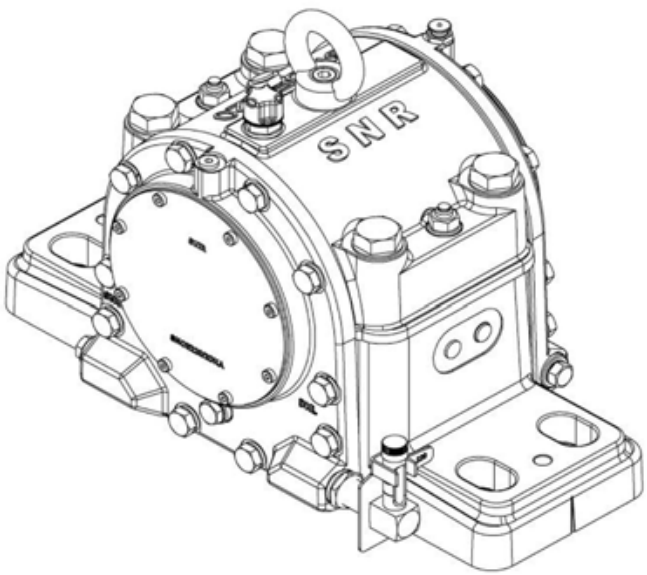
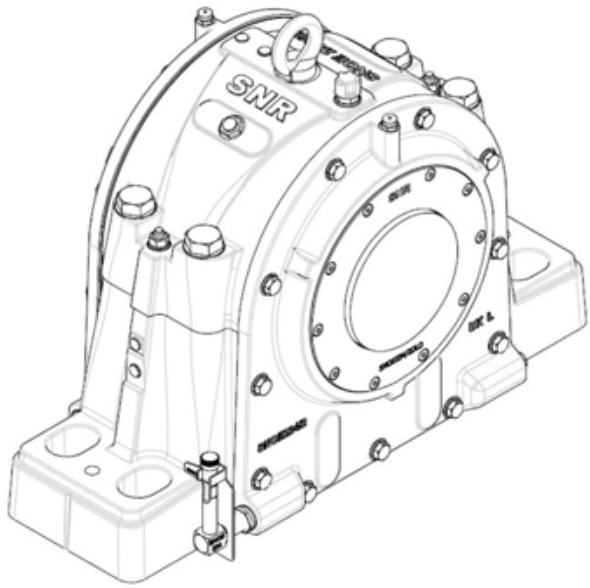
## Assembly, servicing and maintenance instructions

# SNOE 200 SNR bearing housings

**N° TS5142**



# Contents



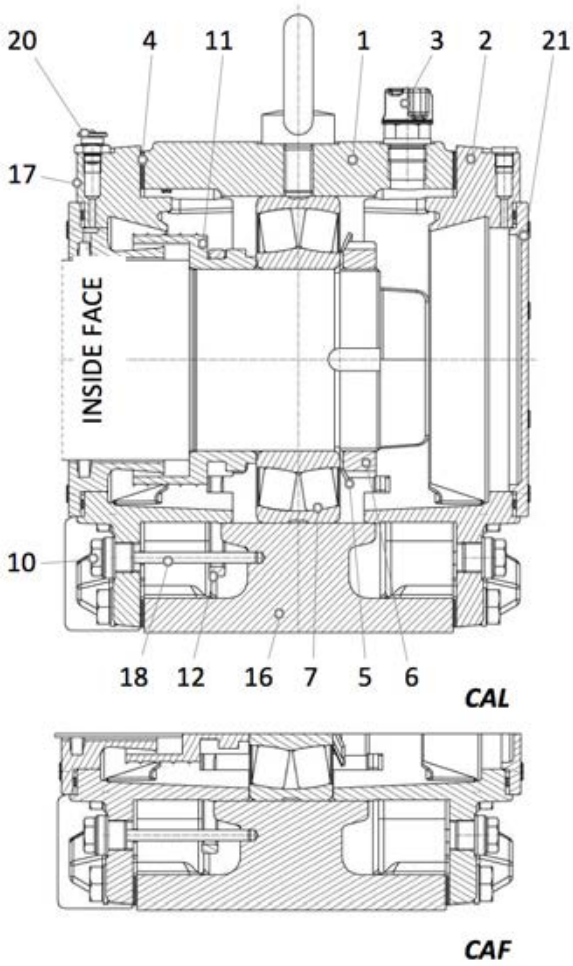
## Pictograms

**Danger:** this pictogram indicates hazards relating to the health of persons and damage to equipment.

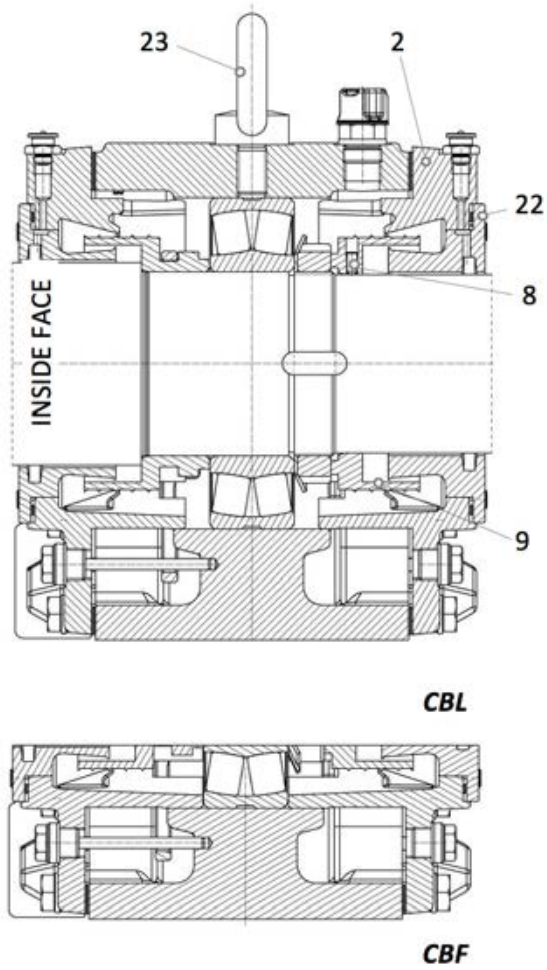
**Instruction**: this pictogram indicates advice on assembly and use for quick and efficient working.  The objective being to obtain a perfect, secure bearing.

# 1. Types of housing with oil-lubricated pillow block

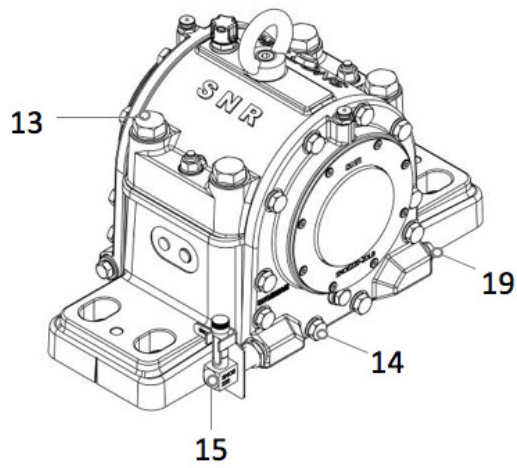
***Single locking***




***Dual opening***




1. Upper part of housing
2. Outer side cover (in several parts)
3. Ventilation filter
4. Cover seal
5. Stop plate
6. Slotted round nut
7. Bearing
8. Grub screw
9. Labyrinth seal (outer)
10. Fixing bolt
11. Labyrinth seal (inner)
12. Greasing ring
13. Connecting bolt
14. Cover screw
15. Oil level indicator
16. Lower part of bearing hou-sing
17. Inner side cover (in several parts)
18. Guide pin
19. Fixing bolt (Oil drain hole)
20. Greaser
21. Closed inner cover
22. Open inner cover
23. Threaded ring



# 2. Preparation for assembly

**a)** Before you start work, the work station or assembly area should be cleaned. Ensure that the tools used for assembly are clean.

**b)** The housings must be completely dismantled. To do this, first remove the side covers (2 and 17), then the cover seals (4). Separate the upper and lower sections of the housing (1 and 16).

**IMPORTANT**

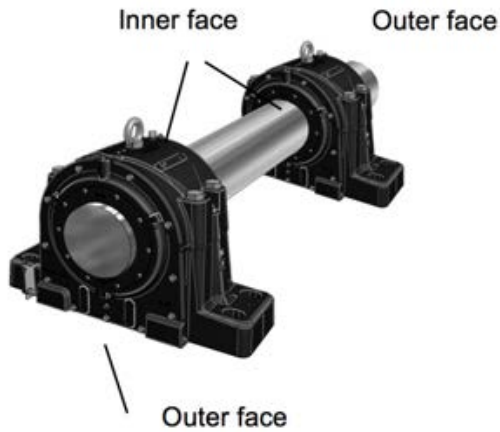
When re-assembling the housing, it is essential that it is done in the right order, so the parts should be numbered.

**c)** Undo the fixing bolt (10) (which holds the cover (17) greasing ring (12) guide pin (18).

**d)** The shaft, labyrinth seals, internal parts of the housing and the cover must be cleaned and de-greased.

**e)** The bolts (10 and 19) and also the oil level indicator supplied with the housing (15) are fitted using copper sealing rings. Prior to each fitting, it should be checked that these copper seals are new.

A copper seal can only be used once.




# 3. Mounting the shaft

**a)** Put the shaft down horizontally and ensure that it cannot roll. Protect its surface to avoid damage.

**b)** Slide the inner cover (17), flat seal (4) and greasing ring (12) on to the shaft.

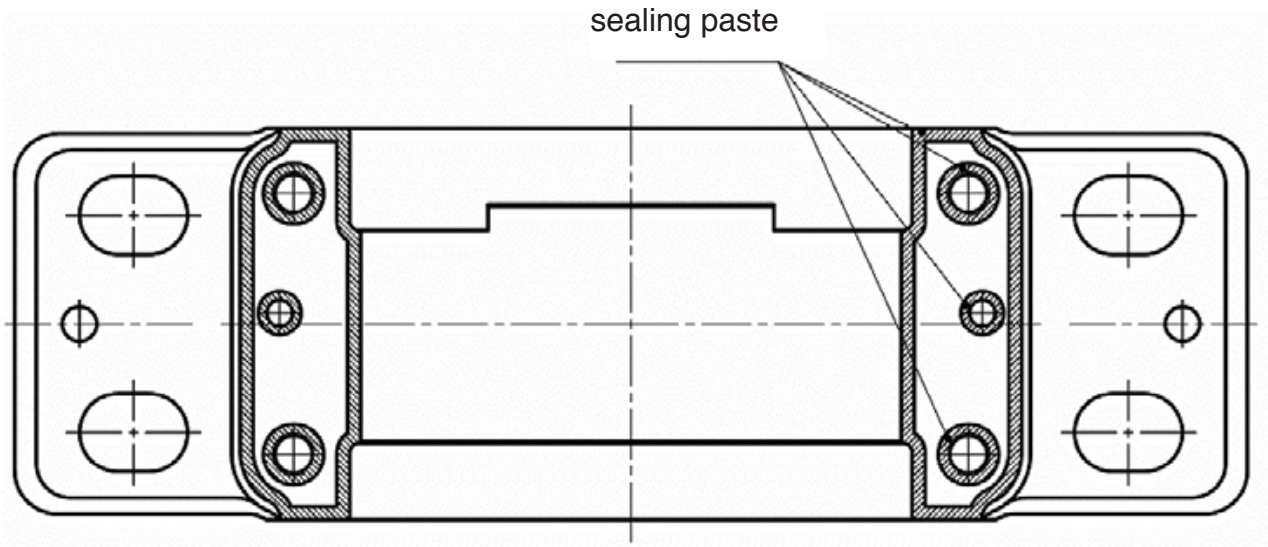
**c)** Heat the inner labyrinth seal (11) (the longer one) to approximately 90°C, using, for exam-ple, an SNR Fast Therm 20, Fast Therm 35 or Fast Therm 150 induction heater and thread it on to the shaft, applying pressure to the collet during the whole of its cooling time.

**d)** Using the same procedure, fit the fixed bearing on to the shaft (max. temperature 120°C). Pay attention to the fitting orientation ( the markings must be pointing towards the end of the shaft). Finally, also fit the stop plate (5) and slotted round nut (6) to lock the bearing (7) in the axial direction.

**e)** Thread the outer labyrinth seal (9) on to the shaft as far as the slotted round nut (6).

**f)** Lock the grub screws (8), using Loctite 222 screw locking compound or similar and tighten to the recommended torque (see Screws and bolts section).

**g)** For fitting the floating bearing, refer to points b) to e). Finally, protect the assembly from contamination by placing a film over it, for example.




# 4. Finalising

**a)** Position the flat seals (4) in front of the two inner covers.

**b)** Fit the previously assembled shaft into the lower part of the housing.

**c)** Apply Marston sealing paste (see data sheet appended) or a similar product on the seals (see drawing above) between the upper and lower parts of the housing (1 and 16) and then assemble the two parts. Tighten the fixing bolts according to the information given in the Screws and bolts section. The screws must be tightened in a cross pattern, first 30% tight and then to the final torque.

**d)** Place the greasing rings (12) on the inner labyrinth seals and push the guide pins (18) into the holes on the under side of the bearing housing base.

**e)** Apply Marston sealing paste or similar to both sides of the cover seals (4) and first screw the inner cover (17) into its locating points.

**IMPORTANT**
**Allow evaporation time (manufacturer's data sheet, page 14)**

Tighten the cover screws as per the method and the following diagram:

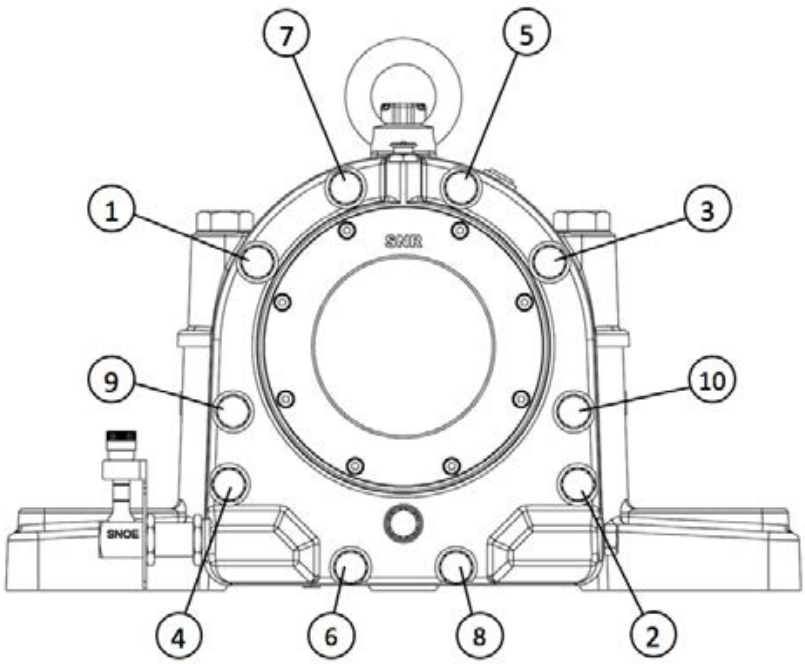
Level 1: 10% torque

Level 2: 50% torque

Level 3: 100% torque

(For torque values, see the Screws and bolts section)

## Cover screw tightening order




**f)** Protect the bearing (7) and the internal parts of the housing. Allow the product to dry for approximately ten minutes.

**g)** Put a little clean oil in the bearing (7) and distribute it by rotating the shaft.

**h)** Screw in the fixing bolt (10) for the cover (17) greasing ring (12) guide pin (18).

**i)** Fit the outer covers (2) with the flat seals (4). Follow the procedure in point e).

**j)** Ensure that all the openings in the housing, such as for example, the bores for the connection of temperature, vibration or other measurement devices are properly locked.

**k)** Fix the oil level indicator supplied with the housing (15) at one of the four connection points. Secure the oil level indicator thread in its housing with Loctite 222 thread locking compound or similar. Each time the assembly is taken apart, a new copper sealing ring should be fitted between the cage surfaces and the oil level indicator fixing points.

**IMPORTANT**
**Copper sealing rings must only be used once and must be changed each time the assembly is taken apart.**

**l)** Align the housing with the support and screw in the four feet, following the recommenda-tions in the Screws and bolts section. The screws must be tightened in a cross pattern, first 30% tight and then to the final torque. Fix the housing with pins.

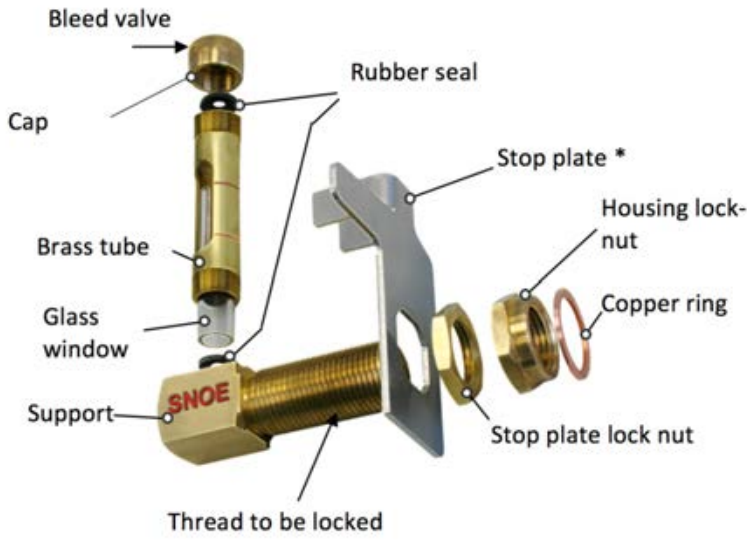
## Positioning and fitting the SNOE oil level indicator

**The oil level indicator must be disas-sembled for fitting.**

Fitting to the housing:

1. Screw the support with the stop plate (for right or left side mounting), the two locknuts and the copper ring into the housing, keeping the assembly vertical. (use screw locking compound).

2. Screw the brass tube, glass window, cap and seals into the support (ensure that the rubber seals are correctly po-sitioned).




**Important:**

Ensure that the bleed valve is not covered by the cap or blocked, otherwise the indi-cator will not display the oil level correctly.

* Two stop plates are supplied with the housing for right or left side mounting.

# 5. Disassembly

**a)** Drain the assembly, for this you can use the fixing bolts (19).

**b)** Undo the bolts and screws (13 and 14).

**c)** Remove the upper part of the housing (1) and the covers (2 and 17).

**IMPORTANT**
**Since flat seals (4) can disintegrate when removing the covers, it is recommended that they are changed.**

**d)** Remove the guide pin (18) and take out the greasing ring (12) from the labyrinth seal nut (11) on the shaft.

**e)** Remove the shaft.

**f)** Remove the stop plate (5) by lifting up the strip and unscrew the slotted round nut (6).

**g)** Remove the bearing on a press or with an extractor, pressing on the inner ring. The extrac-tion force must not reach the outer ring, since this could damage the raceways or rolling bodies.

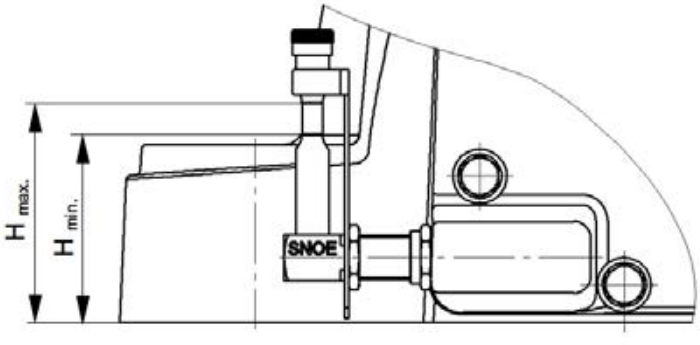
**h)** Check to see whether the bearing has suffered any damage to the surfaces of the bearing seat, cam rollers or cage.

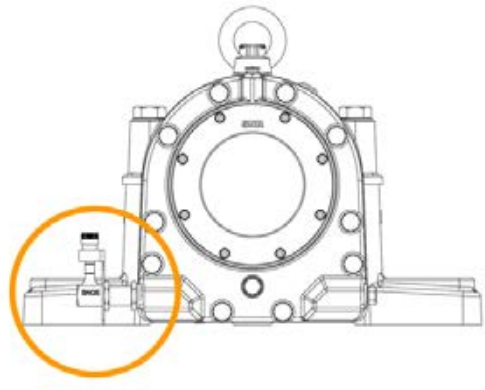
# 6. Commissioning

Slowly pour oil through the ventilation filter opening (3) until the maximum mark on the gauge is reached. Then screw the filter back inside to prevent any contamination in the housing.

The greases and the recommended quantities are given in the Lubrication section.

Then make a test by manually rotating the shaft. Finally, turn the bearings, if possible reducing the speed of rotation by half. Check the oil level and add some more, if necessary. In service, the oil level must always be between the H max. and H min. marks, , on the oil level gauge.
For the first few hours, check the temperature of the bearings.



# 7. Lubrication

The quantities of oil given in this table are for indication purposes only. The essential criterion is the level of oil during service.

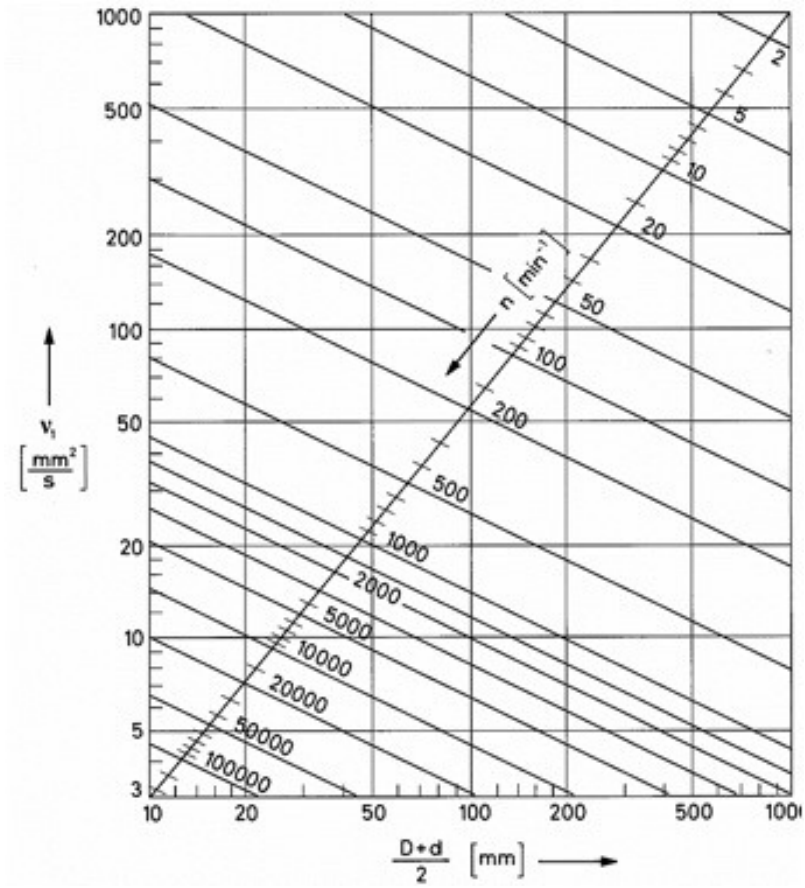
| Housing reference | Approx. oil quantity [l] | Oil level in service [mm] H min. | H max. |
|---|---|---|---|
| SNOE214 | 1,4 | 50 | 65 |
| SNOE217 | 1,4 | 50 | 65 |
| SNOE218 | 1,5 | 45 | 60 |
| SNOE219 | 1,6 | 55 | 70 |
| SNOE220 | 1,7 | 55 | 65 |
| SNOE222 | 2,1 | 50 | 70 |
| SNOE224 | 2,3 | 50 | 70 |
| SNOE226 | 2,3 | 55 | 75 |
| SNOE228 | 3,7 | 55 | 70 |
| SNOE230 | 4,2 | 65 | 90 |
| SNOE232 | 4,7 | 60 | 80 |
| SNOE234 II | 5,2 | 90 | 105 |
| SNOE236 II | 5,2 | 75 | 110 |
| SNOE238 II | 6,5 | 70 | 100 |
| SNOE240 II | 6,3 | 75 | 98 |
| SNOE244 II | 8,2 | 80 | 110 |
| SNOE248 II | 10,0 | 100 | 125 |
| SNOE252 II | 12,0 | 118 | 143 |

**Table 1**

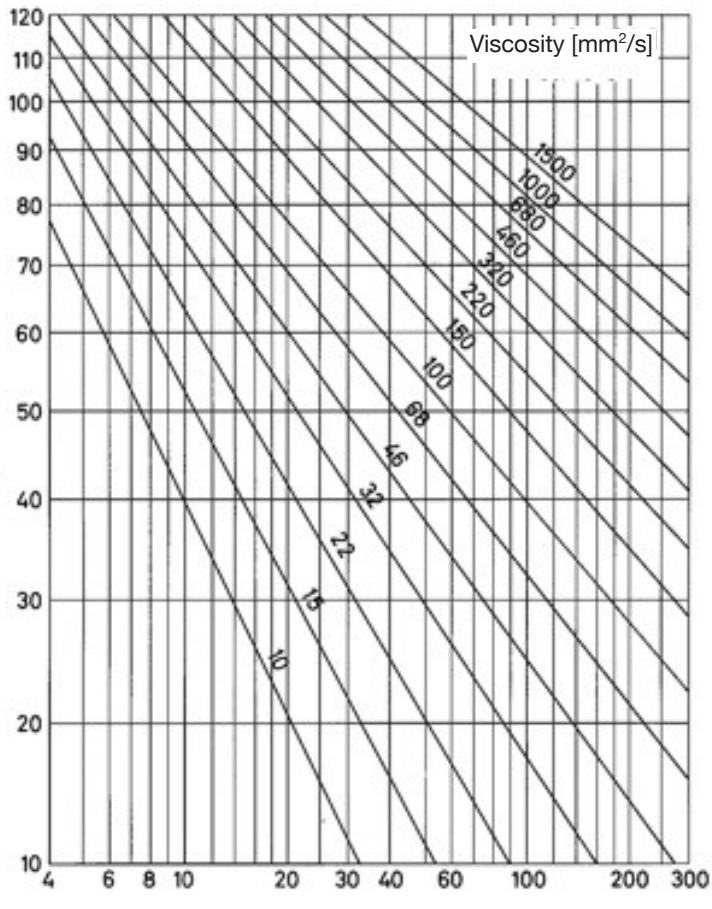
The quality and viscosity of the oil to be used depend on the temperature of the bearing, its load, the speed of rotation of the shaft and other external factors; approximate data are there-fore not possible. The viscosity of the oil may be defined in relation to the average diameter of the bearing and the speed of rotation.

**Diagram 1** shows the operating viscosity v1. At the service temperature, the oil should at least have viscosity v1. But the aim is to obtain an operating viscosity of v = 2 × v1. The reference viscosity at a temperature of 40°C is the ISO viscosity class, which can be found in **table 2**. The oil viscosity to temperature graph shows the relationship for standard mineral oils.

## Diagram 1
Viscosity $\nu_1$




## Diagram 2
Temperature/viscosity
for mineral oils



# 8. Servicing

At regular intervals, it should be checked that the bearing units are operating normally and at the right temperature. Unusual noises or temperatures are signs of a malfunction.. If possible, the cause should be determined immediately. An unbalanced load or insufficient greasing could, for example, alter the usual noise during operation.

To monitor the condition of bearings, tapped holes placed laterally in the housing (M8, M10) allow devices to be installed that can record vibration (SPM for example). To measure the bear-ing's temperature (PT100 for example), the G1/4 or G1/2 tapped holes in the upper part of the body can be used.

(see **SCREWS AND BOLTS** section)

These devices allow signs of damage to be detected in time, and the right moment identified to change the bearing housing.

The oil level should be checked regularly (at least once a month) and during operation, since the oil level is lower when the shaft is running. When adding oil during operation at full speed, the oil level should be approximately 5 mm below the maximum, so as to avoid over-filling.

After two or three days of operation (50 to 70 hours approximately), it is recommended that the oil is drained and its lubrication qualities checked. The results of the analysis will enable oil change cycles to be determined. For cold air ventilation, an additional oil change is indicated after approximately 2000 hours of service, for warm air ventilation, approximately 1000 hours. The next changes should be decided on after analysis of the oil. The reference thresholds are approximately 5,000 hours for cold air ventilation and 2,000 hours for warm air ventilation. The manufacturer's recommendations should be followed.

Re-greasing is necessary at regular intervals (according to the cycles); it is done via the greaser **(Note: not suitable for felt seals)**.

When re-greasing, a quantity of grease should be added, sufficient to make the sealing clear-ance overflow. Under normal conditions of use, for a bearing temperature up to approximately 100°C, a penetration class 3 lithium soap grease with a drop point of 180°C is perfectly suitable, for example Shell Alvania RL3 or Esso Beacon 3.

It is important to check the permeability of the ventilation filter (3) regularly and replace it if necessary.

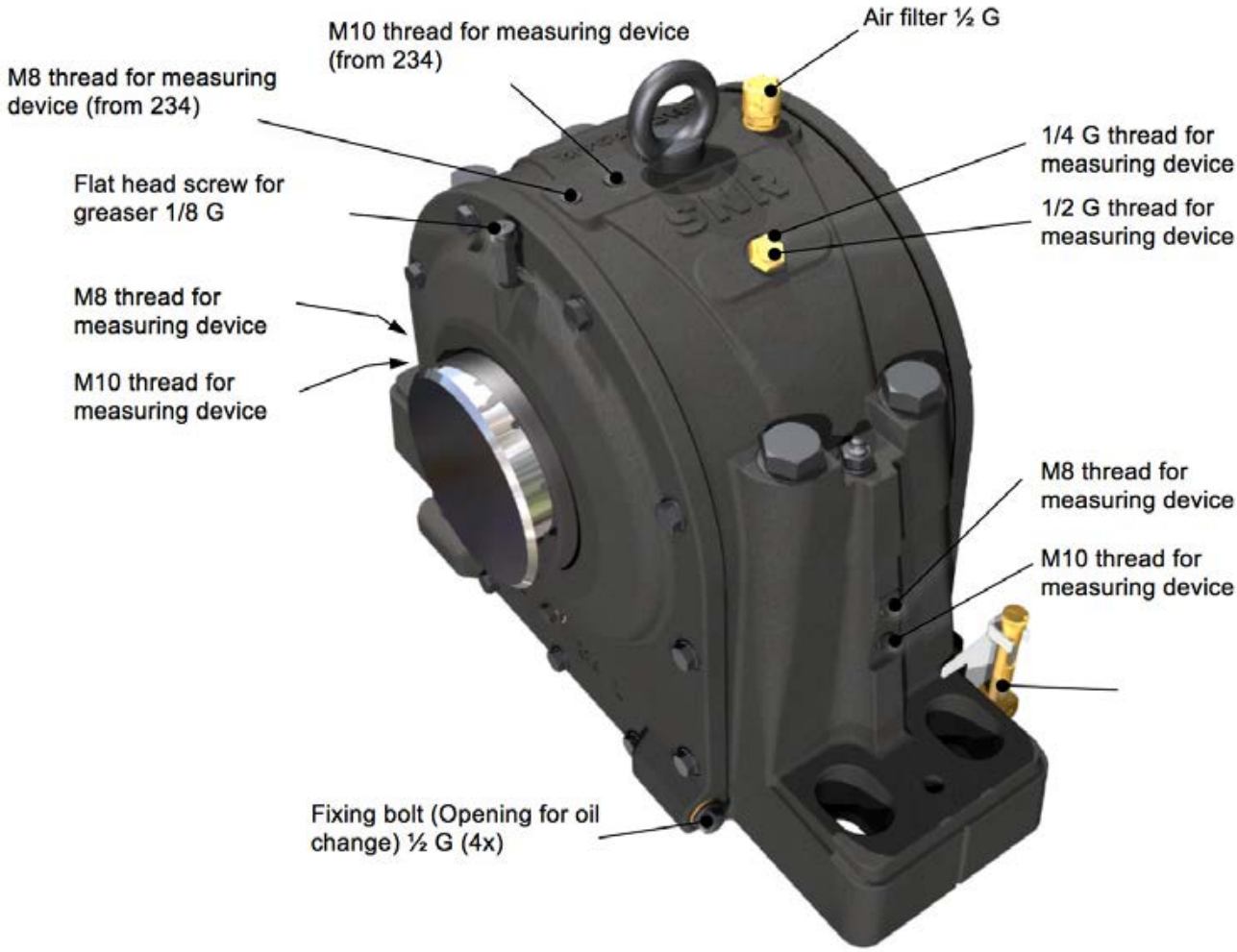
# 9. Screws and bolts

## Recommended tightening torques

| | Fixing bolts Upper/lower parts | | Cover screw | | Guide pin Labyrinth seal (with nut lock compound) | | Recommended pillow block bolts | |
|---|---|---|---|---|---|---|---|---|
| **Standard** | ISO 4014 | | ISO 4017 | | DIN 916 | | ISO 4014 | |
| **Property class** | 8.8 | | 8.8 | | 8.8 | | 8.8 | |
| **No. (on the drawing)** | (n° 13) | | (n° 14) | | (n° 8) | | - | |
| SNOE214 | M16 | 130 Nm | M10 | 35 Nm | M6 | 6 Nm | M16 | 130 Nm |
| SNOE217 | M16 | 130 Nm | M10 | 35 Nm | M6 | 6 Nm | M20 | 260 Nm |
| SNOE218 | M16 | 130 Nm | M10 | 35 Nm | M6 | 6 Nm | M20 | 260 Nm |
| SNOE219 | M16 | 130 Nm | M10 | 35 Nm | M6 | 6 Nm | M24 | 440 Nm |
| SNOE220 | M20 | 260 Nm | M12 | 50 Nm | M6 | 6 Nm | M24 | 440 Nm |
| SNOE222 | M20 | 260 Nm | M12 | 50 Nm | M6 | 6 Nm | M30 | 870 Nm |
| SNOE224 | M20 | 260 Nm | M12 | 50 Nm | M6 | 6 Nm | M30 | 870 Nm |
| SNOE226 | M20 | 260 Nm | M12 | 50 Nm | M6 | 6 Nm | M30 | 870 Nm |
| SNOE228 | M20 | 260 Nm | M12 | 50 Nm | M6 | 6 Nm | M30 | 870 Nm |
| SNOE230 | M24 | 440 Nm | M12 | 50 Nm | M6 | 6 Nm | M36 | 1520 Nm |
| SNOE232 | M24 | 440 Nm | M12 | 50 Nm | M6 | 6 Nm | M36 | 1520 Nm |
| SNOE II 234 | M24 | 440 Nm | M12 | 50 Nm | M8 | 12 Nm | M36 | 1520 Nm |
| SNOE II 236 | M24 | 440 Nm | M16 | 130 Nm | M8 | 12 Nm | M36 | 1520 Nm |
| SNOE II 238 | M30 | 870 Nm | M16 | 130 Nm | M6 | 6 Nm | M42 | 2040 Nm |
| SNOE II 240 | M30 | 870 Nm | M16 | 130 Nm | M6 | 6 Nm | M42 | 2040 Nm |
| SNOE II 244 | M36 | 1520 Nm | M16 | 130 Nm | M8 | 12 Nm | M42 | 2040 Nm |
| SNOE II 248 | M36 | 1520 Nm | M16 | 130 Nm | M10 | 35 Nm | M42 | 2040 Nm |
| SNOE II 252 | M36 | 1520 Nm | M16 | 130 Nm | M12 | 50 Nm | M42 | 2040 Nm |

**Table 2**

# 10. Screws, threads and measurements




**For any further information you may require, please contact us at the following address:**

**SNR WÄLZLAGER GMBH**
- INDUSTRY ENGINEERING DIVISION BIELEFELD -
Postfach 17 01 45
33701 Bielefeld
Tél.: 05 21 924 00 0
Fax: 05 21 924 00 77

# 11. Appendix

## Data sheet

## MARSTON

| | |
|---|---|
| **Colour:** | red |
| **Density (at 25°C):** | 1.1 g/cm³ |
| **Base material** | 63 to 67% polyurethane |
| **Solvent:** | mixture of acetone and ethyl acetate 33 to 37% |
| **Minimum thermal resistance:** | -50°C |
| **Maximum thermal resistance:** | +270°C |
| **Max. filling capacity:** | approx. 0.2 mm |
| **State when delivered** | liquid |
| **Behaviour in respect of corrosion** | prevents atmospheric corrosion |
| **Preparation:** | carefully clean the surfaces and remove oil and grease (using Hyloma Cleaner, for example) |
| **Recommendation:** | wait approximately 10 minutes for evaporation of the solvent before continuing with assembly. |
| **Storage period:** | indefinite at ambient temperature |

**Resistance:** Polyurethane based sealing paste, extremely adhesive and retaining its elastic properties. Thanks to its excellent heat, mechanical and chemical resistance, **Marston** is the ideal product for particularly delicate seals.

In particular, **Marston** resists all mineral oils, numerous synthetic oils, lubricants, fuels, additives, air, gas, water and anti-freeze.

*Marston-Domsel GmbH*
*Quality assurance*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NTN-SNR ROULEMENTS – www.ntn-snr.com - 1 rue des Usines – 74000 Annecy – France – Tel. +33 (0)4 50 65 30 00

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