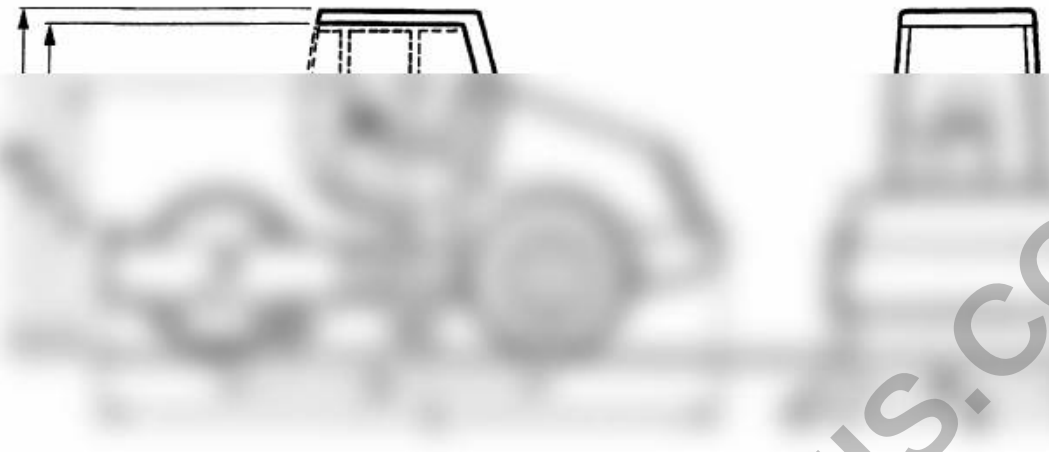
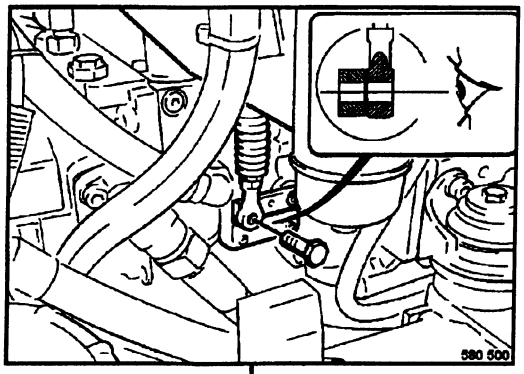


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The machine drives with the travel lever in „NEUTRAL“

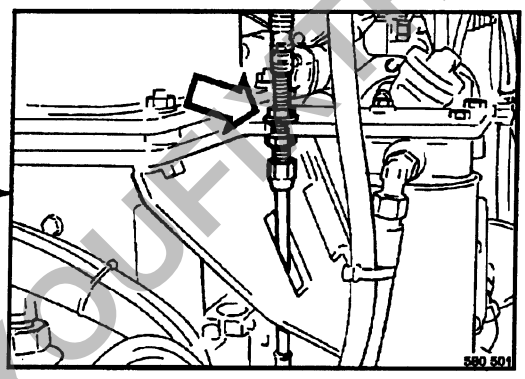


Check the neutral position

- Set the travel lever to „Neutral“
- Detach the travel cable from the pump
- check, whether bores of ball socket and control lever are in line.

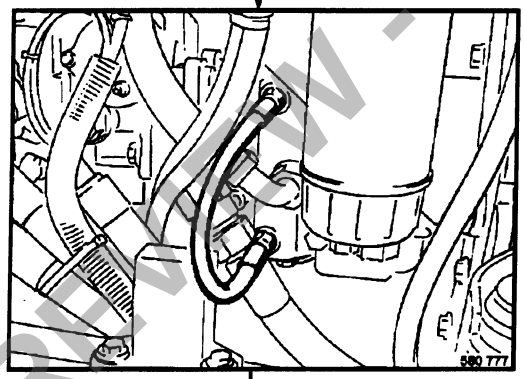
Bores are in line?

no



Adjust the travel control cable

yes



Check the mechanical 0-position

- Connect the control chambers with a hose

Neutral position OK?

no*

yes*

***Stop - inform the service department of BOMAG!**

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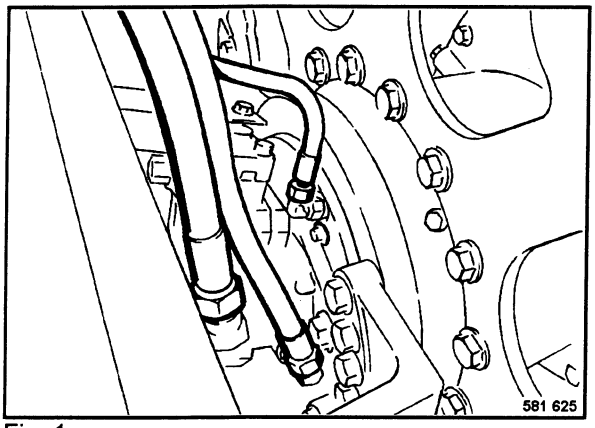


Fig. 1

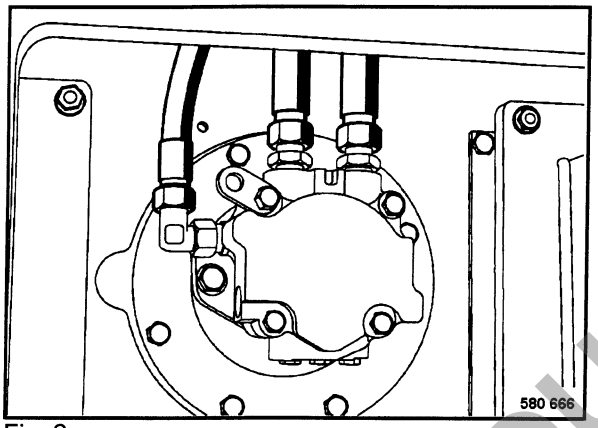


Fig. 2

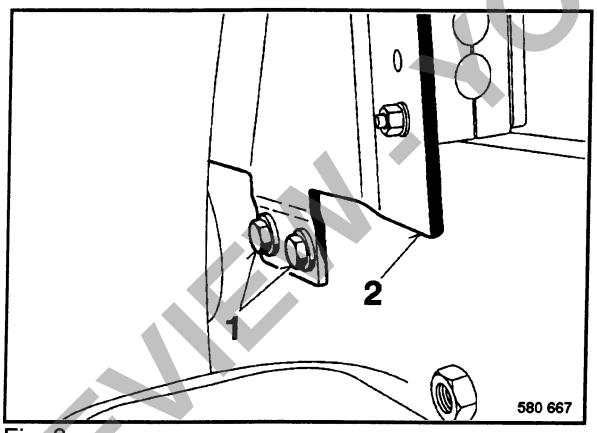


Fig. 3

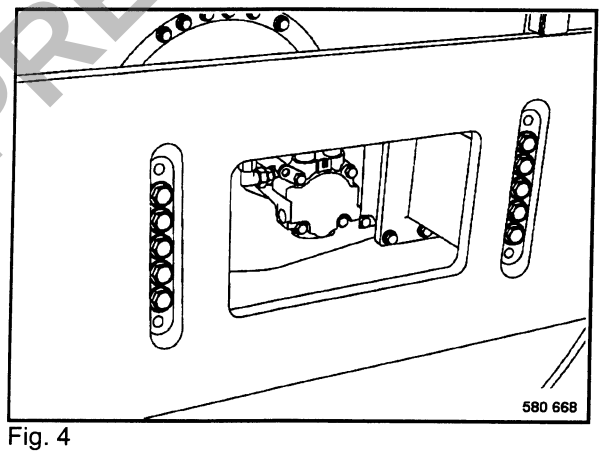


Fig. 4

4.02 Removing and installing the drum

Removing the drum

Environment

Environmental hazard

Catch running out hydraulic oil and dispose of environmentally.

1. Mark the hydraulic hoses at the travel motor and disconnect them from the ports.
2. Close hydraulic hoses and motor ports with suitable plugs (Fig. 1).
3. Mark the hydraulic hoses at the vibration motor and disconnect them from the ports (Fig. 2).
4. Close hydraulic hoses and motor ports with suitable plugs.
5. Unscrew the screws 1 (Fig. 3) from the retaining plate (2) for the hydraulic hoses on the vibration motor side.
6. Unscrew the screws (Fig. 4) from the spacer pieces on vibration and travel motor.

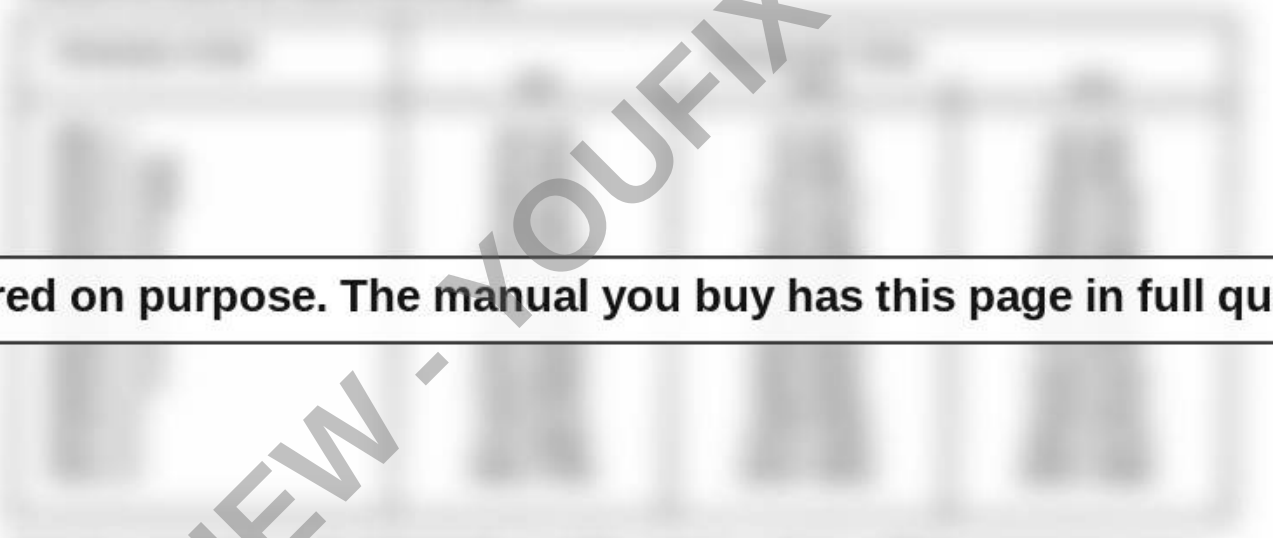
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Torques for bolts with metric unified threads

Dimension of bolt	Torques Nm* (ft-lb)		
	8.8	10.9	12.9

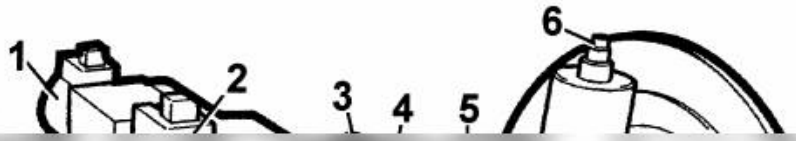




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1.01 Foreword

1.02 Safety regulations

1.03 General notes for repairs

1.04 Tightening torques

1.05 Connecting plan

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These safety regulations must be read and applied by every person involved in the repair of the machine. All applicable accident prevention instructions and the safety regulations in the operation and maintenance manual must also be observed.

Repairs must only be carried out by trained personnel or the BOMAG After Sales Service respectively.

Note

These repair instructions contain headers such as "Note", "Attention", "Danger" which must be strictly followed.

Note

This "Note" on repairs must be strictly followed.

Caution

This note "Attention" refers to repair procedures which must be strictly followed to avoid damage to the machine and other property.

Danger

This note "Danger" refers to repair procedures which must be strictly followed to avoid danger to life.

General

- Park the machine on firm and level ground to carry out repairs.
- Secure the machine against unintended rolling.
- Secure the engine reliably against unintended starting.
- Mark a defective machine by hanging a warning tag on the steering wheel.
- Secure the articulated joint by means of the articulated joint lock.
- Wear your protective outfit such as hard hat and safety boots.
- Keep unauthorized persons away from the machine while repair work is under progress.
- Tools, lifting devices, lifting tackle, supports and other devices must be reliable and safe to operate.
- Use only secure lifting devices of sufficient capacity for removing and installing components.
- Take care when using cleasing agents. Petrol or other easily inflammable substances must never be used for cleaning purposes.
- Cleaning and repairing the fuel tank is very dangerous. When cleaning or repairing a tank do not smoke in the vicinity of the tank and avoid sparks and any kind of fire.
- Always observe the welding instructions when carrying out welding work.

Special safety notes

- Use only genuine BOMAG spare parts.
- Genuine parts and accessories are especially designed for the machine.
- We wish to make expressly clear that we have not tested or authorized any genuine parts or special equipment not supplied by us. The installation or use of such products can therefore have an adverse effect on specified design characteristics and/or passive driving safety. The manufacturer expressly excludes any liability for damage resulting from the use of non-genuine parts or accessories.
- Do not make any conversions or changes to the machine, since this may impair the safety.
- Keep away from the machine's articulation area if tests need to be carried out while the engine is running. Danger of accident!
- Do not clean the machine while the engine is running.
- Do not come in contact with rotating parts of the engine. Danger of accident!
- Exhaust gases are extremely dangerous. Ensure an adequate supply of fresh air when starting the engine in closed rooms.
- Fill in fuel when the engine is stopped! Ensure cleanliness! Do not spill any fuel!
- Store used filters in a special container and dispose of environmentally.
- During maintenance work collect all oils and fuels and dispose of environmentally.
- Do not fill the tank in closed rooms.
- There is a danger of scalding when working with hot oil.
- Do not heat up oil over 160°C, as otherwise the oil or oil vapour may ignite.
- Wipe off any spilled fuel and oils.
- Do not smoke when refueling or checking the acid level in the battery.
- Never check the acid level in the battery and the fuel level with a naked flame.
- Dispose of used batteries environmentally.

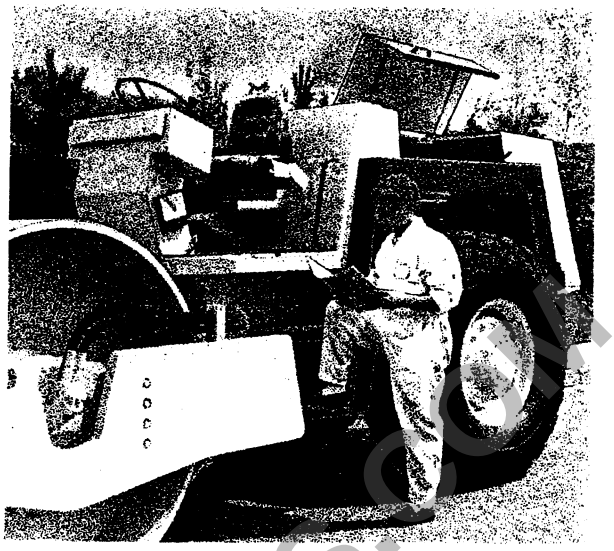
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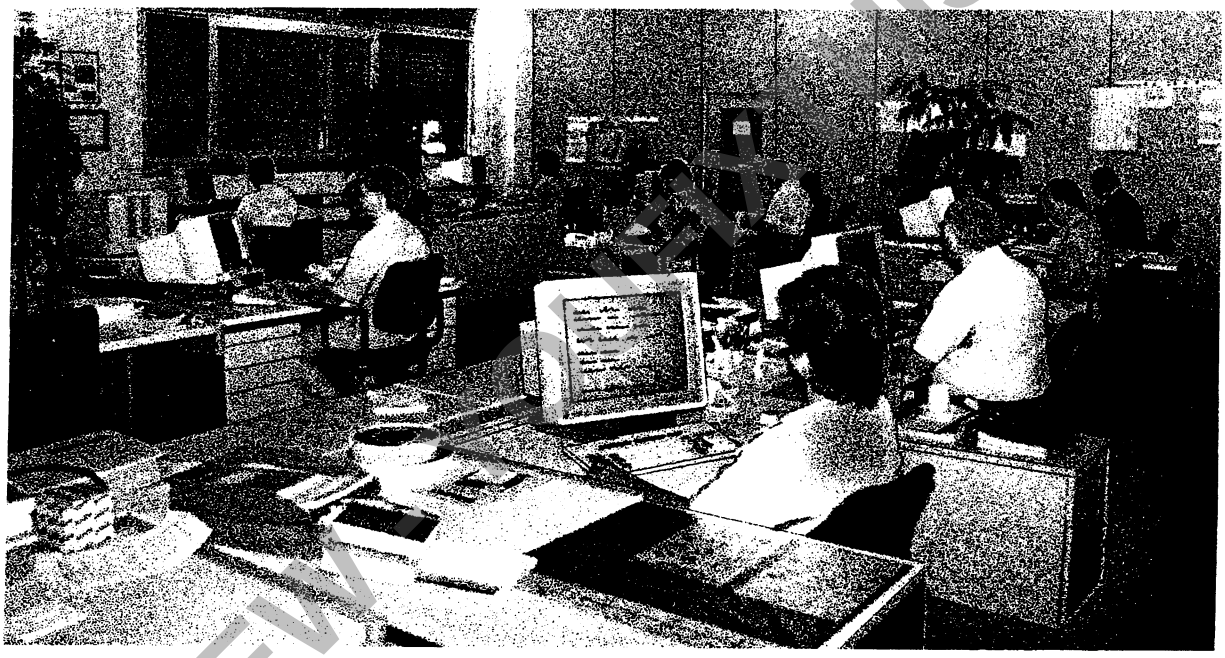
BOMAG

Practical information - for the user!

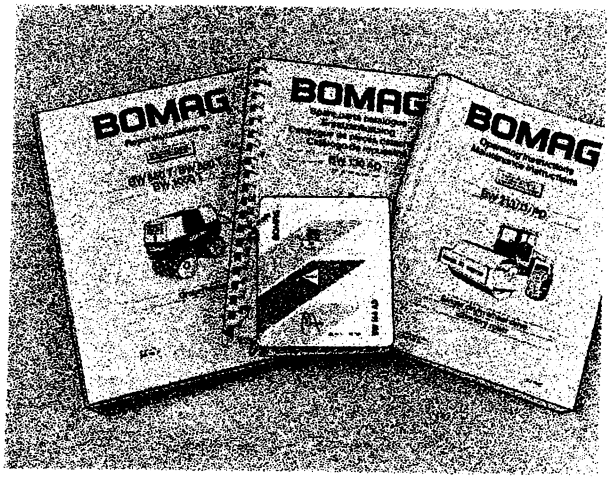
Efficient operation of your machine is ensured by using the operating, maintenance, repair and spare parts manuals.



Thought out by specialists . . .



. . . electronically processed . . .



All in all, advanced technical documentation that makes a good product even better.

an advantage for the user.

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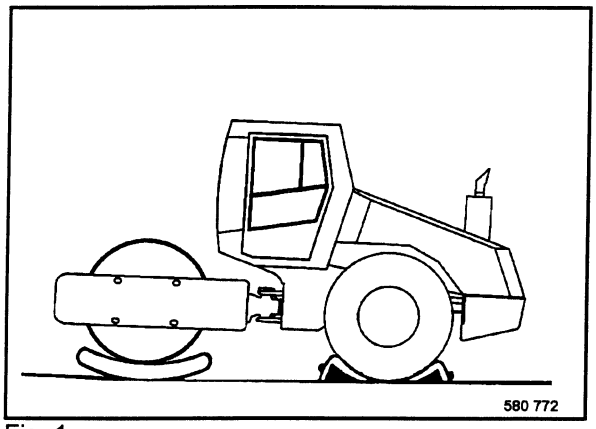


Fig. 1

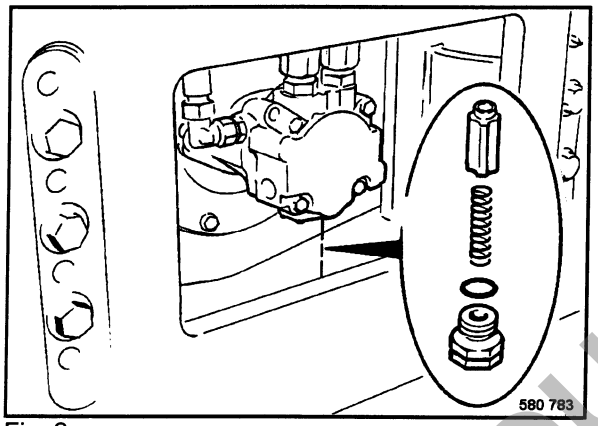


Fig. 2

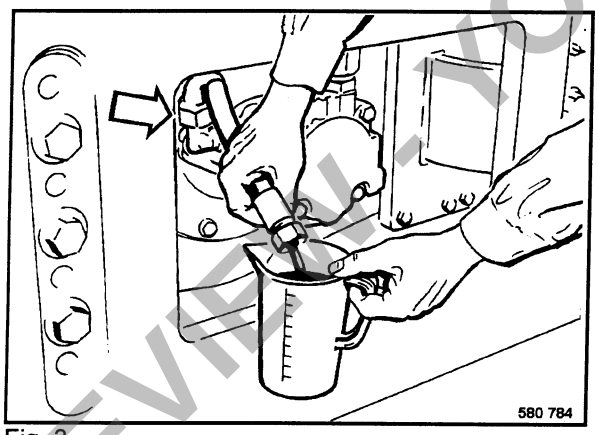


Fig. 3

2.08 Checking the leak oil rate of the vibration motor

Caution

Measurements should be performed at operating temperature of the hydraulic oil (approx. 40˚C).

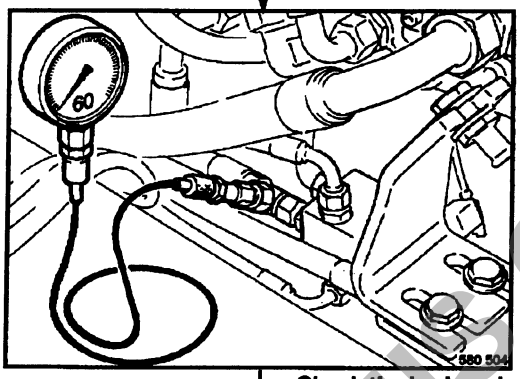
1. Drive the machine with drum onto a soft base (rubber tires) and block drum and wheels additionally with wedges (Fig. 1).
2. Apply the parking brake and block the wheels additionally with wedges (Fig. 1).
3. Block the flushing valve (Fig. 2) with shims.
4. Unscrew the leak oil return hose (Fig. 3), connect a measuring hose and hold it into a measuring container.
5. Start the engine and run it at max. speed.
6. Switch the vibration on and measure the leak oil during one timed minute.

   Nominal value:
   max. 1.5 l/min

   Evaluation of measurement:
   Replace the vibration motor if the permissible leakage rate is exceeded.

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Check the brake releasing pressure

- Install a 60 bar pressure gauge to the rake releasing hose and check whether the brake valve opens.

Nominal value: approx. charge pressure

Brake valve OK?

no → Replace the solenoid valve

yes → Mechanical fault on axle, drum

Charge pressure OK?

no → ***Stop - inform the service department of BOMAG!**

yes*

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4.03 Drum repair overview

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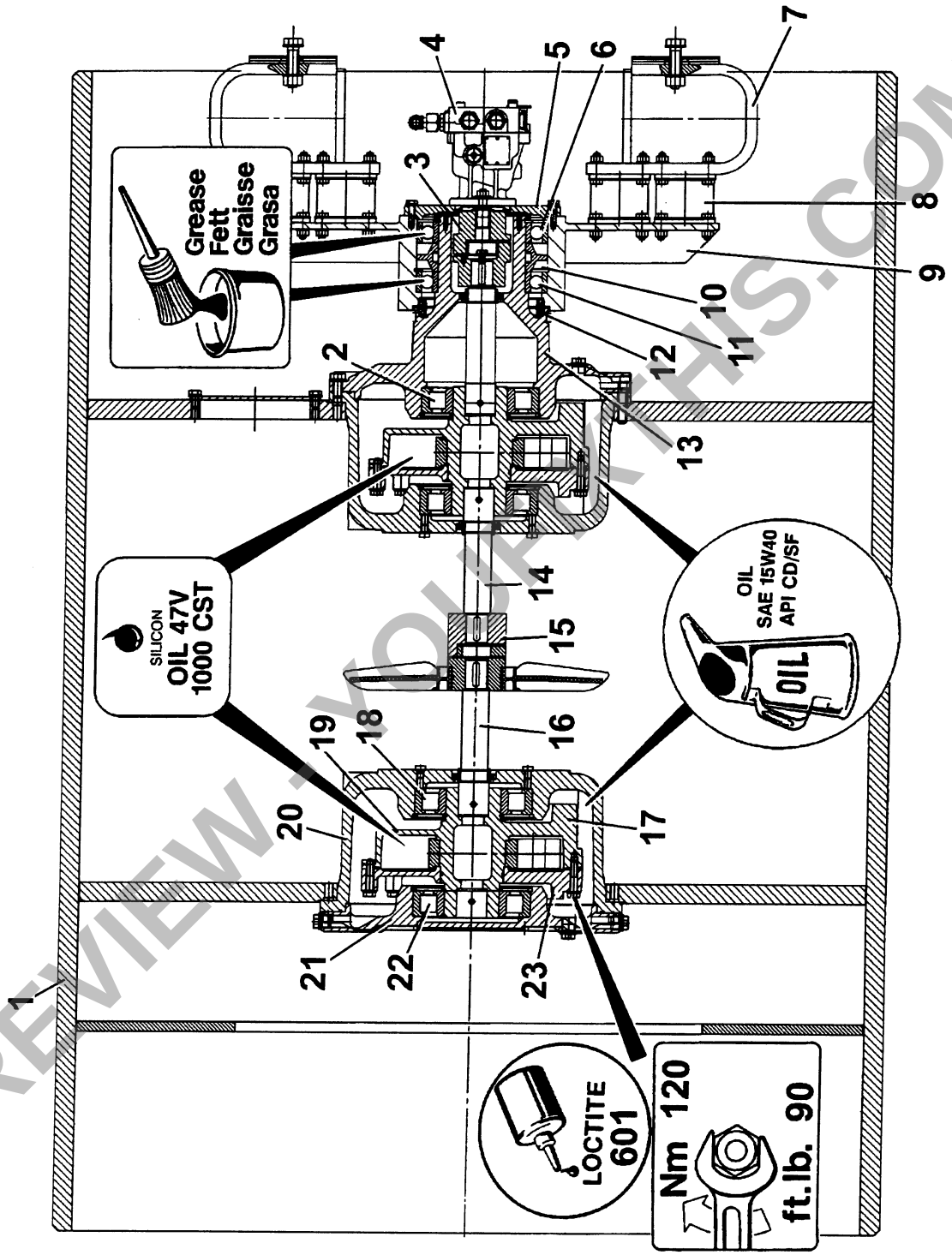


Fig. 1

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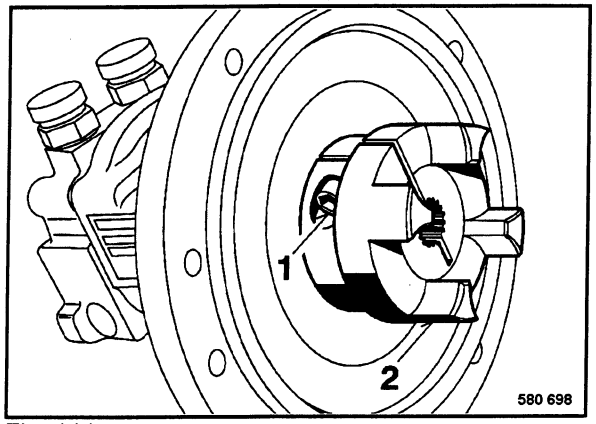


Fig. 111

12. Push the coupling half 2 (Fig. 111) on and secure it with the clamping screw (1).

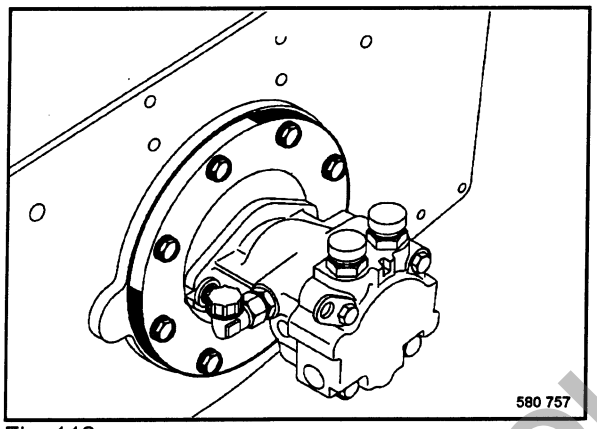


Fig. 112

13. Attach the cover with the vibration motor, insert the screws (Fig. 112) and tighten them.

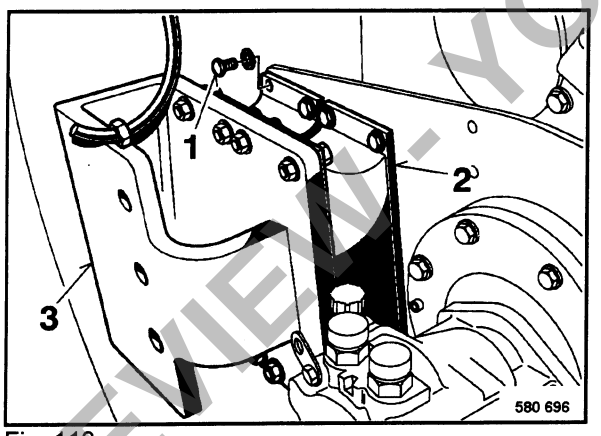


Fig. 113

14. Fasten the rectangular rubber element 2 (Fig. 113) with the attached spacer block (3) with screws (1) to the side plate.

Note

Fasten both rectangular rubber elements.

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Wartungsarbeiten an der Verstellpumpe
MINOR REPAIRS TO THE PUMP

Explosionsdarstellung einer Verstellpumpe (Fortsetzung)

Pos. Item	Teilebezeichnung	Description	Stck Qty	
N00S	Filteranschl. kompl.	Filtration Suction	1	
N10S	Reduzierstutzen	Fitting-Reducer	1	
N35S	Verschl.-Schrb., kpl.	Plug Assy	1	
N35SA	O-Ring	O-Ring	1	D
P2A1	Mehrf.Funktionsvent.	Multi-Function Valve	1	
P2B1	Mehrf.Funktionsvent.	Multi-Function Valve	1	
P06	O-Ring	O-Ring	1	D
P013	O-Ring	O-Ring	1	D
P70	Dross.Rückschl.vent.	Valve Orificed Check	2	
P80	Spezial Stopfen	Plug	2	
S07	Blockzyl. Einbaus.	Cyl.Block/Piston Assy	1	V

Exploded View Of The Variable Displacement Pump (Continuation)

Pos. Item	Teilebezeichnung	Description	Stck Qty
T001	Düse, kpl.	Orifice Assy	1
T201	Dross.rückschl.ventil	Valve Check Orifice	1
T301	Druckfeder	Spring	1
T401	Federhülse	Retainer Spring	1
Z0999	Dichtungssatz	Seal Kit	1
Z1005	Allgem. Hinweise	General Directions	1
Z1010	SAW Verk./Serv.Org	SAW Sales/Serv.Org	1
Z1050	SDF Druckflüssigk.	SDF Hydr. Fluid	1

Merke: Alle mit einem "V" gekennzeichneten Teile sind Verschleißteile. Bei allen mit einem "D" gekennzeichneten Teilen handelt es sich um Dichtungen welche in dem Dichtungssatz Z0999 zusammengefaßt sind.
Es ist zu empfehlen, einen Verschleißteilsatz und einen Dichtungssatz zu bevorraten.
Bei der obigen Stückliste handelt es sich um eine typische Stückliste für eine Verstellpumpe, die jedoch nicht alle Varianten enthält welche möglich sind.
Bei Ersatzteilbedarf fordern Sie bitte bei unserer Service-Abteilung die zu Ihrer Anwendung gehörige spezielle Ersatzteilliste mit Explosionszeichnung an. Dazu ist die auf dem Pumpen-Typenschild angegebene Ident Nr. und/oder Typenbezeichnung bzw. Modell Nr. anzugeben.
Nur nach dieser für Ihren Anwendungsfall speziellen E.-Liste können Original-Ersatzteile bestellt werden.

NOTE: Sets of wear parts comprise all those parts which are marked with a "V".
A set of joints comprises all those parts which are marked with a "D" .
A Seal Kit comprising all seals that are given under the Item No.Z0999.
We recommend that you hold a set of spare parts in stock for possible service requirements.
The above mentioned parts list is a typical spare parts necessary for a variable pump.

But when ordering spare parts it is necessary to write down the Id.No. from the nameplate of the pump unit and/or the type designation or model no. and send it to our service department to get the right spare parts list and exploded view to order genuine spare parts.

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4.4 MDC Control Module

The manual displacement control (MDC) module provides control of the pump servo piston through a connection to the summing link pin within the pump housing. The following procedure shows how to remove and install the control housing. Section 4.6 explains how to remove and install the control spool and linkage.

1. Clean the external surfaces of the pump. If necessary, remove the MDC handle.
2. Remove the seven (7) control retaining screws [Torx T30] that secure the control to the pump housing. Remove the control and control gasket from the pump.

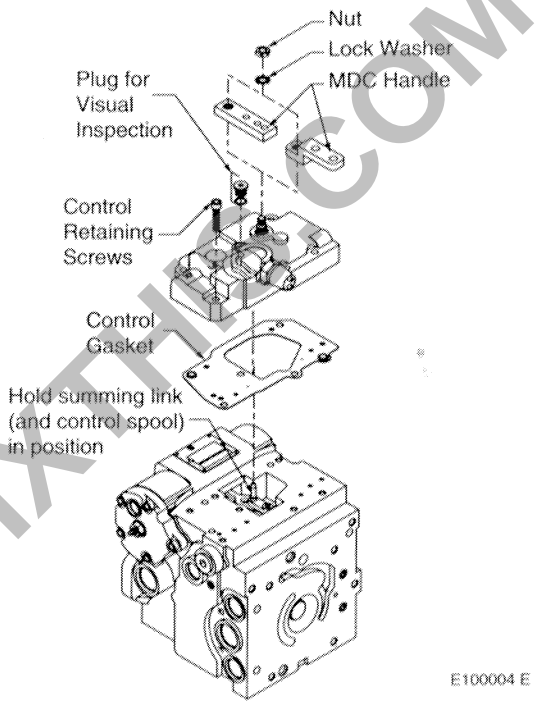
   Note: See section 4.6 for instructions on removing/installing the control spool and linkage.
3. Clean the sealing surfaces of the control and the pump housing. Place a new gasket in position on the housing.

CAUTION
The control orifices are part of the control gasket. Refer to the appropriate Service Parts List to determine the correct gasket.

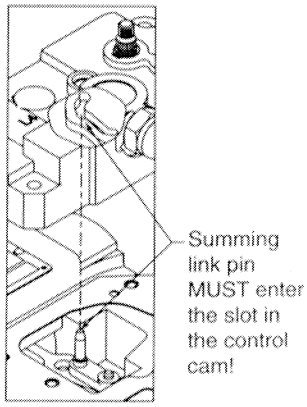
4. Hold the summing link pin in position while installing the control. (The spring on the control spool will tend to push the link to an extreme position.) The link pin MUST engage the slot in the control cam. A plug is provided on the MDC housing to permit visual inspection of linkage pin engagement.

   Note: It may be easiest to lay the servo piston side of the control down first, then watch the link pin engage from the charge pump side of the pump.
5. Install and torque the control screws [15-17 Nm (11-13 ft•lbf)]. Perform Control Neutral Adjustment (Section 4.3).

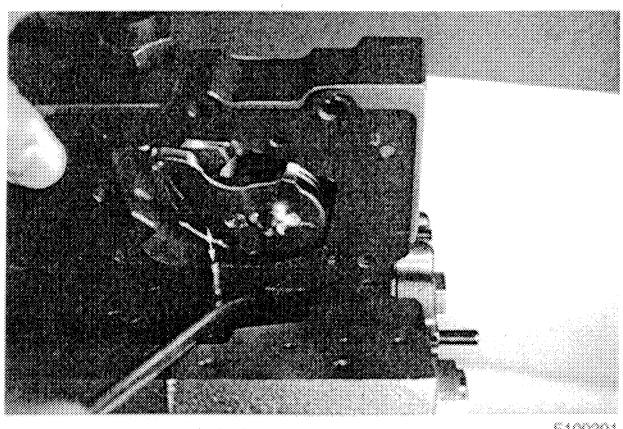
WARNING
Failure to properly engage the link pin with the control cam will result in incorrect control operation, which may lead to loss of control of the vehicle / machine.



MDC Control Module Assembly



Link Pin Into Cam Slot



Link Pin Into Cam Slot

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General Description of the Series 51 Variable Displacement Motors

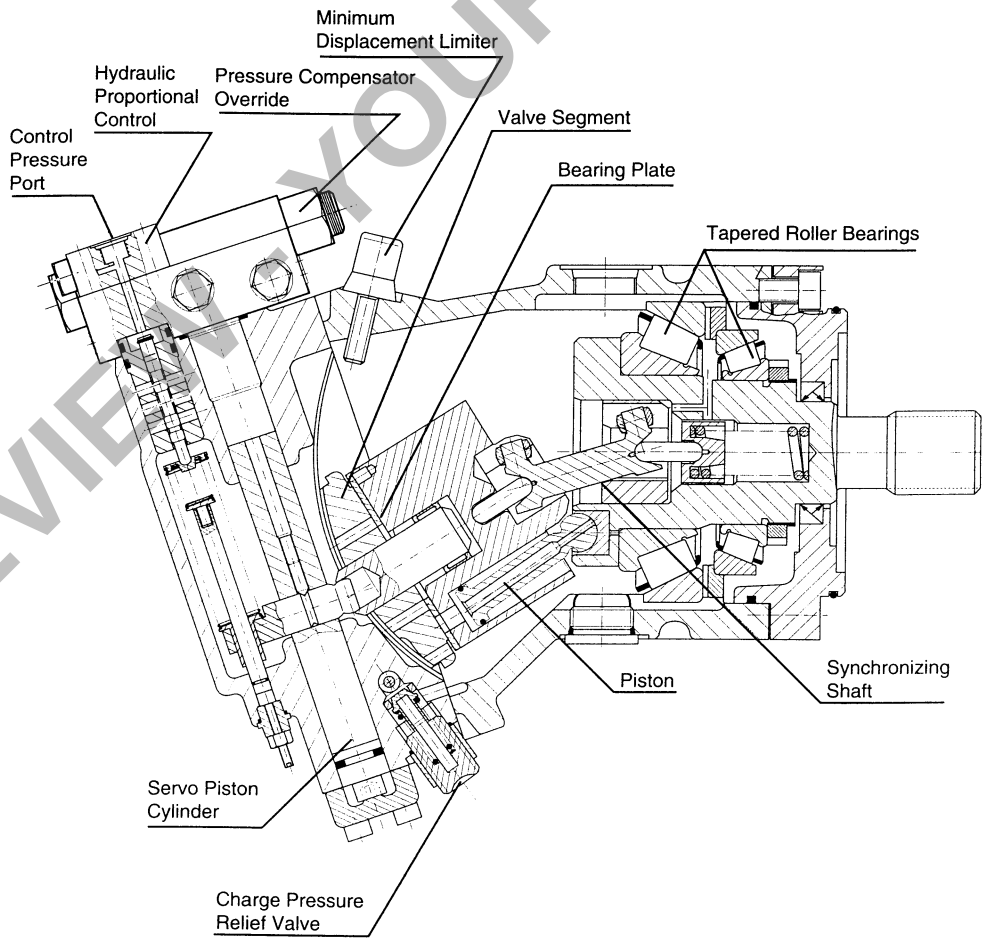
The Series 51 variable displacement hydraulic motors use spherical pistons and piston rings. The angle between the cylinder block and the output shaft can be set between 32° and 6°, providing a 5 to 1 maximum to minimum displacement ratio.

At maximum displacement, the motor will provide a certain maximum output shaft torque and minimum speed corresponding to the pressure and flow supplied to the motor. Under the same input conditions but at minimum displacement, the shaft speed will be approximately five (5) times faster while the available output torque will decrease to approximately one-fifth (1/5) the full displacement value. The displacement is changed by a servo piston which is connected to the valve segment.

Various hydraulic and electrohydraulic controls may be mounted on the motor end cap to control the servo piston and the motor displacement. Servo pressure oil may either be supplied internally from the motor, or externally.

For all controls except the N2 and PC, servo pressure oil is supplied to a four (4) way spool valve in the motor end cap. When a combination of pilot pressure (or force) from an external control assembly and internal spring force shifts this valve, servo pressure is routed to move the servo piston and change the motor's displacement.

A synchronizing shaft, with spherical rollers, synchronizes the rotation of the output shaft and the cylinder block. The ball end of each piston runs in a socket bushing, pressed into the output shaft. There are no other parts used to connect the pistons to the shaft. Two tapered roller bearings support the output shaft.

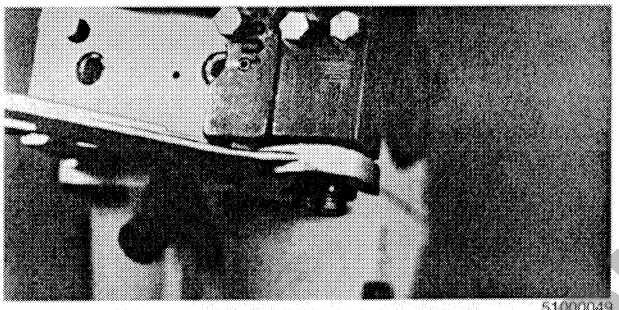


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Fig. 10-1 - Sectional view of Series 51 variable displacement motor (SAE Flange Configuration) with Hydraulic Proportional Control

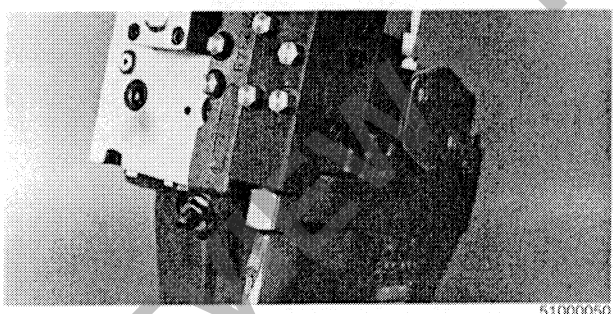
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Component Adjustment (Continued)



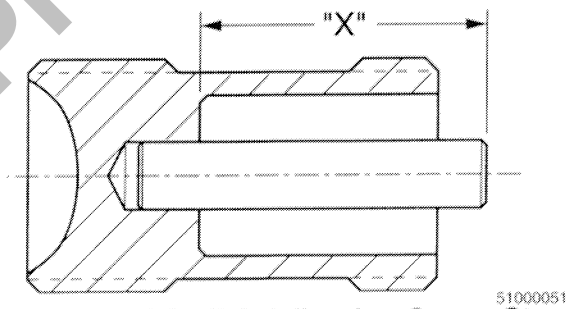
51000049

Fig. 30-28 - Loosen PCOR/PC Lock Nut



51000050

Fig. 30-29 - Rotate PCOR/PC Adjusting Screw



51000051

Fig. 30-30 - PCOR/PC Adjusting Screw Stop Pin

Allow the pump to return to its neutral position. Repeat the procedure for the other side of the closed circuit if so configured. The PCOR or PC regulator must operate at the same start pressure as noted previously. Any noticeable difference in operation from side to side may indicate a problem with the pressure supply shuttle spool or brake pressure defeat spool in the multi-function block.

NOTE: Some motors may be configured for the PCOR or PC regulator to function on only one (1) side of the closed loop. Refer to the nomenclature on the motor nameplate.

In order for the PCOR or PC regulator to function properly on motors equipped with a brake pressure defeat spool, the defeat spool must be positioned correctly. The control pressure for the defeat spool should be applied to the appropriate port (XA or XB) as shown in the following table to shift the defeat spool and permit PCOR or PC regulator operation. Maximum pressure across the brake pressure defeat ports XA and XB is 50 bar (725 psi).

Pressure Compensator Override Defeat Operation

Rotation	High system pressure port	Control pressure on port
CW	A	XB
CCW	B	XA

The PCOR or PC regulator valve is screw adjustable. To adjust, loosen the locknut with a 1-1/16" hex wrench. Turn the adjusting screw with a large screwdriver until the desired pressure setting is established. Clockwise rotation of the adjustment screw will increase the pressure setting at a rate of approximately 70 bar (1000 psi) per turn.

CAUTION

A stop pin is installed in the adjusting screw to prevent "overtravel" of the PCOR/PC valve spool. The stop pin must protrude (distance "X") 19 mm (.75 in.) from the spring seat for settings of 270 to 370 bar (3900 to 5350 psi), or 24 mm (.94 in.) for settings of 110 to 260 bar (1600 to 3750 psi). Refer to the appropriate Service Parts Manual for further information.

While holding the adjusting screw from turning, torque the lock nut to 52 Nm (38 ft•lbsf). Recheck the PCOR or PC regulator setting.

Shut down the prime mover. Remove the gauges and install the gauge port plugs. Return the pump and motor controls to their normal operation.

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Minor Repair and Replacement - Variable Motor (Continued)

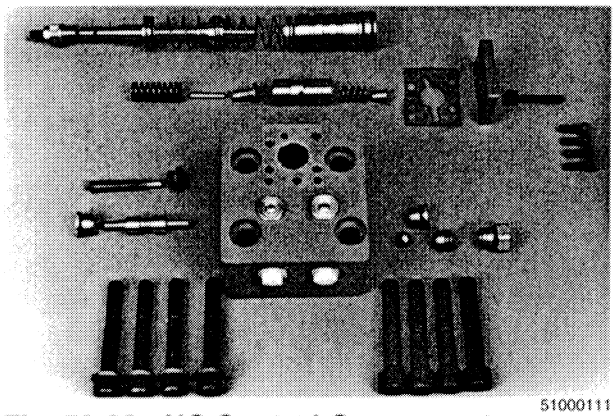

51000111

Fig. 50-83 - HC Control Components

The plugs on the control housing may be removed with a 7/16" hex wrench or a 1/4" internal hex wrench. When reinstalling, torque the 5/16" plugs to 9 Nm (7 ft•lbsf), and the 9/16" plugs to 20 Nm (15 ft•lbsf).

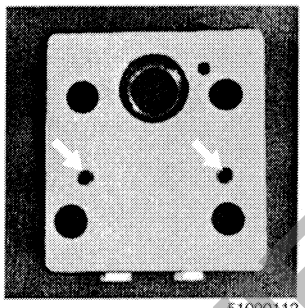

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Fig. 50-84 - HC Control Housing Screens

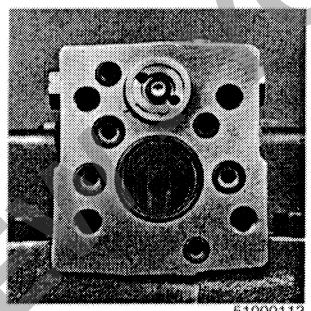

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Fig. 50-85 - End Cap O-Rings Installed for HC Control

The control housing is equipped with filter screens in the passages between the housing and the end cap. Units with internal servo pressure supply have a filter screen installed in the end cap passage leading to the valve spool sleeve. These screens should be pressed into position (with the rounded edge of the filter screens facing "out") until they are flush to 2.0 mm (0.08 in.) below the machined surface of the valve housing or end cap.

Install a new O-ring onto the valve spool sleeve in the end cap. Install new O-rings onto the end cap.

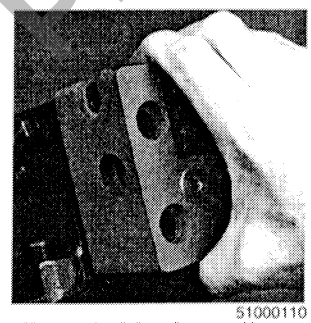

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Fig. 50-86 - Install HC Control Housing

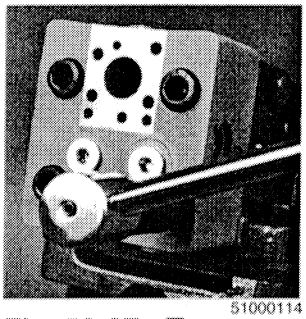

51000114

Fig. 50-87 - Torque HC Control Housing Screws

Install the valve housing onto the end cap, and install the screws (with flat washers on 060, 080, and 110 units).

Torque the screws to 78 Nm (58 ft•lbsf) for 060, 080, and 110 units, or to 110 Nm (81 ft•lbsf) for 160 and 250 units.

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▲CAUTION:
Failure to use a retaining bolt or some other restraining means when assembling the NoSPIN can cause injury in that all NoSPIN differentials have compressed springs.

6. Lay the ring gear and flanged half of the differential case on a bench with the bearing end of the case hub down and the inner case facing up. **ENSURE NO THRUST WASHERS ARE INSIDE THE CASE.**
7. Install the NoSPIN differential in the flanged differential case half.
8. Mount the plain case half over the side gear. **ENSURE NO THRUST WASHERS ARE INSIDE THE CASE.**
9. Position the case halves firmly together with the punch marks aligned and install the case bolts.
10. Tighten case bolts to the torque specified by the vehicle/axle manufacturer. Check to be certain of a tight fit between the two case halves at all points and between the trunnion mounts in the case and the spider trunnions (Fig. 6).

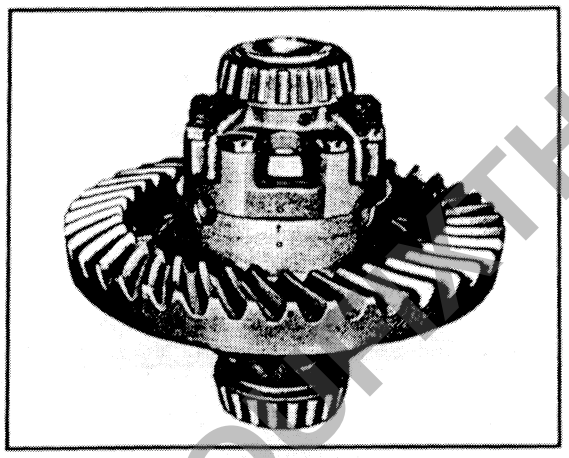


Fig. 6

11. Remove the wing nut, washers and retainer bolt.
12. Follow the vehicle/axle manufacturer's instructions for reinstallation of the ring gear and differential case assembly into the axle carrier.
13. **BEFORE OPERATING THE VEHICLE PERFORM INSTALLATION AND OPERATION TEST STATED ON PAGE 12 TO ENSURE CORRECT RE-ASSEMBLY OF COMPONENTS.**

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