Commercial Hydraulics

Pump & Motor Division

PGP/PGM 300 Series

Parker

ENGINEERING YOUR SUCCESS.

⚠ WARNING — User Responsibility

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by usershaving technical expertise. It is important that you analyze all aspects of your application and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

Offer of Sale

The items described in this document are hereby offered for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. This offer and its acceptance are governed by the provisions stated in the “Offer of Sale”.

⚠ **WARNING:** This product can expose you to chemicals including lead or DEHP which are known to the state of California to cause cancer, birth defects, and other reproductive harm. www.p65warnings.ca.gov

Table of Contents

Commercial PGP/PGM300 Series

- **Three-piece cast iron construction**
  High efficiency and long life in severe operating environments.
- **Low friction bushing**
  Provides strength in heavy duty applications.
- **Balanced thrust plates**
  Optimize pump efficiency.
- **Largest journal bearings available**
  for high pressure and long life.

Product Features	Description
Pump type	Heavy-duty, cast iron, external gear
Mounting	SAE standard flanges
Ports	SAE split flanges and other types of threaded ports, see Specifications
Shaft style	SAE splined, keyed, and others, see Specifications
Maximum speed	400 - 3000 rpm, see Specifications
Theoretical displacement	See Specifications 0.62 to 2.48 in^3
Drive	Clockwise, counterclockwise, double. Direct drive with flexible coupling is recommended. Pumps subject to radial loads must be specified with an outboard bearing. Axial loading is not allowed.
Inlet pressure	30 psia (15psig) maximum pressure / 5 in. Hg maximum vacuum at operating temperature
Outlet pressure	See Specifications
Hydraulic fluids	Mineral oil, fire resistant fluids: water-oil emulsions 60/40, MFB; water-glycol, HFC; phosphate-esters, HFD (FPM seals required)

Product Features	Description
Fluid viscocity	From 7.5 to 1600 cSt (50 to 7500 sus). Recommended 15 to 75 cSt.
Fluid temperature	Mineral oil with standard seals: 0°F to 180°F (-20°C to 80°C); Fire resistant fluids HFB, HFC: 0°F to 150°F (-20°C to 65°C)
Filtration	ISO 4406 code: • 19/16 at 2000 psi/140 bar • 17/14 at 3000 psi/210 bar • 15/12 at 4000 psi/275 bar
Direction of rotation (looking at the drive shaft)	CW, CCW, Bi-Rotational
Multiple pump assemblies	Up to 6 gear selections of the same model, even with different gear widths
Separate or common inlet capability	Common

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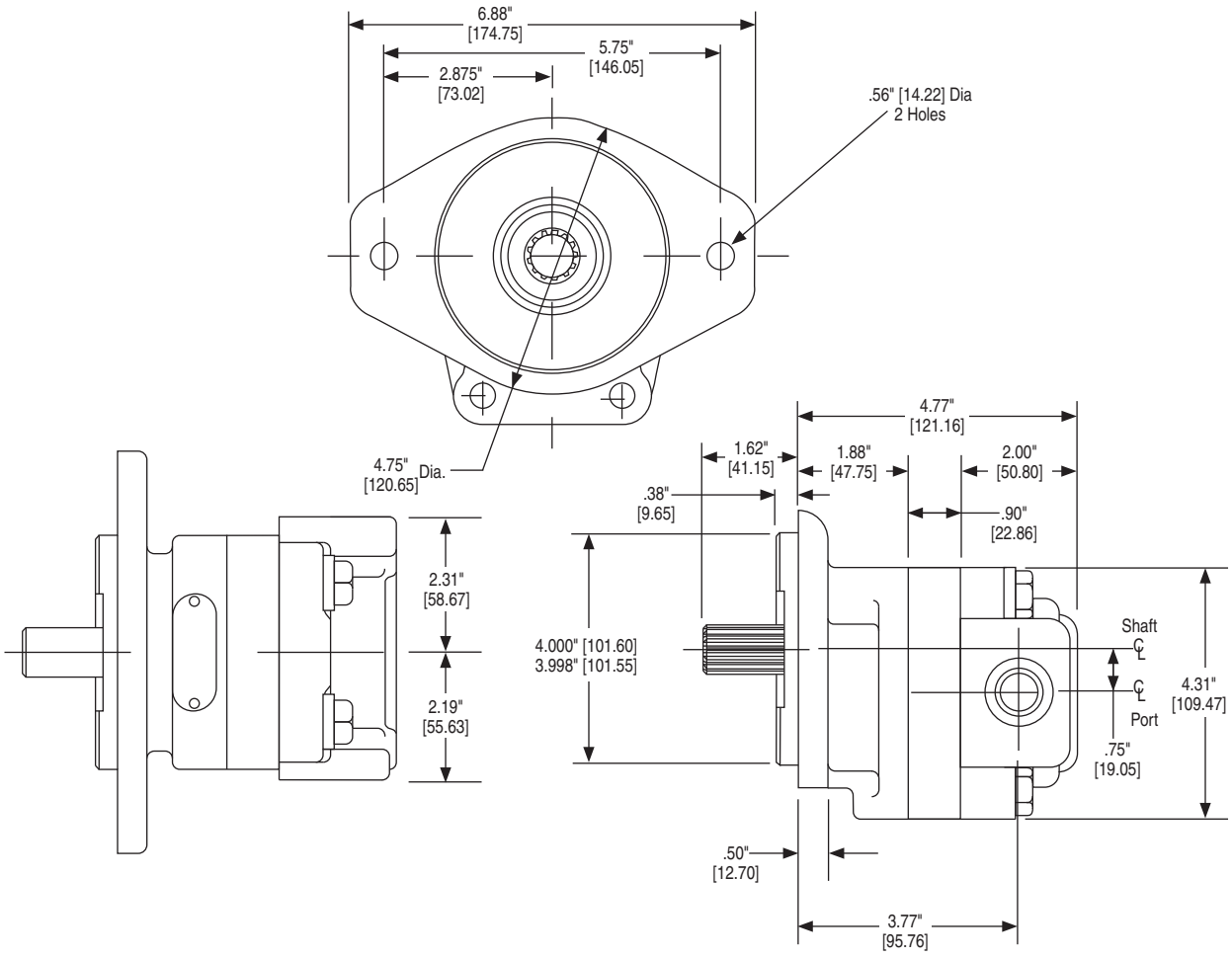
PGP/PGM315 Specifications

PGP315 Frame Size	05	07	10	12	15	17	20
Displacement – cm^3/rev (in^3/rev)	10.2 (0.62)	15.2 (0.93)	20.3 (1.24)	25.4 (1.55)	30.5 (1.86)	35.6 (2.17)	40.6 (2.48)
Max continuous pressure – bar (psi)	241 (3,500)	241 (3,500)	241 (3,500)	241 (3,500)	228 (3,300)	200 (2,900)	172 (2,500)
Max Speed – RPM	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Approximate Weight – Lbs. [kg]	16.0 [7.2]	17 [7.7]	18 [8.2]	19 [8.6]	20 [9.1]	21 [9.5]	22 [10.0]

PGM315 Frame Size	05	07	10	12	15	17	20
Displacement – cm^3/rev (in^3/rev)	10.2 (0.62)	15.2 (0.93)	20.3 (1.24)	25.4 (1.55)	30.5 (1.86)	35.6 (2.17)	40.6 (2.48)
Max continuous pressure – bar (psi)	241 (3,500)	241 (3,500)	241 (3,500)	241 (3,500)	228 (3,300)	200 (2,900)	172 (2,500)
Max Speed – RPM	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Approximate Weight – Lbs. [kg]	16.0 [7.2]	17 [7.7]	18 [8.2]	19 [8.6]	20 [9.1]	21 [9.5]	22 [10.0]

PGP/PGM315 Dimensions



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PGP315 Pump Performance Data

Speed RPM	Output Flow / Input Power	Gear Widths						
		1/2"	3/4"	1"	1-1/4"	1-1/2"	1-3/4"	2"
900	GPM	2.0	3.2	4.4	5.5	6.7	7.9	9.0
	LPM	8	12	17	21	26	30	34
	HP	5	8	11	13	15	15	15
	kW	4	6	8	10	11	11	11
1200	GPM	2.8	4.4	6.0	7.6	9.2	10.7	12.2
	LPM	11	17	23	29	35	40	46
	HP	7	11	14	18	20	21	20
	kW	5	8	11	13	15	15	15
1500	GPM	3.6	5.6	7.7	9.6	11.6	13.5	15.4
	LPM	14	21	29	36	44	51	58
	HP	9	13	18	22	25	26	25
	kW	7	10	13	16	19	19	19
1800	GPM	4.4	6.8	9.3	11.6	14.0	16.3	18.6
	LPM	17	26	35	44	53	62	70
	HP	11	16	21	27	30	31	30
	kW	8	12	16	20	22	23	23
2100	GPM	5.2	8.1	10.9	13.6	16.4	19.1	21.8
	LPM	20	30	41	51	62	72	83
	HP	12	19	25	31	35	36	35
	kW	9	14	18	23	26	27	26
2400	GPM	6.0	9.3	12.5	15.6	18.8	21.9	25.1
	LPM	23	35	47	59	71	83	95
	HP	14	21	28	35	40	41	40
	kW	11	16	21	26	30	31	30
3000	GPM	7.7	11.7	15.7	19.6	23.7	27.6	31.5
	LPM	29	44	59	74	90	104	119
	HP	18	27	35	44	50	51	51
	kW	13	20	26	33	37	38	38

Performance data shown are the average results based on a series of laboratory tests of production units and are not necessarily representative of any one unit. Tests were run with the oil reservoir temperature at 120° F and viscosity 150 SUS at 100° F.
NOTE: Pump output flow is at the maximum rated pressure.

PGM315 Motor Performance Data

Speed RPM	Output Torque	Gear Widths									
		1" 3500 psi		1-1/4" 3500 psi		1-1/2" 3300 psi		1-3/4" 2900 psi		2" 2500 psi	
		A	B	A	B	A	B	A	B	A	B
900	in/lbs	7.1	665	8.3	830	9.6	940	10.9	965	12.2	950
	Nm	27	75.1	32	93.8	37	106.2	41	109.0	46	107.3
1200	in/lbs	8.8	665	10.5	830	12.2	940	13.8	965	15.5	950
	Nm	33	75.1	40	93.8	46	106.2	52	109.0	59	107.3
1500	in/lbs	10.6	660	12.6	825	14.7	935	16.7	955	18.8	945
	Nm	40	74.6	48	93.2	56	105.6	63	107.9	71	106.8
1800	in/lbs	12.3	655	14.7	820	17.2	930	19.6	950	22.1	940
	Nm	46	74.0	56	92.6	65	105.1	74	107.3	84	106.2
2100	in/lbs	14.0	655	16.8	820	19.7	930	22.5	950	25.4	940
	Nm	53	74.0	64	92.6	75	105.1	85	107.3	96	106.2
2400	in/lbs	15.7	640	18.9	800	22.2	910	25.4	930	28.8	920
	Nm	59	72.3	72	90.4	84	102.8	96	105.1	109	103.9
3000	in/lbs	19.0	640	23.0	800	27.2	905	31.2	925	35.3	915
	Nm	72	72.3	87	90.4	103	102.3	118	104.5	134	103.4

A: Input Flow GPM/LPM; B: Output Torque IN/LBS/Nm
NOTE: In accordance with our policy of continuing product development, we reserve the right to change specifications shown in this catalog without notice.

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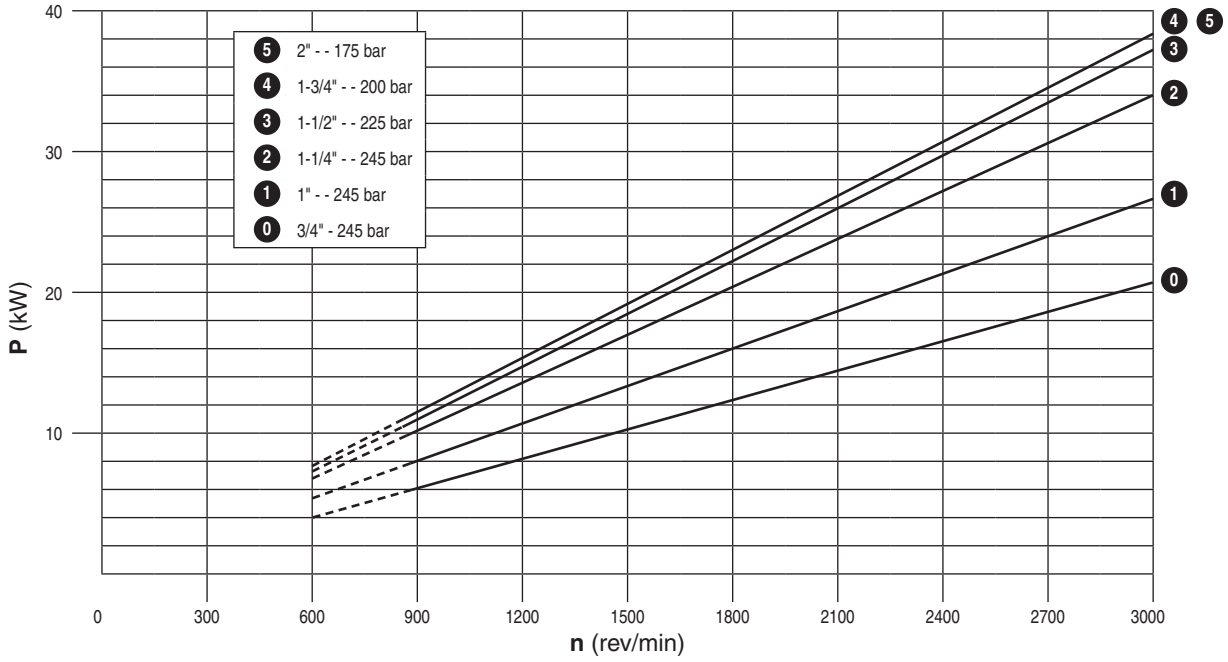
Input



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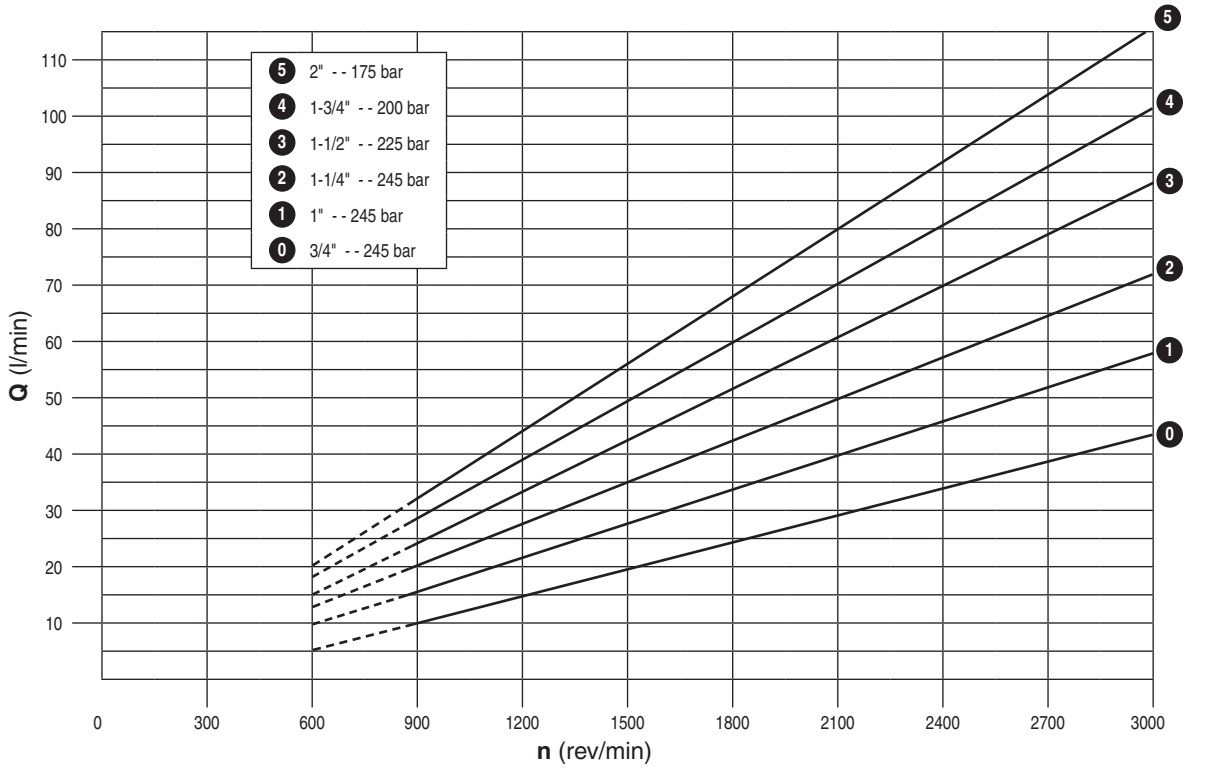

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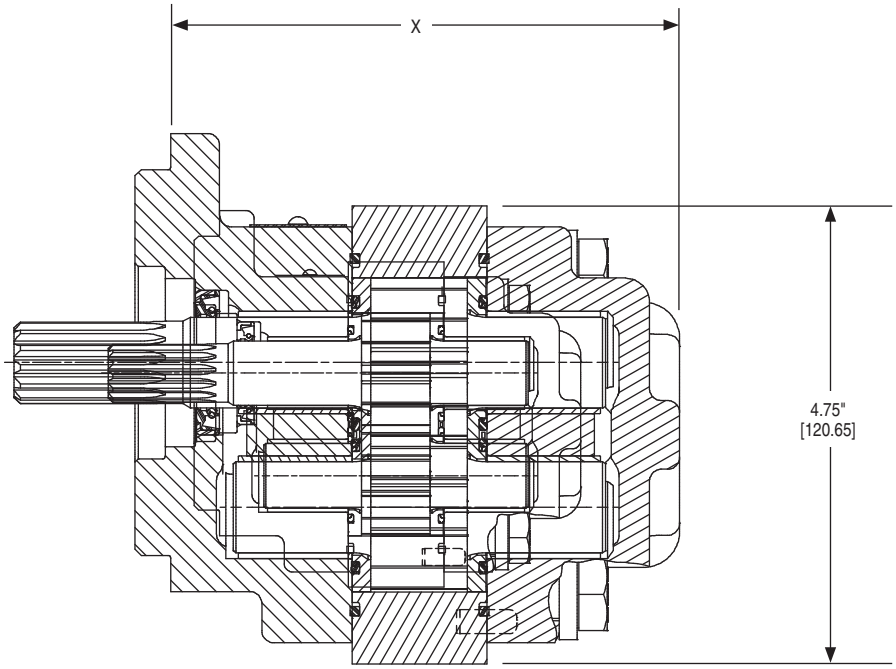
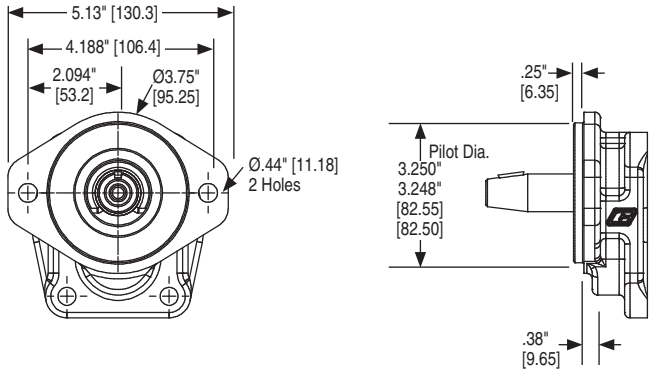
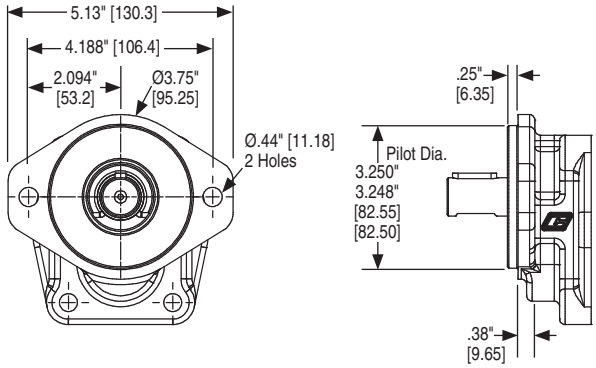


X DIMENSION							
Code	**05**	**07**	**10**	**12**	**15**	**17**	**20**
89	4.78" [121.41]	5.03" [127.76]	5.28" [134.11]	5.53" [140.46]	5.78" [146.81]	6.03" [153.16]	6.28" [159.51]
93	4.78" [121.41]	5.03" [127.76]	5.28" [134.11]	5.53" [140.46]	5.78" [146.81]	6.03" [153.16]	6.28" [159.51]
95	5.52" [140.21]	5.77" [146.56]	6.02" [152.91]	6.27" [159.26]	6.52" [165.61]	6.77" [171.96]	7.02" [178.31]
96	4.78" [121.41]	5.03" [127.76]	5.28" [134.11]	5.53" [140.46]	5.78" [146.81]	6.03" [153.16]	6.28" [159.51]

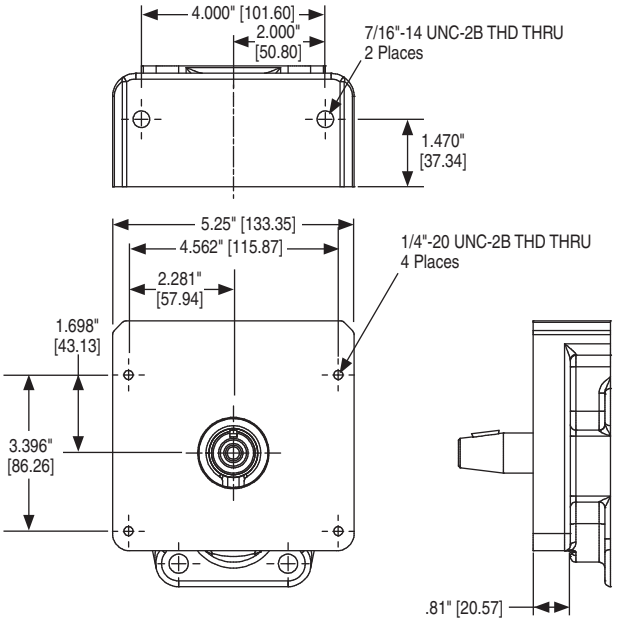
89 SAE A 2-Bolt (Clutch)



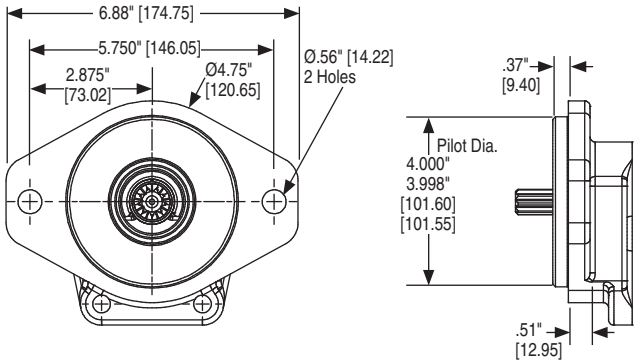
93 SAE A 2-Bolt



95 Pad Mount (Clutch)



96 SAE B 2-Bolt



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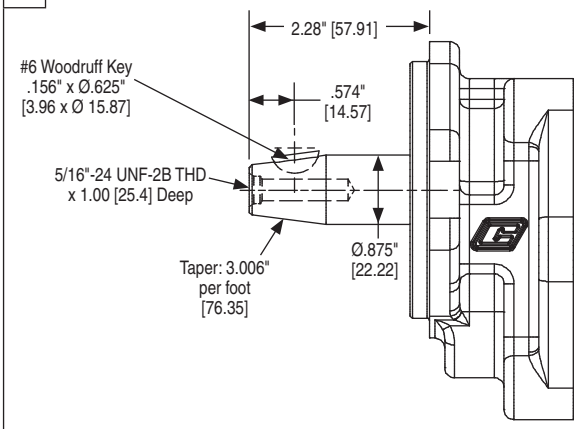
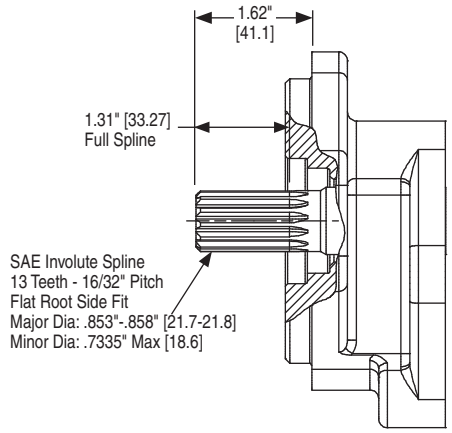
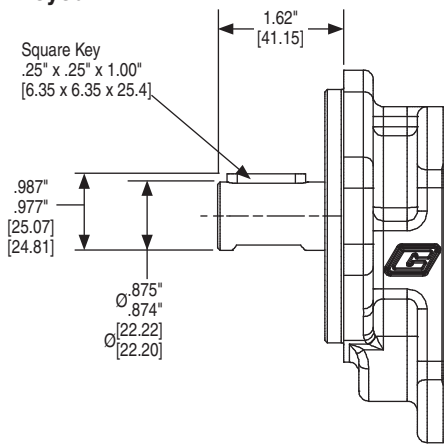
56 Clutch Shaft



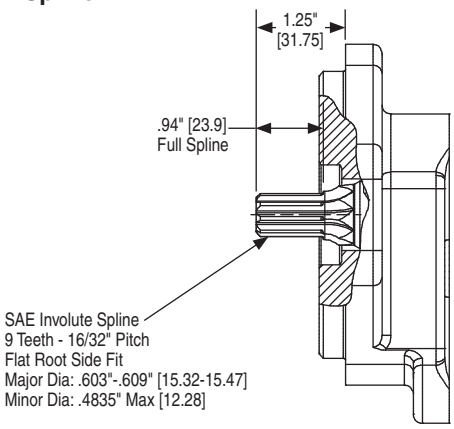
65 SAE B Spline



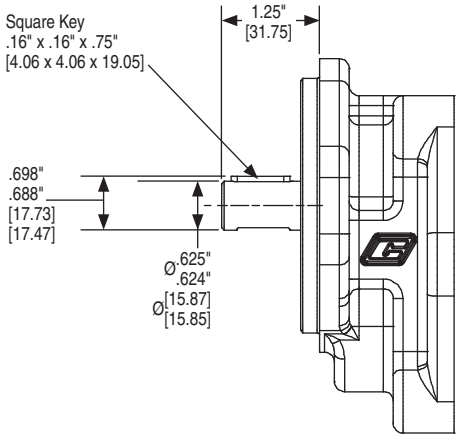
66 SAE B Keyed



96 SAE A Spline



97 SAE A Keyed



Shaft Style		Integral: 1 2 pieces: 2	Maximum Torque	
			lb-ft	Nm
SAE A	Splined - 9 Teeth	1 2	80 -	109 -
	5/8" Keyed	1 2	62 -	84 -
SAE B	Splined - 13 Teeth	1 2	242 -	328 -
	7/8" Keyed	1 2	167 -	226 -
SAE BB	Splined - 15 Teeth	1 2	- -	- -
	1" Keyed	1 2	- -	- -
SAE C	Splined - 14 Teeth	1 2	- -	- -
	1.25" Keyed	1 2	- -	- -
Connecting Shaft			90	122

Torque (lb-ft) = $\frac{\text{Pressure (PSI) x Displacement (in}^3\text{/rev)}}{75.4}$

Torque (Nm) = $\frac{\text{Pressure (Bar) x Displacement (cc/rev)}}{62.8}$

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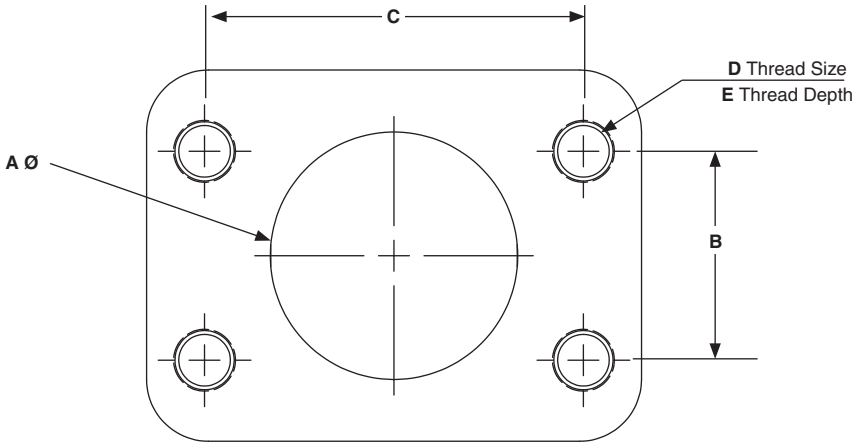
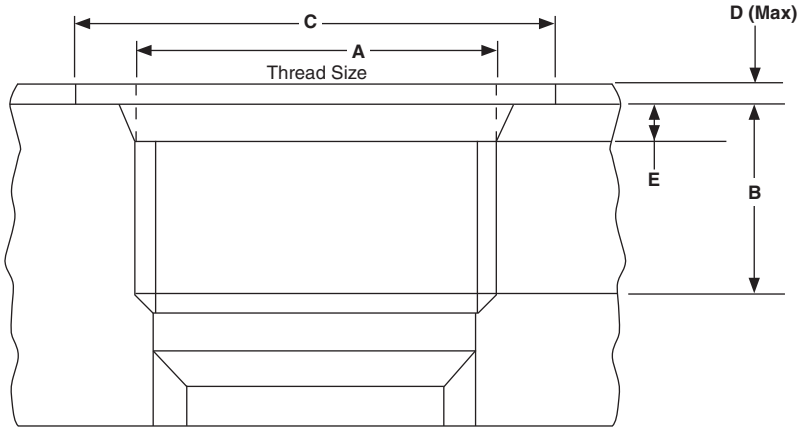
SAE Flanged Ports UNC Thread (SSS)

A		B		C		D	E	
inch	mm	inch	mm	inch	mm	UNC	inch	mm
0.50	12.7	0.69	17.5	1.50	38.1	5/16"-18	0.94	23.9
0.75	19.1	0.88	22.3	1.88	47.7	3/8"-16	0.88	22.4
1.00	25.4	1.03	26.2	2.06	52.2	3/8"-16	0.88	22.4
1.25	31.8	1.19	30.2	2.31	58.7	7/16"-14	1.12	28.4
1.50	38.1	1.41	35.7	2.75	69.9	1/2"-13	1.06	26.9
2.00	50.8	1.69	42.9	3.06	77.8	1/2"-13	1.06	26.9
2.50	63.5	2.00	50.8	3.50	88.9	1/2"-13	1.19	30.2



SAE Straight Thread (ODT)

ODT	A UNF	B		C		D		E	
		inch	mm	inch	mm	inch	mm	inch	mm
1/2"	3/4"-16	.56	14.3	1.19	30.2	.09	2.4	.10	2.55
5/8"	7/8"-14	.66	16.7	1.34	34.1	.09	2.4	.10	2.55
3/4"	1-1/16"-12	.75	19.1	1.62	41.3	.09	2.4	.13	3.30
1"	1-5/16"-12	.75	19.1	1.91	48.5	.09	2.4	.13	3.30
1-1/4"	1-5/8"-12	.75	19.1	2.27	57.7	.09	2.4	.13	3.35
1-1/2"	1-7/8"-12	.75	19.1	2.56	65.0	.09	2.4	.13	3.35
2"	2-1/2"-12	.75	19.1	3.48	88.4	.09	2.4	.13	3.35



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																	Tandem: Repeat if Necessary						
PG	1	315	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	6	6	7	7	10

Code	1 – Type
P	Pump (PE for flurocarbon seals)
M	Motor (no tandem motors available)

Code	2 – Unit
A	Single Unit
B	Tandem Unit (flush studs)
L	Unit with Extended Studs

Code	3 – Shaft End Cover
1	Pump, cw w/o O.B. bearing
2	Pump, ccw w/o O.B. bearing
9	Motor, bi-rot w/o O.B. bearing + 1/4" ODT drain

Code	4 – Shaft End Cover
89	SAE 2-Bolt for clutch
93	SAE A 2-Bolt
95	Pad Mount for clutch
96	SAE B 2-Bolt

Code	5 – Port End Cover			
SIDE PORTED				
CW	CCW	IN	OUT	
SAE Split Flange (pump)				
EJ	JE	1"	3/4"	
EK	KE	1"	1/2"	
EL	LE	3/4"	3/4"	
EM	ME	3/4"	1/2"	
OE	EO	1"	-	
OF	FO	3/4"	-	
OJ	JO	-	3/4"	
OL	LO	-	1/2	
SAE Split Flange (motor)				
DR-Double		1"	1"	
DS-Double		3/4"	3/4"	
Unported (pump)				
BI		Unported		

Code	5 – Port End Cover (cont.)		
SIDE PORTED (cont.)			
CW	CCW	IN	OUT
OD Tube Porting (pump)			
FB	BF	1-1/4"	1"
FC	CF	1-1/4"	7/8"
FG	GF	1-1/4"	3/4"
FJ	JF	1-1/4"	5/8"
FL	LF	1"	1"
FV	VF	1"	7/8"
FW	WF	1"	3/4"
FX	XF	1"	5/8"
FY	YF	7/8"	7/8"
FZ	ZF	7/8"	3/4"
BC	CB	7/8"	5/8"
BG	GB	7/8"	1/2"
BJ	JB	3/4"	3/4"
BL	LB	3/4"	5/8"
BN	NB	3/4"	1/2"
BV	VB	1-1/4"	-
BW	WB	1"	-
BX	XB	7/8"	-
BY	YB	3/4"	-
BZ	ZB	-	1"
PD	DP	-	7/8"
PE	EP	-	3/4"
PM	MP	-	5/8"
PN	NP	-	1/2"
OD TUBE PORTING (motor)			
VN-Double		1"	1"
VR-Double		3/4"	3/4"
VQ-Double		1/2"	1/2"

Code	5 – Port End Cover (cont.)		
REAR PORTED			
CW	CCW	IN	OUT
OD Tube Porting (pump)			
UC	CU	1-1/4"	1"
UF	FU	1-1/4"	7/8"
UN	NU	1-1/4"	3/4"
UD	DU	1"	1"
UP	PU	1"	7/8"
UQ	QU	1"	3/4"
UR	RU	1"	5/8"
LN	NL	7/8"	7/8"
LP	PL	7/8"	3/4"
LQ	QL	7/8"	5/8"
LR	RL	3/4"	3/4"
LS	SL	3/4"	5/8"
LT	TL	3/4"	1/2"
OD Tube Porting (motor)			
RN-Double		1"	1"
RQ-Double		3/4"	3/4"
RS-Double		1/2"	1/2"
BSPP Porting (motor)			
RT-Double		1"	1"
RV-Double		3/4"	3/4"
RW-Double		1/2"	1/2"
National Pipe Thread (motor)			
RX-Double		1"	1"
RY-Double		3/4"	3/4"
RZ-Double		1/2"	1/2"

Code	6 – Gear Housing
AB	Pump
EB	Motor

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																Tandem: Repeat if Necessary						
PG	1	315	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	6	6	7	7	10

Code	7 – Gear Width				
	Gear Width	in.³ /rev.	cm³ /rev.	Max Pressure	
				psi	bar
05	1/2"	.62	10.2	3500	241
07	3/4"	.93	15.2	3500	241
10	1"	1.24	20.3	3500	241
12	1-1/4"	1.55	25.4	3500	241
15	1-1/2"	1.86	30.5	3300	228
17	1-3/4"	2.17	35.6	2900	200
20	2"	2.48	40.6	2500	172

Code	8 – Drive Shaft
56	Clutch Pump Tapered, 5/16 - 24 thd. (internal), #6 Woodruff Keyed (single unit only); 1:4 taper
65	SAE B Splined
66	SAE B Keyed
96	SAE A Splined
97	SAE A Keyed
For Single or Tandem Units - unless noted	

Code	9 – Bearing Carriers			
DUAL OUTLET - PUMP ONLY				
Outlets: for clockwise porting the top port number comes first; for counter-clockwise porting the bottom port number comes first				
CW	CCW	IN	OUT	
SAE Split Flange				
CA	AC	1-1/4"	3/4"	3/4"
DA	AD	1-1/4"	3/4"	1/2"
EA	AE	1-1/4"	1/2"	1/2"
FA	AF	1"	3/4"	3/4"
GA	AG	1"	3/4"	1/2"
HA	AH	1"	1/2"	1/2"
OD Tube Porting				
JG	GJ	1-1/2"	1"	1"
KG	GK	1-1/2"	1"	7/8"
LG	GL	1-1/2"	7/8"	7/8"
MG	GM	1-1/2"	1"	3/4"
NG	GN	1-1/2"	3/4"	3/4"
PG	GP	1-1/4"	1"	1"
QG	GQ	1-1/4"	1"	7/8"
RG	GR	1-1/4"	7/8"	7/8"
SG	GS	1-1/4"	1"	3/4"
TG	GT	1-1/4"	3/4"	3/4"
UG	GU	1-1/4"	3/4"	5/8"
VG	GV	1-1/4"	3/4"	1/2"
WG	GW	1-1/4"	5/8"	5/8"
XG	GX	1-1/4"	1/2"	1/2"
YG	GY	1"	1"	1"
ZG	GZ	1"	1"	7/8"
RC	CR	1"	7/8"	7/8"
SC	CS	1"	1"	3/4"
TC	CT	1"	3/4"	3/4"
VC	CV	1"	3/4"	5/8"
WC	CW	1"	3/4"	1/2"
XC	CX	1"	5/8"	5/8"
YC	CY	1"	1/2"	1/2"

Code	9 – Bearing Carriers (cont.)			
SINGLE OUTLET - PUMP ONLY				
Outlet for front section				
CW	CCW	IN	OUT	
SAE Split Flange				
CJ	JC	1-1/4"	1-1/4"	
CL	LC	1-1/4"	1"	
CM	MC	1-1/4"	3/4"	
HB	BH	1-1/4"	1/2"	
HC	CH	1"	1"	
HF	FH	1"	3/4"	
HL	LH	1"	1/2"	
HM	MH	3/4"	3/4"	
HN	NH	3/4"	1/2"	
OD Tube Porting				
KB	BK	1-1/2"	1-1/2"	
KC	CK	1-1/2"	1-1/4"	
KF	FK	1-1/2"	1"	
KL	LK	1-1/2"	7/8"	
KM	MK	1-1/2"	3/4"	
KN	NK	1-1/4"	1-1/4"	
KO	OK	1-1/4"	1"	
KP	PK	1-1/4"	7/8"	
KQ	QK	1-1/4"	3/4"	
MB	BM	1-1/4"	5/8"	
ML	LM	1-1/4"	1/2"	
MN	NM	1"	1"	
MQ	QM	1"	7/8"	
MR	RM	1"	3/4"	
MS	SM	1"	5/8"	
MT	TM	1"	1/2"	
MU	UM	3/4"	3/4"	
MV	VM	3/4"	5/8"	
MW	WM	3/4"	1/2"	
Common Inlet Passage				
C	D	No Ports		

Code	10 – Connecting Shaft
1	Connecting Shaft
For connecting tandem units	

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- **Three-piece cast iron construction**
  High efficiency and long life in severe operating environments.
- **Low friction bushing**
  Provides strength in heavy duty applications.
- **Balanced thrust plates**
  Optimize pump efficiency.
- **Largest journal bearings available**
  for high pressure and long life.

Product Features	Description
Pump Type	Heavy-duty, cast iron, external gear
Mounting	SAE standard flanges, ZF, others
Ports	SAE split flanges and other types of threaded ports, see Specifications
Shaft Style	SAE splined, keyed, and others, see Specifications
Maximum Speed	400 - 3000 rpm, see Specifications
Theor. displacement	See Specifications
Drive	Clockwise, counterclockwise, double. Direct drive with flexible coupling is recommended. Pumps subject to radial loads must be specified with an outboard bearing. Axial loading is not allowed.
Inlet pressure	30 psia (15psig) maximum pressure / 5 in. Hg maximum vacuum at operating temperature
Outlet pressure	See Specifications
Hydraulic fluids	Mineral oil, fire resistant fluids: water-oil emulsions 60/40, MFB; water-glycol, HFC; phosphate-esters, HFD (FPM seals required)

Product Features	Description
Fluid viscocity	From 7.5 to 1600 cSt (50 to 7500 sus). Recommended 15 to 75 cSt.
Fluid temperature	Mineral oil with standard seals: 0°F to 180°F (-20°C to 80°C); Fire resistant fluids HFB, HFC: 0°F to 150°F (-20°C to 65°C)
Filtration	ISO 4406 code: • 19/16 at 2000 psi/140 bar • 17/14 at 3000 psi/210 bar • 15/12 at 4000 psi/275 bar
Direction of rotation (looking at the drive shaft)	CW, CCW, Bi-Rotational
Multiple pump assemblies	Up to 6 gear selections of the same model, even with different gear widths
Separate or common inlet capability	Common

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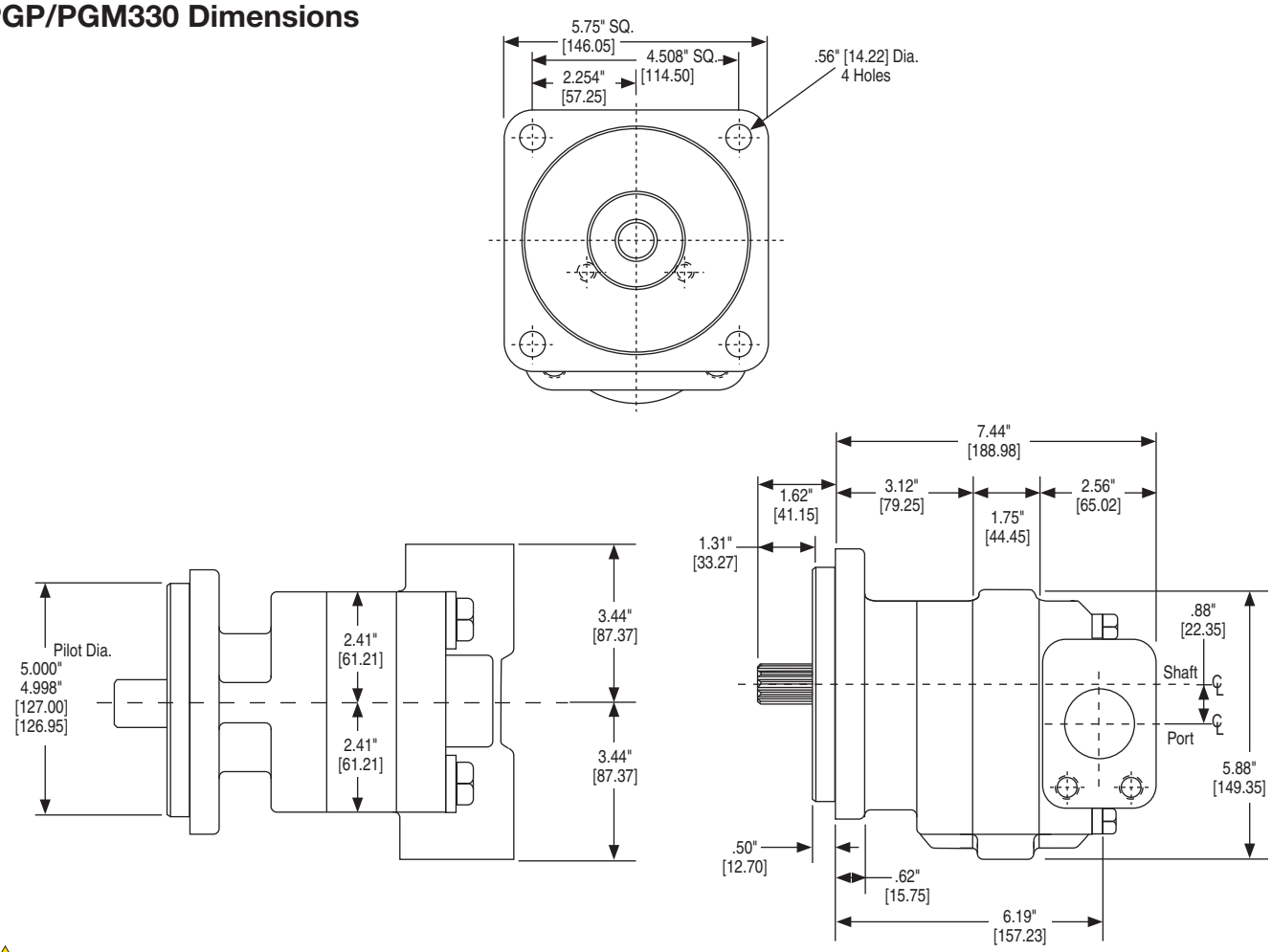
PGP/PGM330 Specifications

PGP330 Frame Size	05	07	10	12	15	17	20
Displacement – cm^3/rev (in^3/rev)	16.1 (0.99)	24.2 (1.48)	32.3 (1.97)	40.4 (2.46)	48.4 (2.96)	56.5 (3.45)	64.6 (3.94)
Max continuous pressure – bar (psi)	241 (3,500)	241 (3,500)	241 (3,500)	241 (3,500)	241 (3,500)	224 (3,250)	207 (3,000)
Max Speed – RPM	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Approximate Weight – Lbs. [kg]	33.6 [15.2]	34.8 [15.8]	36 [16.3]	37.3 [16.9]	38.5 [17.5]	40 [18.1]	41.3 [18.7]

PGM330 Frame Size	05	07	10	12	15	17	20
Displacement – cm^3/rev (in^3/rev)	16.1 (0.99)	24.2 (1.48)	32.3 (1.97)	40.4 (2.46)	48.4 (2.96)	56.5 (3.45)	64.6 (3.94)
Max continuous pressure – bar (psi)	241 (3,500)	241 (3,500)	241 (3,500)	241 (3,500)	241 (3,500)	224 (3,250)	207 (3,000)
Max Speed – RPM	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Approximate Weight – Lbs. [kg]	33.6 [15.2]	34.8 [15.8]	36 [16.3]	37.3 [16.9]	38.5 [17.5]	40.0 [18.1]	41.3 [18.7]

PGP/PGM330 Dimensions



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PGP330 Pump Performance Data

Speed RPM	Output Flow / Input Power	Gear Widths						
		1/2"	3/4"	1"	1-1/4"	1-1/2"	1-3/4"	2"
900	GPM	3.2	5.1	7.0	8.8	10.6	12.4	14.3
	LPM	12	19	26	33	40	47	54
	HP	9	13	17	21	26	28	29
	kW	6	10	13	16	19	21	22
1200	GPM	4.5	7.0	9.5	12.0	14.5	16.9	19.4
	LPM	17	26	36	45	55	64	73
	HP	11	17	23	28	34	37	39
	kW	8	13	17	21	25	28	29
1500	GPM	5.8	8.9	12.1	15.2	18.3	21.4	24.5
	LPM	22	34	46	57	69	81	93
	HP	14	21	28	35	43	46	49
	kW	11	16	21	26	32	34	36
1800	GPM	7.1	10.8	14.7	18.4	22.1	25.9	29.6
	LPM	27	41	55	70	84	98	112
	HP	17	26	34	43	51	55	58
	kW	13	19	25	32	38	41	44
2100	GPM	8.4	12.7	17.2	21.6	26.0	30.3	34.7
	LPM	32	48	65	82	98	115	131
	HP	20	30	40	50	60	65	68
	kW	15	22	30	37	44	48	51
2400	GPM	9.6	14.7	19.8	24.8	29.8	34.8	39.8
	LPM	36	55	75	94	113	132	151
	HP	23	34	45	57	68	74	78
	kW	17	25	34	42	51	55	58
3000	GPM	12.2	18.5	24.9	31.2	37.5	43.8	50.1
	LPM	46	70	94	118	142	166	190
	HP	28	43	57	71	85	92	97
	kW	21	32	42	53	64	69	73

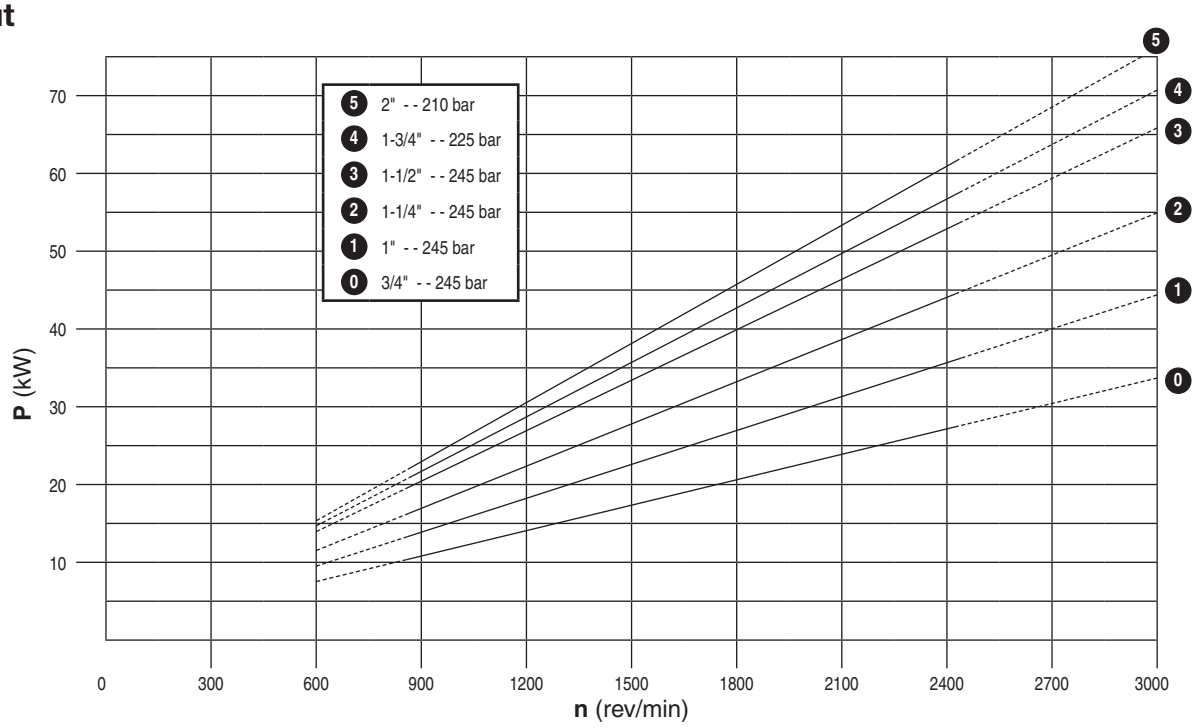
PGM330 Motor Performance Data

Speed RPM	Output Torque	Gear Widths									
		1" 3500 psi		1-1/4" 3500 psi		1-1/2" 3500 psi		1-3/4" 3250 psi		2" 3000 psi	
		A	B	A	B	A	B	A	B	A	B
900	in/lbs	10.1	1010	12.3	1270	14.5	1530	16.7	1665	19.0	1770
	Nm	38	114.1	47	143.5	55	172.9	63	188.1	72	200.0
1200	in/lbs	12.8	1005	15.7	1265	18.6	1525	21.4	1660	24.3	1760
	Nm	49	113.6	59	142.9	70	172.3	81	187.6	92	198.9
1500	in/lbs	15.6	1000	19.1	1255	22.6	1515	26.1	1650	29.6	1750
	Nm	59	113.0	72	141.8	85	171.2	99	186.4	112	197.7
1800	in/lbs	18.4	995	22.5	1250	26.6	1505	30.8	1640	34.9	1740
	Nm	69	112.4	85	141.2	101	170.0	116	185.3	132	196.6
2100	in/lbs	21.1	990	25.9	1240	30.7	1495	35.4	1625	40.2	1720
	Nm	80	111.9	98	140.1	116	168.9	134	183.6	152	194.3
2400	in/lbs	23.9	985	29.3	1235	34.7	1480	40.1	1605	45.5	1695
	Nm	90	111.3	111	139.5	131	167.2	152	181.3	172	191.5
3000	in/lbs	29.2	980	35.9	1230	42.6	1475	49.3	1595	56.0	1685
	Nm	110	110.7	136	139.0	161	166.7	186	180.2	212	190.4

A: Input Flow GPM/LPM; B: Output Torque IN/LBS/Nm
Note: In accordance with our policy of continuing product development, we reserve the right to change specifications shown in this catalog without notice.

WARNING: This product can expose you to chemicals including lead or DEHP which are known to the state of California to cause cancer, birth defects, and other reproductive harm. www.p65warnings.ca.gov

Input



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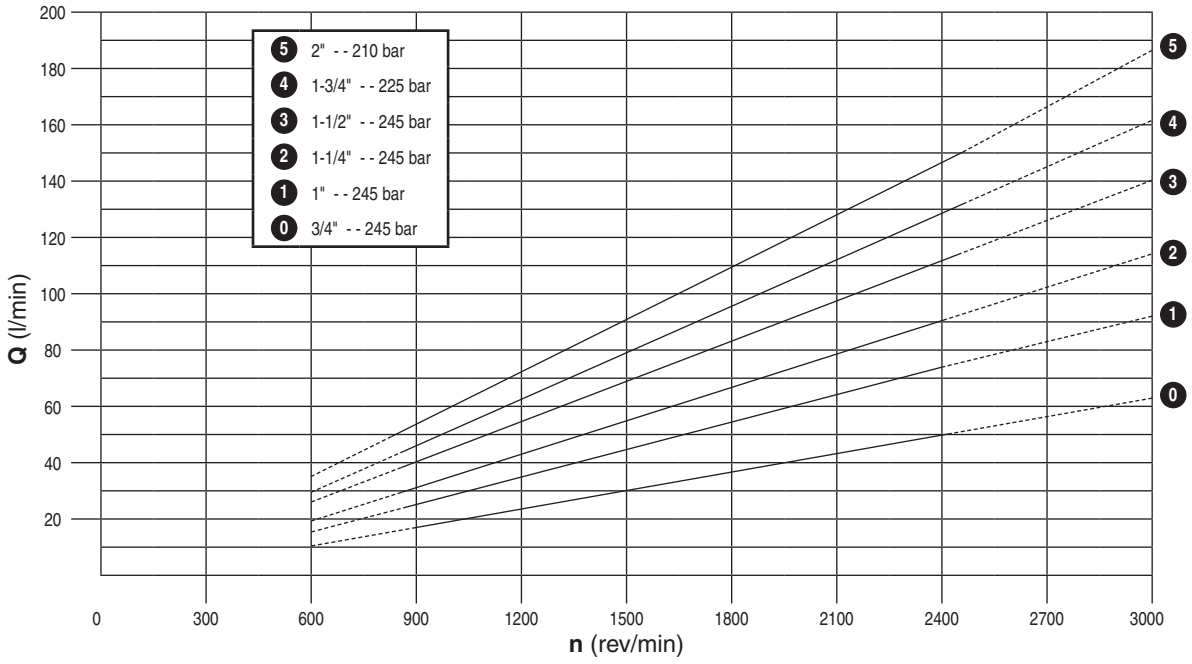

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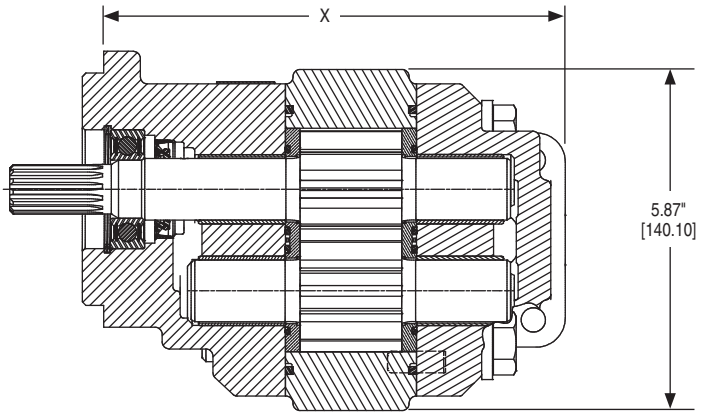
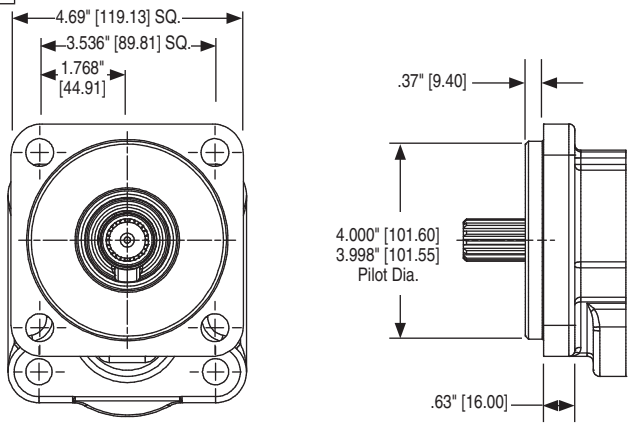
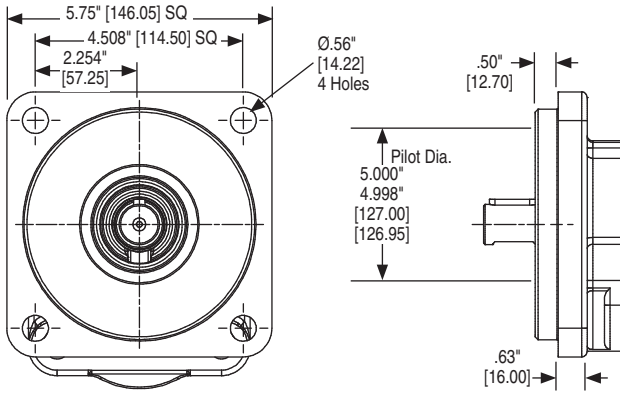


X DIMENSION							
SEC CODE	**05**	**07**	**10**	**12**	**15**	**17**	**20**
42	6.69" [169.93]	6.94" [176.28]	7.19" [182.63]	7.44" [188.98]	7.69" [195.33]	7.94" [201.68]	8.19" [208.02]
78	6.69" [169.93]	6.94" [176.28]	7.19" [182.63]	7.44" [188.98]	7.69" [195.33]	7.94" [201.68]	8.19" [208.02]
97	6.69" [169.93]	6.94" [176.28]	7.19" [182.63]	7.44" [188.98]	7.69" [195.33]	7.94" [201.68]	8.19" [208.02]

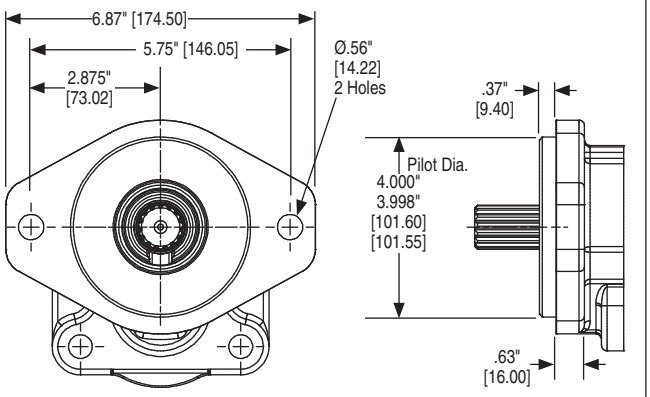
42 SAE B 4-Bolt



78 SAE C 4-Bolt



97 SAE B 2-Bolt



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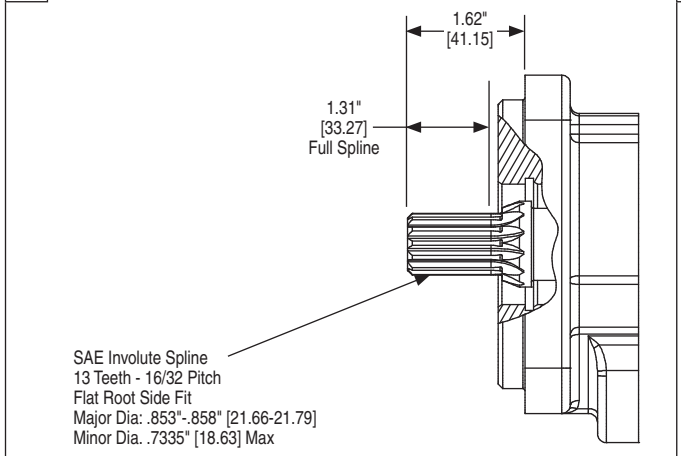
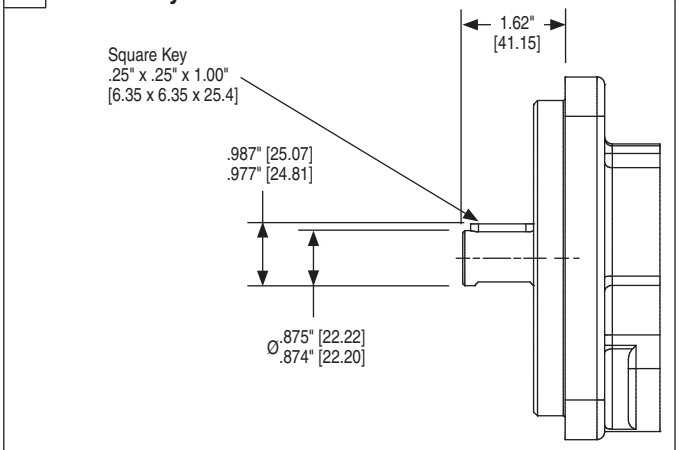
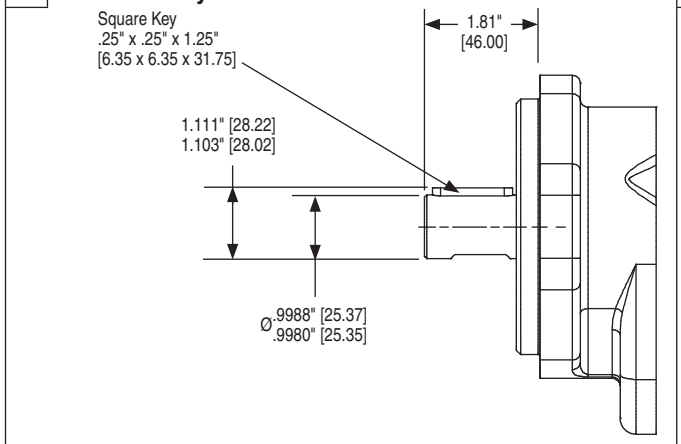
25 SAE B Spline



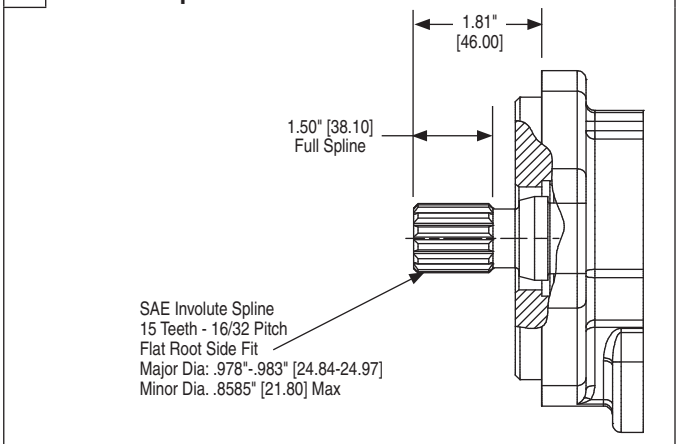
30 SAE B Keyed



43 SAE B-B Keyed



98 SAE B-B Spline



Shaft Style		Integral: 1 2 pieces: 2	Maximum Torque	
			lb-ft	Nm
SAE A	Splined - 9 Teeth	1 2	- -	- -
	5/8" Keyed	1 2	- -	- -
SAE B	Splined - 13 Teeth	1 2	242 159	328 215
	7/8" Keyed	1 2	167 159	226 215
SAE BB	Splined - 15 Teeth	1 2	371 159	503 215
	1" Keyed	1 2	250 159	339 215
SAE C	Splined - 14 Teeth	1 2	- 159	- 215
	1.25" Keyed	1 2	- 159	- 215
Connecting Shaft			159	215

Torque (lb-ft) = $\frac{\text{Pressure (PSI) x Displacement (in}^3\text{/rev)}}{75.4}$

Torque (Nm) = $\frac{\text{Pressure (Bar) x Displacement (cc/rev)}}{62.8}$

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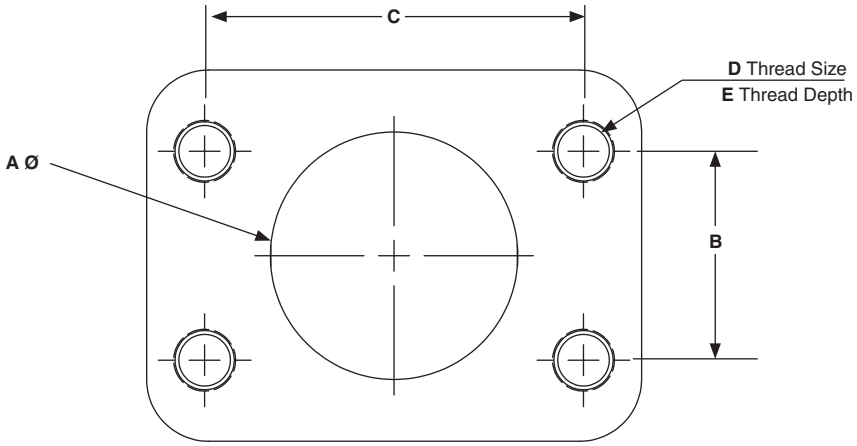
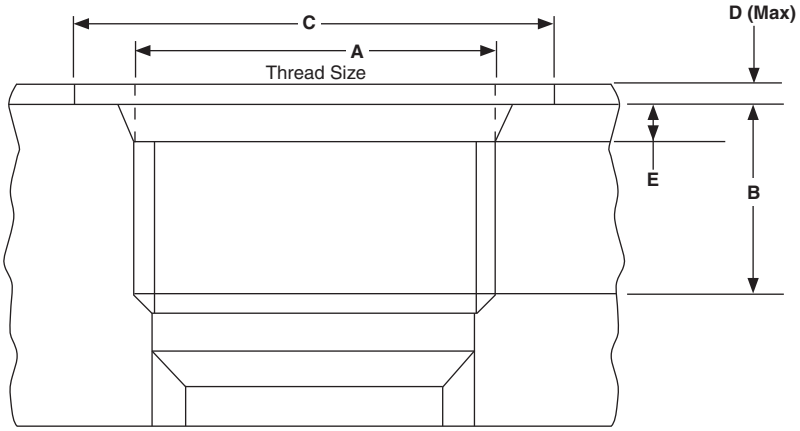
SAE Flanged Ports UNC Thread (SSS)

A		B		C		D	E	
inch	mm	inch	mm	inch	mm	UNC	inch	mm
0.50	12.7	0.69	17.5	1.50	38.1	5/16"-18	0.94	23.9
0.75	19.1	0.88	22.3	1.88	47.7	3/8"-16	0.88	22.4
1.00	25.4	1.03	26.2	2.06	52.2	3/8"-16	0.88	22.4
1.25	31.8	1.19	30.2	2.31	58.7	7/16"-14	1.12	28.4
1.50	38.1	1.41	35.7	2.75	69.9	1/2"-13	1.06	26.9
2.00	50.8	1.69	42.9	3.06	77.8	1/2"-13	1.06	26.9
2.50	63.5	2.00	50.8	3.50	88.9	1/2"-13	1.19	30.2



SAE Straight Thread (ODT)

ODT	A UNF	B		C		D		E	
		inch	mm	inch	mm	inch	mm	inch	mm
1/2"	3/4"-16	.56	14.3	1.19	30.2	.09	2.4	.10	2.55
5/8"	7/8"-14	.66	16.7	1.34	34.1	.09	2.4	.10	2.55
3/4"	1-1/16"-12	.75	19.1	1.62	41.3	.09	2.4	.13	3.30
1"	1-5/16"-12	.75	19.1	1.91	48.5	.09	2.4	.13	3.30
1-1/4"	1-5/8"-12	.75	19.1	2.27	57.7	.09	2.4	.13	3.35
1-1/2"	1-7/8"-12	.75	19.1	2.56	65.0	.09	2.4	.13	3.35
2"	2-1/2"-12	.75	19.1	3.48	88.4	.09	2.4	.13	3.35



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																	Tandem: Repeat if Necessary						
PG	1	330	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	6	6	7	7	10

Code	1 – Type
P	Pump
M	Motor

Code	2 – Unit
A	Single Unit
B	Tandem Unit (flush studs)
C	Single or Tandem with two-piece shaft (O.B. bearing required)
L	Unit with Extended Studs

Code	3 – Shaft End Cover
1	Pump, cw w/o O.B. bearing
2	Pump, ccw w/o O.B. bearing
4	Pump, cw with O.B. bearing
5	Pump, ccw with O.B. bearing
8	Motor, bi-rot with O.B. bearing + 1/4" ODT drain
9	Motor, bi-rot w/o O.B. bearing + 1/4" ODT drain

Code	4 – Shaft End Cover
42	SAE B 4-Bolt
78	SAE C 4-Bolt
97	SAE B 2-Bolt

Code	5 – Port End Cover		
SIDE PORTED			
CW	**CCW**	**IN**	**OUT**
SAE Split Flange (pump)			
EJ	JE	1-1/2"	1-1/4"
EK	KE	1-1/2"	1"
EL	LE	1-1/4"	1-1/4"
EM	ME	1-1/4"	1"
EN	NE	1"	1"
OF	FO	1-1/2"	-
OG	GO	1-1/4"	-
OJ	JO	1"	-
OM	MO	-	1-1/4"
ON	NO	-	1"
SAE Split Flange (motor)			
CS-Double		1-1/4"	1-1/4"
CT-Double		1"	1"
CV-Double		3/4"	3/4"
OD Tube Porting (pump)			
FJ	JF	1-1/4"	1"
FL	LF	1"	1"
BG	GB	1-1/4"	-
BJ	JB	1"	-
BN	NB	-	1"
OD Tube Porting (motor)			
VC-Double		1-1/4"	1-1/4"
VN-Double		1"	1"
VR-Double		3/4"	3/4"
Unported (pump)			
BI		Unported	
Unported (motor)			
BA		Unported	

Code	6 – Gear Housing
AB	Pump
EB	Motor

Code	7 – Gear Width				
	Gear Width	$in.^3$ /rev.	cm^3 /rev.	Max Pressure	
				psi	bar
05	1/2"	0.99	16.1	3500	241
07	3/4"	1.48	24.2	3500	241
10	1"	1.97	32.3	3500	241
12	1-1/4"	2.46	40.4	3500	241
15	1-1/2"	2.96	48.4	3500	241
17	1-3/4"	3.45	56.5	3250	224
20	2"	3.94	64.6	3000	207

Code	8 – Shaft Type
7	SAE C Spline (two-piece only)
11	SAE C Keyed (two-piece only)
25	SAE B Spline
30	SAE B Keyed
43	SAE BB Keyed

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																Tandem: Repeat if Necessary						
PG	1	330	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	6	6	7	7	10

98	SAE BB Splined			
For Single or Tandem Units - unless noted				
Code	**9 – Bearing Carriers**			
DUAL OUTLET - PUMP ONLY				
Outlets: for clockwise porting the top port number comes first; for counter-clockwise porting the bottom port number comes first				
CW	**CCW**	**IN**	**OUT**	
SAE Split Flange				
AM	**MA**	2"	1-1/4"	1-1/4"
AN	**NA**	2"	1-1/4"	1"
AP	**PA**	2"	1"	1"
AT	**TA**	1-1/2"	1-1/4"	1-1/4"
AU	**UA**	1-1/2"	1-1/4"	1"
AV	**VA**	1-1/2"	1"	1"
AW	**WA**	1-1/4"	1-1/4"	1-1/4"
AX	**XA**	1-1/4"	1-1/4"	1"
AY	**YA**	*1-1/4"	1"	1"
AZ	**ZA**	1"	1"	1"
OD Tube Porting				
GV	**VG**	1-1/2"	1"	1"
GY	**YG**	1-1/4"	1"	1"
GZ	**ZG**	1"	1"	1"

* Outlet port for rear section

Code	**9 – Bearing Carriers (cont.)**		
SINGLE OUTLET - PUMP ONLY			
Outlet for front section			
CW	**CCW**	**IN**	**OUT**
SAE Split Flange			
HB	**BH**	2"	1-1/2"
HC	**CH**	2"	1-1/4"
HF	**FH**	2"	1"
HL	**LH**	1-1/2"	1-1/2"
HM	**MH**	1-1/2"	1-1/4"
HN	**NH**	1-1/2"	1"
HO	**OH**	1-1/4"	1-1/4"
HP	**PH**	1-1/4"	1"
HQ	**QH**	1"	1"
RS	**SR**	1-1/4"	1"
OD Tube Porting			
KM	**MK**	1-1/2"	1-1/4"
KN	**NK**	1-1/2"	1"
KO	**OK**	1-1/4"	1-1/4"
KP	**PK**	1-1/4"	1"
KQ	**QK**	1"	1"

Code	**9 – Bearing Carriers (cont.)**		
COMBINED OUTLET			
Outlet for front section			
CW	**CCW**	**IN**	**OUT**
SAE Split Flange (pump)			
UN	**NU**	2"	1-1/2"
UO	**OU**	2"	1-1/4"
UP	**PU**	1-1/2"	1-1/2"
UQ	**QU**	1-1/2"	1-1/4"
UR	**RU**	1-1/4"	1-1/4"
SAE Split Flange (motor)			
BB-Double		1-1/2"	1-1/2"
CC-Double		1-1/4"	1-1/4"
EE-Double		1"	1"
FF-Double		3/4"	3/4"
OD Tube Porting (pump)			
PQ	**QP**	1-1/2"	1-1/4"
PR	**RP**	1-1/4"	1-1/4"
OD Tube Porting (motor)			
NN-Double		1-1/4"	1-1/4"
QQ-Double		1"	1"
RR-Double		3/4"	3/4"
Common Inlet Passage			
C	**D**	No Ports	

Code	**10 – Connecting Shaft**
1	Connecting Shaft
For connecting tandem units	

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- **Three-piece cast iron construction**
  High efficiency and long life in severe operating environments.
- **Low friction bushing**
  Provides strength in heavy duty applications.
- **Balanced thrust plates**
  Optimize pump efficiency.
- **Largest journal bearings available**
  for high pressure and long life.

Product Features	Description
Pump Type	Heavy-duty, cast iron, external gear
Mounting	SAE standard flanges, ZF, others
Ports	SAE split flanges and other types of threaded ports, see Specifications
Shaft Style	SAE splined, keyed, and others, see Specifications
Maximum Speed	2,400 RPM
Theor. displacement	See Specifications
Drive	Clockwise, counterclockwise, double. Direct drive with flexible coupling is recommended. Pumps subject to radial loads must be specified with an outboard bearing. Axial loading is not allowed.
Inlet pressure	30 psia (15psig) maximum pressure / 5 in. Hg maximum vacuum at operating temperature
Outlet pressure	See Specifications
Hydraulic fluids	Mineral oil, fire resistant fluids: water-oil emulsions 60/40, MFB; water-glycol, HFC; phosphate-esters, HFD (FPM seals required)

Product Features	Description
Fluid viscocity	From 7.5 to 1600 cSt (50 to 7500 sus). Recommended 15 to 75 cSt.
Fluid temperature	Mineral oil with standard seals: 0°F to 180°F (-20°C to 80°C); Fire resistant fluids HFB, HFC: 0°F to 150°F (-20°C to 65°C)
Filtration	ISO 4406 code: • 19/16 at 2000 psi/140 bar • 17/14 at 3000 psi/210 bar • 15/12 at 4000 psi/275 bar
Direction of rotation (looking at the drive shaft)	CW, CCW, Bi-Rotational
Multiple pump assemblies	Up to 6 gear selections of the same model, even with different gear widths
Separate or common inlet capability	Common

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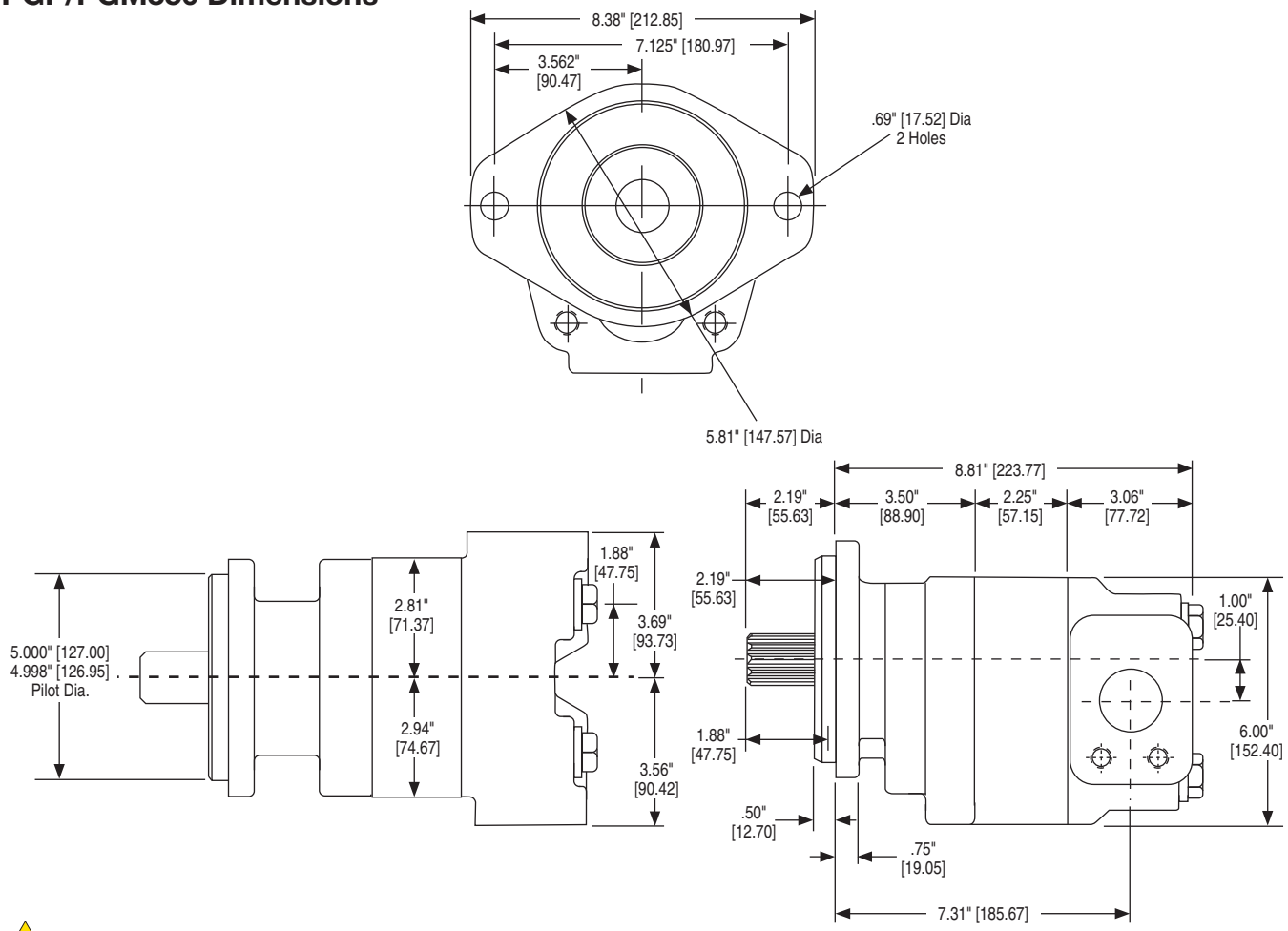
PGP350 Frame Size	05	07	10	12	15	17	20	22	25
Displacement – cm^3/rev (in^3/rev)	20.9 (1.28)	31.3 (1.91)	41.8 (2.55)	52.2 (3.19)	62.7 (3.83)	73.1 (4.46)	83.6 (5.10)	94.0 (5.74)	104.5 (6.38)
Max continuous pressure – bar (psi)	241 (3,500)	241 (3,500)	241 (3,500)	241 (3,500)	241 (3,500)	224 (3,250)	207 (3,000)	190 (2,750)	172 (2,500)
Max Speed – RPM	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400
Approximate Weight – Lbs. [kg]	48 [21.8]	49.5 [22.4]	51 [23.1]	52.5 [23.8]	54.0 [24.5]	55.5 [25.2]	57.0 [25.9]	58.5 [26.5]	60.0 [27.2]

PGM350 Frame Size	05	07	10	12	15	17	20	22	25
Displacement – cm^3/rev (in^3/rev)	20.9 (1.28)	31.3 (1.91)	41.8 (2.55)	52.2 (3.19)	62.7 (3.83)	73.1 (4.46)	83.6 (5.10)	94.0 (5.74)	104.5 (6.38)
Max continuous pressure – bar (psi)	241 (3,500)	241 (3,500)	241 (3,500)	241 (3,500)	241 (3,500)	224 (3,250)	207 (3,000)	190 (2,750)	172 (2,500)
Max Speed – RPM	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400
Approximate Weight – Lbs. [kg]	48 [21.8]	49.5 [22.4]	51 [23.1]	52.5 [23.8]	54.0 [24.5]	55.5 [25.2]	57.0 [25.9]	58.5 [26.5]	60.0 [27.2]

PGP/PGM350 Dimensions



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PGP350 Pump Performance Data

Speed RPM	Output Flow / Input Power	Gear Widths								
		1/2"	3/4"	1"	1-1/4"	1-1/2"	1-3/4"	2"	2-1/4"	2-1/2"
900	GPM	4.0	6.4	8.8	11.2	13.7	16.1	18.6	21.0	23.4
	LPM	15	24	33	42	52	61	70	79	89
	HP	11	17	22	28	33	36	38	39	40
	kW	8	12	17	21	25	27	28	29	30
1200	GPM	5.6	8.8	12.1	15.4	18.7	21.9	25.2	28.4	31.7
	LPM	21	33	46	58	71	83	95	108	120
	HP	15	22	30	37	44	48	51	52	53
	kW	11	17	22	28	33	36	38	39	39
1500	GPM	7.3	11.3	15.5	19.5	23.6	27.7	31.8	35.9	40.0
	LPM	28	43	59	74	89	105	120	136	151
	HP	18	28	37	46	55	60	63	65	66
	kW	14	21	28	34	41	45	47	49	49
1800	GPM	8.9	13.8	18.8	23.6	28.6	33.5	38.4	43.3	48.3
	LPM	34	52	71	89	108	127	145	164	183
	HP	22	33	44	55	67	72	76	78	79
	kW	17	25	33	41	50	54	57	58	59
2100	GPM	10.6	16.3	22.1	27.8	33.6	39.3	45.1	50.8	56.6
	LPM	40	62	84	105	127	149	171	192	214
	HP	26	39	52	65	78	84	89	91	92
	kW	19	29	39	48	58	63	66	68	69
2400	GPM	12.2	18.8	25.4	31.9	38.5	45.1	51.7	58.2	64.8
	LPM	46	71	96	121	146	171	196	220	245
	HP	30	44	59	74	89	96	101	105	106
	kW	22	33	44	55	66	72	76	78	79

PGM350 Motor Performance Data

Speed RPM	Output Torque	Gear Widths													
		1" 3500 psi		1-1/4" 3500 psi		1-1/2" 3500 psi		1-3/4" 3250 psi		2" 3000 psi		2-1/4" 2750 psi		2-1/2" 2500 psi	
		A	B	A	B	A	B	A	B	A	B	A	B	A	B
900	in/lbs	13.4	1320	16.0	1670	18.6	2025	21.2	2225	23.8	2350	26.4	2425	28.9	2450
	Nm	51	149.1	61	188.7	70	228.8	80	251.4	90	265.5	100	274.0	110	276.8
1200	in/lbs	16.9	1315	20.4	1660	23.8	2015	27.2	2215	30.6	2340	34.0	2410	37.4	2435
	Nm	64	148.6	77	187.6	90	227.7	103	250.3	116	264.4	129	272.3	142	275.1
1500	in/lbs	20.5	1300	24.7	1640	28.9	1990	33.2	2195	37.4	2315	41.7	2385	45.9	2410
	Nm	77	146.9	93	185.3	110	224.8	126	248.0	142	261.6	158	269.5	174	272.3
1800	in/lbs	24.0	1295	29.0	1635	34.1	1980	39.2	2180	44.2	2300	49.3	2375	54.4	2395
	Nm	91	146.3	110	184.7	129	223.7	148	246.3	167	259.9	187	268.3	206	270.6
2100	in/lbs	27.5	1285	33.4	1620	39.3	1965	45.2	2165	51.1	2285	57.0	2355	62.9	2380
	Nm	104	145.2	126	183.0	149	222.0	171	244.6	193	258.2	216	266.1	238	268.9
2400	in/lbs	31.0	1265	37.7	1600	44.4	1940	51.2	2135	57.9	2255	64.6	2325	71.3	2350
	Nm	117	142.9	143	180.8	168	219.2	194	241.2	219	254.8	245	262.7	270	265.5

A: Input Flow GPM/LPM; B: Output Torque IN/LBS/Nm
Note: In accordance with our policy of continuing product development, we reserve the right to change specification shown in this catalog without notice.

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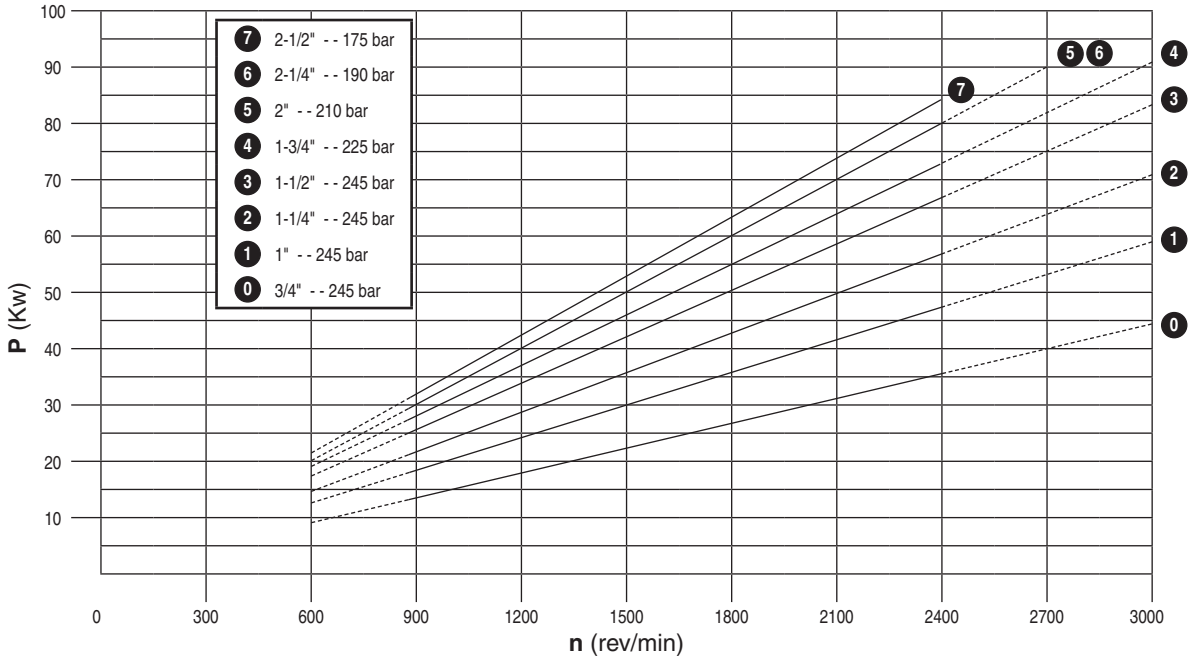
Input



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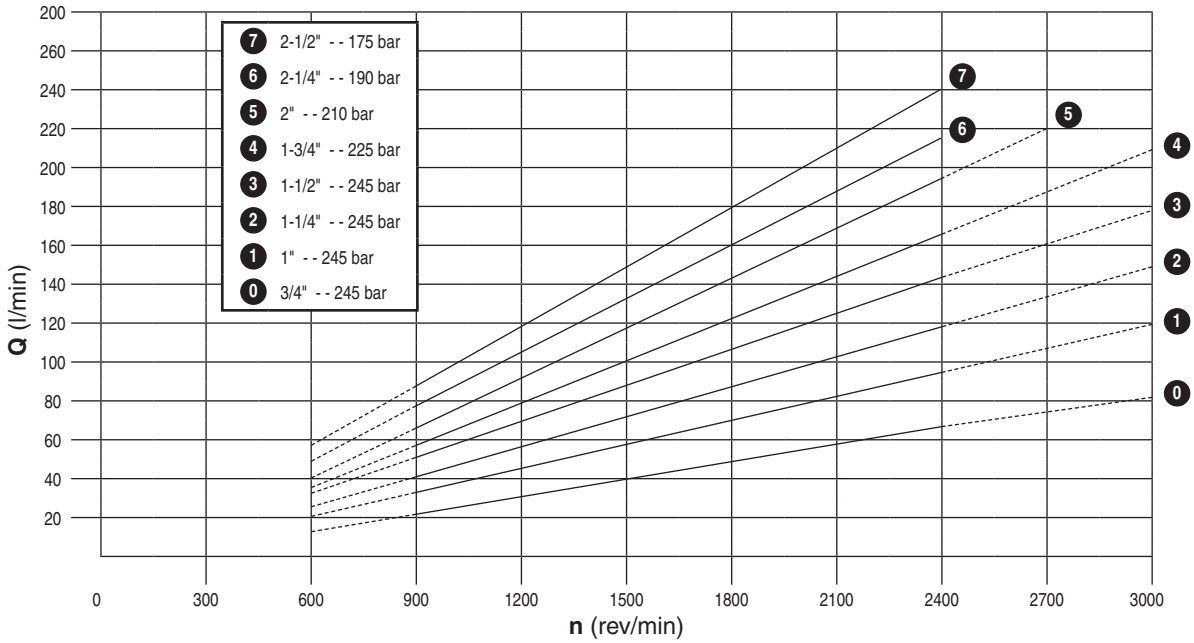

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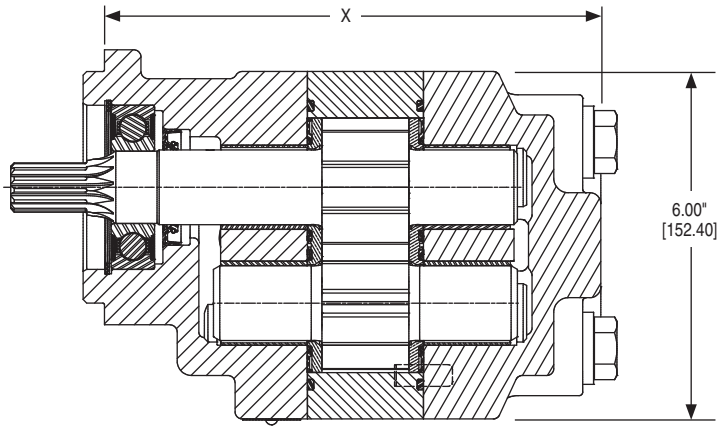
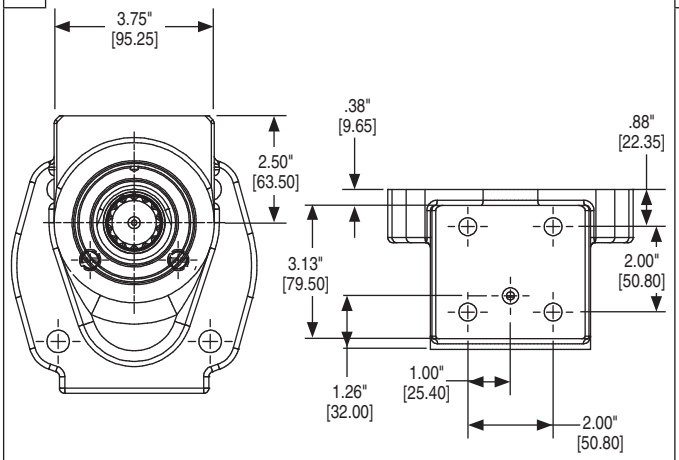
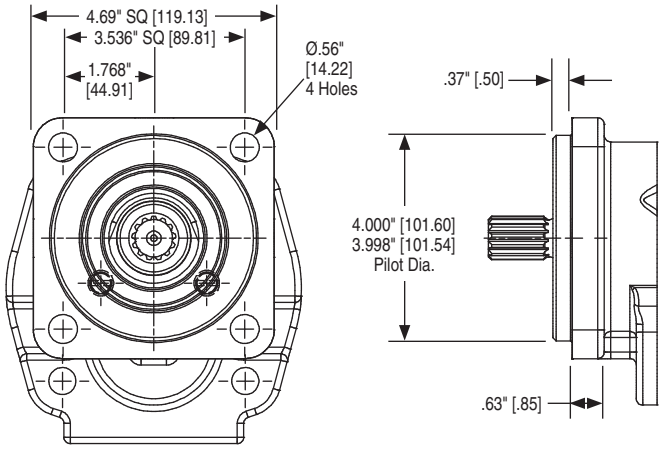


X DIMENSION								
SEC CODE	**07**	**10**	**12**	**15**	**17**	**20**	**22**	**25**
00	8.06" [204.72]	8.31" [211.07]	8.56" [217.42]	8.81" [223.77]	9.06" [230.12]	9.31" [236.47]	9.56" [242.82]	9.81" [249.17]
42	7.81" [198.37]	8.06" [204.72]	8.31" [211.07]	8.56" [217.42]	8.81" [223.77]	9.06" [230.12]	9.31" [236.47]	9.56" [242.82]
46	7.81" [198.37]	8.06" [204.72]	8.31" [211.07]	8.56" [217.42]	8.81" [223.77]	9.06" [230.12]	9.31" [236.47]	9.56" [242.82]
78	7.81" [198.37]	8.06" [204.72]	8.31" [211.07]	8.56" [217.42]	8.81" [223.77]	9.06" [230.12]	9.31" [236.47]	9.56" [242.82]
97	7.81" [198.37]	8.06" [204.72]	8.31" [211.07]	8.56" [217.42]	8.81" [223.77]	9.06" [230.12]	9.31" [236.47]	9.56" [242.82]

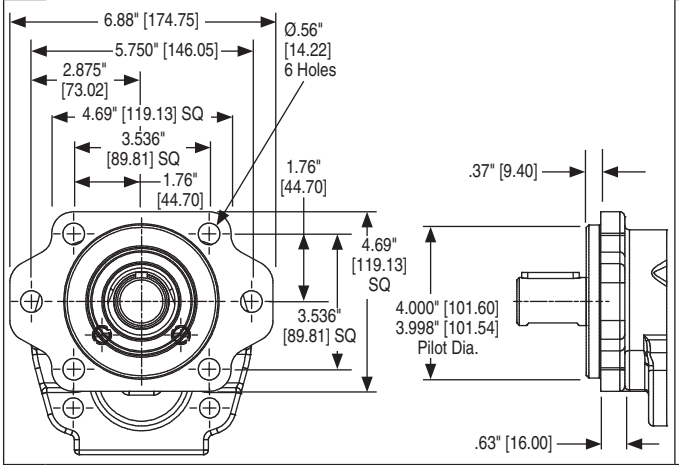
00 Pad Mount



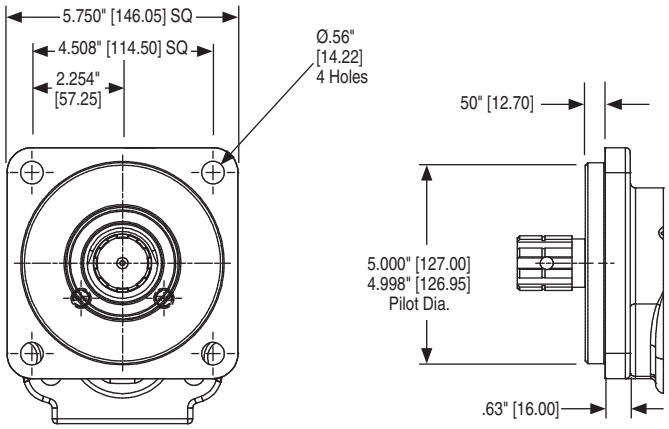
42 SAE B 4-Bolt



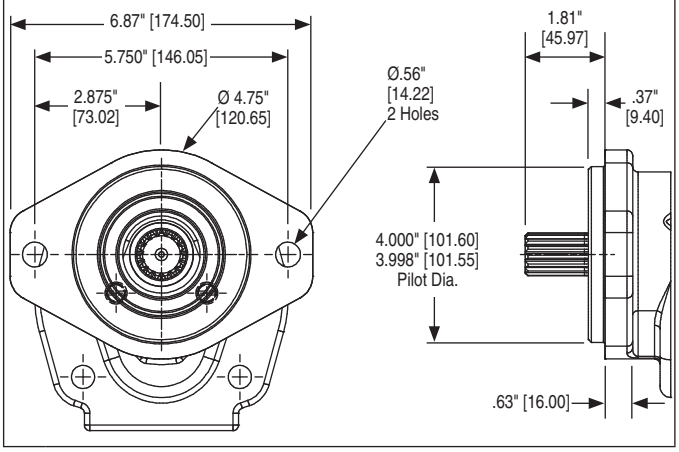
46 SAE B 2/4-Bolt



78 SAE C 4-Bolt



97 SAE B 2-Bolt



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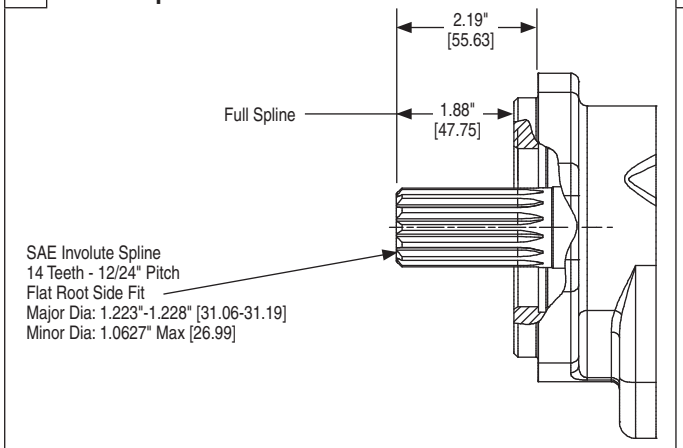
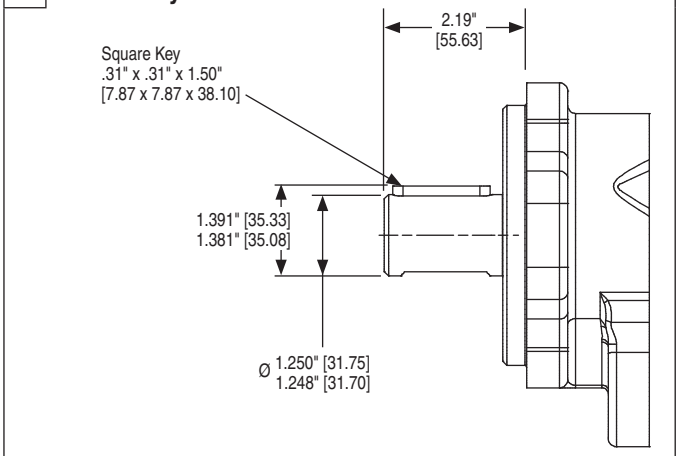
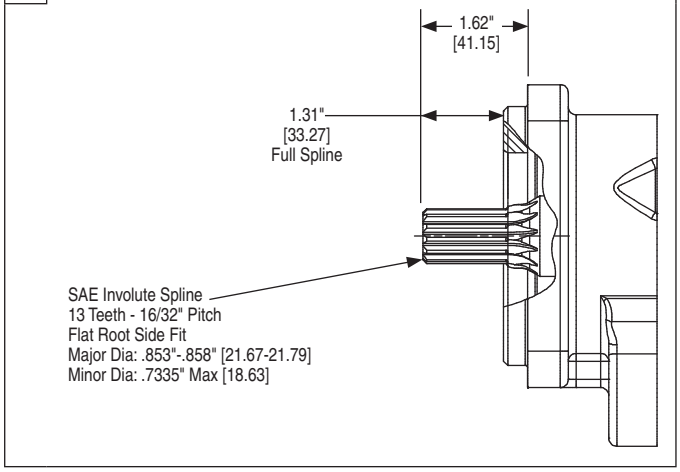
7 SAE C Spline



11 SAE C Keyed



25 SAE B Spline



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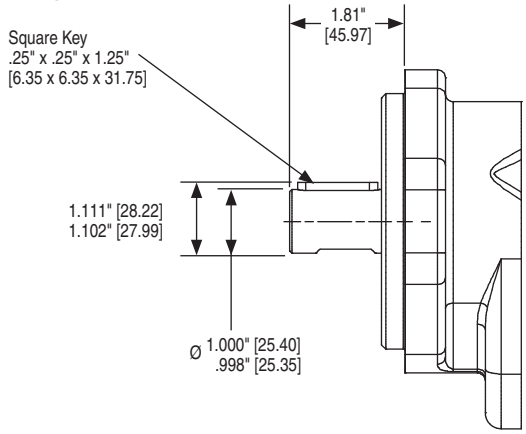
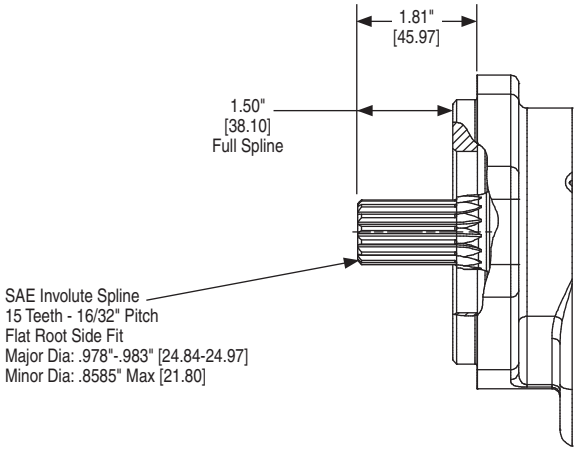
43 SAE BB Keyed



98 SAE BB Spline



Shaft Style		Integral: 1 2 pieces: 2	Maximum Torque	
			lb-ft	Nm
SAE B	Splined - 13 Teeth	1 2	242 242	328 328
SAE BB	Splined - 15 Teeth	1 2	371 300	503 407
SAE C	Splined - 14 Teeth	1 2	708 300	960 407
	1.25" Keyed	1 2	500 300	678 407
Connecting Shaft			300	407

Torque (lb-ft) = $\frac{\text{Pressure (PSI) x Displacement (in}^3\text{/rev)}}{75.4}$

Torque (Nm) = $\frac{\text{Pressure (Bar) x Displacement (cc/rev)}}{62.8}$

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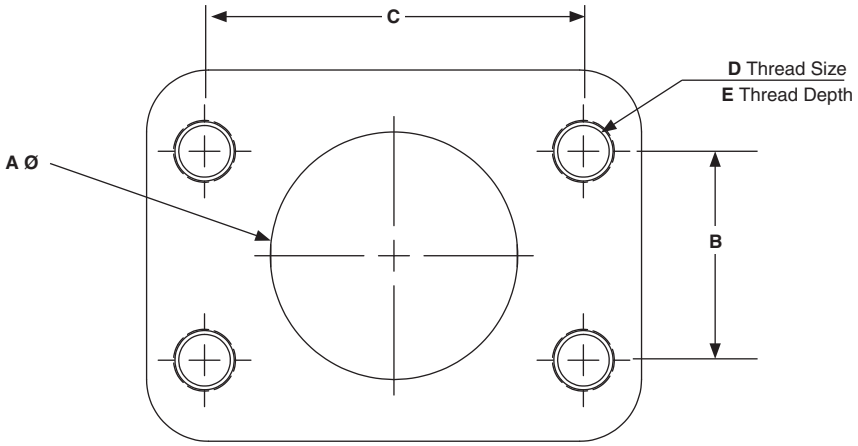
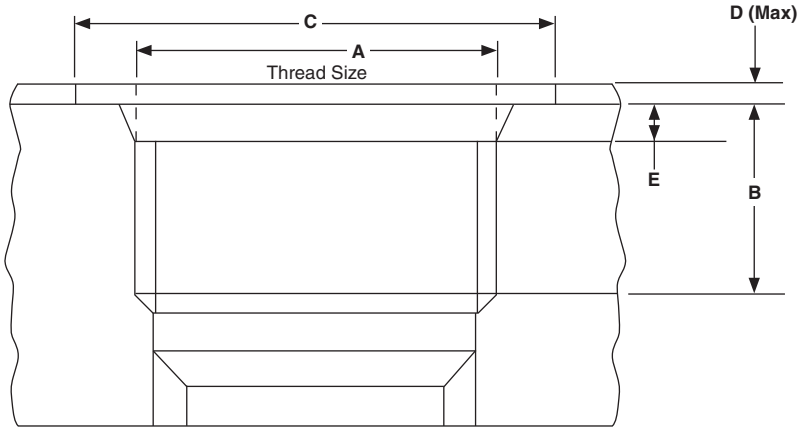
SAE Flanged Ports UNC Thread (SSS)

A		B		C		D	E	
inch	mm	inch	mm	inch	mm	UNC	inch	mm
0.50	12.7	0.69	17.5	1.50	38.1	5/16"-18	0.94	23.9
0.75	19.1	0.88	22.3	1.88	47.7	3/8"-16	0.88	22.4
1.00	25.4	1.03	26.2	2.06	52.2	3/8"-16	0.88	22.4
1.25	31.8	1.19	30.2	2.31	58.7	7/16"-14	1.12	28.4
1.50	38.1	1.41	35.7	2.75	69.9	1/2"-13	1.06	26.9
2.00	50.8	1.69	42.9	3.06	77.8	1/2"-13	1.06	26.9
2.50	63.5	2.00	50.8	3.50	88.9	1/2"-13	1.19	30.2



SAE Straight Thread (ODT)

ODT	A UNF	B		C		D		E	
		inch	mm	inch	mm	inch	mm	inch	mm
1/2"	3/4"-16	.56	14.3	1.19	30.2	.09	2.4	.10	2.55
5/8"	7/8"-14	.66	16.7	1.34	34.1	.09	2.4	.10	2.55
3/4"	1-1/16"-12	.75	19.1	1.62	41.3	.09	2.4	.13	3.30
1"	1-5/16"-12	.75	19.1	1.91	48.5	.09	2.4	.13	3.30
1-1/4"	1-5/8"-12	.75	19.1	2.27	57.7	.09	2.4	.13	3.35
1-1/2"	1-7/8"-12	.75	19.1	2.56	65.0	.09	2.4	.13	3.35
2"	2-1/2"-12	.75	19.1	3.48	88.4	.09	2.4	.13	3.35



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																Tandem: Repeat if Necessary						
PG	1	350	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	6	6	7	7	10

Code	1 – Type
P	Pump
M	Motor

Code	2 – Unit
A	Single Unit
B	Tandem Unit (flush studs)
C	Single or Tandem with two-piece shaft (O.B. bearing required)
L	Unit with Extended Studs

Code	3 – Shaft End Cover
1	Pump, cw w/o O.B. bearing
2	Pump, ccw w/o O.B. bearing
4	Pump, cw with O.B. bearing
5	Pump, ccw with O.B. bearing
8	Motor, bi-rot with O.B. bearing + 1/4" ODT drain
9	Motor, bi-rot w/o O.B. bearing + 1/4" ODT drain
18	Motor, bi-rot with O.B. bearing + 1/4" BSPP drain (78 only)
19	Motor, bi-rot w/o O.B. bearing + 1/4" BSPP drain (42 & 78 only)

Code	4 – Shaft End Cover
00	Clutch Shaft
42	SAE B 4-Bolt
46	SAE B 2/4-Bolt
78	SAE C 4-Bolt
97	SAE B 2-Bolt
98	SAE C 2-Bolt

Code	5 – Port End Cover		
SIDE PORTED			
CW	**CCW**	**IN**	**OUT**
SAE Split Flange (pump)			
EC	CE	2"	1-1/2"
EF	FE	2"	1-1/4"
EG	GE	2"	1"
EH	HE	1-1/2"	1-1/2"
EJ	JE	1-1/2"	1-1/4"
EK	KE	1-1/2"	1"
EL	LE	1-1/4"	1-1/4"
EM	ME	1-1/4"	1"
EN	NE	1"	1"
OE	EO	2"	-
OF	FO	1-1/2"	-
OG	GO	1-1/4"	-
OJ	JO	1"	-
OL	LO	-	1-1/2"
OM	MO	-	1-1/4"
ON	NO	-	1"
SAE Split Flange (motor)			
CR-Double		1-1/2"	1-1/2"
CS-Double		1-1/4"	1-1/4"
CT-Double		1"	1"
CV-Double		3/4"	3/4"
OD Tube Porting (pump)			
FB	BF	1-1/2"	1-1/4"
FC	CF	1-1/2"	1"
FG	GF	1-1/4"	1-1/4"
FJ	JF	1-1/4"	1"
FL	LF	1"	1"
BC	CB	1-1/2"	-
BG	GB	1-1/4"	-
BJ	JB	1"	-
BL	LB	-	1-1/4"
BN	NB	-	1"
OD Tube Porting (motor)			
VC-Double		1-1/4"	1-1/4"
VN-Double		1"	1"
VR-Double		3/4"	3/4"
Unported (pump)			
BI	IB	Unported	
Unported (motor)			
BA		Unported	

Code	6 – Gear Housing
AB	Pump
EB	Motor

Code	7 – Gear Width				
	Gear Width	$in.^3$ /rev.	cm^3 /rev.	Max Pressure	
				psi	bar
05	1/2"	1.28	20.9	3500	241
07	3/4"	1.91	31.3	3500	241
10	1"	2.55	41.8	3500	241
12	1-1/4"	3.19	52.2	3500	241
15	1-1/2"	3.83	62.7	3500	241
17	1-3/4"	4.46	73.1	3250	224
20	2"	5.10	83.6	3000	207
22	2-1/4"	5.74	94.0	2750	190
25	2-1/2"	6.38	104.5	2500	172

Code	8 – Shaft Type
7	SAE C Spline
11	SAE C Keyed
25	SAE B Spline
43	SAE BB Keyed
98	SAE BB Splined
For Single or Tandem Units - unless noted	

WARNING: This product can expose you to chemicals including lead or DEHP which are known to the state of California to cause cancer, birth defects, and other reproductive harm. www.p65warnings.ca.gov

																Tandem: Repeat if Necessary						
PG	1	350	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	6	6	7	7	10

Code	9 – Bearing Carriers			
DUAL OUTLET - PUMP ONLY				
Outlets: for clockwise porting the top port number comes first; for counter-clockwise porting the bottom port number comes first				
CW	**CCW**	**IN**	**OUT**	
SAE Split Flange				
AF	**FA**	2-1/2"	1-1/4"	1-1/4"
AG	**GA**	2-1/2"	1-1/4"	1"
AH	**HA**	2-1/2"	1"	1"
AM	**MA**	2"	1-1/4"	1-1/4"
AN	**NA**	2"	1-1/4"	1"
AP	**PA**	2"	1"	1"
AT	**TA**	1-1/2"	1-1/4"	1-1/4"
AU	**UA**	1-1/2"	1-1/4"	1"
AV	**VA**	1-1/2"	1"	1"
AW	**WA**	1-1/4"	1-1/4"	1-1/4"
AX	**XA**	1-1/4"	1-1/4"	1"
AY	**YA**	1-1/4"	1"	1"
AZ	**ZA**	1"	1"	1"
OD Tube Porting				
GM	**MG**	2"	1-1/4"	1-1/4"
GN	**NG**	2"	1-1/4"	1"
GP	**PG**	2"	1"	1"
GT	**TG**	1-1/2"	1-1/4"	1-1/4"
GU	**UG**	1-1/2"	1-1/4"	1"
GV	**VG**	1-1/2"	1"	1"
GW	**WG**	1-1/4"	1-1/4"	1-1/4"
GX	**XG**	1-1/4"	1-1/4"	1"
GY	**YG**	1-1/4"	1"	1"
GZ	**ZG**	1"	1"	1"

* Outlet port for rear section

Code	9 – Bearing Carriers (cont.)		
SINGLE OUTLET - PUMP ONLY			
Outlet for front section			
CW	**CCW**	**IN**	**OUT**
SAE Split Flange			
HB	**BH**	2"	1-1/2"
HC	**CH**	2"	1-1/4"
HF	**FH**	2"	1"
HL	**LH**	1-1/2"	1-1/2"
HM	**MH**	1-1/2"	1-1/4"
HN	**NH**	1-1/2"	1"
HO	**OH**	1-1/4"	1-1/4"
HP	**PH**	1-1/4"	1"
HQ	**QH**	* 1"	1"
RS	**SR**	1-1/4"	1"
OD Tube Porting			
KB	**BK**	2"	1-1/2"
KC	**CK**	2"	1-1/4"
KF	**FK**	2"	1"
KL	**LK**	1-1/2"	1-1/2"
KM	**MK**	1-1/2"	1-1/4"
KN	**NK**	1-1/2"	1"
KO	**OK**	1-1/4"	1-1/4"
KP	**PK**	1-1/4"	1"
KQ	**QK**	1"	1"
* Outlet port for rear section			

Code	9 – Bearing Carriers (cont.)		
COMBINED OUTLET			
Outlet for front section			
CW	**CCW**	**IN**	**OUT**
SAE Split Flange (pump)			
UN	**NU**	2"	1-1/2"
UO	**OU**	2"	1-1/4"
UP	**PU**	1-1/2"	1-1/2"
UQ	**QU**	1-1/2"	1-1/4"
UR	**RU**	1-1/4"	1-1/4"
SAE Split Flange (motor)			
AA-Double		2"	2"
BB-Double		1-1/2"	1-1/2"
CC-Double		1-1/4"	1-1/4"
EE-Double		1"	1"
FF-Double		3/4"	3/4"
OD Tube Porting (pump)			
PE	**EP**	2"	1-1/2"
PM	**MP**	2"	1-1/4"
PN	**NP**	1-1/2"	1-1/2"
PQ	**QP**	1-1/2"	1-1/4"
PR	**RP**	1-1/4"	1-1/4"
OD Tube Porting (motor)			
MM-Double		1-1/2"	1-1/2"
NN-Double		1-1/4"	1-1/4"
QQ-Double		1"	1"
RR-Double		3/4"	3/4"
Common Inlet Passage			
C	**D**	No Ports	

Code	10 – Connecting Shaft
1	Connecting Shaft
For connecting tandem units	

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- **Three-piece cast iron construction**
  High efficiency and long life in severe operating environments.
- **Low friction bushing**
  Provides strength in heavy duty applications.
- **Balanced thrust plates**
  Optimize pump efficiency.
- **Largest journal bearings available**
  for high pressure and long life.

Product Features	Description
Pump Type	Heavy Duty, Cast Iron, External Gear
Mounting	SAE Standard Flanges
Ports	SAE Split Flanges and other types of Threaded Ports, See Specifications
Shaft Style	SAE Splined, Keyed, and others, See Specifications
Maximum Speed	2400 RPM
Theor. displacement	See Specifications
Drive	CW, CCW, Double
Inlet pressure	15psig Max Press / 5inHg Max Vac
Outlet pressure	See Specifications
Hydraulic fluids	Mineral Oil, Water-Oil Emulsions 60/40HFB, Water-glycol, HFC, Phosphate-esters, HFD
Fluid viscocity	50 to 7500 SUS; Recommended 80 to 350 SUS
Port Connection	Flange/Straight Threaded

Product Features	Description
Fluid temperature	Mineral oil with standard seals: 0° to 180°F (-20°C to +80°C) Fire resistant fluids HFB, HFC 0° to 150°F (-20°C to +65°C)
Filtration	According to ISO 4406 code: • 20/18/15 at 2000 psi/140 bar • 19/17/14 at 3000 psi/210 bar • 17/15/12 at 4000 psi/275 bar
Direction of rotation (looking at the drive shaft)	CW, CCW, Bi-Rotational
Multiple pump assemblies	Single, Multiple, Piggyback, Thru-Drive
Separate or common inlet capability	Common

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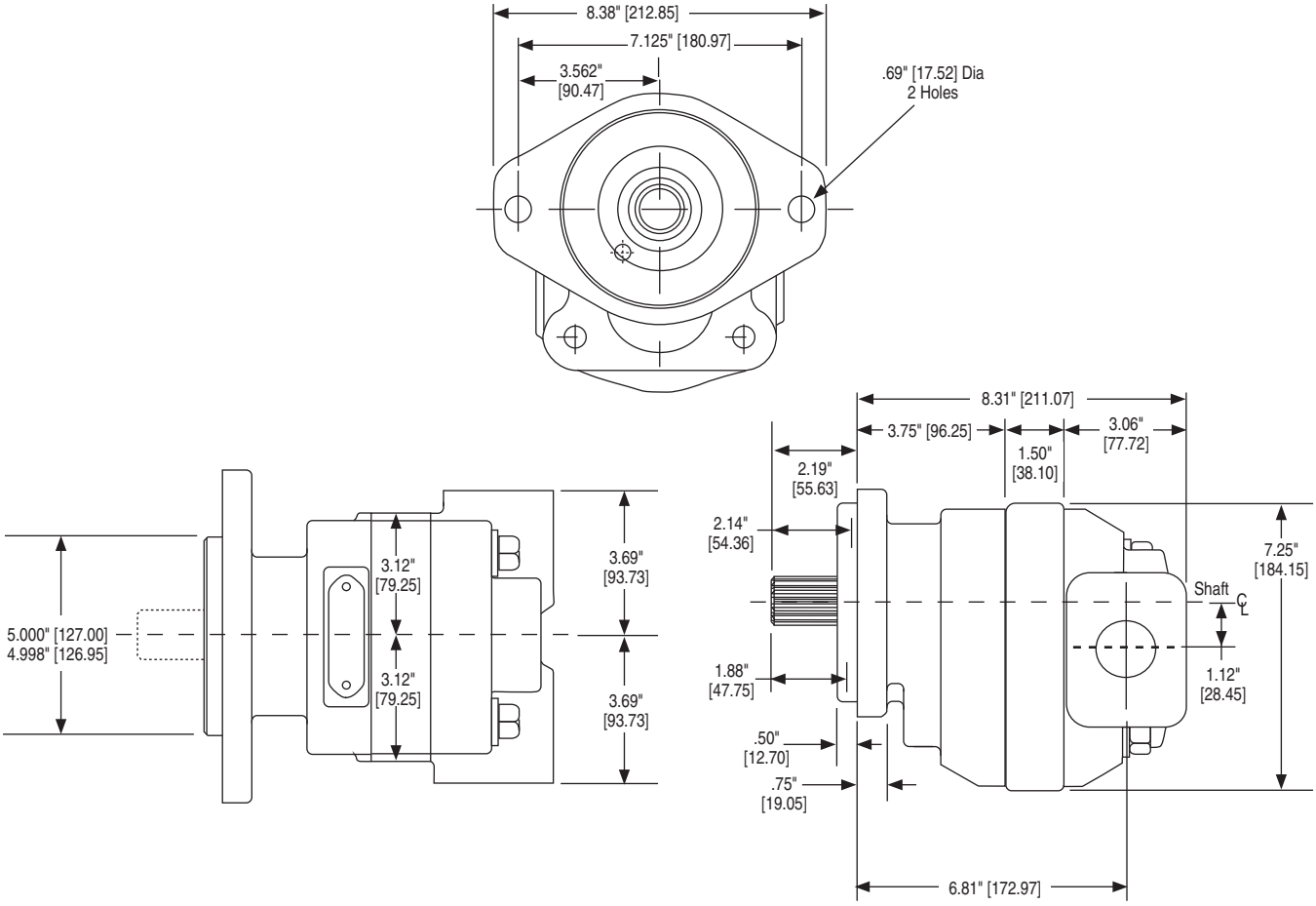
PGP365 Frame Size	07	10	12	15	17	20	22	25
Displacement – cm^3/rev (in^3/rev)	44.3 (2.70)	59.0 (3.60)	73.8 (4.50)	88.5 (5.40)	103.3 (6.30)	118.0 (7.20)	132.8 (8.10)	147.5 (9.00)
Max continuous pressure – bar (psi)	241 (3,500)	241 (3,500)	241 (3,500)	241 (3,500)	241 (3,500)	241 (3,500)	224 (3,250)	207 (3,000)
Max Speed – RPM	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400
Approximate Weight – Lbs. [kg]	53.5 [24.3]	56 [25.4]	58.5 [26.5]	61.0 [27.7]	63.5 [28.8]	66.0 [30]	68.5 [31.1]	71.0 [32.2]

PGM365 Frame Size	07	10	12	15	17	20	22	25
Displacement – cm^3/rev (in^3/rev)	44.3 (2.70)	59.0 (3.60)	73.8 (4.50)	88.5 (5.40)	103.3 (6.30)	118.0 (7.20)	132.8 (8.10)	147.5 (9.00)
Max continuous pressure – bar (psi)	241 (3,500)	241 (3,500)	241 (3,500)	241 (3,500)	241 (3,500)	241 (3,500)	224 (3,250)	207 (3,000)
Max Speed – RPM	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400
Approximate Weight – Lbs. [kg]	53.5 [24.3]	56 [25.4]	58.5 [26.5]	61.0 [27.7]	63.5 [28.8]	66.0 [30]	68.5 [31.1]	71.0 [32.2]

PGP/PGM365 Dimensions



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PGP365 Pump Performance Data

Speed RPM	Output Flow / Input Power	Gear Widths							
		3/4"	1"	1-1/4"	1-1/2"	1-3/4"	2"	2-1/4"	2-1/2"
900	GPM	8.0	11.5	14.9	18.4	21.8	25.4	28.8	32.3
	LPM	30	44	57	70	83	96	109	122
	HP	24	31	39	47	55	63	66	67
	kW	18	23	29	35	41	47	49	50
1200	GPM	11.5	16.2	20.8	25.5	30.0	34.7	39.3	44.0
	LPM	44	61	79	96	114	131	149	166
	HP	31	42	52	63	73	84	88	90
	kW	23	31	39	47	55	63	65	67
1500	GPM	15.0	20.9	26.6	32.5	38.2	44.1	49.8	55.6
	LPM	57	79	101	123	145	167	188	211
	HP	39	52	66	79	92	105	110	112
	kW	29	39	49	59	68	78	82	84
1800	GPM	18.5	25.6	32.5	39.5	46.4	53.4	60.3	67.3
	LPM	70	97	123	149	176	202	228	255
	HP	47	63	79	94	110	126	131	135
	kW	35	47	59	70	82	94	98	101
2100	GPM	22.0	30.2	38.3	46.5	54.6	62.8	70.8	79.0
	LPM	83	114	145	176	207	238	268	299
	HP	55	73	92	110	128	147	153	157
	kW	41	55	68	82	96	110	114	117
2400	GPM	25.6	34.9	44.2	53.5	62.8	72.1	81.4	90.7
	LPM	97	132	167	203	238	273	308	343
	HP	63	84	105	126	147	168	175	180
	kW	47	63	78	94	110	125	131	134

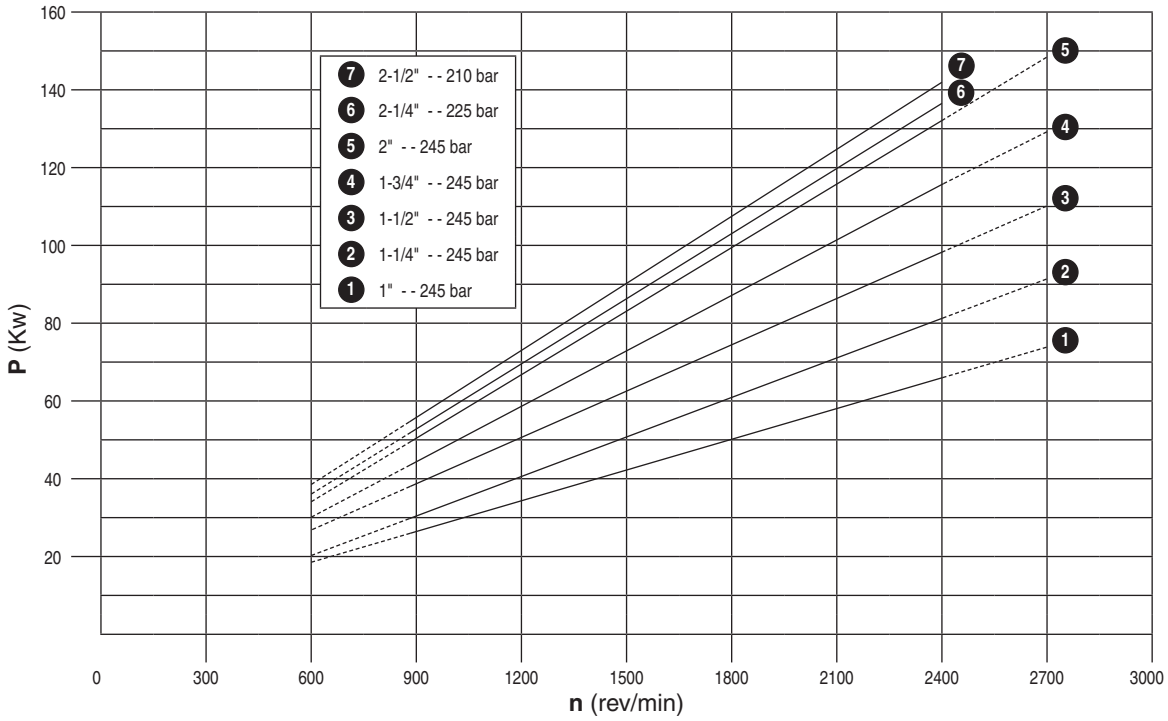
PGM365 Motor Performance Data

Speed RPM	Output Torque	Gear Widths													
		1" 3500 psi		1-1/4" 3500 psi		1-1/2" 3500 psi		1-3/4" 3500 psi		2" 3500 psi		2-1/4" 3250 psi		2-1/2" 3000 psi	
		A	B	A	B	A	B	A	B	A	B	A	B	A	B
900	in/lbs	18.4	1865	22.0	2355	25.6	2860	29.2	3370	32.9	3850	36.5	4020	40.1	4125
	Nm	70	210.7	83	266.1	97	323.1	111	380.8	124	435.0	138	454.2	152	466.1
1200	in/lbs	23.3	1845	28.1	2330	32.9	2830	37.6	3335	42.4	3810	47.2	3980	52.0	4080
	Nm	88	208.5	106	263.3	124	319.7	142	376.8	160	430.5	179	449.7	197	461.0
1500	in/lbs	28.2	1815	34.1	2295	40.1	2780	46.0	3280	52.0	3750	57.9	3915	63.8	4020
	Nm	107	205.1	129	259.3	152	314.1	174	370.6	197	423.7	219	442.3	242	454.2
1800	in/lbs	33.1	1805	40.2	2280	47.3	2765	54.4	3265	61.5	3730	68.6	3895	75.7	3995
	Nm	125	203.9	152	257.6	179	312.4	206	368.9	233	421.4	260	440.1	287	451.4
2100	in/lbs	37.9	1755	46.2	2220	54.4	2690	62.8	3160	71.1	3610	79.3	3770	87.6	3865
	Nm	144	198.3	175	250.8	206	303.9	238	357.0	269	407.9	300	426.0	332	436.7
2400	in/lbs	42.8	1705	52.3	2155	61.7	2615	71.2	3055	80.6	3490	90.1	3645	99.5	3740
	Nm	162	192.6	198	243.5	234	295.5	269	345.2	305	394.3	341	411.8	377	422.6

A: Input Flow GPM/LPM; B: Output Torque IN/LBS/Nm
Note: In accordance with our policy of continuing product development, we reserve the right to change specifications shown in this
catalog without notice.

WARNING: This product can expose you to chemicals including lead or DEHP which are known to the state of California to cause cancer, birth defects, and other reproductive harm. www.p65warnings.ca.gov

Input



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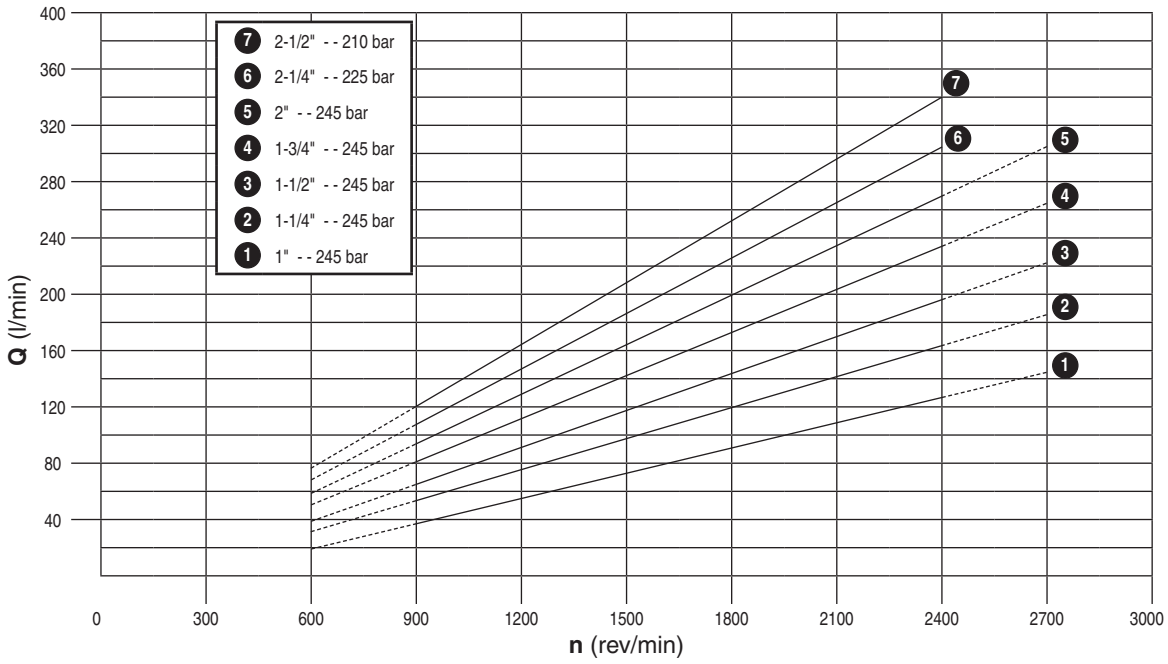

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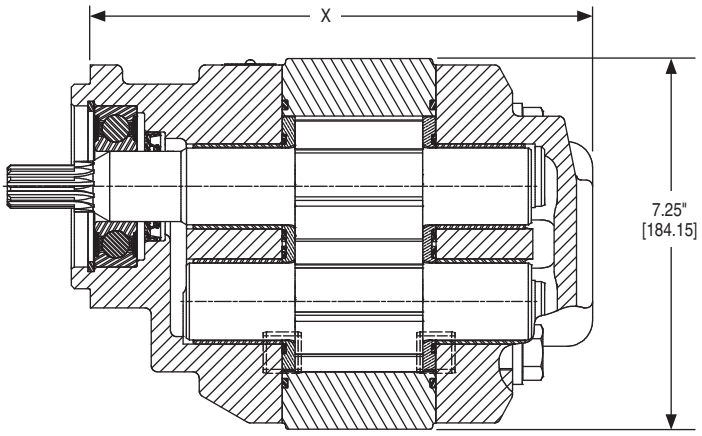
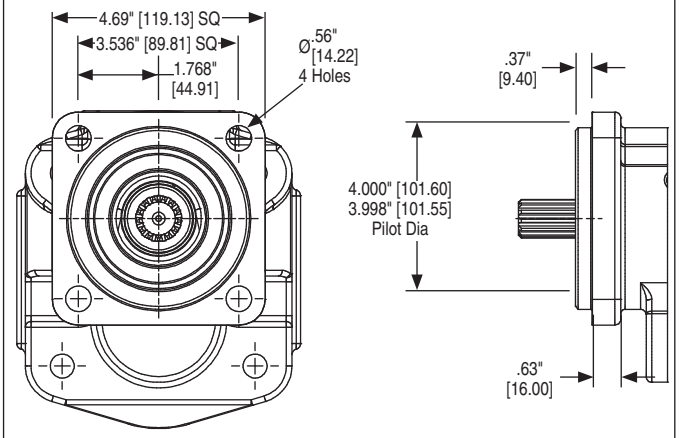
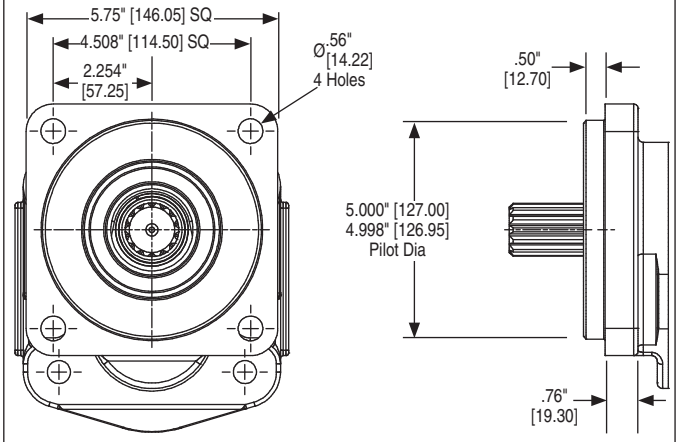


X DIMENSION								
SEC CODE	**07**	**10**	**12**	**15**	**17**	**20**	**22**	**25**
42	8.06" [204.72]	8.31" [211.07]	8.56" [217.42]	8.81" [223.77]	9.06" [230.12]	9.31" [236.47]	9.56" [242.82]	9.81" [249.17]
78	8.06" [204.72]	8.31" [211.07]	8.56" [217.42]	8.81" [223.77]	9.06" [230.12]	9.31" [236.47]	9.56" [242.82]	9.81" [249.17]
97	8.06" [204.72]	8.31" [211.07]	8.56" [217.42]	8.81" [223.77]	9.06" [230.12]	9.31" [236.47]	9.56" [242.82]	9.81" [249.17]
98	8.06" [204.72]	8.31" [211.07]	8.56" [217.42]	8.81" [223.77]	9.06" [230.12]	9.31" [236.47]	9.56" [242.82]	9.81" [249.17]

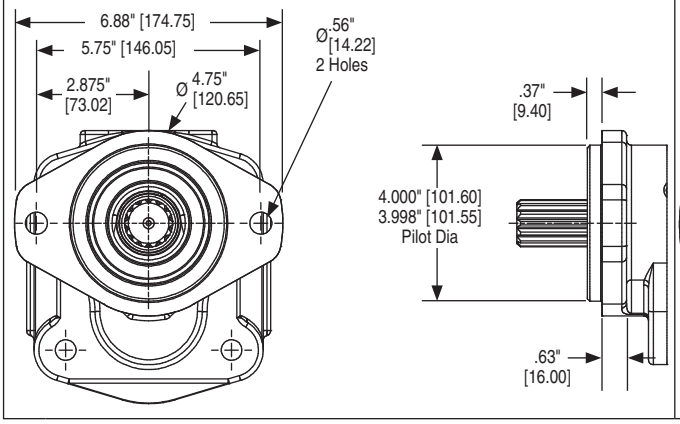
42 **SAE B 4-Bolt**



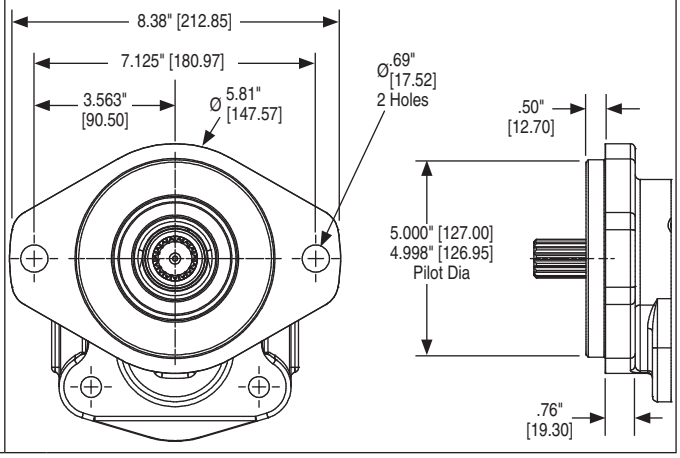
78 **SAE C 4-Bolt**



97 **SAE B 2-Bolt**



98 **SAE C 2-Bolt**



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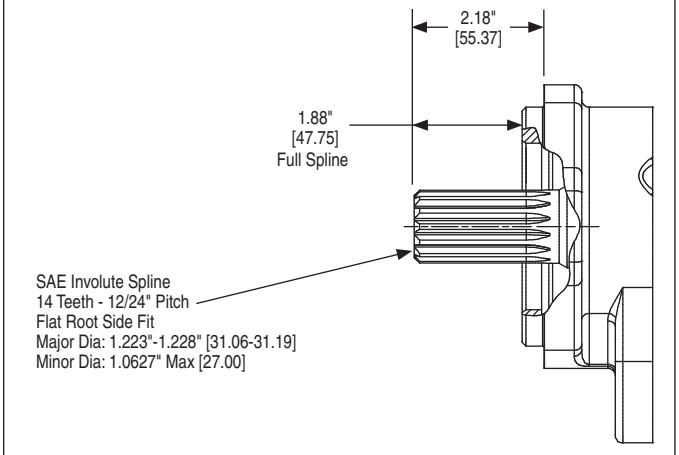
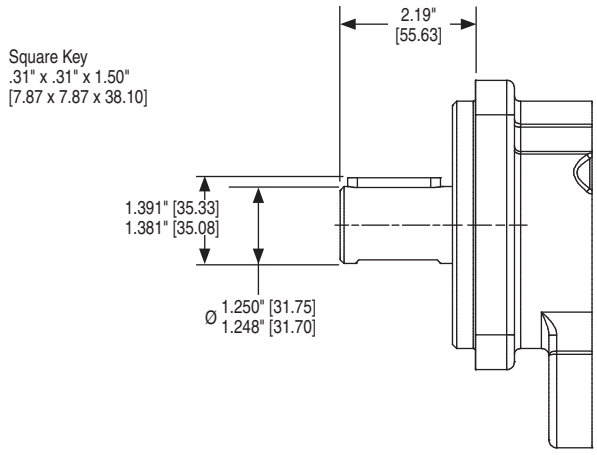
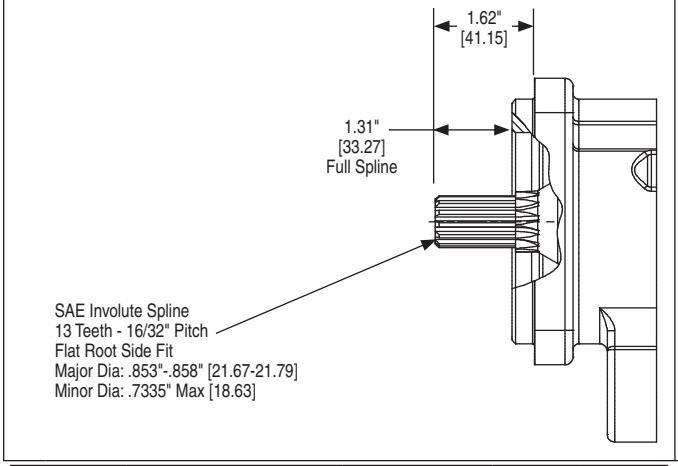
7 SAE C Spline



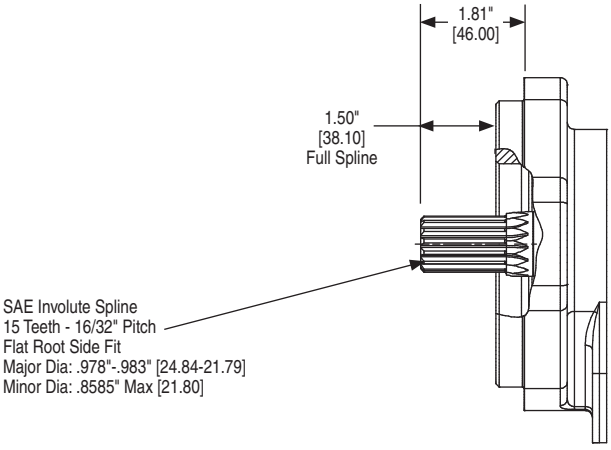
11 SAE C Keyed



25 SAE B Spline



98 SAE BB Spline



Shaft Style		Integral: 1 2 pieces: 2	Maximum Torque	
			lb-ft	Nm
SAE B	Splined - 13 Teeth	1 2	242 242	328 328
	7/8" Keyed	1 2	167 167	226 226
SAE BB	Splined - 15 Teeth	1 2	371 371	503 503
	1" Keyed	1 2	250 250	339 339
SAE C	Splined - 14 Teeth	1 2	708 533	960 723
	1.25" Keyed	1 2	500 500	678 678
Connecting Shaft			533	723

Torque (lb-ft) = $\frac{\text{Pressure (PSI) x Displacement (in}^3\text{/rev)}}{75.4}$

Torque (Nm) = $\frac{\text{Pressure (Bar) x Displacement (cc/rev)}}{62.8}$

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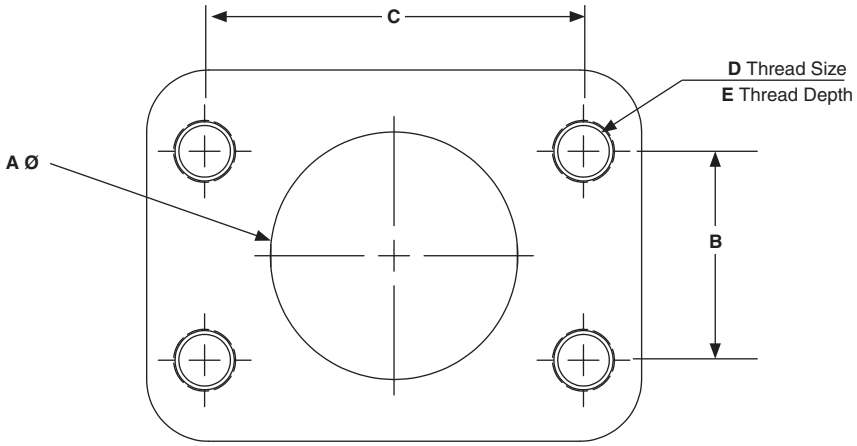
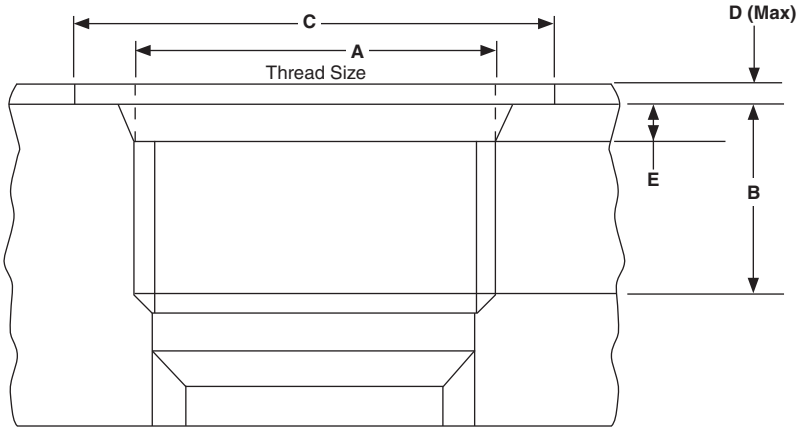
SAE Flanged Ports UNC Thread (SSS)

A		B		C		D	E	
inch	mm	inch	mm	inch	mm	UNC	inch	mm
0.50	12.7	0.69	17.5	1.50	38.1	5/16"-18	0.94	23.9
0.75	19.1	0.88	22.3	1.88	47.7	3/8"-16	0.88	22.4
1.00	25.4	1.03	26.2	2.06	52.2	3/8"-16	0.88	22.4
1.25	31.8	1.19	30.2	2.31	58.7	7/16"-14	1.12	28.4
1.50	38.1	1.41	35.7	2.75	69.9	1/2"-13	1.06	26.9
2.00	50.8	1.69	42.9	3.06	77.8	1/2"-13	1.06	26.9
2.50	63.5	2.00	50.8	3.50	88.9	1/2"-13	1.19	30.2



SAE Straight Thread (ODT)

ODT	A UNF	B		C		D		E	
		inch	mm	inch	mm	inch	mm	inch	mm
1/2"	3/4"-16	.56	14.3	1.19	30.2	.09	2.4	.10	2.55
5/8"	7/8"-14	.66	16.7	1.34	34.1	.09	2.4	.10	2.55
3/4"	1-1/16"-12	.75	19.1	1.62	41.3	.09	2.4	.13	3.30
1"	1-5/16"-12	.75	19.1	1.91	48.5	.09	2.4	.13	3.30
1-1/4"	1-5/8"-12	.75	19.1	2.27	57.7	.09	2.4	.13	3.35
1-1/2"	1-7/8"-12	.75	19.1	2.56	65.0	.09	2.4	.13	3.35
2"	2-1/2"-12	.75	19.1	3.48	88.4	.09	2.4	.13	3.35



WARNING: This product can expose you to chemicals including lead or DEHP which are known to the state of California to cause cancer, birth defects, and other reproductive harm. www.p65warnings.ca.gov

																Tandem: Repeat if Necessary						
PG	1	365	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	6	6	7	7	10

Code	1 – Type
P	Pump
M	Motor

Code	2 – Unit
A	Single Unit
B	Tandem Unit (flush studs)
C	Single or Tandem with two-piece shaft (O.B. bearing required)
L	Unit with Extended Studs

Code	3 – Shaft End Cover
1	Pump, cw w/o O.B. bearing
2	Pump, ccw w/o O.B. bearing
4	Pump, cw with O.B. bearing
5	Pump, ccw with O.B. bearing
8	Motor, bi-rot with O.B. bearing + 1/4" ODT drain
9	Motor, bi-rot w/o O.B. bearing + 1/4" ODT drain

Code	4 – Shaft End Cover
42	SAE B 4-Bolt
78	SAE C 4-Bolt
97	SAE B 2-Bolt
98	SAE C 2-Bolt

Code	5 – Port End Cover		
SIDE PORTED			
CW	**CCW**	**IN**	**OUT**
SAE Split Flange (pump)			
EC	CE	2"	1-1/2"
EF	FE	2"	1-1/4"
EG	GE	2"	1"
EH	HE	1-1/2"	1-1/2"
EJ	JE	1-1/2"	1-1/4"
EK	KE	1-1/2"	1"
EL	LE	1-1/4"	1-1/4"
EM	ME	1-1/4"	1"
EN	NE	1"	1"
OE	EO	2"	-
OF	FO	1-1/2"	-
OG	GO	1-1/4"	-
OJ	JO	1"	-
OL	LO	-	1-1/2"
OM	MO	-	1-1/4"
ON	NO	-	1"
SAE Split Flange (motor)			
CR-Double		1-1/2"	1-1/2"
CS-Double		1-1/4"	1-1/4"
CT-Double		1"	1"
CV-Double		3/4"	3/4"
OD Tube Porting (pump)			
FB	BF	1-1/2"	1-1/4"
FC	CF	1-1/2"	1"
FG	GF	1-1/4"	1-1/4"
FJ	JF	1-1/4"	1"
FL	LF	1"	1"
BC	CB	1-1/2"	-
BG	GB	1-1/4"	-
BJ	JB	1"	-
BL	LB	-	1-1/4"
BN	NB	-	1"
OD Tube Porting (motor)			
VC-Double		1-1/4"	1-1/4"
VN-Double		1"	1"
VR-Double		3/4"	3/4"
Unported (pump)			
BI	IB	Unported	
Unported (motor)			
BA		Unported	

Code	6 – Gear Housing
AB	Pump
EB	Motor

Code	7 – Gear Width				
	Gear Width	$in.^3$ /rev.	cm^3 /rev.	Max Pressure	
				psi	bar
07	3/4"	2.70	44.3	3500	241
10	1"	3.60	59.0	3500	241
12	1-1/4"	4.50	73.8	3500	241
15	1-1/2"	5.40	88.5	3500	241
17	1-3/4"	6.30	103.3	3500	241
20	2"	7.20	118.0	3500	241
22	2-1/4"	8.10	132.8	3250	224
25	2-1/2"	9.00	147.5	3000	207

Code	8 – Shaft Type
7	SAE C Spline
11	SAE C Keyed
25	SAE B Spline
98	SAE BB Splined (two-piece only)
For Single or Tandem Units - unless noted	

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																Tandem: Repeat if Necessary						
PG	1	365	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	6	6	7	7	10

Code	9 – Bearing Carriers			
DUAL OUTLET - PUMP ONLY				
Outlets: for clockwise porting the top port number comes first; for counter-clockwise porting the bottom port number comes first				
CW	**CCW**	**IN**	**OUT**	
SAE Split Flange				
AC	**CA**	2-1/2"	1-1/2"	1-1/2"
AD	**DA**	2-1/2"	1-1/2"	1-1/4"
AE	**EA**	2-1/2"	1-1/2"	1"
AF	**FA**	2-1/2"	1-1/4"	1-1/4"
AG	**GA**	2-1/2"	1-1/4"	1"
AH	**HA**	2-1/2"	1"	1"
AJ	**JA**	2"	1-1/2"	1-1/2"
AK	**KA**	2"	1-1/2"	1-1/4"
AL	**LA**	2"	1-1/2"	1"
AM	**MA**	2"	1-1/4"	1-1/4"
AN	**NA**	2"	1-1/4"	1"
AP	**PA**	2"	1"	1"
AQ	**QA**	1-1/2"	1-1/2"	1-1/2"
AR	**RA**	1-1/2"	1-1/2"	1-1/4"
AS	**SA**	1-1/2"	1-1/2"	1"
AT	**TA**	1-1/2"	1-1/4"	1-1/4"
AU	**UA**	1-1/2"	1-1/4"	1"
AV	**VA**	1-1/2"	1"	1"
AW	**WA**	1-1/4"	1-1/4"	1-1/4"
AX	**XA**	1-1/4"	1-1/4"	1"
AY	**YA**	1-1/4"	1"	1"
AZ	**ZA**	1"	1"	1"
OD Tube Porting				
GJ	**JG**	2"	1-1/2"	1-1/2"
GK	**KG**	2"	1-1/2"	1-1/4"
GL	**LG**	2"	1-1/2"	1"
GM	**MG**	2"	1-1/4"	1-1/4"
GN	**NG**	2"	1-1/4"	1"
GP	**PG**	2"	1"	1"
GQ	**QG**	1-1/2"	1-1/2"	1-1/2"
GR	**RG**	1-1/2"	1-1/2"	1-1/4"
GS	**SG**	1-1/2"	1-1/2"	1"
GT	**TG**	1-1/2"	1-1/4"	1-1/4"
GU	**UG**	1-1/2"	1-1/4"	1"
GV	**VG**	1-1/2"	1"	1"
GW	**WG**	1-1/4"	1-1/4"	1-1/4"
GX	**XG**	1-1/4"	1-1/4"	1"
GY	**YG**	1-1/4"	1"	1"
GZ	**ZG**	1"	1"	1"

* Outlet port for rear section

Code	9 – Bearing Carriers (cont.)		
SINGLE OUTLET - PUMP ONLY			
Outlet for front section			
CW	**CCW**	**IN**	**OUT**
SAE Split Flange			
CJ	**JC**	2-1/2"	1-1/2"
CL	**LC**	2-1/2"	1-1/4"
CM	**MC**	2-1/2"	1"
HB	**BH**	2"	1-1/2"
HC	**CH**	2"	1-1/4"
HF	**FH**	2"	1"
HL	**LH**	1-1/2"	1-1/2"
HM	**MH**	1-1/2"	1-1/4"
HN	**NH**	1-1/2"	1"
HO	**OH**	1-1/4"	1-1/4"
HP	**PH**	1-1/4"	1"
HQ	**QH**	1"	1"
NR	**RN**	2-1/2"	1-1/2"
RS	**SR**	1-1/4"	1"
OD Tube Porting			
KB	**BK**	2"	1-1/2"
KC	**CK**	2"	1-1/4"
KF	**FK**	2"	1"
KL	**LK**	1-1/2"	1-1/2"
KM	**MK**	1-1/2"	1-1/4"
KN	**NK**	1-1/2"	1"
KO	**OK**	1-1/4"	1-1/4"
KP	**PK**	1-1/4"	1"
KQ	**QK**	1"	1"

* Outlet port for rear section

Code	9 – Bearing Carriers (cont.)		
COMBINED OUTLET			
Outlet for front section			
CW	**CCW**	**IN**	**OUT**
SAE Split Flange (pump)			
UC	**CU**	2-1/2"	1-1/2"
UF	**FU**	2-1/2"	1-1/4"
UN	**NU**	2"	1-1/2"
UO	**OU**	2"	1-1/4"
UP	**PU**	1-1/2"	1-1/2"
UQ	**QU**	1-1/2"	1-1/4"
UR	**RU**	1-1/4"	1-1/4"
SAE Split Flange (motor)			
AA-Double		2"	2"
BB-Double		1-1/2"	1-1/2"
CC-Double		1-1/4"	1-1/4"
EE-Double		1"	1"
FF-Double		3/4"	3/4"
OD Tube Porting (pump)			
PE	**EP**	2"	1-1/2"
PM	**MP**	2"	1-1/4"
PN	**NP**	1-1/2"	1-1/2"
PQ	**QP**	1-1/2"	1-1/4"
PR	**RP**	1-1/4"	1-1/4"
OD Tube Porting (motor)			
MM-Double		1-1/2"	1-1/2"
NN-Double		1-1/4"	1-1/4"
QQ-Double		1"	1"
RR-Double		3/4"	3/4"

Code	10 – Connecting Shaft
1	Connecting Shaft
For connecting tandem units	

WARNING: This product can expose you to chemicals including lead or DEHP which are known to the state of California to cause cancer, birth defects, and other reproductive harm. www.p65warnings.ca.gov

Notes

Notes

PARKER-HANNIFIN CORPORATION
OFFER OF SALE

1. **Definitions**. As used herein, the following terms have the meanings indicated.
"Buyer" means any customer receiving a Quote for Products.
"Buyer's Property" means any tools, patterns, plans, drawings, designs, specifications materials, equipment, or information furnished by Buyer, or which are or become Buyer's property.
"Confidential Information" means any technical, commercial, or other proprietary information of Seller, including, without limitation, pricing, technical drawings or prints and/or part lists, which has been or will be disclosed, delivered, or made available, whether directly or indirectly, to Buyer.
"Goods" means any tangible part, system or component to be supplied by Seller.
"Intellectual Property Rights" means any patents, trademarks, copyrights, trade dress, trade secrets or similar rights.
"Products" means the Goods, Services and/or Software as described in a Quote.
"Quote" means the offer or proposal made by Seller to Buyer for the supply of Products.
"Seller" means Parker-Hannifin Corporation, including all divisions, subsidiaries and businesses selling Products under these Terms.
"Seller's IP" means patents, trademarks, copyrights, or other intellectual property rights relating to the Products, including without limitation, names, designs, images, drawings, models, software, templates, information, any improvements or creations or other intellectual property developed prior to or during the relationship contemplated herein.
"Services" means any services to be provided by Seller.
"Software" means any software related to the Goods, whether embedded or separately downloaded.
"Special Tooling" means equipment acquired by Seller or otherwise owned by Seller necessary to manufacture Goods, including but not limited to tools, jigs, and fixtures.
"Terms" means the terms and conditions of this Offer of Sale.

2. Terms. All sales of Products by Seller will be governed by, and are expressly conditioned upon Buyer's assent to, these Terms. These Terms are incorporated into any Quote provided by Seller to Buyer. Buyer's order for any Products whether communicated to Seller verbally, in writing, by electronic data interface or other electronic commerce, shall constitute acceptance of these Terms. Seller objects to any contrary or additional terms or conditions of Buyer. Reference in Seller's order acknowledgement to Buyer's purchase order or purchase order number shall in no way constitute an acceptance of any of Buyer's terms or conditions of purchase. Any Quote made by Seller to Buyer shall be considered a firm and definite offer and shall not be deemed to be otherwise despite any language on the face of the Quote. Seller reserves all rights to accept or reject any purported acceptance by Buyer to Seller's Quote if such purported acceptance attempts to vary the terms of the Quote. If Seller ships Products after Buyer issues an acceptance to the Quote, any additional or different terms proposed by Buyer will not become part of the parties' business relationship unless agreed to in a writing that is signed by an authorized representative of Seller, excluding email correspondence. If the transaction proceeds without such agreement on the part of Seller, the business relationship will be governed solely by these Terms and the specific terms in Seller's Quote.

3. Price; Payment. The Products set forth in the Quote are offered for sale at the prices indicated in the Quote. Unless otherwise specifically stated in the Quote, prices are valid for thirty (30) days and do not include any sales, use, or other taxes or duties. Seller reserves the right to modify prices for any reason and at any time by giving ten (10) days prior written notice. Unless otherwise specified by Seller, all prices are F.C.A. Seller's facility (INCOTERMS 2020). All sales are contingent upon credit approval and full payment for all purchases is due thirty (30) days from the date of invoice (or such date as may be specified in the Quote). Under any circumstances, Buyer may not withhold or suspend payment of any amounts due and payable as a deduction, set-off or recoupment of any amount, claim or dispute with Seller. Unpaid invoices beyond the specified payment date incur interest at the rate of 1.5% per month or the maximum allowable rate under applicable law. Seller reserves the right to require advance payment or provision of securities for first and subsequent deliveries if there is any doubt, in Seller's sole determination, regarding the Buyer's creditworthiness or for other business reasons. If the requested advance payment or securities are not provided to Seller's satisfaction, Seller reserves the right to suspend performance or reject the purchase order, in whole or in part, without prejudice to Seller's other rights or remedies, including the right to full compensation. Seller may revoke or shorten any payment periods previously granted in Seller's sole determination. The rights and remedies herein reserved to Seller are cumulative and in addition to any other or further rights and remedies available at law or in equity. No waiver by Seller of any breach by Buyer of any provision of these terms will constitute a waiver by Seller of any other breach of such provision.

4. Shipment; Delivery; Title and Risk of Loss. All delivery dates are approximate, and Seller is not responsible for damages or additional costs resulting from any delay. All deliveries are subject to our ability to procure materials from our suppliers. Regardless of the manner of shipment, delivery occurs and title and risk of loss or damage pass to Buyer, upon placement of the Products with the carrier at Seller's facility. Unless otherwise agreed prior to shipment and for domestic delivery locations only, Seller will select and arrange, at Buyer's sole expense, the carrier and means of delivery. When Seller selects and arranges the carrier and means of delivery, freight and insurance costs for shipment to the designated delivery location will be prepaid by Seller and added as a separate line item to the invoice. Buyer shall be responsible for any additional shipping charges incurred by Seller due to Buyer's acts or omissions. Buyer shall not return or repackage any Products without the prior written authorization from Seller, and any return shall be at the sole cost and expense of Buyer.

5. Warranty. The warranty for the Products is as follows:
(i) Goods are warranted against defects in material or workmanship for a period of twelve (12) months from the date of delivery or 2,000 hours of use, whichever occurs first; (ii) Services shall be performed in accordance with generally accepted practices and using the degree of care and skill that is ordinarily exercised and customary in the field to which the Services pertain and are warranted for a period of six (6) months from the date of completion of the Services; and (iii) Software is only warranted to perform in accordance with applicable specifications provided by Seller to Buyer for ninety (90) days from the date of delivery or, when downloaded by a Buyer or end-user, from the date of the initial download. All prices are based upon the exclusive limited warranty stated above, and upon the following disclaimer: **EXEMPTION CLAUSE; DISCLAIMER OF WARRANTY, CONDITIONS, REPRESENTATIONS: THIS WARRANTY IS THE SOLE AND ENTIRE WARRANTY, CONDITION, AND REPRESENTATION, PERTAINING TO PRODUCTS. SELLER DISCLAIMS ALL OTHER WARRANTIES, CONDITIONS, AND REPRESENTATIONS, WHETHER STATUTORY, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THOSE RELATING TO DESIGN, NONINFRINGEMENT, MERCHANTABILITY, AND FITNESS FOR A PARTICULAR PURPOSE. SELLER DOES NOT WARRANT THAT THE SOFTWARE IS ERROR-FREE OR FAULT-TOLERANT, OR THAT BUYER'S USE THEREOF WILL BE SECURE OR UNINTERRUPTED, UNLESS OTHERWISE AUTHORIZED IN WRITING BY SELLER, THE SOFTWARE SHALL NOT BE USED IN CONNECTION WITH HAZARDOUS OR HIGH-RISK ACTIVITIES OR ENVIRONMENTS. EXCEPT AS EXPRESSLY STATED HEREIN, ALL PRODUCTS ARE PROVIDED "AS IS".**

6. Claims; Commencement of Actions. Buyer shall promptly inspect all Products upon receipt. No claims for shortages will be allowed unless reported to Seller within ten (10) days of delivery. Buyer shall notify Seller of any alleged breach of warranty within thirty (30) days after the date the non-conformance is or should have been discovered by Buyer. Any claim or action against Seller based upon breach of contract or any other theory, including tort, negligence, or otherwise must be commenced within twelve (12) months from the date of the alleged breach or other alleged event, without regard to the date of discovery.

7. LIMITATION OF LIABILITY. IN THE EVENT OF A BREACH OF WARRANTY, SELLER WILL, AT ITS OPTION, REPAIR OR REPLACE THE NON-CONFORMING PRODUCTS, RE-PERFORM THE SERVICES, OR REFUND THE PURCHASE PRICE PAID WITHIN A REASONABLE PERIOD OF TIME. IN NO EVENT IS SELLER LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES INCLUDING ANY LOSS OF REVENUE OR PROFITS, WHETHER BASED IN CONTRACT, TORT OR OTHER LEGAL THEORY. IN NO EVENT SHALL SELLER'S LIABILITY UNDER ANY CLAIM MADE BY BUYER EXCEED THE PURCHASE PRICE PAID FOR THE PRODUCTS.

8. Confidential Information. Buyer acknowledges and agrees that Confidential Information has been and will be received in confidence and will remain the property of Seller. Buyer further agrees that it will not use Seller's Confidential Information for any purpose other than for the benefit of Seller and shall return all such Confidential Information to Seller within thirty (30) days upon request.

9. Loss to Buyer's Property. Buyer's Property will be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer ordering the Products manufactured using Buyer's Property.

Also, Seller shall not be responsible for any loss or damage to Buyer's Property while it is in Seller's possession or control.

10. Special Tooling. Seller may impose a tooling charge for any Special Tooling. Special Tooling shall be and remain Seller's property. In no event will Buyer acquire any interest in the Special Tooling, even if such Special Tooling has been specially converted or adapted for manufacture of Goods for Buyer and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller has the right to alter, discard or otherwise dispose of any Special Tooling or other property owned by Seller in its sole determination at any time.

11. Security Interest. To secure payment of all sums due from Buyer, Seller retains a security interest in all Products delivered to Buyer and, Buyer's acceptance of these Terms is deemed to be a Security Agreement under the Uniform Commercial Code. Buyer authorizes Seller as its attorney to execute and file on Buyer's behalf all documents Seller deems necessary to perfect Seller's security interest.

12. User Responsibility. Buyer, through its own analysis and testing, is solely responsible for making the final selection of the Products and assuring that all performance, endurance, maintenance, safety and warning requirements of the application of the Products are met. Buyer must analyze all aspects of the application and follow applicable industry standards, specifications, and any technical information provided with the Quote or the Products, such as Seller's instructions, guides and specifications. If Seller provides options of or for Products based upon data or specifications provided by Buyer, Buyer is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the Products. In the event Buyer is not the end-user of the Products, Buyer will ensure such end-user complies with this paragraph.

13. Use of Products, Indemnity by Buyer. Buyer shall comply with all instructions, guides and specifications provided by Seller with the Quote or the Products. If Buyer uses or resells the Products in any way prohibited by Seller's instructions, guides or specifications, or Buyer otherwise fails to comply with Seller's instructions, guides and specifications, Buyer acknowledges that any such use, resale, or non-compliance is at Buyer's sole risk. Further, Buyer shall indemnify, defend, and hold Seller harmless from any losses, claims, liabilities, damages, lawsuits, judgments and costs (including attorney fees and defense costs), whether for personal injury, property damage, intellectual property infringement or any other claim, arising out of or in connection with: (a) improper selection, design, specification, application, or any misuse of Products; (b) any act or omission, negligent or otherwise, of Buyer; (c) Seller's use of Buyer's Property; (d) damage to the Products from an external cause, repair or attempted repair by anyone other than Seller, failure to follow instructions, guides and specifications provided by Seller, use with goods not provided by Seller, or opening, modifying, deconstructing, tampering with or repackaging the Products; or (e) Buyer's failure to comply with these Terms, including any legal or administrative proceedings, collection efforts, or other actions arising from or relating to such failure to comply. Seller shall not indemnify Buyer under any circumstance except as otherwise provided in these Terms.

14. Cancellations and Changes. Buyer may not cancel or modify, including but not limited to movement of delivery dates for the Products, any order for any reason except with Seller's written consent and upon terms that will indemnify, defend and hold Seller harmless against all direct, incidental and consequential loss or damage and any additional expense. Seller, at any time, may change features, specifications, designs and availability of Products.

15. Assignment. Buyer may not assign its rights or obligations without the prior written consent of Seller.

16. Force Majeure. Seller is not liable for delay or failure to perform any of its obligations by reason of any events or circumstances beyond its reasonable control. Such circumstances include without limitation: accidents, labor disputes or stoppages, government acts or orders, acts of nature, pandemics, epidemics, other widespread illness, or public health emergency, cyber related disruptions, cyber-attacks, ransomware sabotage, delays or failures in delivery from carriers or suppliers, shortages of materials, sudden increases in the price of raw material or components, shutdowns or slowdowns affecting the supply of raw materials or components, or the transportation thereof, oil shortages or oil price increases, energy crisis, energy or fuel interruption, war (whether declared or not) or the serious threat of same, riots, rebellions, acts of terrorism, embargoes, fire or any reason whether similar to the foregoing or otherwise. Seller will resume performance as soon as practicable after the event of force majeure has been removed. All delivery dates affected by an event of force majeure shall be tolled for the duration of such event of force majeure and rescheduled for mutually agreed dates as soon as practicable after the event of force majeure ceases to exist. The right to allocate capacity is in the Seller's sole discretion. An event of force majeure shall not include financial distress, insolvency, bankruptcy, or other similar conditions affecting one of the parties, affiliates and/or subcontractors. An event of force majeure in the meaning of these Terms means any circumstances beyond Seller's control that permanently or temporarily hinders performance, even where that circumstance was already foreseen. Buyer shall not be entitled to cancel any orders following its claim of an event of force majeure.

17. Waiver and Severability. Failure to enforce any provision of these Terms will not invalidate that provision; nor will any such failure prejudice either party's right to enforce that provision in the future. Invalidation of any provision of these Terms shall not invalidate any other provision herein and, the remaining provisions will remain in full force and effect.

18. Duration. Unless otherwise stated in the Quote, any agreement governed by or arising from these Terms shall: (a) be for an initial duration of one (1) year; and (b) shall automatically renew for successive one-year terms unless terminated by Buyer with at least 180-days written notice to Seller or if Seller terminates the agreement pursuant to Section 19 of these Terms.

19. Termination. Seller may, without liability to Buyer, terminate any agreement governed by or arising from these Terms for any reason and at any time by giving Buyer thirty (30) days prior written notice. Seller may immediately terminate, in writing, if Buyer: (a) breaches any provision of these Terms, (b) becomes or is deemed insolvent, (c) appoints or has appointed a trustee, receiver or custodian for all or any part of Buyer's property,(d) files a petition for relief in bankruptcy on its own behalf, or one is filed against Buyer by a third party, (e) makes an assignment for the benefit of creditors; or (f) dissolves its business or liquidates all or a majority of its assets.

20. Ownership of Rights. Buyer agrees that (a) Seller (and/or its affiliates) owns or is the valid licensee of Seller's IP and (b) the furnishing of information, related documents or other materials by Seller to Buyer does not grant or transfer any ownership interest or license in or to Seller's IP to Buyer, unless expressly agreed in writing. Without limiting the foregoing, Seller retains ownership of all Software supplied to Buyer. In no event shall Buyer obtain any greater right in and to the Software than a right in a license limited to the use thereof and subject to compliance with any other terms provided with the Software. Buyer further agrees that it will not, directly or through intermediaries, reverse engineer, decompile, or disassemble any Software (including firmware) comprising or contained within a Product, except and only to the extent that such activity may be expressly permitted, either by applicable law or, in the case of open source software, the applicable open source license.

21. Indemnity for Infringement of Intellectual Property Rights. Seller is not liable for infringement of any Intellectual Property Rights except as provided in this Section. Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on a third-party claim that one or more of the Products infringes the Intellectual Property Rights of a third party in the country of delivery of the Products by Seller to Buyer. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of any such claim, and Seller having sole control over the defense of the claim including all negotiations for settlement or compromise. If one or more Products is subject to such a claim, Seller may, at its sole expense and option, procure for Buyer the right to continue using the Products, replace or modify the Products to render them non-infringing, or offer to accept return of the Products and refund the purchase price less a reasonable allowance for depreciation. Seller has no obligation or liability for any claim of infringement: (i) arising from information provided by Buyer (including Seller's use of Buyer's Property); or (ii) directed to any Products for which the designs are specified in whole or part by Buyer; or (iii) resulting from the modification, combination or use in a system of any Products. The foregoing provisions of this Section constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for claims of infringement of Intellectual Property Rights.

22. Governing Law. These Terms, the terms of any Quote, and the sale and delivery of all Products are deemed to have taken place in, and shall be governed and construed in accordance with, the laws of the State of Ohio, as applicable to contracts executed and wholly performed therein and without regard to conflicts of laws principles. Buyer irrevocably agrees and consents to the exclusive jurisdiction and venue of the courts of Cuyahoga County, Ohio with respect to any dispute, controversy or claim arising out of or relating to the sale and delivery of the Products.

23. Entire Agreement. These Terms, along with the terms set forth in the Quote, forms the entire agreement between the Buyer and Seller and constitutes the final, complete and exclusive expression of the terms of sale and purchase. In the event of a conflict between any term set forth in the Quote and these Terms, the terms set forth in the Quote shall prevail. All prior or contemporaneous written or oral agreements or negotiations with

respect to the subject matter shall have no effect. No modification to these Terms will be binding on Seller unless agreed to in a writing that is signed by an authorized representative of Seller, excluding email correspondence, 'clickwrap' or other purported electronic assent to different or additional terms. Sections 2-25 of these Terms shall survive termination or cancellation of any agreement governed by or arising from these Terms.

24. No 'Wrap' Agreements/No Authority to Bind. Seller's clicking any buttons or any similar action, such as clicking "I Agree" or "Confirm," to utilize Buyer's software or webpage for the placement of orders, is NOT an agreement to Buyer's Terms and Conditions. **NO EMPLOYEE, AGENT OR REPRESENTATIVE OF SELLER HAS THE AUTHORITY TO BIND SELLER BY THE ACT OF CLICKING ANY BUTTON OR SIMILAR ACTION ON BUYER'S WEBSITE OR PORTAL.**

25. Compliance with Laws. Buyer agrees to comply with all applicable laws, regulations, and industry and professional standards, including those of the United States of America, and the country or countries in which Buyer may operate, including without limitation the U.S. Foreign Corrupt Practices Act ("FCPA"), the U.S. Anti-Kickback Act ("Anti-Kickback Act"), U.S. and E.U. export control and sanctions laws ("Export Laws"), the U.S. Food Drug and Cosmetic Act ("FDCA"), and the rules and regulations promulgated by the U.S. Food and Drug Administration ("FDA"), each as currently amended. Buyer agrees to indemnify, defend, and hold harmless Seller from the consequences of any violation of such laws, regulations and standards by Buyer, its employees or agents. Buyer represents that it is familiar with all applicable provisions of the FCPA, the Anti-Kickback Act, Export Laws, the FDCA and the FDA and certifies that Buyer will adhere to the requirements thereof and not take any action that would make Seller violate such requirements. Buyer represents and agrees that Buyer will not make any payment or give anything of value, directly or indirectly, to any governmental official, foreign political party or official thereof, candidate for foreign political office, or commercial entity or person, for any improper purpose, including the purpose of influencing such person to purchase Products or otherwise benefit the business of Seller. Buyer further represents and agrees that it will not receive, use, service, transfer or ship any Products from Seller in a manner or for a purpose that violates Export Laws or would cause Seller to be in violation of Export Laws. Buyer agrees to promptly and reliably provide Seller all requested information or documents, including end-user statements and other written assurances, concerning Buyer's ongoing compliance with Export Law.

Supercedes HY09-0300/US August 2021 HY13-PMD300//US September 2021

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