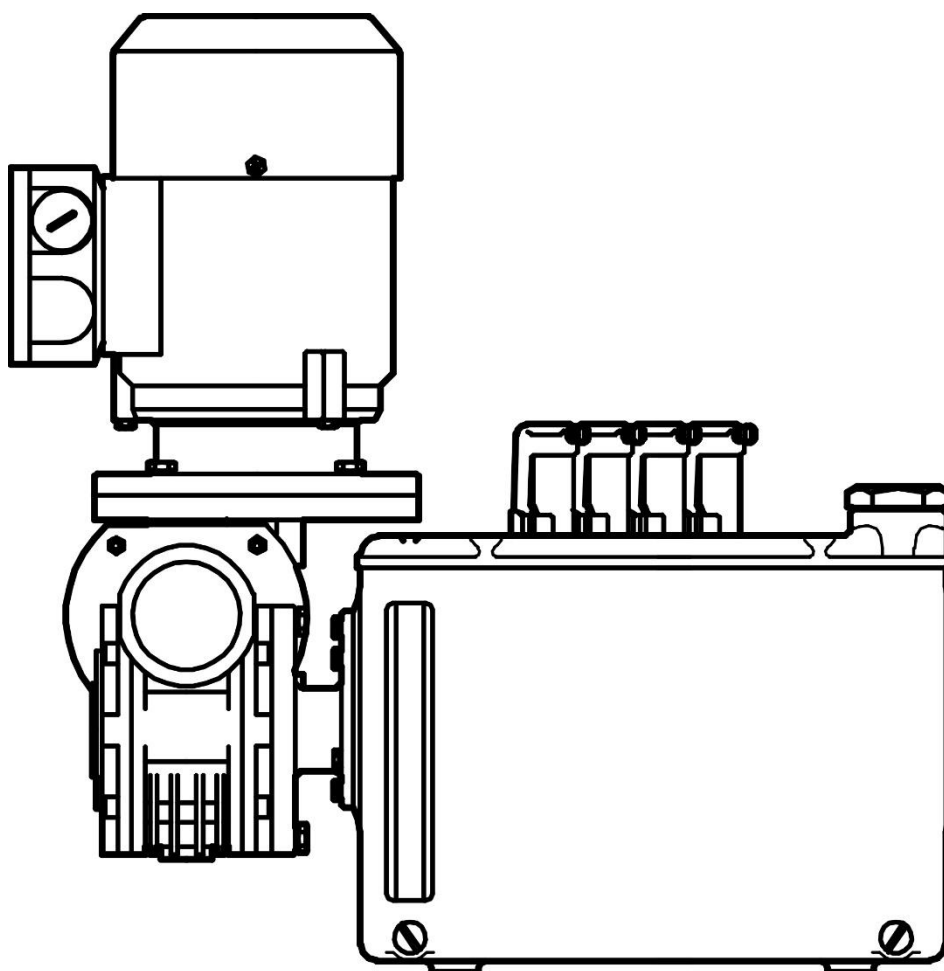


# INSTRUCTION MANUAL

## ÅSSA LUBRICATORS

### TYPE B



**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.

# **CONTENTS**

1. Presentation
2. Safety regulations
3. Technical description
4. Assembly and installation
5. Initial start-up, setting discharge rate
6. Maintenance and repair
7. Spare parts
8. Guarantees
9. CE certification

## **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.

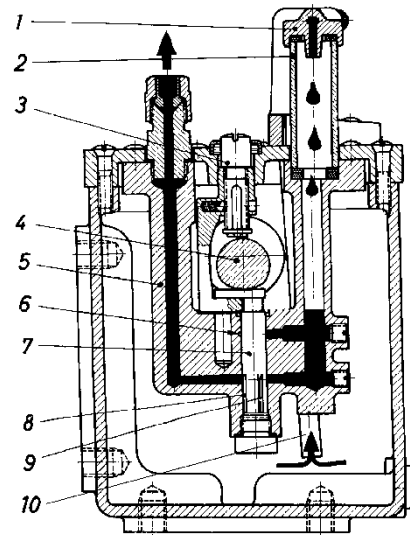
### 3. TECHNICAL DESCRIPTION

#### 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 <sup>3</sup>	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 - 1,000 rpm	---
BSM	---	---	---	1,300 - 3,400 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 by an 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 all outlets. 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 <sup>3</sup> (±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<sup>3</sup> (30 mm<sup>3</sup>), 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

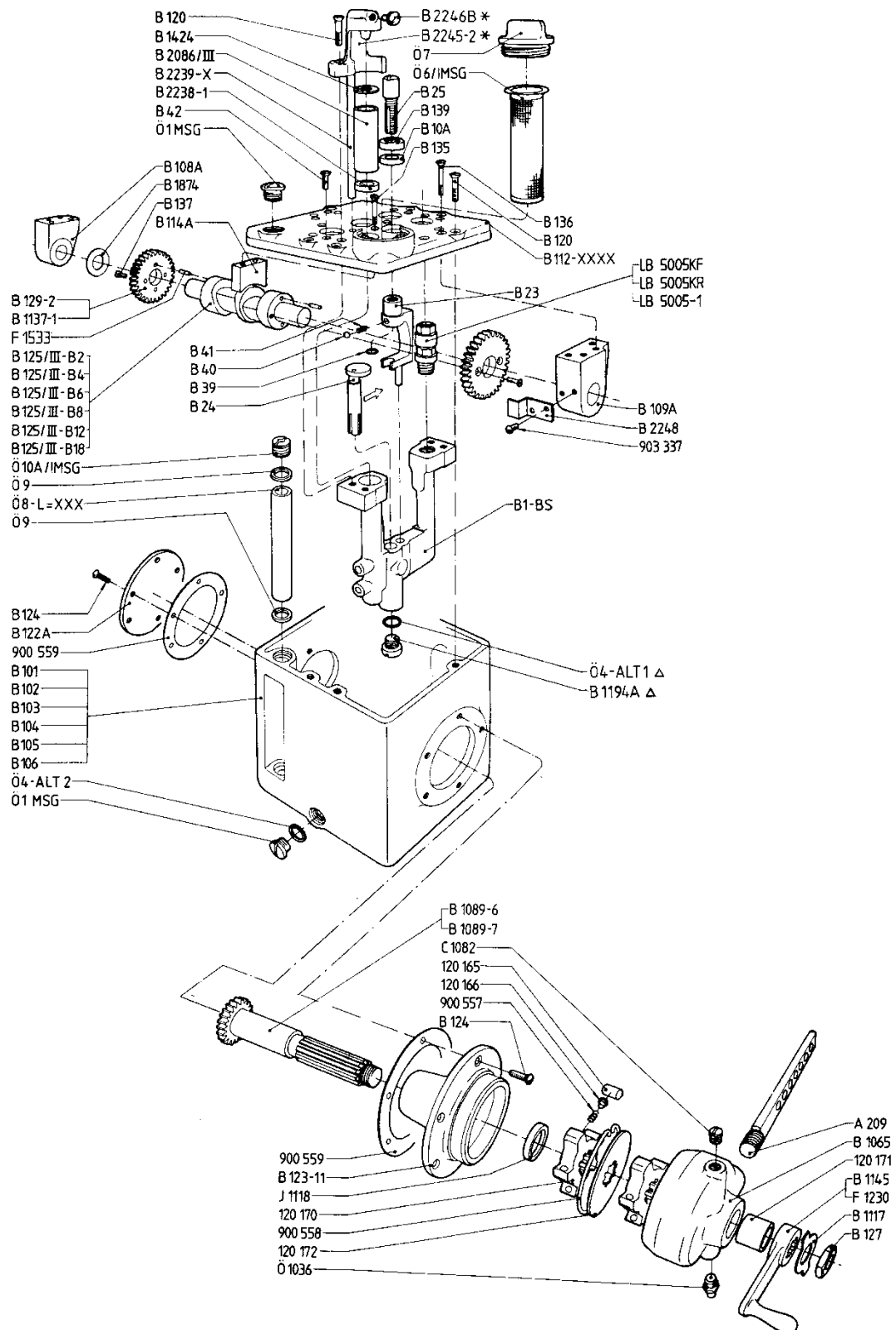
When ordering spare parts always state lubricator type and serial number as on the name-plate

Art.No.	See	Designation	Art.No.	See	Designation
A 209	1	Ratchet lever	B 2238-1		Packing
A 209-4	1	Ratchet arm	B 2239-X	4	Suction pipe
B1-BS	3	Pump body	B 2245-2	4	Sight glass holder
B 10A		Felt ring	B 2246B	4	Vent screw
B 23	2	Lifter	B 2248		Strainer protective plate
B 24	3	Pump plunger	C 1082	1	Plug
B 25	2	Setting screw	F 1230	1	Hand crank, large, bent
B 39	2	Stop ring	F 1533		Pin
B 40	2	Ball	J 1118	1	Seal ring
B 41	2	Spring	LB 363-		Ratchet drive, compl. 1:1, left-
B 42		Screw	LB 363-		Ratchet drive, compl.1:1, right-
B 101		Reservoir 1.0 litre	LB363-KBL		Ratchet drive, compl. 1:1.75, left-
B 102		Reservoir 1.5 litres	LB 363-		Ratchet drive, compl. 1:1.75,
B 103		Reservoir 2.0 litres	LB 376		Lifter, complete
B 104		Reservoir 2.5 litres	LB 378		Pump body, complete std $\phi$ 9 mm
B 105		Reservoir 3.5 litres	LB 378-1		Pump body, complete $\phi$ 10 mm
B 106		Reservoir 6.5 litres	LB 378-2		Pump body, complete $\phi$ 7 mm
B 108A		Bearing, left-hand, std	LB 385-KA		Sight-glass holder, compl., 1 litre
B 109A		Bearing, right-hand std	LB 385-KB		Sight-glass holder, compl., 1.5
B 112-		Lid, state type and serial no.	LB 385-KC		Sight-glass holder, compl., 2
B 114A		Support bearing	LB 385-KD		Sight-glass holder, compl., 2.5-
B 120		Screw	LB 385-KE		Sight-glass holder, compl., 6.5
B 122A		Blind bearing housing	LB 5005-		Outlet connector, 6 mm, brass,
B 123-11	1	Counter ratchet housing	LB 5005-		Outlet connector, 6 mm, brass,
B 124	1	Screw	LB 5005-1		Outlet connector, 6 mm,
B 125/III-		Camshaft, 2 outlets, 1 litre	Ö 1MSG		Plug
B 125/III-		Camshaft, 4 outlets, 1.5 litres	Ö4-ALT1	3	Packing
B 125/III-		Camshaft, 6 outlets, 2 litres	Ö4-ALT2		Packing
B 125/III-		Camshaft, 8 outlets, 2.5 l & 3.5 l	Ö 6/MSG		Oil strainer
B 125/III-		Camshaft, 12 outlets, 5 l & 3.5 l	Ö7		Refilling cover
B 125/III-		Camshaft, 18 outlets, 6.5 l	Ö 8-L=83		Level glass 1.0 litre
B 127	1	Nut	Ö 8-L=93		Level glass 2.5/3.5 litres
B 129-2		Gear, ratio 1:1.75, Z=28	Ö 8-L=98		Level glass 1.5 litres
B 135		Screw	Ö 8-L=103		Level glass 2.0 litres
B 136		Screw	Ö 8-L=133		Level glass 6.5 litres
B 137		Screw	Ö 9		Packing
B 139		Washer	Ö		Plug
B 1065	1	Ratchet drive housing	Ö 1036	1	Grease nipple
B 1089-6	1	Drive shaft ratio 1:1.75, Z=16	120 165	1	Ratchet roller
B 1089-7	1	Drive shaft ratio 1:1, Z=22	120 166	1	Wear plug
B 1117	1	Tab washer	120 170	1	Ratchet cross
B 1137-1		Gear, ratio 1:1, Z=22	120 171	1	Bushing
B 1145	1	Hand crank, small, straight	120 172	1	Washing
B 1194A	3	Plug	900 557	1	Spring
B 1424		Packing	900 558	1	Spring ring
B 1874		Shim	900 559	1	Packing
B 2086/III		Sight glass	903 337		Screw
B 2086/III-		Sight glass with packings			

#### 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





## 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/I
		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.

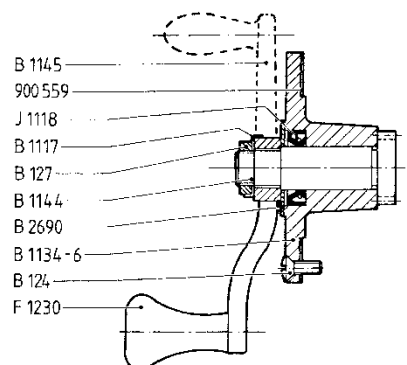
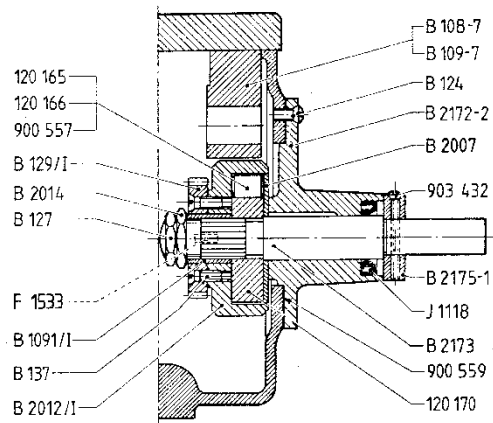
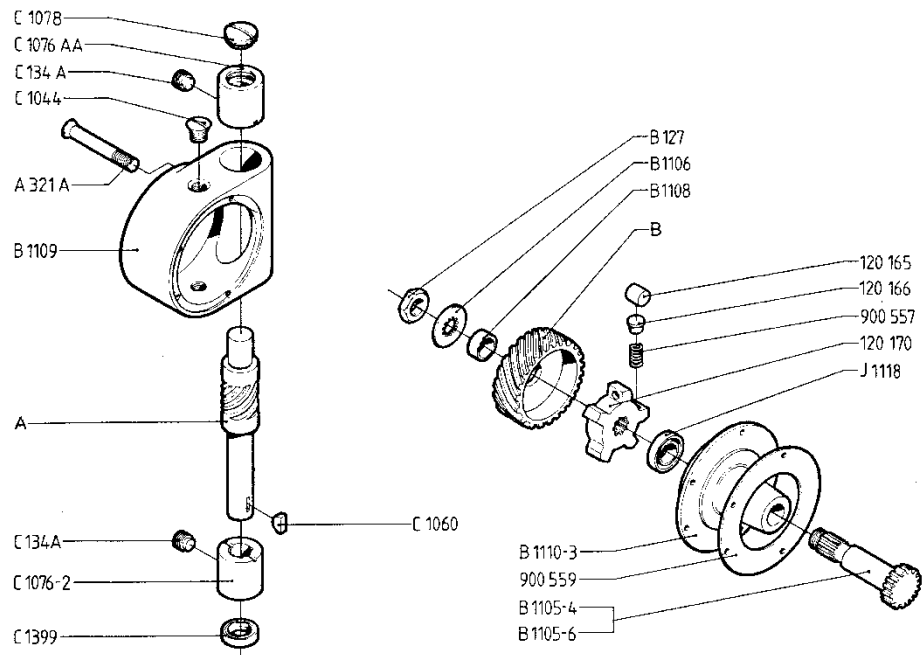
Drive shaft positions and associated rotation:



directions of

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



## Connecting of two lubricators, BSM gear

### Connecting two lubricators

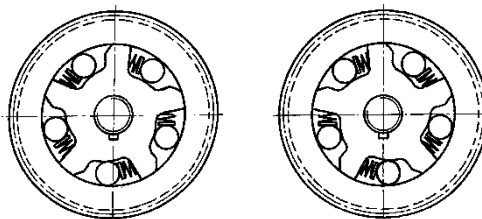
Art. No.	Designation	Art. No.	Designation
B 108-7	Bearing, left-hand	B 1011-3	Gear, ratio 1:1 + 1:1,75 1:1,75 + 1:1
B 109-7	Bearing, right-hand	B 1013	Screw
B 1009A	Bearing housing, blind	900 559	Packing
B 1009-3	Bearing housing, communic	903 075	Screw
B 1010-1	Shaft	903 667	Nut
B 1011-2	Gear, ratio 1:1,75 + 1,75:1		

### BSM gear

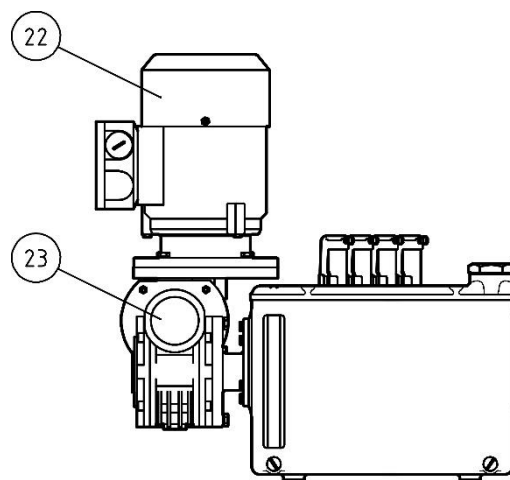
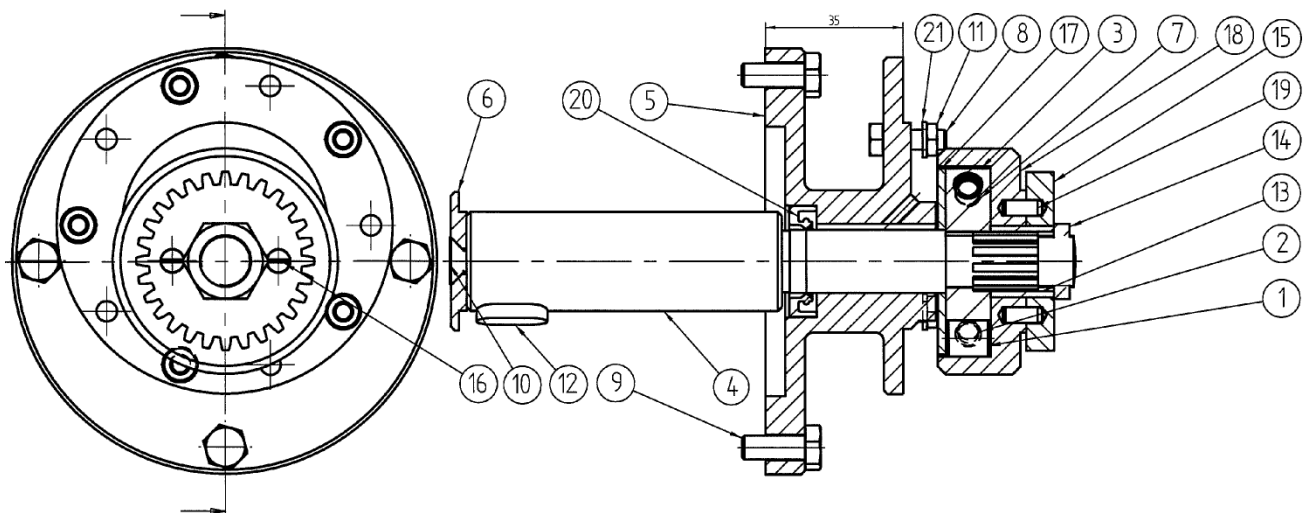
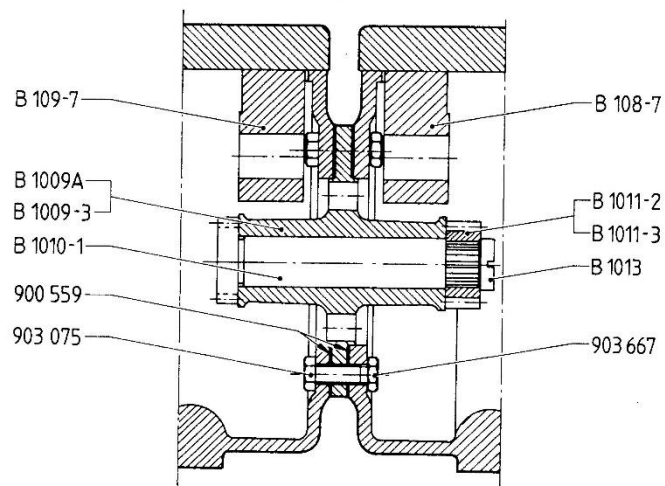
Item	Art. No.	Designation	Item	Art. No.	Designation
1	120165	Ratchet roller	18	B 2012/I	Drive housing
2	120166	Wear plugg	19	F 1533	Pin
3	120170	Ratchet cross	20	J 1118	Seal ring
4	121219	Shaft	21	J 435	Packing
5	121220	Flange	22	901 251	Motor 230/400V 1400 rpm 50 Hz
6	121221	Washer	22	901 252	Motor 230/400V 2800 rpm 50 Hz
7	900557	Spring	22	901 2XX	Motor, special version. State type, V, Hz, rpm as per name plate.
8	903065	Screw	23	906871	Gear 1:70, total 1:55
9	903071	Screw	23	906872	Gear 1:100, total 1:79
10	903537	Screw	23	906873	Gear 1:240, total 1:189
11	903664	Nut	23	906874	Gear 1:420, total 1:330
12	906881	Key	23	906875	Gear 1:720, total 1:566
13	B 1091/I	Ratchet bushing	23	906876	Gear 1:1440, total 1:1131
14	B 127	Nut	23	906877	Gear 1:2160, total 1:1697
15	B 129/I	Gear, ratio, z=28	23	906878	Gear 1:2700, total 1:2121
16	B 137	Screw			
17	B 2007	Washer			

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.



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

## 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