

Group:	Service Manual Update
Bulletin No.:	SB-15-013
Issue Date:	1/30/2015

SERVICE INFORMATION BULLETIN

**Subject: CORRECTION OF WORKSHOP MANUAL FOR 2013MY-2015MY (HINO155, 155h, 195, 195h)
(ADDITION OF OVERHAUL OF THE POWER STEERING GEAR)**

The following is to inform you of the above caption. This service data should be attached to the relevant pages of the workshop manuals for maintenance and to use for servicing.

RELEVANT MODEL:

2013MY, 2014MY, 2015MY (HINO155, 155h, 195, 195h)

CONTENTS:

Addition of overhaul of the power steering gear

RELEVANT MANUALS:

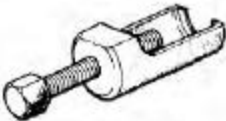
Model Year	MANUAL No.	CHAPTER	Page No.
2013MY	S1-LXJE01A, B, C	STEERING	10-5, 10-32
2014MY	S1-LXJE03A	STEERING	10-5, 10-32
2015MY	S1-LXJE05A	STEERING	10-5, 10-32

SERVICE INFORMATION BULLETIN

STEERING LINKAGE

EN01E10ZZZ020702001007

SST

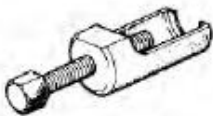
Shape	Part No.	Name	Remarks
	09610-20012	Pitman arm puller	For disconnecting the tie rod end
	09611-36020	Tie rod end puller	For disconnecting the tie rod end
	09930-00010	Drive shaft nut chisel	For staking the steering knuckle arm nut
	09950-40011	Puller B set	For disconnecting the tie rod end

SERVICE INFORMATION BULLETIN

RECIRCULATION BALL TYPE

EN01E10ZZZ020702001008

SST

Shape	Part No.	Name	Remarks
	09610-20012	Pitman arm puller	For disconnecting the steering drag link
	09950-40011	Puller B set	For removing a pitman arm ADD
 	S0965-71860	Inserter assembly A: For 40 mm {1.575 in.} For 45 mm {1.772 in.} For 48 mm {1.890 in.} For 53 mm {2.087 in.} For 58 mm {2.283 in.} (Used together with inserter assembly)	For disassembly and assembly of steering gear (Content of S0903-04180)
	S0969-91360	Needle	For disassembly and assembly of steering gear (Content of S0903-04180)

SERVICE INFORMATION BULLETIN

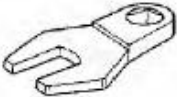
OIL AND GREASE AND OTHERS

Name	Remarks	
Power steering fluid	Replenishing of power steering fluid	ADD
HINO GENUINE SERIES Chassis grease or chassis grease (MIL-G-17740) (NLGI No.1 CALCIUM or LITHIUM-SOAP)	For applying each sliding part	

POWER STEERING PUMP

EN01E10ZZZ020702001009

SST

Shape	Part No.	Name	Remarks
	09612-24014 (J000072)	Steering gear housing overhaul tool set	For pressure feed hose tightening

OIL AND GREASE AND OTHERS

Name	Remarks
Power steering fluid	Replenishing of power steering fluid

SERVICE INFORMATION BULLETIN

10-68

STEERING/STEERING CONTROL

ADD

DISASSEMBLING THE POWER STEERING GEAR

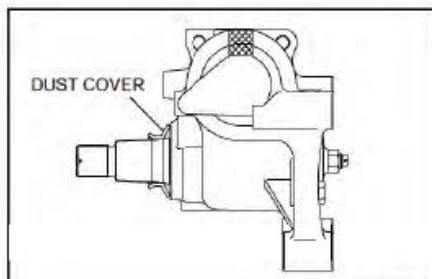
NOTICE

OBSERVE THE FOLLOWING INSTRUCTIONS BEFORE DISASSEMBLY AND ASSEMBLY.

1. All functional parts should be clean. Blow dirty parts off with dry compressed air, then clean them with volatile metal cleanser. Never use brushes or cloth.
2. Handle rubber parts, seals, etc., in clean condition. Any worn part should be replaced immediately. Volatile metal cleanser may attack rubber parts, so they should never be used. Always use fluid.
3. For disassembling and assembling, only use the specified fluid.
4. Standard tools can generally be used for assembling and disassembling, although special tools may be required. When using special tools, read the instruction carefully, and never use standard tools in place of special tools.

1. BEFORE DISASSEMBLY, SECURE THE POWER STEERING IN THE VISE, AND THEN CENTER THE POWER PISTON.

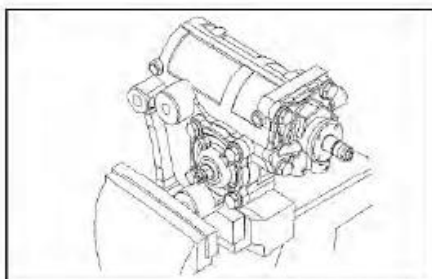
2. REMOVE THE OUTPUT SHAFT DUST COVER.



SHTS10ZZZ0400158

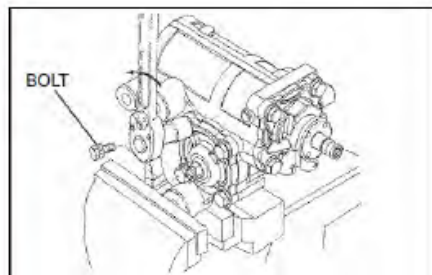
3. REMOVE THE SIDE COVER ASSEMBLY AND SECTOR SHAFT.

- (1) Untighten and remove the adjust screw to the side cover.



SHTS10ZZZ0400159

- (2) Remove the 4 bolts and washers fitting the side cover to the steering body.



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NOTICE

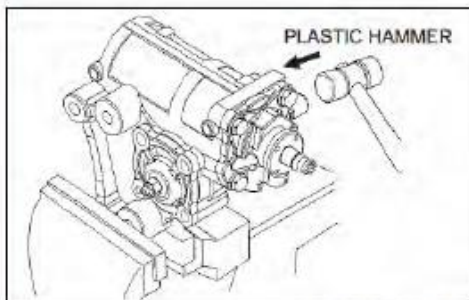
Take care not to damage and lose the removed bolts.

SERVICE INFORMATION BULLETIN

ADD

STEERING/STEERING CONTROL

10-69

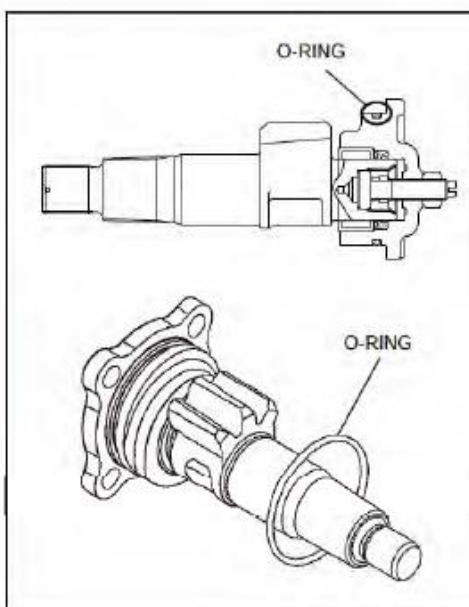


SHTS10ZZZ0400161

- (3) Confirm that the power piston is located in the center, and then gently tap the output end of the sector shaft with a plastic (or wooden) hammer to remove the sector shaft assembly and the side cover together from the steering body.

NOTICE

Never use a steel hammer when removing the sector shaft (as the threads will be damaged).

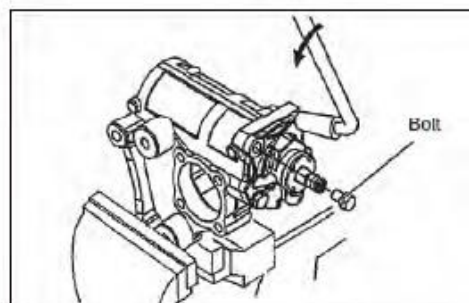


SHTS10ZZZ0400162

- (4) Remove the O-ring from the groove around the outside of the side cover using the special tool.

NOTICE

To prevent damaging the removed sector shaft assembly, cover by wrapping a cloth around it.



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4. REMOVE THE WORM SHAFT ASSEMBLY.

- (1) Remove the bolts to remove the worm shaft assembly and valve housing assembly from the steering body.

NOTICE

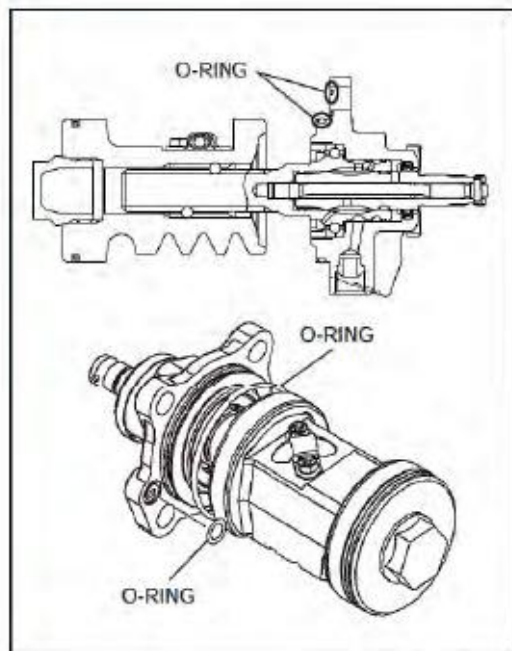
- Do not damage the internal surface of the steering body when removing the worm shaft assembly and valve housing assembly.
- Do not let the steel balls spring out.
- Never damage the power piston.
- Never disassemble the worm shaft assembly.

SERVICE INFORMATION BULLETIN

10-70

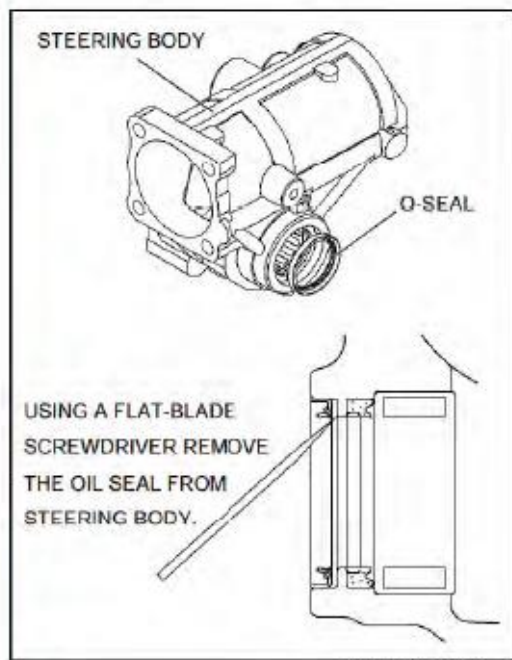
STEERING/STEERING CONTROL

ADD



SHTS10ZZZ0400164

(2) Remove the O-ring.



SHTS10ZZZ0400165

5. REMOVE THE STEERING BODY.

(1) Remove the oil seal from the section of the steering body contacting the sector shaft.

NOTICE

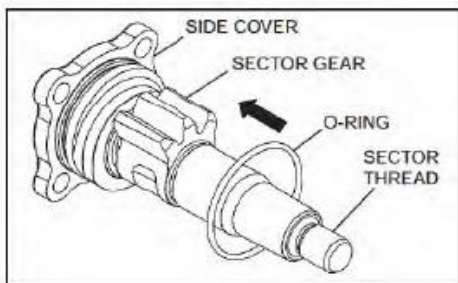
- Do not remove the needle roller bearing and taper plug unless they are damaged.
- Take care not to damage the Y-packing and the backup ring.

SERVICE INFORMATION BULLETIN

ADD

STEERING/STEERING CONTROL

10-71



SHITS10ZZ0400166

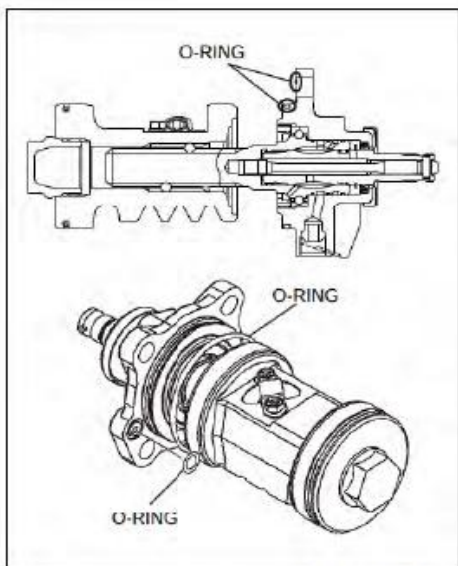
ASSEMBLING THE POWER STEERING GEAR

1. INSTALL THE SIDE COVER.

- (1) Insert the O-ring to the sector gear from the sector thread, and install it to the side cover.

NOTICE

- The backup ring can be assembled easily if inserted by pinching it with the fingers as shown in figure.
- After filling the groove with grease, assemble the Y-packing so that the lip faces to the needle roller bearing side.
- Do not damage the O-ring with the sector gear.
To prevent damaging the O-ring, cover by wrapping a cloth around the sector gear.
- Avoid excessive stretching of the O-ring.
To prevent stretching of the O-ring, insert it from the sector thread side.
- Do not twist the O-ring during assembling.
- Remove dirt and foreign matters on the O-ring groove and all around.



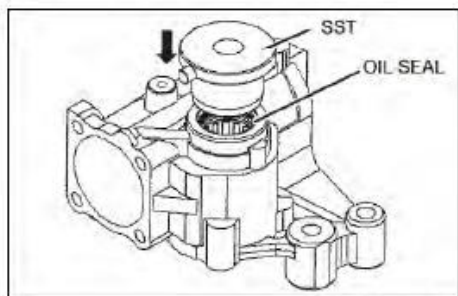
SHITS10ZZ0400167

2. INSTALL THE WORM SHAFT ASSEMBLY AND THE VALVE HOUSING.

- (1) Install the O-ring and seal ring in the groove around the outside of the power piston and form the seal ring using the special tool.
Install the O-ring to the worm shaft assembly (Do not disassemble the worm shaft assembly).

NOTICE

- Do not damage the O-ring with the sector gear.
To prevent damaging the O-ring, cover by wrapping a cloth around the sector gear.
- Avoid excessive stretching of the O-ring.
To prevent stretching of the O-ring, insert it from the sector thread side.
- Do not twist the O-ring during assembling.
- Remove dirt and foreign matters on the O-ring groove and all around.



SHITS10ZZ0400168

3. INSTALL THE STEERING BODY.

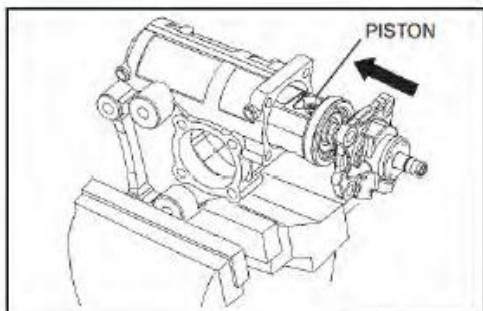
- (1) Press fit the oil seal into the steering body using the special tool.
SST: S0965-71860
Insert assembly
- (2) Fill the oil seal with grease.

SERVICE INFORMATION BULLETIN

10-72

STEERING/STEERING CONTROL

ADD



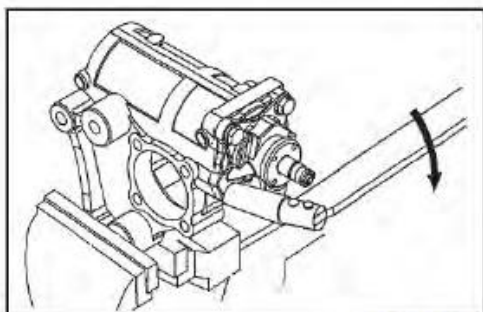
SHTS10ZZZ0400169

4. INSTALL THE VALVE HOUSING AND BALL NUT ASSEMBLY.

- (1) Secure the steering body in the vise.
- (2) Fit the worm shaft and valve housing assembly by inserting it into the steering body with the power piston gear placed on the side of the sector shaft. Hold the power piston lightly by hand so that it does not rotate.

NOTICE

- When inserting the worm shaft and valve housing assembly, do not damage the piston seal ring.
- Be careful that the O-ring does not fall out.



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- (3) Align the steering body and valve housing oil passage holes and tighten the bolt to the specified torque.

Tightening Torque:

73.6-83.4 N·m {751-850 kgf·cm, 55-61 lbf·ft}

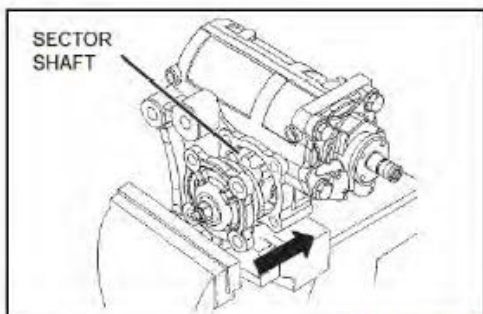
(Narrow cab, cylinder size: $\phi 80$)

98.1-107.9 N·m {1001-1100 kgf·cm, 73-79 lbf·ft}

(Wide cab, cylinder size: $\phi 85$)

NOTICE

- Insert a bar into the bolt hole to align the body and housing oil passage holes. Prevent housing rotation to prevent the O-ring from being cut or dislodged.
- Note that the valve housing fitting bolt tightening torque varies according to the cylinder size.

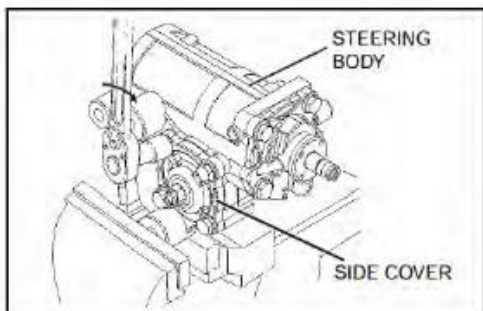


SHTS10ZZZ0400171

- (4) Insert the sector shaft into the steering body so that its gear and the power piston gear engage in the center.

NOTICE

When inserting the sector shaft, do not let the sector shaft serration damage the lip of the Y-packing. Damage may affect oil tightness.



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- (5) Assemble the side cover to the steering body using the bolts. Tighten them to the specified torque.

Tightening Torque:

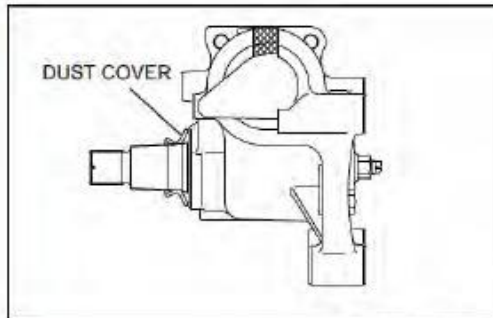
73.6-83.4 N·m {751-850 kgf·cm, 55-61 lbf·ft}

SERVICE INFORMATION BULLETIN

ADD

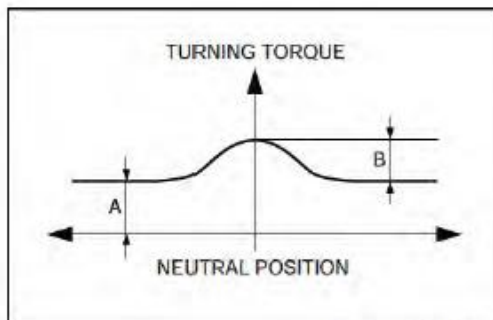
STEERING/STEERING CONTROL

10-73



SHTS10ZZZ0400173

(6) Insert the dust cover.



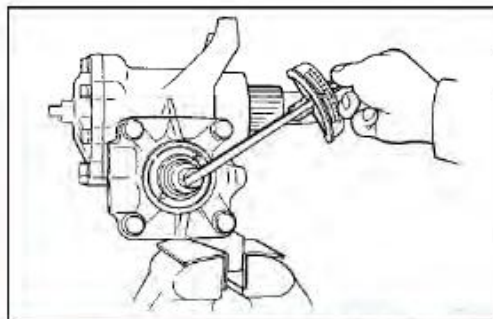
SHTS10ZZZ0400174

5. MEASURE THE WORM VALVE ASSEMBLY TURNING TORQUE.

Assembly standard:

Unit: N·m {kgf·cm, lbf·ft}

A	B
0.35-1.0	0.2-0.4
{3.6-10.1, 0.26-0.73} or less	{2.1-4.0, 0.15-0.29} or less



SHTS10ZZZ0400175

6. INSPECT THE WORM VALVE ASSEMBLY ROTATION CONDITION.

- (1) Check to see that the worm valve assembly rotate smoothly without any shocks, abnormal resistance, noise and drag, when the worm valve assembly rotates full lock in both direction.

7. TIGHTEN THE PITMAN ARM LOCK NUT.