

SECTION 3 POWER TRAIN SYSTEM



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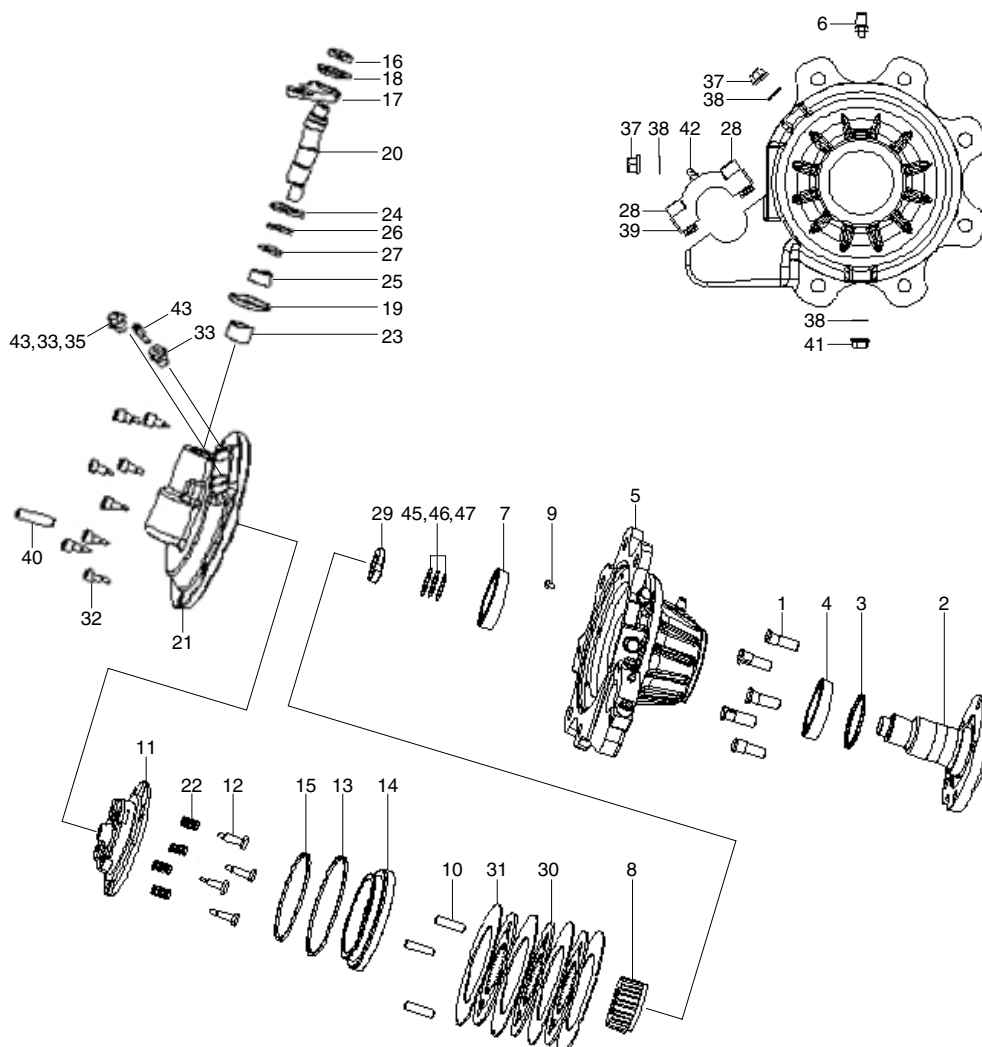
SECTION 3 POWER TRAIN SYSTEM

GROUP 1 STRUCTURE AND OPERATION

1. FRONT AXLE ASSY

1) STRUCTURE

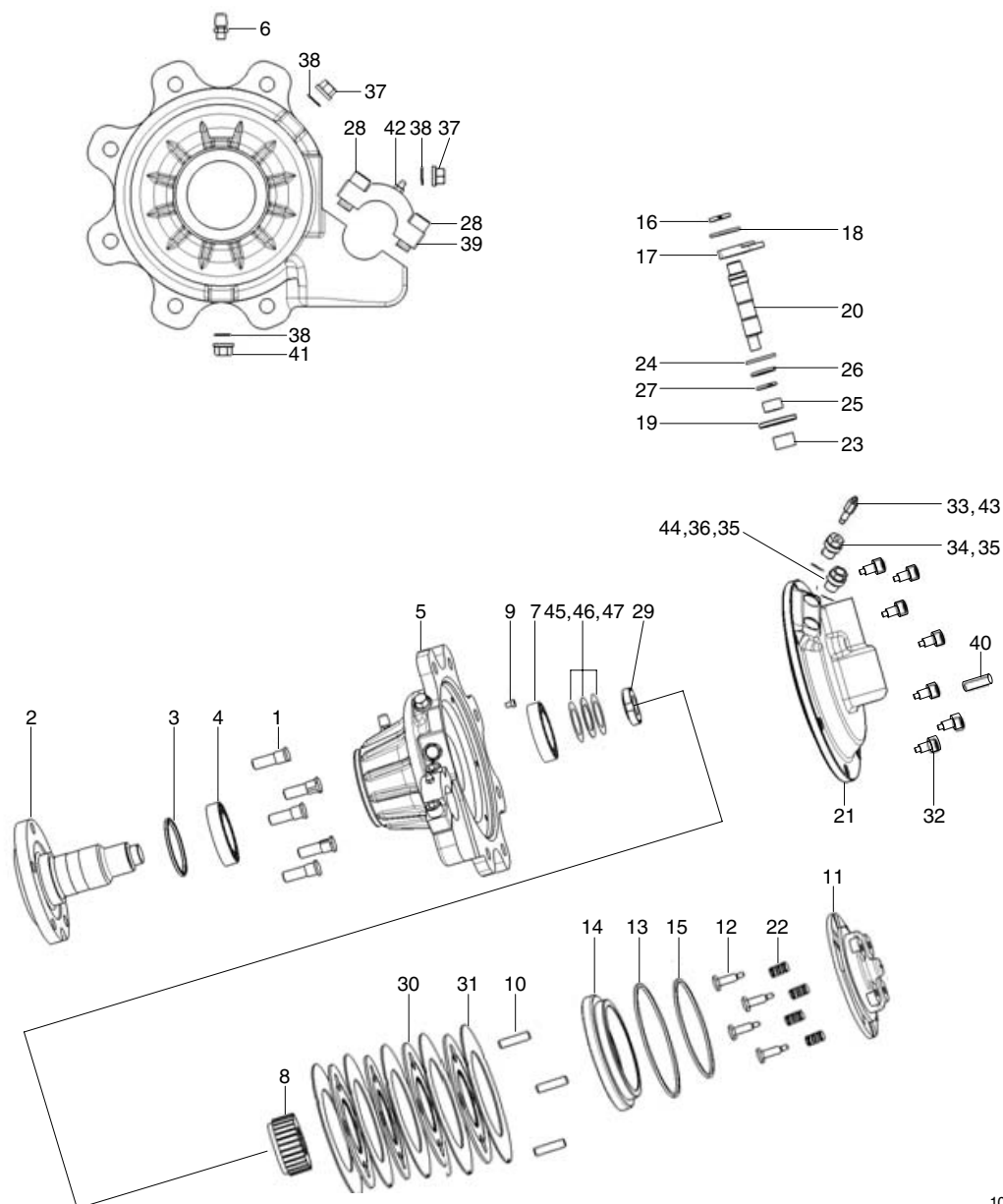
(1) Front axle, LH



10BTR9PT01

- | | | |
|------------------------|--------------------------|-----------------------|
| 1 Wheel bolt | 17 Parking lever (LH) | 33 Fitting |
| 2 Drive shaft | 18 Plain washer | 34 Bleeder screw |
| 3 Oil seal | 19 Bushing | 35 O-ring |
| 4 Taper roller bearing | 20 Cam shaft | 36 Fitting brake line |
| 5 Housing (LH) | 21 Cover (LH) | 37 Plug |
| 6 Air breather | 22 Spring | 38 O-ring |
| 7 Taper roller bearing | 23 Needle roller bearing | 39 Cap |
| 8 Collor, Spline | 24 Plain washer | 40 Dowel pin |
| 9 Socket bolt | 25 Roller | 41 Plug |
| 10 Pin | 26 Plain washer | 42 Nipple |
| 11 Actuator | 27 Snap ring | 43 Fitting cap |
| 12 Bolt | 28 Bolt | 44 Fitting cap |
| 13 Square ring | 29 Lock nut | 45 Shim |
| 14 Piston | 30 Disc | 46 Shim |
| 15 Square ring | 31 Plate | 47 Shim |
| 16 Snap ring | 32 Socket bolt | |

(2) Front axle, RH



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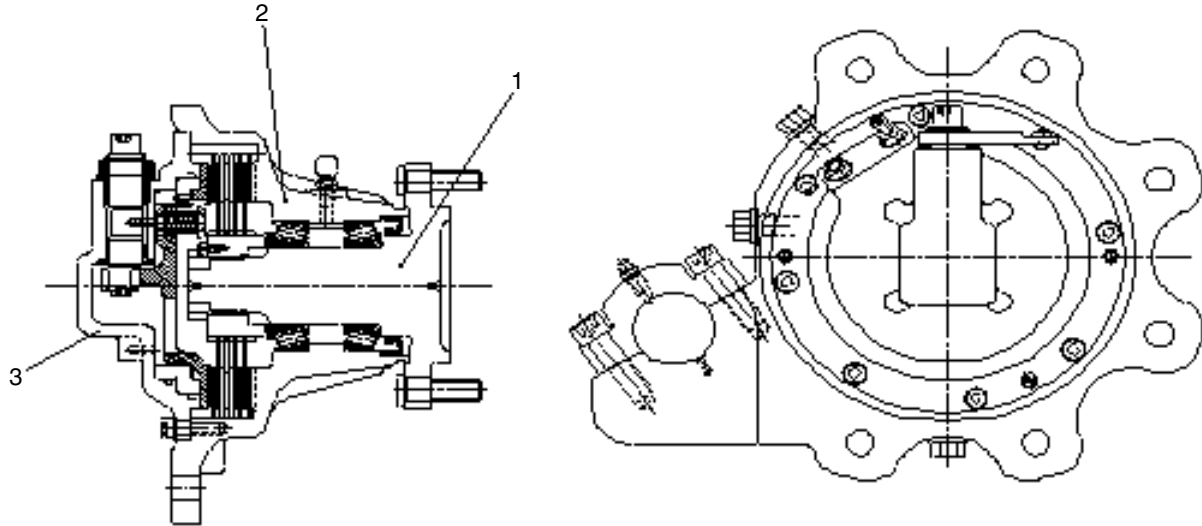
- | | | |
|------------------------|--------------------------|-----------------------|
| 1 Wheel bolt | 17 Parking lever (RH) | 33 Fitting |
| 2 Drive shaft | 18 Plain washer | 34 Bleeder screw |
| 3 Oil seal | 19 Bushing | 35 O-ring |
| 4 Taper roller bearing | 20 Cam shaft | 36 Fitting brake line |
| 5 Housing (RH) | 21 Cover (RH) | 37 Plug |
| 6 Air breather | 22 Spring | 38 O-ring |
| 7 Taper roller bearing | 23 Needle roller bearing | 39 Cap |
| 8 Collor, Spline | 24 Plain washer | 40 Dowel pin |
| 9 Socket bolt | 25 Roller | 41 Plug |
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| 11 Actuator | 27 Snap ring | 43 Fitting cap |
| 12 Bolt | 28 Bolt | 44 Fitting cap |
| 13 Square ring | 29 Lock nut | 45 Shim |
| 14 Piston | 30 Disc | 46 Shim |
| 15 Square ring | 31 Plate | 47 Shim |
| 16 Snap ring | 32 Socket bolt | |

2) SPECIFICATION

Item		Unit	Specification
Max axle load (1 axle)		kg/lb	2100/4630
Max input speed		rpm	5000
Gear ratio		-	20.0
Brake type		-	Wet disc brake
Max brake torque		kgf · m	250 (at 60 bar)
Oil type	Front axle	-	Mobilfluid 424
	Brake	-	Hydraulic oil SAE 10W(AZOLLA ZS32)
Oil volume	Front axle	liter	0.6×2EA
	Brake	cc	3.5×2EA

3) SYSTEM OPERATION

(1) General specification



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- 1 Drive shaft assy
- 2 Housing assy
- 3 Brake cover assy

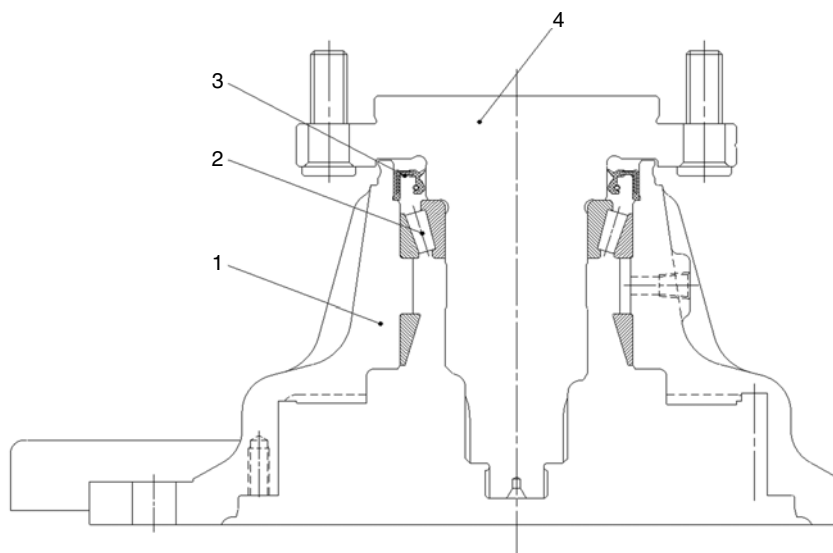
① Outline of the power transmission system

The front axle assy is composed of the drive shaft assy (1), housing assy (2), and brake cover assy (3).

The traction power is transmitted from the drive unit assy and the drive shaft of the front assy is transmitted only traction torque and braking torque.

(2) Basic components

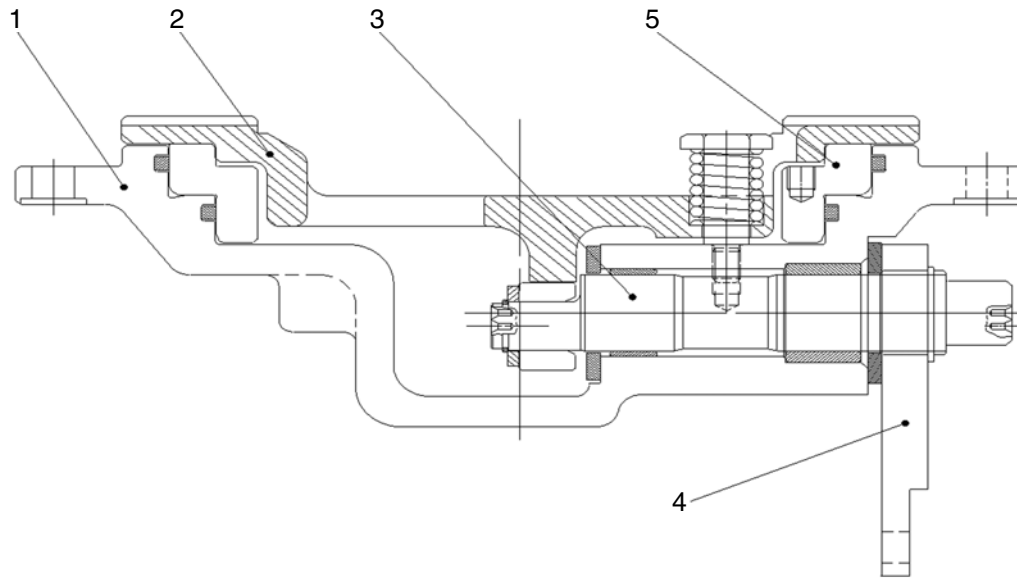
① Housing assy



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- | | | | |
|---|----------------------|---|-------------|
| 1 | Housing | 3 | Oil seal |
| 2 | Taper roller bearing | 4 | Drive shaft |

② Brake cover assy



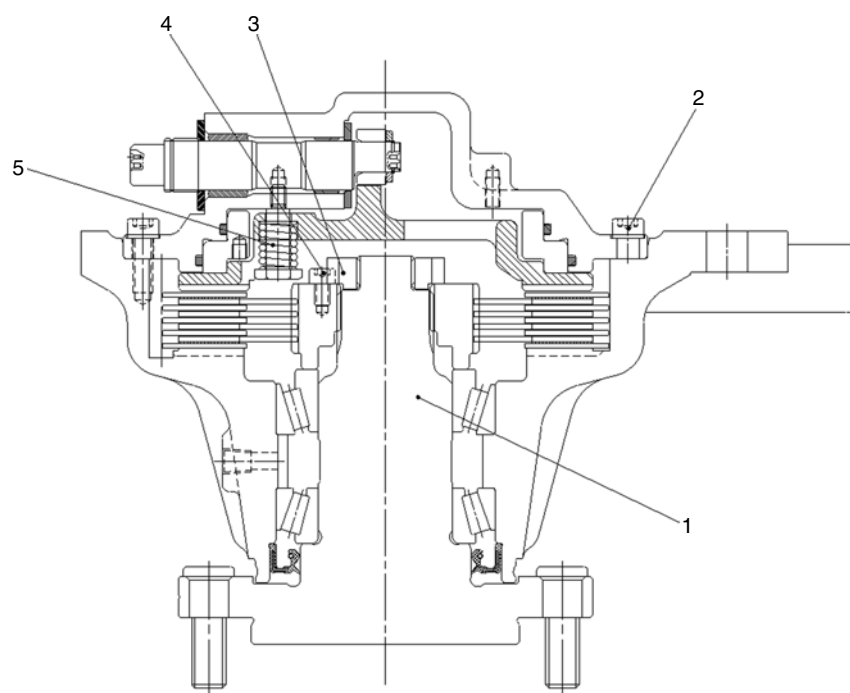
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- 1 Brake cover
- 2 Actuator
- 3 Cam shaft

- 4 Parking lever
- 5 Piston

(3) Tightening torque

① Housing assy



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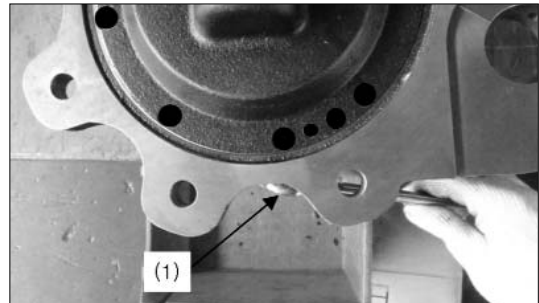
1	Drive shaft	$0.25 \pm 0.05 \text{kgf} \cdot \text{m}$
2	Housing bolt	$3.6 \pm 0.1 \text{kgf} \cdot \text{m}$
3	Lock nut	$21 \pm 1.0 \text{kgf} \cdot \text{m}$
4	Bolt	$0.95 \pm 0.15 \text{kgf} \cdot \text{m}$
5	Brake bolt	$1.5 \pm 0.10 \text{kgf} \cdot \text{m}$

GROUP 2 DISASSEMBLY AND ASSEMBLY

1. DISASSEMBLY OF THE FRONT AXLE ASSY

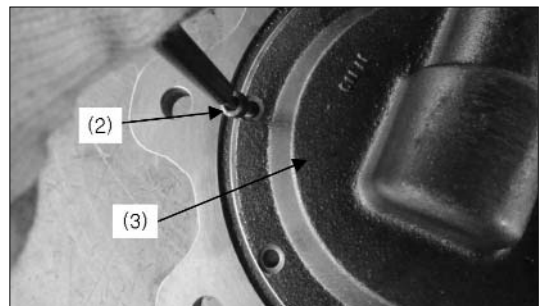
1) DISASSEMBLY OF THE HOUSING

- (1) Remove the drain plug of the housing using the wrench (1) and O-ring, and then, drain out the oil.



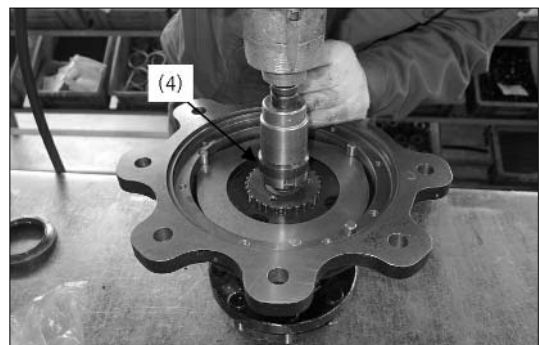
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- (2) Loosen the socket bolts (2, 8EA), and remove the brake cover assy (3).



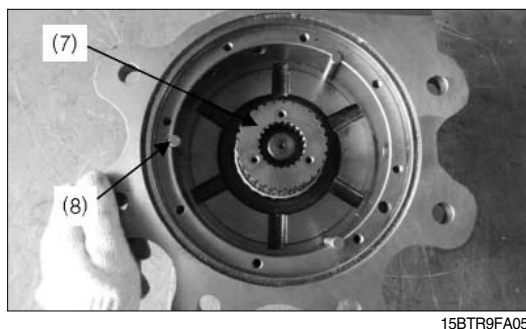
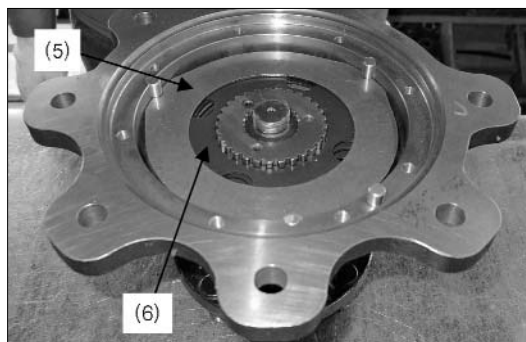
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- (3) Remove the lock nut (4).

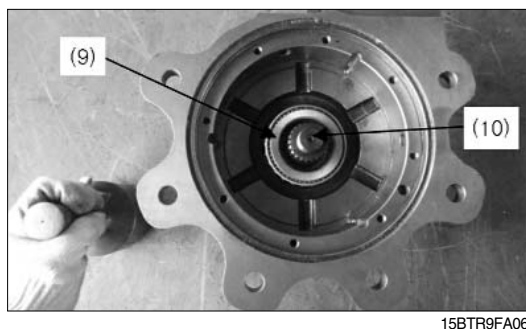


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- (4) Remove plate (5, 5pcs), discs (6, 4EA), collar spline (7, 1pcs) and pin (8, 3EA).



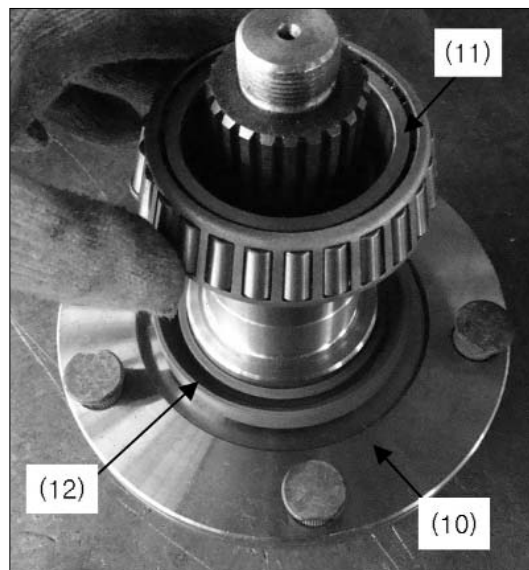
- (5) Disassemble the drive shaft (10) and the bearing (9) using the special tool and the plastic mallet.



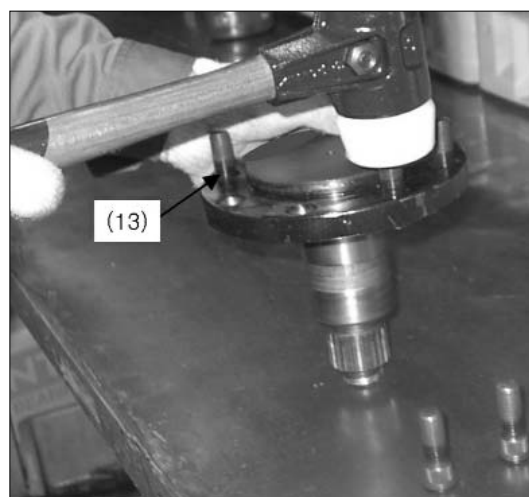
- ※ It should be removed the bearing cup which is assembled on the opposite side of the housing prior to dissassemble the drive shaft (10) and the bearing (9).



- (6) Take out the bearing (11) and the oil seal (12) from the drive shaft (10).

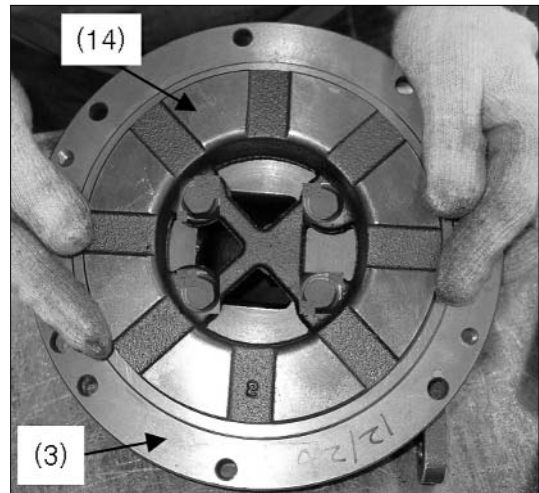


- (7) Remove the wheel bolts (13, 5EA).



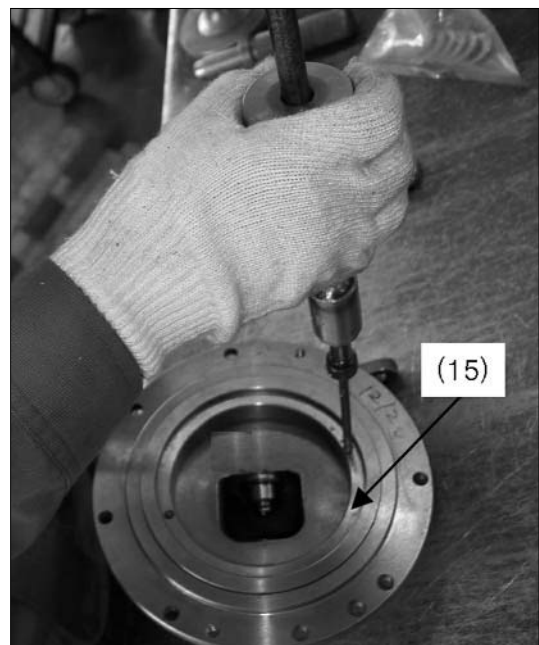
2) DISASSEMBLY THE BRAKE COVER ASSY

- (1) Disassemble the actuator (14, 1EA) from the brake cover (3).

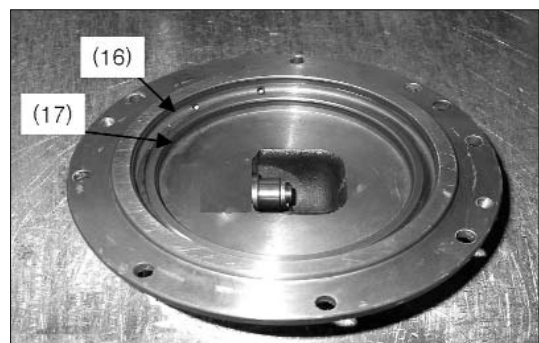


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- (2) Remove the square ring 1 (16) and the square ring 2 (17) after disassembling the piston (15) using the special tool.

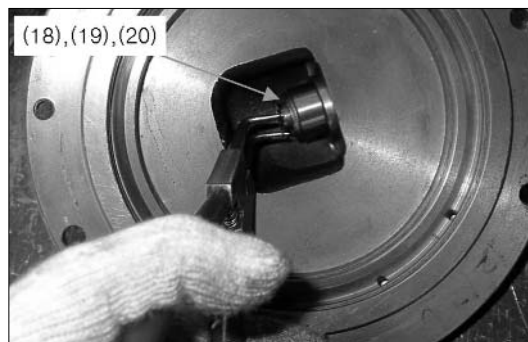


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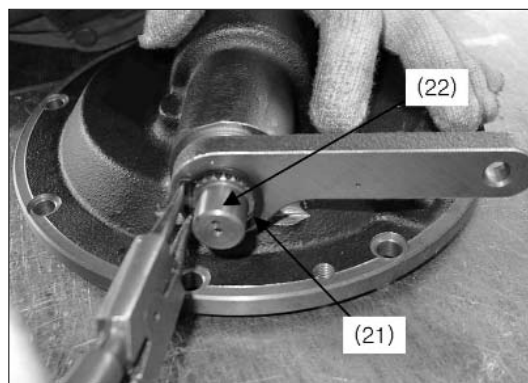


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- (3) Remove the snap ring (18), washer (19) and the roller (20).



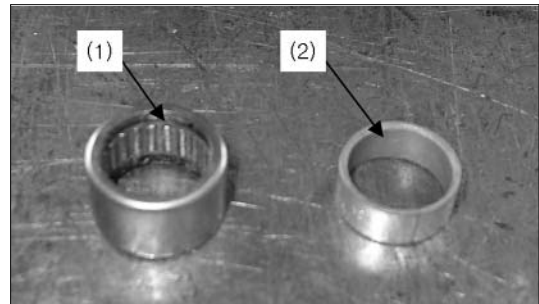
- (4) Disassemble the cam shaft (22) after removing the snap ring (21).



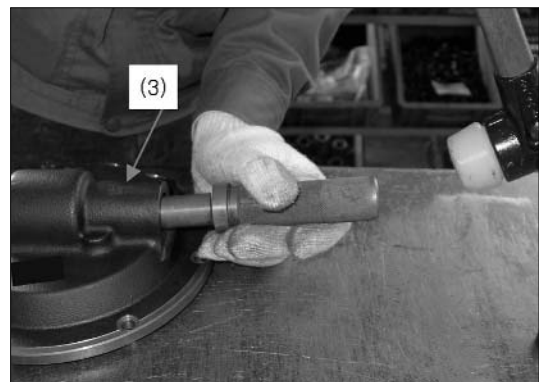
2. ASSEMBLY THE FRONT AXLE ASSY

1) ASSEMBLY THE HOUSING ASSY

- (1) Apply the bond (#1102) on the outside of the needle bearing (1) and the Loctite (#609) on the outside of the bush (2), and then assemble to the brake cover (3).

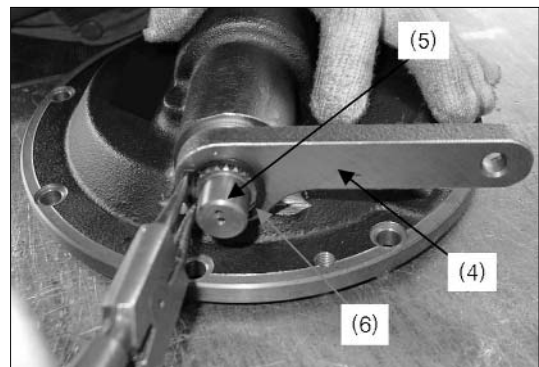


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15BTR9FA16

- (2) Fit the snap ring (6) after assembling the parking lever (4) to the camshaft (5).



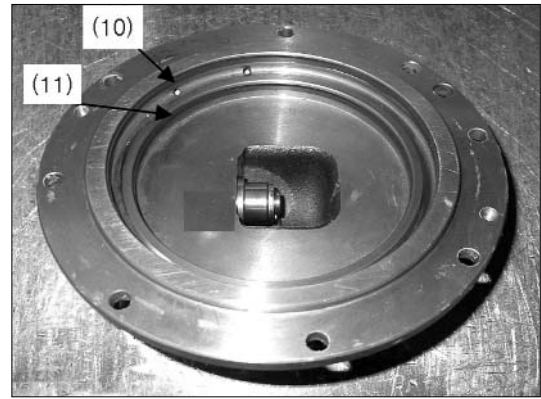
15BTR9FA17

- (3) Assemble the snap ring (7), washer (8), and roller (9).



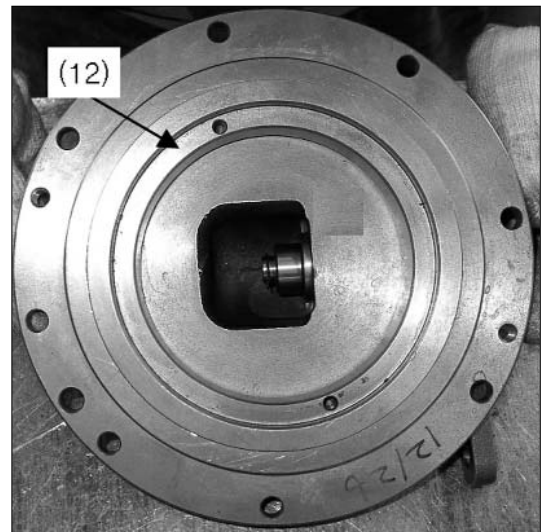
15BTR9FA18

- (4) Assemble the square ring 1 (10) and square ring 2 (11) on the piston (12).



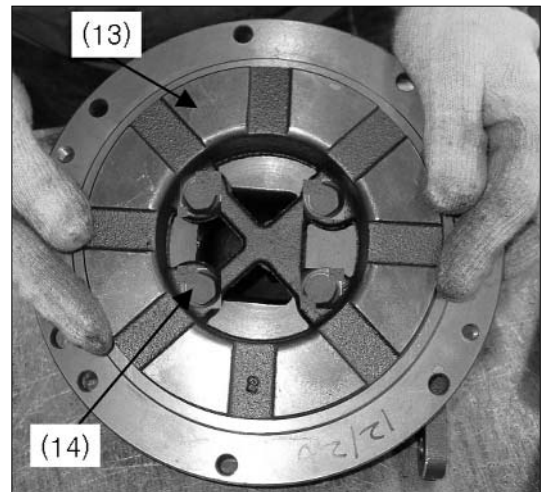
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- ※ It should be used the special tool for the piston and apply the Mobil #424 on the moving surface of the piston, and assemble it.



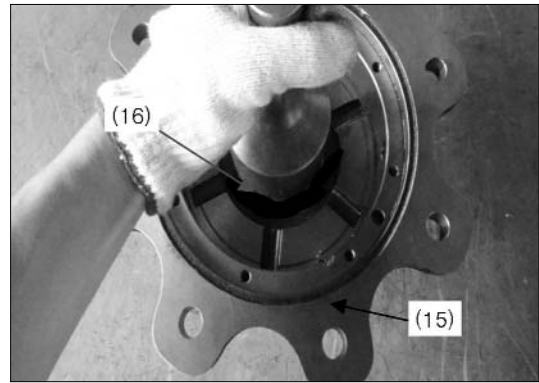
15BTR9FA20

- (5) Apply the Loctite #271 on the brake bolt (14) and assemble the brake bolt (14) with spring on the actuator (13).
- Tightening torque : 1.4~1.6 kg · m
- ※ It should be confirmed that the piston is returned by blowing air to the brake oil port after assembling the brake bolt (14).



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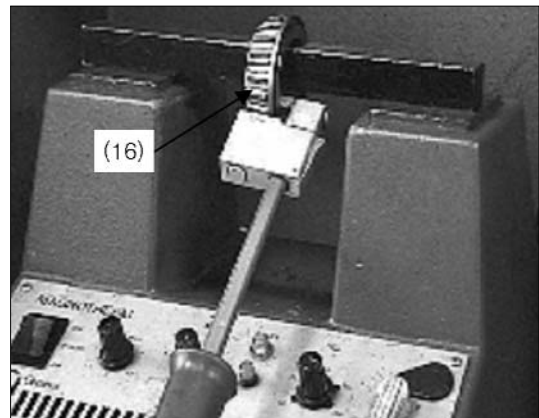
- (6) Assemble the bearing cup (16, 2EA) to the housing (15) using the special tool and the plastic mallet.



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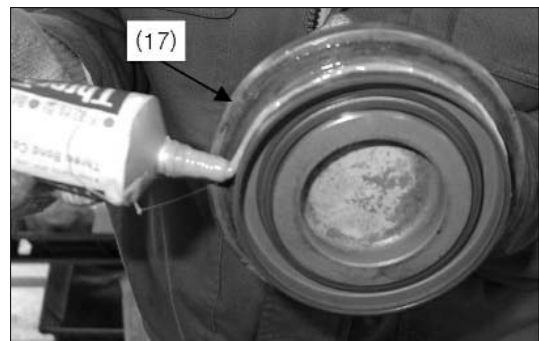
- (7) After heating to 100°C for the bearing cones (16, 2EA), and assemble the bearing cones to the housing (15) using the special tool and the plastic mallet with applying Mobil #424.

※ It should be assembled the bearing cone with heating state.



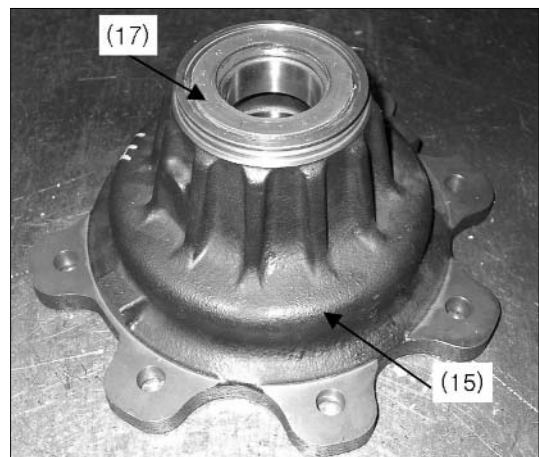
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- (8) After applying the bond (#1102) on the outside of the oil seal (17) and the Mobil #424 on the rib surface of the oil seal, assemble the oil seal (17) to the housing (15).



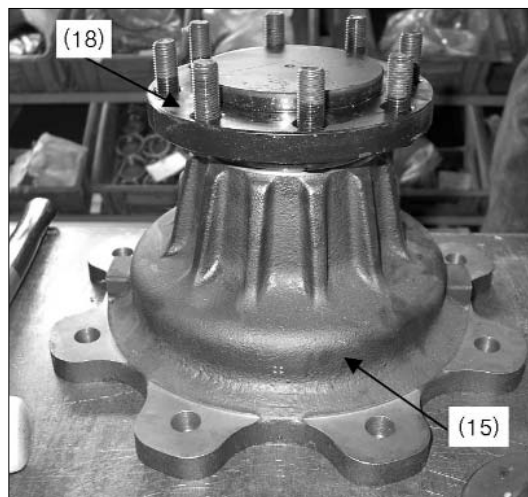
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※ It should be used the special tool when assembling the oil seal.



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- (9) Assemble the drive shaft assy (18) to the housing (15).



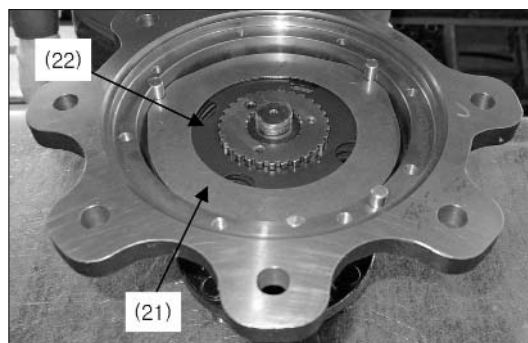
15BTR9FA26

- (10) Assemble the collar spline (19, 1EA) and pin (20, 3EA) to the housing.



15BTR9FA27

- (11) Assemble the plate (21, 5pcs) and the disc (22, 4pcs) to the housing.



15BTR9FA28

- ※ After applying the Loctite #242 on the bolts (3EA), assemble the bolts to the collar spline (19) with tightening torque (0.8~1.1kg · m).
Apply the Loctite #277 to the lock nut and tighten it with tightening torque (20.0~22.0kgf · m).
Before tighten the lock nut, adjust the starting torque 0.25~0.35 kgf · m with suitable shim.

- (12) Apply the Loctite to the socket bolt (23) and tighten it with tightening torque (5.0~7.0kgf · m).



15BTR9FA29