

# Workshop Manual

HP  
70-102

# MF3600 VSF

Series Tractors

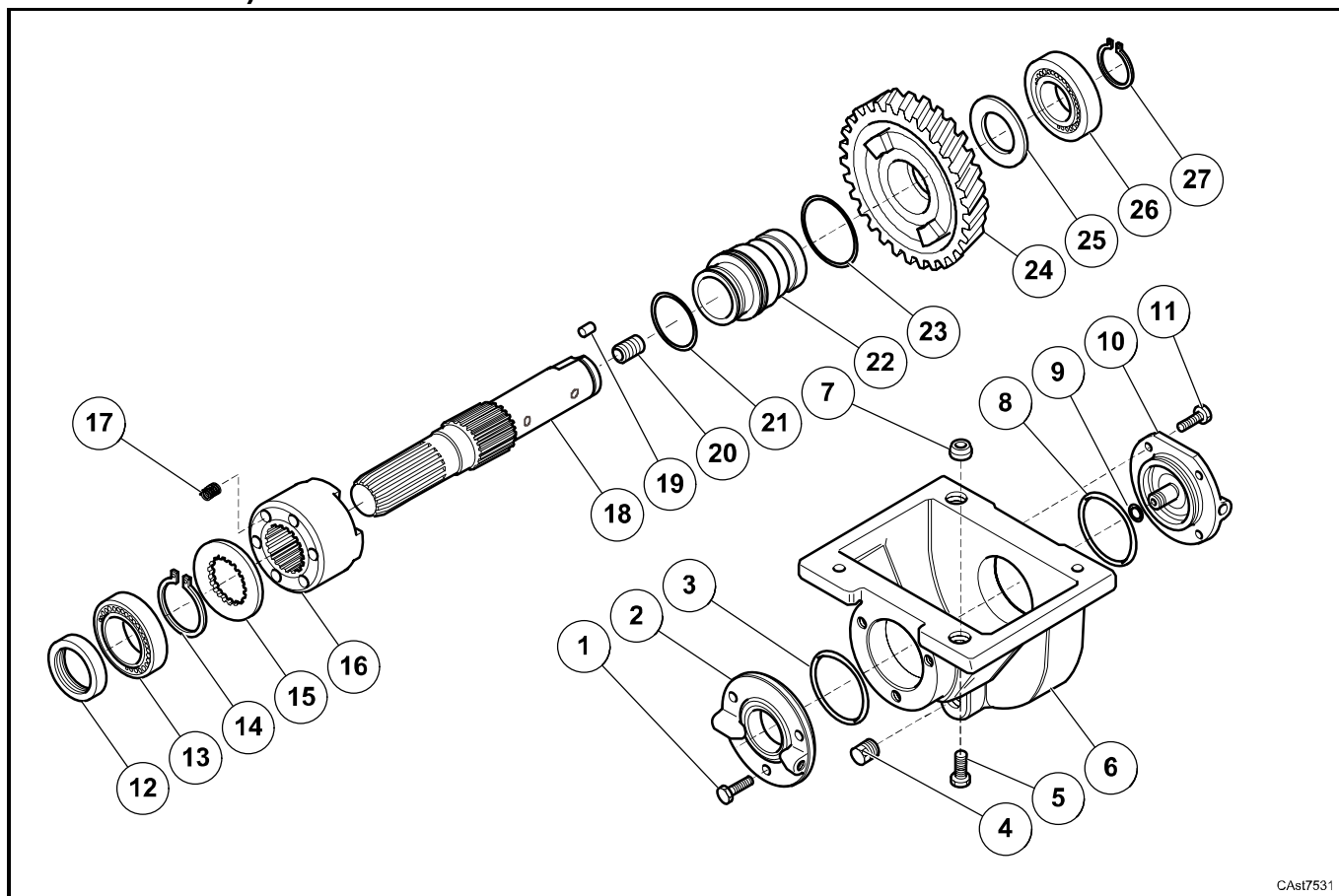


1	Tractor WSM	AG372708
2	2WD front axle WSM	CA270036
3	20.16 4WD front axle WSM	CA270003
4	20.09 4WD front axle WSM	CA270004
5	20.08 4WD front axle WSM	CA270005
6	Transmission WSM	CA270030
7	Transmission 24x12 PS WSM	AG218586
8	Wiring Diagram	



MASSEY FERGUSON

## D.1 4WD drop box (S.A.H.R.) (spring applied hydraulic released)



### RIFERIMENTI DROP BOX - DROP BOX REFERENCES

DROP BOX (SAHR) Z=57	144257
DROP BOX (SAHR) Z=58	144258
DROP BOX (SAHR) Z=59	144259
DROP BOX (SAHR) Z=60	144260

### D.1.1 Disassembly

1. Remove the drain plug (4) and drain the transmission oil completely.

**See:** C.7

2. Remove the fastening screws (5).

3. Disassemble the drop box (6) from the gear box.

4. If necessary, remove the bushes (7) from the box (6).

5. Remove the screws (11).

6. Disassemble the cover (10) from the box (6).

7. Remove the O-Ring (8) from the cover (10).  
**Note:** destructive operation for the O-Ring.
8. Remove the seal ring (9) from the cover (10).  
**Note:** destructive operation for the seal ring.
9. Extract the valve (20) from the shaft (18).
10. Remove the snap ring (27).
11. Remove the bearing (26).
12. Collect the spacer (25).
13. Collect the roller (19).
14. Remove the screws (1).
15. Disassemble the cover (2) from the box (6).
16. Remove the O-Ring (3) from the cover (2).  
**Note:** destructive operation for the O-Ring.
17. Remove the seal ring (12) from the cover (2).  
**Note:** destructive operation for the seal ring.
18. Remove the bearing (13) from the box (6).
19. Extract the shaft (18) from the box (6) and from the bush (22).
20. Remove the snap ring (14) from the shaft (18).
21. Extract at the same time from the box (6): the bush (22), the sleeve (16) and the gear (24).  
**Note:** keep the springs (17) together with the thrust washer (15).
22. Separate the thrust washer (15) from the springs (17).  
**Note:** keep springs.
23. Remove the springs from the sleeve (16).
24. Remove the sleeve (16) from the gear (24).
25. Remove the bush (22) from the sleeve (16).
26. Remove the O-Rings (21) and (23) from the bush (22).  
**Note:** destructive operation for the O-Rings.

### D.1.2 Assembly

1. Assemble the drain plug (4) and tighten it to the prescribed torque.

**See:** C.4

2. Lubricate and assembly two new O-Rings (21) and (23) on the bush (22).

3. Assemble the group (A) as follow:

- assemble the bush (22) on the sleeve (16);
- assemble the sleeve (16) on the gear (24);
- insert the springs (17) into the sleeve (16).

**See:** fig.1 and 2



fig. 1

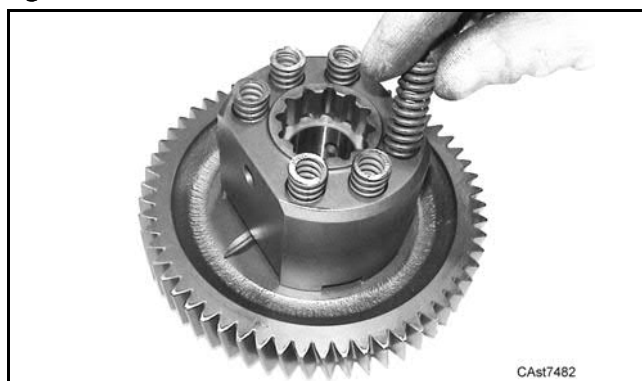


fig. 2

4. Position the box (6) on a suitable rotating support, as shown in figure.

**See:** fig.3 and 4

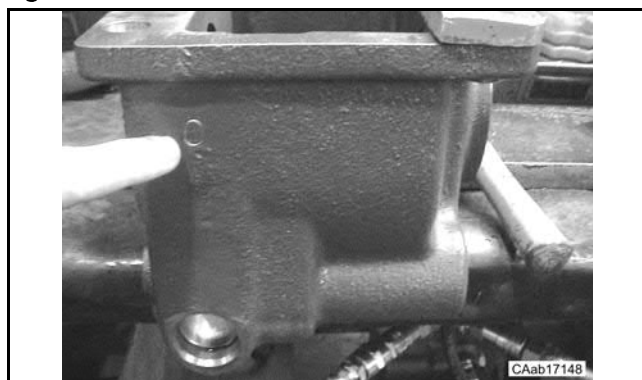


fig. 3



fig. 4

5. Insert the group (A) into the box (6).

See: fig.5

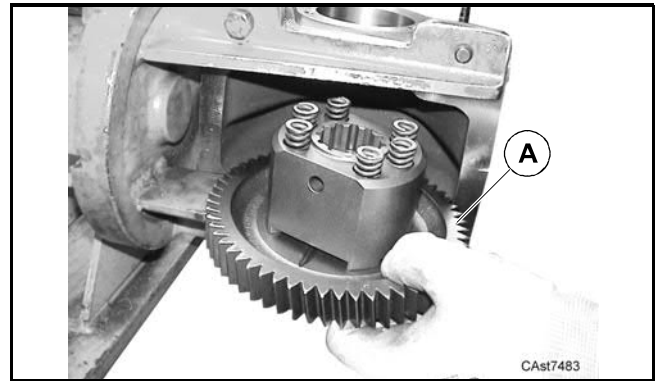


fig. 5

6. Insert the thrust washer (15) into the box (6) on the springs (17).

See: fig.6

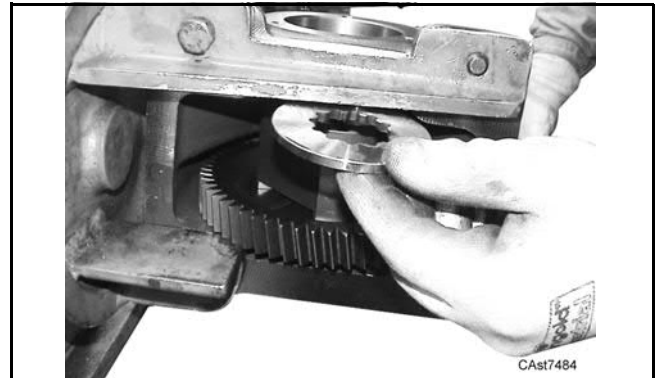


fig. 6

7. Insert the snap ring (14) in the shaft (18).

8. Insert the shaft (18) into the box (6) and into the bush (22).

See: fig.7

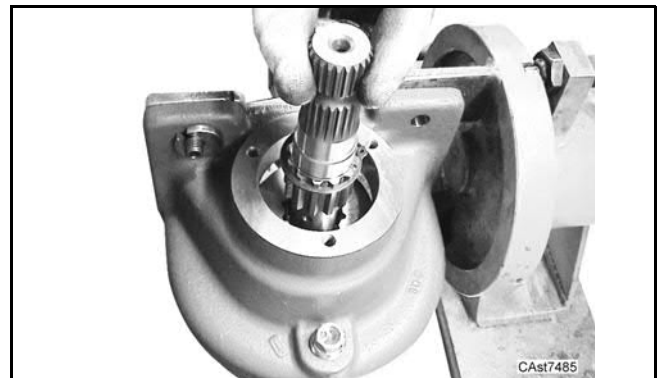


fig. 7

9. Assemble the bearing (13) to the box (6) by using the special tool CA715843 and a hammer.

See: fig.8 and E.1 (4WD S.A.H.R. drop box)



fig. 8

10. Insert a new seal (12) on the cover (2) by using the special tool CA715804 and a hammer.

See: E.1 (4WD S.A.H.R. drop box)

11. Lubricate un nuovo O-Ring (3).

## 4WD DROP BOX (S.A.H.R.)

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12. Assemble the O-Ring (3) on the cover (2).

13. Lubricate a new seal ring (12).

**See:** C.4

14. Assemble the cover (2) to the box (6).

15. Assemble and tighten the fastening screws (1) to the prescribed torque.

**See:** C.4

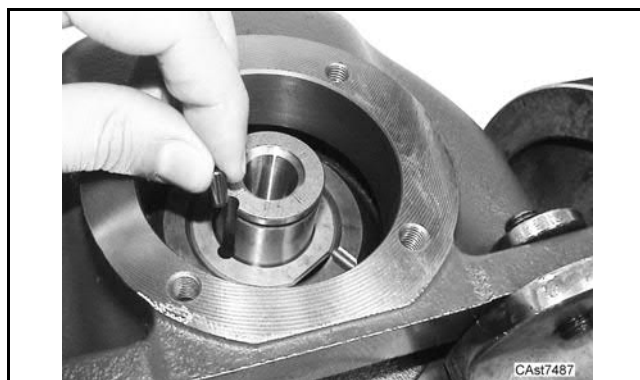
16. Turn the box (6) upside down.

17. Settle the shaft (18) downward.

18. Align the key-way on the shaft (18).

19. Insert the needle (19).

**See:** fig.9



**fig. 9**

20. Assemble the washer (25).

21. Assemble the bearing (26) by using the special tool CA715843 and a hammer.

**See:** fig.10 and E.1 (4WD S.A.H.R. drop box)

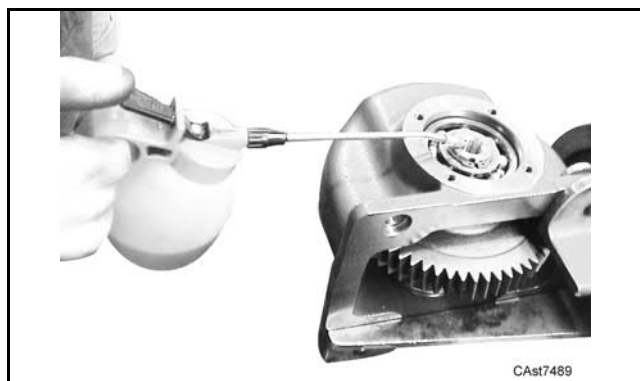


**fig. 10**

22. Assemble the snap ring (27).

23. Lubricate the hole in the shaft (18).

**See:** fig.11



**fig. 11**

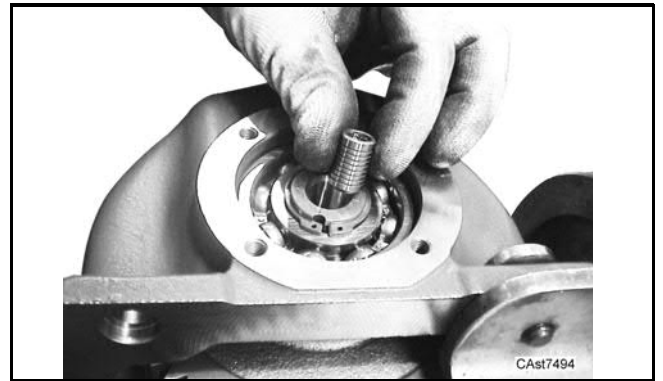
**24.** Insert the valve (20) into the shaft (18).

**See:** fig.12

**25.** Lubricate the valve (20).

**26.** Assemble the shaft (9) on the cover (10) by using the special tool CA715845.

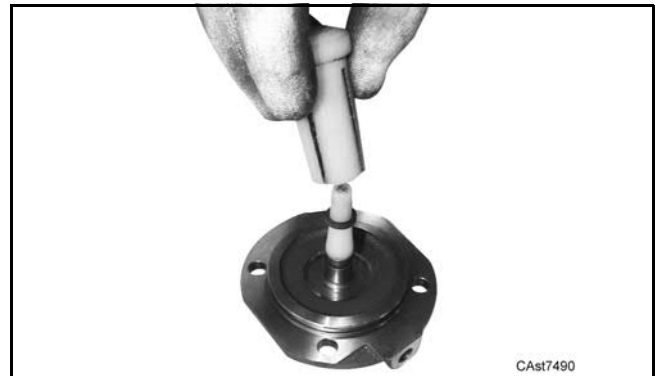
**See:** E.1 (4WD S.A.H.R. drop box)



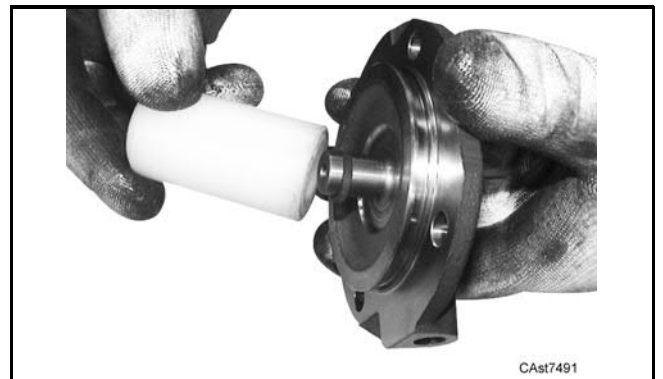
**fig. 12**

**27.** Clench the shaft (9) by using the special tool "calibrator" CA715845.

**See:** fig.13 and 14 and E.1 (4WD S.A.H.R. drop box)



**fig. 13**



**fig. 14**

**28.** Lubricate a new O-Ring (8).

**29.** Assemble the O-Ring (8) on the cover (10).

**30.** Assemble the cover (10) on the box (6).

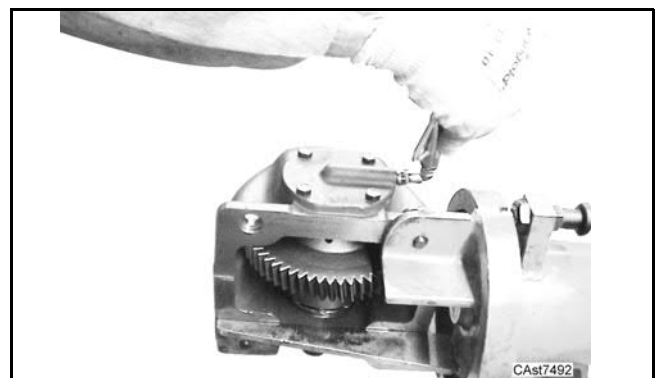
**31.** Assemble and tighten the fastening screws (11) to the prescribed torque.

**See:** C.4

**32.** Check the piston (20) correct working by insufflating air into the box through the hole on the cover (10).

**See:** fig.15

**33.** Assemble the bushes (7) on the box (6).



**fig. 15**

## 4WD DROP BOX (S.A.H.R.)

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**34.** Before matching surfaces, make sure that they are perfectly clean, then degrease and clean them with appropriate detergents.

**Note:** to remove Loctite® 510, we advise to use Loctite® 7200 spray.

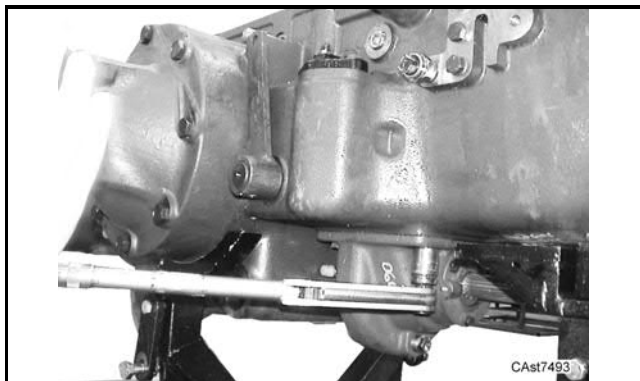
**35.** Apply the prescribed sealant on the contact surface between the drop box (6) and the gear box.

**See:** C.4

**36.** Assemble the drop box (6) to the gear box.

**37.** Assemble and tighten the fastening screws (5) to the prescribed torque.

**See:** fig.16 and C.4



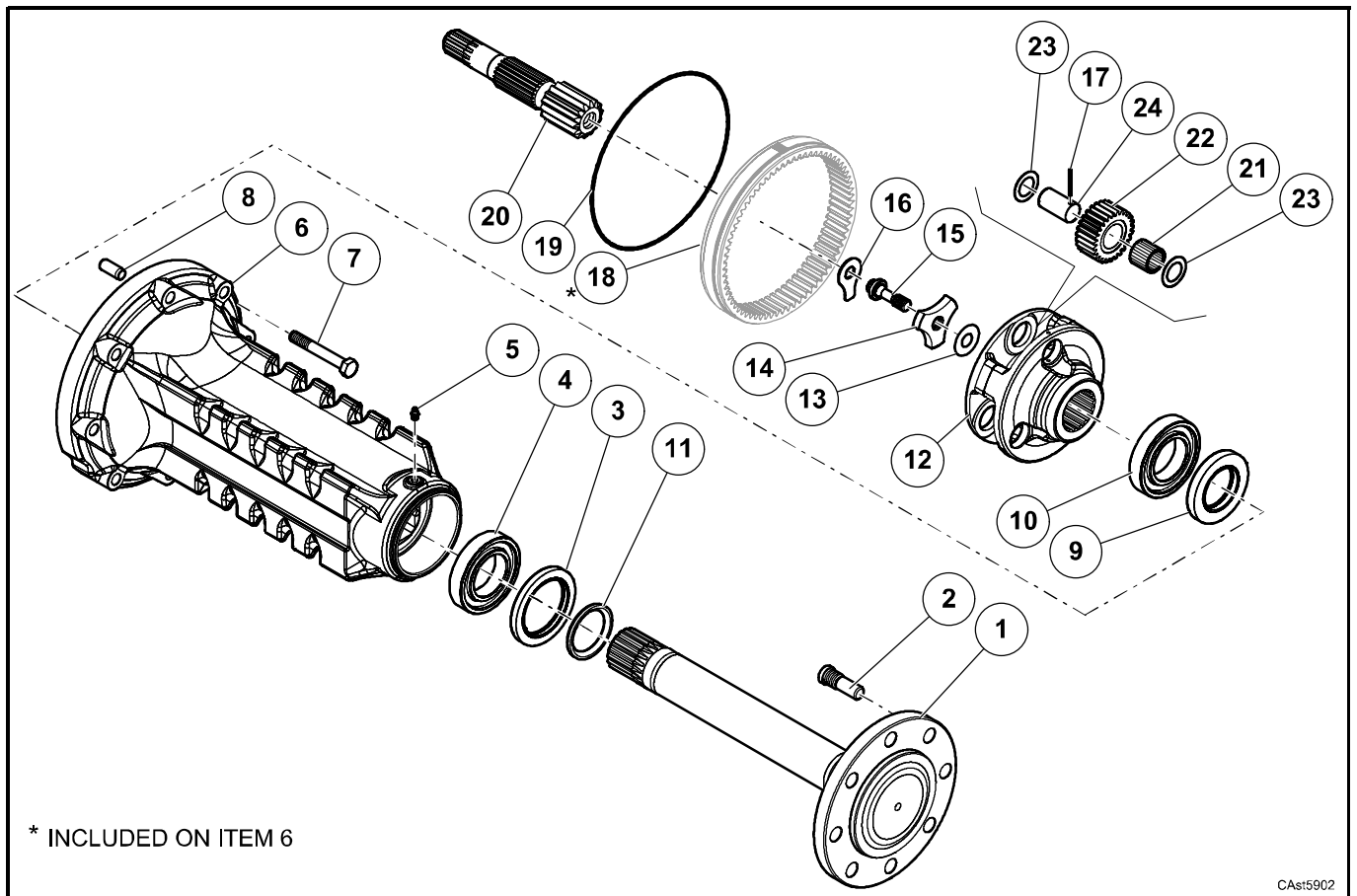
**fig. 16**



## D.2 Final drive

### D.2.1 Final drive CA643601 for 3625-3635 models

CARRARO ref.	Version	Final drivers models	Flange distance	Models
CA643601	F	FINAL DRIVE 506 STD 6/1	1242 mm	3625-3635



### D.2.1.1 Disassembly

1. Before disassembly the final drive, disengage the parking brake.

**See:** D.11

2. Unscrew the trumpet (6) locking screws (7).

3. Disassemble the trumpet (6) from the transmission.

4. Disassemble the shaft (20).

5. Remove the washer (16) locking screw (15).

6. Remove the screw (15).

7. Remove the retaining washer (14) and the shims (13).

8. Extract the planetary carrier (12).

9. Disassemble the planetary gears carrier by removing pins (17).

10. Remove the pins (24) and pull out the washers (23), the gears (22) and the rollers (21) from the planetary gears carrier (12).

11. Remove the pins (8) from the the trumpet (6).

12. Remove the O-Ring (19) on the ring gear (18).

**Note:** destructive operation for O-Ring (19).

13. Remove the washer (11).

14. Collect the bearing (10).

15. Overturn the whole group.

16. Extract wheel shaft (1) from the trumpet (6).

17. Only if necessary, remove the studs (2) fro the wheel axis (1).

18. Remove the seal ring (3) from the trumpet (6).

**Note:** destructive operation for the seal ring (3).

19. Remove the bearing (4) from the trumpet (6).

20. Overturn the trumpet (6).

21. Extract the seal ring (9) from the trumpet (6).

**Note:** destructive operation for the seal ring (9).

22. If necessary remove the greaser (5) from the trumpet (6).

### D.2.1.2 Assembly

1. Position the trumpet vertically.

2. Assemble the bearing (4) to the trumpet (6) by using the special tool CA715825.

**See:** E.1 (CA643601 final drive) and fig.1

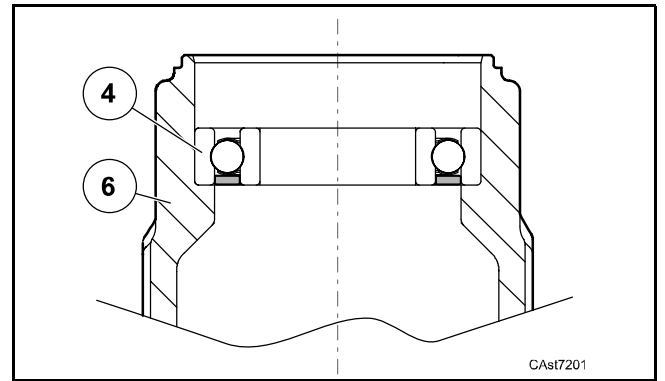


fig. 1

3. Assemble the seal (3) by using the special tool CA119034.

**See:** E.1 (CA643601 final drive) and fig.2

4. Grease the area as shown in figure.

**See:** C.4 and fig.2

5. Assemble the shim (11).

6. Assemble the studs (2) on the wheel axis (1).

7. Warm the shown area to 120 °C for 4/5 minutes to allow the wheel axis (1) insertion.

**See:** fig.2

8. Assemble the wheel axis (1).

9. Overturn the trumpet (6).

10. Assemble the seal (9) by using the special tool CA715824.

**See:** E.1 (CA643601 final drive)

11. Assemble the bearing (10) by using the special tool CA715825.

**See:** E.1 (CA643601 final drive)

12. Assemble a new O-Ring (19) on the ring gear (18).

13. Assemble the pins (8) on the trumpet (6).

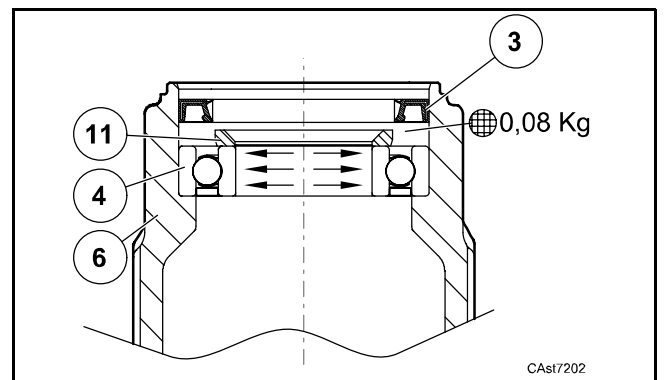


fig. 2

14. Assemble the complete planetary gear assy on the trumpet.

See: fig.3, 4, 5 and C.4

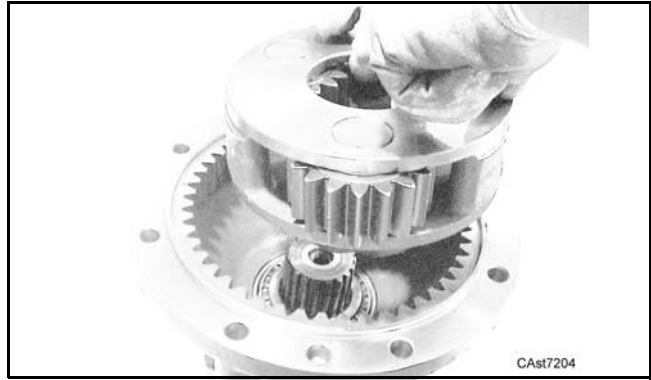


fig. 3

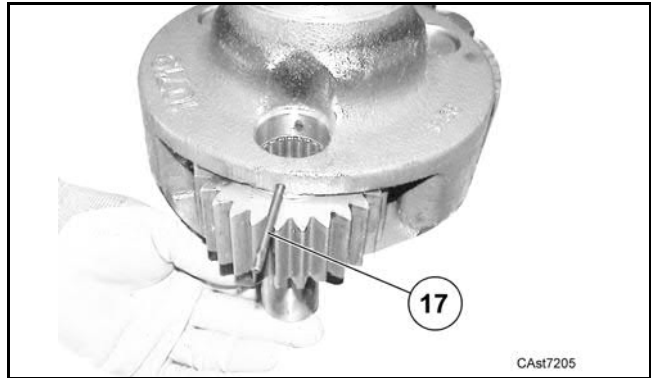


fig. 4

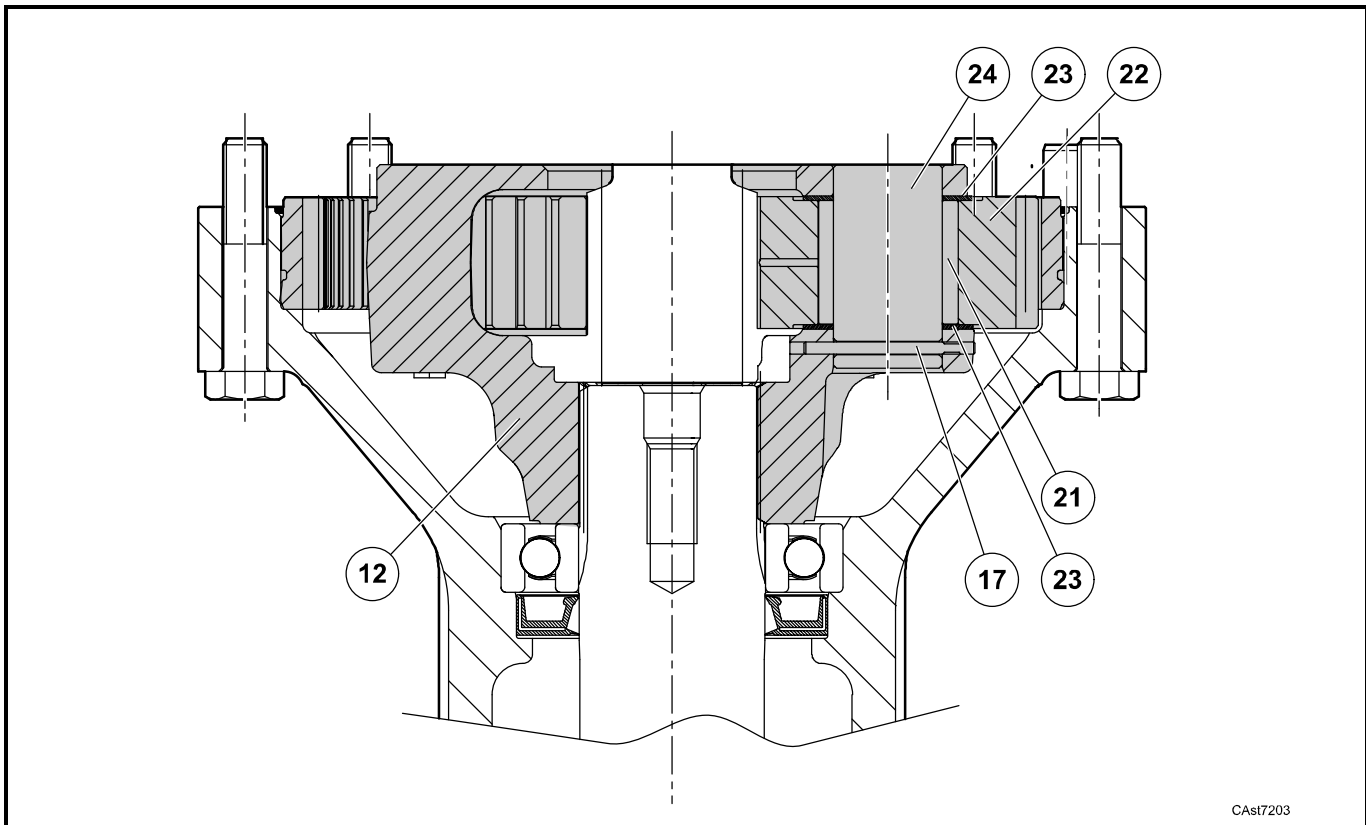


fig. 5

15. Check that wheel axis (1) is assembled up to stroke end.

**D.2.1.3 End float determination**

1. Measure with a depth gauge the dimension **A**.

**See:** fig.6 and 8

2. Measure with a depth gauge the dimension **B**.

**See:** fig.7 and 8

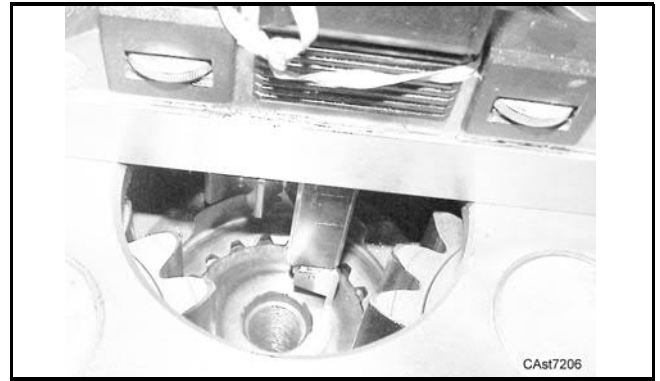


fig. 6

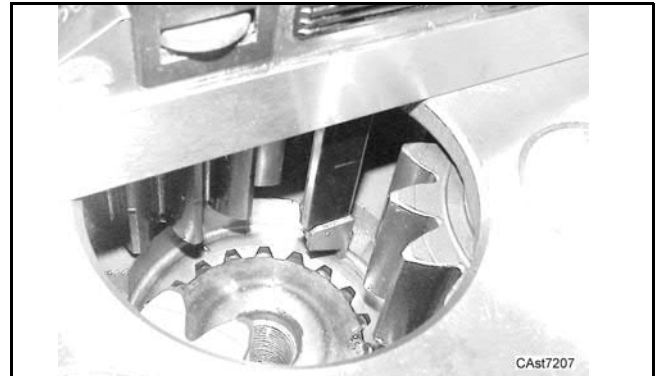


fig. 7

3. The calculated value **C** (without shims) must be within 0.4±0.2 mm.

$$C = A - B = (0.4 \div 1.2) \text{ mm}$$

**See:** fig.8

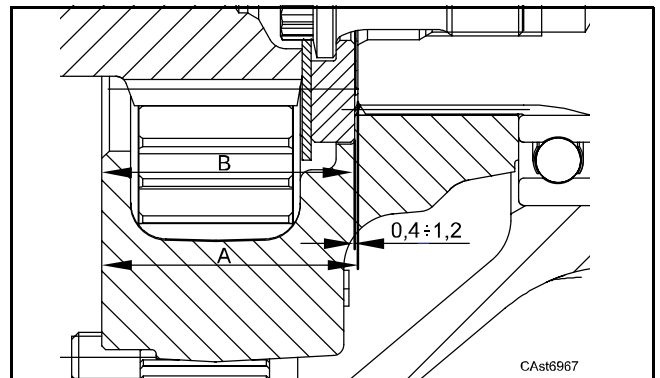


fig. 8

4. Choose the shims (13) among the available range in order to ensure a 0.1±0.5 mm end float on the bearings.

**See:** following table and step [12]

SHIMS RANGE				
Thickness - mm	0.05	0.10	0.30	0.50
Quantity	---	---	--	---

## FINAL DRIVE

5. Assemble shims (13).

See: fig.9

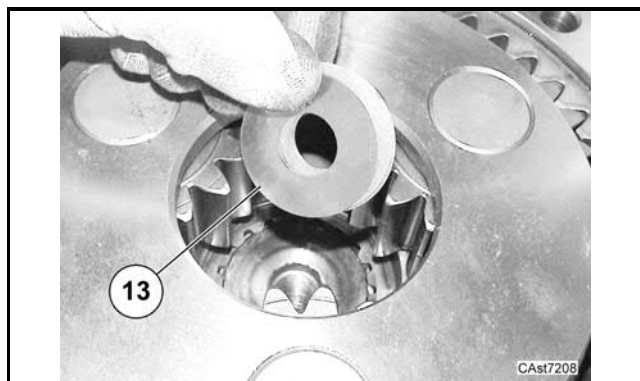


fig. 9

6. Assemble the lock washer (14).

See: fig.10

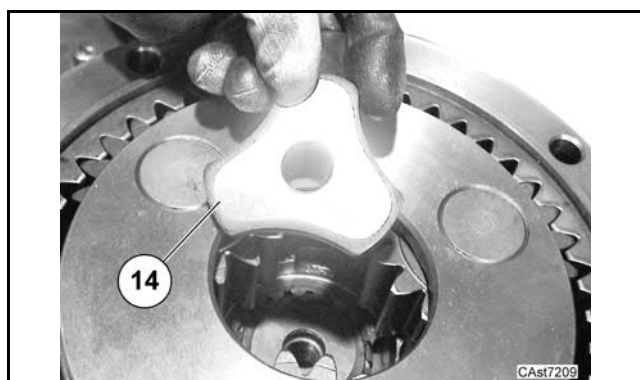


fig. 10

7. Settle the whole group by using a rubber mallet.

See: fig.11

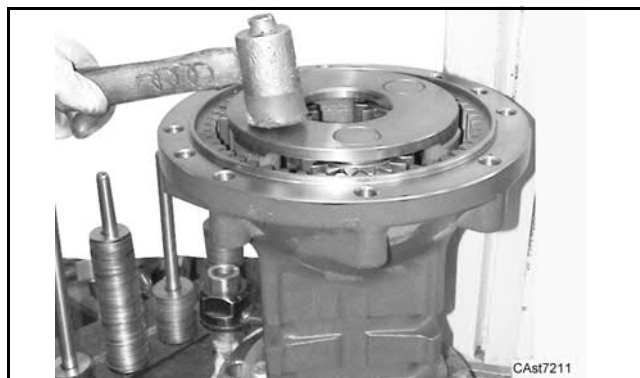


fig. 11

8. Assemble and tighten screw (15) to the prescribed torque, locking the gear rotation by means of a pin.

See: C.4 and fig.12

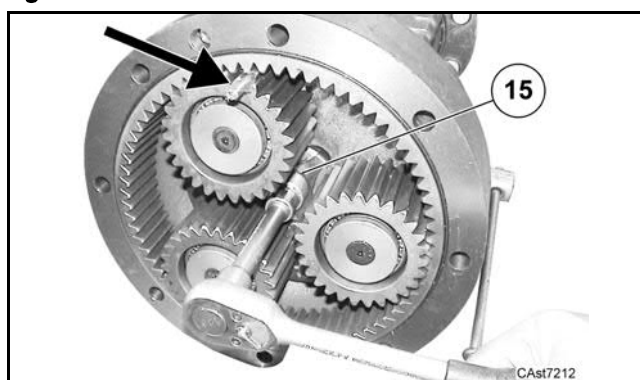


fig. 12

9. Settle again by using a rubber mallet.

10. Check that there is no end float while turning the planetary carrier (12).

See: fig.13

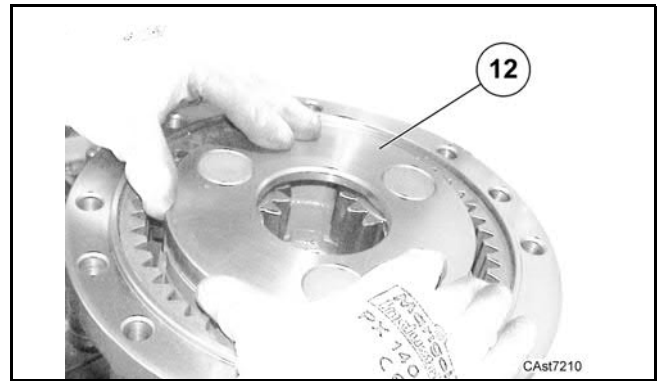


fig. 13

11. Grease the lock washer (16).

See: fig.14

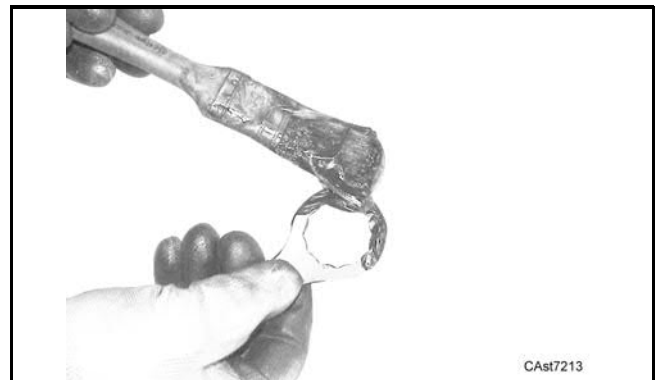


fig. 14

12. Assemble the lock washer (16) by means of a magnet.

See: fig.15

Note: tighten screw (15) as much as necessary to insert washer (16).

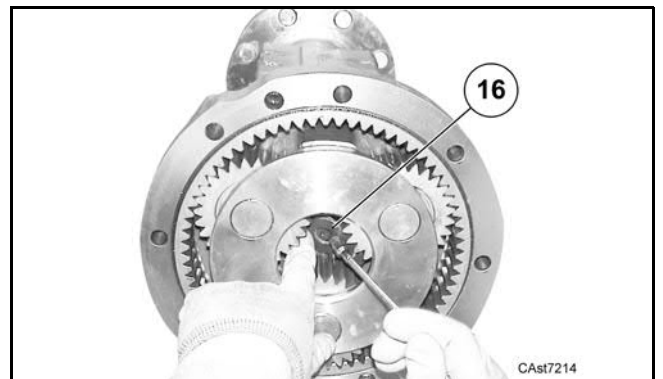


fig. 15

13. Insert the shaft (20) into the transmission.

See: fig.16

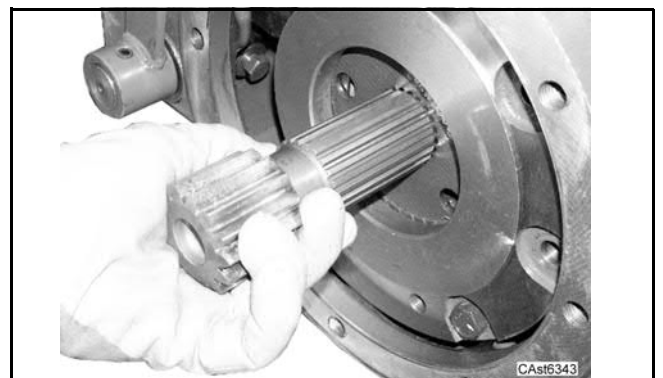


fig. 16

14. Assemble the trumpet (6) to the gear box.

**See:** fig.17

15. Assemble and tighten the fastening screws (7) to the prescribed torque.

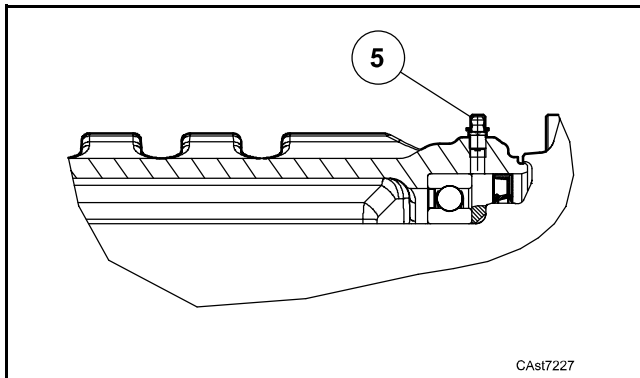
**See:** C.4



**fig. 17**

16. Assemble the greaser (5).

**See:** fig.18

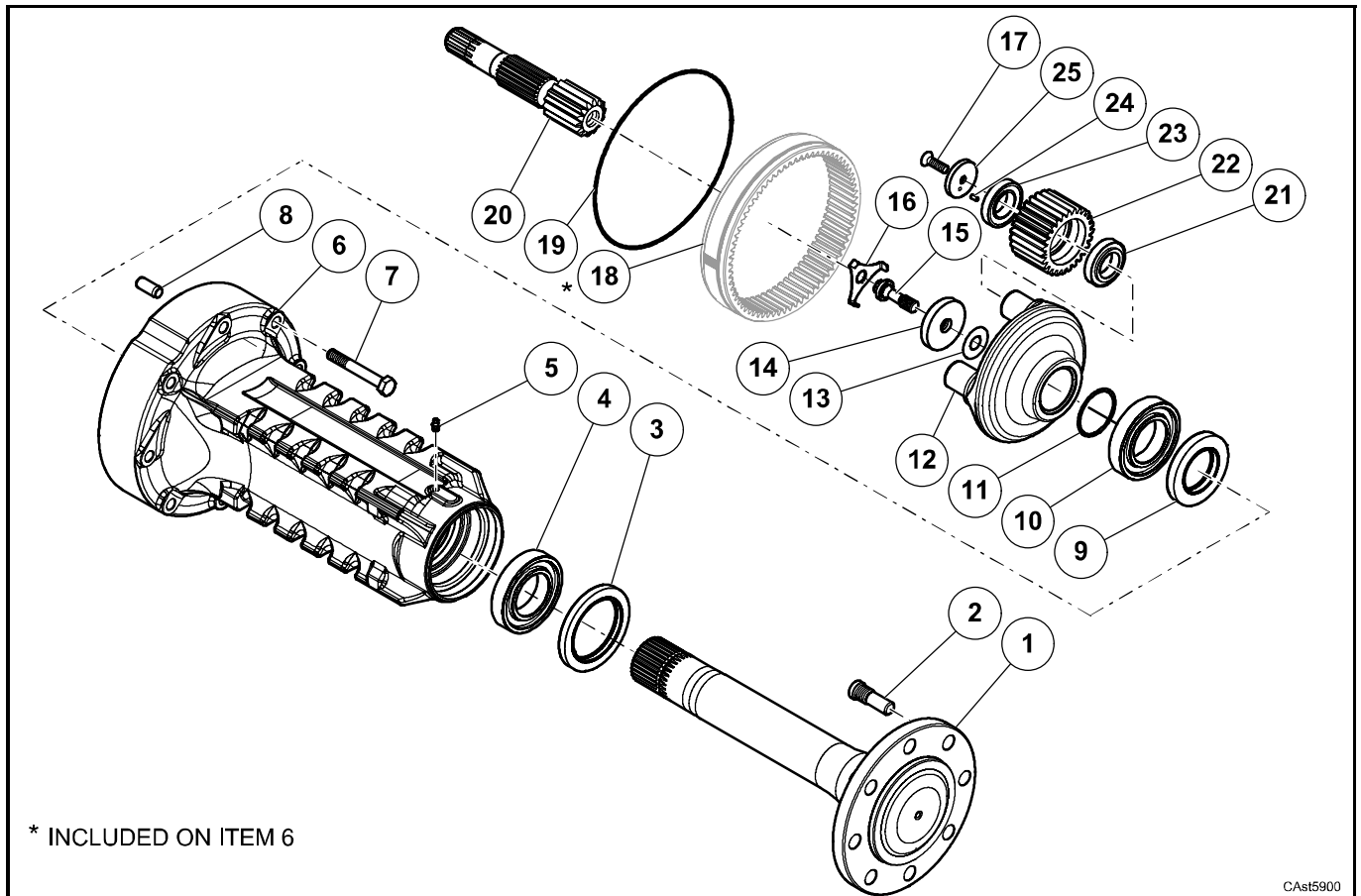


**fig. 18**



## D.2.2 Final drive CA643603 for 3645-3655 models

CARRARO ref.	Version	Final drivers models	Flange distance	Models
CA643603	F	FINAL DRIVE 506 UP 6/1	1242 mm	3645-3655



### D.2.2.1 Disassembly

1. Before disassembly the final drive, disengage the parking brake.

**See:** D.11

2. Remove the trumpet (6) locking screws (7).
3. Disassemble the trumpet (6) from the transmission.
4. Disassemble the shaft (20).
5. Remove the bolt stop (16).
6. Remove the screw (15).
7. Remove the thrust washer (14) and the shims (13).
8. Extract the planetary carrier (12).
9. Remove the locking screws (17) and disassemble the planetary carrier.

10. Remove from each shaft: the thrust washer (25), the bearing (23), the gear (22) and the bearing (21).
11. Remove the pins (8) from the trumpet (6).
12. Remove the O-Ring (19) on the ring gear (18).  
**Note:** destructive operation for the O-Ring (19).
13. Remove the snap ring (11).
14. Collect the bearing cone (10).
15. Overturn the group.
16. Extract the wheel shaft (1) from the trumpet (6).
17. Only if necessary, remove the studs (2) from the wheel axis (1).
18. Remove the seal ring (3) from the trumpet (6).  
**Note:** destructive operation for the seal ring (3).
19. Remove the bearing cone (4).
20. Extract bearing cup (4) from trumpet (6).
21. Overturn the trumpet (6).
22. Remove the bearing cup (9) from the trumpet (6).
23. Extract the seal ring (9) from the trumpet (6).  
**Note:** destructive operation for the seal ring (9).
24. If necessary, remove the greaser (5) from the trumpet (6).

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