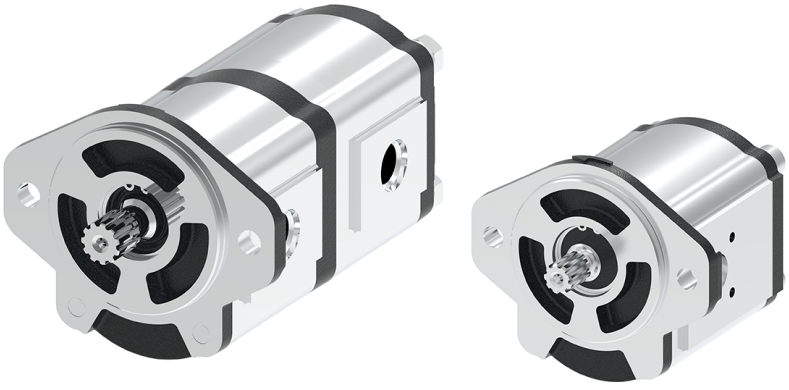
ENGINEERING
TOMORROW

Technical Information

Lumi
Aluminum Gear Pump Group 2



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Revision history

Table of revisions

Date	Changed	Rev
May 2023	Added new product features	0301
January 2023	Renamed product	0203
September 2022	First edition	0101

Contents

General information
Product overview ... 4
Features and benefits ... 5

Hydraulic system design calculations
Based on SI units / Based on US units ... 6
Units and conversions ... 7

Parts nomenclature

Specifications
Technical data ... 9

Performance curves
Flow, speed, and power performance ... 10

Model code
Single pump model code ... 12
Double pump model code ... 15
GD5D product, size, type, and displacement (position 1-6) ... 15
GD5D mounting flange and input shaft (position 9-12) ... 16
GD5D inlet, outlet, threaded, and flanged ports (position 13-20) ... 16
GD5D special features, rotation, and design code (position 21-27) ... 17

Installation
GD5 pump installation ... 18
Port availability ... 19

Dimensions
Mounting flange ... 20
SAE "A" 2 bolt mounting flange ... 20
European rectangular 4 bolt mounting flange ... 20
German rectangular 4 bolt mounting flange ... 21
Input shaft ... 22
Taper 1:8 input shaft ... 22
Straight keyed input shaft with Ø15.88 ... 23
Straight keyed input shaft with Ø17.46 ... 23
Straight keyed shaft with Ø19.05 ... 24
9 teeth shaft ... 24
11 teeth shaft ... 25
Ports ... 26
SAE straight thread O-ring ports ... 26
European flanged ports - 4 bolts ... 26
German flanged ports - 4 bolts ... 27
BSPP straight thread ports ... 27
Metric straight thread ports (ISO 6149) ... 27

Installation and maintenance
Mounting ... 28
Rotation ... 28
Drives ... 28
Fluids ... 28
Fluid reservoir ... 28
Lines ... 28
Filtration ... 28
Starting up ... 29
Periodic checks ... 29

Spare parts
Single pump seal kits ... 30
Double pump with sectional plate seal kits ... 30
Double pump seal kits ... 31

General information

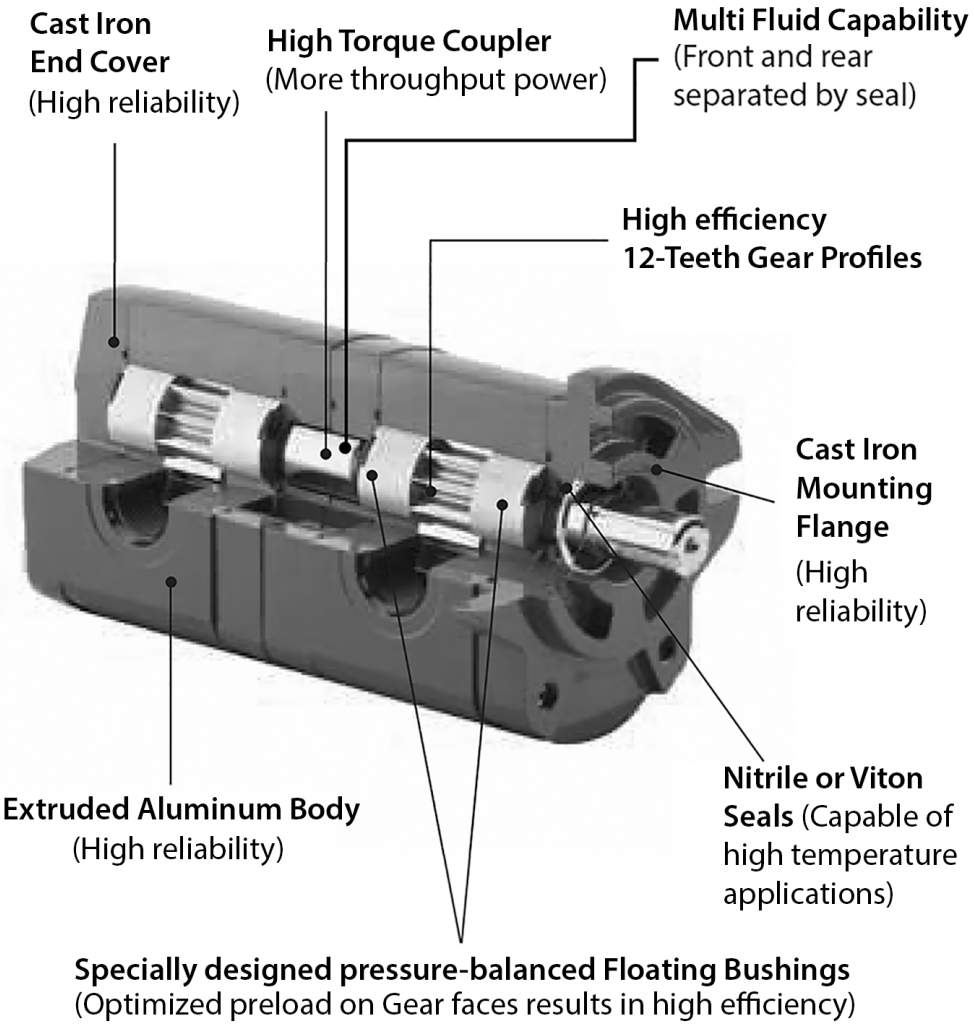
Product overview

Danfoss Gear Products combine state of the art innovation and manufacturing processes. These products are designed to satisfy global customer requirements for higher pressure, long life and full range of options and features.

The Lumi Aluminum Group 2 pump is a floating bushing, pressure balanced design with a high strength extruded aluminum body, cast iron end cover and cast iron mounting flange.

The wide choice of shafts, flanges and ports in compliance with all international standards (SAE, DIN, ISO and European). Displacements from 5.1cm^3/rev (0.31in^3/rev) to 24.0 cm^3/rev (1.46 in^3/rev). Maximum pressure up to 250 bar (3625 psi). Maximum speed up to 4000 RPM.

Sectional view



General information

GD5 features and benefits

Features

- 12 Teeth shaft
- Designed for high efficiency
- Continuous operating pressures up to 240 bar (3480 psi) on cast iron end cover
- Maximum operating speed of 4000 RPM
- Displacements from 5.1cm^3/rev (0.31in^3/rev) to 24.0 cm^3/rev (1.46 in^3/rev)
- SAE, European, DIN and ISO flange, porting styles and shaft options
- Optional sectional sealing for double pumps
- Built to ISO 9001 standards

Benefits

- Wide array of features for design flexibility
- Optimized pre-load on gear faces resulting in higher efficiencies
- Multi-fluid capability

Hydraulic system design calculations

Based on SI units / Based on US units

Use these formulae to determine the nominal pump size for a specific application.

	Based on SI units	Based on US units
Output flow	$Q = \frac{Vg \cdot n \cdot \eta_v}{1000}$ l/min	$Q = \frac{Vg \cdot n \cdot \eta_v}{231}$ [US gal/min]
Input torque	$M = \frac{Vg \cdot \Delta p}{20 \cdot \pi \cdot \eta_m}$ N•m	$M = \frac{Vg \cdot \Delta p}{2 \cdot \pi \cdot \eta_m}$ [lbf•in]
Input power	$P = \frac{M \cdot n}{9550} = \frac{Q \cdot \Delta p}{600 \cdot \eta_t}$ kW	$P = \frac{M \cdot n}{63.025} = \frac{Q \cdot \Delta p}{1714 \cdot \eta_t}$ [hp]

Variables: *SI units [US units]*

Vg =	Displacement per rev.	cm3/rev [in^3/rev]
p_{HD} =	Outlet pressure	bar [psi]
p_{ND} =	Inlet pressure	bar [psi]
Δp =	$p_{HD} - p_{ND}$	bar [psi]
n =	Speed	min^{-1} (rpm)
ηv =	Volumetric efficiency	
ηm =	Mechanical (torque) efficiency	
ηt =	Overall efficiency (ηv • ηm)	

Hydraulic system design calculations

Units and conversions

Basic units

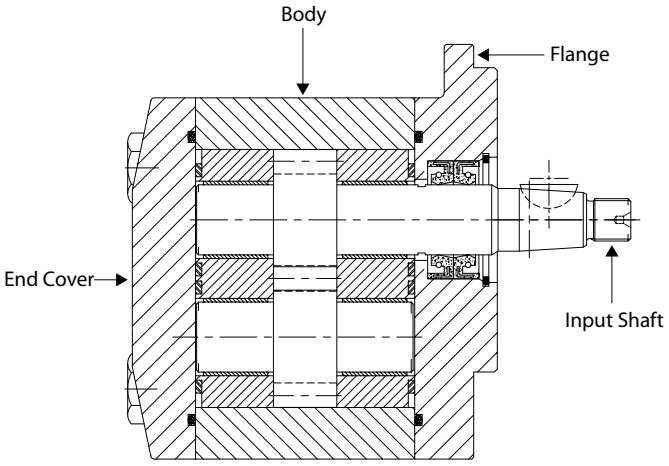
bar	10 Newtons per square centimeter (cm^2)
GPM	Gallons per minute
hp	Horsepower
lbf·in	Pound inch
lbf·ft	Pound foot
kW	Kilowatt
kgf	Kilogram-force
LPM	Liters per minute
N·m	Newton meter
psi	Pounds per square inch (in^2)
RPM	Revolutions per minute
cm^3/r	Cubic centimeters per revolution
in^3/r	Cubic inch per revolution

Commonly used unit conversions

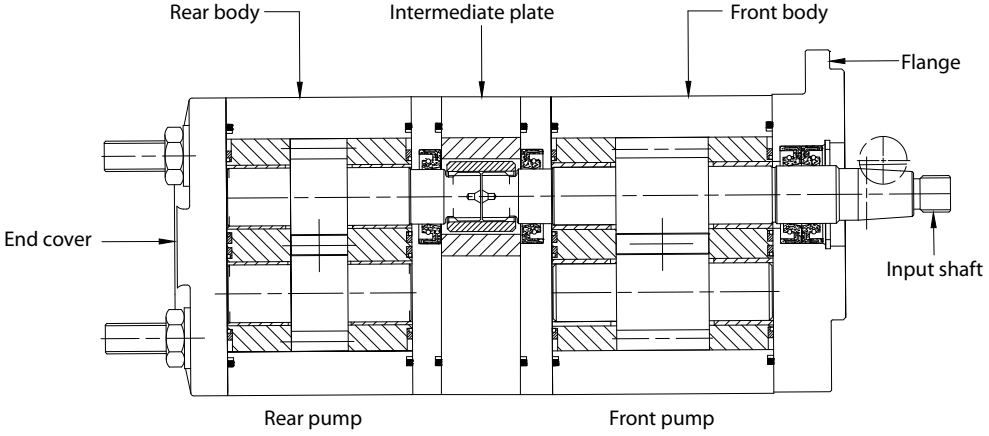
To convert	Into	Multiply by
bar	psi	14.5
cm^3	in^3	0.06102
°C	°F	(°C x 1.8) + 32
Gallons (US)	Liters	3.785
kg	lbs	2.205
kW	hp	1.341
Liters	Gallons (US)	0.2642
mm	in	0.03937
N·m	lbf·in	8.85
N·m	lbf·ft	0.7375
°F	°C	(°F - 32) / 1.8
hp	kW	0.7457
in	mm	25.4
in^3	cm^3	16.387
lbf·in	N·m	0.113
lbf·ft	N·m	1.356
lbs	kg	0.4535
psi	bar	0.06895
psi	kgf/cm^2	0.070307

GD5 parts nomenclature

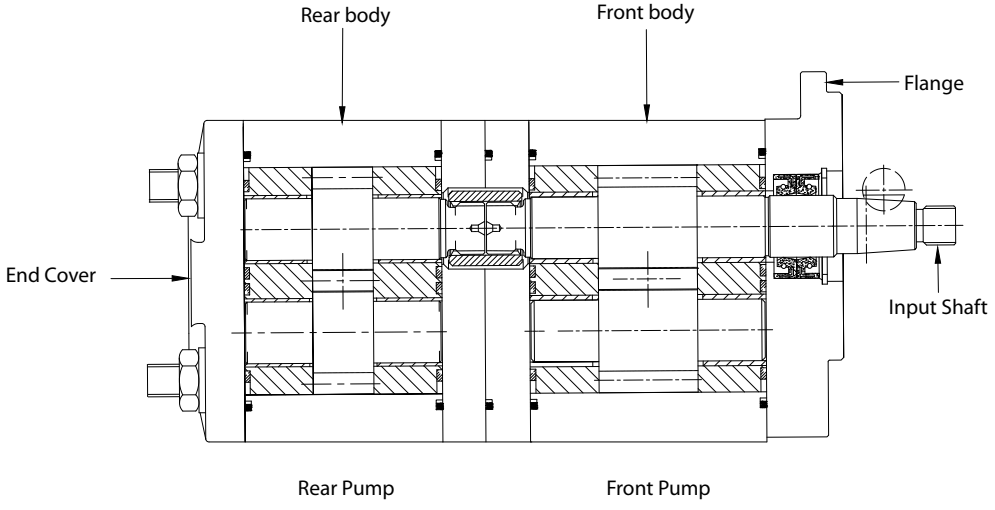
Single pump parts identification



Double pump with sectional sealing parts identification



Double pump parts identification



Specifications

GD5 technical data

Displacement specifications comparison

Displacement cm^3/r [in^3/r]	Max. continuous pressure bar [psi] [1]	Max, intermittent pressure bar [psi] [2]	Min. Speed RPM	Max. speed @ 210 bar RPM	Max. speed @ 250 bar RPM	Min. output flow @ 2000 RPM at max. intermittent pressure LPM [GPM]	Approximate weight kg
5.1 [0.31]	240 [3480]	250 [3625]	700	4000	3000	8.4 [2.22]	3.2
6.0 [0.37]	240 [3480]	250 [3625]	700	4000	3000	10.8 [2.85]	3.3
8.2 [0.50]	240 [3480]	250 [3625]	700	4000	3000	14.3 [3.78]	3.4
9.5 [0.58]	240 [3480]	250 [3625]	700	4000	3000	17.0 [4.49]	3.5
11.0 [0.67]	240 [3480]	250 [3625]	700	4000	3000	19.7 [5.20]	3.7
12.3 [0.75]	240 [3480]	250 [3625]	700	4000	3000	21.4 [5.65]	3.8
16.5 [1.01]	240 [3480]	250 [3625]	700	3500	3000	29.5 [7.79]	3.9
18.0 [1.10]	225 [3263]	235 [3408]	700	3000	3000	32.2 [8.51]	4.0
20.0 [1.22]	210 [3046]	220 [3190]	700	3000	3000	35.8 [9.46]	4.2
24.0 [1.46]	175 [2538]	200 [2900]	700	3000	3000	42.9 [11.33]	4.5

[1] Max. continuous pressure is for flanged ports. For threaded ports, max. continuous and intermittent pressure is 210 bar.

[2] Max. intermittent pressure only applicable for 10% of every minute

Technical data

Rotation	CW or CCW
Maximum axial load	1000 N[1]
Recommended fluid viscosity	16 to 40 cSt (82-185 SUS)
Fluid operating temperature range	-20°C to 80°C (NBR seals)[2]
Recommended cleanliness requirement per ISO 4406:99	20/18/13
Inlet pressure range	-0.3 bar to 2.0 bar

[1] Applicable only for SAE A mounting flange with thrust bearing. For other options, consult your Danfoss representative.

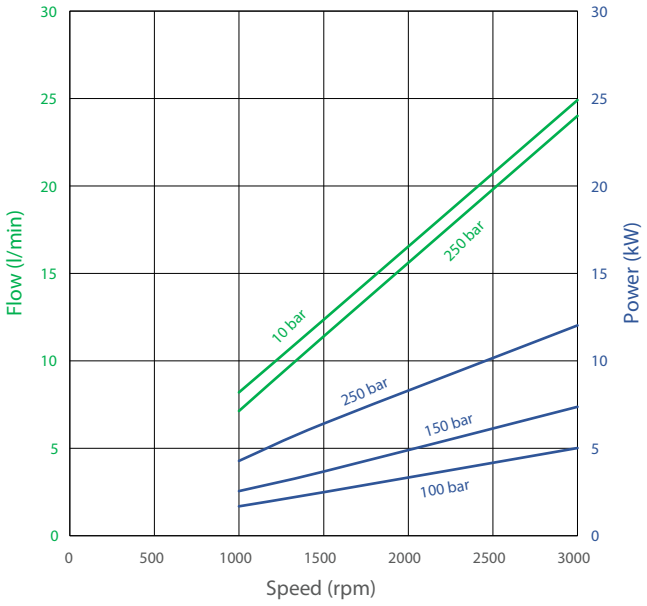
[2] Viton seals available for higher temperatures up to 120°C.

Special application requirements may be fulfilled upon request, please contact Danfoss Technical service for more information.

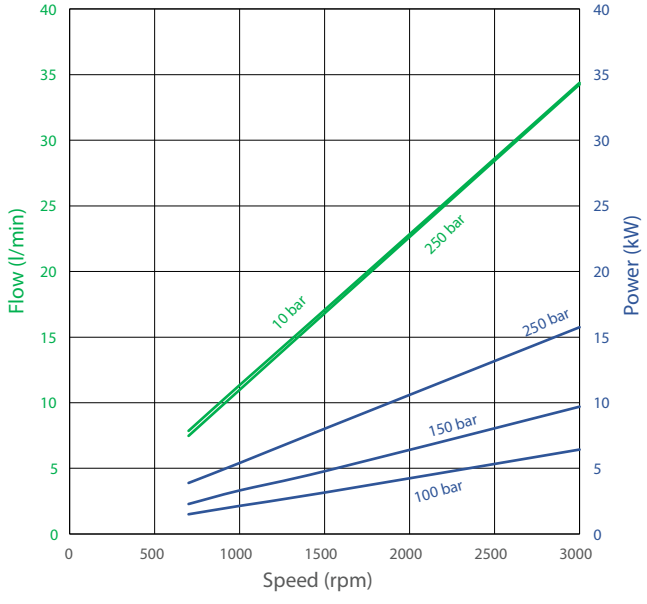
Performance curves

Flow, speed, and power performance

GS5S, GD5D/08

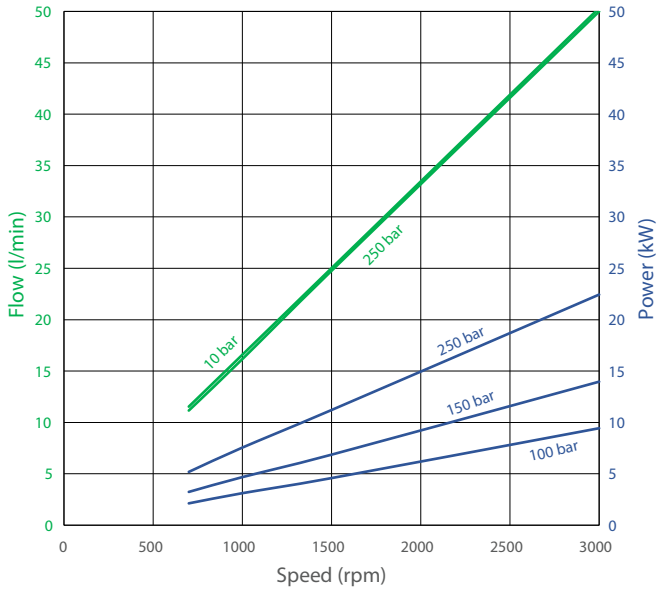


GD5S, GD5D/11



Performance curves

GD5S, GD5D/16



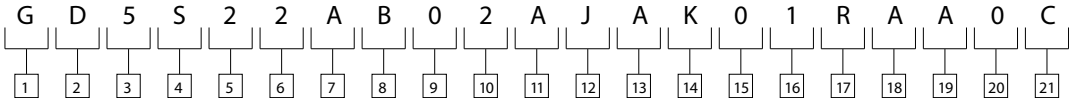
Performance data was collected using a mineral based oil with viscosity of 28 cSt at 45°C - 50°C.

Model code

Single pump model code

The following 21-digit coding system has been developed to identify standard configuration options for the External Single Gear Pump.

Use this model code to specify a pump with the desired features. All 21 digits of the code must be present to release a new product number for ordering.



For customized features, please contact a Danfoss representative.

GD5S product, size, type, displacement (position 1-6)

Product (position 1, 2)

Code	Description
GD	External gear pump

Size (position 2)

5	Frame size

Unit type (position 3)

S	Single pump

Displacement (position 5, 6)

05	5.1 cm^3 [0.031 in^3/r]
06	6.0 cm^3 [0.37 in^3/r]
08	8.2 cm^3 [0.50 in^3/r]
09	9.5 cm^3 [0.58 in^3/r]
11	11.0 cm^3 [0.67 in^3/r]
12	12.3 cm^3 [0.75 in^3/r]
16	16.5 cm^3 [1.01 in^3/r]
18	18.0 cm^3 [1.10 in^3/r]
20	20.0 cm^3 [1.22 in^3/r]
24	24.0 cm^3 [1.46 in^3/r]

GD5S mounting and input shaft options (position 7-10)

Mounting flange (position 7, 8)

Code	Description
AA	SAE-A 2 bolts, pilot Ø82.50, Ø11.0 holes on 106.4 pcd
AD	SAE-A 2 bolts, pilot Ø82.50, Ø11.0 slotted holes on 106.4 pcd
AE	European 4 bolts, pilot Ø50.0, Ø9.0 holes on 71.4 x 96.1 dist
AF	European 4 bolts, pilot Ø54.0, Ø7.5 holes on 71.4 x 96.1 dist
AG	European 4 bolts, pilot Ø36.4, Ø7.0 holes on 71.4 x 96.1 dist
AN	German 4 bolts, pilot Ø80.0, Ø9.0 holes on 72 x 100 dist
AR	European 4 bolts, pilot Ø36.4, Ø9.0 holes on 71.4 x 96.1 dist

Model code

Input shaft (position 9, 10)

01	Taper 1:8 on Ø16.66-7/16-20 L 39.7-Woodruff key 3 X Ø15.7
02	Straight Ø17.46 L 31.8-Key 4.76 X 19.0
03	Straight Ø19.05 L 31.0-Key 4.76 X 19.0
04	Straight Ø15.88 L31.8-Key 3.97 X 14.27
05	Spline SAE J498-11T-16/32-min spline 19.0
06	Spline SAE J498-9T-16/32-min spline 19.0
21	Taper 1:8 on Ø17.46-M12x1.5 L 40.5-Woodruff Key 3x Ø16.5

GD5S inlet, outlet, threaded, and flanged port options (position 11-14)

Inlet port (position 11, 12) and outlet port (position 13, 14)

Code	Description
-	-

SAE straight thread O-ring ports (position 11-14)

AA	SAE #10- 7/8-14
AB	SAE #12- 1 1/16-12
AC	SAE #16- 1 5/16-12
AD	SAE #8- 3/4-16
AE	SAE #14- 1 3/16-12

BSPP straight threaded ports (position 11-14)

AF	3/4 Gas (BSPP)
AG	1/2 Gas (BSPP)
AH	3/8 Gas (BSPP)
BB	1 Gas (BSPP)

Metric straight thread ports, ISO 6149 (position 11-14)

AJ	M22 X 1.5-6H
AK	M18 X 1.5-6H
AL	M27 X 2.0-6H

European flanged ports - 4 bolts

AM	M8X1.25- Ø19 holes on 40 PCD
AN	M6X1.0- Ø14 holes on 30.2 PCD
BE	M6X1.0- Ø13.5 holes on 30 PCD
BF	M8X1.25- Ø20 holes on 40 PCD

Model code

German flanged ports - 4 bolts

AP	M6 X 1, 35.0 PCD, Ø15.0
AR	M6 X 1, 40.0 PCD, Ø20.0
AS	M6 X 1, 40.0 PCD, Ø19.0

GD5S special features, rotation, and design code options (position 15-21)

Special features (position 15, 16)

Code	Description
00	None
01	Viton seal
16	NBR shaft seal inner diameter 17.46; outer diameter 28.58

Rotation (position 17)

L	Left hand rotation (counterclockwise)
R	Right hand rotation (clockwise)

Paint and packaging (position 18, 19)

AA	None
AB	Epoxy coated primer black (except aluminum parts)

Customer identification (position 20)

0	None

Design code (position 21)

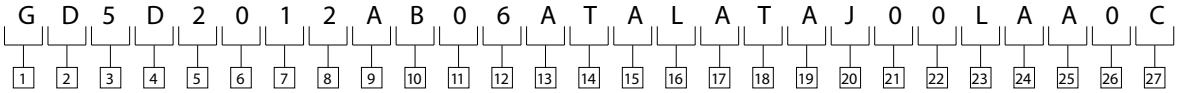
C	Third

Model code

Double pump model code

The following 27-digit coding system has been developed to identify standard configuration options for the External Double Gear Pump.

Use this model code to specify a pump with the desired features. All 27 digits of the code must be present to release a new product number for ordering.



For custom options, please contact a Danfoss representative.

GD5D product, size, type, and displacement (position 1-6)

Product (position 1, 2)

Code	Description
GD	External gear pump

Size (position 3)

5	Frame size

Unit type (position 4)

D	Double

Front pump displacement (position 5, 6)

05	5.1 cm^3 [0.41 in^3/r]
06	6.0 cm^3 [0.37 in^3/r]
08	8.2 cm^3 [0.50 in^3/r]
09	9.5 cm^3 [0.58 in^3/r]
11	11.0 cm^3 [0.67 in^3/r]
12	12.3 cm^3 [0.75 in^3/r]
16	16.5 cm^3 [1.01 in^3/r]
18	18.0 cm^3 [1.10 in^3/r]
20	20.0 cm^3 [1.22 in^3/r]
24	24.0 cm^3 [1.46 in^3/r]

Rear pump displacement (position 5, 6)

05	5.1 cm^3 [0.41 in^3/r]
06	6.0 cm^3 [0.37 in^3/r]
08	8.2 cm^3 [0.50 in^3/r]
09	9.5 cm^3 [0.58 in^3/r]
11	11.0 cm^3 [0.67 in^3/r]
12	12.3 cm^3 [0.75 in^3/r]
16	16.5 cm^3 [1.01 in^3/r]

Combination of displacements for double pump is decided by strength of the drive shaft and coupler. Please consult representative when selecting the double pump displacement.

Model code

GD5D mounting flange and input shaft (position 9-12)

Mounting flange (position 9, 10)

AA	SAE-A 2 bolts, pilot Ø82.50, Ø11.0 holes on 106.4 pcd
AD	SAE-A 2 bolts, pilot Ø82.50, Ø11.0 slotted holes on 106.4 pcd
AE	European 4 bolts, pilot Ø50.0, Ø9.0 holes on 71.4 x 96.1 dist
AF	European 4 bolts, pilot Ø54.0, Ø7.5 holes on 71.4 x 96.1 dist
AG	European 4 bolts, pilot Ø36.4, Ø7.0 holes on 71.4 x 96.1 dist
AN	German 4 bolts, pilot Ø80.0, Ø9.0 holes on 72 x 100 dist
AR	European 4 bolts, pilot Ø36.4, Ø9.0 holes on 71.4 x 96.1 dist

Input shaft (position 11, 12)

01	Taper 1:8 on Ø16.66- 7/16-20 L 39.7-Woodruff key 3 X Ø15.7
02	Straight Ø17.46 L 31.8-Key 4.76 X 19.0
03	Straight Ø19.05 L 31.0-Key 4.76 X 19.0
04	Straight Ø15.88 L 31.8- Key 3.97 X 14.27
05	11T, 16/32DP 30° Involute 19.0 min. full spline, ø18.63, flat root, side fit, shaft ext. 32.4
06	Spline SAE J498-9T- 16/32- min spline 19.0
21	Taper 1:8 on Ø17.46- M12x1.5 L 40.5-Woodruff Key 3x Ø16.5

GD5D inlet, outlet, threaded, and flanged ports (position 13-20)

Front pump and rear pump inlet and outlet ports (position 13-20)

Code	Description
00	No ports

SAE straight thread O-ring ports (position 13-20)

AA	SAE #10- 7/8-14
AB	SAE #12- 1 1/16-12
AC	SAE #16- 1 5/16-12
AD	SAE #8- 3/4-16
AE	SAE #14- 1 3/16-12

BSPP straight threaded ports (position 13-20)

AF	3/4 Gas (BSPP)
AG	1/2 Gas (BSPP)
AH	3/8 Gas (BSPP)
BB	1 Gas (BSPP)

Model code

Metric straight thread ports ISO 6149 (position 13-20)

AJ	M22 X 1.5-6H
AK	M18 X 1.5-6H
AL	M27 X 2.0-6H

European flanged ports - 4 bolts

AM	M8X1.25- Ø19 holes on 40 PCD
AN	M6X1.0- Ø14 holes on 30.2 PCD
BE	M6X1.0- Ø13.5 holes on 30 PCD
BF	M8X1.25- Ø20 holes on 40 PCD

German flange ports - 4 bolts

AP	M6 X 1, 35.0 PCD, ø15.0
AR	M6 X 1, 40.0 PCD, ø20.0
AS	M6 X 1, 40.0 PCD, ø19.0

GD5D special features, rotation, and design code (position 21-27)

Special features (position 21, 22)

Code	Description
00	None
01	Viton seal

Rotation (position 23)

L	Left-hand rotation (counterclockwise)
R	Right-hand rotation (clockwise)

Paint and packaging (position 24, 25)

AA	None
AB	Epoxy coated primer black (except aluminum parts)

Customer identification (position 26)

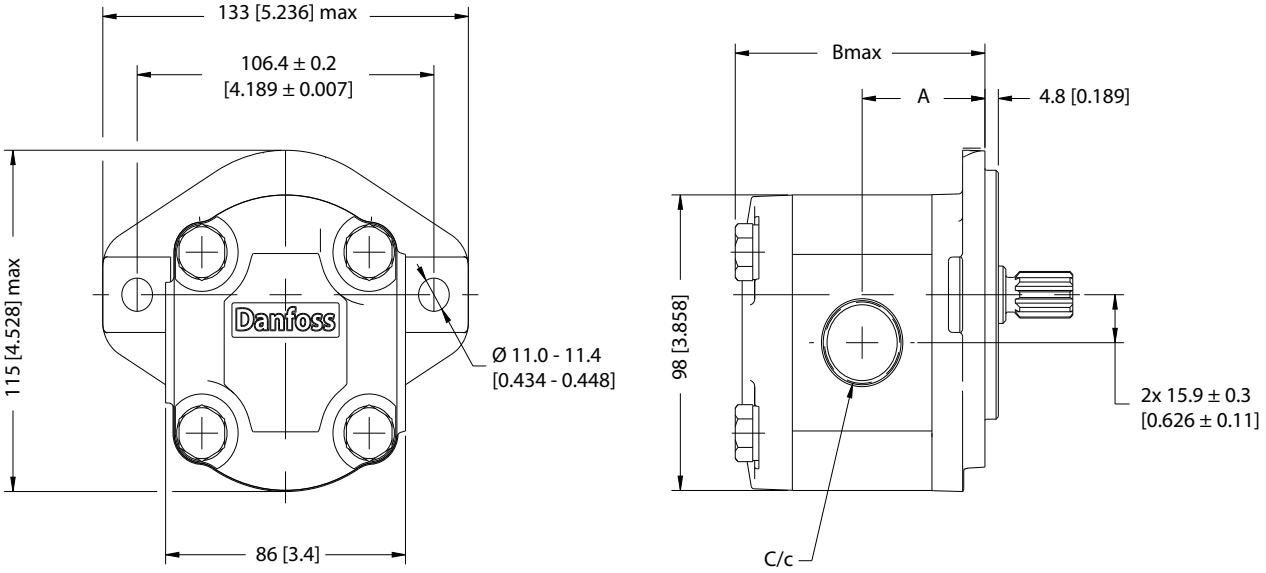
0	None

Design code (position 27)

C	Third

Installation

GD5 pump installation



Dimensions

Type / displacement	A mm [in]	B mm [in]	C (inlet)	c (outlet)
05	44 [1.73]	91 [3.58]	1.0625-12 UN-2B THD	0.8750- 14 UNF-2B THD
06	44.8 [1.76]	92 [3.62]		
08	46.4 [1.83]	96 [3.78]		
09	47.5 [1.87]	98 [3.86]		
11	48.7 [1.92]	100 [3.94]		
12	49.5 [1.95]	101 [3.98]		
16	52.6 [2.07]	106 [4.17]		
18	53.88 [2.12]	108 [4.25]		
20	55.3 [2.18]	114 [4.49]		
24	58.4 [2.30]	120 [4.72]		

Installation

Port availability

Inlet port

Displacement	AA	AB	AC	AD	AE	AF	AG	AJ	AK	AL	AM	AR	AS	BE	BF
05	●	●		●	●		●	●	●	●	●	●	●	●	
06	●	●		●	●		●	●	●	●	●	●	●	●	
08	●	●		●	●	●	●	●	●	●	●	●	●	●	
09	●	●		●	●	●	●	●	●	●	●	●	●	●	
11	●	●		●	●	●	●	●	●	●	●	●	●	●	
12	●	●	●	●	●	●		●	●	●	●	●	●		●
16	●	●	●	●	●	●		●	●	●	●	●	●		●
18	●	●	●	●	●	●		●		●	●	●	●		●
20		●	●		●	●		●		●	●	●	●		●
23		●	●		●	●		●		●					●
24		●	●		●	●		●		●					

Outlet port

Displacement	AA	AB	AD	AF	AG	AH	AJ	AK	AL	AN	AP	BE
05	●		●		●	●		●		●	●	●
06	●		●		●	●		●		●	●	●
08	●		●	●	●	●		●		●	●	●
09	●		●	●	●			●		●	●	●
11	●		●	●	●		●	●	●	●	●	●
12	●		●	●			●	●	●	●	●	●
16	●	●	●	●			●	●	●	●	●	●
18	●	●	●	●			●	●	●	●	●	●
20	●	●		●			●		●	●	●	●
23	●	●		●			●		●			●
24	●	●		●			●		●			

● = available

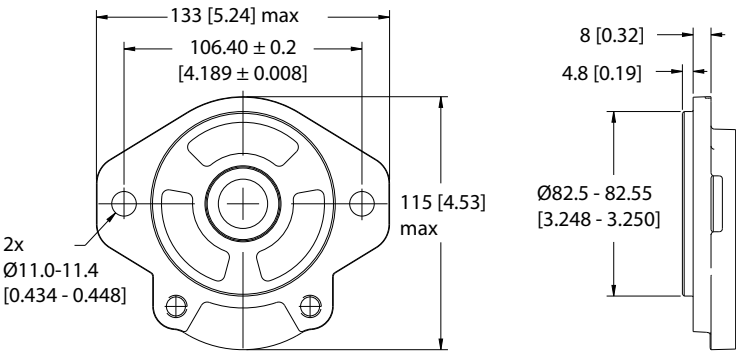
Dimensions

Mounting flange

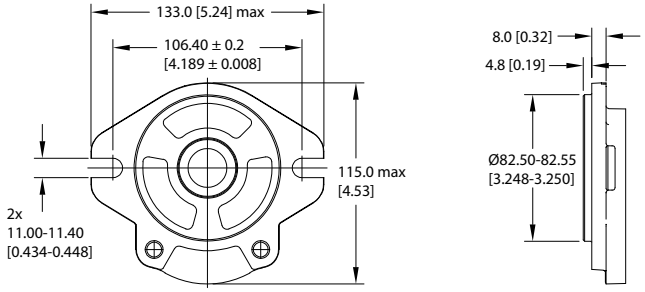
SAE "A" 2 bolt mounting flange dimensions

Dimensions in mm [in].

Code - AAAC

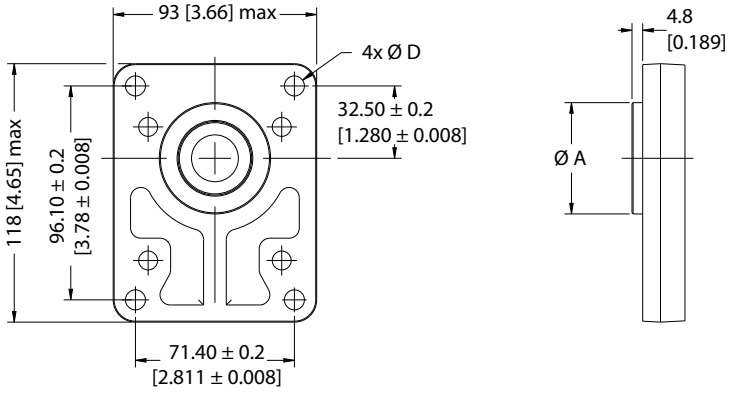


Code - AD



European rectangular 4 bolt mounting flange dimensions

Dimensions in mm [in].



Code	A	D
AD	50 [1.968]	9.0 [0.354]
AE	50 [1.968]	9.0 [0.354]
AE	54 [2.125]	7.5 [0.295]
AF	54 [2.125]	7.5 [0.295]

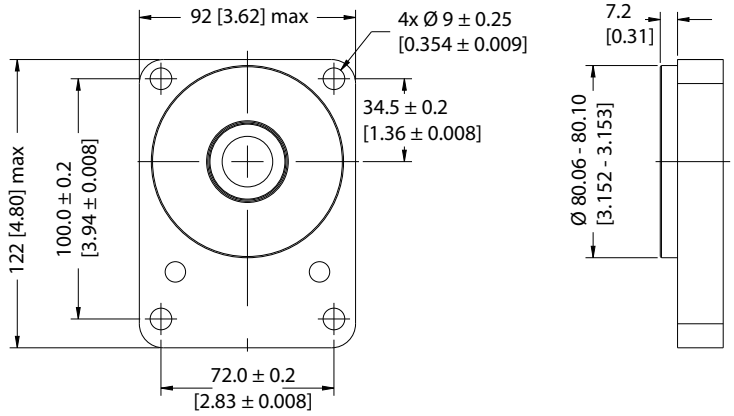
Dimensions

Code	A	D
AF	36.47 [1.435]	7.0 [0.275]
AG	36.47 [1.435]	7.0 [0.275]
AR	36.4 [1.433]	9.0 [0.354]

German rectangular 4 bolt mounting flange dimensions

Dimensions in mm [in].

Code - ANAG



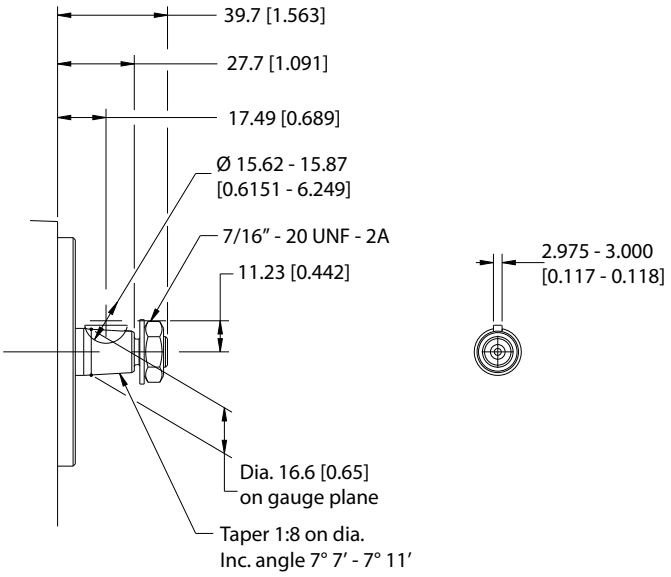
Dimensions

Input shaft

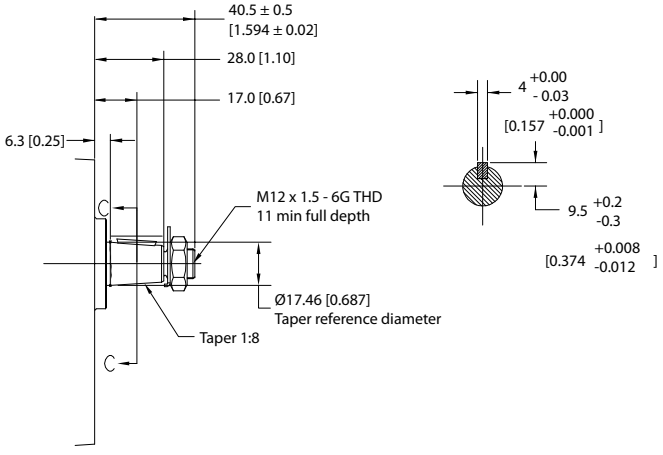
Taper 1:8 input shaft dimensions

Dimensions in mm [in].

Code - 0102 (max allowable torque 150 N·m)



Code - 21

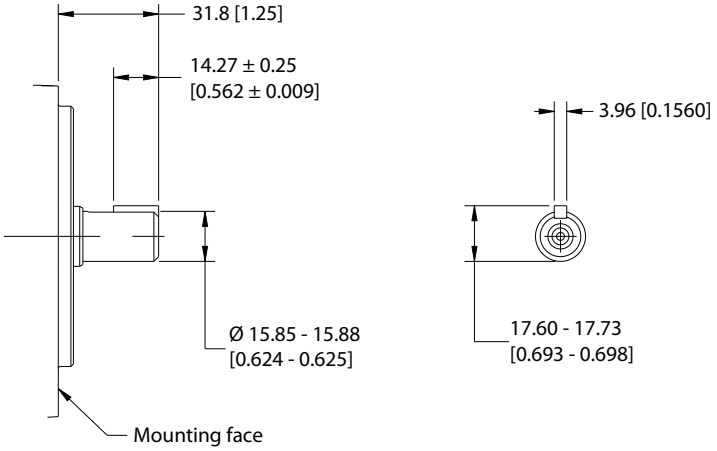


Dimensions

Straight keyed input shaft with Ø15.88 dimensions

Dimensions in mm [in].

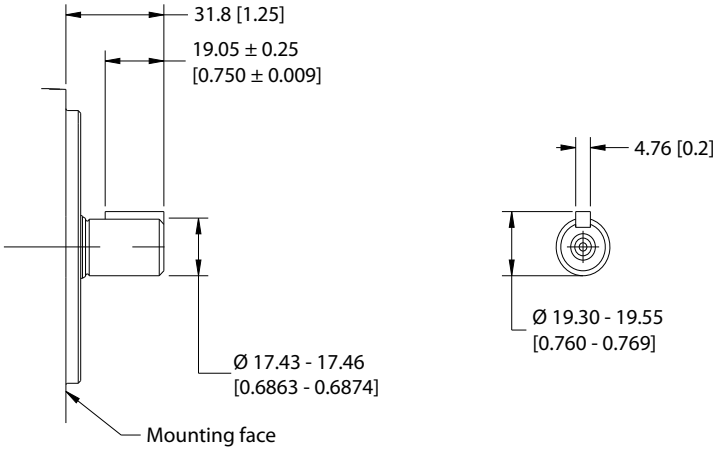
Code - 04 (maximum allowable torque 80 N·m)



Straight keyed input shaft with Ø17.46 dimensions

Dimensions in mm [in].

Code - 02 07 (maximum allowable torque 115 N·m)

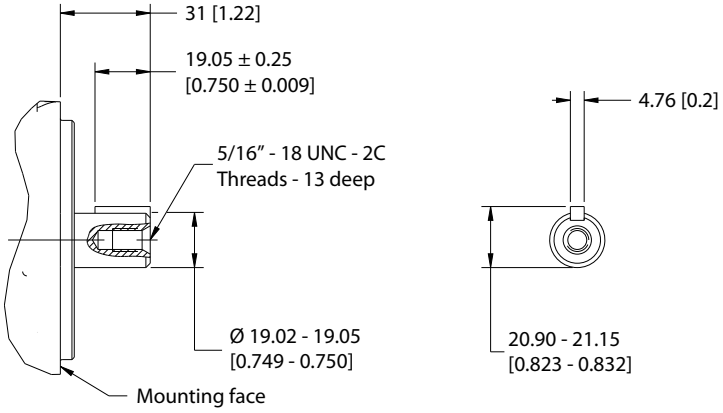


Dimensions

Straight keyed shaft with Ø19.05 dimensions

Dimensions in mm [in].

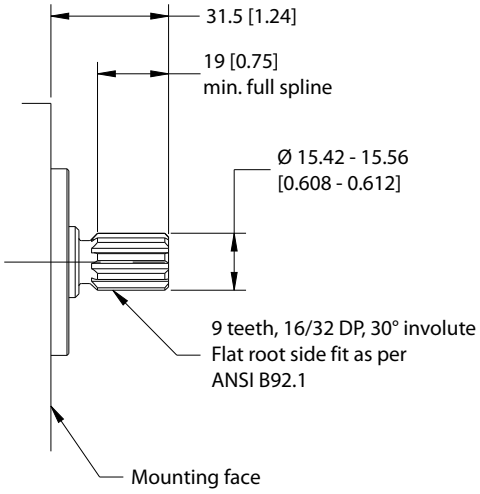
Code - 03 (maximum allowable torque 125 N·m)



9 teeth shaft dimensions

Dimensions in mm [in].

Code - 06 (maximum allowable torque 90 N·m)

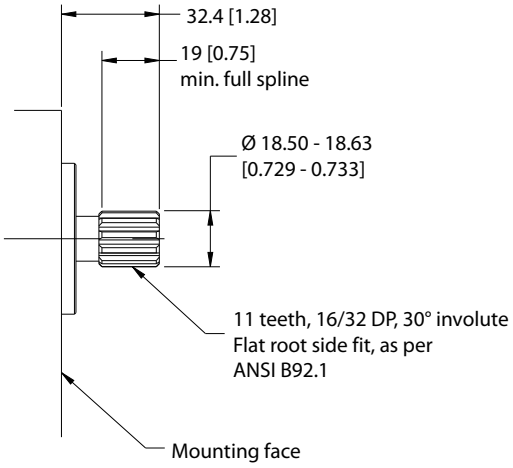


Dimensions

11 teeth shaft dimensions

Dimensions in mm [in].

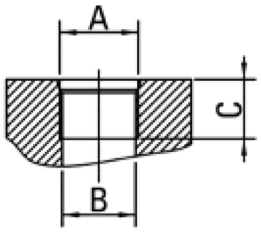
Code - 05 (maximum allowable torque 150 N·m)



Dimensions

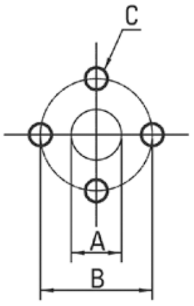
Ports

SAE straight thread O-ring ports dimensions (Pmax ≤ 210 bar)



Code	SAE number	A (thread size)	ØB mm [in]	C mm [in]
AD	8	0.750-16 UNF-2B	17.5 [0.69]	14.3 [0.56]
AA	10	0.875-14 UNF-2B	20.5 [0.81]	16.7 [0.66]
AB	12	1.0625-12 UN-2B	24.9 [0.98]	19.1 [0.75]
AE	14	1.1875-12 UN-2B	28.1 [1.11]	19.1 [0.75]
AC	16	1.3125-12 UN-2B	31.3 [1.23]	19.1 [0.75]

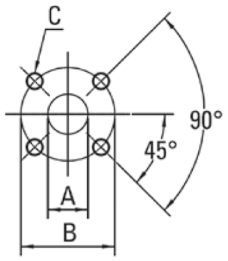
European flanged ports - 4 bolts dimensions



Code	Nominal size	Ø A mm [in]	B mm [in]	C thread	C thread depth mm [in]
AN	14	14.0 [0.55]	30.0 [1.18]	M6	13 [0.51]
AM	19	19,0 [0.75]	40.0 [1.57]	M8	13 [0.51]

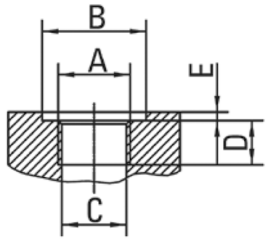
Dimensions

German flanged ports - 4 bolts dimensions



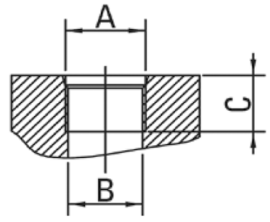
Code	Nominal size	Ø A mm [in]	B mm [in]	C thread	C thread depth mm [in]
AP	15	15.0 [0.59]	35.0 [1.38]	M6	13 [0.51]
AS	19	19.0 [0.75]	40.0 [1.57]	M6	13 [0.51]
AR	20	20.0 [0.79]	40.0 [1.57]	M6	13 [0.51]
BE	13.5	13.5 [0.53]	30.0 [1.18]	M6	13 [0.51]
BF	20	20.0 [0.79]	40.0 [1.57]	M6	13 [0.51]

BSPP straight thread ports dimensions (Pmax ≤ 210 bar)



Code	Nominal size	A	Ø B mm [in]	Ø C mm [in]	D mm [in]	E mm [in]
AF	3/4"	G 3/4"	42.0 [1.65]	24.5 [0.96]	16.5 [0.65]	1.5 [0.06]
AG	1/2"	G 1/2"	33.0 [1.30]	19.0 [0.75]	15.0 [0.59]	1.5 [0.06]
AH	3/8"	G 3/8"	27.0 [1.06]	15.3 [0.60]	12.2 [0.48]	1.5 [0.06]
BB	1"	G 1"	47 [1.85]	30.75 [1.21]	19.1 [0.75]	1.5 [0.06]

Metric straight thread ports (ISO 6149) dimensions (Pmax ≤ 210 bar)



Code	A thread size	Ø B mm [in]	C mm [in]
AJ	M22 x 1.5	20.5 [0.81]	13.5 [0.53]
AK	M18 x 1.5	15.5 [0.65]	12.5 [0.49]
AL	M27 x 2.0	25.0 [0.98]	17.0 [0.67]

Installation and maintenance

Mounting

The pump can be mounted with drive shaft in horizontal, vertical or at any angle in between. All flanges have pilot (spigot) for proper alignment of pump with respect to drive system.

Rotation

Shaft rotation is denoted in the unit coding. Arrow indicating direction of rotation is stamped on the pump's center body. Direction of rotation is viewed from the pump's drive shaft end.

Drives

Coupling used to drive the pump should not transfer any radial or axial load on the pump's drive shaft. A flexible coupling is recommended to accommodate slight misalignment and to dampen the vibration.

Fluids

Pressure ratings in this catalog are determined using petroleum-based hydraulic fluids. Recommended viscosity range is found in *Technical data*. Avoid using mixtures of two different oils which could result in decomposition and reduction of oil's lubricating capability. For use with other oils, consult your Danfoss representative for approval.

Fluid reservoir

The reservoir capacity for industrial systems with open-loop flow should be at least 3 times as that of the flow. The pump suction line should draw oil from a point not less than 100 mm (4 Inch) above the tank bottom to avoid sludge deposits from entering the pump. The return line should be submerged in the oil and should be positioned as far apart as possible from the inlet line. The return and inlet lines should be separated by baffles.

Lines

The inside diameter of the inlet line must be as large as possible. The inlet line should be free from sharp bends, 90 degree elbow fittings or other restrictions that could cause resistance to flow. Positive head should be maintained at the pump inlet as far as possible. However, if the pump is required to operate at low inlet pressure condition, then inlet vacuum should not be less than 0.2 bar (6 inches of Hg). If the inlet vacuum is outside of the recommendations, consult your Danfoss representative for approval.

The maximum inlet pressure of the pump is limited by the shaft seal and should not exceed 2 bar gauge. The inside diameter of outlet line should be at least equal to the opening diameter of the outlet port.

Caution

Over-tightening the coupling connected to threaded-type inlet and outlet ports may damage the threads in the pump body. Do not over-tighten the coupling.

Filtration

Most premature failures of gear pumps are due to contaminated fluid. Oil contamination level should not exceed ISO cleanliness code 20/18/13 per ISO 4406:99. Full flow filtering is always recommended. Initial cleanliness level of the fluid with which system is filled must not exceed NAS 1638Class 9.

Installation and maintenance

Starting up

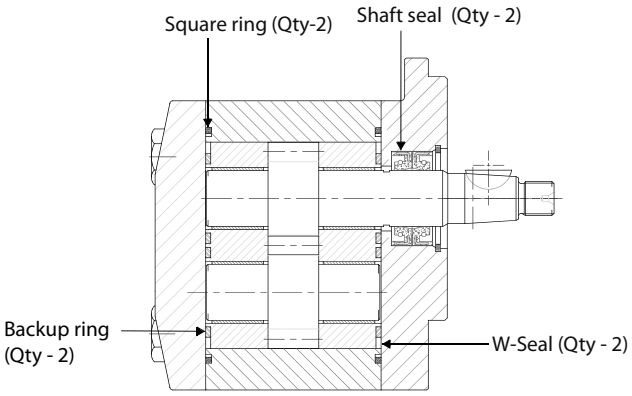
1. Fill the pump with fluid before installing
2. Check the direction of rotation
   Rotation direction should be in line with arrow marked on the pump.
3. Check that all fitting connections are torqued to proper specifications.
4. For first run of the pump, gradually increase pressure and speed until operating levels are obtained.

Periodic checks

Keep the outside surface of the pump clean, especially the area near the drive shaft seal. Using an abrasive powder on the shaft seal will wear the seal and cause leakage. Replace filters regularly in order to keep hydraulic fluid clean. Monitor oil level and replenish oil if necessary.

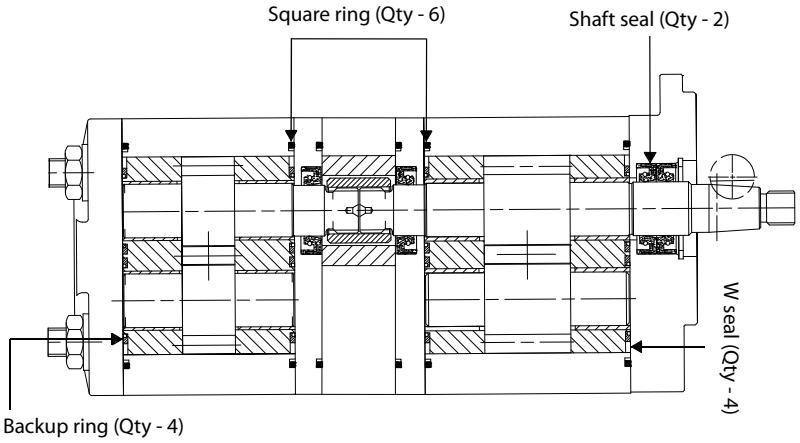
Spare parts

Single pump seal kits



Part number	Description
9901483-001	Nitrile
9901483-002	Viton

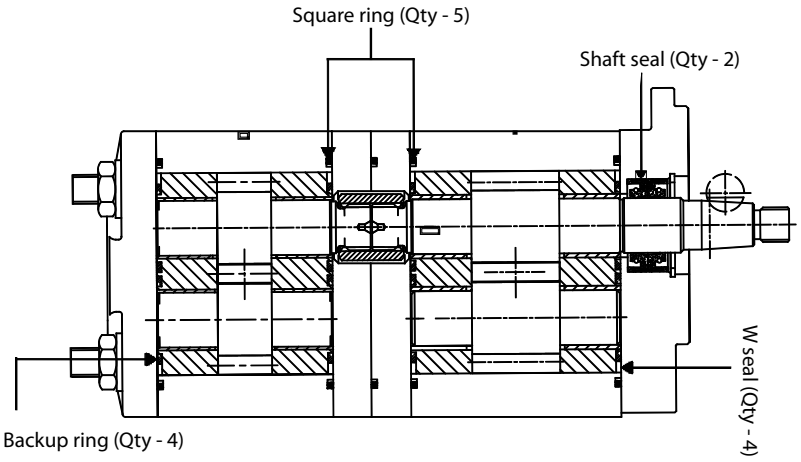
Double pump with sectional plate seal kits



Part number	Description
9901483-003	Nitrile
9901483-004	Viton

Spare parts

Double pump seal kits



Part number	Description
9901483-005	Nitrile
9901483-006	Viton

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Local address:

Danfoss
Power Solutions (US) Company
2800 East 13th Street
Ames, IA 50010, USA
Phone: +1 515 239 6000

Danfoss
Power Solutions GmbH & Co. OHG
Krokamp 35
D-24539 Neumünster, Germany
Phone: +49 4321 871 0

Danfoss
Power Solutions ApS
Nordborgvej 81
DK-6430 Nordborg, Denmark
Phone: +45 7488 2222

Danfoss
Power Solutions Trading (Shanghai) Co., Ltd.
Building #22, No. 1000 Jin Hai Rd
Jin Qiao, Pudong New District
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