Document Title: **Gearbox, specifications**	Function Group: **430**	Information Type: **Service Information**	Date: **2014/10/31**
Profile:			

Gearbox, specifications

Specification

Item		**Unit**	**Specification**
Track gearbox (Serial no. 1 - 80)	Type	–	3–stage planetary
	Reduction ratio	–	56.9
	Gear oil	Liter(gal)	5.5 (1.45)
Track gearbox (Serial no. 81 -)	Type	–	3–stage planetary
	Output revolution (high/low)	RPM	40.6/25.5
	Gear oil	Liter (gal)	5 (1.3)
Slew gearbox	Model		RGS 170/23
	Type	–	2–stage planetary
	Reduction ratio		22.85
	Theoretical output torque	kgf·m (lbf·ft)	1663 (12007)
	Gear oil	Liter (gal)	11(24.8)
	Weight, dry	kg (lbs)	258 (569)
	Weight, total	kg (lbs)	315.5 (695.6)

Document Title: **Track gearbox (serial no. 1 - 80), installation**	Function Group: **4311**	Information Type: **Service Information**	Date: **2014/10/31**
Profile:			

Track gearbox (serial no. 1 - 80), installation

CAUTION

Carefully check the mating surface of the undercarriage and the gearbox for burrs, dirt and rust scale.

1. Pass a wire rope around the gearbox, lift and install the gearbox to the undercarriage.

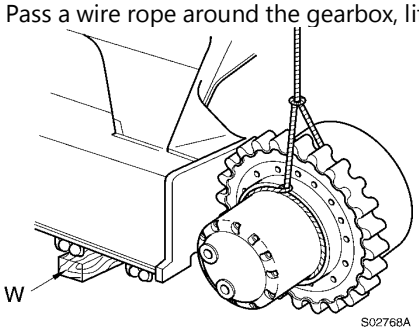


Figure 1
Install, track gearbox

2. Apply Loctite 277 to the gearbox mounting screws, and tighten them to the specified torque.
   Tightening torque : 44 ± 4 kgf·m (318 ± 29 lbf·ft)
3. Connect the hydraulic hoses at the track motor.
4. Install the gearbox cover.
5. Check the gear oil level of gearbox. If necessary, replace or refill the oil.

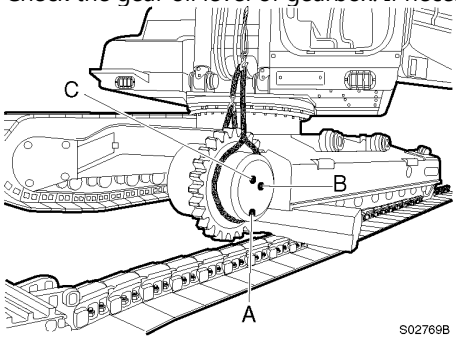


Figure 2
Checking, oil level

A. Drain port
B. Level port
C. Filling port

Document Title: **Track gearbox (serial no. 1 - 80), removal**	Function Group: **4311**	Information Type: **Service Information**	Date: **2014/10/31**
Profile:			

Track gearbox (serial no. 1 - 80), removal

1. Remove cover screw (2) of track gearbox, and remove cover (1).

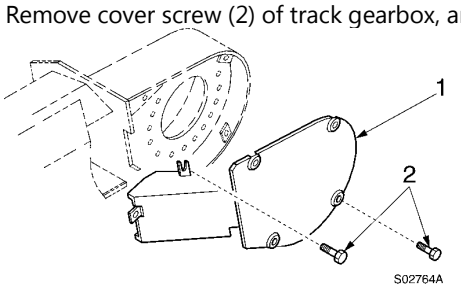


Figure 1
Removal, cover

2. Remove the track.
3. Place a wooden block on the track, and place the lower roller on the block to raise the sprocket off the track.
4. Disconnect the hydraulic hoses at the track motor. Plug the pipe ends and ports to prevent the outflow of oil and the entry of contamination.

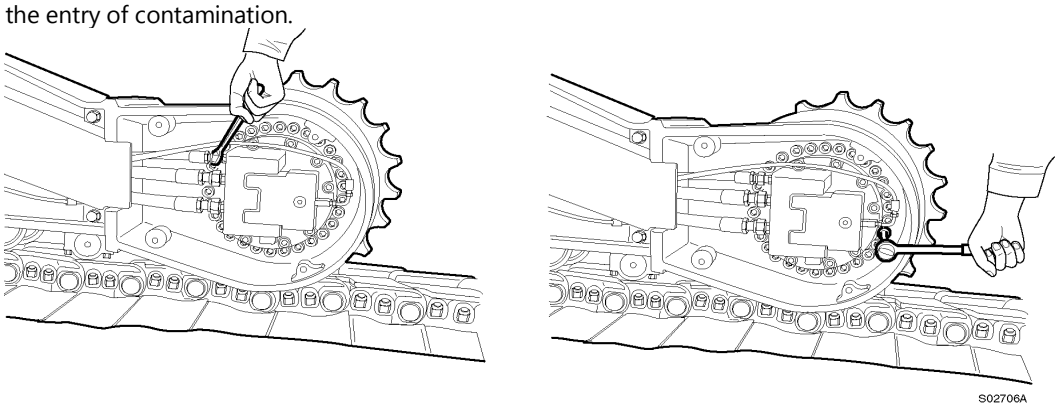


Figure 2
Removal, hydraulic hoses and screws

5. Remove the track motor mounting screws from the undercarriage.
6. Pass a wire rope around the gearbox, and lift it. Remove the track motor as an assembly.

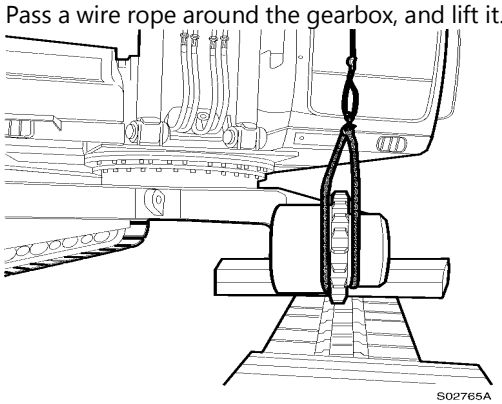


Figure 3
Removal, track gearbox
NOTE!

Lift the gearbox as close to the sprocket as possible to maintain balance.

NOTE!
Putting match–marks on the track frame and track gearbox will facilitate reassembly.

VOLVO

Construction Equipment

Service Information

Document Title: **Track gearbox (serial no. 1 - 80), description**	Function Group: **4311**	Information Type: **Service Information**	Date: **2014/10/31**
Profile:			

Track gearbox (serial no. 1 - 80), description

Track gearbox consists of a three stage planetary mechanism that converts the high speed rotation of the hydraulic motor, into low speed, high torque rotating force at the sprocket hub.

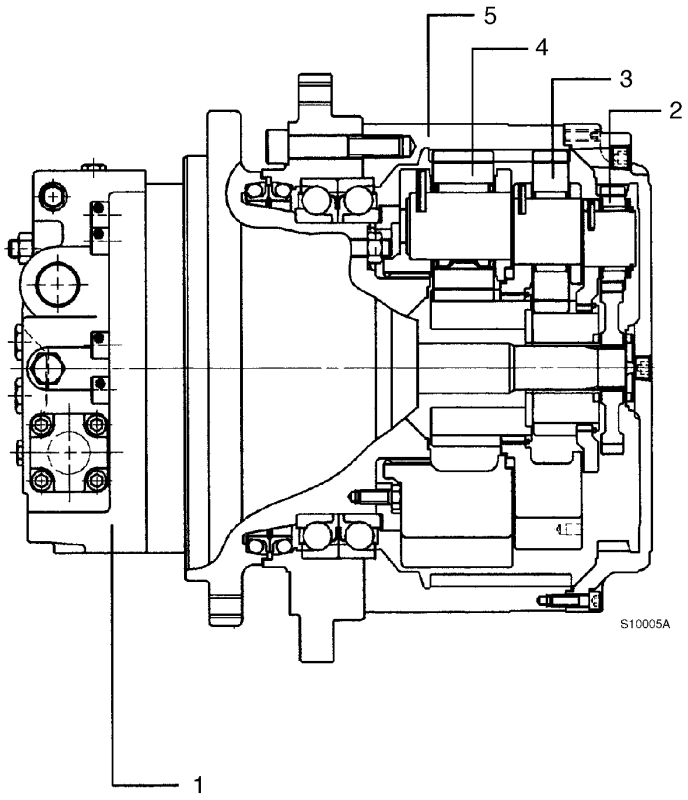


Figure 1
3 stage planetary gearbox

1. Motor
2. No.1 planetary gear assembly
3. No.2 planetary gear assembly
4. No.3 planetary gear assembly
5. Ring gear

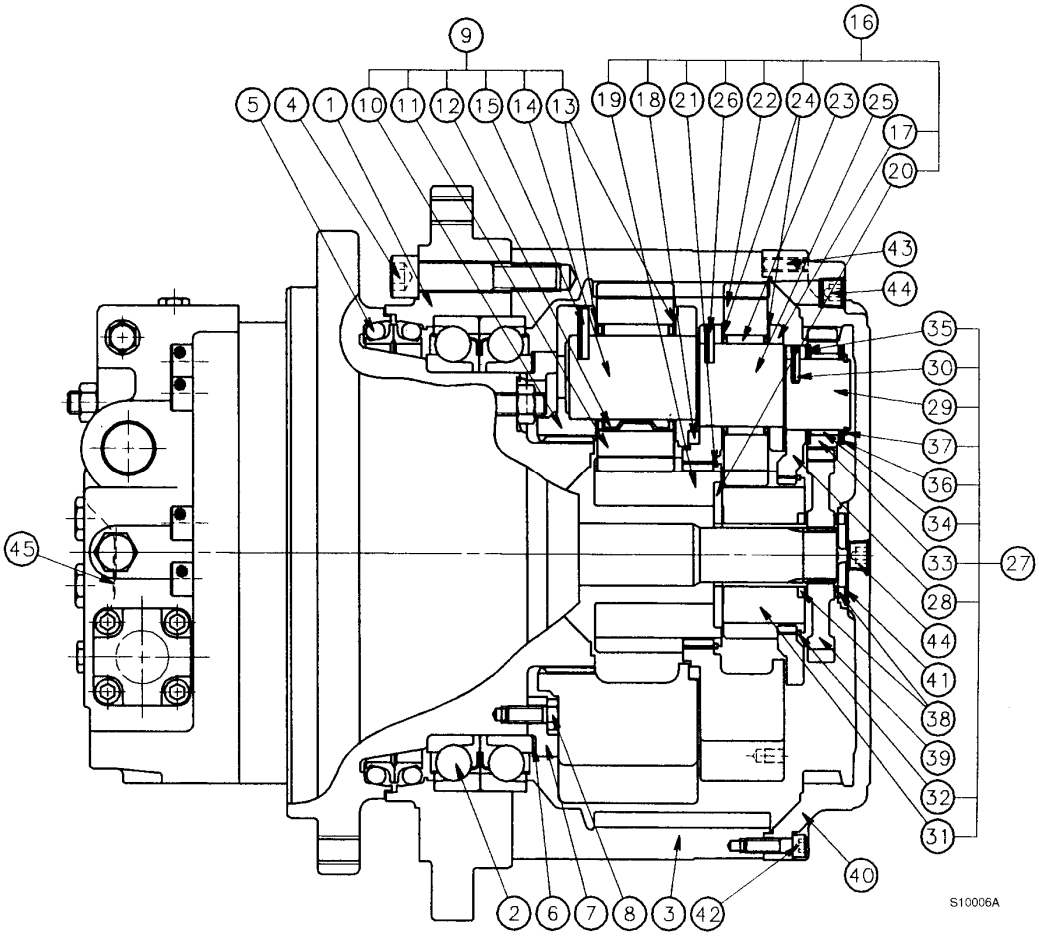


Figure 2
Track gearbox, sectional view

1	Housing	17	No. 2 carrier	34	Needle bearing
2	Angular bearing	18	Thrust ring	35	Thrust washer
3	Ring gear	19	No.3 sun gear	36	Thrust washer
4	Screw	20	Thrust ring	37	Snap ring
5	Seal	21	Retaining ring	38	Thrust ring
6	Shim	22	No.2 planetary gear	39	No.1 sun gear
7	Retainer	23	Needle bearing	40	Cover
8	Screw	24	Thrust washer	41	Shim
9	No.3 planetary gear assembly	25	No.2 pin	42	Screw
10	No. 3 carrier	26	Spring pin	43	Screw
11	No.3 planetary gear	27	No.1 planetary gear assembly	44	Plug
12	Needle bearing	28	No.1 carrier	45	Name plate
13	Thrust washer	29	No.1 pin		
14	No.3 pin	30	Spring pin		
15	Spring pin	31	No.2 sun gear		
16	No.2 planetary gear assembly	32	Retaining ring		

The power transmitted from the hydraulic motor output shaft is transmitted to the 1st stage sun gear (39) → spline of 1st carrier (28) → 2nd sun gear (31) → 2nd planetary gear (22) → spline of 2nd carrier → spline of 2nd carrier → 3rd sun gear (19) → 3rd planetary gear (10) → ring gear(3).
At this time, the reduction ratio of reduction gear is as follows :

(1) 1st reduction ratio

$$i1=((Zs1 + Zr1) \cdot (Zs2 + Zr) \cdot (Zs3 + Zr) / Zs1 \cdot Zs2 \cdot Zs3) - 1$$

- Zs1 = Number of No. 1 sun gear teeth
- Zs2 = Number of No. 2 sun gear teeth
- Zs3 = Number of No. 3 sun gear teeth
- Zr1 = Number of No. 1 ring gear teeth
- Zr = Number of ring gear teeth

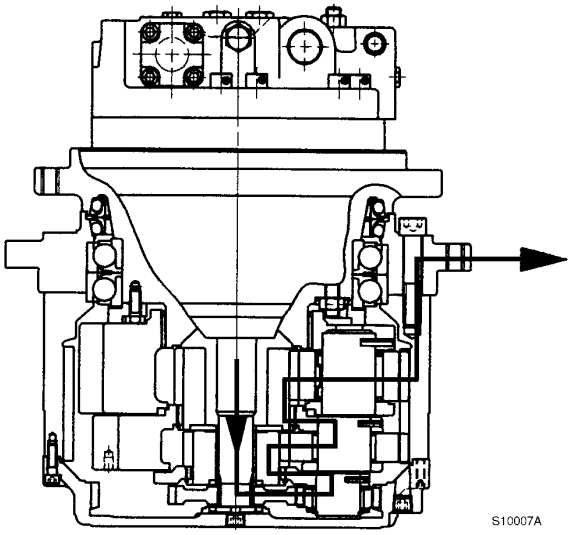


Figure 3
Track gearbox, torque flow

Document Title: **Track gearbox (serial no. 1 - 80), assembly**	Function Group: **4311**	Information Type: **Service Information**	Date: **2014/10/31**
Profile:			

Track gearbox (serial no. 1 - 80), assembly

Preparation

- Clean all parts with cleaning solvent and dry with compressed air.
- Rework damaged parts and before assembling, prepare all replacement parts.
- Coat the sliding parts, bearings and gears with clean gear oil.
- Coat the motor assembly sliding parts and bearings with clean hydraulic oil.
- Replace the o-rings, oil seal and seals.
- Replace screws (6). DO NOT REUSE THESE SCREWS !
- Use a torque wrench to tighten the screws and plugs to the specified torque.

Tightening torque, unit : kgf·m (lbf·ft)

Item No.	Condition	Thread	Tightening torque
4	Screw	M20	55 (397)
8	Screw	M16	11.5 (83)
42	Screw	PT 1/2	6.7(48)
43	Screw	M10	1(7.2)
44	Plug	PT 1/2	6.6 (48)

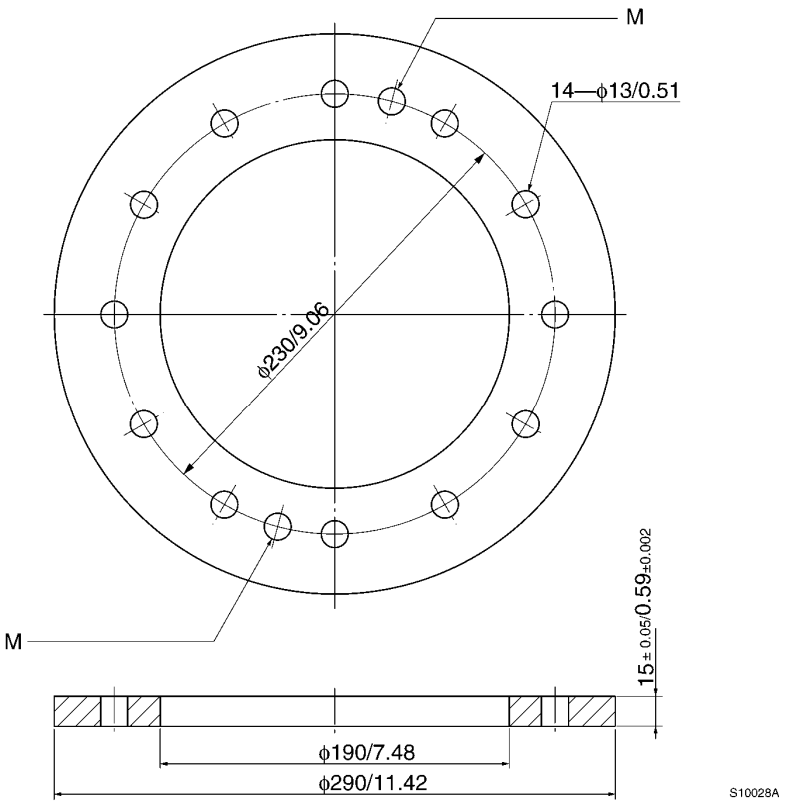
Special tools

Special tools

No.	Description	Size	Quantity
1	Bearing shim adjust fixture	See the diagram followed	1
2	Jig for pressing bearing	See the diagram followed	1

Shim thickness measuring fixture

Unit : mm/in



Part No. : 8920–01380

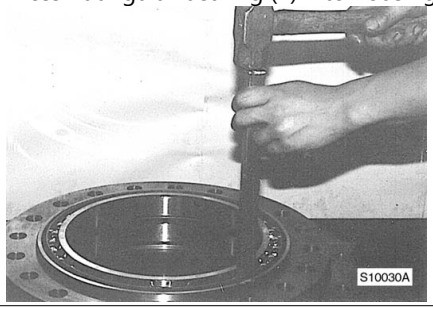
Figure 1
Shim thickness measuring tool (Unit : mm/in)

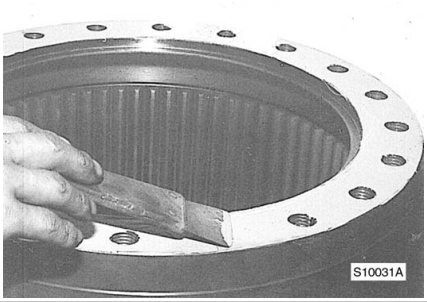
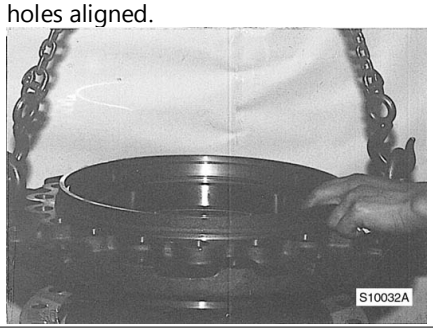
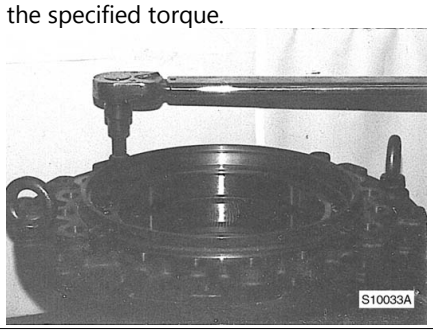
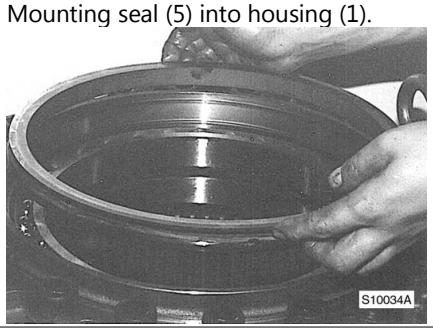
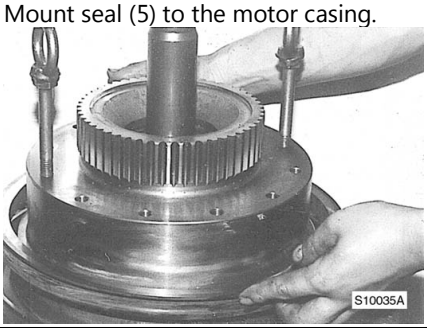
M Measuring position

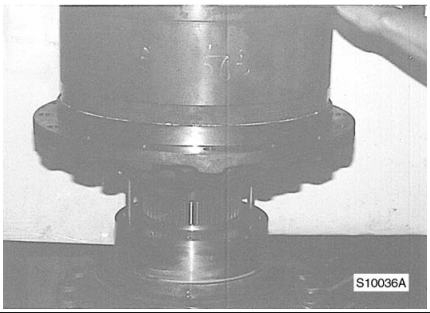
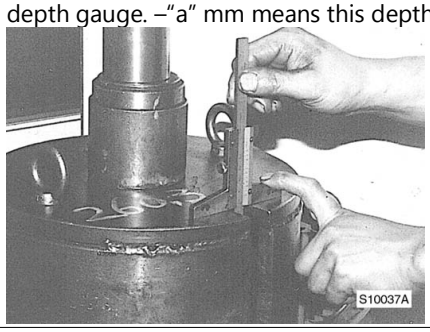
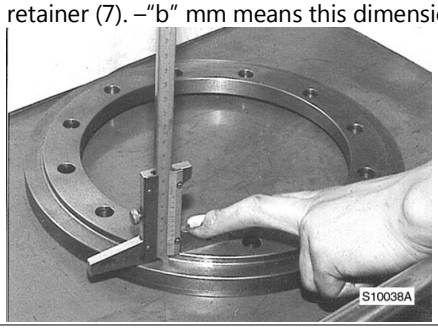
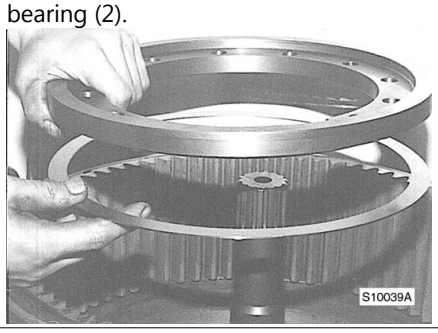
Part nr. : 8920-01380

NOTE!
See [Invalid linktarget] .

Assembly, track gearbox

No.	Procedure	Remark	Tool
1	Press fit angular bearing (2) into housing (1). 	The angular bearings must be properly aligned and fully seated. The outer race must be pressed or hammered into place.	Plastic hammer Press
2	Place the rear side of ring gear (3) upward and remove oil from contacting surface, dry it and apply loctite #5699 evenly.	When reusing the ring gear, remove loctite in tap holes by using a M20 tap.	

			
3	Screw M20 eye bolts into housing (1) lift it with a crane, and place it onto the ring gear with screw holes aligned. 		Eye bolt (M20)
4	Apply loctite #277 to screws (4) and tighten them to the specified torque. 	Pay attention not to rotate the ring gear when assembling.	Allen wrench 17mm (M20) Torque wrench
5	Mounting seal (5) into housing (1). 	Coat grease to o–ring lightly. Ensure o-ring does not twist and is fully seated.	
6	Mount seal (5) to the motor casing. 	Check if o-ring comes out from housing and motor. In that case, reassemble o-ring and seal again	Eye bolt(M10)
7	Mount housing (1) on ring gear (3) and tighten screws (4), then lift the drum sub assembly with seal downward, and fit the inner diameter of the angular bearing to the outer diameter of the motor housing.	Be careful not to damage the sliding surface of the seal.	

			
8	Put a jig onto angular bearing (2), press in until the end of the inner race is aligned to the top of the motor casing.	If a press is not available, put a jig onto the inner race and press fit the bearing by tightening a long M12 screw.	
9	With press–fitted bearing, get distance from the front side of bearing to contacting surface with a depth gauge. –"a" mm means this depth. 		Depth gauge
10	Measure dimension between steps of bearing retainer (7). –"b" mm means this dimension. 		Depth gauge
11	Select a shim of thickness "d" by following calculation d=a–b–(0~0.05).	The axial clearance of bearing is 0.05 ~ 0.1mm. Shim : 0.8, 0.9, 1.0, 1.2, 1.5, 2.3	Torque wrench L wrench 10 mm (PT1/2)
12	Remove the jig from the inner race and put the selected shim (6) onto the inner race of angular bearing (2). 		
13	Put bearing retainer (7) onto it and tighten screws (8) to the specified torque after applying loctite #277.	Remove oil from screw threads and the tap hole of the motor casing.	Socket wrench 19mm (M12) Torque wrench

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