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OPERATING INSTRUCTIONS

LOADING AND UNLOADING PROCEDURE

BEFORE STARTING MACHINE, REFER TO THE DRIVE OFF PROCEDURE.

LOADING DOCK WITH RAMP: PREFERRED METHOD

The easiest and safest method for unloading a paving machine is to drive it off onto a loading dock level with the truck bed. First, remove any separate parts from the truck bed. Then remove all tie down equipment, chock blocks and blocks under frame.

Ramp Boards: Only if Necessary

If no loading dock is available, a set of ramp boards may be used. Be sure that ramp board construction and supports are adequate to carry the load. First, remove any separate parts from the truck bed. Then, remove all tie down equipment, chock blocks and blocks under frame.

Crane Lift: When Available

Use crane with 20-ton capacity to lift machine load. Lifting sling must be properly adjusted to balance the load and clear all components above the deck. Use only lifting points that are provided. First, remove any separate parts from the truck bed. Then, remove all tie down equipment and chock blocks. Lift machine clear of the truck bed and slowly lower to ground. Never allow anyone near or under the machine until is has safely reached the ground!

IMPORTANT: If the parts package sitting in the hopper cannot be removed before starting up the machine, it is very important to avoid operating the conveyor. Dam age could result to the machine and the parts package.

DRIVE OFF PROCEDURE

Be sure all shields and guards are in place and in good condition before starting the machine.

Be sure the direction-speed control levers and all switches are in the “STOP”, “GO” or neutral positions before starting the machine. Assure that all hands and feet are clear of moving parts before starting paver.

Make sure everyone is clear of the paver before starting so they cannot be struck by or caught in moving parts.

1. Mount the machine using the steps and handrail provided at the rear of the machine.
2. Position both DIRECTION-SPEED CONTROL LEVERS in the neutral (centered) position. Position the STOP/GO SWITCH to “STOP”. Neutral lights will illuminate.
3. Hold the secondary start toggle switch while turning the ignition key to the “START” position. Continue to hold the secondary start toggle switch for proximally 10 seconds. The engine should start and idle. Let engine idle for a short warm up period.
4. If the screed is not already up, move the screed lift control lever so that the screed raises. When the screed reaches the maximum height stops, release the screed lift lever. The screed should remain up.
5. To move the machine, position the STOP/GO SWITCH to “GO”. CAUTION: There are two (2) STOP/GO switches on the machine, one on each operators station. To pause the machine’s movement, only one of the switches must be engaged to the “STOP” position. Both switches must be engaged to the “GO” position to enable the paver to move.

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Series 40 - M46 General Parts Identification

M46 Variable Pump -- PV (Minor Repair)

COMMON PARTS GROUP 01		
ITEM	DESCRIPTION	QTY
0101	SHIM KIT CHG RELIEF VALVE	1
0102	PLUG	1
0103	O RING	1
0104	SPRING CHG RELIEF VALVE	1
0105	VALVE REL	1
0106	O-RING	2
0107	PLUG ST THD	2
0110	PLUG	2
0113	PLUG PLASTIC	2
0141	O-RING	1
0142	RING TEMPER LOAD	1
0153	RING BACK UP	1
0154	O-RING	1
0155	COVER GEROTOR	1
0157	SCREW HEX HD	3

SEAL GROUP 03		
ITEM	DESCRIPTION	QTY
0301	SEAL LIP	1
0302	O-RING MDC	1
0303	O-RING MDC	1
0304	O-RING EDC/HDC	1

INPUT/AUX DRIVE CONFIG. GROUP 04		
ITEM	DESCRIPTION	QTY
0403	NUT SLOTTED	1
0404	KEY	1

CHG PUMP DISPLACEMENT GROUP 06		
ITEM	DESCRIPTION	QTY
0603	GEROTOR ASSY	1
0604	PIN	1
0605	KEY WOODRUFF	1
0606	PLUG	1

FILTRATION GROUP 08		
ITEM	DESCRIPTION	QTY
0801	ADAPT SUCTION FILTER INLET	1
0802	ADAPT. REMOTE W/O BYPASS	1
0803	ADAPT. REMOTE W/BYPASS	1
0804	ADAPT. W/BYPASS AND FILTER	1
0805	O-RING	3
0806	SCREW	2
0807	SCREW	1
0808	SCREW	1
0809	SCREW 12 PT	2
0810	PLUG ST THD	2
0812	PLUG PLASTIC	1
0813	PLUG PLASTIC	1
0815	PLUG	1
0816	PLUG	1
0817	PLUG	1
0818	PLUG	1
0819	O-RING	1
0820	VALVE BYPASS	1
0821	SPRING	1
0822	WASHER	1
0823	PLUG EXPANDING	3
0824	PLUG SPECIAL	1
0825	O-RING	1
0826	VALVE BYPASS	1
0827	SPRING	1
0828	WASHER	1
0829	PLUG	2
0830	PLUG EXPANDING	1
0831	FILTER	1
0832	PLUG	1
0833	PLUG ST THD	1
0834	PIPE PLUG	1

BYPASS VALVE GROUP 10		
ITEM	DESCRIPTION	QTY
1001	BYPASS VALVE	1

SYS PRESS PROTECTION GROUP 11		
ITEM	DESCRIPTION	QTY
1101	REL VALVE KIT	1
1102	REL VALVE KIT	1
1103	REL VALVE KIT	1
1104	REL VALVE KIT	1
1105	PLUG SPECIAL	1
1106	PLUG SPECIAL	1
1109	SPRING	1
1110	SPRING	1
1111	POPPET, CHECK	1
1112	POPPET, CHECK	1

CONTROL GROUP 12		
ITEM	DESCRIPTION	QTY
1201	HDC	1
1201	EDC	1
1203	SCREW	2
1204	SCREW SOC HD	2
1205	CAP PLASTIC	1
1206	PLUG PLASTIC	2
1207	SPOOL ROT VALVE MDC	1
1208	BACK UP RING	1
1209	RING BACK UP	1
1210	SCREW HEX HD	1
1213	NUT SPECIAL	1
1214	SPRING NEUTRAL RETURN	1
1215	HANDLE CONTROL VALVE	1
1216	BRACKET NEUTRAL RETURN	1
1219	PLUG	2
1220	LOCK WASHER (MDC)	1
1220	O-RING (HDC & EDC)	2
1221	O-RING	1
1223	VALVE-SOLENOID CONTROL	1
1224	METRIC SCREW SOC HD	4
1225	MANIFOLD 3-POS CONTROL	1
1226	SCREW SOC HD	3
1227	O-RING	2
1228	O-RING	1
1229	PLUG	2
1230	PLUG	2
1231	COVER PLATE FOR SHIPPING	1
1232	GASKET COVER	1
1233	SCREW	2

CONTROL ORIFICE GROUP 14		
ITEM	DESCRIPTION	QTY
1401	PLUG ORIFICE/SCREEN	1
1402	SLEEVE CONTROL VALVE MDC	1
1403	PLUG ORIFICE HDC/EDC	1
1404	PLUG ORIFICE HDC/EDC	1

AUXILIARY FLANGE GROUP 15		
ITEM	DESCRIPTION	QTY
1501	COVER CHARGE PUMP	1
1503	ADAPTER "A" FLANGE	1
1504	O-RING	1
1505	PLATE COVER	1
1506	SCREW HEX HD	2
1507	ADAPTOR "B" FLANGE	1
1508	O-RING	1
1509	COVER PLATE	1
1510	SCREW HEX HD	2

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SYMBOLS USED IN THIS MANUAL

The following symbols have been used in this manual to help communicate the intent of the instructions. When one of these symbols appears, it conveys the meaning as defined in the following descriptions:

DANGER:



Serious personal injury, death and/ or extensive property damage can result if the DANGER instructions are not followed.

WARNING:



Serious personal injury and/or extensive property damage can result if the WARNING instructions are not followed.

CAUTION:



Minor personal injury can result, or a part, an assembly, or the engine can be damaged if the CAUTION instructions are not followed.

NOTE: **Gives additional information, and/or clarification details, which are used in conjunction with previously presented information.**

CALIFORNIA
Proposition 65
Diesel Exhaust Warning

WARNING: Diesel engine exhaust and some of its constituents are known to the state of California to cause cancer, birth defects and other reproductive harm.

CALIFORNIA
Proposition 65
Battery Warning

WARNING: Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer, birth defects and other reproductive harm.

Wash hands after handling.

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PAVING DEPTH AND WIDTH

Before beginning to pave, it is essential that the screed be elevated a distance equal to the desired mat depth plus enough extra height to allow for mat compaction by rolling. This is done by placing "starting blocks" under the screed. If a finished mat depth of 2 inches is desired, starting blocks 2 1/4 thick would provide a suitable starting height. The starting blocks should be at least as long as the width of the screed wear plate, and placed lengthwise with the direction of travel. Place one block under each end of the screed. If necessary, place additional blocks beneath the screed extensions. This placement will provide the screed wear plate with bearing surfaces that are essentially parallel with the grade. Lower the screed, bringing it to rest upon the starting blocks. With the screed in this position rotate the screed depth cranks

(Fig. 23) until the screed wear plate is completely flat on the starting blocks and free rotary travel (no resistance) of the screed depth cranks is attained. Rotate the screed depth cranks an additional 1/2 turn clockwise. When paving begins, check mat depth and adjust screed depth cranks until desired mat depth is attained. Use the screed depth gauge as a reference point only.

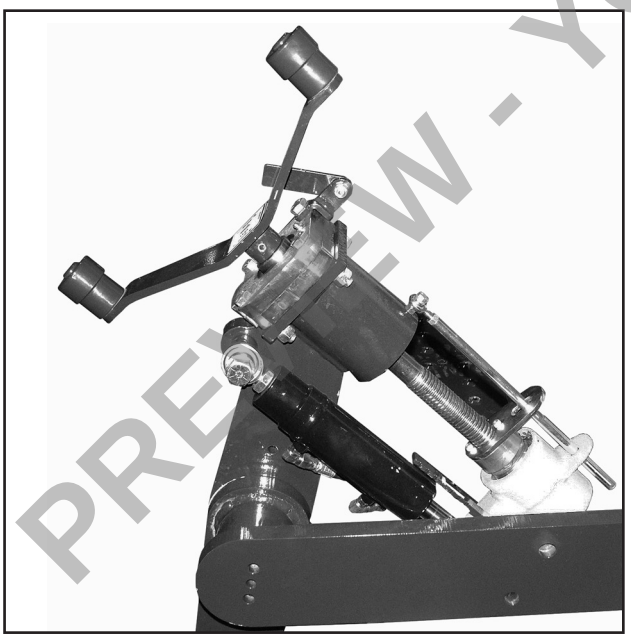


Figure 23 Screed Depth Control

If a tighter, more compacted mat is desired, adjust the screed down pressure valve. The paver's existing screed assembly weighs approximately 1600 pounds. An additional 2400 pounds of FULL FLOATING screed weight can be transferred from the hopper frame assembly onto the screed by using the down pressure valve (Fig. 24). One clockwise rotation of the valve adds approximately 300 pounds of screed weight. Rotating the valve counter clockwise disables the down pressure valve.

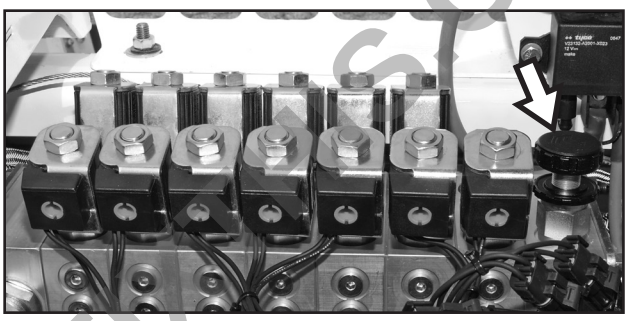


Figure 24 Screed Down Pressure

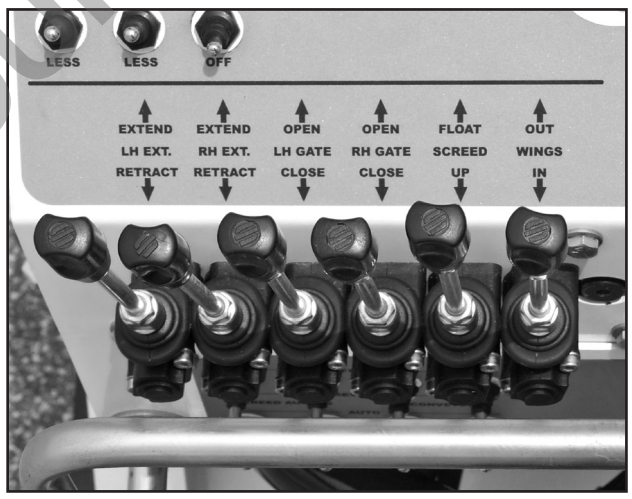


Figure 25 Left Operators Panel

To adjust the paver's paving width from the standard 8 feet, simply extend the hydraulic screed extensions to the desired paving width. The screed extension controls are located on each operator's console (Fig. 25, 26)

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COOLING FAN V-BELT

CHECKING THE V-BELT

Inspect the belts daily. Replace the belts if they are cracked, frayed, or have chunks of material missing. Small cracks are acceptable.

Adjust the belts that have a glazed or shiny surface, which indicates belt slippage. Correctly installed and tensioned belts will show even pulley and belt wear.

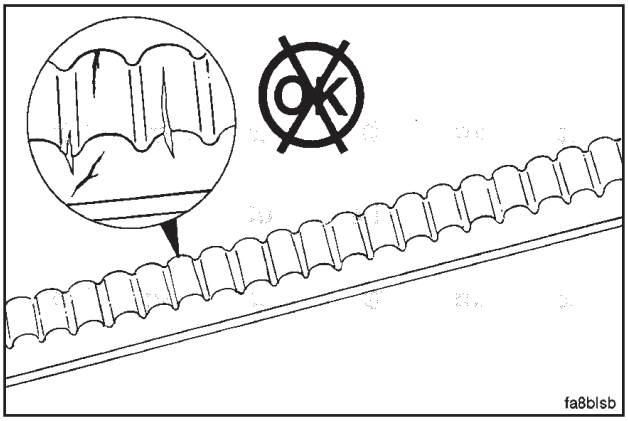


Figure 4-38. V-Belt Inspection

Belt damage can be caused by:

- Incorrect tension
- Incorrect size or length
- Pulley misalignment
- Incorrect installation
- Severe operating environment
- Oil or grease on the belts

The Generator set drive belts are located on the left side of the paver behind the louvers. These belts should be inspected daily as outlined above.

COOLING FAN V-BELT REMOVAL AND INSTALLATION

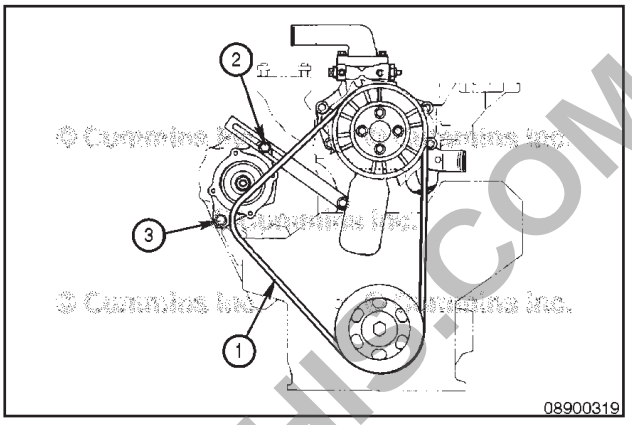


Figure 4-39 V-Belt removal and Inspection

Remove the drive bet by loosening the alternator mounting capscrew (3) and the belt tension adjustment capscrew (2).

Move the alternator down the adjustment bar until the drive belt is loose.

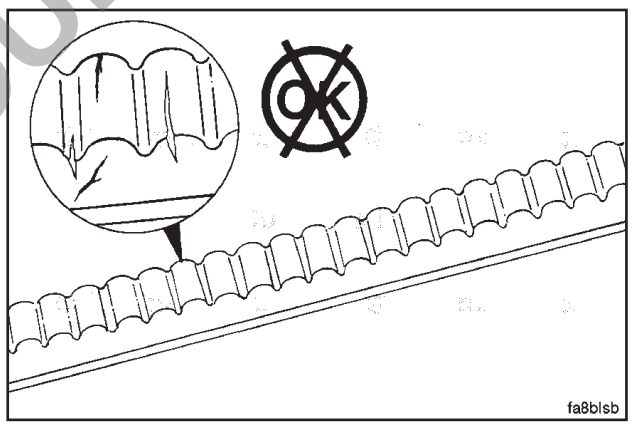


Figure 4-40 V-Belt removal and Inspection

REMOVE THE DRIVE BELT

Check the condition of the V-belt (Fig. 4-40).

Small cracks in transverse direction are permitted.

Cracks in longitudinal direction are not permitted.

Replace the V-belt in case of broken out material, intersecting cracks in longitudinal and transverse direction or fraying.

INSTALL THE DRIVE BELT

Using a breaker bar, raise the alternator on the adjustment bar (1), and adjust the fan belt tension to specifications.

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COOLING PACKAGE REMOVAL AND INSTALL

If it becomes necessary that the cooling system needs to be removed from the 815-2 pavers the following procedure should be followed.

The cooling system involves three systems in the 815-2. They are the Engine cooling, Hydraulic system cooling and Charge Air cooling. Several components need to be removed allowing the cooling system package to be removed from the engine compartment.

Open the engine compartment hood and prop it securely. Remove the (2) hex nuts securing the gas shocks to the mount brackets on both sides of the engine hood. See figure 6-1

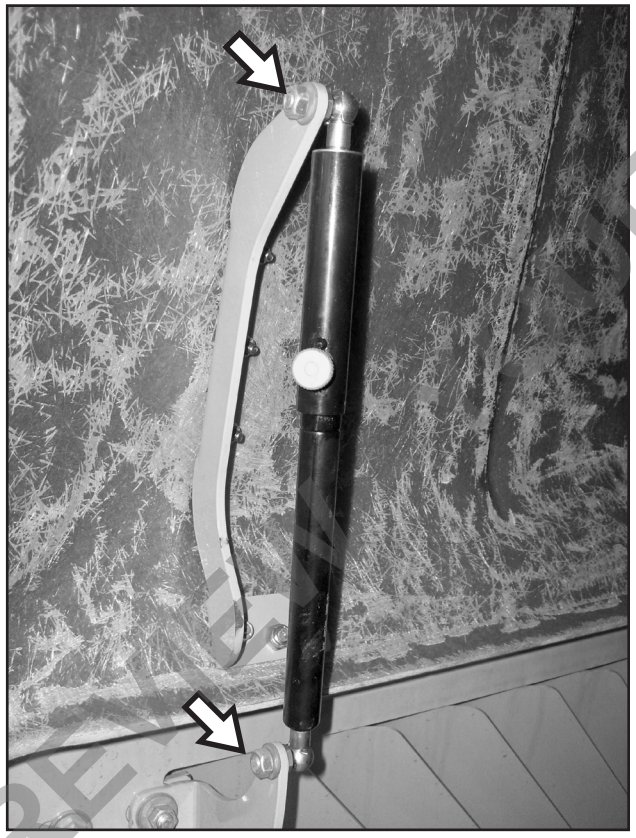


Figure 6-1 Hood Lifts

Close the engine compartment hood. Remove the hinge bolts from the hinges that secure the engine hood to the engine compartment. See figure 6-2 Remove the engine compartment hood and store it in a safe location.



Figure 6-2 Hinge Bolts

Remove hex head cap screws securing the operator stations consoles to the frame weldment. Fig. 6-3 Swing open the two operator station consoles.

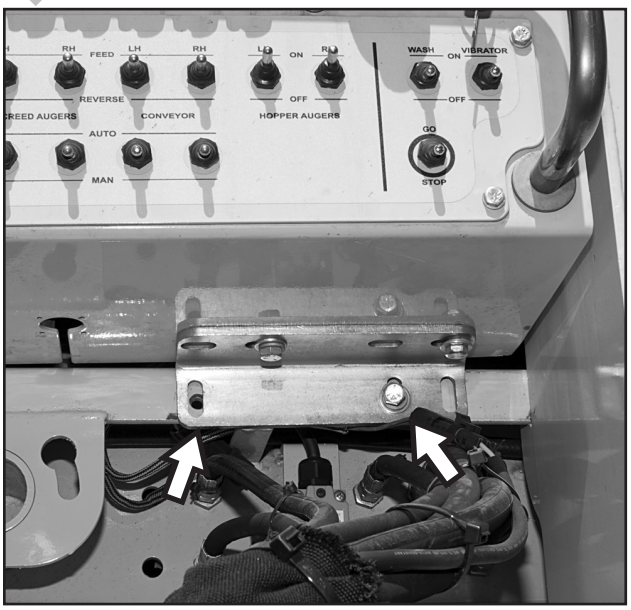


Figure 6-3 Operator Station Retaining Bolts

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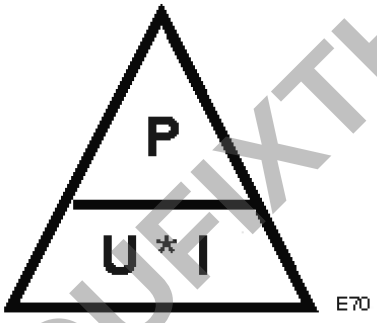
BOMAG Service Training Basic Electrics

Electrical energy

In a closed electric circuit current and voltage generate energy.

If a current of 1 Ampere flows at a voltage of 1 Volt, energy of 1 Watt is produced.

Hint for practice:



By means of this triangle the formula can be easily rearranged, the value you are looking form must just be blanked off with a finger.

Power	**P**	**=**	**I times U**
Amperage	**I**	**=**	**P divided by U**
Voltage	**U**	**=**	**= P divided by I**

Mass units:

U	=	Voltage in Volt
I	=	Current in Ampere
P	=	Power in Watt

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BOMAG Service Training Basic Electrics

Measuring voltage and signal on terminals

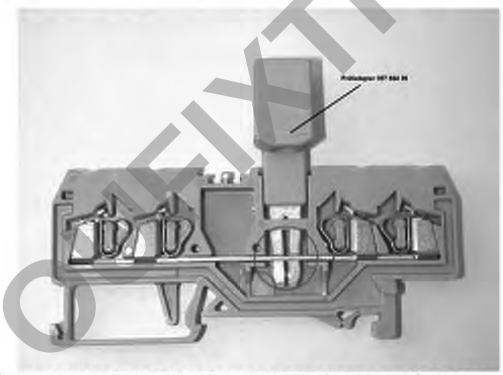
Terminal block without plug

in the designs:

- 4-pole up to cable cross-section 2.5mm².
- 2-pole up to cable cross-section 6mm².
- 2-pole up to cable cross-section 6mm² as safety terminal.

On these terminal blocks the bridge slot is most suitable for tapping off and measuring signals. Here a 4mm test adapter **(BOMAG Nr. 057 564 26)** for connection of a measuring cable can



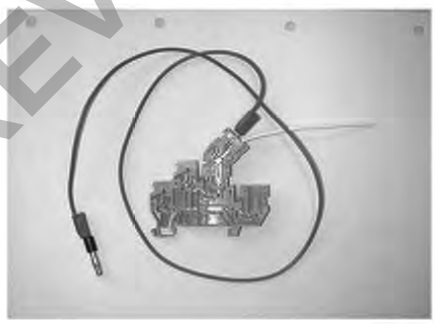


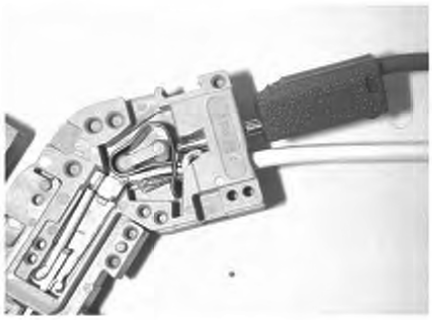
be directly inserted. These test plugs are by standard used in the central electrics of all heavy equipment machines.

BOMAG Nr. 057 564 26

Terminal block with plug

Direct measurements can be taken most reliably on the plug by using the test cables (red and black) and the adapters (2mm to 4mm).





Contact between test cable and terminal body inside the plug is assured.

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Installation, Maintenance and Spare Parts Instructions
Model: Short 'B' Mount (FBH13…..D) Series
Spring Applied, Hydraulically-Released Multiple Plate Brake for Dry Operation

4) Lubricate 'O' ring seals (15 & 17) with Molykote 55M (or equivalent) silicon grease and assemble together with backing rings (16 & 18) to piston (9). To ensure correct brake operation, it is important that the backing rings are assembled opposite to the pressurized side of piston (9).

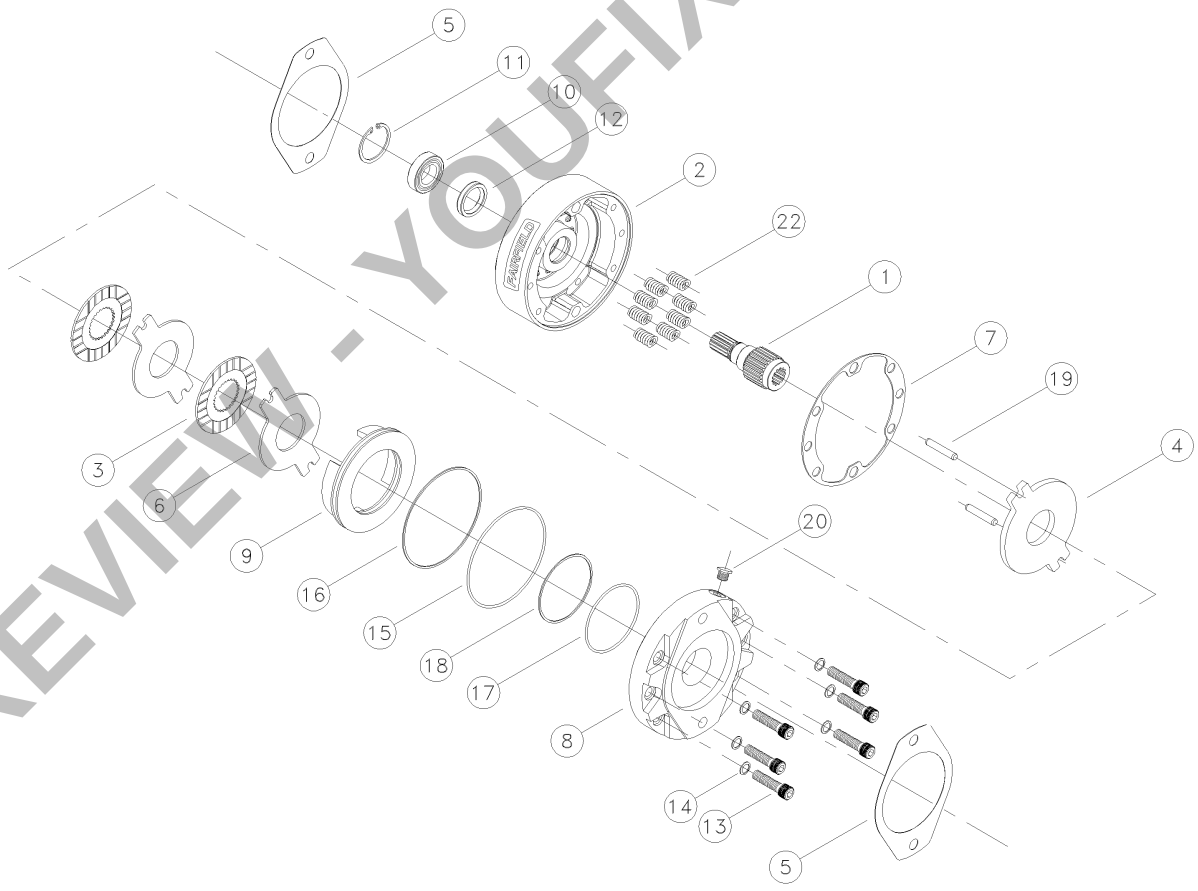
5) Correctly orientate piston (9) aligning spaces with the two dowel pin holes and, assemble into cylinder housing (8) taking care not to damage seals and carefully lay aside.

6) Locate 2-off pins (19) in housing (2) followed by pressure plate (4) and friction plates i.e. an inner (3) followed by an outer (6) in correct sequence.

7) Position gasket (7) in correct orientation.

8) Align two holes in cylinder with dowel pins (19) and assemble piston & cylinder sub-assembly to remainder of brake securing with 6-off SHCS and washers (13 & 14). Torque tighten to 55 Ft-lb (75 Nm).
Note: The use of a suitable press (hydraulic or arbor) pressing down on cylinder end face 'B' will ease assembly of the SHCS (13).

Note: If new friction plates have been assembled, it is recommended that the friction faces are "bedded in" to help make certain stable torque performance.



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Minor Repair and Replacement

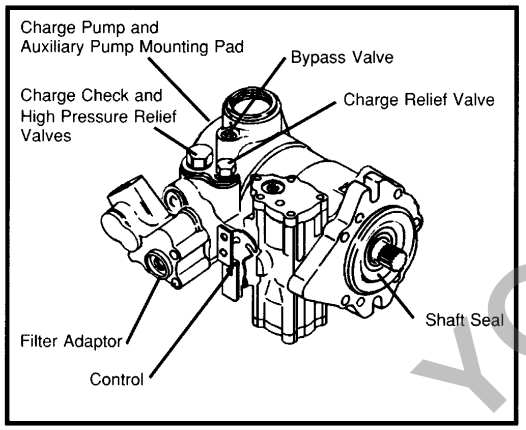
General

Minor Repairs may be performed, following the procedures in this section, without voiding the unit warranty.

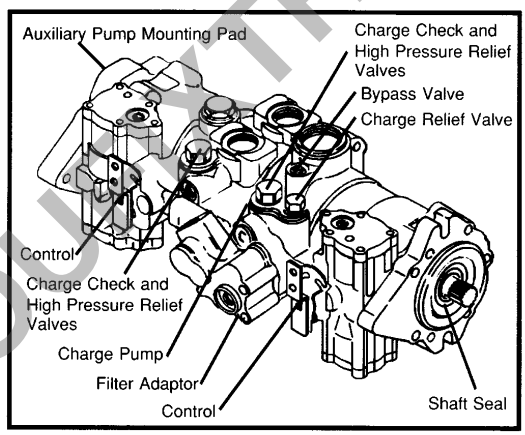
Cleanliness is a primary means of assuring satisfactory transmission life, on either new or repaired units. Cleaning parts by using a clean solvent wash and air drying is usually adequate. As with any precision equipment, all parts must be kept free of foreign materials and chemicals.

Protect all exposed sealing surfaces and open cavities from damage and foreign material.

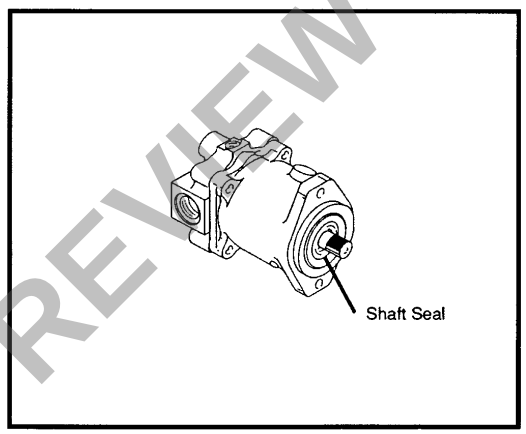
It is recommended that all gaskets and O-rings be replaced. Lightly lubricate all O-rings with clean petroleum jelly prior to assembly. All gasket sealing surfaces must be cleaned prior to installing new gaskets.



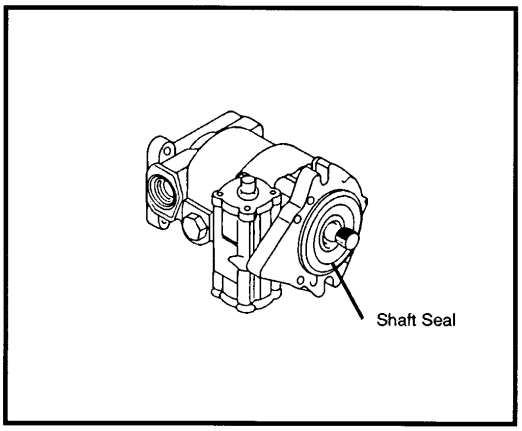
Variable Displacement Pump



Variable Displacement Tandem Pump



Fixed Displacement Motor



Variable Displacement Motor

Fig. 28 - Minor Repairs

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SAUER DANFOSS

Series 45 Frame K and L Open Circuit Axial Piston Pumps
Service Manual
Technical specifications

GENERAL SPECIFICATIONS

Type of mounting
SAE-B mounting flange.

Auxiliary mounting pad options
SAE-A, SAE-B, or SAE-B-B

Control options
PC: Pressure Compensator
LS: Load Sensing (with PC)

Port options
Inlet and system ports: SAE flanged ports, code 61 or O-ring boss ports. Axial (end) ports or radial (side) ports.

All other ports: SAE straight thread O-ring boss.

Direction of rotation
Clockwise or counterclockwise.

Installation position
Installation position is discretionary. To satisfy inlet pressure conditions, it is recommended that the pump always be located below the lowest level of hydraulic fluid in the reservoir. The housing must always be filled with hydraulic fluid.

Technical specifications

Ratings

Specification		Unit	Frame L		Frame K	
Displacement		cm^3 [in^3]	25 [1.53]	30 [1.83]	38 [2.32]	45 [2.75]
Input Speed	Minimum	min^{-1} (rpm)	500	500	500	500
	Rated		3200	3200	2650	2650
	Maximum		3600**	3600**	2800**	2800**
Maximum (peak) working pressure		bar [psi]	350 [5075]	300 [4350]	350 [5075]	300 [4350]
Continuous working pressure			260 [3770]	210 [3045]	260 [3770]	210 [3045]
Flow at rated speed		l/min [gal/min]	76.2 [20.3]	90.0 [24.0]	108.3 [28.9]	126.0 [33.6]
Theoretical input torque at maximum displacement		N•m/bar [lbf•in/1000psi]	0.395 [243]	0.477 [291]	0.605 [369]	0.716 [437]
Mass moment of inertia of internal rotating components		$kg•m^2$ [$lbm•ft^2$]	0.0016 [0.037]	0.0015 [0.035]	0.0017 [0.040]	0.0020 [0.047]
Weight	Axial ports	kg [lbm]	19 [42]	19 [42]	19 [42]	19 [42]
	Radial ports		24 [53]	24 [53]	24 [53]	24 [53

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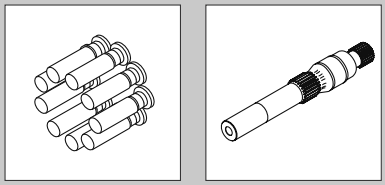
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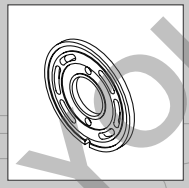
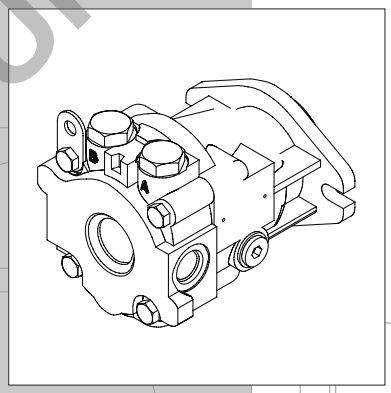
SAUER DANFOSS

Genuine Parts

Series 40
MMF044D and
MMV044D
Axial Piston Motors

Parts Manual



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Series 40 MMF044D and MMV044D Axial Piston Motors
Parts Manual
Fixed displacement motor

Genuine Parts

COMMON PARTS

Order code	Item	Date begin	Date end	Part number	Part name	Qty. per model/kit
	B21	95-42		4350148	Thrust plate	1
	B37	95-42		4350089	End cap gasket	1
	B40	95-42		9004875-0100	Spring pin	2
	B45	06-10		315325 (9005110-8700)	Plug assembly	1
	B45A	06-10		001149 (9004201-6200)	O-ring	1
	B51	06-10		315325 (9005110-8700)	Plug assembly	1
	B51A	06-10		001149 (9004201-6200)	O-ring	1
	T01	95-42		4350754	Motor valve plate (SB-1999-058)	1
	T02	95-42		9004700-1910	Slotted pin	1

SPECIAL HARDWARE

NYJ	T03	06-16		9006200-0281	Retaining ring	1
	T04	06-16		373282 (9001315-0011)	Roller bearing	1
XXX	T03	06-16		9006200-0281	Retaining ring	1
	T04	06-16		373282 (9001315-0011)	Roller bearing	1

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