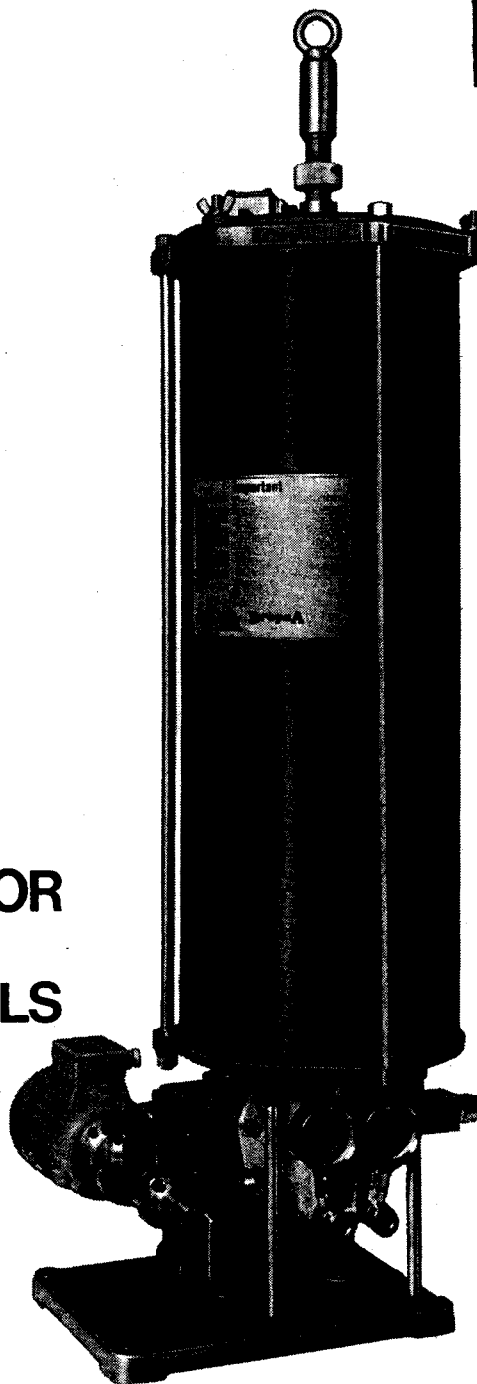


65000 SERIES

PUMPS
MOTORISED PUMPS
WITH
MECHANICAL INVERTOR

CONTROL PANELS
ACCESSORIES



20134 MILANO (ITALY)
Via Massimiano 25
Tel. 2157251/2/3/4/5
Telex 32157 DROPSA

TECHNICAL MANUAL

PUMP 65000 - NEW SERIES

Double line installations - oil and grease

DESCRIPTION

This pump has been designed to supply Double Line Systems on medium and heavy duty plant and machinery. A built-in mechanical device alternates the supply from the two outlets. A choice of gear ratios enables a pre-determined inversion time and thus cycle time to be obtained according to the plant requirements.

The pump consists basically of a main piston and a servo-piston, both of which are hardened and lapped into the cast body.

Discharge per stroke is approx. 0.7 c.c.

Normal operating pressure is 75 bar but a pressure control valve allows a pressure variation from 30-150 bar. The primary worm drive shaft and cam shaft are mounted on ball bearings.

The secondary reduction gear box, eccentrics and inverter mechanism are contained in an oil bath which is separated from the pump reservoir. The pump is available in four basic types:

- with primary worm reduction ratio 1:15
- with primary worm reduction ratio 1:30
- direct drive
- oscillating drive

9 reduction ratios have been designed to control the interval of the lubrication cycle. They can be applied to all 4 basic types of pumps.

Seven types of reservoirs are available:

- For grease: 5 kg - 10 kg - 30 kg - 65 kg -
- For oil : 5 lt - 30 lt - 65 lt

The mechanical inverting device gives a fixed time cycle without using an electrical control panel.

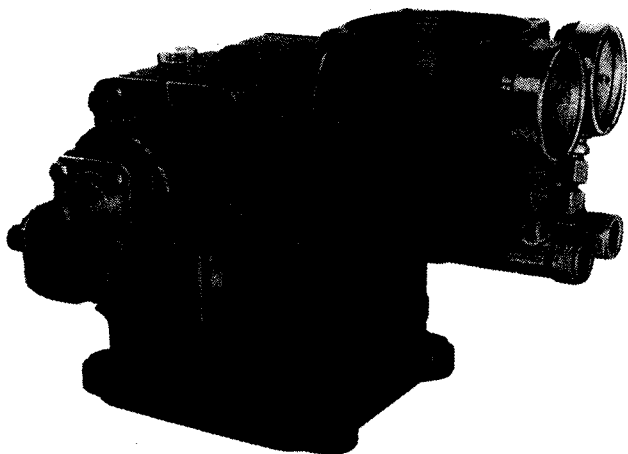
It is however preferable for long lubrication cycles to use an electric control panel to avoid the pump running for extended periods after lubrication has been completed. The control panel also provides a variable time cycle and will signal any possible fault.

MAINTENANCE

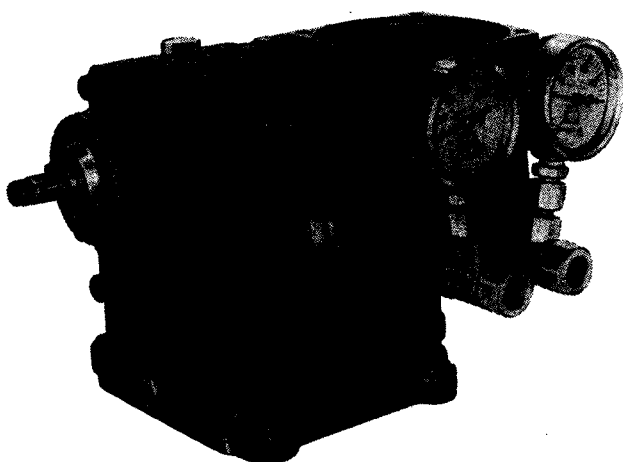
This pump unit does not require special maintenance. Before starting ensure that the gear box is filled with the correct grade of oil as per instructions.

Use only clean, non-corrosive lubricants and fill reservoir through filling attachment. When used for recirculating systems, lubricant must be filtered before returning to reservoir.

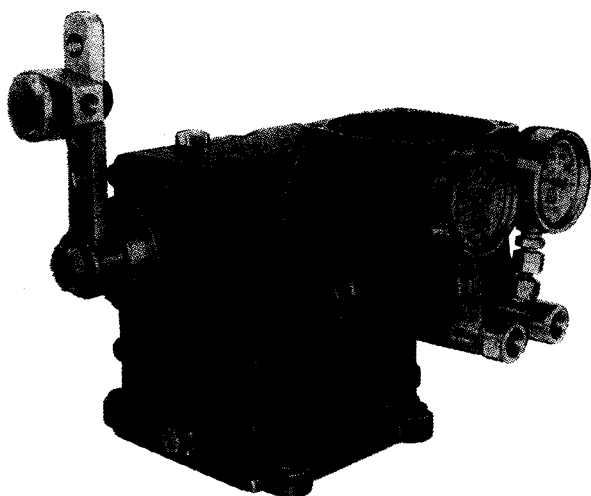
PUMP 65000 - NEW SERIES



Pump with reduction gears - Part No.76500*



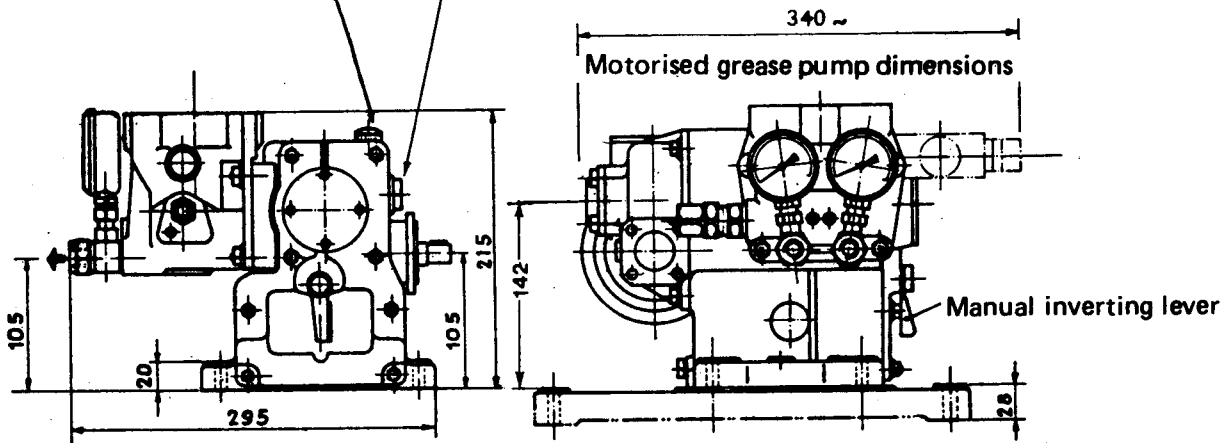
Pump with direct drive - Part No.65634*



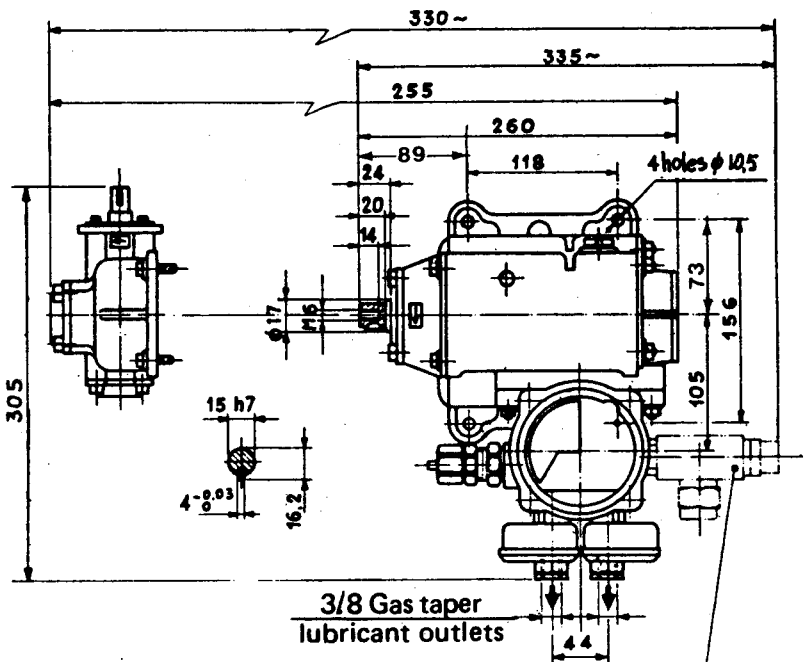
Pump with oscillating drive - Part No.65635*

PUMPS AND MOTORISED PUMP DIMENSIONS

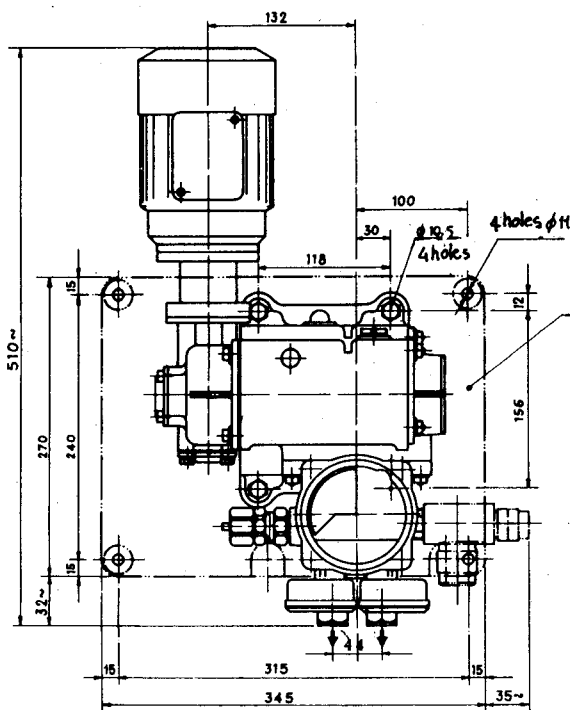
Oil filler plug - pump gear box Level indicator



Pump with reduction gear
max. dimensions



MOTORISED PUMP
Plan view



Baseplate - only for motorised pumps
with 30 and 65 kg - 30 and 65 lt reservoirs

Grease filter with charging valve
1/2 Gas parallel

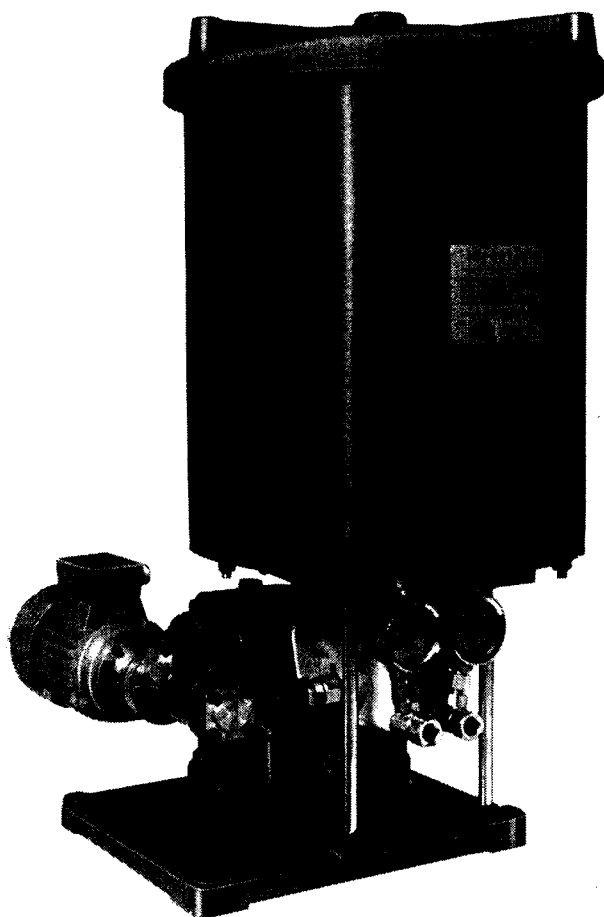
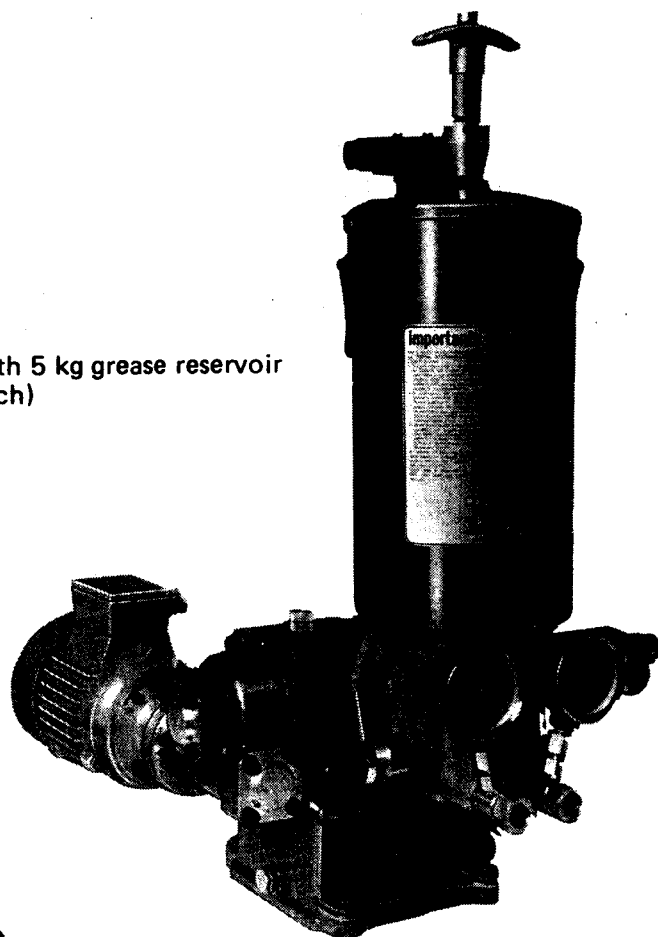


MOTORISED PUMPS WITH RESERVOIRS

Motors usually supplied are type P33

76534*

Motorised pump with 5 kg grease reservoir
(with low level switch)



76577*

Motorised pump with 30 lt oil reservoir
(without low level switch)

REDUCTION PERIOD AND CHOICE OF PUMP

The period is chosen according to the type of feeder used and the number of lubrication points (see Table A - page 7).

The maximum number of points permissible and the time indicated refer only to one inversion. A complete lubrication cycle consists of 2 inversions.

If double outlet feeders are used, the maximum number of points is twice that shown in the table.

When using an electric control panel, choose the lowest inversion time which will ensure that all points are lubricated.

CAUTION: When using direct drive pumps or with oscillating drive, do not exceed 100 r.p.m. for grease and 180 r.p.m. for oil.

USING TABLE A (page 7)

After deciding the type of feeder, 1 - 1.5 - 2 - 3 - 12 - 27 c.c., refer to the appropriate column and choose the period which corresponds to the number of points to be lubricated on each inversion.

Examples

1 - With 2 c.c. output feeders lubricating 40 points per inversion, the correct period is 4. For the same period the inversion time using a motorised pump is indicated; e.g. 4.48" using a 1400 r.p.m. motor and pump with 1:30 primary reduction.

2 - The table also indicates the number of revolutions of input shaft per inversion; e.g. a pump with 1:15 reduction and period 4 gear box inverts every 3456 revolutions of the input shaft.

N.B.: For longer intervals (using a pump without control panel) choose a higher period. When using pumps with control panel, the interval between one cycle and the other will be fixed by the timer in the control panel.

LUBRICANT CONSUMPTION IN 8 HOURS

- Q Quantity of lubricant in grammes per 8 hours
- N Number of permissible points per inversion
- P Discharge in c.c.
- I Number of inversions per 8 hours
- n r.p.m.
- i Number of revolutions per inversion

$$\text{Formula: } Q = N \times P \times I \times 0.9 \quad I = \frac{Q}{P \times N \times 0.9} \quad P = \frac{Q}{I \times N \times 0.9} \quad N = \frac{Q}{I \times P \times 0.9}$$

The value obtained represents the quantity of lubricant used on the complete installation in 8 hours with feeders set at max. output.

For motorised pumps the number of inversions per 8 hours is shown in the table. For other pumps the number of inversions per 8 hours can be calculated using the following formula.

$$I = \frac{n \times 60 \times 8}{i} \quad n = \frac{I \times i}{60 \times 8}$$

N.B.: The max. number of points to be lubricated is important. The values shown utilize 50% of the discharge per inversion. In some cases it is possible to increase the number of points per inversion. In extensive installations or with many flexibles it is better to choose a higher period than the one indicated.



REDUCTION PERIOD AND CHOICE OF PUMP

TABLE A

PUMPS										
PERIOD	Max.number of points that can be lubricated each inversion with feeders set at max. output. Feeder - output c.c						Max. R.p.m. 1400/1'		With direct drive or oscillating drive Max. R.p.m. Oil 180 - Grease 100	
	1	1,5	2	3	12	27	Reduction gear ratio 1/15	Reduction gear ratio 1/30	No.revs.per inversion	
1°	10	7	5	3	1	-	432	864	29	
2°	20	15	10	6	2	1	864	1728	58	
3°	40	30	20	13	3	2	1728	3456	116	
4°	81	60	40	27	7	3	3456	6912	232	
5°	162	120	81	54	14	6	6912	13824	464	
6°	324	240	162	108	27	12	13824	27648	928	
7°	648	480	324	216	54	24	27648	55296	1856	
8°	1296	960	648	432	108	48	55296	110592	3712	
9°	2592	1920	1296	864	216	96	110592	221184	7424	

MOTORISED PUMPS										
PERIOD	Max.number of points that can be lubricated each inversion with feeders set at max. output. Feeder - output c.c						R.p.m. 1400/1'			
	1	1,5	2	3	12	27	Interval time between inversions		Inversions per 8 hours	
							Reduction gear ratio 1/15	Reduction gear ratio 1/30	Reduction gear ratio 1/15	Reduction gear ratio 1/30
1°	10	7	5	3	1	-	18"	36"	1600	800
2°	20	15	10	6	2	1	36"	1'12"	800	400
3°	40	30	20	13	3	2	1'12"	2'24"	400	200
4°	81	60	40	27	7	3	2'24"	4'48"	200	100
5°	162	120	81	54	14	6	4'48"	9'56"	100	50
6°	324	240	162	108	27	12	9'56"	19'12"	50	25
7°	648	480	324	216	54	24	19'12"	38'20"	25	12, 5
8°	1296	960	648	432	108	48	38'20"	1h 16'40"	12, 5	6, 25
9°	2592	1920	1296	864	216	96	1h 16'40"	2h 33'20"	6, 25	3, 125



CODE NUMBER IDENTIFICATION

9 reduction ratios have been designed to control the interval of the lubrication cycle. They can be applied to all four basic types of pump. First design the installation and choose the most suitable gear ratio (see Table A - page 7); look for the Part No. in Table B and replace the asterisk with the ratio number.

Legend

Pumps		Motorised pumps
H Pump with direct drive	Weight - 12.400 kgs	O Motorised pump r.p.m.1400 - R 1/15
L Pump with reduction gears R 1/15	- 13.750 kgs	P Motorised pump r.p.m.1400 - R 1/30
M Pump with reduction gears R 1/30	- 13.750 kgs	Weight 21 kgs with baseplate
N Pump with oscillating drive	- 13.400 kgs	18.500 kgs without baseplate

N.B.: Weights indicated refer to pumps and motorised pumps without reservoir.

TABLE B

WITH GREASE RESERVOIR											
Without reservoir	With low level switch								With min. and max. level switch		
	1835200	189150	1813150	1811200	1835100	189200	1813200	1811250	189220	1813160	1811400
	5 Kg.	10 Kg.	30 Kg.	65 Kg.	5 Kg.	10 Kg.	30 Kg.	65 Kg.	10 Kg.	30 Kg.	65 Kg.
H 65634*	65666*	65667*	65668*	65669*	65670*	65671*	65672*	65673*	65982*	65983*	65716*
L 76500*	76508*	76509*	76510*	76511*	76512*	76513*	76514*	76515*	76516*	76517*	76518*
M 76501*	76519*	76520*	76521*	76522*	76523*	76524*	76525*	76526*	76527*	76528*	76529*
N 65635*	65678*	65679*	65680*	65681*	65674*	65675*	65676*	65677*	65984*	65985*	65717*
O 76504*	76530*	76531*	76532*	76533*	76534*	76535*	76536*	76537*	76538*	76539*	76540*
P 76505*	76541*	76542*	76543*	76544*	76545*	76546*	76547*	76548*	76549*	76550*	76551*

WITH OIL RESERVOIR											
Without reservoir	With low level switch						With oil return		With oil return and low level switch		
	1735015	1711010	176270	1735020	1711105	176250	1711205	176280	1711155	176290	
	5 Lt.	30 Lt.	65 Lt.	5 Lt.	30 Lt.	65 Lt.	30 Lt.	65 Lt.	30 Lt.	65 Lt.	
H 65640*	65698*	65699*	65010*	65700*	65701*	65011*	65703*	65012*	65705*	65013*	
L 76502*	76552*	76553*	76554*	76555*	76556*	76557*	76559*	76560*	76562*	76563*	
M 76503*	76564*	76565*	76566*	76567*	76568*	76569*	76571*	76572*	76574*	76575*	
N 65641*	65706*	65707*	65016*	65708*	65709*	65017*	65711*	65018*	65713*	65019*	
O 76506*	76576*	76577*	76578*	76579*	76580*	76581*	76583*	76584*	76586*	76587*	
P 76507*	76588*	76589*	76590*	76591*	76592*	76593*	76595*	76596*	76598*	76599*	

How to complete the code number with the period.

The chosen pump, consisting of a 1400 r.p.m. motor, ratio 1/15, 30 Lt reservoir, minimum level switch, corresponds to the code number 76580* (read on the table B, Oil, Pos.O).

The above code number is completed replacing the asterisk with the proper period number.

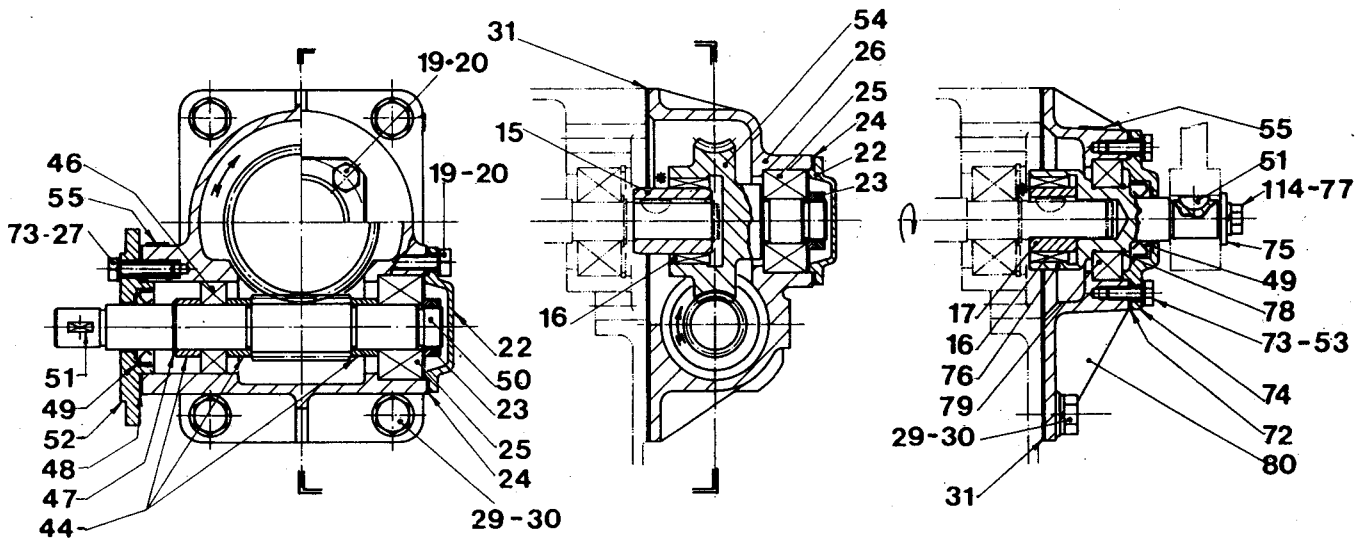
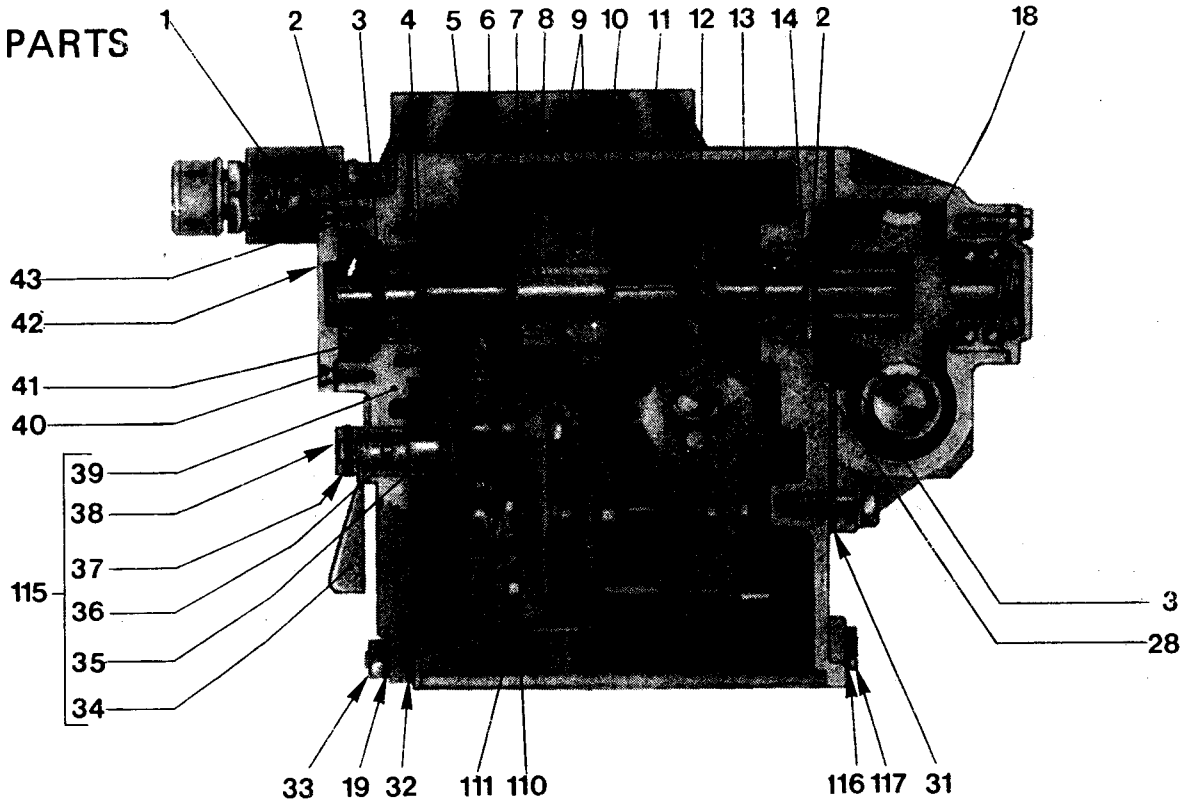
Example: for 3rd period 765803
for 4th period 765804

N.B.: The motorised pumps are normally supplied equipped with 220/380 V - 50 cycle motor.

On demand other voltages are available.

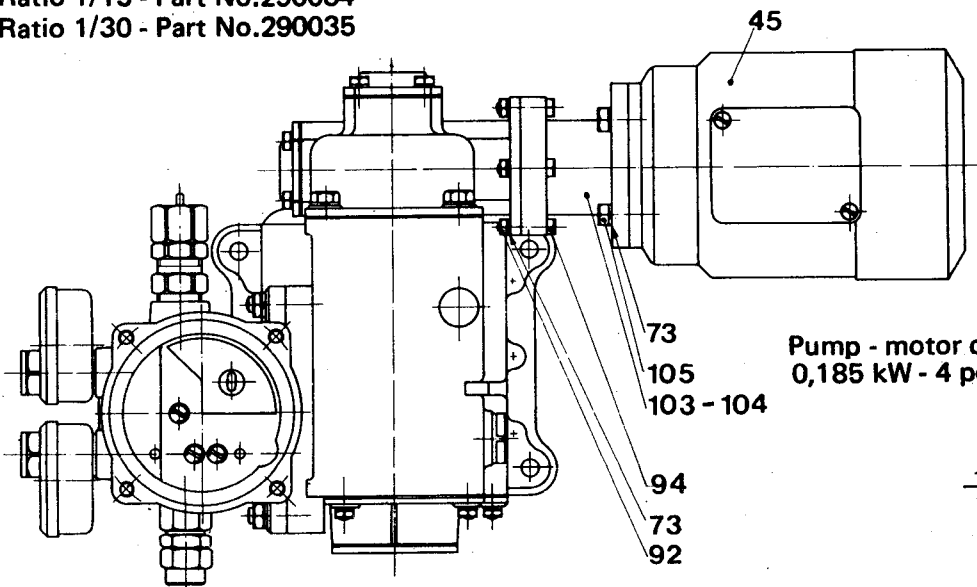


SPARE PARTS

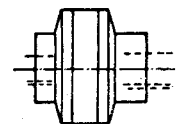


Reduction gear:
 Ratio 1/15 - Part No.290034
 Ratio 1/30 - Part No.290035

Direct drive
 Part No.231200



Pump - motor coupling
 0,185 kW - 4 poles - Part No.3200119 (104)



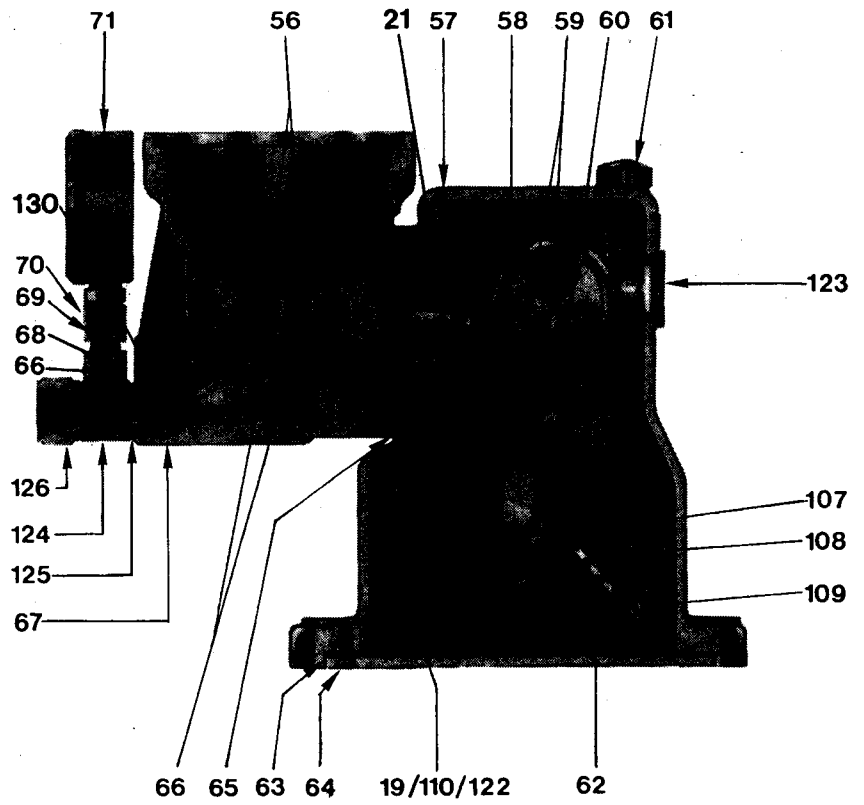
SPARE PARTS

Pos.	Description	Part No.	Qty
1	Grease filter with charging valve	265337	1
	Oil plug	265020	1
	Gasket	231054	1
2	Circlip	18263	2
3	Washer	231013	2
4	Washer	231011	1
5	Circlip	18265	1
6	Washer	231012	1
7	Eccentric for HP piston	265051	1
8	Sunken key 5x5x35	17440	1
9	Pitman bearing	265062	2
10	Eccentric for servo piston	231005	1
11	Eccentric shaft	265004	1
12	Helical gear	265005	1
13	Spacer	265006	1
14	Circlip	18676	1
15	Bush	231372	1
16	Free wheel	3220099	1
17	Bush	231376	1
18	Circlip	18262	1
19	Spring washer A 6.4	16009	19
20	Screw M 6x18	11375	8
21	Pin 4x15	16828	1
22	Cover	231307	2
23	Nut	231306	4
24	Gasket	231308	2
25	Bearing Ø 17 x Ø 40 x Ø 17.5	19254	2
26	Front support	290031	1
27	Screw M 5x18	11361	4
28	Bearing Ø 15 x Ø 42 x Ø 17	19403	1
29	Screw M 8x20	11403	4
30	Spring washer A 8.4	16012	8
31	Gasket	231313	1
32	Gasket	265014	1
33	Nut M 6	16335	8
34	Inversion lever	265308	1
35	Manual inverting fork	265315	1
36	Sealing ring OR	18808	1
37	Pin 3 x 16	16814	1
38	Retaining ring	265309	1
39	End plate	265066	1
40	Screw M 4x10	12667	4
41	Bearing	19357	1
42	Cover	231014	1
43	Gasket	231015	1
44	Spacer	231309	3
45	Motor	3301115	1
46	Bearing Ø 17 x Ø 35 x Ø 10	19302	1
47	Circlip	18265	1
48	Gasket	231312	1
49	Sealing ring Corteco Ø 17xØ30xØ7	18568	1
50	Driving shaft with worm gear - ratio 1/15	231353	1
	Driving shaft with worm gear - ratio 1/30	231354	1

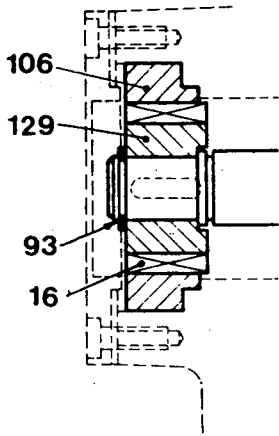
Pos.	Description	Part No.	Qty
51	American feather pin 4 x 5	17585	4
52	Flange, motor bearing	3045156	1
53	Screw	11359	4
54	Driving shaft ratio 1/15	231374	1
	Driving shaft ratio 1/30	231373	1
55	Plate	3310101	1
56	Grub screw	3232111	6
57	Gear housing	265052	1
58	Piston extension	265306	1
59	Washer	265310	2
60	Stop nut	49026	1
61	Oil filler plug	211055	1
62	Bottom cover	265028	1
63	Gasket	265048	1
64	Screw M 5 x 12	13525	10
65	Gasket	265013	1
66	Gasket	125030	7
67	Pump body with pistons	265039	1
68	Connection for gauge	125027	2
69	Gasket	125029	2
70	Nut	125028	2
71	Gauge scale 0 - 250 bar	20551	2
72	Gasket	231212	1
73	Spring washer A 5.3	16008	16
74	Cover	231211	1
75	Washer	265054	1
76	Shaft	231375	1
77	Spring washer A 6.4	16009	1
78	Circlip	18272	1
79	Bearing	19304	1
80	Front support	265029	1
81	Circlip	18254	2
82	Nut	16337	4
83	Gasket	3190106	1
84	Spring	265368	1
85	Ball 7/32"	20506	1
86	Grub screw	265365	1
87	Plug	265364	1
88	Plug	265378	1
89	Grub screw	3232111	1
90	Pivot pin	3001107	2
91	Oscillating driving lever	265160	1
92	Nut M 5	16403	4

SPARE PARTS

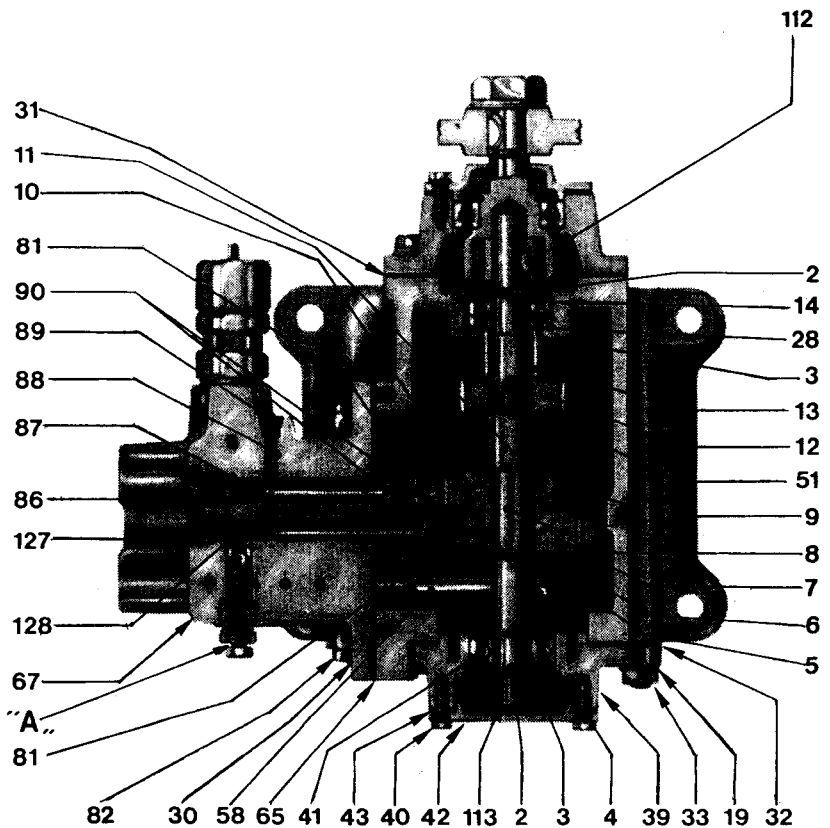
Invertor mechanism section



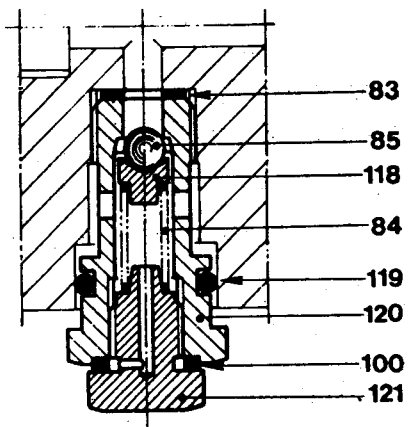
Free wheel (C)



Pump body section



Air release valve
Part No. 265034 (A)

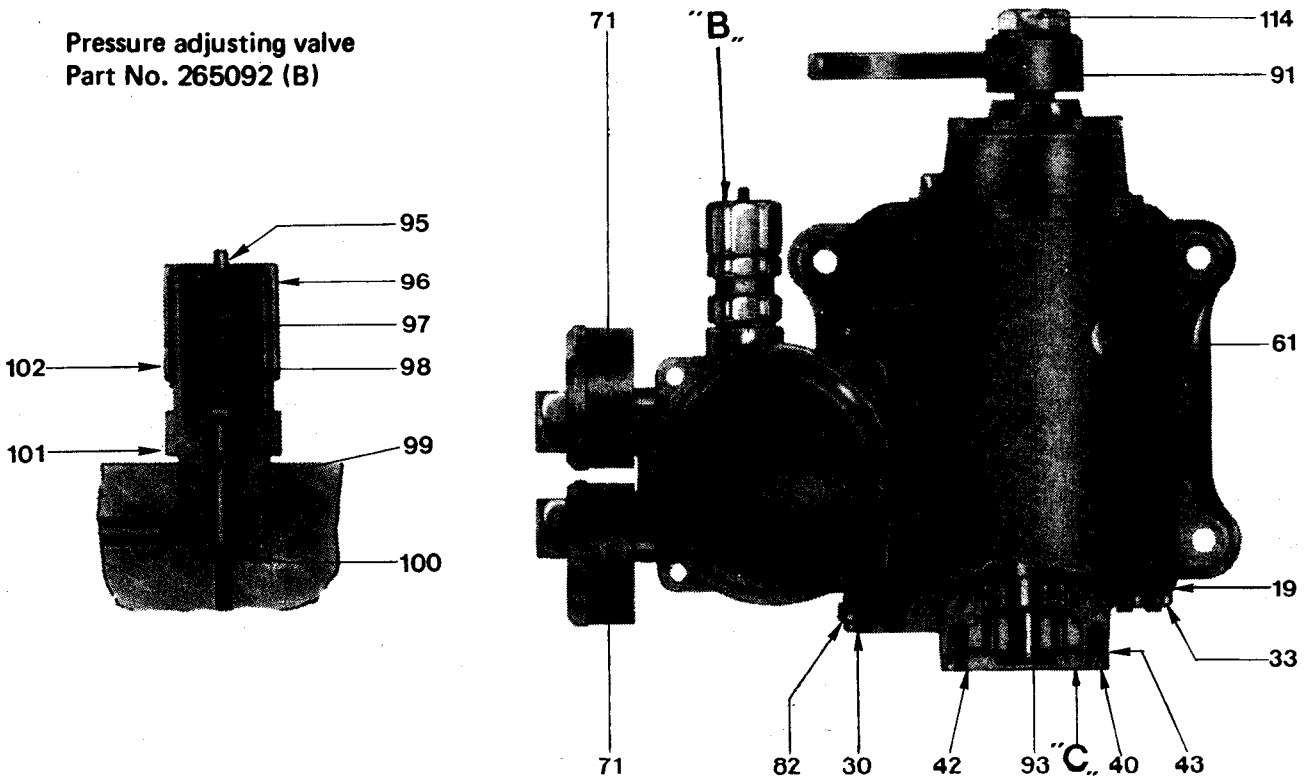


SPARE PARTS

Pos.	Description	Part No.	Qty
93	Circlip	18260	1
94	Screw M 5x25	11364	4
95	Indicator stem	265099	1
96	Pressure adjusting nut	265095	1
97	Outer spring	265097	1
98	Inner spring	265098	1
99	Sealing ring OR	19124	1
100	Gasket	97011	2
101	Valve body	265079	1
102	Locknut	265094	1
103	Motor bearing	3041047	1
104	Motor coupling	3200119	1
105	Screw M 5 x 22	11363	4
106	Ring	265397	1
107	Washer 8.4	16132	1
108	Spring	265323	1
109	Spring guide bushing	265181	1
110	Washer 6.4	16080	4
111	Spring guide pivot	265311	1
112	American feather pin 4 x 5	17585	1

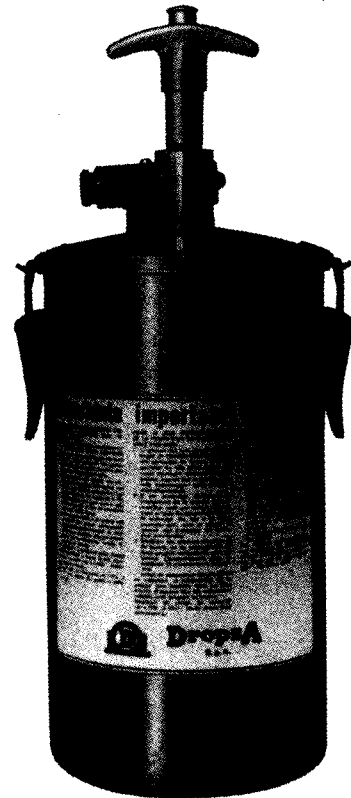
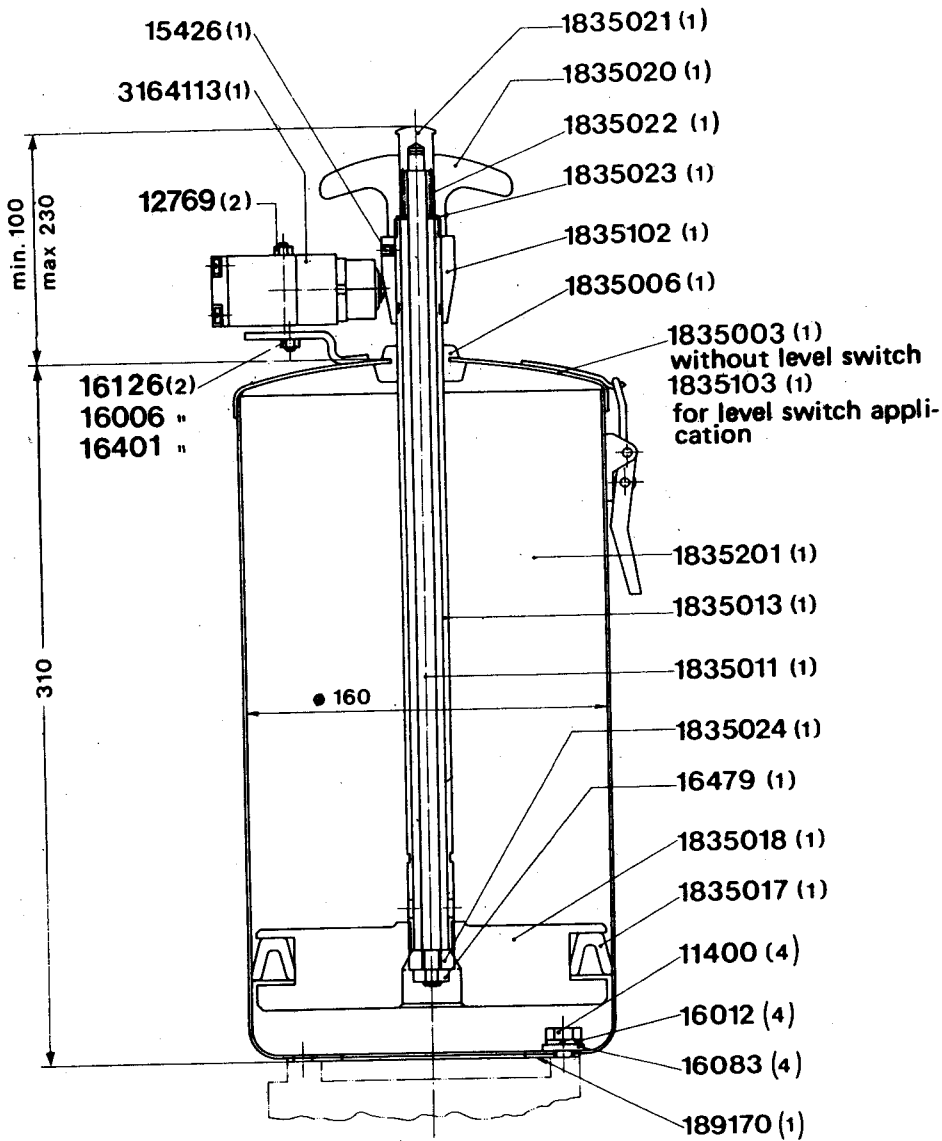
Pos.	Description	Part No.	Qty
113	Sunken key 3x3x13	17405	1
114	Screw M 6 x 14	11373	1
115	Back bearing with fork	265087	1
116	Gasket	231038	1
117	Oil drain plug	265379	1
118	Ball retainer	265046	1
119	Sealing ring OR	18818	1
120	Valve body	265044	1
121	Air release screw	265045	1
122	Screw M 6 x 25	14090	3
123	Level indicator	265037	1
124	Connector	265082	2
125	Gasket	265370	4
126	Solid connection for outlets	265083	2
127	Grub screw	3232107	1
128	Plug	265383	1
129	Bush	265398	1
130	Filter	265117	1

Pressure adjusting valve
Part No. 265092 (B)



GREASE RESERVOIRS

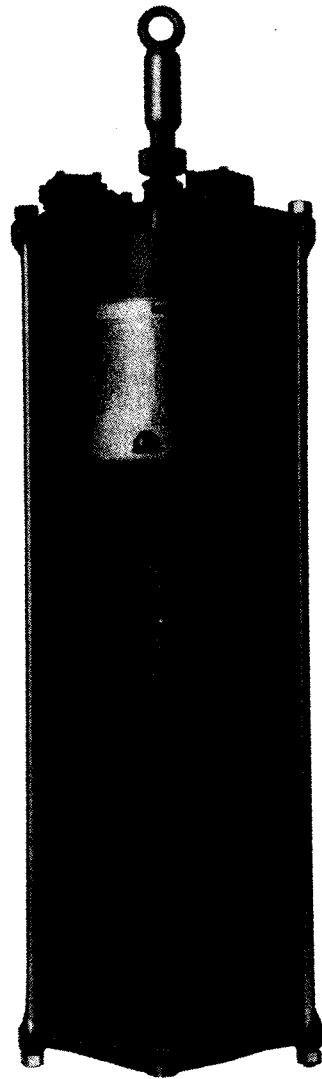
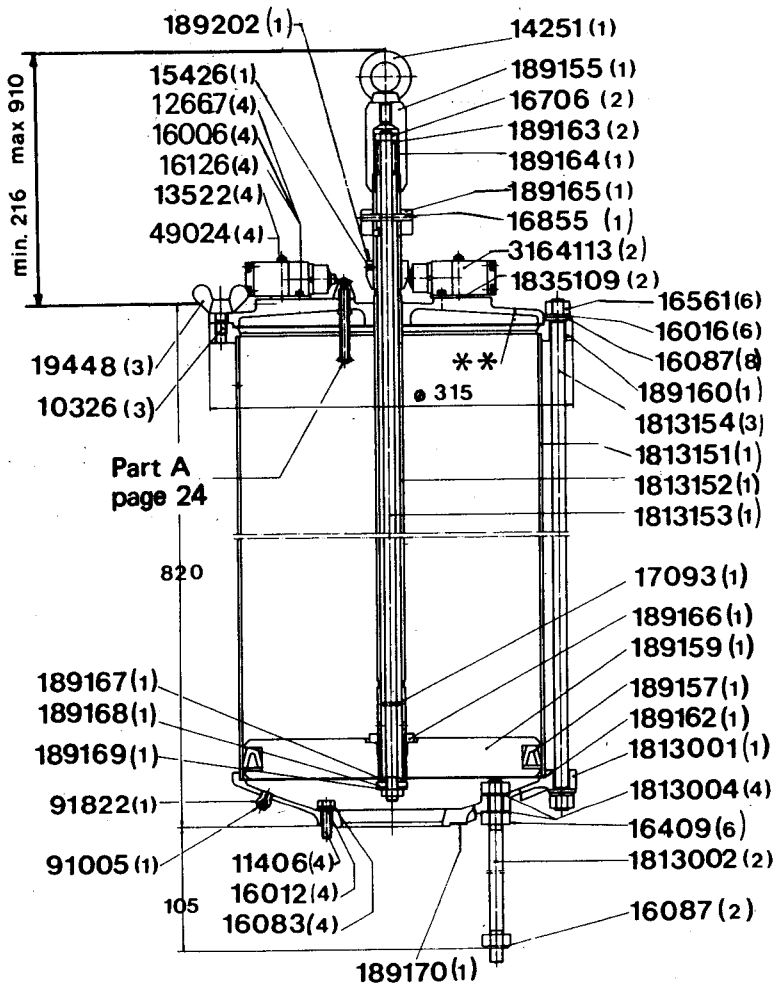
1835100 - 5 kg reservoir with low level switch. Weight 6.600 kg
 1835200 - 5 kg reservoir without low level switch. Weight 6.450 kg



GREASE RESERVOIRS

- 1813150 - 30 kg reservoir without low level switch. Weight 35.400 kg
- 1813160 - 30 kg reservoir with min. and max. level switch. Weight 36 kg
- 1813200 - 30 kg reservoir with low level switch. Weight 35.700 kg

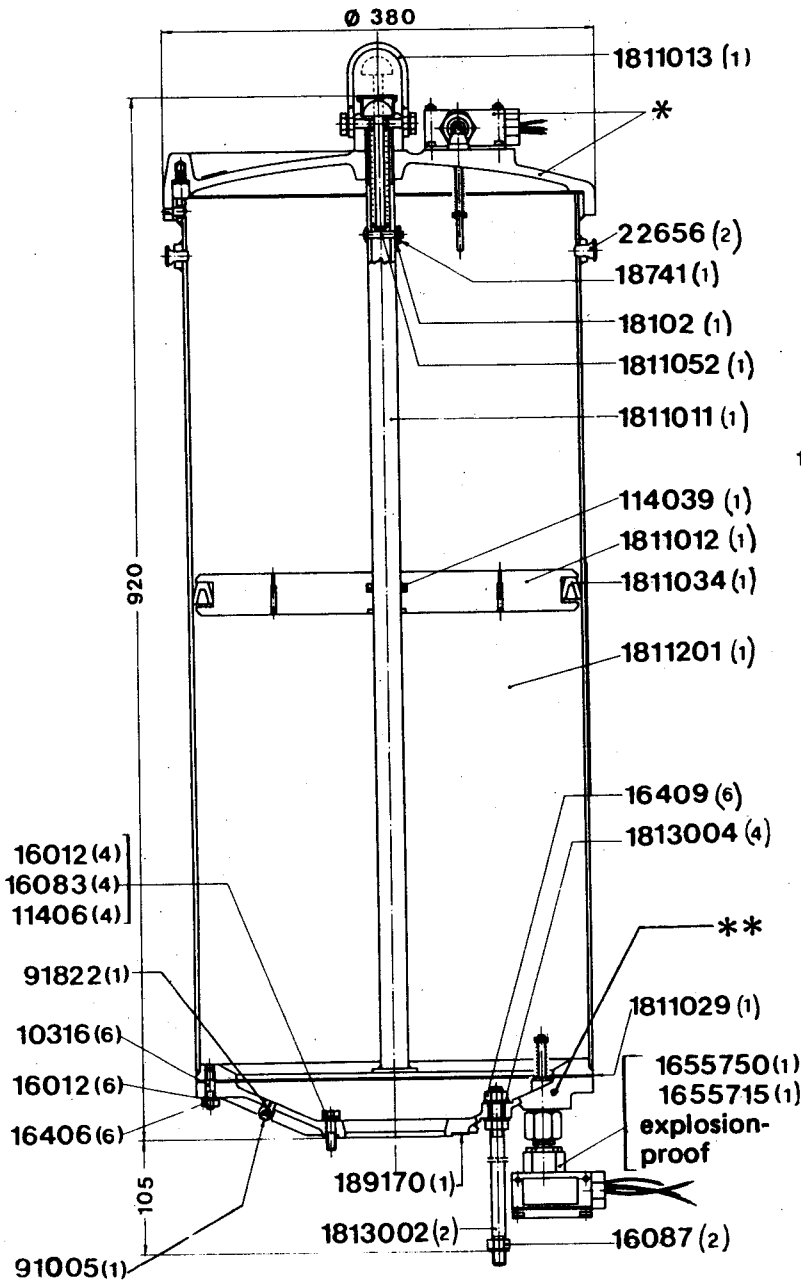
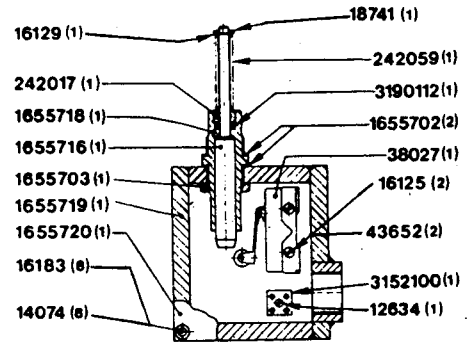
- ** 189156 - Cover without switch.
- 189201 - Cover for low level switch application.
- 189221 - Cover for min. and max. level switch application.



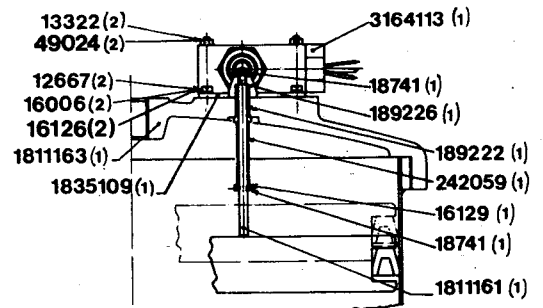
GREASE RESERVOIRS

- 1811200 - 65 kg reservoir without low level switch. Weight 51.900 kg
- 1811250 - 65 kg reservoir with low level switch. Weight 52.400 kg
- 1811400 - 65 kg reservoir with min. and max. level switch. Weight 53 kg
- 1811401 - 65 kg reservoir with low level switch. Explosionproof type. Weight 53 kg.
- * 1811035 - Cover without switch.
- 1811160 - Cover with max. level switch.
- ** 1811045 - Flange without switch.
- 1811251 - Flange for min. level switch application.

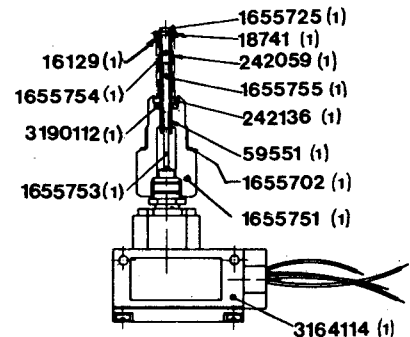
Low level switch Part No.1655715 for explosionproof reservoir.



Cover with max. level switch - Part No.1811160



Low level switch - Part No.1655700



OIL RESERVOIRS

CHARACTERISTICS

The oil reservoirs are equipped with an external sight indicator and can have a low level switch. For lubrication installations with oil return a filter with magnetic plug is available, which is fitted on the external side of the return piping.

REFILLING

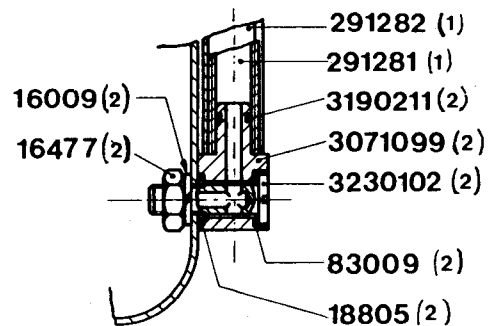
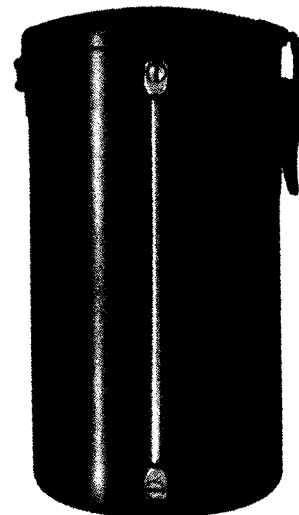
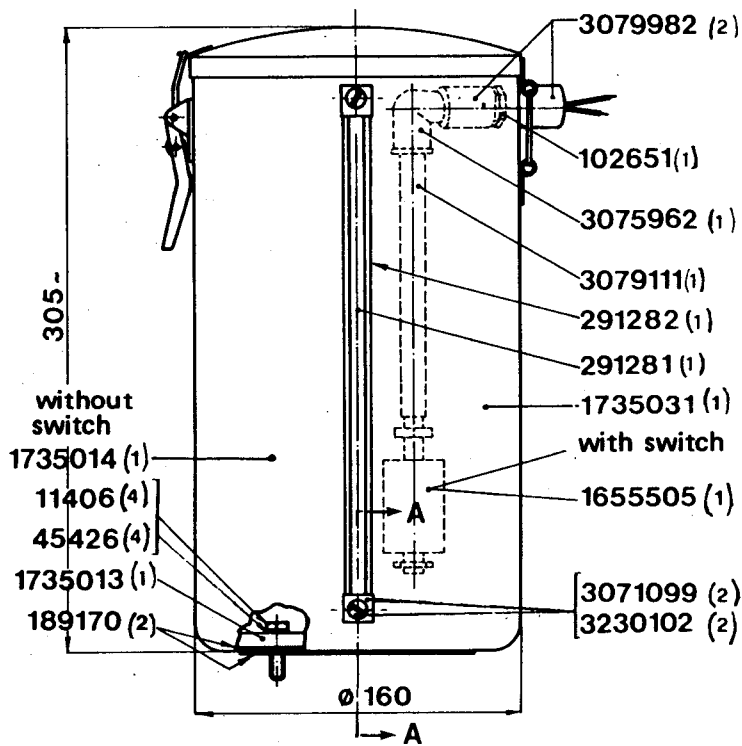
Can be done with the following types of pumps:

- Portable manual pump with 12 lt reservoir, Part No.132054
- Manual pump with trolley with 12 lt reservoir, Part No.132056 (hose, Part No.101775 to be ordered separately)
- Manual pump for 200 lt drum, Part No.132630 (hose with oil transfer valve, Part No.101777- hose without oil transfer valve, Part No.101778 - cover for drum, Part No.1141500 - filter, Part No.1113240 to be ordered separately).
- Air operated transfer pump - ratio 4/1 for 200 lt drum, Part No.2036702 (air hose, Part No.101100 - lubricant hose, Part No.101360 - cover for drum, Part No.1141515 - filter, Part No.234281)
- Air operated transfer pump - ratio 1/1 for 200 litre drum complete with hose, Part No.72161

N.B.: When specifying indicate hose length L, in cm.

1735015 - 5 lt reservoir without low level switch.
Weight 2.300 kg

1735020 - 5 lt reservoir with low level switch.
Weight 3 kg



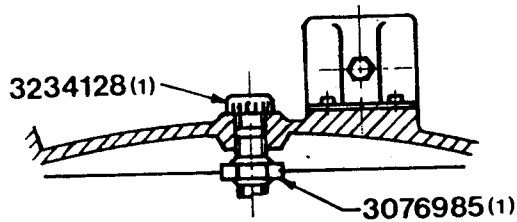
Section A-A

OIL RESERVOIRS

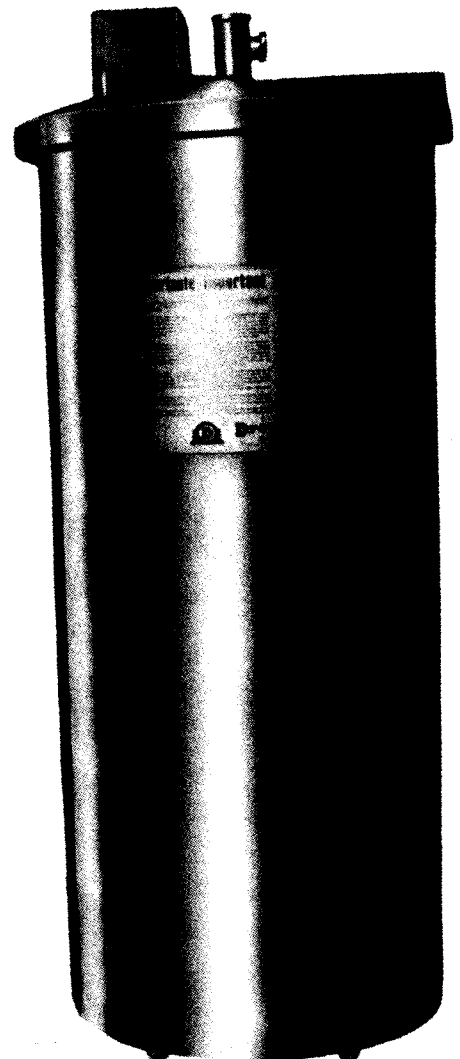
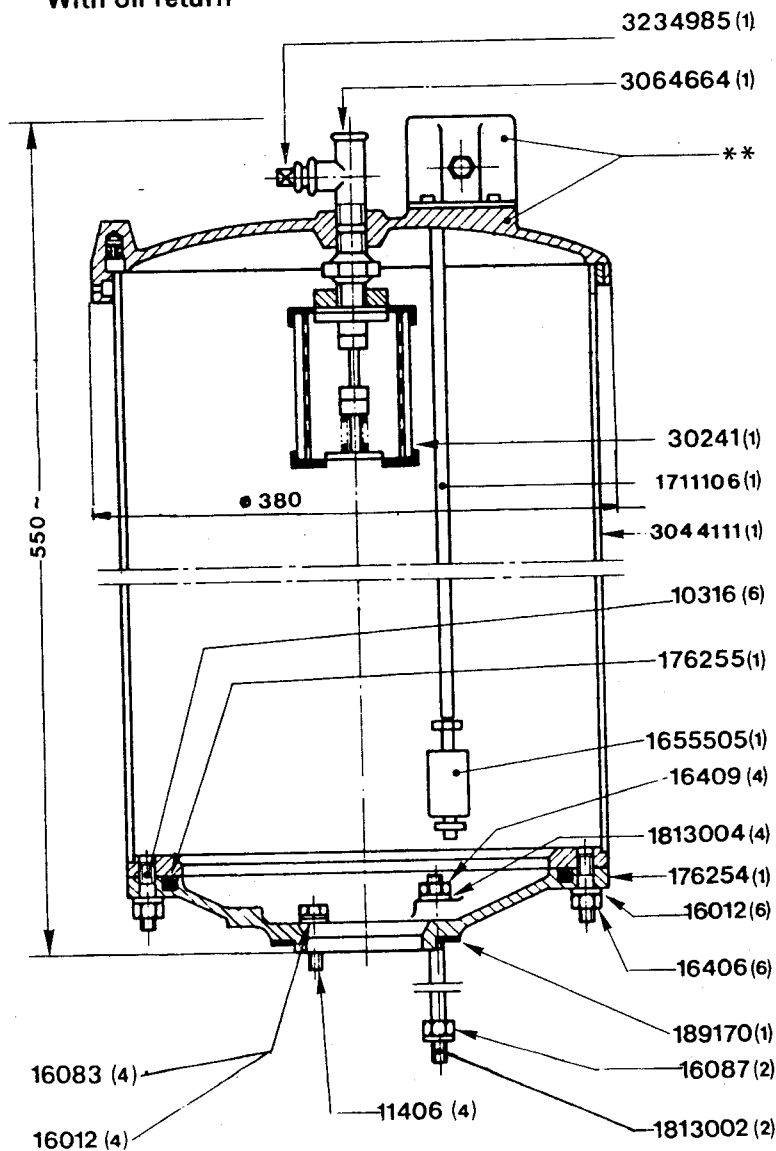
- 1711010 - 30 lt reservoir without low level switch. Weight 6.200 kg
- 1711105 - 30 lt reservoir with low level switch. Weight 6.800 kg
- 1711155 - 30 lt reservoir with oil return and low level switch. Weight 7.200 kg
- 1711205 - 30 lt reservoir with oil return without low level switch. Weight 6.600 kg

- **176260 - Cover with low level switch - standard
- 176258 - Cover without level switch - standard
- 176252 - Cover without level switch - with oil return
- 176266 - Cover with low level switch - with oil return

Standard



With oil return

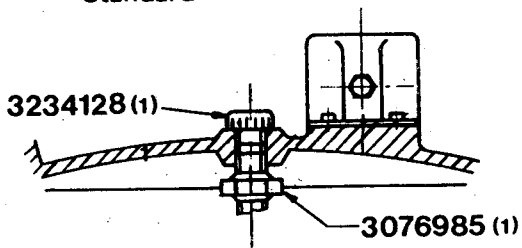


OIL RESERVOIRS

- 176250 - 65 lt reservoir with min. and max. level switch. Weight 29.750 kg
- 176270 - 65 lt reservoir without low level switch. Weight 28.750 kg
- 176280 - 65 lt reservoir with oil return without low level switch. Weight 29.750 kg
- 176290 - 65 lt reservoir with oil return, with min. and max. level switch. Weight 30.750 kg

- **176259 - Cover with min. and max. level switch (standard)
- 176258 - Cover without level switch (standard)
- 176252 - Cover without level switch (with oil return)
- 176265 - Cover with min. and max. level switch (with oil return)

Standard



With oil return

