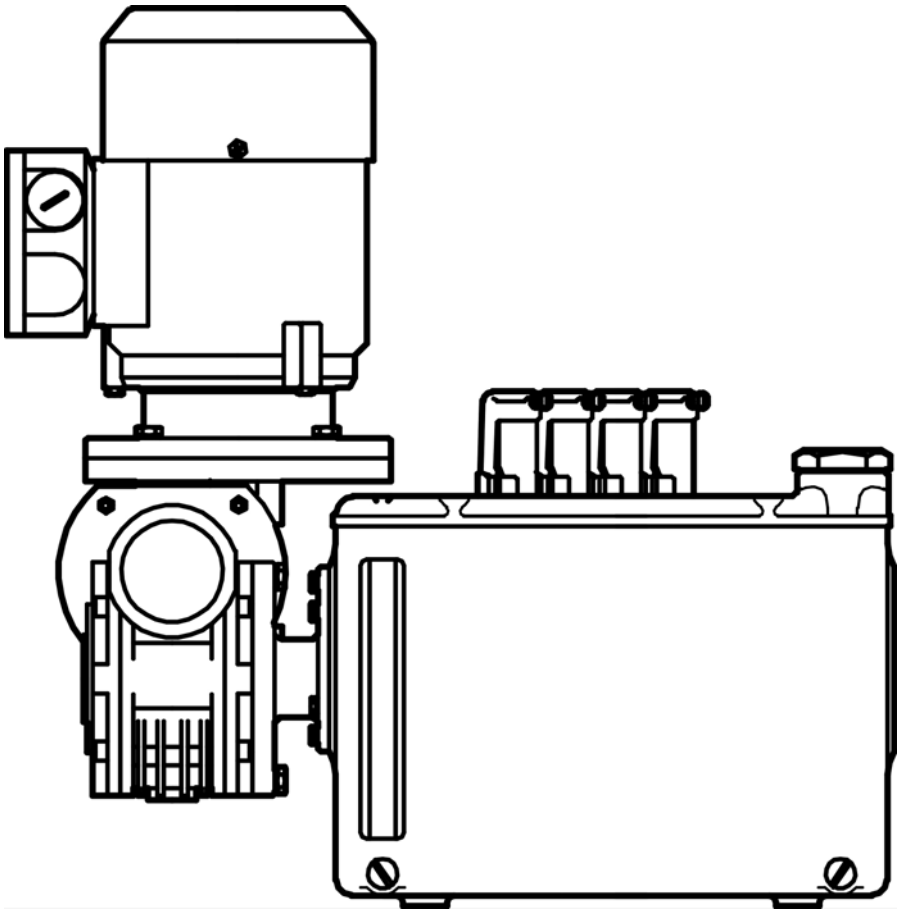
INSTRUCTION MANUAL
ÅSSA LUBRICATORS
TYPE B



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Thank you for choosing an Assalub lubricator.

It is a high-quality Swedish product. Every lubricator is subjected to comprehensive testing before delivery.

Read the instruction manual carefully to ensure correct use of the lubricator.

Original instructions

CONTENTS

1. PRESENTATION

- The ÅSSA Type B lubricator is intended for automatic oil lubrication of machinery and also for dispensing lubricants.
- When an electrically driven lubricator (Model BSM) is to be used in an explosive environment an electric motor of the correct type and safety class must be used.

2. SAFETY REGULATIONS

- Read the instruction manual carefully before starting the lubricator.
- These lubricators may only be used for the media for which they are intended.
- All components used together with the lubricator must be capable of withstanding its flows and pressures.
- Do not exceed the maximum permissible back-pressure.
- Make sure that the lubricator drive is disconnected before any dismantling or servicing.
- Note that leaks or other fine jets of liquid under high pressure can cut the skin. It is especially important to be careful with oil systems that operate under high pressure.
- Inspect the equipment for wear at regular intervals, paying particular attention link systems in the case of ratchet drive. Be careful when in the neighbourhood of rotating drive shaft couplings, hand cranks and ratchet drive systems.

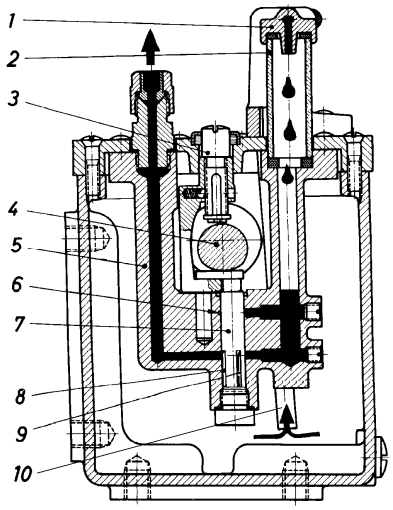
3. TECHNICAL DESCRIPTION

GENERAL

The lubricator consists of a reservoir with lid, which contains the pump mechanism and pump body. A mechanical or electric drive unit is mounted on one end of the reservoir. A hand crank or a feed pump may be mounted on the other end. Extra accessories are a level monitor, flow monitor and heater.

OPERATION

The pump shaft **4** gives the pump plunger **7** a reciprocating motion combined with a rotary motion at dead centre. By means of the grooves **8** and **9** in the pump plunger the cylinder is put in communication alternately with the suction and pressure passages in the pump body **5**. When the plunger moves upwards the oil is drawn up through the suction pipe **10** to the sight glass holder **1** and drips down through the sight glass **2** to the suction passage of the pump body and is drawn into the cylinder when the plunger moves upwards. The plunger then rotates so as to close the communication with the suction passage and the pressure passage is opened, whereupon the plunger moves downwards and forces the oil to the discharge point. Any oil that may leak past the pump plunger is drawn back into the cylinder through the groove **6** turned in the cylinder and the return passage. All the oil that passes through the sight glass is therefore forced out to the discharge point, regardless of the backpressure. The plunger stroke is set to give the desired feed by means of the setting screw **3**.



There is a separate pump body for each outlet. There are no springs or valves whatsoever, and all movements are driven inexorably.

TECHNICAL DATA

Noise level
The noise level is less than 70 dB(A)

Oils
The lubricator is capable of pumping oils and other lubricants with a maximum viscosity of approx. 600 cSt / 40°C. Highly viscous oils and fluids may have to be pre-heated before they can be pumped.

Performance	**Plunger diameter (mm)**		
	Ø 7	**Ø 9 (std)**	**Ø 10**
Max. feed per pump stroke, cm^3	0,18	0,30	0,37
Max. continuous back-pressure, MPa	20	12	10
Max. intermittent back-pressure, MPa	30	30	25

Model	**Ratchet lever stroke**	**Ratchet pulses**	**Drive shaft rpm**	**Motor rpm**
BSP	6 - 60°	max 700/min	---	---
BSRD	---	---	0,5 - 60 rpm	---
BSRE	---	---	15 -1000 rpm	---
BSM	---	---	---	1300 - 3400 rpm

4. ASSEMBLY INSTALLATION

- Make sure when unpacking that no items are missing from the delivery.
- Before assembling, make sure that all pipes and hoses are clean inside.
- The lubricator must be installed on a level surface. Use shims to eliminate any unevenness. This is important in order to avoid stresses that might give rise to cracks in the reservoir. Fix the reservoir in place with the requisite number of 3/8-16 UNC screws, which must not protrude more than 11 mm into the reservoir mounting strips.
- In the case of rotary drive it is advisable to connect the drive shafts together with a flexible coupling.
- A guard must be fitted over the moving parts with ratchet or rotary drive in order to prevent accidents.
- Electric motors must only be connected to the mains power supply by an authorized electrician. Note the direction of rotation of the motor as indicated byan arrow on the motor.

5. INITIAL START-UP

- Fill the reservoir with clean oil of the correct grade in accordance with the maker's recommendations for the machine.
- Screw the setting screws **2** (fig. chapter 3) all the way in for maximum discharge. Run the lubricator until oil is discharged uniformly and without air bubbles from alloutlets. Connect the oil lines and run the lubricator until oil emerges at the pipe orifices. Then connect the pipes to the lubrication-point connectors. Filling of the lubricating pipes can be expedited by use of a separate oil pump.
- After a time in operation, check all connections, pipes and hoses for leaks.

Setting discharge rate

The discharge rate can be reduced by unscrewing the setting screw **3** (fig. chapter 3). The setting screw has 4 detent positions per rotation. If it is unscrewed more than about 5 rotations the discharge ceases completely. The discharge rate can be calculated and adjusted with the aid of the following table. One pump stroke corresponds to one up-and-down movement of the setting screw, equivalent to one revolution of the camshaft **4**.

Discharge/pump stroke, cm^3 (±10%)	**Plunger diameter, mm**		
	Ø 7	**Ø 9 (std)**	**Ø 10**
Max	0,18	0,30	0,37
One turn of setting screw =	0,03	0,05	0,062
¼ turn of setting screw =	0,007	0,012	0,015

The discharge rates can be finely adjusted by counting the number of drops that pass through the individual sight glasses per unit of time. One drop corresponds to approx. 0.03 cm^3 (30 mm^3), almost independent of the viscosity of the oil.

6.MAINTENANCE AND REPAIR

PREVENTIVE MAINTENANCE

Make regular checks of:

- Oil level in lubricator reservoir; it must not run dry.

In the ratchet driven version the ratchet mechanism is filled with highly stable grease during manufacture. We recommend the careful introduction of multi-purpose NLGI-2 EP grease with a grease gun through the drive ratchet housing grease nipple every 8000 hours.

CORRECTIVE MAINTENANCE
TROUBLE-SHOOTING

Problem	Action
Oil drip through sight glass has decreased or ceased although the setting screws move up and down (camshaft rotates).	Leaking sight-glass packings, cracked sight glass and/or blocked suction pipe. Leaking vent screw. Defective pump body. Remove the sight-glass unit retaining screw B120. If necessary replace the packings B1424, B2238-1 and the sight glass B2086/III. Blow the suction pipe B2239-X clean. Tighten the vent screw B2246B by hand. Replace the pump body LB378 (std).
Oil drip through sight glass has ceased. The setting screws do not move (pump shaft does not rotate).	Defective drive unit or power failure (model BSM) Disassemble and repair the drive unit.
Sight glass wholly or partly filled with oil.	Excessive vacuum in sight glass. Loosen the vent screw B2246B in the sight-glass holder and run the lubricator until the oil has disappeared from the sight glass. Tighten the vent screw by hand.

REPAIR

The procedure for disassembling and assembling the lubricator is clearly apparent from the spare parts drawings. Always observe a maximum of cleanliness.
The plungers are individually fitted to the respective pump body cylinder bores and they must therefore be reinstalled in the correct pump body.
The lifters should be reinstalled in their original places since the setting screws in them are usually set differently.
Note how the pump shaft was mounted originally. It must not be reversed but must be reinstalled in its original position.
The ratchet cross must also be reinstalled in its original position; otherwise the lubricator will not work and is liable to damage when restarted.

Repair and servicing are handled by our local agents or directly by our factory.

7. SPARE PARTS

Lubricator type B

When ordering spare parts always state lubricator type and serial number as on the name-plate

Art.No.	See	Designation
A 209	1	Ratchet lever
A 209-4	1	Ratchet arm
B1-BS	3	Pump body
B 10A		Felt ring
B 23	2	Lifter
B 24	3	Pump plunger
B 25	2	Setting screw
B 39	2	Stop ring
B 40	2	Ball
B 41	2	Spring
B 42		Screw
B 101		Reservoir 1.0 litre
B 102		Reservoir 1.5 litres
B 103		Reservoir 2.0 litres
B 104		Reservoir 2.5 litres
B 105		Reservoir 3.5 litres
B 106		Reservoir 6.5 litres
B 108A		Bearing, left-hand, std
B 109A		Bearing, right-hand std
B 112-		Lid, state type and serial no.
B 114A		Support bearing
B 120		Screw
B 122A		Blind bearing housing
B 123-11	1	Counter ratchet housing
B 124	1	Screw
B 125/III-		Camshaft, 2 outlets, 1 litre
B 125/III-		Camshaft, 4 outlets, 1.5 litres
B 125/III-		Camshaft, 6 outlets, 2 litres
B 125/III-		Camshaft, 8 outlets, 2.5 l & 3.5 l
B 125/III-		Camshaft, 12 outlets, 5 l & 3.5 l
B 125/III-		Camshaft, 18 outlets, 6.5 l
B 127	1	Nut
B 129-2		Gear, ratio 1:1.75, Z=28
B 135		Screw
B 136		Screw
B 137		Screw
B 139		Washer
B 1065	1	Ratchet drive housing
B 1089-6	1	Drive shaft ratio 1:1.75, Z=16
B 1089-7	1	Drive shaft ratio 1:1, Z=22
B 1117	1	Tab washer
B 1137-1		Gear, ratio 1:1, Z=22
B 1145	1	Hand crank, small, straight
B 1194A	3	Plug
B 1424		Packing
B 1874		Shim
B 2086/III		Sight glass
B 2086/III-		Sight glass with packings

Art.No.	See	Designation
B 2238-1		Packing
B 2239-X	4	Suction pipe
B 2245-2	4	Sight glass holder
B 2246B	4	Vent screw
B 2248		Strainer protective plate
C 1082	1	Plug
F 1230	1	Hand crank, large, bent
F 1533		Pin
J 1118	1	Seal ring
LB 363-		Ratchet drive, compl. 1:1, left-
LB 363-		Ratchet drive, compl.1:1, right-
LB363-KBL		Ratchet drive, compl. 1:1.75, left-
LB 363-		Ratchet drive, compl. 1:1.75,
LB 376		Lifter, complete
LB 378		Pump body, complete std ϕ9 mm
LB 378-1		Pump body, complete ϕ10 mm
LB 378-2		Pump body, complete ϕ7 mm
LB 385-KA		Sight-glass holder, compl., 1 litre
LB 385-KB		Sight-glass holder, compl., 1.5
LB 385-KC		Sight-glass holder, compl., 2
LB 385-KD		Sight-glass holder, compl., 2.5-
LB 385-KE		Sight-glass holder, compl., 6.5
LB 5005-		Outlet connector, 6 mm, brass,
LB 5005-		Outlet connector, 6 mm, brass,
LB 5005-1		Outlet connector, 6 mm,
Ö 1MSG		Plug
Ö4-ALT1	3	Packing
Ö4-ALT2		Packing
Ö 6/IMSG		Oil strainer
Ö7		Refilling cover
Ö 8-L=83		Level glass 1.0 litre
Ö 8-L=93		Level glass 2.5/3.5 litres
Ö 8-L=98		Level glass 1.5 litres
Ö 8-L=103		Level glass 2.0 litres
Ö 8-L=133		Level glass 6.5 litres
Ö 9		Packing
Ö		Plug
Ö 1036	1	Grease nipple
120 165	1	Ratchet roller
120 166	1	Wear plug
120 170	1	Ratchet cross
120 171	1	Bushing
120 172	1	Washing
900 557	1	Spring
900 558	1	Spring ring
900 559	1	Packing
903 337		Screw

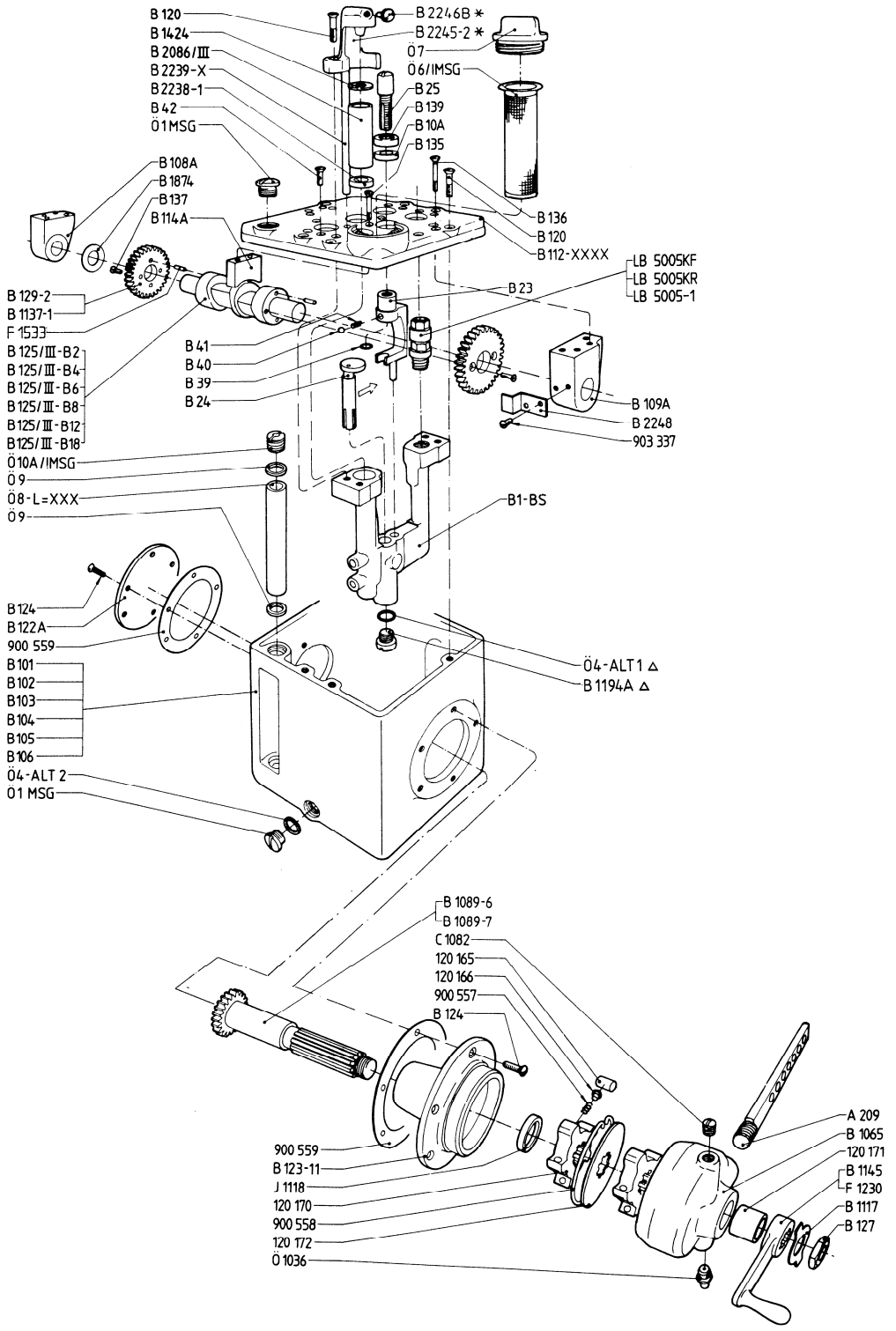
Notes

Note 1 Included in complete drive unit: ratio 1:1 LB 363-KAX or ratio 1.75:1 LB 363-KBX

Note 2 Supplied only in complete lifter assembly LB 376

Note 3 Supplied only in complete pump body assembly LB 378 (std. 9 mm plunger) or LB 378-1 (10 mm plunger) or LB 378-2 (7 mm plunger)

Note 4 Supplied only in complete sight-glass holder LB 385


B 120
B 1424
B 2086/III
B 2239-X
B 2238-1
B 42
Ö 1 MSG
B 2246B *
B 2245-2 *
Ö 7
Ö 6/1MSG
B 25
B 139
B 10A
B 135
B 108A
B 1874
B 137
B 114A
B 136
B 120
B 112-XXXX
LB 5005KF
LB 5005KR
LB 5005-1
B 23
B 129-2
B 1137-1
F 1533
B 125/III-B2
B 125/III-B4
B 125/III-B6
B 125/III-B8
B 125/III-B12
B 125/III-B18
B 41
B 40
B 39
B 24
B 109A
B 2248
903 337
Ö 10A/1MSG
Ö 9
Ö 8-L=XXX
Ö 9
B1-BS
B 124
B 122A
900 559
B 101
B 102
B 103
B 104
B 105
B 106
Ö 4-ALT 2
Ö 1 MSG
Ö 4-ALT 1 △
B 1194A △
B 1089-6
B 1089-7
C 1082
120 165
120 166
900 557
B 124
900 559
B 123-11
J 1118
120 170
900 558
120 172
Ö 1036
A 209
B 1065
120 171
B 1145
F 1230
B 1117
B 127

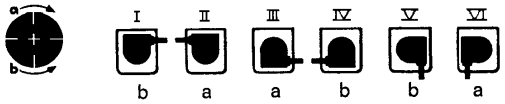
Drive units type BSRE, BSRD and K (hand crank)

DRIVE SHAFTS AND GEARS

Drive side / Drive shaft position	Direction of rotation	Utväxling	A Drivshaft	B Gear
Right hand / I IV V Left hand / II III VI	Clockwise	45:1	F 1221	B 1107/1
		22.5:1	F 1222	B 1107A
		4.6:1	F 1252-3	F 1258
	Counter-clockwise	45:1	F 1221/I	B 1107/III
		4.6:1	F 1252-4	F 1258/I
Right hand / II III VI Left hand / I IV V	Clockwise	45:1	F 1221/I	B 1107/III
	Counter-clockwise	45:1	F 1221	B 1107/I
		22.5:1	F 1222	B 1107A

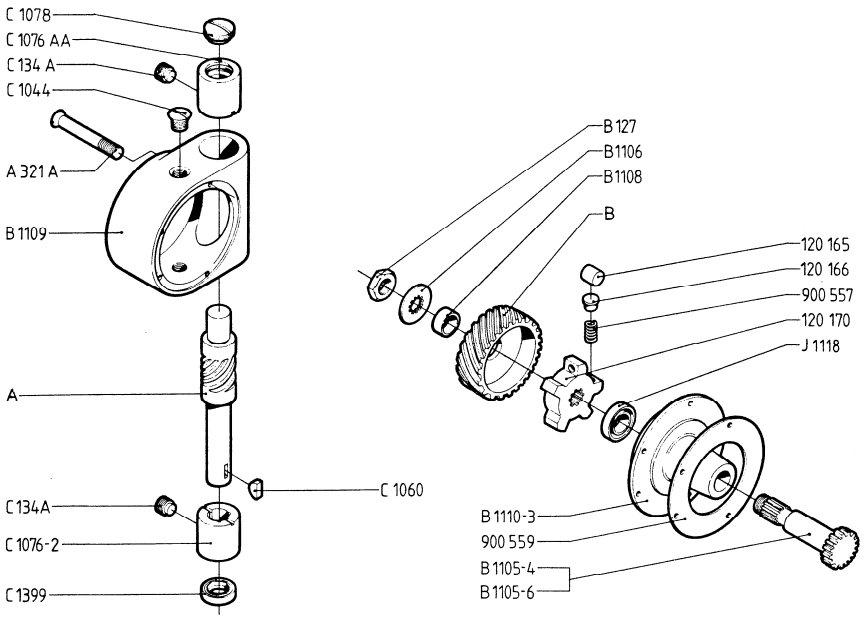
Note: The end closest to the oil filler opening is defined as the right-hand side of the lubricator. The direction of rotation of the shaft is defined looking towards the end of the shaft, a = clockwise, b = counter-clockwise.

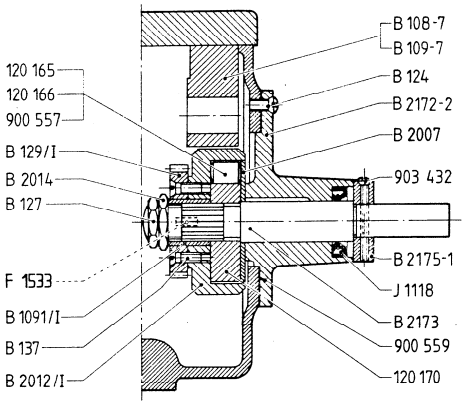
Drive shaft positions and associated directions of rotation:

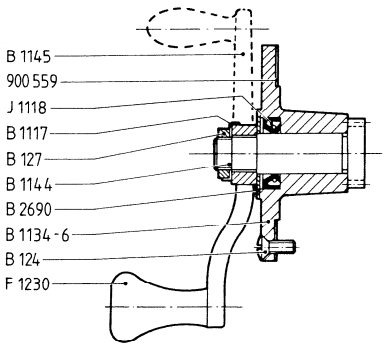


Art.nr.	Designation
B 108-7	Bearing, left-hand
B 109-7	Bearing, right-hand
B 124	Screw
B 127	Nut
B 129/I	Gear
B 137	Screw
B 1091/I	Bushing
B 1105-4	Gear shaft, ratio 1.75:1
B 1105-6	Gear shaft, ratio 1:1
B 1106	Washer
B 1108	Bushing
B1109	Casing
B 1110-3	Bearing housing
B 1117	Tab washer
B 1144	Shaft
B 1145	Crank, small
B 2007	Washer
B 2012/I	Ratchet drive housing
B 2014	Nut
B 2172-2	Bearing housing

Art.nr.	Designation
B 2073	Drive shaft
B 2075-1	Stop collar
B 2690	Washer
C 134A	Bearing set screw
C 1044	Oil plug
C 1060	Key
C 1076AA	Bearing
C 1076-2	Bearing
C 1078	Plug
C 1399	Seal ring
F 1230	Hand krank, large
F 1533	Pin
J 1118	Seal ring
120 165	Ratchet roller
120 166	Wear plug
120 170	Ratchet cross
900 557	Spring
900 559	Packing
903 432	Screw


C 1078
C 1076 AA
C 134 A
C 1044
A 321 A
B 1109
A
C 1060
C 134A
C 1076-2
C 1399
B 127
B1106
B1108
B
120 165
120 166
900 557
120 170
J 1118
B 1110-3
900 559
B 1105-4
B 1105-6


120 165
120 166
900 557
B 129/I
B 2014
B 127
F 1533
B 1091/I
B 137
B 2012/I
B 108-7
B 109-7
B 124
B 2172-2
B 2007
903 432
B 2175-1
J 1118
B 2173
900 559
120 170


B 1145
900 559
J 1118
B 1117
B 127
B 1144
B 2690
B 1134-6
B 124
F 1230

Connecting of two lubricators, BSM gear

Connecting two lubricators

Art. No.	Designation
B 108-7	Bearing, left-hand
B 109-7	Bearing, right-hand
B 1009A	Bearing housing, blind
B 1009-3	Bearing housing, communic
B 1010-1	Shaft
B 1011-2	Gear, ratio 1:1,75 + 1,75:1

Art. No.	Designation	
B 1011-3	Gear, ratio	1:1 + 1:1,75 1:1,75 + 1:1
B 1013	Screw	
900 559	Packing	
903 075	Screw	
903 667	Nut	

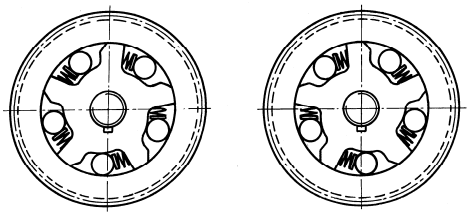
BSM gear

Item	Art. No.	Designation
1	120165	Ratchet roller
2	120166	Wear plugg
3	120170	Ratchet cross
4	121219	Shaft
5	121220	Flange
6	121221	Washer
7	900557	Spring
8	903065	Screw
9	903071	Screw
10	903537	Screw
11	903664	Nut
12	906881	Key
13	B 1091/I	Ratchet bushing
14	B 127	Nut
15	B 129/I	Gear, ratio, z=28
16	B 137	Screw
17	B 2007	Washer

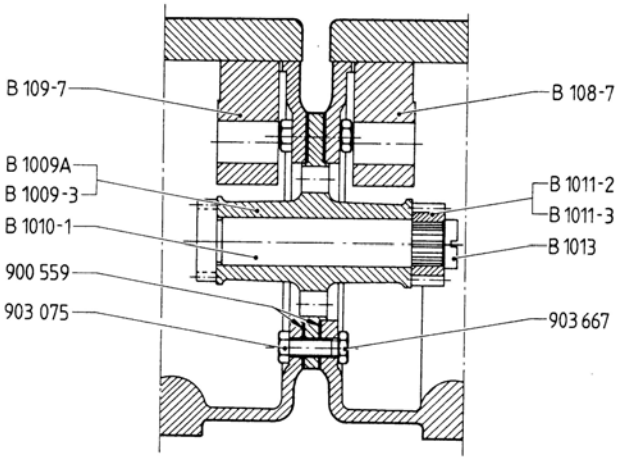
Item	Art. No.	Designation
18	B 2012/I	Drive housing
19	F 1533	Pin
20	J 1118	Seal ring
21	J 435	Packing
22	901 251	Motor 230/400V 1400 rpm 50 Hz
22	901 252	Motor 230/400V 2800 rpm 50 Hz
22	901 2XX	Motor, special version. State type, V, Hz, rpm as per name plate.
23	906871	Gear 1:70, total 1:55
23	906872	Gear 1:100, total 1:79
23	906873	Gear 1:240, total 1:189
23	906874	Gear 1:420, total 1:330
23	906875	Gear 1:720, total 1:566
23	906876	Gear 1:1440, total 1:1131
23	906877	Gear 1:2160, total 1:1697
23	906878	Gear 1:2700, total 1:2121

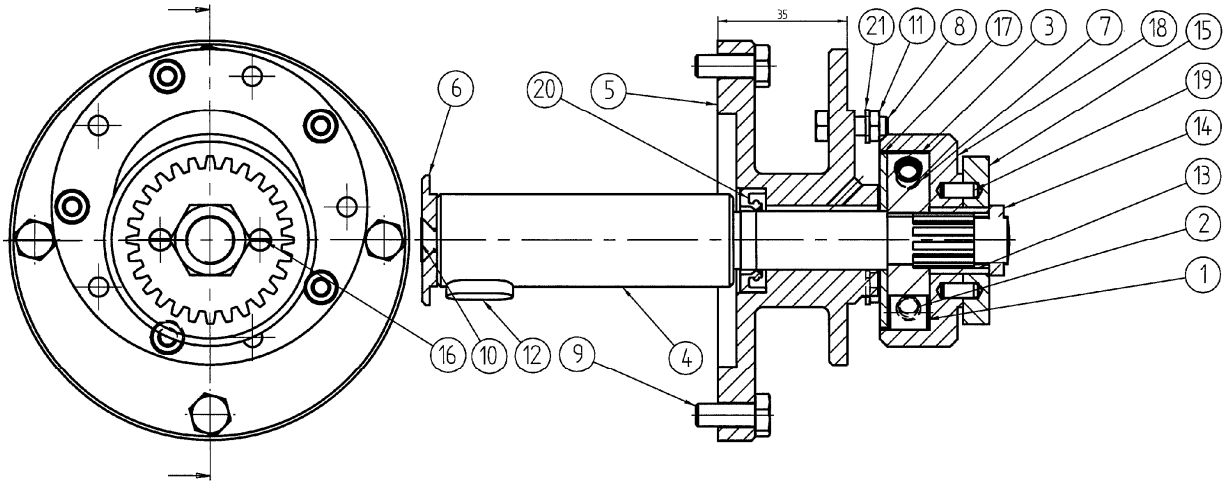
Position of Ratchet cross:

The ratchet cross B1001 must be fitted as shown in the adjoining figure (looking towards the shaft end). If it is mounted incorrectly the motor will not drive the lubricator. The end closest to the oil filler opening is defined as the right-hand side of the lubricator



Right-hand drive side Left-hand drive side.


B 109-7
B 108-7
B 1009A
B 1009-3
B 1011-2
B 1011-3
B 1010-1
B 1013
900 559
903 075
903 667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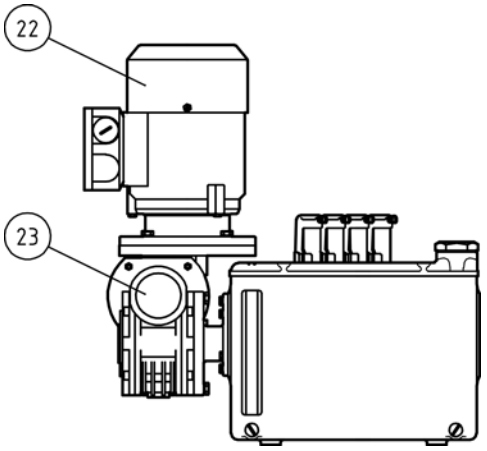
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8. GUARANTEES

Correct assembly and installation in accordance with the instructions ensures safe and reliable operation.

It is important that the personnel who use the equipment carefully read the instructions in detail.

We can accept no responsibility for faults that occur due to negligence in following the instructions. The guarantee ceases to apply if the customer disassembles the lubricator without our express permission during the guarantee period.

GUARANTEE CERTIFICATE
LUBRICATOR TYPE B

Delivery date: _____

Serial No: _____

Type: _____ Order No: _____

SUPPLIED BY: _____

_____

_____

INSTALLED BY: _____

CUSTOMERS NAME: _____

_____

ADDRESS: _____

_____

DATE: _____

ASSALUB AB guarantees new lubricators for 24 months from the day on which they are taken into service, but for not more than 36 months after delivery from our factory The guarantee covers only defects that manifest themselves during correct use of the equipment and excludes defects caused by external damage, incorrect assembly, lack of maintenance or any other cause not related to material or defects in manufacture.
Products which the buyer has fitted parts of other make are excluded.

ASSALUB AB can in no case be held responsible for indirect damages or losses such as shut-downs, labour costs, lost income, penalties for delays, etc. Guarantee claims can be made for products or parts where there is clearly a defect in manufacture or material. Any faulty lubricator or component should be returned by the buyer to us or our agent for repair or replacement as we choose. All transport costs in connection with guarantee claims shall be paid by the customer. Defects due to faulty installation are the responsibility of the company which has made the installation, as stated above.

EU DECLARATION OF CONFORMITY

We, Assalub AB,
Prästängsvägen 15, SE-597 30 Åtvidaberg, Sweden,
declare that the:

OIL PUMP

Type BSP and BSM

is designed and manufactured in accordance with

EUROPEAN MACHINE DIRECTIVE 2006/42/EG

Åtvidaberg, December 11, 2009

Kim Funck
Managing Director

Niklas Rehn
Responsible for Technical File