

**PMSF.72.89.0001**

## **USE, MAINTENANCE AND SPARE PARTS MANUAL**

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#### **4.0 DISASSEMBLY OF THE WHEEL HUB**

- 4.1 Take out the wheel hub (80), supporting it with lifting belts; in this way, you can remove the complete bevel bearing (79), the spacer (78) with the oil seal rings (77) (82).
  - 4.2 Dismantle the external rings of the bevel bearings (78) (83).
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#### **5.0 DISASSEMBLY OF THE SPINDLE**

- 5.1 Unscrew the screws (121) (122), recover the brake (120) and then the spindle (76).
  - 5.2 Extract from the spindle (76) the retaining ring (53), the oil seal rings (52) and the bushing (51).
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#### **6.0 DISASSEMBLY OF THE EXTERNAL HALF ARTICULATED JOINT**

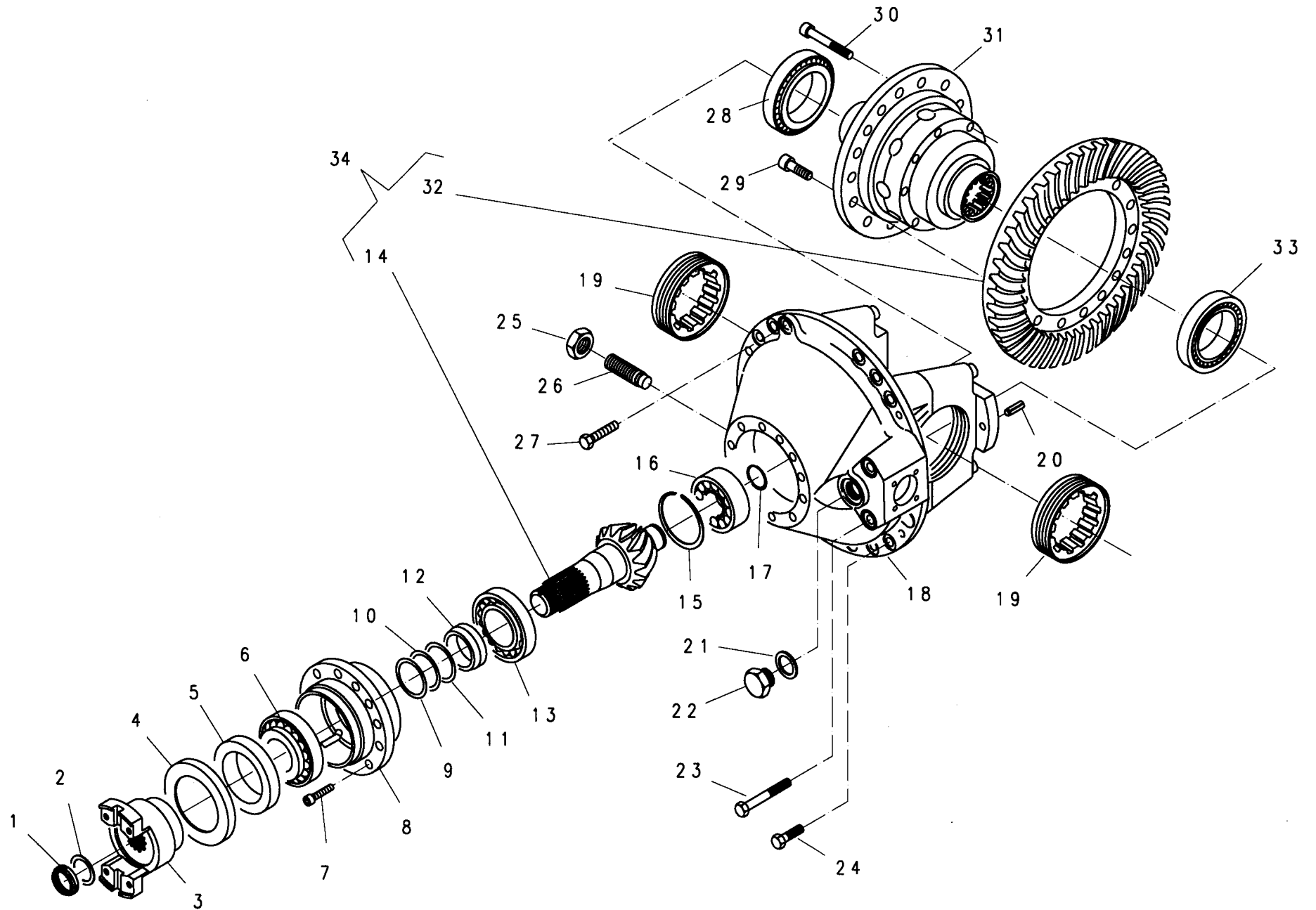
- 6.1 Remove the upper articulated joint pin (57) complete with pin flange (56), by unscrewing the screws (55).
  - 6.2 Repeat the same operations for the lower pin (59) complete with right transmission lever (60) and left transmission lever (69) by unscrewing the screws (61) and by recovering the fifth wheel (46).
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#### **7.0 DISASSEMBLY OF THE UNIVERSAL JOINT WITH DRIVESHAFTS**

- 7.1 You can recover the universal joint with driveshafts (62) in two different ways: the first one is by dismantling the hub (80) and the spindle (76), the second one is by dismantling the external half articulated joint, complete with spindle, brake and hub.
  - 7.2 In both cases you will have to recover the drum (107) by unscrewing the screws (108) and the complete spider by unscrewing the screws (101), the crown wheel (93) with the retaining ring (94).
  - 7.3 In case you choose the second system, before unscrewing the screws (55) (61) to recover the complete articulation pins (57) (59) and the fifth wheels (46), you will have to support the complete unit by means of lifting belts.
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#### **8.0 DISASSEMBLY OF THE UNIVERSAL JOINT CARRIER BUSH**

- 8.1 Unloose the nut (47), the screw (48) and extract the universal joint carrier bush from the axle body. Then remove the retaining ring (53), the oil seal rings (52), the bushing (51) and the O-ring (49) from the bush.



## **1.0 DESCRIPTION**

The PMSF.72.89.0002 unit consists of a reduction unit with a bevel gear pair and an epicycloidal reduction. A bevel pinion engages with a bevel gear fixed on the train carrier of a differential gearing which transfers motion to the universal joints. Between the universal joint and the wheel hub with drum, there is a reduction unit made of an epicycloidal reduction gear. At the end of the axle body there are internal half articulations for the articulation of the steering equipment. The block brakes are air controlled by means of a cylinder which is fitted on the brake plate, controlled by the tristop cylinder (131).

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## **2.0 LUBRICATION**

Splash lubrication has been adopted for this unit and it is designed in such a way that all the gears and the bearings are sufficiently lubricated under all operating conditions. The check of the level in the axle body and in the epicycloidal reduction gears must be done by removing the plugs (48) and (112).

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## **3.0 PUTTING IN OPERATION**

The transmissions are delivered without oil. Before putting them in operation, they must be therefore filled with oil through the fillers (48) (112). Use oil that is perfectly clean and of the type specified in point 4.2.

If unsuitable oil is used by accident, the guarantee conditions are no longer valid. For the levels and any necessary topping up, see point 2.0.

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## **4.0 OIL REFUELINGS AND CHECKS**

### **4.1 CAPACITY**

Axle body	23,50 litres
Epicycloidal gear on the hub	4,00 litres (each one)

- 16.13 Check the efficiency of the breather plug on the axle body, after having washed it with Diesel oil.
- 16.14 Check the oil seals on the oil drain plugs and the oil level.

## **ASSEMBLY OPERATIONS**

### **PMSF.72.89.0002**

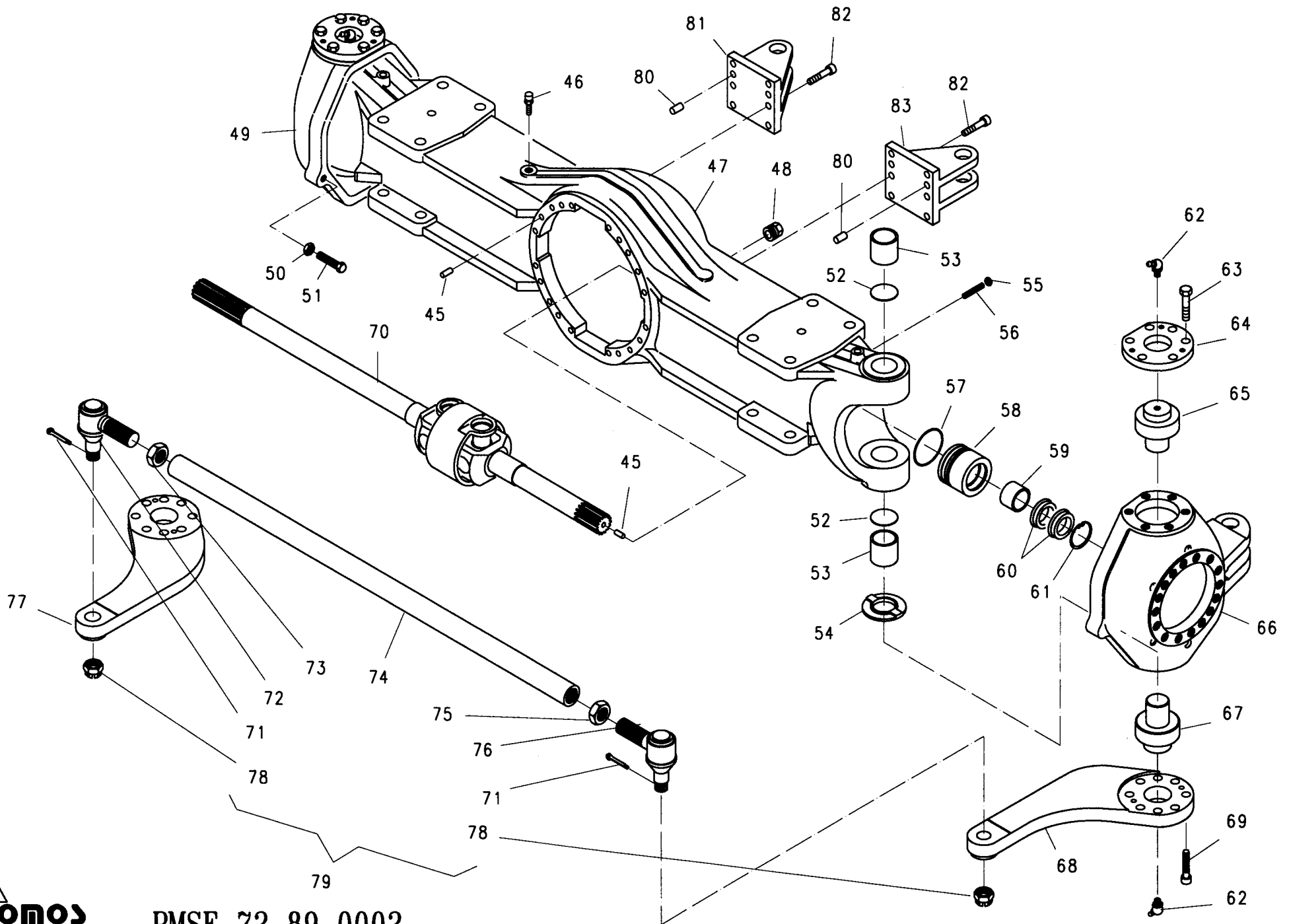
#### **17.0 ASSEMBLY OF THE DIFFERENTIAL CARRIER**

- 17.1 Assemble the two bevel crown wheels inside the differential half carrier and the four bevel planetary gears on the cross with the respective support rings. Couple the two half carriers together, by letting match the numbers printed on them.
- 17.2 Tighten the screws (30).
- 17.3 Key on the ring bevel gear (32) and secure it with the screws (29).
- 17.4 Shrink on (**max 90°C**) the internal rings of the bevel bearings (28) (33).

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#### **18.0 ASSEMBLY OF THE BEVEL PINION AND OF THE DIFFERENTIAL CARRIER ON THE DIFFERENTIAL SUMP**

- 18.1 Shrink on (**max. 90°C**) the bearing (13) on the bevel pinion head (14), fit the external rings of the bevel bearings (6) (13) in the bearing carrier bush (8).
- 18.2 House the external ring of the cylindrical roller bearing (16) in the differential sump (18) by using a drift and stop its axial movement through the shoulder ring (15), being sure that this last one is properly housed.
- 18.3 Insert the bevel pinion into the bearing carrier bush, so that the bevel bearing (13), attached to the pinion toothing, couples with the external ring; insert the spacer (12) and the shims (9) (10) (11).
- 18.4 Insert the internal ring of the bevel bearing (6) on the side of the threaded tang of the bevel pinion, and place the oil seal ring (5) in the seat.
- 18.5 **N.B.:** Proceed as follows to establish the number of shims (9) (10) (11):
  - a) Position the internal ring of the bevel bearings (6) (13) as shown (see fig. 1) and place the spacer (12) between them.
  - b) Subject this pack to an axial load of **20000 N** and survey the **measurement A** (see fig. 1).
  - c) Drive the external rings of the bevel bearings (6) (13) into the bearing carrier bush (8), ensuring that the contact surfaces are well clean to avoid measurement errors.
  - d) Complete the assembly of the bevel bearings without placing the spacer (12) between them and subject them to an axial load of **2000 N**; survey the **measurement B** (see fig. 2). The difference resulting from the **measurement B** and the **measurement A** will be the thickness measurement.



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#### 4.7 SEAL PRODUCTS

Use degreasing solvents to clean thoroughly all parts where the **AREXONS Motorsil D** liquid sealant for flat surfaces must be used.

**N.B.:** The liquid sealant must be well laied off on all surfaces where oil passes. Remove the exceeding product.

## 20.0 ASSEMBLY OF THE UNIVERSAL JOINT WITH DRIVESHAFTS

- 20.1 Clean the two splined parts of the universal joint with driveshafts (62) carefully. Insert the parallel pin (37) in the hole situated at the end of the shortest shaft. Make sure it is well tightened; if not, secure the movement of the parallel pin (37) with **LOCTITE 601**. Insert the longest part of the shaft in the universal joint carrier bush, paying attention not to damage the oil seal rings (52).

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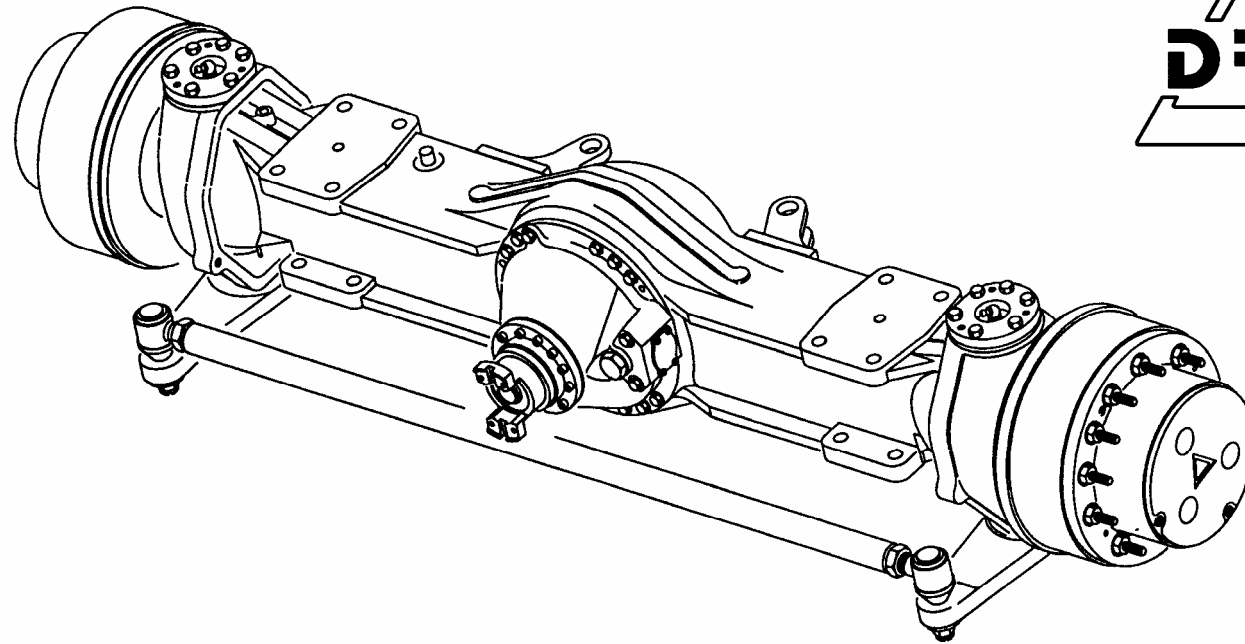
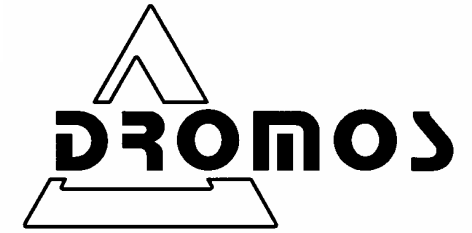
## 21.0 ASSEMBLY OF THE SPINDLE AND OF THE BRAKE

- 21.1 Using a drift, insert the bushing (51) and the oil seal rings (52) in the spindle (76); then insert the retaining ring (53).
- 21.2 Drive the centering and support ring (91) in the spindle housing (76). Insert the short shaft of the universal joint with driveshafts (62) in the spindle (76), paying attention not to damage the oil seal rings (52).
- 21.3 Put the spindle in the centering of the external half articulated joint, then place the brake plate and secure with the screws (121) (122).

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## 22.0 ASSEMBLY OF THE WHEEL HUB

- 22.1 Insert the stud bolt (81) in the holes of the wheel hub (80) by putting in contact the surface of the stud bolt with the support surface of the wheel hub.
- 22.2 Put some **LOCTITE 601** on the external diameter of the oil seal ring (82) and insert it by a drift in the housing of the wheel hub.
- 22.3 House the two external rings of the bevel bearings (79) (84), ensuring that the support surfaces are well clean.
- 22.4 Put some “special grease for bearings” uniformly on the rollers of the internal ring of the bevel bearing (79), then put the internal ring of the greased bearing in contact with its external ring, insert the spacer (78) and house with a drift the oil seal ring (77) in the external housing of the bearing (79).
- 22.5 Insert the wheel hub (80) by holding it with a lifting belt.
- 22.6 Insert on the annular gear (88) the hub for annular gear (87) and stop the axial movement through the plates (86) by locking them with the screws (85).
- 22.7 Shrink on (**max 90°C**) the internal ring of the bearing (84) on the hub for the annular gear (87).
- 22.8 Then insert the annular gear (88) complete with hub for annular gear (87) on the spindle (76), put the washer for ring nut (73), and tighten the ring nut (75).
- 22.9 Rotate the hub (80) continuously and, at the same time, tighten the ring nut (90), so that there is a resistance torque to the wheel hub (80) of approximately **60÷70 Nm**. Align a threaded hole of the ring nut with one of the two splines on the spindle (76).
- 22.10 Screw the dowel (92).
- 22.11 Insert the crown wheel (93) in the splined part of the universal joint with driveshafts (62) coming out from the spindle (76), stop it with the retaining ring (94) and make sure this last one is correctly housed.



**PMSF.72.89.0004**

## **USE AND MAINTENANCE MANUAL**

#### **4.0 DISASSEMBLY OF THE WHEEL HUB**

- 4.1 Take out the wheel hub (88), supporting it with lifting belts; in this way, you can remove the complete bevel bearing (87), the spacer (86) with the oil seal rings (85) (90).
  - 4.2 Dismantle the external rings of the bevel bearings (87) (92).
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#### **5.0 DISASSEMBLY OF THE SPINDLE**

- 5.1 Unscrew the screws (128) (129), recover the brake (130) and then the spindle (84).
  - 5.2 Extract from the spindle (84) the retaining ring (61), the oil seal rings (60) and the bushing (59).
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#### **6.0 DISASSEMBLY OF THE EXTERNAL HALF ARTICULATED JOINT**

- 6.1 Remove the upper articulated joint pin (65) complete with pin flange (64), by unscrewing the screws (63).
  - 6.2 Repeat the same operations for the lower pin (67) complete with right transmission lever (68) and left transmission lever (77) by unscrewing the screws (69) and by recovering the fifth wheel (54).
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#### **7.0 DISASSEMBLY OF THE UNIVERSAL JOINT WITH DRIVESHAFTS**

- 7.1 You can recover the universal joint with driveshafts (70) in two different ways: the first one is by dismantling the hub (88) and the spindle (84), the second one is by dismantling the external half articulated joint, complete with spindle, brake and hub.
  - 7.2 In both cases you will have to recover the drum (115) by unscrewing the screws (116) and the complete spider (110) by unscrewing the screws (109), the crown wheel (101) with the retaining ring (102).
  - 7.3 In case you choose the second system, before unscrewing the screws (63) (69) to recover the complete articulation pins (65) (67) and the fifth wheels (54), you will have to support the complete unit by means of lifting belts.
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#### **8.0 DISASSEMBLY OF THE UNIVERSAL JOINT CARRIER BUSH**

- 8.1 Unloose the nut (55), the screw (56) and extract the universal joint carrier bush from the axle body. Then remove the retaining ring (61), the oil seal rings (60), the bushing (59) and the O-ring (57) from the bush.

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