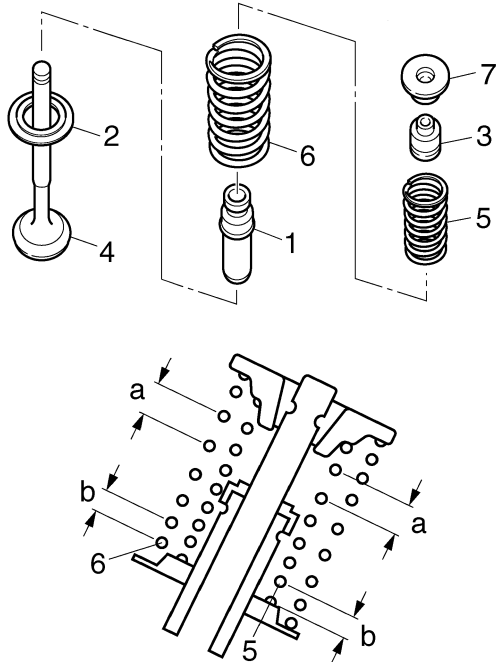


VALVES AND VALVE SPRINGS

- Upper spring seat “7”
(into the cylinder head)

NOTE:

Install the valve springs with the larger pitch “a” facing up.



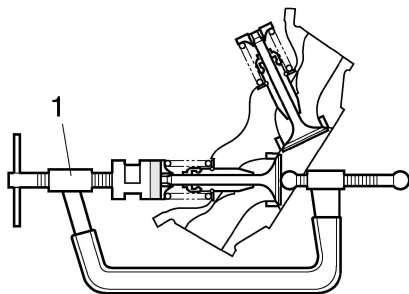
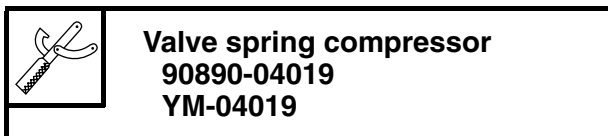
b. Smaller pitch

4. Install:

- Valve cotters

NOTE:

Install the valve cotters by compressing the valve springs with the valve spring compressor set “1”.

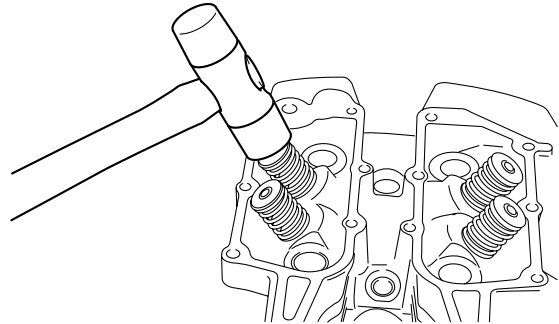


5. To secure the valve cotters onto the valve stem, lightly tap the valve tip with a soft-face hammer.

ECA13800

CAUTION:

Hitting the valve tip with excessive force could damage the valve.

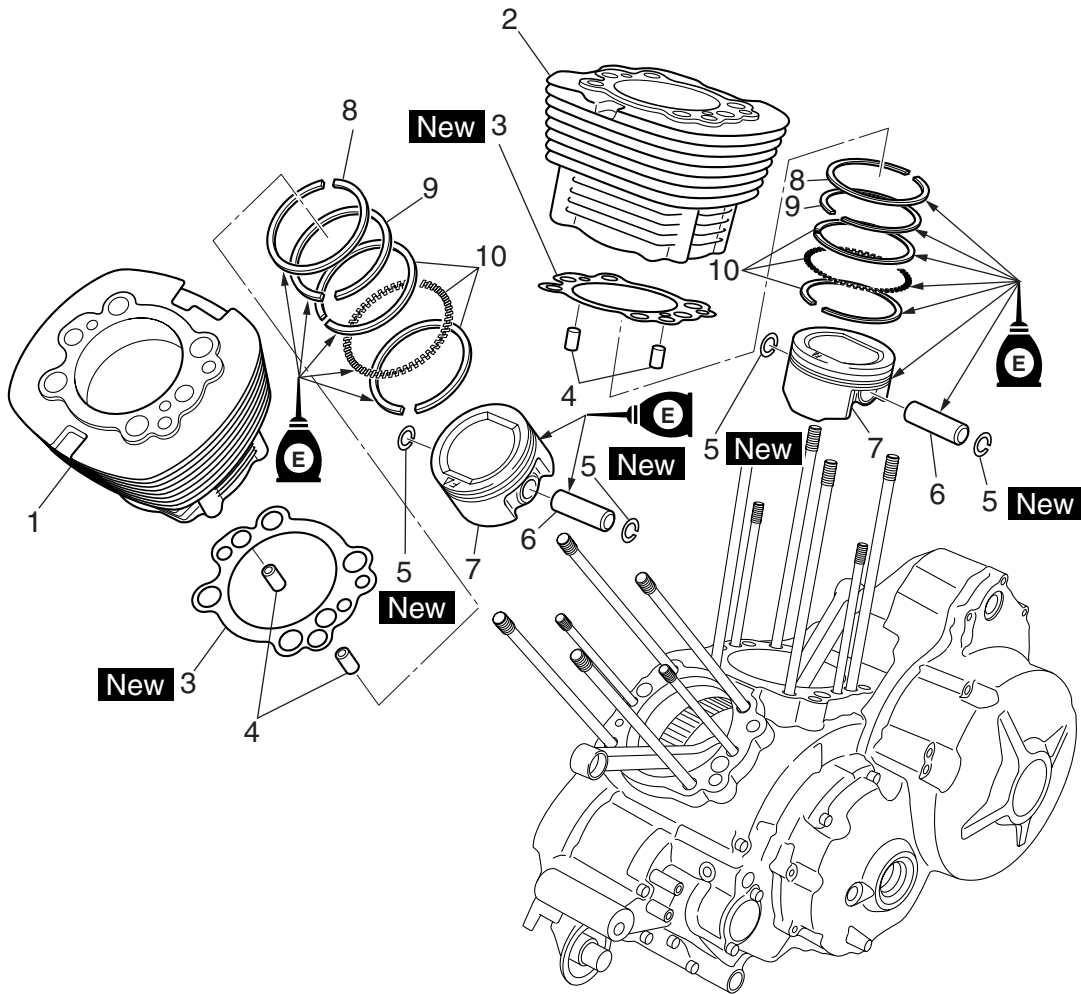


CYLINDERS AND PISTONS

EAS24360

CYLINDERS AND PISTONS

Removing the cylinders and pistons



Order	Job/Parts to remove	Q'ty	Remarks
	Cylinder head		Refer to "CYLINDER HEADS" on page 5-31.
1	Front cylinder	1	
2	Rear cylinder	1	
3	Cylinder gasket	2	
4	Dowel pin	4	
5	Piston pin clip	4	
6	Piston pin	2	
7	Piston	2	
8	Top ring	2	
9	2nd ring	2	
10	Oil ring	2	
			For installation, reverse the removal procedure.

CYLINDERS AND PISTONS

EAS24380

REMOVING THE PISTONS

The following procedure applies to all of the pistons.

- Remove:
 - Piston pin clips "1"
 - Piston pin "2"
 - Piston "3"

ECA13810

CAUTION:

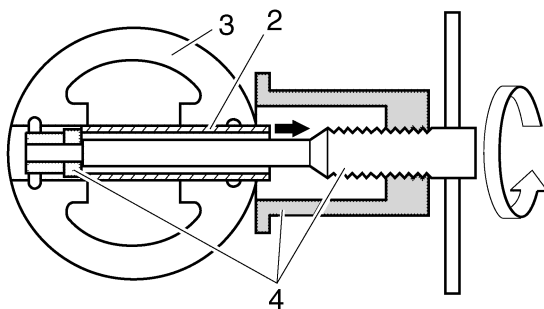
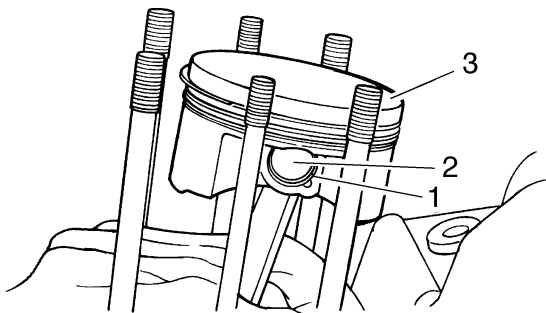
Do not use a hammer to drive the piston pin out.

NOTE:

- Before removing the piston pin clip, cover the crankcase opening with a clean rag to prevent the piston pin clip from falling into the crankcase.
- For reference during installation, put an identification mark on each piston crown.
- Before removing the piston pin, deburr the piston pin clip's groove and the piston's pin bore area. If both areas are deburred and the piston pin is still difficult to remove, remove it with the piston pin puller set "4".



**Piston pin puller set
90890-01304
Piston pin puller
YU-01304**

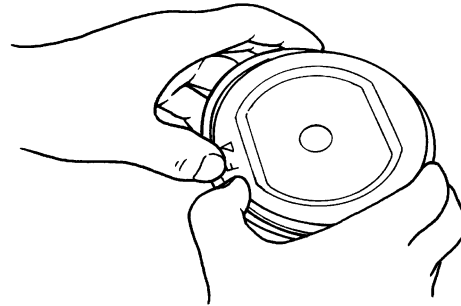


- Remove:
 - Top ring
 - 2nd ring

- Oil ring

NOTE:

When removing a piston ring, open the end gap with your fingers and lift the other side of the ring over the piston crown.



EAS24410

CHECKING THE CYLINDERS AND PISTONS

The following procedure applies to all of the cylinders and pistons.

- Check:
 - Piston wall
 - Cylinder wall

Vertical scratches → Rebore or replace the cylinder, and replace the piston and piston rings as a set.
- Measure:
 - Piston-to-cylinder clearance

- Measure cylinder bore "C" with the cylinder bore gauge.

NOTE:

Measure cylinder bore "C" by taking side-to-side and front-to-back measurements of the cylinder. Then, find the average of the measurements.



Cylinder Bore

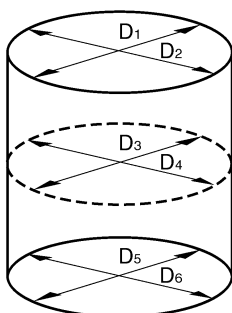
97.000–97.010 mm (3.8189–3.8193 in)
**Taper limit
0.050 mm (0.0020 in)**
**Out of round limit
0.050 mm (0.0020 in)**

"C" = maximum of D_1 – D_6

"T" = maximum of D_1 or D_2 - maximum of D_5 or D_6

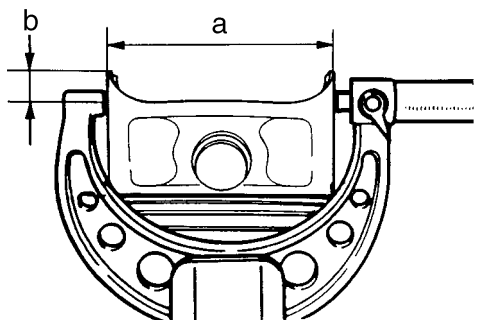
"R" = maximum of D_1 , D_3 or D_5 - minimum of D_2 , D_4 or D_6

CYLINDERS AND PISTONS



- b. If out of specification, rebores or replace the cylinder, and replace the piston and piston rings as a set.
- c. Measure piston skirt diameter D "a" with the micrometer.

Piston Diameter D
96.960–96.975 mm (3.8173–3.8179 in)



- b. 10 mm (0.39 in) from the bottom edge of the piston
- d. If out of specification, replace the piston and piston rings as a set.
- e. Calculate the piston-to-cylinder clearance with the following formula.

- Piston-to-cylinder clearance =
Cylinder bore "C" -
Piston skirt diameter "D"

Piston-to-cylinder clearance
0.025–0.050 mm (0.0010–0.0020 in)
Limit
0.15 mm (0.0059 in)

- f. If out of specification, rebores or replace the cylinder, and replace the piston and piston rings as a set.



EAS24430

CHECKING THE PISTON RINGS

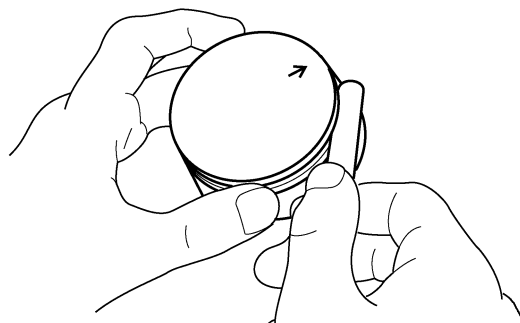
1. Measure:

- Piston ring side clearance
Out of specification → Replace the piston and piston rings as a set.

NOTE:

Before measuring the piston ring side clearance, eliminate any carbon deposits from the piston ring grooves and piston rings.

Piston ring
Top ring
Ring side clearance
0.030–0.080 mm (0.0012–0.0032 in)
Limit
0.120 mm (0.0047 in)
2nd ring
Ring side clearance
0.030–0.070 mm (0.0012–0.0028 in)
Limit
0.12 mm (0.0047 in)

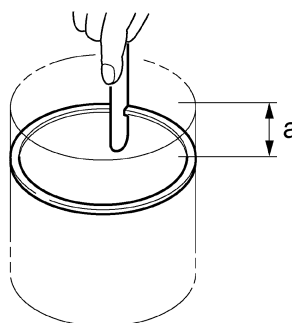


2. Install:

- Piston ring
(into the cylinder)

NOTE:

Level the piston ring into the cylinder with the piston crown.



- a. 10 mm (0.39 in)

CYLINDERS AND PISTONS

3. Measure:

- Piston ring end gap
Out of specification → Replace the piston ring.

NOTE: _____

The oil ring expander spacer's end gap cannot be measured. If the oil ring rail's gap is excessive, replace all three piston rings.



Piston ring

Top ring

End gap (installed)
0.30–0.50 mm (0.01–0.02 in)

Limit
0.70 mm (0.0276 in)

2nd ring

End gap (installed)
0.30–0.45 mm (0.01–0.02 in)

Limit
0.80 mm (0.0315 in)

Oil ring

End gap (installed)
0.20–0.70 mm (0.01–0.03 in)

EAS24440

CHECKING THE PISTON PINS

The following procedure applies to all of the piston pins.

1. Check:

- Piston pin
Blue discoloration/grooves → Replace the piston pin and then check the lubrication system.

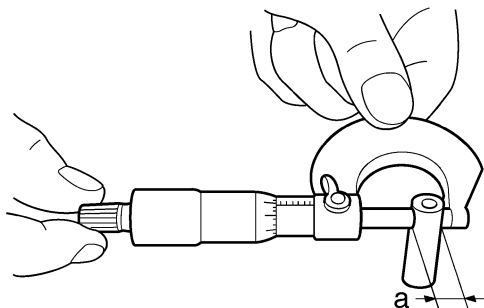
2. Measure:

- Piston pin outside diameter “a”
Out of specification → Replace the piston pin.



Piston pin outside diameter
21.991–22.000 mm (0.8658–0.8661 in)

Limit
21.971 mm (0.8650 in)



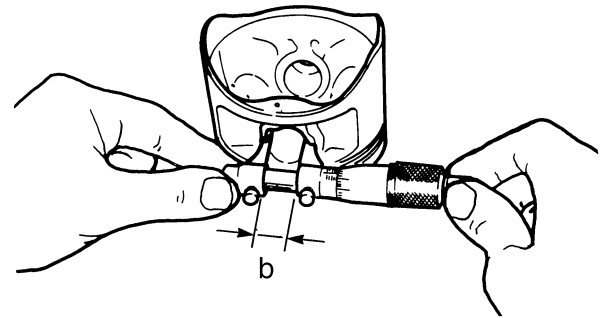
3. Measure:

- Piston pin bore diameter “b”
Out of specification → Replace the piston.



Piston pin bore inside diameter
22.004–22.015 mm (0.8663–0.8667 in)

Limit
22.045 mm (0.8679 in)



4. Calculate:

- Piston-pin-to-piston-pin-bore clearance
Out of specification → Replace the piston pin and piston as a set.

• Piston-pin-to-piston-pin-bore clearance =
Piston pin bore diameter “b” -
Piston pin outside diameter “a”



Piston-pin-to-piston-pin-bore clearance

0.004–0.024 mm (0.00016–0.00094 in)

Limit
0.074 mm (0.00291 in)

EAS24460

INSTALLING THE PISTONS AND CYLINDERS

The following procedure applies to all of the pistons and cylinders.

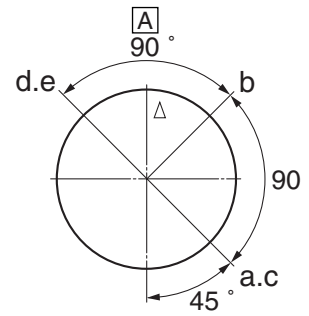
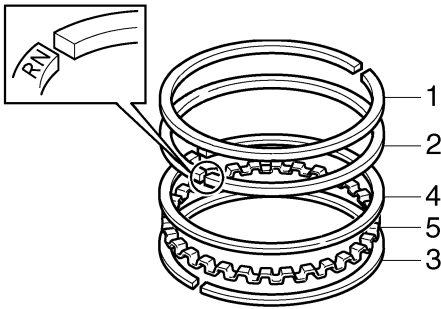
1. Install:

- Top ring “1”
- 2nd ring “2”
- Lower oil ring rail “3”
- Upper oil ring rail “4”
- Oil ring expander “5”

NOTE: _____

Be sure to install the piston rings so that the manufacturer's marks or numbers face up.

CYLINDERS AND PISTONS



2. Install:

- Piston "1"
- Piston pin "2"
- Piston pin clips "3" **New**

NOTE:

- Apply engine oil onto the piston pin.
- Make sure the arrow mark "a" on the piston faces towards the front of the vehicle.
- Before installing the piston pin clip, cover the crankcase opening with a clean rag to prevent the clip from falling into the crankcase.
- Reinstall each piston into its original cylinder (numbering order starting from the left: #1 to #2).

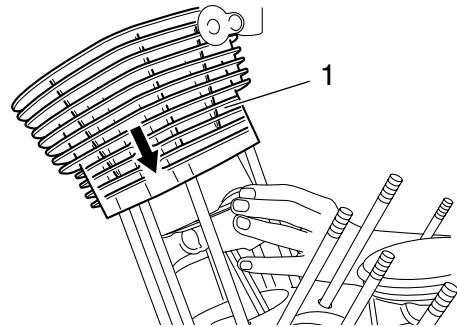
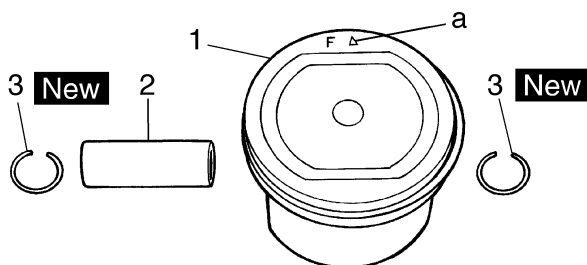
- a. Top ring
- b. Upper oil ring rail
- c. Oil ring expander
- d. Lower oil ring rail
- e. 2nd ring
- A. forward

5. Install:

- Cylinder "1"

NOTE:

- While compressing the piston rings with one hand, install the cylinder with the other hand.



3. Lubricate:

- Piston
- Piston rings
- Cylinder
(with the recommended lubricant)



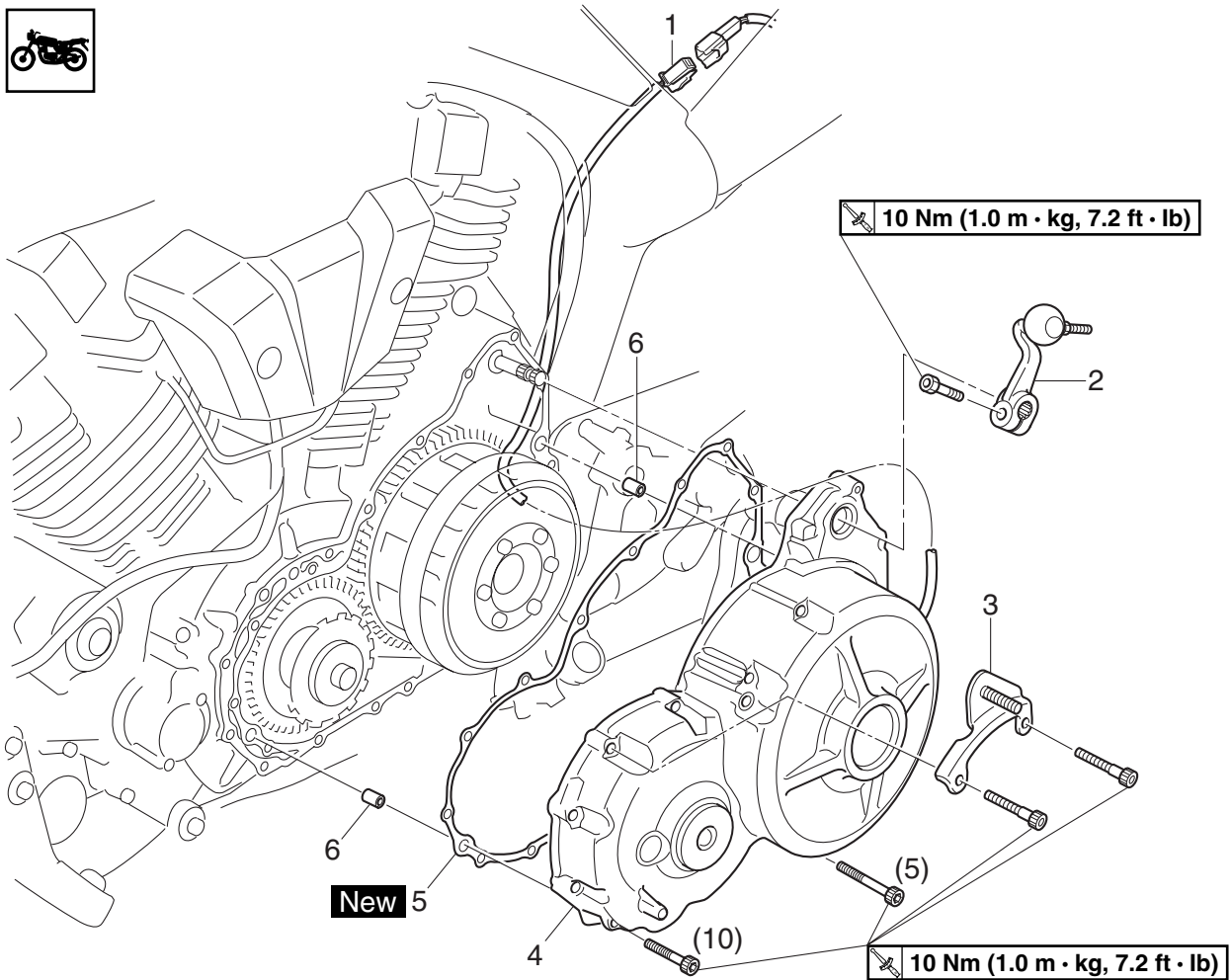
4. Offset:

- Piston ring end gaps

EAS25060

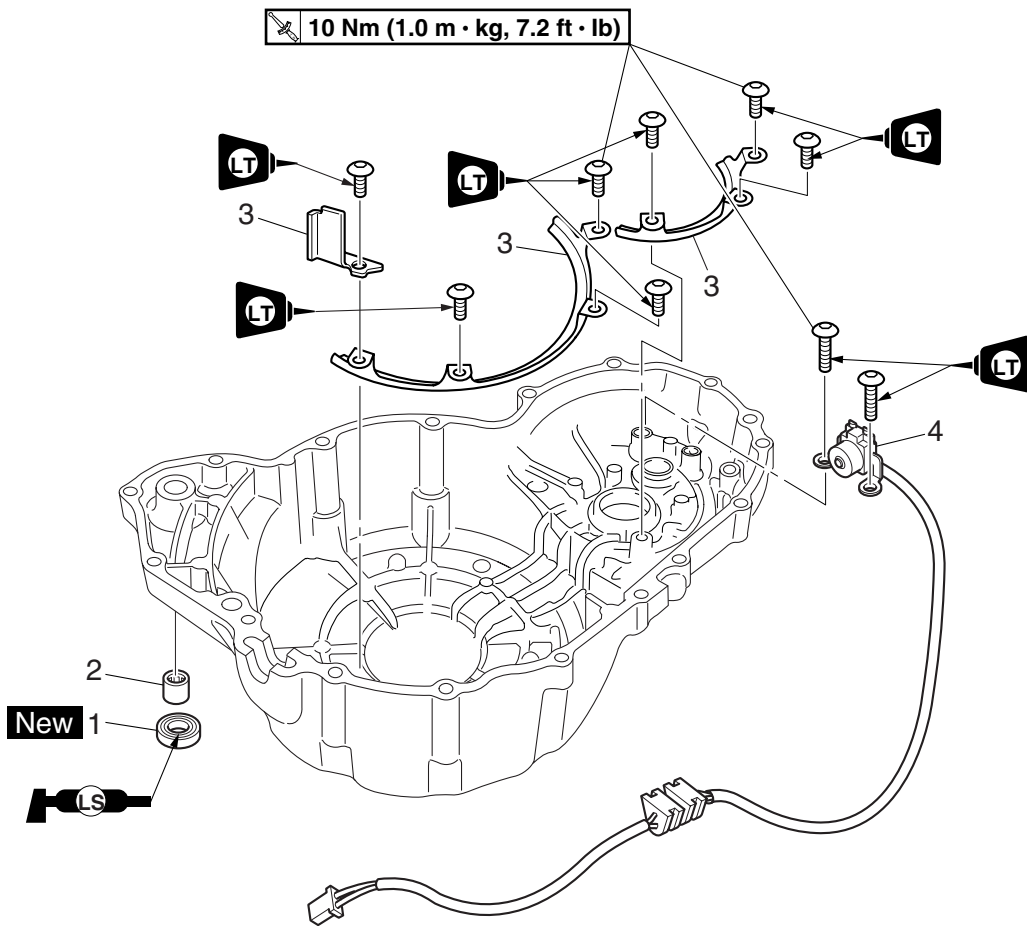
CLUTCH

Removing the clutch cover



Order	Job/Parts to remove	Q'ty	Remarks
	Engine oil		Drain. Refer to "CHANGING THE ENGINE OIL" on page 3-11.
	Battery box/Air duct		Refer to "GENERAL CHASSIS" on page 4-1.
	Oil tank/Shift rod		Refer to "ENGINE REMOVAL" on page 5-1.
1	Crankshaft position sensor coupler	1	Disconnect.
2	Shift arm	1	
3	Oil tank bracket	1	
4	Clutch cover	1	
5	Clutch cover gasket	1	
6	Dowel pin	2	
			For installation, reverse the removal procedure.

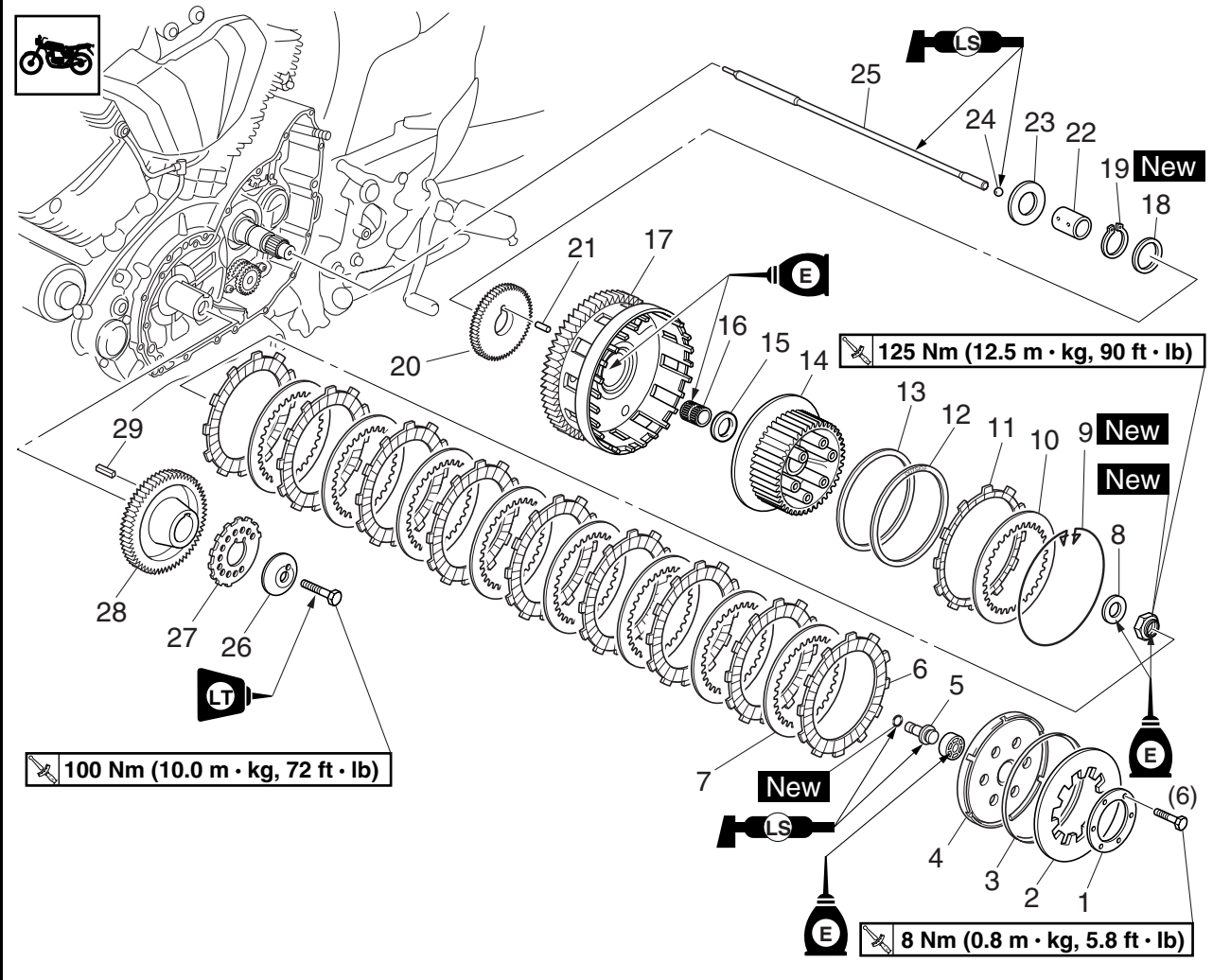
Removing the crankshaft position sensor



Order	Job/Parts to remove	Q'ty	Remarks
1	Oil seal	1	
2	Bearing	1	
3	Crankshaft position sensor lead holder	3	
4	Crankshaft position sensor	1	
			For installation, reverse the removal procedure.

CLUTCH

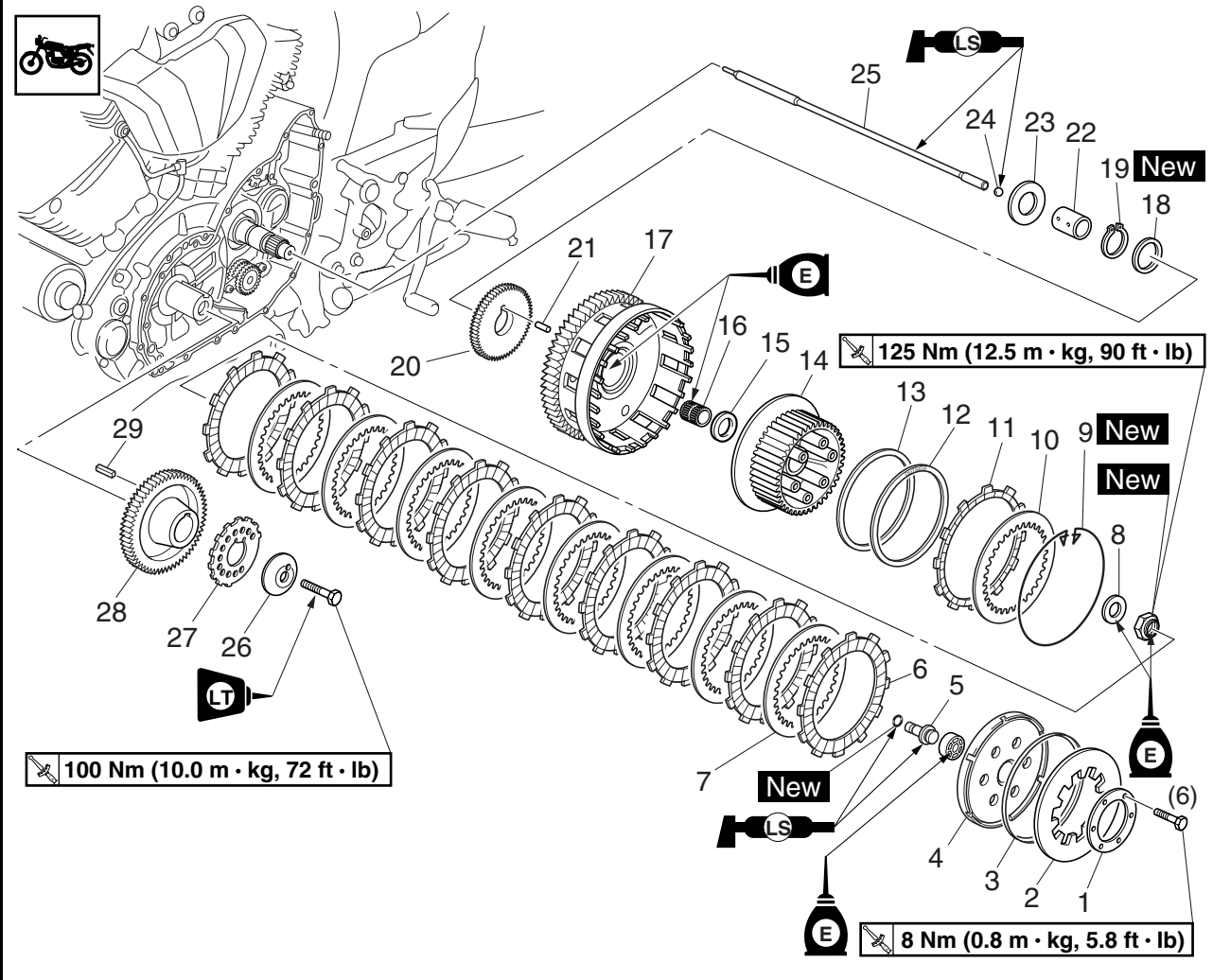
Removing the clutch



Order	Job/Parts to remove	Q'ty	Remarks
1	Clutch spring plate retainer	1	
2	Clutch spring plate	1	
3	Clutch spring plate seat	1	
4	Pressure plate	1	
5	Short clutch push rod	1	
6	Friction plate 1	9	
7	Clutch plate	8	
8	Conical spring washer	1	
9	Wire circlip	1	
10	Clutch plate	1	
11	Friction plate 2	1	
12	Clutch damper spring	1	
13	Clutch damper spring seat	1	
14	Clutch boss	1	
15	Thrust washer 1	1	
16	Bearing	1	
17	Clutch housing	1	

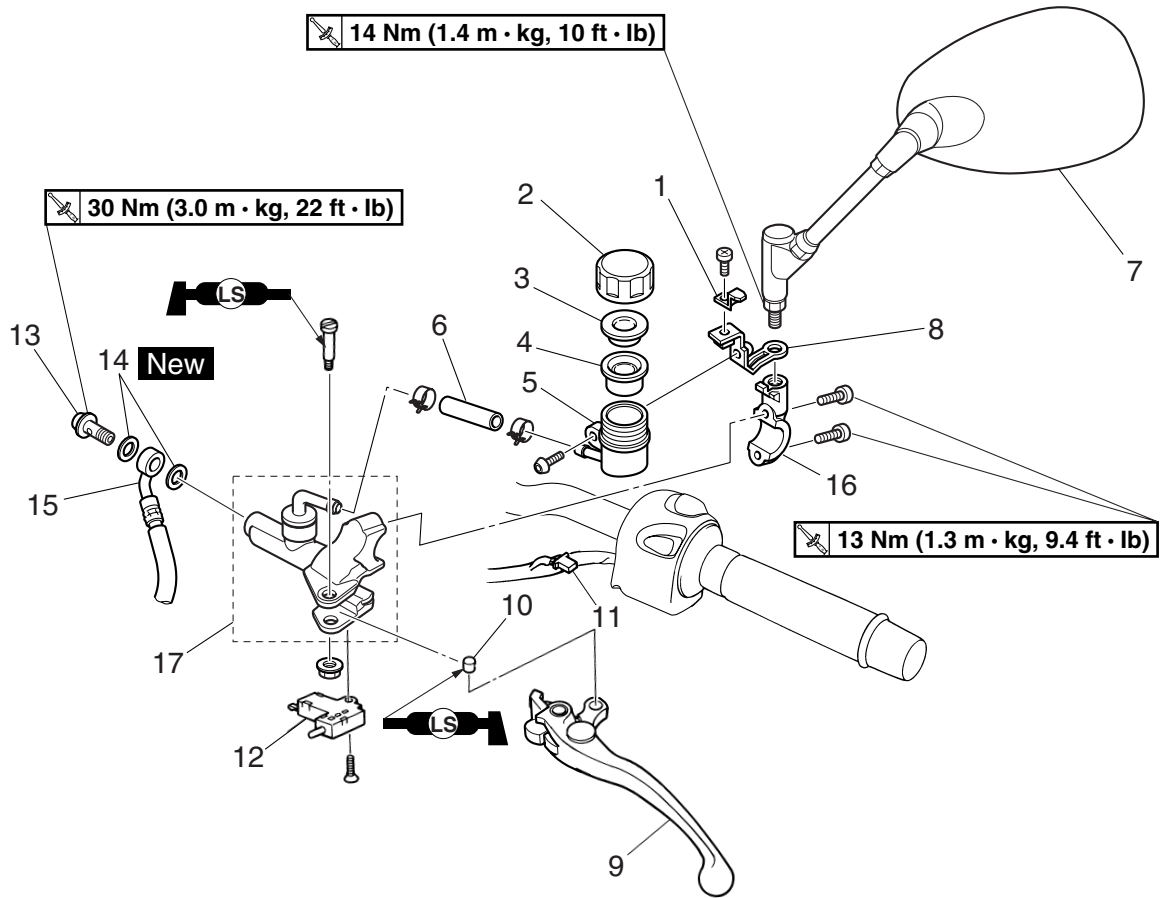
CLUTCH

Removing the clutch



Order	Job/Parts to remove	Q'ty	Remarks
18	Washer	1	
19	Circlip	1	
20	Oil pump drive gear	1	
21	Dowel pin	1	
22	Collar	1	
23	Thrust washer 2	1	
24	Ball	1	
25	Long clutch push rod	1	
26	Spacer	1	
27	Crankshaft position sensor rotor	1	
28	Primary drive gear	1	
29	Straight key	1	
			For installation, reverse the removal procedure.

Removing the clutch master cylinder



Order	Job/Parts to remove	Q'ty	Remarks
	Clutch fluid		Drain. Refer to "BLEEDING THE HYDRAULIC CLUTCH SYSTEM" on page 3-14.
1	Clutch fluid reservoir cap holder	1	
2	Clutch fluid reservoir cap	1	
3	Clutch fluid reservoir diaphragm holder	1	
4	Clutch fluid reservoir diaphragm	1	
5	Clutch fluid reservoir	1	
6	Clutch fluid reservoir hose	1	
7	Left rearview mirror	1	
8	Clutch fluid reservoir bracket	1	
9	Clutch lever	1	
10	Bushing	1	
11	Clutch switch coupler	1	Disconnect.
12	Clutch switch	1	
13	Clutch hose union bolt	1	
14	Copper washer	2	
15	Clutch hose	1	