

## HOW TO USE THIS MANUAL

### MANUAL FORMAT

All of the procedures in this manual are organized in a sequential, step-by-step format. The information has been compiled to provide the mechanic with an easy to read, handy reference that contains comprehensive explanations of all disassembly, repair, assembly, and inspection operations.

For instance, the condition of a faulty component will precede an arrow symbol and the course of action required will follow the symbol.

- Bearings

Pitting/scratches → Replace.

To assist you in finding your way through this manual, the section title and major heading is given at the top of every page.

### MODEL INDICATION

Multiple models are mentioned in this manual and their model indications are noted as follows.

Model name	100AETO	E115AMH	E115AWH	E115AE	E115AET	115BE	115BET	115BETO
USA and Canada name	100TR	—	—	—	—	—	C115TR	—
Indication	100AETO	E115AMH	E115AWH	E115AE	E115AET	115BE	115BET	115BETO
Model name	115CETO		115FETO	130BETO		L130BETO	140BET	
USA and Canada name	115TR	S115TR	B115TR	130TR	S130TR	L130TR	—	
Indication	115CETO	S115CETO	—	130BETO	S130BETO	L130BETO	140BET	

### ILLUSTRATIONS

The illustrations within this service manual represent all of the designated models.

### CROSS REFERENCES

The cross references have been kept to a minimum. Cross references will direct you to the appropriate section or chapter.





Item	Model		Unit					
	Worldwide	USA	Canada	100AETO	E115AMH	E115AWH	E115AE	E115AET
	—	—	—	—	—	—	—	—
Induction system	Loop charge							
Exhaust system	Through prop boss							
Lubrication system	Oil injection	Pre-mixed						
Cooling system	Water							
Ignition system	CDI							
Starting system	Electric	Manual	Manual and electric	Electric				
Advance type	Mechanical							
<b>FUEL AND OIL</b>								
Fuel type	Unleaded regular gasoline							
Fuel rating	*PON	86						
	RON	91						
Engine oil type	2-stroke outboard engine oil							
Engine oil grade	TC-W3							
Engine oil capacity (engine oil tank)	L (US qt, Imp qt)	0.9 (0.95, 0.79)	—					
(sub-oil tank)	L (US qt, Imp qt)	10.5 (11.1, 9.2)	—					
Gear oil type	Hypoid gear oil SAE 90							
Gear oil total quantity	cm <sup>3</sup> (US oz, Imp oz)	760 (25.7, 26.8)						
<b>BRACKET</b>								
Trim angle (at 12° boat transom)	Degree	-4 - 16	12, 16, 20, 24, 28			-4 - 16		
Tilt-up angle	Degree	70	66			70		
Steering angle	Degree	35 + 35						
<b>DRIVE UNIT</b>								
Gear shift positions	F-N-R							
Gear ratio	2.00 (26/13)							
Reduction gear type	Spiral bevel gear							
Clutch type	Dog clutch							
Propeller shaft type	Spline							
Propeller direction (rear view)	Clockwise							

\* PON: Pump Octane Number  
 RON: Research Octane Number

### MÄTNING AV OLJEPUMPENS KAPACITET

Mät:

- Oljepumpskapacitet  
Motsvarar ej specifikation →  
Kontrollera oljepumpens alla  
komponenter och byt ut eventu-  
ella defekta delar.



#### Motoroljans pumpkapaci- tet (3 minuter/1 cylinder)

100hk, 115hk:  
 $3,20 \pm 0,70 \text{ cm}^3$   
(0,108 ± 0,024 US oz,  
0,113 ± 0,025 Imp oz)  
130hk:  
 $4,80 \pm 1,10 \text{ cm}^3$   
(0,162 ± 0,037 US oz,  
0,169 ± 0,039 Imp oz)

### ÖLJYPUMPUN SYÖTÖN MITTAUS

Mittaa:

- Öljynsyöttö  
Poikkeaa ohjeavosta →  
Tarkista kaikki öljypumpun  
osat ja vaihda vialliset  
uusiin.



#### Moottoriöljyn syöttö (3 min/1 sylinteri)

100 hv, 115 hv:  
 $3,20 \pm 0,70 \text{ cm}^3$   
(0,108 ± 0,024 US oz,  
0,113 ± 0,025 Imp oz)  
130 hv:  
 $4,80 \pm 1,10 \text{ cm}^3$   
(0,162 ± 0,037 US oz,  
0,169 ± 0,039 Imp oz)

### MISURAZIONE DELLA PORTATA DELLA POMPA DELL'OLIO

Misurare:

- Portata della pompa dell'olio  
Fuori specifica → Controllare  
tutti i componenti della pompa  
dell'olio e sostituire tutte le parti  
difettose.



#### Portata olio motore (3 minuti/1 cilindro)

100cv, 115cv:  
 $3,20 \pm 0,70 \text{ cm}^3$   
(0,108 ± 0,024 US oz,  
0,113 ± 0,025 Imp oz)  
130cv:  
 $4,80 \pm 1,10 \text{ cm}^3$   
(0,162 ± 0,037 US oz,  
0,169 ± 0,039 Imp oz)

#### OBS:

Observera följande när oljepumpens kapacitet mäts.

- Motoroljans temperatur bör vara 10 - 30 °C (50 - 86 °F).
- Innan oljepumpens kapacitet mäts, avlufta oljeinsprutningssystemet och kontrollera att inga luftbubblor finns i motoroljan som flödar ut ur matarslangen för oljan.
- När mätcyllindern används bör det tillses att motorolja inte fastnat på cylinderns sidor, annars kommer mätningen att bli fel.
- Använd endast specificerad motorolja med rätt viskositet. Om viskositeten är för hög eller för låg, kommer mätningen av pumpkapaciteten att bli fel.
- Beräkna pumpkapaciteten per minut. Ju längre mättid, desto mer korrekt kommer mätvärdet att bli.

#### PS:

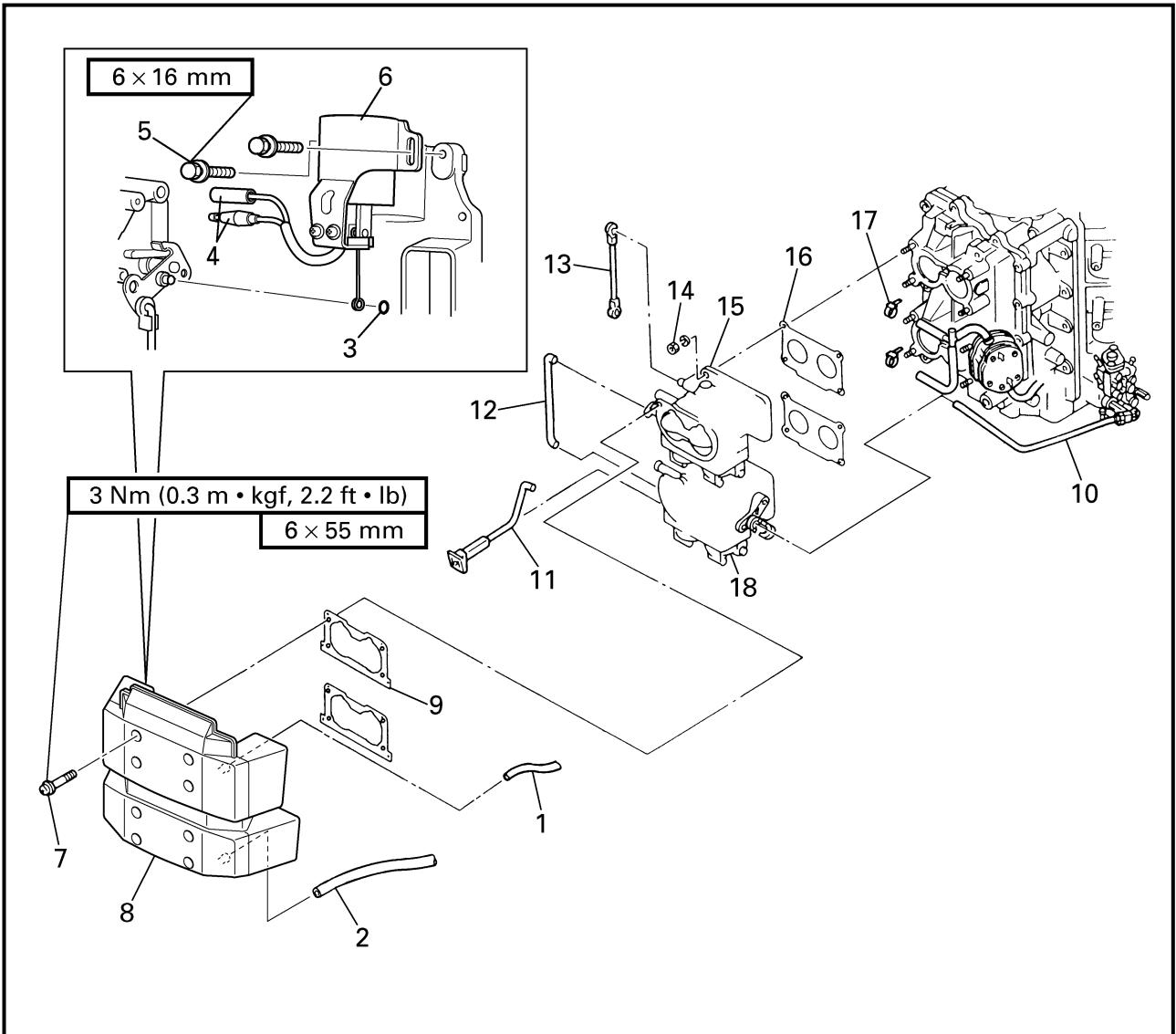
Kun mittaat öljypumpun toimintaa, ota huomioon seuraavat seikat.

- Moottoriöljyn lämpötilan pitää olla 10 - 30 °C (50 - 86 °F).
- Ilmaa öljynruiskutusjärjestelmä ennen mittausta ja varmista, ettei öljynsyöttöputkesta ulos virtaavassa öljyssä ole ilmakuplia.
- Kun käytät mittalasia, varmista ettei öljyä jää mittalasin seinämiin, sillä silloin mittaus ei ole tarkka.
- Käytä vain ohjeen mukaista öljyä, jonka viskositeetti on oikea. Jos viskositeetti on liian suuri tai pieni, syöttömittauksesta tulee virheellinen.
- Laske syöttönopeus minuuttia kohti. Mitä pidempi mittausaika on, sitä tarkempi mittaus.

#### NOTA:

Quando si misura la portata della pompa dell'olio, osservare le precauzioni seguenti.

- La temperatura dell'olio motore deve essere compresa tra 10 e 30°C (50 e 86°F).
- Prima di misurare la portata della pompa dell'olio, spurgare completamente l'aria dall'impianto di iniezione olio ed assicurarsi che l'olio che fuoriesce dal tubo flessibile di alimentazione dell'olio non contenga bolle d'aria.
- Quando si utilizza il cilindro graduato, assicurarsi che le pareti del cilindro stesso non siano sporche d'olio motore, altrimenti la misurazione non sarà corretta.
- Utilizzare solo l'olio motore specificato della viscosità appropriata. Se la viscosità è eccessiva o insufficiente, la misurazione della portata risulterà errata.
- Calcolare la portata al minuto. La precisione della misurazione è direttamente proporzionale alla durata della misurazione stessa.

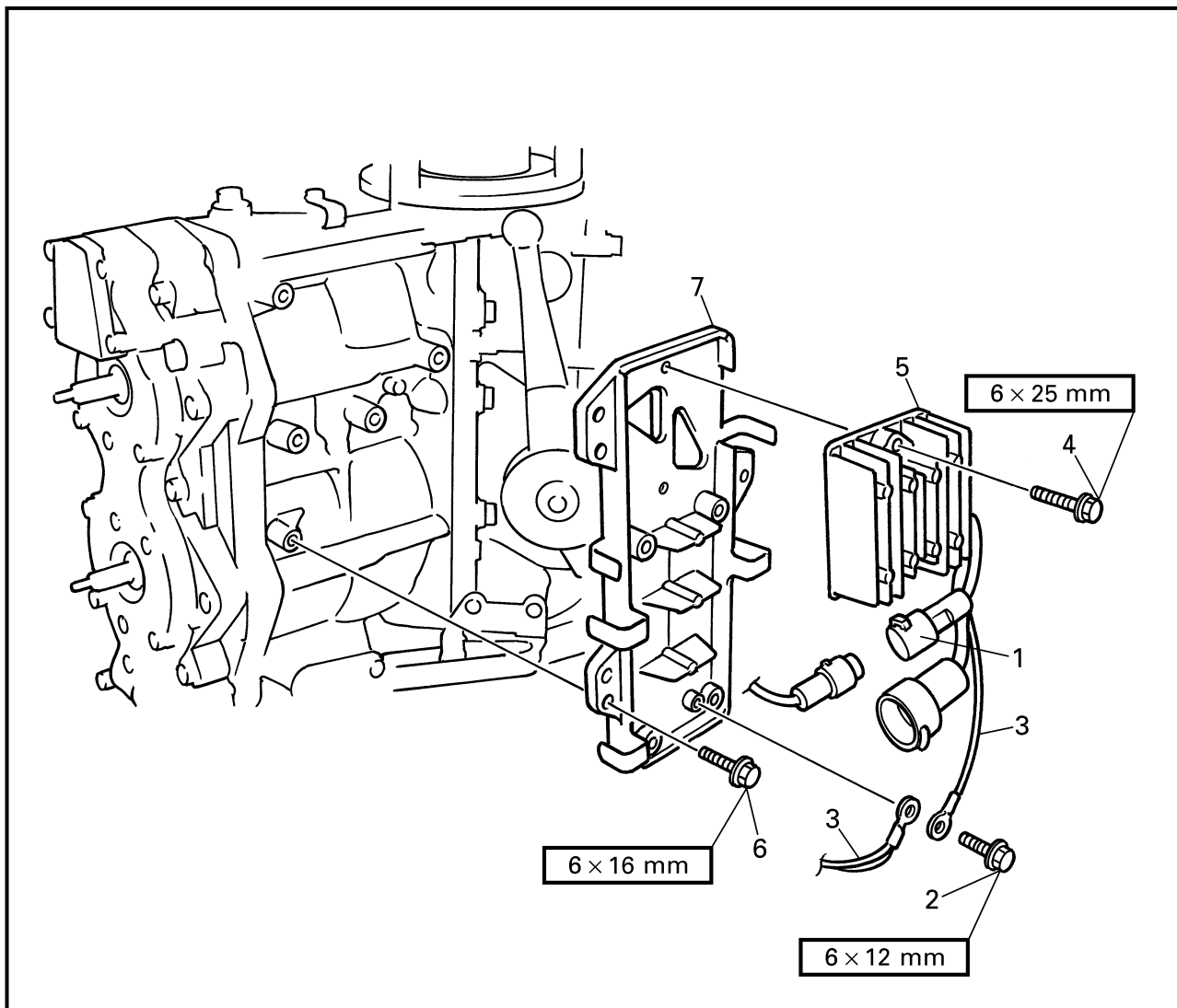


Order	Job/Part	Q'ty	Remarks
10	Oil pump link rod	1	
11	Choke link rod	1	
12	Fuel enrichment valve link rod	1	
13	Throttle link rod	1	
14	Nut	8	
15	Carburetor #1	1	
16	Gasket	2	<b>Not reusable</b>
17	Plastic locking tie	2	<b>Not reusable</b>
18	Carburetor #2	1	

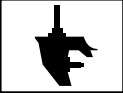
For installation, reverse the removal procedure.



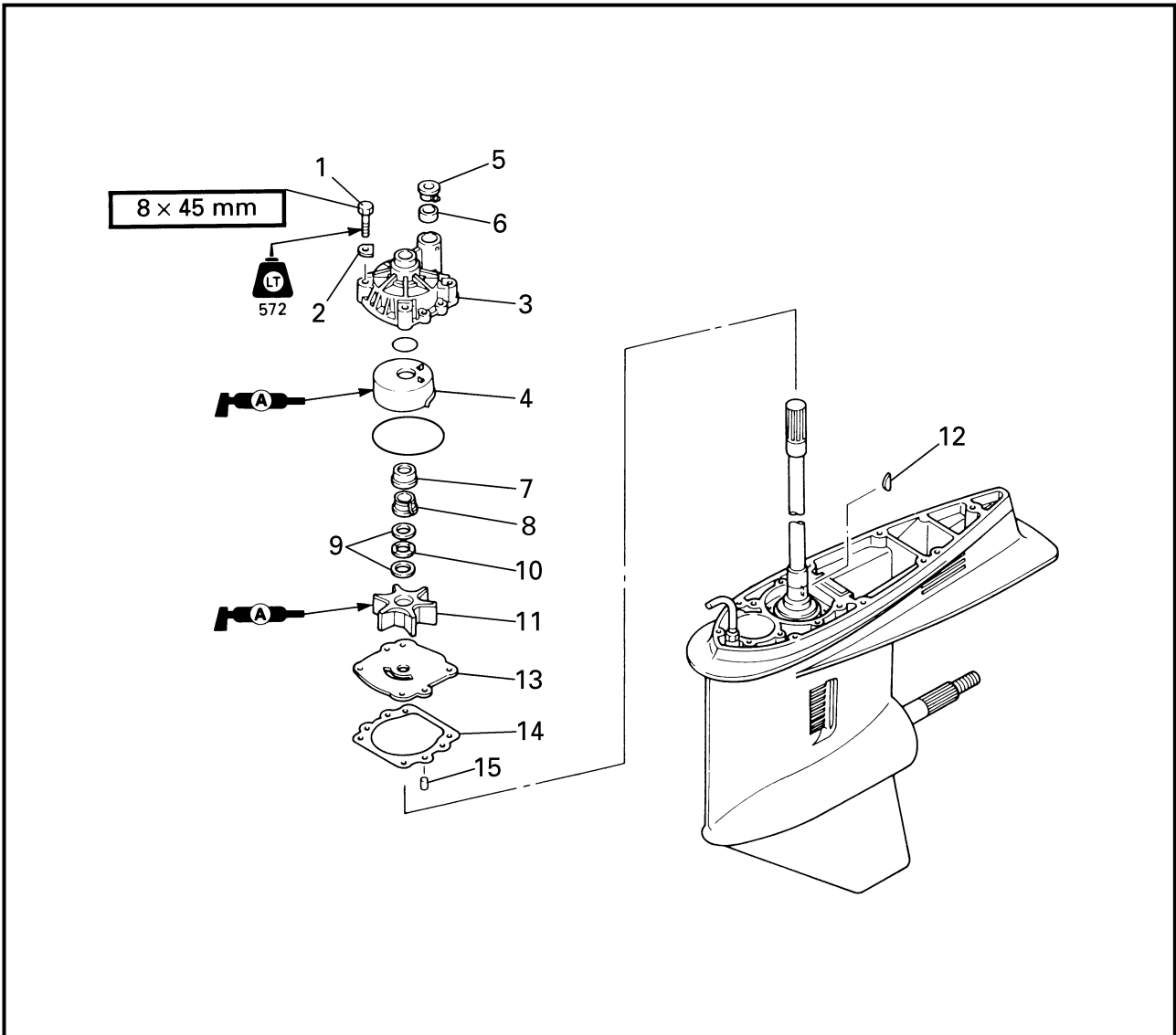
**RECTIFIER/REGULATOR  
REMOVING/INSTALLING THE RECTIFIER/REGULATOR  
(OIL INJECTION EXCEPT FOR 115BETO MODELS)**



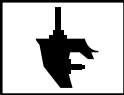
Order	Job/Part	Q'ty	Remarks
	Rectifier/regulator cover		Refer to "STATOR ASSEMBLY" on page 5-18.
	Lighting coil coupler		Refer to "STATOR ASSEMBLY" on page 5-18.
1	Rectifier/regulator coupler	1	
2	Bolt	1	
3	Ground lead	2	
4	Bolt	2	
5	Rectifier/regulator	1	
6	Bolt	3	
7	Rectifier/regulator bracket	1	
			For installation, reverse the removal procedure.



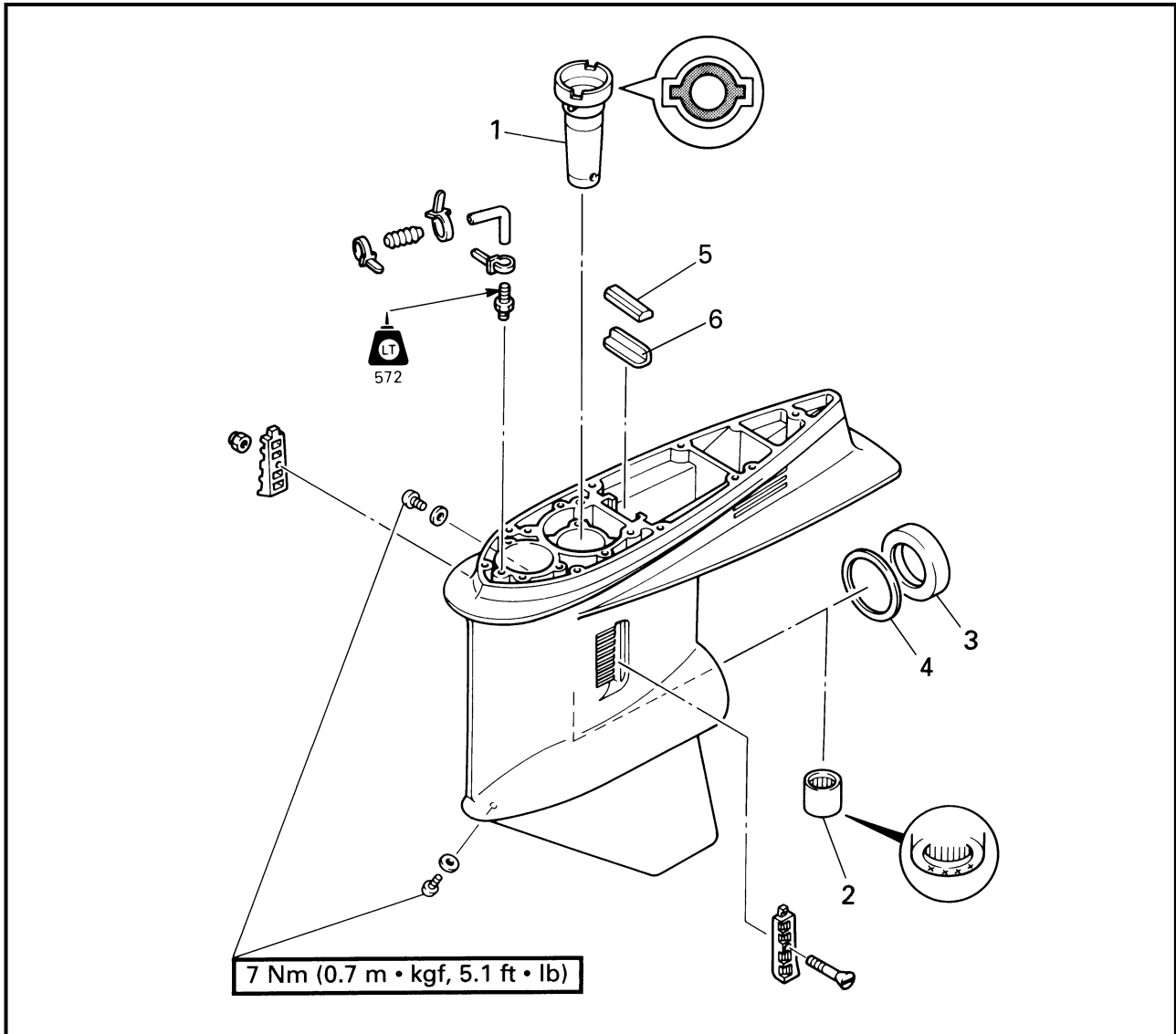
**WATER PUMP (REGULAR ROTATION MODELS)  
REMOVING/INSTALLING THE WATER PUMP (EXCEPT FOR B115)**



Order	Job/Part	Q'ty	Remarks
	Lower unit		Refer to "LOWER UNIT (REGULAR ROTATION MODELS)" on page 6-1.
1	Bolt	4	
2	Plate washer	4	
3	Impeller housing	1	
4	Impeller housing cup	1	
5	Grommet	1	
6	Spacer	1	
7	Collar	1	
			Continued on next page.



**LOWER CASE ASSEMBLY (REGULAR ROTATION MODELS)  
DISASSEMBLING/ASSEMBLING THE LOWER CASE ASSEMBLY  
(EXCEPT FOR B115)**

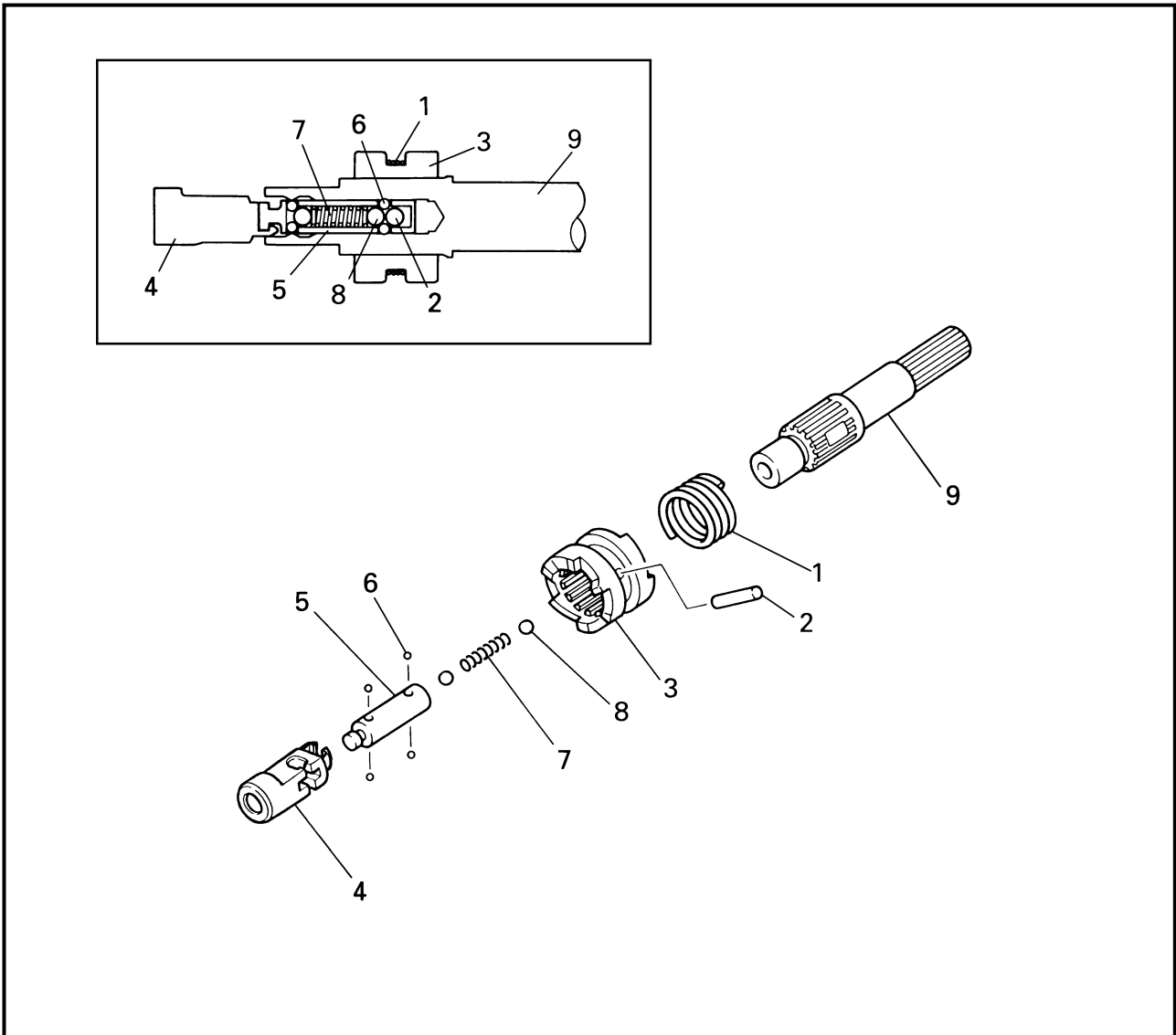


Order	Job/Part	Q'ty	Remarks
	Forward gear		Refer to "DRIVE SHAFT (REGULAR ROTATION MODELS)" on page 6-21.
1	Drive shaft sleeve	1	
2	Needle bearing	1	
3	Tapered roller bearing outer race	1	
4	Forward gear shim	*	
5	Water seal	1	
6	Plate	1	
			For assembly, reverse the disassembly procedure.

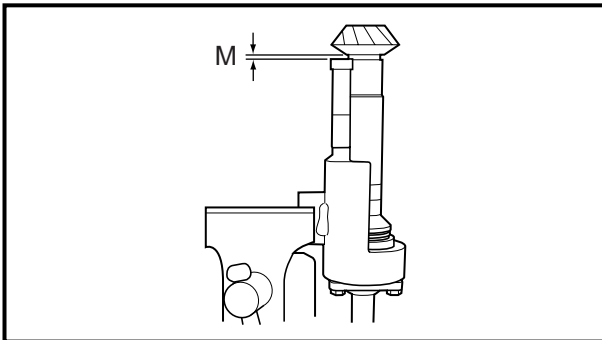
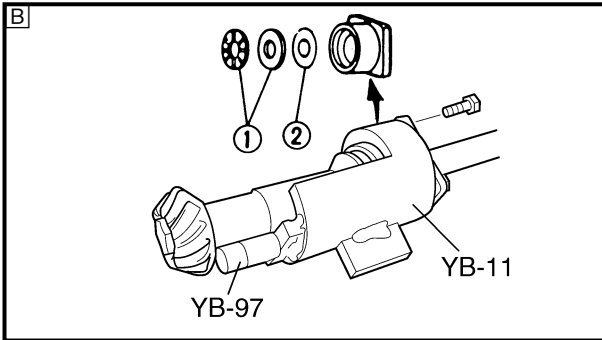
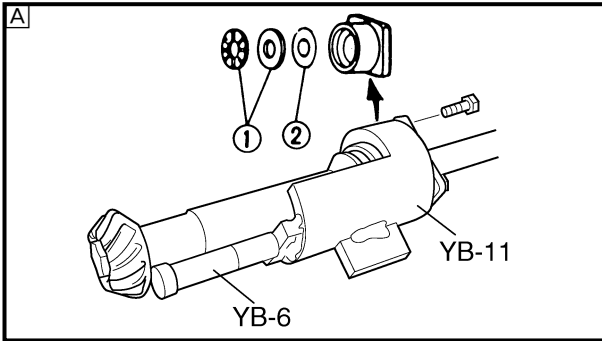
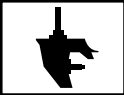
\*: As required



**DISASSEMBLING/ASSEMBLING THE FRONT PROPELLER SHAFT ASSEMBLY**



Order	Job/Part	Q'ty	Remarks
1	Spring	1	For assembly, reverse the disassembly procedure.
2	Pin	1	
3	Dog clutch	1	
4	Shift rod joint	1	
5	Shift rod joint slider	1	
6	Ball	4	
7	Spring	1	
8	Ball	2	
9	Front propeller shaft	1	



(2) Install the pinion height gauge, drive shaft, thrust bearing ①, and shim(s) ②.

	<b>Pinion height gauge</b> <b>YB-34432-6, -11, -97</b>
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- Ⓐ Except for B115
- Ⓑ For B115

**NOTE:** \_\_\_\_\_  
If the original shim(s) is unavailable, start with a 0.50-mm shim.

(3) Install the pinion and pinion nut.

	<b>Pinion nut</b> <b>95 Nm (9.5 m • kgf, 69 ft • lb)</b>
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(4) Measure the specified measurement (M).

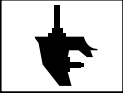
- NOTE:** \_\_\_\_\_
- Measure the clearance between the pinion height gauge and the lower surface of the pinion as shown.
  - Perform the same measurement at three points on the pinion.
  - Find the average of the measurements (M).

2. Adjust:

- Shim thickness (T3)  
Remove or add shim(s).

	<b>Available shim thickness</b> <b>0.10, 0.12, 0.15, 0.18, 0.30, 0.40</b> <b>and 0.50 mm</b>
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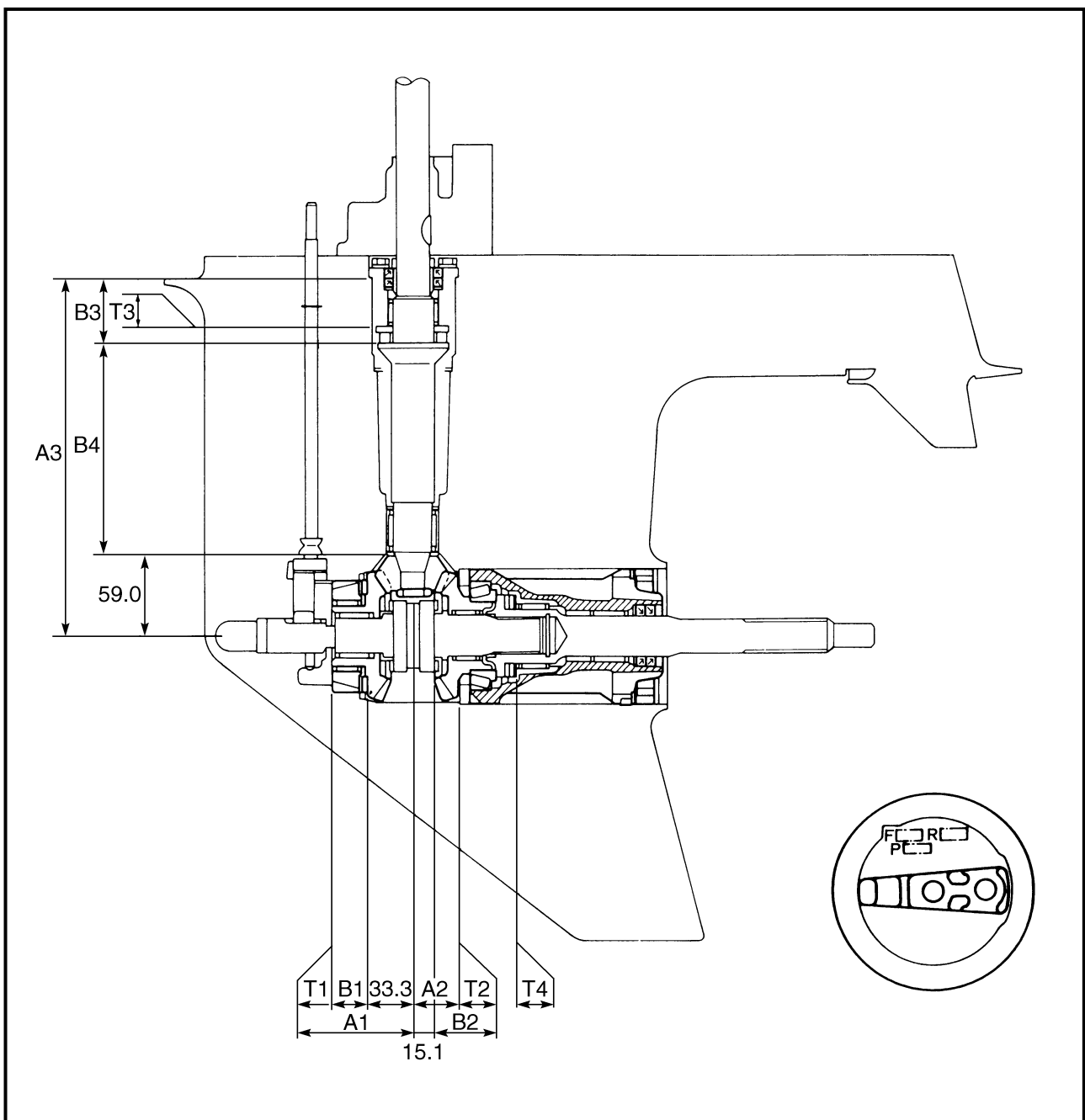
**NOTE:** \_\_\_\_\_  
(M0) – (M) should be as close to “0” as possible.

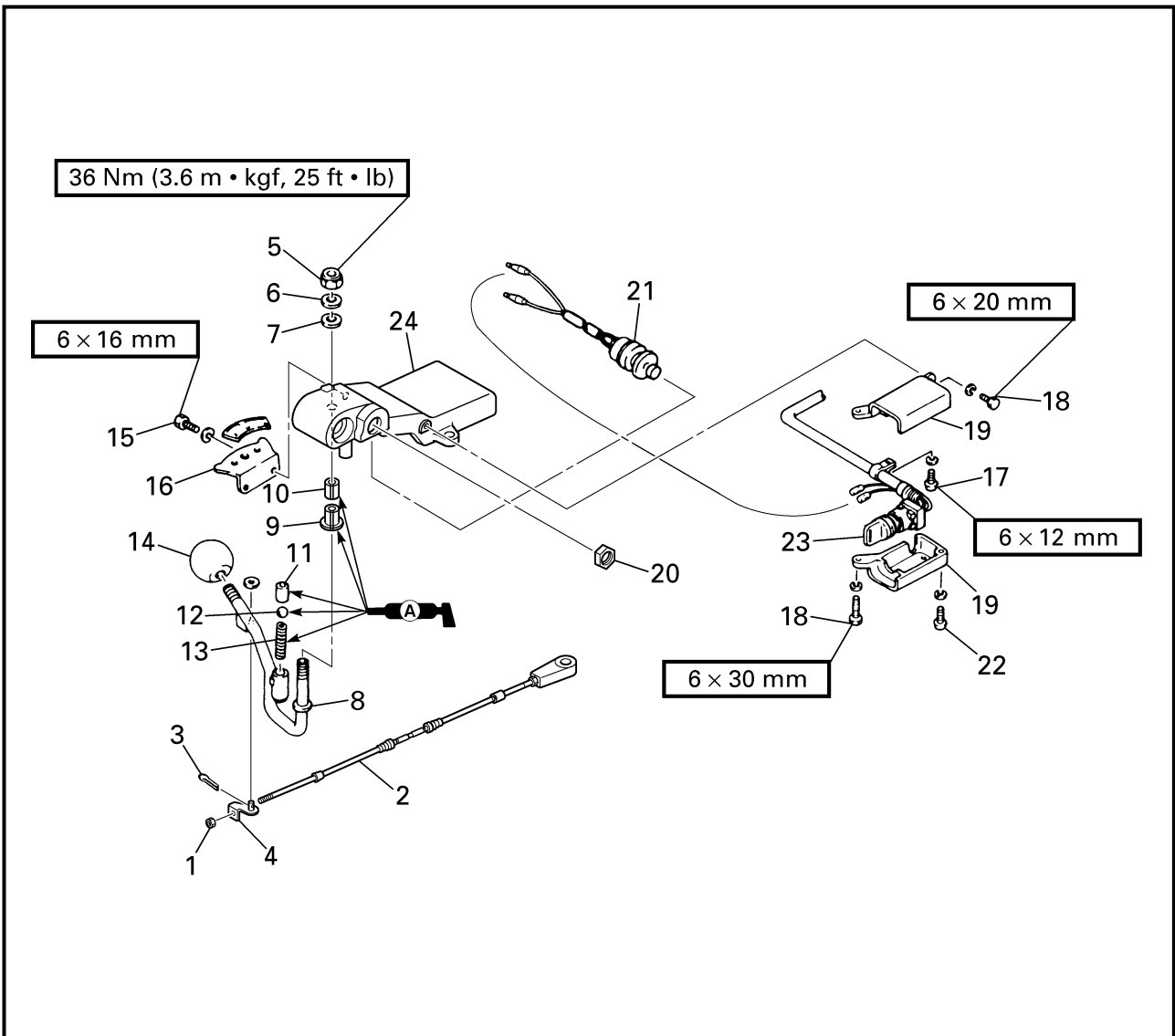


SHIMMING (COUNTER ROTATION MODELS)

**NOTE:**

- There is no need to select shims when reassembling with the original case and inner parts.
- Shim calculations are required when reassembling with the original inner parts and a new case (the difference between the original inner parts and the new case).
- Measurements and adjustments are required when replacing the inner part(s).





Order	Job/Part	Q'ty	Remarks
9	Bushing	1	
10	Bushing	1	
11	Collar	1	
12	Ball	1	
13	Spring	1	
14	Shift grip	1	
15	Bolt	2	
16	Shift arm guide	1	

Continued on next page.



## STYRARM

### DEMONTERING/MONTERING AV STYRARM

Följd	Jobb/Del	Antal	Anmärkningar
	Övre växelhus		Se "ÖVRE VÄXELHUSUPPSÄTTNING" på sidan 7-17.
1	Fjädersring	1	
2	Ok, styrarm	1	
3	Bricka	1	
4	Bricka	1	
5	O-ring	1	
6	Styrarm	1	
7	Bricka	1	
8	Bussning	2	
9	Vridfästsuppsättning	1	
			För montering, utför demonteringen i omvänd ordningsföljd.

## OHJAUSVARSI

### OHJAUSVARREN IRROTUS JA ASENNUS

Järjestys	Työ/osa	kpl	Huomautuksia
	Yläkotelo		Katso "YLÄKOTELO" sivulla 7-17.
1	Lukkorengas	1	
2	Ohjausvarren kannatin	1	
3	Aluslaatta	1	
4	Aluslaatta	1	
5	O-rengas	1	
6	Ohjausvarsi	1	
7	Aluslaatta	1	
8	Holkki	2	
9	Kääntöjalusta	1	
			Kokoa osat purkutoimiin nähden päinvastaisessa järjestyksessä.

## BRACCIO DELLO STERZO

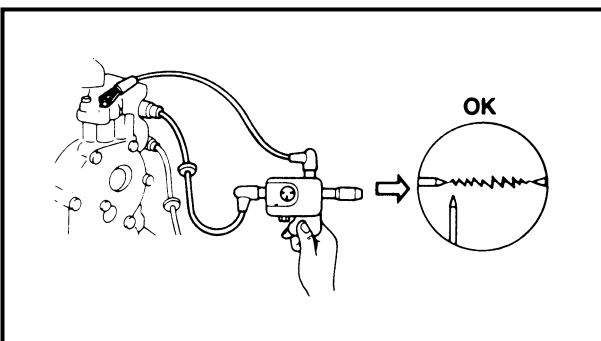
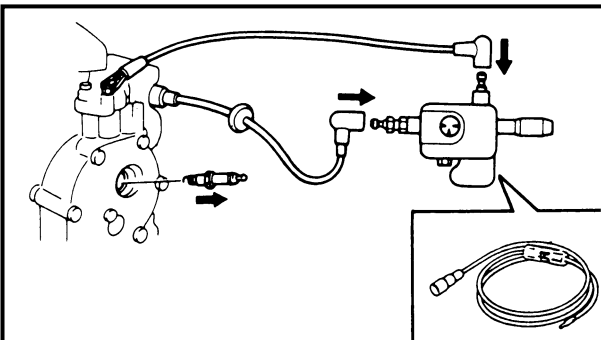
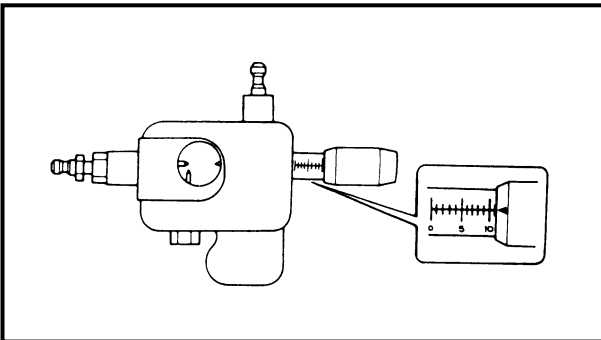
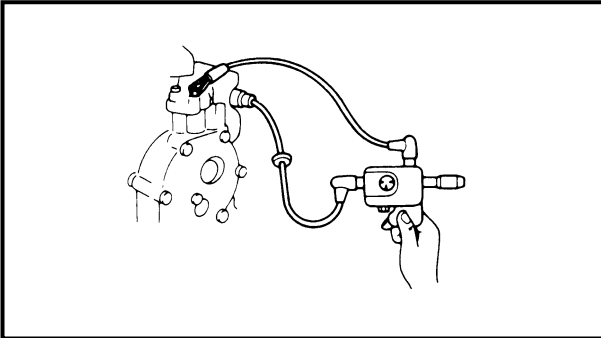
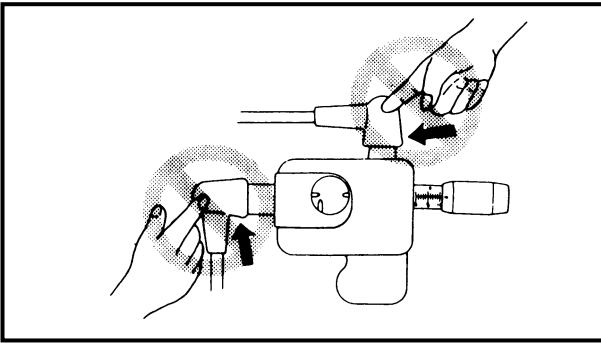
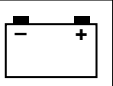
### RIMOZIONE/INSTALLAZIONE DEL BRACCIO DELLO STERZO

Ordine	Lavoro/parte	Q.tà	Commenti
	Gruppo scatola superiore		Vedere "SCATOLA SUPERIORE" a pagina 7-17.
1	Anello elastico di arresto	1	
2	Forcella del braccio dello sterzo	1	
3	Rondella	1	
4	Rondella	1	
5	O-ring	1	
6	Braccio dello sterzo	1	
7	Rondella	1	
8	Boccola	2	
9	Staffa girevole	1	
			Per l'installazione, invertire la procedura di rimozione.

Följd	Jobb/Del	Antal	Anmärkningar
7	Backventilsuppsättning	1	För montering, utför demonteringen i omvänd ordningsföljd.
8	Växelpump	1	
9	Skyttelventil	2	
10	Backventil	2	
11	Säkerhetsventilsuppsättning, upp	1	
12	Säkerhetsventilsuppsättning, ned	1	

Järjestys	Työ/osa	kpl	Huomautuksia
7	Sulkuventtiili	1	Kokoa osat purkutoimiin nähden päinvastaisessa järjestyksessä.
8	Hammaspyöräpumppu	1	
9	Sukkulaventtiili	2	
10	Sulkuventtiili	2	
11	Yläasennon varoventtiili	1	
12	Ala-asennon varoventtiili	1	

Ordine	Lavoro/parte	Q.tà	Commenti
7	Valvola di ritegno	1	Per l'installazione, invertire la procedura di rimozione.
8	Pompa ad ingranaggi	1	
9	Valvola a navetta	2	
10	Valvola di ritegno	2	
11	Valvola di sicurezza superiore	1	
12	Valvola di sicurezza inferiore	1	



## INSPECTING THE IGNITION SPARK GAP

### ⚠ WARNING

- Do not touch any of the connections of the spark gap tester lead wires.
- Do not let sparks leak out of the removed spark plug cap.
- Keep flammable gas or liquids away, since this test can produce sparks.

Inspect:

- Ignition spark gap  
Above specification → Replace the spark plug.  
Below specification → Inspect the CDI unit output.



**Ignition spark gap**  
9 mm (0.4 in)

### Inspecting steps

- (1) Remove the spark plugs from the engine.
- (2) Connect a spark plug cap to the spark gap tester.
- (3) Set the spark gap length on the adjusting knob.



**Spark gap tester**  
YM-34487 / 90890-06754

- (4) Crank the engine and observe the spark through the discharge window of the spark gap tester.