# **SNR : The SNC Pillow Block Range for Your Application**









Industry



# Content

	Page
General	
Foreword	2
The SNR bearing housing concept	3
Development principles	5
Structural details	6
Designations and explanations	
Housing	9
Delivery condition	9
Material / Colour / Corrosion protection	9
Seal variations / Sets	10
Order examples	10
Complete systems	11
Sealing systems	10
Double lip seal	12
Felt strip sealing / optional V-ring	12
V-ring seal with contact washer	13
Labyrinth seal Taconite seal	15 15
Cover plate	15
Special seals	16
Seal selection	17
	17
SNR Premier bearings	
Bearing with cylindrical bore	18
Bearing with tapered bore	18
SNR PREMIER roller bearings	19
Fixed bearings / floating bearings	19
Loads and torques	
Housing load carrying capacity	21
Tightening torques	21
	22
Lubricant quantities	22
Lubricating fitting / sealing plug Grease regulation disc	23 24
	24
Mounting	
Housing attachment	25
Mounting the bearings	27
Radial clearance reduction	28
Preparation for mounting	29
Double lip seal mounting	30
Felt strip seal mounting	32
V-ring seal with contact washer mounting	34
Labyrinth seal mounting	36
Taconite seal mounting	38
Dimension tables	
Pillow block housing for bearings with adapter sleeve mounting	40
Pillow block housing for bearings with cylindrical bore	52
Accessories	
SNR mounting tools	66
SNR lubricating grease	67
SNR diagnostic equipment	68
, 1)	SNR
$\bigcirc$	

# Foreword

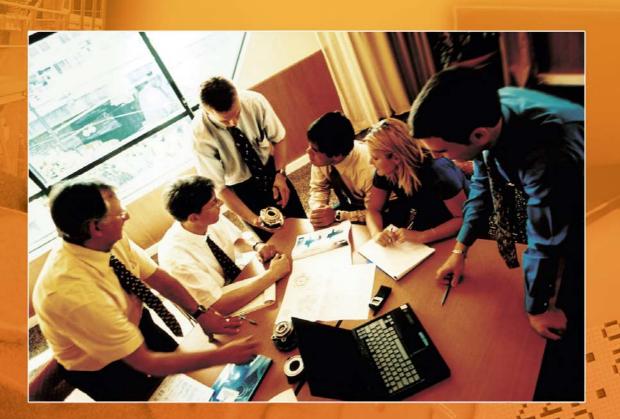
SNR is one of Europe's leading manufacturers of rolling bearings and has been one of the industry's biggest innovators for decades. Our innovations in rolling bearing technology for the automotive, aerospace and industrial sectors are the basis for our consistent growth. Our integration into the Renault-Nissan Group is a further guarantee of high productivity and quality.

Contact with our customers and their application is especially important to us.

A closely meshed network of sales offices and trade partners allows us to maintain direct contact at all times - worldwide. In terms of new product development, this customer focus means that our customers can directly influence our products. Our guiding principle is to work together to find constructive solutions. Product quality, efficiency and high utility for users are the basis for strategic partnership between SNR and you - our customers.

SNR bearing housings are an established element of our product strategy and, in conjunction with our *PREMIER* rolling bearings, provide a unique level of performance.

### Find out for yourself.



### | The SNC bearing housing concept

Variable, efficient, user friendly! That's the basic concept behind our SNC series.

#### **Basic design**

Our two-part bearing housings are made up of an upper and a lower section. This greatly simplifies mounting and maintenance of the units, as the bearing and sealing elements can be mounted on the shaft first and then simply inserted into the pre-positioned lower section of the housing.

These units are compatible with ISO standards 02, 03, 22, 23 and 32 sized self-aligning bearings or roller bearings. The high performance SNR *PREMIER* self-aligning roller bearings offer huge additional benefits in terms of service life and running behaviour. Our application engineers will be happy to advise you on the design and dimensioning of your bearing locations.

A wide variety of different sealing systems ensures that optimum solutions are available for all kinds of applications, from the less stringent requirements for a bearing location under clean ambient conditions through to usage under extremely adverse conditions.

Unique design selling points, such as the circular ribbing on the housing allow fault-free operation even at high temperatures and with heavy loads. The optimum vibration behaviour of our FEM-optimised housings extends their service life considerably.

Increased housing rigidity and improved heat dissipation are further advantages of the SNC series. Other design details are described in more detail later in this catalogue.

#### **Complete systems**

SNR enables its customers to order application-specific complete systems. These include bearing units that are supplied fully assembled with the shaft and pre-lubricated for direct installation.

This results in economic benefits such as:

- Reduction of logistics costs: One supplier one responsibility
- Reduction of commissioning costs due to avoidance of mounting errors
- Reduction of manufacturing costs due to elimination of the need to mount individual components separately
- Reduction of inventory costs

#### **Modular principle**

The versatility and the number of variations in the SNC housing series ensure that a wide range of modules are available, with even the standard options offering enormous variety. This means that complex and expensive special designs can often be avoided. The modular principle, with its different dimensions, sealing elements and rolling bearing variations, provides a wide range of options that offers a technically and economically viable solution for most applications.





# Latest generation of SNC pillow block housings

The SNC pillow block housing is a technological advancement of our previous SNB and SNU series.

The major abutment dimensions of the SNC series correspond to the specifications in ISO 113/II:1994 and DIN 736:1984 to DIN 739:1984.

The bearing units are based on our two-part housing. By default, these are made of grey cast iron in compliance with DIN EN 1561 and are available in different sizes. On request, for particularly high loads, housings can also be produced from other materials, such as ductile iron, in the same dimensions. Each individual housing can hold bearings of different diameters and widths. They are primarily self-aligning roller bearings.

However, the crucial factor is the type of application. For example, if high speeds are required, selfaligning ball bearings can be used. Self-aligning roller bearings are particularly well suited for high axial and radial forces.

Combined with the various sealing elements, this results in a variety of possible designs, which make up SNR's standard range. The shaft diameters are between 20 and 160 mm (special dimensions on request). The bearings with tapered bore inner rings are attached to the shaft using an adapter sleeve. By contrast, bearings with a cylindrical inner ring lie directly on the shaft.

There are a wide variety of sealing options for the housing due to the large number of practical applications. The most important factors are the speeds and the external influences that act on the unit.

#### The SNR standard range includes:

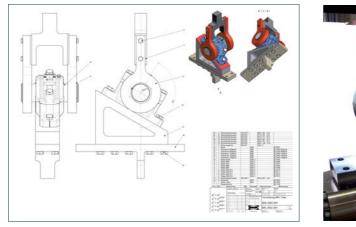
- Double lip seal
- Felt strip seal with retainer
- V-ring seal with contact washer
- Labyrinth ring seal
- Taconite seal

All SNC units are designed for both through shafts and for shaft ends.

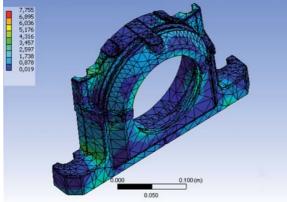
A cover plate is available for these versions, which is inserted in the sealing groove in place of the seal.

### Development principles

The development process for our bearing housings always follows a set and proven principle: design, optimisation and determination of load limits. True to these principles, all SNC housings are designed using our 3D CAD software. The shape and design of the individual housing cross-sections are calculated and optimised by our specialist engineers using the finite element method (FEM). At SNR, theory and practice are aligned in sophisticated endurance tests on the test bench and in practical load tests.



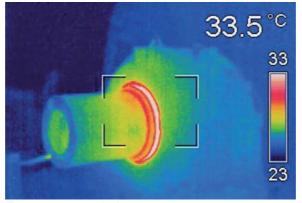
Load test: Tensile test parallel to mounting surface. During the test phase, SNC housings are loaded to their limits.



The finite element method enables the optimum Housing and s Vibration beha



Housing and seals on the test bench. Vibration behaviour, temperature pattern and wear behaviour in practice.



5

Temperature analysis





During development of our new SNC series, we have optimised many aspects of the housing. This optimisation is the result of our decades of application know how for bearing housings. We have incorporated a variety of practical details that make mounting easier and safer for the user and guarantee maximum reliability. The FEM-optimised housing provides additional benefits including:



# Strength properties and heat dissipation:

The circular ribbing on the housing body gives the SNC housing excellent form stability and rigidity. Furthermore, this structural feature helps to optimize the vibration behaviour and heat dissipation of the units.

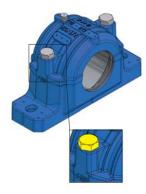
The X-shaped support surface and the cross piece in the housing foot

strengthen the bearing seat substructure and thus support the construction at a critical point.



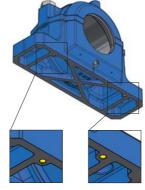
#### Heat dissipation:

The support surface in the foot of the SNC housing ensures extremely efficient dissipation of operating heat.



#### **Connection bolts:**

On SNC pillow block housings, bolts with a larger diameter than on comparable housings are used to connect the upper and lower sections of the housing. This enables higher radial loads to act on the housing cap.

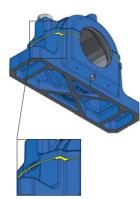


#### Mounting holes:

The holes incorporated into the underside of the housing foot simplify exact alignment of the units in series production.

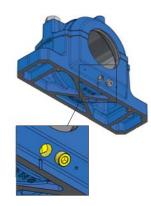
Dowel pins that are preinstalled in the mounting surface as set out in the table (see page 26) indicate the exact position. If modification of the housing is necessary, the mounting

holes can also be used for alignment on a processing machine with no problems.



#### Drain edge:

The circular edge prevents the penetration of moisture at the interface between the upper and lower section.

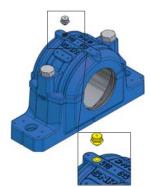


#### Grease drain hole:

All SNC housings are factory-fitted with a grease drain hole. In addition to the default position, other locations can also be selected for the grease drain hole. Positions are marked by centre punching. The drain hole is located in the foot area opposite the

lubricating fitting. It ensures that excess grease from inside the housing can escape.

(Drain holes are sealed with threaded plugs when delivered.)

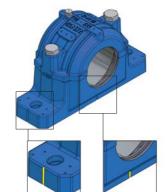


#### Lubricating fitting:

There are several centre punching points in the housing cap, which can be used for alternative threaded holes. Ex works, the SNC housing has one threaded hole.

(The threaded hole is

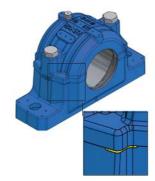
sealed when delivered. One flat headed and one tapered lubricating fitting is included.)



#### Alignment markings:

For quick and easy alignment on the mounting surface, SNC housings have positioning marks.

These are located under each shaft outlet hole and on the side of the housing foot.



7

#### Dismounting edge:

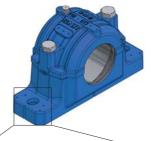
Simplifies dismounting for maintenance work on the bearing units. A lever can be used to easily separate the upper and lower sections of the housing from one another at these points.





# Markings for mounting with four fastening bolts:

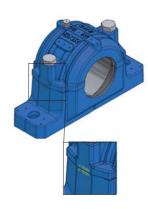
For mounting situations in which the centrally positioned main fastening holes cannot be used, there are four markings in the housing foot. These can be used as alternative fastening holes.



# Markings for additional dowel pins:

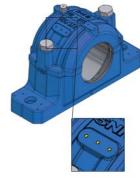
Enable the bearing units to be fixed onto the mounting surface with additional dowel pins. These pins are useful if very high loads occur parallel to the support surface.





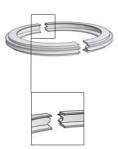
# Upper and lower section marking:

The code numbers imprinted on the side of the housing body are used to correctly assign the upper and lower section. When mounting several housings, the upper and lower sections must never be exchanged as they are matched during production.



#### **Connection options:**

Several marking points are cast into the upper sections of the housings. If necessary, these can be used for connecting holes for measuring sensors, e.g. vibration pickups or temperature sensors.



#### **Retainer:**

8

An aluminium retainer is fitted to hold the felt strips. Its special construction ensures that the felt strips are precisely positioned and simultaneously acts as a contact surface for the optional V-ring that can be used.

### | Designations and explanations

#### Housing:

 SNC 518-615

 Pillow block housing based on ISO 113/II: 1994

 and DIN 736: 1984 to DIN 739:1984

Size –

#### 500 Series

Bearing housing for rolling bearings with tapered bore from 1200K, 2200K, 22200K and 23200K series Shaft diameter: 20 mm – 140 mm

#### 600 Series

Bearing housing for rolling bearings with tapered bore from 1300K, 2300K, 21300K and 22300K series Shaft diameter: 20 mm – 90 mm

#### 200 Series

Bearing housing for rolling bearings with cylindrical bore from 1200, 2200, 22200 and 23200 series Shaft diameter: 25 mm – 160 mm

#### 300 series

Bearing housing for rolling bearings with cylindrical bore from 1300, 2300, 21300 and 22300 series Shaft diameter: 25 mm – 100 mm

#### **Fixed bearing version**

All SNC housings can be used as fixed bearings by using locating rings. Locating rings must be ordered separately. Two locating rings are required per housing. The corresponding sizes can be found in the dimension tables.

#### **Delivery conditions**

Each SNC bearing housing comes complete with appropriate flat headed and tapered lubricating fittings. These are not fitted and can be found inside the housing. The corresponding threaded hole in the upper housing section is sealed with a plastic plug in the factory. A metal threaded plug is screwed into the grease drain hole in the lower housing section. The shaft outlet openings are fitted with protective plastic covers.

#### Material / Colour / Corrosion Protection

The housings are produced from grey cast iron in compliance with DIN EN 1561. On request, SNC bearing housings can also be produced from other materials, e.g. ductile iron. By default, all external surfaces of the housing are painted (colour RAL 5010 - Gentian blue). The machined surfaces inside the housing are treated with an anti-corrosion agent; all non-machined surfaces are primed.

9



#### Seal versions

SCDS	Double lip seal	
SCFS	Felt strip seal	
SCSV	V-ring seal	
SCLA	Labyrinth seal	Example designation:
SCTA	Taconite seal	SC518DS
VA	V-ring (A version) in addition to SCFS	
SCEC	Cover plate	

All SNC units are designed for both through shafts and for shaft end bearing arrangements. A cover (SC...EC) is available for these versions. This is inserted in the groove between the upper and lower sections in place of the second seal.

#### Further information about the individual seal versions can be found in the **Sealing systems** section.

To provide maximum flexibility when it comes to selecting, SNC seals are packaged as a set. **One seal** set is required for each side of the housing.

#### Content of seal set

SCDS	Double lip seal	1x double lip seal (2-part)
SCFS	Felt strip seal	1x retainer (2-part) / 1x round cord (2-part) / Felt strips (2-part)
SCSV	V-ring seal	1x V-ring (A version) / 1x contact washer
SCLA	Labyrinth seal	1x Labyrinth ring / 1x round cord
SCTA	Taconite seal	1x Taconite seal (multi-part; assembled)

#### Accessories

Grease regulation disc RDC

Regulation discs are available as an option. The corresponding sizes can be found in the dimension tables.

Further information about the grease regulation discs can be found in the corresponding section.

10

#### Order examples for SNC bearing housings:

#### A

Pillow block housing for through shaft; Self-aligning ball bearing 2212 with cylindrical bore for shaft diameter 60 mm; felt strip seal with additional V-ring seal; floating bearing version.

x1 Pillow block housing	SNR	SNC212-310
x1 Self-aligning ball bearing	SNR	2212
x2 Felt strip seals	SNR	SC212FS
x2 V-ring seals	SNR	V70A

#### В

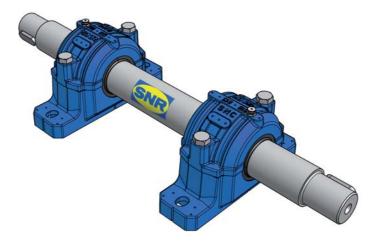
Pillow block housing for shaft end bearing arrangements; self-aligning roller bearing 23218K with adapter sleeve for shaft diameter 80 mm; double lip seal; regulation disc; fixed bearing version.

x1 Pillow block housing	SNR	SNC518-615
x1 Self-aligning roller bearing	SNR	23218K
x1 Adapter sleeve	SNR	H2318
x2 Locating rings	SNR	FR160x6,25
x1 Double lip seal	SNR	SC518DS
x1 Cover plate	SNR	SC518-615EC
x1 Regulation disc	SNR	RDC518

### Complete systems

SNR offers its customers the opportunity to jointly develop and produce application-specific complete systems. These bearing systems can be integrated directly into the relevant applications. The cost reduction, particularly for series production, justifies the purchase of finished system solutions. Logistical processes are simplified and installation times cut. In addition, the risk of mounting errors is avoided. Our name is your guarantee of correct mounting and optimum guality of the products used.

Benefit from our services.



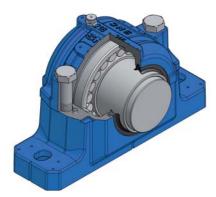




There are a wide variety of sealing options for the housing due to the large number of applications. The correct choice of sealing system depends on several factors. Below, you will find important information about all of the sealing options that are included in the standard range of SNC bearing housings.

The sealing selection table on Page 17 provides a quick overview of the technical properties and possible applications of SNC seals.

#### **Double lip seals SC..DS**



SNR's double lip seals have two parts, which makes them particularly easy to fit.

They are made of the material NBR (butadiene acrylonitrile rubber). The durability and elasticity of the material ensure an excellent sealing effect. The circumferential speeds can be up to 8 m/s.

For shaft diameters greater than 100mm, max. misalignment of 0.5°, for bearing units with shafts smaller than 100 mm max. 1°. The shaft diameter should lie within the tolerance field h9.

We recommend ground shafts with a roughness of less than  $R_{a}$  3.2  $\mu m.$ 

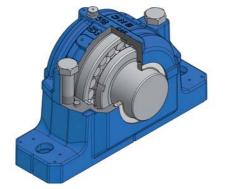
The permissible temperature range for this seal is between -40 °C and +100 °C. Higher temperatures are possible using appropriate materials.

# Our application engineers will be happy to advise you on the options.

Note that one seal must be ordered for each side of the housing. The delivery includes two half seals.

12



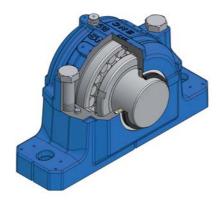


The felt strip seals are a reliable standard seal for SNC bearing housings. They are easy to fit and after a running-in phase can be used for circumferential speeds of up to 15 m/s (running-in phase up to approx. 5 m/s). Felt strip seals are suitable for grease lubrication and temperatures of between -40 °C and +100 °C. We can also offer you a choice of special materials for the use of higher temperatures. Misalignment may not be greater than approx.  $0.5^{\circ}$ . A roughness of Ra 3.2 µm must not be exceeded in the contact area.

Note that one seal must be ordered for each side of the housing. The delivery includes the two felt strips, the two-part aluminium retainer and 2 round cords.

The felt strips are soaked in oil and fitted in the retainers at the factory and can be used immediately. No retainers are required for some bearing housings. Here, the felt strip is inserted directly into the housing groove.

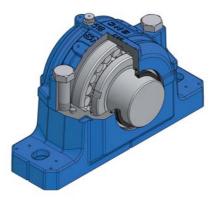
#### V-ring seal - optional



In addition to a felt strip seal (SC...FS), SNC bearing housing units can be fitted with optional V-rings made of NBR (butadiene acrylonitrile rubber). With this combination, the sealing lip has an axial contact with the retainer, ensuring an even better sealing effect (for permissible circumferential speed, see SC...SV).

Note that one seal must be ordered for each side of the housing. The delivery includes an A version of the V-ring.

#### V-ring seal with contact washer SC..SV



The SC...SV seal consists of a contact washer made of corrosion-protected sheet steel with a vulcanised rubber lip and the V-ring made of NBR (butadiene acrylonitrile rubber). The contact washer is fixed in the sealing groove between the upper and lower section. The sealing lip of the V-ring has an axial contact with the contact washer. For shafts with a diameter of up to 50 mm, misalignment of up to approx. 1.5° is possible. Larger shaft diameters may not exceed a misalignment of 1°.

For higher circumferential speeds, V-rings can also be secured axially and/or radially. For this purpose, SNR recommends the use of supporting rings that can be fitted directly behind the V-rings. The following table shows the corresponding dimensions of the supporting rings. For V-ring seals that are not axially secured, circumferential speeds of up to 7 m/s are permitted. Axially secured: 12 m/s. Axially and radially secured: More than 12 m/s. The operating temperatures for these seal versions are between -40°C and +100°C.

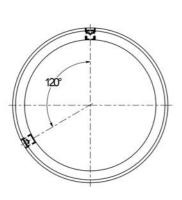
Note that one seal must be ordered for each side of the housing. The delivery includes one contact washer and the corresponding V-ring.

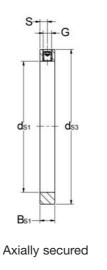


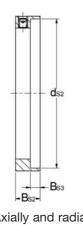


### Dimensions of supporting rings for V-ring seals

Shaft				D	imensior	าร			Set
diamet d, d <sub>1</sub>	d <sub>S1</sub>	d <sub>S2</sub>	B <sub>S1</sub>	B <sub>S2</sub>	B <sub>S3</sub> [mm]	d <sub>S3</sub>	s	G	screw DIN 913
20	20	27,2	7	10,5	3,5	30	3,5	M4	4x4,5
25	25	32,1	7	10,5	3,5	35	3,5	M4	4x4,5
30	30	37,2	7	10,5	3,5	40	3,5	M4	4x4,5
35	35	42,2	7	10,5	3,5	45	3,5	M4	4x4,5
40	40	49,1	7	12,0	4,5	53	3,5	M4	4x5
45	45	54,0	7	12,0	4,5	58	3,5	M4	4x5
50	50	59,1	7	12,0	4,5	63	3,5	M4	4x5
55	55	64,1	7	12,0	4,5	68	3,5	M4	4x5
60	60	69,1	7	12,0	4,5	73	3,5	M4	4x5
65	65	74,1	7	12,0	4,5	78	3,5	M4	4x5
70	70	81,0	10	16,0	6,0	84	4,5	M5	5x6
75	75	86,0	10	16,0	6,0	89,5	4,5	M5	5x6
80	80	91,0	10	16,0	6,0	94,5	4,5	M5	5x6
85	85	96,0	10	16,0	6,0	100	4,5	M5	5x6
90	90	101,0	10	16,0	6,0	105	4,5	M5	5x6
95	95	106,0	10	16,0	6,0	109	4,5	M5	5x6
100	100	111,0	10	16,0	6,0	115	4,5	M5	5x6
110	110	122,9	11	18,0	7,5	128	5,0	M6	6x8
115	115	127,4	11	18,0	7,5	133	5,0	M6	6x8
125	125	138,1	11	18,0	7,5	143	5,0	M6	6x8
135	135	147,5	11	18,0	7,5	153	5,0	M6	6x8
140	140	152,9	11	18,0	7,5	158	5,0	M6	6x8
145	145	158,1	11	18,0	7,5	163	5,0	M6	6x8
155	155	167,5	11	19,0	8,5	173	5,0	M6	6x8
165	165	179,9	11	19,0	8,5	185,5	5,0	M6	6x8
175	175	189,3	11	19,0	8,5	195	5,0	M6	6x8

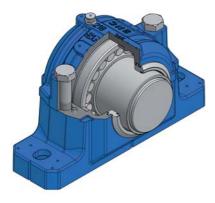






Axially and radially secured

#### Labyrinth seal SC..LA



For adverse ambient conditions, all SNC bearing housings can be fitted with labyrinth seals. The sealing ring and the sealing groove in the housing form a labyrinth with a narrow sealing gap. The great advantage of these seals is that the bearing arrangement can be operated at the permissible speed for the bearings used. The labyrinth ring is synchronised on the shaft by the installed round cord.

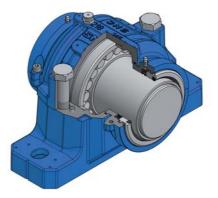
The maximum misalignment of the shaft may not be greater than 0.3°.

The operating temperature range for this seal is between -40°C and +200°C.

Optional relubrication of the labyrinth seal is possible. The marking points cast into the housing above the sealing groove are used for this purpose.

Note that one seal must be ordered for each side of the housing. The delivery includes a labyrinth ring (material: cast iron or steel) and the associated round cord.

#### **Taconite seal SC..TA**



This type of seal is predominantly used where extreme ambient conditions prevail. Thanks to its exceptionally robust design, the sealing system protects against fine dust and large dirt particles and is secure against moisture. Overall, three different sealing systems within the component are responsible for the outstanding sealing effect:

- Labyrinth ring that can be relubricated (threaded bore M6) with radial cross pieces;
- Shaft sealing;
- Cavity completely filled with grease, which acts as a grease lock.

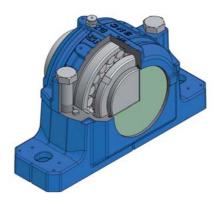
The separable Taconite seal is fixed in the sealing groove between the upper and lower housing sections using an O ring. The labyrinth ring rotates with the shaft. This is ensured by a round cord that is inserted between the shaft and the labyrinth ring. The shaft sealing ring is pressed into the stationary part of the seal. The sealing lip slides on the shaft. The shaft diameter should lie within the tolerance field h9. We recommend twist free ground shafts with a roughness of less than Ra 3.2 µm. Misalignment of up to 0.5° is technically possible. The permissible temperature range for this seal is between -40°C and +100°C. Circumferential speeds of up to 10 m/s can be realised. Higher temperatures are possible using appropriate materials. Our application engineers will be happy to advise you on the options we offer.

Note that one seal must be ordered for each side of the housing. The delivery includes a completely assembled Taconite seal (lubricating fitting included).





**Cover plate SC...EC** 



Cover plates are available for all SNC bearing housings. The cover plate is made of corrosion-resistant sheet steel and has a circular rubber lip made of NBR (butadiene acrylonitrile rubber). It is fixed in the sealing groove between the upper and lower section and effectively seals the housing. Cover plates can be combined with any other seal in the SNC range. The temperature range for cover plates is between -40°C and +100°C.

For details of the dimensions of the permissible shaft ends, refer to the dimension table (dimension  $w_1$ ). The delivery includes one cover plate with vulcanised rubber lip.

#### **Special seals**

In special cases, it is possible that standard seals will not satisfy specific operating requirements. For example, if particularly high temperatures are required, SNC bearing housings can be fitted with seals made of special materials. SNR bearing housings can also be used in solutions that differ from the standard shape.

SNR bearing housings can also be adapted with sealing solutions that differ from the standard design.

# **Seal selection**

		A						
		SCDS	SCFS	SCSV	SCLA	SCTA		
Structural properties		Double lip seal	Felt strip seal	V-ring	Labyrinth seal	Taconite seal		
		Sear	sear	seal	Sear	Sear		
Operating temperature	°C	-40+100	-40+100	-40+100	-40+200	-40+100		
Circumferential speed	m/s	< 8	< 15	< 7 <sup>3)</sup>	> 15	< 10 <sup>4)</sup>		
Possible misalignment	degrees	0,51	< 0,5	11,5	< 0,3	< 0,5		
Relubrication		۵						
Low friction								
Suitable for floating bearings				0		POL.		
Vertical installation			Ó		a	Í		
Sealing behaviour for:								
Splash water / moisture					a			
Ultra fine particles								
Fine particles								
Large particles								
Sharp-edge particles				•				
UV resistance				A				
Ideally suited	<sup>1)</sup> During running-in phase up to approx. 5m/s <sup>2)</sup> If V-ring is fitted inside on underside. <sup>3)</sup> Without additional supporting ring (axially secured:							





17

<sup>3</sup> Without additional supporting ring (axially secured: 7-12 m/s); axially and radially secured: >12 m/s)

<sup>4)</sup> Depending on shaft diameter





SNC bearing housings are designed to hold self-aligning roller or ball bearings. The choice of bearing type and the design of the bearing arrangement depend primarily on the type of application.

18

# **Bearings with cylindrical** bore

Rolling bearings with a cylindrical bore are mounted directly on the shaft. The selected shaft tolerance should depend on the application and the bearings used. The inner ring of the rolling bearing must be supported against a shaft shoulder.

The bearing must always be fitted securely onto the shaft. For easy, safe and quick mounting of the bearings, we recommend the use of an SNR induction heating device.

# Information about this can be found in the SNR *Maintenance Services* catalogue.

# Bearings with a cylindrical bore are particularly well suited for:

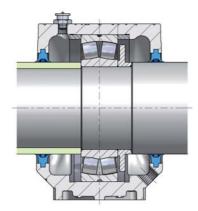
- S• Applications in which large axial loads have to be absorbed;
- ∑• Series mounting
- ∑● Bearing arrangements that are exposed to significant shock loads.

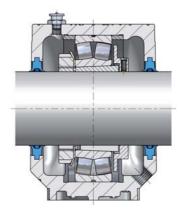
# **Bearings with tapered** bore

Rolling bearings with a tapered bore are mounted on the shaft using an adapter sleeve. The tolerance field of the shaft can be greater than for bearings with a cylindrical bore. Basically, any drawn shafts produced in the tolerance field h9 can be used. The inner ring of the bearing is fixed on the sleeve by axial preload. Adherence to the specified radial bearing clearance after mounting must be ensured. The relevant values can be found in the table on Page 28.

# Bearings with a tapered bore are particularly well suited for:

- ∑● Bearing locations in which the exact position of the bearing is not known in advance;
- ∑● Applications that have to proceed without machining of the shafts;
- ∑● Constructions that do not allow any weakening of the shafts;
- ∑• Bearing arrangements that are adapted to particular operating conditions by adjusting the bearing clearance.





### SNR bearings in PREMIER quality

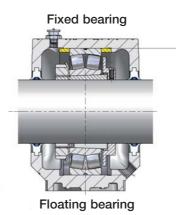


SNR *PREMIER* self-aligning roller bearings are designed for applications in which high loads, severe imbalance, dirt, shocks and vibrations can occur. To improve on the excellent performance and reliability of the series, the SNR *PREMIER* self-aligning roller bearings have been optimised in terms of their load ratings and service life. By using high-purity steels, optimizing the internal construction and improving the manufacturing methods, the load ratings have been successfully increased by 18%, bringing a 75% rise in the service life.

To find out more about SNR's **PREMIER** quality self-aligning roller bearings, ask for your catalogue.

# | Fixed / floating bearing version

SNC bearing housings can be used for both fixed and floating bearing arrangements. The the locating rings available from SNR enable the bearings used to be fixed in place axially. The width of the the locating rings is adapted to the size of the relevant bearing. The exact designation can be found in the dimension table. To secure the bearings in the housing, two the locating rings per housing are necessary.



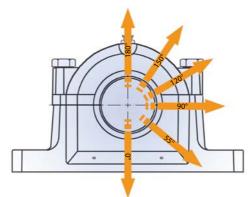
More information about the construction and design of bearing arrangements can be found in our main *SNR rolling bearing catalogue*.





### | Loads and torques

The table below contains information about the breaking loads of SNC bearing housings and the maximum loading capacity of the connecting bolts between the upper and lower section and the foot bolts. The load directions and the safety factor selected for the appropriate operating conditions can be used to determine the permissible loads. In general, a safety factor of 6 is used for engineering calculations. The specified values are intended solely as reference values.



I	Housi	ng siz	ze	ŀ	lousir in l	Ŭ	eaking direct		s	Connecting bolts (upper/lower section) <sup>1)</sup>	c for	ax. Lo apacit both b in load lirectio	<b>ty</b> polts	Recom- mended tighten- ing torque		Max. tigh- tening torque
	S	NC		0°	55°	90° [k		150°	180°	Property class 8.8	120°	150° [kN]	180°	[Nm]	class 8.8	[Nm]
205		505		180	160	95	70	60	80	M10x40	60	35	30	65	M12	87
206	305	506	605	200	170	100	80	67	85	M10x40	60	35	30	65	M12	87
207	306	507	606	224	190	121	85	80	95	M10x45	60	35	30	65	M12	87
208	307	508	607	265	220	132	95	85	115	M12x50	80	45	40	65	M12	87
209		509		280	235	140	100	90	120	M12x55	80	45	40	65	M12	87
210	308	510	608	315	265	160	121	110	140	M12x55	80	45	40	65	M12	87
211	309	511	609	355	280	170	125	118	145	M16x60	180	100	90	150	M16	210
212	310	512	610	355	300	180	132	125	160	M16x60	180	100	90	150	M16	210
213	311	513	611	400	345	210	150	132	170	M16x70	180	100	90	150	M16	210
214				450	360	220	160	145	185	M16x70	180	100	90	150	M16	210
215	312	515	612	475	411	250	185	160	215	M16x70	180	100	90	150	M16	210
216	313	516	613	500	430	265	190	175	220	M16x80	180	100	90	290	M20	410
217	314	517		560	480	290	205	191	250	M16x80	180	100	90	290	M20	410
218	315	518	615	670	550	340	250	220	285	M20x90	260	150	130	290	M20	410
219	316	519	616	710	580	355	265	230	300	M20x100	260	150	130	290	M20	410
220	317	520	617	750	630	375	280	250	320	M24x100	360	210	180	500	M24	710
	318		618	800	670	400	315	280	340	M24x110	360	210	180	500	M24	710
222	319	522	619	950	800	450	355	320	400	M24x130	360	210	180	500	M24	710
224	320	524	620	950	800	475	355	320	420	M20x130	260	150	130	500	M24	710
226		526		1060	900	540	410	360	450	M24x130	360	210	180	500	M24	710
228		528		1250	1060	630	475	430	530	M24x140	360	210	180	1005	M30	1430
230		530		1400	1200	730	540	480	600	M24x150	360	210	180	1005	M30	1430
232		532		1700	1450	860	640	570	730	M30x160	730	430	360	1005	M30	1430

<sup>1)</sup> ISO 4014 (DIN EN 24014)





### Lubricant quantities

The SNC series bearing housings are developed with grease lubrication for operation. High speeds or temperatures, heavy loads and adverse ambient conditions are all influencing factors that necessitate relubrication or replacement of the lubricant. Constant lubricant supply, for example from a central lubricating system, is also conceivable.

For the initial fill, it is essential to make sure that the correct quantity of grease is added. For details, refer to the table below.

More information about lubrication of SNC pillow block housings can be found in the *operating and maintenance instructions for the SNC housings*.

	Hou	sing size	)	Grease quantity Initial fill
		SNC		(approx. 60%
				of cavity)
				[g]
205		505		30
206	305	506	605	45
207	306	507	606	65
208	307	508	607	80
209		509		105
210	308	510	608	130
211	309	511	609	180
212	310	512	610	210
213	311	513	611	270
214				290
215	312	515	612	330
216	313	516	613	440
217	314	517		500
218	315	518	615	650
219	316	519	616	700
220	317	520	617	900
	318		618	1100
222	319	522	619	1200
224	320	524	620	1400
226		526		1600
228		528		2000
230		530		2500
232		532		3000



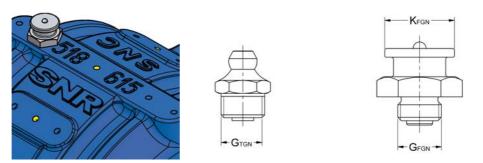
# | Lubricating fitting and lubricant duct

Several centre punching points on the upper section of the housing indicate the possible positions for threaded holes. Lubricant is normally supplied to the bearings from the side. SNC housings are given a threaded hole in the factory. When delivered, this is sealed with a plastic plug. Bearings that allow relubrication using the outer ring can also be supplied directly with lubricant using one of the three possible lubricant ducts (see left-hand figure). Each SNC includes one flat headed and one tapered lubricating fitting located inside the housing.

#### Lubricating fitting dimensions

					Flat	Tapered			
Housing		Si	ze		DIN 3404	DIN 71412	G <sub>FGN</sub>	G <sub>TGN</sub>	K <sub>FGN</sub>
SNC	205		505		FGN-M6-10 <sup>1)</sup>	TGN-M6	M6x1	M6x1	10mm
SNC	206-210	305-308	506-510	605-608	FGN-M10-10 <sup>1)</sup>	TGN-M10	M10x1	M10x1	10mm
SNC	211-232	309-320	511-532	609-620	FGN-M10-16	TGN-M10	M10x1	M10x1	16mm

<sup>1)</sup> Based on DIN 3404



### Sealing plug and grease drain hole

To allow excess grease to escape from the housing during relubrication, there is a grease drain hole opposite the lubricant duct. It is situated below the shaft outlet opening. It is sealed with a metal threaded plug in the factory. In addition to the default position, other locations can also be selected for the grease drain hole. These positions are indicated by centre punching.



#### Sealing plug dimensions

					Width across	
Housing		S	bize		flats SW	G
SNC	205-210	305-308	505-510	605-608	4	M10x1
SNC	211-215	309-312	511-515	609-612	6	M12x1,5
SNC	216-220	313-318	516-520	613-618	8	M16x1,5
SNC	222-232	319-320	522-532	619-620	10	M20x1,5

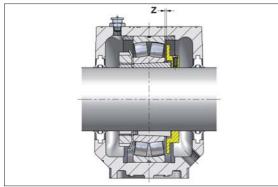




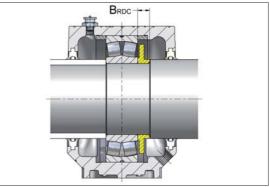
The single-part grey cast iron regulation discs can be fitted in every SNC housing as an option. They are primarily required to convey excess quantities of grease out of the interior of the housing (grease drain hole must be open). The gap between the regulation disc, the bearing and the housing results in a regulating conveying effect for the lubricant during operation. The excess grease is discharged from the bearing. During installation and after each relubrication interval, this has the advantage that the steady state temperature is reached more quickly. Practical experience has also shown that the operating temperature of the bearing arrangements with regulation discs is less than those without regulation of the grease quantity, particularly at very high speeds. Accumulations of grease can lead to a rapid increase in the bearing temperature. This would result in hot running of the rolling bearings and premature failure. In units with an adapter sleeve, they are attached to the shaft using two set screws. In bearing units with cylindrical bearings, the regulation discs are secured axially between the shaft shoulder and the bearing. The tightening torques for the fastening bolts are shown in the table below. To ensure that the regulation disc functions correctly, the mounting instructions must be followed as exactly as possible. The regulation disc should be positioned as specified in the upper table.

# Mounting

Regulation discs must be mounted on the side of the grease drain hole. When using rolling bearings with adapter sleeves, it must be ensured that the groove nuts are positioned on the lubricating fitting side.



Use of regulation disc in bearing arrangement with adapter sleeve mounting.



Use of regulation disc in bearing arrangement with cylindrical bore.

	Abutment dimensions										
	Distance Bearing outer ring - regulation disc Z										
Housing	Si	[mm]									
SNC	505-509	605-607	2								
SNC	510-518	608-615	3								
SNC	519-532	616-620	4								

Tightening torques and widths across flats												
Regulation	Si	ze	Width across flats	Max. tightening torque								
disc			[mm]	[Nm]								
RDC	505-512	605-612	2,5	3,5								
RDC	513-519	613-618	3,0	5,5								
RDC	520-532	619-620	4,0	11,5								

200 Series		300	) Series
Size	[mm]	Size	[mm]
RDC205	7,5	RDC305	9
RDC206	8,5	RDC306	9
RDC207	9	RDC307	9
RDC208	8	RDC308	9
RDC209	12	RDC309	10
RDC210	8	RDC310	10
RDC211	9	RDC311	10
RDC212	11	RDC312	10
RDC213	12,5	RDC313	12
RDC214	18	RDC314	15
RDC215	11	RDC315	15
RDC216	11	RDC316	20
RDC217	14	RDC317	18
RDC218	15	RDC318	20
RDC219	18	RDC319	24
RDC220	18	RDC320	24
RDC222	22		
RDC224	24		

# Abutment dimensions for $\mathbf{B}_{RDC}$ regulation disc in bearing arrangement with cylindrical bore

### **Housing fixing**

RDC226 RDC228 RDC230 RDC232

#### Markings for mounting on T profiles

Four markings in housing foot specify the positions that can be used for alternative fastening holes. These should be used if the housing cannot be mounted using the two centrally positioned fastening holes. For example, this can be the case when attaching to T profiles. The corresponding distances for the connections and the bore diameters can be found in the table on Page 26.

#### Pin markings for additional dowel pins

SNC bearing housings can be fixed onto the mounting surface using additional dowel pins. To do this, drill holes at the four marking points for the dowel pins. Pinning is useful if extremely high loads will occur parallel to the mounting surface. The position of the holes in the support surface and the recommended dowel pin diameters can be found in the table on Page 26.

#### **Mounting holes**

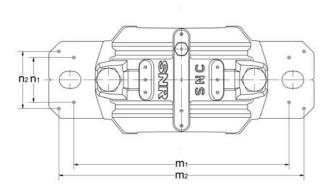
The holes drilled on the underside of the housing foot simplify precise alignment of the units in series production. Dowel pins that have been pre-installed in the mounting surface as set out in the table on Page 26 indicate the exact positions. If modification of the housing is necessary, the mounting holes can also be used for alignment on a processing machine with no problems.

25

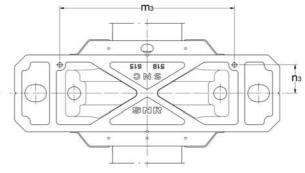


Marking for Pin Mounting Housing sizes mounting marking bore Pin SNC Bore Pin Ø Ø Ø  $m_3 \pm 0,1 \quad n_3 \pm 0,1$ m<sub>1</sub> n<sub>1</sub>  $m_2$ n<sub>2</sub> 31.5 32,5 32,5 

**Housing fixing** 



SNR



49,5

62,5

### | Mounting the bearings

It is often the case that mounting errors cause the premature failure of a bearing arrangement. We therefore recommend that the mounting instructions are followed as closely as possible to ensure that the rolling bearings are properly mounted.

Use of the correct tools is also a prerequisite. SNR supplies useful accessories that simplify the mounting work and prevent damage to the bearings.

#### Request our SNR Maintenance Services catalogue for details.

#### **Bearing with cylindrical bore**

A distinction is made between mounting the rolling bearings in a warm or cold condition. The type of mounting depends on the bearing dimensions - bearings with a bore diameter above 40 mm should be mounted when warm.

Using an SNR induction heating device allows the bearings to be heated to the specified temperature, so that they can be attached to the shaft with no problems. Cold mounting is carried out using a hydraulic press or a suitable alternative tool. For mounting with a mounting sleeve and hammer, it must be ensured that the force must always act on the fixed bearing ring. The end of the tube adjacent to the rolling bearing ring must be planar and perpendicular to the tube axis. The mounting force should act in the shaft axis. Direct contact between the hammer and the bearing is to be avoided.

#### Bearing with tapered bore (adapter sleeve mounting)

The radial clearance of the bearing must be checked using feeler gauges (use SNR feeler gauges + mounting card). Slide the rolling bearing onto the sleeve and mount the lock washer and the groove nut. Do not fully tighten the groove nut. Slide the pre-mounted rolling bearing and sleeve to the desired position on the shaft. The floating bearing should always be positioned in the centre of the housing. To check this, the shaft can be provisionally placed in the housing. The adapter sleeve is now tightened using a hook spanner (available from SNR). During the tightening process, the reduction of the clearance in the rolling bearing must be constantly checked using the feeler gauges. The specified clearance reduction can be found in the table on Page 28 or the SNR mounting card available separately. When mounting the self-aligning ball bearings, the groove nut is tightened until the clearance is almost zero. It must be ensured that the outer ring of the bearing can still be easily turned by hand. The groove nut is fixed and secured by bending a tongue on the lock washer into a groove on the groove nut. The bearings are then filled with the required quantity of grease.

More information about mounting SNR rolling bearings can be found in our main *rolling bearing catalogue* and in the *operating and maintenance instructions for SNC pillow block housings*.





#### Radial clearance reduction when mounting SNR self-aligning roller bearings with tapered bore

	Nominal Radial clearance dimension before mounting clearance group				Reduction of radial clearance			Displacement on taper 1:12				Displacement on taper 1:30				Check value for minimum radial clearance after mounting				
d		norma	al	C3		C4				Shaf	ť	Sleev	ve	Shaf	ť	Slee	eve			
Abo	ve to	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max	min.	max	min.	max.	norm	al C3	C4
[n	nm]	[m	m]	[m	m]	[m	m]	[m	m]	[m	im]	[m	m]	[m	m]	[r	nm]		[mm]	
30 40 50 65 80 100	40 50 65 80 100	0,035 0,045 0,055 0,07 0,08 0,1	0,05 0,06 0,075 0,095 0,11 0,135	0,05 0,06 0,075 0,095 0,11 0,135	0,065 0,08 0,095 0,12 0,14 0,17	0,065 0,08 0,095 0,12 0,14 0,17	0,085 0,1 0,12 0,15 0,18 0,22	0,02 0,025 0,03 0,04 0,045 0,05	0,025 0,03 0,04 0,05 0,06	0,35 0,4 0,45 0,6 0,7	0,4 0,45 0,6 0,75 0,9 1,1	0,35 0,45 0,5 0,7 0,75 0,8	0,45 0,5 0,7 0,85 1,0 1,2	1,7	2,2 2,7	1,8	2,4 2,8	0,015 0,02 0,025 0,025 0,035 0,035	0,025 0,03 0,035 0,04 0,05 0,065	0,04 0,05 0,055 0,07 0,08 0,1
120 140 160 180	140 160 180 200	0,12 0,13 0,14 0,16	0,16 0,18 0,2 0,22	0,16 0,18 0,2 0,22	0,2 0,23 0,26 0,29	0,2 0,23 0,26 0,29	0,26 0,3 0,34 0,37	0,065 0,075 0,08 0,09	0,09 0,1 0,11 0,13	1,1 1,2 1,3 1,4	1,4 1,6 1,7 2,0	1,2 1,3 1,4 1,5	1,5 1,7 1,9 2,2	2,7 3,0 3,2 3,5	3,5 4,0 4,2 4,5	2,8 3,1 3,3 3,6	3,6 4,2 4,6 5,0	0,055 0,055 0,06 0,07	0,08 0,09 0,1 0,1	0,11 0,13 0,15 0,16
200 225 250 280 315	225 250 280 315 355	0,18 0,2 0,22 0,24 0,27	0,25 0,27 0,3 0,33 0,36	0,25 0,27 0,3 0,33 0,36	0,32 0,35 0,39 0,43 0,47	0,32 0,35 0,39 0,43 0,47	0,41 0,45 0,49 0,54 0,59	0,1 0,11 0,12 0,13 0,15	0,14 0,15 0,17 0,19 0,21	1,6 1,7 1,9 2,0 2,4	2,2 2,4 2,6 3,0 3,4	1,7 1,8 2,0 2,2 2,6	2,4 2,6 2,9 3,2 3,6	4,0 4,2 4,7 5,0 6,0	5,5 6,0 6,7 7,5 8,2	4,2 4,6 4,8 5,2 6,2	5,7 6,2 6,9 7,7 8,4	0,08 0,09 0,1 0,11 0,12	0,12 0,13 0,14 0,15 0,17	0,18 0,2 0,22 0,24 0,26
355 400 450 500 560	400 450 500 560 630	0,3 0,33 0,37 0,41 0,46	0,4 0,44 0,49 0,54 0,6	0,4 0,44 0,49 0,54 0,6	0,52 0,57 0,63 0,68 0,76	0,52 0,57 0,63 0,68 0,76	0,65 0,72 0,79 0,87 0,98	0,17 0,2 0,21 0,24 0,26	0,23 0,26 0,28 0,32 0,35	2,6 3,1 3,3 3,7 4,0	3,6 4,1 4,4 5,0 5,4	2,9 3,4 3,6 4,1 4,4	3,9 4,4 4,8 5,4 5,9	6,5 7,7 8,2 9,2 10,0	9,0 10,0 11,0 12,5 13,5	6,8 8,0 8,4 9,6 10,4	9,2 10,4 11,2 12,8 14,0	0,13 0,13 0,16 0,17 0,2	0,19 0,2 0,23 0,25 0,29	0,29 0,31 0,35 0,36 0,41
630 710 800 900 1000	710 800 900 1000 1120	0,51 0,57 0,64 0,71 0,78	0,67 0,75 0,84 0,93 1,02	0,67 0,75 0,84 0,93 1,02	0,85 0,96 1,07 1,19 1,3	0,85 0,96 1,07 1,19 1,3	1,09 1,22 1,37 1,52 1,65	0,3 0,34 0,37 0,41 0,45	0,4 0,45 0,5 0,55 0,6	4,6 5,3 5,7 6,3 6,8 7,4	6,2 7,0 7,8 8,5 9,0 9,8	5,1 5,8 6,3 7,0 7,6 8,3	6,8 7,6 8,5 9,4 10,2	11,5 13,3 14,3 15,8 17,0	15,5 17,5 19,5 21,0 23,0	12,0 13,6 14,8 16,4 18,0	16,0 18,0 20,0 22,0 24,0 26,0	0,21 0,23 0,27 0,3 0,32	0,31 0,35 0,39 0,43 0,48	0,45 0,51 0,57 0,64 0,7

### **Preparations and important instructions** for mounting

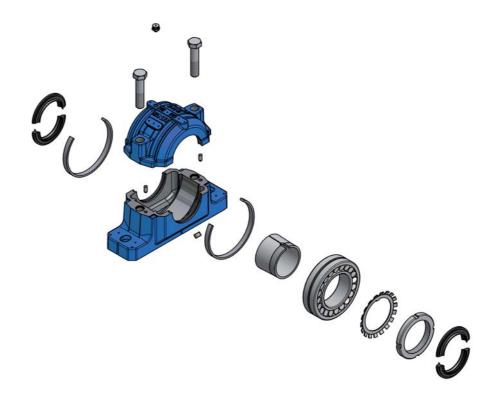
- It is important to ensure that mounting can be carried out in an environment that is dry and free of dust.
- The work station or mounting area must be cleaned before starting. Make sure that clean tools are used and that operators are familiar with all safety regulations for the equipment used in mounting.
- Working with compressed air is prohibited in the mounting area (exception: impact wrench).
- The bearings, adapter sleeves, locating rings and regulation discs should not be removed from their original packaging until immediately before mounting.

#### Caution: Do not wash bearings!

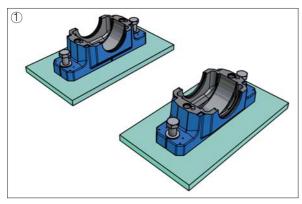
- The shaft, sleeves and the inner sections of the housing should be degreased or cleaned.
- It must be ensured that the clamping surface is clean and even (min. IT7, measured across diagonal).
   We recommend a roughness of approx. R<sub>a</sub> 12.5µm for the clamping surface.
- The upper and lower sections of the housing have identical markings on the side. If several housings are being mounted simultaneously, they may not under any circumstances be exchanged.
- The SNC seals include mounting instructions in the packaging.



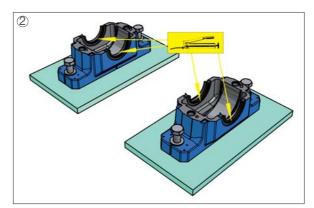




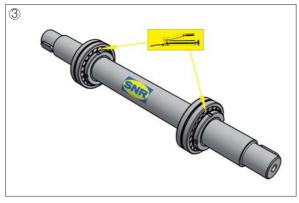
(30)



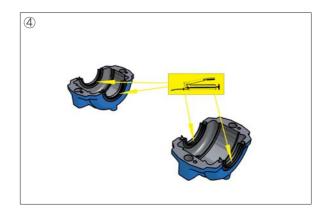
Securely position the lower sections of the housings.



Insert half of the seal into the sealing grooves on each lower housing section. In units with an internal shaft end, only one seal is required in total. The cover plate SC..EC is used instead of the second seal in this case. Add lubricant to the cavity between the two sealing lips.



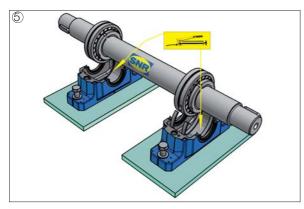
Clamp the shaft horizontally (protect the shaft against damage in the area of the clamping). The bearings should be positioned on the shaft as described in the *Mounting the bearings* section and completely filled with grease.



Insert the other halves of the seals into the sealing grooves on the upper housing sections and add lubricant in the cavity between the two sealing lips.

#### Units with regulation discs

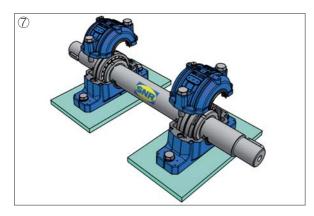
In units with a regulation disc, the regulation discs must be mounted on the grease drain hole side. The position of the shaft is specified in the table on Page 25. When using rolling bearings with adapter sleeves, it must be ensured that the groove nuts are positioned on the lubricating fitting side. Tighten the two set screws with the appropriate tightening torques as set out in the table on Page 24 (this only applies to 500 and 600 series regulation discs).

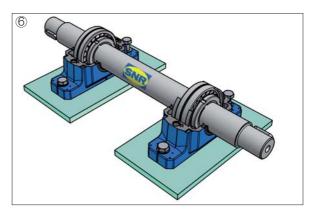


Insert the pre-mounted shaft into the lower housing section. For the floating bearing version, position the bearing centrally on the bearing seat. Distribute the remaining quantities of grease (table on Page 22) evenly in the lower housing sections.

#### Locating rings

For the fixed bearing version, insert the two locating rings on each side of the bearing in the lower housing section.





Position the lower housing section correctly using the alignment markings and slightly tighten the foot bolts.

Position the upper housing section and tighten the connecting bolts evenly to the tightening torques specified in the table on Page 21.

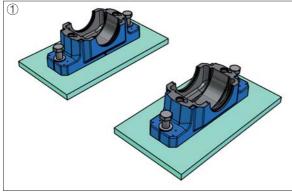
Check the alignment of the bearing housing again and then tighten the foot bolts to the appropriate tightening torque (table, Page 21).



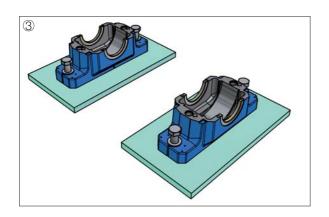


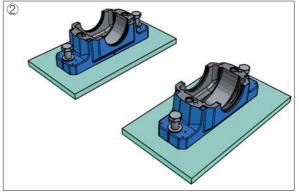


32



Securely position the lower sections of the housings.

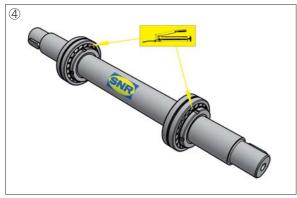




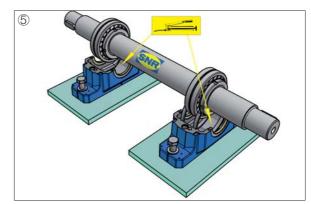
Insert a round cord into the sealing grooves on each lower housing section. In units with an internal shaft end, only one seal is required in total.

The cover plate SC..EC is used instead of the second seal in this case.

Insert the retainer containing the oil-soaked felt strips into the sealing grooves in the lower housing sections on top of the round cord.



Clamp the shaft horizontally (protect the shaft against damage in the area of the clamping). When using V-rings, slide those that are located between the bearing units (internal) onto the shaft. Later mounting is not possible. The bearings should be positioned on the shaft as described in the *Mounting the bearings* section and completely filled with grease.



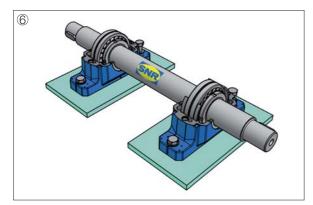
Insert the pre-mounted shaft into the lower housing section. For the floating bearing version, position the bearing centrally on the bearing seat. Distribute the remaining quantities of grease (table, Page 22) evenly in the lower housing sections.

#### Locating rings

For the fixed bearing version, insert the two locating rings on each side of the bearing in the lower housing section.

#### Units with regulation discs

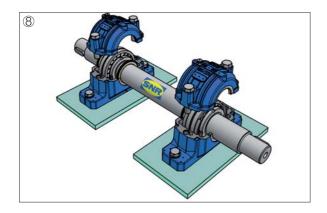
In units with a regulation disc, the regulation discs must be mounted on the grease drain hole side. The position of the shaft is specified in the table on Page 25. When using rolling bearings with adapter sleeves, it must be ensured that the groove nuts are positioned on the lubricating fitting side. Tighten the two set screws with the appropriate tightening torques as set out in the table on Page 24 (this only applies to 500 and 600 series regulation discs).



When using V-rings, now slide those located outside the housing onto the shaft. Position the lower housing section correctly using the alignment markings and slightly tighten the foot bolts.



Insert the remaining round cords into the grooves on the upper housing sections and then insert the retainers containing the oil-soaked felt strips.



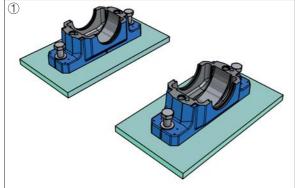
Position the upper housing section and tighten the connecting bolts evenly to the tightening torques specified in the table on Page 21. Slide all pre-mounted V-rings with sealing lips to their final position next to the contact washers. Grease the sealing lips first.

Check the alignment of the bearing housing again and then tighten the foot bolts to the appropriate tightening torque (table, Page 21).









Securely position the lower sections of the housings.



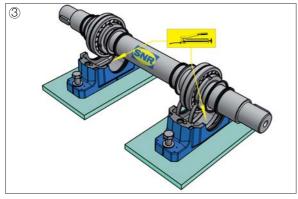
Clamp the shaft horizontally (protect the shaft against damage in the area of the clamping). The internal contact washers and V-rings are slid onto the shaft first. The sequence and arrangement of the sealing elements is crucial to ensure correct mounting.

On units with an internal shaft end, only one contact washer and one V-ring is used. The cover SC..EC is used instead of the second seal in this case.

The bearings should be positioned on the shaft as described in the *Mounting the bearings* section and completely filled with grease.

#### Units with regulation discs

Regulation discs must be mounted on the side of the grease drain hole. The position of the shaft is specified in the table on Page 25. When using rolling bearings with adapter sleeves, it must be ensured that the groove nuts are positioned on the lubricating fitting side. Tighten the two set screws with the appropriate tightening torques as shown in the table on Page 24 (this only applies to 500 and 600 series regulation discs).

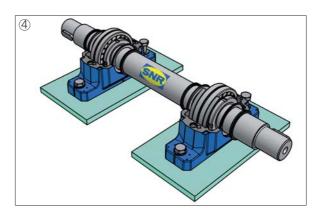


Insert the pre-mounted shaft into the lower housing section. Carefully insert the contact washers into the sealing grooves on the lower housing sections. For the floating bearing version position the bearing centrally on the bearing seat.

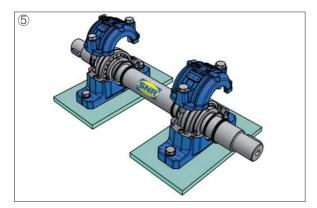
Distribute the remaining quantities of grease (table, Page 22) evenly in the lower housing sections.

#### Locating rings

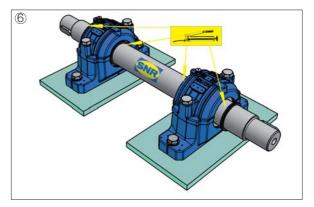
For the fixed bearing version, insert the two locating rings on the side of the bearing in the lower housing section.



Position the lower housing section correctly using the alignment markings and slightly tighten the foot bolts.



Position the upper housing section and tighten the connecting bolts evenly to the tightening torques specified in the table on Page 21.



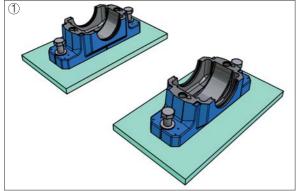
Slide all pre-mounted V-rings with sealing lips to their final position next to the contact washers. Grease the sealing lips first.

Check the alignment of the bearing housing again and then tighten the foot bolts to the appropriate tightening torque (table, Page 21).

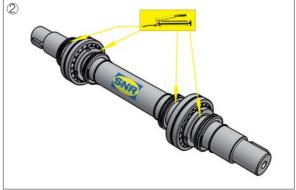








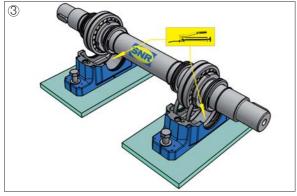
Securely position the lower sections of the housings.



Clamp the shaft horizontally (protect the shaft against damage in the area of the clamping). Slide the internal labyrinth rings onto the shaft. Ensure the correct mounting direction. On units with an internal shaft end, only one labyrinth seal is used. The cover plate SC..EC is used instead of the second seal in this case. The bearings should be positioned on the shaft as described in the *Mounting the bearings* section and completely filled with grease. Then position the external labyrinth rings on the shaft in the correct mounting direction.

#### Units with regulation discs

Regulation discs must be mounted on the side of the grease drain hole. The position of the shaft is specified in the table on Page 25. When using rolling bearings with adapter sleeves, it must be ensured that the groove nuts are positioned on the lubricating fitting side. Tighten the two set screws with the appropriate tightening torques as shown in the table on Page 24 (this only applies to 500 and 600 series regulation discs).

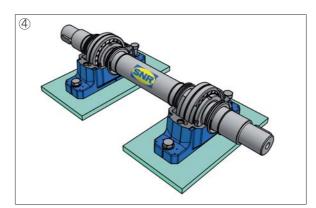


Insert the pre-mounted shaft into the lower housing section. Carefully insert the labyrinth seals into the sealing grooves on the lower housing sections. For the floating bearing version, position the bearing centrally on the bearing seat.

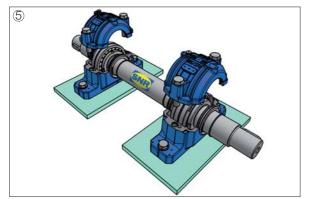
Distribute the remaining quantities of grease (table, Page 22) evenly in the lower housing sections.

### Locating rings

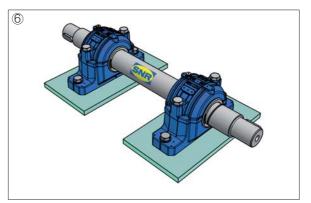
For the fixed bearing version, insert the two locating rings on each side of the bearing in the lower housing section.



Position the lower housing section correctly using the alignment markings and slightly tighten the foot bolts.



Position the upper housing section and tighten the connecting bolts evenly to the tightening torques specified in the table on Page 21.



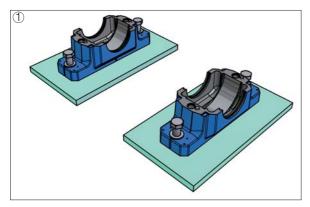
Press a round cord into each circular groove between the shaft and the labyrinth ring. Using a screwdriver makes it easier to insert the cord.

Check the alignment of the bearing housing again and then tighten the foot bolts to the appropriate tightening torque (table, Page 21).

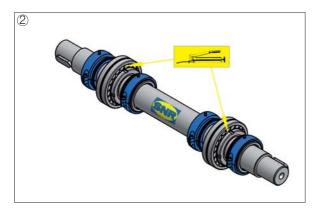








Securely position the lower sections of the housings.



#### Units with regulation discs

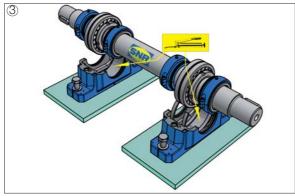
Clamp the shaft horizontally (protect the shaft against damage in the area of the clamping).

Before mounting the Taconite seals, lightly grease the shaft sealing rings. Slide the internal sealing elements into place so that the ring grooves with the O ring attached point towards the housing. On units with an internal shaft end, only one Taconite seal is used. The cover plate SC..EC is used instead of the second seal in this case.

The bearings should be positioned on the shaft as described in the *Mounting the bearings* section and completely filled with grease. Now slide the external Taconite seals onto the shaft, ring grooves first.

Regulation discs must be mounted on the side of the grease drain hole. The position of the shaft is specified in the table on Page 25. When using rolling bearings with adapter sleeves, it must be ensured that the groove nuts are positioned on the lubricating fitting side. Tighten the two threaded pins with the appropriate tightening torques as shown in the table on Page 24 (this only applies to 500 and 600 series regulation discs).

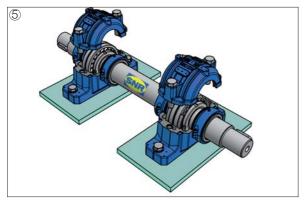
39



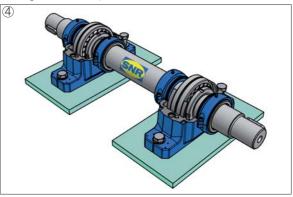
Carefully insert sealing elements with O rings into the sealing grooves on the lower housing sections. For the floating bearing version, position the bearing centrally on the bearing seat. Distribute the remaining quantities of grease (look at table on page 22) evenly in the lower housing sections.

#### Locating rings

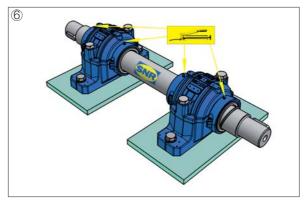
For the fixed bearing version, insert the two set screws on the side of the bearing in the lower housing section.



Position the upper housing section and tighten the connecting bolts evenly to the tightening torque specified in the table on Page 21.



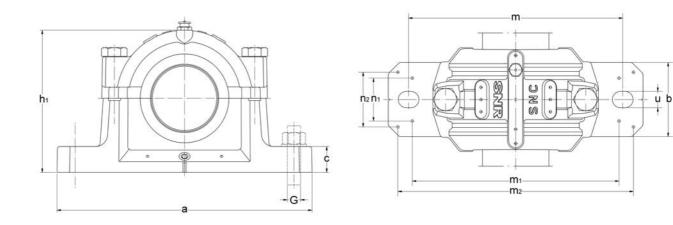
Position the lower housing section correctly using the alignment markings and slightly tighten the foot bolts.



Press a round cord into each circular groove between the shaft and the labyrinth ring. Using a screwdriver makes it easier to insert the cord. Remove plug from the lubricating fitting bore and screw in the lubricating fitting supplied. The seals should then be greased by the lubricating fitting while the shaft is rotating, until grease escapes at the labyrinths. Check the alignment of the bearing housing again and then tighten the foot bolts to the appropriate tightening torque (table, Page 21).







d	Тур	D	a	b	С	g	h	H	m	y dimer G [mm]	nsions u	v	h <sub>1</sub>	m <sub>1</sub>	n <sub>2</sub>	m <sub>2</sub>	n <sub>1</sub>		Weight pprox <sup>1)</sup> [kg]
	SNC505	52	165	46	19	25	40	67	130	M12	15	20	74	116	32	152	28	36	1,6
20	SNC605	62	185	52	22	32	50	77	150	M12	15	20	89	130	38	172	25	44	2,3
05	SNC506	62	185	52	22	32	50	77	150	M12	15	20	89	130	38	172	25	44	2,3
25	SNC606	72	185	52	22	34	50	82	150	M12	15	20	93	135	38	172	25	46	2,4
	SNC507	72	185	52	22	34	50	82	150	M12	15	20	93	135	38	172	25	46	2,4
30	SNC607	80	205	60	25	39	60	85	170	M12	15	20	107	160	44	188	34	50	3,2

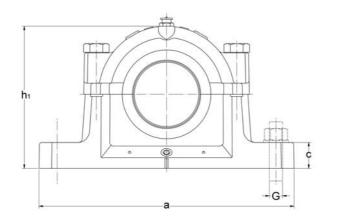
(40)

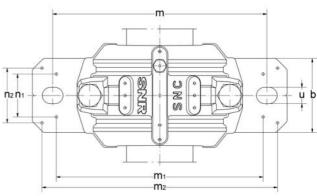


<sup>3)</sup> Optional V-ring available for felt strip seal (FS).









d	Тур	D	а	b	С	g	h	H	m	g dimer G [mm]	nsions u	v	h <sub>1</sub>	m <sub>1</sub>	n <sub>2</sub>	m <sub>2</sub>	n <sub>1</sub>		Weight approx <sup>1)</sup>
	SNC508	80	205	60	25	39	60	85		M12	15	20	107	160	44	188	34	50	<b>[kg]</b> 3,2
35	SNC608	90	205	60	25	41	60	90	170	M12	15	20	113	160	44	188	34	53	3,4
40	SNC509	85	205	60	25	30	60	85	170	M12	15	20	110	160	44	188	34	44	3,2
40	SNC609	100	255	70	28	44	70	95	210	M16	18	24	127	200	49	234	40	56	5,1
45	SNC510	90	205	60	25	41	60	90	170	M12	15	20	113	160	44	188	34	53	3,4
-40	SNC610	110	255	70	30	48	70	105	210	M16	18	24	133	200	54	234	40	64	5,4

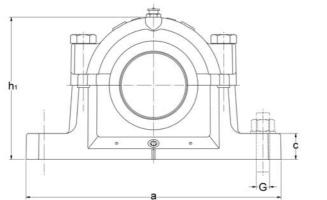


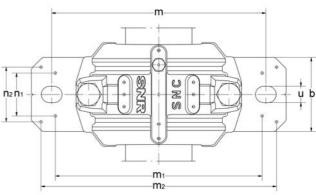
<sup>3)</sup> Optional V-ring available for felt strip seal (FS).

(43)









d	Тур	D	а	b	С	g	h	H I	m	dimer G	nsions U	v	h <sub>1</sub>	m <sub>1</sub>	n <sub>2</sub>	m <sub>2</sub>	n <sub>1</sub>		Weight approx <sup>1)</sup>
	SNC511	100	255	70	28	44	70	95		[mm] M16	18	24	127	200	49	234	40	56	[kg] 5,1
50	SNC611	120	275	80	30	51	80	110	230	M16	18	24	148	220	58	252	48	63	7,0
	SNC512	110	255	70	30	48	70	105	210	M16	18	24	133	200	54	234	40	64	5,4
55	SNC612	130	280	80	30	56	80	115	230	M16	18	24	155	220	58	257	48	72	7,3
60	SNC513	120	275	80	30	51	80	110	230	M16	18	24	148	220	58	252	48	63	7,0
60	SNC613	140	315	90	32	58	95	120	260	M20	22	28	175	252	66	288	52	72	10,4

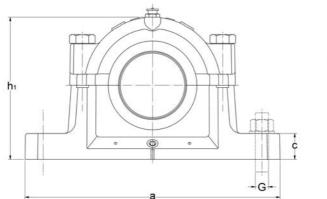
(44)

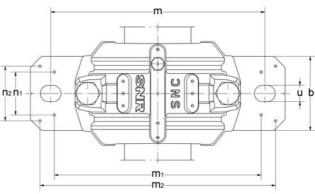


<sup>3)</sup> Optional V-ring available for felt strip seal (FS).









d	Тур	D	а	b	с	g	h	H I	m	g dimer G [mm]	nsions u	v	h <sub>1</sub>	m <sub>1</sub>	n <sub>2</sub>	m <sub>2</sub>	n <sub>1</sub>		Weight approx <sup>1)</sup> [kg]
	SNC515	130	280	80	30	56	80	115	230	M16	18	24	155	220	58	257	48	72	7,3
65	SNC615	160	345	100	35	65	100	140	290	M20	22	28	192	280	74	319	58	80	13,5
	SNC516	140	315	90	32	58	95	120	260	M20	22	28	175	252	66	288	52	72	10,4
70	SNC616	170	345	100	35	68	112	145	290	M20	22	28	212	280	70	317	58	88	15,6
76	SNC517	150	320	90	32	61	95	125	260	M20	22	28	183	252	66	292	52	76	10,2
75	SNC617	180	380	110	40	70	112	160	320	M24	26	32	215	300	78	348	66	104	18,4

(46)

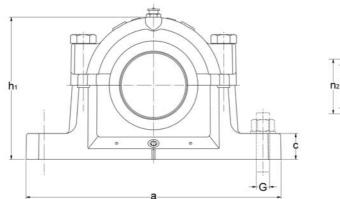


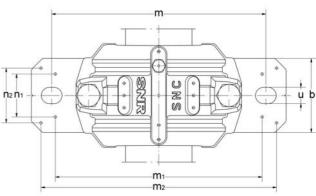
<sup>3)</sup> Optional V-ring available for felt strip seal (FS).

(47)









d	Тур	D	a	b	с	g	h	H( I	m	g dimer G [mm]	nsions U	; V	h <sub>1</sub>	m <sub>1</sub>	n <sub>2</sub>	m <sub>2</sub>	n <sub>1</sub>		Weight approx <sup>1)</sup> [kg]
	SNC518	160	345	100	35	65	100	140	290	M20	22	28	192	280	74	319	58	80	13,5
80	SNC618	190	380	110	40	74	112	160	320	M24	26	32	220	300	78	348	66	104	18,5
05	SNC519	170	345	100	35	68	112	145	290	M20	22	28	212	280	70	317	58	88	15,6
85	SNC619	200	410	120	45	80	125	175	350	M24	26	32	242	320	88	378	74	110	24,7
00	SNC520	180	380	110	40	70	112	160	320	M24	26	32	215	300	78	348	66	104	18,4
90	SNC620	215	410	120	45	86	140	185	350	M24	26	32	271	330	88	378	74	122	30,0

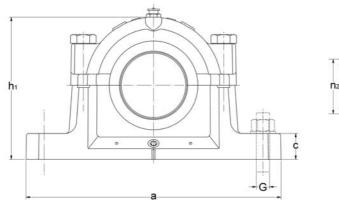


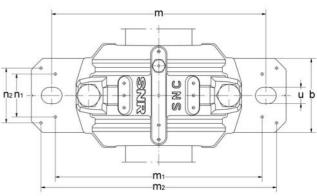
<sup>3)</sup> Optional V-ring available for felt strip seal (FS).

(49)









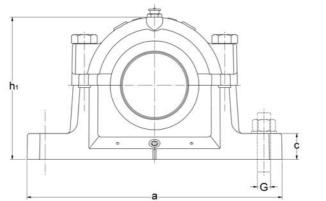
								H	ousing	g dimer	nsions	5							Weight
d	Тур	D	а	b	С	g	h	I	m	G [mm]	u	V	h <sub>1</sub>	m <sub>1</sub>	n <sub>2</sub>	m <sub>2</sub>	n <sub>1</sub>		approx <sup>1)</sup> [kg]
100	SNC522	200	410	120	45	80	125	175	350	M24	26	32	242	320	88	378	74	110	24,7
110	SNC524	215	410	120	45	86	140	185	350	M24	26	32	271	330	88	378	74	122	30,0
115	SNC526	230	445	130	50	90	150	190	380	M24	28	35	290	370	92	414	80	122	36,6
125	SNC528	250	500	150	50	98	150	205	420	M30	35	42	302	400	108	458	92	128	42,6
135	SNC530	270	530	160	60	106	160	220	450	M30	35	42	323	430	116	486	100	140	55,2
140	SNC532	290	550	160	60	114	170	235	470	M30	35	42	344	450	116	506	100	155	63,0

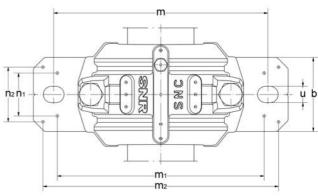


<sup>3)</sup> Optional V-ring available for felt strip seal (FS).









d	Тур	d <sub>1</sub>	D	а	b	с	g	h	Hous I	ing dimei m ( [mm]		s u	۷	h <sub>1</sub>	m <sub>1</sub>	n <sub>1</sub>	m <sub>2</sub>	n <sub>2</sub>		/eight pprox <sup>1)</sup> [kg]
05	SNC205	30	52	165	46	19	25	40	67	130 M	12 <sup>-</sup>	15	20	74	116	32	152	28	36	1,5
25	SNC305	30	62	185	52	22	32	50	77	150 M	12 -	15	20	89	130	38	172	25	44	2,1
	SNC206	35	62	185	52	22	32	50	77	150 M	12 -	15	20	89	130	38	172	25	44	2,1
30	SNC306	35	72	185	52	22	34	50	82	150 M	12 -	15	20	93	135	38	172	25	46	2,3
05	SNC207	45	72	185	52	22	34	50	82	150 M	12 -	15	20	93	135	38	172	25	46	2,3
35	SNC307	45	80	205	60	25	39	60	85	170 M	12 -	15	20	107	160	44	188	34	50	3,1

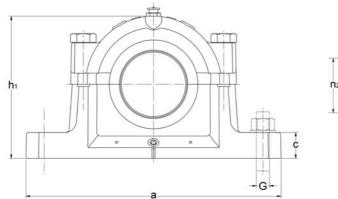


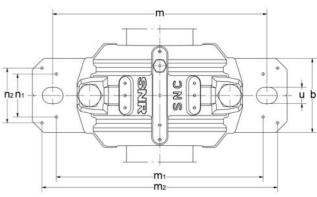
<sup>3)</sup>Optional V-ring available for felt strip seal (FS).

(53)









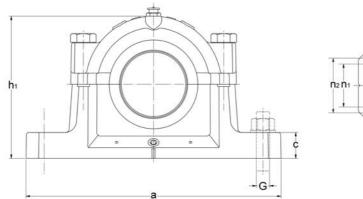
d	Тур	d <sub>1</sub>	D	a	b	С	g	h	Hous I	ing dime m [mm]	ensio G	ns u	v	h <sub>1</sub>	m <sub>1</sub>	n <sub>1</sub>	m <sub>2</sub>	n <sub>2</sub>	n <sub>3</sub> ap	/eight prox¹) [kg]
10	SNC208	50	80	205	60	25	39	60	85	170 N	V12	15	20	107	160	44	188	34	50	3,1
40	SNC308	50	90	205	60	25	41	60	90	170 N	V12	15	20	113	160	44	188	34	53	3,5
	SNC209	55	85	205	60	25	30	60	85	170 N	V12	15	20	110	160	44	188	34	44	3,1
45	SNC309	55	100	255	70	28	44	70	95	210 N	V16	18	24	127	200	49	234	40	56	5,0
	SNC210	60	90	205	60	25	41	60	90	170 N	V12	15	20	113	160	44	188	34	53	3,5
50	SNC310	60	110	255	70	30	48	70	105	210 N	V16	18	24	133	200	54	234	40	64	5,3

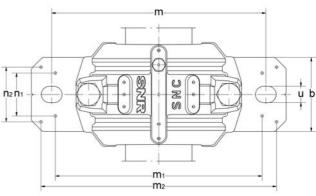


<sup>3</sup>Optional V-ring available for felt strip seal (FS).









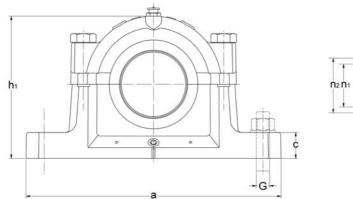
d	Тур	d <sub>1</sub>	D	а	b	с	g	h	Housi I	ing dim m [mm]	G	ns u	v	h <sub>1</sub>	m <sub>1</sub>	n <sub>1</sub>	m <sub>2</sub>	n <sub>2</sub>		/eight pprox <sup>1)</sup> [kg]
	SNC211	65	100	255	70	28	44	70	95	210	M16	18	24	127	200	49	234	40	56	5,0
55	SNC311	65	120	275	80	30	51	80	110	230	M16	18	24	148	220	58	252	48	63	6,7
	SNC212	70	110	255	70	30	48	70	105	210	M16	18	24	133	200	54	234	40	64	5,3
60	SNC312	70	130	280	80	30	56	80	115	230	M16	18	24	155	220	58	257	48	72	7,0
	SNC213	75	120	275	80	30	51	80	110	230	M16	18	24	148	220	58	252	48	63	6,7
65	SNC313	75	140	315	90	32	58	95	120	260	M20	22	28	175	252	66	288	52	72	9,5

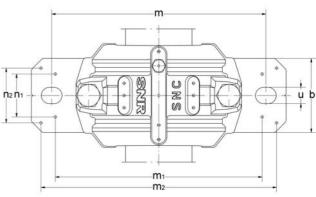


<sup>3)</sup>Optional V-ring available for felt strip seal (FS).

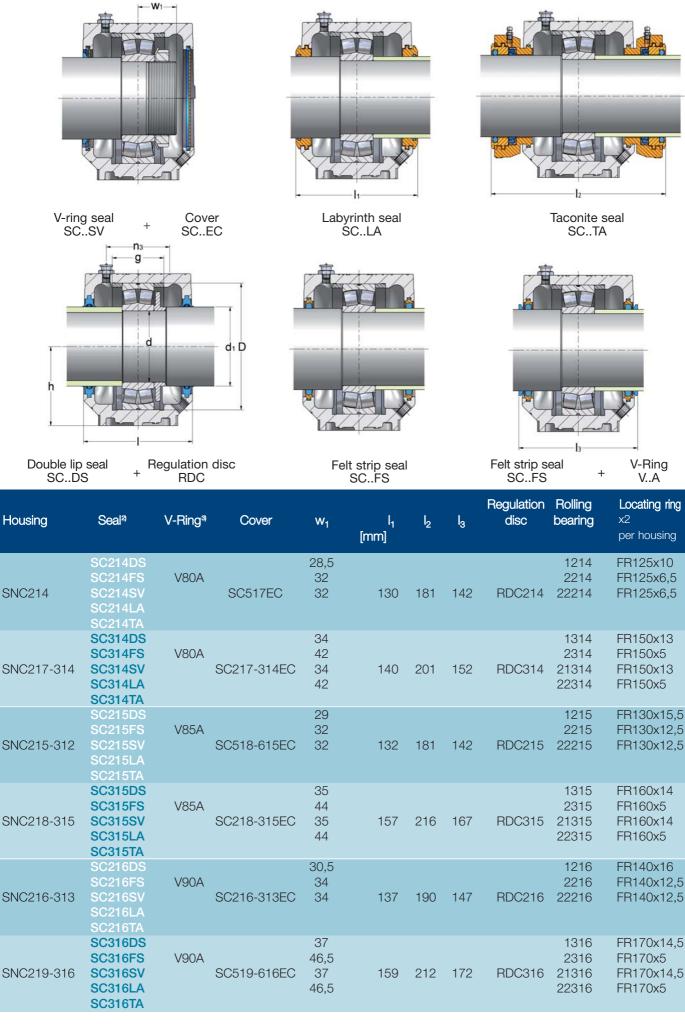








									Housi	ing din	nensio	ns							۷	Veight
d	Тур	d <sub>1</sub>	D	а	b	С	g	h	I	m [mm	G	u	V	h <sub>1</sub>	m <sub>1</sub>	n <sub>1</sub>	m <sub>2</sub>	n <sub>2</sub>		oprox <sup>1)</sup> [kg]
70	SNC214	80	125	275	80	30	44	80	115	230	M16	18	23	154	220	58	252	48	66	7,6
70	SNC314	80	150	320	90	32	61	95	125	260	M20	22	28	183	252	66	292	52	76	9,8
	SNC215	85	130	280	80	30	56	80	115	230	M16	18	24	155	220	58	257	48	72	7,0
75	SNC315	85	160	345	100	35	65	100	140	290	M20	22	28	192	280	74	319	58	80	12,4
0.0	SNC216	90	140	315	90	32	58	95	120	260	M20	22	28	175	252	66	288	52	72	9,5
80	SNC316	90	170	345	100	35	68	112	145	290	M20	22	28	212	280	70	317	58	88	15,5

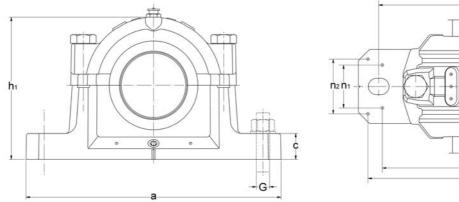


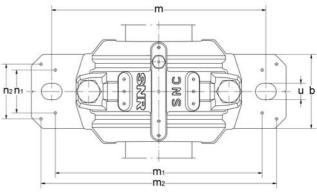
<sup>3)</sup>Optional V-ring available for felt strip seal (FS).

(59)









									Housi		nensio	ns							W	/eight
d	Тур	d <sub>1</sub>	D	а	b	С	g	h	I	m [mm	G 1]	u	V	h <sub>1</sub>	m <sub>1</sub>	n <sub>1</sub>	m <sub>2</sub>	n <sub>2</sub>		prox <sup>1)</sup> [kg]
05	SNC217	95	150	320	90	32	61	95	125	260	M20	22	28	183	252	66	292	52	76	9,8
85	SNC317	95	180	380	110	40	70	112	160	320	M24	26	32	215	300	78	348	66	104	18,7
00	SNC218	100	160	345	100	35	65	100	140	290	M20	22	28	192	280	74	319	58	80	12,4
90	SNC318	100	190	380	110	40	74	112	160	320	M24	26	32	220	300	78	348	66	104	18,5
05	SNC219	110	170	345	100	35	68	112	145	290	M20	22	28	212	280	70	317	58	88	15,5
95	SNC319	110	200	410	120	45	80	125	175	350	M24	26	32	242	320	88	378	74	110	24,8



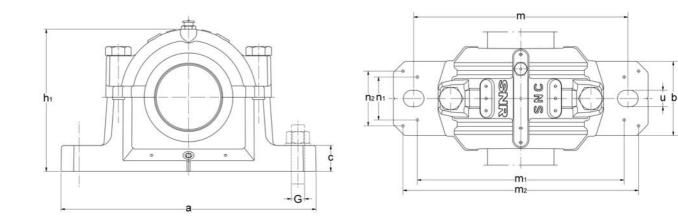
 $^{\mbox{\tiny 2)}}$  Seals must be ordered for each side of the housing.

<sup>3</sup> Optional V-ring available for felt strip seal (FS).

(61)







d	Тур	d <sub>1</sub>	D	а	b	с	g	h	Housi I	ng dir m [mm	nensio G 1]	ins U	v	h <sub>1</sub>	m <sub>1</sub>	n <sub>1</sub>	m <sub>2</sub>	n <sub>2</sub>	Weight n <sub>3</sub> approx¹) [kg]
<b>#</b> 100	SNC220	115	180	380	110	40	70	112	160	320	M24	26	32	215	300	78	348	66	104 18,7
	SNC320	115	215	410	120	45	86	140	185	350	M24	26	32	271	330	88	378	74	122 30,4
110	SNC222	125	200	410	120	45	80	125	175	350	M24	26	32	242	320	88	378	74	110 24,8
120	SNC224	135	215	410	120	45	86	140	185	350	M24	26	32	271	330	88	378	74	122 30,4
130	SNC226	145	230	445	130	50	90	150	190	380	M24	28	35	290	370	92	414	80	122 36,6
140	SNC228	155	250	500	150	50	98	150	205	420	M30	35	42	302	400	108	458	92	128 42,5



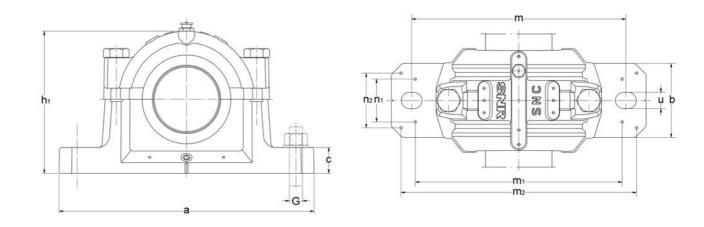
 $^{\mbox{\tiny 2)}}$  Seals must be ordered for each side of the housing.

<sup>3)</sup> Optional V-ring available for felt strip seal (FS).

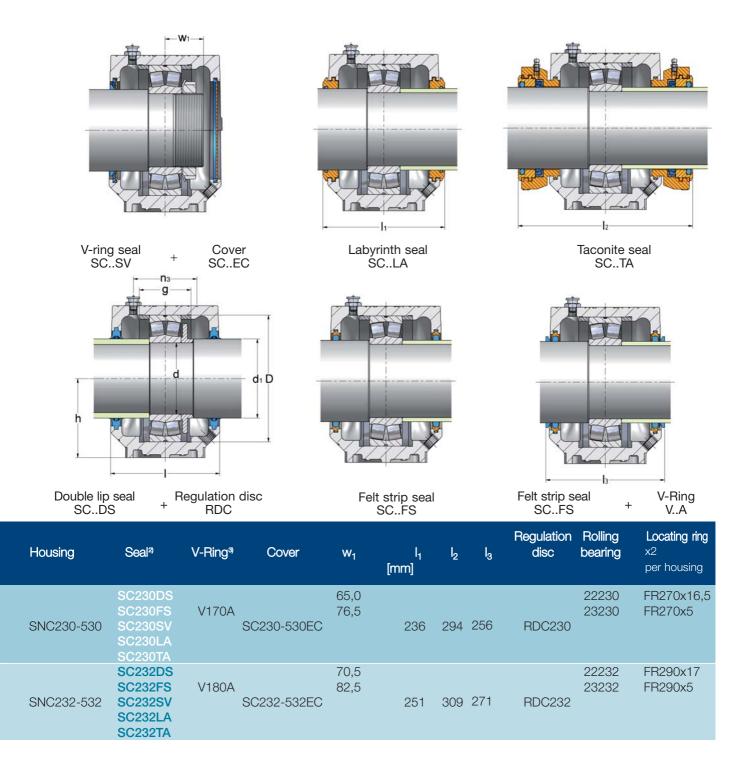
(63)







d	Тур	d <sub>1</sub>	D	а	b	С	g	h	Housi I	ng dir m [mm	nensio G າ]	uns u	v	h <sub>1</sub>	m <sub>1</sub>	n <sub>1</sub>	m <sub>2</sub>	n <sub>2</sub>	Weight n <sub>3</sub> approx¹) [kg]
15	0 SNC230	165	270	530	160	60	106	160	220	450	M30	35	42	323	430	116	486 10	0 14	40 55,2
16	0 SNC232	175	290	550	160	60	114	170	235	470	M30	35	42	344	450	116	506 10	00 15	55 63,0







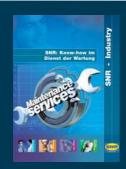


## Maintenance: SNR tools for mounting and removal of rolling bearings

Know-how and cleanliness are crucial for mounting and removing rolling bearings. SNR offers tools tailored to your requirements to extend the service life of your rolling bearings and to ensure your productivity levels.

- ① Induction heating device: Fast Therm 20/35/150/300/600/1000
- ② Mounting case
- ③ Wrench for standard and precision locknuts
- (4) Hydraulic extractor 10T
- (5) Heat protection gloves, Kevlar®





All products in this area can be found in our SNR Maintenance catalogue, which contains 64 pages of solutions for:

(5)

- Lubrication
- Mounting and removal
- Measurements and monitoring

(66)

- Vibration analysis, training...



Correct greasing of a bearing arrangement is a prerequisite for fault-free operation.

67

## Lubrication recommendations

- Choose appropriate grease types for the operating conditions.
- Use correct grease quantity.
- Avoid soiling during mounting, removal and maintenance.
- Schedule to relubrication periods;
- Use SNR lubricants and relubrication equipment.

## **Relubrication**

For applications with high speeds and temperatures, relubrication of the rolling bearings is necessary. The bearing must rotate during relubrication to ensure even distribution of the grease. We recommend that you do **not** change the grease type.

# SNR products for common applications

- ① The SNR-LUB range is specially designed for self-aligning roller bearings:
  - **SNR-LUB EP grease**, extremely resistant to pressure: high loads at normal speeds.
  - SNR-LUB VX grease, high loads and low speeds: recommended for vibration applications.
  - SNR-LUB FV grease, low speeds.
- 0 Special grease gun for bearings
- 3 Automatic lubricator







## Continuous and/or periodic vibration monitoring

90% of premature damage can be attributed to external causes. We therefore recommend that the condition of the rolling bearing is monitored repeatedly. Periodic or continuous monitoring enables damage to be identified in its initial stages. This allows precautionary replacement of the defective bearing to be planned and avoids unscheduled standstill times. A series of typical indicators can be specified, based on the machine arrangement:

Noise level, lubrication, operating temperature of bearing, contamination, moisture

In association with **01dB-Metravib**, SNR offers a complete range of monitoring equipment for analysing environmental influences that can impair the functioning of rolling bearings and your machines.

Our vibratory application expertise services will allow you to define:

- the monitoring methods and inspections means,
- the inspection periods,
- the organization to be put in place,
- the formal result recording process.

# The laser sighting thermometer

Monitoring of rolling bearing temperature during operation.

## Calibrated thickness gauges

68

Measurement of radial clearance from self-aligning roller bearings.









# **SNR : SNC Pillow Block Housings**

Designed for the most applications in machine and plant engineering, the SNR Pillow Blocks always offer the optimum solution.



