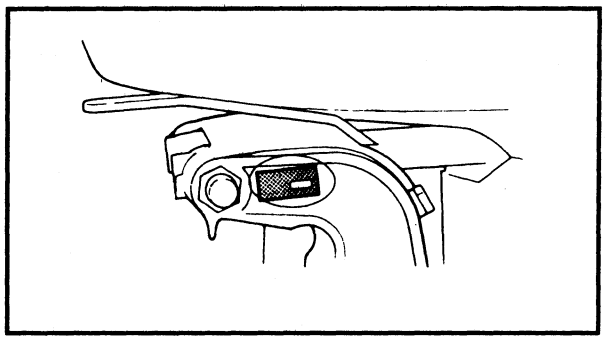
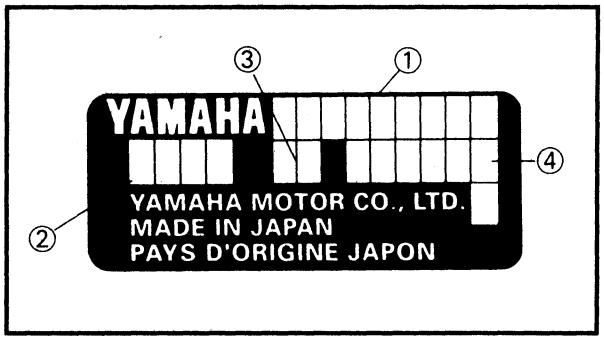




IDENTIFICATION

SERIAL NUMBER

The serial number of the outboard motor is stamped on the label attached to the port side of the clamp bracket.

NOTE:

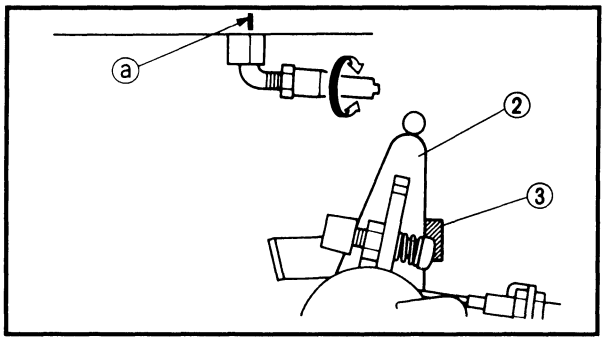
For USA model:
As an antitheft measure, a special label on which the outboard motor serial number is stamped is bonded to the port side of the clamp bracket. The label is specially treated so that peeling it off causes cracks across the serial number.

① Model name
② Approved model No.
③ Transom height
④ Serial number

STARTING SERIAL NUMBERS

The starting serial number blocks are as follows:

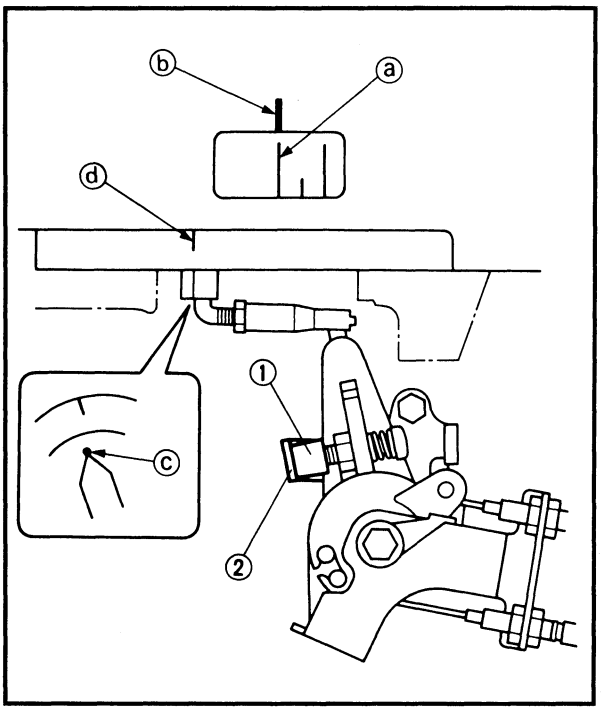
Model		Approved model code	Starting serial No.
World-wide	USA, CANADA		
9.9FMH	9.9MH	682C	S: 155562~ L: 455181~ SUL: 850196~
9.9FEMH	9.9EH		S: 700301~ L: 600791~ SUL: 900141~
9.9FEMHR	—		S: 630246~ L: 660183~
9.9FEMR	9.9ER		L: 690256~
15FMH	15MH	684C	S: 405497~ L: 153352~ SUL: 830146~
15FEMH	15EH		S: 300231~ L: 600511~ SUL: 900131~
15FEMHR	—		S: 380261~ L: 650243~



- Set the dial gauge to zero at TDC.
- Turn the flywheel counterclockwise until the dial gauge indicates that the piston position is at a specified distance from TDC.

Piston position:
4.22 mm (0.166 in) BTDC

- Turn the magneto control lever ② so that it contacts the fully advanced stopper ③.
- Adjust the link joint length so that the timing indicator aligns with the marking ⓐ on the flywheel.
- Tighten the lock nut.

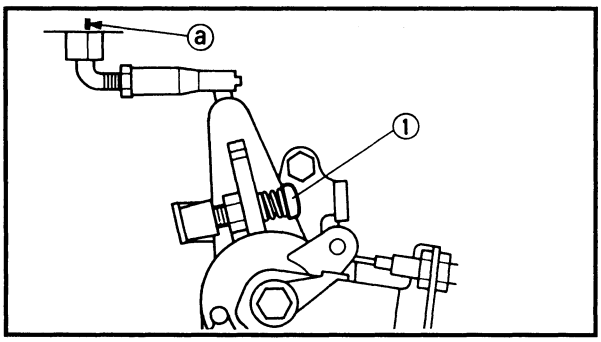


3. Check:
   - Fully retard ignition timing
     Incorrect → Adjust.

Checking steps:
- Turn the flywheel clockwise so that the its specified marking ⓐ aligns with the starter cover marking ⓑ.

Fully retard position:
5° ATDC

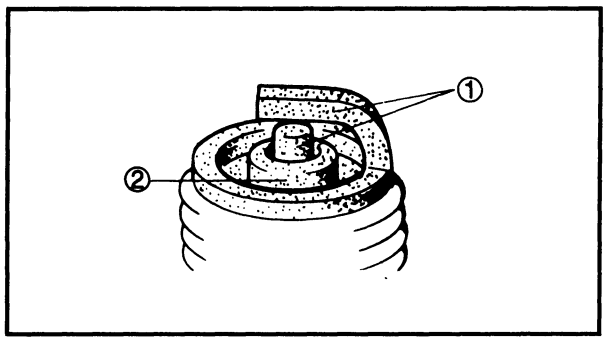
- Turn the magneto control lever so that the fully retard screw ① contacts the fully retard stopper ②.
- Check the timing indicator ⓒ so that it aligns with the marking ⓓ on the flywheel.



4. Adjust:
   - Fully retard screw

Adjustment steps:
- Turn the flywheel clockwise until the dial gauge indicates that the piston position is at specified distance from TDC.

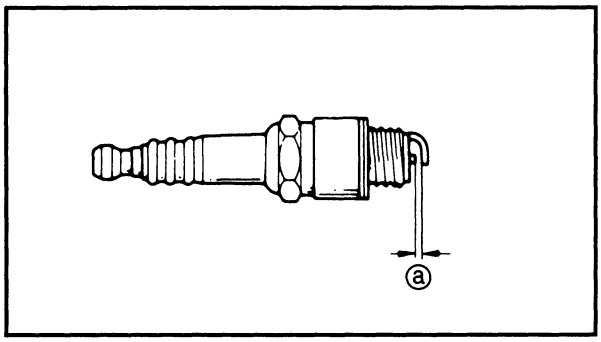
Piston position:
0.12 mm (0.005 in) ATDC



Spark plug

1. Inspect:
   - Electrode ①
     Wear/Damage → Replace.
   - Insulator color ②
     Distinctly different color → Check the engine condition.

Color guide
Medium to light tan color:
Normal
Whitish color:Lean fuel mixture
Plugged fuel mixture
Air leak
Wrong settings
Blackish color:Overly rich mixture
Electrical malfunction
Excess oil used
Defective spark plug

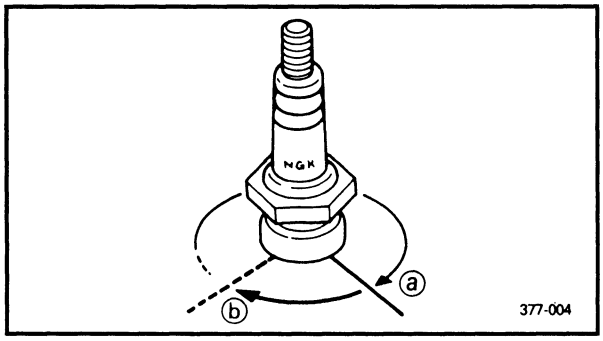


2. Clean:
   - Spark plug
     Clean the spark plug with a spark plug cleaner or wire brush.
3. Measure:
   - Spark plug gap ⓐ
     Out of specification → Alter gap.
     Use a wire gauge.

Spark plug gap:
0.9 ~ 1.0 mm (0.035 ~ 0.039 in)

4. Tighten:
   - Spark plug

Spark plug:
25 Nm (2.5 m • kg, 18 ft • lb)

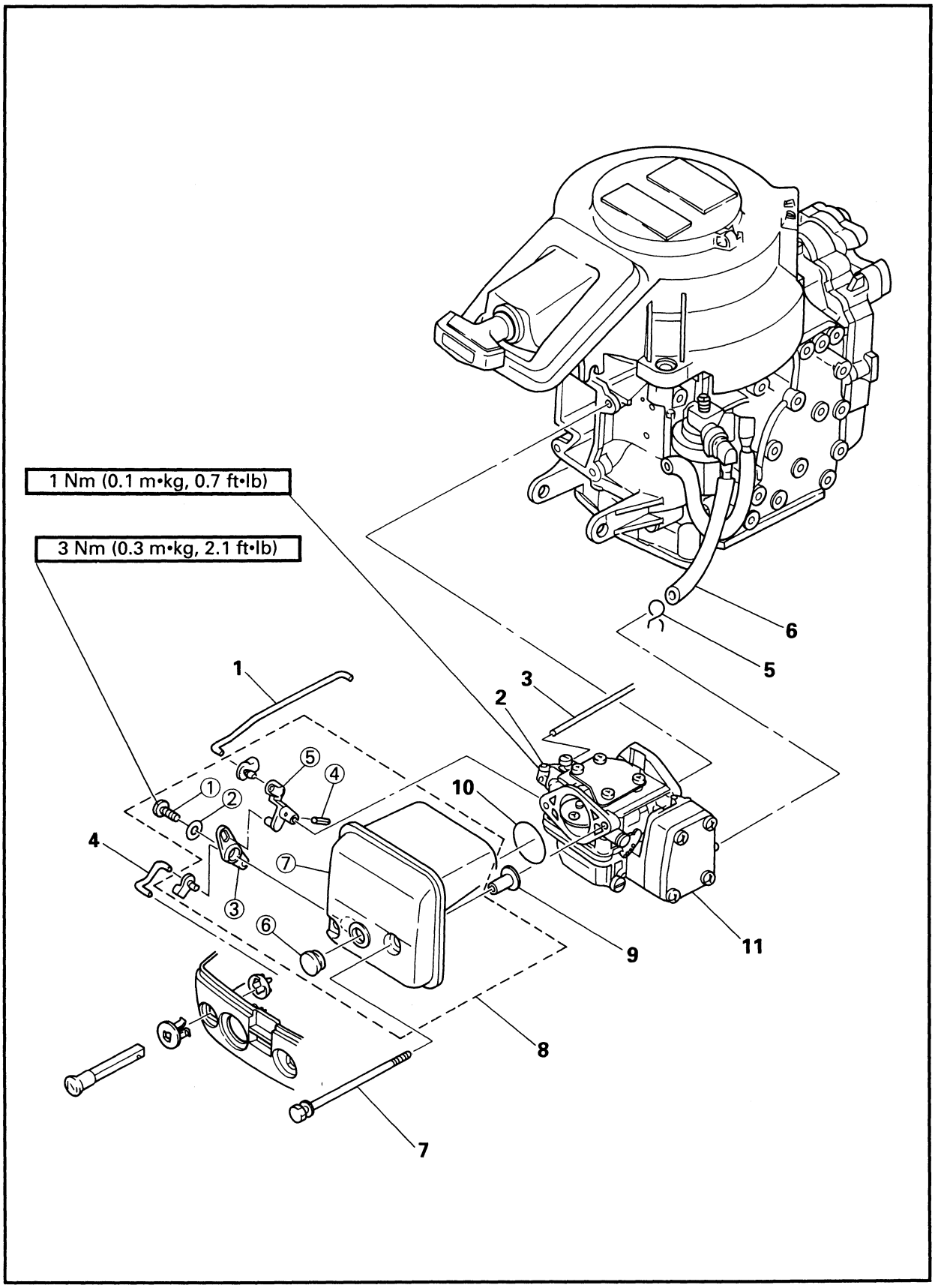


NOTE:

- Before installing a spark plug, clean the gasket surface and plug surface. Also it is suggested to apply a thin film of Anti Seize Compound to the spark plug threads to prevent future thread seizure.
- If a torque wrench is not available, a good estimate of the correct torque is a further 1/4 to 1/2 turns ⓑ on finger tightened ⓐ spark plug.

CARBURETOR REMOVAL

EXPLODED DIAGRAM



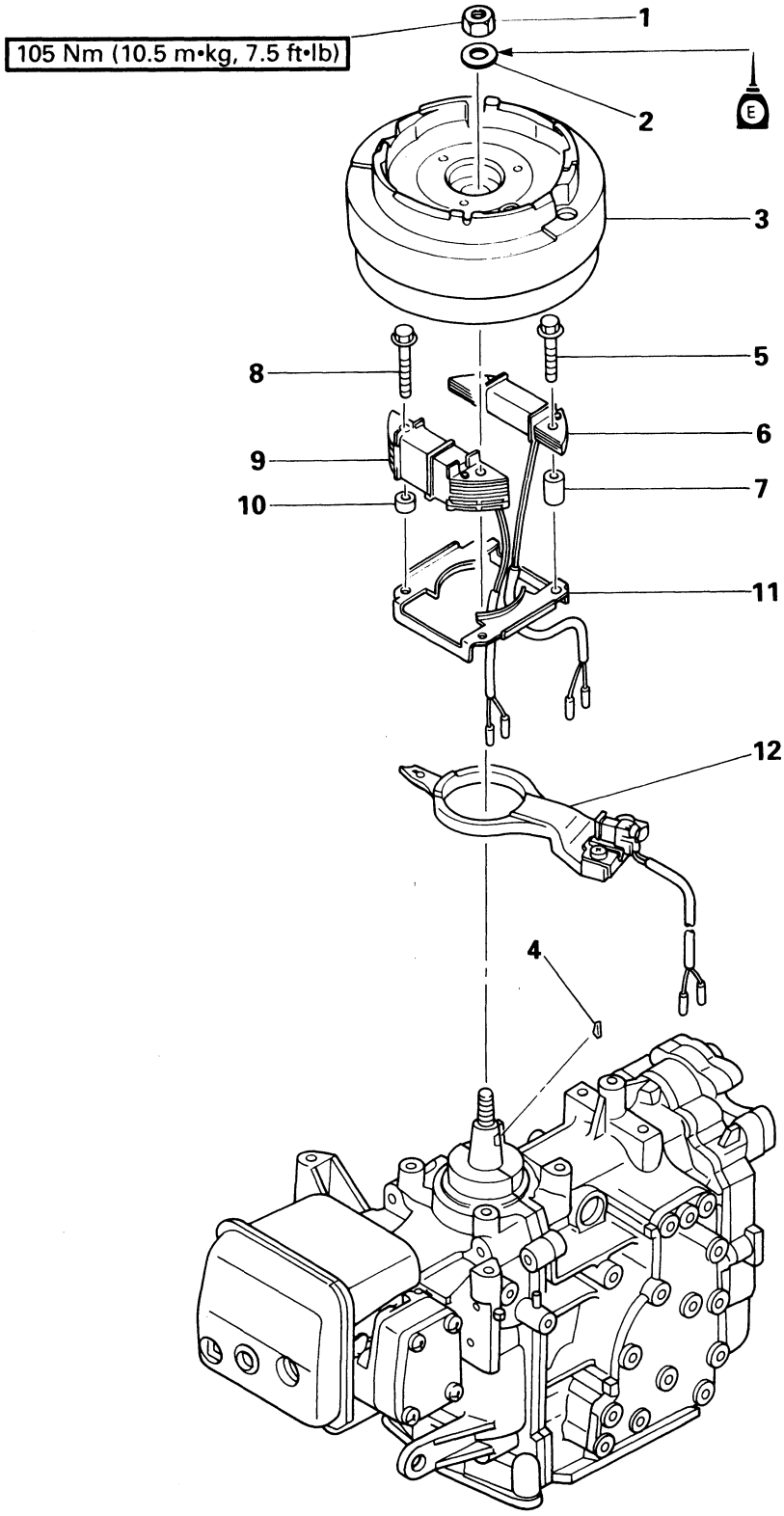
POWER UNIT REMOVAL

REMOVAL AND INSTALLATION CHART

Step	Procedure/Part name	Q'ty	Service points
	POWER UNIT REMOVAL		Follow the left "Step" for removal.
1	Screw (with washer)	1	for remote model
2	Shift lever link	1	
3	Bushing	1	
4	Nut	1	
5	Throttle lever link	1	
6	Plane washer	1	
7	Wave washer	1	
8	Bushing	2	
9	Choke link rod	1	
10	Screw	1	
11	Acceleration rod	1	
12	Link joint	1	
13	Choke knob rod	1	
14	Bolt (with washer)	1	
15	Bolt (with washer)	1	
16	Control pulley bracket assembly	1	
17	Bolt (with washer)	1	
18	Engine stop switch lead	2	Except for remote model
19	Wire harness ground lead	1	for remote model
20	2P connector lead	2	for 2P connector model
21	Wire harness rectifier lead	4	for remote model
22	Wire harness starter relay lead	2	
23	Bolt (with washer)	1	Electrical starter model.
24	Nut	1	
25	Spring washer	1	
26	Battery cable	1	
27	Pilot water hose	1	
28	Fuel hose	1	
29	Bolt (with washer)	6	8 x 30 mm
30	Clip	1	
31	Plane washer	1	
32	Shift lever rod	1	
33	Engine unit	1	
34	Upper case gasket	1	
35	Dowel pin	2	
36	Collar	1	
			Reverse the removal steps for installation.

FLYWHEEL MAGNETO AND MAGNETO BASE

EXPLODED DIAGRAM



CYLINDER HEAD, THERMOSTAT AND EXHAUST COVER

EXPLODED DIAGRAM

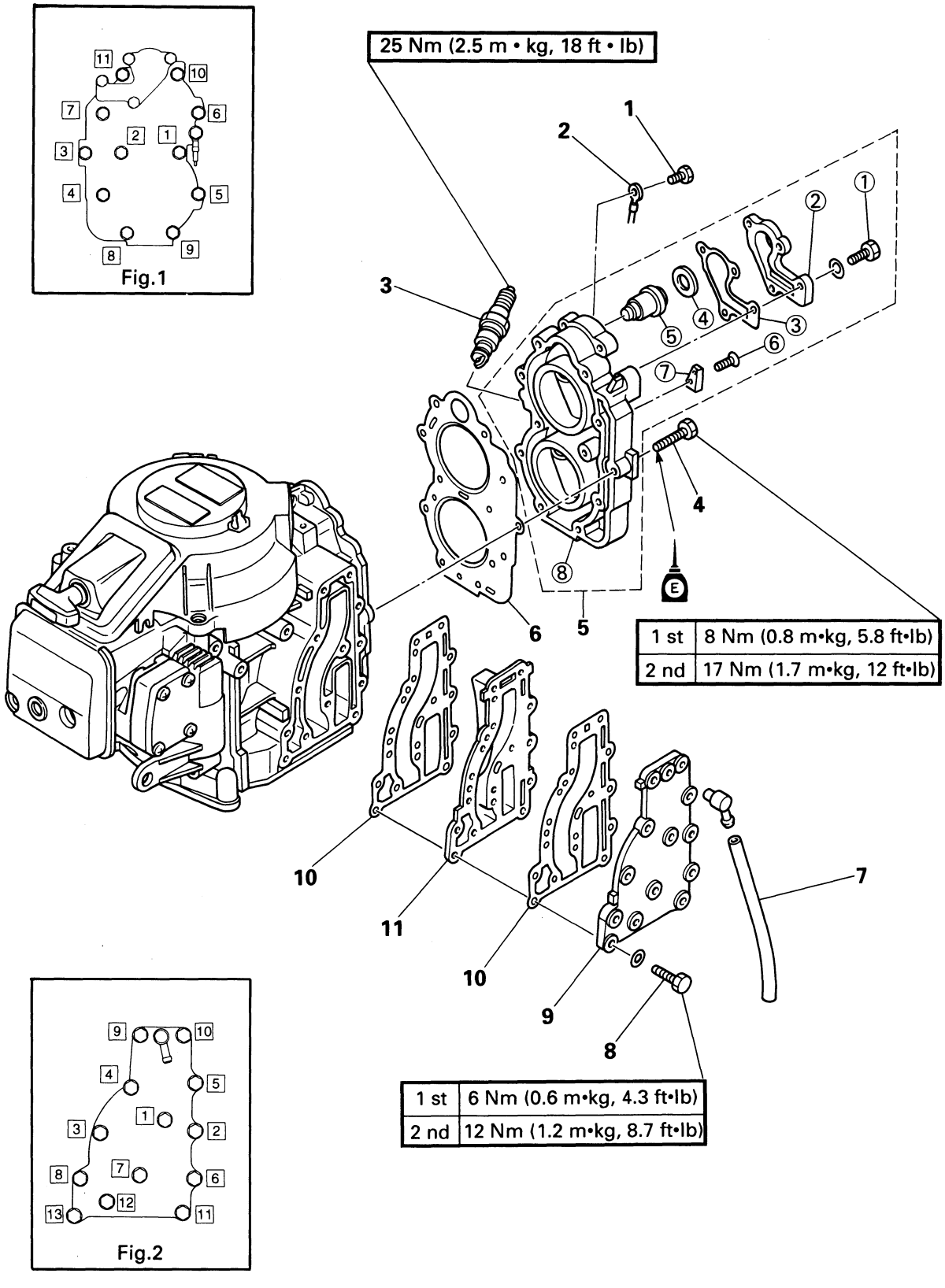
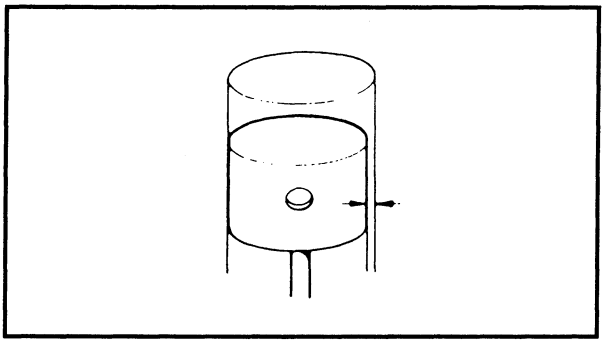


Fig.1

Fig.2

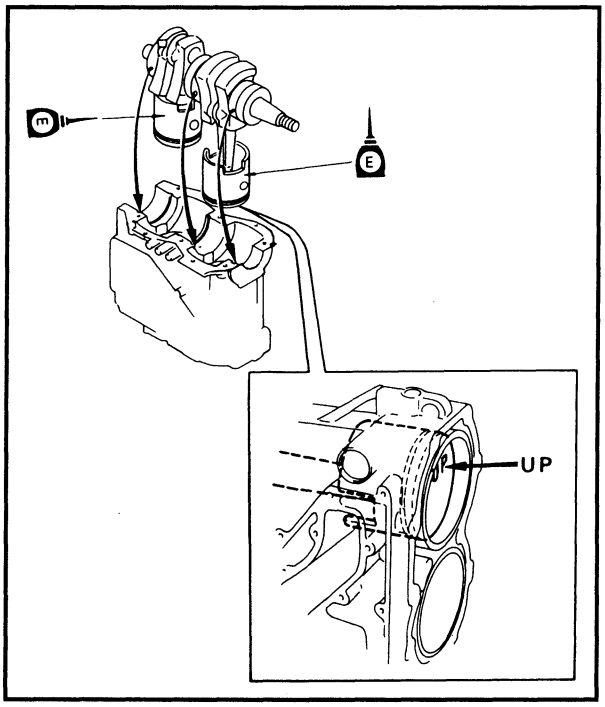


Piston to cylinder clearance

1. Calculate:
   - Piston clearance
     Out of specification → Replace piston and piston ring and/or cylinder.

Piston clearance	=	Cylinder bore	−	Piston diameter

Piston clearance:
0.035 ~ 0.040 mm
(0.0014 ~ 0.0016 in)

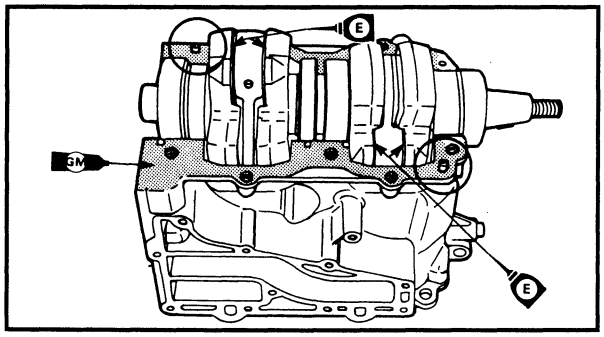


Cylinder body and crankcase installation

1. Install:
   - Cylinder body
   - Crankshaft and piston

NOTE:

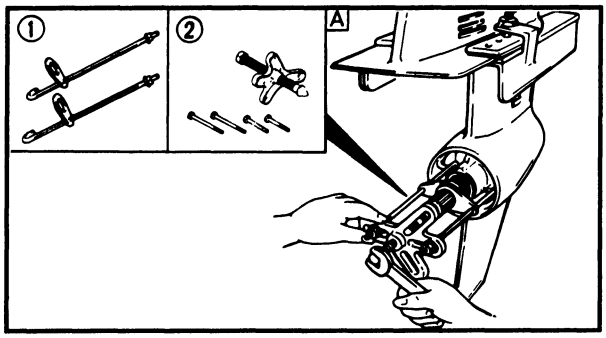
- Align the piston ring end gaps with the respective locating pins.
- Fit the bearing locating pins in the cylinder body.

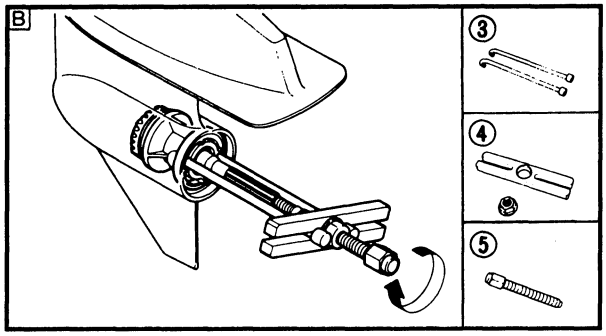


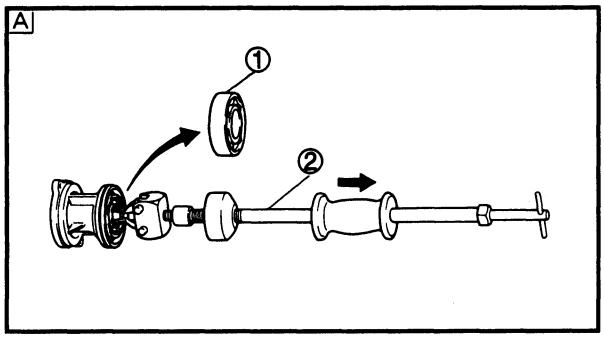
2. Apply:
   - Gasket maker
     Onto the connecting surfaces of the crankcase and cylinder body.

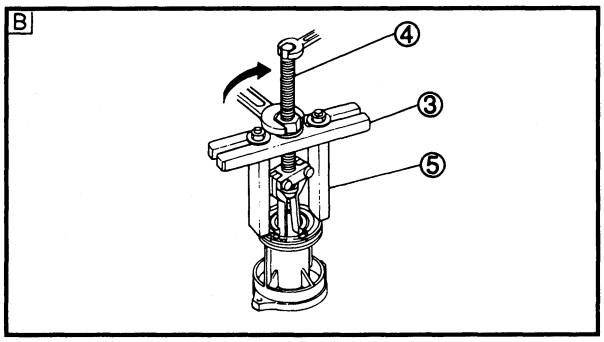
NOTE:

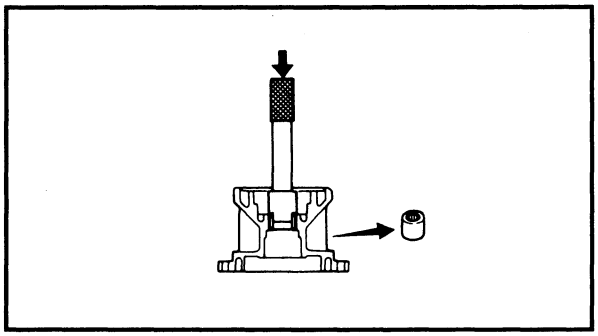
- Clean the connecting surfaces of the crankcase and cylinder body before applying the Gasket maker.
- Gasket maker should be so applied that it does not overflow the contacting surface.











SERVICE POINTS

Propeller shaft housing removal

1. Remove:
   - Propeller shaft housing assembly

Bearing housing puller:
YB-06234 ..... ①
90890-06503 ..... ③
Universal puller:
YB-06117 ..... ②
Stopper guide plate:
90890-06501 ..... ④
Center bolt:
90890-06504 ..... ⑤

A For USA and CANADA
B Except for USA and CANADA

Propeller shaft housing disassembly

1. Remove:
   - Ball bearing ①

Slide hammer set:
YB-06096 ..... ②
Stopper guide plate:
90890-06501 ..... ③
Bearing puller:
90890-06535 ..... ④
Stopper guide stand:
90890-06538 ..... ⑤

A For USA and CANADA
B Except for USA and CANADA

2. Remove:
   - Needle bearing

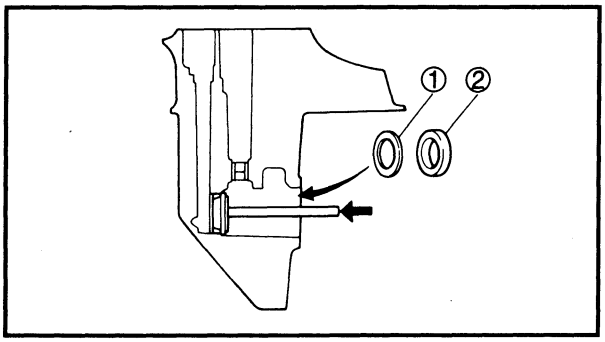
Driver rod:
YB-06071/90890-06604
Needle bearing attachment:
YB-06081/90890-06616

Lower case inspection

1. Clean:
   - Gear case
     Use a soft brush and solvent.
2. Inspect:
   - Water passage
     Mineral deposits/Corrosion → Clean.
3. Inspect:
   - Lower case
     Crack/Damage → Replace.

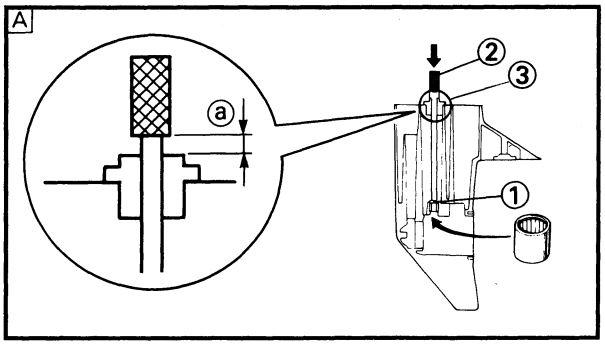
Lower case assembly

1. Install:
   - Forward gear shim ①
   - Forward gear bearing outer race ②



Bearing installer:
YB-06085/90890-06625
Driver rod:
YB-06071/90890-06605

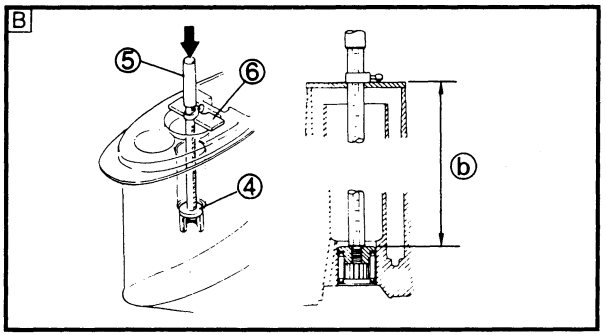
A



2. Install:
   - Drive shaft needle bearing

Depth ⓐ:
17.8 mm (0.70 in)
Depth ⓑ:
172.7~173.2 mm (6.80~6.82 in)

B



Bearing attachment:
YB-06230 ..... ①
90890-06617 ..... ④
Driver rod:
YB-06229 ..... ②
90890-06602 ..... ⑤
Driveshaft needle bearing depth stop:
YB-06231 ..... ③
Bearing depth plate:
90890-06603 ..... ⑥

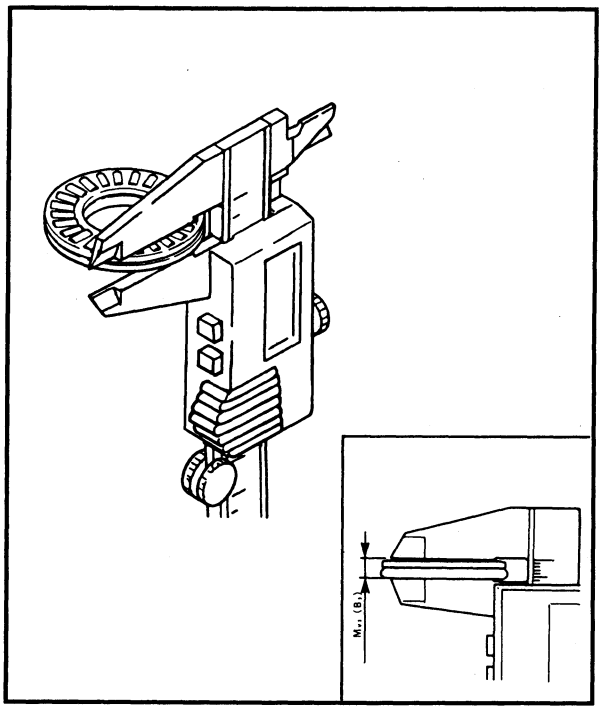
A For USA and CANADA
B Except for USA and CANADA

SHIM SELECTION (EXCEPT FOR USA AND CANADA)

Pinion gear shim

NOTE:

Find pinion gear shim thickness (T3) by selecting shims until the specified measurement is obtained with the special tool.



1. Measure:
   - Measurement (M)

	Digital caliper: 90890-06704

NOTE:

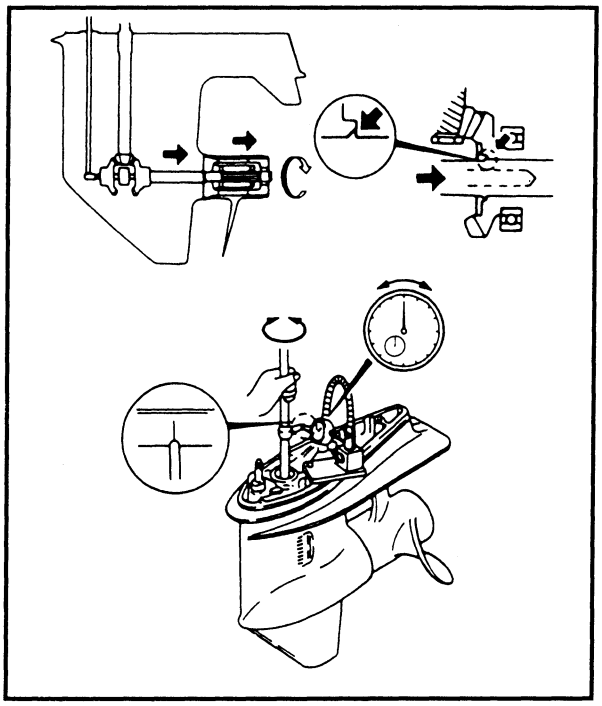
Measure the thicknesses (Mv3) of bearing and washer.

2. Calculate:
   - Pinion gear shim thickness (T3)

	Pinion gear shim thickness (T3) =6.05 - Mv3 mm

3. Select:
   - Pinion gear shim

Calculated numeral		Using shim
more than	or less	
1.13	1.20	1.13
1.20	1.30	1.20
	Available shim thickness: 1.13 and 1.20 mm	



Measuring steps:
- Set the shift shaft in the reverse position.
- Load the reverse gear by installing the propeller with the front side facing backward, and tighten the propeller nut.

Propeller nut:
5 Nm (0.5 m • kg, 3.6 ft • lb)

- Attach the backlash indicator on the drive shaft (12.8 mm in diameter).

Backlash indicator:
YB-06265/90890-06706

- Attach the dial gauge on the lowercase, and make the dial gauge stem contact the mark on the indicator.

Backlash adjusting plate:
YB-07003
Dial gauge:
YU-03097/90890-01252
Magnet base:
YU-34481/90890-06705

- While pulling the drive shaft, slowly turn the drive shaft clockwise and counterclockwise; then, measure the backlash when the drive shaft stops at each direction.

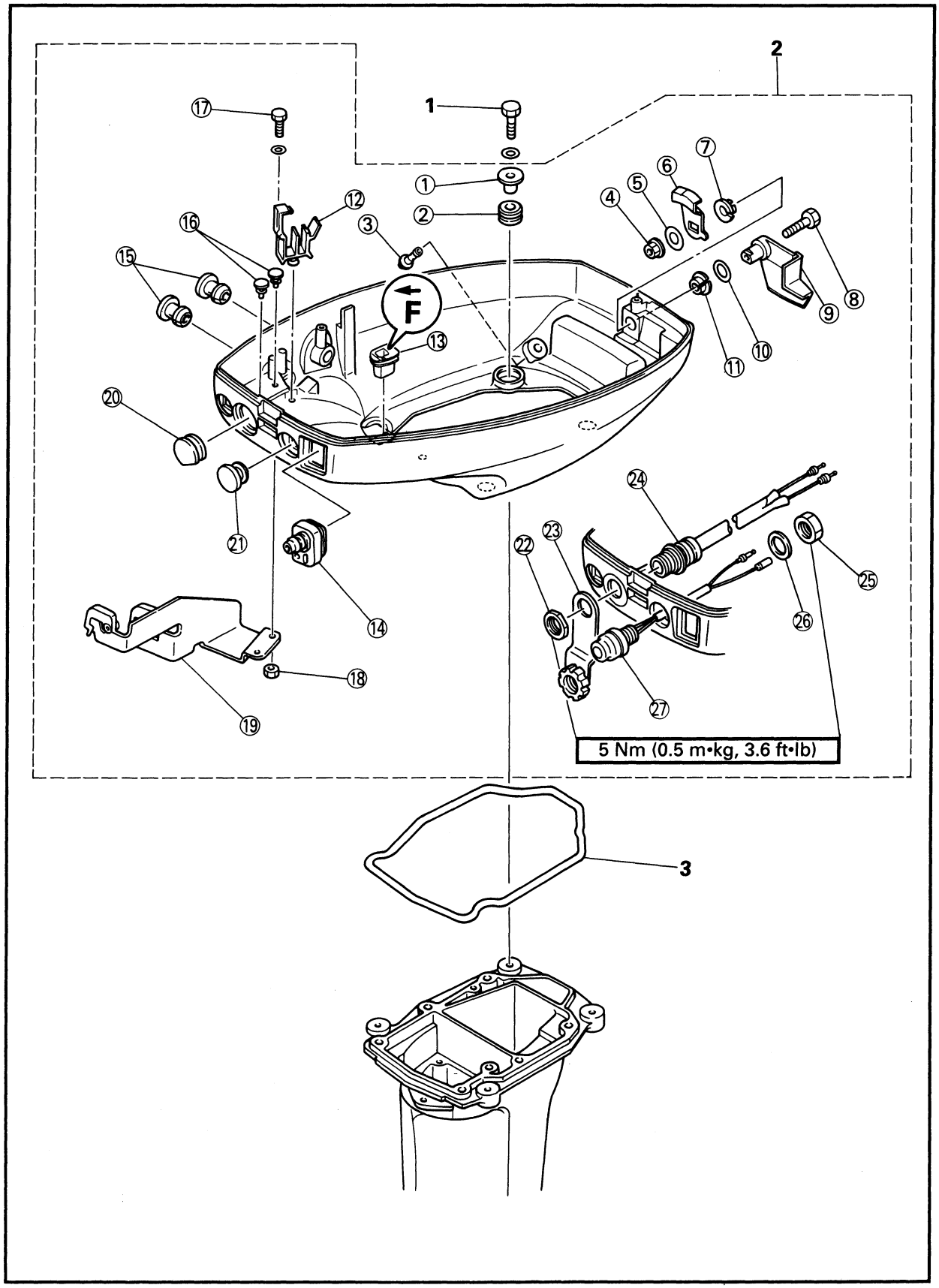
2. Adjust:
   - Reverse gear shim(s)

NOTE:
Adjust the shim(s) to be added or removed according to specification.

Reverse gear backlash	Shim thickness
Less than 0.95 mm	To be decreased by $\frac{(1.30 - \text{measurement})}{2.1}$
More than 1.65 mm	To be increased by $\frac{(\text{measurement} - 1.30)}{2.1}$
Available shim thickness: 0.10, 0.20, 0.30, 0.40 and 0.50 mm	

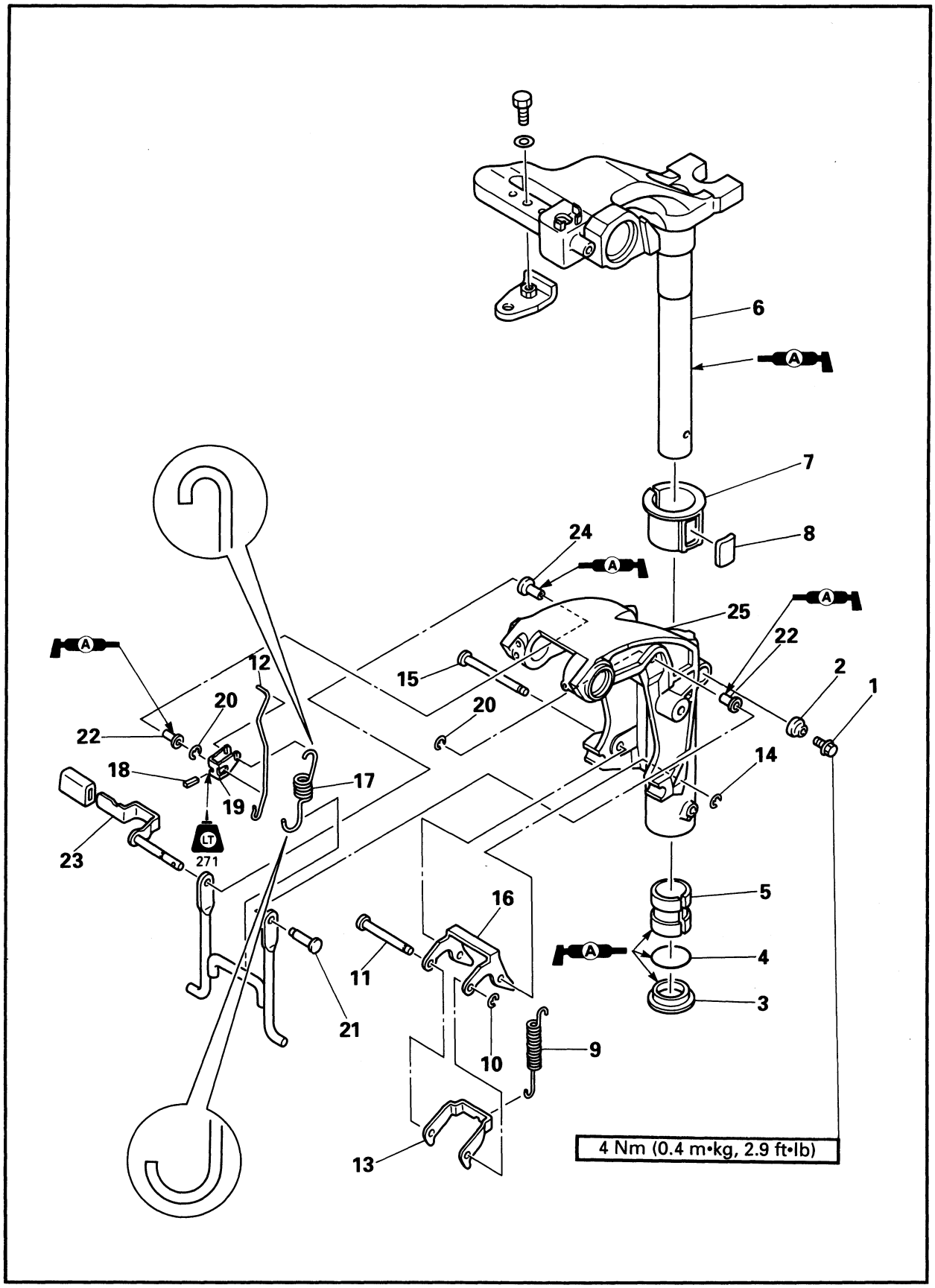
BOTTOM COWLING

EXPLODED DIAGRAM



STEERING AND SWIVEL BRACKET

EXPLODED DIAGRAM



TROUBLE ANALYSIS

NOTE:

Following items should be obtained before "trouble analysis".

1. Battery is charged and its specified gravity is in specification.
2. There is no incorrect wiring connection.
3. Wiring connections are surely engaged and without any rust.
4. Lanyard is installed to the engine stop switch.
5. Shift position is in neutral.
6. Fuel is coming to the carburetor.
7. Correct rigging and engine setting are obtained.
8. Engine is free from any "Hull problem".

TROUBLE ANALYSIS CHART

Trouble mode													Check elements	
ENGINE WILL NOT START	ROUGH IDLING	ENGINE STALLS	ENGINE WILL NOT STOP	POOR PERFORMANCE	OVERHEATING	LOOSE STEERING	HARD SHIFTING	POOR BATTERY CHARGING					Relative part	Reference Chapter
													FUEL SYSTEM	
O		O		O									Fuel hose	4
O		O		O									Fuel joint	4
O	O	O		O									Fuel filter	4
O		O		O									Fuel pump	4
O	O	O		O									Carburetor	4
		O		O	O								Pilot screw setting	4
		O		O									Idle speed	3
													POWER UNIT	
O	O			O									Compression	5
O	O			O									Reed valve	5
O	O												Cylinder head gasket	5
O				O									Seal	5
O				O									Cylinder body	5
O				O									Piston ring	5
O				O									Crank case	5
O													Piston	5
	O			O									Control unit adjustment	3
				O									Bearing	5
					O								Thermostat	5
					O								Water passage	5