ground when checking radiator fluid level.
* Do radiator fluid level inspection at the reservoir tank

Check that reservoir tank fluid level is between "UPPER" & "LOWER" marks

Recommended Radiator Fluid:

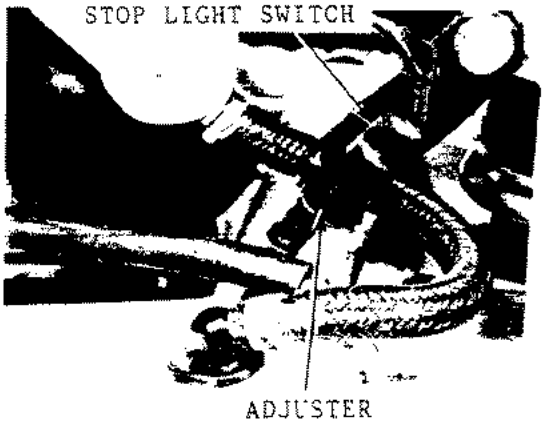
Honda Standard Ultra Radiator Fluid or equivalent (ratio = 30%)

LIGHTING SYSTEM

Headlight

With motorcycle on level ground, adjust headlight by turning screw with a driver

Stop Light

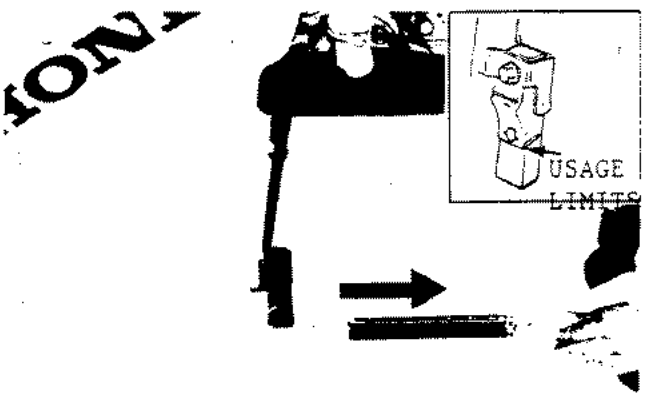


* Do after adjusting brake pedal light

So that the stop light will shine when the brake pedal is pushed down 10mm, turn the adjuster while pushing the switch
After adjusting, check the brake pedal movement and light timing

* Front stop light switch cannot be adjusted

Side Stand



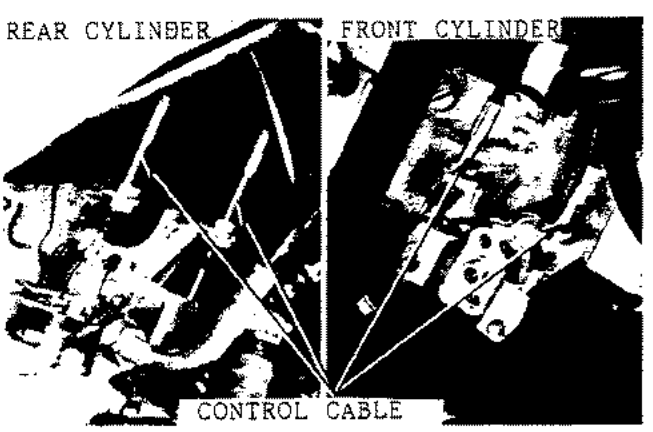
Because of the weight of the frame and raising the bike using the side stand the side stand may bend

With 2.0-3.0Kg pressure the stand will raise when pushing the rubbber
If not apply grease to the joint

If worn or damaged the replace rubber

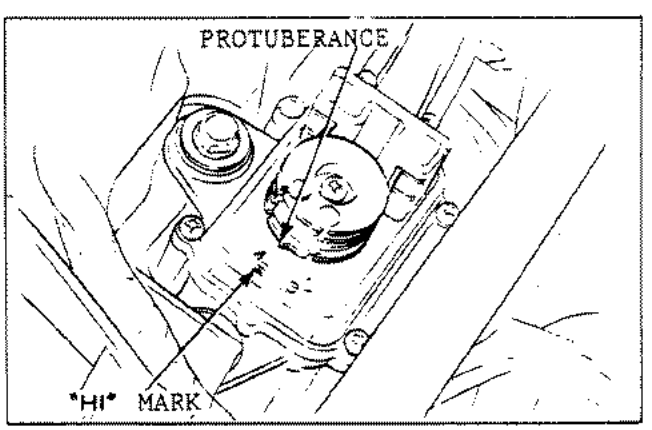
Torque :
Side stand bolt : 1.0-2.0 Kg-m
Side stand lock nut: 3.0-4.0 kg-m
Side stand bracket : 2.4-3.0 kg-m

RC VALVE CONTROL CABLE ADJUSTMENT



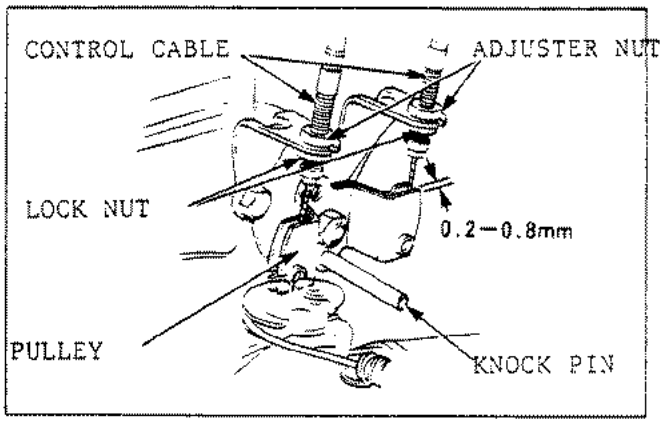
* If the control cable connection is removed or the control cable is loose, then replace the control cable.

Remove R. lower fairing (15-3)
Remove fuel tank (4-2)
Remove control cable connection from cylinder pulley
Connect fuel tube to fuel cock and start engine
Slowly raise engine revolutions and check that at roughly 2000rpm the servo motor pulley protuberance stops at the "HI" mark position and stop the engine with the OFF switch.



Fully open the pulley on the cylinder side and fix there with the knock pin or something suitable

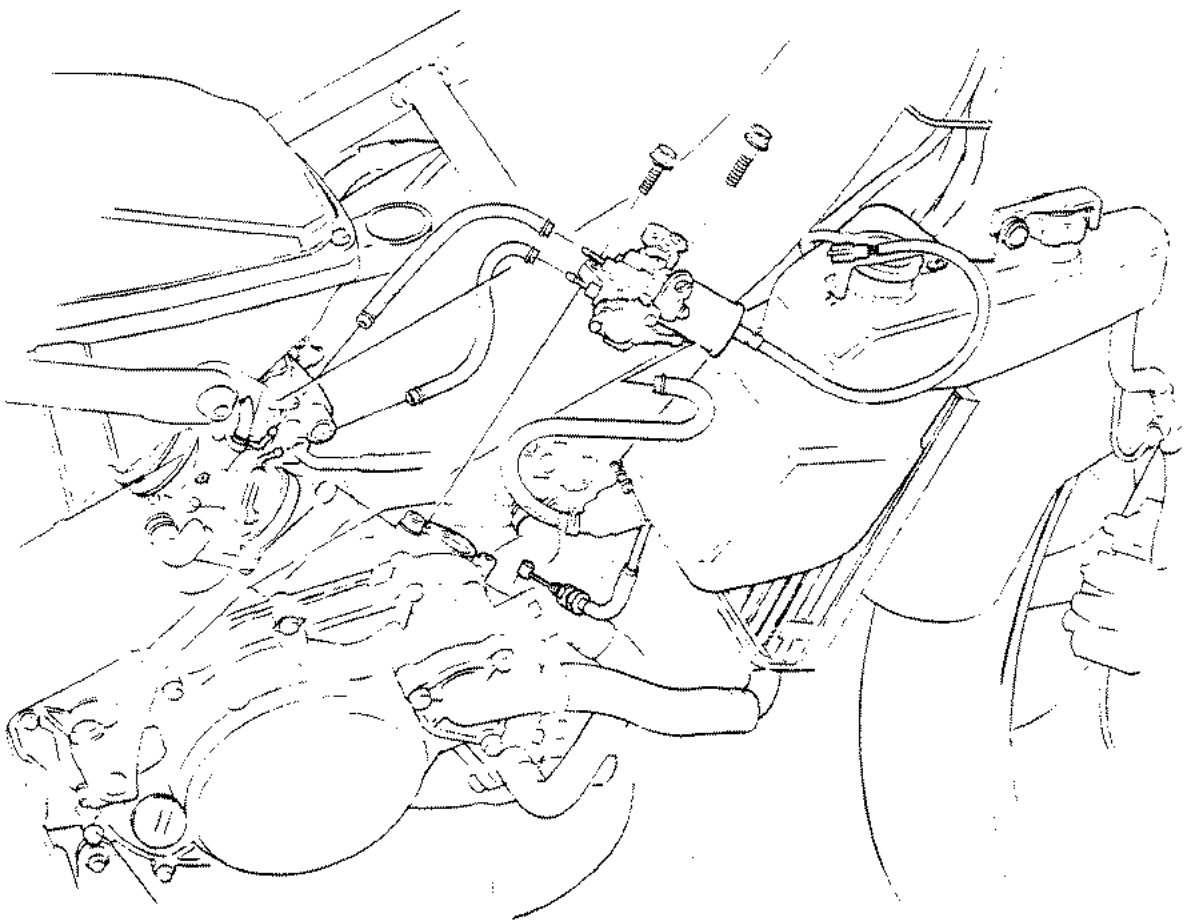
* Check that the pulley is okay when it is in the fixed position
* It is easier to perform if the knock pin (94303-06100) is used.



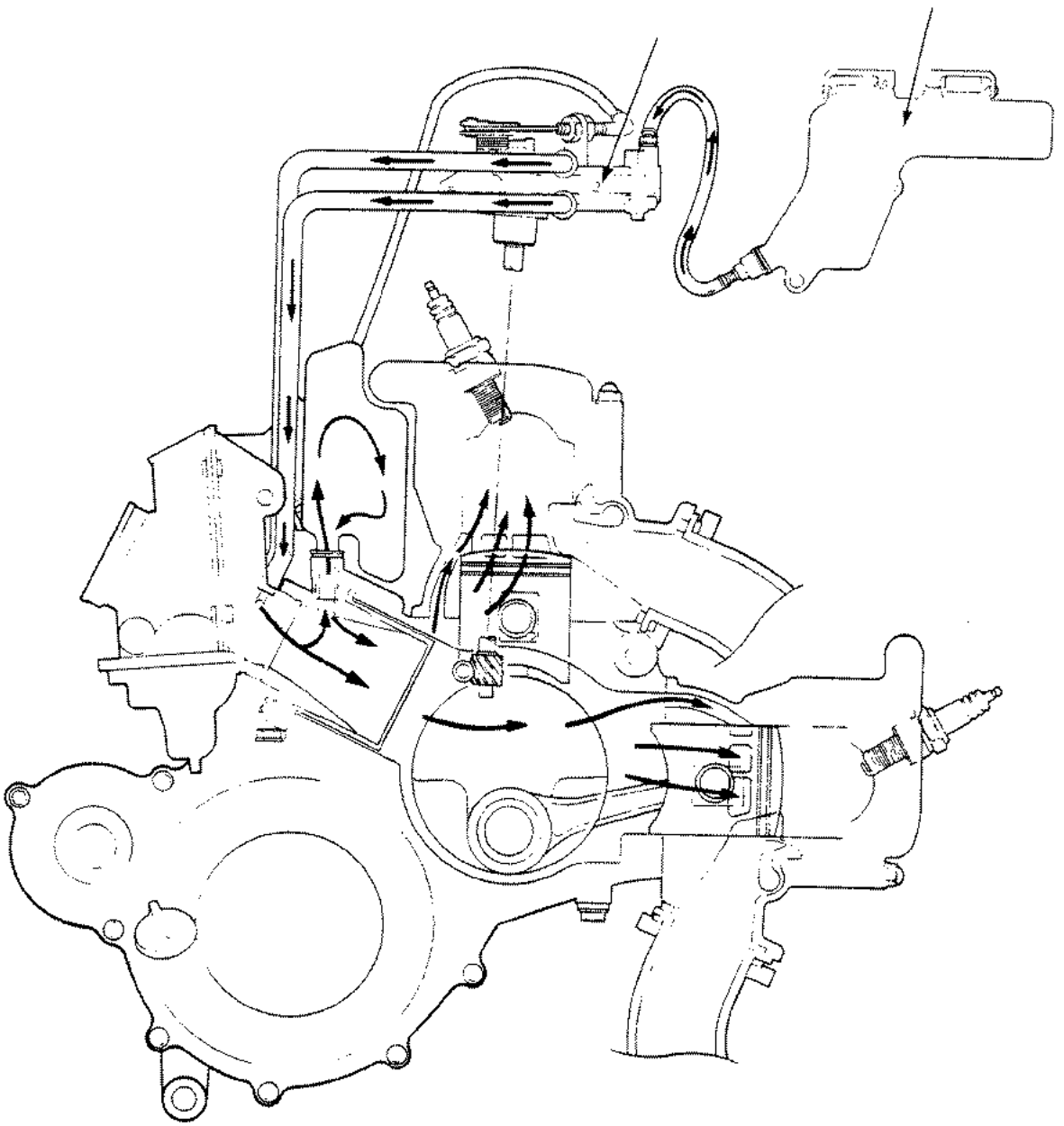
Connect control cable to the cylinder pulley
Adjust the adjuster nut so that the pulley which pulls up cable has freeplay of under 0.5mm

* Always tighten the adjuster nut by hand

Start engine, and slowly increase revolution to around 2000rpm and check that the pulley moves clockwise to a stop, and increase the revolutions to around 3000rpm where it should move anti-clockwise to a stop



3.



MAINTENANCE POINTS

Warnings:

- Conduct all maintenance with vehicle upright
- Take care that foreign particles do not enter engine or oil path tube when removing oil pump.
- Do not separate oil pump assembly
- Bleed air if air has entered oil tube (oil tank - oil pump) or when oil tube has been removed from oil pump
- Bleed path tube if oil path tube (oil pump - carburettor) has been removed

MAINTNENANCE INFORMATION

Oil Tank Capacity	1.3ℓ
Recommended Engine Oil - Honda Ultra 2 super, or Honda Ultra GP2 or equivalent	

TROUBLE SHOOTING:

Lots of Exhaust Smoke, Carbon on Spark Plugs

- Oil pump not balanced
- Engine oil poor quality
- Oil pump solenoid faulty

Overheating

- Oil pump not balanced
- Engine oil quality poor
- Oil pump faulty

Engine Oil Does Not Come From Oil Tank

- Oil tank cap breather faulty
- Oil strainer screen clogged

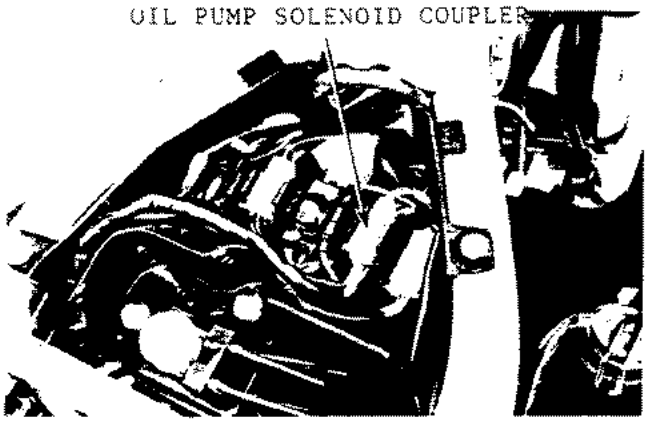
Piston Seizure

- Engine oil cut, or oil strainer screen tube, clogged
- Oil pump not balanced
- Air leaking into oil tube
- Oil pump faulty
- Ignition plug failure

OIL PUMP

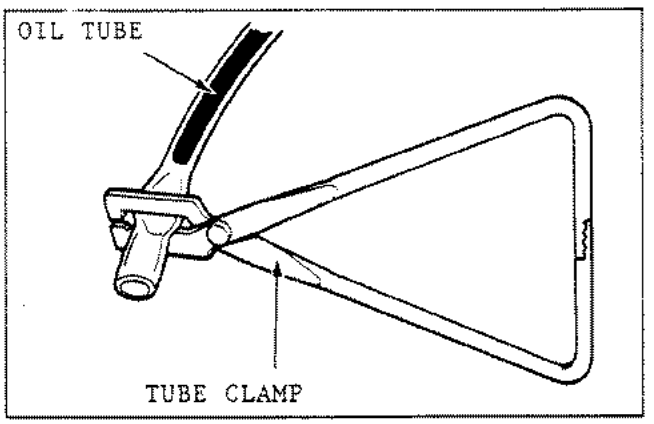
Removal

Remove R. Lower fairing (15-3)
Remove fuel tank (4-2)
Remove oil pump solenoid coupler (2P amp white) connection



* Use tube clamp and stop oil flowing out from oil tube or oil tank

Pull oil tube from oil pump
Remove oil pump control cable from oil pump control lever
Remove the 2 oil path tubes from oil pump
Remove bolt and oil pump assembly

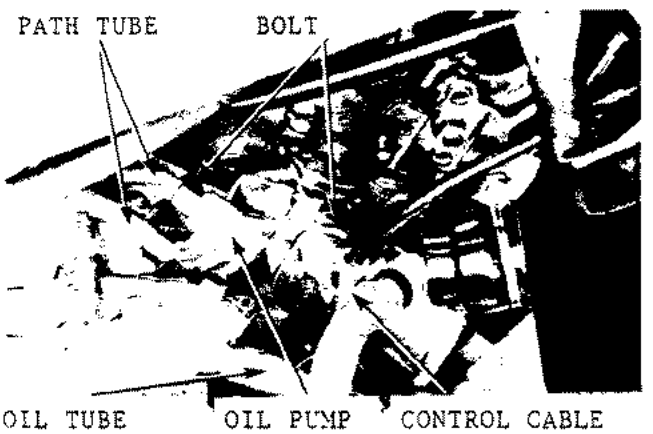


* Ensure foreign particles do not enter oil pump or tubes
* Insert plug into each oil path tube so that oil does not flow out
* Do not damage tube clip
* Check that each tubes oil pump assembly is installed

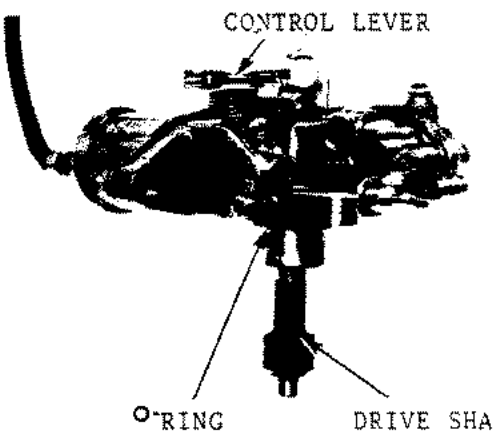
Inspection

After removing the oil pump assembly inspect the following:

- O rings
- Oil pump drive shaft wear
- Oil pump body wear
- Oil pump control lever operation



* Do not disassemble oil pump assembly



INSTALLATION

Apply transmission oil to O ring and install oil pump

* Ensure foreign particles do not enter oil pump or tubes

Fill oil path tube with engine oil
Install oil path tube to oil pump

* Do not forget to install the tube clip

Install oilpump control cable
Connect oil tube

Connect oil pump solenoid coupler (2P mini white)

* After installing, inspect the following and adjust if necessary:

- Control cable adjustment (2-14)
- Oil pump air bleeding
- Oil path tube air bleeding
- Oil leakages

Install fuel tank (4-2)
Install R. Lower fairing (15-5)

OIL PUMP AIR BLEEDING

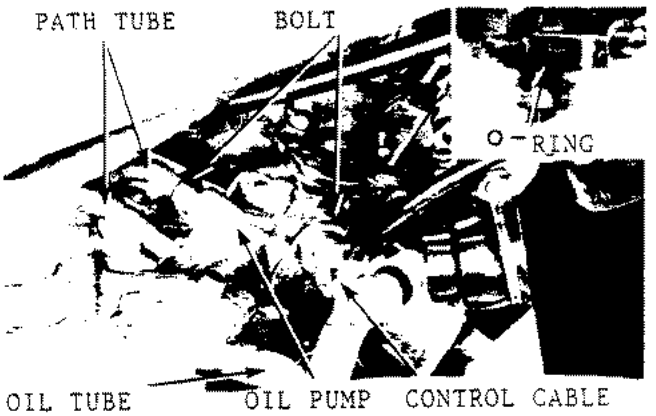
If air enters the oil system trouble will be caused to the oil lubrication
Perform air bleeding to the oil pump and oil tube - oil path tube

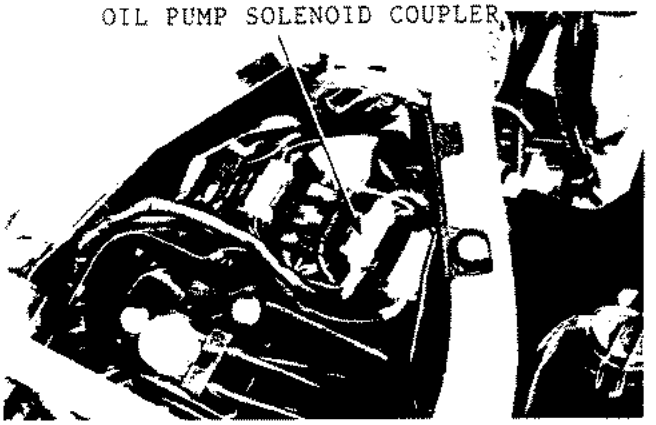
OIL TUBE, OIL PUMP AIR BLEEDING

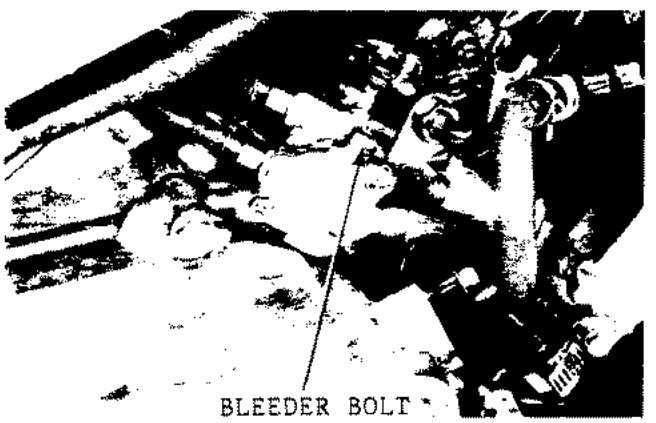
Remove R. Lower fiaring (15-3)
Loosen oil pump indicator bleeder bolt and drain oil and air from oil tube and oil pump

If all air is out, then reinstall bleeder bol

* When the oil tube is removed and oil cut and air enters the oil tube always bleed air from oil tube and oil pump * When bleeding air from oiltube and oil pump, always bleed air from oil path tube also







OIL PATH TUBE AIR BLEEDING

* When oil tube is removed and oil cut and air enters the oil tube always bleed air from the oil tube and oil pump

With a fuel ratio of 25-50:1, start engine With control lever in a fully open position allow engine to idle up to 10 seconds and push out oil from oil pump depending on if air is in oil path tube.

* Do not perform when muffler is hot. Do where ventilation is good and where there are no hot items

* Use recommended engine oil
* Do not rev engine quickly

OIL TANK REMOVAL

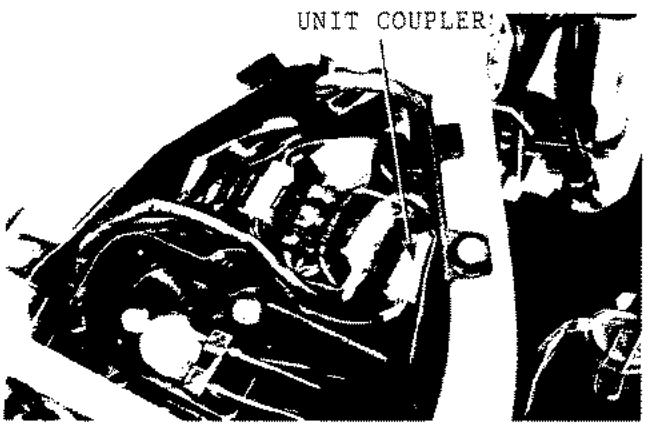
Remove R. Lower fairing (15-3)
Remove fule tank (4-2)
Drain engine oil from oil tank (2-13)
Remove oil unit coupler (3P mini)

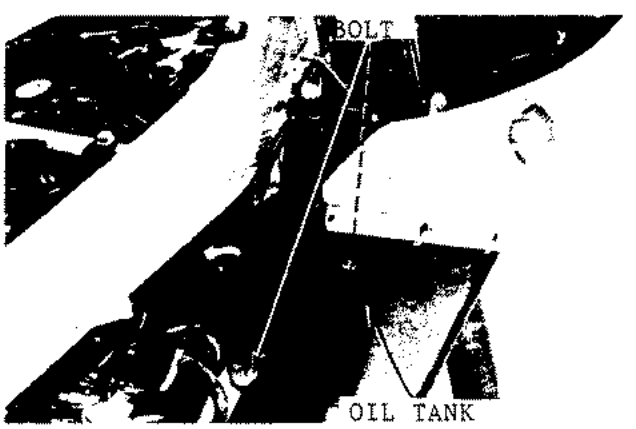
Remove oil tank 2 bolts. and oil tank

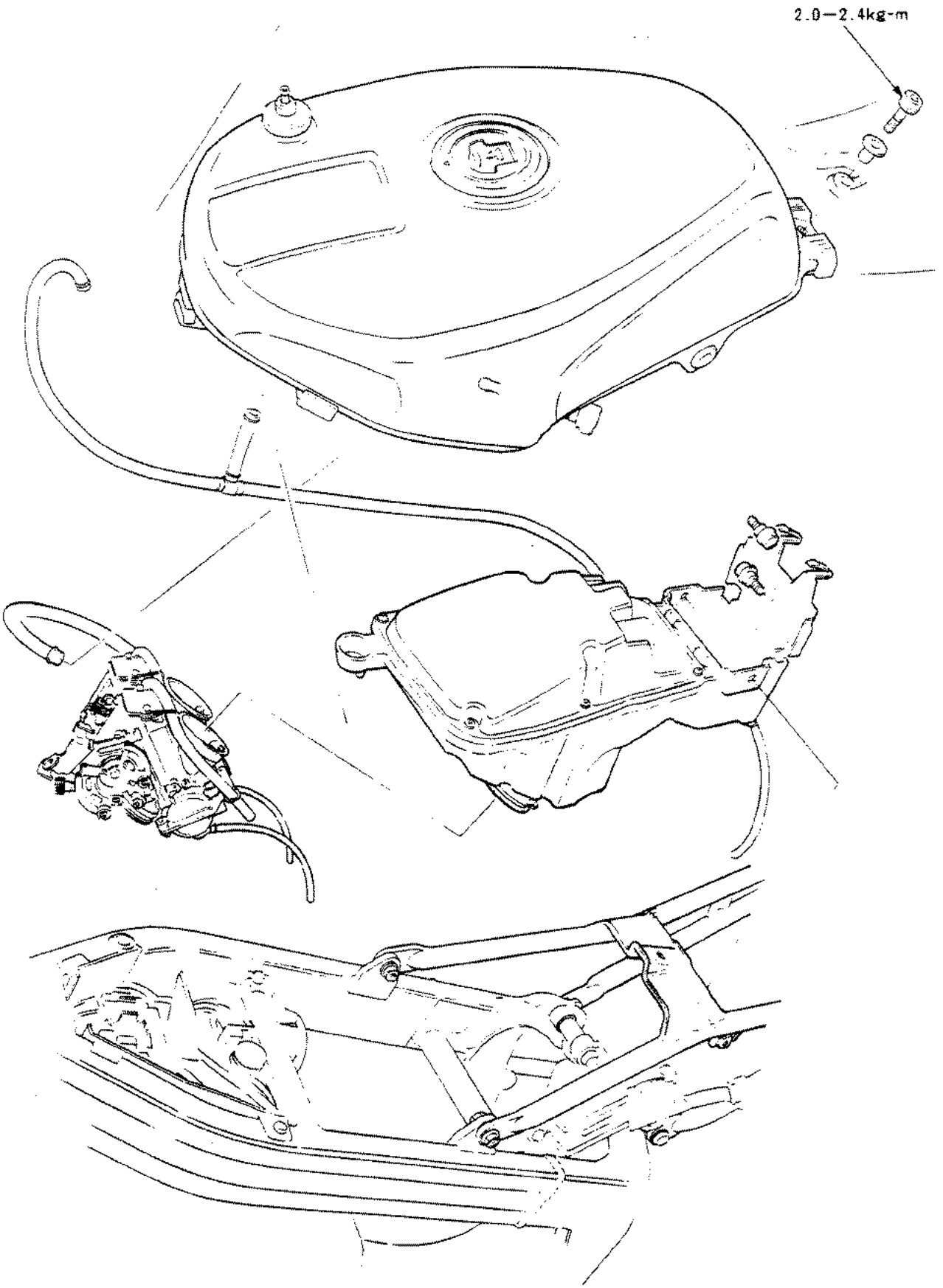
Install in the reverse order to removal

* Ensure no foreign particles enter tank or tubes

After installing bleed air from oil pump






2.0—2.4kg-m

4. FUEL SYSTEM

MAINTNENACE INFORMATION

Warnings:

- When draining gasoline beware of naked flames
- Take care when installing o-rings and always use new ones
- Before separating loosen float chamber drain plug and drain fuel from carburettor

Venturi Bore	28mm	
Setting Mark	TA10A	
Float Level	13mm	
Main Jet	#110	
Slow Jet	# 38	
Jet Needle Mark	No. 1 2QY	No. 2 2QZ
Idle Speed	1,200±100rpm	
Throttle Grip Play	2 — 6 mm	
Air Screw Rotations	1-½回転	

TOOLS

Special Tools:

Pilot screw wrench	07908—4220201

Standard Tools:

Float level gauge	07401—0010000
Torque driver	07703—0010500

TROUBLE SHOOTING

Does Not Go:

No fuel in tank
No fuel entering carburettor
Too much fuel in engine
Air cleaner clogged
Choke movment faulty

Movement Inhibited (Goes & Soon Stops)

Idle Not Balanced:

Choke movement faulty
Ignition/idle faulty
Poor synchromization
Carburettor faulty
Dirty fuel
Idle balance faulty

Misfire/Backfire:

Ignition problems (section17)
Carburettor faulty

No Power:

Fuel system clogged
Float valve faulty

Mixture Too Lean:

Fuel jets clogged
Float valve faulty
Float level to low
Fuel tank breather tube clogged
Fuel tube bent, split clogged
Air vent tube clogged
Air screw adjustment faulty

Mixture Too Rich:

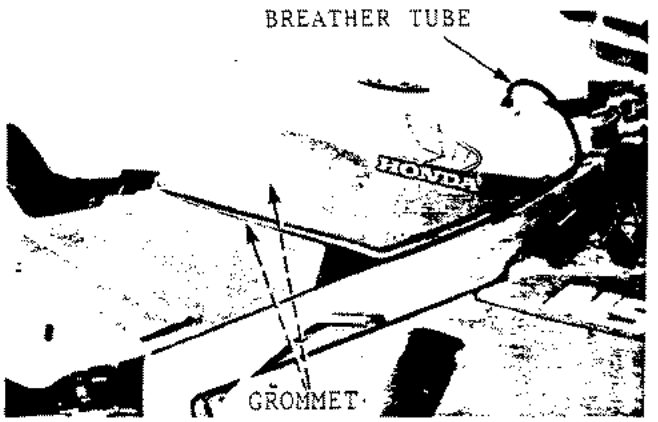
Choke lever still on
Float valve movement faulty
Float level too high
Air jet clogged
Air cleaner element dirty
Air screw adjustment faulty

FUEL TANK

Removal

* Be careful with heat & remove gasoline to avoid spillage

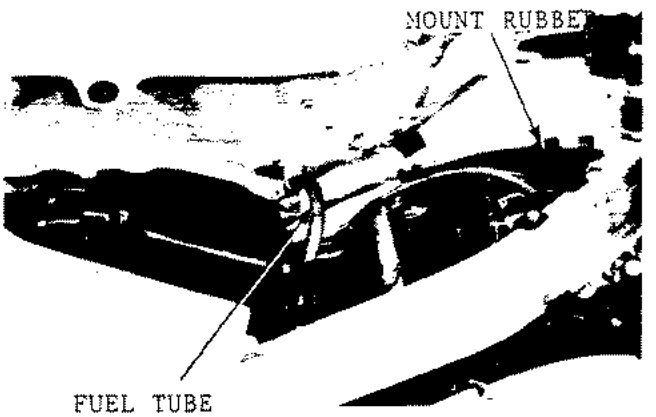
Remove seat (15-1)
Remove breather tube from fuel tank, turn fuel cock off
Remove side cover protuberance from fuel tank grommet & lift up tank
Remove fuel tube from fuel cock
Remove fuel tank mount cover from fuel tank and remove fuel tank

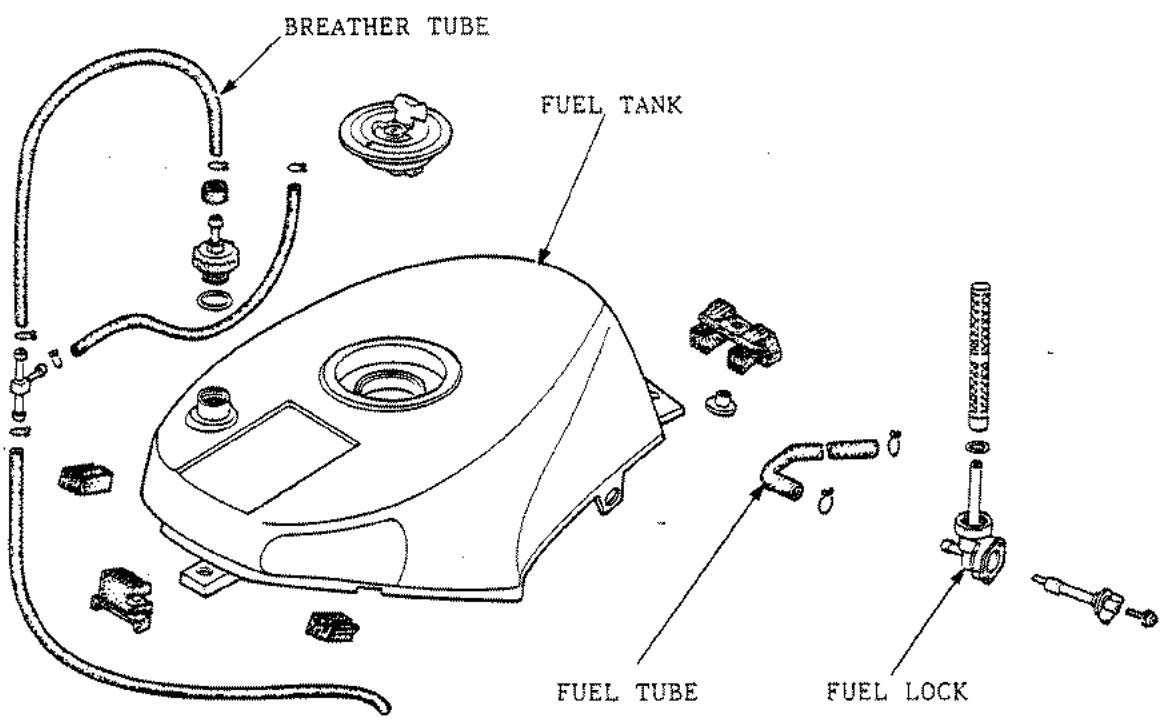


Installation

Install in reverse order to removal

* Check that fuel tank mount rubbers are pushed forward so that tank can be installed on frame
* Take care not to split or bend breather tube and fule tube.

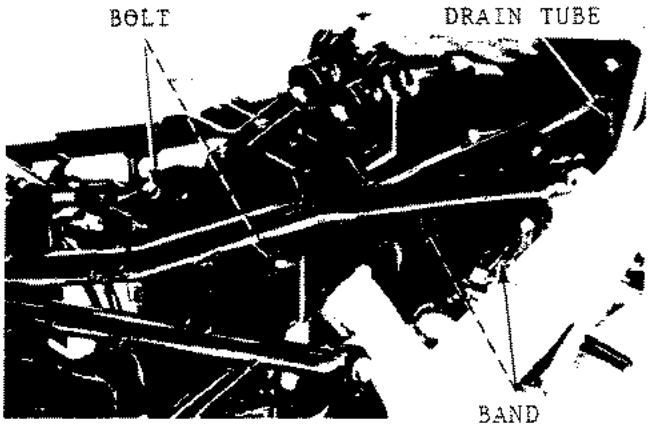


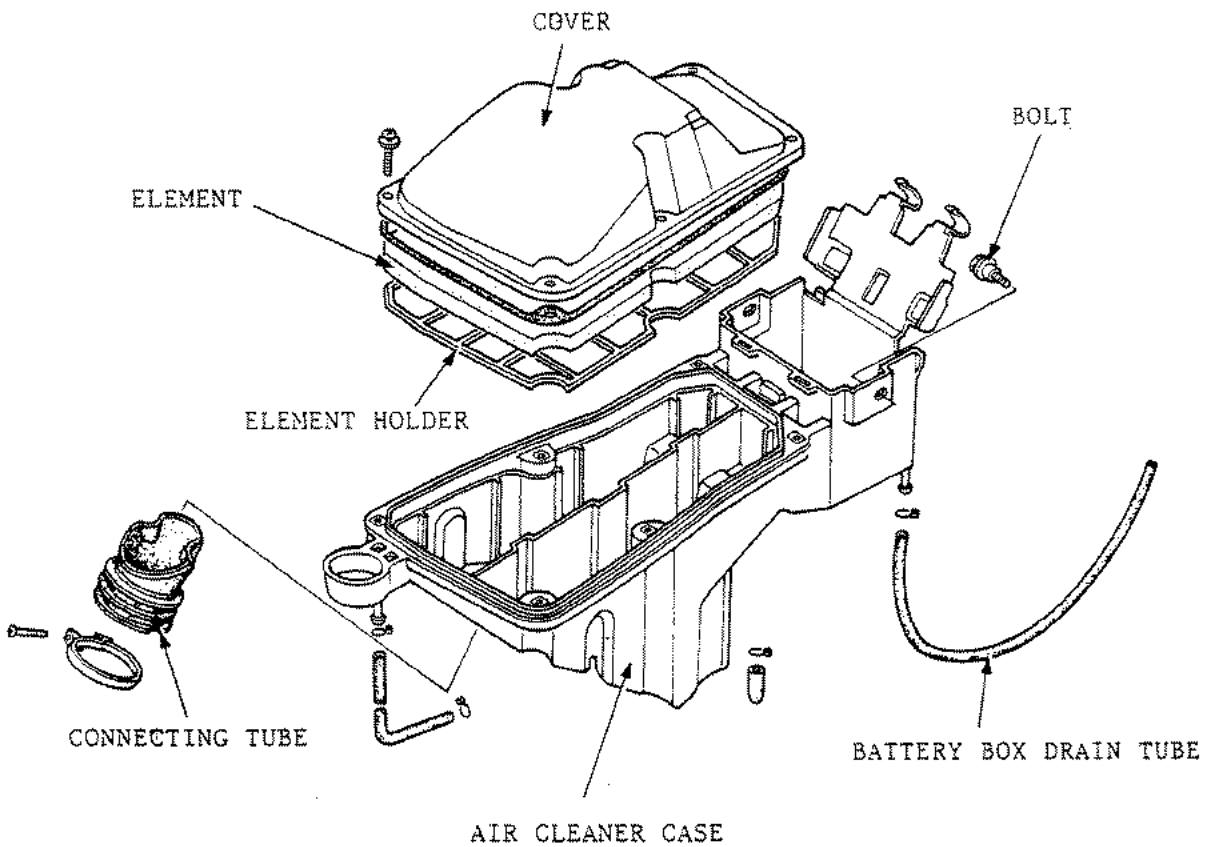


AIR CLEANER CASE

Removal

Remove side cover (15-1)
Remove fuel tank (4-2)
Remove battery (16-3)
Remove air cleaner case bolt
Remove drain tube
Loosen connecting tube band
Remove air cleaner case

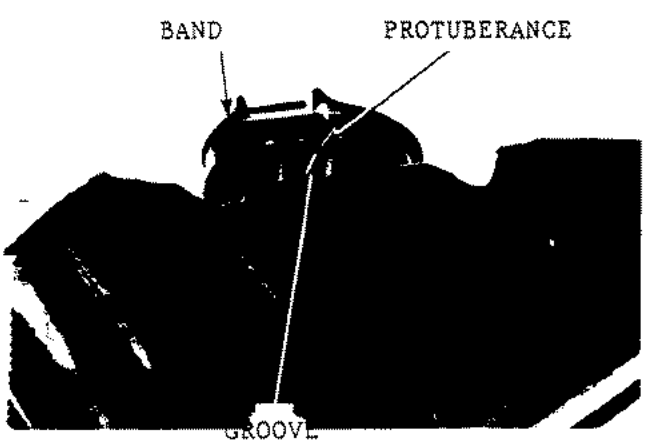




Installation

Install in reverse order of removal

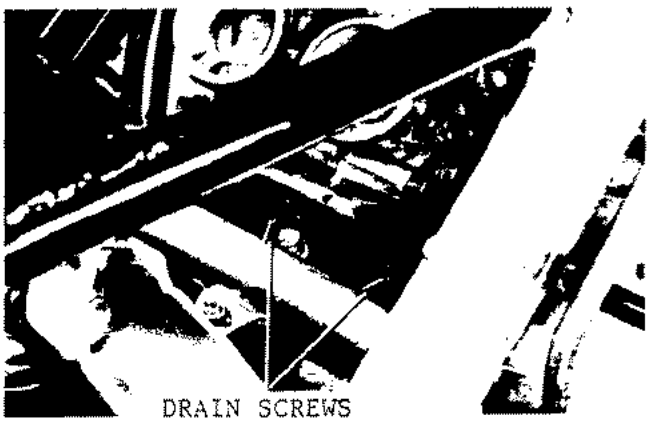
* Align connecting tube band protuberance with tube groove
* After checking that tube is not bent internally, install carburettor. If bent when installed engine performance will be affected
* Check that nothing has fallen into air cleaner case when installing air element



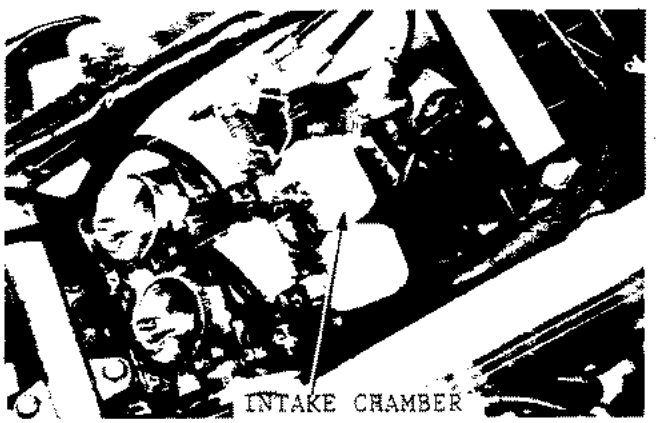
CARBURETTOR

Removal

Remove fuel tank (4-2)
Remove air cleaner case (4-3)
Remove lower fairing (15-3)
Loosen drain plug and drain gasoline from carburettor



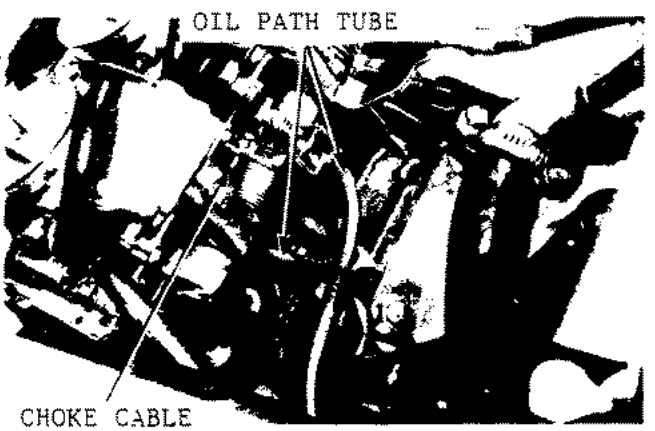
Remove intake chamber



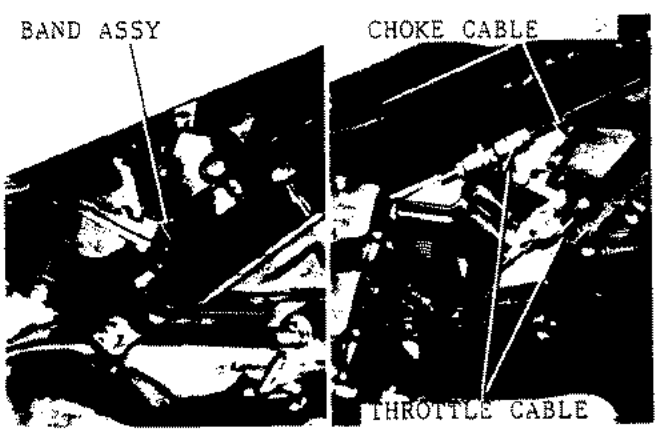
Remove oil path tube from carburettor & insert a screw in path tube so that oil does not drain out

Remove choke cable

Loosen insulator band and raise carburettor up.
Remove throttle cable and oil pump control cable from carburettor

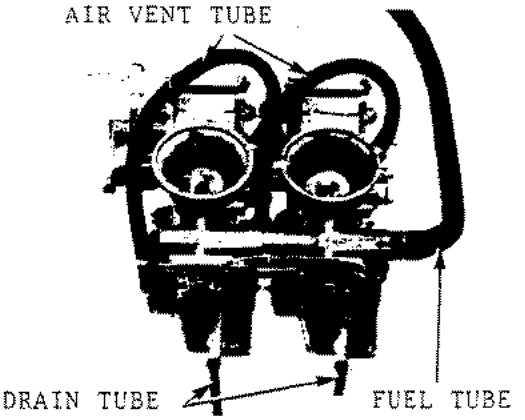


* After removing carburettor, place a cover or screw in reed valve so that rubbish cannot enter. Also take care that rubbish does not enter crankcase



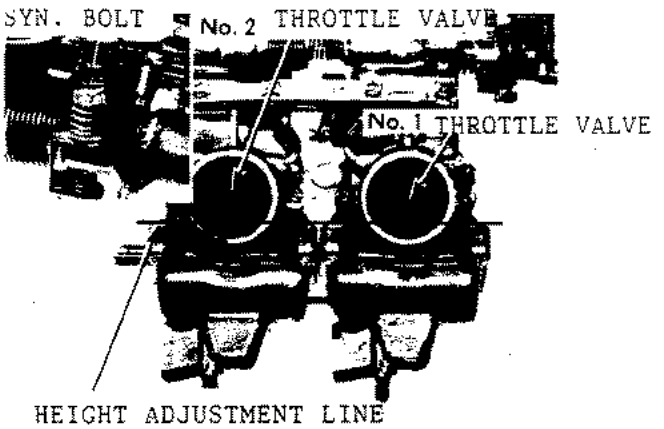
Analysis

* Float chamber, jets, throttle valve can be analysed without separating the carburettor. Only separate if necessary

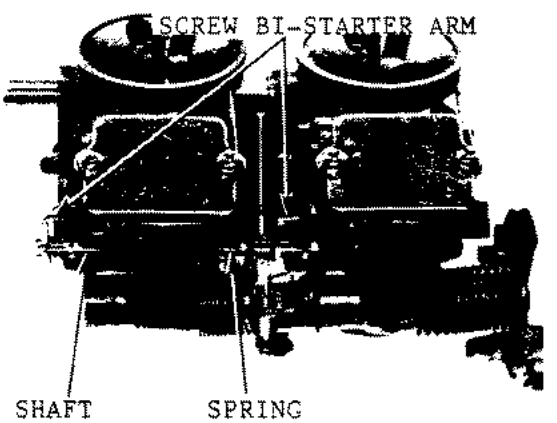


Remove tube from carburettor

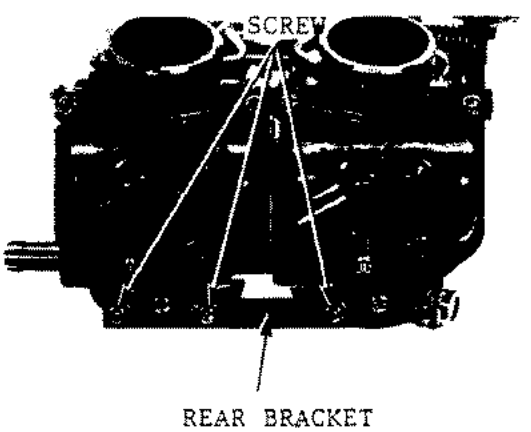
Turn the synchronizing bolt and align the No.2 carburettor throttle valve height with the No.1 carburettor throttle valve height



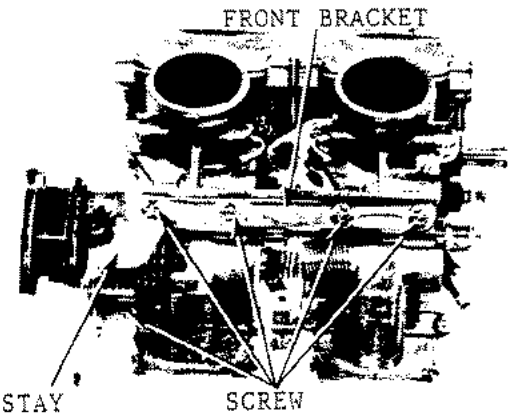
Loosen the bi-starter arms screw and remove the shaft and spring



Remove the rear bracket

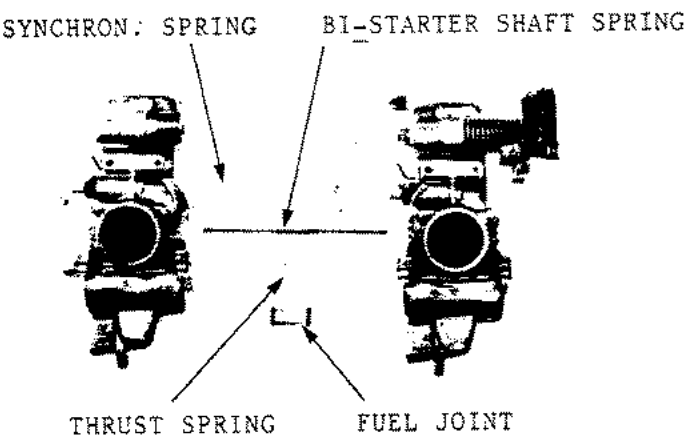


Remove front bracket



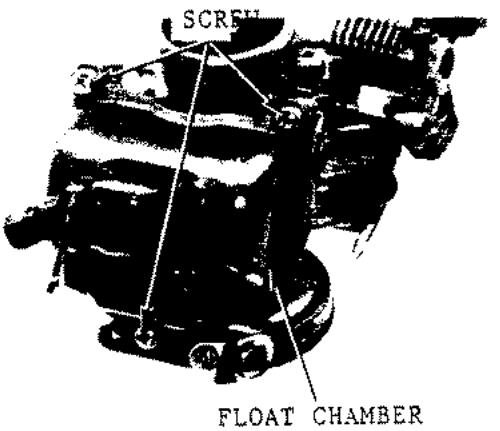
Removethrottle stop screw together with stay

While taking care that the spring does not fly out, separate the carburettor

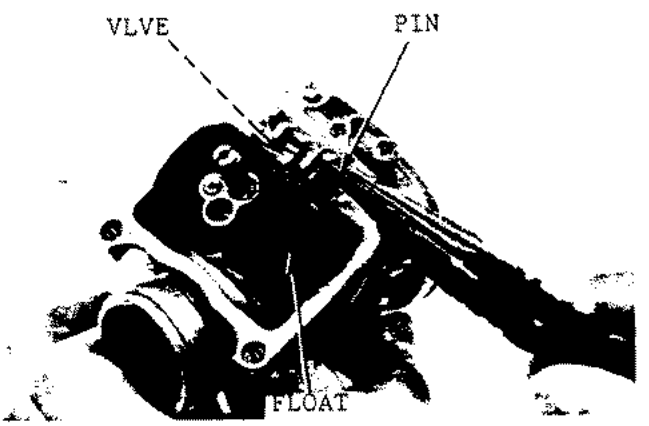


> * Separate horizontally so as not to damage the fule joint pipe

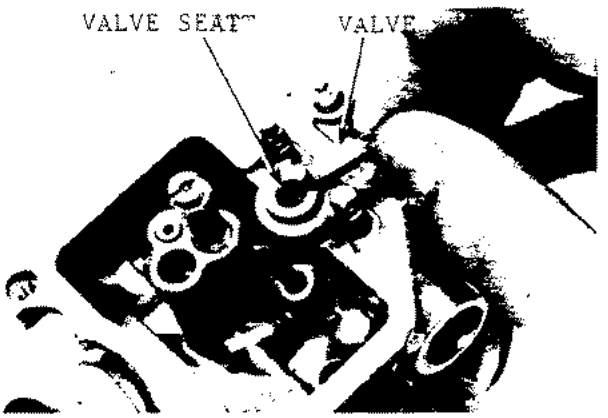
Remove screw and front chamber



Remove float arm, float, and float valve



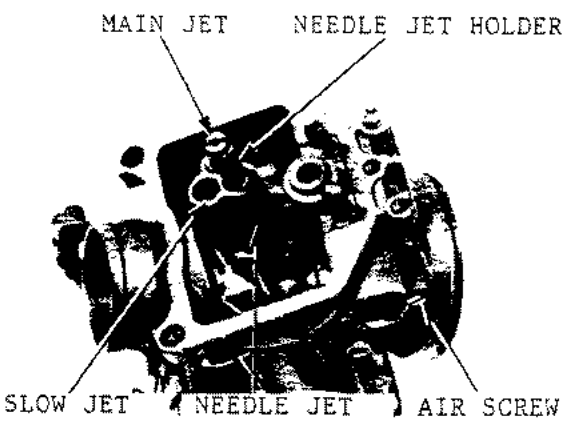
Inspect valve seat area for damage. Inspect floatvalve seat for damage



Remove air screw

* Before removing air screw, check position of it for safe revolutions
* Do not insert with force, as the seat facing is easily dmaged

Remove main jet, needle jet holder, needle jet and slow jet



Clean each jet with cleaning solvent

Loosen bi-starter valve nut & remove spring and bi-starter valve.

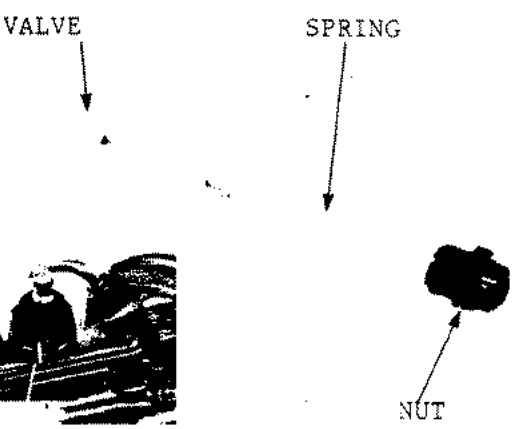
Inspect bi-starter for wear and damage

Remove the 3 screws fastening the throttle valve cover (or 4 screws if the throttle stop screw has not been removed)

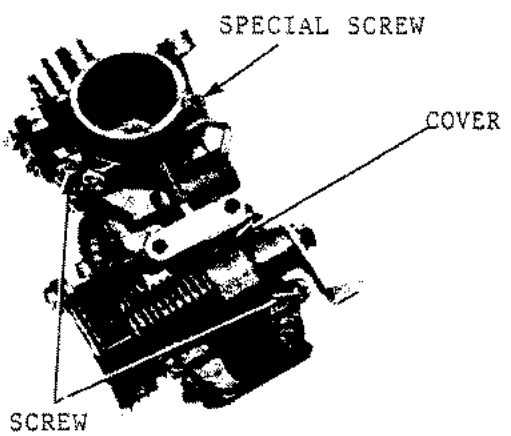
Remove the throttle tube together with the cover

Use the following special tool

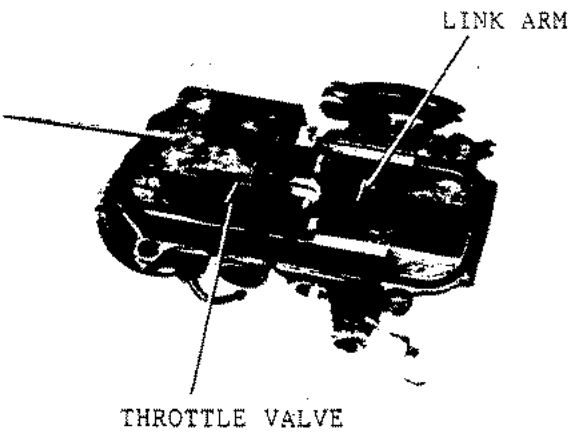
Torque Driver 07703-0010500



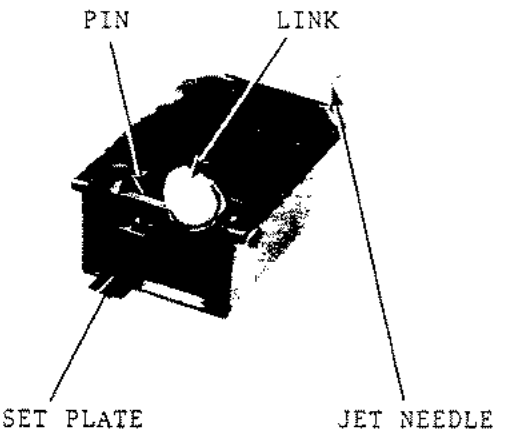
* Take care not to damage jet needles when removing it
* Do not do analysis of throttle valve if not totally necessary



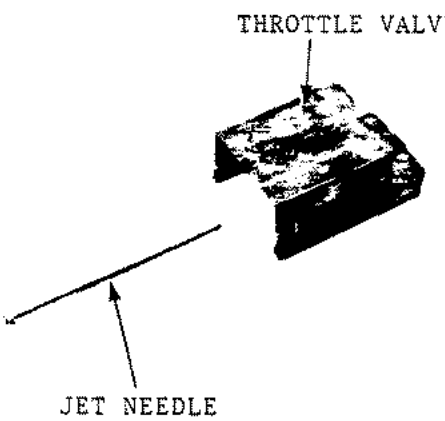
Remove throttle valve from throttle link arm



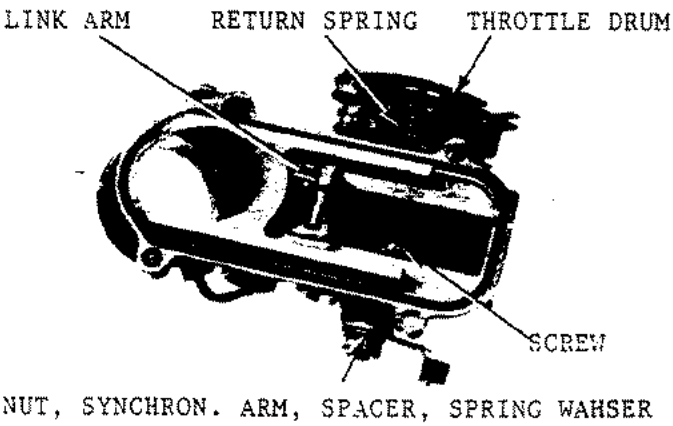
Remove set plate, htne pin, link and jet needle



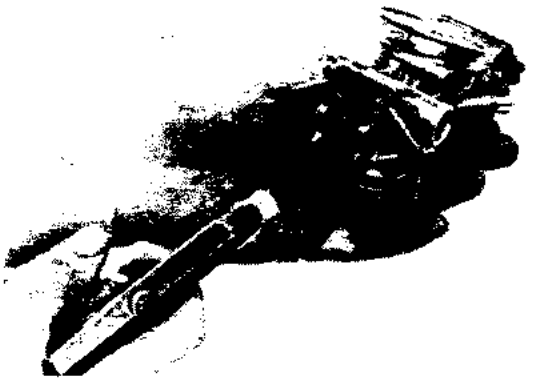
Inspect jet needle and throttle valve for damage and wear



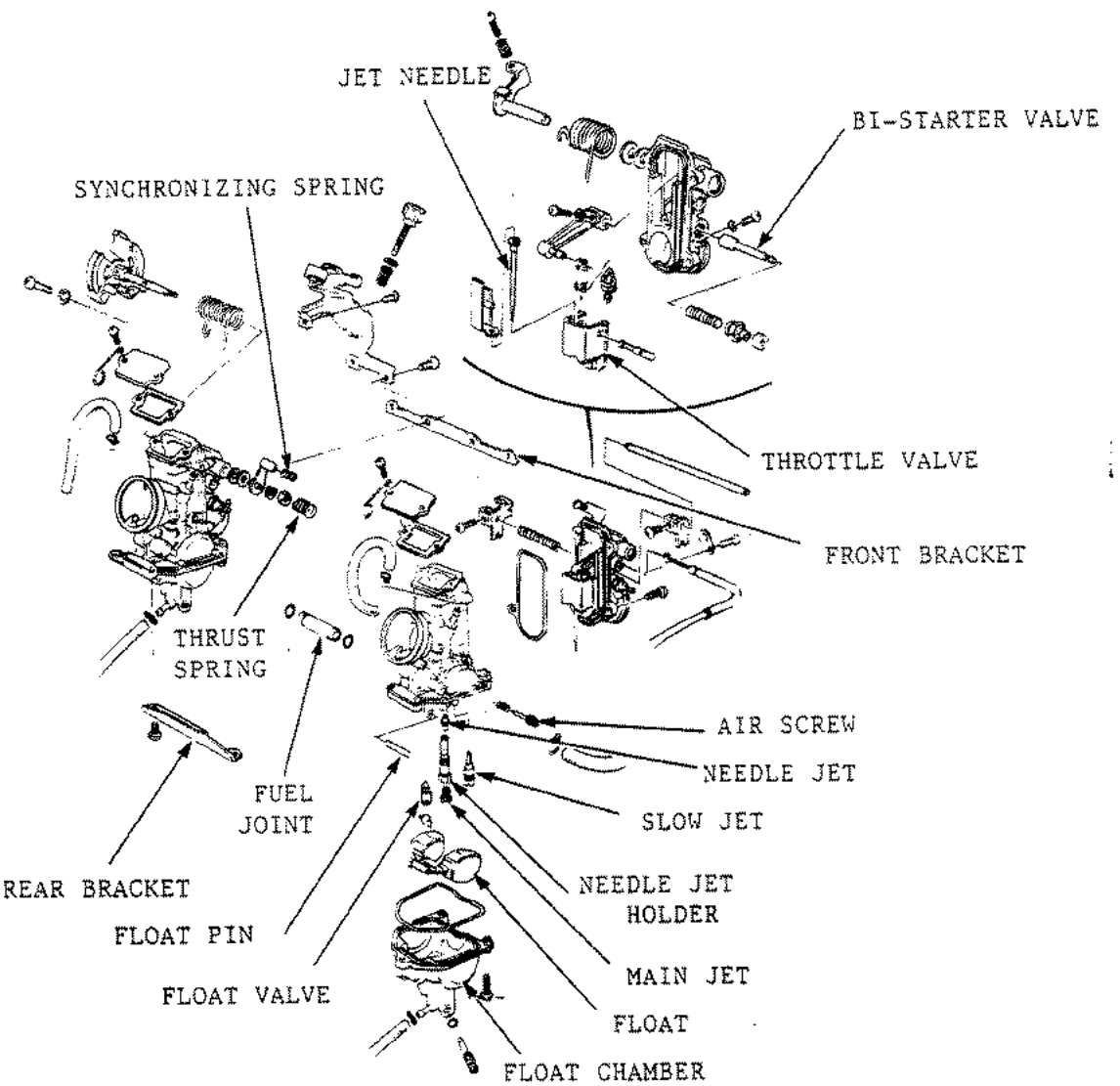
Remove nut, and spring washer and remove synchronizing arm and spacer Remove link arm set screw and spring washer, and remove throttle drum and return spring together.



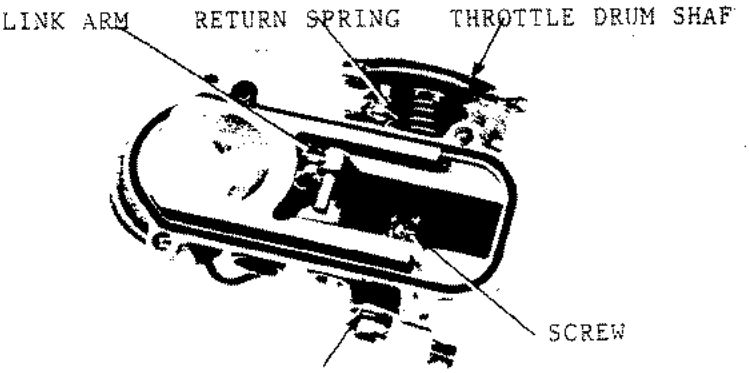
Clean carburettor body with air gun



ASSEMBLY



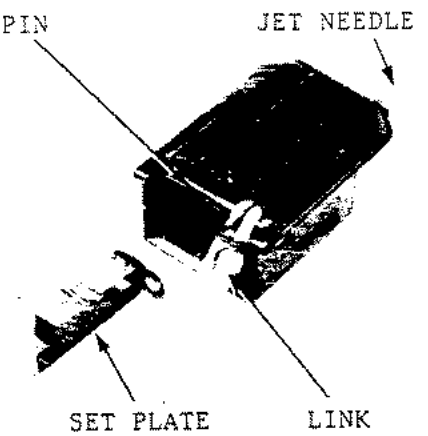
Install throttle shaft return spring, throttle drum together with link arm as a set



Install link arm set screw abd spring washer as a set
Install spacer and synchronizing arm & install nut and spring washer as a set

NUT, SYNCHRON. ARM, SPACER, SPRING WASHER

Insert jet needle to the throttle valve
Install link with the pin
Align set plate with the plate and insert
Align the jet needle head with the set plate hole and install

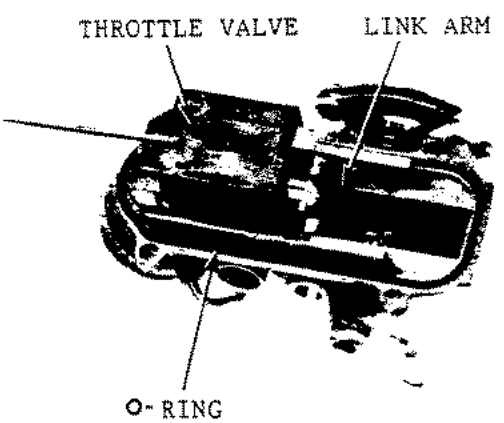


Install throttle valve into link arm

Install O ring into groove of throttle cover

While inserting jet needle into needle jet install into cover body

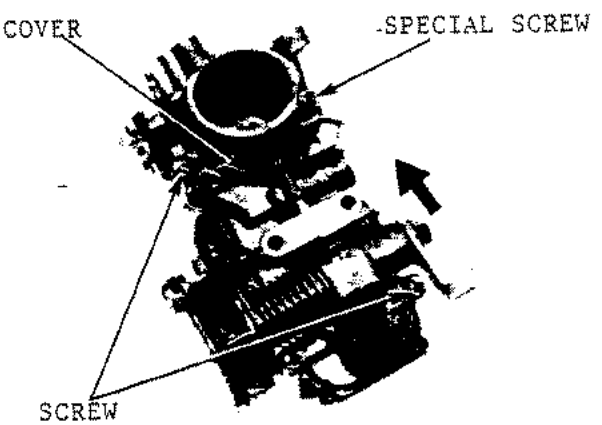
* Take good care not to damage jet needle



Install the 3 screw (if No.1 carburettor stop screw has not been removed, 4 screws)

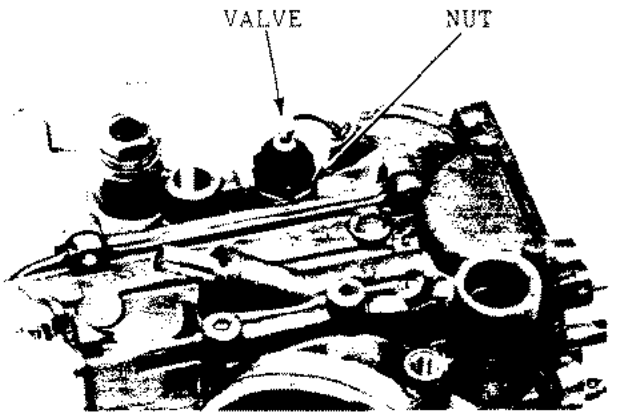
Insert special screw with tool

Torque Driver 07703-0010500



* Install throttle valve cover while pushing body bottom

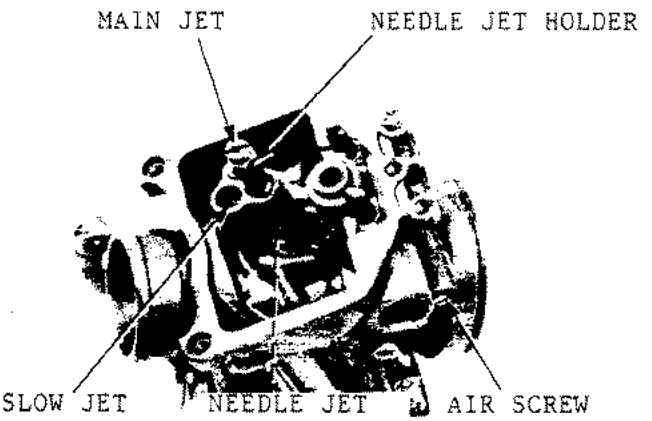
Install bi-starter valve together with spring and tighten nut



Install needle jet, needle jet holder, and main jet

Install slow jet

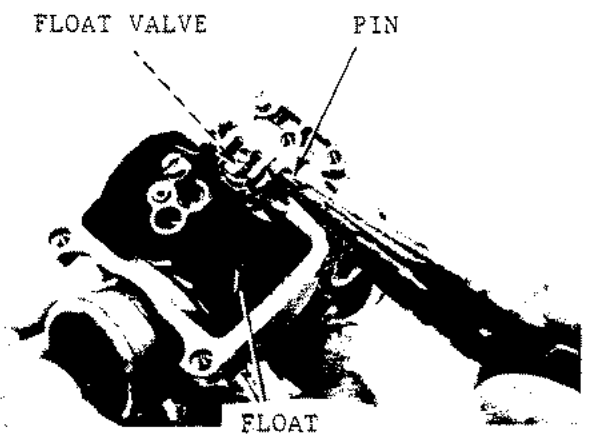
Install air screw



Air screw standard rotations : 1-¼ times

Install float valve, float and float arm pin

Inspect float valve movement

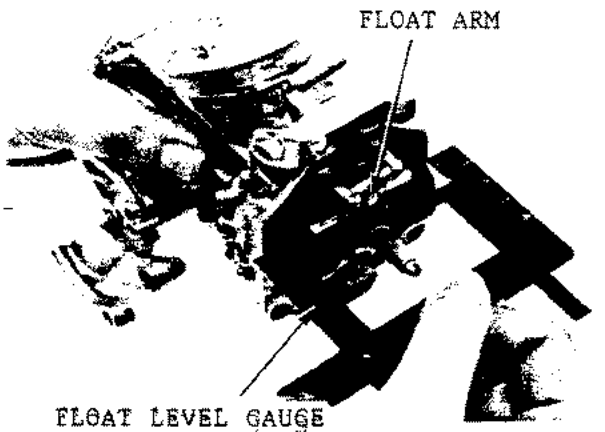


Measure float level height at main jet

Std float level = 13mm

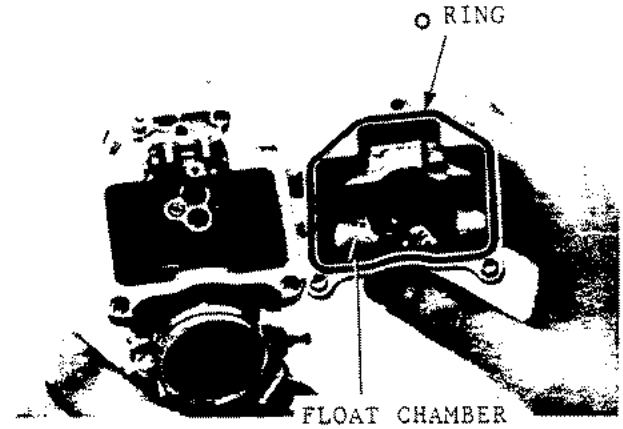
Adjust float arm by bending

Float level gauge : 07401-0010000

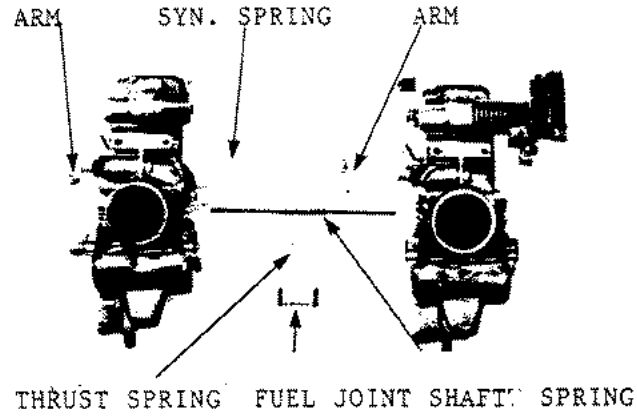


If float chamber O ring is damaged, replace it.

Install float chamber and install three screws

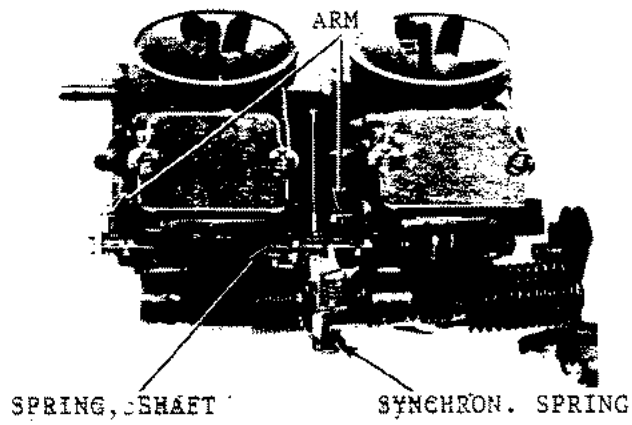


If fuel joint O ring is damaged, replace it
Set fuel joint and thrust spring in carburettor and assemble carburettor



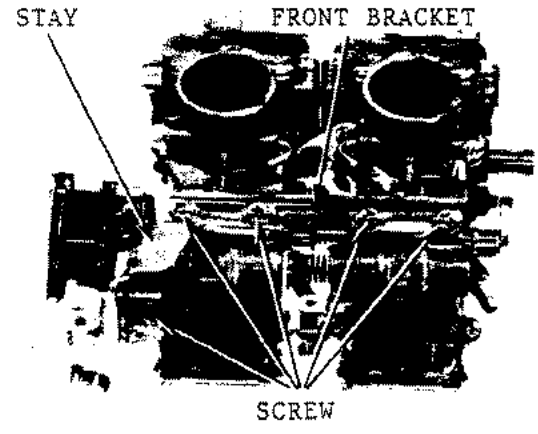
Install bi-starter arm, spring and shaft in carburettor

Set synchronizing spring

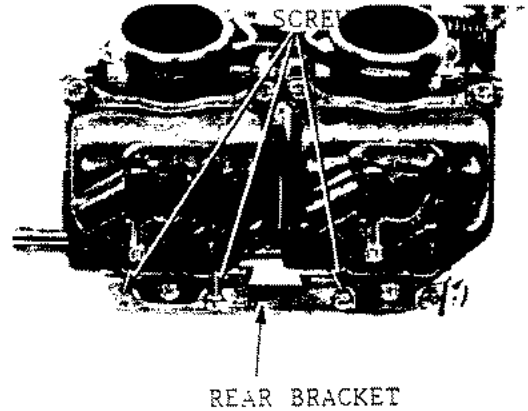


Install front bracket
install throttle stop screw together with stay

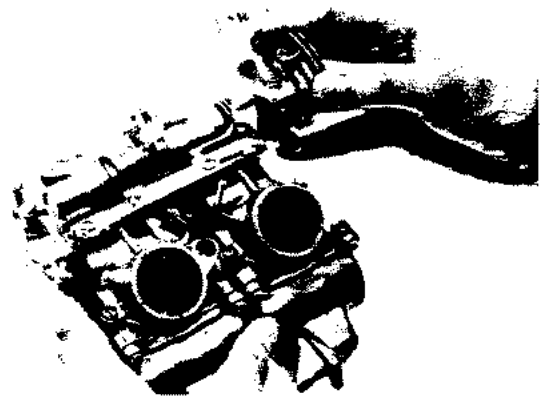
insert screws.



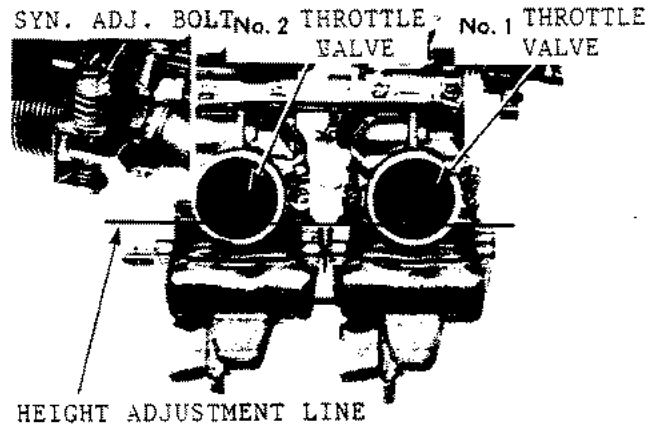
Install rear barcket, aNS INSERT SCREWS



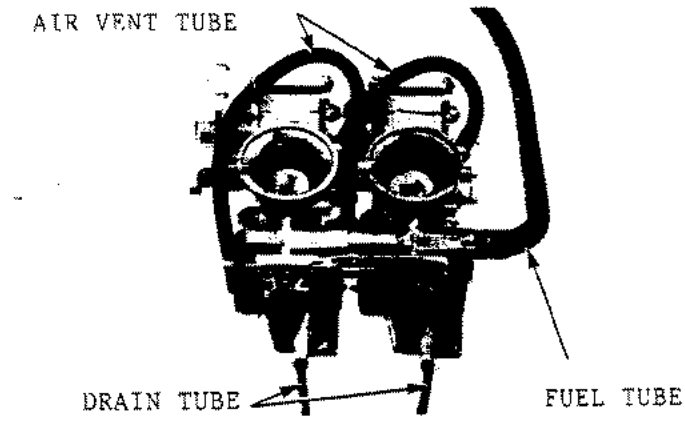
Move throttle drum by hand, and inspect movement of throttle valve



Turning synchronizing adjuster bolt and align No.2 carburettor throttle valve height with No. 1 carburettor throttle valve

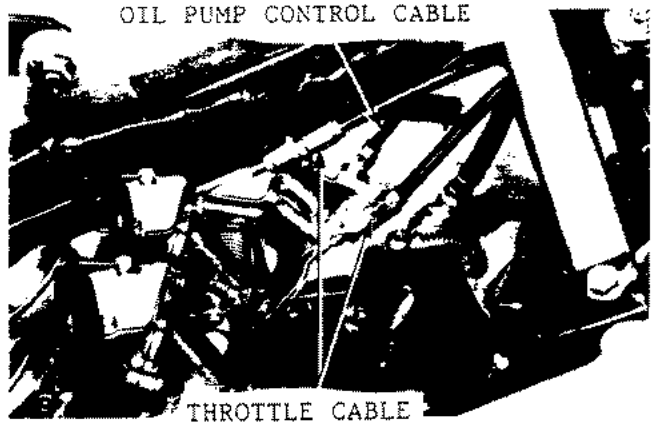


Install tube

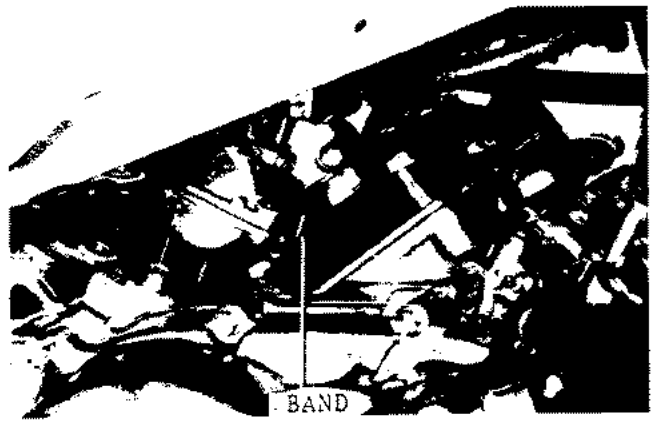


INSTALLATION

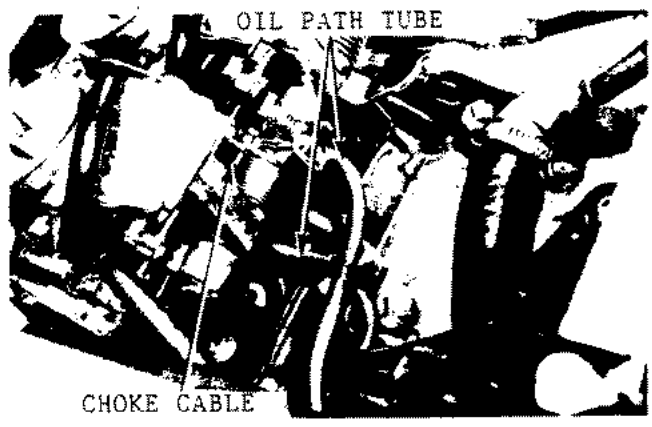
Install the oil pump control cable and throttle cable into the carburettor



Install carburettor into insulator and tighten band

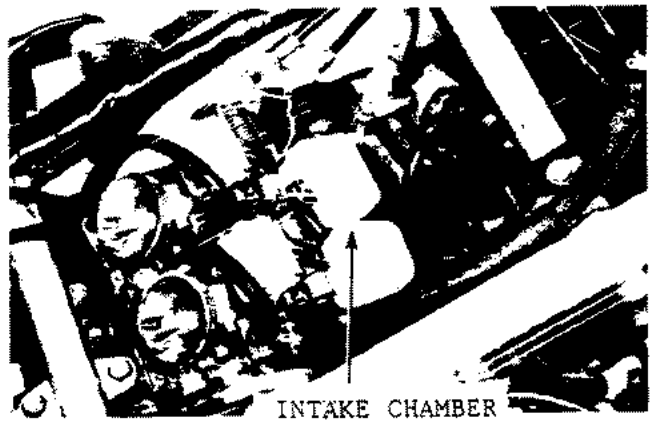


Connect oil path tube to carburettor
Connect choke cable to carburettor



Check for foreign particles and abnormal conditions and install chamber to insulator

* When installing intake chamber, ensure that it is position against the stopper and tighten band

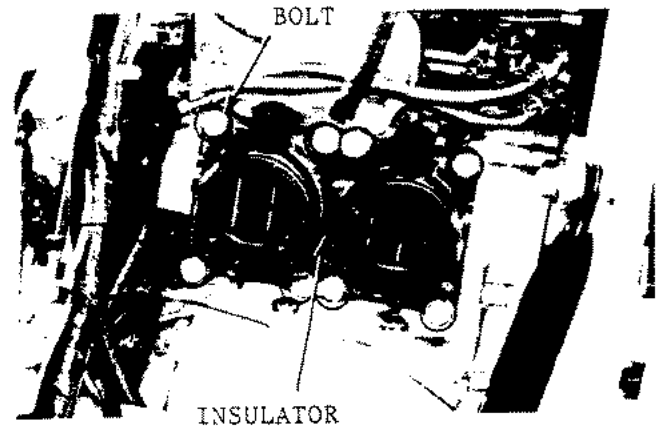


Inspect throttle grip play (2-15)
Adjust oil pump control cable (2-14)
Install air cleaner case (4-3)
Install fuel tank (4-2)
Bleed oil pump (3-4)
Adjust air screw (4-16)
Adjust idling (2-12)
Synchronize (4-16)
Install lower fairing (15-5)

REED VALVE

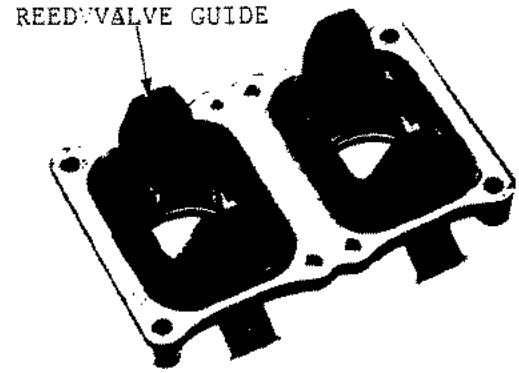
Removal

Remove carburettor (14-4)
Remove 8 reed valve bolts, and remove insulator, reed valve and gasket



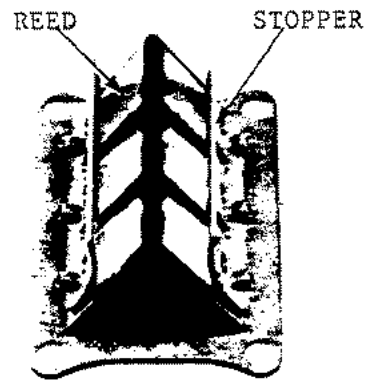
* after removing all parts, place cover over crankcase so that foreign particles do not enter

Inspect insulator valve guide for wear



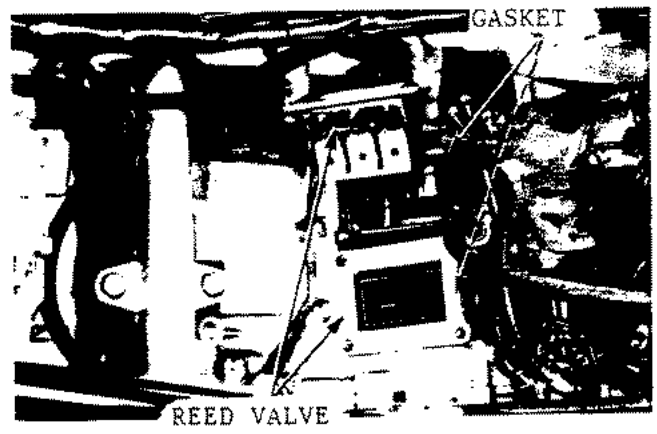
Replace reed if worn
If reed valve seat is worn, cut or if there is clearance or gaps with the reed, then replace as an assembly

* The reed stopper must not be bent at all, if bent engine will be affected
* Replace all items in a poor condition
* Do not separate reed valve



Install new gaskets and install reed valve

Install insulator and tighten 8 bolts



AIR SCREW ADJUSTMENT

* Adjust once the engine is warm

Fully close air screw and then turn out standard number of turns

Standard number of turns : 1-½ revolutions

* Take care not to turn into seat too tight as it will be easily damaged

Start engine, turn throttle stop screw to make engine idle
Idle speed : 1200 ± 100 rpm

Lightly snap the throttle from idle and check if revolutions are smooth and increase is normal

Turn air screw ½ turn from standard position and if abnormal conduct another test (1-23)

CARBURETTOR SYNCHRONIZATION

* Synchronize carburettors once engine is warm

Remove lower fairing (15-3)
Remove each plug from carburettor

Use vacuum gauge to adjust

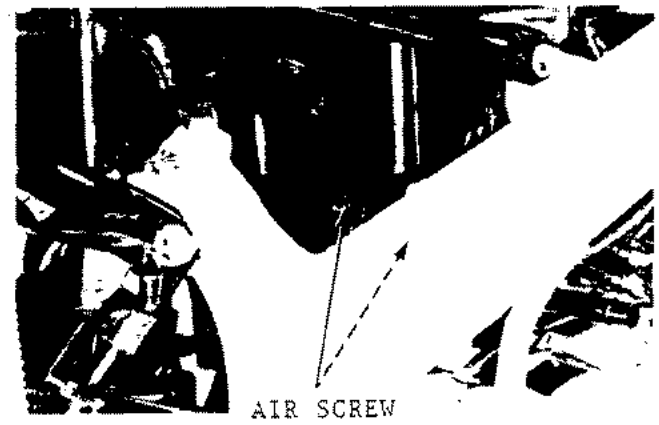
Start engine and idle

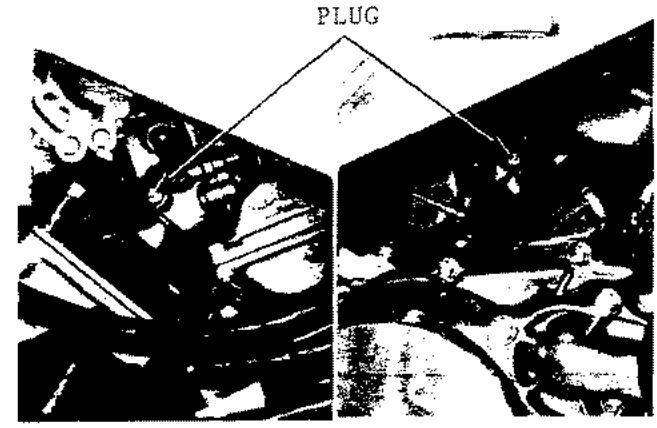
Idle speed : 1200 ± 100rpm

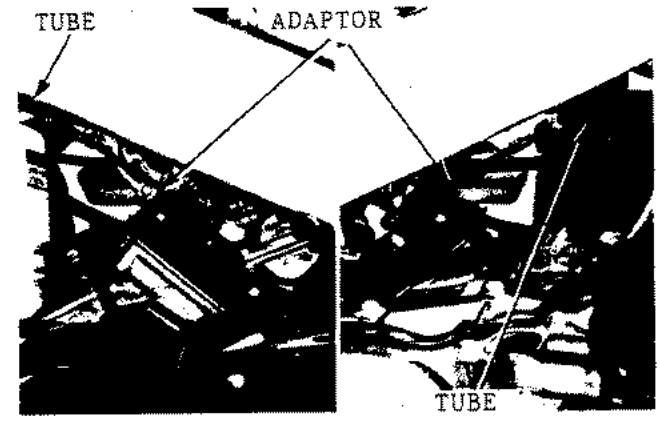
Inspect each cylinder vacuum

Standard vacuum : UNDER 30mmHg

If vacuum is above standard vlave then adjust







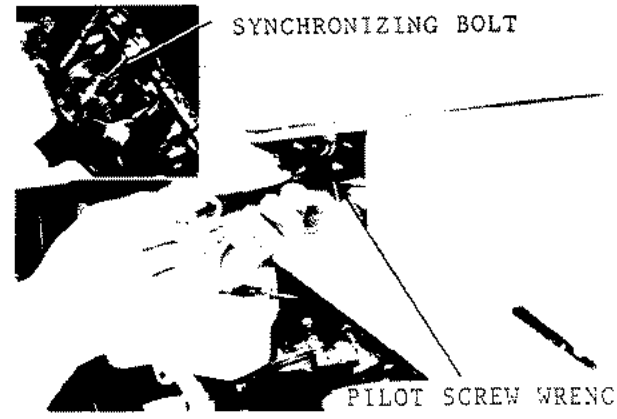
Balance each carburettor by turning synchronizing bolt

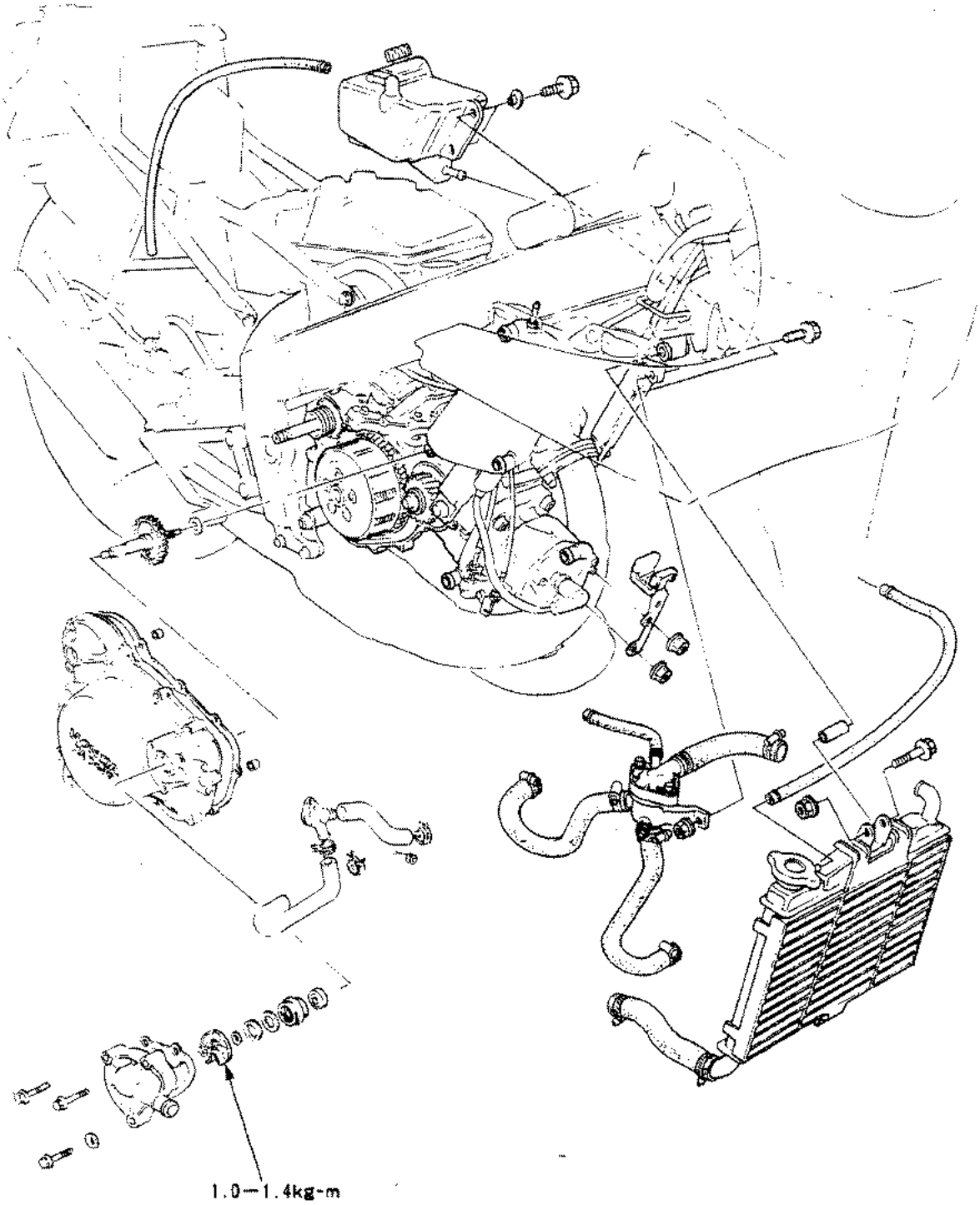
Special Tool:

Pilot Screw Wrench : 07908-4220201

* No.1 carburettor becomes normal

After adjusting,snap throttle 2-3 times inspect and adjust idlaing (2-12)




1.0—1.4kg-m

COOLING SYSTEM 5.

MAINTENANCE INFORMATION:

Warning: If you think the radiator fluid temperature may be over 100°C do not open radiator cap as this will cause rapid outflow of pressure

- Adjust cooling system when it si cold
- All maintenance to cooling system can be performed with the vehicle upright
- Refill radiator at reserve tank
- After inspecting and adjusting use a radiator cap tester and inspect each connection and seal for leakage

Torques:

Water Pump Impellar : 1.0-1.4 kg-m

Maintenance Standards

Item		Std	Service Limit
Radiator cap pressure		1.1-1.4kg/cm²	
Thermostat Opening Temp.	Opening	63-67℃	
	Ttl Open	80℃	
	Ttl Open Lift	8 mm以上	
Coolant Capacity	Total roughly	1.310cc (Radiator 1.060cc / Reserve tank 250cc)	

TOOLS:

Special:

Bearing remover set (10mm)	07936-GE00000
Mechanical seal driver attachment	07945-4150400

Standard:

Outer driver (24x26mm)	07746-0010700
Pilot (10mm)	07746-0040100
Driver handle A	07749-0010000

TROUBLE SHOOTING

Water Temperature Too High:

Temperature gauge or thermo sensor faul
Radiator cap faulty
Radiator fluid faulty
Water hose or jacket clogged
Fins bent
Radiator clogged
Water pump faulty

Water Leakage:

Mechanical seal faulty
Water hose worn, split
O-rings, gaskets seals faulty

Temperature Does Not Rise, or Rises Poorly:

Temperature gauge or thermostat faulty

RADIATOR FLUID DENSITY

RaD FLUID % \ Temp °C	0	5	10	15	20	25	30	35	40	45	50
5	1.009	1.009	1.008	1.008	1.007	1.006	1.005	1.003	1.001	0.999	0.997
10	1.018	1.017	1.017	1.016	1.015	1.014	1.013	1.011	1.009	1.007	1.005
15	1.028	1.027	1.026	1.025	1.024	1.022	1.020	1.018	1.016	1.014	1.012
20	1.036	1.035	1.034	1.033	1.031	1.029	1.027	1.025	1.023	1.021	1.019
25	1.045	1.044	1.043	1.042	1.040	1.038	1.036	1.034	1.031	1.028	1.025
30	**1.053**	**1.052**	**1.051**	**1.049**	**1.047**	**1.045**	**1.043**	**1.041**	**1.038**	**1.035**	**1.032**
35	1.063	1.062	1.060	1.058	1.056	1.054	1.052	1.049	1.046	1.043	1.040
40	1.072	1.070	1.068	1.066	1.064	1.062	1.059	1.056	1.053	1.050	1.047
45	1.080	1.078	1.076	1.074	1.072	1.069	1.066	1.063	1.060	1.057	1.054
50	1.086	1.084	1.082	1.080	1.077	1.074	1.071	1.068	1.065	1.062	1.059
55	1.095	1.093	1.091	1.088	1.085	1.082	1.079	1.076	1.073	1.070	1.067
60	1.100	1.098	1.095	1.092	1.089	1.086	1.083	1.080	1.077	1.074	1.071

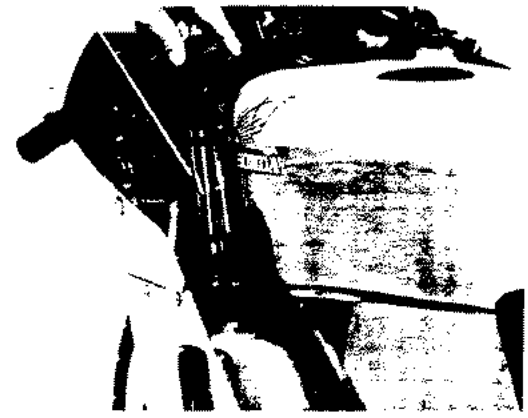
RADIATOR MIXTURE

Lowest Temp	Ratio	Honda Ultra Rad Fluid	Water
−9°C	20%	262cc	1,048cc
−16°C	**30%**	**393cc**	**917cc**
−25°C	40%	524cc	786cc
−37°C	50%	655cc	655cc
−44.5°C	55%	720.5cc	589.5cc

INSPECTION

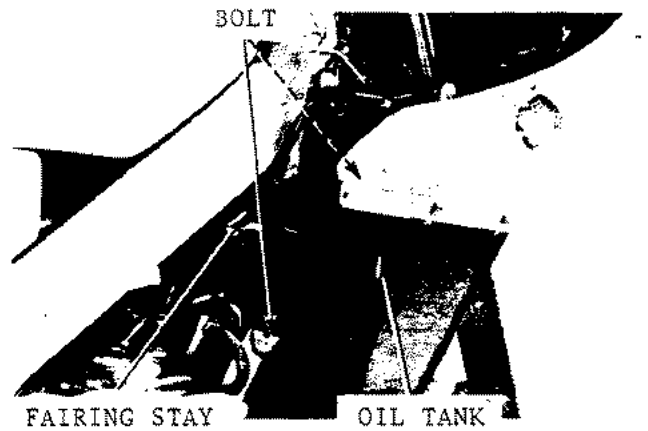
Radiator Fluid Level

Use a level gauge and measure radiator fluid level
Inspect for leakage



Radiator Cap Inspection

Remove R. lower fairing (15-3)
Remove fairing stay
Remove oil tank bolts and put in a position where the radiator cap can be removed and fix to frame



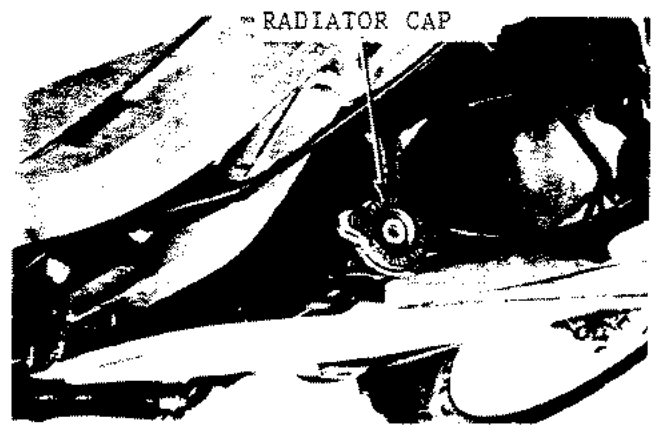
Remove radiator cap

* Check that radiator fluid has cooled sufficiently before removing radiator cap

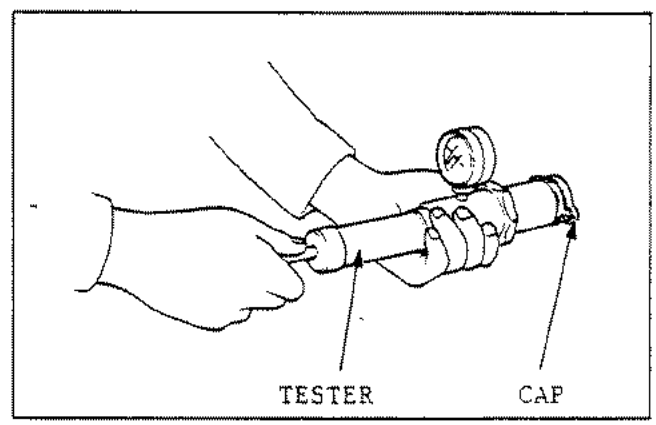
Use radiator cap tester and check cap quality

If radiator cap relief pressure holds for around 6 seconds it is okay

Radiator Cap relief Pressure: 1.1-1.4kg/cm^2



* So that the tester can be installed to the cap apply water to the cap seal



RADIATOR PRESSURE INCREASE TESTS

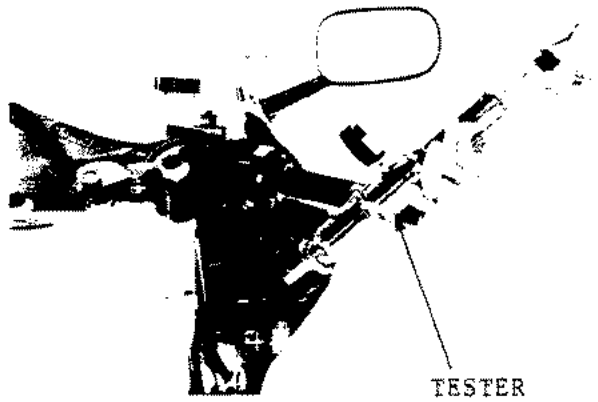
Remove radiator cap

* Check that the radiator has cooled before removing cap

Apply specified pressure to radiator cap & check that it holds pressure for 6 seconds

Standard pressure : 1.1-1.4 Kg/cm^2

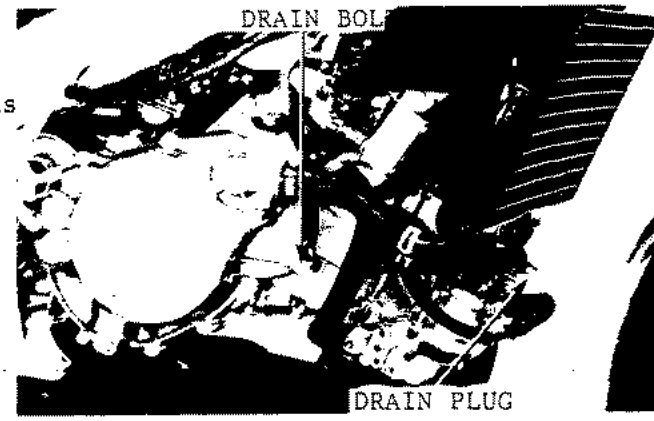
* Do not increase pressure above specified pressure. If too much pressure is applied damage can be caused to the radiator and connections



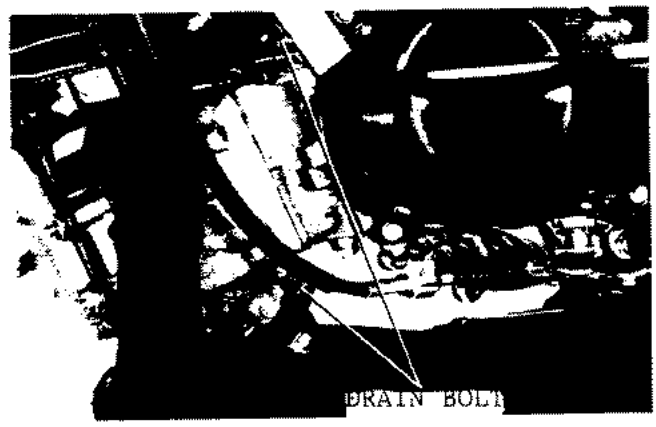
If there is pressure leakage, check for leaks in hoses, each connection and water pump lower section

RADIATOR FLUID REPLACMENT

Remove radiator cap (5-3)
Remove lower fairing (15-3)
Remove water pump drain bolt, No.1 cyl head drain bolt and drain fluid for radiator
Remove each cylinders drain bolt and drain remaining radiator fluid
Finally move bike left & right to drain total radiator fluid. After draining install sealing washer into drain plug and drain bolt and tighten plug and bolt sufficiently



* Do not forget to install sealing washers



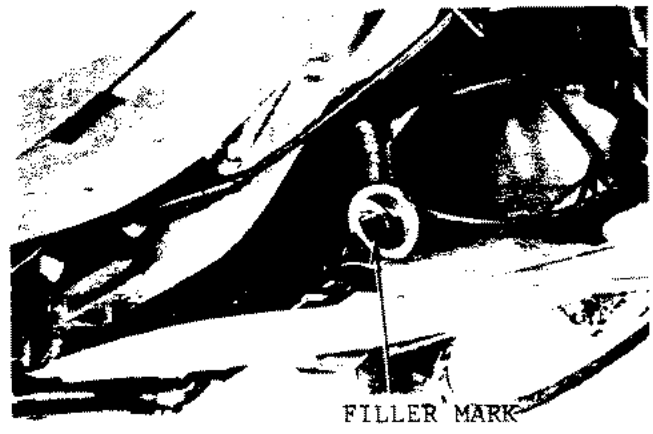
Fill radiator fluid into filler hole
Place transmission in neutral & start engine
Once engine is warm snap throttle 3-4 times between 4000-5000rpm
Finally fill radiator fluid to level mark

Install radiator cap

Inspect reservoir tank fluid level and if insufficient fill to "UPPER" level

Install oil tank

Install lower fairing (15-5)

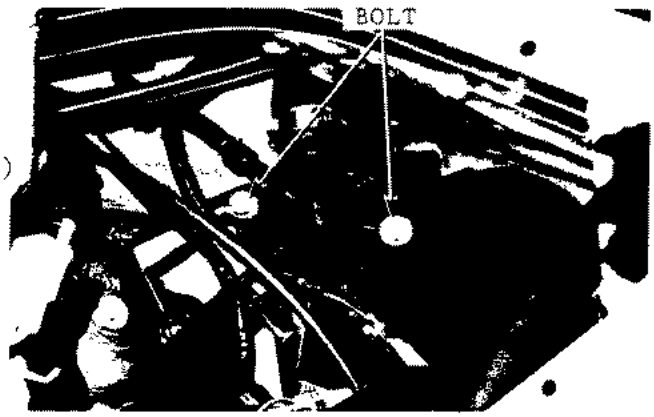


THERMOSTAT

Removal

Remove fuel tank (4-2)
Remove coupler holder from under fuel tank (17-3)
Drain radiator fluid (3-4)
Remove two bolts

Raise thermostat cover upward and remove thermostat



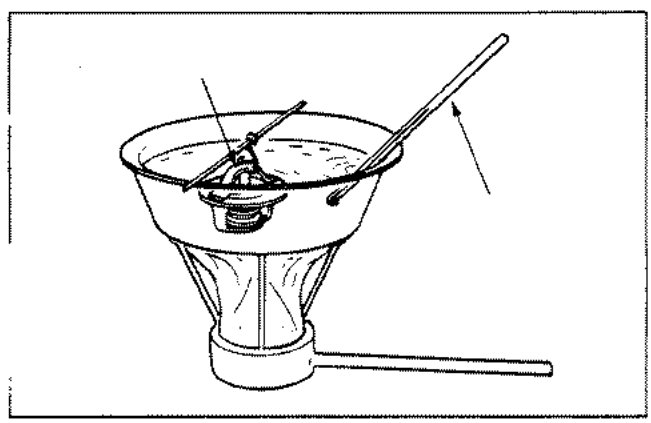
Inspection

Put thermostat inot tester container, raise water temperature and test opening relief temperature

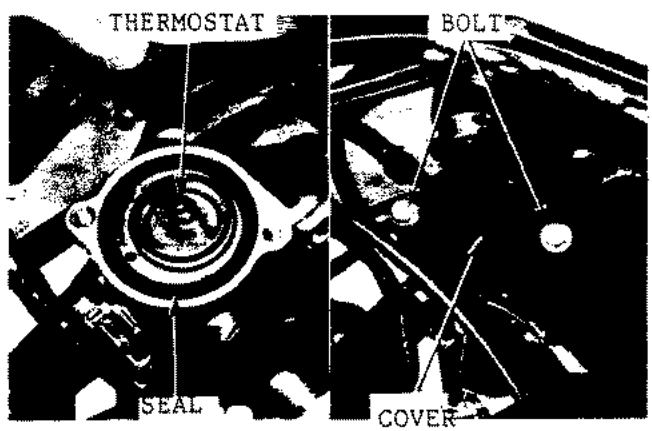
Thermostat:

Opening temperature	63-67°C
Full open temperature	80°C
Full open lift	above 8mm

* Do not let thermostat touch container
* Do not place thermostat & thermometer near eadge of container
* Replace thermostat if it opens even just a little above the standard temperature
* Measure opening lift for roughly 5 minutes after it has held 80°C



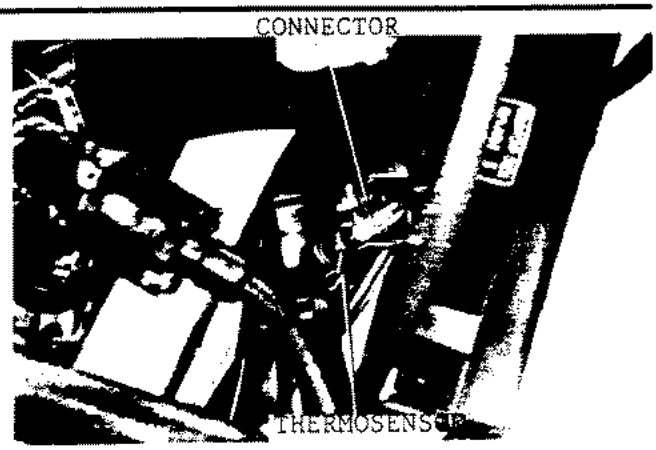
Insert thermostat into thermostat case and reassemble
Assemble seal rubber into thermostat case
Install thermostat cover and tighten bolts
Install radiator fluid (15-4)
Install coupler holder (17-3)
Install fule tank (4-2)



THERMOSENSOR

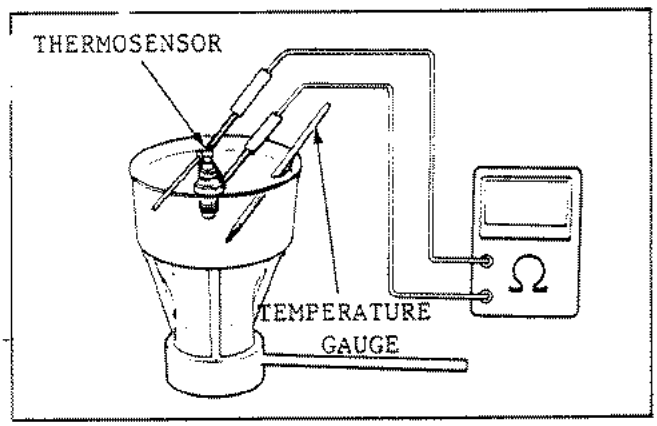
Removal

Drain radiator fluid (5-4)
Remove thermostat wire connector from thermosensor
Remove thermosensor from thermostat case



Inspection

Insert thermostat unit into test container, raise water temperature gradually, and measure thermosensor resistance change



Thermosensor Unit:

Temperature (°C)	60	118	122
Resistance (ohms)	90-120	16-19	14-18

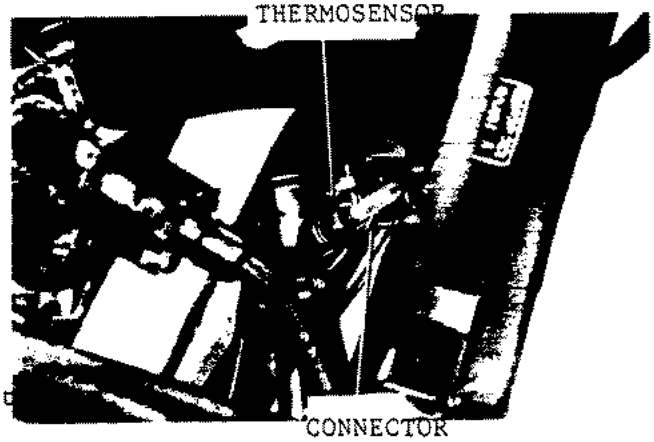
Installation

Install thermosensor

Torque : 1.2-1.8Kg-m

* Apply sealing agent to thermostat when installing it.

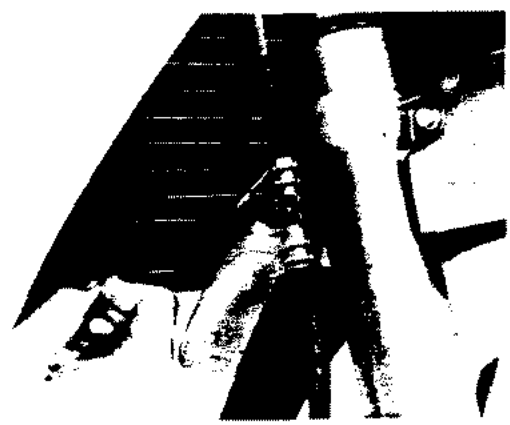
Connect thermosensor wire connector
Insert radiator fluid (3-4)



RADIATOR

Radiator, Hose Inspection

Inspect radiator core and fins for clogging
If fins are bent use a screwdriver and adjust



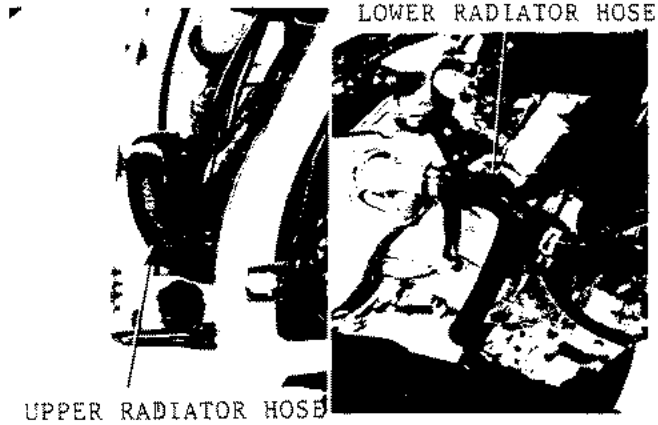
Inspect hose pipe and plug for damage and splitting

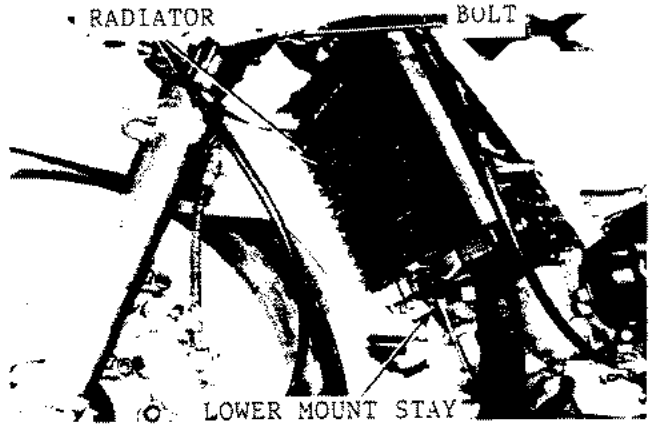
Removal

* Perform when engine is cold

Remove lower fairing
Drain radiator (5-4)
Remove radiator hose from radiator

Remove radiator lower mount stay from cylinder head
Remove radiator upper bolt, and remove radiator from frame





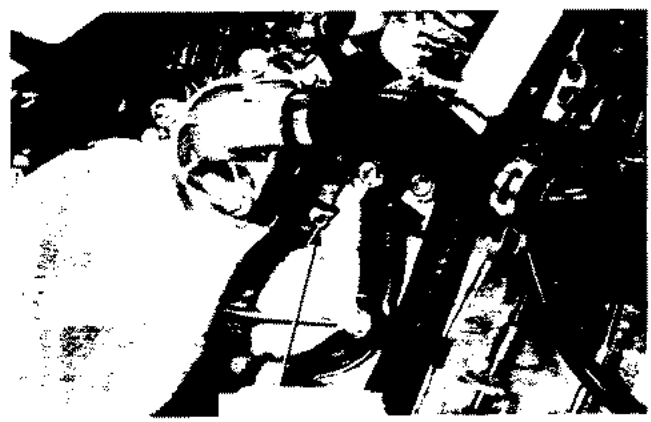
Installation

Install in reverse order of removal
Insert radiator fluid (5-4), after this conduct increasing pressure test on radiator to check for leakages from each (5-4)

WATER PUMP

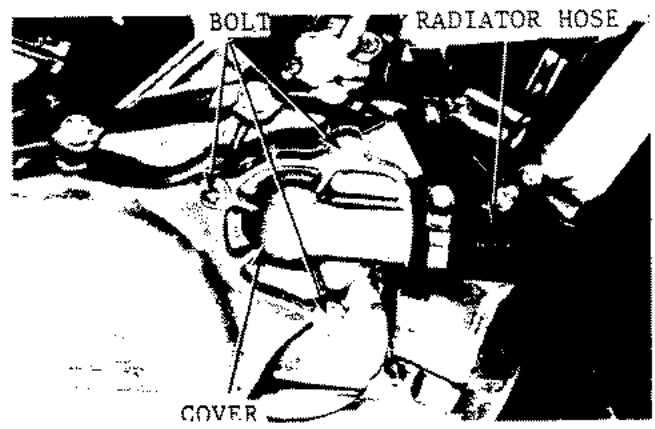
Mechanical Seal Inpsection

Remove R Lower fairing (15-3)
Inspect radiator for leakages from the inspection hole in the lower part of the water pump. If any leakages, replace mechanical seal as it will be worn.



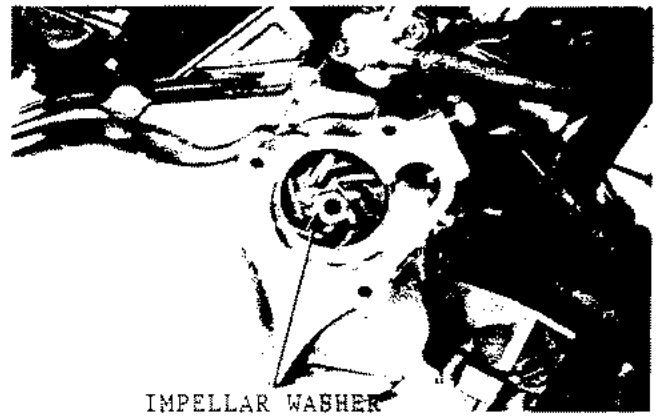
Water Pump Removal

Drain radiator fluid (5-4)
Remove radiator hose from water pump cover
Remove bolt, and remove water pump cover and gasket.



Remove impellor and washer

Inspect impellor for wear



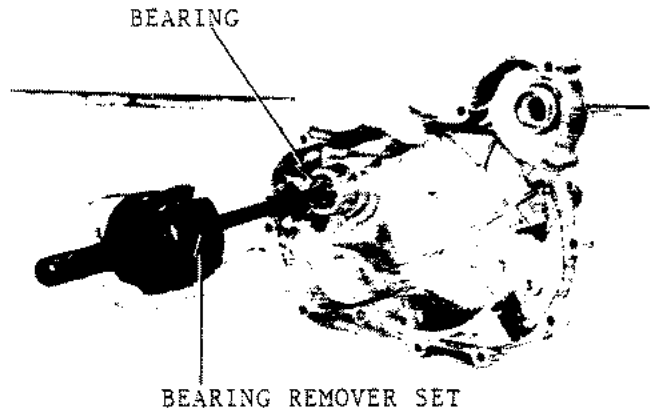
Mechanical Seal Replacement

Remove R crankcase cover (8-3)

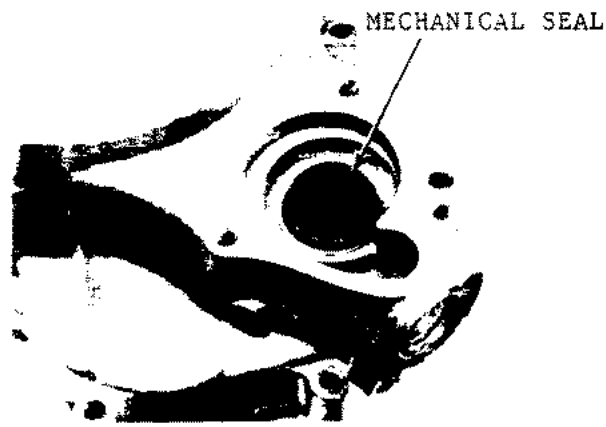
Remove water pump shaft bearing

Special Tool:

Bearing removal set (10mm) 07936-GE00000



Remove mechanical seal



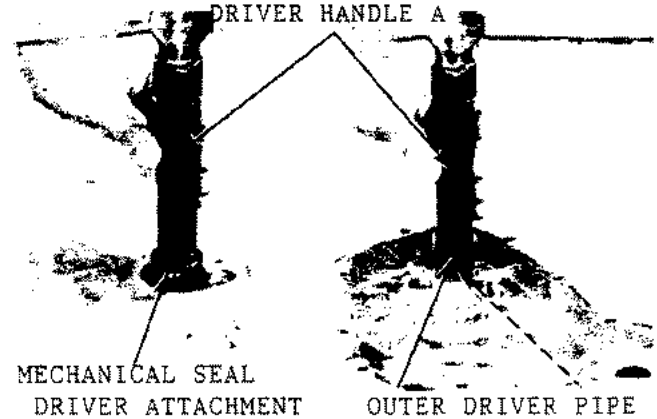
Insert new mechanical seal

Special Tool:

Mechanical seal driver attachment
07945-4150400

Standard Tool:

Driver handle A 07749-0010000



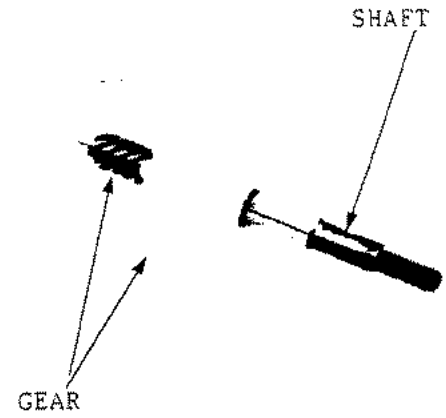
Insert new bearing

Standard tools:

Outer driver (24x26mm)	07746-0010700
Pilot (12mm)	07746-0040100
Driver handle A	07749-0010000

WATER PUMP INSTALLATION

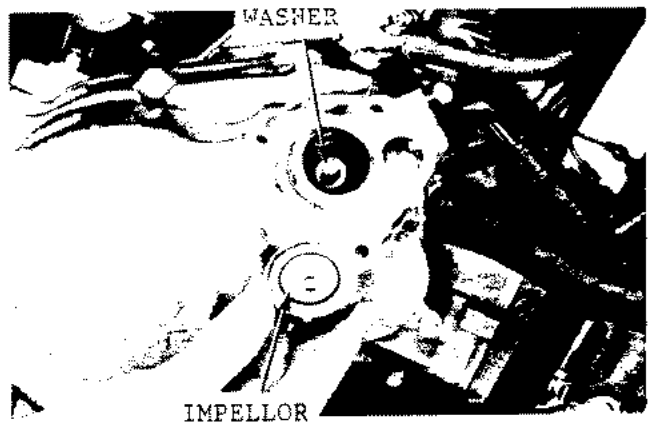
Inspect water pump shaft, gears for damage



Install R. crankcase cover (8-15)

Install washer into shaft and install impellor into shaft

Torque: 1.0-1.4 Kg-m



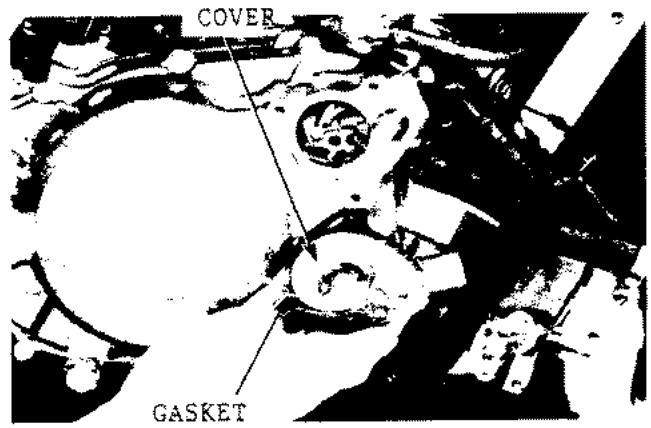
Install new gasket into water pump cover and install R crankcase cover

Tighten bolt
Insert radiator fluid (5-4)

RESERVOIR TANK

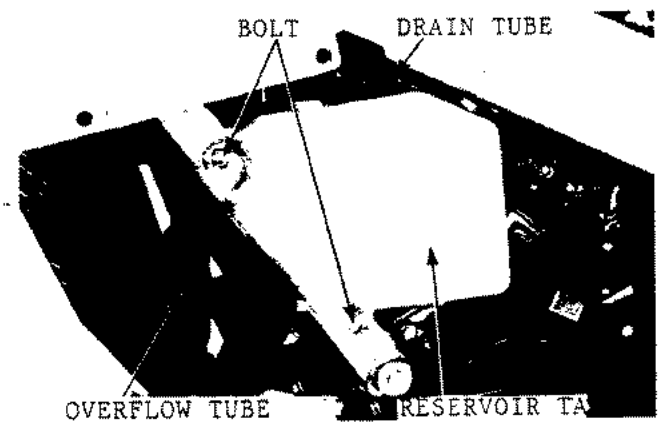
Removal

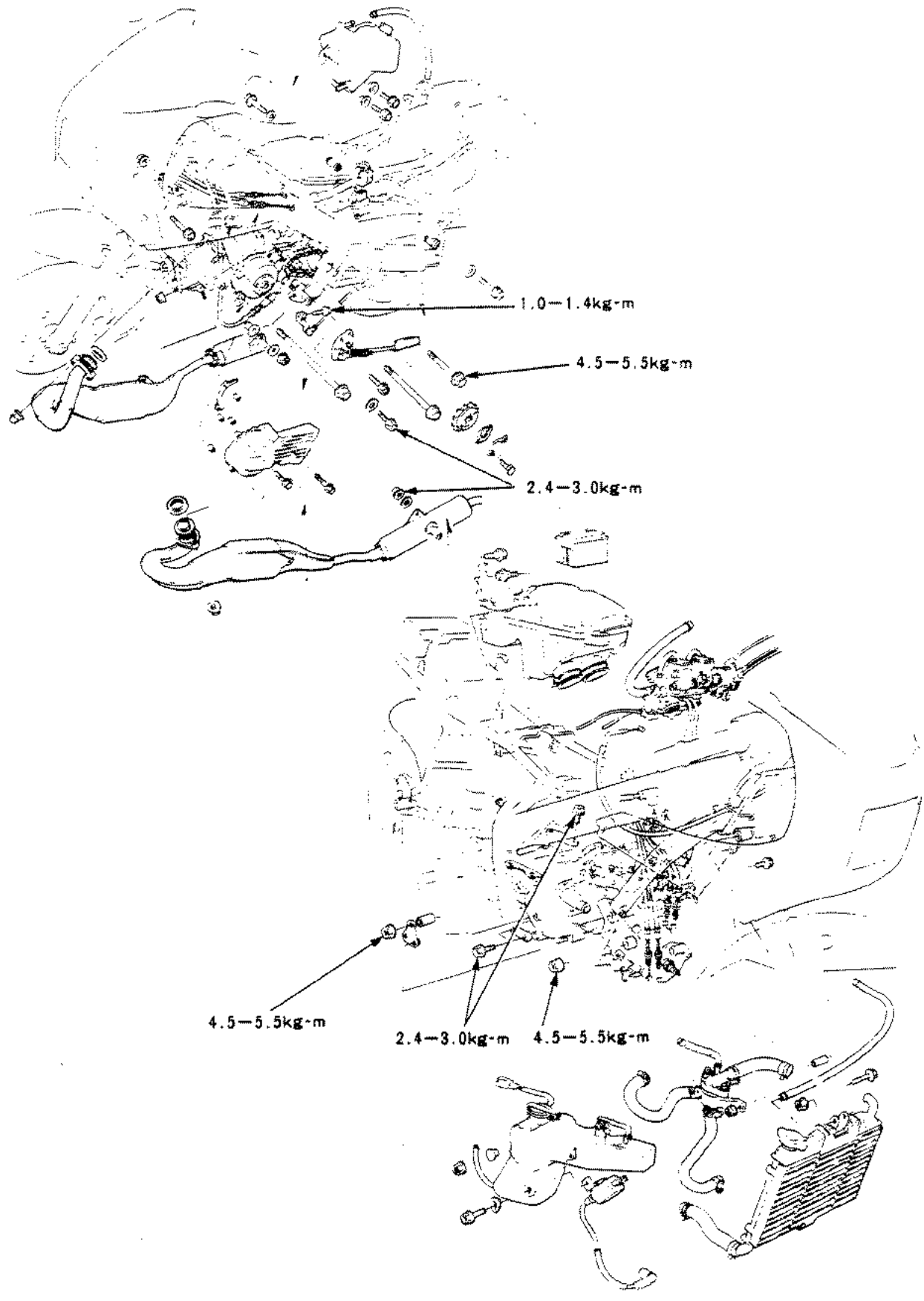
Remove lower fairing (15-3)
Remove overflow tube and drain tube from reservoir tsnk.
Remove 2 bolts amd remove reservoir tank



installation

Install in reverse order to removal




1.0—1.4kg-m
4.5—5.5kg-m
2.4—3.0kg-m
4.5—5.5kg-m
2.4—3.0kg-m
4.5—5.5kg-m

6. ENGINE REMOVAL

MAINTENANCE INFORMATION:

Warnings:

- When removing engine ensure motorcycle is upright and take care not to damage frame engine, cables and harnesses. Raise engine using a jack
- When removing engine put tape on frame where the engine may mark it.
- Perform the following maintenance:
  - Clutch, gearshift linkage, kickstarter (section 8)
  - Cylinder head, cylinder, piston (Section 7)
  - Oil pump (section 3)
  - Crankshaft, conrod (section 11)
  - AC Generator (section 10)
  - Water pump (section 5)
  - Carburettor (section 4)
  - Transmission (shift drum, shift fork, fork shaft (section 9)

Remove the following

- Crankcase (section 11)

Engine weight		30.5kg
Transmission oil capacity (disassembled		0.9ℓ
Coolant Capacity	Radiator engine	1,060cc
	Reserve Tank	250cc
Recommended engine oil		see section 3 — 2
Recommended transmission oil		see section 2 — 8
Recommended radiator fluid		see section5 — 2 (recommended ratio 30%)

TORQUES:

Engine hanger bolt 8 mm	2.4—3.0kg-m
10mm	4.5—5.5kg-m
Exhaust chamber pinch bolt	2.4—3.0kg-m
Shift change pedal	1.0—1.4kg-m
Silencer pinch bolt	2.4—3.0kg-m

ENGINE REMOVAL

Place vehicle on flat ground and raise frame

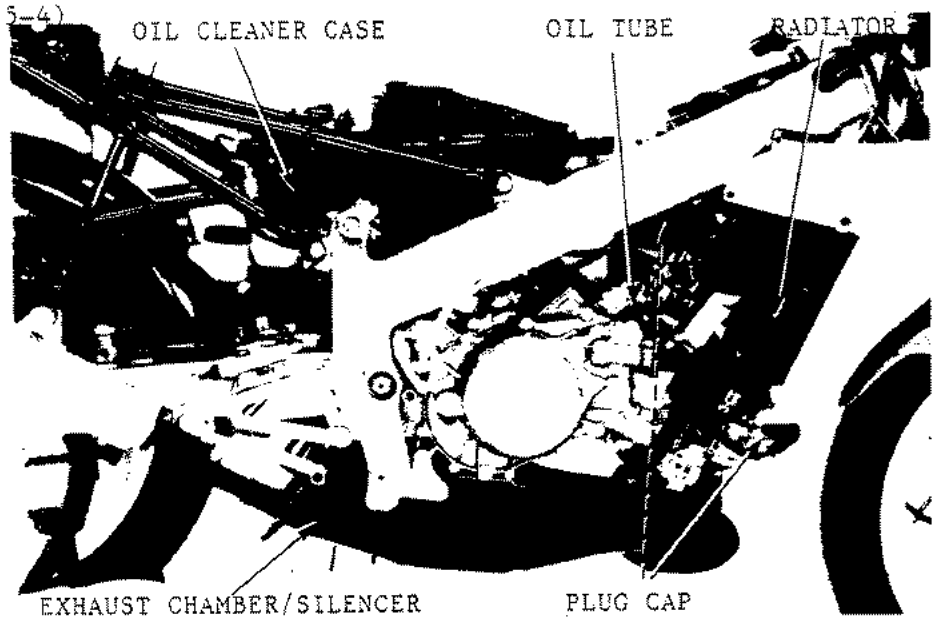
Remove the following parts:

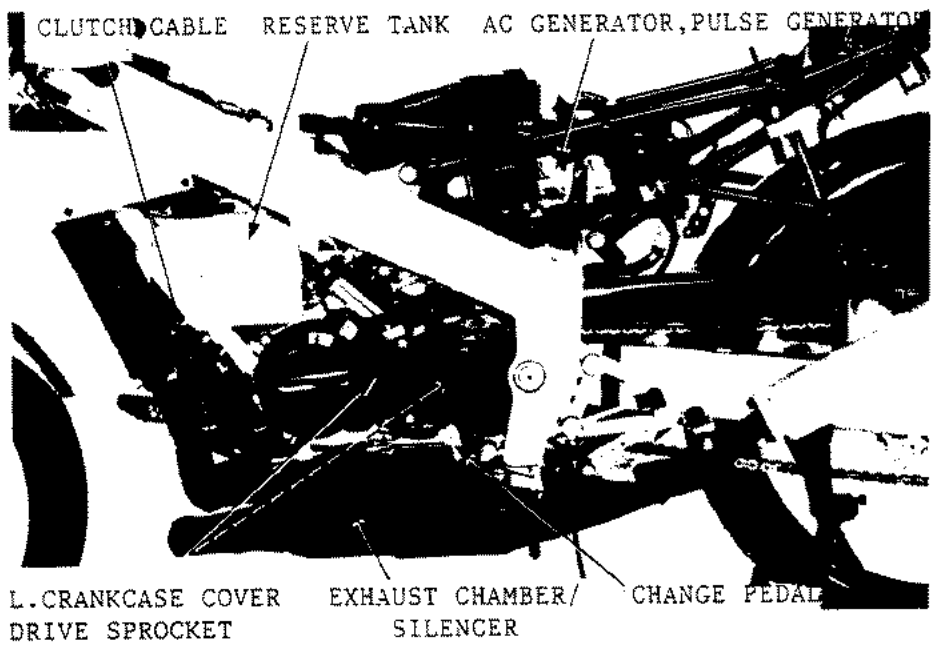
- seat, side covers, lower fairing (section 15)
- Fuel tank (4-2)
- battery 9 16-3)

Drain transmission oil (2-9)
Drain radiator fluid (5-4)

Remove the following parts:-

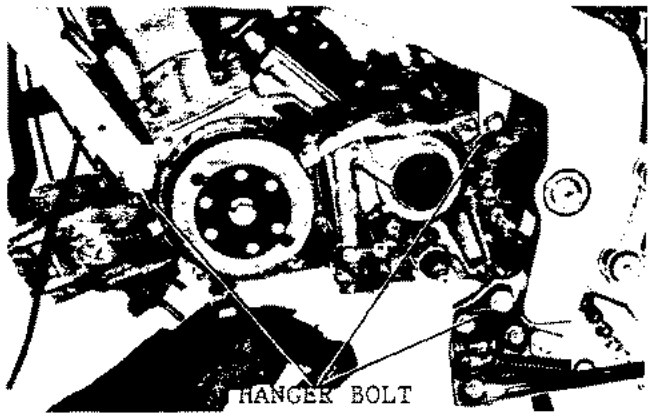
- air cleaner case
- carburettor (4-4)
- radiator
- cylinder head water hose (7-3)
- RC valve control cable (19-3)
- oil tube
- exhaust chamber/ silencer
- spark plug cap
- radiator fluid reservoir tank
- AC generator wire coupler
- Pulse generator wire coupler
- L.crankcase cover
- drive sprocker
- change pedal
- clutch cable





Raise engine with a jack

Remove engine hanger bolt, hanger plate and remove engine from frame



ENGINE INSTALLATION

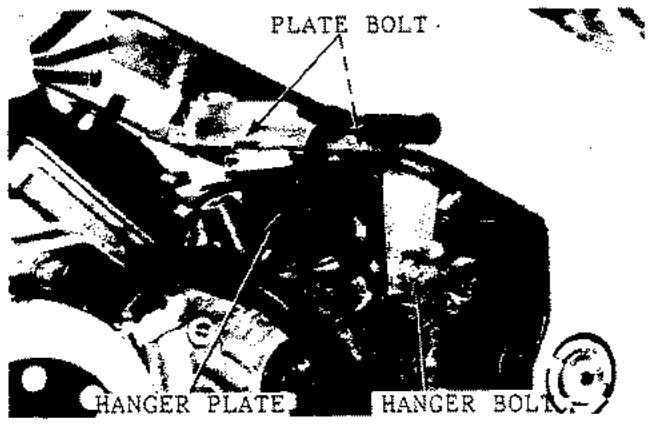
* Take care not to damage harness and cables
* Take care not to damage each part on frame, bolts and threads.
* Do not forget to install collars
* Place harness and cable in the correct positions.

While raising engine with a jack set it in the frame

Install upper hanger bolts and plate bolts

Torques:

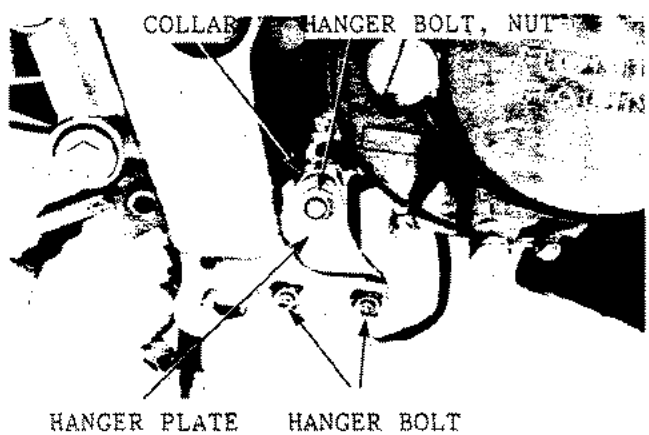
Hanger bolt (10mm)	4.5-5.5 kg-m
Plate bolt (8mm)	2.4-3.0 kg-m



Install lower hanger bolts and plate bolts

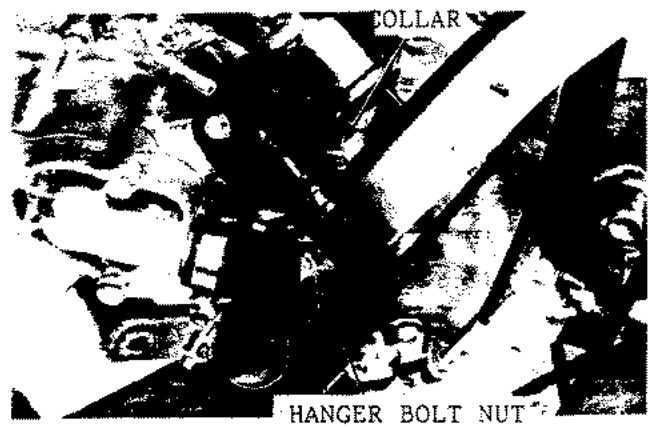
Torques:

Hanger bolt (10mm)	4.5-5.5 kg-m
Plate bolt (8mm)	2.4-3.0 kg-m



Check that collars have been installed and tighten front hanger bolt

Torque: 4.5-5.5 kg-m

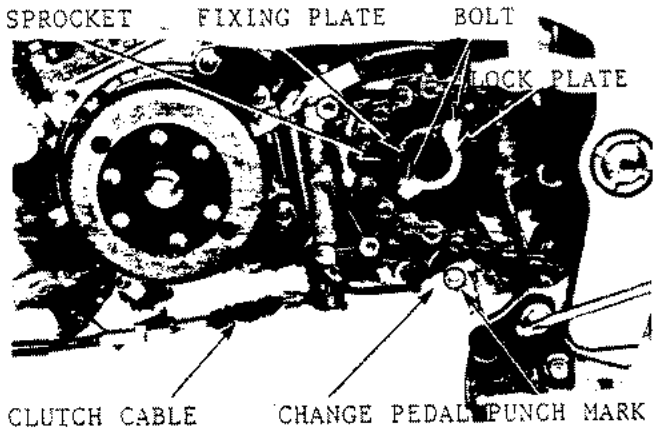


Install drive sprocket

Install fixing plate and lock plate and tighten bolts
Line up lock plate hole and turn bolt till it stops

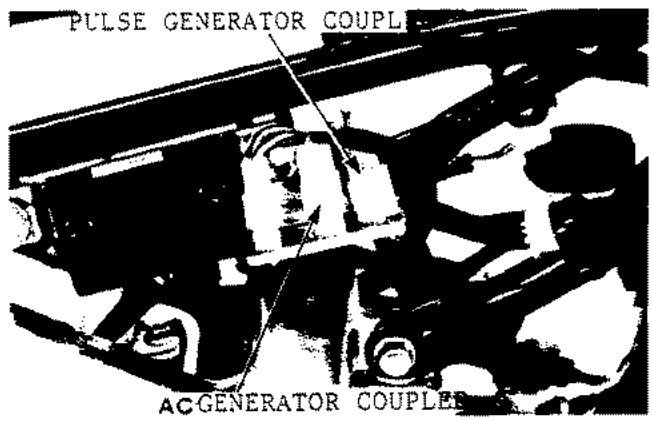
Aligh change pedal pinch mark and shift spindle pinch mark and install change pedal

Torque: 1.0-1.4 kg-m



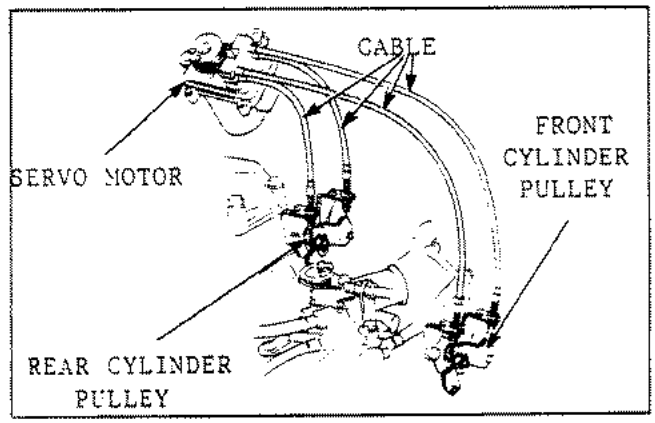
Connect clutch cable lifter arm

Connect AC generaotr wire coupler and pulse generator wire coupler

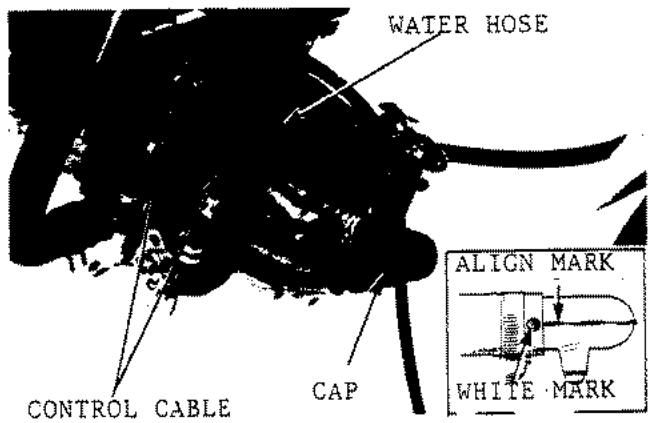


Connect RC valve control cable as in the diagram

Connect RC valve control cable, cylinder head water hose and spark plug cap to the front cylinder



* Align hoses white mark and cylinder head alignment mark and install hose.



Connect RC vakve control cable, cylinder head water hose, radiator bipass tube and spark plug cap to rear cylinder

Install the following parts:

- L. crankcase cover
- radiator reserve tank
- exhaust chamber
- radiator
- oil tube
- carburettor (4-14)

* Install wiring and harness correctly (1-23)

Insert radiator fluid (5-4)
Insert transmission oil (2-9)

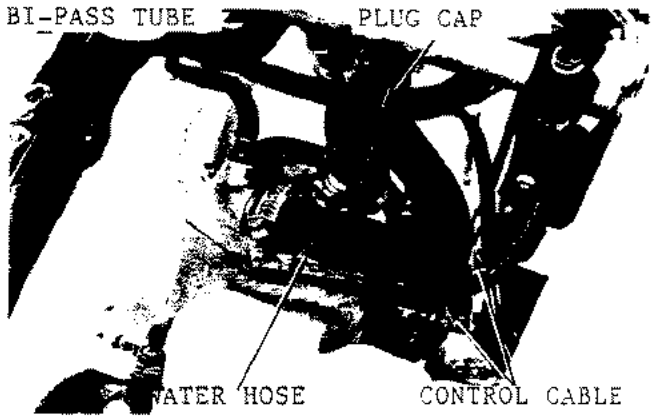
Perform the following inspections/ maintenance

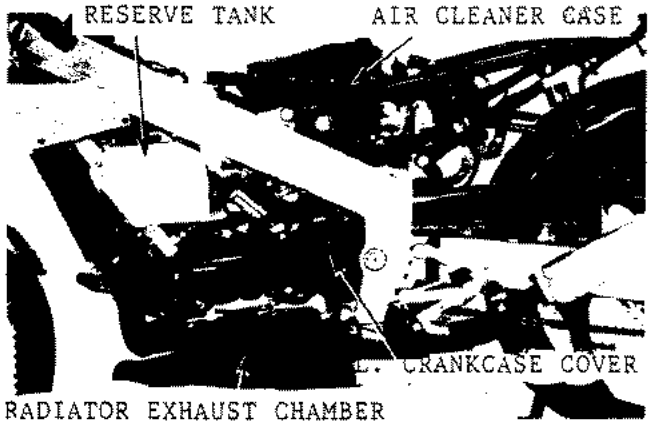
- throttle grip play (2-15)
- clutch lever play (2-7)
- drive chain (2-9)
- oil pump control cable (2-14)

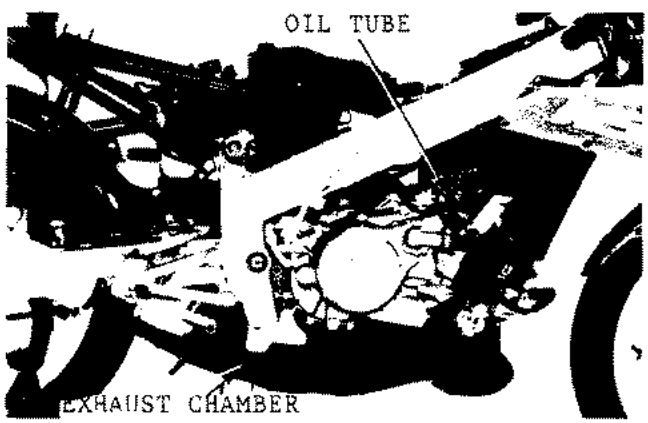
Install the following parts:

- air cleaner case
- battery (16-3)
- fuel tank (4-2)

Bleed transmission system (3-4)
Adjust RC valve control cable (2-17)
Install lower fairing, side covers, seat (section 15)







7. CYLINDER HEAD, CYLINDER PISTON, R.C. VALVE

MAINTENANCE INFORMATION

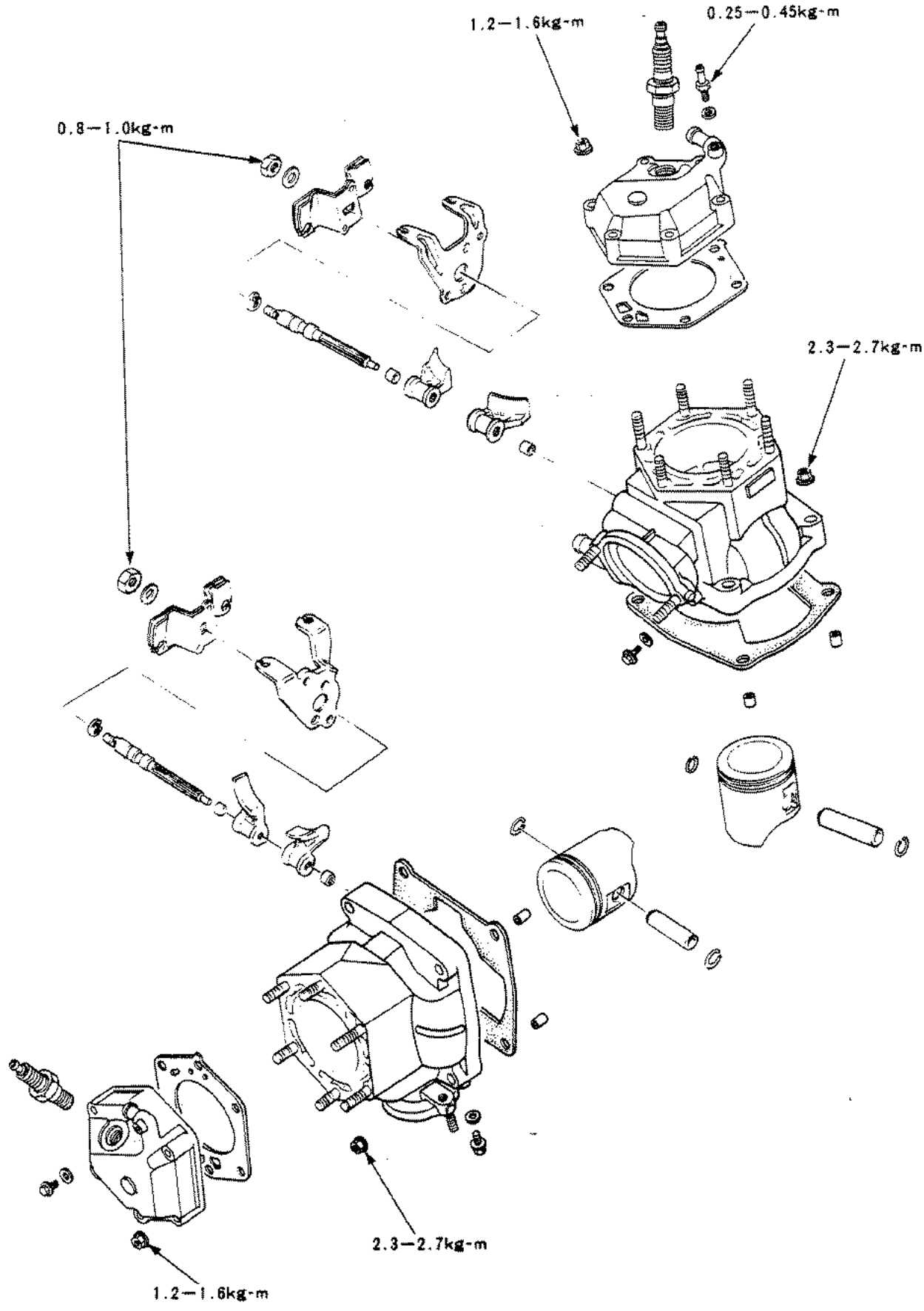
Warnings:

- It is not necessary to remove engine when maintaining frame. Perform all maintenance with the vehicle in an upright position
- Before maintenance, clean engine so that foreign materials cannot enter
- When removing cylinder and cylinder head do not use screwdrivers or other object which will damage the index mark
- Do not damage cylinder wall or piston facing
- Before inspecting parts which have been removed wash them and when reinstalling apply engine oil to moving parts
- Always replace cylinder head gasket with a new one once removed. If reused leakage and poorperformance will result
- Cylinder and piston selection is related. When replacing cylinder or piston always install the part with the corresponding mark

Item		Standard	Service Limit
Cylinder I.D	Mark : A	54.010—54.015	54.085
	Mark : B	54.005—54.010	54.080
	Mark : C	54.000—54.005	54.075
		———	0.05
		———	0.05
Piston O.D (15mm from skirt)	Mark : B	53.971—53.975	53.940
	Mark : 0	53.966—53.970	53.935
	Mark : D	53.961—53.965	53.930
Cylinder-to-piston clearance		0.035—0.044	0.08
Piston pin hole I.D		15.002—15.008	15.03
Piston pin O.D		14.994—15.000	14.98
Piston-to-pin clearance		0.002—0.014	0.04
Piston ring clearance	Top	0.23—0.38	0.43
	Second	0.23—0.38	0.43
Cylinder head warpage		———	0.10
Upper cylinder warpage		———	0.02
Ring groove to ring clearance	Second	0.065—0.095	0.12
Cylinder compression		12± 2 kg/cm²	———

TORQUES:

Cylinder head nut	1.2—1.6kg-m
Cylinder nut	2.3—2.7kg-m
RC Valve shaft	0.8—1.0kg-m
Cylinder head bipass tube joint	0.25—0.45kg-m


1.2—1.6kg-m
0.25—0.45kg-m
0.8—1.0kg-m
2.3—2.7kg-m
2.3—2.7kg-m
1.2—1.6kg-m

TROUBLE SHOOTING:

Low Compression, Poor Response
At Low Revs:

- Cylinder head gasket faulty
- Spark plug installation faulty
- Piston rings damaged, sticking or worn
- Cylinder piston damaged or worn

High compression, Overheating,
Knocking:

- Carbon deposits on cylinder head
  or pistons

Piston Noise:

- Cylinder, piston dmaged
- Piston pin bore or piston pin damaged
- Conrod small end bearing damaged

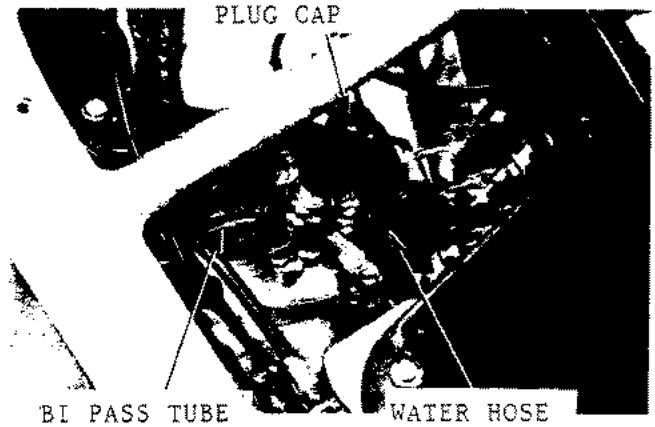
CYLINDER HEAD REMOVAL

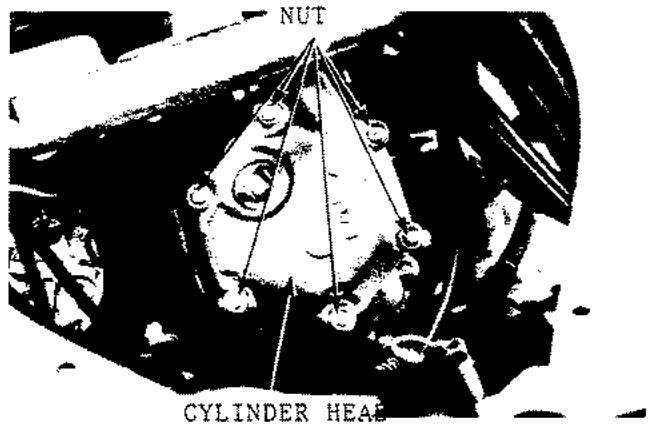
Remove seat, side covers, lower fairing (section 15)

Drain radiator (5-4)

Rear Cylinder Head Removal

Remove fuel tank & air cleaner case (sect. 4)
Remove coupler holder & CDI unit (17-3)
Remove spark plug cap, bipass tube, water hose from cylinder head and spark plug
Remove spark plug
Remove cylinder head nut & remove cylinder head and gasket

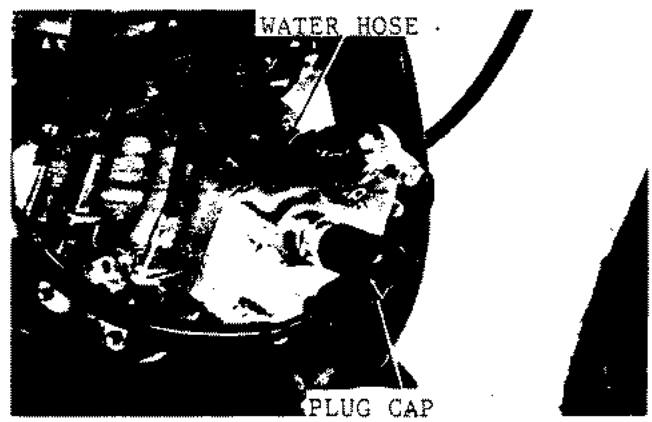




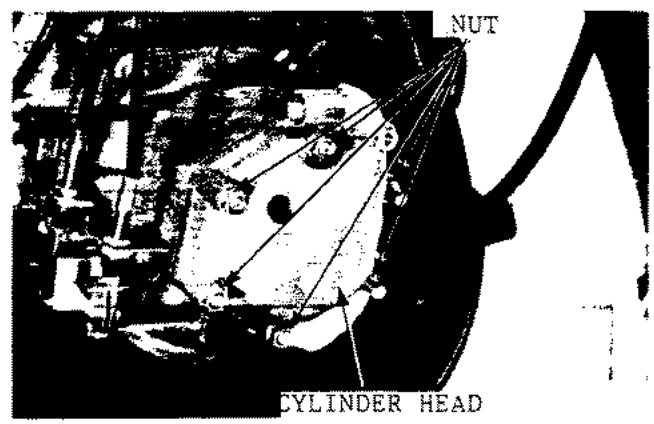
Front Cylinder Head removal

Remove radiator (5-7)
remove cylinder head water hose and spark plug cap from cylinder head and spark plug.

Remove spark plug

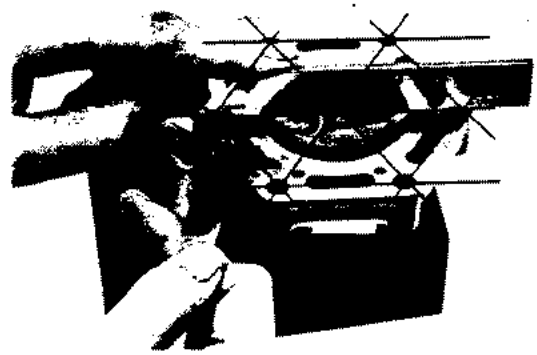


Remove cylinder head nut anc remove cylinder head and gasket



CYLINDER HEAD INSTALLATION

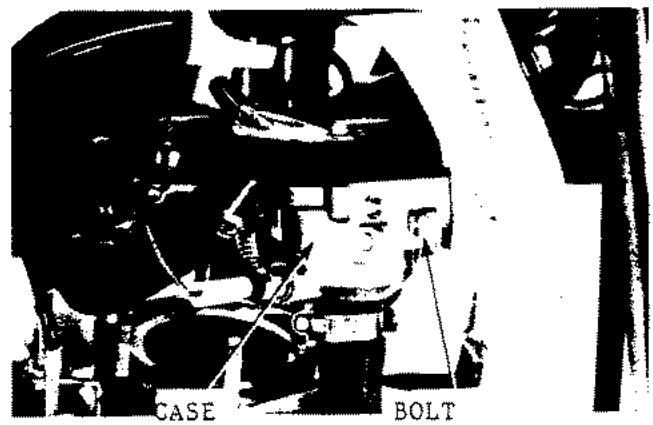
Clean fuel system of carbon and other deposits



* Do not damage fuel system and cylinder index mark

Inspect spark plug bore and around stud bolt hole.
Inspect cylinder head warpage using a straight eadge and thickness gauge

Service Limit: 0.05mm

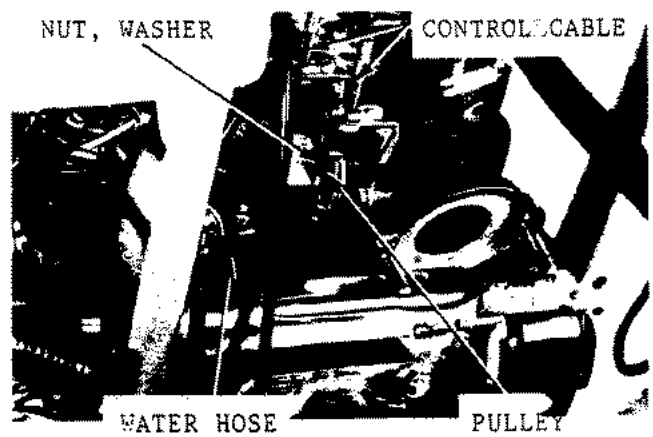


CYLINDER, PISTON REMOVAL

Remove cylinder head (7-3)
Remove exhaust chamber (15-7)

Rear Cylinder Removal

Remove thermostat case

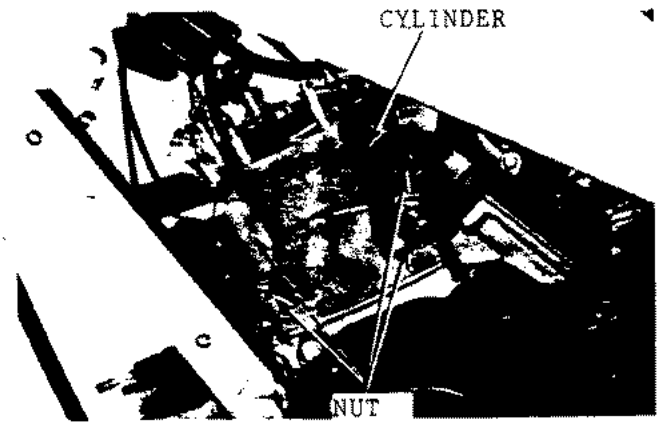


Remove cylinder water hose & RC valve control cable

Remove control cable pulley

* Take care as nut is left hand thread

Remove cylinder nut, cylinder, gasket and knock pin

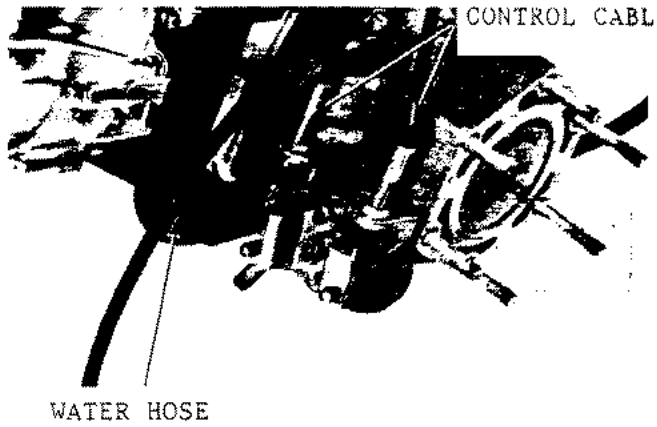


* Take car not to damage cylinder index mark

* Take care not to drop knock pin

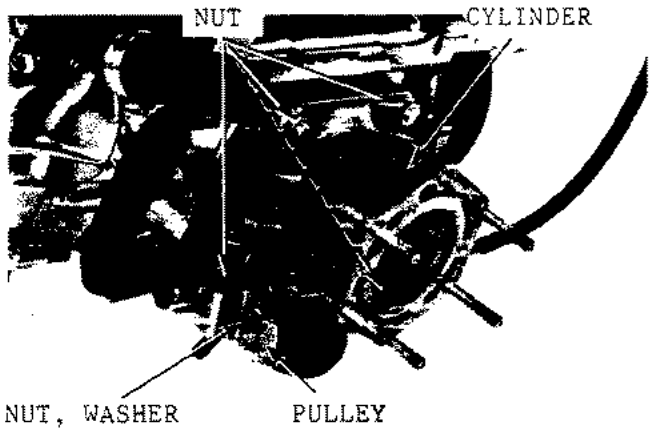
Front Cylinder Removal

Remove cylinder water hose & RC valve control cable



Remove control cable pulley

* Take care as nut is left hand thread

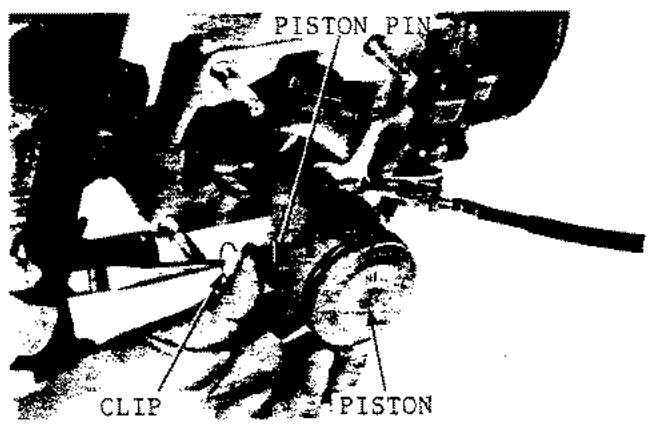


Remove cylinder nut, cylinder, gasket and knock pin

* Take care not to damage cylinder index mark * Take care not to frop knock pin

Piston Removal

Remove piston pin clip, pull out piston pin and remove piston
Remove conrod small end bore needle bearing from conrod

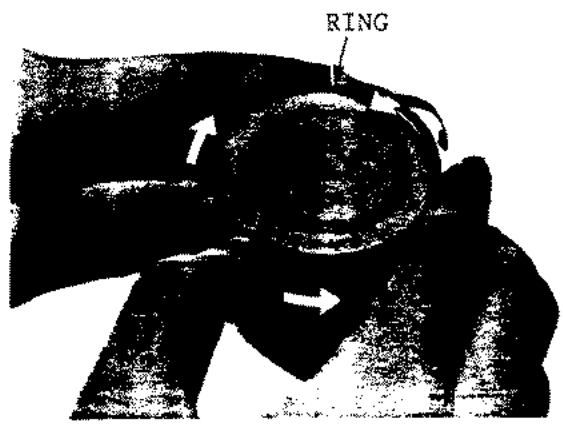


* Take care not to damage piston * When pulling out piston pin do not change composition in conrod * take care that clip does not fall into crankcase

Piston Ring Removal

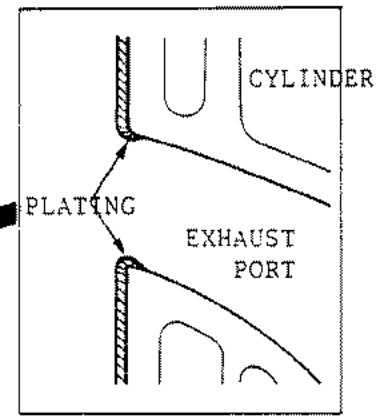
Open piston ring gap and remove from opposite side of gap

Remove expander



CYLINDER INSPECTION

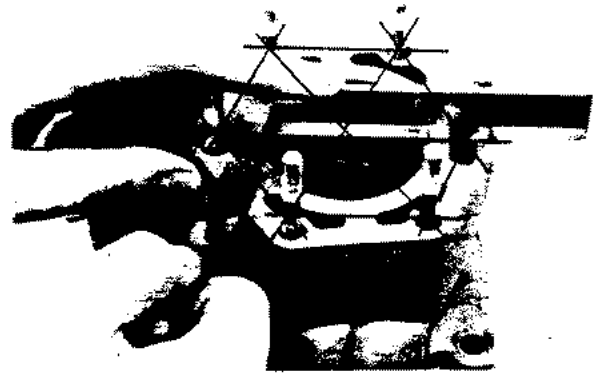
Clean exhaust port of carbon deposits



* When removing carbon deposits from cylinder and exhaust port entrance, be careful not to cause damage

Inspect cylinder upper face warpage with a straight edge and thickness gauge

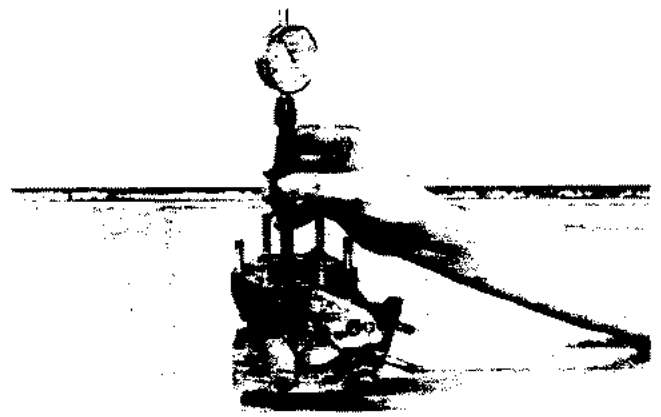
Service Limit: 0.05mm



inspect cylinder and piston for damage & wear

Measure the internal diameter at right angles to the piston pin direction (X-Y) at top, middle and lower 6 points
Each measurements largest value is the cylinder I.D. valve

Service limit: Mark A 54.085mm] Replace
Mark B 54.080mm]- if
Mark C 54.075mm] above



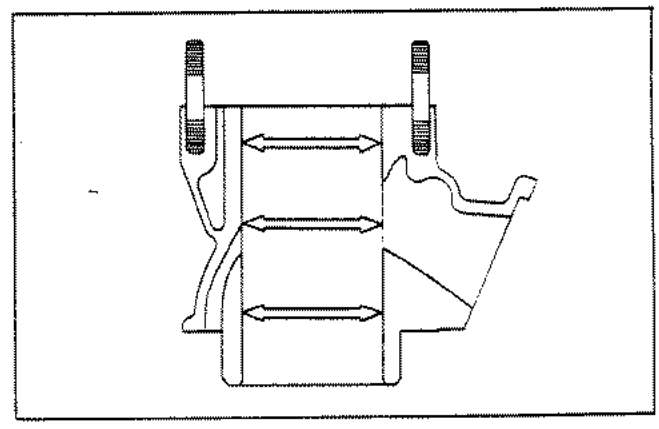
Check the cylinder-to -piston clearance
Identify the largest clearance

Service limit: 0.08mm (replace if above)

Measure the piston O.D. (7.7)

After measuring each valve calculate the circularand cylindrical diameters, and abtain the largest degree of difference at each point (X,Y) at top, middle and bottom

Circular: 0.05mm (replace if above
Cylindrical: 0.05mm (replace if above)



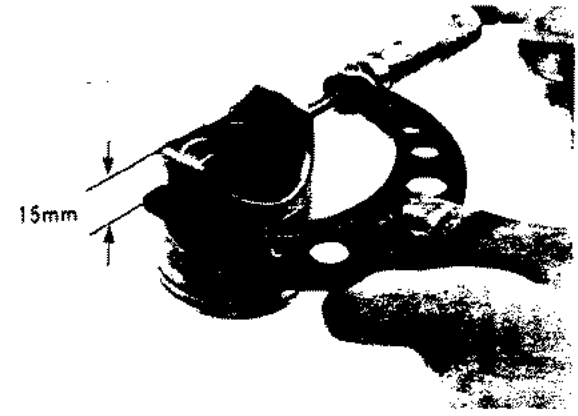
* When replacing cylinder, always select the matching piston and assemble

Cylinder replace warning: Relating to marks (7-8)

PISTON INSPECTION

Remove all foreign deposits off piston
Inspect for piston damage, cracks, ring groove damage, carbon deposits

Measure piston O.D.

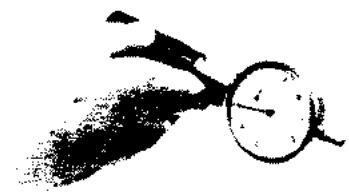


* Measure 15mm from bottom of skirt at the piston pin hole

Service limit: Mark B 53.940mm] Replace
No Mark 53.935mm] if
Mark O 53.930mm] below

* For the purpose of assembling the piston with the same cylinder mark (the piston with no mark is assembled with the cylinder mark C) decide using the cylinder mark

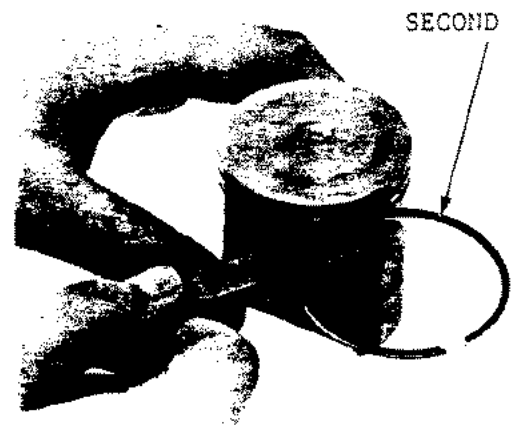
Measure the piston pin bore I.D.



Service limit: 15.03mm (replace if above)

* When replacing pistons always select using the matching cylinder and assemble

Piston Replacment Waruing: Relating to marks
(7.8)

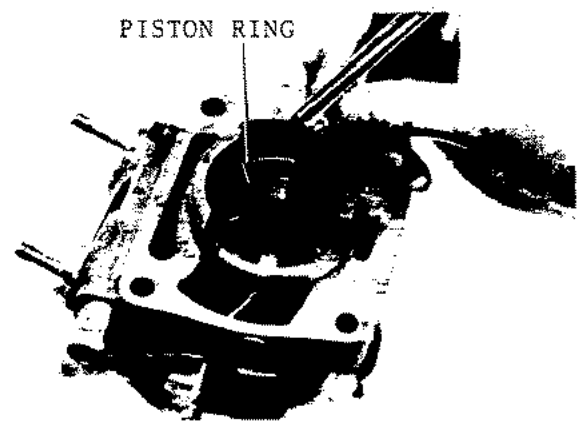


PISTON RING INSPECTION

Inspect the piston ring to ring groove clearance

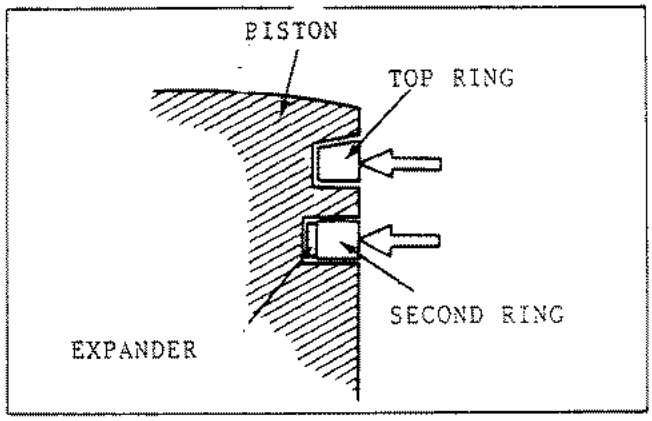
Service limit: 0.12mm (replace if above)
(second ring)

Measure the piston ring gap clearance



Service limit: 0.43mm (replace if above)
(top,second ring)

Install top, second rings and expander to piston.
Push piston rings into place and check that the piston circumference and piston rings are inserted at the same height. If it does not insert correctly the rings may be damaged or carbon may be deposited on piston rings



PISTON PIN INSPECTION

Measure piston pin O.D

Service limit: 14.98mm (replace if under)

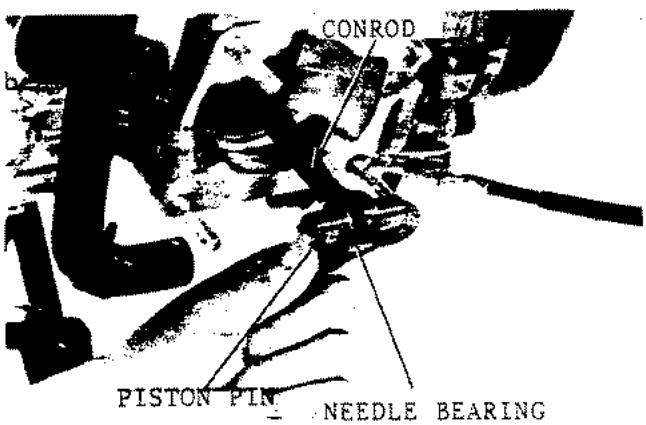
Check piston-to,piston pin clearance

Service limit: 0.04mm (replace if above)

If above service limit value replace with new piston pin
If within service limit replace piston and piston pin

CONROD SMALL END INSPECTION

Install conrod small end needle bearing end piston pin in conrod small end, and inspect condition. Replace if movement in b



CYLINDER PISTON SELECTION

If cylinder or piston exceed service limit then replace pistons that correspond to cylinder must be installed Select as per the following method:

Piston Selection

Write down piston mark

* The mark is on top of piston
* In order that the piston selected corresponds with same cylinder mark, decide using the mark on the cylinder

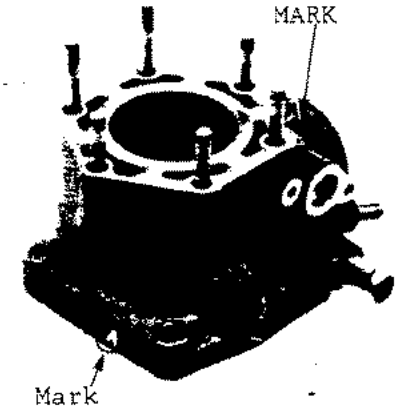
When replacing piston, select piston with the same mark

CYLINDER SELECTION

Write down cylinder mark

* The mark is under cylinder (carburettor side) and on exhaust top side

When replacing cylinder select cylinder with the smae mark

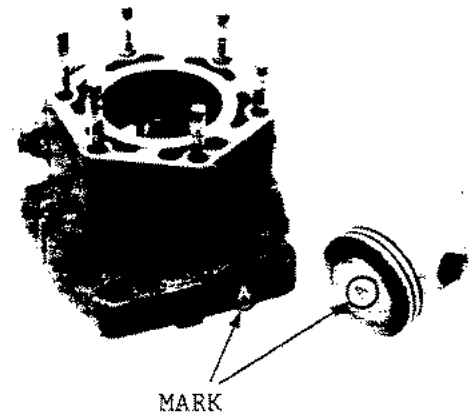


CYLINDER AND PISTON SELECTION

When replacing cylinder and piston at same time, always choose cylinder and piston with corresponding marks

X = do not select O = Select

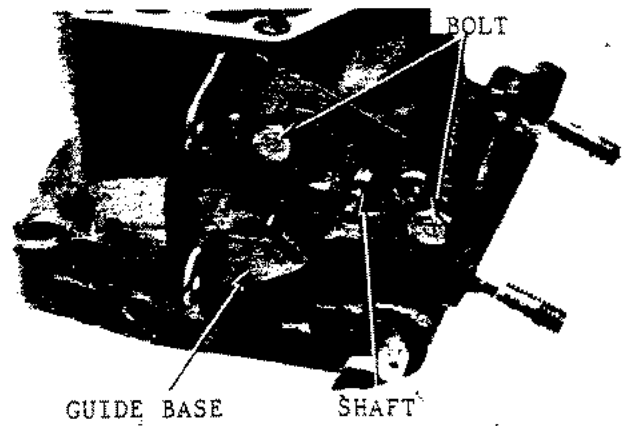
PISTON \ CYLINDER	Mark A	Mark B	Mark C
Mark B	O	X	X
No MArk	X	O	X
Mark D	X	X	O



RC VALVE

removal

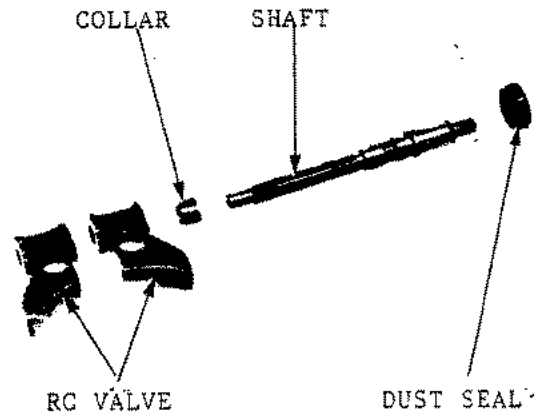
Remove bolt and remove cable guide base
Remove RC valve shaft, dust seal and take out RC valve



Inspection

Clean carbon from RC valve and shaft
Inspect RC valve and shaft for wear
Install RC valve together with collar into shaft, and replace if it moves greater/less then 1mm at valve pointed end

Replace with new dust seal



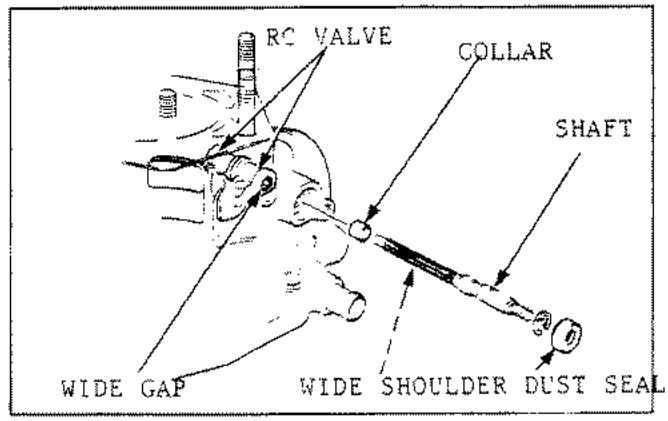
Installation

Set RC valve into cylinder

* Beware of installation direction

Align shaft wide shoulder with valve wide gap, and install with collar

Install new dust seal

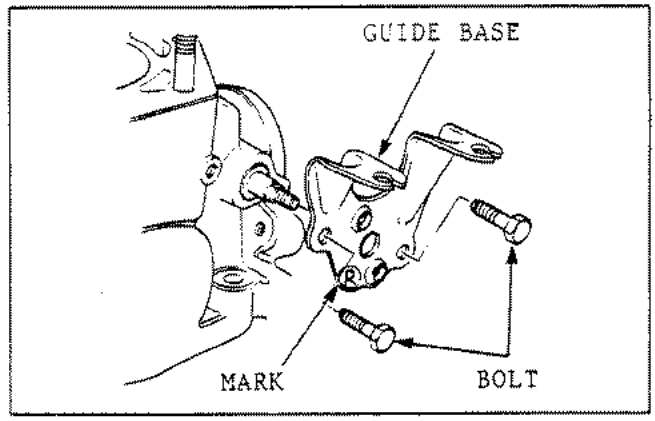


* Take care with "F" and "R" marks "F" mark is for front cylinder. "R" marks is for rear cylinder
* The pinch bolts are specially for the guide base, so use special bolts

CYLINDER, PISTON INSTALLATION

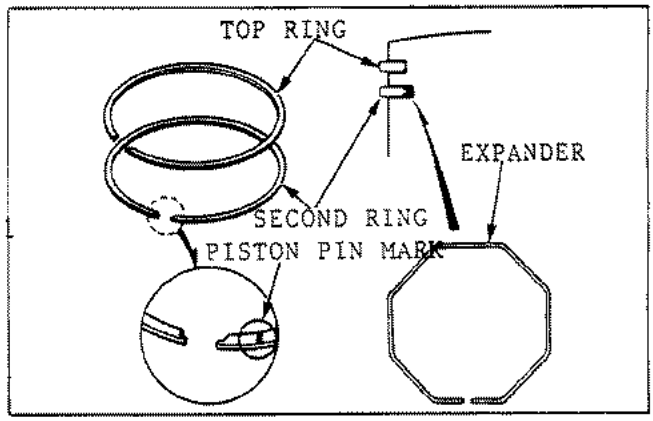
Piston Ring Installation

Install piston rings into piston



* Always install piston ring "N" and "R" mark facing upwards
* The respective top,second rings are special to the piston.
* When replacing piston rings, replace with the same makers parts as a set.

Piston Installation

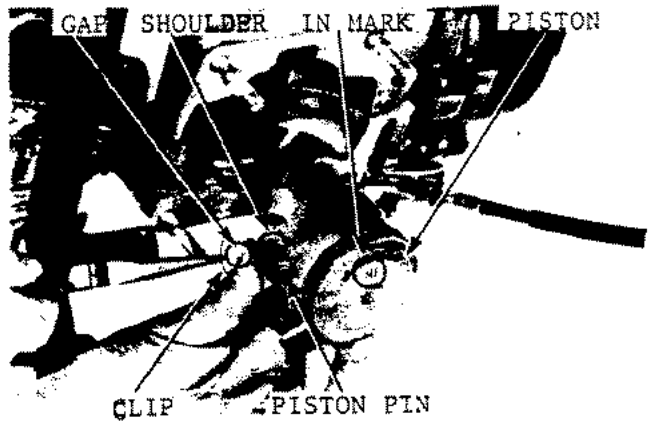


Apply recommended engine oil to conrod small end bearing and piston, then install

put piston pin in piston and install

* Always face "IN" mark to the intake side

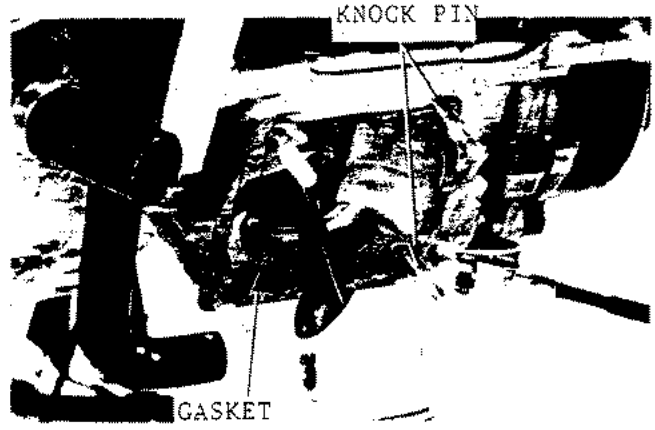
Install new piston pin clip



* When installing rear cylinder piston, ensure clip does not fall inside crank
* Do not align clip gap with piston should

Install cylinder gasket, knock pin

* Use new cylinder gasket

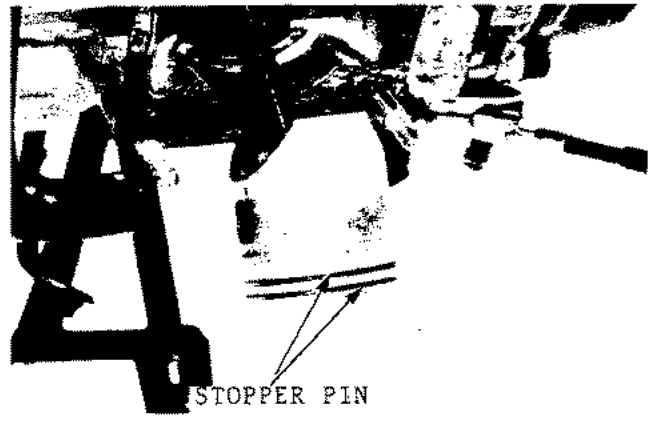


Align piston ring gap with piston ring stopper arm

FRONT CYLINDER INSTALLATION

Apply recommended engine oil to piston and piston rings and while pushing piston rings inward push into cylinder

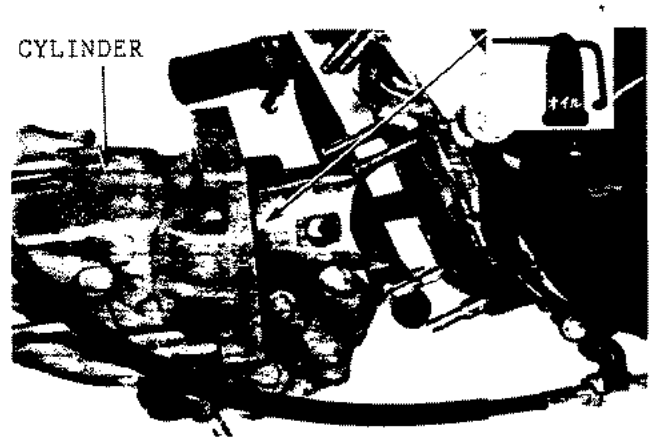
* Take care not to get piston rings stuck in cylinder
* Do not install in cylinder if piaton rings are riding on piston ring stopper



Install cylinder nut

Torque: 2.3-2.7 Kg-m

* Turn nut 2-3 times, and tighten in the opposite angle

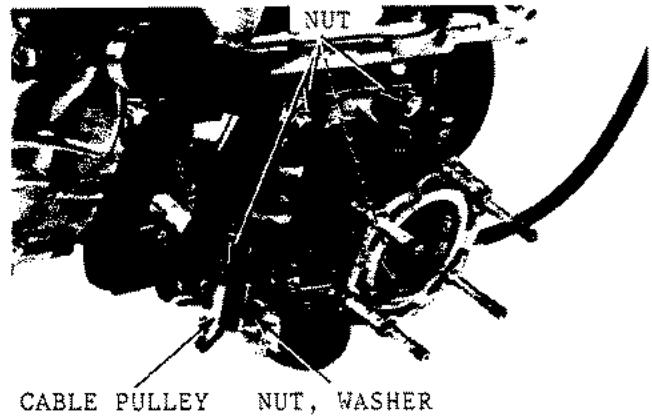


Install cable pulley spacer into RC valve shaft and tighten nut together with washer

Torque: 0.8-1.0 Kg-m

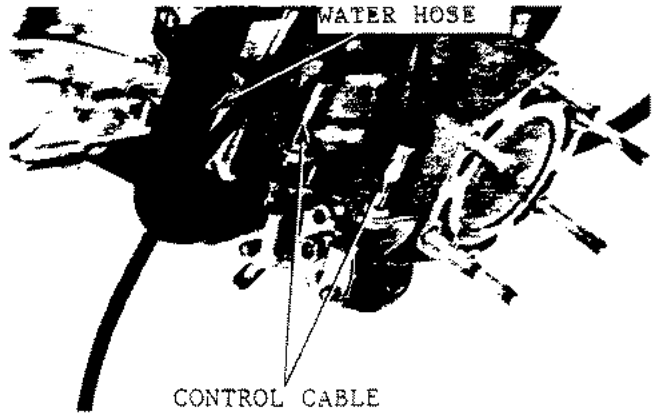
* Align cable pulley with RC valve shafts flat surface and install

* Beware nut is left hand thread



Connect control cable

Connect cylinder water hose

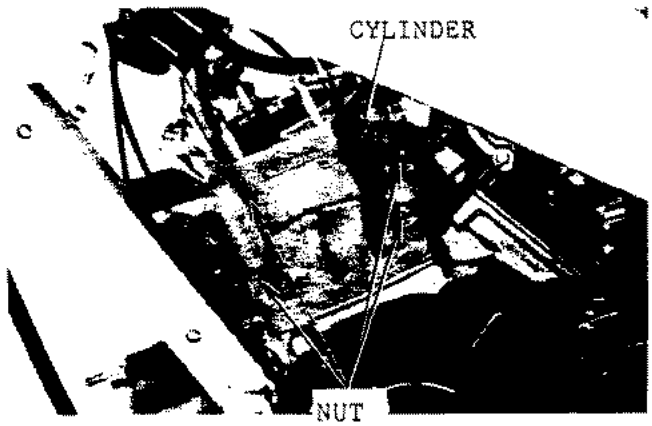


Rear Cylinder Installation

install rear cylinder in same way as front cylinder (7.11)

Tighten cylinder nut

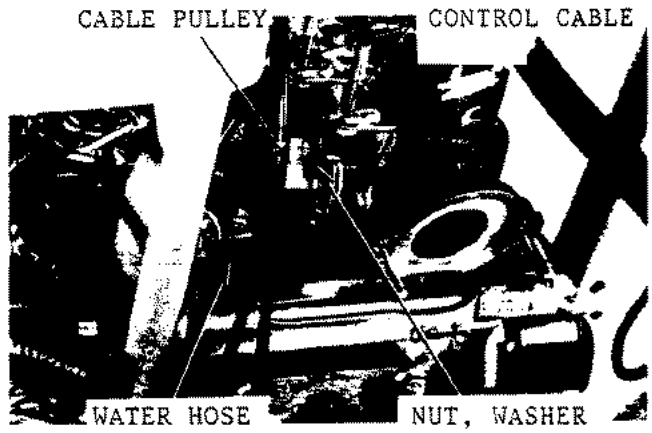
Torque: 2.3-2.7 Kg-m



Install cable pulley and spacer into RC valve shaft and tighten nut and washer together

Torque: 0.8-1.0 Kg-m

* Align caBLE PULLEY AND RC valve shaft flat surface and install



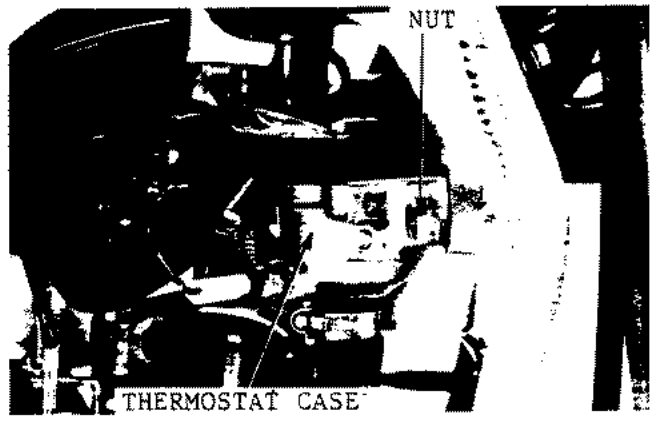
* Take care nut is left hand thread

Connect control cable

Connect water hose

install exhaust chamber (15.7)

Install thermostat case

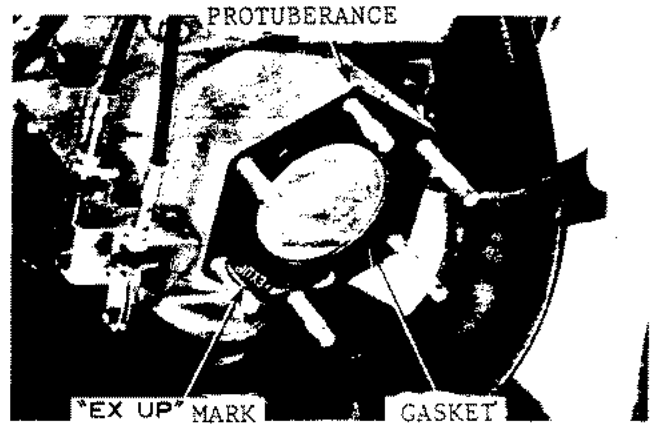


CYLINDER HEAD INSTALLATION

Front Cylinder head Installation

Install new gasket in cylinder

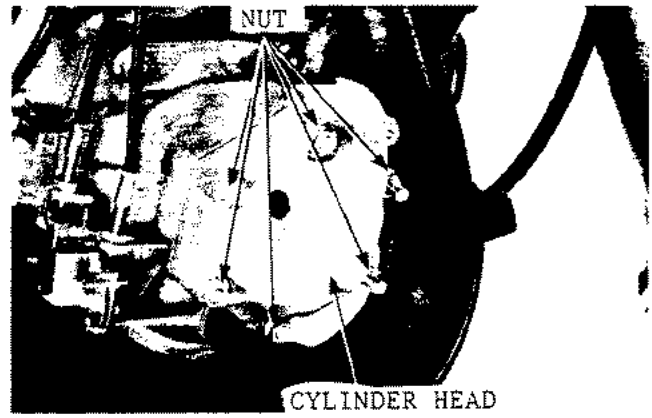
* FaCE "EX UP" mark upwards and install with protuberance on intake side



Install cylinder head and tighten nut

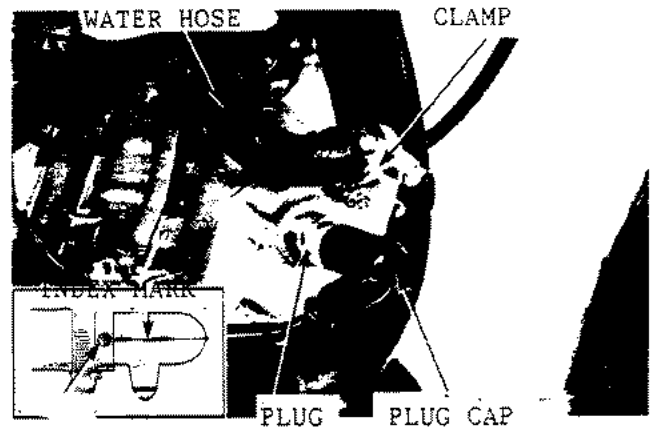
Torque: 1.2-1.6 Kg-m

* Tighten nuts opposite to each other 2-3 times each time



Install cylinder head water hose into cylinder head and install clamp

* Align hose white mark with cylinder head index mark and tighten bolt.



Install spark plug

Torque: 1.5-2.0 Kg-m

Connect plug cap tp plug

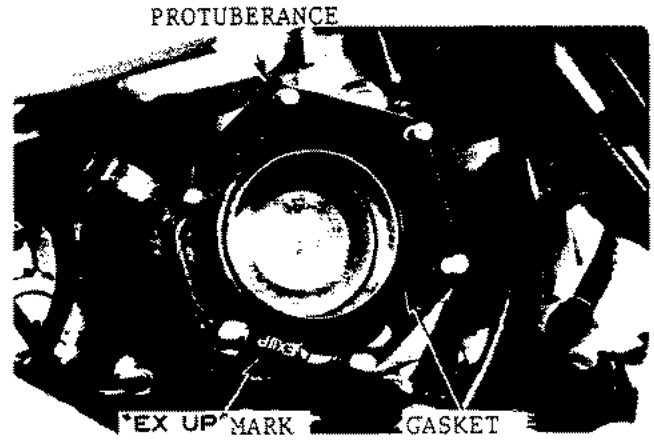
Install radiator (5.7)

Insert radiator fluid which was drained when radiator was removed (5.4)

Rear Cylinder Head Installation

Install new gasket in cylinder

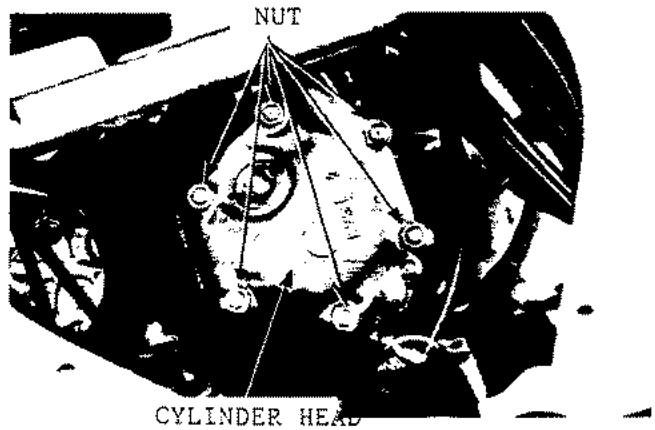
* Face "EX UP" mark upwards and install with protuberance on intake side



Install cylinder head and tighten nut

Torque: 1.2-1.6 Kg-m

* Tighten nuts opposite to each other 2-3 turns each time

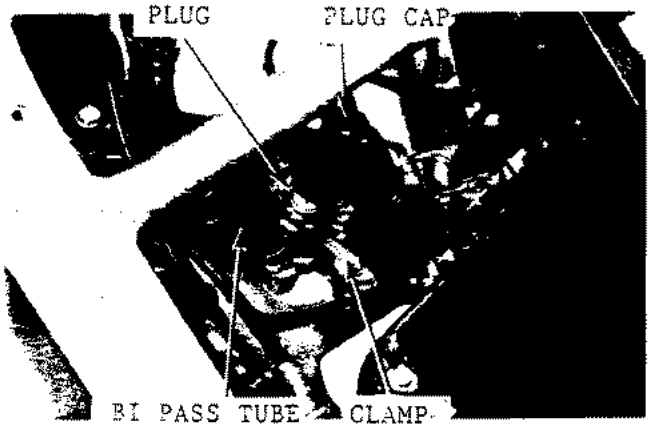


Install cylinder head water hose into cylinder head and tighten clamp

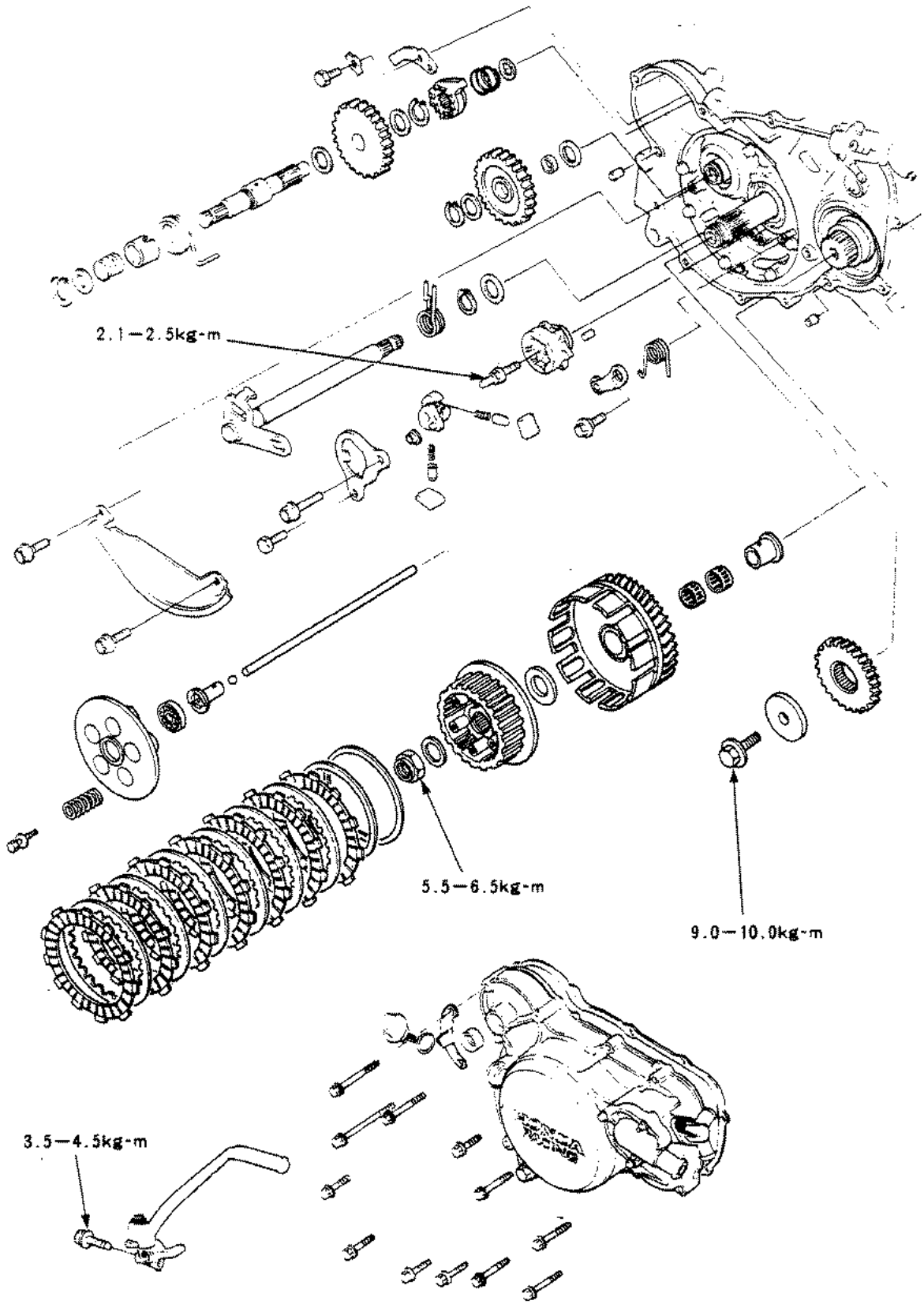
Install spark plug

Torque: 1.5-2.0 Kg-m

Install spark plug cap
Connect bipass tube
Install coupler holder and CDI unit (17-3)
Install air cleaner case and fuel tank (section 4)
Insert radiator fluid which was drained when radiator was removed (5.4)
ADjust RC valve control cable (2.17)



Install lowerfairing, side covers and seat (section 15)


2.1—2.5kg-m
5.5—6.5kg-m
9.0—10.0kg-m
3.5—4.5kg-m

8. CLUTCH, KICKSTARTER, GEAR SHIFT LINKAGE

MAINTENANCE INFORMATION:

Warnings:

- Perform all adjustments with vehicle on level ground
- When removing primary drive gear, always use special/standard tools
- Clean cases when installing gaskets
- Ensure foreign particles do not enter engine
- When separating case take care not to damage index mark

8

: mm

Item		Standard	Service Limit
Clutch spring freeplay		38.9	38.0
Clutch disc thickness		2.92—3.08	2.5
Clutch plate warpage		—	0.2
Clutch outer guide I.D		22.011—22.031	22.03
Main shaft O.D (clutch outer guide)		21.980—21.999	21.94
Kickstarter	Kickstarter spindle O.D	19.959—19.980	19.92
	Kickstarter pinion gear I.D	20.020—20.041	20.10
	Kickstarter idle gear I.D	20.020—20.041	20.10
	Countershaft O.D	19.980—19.993	19.97

TORQUES:

Clutch centre locknut	5.5—6.5kg-m	Kickstarter pedal	3.5—4.5kg-m
Primary drive gear bolt	9.0—10.0kg-m		
Shifter pin (apply locking agent)	2.1—2.5kg-m	Clutch lifter arm stopper bolt	0.8—1.2kg-m
		Shift change pedal	1.0—1.4kg-m

TOOLS:

Special tools		Standard tools	
Gear holder	07HMB—KV30100	Clutch centre holder	07724—0050000

TROUBLE SHOOTING:

CTutch Slip When Accelerating

- Not enough play
- Damage to clutch discs
- Clutch springs bent

Clutch Movement Not Balanced

- Clutch outer groove damaged
- Transmission oil leakage
- Recommended transmission oil not used

Clutch Will Not Engage, Clutch Engaged But Still Moves

- Too much play
- Clutch plate warped, bent

Lever Movement Too Heavy

- Clutch cable damaged or clogged
- Lifter damaged
- Cable not routed correctly
- Clutch lubrication faulty

Gears Difficult To Engage

- Clutch cable adjusted poorly
- Shift fork bent, dmaged
- Shift drum cam groove damaged
- Shift spindle slot clogged

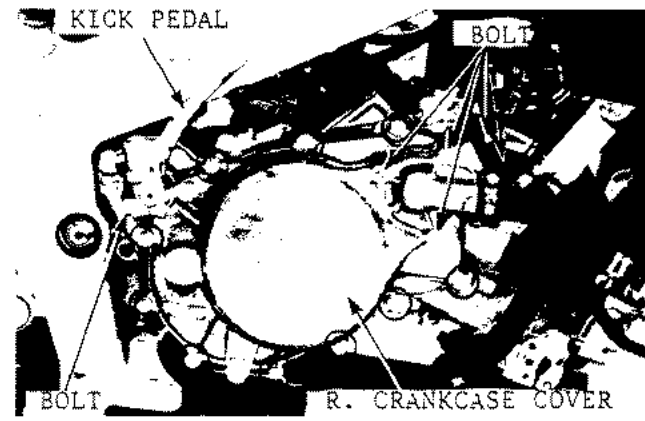
Gears Jump Out

- Gear docks damaged
- Shift shaft bent
- Stopper arm damaged
- Shift fork bent, damaged

REAR CRANKCASE COVER

Removal

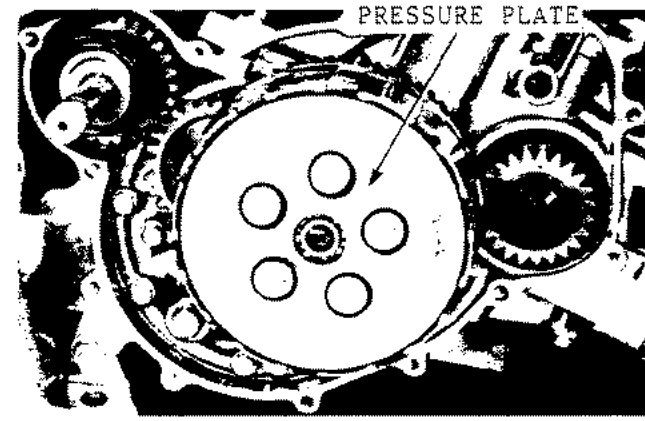
Remover R. lower fairing (section 15)
Drain transmission oil (2.9)
Drain radiator (5.4)
Remove bolt amd remover kick pedal
Remove water joint bolt



Remove 12 bolts and remove R . crankcase cover
Remove gasket and knock pin

CLUTCH REMOVAL

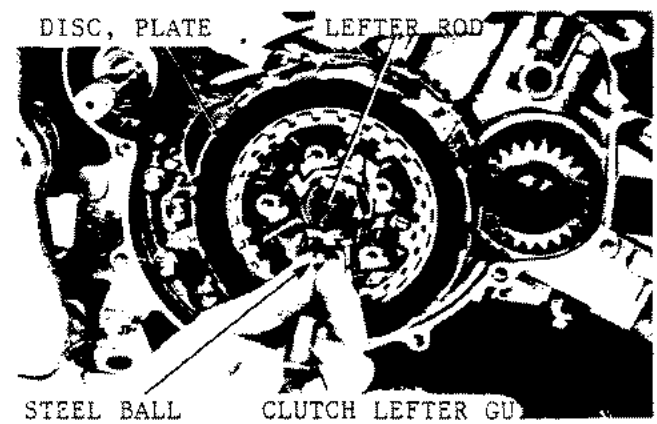
Remove R crankcase cover
Remove 5 bolts and remove pressure plate and clutch springs



* Loosen opposite bolts on pressure plate little by little

Remove clutch lifter guide, lifter guide inner steel ball and clutch lifter rod.

* Hold clutch lever and move lifter rod a little to remove



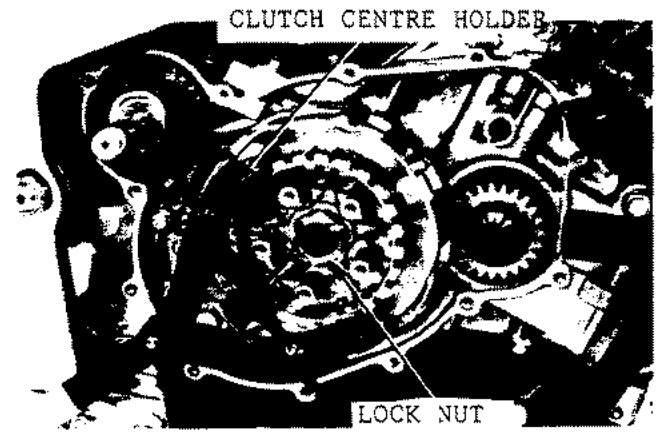
Remove :clutch discs, clutch plates

Steady clutch with clutch centre holder and remove clutch centre lock nut

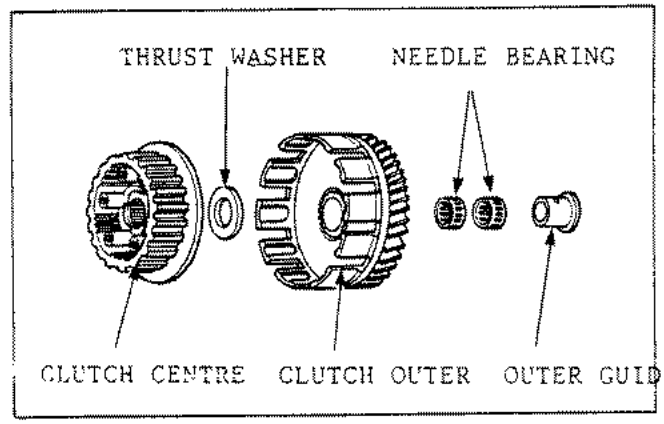
Standard tool:

Clutch centre holder 07724-0050000

Remove washer



Remove clutch centre, thrust washer, clutch outer, needle bearing and outer guide from main shaft

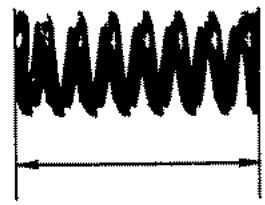


Clutch Spring Inspection

Measure spring freeplay

Service limit: 38.0mm

(replace if below)

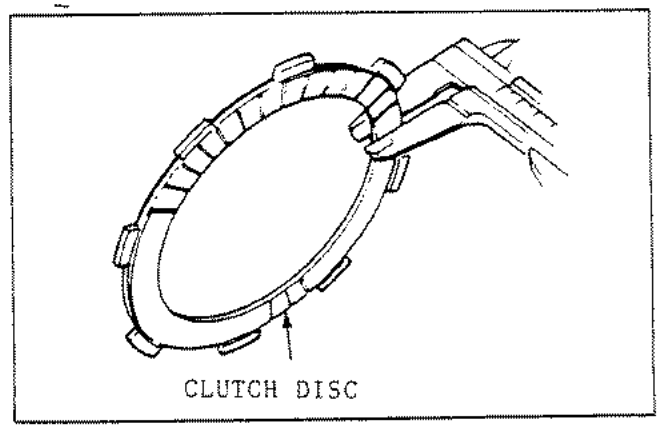


Clutch Disc Inspection

Replace clutch discs if damaged or different colour

Measure clutch disc thickness

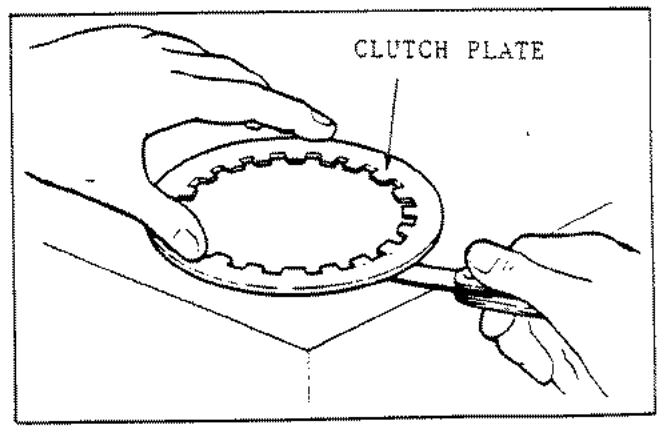
Service limit: 2.5mm (replace if below)



Clutch Plate Inpsection

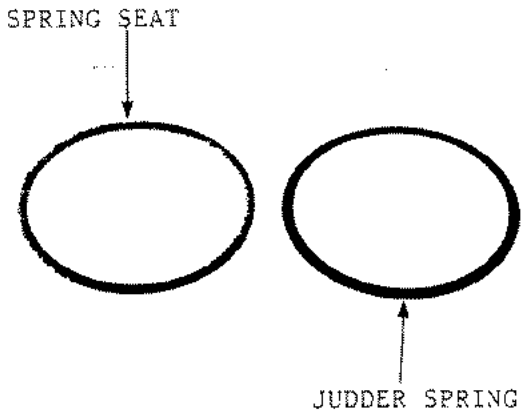
Measure plate thickness using a thickness gauge.

Service limit: 0.2mm (replace if above)



Spring Seat, Judder Spring Inspection

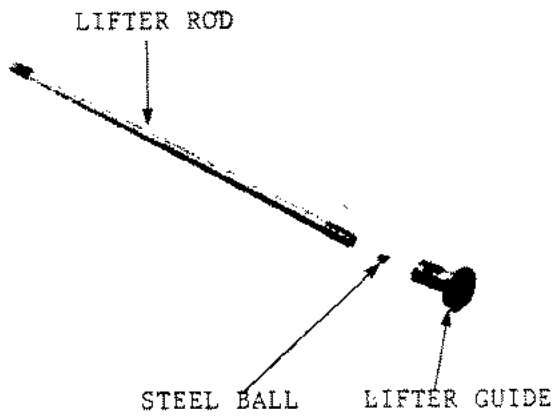
Inspect spring seat and judder spring for change in shape, warpage, damage and wear



Clutch Lifter Guide, Steel Ball, Clutch Lifter Inspection

Inspect clutch lifter guide, steel ball damage

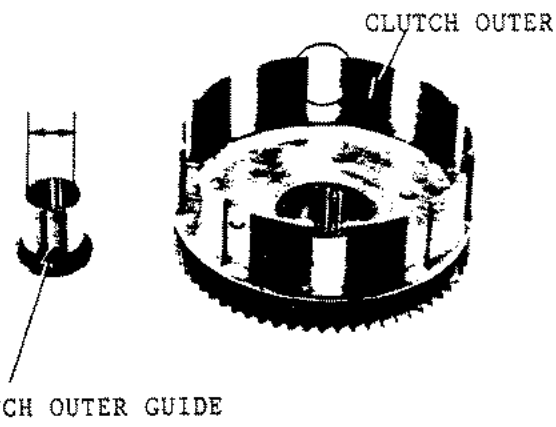
Inspect clutcch lifter rod for bends



Clutch Outer Inpsection

Inspect clutch outer bearing condition
Replace if in poor condition
Inspect clutch outer groove for damage and wear due to discs
Measure clutch outer guide I.D

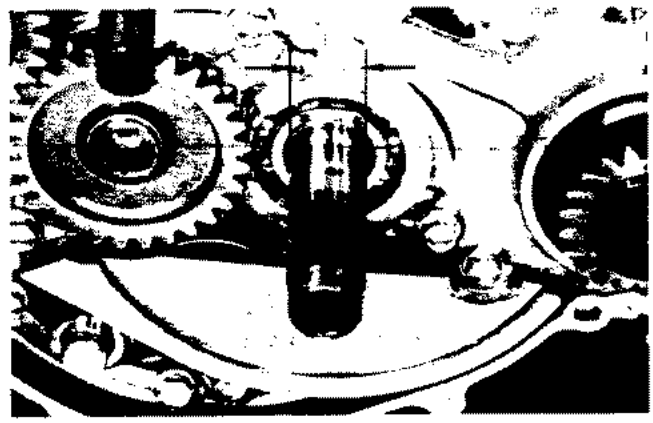
Service limit: 22.03mm



Main shaft Inspection

Measure main shaft O.D

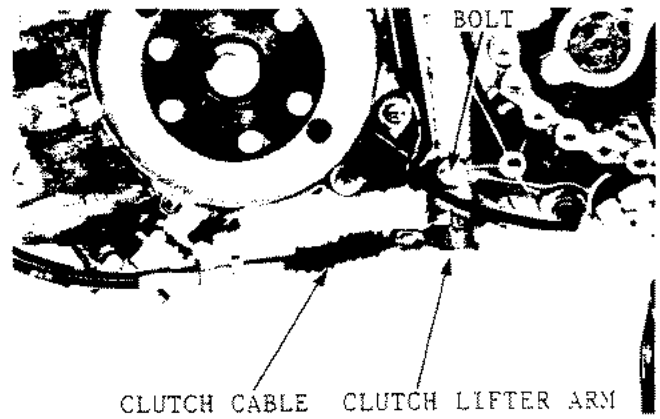
Service limit: 21.94mm
(replace if below)



CLUTCH LIFTER ARM

Removal

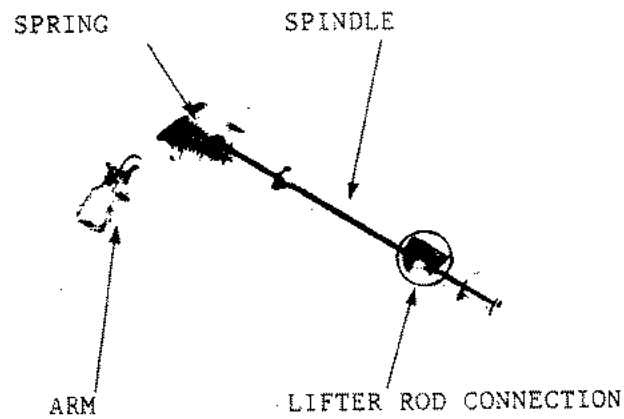
Remove L. crankcase cover (10.2)
Remove exhaust chamber (15.7(
Remove clutch cable from lifter arm
Remove clutch lifter arm stopper bolt, pull lifter arm down and remove



* When removing lifter arm it is necessary to remove clutch lifter rod (8.3)

Clutch Lifter Arm Inspection

Inspect the following:
- lifter arm bent, damaged
- Spindle bent, damaged
- Reurn spring bent
- Spindle lifter rod connection damaged



PRIMARY DRIVE GEAR

Removal

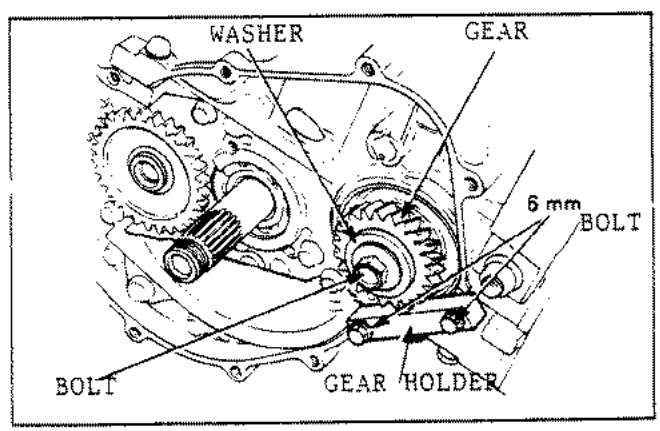
Remove R crankcase cover (8.3)
Remove clutch (8.3)
Install 2 6mm bolts of gear holder as in the picture.

Special Tools:

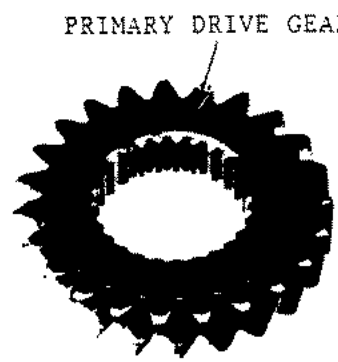
Gear Holder 07HMB-KV30100

Remove primary drive gear bolt, washers

Remove primary drive gear



* Take care as bolts are left hand thread



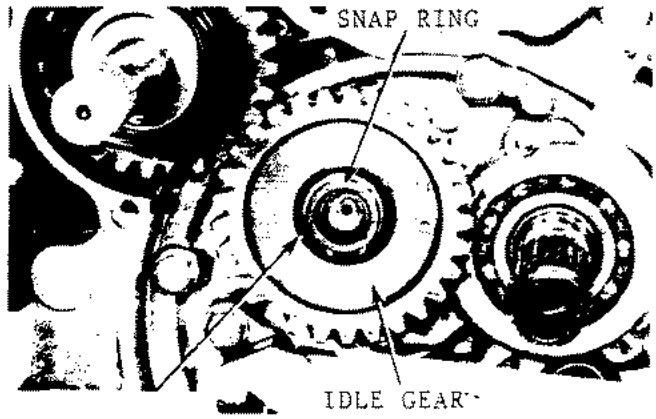
PRIMARY DRIVE GEAR INSPECTION

Inspect primary drive gear for damage and wear

KICKSTARTER REMOVAL

Kickstarter Idle Gear Removal

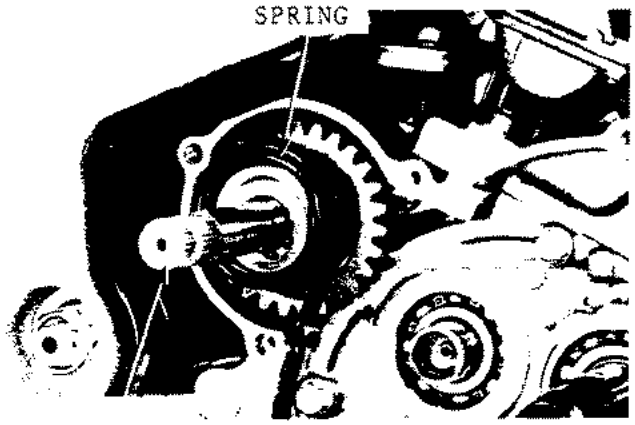
Remove R.crankcase cover (8.3)
Remove clutch (8.3)
Remove snap ring and thrust washer and take out counter shaft idle gear and thrust washer

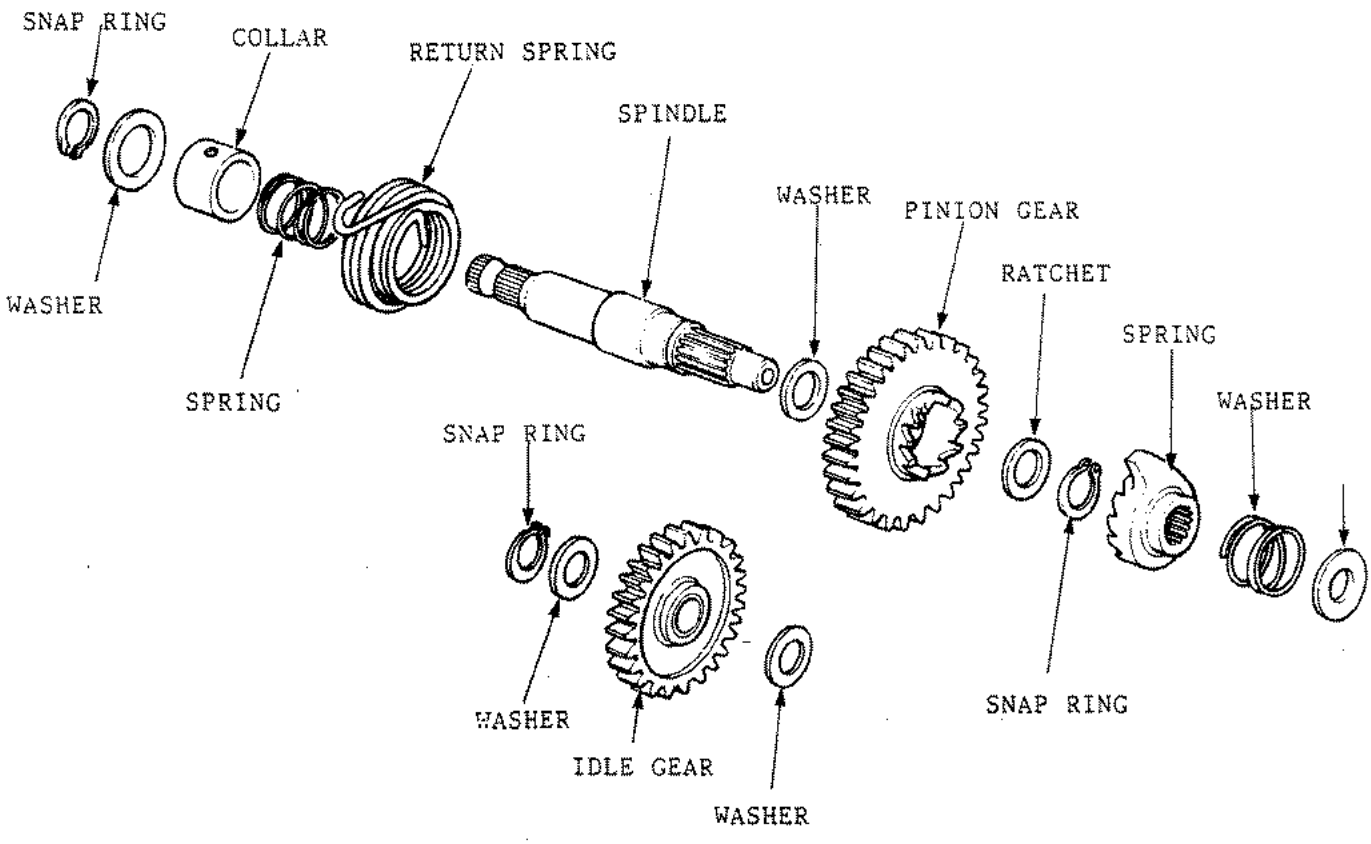


KICKSTARTER SPINDLE REMOVAL

> * When adjusting kickstarter spindle, it is not necessary to remove clutch and kick-starter idle gear

Remove kick return spring from R crankcase
Remove kickstarter spindle from R.crankcase as a set.
Separate kickstarter spindle





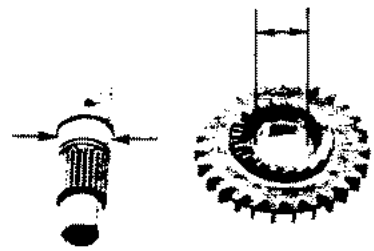
KICKSTARTER INPSECTION

Measure kickstarter spindle O.D.

Service limit: 19.92mm (replace if below)

Measure kickstarter pinion gear I.D

Service limit: 20.10mm (replace if above)



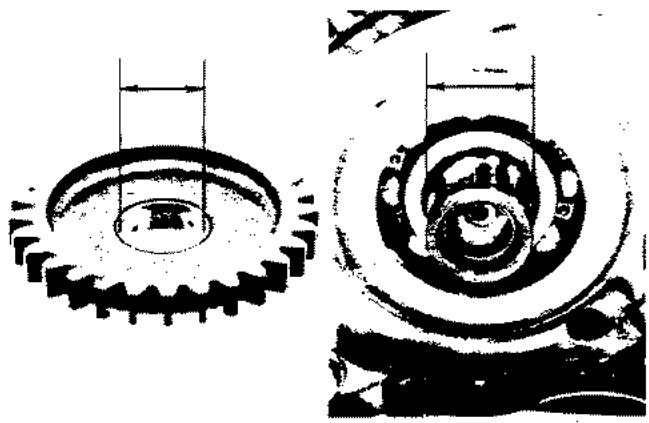
KICKSTARTER IDLE GEAR INSPECTION

Measure kickstarter idle gear I.D

Service limit: 20.10mm (replace if above)

Measure countershaft O.D

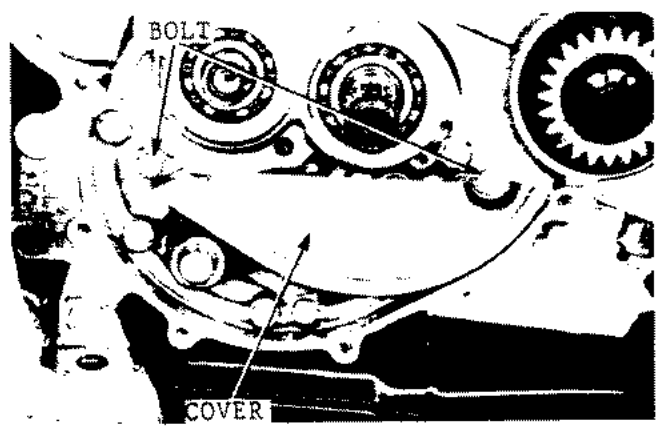
Service limit: 19.97mm (replace if below)



GEAR SHIFT LINKAGE

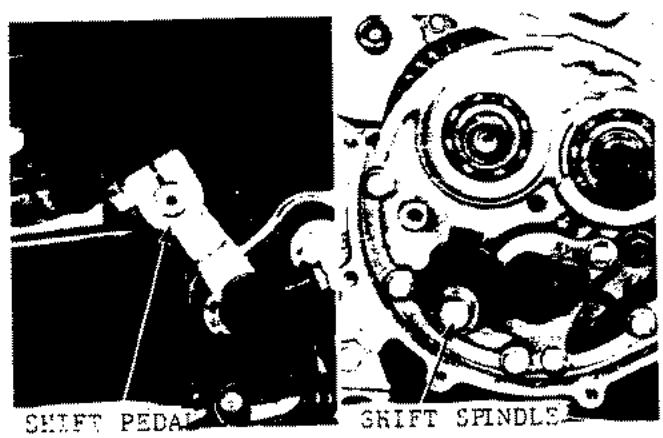
Removal

Remove 2 bolts and remove gear shift linkage cover

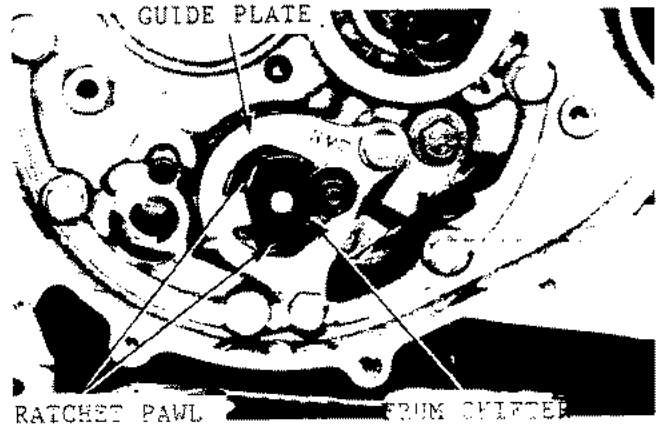


Remove shift change pedal from shift spindle
Pull shift spindle assy out of crankcase.

* Take care not to drop thrust washer



Remove 2 guide plate mount bolts and remove the assembled guide plate and drum shifter
Push the 2 ratchet pawls in the drum shifter so that they do not fall out and separate the guide plate and drum shifter

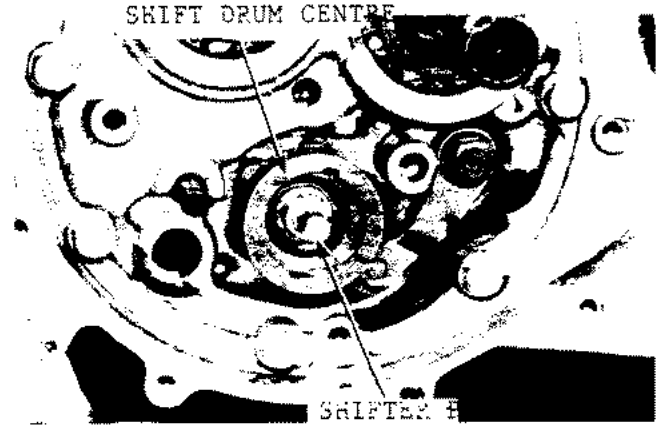


* Take care not to drop ratchet pawls and springs

Remove shifter pin shift drum

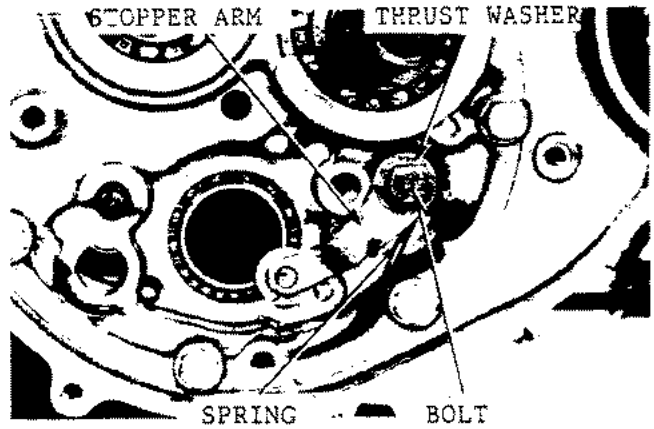
Remove shift drum centre and roller pin from shift drum

* Only remove shifter pin if adjusting shift drum centre



Remove bolts and remove drum stopper arm, thrust washer and stopper arm spring

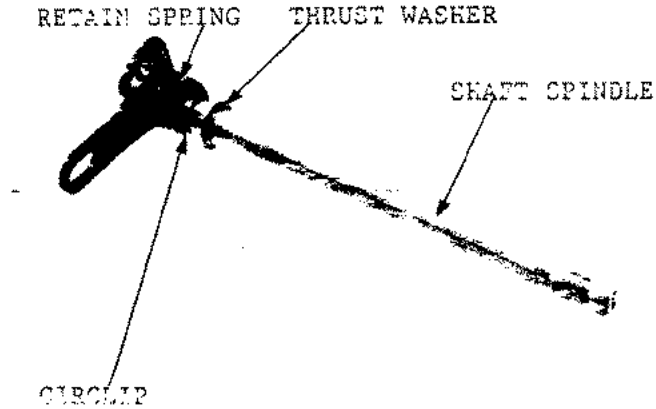
Remove the thrust washer from the assemblies shift spindle
Remove circlip from spindle and remove shift retain spring



GEARSHIFT LINKAGE INSPECTION

Inspect the following

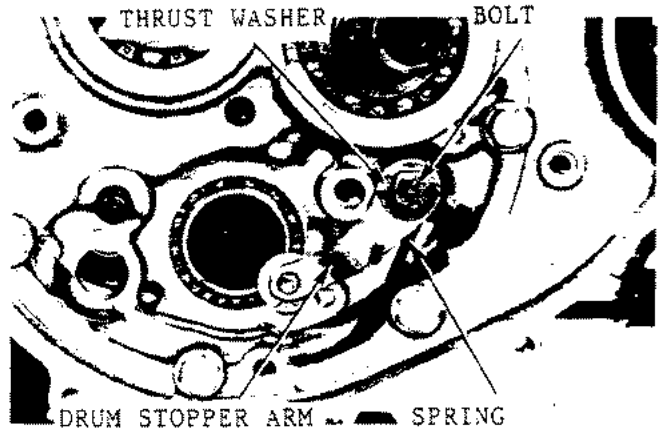
- Shift drum centre and pin wear/damage
- Stopper arm spring warpage
- Drum shifter wear/damage
- Ratchet pawl wear/damage
- Ratchet spring warpage
- Pawl plunger wear/damage
- Shift spindle and drum shifter pin wear/damage
- Shift retain spring warpage
- Shift spindle warpage, damage



Installation

Use drum stopper arm bolt and install stopper arm spring, thrust washer and drum stopper arm

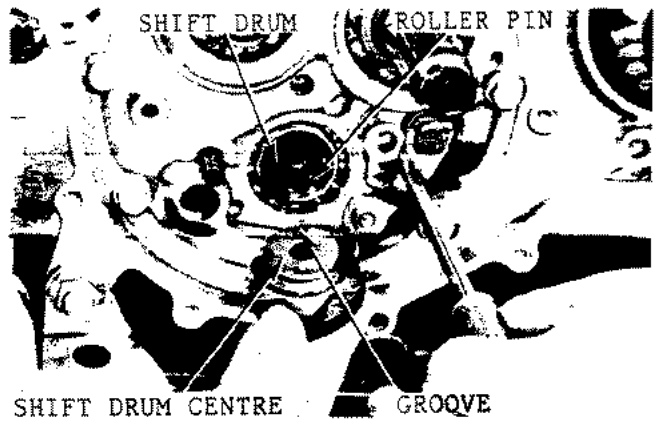
* Do not forget to install thrust washer



Fix drum stopper arm with a driver as in the picture to the right

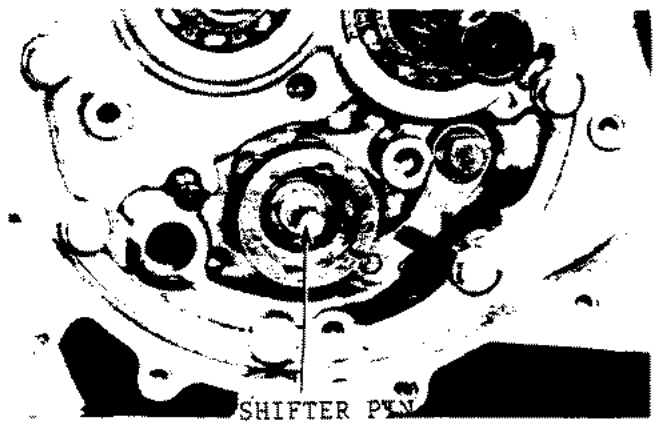
Push roller pin into shift drum

Align shift drum centre groove with shift drum roller pin and install



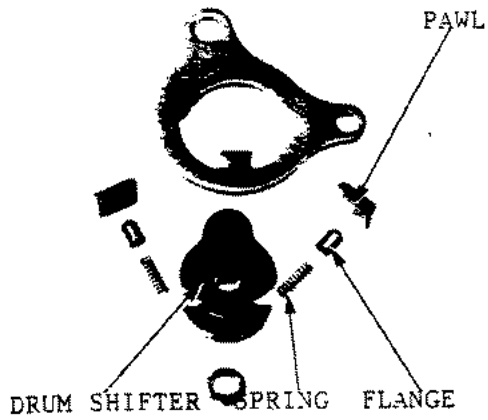
Apply locking agent to new shifter pin and install

Torque: 2.1-2.5 Kg-m



Assemble ratchet spring, pawl flange and ratchet pwel into drum shifter

* Check that the transmission gear is in neutral according to the position of the shift drum centre

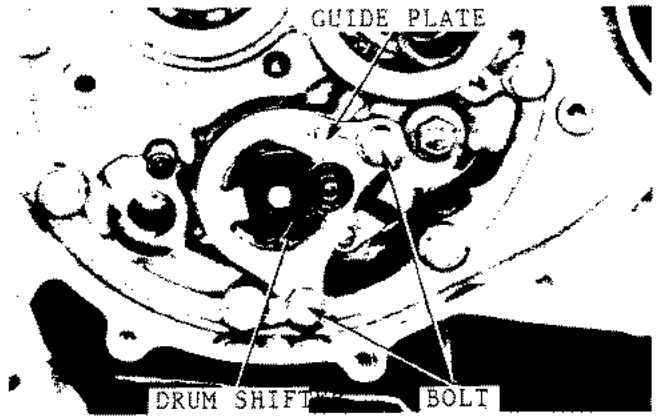


Push drum shifter ratchet pawl and assemble guide plate

* Take care not to drop ratchet pawl, ratchet spring amd pawl flange

Once drum shifter and guide plate are assembled, assemble in drum centre

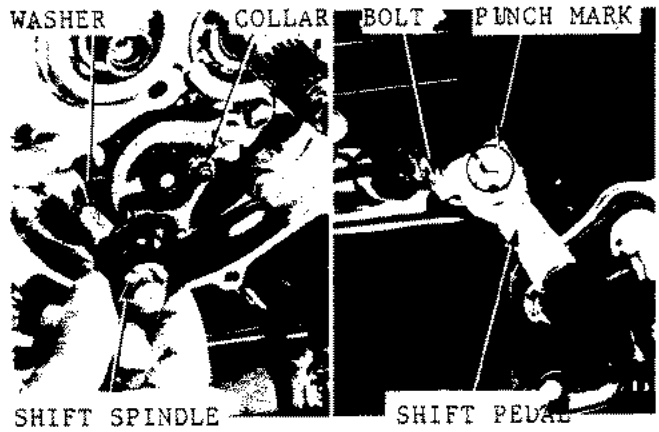
Install 2 bolts into guide plate



Install shifter collar

Install gear shift spindle amd thrust washer

* After assembling turn gear shift spindle and check linkage operation

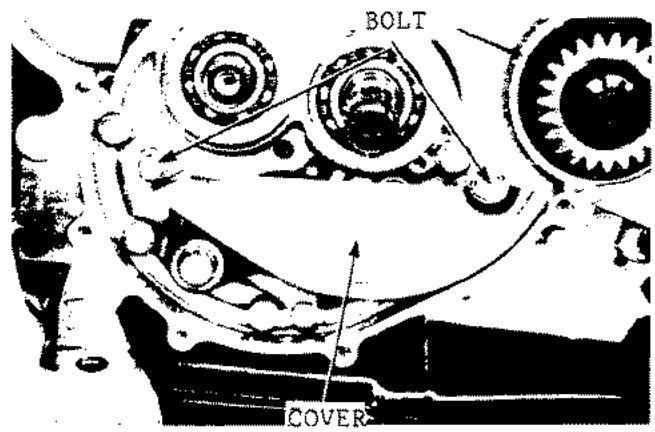


Align shift change pedal and spindle punch mark and install pedal

Tighten bolts

Torque: 1.0-1.4 kg-m

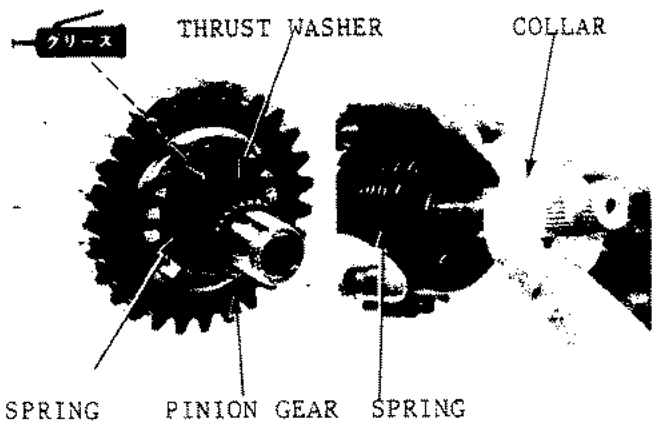
Install 2 bolts into gear shift linkage cover



KICKSTARTER INSTALLATION

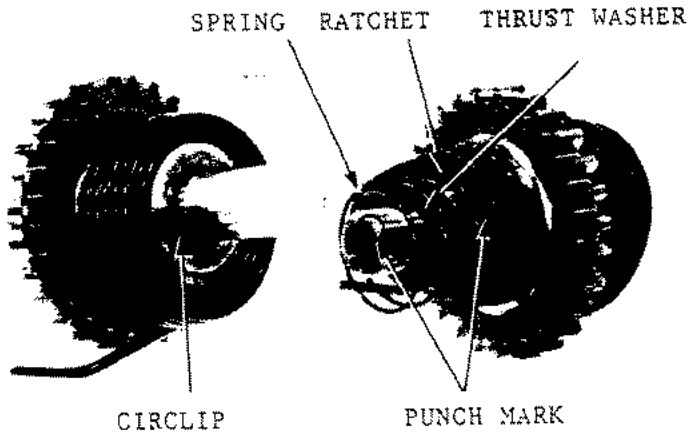
Apply molybdenum grease to pinion gear
Install each part into kickstarter spindle by hand

* Check that circlip is situated fully in groove
* Do not forget to install thrust washer
* Align collar shoulder with return spring and install

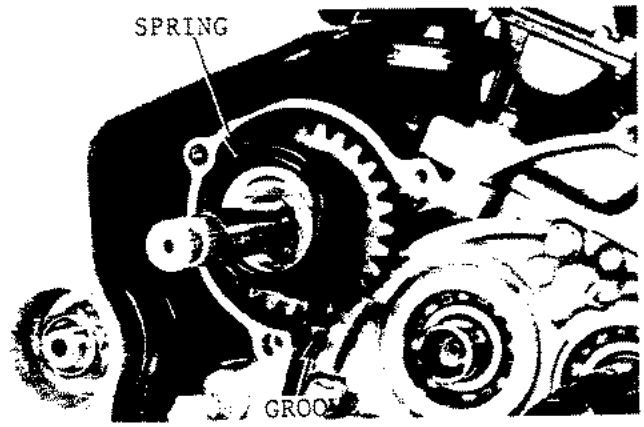


Place spindle punch mark and ratchet punch mark horizontally up, push ratchet into spindle and assemble

Install spring

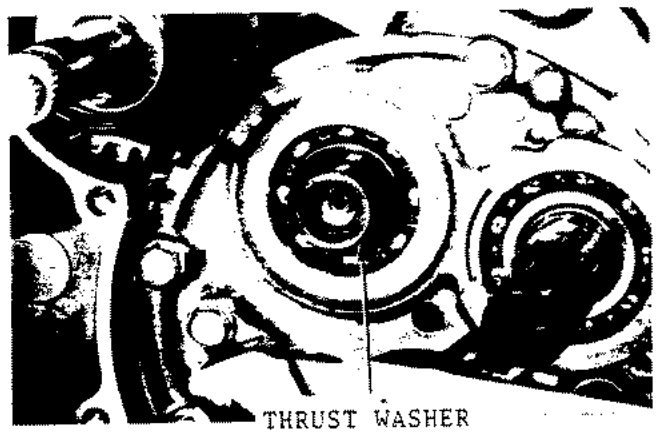


Install kickstarter pin such that the return spring and the R. crankcase groove meet

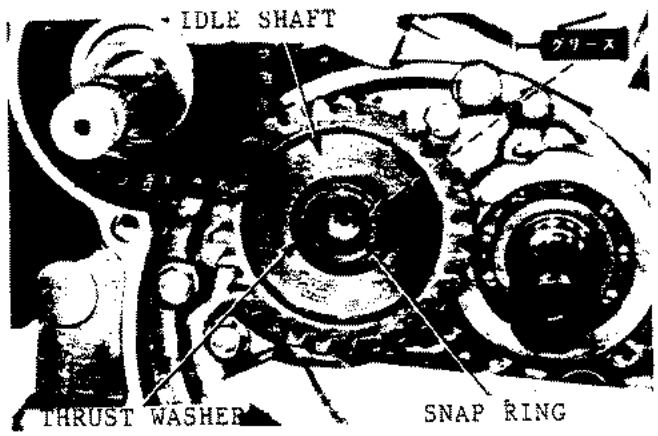


KICKSTARTER IDLE GEAR INSTALLATION

Install thrust washer into countershaft



Apply molybdenum grease to idle gear
Install idle gear, thrust washer and snpa ring into countershaft



PRIMARY DRIVE GEAR INSTALLATION

Install gear holder and install drive gear bolt and washer together

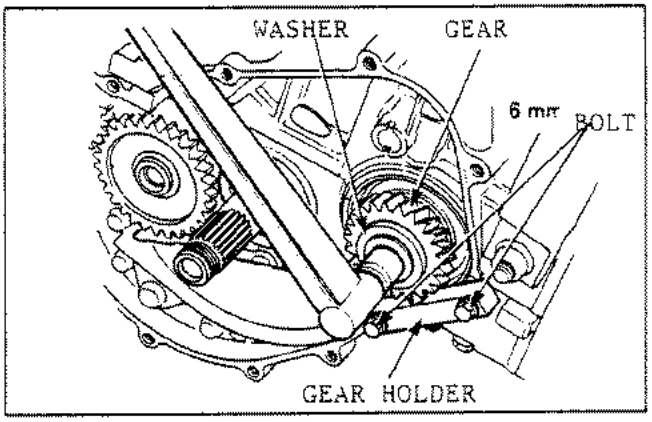
Torque: 5.0-6.0 Kg-m

Special Tool:

Gear Holder : 07HMB-KV30100

Install clutch

Install R. crankcase cover 9 8.15)



CLUTCH INSTALLATION

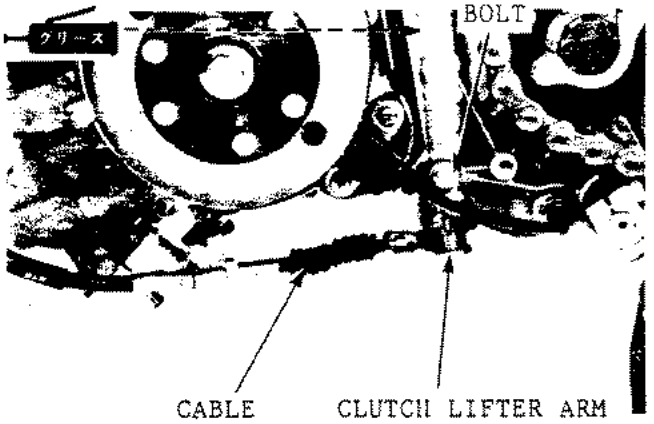
Clutch Lifter Arm Installation

Apply molybdenum grease to spindle lifter rod connection
Insert clutch lifter arm and install clutch lifter arm stopper bolt.

Torque: 0.8-1.2Kg-m

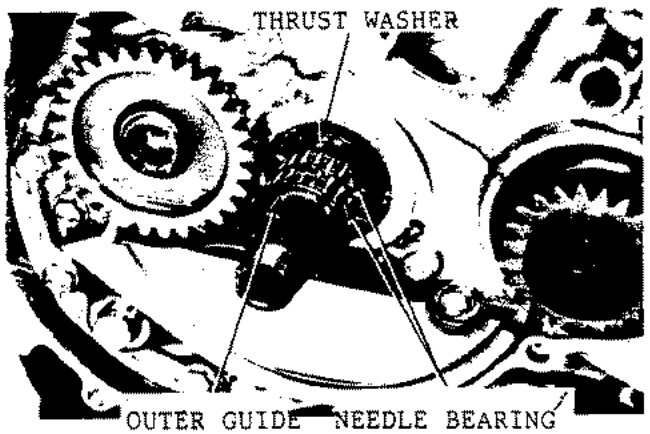
Install clutch cable into lifter arm

Install L. crankcase cover (10.3)
Install exhaust chamber (15.7)



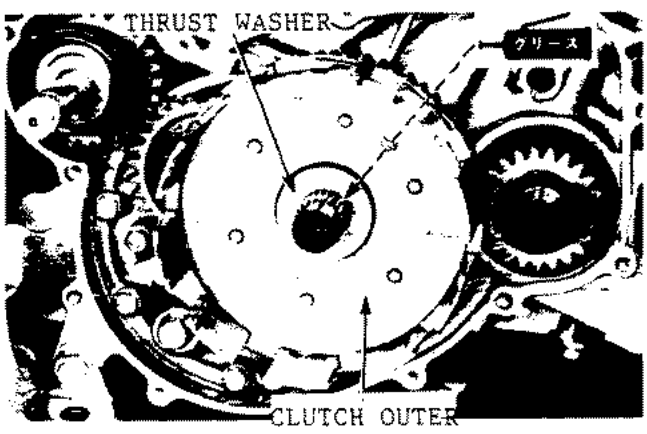
CLUTCH INSTALLATION

Install clutch outer guide and needle bearing into main shaft

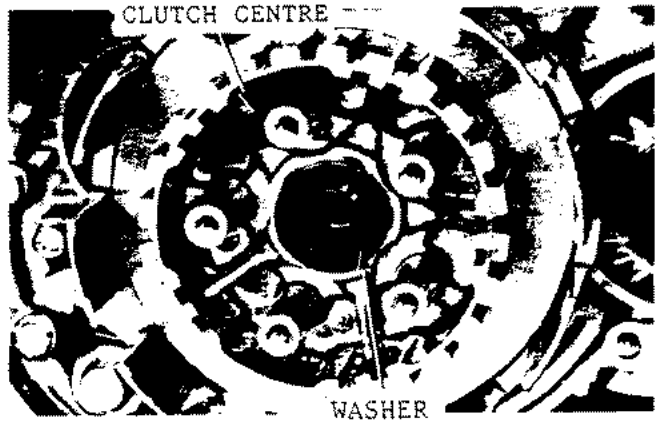


Apply molybdenum grease to clutch outer
Install clutch outer, thrust washer into main shaft

* If it is difficult to install clutch outer, turn the kickstarter idle gear in order to make it easier to enter

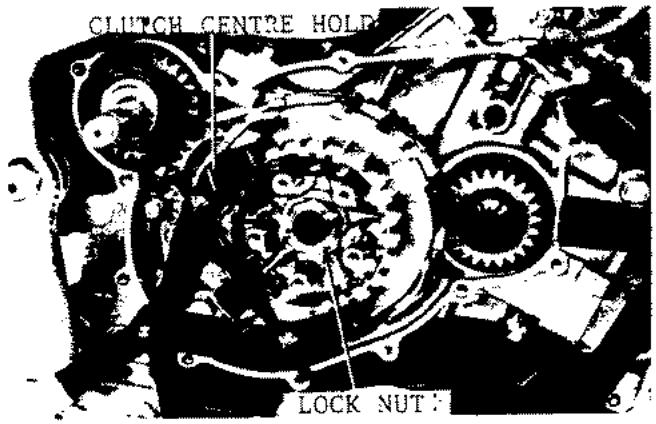


Align main shaft spline and install clutch centre and washer



Insall lock nut
Install clutch centre holder into clutch centre

* Install clutch centre groove and holder so that they connect correctly

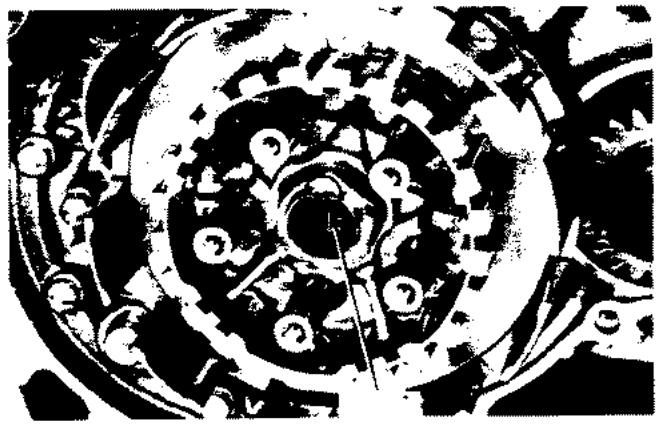


Install new clutch centre lock nut

Torque: 5.0-6.0 Kg-m

Standard Tool:

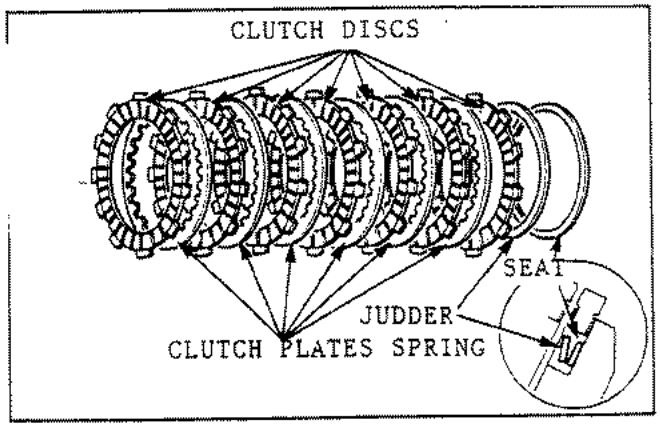
Clutch centre holder : 07724-0050000



Align main shaft groove with locknut flange

Install clutch discs, clutch plates, judder springs and seat as in the picture

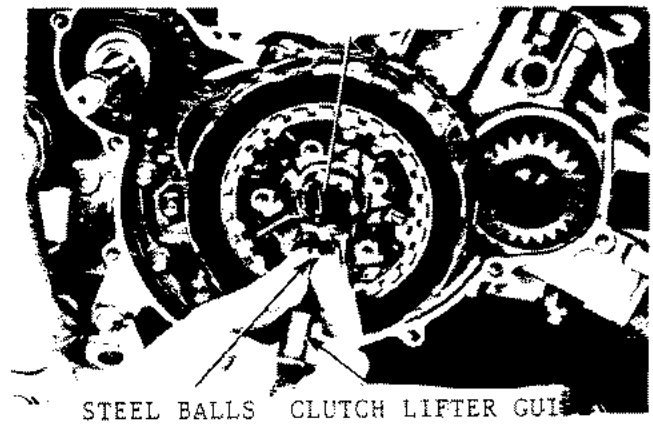
* Before installing apply recommended engine oil to disc plates
* Check that judder springs are assembled in correct ,direction



Insert clutch lifter rod into main shaft
Check clutch lifter arm

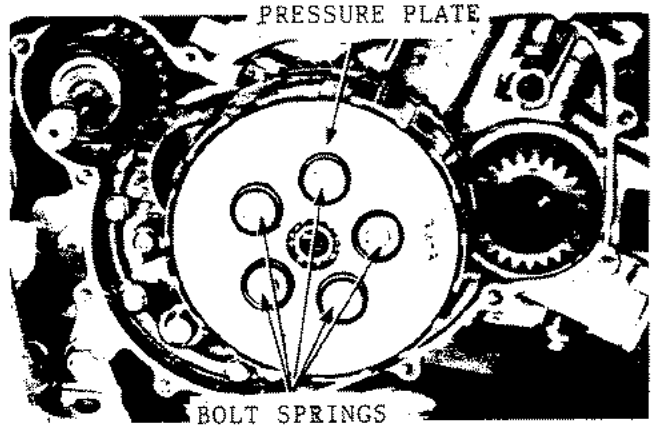
* Move clutch lever and arm and check rod movement

Apply grease to steel balls
Insert steel balls into clutch lifter guide
Push clutch lifter guide and steel balls into clutch lifter rod and install



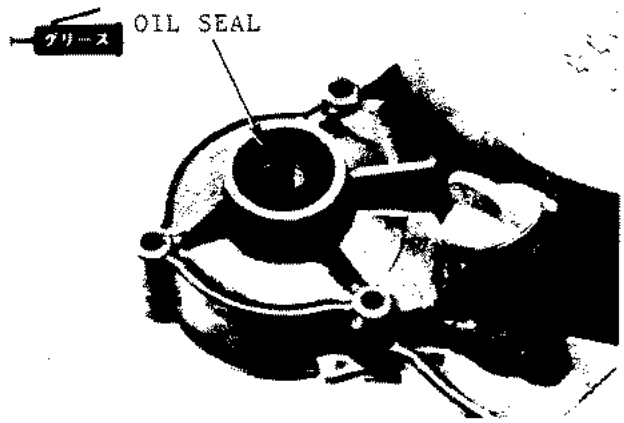
Install 5 clutch springs and install 5 bolts into pressure plate

* Turn opposing bolts 2-3 times to install

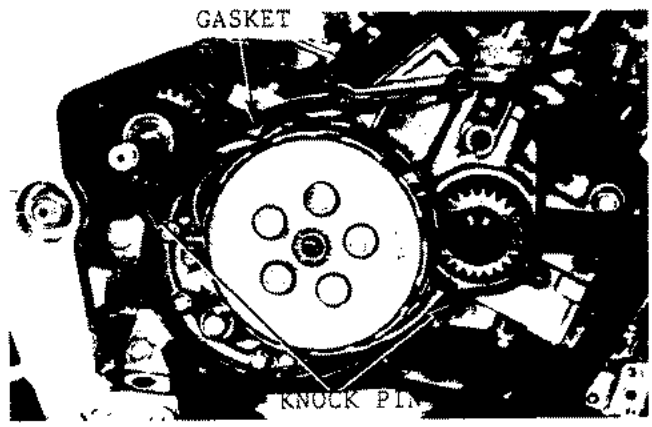


R. CRANKCASE COVER INSTALLATION

Apply grease to oil seal lip



Install knock pin and new gaskets



Install R.crankcase cover

* Install bolts opposing each other

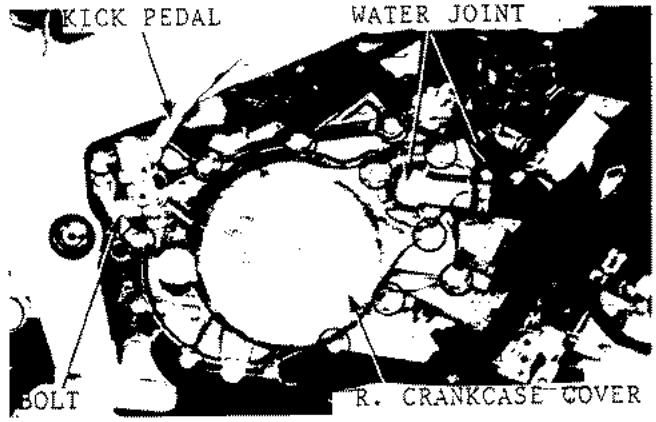
Install water joint

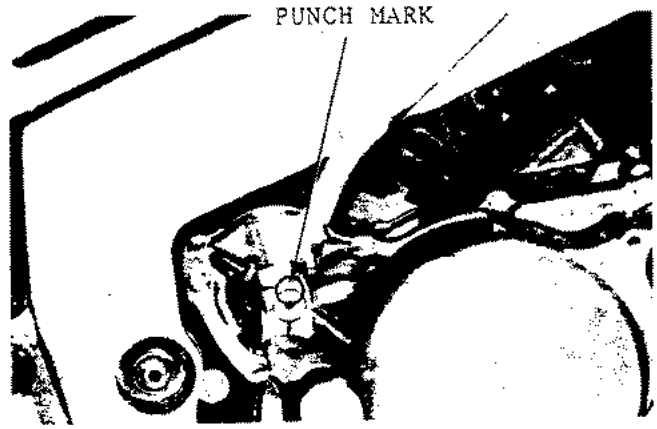
Install kickstarter pedal

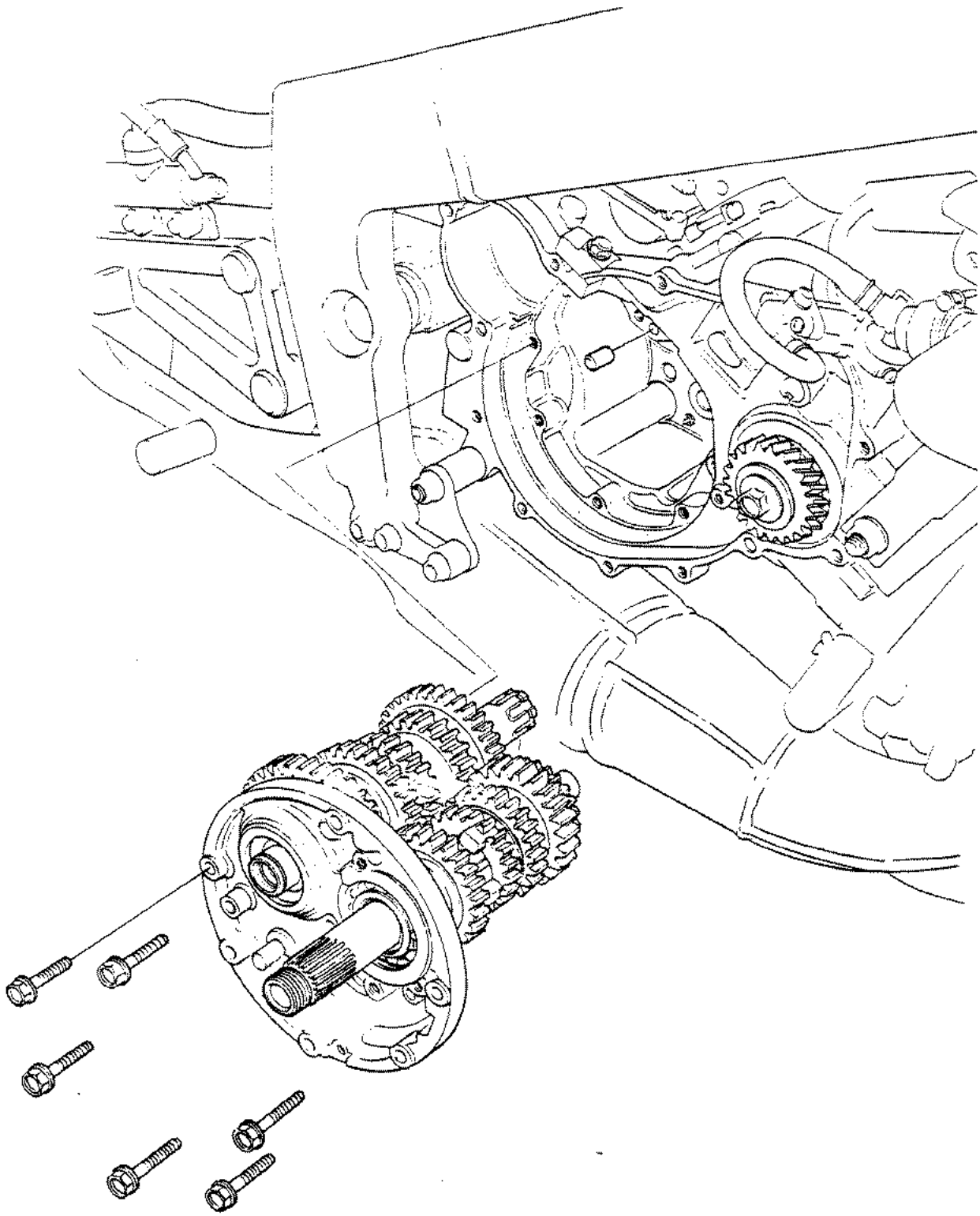
Torque: 3.5-4.5 Kg-m

* Align kickstarter and spindle punch mark and install kick pedal

Inspect clutch lever play (2.7)
Insert transmission oil (2.9)
Insert radiator fluid (5.4)
Install R. lower fairing (15.5)







9. TRANSMISSION

MAINTENANCE INFORMATION:

Warnings:

* Perform all maintenance with vehicle in an upright position
* Before removing transmission, remove the following parts:
  - clutch (section 8)
  - kickstarter (section 8)
  - gearshift linkage (section 8)

: mm

ITEM			STANDARD	SERVICE LIMIT
Mainshaft	Backlash		0.044—0.133	0.30
Countershaft	Gear I.D	M 5	28.000—28.021	28.05
		M 6	28.000—28.021	28.05
		C 1	23.000—23.021	23.05
		C 2	28.000—28.021	28.05
		C 3	28.000—28.021	28.05
		C 4	28.000—28.021	28.05
	Gear Collar	M 5 I.D	25.000—25.021	25.085
		M 5 O.D	27.959—27.980	27.92
		M 6 O.D	27.959—27.980	27.92
		C 1 O.D	22.959—22.980	22.92
		C 1 I.D	20.020—20.041	20.07
		C 2 O.D	27.959—27.980	27.92
		C 2 I.D	25.000—25.021	25.05
		C 3 O.D	27.959—27.980	27.92
		C 4 O.D	27.959—27.980	27.92
	Mainshaft O.D	M 5	24.980—24.993	24.95
	Countershaft O.D	C 1	19.980—19.993	19.95
		C 2	24.959—24.980	24.93
Shift fork	Hook width		5.93—6.00	5.6
	I.D		11.000—11.021	11.04
Fork shaft O.D			11.966—11.984	11.94
Shift drum O.D			11.966—11.984	11.94

TOOLS

Special Tools

Bearing remover	07936—3710300
Remover handle	07936—3710100
Remover sliding weight	07741—0010201
Driver handle	07949—3710001

Standard Tools

Outer driver (37x40mm)	07746—0010200
Outer driver (42x47mm)	07746—0010300
Outer driver (62x68mm)	07746—0010500
Pilot (20mm)	07746—0040500
Pilot (25mm)	07746—0040600
Driver handle A	07749—0010000
Driver handle C	07746—0030100
Inner driver (25mm)	07746—0030200

TROUBLE SHOOTING:

Engine Noise

- transmission bearing worn
- transmission gears shaft collar damaged

Gears Sticking

- gear dogs damaged
- shift fork bent
- shift fork shaft bent

Gear Difficult To Engage

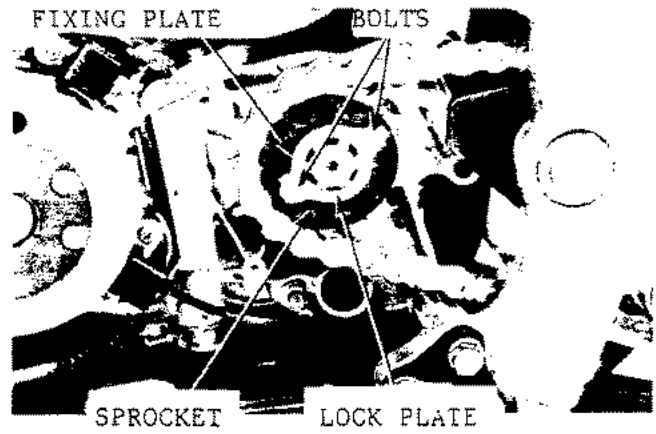
- clutch cable adjustment faulty
- shift fork bent, damaged
- shift fork shaft bent
- Transmission oil level incorrect
  or faulty

TRANSMISSION REMOVAL

Remove lower fairing (15.3)

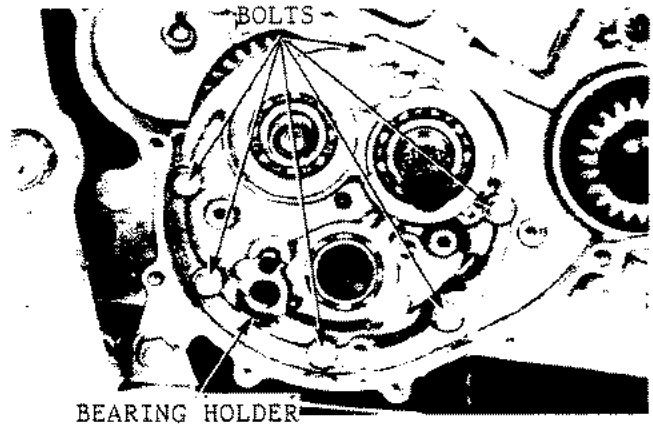
Remove the following
- clutch (8.3)
- kickstarter (8.7)
Gearshift linkage (8.8)

Raise plate tabs, remove drive sprocket bolts, lock plate and drive sprocket



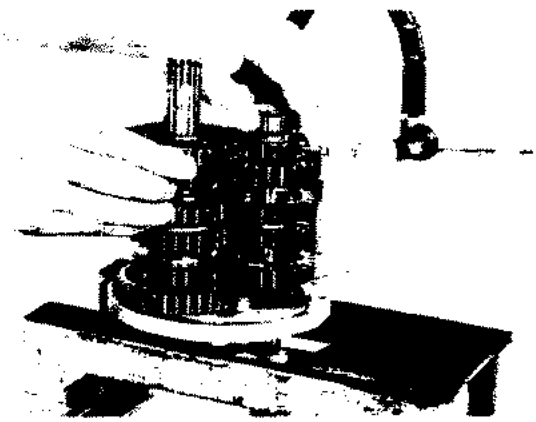
Remove 6 bolts
While lightly knocking counter shaft from drive sprocket side, remove transmission and bearing holder as as assembly

Remove knock pin

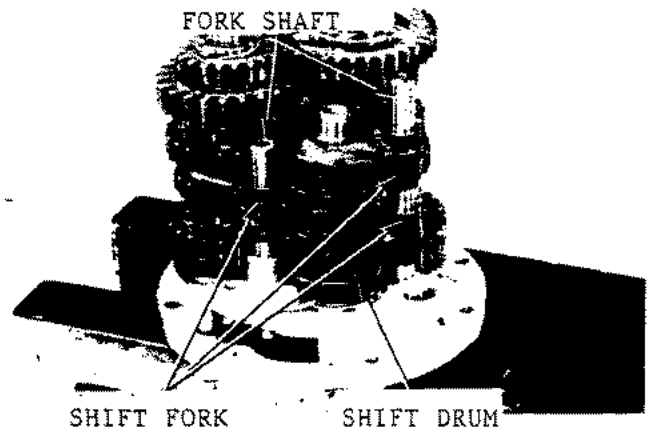


Inspect each gears backlash

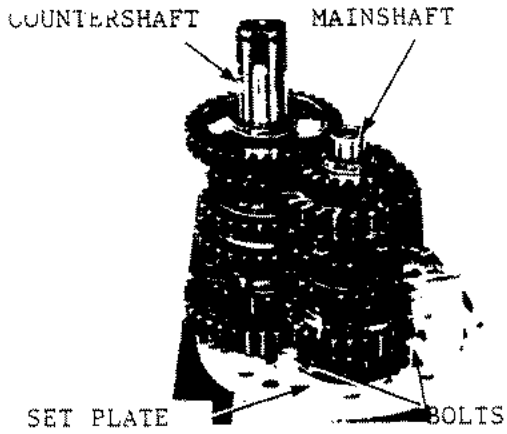
Service Limit : 0.30mm (replace if above)



Pull shift fork shaft and remove shift fork and shaft drum



Remove main shaft bearing set plate and remove mainshaft and countershaft as an assembly from bearing shaft



TRANSMISSION INSPECTION

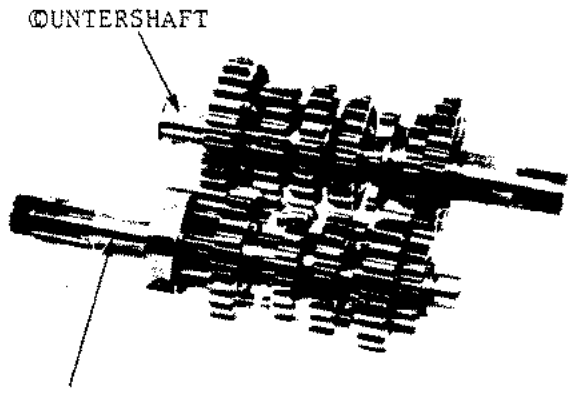
Mainshaft, Countershaft, Gears, Collars

Separate each gear from shaft and inspect gears faces and dogs for damage

> * Do not open clirclip more than necessary. Hold shaft and heavy items and slide to remove

Inspect each gear dog and hole for wear and damage. Also inpsect each gear facing for wear and damage.
Measure each gears I.D

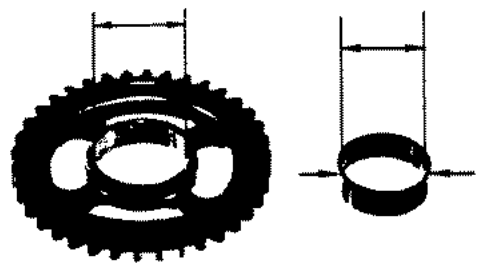
M5,M6,C2,C3,C4 : 28.05mm (replace if over)
C1 : 23.05mm (replace if over)



Measure each gear collars internal O.D

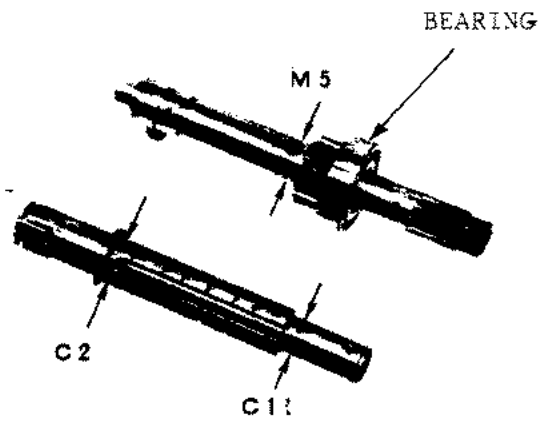
Service limit:

M5 I.D : 25.085mm (replace if above)
C2 I.D : 25.05mm (replace if above)
C1 I.D : 20.07mm (replace if above)
C1 O.D : 22.92mm (replace if below)
M5,M6,C2,C3,C4 O.D : 27.92mm (replace if below)



Measure mainshaft counter shaft O.D

Service limit:
M5 : 24.95mm (replace if below)
C1 : 19.95mm (replace if below)
C2 : 24.93mm (replace if below)



While turning mainshaft bearing outer race, inspect for smooth movement and condition
Also inpsect that mainshaft is tightened so there is no slack if abnormal, then replace (9.7)

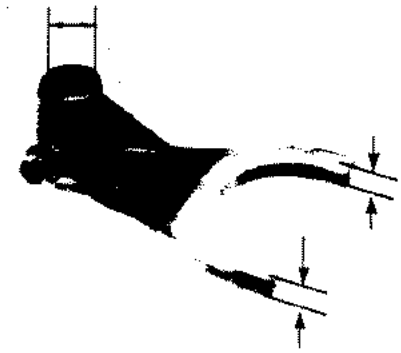
SHIFT FORK

Inspect shift fork for warpage and change in shape

Measure shift fork I.D and hook width

Service limit:

I.D : 11.04mm (replace if above)
Hook width : 5.6mm (replace if below)

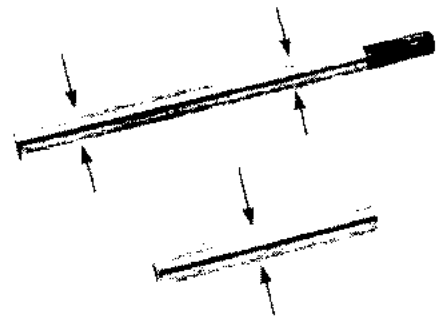


SHIFT FORK SHAFT

Inspect shift fork shaft for warpage and damage

Measure shaft O.D

Service limit: 11.94mm (replace if below)



SHIFT DRUM

Inspect shift drum guide groove for damage

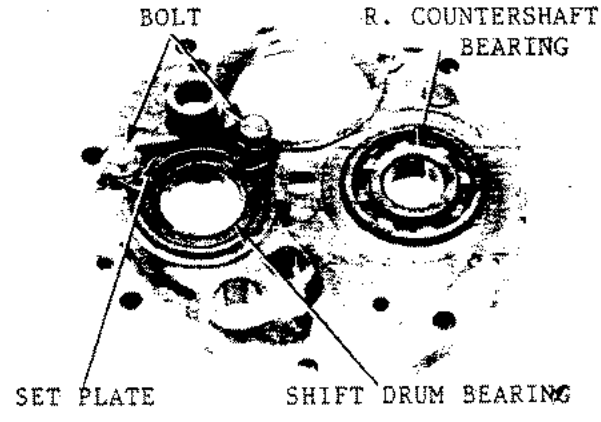
Measure shift drum O.D

Service limit: 11.94mm (replace if below)

TRANSMISSION BEARING REPLACEMENT

Bearing holder

Turn R. countershaft bearing and shift drum bearing and inspect for smooth movement
Also inpsect bearing holder for movement
If replacement is necessarry, remove shift drum bearing set plate and remove shift drum bearing
Remove R. countershaft bearing

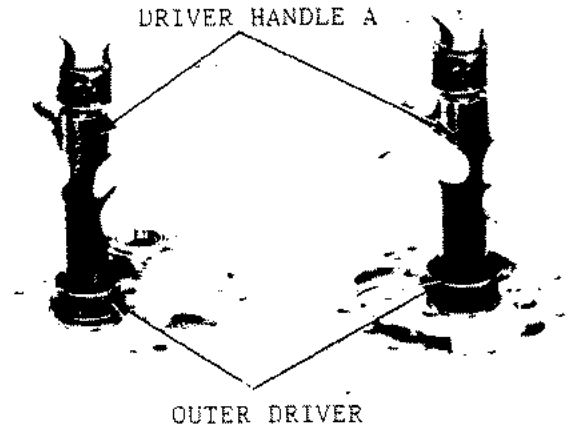


Insert new R. countershaft bearing and shift bearing

* Insert with bearing mark facing outwards
* Insert using weight

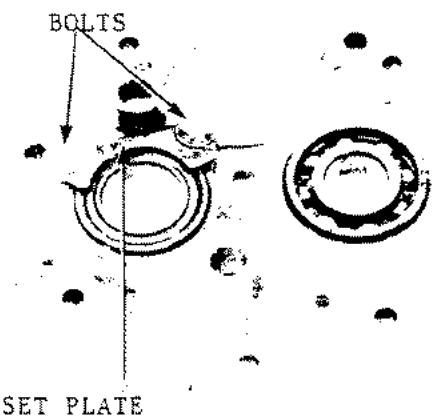
Standardtools:

Outer driver (42x47mm) 07746-0010300
Pilot (20mm)(R.countershaft)07746-0040500
Pilot (25mm)(shift drum brg)07746-0040600
Driver handle A 00749-0010000



Install shift drum bearing set plate and tighten bolt

* Apply locking agent to bolt and install
* Do not apply too much locking agent



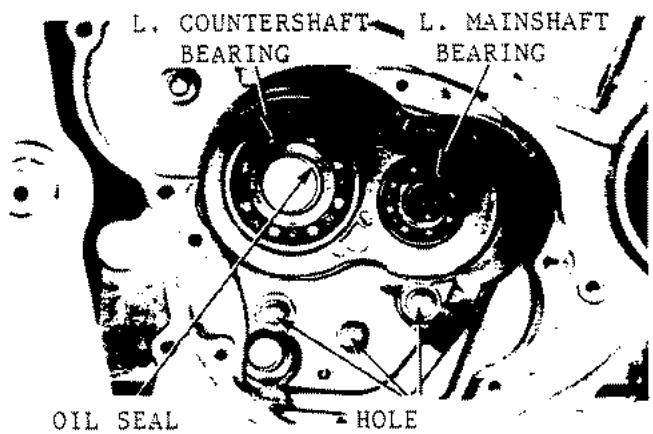
CRANKCASE

Inspect shift drum and shift fork shaft for wear and damage
Turn L. countershaft bearing and L. mainshaft bearing inner race and check for smooth movement

Also inspect for movement in crankcase

L. Countershaft Bearing Replacement

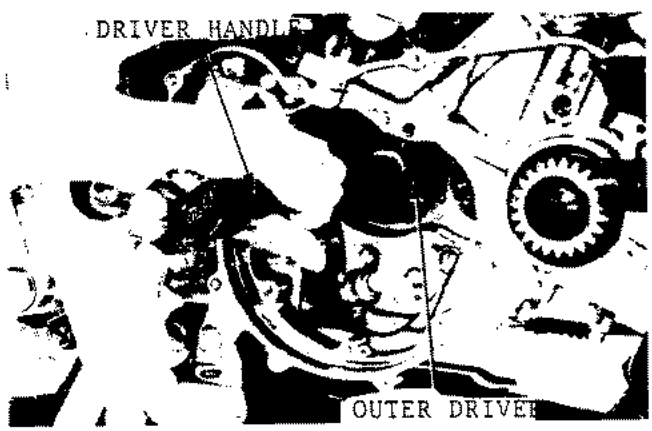
Remove countershaft oil seal and remove L. countershaft bearing



Insert new L. countershaft bearing

* Insert with bearing facing outwards
* Insert into crankcase using weight

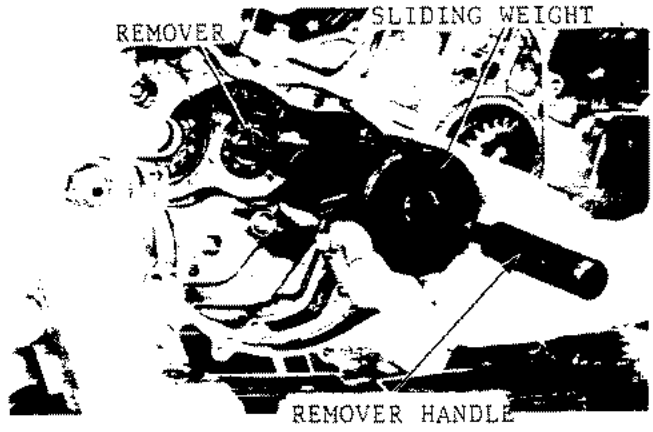
Special Tools:
Driver handle 07949-3710001
Standard Tools:
Outer driver (62×68mm) 07746-0010500



L. Mainshaft Bearing

Remove L. mainshaft bearing

Bearing remover	07936—3710300
Remover handle	07936—3710100
Remover sliding weight	07741—0010201

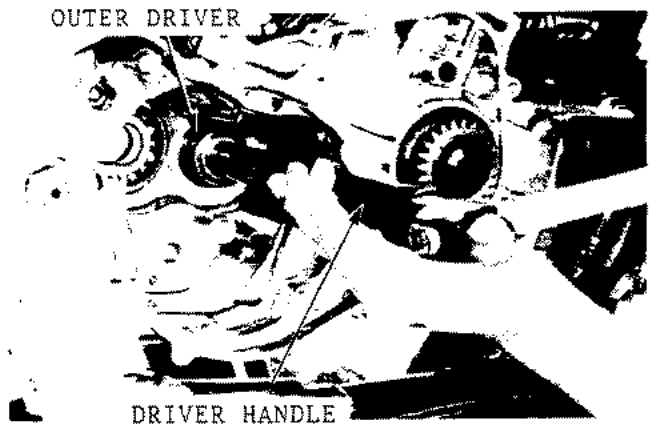


Insert new L. mainshaft bearing

* Insert with bearing mark facing outwards
* Insert into crankcase using weight

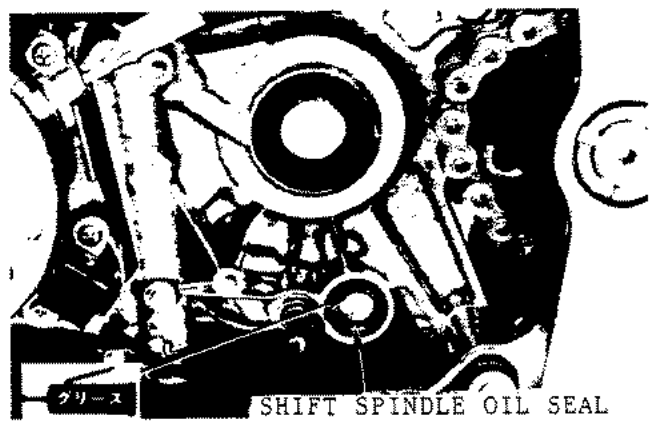
Special Tool: Driver handle 07949—3710001

Standard Tool: Outer driver (37x40mm 07746—0010200



Inspect shift spindle oil seal and replace if necessary

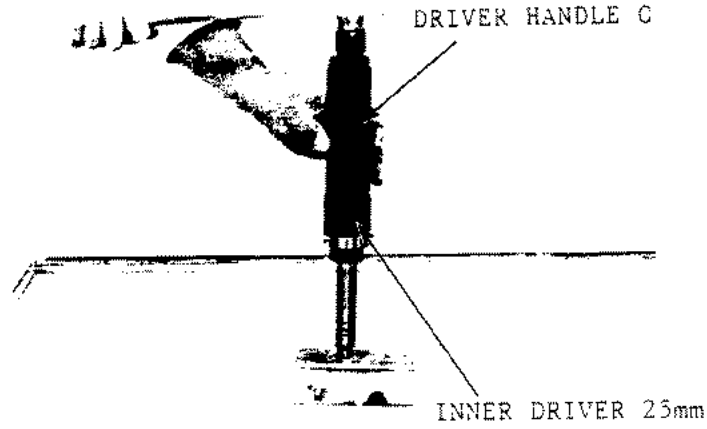
Apply grease to lip



MAINSHAFT

Use bearing puller and remove R. mainshaft bearing

Insert new R.mainshaft bearing into mainshaft



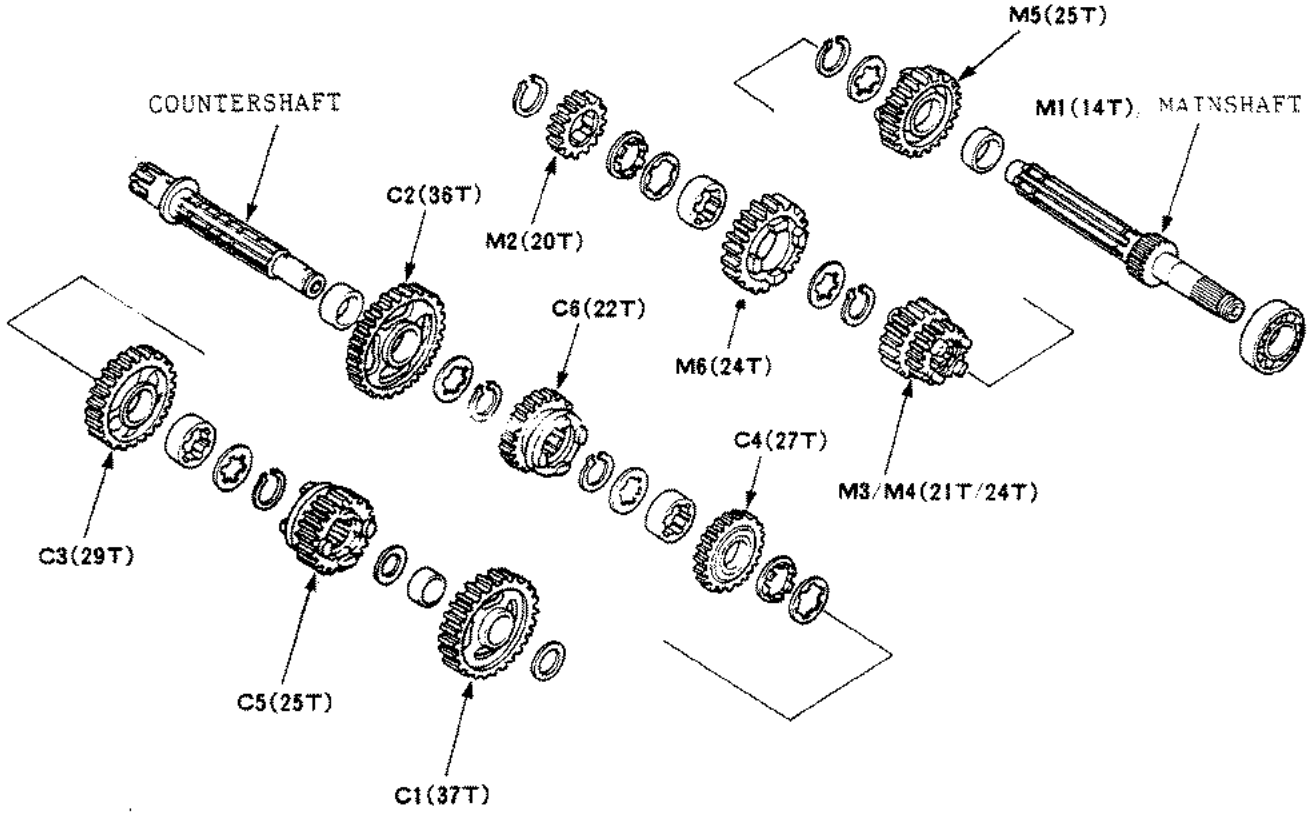
Standard Tools

Driver handle C	07746—0030100
Inner driver (25mm)	07746—0030200

* Insert with bearing mark facing outwards
* Insert into mainshaft using weight

TRANSMISSION INSTALLATION

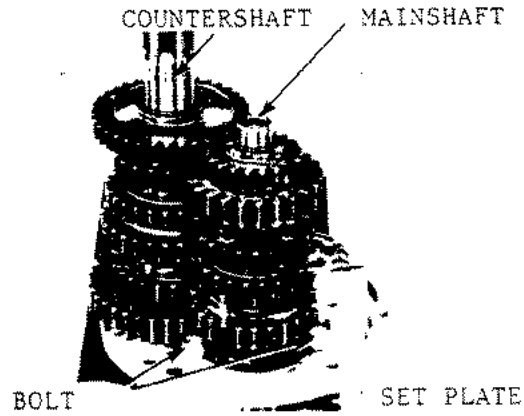
Apply transmission oil to each moving part



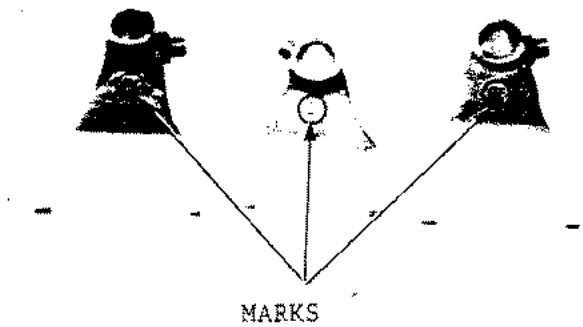
Install mainshaft and countershaft as an assembly into bearing holder
Install mainshaft bearing set plate

Instll bolts

* Use new bolts

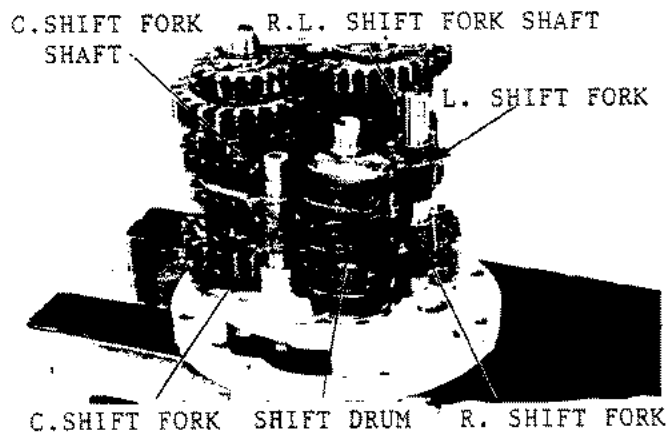


Take care when installing shift forks that the respective "R","C" and "L" marks are in the correct places



Install shift drum and shift fork

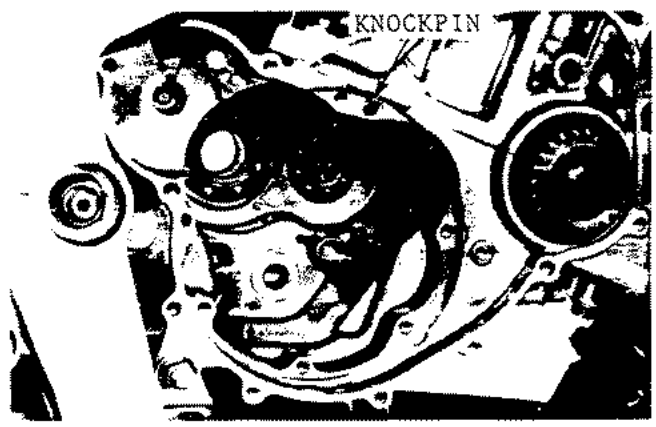
* Face shift fork marks upwards as in the photo



Install shift fork shaft
Inspect for smooth movement in each part

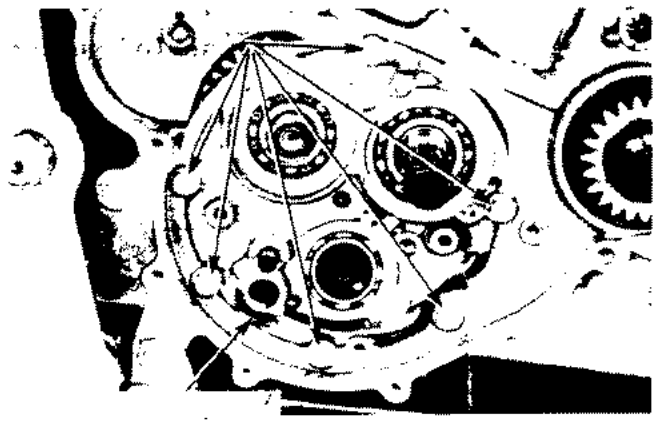
Install knock pin

* Do not forget to install knock pin



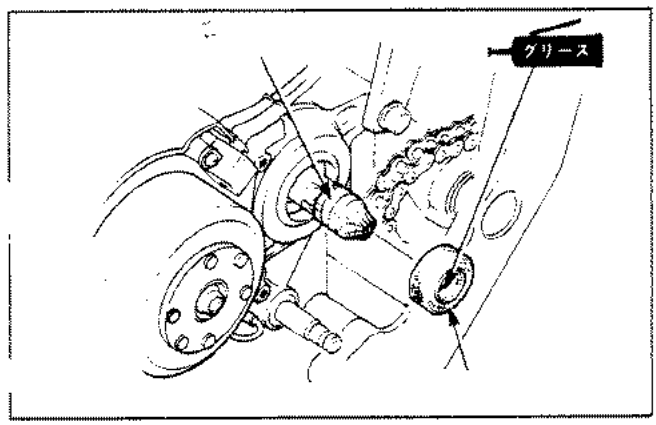
Install transmission as an assembly with bearing holder into crankcase

Install 6 bolts in opposing positions, 2-3 turns each time



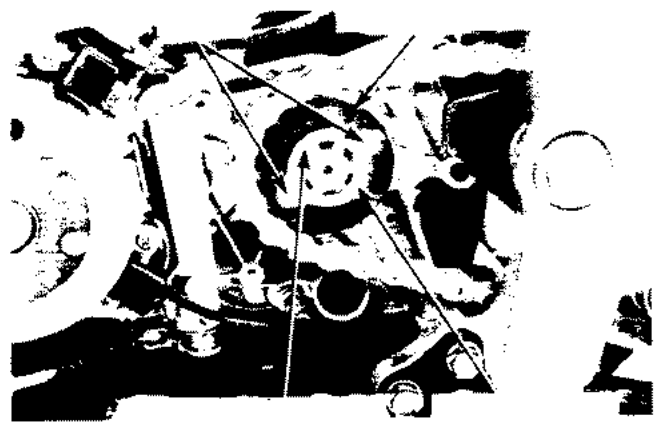
Install new countershaft oil seal into crankcase

* Install at same height as crankcase edge
* Install taking care not to damage oil seal lip and spring
* Apply tape to countershaft drive sprocket and apply grease to oil seal lip

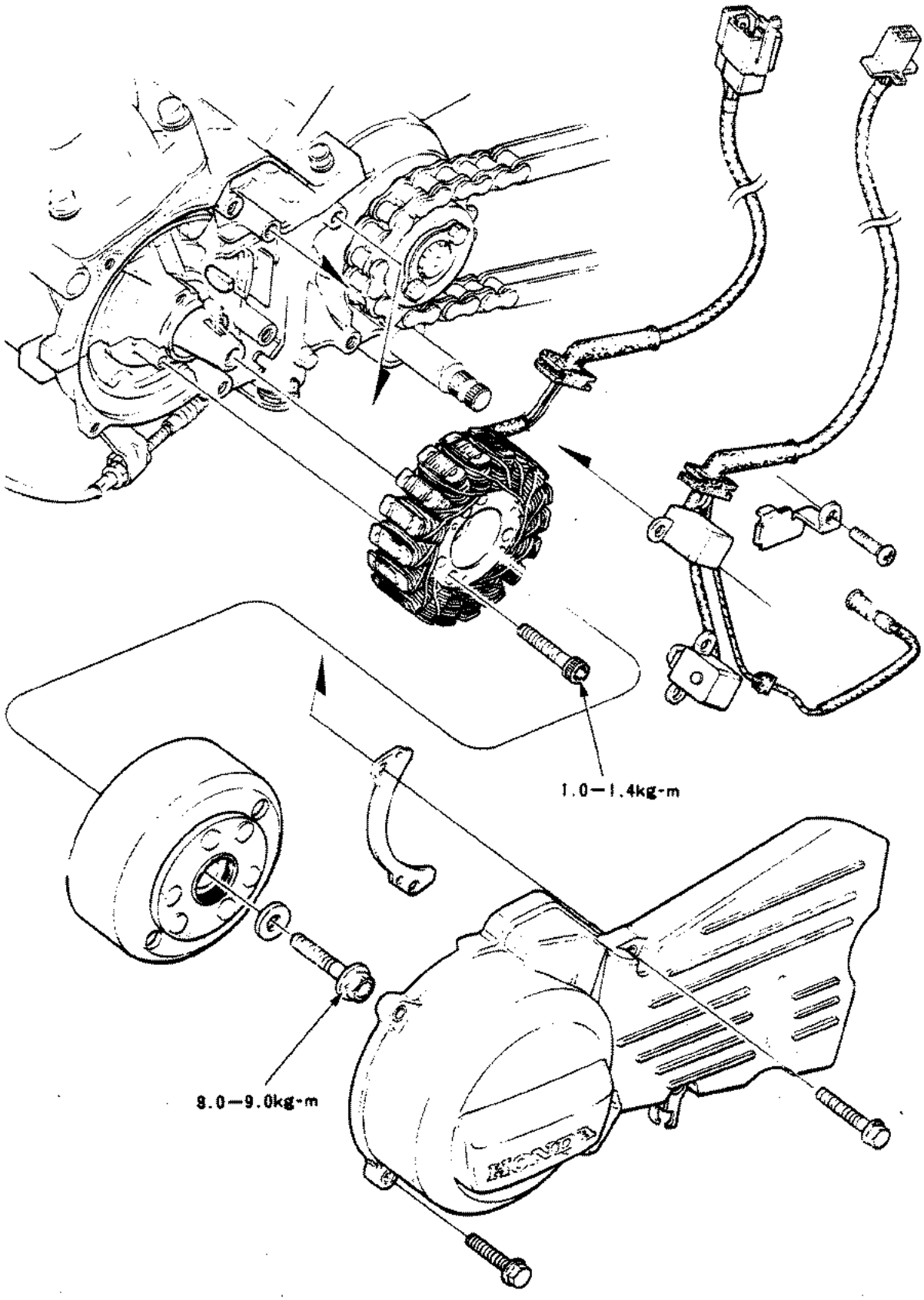


Install drive sprocket, fixing plate and lock plate and tighten bolts

Align lock plate hook so that the bolts can not rotate



Install the following:
- gearshift linkage (8.10)
- kickstarter (8.11)
- clutch (8.13)


1.0—1.4kg-m
8.0—9.0kg-m

10. AC GENERATOR

MAINTENANCE INFORMATION

Warning

- This section explains how to remove the AC Generator and Pulse Generator
- Refer to section 16 for AC Generator troubleshooting and inspection
- Refer section 17 for pulse generator troubleshooting and inspection

Torques:

Flywheel	8.0—9.0kg-m
Stator	1.0—1.4kg-m

TOOLS:

Special Tools:

Rotor Puller Attachment	07HMC—KV30100

Standard Tools

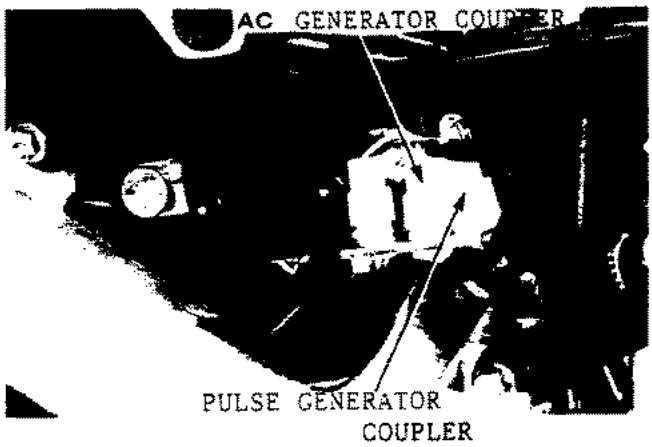
Universal holder	07725—0030000
Flywheel puller	07733—0010000

PULSE GENERATOR REMOVAL

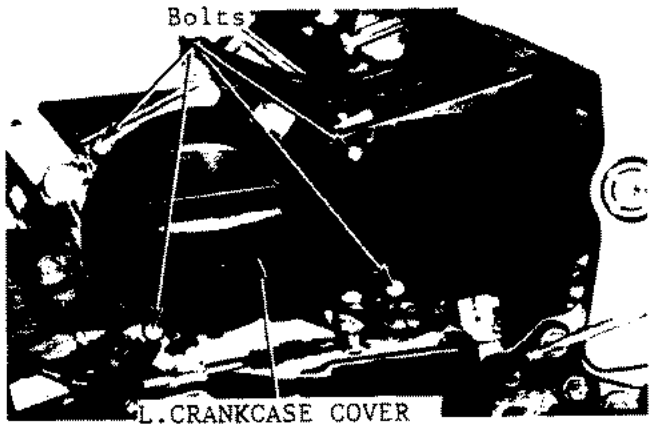
Remove seat, side covers and lower fairing (section 15)

Remove pulse generator coupler connection

If removing AC Generator, disconnect AC Generator coupler



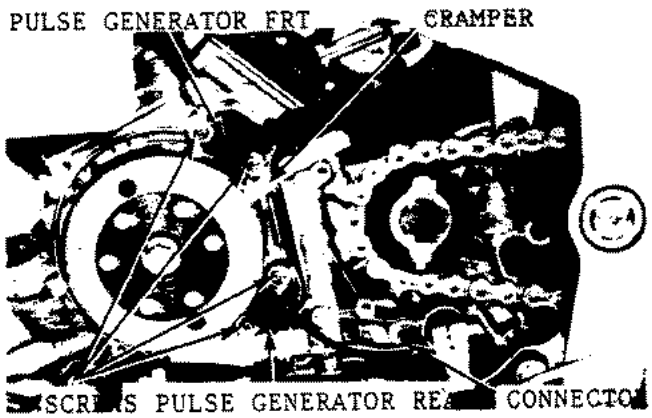
Remove 4 bolts and remove L. crankcase cover



Remove connector from neutral switch

Remove pulse generator

* Take care not to lose wire cramper



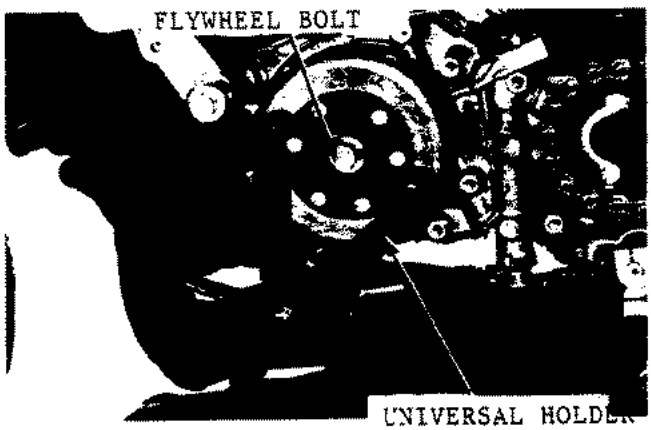
AC GENERATOR REMOVAL

Remove AC Generator coupler connection

Use a universal holder and fix flywheel

Standard Tool - Universal Holder 07725-0030000

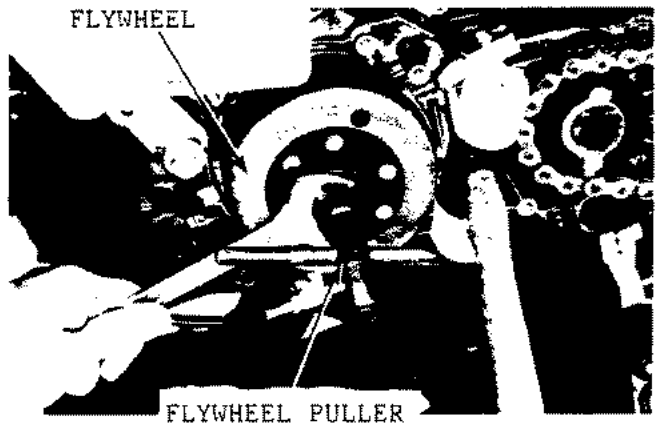
Remove flywheel bolt



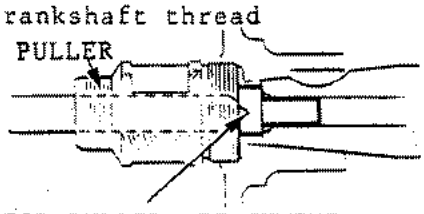
Use flywheel puller and remove flywheel

Special tool - Rotor Puller Attachment 07HMC-KV30100

StandardeTool - Flywheel Puller 07733-0010000



* Install the special tool puller as in the picture so that the puller thread doesnot enter the crankshaft thread



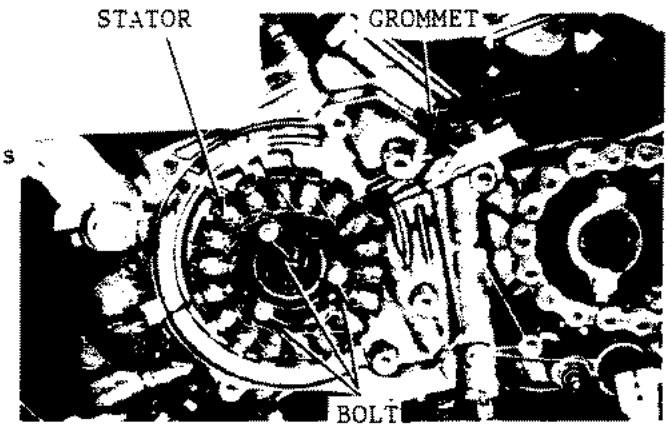
AC GENERATOR INSTALLATION

Install stator into crankshaft and tighten bolts

Torque: 1.0-1.4 Kg-m

Route AC Generator wires correctly and install grommet into case groove

Connect AC generator coupler (10.4)



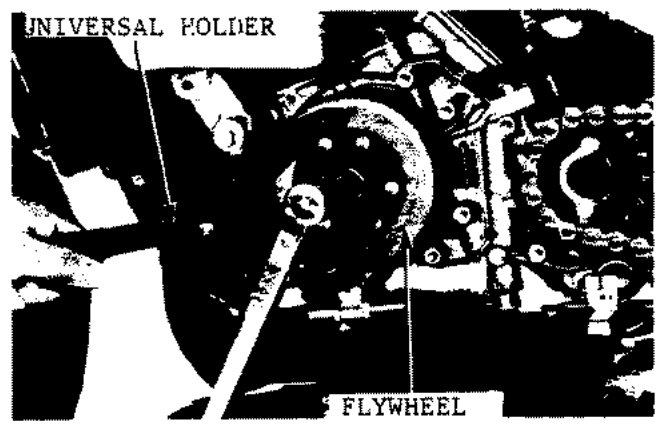
Install flywheel into crankshaft

* Remove all damaged and abnormalities from flywheel and stator and install
* Remove tape from crankshaft

Use the universal holder and fix flywheel
Install washer and flywheel bolt and tighten

Special Toool - Universal Holder 07725-0030000

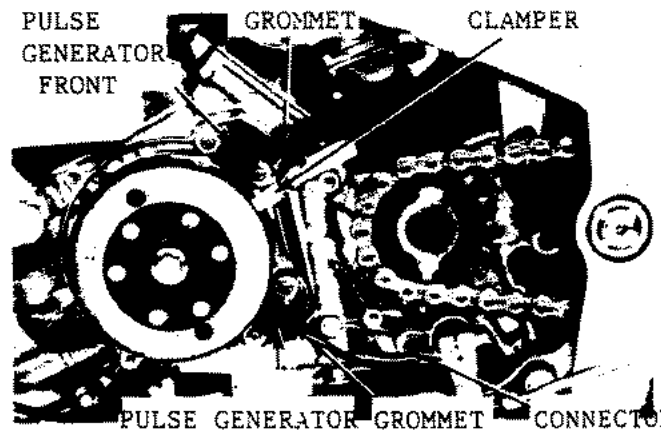
Torque: 8.0-9.0 Kg-m



PULSE GENERATOR INSTALLATION

Install pulse generator

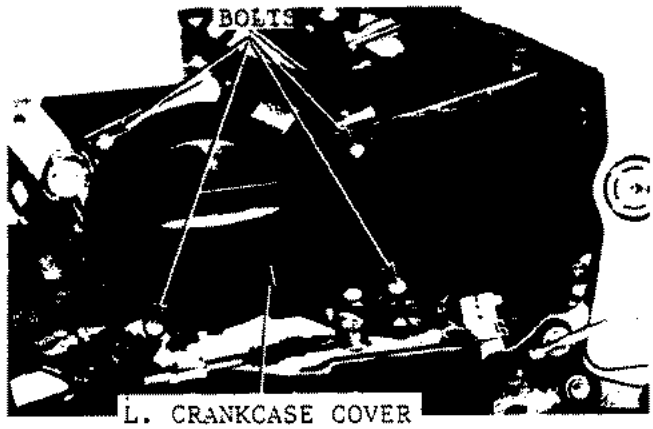
* Clamp AC generator wires, pulse generaotr wires correctly using clamper



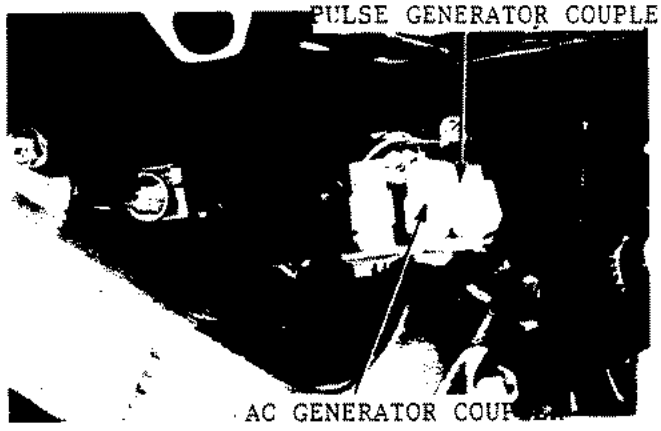
Route pulse generator wire correctly and install grommet into case groove

Connect nuetral switch

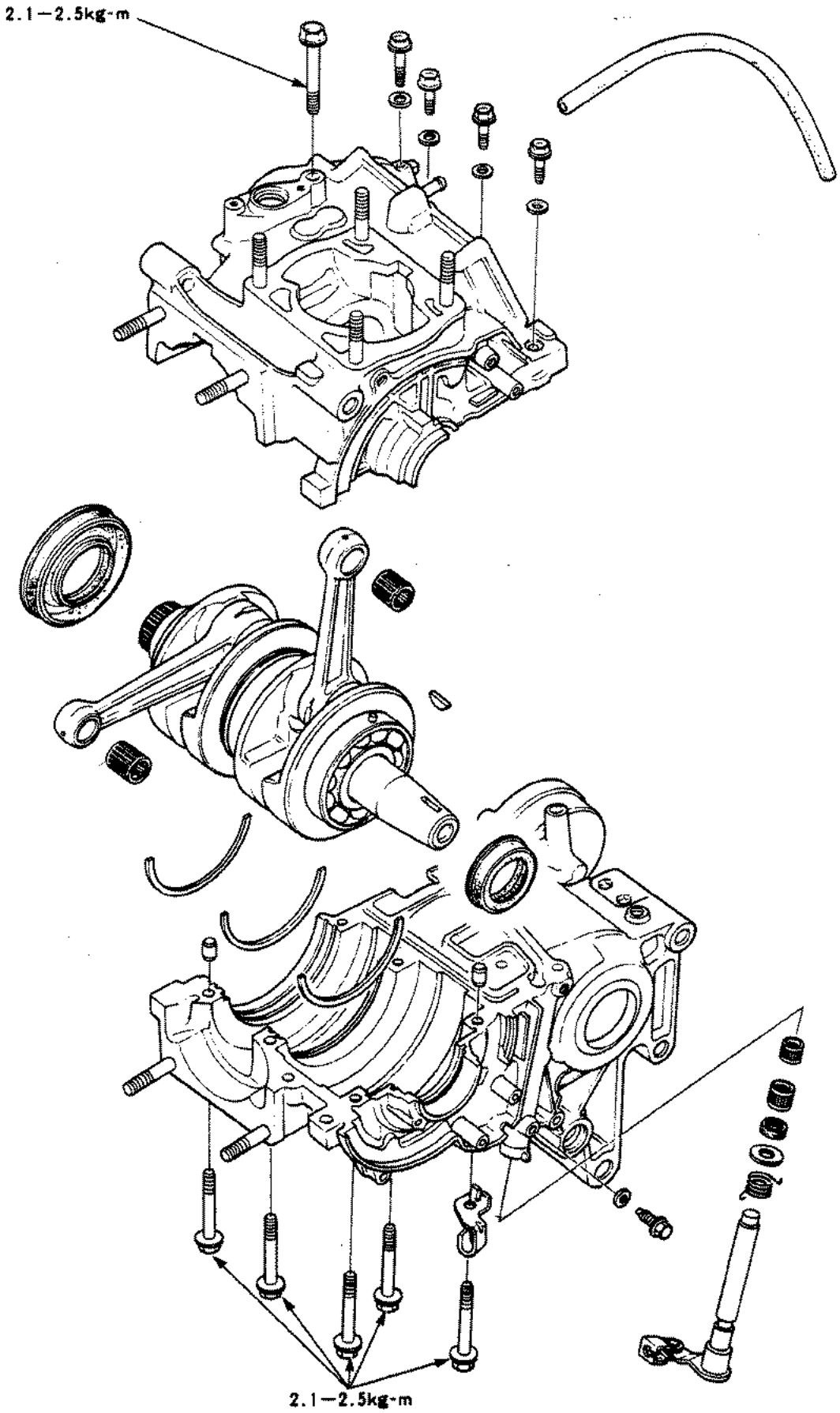
Install L. crankcase and tighten bolts



Connect pulse generator coupler and AC generator coupler



Instll lower fairing, side covers and seat (section 15)


2.1—2.5kg-m
2.1—2.5kg-m

MAINTENANCE INFORMATION

Warnings:

When adjusting crankshaft it is not necessary to remove engine. If the following parts are removed, maintenance can be performed.
- Cylinder head,cykinder, piston (section 7)
- AC Generator, Pulse generator (section 10)
- Primary drive gear (section8
- Front engine hanger bolt (section 6)
- Upper crankcase
- Crankshaft adjustment is explained as if the engine has been removed from the frame
- Remove the following parts before adjusting crankcase
  - Cylinder head, cylinder, piston (section 7)
  - Transmission (section 9)
  - AC generator, pulse generator (section 10)
  - Clutch kickstarter, gearshift linkage (section 8)
- Remove engine as in section 6
- Before proceeding clean engine of all foreign particles
- When separating crankshaft take sufficient care not to damage oil seal. This could cause a decrease in engine performance
- When installing crankshaft the main journal bearing set pin must be set in the case groove

: mm

Item		Standard	Service Limit
Conrod	Big end axial clearance	0.55—0.75	0.85
	Big end axial perpendicular gap	—	0.05
Crankshaft Journal runout	A	0.05	0.10
	B	0.03	0.08

Torque:

Crankcase bolt	2.1—2.5kg-m	Neutral Switch	1.4—1.8kg-m

TROUBLE SHOOTING

Engine Noise

- Main journal bearing faulty
- Crank pin bearing faulty

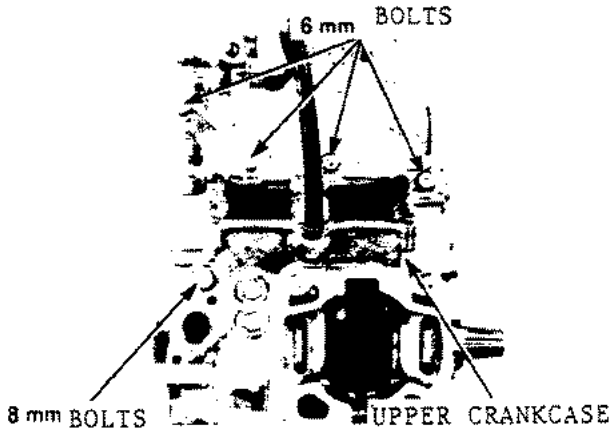
CRANKCASE SEPARATION

Remove the necessary parts for adjustment

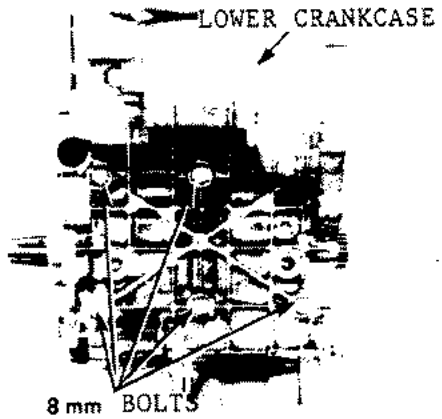
(11.1)

Remove upper crankcase bolt

* So that the cases do not warp remove the small bolts first,moving to the bigger bolts, removing opposite bolts 2-3 turns at a time



Lower upper crankcase and remove lower crankcase bolt



Face upper crankcase upwards

Pull upper crankcase upwards and separate crankcase

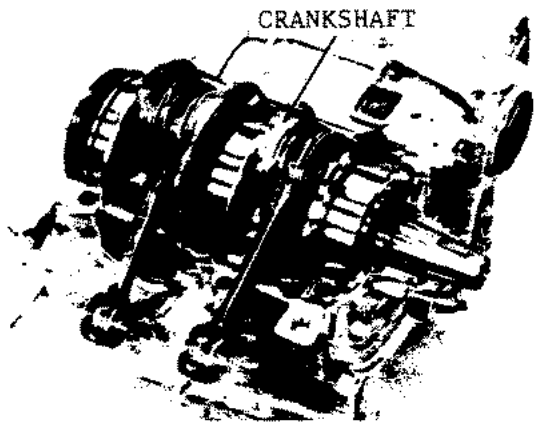
* Take care not to mark align marks with driver etc
* Lightly tap cases with plastic hammer to separate

CRANKSHAFT

Crankshaft Removal

Hold both ends of crankshaft and pull crankshaft assy upwards from lower crankcase.

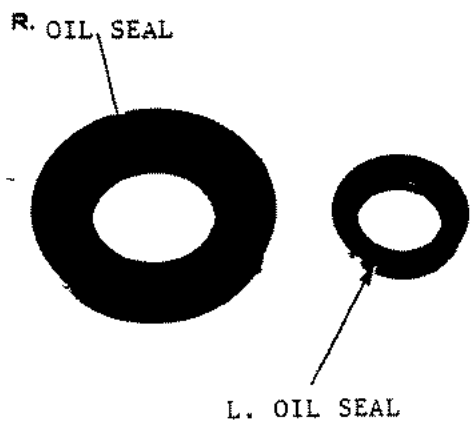
Remove oil seals from both ends of crankshaft



* Take care not to damage oil seal lip

OIL SEAL INSPECTION

Inspect oil seal for damage. Particularly if you can see damage to oil seal lip, engine performance will be affected unless seal is replaced.



* If damage can be seen to middle oil seal in crankshaft, replace as a crankshaft assembly.

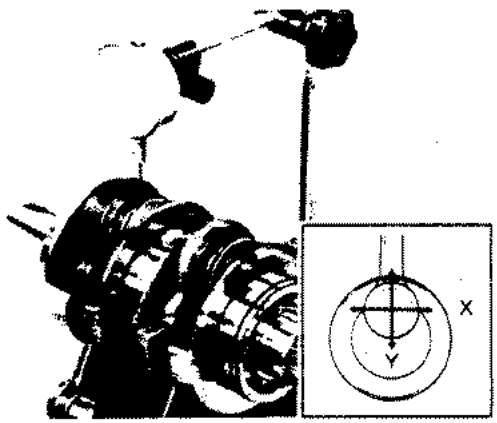
CRANKSHAFT INSPECTION

Measure conrod big end axial clearance

Service limit : 0.85mm (replace if above)

Measure conrod big end axial values X,Y

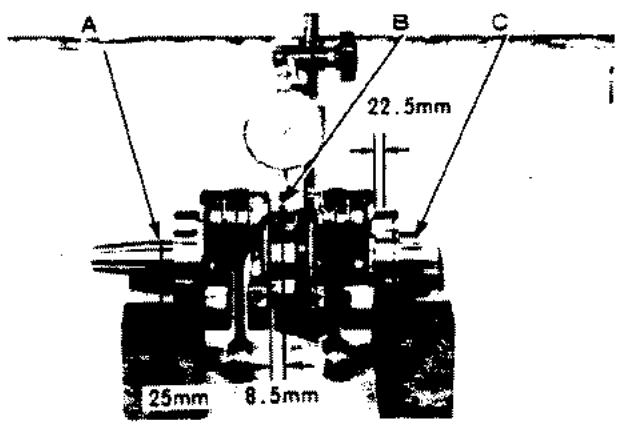
Service limit : 0.05mm (replace if above)



Turn crankshaft journal bearing outer race and inspect for smooth movement
If abnormal, replace crankshaft assembly
If crankshaft middle oil seal is damaged, replace crankshaft assembly
Measure crankshaft journal runout:

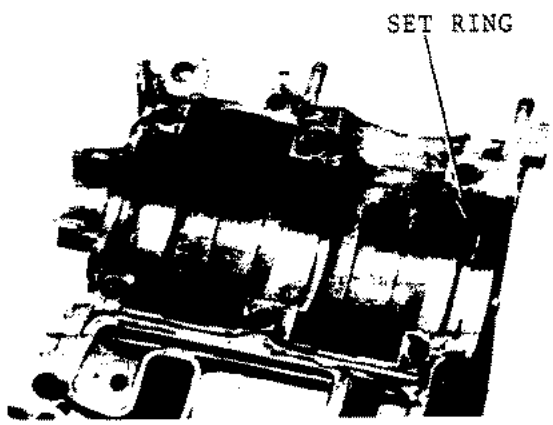
Service limit : 0.10mm (replace if above)(A,C)
: 0.08mm (replace if above) (B)

If abover service limits are exceeded replace crankshaft assembly



CRANKSHAFT INSTALLATION

Install bearing set ring into right hand lower crankcase bearing holder



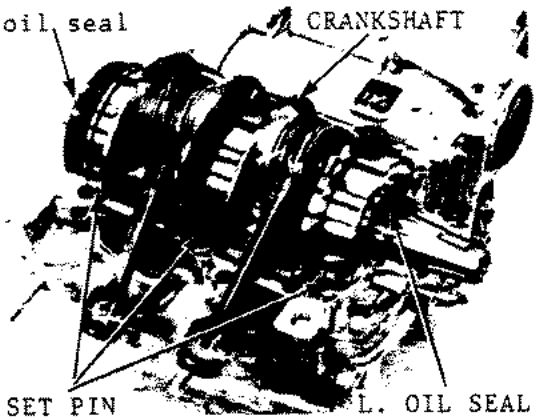
Apply recommended engine oil to journal bearing and conrod big end.

Install oil seal to crankshaft end

*Take care not to damage oil seal lip

Apply sealing agent to R-L oil seal outside
Align crankshaft journal bearing set pin with lower crankcase groove and install crankshaft assembly

* Set crankshaft into crankcase and lightly tap journal bearing into crankcase with plastic hammer
* Check that the respoective oil seals are set into the case grooves
* Check that the respective bearing set pins are entered into the crankcase groove



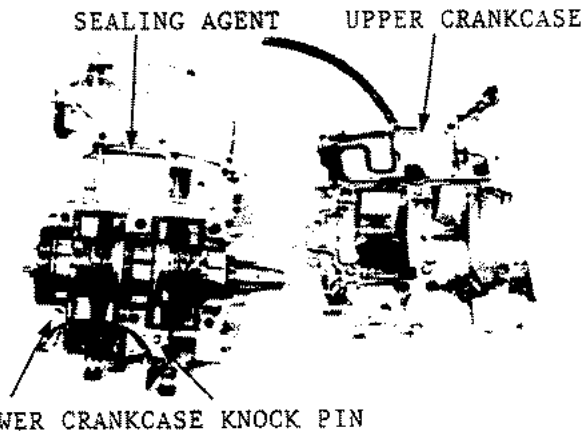
CRANKCASE ASSEMBLY

Check that the crankshaft journal bearings set pin is set into the case groove.

* Clean crankcase aligning face of all packing

Apply packing to crankcase aligning face

* Do not apply to knock pin hole



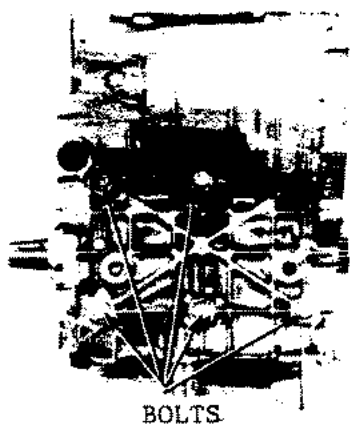
Install upper crankcase to lower crankcase

* Inspect aligning mark clearance & assemble so there is no clearance

Tighten lower crankcase bolt

Torque: 2.1-2.5 Kg-m

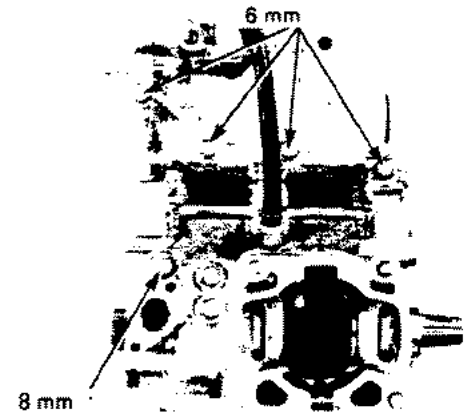
* Tightne bolts 2-3 turns at a time from the inside to the outside



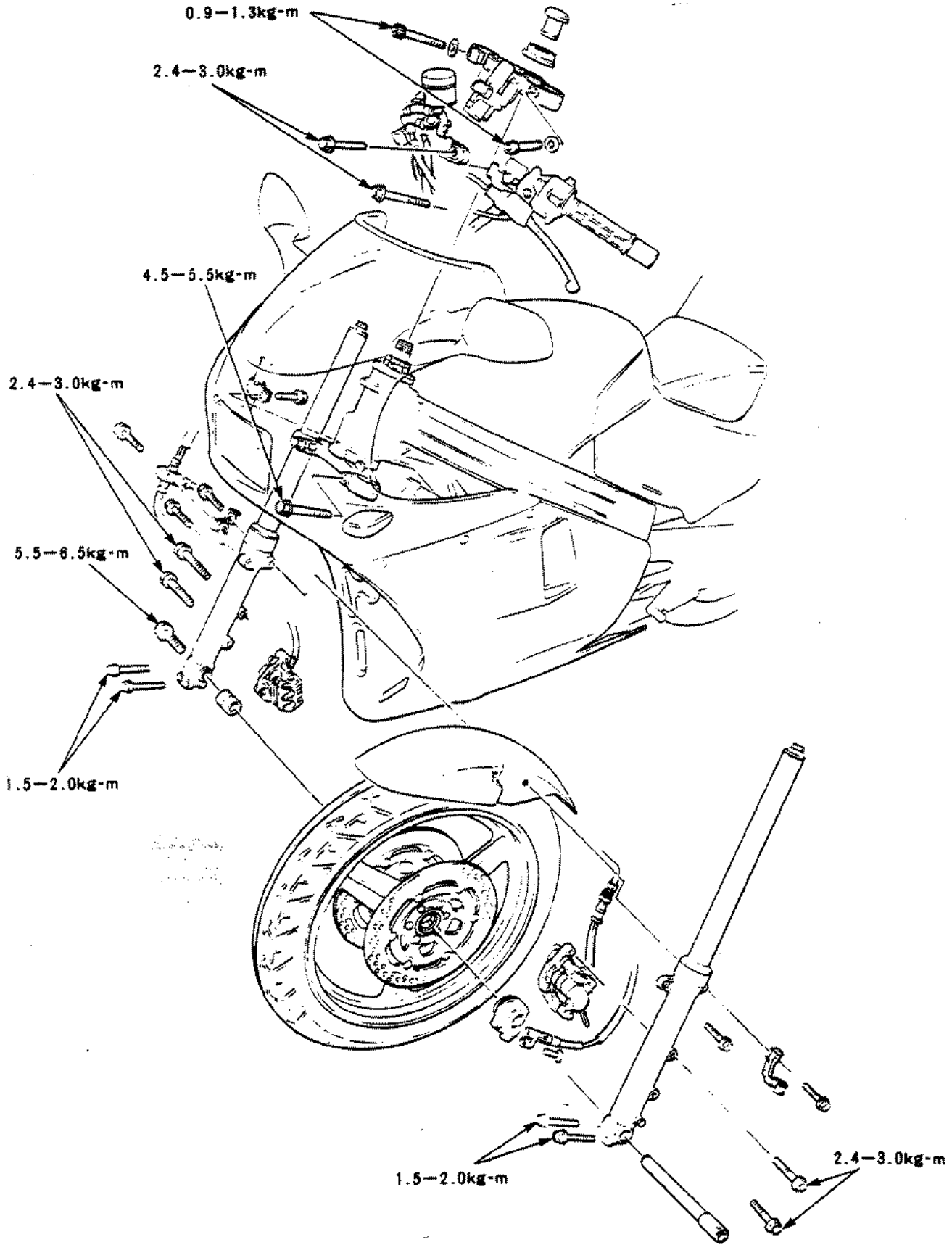
Tighten upper crankcase bolts

Torque : 8 mm bolt 2.1—2.5kg-m
6 mm bolt 1.0—1.4kg-m

* Tighten bolts 2-3 turns at a time, opposing each other



Install removed parts in reverse order to removed


0.9—1.3kg-m
2.4—3.0kg-m
4.5—5.5kg-m
2.4—3.0kg-m
5.5—6.5kg-m
1.5—2.0kg-m
1.5—2.0kg-m
2.4—3.0kg-m

12. FRONT WHEEL, SUSPENSION, STEERING

MAINTENANCE INFORMATION

Warnings:

- Raise front wheel and make sure that wheel can turn with minimal force. Also make sure there is nothing that can damage wheel
- Because tubeless tires have been fitted, take special care that there is no damage to tires and rims.
- When removing wheels from rims use special "tire levers" and "rim protectors"
- Regarding tubeless tire removal refer to Honda Motorcycle Tubeless Tire Service Manual No.6041551
- When replacing tires rmove disc housing from wheel hub. When replacing tire balance wheel by adding disc plate

Item		Standard	Service Limit
Front axle warpage		———	0.2mm
Front Wheel Rim Out	Radial	———	2.0mm
	Axial	———	2.0mm
Front cushion spring freeplay		291.5mm	285.7mm
Front fork pipe warpage		———	0.2mm
Front fork oil capacity	Total	383cc	———
	Ttl Replacement	108mm	———
Front fork air pressure		0 —0.4kg cm²	———

TORQUES

Handlebar bolts	2.4—3.0kg-m	Front fork socket bolt	1.5—2.5kg-m
Brake disc nut	1.4—1.6kg-m	Bottom bridge bolt	4.5—5.5kg-m
Front axle bolt	5.5—6.5kg-m	Top bridge bolt	0.9—1.3kg-m
Axle pinch bolt	1.5—2.0kg-m	Fork bolt	1.5—3.0kg-m
Caliper brakcet bolt	2.4—3.0kg-m	Steering adjust. nut	2.3—2.7kg-m
Master cylinder holder bolt	1.0—1.4kg-m	Clutch lever holder	9.0—12.0kg-m
			0.7—1.1kg-m

TOOLS:

Special Tools

Steering stem socket	07916—3710100	(1) Driver shaft body	07946—KM90300
Steering stem driver	07946—MB00000	(2) Assembly base	07946—KM90600
Fork seal driver	07947—4630100	(3) Driver attachment A	07946—KM90100
Ball race remover set [(1)-(6)]	07946—KM90000	(4) Driver attachment B	07946—KM90200
		(5) Bearing remover A	07946—KM90400
		(6) Bearing remover B	07946—KM90500

Standard Tools

Extension bar	07716-0020500	Driver handle A	07749-0010000
Lock nut wrench (30x32)	07716-0020400	Pilot (20mm)	07746-0040500
Bearing remover shaft	07746-0050100	Outer driver (42x47)	07746-0010300
Bearing remover head (20mm)	07746-0050600		

TROUBLE SHOOTING

Handlebars Heavy

- steering adjustment nut too tight
- Steering bearings damaged
- Wires, cables stuck on steering
- Tire pressures too low

Handlebars Pullable

Front forks bent
- Front axle bent, tires warped
- Rear fork bent

Front End Runout

- rim shape changed
- front wheel bearings damaged
- tires faulty
- axle tightening faulty
- wheel balance faulty

Front Cushion Noise

- fork pipe and bottom case give
- oil capacity incorrect
- cushion bolts to lose

Front cushion Sag

- springs bent
- oil capacity too low
- fork air pressure incorrect
- recommended oil not used

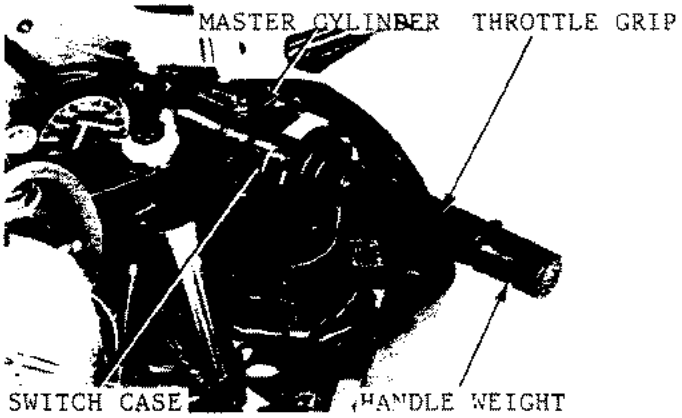
Front Cushion Too Hard

- fork oil incorrect
- fork air pressures incorrect
- fork pipes bent
- oil clogged
- recommended oil not used

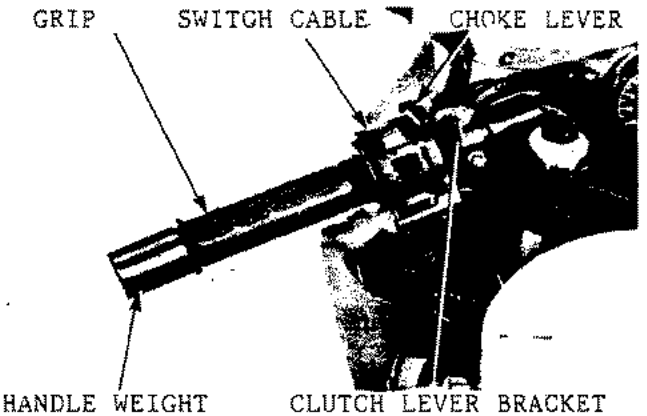
HANDLEBARS

Removal

Remove the following from R. Hnadle
- master cylinder
- handle switches
- handle weight
- throttle grip

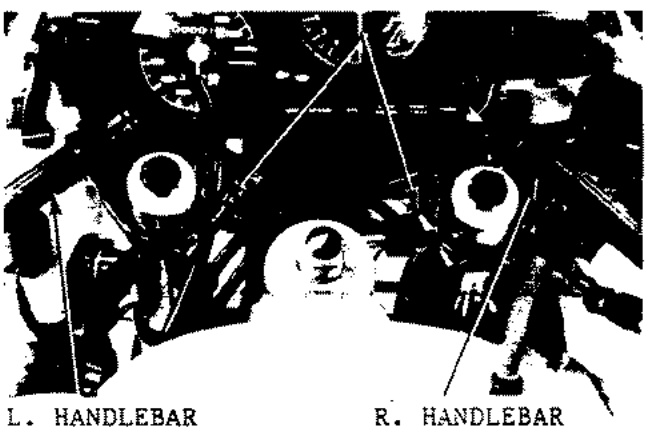


Remove following from L. handle
- clutch lever bracket
- handle switch case
- handle weight
- handle grip
- choke lever



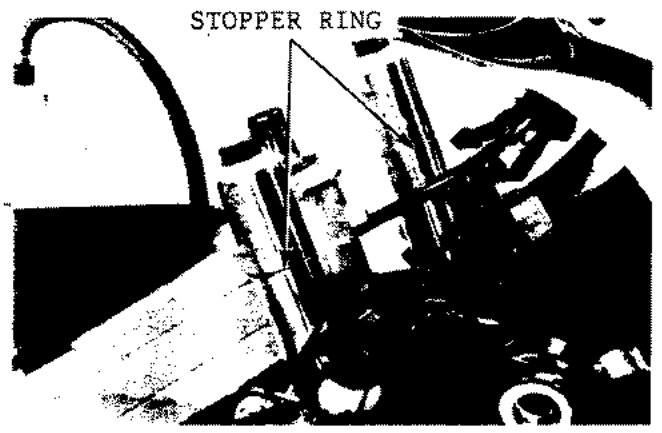
Remove steering top bridge (12.18)

Loosen handl bolts and remove handlbars



Installation

Check that left and right front fork grooves have stopper rings fitted

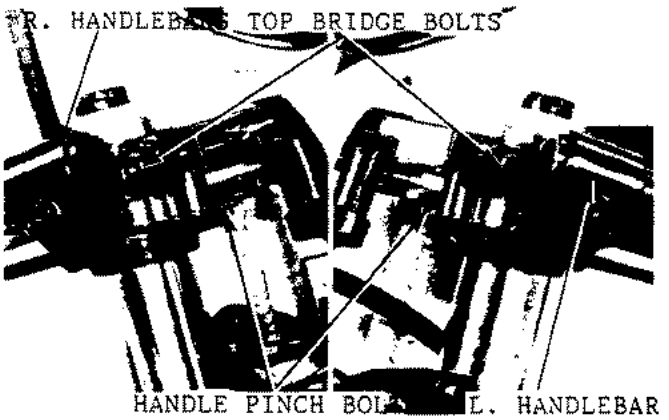


Install handlebars to front forks
Install top bridge and align top bridge shoulder and protrusion

Tighten steering stem nut (12.22)

Torque : 9.0-12.0 Kg-m

* Inspect tjat top bridge and handlebars are fitted correctly and that the stopper ring is not pushing out. If any abnormal t..., loosen bottom bridge bolt and adjust front fork position



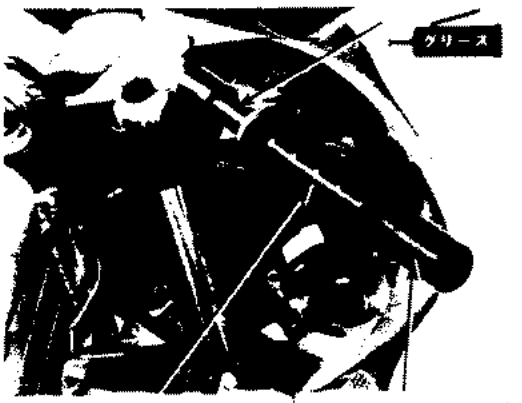
Tighten top bridge bolt

Torque : 0.9-1.3 Kg-m

Tighten handlebar bolts

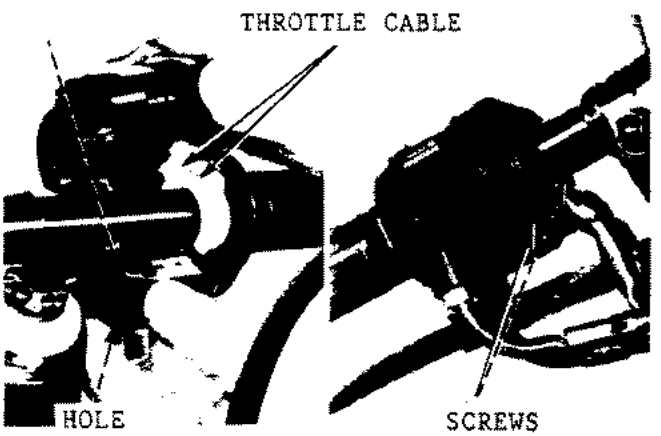
Torque : 2.4-3.0 Kg-m

Apply multipurpose grease to throttle grip and install. Install handle weight



Connect throttle cable to throttle grip
Align R. Hnadle switch case protrusion and handle hole, then tighten

Tighten switch case 2 screws



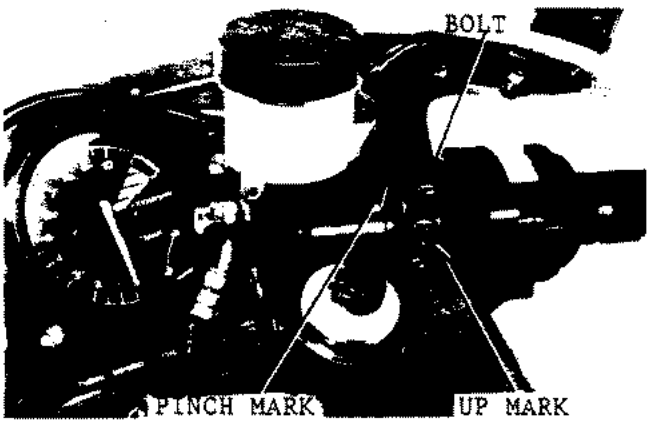
* Tighten front screws first then rear screws

Face holder "UP" mark upwards and install master cylinder to handlebars
Align master cylinder and holder with handlebars pinch mark
Tighten top bolt first then bottom bolt

Torque : 1.0-1.4 Kg-m

Connect wire to front stop light switch

After tightening adjust throttle grip play (2.15)

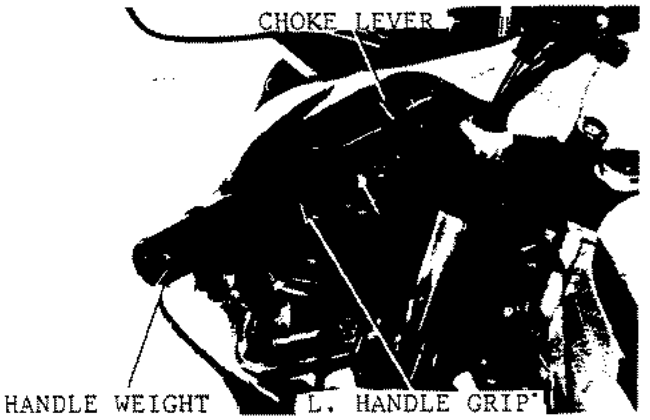


Install choke lever to handlebars

Clean L. handle grip completely

Apply recommended "Honda Bonda A" or "Semedine #540" to grip internally and install making sure grip cannot turn

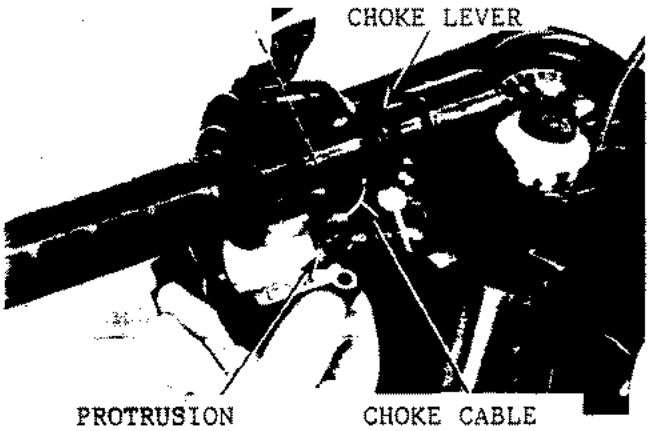
* After installing grip make sure it cannot turn



Install handle weight

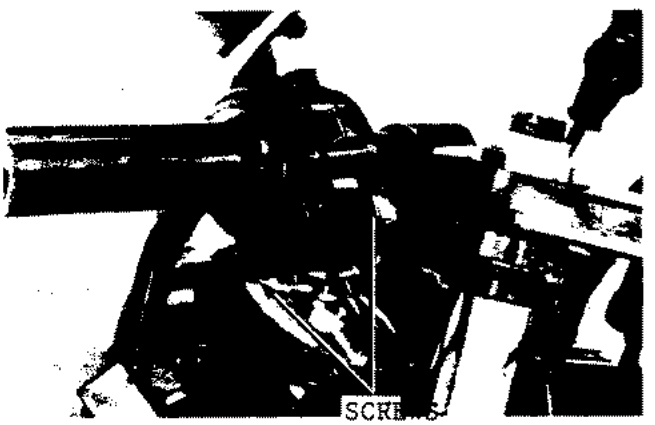
Install choke cable to choke lever

Align L. switch case protrusion with handle hole and install



Tighten 2 screws

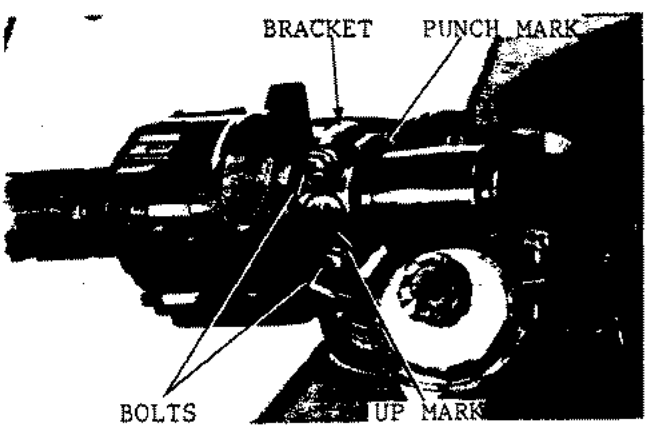
* Tighten front screws first then rear screws



Install clutch lever bracket and holder and tighten bolts

Torque : 0.7-1.1 Kg-m

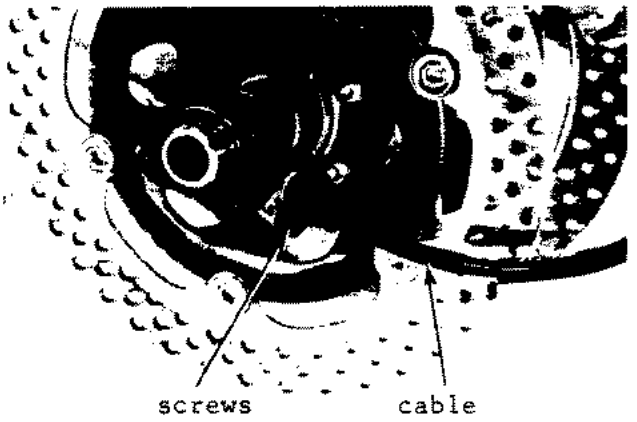
* Align holder mark with handle punch mark
* Face holder "UP" mark upwards
* Tighten top bolt first then bottom bolt



FRONT WHEEL

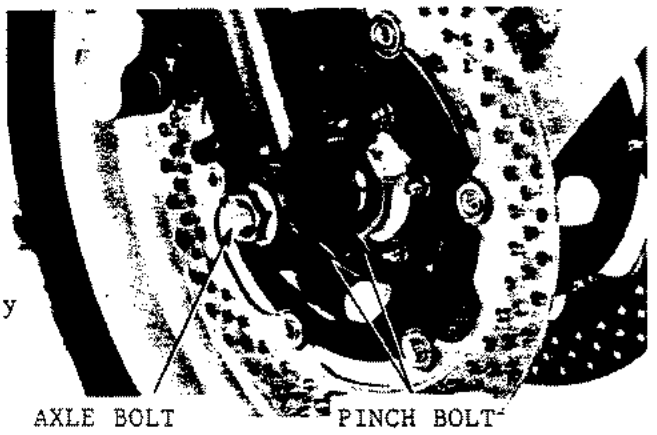
Removal

Remove screws and remove speedometer cable f
from gear box



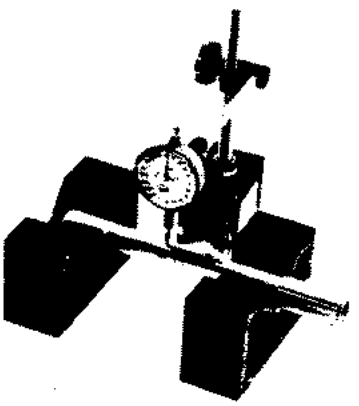
Remove caliper bracket bolt and remove
one caliper (14.4)

* Do not hang brake caliper on brake disc
* Hold caliper upwards with tape
* Do not twist brake hose
* After removing brake caliper do not move fron brake lever



Place vehicle in upright position and steady front wheel
Loosen L-R axle pinch bolt and remove axle
Pull out axle and remove front wheel

* Take care not to damage disc pads



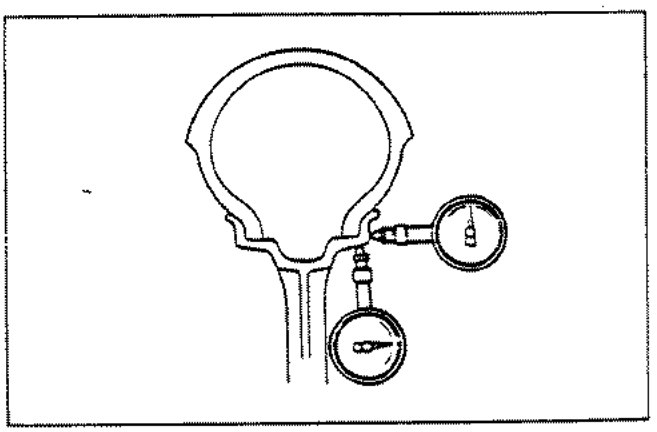
Inspection

Inspect front axle for warpage

Place Vee block upwards and measure front axlw with dial gauge. A reading on the dial gauge indicates warpage

Service limit : 0.2mm (replace if above

Turn wheel slowly and inspect rim runout with dial gauge

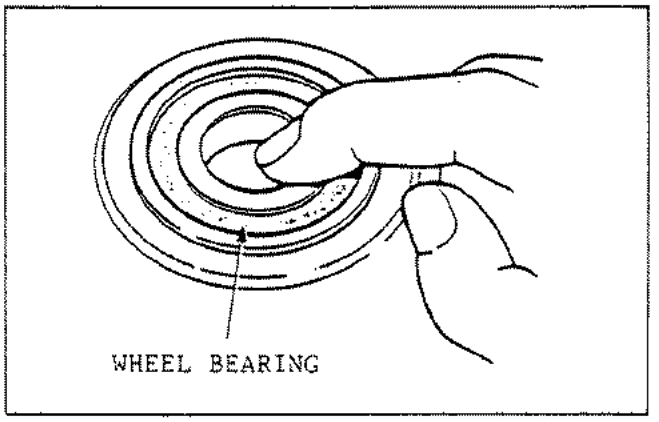


Service limit : radial - 2.0mm
axial - 2.0mm
(replace if above these)

* Cast wheel can not be dismantled

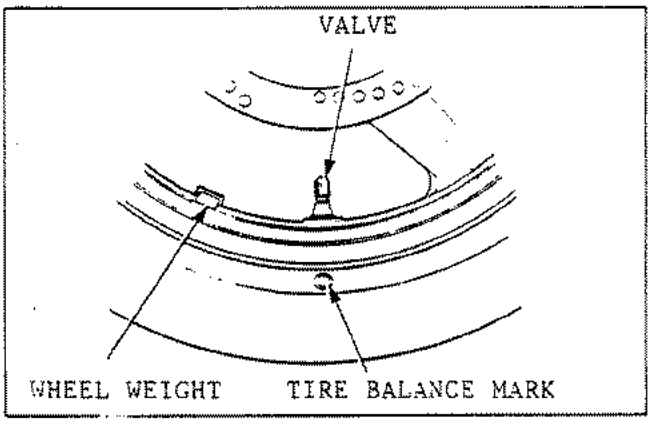
Turn bearing inner race by hand and replace if any noise or poor movement
inspect that bearing outer race is completely pressurised against hub, if abnormal then replace bearing

8 Always replace left and right bearings as as set.



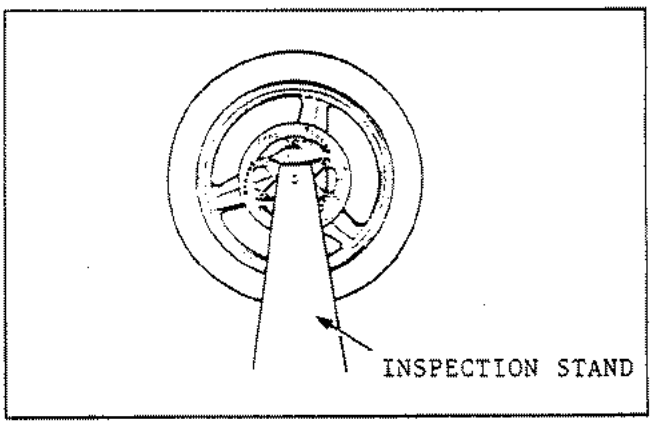
WHEEL BALANCE

* Check wheel balance with vehicle raised, handlebars stationery and vehicle completely balanced. If tire is removed from wheel inpsect rim balance
* Check that tire balance mark (on side of wheel) is aligned with valve



Remove collar and speedometer gearbox
Inspect wheel, tire and brake disc with vehicle on a stand. Stop wheel from rotating release and wait for heavy portion to reach bottom. Do this 2-3 times to assess heavy point. If wheel is imbalanced apply weight to top of rim (opposite to heavy point).
If necessary change weights until one is selected which will stop the wheel rotating to a heavy point. Fix weights securely

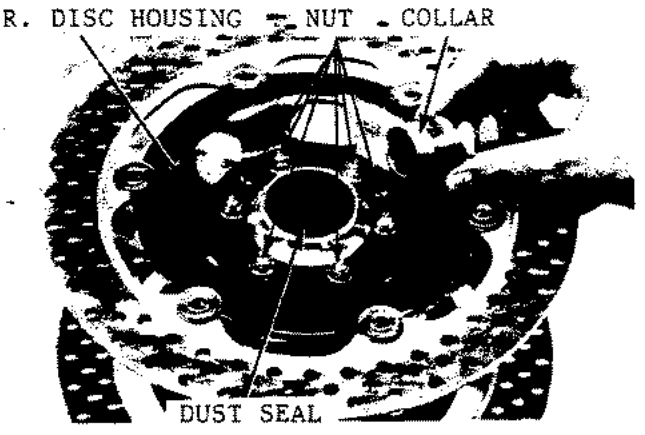
* Do notplace weights greater than 60g on front wheel and 60g on rear wheel



Separation

Remove collar and dust seal from right hub
Remove the 6 nuts and remove R. brake disc housing

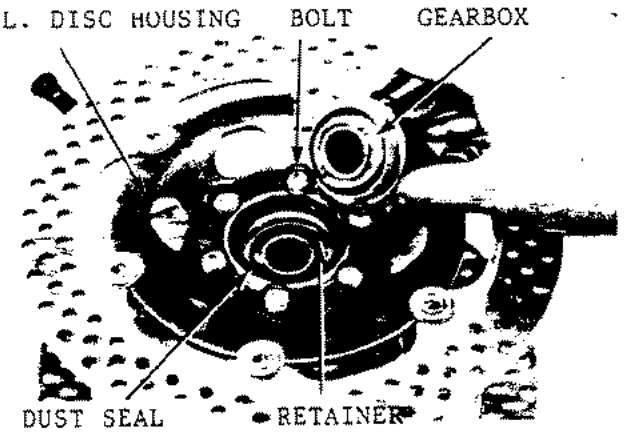
* Do not remove more that brake disc and housing



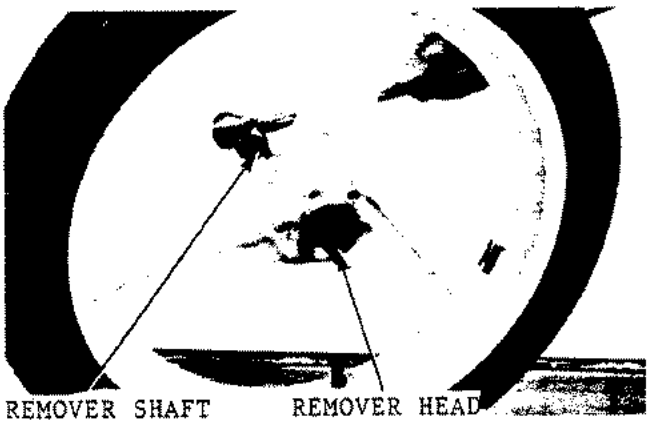
Remove speedometer gearbox, dust seal and gear box retainer from left side

Remove 6 bolts and remove L. brake disc housing

* Do not remove more than brake disc and housing

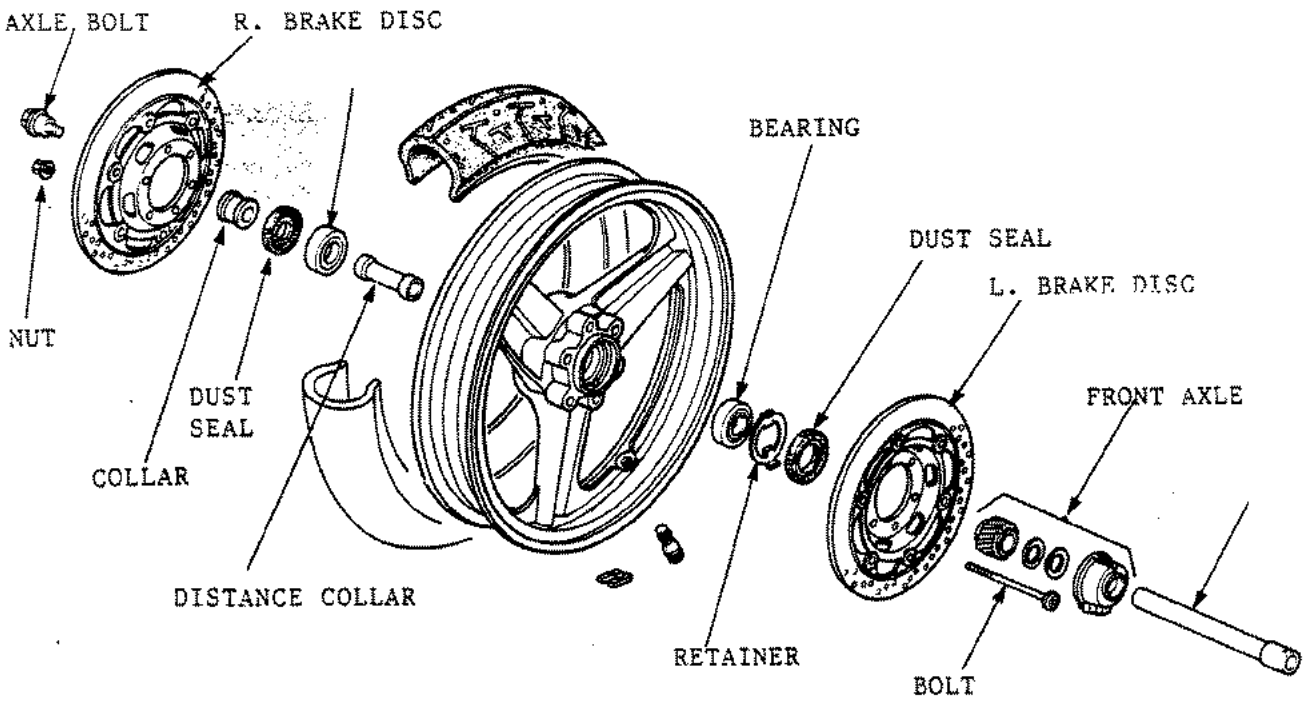


Standard tools:
Bearing remover shaft
07746—0050100
Bearing remover head (20MM)
07746—0050600



ASSEMBLY

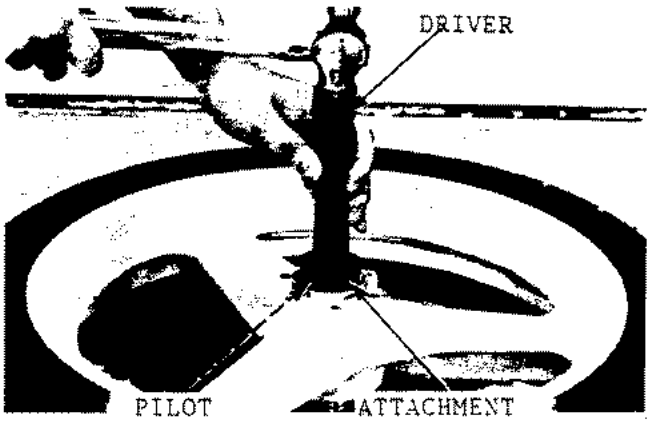
* Brake disc performance will be affected if oil or other foreign materials are apply to disc. Clean totally before use.



Insert R. bearing and distance collar
Standard tools
Driver Handle A
07749-0010000

Pilot (20mm)
0..16-0040500

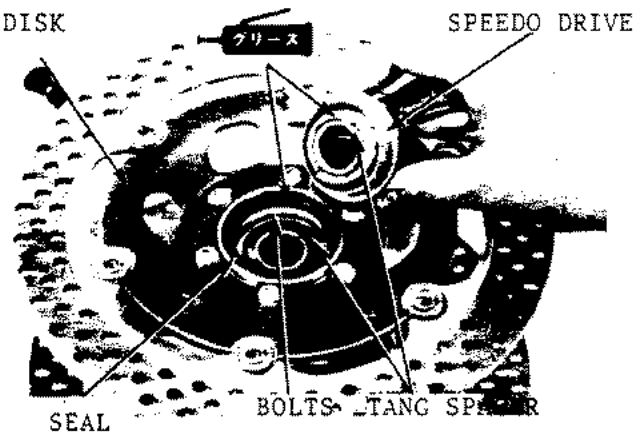
Outer driver (42×47mm)
07746-0010300



* Before installing bearing check that distance collar is installed

Insert L -R bearing with same standard tool
Install gearbox retainer and dust seal
Apply grease to dust seal lip
Apply grease to gear box align gearbox shoulder and retainer groove and install

Install left/right disc housing

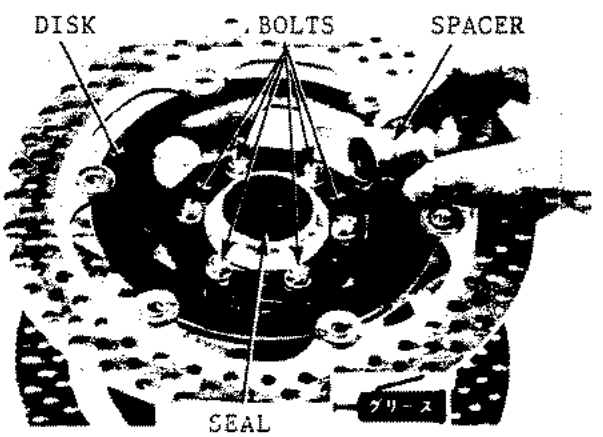


Tighten disc housing nut

Torque: 1.4-1.6 Kg-m

install dust seal and apply grease to lip

install wheel



INSTALLATION

While aligning brake pad gap with brake disc, set front wheel

* Take care not to damgge brake pads, disc

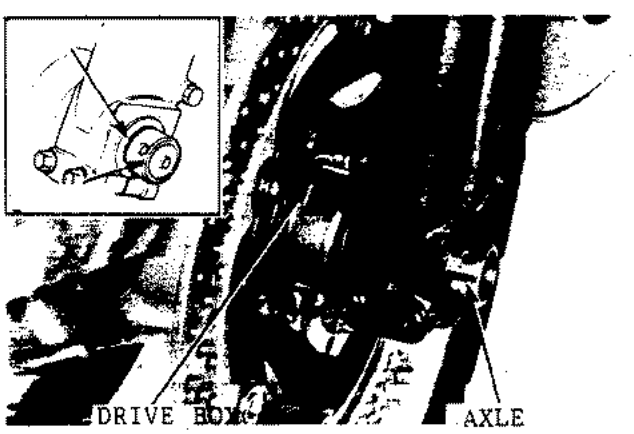
Move axle from left
Align speedometer gear box stopper with L. fork bottom case stopper

Install L. axle pinch bolt

Torque : 1.5-2.0 Kg-m

* Align axle line with bottom case

: 1.5-2.0kg-m



install axle bolt and tighten

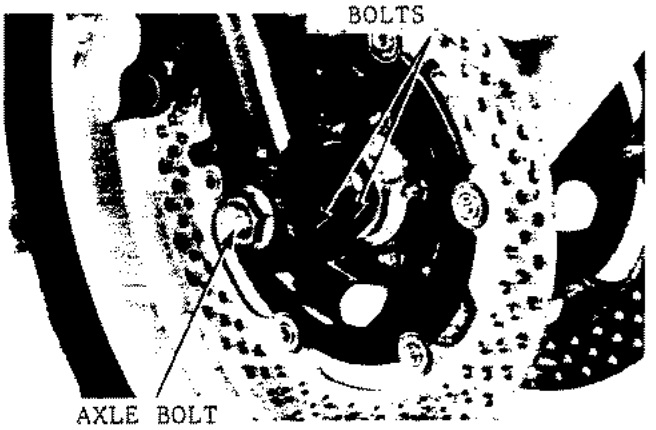
Torque : 5.5-6.5 Kg-m

Tighten R axle pinch bolt

Torque : 1.5-2.0 Kg-m

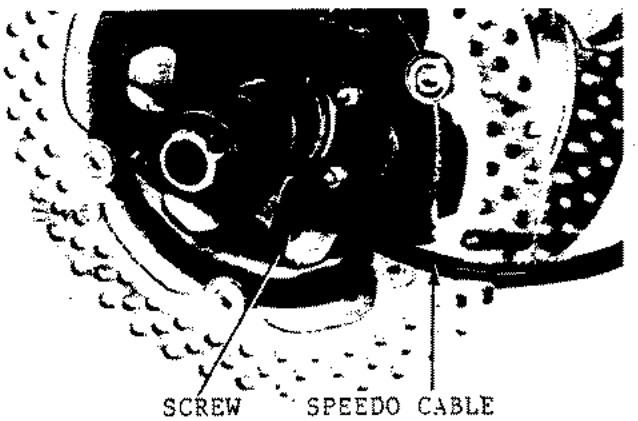
Connect speedometer cable to gearbox and tighten screw
Install caliper (14.6)

* Take care not to damage brake pads



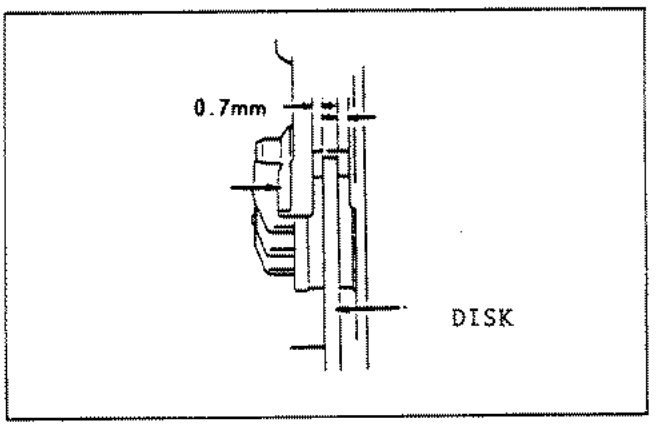
Loosen L. axle pinch bolt
Measure that the L. Brake disc and caliper bracket clearance is 0.7mm using a thickness gauge. If thickness gauge does not enter pull L. fork out until it will. Check that both sides of the left disc have a clearance of greater than 0.07mm.
Tighten L. axle pinch bolt

Torque : ~~1.5-2.0kg-m~~ 1.5-2.0 Kg-m



Pull in brake lever a few times and check caliper bracket to disc clearance

* If the caliper bracket to brake disc clearance is not sufficient then a damaged disc will be the cause.

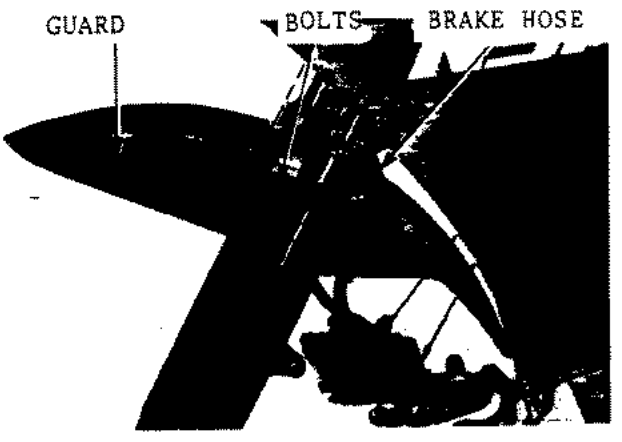


FRONT FORKS

Removal

Remove front wheel (12.6)
Remove caliper bracket bolt and caliper (14.4)

* Do not pull caliper on brake hose
* Tie brake caliper into a fixed position
* Do not twist brake hose
* After removing brake caliper do not operate front brake lever

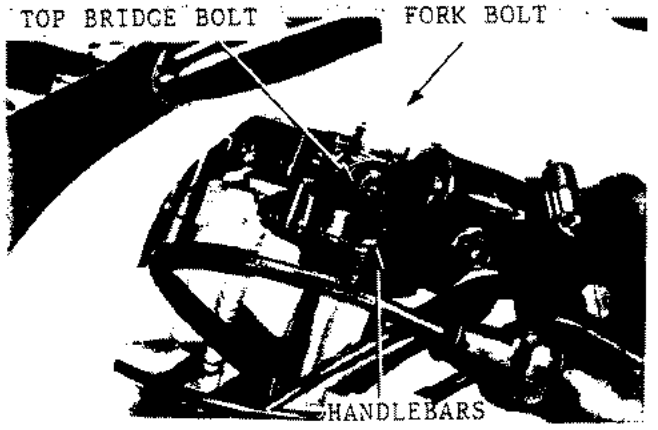


Remove front fender bolt and remove front fender
Remove brake pipe from front forks

* Do not bend or twist brake pipe

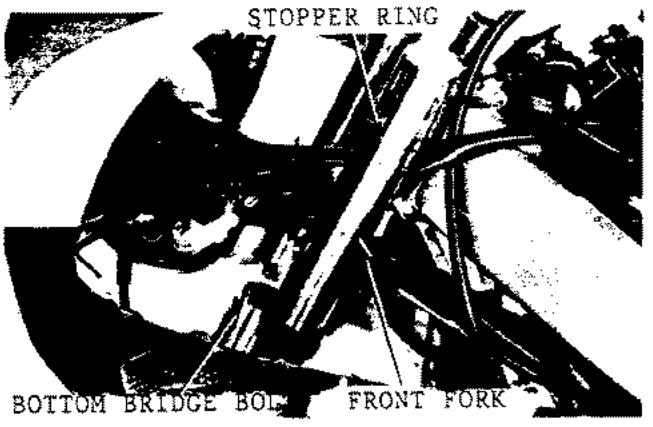
Remove air valve cap push air valve and drain air from forks

Loosen fork bolt
loosen top bridge bolt
Remove handlebars (12.3)



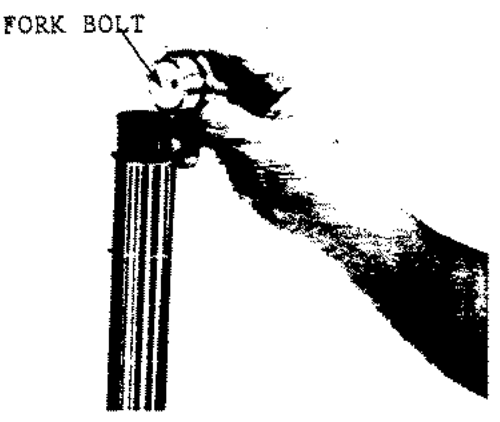
* Do not hang brake hose on front brake master cylinder
* Oil pressure can be affected by air entering master cylinder, fix it at the position the same as the installed postion

Pull out stopper ring



Loosen bottom bridge bolt and remove front forks

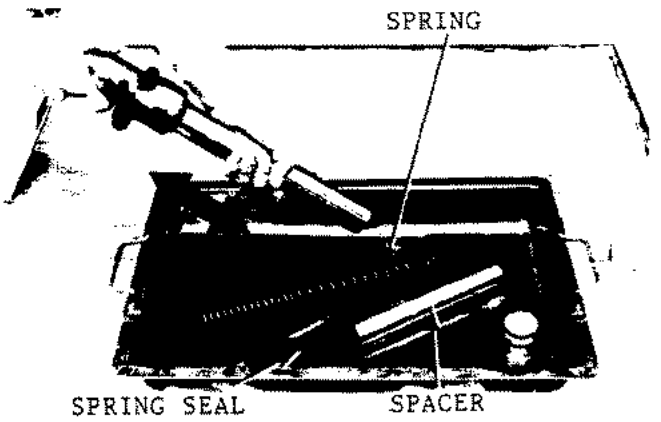
SEPARATION



Remover fork bolt

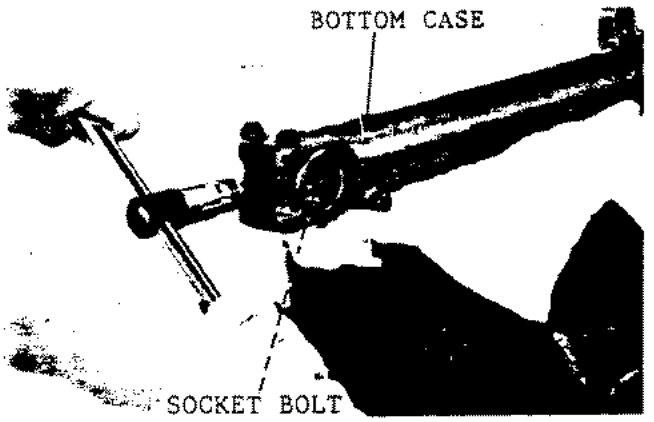
Remove spacer, spring seat, spring

Pump fork pipe and drain oil from front fork



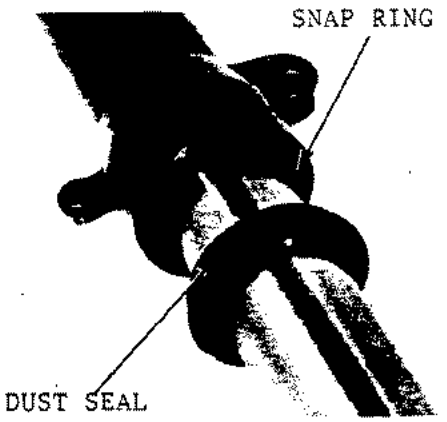
Fix bottom case in vice

Remove socket bolt from bottom case



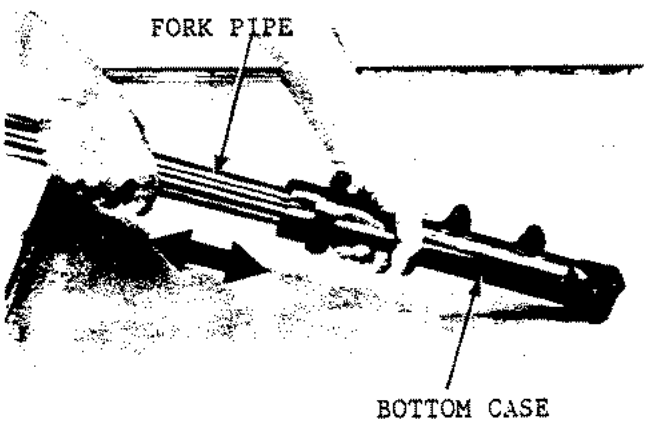
Remove dust seal

Remove snap ring



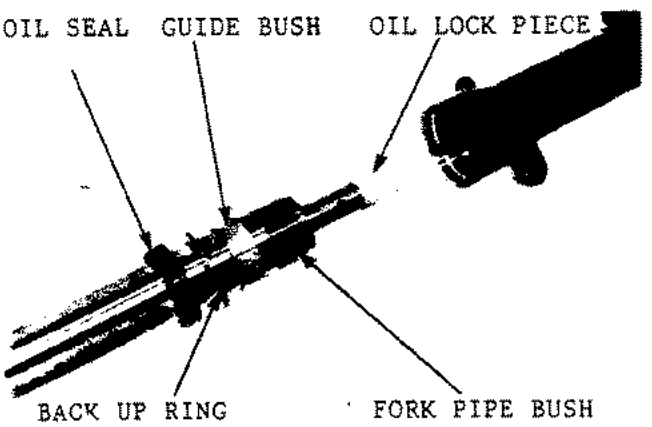
Pull out fork pipe from bottom case

> * Push in fork pipe (not too hard) and pull strongly and repeat



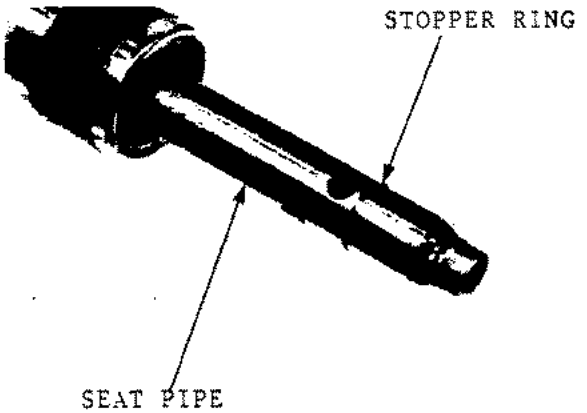
Remove oil lock piece from bottom case
Remove oil sealm back up ring and guide bush from fork pipe

> * Only remove fork pipe bush if replacing with a new one



Remove stopper ring from seat pipe

Remove seat pipe from fork pipe



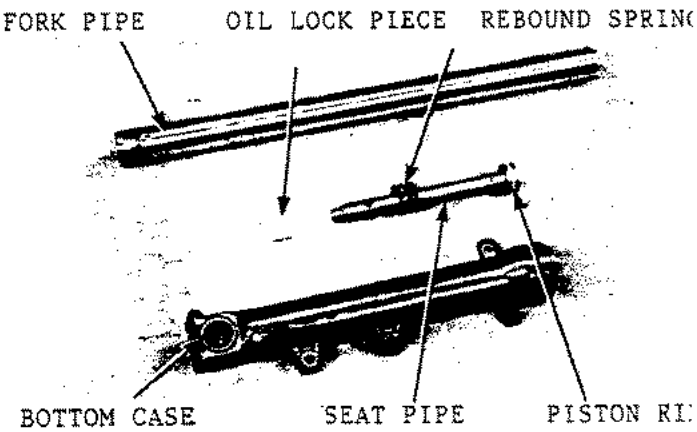
Inspection

Measure for spring free play

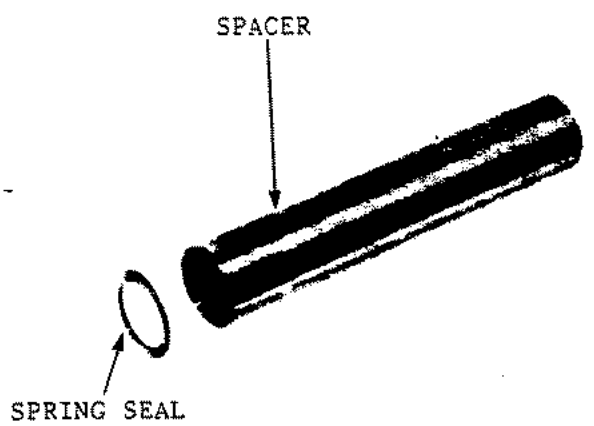
ServiceLimit: 285.7mm (replace if below)

Inspect fork pipe, seat pipe, oil lock piece, rebound spring, bottom case and piston ring for wear and damage

Replace if any abnormalities

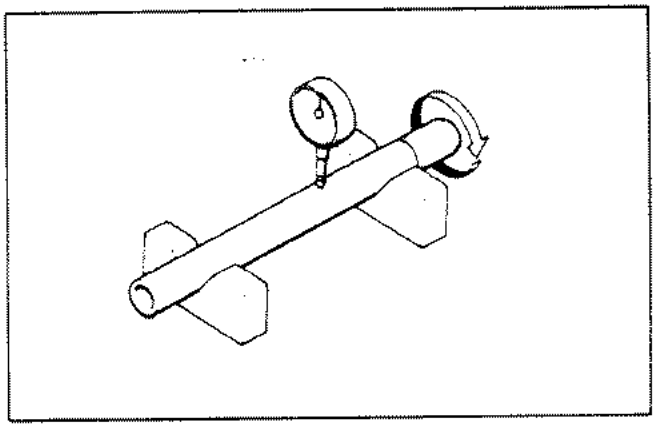


Inspect spacer, spring seat for damage. If any then repalce

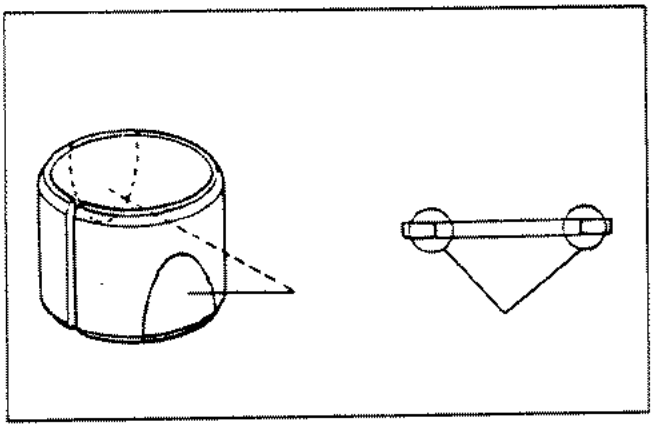


Face Vee block upwards and measure warpage of fork pipe with dial gauge. The value will give the degree of warpage

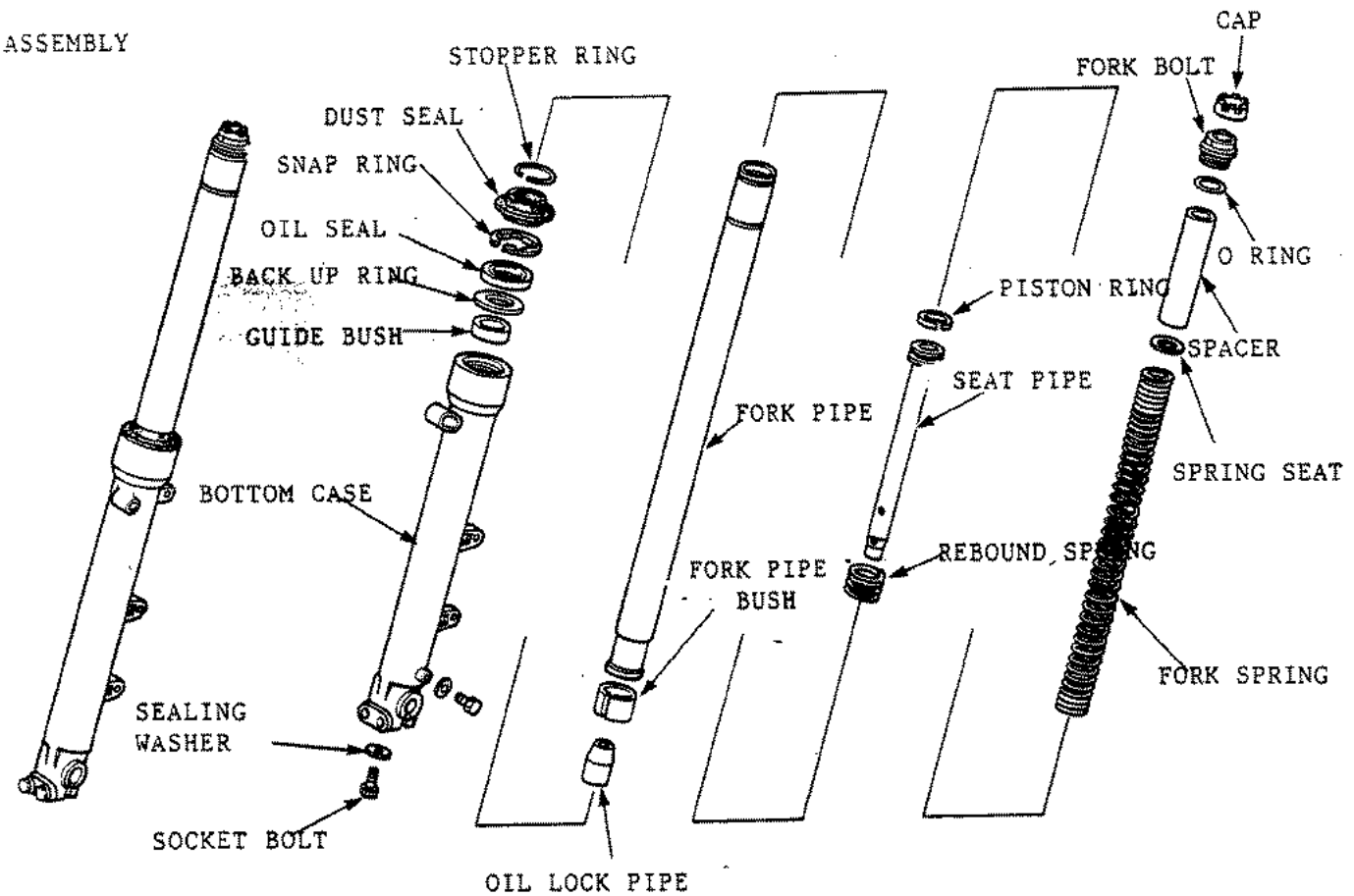
Service Limit: 0.2mm (replace if above)



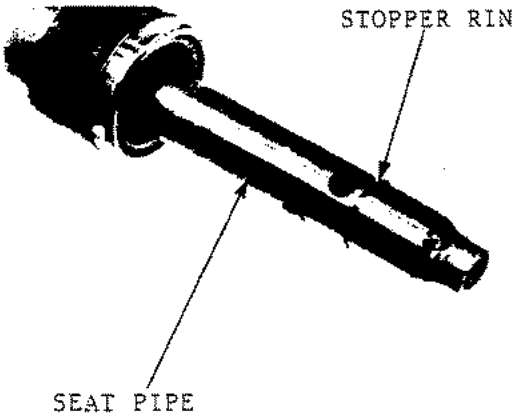
Inspect guide bush and fork pipe bush rubbing face. When rubbing portionis more that 3/4 and metal can be seen (teflon is peeling off), or if damaged, then replace
Inspect back up ring inspection portion
If there is a change in shape, then replace

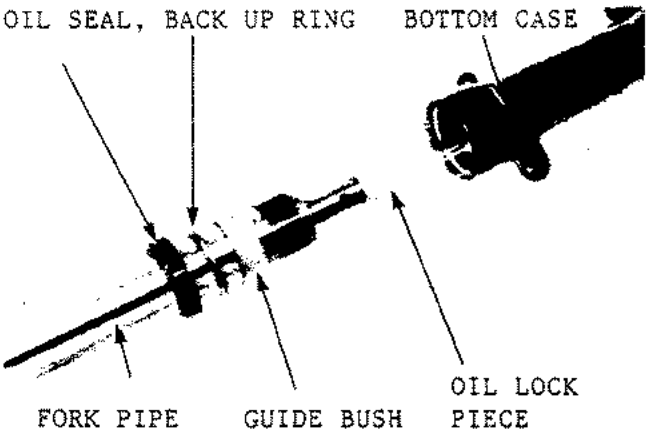


ASSEMBLY



Install seat pipe to fork pipe
Install stopper ring into seat pipe groove





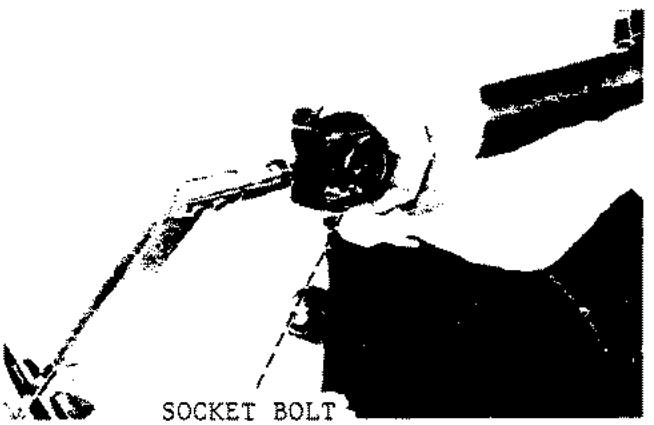
Install oil lock piece into seat pipe
Install guide bush and back up ring into fork pipe.
Apply ATF to oil seal lip and install fork pipe

* Before aligning oil seal, stick tape tofork pipe upper end and take care not to damage oil seal lip
* Face oil seal markers mark upwards

Install fork pipe into bottom case

Hold bottom case, fix in vice and install socket bolt, into seat pipe

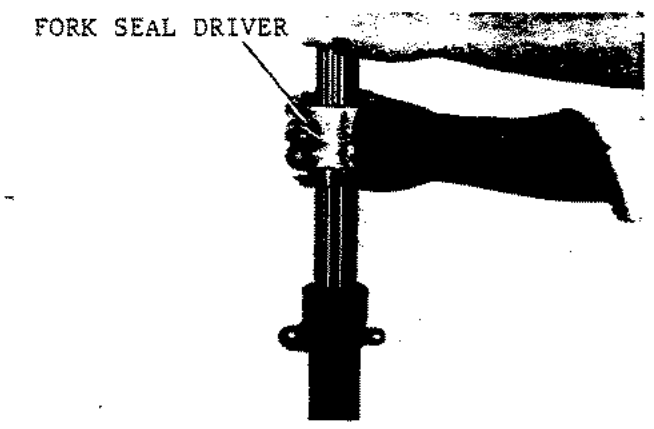
Torque : 1.5-2.5kg-m



Insert guide and oil seal at the same time into the bottom case, using a driver

Special Tool 07947-4630100

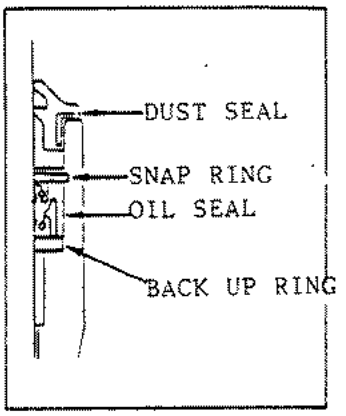
Fork seal driver



Install snap ring

Install dust seal

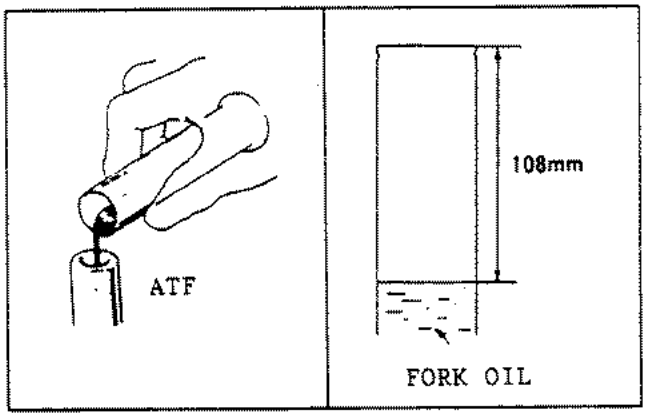
* Ensure that snap ring is installed in bottom case groove



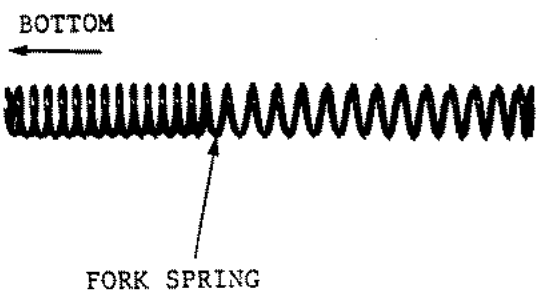
Fully extend fork pipe and fill with ATF fluid to recommended level

Recommended level : 108mm

Total Capacity : 383cc



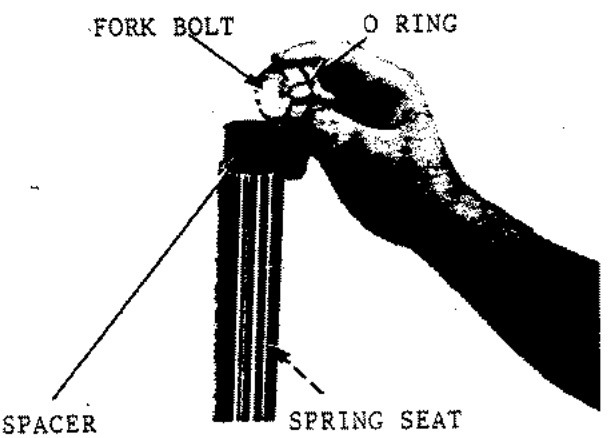
Face the small pitch end of the fork spring into the bottom and install in the front fork



Install spring seat and spacer

Replace fork bolt O ring if damaged and apply a little ATF fluid to it.

Install fork bolt into fork pipe



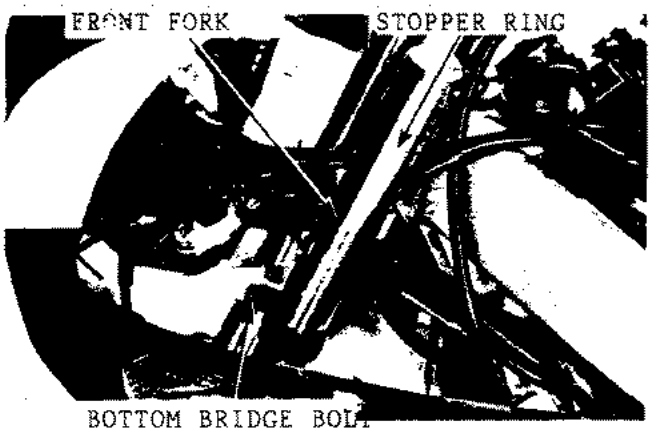
INSTALLATION

Place front fork in bottom bridge
Install stopper ring into fork pipe groove
Install handlebars (12.3)
Tighten top bridge

Torque : 0.9-1.3Kg-m

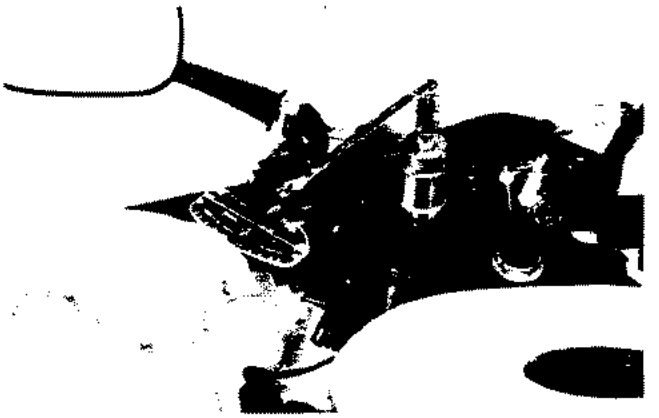
Tighten bottom bridge bolt

Torque : 4.5-5.5 kg-m



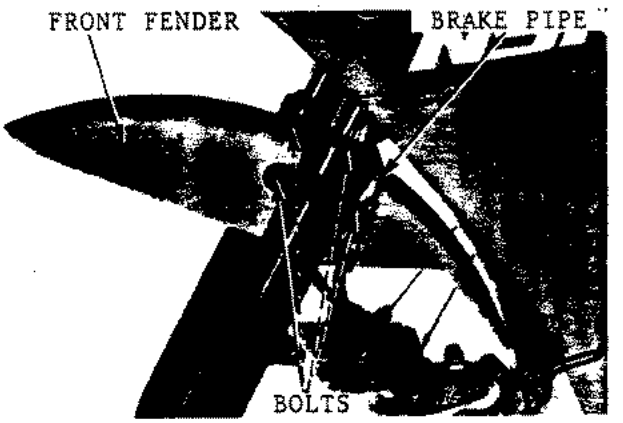
Install fork bolt

Torque : 1.5-3.0 kg-m



Install front fender
Install brake pipe

* Place bolts in both sides of brake pipe and after deciding on correct position, tighten bolts



Install brake caliper (14.6)
Install front wheel (12.9)
Adjust front fork air pressure (2.7)

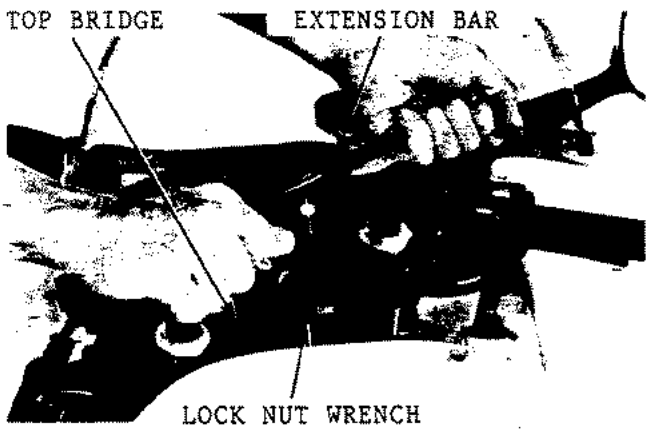
STEERING STEM

Removal

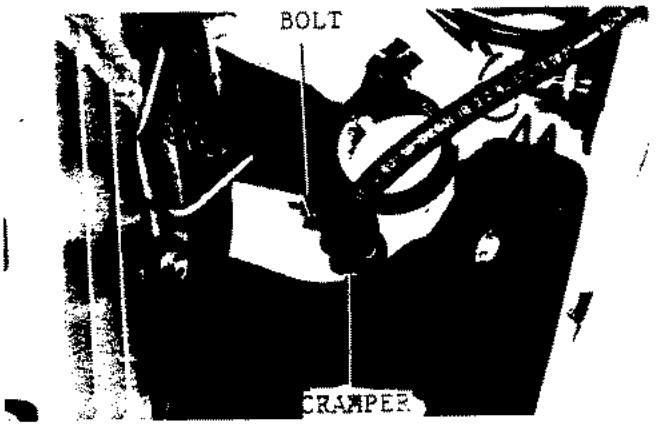
Remove steering stem nut, washer
Loosen top bridge bolt and remove top bridge

Standard tools
Extension bar 07716-0020500
Lock nut wrench (30×32mm) 07716-0020400

Remove front wheel (12.6)
Remove front forks (12.10)
Remove centre lower fairing (15.3)

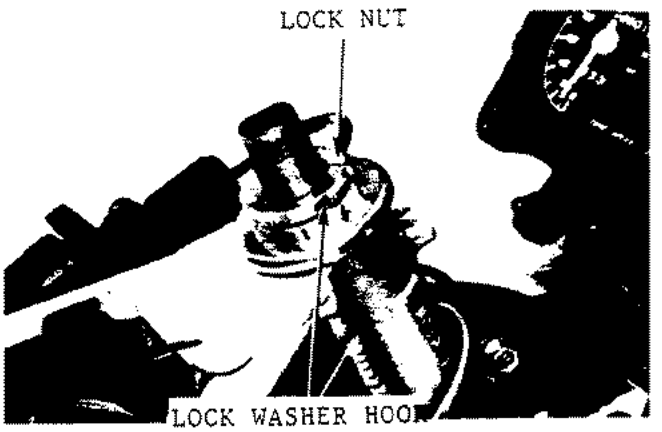


Remove brake hose cramper from bottom bridge



Straingten lock washer hook
Remove lock nut, lock washer

* Do not re-use lock washer



Remover steering adjuster nut

Special tool

07916—3710100 - Steering stem socket

Remove steering stem, dust seal, upper bearing inner race and upper bearings
Remove lower bearings from steering stem.

INSPECTION

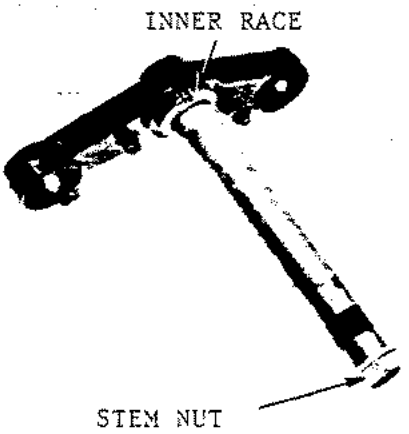
Inspect upper, lower beaarings for wear and damage. Inspect steering stem lower bearing inner race and dust seal for wear and damage

Inspect steering head pipe bearing outer race for wear and damage

BEARING REPLACEMENT

* When replacing bearings, replace bearings inner and outer races as a set

Remove lower bearing inner race

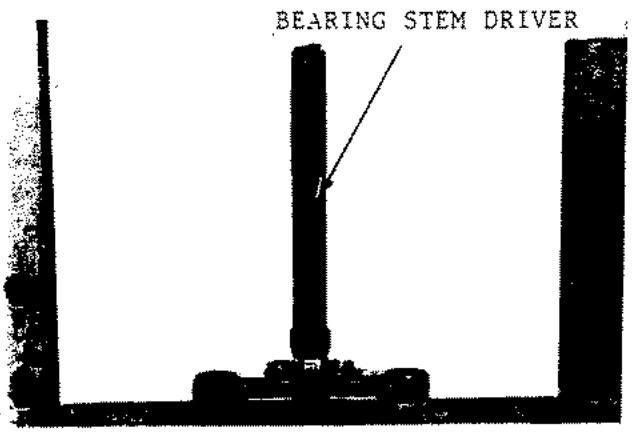


* Install stem nut inot stem and fix so that thread connot be damaged
* Take care not to damage stem

Remove dust seal

Install

Install dust seal into steering stem and pressure in inner race



Special tools:

07946—MB00000 - Steering stem driver

BALL RACE REPLACEMENT

Ball race remover set (1)-(6)

07946—KM90000

①Driver shaft assy (nut A,B)
07946—KM90300

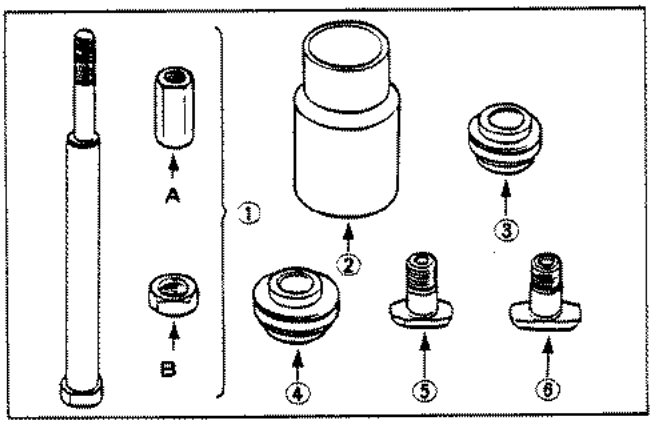
②Assembly Base
07946—KM90600

③Driver attachment A
07946—KM90100

④Driver attachment B
07946—KM90200

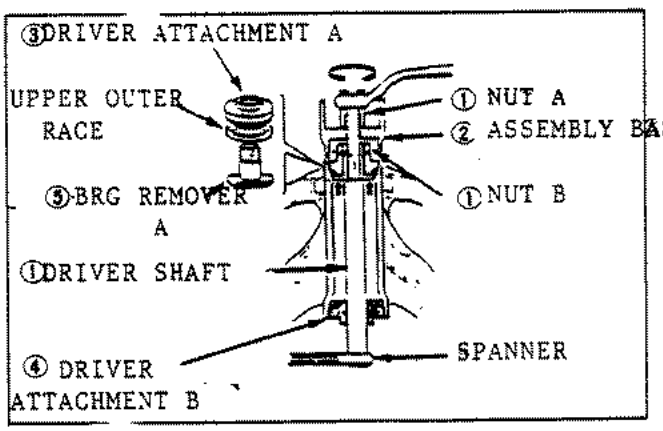
⑤Bearing remover A
07946—KM90400

⑥Bearing remover B
07946—KM90500



Set ball race remover into head pipe as in the picture

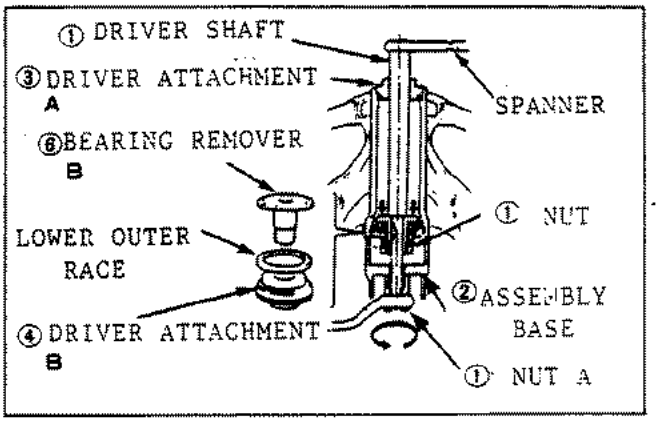
* Align head pipe shoulder with bearing remover A and install
* Lightly tighten nut B with spanner
* Take care with assembly base direction



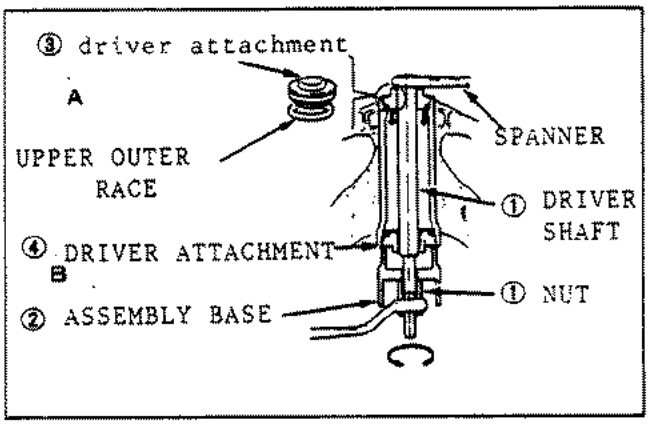
Stop driver shaft moving using spanner, turn Nut A and remove outer race

At the same time, remove lower outer race

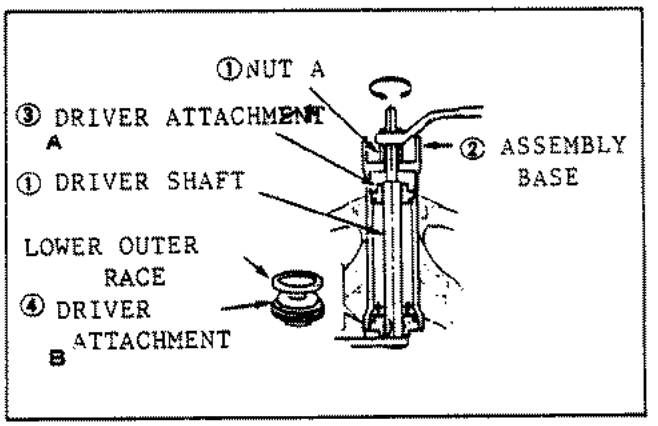
* Align bearing remover B with head pipe shoulder and install



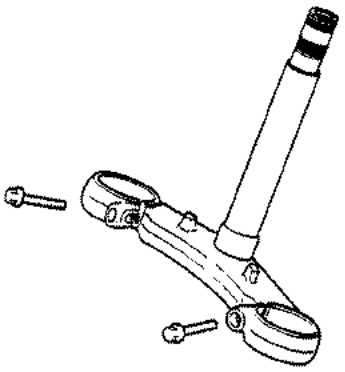
Set upper outer race and ball race remover with head pipe as in the picture
Stop driver shaft moving using spanner turn Nut A and install outer race

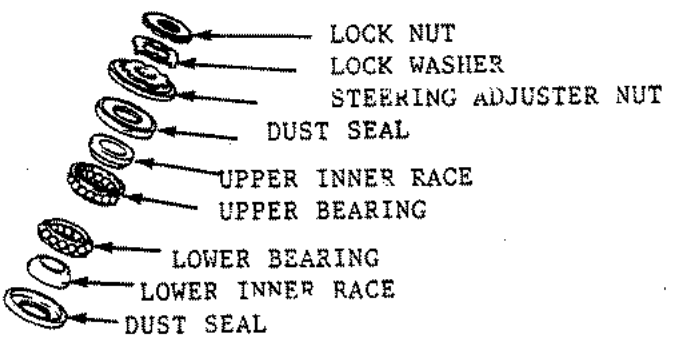


Set lower outer race and ball race remover in the head pipe as in the picture
Stop driver shaft moving using spanner and tunr Nut A and install lower outer race

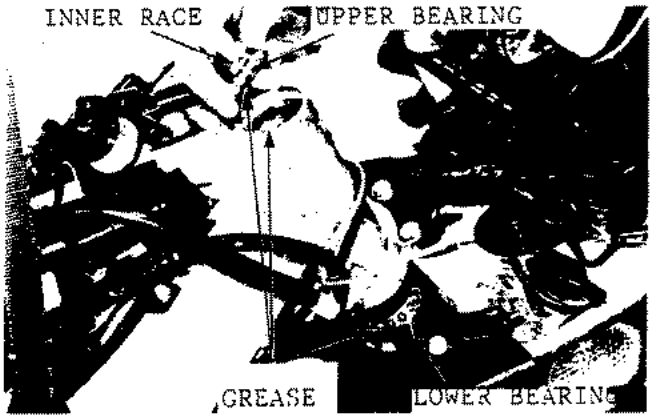


INSTALLATION





Apply sufficient grease to bearing
Install lower bearings to steering stem
Install steering stem into steering head
Install upper bearings, inner race and dust seal



Tighten steering adjuster nut

Torque : 2.3-2.7 kg-m

Special tool

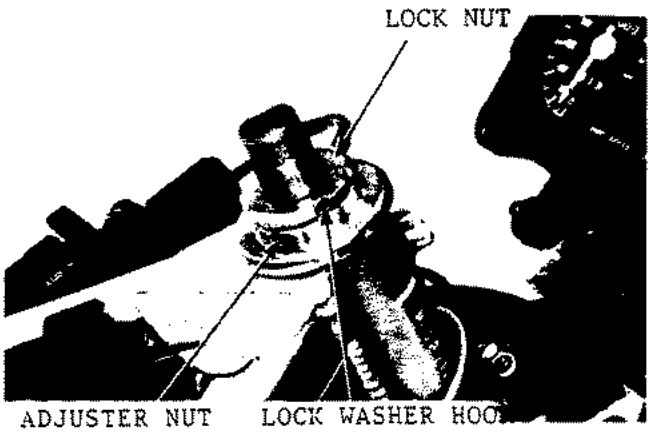
Steering stem socket - 07916-3710100

Move steering stem left and right 5-6 times to seat bearings

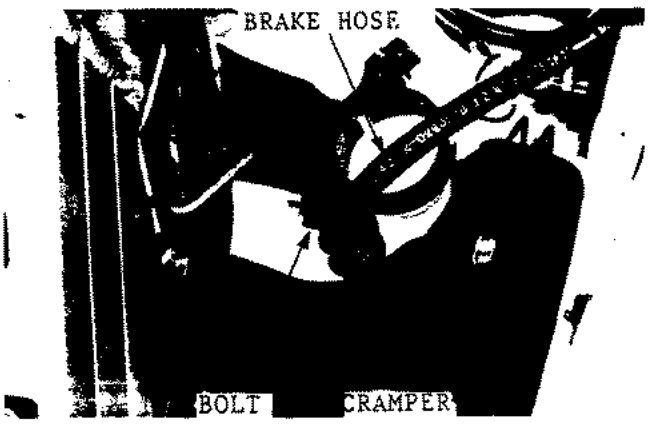
Tighten steering adjuster nut to the recommended torque.

Align new lock nut washer hook with steering adjuster nut groove and install
Tighten lock washer and lock nut by hand until they meet
Hold steering adjuster hook and lock nut groove meet axactly

Bend lock washer hook until it nears lock nut groove



Install brake hose into bottom bridge using cramper

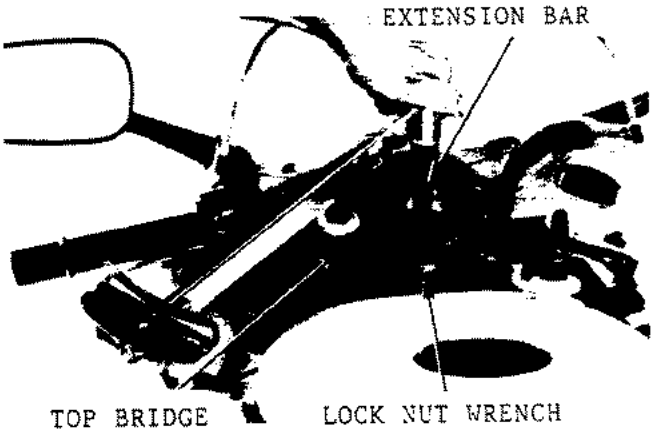


Temporarily install front forks
Temporarily install handlebars to front forks
Install fork top bridge
Install washer stem nut and tighten

Torque : 9.0-12.0 Kg-m

Special Tools:

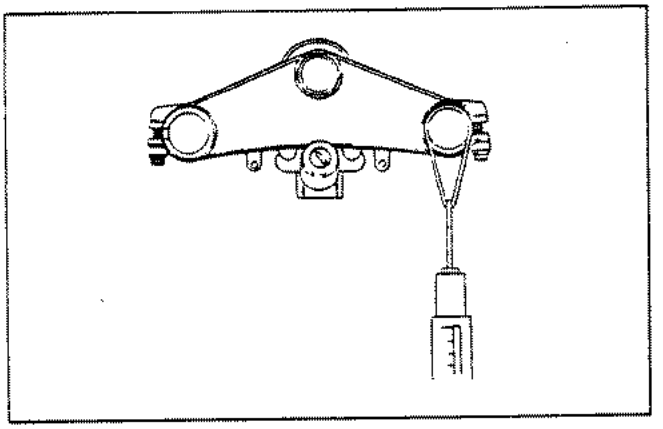
Lock nut wrench (30x32)	07716-0020400
Extension bar	07716-0020500



Install front forks properly (12.17)
Tighten top bridge bolt

Torque : 0.9-1.3 kg-m

Install handlebars (12.3)
Install front wheel (12.9)

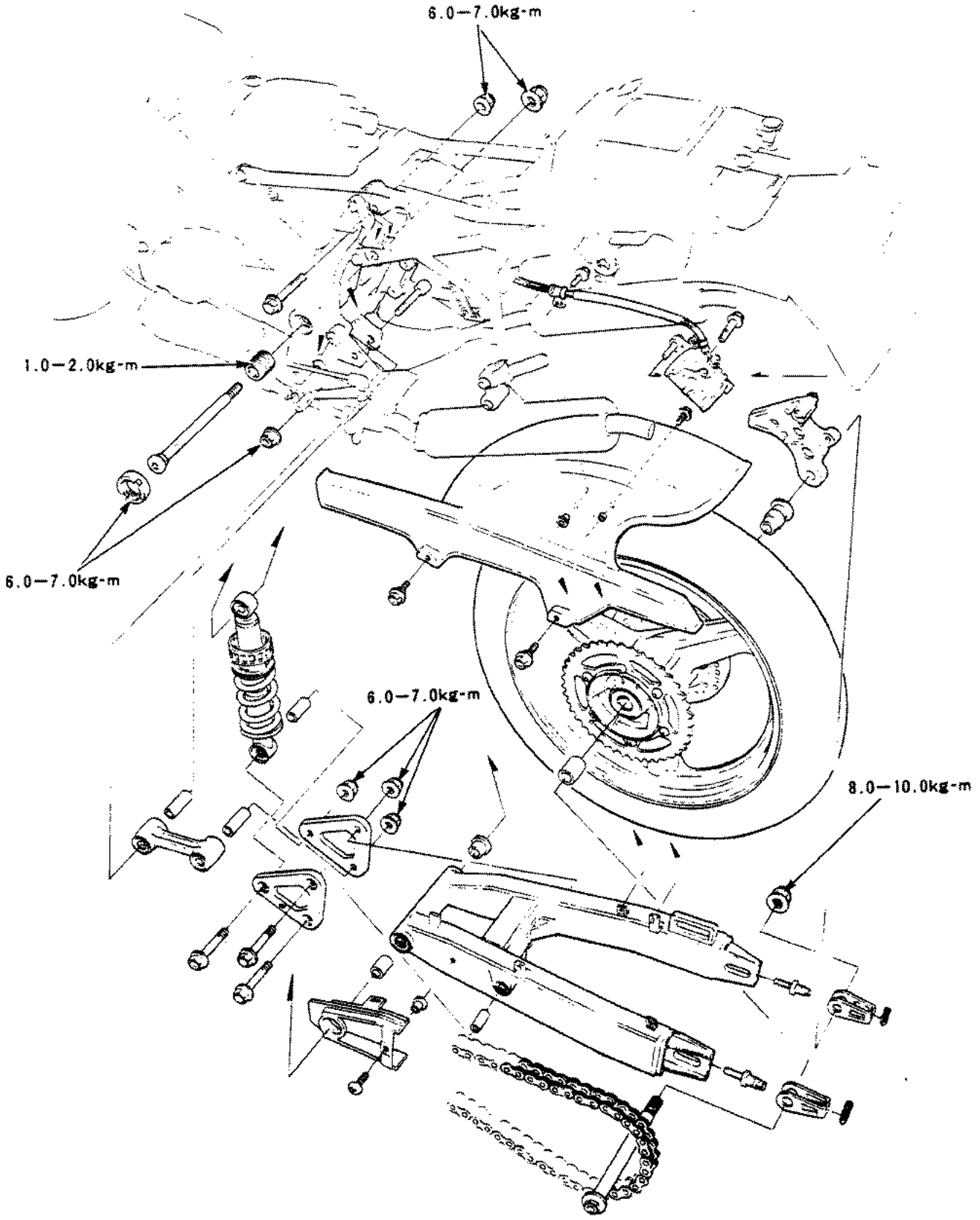


STEERING STARTING WEIGHT

Raise frame and lift front wheel off ground
Hang scales from front fork pipe and measure the weight required to move steering

* Do not hook up cables and wire harness on ste,
* Turn steering top bridge and pull 90°

If it takes 1.0-1.5kg to move forks from left to right it is okay.


6.0—7.0kg-m
1.0—2.0kg-m
6.0—7.0kg-m
6.0—7.0kg-m
8.0—10.0kg-m

13. REAR WHEEL, SUSPENSION

MAINTENANCE INFORMATION

Warnings

* When raising wheel, ensure wheel does not require large force to turn. Also, do not damage wheel.
* Standard tubeless tires are being used. Take care not to damage tire, rim.
* When removing tire from rim, so that tires do not get damaged, use special tools [tire levers] and [Rim protectors]
* Refer to HONDA MOTORCYCLE TUBELESS TIRE SERVICE MANUAL No.6041551 for tubeless tire removal method
* Always use correct nuts and bolts in rear suspension linkage and rear cushion. Also do not change bolt direction
* Refer to section 12.7 for rear wheel balancing

Item		Standard	Service limit
Rear axle warpage		———	0.2mm
Rear wheel rim runout	Radial	———	2.0mm
	Axial	———	2.0mm
Rear cushion damper pressure		24—29kg	19.2kg
Rear cushion spring length		124.0mm	———
Rear cushion spring freeplay		131.3mm	128.7mm

TORQUES:

Driven sprocket nut	2.8—3.4kg-m
Rear axle nut	8.0—10.0kg-m
Rear cushion lower joint 1/nut	6.0—7.5kg-m
Rear cushion lower bolt	6.0—7.0kg-m
Rear cushion upper bolt	6.0—7.0kg-m
Conrod bolt (cushion arm)	6.0—7.0kg-m
Conrod bolt (frame)	6.0—7.0kg-m
Rear fork pivot adjuster bolt	1.0—2.0kg-m
Rear fork pivot lock nut	6.0—7.0kg-m
Rear fork pivot nut	6.0—7.0kg-m
Rear brake disc bolt	3.7—4.3kg-m
Cushion arm bolt (rear fork)	6.0—7.0kg-m
Rear cushion lower joint (apply locking agent)	3.8—6.0kg-m

TOOLS:

Special Tools

Lock nut wrench	07GMA-KT70200
Rr cushion Comp. Attach	07959-MB10000
Needle bearing remover	07GMD-KT80100
Driver shaft B	07964-MB00200
Needle brg driver attac	07HMD-KV30100
Bearing remover (15mm)	07936-KC10000
- Remover assy (15mm	07936-KC10500
- Remover shaft (15mm)	07936-KC10100
- Remover head (15mm)	07936-KC10200
- Remover steering weight	07741-0010201

Standard tools

Outer driver (32x35mm)	07746-0010100
Outer driver (42x47mm)	07746-0010300
Outer driver (24x26mm)	07746-0010700
Pilot (15mm)	07746-0040300
Pilot (17mm)	07746-0040400
Pilot (20mm)	07746-0040500
Bearing remover shaft	07746-0050100
Bearing remover head (17mm)	07746-0050500
Bearing remover head (20mm)	07746-0050600
Driver handle A	07749-0010000
Rear cushion compressor	07GME-0010000
- Compressor screws assy	07GME-0010100

TROUBLE SHOOTING

Rear Wheel Runout

- wheel rim shaped changed
- rear wheel bearings collapsed
- tires faulty
- axle incorrectly tightened
- tire pressures faulty
- rear fork pivot bearings faulty
- tires worn
- wheel balance incorrect

Rear Cushion Too Soft

- cushion spring warped
- rear cushion adjuster incorrectly adjusted
- rear damper warped, oil leakage

Rear Cushion Hard

- damper rod bent
- rear fork pivot bearing worn
- rear cushion adjuster incorrectly adjusted

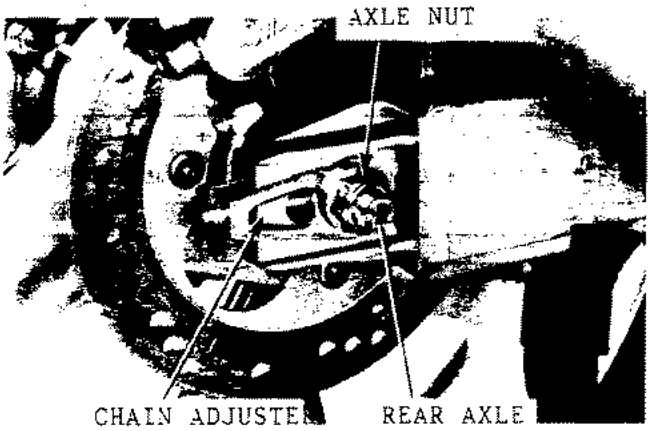
. Rear Cushion Noisy

- cushion case out of shape
- bolts loose

REAR WHEEL

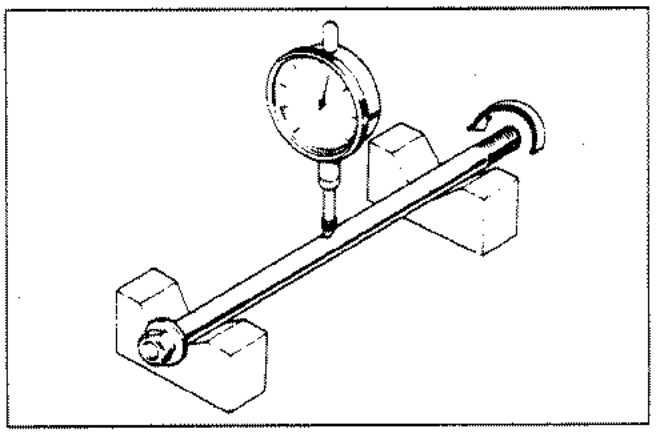
Removal

Raise frame and rear wheel off the ground
Remove rear axle nut
Loosen drive chain adjuster, pull put rear axle, push rear wheel forward, and remove chain from driven sprocket
Remove rear wheel



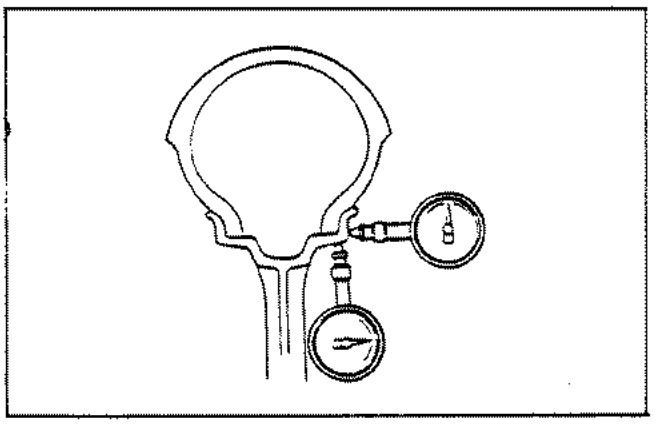
Place rear axle on Vee block and inspect using dial gauge
The reading on the dial gauge indicates the degree of warpage

Service limit: 0.2 (replace if above)



Turn wheel slowly and inspect runout using dial gauge

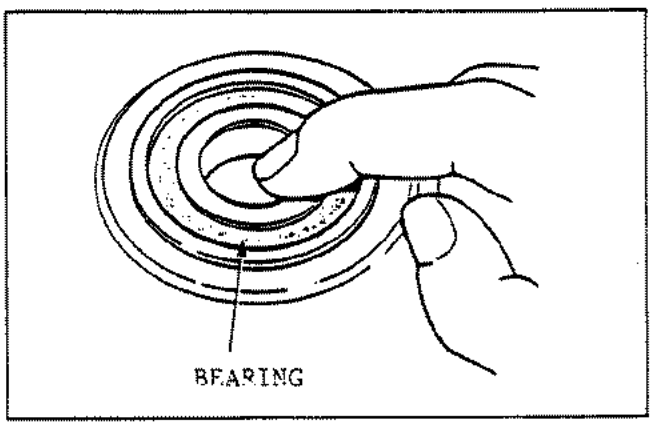
Service limit: Radial: 2.0mm (replace if above)
Axial : 2.0mm (" " ")



* Do not assemble cast wheel
* If exceeds service limit then replace

Turn bearing inner race, and replace if any abnormalities

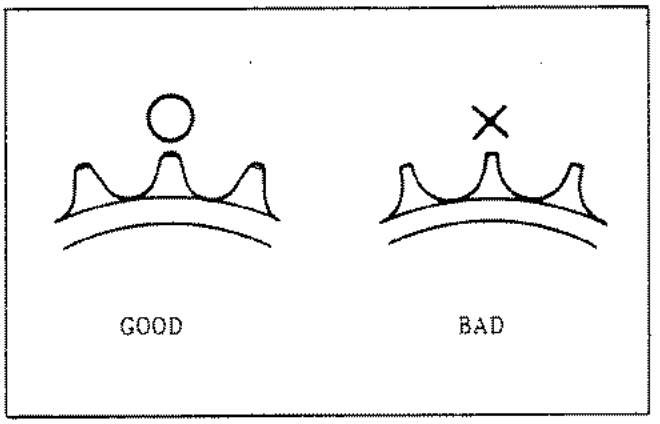
Inspect that the outer race is in hub properly - If abnormal replace



* Always replace bearings as a set of three (2 wheel bearings and 1 flange bearing)

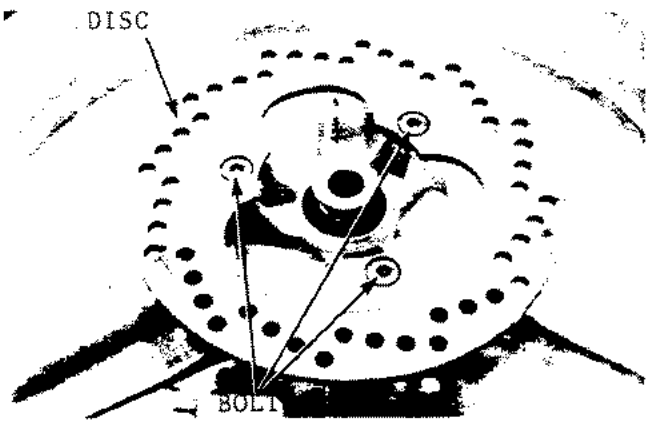
Inspect final driven sprocket for wear and damage

* Do inspection of drive chain and drive sprocket at the same time. If replacing, always replace as a set.



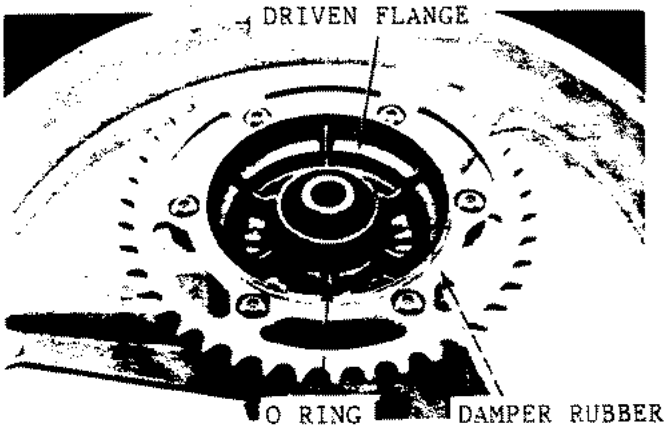
Separation

Remove rear brake disc three bolts and remove brake disc



Remove driven flange and damper rubber

Remove O ring



Use bearing remover to remove left and right side collars

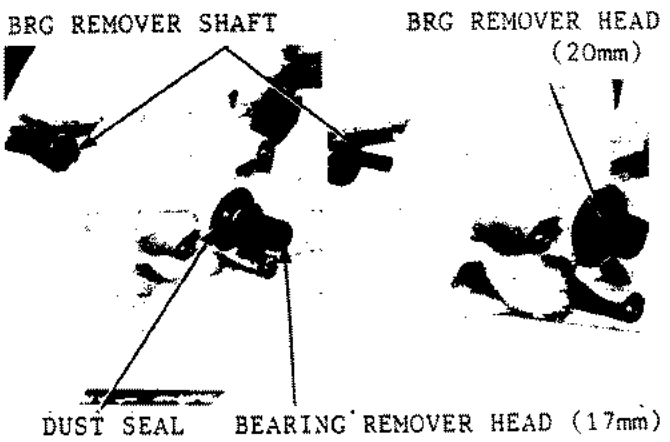
Bearing remover shaft 07746—0050100

Bearing remover head (17mm) 07746—0050500

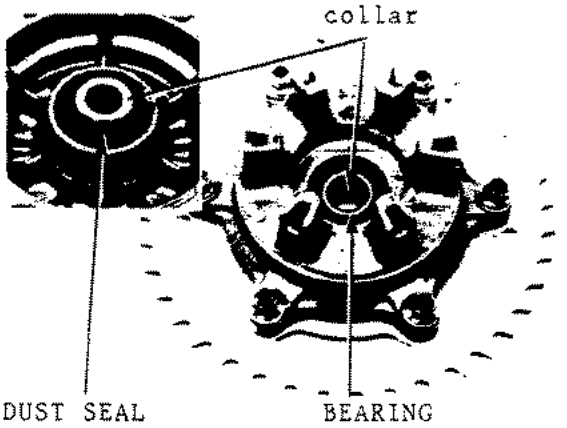
Remove dust seal, wheel bearings & distance collar

Bearing remover shaft 07746—0050100

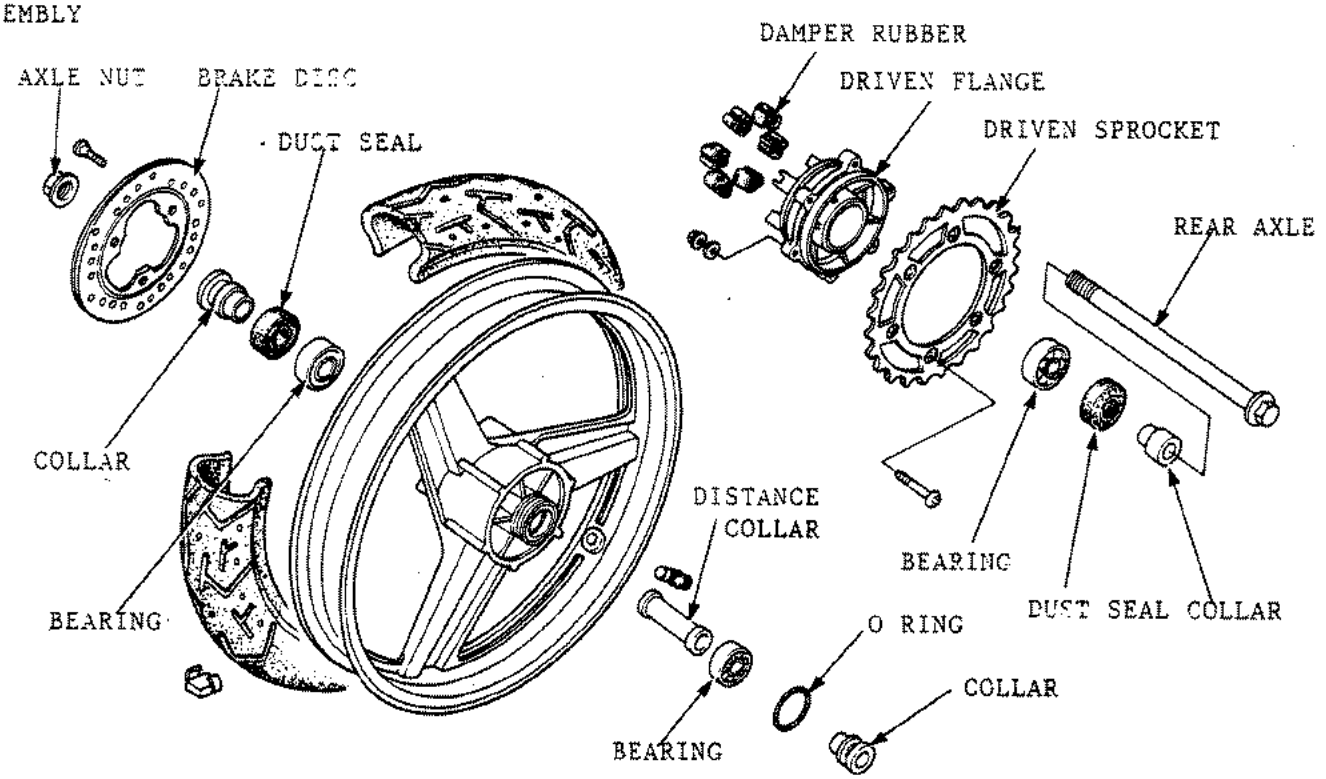
Bearing remover head (20mm) 07746—0050600



Remove bearings, collar, dust seals from driven flange



ASSEMBLY

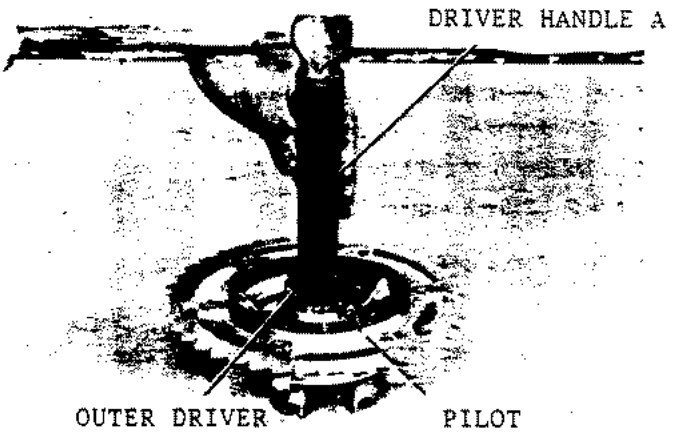


Inset new bearings into driven flange

* Insert bearings so that there is more sticking out in driven flange

Standard tools

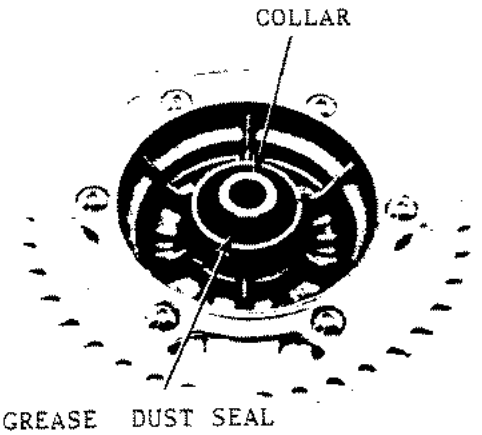
Driver handle A	07740—0010000
Outer driver (42x47mm)	07746—0010300
Pilot (20mm)	07746—0040500



Apply grease to dust seal lip and install into driven flange

install collar inot bearing

* When installing collar, ensure bearing inner race will not cause damage to bearings

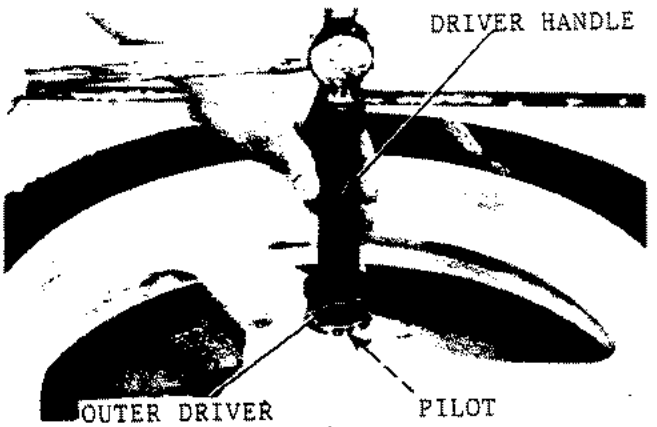


Insert R. bearing first
insert distance collar inot wheel hub and insert L. bearing

* Insert bearing so that it seals correctly, end cannot move

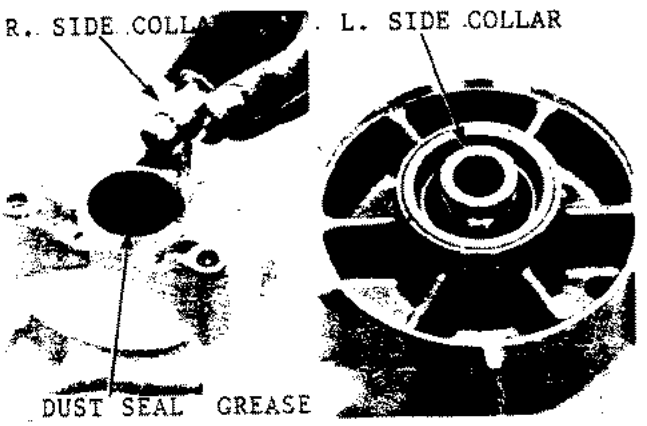
Standard tools:

Driver handle A	07749-0010000
Outer driver (42x47mm)	07746-0010300
Pilot (20mm)	07746-0040500



Apply grease to dust seal lip and install into right side of wheel hub
Install right side collar into bearing
install left side collar into bearing

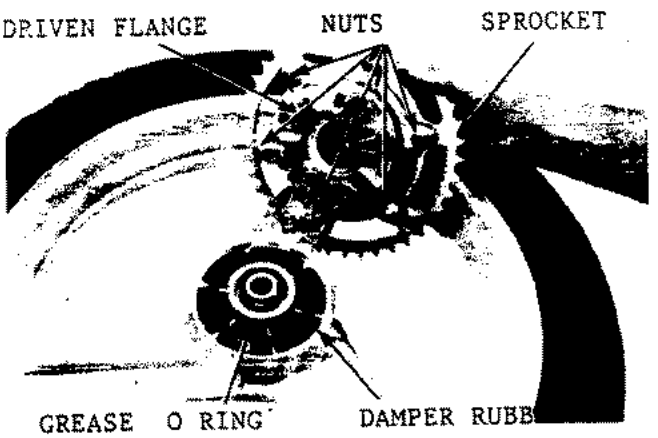
* When installing side collars take care not to chip opposite side of bearing inner race or to damage bearing



Apply grease to new O ring and install in wheel hub
Inspect damper rubbers for wear or warpage
If the driven sprocket has been removed apply oil to nut and tighten to standard torque

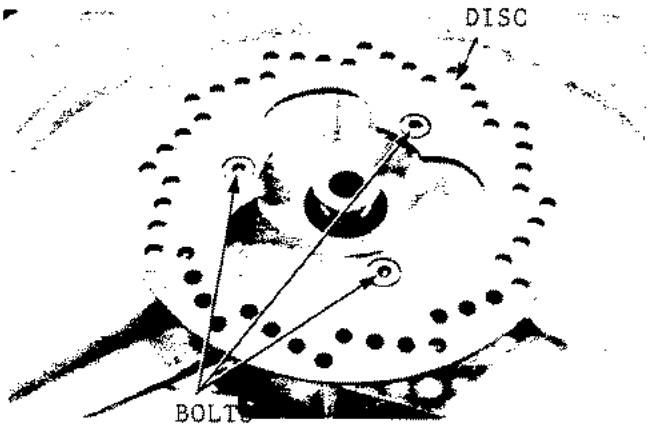
Torque: 2.8-3.4 kg-m

install driven flange into wheel hub



Install rear brake disc and tighten bolts

Torque: 3.7-4.3 kg-m

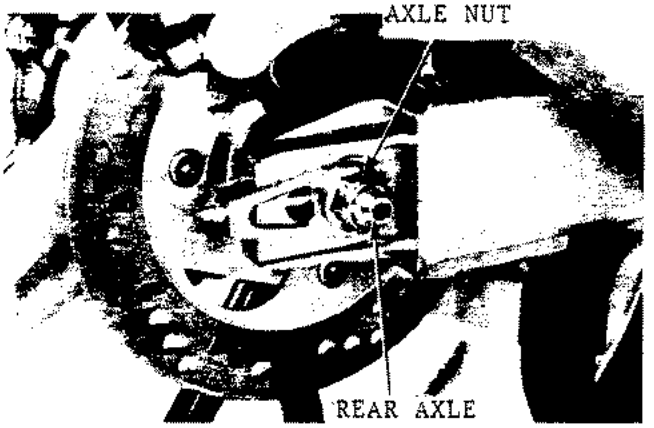


INSTALLATION

* Align brake disc between pads and take care not to damage then when installing wheel

Set drive chain into sprocket
install rear axle from the Left side and adjust chain (2.9)
Tigntne axle nut

Torque 8.0-10.0 kg-m

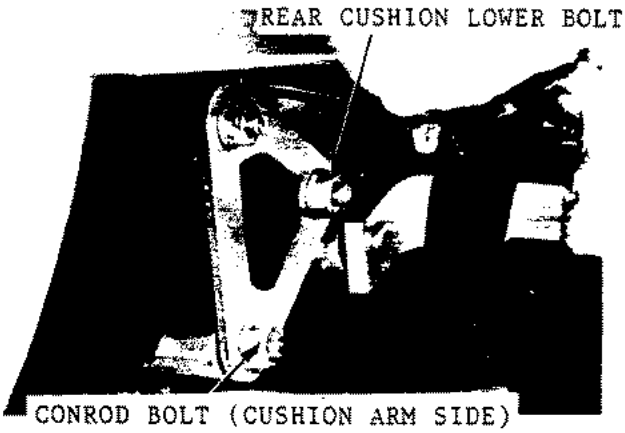


REAR CUSHION

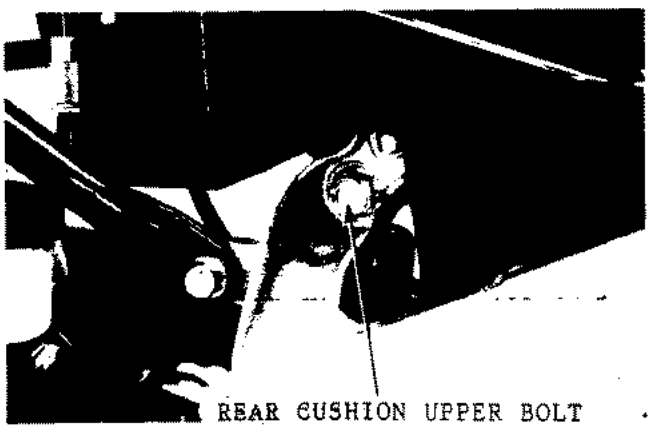
Removal

Raise frame and remove rear wheel

Remove side covers (15.3)
Remove R.lower fairing (15.3)
Remove conrod bolt (cushion arm side)
Remove rear cushion lower bolt

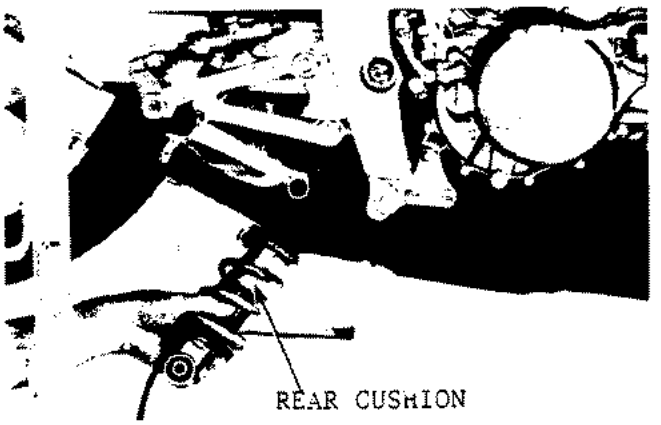


Remove rear cushjon upper bolt



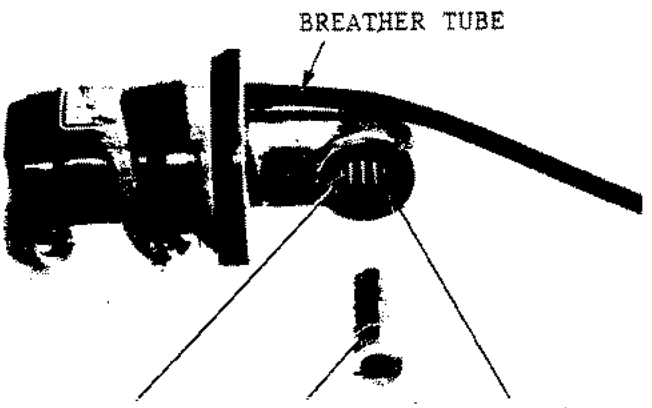
Raise rear wheel and fix in place

Remove rear cushion downwards from between exhaust chamber



LOWER JOINT BEARING REPLACMENT

Remove collar
Replace needle bearing if damaged
Remove dust seals from both sides
Remove breather tube

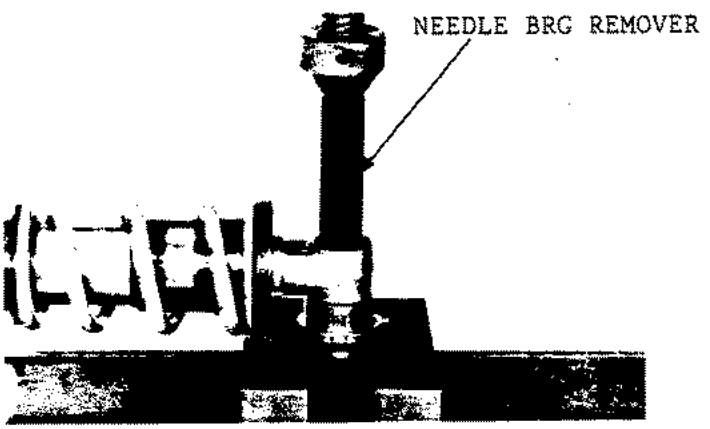


Remove needle bearing

* Remove taking care not to scratch lower joint bearing face.

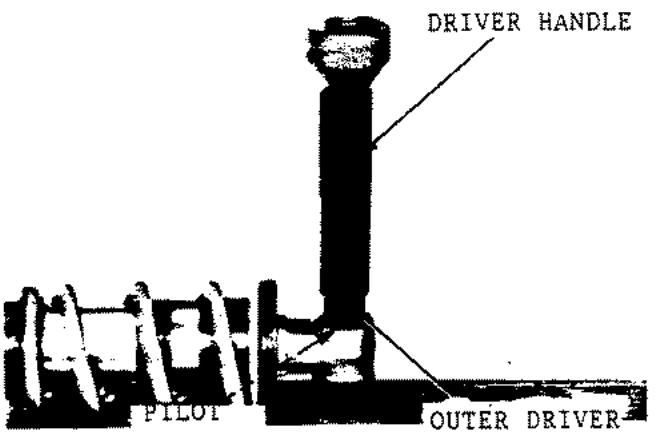
Special tool:

Needle bearing remover 07GMD-KT80100



Use hydraulic press to insert new bearings

* Push into bearing mark Standard tools	
Driver Handle A	07749—0010000
Outer driver (24x26mm)	07746—0010700
Pilot (17mm)	07746—0040400



SEPARATION

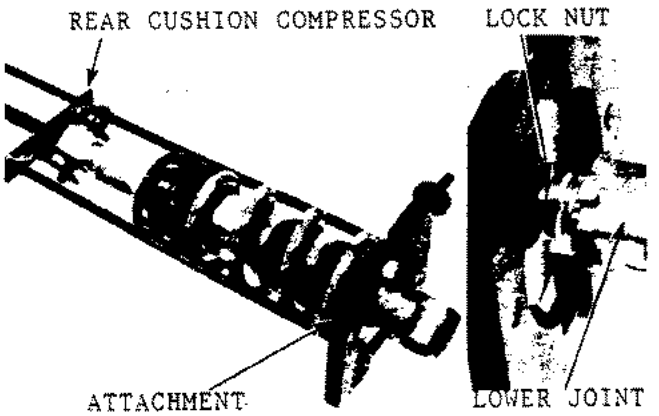
Install rear cushion compressor

Standard tool:

Rear cushion compressor 07GME-0010000

Special tool:

Rear cushion compressor attachment
07959-MB10000

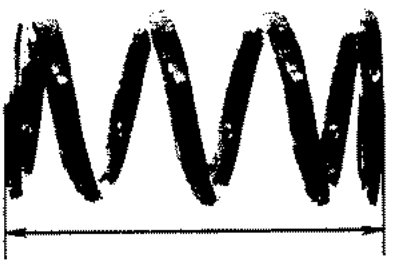


Pressure spring to a position where the locknut can be removed. Hold lock nut using a spanner and remove lower joint. Remove standard tool and remove seat stopper, dust sea, spring guide, lower spring seat, spring, upper spring seat and adjuster

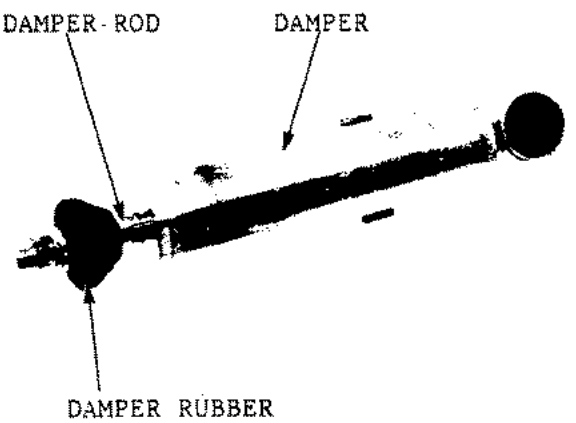
INSPECTION

Inspect rear cushion spring freeplay

Service limit : 128.7mm (replace if below)



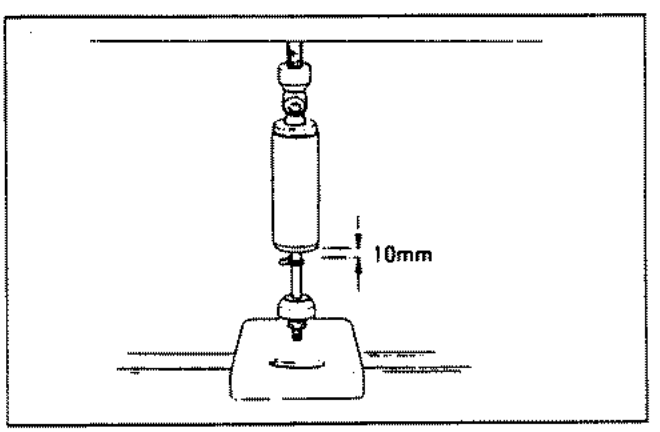
Inspect rear damper shape, oil leakages, rod warpage and damper rubber damage
Inspect rear damper for smooth movement



Push down rear damper and place a mark 10mm from damper base. Apply pressure, push down to mark using hydraulic press and measure force required

Damper pressure 24-26kg

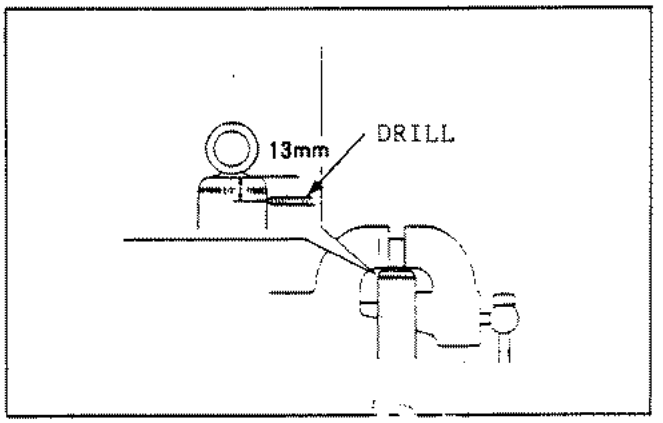
If under 19.2kg then replace



DAMPER UNIT GAS DRAINAGE

Because high pressure gas is inside damper unit, take care with the following point

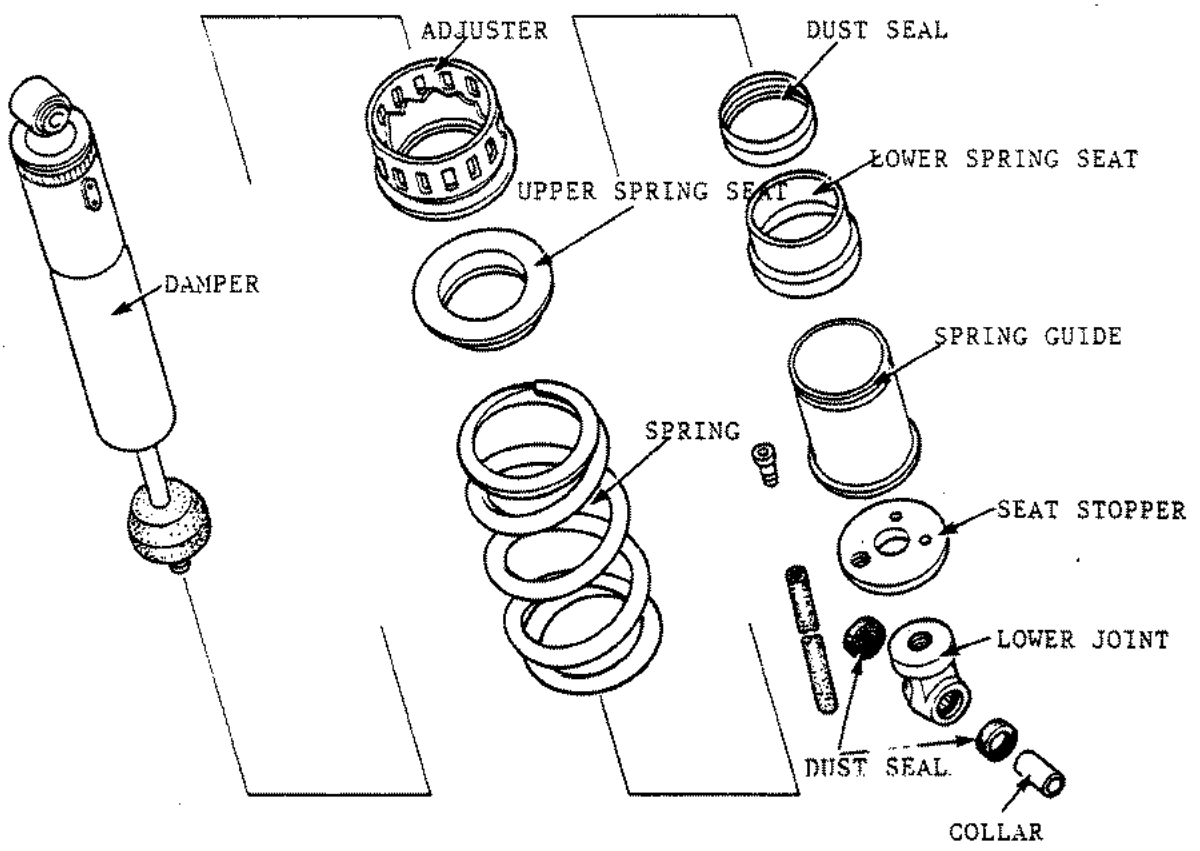
* Never try to increase oil or separate unit as fire or high oil,output may occur



Drill using a punch as in the picture
Stand damper unit up and fix in position in a vice
Drill a 3mm hole where the punch mark is to drain the gas.

Inspect upper seat, dust seal, lower seat, adjuster and spring guide for damage, wear and change in shape

ASSEMBLY

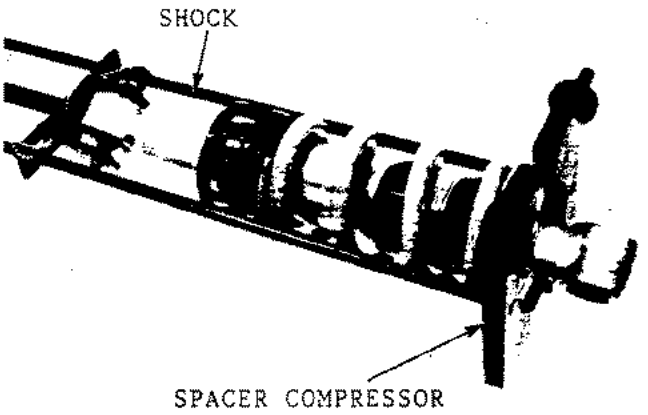


Assemble adjuster, upper seat, spring, lower seat, dust seal, spring guide and seat stopper in damper

Oush in lower joint using a rear cushion compressor and install spring

Standard tool:

Rear cushion compressor 07GME-0010000
Rear Cushion comp. attach 07959-MB10000



Tighten locknut into damper rod

Torque: 6.0-7.5 kg-m

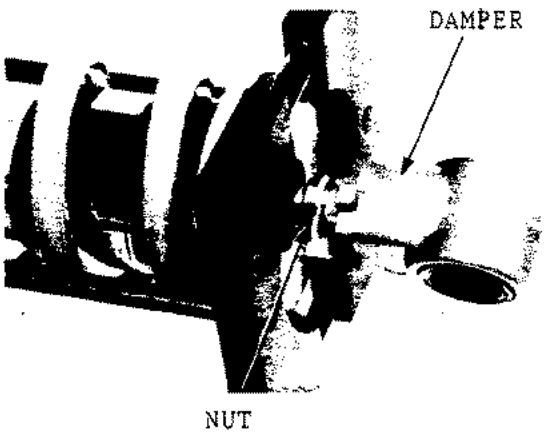
Tighten until lower joint meets locknut

Spring length (installed)

Standard : 124.0mm (adjuster=3rd position)

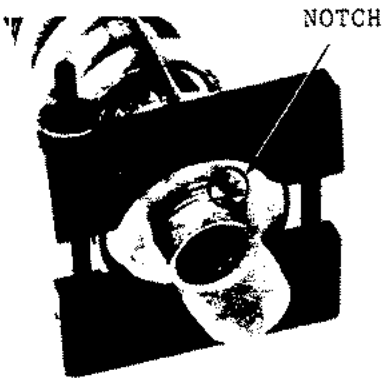
Hold lock nut and tighten lower joint

Torque: 3.8-6.0 kg-m

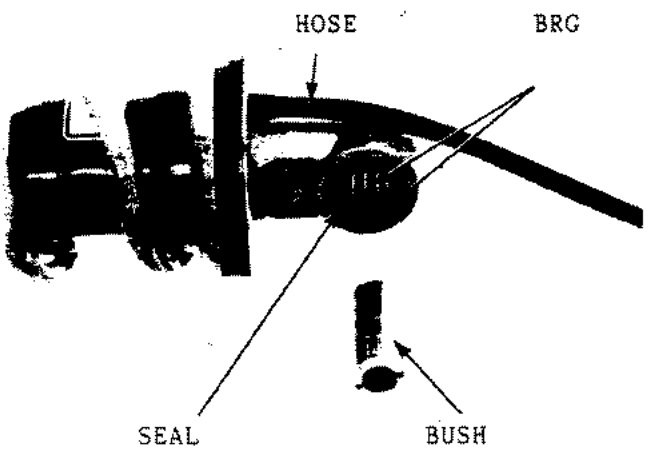


* Apply locking agent to damper rod thread and assemble.

Align lower joint shoulder and seat stopper protrusion and remove rear cushion compressor from rear cushion



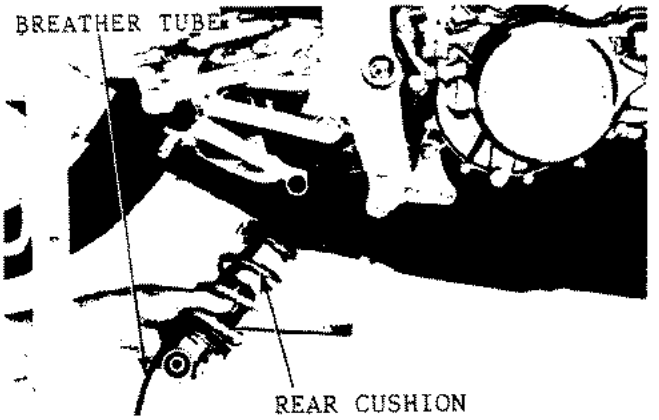
Apply grease to needle bearing roller
Apply grease to new dust seal lip and install lower joint
Install collar
Install breather tube



INSTALLATION

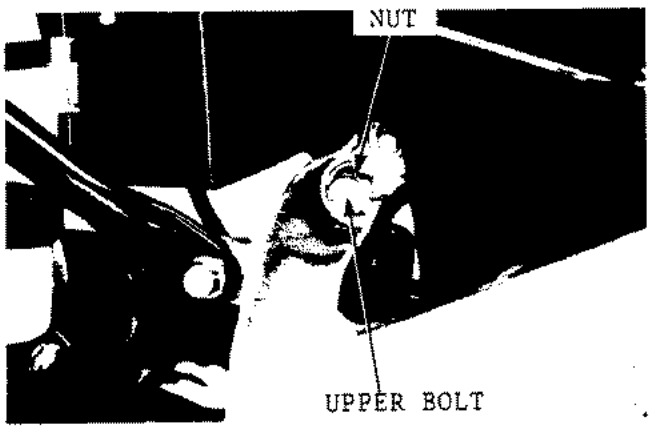
Pass the rear cushion from the bottom, between the exhaust chamber abd set in the installed position

* Set the breather tube to the rear



Install upper bolt and nut

Torque: 6.0-7.0 Kg-m



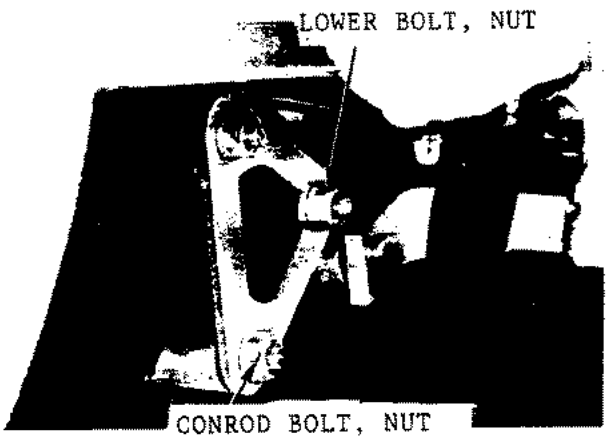
Remove rear wheel from held position
Install rear cushion lower bolt, nut

Torque: 6.0-7.0 kg-m

Install conrod bolt and nut (cushion arm side)

Torque: 6.0-7.0 kg-m

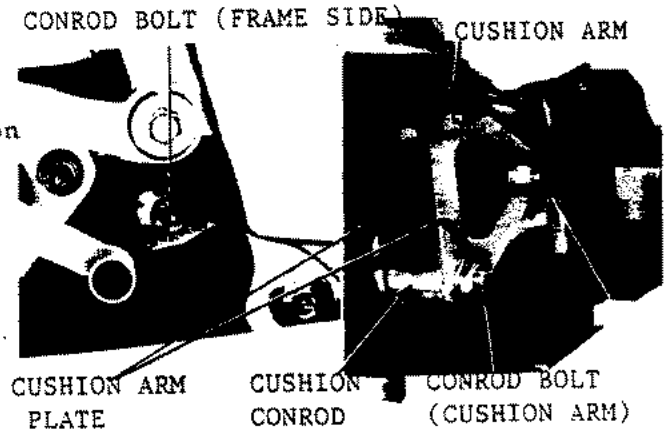
Install R. Lower fairing (15.5)
Install side covers (15.2)



SUSPENSION LINKAGE

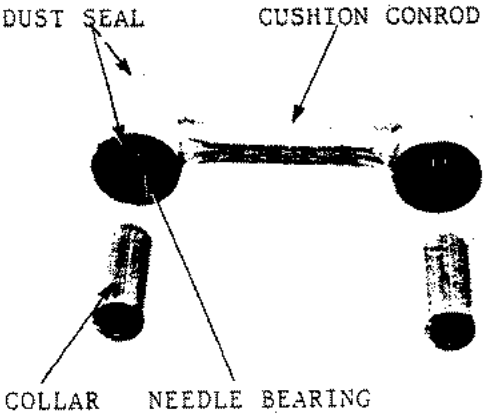
Removal

Raise frame and remove rear wheel
Remove conrod bolt (frame & cushion arm sides) and remove cushion conrod
Remove rear cushion lower bolt and cushion arm bolt and remove cushion arm plate.



CUSHION CONROD BEARING REPLACMENT

Inspect cushion conrod for damage
Remove collar
If needle bearing is damaged, replace with a new one
Remove dust seal

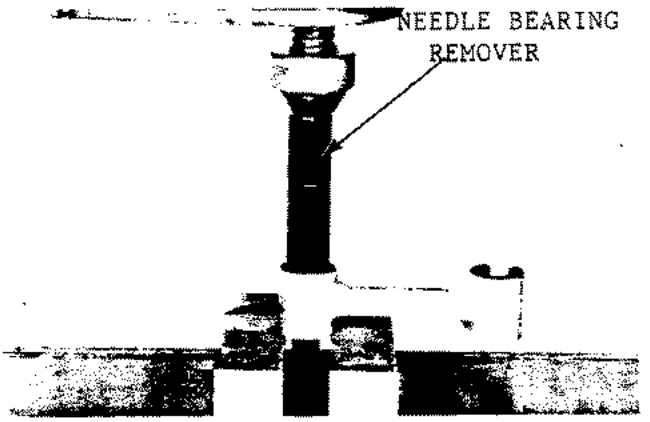


Remove needle bearing

* Take care not to damage; cushion conrod bearing face

Special tool:

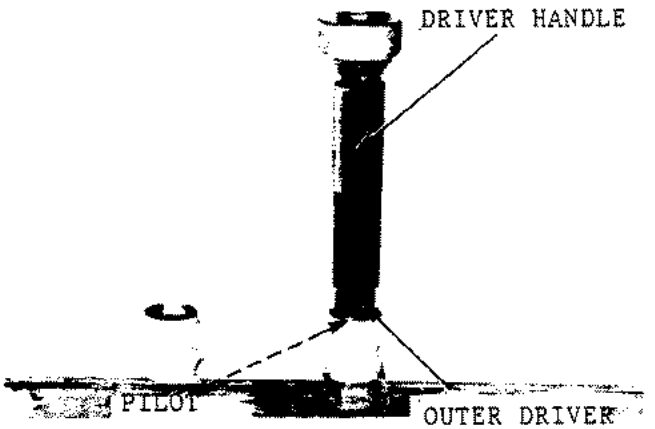
Needle beraing remover - 07GMD-KT80100



Insert new bearing using hydraulic press

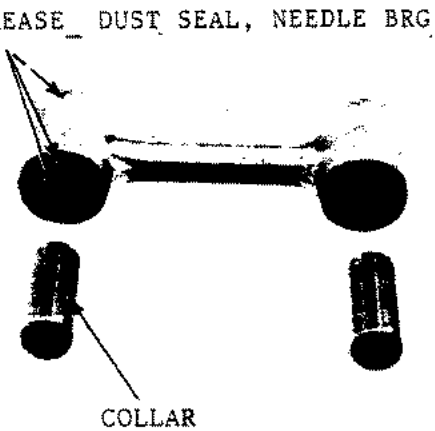
* Insert up to the bearing mark
Standard tools:

Driver Handle A	07749-0010000
Outer driver (24x26mm)	07746-0010700
Pilot (17mm)	07746-0040400



Apply grease to needle bearing roller
Apply grease to new dust seal lip and install cushion conrod

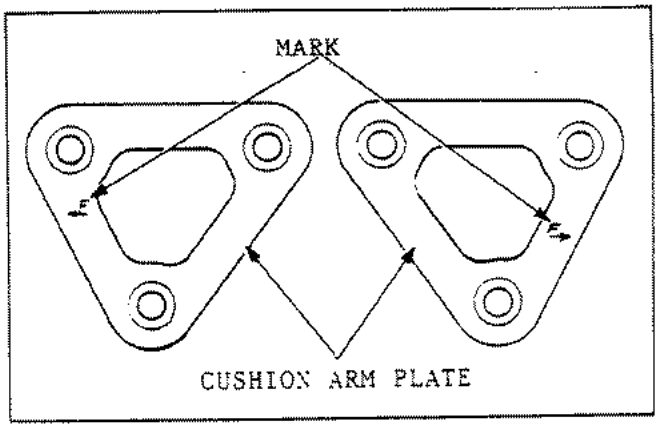
Install collar



CUSHION ARM PLATE INSPECTION

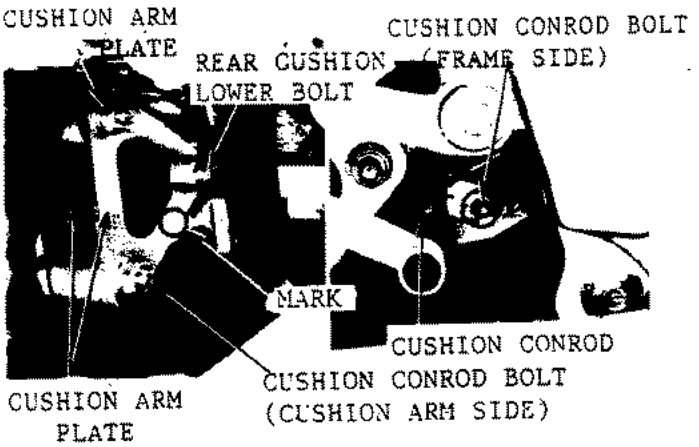
Inspect cushion arm plate for damage and warpage

If any abnormalities then replace



Set cushion arm plate, cushion conrod into installed position

* Face cushion arm plate (F) mark forward and install



Install bolt

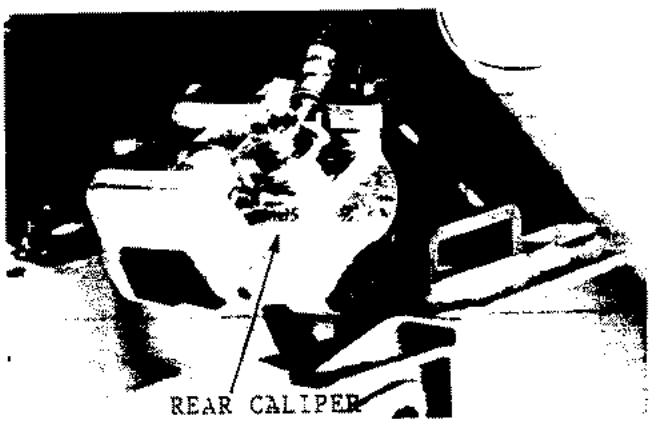
Torque: 6.0-7.0 kg-m

REAR FORK

Removal

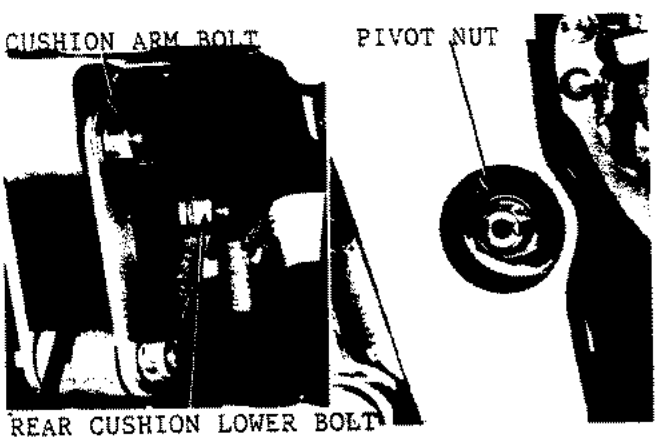
Raise frame and unweight rear wheel
Remove rear wheel (13.3)
Remove rear fender B (15.8)
Remove rear caliper from rear fork

* Hold caliper using tape or something * Do not allow caliper to hang from brake hose



Remove cushion arm bolt and rear cushion lower bolt

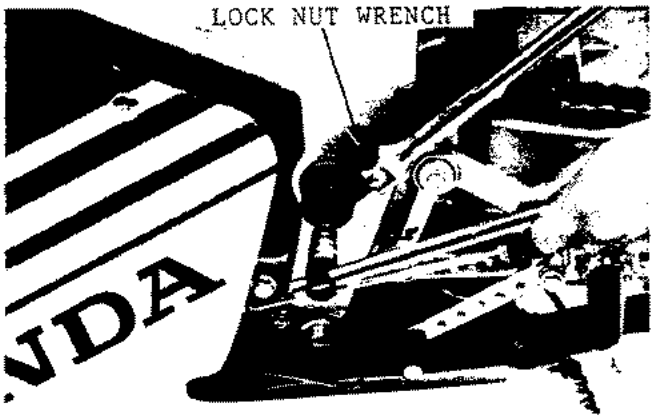
Remove rear fork pivot nut



Remove locknut

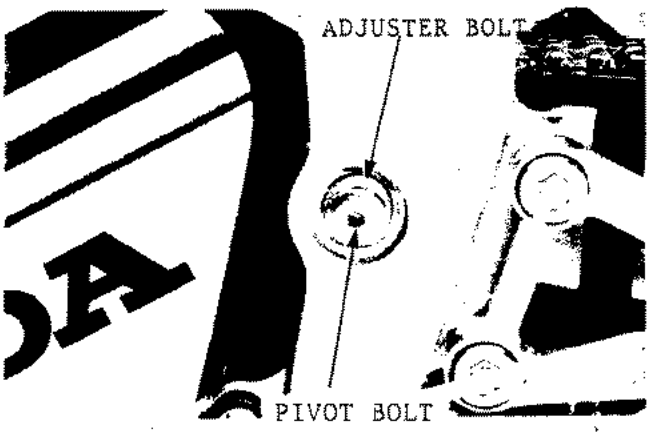
Special tool; Lock nut wrench 07GMA—KT70200

* To remove lock nut, do not turn adjuster bolt, and screw in pivot bolt



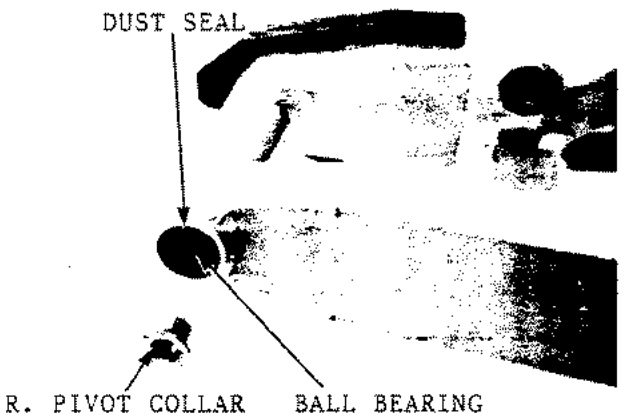
Remove rear fork pivot adjuster bolt and pivot bolt together

Remove rear fork

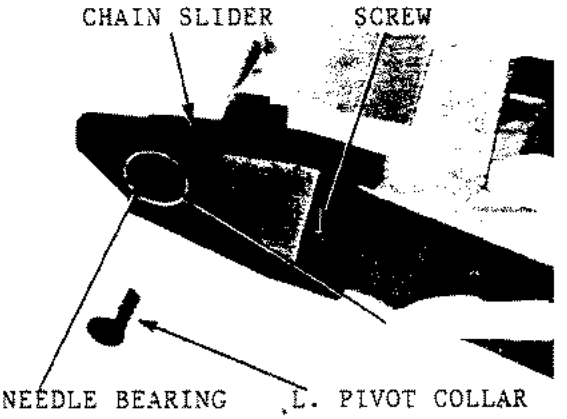


PIVOT BEARING REPLACEMENT

Remove R. pivot collar
Remove dust seal
Inspect pivot collar and dust seal for damage
Inspect ball bearings for damage, noise and smooth movement

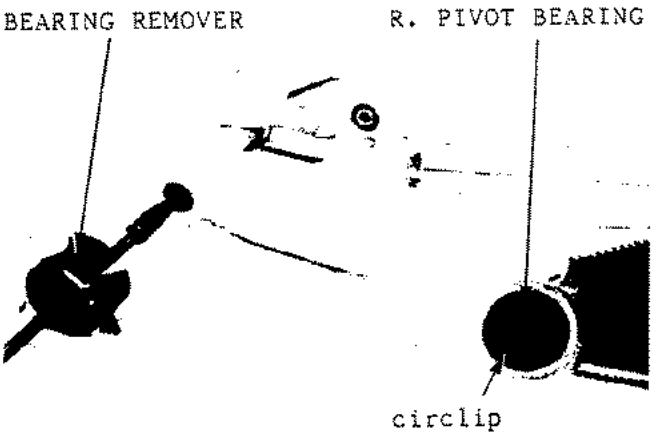


Remove chain slider from rear fork
Inspect chain slider for wear and damage
Remove dust seal
Remove L. pivot collar
Inspect dust seal and L. pivot collar for damage
Inspect needle bearings for damage



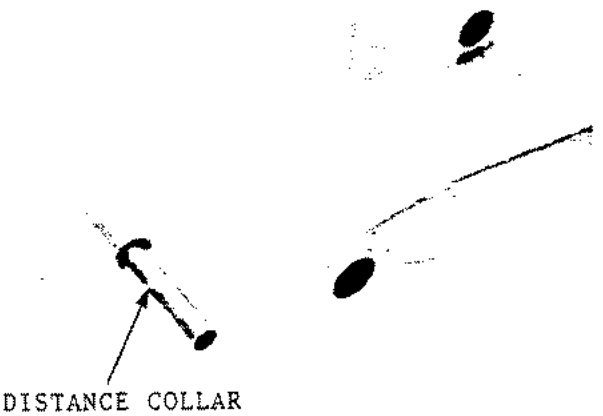
Remove circlip
Remove R. Pivot bearaing (ball bearing)
Special tools:

Bearing remover (15mm)	07936-KC10000
- Remover assy (15mm)	07936-KC10500
- Remover shaft (15mm)	07936-KC10100
- Remover head (15mm)	07936-KC10200
-Remover sliding height	07741-0010201



Remove distance collar from rear fork pivot

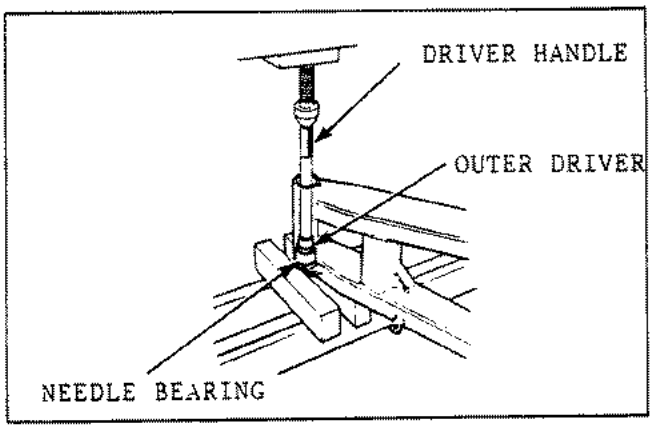
Inspect distance collar for damage



Remove L. pivot bearing (needle bearing)

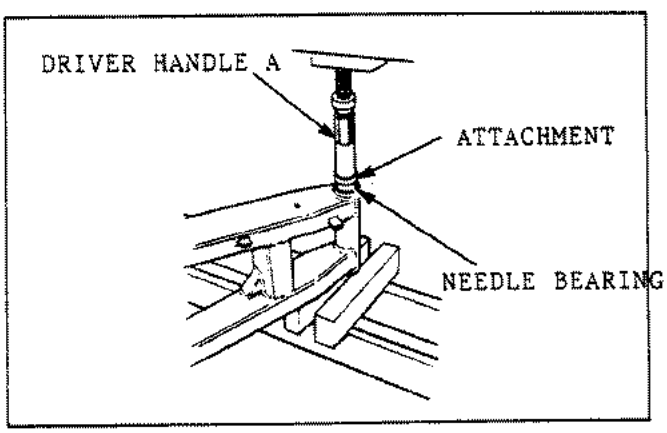
Special tool:

Driver handle 07949-3710001
Outer driver (28-30mm)07946-1870100

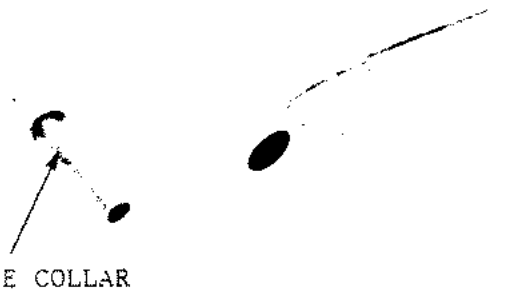


Use hydraulic press and insert L. pivot bearing (needle bearing)

Special Tool
Needle bearing driver att. 07HMD-KV30100
Standard tool
Driver handle A 07749-0010000



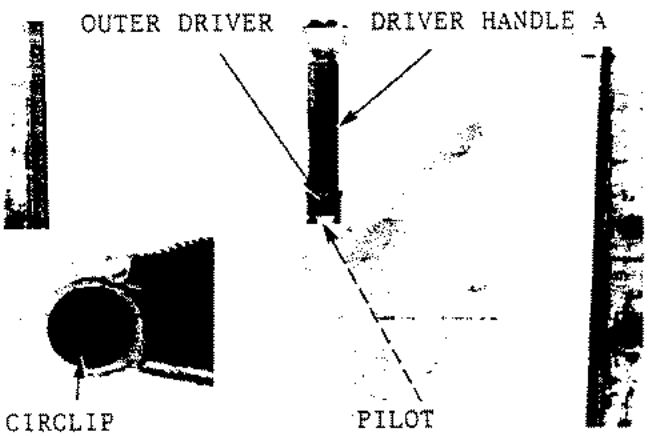
Install distance collar



Use hydraulic press and insert R. pivot bearing (ball bearing)

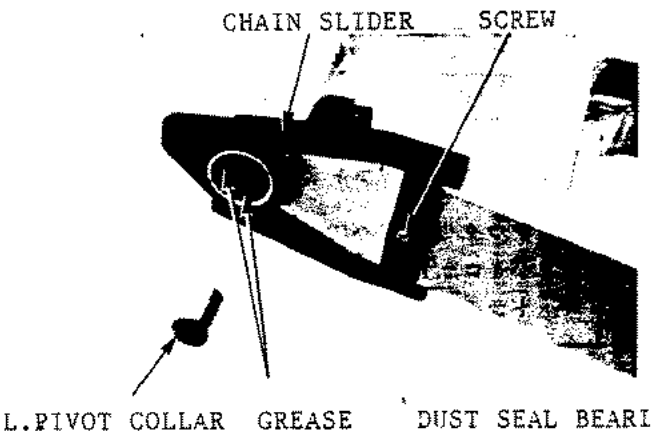
Standard tool:

Outer driver (32x35mm)	07746—0010100
Pilot (15mm)	07746—0040300
Driver handle A	07749—0010000



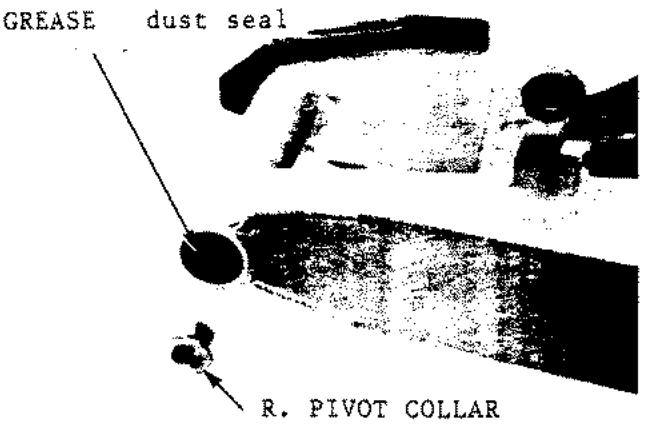
Install circlip into groove

Apply grease to L. pivot bearing roller
Apply grease to L. pivot dust seal lip and install
Install L. pivot collar
Install chain slider



Apply grease to R.pivot dust seal lip and install

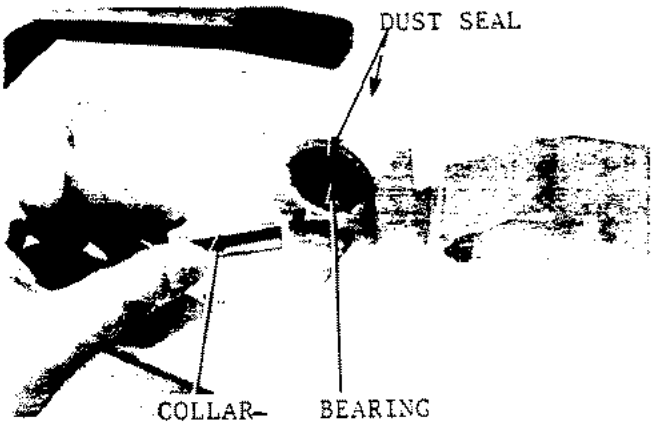
Install R. pivot collar



CUSHION ARM BEARING REPLACEMENT

Remove collar

If needle bearing is damaged then replace with new one
Replace ring
Remove dust seal

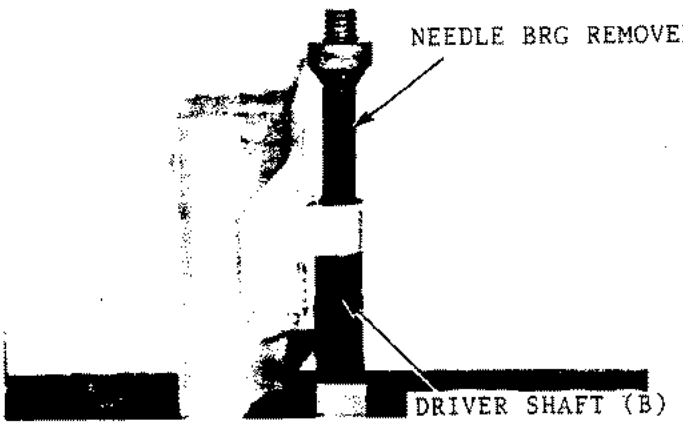


Remove needle bearing

* Take care not to damage rear fork bearing face

Special Tool

Needle bearing remover	07GMD—KT80100
Driver shaft (B)	07964—MB00200

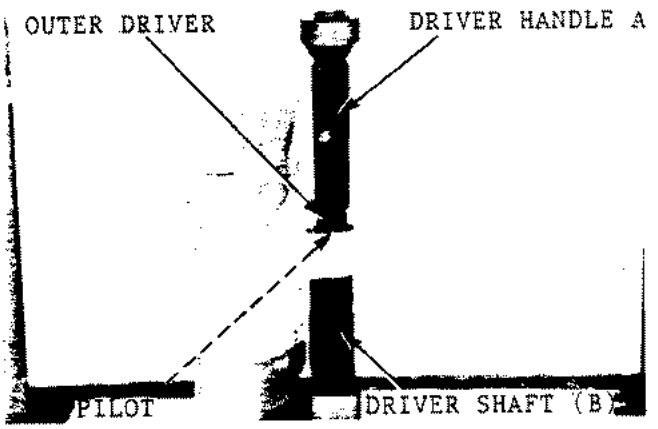


Use a hydraulic press to install new bearing

* Insert up to bearing mark

Special tool:

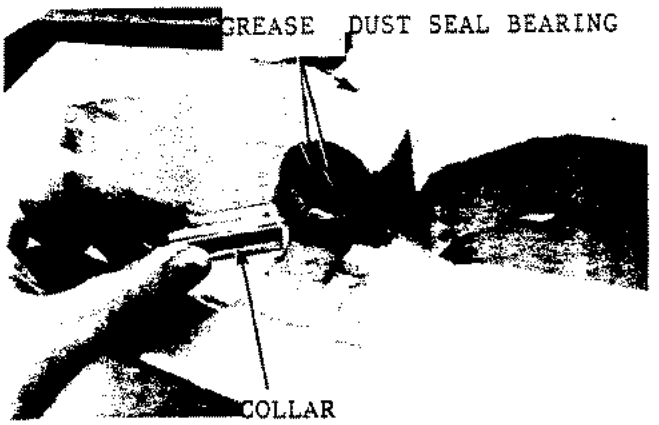
Driver shaft (B)	07964—MB00200
Standard tool:	
Outer driver (24x26mm)	07746—0010700
Pilot (17mm)	07746—0040400
Driver handle A	07749—0010000



Apply grease to bearing roller

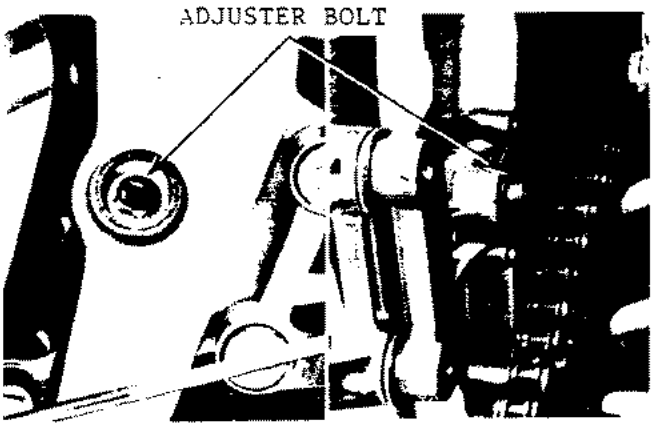
Apply grease to new dust seal lip and install

Install collar



INSTALLATION

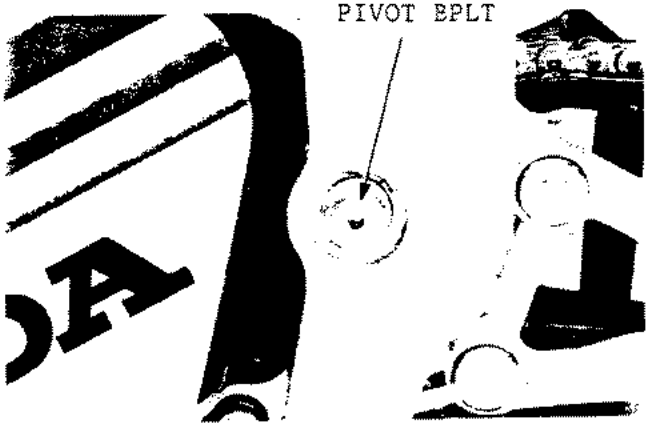
Do not insert rear fork pivot adjuster bolt as fsr as the pointed end will meet the frame internal face.



Install rear fork and insert pivot bolt from adjuster bolt side

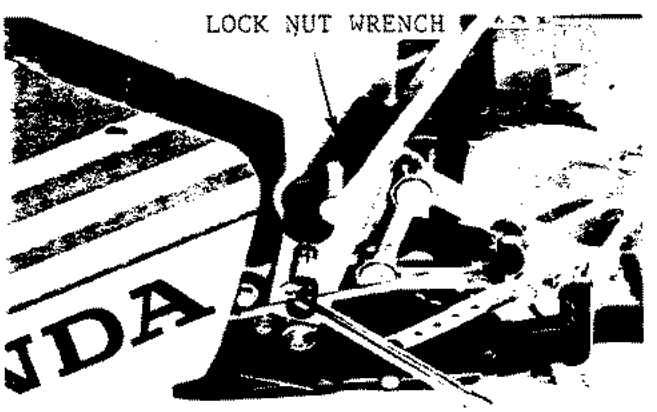
Turn pivot bolt and tighten adjuster bolt

Torque: 1.0-2.0 kg-m

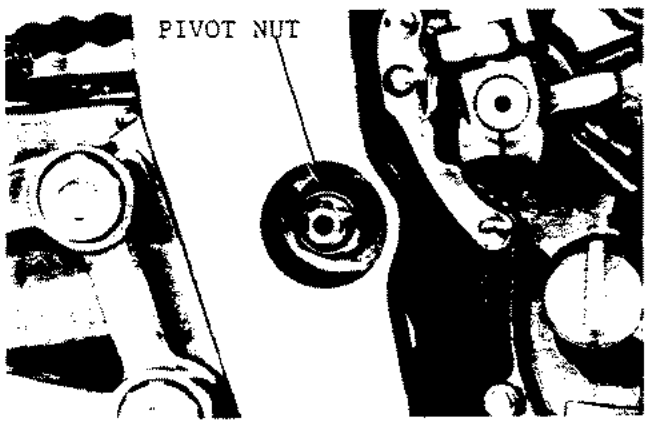


Install lock nut and tighten

Special Tool:
Lock nut wrench 07GMA—KT70200

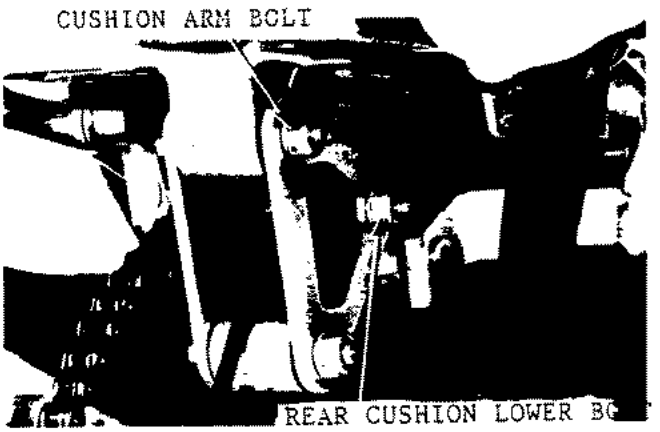


* To tighten lock nut do not turn adjuster bolt at the same time and push in pivot bolt



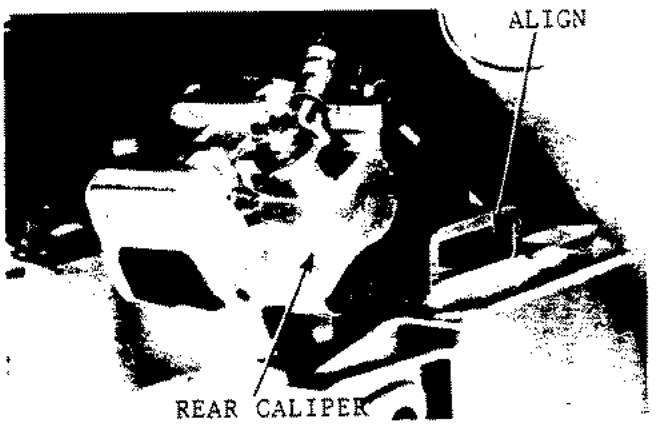
Install cushion arm bolt and rear cushion lower bolt and tighten

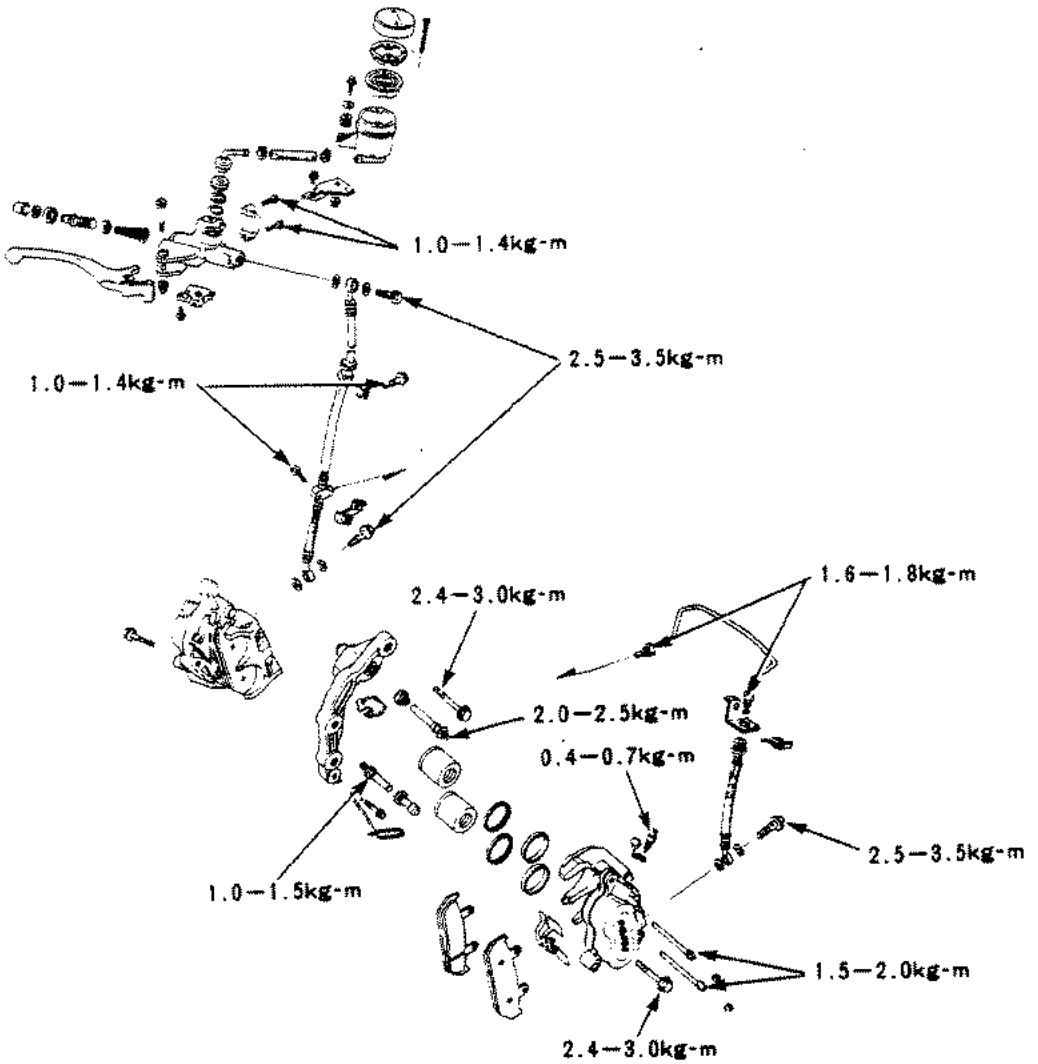
Torque: Cushion arm bolt: 6.0-7.0 kg-m
R.cushion lwr bolt: 6.0-7.0kg-m

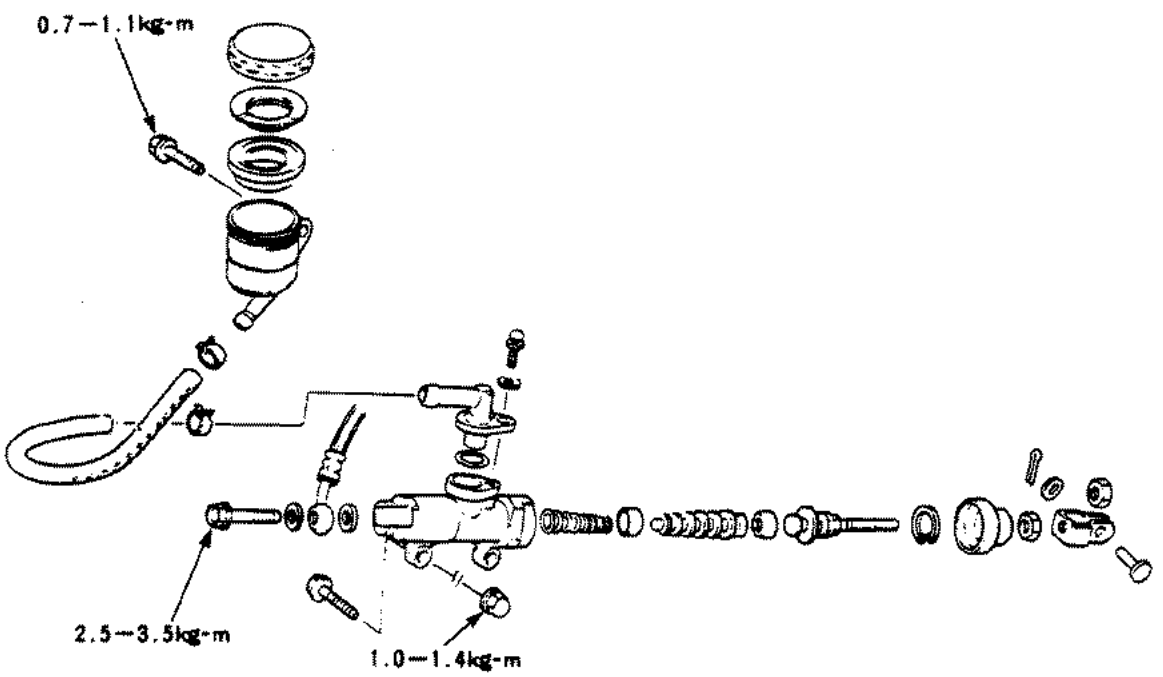


Align rear caliper bracket protrusion with rear fork index mark and install

Install rear fender B (15.8)
Install rear wheel (13.7)




1.0—1.4kg-m
2.5—3.5kg-m
1.0—1.4kg-m
2.4—3.0kg-m
1.6—1.8kg-m
2.0—2.5kg-m
0.4—0.7kg-m
2.5—3.5kg-m
1.0—1.5kg-m
1.5—2.0kg-m
2.4—3.0kg-m


0.7—1.1kg-m
2.5—3.5kg-m
1.0—1.4kg-m

14. BRAKES (DISC BRAKE)

MAINTENANCE INFORMATION

Warnings

- When using brake fluid, ensure no water or foreign particles enter it
- Use only recommende brake fluid
- Use DOT 4 for front brake fluid and DOT 3 for rear
- Clean all dismantled parts of fluid and check each part
- Ensure foreign particles do not enter each removed part
- Brake pads may be replaced without removing hose
- If brake hose is removed, then bleed air
- Do not bend brake pipe

Item	Standard	Service limit
Brake disc width rear	3.8(4.8)—4.2(5.2)	3.5(4.0)
Brake disc runout - front	———	0.4
rear	———	0.3
Front master cylinder I.D	14.000—14.043	14.055
Rear master cylinder I.D	12.700—12.743	12.755
Front master piston O.D	13.957—13.984	13.945
Rear master piston O.D	12.657—12.684	12.645
Caliper cylinder I.D	27.000—27.050	27.06
Caliper piston O.D	26.918—26.968	26.91

TORQUES

Bleeader valve	0.4—0.7kg-m	Master cylinder holder bolt	1.0—1.4kg-m
Front caliper bracket bolt	2.4—3.0kg-m	Brake hose bolt	2.5—3.5kg-m
Hanger pin	1.5—2.0kg-m	R. Step stay bolt	2.4—3.0kg-m
Rear hanger pin retainer bolt	0.8—1.3kg-m	R. Brake reservoir bolt	0.7—1.1kg-m
Rear caliper pin bolt 10mm	2.4—3.0kg-m	Rear master cylinder	1.0—1.4kg-m
Rear caliper pinch bolt	2.0—2.5kg-m	Front brake pipe (apply locking agent)	1.6—1.8kg-m

TOOLS:

Special tools:

Snap ring pliers 07914-3230001

TROUBLE SHOOTING

Brake Movement Heavy

- air in brake system
- not enough brake fluid
- brake fluid leaking
- brake pads worn
- pad-to-disc face dirty

Brake Lever Heavy (Brake Pedal) or
Brakes Stay On

- caliper piston fixed in
- brake system clogged
- master piston fixed on

Noise From Brakes

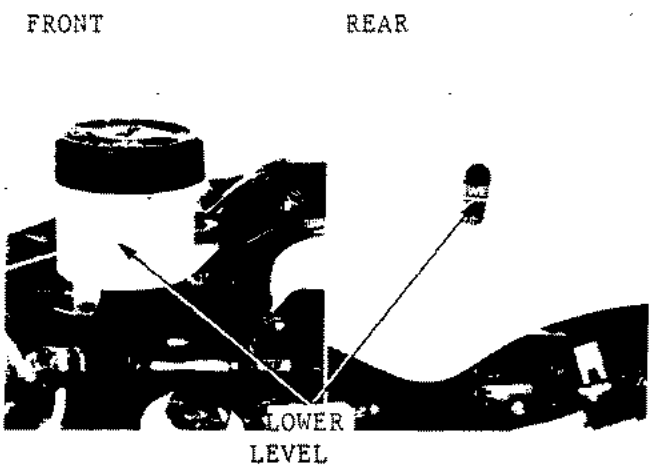
- pads dirty, damaged
- disc runout damaged
- caliper installation faulty
- disc or wheel alignment faulty
- pad and hanger pin lubrication incorrect

Brakes Poor On One Side

- pads dirty
-disc or wheel alignment faulty
- caliper slide fixed on

Check master cylinder brake fluid level

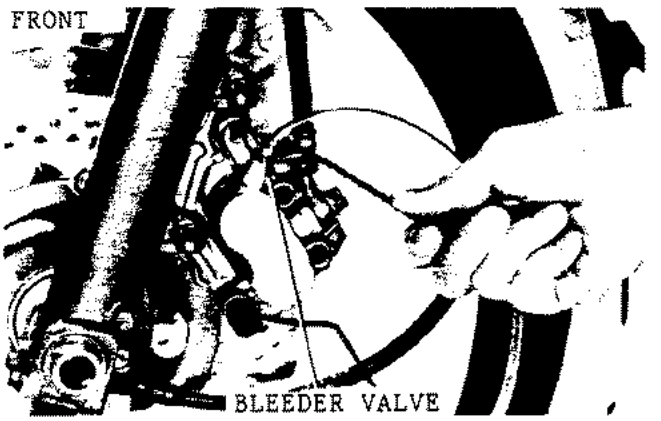
* When adjusting fluid level ensure no foreign particles enter fluid
* When removing rear reservior cap remove R. side cover
* Use DOT 4 brake fluid for front master cylinder and DOT 3 for rear



BRAKE FLUID EXTRACTION/FILLING

Front

Turn handlebars to left and remove reservior cover with vehicle in upright position

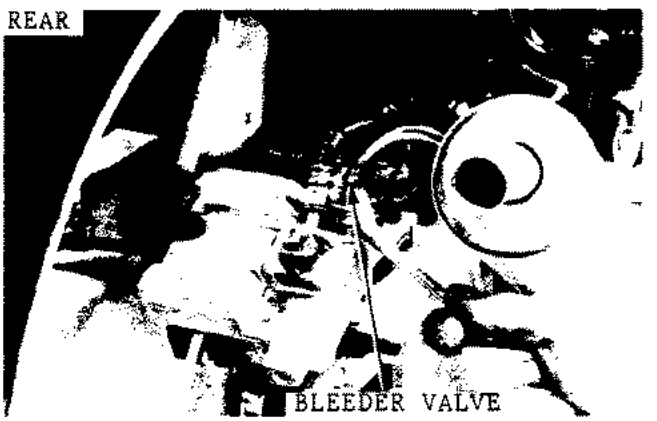


Rear

Remove side cover and remove reservoir cover
Install bleeder valve vinyl tube

loosen caliper bleeder valve and move brake lever/pedal
Move until brake fluid does not come out of bleeder valve

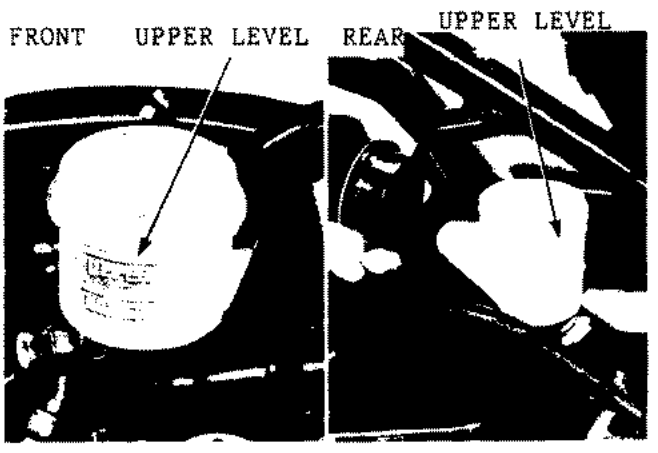
* Brake performance will be affected by dirt on brake disc pads
* If dirty then replace with new pads and clean brake disc



AIR BLEEDING

8 Take care when assessin brake fluid level

* If fluid is nearing the lower level, then advance to the following



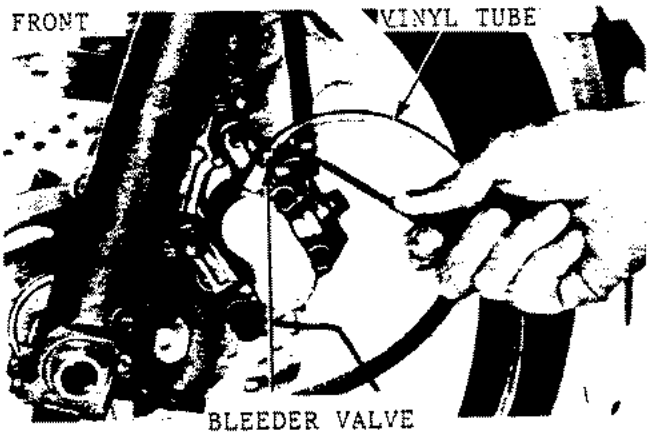
Tighten bleeder valve and fill brake fluid to upper level and install diaphragm

Front

Move braked lever and drain air from separator. Move until air does not come from reservoir (until brake lever movement is heavy)

Rear

ove brake lever until air does not come from reservoir. Install vinyl tube to caliper bleeder valve and drain into container

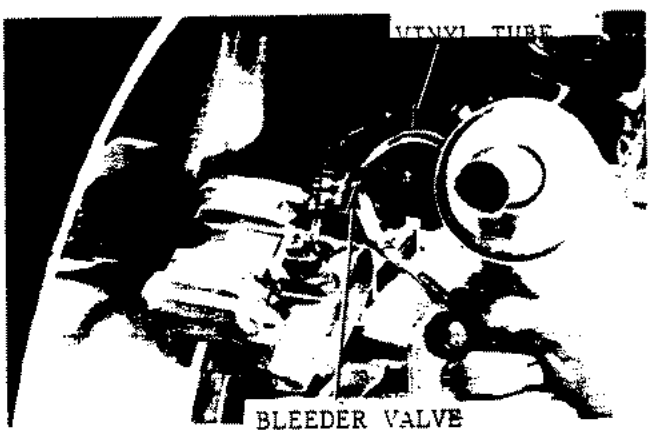


1] Move brake lever (brake pedal) several times and in a hold position (with push ins), turn bleeder valve roughly ½ turn and retighten.

* Do not move brake lever (brake pedal) until tightening bleeder valve

2] Slowly move brake lever (brake pedal) and once moving safely then pump into position

1 & 2 should be carried out until all air is removed from bleeder valve



Tighten bleeder valve

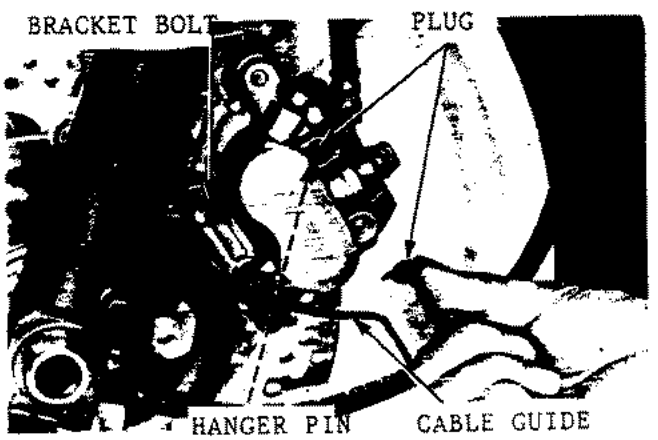
Torque : 0.4–0.7 kg-m

After bleeding air, fill reservoir with brake fluid to upper mark

BRAKE PADS/DISC

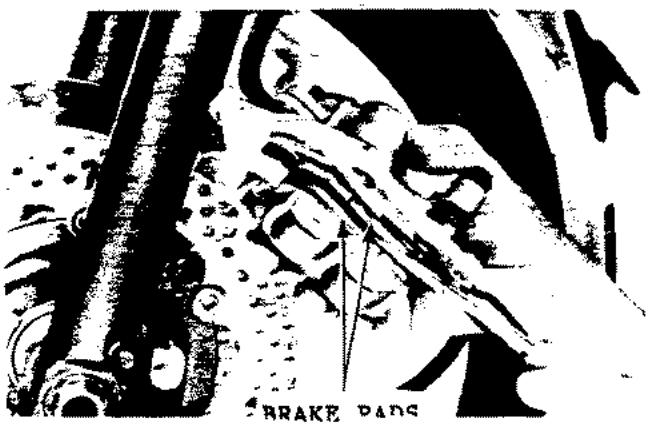
Front brake Pad Replacement

* When replacing pads do not remove brake hose.



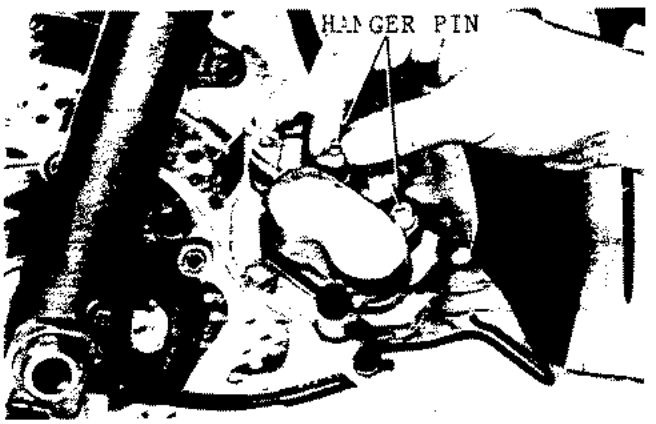
Remove hanger pin plug and loosen hanger pin.
Remove speedometer cable guide.
Remove caliper bracket bolt and remove caliper bracket from fornt forks

In order to install new brake pads push to return piston position

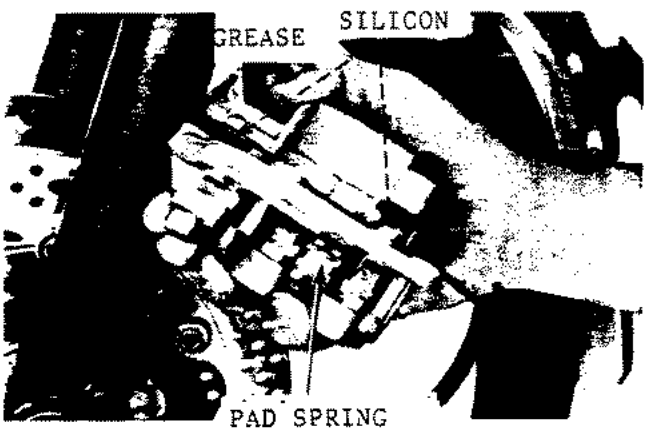


Remove hanger pin from caliper and remove brake pads

* Pull caliper bracket open to replace pads



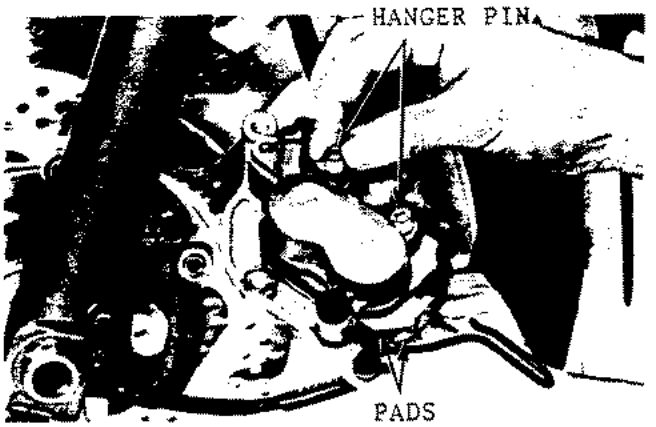
Check that pad springs are installed correctly
Apply silicon grease to caliper bracket pin



Install new pads to caliper

* Always replace brake pads as a set

Push pads, align with caliper hole and install hanger pin



Install caliper to front forks

* Take care not to damage brake pads

Tighten caliper bracket bolt:

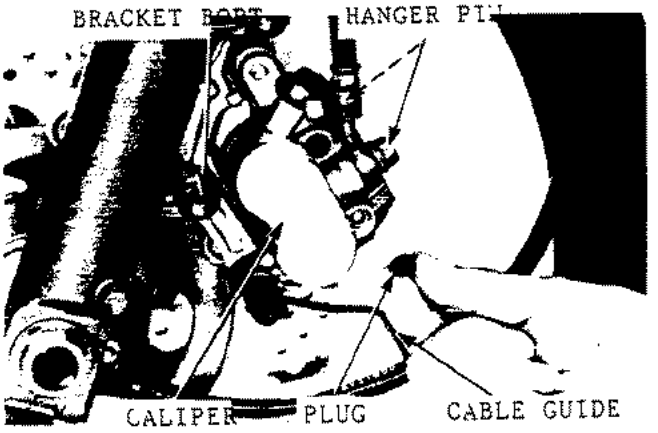
Torque: 2.4-3.0kg-m

Tighten hanger pin:

Torque: 1.5-2.0 kg-m

Install hanger pin plug

install speedometer cable guide into L. front brake caliper bracket



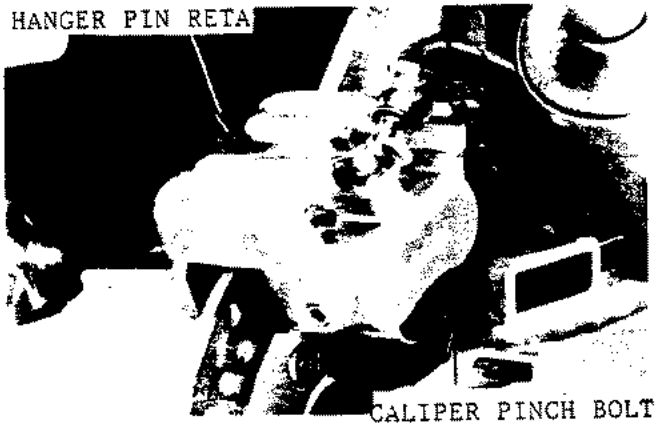
* After replacing pads move brake lever tp push piston in and out

REAR BRAKE PAD REPLACEMENT

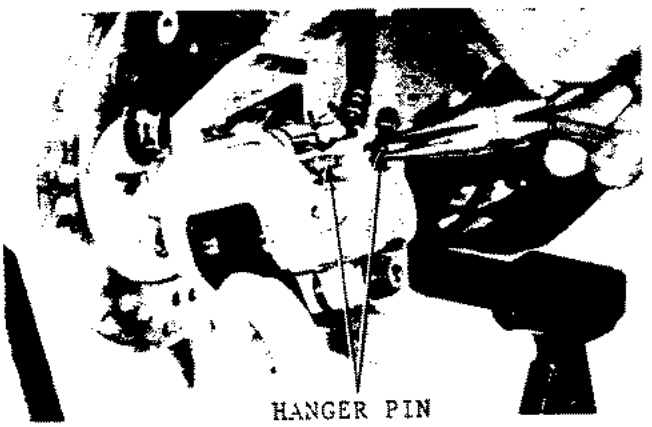
8 Do not remove brake hose when replacing pads

Remove hanger pin retainer

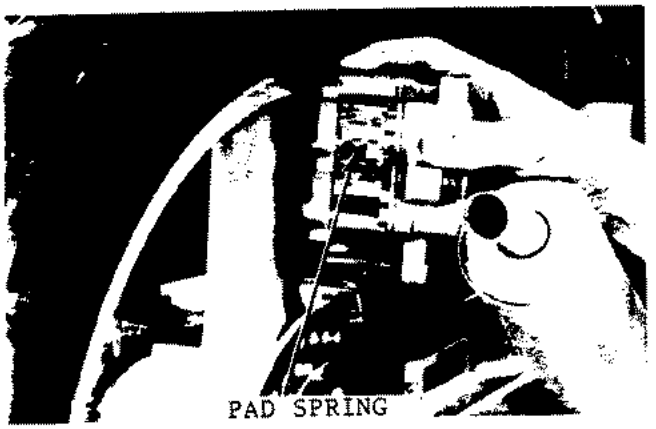
Remove caliper pinch bolt and remove caliper from rear caliper bracket



In order to install new pads push out caliper piston
Take hanger pin from caliper and remove pads



Check that pad springs are installed correctly

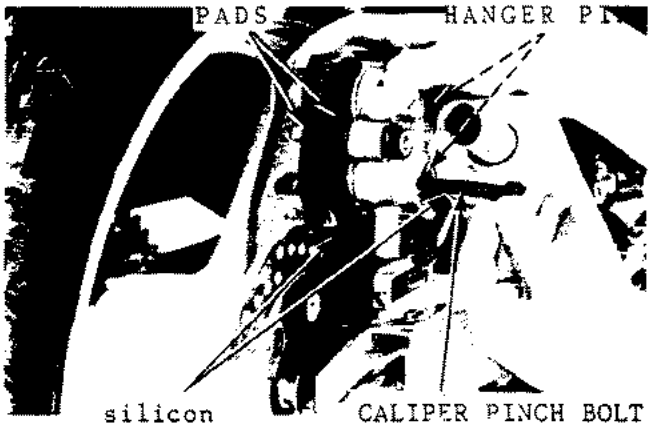


Install new pads into caliper

* Always replace brake pads as a set

Push in pads, align pad pin and assemble with hanger pin

Apply silicon grease to caliper pinch bolt and caliper bracket pin



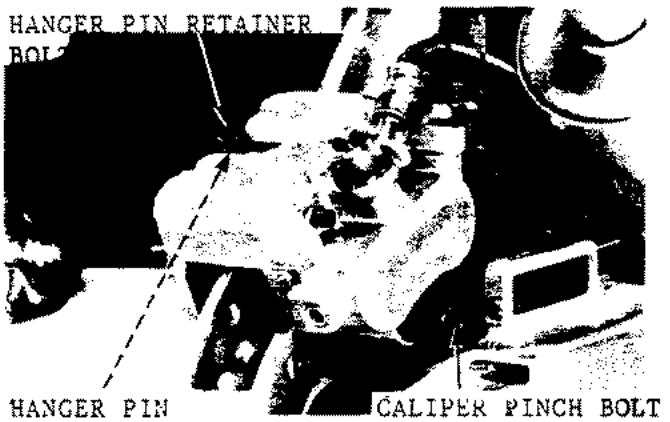
Install caliper to caliper bracket and tighten caliper pinch bolt

Torque: 2.0-2.5 kg-m

Assemble hanger pin retainer into hanger pin pad and tighten bolt

Torque: 0.8-1.3 kg-m

* After replacing pads move brake pedal and push out piston



BRAKE DISC INSPECTION

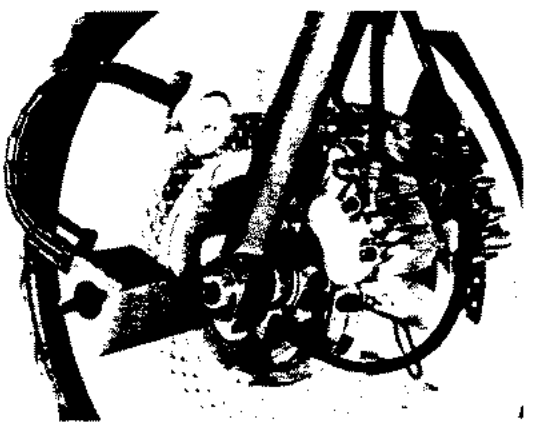
Measure brake disc width

Service Limit: Front 3.5mm (replace if below)
Rear 4.0mm (replace if below)

Inspect front disc for movement

Use dial gauge and measure brake disc runout

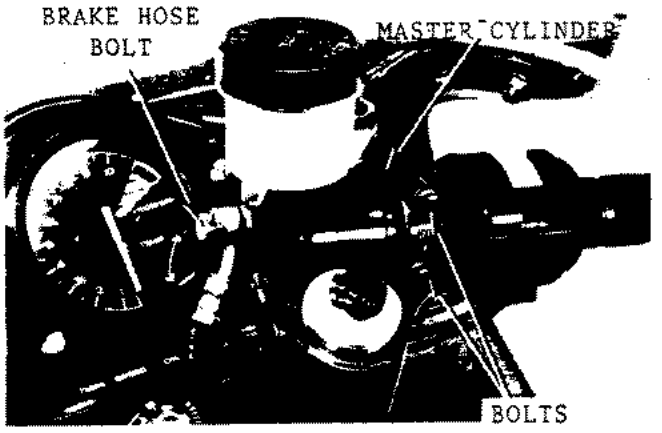
Service limit: Front 0.4 mm (replace if above)
Rear 0.3mm (replace if above



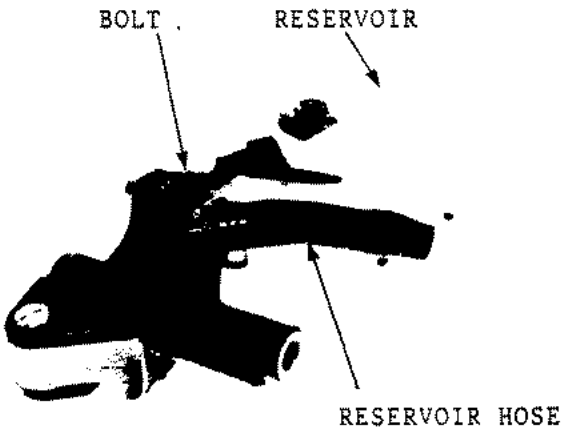
FRONT MASTER CYLINDER

Removal

> * When working on brake fluid ensure no foreign particles enter each part
> * In order to drain fluid, cover the hose joint

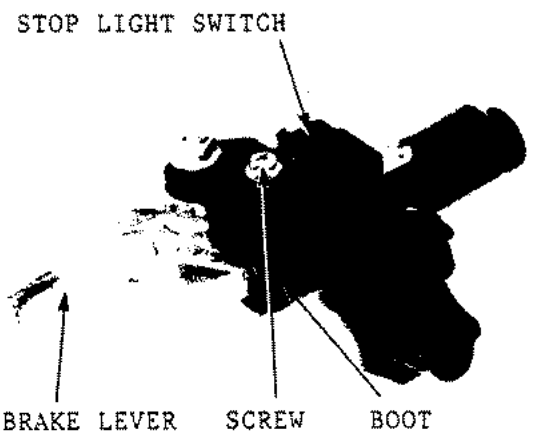


Drain brake fluid (14.3)
Remove brake hose bolt and remove brake hose
Remove wire connection from front stop light switch.
Remove holder bolt and remove master cylinder



Remove reservoir hose
Remove bolt and take off reservoir from master cylinder

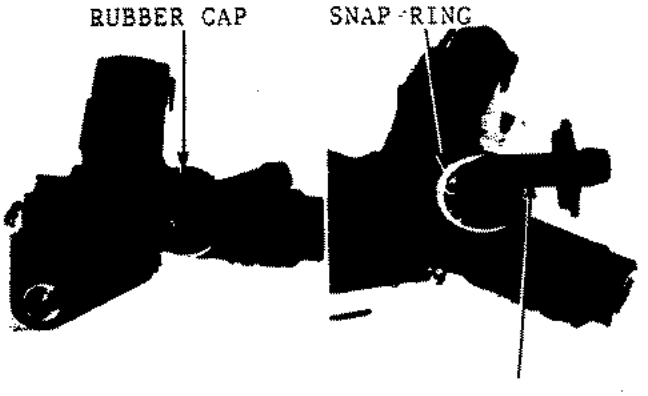
Remove front stop light switch



Remove brake lever

Remove boot

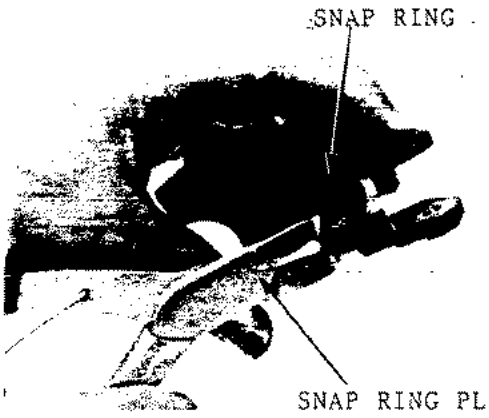
Remove rubber cap and snap ring and take off reservoir hose joint



Separation

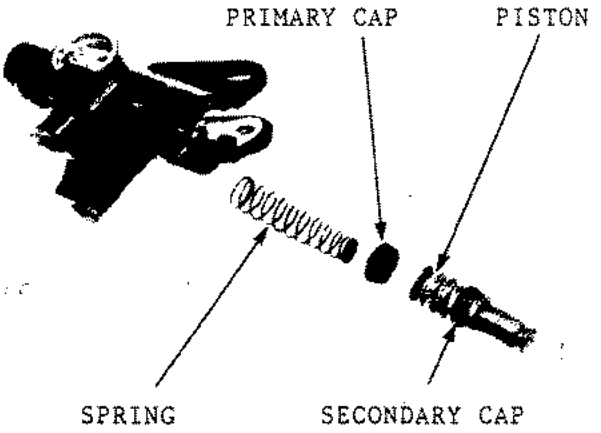
Remove snap ring

Special tool : snap ring pliers
07914-3230001



Remove piston secondary cap primary cap and spring
Clean master cylinder reservoir and master piston with brake fluid

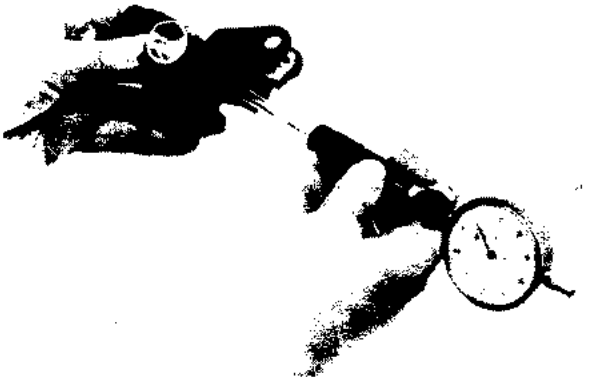
* Clean all removed parts with brake fluid and check each part has been cleared so air can pass through
* Ensure all foreign particles have been removed from parts



Inspection

Inspect master cylinder moving parts for damage
Measure master cylinder I.D

Service limit: 14.055 (replace if above)



Inspect piston surface for damage and warpage
Inspect primary cap and secondary cap for damage

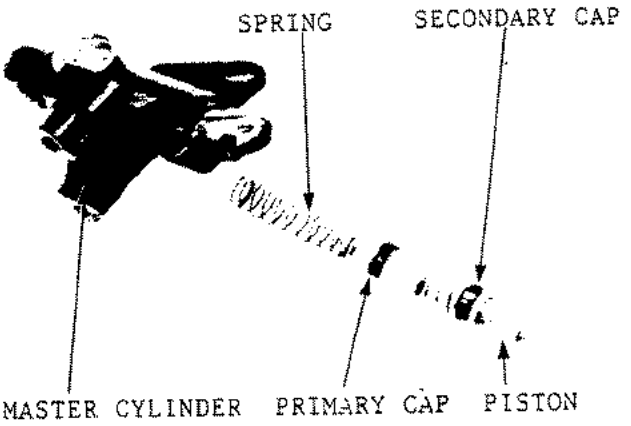
Measure master cylinder O.D

Service limit: 13.945mm (eplace if below

ASSEMBLY

* Check that each part is clean before installing
*Replace master cylinder piston, spring cap and snap ring as a set

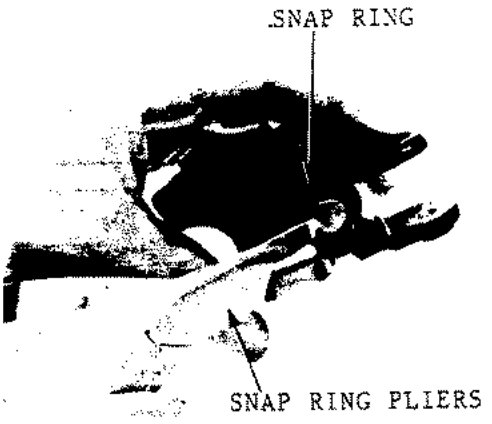
Apply brake fluid to piston cap and master cylinder inside



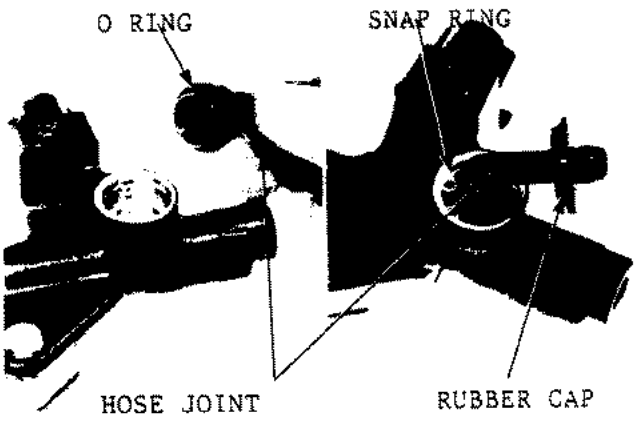
Install spring, piston cap and piston into master cylinder and hold using snap ring

Special tool: 07914-3230001
Snap ring pliers

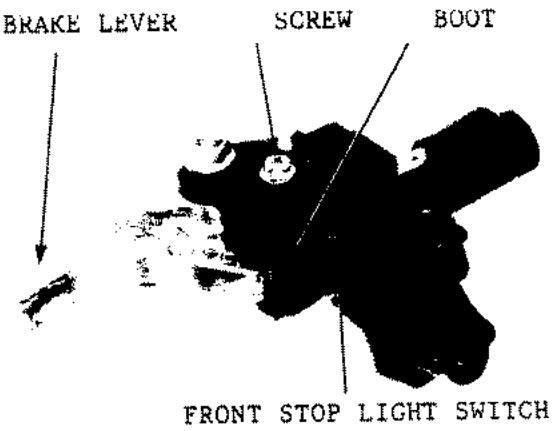
* When installing primary cap, face O.D small end to the piston and install
* Ensure snap ring fits into groove correctly



Apply brake fluid to new O ring and install reservoir hose joint
Install reservoir hose joint into master cylinder and hold using snap ring.
Install rubber cap into master cylinder

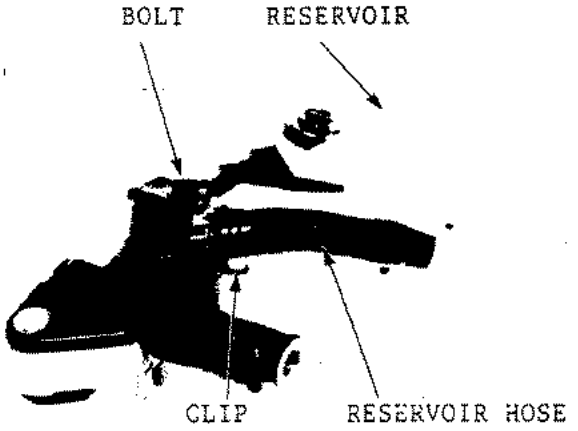


Instll front stop light switch
Install boot
Install brake lever



Install reservoir hose into reservoir hose joint and hold using clip

Install reservoir into master cylinder and tighten bolts



INSTALLATION

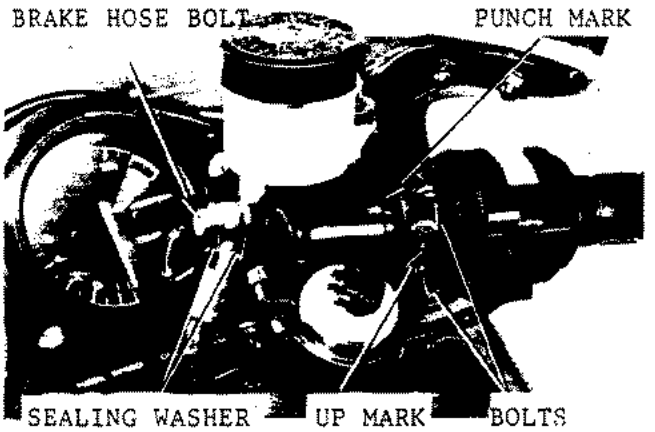
Install master cylinder onto handlebars

* Face holder "UP" mark upwards and align holder index mark with handlebar punch mark
* Tighten bolt into holder top side first

Torque: 1.0-1.4kg-m

Install 2 new sealing washers and hose bolts into brake hose

Torque: 2.5-3.5 kg-m



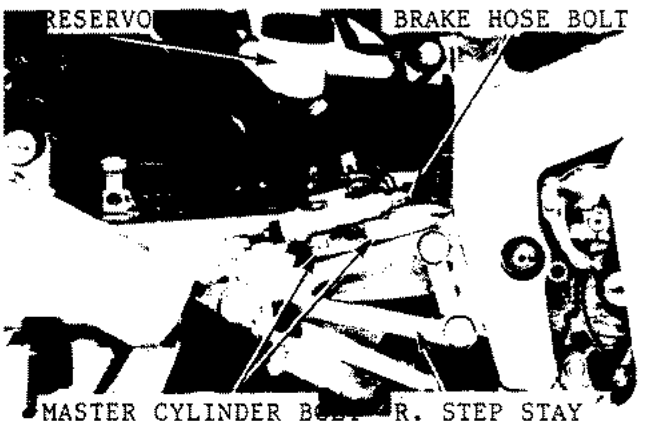
Connect stop light switch wire into switch

Fill with brake fluid and bleed air (14.3)

REAR MASTER CYLINDER

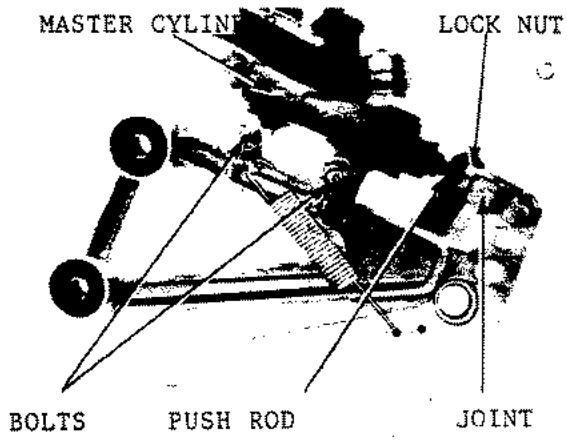
Removal

Remove sidecover (15.1)
Drain brake fluid (14.3)
Remove brake hose bolt
Loosen master cylinder bolts first
Remove reservoir
Remove R. step stay



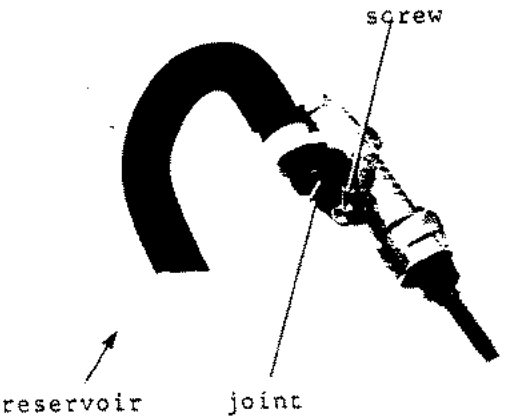
Remove master cylinder from Rstep stay, loosen locknut and remove pushrod/master cylinder from push rod joint.

* Ensure no foreign particles enter brake fluid
* In order to protect brake fluid outflow, cover hose joint



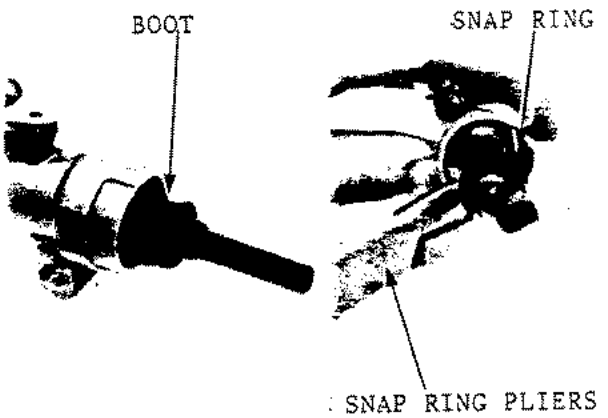
Separation

Remove screw and remove brake hose joint and reservoir from master cylinder



Remove boot and snap ring

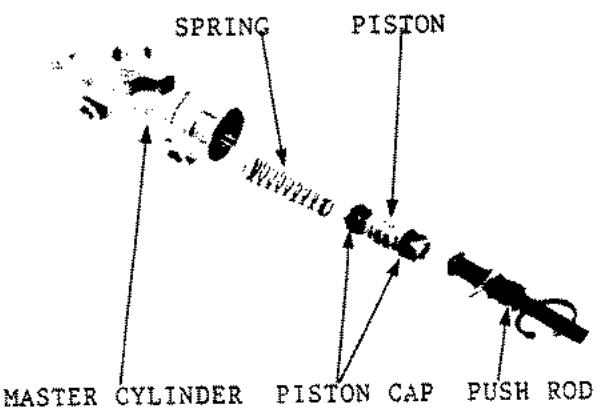
Special tool: 07914-3230001
Snap ring pliers



Remove piston, piston cap and spring from master cylinder and clean master cylinder and reservoir of all brake fluid

* Clean removed parts with brake fluid and check that air can pass through each port
* Remove all foreign particles from separated parts

Inspect push rod for warpage damage

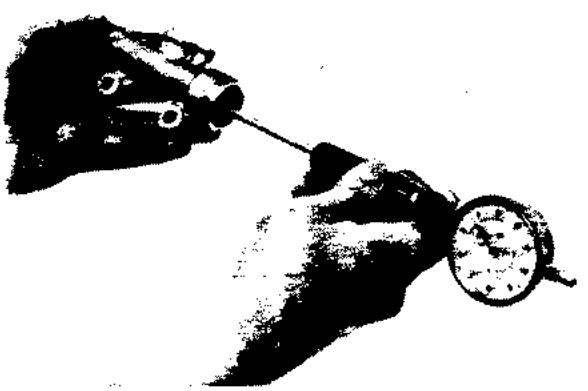


INSPECTION

Inspect master cylinder master piston movement and damage

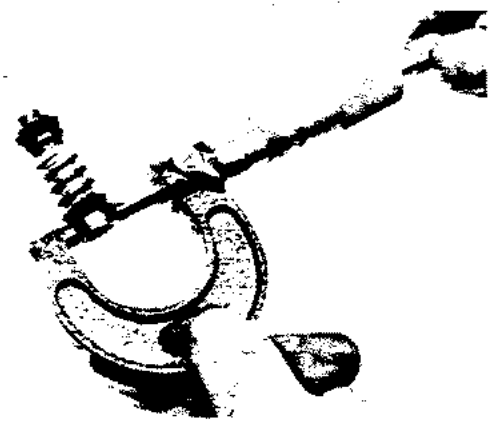
Measure mater cylinder I.D

Service limit: 12.755mm (replace if above)



Inspect master piston for damage
Inspect piston cap for damage
Measure master pistonO.D

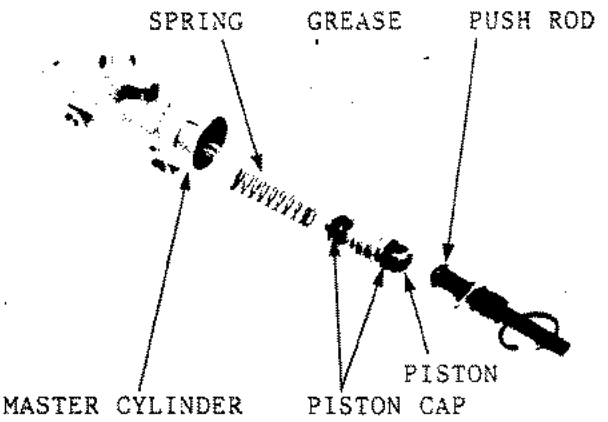
Service limit: 12.645mm (replace if below)



ASSEMBLY

* Remove all foreign particles from each part
* Do not reuse drained brake fluid
* Replace master cylinder, piston, spring cap and snap ring as a set.

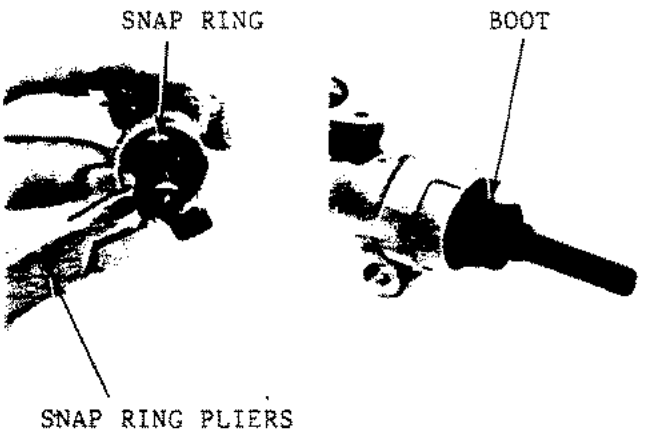
Apply brake fluid to piston cap and assemble piston
Apply brake fluid to master cylinder inside
Assemble spring, piston cap and piston into master cylinder
Apply grease to push rod piston and face



* To install cap do not change lip shape
* The spring small end faces the piston side.

Assemble push rod into master cylinder and hold using snap ring

Special tool: 07914-3230001
Snap ring pliers

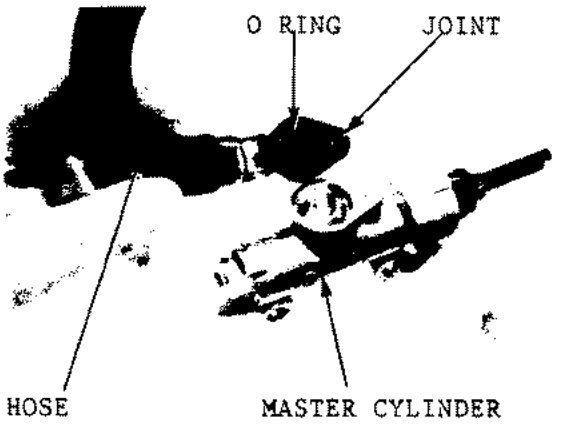


* Ensure snapring is installed in groove correctly

Install boot

install new O ring into hose joint and apply brake fluid

Install joint into master cylinder



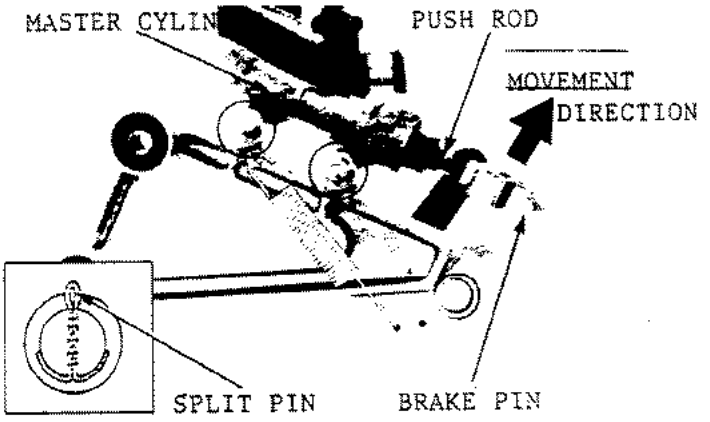
INSTALLATION

Install lock nut to push rod and install into joint

Install master cylinder into R. step stay

Torque: 1.0-1.4 kg-m

Install stop light switch spring into brake pedal correctly and install R. step stay



* Assemble brake pin from swingarm side
* Insert split pin into the brake rod as in the picture

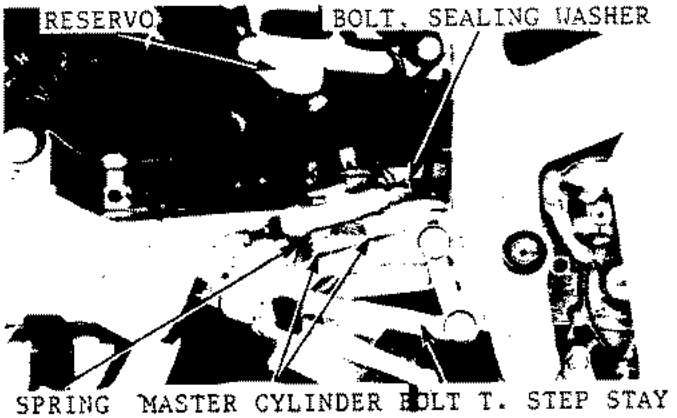
Torque: 2.4-3.0 kg-m

Install 2 new sealing washers and hose bolts into master cylinder

Install reservoir

Torque: 0.7-1.1 kg-m

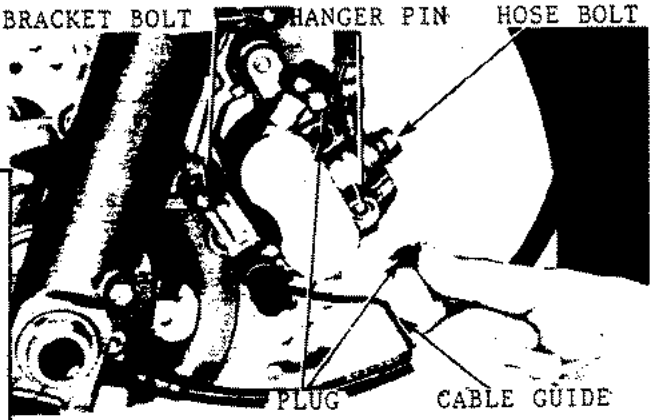
Fill with brake fluid and bleed air (14.3)
Install side cover (15.2)
Adjust rear brake pedal height (2.5)



FRONT BRAKE CALIPER

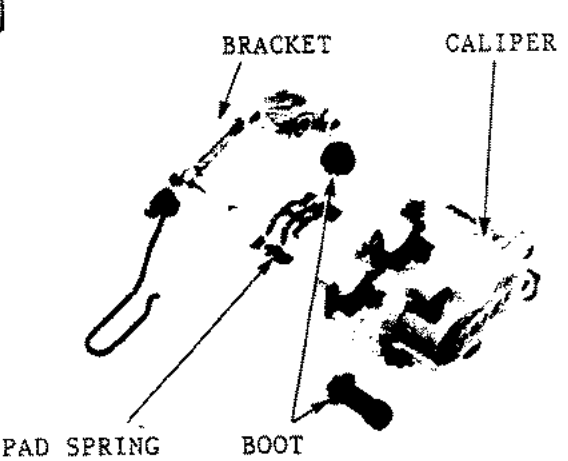
Removal

* Ensure no foreign particles enter brake fluid
* Cover hose joint so that brake fluid does not flow out
* Clean removed parts with brake fluid and check that air can flow through each part
* Ensure no foreign particles enter parts

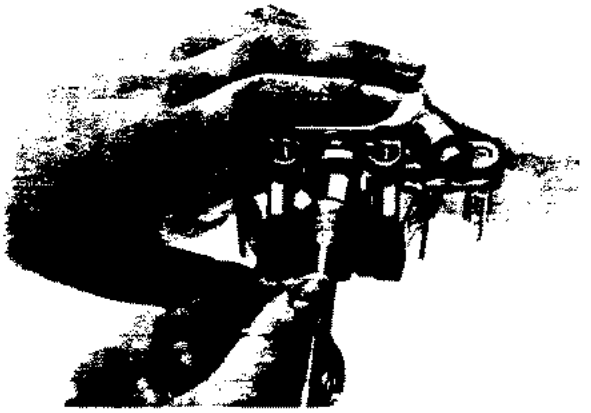


* Do not spill brake fluid onto brake discs or brake performance will be affected. If dirty replace with new pads and clean disc

Drain brake fluid (14.3)
Remove plug and loosen hanger bolt
Remove brake hose bolt and remove brake hose
Remove caliper bracket bolt and remove caliper from bracket



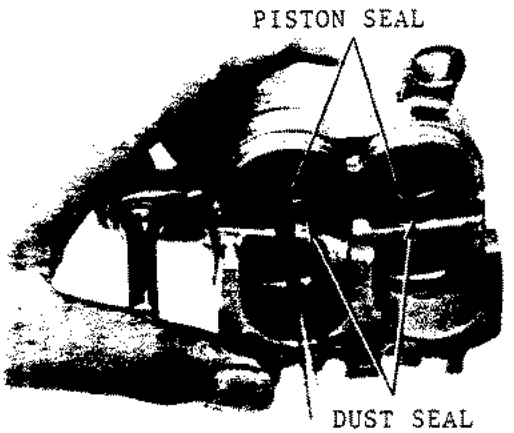
Ensure piston and brake fluid do not fly out and lower piston
insert low pressure air into brake hose installed, hole and remove piston from caliper



* Do not use high pressure air and do not hold air gun too close
* Do not enter hands into caliper

Push piston seal and dust seal into cylinder to remove

* Take care not to damage caliper cylinder inside



Clean caliper cylinder and piston with brake fluid

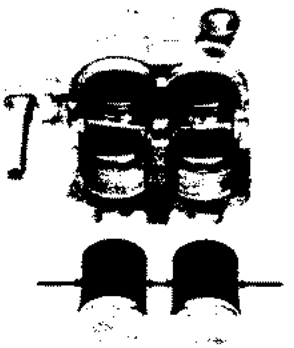
INSPECTION

Inspect cylinder movement and damage
Measure cylinder I.D

Service limit: 27.06mm (replace if above)

Inspect piston outside for damage

Measure O.D
Service limit: 26.91mm (replace if below)



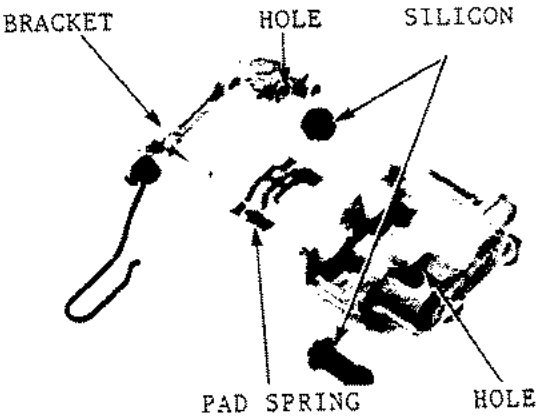
ASSEMBLY

* Ensure all foreign particles are removed for each part.
* Do not reuse brake fluid
* When separating caliper, replace with new piston seal and dust seal

Install new piston seal and dust seal into caliper groove.
Apply brake fluid to each seal and assemble caliper
Assemble piston into caliper

* Face caliper piston groove to caliper side and install

Install pad spring into caliper
Apply silicon grease to boot inside
Install boot correctly into caliper and caliper bracket groove
install caliper bracket
Install brake pads.



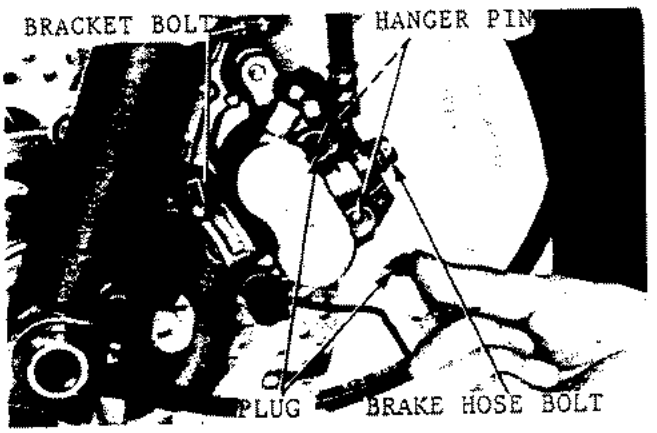
INSTALLATION

install caliper into front forks

* Take care not to damage brake pads

Tighten caliper bracket bolt
Torque: 2.4-3.0 kg-m

Tighten hanger pin
Torque: 1.5-2.0 kg-m

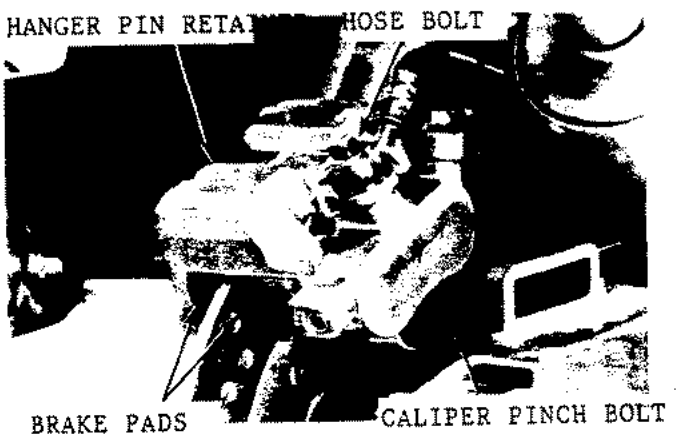


Install janger pin plug
Install 2 new sealing washers and brake hose bolt and tighten brake bolts
Torque: 2.5-3.5 kg-m

Fill with brake fluid and bleed air
(14.3)

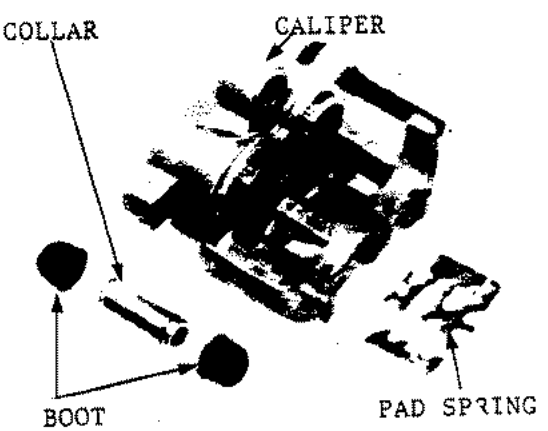
REAR BRAKE CALIPER

Removal



Drain brake fluid (14.3)
Remove brake hose bolt and brake hose
Remove hanger pin retainer
Remove caliper pinch bolt, turn caliper upwards to remove disc and remove from caliper bracket
Remove brake pads.

* Do not spill brake fluid onot brake disc. Brake performance will be affected. If dirty then replace with new pads and clean disc



Separation

Remove pad spring, pivot collar and boot from caliper
Inspect boot and replace if damaged

Ensure piston and brake fluid do not fly out and face piston downwards.
insert low pressure air into brake hose hole and remove piston from caliper

* Do not use high pressure air and do not hold air gun too close.
* Do not enter hand into caliper

Push piston seal and dust seal into groove

* Take care not to damge caliper cylinder inside

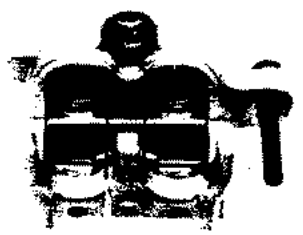
Clean caliper cylinder and piston with brake fluid

INSPECTION

inspect cylinder movement and damage
Measure cylinder I.D

Servi**e** limit : 27.06mm (replace if above)
Inspect piston outside for damage
Measure piston O.D

Service limit 26.91mm (replace if below)

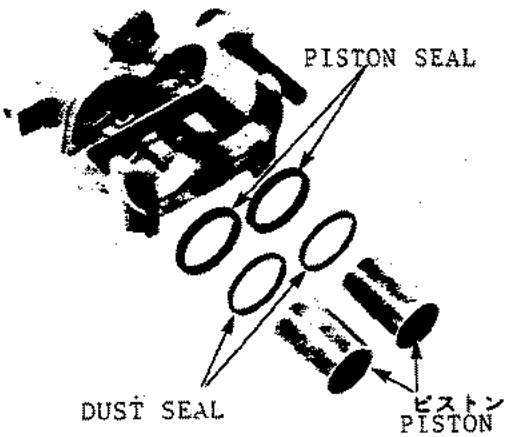


ASSEMBLY

install new dust seal and piston seal inot caliper cylinder
Apply brake fluid to each seal and assemble caliper
Assemble piston into caliper

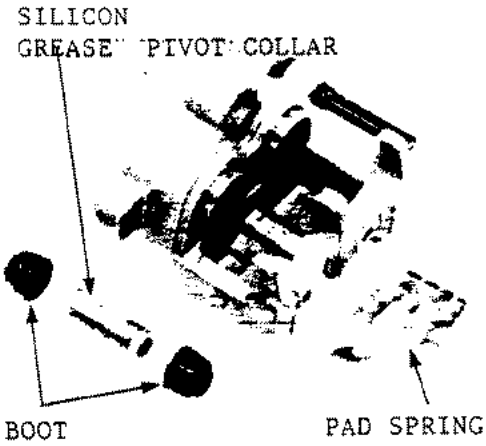
* Face caliper piston groove and shoulder to pad side and install

* Ensure no foreign particles enter each part
* Do not reused brake f;uid
* When separating caliper, replace piston seal and dust seal



Install pad spring

Apply silicon grease to pivot collar O.D and boot I.D
Install pivot collar and boot into caliper



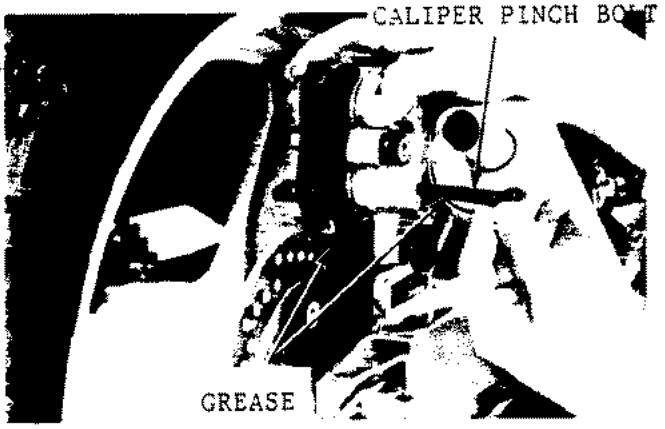
INstallation

Install brake pads
Apply silicon grease to caliper pinch bolt and caliper bracket pin

Install caliper to bracket, turn downeards and set over disc

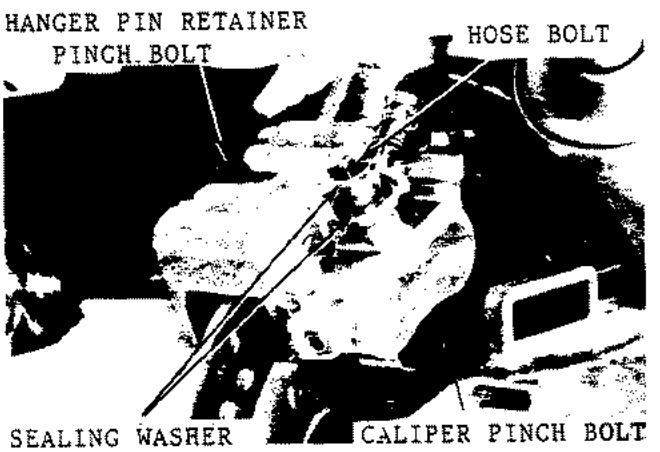
* take car not to damage brake pads

Tighten caliper pinchbolt
Torque: 2.0-2.5 kg-m



Assemble hanger pin retainer and tighten bolt
Torque: 0.8-1.3 kg-m

Install 2 sealing washers and brake hose bolts and tighten hose bolts
Torque: 2.5-3.5 kg-m



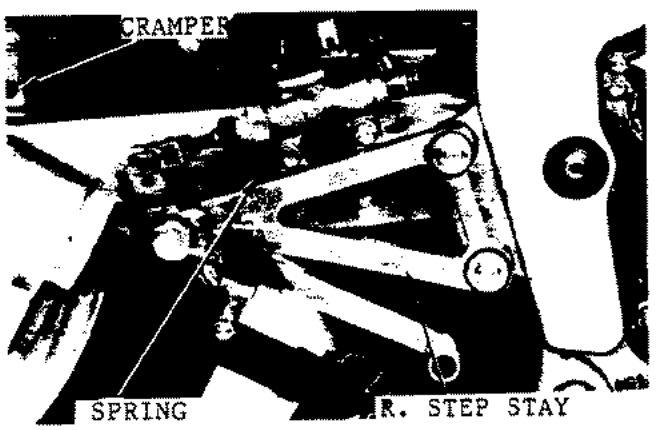
Fill with brake fluid and bleed air
(14.3)

BRAKE PEDAL

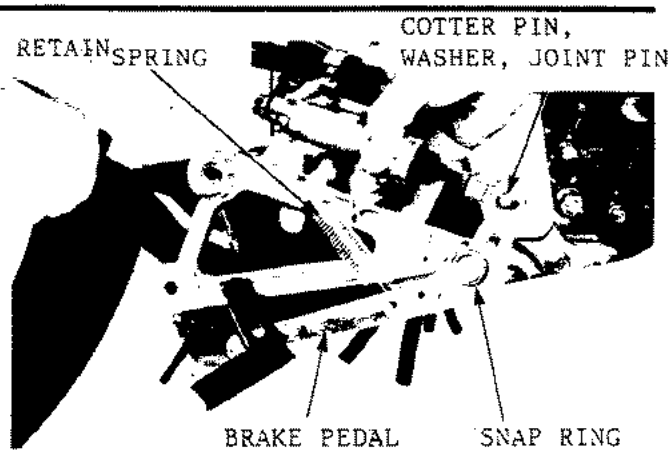
Removal

Remove side cover (15.1)
Remove R. step stay

Remove stop light switch spring from pedal
Remove brake hose cramper

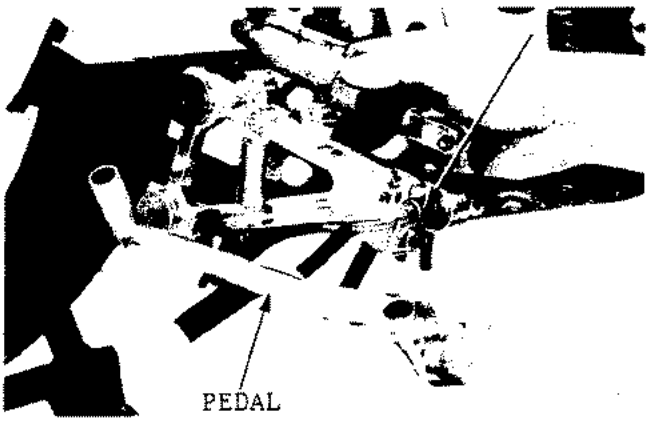


Remove retain spring
Remove cotter pin and remove brake rod joint tin
Remove snap ring and remove brake pedal from R. step stay



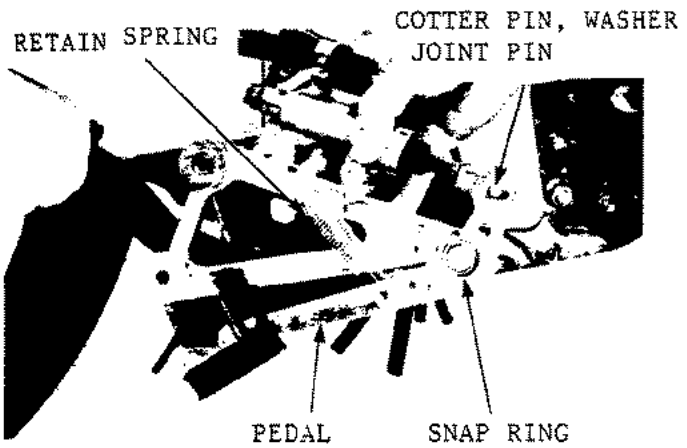
INSTALLATION

Apply grease to R. step stay pivot and install brake pedal



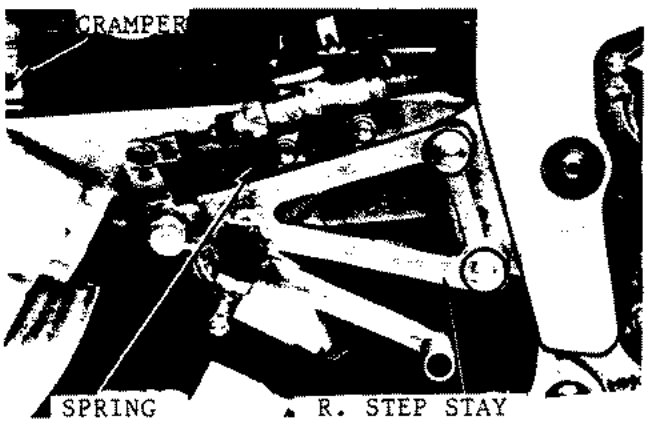
Install snap ring correctly
Assemble brake rod joint pin correctly and install new washer and cotter pins

Assemble retain spring into pedal



Install R.step stay and tighten bolts
Torque: 2.4-3.0kg-m

Install stop light stay spring into brake pedal
Install brake hose cramper
Install side covers (15.2)



15. FAIRING, EXHAUST CHAMBER, RR FENDER, SUB FRAME

MAINTENANCE INFORMATION

Warnings

* Only adjust exhauast chamber or silencer when cold

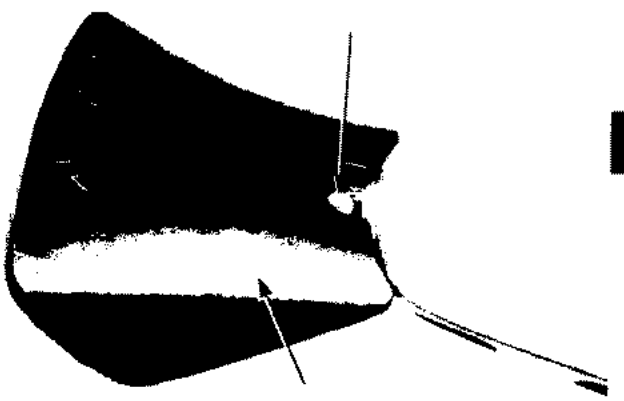
Torques:

Sub frame	3.5-4.5 kg-m
Exhaust chamber pinch bolt	2.4-3.0 kgOm
Chamber/silencer joint bolt	1.0-1.4 kg-m
Silencer pinch bolt	2.4-3.0 kg-m
Fairing stau (UP)	2.4-3.0 kg-m
Seat pinch bolt	2.0-2.4 kg-m

SIDE COVERS

Removal

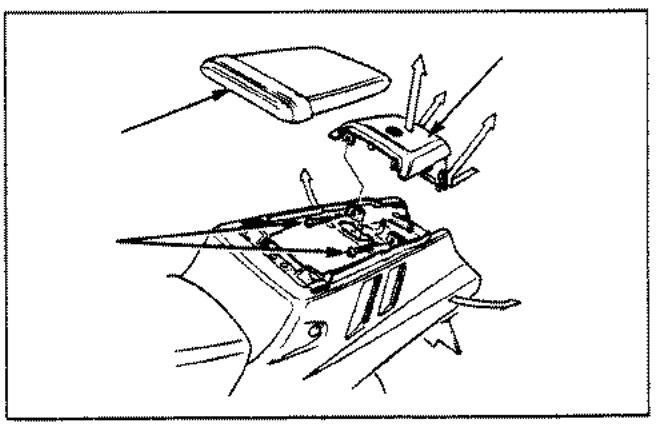
Remove seat pinch bolts and remove seat



Use ignition key and remove tandem seat
Remove 2 screws

Remove seat cowl hook from side covers and remove seat cowl

* Take care not to dmage seat cowl hook



Remove 4 pinch screws from side covers
Remove side cover from fuel tank grommets and remove side covers backwards and up to remove

* Take care not to damage side cover

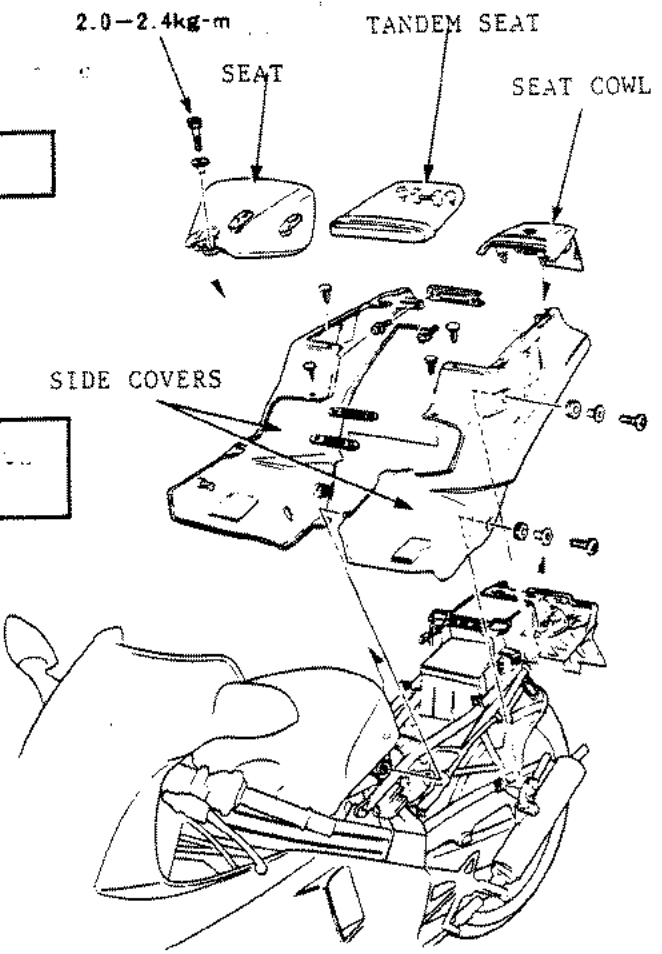
INSTLLATION

Set side covers in frame
Insert into fuel tank grommet

* Take special care not to damage side cover when pushing into grommet

Tighten 4 screws

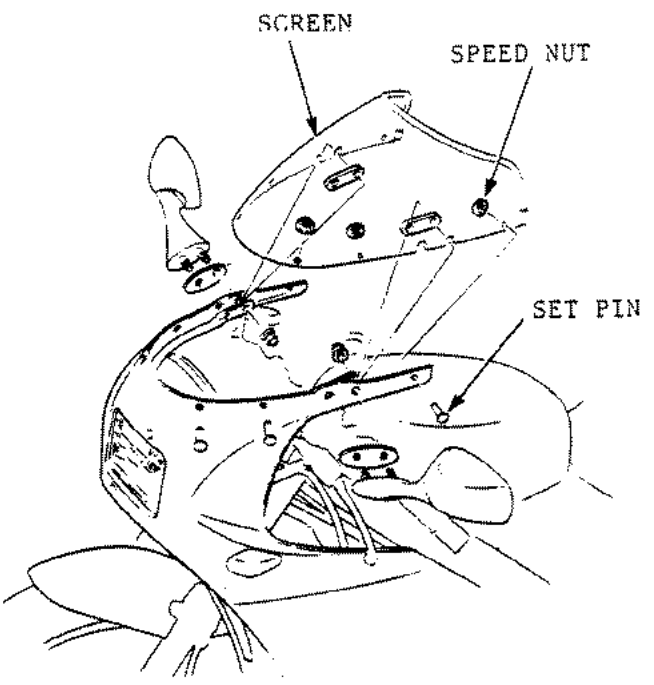
Install seat cowl
Align tandem seat stay with frme and push seat unti; you can hear catch noise to install seat
Align seat stay with frame and install
Tighten bolts
Torque: 2.0-2.4 kg-m



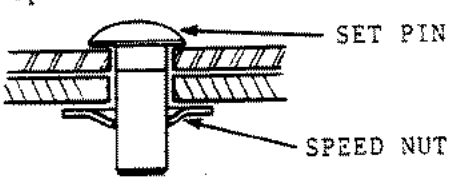
WINDSCREEN

Replacement

Remove set pins ands speed nut and remove windscreen
Set windscreen
Install new set pins, speed nut and windscreen



* Install speed nut as below

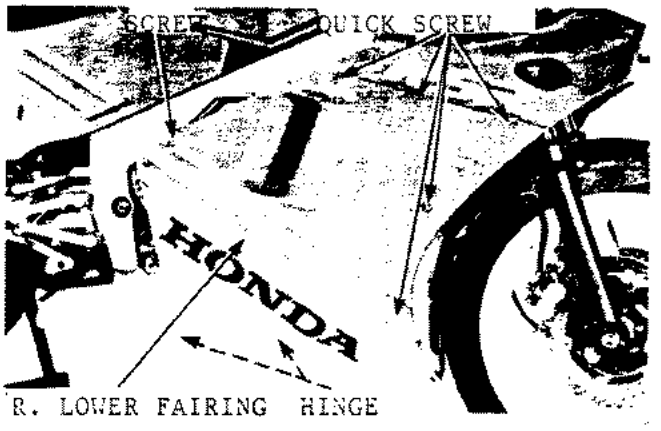


Take sufficient care not to damage windscreen

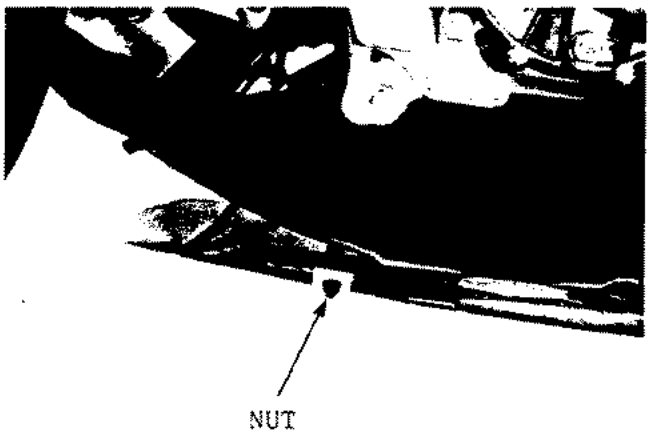
FAIRING

Lower fairing

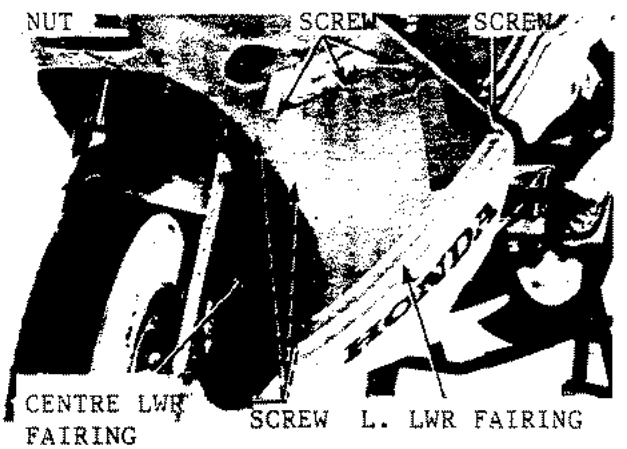
Remove 5 quick screws
Remove R Lower fairing from stay
Open R lower fairing forward and remove from L. lower fairing hinge and remove R. lower fairing



Remove L. lower fairing under engine nut

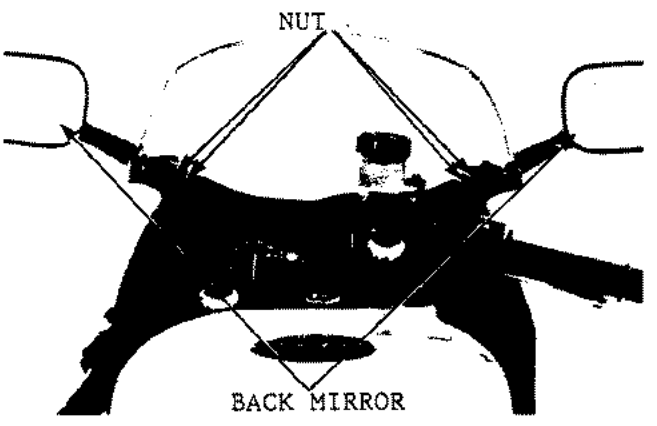


Remove centre lower fairing pinch nut, screws and lower fairing
Remove L. lower fairing 3 screws
Remove L. lower fairing from stay and remove L. lower fairing

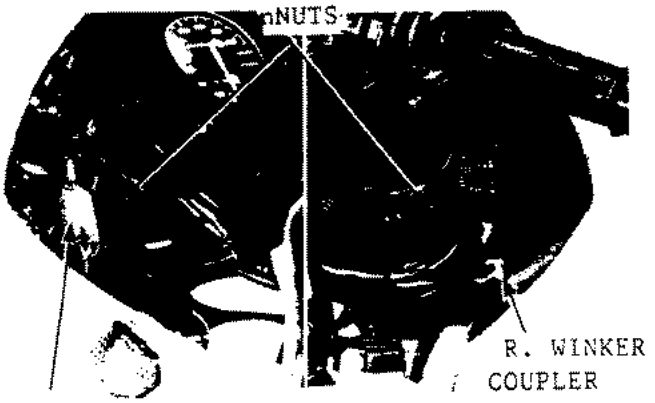


UPPER FAIRING

Remove back mirror pinch nut and remove mount rubber and back mirror together

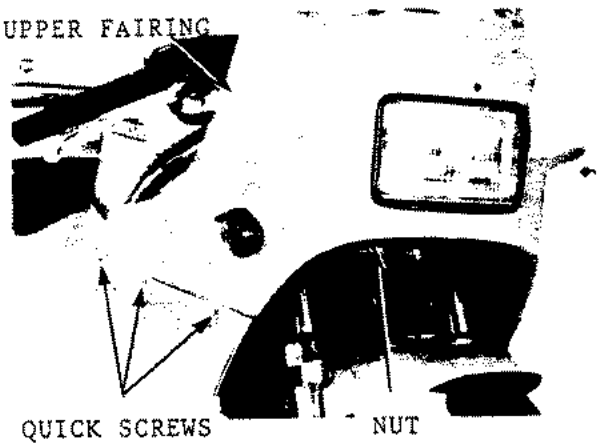


Remove L and R front winker coupler connection
Remove position light wire connector
Remove upper fairing pinch bolt

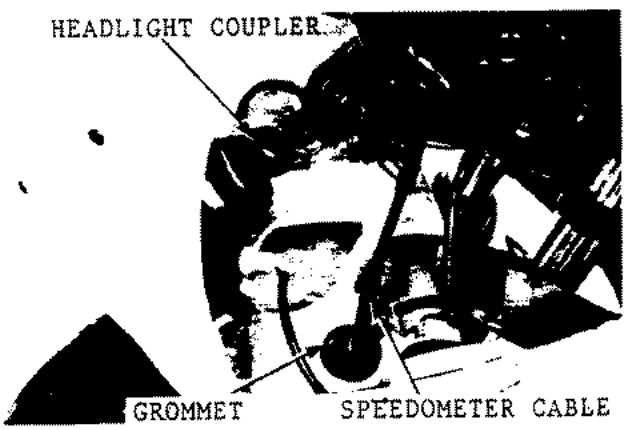


L.WINKER COUPLER, POSITION LIGHT WIRE CONNECTOR

Remove 3 screws, 3 fairing screws and fairing nut and pull out fairing from the front

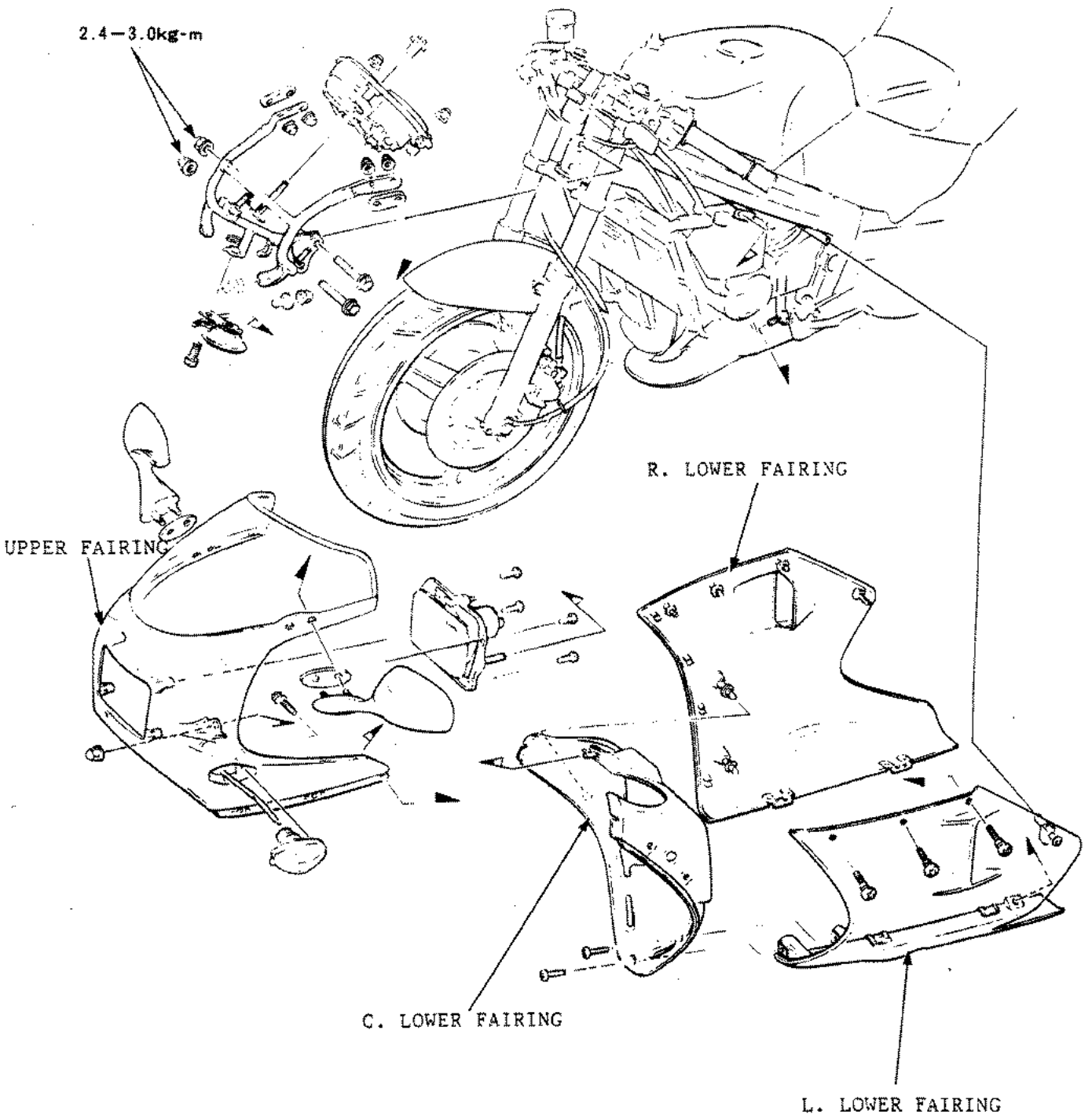


Remove headlight coupler
Remove speedometer cable and grommet from the upper fairing and remove upper fairing



INSTALLATION

Reverse upper fairing and lower fairing removal process to install

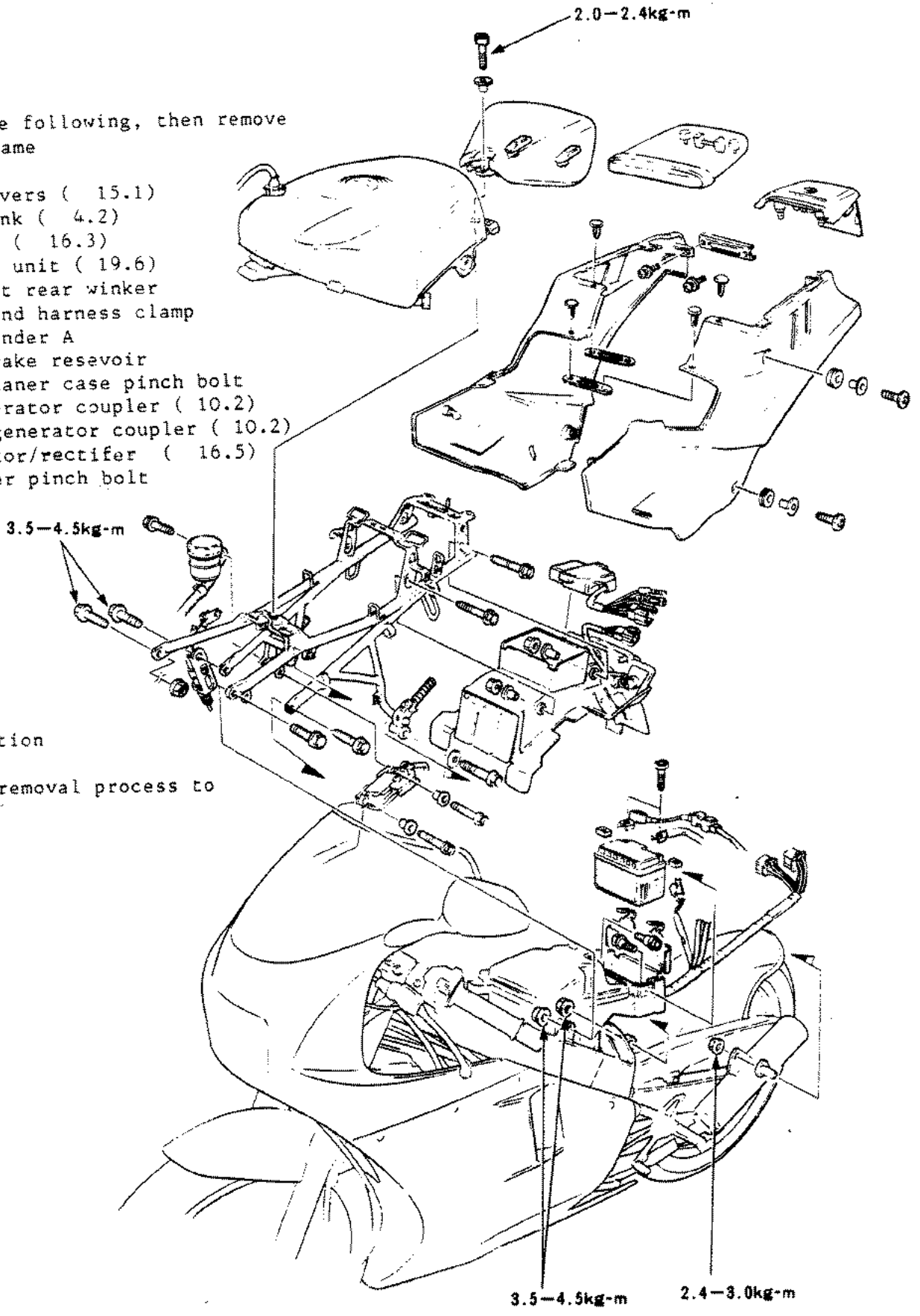


SUB FRAME

Removal

Remove the following, then remove the subframe

- Side covers (15.1)
- Fuel tank (4.2)
- Battery (16.3)
- Control unit (19.6)
- Tailight rear winker coupler and harness clamp
- Rear fender A
- Rear brake resevoir
- Air cleaner case pinch bolt
- AC Generator coupler (10.2)
- Pulse generator coupler (10.2)
- Regulator/rectifer (16.5)
- Silencer pinch bolt



Installation

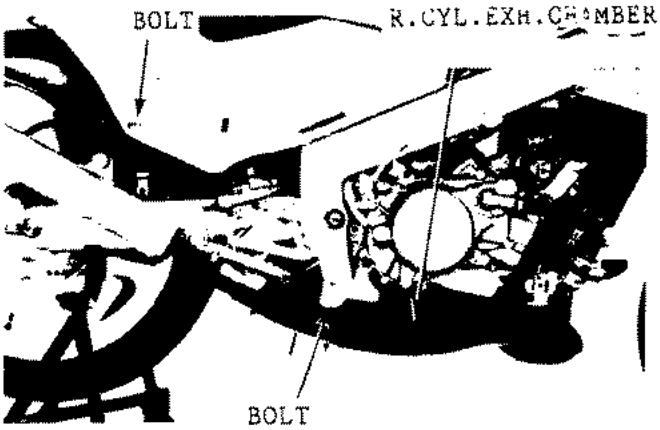
Reverse removal process to install

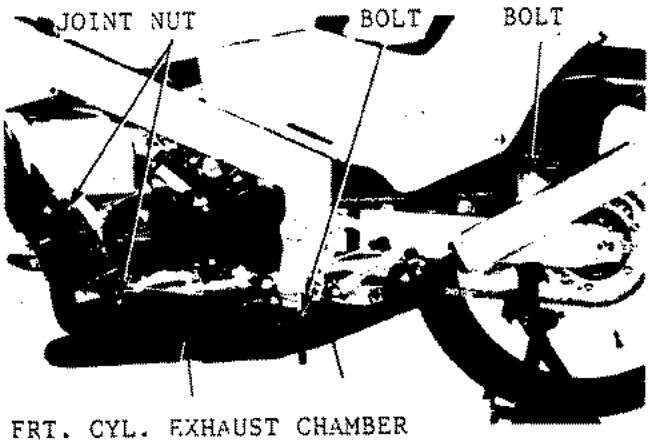
EXHAUST CHAMBER

Removal

Remove lower fairing (15.2)
Remove rear cylinder exhaust chamber joint nut, pinch bolt and silencer pinch bolt
Remove rear cylinder exhaust chamber

In the same way, remove the front cylinder exhaust chamber





FRT. CYL. EXHAUST CHAMBER

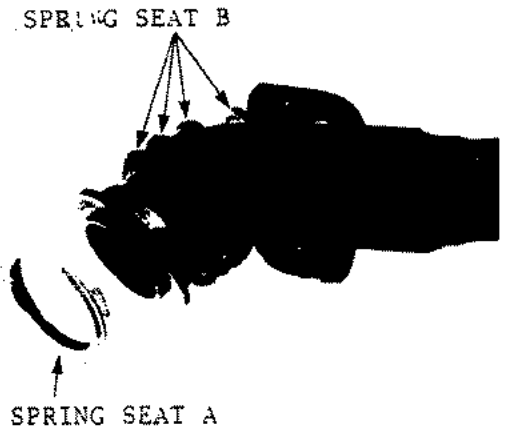
Removal

Inspect spring seat B for wear
If any abnormalities, htne replace exhaust chamber. Replace spring seat A with a new one
After cleaning spring seat A,B assemble facein the muffler, then install

When installing, tighten the following bolts, nuts.

- cylinder and muffler pinch bolts
- muffler body pinch bolt
- silencer muffler pinch bolt

*After cleaning all removed parts, then reinstall

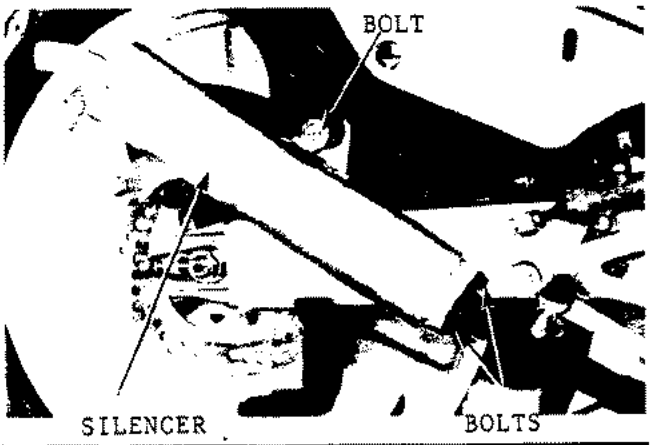


Torques:

Exhaust Chamber pinch bolt	2.4–3.0 kg-m
Silencer pinch bolt	2.4–3.0 kg-m

SILENCER REPLACMENT

Remove silencer pinch bolt
Remove 3 silencer joint bolts and remove silencer from exhaust chamber

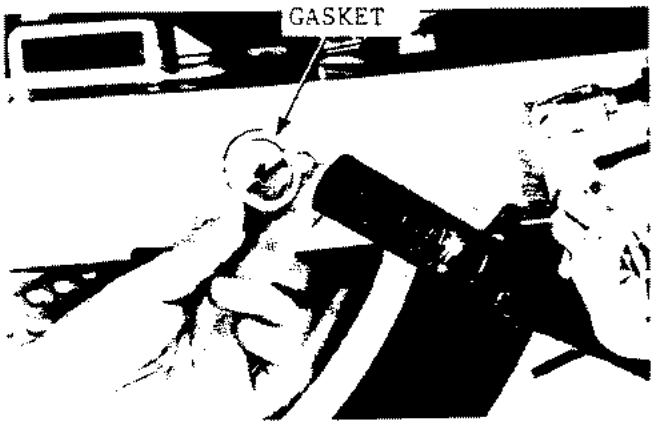


Install new gasket

Reverse silencer removal proceedure to install

Torques:

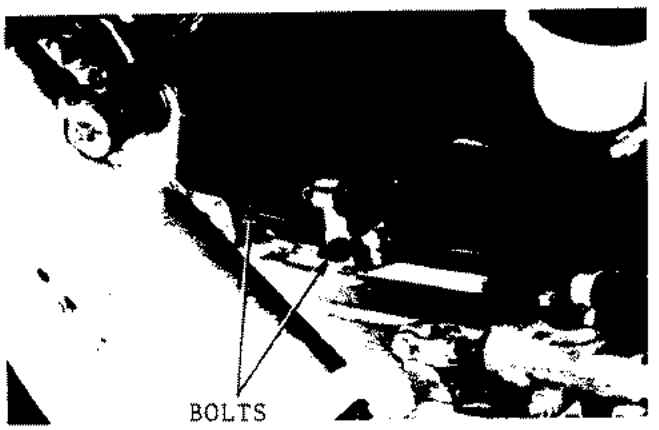
silencer pinch bolt 2.4-3.0 kg-m
Chamber/silencer joint bolt 1.0-1.4 kg-m



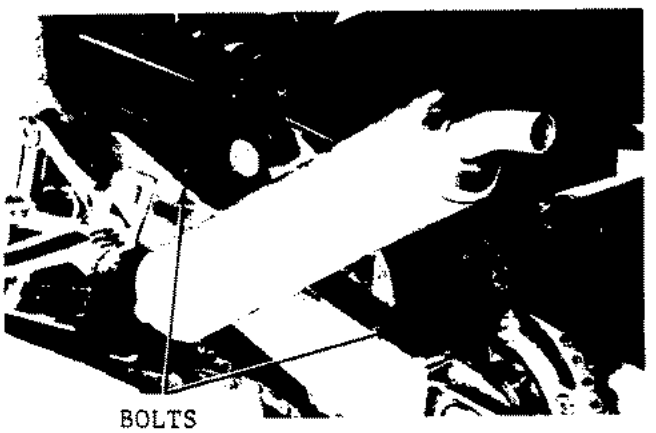
REAR FENDER

Removal

Remove side covers (15.1)
Raise frame and unweight rear wheel
Remove rear cushion upper bolt (13.7)



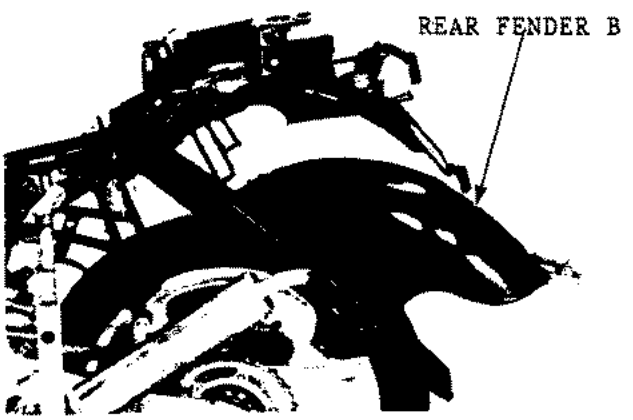
Remove rear fender 4 bolts



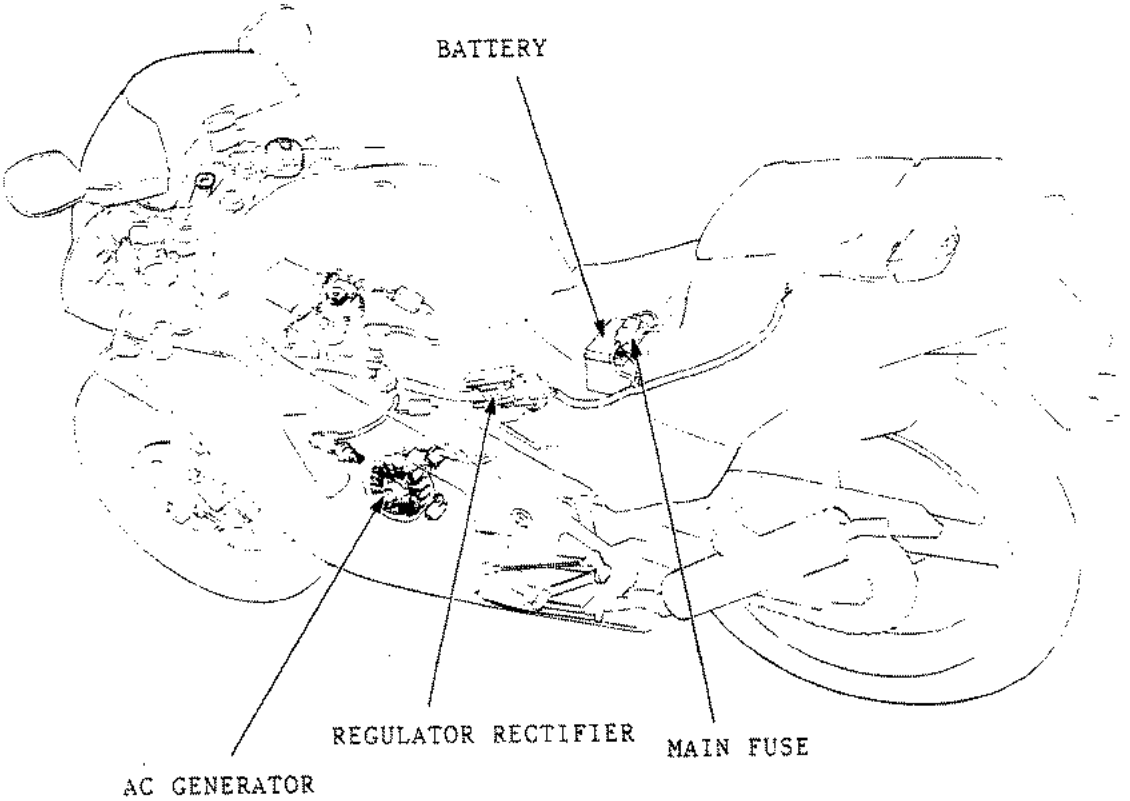
Tilt rear fender to left and pull back to remove

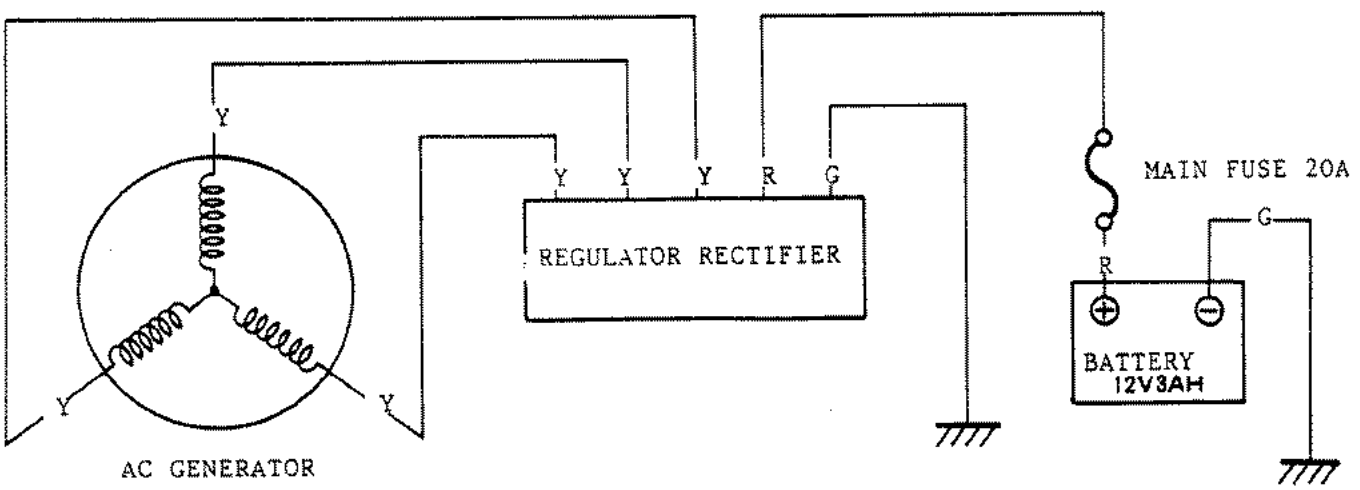
Installation

Reverse removal proceedure to install



WIRING MAP


BATTERY
REGULATOR RECTIFIER
MAIN FUSE
AC GENERATOR


Y
Y
Y
Y
R
G
REGULATOR RECTIFIER
MAIN FUSE 20A
G
R
BATTERY
12V3AH
Y
Y
AC GENERATOR

16. BATTERY, CHARGING SYSTEM

MAINTENANCE INFORMAITON

Warnings

* A special regulator rectifier is used on this machine. Do not use regulator/rectifiers from a different machine. If a different regulator/rectifier is used the CDI unit will be damaged.

- Connect each lead to a lead of the same colour. If connected to an incorrect lead trace the correct one and connect. Before disconnecting check all lead colours Connect couplers of the same colours
- AC generator removal (section 10
- Refer to 1.28 for the total system troubleshooting section

Maintenacne free battery:
- Fluid level inspection is not necessary. No need to adjust fluid levels
- When charging battery, remove battery from frame, but do not remove fluid caps
- Do not use 'quick charging' for battery unless an emergency
- Always charge battery for the standard time and charging level
- Always use a digital circuit tester to inspect charging performance
- When replacing battery, do not use an umcompatable battery

BATTERY	Capacity	12V 3 AH
	Electric Current	0.4A
	Open voltage	13.0 — 13.2V (20℃)
Start of charging revolutions (headlight-lowbeam) under		1,050rpm
REGULATOR/RECTICIFER	Type	Silister
	Voltage stop	13.5 — 15.5V
AC GENERATOR COIL RESISTANCE		0.2 — 0.9Ω
AC GENERATOR OUTPUT		180W/5,000rpm

TOOLS

Gauges

Digital Circuit Tester (Showa)	07411 — 0020000
Circuit Tester (Sanwa)	07308 — 0020000
(Showa)	TH-5H

TROUBLESHOOTING

No Electrics (with mainswitch "ON")

- battery losing voltage
  - leaking
  - regulator/rectifier faulty
  - AC generator faulty
- battery cord connection cut
- fuse cut (inspect main fuse)
- main switch faulty
- couper connection faulty or shorting

Charging System Faulty

- connector or coupler connection faulty, misrouted or showing
  - between AC Generaotr and regulator/rectifier (Y)
  - between regulator/rectifier & battery (R)
  - between regulator/rectifier & earth (G)
- regulator/rectifier faulty
- AC generator faulty

Voltage Low

- battery charging faulty or losing charge
- regulator/rectifier faulty
- AC generator faulty

Electric Current Faulty

- battery cord connector faulty
- charging system connection faulty
- ignition system connection faulty or showing

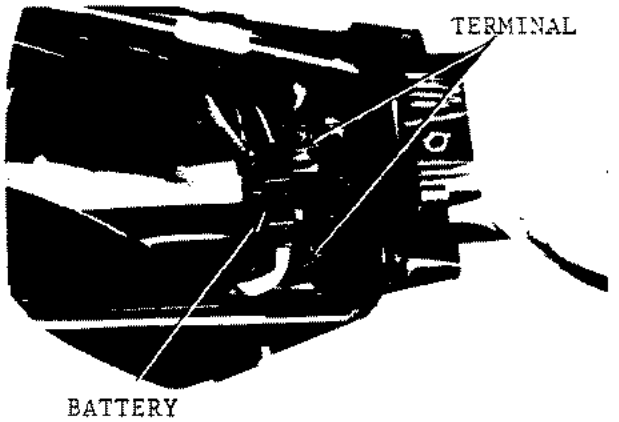
BATTERY

Battery removal

Remove seat and open battery cover
Remove cables from terminals

> * Remove negative first then positive terminal

Remove battery
install in reverse proceedure to removal



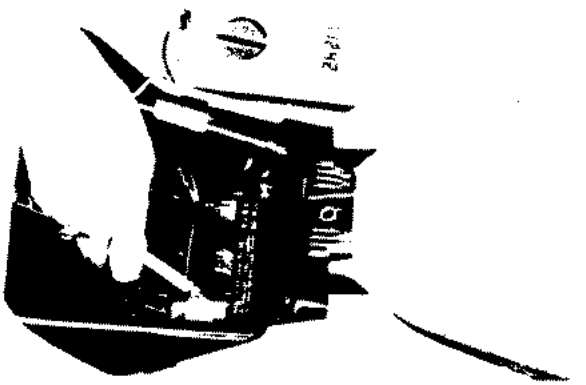
> * After installing battery apply a small amount of grease to terminals

Charging System Inspection

Measure battery voltage

Safe Charge : 13.0 - 13.2V (20°C)
Faulty charge : under 12.3V (20°C)

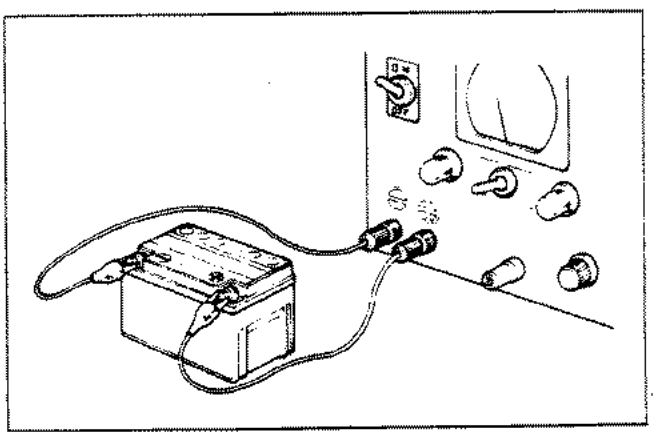
> * Always use circuit tester to inspect charging system.
> Terminal circuit tester: 07411-0020000
> * Connect voltage gauge positive cord to battery positive terminal and negative cord to negative terminal



CHARGING

Connecting method:

Charger positive - battery positive
Charger negative - battery negative



> * Always switch charger switch on and off using ON and OFF switch. If performed using connector it may cause sparks to jump
> * Always charge using recommended current and time

> * If recommended charge or time is exceeded battery performance will be affected, so follow the recommendations below

Charge current	Std	0.4A
	Quick Charge	4.0A
Charge Time	Std	
	Quick Time	30
Charge Open Voltage		12.8 (above)

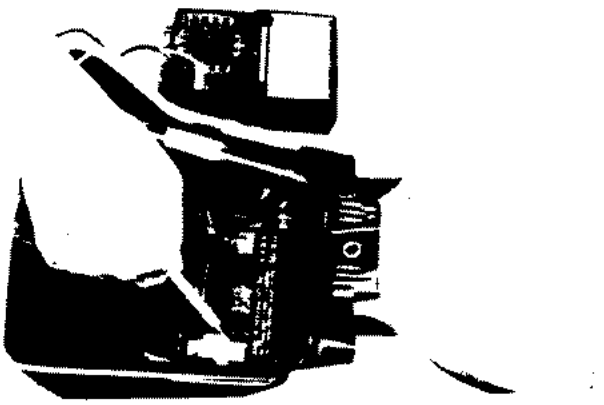
LEAK TEST

Turn main switch OFF, disconnect regulator/ rectifier coupler, remove negative terminal from battery and install voltage gauge between negative terminal and battery earth cable

If no voltage it is abnormal

* Connect voltage gauge negative cord to battery negative terminal and positive cord to negative cable

If leaking check for shorts in wire harness and coupler and inpsect main switch for abnormalilites (18.6). If abnormal measure regulator/rectifier controlled voltage (16.4)



REGULATOR/RECTIFIER

* refer to (1.28) and inspect each step

Controlled Voltage Inspection

Warm engine
Stop engine and remove seat
Set voltage gauge between battery terminals and start engine

* Raise engine revolutions and inspect for the holding of charge

voltage ± 13.5-15.5V/5000rpm

Replacement

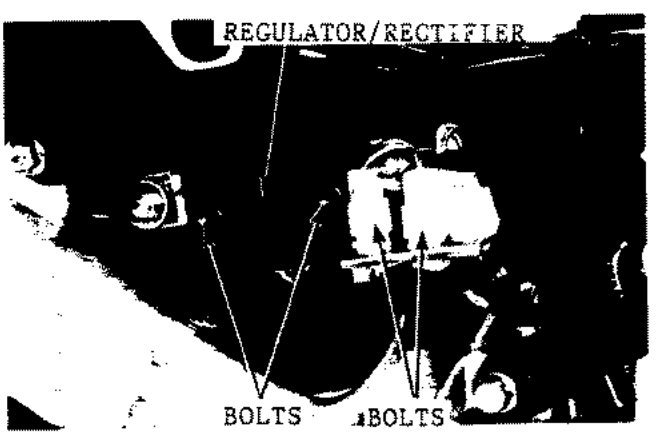
* Only use specified regulator/rectifier Use of an unspecified regulator/rect. will result in damage to CDI unit

remove side covers (15.1)
Remove coupler connection

Remove regulator/rectifier pinch nut and remove regulator/rectifier

install in reverse proceedure to removal

* Connect each coupler correctly



AC GENERATOR INSPECTION

Remove side covers
Remove AC generator 3P coupler connection and measure resistance between yellow wires of AC generator

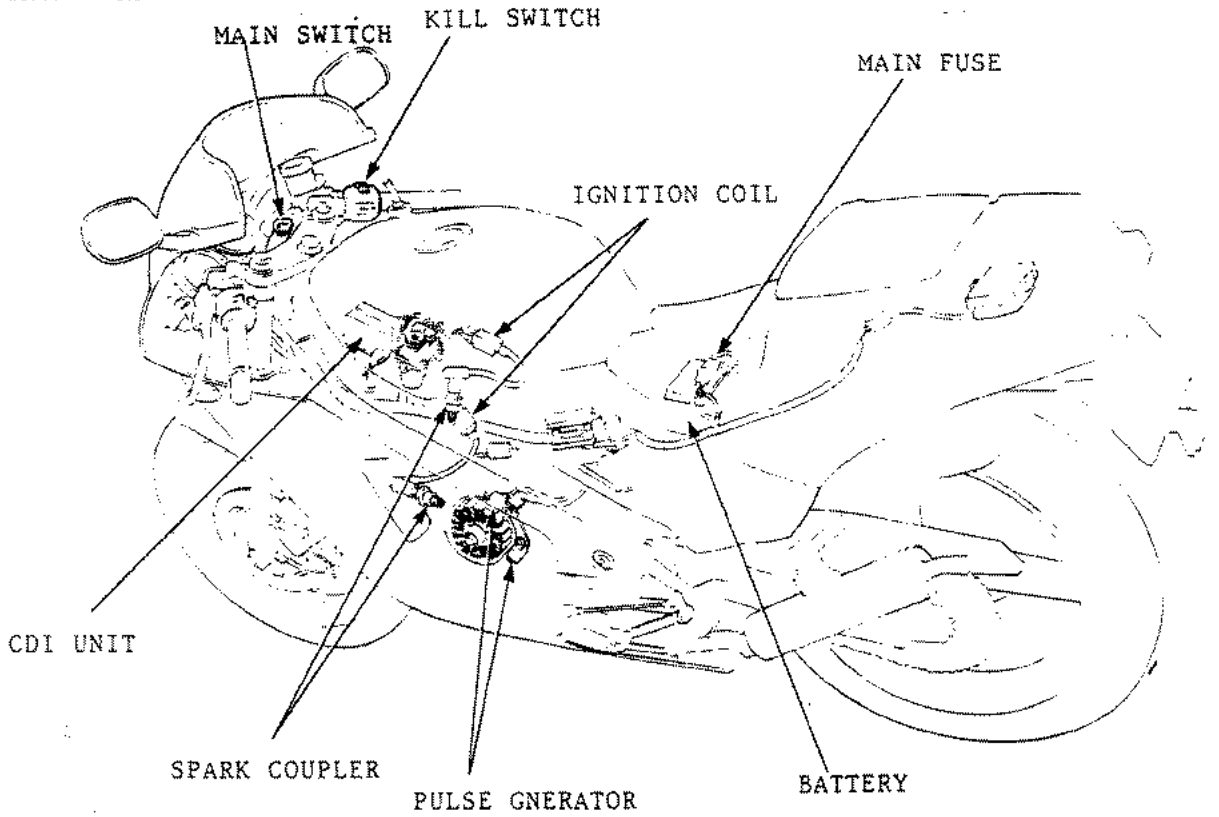
Resistance: 0.2-0.9 ohn (20°C)

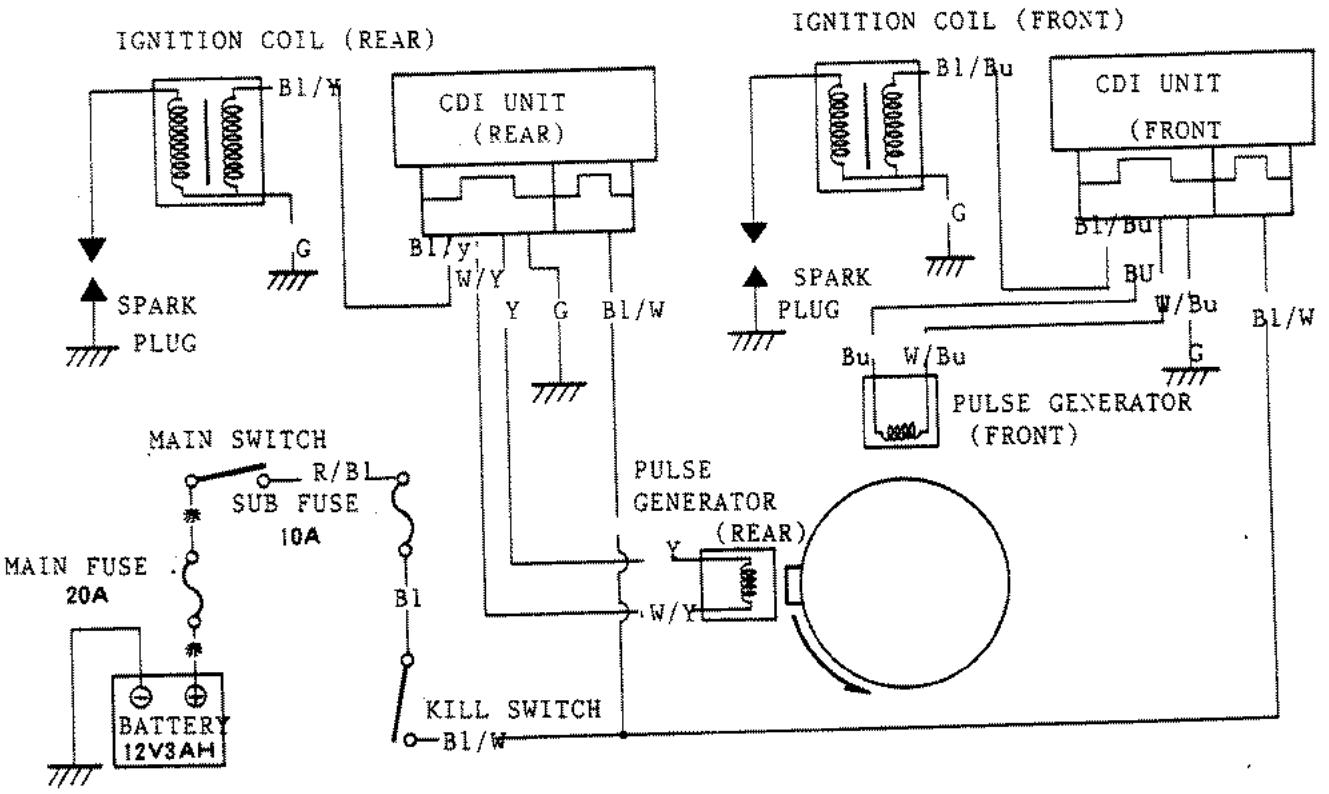
Check for no lead through each wire and earth

If resistance is not normal or there is lead through wires ar earth then replace AC generator

* This measurement can be performed with AC generator installed in engine

WIRING MAP


MAIN SWITCH
KILL SWITCH
MAIN FUSE
IGNITION COIL
CDI UNIT
SPARK COUPLER
PULSE GNERATOR
BATTERY


IGNITION COIL (REAR)
IGNITION COIL (FRONT)
Bl/W
CDI UNIT (REAR)
Bl/Bu
CDI UNIT (FRONT)
G
Bl/y
W/Y
Y
G
Bl/W
SPARK PLUG
Bl/Bu
BU
W/Bu
Bu
PULSE GENERATOR (FRONT)
MAIN SWITCH
R/Bl
SUB FUSE
10A
MAIN FUSE
20A
Bl
PULSE GENERATOR (REAR)
W/Y
KILL SWITCH
BATTERY
12V3AH

MAINTENANCE INFORMATION

Warnings:

- A CDI ignition system is used so adjustments are not necessary. Use a DC-DCI battery
- Inspect ignition timing (2.11)
- Inspect spark plug (2.11)
- Check that each lead is connected to the smae colour. Always align correct colours and connect each connector to nearest coloured tube. Before removing wires, check colours
- Measure distance for large and small variations
- Refer to (1.29 for total system trouble shooting

SPARK PLU	NGK	ND
	B8ECS, B9ECS, B10ECS	W24ES-C, W27ES-C, W31ES-C
	B8ES, B9ES	W24ES-U, W27ES-U
Spark plug gap	0.7—0.8mm	
Ignition timing "F"	15° ±2° BTDC/1,200rpm	
Advanced opening revolutions	15° ±2° BTDC/2,700rpm	
Advanced closing revolutions	25° ±2° BTDC/4,000rpm	
Retarded opening revolutions	24° ±2° BTDC/7,000rpm	
Retarded closing revolutions	4° ±3° BTDC/10,850rpm	
Ignition coil resistance Primary coil	0.1—0.2Ω	
Secondary coil - plug cap ON	5—13kΩ	
- plug cap OFF	3.6—4.6kΩ	
Pulse generator coil resistance 20°C	180—220Ω	

TOOLS

Gauges

Digital Circuit tester (Showa)	07411—0020000
Circuit tester (Sanwa)	07308—0020000
(showa)	TH-5H

TROUBLE SHOOTING

Does Not Fire All Plugs

- Kill switch OFF
- Kill switch faulty
- Main switch faulty
- Pulse generator faulty
- CDI unit faulty
- Sub fuse blown (10A)
- Wire connection faulty, incorrect routed, shorting
  - battery to main fuse (20A) (R)
  - main fuse (20A) to main switch (R)
  - main switch to sub fuse (R/Bl)
  - sub fuse to kill switch (Bl)
  - Kill switch to CDI unit (Bl/W)
  - Ign, switch to CDI unit (Bl/Bu,Bl/Y)
  - CDI unit to earth (G)
  - Pulse generator to CDI Unit (W/Bu,Bu,W/Y,Y)

Plug Not Firing

- Plug faulty
- Plug cap faulty
- High tension cord faulty
- CDI unit to ign. coil wire misrouted, connector faulty or shorting
- Kill switch to CDI unit (Bl/W) wire misrouted, connector faulty or shorting

Revolutions Imbalanced

- Ignition Primary Circuit
  - Ign. coil faulty
  - Kill switch faulty
  - Main switch faulty
  - Battery charging faulty
  - CDI unit faulty
  - Pulse generator faulty
  - Pulse rotor faulty

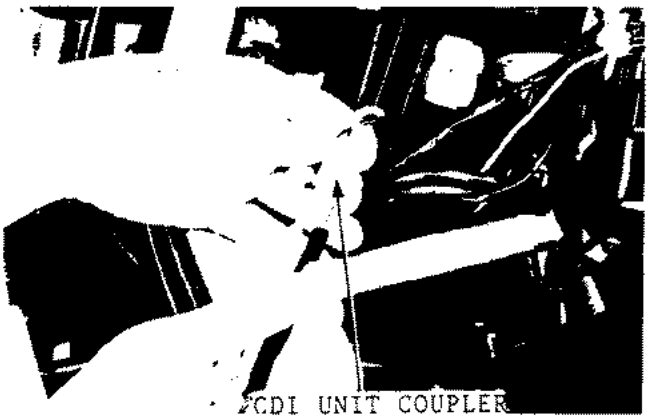
- Ignition Secondary Circuit
  - Plug faulty
  - High tension cord faulty
  - plug cap leak
  - Ign. coil faulty
  - CDI unit faulty
  - Pulse generator faulty

Advanced Or Retarded Faulty

- Pulse generator faulty
- CDI unit faulty

CDI UNIT INSPECTION

Refer to (1.29) for troubleshooting



Remove CDI unit fuel tank (4.2) and coupler holder, remove coupler terminal and perform the following inspection

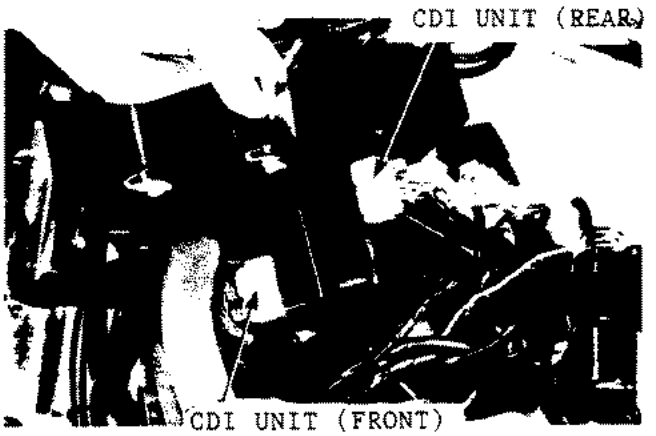
			Std (20°C)
	No. 1 CDI	No. 2 CDI	
Ign. coil primary coil resistance	Bl/Y to G	Bl/Bu to G	0.1–0.2Ω
Ign. coil Sec. coil resistance	G to high tension cord		5 k–13kΩ cap on
Pulse generator coil resistance	W/Bl to Y	W/Bu to Bu	180–220Ω
Main switch -kill switch CDI unit voltage	Bl/W(+) to G (-) Main switch "ON" Kill switch "RUN"		Battery voltage present

If inspection valves are abnormal, inspect/replace the following

- Igntion coil inpsection/replacement (17.4)

- Pulse generator inspection (17.5)

If any furhter abnormalities then replace the CDI unit



IGNITION COIL

Ignition coil inspection

Remove ignition coil

Measure resistance of primary ignition coil between terminals

Standard: 0.1-0.2 ohm (20°C)

Measure ignition coil secondary resistance between high tension cord (plug cap on) and green terminal

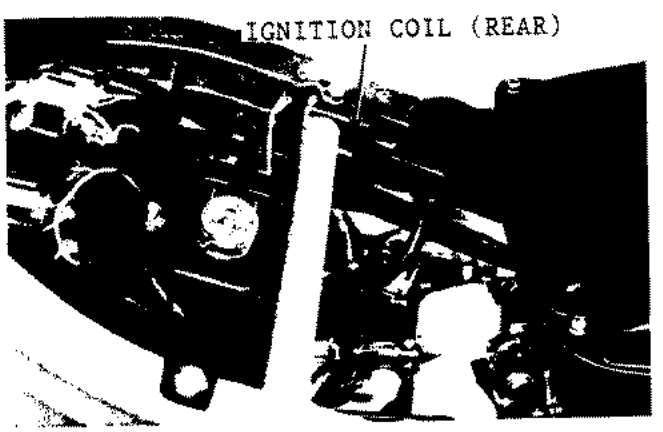
Standard: 5 - 13 K ohms (cap on/20°C)

If the measured value is outside that of the standard value remove plug cap from high high tension cord amd measure secondary resistance

Standard: 3.6-4.6 K ohms (No cap/20°C)

If the measured value is within that of the standard value, inspect plug cao, if necessary then replace. If outsdide the standard valve, then replace ignition coil

IGNITION COIL REPLACEMENT



Ignition coil (rear)
Remove fuel tank (4.2)
Ignition coil (Front)
Remove R. lower fairing (15.3)

Remove connector from primary terminal and remove plug cap from plug

Remove ignition coil from installed stay

* Install connector correctly to primary terminal

Rear Coil = green-green wire
black-black/yellow wire

Front coil = green-green wire
black-blacl/blue wire

Install plug cap to new ignition coil and install coil to stay.
Install plug cap to plug

Ignition coil (rear)

Install fuel tank (4.2)

Ignition coil (front)

Install R. Lower fairing (15.5)

PULSE GENERATOR

Inspection

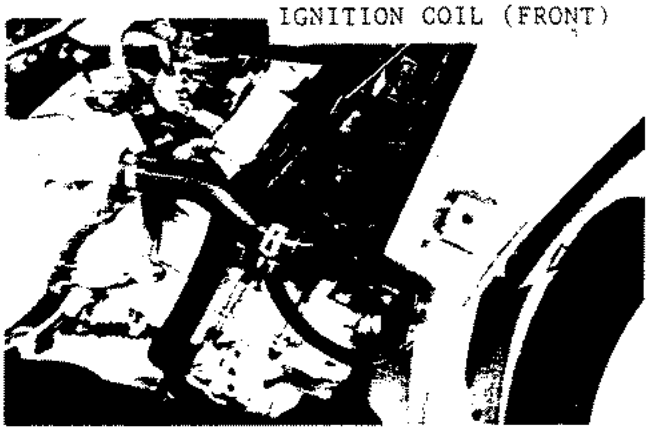
Remove side cover (15.1)
Remove pulse generator coupler and measure resistance W/Y-Y (rear pulse generator coil)

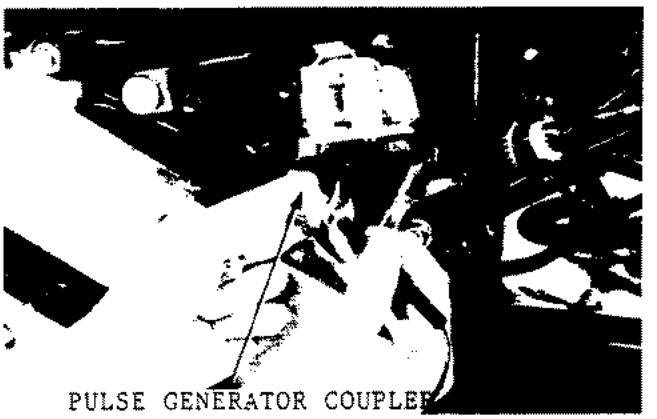
and W/Bu-Bu (front pulse generator coil)

Standard : 180-22o ohms (20°C)

Replace pulse generator (10.2)

IGNITION COIL (FRONT)





PULSE GENERATOR COUPLER

18. LIGHTS, METERS, SWITCHES

MAINTENANCE INFORMATION

Warnings

- Route each lead to the same colours. Always realign incorrectly matched wires and attach to the nearest connector. Before removing wires, note each leads colour Connect couplers to those of the same colours
- Perform switch current test while installed in machine
- Take cate with connector couplers and align lock hook correctly

Headlight bulb	12V60/55W
Position bulb	12V3.4W
Winker bulb	12V23W×4
Stop/tail light bulb	12V23/8W×2
Pilot lamp	12V3.0W×5
Meter lamp	12V3.4W×4
Speed warning light	12V3.0W
Main fuse	20A
Winkers, brake light, horn, passing switch sub fuse	15A
Sub fuse(winkers,brake light, horn, passing switch sub fuse)	10A×4

Torque:

Main switch 2.4-3.0 kg-m

Trouble Shooting

Lights Do Not Shine
- bulb blown
- switch faulty
- wire misrouted
- fuse blown
  (inspect upper fairing inner sub fuse and main fuse)
- battery charging
- routing faulty

Lights Do Not Work

- battery charging
- Bulb faulty

Can Not Change Headlight Hi-Lo

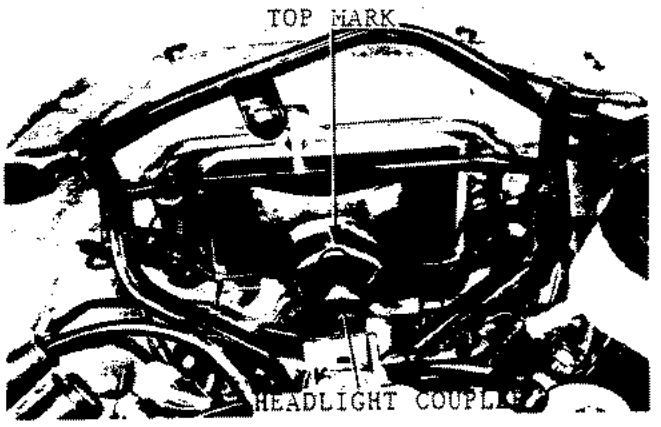
- Bulb faulty
- Dimmer switch faulty
- Routing faulty

HEADLIGHT

Bulb Replacement

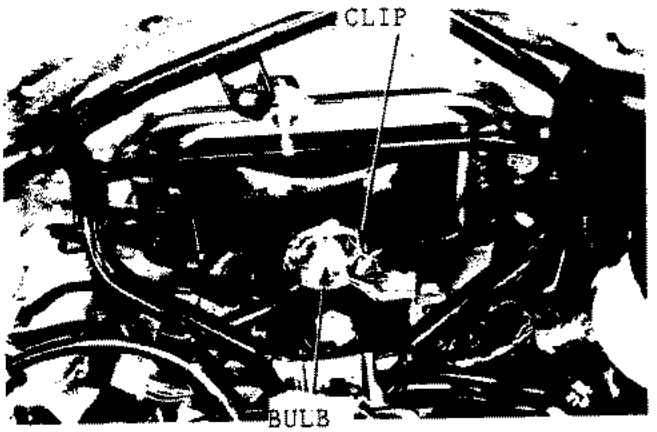
Remove meters (18.3)

Remove headlight coupler and remove dust cover



Remove clip and replace bulb

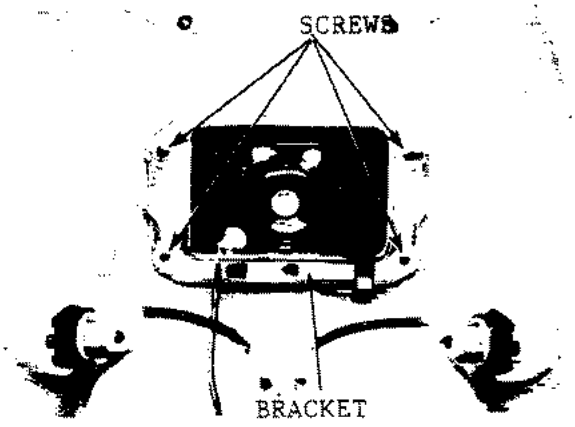
* Bulb may be damaged by cleaning or handling



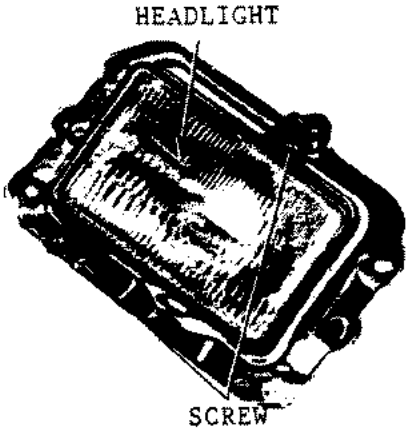
Install clip
Face "TOP" mark to the top and install dust cover
Connect headlight coupler and check lighting performance

Removal

Remove upper fairing (15.3)
Remove 4 screws and remove healight bracket



Remove 2 screws and remove headlight case from bracket



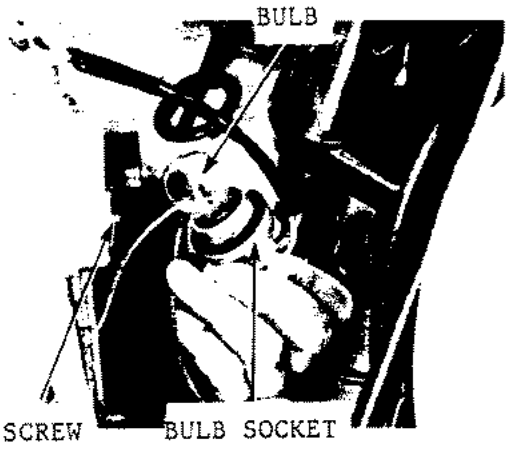
Installation

Install in reverse proceedure to removal

* After installing headlight case, adjust headlight (2.16)

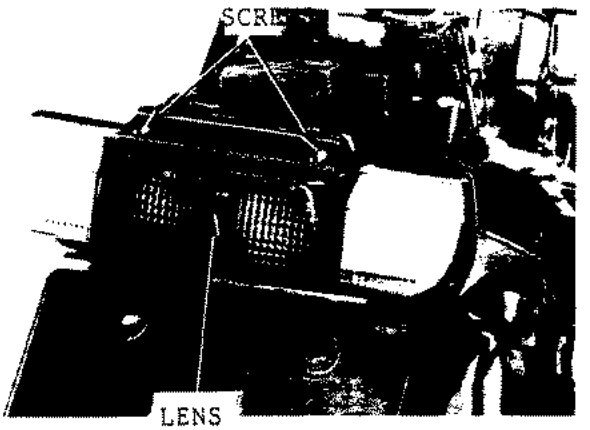
WINKERS

Turn bulb socket, separate bulb socket lock and remove bulb socket and bulb from winker
If necessary remove screws abd replace winker lens.
Install new bulb in bulb socket and install in reverse proceedure to removal



BRAKE/TAILIGHT

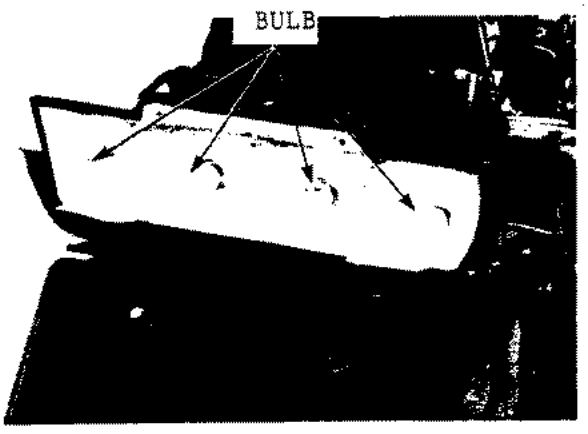
Remove side covers (15.1)
Remove brake/tailight lens



Replace bulb

install lens

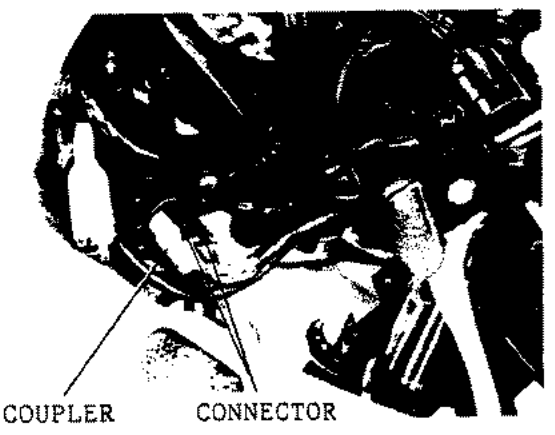
Install side covers (15.2)



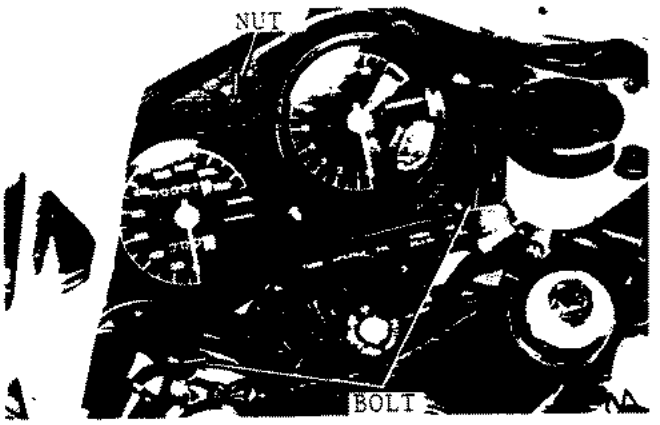
METERS

Removal

Remove meter coupler and connector

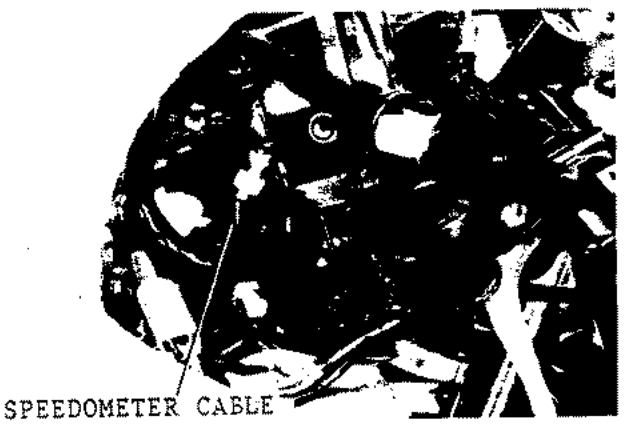


Remove meter pinch bolt, nut



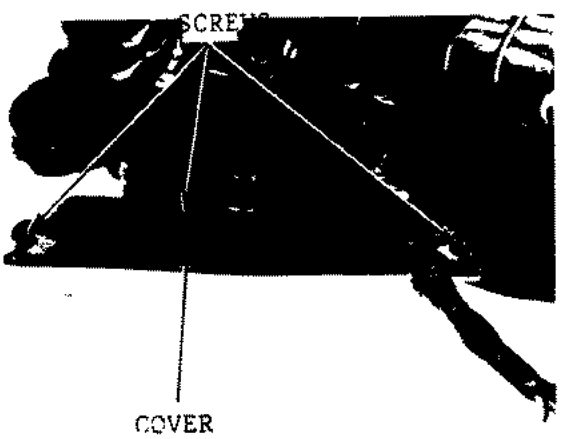
Remove speedometer cable

Remove meter



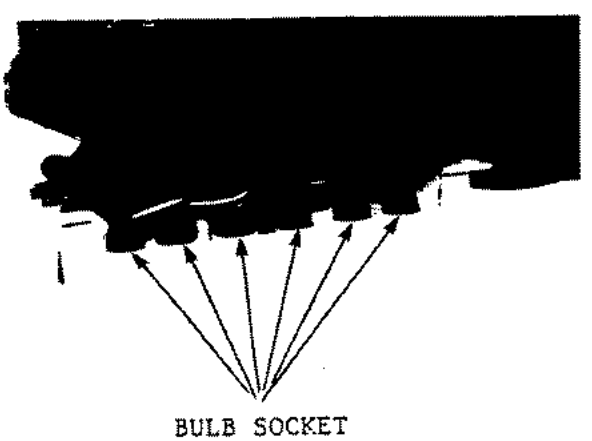
BULB REPLACMENT

Remove pilot light case cover

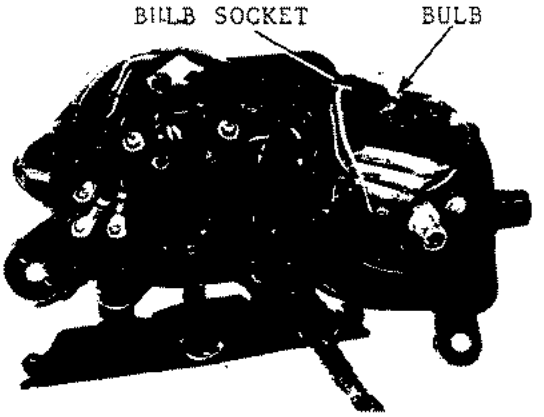


Remove bulb socket and replace bulb

Install cover

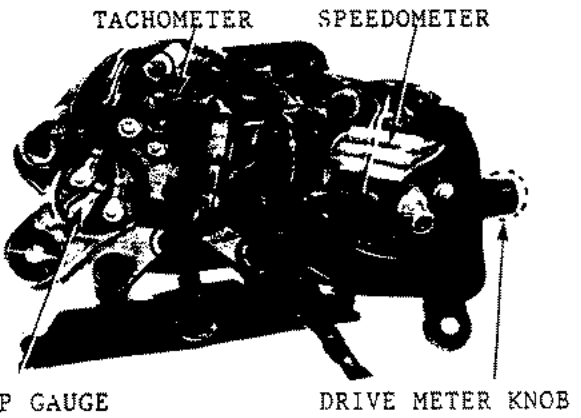


Pull bulbsocket out of meter and replace bulb



SEPARATION

Remove screws and nuts and separate meter

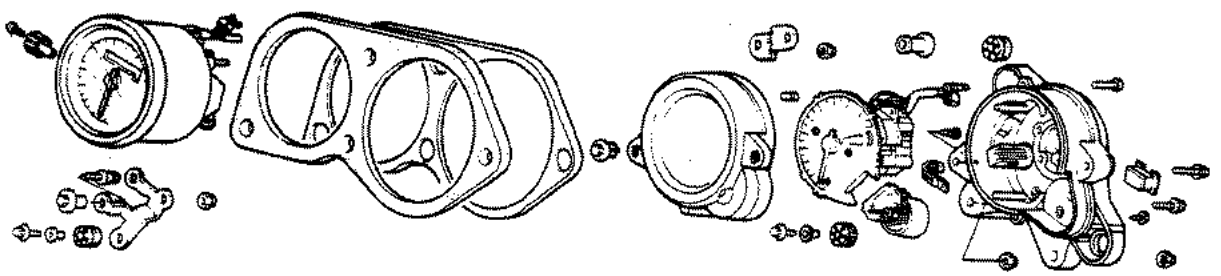


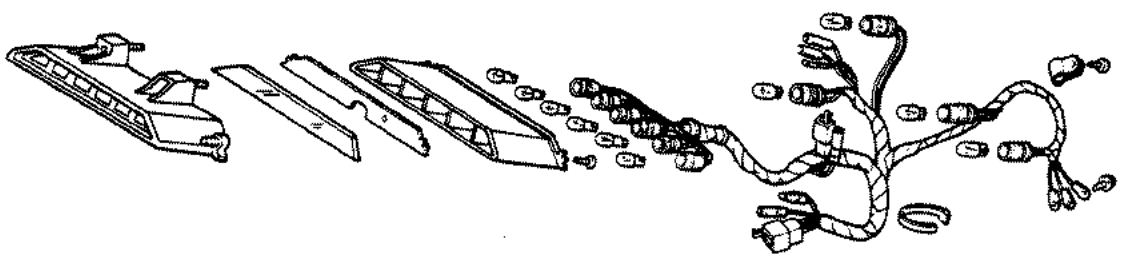
ASSEMBLY/INSTALLATION

perform in reverse procedure to removal/ separation

When assembling motor, align colour codes and wire colours

B Black W : White
BR : Brown Y : Yellow
L : Blue G : Green





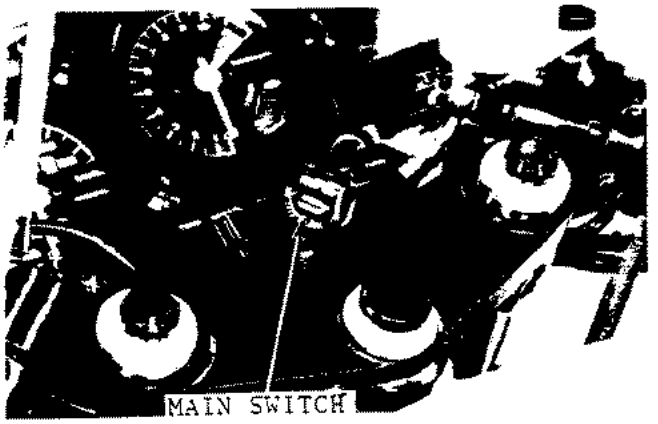
MAIN SWITCH

Inspection

Remove main switch 6P coupler from fuel tank lower coupler holder

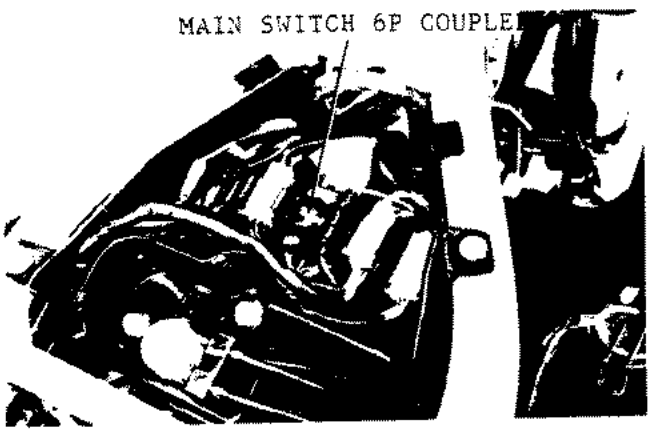
○—○ If current, then okay

	BAT1	IGN	TL1	TL2	PA
	R	R/Bl	Br/W	Br	Y/Bl
ON	○	○	○	○	
OFF					
P	○				○
LOCK					

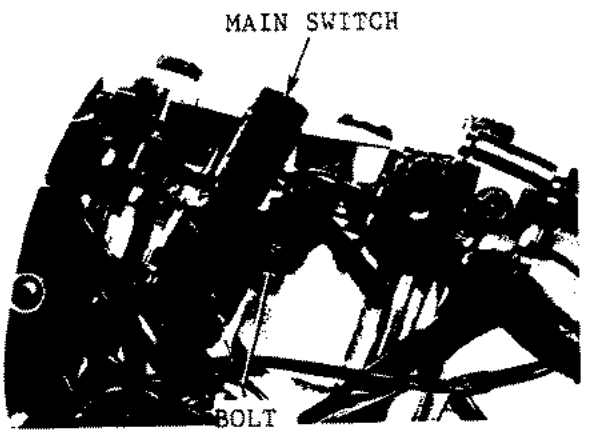


Removal

Remove main switch 6P coupler from fuel tank lower coupler holder

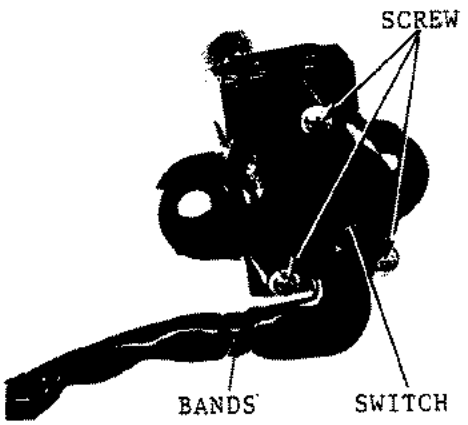


Remove main switch 2 bolts and remove main switch



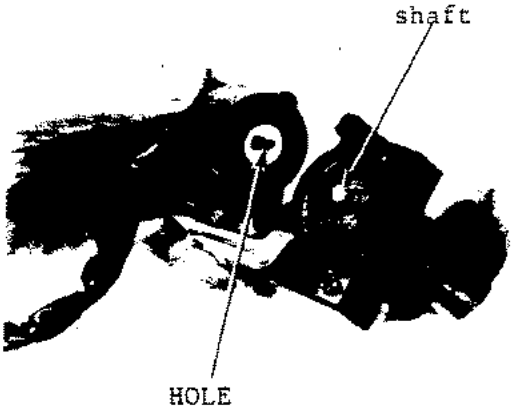
Separation

Cut bands remove 3 screws and remove switch from switch cylinder



ASSEMBLY

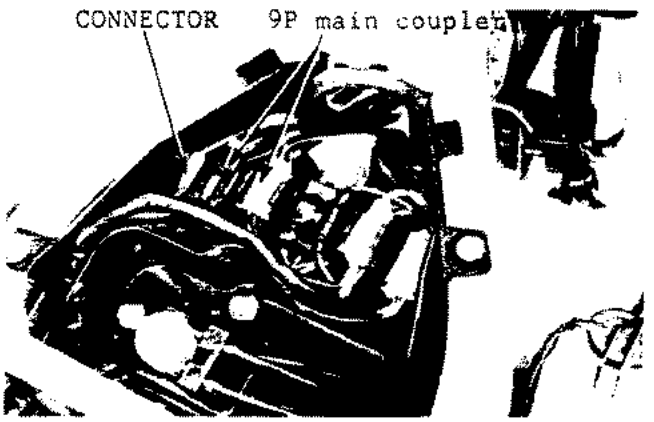
Align cylinder shaft with switch hole and install
Install 3 screws and cramp with band
Cut band excess
After assembly inspect switch current
(18.6)



INSTALLATION
In reverse order to removal

Handle switch

Remove fuel tank coupler holder 9P mini coupler (Bl and R) and connector

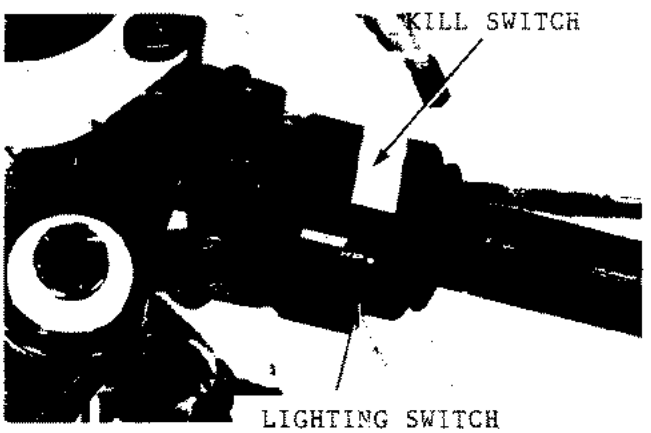


* After install ing check switch movement

○—○ If current then okay

KILL SWITCH

	IG	BAT6
	Bl/W	Bl
OFF		
RUN	○——	——○



LIGHTING SWITCH

	BAT5	TL	BAT4	HL
	Br/Bu	Br/W	Bl/R	Bu/W
·				
P	○——	——○		
N	○——	——○	○——	——○
H	○——	——○	○——	——○

PASSING SWITCH

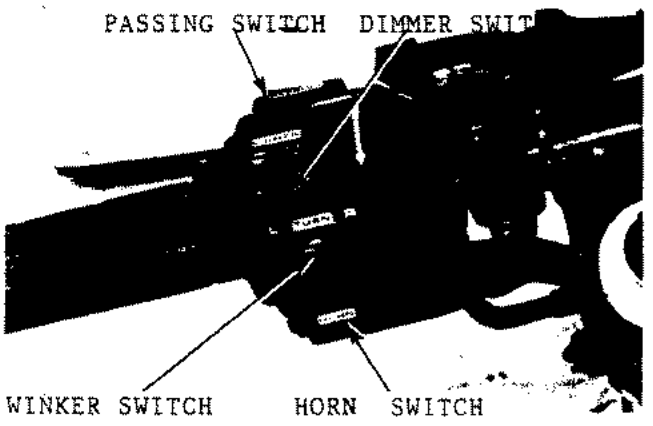
	BAT3	Hi
	W/G	Bu
FREE		
PUSH	○——	——○

HORN SWITCH

	BAT3	Ho
	W/G	Lg
FREE		
PUSH	○——	——○

DIMMER SWITCH

	HL	Lo	Hi
	Bu/W	W	Bu
Lo	○——	——○	
N	○——	——○	——○
Hi	○——		——○



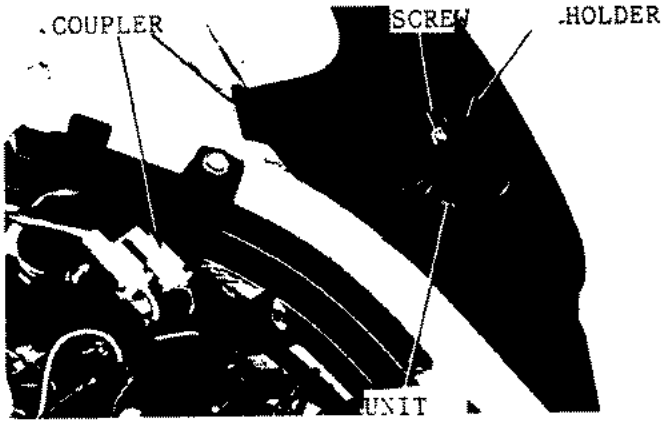
WINKER SWITCH

	W	R	L
	Gr	Lb	O
R	○——	——○	
N			
L	○——	———	——○

OIL WARNING SYSTEM

Oil warning light inspection

Remove fuel tank (4.2)
Remove R Lower fairing (15.3)
Remove oil tank installed bolt and move oil tank backwards. Remove oil level switch coupler and measure voltage between Br/Bu (+) and Green (-). If voltage with main switch on then okay
Short the coupler Br/Bu and G/R terminals and if the light glows with the main switch on, then okay. If it does not glow then either the bulb has blown; connector faulty or harness misrouted

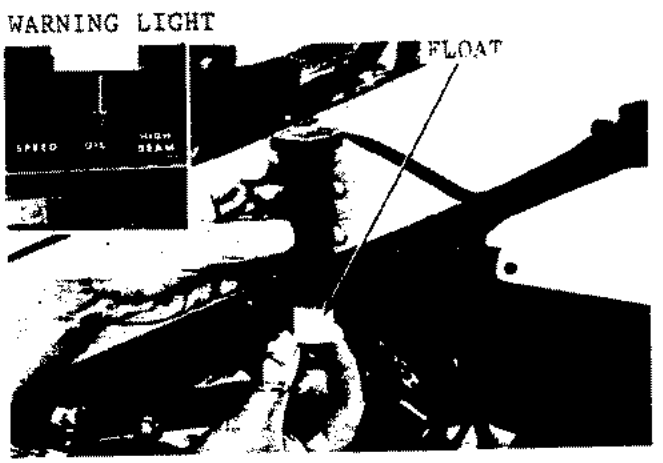


Remove unit holder and pull unit from oil tank

Remove stopper and remove front case

Connect coupler and turn main switch ON

* Turn on winkers and check battery then perform next inspection



Move oil level switch up and down and insoect if light goes on and off
If abnormal then replace switch

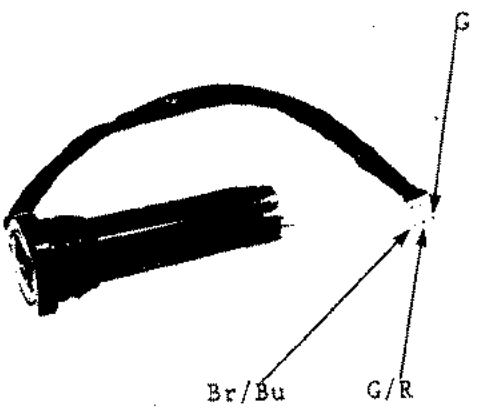
OIL LEVEL SWITCH INSPECTION

Lower float down safely and measure resistance

G/R - Br/Bu 5-20 ohm
G - Br/Bu infinity

Raise float up safely and measure resistance of G/R and Br/Bu

G/R - Br/Bu 320 - 350 ohm



TEMPERATURE GAUGE

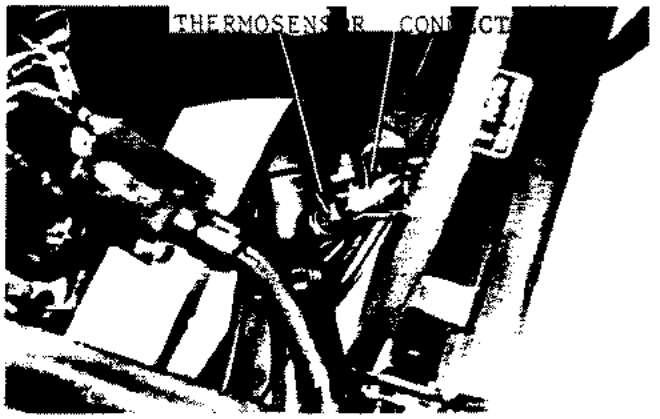
* Before inspecting thermosensor check radiator fluid level and cooling system for air internally

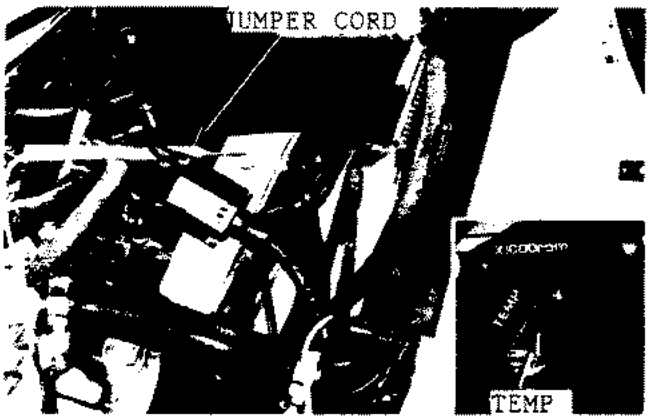
Remove R lower fairing (15.3)
Remove thermosensor connector from thermostat case

Use jumper cord and earth connector
Turn main switch ON and check if temperature gauge needle reaches H mark in one movement

* Do not earth thermosensor wire for more than 5 seconds or temperature gauge will be damaged

If abnormal check wire harness and if normal replace temperature gauge (18.5)





TEMP GAUGE

TACHOMETER

If tachometer does not move correctly perform the following inspection
Check that spark jumps on rear cylinder. If it jumps inspect the following

Tuirn main switch ON and measure voltage between meter coupler (9P mini W) Br/Bu and earth
If no voltage betweeen Br/Bu and earth inspect wire harness routing and sub fuse (10A)

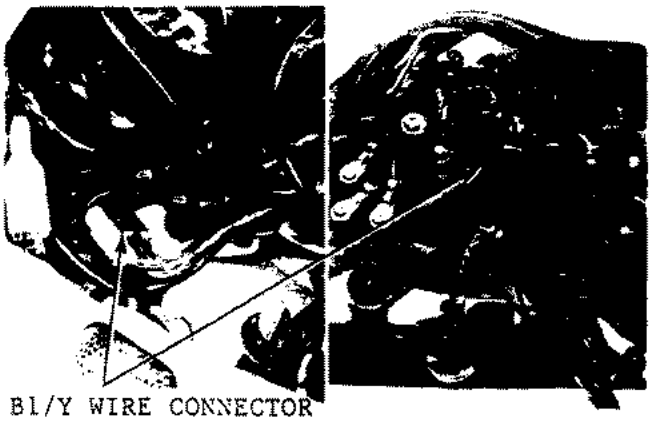
Remove fuel tank (4.2)

Remove meters (18.3)

Remove rear cylinder CDI unit coupler
Check for current between fairing side Bl/Y connector and CDI unit coupler Bl/Y cord

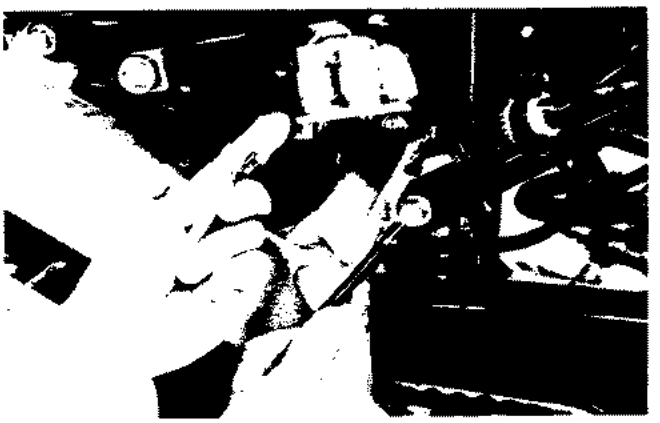
If current check meters sub harness Bl/Y cord routing and connector quality.
If normal replace tachometer


REAR CYL. CDI UNIT


Bl/Y WIRE CONNECTOR

NEUTRAL SWITCH

Remove fuel tank (4.2)
Remove neutral switch connector and inspect between Lg/R wire abd earth for current

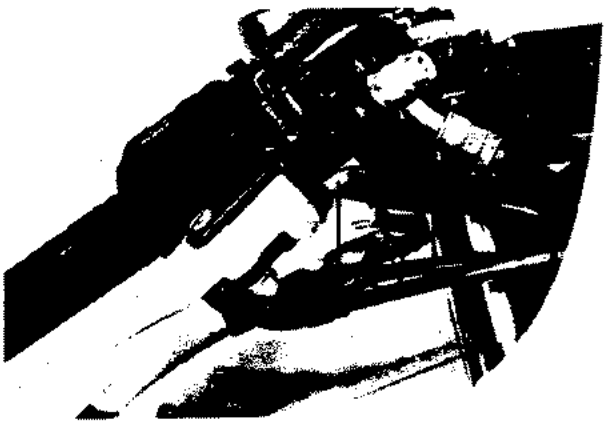


BRAKE LIGHT SWITCH

Front

Remove brake light switch connector
Without moving brake lever inspect for current

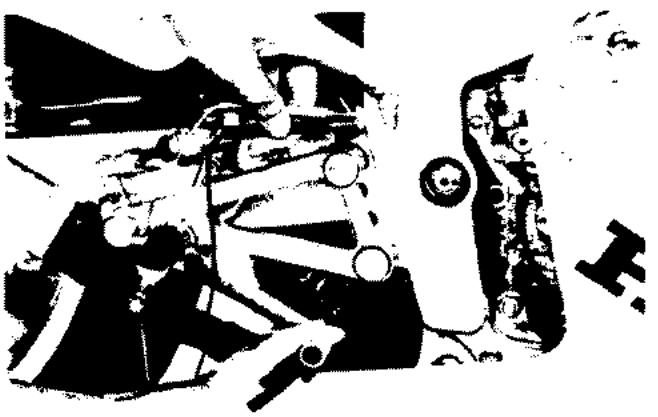
Pulling lever - current
Not Pulling Lever - No current



Rear

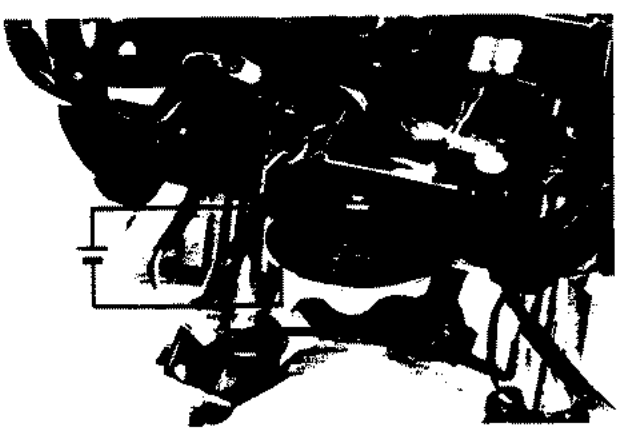
remove seat and remove rear brake light switch coupler. Without moving brake pedal inspect for current

Pushing Pedal - current
Not Pushing Pedal - No current

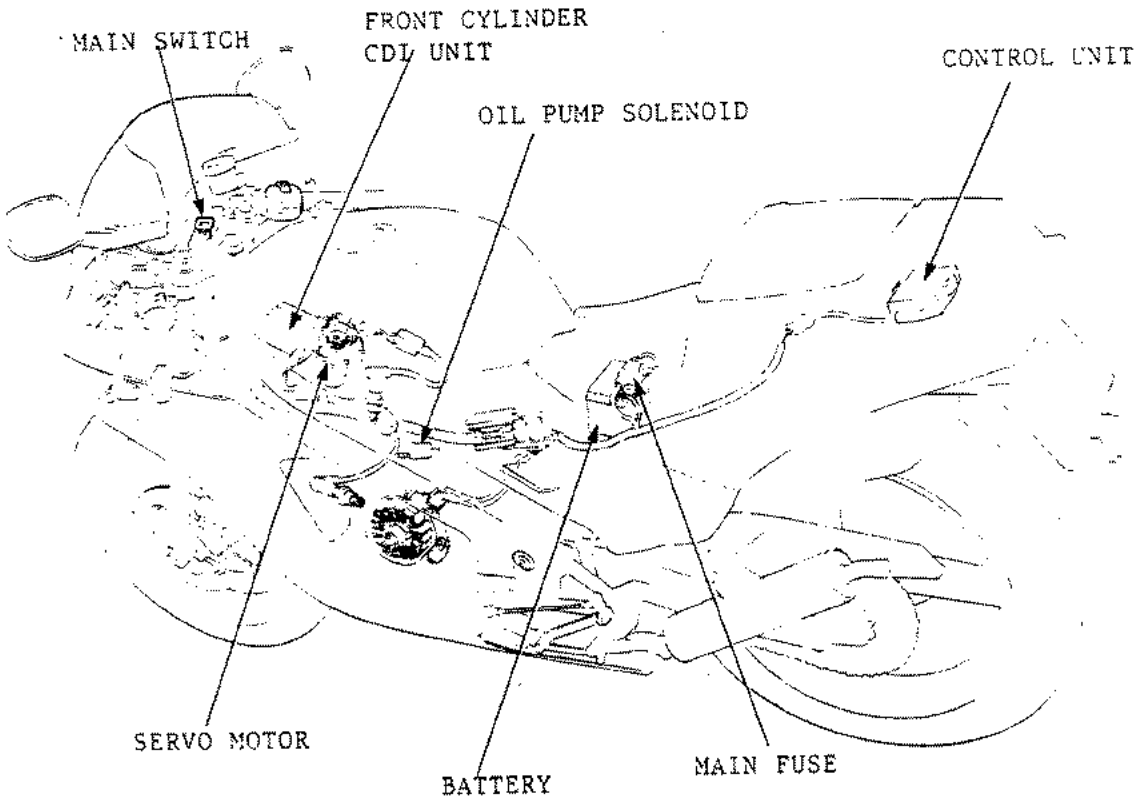


HORN

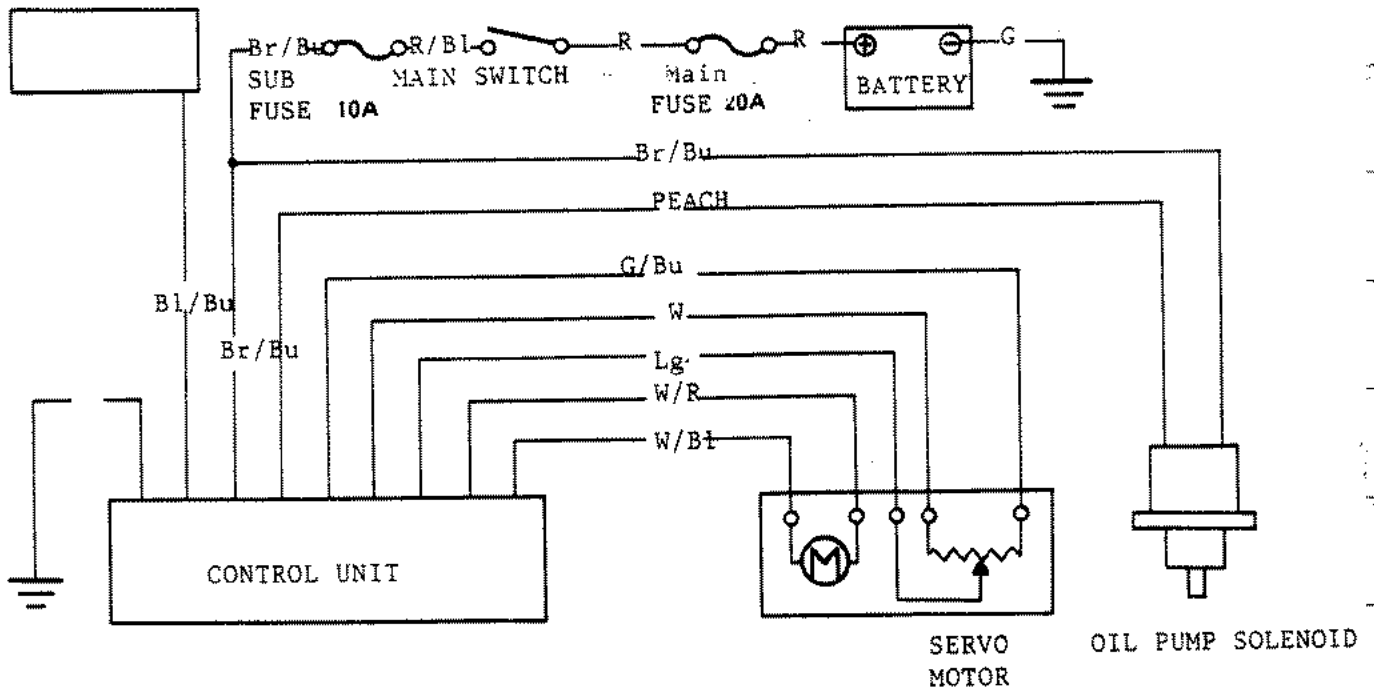
Remove wire from horn
Connect 12V battery to horn and if noise then okay



WIRING MAP



FRONT CYLINDER CDI UNIT



19.

MAINTENANCE INFORMATION

Warnings

- Route all corde to those of the same colour. Misrouted cords should be realized and connect to nearest connector. Before removing wiring take note of cord colours. Connect couplers to those of the same colour
- When inspecting using battery take extreme care not to short battery
- If the oil pump solenoid is poor quality the replace oil pump assembly
- If the servo motor or throttle sensor are poor quality, then replace as servo motor assembly

	Standard
Oil pump solenoid resistance (20°C)	3.0 — 5.0Ω

TROUBLE SHOOTING

RC Valve Does Not Move (1.30)

- throttle sensor faulty
- Wire harness, coupler or connector misrouted or shorting
- ignition system faulty (Section 17)
- Control unit faulty
- Sub fuse blown

At Low Revolutions, Lots Of Exhaust Gas

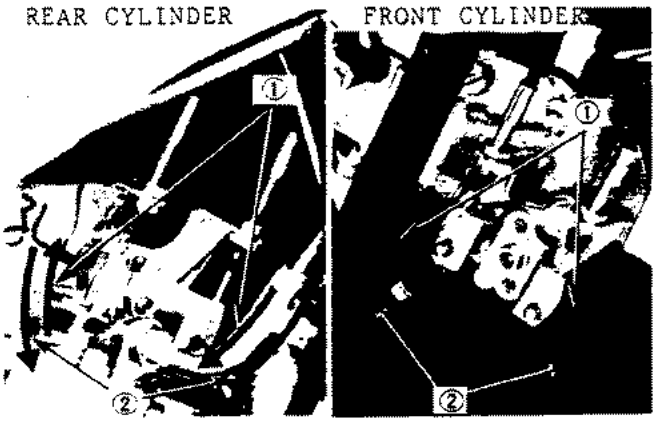
- Oil pump solenoid faulty
- Ignition system faulty (Section 17)
- Wire harness, coupler, connector misrouted or shorting
- Control unit faulty

SERVO MOTOR

RC Valve Movement Inspection

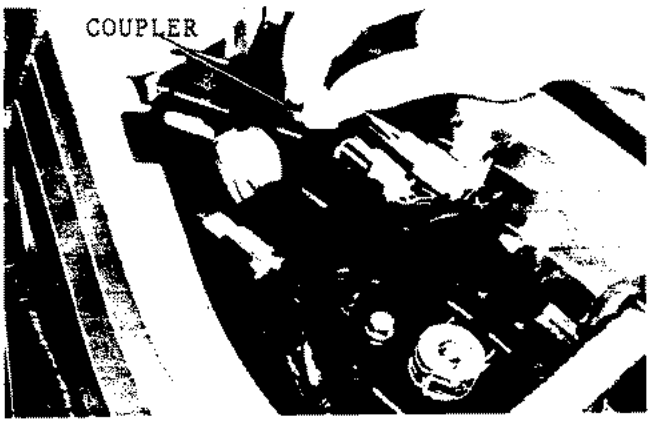
Remove R. Lower fairing (15.3)
Start engine, slowly raise revolutions to around 2000rpm whereby the cylinder pulley should move clockwise to a stop and at 3000rpm it should move anit-clockwise to a stop

Check:
(1) roughly 2000rpm pulley movement
(2) roughly 3000rpm pulley movement

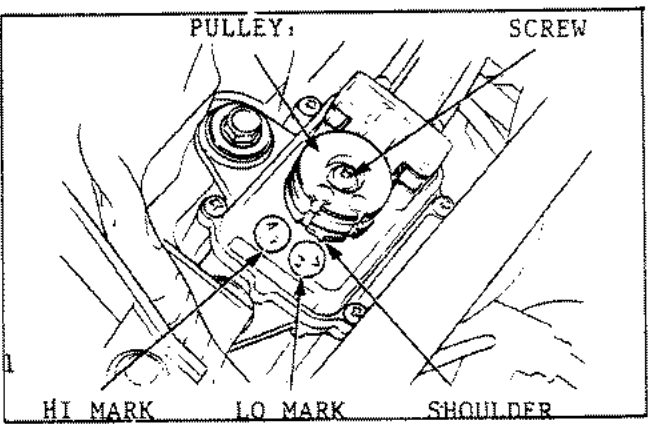


SERVO MOTOR INSPECTION

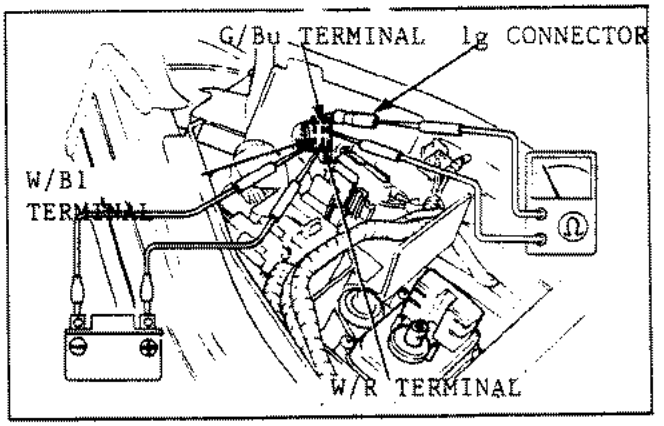
Remove fuel tank (4.2)
inspect servo motor control cable connection for damage.
Remove R lower fairing (15.3)
Remove servo motor coupler and connector
If any movement in connectors then correct



Remove control cable connector from cylinder pulley (19.3)
Connect fuel tube to fuel cock and start engine
Raise engine revs slowly and inspect that at roughly 2000rpm the oulley shoulder reaches the HI mark and at roughly 3000rpm it reaches the LO mark
If it moves incorrectly inspect cable and bulb for carbon sticking



Remove screw and remove servo motor pulley
When the battery is connected to the servo motor coupler W/Bl terminal and W/R terminal inspect if the motor moves the opposite way
Also measure the resistance of the servo motor coupler G/Bu terminal and servo motor connector (Lg) when the motor is turning and inspect that the tester needle moves 0-5 K ohm -00



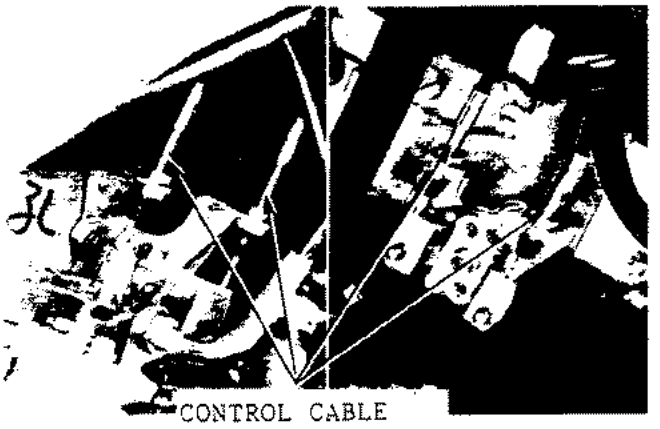
* Do not short battery

Turn motor over and if the tester needle waves between 0-5 K ohm - 00 then the servo motor is okay
If the motor does not turn over and the tester needle does not move the replace servo motor

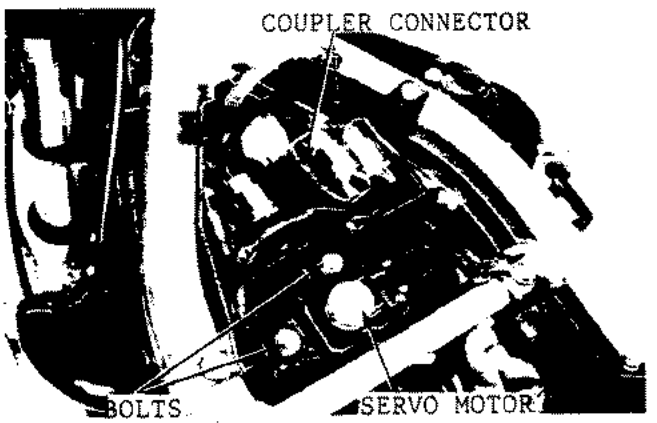
SERVO MOTOR REPLACMENT

Remove fuel tank (4.2)
Remove R. Lower fairing (15.3)

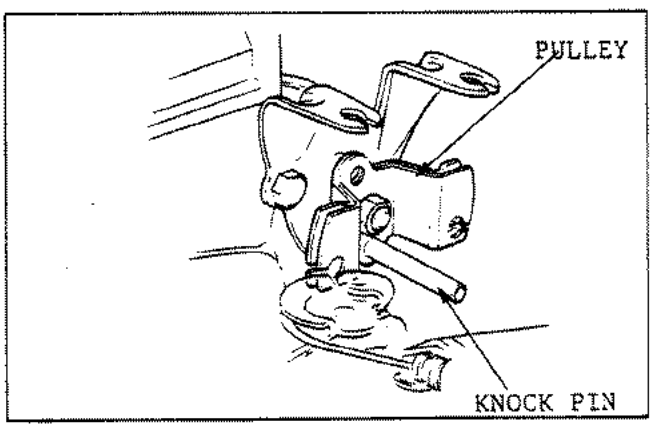
Remove control cable connection from cylinder pulley



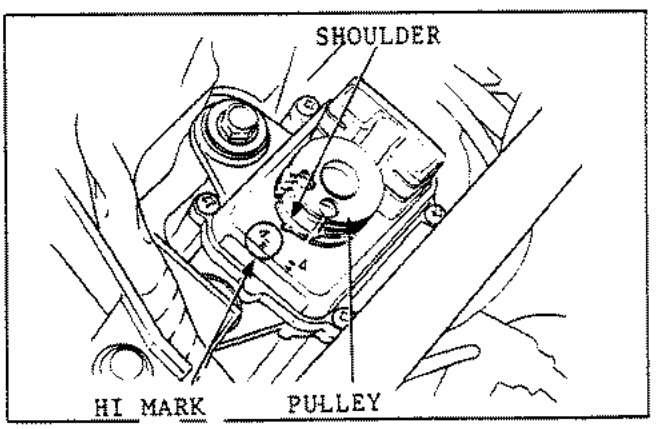
Remove servo motor coupler (4P mini,W) connector
Remove servo motor pinch bolt and replace servo motor



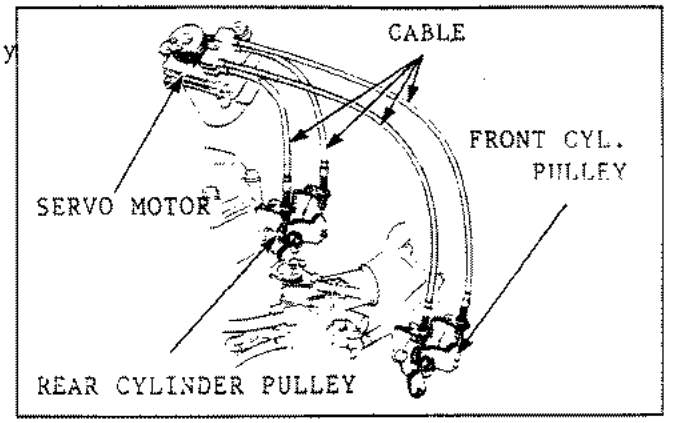
Fully open cylinder pulley RC Valve and hold with knock pin



Connect fuel tube to fuel cock and start the engine. Rev engine slowly and at roughly 2000rpm check that servo motor shoulder stops at HI position and turn main switch off to stop engine



Connect control cable to servo motor pulley
Connect control cable to cylinder pulley
Adjust control cable (2.17)
Install fuel tank (4.2)
Install R lower fairing (15.5)



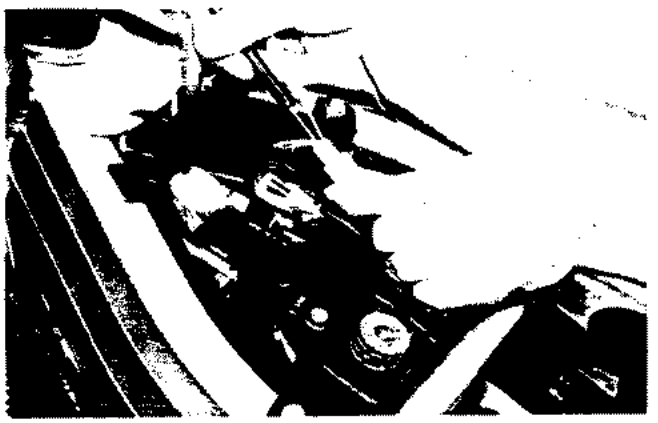
OIL PUMP SOLENOID

Inspection:

Remove fuel tank (4.2)
Remove R lower fairing (15.3

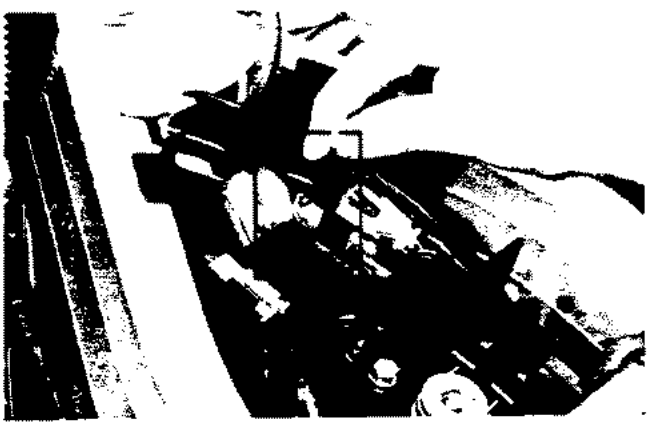
Remove oil pump solenoid coupler connection

Measure resistance at coupler
Br/Bu-Peach box - std (20°C) = 3.0-5.0 ohm



Connect solenoid coupler Br/Bu box to positive and peach box to negative of 12 volt battery

* Do not shorth battery
* Do not connect battery for more then one minute

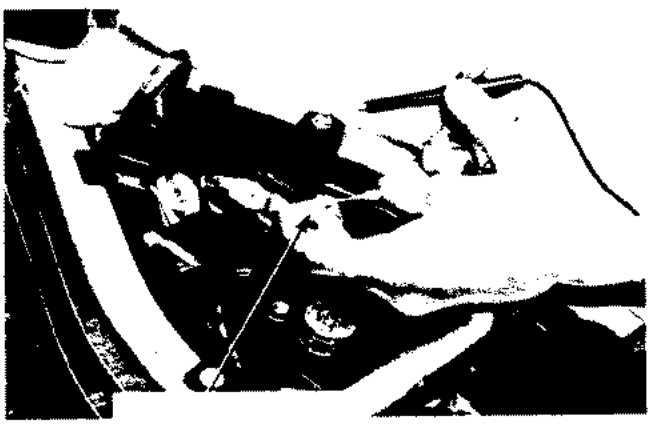


If there is no "clunk" sound from solenoid then replace oil pump assy

Oil pump replacement (3.3)

If there is a sound then advance to next inspection

Turn main switch "ON"
Measure voltage between solenoid harness coupler (2P mini,W) earth Br/Bu box



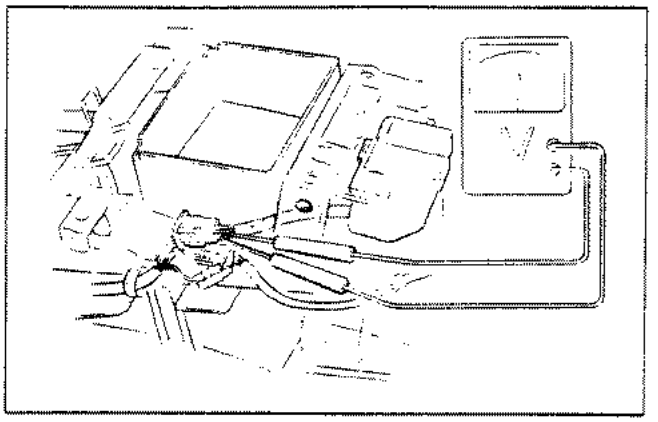
Battery voltage (above 10V) - inspect wire harness
No battery voltage (under 10V) - battery charging faulty, wire harness, coupler short, connection faulty, fuse faulty

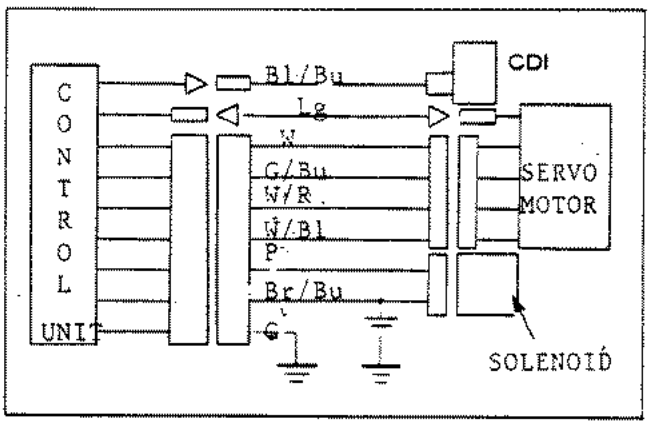
WIRE HARNESS INSPECTION

Inspect servo motor and oil pump solenoid.
If any abnormalities then conduct the following inspection:
Inspect ignition system (section 17)
Remove side covers (15.1)
Tunr main switch on and inspect if there is voltage between control unit coupler BR/Bu-G
If no battery voltage inspect main switch battery, fuses, wire harness and couplers

If voltage inspect current between control unit connector (Bl/Bu) and cylinder CDI unit coupler Bl/Bu
If no current correct wire harness or replace

If current inspect for current of wire harness from control unit to oil pump solenoid and servo motor
If no current, then correct wire harness or replace
If current then replace control unit

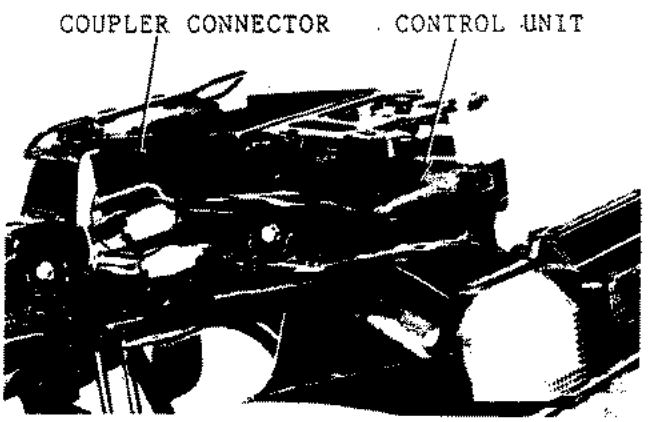




CONTROL UNIT

* If servo motor does not work or oil pump solenoid does not work, do not replace control unit first. If the servo motor or solenoid is shorting it will cause damaged to control unit

Inspect servo motor, oil pump solenoid and wire harness, if no abnormalities but servo motor or oil pump solenoid does not move then replace control unit.



REPLACEMENT

Remove side covers (15.1)
Remove control unit coupler and connectors
Pull out control unit from rear fender A shoulder and replace it.

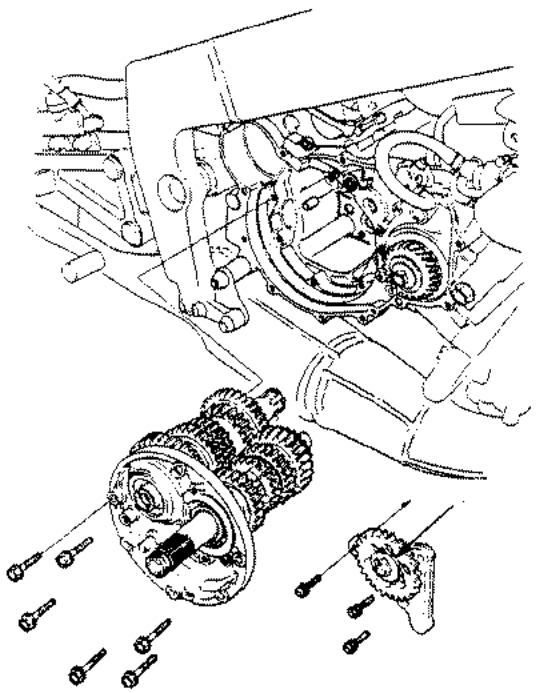
Install side covers (15.2)

20. NSR250R(J)

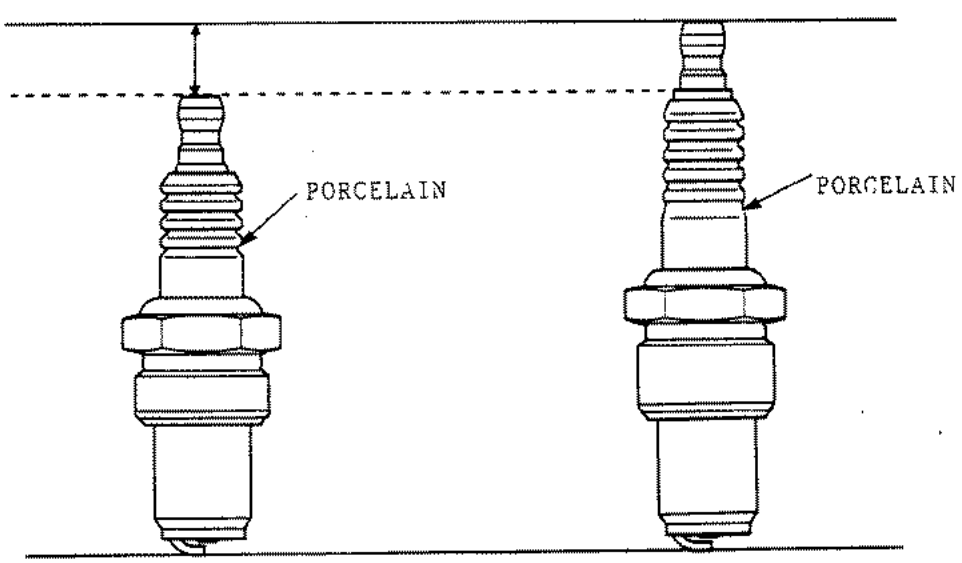
Make		Honda MC18
Length		1.985m
Width		0.640m
Height		1.105m
Wheel Base		1.355m
Engine Type		MC16E
Eng. Capacity		249cm³
Motive Power		Petrol
Vehicle Weight	FRT	72kg
	Rr	73kg
	TTL	145kg
Rider No.		2
Gross Weight	Frt	89kg
	Rr	166kg
	TTl	255kg
Tires	Frt	110/70-17 53H
	RR	140/60R18 64H
Ground Clearance		0.135m
Braking Distance (50K/H)		14.0m (50)
Turning Circle		2.9m
Starting		Kickstart
Fuel		Petrol 2 Cycle
Cyl.Configuration		V 2
Com. Type		Half Ball
Bore X Stroke		54.0×54.5mm
Comp. ratio		7.3
Cyl. Comp		10.0kg/cm²-400rpm
Max H.P.		45PS 9500rpm
Torque		3.8kgm/8000rpm
Port Timing	Open	Movement Auto
	Close	Movement Auto
Intake	Open	76°~95° (BBDC)
	Close	76°~95° (ABDC)
Exhaust	Open	62° BBDC
	Close	62° ABDC
Idle Speed		1200rpm
Lubrication		Forced pressure wet sump
Oil Pump		Plunge type Tricoid type
Oil Capacity		*2.1ℓ

Cooling system		Water Cooled
Air Cleaner type		Foam
Fuel Tank Cap		16
Type		TA20
Gas Intake		32mm
Venturi Bore		32mm
Type		CDI
Ign Timing		15°BTDC 1200rpm
Spark Plug	NGK	BR9ECM, BR10ECM
	ND	W27EMR-C, W31EMR-C
Plug Gap		0.7~0.8mm
Battery		12V 3AH
Clutch type		Wet Coil Spring
operation		Manual
Primary Reduction		2.360
Trans- type		Usual Method
1st Gear		2.846
2nd Gear		1.941
3rd Gear		1.500
4th Gear		1.272
5th Gear		1.136
6th Gear		1.045
Reduction Method		Chain
Final		2.733
Frt Wheel - Caster		24°
Trail		90mm
Tire Pressures	Frt	2.25kg/cm²
	RR	2.50kg/cm²
Strg Angle	Lft	30°
	Rt	30°
Brakes	Frt	Pressurised Disc
	RR	Pressurised Disc
Suspension	Frt	Telescopic
	RR	Swing Arm
Frame Type		Diamond
Frame NO.		MC18-1000020~
Engine NO.		MC16E-1031032~
*Transmission Oil		0.8ℓ
Engine Oil		1.3ℓ

CASSETTE TRANSMISSION



ALL NEW, SHORT BODY SPARK PLUG



SPECIAL FEATURES

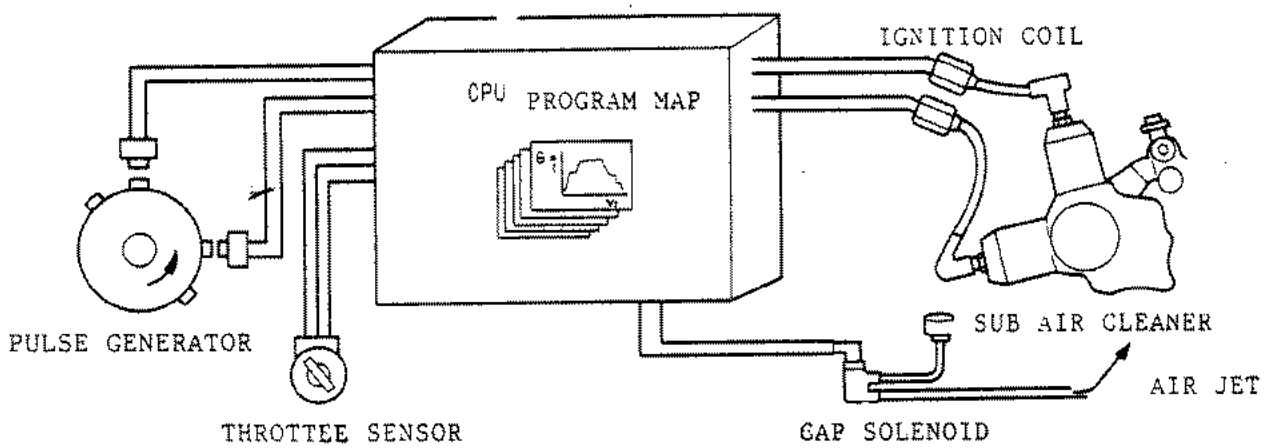
Engine Control Unit.

The PGM-CDI unit and RC valve unit are related to the engine control unit.
The engine control unit is composed of a PGM control unit and CDI convertor

PGM Control unit does: PGM-CDI 2 ignition timing adjustment
PGM-Carburettor 2 air/fuel mixture adjustment
PGM-RC Valve RC valve adjustment
Oil pump solenoid Oil outflow characteristic adjustment

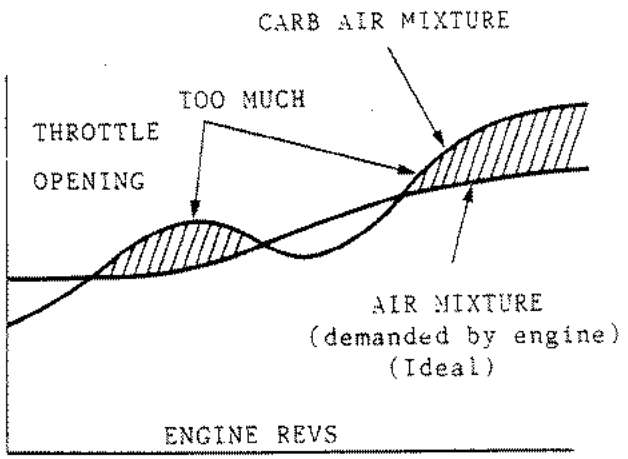
Performance:

The engine control unit is divided into the PGM control section and the CDI convertor. In the CPU program map the pulse signaling from the No.1 & 2 pulse generator is in accordance with the engine revolutions, enters voltage from the throttel sensor in accordance with the throttel opening. The program does, the ignition timing demanded

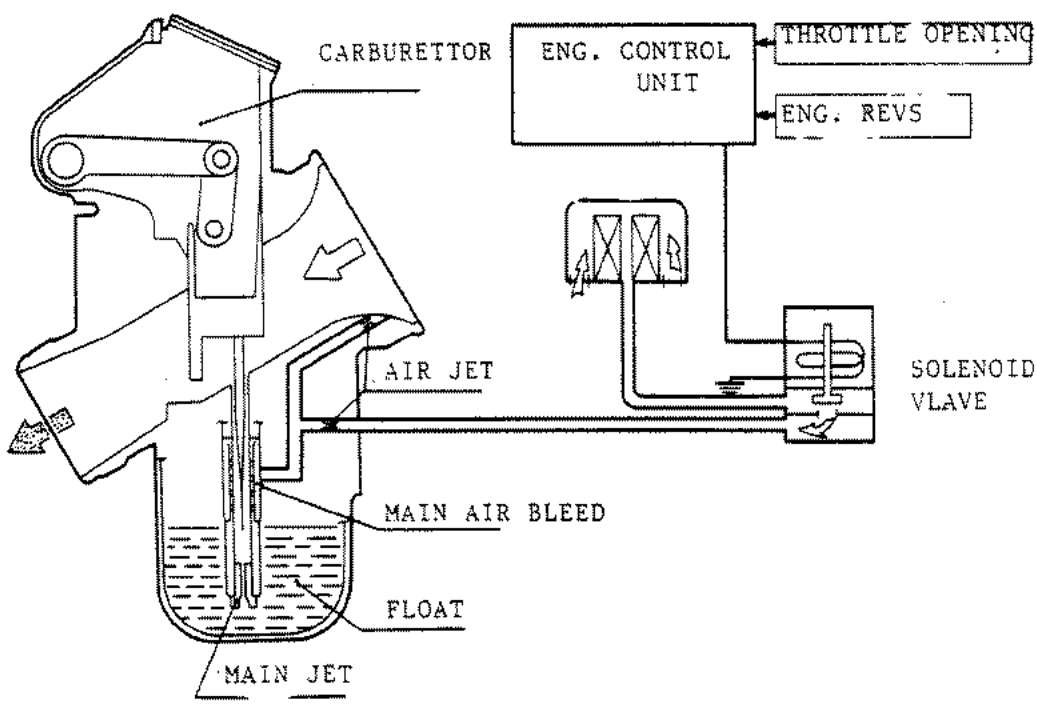


by the engine from the enforced valve, the air/fuel mixture, exhaust port timing, oil outflow capacity measurement and predicts the various circumstances from low revolutions to high revolutions which give good fuel performance

PGM-CARBURETTOR



Carburettor Air Jet Control System.
The air mixture (ideal) & air mixture supplied to the engine are shown respectively on the graph In this system the carb supplies the air mixture and in order to supply close to the air mixture demanded by the engine, send air into the carb air jet. The PGM carb not only supplements the air jet and solenoid valve but also make fine control possible. The PGM control according to the input power from the engine revs (pulse Generator), throttle opening (throttle sensor is produced by separate solenoid valves and adjusts the input volume of air from the sub air cleaner to the main air bleed
When the air mixture supplied to the carb is too rich, (obligqu line on graph) the solenoid is turned ON and according to the air input increase to the air bleed the air mixture is diluted & the engine nears the ideal air/fuel mixture demanded by the engine. The PGM-carburettor as for engine revolutions makes it such that it can control the correct air mixture with the throttle opening from low revolutions to high revolutions and improves drivability over all rev. ranges



		mm	kg—m	
	1	20	8.0 — 9.0	
	1	10	7.0 — 9.0	
	1	10	1.5 — 2.5	
	1	6	0.8 — 1.2	
	1	6	0.6 — 0.8	

		mm	kg—m	
	4	8	1.8 — 2.5	
	4	7	1.5 — 2.0	
	1	18	9.0 —11.0	
	1	20	1.0 — 2.0	
	1	20	6.0 — 7.0	
	4	6	1.0 — 1.4	
	4	8	2.4 — 3.0	
	8	8	3.0 — 3.5	
	12	6	1.4 — 1.6	
	5	10	5.0 — 6.0	
	3	10	1.5 — 2.0	
	3	10	0.2 — 0.3	
	2	10	1.2 — 1.5	
	2	10	2.5 — 3.5	
	4	10	4.5 — 5.5	
	1	54	8.0 —10.0	
	1	5	0.35— 0.5	
	2	10	3.5 — 4.5	
	3	10	3.5 — 4.5	
	1	12	5.0 — 6.0	

	32mm	
	TA20A	
	No.1 #130	No.2 #132
	No.1 BPD	No.2 BPE
	No.1 # 75	No.2 # 70
	2 —3/8	

: mm

		0.30—0.45	0.50
		0.30—0.45	0.50
		10±2kg/cm²	—

: mm

		36.0	35.0
		20.020—20.041	20.07
		22.959—22.980	22.92
		23.000—23.021	23.05

: mm

		—	0.2
		0.02—0.07	0.12
		0.10—0.15	0.2
		24.987—24.993	24.95

: mm

		0.54—0.76	0.85

: mm

		15.4—20.0kg	12.3kg
		160.3	—
		172.3	168.9

: mm

		A	25.400—25.450	25.46
		B	30.230—30.280	30.29
			38.180—38.230	38.24
		A	25.318—25.368	25.31
		B	30.148—30.198	30.14
			38.115—38.148	38.105
			14.000—14.043	14.055
			13.957—13.984	13.945

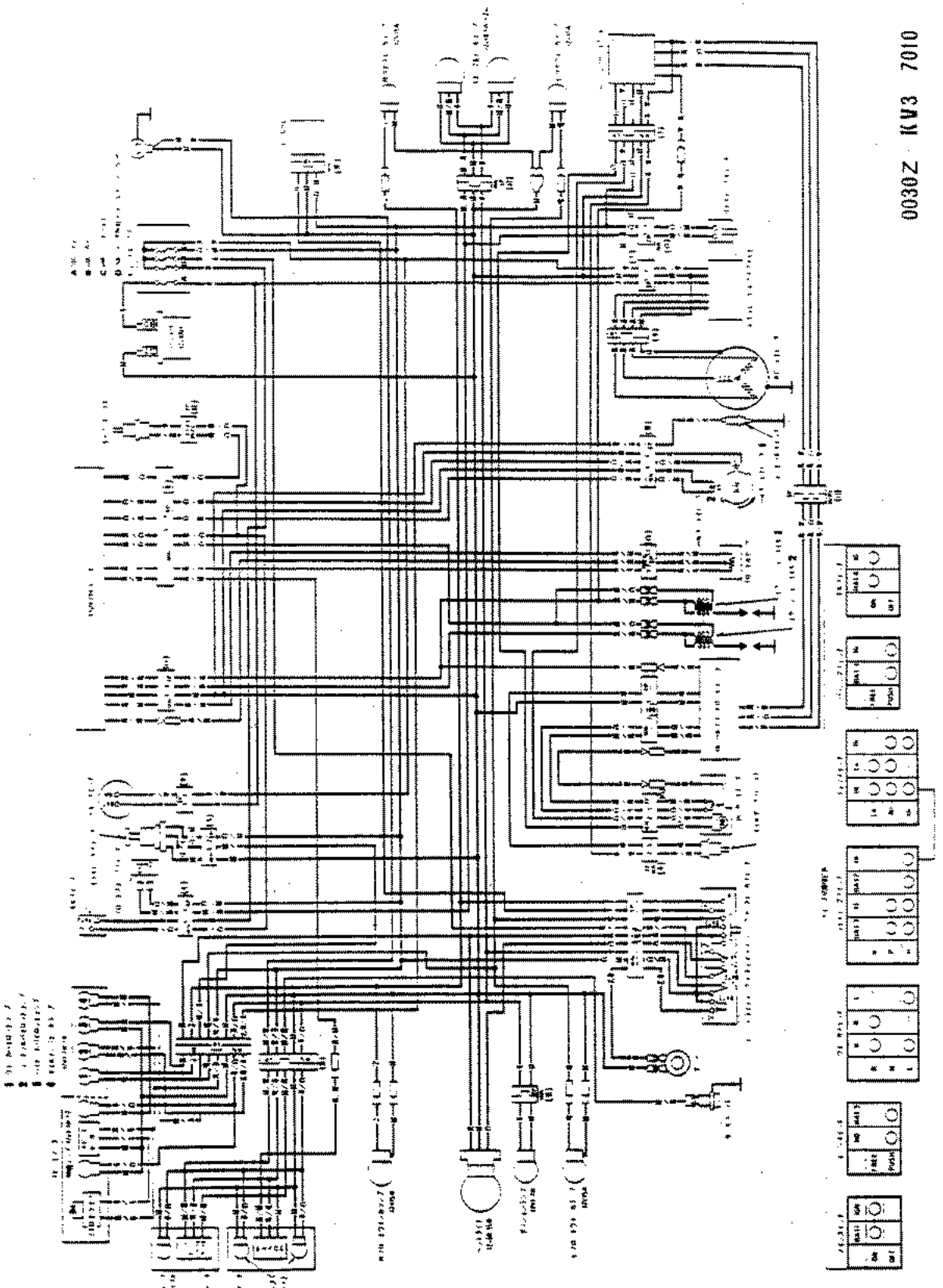
	429cc	—
	128mm	—
	267.2mm	261.9mm

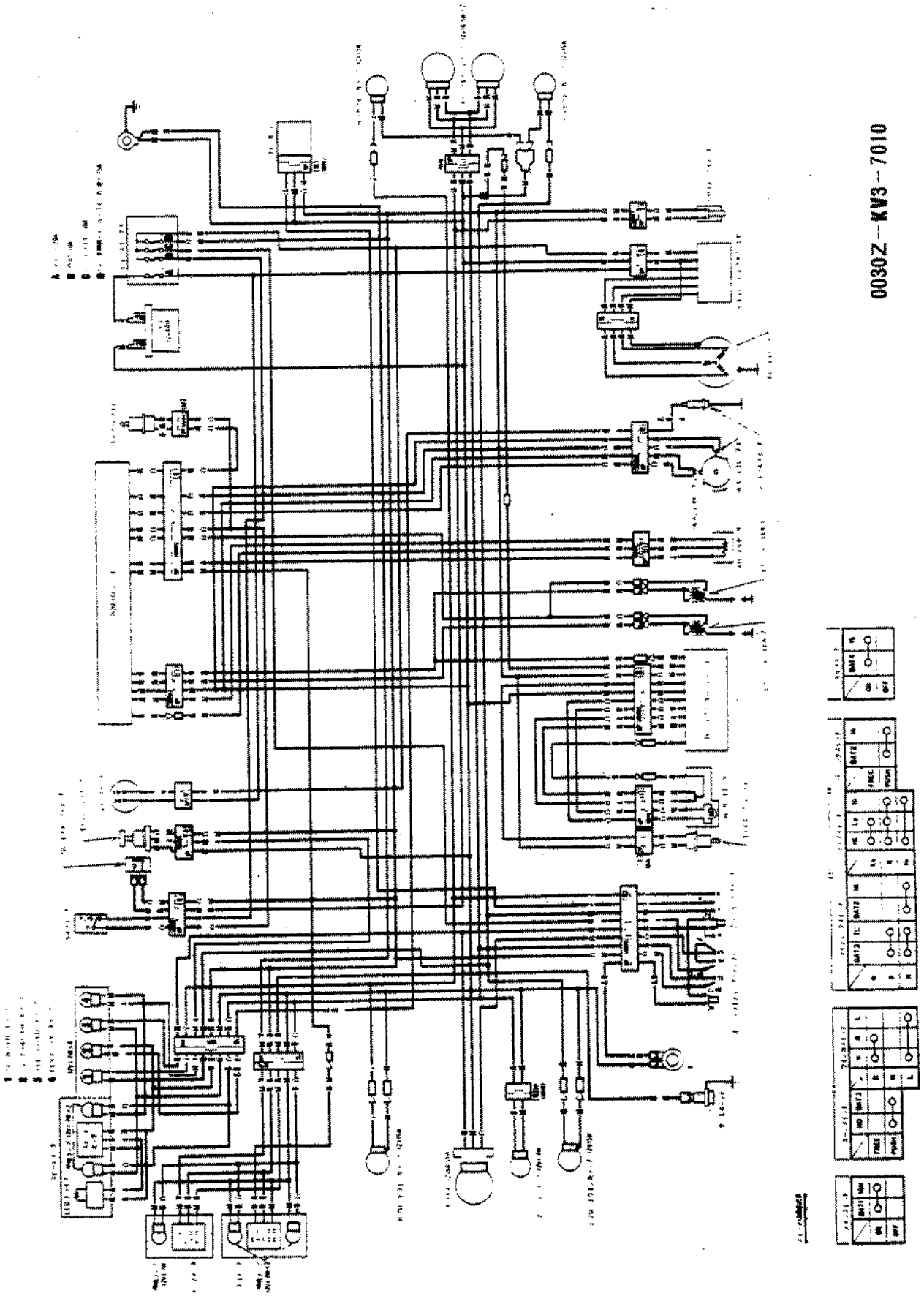
	NGK	ND
	BR 9ECM BR10ECM	W27EMR-C W31EMR-C

	12V1.7W
	12V15W×4
	12V18/5W×2
	12V1.7W×4
	12V1.7W×5
	10A×2, 15A×1

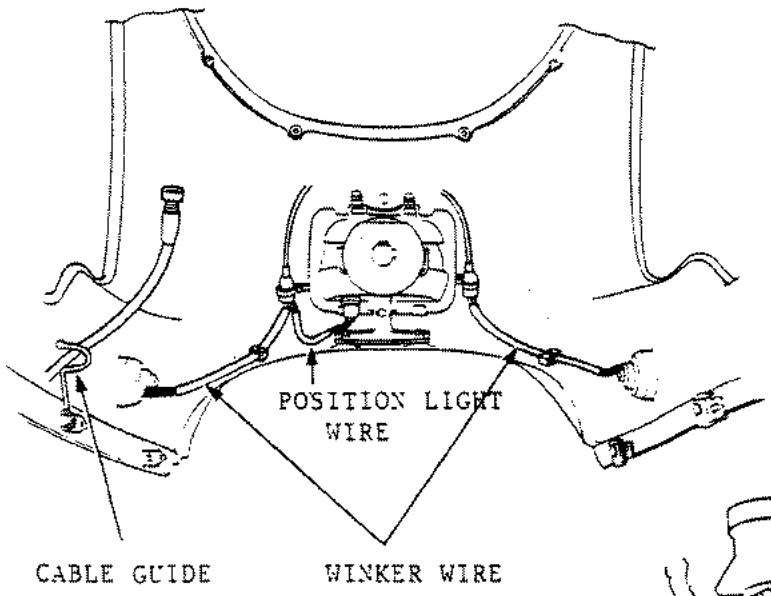
07JMB－KV30100	
07946－KM90001	
07946－KM90401	
07508－0014400	PGM CDI
07947－KA50100	
07947－KF00100	

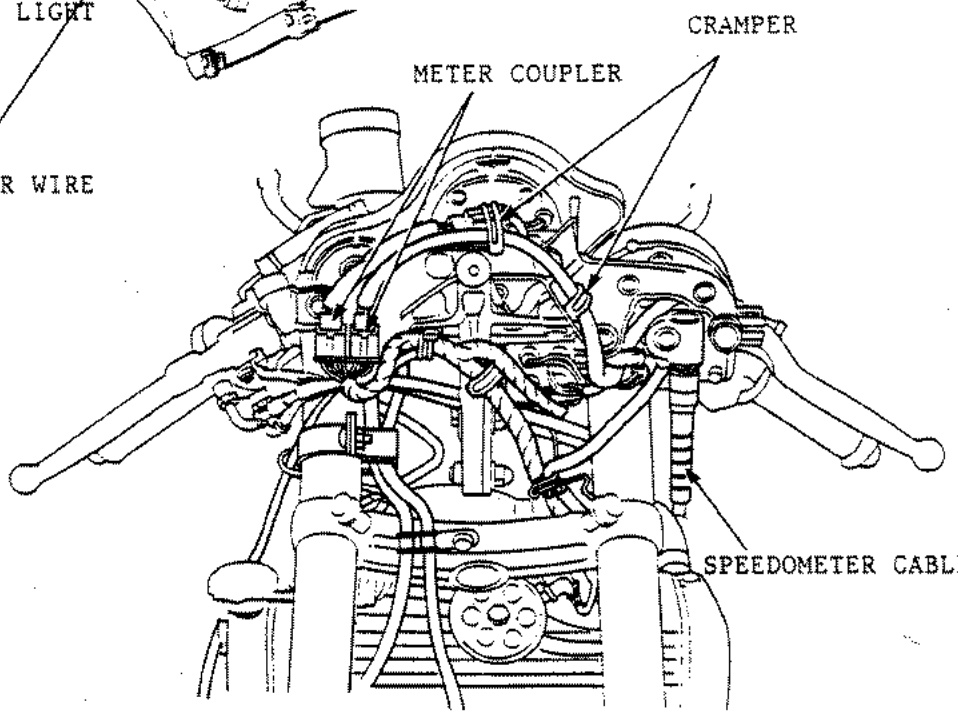
07746－0010400	
07746－0041000	
07746－0040600	
07746－0030100	
07746－0050600	
07703－0010100	
07707－0020500	

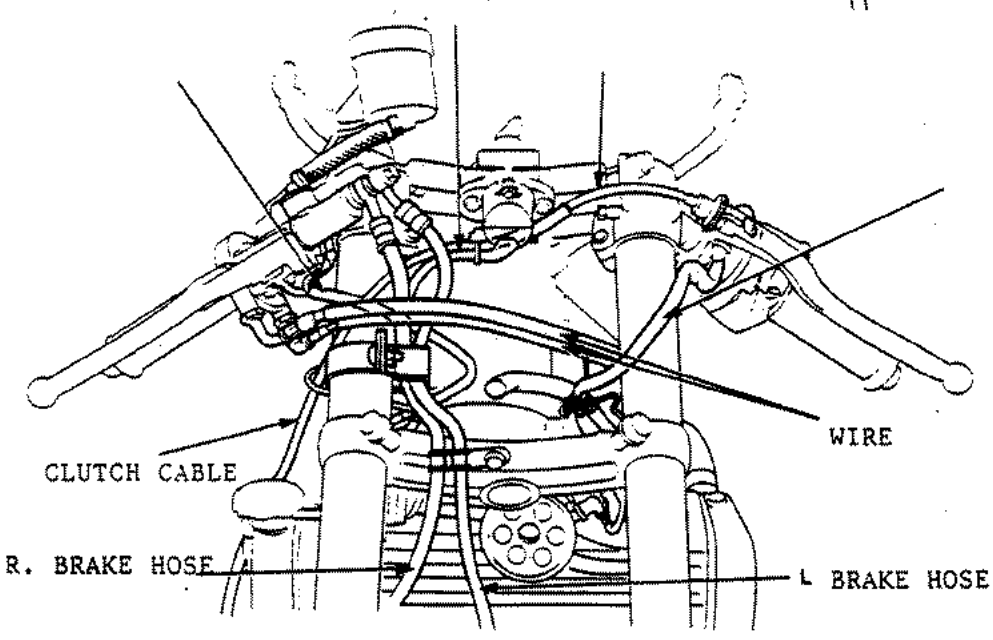


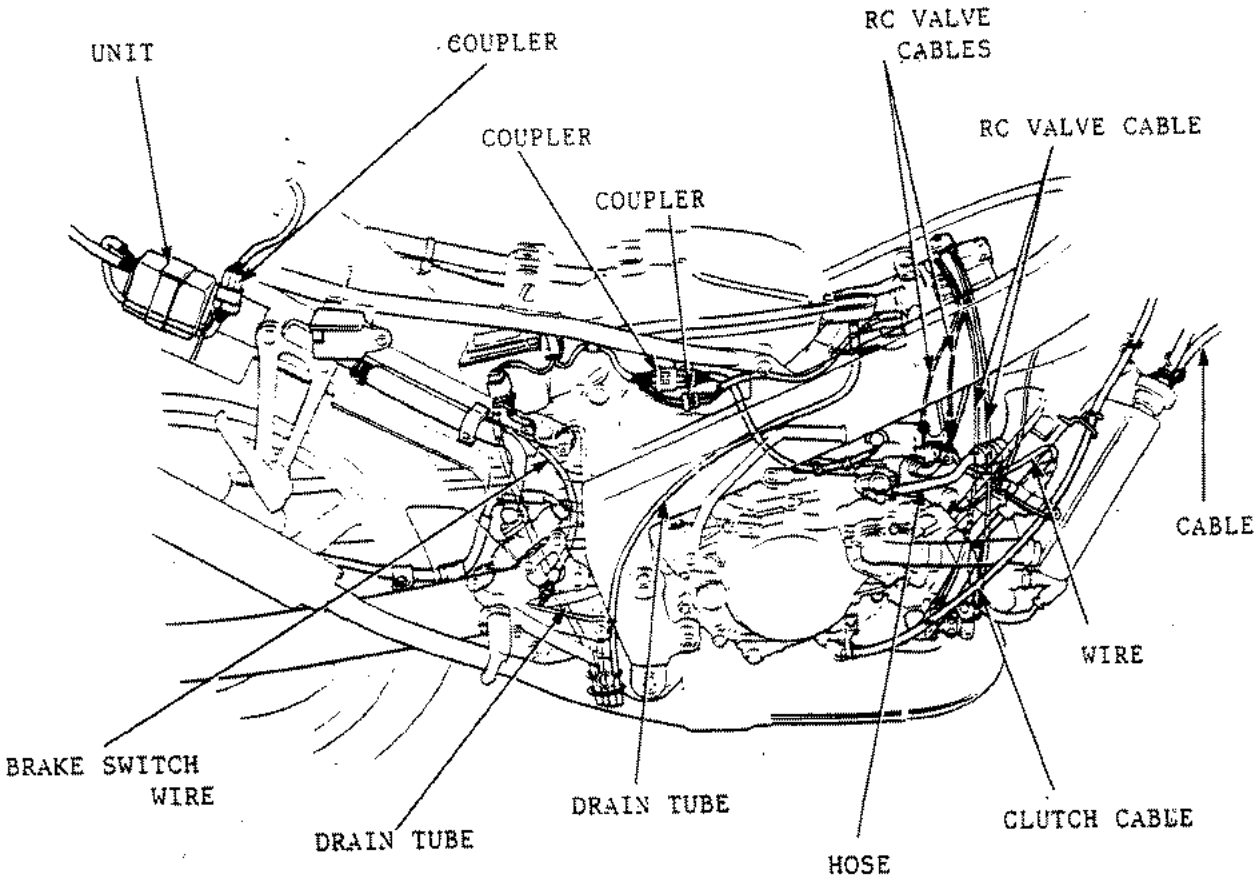

0030Z-KW3-7010

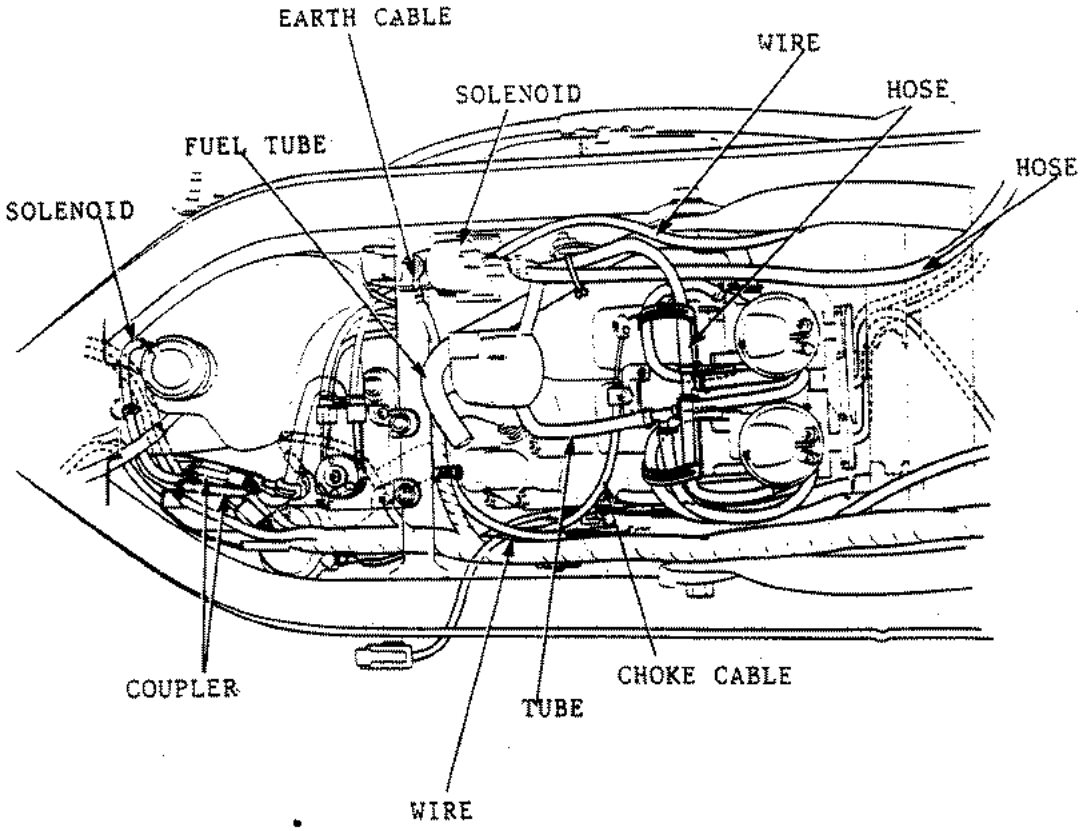
WIRING MAP

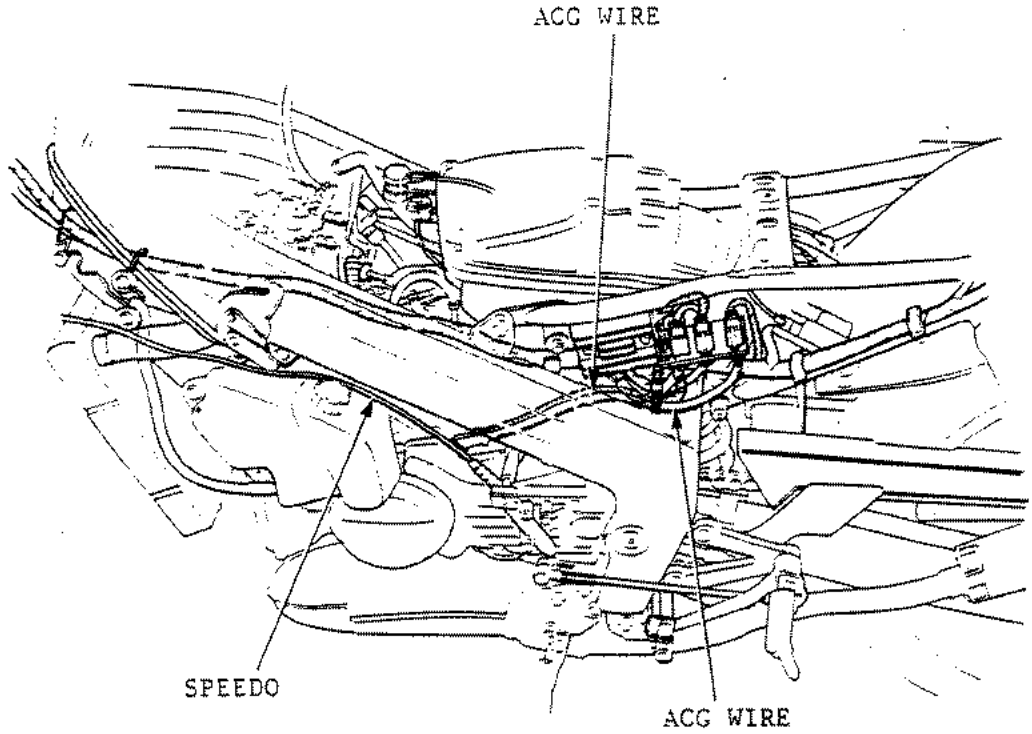

POSITION LIGHT WIRE
CABLE GUIDE
WINKER WIRE

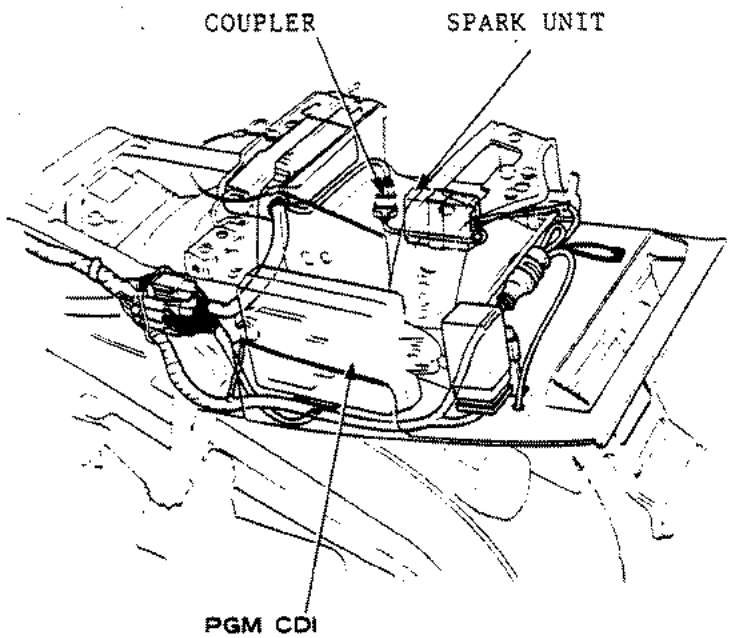

CRAMPER
METER COUPLER
SPEEDOMETER CABLE

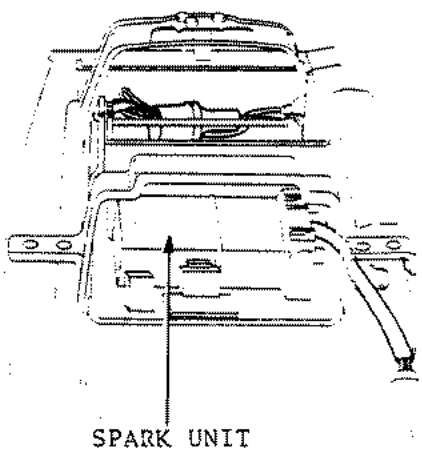

WIRE
CLUTCH CABLE
R. BRAKE HOSE
L BRAKE HOSE

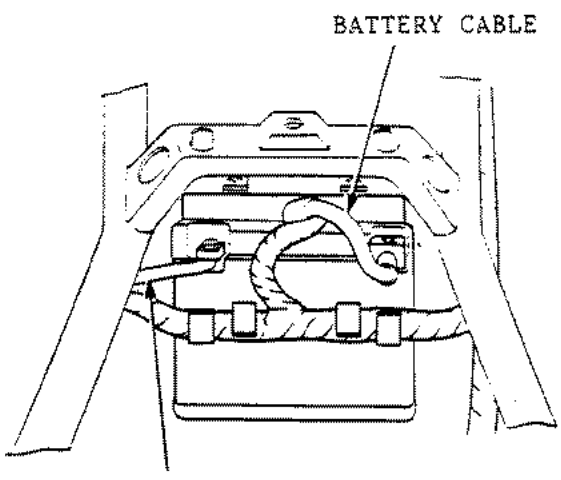

UNIT
COUPLER
COUPLER
COUPLER
RC VALVE CABLES
RC VALVE CABLE
CABLE
WIRE
BRAKE SWITCH WIRE
DRAIN TUBE
DRAIN TUBE
HOSE
CLUTCH CABLE

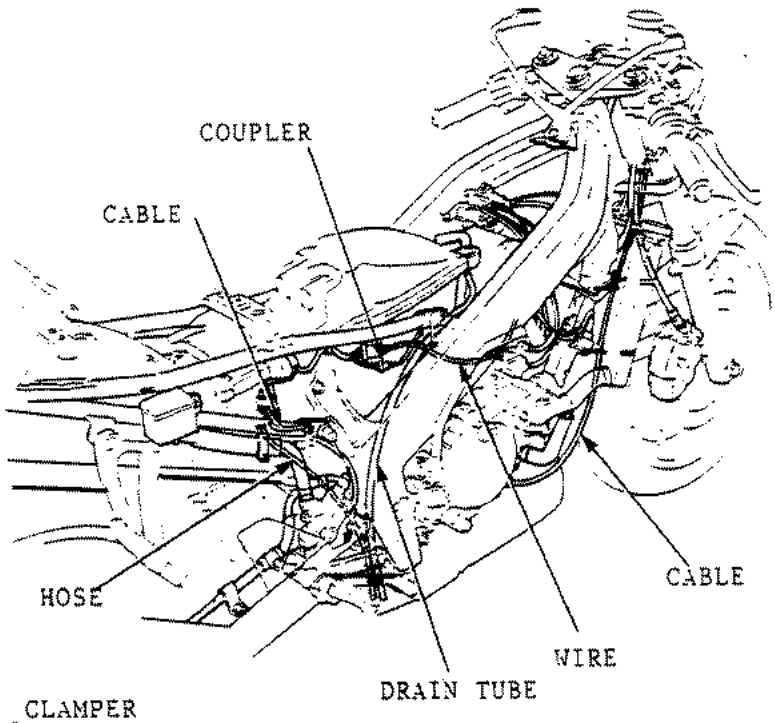

EARTH CABLE
WIRE
SOLENOID
HOSE
FUEL TUBE
HOSE
SOLENOID
COUPLER
TUBE
CHOKE CABLE
WIRE

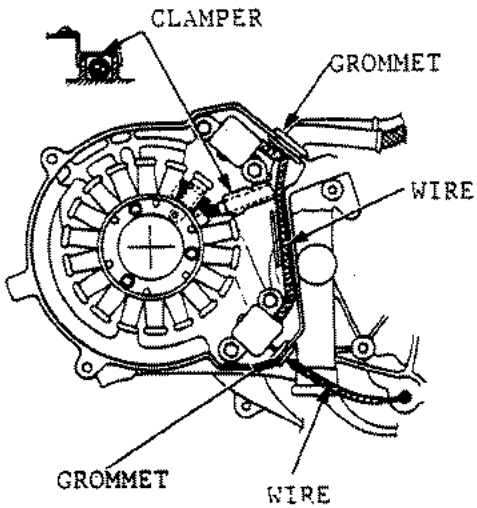

ACG WIRE
SPEEDO
ACG WIRE

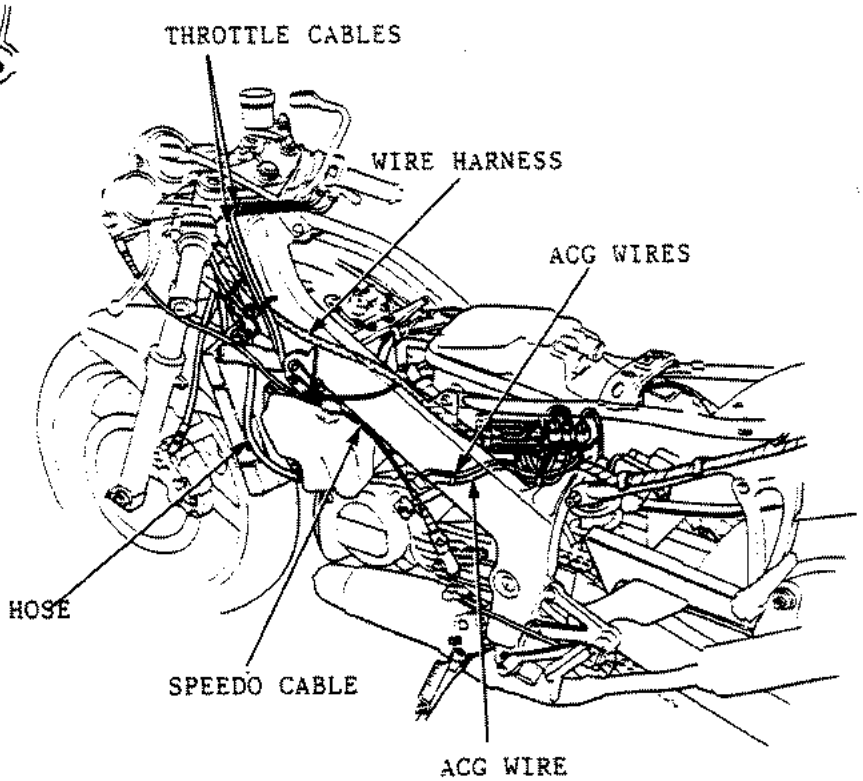

COUPLER
SPARK UNIT
PGM CDI


SPARK UNIT

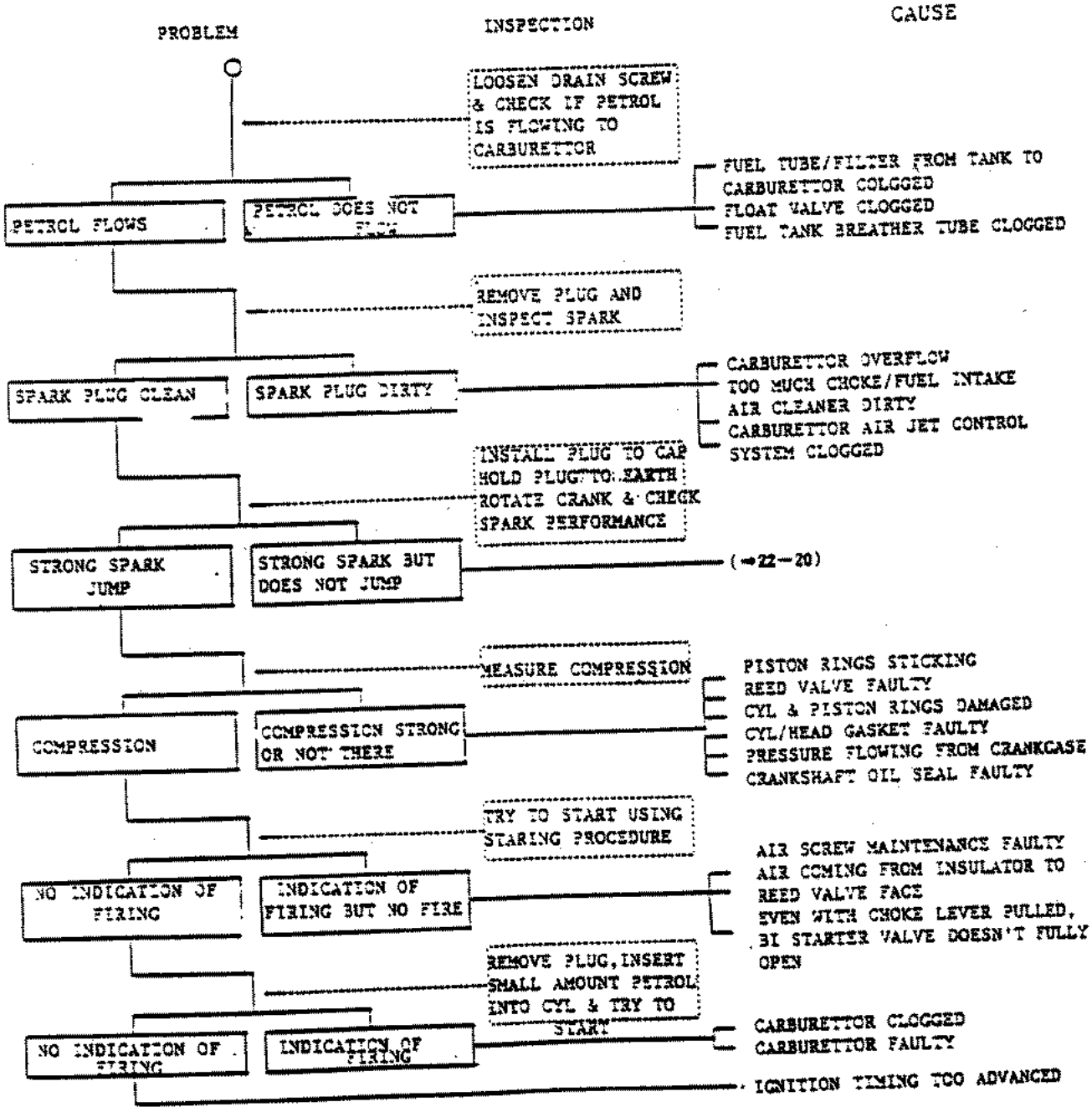

BATTERY CABLE

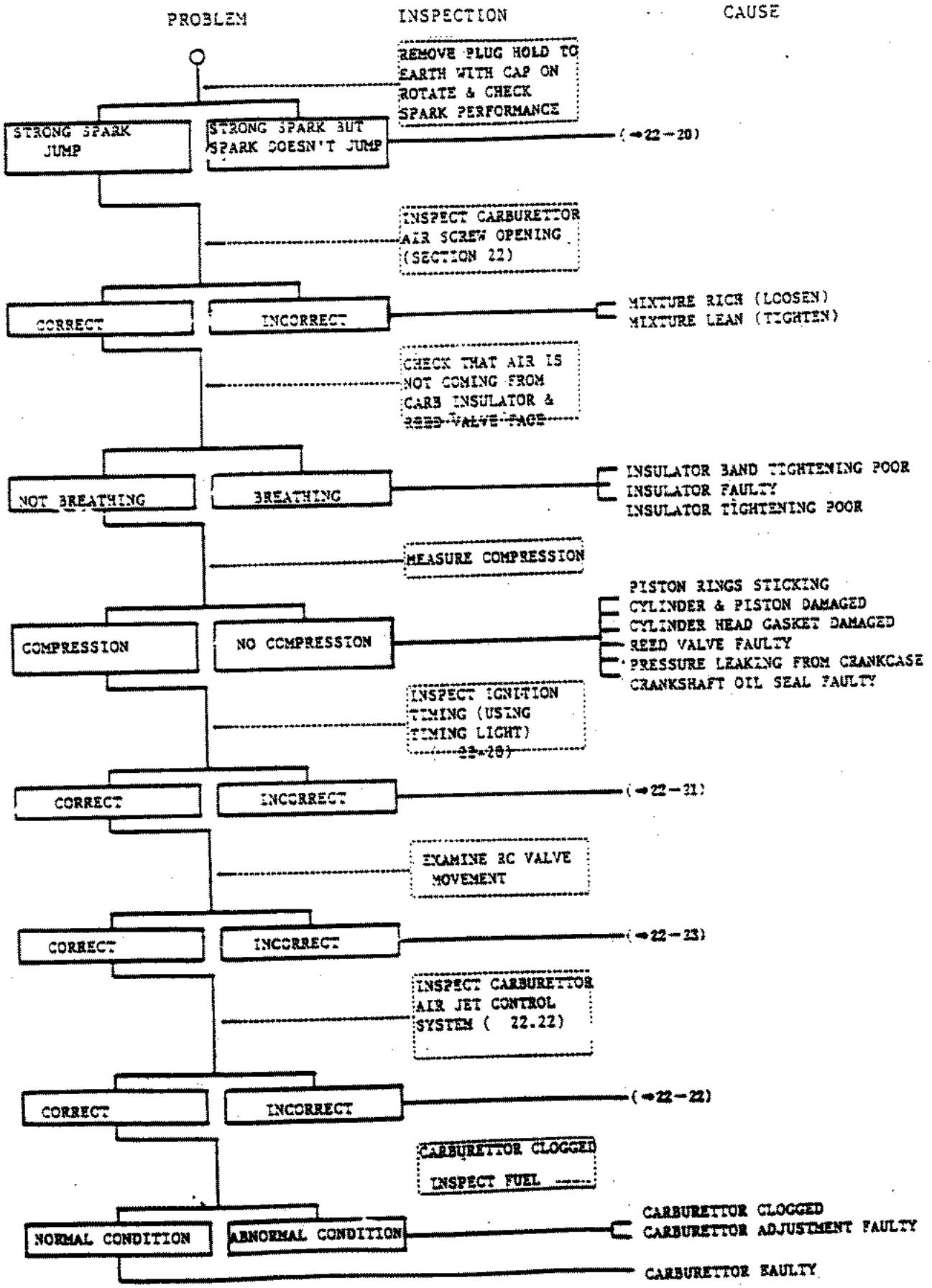

COUPLER
CABLE
HOSE
CABLE
WIRE
DRAIN TUBE


CLAMPER
GROMMET
WIRE
GROMMET
WIRE

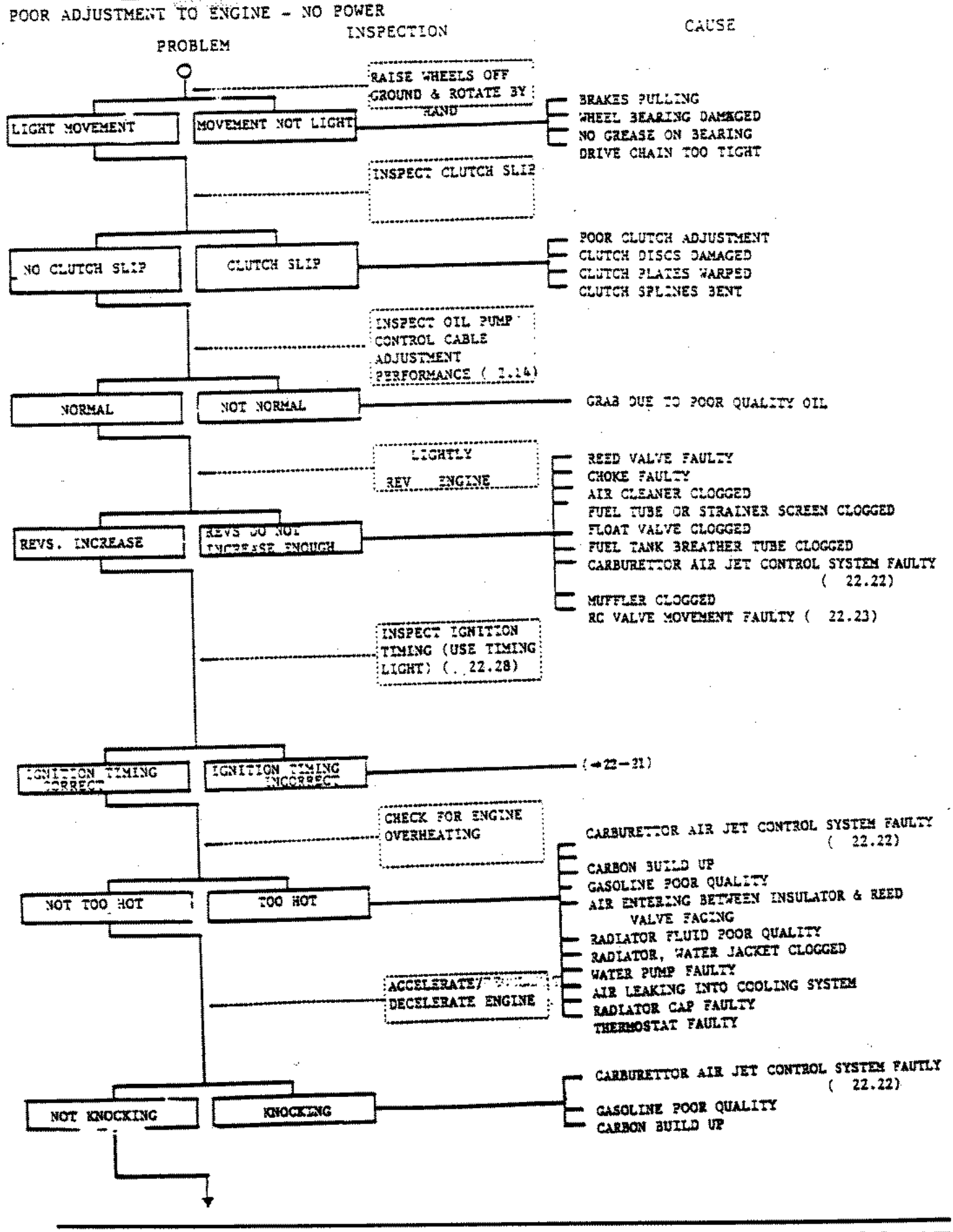

THROTTLE CABLES
WIRE HARNESS
ACG WIRES
HOSE
SPEEDO CABLE
ACG WIRE

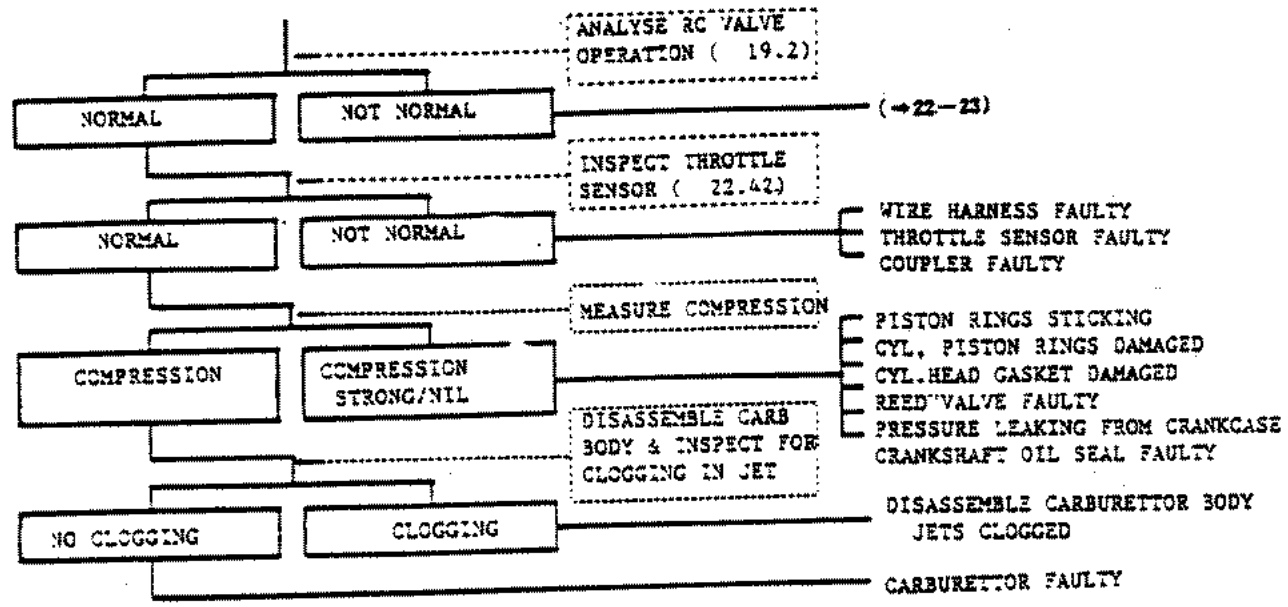
TROUBLE SHOOTING



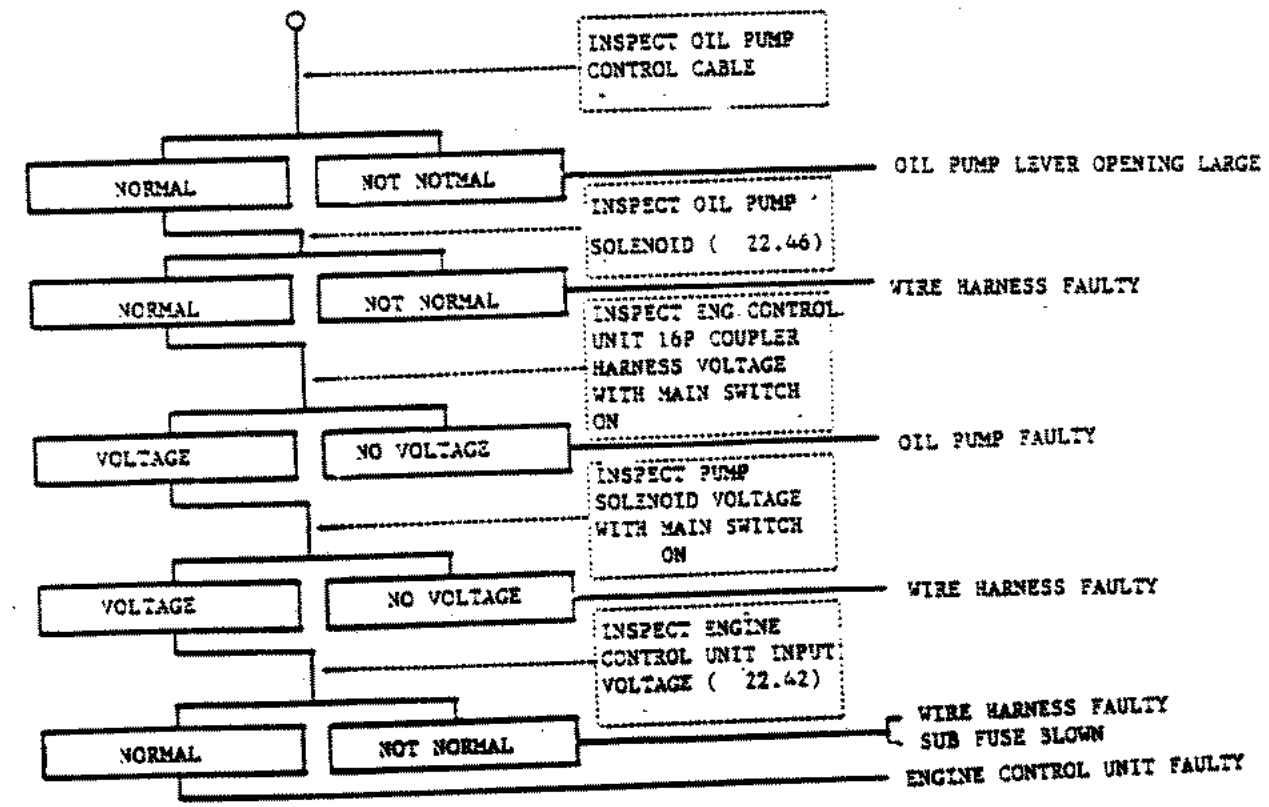

PROBLEM
INSPECTION
CAUSE
REMOVE PLUG HOLD TO EARTH WITH CAP ON ROTATE & CHECK SPARK PERFORMANCE
STRONG SPARK JUMP
STRONG SPARK BUT SPARK DOESN'T JUMP
(→22-20)
INSPECT CARBURETTOR AIR SCREW OPENING (SECTION 22)
CORRECT
INCORRECT
MIXTURE RICH (LOOSEN)
MIXTURE LEAN (TIGHTEN)
CHECK THAT AIR IS NOT COMING FROM CARB INSULATOR & REED VALVE FACE
NOT BREATHING
BREATHING
INSULATOR BAND TIGHTENING POOR
INSULATOR FAULTY
INSULATOR TIGHTENING POOR
MEASURE COMPRESSION
COMPRESSION
NO COMPRESSION
PISTON RINGS STICKING
CYLINDER & PISTON DAMAGED
CYLINDER HEAD GASKET DAMAGED
REED VALVE FAULTY
PRESSURE LEAKING FROM CRANKCASE
CRANKSHAFT OIL SEAL FAULTY
INSPECT IGNITION TIMING (USING TIMING LIGHT) (→22-20)
CORRECT
INCORRECT
(→22-21)
EXAMINE BC VALVE MOVEMENT
CORRECT
INCORRECT
(→22-23)
INSPECT CARBURETTOR AIR JET CONTROL SYSTEM (22.22)
CORRECT
INCORRECT
(→22-22)
CARBURETTOR CLOGGED
INSPECT FUEL
NORMAL CONDITION
ABNORMAL CONDITION
CARBURETTOR CLOGGED
CARBURETTOR ADJUSTMENT FAULTY
CARBURETTOR FAULTY

POOR ADJUSTMENT TO ENGINE - NO POWER





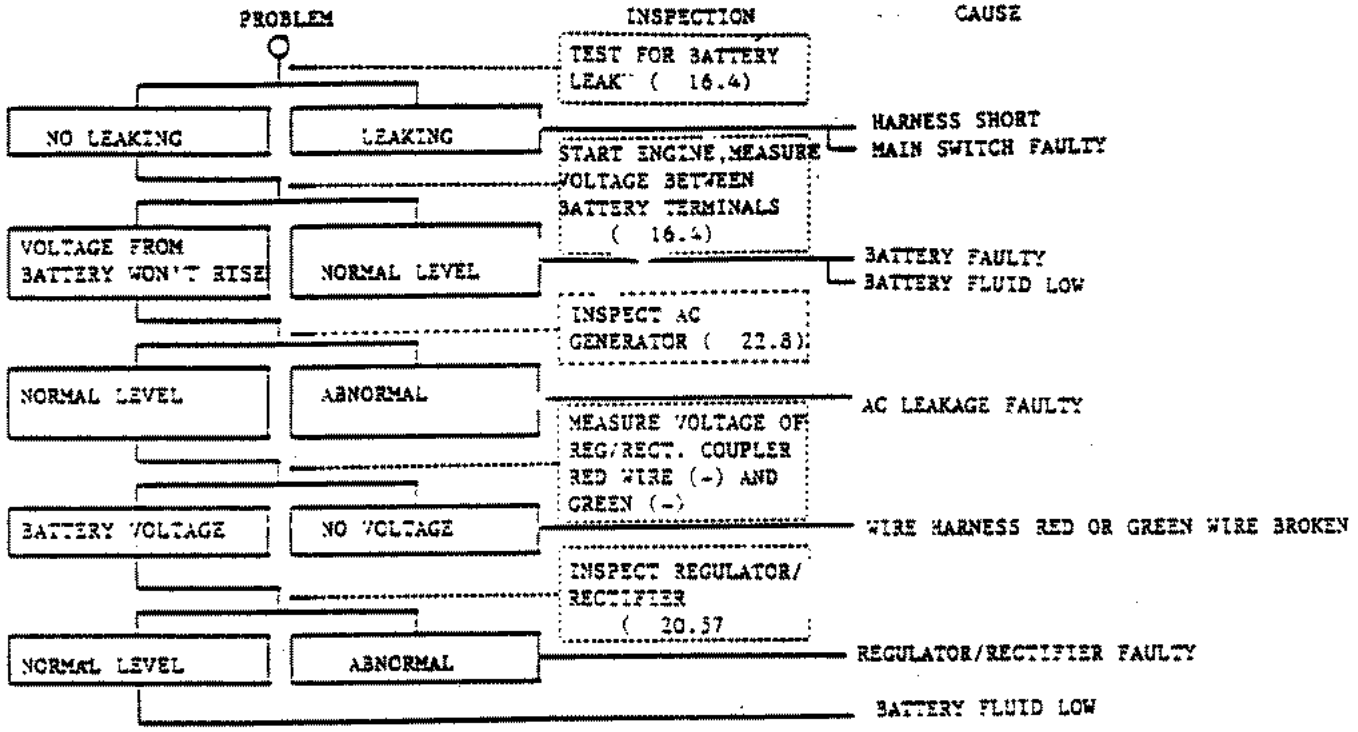
AT LOW REVS, LOTS OF EXHAUST NOISE



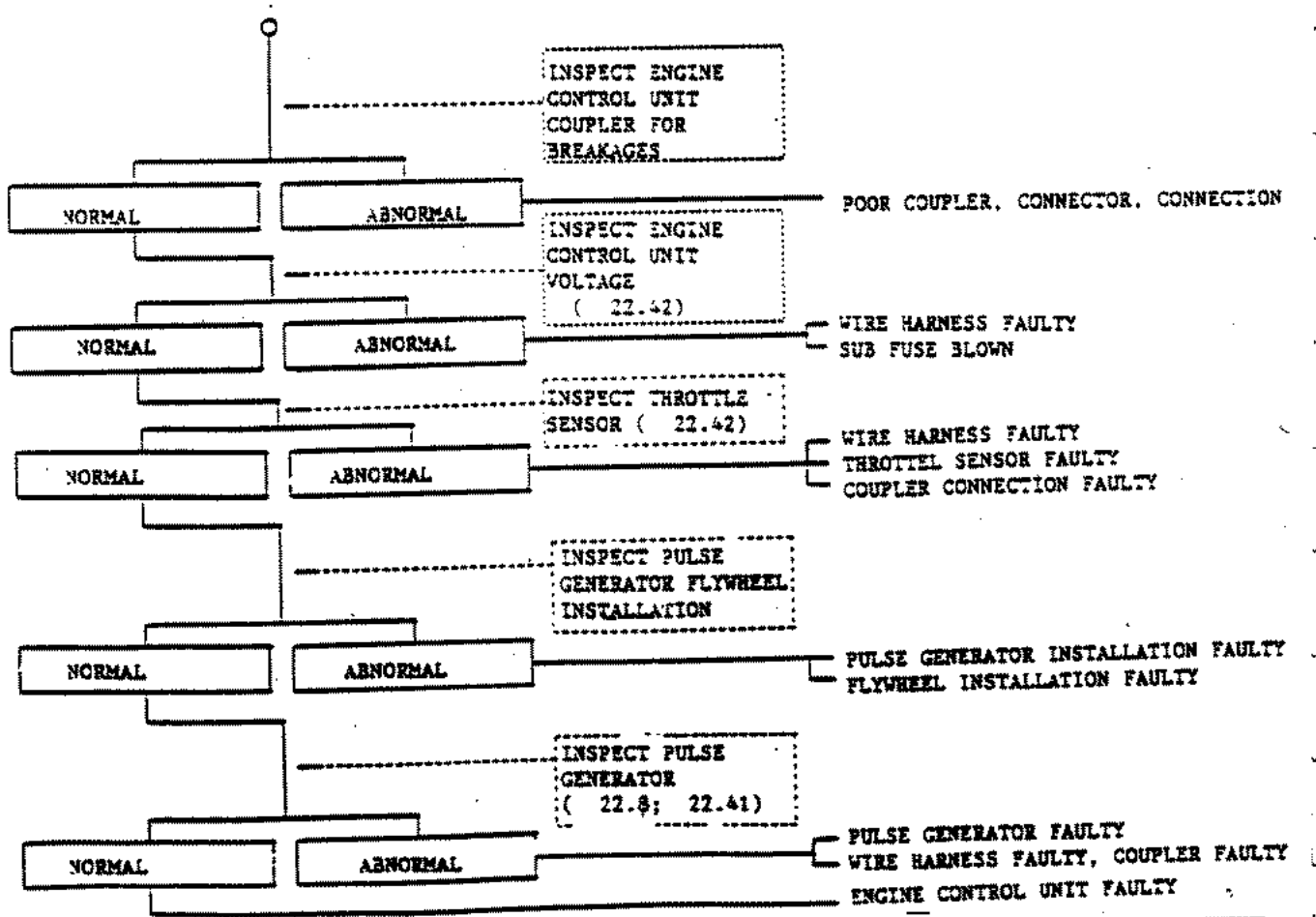
NO SPARK FROM SPRAK PLUG
If there is no spark, conduct spark test on ignition coil. Measure the ignition coils primary voltage. If there is difficulty with the coil but still normal spark, the ignition coil has been faulty from beginning

PERFORMANCE PROBLEM	CHECK THE FOLLOWING. POSSIBLE CAUSES FROM 1.
PEAK VOLTAGE IS LOW	1. USE TESTER TO CHECK FOR LOW INTERNAL RESISTANCE 2. TESTING SAMPLING TIME CONSEQUENCES 3. IGNITION WIRING CUT, POOR CONTACT 4. IGNITION COIL FAULTY 5. ENGINE CONTROL UNIT FAULTY (1-4 If no abnormal conditions, no spark from plugs)
NO PEAK VOLTAGE PEAK VOLTAGE USUALLY NOT THERE	1. ADAPTOR MISCONNECTED 2. FUSE,MAIN SWITCH,KILL SWITCH FAULTY 3. ENGINE CONTROL UNIT COUPLER CONNECTION POOR 4. NO VOLTAGE IN ENGINE CONTROL UNIT 16P COUPLER BLACK/WHITE WIRES (22.42) 5. ENGINE CONTROL UNIT 4P COUPLER WIRE BROKEN, POORLY CONNECTED 6. CRANKING SPEED TOO LOW (KICK POWER TOO STRONG) 7. PULSE GENERATOR POOR QUALITY (MEASURE PEAK VOLTAGE) 8. PEAK VOLTAGE ADAPTOR FAULTY 9. ENGINE CONTROL UNIT FAULTY (1-8 If no abnormal condition, no spark from plugs)
PEAK VOLTAGE NORMAL BUT NO SPARK FROM PLUGS	1. SPARK PLUGS POOR QUALITY, OR IGNITION COIL SECONDARY CURRENT LEAK 2. IGNITION COIL FAULTY
PEAK VOLTAGE LOW	1. USE TESTER TO CHECK FOR LOW INTERNAL RESISTANCE 2. CRANKING SPEED TOO LOW (KICK POWER TOO STRONG) 3. TESTING SAMPLING TIME CONSEQUENCES (MEASURE REVOLUTIONS - NORMAL IF VALVE ABOVE STANDARD) 4. PULSE GENERATOR FAULTY (1-3 No abnormal conditions
NO PEAK VOLTAGE OR USUALLY NOT THERE	1. PEAK VOLTAGE ADAPTOR FAULTY 2. PULSE GENERATOR FAULTY

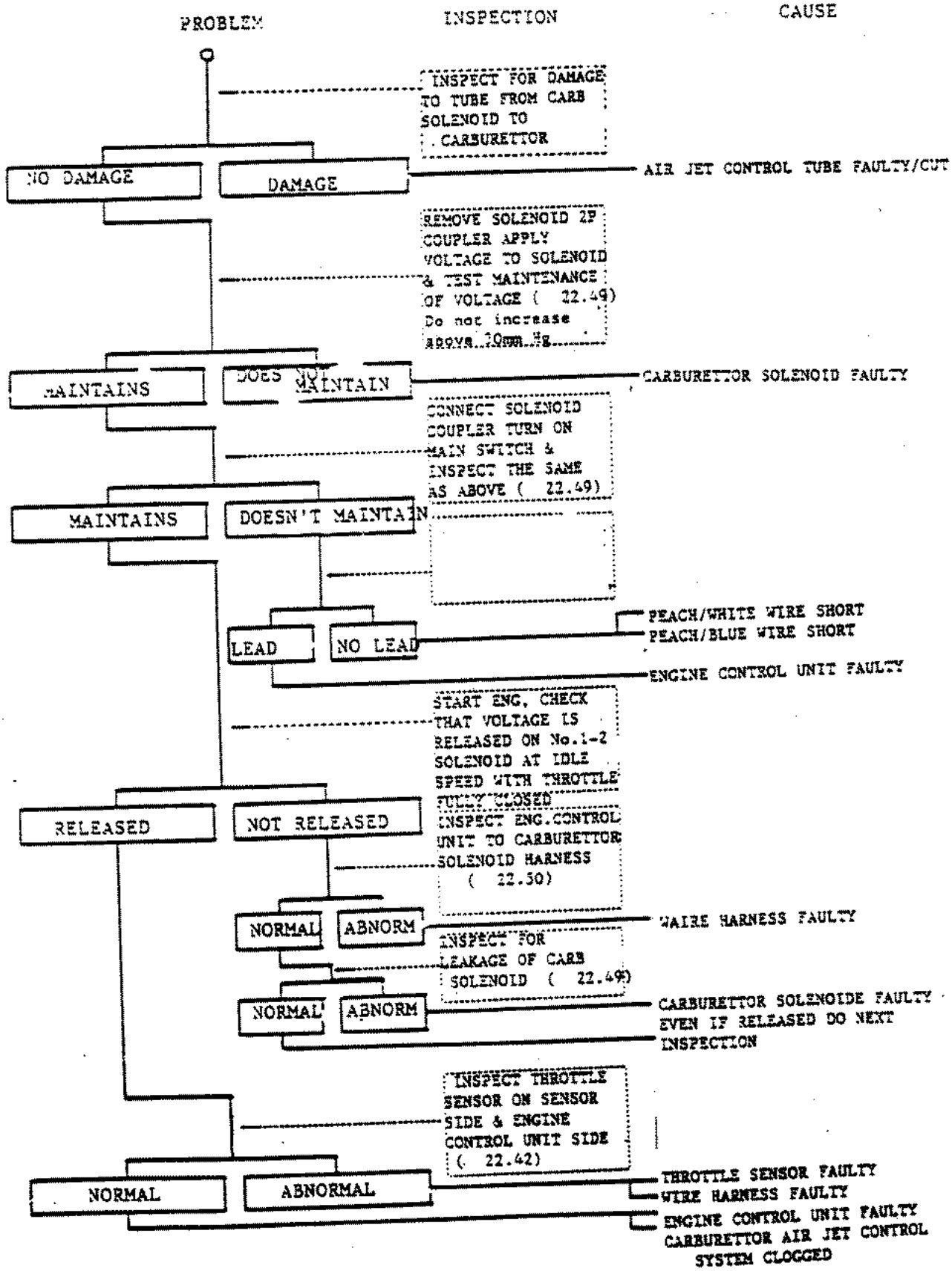
POOR CHARGING



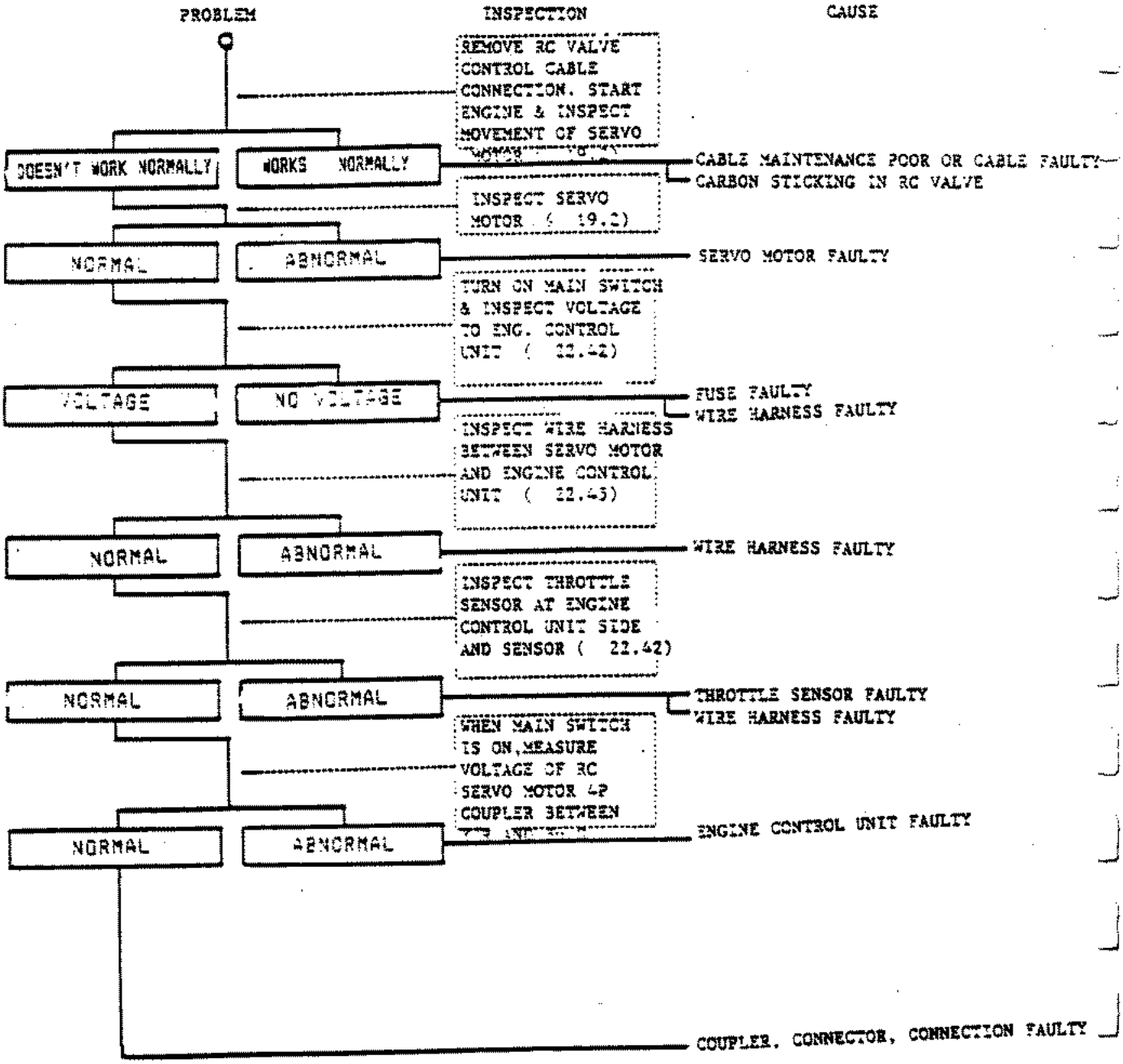
IGNITION TIMING POOR



CARBURETTOR AIR JET CONTROL SYSTEM



RC VALVE MOVEMENT POOR



MAINTENANCE SCHEDULE

		Cont inuous	1 Mths	6 Mths	12 Mths	
STEERING	H/Bar fstg				●	Play
					●	Damage
					●	Left, Right turning
	Forks			●	●	Damage
				●	●	Fork spindle installation — Tighten steering stem
					●	Fork spindle movement — Tighten steering stem
	Brake Pedal			●	●	Play and performance when pushed — Play: 10-20mm Pedal, 20-30mm Lever
		●				Noise
			○	●	●	Brake noise
			○	●	●	Leakage, damage, installation
						Brake hose replacement — Every 4 years
	Fluid Tank	●		●	●	Fluid capacity — Fluid level: Front between top & bottom mark; Rear between top & bottom amrk
	M/Cyl, Wheel cyl, Brake Disc/Pads				●	Damage, wear
						Master cylinder, cylinder cap, dust seal, disc caliper replacement — ☆ Every two years
					●	Disc to pad clearance
				○	●	Pad wear — Indicator
					●	Disc wear and damage — Standard : F - 4.0mm R -5.0mm; Ser.limit : F - 3.5mm R -4.0mm
						Brake fluid replacement — Every year

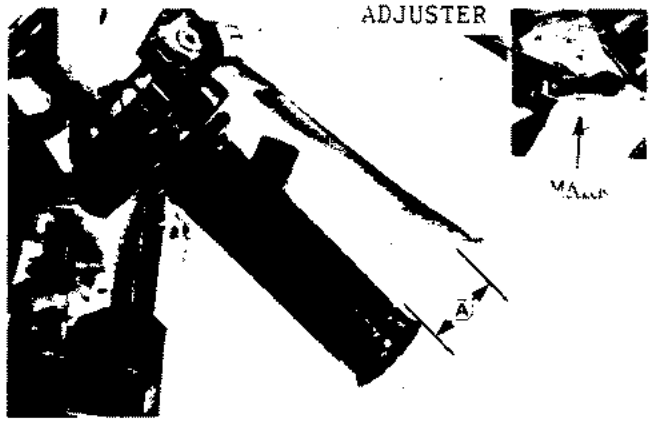
		1	6	12	
Wheel	Tire Pressures	●	●	●	Front / Rear 1 rider 2.25 / 2.25 2 riders 2.25 / 2.50 Tire type 110/70R17 54H / 150/60R18 67H
	Tire wear and damage	●	●	●	
	Tire tread depth	●	●	●	Min – Fro 0.8mm Rear 0.3mm
	Foreign articles stuck in tires	●	●	●	
	Wheel nut, wheel bolt loosening		●	●	Tighten axle nut, axle holder front axle holder torque 1.8–2.5 Kg.m Fro axle bolt torque 5.5–6.5 Kg.m Rr axle nut torque 8.5–10.5 Kg.m
	Rim, side rim, wheel disc damage		C	●	Wheel rim runout, warpage Front 2.0mm axial 2.0mm radial Rear 2.0mm axial 2.0mm radial
	Front wheel bearings			●	
	Rear wheel bearing			●	
Rear Suspension Arm	Damage			●	Tighten cushion, spring
	Arm damage			●	
Rear Shock Ab.	Fluid leakage, damage			●	
	Bushings			●	
Clutch	Lever play			●	● Play – lever 10–20mm
	Use		C	●	●
Transmission Oil	Fluid leakage, oil capacity			●	● Oil capacity – between upper and lower marks
	Gear movement				●
	Transmission oil replacement				Every two years

		1 Month (Cont'l'us.)	6 Mths	12 mths	
CHAIN AND STRUCTURE	Chain slack	○	●	●	Use side stand and measure play in middle 15-25mm
	Sprocket installation & damage			●	
IGN	Ignition plug performance		●	●	Plug gap 0.7-0.8mm
	Ignition plug replacement				5.000km (every)
BAT. WIRE	Terminal connections			●	
	Connections & wire damage			●	
BODY	Twisting, foreign sounds		●	●	
	Low/High speed performance	○	●	●	Idle speed 1200±100rpm
	Exhaust gas		●	●	
	Air cleaner element		●	●	
FUEL SYS	Oil leakage and capacity		●	●	Oil capacity Check that pilot lamp does not shine
	Oil leakage		●	●	
	Oil capacity	●			
	Oil cleaner clogging			●	
	Oil pump performance	○		○	
	Fuel leakage		●	●	
	Carburettor link			●	
	Throttle cable & choke cable			●	
	Fuel filter clogging			●	
	Fuel capacity	●			
	Fuel hose replacement				Every 4 years
COOLING SYS	Water capacity	●		●	● Between upper and lower levels in reserve tank
	Water leakage	●			●
	Radiator cap				● Pressure 1.1-1.4 K/cm²
	Cooling agnet replacement				Every two years
				●	●
		●			

	1 month (Continue.)	6 months	12 months
Horn			●
Labels	●		
	●		
Gauges			●
Exhaust pipe, muffler			●
Muffler performance			●
			●
	●		
		●	●
			C

FRONT BRAKE

Lever travel 10-20mm

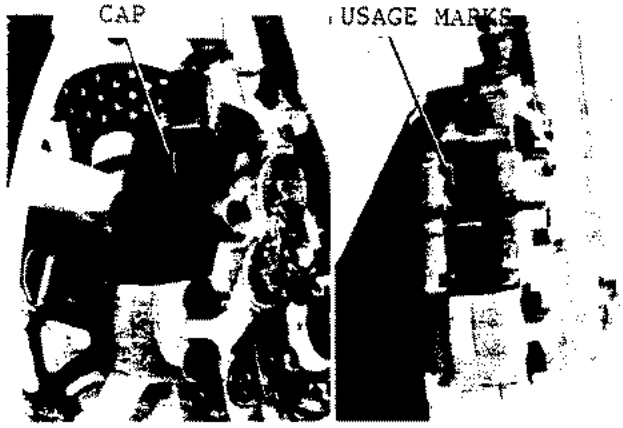


FRONT BRAKE PAD

Pad Wear

Inspect pad wear using the usage marks

* Replace brake pads as a set

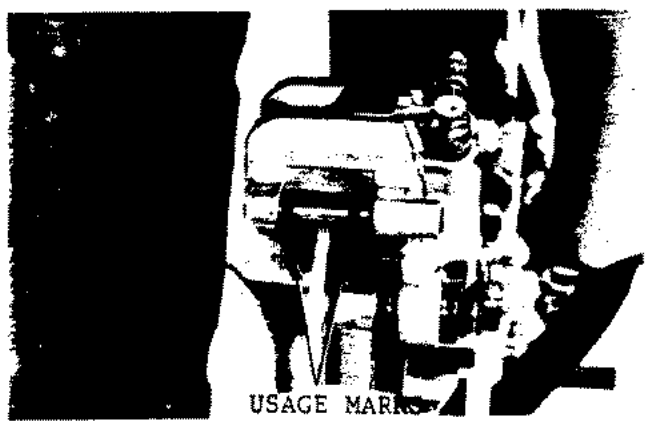


REAR BRAKE PAD

Pad Wear

Inspect pad wear using the usage marks

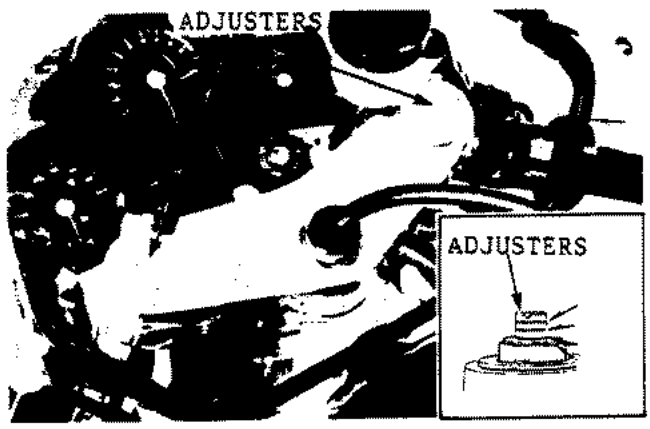
* Replace brake pads as a set



FRONT FORK

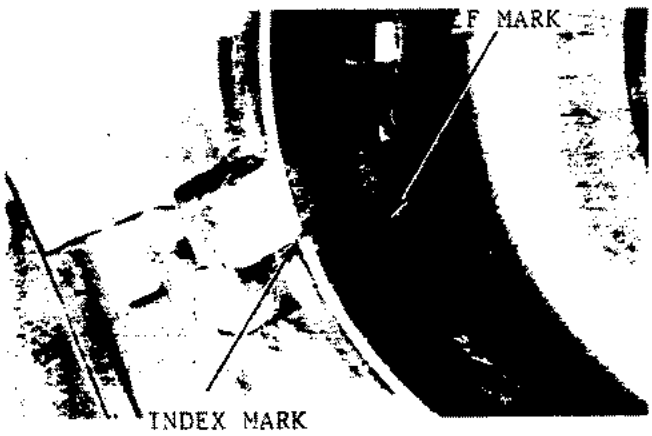
Spring preload adjustments

* Ensure spring preload settings are even between left and right forks



IGNITION TIMING

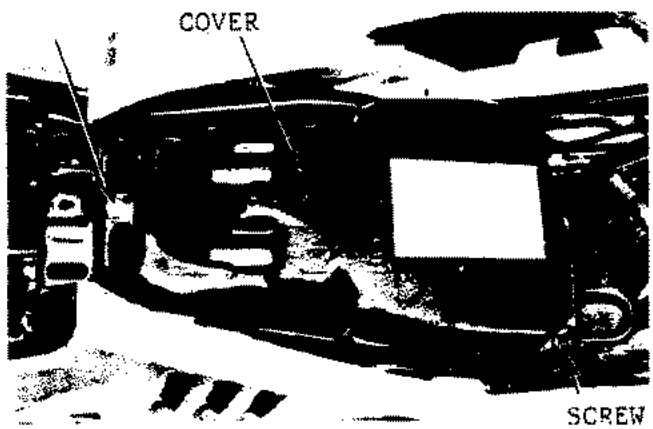
* This machine uses CDI ignition system so adjustment of the ignition timing is not necessary



AIR CLEANER

* do not clean element with petrol, solvents or alkalis

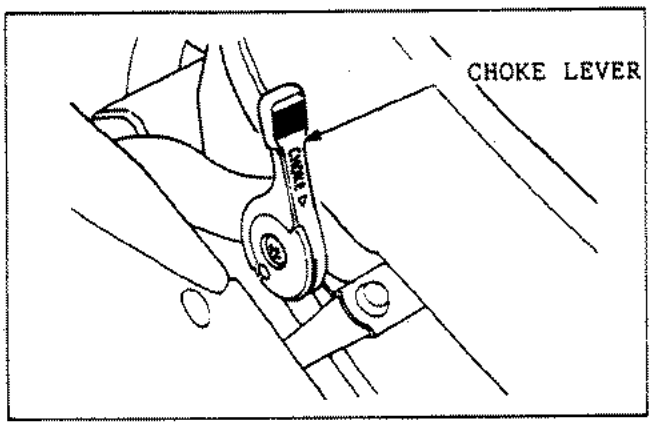
* If element is installed squashed then it will become easily worn, thus needing replacement



CHOKE

Inspect the choke cable and adjusters condition

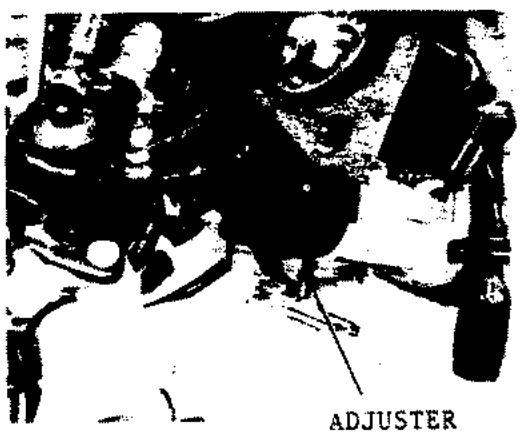
Inspect for smooth operation from fully closed to fully open



LIGHTING SYSTEM

headlight adjustment

With motorcycle on level ground adjust headligh by turning screw with a driver

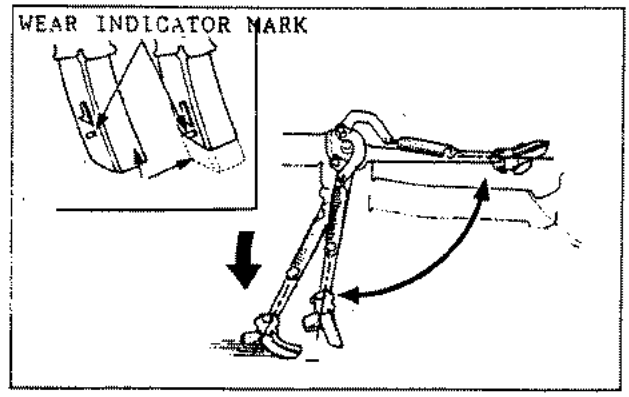


SIDE STAND

Because of the weight of the frame and raising the bike using the side stand the stand may bend.

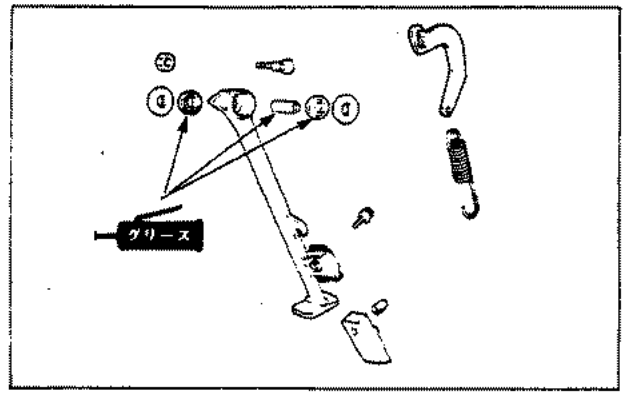
With 2.0-3.0 Kg pressure the stand will raise when pushing the rubber

If the rubber is worn or damaged replace



LUBRICATING POINTS

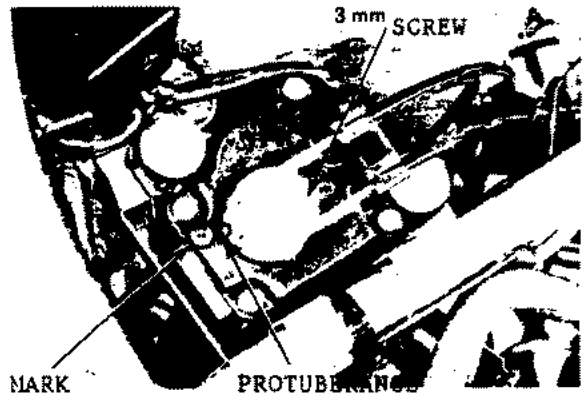
Indicated in diagramm

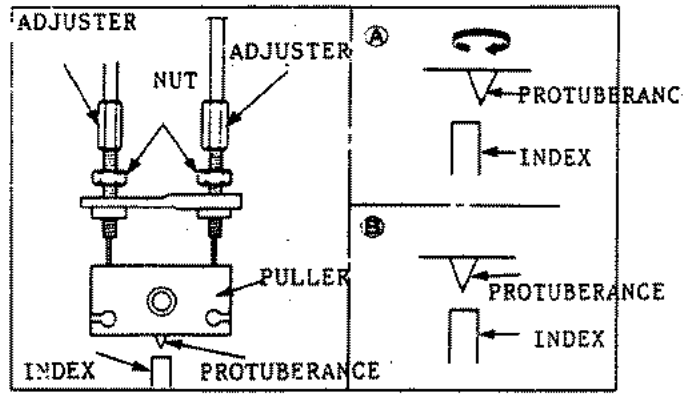


RC VALVE CONTROL CABLE ADJUSTMENT

* If the control cable connection is removed or the control cable is loose, then replace the control cable

Remove R. lower fairing (15.3)
Remove fuel tank (4-2)
Remove control cable connection from cylinder pulley
Connect fuel tube to fuel cock and start engine
Slowly raise engine revolutions and check that at roughly 2000rpm the servo motor pulley protuberance stops at the "HI" mark position and stop the engine with the OFF switch

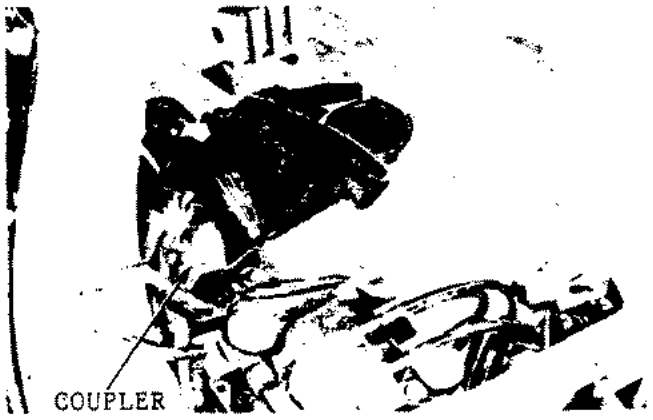




Fully open the pulley on the cylinder side and fix there withthe knock pin or something suitable

* Check that the pulley is okay when it is in the fixed position

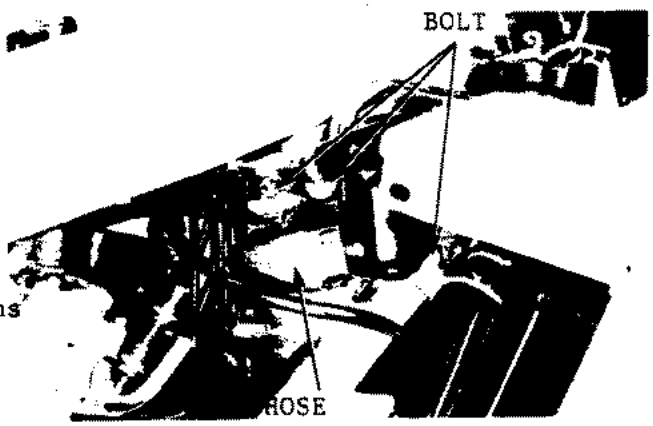
* it is easier to perform if the knock pin (94303-06100) is used



Connect control cable to the cylinder pulley.

Adjust the adjuster nut so that the pulley which pulls up cable has freeplay of under 0.5mm

* Always tighten the adjuster nut by hand



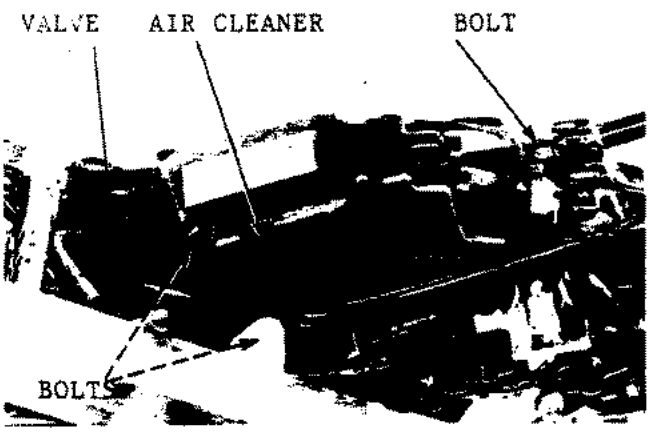
Start engine and slowlu increase revolutions to around 2000rpm and check that the pulley moves clockwise to a stop, and increase the revolutions to around 3000rpm where it should move anti clockwise to a stop

AIR CLEANER CASE

remove air cleaner drain tube

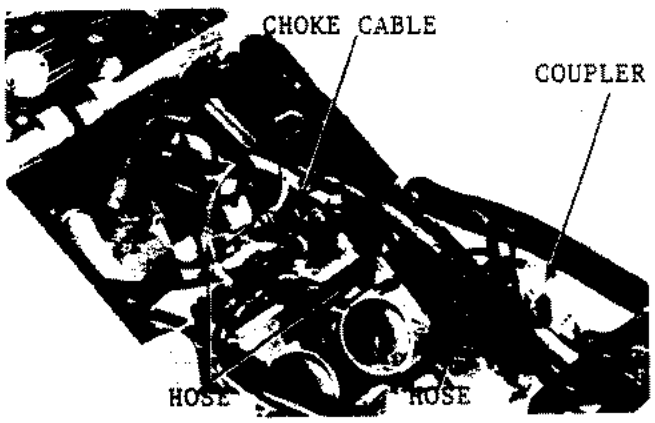
Remove air cleaner case bolt

Loosen connecting tube band and remove air cleaner



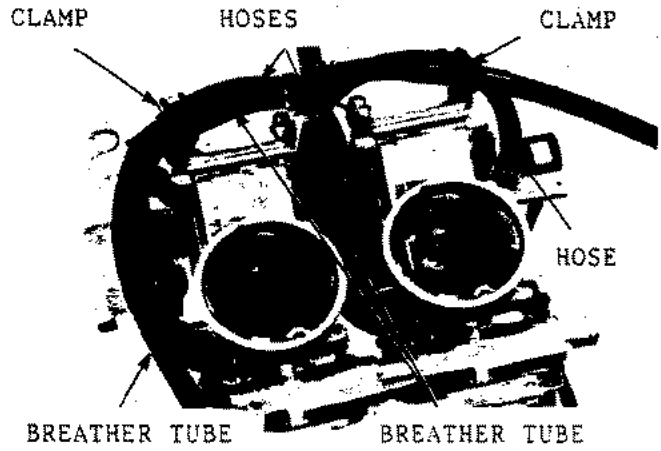
CARBURETTOR

Remove as per section 4

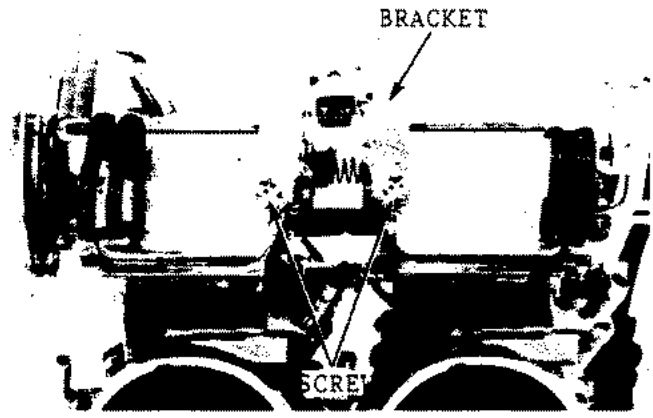


CARBURETTOR INSPECTION

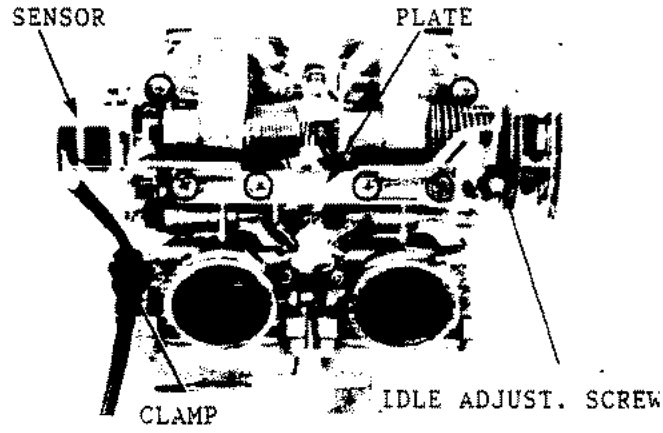
Disassemble as per section 4



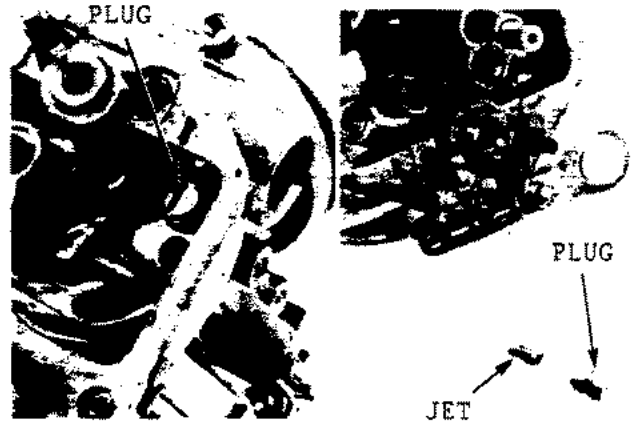
Remove bracket

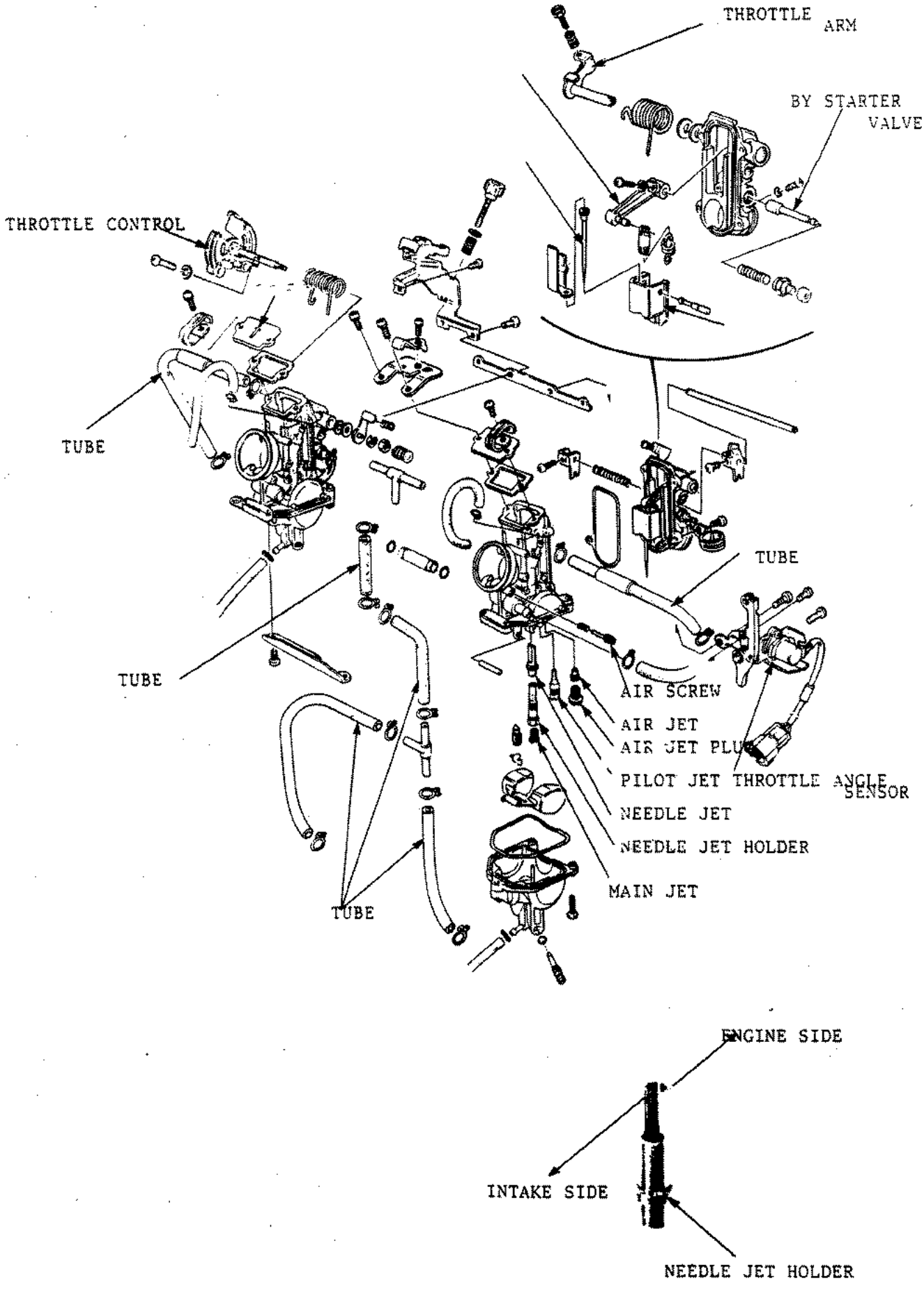


* Caution care must be taken when removing throttle angle sensor



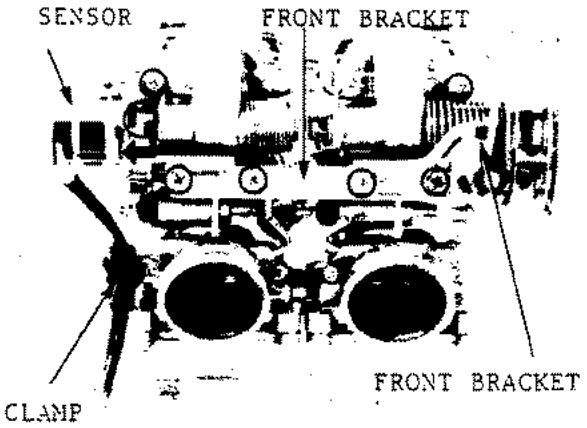
Inspect air jet by removing the plug shown

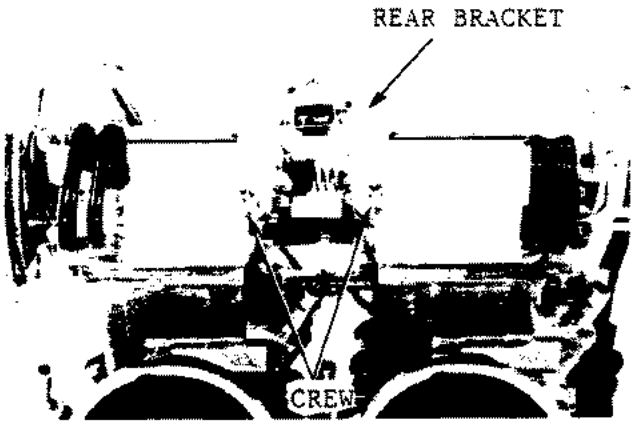



THROTTLE ARM
BY STARTER VALVE
THROTTLE CONTROL
TUBE
TUBE
TUBE
TUBE
AIR SCREW
AIR JET
AIR JET PLUG
PILOT JET
THROTTLE ANGLE SENSOR
NEEDLE JET
NEEDLE JET HOLDER
MAIN JET
ENGINE SIDE
INTAKE SIDE
NEEDLE JET HOLDER

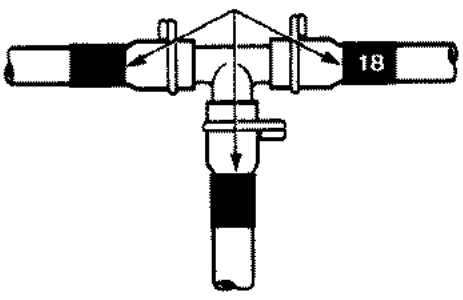
REASSEMBLY

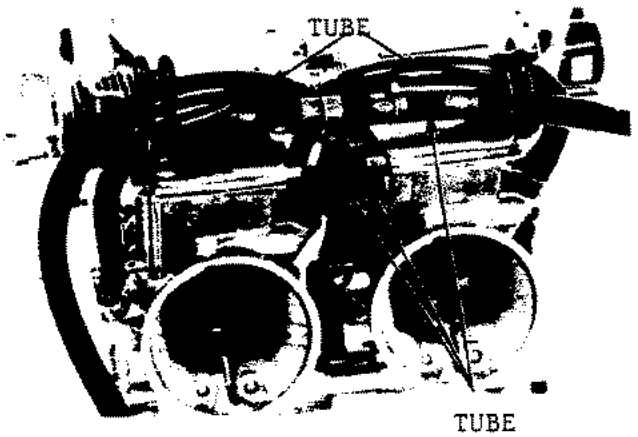
Assemble in the reverse order of disassembly

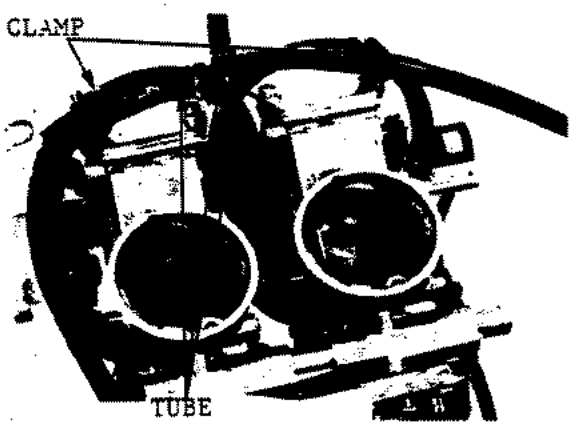


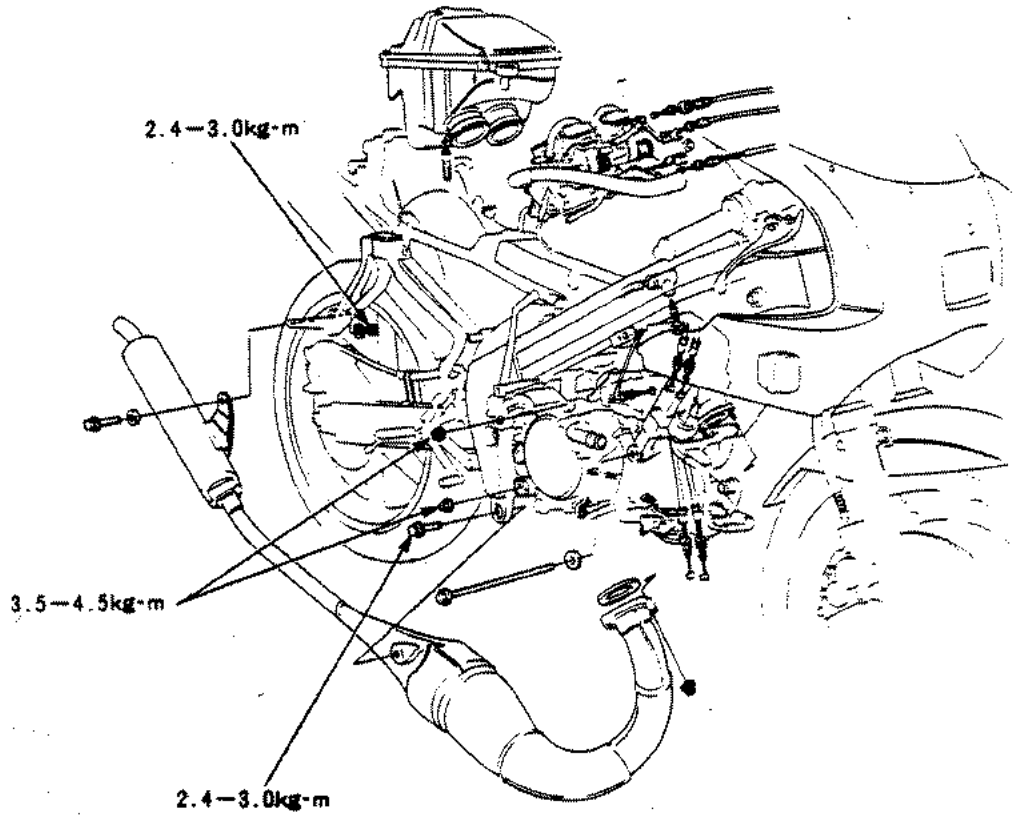


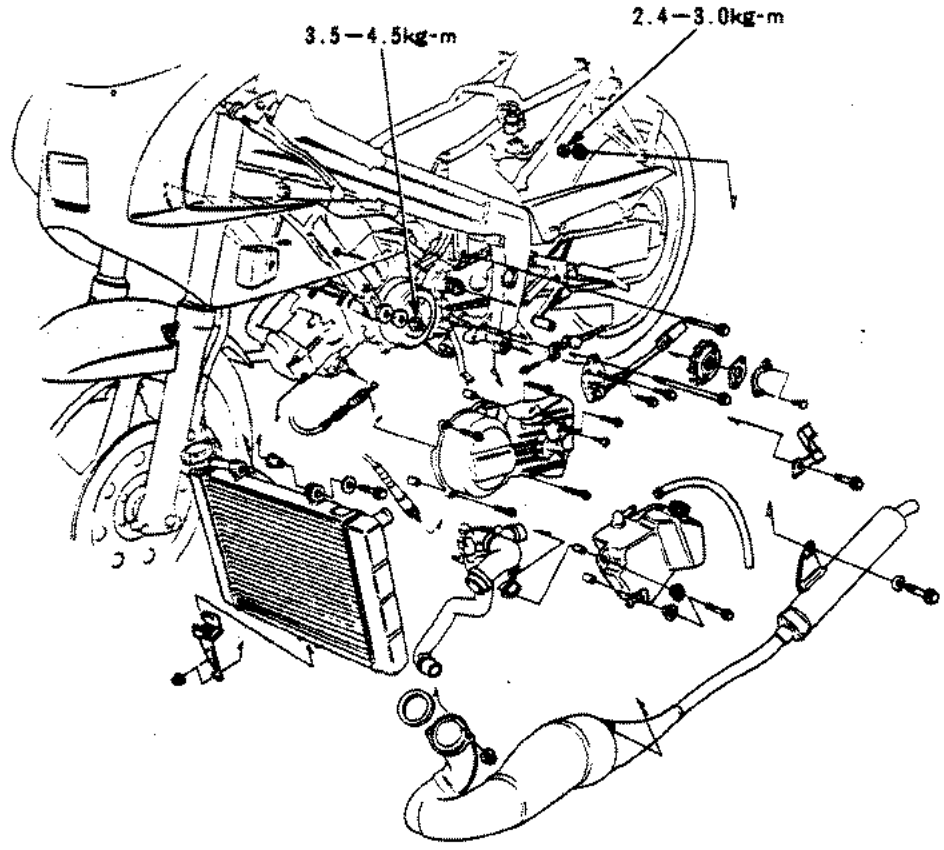
Ensure the tubes are all routed correctly







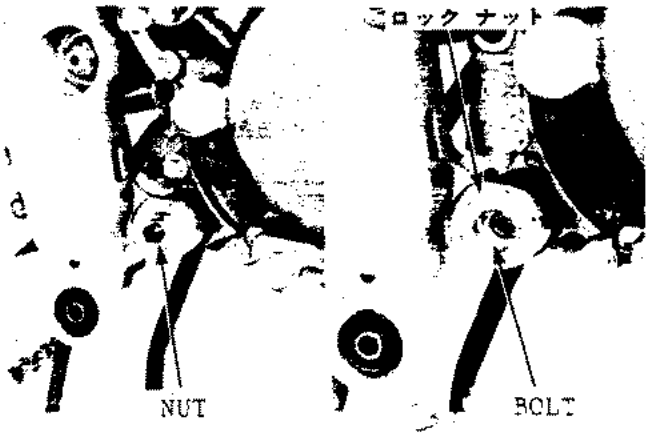

2.4—3.0kg-m
3.5—4.5kg-m
2.4—3.0kg-m


3.5—4.5kg-m
2.4—3.0kg-m

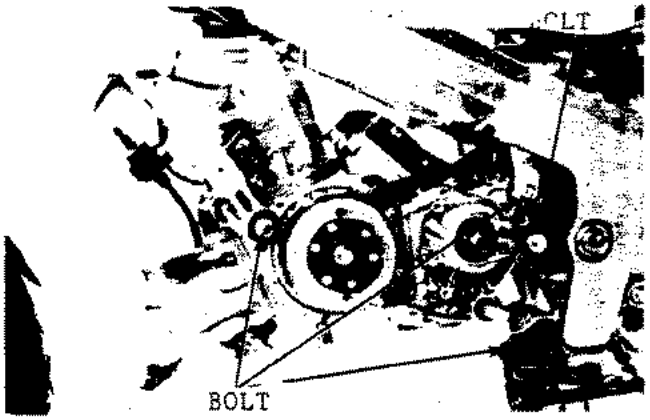
ENGINE REMOVAL

As per (6-2)

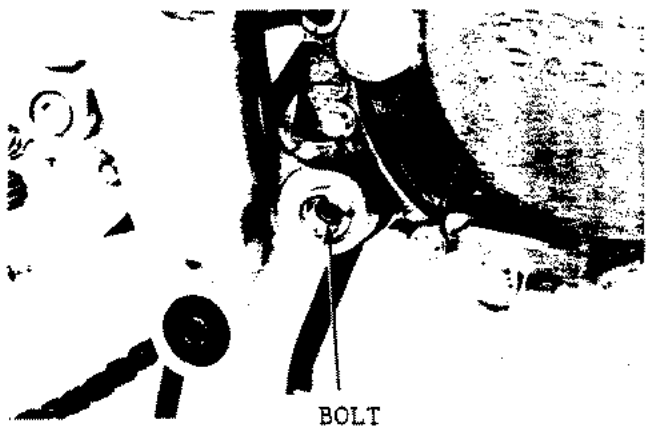
Remove hanger bolts as shown



Remove hanger bolts

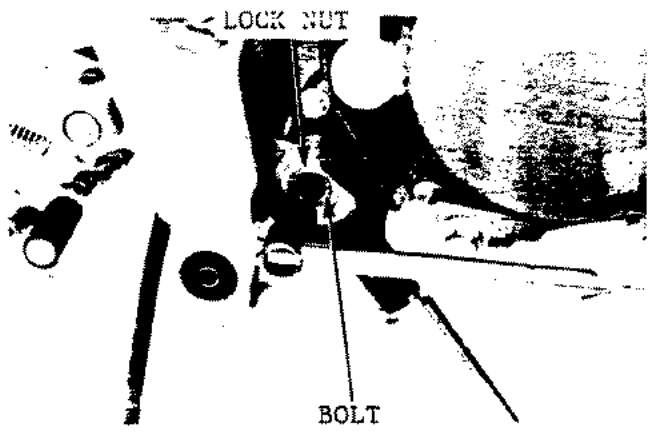


Remove special hanger bolt by removing lock nut and then remove bolt with commercially available hex driver



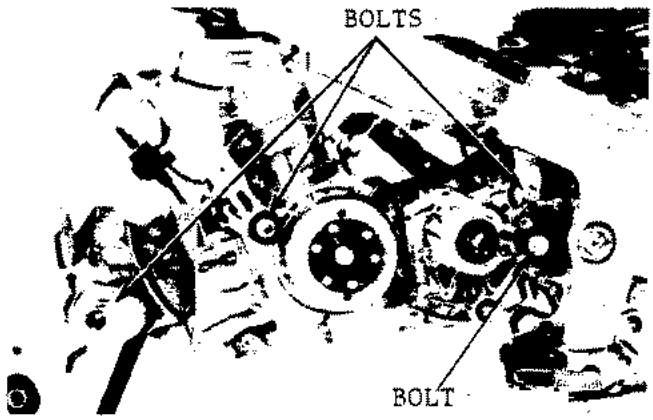
ENGINE INSTALLATION

reverse order of disassembly refer (6-3)

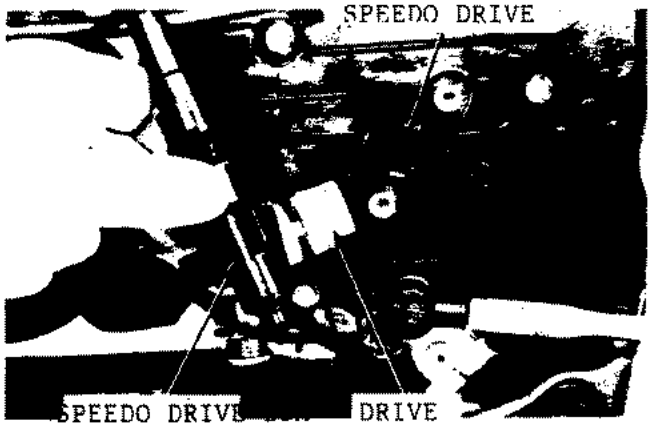


Torque engine hanger bolts to recommended torque

refer section 6

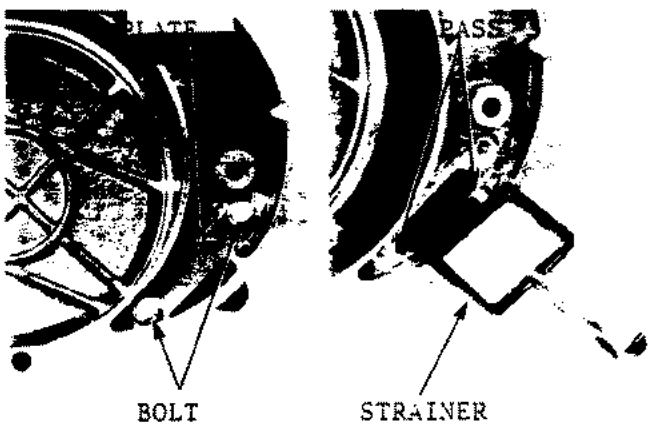


Align the drive pegs with the slots of the speedo drive box



OIL STRAINER

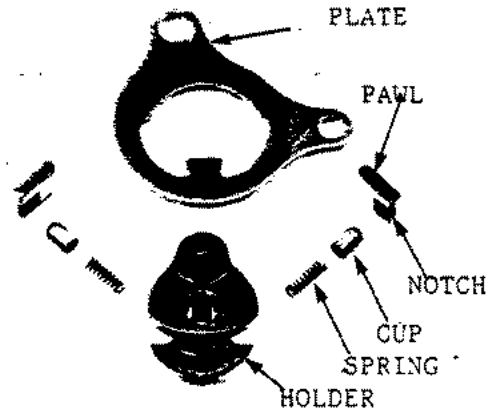
Remove the oil strainer retaining bolts and plate



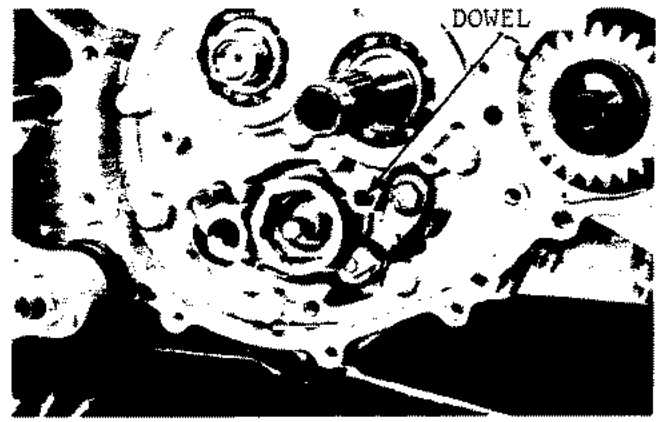
Blow out all recessess etc with compressed air

GEAR CHANGE

Ratchet assembly

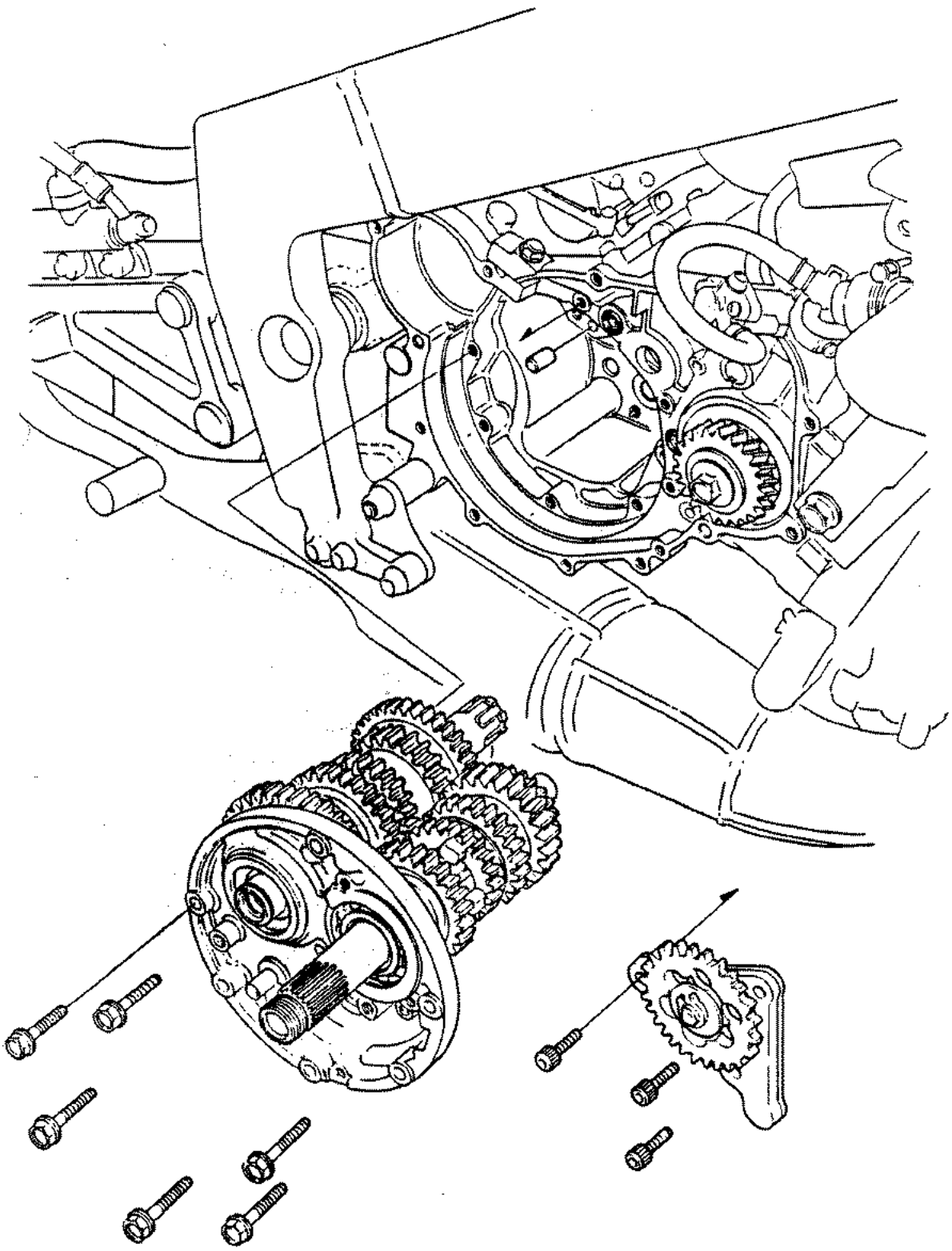


Stopper drum assembly

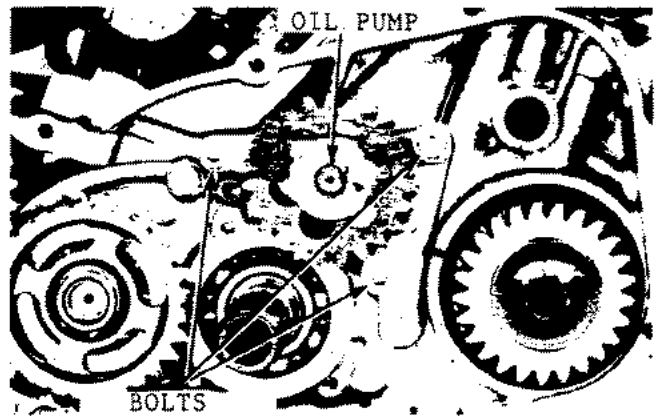


CLUTCH ASSEMBLY

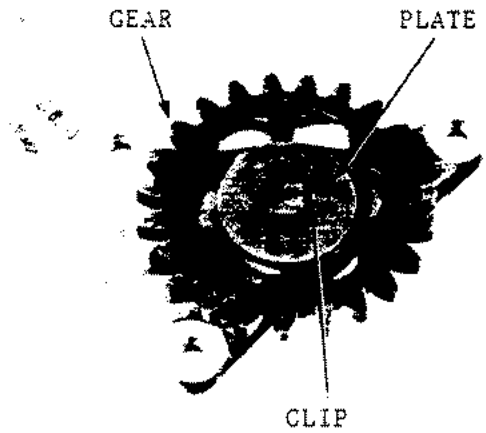
Lock washer



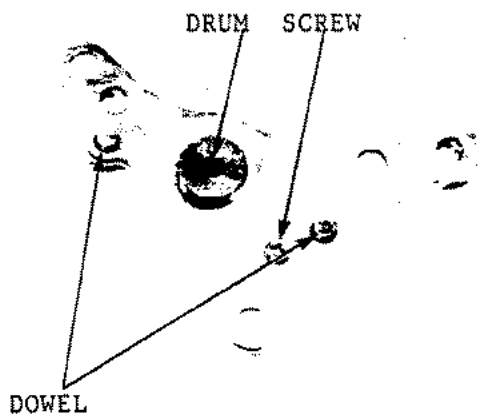
Oil pump assembly



OIl pump drive gear and retaining plate

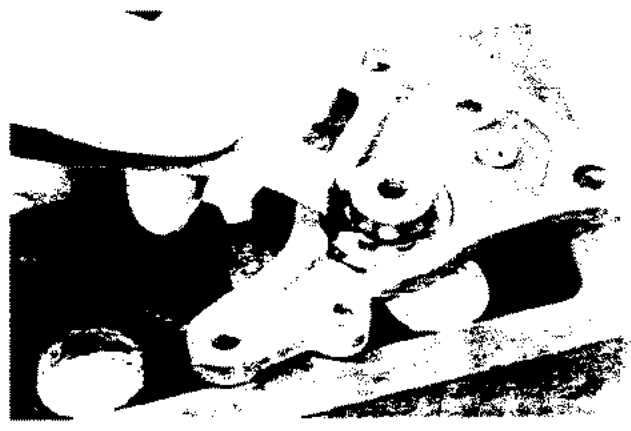


Oil pump dowels



OIl pump rotor tip clearance measurement

Service Limit: 0.2mm



Outer rotor to body clearance

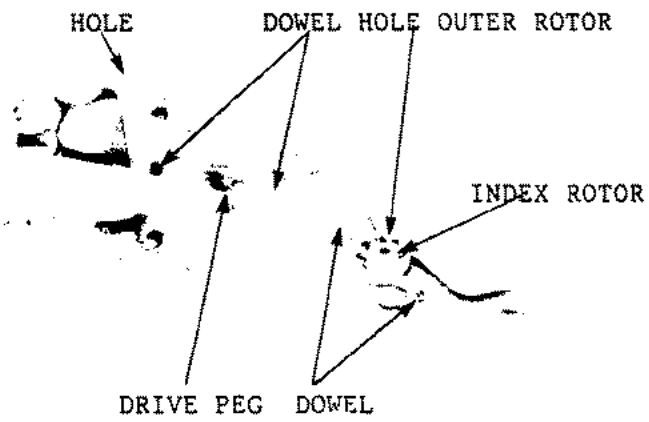
Service limit: 0.12mm

Rotor to body side clearance

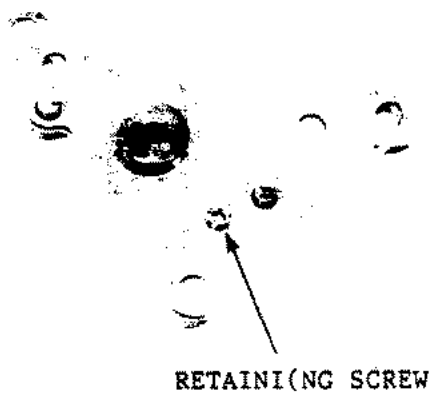
Service limit 0.20mm

Oil pump assembly

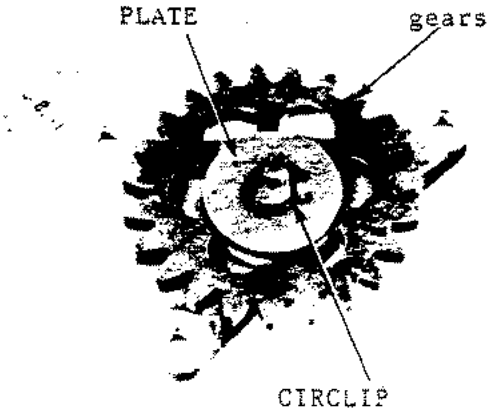
Ensure you lubricate all moving parts with clean engine oil when assembling and align dowels/hole etc



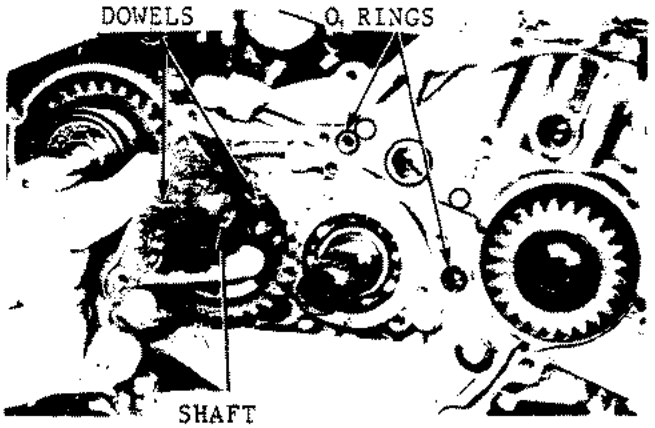
Fit retaining screw

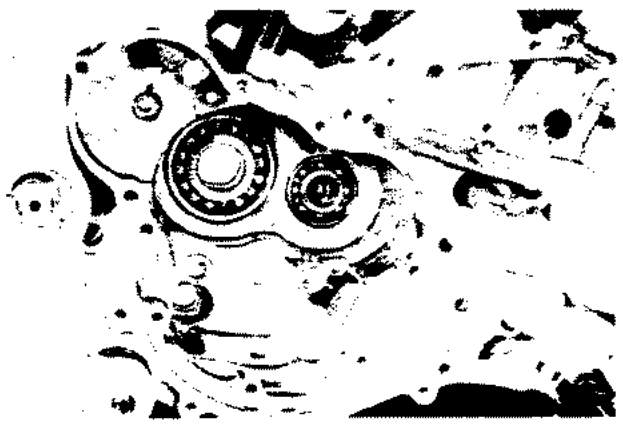


Assemble drive gear plate and retaining clip to oil pump shaft

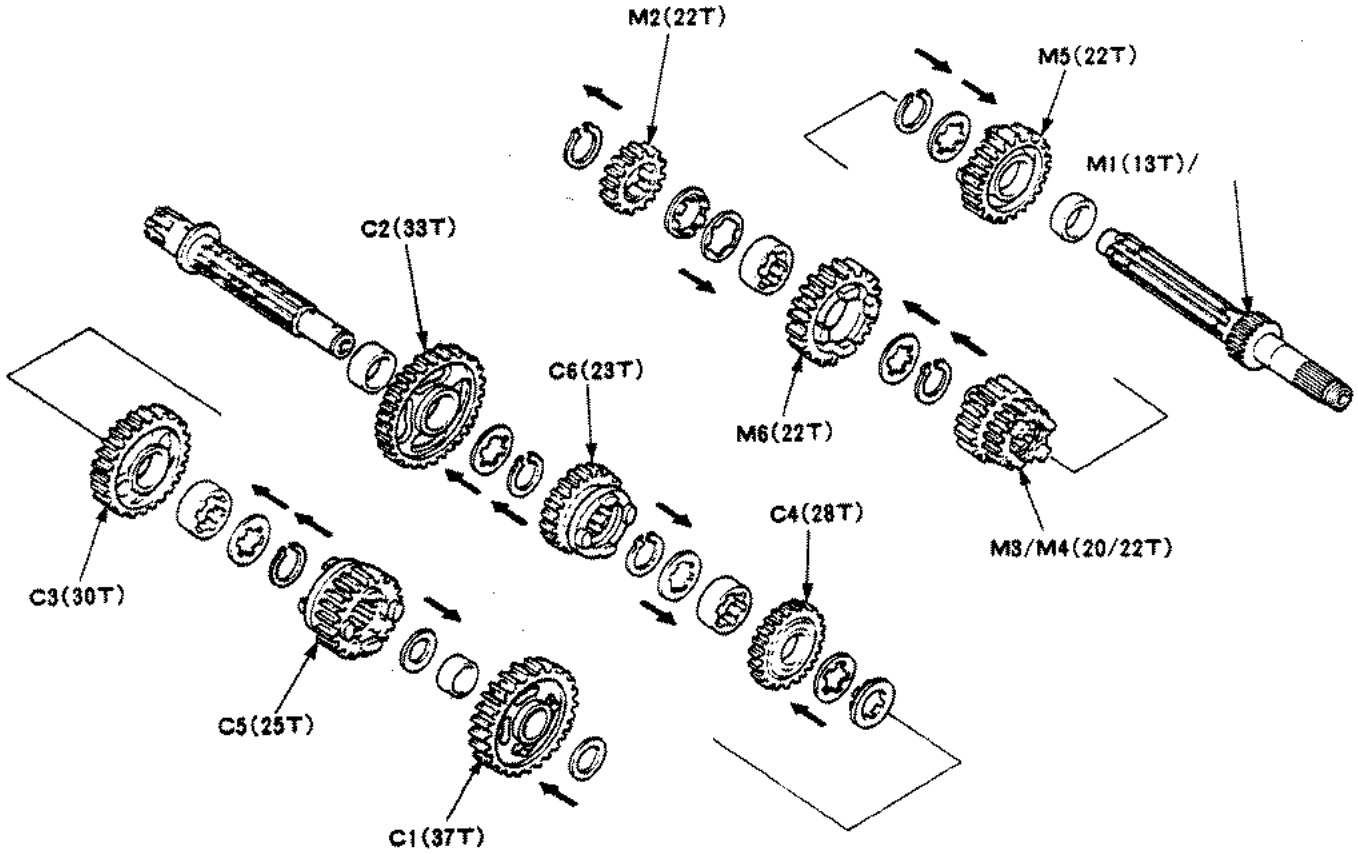


Ensure all O rings are in good condition and install oil pump





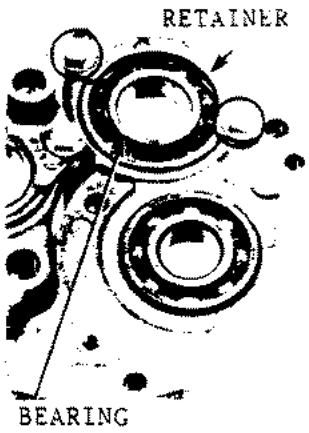
*


M2(22T)
M5(22T)
M1(13T)/
C2(33T)
C6(23T)
M6(22T)
C4(28T)
M3/M4(20/22T)
C3(30T)
C5(25T)
C1(37T)

TRANSMISSION

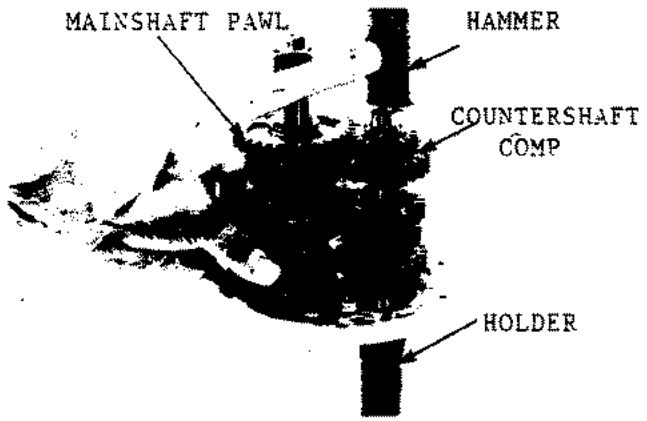
Bearing removal

Remove bearing retainer, before removing bearing

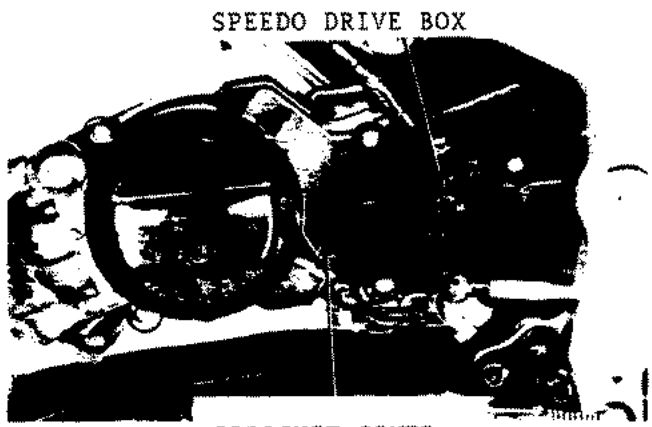


ASSEMBLY

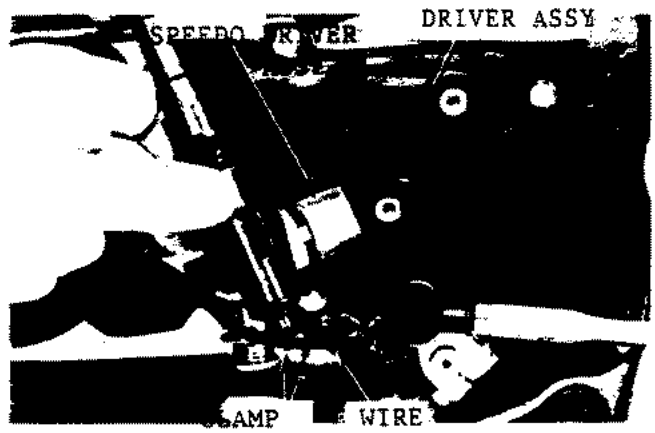
Use a suitable bearing holder to assemble the mainshaft and countershaft to outer cover

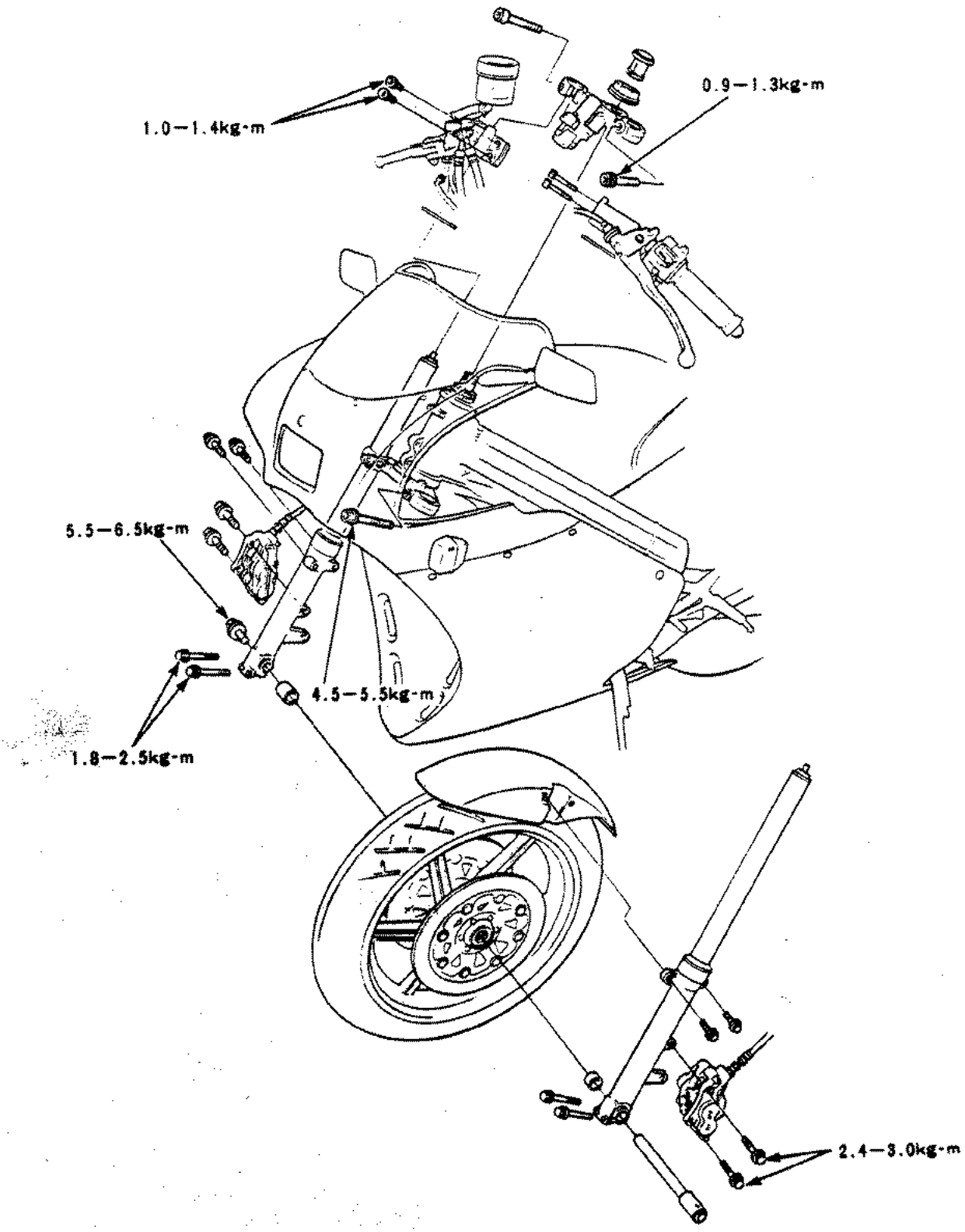


ACG/SPROCKET COVER



SPEEDO DRIVE BOX




1.0—1.4kg·m
0.9—1.3kg·m
5.5—6.5kg·m
4.5—5.5kg·m
1.8—2.5kg·m
2.4—3.0kg·m

HANDLE BARS

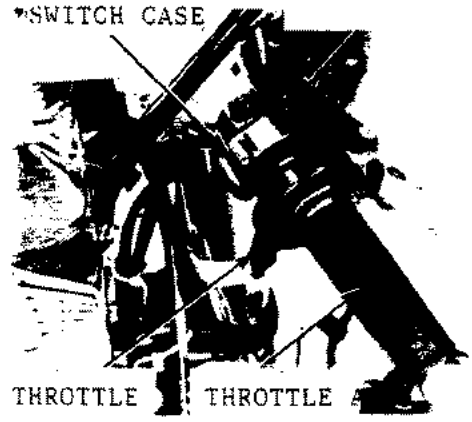
Removal

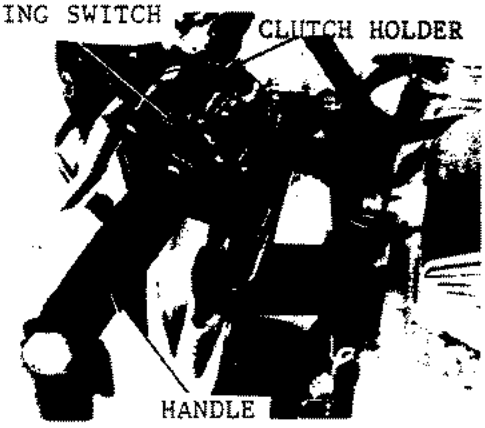
Remove the following from the R. Handle

Master Cylinder
Handle switch
Throttle grip

Remove the following from the L. Handle

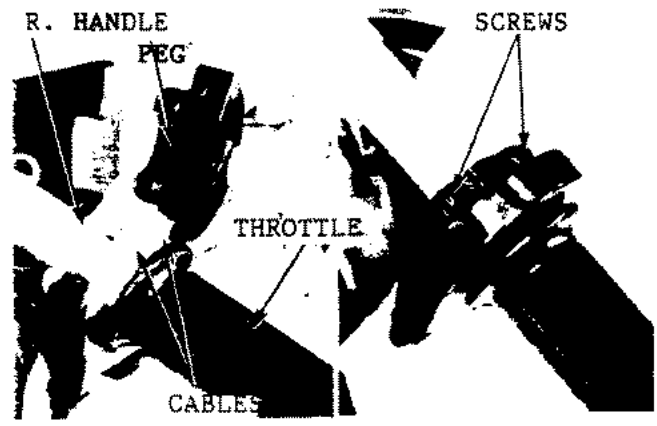
Clutch lever bracket
Lighting switch
Handle grip



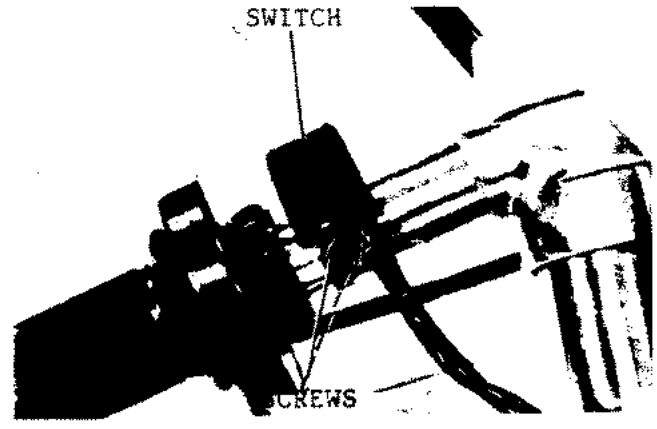


Assembly

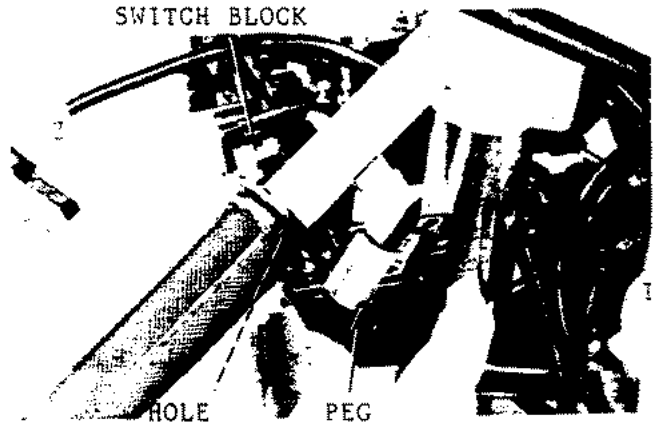
When installing the throttle housing align the peg in the housing with the hole in the right handle



Take care not to pinch the wires from the engine stop switch

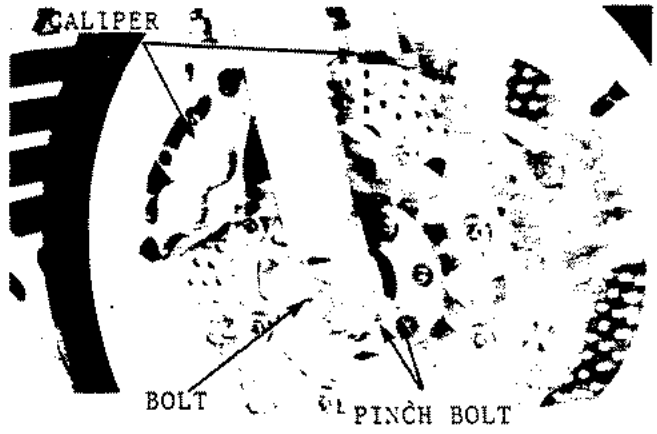


When installing the L.H. switch block be sure to align the alignment peg in the housing with the L. handle pipe



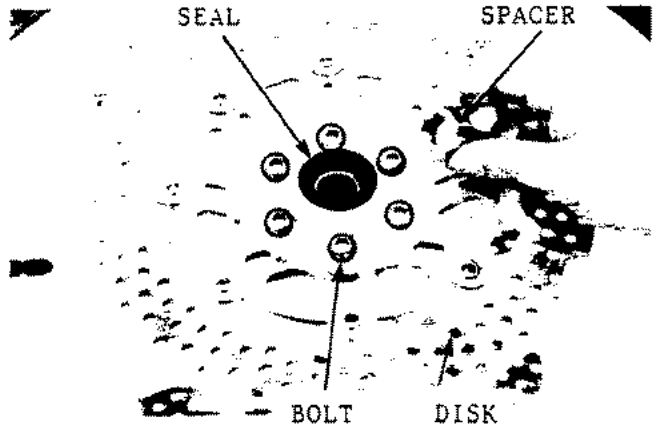
Front Wheel/Suspension

To remove the front wheel remove the brake calipers.
Loosen the axle bolt then loosen the axle pinch bolts
Remove the axle and remove the wheel

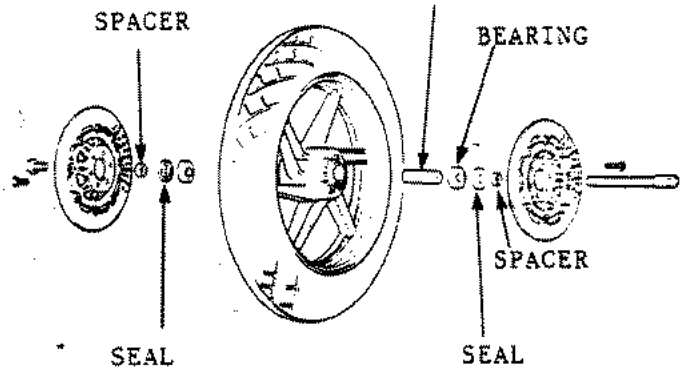


To Remove the Disks remove

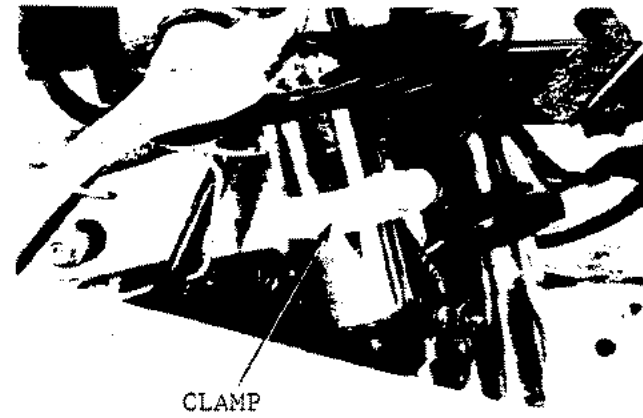
disk mounting bolts



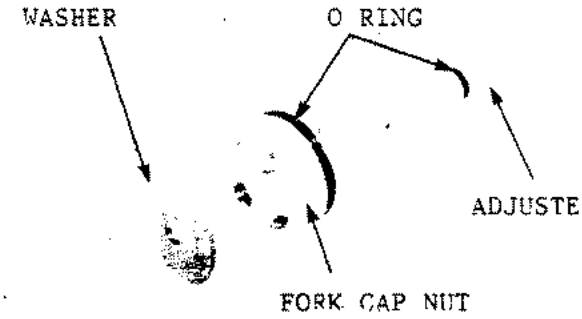
* Regrease seals before reassembly



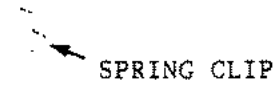
When routirg the front brake hose fit the clamp and then check for free steering operation left to right



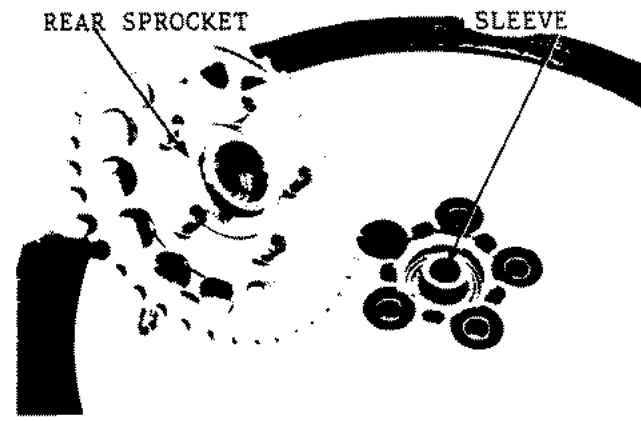
Spring preload adjuster assembly



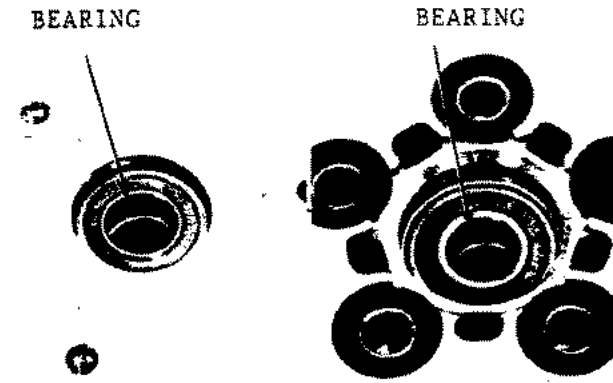
Rear Wheel/Bearing

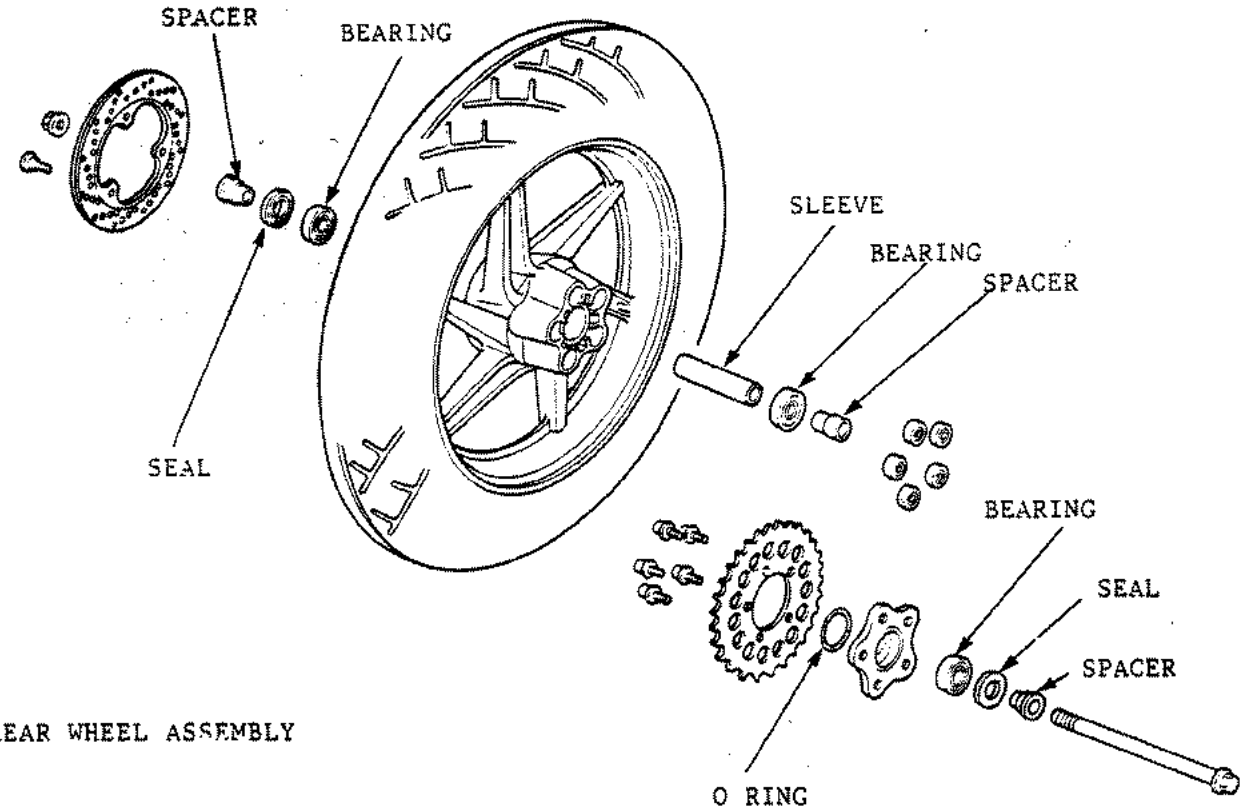


Whenever replacing the rear wheel bearings ensure that the sprocket spacer is attached before fitting the sprocket



Rear wheel Bearings

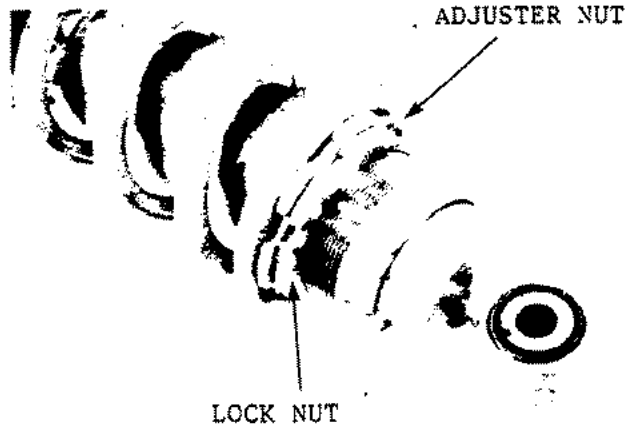




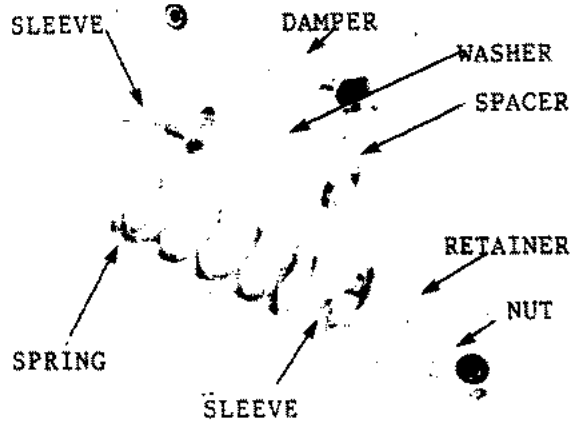
REAR WHEEL ASSEMBLY

Rear Suspension

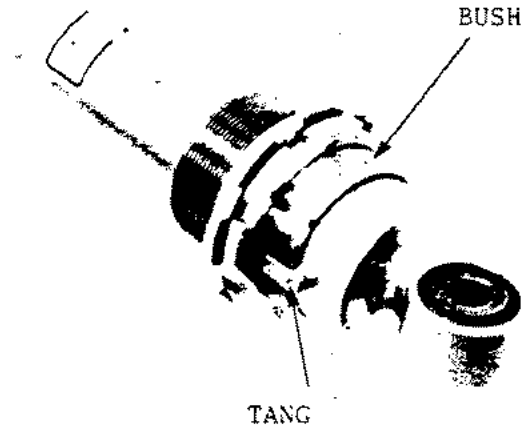
Rear shock spring pre load adjustment

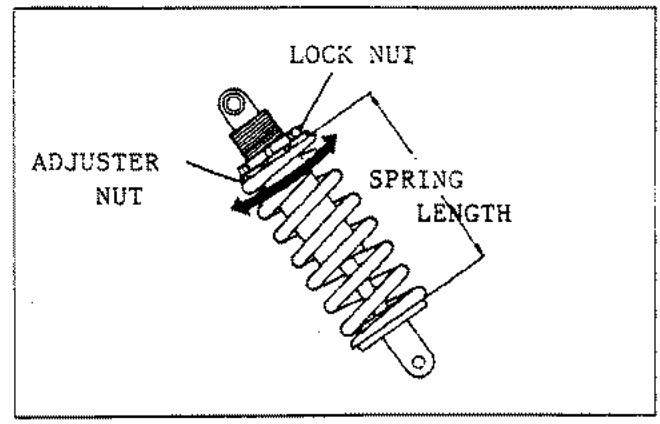


Rear shock assembly

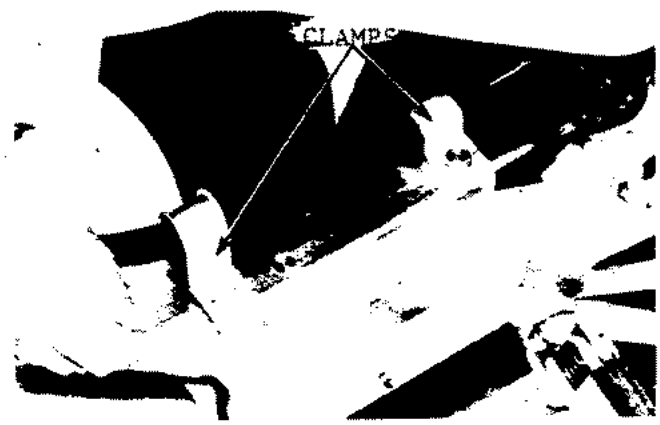


Rear shock

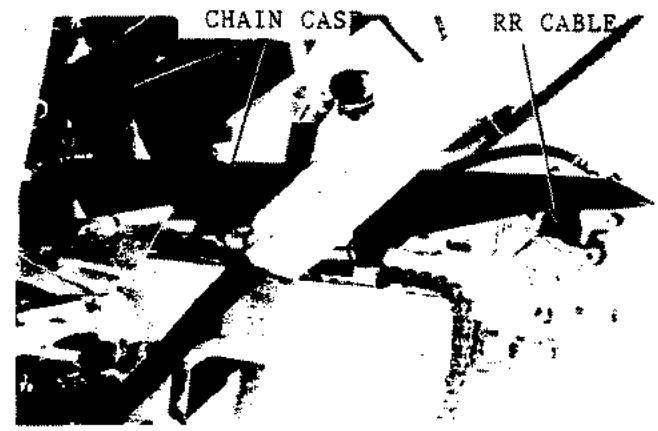




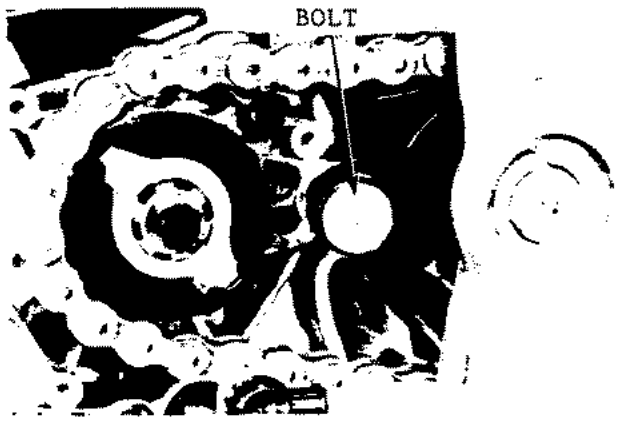
Rear brake hose clamps



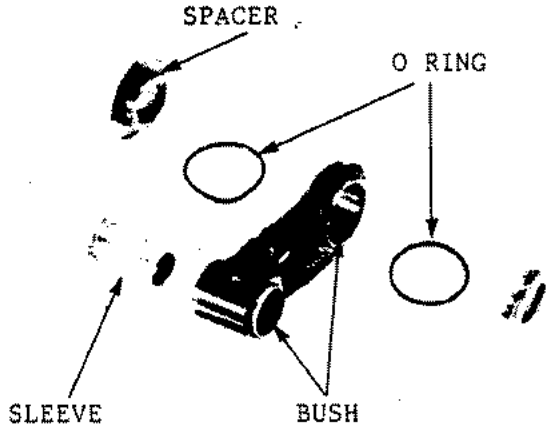
Chain Case



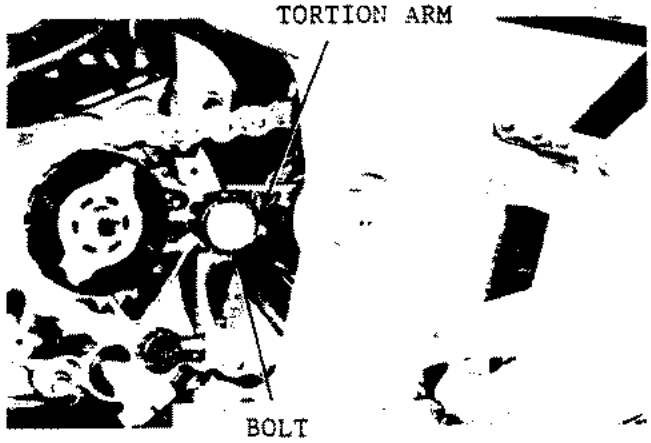
Tortion Arm Assembly

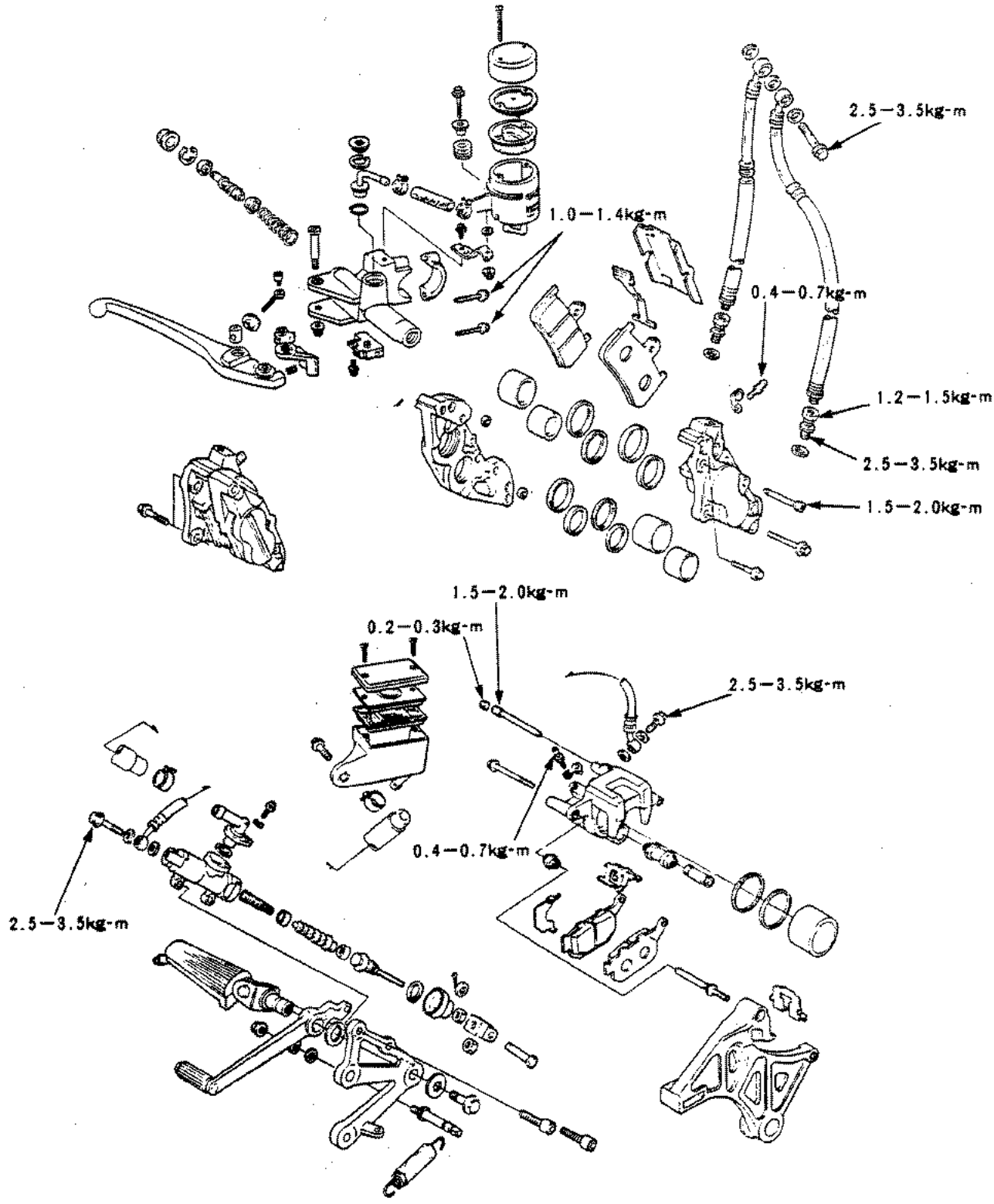


Explode view of tortion assembly

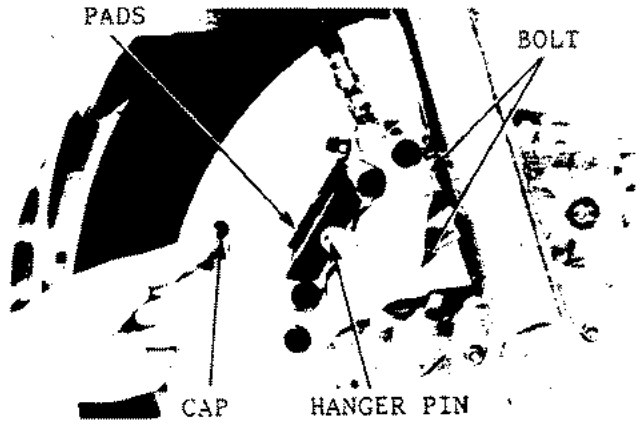


When reassembling the tortion arm assembly use Molybdenium grease

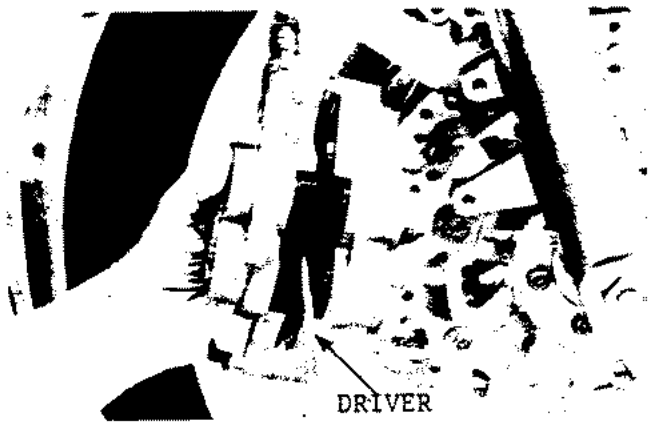



2.5—3.5kg-m
1.0—1.4kg-m
0.4—0.7kg-m
1.2—1.5kg-m
2.5—3.5kg-m
1.5—2.0kg-m
1.5—2.0kg-m
0.2—0.3kg-m
2.5—3.5kg-m
0.4—0.7kg-m
2.5—3.5kg-m

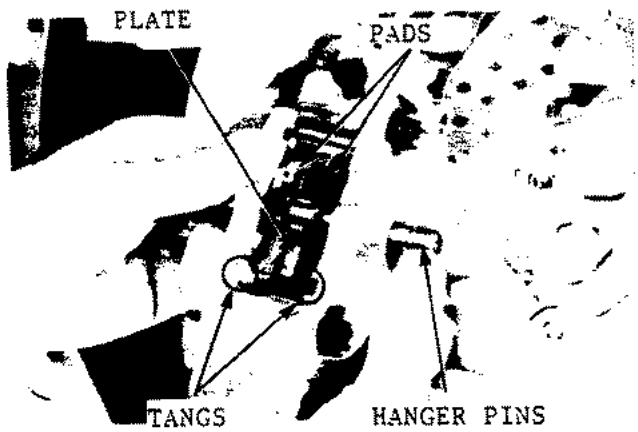
FRONT BRAKE INSPECTION



In order to install new brake pads return pistons to original position

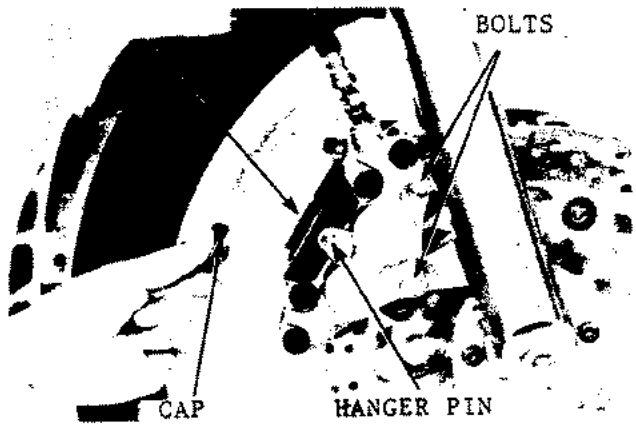


Remove hanger pin to remove brake pads



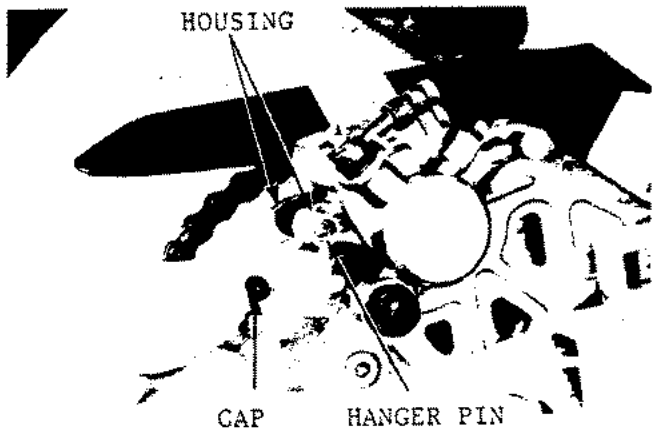
* Always replace brake pads as a set

After replacing brake pads pump brake lever to push pads back into disk

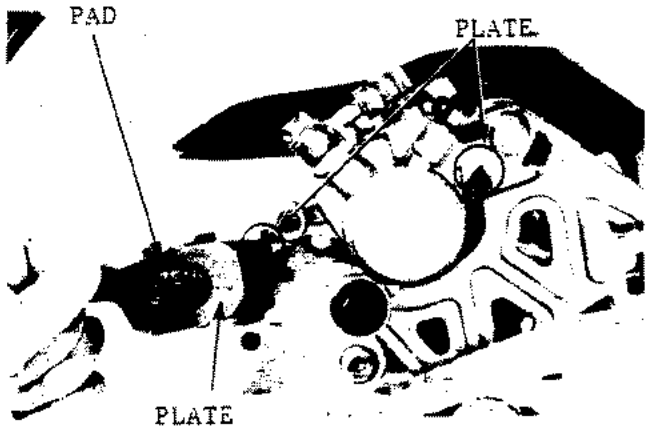


REAR BRAKES

Always r4place brake pads as a set

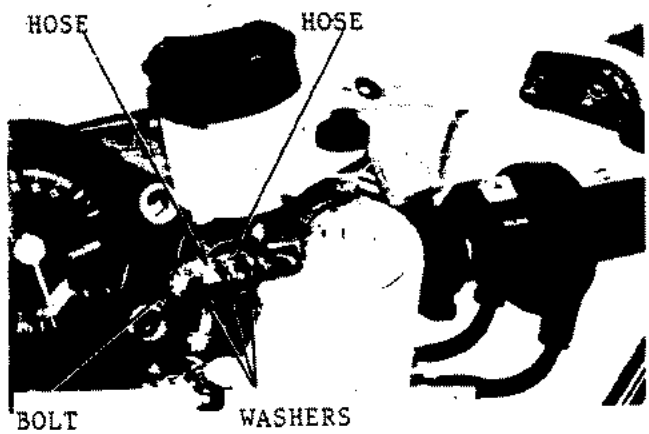


Ensure that the brake pad springs are installed correctly

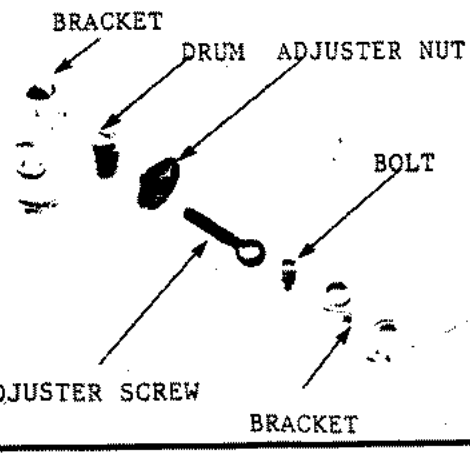


Always pump up rear brake after pad replacement

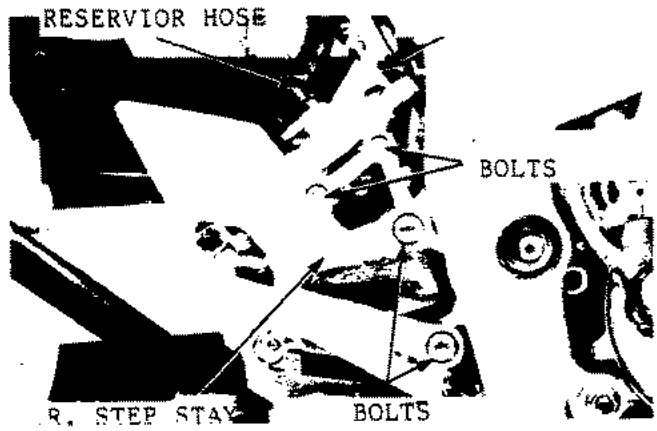
Front Brake.Lever Assembly



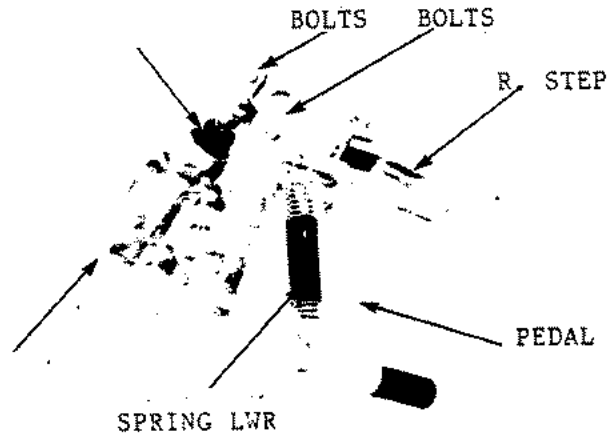
Exploded view front brake lever



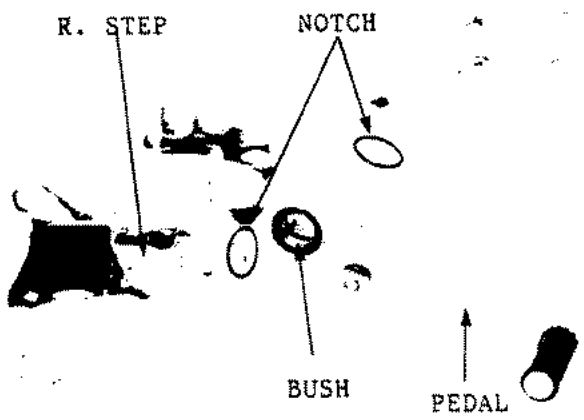
REAR MASTER CYLINDER ASSEMBLY

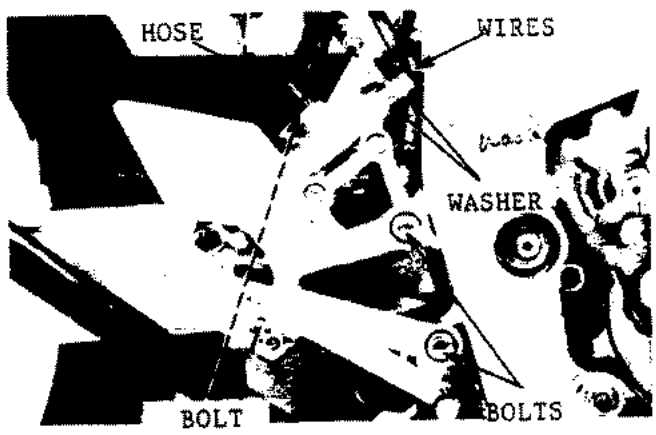


Ensure no foreign particles enter brake fluid

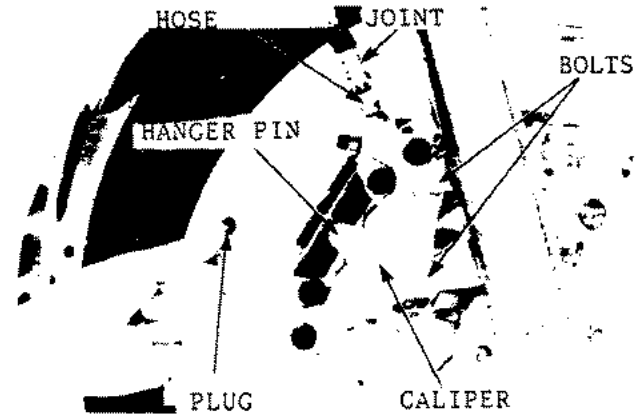


Ensure you grease brake pedal bushes with Molybdenium disulphide grease



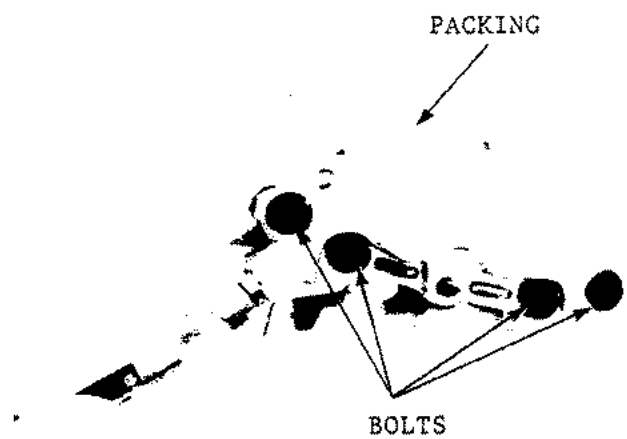


Do not spill brake fluid onto brake disks or brake performance will be affected

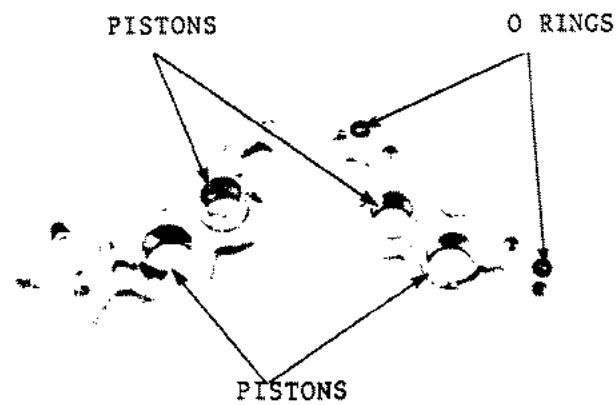


Do not use high pressure air and do not hold air gun too close

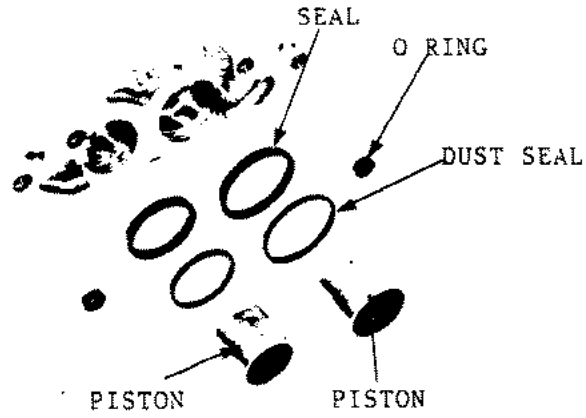
Do not enter hands into caliper



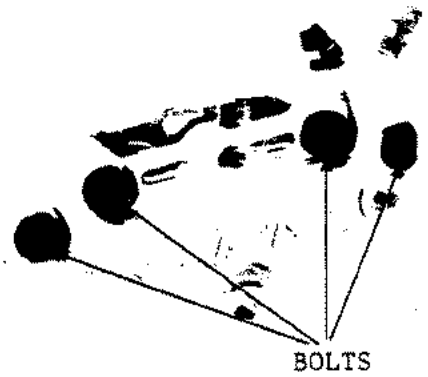
Take care when removing pistons not to damage seals and caliper assembly

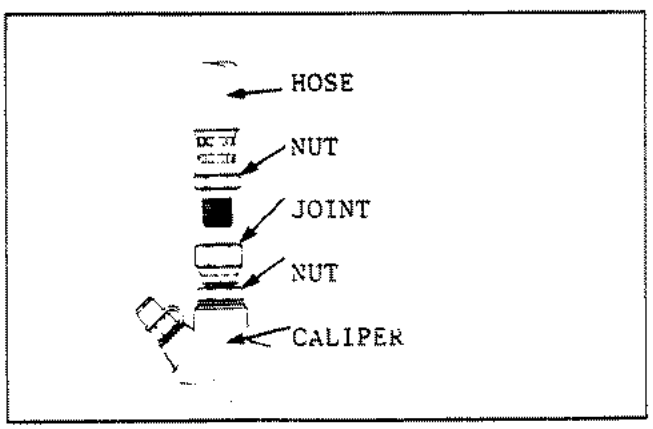


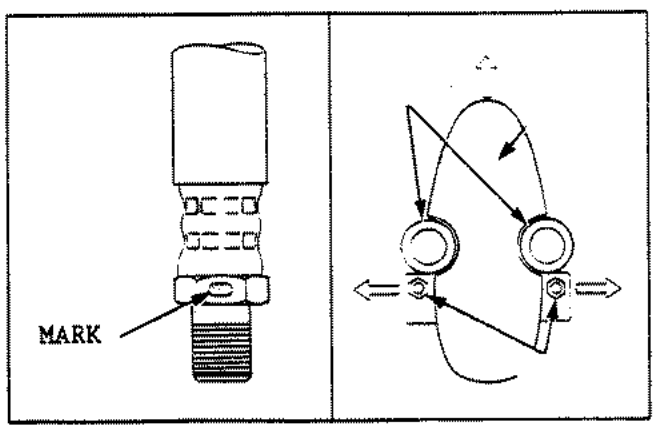
Take care when reassemblying not to damage psitons seals etc

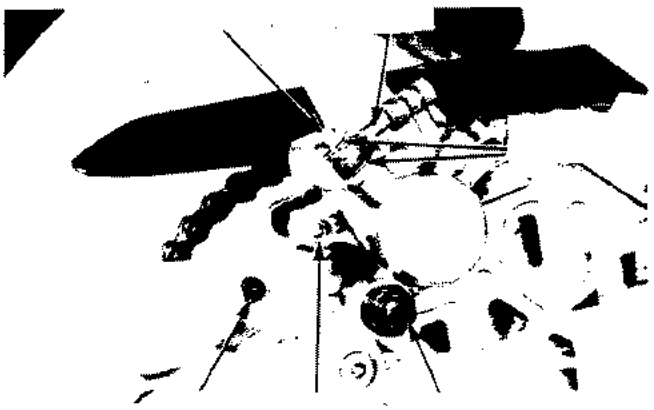


When reassembling caliper torque bolts to: 3.0 - 3.5 Kg-m



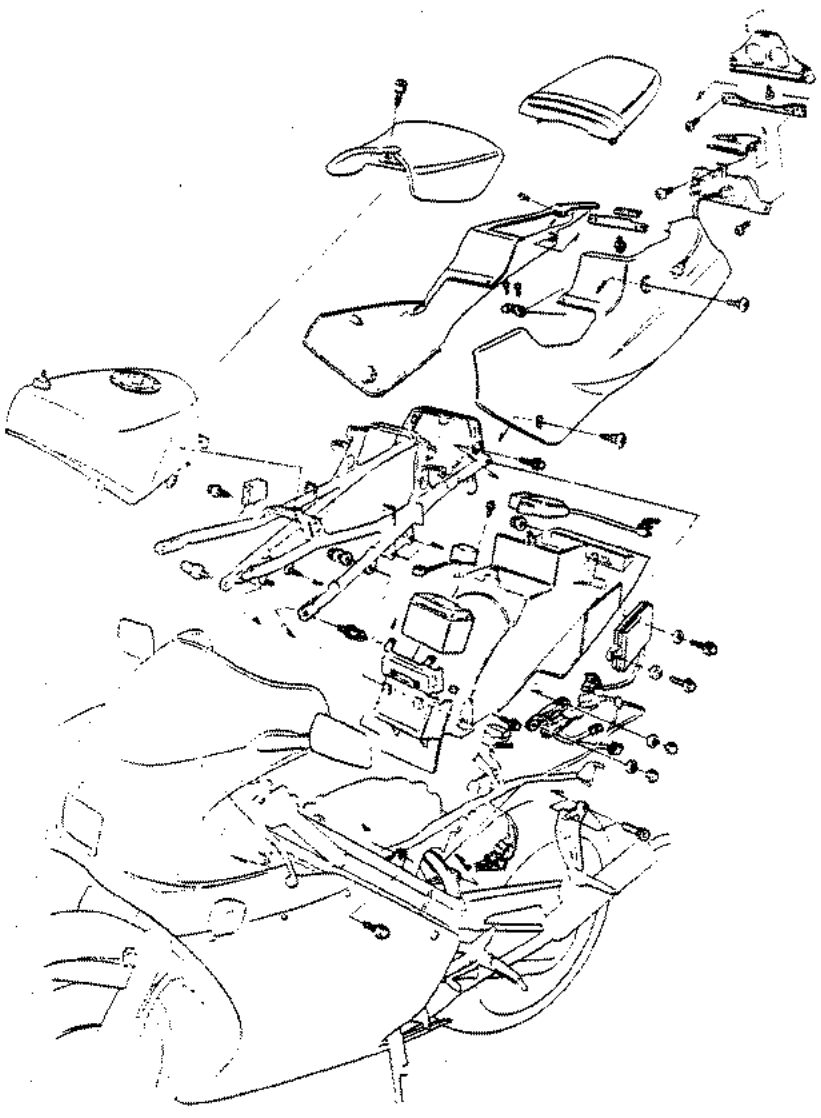




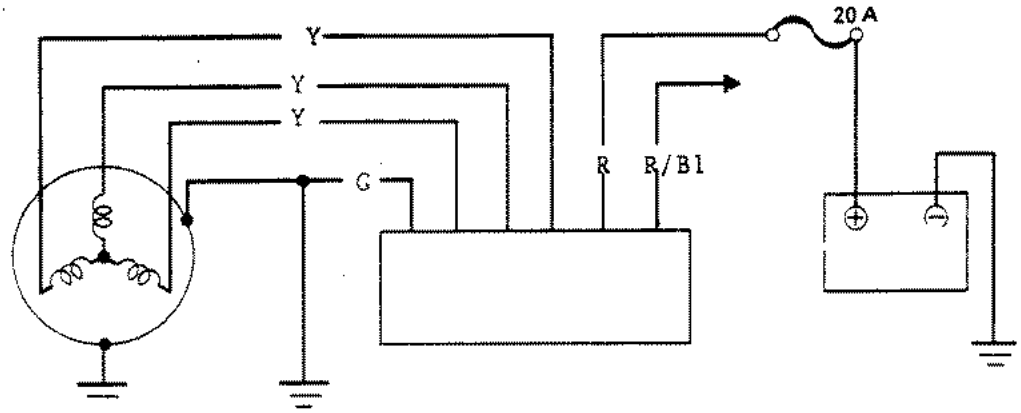


Re assemble in reverse order of disassemoly

EXPLODED VIEW

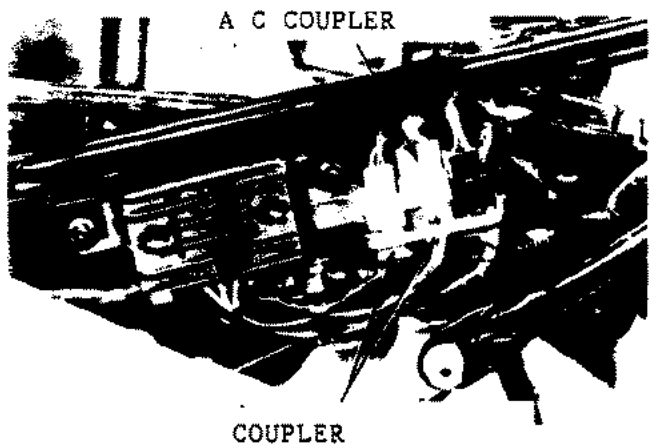


CHARGING SYSTEM

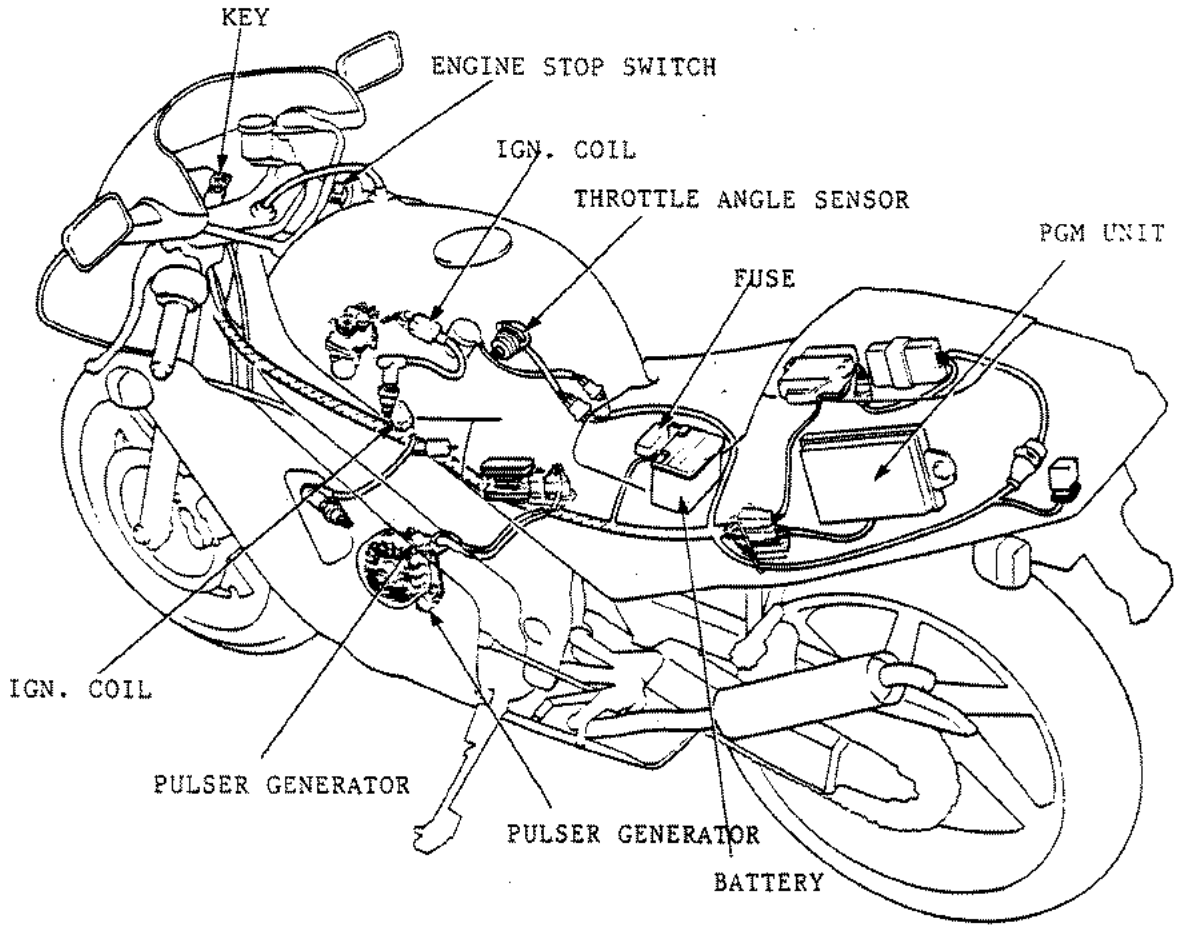


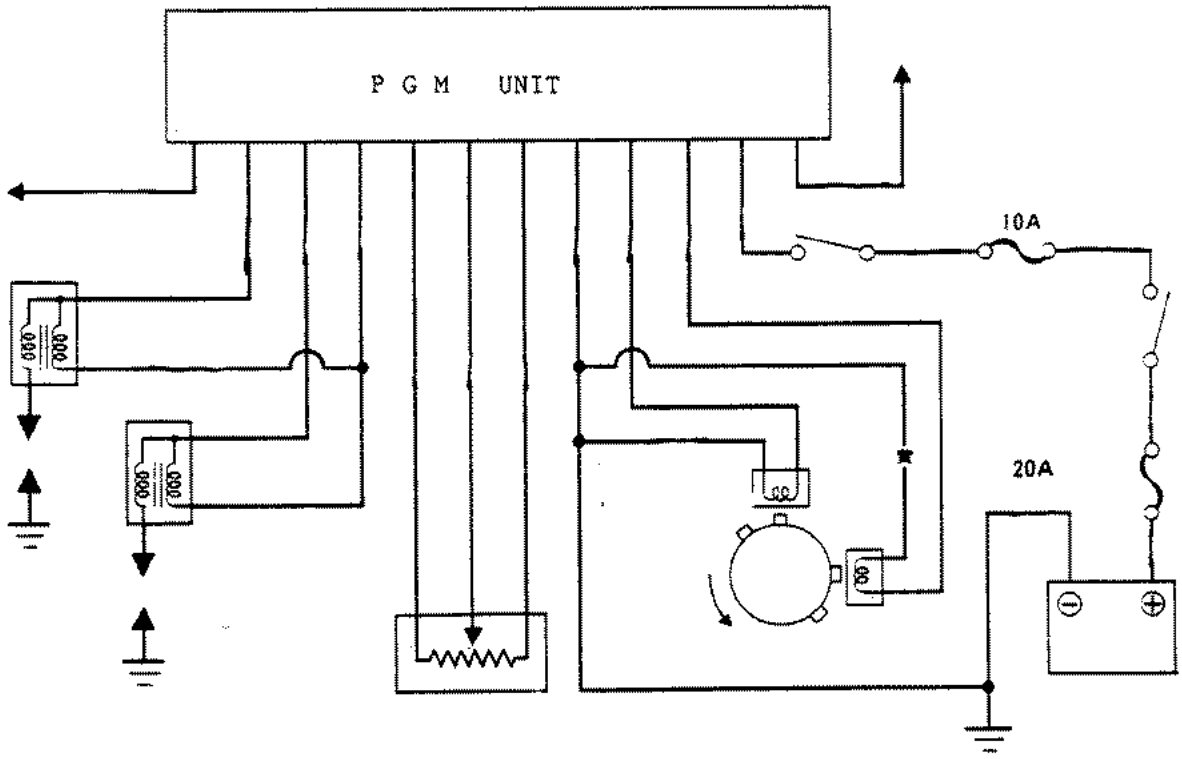
VOLTAGE REGULATOR RECTIFIER

Check rectifier for forward and reverse resistance to check the diodes in the normal mannner

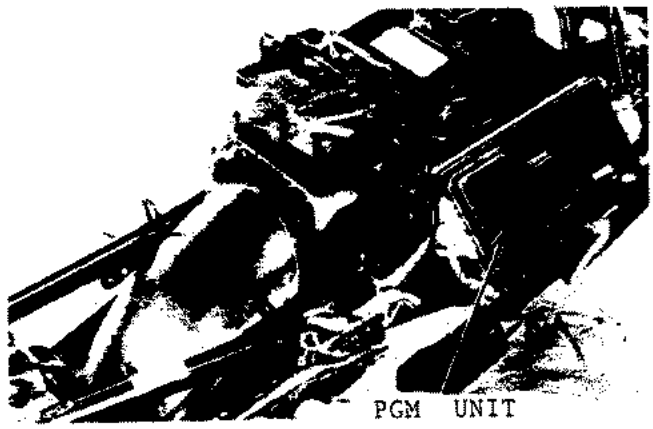


COUPLER

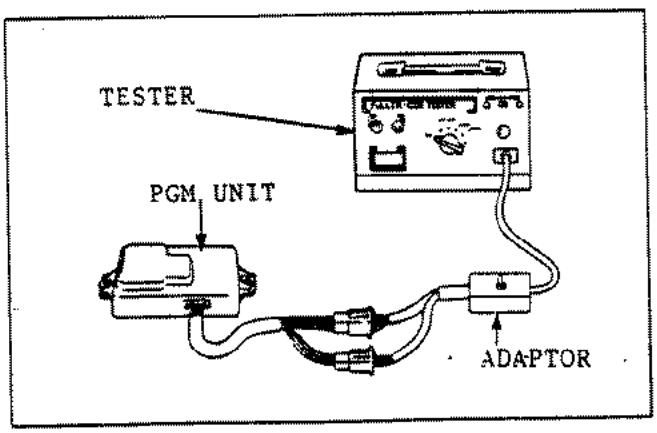

KEY
ENGINE STOP SWITCH
IGN. COIL
THROTTLE ANGLE SENSOR
PGM UNIT
FUSE
IGN. COIL
PULSER GENERATOR
PULSER GENERATOR
BATTERY


P G M UNIT
10A
20A

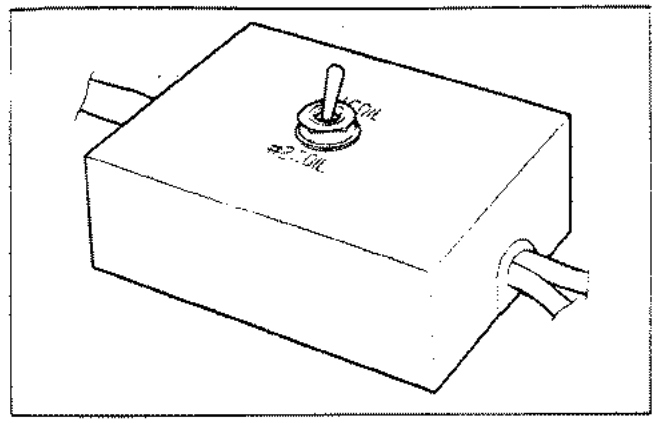
Do not drop PGM Unit or it could be damaged

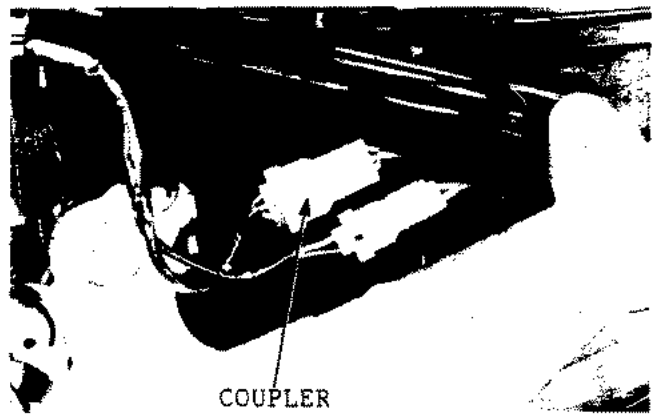


1	OFF
2	P
3	EXT
4	ON 1
5	ON 2



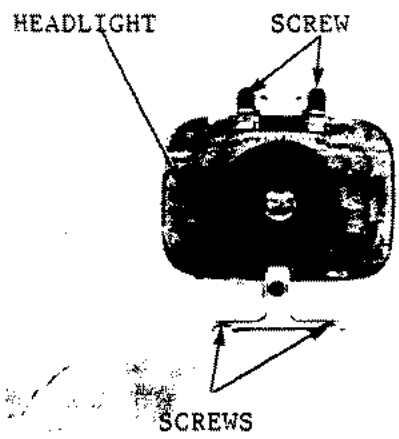
Test unit adaptor



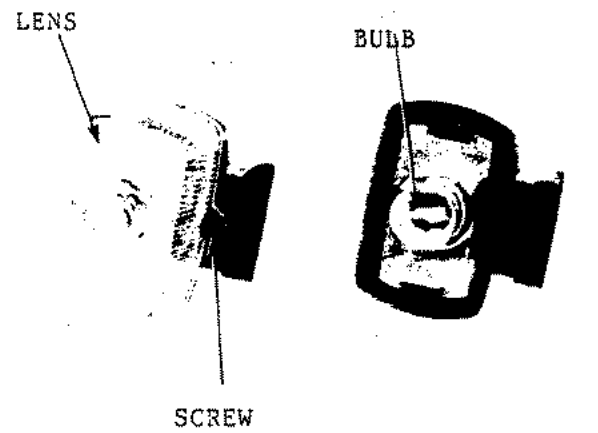


LIGHTS

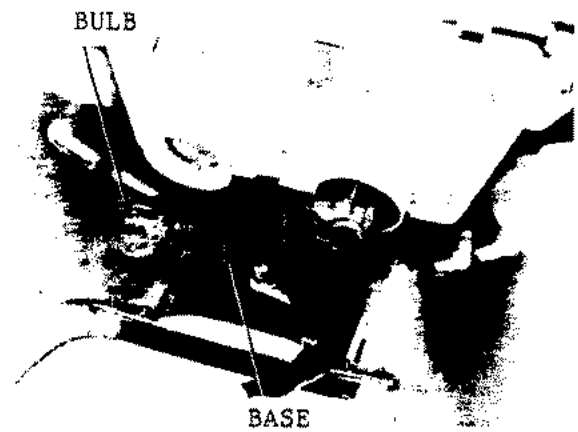
Headlight Unit



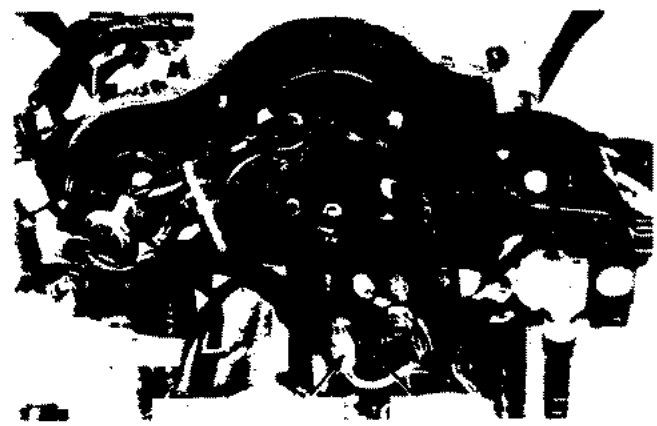
Indicator bulb



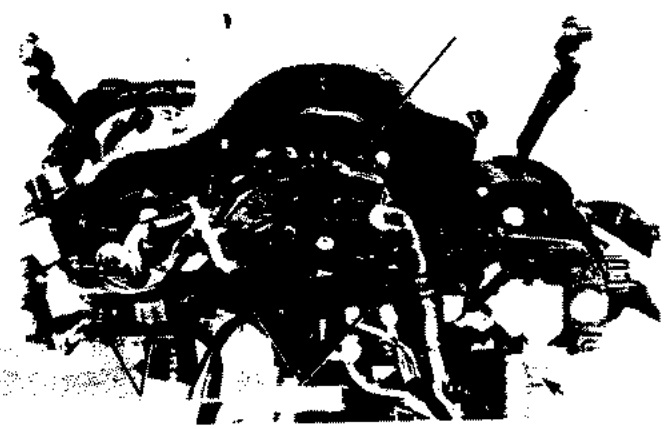
Stop tail bulb

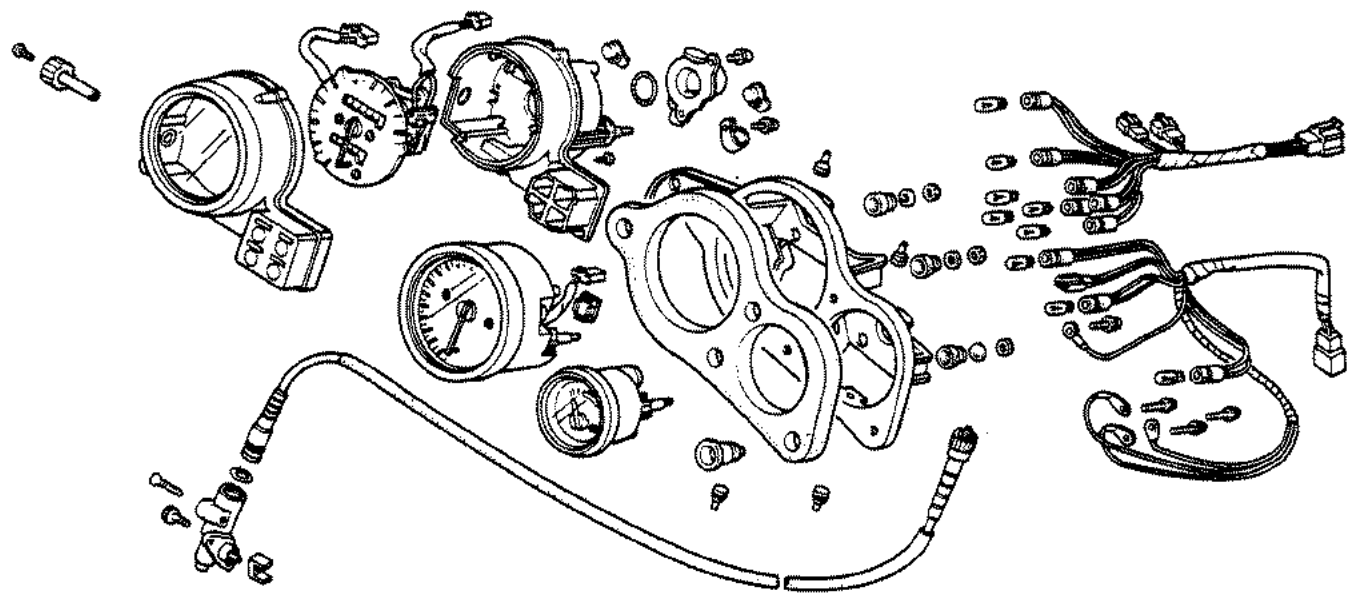


Instrument bulbs



Instrument couplers



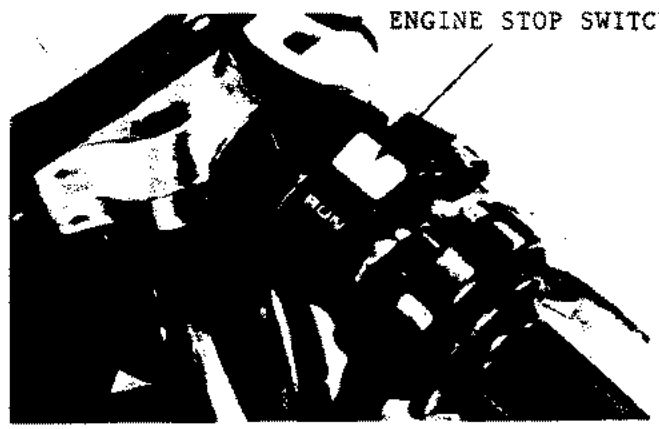


SWITCHES

Engine Stop Switch

	BAT1	IGN
ON	○	○
OFF		

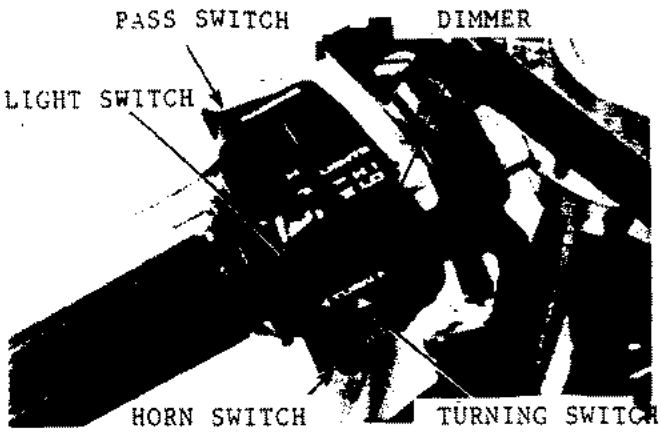
	IG	BAT4
OFF		
RUN	○	○

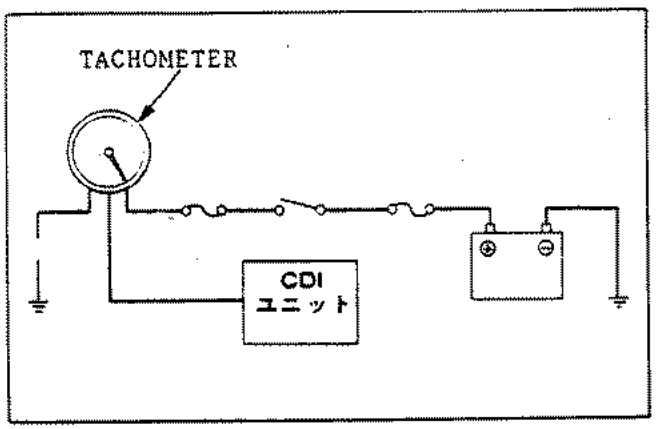


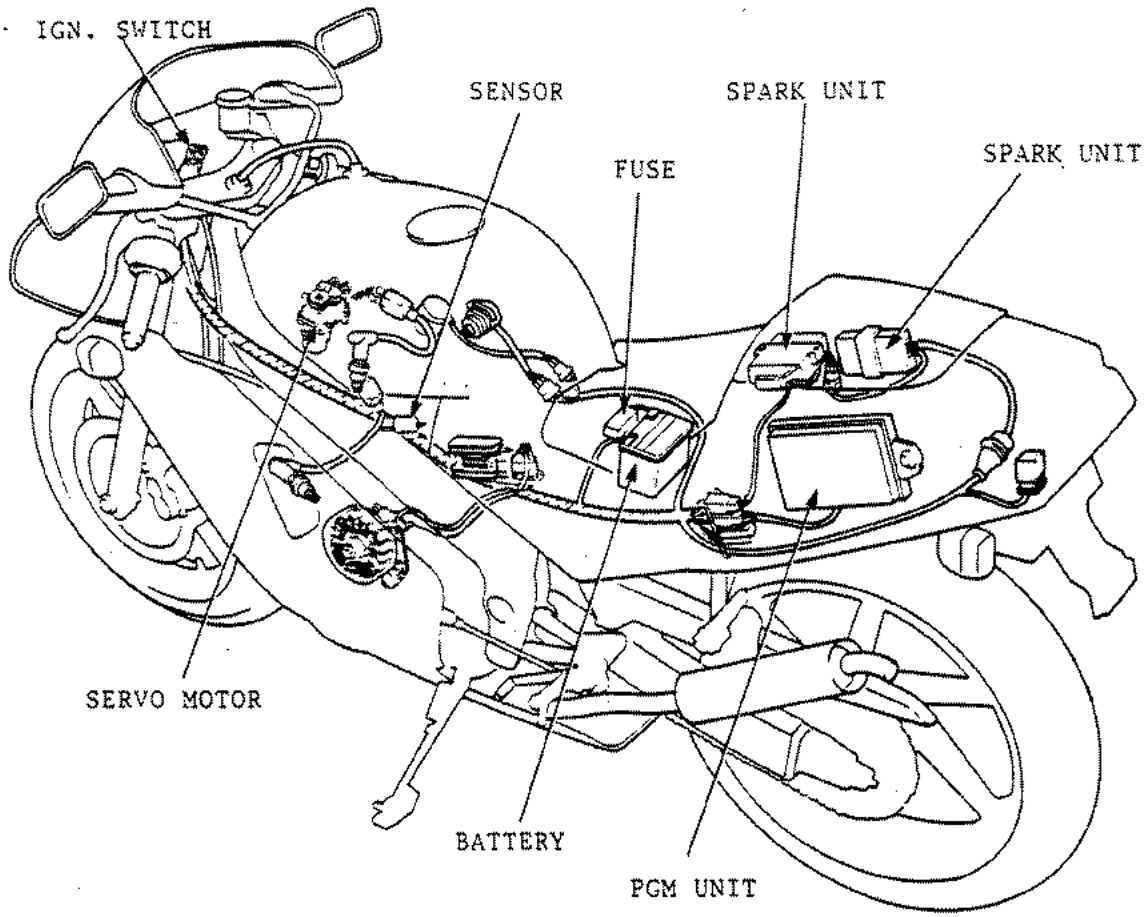
LEFT HANDLE BAR SWITCH

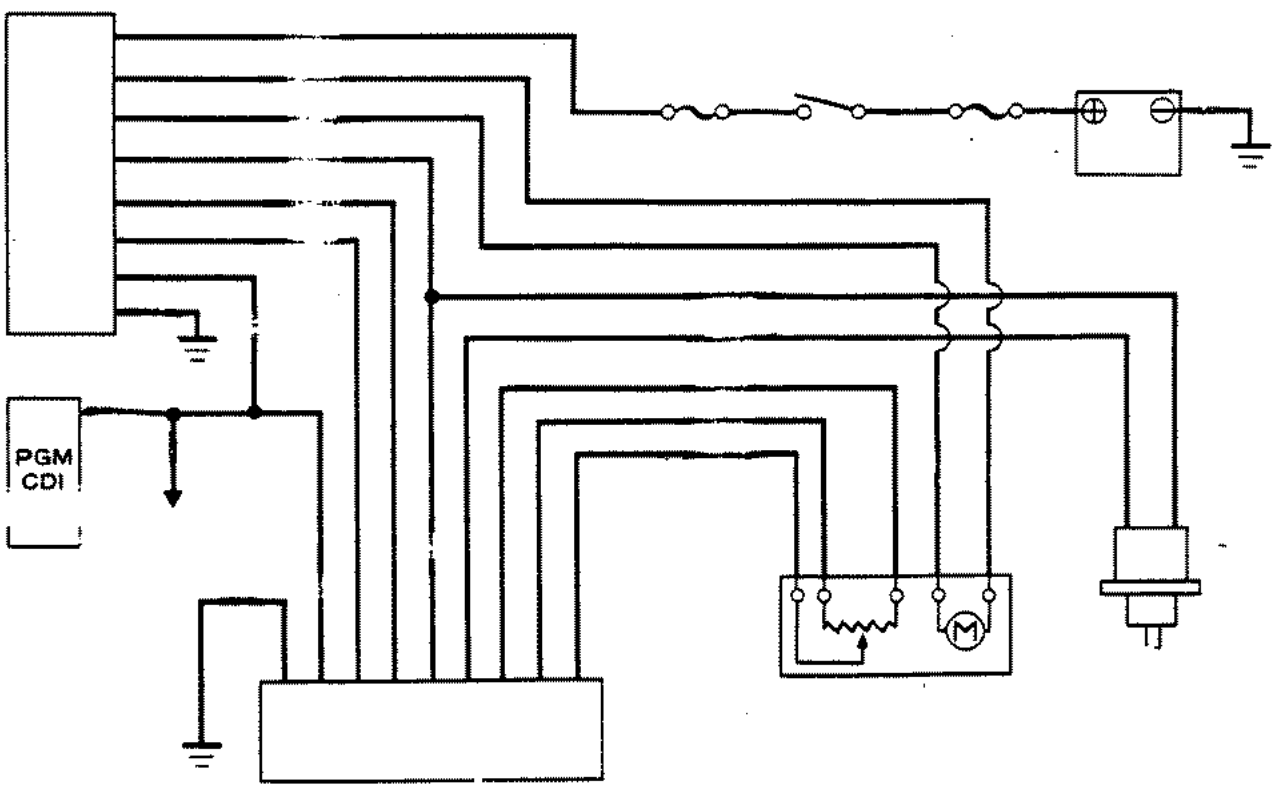
	BAT3	TL	BAT2	HL
•				
P	○—○	○—○		
H	○—○	○—○	○—○	

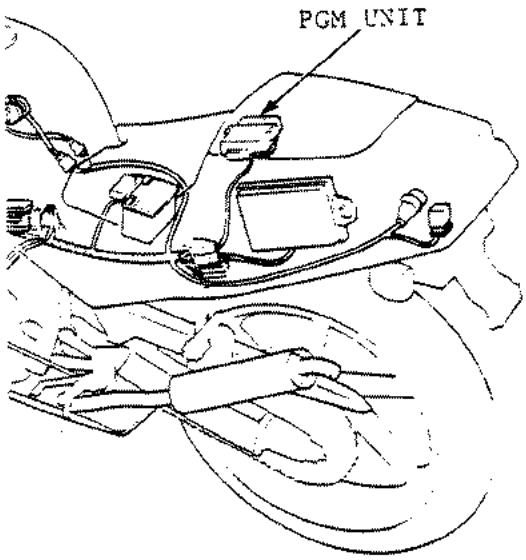
	HL	Lo	Hi
Lo	○—○		
N	○—○	○—○	○
Hi	○—○		○

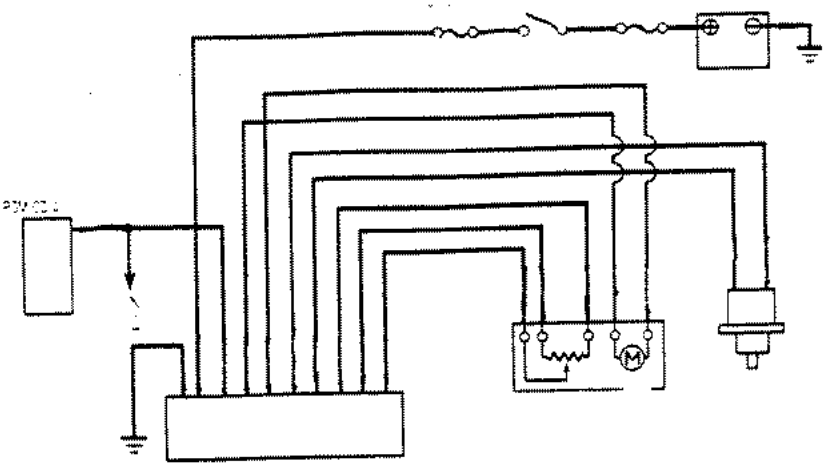


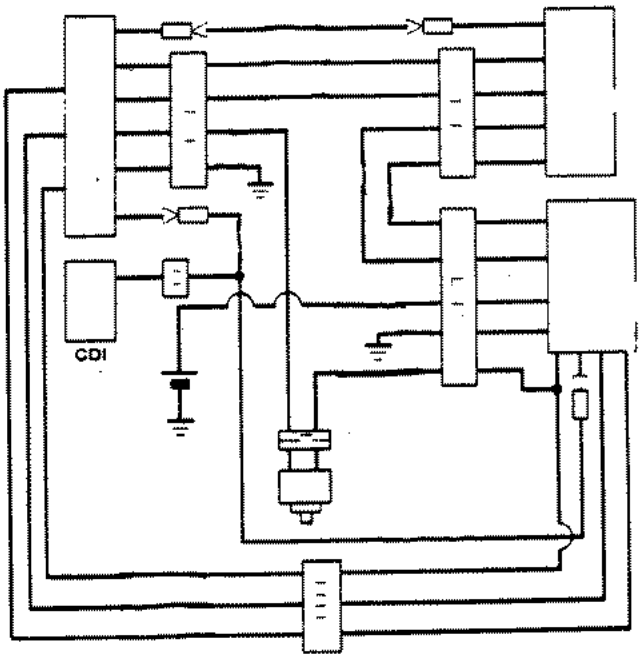


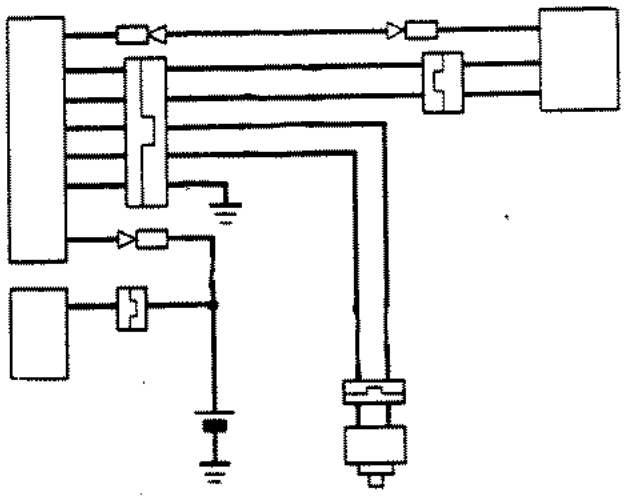

IGN. SWITCH
SENSOR
SPARK UNIT
FUSE
SPARK UNIT
SERVO MOTOR
BATTERY
PGM UNIT

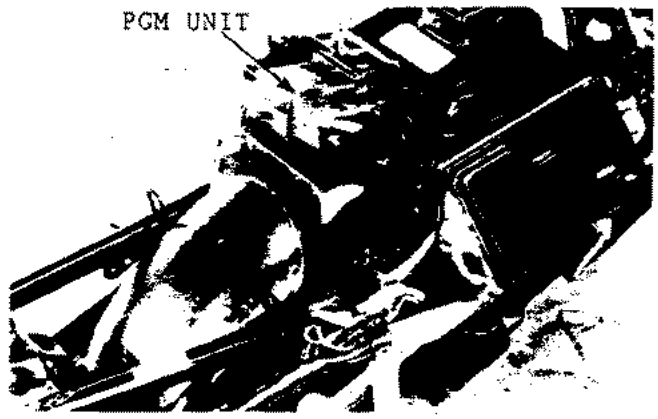

PGM
CDI

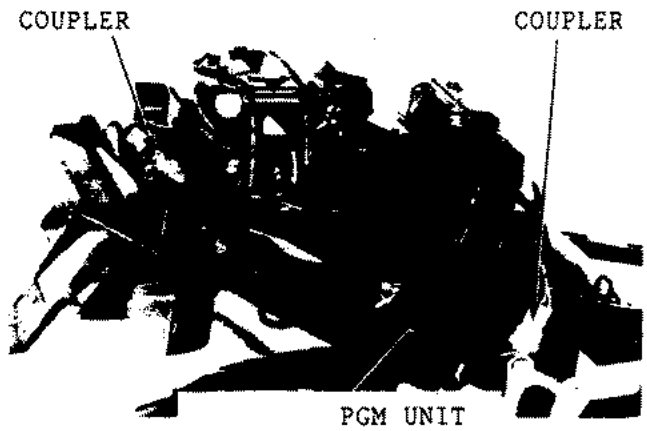

PGM UNIT

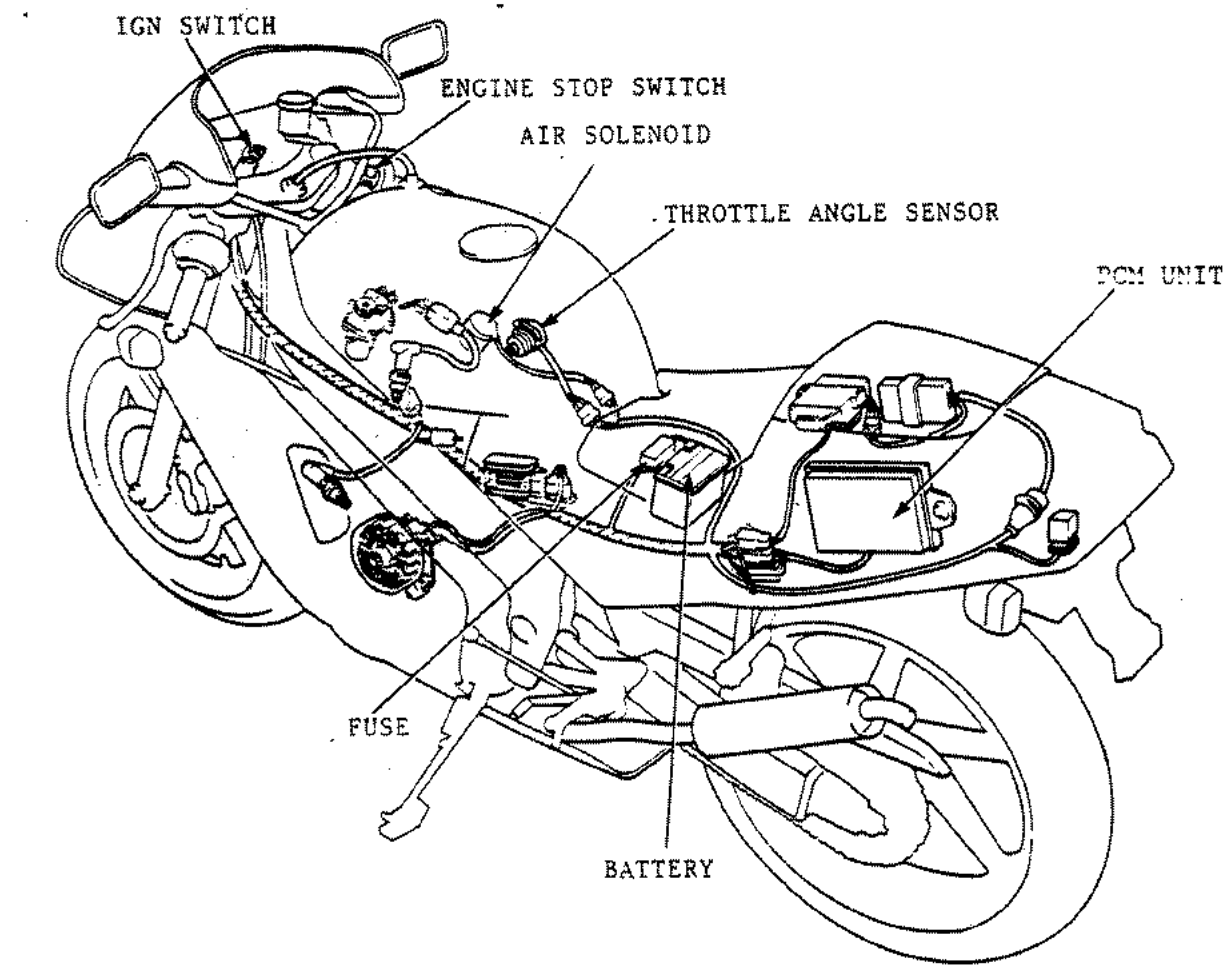


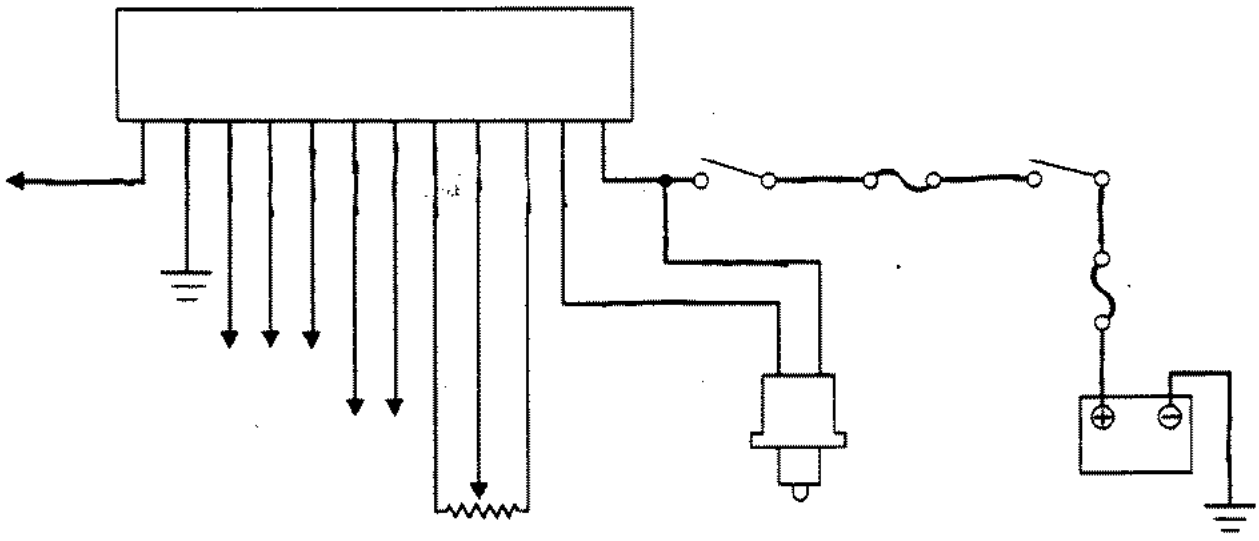

CDI

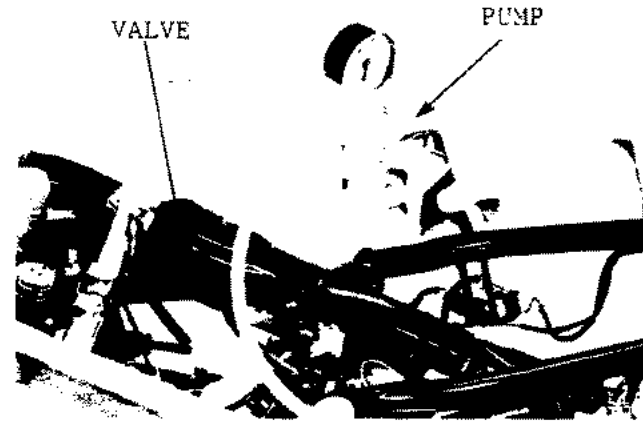


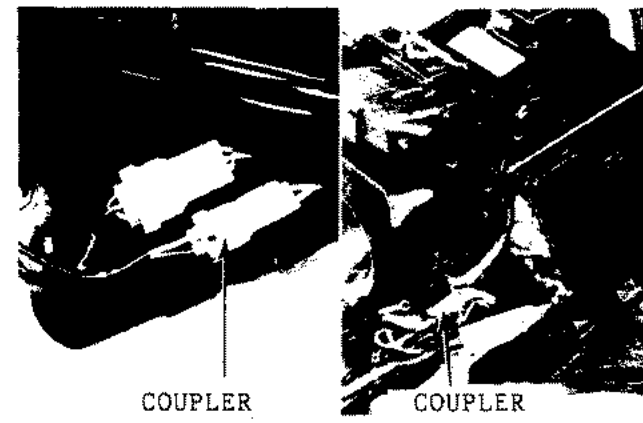

PGM UNIT

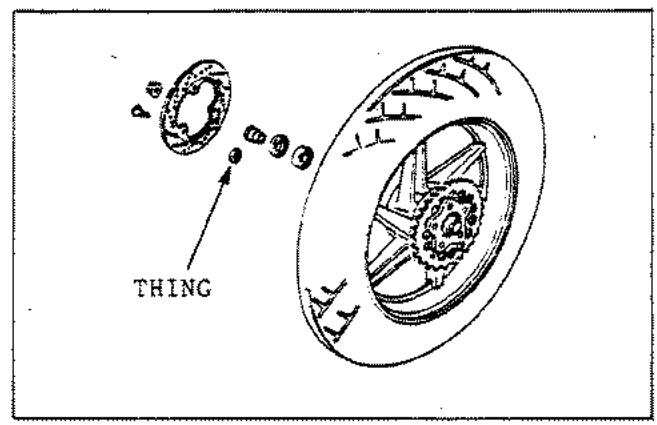

COUPLER
COUPLER
PGM UNIT

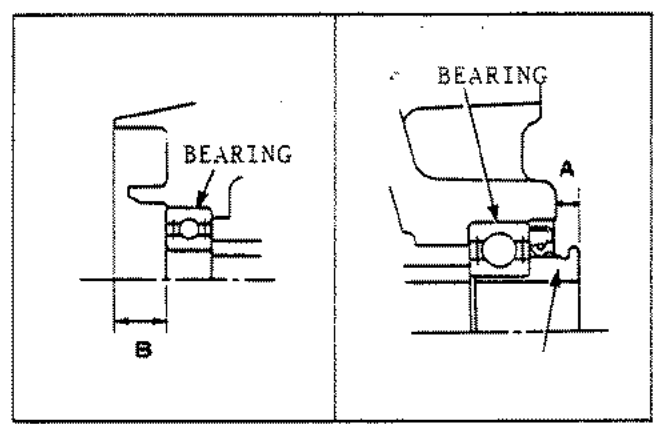

IGN SWITCH
ENGINE STOP SWITCH
AIR SOLENOID
THROTTLE ANGLE SENSOR
PCM UNIT
FUSE
BATTERY



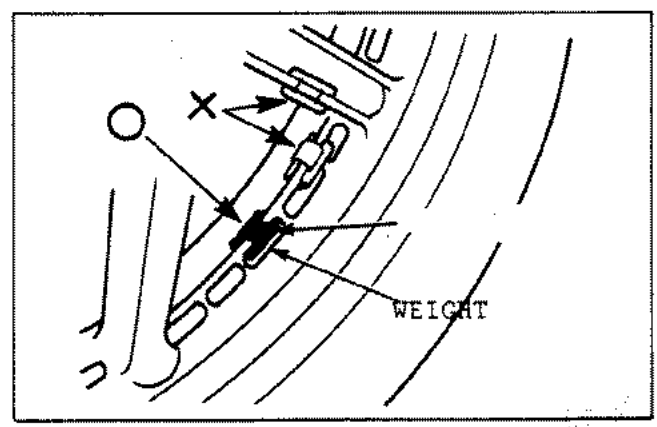

VALVE
PUMP


COUPLER
COUPLER



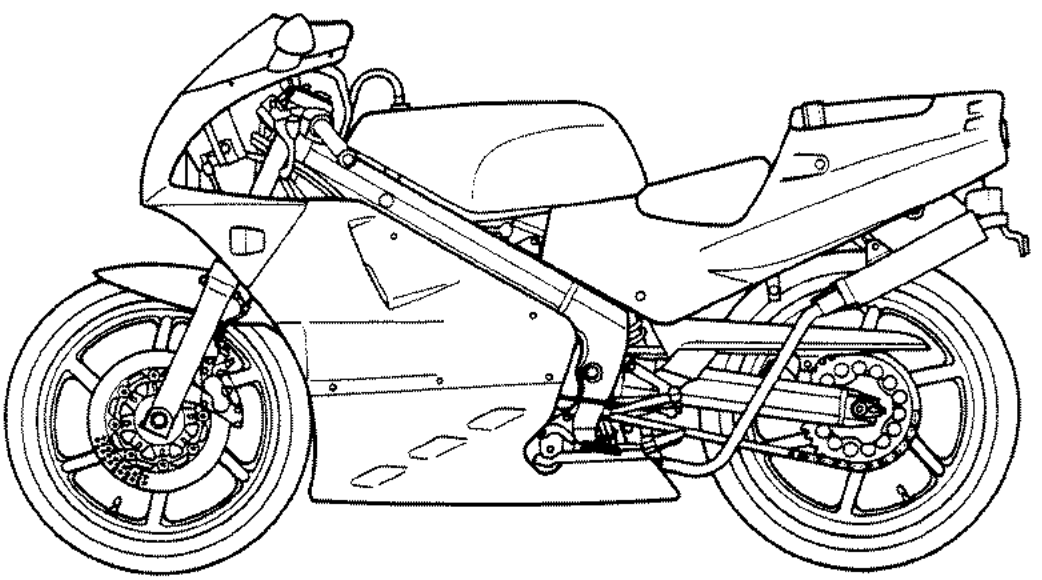


A : 4.05 — 5.15mm
B : 17.20 — 17.44mm



10g	42704 — KV3 — 7200
20g	42705 — KV3 — 7200
30g	42706 — KV3 — 7200

NSR250R(K)



K

22. NSR250R(K)

Make		Honda MC18
Length		1.980m
Width		0.650m
Height		1.060m
Wheel base		1.345m
Engine type		MC16E
Engine capacity		249cm³
Motive power		Petrol
Vehicle Weight	FRT	73kg
	RR	76kg
	Ttl	149kg
Rider number		2
Gross Weight	Frt	91kg
	Rr	168kg
	Ttl	259kg
Tires	Frt	110/70R17 54H
	Rr	150/60R18 67H
Ground clearance		0.135m
Braking Distance (Km/H)		14.0m (50)
Turning circle		2.9m
Starting		Kickstart
Fu..		Petrol - 2 cycle
Cyl. configuration		V 2
Com, type		Half ball
Bore x stroke		54.0×54.5mm
Comp. ratio		7.3
Cyl. Compress.		10.0kg/cm²-400rpm
Max Horse power		45PS/9500rpm
Torque		3.8kgm/8000rpm
Port Timing	Movement	- Open - Automatic
		closed- Automatic
	Intake Open	76°~95° (BBDC)
	Closed	76°~95° (ABDC)
	Exh, Open	62° (BBDC)
	Closed	62° (ABDC)
Idle speed		1200rpm
Lubrication Method		Forced pressure Wet sump
Oil pump type		Plunge type, (eng) Tricoid type (g/box)
Oil Capacity		*2.1

Cooling system		water cooled
Air cleaner type		Foam
Fuel capacity		16
Carb	Type	TA21
	Gas intake	32mm
	Venturi bore	32mm
Ign. System	Type	CDi
	Ign. Tim Frt	15°BTDC/1200rpm
	Ign. Tim Rr	5°BTDC/1200rpm
	Ignition Plug NGK	BR9ECM, BR10ECM
	Ignition Plug ND	W27EMR-C, W31EMR-C
	Plug gap	0.7~0.8mm
Battery		12V 3 AH
Clutch	Type	Wet, coil spring
	Operation	Manual
Primary reduction		2.360
Transmission	Type	Usual method
	1st gear	2.846
	2nd gear	2.000
	3rd gear	1.631
	4th gear	1.368
	5th gear	1.250
	6th gear	1.173
	Method	Chain
	Final	2.800
Caster		23°15'
Trail		87mm
Tire Pressures	Frt	2.25kg/cm²
	Rr	2.50kg/cm²
Steering Angle	Lt	30°
	Rghr	30°
Brakes	Frt	Pressurised discs
	Rr	Pressurised discs
Suspension	Frt	Telescopic
	Rr	Swing arm
Frame type		Diamond
Frame NO.		MC18-1100001~
Engine NO.		MC16E-1130001~

* : Transmission OIL 0.8

Engine oil 1.3

SPECIAL FEATURES

Engine Control Unit -(PGM-2)

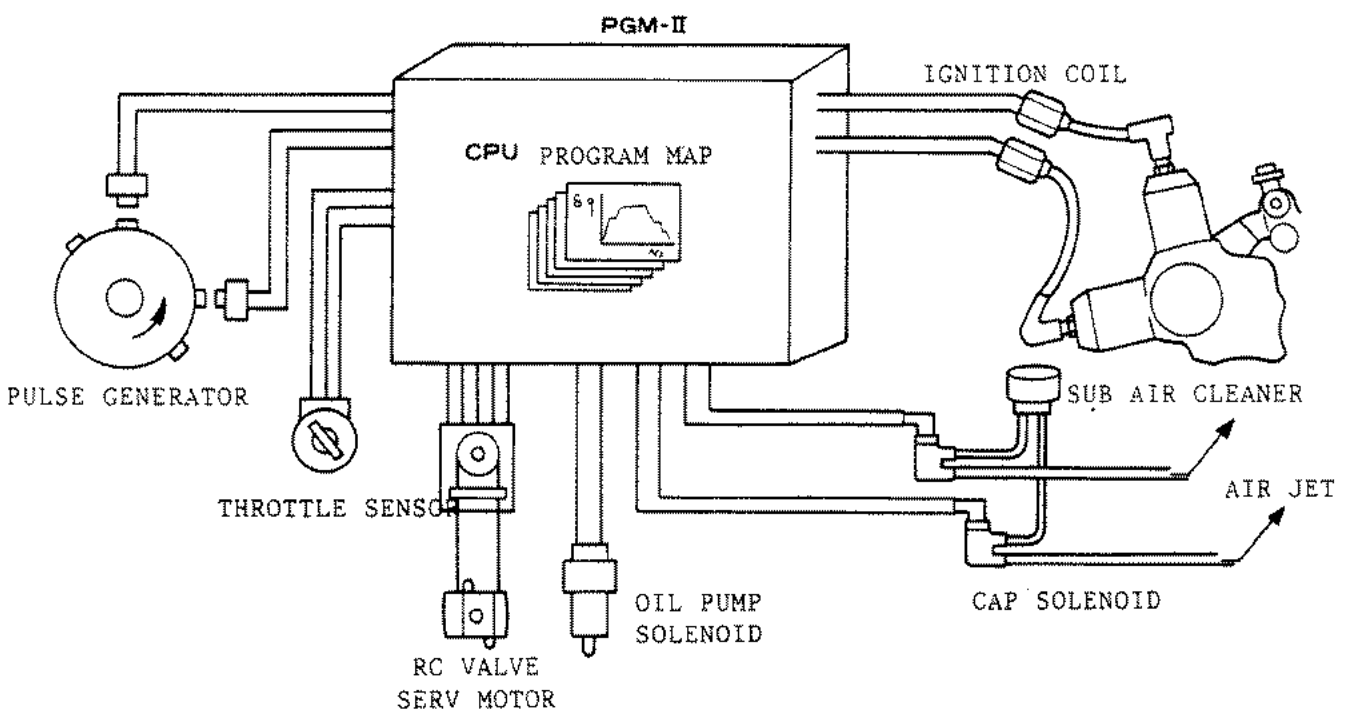
The PGM-CDI unit and RC valve unit are related to the engine control unit (PGM-2)

The engine control unit is composed of a PGM control unit and CDI convertor

PGM control unit does: PGM-CDI 2 ignition timing adjustment
PGM- Carburettor 2 air/fuel mixture adjustment
PGM-RC Valve RC valve adjustment
Oil pump solenoid oil outflow characteristic adjustment

Performance:

The engine control unit is divided into the PGM control section and the CDI convertor. In the CPU progeam map the pulse signaling from the No.1 & 2 pulse generator is in accordance with the engine revolutions, enters voltage from the throttle sensor in accordance with the throttle opening. The program does, the ignition timing demanded by the engine from the enforced valve, the air/fuel mixture, exhaust port timing, oil outflow capacity measurement and predicts the various circumstances from low revolutions to high revolutions which give good fuel performance

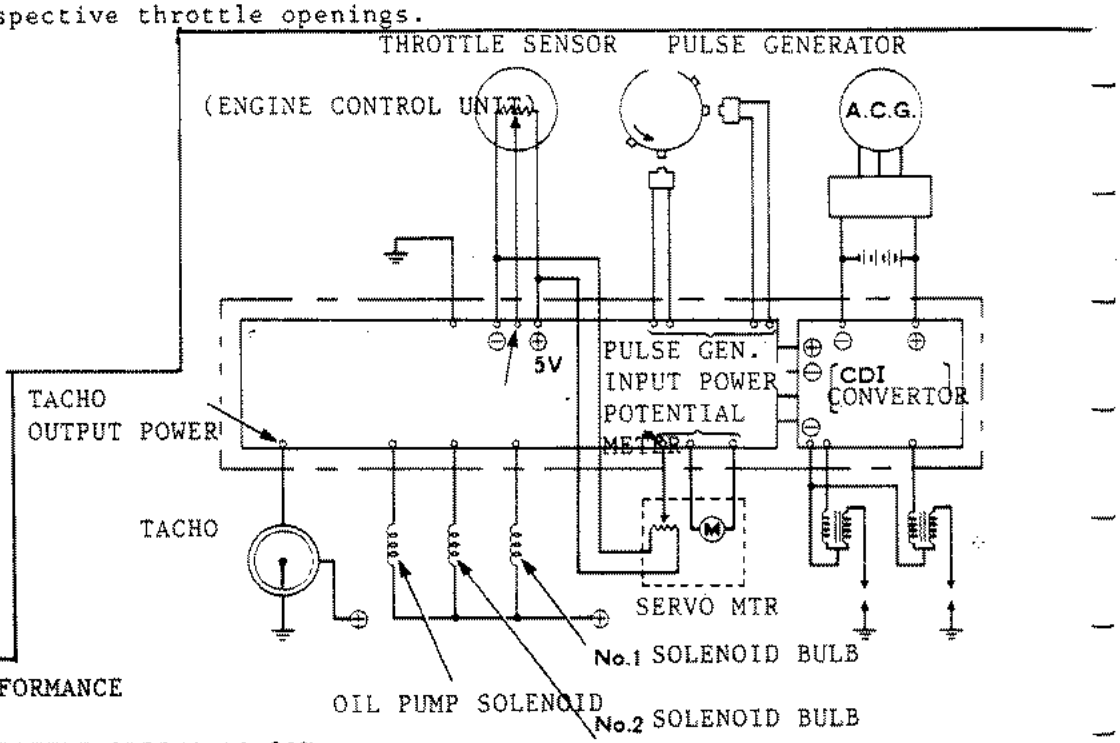


PGM-CDI 2

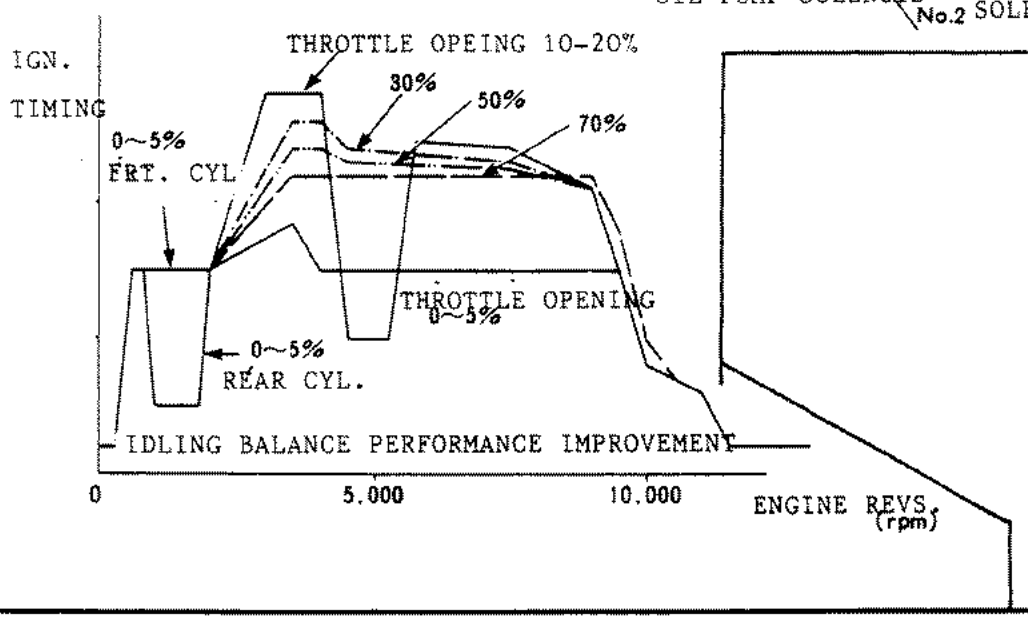
The PGM-CDI 2, at the same time as advancing new domains, has the advanced characteristi of ign timing for independant frt & rear cylinders. The No.1-2 pulse generators pulse signaling is on the eng. revs & throttle sensor output voltage is on throttle opening, and respective PGM control PGU program maps apply power. The CPU program map is independant for the frt & Rr cylinders and with a plan ror optimum ignition timing, gives spark plug firing points produced by the CDI convertor.

For example, when the throttle opening is less than 5% and the engine revs are between 1000 & 1800rpm, it becomes possible tp approach ign. timing which demands different characteristics for the frt & Rr cylinders. Giving very smooth idle characteristics

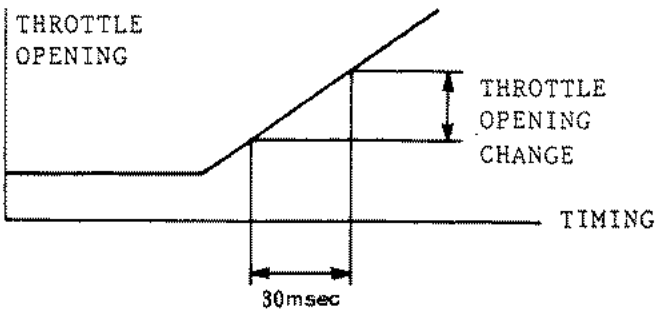
Even with the advanced performance at all en. revs, the program map details can be changed, with not only the throttle opening and eng. revs being able to be divided, the ign. timing demanded by the eng. can be corresponding. With this, it has become possible for the acceleration response to be increased. For example even at the same engine revolutions, with the throttle opening at 30% & 50% the ign. timing can be adjusted for the respective throttle openings.



IGNITION TIMING PERFORMANCE

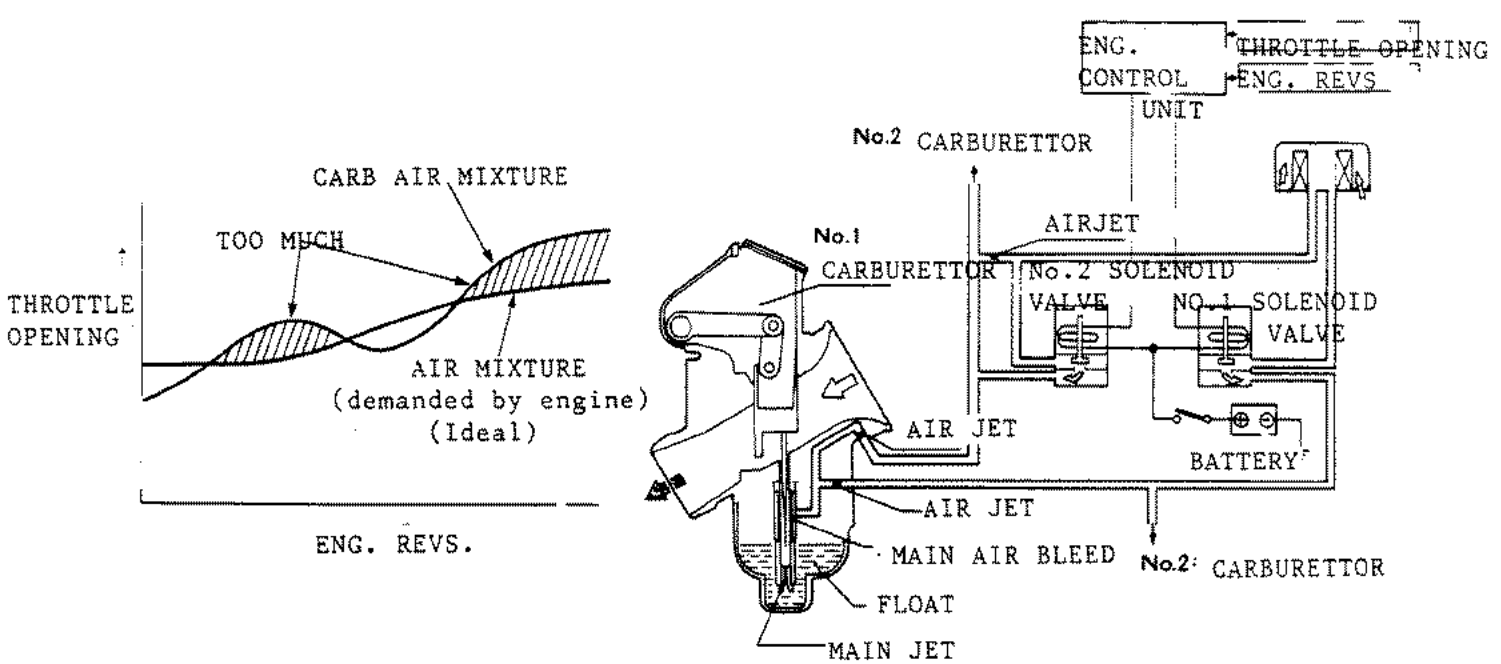


Also regarding the advanced angle of compensating for ignition timing at quick throttle opening, whether it be 100-4500rpm, or even widened to 1000-11500rpm, the following throttle performance at all rev ranges has been increased. When the revolutions are between 1000 and 11500rpm it compensates for the changed throttle opening from the fixed timing (30m sec). With the PGM control, if the throttle opening change is 20% below the 30m sec the 2-8° will be compensated to 5-6°



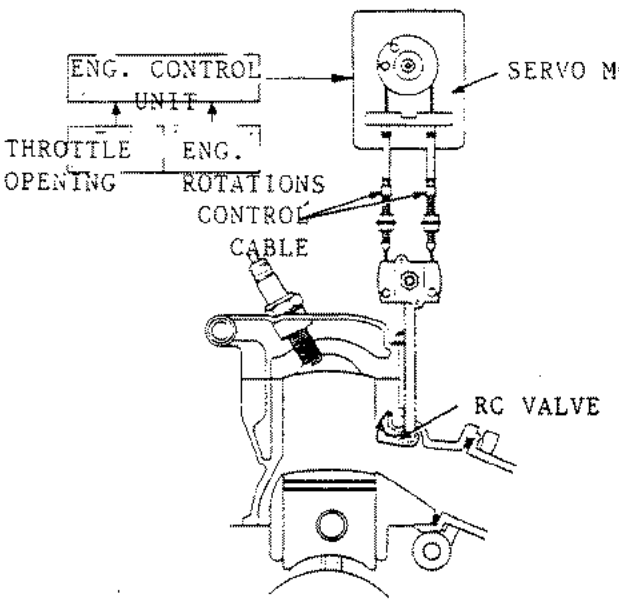
PGM-CARBURETTOR 2

Carburettor Air Jet Control System:
The air mixture (ideal air mixture) and air mixture supplied to the eng. are shown respectively on the graph below. In this system the carb supplies the air mixture, and in order to supply close to the air mixture demanded by the engine, sends air into the carb air jet. The PGM carb.2 not only supplements the air jet and solenoid valve, but also makes fine control possible. The PGM control according to the input power from the engine revs (pluse generator), throttle opening (throttle sensor) is produced by separate NO.1 solenoid and NO.2 solenoid valves, and adjusts the input volume of air from the sub air cleaner to the main air bleed.
When the air mixture supplied to the carburettor is too rich, (oblique line on graph), the solenoid is turned ON, and according to the air input increase to the air bleed the air mixture is diluted and the engine nears the ideal air/fuel mixture demanded by the engine. The PGM-Carburettor 2, as for engine revolutions, makes it such that it can control the correct air mixture with the throttle opening from low revolutions to high revolutions, and improves drivability over all rev. ranges

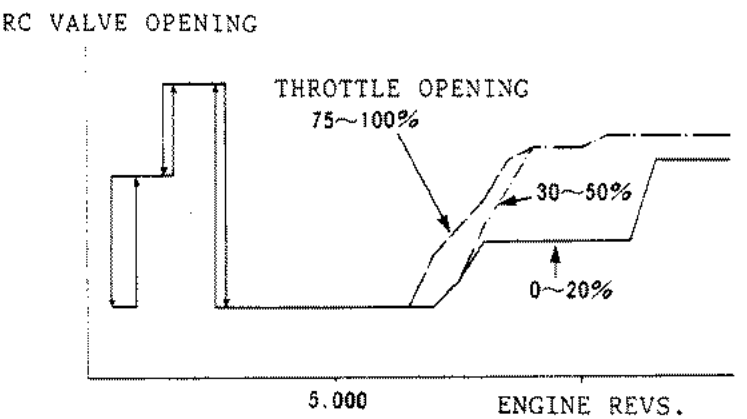


PGM-RC VALVE

With the PGM-RC valve system, the exhaust port timing in relation to the engine revolutions and throttle opening operates the servo motor according to the engine control units PGM control map and controls the RC valve opening
As for the input from the pulse generator and throttle sensor, the output power correspondingly details the exhaust port timing and is adjusted according to the change in the PGM control program map.
For example, at the same engine revolutions, the exhaust port timing which gives the maximum output that relates to the respective throttle openings is held within the PGM control program map. According to the program map the RC valve is operated and controls the optimum port timing



(PGM-RC VALVE OPENING PERFORMANCE)



The PGM-RC Valve amkes it possible to finely adjust the exhaust port timing in accordance to the various engine revolutions and throttle openings, and depending on this the throttle response and power output is improved.

MAINTENANCE DATA

Torques:

Frame	No.	Threadmm	Torque (kg-m)	Notes
Front disc pinch bolt	12	6	1.8~2.2	
Torque rod pinch bolt/nut (frame)	1	10	3.0~4.0	after tightening
Torque rod pinch bolt/nut (caliper)	1	10	3.0~4.0	insert split pin
Brace hose clamp bolt	4	6	1.0~1.4	
Driven socket bolt	5	10	7.0~8.0	Apply oil to thread
Rear brake disc pinch bolt	3	8	4.0~4.5	
Rear axle nut	1	18	8.5~10.5	

Tools:

Standard	Tool number	No.	Use
Torque driver bit	07703-0010400	1	Carb. separation
Bit driver	07703-0010300	1	Carb. separation
Rear suspension compressor attach.	07959-MB10000	1	Rear suspension sep/install

Special	Tool number	No.	Use
Spherical driver bit	07HMF-HC00100	1	Torque rod brg removal
Rear suspension compressor	07GME-0010000	1	Gear suspension sep/install

Gauges:

	Tool number	No.	Use
Peak voltage adaptor	07HGJ-0020100	1	Ignition inspection

Fuel system

	No.1 Carb	No.2 Carb
Setting mark	TA21A	
Main jet	#128	
Jet needle mark	BPG	BPH
Power jet	#75	
Air screw rotations	2-1/8	

CYLINDER HEAD, CYLINDER PISTON, RC VALVE

mm

		Standard	Service limit
Cylinder I.D	Mark : A	54.008－54.011	54.02
	Mark : B	54.004－54.008	54.02
	Mark : C	54.000－54.004	54.02
Piston O.D	Mark : B	53.966－53.969	53.92
	No mark	53.962－53.965	53.91
	Mark : D	53.958－53.961	53.91
Cylinder to piston clearance		0.039－0.045	0.09
Piston pin bore I.D		15.022－15.006	15.05
Piston pin O.D		14.966－15.000	14.95
Piston to piston pin clearance		0.002－0.010	0.04

Front wheel, suspension

: mm

	Standard	Service Limit
Front cushion sprin freeplay	285.4	279.7
Front fork oil	Honda Ultra cushion oil 10	

Rear wheel, suspension

: mm

	Standard	Service Limit
Rear cushion damper pressure (at 10mm)	15.4－19.9kg	12.3kg
Rear Cushion spring torque length	161.8	----------

Ignition System:

Ignition timing	Front cylinder		15°BTDC/ 1200rpm
	rear cylinder		5°BTDC/ 1200rpm
			300rpm
			11,500rpm
Ignition coil	First coil resistance (20°C)		0.1－0.3Ω
	2nd coil resistance (20°C)	Cap On	5.0－11.0KΩ
		Cap Off	2.0－ 4.0KΩ
Pulse generator	Coil resistance (20°C)		180－220Ω

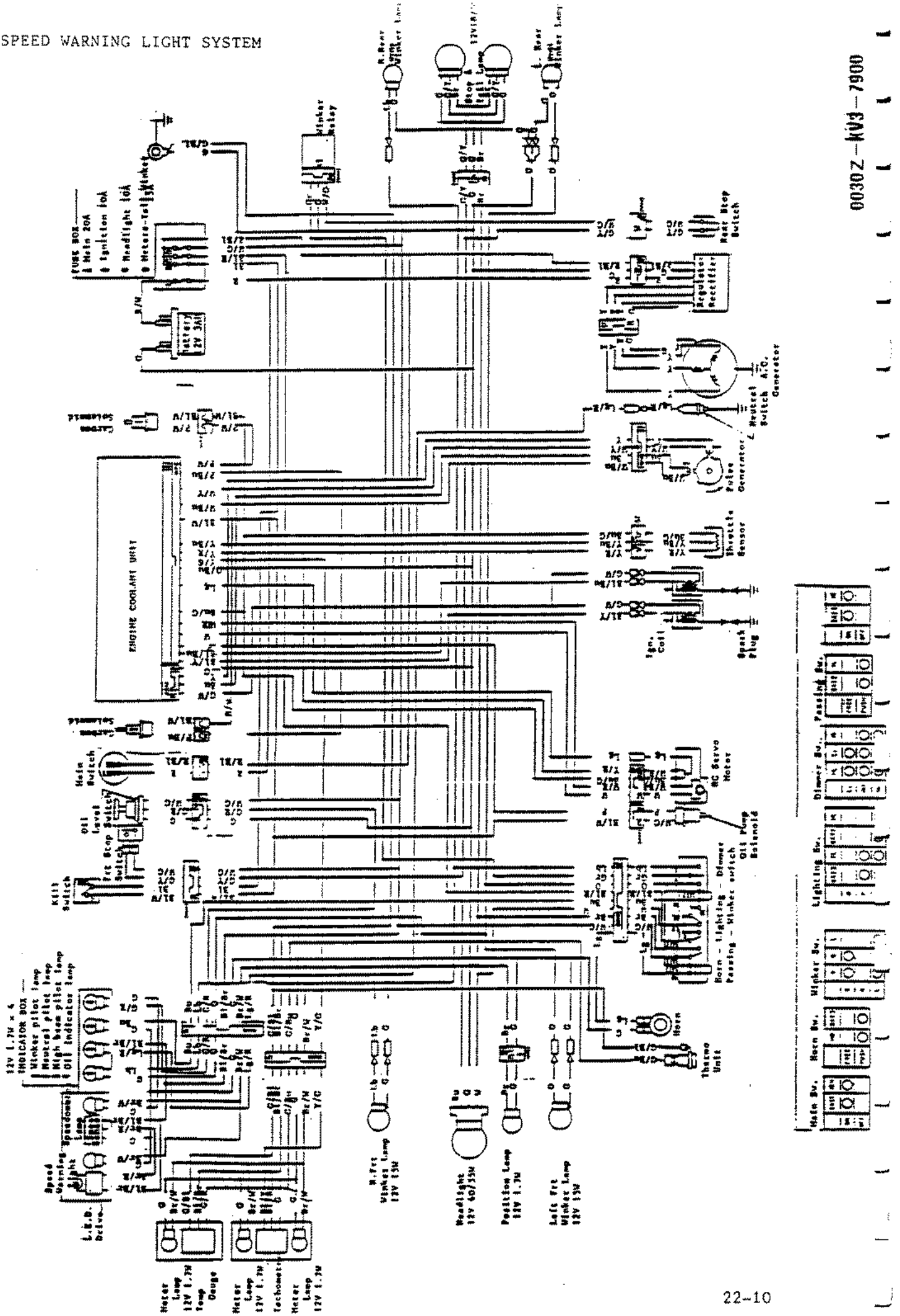
Generator System:

AC Generator Resistance (20°)	0.2－1.0Ω

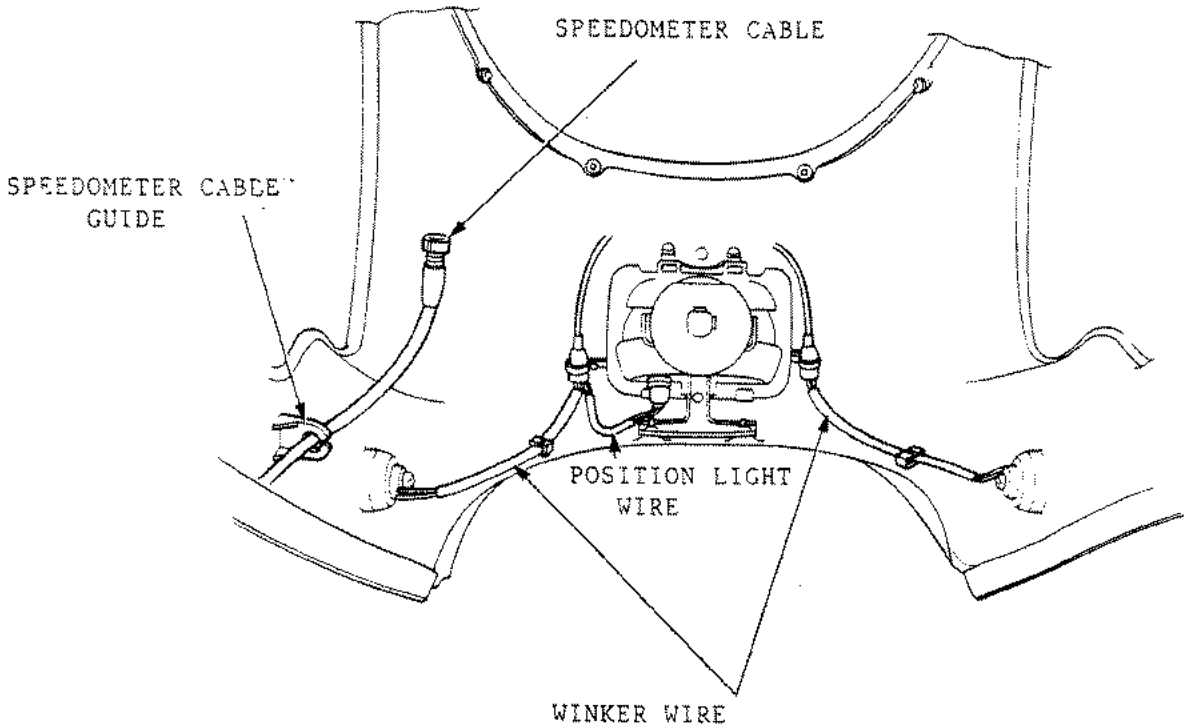
Air Solenoid

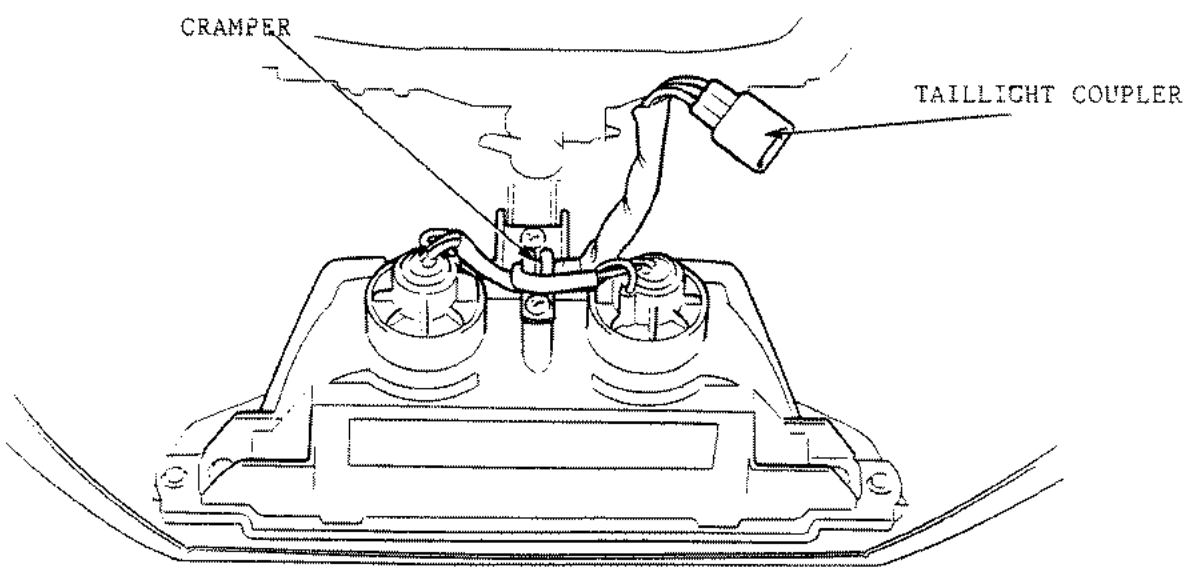
Air solenoid resistance (20°C)	25－40Ω

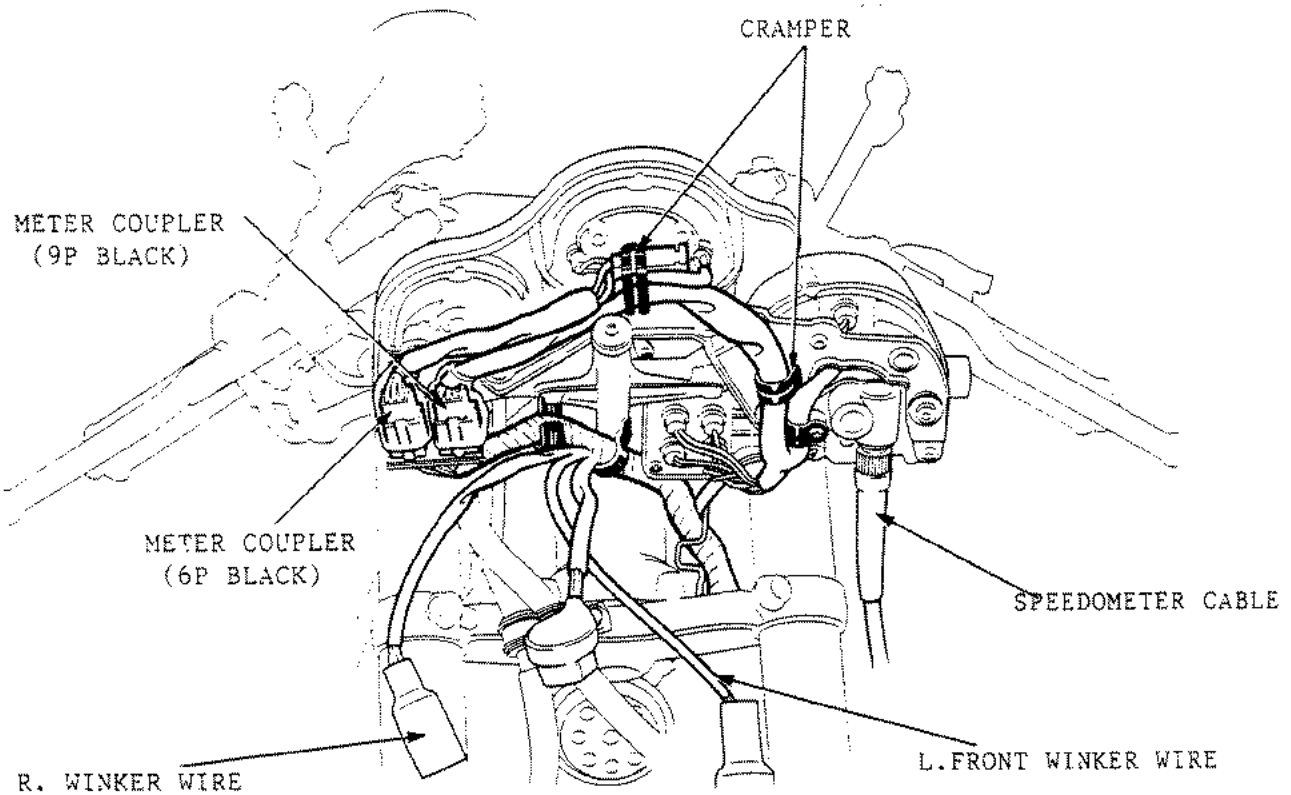
SPEED WARNING LIGHT SYSTEM

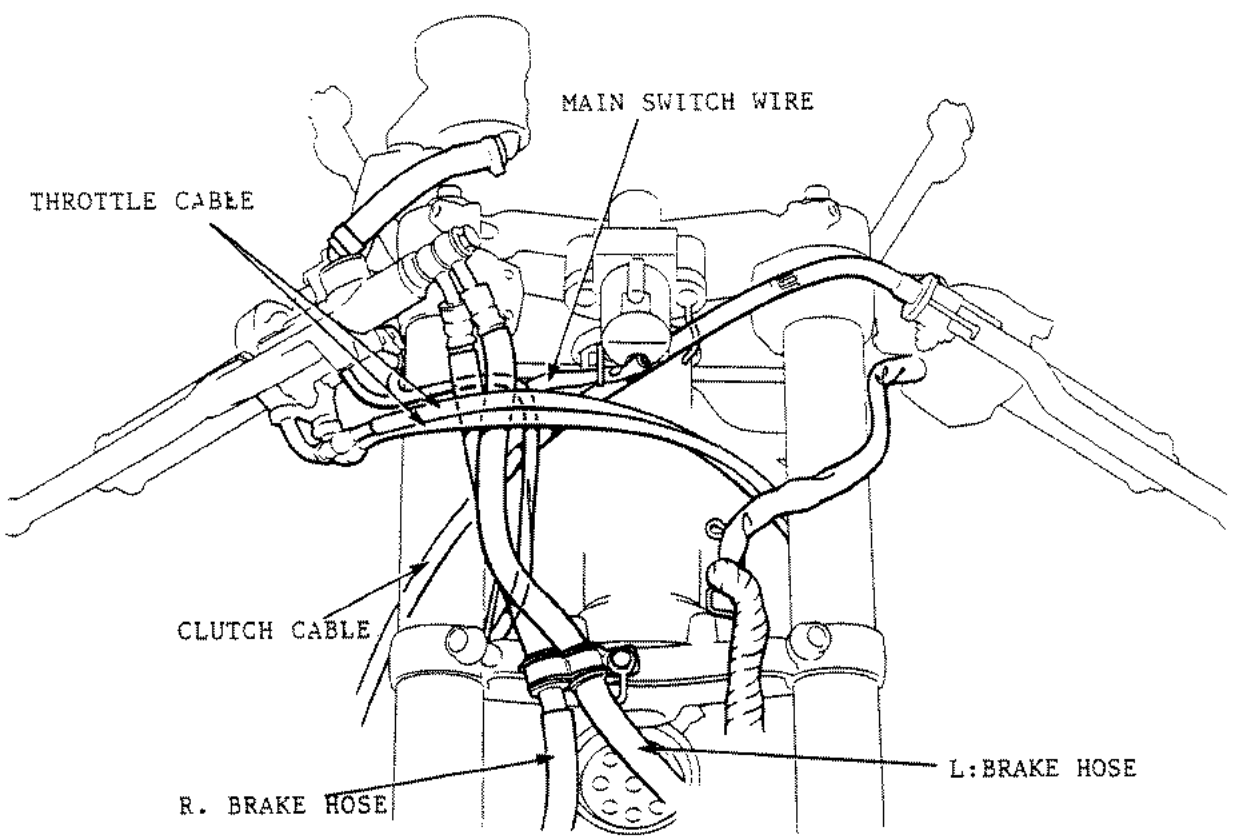


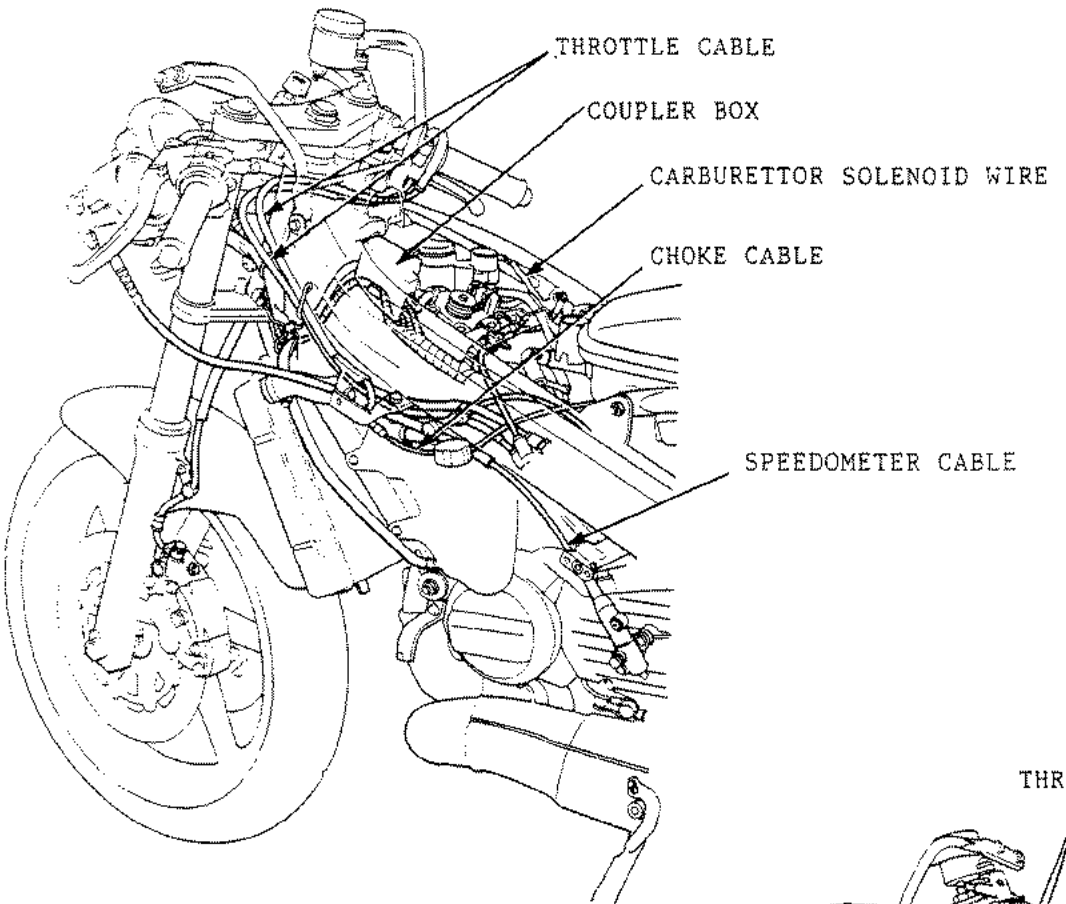
WIRING MAP

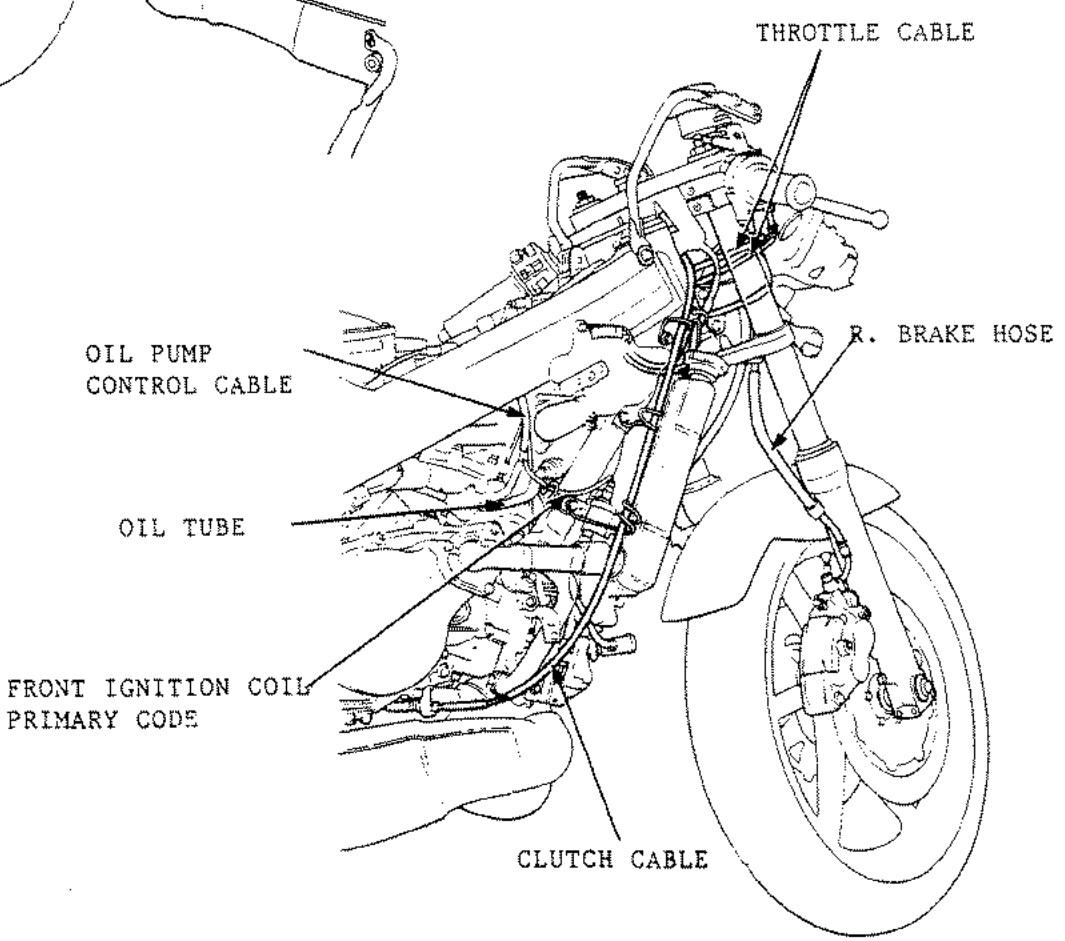

SPEEDOMETER CABLE
SPEEDOMETER CABLE GUIDE
POSITION LIGHT WIRE
WINKER WIRE

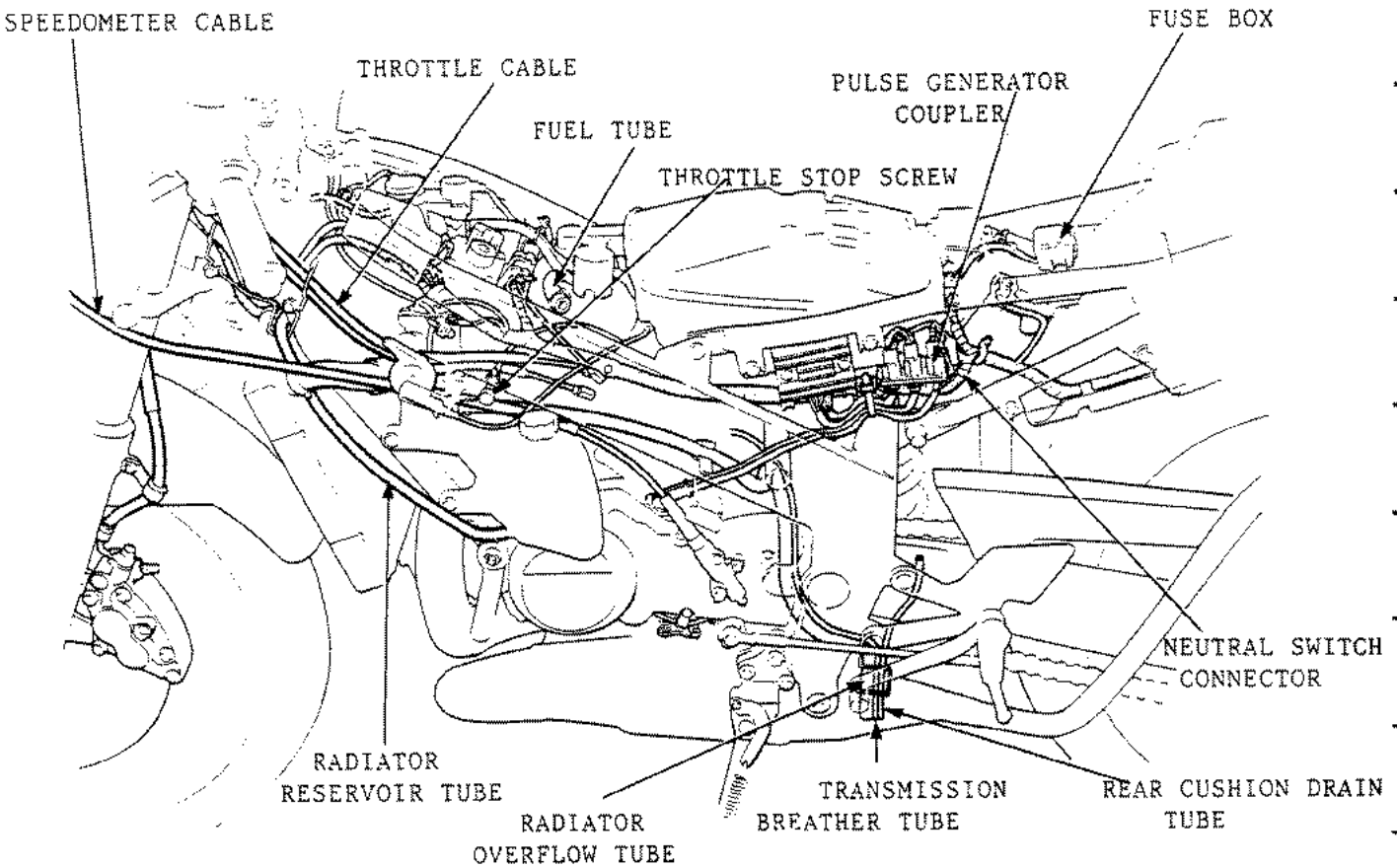

CRAMPER
TAILLIGHT COUPLER

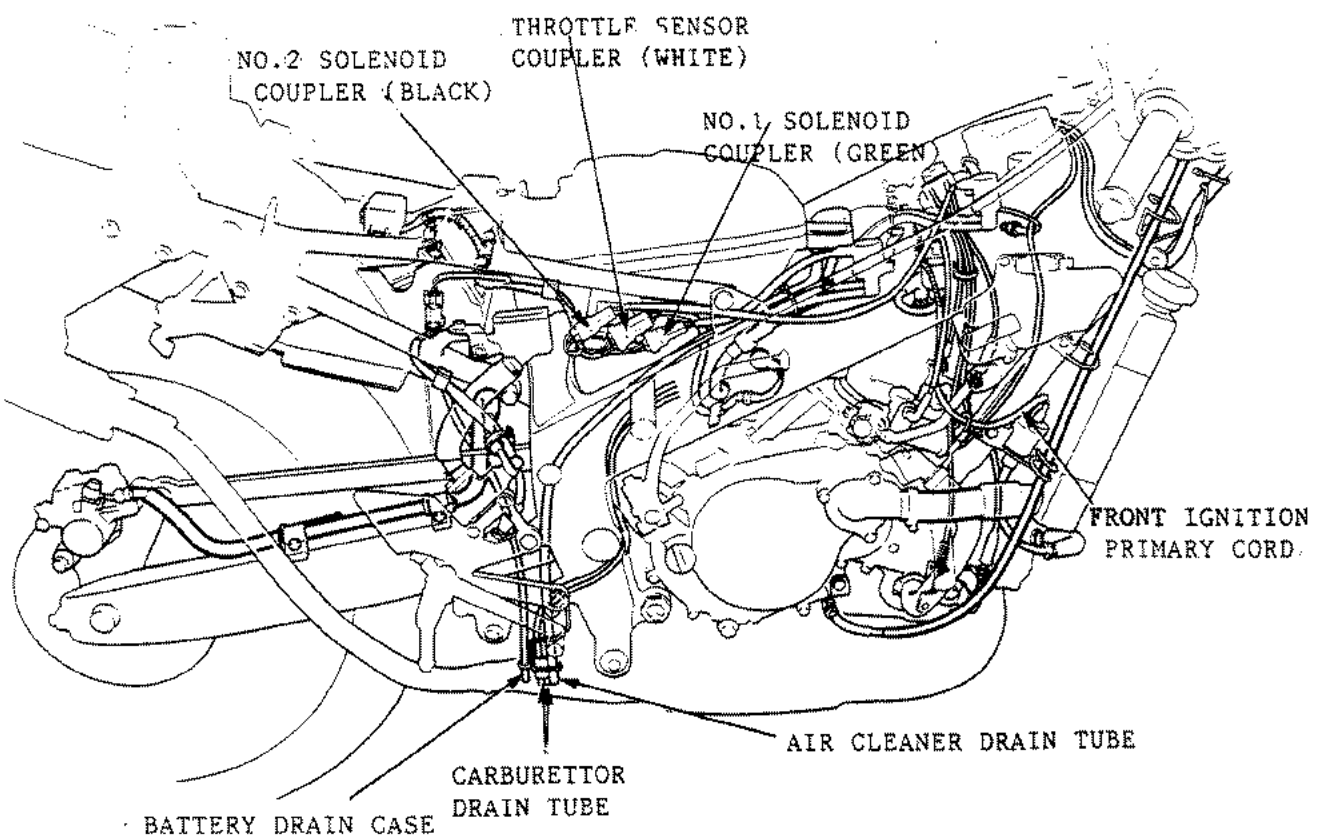

CRAMPER
METER COUPLER
(9P BLACK)
METER COUPLER
(6P BLACK)
SPEEDOMETER CABLE
R. WINKER WIRE
L.FRONT WINKER WIRE

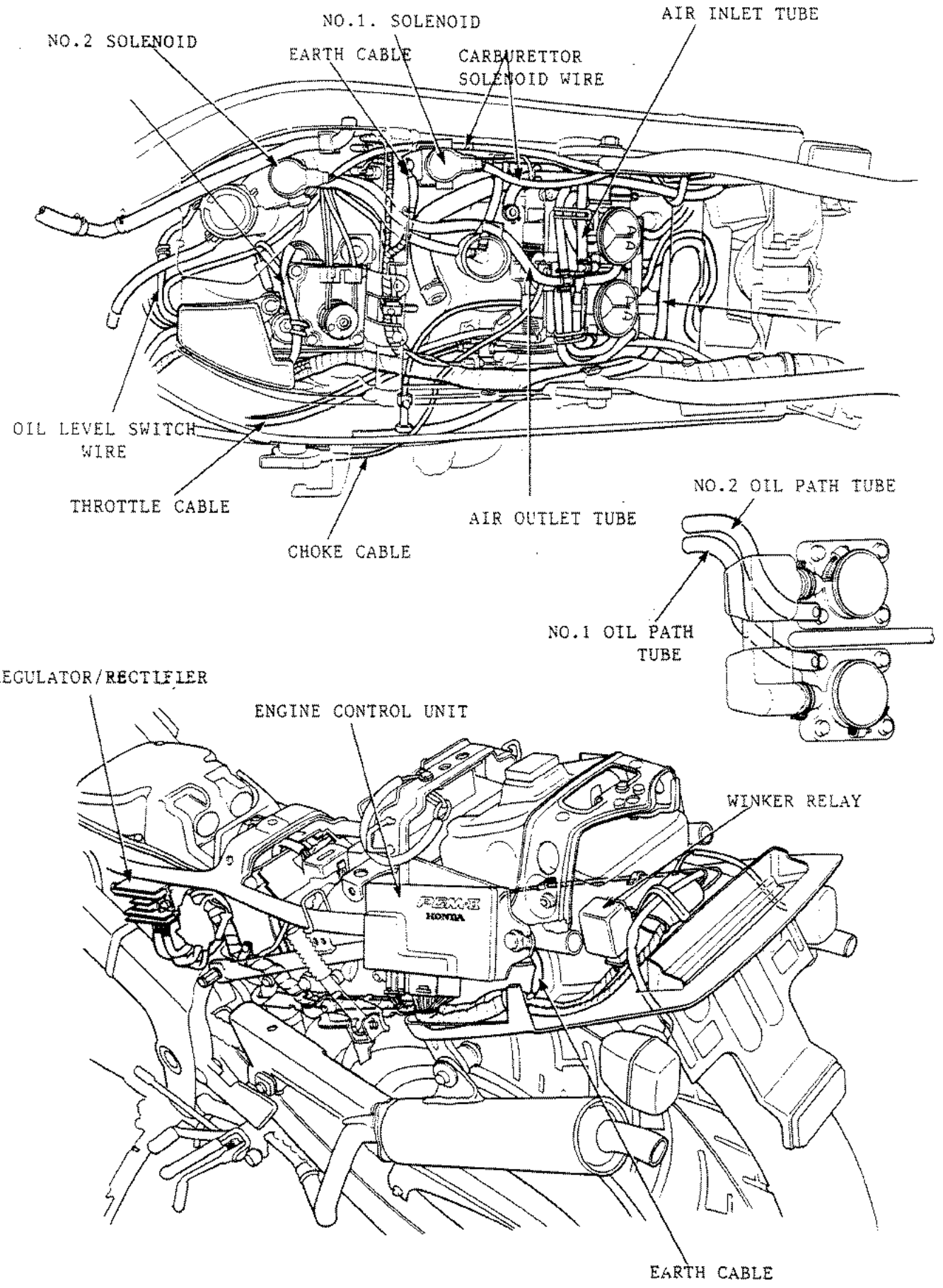

MAIN SWITCH WIRE
THROTTLE CABLE
CLUTCH CABLE
L:BRAKE HOSE
R. BRAKE HOSE


THROTTLE CABLE
COUPLER BOX
CARBURETTOR SOLENOID WIRE
CHOKE CABLE
SPEEDOMETER CABLE

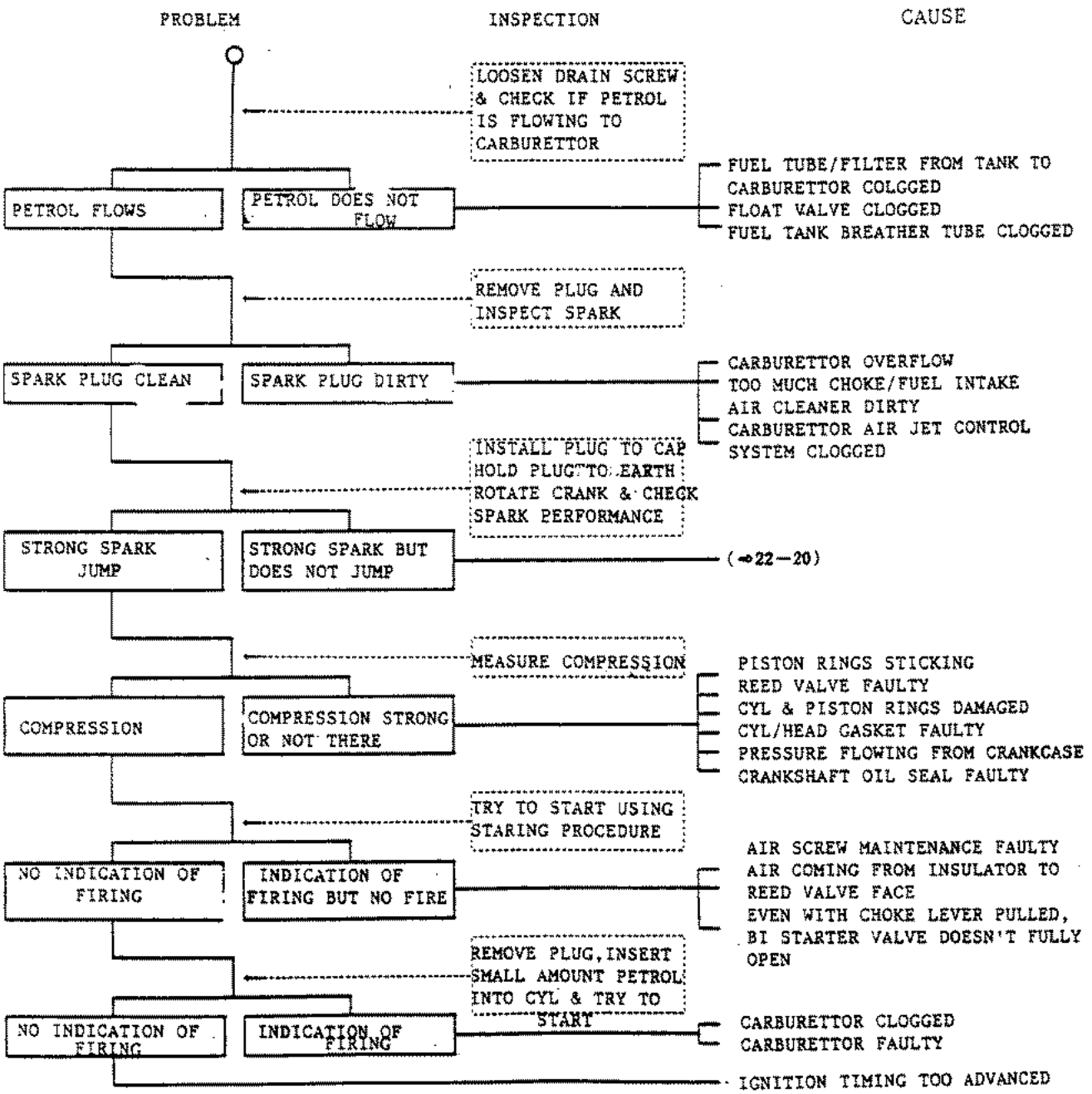

THROTTLE CABLE
OIL PUMP
CONTROL CABLE
R. BRAKE HOSE
OIL TUBE
FRONT IGNITION COIL
PRIMARY CODE
CLUTCH CABLE

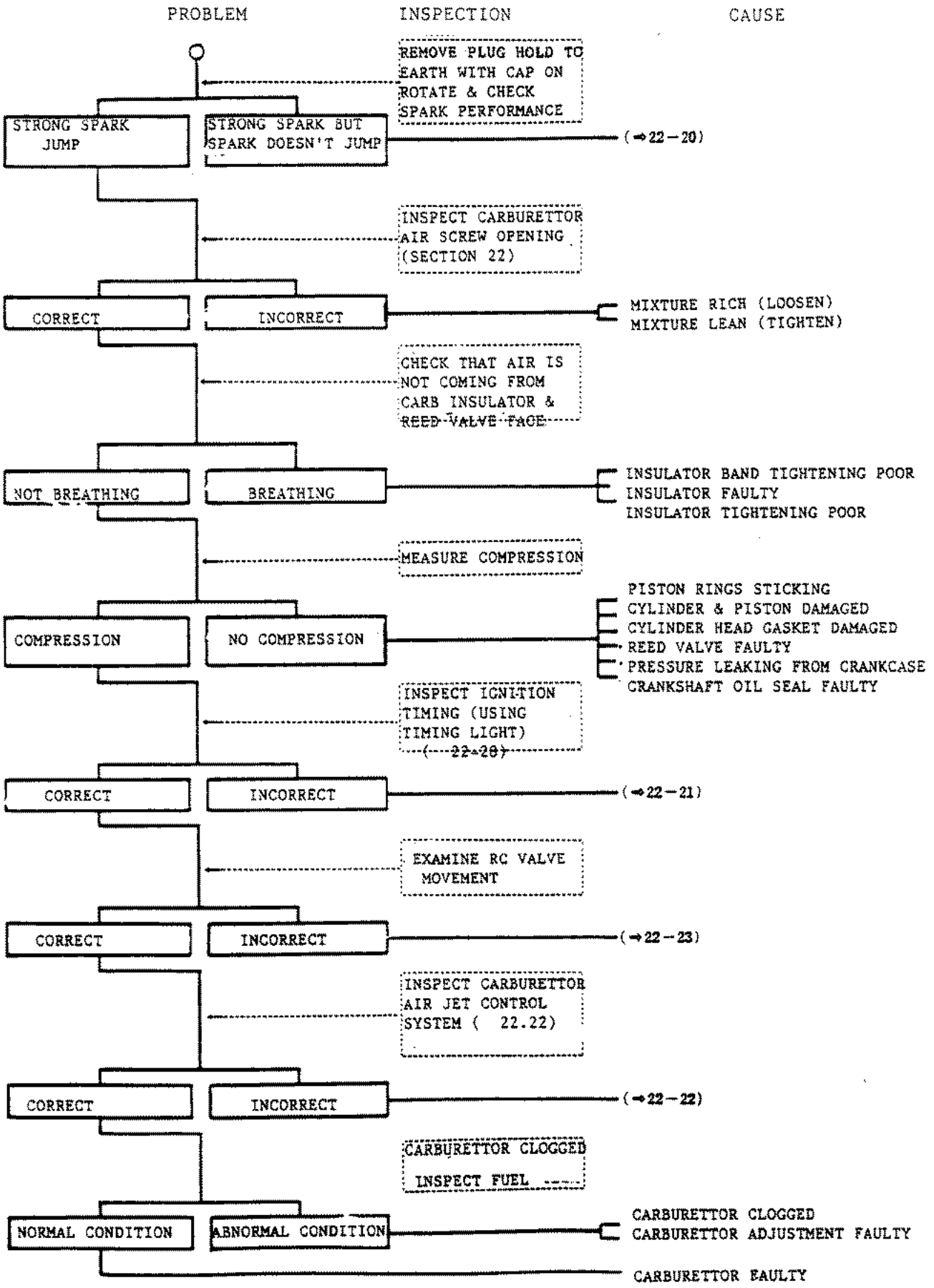

SPEEDOMETER CABLE
THROTTLE CABLE
FUEL TUBE
PULSE GENERATOR COUPLER
FUSE BOX
THROTTLE STOP SCREW
NEUTRAL SWITCH CONNECTOR
RADIATOR RESERVOIR TUBE
RADIATOR OVERFLOW TUBE
TRANSMISSION BREATHER TUBE
REAR CUSHION DRAIN TUBE


THROTTLE SENSOR COUPLER (WHITE)
NO.2 SOLENOID COUPLER (BLACK)
NO.1 SOLENOID COUPLER (GREEN)
FRONT IGNITION PRIMARY CORD
AIR CLEANER DRAIN TUBE
CARBURETTOR DRAIN TUBE
BATTERY DRAIN CASE TUBE

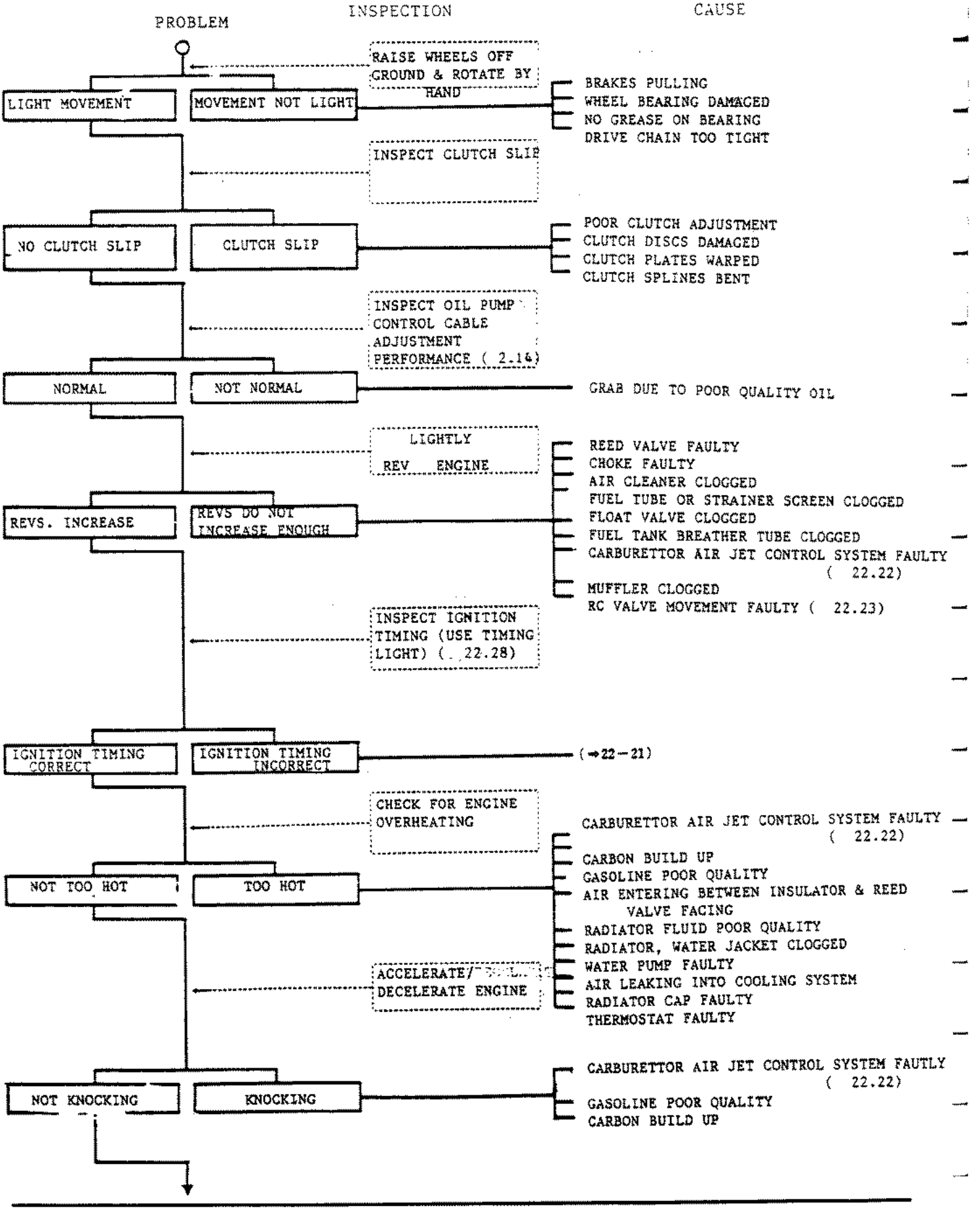

NO.2 SOLENOID
NO.1. SOLENOID
EARTH CABLE
CARBURETTOR SOLENOID WIRE
AIR INLET TUBE
OIL LEVEL SWITCH WIRE
THROTTLE CABLE
CHOKE CABLE
AIR OUTLET TUBE
NO.2 OIL PATH TUBE
NO.1 OIL PATH TUBE
REGULATOR/RECTIFIER
ENGINE CONTROL UNIT
WINKER RELAY
EARTH CABLE

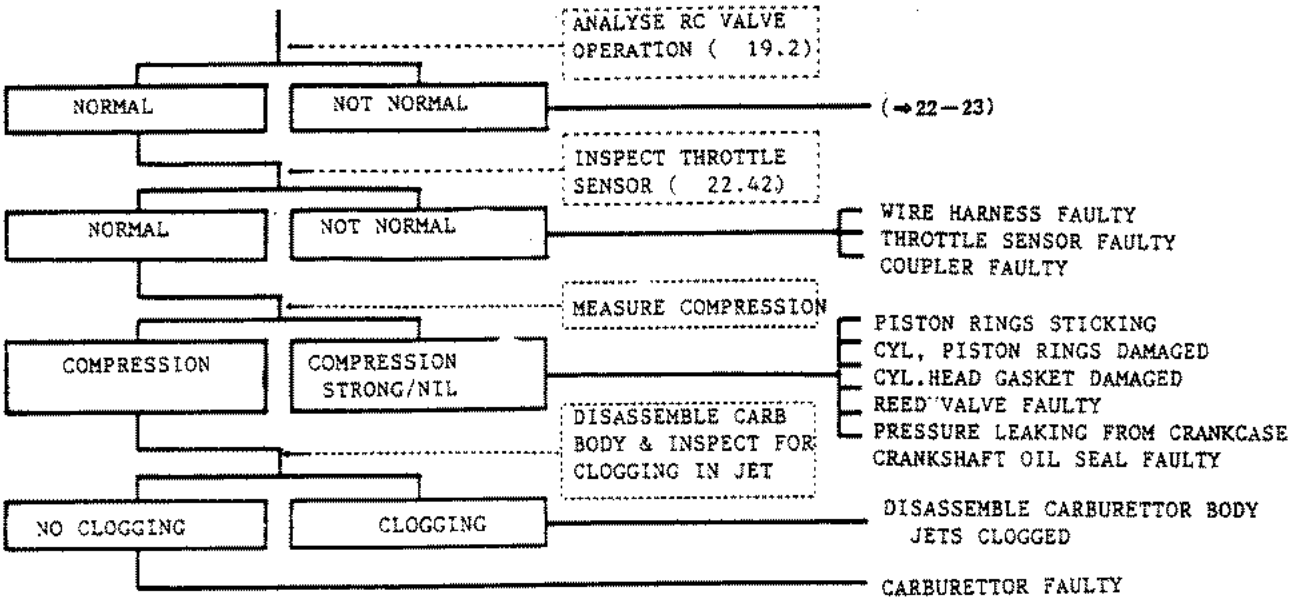
TROUBLE SHOOTING



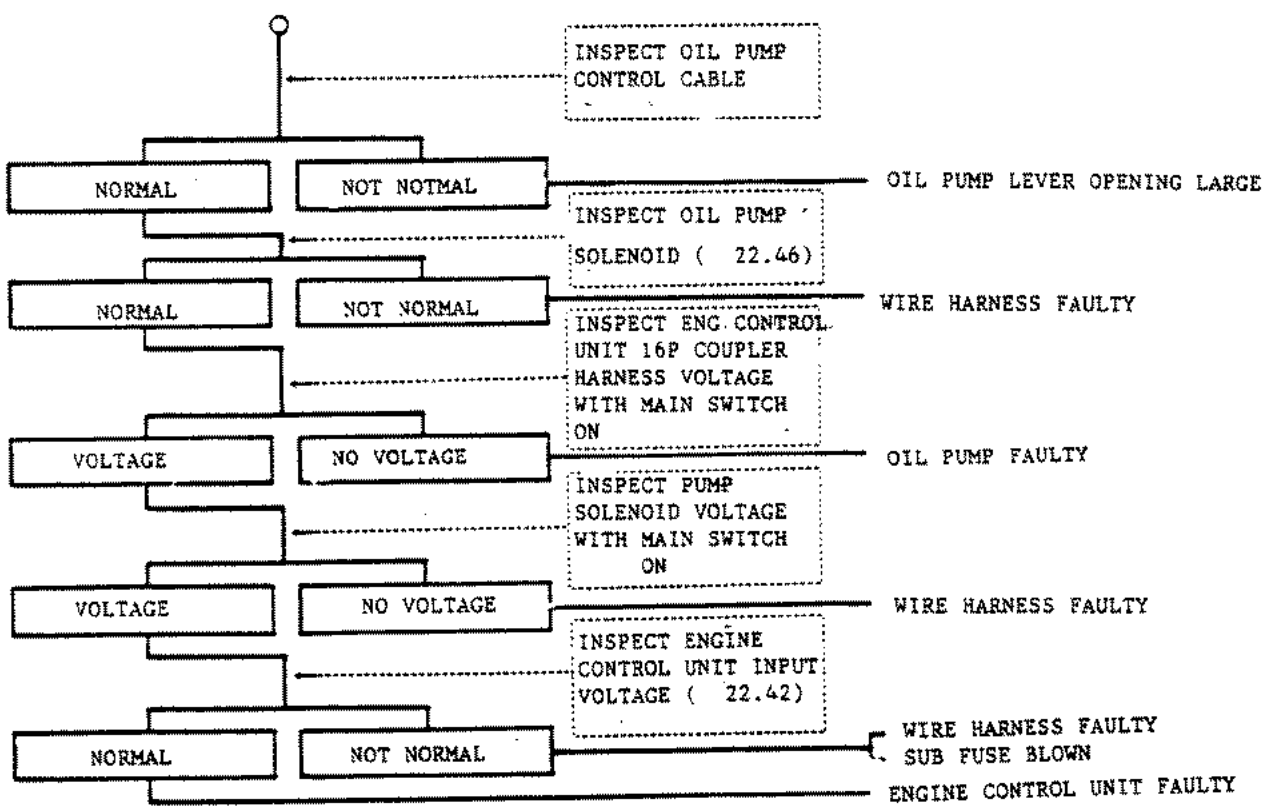

PROBLEM
INSPECTION
CAUSE
REMOVE PLUG HOLD TO EARTH WITH CAP ON ROTATE & CHECK SPARK PERFORMANCE
STRONG SPARK JUMP
STRONG SPARK BUT SPARK DOESN'T JUMP
(⇒22-20)
INSPECT CARBURETTOR AIR SCREW OPENING (SECTION 22)
CORRECT
INCORRECT
MIXTURE RICH (LOOSEN)
MIXTURE LEAN (TIGHTEN)
CHECK THAT AIR IS NOT COMING FROM CARB INSULATOR & REED VALVE FACE
NOT BREATHING
BREATHING
INSULATOR BAND TIGHTENING POOR
INSULATOR FAULTY
INSULATOR TIGHTENING POOR
MEASURE COMPRESSION
COMPRESSION
NO COMPRESSION
PISTON RINGS STICKING
CYLINDER & PISTON DAMAGED
CYLINDER HEAD GASKET DAMAGED
REED VALVE FAULTY
PRESSURE LEAKING FROM CRANKCASE
CRANKSHAFT OIL SEAL FAULTY
INSPECT IGNITION TIMING (USING TIMING LIGHT) (22-28)
CORRECT
INCORRECT
(⇒22-21)
EXAMINE RC VALVE MOVEMENT
CORRECT
INCORRECT
(⇒22-23)
INSPECT CARBURETTOR AIR JET CONTROL SYSTEM (22.22)
CORRECT
INCORRECT
(⇒22-22)
CARBURETTOR CLOGGED
INSPECT FUEL
NORMAL CONDITION
ABNORMAL CONDITION
CARBURETTOR CLOGGED
CARBURETTOR ADJUSTMENT FAULTY
CARBURETTOR FAULTY

POOR ADJUSTMENT TO ENGINE - NO POWER





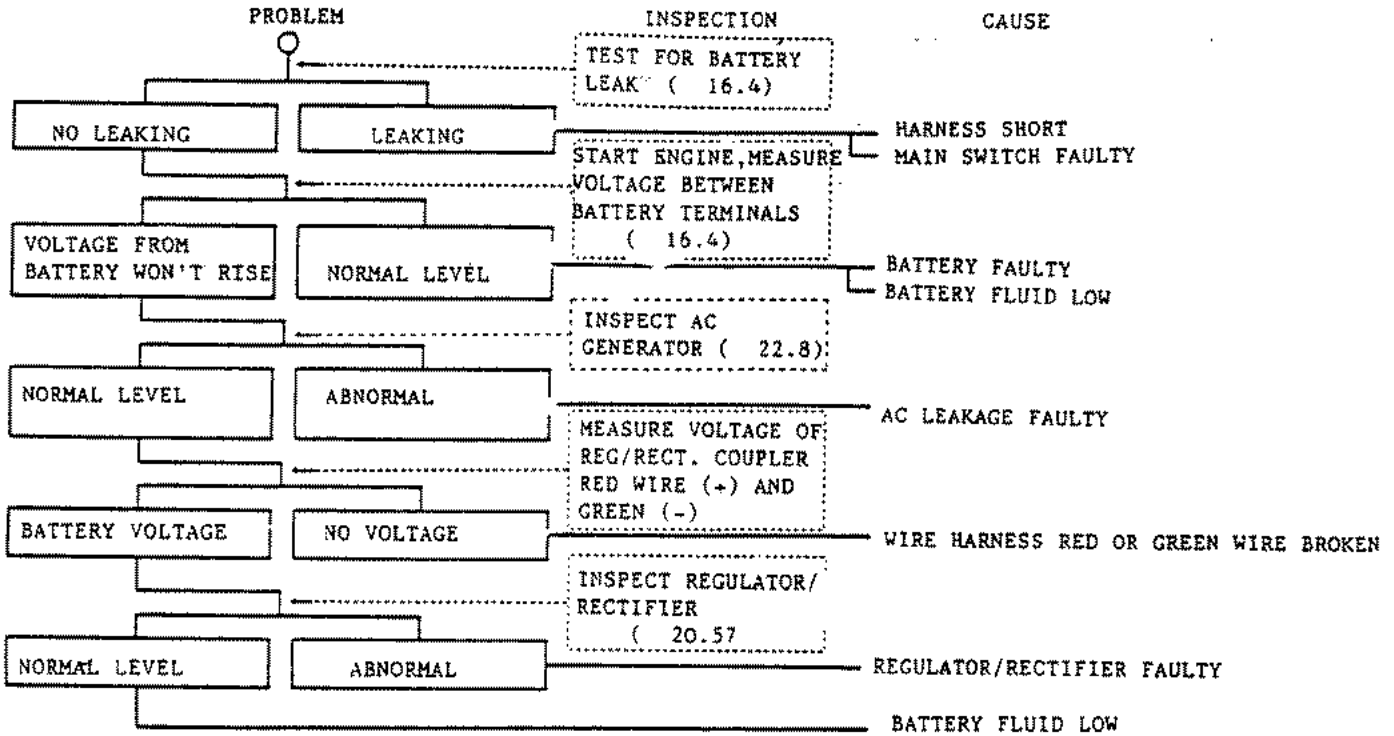
AT LOW REVS, LOTS OF EXHAUST NOISE



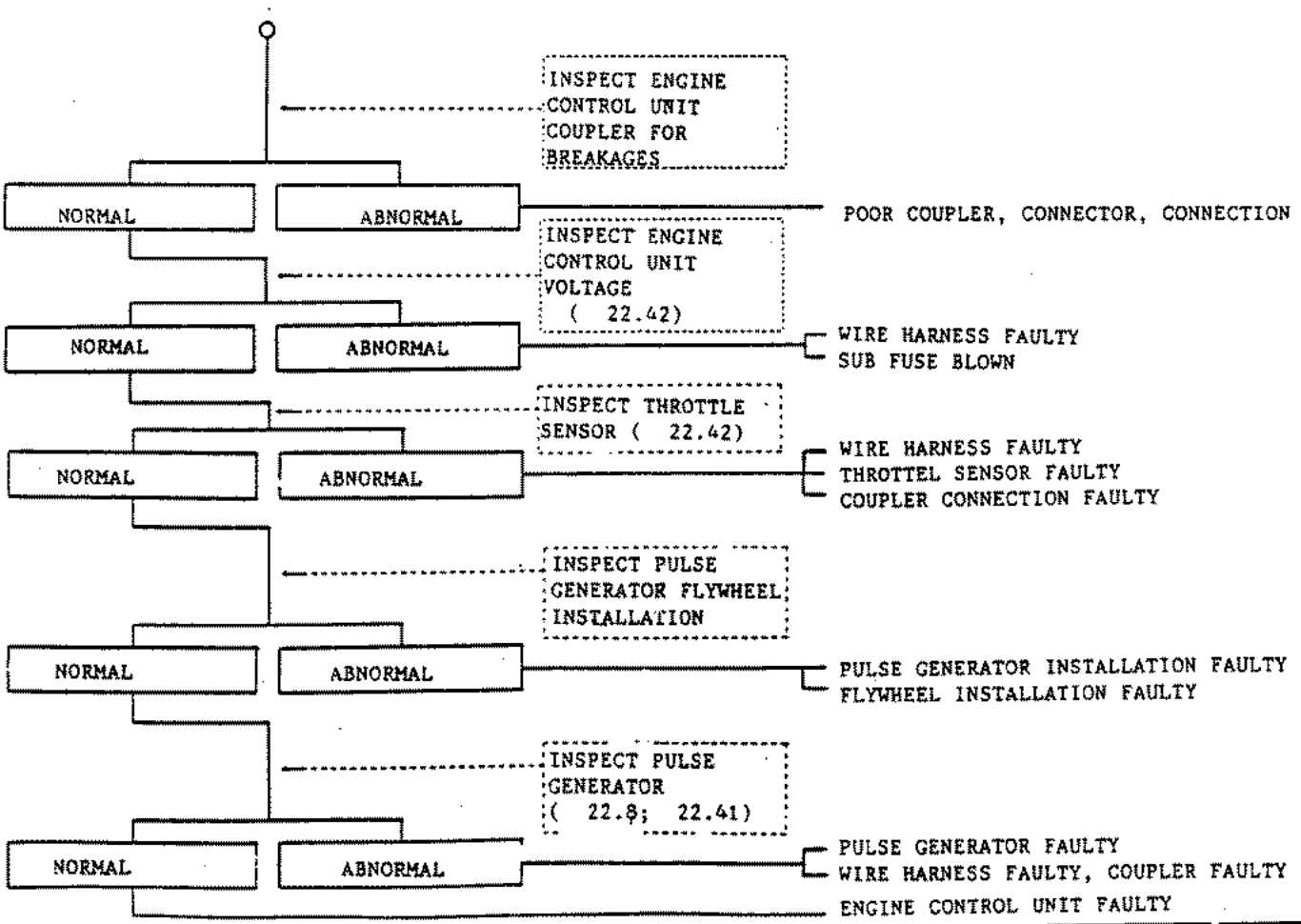
NO SPARK FROM SPRAK PLUG
If there is no spark, conduct spark test on ignition coil. Measure the ignition coils primary voltage. If there is difficulty with the coil but still normal spark, the ignition coil has been faulty from beginning

PERFORMANCE PROBLEM		CHECK THE FOLLOWING. POSSIBLE CAUSES FROM 1.
	PEAK VOLTAGE IS LOW	1. USE TESTER TO CHECK FOR LOW INTERNAL RESISTANCE 2. TESTING SAMPLING TIME CONSEQUENCES 3. IGNITION WIRING CUT, POOR CONTACT 4. IGNITION COIL FAULTY 5. ENGINE CONTROL UNIT FAULTY (1-4 If no abnormal conditions, no spark from plugs)
	NO PEAK VOLTAGE PEAK VOLTAGE USUALLY NOT THERE	1. ADAPTOR MISCONNECTED 2. FUSE,MAIN SWITCH,KILL SWITCH FAULTY 3. ENGINE CONTROL UNIT COUPLER CONNECTION POOR 4. NO VOLTAGE IN ENGINE CONTROL UNIT 16P COUPLER BLACK/WHITE WIRES (22.42) 5. ENGINB CONTROL UNIT 4P COUPLER WIRE BROKEN, POORLY CONNECTED 6. CRANKING SPEED TOO LOW (KICK POWER TOO STRONG) 7. PULSE GENERATOR POOR QUALITY (MEASURE PEAK VOLTAGE) 8. PEAK VOLTAGE ADAPTOR FAULTY 9. ENGINE CONTROL UNIT FAULTY (1-8 If no abnormal condition, no spark from plugs)
	PEAK VOLTAGE NORMAL BUT NO SPARK FROM PLUGS	1. SPARK PLUGS POOR QUALITY, OR IGNITION COIL SECONDARY CURRENT LEAK 2. IGNITION COIL FAULTY
	PEAK VOLTAGE LOW	1. USE TESTER TO CHECK FOR LOW INTERNAL RESISTANCE 2. CRANKING SPEED TOO LOW (KICK POWER TOO STRONG) 3. TESTING SAMPLING TIME CONSEQUENCES (MEASURE REVOLUTIONS - NORMAL IF VALVE ABOVE STANDARD) 4. PULSE GENERATOR FAULTY (1-3 No abnormal conditions
	NO PEAK VOLTAGE OR USUALLY NOT THERE	1. PEAK VOLTAGE ADAPTOR FAULTY 2. PULSE GENERATOR FAULTY

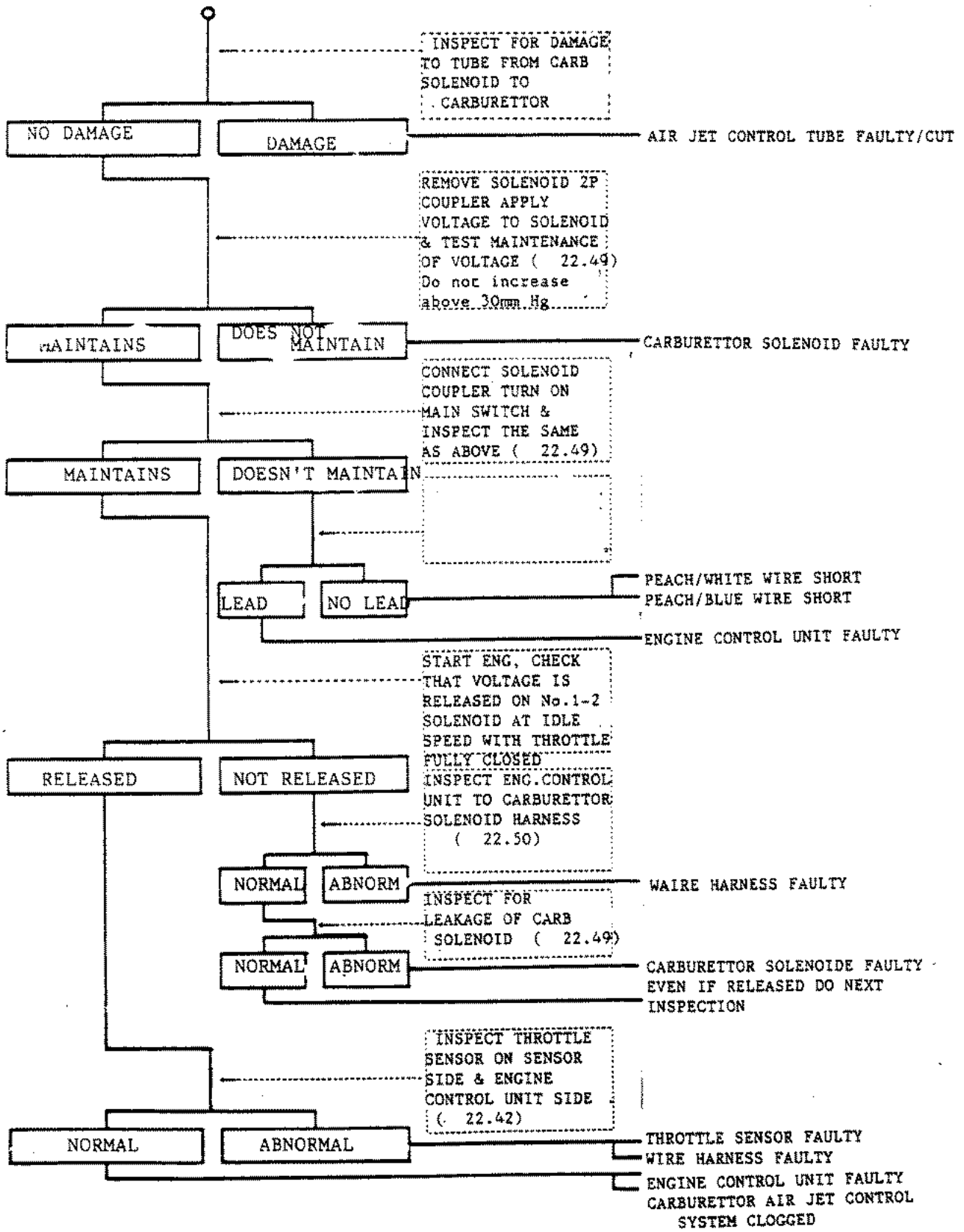
POOR CHARGING



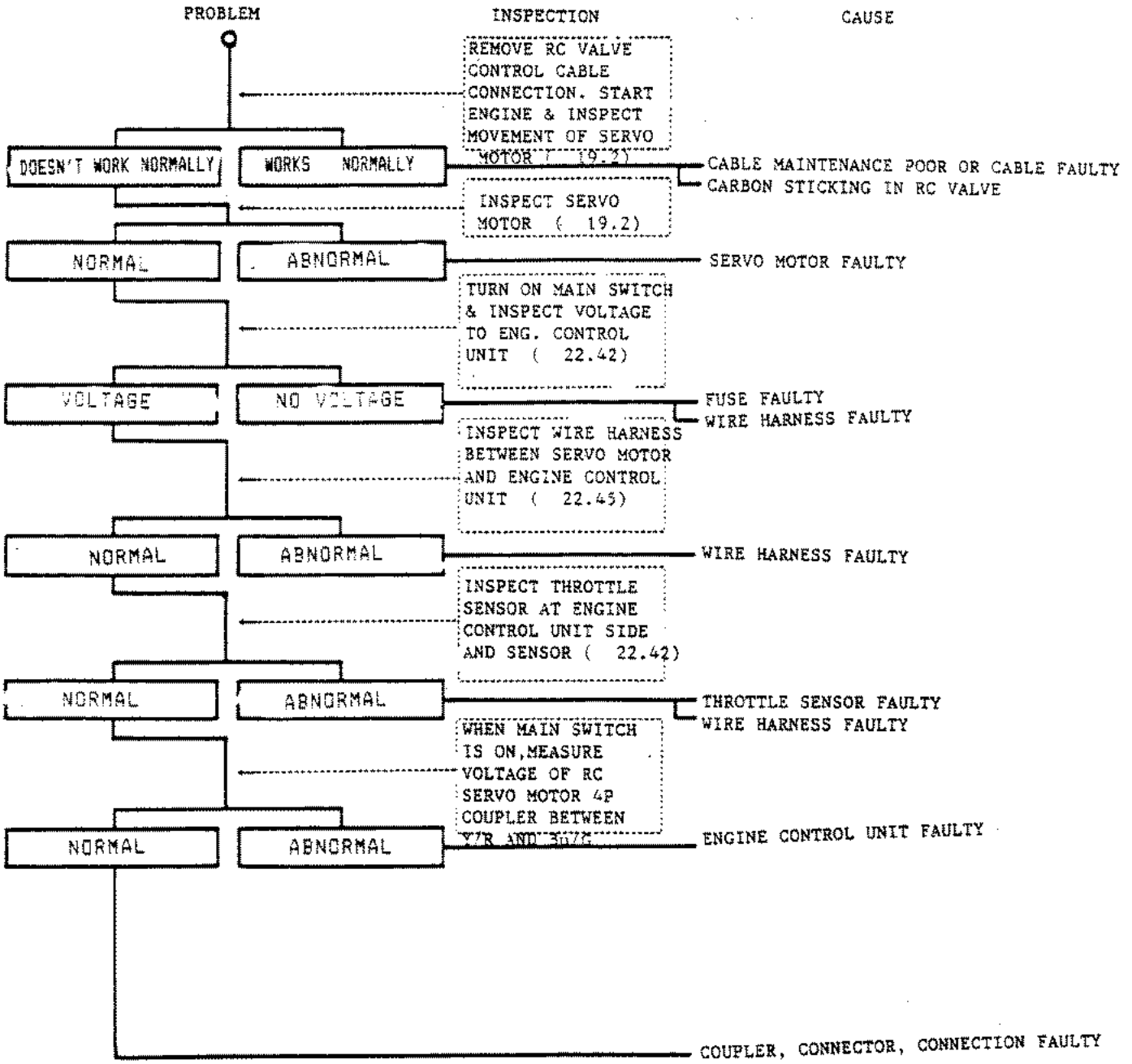
IGNITION TIMING POOR



CARBURETTOR AIR JET CONTROL SYSTEM



RC VALVE MOVEMENT POOR



MAINTENANCE SCHEDULE

		Cont inuous	1 Mths	6 Mths	12 Mths	
STEERING	H/Bars Stg	– Play			●	
		Damage			●	
		Left, Right turning			●	
	Forks	Damage		●	●	
		Fork spindle installation		●	●	Tighten steering stem
		Fork spindle movement			●	Tighten steering stem
	Brake Pedal	Play and performance when pushed		●	●	Play 10–20mm Pedal 20–30mm Lever
		Noise	●			
		Brake noise	○	●	●	
		Leakage, damage, installation	○	●	●	
		Brake hose replacement				Every 4 years
	Res. Tank	Fluid capacity	●	●	●	Fluid level Front between top & bottom mark Rear between top & bottom amrk
	M/cyl. Wheel cyl. Disc caliper	Damage, wear			●	
		Master cylinder, cylinder cap, dust seal, disc caliper replacement				☆ Every two years
		Disc to pad clearance			●	
		Pad wear		○	●	Indicator
		Disc wear and damage			●	Standard : F – 4.0mm R –5.0mm Ser.limit : F – 3.5mm R –4.0mm
	Brake Disc/Pads	Brake fluid replacement				Every year

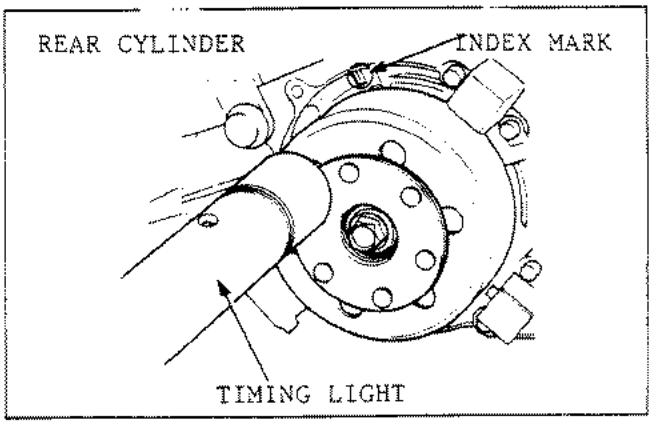
			1	6	12	
WHEEL	Tire Pressures	●		●	●	<table><tr><th></th><th>Frt</th><th>Rear</th></tr><tr><td>1rider</td><td>2.25</td><td>2.25</td></tr><tr><td></td><td>2.25</td><td>2.25</td></tr><tr><td>2riders</td><td>2.25</td><td>2.50</td></tr><tr><td>Tire type</td><td>110/70R17 54H</td><td>150/60R18 67H</td></tr></table>
	Tire wear and damage	●		●	●	
	Tire tread depth	●		●	●	Min - Frt 0.8mm Rear 0.8mm
	Foreign articles stuck in tires	●		●	●	
	Wheel nut, wheel bolt loosening			●	●	Tighten axle nut, axle holder front axle holder torque 1.8-2.5 Kg.m Frn axle bolt torque 5.5-6.5 Kg.m Rr axle nut torque 8.5-10.5 Kg.m
	Rim, side rim, wheel disc damage		○		●	Wheel rim runout, warpage Front 2.0mm axial 2.0mm radial Rear 2.0mm axial 2.0mm radial
	Front wheel bearings				●	
	Rear wheel bearing				●	
Swing Arm Bushing	Damage				●	Tighten cushion, spring
	Arm damage				●	
Shock Ab	Fluid leakage, damage				●	
	Bushese				●	
Clutch	Lever play			●	●	Play - lever 10-20mm
	Use		○	●	●	
Trans oil	Fluid leakage, oil capacity			●	●	Oil capacity - between upper and lower marks
	Gear movement				●	
	Transmission oil replacement					Every two years

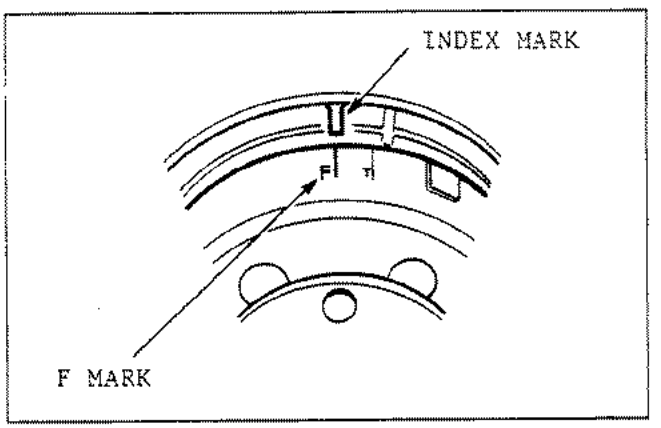
		1 Month Continuous	6 Mths.	12 mths.	
CHAIN AND SPROCKET	Chain slack	○	●	●	Use side stand and measure play in middle 15-25mm
	Sprocket installation & damage			●	
IGN.	Ignition plug performance		●	●	Plug gap 0.7-0.8mm
	Ignition plug replacement				5,000km (every)
BAT. WIRE	Terminal connections			●	
	Connections & wire damage			●	
BODY	Twisting, foreign sounds		●	●	
	Low/High speed performance	○	●	●	Idle speed 1200±100rpm
	Exhaust gas		●	●	
	Air cleaner element		●	●	
	Oil leakage and capacity		●	●	Oil capacity Check that pilot lamp does not shine
	Oil leakage		●	●	
	Oil capacity	●			
	Oil cleaner clogging			●	
	Oil pump performance	○		○	
FUEL SYS	Fuel leakage		●	●	
	Carburettor link			●	
	Throttle cable & choke cable			●	
	Fuel filter clogging			●	
	Fuel capacity	●			
	Fuel hose replacement				Every 4 years
COOLING SYS	Water capacity	●	●	●	Between upper and lower levels in reserve tank
	Water leakage	●		●	
	Radiator cap			●	Pressure 1.1-1.4 K/cm^2
	Cooling agnet replacement				Every two years
			●	●	
		●			

	Contin.	1 month	6 mths	12 mths	
Horn				●	
Labels	●				
	●				
Gauges				●	
Exhaust pipe, muffler				●	
Muffler performance				●	
				●	
	●				
			●	●	
				○	

* Becasue this machine uses a CDI ignition system maintenance of ignition timing is not necessary
* If ignition timing is incorrect turn to (22.21) and inspect the connections

Remove lower fairing (22.35)
Keep engine warm
Remove L. crankcase cover (20.42)
Join the timing light cord to the rear cylinder high tension cord
Start engine and idle at 1200 ±100rpm
Align the index mark with the F mark and inspect whether the ignition timing is okay or not





ENGINE

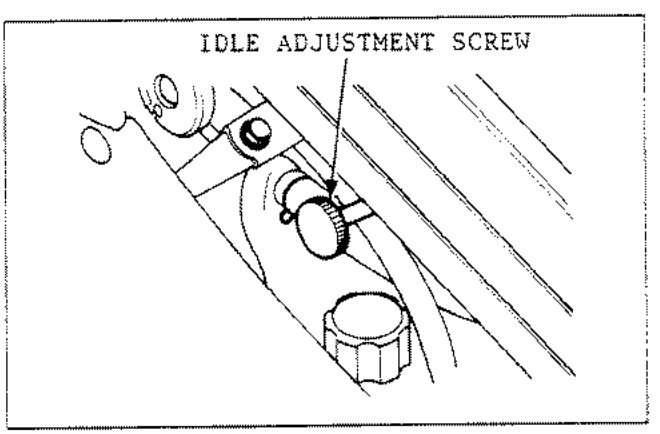
Main body

* Adjust idle speed once engine is warm
* After overhauling a carburettor balance the carburettors (4.16)

Place engine in neutral
Start engine
Turn throttle stop screw to slowest speed and turn in to adjust idle speed

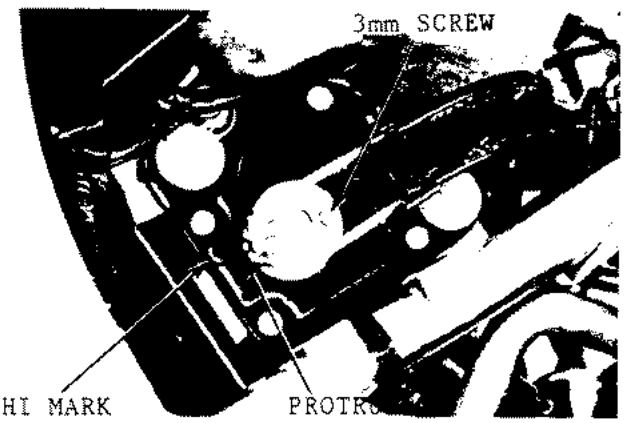
Idle speed: 1200±100rpm

If idling speed is imbalanced or there is a snapping sound then synchronise carburettors (4.16)



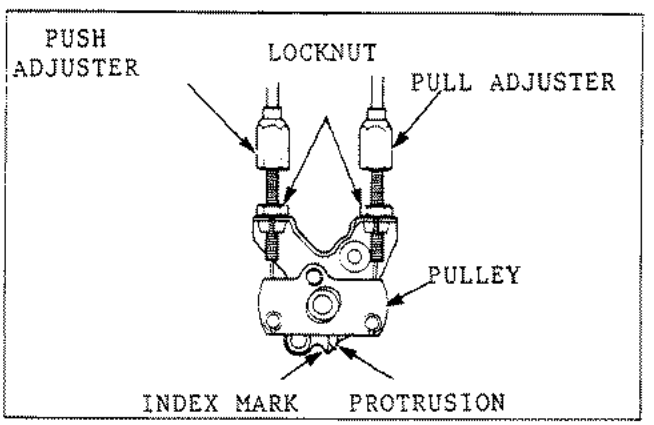
RC VALVE CONTROL CABLE MAINTENANCE

Remove fuel tank (4.2)
Start engine, confirm that at roughly 2000rpm the servo motor pulley protuberance nears the HI mark and turn off the engine.
Insert the 3mm screw into the oulley screw hole and tighten until the pulley cannot move



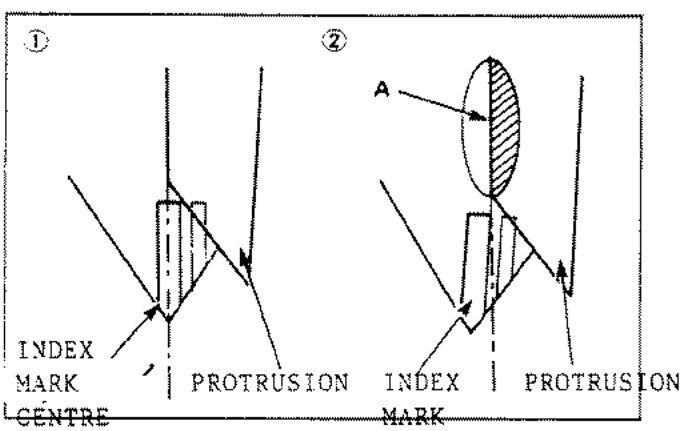
(Cable Play Adjustment)
Push pulley by head until the pulley protrusion left side (A section) meets the centre of the index mark (as in illustration 1)

In that situation turn the pull adjuster by hand and at the point where the pulley protrusion (A) meets the engine index mark right hand side, (illustration 2), release the hand that was pushing the pulley
Turn the push adjuster by hand and align the pulley protrusion left side (A) with the engine index mark centre (1)



Check that the pulley moves by hand and that the pulley gap is between 0.5-3.0mm (illus.3)

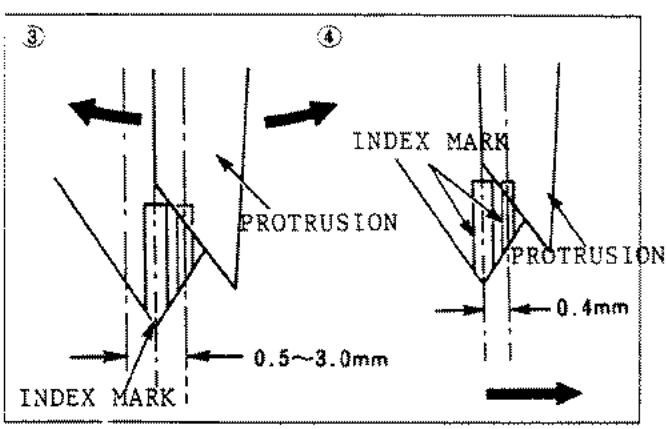
If pulley gap is under 0.5mm (cable is too tight) or over 3.0mm (cable is too loose) then adjust as shown above



RC Valve Adjustment

With the pulley free, check the protrusion left (A) side and the engine index mark

- pulley lag direction is under 0.4mm (4)
- the protrusion left (A) mark is between the engine's two index marks



If outside standard, readjust
If inside standard, tighten lock nut while turning adjuster by hand

Remove the screw that held the servomotor pulley

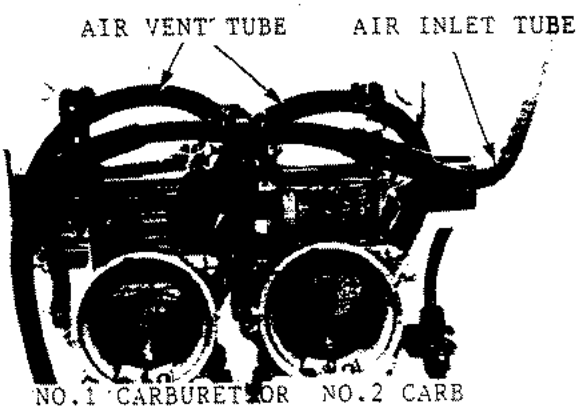
Reinstall fuel tank

CARBURETTOR

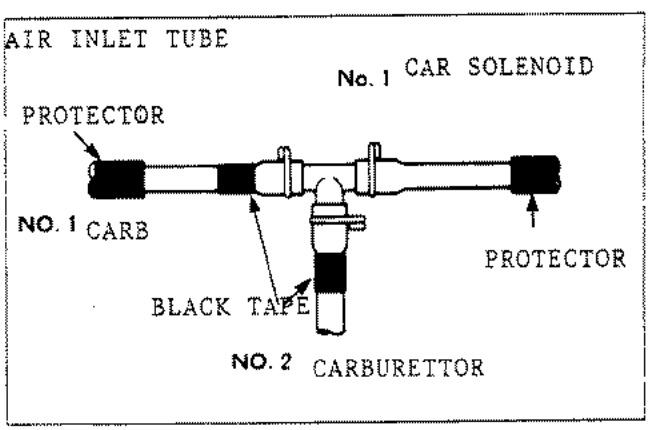
Tube Installation

Assemble carburettor (20.31)
Install air vent tube

Install air inlet tube

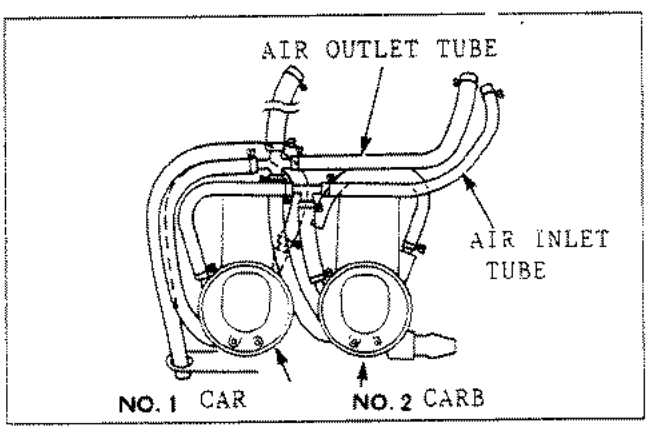


** Install black tape on tube and protector as showm



Install air outlet tube

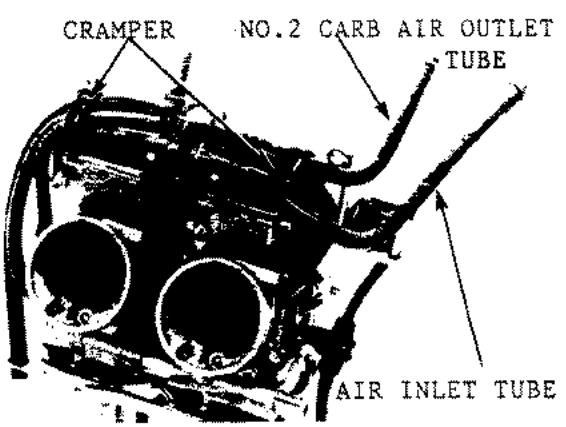
Clamp tube with the carburettors top clamper



Install fuel tube and drain tube (4.13)

Install carburettor

Install tubes properly as shown in wiring map (22.11)

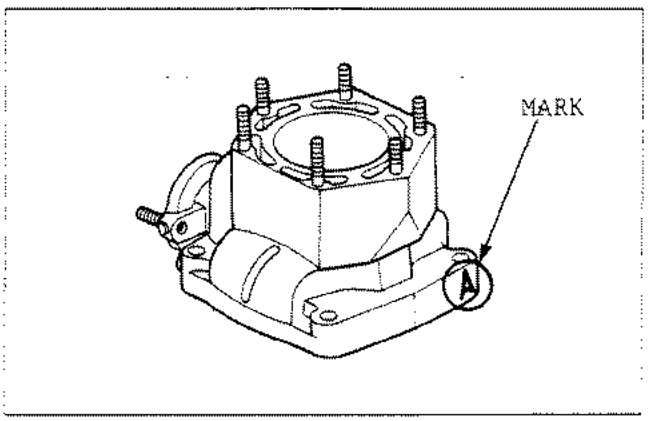


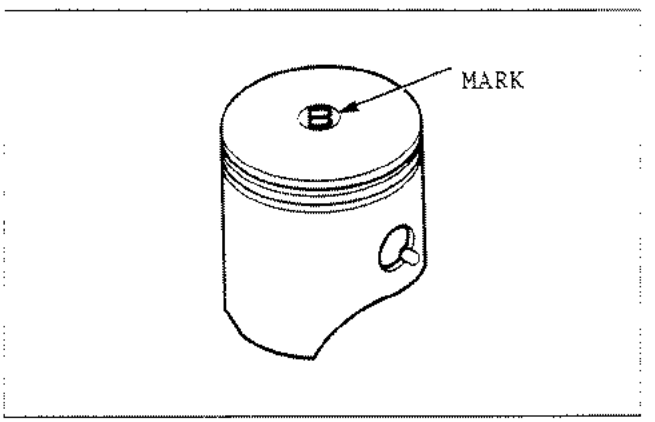
CYLINDER, PISTON SELECTION

The cases for replacement of cylinder, pistons and corresponding replacment parts are shown below

Selection

Cyl / Piston	Mark A 54.008 — 54.011	Mark B 54.004 — 54.008	Mark C 54.000 — 54.004
Mark B			×
No Mark	×		×
Mark D	×		





BRAKE SYSTEM

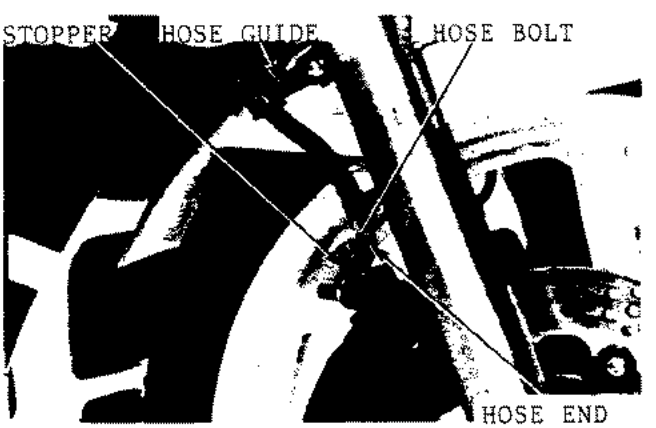
Front brake calipe installation

Install caliper to front fork

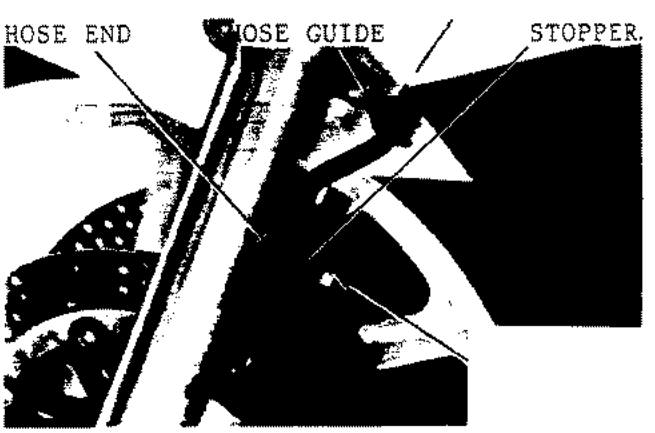
install caliper pinch bolt (20.55)

Install brake hose and hose bolt

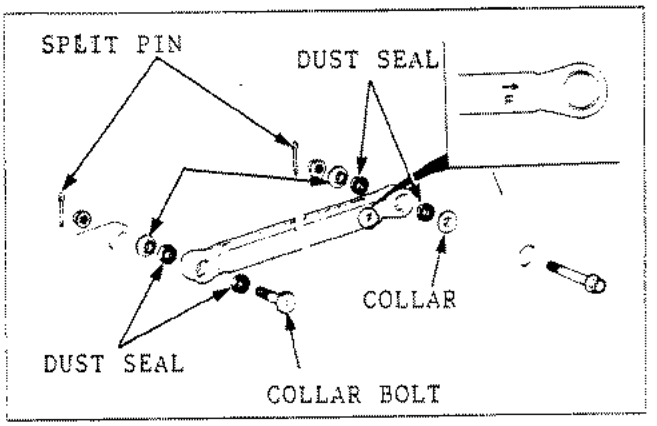
Torque 3.0-4.0 Kg.m



* When installing brake hose install hose end to cliper stopper correctly
* Check that the brake hose is definitely attached to hose guide



REAR BRAKE TORQUE ROD



Removal

Remove split pin

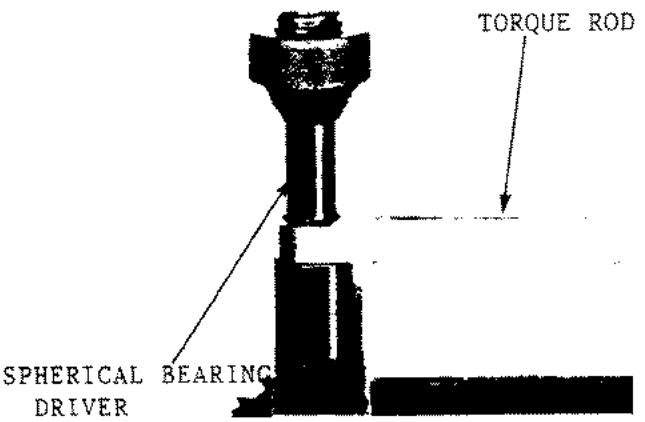
Remove bolt and nut and remove torque rod

SPHERICAL BEARING REPLACEMENT

Remove collar and dust seal

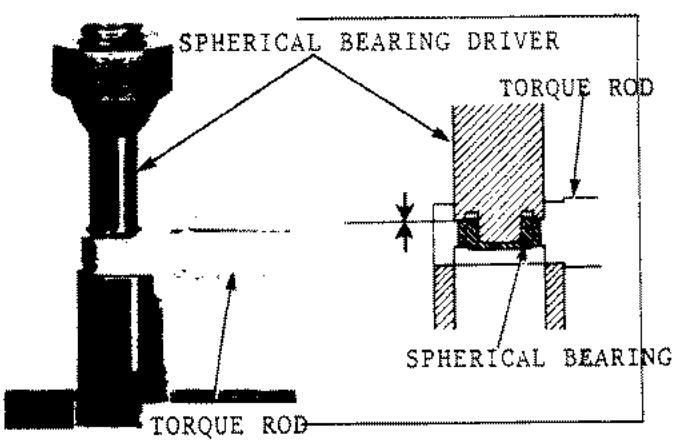
Use hydraulic press to remove bearing

Shperical Bearing Driver 07HMF-HC00100



Use hydraulic press and install bearing

Special tool:
Spherical Bearing Driver 07HMF-HC00100



* Insert bearing to face (as illustrated)

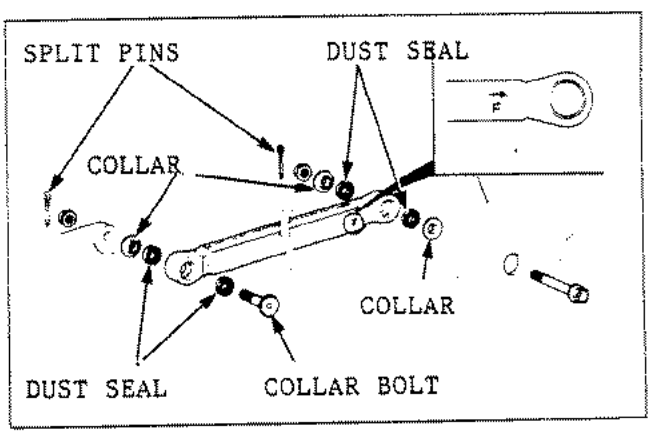
Apply molybdenum to dust seal

Install collar

Installation

Install torque rod to frame

* Face F mark on torque rod to the front



Install bolt, nut and callar to frame and tighten

Install new split pin

REAR BRAKE CALIPER BRACKET REMOVAL

* Be careful not to spill fluid on brake discs or pads. Brake performance would be affected. If removing, replace pads and check disc

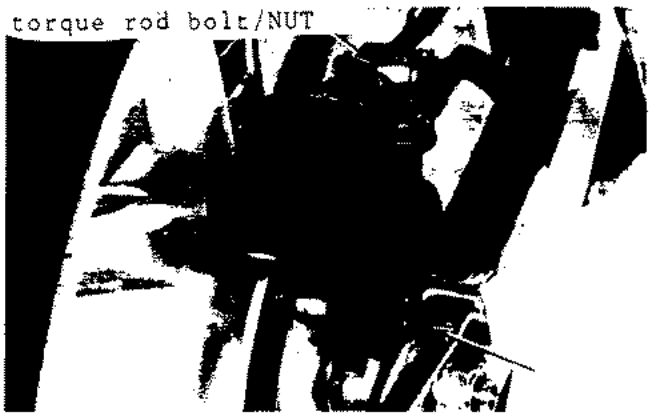
* Brake caliper bracket can be removed without disconnecting brake hose

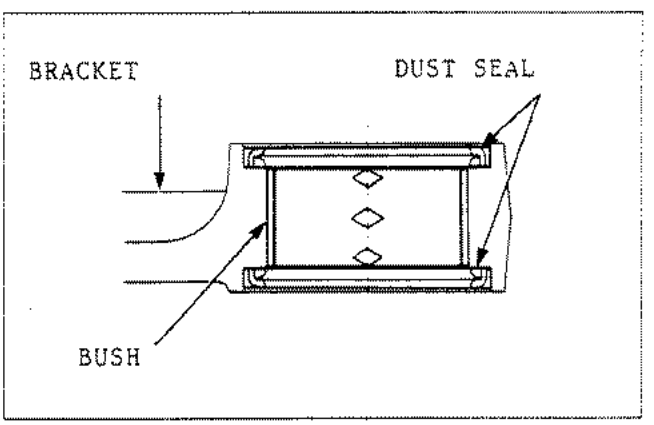
Removal

Remove torque rod caliper bracket pinch bolt (22.32)
Remove caliper bolt and remove caliper bracket (20.56)

* Suspend brake cliper so as not to pinch hose

Remove rear wheel (13.3)
Remove caliper bracket
Remove collar from bracket and inspect for damage
Inspect for damage to dust seal, warpage and damage to bush
If the bush is worn then replace bracket as an assembly





Installation

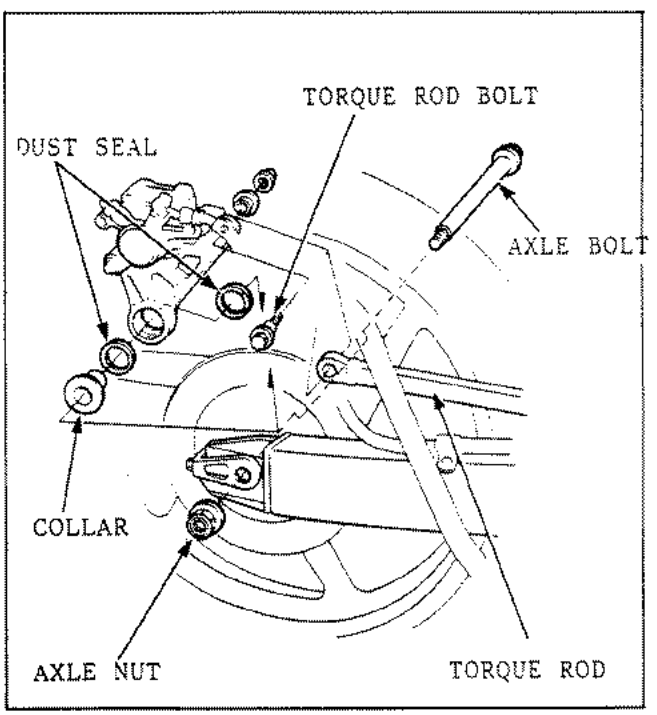
* Apply molybdenum grease to dust seal lip and bush inner

Install collar to bracket

Install caliper bracket and rear wheel (13.7)
Install caliper to bracket (20.56)
Install torque rod (22.32)

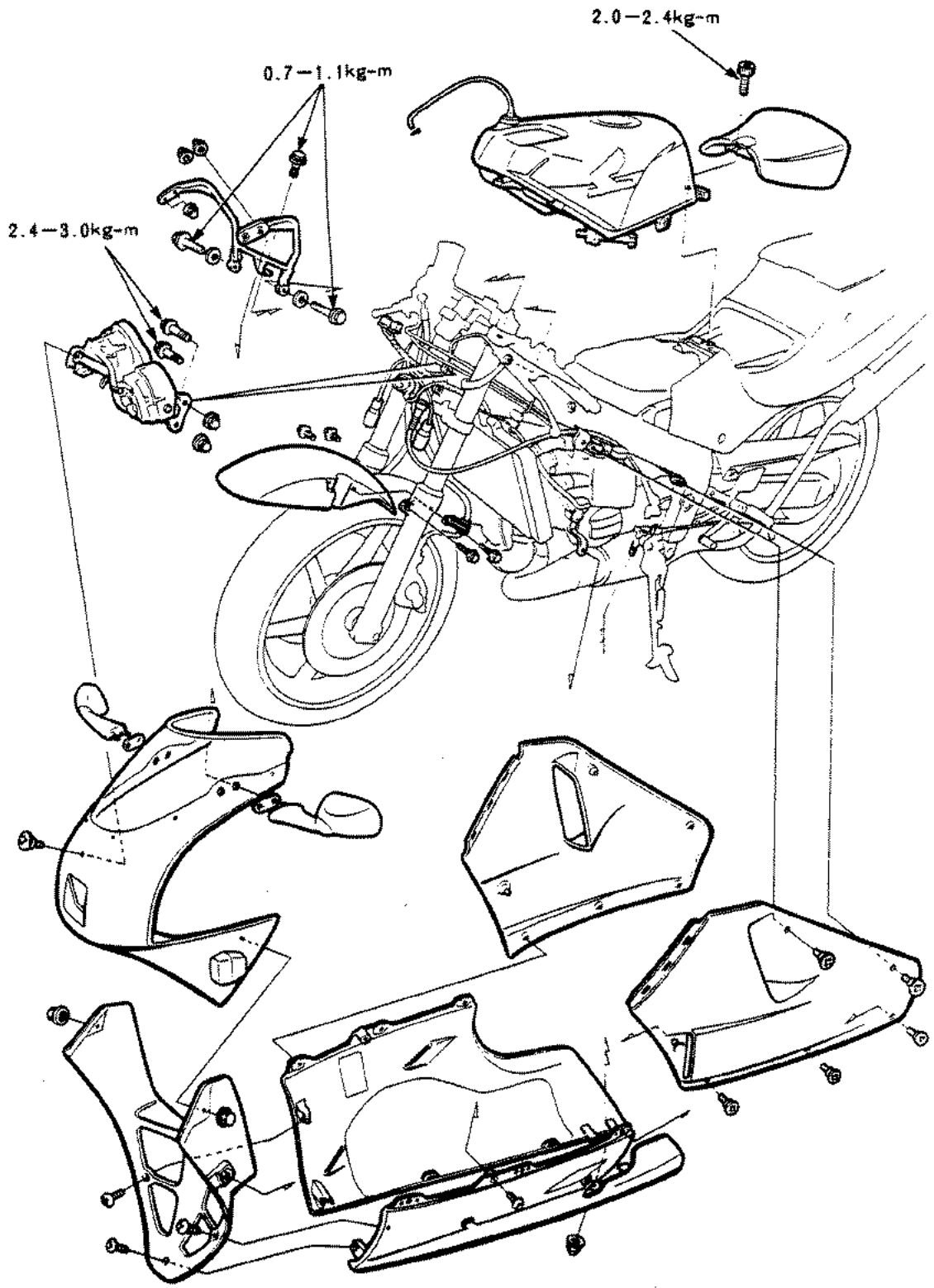
Torques:

Rear axle nut	8.5-10.5 Kg.m
Torque rod pinch bolt/nut	3.0-4.0 Kg.m



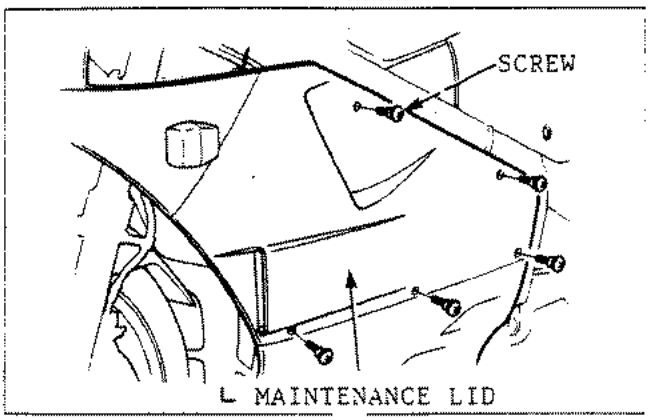
FAIRING, EXHAUST CHAMBER, SUB FRAME

FAIRING



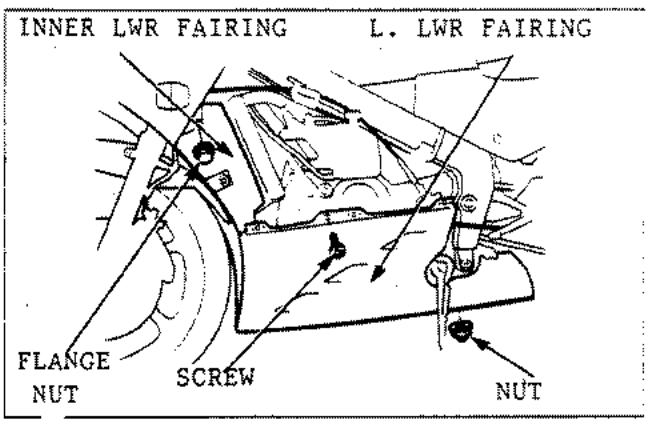
MAINTENANCE LID

Remove 5 screw
Remove upper fairing hook, inner lower fairing screw andremove L. maintenance lid
Loose 5 quick release screws
Remove screws from upper fairing hook and inner lower fairing, and remove R. maintenance lid

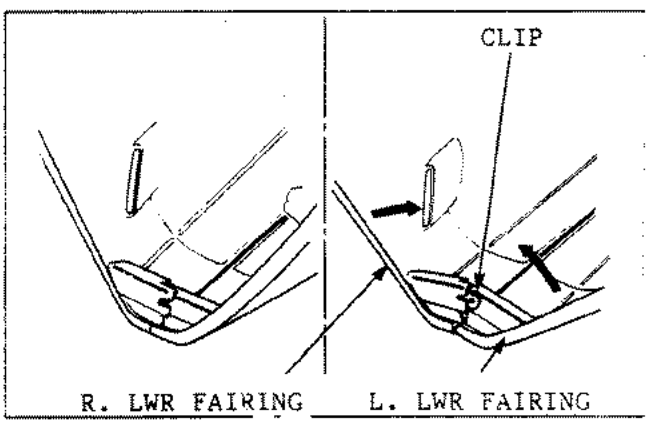


LOWER FAIRING

Remove pinch nut from engine section of lower fairing
Remove the 2 screws and 2 flange nuts, and remove lower fairing from assembly



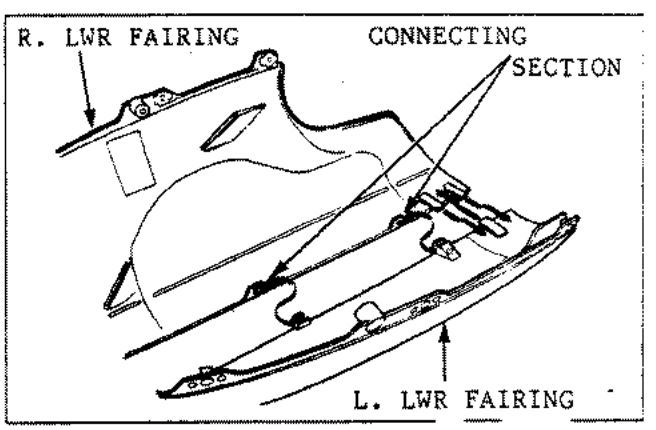
Remove 3 screws and remove inner lower fairing
Pull apart where lower fairing front sections meet



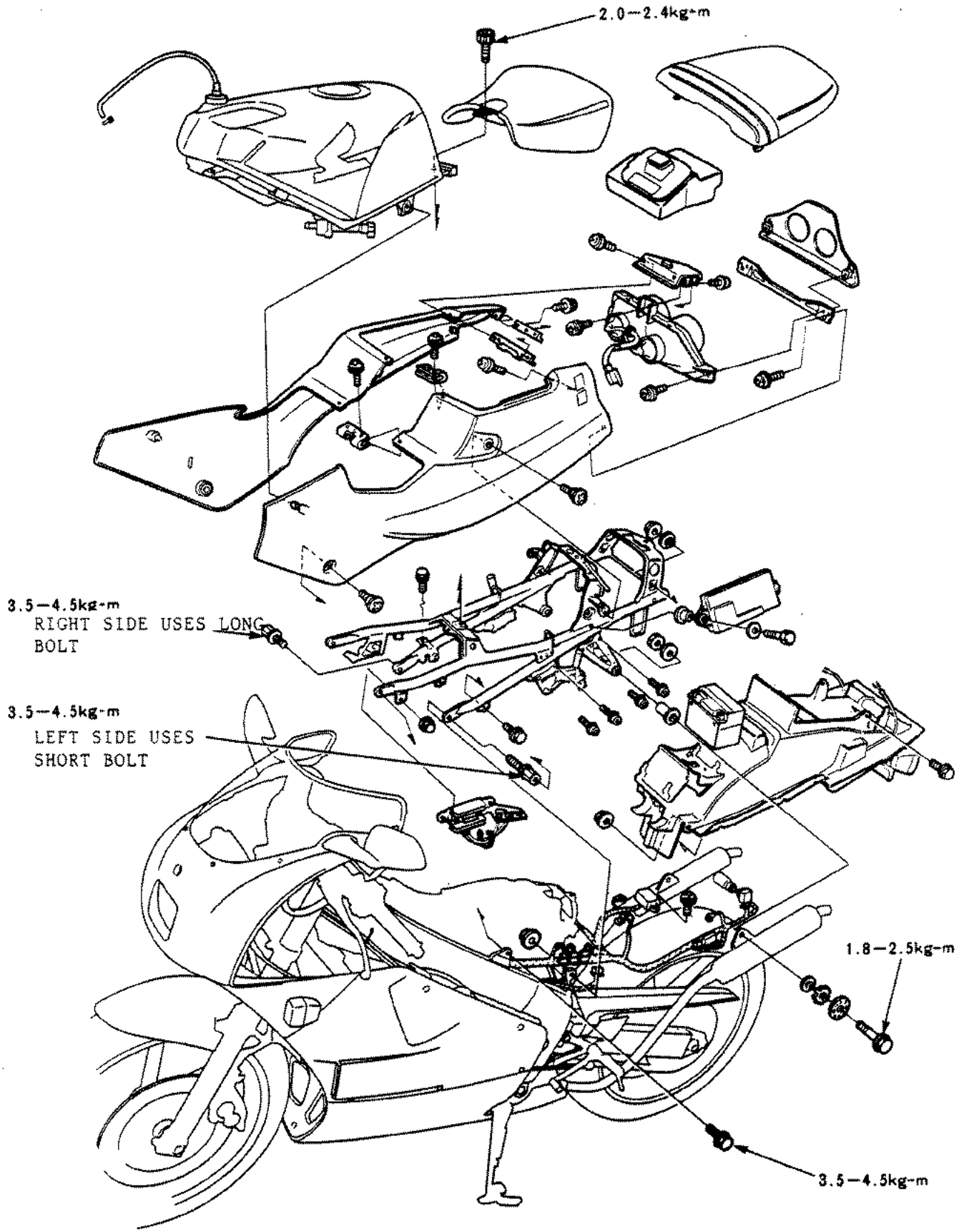
Remove heat guard from lower fairing connection
Separate left and right fairing by taking it forward and back.

* Take care not to break lower fairing hook

When installing reverse removal process

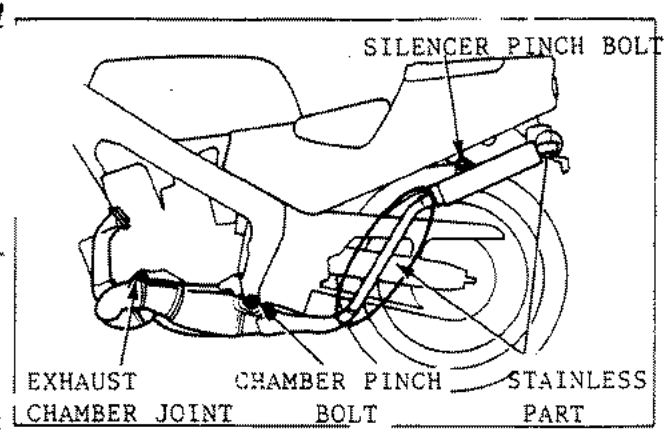


SUB FRAME, SEAT COWL REMOVAL



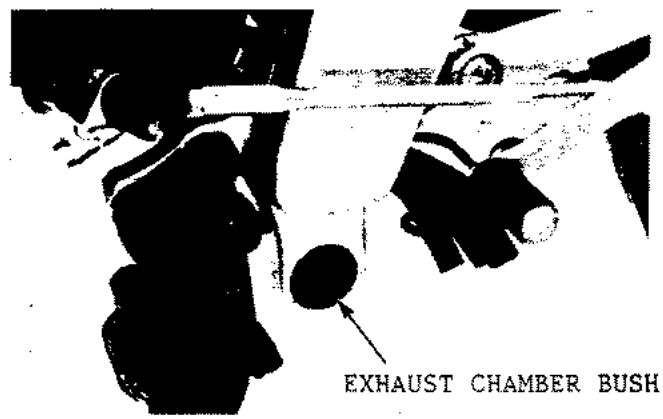
* Remove muffler and exhaust chamber when cold

* Exhaust pipe is stainless. Thus oil and dirt stains can be removed with the engine running. If removing stains use a specified stainless steel cleaner and wash with sponge



Removal

Remove lower fairing (22.35)
Remove front cylinder exhaust chamber joint nut, silencer pinch bolt and chamber pinch bolt
In the same way, remove exhsust chamber
Inspect exhaust chamber bush for damage

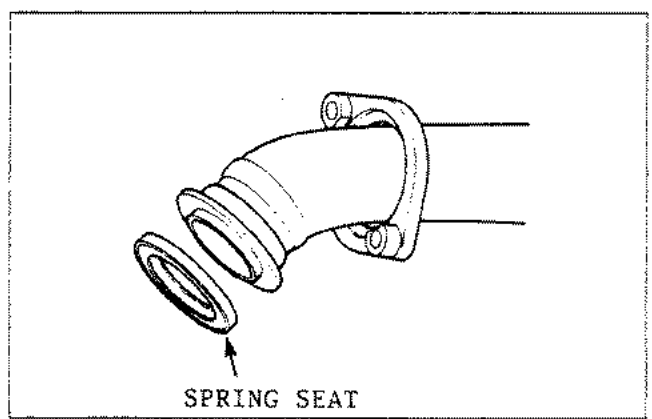


Installation

Pull off exhsust chamber spring seat face
Install a new spring seat to exhaust chamber

When installing, insert the bolts and nuts by hand and tighten

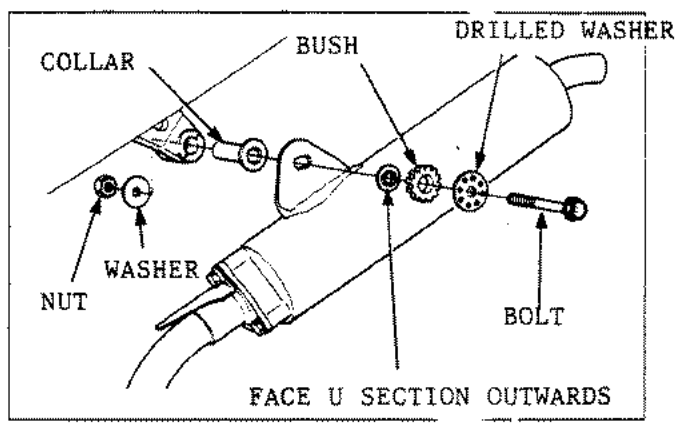
- exhaust chamber joint nut
- exhaust chamber pinch bolt
- silencer pinch bolt



Torque:

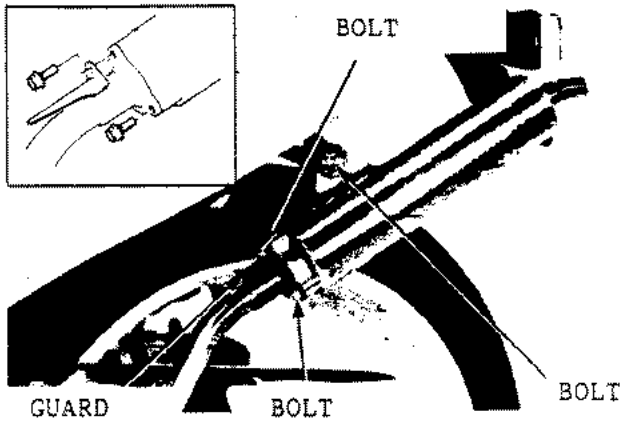
Exhast chamber joint nut	2.3-2.7 Kg.m
Exhaust chamber pinch bolt	1.8-2.5 Kg.m
Silencer pinch bolt	1.8-2.5 Kg.m

* Install silencer pinch bolt as in the illustration



SILENCER REPLACEMENT

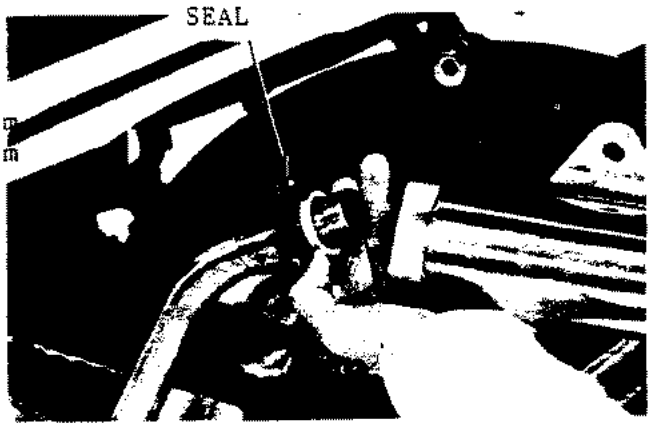
Remove silencer pinch bolt
Remove 3 silencer joint bolts and heat guard and remove silencer from exhaust chamber



Install new gasket to silencer
Install heat guard and silencer joint bolt and tighten bolt

Install silencer pinch bolt

Torque: Silencer joint bolt 1.0-1.4 Kg.m
Silencer pinch bolt 1.8-2.5 Kg.m



* The heat guard installed silencer joint bolt is larger then the other 2 bolts

BATTERY/CHARGING SYSTEM

Battery Removal

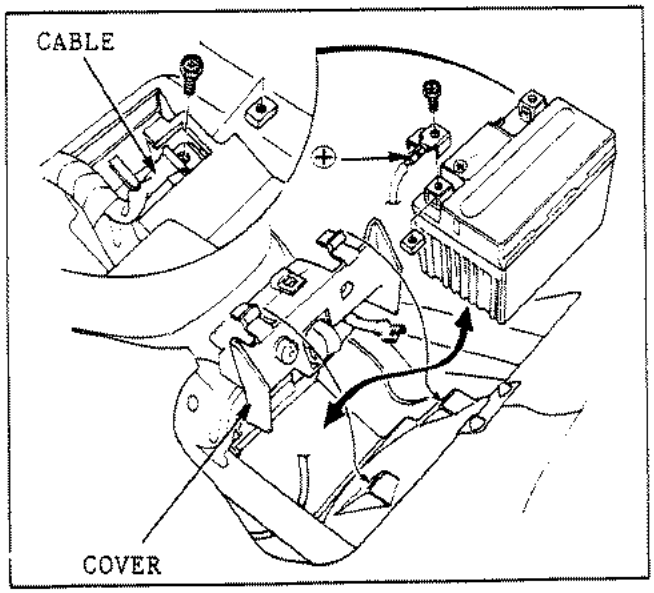
Remove battery (-) terminal cable

Open battery cover

Remove (+) cable from (+) terminal

Remove battery

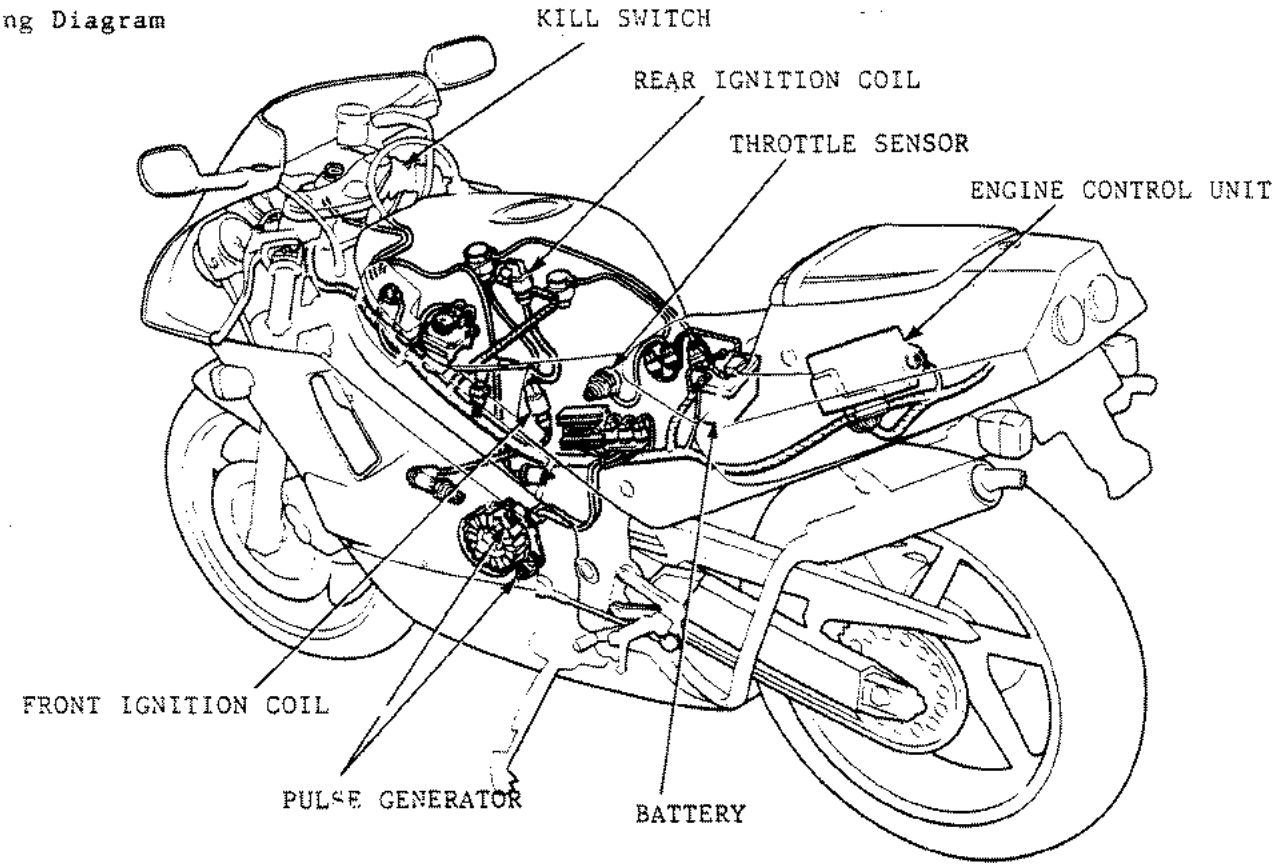
Install and reverse removal process

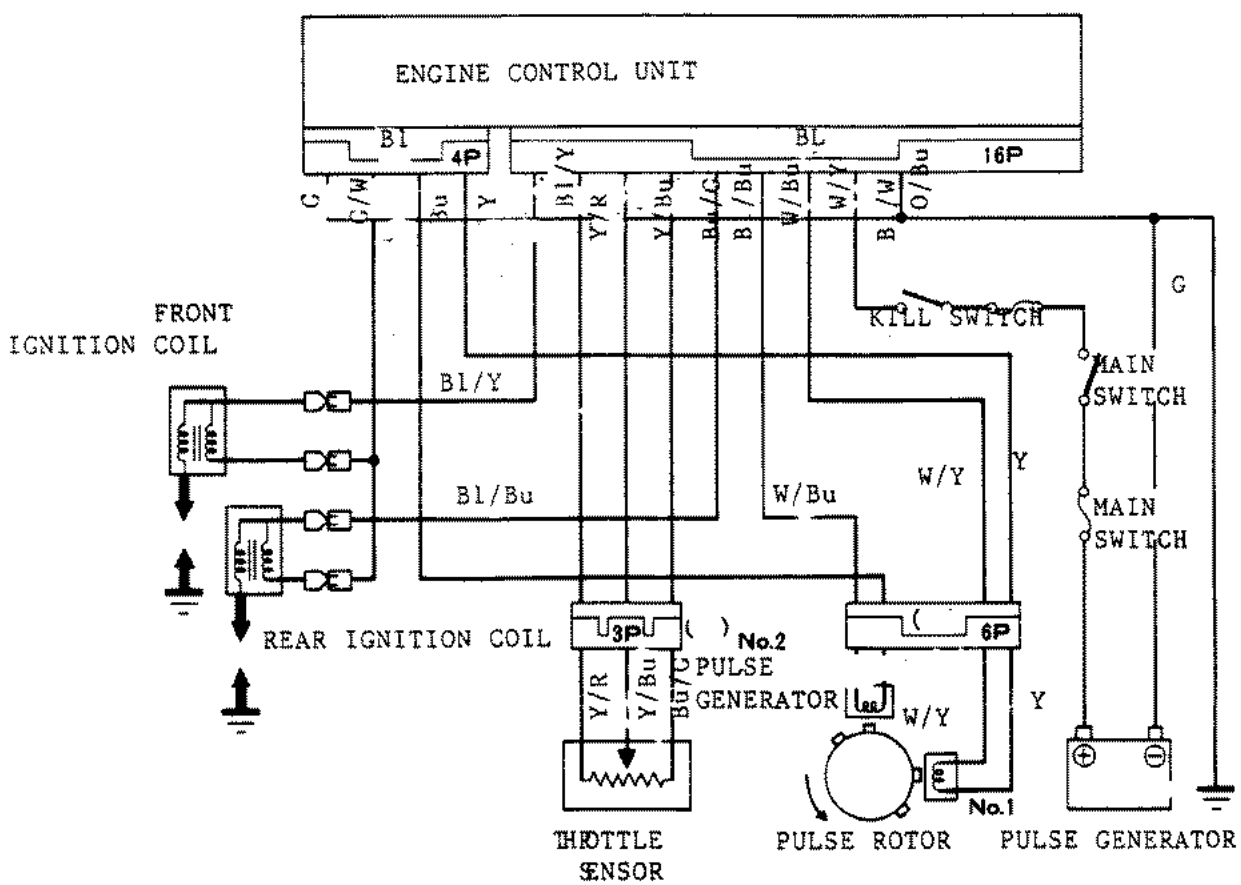


* After installing battery, apply a small amount of grease.

IGNITION SYSTEM

Wiring Diagram

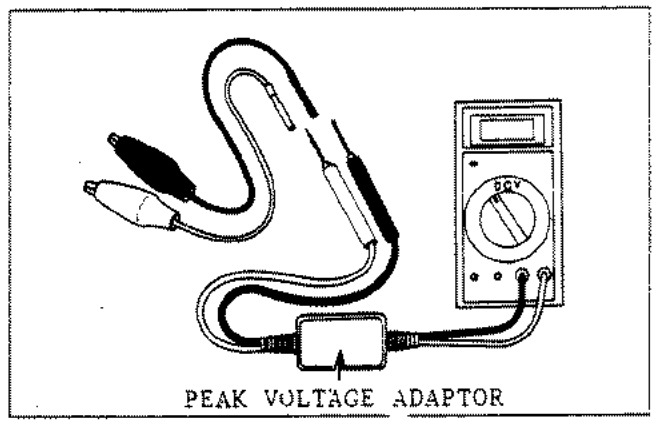




Warnings;
- When inspecting ignition system, refer to trouble shooting section (22.20)
- Most ignition system troubles are caused by coupler etc being misconnected. Before adjusting each one, inspect quality of connection
- If engine control unit is dropped, damage may be caused so take care when charging Also if there is a charge leak, when connector and couplers are connected too much voltage amy be applied, causing internal damage to the unit. Always turn main switch OFF before performing work.
- Do not remove throttle sensor from carburettor. If any abnormalities to throttle sensor, replace sensor, sensor stay assy, joint, throttle shaft and throttle link arm as a set.

IGNITION SYSTEM INSPECTION

* If no spark from spark plug, remove each wire, loosen and check for abnormalities and measure respective peak voltages
* Measure digital tester input resistance (impedence) for values above 10M ohm/DCV Depending on the type of tester used the resistance will difer.



PEAK VOLTAGE ADAPTOR

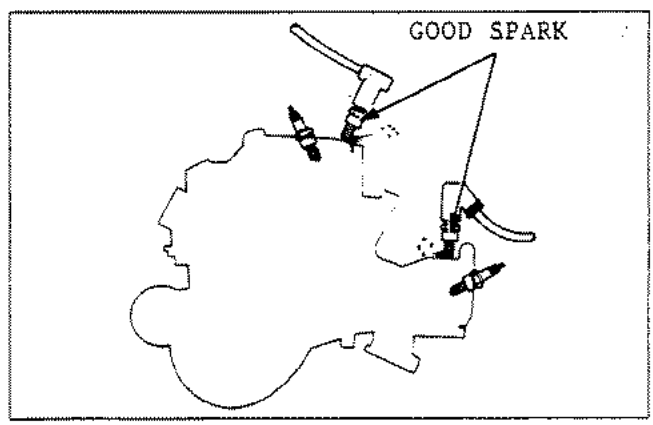
Connect peak voltage adaptor to digital tester

Gauge: Peak voltage adaptor 07HGJ-0020100
Showa Digital Tester 07411-0020000

Resistance abover 10M ohm/DCV

Ignition Coil Primary Voltage (Primary Peak Voltage)

* Wire ignition system correctly and measure value. If there is a break in wiring, measurement cannot be done.
* If cylinder compression, inspect plug installation



Remove fuel Tank(4.2)

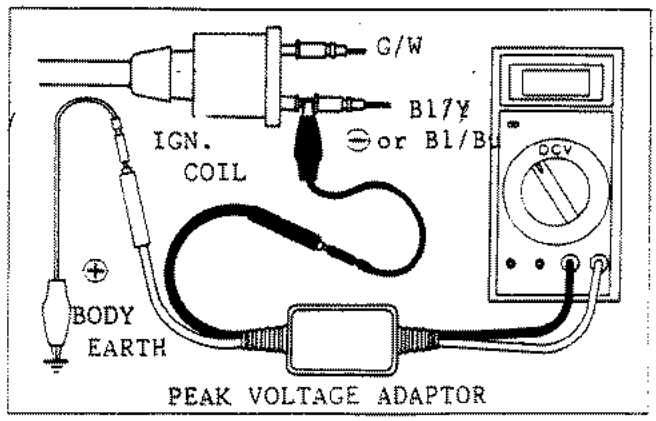
As for primary peak voltage, crank and measure ignition coil primary voltage. For this purpose if there are any abnormalities on one cylinder, kick over and measure the other cylinder. NB If cranking speed is imbalanced your primary voltage will vary
As with the standard spark test, leave spark plug in cylinder head and install good spark plugs to cylinder plug gap, earth to engine, advance to next step, and measure primary voltage

FRONT CYLINDER

With ignition coil primary wire connected, connect peak voltage adaptor to primary wire B/Y and body earth.
Turn main switch ON and RUN kill switch
Kick over and measure ignition coil primary voltage
Inspect rear cylinder in the same way

Recommended method

Front cyl. : (–) Bl/Y – body earth (+)
Rear Cyl. : (–) Bl/Bu – body earth (+)
Peak voltage: above 300V



* When measuring voltage, if finger touches probes metal end, it will become electrified. Take care not to touch it with finger

* Abnormal values will be given if other ignition system routes are cut or connections faulty
* The respective ignition coils primary voltage may be abnormal, but if above the respective standard values then it is okay

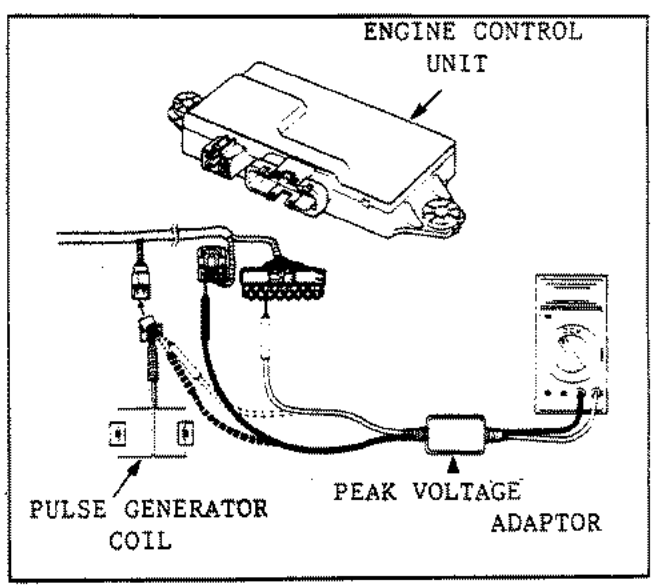
PULSE GENERATOR

* Install spark plugs into cylinder head and inpsect cylinder compression

Turn main switch OFF
Remove seat cowl
remove engine control unit 16P and 4P couplers and connect peak voltage adaptor to harness sides coupler pulse generator wire, 4P Bu and 16P W/Bu terminals
Kick engine over and measure pulse generator peak voltage
Inspect W/Y terminal in the same way

Recommended method:

No.1 (+) 16P W/Y – 4P Y (–)
No.2 (+) 16P W/Bu – 4P Bu (–)
Peak voltage : above 2V



* If one sides pulse generator is faulty spark will not jump for both cylinders
* If each pulse generators measured voltage differs, it each is above the respective standard value then it si okay

If measured value at unit coupler is abnormal, remove pulse generator 6P coupler connection
Connect adaptor, and in the same way, measure both pulse generators peak voltage, and compare with peak voltage value measured at unit coupler

Recommended method
No.1 (+) W/Y - Y (-)
No.2 (+) W/Bu - Bu (-)
Peak voltage above 2 V

If the value at the unit is abnormal, but the voltage at the pulse generator is normal, either the coupler connection is faulty or the wire harnes is misrouted
If both are abnormal, then pulse generator abnormality is possible. Refer (22.20)

THROTTLE SENSOR INSPECTION

Turn main switch OFF
Remove seat cowl
Remove engine control unit 16P & 4P coupler
inspect the following at the harness sides coupler
Measure 16P coupler Bu/G and Y/R resistance

Std Resistance (20°C): 4-6 K ohm

Measure resistance between Y/Bu & Bu/G wher throttle is fully closed to fully open and if each resistance value is exceeded then it is normal

Std resistance (20°C) Fully closed
0-1.5 K ohm (throttle stop screw loosened safely)
Fully open : 4-6 K ohm

When value becomes large, remove throttle sensor 3P coupler connection and perform the above inspection at both sides of the sensor couplers terminals.
If measured value is inside standard resistance value, then correct wire harness or replace it.
If the measured value is larger than the standard value then replace throttle sensor & sensor stay assy, joint, throtile shaft & throttle link arm as a set

ENGINE CONTROL UNIT
Engine Control Unit Input Voltage Inspecion

Turn main switch OFF
Remove seat cowl
Remove 16P & 4P

ENGINE CONTROL UNIT
Engine control unit input voltage inspection

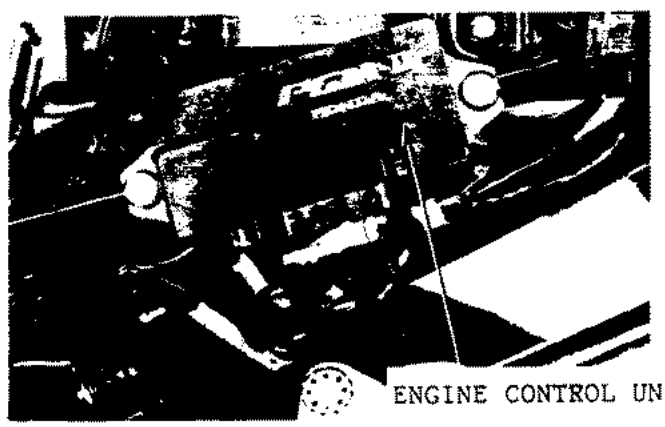
Turn main switch Off. remove seal cowl
Remove 16P and 4P couplers from engine control unit
Turn main switch ON and kill switch on RUN.
Inspect for voltage in 16P coupler harness coupler, Bl/W terminals. If voltage then okay

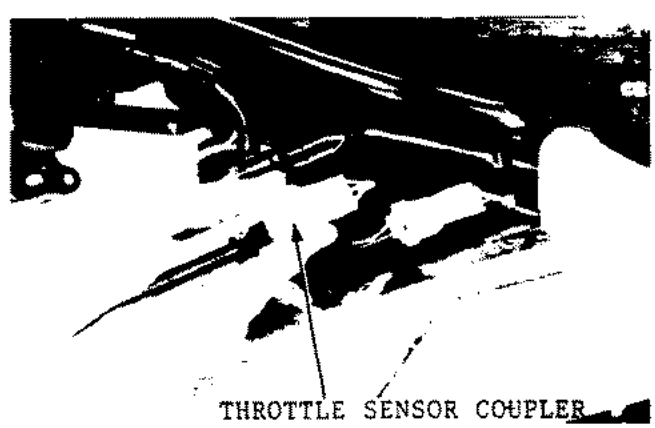
Recommended method:

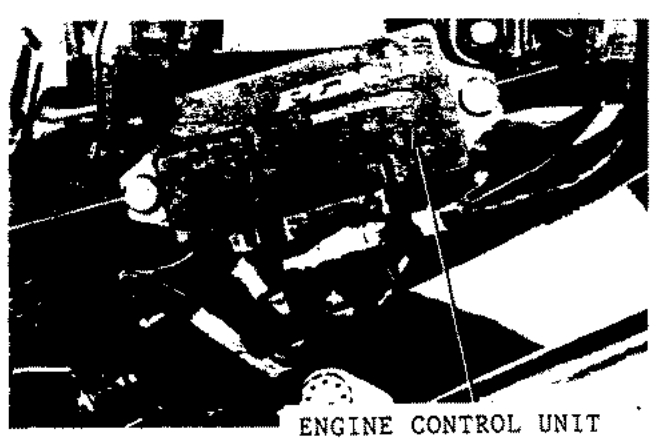
(+) 16P coupler Bl/W - body earth (-)

Recommended voltage : Battery voltage

If not holding battery voltage, inspect main switch, kill switch, fuses and wire harness







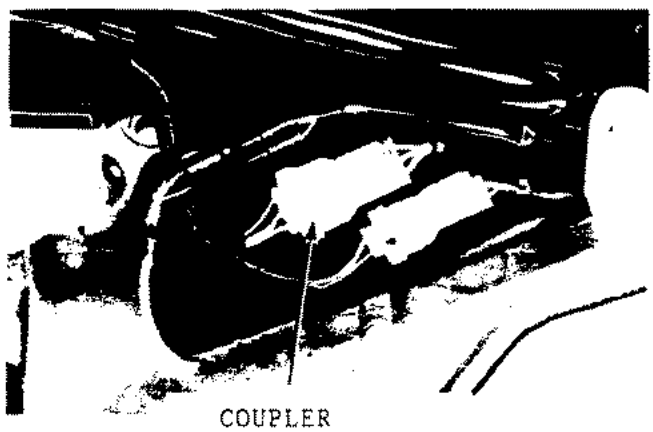
ENGINE CONTROL UNIT OUTPUT VOLTAGE INSPECTION

(Throttle sensor, RC valve servo motor potentro meter)

Turn main switch OFF, remove seat cowl & fule fuel tank (4.2). Remove throttle sensor 3P coupler. Remove servo motor 4P coupler and connector

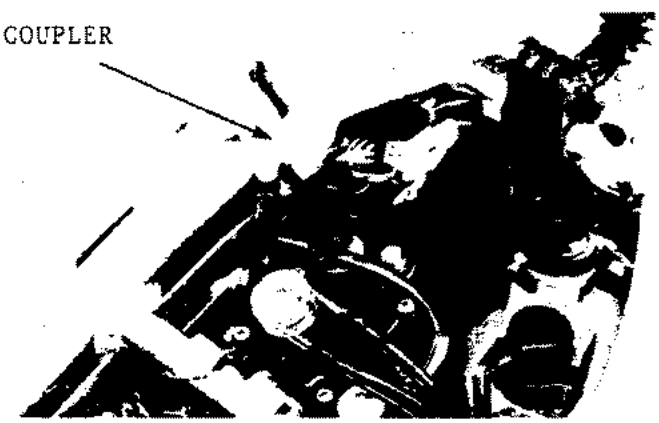
Turn main switch ON and kill switch to RUN Remove throttle sensor 3P coupler & measure voltage on coupler harness side Y/R and Bu/G terminals. Remove servo motor 4P coupler and measure voltage of coupler harness side Y/R and BU/G terminals

Recommendedmethod
Throttle sensor = (+) Y/R - Bu/G (-)
Servo motor + (+) Y/R - Bu/G (-)
Recommended voltage = 4-5V



COUPLER

COUPLER

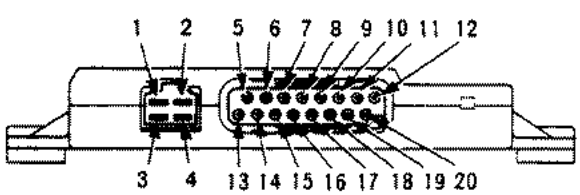


ENGINE CONTROL UNIT TERMINALS

Refer to wiring map (22.9,10) and below illustration and inspect for correct placements

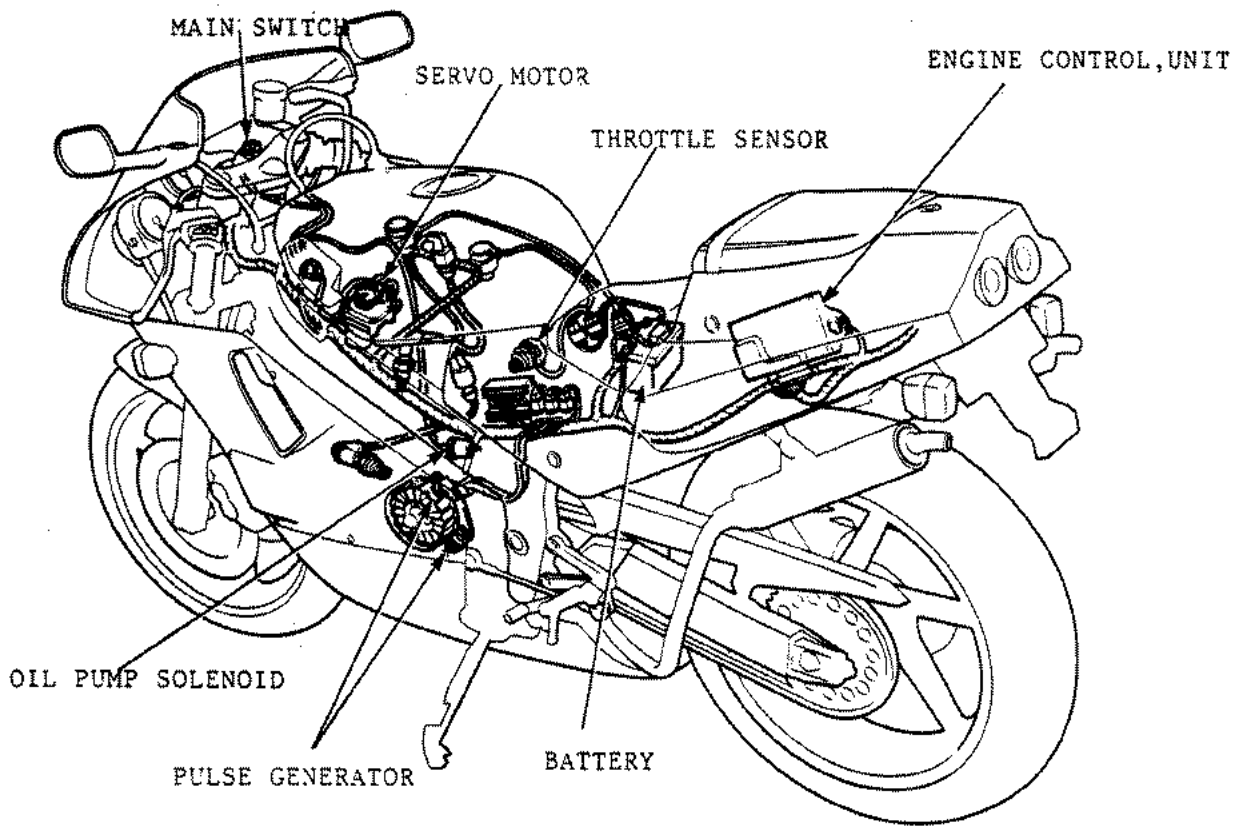
4P	WIRE HARNESS COLOUR
1] Ign coil (-)	G/W
2] NO.1 pulse generator (-)	Y
3] No.2 pulse generator (-)	Bu
4] Earth	G

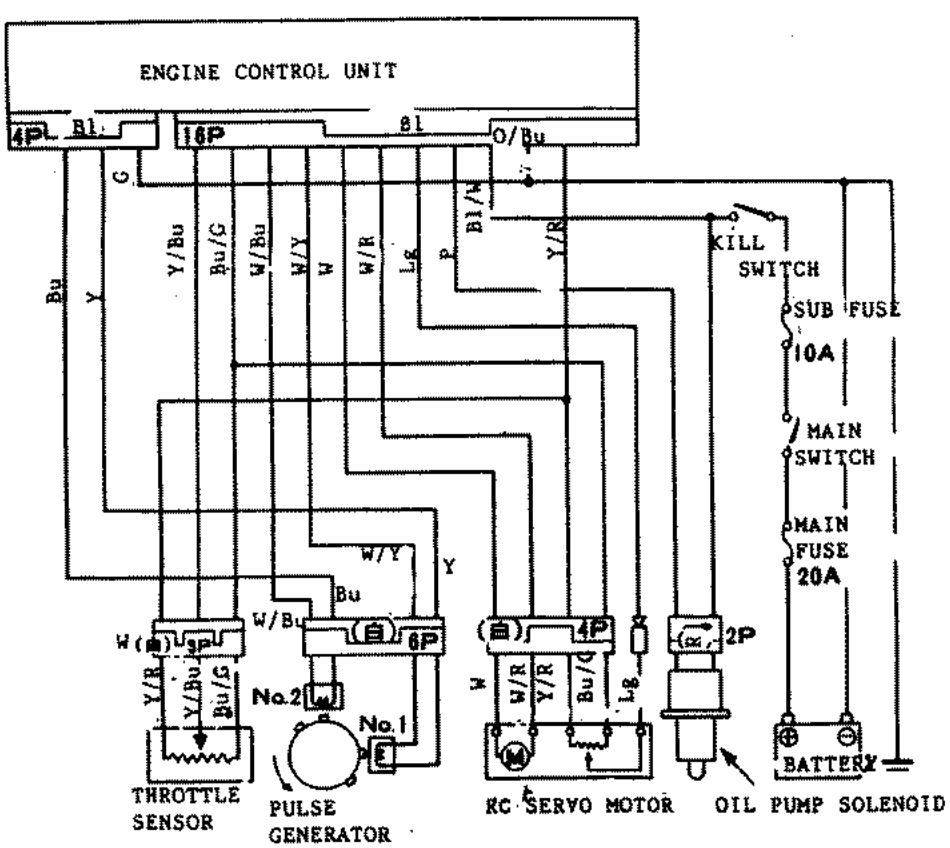
16P	
5] Frt Ign. coil (+)	Bl/Y
6] Oil pump solenoid	P
7] RC servo motor (+)	W
8] No.2 Carb solenoid	P/Bu
9] Earth	O/Bu
10] No.2 pulse generator (+)	W/Bu
11] Potentro meter (+)	Y/R
12] Throttle sensor	Y/Bu
13] Rr Ign coil (+)	Bl/Bu
14] Battery power source (+)	Bl/W
15] RC Servo motor (-)	W/R
16] No.1 Carb solenoid	P/W
17] Potentro meter (-)	Bu/G
18] No.1 pulse generator (-)	W/Y
19] Tachometer	Y/G
20] RC valve sensor	Lg



CONTROL UNIT, SERVO MOTOR, OIL PUMP SOLENOID

Wiring Diagram





Warnings:
- Refer to troubleshooting section 22.23 for total system.
- If engine control unit is dropped damage may be caused, so take car when cahrging Also if there is a charge leak when connector and couplers are connected, too much voltage may be applied, causing internal damage to the unit. Always turn main switch OFF before performing work

RC Valve, Servo Motor Inspection

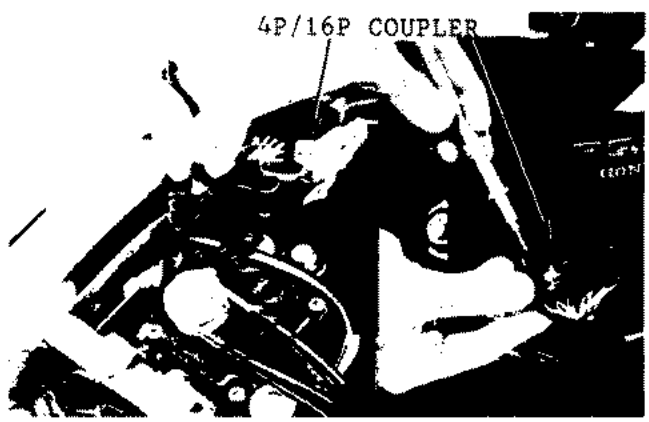
Refer to (19.2) and inspect RC valve performance
Even if it does not perform normally conduct inspections listed in (19.2)

WIRE HARNESS, ENGINE CONTROL UNIT INSPECTION

Inspect servo motor and if no abnormalities conduct the following inspection
Remove seat cowl and fuel tank (4.2)
Inspect engine control unit input voltage (22.42)
If battery voltage, then normal
If no battery voltage, inspect wire harness routingand sub frame


ENGINE CONTROL UNIT

If there is battery voltage inspect for current in the servo motor harness 4P coupler, connector and engine control unit harness 14P and 4P couplers


4P/16P COUPLER

Servo Motor	W	W/R	Bu/G	Y/R	Lg
	↕	↕	↕	↕	↕
Unit	W	W/R	Bu/G	Y/R	Lg

If no current; replace wire harness or correct it

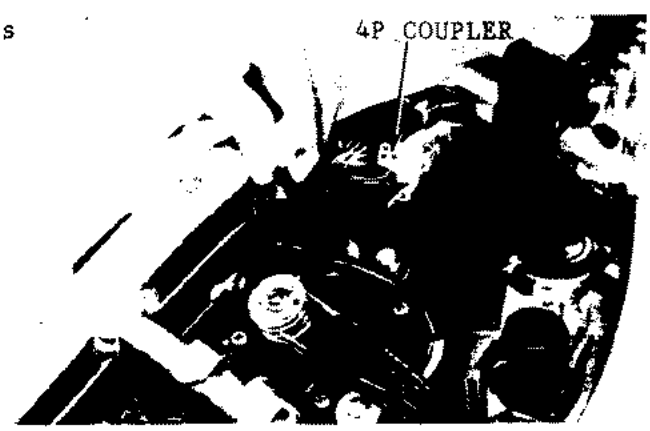
If current inspection is normal, inspect engine control unit output voltage (22.43)

Connect engine control unit 16P and 4P couplers
Turn main switch ON

Recommended method

(+) Y/R - Bu/G (-)
Recommended voltage = 4–5V

If no voltage, inspect engine control unit

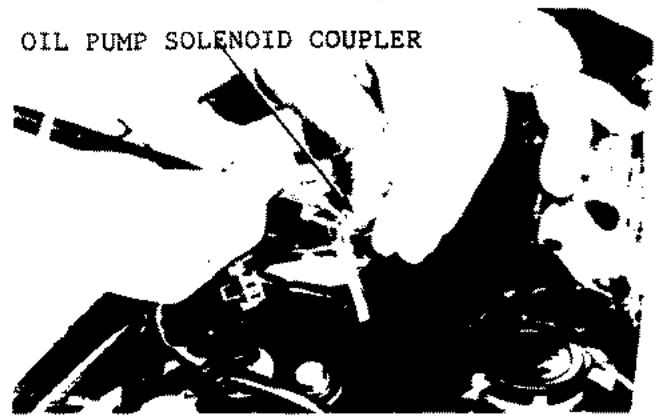

4P COUPLER

OIL PUMP SOLENOID INSPECTION

Remove fuel tank (4.2)
Remove R. maintenance lead (22.35)
Remove oil pump solenoid coupler connection
Measure resistance between coupler W/G and P terminals

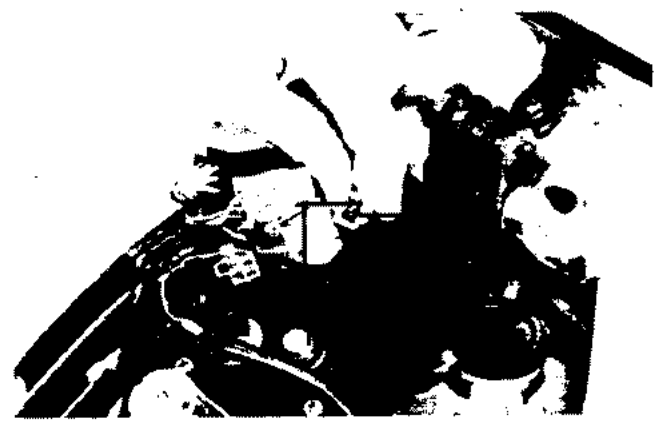
Standard resistance (20°C) = 3.0-5.0 ohm

OIL PUMP SOLENOID COUPLER



Connect battery (+) to solenoid coupler W/G terminal and (-) to P terminal

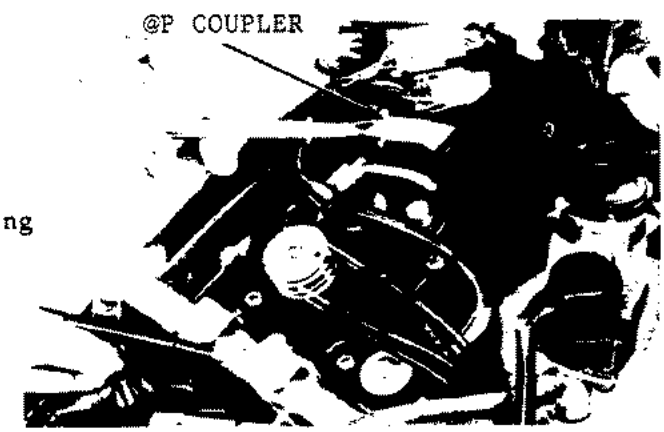
* Do not short battery
* Do not connect battery for more than 1 second
* Use a safe charge battery



If no Click sound comes from solenoid, then replace oil pump assy
Oil pump replacement) 3.3)

If there is a sound, advance to the next inspection
Connect pump solenoid 2P coupler
Turn main switch ON
Measure voltage between solenoid harness 2P coupler (R) Bl/W and body earth
If there si battery voltage, then okay

@P COUPLER



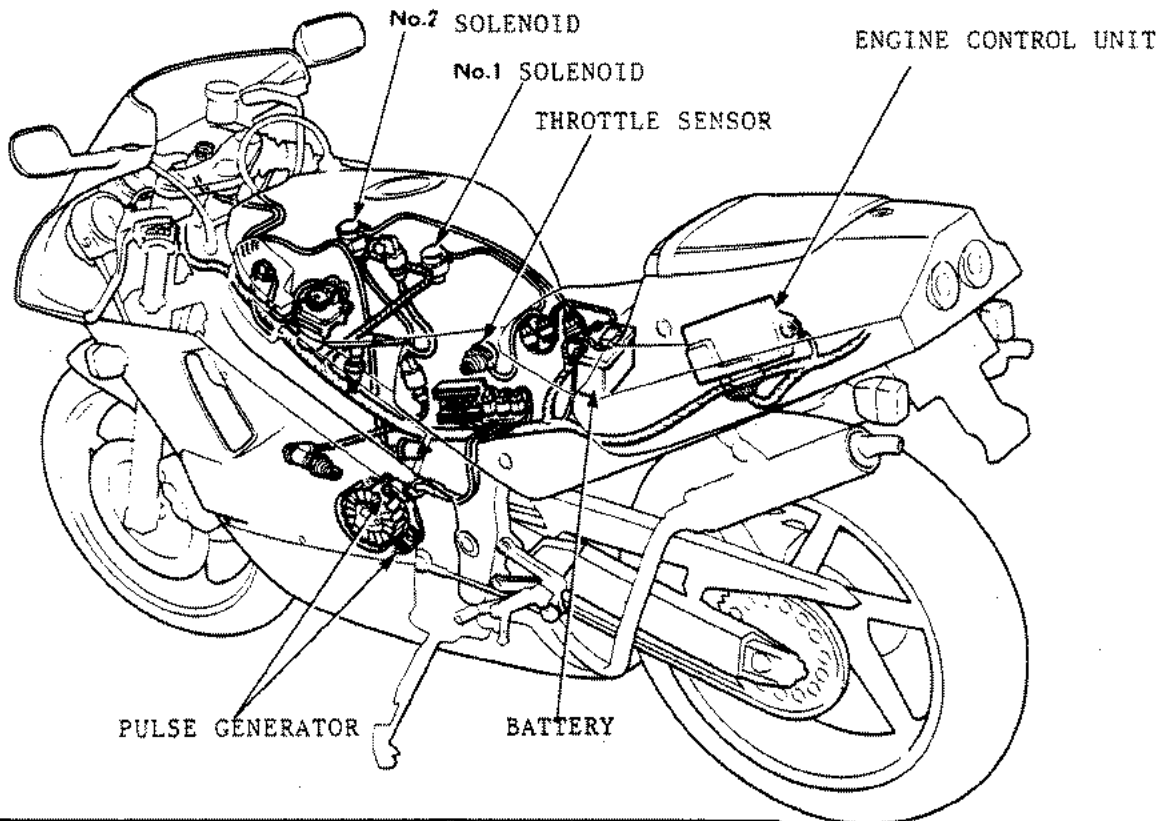
Recommended method
(+) Bl/W - body earth (-)

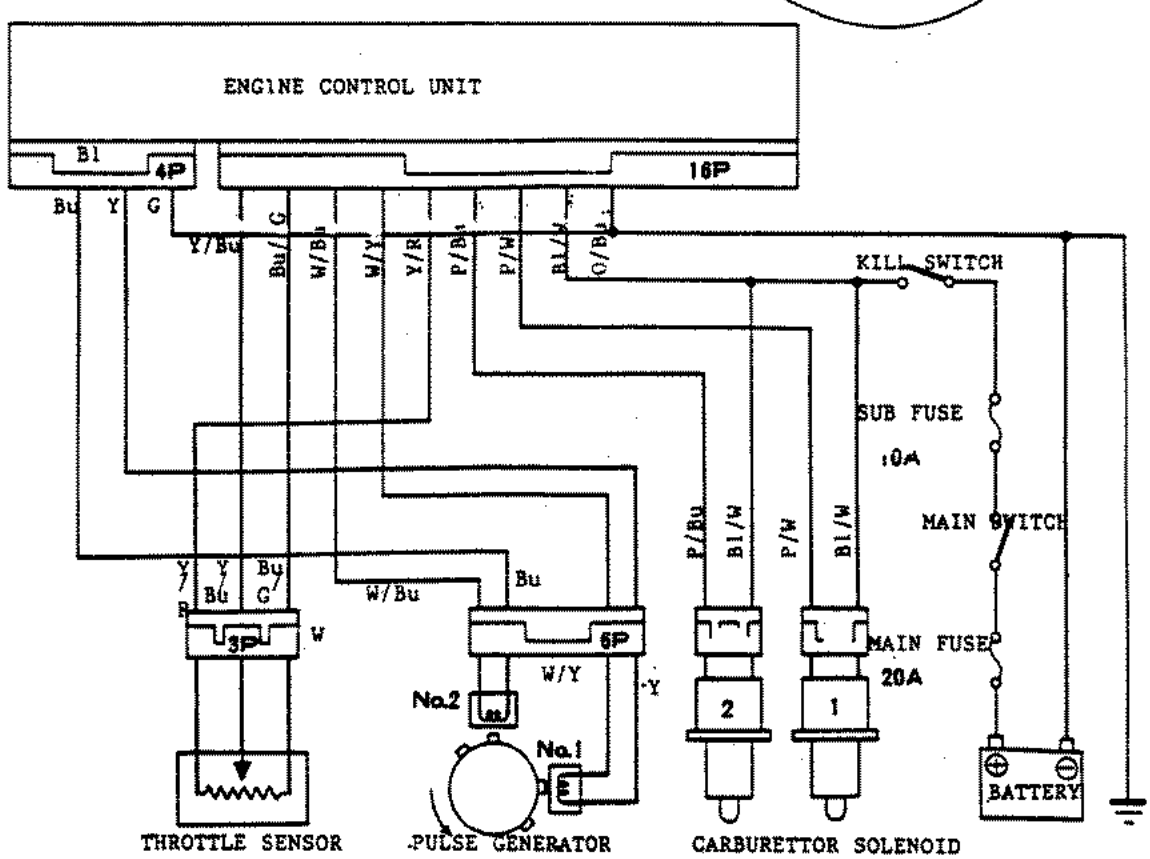
If no battery voltage, conduct the following inspection

- Main switch current
- Battery charging performance
- Wire harness, coupler short, connectos
- Blown Fuse

CARBURETTOR AIR JET CONTROL SYSTEM

Wiring Map

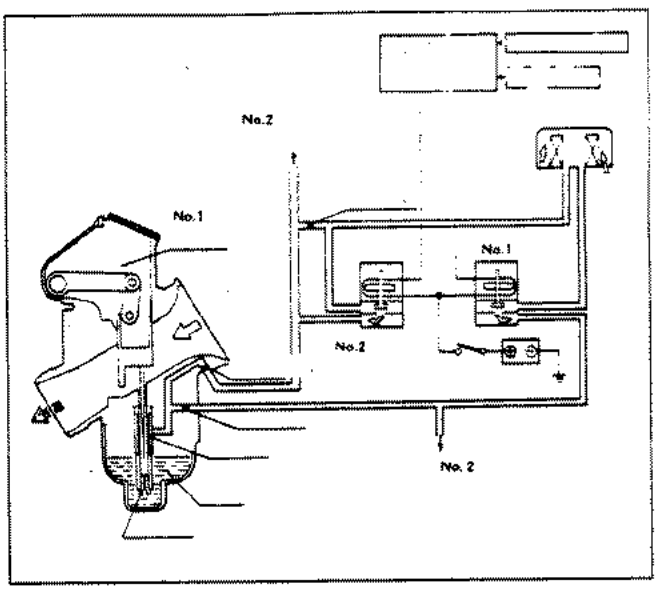




Warnings:
- Refer to (22.22) and conduct the appropriate inspections
- Take care that foreign particles do not enter carburettor air jet control system tube joint and air screw.
- If engine control unit is dropped damage may be caused. Take care when charging Also if there is a charge leak, when connector and couplers are connected too much voltage may be applied, causing internal damage to the unit. Always turn main switch OFF before performing work

CARBURETTOR SOLENOID TUBE INSPECTION

Remove seat cowl
Remove fuel tank (4.2)
Remove air cleaner case (20.29)
Inspect for wear and damage to tube leading from solenoid to carburettor and joint
Refer wiring diagram (22.11) and inspect routing

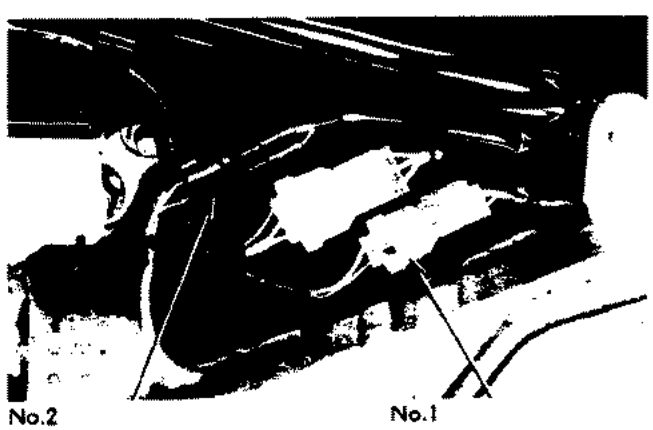


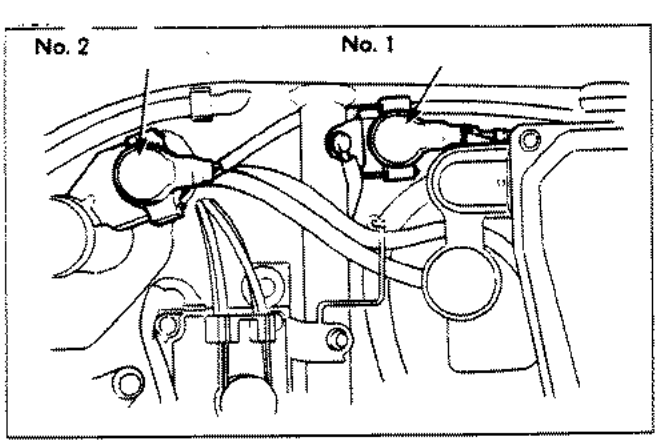
VALVE LEAK INSPECTION

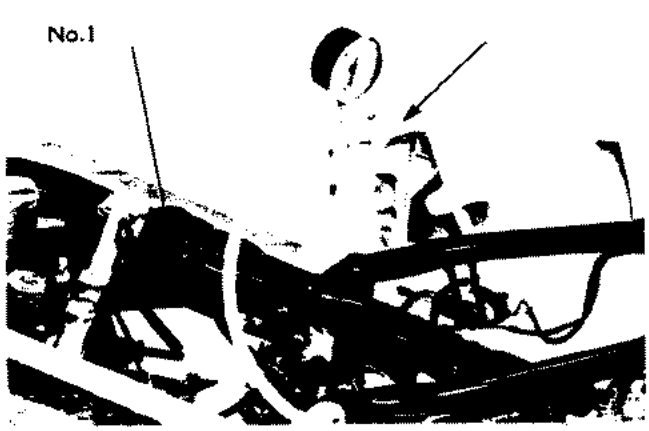
Remove air cleaner case (20.29)
Remove No.1-2 solenoid 2P coupler connection
Remove bottom tube from No.1 solenoid
Apply pressure to bottom of solenoid and if it will hold it is okay

* Do not apply more than 30mm Hg pressure

If it does not hold, then replace solenoid
Inspect No. 1 solenoid in the same way
Connect solenoid 2P coupler, turn on main switch and inspect in the same way as above. If it can hold pressure, then it is okay. If it cannot then inspect engine control unit and wire harness

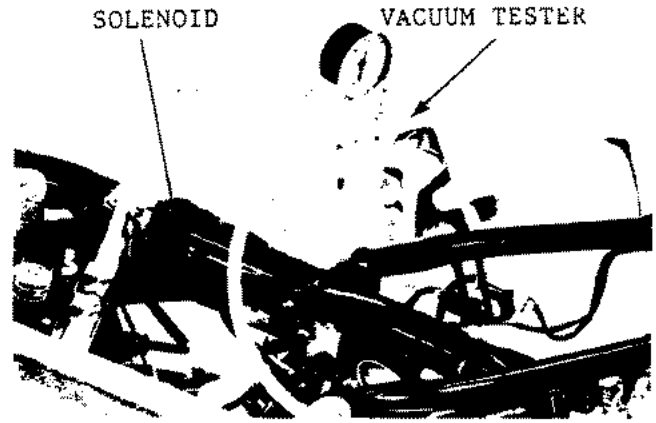






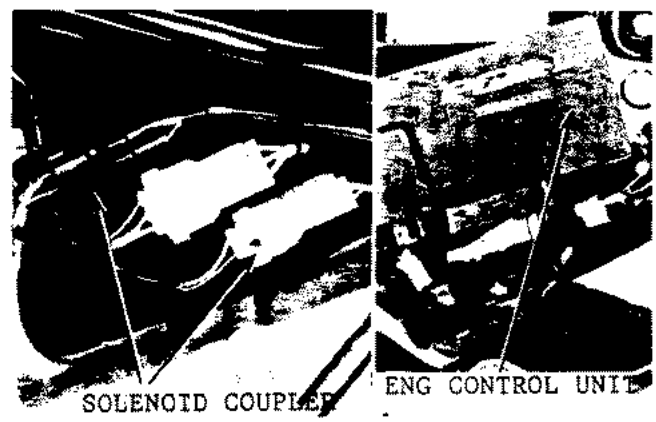
SOLENOID PERFORMANCE INPSECTION

Place transmission in neutral
Remove No.1 solenoid lower tube and connect vacuum tester. Start engine with the No. solenoid pressure holding
When engine is idling, release pressure
Inspect No.2 solenoid in same way. With No.1 solenoid, raise engine revolutions and at roughly 6500rpm, if it can hold pressure then it is okay

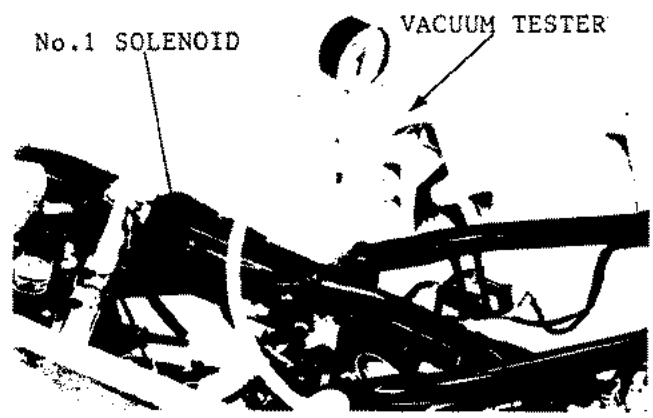


SOLENOID COIL INSPECTION

Turn main switch OFF
Remove seat cowl
Remove No.1 solenoid lower tube and connect vacuum tester.
Remove control unit 16P and 4P couplers
Earth 16P coupler harness P/W terminals with jumper cords



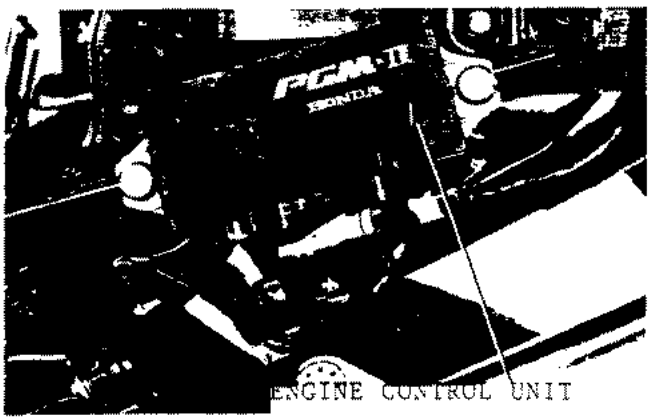
When main switch if turned On, release pressure & when it is OFF, if it can hold pressure then solenoid is okay
Inspect P/Bu terminals (No.2 solenoid) in the same way



SOLENOID HARNESS INSPECTION

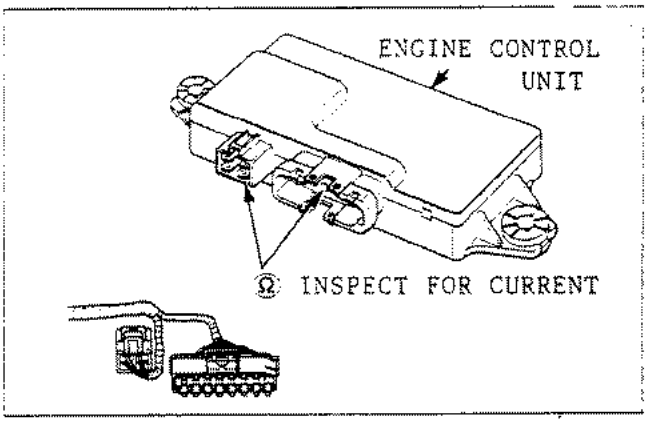
Turn main switch OFF
Remove seat cowl
Remove engine control unit 16P coupler connector
Remove No.1 solenoid 2P coupler connection and join harness coupler terminal with jumper wires

With main switch turned OFF, inspect for no voltage between harness 16P coupler P/W terminal (+) and frame earth (-)
If no voltage okay
Inspect P/Bu terminal (+) in the same way. If battery voltage, inspect main switch
Turn main switch ON and inspect for voltage between harness 16P coupler P/W terminal (+) and frame earth (-). If voltage, wire harness is okay. Inspect P/Bu terminal (+) in the same way.
If no voltage, inspect main switch and wire harness



ENGINE CONTROL UNIT INSPECTION

Turn main switch OFF
Remove seat cowl
Remove engine control unit 16P and 4P couplers.
Inspect respective currents between P/W and G, P/Bu and G terminals
If no voltage then okay
If voltage then replace engine control unit



Standard method:

16P P/W - G 4P
16P P/Bu - G 4P

ホンダ NSR250R(K)

サービスマニュアル

発行　本田技研工業株式会社

編集　本田技研工業㈱整備資料課

HONDA

本田技研工業株式会社