

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
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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		

 **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

- **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 viscosity	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: <ul style="list-style-type: none"> • 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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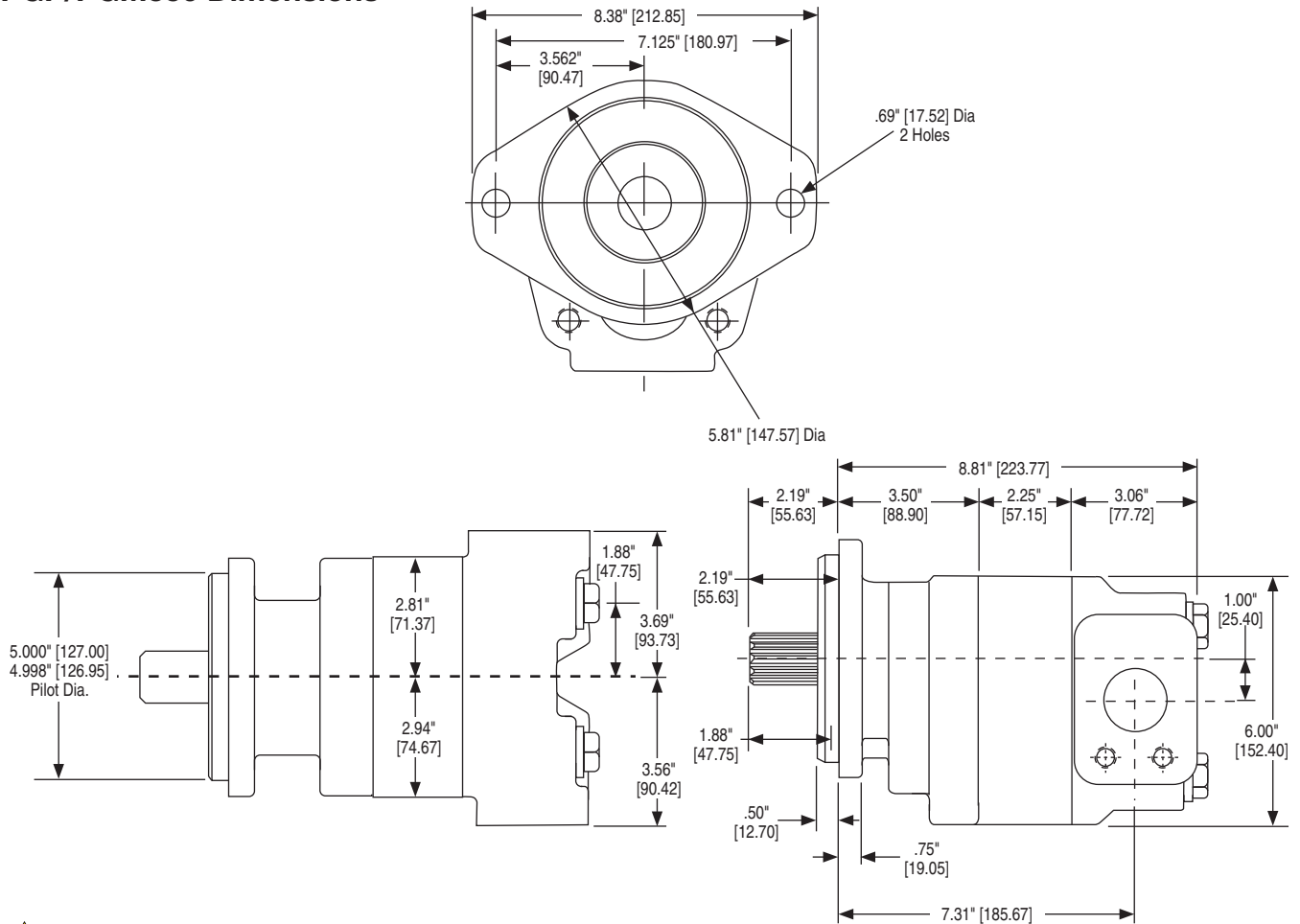
PGP/PGM350 Specifications/Dimensions

Gear Pumps & Motors

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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PGP/PGM350 Performance Data

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

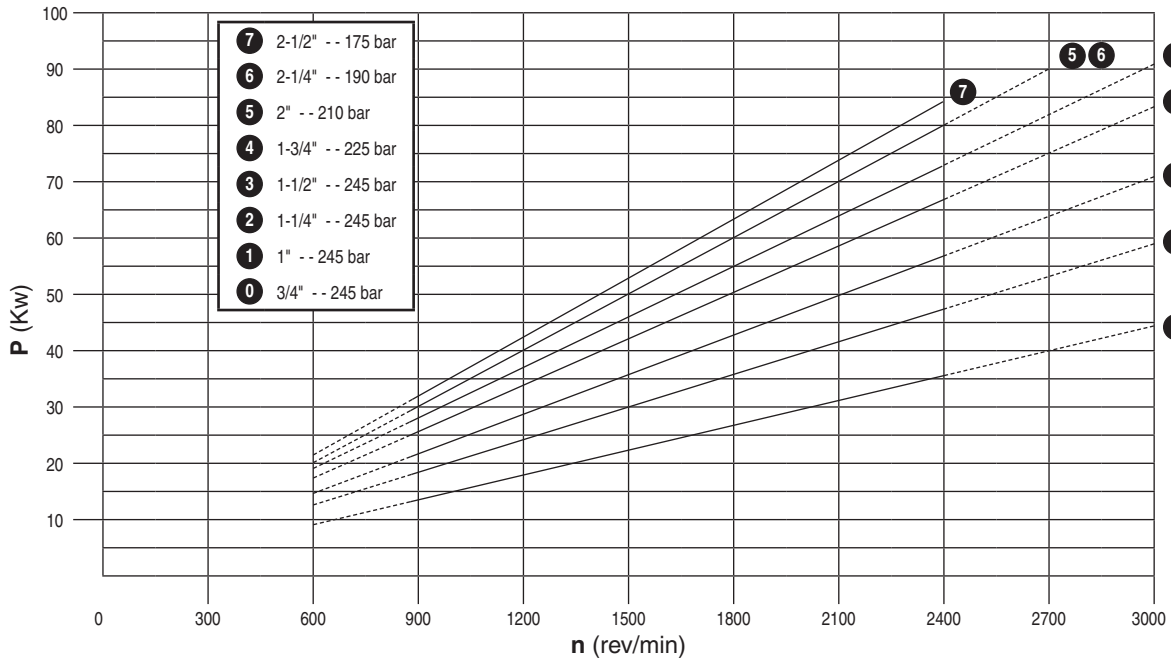
Speed RPM	Output Torque	Gear Widths													
		1" 3500 psi		1-1/4" 3500 psi		1-1/2" 3500 psi		1-3/4" 3250 psi		2" 3000 psi		2-1/4" 2750 psi		2-1/2" 2500 psi	
		A	B	A	B	A	B	A	B	A	B	A	B	A	B
900	in/lbs	13.4	1320	16.0	1670	18.6	2025	21.2	2225	23.8	2350	26.4	2425	28.9	2450
	Nm	51	149.1	61	188.7	70	228.8	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

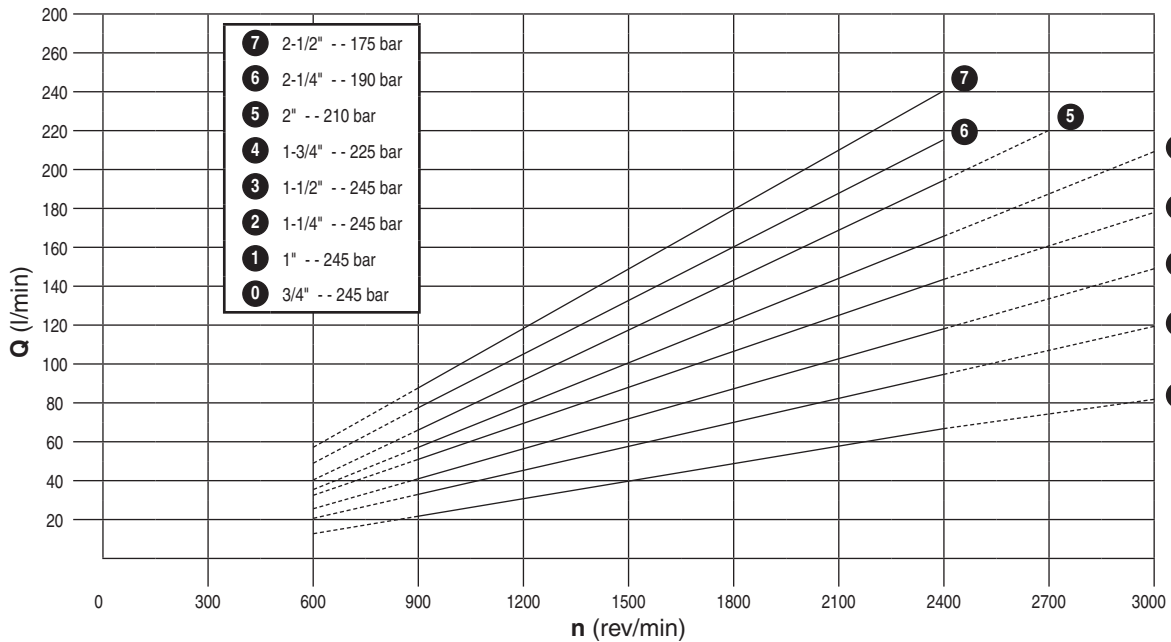
Note: In accordance with our policy of continuing product development, we reserve the right to change specification shown in this catalog without notice.

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

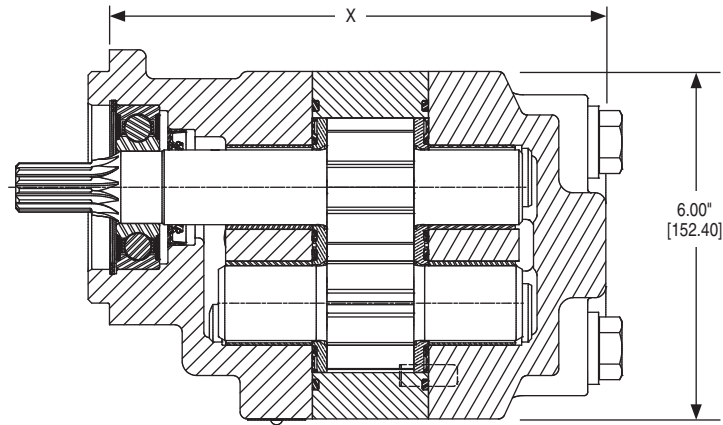
Input



Output



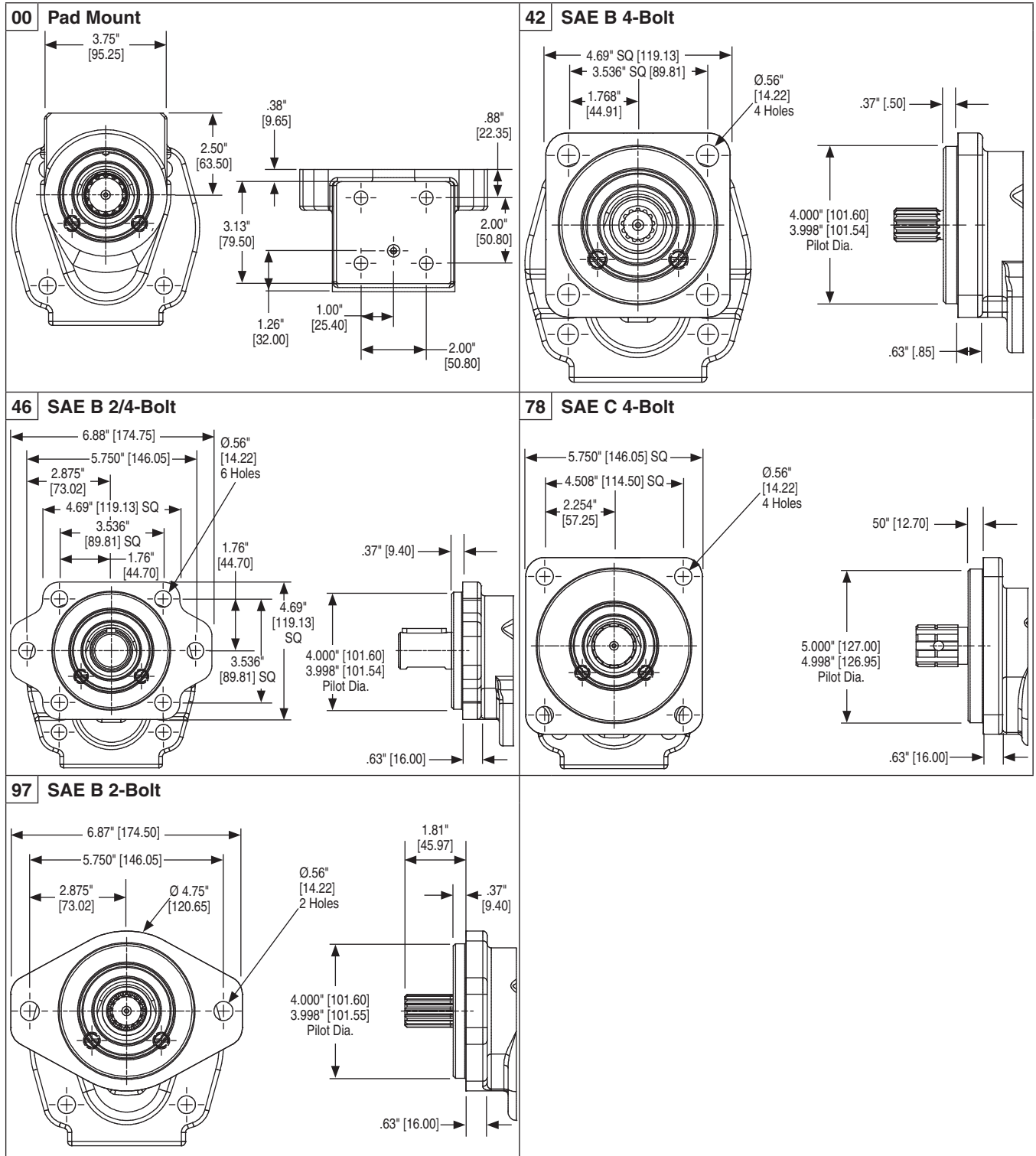
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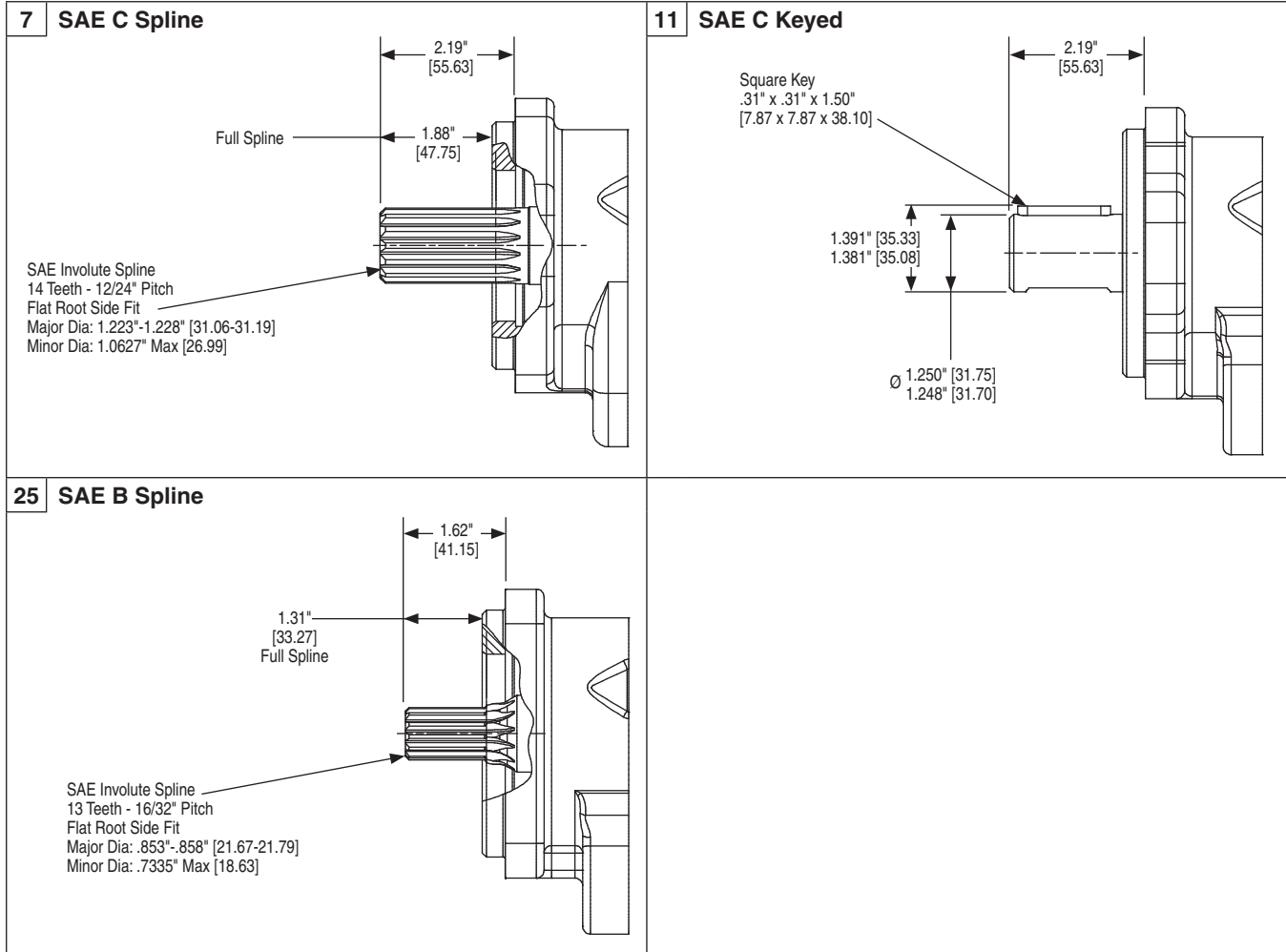
X DIMENSION

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]

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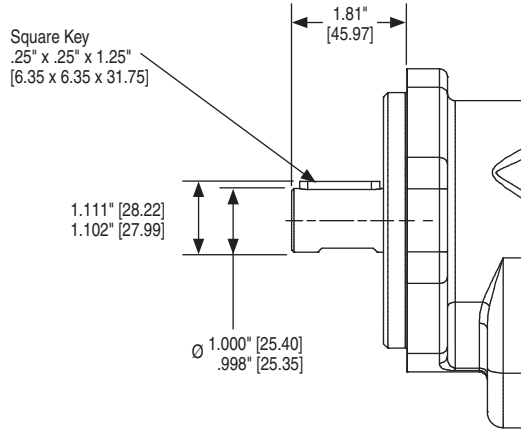


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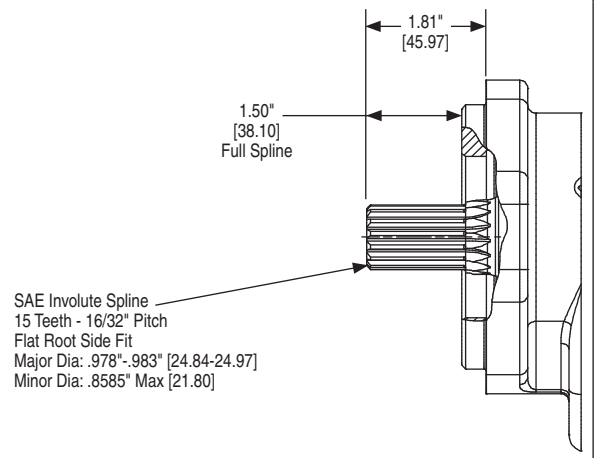


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43 SAE BB Keyed



98 SAE BB Spline



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

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

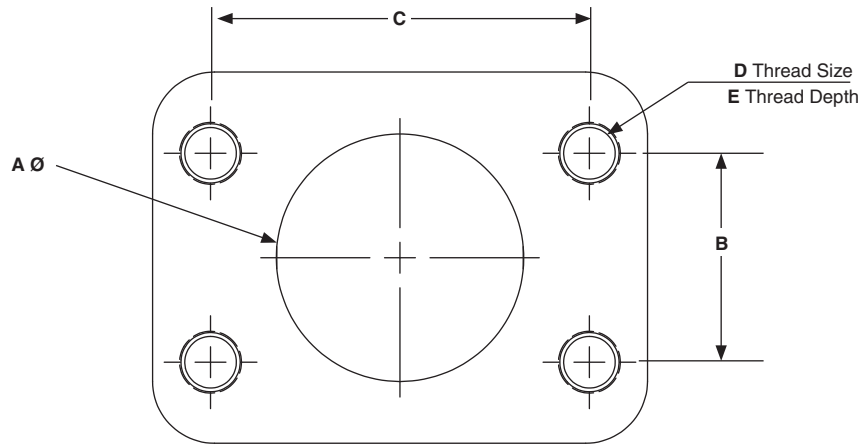
Torque (Nm) = $\frac{\text{Pressure (Bar)} \times \text{Displacement (cc/rev)}}{62.8}$



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SAE Flanged Ports UNC Thread (SSS)

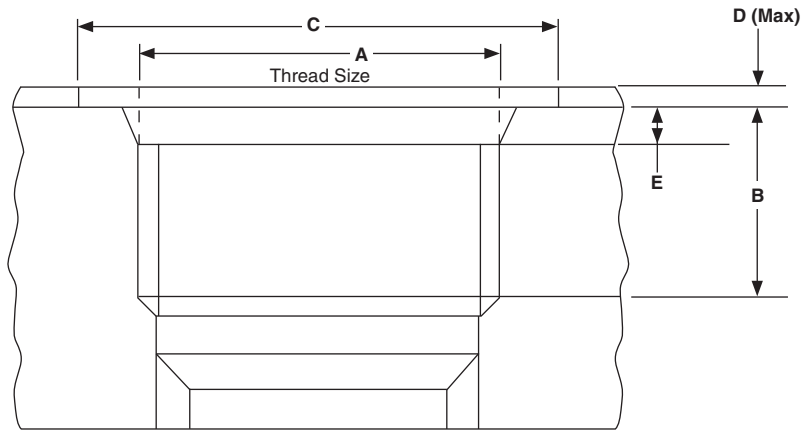
A		B		C		D	E	
inch	mm	inch	mm	inch	mm	UNC	inch	mm
0.50	12.7	0.69	17.5	1.50	38.1	5/16"-18	0.94	23.9
0.75	19.1	0.88	22.3	1.88	47.7	3/8"-16	0.88	22.4
1.00	25.4	1.03	26.2	2.06	52.2	3/8"-16	0.88	22.4
1.25	31.8	1.19	30.2	2.31	58.7	7/16"-14	1.12	28.4
1.50	38.1	1.41	35.7	2.75	69.9	1/2"-13	1.06	26.9
2.00	50.8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



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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
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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

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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
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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	

 **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