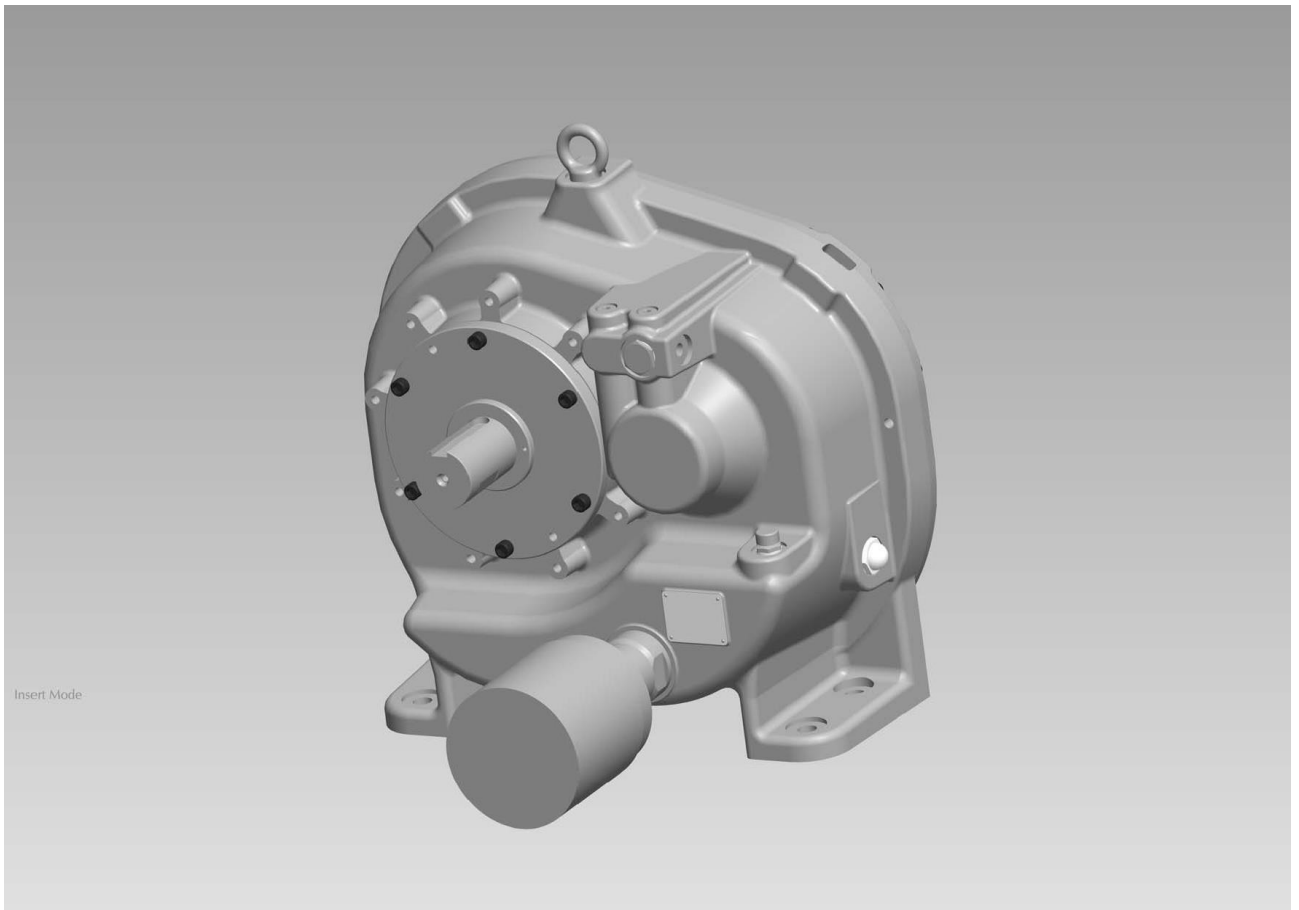




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TECHNICAL INFORMATION

B38 Gear box with heater



Doc no.: TI B38052

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1. Technical data

1.1 Specification Gearbox B38

Layout:	A Gearbox for 250 kW power.
Drive configuration:	Drive shaft A, max 8500 rpm, Shaft B 3200 rpm.
	Ratio: 2.68:1 (Possible ratio: 1.53:1- 3.05:1)
Dimensions:	LxWxH: 666x541x673 mm (excl couplings)
Weight:	280 kg (excl couplings)
Ambient temp:	-45°C to +50°C
Orientation of Gearbox:	According to layout drawing "B38052 sheet1".
Material in housing:	Cast iron SS 0125
Material in gears:	Steel

1.2 Description oil system

Lubrication system:	Circulating oil system. Integrated oil pump
Oil blocking system:	Lip sealing package on all shaft ends
Oil pressure:	4.5 Bar abs
Oil flow:	15.1 lit/min
Oil reservoir volume:	23.0 lit + external devices
Lubrication oil type:	Shell Omala 68 EP
Max oil temp. injected:	60°C
Oil filter requirement:	15µm (Not necessary if the oil system not contain particle larger than 15 my. The gear box has one magnetic plug).
Max pressure drop in cooler:	0.3 Bar
Pressure gage:	Recommended to indicate pressure below 2 Bar abs at injection point.

2. Installation

2.1 Functional description

The Gearbox B38 used to connect expander/compressor with generator/motor. Between the units shall coupling be used. The B38 have one internal oil tank and oil pump but not any oil cooler. For that reason B38 have two connections “Oil out to cooler” and “Oil injection from Cooler” se Drawing B38052. Gearbox is enclosed with a heater to hold oil to 40 °C.

2.2 Transportation and handling

Please take the following precautions when transporting and handling the B38 during installation:

- The B38 must be transported standing fixed with mounting feet. The Lifting eye shall be used when the B38 needs to be lifted.

The lifting eye on the Gearbox can **only** be used to lifting the Gearbox B38 and not other units or frames.

- Always cover the B38 connections in order to prevent water, dust and debris to enter the B38 and cause damage.
- Do NOT remove the protective covers from the connections until the expander is mounted in place and the oil piping will be fitted.

2.3 Lubrication oil system

Please acknowledge the following instructions and warnings to avoid injury.

An external oil cooler system is required in order to ensure proper operation of gears, drive shaft seal and bearings. B38 have two connections “Oil out to cooler” and “Oil injection from Cooler”. The position of this connections, see picture 2.2.2 and documentation in chapter 5.2.

The following functions are essential:

- Oil cooler
- Oil pressure guard if necessary
- Oil temperature guard
- Oil filter if necessary

The Gearbox B38 has following components integrated:

- Oil sump being vented to atmosphere
- Oil pump for pressure 4.5 Bar atm
- Over flow valve for specified pressure
- Magnetic plug in sump

2.4 Checklist before initial start up

Please acknowledge the following checklist before attempting to start up the B38:

- 1 Check the oil level in the oil sump. A minimum of 23 litres +external devices.
- 2 Check that it is oil in cooler and pipes.
- 3 Check that the oil connections are correctly and properly secured.
See picture 2.2.2
- 4 Check that all couplings are correctly and properly mounted and assembled.
See picture 2.2.3

3. Start up and operational instructions

3.1 Start up and shut down procedure

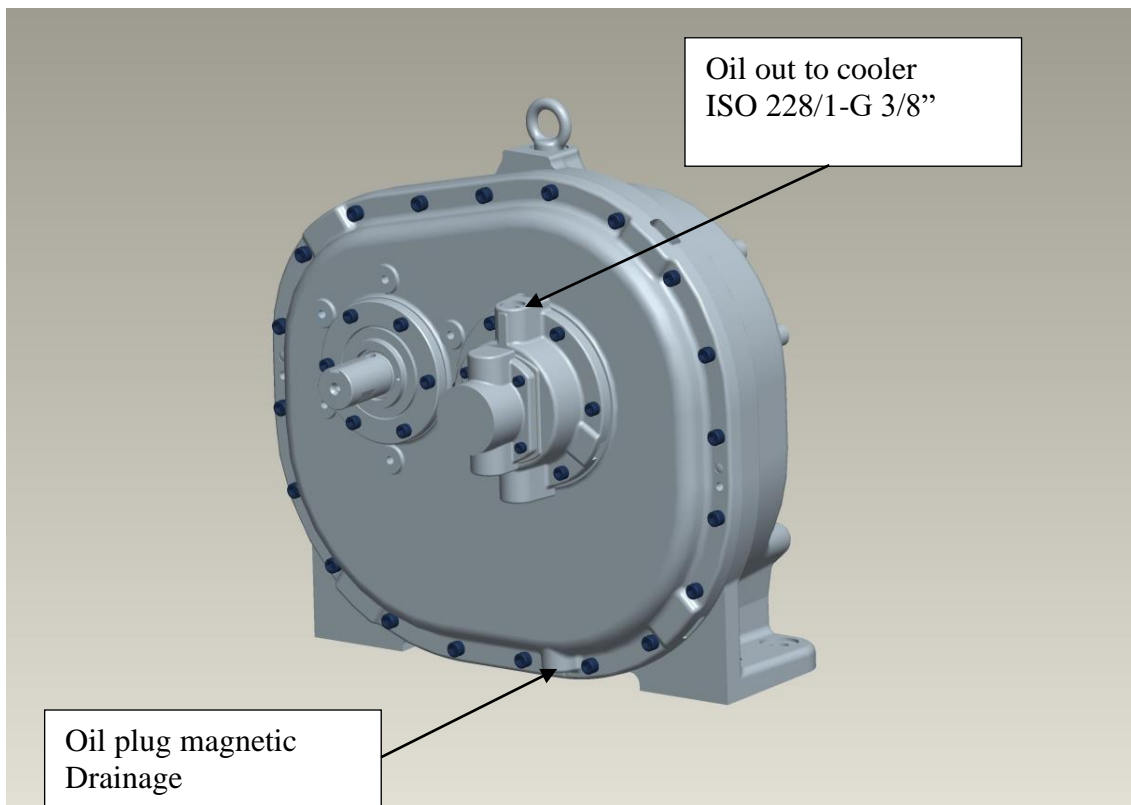
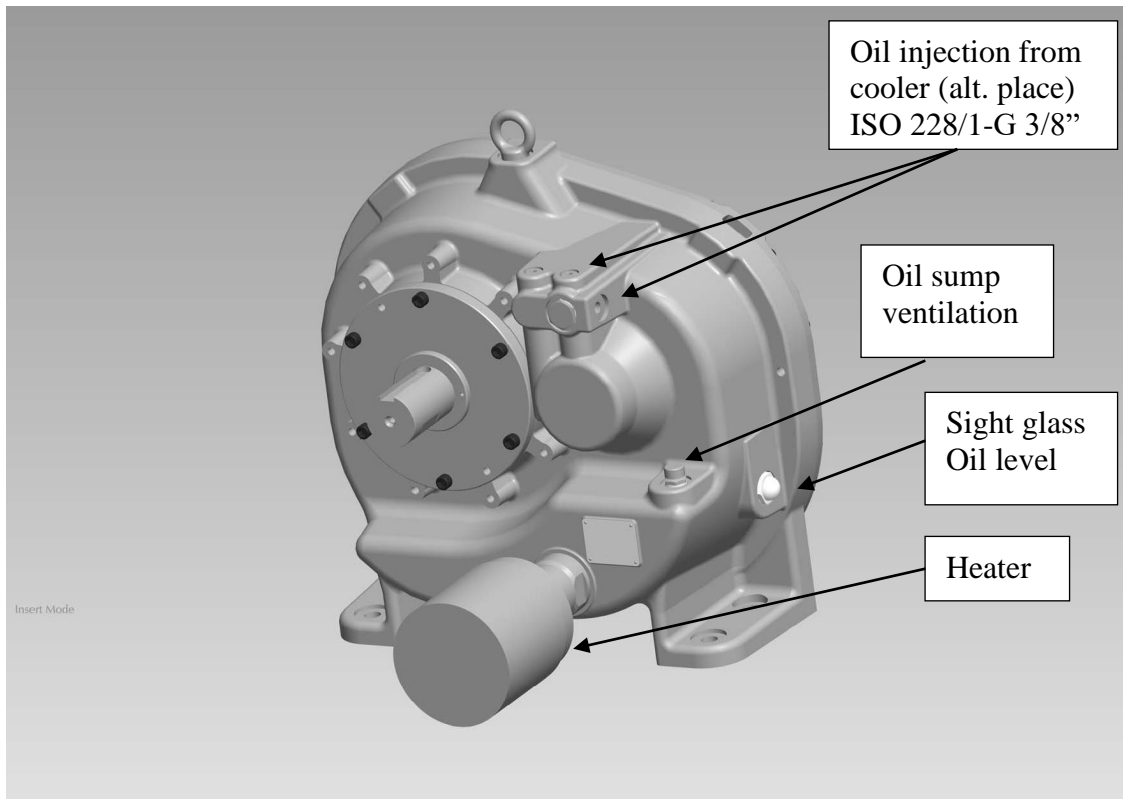
- Prime the pump with oil before start if B38 have been stationary for > 1 month.
- Oil pressure is to be applied immediately after the B38 is started.
- The acceleration up to nominal speed should be swift without unnecessary delay.
- Do not run continuously at operating speeds below 1000 rpm on shaft A.
- Check the oil pressure at inlets of the B38 immediately after start up.
- Please inspect the B38 and the oil system after the first test run and check for oil leakages.
- When the oil pressure is removed the unit must be stopped without delay.
- **Do not operate B38 without applied oil pressure!**
- Max allowed operating speed is 8500 rpm for shaft A

3.2 Safety aspects of running the Gearbox B38

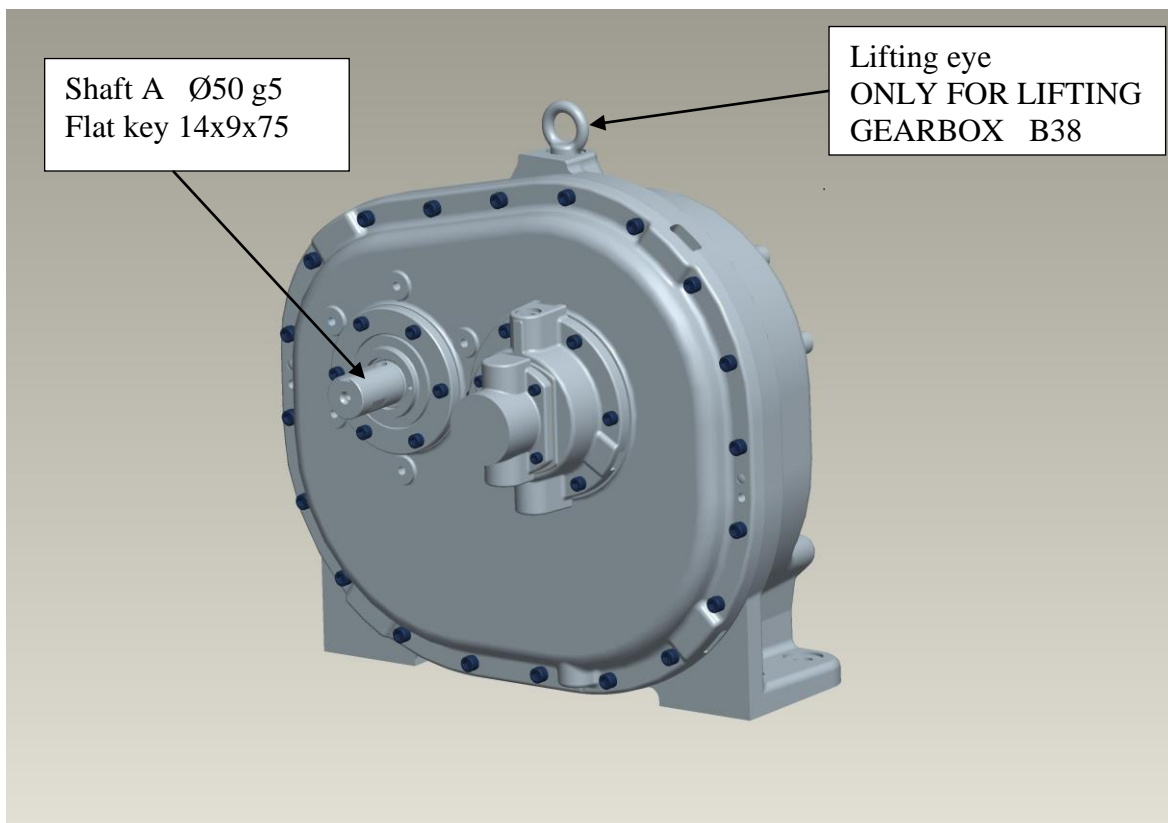
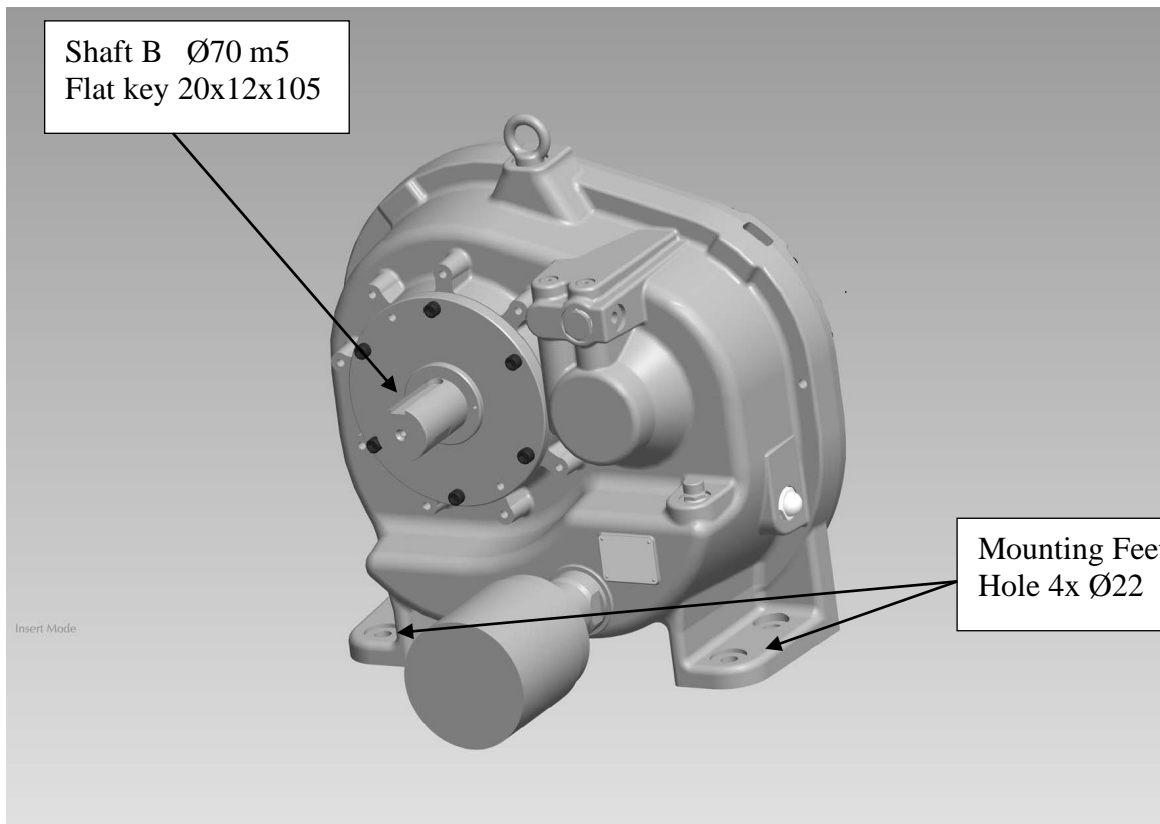
Please acknowledge the following instructions and warnings to avoid injury.

- Hot surfaces: Make sure that appropriate precautions are taken to avoid any kind of injuries related to contact with hot surfaces. The surface temperature of the B38 stage may exceed 80°C during operation and will stay warm for a long period after the B38 has been stopped.
- Noise: Make sure that appropriate precautions are taken to avoid any kind of injuries related to the noise generated by the B38. Exposure to the noise levels from the B38 without wearing noise protection will result in permanent hearing dysfunction.
- Damage: Always make sure to mount protection covers around the couplings to prevent personal injury.
- Toxic oil: Make sure that appropriate precautions are taken to avoid any unnecessary contact with any oil traces on the B38 or the lubrication oil system. Use protective gloves at all time.

Picture 2.2.2 Oil connections and information



Picture 2.2.3 Gearbox with shafts information



4. Maintenance

4.1 Service general

Please follow the recommendations below:

Service interval: Gearbox B38: Every 17.500 hours or 3 years
 witch ever comes first *

For service of B38 change the oil and clean the oil plug (or change oil filter).

* For other service please contact SRM for authorized service personal.

4.2 External oil system

Oil change interval: OEM Responsibility

Filter change interval: OEM Responsibility

4.3 Spare parts

Original spare parts will be provided by SRM's authorized service personal.

4.4 Troubleshooting

Please make following actions and record following observations for the listed trouble items before contacting SRM.

Gearbox oil temperature is higher than specified

1. Check supply of cooling water
2. Check oil amount in the gearbox

Gearbox leaks oil from the shaft seal

1. Check shaft alignment on both sides

Gearbox vibrates excessively

1. Check shaft alignment on both sides
2. Remove couplings and turn the input shaft slowly by hand to detect any abnormal sound and uneven torque

5. Documentation

5.1 Installation of heater

See doc. Heater_140282_E_09

5.2 Installation of coupling

The couplings for Gearbox B38 are designed for key shaft and locking screws.

Move the unit (Expander/Generator) to line the shaft, see separate document for the coupling. The distance between the two coupling parts on shafts shall have (100 mm) enough space for mounting the spacer.

There is not any place reserved for speed sensor on gearbox.

Line the shafts before mounting the couplings.

NOTE! Positions marked as “Not included” are not included in B38 package. The couplings must be order separately.

