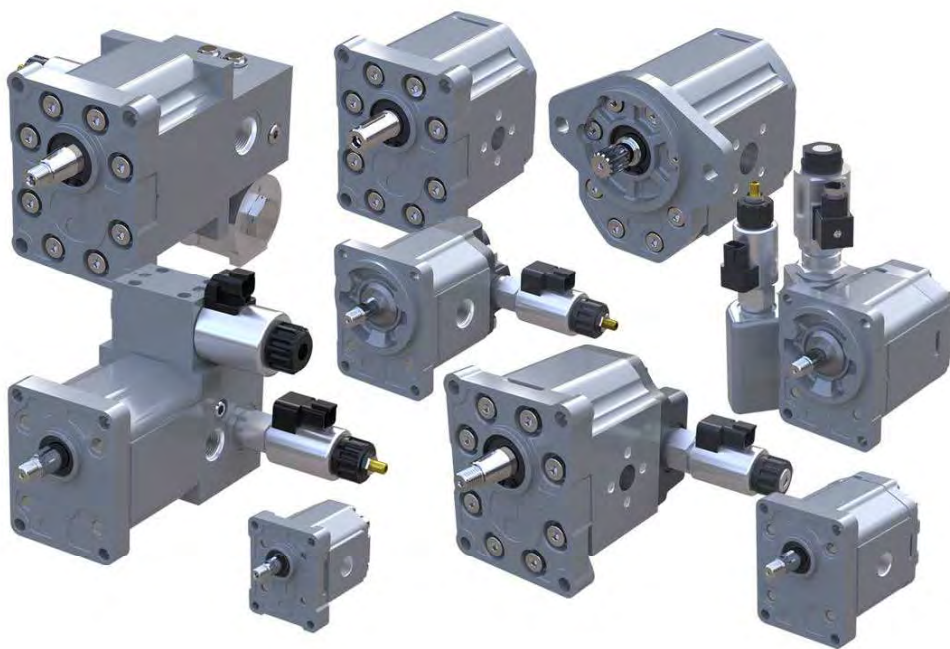


Technical Information

Gear Motors

Group 1, 2, and 3





Hydraulik · Automation

Danfoss

Technical Information

Gear Motors Group 1, 2, and 3

Revision history

Table of revisions

Date	Changed	Rev
July 2021	Minor corrections to data made	0102
October 2019	First edition	0101

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General information

Overview

The Danfoss Gear Motors is a range of peak performance fixed displacement hydraulic motors available in three different frame sizes: Group 1, Group 2, and Group 3, all as uni- and bidirectional version.

Constructed of a high strength extruded aluminum body with aluminum rear cover and aluminum front flange, all motors are balanced for exceptional efficiency and designed to ensure an excellent starting torque and, in the bidirectional version, to guarantee the ability to work with high back pressure and extremely low system pressure.

The flexibility of the range in each frame size combined with the high efficiency and low starting torque makes the Danfoss Gear Motors ideal for a wide range of applications sectors including on- and off-highway hydraulic fan drive systems, turf care, road bidge, fork lifts and municipal.

All the unidirectional motors have the same construction of the correspondent pump as well but, with inlet and outlet positioned at the opposite side for the same rotation.

Some representatives of gear motors

SKM1NN 06SA



SNM2NN9JDB





General information

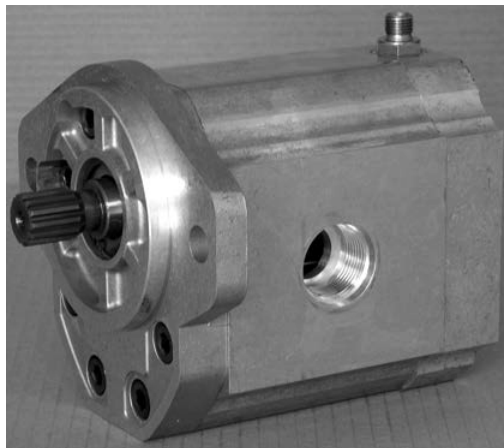
SNM3NN01BA



SNU2NN 06SA

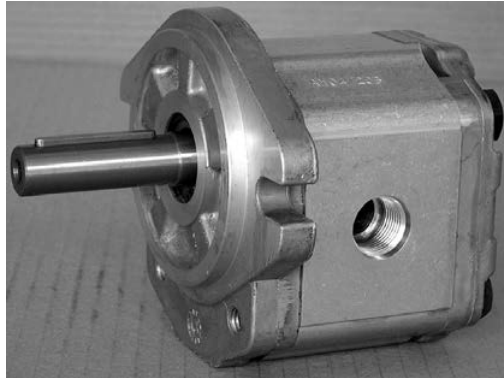


SNM3NL 07SA



Technical Information
Gear Motors Group 1, 2, and 3
General information

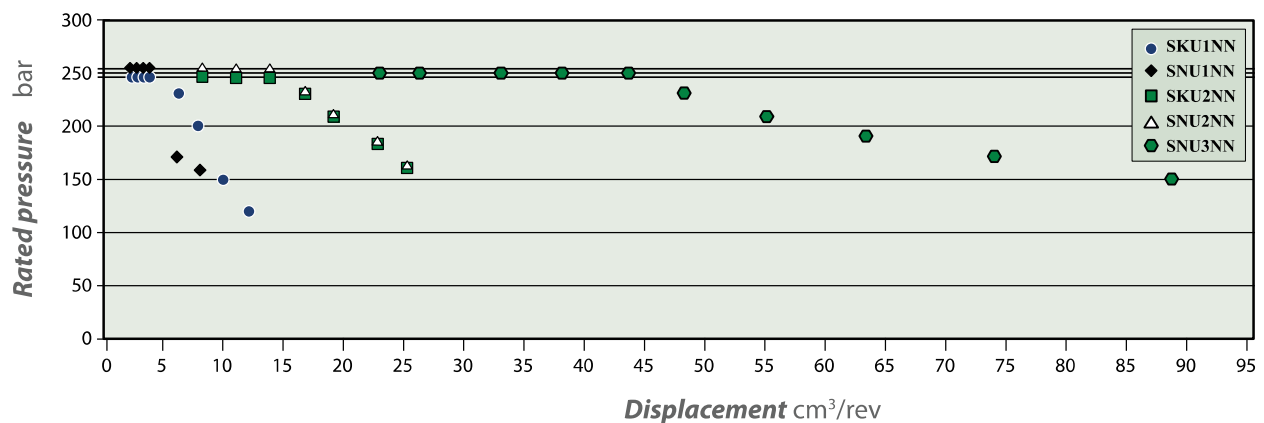
SNU2NN 06GB


Features and benefits

- Three groups of frame sizes (Group 1, 2 and 3)
- Displacements from 2.6 to 90 cm³/rev [from 0.158 to 5.49 in³/rev]
- Available in uni- and bidirectional version for all the frame sizes, displacements and configurations
- Rated pressure up to 250 bar [3625 psi]
- Back pressure capability up to 250 bar [3625 psi]
- Speeds up to 4000 min⁻¹ (rpm) for Group 1 and 2, and up to 2500 min⁻¹ (rpm) for Group 3
- SAE, ISO and DIN mounting flanges and shafts
- Available with integrated relief valve in the Group 2 frame size and integrated anti-cavitation valve in Group 2 and Group 3 frame sizes

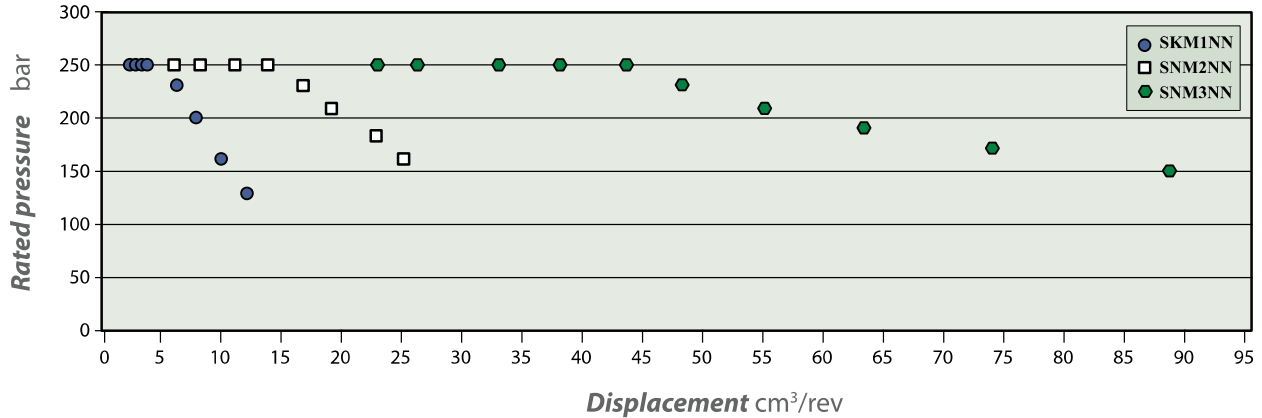
Motor displacements

Quick reference chart for unidirectional motor models (Group 1, 2 and 3)



General information

Quick reference chart for bidirectional motor models (Group 1, 2 and 3)


Determination of nominal motor size
Based on SI units

$$Q_e = \frac{V_g \cdot n}{1000 \cdot \eta_v}$$

$$M_e = \frac{V_g \cdot \Delta p \cdot \eta_{mh}}{20 \cdot \pi}$$

$$P_e = \frac{M_e \cdot n}{9550} = \frac{Q_e \cdot \Delta p \cdot \eta_t}{600}$$

$$n = \frac{Q_e \cdot 1000 \cdot \eta_v}{V_g}$$

Where:

Q_e	Input flow [l/min]
M_e	Output torque [N·m]
P_e	Output power [kW]
n	Speed [min ⁻¹]
V_g	Motor displacement per rev. (cm ³ /rev)
P_{high}	High pressure (bar)
P_{low}	Low pressure (bar)
Δp	High pressure minus Low pressure (bar)
η_v	Motor volumetric efficiency
η_{mh}	Mechanical-hydraulic efficiency
η_t	Motor total efficiency (η _v · η _{mh})

Based on US units

$$Q_e = \frac{V_g \cdot n}{231 \cdot \eta_v}$$

$$M_e = \frac{V_g \cdot \Delta p \cdot \eta_{mh}}{2 \cdot \pi}$$

$$P_e = \frac{V_g \cdot n \cdot \Delta p \cdot \eta_t}{396\,000}$$

$$n = \frac{Q_e \cdot 231 \cdot \eta_v}{V_g}$$

Where:

Q_e	Input flow [US gal/min]
M_e	Output torque [lb·in]
P_e	Output power [hp]
n	Speed [rpm]
V_g	Motor displacement per rev. [in ³ /rev]
P_{high}	High pressure [psi]
P_{low}	Low pressure [psi]
Δp	High pressure minus Low pressure [psi]
η_v	Motor volumetric efficiency
η_{mh}	Mechanical-hydraulic efficiency
η_t	Motor total efficiency (η _v · η _{mh})

System Requirements

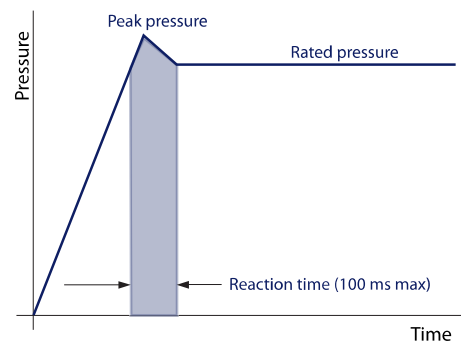
Pressure

Peak pressure is the highest intermittent pressure allowed.

The relief valve overshoot (reaction time) determines peak pressure. It is assumed to occur for less than 100 ms.

The illustration to the right shows peak pressure in relation to rated pressure and reaction time (100 ms maximum).

Rated pressure is the average, regularly occurring operating inlet pressure that should yield satisfactory product life. The maximum machine load at the motor shaft determines rated pressure



System pressure is the differential between the inlet and outlet ports. It is a dominant operating variable affecting hydraulic unit life. High system pressure, resulting from high load at the motor shaft, reduces expected life. System pressure must remain at, or below, rated pressure during normal operation to achieve expected life.

Back pressure is the average, regularly occurring operating outlet pressure that should yield satisfactory bidirectional motor life. The hydraulic load demand downstream of the motor determines the back pressure. Unidirectional motors cannot work with back pressure and the maximum back pressure allowed is 5 bar [72 psi] rated and 7 bar [101 psi] as peak.

Case Drain Pressure is the regularly occurring case drain line pressure that should yield satisfactory bidirectional motor life. It is recommended to design the case drain piping connecting the case drain direct to the tank in order to keep the case drain pressure as low as possible. The max. continuous case drain pressure allowed is 5 bar [72 psi] rated and 7 bar [101 psi] as peak.

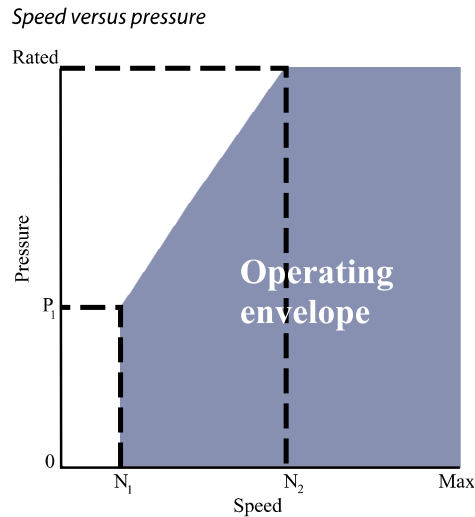
Speed

Maximum speed is the limit recommended by Danfoss for a particular gear motor when operating at rated pressure. It is the highest speed at which normal life can be expected.

The lower limit of operating speed is the minimum speed. It is the lowest speed at which normal life can be expected.

The minimum speed increases as operating system pressure increases. When operating under higher pressures, a higher minimum speed must be maintained, as illustrated below.

System Requirements



Where:

N_1 = Minimum speed at 100 bar

N_2 = Minimum speed at rated pressure

Hydraulic Fluids

Ratings and data for gear motors are guaranteed when the hydraulic system operates with premium hydraulic fluids without containing oxidation, rust, or foam inhibitors.

These fluids have to work with good thermal and hydrolytic stability to prevent wear, erosion, or corrosion of internal components. They include:

- Hydraulic fluids following DIN 51524, part 2 (HLP) and part 3 (HVLP) specifications
- API CD engine oils conforming to SAE J183
- M2C33F or G automatic transmission fluids
- Certain agricultural tractor fluids

Caution

Use only clean fluid in the gear motors and hydraulic circuit. Never mix hydraulic fluids.

Temperature and Viscosity

Temperature and viscosity requirements must be concurrently met. Use of petroleum/mineral-based fluids is highly recommended.

High temperature limits apply at the inlet port of the motors. The motors should operate at or below the maximum continuous temperature. The peak temperature is based on material properties.

Don't exceed it.

Minimum (cold start) temperature relates to the physical properties of component materials.

Cold oil, generally, doesn't affect the durability of motors components. It may affect the ability of oil to flow and transmit power. For this reason, keep the temperature at 16°C [60 °F] above the pour point of the hydraulic fluid.

System Requirements

Temperature limits (with standard NBR seals)

Minimum (cold start)	Maximum continuous	Peak (intermittent)
-20°C [-4°F]	80°C [176°F]	90°C [194°F]

Minimum viscosity occurs only during brief occasions of maximum ambient temperature and severe duty cycle operation.

Maximum viscosity occurs at cold start only. During this condition, limit speeds until the system warms up.

- Size heat exchangers to keep the fluid within these limits
- Test regularly to verify that these temperatures and viscosity limits aren't exceeded
- Keep the fluid viscosity in the recommended viscosity range for maximum unit efficiency and bearing life

Fluid viscosity limits, in mm²/s [SUS]

Maximum (cold start)	Recommended range	Range for high efficiency	Minimum
1600 [7273]	12-100 [66-456]	20-50 [97-231]	10 [60]

Filtration

Filters

Use a filter that conforms to Class 22/18/13 of ISO 4406 (or better). It may be on the motor outlet (discharge filtration) or inlet (pressure filtration).

Selecting a filter

When selecting a filter, please consider:

- Contaminant ingress rate (determined by factors such as the number of actuators used in the system)
- Generation of contaminants in the system
- Required fluid cleanliness
- Desired maintenance interval
- Filtration requirements of other system components

Measure filter efficiency with a Beta ratio (β_x). β_x ratio is a measure of filter efficiency defined by ISO 4572. It is the ratio of the number of particles greater than a given diameter (in microns) upstream of the filter to the number of these particles downstream of the filter.

- For discharge filtration with controlled reservoir ingress, use a $\beta_{35-45} = 75$ filter
- For pressure filtration, use a filtration with an efficiency of $\beta_{10} = 75$

The filtration requirements for each system are unique. Evaluate filtration system capacity by monitoring and testing prototypes.

Fluid cleanliness level and β_x ratio

Fluid cleanliness level (per ISO 4406)	Class 22/18/13 or better
β_x ratio (discharge filtration)	$\beta_{35-45} = 75$ and $\beta_{10} = 2$
β_x ratio (pressure or return filtration)	$\beta_{10} = 75$
Recommended inlet screen size	100 – 125 μm [0.004 – 0.005 in]

Reservoir

The **reservoir** provides clean fluid, dissipates heat, removes entrained air, and allows fluid volume changes associated with fluid expansion and cylinder differential volumes. A correctly sized reservoir

System Requirements

accommodates maximum volume changes during all system operating modes. It promotes de-aeration of the fluid as it passes through, and accommodates a fluid dwell-time between 60 and 180 seconds, allowing entrained air to escape.

Minimum reservoir capacity depends on the volume required to cool and hold the oil from all retracted cylinders, allowing for expansion due to temperature changes. A fluid volume of 1 to 3 times the pump output flow (per minute) is satisfactory. The minimum reservoir capacity is 125% of the fluid volume.

Install the suction line above the bottom of the reservoir to take advantage of gravity separation and prevent large foreign particles from entering the line. Cover the line with a 100-125 micron screen. The pump should be below the lowest expected fluid level.

Put the return-line below the lowest expected fluid level to allow discharge into the reservoir for maximum dwell and efficient deaeration. A baffle (or baffles) between the return and suction lines promotes deaeration and reduces fluid surges.

Line sizing-x

Choose pipe sizes that accommodate minimum fluid velocity to reduce system noise, pressure drops, and overheating. This maximizes system life and performance.

Design inlet piping that maintains continuous pump inlet pressure above 0.8 bar absolute during normal operation. The line velocity should not exceed the values in the table below:

Maximum line speed

Inlet	Outlet	Return
5 m/s [16.4 ft/sec]	2.5 m/s [8.2 ft/sec]	3 m/s [9.8 ft/sec]

Most systems use hydraulic oil containing 10% dissolved air by volume.

Over-aeration, or entrained air is the result of flow line restrictions, where the dissolved air comes out of solutions, or when air is allowed to leak into the hydraulic circuit. These include inadequate pipes size, sharp bends, or elbow fittings causing a reduction of flow-line cross-sectional area. This problem will not occur if these circuit recommendations are followed, rated speed requirements are maintained, and reservoir size and location are adequate.

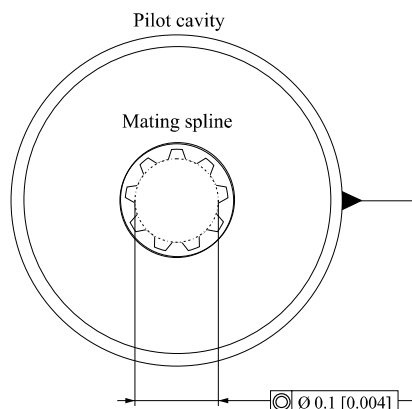
Motor shaft connection

Shaft options for gear motors include tapered, splined, and parallel shafts.

Plug-in drives, with a splined shaft, can impose severe radial loads when the mating spline is rigidly supported. Increasing spline clearance does not alleviate this condition.

Use plug-in drives only if the concentricity between the mating spline and pilot diameter is within 0.1 mm [0.004 in]. Lubricate the drive by flooding with oil. A three-piece coupling minimizes radial or thrust shaft loads.

Motor shaft connection

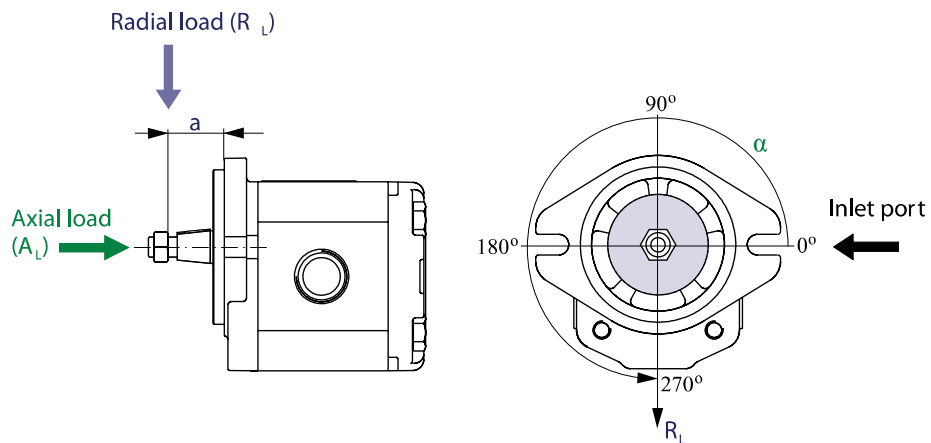


System Requirements

To avoid spline shaft damage, use carburized and hardened steel couplings with 80-82 HRA surface hardness.

Motor shaft load data form

Photocopy this page and fax the complete form to your Danfoss representative for an assistance. This illustration shows a motor with counterclockwise orientation:



Application data

Item	Value	Based on SI or US units	
Motor displacement		<input type="checkbox"/> cm ³ /rev	<input type="checkbox"/> in ³ /rev
Rated system pressure		<input type="checkbox"/> bar	<input type="checkbox"/> psi
Peak pressure			
Motor shaft rotation		<input type="checkbox"/> left	<input type="checkbox"/> right
Motor minimum speed		min ⁻¹ (rpm)	
Motor maximum speed			
Radial load	R₁	<input type="checkbox"/> N	<input type="checkbox"/> lbf
Angular orientation of radial load to inlet port	α	degree	
Axial load	A₁	<input type="checkbox"/> N	<input type="checkbox"/> lbf
Distance from flange to radial load	a	<input type="checkbox"/> mm	<input type="checkbox"/> in

Motor Life

Motor life is a function of speed, system pressure, and other system parameters (such as fluid quality and cleanliness).

All Danfoss gear motors use hydrodynamic journal bearings that have an oil film maintained between the gear/shaft and bearing surfaces at all times. If the oil film is sufficiently sustained through proper system maintenance and operating within recommended limits, long life can be expected.

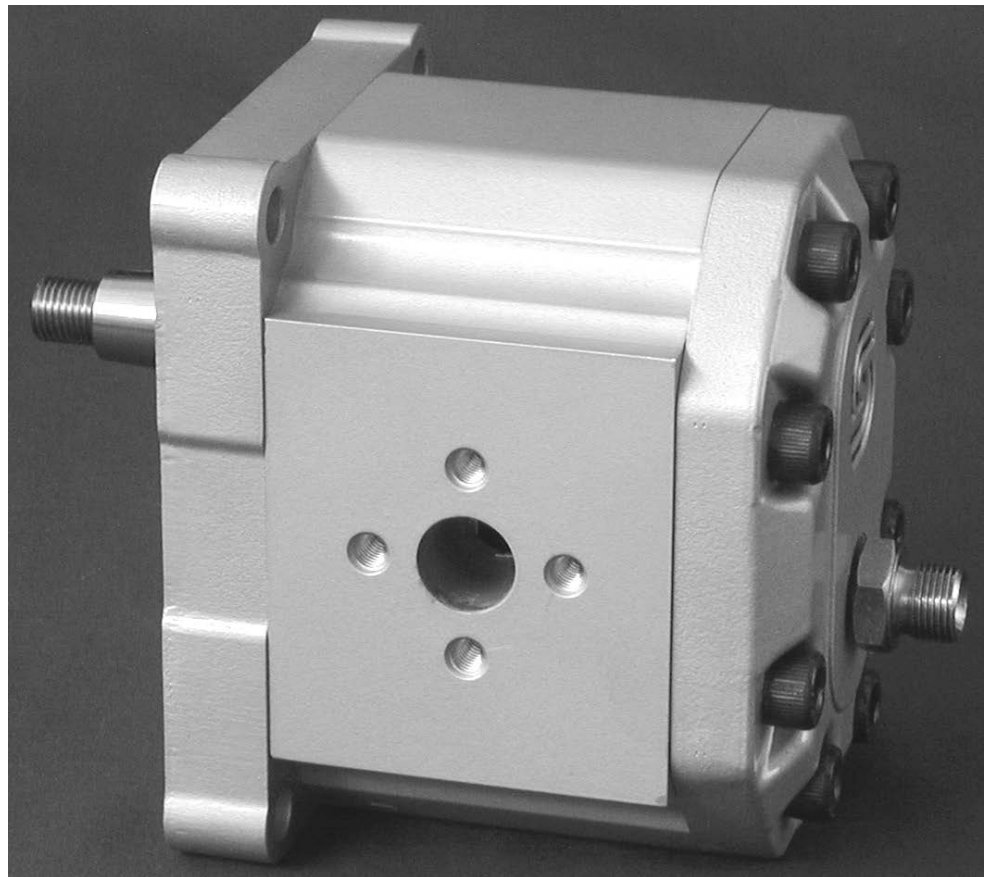
High pressure impacts motor life. When submitting an application for review, provide machine duty cycle data that includes percentages of time at various loads and speeds.

B₁₀ life expectancy number is generally associated with rolling element bearings. It does not exist for hydrodynamic bearings.

Danfoss strongly recommends a prototype testing program to verify operating parameters and their impact on life expectancy before finalizing any system design.

Group 3 Gear motors**Motor design****SNM3NN**

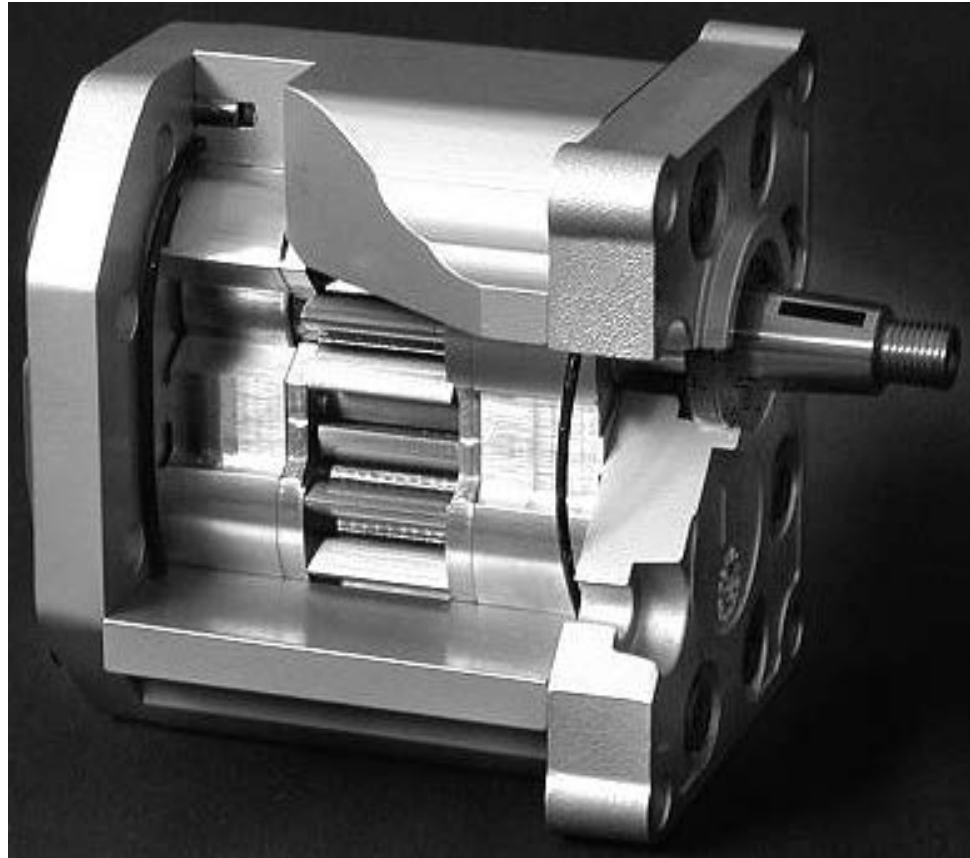
SNM3NN is the Group 3 bidirectional motor available in the whole displacements range from 22 up to 90 cm³/rev [1.35 up to 5.38 in³/rev].



Configurations include European and SAE flanges and shafts (01BA, 01FA, 01DA, 02AA, 02FA, 02DB, 03BB, 03FB, 06AA, 06DD, 07BC, 07GA, 07SA).

Group 3 Gear motors
SNU3NN

SNU3NN is the Group 3 unidirectional motor available in the whole displacements range from 22 up to 90 cm³/rev [1.35 up to 5.38 in³/rev].



The SNU3NN motor construction is derived from the correspondent pump SNP3.

Configurations include European and SAE flanges and shafts (01BA, 01FA, 01DA, 02AA, 02FA, 02DB, 03BB, 03FB, 03DB, 06AA, 06SA, 07BC, 07GA, 07SA).

Technical data

This table details the technical data for Group 3 gear motors based on the model and displacement configuration.

Technical data for Group 3 gear motors

		Frame size									
		022	026	033	038	044	048	055	063	075	090
Displacement	cm ³ /rev [in ³ /rev]	22.1 [1.35]	26.2 [1.60]	33.1 [2.02]	37.9 [2.32]	44.1 [2.69]	48.3 [2.93]	55.2 [3.36]	63.4 [3.87]	74.4 [4.54]	88.2 [5.38]
SNU3NN (unidirectional)											
Peak pressure	bar [psi]	270 [3915]	270 [3915]	270 [3915]	270 [3915]	270 [3915]	250 [3625]	230 [3336]	210 [3045]	190 [2755]	170 [2465]
Rated pressure		250 [3625]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	230 [3336]	210 [3045]	190 [2755]	170 [2465]	150 [2175]

Technical Information
Gear Motors Group 1, 2, and 3
Group 3 Gear motors

Technical data for Group 3 gear motors (continued)

		Frame size									
		022	026	033	038	044	048	055	063	075	090
Minimum speed	min-1 (rpm)	800	800	800	800	800	800	800	600	600	600
Maximum speed		2500	2500	2500	2500	2300	2300	2300	2300	2100	2100
SNM3NN (bidirectional) motor in parallel											
Peak pressure	bar [psi]	270 [3915]	270 [3915]	270 [3915]	270 [3915]	270 [3915]	250 [3625]	230 [3336]	210 [3045]	190 [2755]	170 [2465]
Rated pressure		250 [3625]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	230 [3336]	210 [3045]	190 [2755]	170 [2465]	150 [2175]
Minimum speed	min-1 (rpm)	800	800	800	800	800	800	800	800	800	800
Maximum speed		2500	2500	2500	2500	2300	2300	2300	2300	2100	2100
SNM3NN (bidirectional) motor in series											
Peak pressure	bar [psi]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	230 [3336]	210 [3045]	190 [2755]	170 [2465]	150 [2175]
Rated pressure		250 [3625]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	230 [3336]	210 [3045]	190 [2755]	170 [2465]	150 [2175]
Minimum speed	min-1 (rpm)	800	800	800	800	800	800	800	800	800	800
Maximum speed		2500	2500	2500	2500	2300	2300	2200	2100	2100	2100
All (SNU3NN, SNM3NN)											
Weight	kg [lb]	6.8 [15.0]	6.8 [15.0]	7.2 [15.8]	7.3 [16.1]	7.5 [16.5]	7.6 [16.8]	7.8 [17.3]	8.1 [17.9]	8.5 [18.7]	8.9 [19.6]
Moment of inertia of rotating components	x 10 ⁻⁶ kg·m ² [x 10 ⁻⁶ lb·ft ²]	198 [4698]	216 [5126]	246 [5837]	267.2 [6341]	294.2 [6981]	312.2 [7408]	342.3 [8123]	378.3 [8977]	426.4 [10 118]	486.5 [11 545]

$$1 \text{ kg}\cdot\text{m}^2 = 23.68 \text{ lb}\cdot\text{ft}^2$$

 **Caution**

The rated and peak pressure mentioned are for motors with flanged ports only. When threaded ports are required a derated performance has to be considered. To verify the compliance of a high pressure application with a threaded ports pump apply to a Danfoss representative.

Model code
A Family

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
•	•	•	•	•	•	•	•	•	•	•	•	/	•	•

SNU3NN	Gr3 Unidirectional Motor
SNU3GN	Gr3 Unidirectional Motor+Anticav.Check Valve
SNM3NN	Gr3 Bidirectional Motor - Axial drain on cover
SNM3NL	Gr3 Bidirectional Motor-Vert.drain on rear cover
SNM3GN	Gr3 Bidirectional Motor-Anticav.Check Valve - Axial drain on cover
SNM3GL	Gr3 Bidirectional Motor-Anticav.Check Valve - Vert.drain on rear cover
SNM3DN	Gr3 Bidirectional Motor-Internal drain valve

Technical Information
 Gear Motors Group 1, 2, and 3

Group 3 Gear motors

B Displacement

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
	•	•	•									/		

022	22,1 cc
026	26,2 cc
033	33,1 cc
038	37,9 cc
044	44,1 cc
048	48,3 cc
055	55,2 cc
063	63,4 cc
075	74,4 cc
090	88,2 cc

C Rotation

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
		•										/		

L	Left (Counterclockwise)
R	Right (Clockwise)
B	Bidirectional

D Project version (value representing a change to the initial project)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
			•									/		

N	Std Version of Project
----------	------------------------

E Mounting flange

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
				•	•							/		

Code	Description (Type of flange · Type of drive gear · Preferred ports for configuration)
01	Pilot Ø50,8+4 holes (98,4x128,1)
02	Pilot Ø50,8+4 holes (98,4x137)
03	Pilot Ø60,3+4 holes (114,3x149,5)
06	Pilot Ø105+4 holes (102,0x145,0)
07	SAE B-pilot Ø101,6 -2 holes
08	SAE C-pilot Ø127 -4 holes
09	SAE A-pilot Ø82,55 -2 holes
91	Outrigger bearing typo 01 -Taper 1:8 M14x1,5 key 4x7,5

Technical Information
Gear Motors Group 1, 2, and 3
Group 3 Gear motors

Code	Description(Type of flange • Type of drive gear • Preferred ports for configuration)
9Y	Outrigger bearing type 07 -taper shaft 1:8-5/8-18UNF- Key6,375 with Dust Cover
D7	Pilot Ø101,6+2 holes - for double shaft seal - Special 07

F Drive Gear

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
					•	•						/		

AA	Taper 1:5-M16x1,5-Key 5
BA	Taper 1:8-M14x1,5-Key 4
BB	Taper 1:8-M16x1,5-Key 4,79
BC	Taper 1:8-5/8-18UNF-2A-Key 6,375
BP	Taper 1:8-5/8-18UNF-2A-Key 6,375 with NUT & WASHER (for flange 07)
DA	DIN5482 B22x19 L=24 (for flange type 01)
DD	DIN 5482 B28x25 L28 (for flange type 06)
FA	ParallelØ20-Key 5x5 L30 (for flange type 01-02)
FB	Parallel Ø22-Key 5x5 L40 (for flange type 03)
GA	Parallel Ø22,225 x L25,4-Key 6,375x6,375 L25,4
GB	ParallelØ22,225xL25,4-Key 6,375x6,375x25,4+thd hole:1/4-20UNC-2B
SA	SAE J498-13T-16/32-SAE B
SB	SAEJ498-13T-16/32-SAE A (for flange type 09)
RA	SAEJ498-14T-12/24-SAE C- 4 bolt (for flange type 08)
SH	SAE J498-15T-16/32 (for flange type 07)

G Rear Cover

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
						•	•					/		

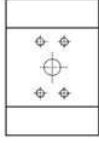
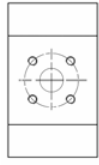
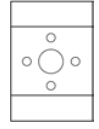

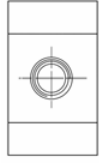

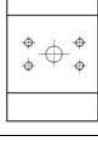
P1	Std cover for unidirectional motors
M1	Std cover motor axial drain on cover M14x1,5
M2	Std cover motor axial drain on cover M12x1,5 ISO6149
M6	Std cover motor axial drain on cover 9/16-18UNF-2B
MF	Std cover motor axial drain on cover drain 3/8 Gas
L1	Cover motor with radial drain on cover - Vertical M14x1,5
L2	Cover motor with radial drain on cover - Horizontal M14x1,5
L6	Cover motor with radial drain on cover - Vertical 9/16-18UNF-2B
LT	Cover motor with radial drain on cover - Vertical 9/16-18UNF-2B drain up
D1	Cover motor without drain (internal drained) - for SNM3DN series

H Inlet size; I Outlet size

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
							•	•	•	•		/		

Technical Information

Gear Motors Group 1, 2, and 3
Group 3 Gear motors

A2	18,5x22,23x47,63x3/8-16UNC	
A3	25x26,19x52,37x3/8-16UNC	
A4	31x30,18x58,72x7/16-14UNC	
A5	37,5/27x35,71x69,85x1/2-13UNC	
B7	20x40xM6	
BA	18x55xM8	
BB	27x55xM8	
BC	36x55xM8	
C3	13,5x30xM6	
C7	20x40xM8	
CA	27x51xM10	
CD	36x62xM10	
E5	7/8-14UNF	
E6	1-1/16-12UN	
E8	1-5/16-12UN	
E9	1-5/8-12UN	
EA	1-7/8-12UN	
H8	M27x2-ISO6149	
H9	M33x2-ISO6149	
F5	BSP 3/4 GAS	
F6	BSP 1 GAS	
F7	BSP 1-1/4 GAS	
M5	25x52,37x26,19xM10	
M6	31x30,18x58,72xM10	
M7	37,5x35,71x69,85xM12	
MG	25/20x52,37x26,19xM10(=) - Special	
MH	31x30,18x58,72xM10 deep18(=)	
MN	31x30,18x58,72xM10 deep12(=)	
MR	37,5x35,71x69,85xM12 deep20(=)	

J Ports pos & Spec body

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
									•	•		/		

NN	Std from catalog
PL*	Inlet port Left position looking gear drive from front flange

Group 3 Gear motors

PR*	Inlet port Right position looking gear drive from front flange
ZZ	Port Bx-Bx in the center of the body

* to be used if inlet-outlet are different

K Seals

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
											•	/			

N	Standard NBR seals
B	VITON seals
D	NBR seals + VITON shaft seal with dust lip
X	NBR seals + Dust Cover
Y	VITON seals + Dust Cover
Z	VITON shaft seal + Dust Cover

L Screws

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
											•	/			

N	Std burnished screws
B	Geomet screws - Anticorrosion screws

M Set valves

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
												/	•	•	•

NNN	No valve
------------	----------

N Type of mark

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
												/		•

N	Standard Danfoss Marking
A	Standard Danfoss Marking+Customer Code-Special
Z	Without Marking

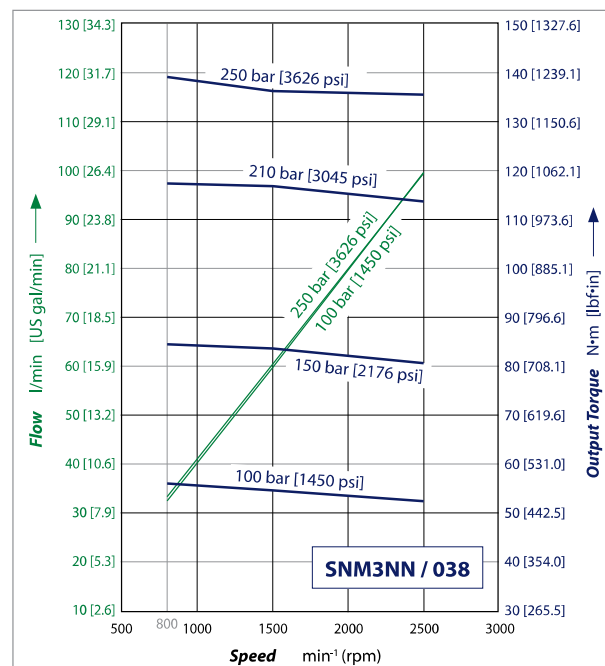
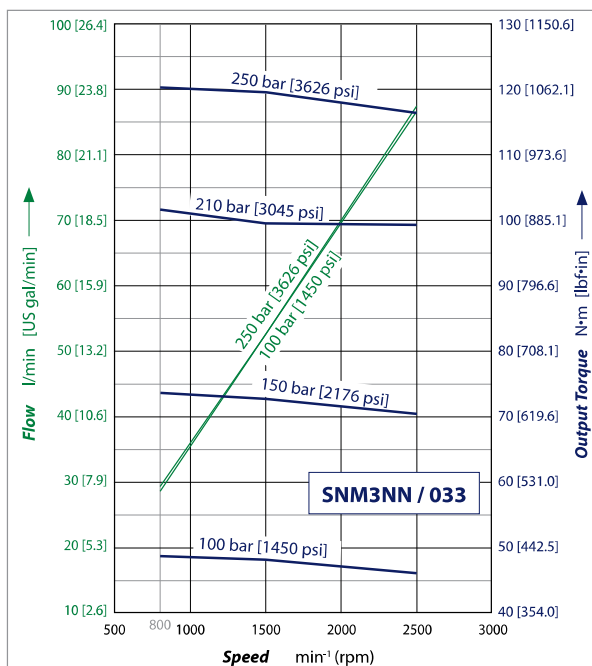
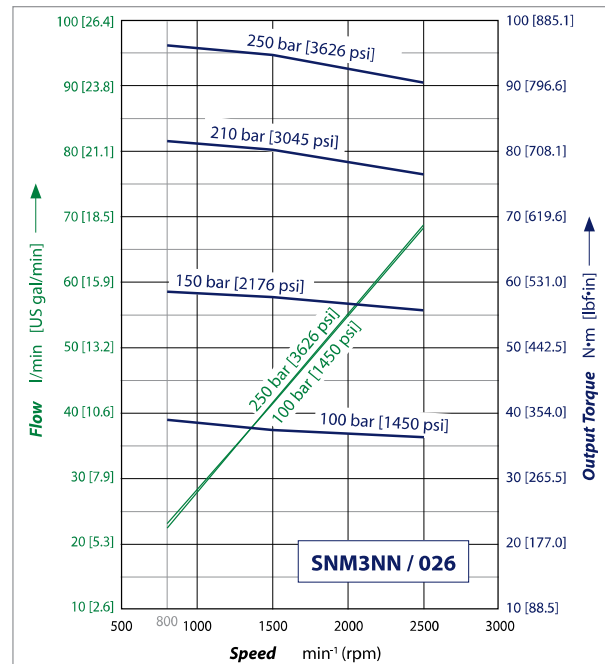
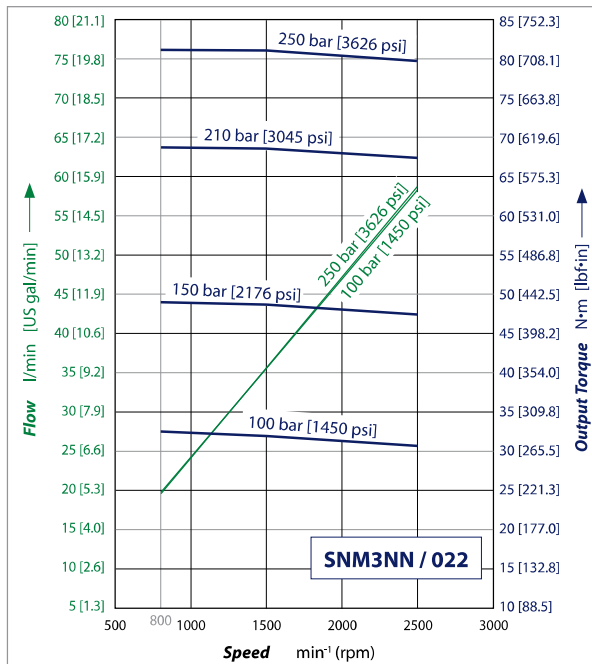
O Mark position

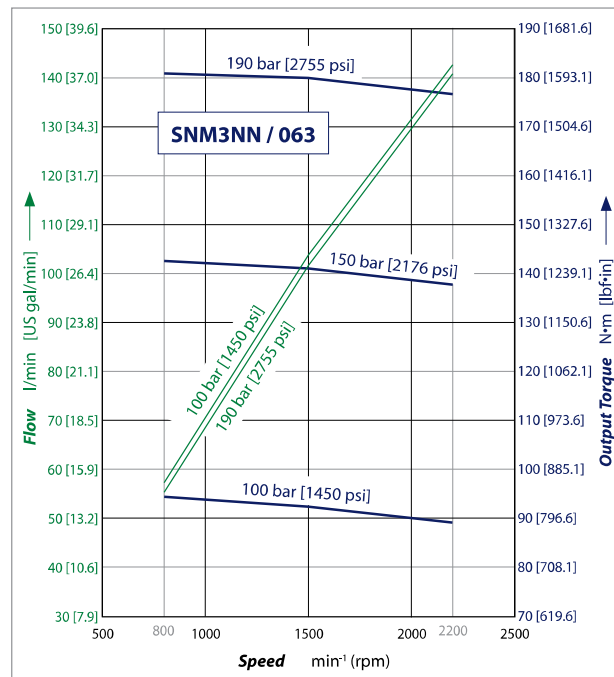
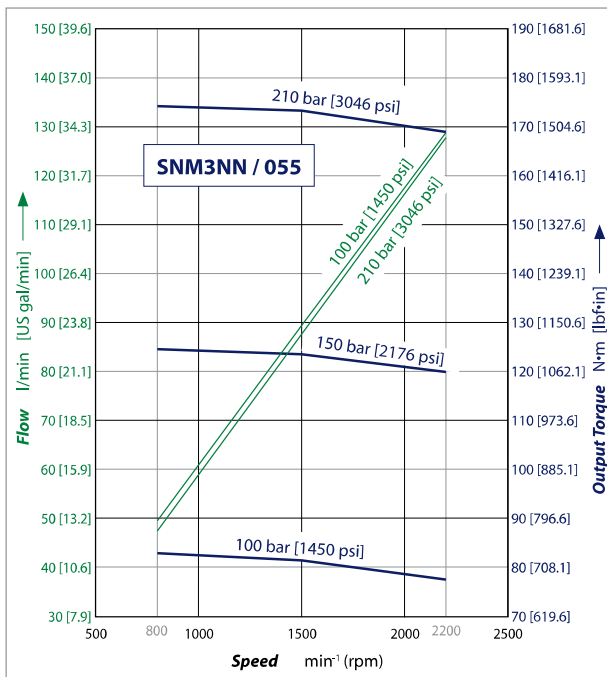
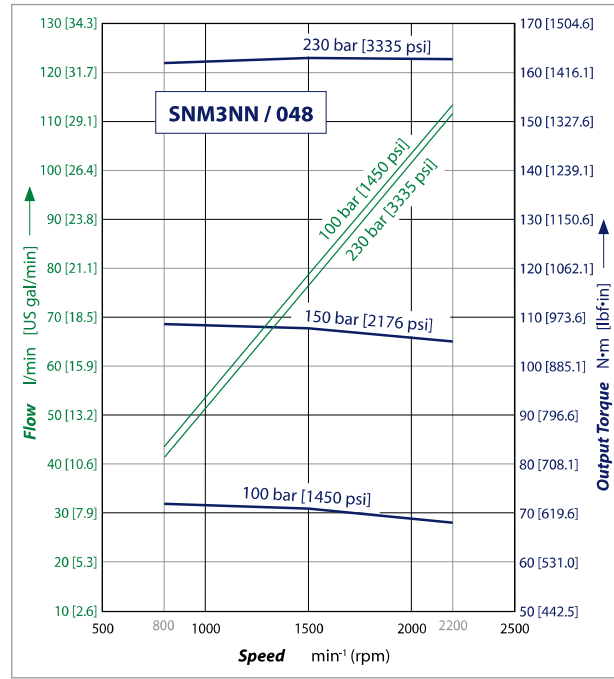
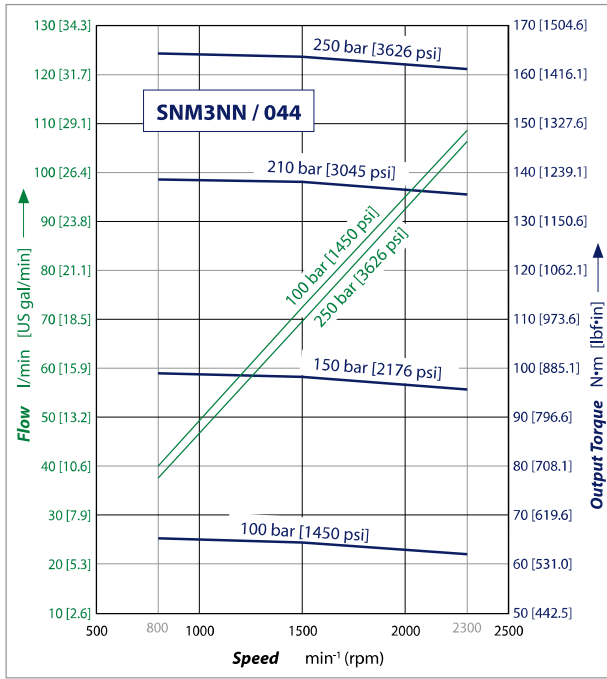
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
												/		•

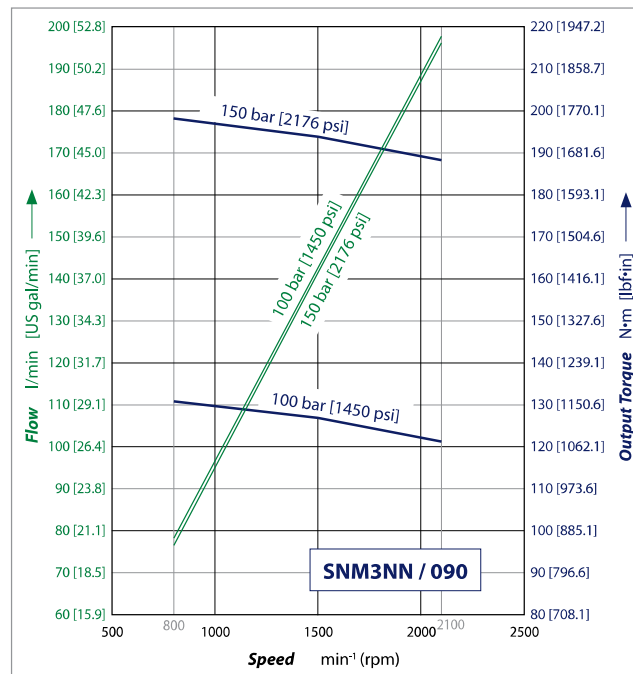
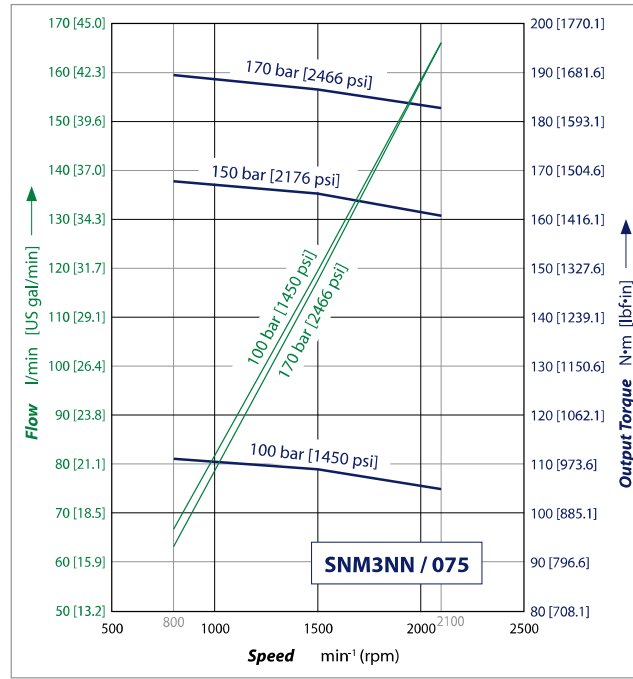
N	Std Marking position (on top)
A	Special Marking position on the bottom

Technical Information
Gear Motors Group 1, 2, and 3
Group 3 Gear motors
Motor performance graphs

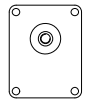
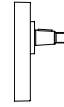
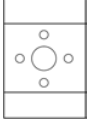
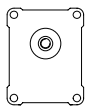
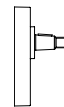
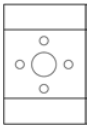
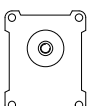
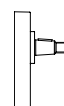
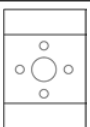
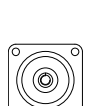
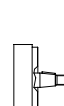

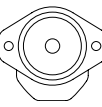
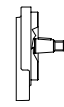
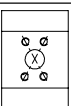
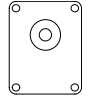
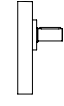
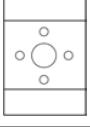
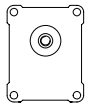
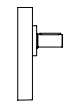
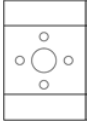
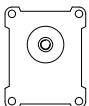
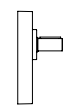
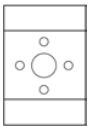
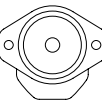
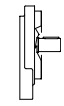
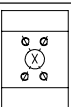
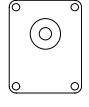
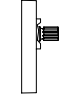
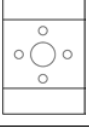
The following graphs on the next pages provide typical inlet flow and output torque for Group 3 motors at various working pressures. Data were taken using ISO VG46 petroleum /mineral based fluid at 50 °C [122 °F] (viscosity = 28 mm²/s [132 SUS]).



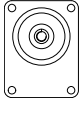
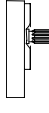

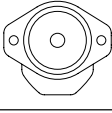
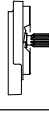
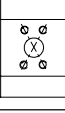

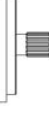
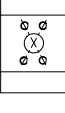
Technical Information
Gear Motors Group 1, 2, and 3
Group 3 Gear motors


Technical Information
Gear Motors Group 1, 2, and 3
Group 3 Gear motors


Group 3 Gear motors
Flange, shaft, and port configurations

Motor	Code	Flange	Shaft	Port
SNM3 SNU3	01BA	pilot Ø 50.8 mm [2.0 in] European 01 4- bolt 	1:8 tapered 	European flanged port + pattern 
SNM3 SNU3	02BA	pilot Ø 50.8 mm [2.0 in] European 02 4- bolt 	1:8 tapered 	European flanged port + pattern 
SNM3 SNU3	03BB	pilot Ø 60.3 mm [2.374 in] European 03 4- bolt 	1:8 tapered 	European flanged port + pattern 
SNM3 SNU3	06AA	pilot Ø 105 mm [4.133 in] German 4-bolt 	1:5 tapered 	German std ports port X pattern 
SNM3 SNU3	07BC	SAE B pilot Ø 101.6 2- bolt 	1:8 tapered 	Vertical four bolt flanged port 
SNM3 SNU3	01FA	pilot Ø 50.8 mm [2.0 in] European 01 4- bolt 	Ø 20 mm [0.787 in] parallel 	European flanged port + pattern 
SNM3 SNU3	02FA	pilot Ø 50.8 mm [2.0 in] European 02 4- bolt 	Ø 20 mm [0.787 in] parallel 	European flanged port + pattern 
SNM3 SNU3	03FB	pilot Ø 60.3 mm [2.374 in] European 03 4- bolt 	Ø 22 mm [0.866 in] parallel 	European flanged port + pattern 
SNM3 SNU3	07GA	SAE B pilot Ø 101.6 mm 2-bolt 	Ø 22.225 mm [0.875 in] parallel 	Vertical four bolt flanged port 
SNM3 SNU3	01DA	pilot Ø 50.8 mm [2.0 in] European 01 4- bolt 	Splined shaft 13T – m 1.60 DIN 5482 – B22 x 19 	European flanged port + pattern 

Technical Information
Gear Motors Group 1, 2, and 3
Group 3 Gear motors

Motor	Code	Flange	Shaft	Port
SNM3 SNU3	06DD	pilot Ø 105 mm [4.133 in] German 4-bolt 	Splined shaft 15T – m 1.60 DIN 5482 – B28 x 25 	German std ports port X pattern 
SNM3 SNU3	07SA	SAE B pilot Ø 101.6 mm 2-bolt 	Splined shaft SAE J498 13T – 16/32DP 	Vertical four bolt flanged port 
SNM3 SNU3	08RA	pilot Ø 127mm [5.0 in] SAE C, 4- bolt 	Splined shaft SAE J498 14T - 12/24DP 	Vertical four bolt flanged port 

Shaft and flange availability

This table details the standard Group 3 shafts and flange combinations that are currently available with the maximum shaft torque limits.

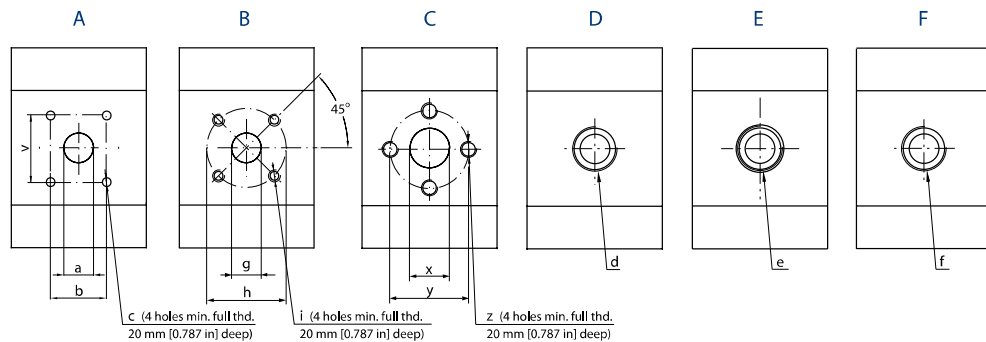
Shaft		Mounting flange code with maximum torque in Nm [lb*in]						
Cod e	Description	01	02	03	06	07	08	09
AA	Taper 1:5-M16x1,5-Key 5				300 [2655]			
BA	Taper 1:8-M14x1,5-Key 4	350 [3097]	350 [3097]					
BB	Taper 1:8-M16x1,5-Key 4,79			500 [4425]				
BC	Taper 1:8-5/8-18UNF-2A-Key 6,375					300 [2655]		
BP	Taper 1:8-5/8-18UNF-2A-Key 6,375 with NUT & WASHER (for flange 07)					300 [2655]		
DA	DIN 5482 B22x19 L=24 (for flange type 01)	290 [2566]	290 [2566]					
DD	DIN 5482 B28x25 L28 (for flange type 06)				450 [3982]			
FA	Parallel Ø20-Key 5x5 L30 (for flange type 01-02)	210 [1858]	210 [1858]					
FB	Parallel Ø22-Key 5x5 L40 (for flange type 03)			300 [2655]				
GA	Parallel Ø22,225 x L25,4-Key 6,375x6,375 L25,4					230 [2035]		

Technical Information
Gear Motors Group 1, 2, and 3
Group 3 Gear motors

Shaft		Mounting flange code with maximum torque in Nm [lb*in]						
Code	Description	01	02	03	06	07	08	09
GB	Parallel Ø22,225xL25,4- Key 6,375x6,375x25,4+thd hole:1/4-20UNC-2B					230 [2035]		
SA	SAE J498-13T-16/32- SAE B					270 [2389]		
SB	SAE J498-13T-16/32- SAE A (for flange type 09)							270 [2389]
RA	SAE J498-14T-12/24- SAE C-4 bolt (for flange type 08)						400 [3540]	
SH	SAE J498-15T-16/32- (for flange type 07)					400 [3540]		

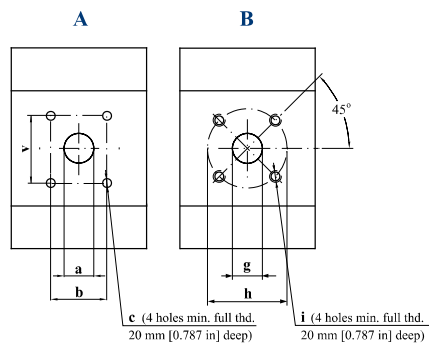
Ports dimensions
Bidirectional motor ports

Available ports for Group 3 bidirectional motors



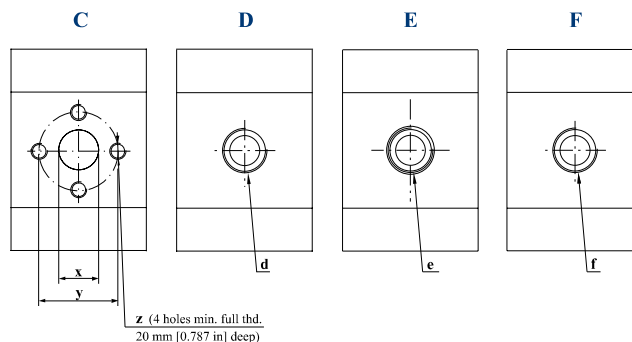
Technical Information
Gear Motors Group 1, 2, and 3
Group 3 Gear motors
Ports dimensions for bidirectional motors SNM3NN

Port type	A				B			C			D	E	F	
Dimensions	a	b	v	c	g	h	i	x	y	z	d	e	f	
Frame size	022	25.4 [1.0]	26.19 [1.031]	52.37 [2.061]	3/8-16UNC-2B	27 [1.063]	55 [2.165]	M8	20 [0.79]	40 [1.58]	M8	M26x1.5	15/16-12UN-2B	3/4 Gas (BSPP)
	026	25.4 [1.0]	26.19 [1.031]	52.37 [2.061]	3/8-16UNC-2B	27 [1.063]	55 [2.165]	M8	20 [0.79]	40 [1.58]	M8	M26x1.5	15/16-12UN-2B	3/4 Gas (BSPP)
	033	31.8 [1.251]	30.18 [1.188]	58.72 [2.311]	7/16-14UNC-2B	27 [1.063]	55 [2.165]	M8	27 [1.063]	51 [2.008]	M10	M33x2	15/8-12UN-2B	1 Gas (BSPP)
	038	31.8 [1.251]	30.18 [1.188]	58.72 [2.311]	7/16-14UNC-2B	27 [1.063]	55 [2.165]	M8	27 [1.063]	51 [2.008]	M10	M33x2	15/8-12UN-2B	1 Gas (BSPP)
	044	31.8 [1.251]	30.18 [1.188]	58.72 [2.311]	7/16-14UNC-2B	27 [1.063]	55 [2.165]	M8	27 [1.063]	51 [2.008]	M10	M33x2	15/8-12UN-2B	1 Gas (BSPP)
	048	31.8 [1.251]	30.18 [1.188]	58.72 [2.311]	7/16-14UNC-2B	27 [1.063]	55 [2.165]	M8	27 [1.063]	51 [2.008]	M10	M33x2	15/8-12UN-2B	1 Gas (BSPP)
	055	31.8 [1.251]	30.18 [1.188]	58.72 [2.311]	7/16-14UNC-2B	27 [1.063]	55 [2.165]	M8	27 [1.063]	51 [2.008]	M10	M33x2	15/8-12UN-2B	1 Gas (BSPP)
	063	31.8 [1.251]	30.18 [1.188]	58.72 [2.311]	7/16-14UNC-2B	36 [1.417]	55 [2.165]	M8	36 [1.417]	62 [2.441]	M10	M33x2	15/8-12UN-2B	1/4 Gas (BSPP)
	075	31.8 [1.251]	30.18 [1.188]	58.72 [2.311]	7/16-14UNC-2B	36 [1.417]	55 [2.165]	M8	36 [1.417]	62 [2.441]	M10	M33x2	15/8-12UN-2B	1/4 Gas (BSPP)
	090	31.8 [1.251]	30.18 [1.188]	58.72 [2.311]	7/16-14UNC-2B	36 [1.417]	55 [2.165]	M8	36 [1.417]	62 [2.441]	M10	M33x2	15/8-12UN-2B	1/4 Gas (BSPP)
Drain	M14 x 1.5											9/16-18UNF-2B		

Unidirectional motor ports
Available ports for Group 3 unidirectional motors


Group 3 Gear motors
Ports dimensions for unidirectional motors SNU3NN

Port type			A				B		
Dimensions			a	b	c	v	g	h	i
Frame size	022	Outlet	20 [0.79]	40 [1.58]	M8	3/8-16UNC-2B	27 [1.063]	55 [2.165]	M8
		Inlet	20 [0.79]	40 [1.58]	M8	3/8-16UNC-2B	18 [0.709]	55 [2.165]	M8
	026	Outlet	20 [0.79]	40 [1.58]	M8	3/8-16UNC-2B	27 [1.063]	55 [2.165]	M8
		Inlet	20 [0.79]	40 [1.58]	M8	3/8-16UNC-2B	18 [0.709]	55 [2.165]	M8
	033	Outlet	27 [1.063]	51 [2.008]	M10	7/16-14UNC-2B	27 [1.063]	55 [2.165]	M8
		Inlet	20 [0.79]	40 [1.58]	M8	3/8-16UNC-2B	18 [0.709]	55 [2.165]	M8
	038	Outlet	27 [1.063]	51 [2.008]	M10	7/16-14UNC-2B	27 [1.063]	55 [2.165]	M8
		Inlet	20 [0.79]	40 [1.58]	M8	3/8-16UNC-2B	18 [0.709]	55 [2.165]	M8
	044	Outlet	27 [1.063]	51 [2.008]	M10	7/16-14UNC-2B	27 [1.063]	55 [2.165]	M8
		Inlet	27 [1.063]	51 [2.008]	M10	3/8-16UNC-2B	18 [0.709]	55 [2.165]	M8
	048	Outlet	27 [1.063]	51 [2.008]	M10	7/16-14UNC-2B	27 [1.063]	55 [2.165]	M8
		Inlet	27 [1.063]	51 [2.008]	M10	3/8-16UNC-2B	18 [0.709]	55 [2.165]	M8
	055	Outlet	27 [1.063]	51 [2.008]	M10	1/2-13UNC-2B	27 [1.063]	55 [2.165]	M8
		Inlet	27 [1.063]	51 [2.008]	M10	7/16-14UNC-2B	18 [0.709]	55 [2.165]	M8
	063	Outlet	36 [1.417]	62 [2.441]	M10	1/2-13UNC-2B	36 [1.417]	55 [2.165]	M8
		Inlet	27 [1.063]	51 [2.008]	M10	7/16-14UNC-2B	27 [1.063]	55 [2.165]	M8
	075	Outlet	36 [1.417]	62 [2.441]	M10	1/2-13UNC-2B	36 [1.417]	55 [2.165]	M8
		Inlet	27 [1.063]	51 [2.008]	M10	7/16-14UNC-2B	27 [1.063]	55 [2.165]	M8
	090	Outlet	36 [1.417]	62 [2.441]	M10	1/2-13UNC-2B	36 [1.417]	55 [2.165]	M8
		Inlet	27 [1.063]	51 [2.008]	M10	7/16-14UNC-2B	27 [1.063]	55 [2.165]	M8

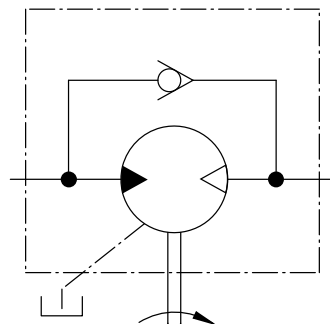
Unidirectional motor ports
Available ports for Group 3 unidirectional motors


Group 3 Gear motors
Ports dimensions for unidirectional motors SNU3NN

Port type		C			D	E	F	
Dimensions		x	y	z	d	e	f	
Frame size	022	Outlet	20 [0.79]	40 [1.58]	M8	M26 x 1.5	¾ Gas (BSPP)	15/16–12UN–2B
		Inlet	20 [0.79]	40 [1.58]	M8	M26 x 1.5	¾ Gas (BSPP)	11/16–12UN–2B
	026	Outlet	20 [0.79]	40 [1.58]	M8	M26 x 1.5	¾ Gas (BSPP)	15/16–12UN–2B
		Inlet	20 [0.79]	40 [1.58]	M8	M26 x 1.5	¾ Gas (BSPP)	11/16–12UN–2B
	033	Outlet	27 [1.063]	51 [2.008]	M10	M33x2	1 Gas (BSPP)	15/8–12UN–2B
		Inlet	20 [0.79]	40 [1.58]	M8	M26 x 1.5	¾ Gas (BSPP)	15/16–12UN–2B
	038	Outlet	27 [1.063]	51 [2.008]	M10	M33x2	1 Gas (BSPP)	15/8–12UN–2B
		Inlet	20 [0.79]	40 [1.58]	M8	M26 x 1.5	¾ Gas (BSPP)	15/16–12UN–2B
	044	Outlet	27 [1.063]	51 [2.008]	M10	M33 x 2	1 Gas (BSPP)	15/8–12UN–2B
		Inlet	27 [1.063]	51 [2.008]	M10	M33 x 2	1 Gas (BSPP)	15/16–12UN–2B
	048	Outlet	27 [1.063]	51 [2.008]	M10	M33 x 2	1 Gas (BSPP)	15/8–12UN–2B
		Inlet	27 [1.063]	51 [2.008]	M10	M33 x 2	1 Gas (BSPP)	15/16–12UN–2B
	055	Outlet	27 [1.063]	51 [2.008]	M10	M33 x 2	1 Gas (BSPP)	17/8–12UN–2B
		Inlet	27 [1.063]	51 [2.008]	M10	M33 x 2	1 Gas (BSPP)	15/8–12UN–2B
	063	Outlet	36 [1.417]	62 [2.441]	M10	M42 x 2	1¼ Gas (BSPP)	17/8–12UN–2B
		Inlet	27 [1.063]	51 [2.008]	M10	M33 x 2	1 Gas (BSPP)	15/8–12UN–2B
	075	Outlet	36 [1.417]	62 [2.441]	M10	M42 x 2	1¼ Gas (BSPP)	17/8–12UN–2B
		Inlet	27 [1.063]	51 [2.008]	M10	M33 x 2	1 Gas (BSPP)	15/8–12UN–2B
	090	Outlet	36 [1.417]	62 [2.441]	M10	M42 x 2	1¼ Gas (BSPP)	17/8–12UN–2B
		Inlet	27 [1.063]	51 [2.008]	M10	M33 x 2	1 Gas (BSPP)	15/8–12UN–2B

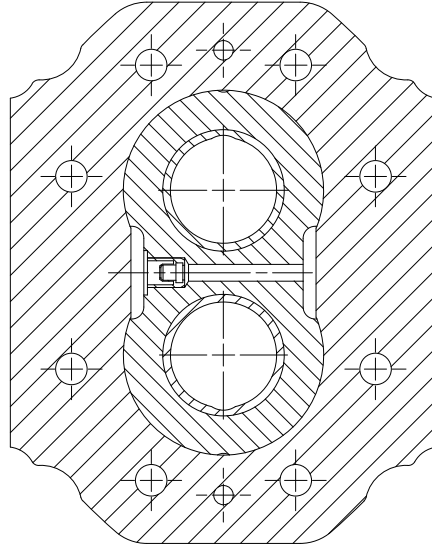
Anti-cavitation check valve - SNM3GN

Danfoss offers an optional integral anti-cavitation check valve integrated in Group 3 motors bearing blocks. Available for all the displacements, the valve directs internally the flow from the motor outlet to the inlet, when the outlet pressure gets higher than the inlet one.

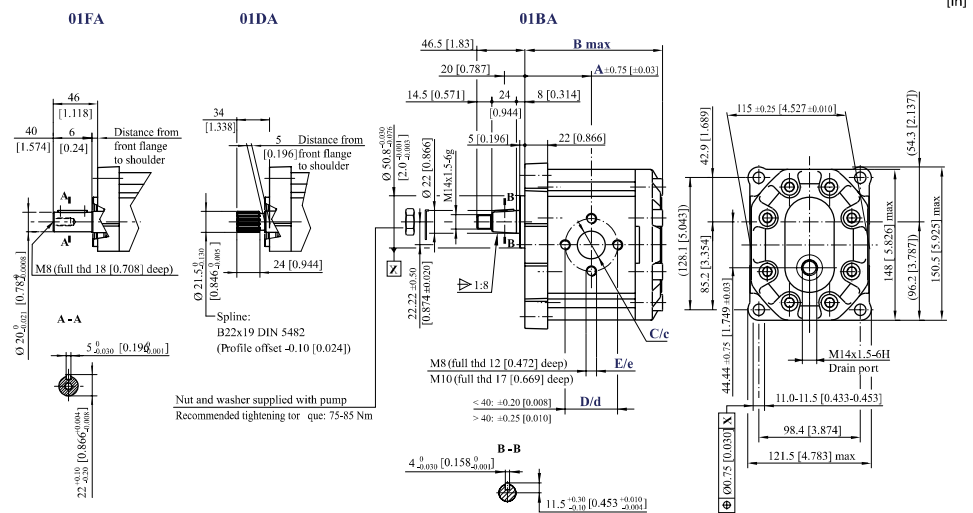
Valve schematic diagram


Technical Information
Gear Motors Group 1, 2, and 3
Group 3 Gear motors

Anticavitation check valve cross section


Dimensions
SNM3NN, SNU3NN – 01FA, 01DA and 01BA

Standard porting drawing for 01FA, 01DA and 01BA



Bidirectional motors dimensions – 01FA, 01DA and 01BA

Frame size		022	026	033	038	044	048	055	063	075	090
Dimension	A	63.0 [2.480]	64.5 [2.539]	67.0 [2.637]	68.8 [2.708]	71.0 [2.795]	72.5 [2.854]	75.0 [2.952]	78.0 [3.070]	82.0 [3.228]	87.0 [3.425]
	B	132.5 [5.216]	135.5 [5.334]	140.5 [5.531]	144.0 [5.669]	148.5 [5.846]	151.5 [5.964]	156.5 [6.161]	162.5 [6.397]	170.5 [6.712]	180.5 [7.106]

Technical Information
Gear Motors Group 1, 2, and 3
Group 3 Gear motors
Bidirectional motors dimensions – 01FA, 01DA and 01BA (continued)

Frame size	022	026	033	038	044	048	055	063	075	090
Inlet/Outlet	C/c	20 [0.79]		27 [1.063]						
	D/d	40 [1.58]		51 [2.007]						
	E/e	M8		M10						

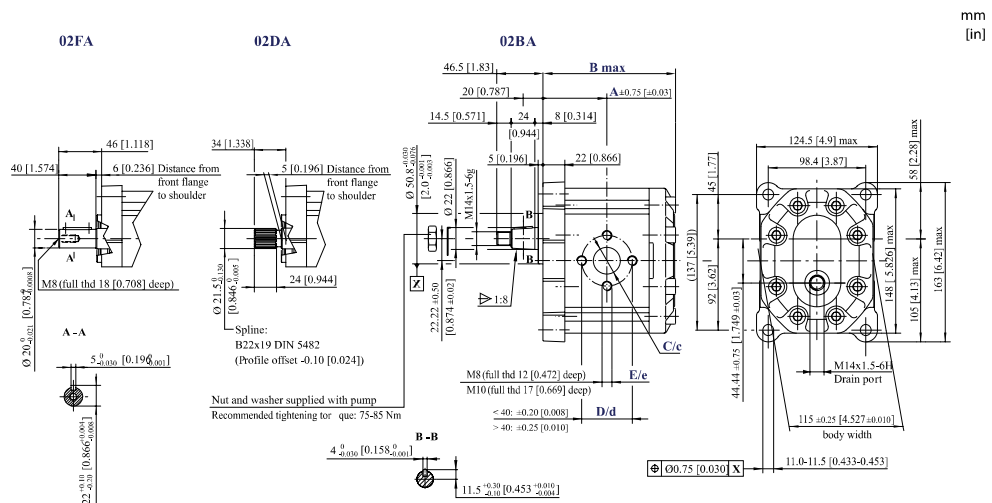
 For unidirectional motors dimensions see [Ports dimensions](#) on page 72.

For unidirectional motors no case drain hole into the rear cover.

Model code examples and maximum shaft torque

Flange/drive gear	Model code example	Maximum shaft torque
01FA	SNM3NN/075BN01FAM1CACANNNN/NNNNN	210 N·m [1858 lb·in]
01DA	SNM3NN/026BN01DAM1C7C7NNNN/NNNNN	290 N·m [2566 lb·in]
01BA	SNM3NN/044BN01BAM1CACANNNN/NNNNN	350 N·m [3097 lb·in]

 For further details on ordering, see [Model code](#) on page 62.

SNM3NN, SNU3NN – 02FA, 02DB and 02AA
Standard porting drawing for 02FA, 02DB and 02AA

Bidirectional motors dimensions – 02FA, 02DA and 02BA

Frame size	022	026	033	038	044	048	055	063	075	090	
Dimension	A	63.0 [2.480]	64.5 [2.539]	67.0 [2.637]	68.8 [2.708]	71.0 [2.795]	72.5 [2.854]	75.0 [2.952]	78.0 [3.070]	82.0 [3.228]	87.0 [3.425]
	B	132.5 [5.216]	135.5 [5.334]	140.5 [5.531]	144.0 [5.669]	148.5 [5.846]	151.5 [5.964]	156.5 [6.161]	162.5 [6.397]	170.5 [6.712]	180.5 [7.106]
Inlet/Outlet	C/c	20 [0.79]		27 [1.063]							
	D/d	40 [1.58]		51 [2.007]							
	E/e	M8		M10							

 For unidirectional motors dimensions [Ports dimensions](#) on page 72.

For unidirectional motors no case drain hole into the rear cover.

Technical Information
Gear Motors Group 1, 2, and 3
Group 3 Gear motors

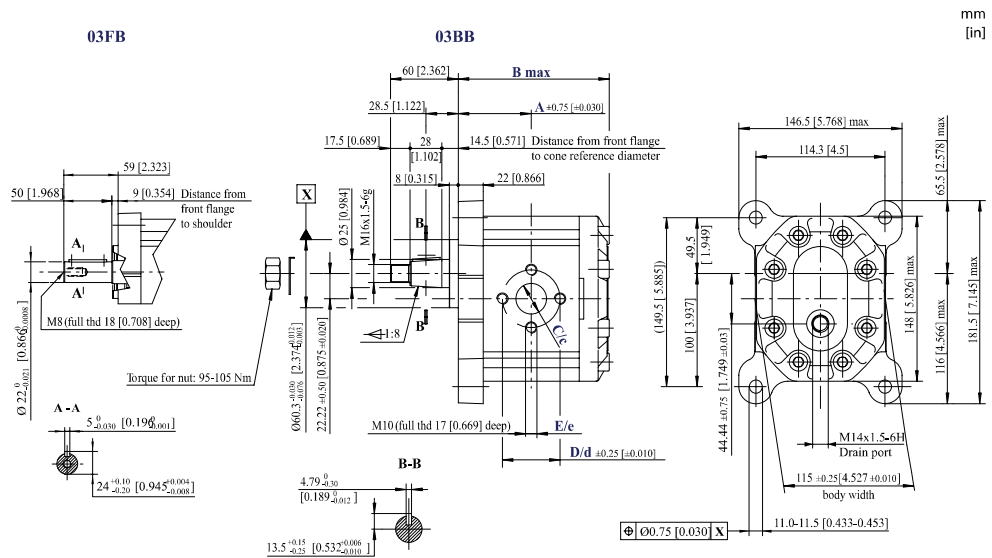
Model code examples and maximum shaft torque

Flange/drive gear	Model code example	Maximum shaft torque
02FA	SNM3NN/044BN02FAM1CACANNNN/NNNNN	210 N·m [1858 lb·in]
02DA	SNM3NN/033BN02DAM1CACANNNN/NNNNN	290 N·m [2566 lb·in]
02BA	SNM3NN/026BN02BAM1C7C7NNNN/NNNNN	350 N·m [3097 lb·in]

 For further details on ordering, see [Model code](#) on page 62.

SNM3NN, SNU3NN – 03FB and 03BB

Standard porting drawing for 03FB and 03BB



Bidirectional motors dimensions – 03FB and 03BB

Frame size		022	026	033	038	044	048	055	063	075	090
Dimension	A	61 [2.4]	63 [2.48]	64.5 [2.54]	66.5 [2.62]	69.5 [2.74]	72.5 [2.854]	75 [2.95]	78 [3.07]	82 [3.23]	87 [3.43]
	B	132.5 [5.22]	135.5 [5.33]	140.5 [5.53]	144.0 [5.67]	148.5 [5.85]	151.5 [5.96]	156.5 [6.16]	162.5 [6.4]	170.5 [6.71]	180.5 [7.11]
Inlet/Outlet	C/c	18 [0.71]		27 [1.063]							
	D/d	55 [2.16]									
	E/e	M8									

 For unidirectional motors dimensions, see [Ports dimensions](#) on page 72.

For unidirectional motors no case drain hole into the rear cover.

Technical Information
 Gear Motors Group 1, 2, and 3

Group 3 Gear motors

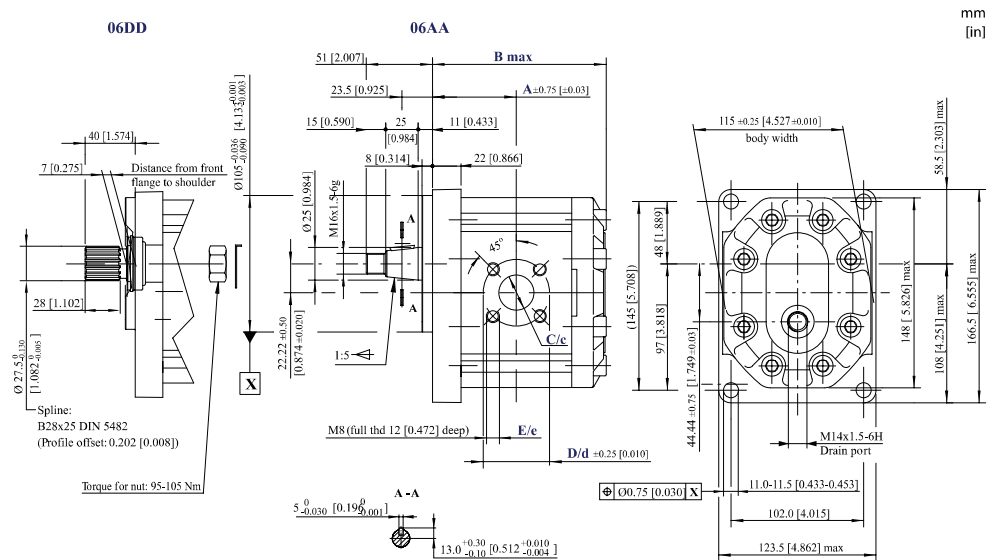
Model code examples and maximum shaft torque

Flange/drive gear	Model code example	Maximum shaft torque
03FB	SNM3NN/063BN03FBM1CACANNNN/NNNNN	300 N·m [2655 lb·in]
03BB	SNM3NN/090BN03BBM1CACANNNN/NNNNN	500 N·m [4425 lb·in]

 For further details on ordering, see [Model code](#) on page 62.

SNM3NN, SNU3NN – 06AA

Standard porting drawing for 06AA



Bidirectional motors dimensions – 06DD AND 06AA

Frame size	022	026	033	038	044	048	055	063	075	090
A	63.0 [2.480]	64.5 [2.539]	67.0 [2.637]	68.8 [2.708]	71.0 [2.795]	72.5 [2.854]	75.0 [2.952]	78.0 [3.070]	82.0 [3.228]	87.0 [3.425]
B	132.5 [5.216]	135.5 [5.334]	140.5 [5.531]	144.0 [5.669]	148.5 [5.846]	151.5 [5.964]	156.5 [6.161]	162.5 [6.397]	170.5 [6.712]	180.5 [7.106]
C/c	20 [0.79]		27 [1.063]							
D/d	40 [1.58]		51 [2.007]							
E/e	M8		M10							

 For unidirectional motors dimensions, see [Ports dimensions](#) on page 72.

For unidirectional motors no case drain hole into the rear cover.

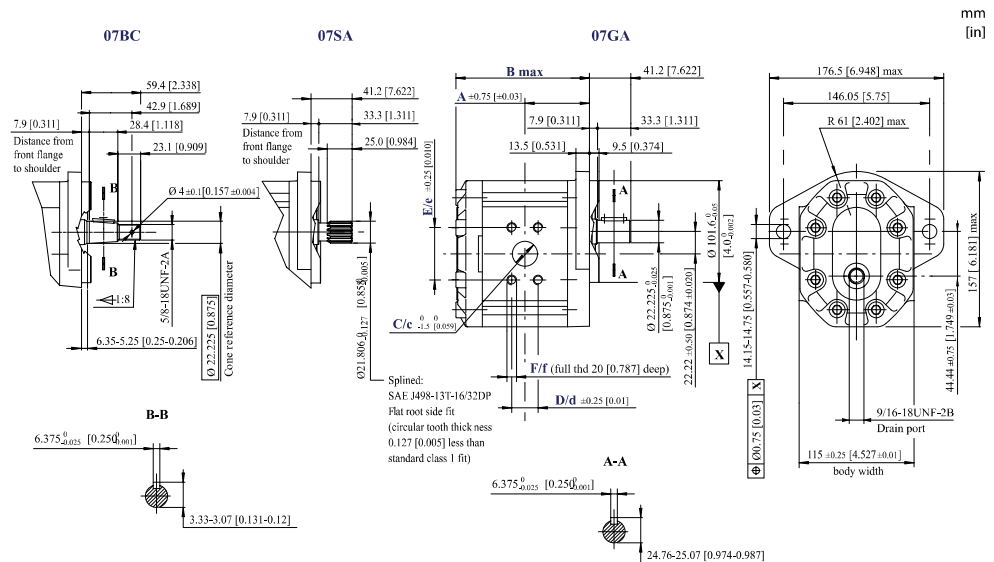
Model code examples and maximum shaft torque

Flange/drive gear	Model code example	Maximum shaft torque
06DD	SNM3NN/044BN06DDM1BBBBNNNN/NNNNN	300 N·m [2655 lb·in]
06AA	SNM3NN/022BN06AAM1BABANNNN/NNNNN	450 N·m [3982 lb·in]

 For further details on ordering, see [Model code](#) on page 62.

Technical Information
Gear Motors Group 1, 2, and 3
Group 3 Gear motors
SNM3NN, SNU3NN – 07BC, 07SA and 07GA

Standard porting drawing for 07BC, 07SA and 07GA



Bidirectional motors dimensions – 07BC, 07SA and 07GA

Frame size		022	026	033	038	044	048	055	063	075	090
Dimension	A	63.0 [2.480]	64.5 [2.539]	67.0 [2.637]	68.8 [2.708]	71.0 [2.795]	72.5 [2.854]	75.0 [2.952]	78.0 [3.070]	82.0 [3.228]	87.0 [3.425]
	B	132.5 [5.216]	135.5 [5.334]	140.5 [5.531]	144.0 [5.669]	148.5 [5.846]	151.5 [5.964]	156.5 [6.161]	162.5 [6.397]	170.5 [6.712]	180.5 [7.106]
Inlet/Outlet	C/c	25.4 [1]		31.8 [1.251]							
	D/d	26.19 [1.031]		30.18 [1.188]							
	E/e	52.37 [2.061]		58.72 [2.311]							
	F/f	3/8–16UNC–2B		7/16–14UNC–2B							

 For unidirectional motors dimensions, see [Ports dimensions](#) on page 72.

For unidirectional motors no case drain hole into the rear cover.

Model code examples and maximum shaft torque

Flange/drive gear	Model code example	Maximum shaft torque
07BC	SNM3NN/026BN07BCM6A3A3NNNN/NNNN	300 N·m [2655 lb·in]
07SA	SNM3NN/063BN07SAM6A4A4NNNN/NNNN	270 N·m [2389 lb·in]
07GA	SNM3NN/090BN07GAM6A4A4NNNN/NNNN	230 N·m [2035 lb·in]

 For further details on ordering, see [Model code](#) on page 62.