

## GROUP 6 TRAVEL DEVICE

### 1. REMOVAL AND INSTALL

#### 1) REMOVAL

- (1) Swing the work equipment 90° and lower it completely to the ground.
- (2) Operate the control levers and pedals several times to release the remaining pressure in the hydraulic piping.
- (3) Loosen the breather slowly to release the pressure inside the hydraulic tank.

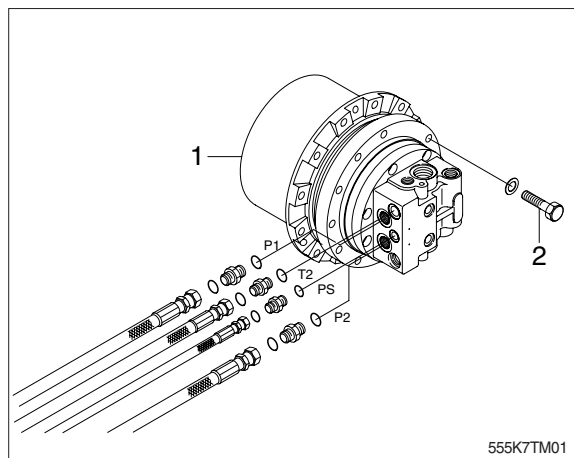
**▲ Escaping fluid under pressure can penetrate the skin causing serious injury.**

※ **When pipes and hoses are disconnected, the oil inside the piping will flow out, so catch it in oil pan.**

- (4) Remove the track shoe assembly.  
For details, see removal of track shoe assembly.
- (5) Remove the cover.
- (6) Remove the hose.  
※ **Fit blind plugs to the disconnected hoses.**
- (7) Remove the bolts and the sprocket.
- (8) Sling travel device assembly(1).
- (9) Remove the mounting bolts(2), then remove the travel device assembly.  
· Weight : 80 kg (180 lb)



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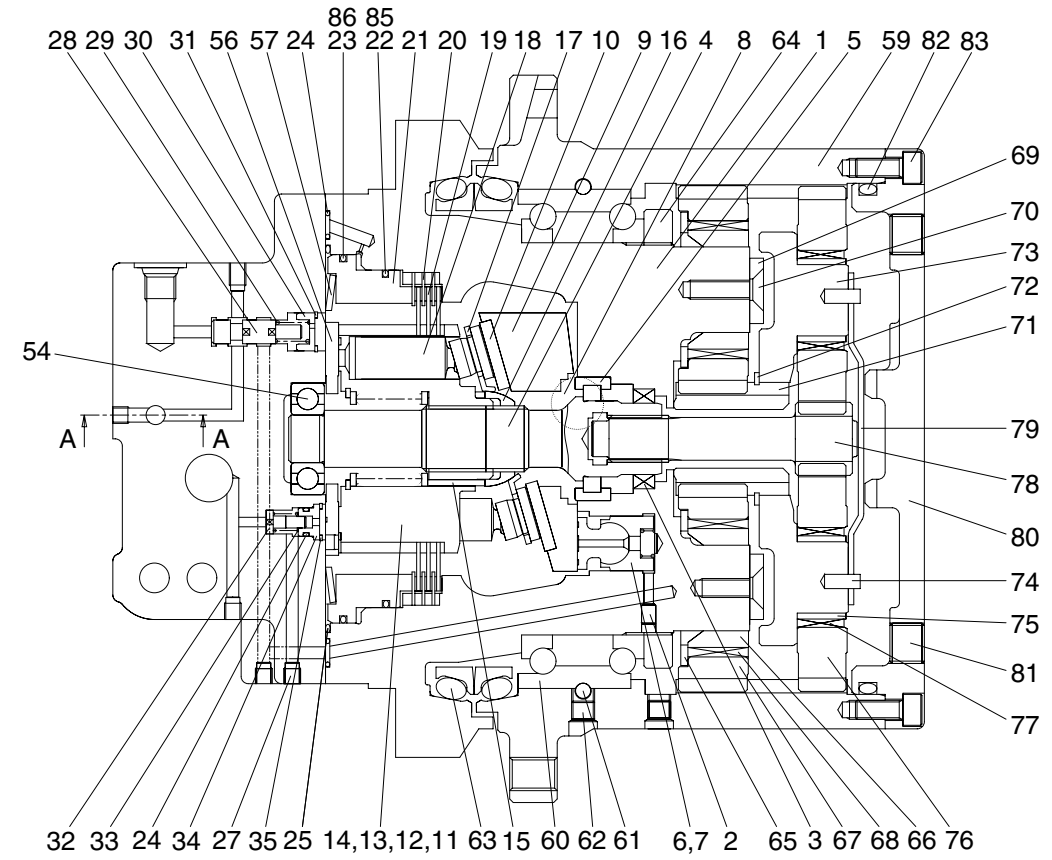
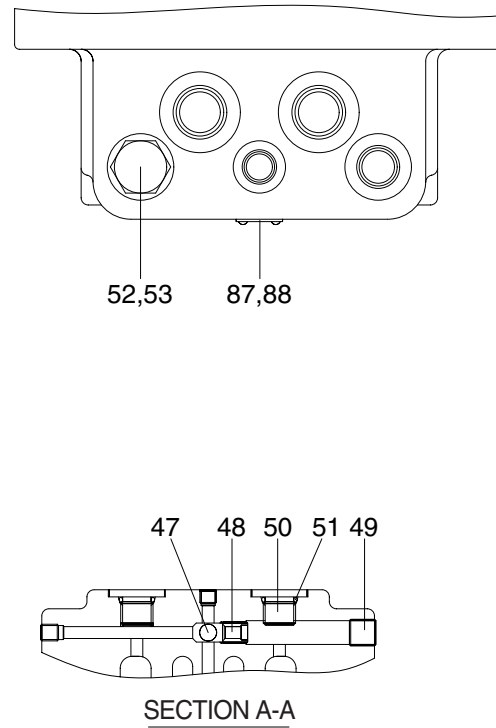
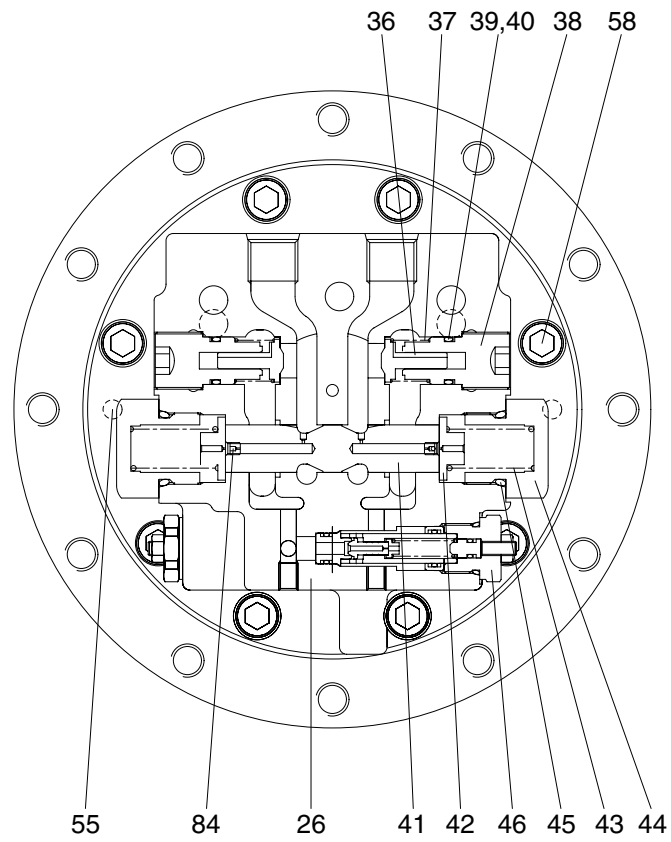


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#### 2) INSTALL

- (1) Carry out installation in the reverse order to removal.
- (2) Bleed the air from the travel motor.
  - ① Remove the air vent plug.
  - ② Pour in hydraulic oil until it overflows from the port.
  - ③ Tighten plug lightly.
  - ④ Start the engine, run at low idling, and check oil come out from plug.
  - ⑤ Tighten plug fully.
- (3) Confirm the hydraulic oil level and check the hydraulic oil leak or not.

2) STRUCTURE



1 Shaft casing	16 Ball guide	31 Snap ring	46 Relief valve assembly	61 Steel ball	76 Planetary gear (B)
2 Expand	17 Set plate	32 Check	47 Steel ball	62 Plug	77 Needle bearing
3 Oil seal	18 Piston	33 Spring	48 Check seat	63 Floating seal	78 Drive gear
4 Shaft	19 Friction plate	34 Seat	49 Plug	64 Nut	79 Thrust plate
5 Bearing	20 Parking plate	35 Snap ring	50 Plug	65 Washer	80 Ring gear cover
6 Swash piston	21 Parking piston	36 Check	51 O-ring	66 Collar	81 Plug
7 Spring	22 O-ring	37 Spring	52 Plug	67 Planetary gear (A)	82 O-ring
8 Swash steel ball	23 O-ring	38 Plug	53 O-ring	68 Needle bearing	83 Wrench bolt
9 Swash plate	24 O-ring	39 O-ring	54 Ball bearing	69 Plate	84 Orifice
10 Shoe plate	25 O-ring	40 Back up ring	55 Pin	70 Flat head bolt	85 Back up ring
11 Cylinder block	26 Valve casing	41 Main spool	56 Valve plate	71 Sun gear	86 Back up ring
12 Spring seat	27 Plug	42 Spring seat	57 Spring	72 Snap ring	87 Name plate
13 Spring	28 Spool	43 Spring	58 Wrench bolt	73 Carrier	88 Rivet
14 Snap ring	29 Spring	44 Plug	59 Ring gear	74 Spring pin	
15 Pin	30 Stopper	45 O-ring	60 Angular bearing	75 Collar	

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## **2. DISASSEMBLY**

### **1) GENERAL PRECAUTIONS**

- (1) Before disassembling the travel motors, check the items to be inspected and, for remedy against trouble, closely examine the nature of the trouble, so that the motor can be disassembled effectively.
- (2) To disassemble the motor, use the disassembling procedures described as followings and select a clean place.
- (3) Place a rubber or vinyl sheet or other such protective materials on your working bench to protect the surface of the motor to be serviced.
- (4) During disassembly, give a match mark to the mating surfaces of each part.
- (5) Arrange removed parts in order so that they will not become damaged or missing during disassembly.
- (6) Once seals have been disassembled, they should be replaced even if damage is not observed. Have replacement seals ready on hand before starting your disassembling job.

## 2) TOOLS AND TIGHTENING TORQUE

### (1) Tools

Name of tools	Size	Name of applied parts
Hexagonal L-wrench	2.5	Orifice (84)
	4	Plug (27)
	6	Plug (49), wrench bolt (70, 83)
	8	Plug (81)
	-	Plug (38, 52, 50)
Socket wrench / spanner	27	Plug (44), Relief valve assembly (46)
Snap-ring plier (for holes, axis)		Snap ring (14, 31, 35, 72)
Solder hammer		Bearing (5), Pin (55, 74), Oil seal (3)
Torque wrench		Size : 500, 3000
Jig for assembling oil seal		Oil seal (3)
Induction heating apparatus for bearing		Bearing (5)

### (2) Tightening torque

No.	Name	Size	Torque
			kgf · m
27	Plug	NPT 1/16	0.7~1.1
38	Plug	M24	5
46	Orifice	M27	17~19
49	Plug	PT 1/4	5
58	Wrench bolt	M12×35L	10
81	Plug	PT 3/8	8.5
70, 83	Wrench bolt	M8×20L	10
84	Orifice	M5	0.7

### 3. DISASSEMBLY

#### 1) GENERAL PRECAUTIONS

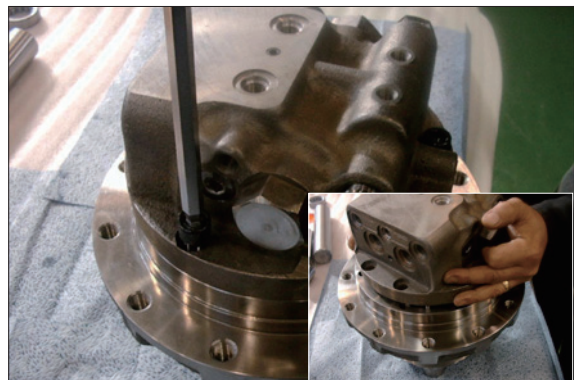
- (1) Select a clean place for disassembling.  
Spread a rubber plate on a working table in order to prohibit the damage of parts.
- (2) Clean a reduction gear and a motor part, washing out dirt and unnecessary substances.
- (3) Without any damage of O-ring, oil seal, the adhered surface of other seals, a gear, a pin, the adhered surface of other bearings, and the surface of moisturized copper, treat each parts.
- (4) Numbers written in the parenthesis ( ), next to the name of a part represent the item numbers of a previous page.
- (5) The side of a pipe in a motor can be written as a rear side ; the side of out-put as a front side.
- (6) In case of bonding bolts, combine a standard torque by torque wrench after spraying loctite #262 on the tap parts.

#### 2) DISASSEMBLING

##### (1) Motor unit

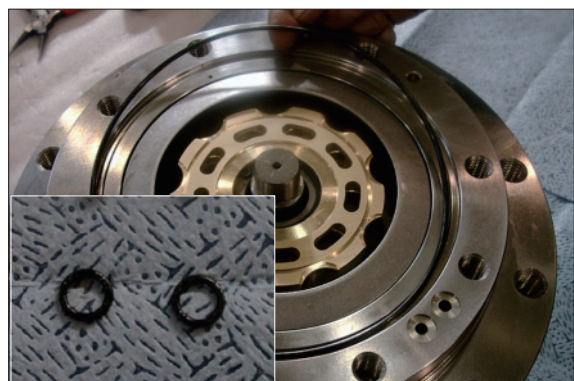
- ① Put the motor assembly on the assemble table.

Using L-Wrench, disassemble 8 wrench bolt (58) and so respectively disassemble shaft casing assembly and rear cover assembly.



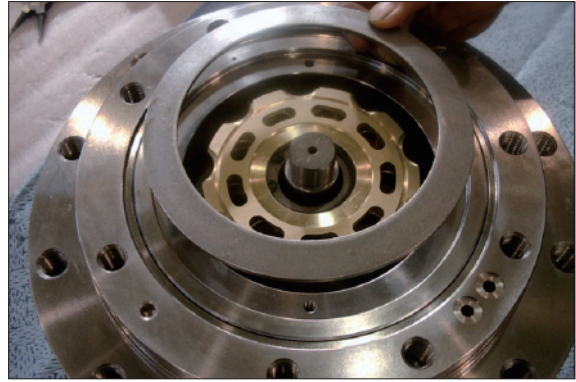
7078TM01/01A

- ② Disassemble O-ring (24) and O-ring (25) in that order from shaft casing (1).



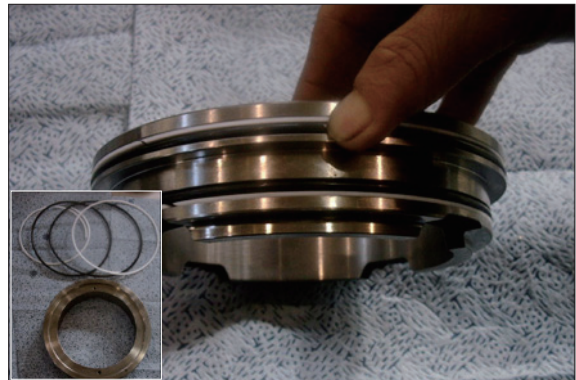
555K7TM02/02A

- ③ Disassemble plate spring (57) from shaft casing (1).



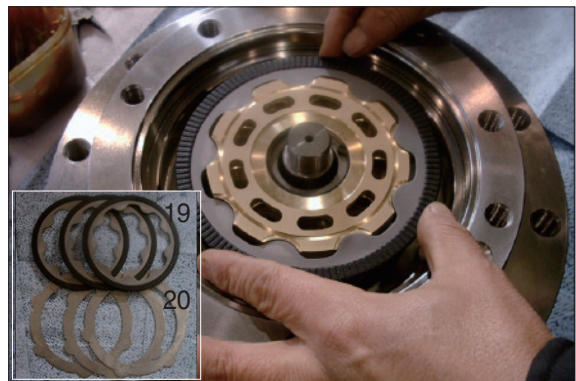
555K7TM03

- ④ Using compression air, disassemble parking piston (21) from shaft casing (1) and disassemble O-ring (23), O-ring (22) and back up ring (85) in that order.



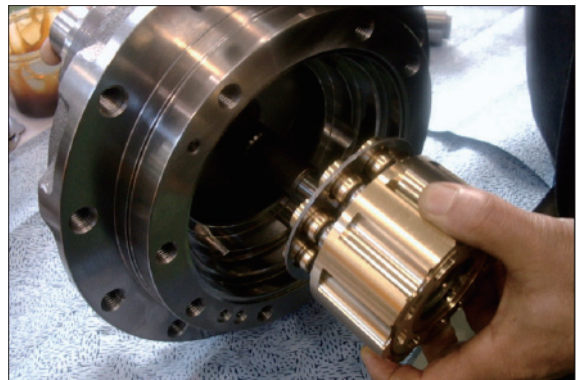
7078TM04/04A

- ⑤ Disassemble respectively 3 set of friction plate (19), parking plate (20) from shaft casing (1).



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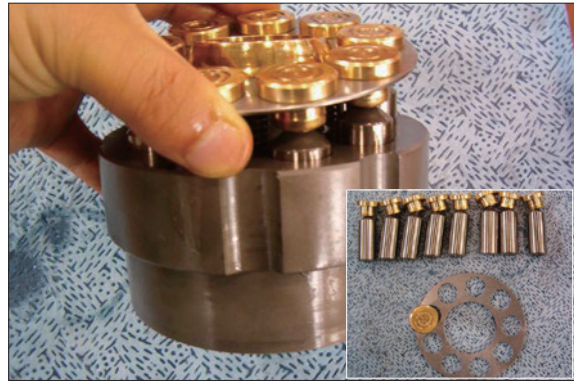
- ⑥ Disassemble cylinder block assembly (11) from shaft casing (1).



555K7TM06

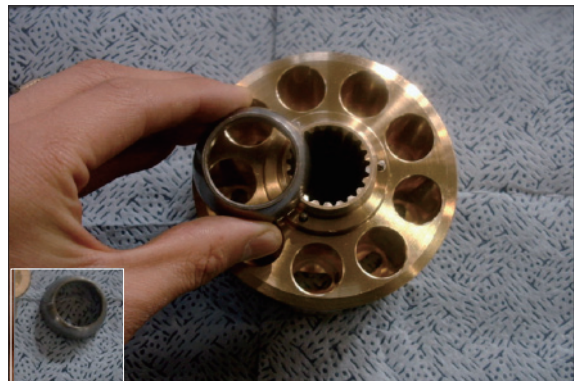
## (2) Cylinder block

- ① Disassemble set plate (17), piston assembly (18) from cylinder block assembly (11).



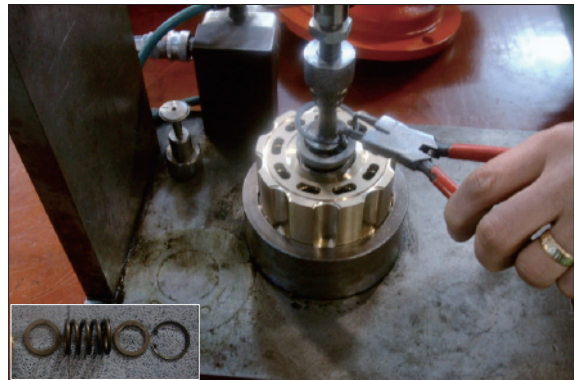
7078TM07/07A

- ② Disassemble cylinder block (11), ball guide (16) and pin (15) in that order.



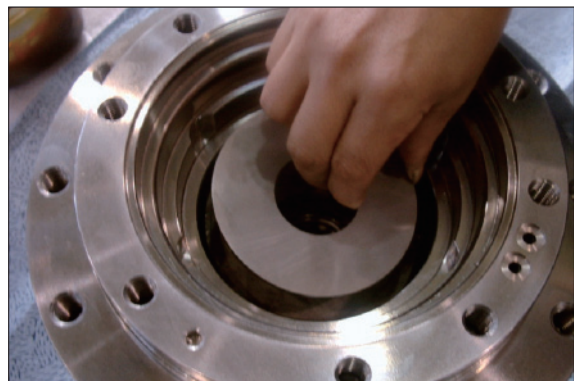
555K7TM08/08A

- ③ Put the cylinder block (11) on the air assembling jig and disassemble snap ring (14) by using a plier. Disassemble spring seat (12), spring (13) and spring seat (12) in that order.



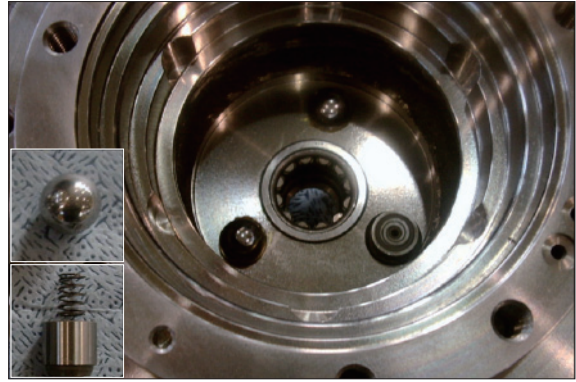
555K7TM09/09A

- ④ Disassemble shoe plate (10) from shaft casing (1).



555K7TM10

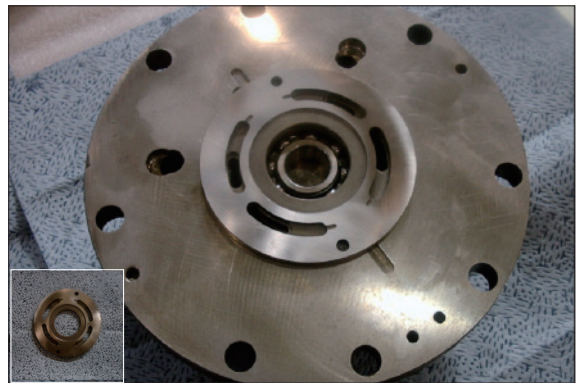
- ⑤ Disassemble steel ball (8) and swash plate (6) from shaft casing (1).



555K7TM11/11A/11B

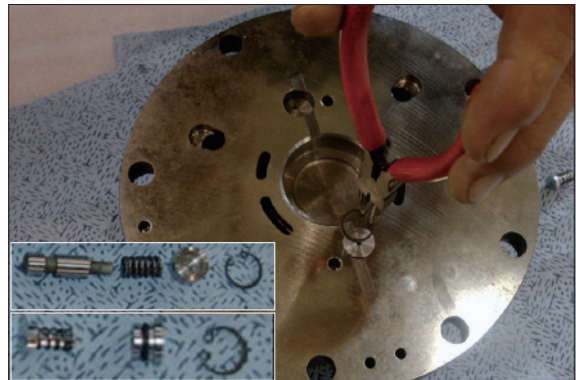
### (3) Rear cover

- ① Disassemble valve plate (56) from rear cover (26).



555K7TM12/12A

- ② Using plier jig, disassemble snap ring (35), seat (34), O-ring (24), spring (33), check (32) from rear cover (26) and then disassemble snap ring (31), stopper (30), spring (29) and spool (28) same procedure.



7078TM13

- ③ Using torque wrench, disassemble relief valve assembly (46) from rear cover (26) (left, right is symmetry).



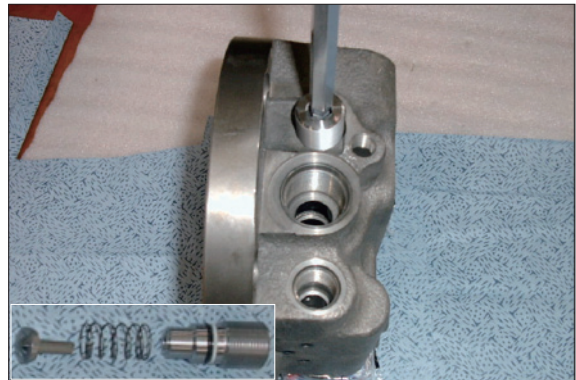
555K7TM14/14A

- ④ Using torque wrench, disassemble plug (44) and O-ring (45), spring (43), spring seat (42) and main spool (41) in that order.



7078TM15/15A

- ⑤ **Disassembly make up valve**  
Using L-wrench, disassemble plug (38) and disassemble O-ring (36), back up ring (40) and spring (37) and then check (36) and spring (37) in that order.



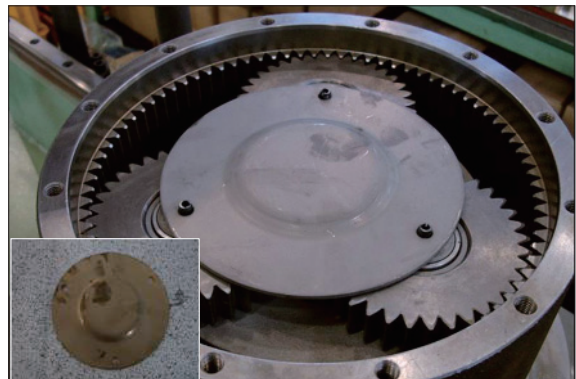
555K7TM15/15A

#### (4) Reduction gear

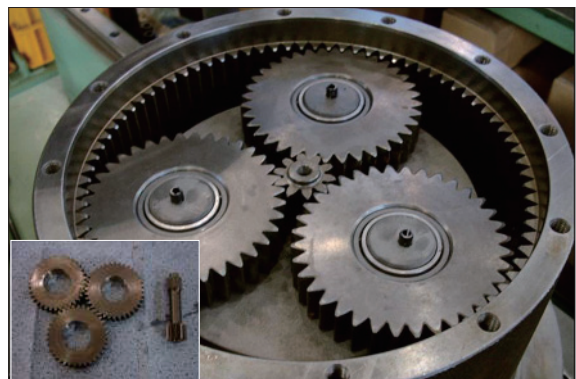
- ① Using L-wrench, disassemble wrench bolt (83) and then ring gear cover (80), O-ring (82) from ring gear (59).



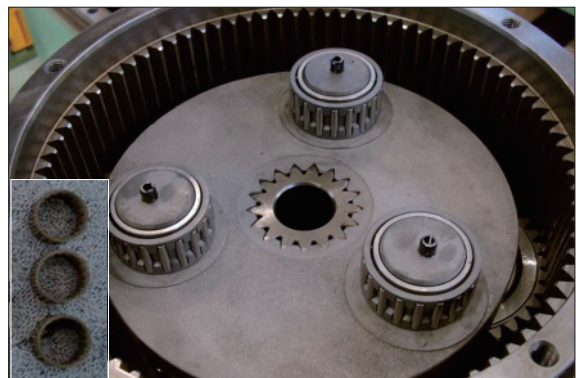
- ② Disassemble thrust plate (79) from ring gear (59).



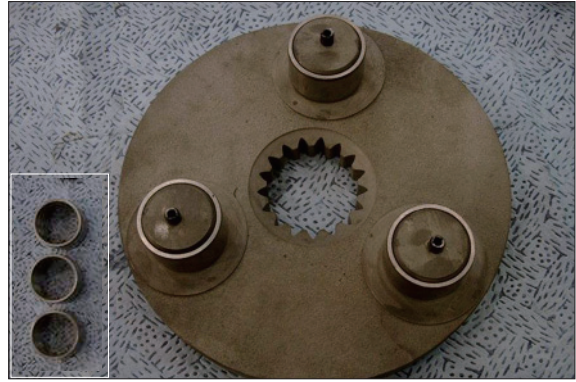
- ③ Disassemble planetary gear (76), drive gear (78) in that order from ring gear (59).



- ④ Disassemble 3 needle bearing (77) from ring gear (59).

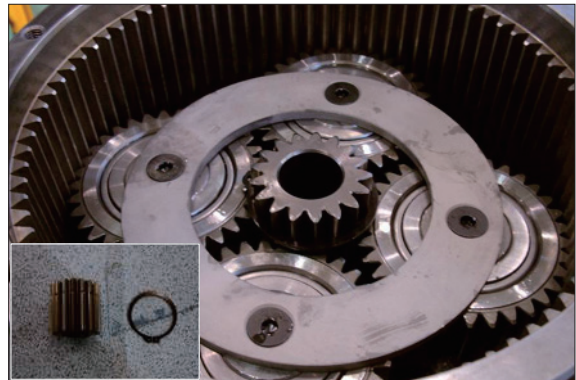


- ⑤ Disassemble in order collar (75), carrier (73) from ring gear (59).



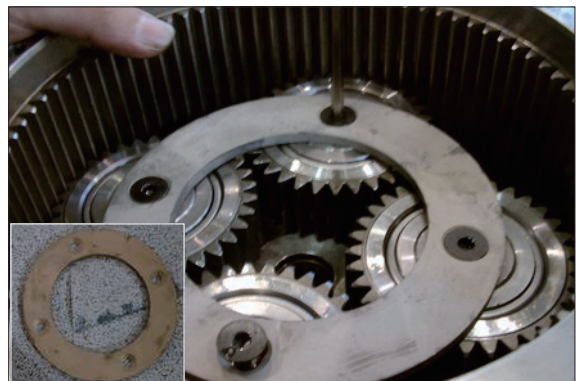
7078TM21/21A

- ⑥ Disassemble sun gear (71) from ring gear (59) and then disassemble snap ring (72) with a plier jig.



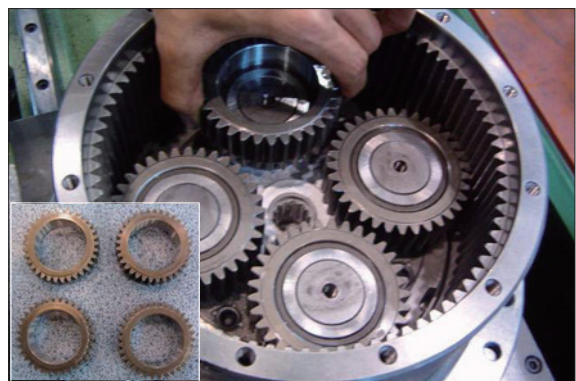
7078TM22/22A

- ⑦ Using a L-wrench, disassemble plate head bolt (70)-4EA from ring gear (59) and then disassemble plate (69).



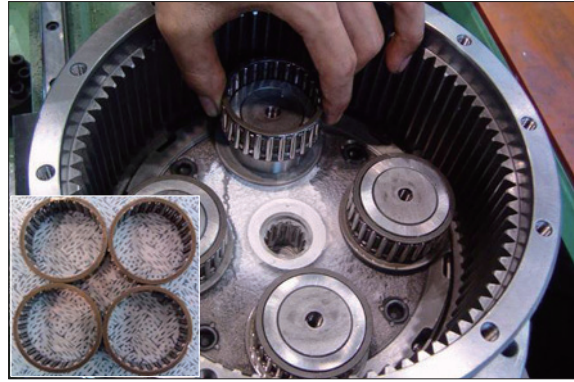
7078TM23/23A

- ⑧ Disassemble planetary gear (67)-4EA from ring gear (59).



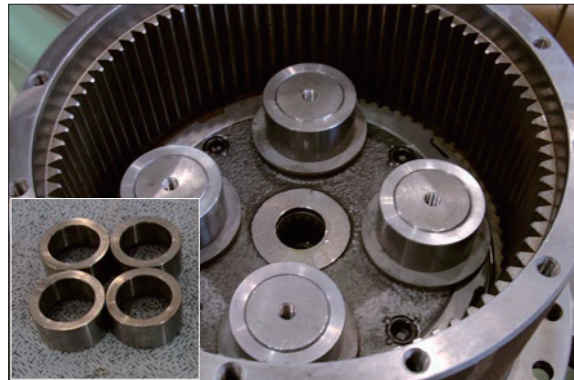
7078TM24/24A

- ⑨ Disassemble needle bearing (68)-4EA from ring gear (59).



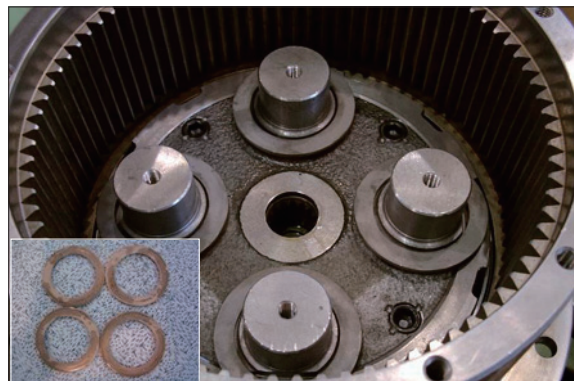
7078TM25/25A

- ⑩ Disassemble collar (66)-4EA from ring gear (59).



7078TM26/26A

- ⑪ Disassemble washer (65)-4EA from ring gear (59).



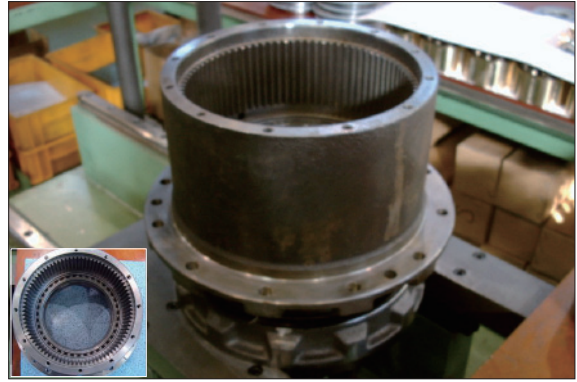
7078TM27/27A

- ⑫ Using jig, disassemble nut (64) when inner pressed state with a L-wrench bolt from ring gear (59).



78078TM29

- ⑬ Put the reduction gear on the assembling jig and then disassemble ring gear (59).



555K7TM17

## 4. ASSEMBLY

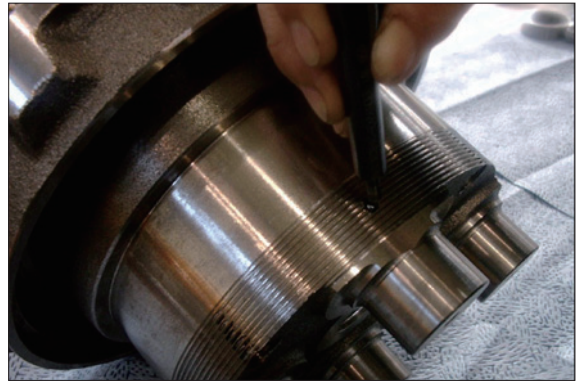
### 1) GENERAL SUGGESTIONS

- (1) After washing each parts cleanly, dry it with compressed air.  
Provided that you do not wash friction plate with treated oil.
- (2) In bonding each part, fasten bond torque.
- (3) When using a hammer, do not forget to use a plastic hammer.

### 2) ASSEMBLING

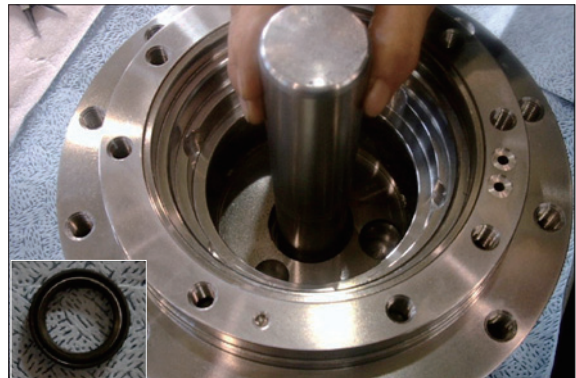
#### (1) Sub of turning axis and valve casing

- ① Using a jig, insert the steel ball (61) to the shaft casing (1) and then assemble plug (62).



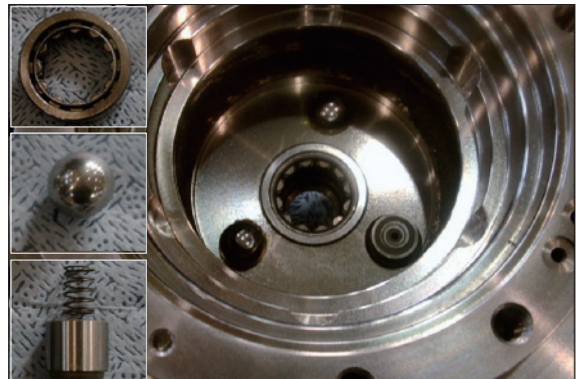
7078TM51

- ② Using a jig, assemble oil seal (3) to the shaft casing (1) and then insert with solid hammer.



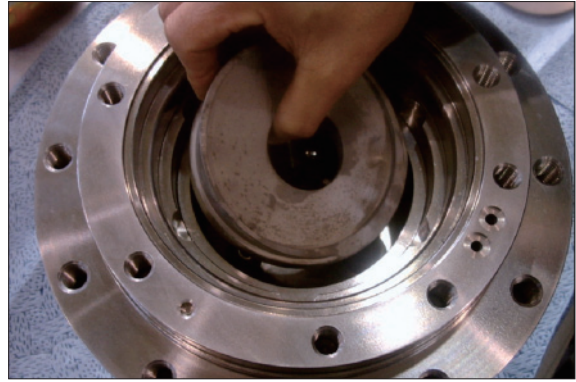
7078TM52

- ③ Assemble bearing (5) to the shaft casing (1) and then assemble steel ball (8) with grease and swash piston (6).



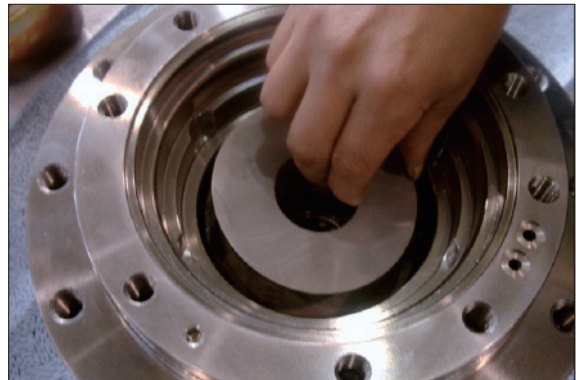
555K7TM19/19A/19B/19C

- ④ Assemble swash plate (9) to the shaft casing (1).



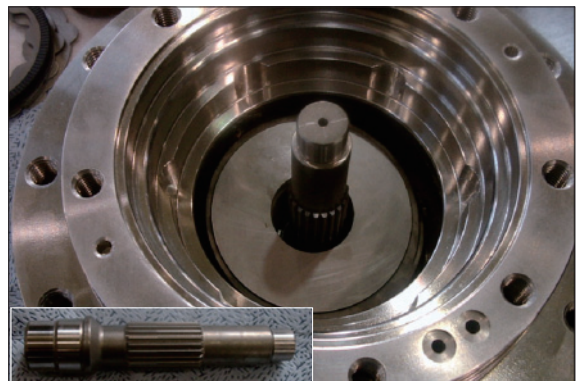
555K7TM20

- ⑤ Assemble shoe plate (10) to the shaft casing (1).



555K7TM21

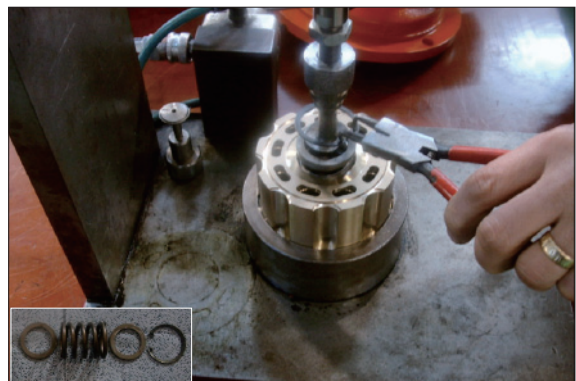
- ⑥ Assemble shaft (4) to the shaft casing (1).



555K7TM22/22A

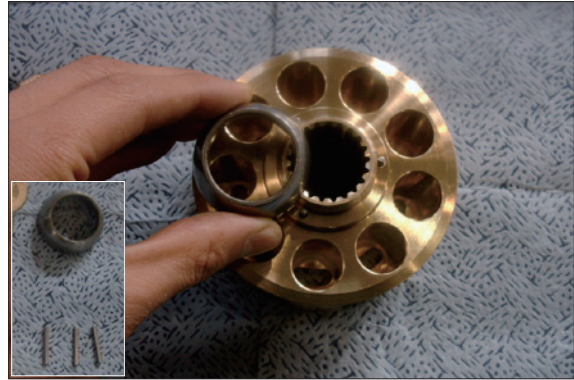
## (2) Cylinder block sub assembly

- ① Put cylinder block (11) on the air jig, assemble spring seat (12), spring (13) in that order and then assemble the snap ring (14) with a plier.



555K7TM09A

- ② Assemble pin (15), ball guide (16) in that order to the cylinder block (11).



555K7TM08/08A

- ③ Assemble piston (18) to the set plate (17, 9 set).



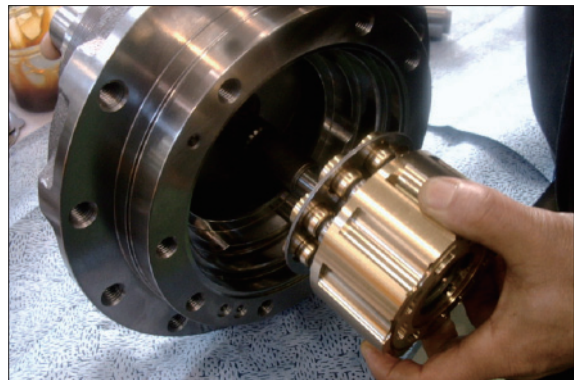
555K7TM23

- ④ Assemble sub-assembled piston (17, 18) to the cylinder block (9).



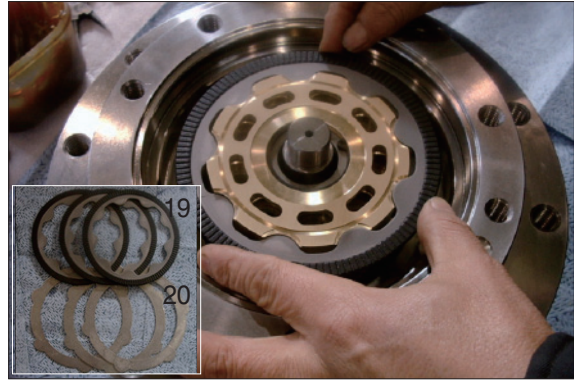
7078TM60

- ⑤ Assemble sub-assembled cylinder block (11) to the shaft casing (1).



555K7TM06

- ⑥ Assemble friction plate (19), parking plate (20) (respectively 3 EA) to the shaft casing (1).



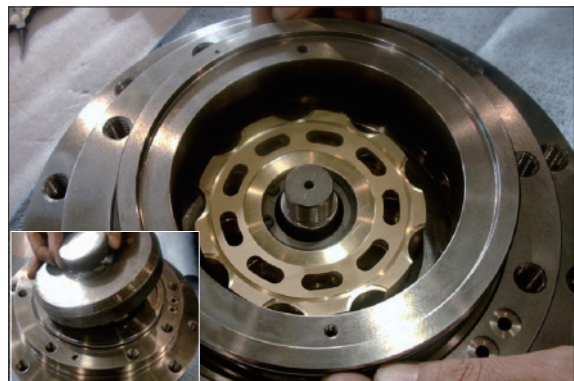
555K7TM05

- ⑦ Assemble back up ring (86), O-ring (23, 22), back up ring (85) in that order to the parking piston (21).



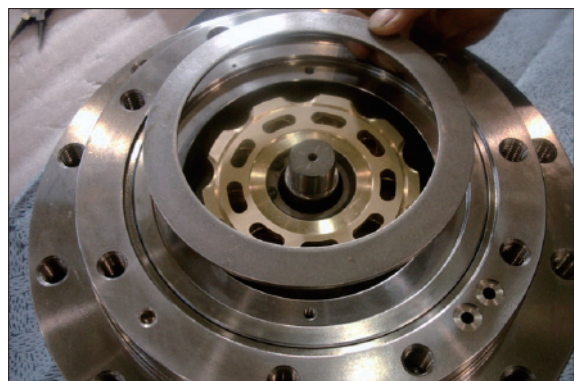
7078TM04/04A

- ⑧ Using a jig, insert the parking piston to the shaft casing (1) and assemble.



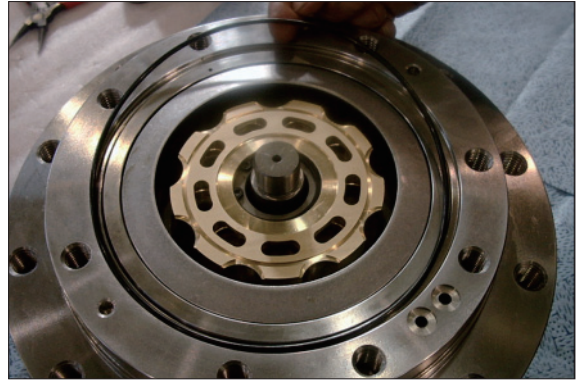
555K7TM24

- ⑨ Assemble spring (57) to the shaft casing (1).



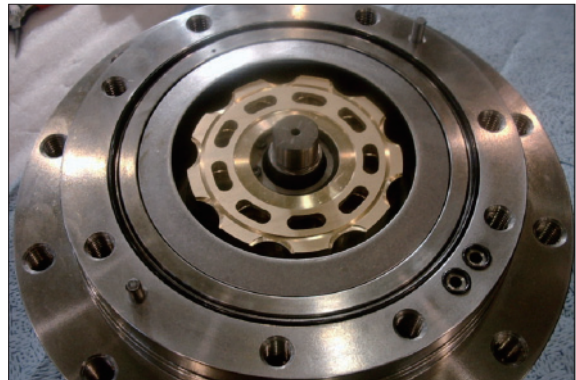
555KTM03

- ⑩ Assemble O-ring (25) to the shaft casing (1).



555K7TM02

- ⑪ Assemble pin (55), O-ring (24) in that order to the shaft casing (1).



555K7TM25

### (3) Rear cover assembly

- ① Using a L-wrench, assemble plug (27)-9EA to the rear cover (26).



7078TM66

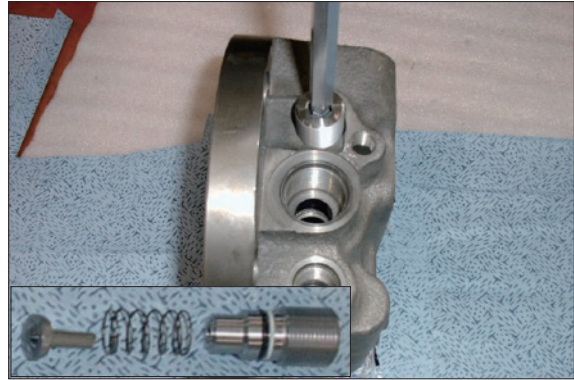
- ② Contact steel ball (47) to the rear cover (26) by using jig and assemble plug (49) with a L-wrench.



7078TM67

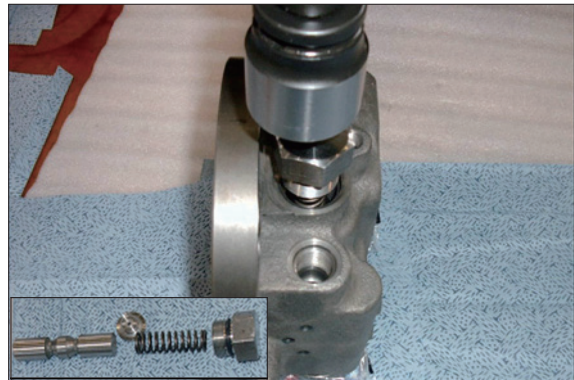
③ Assemble the make up check valve

Assemble check (36), spring (37) to rear cover (26) and assemble plug (38) with back up ring (40) and O-ring (39) to rear cover (26) by using a L-wrench.



7078TM16/16A

- ④ Fit orifice (84) to main spool (41) symmetry and assemble it to rear cover (26) and then assemble spring seat (42), spring (43), O-ring (45) and plug (44) in that order by using a torque wrench.



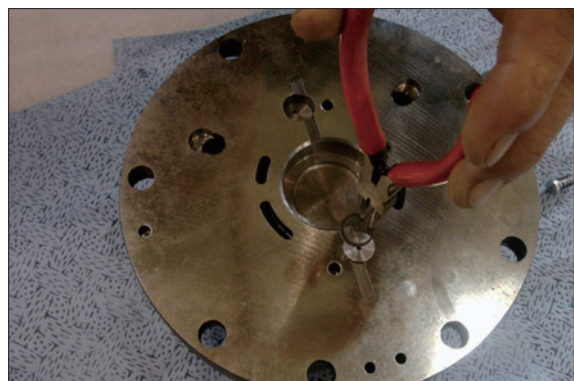
7078TM15/15A

- ⑤ Assemble relief valve assembly (46) (with left-right symmetry) to the rear cover (26) and then tighten with a torque wrench.



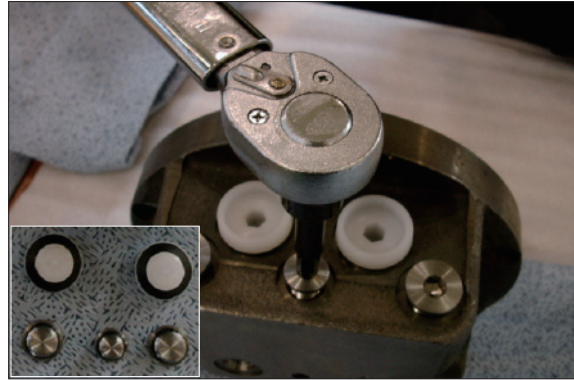
7078TM71

- ⑥ Using plier, Assemble spool (28), spring (29), stopper (30) and snap ring (31) in that order to the Ø16 hole on the underneath of the rear cover (26) and assemble check (32), spring (33), O-ring (24), seat (34) and snap ring (35) in that order to the Ø15 hole of the rear cover (26).



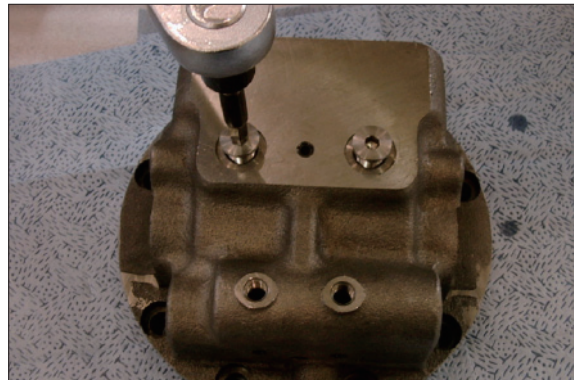
7078TM13

- ⑦ Fit O-ring (51) to plug (49) and O-ring (53) to plug (52) and then assemble them to rear cover (26) by a torque wrench.



555K7TM26/26A

- ⑧ Assemble 2 plug (50) to rear cover (26) by a torque wrench.



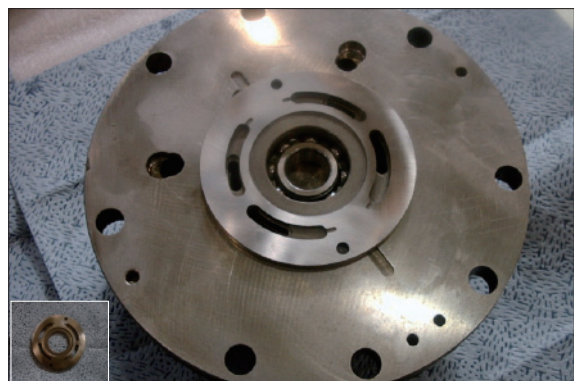
555K7TM27

- ⑨ Assemble ball bearing (54) with grease to rear cover (26) and insert 2 pin (55) by using hammer.



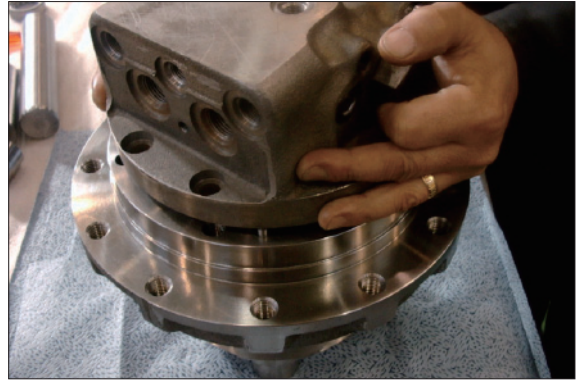
555K7TM28

- ⑩ Assemble valve plate (56) with grease to rear cover (26).



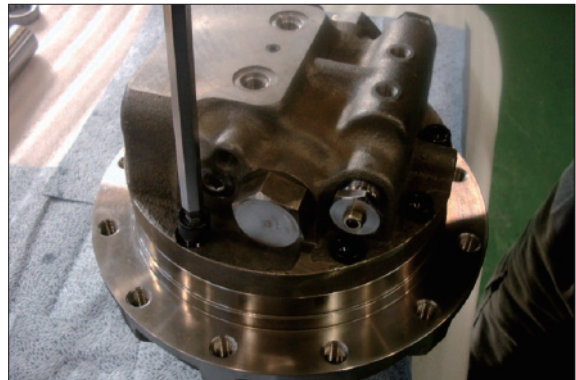
555K7TM12/12A

- ⑪ Assemble rear cover (26) to shaft casing (1).



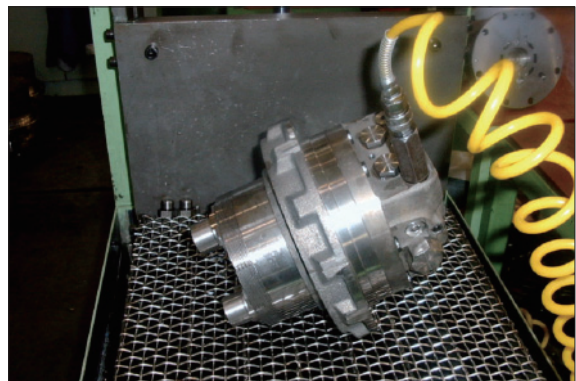
555K7TM29

- ⑫ Combine rear cover assembly and shaft casing assembly with 8 bolt (58).



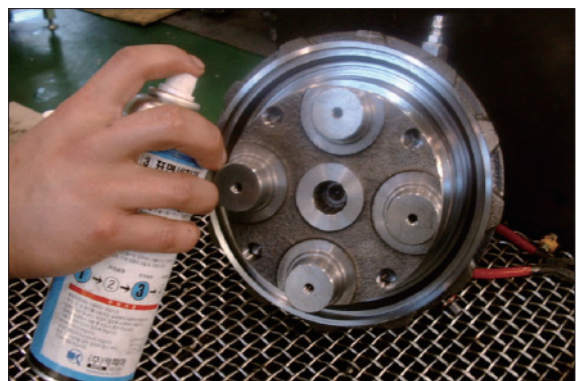
555K7TM30

- ⑬ **Motor pressure test**
- Check the oil leak for one minute by appearance test at air pressure 5 kgf/cm<sup>2</sup> (43 psi).



555K7TM31

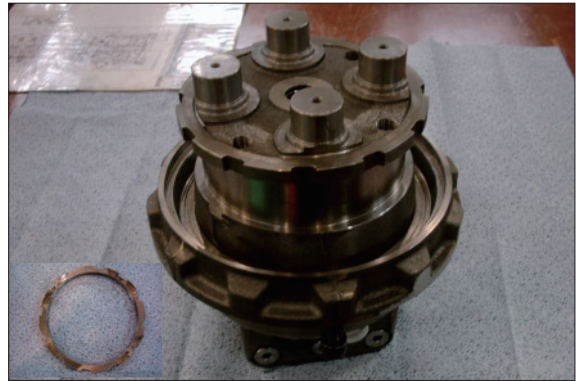
- ⑭ **Leakage test**
- Clean the unit by #1 color checker and spray #3 checker. Check leakage from oil seal and body.



555K7TM32

#### (4) Travel reduction gear

- ① Before assemble nut (64) to the motor.  
Remove burr and alien substances ready for assembling.



7078TM77/28A

- ② Insert ring gear (59) to the spray washing machine and heat up 69~70 °C for one minute.



7078TM78

- ③ Assemble angular bearing (60) to the ring gear (59).



7078TM79/79A

- ④ Insert 10 steel ball (61) to the ring gear (59) with a jig and assemble 2 plug (62) with a L-wrench.



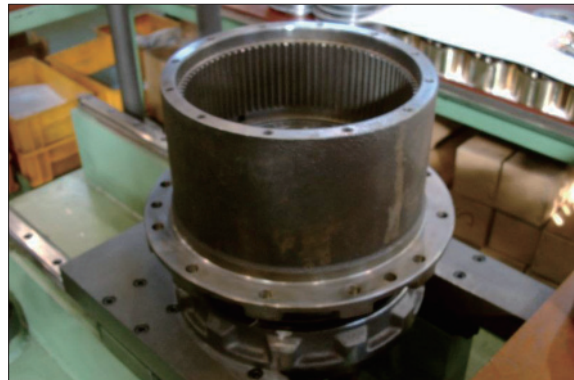
7078TM80/80A

- ⑤ Assemble floating seal (63) to ring gear (59) and motor part with a jig.



7078TM81/81A/82

- ⑥ Upset the ring gear (59) and assemble with motor.



7078TM83

- ⑦ Combine nut (64) to the ring gear (59) and pressing use a jig and then assemble with a torque-wrench.



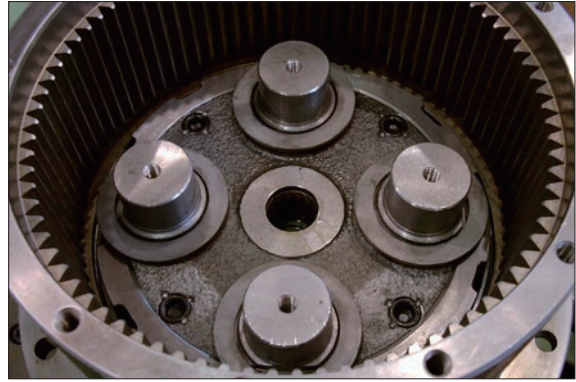
7078TM28/28B/28C

- ⑧ Using a L-wrench, assemble plug-4EA to the ring gear (59) and then cocking by a jig.



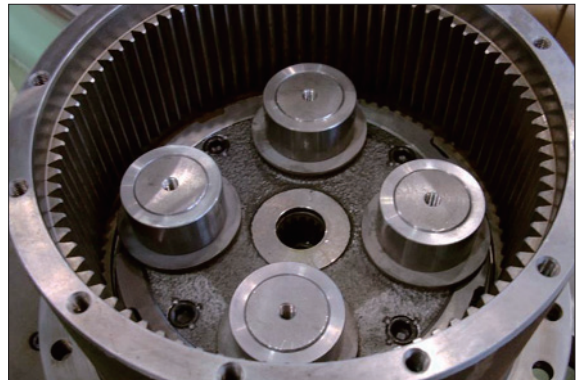
7078TM84/84A/85

- ⑨ Assemble washer (65)-4EA to the ring gear (59).



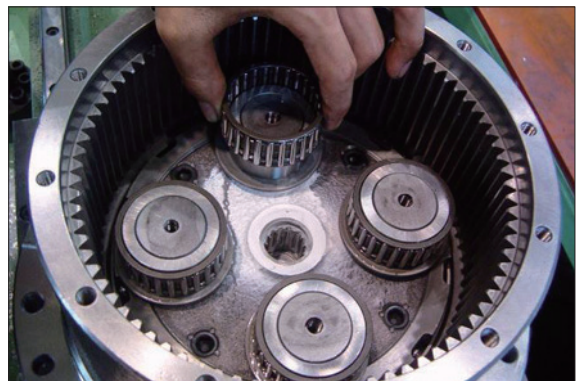
7078TM27

- ⑩ Assemble collar (66)-4EA to the ring gear (59).



7078TM26

- ⑪ Assemble needle bearing (68)-4EA to the ring gear (59).



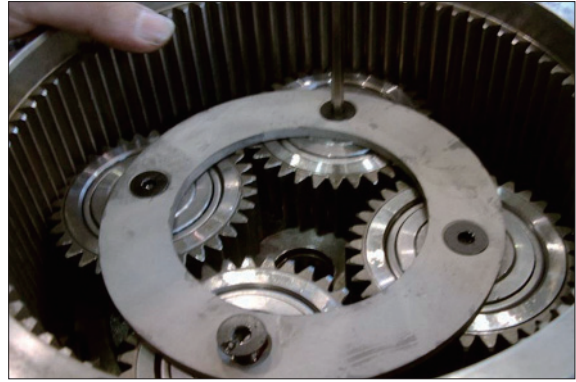
7078TM25

- ⑫ Assemble planetary gear (67)-4EA to the ring gear (59).



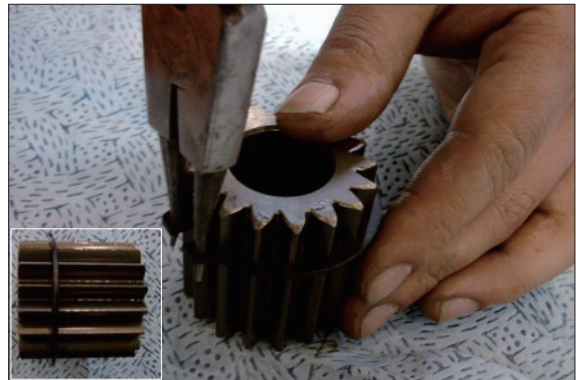
7078TM24

- ⑬ Assemble plate (69)-1EA to the ring gear (59) and then tighten flat head bolt (70)-4EA with a L-wrench.  
(after paste loctite and then tighten the flat head bolt).



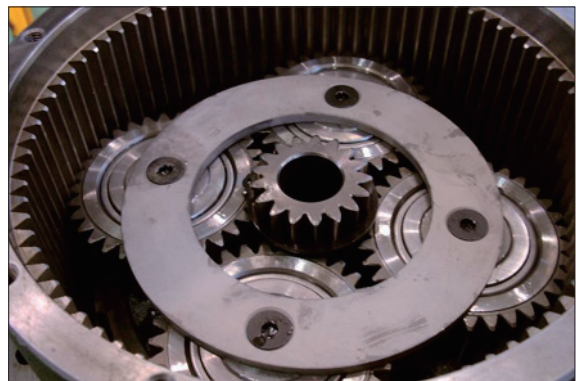
7078TM23

- ⑭ Assemble snap ring (72) to the sun gear (71) with a plier jig.



7078TM86/86A

- ⑮ Assemble sun gear with snap ring assembly to the ring gear (59).



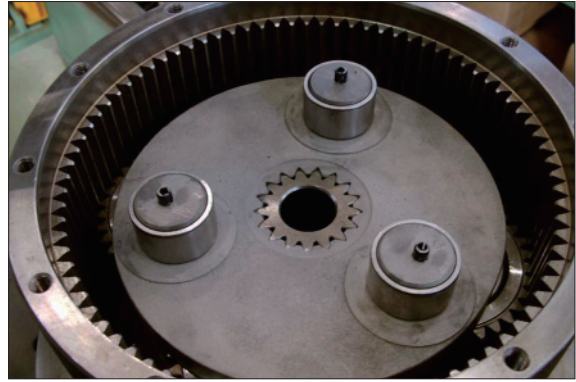
7078TM22

- ⑯ Assemble in that order collar (75), spring pin (74) to the carrier (73).



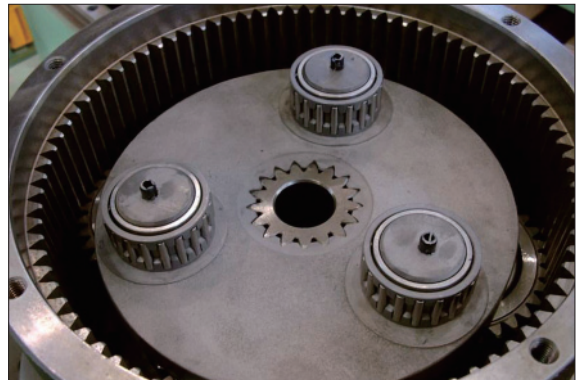
7078TM21

- ⑰ Assemble carrier sub assembly to the ring gear (59).



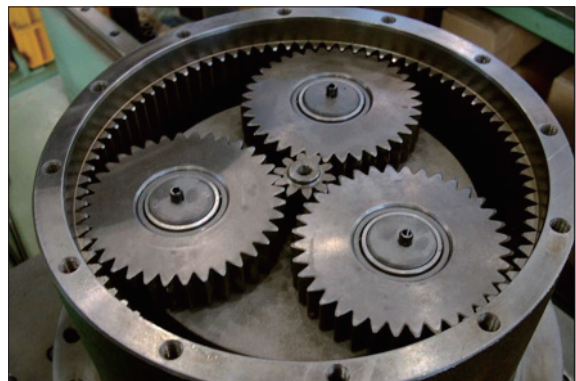
7078TM87

- ⑱ Assemble needle bearing (77)-3EA to the ring gear (59).



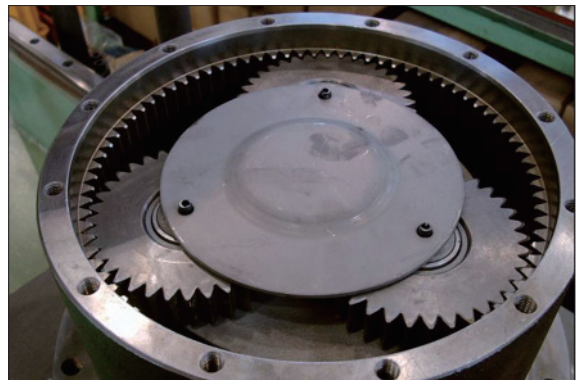
7078TM20

- ⑲ Assemble in order planetary gear (76), drive gear (78) to the ring gear (59).



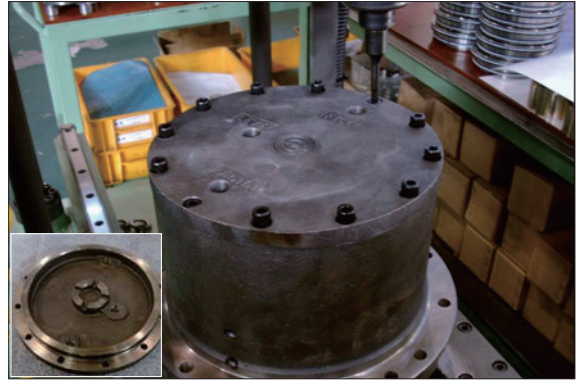
7078TM19

- ⑳ Assemble thrust plate (79) to the ring gear (59).



7078TM18

- ② Assemble in order ring gear cover (80) with O-ring (82) and then assemble wrench bolt (83) with a torque-wrench.



7078TM17/17A

- ② Roll the teflon tape to the ring gear (59) and then combine with a L-wrench (after test of drain part water pressure and capacity and then assemble plug PT3/8).

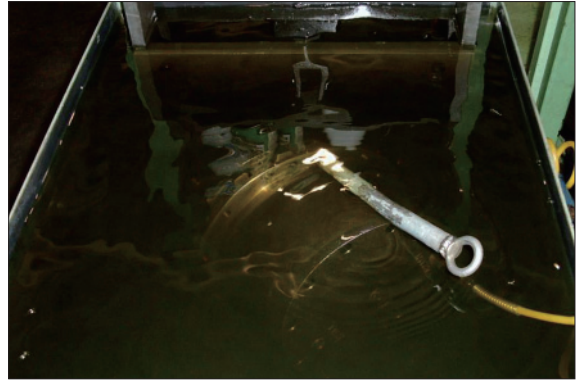


7078TM88

**(5) Test**

**① Motor pressure test**

- Check the oil leak for one minute by appearance test at air pressure 5 kgf/cm<sup>2</sup> (71 psi).



7078TM89

**② Performance test**

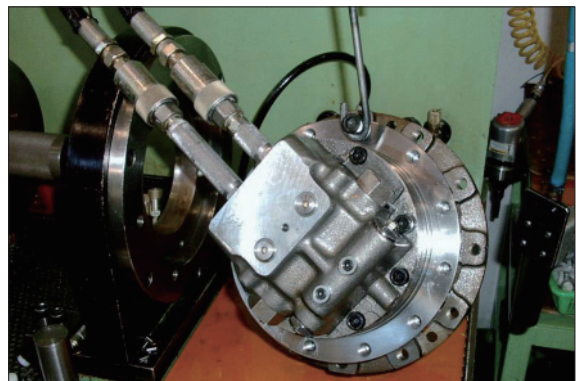
- Pour the gear oil (85W-140) by beaker at the reduction gear.



7078TM90

**③ Test bench mounting**

- Partially performance test by mounting the motor test bench.



7078TM91