Grease Lubrication Pump BS - B

Operating Instructiones

CONFIGURATION

The pump can be supplied at choice, either coupled with an electic geared motor, or with transmission gear box and free-end stud. The rotaring drive shaft fitted with an eccentric inside the pump head oscillates a rocker arm to which the pistons are connected.

DRIVE

The pump consists of the housing with the pump head, and a lubricant reservoir mounted on top. An integral pressure relief valve is incorporated in the pump head.

PRINCIPLE OF FUNCTIONING

Reservoir with wedge plate assy. and scraper

A ratched mechanism (39 - 43) (page 5, section G - H) converts the oscillating motion of the rocker arm (77) (page 6, section E - F) into rotary motion of the feed worm (wedge plate assy. 4) (page 5) and the scraper (34) attached to it. Irrespective of the direction of drive of the motor the two parts always rotate clockwise causing the grease to be scraped off the wall of the reservoir (1) and forced into the housing (17), thus eliminating cavitation and ensuring positive priming of the pump unit.

Pump head

The pump head is secured in the housing (17) by 8 cap screws. It comprises a flange (52) (page 6, section A - B) with an eccentric (74) (section I - K) running on a ball bearing, and the pump element (section I - K) bolted to the flange.

The eccentric (74) causes a reciprocating motion in the rocker arm (77).(section E - F) The two feeding pistons (84) are connected to the rocker arm.

The BS - B double acting pump operates with two pairs of pistons simultaneously such that, as one pair of pistons is on the suction stroke, the other pair forces the lubricant to the outlet ports, through the pressure connection. Each of the two feed pistons fitted in the housing (82) comprises two control pistons (80, 83) in a common bore.

Suction stroke

At the start of the suction stroke, the pistons (80, 83,84) are moving together towards the suction channel until the spring-loaded control piston (83) is pressed against the stop thus reaching its final position.

As the delivery plunger (84) continues to move, a vacuum is created between the feed plunger (84) and the control plunger (83). As soon as the feed plunger (84) uncovers the suction port, the vacuum, in conjunction with the slight overpressure of the lubricant in the pump housing (17), causes lubricant to be sucked into the cylinder.

PRINCIPLE OF FUNCTIONING (Continue)

If the force of the spring (81) is not sufficient enough to enable to move the control piston (83) to the stop into the final position in the housing (82), the control piston (83) is bound to be positively controlled at the end of the stroke, by the rocker arm (77) and displaced into its final position mechanically, thanks to a second control plunger (80) being provided.

Pressure stroke

Now the feed piston (84) moves towards the pressure connection closing the suction channel. The lubricant enclosed by the feed piston (84) and control piston (83) is moved axially, against the force of the spring (81). At the moment the annular groove in the control piston (83) is reaching the pressure channel, the axial movement of the control plunger stops. The lubricant is forded by the feed plunger (84) rotating in axial direction into the pressure channel. As soon as the two plungers (83, 84) make contact, the stroke of the feed plunger is terminated.

COMMISSIONING

Pump installation

Install the pump vertically. Then connect the motor to the control panel (refer to wiring diagram). The motor may rotate in either directions, but with the view to the gearing of the transmission gear box, it is recommended that is should run clockwise.

Filling the reservoir and pipe lines

Efficient operation demands the use of only clean lubricant! Contamination of the lubricant can lead to operation trouble and damage. To shorten the time of the initial start-up it is advisable to fill the grease using a barrel pump or a press via the R-outlet. Containers should only be re-charged via the filler plug provided, preferably by use of a filling pump or grease gun, or from the works bulk supply system. The container must always be kept closed and care taken in ensuring that the lubricant is kept free from dirt and other contamination. Recharging of the container at the correct time is most important, otherwise there is a risk of air finding its ways into the pump and main lines. In contrast to other pumps, no oil is required to be charged for initial start-up.

To ensure trouble-free functioning the pump itself should be de-aerated by running it for a period without back pressure. As soon as the lubricant is discharged free of air from pressure connection (P), the feed lines can be connected. Run the pump then and continue to bleed all main lines, then make the connection to the metering elements.

COMMISSIONING (Continue)

Connecting the pressure and relief lines

The pressure outlet port at the flange (52) (page 6, section A-B) has a pipe connection of G 3/8" BSP female thread. When using the pump in a dual-line system, this branch is used to connect the 4/2-way reversing valve (or 3/2-way valve respectively). On the pump housing (17) (page 5) there is the pressure relief port of G 3/8" BSP to connect the 4/2-way valve. In filling or greasing systems without a change-over valve, this port should be shut by a plug.

MAINTENANCE

Strainer

The strainer incorporated (51) (page 6, section A-B) should retain any contamination, which, by carelessness, has been allowed to get into the lubricant. Therefore, check and clean with petrol or spirit the strainer at regular intervals. Any dirt therefore is retained inside the strainer (51). When disassembling the impurities are removed.

Pressure relief valve

The integral relief valve (54 - 62) (page 6, section A - B) protects the pumping element from damage. The pressure can be set according to system requirements from 0 to 400 bar.

Turning the square spindle clockwise (62) the pressure is increased, and turning it anti-clockwise it is decreased. The relief valve is set by the manufacturers to a pressure of 400 bar.

Attention!
The pressure rating adjusted at relief valve must not be higher than max. admissible operating pressure of the elements installed downflow.

Bursting discs

Two bursting discs (47) are fitted in the stud (48) below the bush (46) which will rupture in the event of failure, or excessive pressure beyond 500 bar building up in the pressure channel in flange (52), e.g. if the strainer (51) is contaminated, or the relief valve is clogged (54 - 62). When these discs burst, the lubricant issues out of the tube (44). In this case, first remedy the cause of failure and replace two new burst discs. Under the plug (53) in the flange (52) there are ten spare discs. When replacing new bursting discs take care that the curved face shows towards the bushing (46). If incorrectly fitted, the burst pressure is apt to be increased to such an extent causing the pump drive to be damaged.

Working safety advice !
Make sure to fit tube (44) (page 6, section A - B) correctly otherwise, and in the event of failing to provide it at all, there is a danger to life and limb to everybody involved.

Geared motor or transmission gear box

The motor or the transmission gear box is supplied by the manufacturers ready for operation and filled with oil ARAL Degol BMB 680, which is suitable for an ambient temperature down to -10^{o}centigrade. Refilling is not necessary, filling in excess is apt to heat the pump which is inadmissible. First oil change is recommended to take place at the end of 10,000 service hours. The manufacturers recommended to use ARAL Degol BMB 220 for temperatures between -10^{o} to -20^{o} centigrade. If not available, the following oils may be used instead:

Aral	:	Degol BG 220
BP	:	Energol GR-xP 220
Calypsol	:	Biesen Öl MSR 114
Esso	:	Spartan EP 220
Mobil	:	Mobilgear 630
Shell	:	Omala 220
Texaco	:	Meropa 220

For temperatures below $-20\ ^{o}$C ARAL Degol BMB 46 (suitable down to $-45\ ^{o}$C) is recommended.

The quantity to be recharged is 0.1 litre for transmission gear box for 0.37 kW and 0.2 litre 1 for 0.75 or 1.5 kW power ratings respectively.

Installation, commissioning and maintenance is required to be carried out by qualified personnel only.

Existing safety regulations must be observed.

This manual is subject to change concomitant with new developments.

SPARES LIST

Part	Pcs.	Denomination			Code No.	
—	—	Grease lubricator pump BS - B with gear box motor			22123 - 1200	
—	—	Grease lubricator pump BS - B with free-end stud			22123 - 1300	
—	1	Pump consisting of part 1 - 21, 25 - 62 and 67 - 89		30 ltr.	22123 - 1111	
				60 ltr.	22123 - 1121	
				100 ltr.	22123 - 1131	
—	1	Lubricant reservoir consisting of parts 1, 5 and 8		30 ltr.	63721 - 1711	
				60 ltr.	63721 - 1721	
				100 ltr.	63721 - 1731	
1	1	Reservoir		30 ltr.	73721 - 1711	N
				60 ltr.	73721 - 1721	N
				100 ltr.	73721 - 1741	N
2	1	Hexagon head nut M 12 DIN 985			74175 - 1544	
3	1	Washer B 13 DIN 125 - St - galvanized			74185 - 1094	
4	1	Wedge plate			72631 - 1121	
5	1	Filling valve			65231 - 2111	
6	16	Cheese-head screw M 6 x 20 DIN 7984 - galvanized			74102 - 1144	
7	16	Copper washer A 6 x 10 DIN 7603 - Cu			72712 - 1034	E
8	1	Base ring			73761 - 5431	N
9	1	Woodruff key 5 x 6.5 DIN 6888			71951 - 4044	
10	1	Shaft			71225 - 2141	
11	1	Circlip			74181 - 9111	
12	1	Washer			74181 - 5242	
13	1	Woodruff key 6 x 7.5 DIN 6888			71951 - 4073	
14	1	Washer B 17 DIN 1235 - St - galvanized			74185 - 1124	
15	1	Nut M 16 DIN 935 - 8 - galvanized			74175 - 2014	
16	1	Grover lock pin 4 x 24 DIN 1481			74225 - 5134	
17	1	Housing			74321 - 3511	
—	1	Pump head consisting of part 18 - 21, 25, 29, 44 - 62 and 67 - 89			62812 - 1141	
18	4	Cheese-head screw M 6 x 50 DIN 912 - 10.9 - galvanized			74102 - 1913	
—	1	Pump element consisting of part 20, 21, 29 and 77 - 89			62212 - 1341	
20	1	O - ring 6 x 2 DIN 3770 - NB 70			72711 - 1233	E
21	1	Bush			71441 - 1141	
22	1	Sealing ring			72728 - 1231	E
23	4	Lock washer 6 DIN 7980			74185 - 3034	
24	1	Geared motor, RPM power rating temperature range	0,37 kW 80 min^{-1} 0 °C to + 80 °C	220 - 240 V / 380 - 415 V; 50 Hz 243 - 277 V / 420 - 480 V; 60 Hz	71111 - 2313	
				290 V / 500 V; 50 Hz	71111 - 2333	
			0,75 kW 80 min^{-1} - 20 °C to + 80 °C	220 - 240 V / 380 - 440 V; 50 Hz 243 - 277 V / 420 - 480 V; 60 Hz	71111 - 2353	
				290 V / 500 V; 50 Hz	71111 - 2363	
			1,5 kW 160 min^{-1} 0 °C to + 80 °C	220 - 240 V / 380 - 415 V; 50 Hz 243 - 277 V / 420 - 480 V; 60 Hz	71111 - 3013	
				290 V / 500 V; 50 Hz	71111 - 3023	
			1,5 kW 250 min^{-1} 0 °C to + 80 °C	220 - 240 V / 380 - 415 V; 50 Hz 243 - 277 V / 420 - 480 V; 60 Hz	71111 - 3113	
				290 V / 500 V; 50 Hz	71111 - 3123	
		Gearbox, transmission gearbox ratio, required drive power at 1500 min^{-1}, temperature range		18 : 1; 0,37 kW; 0 °C to + 80 °C	71111 - 1213	
				17 : 1; 0,75 kW; - 20 °C to + 80 °C	71111 - 1223	
				9 : 1; 1,5 kW; 0 °C to + 80 °C	71111 - 1233	
				5,5 : 1; 1,5 kW; 0 °C to + 80 °C	71111 - 1243	
25	1	Dowel pin 6 x 12 DIN 1474			74225 - 3044	
26	2	Cheese-head screw M 8 x 25 DIN 7984 - galvanized			74102 - 1254	
27	1	Ratchet drive			71532 - 1431	
28	4	Lock washer 8 DIN 7980			74185 - 3044	
29	10	Hexagon head nut M 8 DIN 934 - 8 - galvanized			74175 - 1284	
30	2	Sealing ring			72729 - 1421	E
31	2	Cheese-head screw M 5 x 20 DIN 7984 - galvanized			74102 - 1054	
32	2	Lock washer 5 DIN 7980			74185 - 3024	
33	2	Hexagon head nut M 5 DIN 934 - 8 - galvanized			74175 - 1244	
34	1	Scraper		30 ltr.	72621 - 1421	
				60 ltr.	72621 - 1431	
				100 ltr.	72621 - 1441	

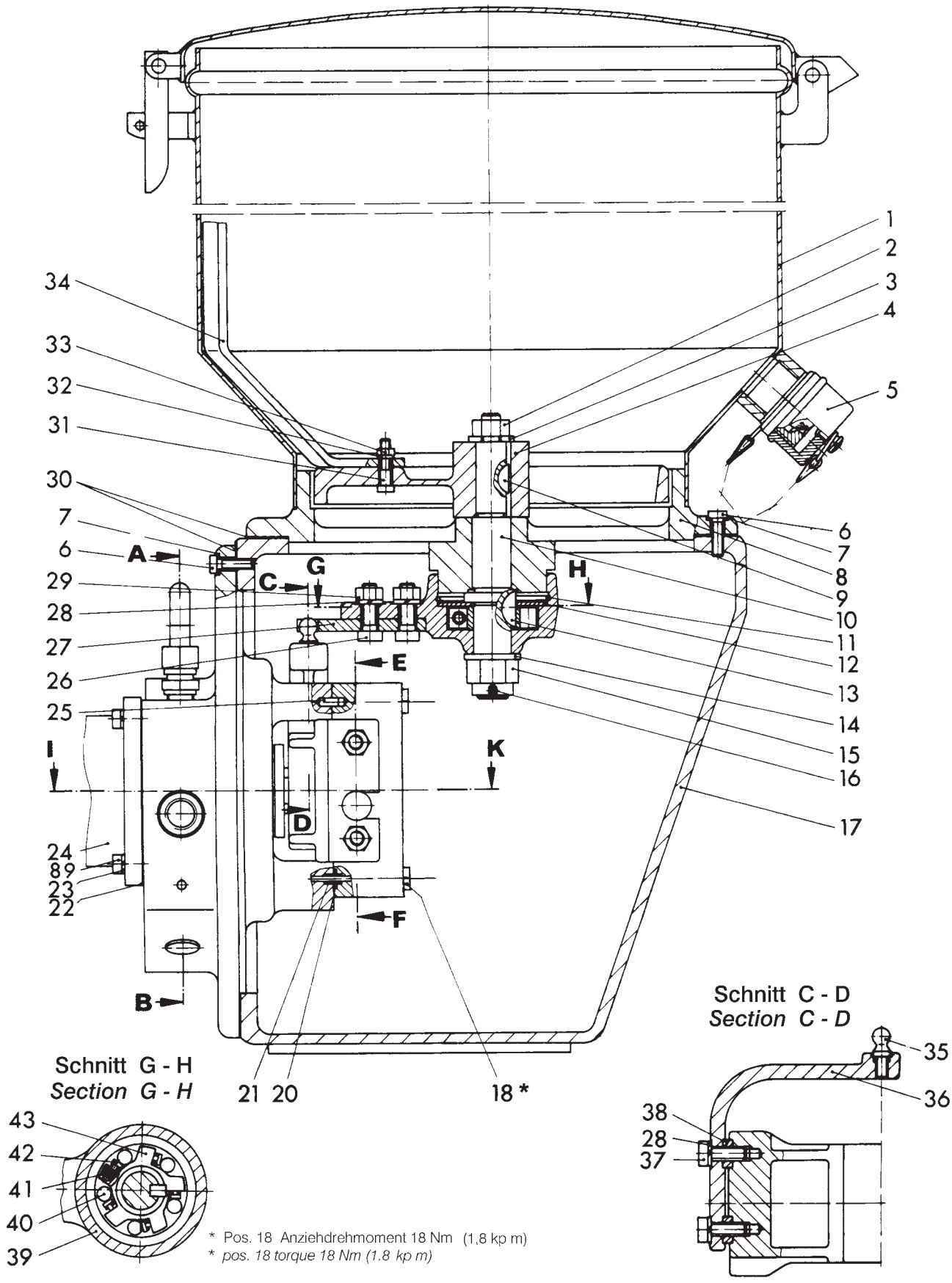
SPARES LIST (Continue)

Part	Pcs.	Denomination	Code No.	
35	1	Bowl gudgeon	72541 - 1121	
36	1	Bracket	74361 - 1811	
37	2	Cheese-head screw M 8 x 20 DIN 7984 - galvanized	74102 - 1244	
38	2	Washer	74184 - 1181	
39	1	Ratchet housing	71161 - 2241	
40	5	Roller	71961 - 2111	
41	5	Compression spring	71613 - 2122	
42	5	Spring cup	71641 - 3111	
43	1	Free wheel boss	71161 - 1221	
44	1	Tube	73131 - 1421	
45	1	Straight male stud connector DL 10 - G 1/4 DIN 2353 - St	73442 - 1414	
46	1	Bush	71441 - 1211	
47	12	Burst plate	74181 - 1312	E
48	1	Stud	73490 - 2951	
49	1	Copper washer A 22 x 27 DIN 7603 - Cu	72712 - 1384	E
51	1	Strainer	63671 - 1511	
52	1	Flange	74354 - 8541	
53	1	Plug G 1/4	74161 - 7811	
54	1	O - ring 5.28 x 1.78 DIN 3779 - NB 90	72711 - 1173	E
—	1	Valve assy. consisting of part 55 and 56	63611 - 1131	
55	1	Housing	74332 - 8741	N
56	1	Plunger	72105 - 1141	N
57	2	Spring cup	71641 - 3421	
58	1	Copper washer A 28,5 x 32 x 1 DIN 7603 - Cu	72712 - 1574	E
59	1	Compression spring	71616 - 7151	
60	1	Sleeve	71461 - 3621	
61	1	Nut M 10 - 8	74171 - 5253	
62	1	Square screw M 10 x 50 DIN 480 - 5.6 - galvanized	74105 - 1513	
63	1	Straight male connector DS 10 - G 3/8 DIN 2353 - St	73442 - 1424	
64	1	Tube	73131 - 1411	
65	1	Pressure gauge male connector MAV 10 - SR 1/2 - St	73442 - 4413	
66	1	Pressure gauge 165 AR 10016 DIN 16064	75111 - 5294	
67	1	Copper washer A 17 x 21 DIN 7603 - Cu	72712 - 1324	E
68	1	Plug G 3/8 DIN 908 - 5.8 - galvanized	74106 - 1254	
—	1	Bearer block consisting of part 70 and 71	62512 - 1111	
70	1	Ball bearing 1203 DION 630	71418 - 1144	N
71	1	Bearer block	72512 - 3531	N
72	2	Circlip 52 x 2 DIN 472	74186 - 1344	
73	1	Bush	71447 - 1121	
74	1	Eccentric	71541 - 1511	
75	1	Circlip 25 x 1.2 DIN 471	74186 - 1154	
76	2	Ball bearing 6205 DIN 625	71418 - 1294	
77	1	Rocker arm	72512 - 2121	
78	2	V - ring U 14 x 18.7 x 1.5	72713 - 5163	E
—	2	Housing consisting of part 79 and 80	64332 - 4611	
79	2	Housing	74332 - 9151	N
80	2	Plunger	72105 - 1151	N
81	2	Compression spring	71615 - 5151	E
—	1	Housing consisting of part 82 and 84	64332 - 4131	N
82	1	Housing	74332 - 4131	N
83	2	Plunger	72108 - 2551	N
84	2	Plunger	72108 - 2541	N
85	2	Rod	71511 - 2221	
86	4	Washer B 8.4 DIN 125 - St - galvanized	74185 - 1074	
87	2	Drive dog	71942 - 1911	N
88	2	Circlip 8 DIN 9045	74186 - 3014	N
89	4	Hexagon head screw M 6 x 20 - 8.8	74101 - 1823	

Parts marked ''E'' recommended to be held in stock as spare.
Parts marked ''N'' are precision - mated parts which can only be supplied as an assembly.

Caution! Do not mix lubricants with others; Clean gear boxes thoroughly with petrol or spirit before recharging with oil.

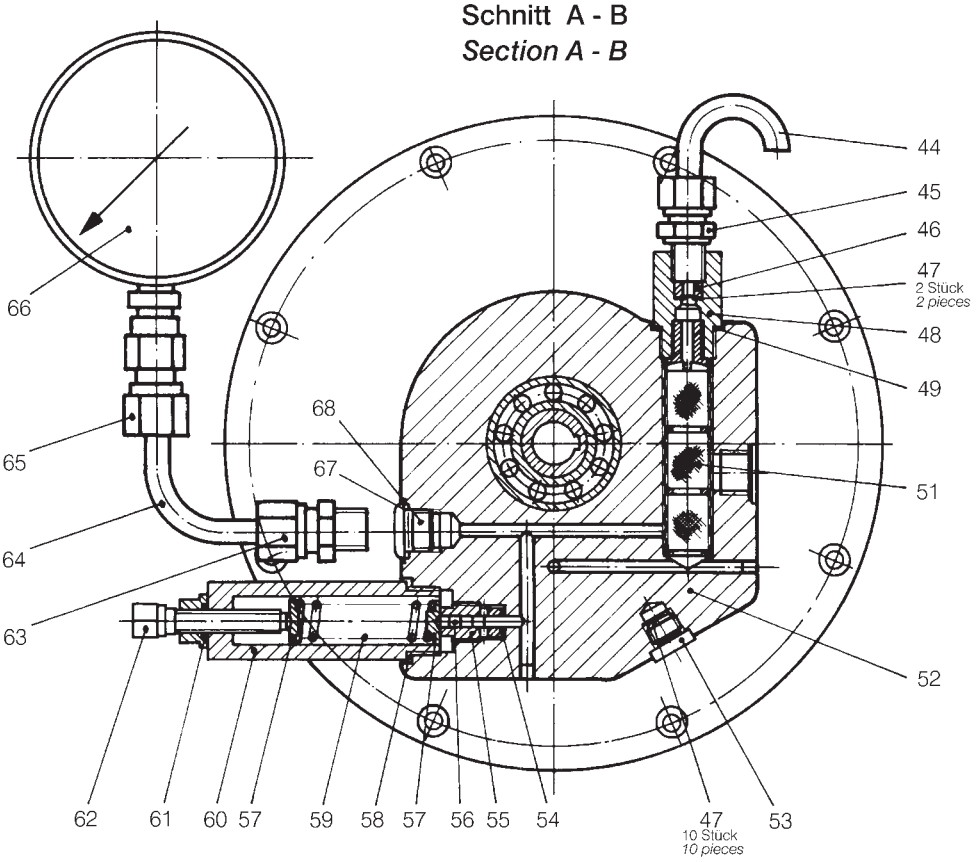
SPARES DRAWING



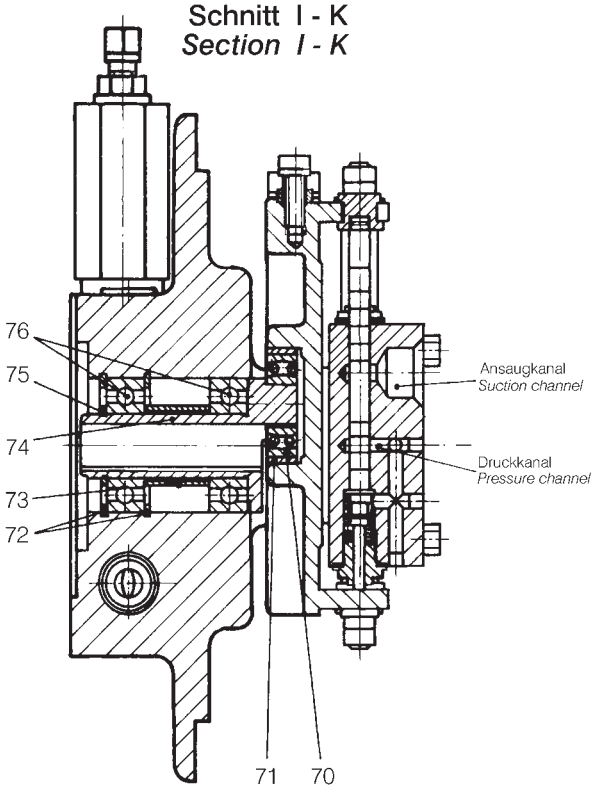
* Pos. 18 Anziehdrehmoment 18 Nm (1,8 kp m)
* *pos. 18 torque 18 Nm (1.8 kp m)*

SPARES DRAWING (Continue)

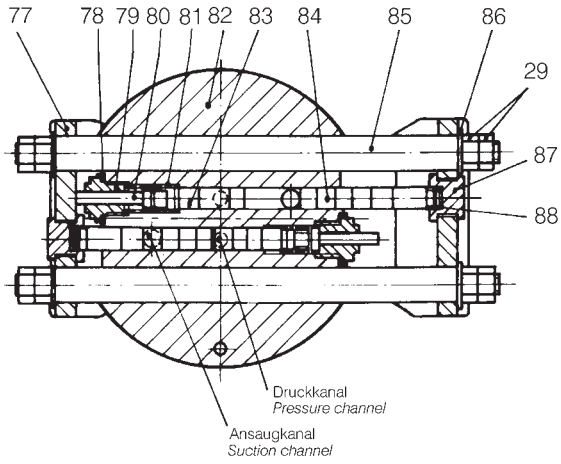
Schnitt A - B
Section A - B



Schnitt I - K
Section I - K



Schnitt E - F
Section E - F



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