



## GROUP 2 GEAR MOTORS

### Motor Design

#### SNM2NN

SNM2NN is the group 2 bidirectional motor available in the whole displacements range from 6 up to 25 cm<sup>3</sup>/rev [from 0.37 up to 1.538 in<sup>3</sup>/rev].

Configurations include European and SAE flanges and shafts (Code 01BA, 01FA, 01DA, 02AA, 02DB, 03CA, 04AA/05AA, 04DB/05DB, 06GA, 06SA).

#### SNU2NN

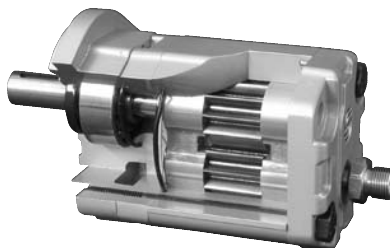
SNU2NN is the group 2 unidirectional motor available in the displacements range from 8 up to 25 cm<sup>3</sup>/rev [from 0.513 up to 1.538 in<sup>3</sup>/rev]. The SNU2NN motor construction is derived from the correspondent pump SNP2NN.

Configurations include European and SAE flanges and shafts (Code 01BA, 01FA, 01DA, 02AA, 02DB, 03CA, 04AA/05AA, 04DB/05DB, 06GA, 06SA).

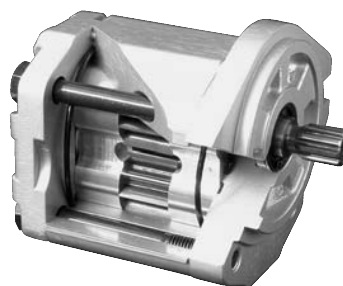
#### SKU2NN

SKU2NN is the Group 2 unidirectional motor available in the displacements range from 8 up to 25 cm<sup>3</sup>/rev [from 0.513 up to 1.538 in<sup>3</sup>/rev]. The SKU2NN motor construction is derived from the correspondent pump SKP2NN. Configuration includes SAE flange and shaft only (Code 06SA).

SNM2NN 9JDB (cut-away)



SNU2NN 06SA (cut away)





## Technical data

The table below details the technical data for Group 2 gear motors based on the model and displacement configuration.

### Technical data for Group 2 gear motors

		Frame size							
		6,0*	8,0	011	014	017	019	022	025
Displacement	cm <sup>3</sup> /rev [in <sup>3</sup> /rev]	6.0 [0.36]	8.4 [0.513]	10.8 [0.659]	14.4 [0.879]	16.8 [1.025]	19.2 [1.171]	22.8 [1.391]	25.2 [1.538]
<b>SNM2NN (bidirectional motor)</b>									
Peak pressure	bar [psi]	280 [4060]	280 [4060]	280 [4060]	280 [4060]	260 [3770]	230 [3335]	200 [2900]	180 [2610]
Rated pressure		250 [3625]	250 [3625]	250 [3625]	250 [3625]	230 [3335]	210 [3045]	180 [2610]	160 [2320]
Outlet back pressure		250 [3625]	250 [3625]	250 [3625]	250 [3625]	230 [3335]	210 [3045]	180 [2610]	160 [2320]
Minimum speed	min <sup>-1</sup> (rpm)	700	700	700	700	500	500	500	500
Maximum speed		4000	4000	4000	4000	4000	3500	3500	3500
<b>SNU2NN (unidirectional motor)</b>									
Peak pressure	bar [psi]	-	280 [4060]	280 [4060]	280 [4060]	260 [3770]	230 [3335]	200 [2900]	180 [2610]
Rated pressure			250 [3625]	250 [3625]	250 [3625]	230 [3335]	210 [3045]	180 [2610]	160 [2320]
Minimum speed	min <sup>-1</sup> (rpm)		600	600	600	500	500	500	500
Maximum speed		3500	3500	3500	3000	3000	3000	2500	
<b>SKU2NN (unidirectional motor)</b>									
Peak pressure	bar [psi]	-	280 [4060]	280 [4060]	280 [4060]	260 [3770]	230 [3335]	200 [2900]	175 [2815]
Rated pressure			250 [3625]	250 [3625]	250 [3625]	230 [3335]	210 [3045]	180 [2610]	160 [2320]
Minimum speed	min <sup>-1</sup> (rpm)		600	600	600	500	500	500	500
Maximum speed		3500	3500	3500	3000	3000	3000	2500	
<b>All (SNM2NN, SNU2NN, SKU2NN)</b>									
Weight	kg [lb]	2.4 [5.3]	2.5 [5.5]	2.7 [5.5]	2.9 [6.3]	3.0 [6.5]	3.1 [6.7]	3.2 [7.0]	3.3 [7.3]
Moment of inertia of rotating components	x 10 <sup>-6</sup> kg·m <sup>2</sup> [x 10 <sup>-6</sup> lb·ft <sup>2</sup> ]	26.5 [629]	32.4 [769]	38.4 [911]	47.3 [1122]	53.3 [1265]	59.2 [1405]	68.1 [1616]	74.1 [1758]
Theoretical flow at maximum speed	l/min [US gal/min]	24 [6.3]	33.6 [8.9]	43.2 [11.4]	50.4 [13.3]	50.4 [13.3]	57.6 [15.2]	68.4 [18.0]	75.6 [20.0]

1 kg·m<sup>2</sup> = 23.68 lb·ft<sup>2</sup>

\* Before choosing this frame size, please apply to Turolla technical department.

### ⚠ Caution

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



## Product Code

### Model Code



## A Family

<b>SEM2DN</b>	Low Cost Gr2 Bidir.Motor-int.drain
<b>SEM2NL</b>	Low Cost Gr2 Bidirec.Motor-vert.drain
<b>SEM2NN</b>	Low Cost Gr2 Bidirec.Motor
<b>SHM2GL</b>	Hi.Press.Gr2 Bid.Mot.+ Antic.Check Val-Vert.drain
<b>SHM2IN</b>	Hi.Press.Gr2 Bidir.Motor+Int.drain RV
<b>SHM2NL</b>	Hi.Press.Gr2 Bidirec.Motor-Vert.drain
<b>SHM2NN</b>	Hi.Press. Gr2 Bidirec.Motor
<b>SHU2GN</b>	Hi.Press. Gr2 Unidir.Motor+ Anticav.Check valve
<b>SHU2NN</b>	High Press. Gr2 Unidir.Motor
<b>SKU2NN</b>	Big shaft GR2 Unidir.Motor
<b>SNM2DN</b>	Gr2 Bidir.Motor-Int.Drain
<b>SNM2FL</b>	Gr2 Bidir.Motor+Break.Valve-Vert.drain-Special
<b>SNM2FN</b>	Gr2 Bidir.Motor+Break.Valve-Special
<b>SNM2GC</b>	Gr2 Bidir.Motor+Anticav.Check Val.-Ax.drain
<b>SNM2GL</b>	Gr2 Bidir.Motor-Anticav.Check Val.-vert.drain
<b>SNM2GN</b>	Gr2 Bidir.Motor-Anticav.Check Valve
<b>SNM2IL</b>	Gr2 Bidir.Motor+Int.drain RV-Vert.drain

<b>SNM2IN</b>	Gr2 Bidir.Motor+Int.drain RV
<b>SNM2JN</b>	Gr2 Bid.Motor+Int.drain RV+Anticav.Check Valve
<b>SNM2NC</b>	Gr2 Bidir.Motor-Cover Ports-Ax.drain
<b>SNM2NL</b>	Gr2 Bidir.Motor-Vert.drain
<b>SNM2NN</b>	Gr2 Bidir.Motor
<b>SNM2SN</b>	Gr2 Bidir.Motor+by-pass electric valve-Special
<b>SNU2EN</b>	Gr2 Unidir.Motor+Ext.drain RV
<b>SNU2GN</b>	Gr2 Unidir.Motor+Anticav.Check Valve
<b>SNU2GC</b>	Gr2 Unidir.Motor-In./Out. on Cover+Anticav.Check Valve
<b>SNU2IN</b>	Gr2 Unidir.Motor+Int.drain RV
<b>SNU2JN</b>	Gr2 Unidir.Motor+Int.drain RV+Anticav.Check Valve
<b>SNU2NC</b>	Gr2 Unidir.Motor-In.-Out.on cover
<b>SNU2NN</b>	Gr2 Unidir.Motor
<b>SNU2QN</b>	Gr2 Unid.Motor-Ext.drain RV+Anticav.Check Valve
<b>SNU2TN</b>	Gr2 Unidir.Motor-Break.Valve as Anticav.Valve-Special

## B Displacement

5,5	5,5 cc -Special
6,0	6,0 cc -Special
8,0	8,4 cc
9,0	9,0 cc -Special
9,5	9,5 cc -Special

011	10,8 cc
012	12,0 cc -Special
014	14,4 cc
017	16,8 cc
019	19,2 cc

021	21,0 cc -Special
022	22,8 cc
025	25,2 cc



### C Rotation

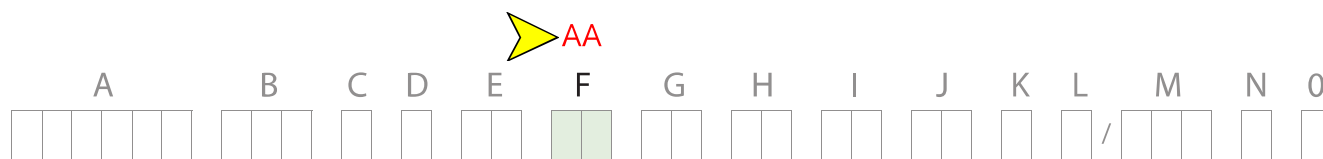
<b>B</b>	Bidirectional
L	Unidirectional Left hand
R	Unidirectional Right hand

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

<b>N</b>	Std Version of Project
2	Std Big-Shaft - Special Unbalanced
4	Precharged seal on cover-Special heavy-duty applications
6	Short version - Special

### E Mounting flange

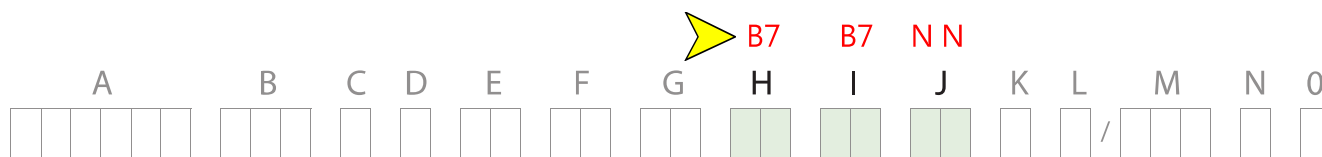
01	pilot Ø36,5+4 holes
02	pilot Ø80+4 holes
03	pilot Ø52+O-ring+4 holes through body
04	pilot Ø50+2 holes through body
05	pilot Ø50+2 holes through body
06	SAE A pilot Ø82,55+2 holes
B2	pilot Ø80+4 holes+special shaft seal slot - Special
L5	pilot Ø52 spigot Diameter+O-Ring+4 holes through body - Special
Q2	pilot Ø80+4 holes+fastening holes Ø10,5mm- Special
91	Outrigger Bearing Type 01+taper shaft 1:8-M12x1,25-Key4
92	Outrigger Bearing Type 02+taper shaft 1:5-M12x1,25-Key3
94	Outrigger Bearing Type 04+taper shaft 1:5-M12x1,25-Key3
9A	Outrigger Bearing Type 01+taper shaft 1:8-M12x1,25-Key3.2
9D	Outrigger Bearing Type 01+parallel shaft Ø15-Key4
9F	Outrigger Bearing Type 02+taper shaft 1:5-M14x1,5-Key4+special shaft seal RZB
9G	Outrigger Bearing Type 04+taper shaft 1:5-M12x1,25-Key3 + 4 M10 assembly thd holes "HELI-COIL- Special
9H	Outrigger Bearing Type 06+taper shaft 1:8-M12x1,25-Key4
9J	Outrigger Bearing Type 06 with parallel shaft Ø3/4 (Ø19.05 mm)
9L	Outrigger Bearing Type 01 parallel shaft Ø22 pilot Ø50,8
9M	Outrigger Bearing Type 01 parallel shaft Ø18 pilot Ø36,5



## F Drive gear

<b>AA</b>	Taper 1:5-M12x1,25-Key 3
<b>AC</b>	Taper 1:5-M14x1,5-Key 4
<b>AD</b>	Taper 1:5-M12X1,25-Key 3-Drive - Special for Version 6
<b>B1</b>	Taper 1:8-M12x1,25-Key 4/6 lowered
<b>BA</b>	Taper 1:8-M12x1,25-Key 4
<b>BB</b>	Taper 1:8-M12x1,25-Key 4/3,2
<b>BJ</b>	Taper 1:8-M12x1,25-Key 4/3 black steel
<b>CA</b>	Tang 8x17,8xL6,5 FR03
<b>CF</b>	Tang 8x Ø17,46xL9,6-Special
<b>DA</b>	Spline DIN 5482 B17x14-L10
<b>DB</b>	Spline DIN 5482 B17x14-L14
<b>DL</b>	Spline DIN 5482 B17x14-L14+rear spline DIN 5482 17x14-L14 SC32..._2 - Special
<b>EC</b>	Spline DIN 5480 W20x1,25xz14-9g - Special
<b>FA</b>	Parallel Ø15-L30+Key 4x25
<b>GA</b>	Parallel SAE Ø15,875-L23,8-Key 4x18
<b>GB</b>	Parallel SAE Ø15,875-L50,8-Key 4x40
<b>GC</b>	Parallel SAE Ø17,46-L24,4-Key 3/16x3/16xL20 - Special
<b>SA</b>	Spline SAE J498-9T-16/32
<b>SB</b>	Spline SAE J498-11T-16/32 -Special only for Version 2
<b>SE</b>	Spline SAE J498-9T-16/32+M6 thd hole
<b>SF</b>	Spline SAE J498-9T-16/32-reinforced fillet
<b>SG</b>	Spline SAE J498-11T-16/32-Special only for Version 2
<b>SI</b>	Spline SAE J498-11T-16/32-Special only for Version 2
<b>TC</b>	Spline SAE 13T-20/40-Special





## H Inlet size    I Outlet size

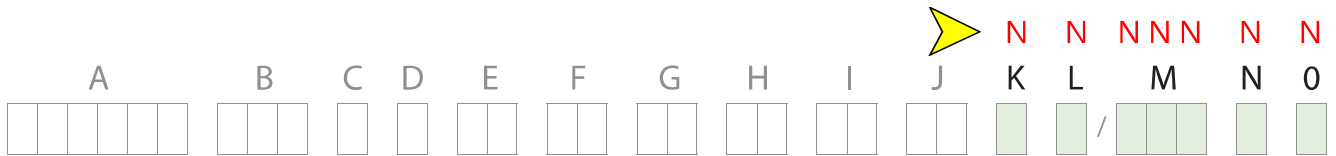
<b>NN</b>	Without inlet		
<b>B3</b>	13,5x30xM6 in X		
<b>B5</b>	15x35xM6		
<b>B6</b>	15x40xM6		
<b>B7</b>	<b>20x40xM6</b>		
<b>BB</b>	27x55xM8		
<b>C2</b>	12x26xM5		
<b>C3</b>	13,5x30xM6		
<b>C4</b>	15x35xM6 DXK(+)		
<b>C5</b>	13,5x40xM8		
<b>C6</b>	20x40xM6 DXK(+)		
<b>C7</b>	20x40xM8		
<b>C8</b>	23,5x40xM8		
<b>CS</b>	13,5x30xM6 (2 holes)		
<b>CV</b>	20x40xM8 (2 holes at 30°)		
<b>CX</b>	20x40xM8 (2 holes)		
<b>CY</b>	20x40xM8 (3 holes)		
<b>D4</b>	M16x1,5		
<b>D5</b>	M18x1,5		
<b>D7</b>	M22x1,5		
<b>D9</b>	M26x1,5		
<b>E3</b>	9/16-18UNF		
<b>E4</b>	3/4-16UNF		
<b>E5</b>	7/8-14UNF		
<b>E6</b>	1-1/16-12UN		
<b>E8</b>	1-5/16-12UN		

<b>F3</b>	3/8 GAS	
<b>F4</b>	1/2 GAS	
<b>F5</b>	3/4 GAS	
<b>F6</b>	1 GAS	
<b>H5</b>	M18x1,5-ISO6149	
<b>H7</b>	M22x1,5-ISO6149	
<b>H8</b>	M27x2-ISO6149	
<b>H9</b>	M33x2-ISO6149	
<b>M1</b>	12x17,48x38,1xM6	
<b>M2</b>	12x17,48x38,1xM8	
<b>M3</b>	18,5x17,48x38,1xM8	
<b>M5</b>	25/20x52,37x26,19xM10	
<b>MB</b>	12x38,1x17,48xM8(=)	
<b>MC</b>	18,5x47,63x22,23xM6(=)	
<b>MD</b>	18,5x47,63x22,23xM8(=)	
<b>ME</b>	18,5x47,63x22,23xM10(=)	
<b>MG</b>	25/20x52,37x26,19xM10(=)	
<b>MH</b>	31/25x58,72x30,18xM10(=)	

## J Ports Pos & Spec Body

<b>NN</b>	Std from catalogue
<b>YY</b>	Port Bx-Bx with flange SAE-A; off-set to rear cover
<b>EU</b>	Dist. from front flange=58,5 - Special
<b>F9</b>	Dist. from front flange=69 - Special
<b>PL</b>	Inlet port Left position looking gear drive from front flange

<b>PR</b>	Inlet port Right position looking gear drive from front flange
<b>TD</b>	Nr.4 milling D.27 tigh.16 flange side - Special
<b>TE</b>	Nr.4 milling D.27 tigh.20 flange side - Special
<b>ZZ</b>	Port Bx-Bx in the center of the body - Option



## K Seals

<b>N</b>	Standard NBR seals
<b>B</b>	VITON seals (only for unidirectional motors)
<b>D</b>	VITON shaft seal with dust lip (type BABSL)
<b>F</b>	VITON seals except for shaft seal - Special
<b>X</b>	NBR seals+Dust Cover
<b>Y</b>	VITON seals + Dust Cover
<b>Z</b>	VITON shaft seal + Dust Cover

## L Screws

<b>N</b>	Std burnished screws
<b>A</b>	Zinc plated screws
<b>C</b>	Galvanized nuts - Special

## M Set valves

<b>NNN</b>	No valve
<b>V**</b>	not defined-pressure no setting :oil ISO VG68-45°

## N Type of mark

<b>N</b>	Standard Turolla Marking
<b>A</b>	Standard Turolla Marking+Customer Code-Special
<b>Z</b>	Without Marking

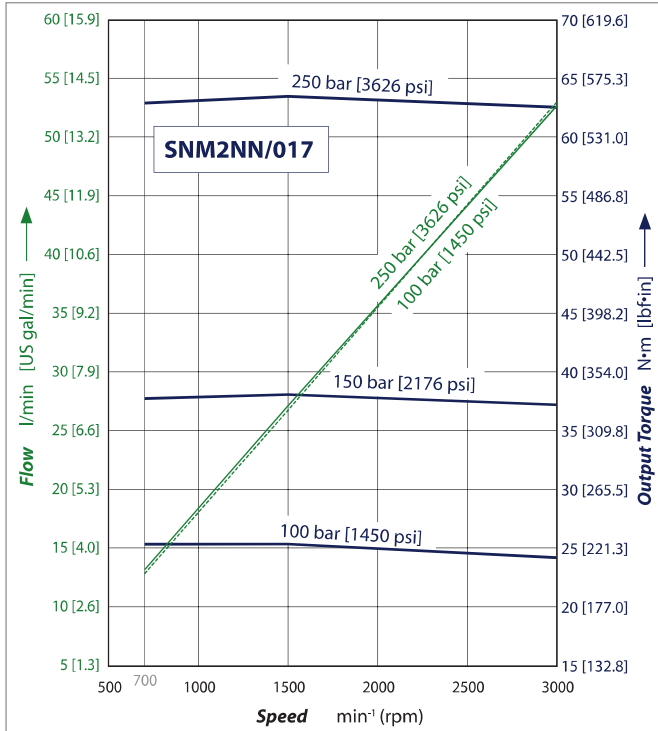
## O Mark position

<b>N</b>	Std Marking position (on top)
<b>A</b>	Special Marking position on the bottom

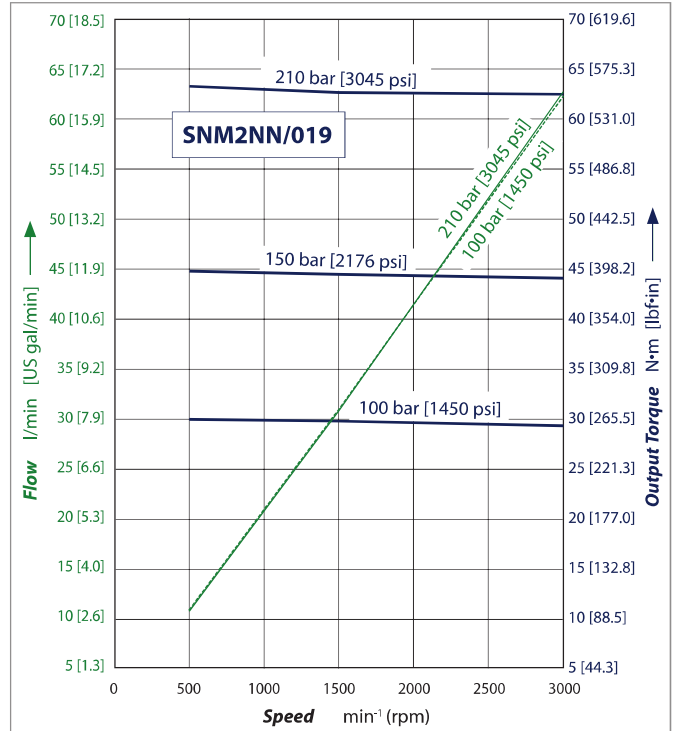




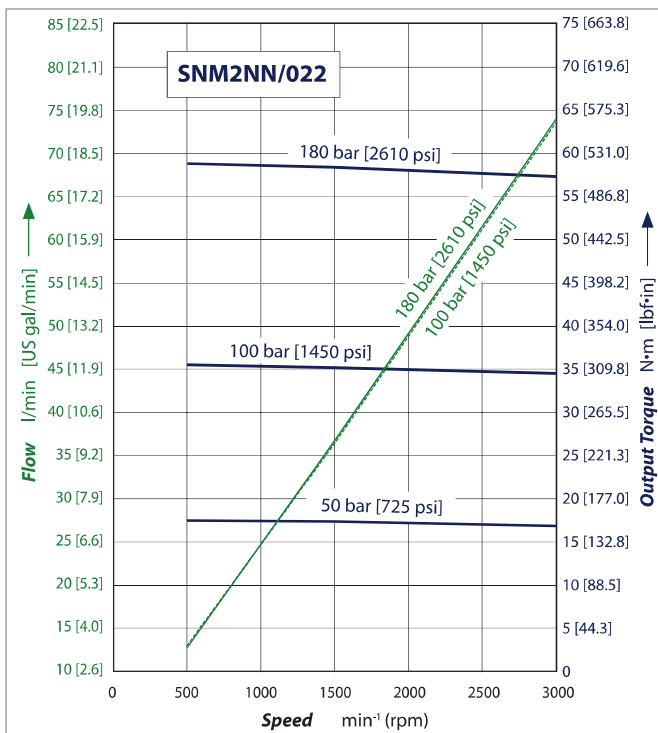
SNM2NN/017 motor performance graph



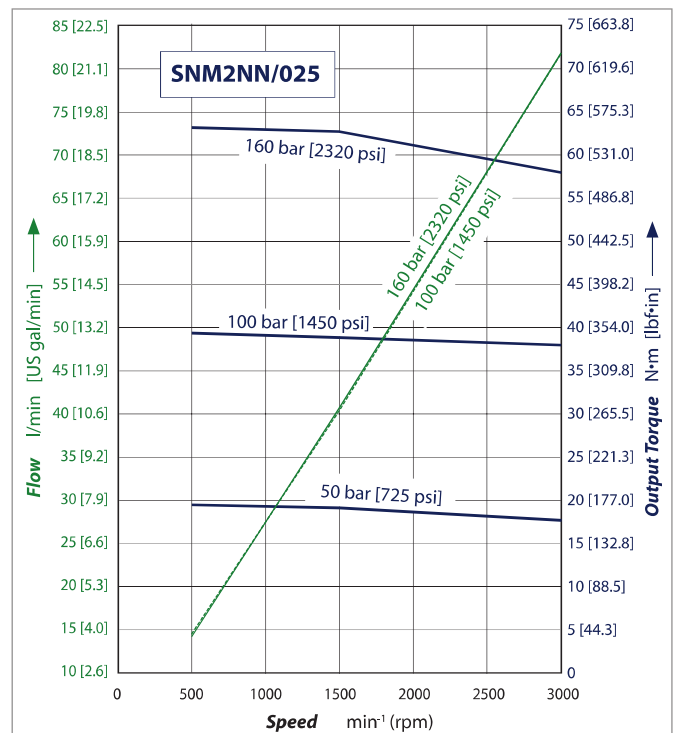
SNM2NN/019 motor performance graph



SNM2NN/022 motor performance graph



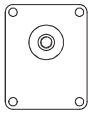
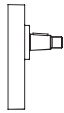
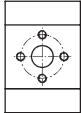
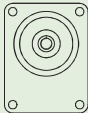

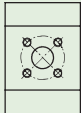


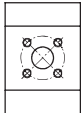
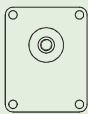
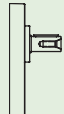
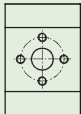
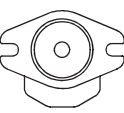
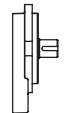
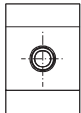
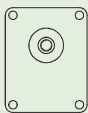
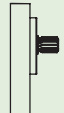
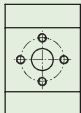

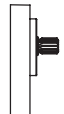
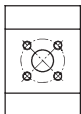

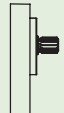
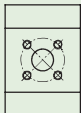
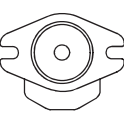
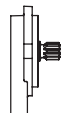
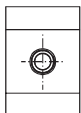
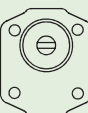
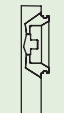
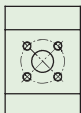
SNM2NN/025 motor performance graph





## Flange, shaft and port configurations

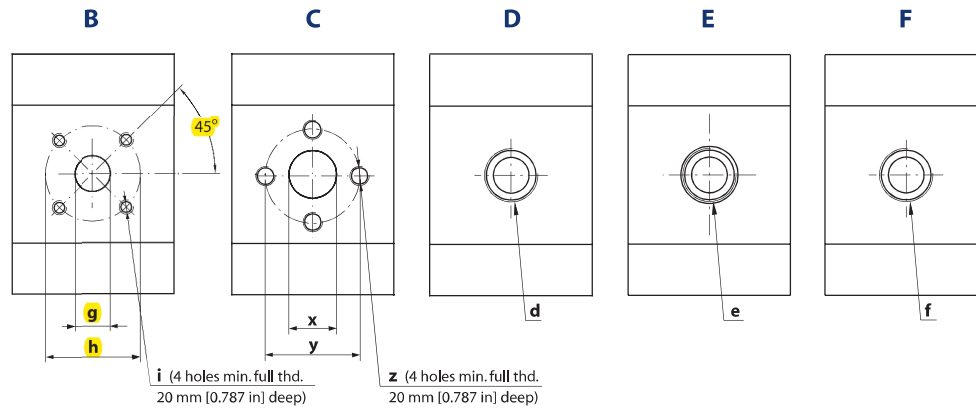
Flange, shaft and port configurations for SNM2NN and SNU2NN motors

Code	Flange	Shaft	Port
01BA	European 01, 4-bolts pilot Ø 36.5 mm [1.44 in] 	1:8 tapered 	European in + pattern 
02AA	European 02, 4-bolts pilot Ø 80 mm [3.15 in] 	1:5 tapered 	German standard in X pattern 
04AA/ 05AA	German PTO 2-bolts pilot Ø 50 mm [1.97 in] 	1:5 tapered 	German standard in X pattern 
01FA	European 01, 4-bolts pilot Ø 36.5 mm [1.44 in] 	Ø 15 mm [0.59 in] parallel 	European in + pattern 
06GA	SAE A pilot Ø 82.55 mm [3.25 in] 	Ø 15.7 mm [0.625 in] parallel 	Threaded SAE O-ring boss port 
01DA	European 01, 4-bolts pilot Ø 36.5 mm [1.44 in] 	9-teeth splined $m = 1.60, \alpha = 30^\circ$ DIN 5482-B17x14 	European in + pattern 
02DB	European 02, 4-bolts pilot Ø 80 mm [3.15 in] 	9-teeth splined $m = 1.60, \alpha = 30^\circ$ DIN 5482-B17x14 	German standard in X pattern 
04DB/ 05DB	German PTO 2-bolts pilot Ø 50 mm [1.97 in] 	9-teeth splined $m = 1.60, \alpha = 30^\circ$ DIN 5482-B17x14 	German standard in X pattern 
06SA	SAE A pilot Ø 82.55 mm [3.25 in] 	SAE 9-teeth splined 	Threaded SAE O-ring boss port 
03CA	Turolla tang pilot Ø 52 mm [2.066 in] 	Turolla standard tang 	German standard in X pattern 



## Port dimensions

Available ports for Group 2 motors



## Bidirectional motor ports dimensions

SNM2NN bidirectional motors and SNM2GN, SNM2JN, SNM2IN motors made unidirectional only by the valve

Port type		B			C			D	E	F	
Port dimensions		g	h	i	x	y	z	d	e	f	
Frame size	6,0	Inlet/Outlet	15 [0.59]	35 [1.38]	M6	13.5 [0.53]	30 [1.18]	M6	M22x1.5	7/8-14UNF-2B	1/2 Gas (BSPP)
	8,0	Inlet/Outlet	15 [0.59]	35 [1.38]	M6	13.5 [0.53]	30 [1.18]	M6	M22x1.5	7/8-14UNF-2B	1/2 Gas (BSPP)
	011	Inlet/Outlet	15 [0.59]	35 [1.38]	M6	13.5 [0.53]	30 [1.18]	M6	M22x1.5	7/8-14UNF-2B	1/2 Gas (BSPP)
	014	Inlet/Outlet	15 [0.59]	35 [1.38]	M6	20 [0.79]	40 [1.58]	M8	M22x1.5	7/8-14UNF-2B	1/2 Gas (BSPP)
	017	Inlet/Outlet	15 [0.59]	35 [1.38]	M6	20 [0.79]	40 [1.58]	M8	M22x1.5	7/8-14UNF-2B	1/2 Gas (BSPP)
	019	Inlet/Outlet	20 [0.79]	40 [1.58]	M6	20 [0.79]	40 [1.58]	M8	M26x1.5	1-1/16-12UNF-2B	3/4 Gas (BSPP)
	022	Inlet/Outlet	20 [0.79]	40 [1.58]	M6	20 [0.79]	40 [1.58]	M8	M26x1.5	1-1/16-12UNF-2B	3/4 Gas (BSPP)
025	Inlet/Outlet	20 [0.79]	40 [1.58]	M6	23.5 [0.92]	40 [1.58]	M8	M26x1.5	1-1/16-12UNF-2B	3/4 Gas (BSPP)	
Drain		1/4 Gas (BSPP)						9/16-18UNF-2B		1/4 Gas (BSPP)	

## Unidirectional motor ports dimensions

SNU2NN and SKU2NN ports dimensions

Port type		B			C			D	E	F	
Port dimensions		g	h	i	x	y	z	d	e	f	
Frame size	8,0	Inlet	15 [0.59]	35 [1.38]	M6	13.5 [0.53]	30 [1.18]	M6	M18x1.5	1-1/16-12UNF-2B	1/2 Gas (BSPP)
		Outlet	20 [0.79]	40 [1.58]	M6	13.5 [0.53]	30 [1.18]	M6	M16x1.5	7/8-14UNF-2B	1/2 Gas (BSPP)
	011	Inlet	15 [0.59]	35 [1.38]	M6	13.5 [0.53]	30 [1.18]	M6	M18x1.5	1-1/16-12UNF-2B	3/4 Gas (BSPP)
		Outlet	20 [0.79]	40 [1.58]	M6	13.5 [0.53]	30 [1.18]	M6	M16x1.5	7/8-14UNF-2B	1/2 Gas (BSPP)
	014	Inlet	15 [0.59]	35 [1.38]	M6	13.5 [0.53]	30 [1.18]	M6	M18x1.5	1-1/16-12UNF-2B	3/4 Gas (BSPP)
		Outlet	20 [0.79]	40 [1.58]	M6	20 [0.79]	40 [1.58]	M8	M16x1.5	7/8-14UNF-2B	1/2 Gas (BSPP)
	017	Inlet	15 [0.59]	35 [1.38]	M6	13.5 [0.53]	30 [1.18]	M6	M18x1.5	1-1/16-12UNF-2B	3/4 Gas (BSPP)
		Outlet	20 [0.79]	40 [1.58]	M6	20 [0.79]	40 [1.58]	M8	M18x1.5	7/8-14UNF-2B	1/2 Gas (BSPP)
	019	Inlet	15 [0.59]	35 [1.38]	M6	13.5 [0.53]	30 [1.18]	M6	M18x1.5	1-1/16-12UNF-2B	3/4 Gas (BSPP)
		Outlet	20 [0.79]	40 [1.58]	M6	20 [0.79]	40 [1.58]	M8	M18x1.5	7/8-14UNF-2B	1/2 Gas (BSPP)
	022	Inlet	15 [0.59]	35 [1.38]	M6	13.5 [0.53]	30 [1.18]	M6	M18x1.5	1-1/16-12UNF-2B	3/4 Gas (BSPP)
		Outlet	20 [0.79]	40 [1.58]	M6	20 [0.79]	40 [1.58]	M8	M18x1.5	7/8-14UNF-2B	1/2 Gas (BSPP)
	025	Inlet	15 [0.59]	35 [1.38]	M6	13.5 [0.53]	30 [1.18]	M6	M18x1.5	1-1/16-12UNF-2B	1 Gas (BSPP)
		Outlet	20 [0.79]	40 [1.58]	M6	20 [0.79]	40 [1.58]	M8	M18x1.5	7/8-14UNF-2B	3/4 Gas (BSPP)