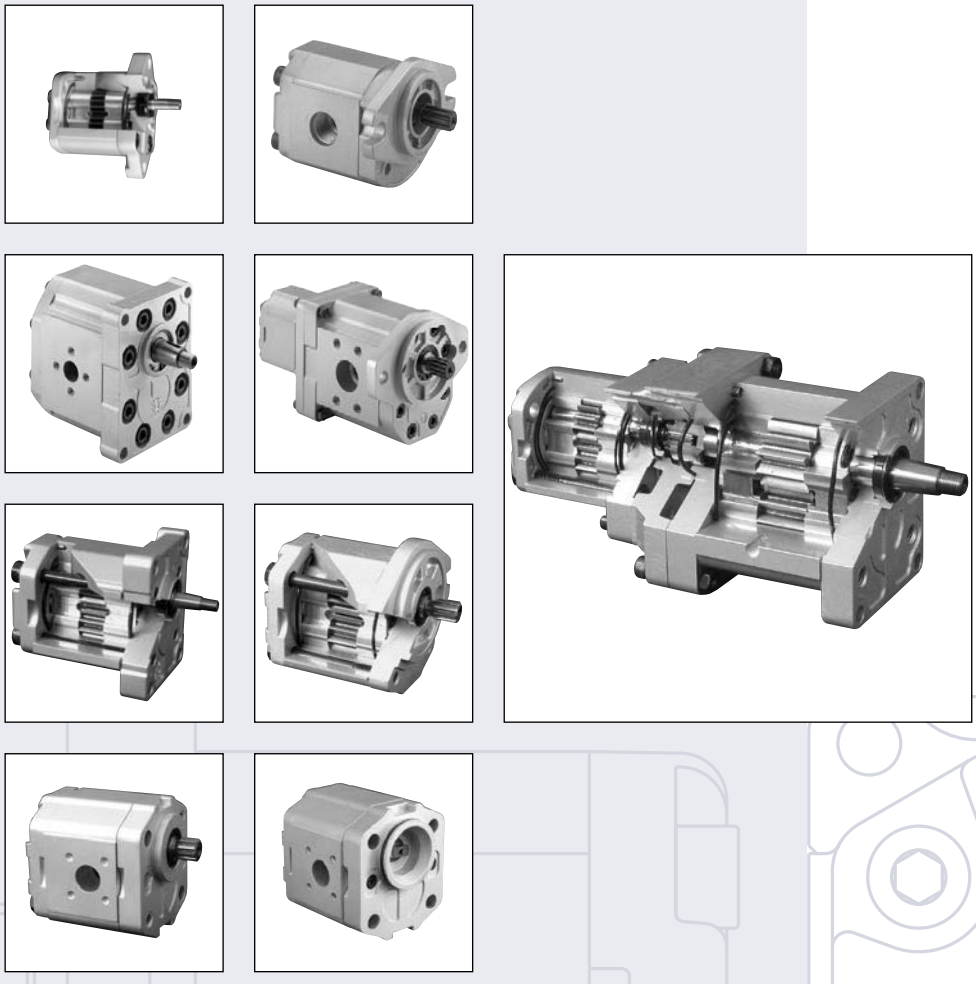
SAUER DANFOSS

General Gear Pumps and Motors

Technical Information



General Gear Pumps and Motors
Technical Information
Overview

This manual offers the Sauer-Danfoss customer summarized technical information on all standard Sauer-Danfoss gear pumps and motors and the standard available flanges, shafts, and ports. For detailed information on a particular product, please consult the specific technical manual for that product.

F005 009

Sauer-Danfoss gear pumps and motors are ideal for a wide range of applications for:

- **small vehicles,** such as aerial lifts, greens and fairway mowers and electric forklifts. These needs are ideally served by the aluminum pumps in the SKP1 and SKP2 ranges. These pumps feature integral valves and pressure balanced design for high efficiency, and extruded aluminum bodies for high strength.
- **medium-sized vehicles**, such as tractors, IC forklifts, and skid steers, Sauer-Danfoss offers the 25SP aluminum pumps feature SAE A and B mounts, integral valves, and high-performance DU bushings.
- **larger, off-highway vehicles,** like tractors, backhoe loaders, dumpers, and telescopic handlers, we offer the SNP3.

Many combinations of the pumps mentioned are available as multiple units made to fit any need. Sauer-Danfoss provides standard pumps for use in industrial applications, including power packs. Advantages include small package size, quiet operations, and low installed cost.

Front cover illustrations: F005 037, F005 033, F005 018, F005 028, F005 021, F005 019, F005 030, F005 026, F005 068, P005 051.

SAUER DANFOSS

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RANGE

Sauer-Danfoss offers a wide range of gear products to meet most application needs. The catalogue highlights the range of aluminum and cast iron gear pumps and motors available from Sauer-Danfoss. Detailed specifications are included for all products. Many other configurations are available that are not included in this catalogue.
For further information, please contact your Sauer-Danfoss representative.

Aluminum gear pumps and motors

There are six families of aluminum pumps currently available. Some can be combined to make multiple pumps.

There are three families of aluminum motors: **Group 1**, **Group 2** and **Group 3.**

Pumps and motors with extruded aluminum housing provide the necessary strength construction while providing a very high power-to-weight ratio and increased heat dissipation. At production test, the gear teeth cut their own track in the aluminum body for maximum radial gear tip sealing and high volumetric efficiency.

Cast-iron gear pumps and motors

D Series pumps and motors are of cast-iron construction. The CP180 and CP222 pumps, and the MYCP motor, have cast-iron bodies with aluminum flanges and covers. All pumps and motors feature a pressure-balanced design for high volumetric and mechanical efficiencies.

BENEFITS

Sauer-Danfoss offers gear pumps and motors throughout a wide range of displacements. Each has its own unique benefits that, briefly, include in part or total:

- Large displacement range (from 0.25 to 162 cm^3/rev [0.015 to 9.886 in^3/rev])
- High performance and cost effective
- Efficient pressure-balanced design
- Proven reliability and performance
- Optimum product configurations
- Full range of auxiliary features
- Compact, lightweight
- Modular product design
- Quiet operation
- Worldwide manufacture, sales and service

Sauer-Danfoss pumps and motors pressure-balanced design provides high efficiency throughout a given range of displacements.

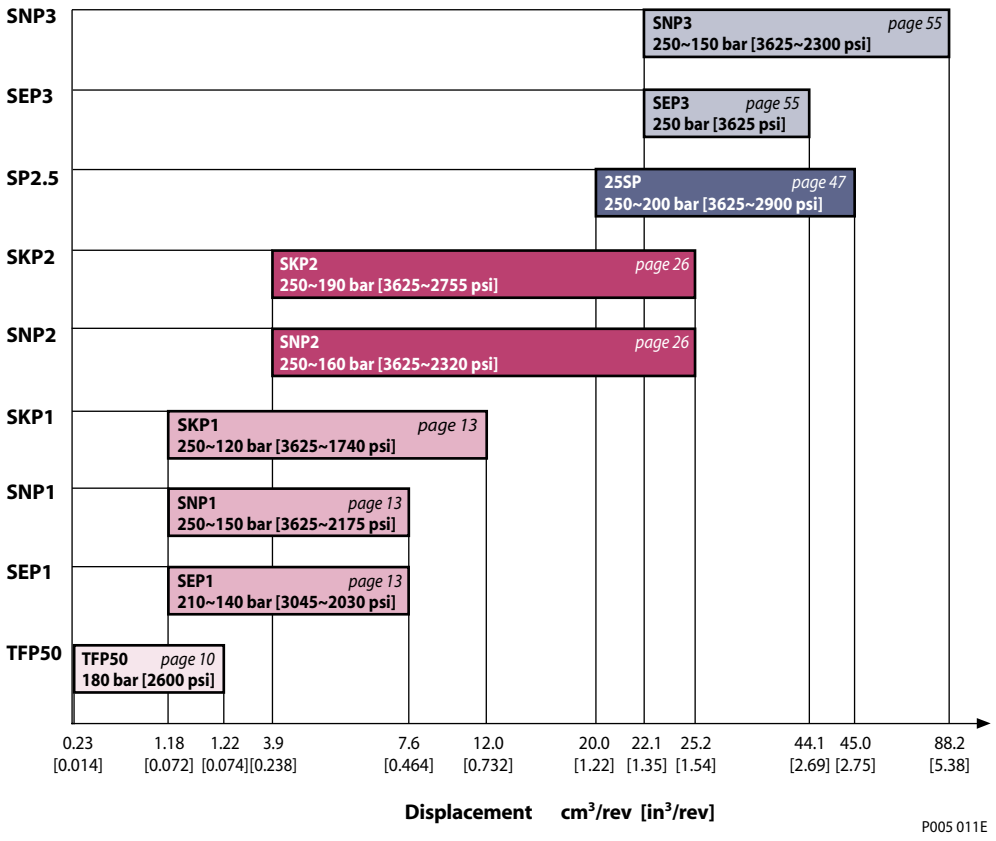
One-piece gear/shaft construction provides both high strength and an accurate profile. Each integral gear/shaft is constructed **of bearing-quality hardened-steel** that is machined to precise tolerances for minimum leakage. This one-piece design also eliminates the potential problems of stress-fatigue often associated with two-piece designs.

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

PUMP DISPLACEMENTS

Quick reference chart for pump displacements/models

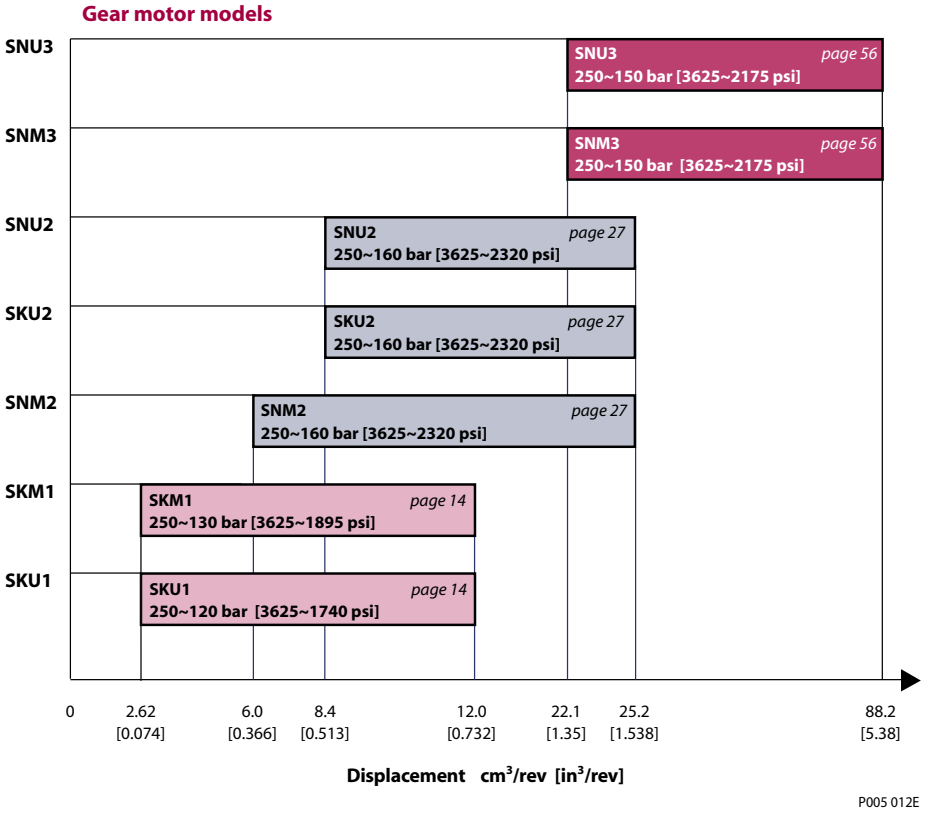
Gear pump models



Consider these pressures as maximum continuous pressure.

MOTOR DISPLACEMENTS

Quick reference chart for motor displacements/models



Consider these pressures as maximum continuous pressure.

SINGLE PUMPS AND MOTORS – GROUPS 0.5, 1, 2, 3

A *Type*

Code		Description
Pumps	**TFP50, SNP1, SNP2, SNP3**	Standard gear pumps
	SKP1, SKP2	High torque gear pumps
	SEP1, SEP2, SEP3	Medium pressure uni-directional gear pumps
	SNI1, SNI2	Gear pumps with internal drain relief valve
Motors	**SKM1, SNM2, SNM3**	Standard bi-directional gear motor
	SKU1, SKU2	High torque uni-directional gear motors
	SNU1, SNU2, SNU3	Uni-directional gear motors

B *Displacement – cm³/rev [in³/rev]*

Group 0.5 pumps	
0.25	0.25 [0.015]
0.45	0.45 [0.027]
0.57	0.57 [0.034]
0.76	0.76 [0.045]
1.27	1.27 [0.075]

Group 1 pumps	
1.2	1.18 [0.072]
1.7	1.57 [0.096]
2.2	2.09 [0.128]
2.6	2.62 [0.160]
3.2	3.14 [0.192]
3.8	3.66 [0.223]
4.3	4.19 [0.256]
6.0	5.89 [0.359]
7.8	7.59 [0.463]
10*	0.94 [0.607]
12*	12.0 [0.732]

Group 1 motors	
–	
2.6	2.62 [0.160]
3.2	3.14 [0.192]
3.8	3.66 [0.223]
4.3	4.19 [0.256]
6.0	5.89 [0.359]
7.8	7.59 [0.463]
10	9.94 [0.607]
12	12.0 [0.732]

* SEP1 not available

B *Displacement (continued) – cm³/rev [in³/rev]*

Group 2 pumps	
4	3.9 [0.24]
6	6.0 [0.37]
8	8.4 [0.51]
11	10.8 [0.66]
14	14.4 [0.88]
17	16.8 [1.02]
19	19.2 [1.17]
22	22.8 [1.39]
25	25.2 [1.54]

Group 2 motors	
–	
6*	6.0 [0.37]
8	8.4 [0.51]
11	10.8 [0.66]
14	14.4 [0.88]
17	16.8 [1.02]
19	19.2 [1.17]
22	22.8 [1.39]
25	25.2 [1.54]

* SNM2 only

Group 3 pumps	
22	22.1 [1.35]
26	26.2 [1.60]
33	33.1 [2.02]
38	37.9 [2.32]
44	44.1 [2.69]
48**	48.3 [2.93]
55**	55.1 [3.36]
63**	63.4 [3.87]
75**	74.4 [4.54]
90**	88.2 [5.38]

Group 3 motors	
22	22.1 [1.35]
26	26.2 [1.60]
33	33.1 [2.02]
38	37.9 [2.32]
44	44.1 [2.69]
48	48.3 [2.93]
55	55.1 [3.36]
63	63.4 [3.87]
75	74.4 [4.54]
90	88.2 [5.38]

** SNP3 only

C *Direction of rotation*

Code	Description
D	Right hand (clockwise)
S	Left hand (counterclockwise)
(none)	For reversible motors

SINGLE PUMPS AND MOTORS – GROUPS 0.5, 1, 2, 3 (continued)

A □□□□ / B □□ C □ D □□□□ E □□□ F □ G □

D *Shaft / Mounting flange / Port Configuration*

Code	Description	TFP50	SNP1	SKP1	SEP1	SNI1	SKM1	SKU1	SNU1	SNP2	SKP2	SEP2	SNI2	SNM2	SNU2	SKU2	SNP3	SEP3	SNM3	SNU3
CO01	1:8 Tapered shaft / European 01 4-bolt flange / European flanged ports	–	●	–	–	●	●	–	●	●	–	●	●	●	●	–	●	●	●	●
CO02	1:8 Tapered shaft / European 02 4-bolt flange / European flanged ports	–	–	●	–	–	●	●	–	●	–	–	●	●	●	–	●	–	●	●
CO03	1:8 Tapered shaft / European 03 4-bolt flange / European flanged ports	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	●	–	●	●
CO04	1:5 Tapered shaft / German engine PTO / German flanged ports	–	–	–	–	–	–	–	–	●	–	–	●	●	●	–	–	–	–	–
CO05	1:5 Tapered shaft / German engine PTO / German flanged ports	–	–	–	–	–	–	–	–	●	–	–	●	●	●	–	–	–	–	–
CO06	1:5 Tapered shaft / German 4-bolt flange / German flanged ports	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	●	–	●	●
CO07	1:8 Tapered shaft / SAE B 2-bolt flange / Vertical 4-bolt flanged ports	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	●	–
CO09	1:8 Tapered shaft / Perkins 9000 series / German flanged ports	–	–	–	–	–	–	–	–	●	–	–	●	–	●	–	–	–	–	–
CO0B	1:8 Tapered shaft / Perkins 1000 series / German flanged ports	–	–	–	–	–	–	–	–	●	–	–	●	–	●	–	–	–	–	–
CI01	Parallel shaft / European 01 4-bolt flange / European flanged ports	●	–	–	–	–	–	–	–	●	–	●	●	●	●	–	●	–	●	●
CI02	Parallel shaft / European 02 4-bolt flange / European flanged ports	–	–	●	–	–	●	●	–	–	–	–	–	–	–	–	●	–	●	●
CI03	Parallel shaft / European 03 4-bolt flange / European flanged ports	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	●	–	●	●
CI06	Parallel shaft / SAE A-A flange / SAE O-ring boss ports	–	–	●	–	–	●	●	–	●	–	–	–	–	–	–	–	–	–	–
CI07	Parallel shaft / SAE B 2-bolt flange / Vertical 4-bolt flanged ports	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	●	–	●	●
SC01	DIN splined shaft / European 01 4-bolt flange / European flanged ports	–	●	–	–	●	●	–	●	●	–	●	●	●	●	–	●	–	●	●
SC02	DIN splined shaft / European 02 4-bolt flange / European flanged ports	–	–	–	–	–	–	–	–	●	–	–	●	●	●	–	●	–	●	●
SC03	DIN splined shaft / European 03 4-bolt flange / European flanged ports	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	●	–	●	●
SC04	DIN splined shaft / German engine PTO / German flanged ports	–	–	–	–	–	–	–	–	●	–	–	●	●	●	–	–	–	–	–
SC05	DIN splined shaft / German engine PTO / German flanged ports	–	–	–	–	–	–	–	–	●	–	–	●	●	●	–	–	–	–	–
SC06	SAE splined shaft / German 4-bolt flange / German flanged ports	–	–	●	–	–	●	●	–	●	●	–	●	●	●	●	●	–	●	●
SC07	SAE splined shaft / SAE B 2-bolt flange / Vertical 4-bolt flanged ports	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	●	●	●	●
FR03	Sauer-Danfoss Tang / European 03 4-bolt flange / German flanged ports	–	●	–	●	●	–	–	–	●	–	–	●	●	●	–	–	–	–	–

Legend:
● = Standard
❍ = Optional
– = Not Available

E *Variant Code (3-letter code describes variants to standard configuration)*

Code	Description
...	Standard configuration
CBO	Rear cover with case drain ¼ Gas
V**	Integral relief valve/Pressure setting/Motor speed for relief valve setting in min^{-1} (rpm)

For variants, please contact the Sauer-Danfoss sales organization.

F *Version (value representing a change to the initial project)*

Code	Description
.	Initial project [*LEAVE BLANK]
1÷9 or **A÷Z**	It should be reserved to Sauer-Danfoss

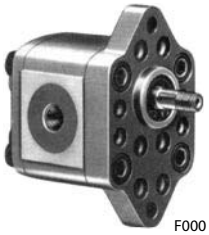
G *Port Type (if other than standard)*

Code	Description
.	Standard port for the flange type specified [*LEAVE BLANK]
A	SAE flanged port
B	Flanged port with threaded holes in **X** pattern (German standard ports), centered on the body
C	Flanged port with threaded holes in **+** pattern (European standard ports)
D	Threaded metric port
E	Threaded SAE O-ring boss port
F	Threaded Gas port (BSPP)
G	Flanged port with threaded holes in **X** pattern (German standard ports), offset from center of body

OVERVIEW

TFP50 pumps provide flexibility, numerous displacements, features, and shaft/port options. The TFP50 series has earned an excellent reputation for rugged, dependable performance at continuous pressures and speeds. TFP50 pumps are available in five displacements from 0.25 to 1.27 cm³/rev [0.015 to 0.075 in³/rev]. Complete information can be found by referring to the specific sections in this technical manual.

TFP50 CI01



F000 219

TFP50 CI01 (cut-away)

F005 037

DESIGN

Constructed of high strength aluminum, the TFP50 rotation is either clockwise or counterclockwise.

FEATURES

Special features of Group 0.5 pumps include:

- Wide range of displacements (from 0.25 to 1.27 cm³/rev [0.015 to 0.075 in³/rev]).
- Parallel shaft ends
- Standard mounting flange (European, 2-bolt)
- European port options.

TECHNICAL DATA

Technical data – Group 0.5 gear pumps

		Pump model				
		0.25	**0.45**	**0.57**	**0.76**	**1.27**
Displacement	cm³/rev [in³/rev]	0.25 [0.015]	0.45 [0.027]	0.57 [0.034]	0.76 [0.045]	1.27 [0.075]
Peak pressure	bar [psi]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]
Rated pressure		180 [2600]	180 [2600]	180 [2600]	180 [2600]	180 [2600]
Minimum pressure at maximum speed		103 [1500]	103 [1500]	103 [1500]	103 [1500]	103 [1500]
Minimum speed at 103 bar [1500 psi]	min⁻¹ (rpm)	500	500	500	500	500
Maximum speed		8000	8000	8000	7000	5000
Weight	kg [lb]	0.40 [0.88]	0.45 [1.00]	0.46 [1.01]	0.47 [1.03]	0.48 [1.06]
Moment of inertia of rotating components	x 10⁻⁶ kg•m² [x 10⁻⁶ lb•ft²]	0.425 [10.09]	0.544 [12.91]	0.621 [14.74]	0.737 [17.49]	1.049 [24.89]
Theoretical flow at maximum speed	l/min [US gal/min]	2.00 [0.53]	3.60 [0.95]	4.56 [1.20]	5.32 [1.41]	6.35 [1.68]

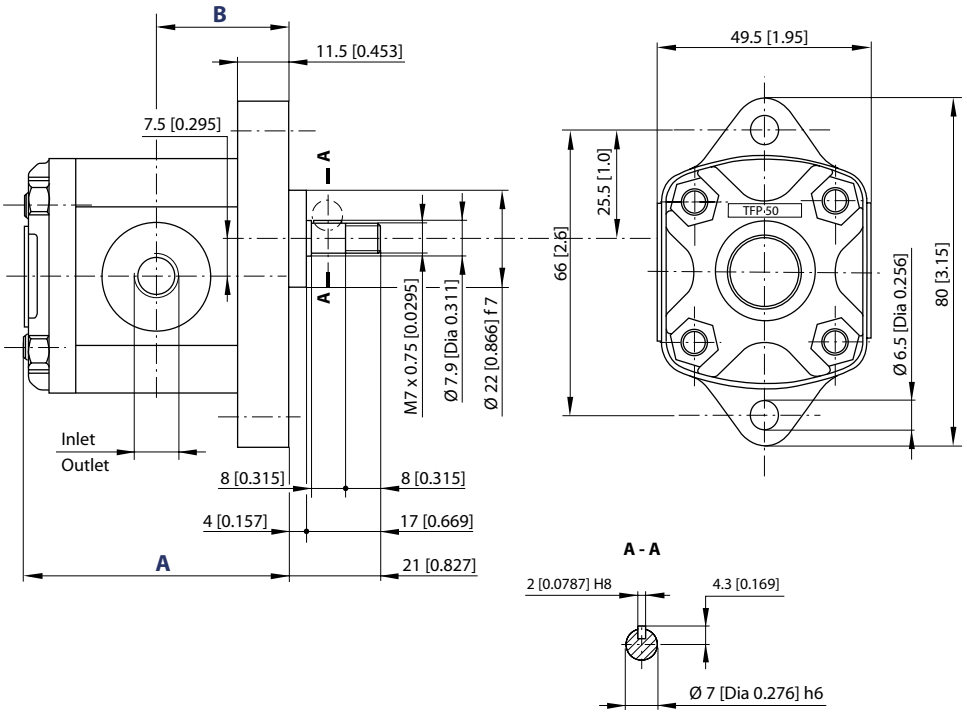
For applications requiring parameters beyond those listed above, contact Sauer-Danfoss.

DIMENSIONS

TFP50 – CI01

Available CI01 configuration only.

mm
[in]



TFP50 dimensions

Type (displacement)		0.25	0.45	0.57	0.76	1.27
Dimension	A	53.5 [2.10]	55.0 [2.16]	56.0 [2.20]	61.5 [2.42]	61.5 [2.42]
	B	26.5 [1.04]	27.3 [1.07]	27.8 [1.09]	30.5 [1.20]	30.5 [1.20]
Input/Output		M10 x 1				

Model code example

TFP50	**TFP50/0.57 D CI01 ..._.**

Maximum shaft torque

CI01	4.5 N•m [39.8 lb•in]

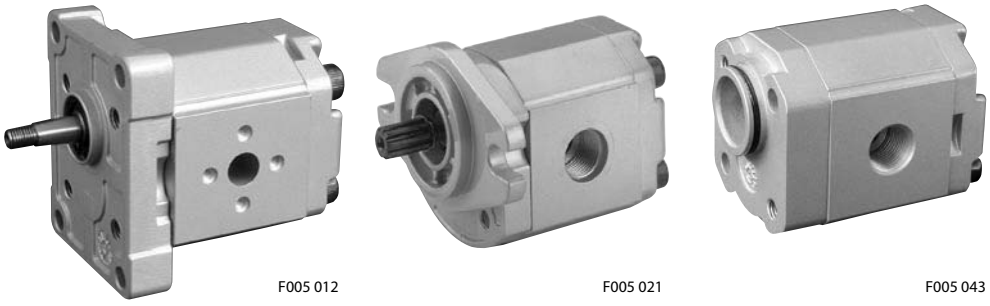
For further details on ordering, see *Model code,* pages 8 and 9.

OVERVIEW

Sauer-Danfoss group 1 gear pumps and motors use an external spur gear, and positive displacement design of proven high pressure and efficiency. These high performance pumps are robustly constructed. Their durability has been proven, with over 30 years experience, in hydraulic products for mobile and industrial applications.

Group 1 enjoy a pressure-balanced design that provides high efficiency for the entire series. Series includes the SKP1, SEP1 and SNP1 pumps, and SKM1 motor.

Group 1 gear pumps representatives

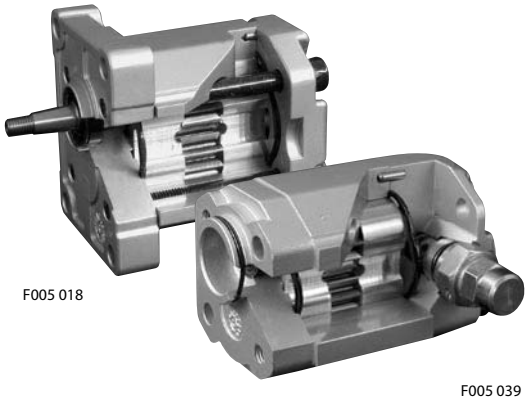


F005 012 F005 021 F005 043

DESIGN

Group 1 is made up of high performance gear pumps and motors with fixed displacements. They are available with a variety of splined, parallel, and tapered shaft ends (not all are available with all flange styles); see *the table on shaft availability and interchangeability* on the next page. Various port configurations are also available. The SKM1 motor can work in series.

SNP1 CO01 and SNI1 FR03 (cut-away)



F005 018

F005 039

FEATURES

Special features of Group 1 pumps and motor include:

- wide range of displacements (from 1.2 to 12 cm^3/rev [0.072 to 0.732 in^3/rev] for pumps; from 2.6 to 12 cm^3/rev [0.158 to 0.732 in^3/rev] for motor)
- a variety of splined, parallel, and tapered shaft ends
- various standard mounting flanges
- European, DIN, O-ring boss, and BSPP (gas threaded) port options
- multiple pump configurations, in combination with SNP1, SKP1, SNP2, SKP2 and SNP3.

TECHNICAL DATA FOR PUMPS

This table details Group 1 technical data for gear pumps based on the model and displacement configuration. For further information, please see Sauer-Danfoss publication *Group 1 Gear Pumps Technical Information,* 520L0545.

Technical data – Group 1 gear pumps

		Pump model										
		1.2	**1.7**	**2.2**	**2.6**	**3.2**	**3.8**	**4.3**	**6.0**	**7.8**	**10.0**	**12.0**
Displacement	cm^3/rev [in^3/rev]	1.18 [0.072]	1.57 [0.096]	2.09 [0.128]	2.62 [0.160]	3.14 [0.192]	3.66 [0.223]	4.19 [0.256]	5.89 [0.359]	7.59 [0.463]	9.94 [0.607]	12.00 [0.732]
SNP1												
Peak pressure	bar [psi]	270 [3915]	270 [3915]	270 [3915]	270 [3915]	270 [3915]	270 [3915]	270 [3915]	210 [3045]	170 [2465]	–	
Rated pressure		250 [3625]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	190 [2760]	150 [2175]		
Minimum speed at 0-150 bar	min^{-1} (rpm)	800	800	600	600	600	600	500	500	500		
Min. speed at 150 bar to rated pressure		1200	1200	1000	1000	1000	1000	800	800	800		
Maximum speed		4000	4000	4000	4000	4000	4000	3000	3000	3000		
SEP1												
Peak pressure	bar [psi]	230 [3335]	230 [3335]	230 [3335]	230 [3335]	230 [3335]	230 [3335]	230 [3335]	190 [2760]	160 [2320]	–	
Rated pressure		210 [3045]	210 [3045]	210 [3045]	210 [3045]	210 [3045]	210 [3045]	210 [3045]	170 [2465]	140 [2030]		
Minimum speed at 0-150 bar	min^{-1} (rpm)	800	800	600	600	600	600	500	500	500		
Min. speed at 150 bar to rated pressure		1200	1200	1000	1000	1000	1000	800	800	800		
Maximum speed		4000	4000	4000	4000	4000	4000	3000	3000	3000		
SKP1*												
Peak pressure	bar [psi]	270 [3915]	270 [3915]	270 [3915]	270 [3915]	270 [3915]	270 [3915]	270 [3915]	250 [3625]	220 [3190]	170 [2465]	140 [2030]
Rated pressure		250 [3625]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	230 [3335]	200 [2900]	150 [2175]	120 [1740]
Minimum speed at 0-150 bar	min^{-1} (rpm)	800	800	800	800	800	800	600	600	600	600	600
Min. speed at 150 bar to rated pressure		1200	1200	1000	1000	1000	1000	1000	800	800	800	-
Maximum speed		4000	4000	4000	4000	4000	4000	3000	3000	3000	2000	2000
All (SNP1, SEP1, SKP1)												
Weight	kg [lb]	1.02 [2.26]	1.05 [2.31]	1.09 [2.40]	1.11 [2.45]	1.14 [2.51]	1.18 [2.60]	1.20 [2.65]	1.30 [2.87]	1.39 [3.06]	1.55 [3.42]	1.65 [3.64]
Moment of inertia of rotating components	x 10^{-6} kg m^2 [x 10^{-6} lb•ft^2]	3.2 [77]	3.7 [89]	4.4 [105]	5.1 [120]	5.7 [136]	6.4 [152]	7.1 [168]	9.3 [220]	11.4 [271]	14.6 [347]	17.1 [407]
Theoretical flow at maximum speed	l/min [US gal/min]	4.72 [1.25]	6.28 [1.66]	8.36 [2.21]	10.48 [2.77]	12.56 [3.32]	14.64 [3.87]	12.57 [3.32]	17.67 [4.67]	22.77 [6.02]	19.88 [5.25]	24 [6.34]

1 kg•m^2 = 23.68 lb•ft^2

* SKP1 is a special version of the SNP1. It is designed to accommodate an SAE 9T 20/40 DP tooth splined shaft for higher torque applications. For further information please consult the specific Group 1 literature.

TECHNICAL DATA FOR MOTORS

This table details Group 1 technical data for gear motors based on the model and displacement configuration. For further information, please see Sauer-Danfoss publication *Group 1, 2 and 3 Gear Motors, Technical Information,* 520L0568.

Technical data – Group 1 gear motors

		Motor model							
		2.6	**3.2**	**3.8**	**4.3**	**6.0**	**7.8**	**10.0**	**12.0**
Displacement	cm^3/rev [in^3/rev]	2.62 [0.158]	3.14 [0.195]	3.66 [0.231]	4.19 [0.262]	5.89 [0.366]	7.59 [0.464]	9.94 [0.607]	12 [0.732]
SKM 1 (a standard, bidirectional motor)									
Peak pressure	bar [psi]	270 [3915]	270 [3915]	270 [3915]	270 [3915]	250 [3625]	220 [3190]	180 [2610]	150 [2175]
Rated pressure	bar [psi]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	230 [3335]	200 [2900]	160 [2320]	130 [1895]
Minimum speed	min^{-1} (rpm)	1000	1000	1000	800	800	800	800	800
Maximum speed	min^{-1} (rpm)	4000	4000	3000	3000	2000	2000	2000	2000
SKU 1 (a standard, unidirectional motor)									
Peak pressure	bar [psi]	270 [3915]	270 [3915]	270 [3915]	270 [3915]	250 [3625]	220 [3190]	170 [2465]	140 [2030]
Rated pressure	bar [psi]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	230 [3335]	200 [2900]	150 [2175]	120 [1740]
Minimum speed	min^{-1} (rpm)	1000	1000	1000	800	800	800	800	800
Maximum speed	min^{-1} (rpm)	4000	4000	3000	3000	2000	2000	2000	2000
Both (SKM 1 and SKU 1)									
Weight	kg [lb]	1.02 [2.26]	1.14 [2.51]	1.18 [2.60]	1.20 [2.65]	1.30 [2.87]	1.39 [3.06]	1.55 [3.42]	1.65 [3.64]
Moment of inertia of rotating components	x 10^{-6} kg•m^2 [x 10^{-6} lb•ft^2]	5.1 [121.0]	5.7 [135.2]	6.4 [151.9]	7.1 [168.5]	9.3 [220.7]	11.4 [270.5]	14.6 [339.4]	17.1 [405.8]

1 kg•m^2 = 23.68 lb•ft^2

Caution

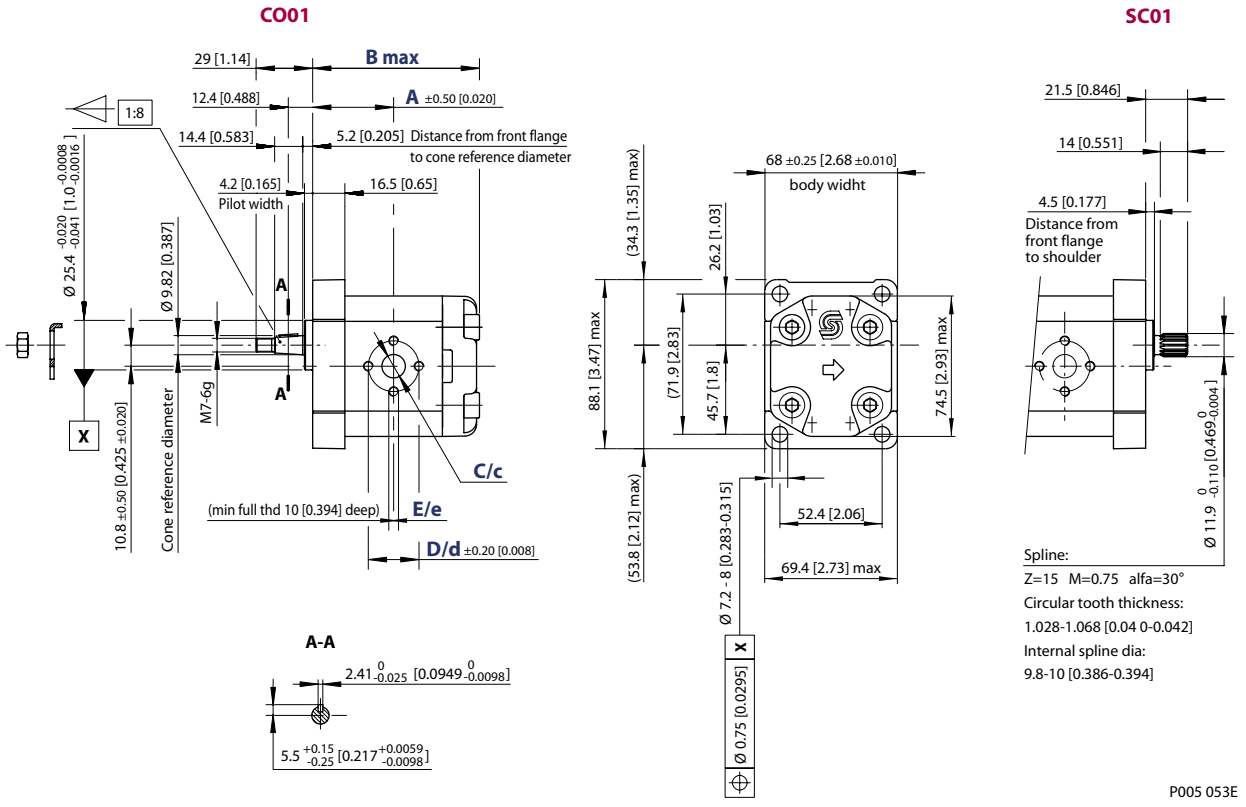
The rated and peak pressure mentioned are for pumps and motors with flanged ports only. When threaded ports are required a de-rated performance has to be considered. To verify the compliance of an high pressure application with a threaded ports pump apply to a Sauer-Danfoss representative.

GEAR PUMP DIMENSIONS

SNP1 – CO01 and SC01

This drawing shows the standard porting for CO01 and SC01
Available in Series SNP1 only.

mm
[in]



SNP1 – CO01 and SC01 dimensions

Type (displacement)		1.2	1.7	2.2	2.6	3.2	3.8	4.3	6.0	7.8
Dimension	A	37.75 [1.486]	38.5 [1.516]	39.5 [1.555]	40.5 [1.634]	41.5 [1.634]	42.5 [1.673]	43.5 [1.713]	46.75 [1.841]	50.0 [1.969]
	B	79.5 [3.130]	81.0 [3.189]	83.0 [3.268]	85.0 [3.346]	87.0 [3.425]	89.0 [3.504]	91.0 [3.583]	97.5 [3.839]	104.0 [4.094]
Inlet/Outlet	C/c	12 [0.472]								
	D/d	26 [1.024]								
	E/e	M5								

Model code example

SNP1	**SNP1/2.2 D CO01 ..._.** **SNP1/6 S SC01 ..._.**

Maximum shaft torque

CO01	N•m [lb•in]	25 [221]
SC01		35 [310]

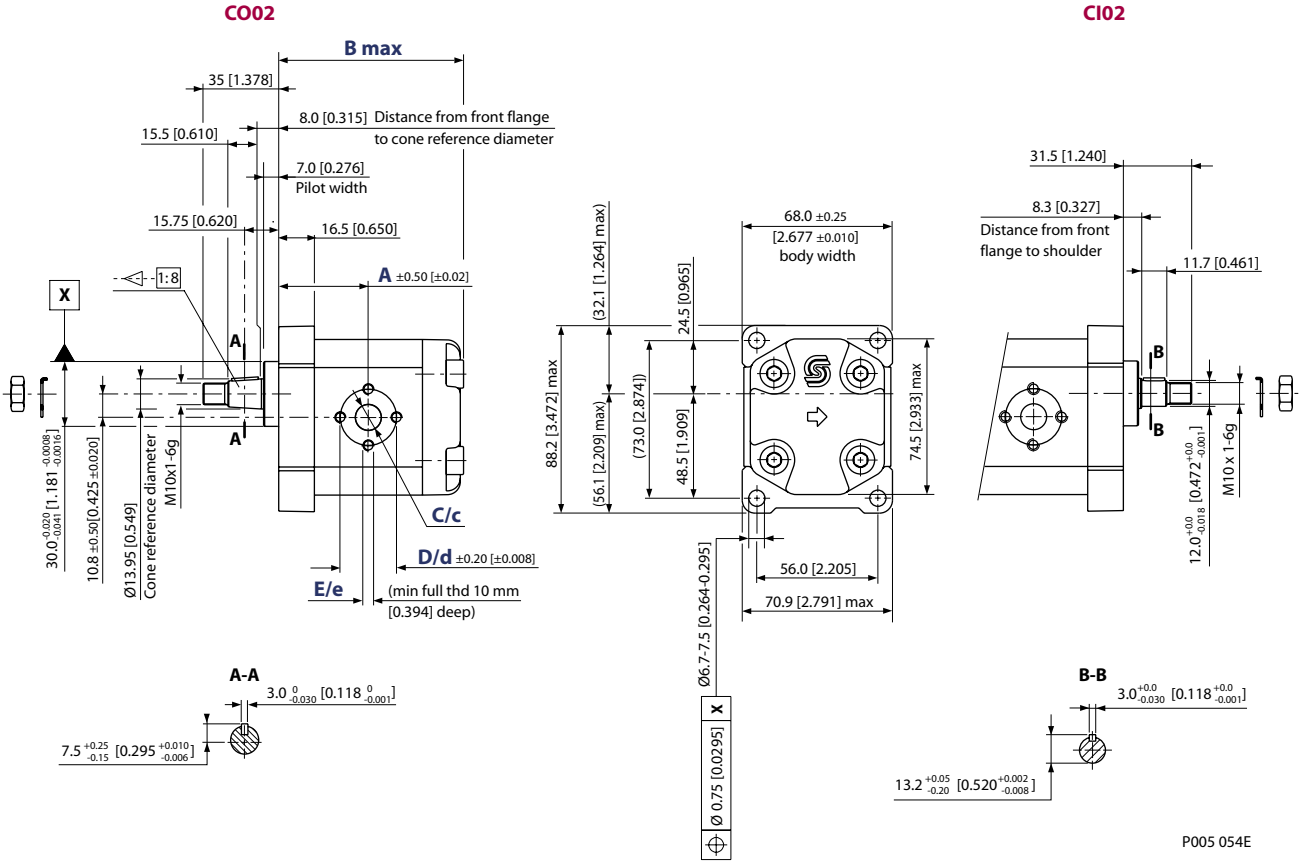
For further details on ordering, see *Model code,* pages 8 and 9.

GEAR PUMP DIMENSIONS (continued)

SKP1 – CO02 and CI02

This drawing shows the standard porting for CO02 and CI02.
Available in Series SKP1 only.

mm
[in]



SKP1 – CO02 and CI02 dimensions

Type (displacement)		1.2	1.7	2.2	2.6	3.2	3.8	4.3	6.0	7.8	10.0	12.0
Dimension	A	37.75 [1.486]	38.5 [1.516]	39.5 [1.555]	40.5 [1.634]	41.5 [1.634]	42.5 [1.673]	43.5 [1.713]	46.75 [1.841]	50.0 [1.969]	54.5 [2.146]	58.5 [2.303]
	B	79.5 [3.130]	81.0 [3.189]	83.0 [3.268]	85.0 [3.346]	87.0 [3.425]	89.0 [3.504]	91.0 [3.583]	97.5 [3.839]	104.0 [4.094]	113.0 [4.449]	121.0 [4.764]
Inlet/Outlet	C/c	12 [0.472]										
	D/d	26 [1.024]										
	E/e	M5										

Model code example

SKP1	**SKP1/2.2 D CO02 ..._.** **SKP1/3.8 S CI02 ..._.**

Maximum shaft torque

CO02	N•m [lb•in]	50 [442]
CI02		24 [212]

For further details on ordering, see *Model code,* pages 8 and 9.

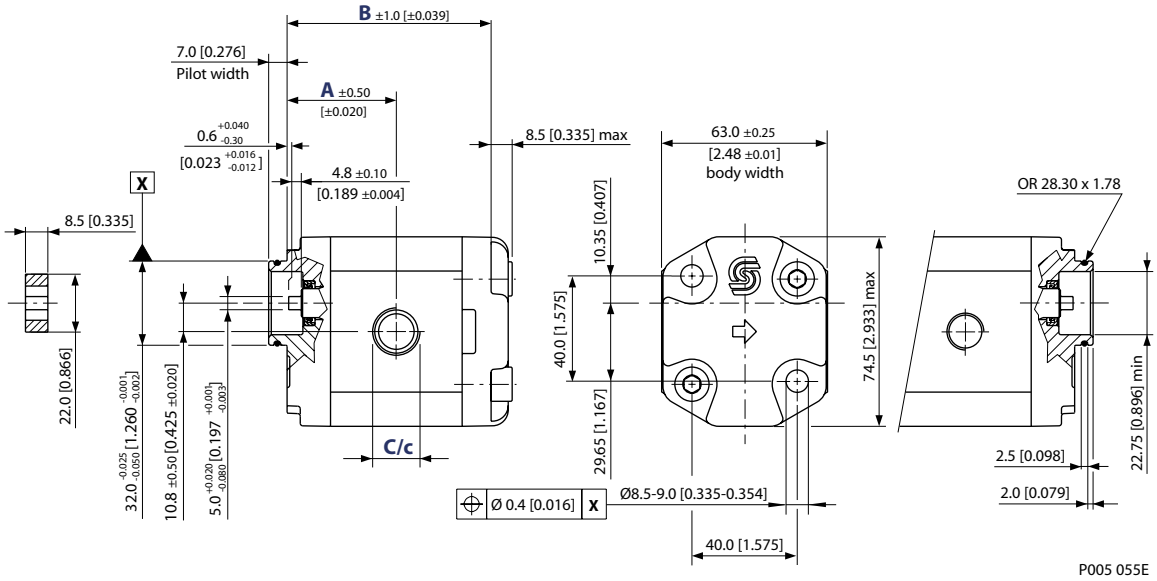
GEAR PUMP DIMENSIONS (continued)

SNP1, SEP1 – FR03

This drawing shows the standard porting for FR03.

mm
[in]

FR03



SNP1, SEP1 – FR03 dimensions

Type (displacement)		1.2	1.7	2.2	2.6	3.2	3.8	4.3	6.0	7.8
Dimension	A	37.75 [1.486]	38.5 [1.516]	39.5 [1.555]	40.5 [1.634]	41.5 [1.634]	42.5 [1.673]	43.5 [1.713]	46.75 [1.841]	50.0 [1.969]
	B	70.0 [2.756]	71.5 [2.815]	73.5 [2.894]	75.5 [2.972]	77.5 [3.051]	79.5 [3.130]	81.5 [3.209]	88.0 [3.465]	94.5 [3.720]
Inlet	C	M18 x 1.5 THD 12 [0.472] deep								
Outlet	c	M14 x 1.5, THD 12 [0.472] deep					M18 x 1.5, THD 12 [0.472] deep			

Model code example

SNP1	**SNP1/2.2 D FR03 ..._.**
SEP1	**SEP1/3.2 S FR03 LFE_.**

Maximum shaft torque

FR03	N•m [lb•in]	14 [124]

For further details on ordering, see *Model code,* pages 8 and 9.

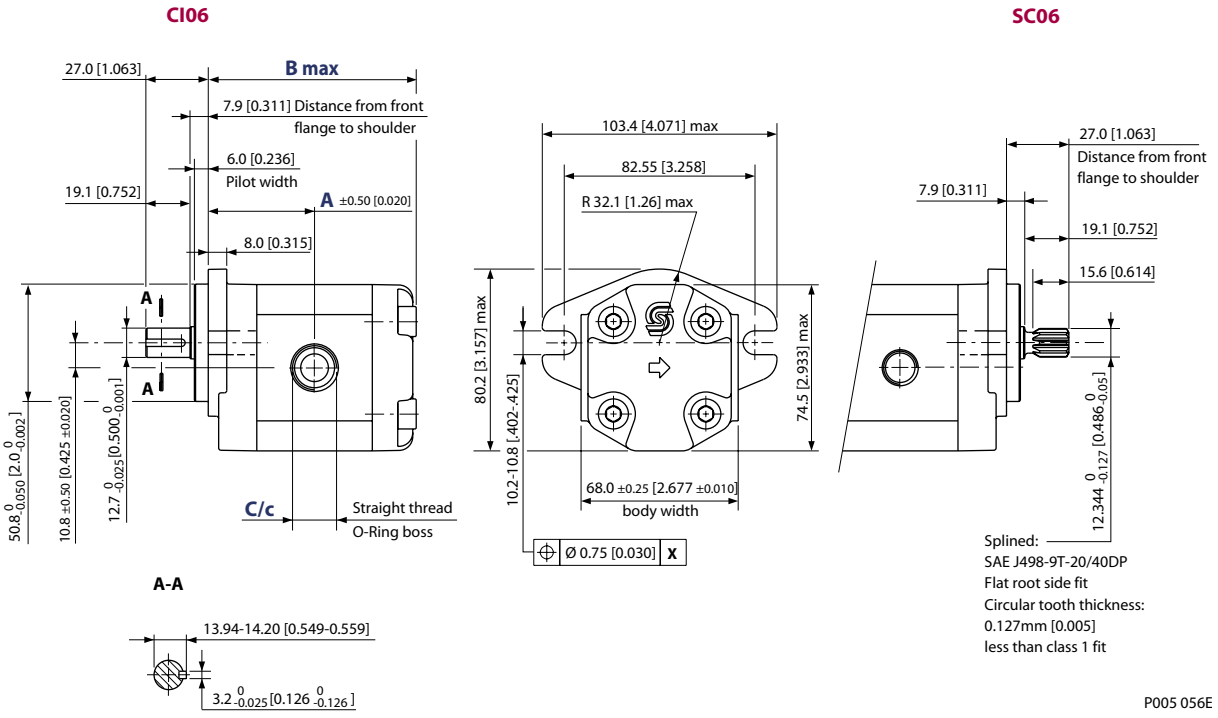
LFE variant means "Product supplied without Oldham coupling".
LAN variant means a version without shaft seal.

GEAR PUMP DIMENSIONS (continued)

SKP1 – CI06 and SC06

This drawing shows the standard porting for CI06 and SC06.
Available in Series SKP1 only.

mm
[in]



SKP1 – CI06 and SC06 dimensions

Type (displacement)		1.2	1.7	2.2	2.6	3.2	3.8	4.3	6	7.8	10	12
Dimension	A	42.25 [1.663]	43.0 [1.693]	44.0 [1.732]	45.0 [1.772]	46.0 [1.811]	47.0 [1.850]	48.0 [1.890]	51.25 [2.018]	54.5 [2.146]	59.0 [2.323]	63.5 [2.5003]
	B	84.0 [3.307]	85.5 [3.366]	87.5 [3.445]	89.5 [3.524]	91.5 [3.602]	93.5 [3.681]	95.5 [3.760]	102.0 [4.016]	108.5 [4.272]	117.5 [4.626]	125.5 [4.941]
Inlet	C	¾–16UNF–2B, THD 14.3 [0.563] deep										
Outlet	c	9/16–18UNF–2B, THD 12.7 [0.500] deep										

Model code example

SKP1	**SKP1/3.2 D CI06 ..._.** **SKP1/10 S SC06 ..._.**

Maximum shaft torque

CI06	N•m [lb•in]	32 [283]
SC06		34 [301]

For further details on ordering, see *Model code,* pages 8 and 9.

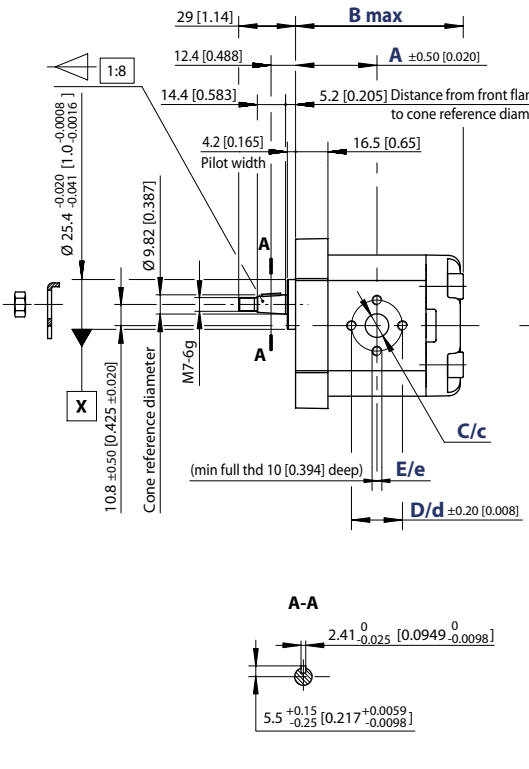
GEAR MOTOR DIMENSIONS

SKM1 – CO01 and SC01

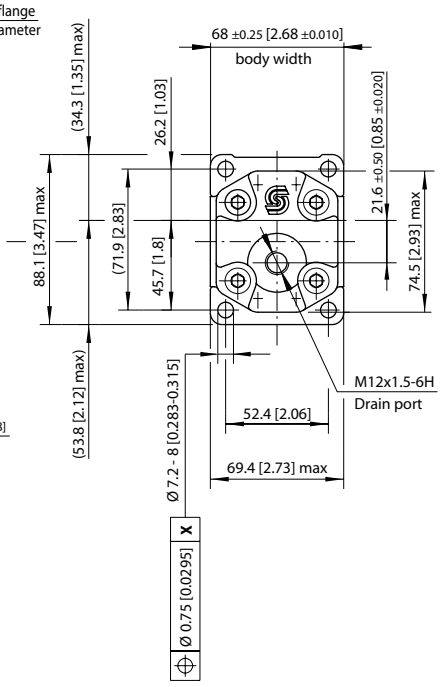
This drawing shows the standard porting for CO01 and SC01.
Available in Series SKM1 only.

mm
[in]

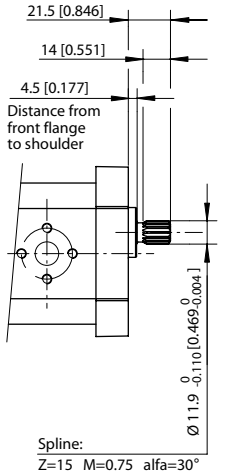
CO01



A-A



SC01



Spline:
Z=15 M=0.75 alfa=30°
Circular tooth thickness:
1.028-1.068 [0.040-0.042]
Internal spline dia:
9.8-10 [0.386-0.394]

P005 057E

SKM1 – CO01 and SC01 dimensions

Type (displacement)		2.6	3.2	3.8	4.3	6.0	7.8	10.0	12.0
Dimension	A	40.5 [1.594]	41.5 [1.634]	42.5 [1.673]	43.5 [1.713]	46.75 [1.841]	50.0 [1.969]	54.5 [2.146]	58.5 [2.303]
	B	85.0 [3.346]	87.0 [3.425]	89.0 [3.504]	91.0 [3.583]	97.5 [3.839]	104.0 [4.094]	113.0 [4.449]	121.0 [4.764]
Inlet/Outlet	C/c	12 [0.472]							
	D/d	26 [1.024]							
	E/e	M5							

Model code example

SKM1	**SKM1/3.2 . CO01..._.** **SKM1/2.6 . SC01 ..._.**

Maximum shaft torque

CO01	N•m [lb•in]	25 [221]
SC01		35 [310]

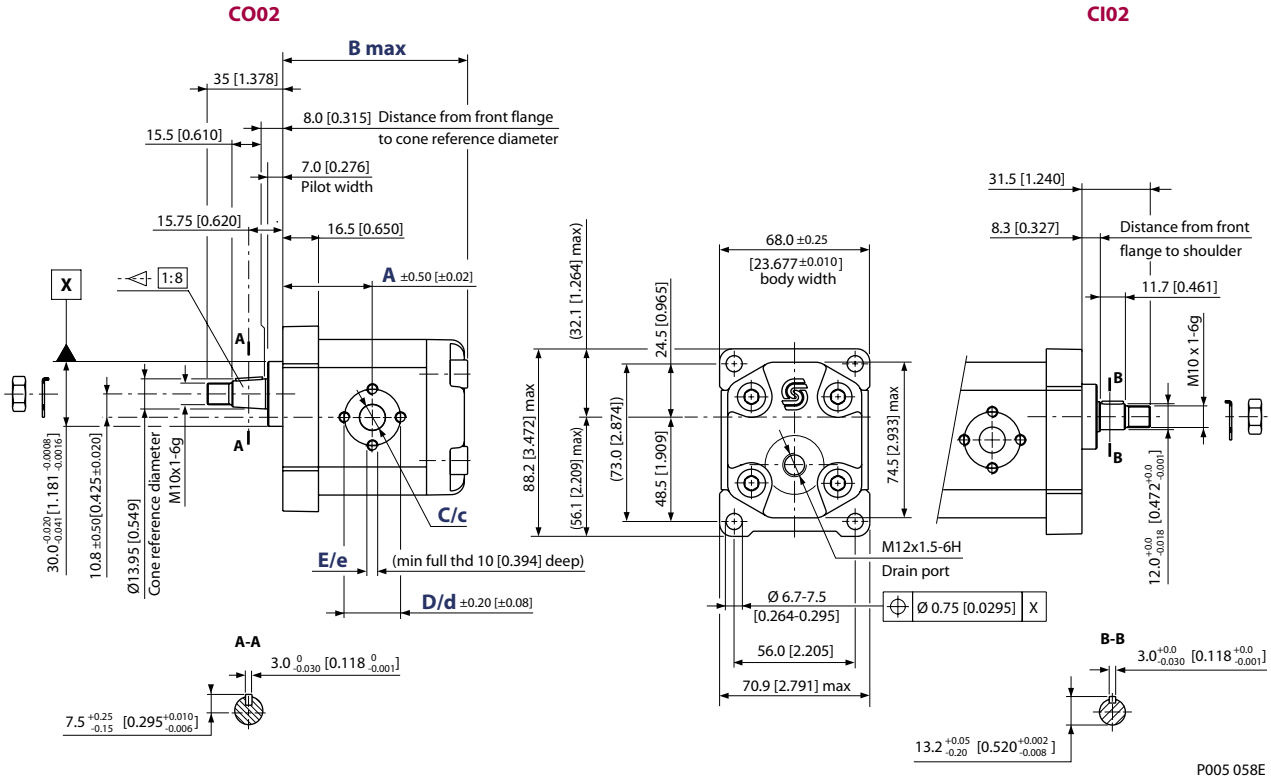
For further details on ordering, see *Model code,* pages 8 and 9.

GEAR MOTOR DIMENSIONS (continued)

SKM1, SKU1 – CO02 and CI02

This drawing shows the standard porting for CO02 and CI02.

mm
[in]



SKM1, SKU1 – CO02 and CI02 dimensions

Type (displacement)		2.6	3.2	3.8	4.3	6.0	7.8	10.0	12.0
Dimension	**A**	40.5 [1.594]	41.5 [1.634]	42.5 [1.673]	43.5 [1.713]	46.75 [1.841]	50.0 [1.969]	54.5 [2.146]	58.5 [2.303]
	B	85.0 [3.346]	87.0 [3.425]	89.0 [3.504]	91.0 [3.583]	97.5 [3.839]	104.0 [4.094]	113.0 [4.449]	121.0 [4.764]
Inlet/Outlet	**C/c**	12 [0.472]							
	D/d	26 [1.024]							
	E/e	M5							

Model code example

SKM1	**SKM1/10 . CO02 ..._.** **SKM1/12 . CI02 ..._.**
SKU1	**SKU1/10 D CO02 ..._.** **SKU1/12 S CI02 ..._.**

Maximum shaft torque

CO02	N•m [lb•in]	50 [442]
CI02		24 [212]

For further details on ordering, see *Model code,* pages 8 and 9.

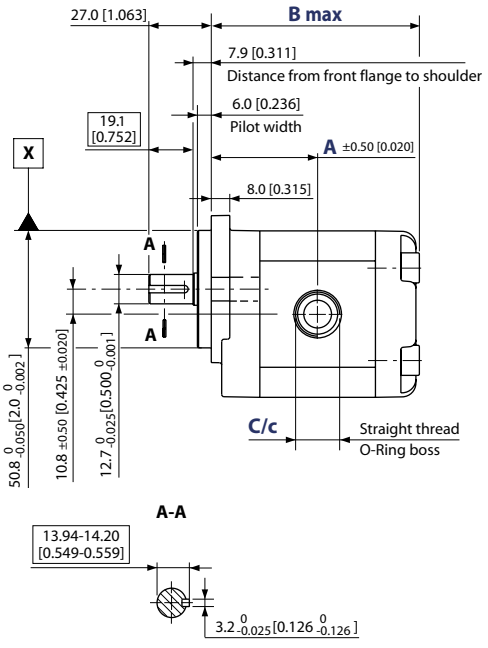
GEAR MOTOR DIMENSIONS (continued)

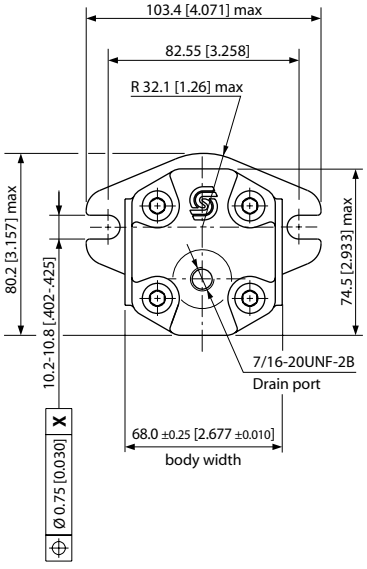
SKM1 – CI06 and SC06

This drawing shows the standard porting for CI06 and SC06.
Available in Series SKM1 only.

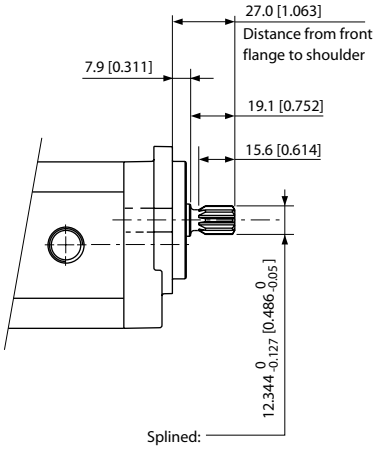
mm
[in]

CI06





SC06



P005 059E

SKM1 – CI06 and SC06 dimensions

Type (displacement)		2.6	3.2	3.8	4.3	6.0	7.8	10.0	12.0
Dimension	A	45 [1.771]	46 [1.811]	47 [1.850]	48 [1.889]	51.25 [2.017]	54.5 [2.145]	59 [2.322]	63.5 [2.500]
	B	89.5 [3.523]	91.5 [3.602]	93.5 [3.681]	95.5 [3.759]	102 [4.015]	108.5 [4.271]	117.5 [4.625]	125.5 [4.940]
Inlet/Outlet	C/c	¾–16UNF–2B, THD 14.3 [0.563] deep							

Model code example

SKM1	**SKM1/10 . CI06 ..._.** **SKM1/12 . SC06 ..._.**

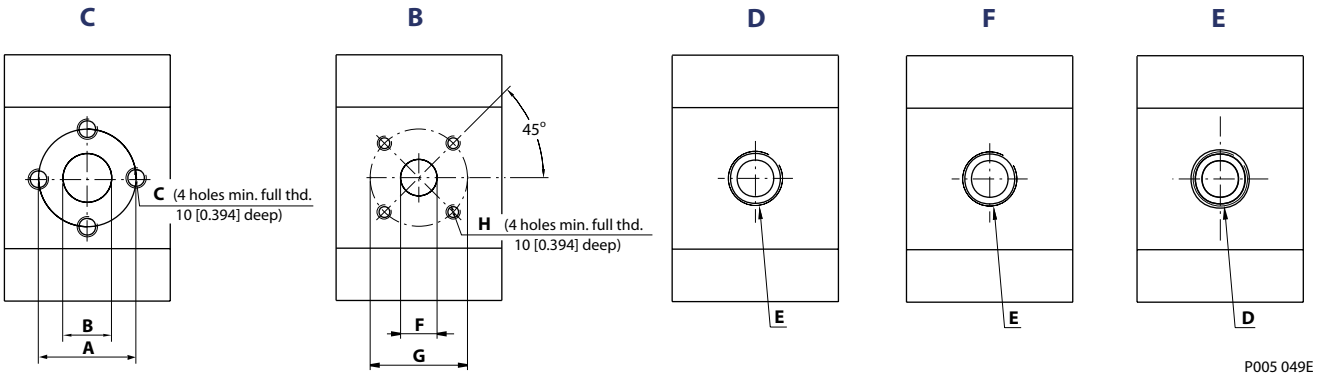
Maximum shaft torque

CI06	N•m [lb•in]	32 [283]
SC06		34 [301]

For further details on ordering, see *Model code,* pages 8 and 9.

GROUP 1 PUMP PORTS

These pump ports are available:



P005 049E

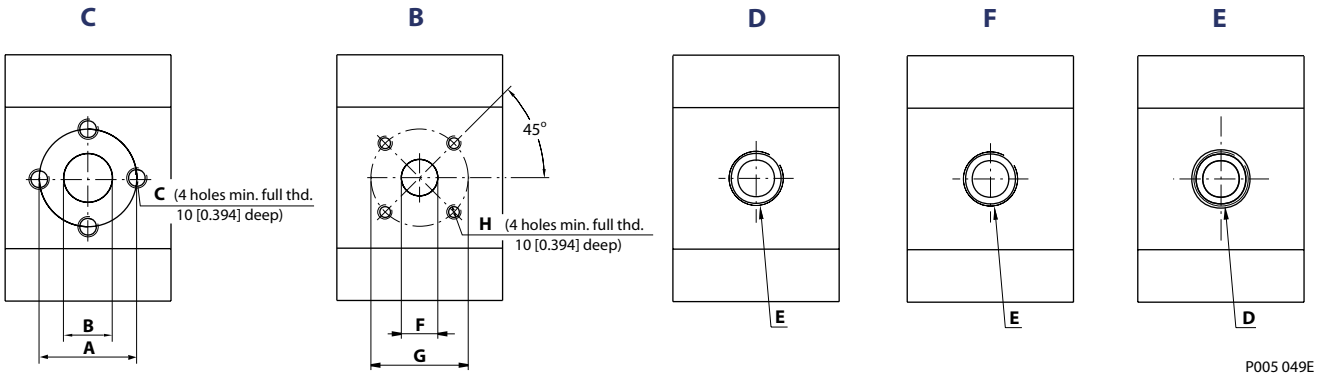
Group 1 pump ports dimensions

Model code*		C			B			D	F	E
Standard port for flange code		01/02			nonstandard (ports centered on body)			03	nonstandard	06
Type (displacement)		B	A	C	F	G	H	E	E	D
1.2	Inlet	12 [0.462]	26 [1.024]	M5	13 [0.512]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	3/4–16UNF–2B
	Outlet	12 [0.462]	26 [1.024]	M5	8 [0.315]	30 [1.181]	M6	M14x1.5	3/8 Gas (BSPP)	9/16–18UNF–2B
1.7	Inlet	12 [0.462]	26 [1.024]	M5	13 [0.512]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	3/4–16UNF–2B
	Outlet	12 [0.462]	26 [1.024]	M5	8 [0.315]	30 [1.181]	M6	M14x1.5	3/8 Gas (BSPP)	9/16–18UNF–2B
2.2	Inlet	12 [0.462]	26 [1.024]	M5	13 [0.512]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	3/4–16UNF–2B
	Outlet	12 [0.462]	26 [1.024]	M5	8 [0.315]	30 [1.181]	M6	M14x1.5	3/8 Gas (BSPP)	9/16–18UNF–2B
2.6	Inlet	12 [0.462]	26 [1.024]	M5	13 [0.512]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	3/4–16UNF–2B
	Outlet	12 [0.462]	26 [1.024]	M5	8 [0.315]	30 [1.181]	M6	M14x1.5	3/8 Gas (BSPP)	9/16–18UNF–2B
3.2	Inlet	12 [0.462]	26 [1.024]	M5	13 [0.512]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	3/4–16UNF–2B
	Outlet	12 [0.462]	26 [1.024]	M5	8 [0.315]	30 [1.181]	M6	M14x1.5	3/8 Gas (BSPP)	9/16–18UNF–2B
3.8	Inlet	12 [0.462]	26 [1.024]	M5	13 [0.512]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	3/4–16UNF–2B
	Outlet	12 [0.462]	26 [1.024]	M5	8 [0.315]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	9/16–18UNF–2B
4.3	Inlet	12 [0.462]	26 [1.024]	M5	13 [0.512]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	3/4–16UNF–2B
	Outlet	12 [0.462]	26 [1.024]	M5	8 [0.315]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	9/16–18UNF–2B
6.0	Inlet	12 [0.462]	26 [1.024]	M5	13 [0.512]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	3/4–16UNF–2B
	Outlet	12 [0.462]	26 [1.024]	M5	13 [0.512]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	9/16–18UNF–2B
7.8	Inlet	12 [0.462]	26 [1.024]	M5	13 [0.512]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	3/4–16UNF–2B
	Outlet	12 [0.462]	26 [1.024]	M5	13 [0.512]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	9/16–18UNF–2B
10.0	Inlet	12 [0.462]	26 [1.024]	M5	13 [0.512]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	3/4–16UNF–2B
	Outlet	12 [0.462]	26 [1.024]	M5	13 [0.512]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	9/16–18UNF–2B
12.0	Inlet	12 [0.462]	26 [1.024]	M5	13 [0.512]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	3/4–16UNF–2B
	Outlet	12 [0.462]	26 [1.024]	M5	13 [0.512]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	9/16–18UNF–2B

* Mark only if desired porting is nonstandard for the flange code selected. Otherwise, mark '.'

GROUP 1 MOTOR PORTS

These motor ports are available:



Group 1 motor ports dimensions

Model code*		C			B			D	F	E
Standard port for flange code		01			02			nonstandard		06
Type (displacement)		B	A	C	F	G	H	E	E	D
2.6	Inlet	12 [0.472]	26 [1.024]	M5	13 [0.512]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	3/4–16UNF–2B
	Outlet	12 [0.472]	26 [1.024]	M5	13 [0.512]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	3/4–16UNF–2B
3.2	Inlet	12 [0.472]	26 [1.024]	M5	13 [0.512]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	3/4–16UNF–2B
	Outlet	12 [0.472]	26 [1.024]	M5	13 [0.512]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	3/4–16UNF–2B
3.8	Inlet	12 [0.472]	26 [1.024]	M5	13 [0.512]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	3/4–16UNF–2B
	Outlet	12 [0.472]	26 [1.024]	M5	13 [0.512]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	3/4–16UNF–2B
4.3	Inlet	12 [0.472]	26 [1.024]	M5	13 [0.512]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	3/4–16UNF–2B
	Outlet	12 [0.472]	26 [1.024]	M5	13 [0.512]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	3/4–16UNF–2B
6.0	Inlet	12 [0.472]	26 [1.024]	M5	13 [0.512]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	3/4–16UNF–2B
	Outlet	12 [0.472]	26 [1.024]	M5	13 [0.512]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	3/4–16UNF–2B
7.8	Inlet	12 [0.472]	26 [1.024]	M5	13 [0.512]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	3/4–16UNF–2B
	Outlet	12 [0.472]	26 [1.024]	M5	13 [0.512]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	3/4–16UNF–2B
10.0	Inlet	12 [0.472]	26 [1.024]	M5	13 [0.512]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	3/4–16UNF–2B
	Outlet	12 [0.472]	26 [1.024]	M5	13 [0.512]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	3/4–16UNF–2B
12.0	Inlet	12 [0.472]	26 [1.024]	M5	13 [0.512]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	3/4–16UNF–2B
	Outlet	12 [0.472]	26 [1.024]	M5	13 [0.512]	30 [1.181]	M6	M18x1.5	3/8 Gas (BSPP)	3/4–16UNF–2B
Drain (only SKM1)		M12x1.5			M12x1.5			M12x1.5	1/8 Gas (BSPP)	7/16–20UNF–2B

* Mark only if desired porting is nonstandard for the flange code selected. Otherwise, mark '.'

SHAFT AND FLANGE AVAILABILITY

This table details the standard Group 1 shafts and flange combinations that are currently available with the maximum shaft torque limits. For further information, please see Sauer-Danfoss publications *Group 1 Gear Pumps Technical Information,* 520L0545 and *Group 1, 2 and 3 Gear Motors, Technical Information,* 520L0568.

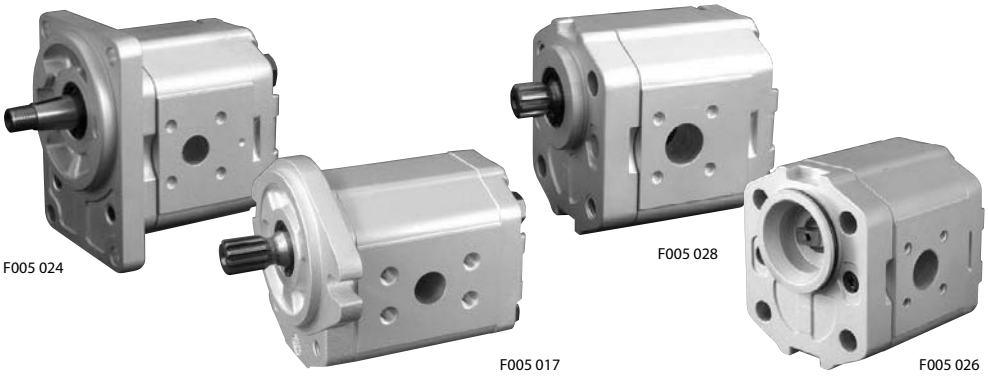
Shaft and flange availability and torque capacity

Shaft		**Mounting flange code with maximum torque** in Nm [lb•in]			
Description	***Code***	**01**	**02**	**03**	**06**
Taper 1:8	**CO**	25 [221]	50 [442]	-	-
Spline 15-T	**SC**	35 [310]	-	-	-
SAE spline J/498-9T-20/40 DP	**SC**	-	-	-	34 [301]
Parallel 12 mm	**CI**	-	24 [212]	-	-
Parallel 12.7 mm	**CI**	-	-	-	32 [283]
Sauer-Danfoss Tang	**FR**	-	-	14 [124]	-

OVERVIEW

Sauer-Danfoss' Group 2 family of gear pumps: SNP2, SKP2 and motors: SNM2, SNU2, SKU2 are pressure balanced to provide high efficiency for the entire series. The SNP2 pump accommodates SAE 9-tooth and the SKP2 pump accomodates SAE 11-tooth splined shaft for higher torque applications. The SNM2 (a bidirectional motor) and the SNU2, SKU2 (unidirectional motors) complete the family.

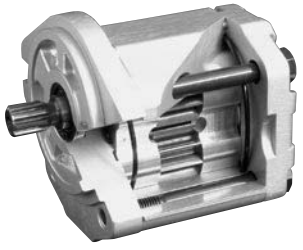
Group 2 gear pumps and motors



F005 024 F005 017 F005 028 F005 026

DESIGN

The Group 2 family of gear pumps and motors have a full range of mounting flanges meeting the standards of the market. The robust shaft seal design has a built-in stiffener and dust lip. The extruded aluminum alloy body is built for high pressure, complete with flanged or threaded ports that are compatible with market standards. Their patented sealing system design with high pressures and prevents leaks. SKP2 are 11-tooth splined shaft gear pumps.



F005 030

FEATURES

Special features within the Group 2 family include:

- wide range of displacement (from 4 to 25 cm^3/rev [from 0.24 to 1.54 in^3/rev] for pumps; and from 6 to 25 cm^3/rev [from 0.36 to 1.54 in^3/rev] for motors)
- various splined, parallel, and tapered shaft ends
- many types of industry-standard and special engine mounting flanges
- assorted port configurations including European, DIN standard, BSPP, and O-ring boss
- optional priority flow divider valve integrated into the rear cover
- numerous relief valve options, including full-flow, pilot, and others
- outrigger bearing assembly available for high radial and thrust load applications
- multiple configurations in combination with SNP1, SKP1, SKP2 and SNP3 pumps.

TECHNICAL DATA FOR PUMPS

This table details Group 2 technical data for gear pumps based on the model and displacement configuration. For further information about application and configuration of gear pumps, please see Sauer-Danfoss publication *Group 2 Gear Pumps Technical Information,* 520L0560.

Technical data – Group 2 gear pumps

		Pump model								
		4	**6**	**8**	**11**	**14**	**17**	**19**	**22**	**25**
Displacement	cm^3/rev [in^3/rev]	3.9 [0.24]	6.0 [0.37]	8.4 [0.51]	10.8 [0.66]	14.4 [0.88]	16.8 [1.02]	19.2 [1.17]	22.8 [1.39]	25.2 [1.54]
SNP2										
Peak pressure	bar [psi]	280 [4060]	280 [4060]	280 [4060]	280 [4060]	280 [4060]	280 [4060]	230 [3335]	200 [2900]	175 [2638]
Rated pressure		250 [3625]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	210 [3045]	180 [2610]	160 [2320]
Minimum speed at 0-100 bar	min^{-1} (rpm)	600	600	600	500	500	500	500	500	500
Minimum speed at 100-180 bar		1200	1200	1000	800	750	750	700	700	700
Min. speed at 180 bar to rated pressure		1400	1400	1400	1200	1000	1000	1000	800	–
Maximum speed		4000	4000	4000	4000	3500	3000	3000	3000	3000
SKP2										
Peak pressure	bar [psi]	280 [4060]	280 [4060]	280 [4060]	280 [4060]	280 [4060]	280 [4060]	260 [3770]	230 [3335]	200 [2900]
Rated pressure		250 [3625]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	240 [3480]	210 [3045]	190 [2755]
Minimum speed at 0-100 bar	min^{-1} (rpm)	600	600	600	500	500	500	500	500	500
Minimum speed at 100-180 bar		1200	1200	1000	800	750	750	700	700	700
Min. speed at 180 bar to rated pressure		1400	1400	1400	1200	1000	1000	1000	800	800
Maximum speed		4000	4000	4000	4000	3500	3000	3000	3000	3000
Both (SNP2, SKP2)										
Weight	kg [lb]	2.3 [5.1]	2.4 [5.3]	2.5 [5.5]	2.7 [5.8]	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^{-6} kg•m^2 [x 10^{-6} lb•ft^2]	21.3 [505]	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]	15.6 [4.1]	24.0 [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^2 = 23.68 lb•ft^2

TECHNICAL DATA FOR MOTORS

This table details the performance of the Group 2 gear motors. For further information about application and configuration of gear motors, please see Sauer-Danfoss publication *Group 1, 2 and 3 Gear Motors, Technical Information,* 520L0568.

Technical data – Group 2 gear motors

		Motor model							
		6	**8**	**11**	**14**	**17**	**19**	**22**	**25**
Displacement	cm^3/rev [in^3/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]
SNM2 (a bidirectional motor)									
Peak pressure	bar [psi]	280 [4060]	280 [4060]	280 [4060]	280 [4060]	260 [3770]	230 [3335]	200 [2900]	180 [2610]
Rated pressure	bar [psi]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	230 [3335]	210 [3000]	180 [2610]	160 [2320]
Outlet pressure	bar [psi]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	230 [3335]	210 [3000]	180 [2610]	160 [2320]
Minimum speed	min^{-1} (rpm)	700	700	700	700	500	500	500	500
Maximum speed	min^{-1} (rpm)	4000	4000	4000	4000	4000	3500	3500	3500
SNU2 (a unidirectional motor)									
Peak pressure	bar [psi]	–	280 [4060]	280 [4060]	280 [4060]	260 [3770]	230 [3335]	200 [2900]	180 [2610]
Rated pressure	bar [psi]	–	250 [3625]	250 [3625]	250 [3625]	230 [3335]	210 [3000]	180 [2610]	160 [2320]
Minimum speed	min^{-1} (rpm)	–	600	600	600	500	500	500	500
Maximum speed	min^{-1} (rpm)	–	3500	3500	3500	3000	3000	3000	2500
SKU2 (a unidirectional motor)									
Peak pressure	bar [psi]	–	280 [4060]	280 [4060]	280 [4060]	260 [3770]	230 [3335]	200 [2900]	175 [2815]
Rated pressure	bar [psi]	–	250 [3625]	250 [3625]	250 [3625]	230 [3335]	210 [3000]	180 [2610]	160 [2320]
Minimum speed	min^{-1} (rpm)	–	600	600	600	500	500	500	500
Maximum speed	min^{-1} (rpm)	–	3500	3500	3500	3000	3000	3000	2500
All (SNM2, SNU2, SKU2)									
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^{-6} kg•m^2 [x 10^{-6} lb•ft^2]	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^2 = 23.68 lb•ft^2

Caution

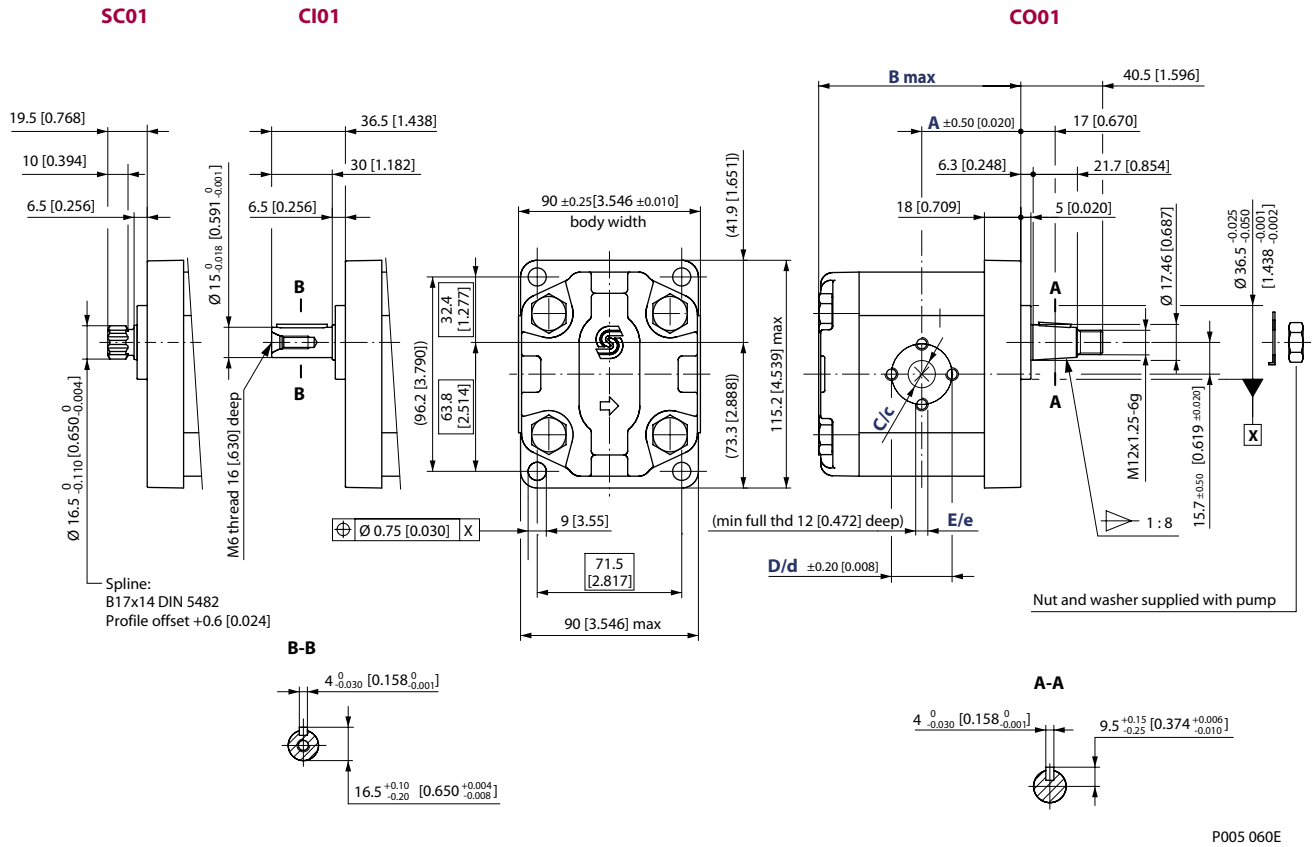
The rated and peak pressure mentioned are for pumps and motors with flanged ports only. When threaded ports are required a de-rated performance has to be considered. To verify the compliance of an high pressure application with a threaded ports pump apply to a Sauer-Danfoss representative.

GEAR PUMP DIMENSIONS

SNP2 – CO01, CI01 and SC01

This drawing shows the standard porting for CO01, CI01 and SC01.

mm
[in]



SNP2 – CO01, CI01 and SC01 dimensions

Type (displacement)		4	6	8	11	14	17	19	22	25
Dimension	A	43.25 [1.703]	45 [1.772]		49 [1.929]	52 [2.047]		56 [2.205]	59 [2.323]	
	B	90.0 [3.543]	93.0 [3.681]	97.5 [3.839]	101.5 [3.996]	107.5 [4.232]	111.5 [4.390]	115.5 [4.574]	121.5 [4.783]	125.5 [4.941]
Inlet	C	13.5 [0.531]				20 [0.787]				23.5 [0.925]
	D	30 [1.181]				40 [1.575]				
	E	M6				M8				
Outlet	c	13.5 [0.531]								20 [0.787]
	d	30 [1.181]								40 [1.575]
	e	M6								M8

Model code example

SNP2	**SNP2/11 D CO01..._.** **SNP2/14 S SC01 ..._.** **SNP2/17 D CI01..._**

Maximum shaft torque

CO01	N•m [lb•in]	150 [1328]
SC01, CI01		90 [797]

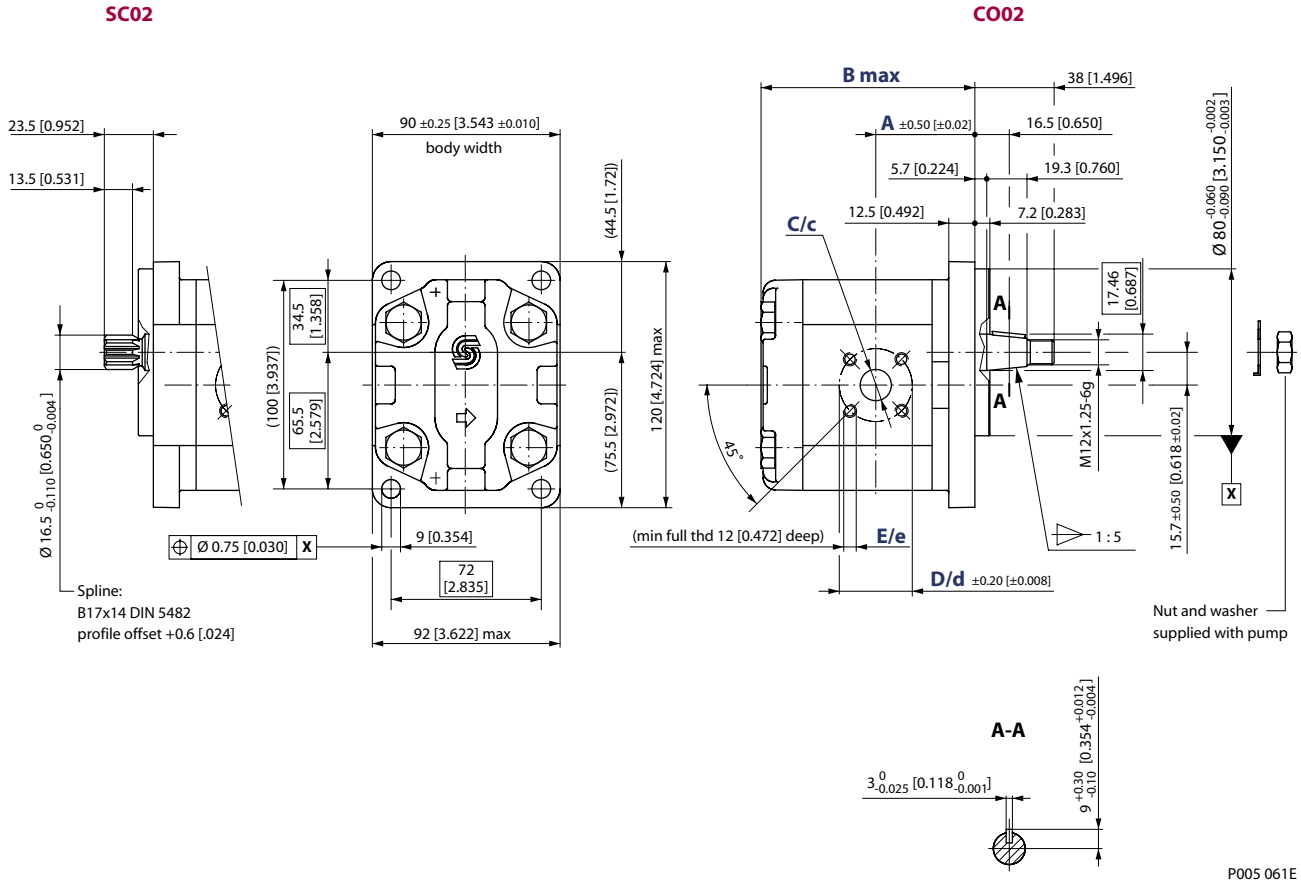
For further details on ordering, see *Model code,* pages 8 and 9.

GEAR PUMP DIMENSIONS (continued)

SNP2 – CO02 and SC02

This drawing shows the standard porting for CO02 and SC02.

mm
[in]



P005 061E

SNP2 – CO02 and SC02 dimensions

Type (displacement)		4	6	8	11	14	17	19	22	25
Dimension	A	39.8 [1.567]	41.1 [1.618]	43.1 [1.697]	47.5 [1.870]	47.5 [1.870]	47.5 [1.870]	47.5 [1.870]	55 [2.165]	64.5 [2.539]
	B	92.5 [3.642]	96 [3.780]	100 [3.937]	104 [4.094]	110 [4.331]	114 [4.488]	118 [4.646]	124 [4.882]	128 [5.039]
Inlet	C	15 [0.591]		20 [0.787]						
	D	40 [1.575]								
	E	M6								
Outlet	c	15 [0.591]								
	d	35 [1.378]								
	e	M6								

Model code example

SNP2	**SNP2/8 D CO02..._.** **SNP2/14 S SC02 ..._.**

Maximum shaft torque

CO02	N•m [lb•in]	140 [1239]
SC02		130 [1151]

For further details on ordering, see *Model code,* pages 8 and 9.

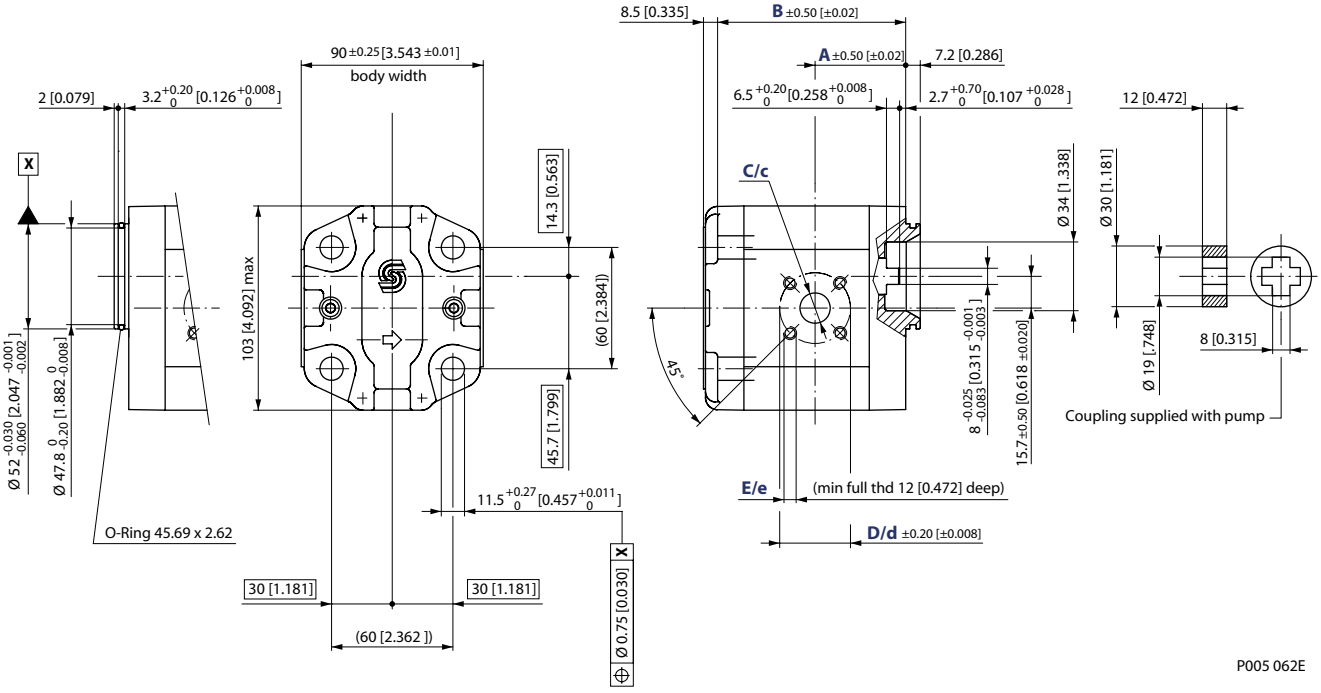
GEAR PUMP DIMENSIONS (continued)

SNP2 – FR03

This drawing shows the standard porting for FR03.

mm
[in]

FR03



SNP2 – FR03 dimensions

Type (displacement)		4	6	8	11	14	17	19	22	25
Dimension	A	37.3 [1.469]	38.6 [1.520]	40.6 [1.598]	45 [1.772]	45 [1.772]	45 [1.772]	45 [1.772]	52.5 [2.067]	62 [2.441]
	B	81.5 [3.209]	85 [3.346]	89 [3.504]	93 [3.661]	99 [3.897]	103 [4.055]	107 [4.212]	113 [4.448]	117 [4.606]
Inlet	C	15 [0.591]		20 [0.787]						
	D	40 [1.575]								
	E	M6								
Outlet	c	15 [0.591]								
	d	35 [1.378]								
	e	M6								

Model code example

SNP2	**SNP2/17 S FR03 ..._.**

Maximum shaft torque

FR03	N•m [lb•in]	70 [620]

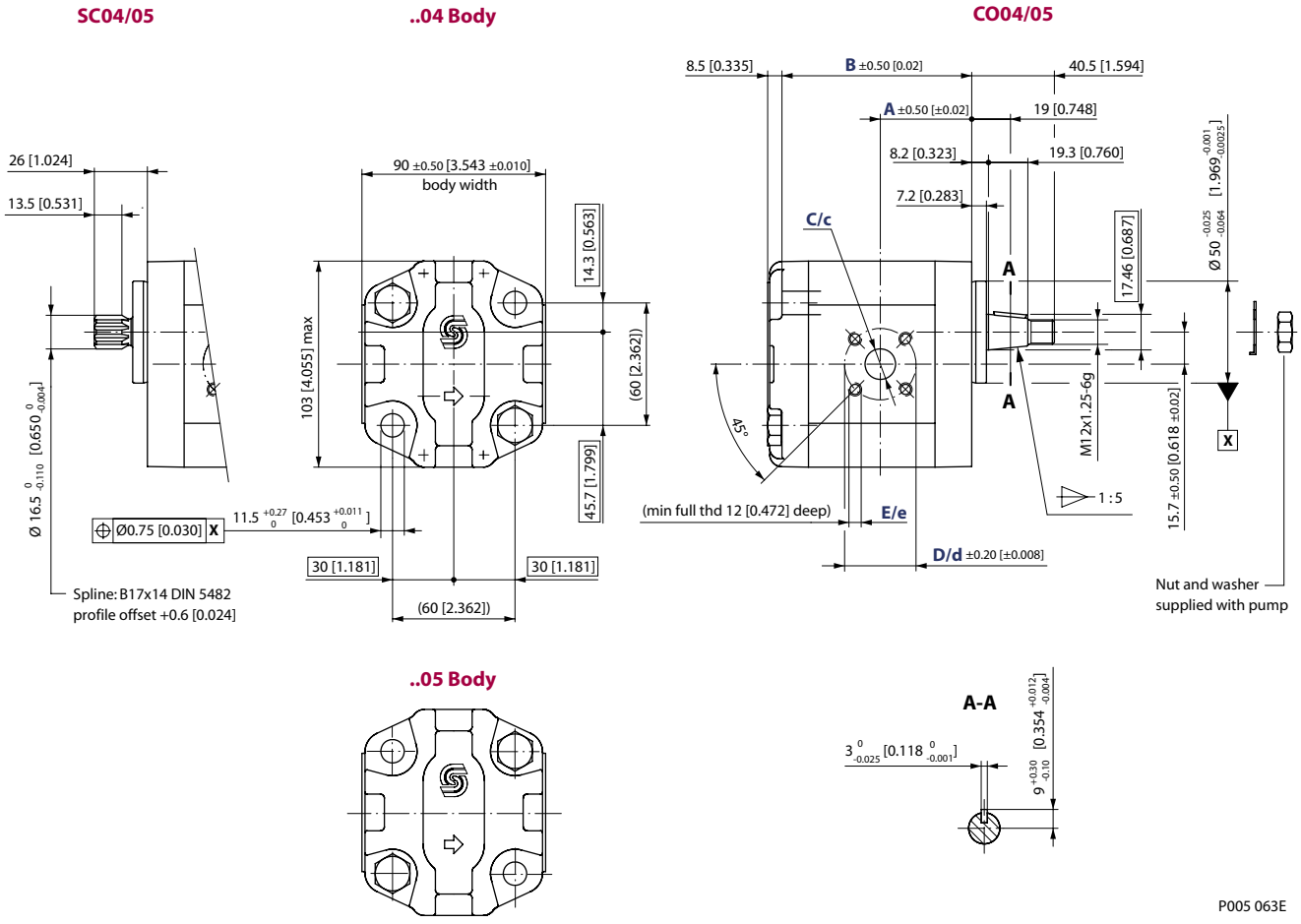
For further details on ordering, see *Model code,* pages 8 and 9.

GEAR PUMP DIMENSIONS (continued)

SNP2 – CO04/05 and SC04/05

This drawing shows the standard porting for CO04/05 and SC04/05.

mm
[in]



SNP2 – CO04/05 and SC04/05 dimensions

Type (displacement)		4	6	8	11	14	17	19	22	25
Dimension	A	37.3 [1.469]	38.6 [1.520]	40.6 [1.598]	45 [1.772]	45 [1.772]	45 [1.772]	45 [1.772]	52.5 [2.067]	62 [2.441]
	B	81.5 [3.208]	85 [3.364]	89 [3.503]	93 [3.661]	99 [3.897]	103 [4.055]	107 [4.212]	113 [4.448]	117 [4.606]
Inlet	C	15 [0.591]	20 [0.787]							
	D	40 [1.575]								
	E	M6								
Outlet	c	15 [0.591]								
	d	35 [1.378]								
	e	M6								

Model code example

SNP2	**SNP2/8 D CO04..._.** **SNP2/8 S CO05..._.** **SNP2/14 S SC04 ..._.** **SNP2/14 D SC05 ..._.**

Maximum shaft torque

CO04/CO05	N•m [lb•in]	140 [1239]
SC04/SC05		130 [1151]

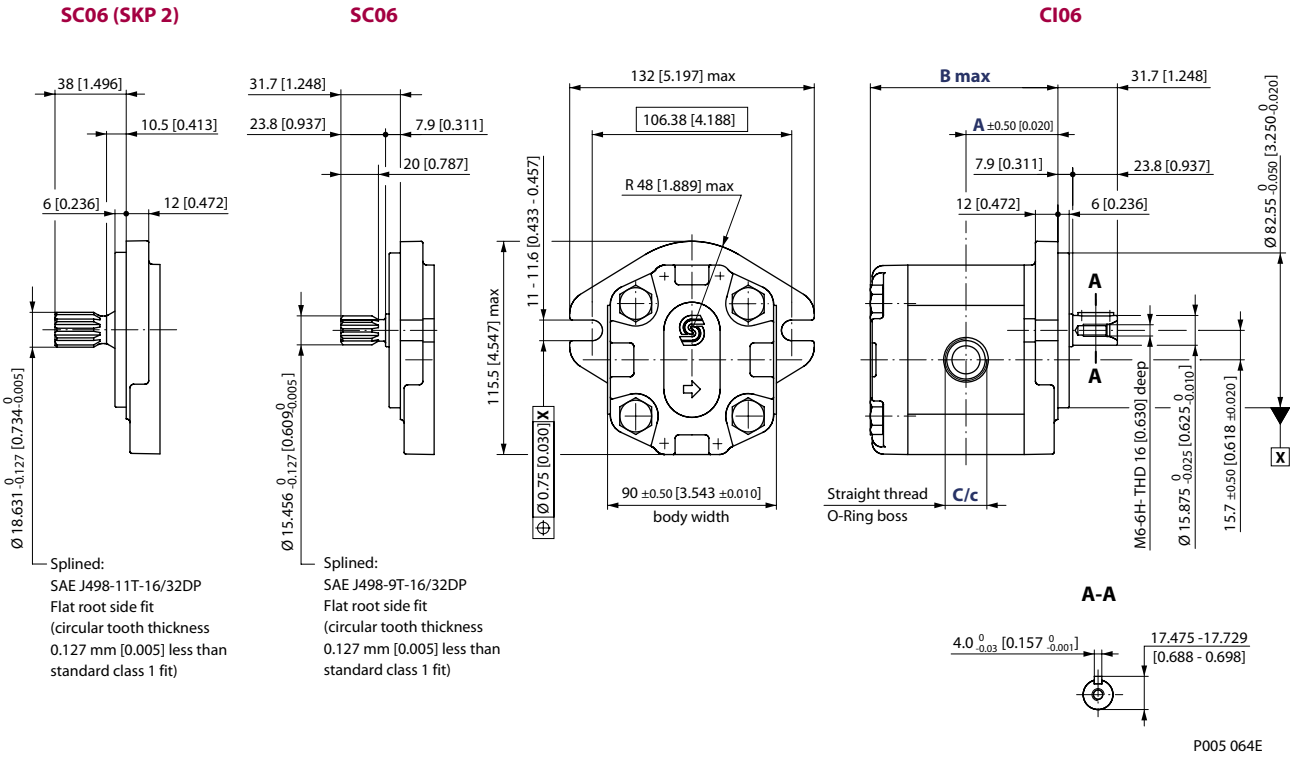
For further details on ordering, see *Model code,* pages 8 and 9.

GEAR PUMP DIMENSIONS (continued)

SNP2 – SC06, CI06 and SKP2 – SC06

This drawing shows the standard porting for SC06 and CI06.

mm
[in]



P005 064E

SNP2 – SC06, CI06 and SKP2 – SC06 dimensions

Type (displacement)		4	6	8	11	14	17	19	22	25
Dimension	A	43.25 [1.703]	45 [1.772]	47 [1.850]	49 [1.920]	52 [2.047]	54 [2.205]	56 [2.205]	59 [2.323]	61 [2.402]
	B	90 [3.543]	93.5 [3.681]	97.5 [3.839]	101.5 [3.996]	107.5 [4.232]	111.5 [4.390]	115.5 [4.547]	121.5 [4.783]	125.5 [4.941]
Inlet	C	1 1/16–12UNF–2B, 18.0 [0.709] deep								
Outlet	c	7/8–14UNF–2B, 16.7 [0.658] deep								

Model code example

SNP2	**SNP2/11 D CI06..._.** **SNP2/22 D SC06 ..._.**
SKP2	**SKP2/14 S SC06 ..._.**

Maximum shaft torque

CI06	N•m [lb•in]	80 [708]
SC06 (SNP2)		75 [664]
SC06 (SKP2)		150 [1328]

For further details on ordering, see *Model code,* pages 8 and 9.

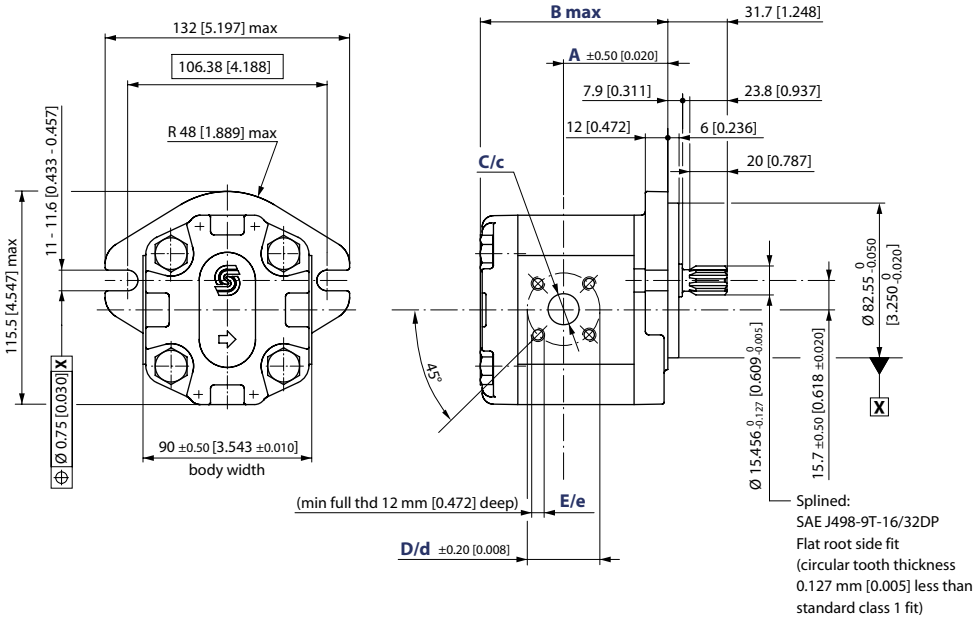
GEAR PUMP DIMENSIONS (continued)

SNP2 – SC06 LCX_G

This drawing shows the standard porting for SC06 LCX_G.

mm
[in]

SC06 LCX_G



P005 066E

SNP2 – SC06 LCX_G dimensions

Type (displacement)		4	6	8	11	14	17	19	22	25
Dimension	A	49.2 [1.937]	51.4 [2.023]	53.4 [2.102]	53.0 [2.087]	59.0 [2.322]	63.0 [2.480]	67.0 [2.637]	65.5 [2.579]	60.0 [2.326]
	B	90 [3.543]	93.5 [3.681]	97.5 [3.839]	101.5 [3.996]	107.5 [4.232]	111.5 [4.390]	115.5 [4.547]	121.5 [4.783]	125.5 [4.941]
Inlet	C	15 [0.591]		20 [0.787]						
	D	40 [1.575]								
	E	M6								
Outlet	c	15 [0.591]								
	d	35 [1.378]								
	e	M6								

Model code example

SNP2	**SNP2/25 S SC06 LCX_G**

Maximum shaft torque

SC06 LCX_G	N•m [lb•in]	75 [646]

For further details on ordering, see *Model code,* pages 8 and 9.

LCX means: front flange with seal on pilot diameter – body with front flange side (marked **B**) facing the cover.

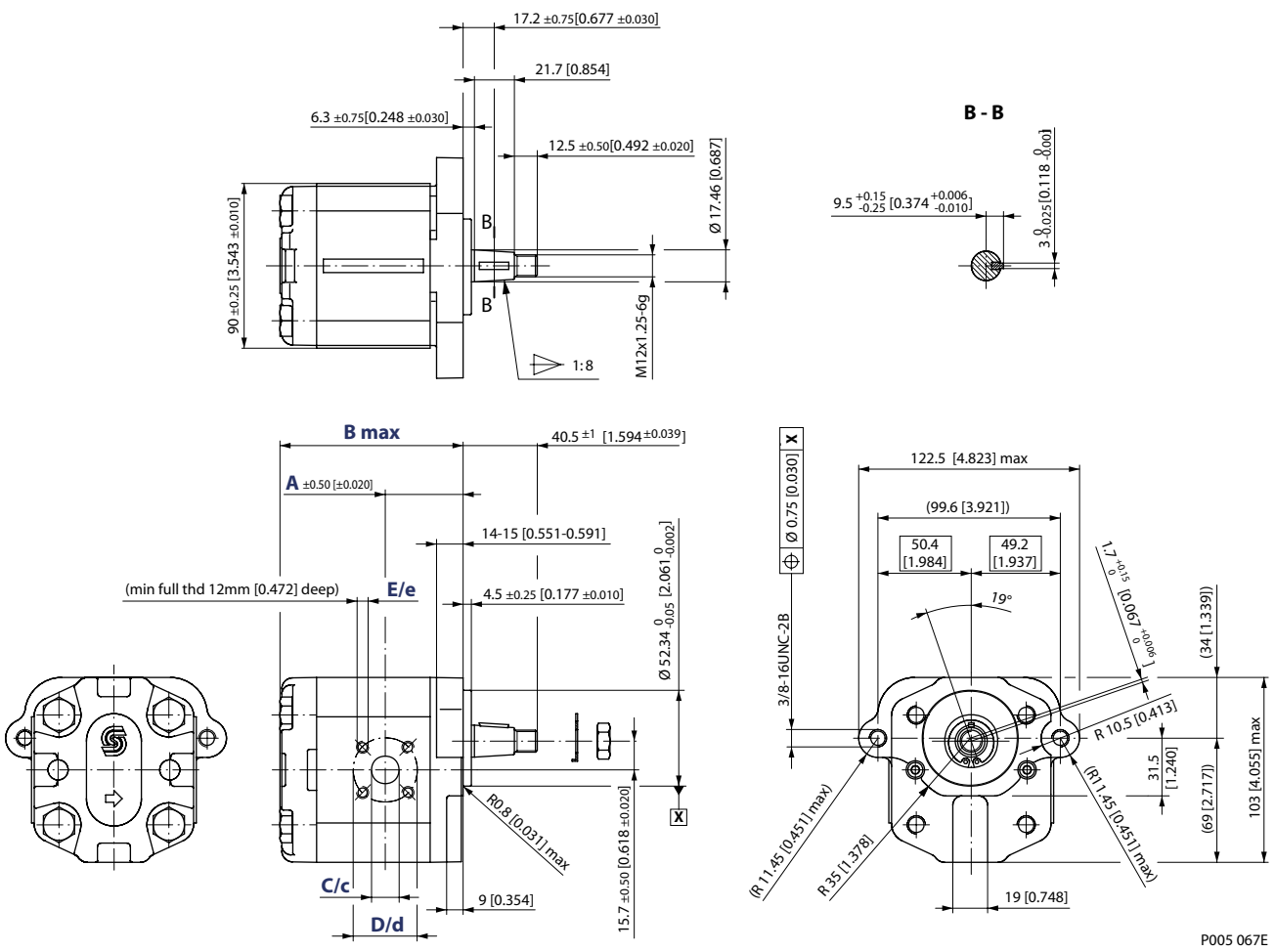
GEAR PUMP DIMENSIONS (continued)

SNP2 – CO09

This drawing shows the standard porting for CO09.

mm
[in]

CO09



SNP2 – CO09 dimensions

Type (displacement)		4	6	8	11	14	17	19	22	25
Dimension	A	37.3 [1.469]	38.6 [1.520]	40.6 [1.598]	45 [1.772]				52.5 [2.067]	62 [2.441]
	B	90 [3.543]	93.5 [3.681]	97.5 [3.839]	101.5 [3.996]	107.5 [4.232]	111.5 [4.390]	115.5 [4.547]	121.5 [4.783]	125.5 [4.941]
Inlet	C	15 [0.591]		20 [0.787]						
	D	40 [1.575]								
	E	M6								
Outlet	c	15 [0.591]								
	d	35 [1.378]								
	e	M6								

Model code example

SNP2	**SNP2/22 D CO09 ..._.**

Maximum shaft torque

CO09	N•m [lb•in]	150 [1328]

For further details on ordering, see *Model code,* pages 8 and 9.

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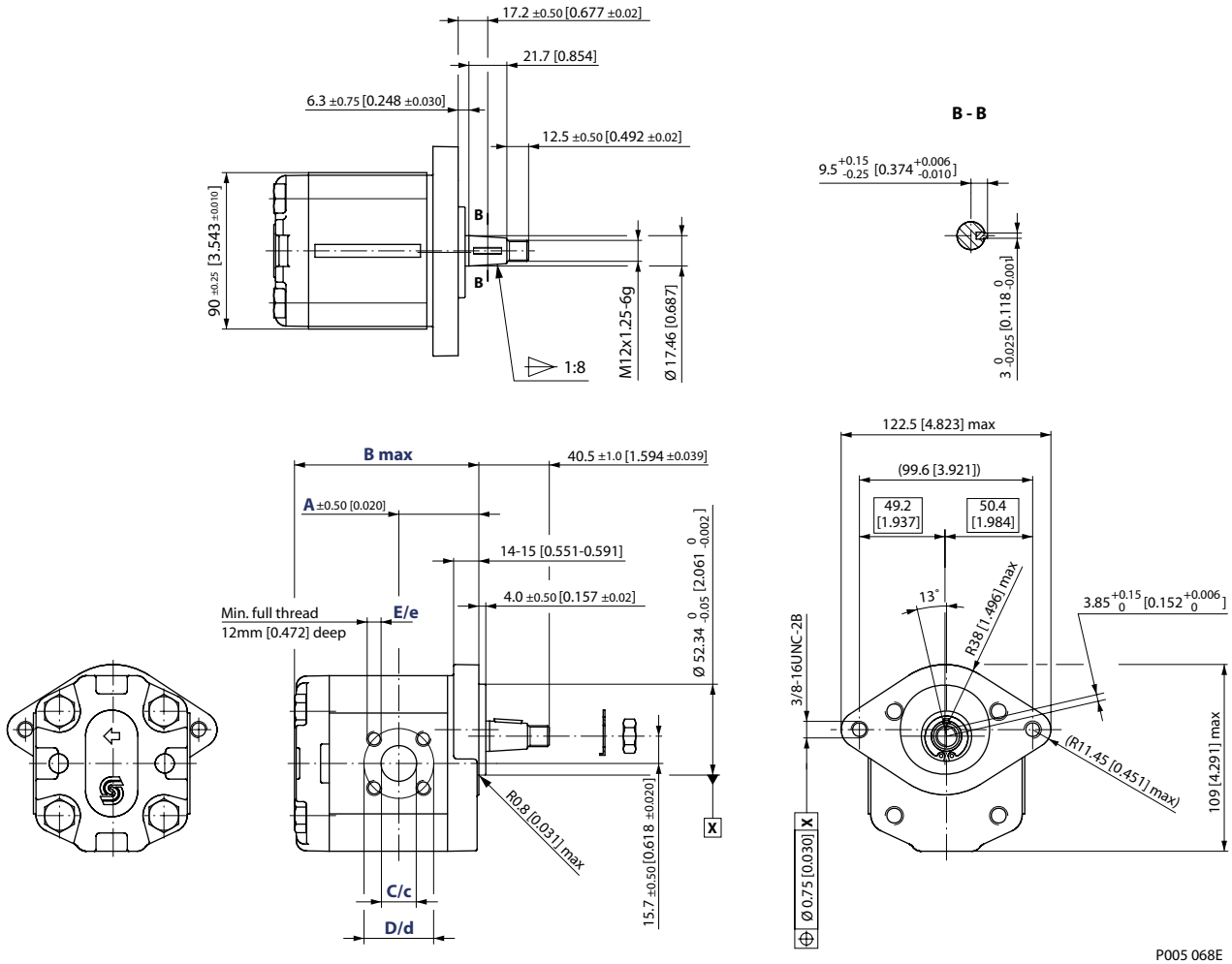
GEAR PUMP DIMENSIONS (continued)

SNP2 – CO09 (variant BBM)

This drawing shows the standard porting for CO09 (variant BBM).

mm
[in]

CO09 (variant BBM)



P005 068E

SNP2 – CO09 (variant BBM) dimensions

Type (displacement)		4	6	8	11	14	17	19	22	25
Dimension	A	37.3 [1.469]	38.6 [1.520]	40.6 [1.598]	45 [1.772]				52.5 [2.067]	62.0 [2.441]
	B	90 [3.543]	93.5 [3.681]	97.5 [3.839]	101.5 [3.996]	107.5 [4.232]	111.5 [4.390]	115.5 [4.547]	121.5 [4.783]	125.5 [4.941]
Inlet	C	15 [0.591]		20 [0.787]						
	D	40 [1.575]								
	E	M6								
Outlet	c	15 [0.591]								
	d	35 [1.378]								
	e	M6								

Model code example

SNP2	**SNP2/25 S CO09 ..._.**

Maximum shaft torque

CO09 (variant BBM)	N•m [lb•in]	150 [1328]

For further details on ordering, see *Model code,* pages 8 and 9.

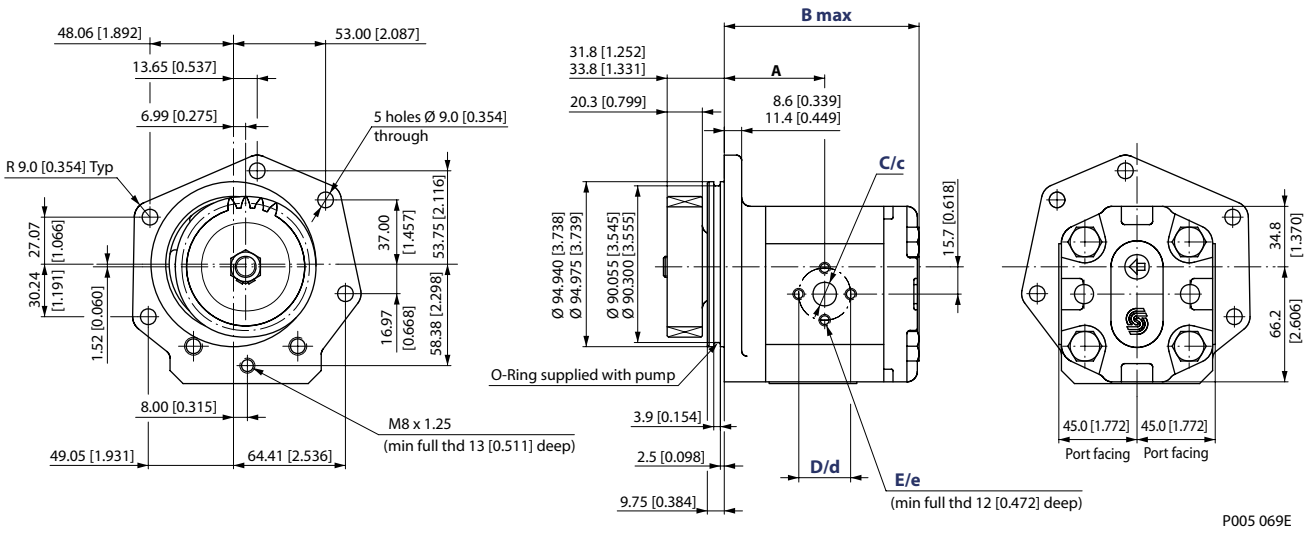
GEAR PUMP DIMENSIONS (continued)

SNP2 – CO0B

This drawing shows the standard porting for CO0B.

mm
[in]

CO0B



SNP2 – CO0B dimensions

Type (displacement)		4	6	8	11	14	17	19	22	25
Dimension	A	49.05 [1.931]	50.8 [2.000]		54.8 [2.157]	57.8 [2.276]		61.8 [2.433]		64.8 [2.551]
	B	95.3 [3.752]	98.8 [3.890]	102.8 [4.047]	106.8 [4.205]	112.8 [4.441]	116.8 [4.598]	120.8 [4.756]	126.8 [4.992]	130.0 [5.118]
Inlet	C	13.5 [0.531]				20 [0.787]				
	D	30 [1.181]				40 [1.575]				
	E	M6				M8				
Outlet	c	13.5 [0.531]								
	d	30 [1.181]								
	e	M6								

External gear data

Number of teeth	28
Module normal	2.54 [0.100]
Module transverse	2.618 [0.103]
Pressure angle normal	20°
Pressure angle transverse	20.5727°
Pitch circle diameter	73.34 [2.887]
Helix angle	14.133°
Hand of helix	Left hand
Full tooth depth	5.97 [0.235]
Base circle diameter	68.663 [2.702]
Dimension over 4 teeth	28.207 – 28.168 [1.111 – 1.109]

Maximum shaft torque

CO0B	N•m [lb•in]	150 [1328]

Model code example

SNP2	**SNP2/14 D CO0B ..._.**

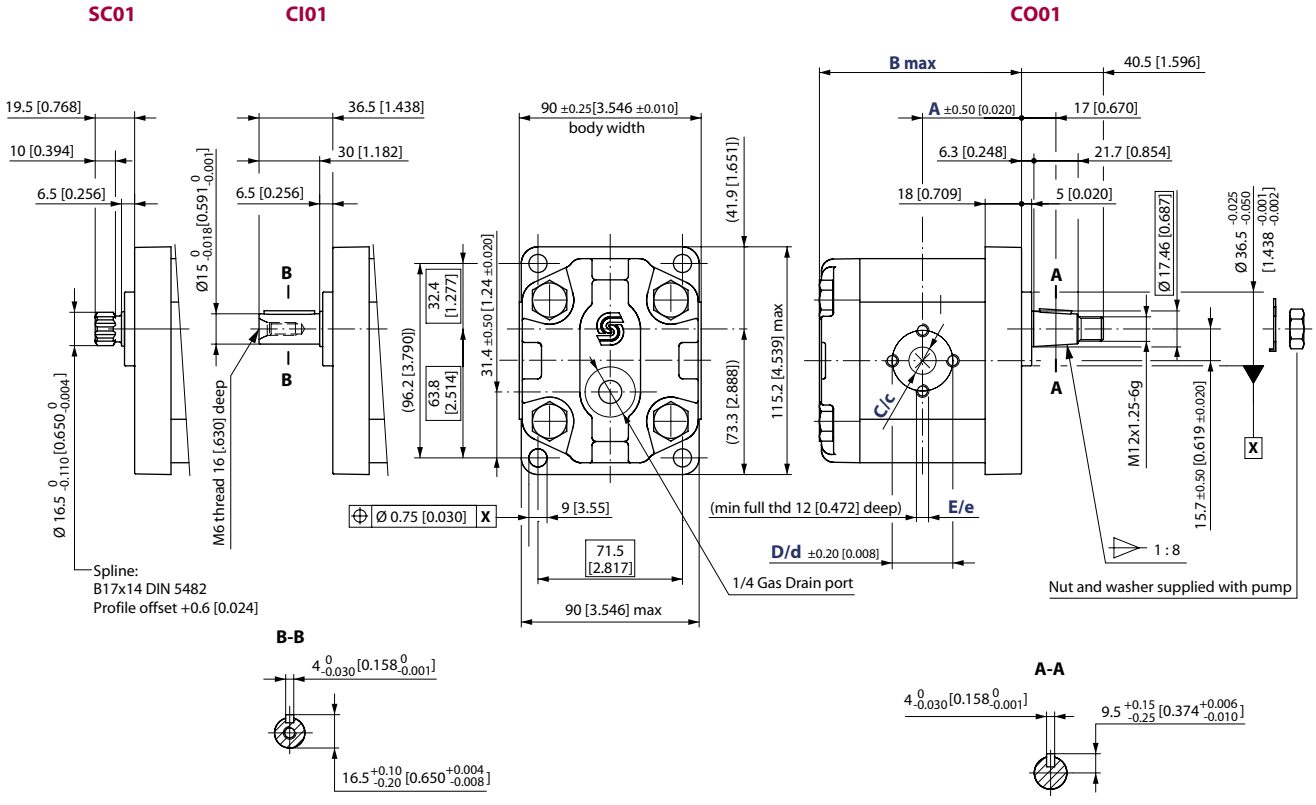
For further details on ordering, see *Model code,* pages 8 and 9.

GEAR MOTOR DIMENSIONS

SNM2 – SC01, CI01 and CO01

This drawing shows the standard porting for SC01, CI01 and CO01.

mm
[in]



SNM2 – SC01, CI01 and CO01 dimensions

Type (displacement)		6	8	11	14	17	19	22	25
Dimension	A	45 [1.771]		49 [1.929]	52 [2.047]		56 [2.204]	59 [2.322]	
	B	93.5 [3.681]	97.5 [3.838]	101.5 [3.996]	107.5 [4.232]	111.5 [4.389]		121.5 [4.783]	125.5 [4.940]
Inlet/Outlet	C/c	13.5 [0.531]			20 [0.787]				23.5 [0.925]
	D/d	30 [1.181]			40 [1.575]				
	E/e	M6			M8				

Model code example

SNM2	**SNM2/19 . SC01 ..._.** **SNM2/17 . CI01 ..._.** **SNM2/8 . CO01 ..._.**

Maximum shaft torque

SC01, CI01	N•m [lb•in]	90 [797]
CO01		150 [1328]

For further details on ordering, see *Model code,* pages 8 and 9.

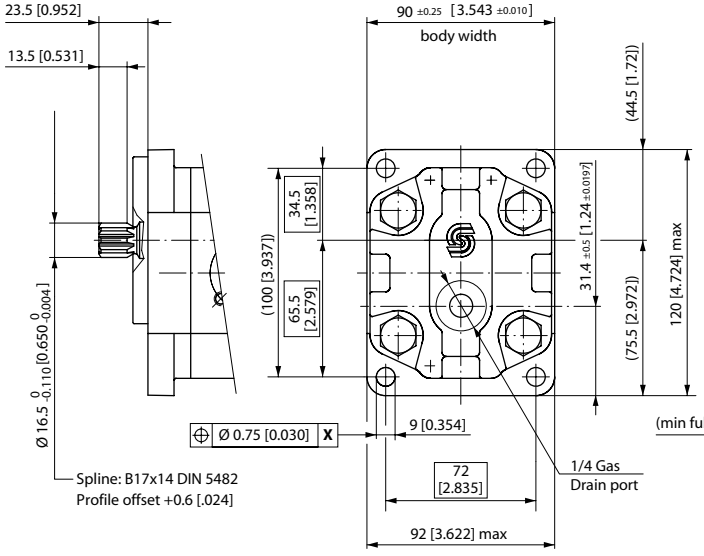
GEAR MOTOR DIMENSIONS (continued)

SNM2 – SC02 and CO02

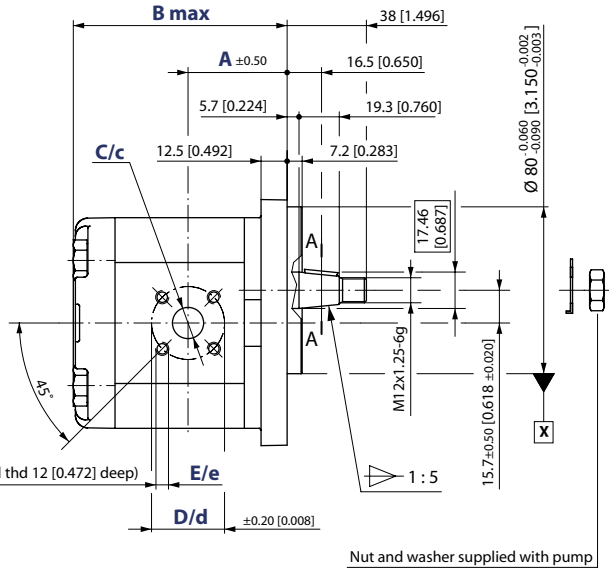
This drawing shows the standard porting for CO02 and SC02.

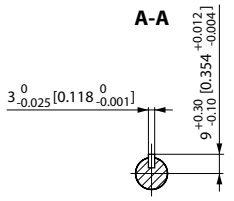
mm
[in]

SC02



CO02





P005 071E

SNM2 – SC02 and CO02 dimensions

Type (displacement)		6	8	11	14	17	19	22	25
Dimension	A	41.1 [1.618]	43.1 [1.697]	47.5 [1.870]	47.5 [1.870]	47.5 [1.870]	47.5 [1.870]	55 [2.165]	64.5 [2.539]
	B	96 [3.780]	100 [3.937]	104 [4.094]	110 [4.331]	114 [4.488]	118 [4.646]	124 [4.882]	128 [5.039]
Inlet/Outlet	C/c	15 [0.591]					20 [0.787]		
	D/d	35 [1.378]					40 [1.575]		
	E/e	M6							

Model code example

SNM2	**SNM2/19 . SC02 ..._.** **SNM2/25 . CO02 ..._.**

Maximum shaft torque

SC02	N•m [lb•in]	90 [797]
CO02		140 [1239]

For further details on ordering, see *Model code,* pages 8 and 9.

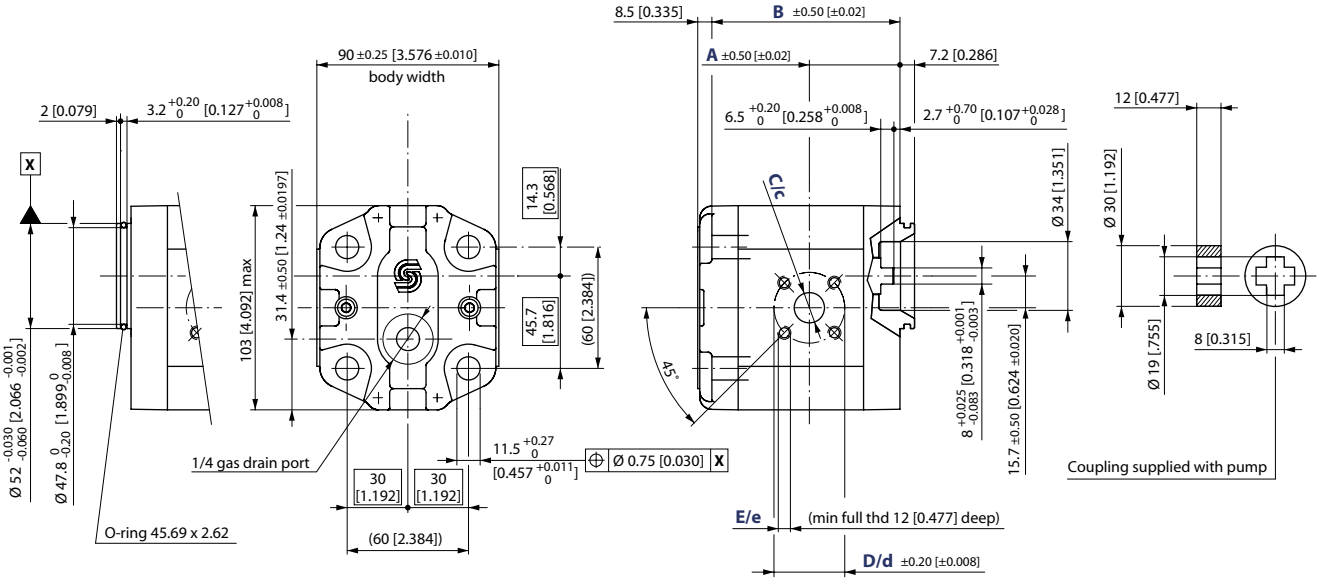
GEAR MOTOR DIMENSIONS (continued)

SNM2 – FR03

This drawing shows the standard porting for FR03.

mm
[in]

FR03



P005 072E

SNM2 – FR03 dimensions

Type (displacement)		6	8	11	14	17	19	22	25
Dimension	A	38.6 [1.520]	40.6 [1.598]	45 [1.772]				52.5 [2.067]	62 [2.441]
	B	85 [3.364]	89 [3.503]	93 [3.661]	99 [3.897]	103 [4.055]	107 [4.212]	113 [4.448]	117 [4.606]
Inlet/Outlet	C/c	15 [0.591]					20 [0.787]		
	D/d	35 [1.378]					40 [1.575]		
	E/e	M6							

Model code example

SNM2	**SNM2/17 . FR03 ..._.**

Maximum shaft torque

FR03	N•m [lb•in]	70 [620]

For further details on ordering, see *Model code,* pages 8 and 9.

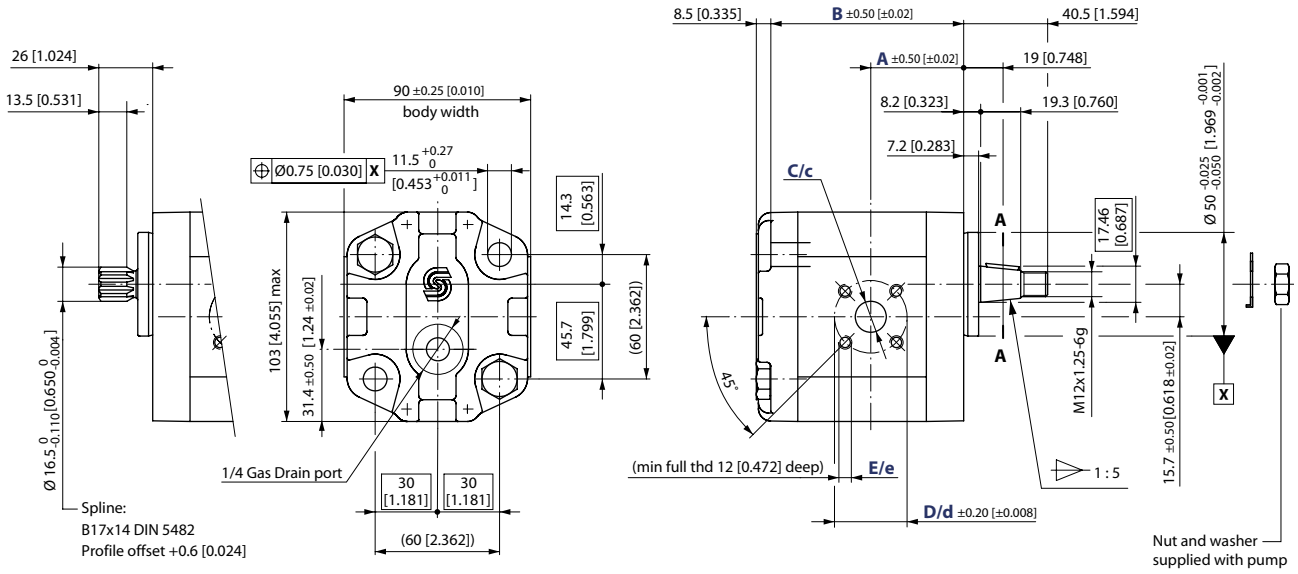
GEAR MOTOR DIMENSIONS (continued)

SNM2 – CO04/05 and SC04/05

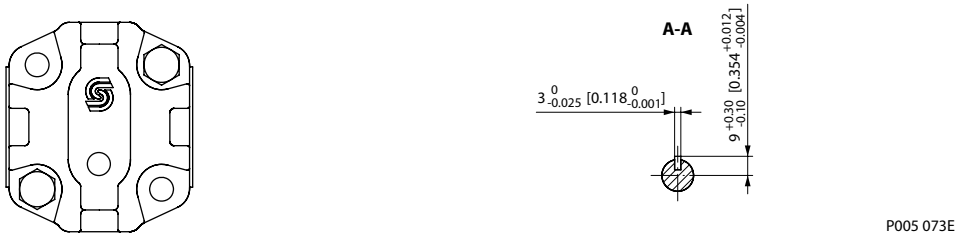
This drawing shows the standard porting for CO04/05, SC04/05.

mm
[in]

SC04/05 ..04 Body CO04/05



..05 Body



P005 073E

SNM2 – SC04/05 and CO04/05 dimensions

Type (displacement)		6	8	11	14	17	19	22	25
Dimension	A	38.6 [1.520]	40.6 [1.598]	45 [1.772]				52.5 [2.067]	62 [2.441]
	B	85 [3.364]	89 [3.503]	93 [3.661]	99 [3.897]	103 [4.055]	107 [4.212]	113 [4.448]	117 [4.606]
Inlet/Outlet	C/c	15 [0.591]					20 [0.787]		
	D/d	35 [1.378]					40 [1.575]		
	E/e	M6							

Model code example

SNM2	**SNM2/17 . CO04..._.** **SNM2/22 . CO05..._.** **SNM2/14 . SC04 ..._.** **SNPM/19 . SC05 ..._.**

Maximum shaft torque

CO04/CO05	N•m [lb•in]	140 [1239]
SC04/SC05		130 [1151]

For further details on ordering, see *Model code,* pages 8 and 9.

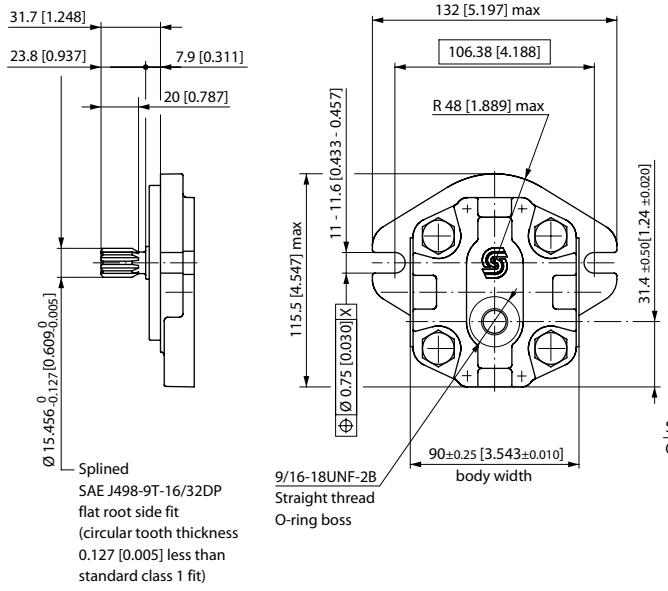
GEAR MOTOR DIMENSIONS (continued)

SNM2 – SC06 and CI06

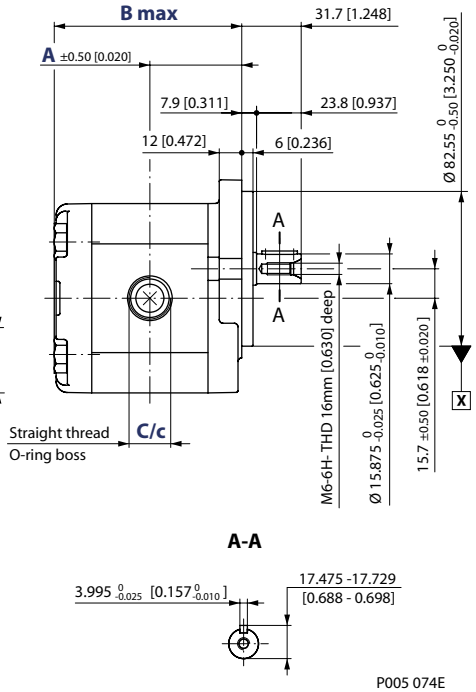
This drawing shows the standard porting for SC06 and CI06.

mm
[in]

SC06



CI06



P005 074E

SNM2 – SC06 and CI06 dimensions

Type (displacement)		6	8	11	14	17	19	22	25
Dimension	A	45 [1.772]	47 [1.850]	49 [1.920]	52 [2.047]	54 [2.205]	56 [2.205]	59 [2.323]	61 [2.402]
	B	93.5 [3.681]	97.5 [3.839]	101.5 [3.996]	107.5 [4.232]	111.5 [4.390]	115.5 [4.547]	121.5 [4.783]	125.5 [4.941]
Inlet/Outlet	C/c	7/8–14UNF–2B, 16.7 [0.658] deep					1 1/16–12UNF–2B, 18.0 [0.709] deep		

Model code example

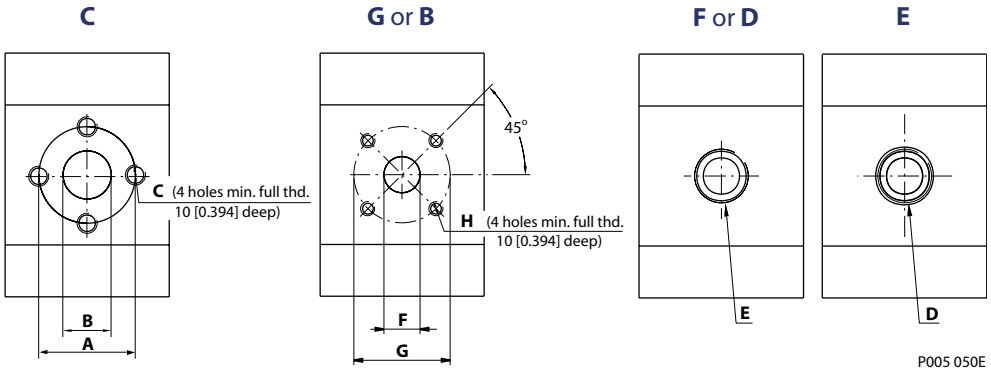
SNM2	**SNP2/11 . CI06..._.** **SNP2/22 . SC06 ..._.**

Maximum shaft torque

CI06	N•m [lb•in]	80 [708]
SC06		75 [664]

For further details on ordering, see *Model code,* pages 8 and 9.

GROUP 2 PUMP PORTS



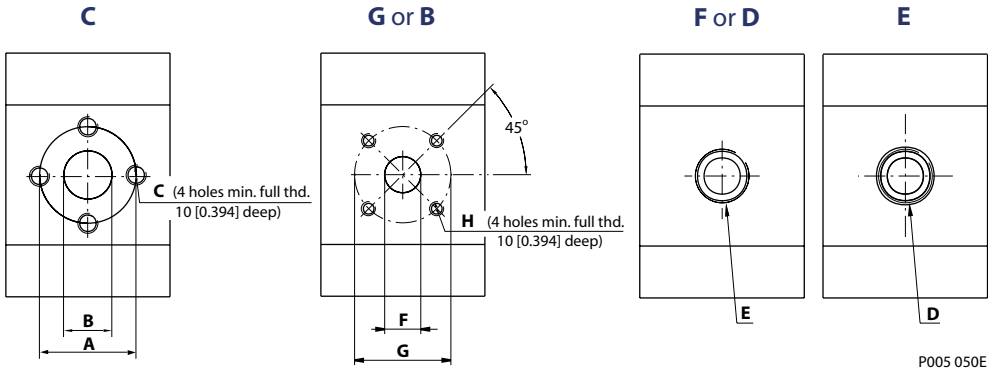
Group 2 – pump ports dimensions

Model code*		C			G **			B			F	E
Standard port for flange code		01			02/03/04/05/09/0B/09 BBM			nonstandard (ports centered on body)			nonstandard	06
Type (displacement)		B	A	C	F	G	H	F	G	H	E	D
4	Inlet	13.5 [0.531]	30 [1.181]	M6	15 [0.591]	40 [1.575]	M6	15 [0.591]	40 [1.575]	M6	½ Gas (BSPP)	1 1/16–12UNF–2B
	Outlet	13.5 [0.531]	30 [1.181]	M6	15 [0.591]	35 [1.378]	M6	15 [0.591]	35 [1.378]	M6	½ Gas (BSPP)	7/8–14UNF–2B
6	Inlet	13.5 [0.531]	30 [1.181]	M6	15 [0.591]	40 [1.575]	M6	15 [0.591]	40 [1.575]	M6	½ Gas (BSPP)	1 1/16–12UNF–2B
	Outlet	13.5 [0.531]	30 [1.181]	M6	15 [0.591]	35 [1.378]	M6	15 [0.591]	35 [1.378]	M6	½ Gas (BSPP)	7/8–14UNF–2B
8	Inlet	13.5 [0.531]	30 [1.181]	M6	20 [0.787]	40 [1.575]	M6	20 [0.787]	40 [1.575]	M6	½ Gas (BSPP)	1 1/16–12UNF–2B
	Outlet	13.5 [0.531]	30 [1.181]	M6	15 [0.591]	35 [1.378]	M6	15 [0.591]	35 [1.378]	M6	½ Gas (BSPP)	7/8–14UNF–2B
11	Inlet	13.5 [0.531]	30 [1.181]	M6	20 [0.787]	40 [1.575]	M6	20 [0.787]	40 [1.575]	M6	¾ Gas (BSPP)	1 1/16–12UNF–2B
	Outlet	13.5 [0.531]	30 [1.181]	M6	15 [0.591]	35 [1.378]	M6	15 [0.591]	35 [1.378]	M6	½ Gas (BSPP)	7/8–14UNF–2B
14	Inlet	20.0 [0.787]	40 [1.575]	M6	20 [0.787]	40 [1.575]	M6	20 [0.787]	40 [1.575]	M6	¾ Gas (BSPP)	1 1/16–12UNF–2B
	Outlet	13.5 [0.531]	30 [1.181]	M6	15 [0.591]	35 [1.378]	M6	15 [0.591]	35 [1.378]	M6	½ Gas (BSPP)	7/8–14UNF–2B
17	Inlet	20.0 [0.787]	40 [1.575]	M6	20 [0.787]	40 [1.575]	M6	20 [0.787]	40 [1.575]	M6	¾ Gas (BSPP)	1 1/16–12UNF–2B
	Outlet	13.5 [0.531]	30 [1.181]	M6	15 [0.591]	35 [1.378]	M6	15 [0.591]	35 [1.378]	M6	½ Gas (BSPP)	7/8–14UNF–2B
19	Inlet	20.0 [0.787]	40 [1.575]	M6	20 [0.787]	40 [1.575]	M6	20 [0.787]	40 [1.575]	M6	¾ Gas (BSPP)	1 1/16–12UNF–2B
	Outlet	13.5 [0.531]	30 [1.181]	M6	15 [0.591]	35 [1.378]	M6	15 [0.591]	35 [1.378]	M6	½ Gas (BSPP)	7/8–14UNF–2B
22	Inlet	20.0 [0.787]	40 [1.575]	M6	20 [0.787]	40 [1.575]	M6	20 [0.787]	40 [1.575]	M6	¾ Gas (BSPP)	1 1/16–12UNF–2B
	Outlet	13.5 [0.531]	30 [1.181]	M6	15 [0.591]	35 [1.378]	M6	15 [0.591]	35 [1.378]	M6	½ Gas (BSPP)	7/8–14UNF–2B
25	Inlet	23.5 [0.925]	40 [1.575]	M8	20 [0.787]	40 [1.575]	M6	20 [0.787]	40 [1.575]	M6	1 Gas (BSPP)	1 1/16–12UNF–2B
	Outlet	20.0 [0.787]	40 [1.575]	M8	15 [0.591]	35 [1.378]	M6	15 [0.591]	35 [1.378]	M6	¾ Gas (BSPP)	7/8–14UNF–2B

* Mark only if desired porting is nonstandard for the flange code selected. Otherwise mark '.'

** Port **G** is offset from the center of the body.

GROUP 2 MOTOR PORTS



Group 2 – motor ports dimensions

Model code		C			G or B *			F or D		E
Standard port for flange code		01			02/03/04/05			nonstandard		06
Type (displacement)		B	A	C	F	G	H	E		D
6*	Inlet/ Outlet	13.5 [0.531]	30 [1.181]	M6	15 [0.591]	35 [1.378]	M6	½ Gas (BSPP)	M22x1.5	7/8–14UNF–2B
8	Inlet/ Outlet	13.5 [0.531]	30 [1.181]	M6	15 [0.591]	35 [1.378]	M6	½ Gas (BSPP)	M22x1.5	7/8–14UNF–2B
11	Inlet/ Outlet	13.5 [0.531]	30 [1.181]	M6	15 [0.591]	35 [1.378]	M6	½ Gas (BSPP)	M22x1.5	7/8–14UNF–2B
14	Inlet/ Outlet	20.0 [0.787]	40 [1.575]	M8	15 [0.591]	35 [1.378]	M6	½ Gas (BSPP)	M22x1.5	7/8–14UNF–2B
17	Inlet/ Outlet	20.0 [0.787]	40 [1.575]	M8	15 [0.591]	35 [1.378]	M6	½ Gas (BSPP)	M22x1.5	7/8–14UNF–2B
19	Inlet/ Outlet	20.0 [0.787]	40 [1.575]	M8	20 [0.787]	40 [1.575]	M6	¾ Gas (BSPP)	M26x1.5	1 1/16–12UNF–2B
22	Inlet/ Outlet	20.0 [0.787]	40 [1.575]	M8	20 [0.787]	40 [1.575]	M6	¾ Gas (BSPP)	M26x1.5	1 1/16–12UNF–2B
25	Inlet/ Outlet	23.5 [0.925]	40 [1.575]	M8	20 [0.787]	40 [1.575]	M6	¾ Gas (BSPP)	M26x1.5	1 1/16–12UNF–2B
	Drain	¼ Gas (BSPP)								9/16–18UNF–2B

* Port **B** is in the center of the body. Port **G** is offset from the center of the body.

SHAFT OPTIONS

Group 2 pumps are available with a variety of splined, parallel, and tapered shaft ends. Not all shaft styles are available with all flange styles.

Valid combinations and nominal torque ratings are shown in the table below. Torque ratings assume no external radial loading. Applied torque must not exceed these limits regardless of pressure parameters stated earlier. Maximum torque ratings are based on shaft torsional fatigue strength.

Recommended mating splines for Group 2 splined output shafts should be in accordance with SAE J498 or DIN 5482. Sauer-Danfoss external SAE splines are flat root side fit with circular tooth thickness reduced by 0.127 mm [0.005 in] in respect to class 1 fit. The external DIN splines have an offset increased by 0.1 mm [0.004 in.] These dimensions are modified in order to assure a clearance fit with the mating spline.

Other shaft options may exist. Contact your Sauer- Danfoss representative for availability.

SHAFT AND FLANGE AVAILABILITY

Shaft and flange availability and torque capability

This table details the standard Group 2 shafts and flange combinations that are currently available with the maximum shaft torque limits. For further information, please see Sauer-Danfoss publications *Group 2 Gear Pumps Technical Information,* 520L0560 and *Group 1, 2 and 3 Gear Motors, Technical Information,* 520L0568.

Shaft and flange availability and torque capability

Shaft		**Mounting flange code with maximum torque** in N•m [lb•in]							
Description	***Code***	**01**	**02**	**03**	**04**	**05**	**06**	**09**	**0B**
Taper 1:5	**CO**	–	140 [1239]	–	140 [1239]	140 [1239]	–	–	–
Taper 1:8	**CO**	150 [1328]	–	–	–	–	–	150 [1328]	150 [1328]
DIN spline B17x14	**SC**	90 [797]	130 [1151]	–	130 [1151]	130 [1151]	–	–	–
SAE spline 9T 16/32p	**SC**	–	–	–	–	–	75 [646]	–	–
SAE spline 11T 16/32p	**SC**	–	–	–	–	–	150 [1328]	–	–
Parallel 15 mm [0.590 in]	**CI**	90 [797]	–	–	–	–	–	–	–
Parallel 15.875 mm [0.625 in]	**CI**	–	–	–	–	–	80 [708]		
Sauer-Danfoss Tang	**FR**	–	–	70 [620]	–	–	–	–	–

Notes

OVERVIEW

Sauer-Danfoss **Group 2.5 – Series 25SP** range of gear pumps use an external spur gear, and positive displacement design of proven high pressure capability and efficiency. These high performance pumps are robustly constructed. Their durability has been proven, with over 30 years experience, in hydraulic products for mobile and industrial applications. Series 25SP gear pumps enjoy a pressure-balanced design that provides high efficiency for the entire series.

Series 25SP gear pumps

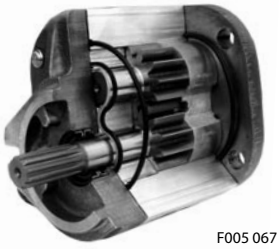

F005 035


F005 066


F005 065

DESIGN

The Series 25SP is designed with high-strength extruded aluminum gear housing. It has a gray iron flange and cover, one piece shafts, 12 tooth gears and fully floating pressure balanced bearing design.


F005 067

FEATURES

Special features of the Series 25SP gear pump include:

- wide range of displacements (from 20 to 45 cm^3/rev [from 1.22 to 2.75 in^3/rev])
- variety of splined, parallel, and tapered shaft ends (all shafts are available with all flanges)
- two industry-standard mounting flanges: SAE A and SAE B
- O-ring boss ports configuration per SAE J1926/1
- optional priority flow divider valve / static load sense priority flow divider
- rear port covers (optional)
- multiple Series 25SP pumps.

TECHNICAL DATA

Technical data – Series 25SP gear pumps

		Pump model							
		20	**22**	**25**	**28**	**31**	**35**	**40**	**45**
Displacement	cm^3/rev [in^3/rev]	20.0 [1.22]	22.4 [1.37]	25.0 [1.53]	28.0 [1.71]	31.5 [1.92]	35.5 [2.17]	40.0 [2.44]	45.0 [2.75]
Peak pressure	bar [psi]	275 [3950]	275 [3950]	275 [3950]	275 [3950]	275 [3950]	275 [3950]	245 [3552]	225 [3262]
Rated pressure	bar [psi]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	220 [3190]	200 [2900]
Minimum speed	min^{-1} (rpm)	500	500	500	500	500	500	500	500
Maximum speed	min^{-1} (rpm)	3000	3000	2800	2800	2800	2700	2500	2500
Weight	kg [lb]	5.6 [12.34]	5.8 [12.79]	6.0 [13.23	6.5 [20.5]	6.8 [14.33]	7.2 [15.87]	7.6 [16.76]	8.0 [17.64]
Moment of inertia of rotating components	x 10^{-6} kg•m^2 [x 10^{-6} lb•ft^2]	94.8 [2250]	102.8 [2439]	148.8 [3531]	127.7 [3030]	139.3 [3305.6]	152.6 [3621]	167.6 [3977.1]	184.2 [4371.1]
Theoretical flow at maximum speed	l/min [US gal/min]	60.0 [15.85]	67.2 [17.79]	75.0 [19.87]	84.0 [22.21]	94.5 [24.94]	106.5 [28.18]	120.0 [31.69]	135.0 [35.71]

For applications requiring parameters beyond those listed, contact Sauer-Danfoss.

Caution

The rated and peak pressure mentioned are for pumps and 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 Sauer-Danfoss representative.

MODEL CODE DESIGNATION

A				B		C	D		E		F1F2		G		H			I			J		
2	5	S	P	3	5	R	S	A	0	7	A	N	1	2	N	N	N	1	6	0	1	4	0

A *Type*

Code	Description
25SP	SP2.5/250 series solo gear pumps

C *Direction of rotation*

Code	Description
R	Right hand (clockwise)
L	Left hand (counterclockwise)

B *Displacement*

Code	Description
20	20.0 cm^3/rev [1.22 in^3/rev]
22	22.4 cm^3/rev [1.37 in^3/rev]
25	25.0 cm^3/rev [1.53 in^3/rev]
28	28.0 cm^3/rev [1.71 in^3/rev]
31	31.5 cm^3/rev [1.92 in^3/rev]
35	35.5 cm^3/rev [2.17 in^3/rev]
40	40.0 cm^3/rev [2.44 in^3/rev]
45	45.0 cm^3/rev [2.75 in^3/rev]

D *Shaft Type*

Code	Description
SA	Spline 11T (16/32 DP) SAE
SB	Spline 13T (16/32DP) SAE
SK	Straight key (parallel) Ø19 mm [0.75 in dia]
SD	Taper 1 :8

E *Flange Type*

Code	Description
06	SAE 'A'
07	SAE 'B'

SAE 'B' shafts may be used with SAE 'A' flanges and vice versa.

F *Body Configuration*

Code F1	Inlet port description
A	SAE O-ring boss 1 5/16"
B	SAE O-ring boss 1 5/8"
C	BSP 1"
D	SAE split flange 1¼"
E	SAE split flange 1½" (≥ 28 cm^3/rev)
F	M33 O-ring boss
G	M42 O-ring boss
N	None
X	Other

Code F2	Outlet port description
A	SAE O-ring boss 1 1/16"
C	BSP ¾"
D	SAE split flange 1"
F	M27 O-ring boss
N	None
X	Other

The sample pump code shown above specifies a 35.5 cm^3/rev pump, clockwise rotation, 11 tooth splined SAE shaft, SAE "B" 2-bolt flange, body with ORB inlet port only, PFD cover with side O-ring priority and non-priority ports, full flow priority relief valve, no special features, flow setting of 16 l/min and full flow priority relief valve set to 140 bar.

MODEL CODE DESIGNATION

A		B		C	D		E		F1F2		G		H			I			J		
2	5	S	P	3	5	R	S	A	0	7	A	N	1	2	N	N	N	1	6	0	1	4	0

G *Rear Cover and Port Configuration*

Code	Description
00	Plain cover
01	Rear ports SAE O-ring boss 1 5/16" inlet 1 1/16" outlet
02	Rear ports BSP 1" inlet ¾" outlet
03	Rear ports M33 ORB inlet M27 ORB outlet
10	PFD no R/V O-ring boss side port
11	PFD pilot R/V O-ring boss side port
12	PFD full flow priority R/V O-ring boss side port
20	PFD no R/V O-ring boss rear port
21	PFD pilot R/V O-ring boss rear port
22	PFD full flow priority R/V O-ring boss rear port
30	PFD no R/V BSP side port
31	PFD pilot R/V BSP side port
32	PFD full flow priority R/V BSP side port
40	PFD no R/V BSP rear port
41	PFD pilot R/V BSP rear port
42	PFD full flow priority R/V BSP rear port
50	PFD no R/V METRIC ORB side port
51	PFD pilot R/V METRIC ORB side port
52	PFD full flow priority R/V METRIC ORB side port
60	PFD no R/V METRIC ORB rear port
61	PFD pilot R/V METRIC ORB rear port
62	PFD full flow priority R/V METRIC ORB rear port

H *Special Feature Coding*

Code	Description
NNN	No special features
SSA	Short shaft M44 mount
SSB	Short shaft 32.5mm
XXX	Special feature not defined, see installation drawing

I *Priority Flow Setting ±10 %*

Code	Description
060	6 l/min [1.6 US gal/min]
080	8 l/min [2.1 US gal/min]
100	10 l/min [2.6 US gal/min]
120	12 l/min [3.2 US gal/min]
140	14 l/min [3.7 US gal/min]
160	16 l/min [4.2 US gal/min]
180	18 l/min [4.8 US gal/min]
200	20 l/min [5.3 US gal/min]
220	22 l/min [5.8 US gal/min]
240	24 l/min [6.3 US gal/min]
260	26 l/min [6.9 US gal/min]
280	28 l/min [7.4 US gal/min]
998	Load sense (static)
999	Load sense (dynamic)

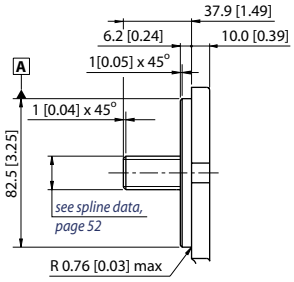
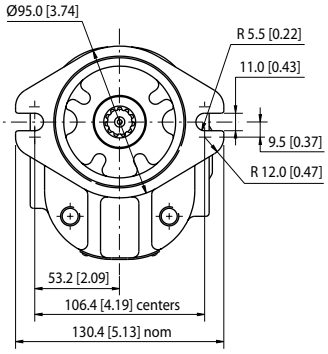
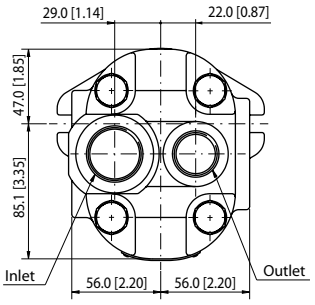
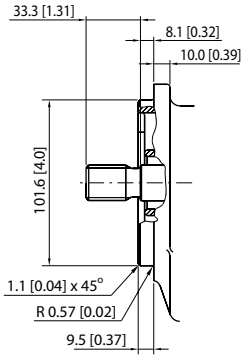
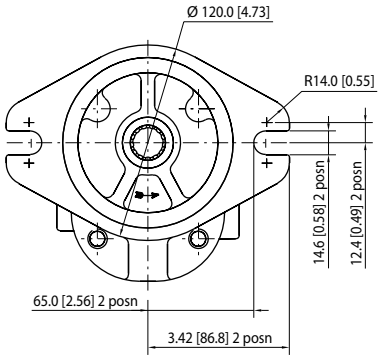
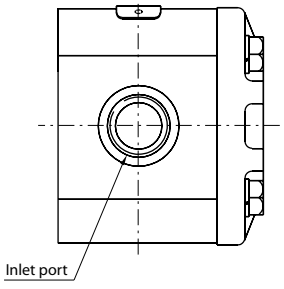
J *Priority Relief Valve Setting ±3.5 bar [±51 psi]*

Code	Description
NNN	No relief valve
060	60 bar [870 psi]
070	70 bar [1015 psi]
080	80 bar [1160 psi]
090	90 bar [1305 psi]
100	100 bar [1450 psi]
110	110 bar [1595 psi]
120	120 bar [1740 psi]
130	130 bar [1885 psi]
140	140 bar [2030 psi]
150	150 bar [2175 psi]
160	160 bar [2320 psi]
170	170 bar [2465 psi]
180	180 bar [2610 psi]
190	190 bar [2755 psi]
200	200 bar [2900 psi]

SHAFT, FLANGE, AND PORT CONFIGURATION

This table illustrates the standard 25SP configurations for each pump (all are interchangeable):

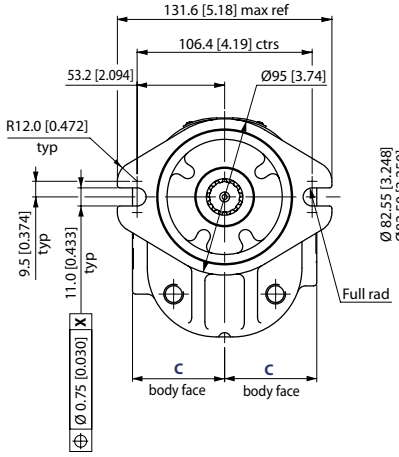
Shaft, flange and port configuration – Series 25SP

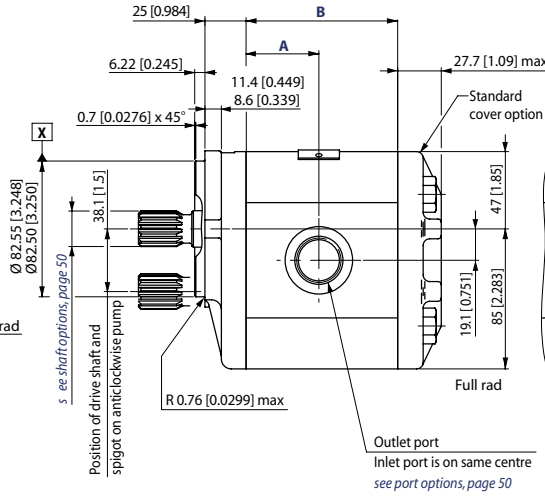
Shaft	Flange	Port
SAE A 11-tooth splined 	*SAE A 2-bolt* 	*SAE O-ring boss* *Inlet: 1 5/16"-12UNF, Outlet: 1 1/16"-12UNV* 
SAE B 13-tooth splined 	*SAE B 2-bolt* 	*SAE port* *Inlet: 1 5/16"-12UNF, Outlet: 1 1/16"-12UNF*  P005 047E

DIMENSIONS

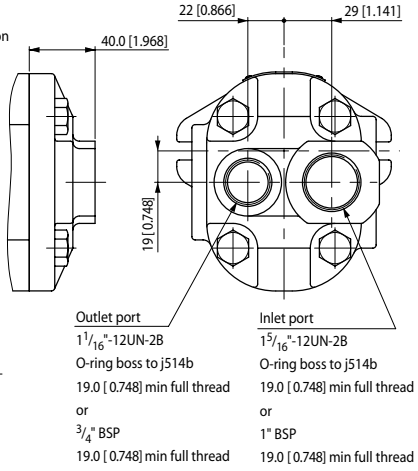
mm [in]

Flange option SAE A

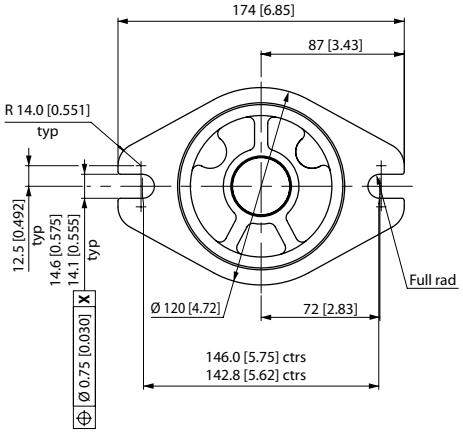


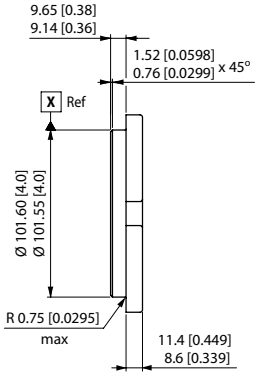


Rear ported cover option



Flange option SAE B





P005 075E

Series 25SP dimensions

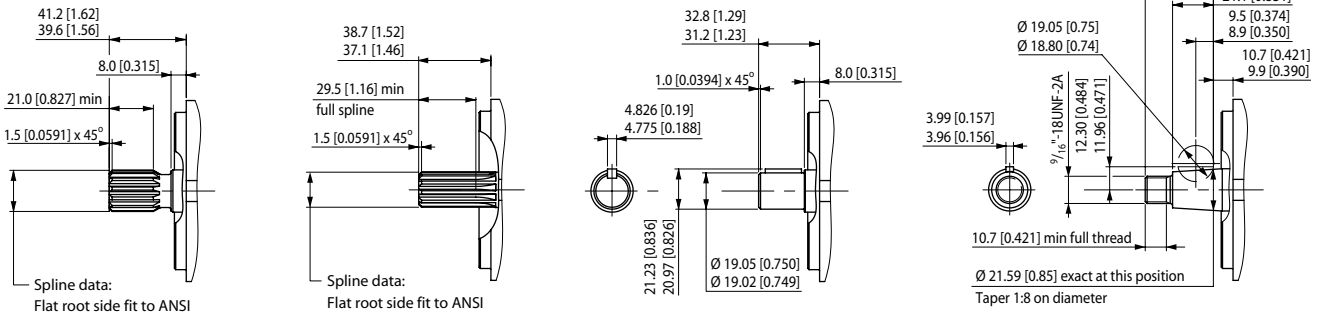
Type (displacement)		20	22	25	28	31	35	40	45
Dimension	A	32.4 [1.275]			44.3 [1.744]				
	B	64.8 [2.551]	67.3 [2.649]	69.9 [2.752]	88.5 [3.484]	92.2 [3.630]	96.3 [3.791]	100.9 [3.972]	106.1 [4.177]
Inlet	C	1 5/16 –12UNF O-ring							
Outlet	c	1 1/16 –12UNF O-ring							

SHAFT OPTIONS

mm [in]

Key supplied with pump

Key, tab washer & lock nut supplied with pump



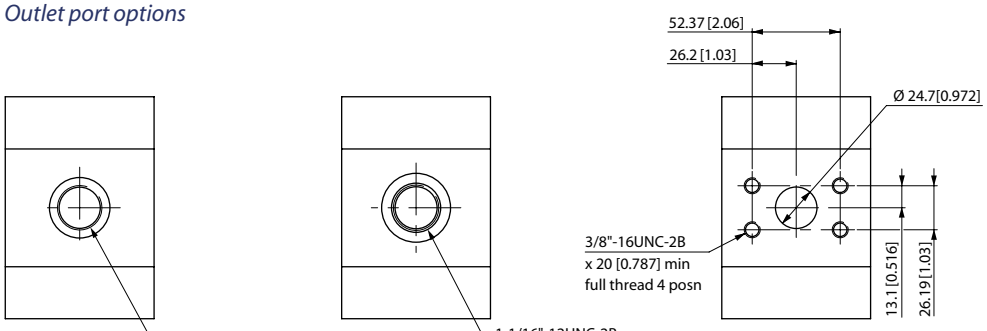
Spline data:
Flat root side fit to ANSI B92.1-1970 (except fit)
Number of teeth: 13
Diametrical pitch: 16/32
Pressure angle: 30°
Pitch diameter: 20.6375 [0.812]
Circular tooth thickness:
Actual: 2.162 [0.085] min
Effective: 2.228 [0.087]max

Spline data:
Flat root side fit to ANSI B92.1-1970 (except fit)
Number of teeth: 11
Diametrical pitch: 16/32
Pressure angle: 30°
Pitch diameter: 17.4625 [0.687]
Circular tooth thickness:
Actual: 2.263 [0.089] min
Effective: 2.329 [0.091] max

P005 076E

PORTS OPTIONS

Outlet port options

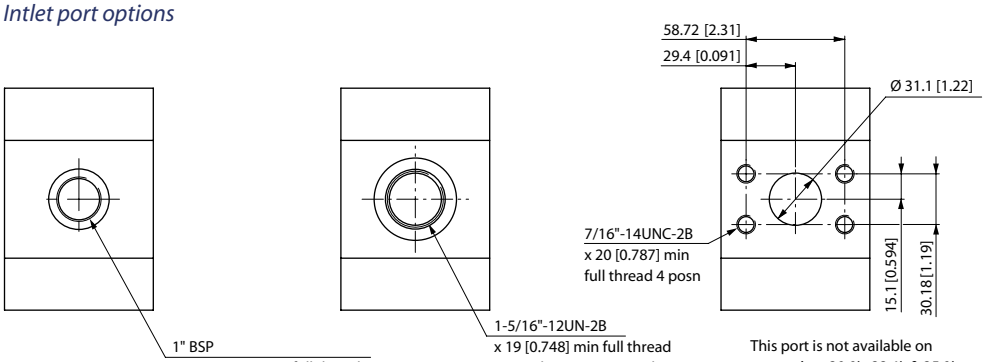


3/4" BSP
x 16.3 [0.642] min full thread
Ø 36.0 x 0.5 [Dia1.42 x 0.0197]
deep spotface

1-1/16"-12UNC-2B
x 19 [0.748] min full thread
O-ring boss to SAE J514b
Ø 41.0 x 0.5 [Dia1.61 x 0.0197]
deep spotface

This port is not available on pump sizes 20.0L, 22.4L & 25.0L. This port is only available in the orientation shown.

Intlet port options



1" BSP
x 19.1 [0.752] min full thread
Ø 43.5 x 0.5 [Dia1.71 x 0.0197]
deep spotface

1-5/16"-12UN-2B
x 19 [0.748] min full thread
O-ring boss to SAE J514b
Ø 49.0 x 0.5 [Dia1.93 x 0.0197]
deep spotface

This port is not available on pump sizes 20.0L, 22.4L & 25.0L. This port is only available in the orientation shown.

P005 077E

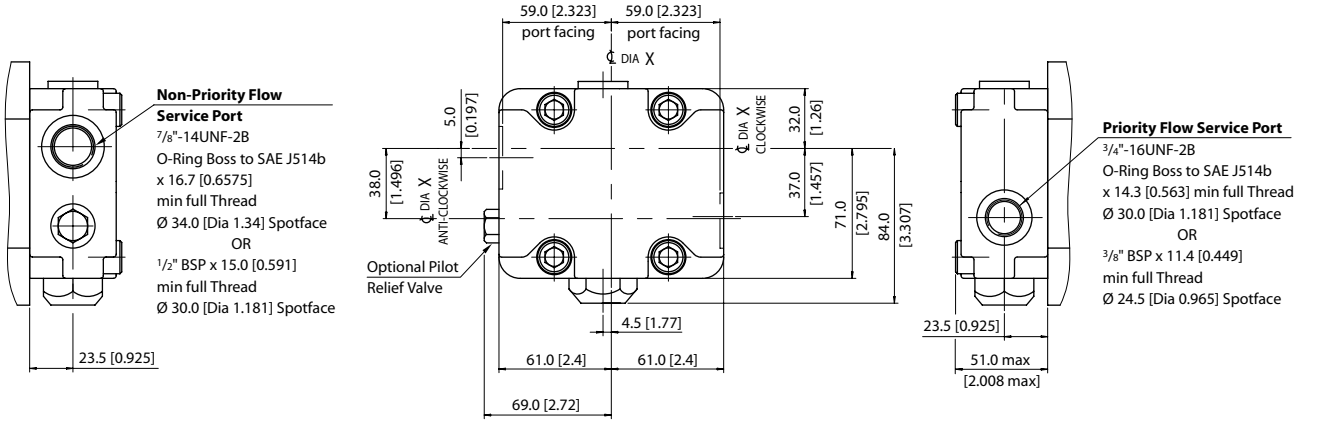
PRIORITY FLOW DIVIDER COVER PORT OPTIONS

PFD cover is available:

- with pilot relief valve, which discharges to non-priority flow,
- with full flow relief valve, which discharges back to pump inlet, and is only suitable for intermittent use (3 sec. max.) in order to avoid excessive temperature build up,
- with side or end ports,
- with or without LS option. Load sense (LS) option is available static or dynamic.

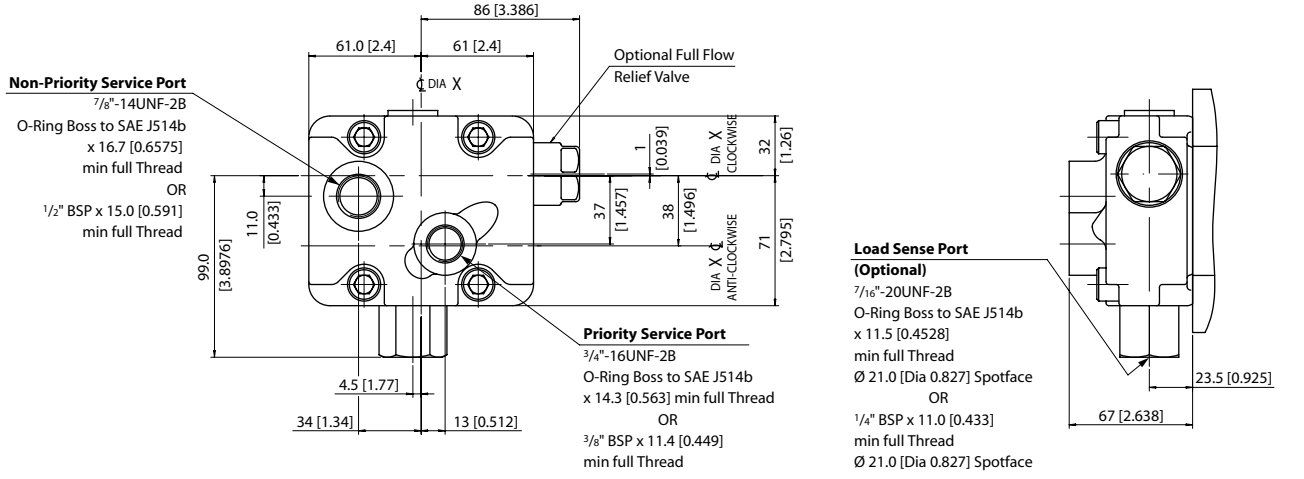
Priority Flow Divider Cover Side Ported

mm [in]



P005 302E

Priority Flow Divider Cover Rear Ported



P005 303E

SHAFT AND FLANGE AVAILABILITY

Shaft and torque capability

Shaft		Maximum torque
Description	***Code***	N•m [lb•in]
SAE Spline 13T 16/32p	**SB**	203 [1797]
SAE Spline 11T 16/32p	**SA**	140 [1239]
Parallel 19 mm [0.748 in]	**SK**	140 [1239]
Taper 1:8	**SD**	350 [3098]

Group 3

OVERVIEW

Sauer-Danfoss' Group 3 Series of gear pumps and motors uses an external spur gear, and positive displacement design pump of proven high pressure and efficiency. Constructed of three-piece aluminum body, it has been repeatedly proven, with over 30 years experience in hydraulic products for mobile and industrial applications.

The **extruded aluminum housing** provides the necessary strength construction while providing a very high power to weight ratio and increased heat dissipation.
Its **aluminum housing** permits the gear teeth to cut in toward the inlet side and create their own path for maximum radial gear tip seal and high volumetric efficiency.

The Group 3 Series is composed of the SNP3 gear pump and two motors:
the bidirectional SNM3 and unidirectional SNU3. They look like this:

F005 033

F005 045

DESIGN

Super finished shaft journals, floating pressure plates, and Teflon coated large DU bearings are protected by an extruded aluminum alloy gear housing. The one-piece shaft is set within a high-strength aluminum flange and cover, open to numerous options, including.

F005 034

FEATURES

Special features within Group 3 family include:

- wide range of displacements (from 22 to 90 cm^3/rev [1.34 to 5.49 in^3/rev] for pumps and motors)
- SAE, DIN, and European standard mounting flanges
- high quality case hardened steel gears
- pressure plates that provide efficiency at all speeds
- contact force between bearing face and gear is low and precisely controlled
- volumetric efficiencies in the range of 95%
- multiple pump configurations in combination with SNP1, SNP2 and SNP3.

TECHNICAL DATA FOR PUMPS

This table details the technical data for the SNP3 and SEP3 gear pumps. The SNP3 is a standard product. For further information about application and configuration of gear pumps, please see Sauer-Danfoss publication *Group 3 Gear Pumps Technical Information*, 520L0569.

Technical data – Group 3 gear pumps

		Pump model									
		22	**26**	**33**	**38**	**44**	**48**	**55**	**63**	**75**	**90**
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]	55.1 [3.36]	63.4 [3.87]	74.4 [4.54]	88.2 [5.38]
SNP3											
Peak pressure	bar [psi]	270 [3910]	270 [3910]	270 [3910]	270 [3910]	270 [3910]	250 [3625]	250 [3625]	230 [3350]	200 [2910]	170 [2465]
Rated pressure		250 [3625]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	230 [3350]	230 [3350]	210 [3045]	180 [2610]	150 [2175]
Minimum speed	min^{-1} (rpm)	800	800	800	800	800	800	800	600	600	600
Maximum speed		3000	3000	3000	3000	3000	3000	2500	2500	2500	2500
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} lbf•ft^2]	198 [4698]	216 [5126]	246 [5838]	267,2 [6340]	294,2 [6891]	312,2 [7408]	342,3 [8123]	378,3 [8977]	426,4 [10118]	486,5 [11545]
Theoretical flow at maximum speed	l/min [US gal/min]	66.3 [17.5]	78.6 [20.8]	99.3 [26.2]	113.7 [30.0]	132.3 [35.0]	144.9 [38.3]	137.8 [36.4]	158.5 [41.8]	186 [49.1]	220.5 [58.3]
SEP3											
Peak pressure	bar [psi]	230 [3350]	230 [3350]	230 [3350]	230 [3350]	200 [2910]					
Rated pressure		210 [3045]	210 [3045]	210 [3045]	210 [3045]	180 [2610]					
Minimum speed	min^{-1} (rpm)	1000	1000	1000	1000	800					
Maximum speed		3000	3000	3000	2800	2600					
Weight	kg [lb]	5.7 [12.57]	5.8 [12.79]	6.1 [13.45]	6.2 [13.67]	6.4 [14.11]					
Moment of inertia of rotating components	x 10^{-6} kg•m^2 [x 10^{-6} lbf•ft^2]	198 [4698]	216 [5126]	246 [5873]	294.2 [6981]	312.2 [7408]					
Theoretical flow at maximum speed	l/min [US gal/min]	66.3 [17.5	78.6 [20.8]	99.3 [26.2]	113.7 [30.0]	132.3 [35.0]					

1 kg•m^2 = 23.68 lb•ft^2

TECHNICAL DATA FOR MOTORS

This table details the technical data for the SNM3 and SNU3 gear motors.
For further information about application and configuration of gear motors, please see Sauer-Danfoss publication *Group 1, 2 and 3 Gear Motors, Technical Information,* 520L0568.

Technical data – Group 3 gear motors

		Motor model									
		22	**26**	**33**	**38**	**44**	**48**	**55**	**63**	**75**	**90**
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]
SNU3 (uni-directional)											
Peak pressure	bar [psi]	270 [3915]	270 [3915]	270 [3915]	270 [3915]	270 [3915]	250 [3625]	230 [3335]	210 [3045]	190 [2755]	170 [2465]
Rated pressure	bar [psi]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	230 [2800]	210 [3045]	190 [2755]	170 [2465]	150 [2175]
Minimum speed	min^{-1} (rpm)	800	800	800	800	800	800	800	600	600	600
Maximum speed	min^{-1} (rpm)	2500	2500	2500	2500	2300	2300	2300	2300	2100	2100
SNM3 (bi-directional) motor in parallel											
Peak pressure	bar [psi]	270 [3915]	270 [3915]	270 [3915]	270 [3915]	270 [3915]	250 [3625]	230 [3335]	210 [3045]	190 [2755]	170 [2465]
Rated pressure	bar [psi]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	230 [2800]	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	min^{-1} (rpm)	2500	2500	2500	2500	2300	2300	2300	2300	2100	2100
SNM3 (bi-directional) motor in series											
Peak pressure	bar [psi]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	230 [3335]	210 [3045]	190 [2755]	170 [2465]	150 [2175]
Rated pressure	bar [psi]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	250 [3625]	230 [2800]	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	min^{-1} (rpm)	2500	2500	2500	2500	2300	2300	2200	2100	2100	2100
All (SNU3, SNM3)											
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 kg•m^2 = 23.68 lb•ft^2

Caution

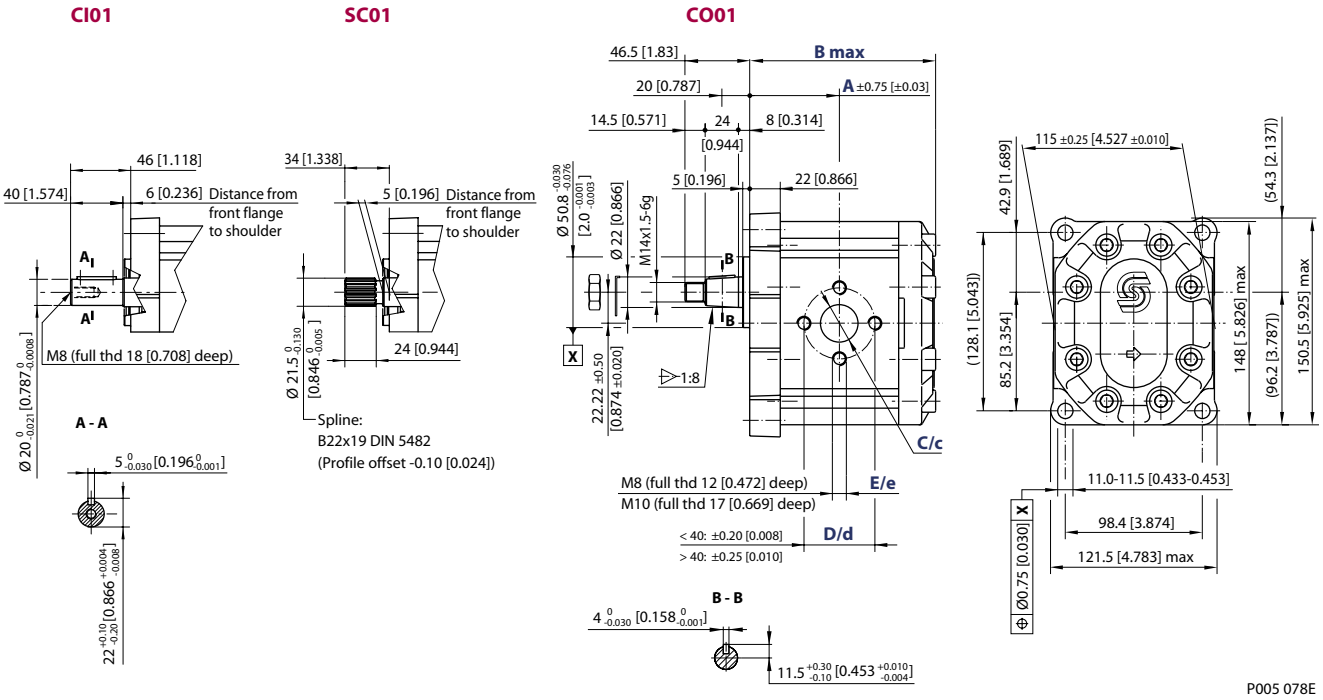
The rated and peak pressure mentioned are for pumps and motors with flanged ports only. When threaded ports are required a de-rated performance has to be considered. To verify the compliance of an high pressure application with a threaded ports pump apply to a Sauer-Danfoss representative.

GEAR PUMP DIMENSIONS

SNP3 – CI01, CO01, SC01 and SEP3 – CO01

mm
[in]

The drawing shows the SNP3 standard porting for CI01, SC01 and CO01.
The configurations CI01 and CO01 are available for the **SEP3**.



P005 078E

SNP3 – CI01, CO01, SC01 and SEP3 – CO01dimensions

Type (displacement)		22	26	33	38	44	48	55	63	75	90
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	C	20 [0.787]		27 [1.063]				36 [1.417]			
	D	40 [1.575]		51 [2.007]				62 [2.441]			
	E	M8		M10							
Outlet	c	20 [0.787]				27 [1.063]					
	d	40 [1.575]				51 [2.001]					
	e	M8				M10					

The SEP3 overall length is 12 mm [0.472 in] less than the SNP3 for the whole range of displacements (22.1 to 44.1 cm³/rev [1.35 to 2.69 in³/rev]).

Model code example

SNP3	**SNP3/22 D CI01 ..._.** **SNP3/38 S SC01 ..._.** **SNP3/75 D CO01 ..._.**
SEP3	**SEP3/44 D CO01 ..._.**

Maximum shaft torque

CI01	N•m [lb•in]	210 [1858]
SC01		290 [2566]
CO01		350 [3097]

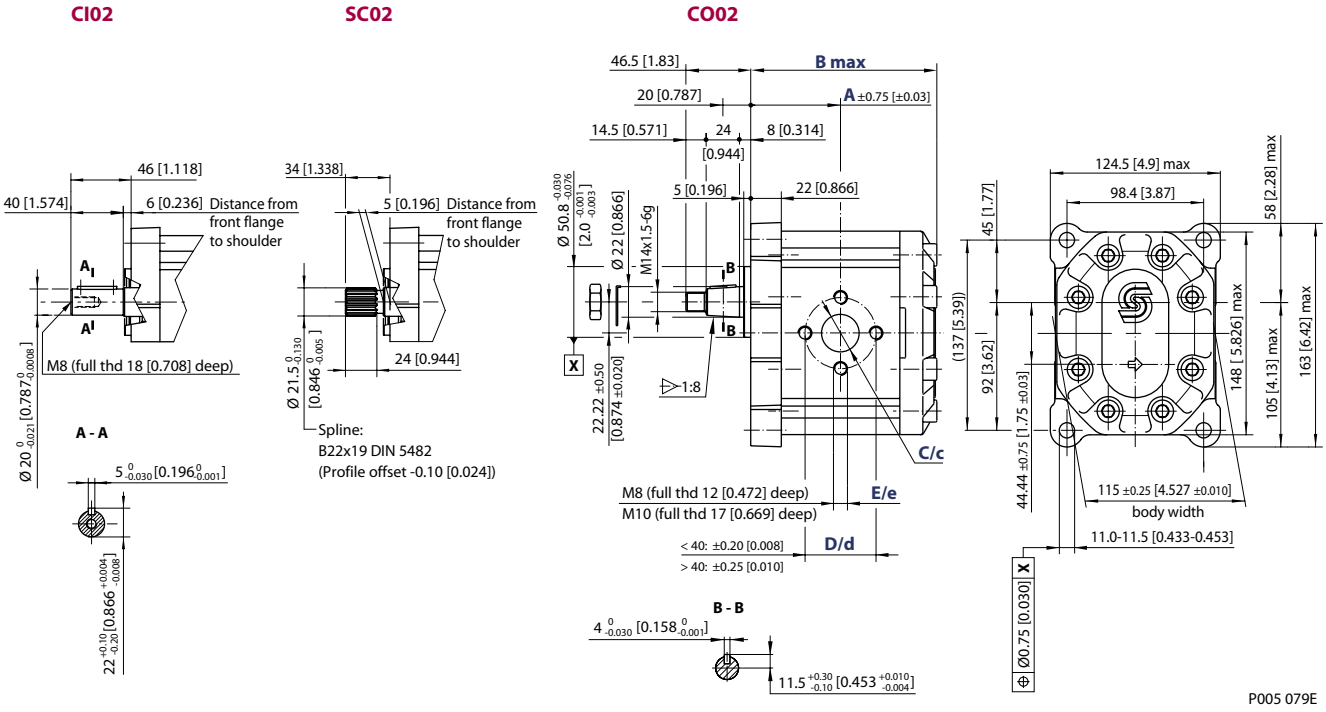
For further details on ordering, see *Model code,* pages 8 and 9.

GEAR PUMP DIMENSIONS (continued)

SNP3 – CO02, CI02 and SC02

This drawing shows the standard porting for CO02, CI02 and SC02

mm
[in]



SNP3 – CO02, CI02 and SC02 dimensions

Type (displacement)		22	26	33	38	44	48	55	63	75	90
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	C	20 [0.787]		27 [1.063]				36 [1.417]			
	D	40 [1.575]		51 [2.007]				62 [2.441]			
	E	M8		M10							
Outlet	c	20 [0.787]				27 [1.063]					
	d	40 [1.575]				51 [2.001]					
	e	M8				M10					

Model code example

SNP3	**SNP3/22 D CI02 ..._.** **SNP3/38 S SC02 ..._.** **SNP3/75 D CO02 ..._.**

Maximum shaft torque

CI02	N•m [lb•in]	210 [1858]
SC02		290 [2566]
CO02		350 [3097]

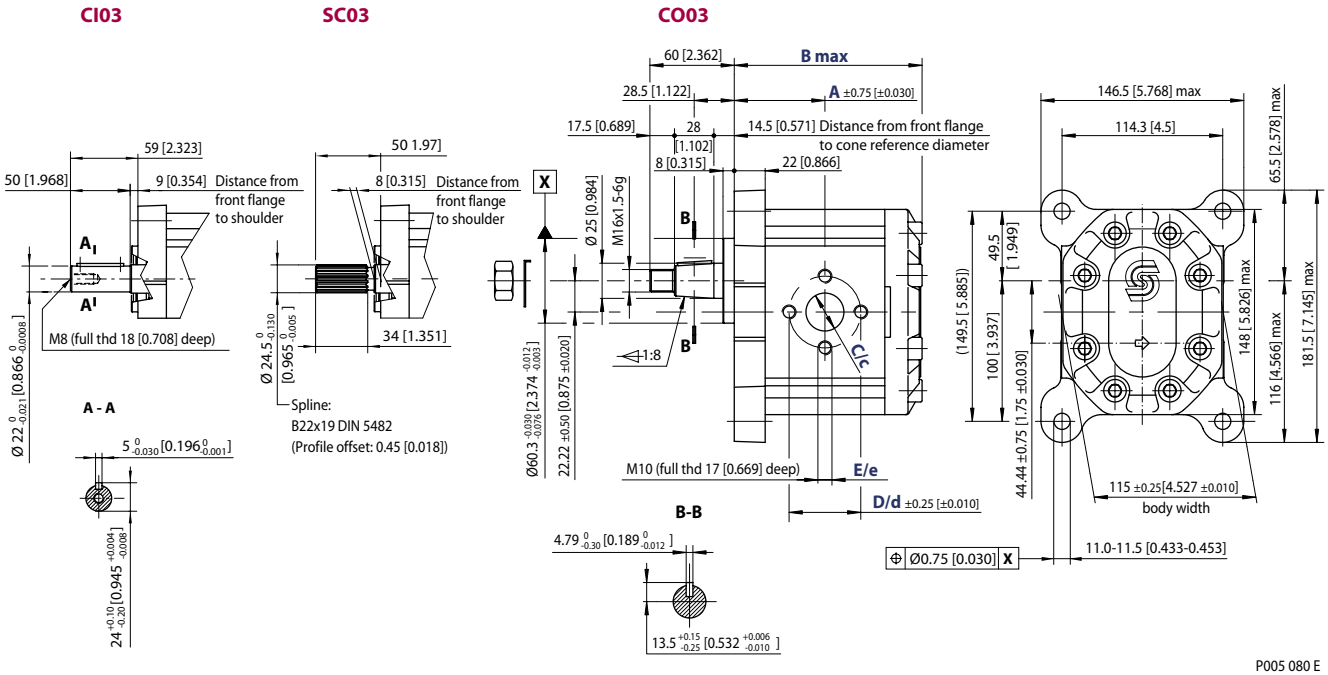
For further details on ordering, see *Model code,* pages 8 and 9.

GEAR PUMP DIMENSIONS (continued)

SNP3 – CO03, CI03 and SC03

This drawing shows the standard porting for CO03, CI03 and SC03.

mm
[in]



P005 080 E

SNP3 – CI03, SC03 and CO03 dimensions

Type (displacement)		22	26	33	38	44	48	55	63	75	90
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	C	20 [0.787]		27 [1.063]				36 [1.417]			
	D	40 [1.575]		51 [2.007]				62 [2.441]			
	E	M8		M10							
Outlet	c	20 [0.787]				27 [1.063]					
	d	40 [1.575]				51 [2.001]					
	e	M8				M10					

Model code example

SNP3	**SNP3/22 D CI03 ..._.** **SNP3/38 S SC03 ..._.** **SNP3/75 D CO03 ..._.**

Maximum shaft torque

CI03	N•m [lb•in]	300 [2655]
SC03		380 [3363]
CO03		500 [4425]

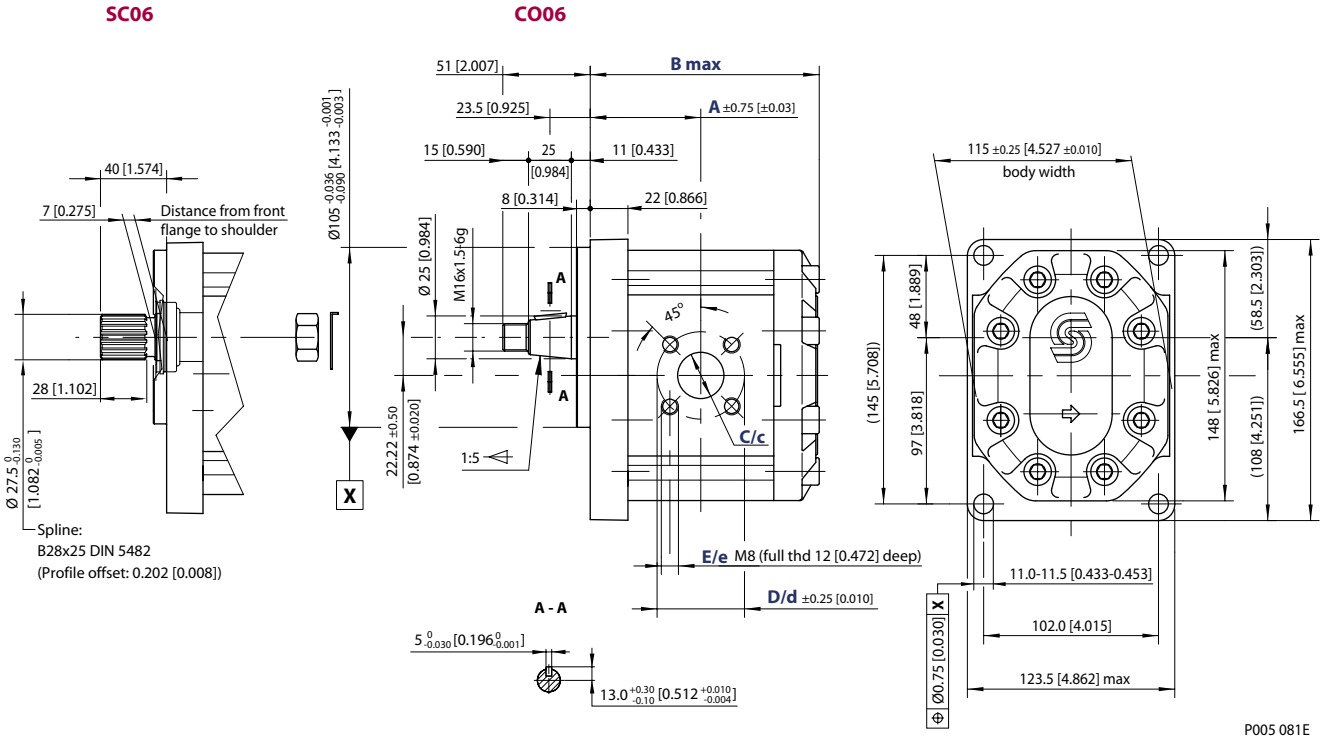
For further details on ordering, see *Model code,* pages 8 and 9.

GEAR PUMP DIMENSIONS (continued)

SNP3 – CO06 and SC06

This drawing shows the standard porting for CO06 and SC06.

mm
[in]



SNP3 – SC06 and CO06 dimensions

Type (displacement)		22	26	33	38	44	48	55	63	75	90
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	C	27 [1.063]							36 [1.417]		
	D	55 [2.165]									
	E	M8									
Outlet	c	18 [0.708]							27 [1.063]		
	d	55 [2.165]									
	e	M8									

Model code example

SNP3	**SNP3/38 S SC06 ..._.** **SNP3/55 D CO06 ..._.**

Maximum shaft torque

SC06	N•m [lb•in]	450 [3982]
CO06		300 [2655]

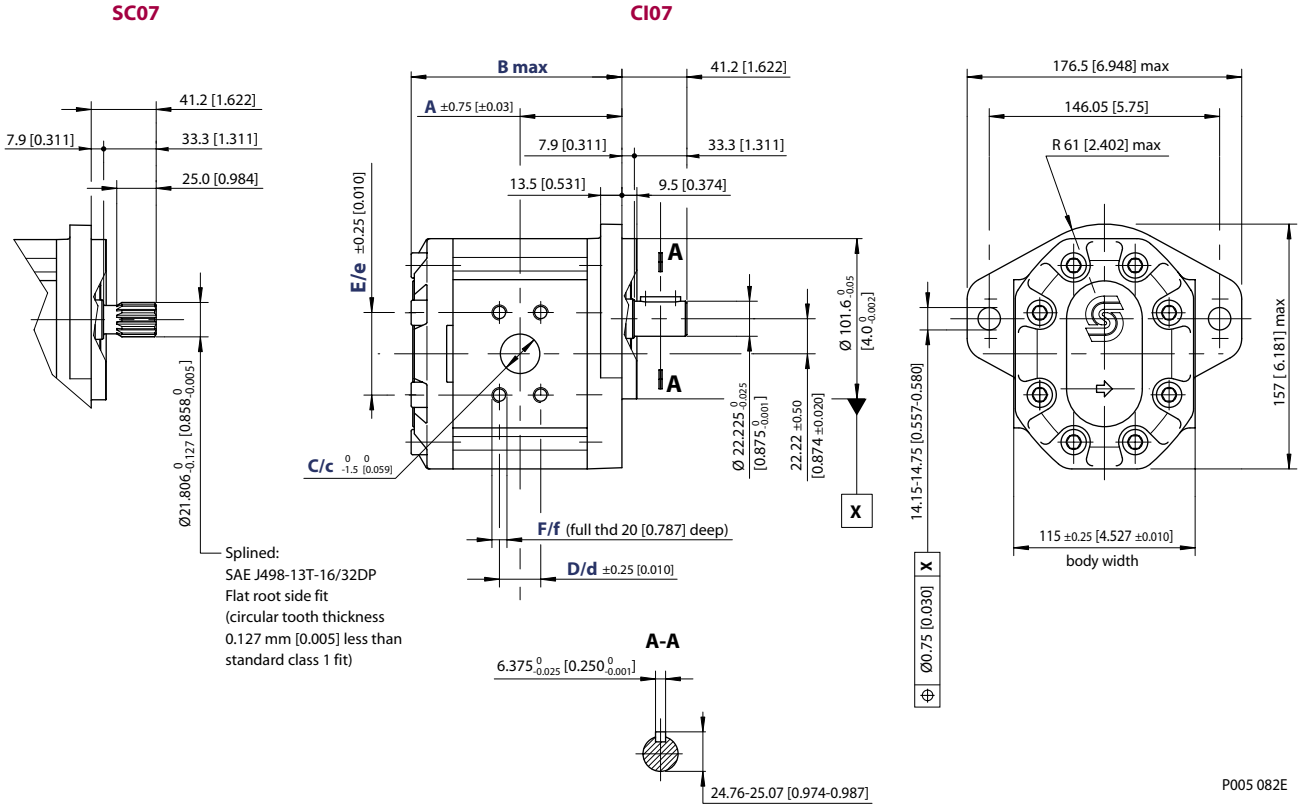
For further details on ordering, see *Model code,* pages 8 and 9.

GEAR PUMP DIMENSIONS (continued)

SNP3 – CI07, SC07 and SEP3 – SC07

This drawing shows the standard porting for CI07 and SC07.

mm
[in]



SNP3 – CI07, SC07 and SEP3 – SC07 dimensions

Type (displacement)		22	26	33	38	44	48	55	63	75	90
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	C	25.4 [1]		31.8 [1.251]				38.1 [1.5]			
	D	26.19 [1.031]		30.18 [1.188]				35.71 [1.405]			
	E	52.37 [2.061]		58.72 [2.311]				69.85 [2.75]			
	F	3/8–16UNC–2B		7/16–14UNC–2B				1/2–13UNC–2B			
Outlet	c	19.1 [0.751]		25.4 [1.0]				31.8 [1.251]			
	d	22.23 [0.875]		26.19 [1.031]				30.18 [1.188]			
	e	47.63 [1.875]		52.37 [2.061]				58.72 [2.311]			
	f	3/8–16UNC–2B		3/8–16UNC–2B				7/16–14UNC–2B			

Model code example

SNP3	**SNP3/90 D SC07 ..._.** **SNP3/38 S CI07 ..._.**
SEP3	**SEP3/22 S SC07 ..._.** **SEP3/26 D CI07 ..._.**

Maximum shaft torque

SC07	N•m [lb•in]	270 [2389]
CI07		230 [2035]

For further details on ordering, see *Model code,* pages 8 and 9.

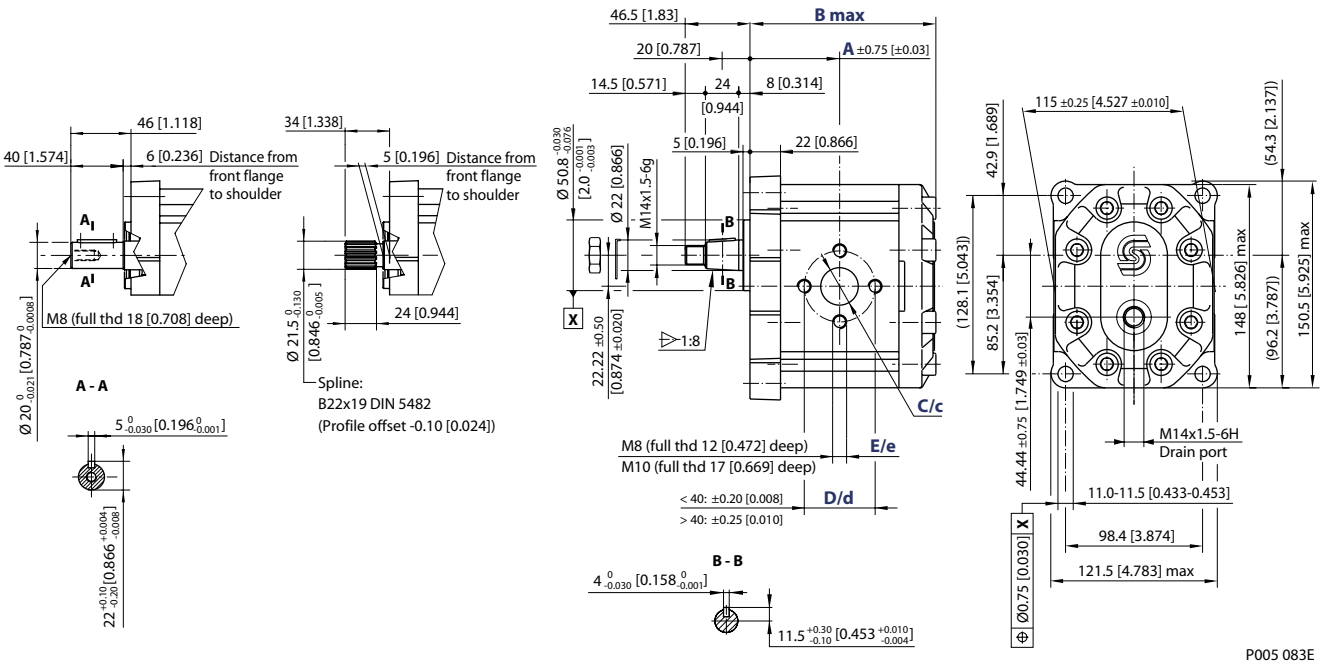
GEAR MOTOR DIMENSIONS

SNM3 – CI01, SC01 and CO01

This drawing shows the standard porting for CO01, CI01 and SC01.

mm
[in]

CI01 SC01 CO01



P005 083E

SNM3 – CI01, SC01 and CO01 dimensions

Type (displacement)		22	26	33	38	44	48	55	63	75	90
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 [0.787]		27 [1.063]							
	D/d	40 [1.575]		51 [2.007]							
	E/e	M8		M10							

Model code example

SNM3	**SNM3/22 . CI01 ..._.** **SNM3/38 . SC01 ..._.** **SNM3/75 . CO01 ..._.**

Maximum shaft torque

CI01	N•m [lb•in]	210 [1858]
SC01		290 [2566]
CO01		350 [3097]

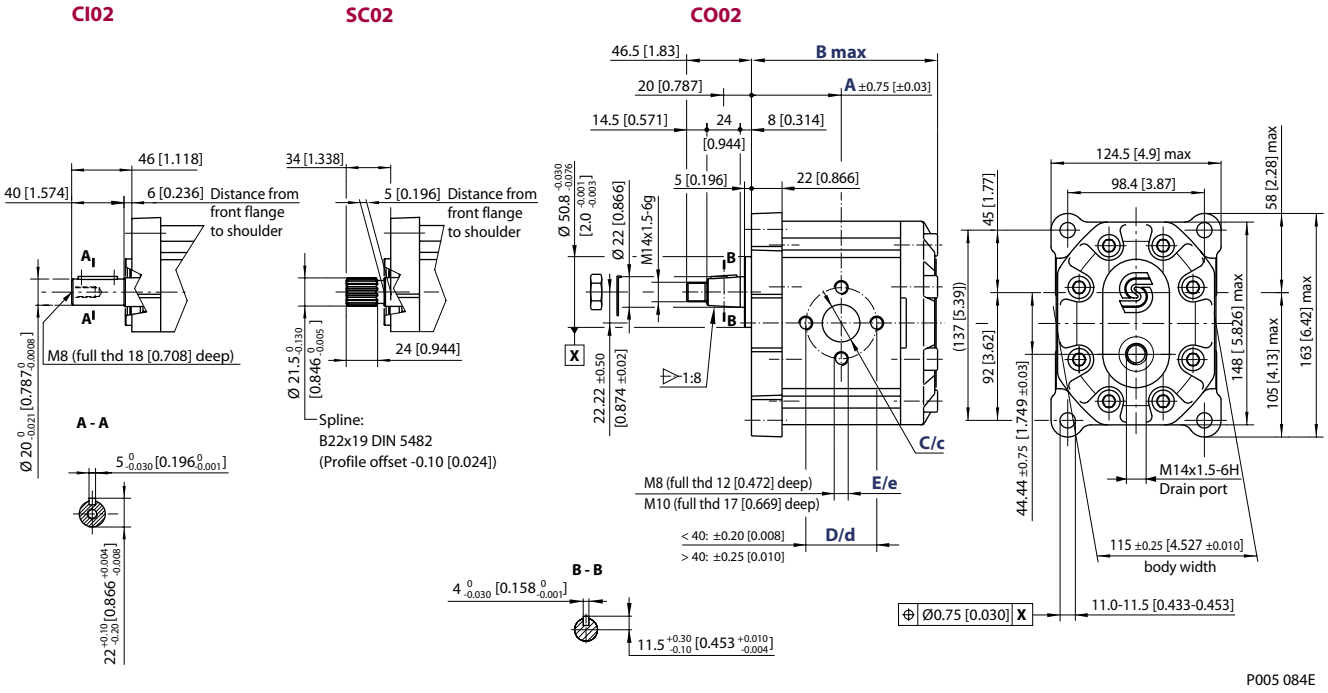
For further details on ordering, see *Model code,* pages 8 and 9.

GEAR MOTOR DIMENSIONS (continued)

SNM3 – CI02, SC02 and CO02

This drawing shows the standard porting for CI02, SC02 and CO02.

mm
[in]



SNM3 – CI02, SC02 and CO02 dimensions

Type (displacement)		22	26	33	38	44	48	55	63	75	90
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 [0.787]		27 [1.063]							
	D/d	40 [1.575]		51 [2.007]							
	E/e	M8		M10							

Model code example

SNM3	**SNM3/22 . CI02 ..._.** **SNM3/38 . SC02 ..._.** **SNM3/75 . CO02 ..._.**

Maximum shaft torque

CI02	N•m [lb•in]	210 [1858]
SC02		290 [2566]
CO02		350 [3097]

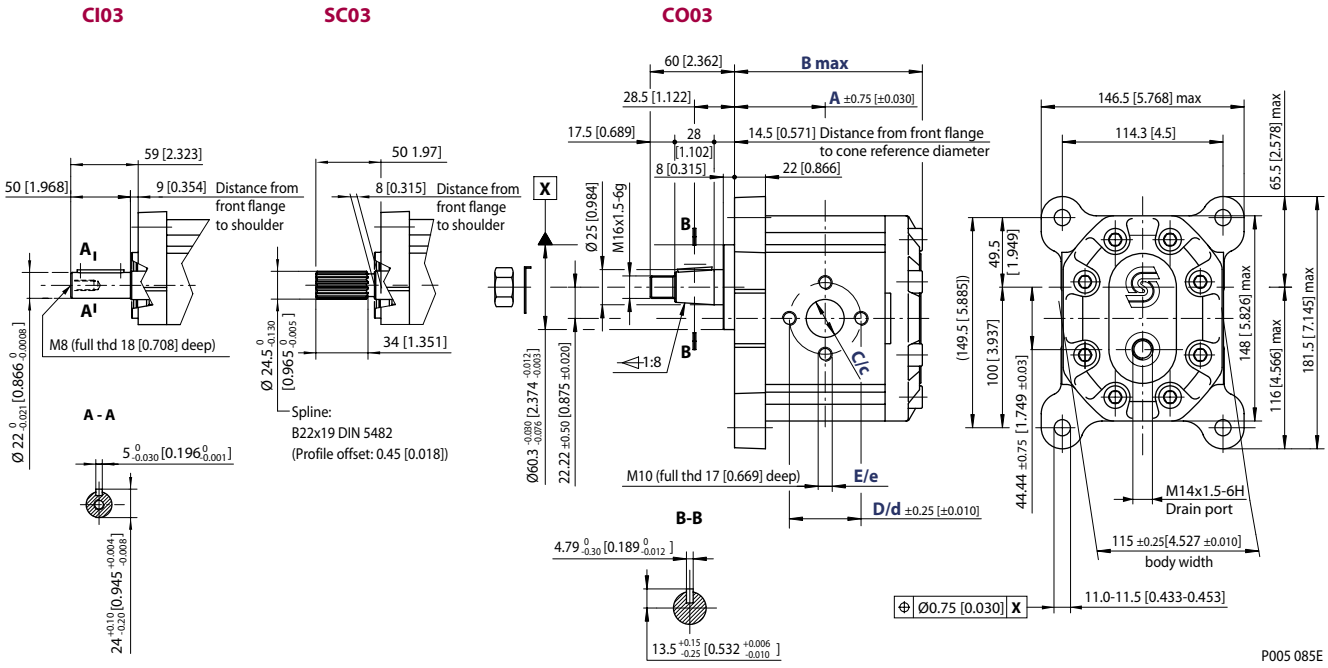
For further details on ordering, see *Model code,* pages 8 and 9.

GEAR MOTOR DIMENSIONS (continued)

SNM3 – CI03, SC03 and CO03

This drawing shows the standard porting for CI03, SC03 and CO03.

mm
[in]



SNM3 – CI03, SC03 and CO03 dimensions

Type (displacement)		22	26	33	38	44	48	55	63	75	90
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 [0.787]		27 [1.063]							
	D/d	40 [1.575]		51 [2.007]							
	E/e	M8		M10							

Model code example

SNM3	**SNM3/22 . CI03 ..._.** **SNM3/38 . SC03 ..._.** **SNM3/75 . CO03 ..._.**

Maximum shaft torque

CI03	N•m [lb•in]	300 [2655]
SC03		380 [3363]
CO03		500 [4425]

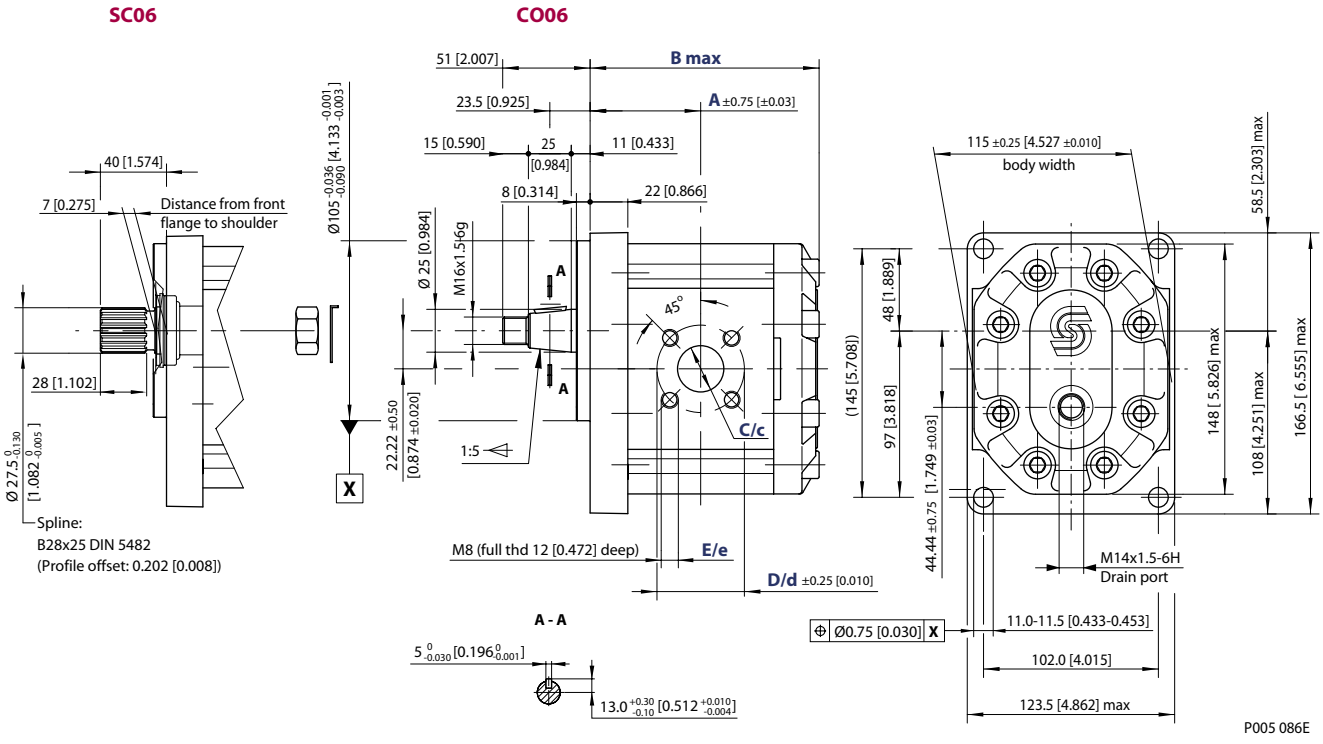
For further details on ordering, see *Model code,* pages 8 and 9.

GEAR MOTOR DIMENSIONS (continued)

SNM3 – CO06

This drawing shows the standard porting for CO06.

mm
[in]



SNM3 – CO06 dimensions

Type (displacement)		22	26	33	38	44	48	55	63	75	90
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 [0.787]		27 [1.063]							
	D/d	40 [1.575]		51 [2.007]							
	E/e	M8		M10							

Model code example

SNM3	**SNP2/26 . CO06 ..._.**

Maximum shaft torque

CO06	N•m [lb•in]	300 [2655]

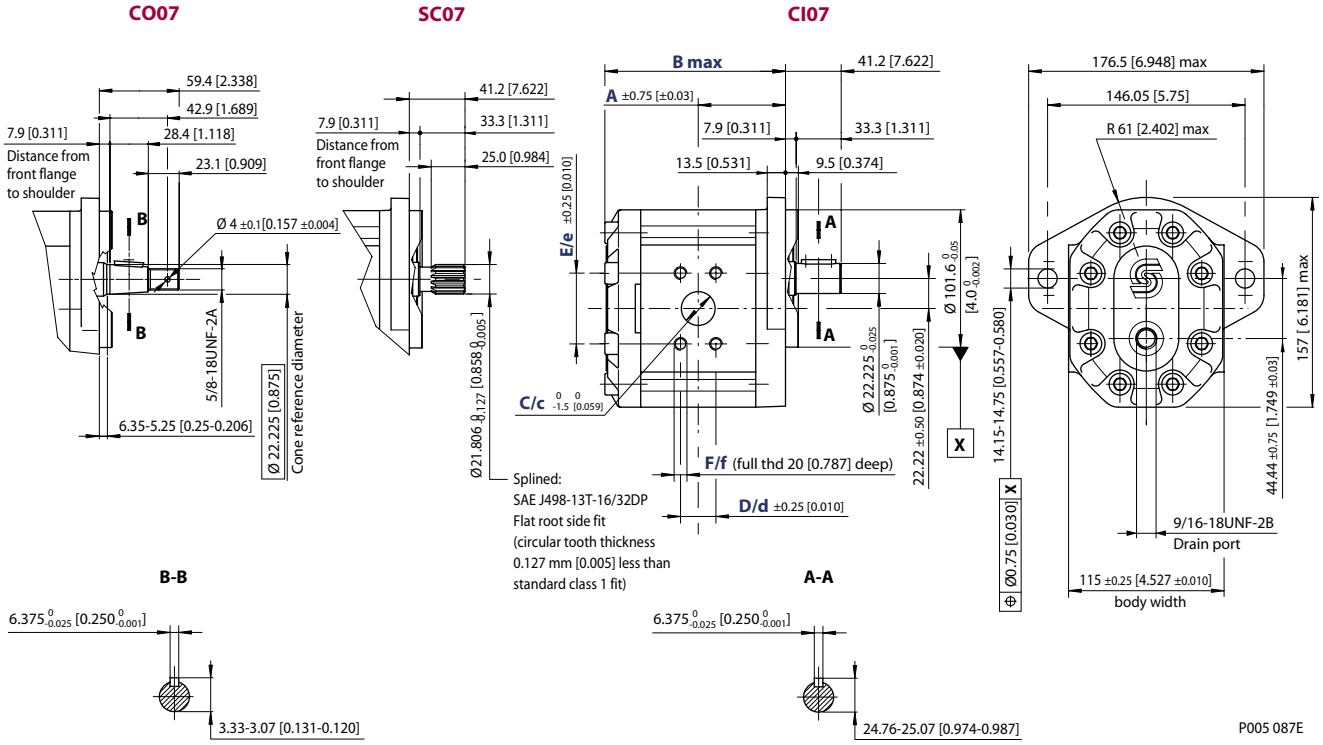
For further details on ordering, see *Model code,* pages 8 and 9.

GEAR MOTOR DIMENSIONS (continued)

SNM3 – CO07, CI07 and SC07

This drawing shows the standard porting for CO07, CI07 and SC07.

mm
[in]



SNM3 – CO07, CI07 and SC07 dimensions

Type (displacement)		22	26	33	38	44	48	55	63	75	90
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							

Model code example

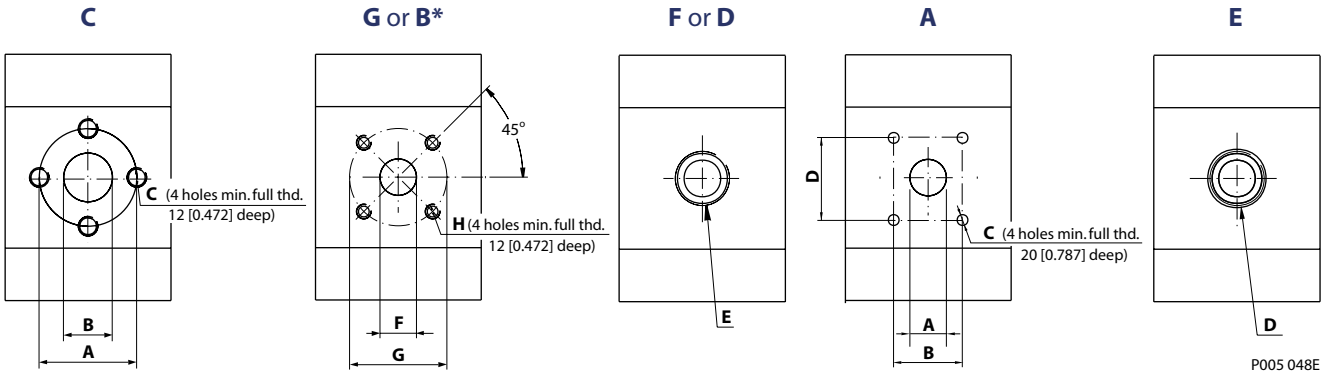
SNM3	**SNM3/22 . CI07 ..._.** **SNM3/38 . SC07 ..._.** **SNM3/75 . CO07 ..._.**

Maximum shaft torque

CI07	N•m [lb•in]	230 [2035]
SC07		270 [2389]
CO07		300 [2655]

For further details on ordering, see *Model code,* pages 8 and 9.

GROUP 3 PUMP PORTS



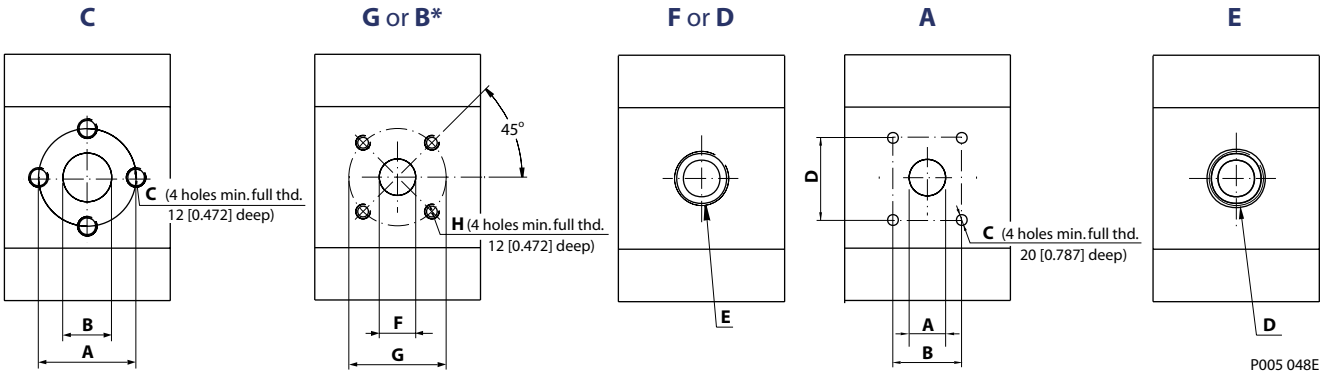
Group 3 – pump ports dimensions

Model code		C						G or B*		
Standard port for flange code		01/02			03			06		
Type (displacement)		B	A	C	B	A	C	F	G	H
22	Inlet	20 [0.787]	40 [1.575]	M8	20 [0.787]	40 [1.575]	M8	27 [1.063]	55 [2.165]	M8
	Outlet	20 [0.787]	40 [1.575]	M8	20 [0.787]	40 [1.575]	M8	18 [0.709]	55 [2.165]	M8
26	Inlet	20 [0.787]	40 [1.575]	M8	20 [0.787]	40 [1.575]	M8	27 [1.063]	55 [2.165]	M8
	Outlet	20 [0.787]	40 [1.575]	M8	20 [0.787]	40 [1.575]	M8	18 [0.709]	55 [2.165]	M8
33	Inlet	27 [1.063]	51 [2.008]	M10	27 [1.063]	51 [2.008]	M10	27 [1.063]	55 [2.165]	M8
	Outlet	20 [0.787]	40 [1.575]	M8	20 [0.787]	40 [1.575]	M8	18 [0.709]	55 [2.165]	M8
38	Inlet	27 [1.063]	51 [2.008]	M10	27 [1.063]	51 [2.008]	M10	27 [1.063]	55 [2.165]	M8
	Outlet	20 [0.787]	40 [1.575]	M8	20 [0.787]	40 [1.575]	M8	18 [0.709]	55 [2.165]	M8
44	Inlet	27 [1.063]	51 [2.008]	M10	27 [1.063]	51 [2.008]	M10	27 [1.063]	55 [2.165]	M8
	Outlet	27 [1.063]	51 [2.008]	M10	27 [1.063]	51 [2.008]	M10	18 [0.709]	55 [2.165]	M8
48	Inlet	27 [1.063]	51 [2.008]	M10	27 [1.063]	51 [2.008]	M10	27 [1.063]	55 [2.165]	M8
	Outlet	27 [1.063]	51 [2.008]	M10	27 [1.063]	51 [2.008]	M10	18 [0.709]	55 [2.165]	M8
55	Inlet	27 [1.063]	51 [2.008]	M10	27 [1.063]	51 [2.008]	M10	27 [1.063]	55 [2.165]	M8
	Outlet	27 [1.063]	51 [2.008]	M10	27 [1.063]	51 [2.008]	M10	18 [0.709]	55 [2.165]	M8
63	Inlet	36 [1.417]	62 [2.441]	M10	36 [1.417]	62 [2.441]	M10	36 [1.417]	55 [2.165]	M8
	Outlet	27 [1.063]	51 [2.008]	M10	27 [1.063]	51 [2.008]	M10	27 [1.063]	55 [2.165]	M8
75	Inlet	36 [1.417]	62 [2.441]	M10	36 [1.417]	62 [2.441]	M10	36 [1.417]	55 [2.165]	M8
	Outlet	27 [1.063]	51 [2.008]	M10	27 [1.063]	51 [2.008]	M10	27 [1.063]	55 [2.165]	M8
90	Inlet	36 [1.417]	62 [2.441]	M10	36 [1.417]	62 [2.441]	M10	36 [1.417]	55 [2.165]	M8
	Outlet	27 [1.063]	51 [2.008]	M10	27 [1.063]	51 [2.008]	M10	27 [1.063]	55 [2.165]	M8

(the table is continued on the next page)

* Port **B** is in the center of the body. Port **G** is offset from the center of the body.

GROUP 3 PUMP PORTS (continued)

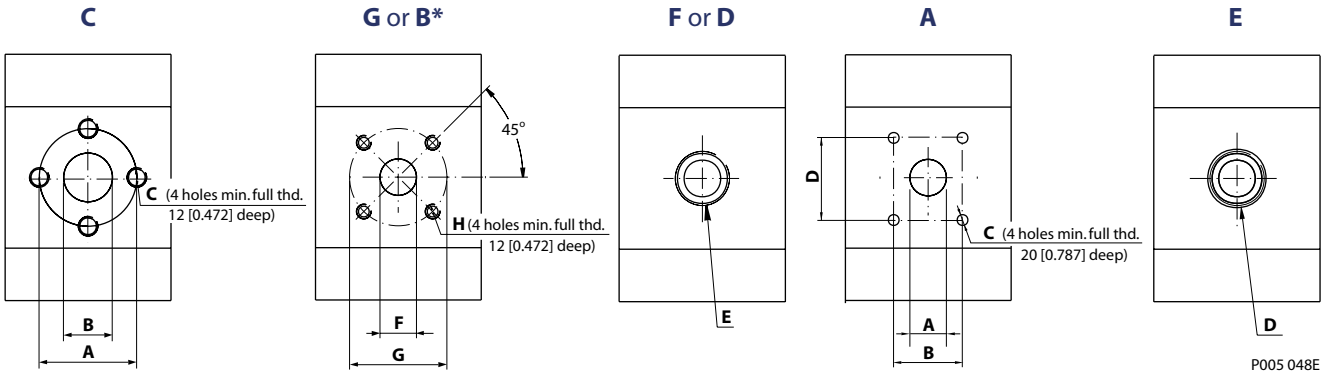


Group 3 – pump ports dimensions

Model code		A				F or D		E
Standard port for flange code		07/08/09				nonstandard for all configuration		07/08/09
Type (displacement)		A	B	D	C	E		D
22	Inlet	25.4 [1.000]	26.19 [1.031]	52.37 [2.062]	3/8–16UNC–2B	¾ Gas (BSPP)	M26x1.5	1 5/16–12UN–2B
	Outlet	19.1 [0.752]	22.23 [0.875]	47.63 [1.875]	3/8–16UNC–2B	¾ Gas (BSPP)	M26x1.5	1 1/16–12UN–2B
26	Inlet	25.4 [1.000]	26.19 [1.031]	52.37 [2.062]	3/8–16UNC–2B	¾ Gas (BSPP)	M26x1.5	1 5/16–12UN–2B
	Outlet	19.1 [0.752]	22.23 [0.875]	47.63 [1.875]	3/8–16UNC–2B	¾ Gas (BSPP)	M26x1.5	1 1/16–12UN–2B
33	Inlet	31.8 [1.252]	30.18 [1.188]	58.72 [2.312]	7/16–14UNC–2B	1 Gas (BSPP)	M33x2	1 5/8– 12UN–2B
	Outlet	25.4 [1.000]	26.19 [1.031]	52.37 [2.062]	3/8–16UNC–2B	¾ Gas (BSPP)	M26x1.5	1 5/16–12UN–2B
38	Inlet	31.8 [1.252]	30.18 [1.188]	58.72 [2.312]	7/16–14UNC–2B	1 Gas (BSPP)	M33x2	1 5/8–12UN–2B
	Outlet	25.4 [1.000]	26.19 [1.031]	52.37 [2.062]	3/8–16UNC–2B	¾ Gas (BSPP)	M26x1.5	1 5/16–12UN–2B
44	Inlet	31.8 [1.252]	30.18 [1.188]	58.72 [2.312]	7/16–14UNC–2B	1 Gas (BSPP)	M33x2	1 5/8–12UN–2B
	Outlet	25.4 [1.000]	26.19 [1.031]	52.37 [2.062]	3/8–16UNC–2B	1 Gas (BSPP)	M33x2	1 5/16–12UN–2B
48	Inlet	31.8 [1.252]	30.18 [1.188]	58.72 [2.312]	7/16–14UNC–2B	1 Gas (BSPP)	M33x2	1 5/8–12UN–2B
	Outlet	25.4 [1.000]	26.19 [1.031]	52.37 [2.062]	3/8–16UNC–2B	1 Gas (BSPP)	M33x2	1 5/16–12UN–2B
55	Inlet	38.1 [1.500]	35.71 [1.406]	69.85 [2.750]	1/2–13UNC–2B	1 Gas (BSPP)	M33x2	1 7/8–12UN–2B
	Outlet	31.8 [1.252]	30.18 [1.188]	58.72 [2.312]	7/16–14UNC–2B	1 Gas (BSPP)	M33x2	1 5/8–12UN–2B
63	Inlet	38.1 [1.500]	35.71 [1.406]	69.85 [2.750]	1/2–13UNC–2B	1¼ Gas (BSPP)	M42x2	1 7/8–12UN–2B
	Outlet	31.8 [1.252]	30.18 [1.188]	58.72 [2.312]	7/16–14UNC–2B	1 Gas (BSPP)	M33x2	1 5/8–12UN–2B
75	Inlet	38.1 [1.500]	35.71 [1.406]	69.85 [2.750]	1/2–13UNC–2B	1¼ Gas (BSPP)	M42x2	1 7/8–12UN–2B
	Outlet	31.8 [1.252]	30.18 [1.188]	58.72 [2.312]	7/16–14UNC–2B	1 Gas (BSPP)	M33x2	1 5/8–12UN–2B
90	Inlet	38.1 [1.500]	35.71 [1.406]	69.85 [2.750]	1/2–13UNC–2B	1¼ Gas (BSPP)	M42x2	1 7/8–12UN–2B
	Outlet	31.8 [1.252]	30.18 [1.188]	58.72 [2.312]	7/16–14UNC–2B	1 Gas (BSPP)	M33x2	1 5/8–12UN–2B

* Port **B** is in the center of the body. Port **G** is offset from the center of the body.

GROUP 3 MOTOR PORTS



Group 3 – motor ports dimensions

Model code		C			G or B			F or D		E	A
Standard port for flange code		01/02/03			06			nonstandard			SAE J518c vertical 07
Type (displacement)		B	A	C	F	G	H	E	E	D	"
22	Inlet/ Outlet	20 [0.787]	40 [1.575]	M8	27 [1.063]	55 [2.165]	M8	¾ Gas (BSPP)	M26x1.5	1 5/16–12UN–2B	1
26	Inlet/ Outlet	20 [0.787]	40 [1.575]	M8	27 [1.063]	55 [2.165]	M8	¾ Gas (BSPP)	M26x1.5	1 5/16–12UN–2B	1¼
33	Inlet/ Outlet	27 [1.063]	51 [2.008]	M10	27 [1.063]	55 [2.165]	M8	1 Gas (BSPP)	M33x2	1 5/8–12UN–2B	1¼
38	Inlet/ Outlet	27 [1.063]	51 [2.008]	M10	27 [1.063]	55 [2.165]	M8	1 Gas (BSPP)	M33x2	1 5/8–12UN–2B	1¼
44	Inlet/ Outlet	27 [1.063]	51 [2.008]	M10	27 [1.063]	55 [2.165]	M8	1 Gas (BSPP)	M33x2	1 5/8–12UN–2B	1¼
48	Inlet/ Outlet	27 [1.063]	51 [2.008]	M10	27 [1.063]	55 [2.165]	M8	1 Gas (BSPP)	M33x2	1 5/8–12UN–2B	1¼
55	Inlet/ Outlet	27 [1.063]	51 [2.008]	M10	27 [1.063]	55 [2.165]	M8	1 Gas (BSPP)	M33x2	1 5/8–12UN–2B	1¼
63	Inlet/ Outlet	27 [1.063]	51 [2.008]	M10	27 [1.063]	55 [2.165]	M8	1 Gas (BSPP)	M33x2	1 5/8–12UN–2B	1¼
75	Inlet/ Outlet	27 [1.063]	51 [2.008]	M10	27 [1.063]	55 [2.165]	M8	1 Gas (BSPP)	M33x2	1 5/8–12UN–2B	1¼
90	Inlet/ Outlet	27 [1.063]	51 [2.008]	M10	27 [1.063]	55 [2.165]	M8	1 Gas (BSPP)	M33x2	1 5/8–12UN–2B	1¼
Drain		M14 x 1.5								9/16–18UNF–2B	

* Port **B** is in the center of the body. Port **G** is offset from the center of the body.

SHAFT AND FLANGE AVAILABILITY

Shaft and flange availability and torque capacity

This table details the standard Group 3 shafts and flange combinations that are currently available with the maximum shaft torque limits. For further information, please see Sauer-Danfoss publications *Group 3 Gear Pumps Technical Information,* 520L0569 and *Group 1, 2 and 3 Gear Motors, Technical Information,* 520L0568.

Shaft and flange availability and torque capacity

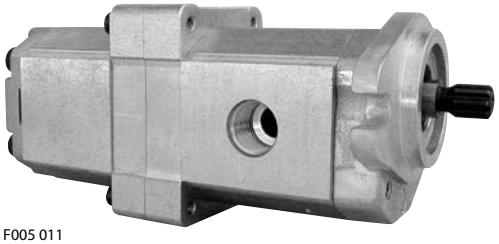
Shaft		**Mounting flange code with maximum torque** in Nm [lb•in]				
Description	***Code***	**01**	**02**	**03**	**06**	**07**
Taper 1:5	**CO**	–	–	–	300 [2655]	–
Taper 1:8	**CO**	350 [3097]	350 [3097]	500 [4425]	–	300 [2655]
SAE spline 13T 16/32p	**SC**	290 [2566]	290 [2566]	380 [3363]	450 [3982]	270 [2389]
Parallel ø22.225 mm	**CI**	210 [1858]	210 [1858]	300 [2655]	–	230 [2035]

OVERVIEW

Sauer-Danfoss multi-stage pumps can be combined of group 1, 2, and 3. In addition to the standard range (presented in the following), first stage can be supplied with a splined, a tapered or a parallel shaft. Also versions with suction connection and other hydraulic connections and flange assembly or centralized threads are available.

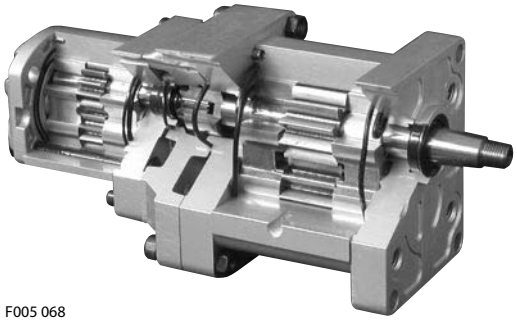
The representatives of Sauer-Danfoss multi-stage pumps are shown below:

Tandem pump PTT SC46



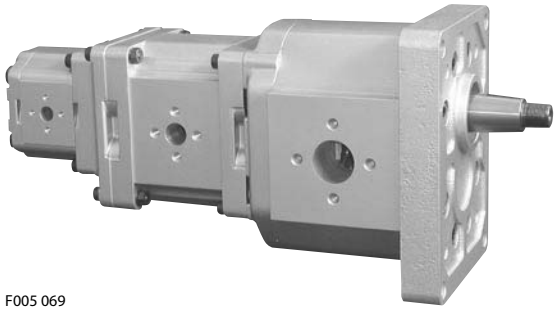
F005 011

Tandem pump PNT CO31(cut-away)



F005 068

Triple pump PFRN CO31



F005 069

MULTI-STAGE PUMP MODEL CODE

Example:

A	B	C	D	E		F		G	H	J	K	L	M		N	O
P	N	N	T	1	9	+	1	1	+	4.	3	D	S	C	3	1	W	H	O	1	G

A *Product = pump*

B *1st stage group**

C *2nd stage group**

D *3rd stage group**

Stage group code*	
T	= SNP1
Y	= SKP1
N	= SNP2
L	= SKP2
R	= SNP3

E *Displacement of the 1st pump*

F *Displacement of the 2nd pump*

G *Displacement of the 3rd pump*

H *Direction of rotation*

D	= right (clockwise)
S	= left (counterclockwise)

J *Shaft type*

K *Spacer flange*

L *Front flange configuration*

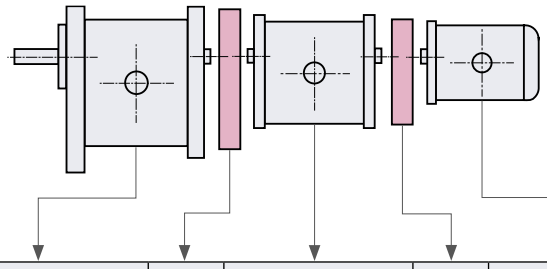
M *Variant code*

N *Version*

O *Port type*

MULTI-STAGE PUMP MODEL CODE (continued)

Market codes for composition of multi-stage pumps



Compressed code	First stage	Kit	Middle stage	Kit	Rear stage
PTT ..+... CO41 ..._.	SNP1 /... CO41 ..._.	HT	–	–	SNP1/... SC11 ..._.
PTTT ..+..+..+... CO41 ..._.	SNP1/... CO41 ..._.	HT	SNP1/... SC71 ..._.	HV	SNP1/... SC11 ..._.
PLN ..+... CO41 ..._.	SKP2/... CO41 ..._.	–	–	–	SNP2/... FR03 ..._.
PLL ..+... TX41 ..._.	SKP2/... TX41 ..._.	–	–	–	SKP2/... FR03 ..._.
PNT ..+... CO31 ..._.	SNP2/... CO41 ...3.	HN	–	–	SNP1/... SC1C ..._.
PNTT ..+..+..+...CO31 ..._.	SNP2/... CO41 ...3.	HN	SNP1/... SC7C ..._.	HT	SNP1/... SC11 ..._.
PNN..+... CO41 ..._.	SNP2/... CO41 ..._.	–	–	–	SNP2/... FR03
PNNT ..+..+..+... CO31 ..._.	SNP2/... CO41 ...1.	–	SNP2/... FR73 ...3.	HN	SNP1/... SC1C ..._.
PNNN..+..+... CO41 ..._.	SNP2/... CO41 ..._.	–	SNP2/...FR73	–	SNP2/... FR03
PRT..+... CO31 ..._.	SNP3/... CO41 ..._.	HR	–	–	SNP1/... SC01
PRTT..+..+... CO31 ..._.	SNP3/... CO41 ..._.	HR	SNP1/...SC41	HT	SNP1/... SC01
PRN..+... CO31 ..._.	SNP3/... CO41 ..._.	H	–	–	SNP2/... SC01
PRNT..+..+..+... CO31 ..._.	SNP3/... CO41 ..._.	H	SNP2/...SC31...3.	HN	SNP1/... SC1C ..._.
PRNN..+..+... CO31 ..._.	SNP3/... CO 41 ..._.	H	SNP2/...SC41	–	SNP2/... FR03
PRR..+... CO41 ..._.	SNP3/... CO41 ..._.	G	–	–	SNP3/... SC11
PRRT ..+..+..+... CO31 ..._.	SNP3/... CO41 ..._.	G	SNP3/... SC71 ...3.	HR	SNP1/... SC1E ..._.
PRRN..+..+... CO31 ..._.	SNP3/... CO41 ..._.	G	SNP3/...SC71	H	SNP2/... SC01
PRRR..+..+... CO41 ..._.	SNP3/... CO41 ..._.	G	SNP3/...SC71	G	SNP3/... SC11
PFN..+... CO31 ..._.	TAP 60-200... CO31 ..._.	S	–	–	SNP2/... SC01
PFNT..+..+...CO31 ..._.	TAP 60-200... CO31 ..._.	S	SNP2/...SC31...3.	HN	SNP1/... SC1C
PFNN..+..+... CO31…_.	TAP 60-200... CO31 ..._.	S	SNP2/...SC41	–	SNP2/... FR03
PFR..+... CO31…_.	TAP 60-200... CO31 ..._.	E	–	–	SNP3/... SC11
PFRN..+..+... CO31…_.	TAP 60-200... CO31 ..._.	E	SNP3/...SC71	H	SNP2/...SC01
PFF..+... CO41…_.	TAP 60-200... CO41 ..._.	F	–	–	TAP 60-200... SC11

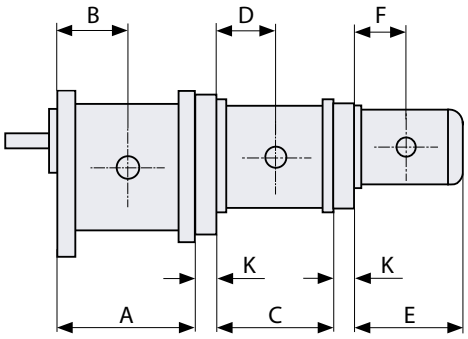
To assembly tandem pumps consider first and rear stage; for triple pumps consider all stages; for multi-stage pumps consider first stage, middle stages and rear stage. Above table shows the CO31 ..._. – CO41 ..._. standard configuration only, corresponding to CO01 of single pump; for different configurations of shaft and front flange see the pages regarding single pumps.

Example:

PRNN26 + 19 + 14 D SC37 ..._G

P means multistage pump, **R** means SNP3, **N** means SNP2, **26** means displacement 1st stage, **19** means displacement 2nd stage, **14** means displacement 3rd stage, **D** means rotation clockwise, **SC** means shaft spline, **37** means type of flange (if there is in assembled different group, otherwise becomes **47**) the same configuration 07 single pump, **G** means special port configuration offset from center of the body.

MULTI-STAGE PUMPS WITH EUROPEAN STANDARD FRONT FLANGE (01)



Coupling kit width – K	mm [in]
SNP1 + SNP1	0
SNP2 + SNP1	0
SNP2 + SNP2	0
SNP3 + SNP1	0
SNP3 + SNP2	25.0 [0.984]
SNP3 + SNP3	0
TAP60-200 + SNP1	23.5 0.925
TAP60-200 + SNP2	25.0 [0.984]
TAP60-200 + SNP3	0
TAP60-200 + TAP60-200	0

All groups – dimensions (mm [in])

Product type			A	B	C	D	E	F
Group 1	SNP1 SKP1	1.2	75.75 [2.982]	37.75 [1.486]	76.00 [2.992]	38.00 [1.496]	79.75 [3.140]	38.00 [1.496]
		1.7	77.25 [3.041]	38.50 [1.515]	77.50 [3.051]	38.75 [1.525]	81.25 [3.199]	38.75 [1.525]
		2.2	79.25 [3.120]	39.50 [1.555]	79.50 [3.130]	39.75 [1.565]	83.25 [3.278]	39.75 [1.565]
		2.6	81.25 [3.199]	40.50 [1.594]	81.50 [3.208]	40.75 [1.604]	85.25 [3.356]	40.75 [1.604]
		3.2	83.25 [3.278]	41.50 [1.634]	83.50 [3.287]	41.75 [1.644]	87.25 [3.435]	41.75 [1.644]
		3.8	85.25 [3.356]	42.50 [1.673]	85.50 [3.366]	42.75 [1.683]	89.25 [3.514]	42.75 [1.683]
		4.3	87.25 [3.435]	43.50 [1.712]	87.50 [3.445]	43.75 [1.722]	91.25 [3.592]	43.75 [1.722]
		6	93.75 [3.691]	46.75 [1.840]	94.00 [3.701]	47.00 [1.850]	97.75 [3.848]	47.00 [1.850]
		7.8	100.25 [3.947]	50.0 [1.968]	100.5 [3.956]	50.25 [1.978]	104.25 [4.104]	50.25 [1.978]
		10	109.25 [4.301]	54.50 [2.145]	109.5 [4.311]	54.75 [2.155]	113.25 [4.458]	54.75 [2.155]
		12	117.25 [4.616]	58.50 [2.303]	117.5 [4.626]	58.75 [2.313]	121.25 [4.773]	58.75 [2.313]
Group 2	SNP2 SKP2	4	87.50 [3.445]	43.3 [1.705]	87.50 [3.445]	43.3 [1.705]	93.0 [3.661]	43.3 [1.705]
		6	91.0 [3.582]	45.0 [1.771]	91.00 [3.582]	45.0 [1.771]	96.5 [3.799]	45.0 [1.771]
		8	95.0 [3.740]	45.0 [1.771]	95.00 [3.740]	45.0 [1.771]	100.5 [3.956]	45.0 [1.771]
		11	99.0 [3.897]	49.0 [1.929]	99.00 [3.897]	49.0 [1.929]	104.5 [4.114]	49.0 [1.929]
		14	105.0 [4.134]	52.0 [2.047]	105.0 [4.134]	52.0 [2.047]	110.5 [4.350]	52.0 [2.047]
		17	109.0 [4.291]	52.0 [2.047]	109.0 [4.291]	52.0 [2.047]	114.5 [4.508]	52.0 [2.047]
		19	113.0 [4.449]	56.0 [2.205]	113.0 [4.449]	56.0 [2.205]	118.5 [4.665]	56.0 [2.205]
		22	119.0 [4.685]	59.0 [2.323]	119.0 [4.685]	59.0 [2.323]	124.5 [4.902]	59.0 [2.323]
		25	123.0 [4.843]	59.0 [2.323]	123.0 [4.843]	59.0 [2.323]	128.5 [5.059]	59.0 [2.323]
Group 3	SNP3	22	126.0 [4.960]	63.0 [2.480]	126.0 [4.960]	63.0 [2.480]	132.5 [5.216]	63.0 [2.480]
		26	129.0 [5.078]	64.5 [2.539]	129.0 [5.078]	64.5 [2.539]	135.5 [5.334]	64.5 [2.539]
		33	134.0 [5.275]	67.0 [2.637]	134.0 [5.275]	67.0 [2.637]	140.5 [5.531]	67.0 [2.637]
		38	137.5 [5.413]	68.8 [2.708]	137.5 [5.413]	68.8 [2.708]	144.0 [5.669]	68.8 [2.708]
		44	142.0 [5.590]	71.0 [2.795]	142.0 [5.590]	71.0 [2.795]	148.5 [5.846]	71.0 [2.795]
		48	145.0 [5.708]	72.5 [2.854]	145.0 [5.708]	72.5 [2.854]	151.5 [5.964]	72.5 [2.854]
		55	150.0 [5.905]	75.0 [2.952]	150.0 [5.905]	75.0 [2.952]	156.5 [6.161]	75.0 [2.952]
		63	156.0 [6.141]	78.0 [3.071]	156.0 [6.141]	78.0 [3.071]	162.5 [6.397]	78.0 [3.071]
		75	164.0 [6.456]	82.0 [3.228]	164.0 [6.456]	82.0 [3.228]	170.5 [6.712]	82.0 [3.228]
		90	174.0 [6.850]	87.0 [3.425]	174.0 [6.850]	87.0 [3.425]	180.5 [7.106]	87.0 [3.425]
Group 4	TAP60–200	60	176.0 [6.929]	88.0 [3.464]	176.0 [6.929]	88.0 [3.464]	174.5 [6.870]	88.0 [3.464]
		85	186.0 [7.323]	93.0 [3.661]	186.0 [7.323]	93.0 [3.661]	184.5 [7.264]	93.0 [3.661]
		106	194.0 [7.637]	97.0 [3.819]	194.0 [7.637]	97.0 [3.819]	192.5 [7.578]	97.0 [3.819]
		130	203.0 [7.992]	101.5 [3.996]	203.0 [7.992]	101.5 [3.996]	201.5 [7.933]	101.5 [3.996]
		148	210.0 [8.267]	105.0 [4.134]	210.0 [8.267]	105.0 [4.134]	208.5 [8.208]	105.0 [4.134]
		180	222.0 [8.740]	111.0 [4.370]	222.0 [8.740]	111.0 [4.370]	220.5 [8.681]	111.0 [4.370]
		200	230.0 [9.055]	115.0 [4.527]	230.0 [9.055]	115.0 [4.527]	228.5 [8.996]	115.0 [4.527]

MULTI-STAGE PUMPS WITH EUROPEAN STANDARD FRONT FLANGE (01) (continued)

Examples of overall lenght calculation:

2-stage pump: SNP3/44 + SNP1/3.2

A = 142.0 mm
K = 0
E = 87.25 mm

L_{tot} = 142 + 0 + 87.25 = 229.25 mm

4-stage pump: SNP3/55 + SNP2/17 + SNP2/8 + SNP1/2.2

A = 150.0 mm
K = 25.0 mm (1° kit – 1st kit)
C = 109.0 mm (2nd stage)
K = 0 mm (2° kit – 2nd kit)
C = 95. 0 mm (3rd stage)
K = 0 mm (3° kit – 3rd kit)
E = 83.25 mm (4th stage)

L_{tot} = 150.0 + 25.0 + 109.0 + 0 + 95.0 + 0 + 83.25 = 413.25 mm

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