



OIL SOLUTIONS

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"For All Your Hydraulic Needs"

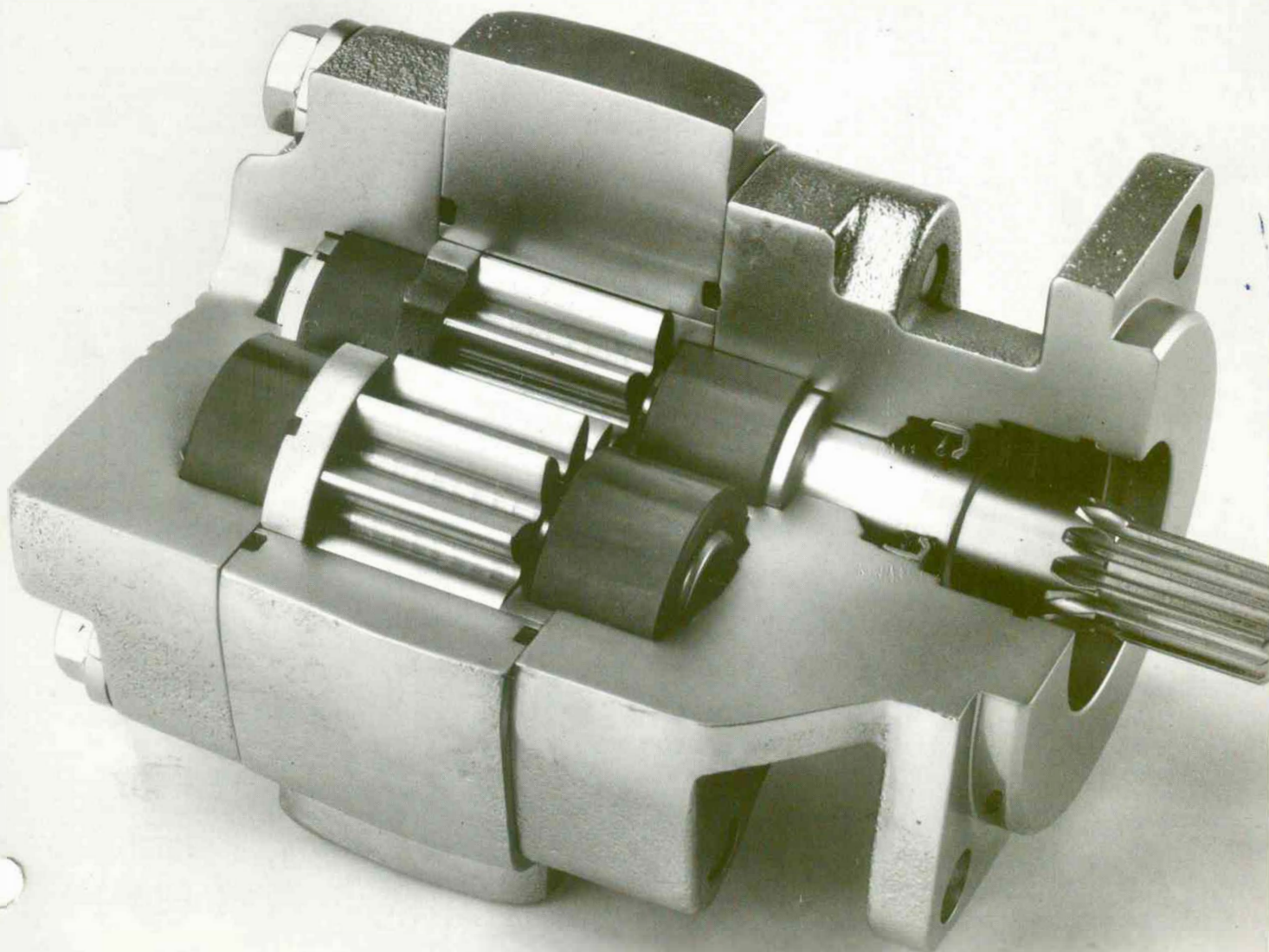
P20TM

Single and multiple hydraulic **PUMPS AND MOTORS**

to 3000 psi • up to 39 gpm
motors to over 40 hp



Commercial Intertech



P20™

Oil Hydraulic Pumps and Motors
Single and Multiple Units

Pressures to 3000 psi
Up to 39 gpm
Speeds to 2400 rpm

Big Performance In A Small Package

Pressure Ratings

Commercial's P20 gear pumps and motors are an ideal power for the truck industry. With 1/2" gears, it measures only 6" from mounting flange to the port end cover and weighs only 25 lbs.

The P20 can produce flows up to 2.96 cir @ 3000 psi; output to 3.94 cir up to 2500 psi. Maximum speed is 2400 rpm. Motors and pumps can be bi-rotational.

A variety of drive shafts and mounting styles are offered to meet your needs. Standard features include rigid, one-piece drive shaft and gears and pressure balanced thrust plates which assure top efficiency.

Multiple Units

P20 pumps or motors can be assembled in tandem to provide additional pump flow or more motor torque from one drive shaft. Each gear section is connected to the drive shaft by a connecting shaft. The strength of the shafts (their PL factor) determines the maximum gear width the pump or motor can turn at a given pressure.

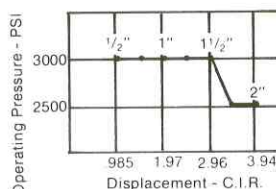
To determine the unit's PL, multiply the operating pressure (P) by the total gear width (L). Example: Assume a P20 pump will be operating at 3000 psi and have a 1" and a 1 1/2" gear housing. Multiply the total gear width of 1 1/2" by the operating pressure.

$$(1.5" \times 3000) = 4500$$

This pump needs a drive shaft with a PL factor of 4500 or more to operate successfully. The PL factor for each drive shaft is given on the opposite page.

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

Maximum Operating Pressure by Gear Width



Displacement

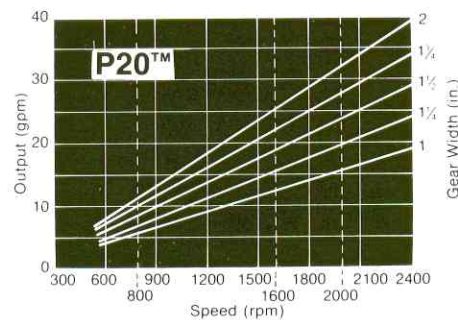
The P20 displaces 1.97 cubic inches per inch of gear width. Maximum operating pressure is 3000 psi for 1/2" through 1 1/2" gears and 2500 psi for 1 3/4" and 2" gears. Gear widths are graduated in 1/4" increments.

Performance Data

Pump Performance (GPM)

Average Output

U.S. Gallons at 175 bar/2500 psi

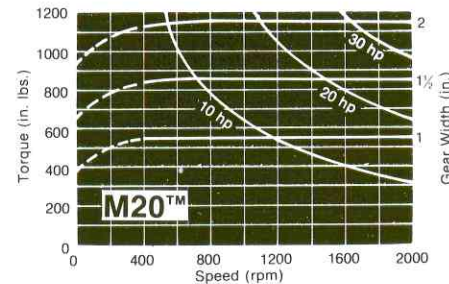


Pump Speed	Gear Width				
	1"	1 1/4"	1 1/2"	1 3/4"	2"
900	6.5	8.0	10.0	12.0	13.5
1200	9.0	11.5	14.0	16.0	18.5
1500	11.5	14.5	17.5	20.5	23.5
2100	16.5	21.0	25.0	29.5	34.0

Motor Performance

Average Torque Output

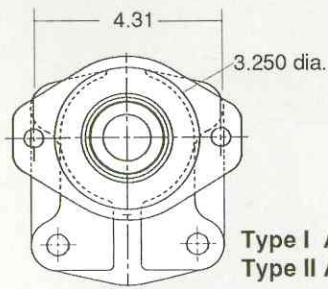
(in. lbs.) at 140 bar/2000 psi



Motor Speed	Gear Width			
	1"	1 1/2"	2"	
	Torque in. lbs.	Torque in. lbs.	Torque in. lbs.	GPM
800	550	870	1150	17.0
1200	550	870	1150	23.5
1600	550	860	1140	30.5
2000	550	850	1125	37.0

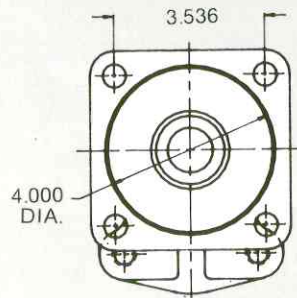
Mounting Patterns

SAE A, 2-Bolt



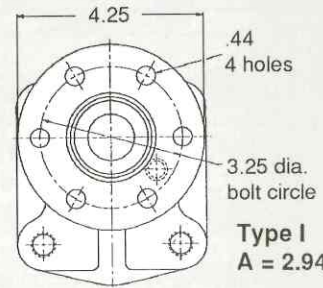
Type I A = 2.94"
Type II A = 1.81"

SAE B, 4-Bolt



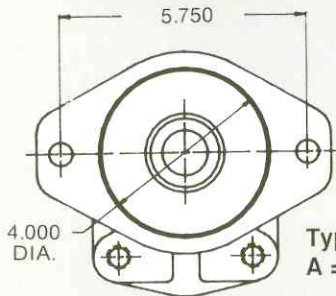
Type I
A = 2.94"

6-Bolt Round Flange



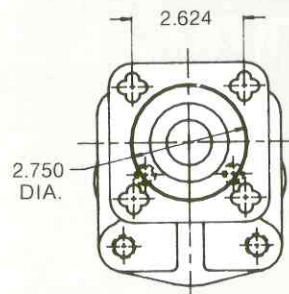
Type I
A = 2.94"

SAE B, 2-Bolt



Type I
A = 2.94"

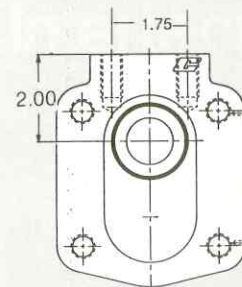
Cloverleaf PTO Mount



Type II
A = 3.56"

Uses Type II Shaft

Pad Mounting



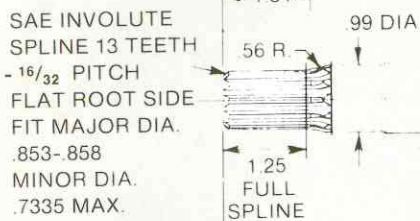
Type I
A = 1.81"

Uses Type II Shaft

Drive Shafts

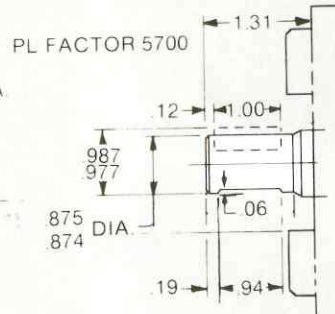
SAE B, Splined, 13-Tooth

PL FACTOR 8300 TYPE I

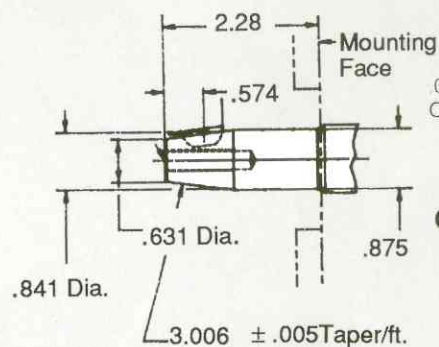


SAE B, Keyed, 1/4 x 1

PL FACTOR 5700

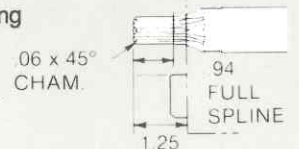


Tapered Shaft



SAE A, Splined, 9-Tooth

PL FACTOR 2700

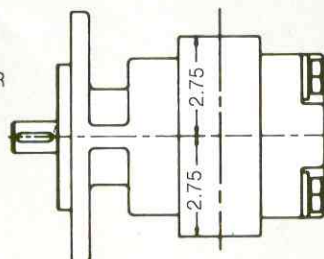


Connecting Shaft
PL 5500 SPLINED ONLY

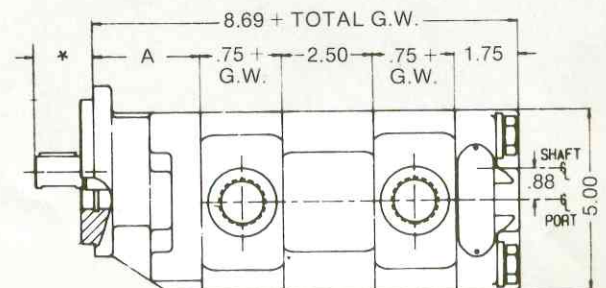
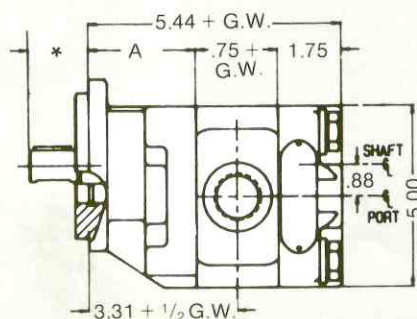
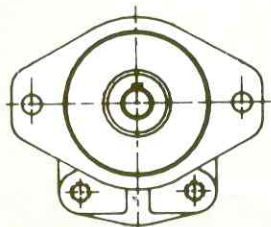
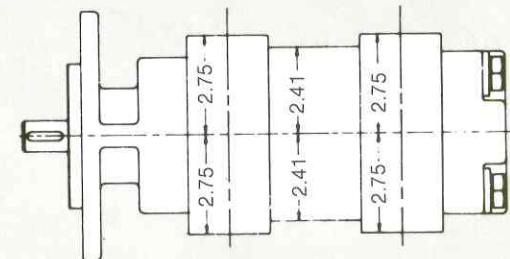
Dimensional Data (inches)

Single Units

SEE MOUNTING PATTERNS FOR
"A" DIMENSION



Multiple Units



* THIS DIMENSION WILL VARY WITH TYPE OF DRIVE SHAFT

NOTE:

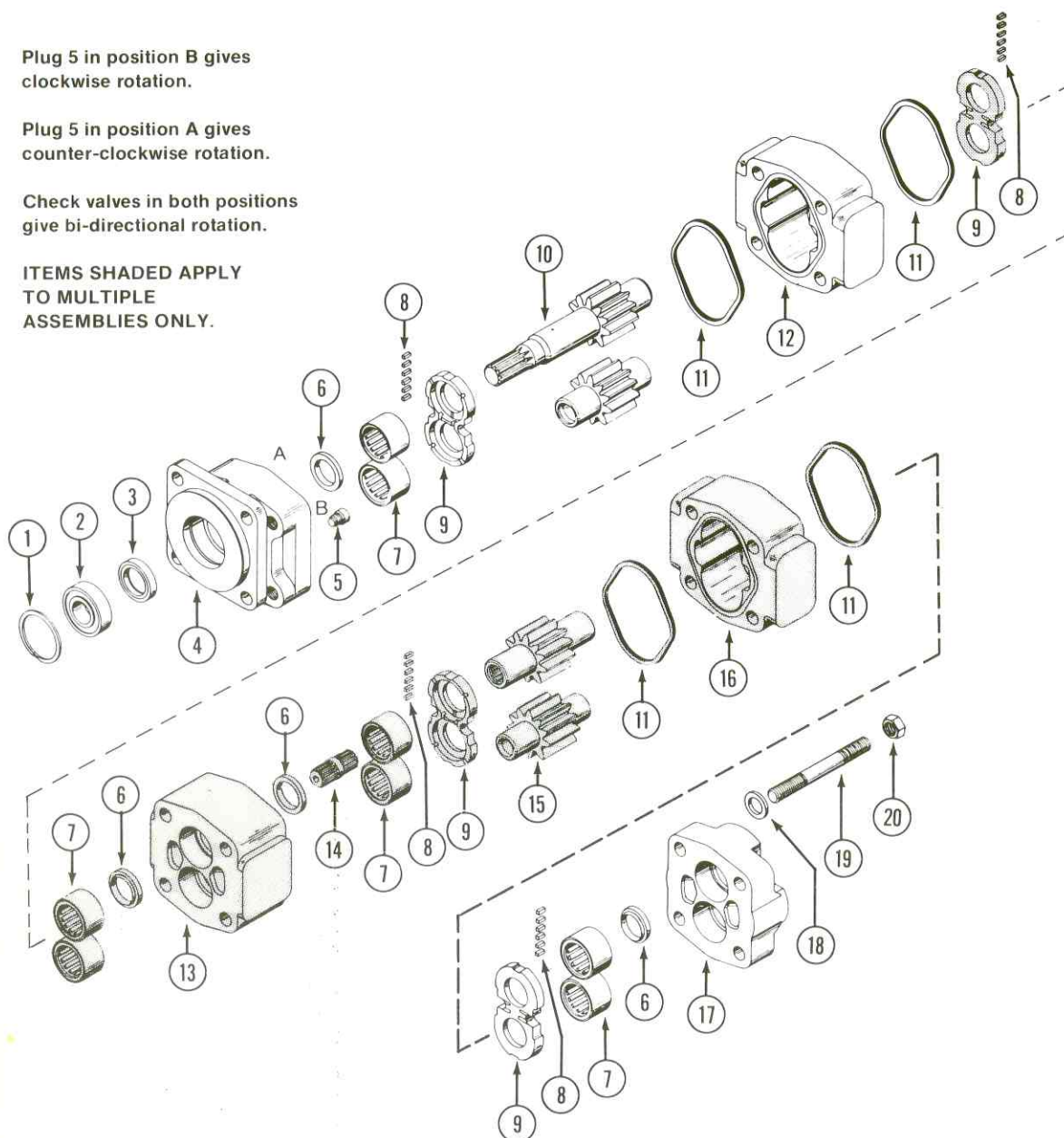
This page shows the typical arrangement of a 2-section unit.
It may not be pictorially correct and is not to scale.

Plug 5 in position B gives
clockwise rotation.

Plug 5 in position A gives
counter-clockwise rotation.

Check valves in both positions
give bi-directional rotation.

ITEMS SHADED APPLY
TO MULTIPLE
ASSEMBLIES ONLY.



PARTS LIST

- | | | |
|-------------------------------|---|------------------------|
| 1 Snap Ring | 8 Pocket Seals | 15 Matched Gear Set |
| 2 Outboard Bearing | 9 Thrust Plates | 16 Gear Housing |
| 3 Seal | 10 Integral Drive Shaft
and Gear Set | 17 Port End Cover |
| 4 Shaft End Cover | 11 Gasket Seals | 18 Washers |
| 5 Check Assemblies
or Plug | 12 Gear Housing | 19 Studs or Cap Screws |
| 6 Ring Seals | 13 Bearing Carrier | 20 Nuts |
| 7 Roller Bearings | 14 Connecting Shaft | |

Global Headquarters are located at: 1775 Logan Avenue
P.O. Box 239
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Phone: (216) 746-8011
Fax: (216) 746-1148

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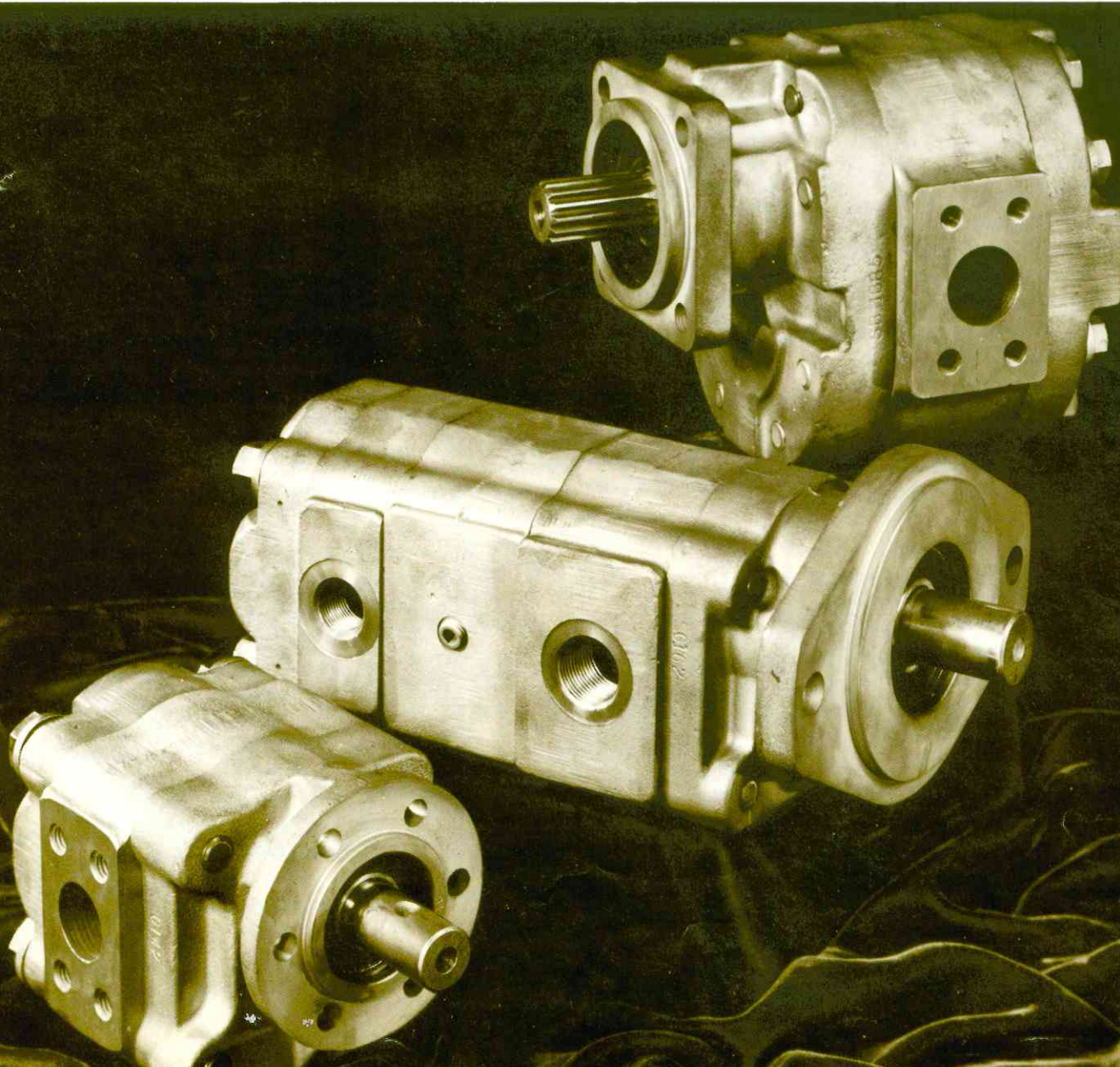
NOTE: As of April 1, 1996 area code for Youngstown will be 330.

**P30™/P50™/P75™
OIL HYDRAULIC
SINGLE & MULTIPLE
PUMPS & MOTORS**

pressures to
2500 psi/175 bar

output to
120 U.S. gpm/454 lpm

motors up to 110 hp



performance data

P30™/P50™/P75™ PUMPS

performance data

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 SSU at 100° F. Requests for more specific data should be directed to our Technical Service Department through our sales representatives.

multiple units

Each section of a multiple pump should be regarded as a single pumping unit with corresponding delivery and power input requirements. Since the entire input is fed through the drive shaft, the power delivered to or from the pump is limited by the physical strength of the shaft. To define this power limitation, we use a "PL" factor, "P" being the operating pressure and "L" the summation of gear widths.

In multiple pumps, the "PL" must be calculated for the first connecting shaft as well as the drive shaft. Each style or type of shaft has a unique "PL" factor as noted in the table below.

Pressure x total gear width = PL
PL MUST NOT EXCEED NUMBER SHOWN IN CHART FOR APPROPRIATE SHAFT.

Pump	Shaft Style	PL
P30	SAE A Spline	2,700
	SAE B Spline	8,300
	6 Tooth Spline	11,650
	.875 Key	5,700
	1.00 Key	8,600
	Connecting Shaft	5,500
P50	Continental Shaft	5,500
	SAE B Spline	6,400
	SAE C Spline	13,850
	1.00 Key	6,600
	1.25 Key	13,000
P75	Connecting Shaft	8,000
	Continental Shaft	8,000
	SAE C Spline Single	8,600
	SAE C Spline Multiple	12,000
	1.25 Key	8,300
	Connecting Shaft	9,450
	Continental Shaft	7,750

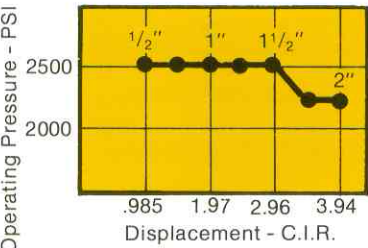
Refer to pages 20 and 21 for drive shaft details.

Where there are three or more operating sections in a multiple assembly, the application must be reviewed with Commercial's Technical Service Department.

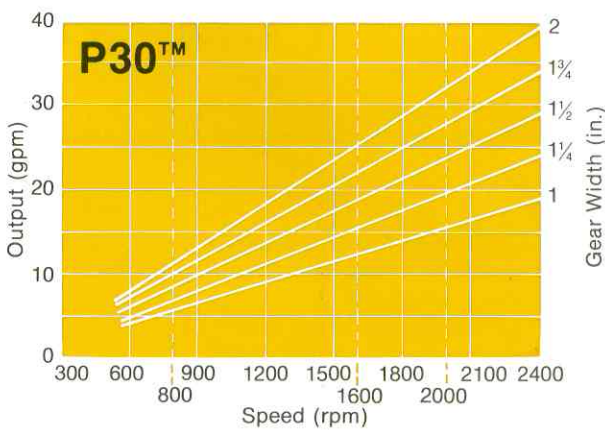
NOTE: Installations involving pump or motor speeds below 400 rpm or exceeding 2000 rpm and/or above 2500 psi should be reviewed by our Technical Service Department through your Commercial representative.

P30™

MAXIMUM OPERATING PRESSURE BY GEAR WIDTH

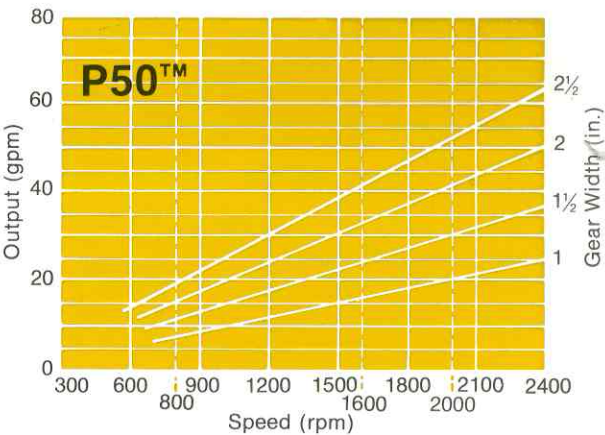
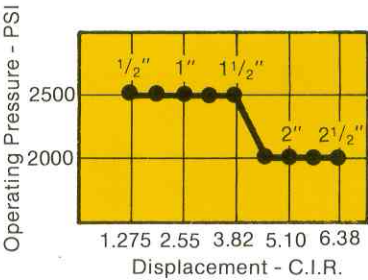


AVERAGE OUTPUT — U.S. Gallons at 140 bar/2000 psi



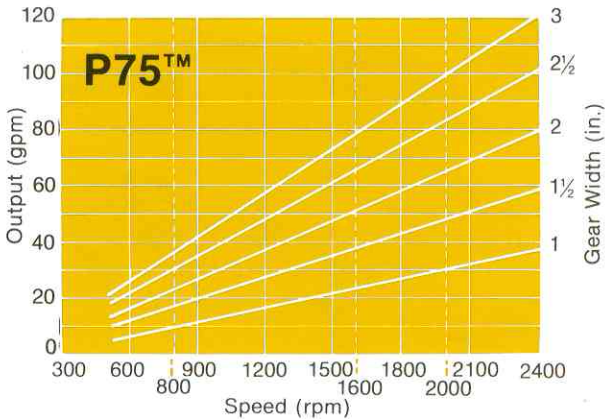
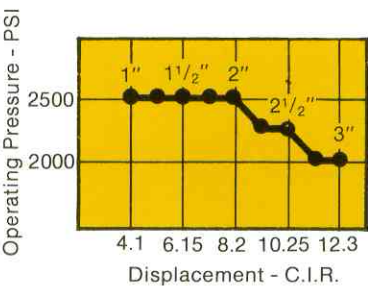
P50™

AVERAGE OUTPUT — U.S. Gallons at 140 bar/2000 psi



P75™

AVERAGE OUTPUT — U.S. Gallons at 140 bar/2000 psi



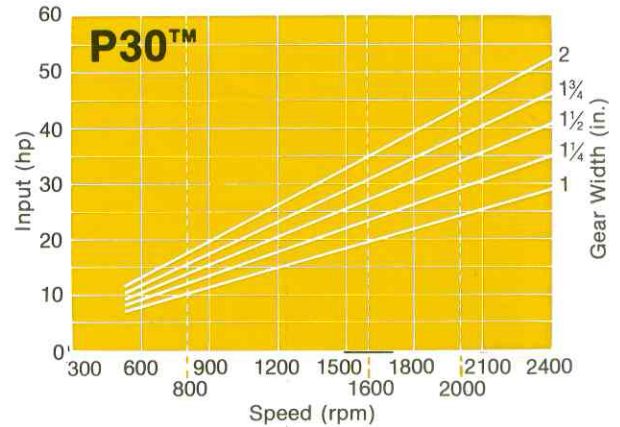
Average output flow • U.S. Gallons per Minute

- British Imperial Gallons per Minute
- Litres per Minute

Commercial's P30, P50, and P75 pumps and motors are manufactured under one or more of the following patents: United States, 3,421,769; Great Britain, 1,028,735; Canada, 781,832; Australia, 401,461; France, 1,428,763; Italy, 746,701; and Sweden, 320,855.

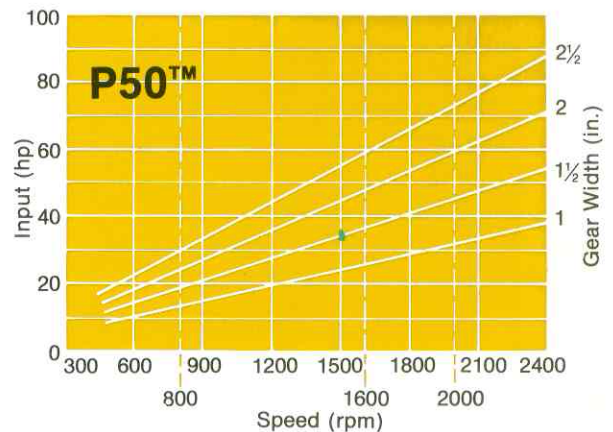
Speed rpm	Gear Width (inches)				
	1	1¼	1½	1¾	2
900	6.5	8	10	12	13.5
	5.5	6.5	8.5	10	11
	24.5	30	38	45.5	51
1200	9	11.5	14	16	18.5
	7.5	9.5	11.5	13.5	15.5
	34	43.5	53	60.5	70
1500	11.5	14.5	17.5	20.5	23.5
	9.5	12	14.5	17	19.5
	43.5	55	66	77.5	89
1800	14	18	21.5	25	29
	11.5	15	18	21	24
	53	68	81.5	94.5	110
2100	16.5	21	25	29.5	34
	13.5	17.5	21	24.5	28.5
	62.5	79.5	94.5	112	129
2400	19	24	29	34	39
	16	20	24	28.5	32.5
	72	91	110	129	148

AVERAGE INPUT — (hp) at 140 bar/2000 psi



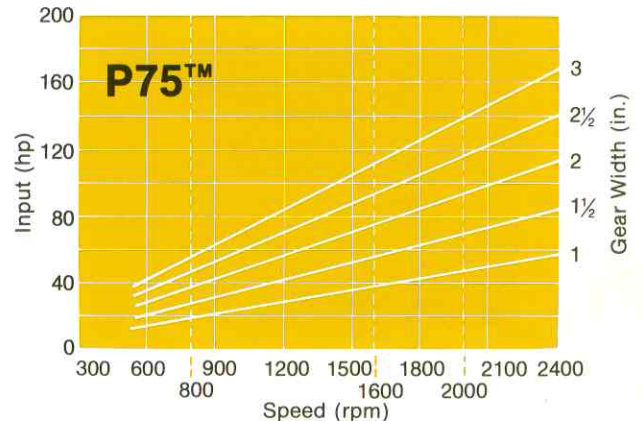
Speed rpm	Gear Width (inches)						
	1	1¼	1½	1¾	2	2¼	2½
900	8.5	10.5	13	15	17.5	20	22
	7	8.5	11	12.5	14.5	16.5	18.5
	32	39.5	49	57	66	75.5	83.5
1200	12	15	18	21	24	27	30
	10	12.5	15	17.5	20	22.5	25
	45.5	57	68	79.5	91	102	114
1500	15	19	23	27	31	35	39
	12.5	16	19	22.5	26	29	32.5
	57	72	87	102	117	132	148
1800	18	23	27.5	32.5	37.5	42	47
	15	19	23	27	31	35	39
	68	87	104	123	142	159	178
2100	21.5	27	32.5	38.5	44	49.5	55
	18	22.5	27	32	36.5	41	46
	81.5	102	123	146	167	187	208
2400	25	31	37	44	51	57	63.5
	21	26	31	36.5	42.5	47.5	53
	94.5	117	140	167	193	216	240

AVERAGE INPUT — (hp) at 140 bar/2000 psi



Speed rpm	Gear Width (inches)								
	1	1¼	1½	1¾	2	2¼	2½	2¾	3
600	6	9	11.5	13.5	16.5	18.5	21	23	26
	5	7.5	9.5	11	13.5	15.5	17.5	19	21.5
	22.5	34	43.5	51	62.5	70	79.5	87	98.5
1200	17	22	27	32	37.5	42	48	52.5	58
	14	18.5	22.5	26.5	31	35	40	43.5	48.5
	64.5	83.5	102	121	142	159	182	199	220
1500	22	29	35.5	41.5	48	54.5	61	67	74
	18.5	24	29.5	34.5	40	45.5	51	56	61.5
	83.5	110	134	157	182	206	231	254	280
1800	27.5	35.5	43.5	51	59	66	74	81.5	90
	23	29.5	36	42.5	49	55	61.5	68	75
	104	134	165	193	223	250	280	308	341
2100	33	42	51.5	60	69.5	78	87	96.5	106
	27.5	35	43	50	58	65	72.5	80.5	88.5
	125	159	195	227	263	295	329	365	401
2400	38	49	59.5	70	80	90	101	111	122
	31.5	41	49.5	58.5	66.5	75	84	92.5	101.5
	144	185	225	265	303	341	382	420	462

AVERAGE INPUT — (hp) at 140 bar/2000 psi



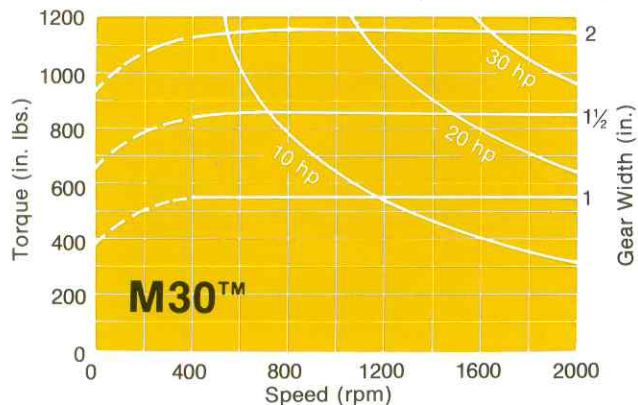
performance data

M30™/M50™/M75™ MOTORS

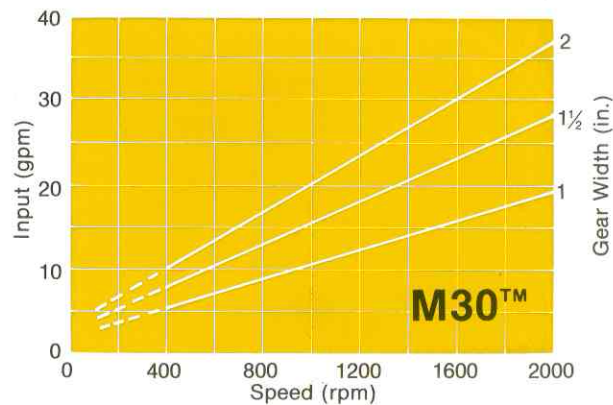
Multiple unit motor installations must be cleared through Commercial's Technical Service Department.

M30™

AVERAGE TORQUE OUTPUT (in. lbs.) at 140 bar/2000 psi

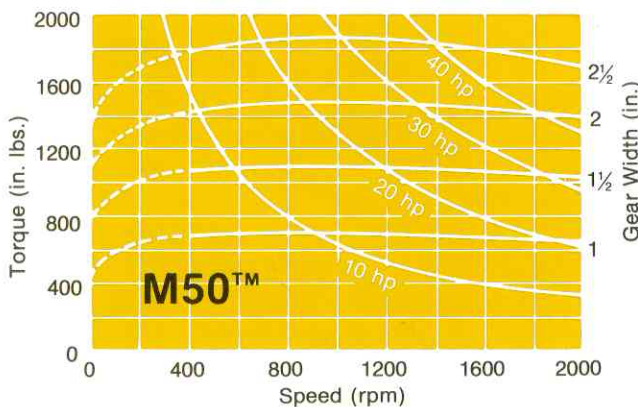


AVERAGE INPUT — U.S. Gallons at 140 bar/2000 psi

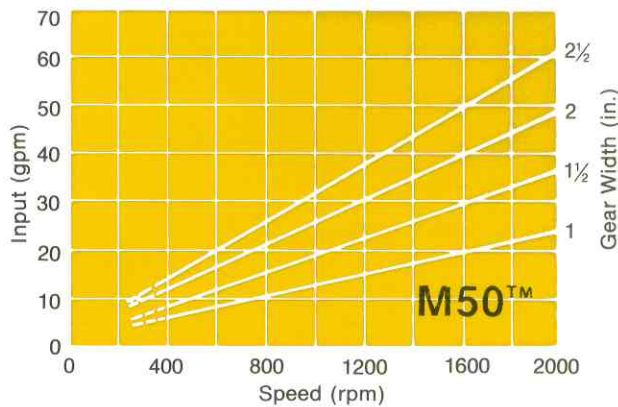


M50™

AVERAGE TORQUE OUTPUT (in. lbs.) at 140 bar/2000 psi

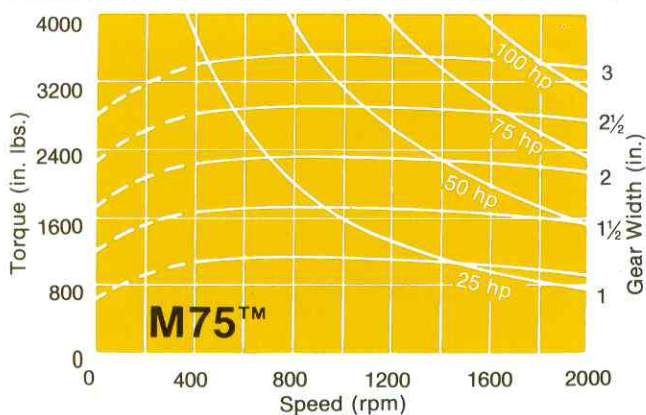


AVERAGE INPUT — U.S. Gallons at 140 bar/2000 psi

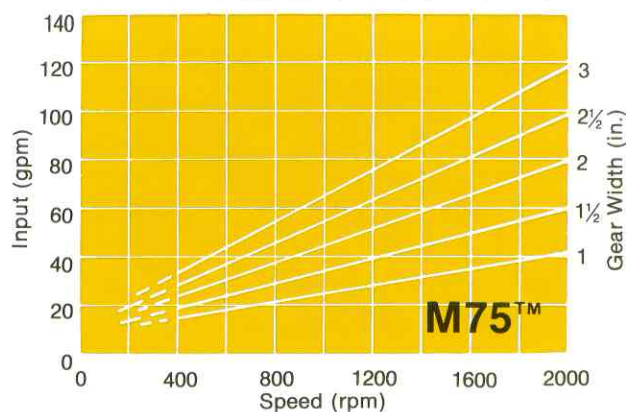


M75™

AVERAGE TORQUE OUTPUT (in. lbs.) at 140 bar/2000 psi



AVERAGE INPUT — U.S. Gallons at 140 bar/2000 psi



MOTOR DATA (extracted from the average performance curves on the opposite page)

Speed rpm	1" GEAR			1½" GEAR			2" GEAR		
	Output		Input gpm igpm lpm	Output		Input gpm igpm lpm	Output		Input gpm igpm lpm
	Torque in. lbs. N m kpm	Power hp met. hp		Torque in. lbs. N m kpm	Power hp met. hp		Torque in. lbs. N m kpm	Power hp met. hp	
800	550	7	9	870	11	13	1150	14.5	17
	62		7.5	98.5		11	130		14
	6.5	7	34	10	11	49	13	14.5	64.5
1200	550	10.5	13	870	16.5	18	1150	22	23.5
	62		11	98.5		15	130		19.5
	6.5	10.5	49	10	16.5	68	13	22.5	89
1600	550	14	16	860	22	23	1140	29	30.5
	62		13.5	97		19	129		25.5
	6.5	14	60.5	10	22.5	87	13	29.5	115
2000	550	17.5	19.5	850	27	28	1125	36	37
	62		16	96		23.5	127		31
	6.5	17.5	74	10	27.5	106	13	36.5	140

Speed rpm	1" GEAR			1½" GEAR			2" GEAR			2½" GEAR		
	Output		Input gpm igpm lpm	Output		Input gpm igpm lpm	Output		Input gpm igpm lpm	Output		Input gpm igpm lpm
	Torque	Power		Torque	Power		Torque	Power		Torque	Power	
	in. lbs N m kpm	hp met. hp		in. lbs. N m kpm	hp met. hp		in. lbs. N m kpm	hp met. hp		in. lbs. N m kpm	hp met. hp	
800	670	8.5	10.5	1070	13.5	15.5	1450	18	21	1850	23.5	26
	75.5		8.5	121		13	164		17.5	209		21.5
	7.5	8.5	39.5	12.5	13.5	58.5	16.5	18.5	79.5	21.5	24	98.5
1200	680	13	15.5	1075	20.5	22.5	1450	27.5	30.5	1840	35	37.5
	77		13	121.5		18.5	164		25.5	208		31
	8	13	58.5	12.5	21	85	16.5	28	115	21	35.5	142
1600	670	17	20	1045	26.5	30	1440	36.5	40	1750	44.5	49.5
	75.5		16.5	118		25	162.5		33.5	197.5		41
	7.5	17	75.5	12	27	114	16.5	37	151	20	45	187
2000	660	21	25	1030	32.5	37	1415	44.5	49	1720	54.5	61.5
	74.5		21	116.5		31	160		41	194.5		51
	7.5	21.5	94.5	12	33	140	16.5	45	185	20	55.5	233

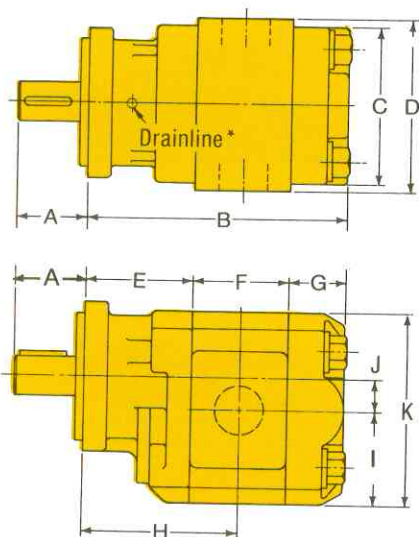
Speed rpm	1" GEAR			Input	1½" GEAR			Input	2" GEAR			Input	2½" GEAR			Input	3" GEAR			Input
	Output		gpm igpm lpm		Output		gpm igpm lpm		Output		gpm igpm lpm		Output		gpm igpm lpm		Output		gpm igpm lpm	
	Torque	Power			Torque	Power			Torque	Power			Torque	Power			Torque	Power		
	in. lbs. N m kpm	hp met. hp			in. lbs. N m kpm	hp met. hp			in. lbs. N m kpm	hp met. hp			in. lbs. N m kpm	hp met. hp			in. lbs. N m kpm	hp met. hp		
	800	1050			13.5	20.5			1650	21			28	2200			28	35.5		
118.5			17	186.5		23.5	248.5		29.5	325		36	409.5		42					
12		13.5	77.5	19	21.5	106	25.5	28.5	134	33	37	163	42	46.5	191					
1200	1025	19.5	27.5	1600	30.5	38	2200	42	49.5	2850	54	60.5	3575	68	72					
	116		23	181		31.5	248.5		41	322		50.5	404		60					
	12	20	104	18.5	31	144	25.5	42.5	187	33	55	229	41	69	273					
1600	1000	25.5	34	1575	40	49	2175	55	64	2800	71	78.5	3500	89	93					
	113		28.5	178		41	245.5		53.5	316.5		65.5	395.5		77.5					
	11.5	26	129	18	40.5	185	25	56	242	32.5	72	297	40.5	90	352					
2000	950	30	41.5	1550	49	59	2175	67.5	78	2750	87	96.5	3425	109	114					
	107.5		34.5	175		49	245.5		65	310.5		80.5	387		95					
	11	30.5	157	18	49.5	223	25	68.5	295	31.5	88	365	39.5	110.5	431					

dimensional data

P30™/P50™

SINGLE UNIT

Dimensional data shown in $\frac{\text{mm}}{\text{inches}}$



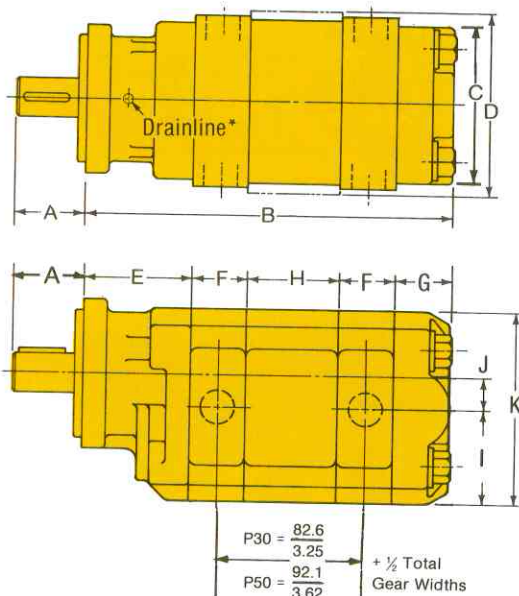
Model	Type	A	B	C	D	E	F	G	H	I	J	K
P30	1	See Drive Shaft Codes, Pages 20, 21	$\frac{138.1}{5.44}$ +Gear Width	$\frac{122.2}{4.81}$	See Gear Housing Codes, Pages 14, 15	$\frac{74.6}{2.94}$	$\frac{19.0}{.75}$	$\frac{44.4}{1.75}$	$\frac{84.1}{3.31}$ +½ Gear Width	$\frac{68.3}{2.69}$	$\frac{22.2}{.88}$	$\frac{136.5}{5.38}$
	2		$\frac{109.5}{4.31}$ +Gear Width			$\frac{46.0}{1.81}$	+Gear Width		$\frac{55.8}{2.19}$ +½ Gear Width			
P50	1	See Drive Shaft Codes, Pages 20, 21	$\frac{149.2}{5.88}$ +Gear Width	$\frac{125.4}{4.94}$	See Gear Housing Codes, Pages 16, 17	$\frac{85.7}{3.38}$	$\frac{19.0}{.75}$	$\frac{44.4}{1.75}$	$\frac{95.2}{3.75}$ +½ Gear Width	$\frac{76.2}{3.00}$	$\frac{25.4}{1.00}$	$\frac{152.4}{6.00}$
	2		$\frac{123.8}{4.88}$ +Gear Width			$\frac{60.3}{2.38}$	+Gear Width		$\frac{69.5}{2.75}$ +½ Gear Width			

*Drainlines are provided in all single motor applications. For size, style, and location, refer to Shaft End Covers, pages 8 through 11.

Motors are internally drained and generally do not require a drainline connection. If pressure downstream of the motor exceeds 100 psi, or pulses to over 100 psi, a drain-to-tank line is required. Drainline pressure should not exceed 100 psi.

P30™/P50™

MULTIPLE UNIT



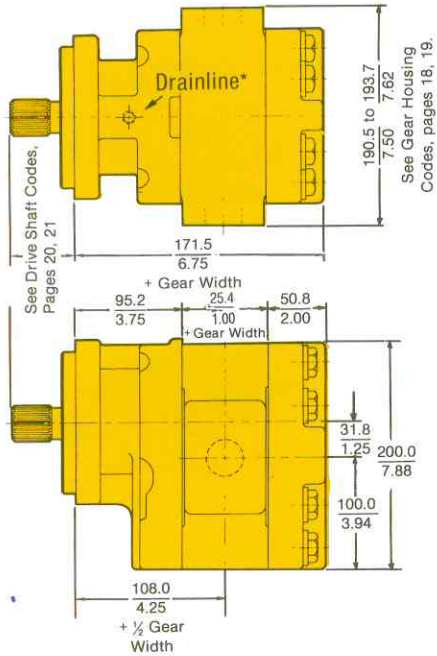
Model	Type	A	B	C	D	E	F	G	H	I	J	K
P30	1	See Drive Shaft Codes, Pages 20, 21	$\frac{220.7}{8.69}$ + Total Gear Width	$\frac{122.2}{4.81}$	See Bearing Carrier Codes, Pages 22, 23	$\frac{74.6}{2.94}$	$\frac{19.0}{.75}$					
	2		$\frac{192.1}{7.56}$ + Total Gear Width			$\frac{46.0}{1.81}$	+Gear Width	$\frac{44.4}{1.75}$	$\frac{63.5}{2.50}$	$\frac{68.3}{2.69}$	$\frac{22.2}{.88}$	$\frac{136.5}{5.38}$
P50	1	See Drive Shaft Codes, Pages 20, 21	$\frac{241.3}{9.50}$ + Total Gear Width	$\frac{125.4}{4.94}$	See Bearing Carrier Codes, Pages 22, 23	$\frac{85.7}{3.38}$	$\frac{19.0}{.75}$					
	2		$\frac{215.9}{8.50}$ + Total Gear Width			$\frac{60.3}{2.38}$	+Gear Width	$\frac{44.4}{1.75}$	$\frac{73.0}{2.88}$	$\frac{76.2}{3.00}$	$\frac{25.4}{1.00}$	$\frac{152.4}{6.00}$

*Drainlines are provided in all multiple motor applications. For size, style, and location, refer to Shaft End Covers, pages 8 through 11.

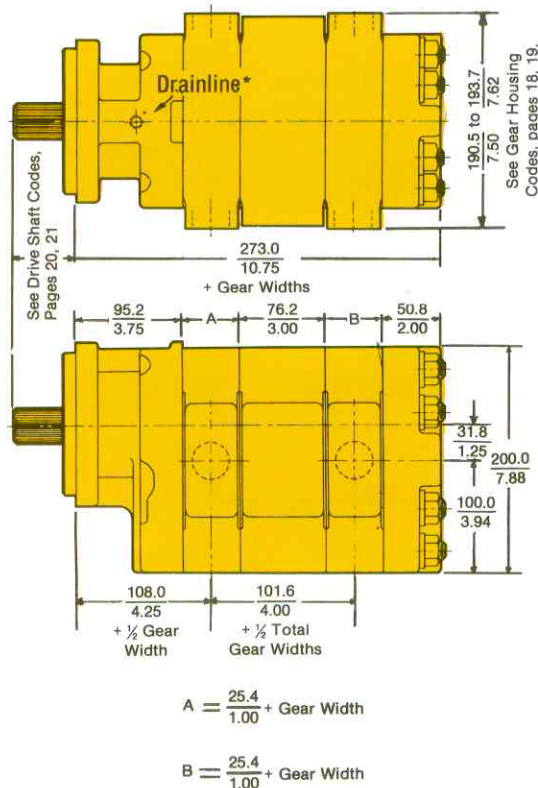
To better serve Commercial's worldwide market we have included metric dimensions in this catalog.

Motors are internally drained and generally do not require a drainline connection. If pressure downstream of the motor exceeds 100 psi, or pulses to over 100 psi, a drain-to-tank line is required. Drainline pressure should not exceed 100 psi.

SINGLE UNIT



MULTIPLE UNIT

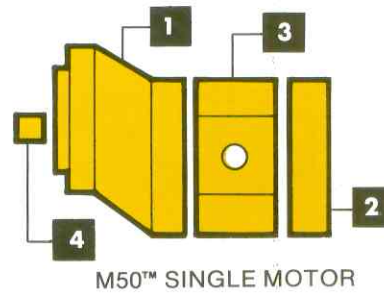


how to specify and code

This catalog contains codes for most widely used models only. Complete codes for assembling all configurations are readily available from our sales representatives.

SINGLE UNITS

Commercial's P30, P50, P75 pumps and motors are available as single or multiple assemblies. The full assembly code for the finished unit combines individual codes for shaft end cover, port end cover, gear housing, and drive shaft as selected to do the job you require. It is preceded by the letter P or M for pump or motor — and by 30, 50, or 75 to designate the series — and by the letter A to designate a single unit. Here is an example of the procedure:



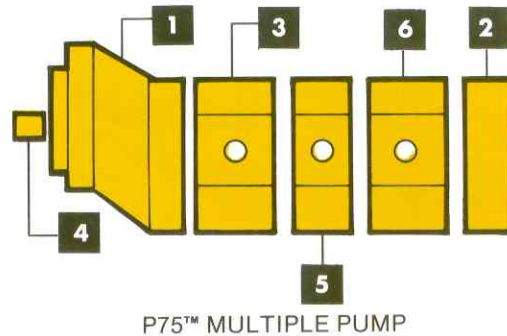
Assembly Code M50A 842 BE OL15-43

Motor.....M	1. Shaft End Cover (Page 8).....842
Series.....50	2. Port End Cover (Page 12).....BE
Model.....A	3. Gear Housing (Page 16).....OL15
	4. Drive Shaft (Page 21).....43

MULTIPLE UNITS

Multiple units are coded in the same manner except that additional designations for added sub-components must be included. Each section added to the single assembly requires a proper code for a bearing carrier, gear housing, and connecting shaft. The letter B designates a multiple unit. Here is an example of an assembly code for a two-section P75 pump:

When specifying split flange porting on multiple units, all coding MUST be cleared by our Technical Service Dept.



Assembly Code P75B 178 BI OK15-7 C OK12-1

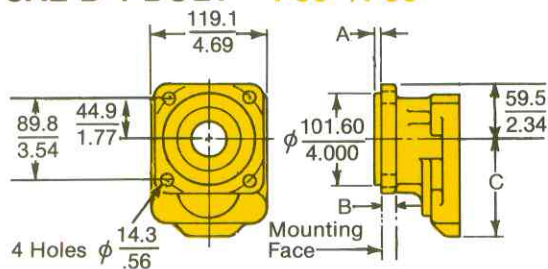
Pump.....P	1. Shaft End Cover (Page 8).....178
Series.....75	2. Port End Cover (Page 12).....BI
Model.....B	3. Gear Housing (Page 18).....OK15
	4. Drive Shaft (Page 20).....7
	5. Bearing Carrier (Page 23).....C
	6. Gear Housing (Page 18).....OK12
	7. Connecting Shaft (Page 21).....1

shaft end covers

Outboard bearings must be used with all drives subjected to radial loading. Helical gear drives must be approved through our sales representative.

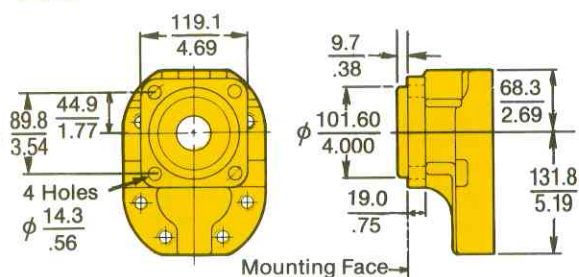
Dimensional data shown in $\frac{\text{mm}}{\text{inches}}$

SAE B 4-BOLT P30™/P50™



Model	A	B	C
P30	$\frac{9.7}{.38}$	$\frac{12.7}{.50}$	$\frac{90.5}{3.56}$
P50	$\frac{6.4}{.25}$	$\frac{15.9}{.62}$	$\frac{101.6}{4.00}$

P75™



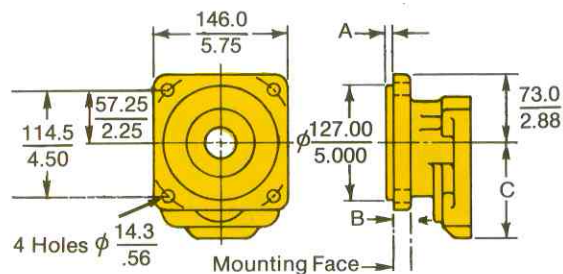
Outboard Bearing	Drain-line Thread & Location 	CODES			MOTORS Rotation
		PUMPS Rotation			
		Clockwise	Counter-Clockwise	Double	
Without	NONE	142	242	342	—
	¼ NPT	—	—	—	942
	¼ BSPP	—	—	—	1942
With	NONE	442	542	642	—
	¼ NPT	—	—	—	842
	¼ BSPP	—	—	—	1842

FOR ALL UNITS

To determine direction of shaft rotation, view the unit with the shaft pointing toward you, and the idler (driven) gear beneath the shaft. With clockwise rotation, flow will be left to right. The inlet port will be on the left, outlet on the right. The flow is in the opposite direction with counter-clockwise rotation. Inverting the pump will reverse the inlet and outlet ports but not the direction of rotation.

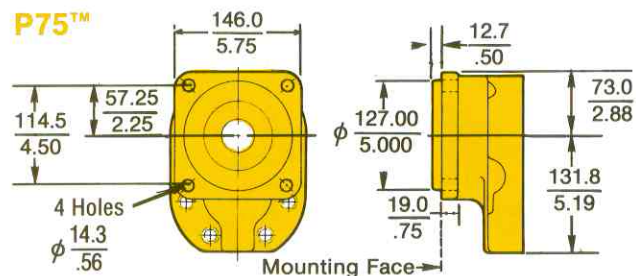
SAE C 4-BOLT

P30™/P50™



Model	A	B	C
P30	$\frac{12.7}{.50}$	$\frac{12.7}{.50}$	$\frac{90.5}{3.56}$
P50	$\frac{6.4}{.25}$	$\frac{15.9}{.62}$	$\frac{101.6}{4.00}$

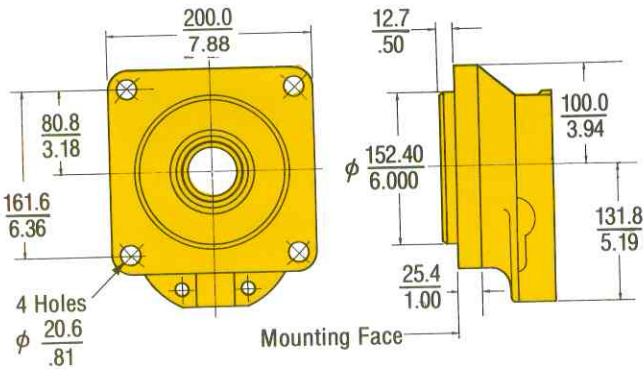
P75™



CODES					
Outboard Bearing	Drain-line Thread & Location 	PUMPS Rotation			MOTORS Rotation
		Clockwise	Counter-Clockwise	Double	Double
Without	NONE	178	278	378	—
	¼ NPT	—	—	—	978
	¼ BSPP	—	—	—	1978
With	NONE	478	578	678	—
	¼ NPT	—	—	—	878
	¼ BSPP	—	—	—	1878

This catalog contains codes for most widely used models only. Complete codes for assembling all configurations are readily available from our sales representatives.

P75™ ONLY

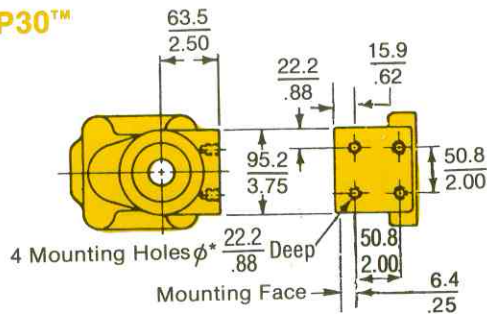


Outboard Bearing	Drain-line Thread & Location	CODES PUMPS Rotation			MOTORS Rotation
		Clockwise	Counter-Clockwise	Double	Double
Without	NONE	180	280	380	—
	¼ NPT	—	—	—	980
	¼ BSPP	—	—	—	1980
With	NONE	480	580	680	—
	¼ NPT	—	—	—	880
	¼ BSPP	—	—	—	1880

PAD MOUNTING

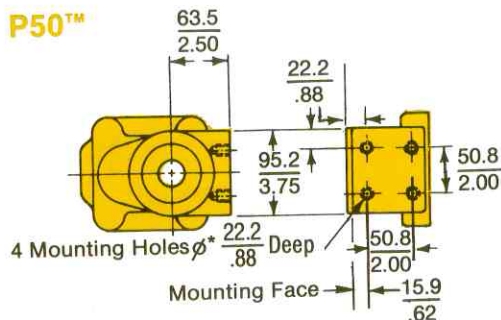
P30™/P50™

P30™



*See table to the right for thread size and style.

P50™



*See table to the right for thread size and style.

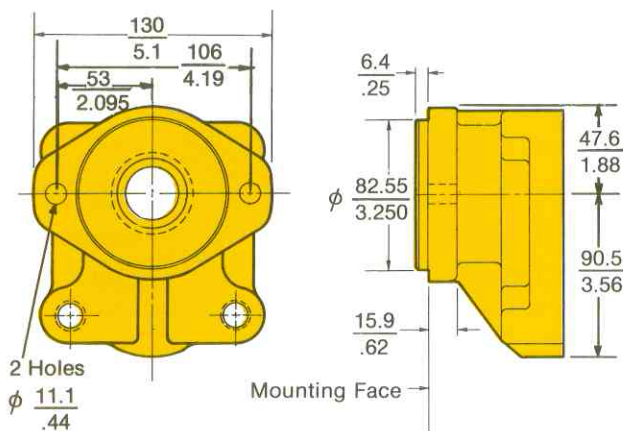
Outboard Bearing	Drain-line Thread & Location	Mounting Hole ϕ Thread	CODES PUMPS Rotation			MOTORS Rotation
			Clockwise	Counter-Clockwise	Double	Double
Without	NONE	½—13 Thd.	400	500	600	—
		M12 x 1.75	1400	1500	1600	—
		¼ NPT	—	—	—	800
With	¼ BSPP	½—13 Thd.	—	—	—	1800
	¼ BSPP	M12 x 1.75	—	—	—	1800

shaft end covers

Outboard bearings must be used with all drives subjected to radial loading. Helical gear drives must be approved through our sales representative.

Dimensional data shown in $\frac{\text{mm}}{\text{inches}}$

SAE A 2-BOLT P30™ ONLY



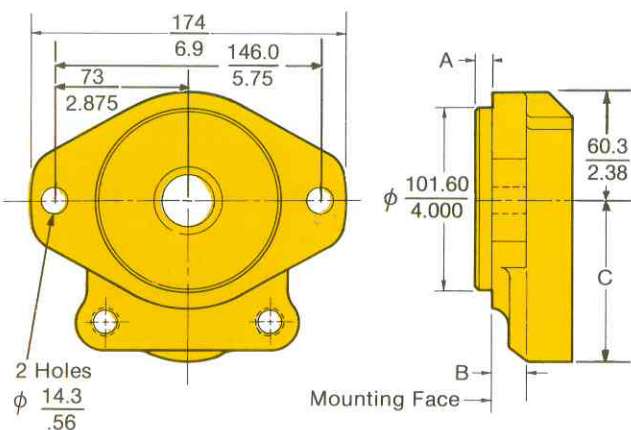
CODES

Outboard Bearing	Drain-line Thread & Location	PUMPS Rotation			MOTORS Rotation
		Clockwise	Counter-Clockwise	Double	Double
Without	NONE	194	294	394	—
	¼ NPT	—	—	—	994
	¾ BSPP	—	—	—	1994
With	NONE	494	594	694	—
	¼ NPT	—	—	—	894
	¾ BSPP	—	—	—	1894

FOR ALL UNITS

To determine direction of shaft rotation, view the unit with the shaft pointing toward you, and the idler (driven) gear beneath the shaft. With clockwise rotation, flow will be left to right. The inlet port will be on the left, outlet on the right. The flow is in the opposite direction with counter-clockwise rotation. Inverting the pump will reverse the inlet and outlet ports but not the direction of rotation.

SAE B 2-BOLT P30™/P50™



CODES

Outboard Bearing	Drain-line Thread & Location	PUMPS Rotation			MOTORS Rotation
		Clockwise	Counter-Clockwise	Double	Double
Without	NONE	196	296	396	—
	NONE	197	297	397	—
	¼ NPT	—	—	—	997
	¾ BSPP	—	—	—	1997
With	NONE	497	597	697	—
	¼ NPT	—	—	—	897
	¾ BSPP	—	—	—	1897

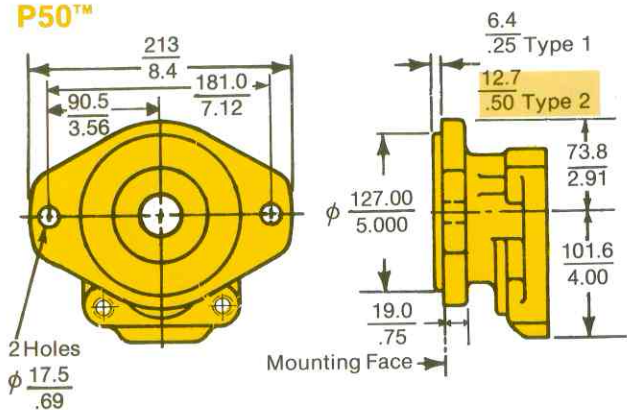
Model	A	B	C
P30 Type 1 & Type 2	9.5 .38	19.0 .75	90.5 3.56
P50 Type 1	6.4 .25	19.0 .75	101.6 4.00
Type 2	9.5 .38		

■ Type 2. Can only be used with type 2 drive shafts.

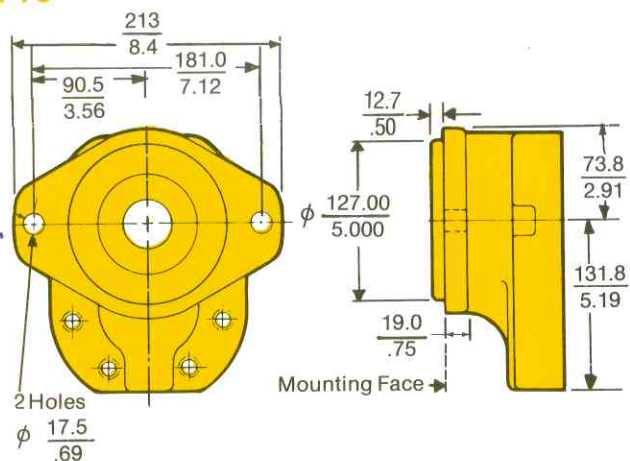
SAE C 2-BOLT P50™/P75™ ONLY

This catalog contains codes for most widely used models only. Complete codes for assembling all configurations are readily available from our sales representatives.

P50™



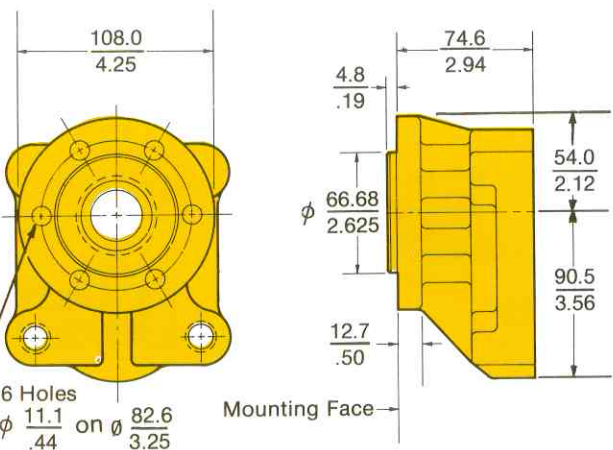
P75™



Outboard Bearing	Drain-line Thread & Location 	CODES			MOTORS
		PUMPS			Rotation
		Rotation	Counter-Clockwise	Double	Double
Without	NONE	199	299	399	—
	¼ NPT	—	—	—	999
	¼ BSPP	—	—	—	1999
	NONE	198	298	398	—
	¼ NPT	—	—	—	998
	¼ BSPP	—	—	—	1998
With	NONE	498	598	698	—
	¼ NPT	—	—	—	898
	¼ BSPP	—	—	—	1898

■ Type 2. Can only be used with type 2 drive shafts.

ROUND FLANGE 6-BOLT P30™ ONLY

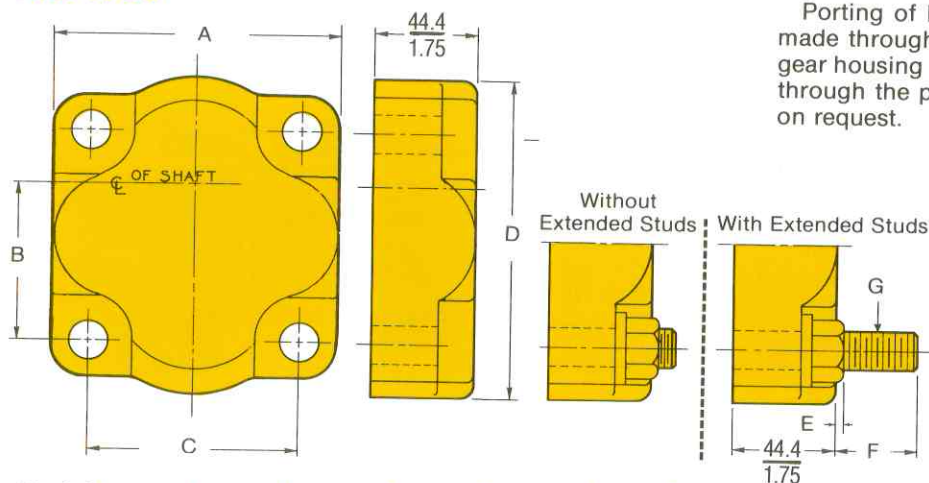


Outboard Bearing	Drain-line Thread & Location 	CODES			MOTORS Rotation
		PUMPS Rotation			
		Clockwise	Counter-Clockwise	Double	Double
Without	NONE	105	205	305	—
	¼ NPT	—	—	—	905
	¼ BSPP	—	—	—	1905
With	NONE	405	505	605	—
	¼ NPT	—	—	—	805
	¼ BSPP	—	—	—	1805

port end covers

Dimensional data shown in $\frac{\text{mm}}{\text{inches}}$

P30™/P50™



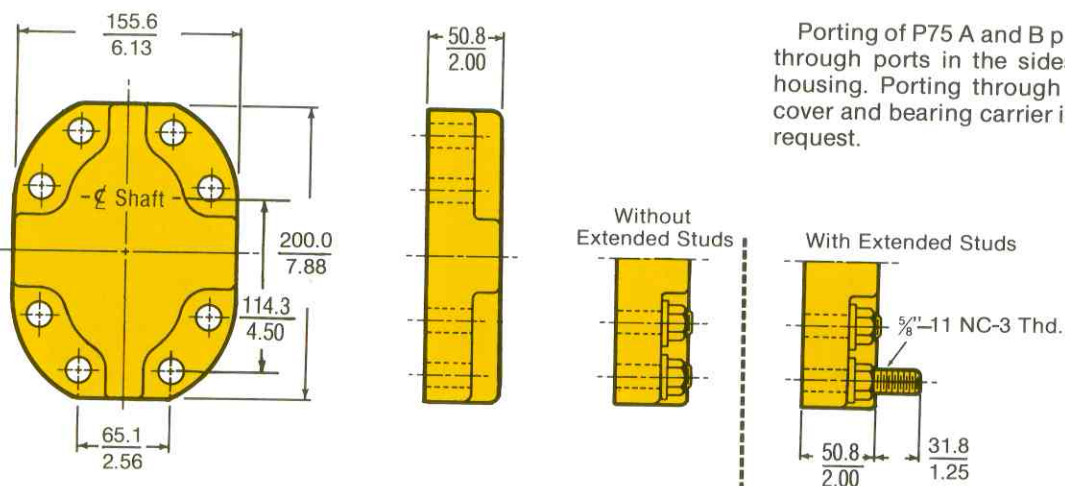
Porting of P30/50 A and B pumps is made through ports in the sides of the gear housing or bearing carrier. Porting through the port end cover is available on request.

Model	A	B	C	D	E	F	G
P30	$\frac{122.2}{4.81}$	$\frac{67.5}{2.66}$	$\frac{90.5}{3.56}$	$\frac{136.5}{5.38}$	$\frac{3.2}{12}$	$\frac{34.9}{1.38}$	$\frac{5}{8}$ "-11 NC-3 Thd.
P50	$\frac{125.4}{4.94}$	$\frac{70.6}{2.78}$	$\frac{90.5}{3.56}$	$\frac{152.4}{6.00}$	$\frac{3.2}{12}$	$\frac{38.1}{1.50}$	$\frac{5}{8}$ "-11 NC-3 Thd.

CODE SELECTION

	Without Extended Studs	With Extended Studs
Single Units	BE	—
Multiple Units	BI	BY

P75™



Porting of P75 A and B pumps is made through ports in the sides of the gear housing. Porting through the port end cover and bearing carrier is available on request.

CODE SELECTION

	Without Extended Studs	With Extended Studs
Single Units	BE	—
Multiple Units	BI	BY

U.S. standard and metric threads

Units ordered from codes shown in this catalog will accommodate the following U.S. Standard or Metric threads:

Port Size		Split Flange Mounting Bolts		SAE Straight Thread	Metric Straight Thread	NPT Tapered Thread	BSPP Parallel Thread
Inches	Millimeters	SAE	Metric				
1/4	6.35	—	—	—	—	1/4 — 18	1/4 — 19
3/8	9.53	—	—	—	—	3/8 — 18	3/8 — 19
1/2	12.70	5/16 — 18	M8 x 1.25	3/4 — 16	M18 x 1.5	1/2 — 14	1/2 — 14
5/8	15.88	—	—	7/8 — 14	M22 x 1.5	—	—
3/4	19.05	3/8 — 16	M10 x 1.5	1 1/16 — 12	M26 x 1.5	3/4 — 14	3/4 — 14
7/8	22.22	—	—	1 3/16 — 12	M30 x 1.5	—	—
1	25.40	3/8 — 16	M10 x 1.5	1 5/16 — 12	M33 x 2	1 — 11 1/2	1 — 11
1 1/4	31.75	7/16 — 14	M10 x 1.5	1 5/8 — 12	M42 x 2	1 1/4 — 11 1/2	1 1/4 — 11
1 1/2	38.10	1/2 — 13	M12 x 1.75	1 7/8 — 12	M48 x 2	1 1/2 — 11 1/2	1 1/2 — 11
2	50.80	1/2 — 13	M12 x 1.75	2 1/2 — 12	—	—	2 — 11
2 1/2	63.50	1/2 — 13	M12 x 1.75	—	—	—	—
3	76.20	5/8 — 11	M16 x 2.0	—	—	—	—

approximate weight

**TABLE 1
SINGLE UNITS**

Approximate weight of single pump or motor with SAE B 4-bolt mounting.

TABLE 1		Gear Width (inches)									
Model	Unit Weight	1	1¼	1½	1¾	2	2¼	2½	2¾	3	
P30	Pounds	33	34	35	36	37	—	—	—	—	
	KG	15	15½	16	16½	17	—	—	—	—	
P50	Pounds	37	38½	40	41½	43	48½	50	—	—	
	KG	17	17½	18	18¾	19½	22	22½	—	—	
P75	Pounds	72	75	77	80	82	85	87	90	92	
	KG	33	34	35	36	37	39	40	41	42	

**TABLE 2
MULTIPLE UNITS**

To determine the approximate weight of a pump or motor with SAE B 4-bolt mounting. . .

1. Determine from Table 1 the approximate weight of a single unit the same size as the first unit of the multiple assembly.
2. From Table 2 determine the approximate weight of each additional unit of the multiple assembly and add to the unit weight of the first unit to estimate total weight of multiple assembly.

TABLE 2		Gear Width (inches)								
Model	Add per Gear Section	1	1¼	1½	1¾	2	2¼	2½	2¾	3
P30	Pounds	27	28	29	31	32	—	—	—	—
	KG	12	12½	13	14	14½	—	—	—	—
P50	Pounds	31	32½	34	35½	37	42½	44	—	—
	KG	14	15	15½	16	17	19¼	20	—	—
P75	Pounds	59	62	64	67	69	72	74	77	79
	KG	27	28	29	31	32	33	34	35	36

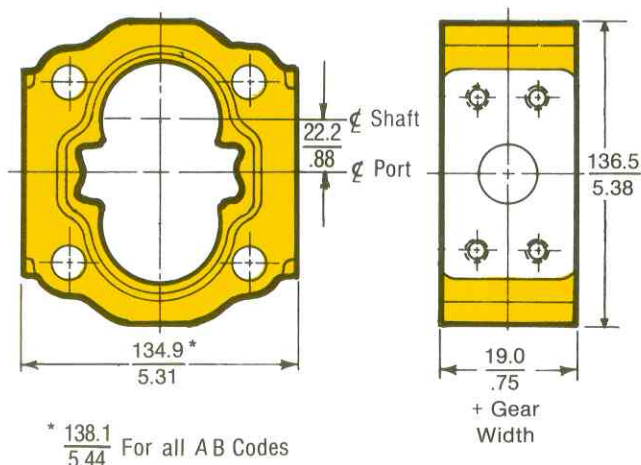
gear housings

P30™

Porting shown in color panels are rated to 2000 psi/140 bar. For other available porting, contact your sales representative from Commercial.

SPLIT FLANGE PORTS

Dimensional data shown in $\frac{\text{mm}}{\text{inches}}$



NOTE:
Codes shown in black are SAE threads.
Codes shown in color are metric threads.

When specifying split flange porting on multiple units, all coding MUST be cleared by our Technical Service Dept.

CODE SELECTION

Flange Hole Diameter (in.)		CODE Gear width (in.)				
Left	Right	1	1¼	1½	1¾	2
NONE	NONE	AB10 AB10	AB12 AB12	AB15 AB15	AB17 AB17	
1	1		OF12 UM12	OF15 UM15		
1	1¼*		OG12* VU12*	OG15 VU15		
1¼*	1		OJ12* UX12*	OJ15 UX15		
1¼	1¼				OL17 PO17	OL20 PO20
1¼	1½*				OM17* QO17*	OM20 QO20
1½*	1¼				OP17* SO17*	OP20 SO20

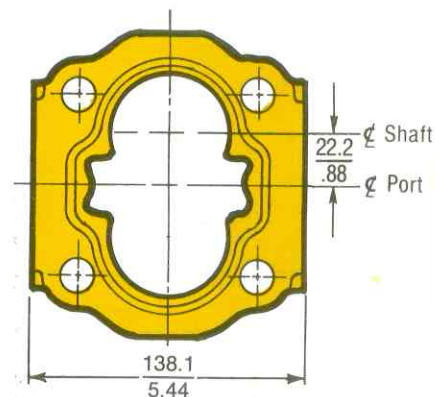
*low pressure inlet only

½" and ¾" gear sections are available without porting for secondary pumps in multiple assemblies only.

Code for ½" gear is AB05
AB05

Code for ¾" gear is AB07
AB07

STRAIGHT THREAD PORT



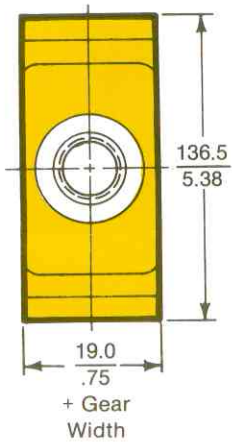
CODE SELECTION

Port Size O.D. Tube (in.)		CODE	
Left	Right	1	
NONE	NONE	AB10 AB10	
¾	NONE	EC10 EN10	
NONE	¾	ED10 TQ10	
¾	¾	EF10 ES10	
¾	1*	EG10* ET10*	
1*	¾	EJ10* EV10*	
1	1		
1	1¼*		
1¼*	1		
1¼	1¼		
1¼	1½*		
1½*	1¼		

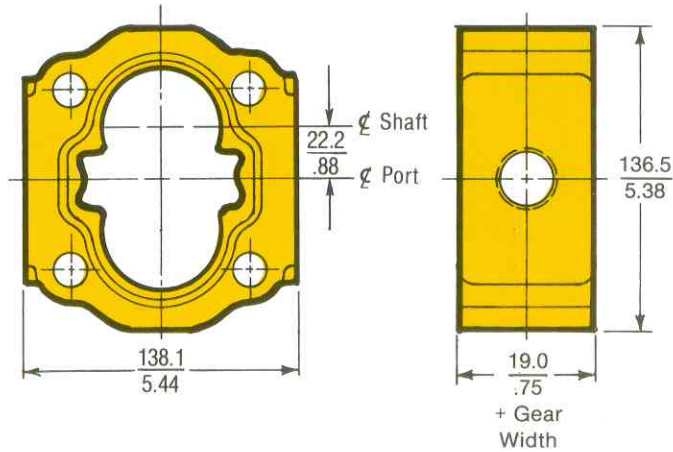
*low pressure inlet only

This catalog contains codes for most widely used models only. Complete codes for assembling all configurations are readily available from our sales representatives.

PIPE THREAD PORTS



NOTE:
Codes shown in black are SAE threads.
Codes shown in color are **metric** threads.



NOTE:
Codes shown in black are NPT threads.
Codes shown in color are **BSPP** threads.

CODE
Gear width (in.)

1/4	1/2	3/4	2
AB12 AB12	AB15 AB15	AB17 AB17	
EC12 EN12			
ED12 TQ12			
EF12 ES12			
EG12* ET12*			
EJ12* EV12*			
	AF15 CM15		
	AG15* VE15*	AG17* VE17*	AG20 VE20
	AJ15* EX15*	AJ17* EX17*	AJ20 EX20
		AL17 PA17	AL20 PA20
			AM20* QA20*
			AP20* SA20*

CODE SELECTION
Pipe Diameter
(in.)

Left		Right		1		1/4		1/2		3/4		2
NONE	NONE	NONE	NONE	AB10 AB10	AB12 AB12	AB15 AB15	AB17 AB17					
3/4	NONE	IC10 YN10	IC12 YN12									
NONE	3/4	ID10 YQ10	ID12 YQ12									
3/4	3/4	IF10 YST0	IF12 YS12									
3/4	1*	IG10* YT10*	IG12* YT12*									
1*	3/4	IJ10* YV10*	IJ12* YV12*									
1	1					YF15 MP15	YF17 MP17					
1	1 1/4*					YG15* VY15*	YG17* VY17*					
1 1/4*	1					YJ15* IX15*	YJ17* IX17*					
1 1/4	1 1/4											YL20 PF20

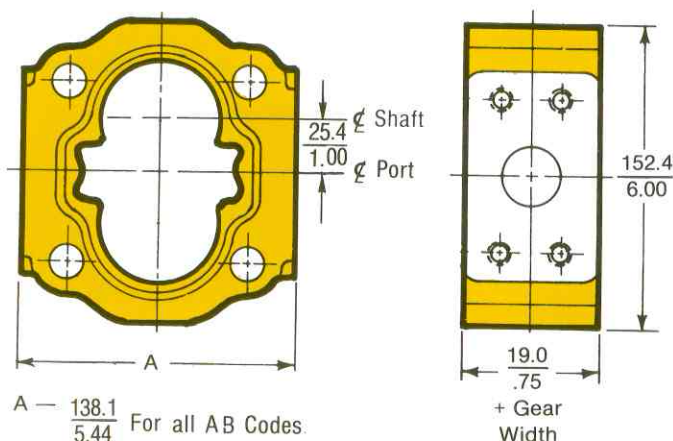
*low pressure inlet only

gear housings

P50™

Dimensional data shown in $\frac{\text{mm}}{\text{inches}}$

SPLIT FLANGE PORTS



$$A = \frac{138.1}{5.44} \text{ For all AB Codes}$$

$$\frac{134.9}{5.31} \text{ For Gear Widths Through 2"} \quad \text{When specifying split flange porting on multiple units, all coding MUST be cleared by our Technical Service Dept.}$$

$$\frac{168.2}{6.62} \text{ For } 2\frac{1}{4}" \text{ and } 2\frac{1}{2}" \text{ Gear Widths Only}$$

NOTE:

Codes shown in black are SAE threads.
Codes shown in color are metric threads.

CODE SELECTION

Flange Hole Diameter (in.)		CODE Gear width (in.)						
Left	Right	1	1¼	1½	1¾	2	2¼	2½
NONE	NONE	AB10 AB10						
1	1		OF12 UM12					
1	1¼*		OG12* VU12*					
1¼*	1		OJ12* UX12*					
1¼	1¼		OL15 PO15					
1¼	1½*		OM15* QO15*	OM17* QO17*				
1½*	1¼		OP15* SO15*	OP17* SO17*				
1½	1½				OR20 SV20	OR22 SV22	OR25 SV25	
1½	2*				OS20* JN20*	OS22* JN22*	OS25 JN25	
2*	1½				OV20* JQ20*	OV22* JQ22*	OV25 JQ25	

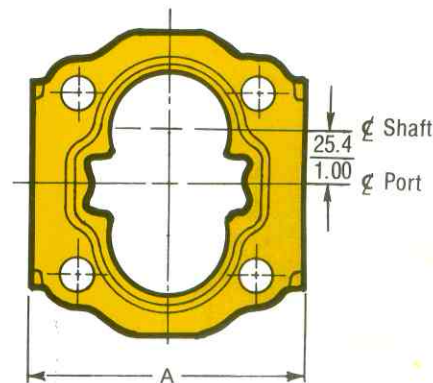
*low pressure inlet only

½" and ¾" gear sections are available without porting for secondary pumps in multiple assemblies only.

Code for ½" gear is AB05
AB05

Code for ¾" gear is AB07
AB07

STRAIGHT THREAD PORT



$$A = \frac{138.1}{5.44} \text{ For Gear Widths Through 2"} \quad \text{When specifying straight thread porting on multiple units, all coding MUST be cleared by our Technical Service Dept.}$$

$$\frac{171.4}{6.75} \text{ For } 2\frac{1}{4}" \text{ and } 2\frac{1}{2}" \text{ Gear Widths Only}$$

CODE SELECTION

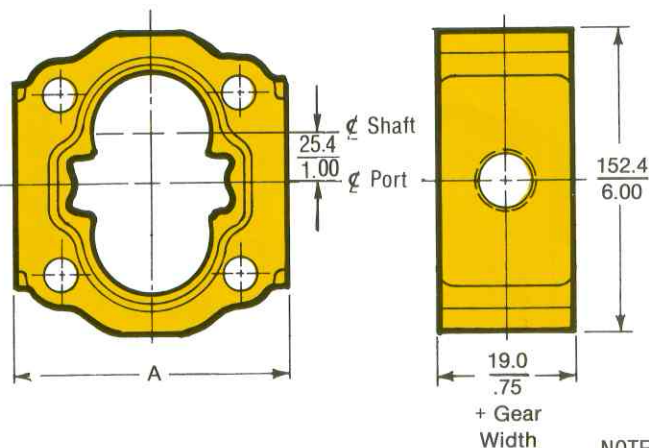
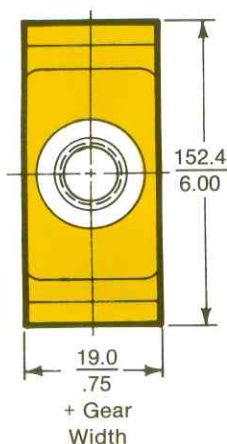
Port Size O.D. Tube (in.)		CODE	
Left	Right	1	1¼
NONE	NONE	AB10 AB10	
¾	NONE	EC10 EN10	
NONE	¾	ED10 TQ10	
¾	¾	EF10 ES10	EF12 ES12
¾	1*	EG10* ET10*	EG12* ET12*
1*	¾	EJ10* EV10*	EJ12* EV12*
1	1		
1	1¼*		
1¼*	1		
1¼	1¼		
1¼	1½*		
1½*	1¼		

*low pressure inlet only

Porting shown in color panels are rated to 2000 psi/140 bar. For other available porting, contact your sales representative from Commercial.

This catalog contains codes for most widely used models only. Complete codes for assembling all configurations are readily available from our sales representatives.

PIPE THREAD PORTS



A — $\frac{138.1}{5.44}$ For Gear Widths Through 2"
 $\frac{171.4}{6.75}$ For $2\frac{1}{4}$ " and $2\frac{1}{2}$ " Gear Widths Only

NOTE:
 NPT threads are not recommended for use at pressures in excess of 100 bar/1500 psi.

NOTE:
 Codes shown in black are SAE threads.
 Codes shown in color are metric threads.

NOTE:
 Codes shown in black are NPT threads.
 Codes shown in color are BSPP threads.

CODE SELECTION

Pipe Diameter (in.)		CODE Gear width (in.)							
Left	Right	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	1 $\frac{3}{4}$	2	2 $\frac{1}{4}$	2 $\frac{1}{2}$	
NONE	NONE	AB10 AB10							
$\frac{3}{4}$	NONE	IC10 YN10							
NONE	$\frac{3}{4}$	ID10 YQ10							
$\frac{3}{4}$	$\frac{3}{4}$	IF10 YS10							
$\frac{3}{4}$	1*	IG10* YT10*	IG12 YT12*						
1*	$\frac{3}{4}$	IJ10* YV10*	IJ12 YV12*						
1	1		YF12	YF15 MP15					
1	1 $\frac{1}{4}$ *			YG15* VY15*	YG17 VY17*				
1 $\frac{1}{4}$ *	1			YJ15* IX15*	YJ17 IX17*				
1 $\frac{1}{4}$	1 $\frac{1}{4}$				YL17	YL20 PF20	YL22 PF22	YL25 PF25	
1 $\frac{1}{4}$	1 $\frac{1}{2}$							YM25 IQ25	
1 $\frac{1}{2}$	1 $\frac{1}{4}$							YP25 IS25	

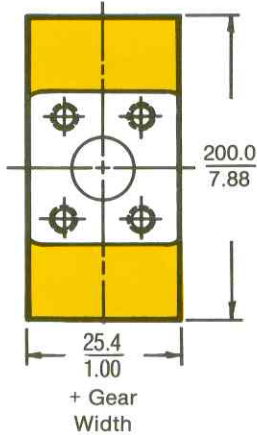
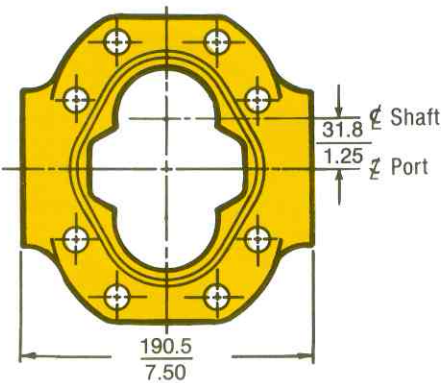
*low pressure inlet only

gear housings

P75™

Dimensional data shown in $\frac{\text{mm}}{\text{inches}}$

SPLIT FLANGE PORTS



When specifying split flange porting on multiple units, all coding **MUST** be cleared by our Technical Service Dept.

NOTE:
Codes shown in black are SAE threads.
Codes shown in color are metric threads.

CODE SELECTION

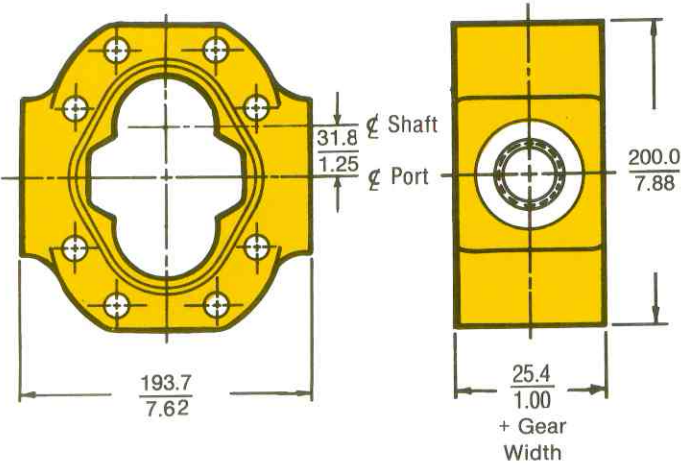
Flange Hole Diameter (in.)		CODE Gear width (in.)									
Left	Right	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$	3
$\frac{3}{4}$	1	UG07 VT07	UG10 VT10								
1	$\frac{3}{4}$	UJ07 RV07	UJ10 RV07								
1	1		OF10 UM10	OF12 UM12	OF15 UM15	OF17 UM17	OF20 UM20				
1	$1\frac{1}{4}$ *		OG10* VU10*	OG12 VU12							
$1\frac{1}{4}$ *	1		OJ10* UX10*	OJ12 UX12							
1	$1\frac{1}{2}$ *			OH12* HO12*	OH15* HO15*						
$1\frac{1}{2}$ *	1			OK12* VO12*	OK15* VO15*						
$1\frac{1}{4}$	$1\frac{1}{4}$			OL12 PO12	OL15 PO15	OL17 PO17	OL20 PO20	OL22 PO22	OL25 PO25	OL27 PO27	OL30 PO30
$1\frac{1}{4}$	$1\frac{1}{2}$ *				OM15* QO15*	OM17* QO17*	OM20* QO20*				
$1\frac{1}{2}$ *	$1\frac{1}{4}$				OP15* SO15*	OP17* SO17*	OP20* SO20*				
$1\frac{1}{4}$	2*					ON17* JR17*	ON20* JR20*	ON22* JR22*	ON25* JR25*		
2*	$1\frac{1}{4}$					OQ17* JM17*	OQ20* JM20*	OQ22* JM22*	OQ25* JM25*		
$1\frac{1}{2}$	$1\frac{1}{2}$						OR20 SV20	OR22 SV22	OR25 SV25	OR27 SV27	OR30 SV30

*low pressure inlet only

Porting shown in color panels are rated to 2000 psi/140 bar. For other available porting, contact your sales representative from Commercial.

This catalog contains codes for most widely used models only. Complete codes for assembling all configurations are readily available from our sales representatives.

STRAIGHT THREAD PORTS



NOTE:

Codes shown in black are SAE threads.
Codes shown in color are metric threads.

CODE SELECTION

Port Size O.D. Tube (in.)		CODE Gear width (in.)			
Left	Right	3/4	1	1 1/4	1 1/2
3/4	1*	EG07* ET07*			
1*	3/4	EJ07* EV07*			
1	1		AF10 CM10	AF12 CM12	AF15 CM15

*low pressure inlet only

SPLIT FLANGE PORTS, continued

CODE SELECTION

Flange Hole Diameter (in.)		CODE Gear width (in.)									
Left	Right	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3
1 1/2	2*					OS17* JN17*	OS20* JN20*	OS22* JN22*	OS25* JN25*		
2*	1 1/2					OV17* JQ17*	OV20* JQ20*	OV22* JQ22*	OV25* JQ25*		
1 1/2	2 1/2*									OT27* JX27*	OT30* JX30*
2 1/2*	1 1/2									OW27* LJ27*	OW30* LJ30*
2	2									OX27 JS27	OX30 JS30

*low pressure inlet only

drive shafts splined

STYLE OF SPLINED SHAFTS

SAE A

9 Teeth
16/32 Pitch

30° Pressure Angle

SAE B

13 Teeth
16/32 Pitch

30° Pressure Angle

SAE C

14 Teeth
12/24 Pitch

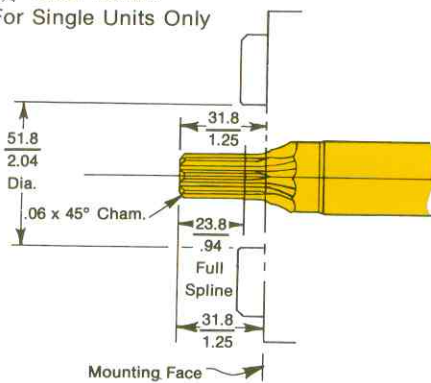
30° Pressure Angle

Dimensional data shown in mm
inches

SAE A

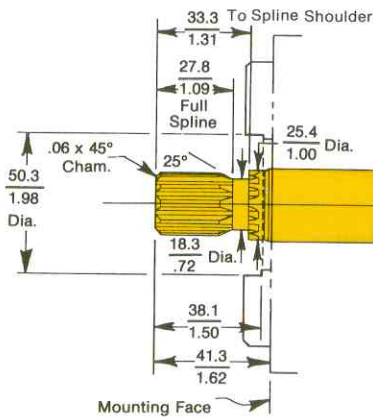
P30™ CODE 95• Type 1

Available in 1" and
1¼" Gear Widths
For Single Units Only

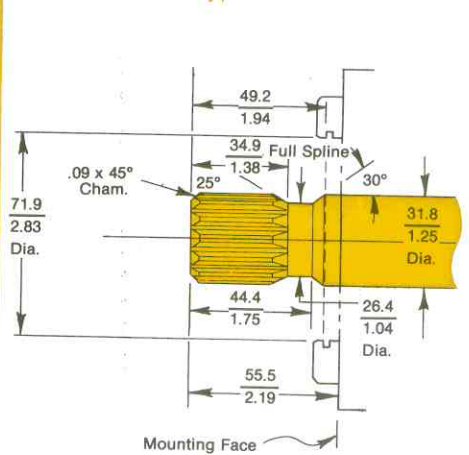


P30™ CODE 65• Type 2

For Single Units Only

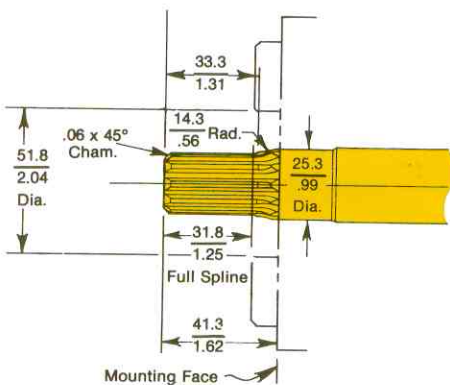


P50™ CODE 53 Type 2



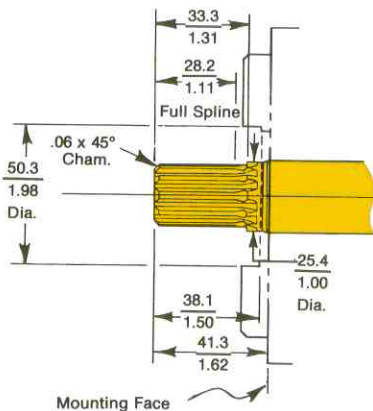
SAE B

P30™ CODE 25 Type 1



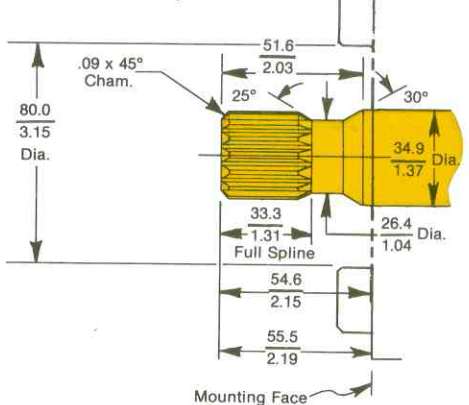
P30™ CODE 65• Type 2

For Multiple Units

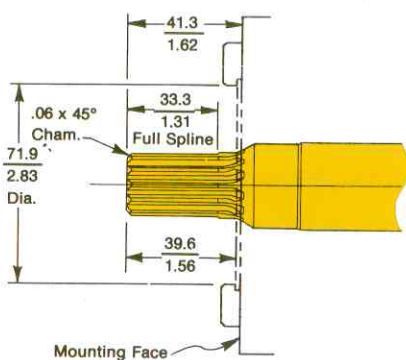


P75™ CODE 7 Type 1

For Single Units Only

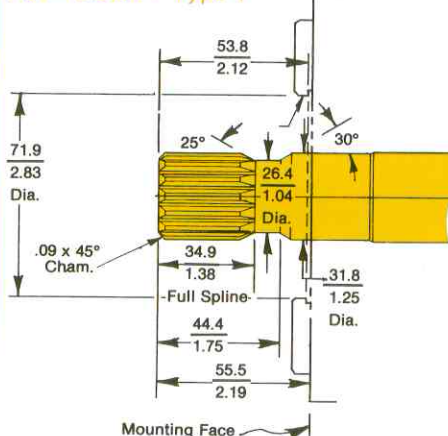


P50™ CODE 25 Type 1



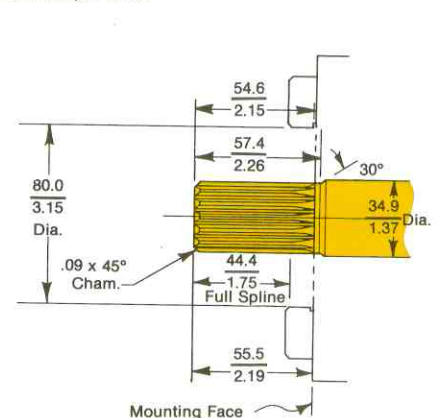
SAE C

P50™ CODE 7 Type 1



P75™ CODE 7 Type 1

For Multiple Units



This catalog contains codes for most widely used models only. Complete codes for assembling all configurations are readily available from our sales representatives.

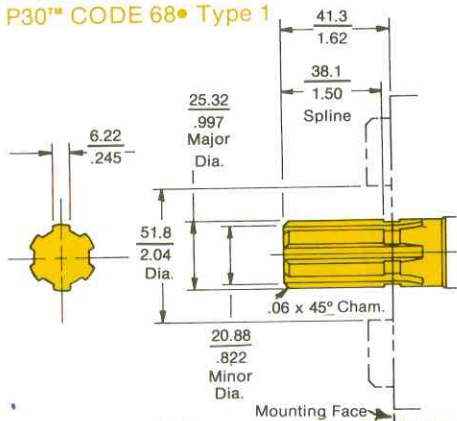
The Code 11 shaft for the P50 is INTEGRAL with the gear. No outboard bearing is required unless there is a radial load. The Code 11 shaft for the P75C is NOT INTEGRAL with the gear and always requires an outboard bearing. With this shaft the PL factor is limited to 8000.

Attention:

These illustrations do not necessarily portray the exact drive shaft configuration for reasons of design. To determine coupling engagement, specific details for any shaft can be obtained from your Commercial sales representative at any of our district sales offices.

SPLINED/6 TEETH

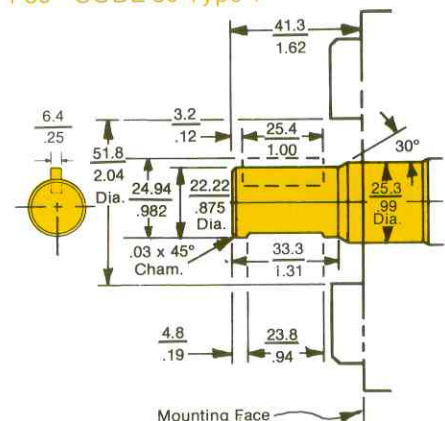
P30™ CODE 68• Type 1



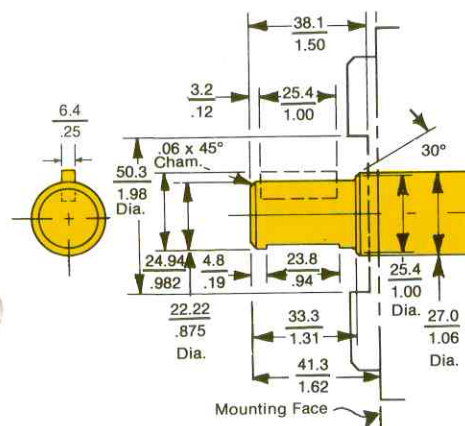
straight keyed

SAE B

P30™ CODE 30 Type 1

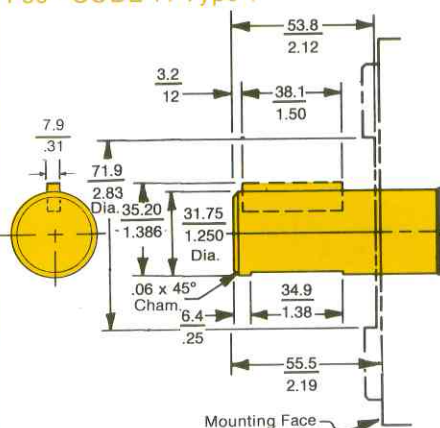


P30™ CODE 66• Type 2

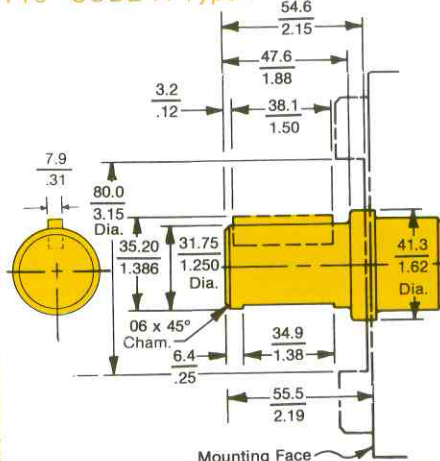


SAE C

P50™ CODE 11 Type 1

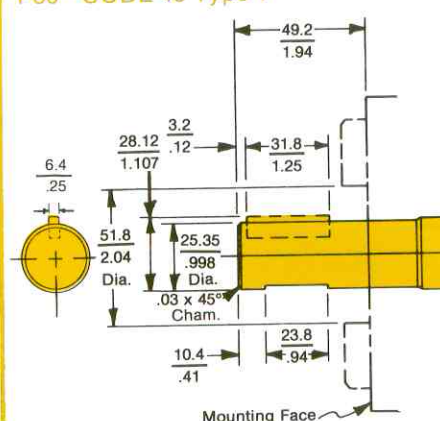


P75™ CODE 11 Type 1

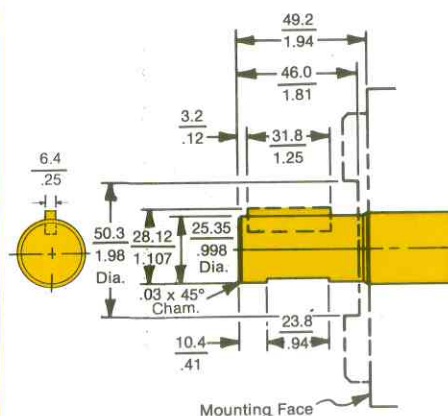


STRAIGHT KEYED

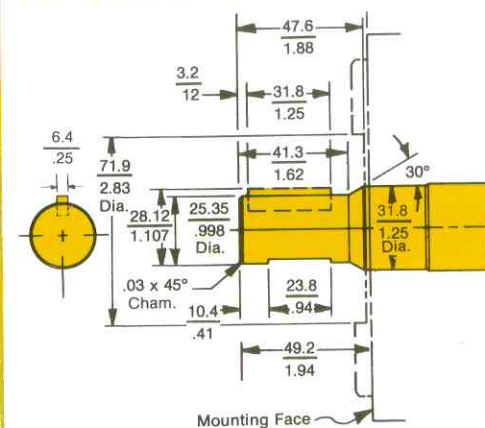
P30™ CODE 43 Type 1



P30™ CODE 67• Type 2



P50™ CODE 43• Type 1

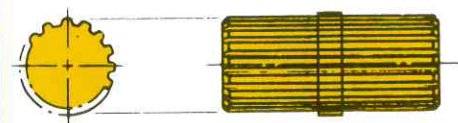


CONNECTING SHAFT

P30™/P50™/P75™ CODE 1

Type 1 and Type 2

For Multiple Units Only



• Available for special application upon request. Not a stock item.

Use Type 1 drive shafts with Type 1 shaft end covers only.

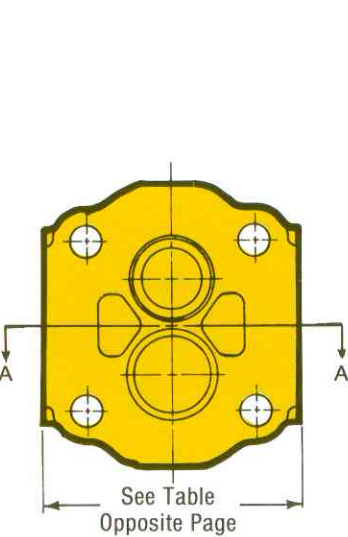
Use Type 2 drive shafts with Type 2 shaft end covers only.

bearing carriers

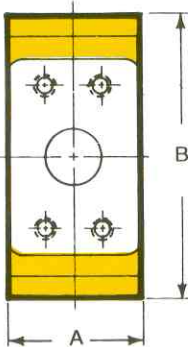
P30™/P50™ Multiple unit motor installation must be cleared through Commercial's Technical Service Department.

Dimensional data shown in $\frac{\text{mm}}{\text{inches}}$

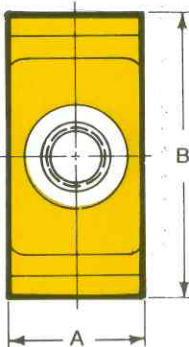
Both pump units of a tandem pump assembly may be fed through the bearing carrier provided inlet flow to each unit does not exceed 21 gpm. If both units discharge through common porting in the bearing carrier, maximum flow from either unit must not exceed 40 gpm.



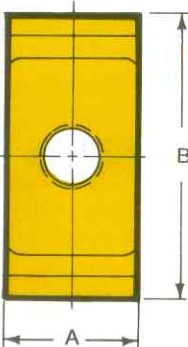
**SPLIT
FLANGE
PORTS**



**STRAIGHT
THREAD
PORTS**

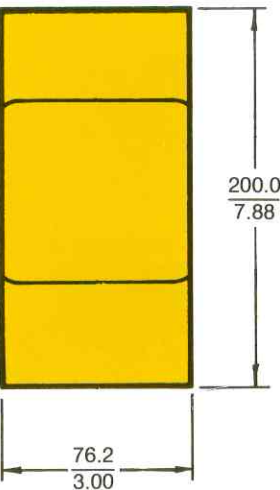
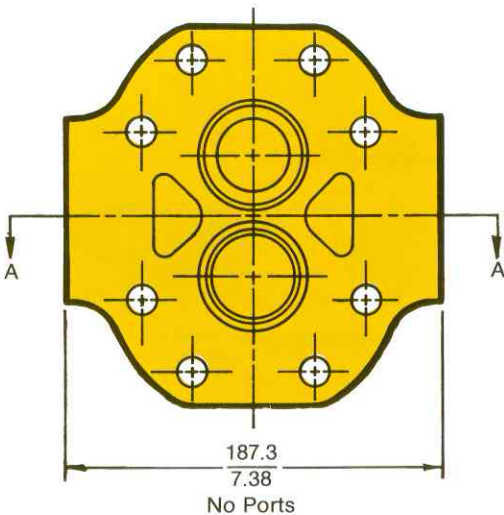


**PIPE
THREAD
PORTS**



Model	A	B
P30	63.5	136.5
	2.50	5.38
P50	73.0	152.4
	2.88	6.00

P75™



In a tandem pump assembly, up to 35 gpm may be fed to the second section through the bearing carrier. Both pump sections are then supplied through the main inlet port in the front gear housing. Total oil velocity through the inlet should not exceed 8-10 fps.

Porting through the bearing carrier is available on request.

This catalog contains codes for most widely used models only. Complete codes for assembling all configurations are readily available from our sales representatives.

P30™/P50™ PUMPS CODE SELECTION

Section A-A back front	Rot.	Split Flange Ports*		Width mm Inches	CODE SAE Metric	Straight Thread Ports		Width mm Inches	CODE SAE Metric	Pipe Thread Ports		Width mm Inches	CODE NPT† BSPP
		Flange Hole Diameter (in.) Left	Flange Hole Diameter (in.) Right			O.D. Tube Inches Left	O.D. Tube Inches Right			Pipe Diameter Inches Left	Pipe Diameter Inches Right		
	CW	NONE	NONE	131.8 5.19	C C	NONE	NONE	131.8 5.19	C C	NONE	NONE	131.8 5.19	C C
For clockwise rotation assemblies only.													
	CCW	NONE	NONE	131.8 5.19	D D	NONE	NONE	131.8 5.19	D D	NONE	NONE	131.8 5.19	D D
For counter-clockwise rotation assemblies only.													
	CW	1½	NONE	144.5 5.69	NB FH	1½	NONE	146.0 5.75	FB FL	1¼	NONE	146.0 5.75	VB DX
	CCW	NONE	1½	144.5 5.69	BN HF	NONE	1½	146.0 5.75	BF LF	NONE	1¼	146.0 5.75	BV XD
	CW	1½	¾	142.9 5.62	NR FW	1½	¾	146.0 5.75	FJ FZ	1¼	¾	146.0 5.75	VX DT
	CCW	¾	1½	142.9 5.62	RN WF	¾	1½	146.0 5.75	JF ZF	¾	1¼	146.0 5.75	XV TD
	CW	1	¾	142.9 5.62	SR ST	1	¾	146.0 5.75	KJ KL	1	¾	146.0 5.75	ZX PN
	CCW	¾	1		RS TS	¾	1		JK LK	¾	1		XZ NP

M30™/M50™ MOTORS CODE SELECTION

Section A-A back front	Rot.	Split Flange Ports*		Width mm Inches	CODE SAE Metric	Straight Thread Ports		Width mm Inches	CODE SAE Metric	Pipe Thread Ports		Width mm Inches	CODE NPT† BSPP
		Flange Hole Diameter (in.) Left	Flange Hole Diameter (in.) Right			O.D. Tube Inches Left	O.D. Tube Inches Right			Pipe Diameter Inches Left	Pipe Diameter Inches Right		
	Double	NONE	NONE	131.8 5.19	B B	NONE	NONE	131.8 5.19	B B	NONE	NONE	131.8 5.19	B B
Pump applications involving the use of Code B Bearing Carriers subject to approval of Technical Service Department.													
	Double	1¼	1¼	142.9 5.62	MM SS	1¼	1¼	146.0 5.75	BB JJ	1¼	1¼	146.0 5.75	VV GG
		1½	1½		NN XX	1½	1½		FF ZZ				

P75™ PUMPS CODE SELECTION

Section A-A back front	Rot.	Split Flange Ports*		Width mm Inches	CODE SAE Metric	Straight Thread Ports		Width mm Inches	CODE SAE Metric
		Flange Hole Diameter (in.) Left	Right			O.D. Tube Inches Left	Right		
	CW	NONE	NONE	187.3 7.38	C C	NONE	NONE	187.3 7.38	C C
For clockwise rotation assemblies only.									
	CCW	NONE	NONE		D D	NONE	NONE		D D
For counter-clockwise rotation assemblies only.									

Porting through the bearing carrier is available on request.

M75™ MOTORS CODE SELECTION

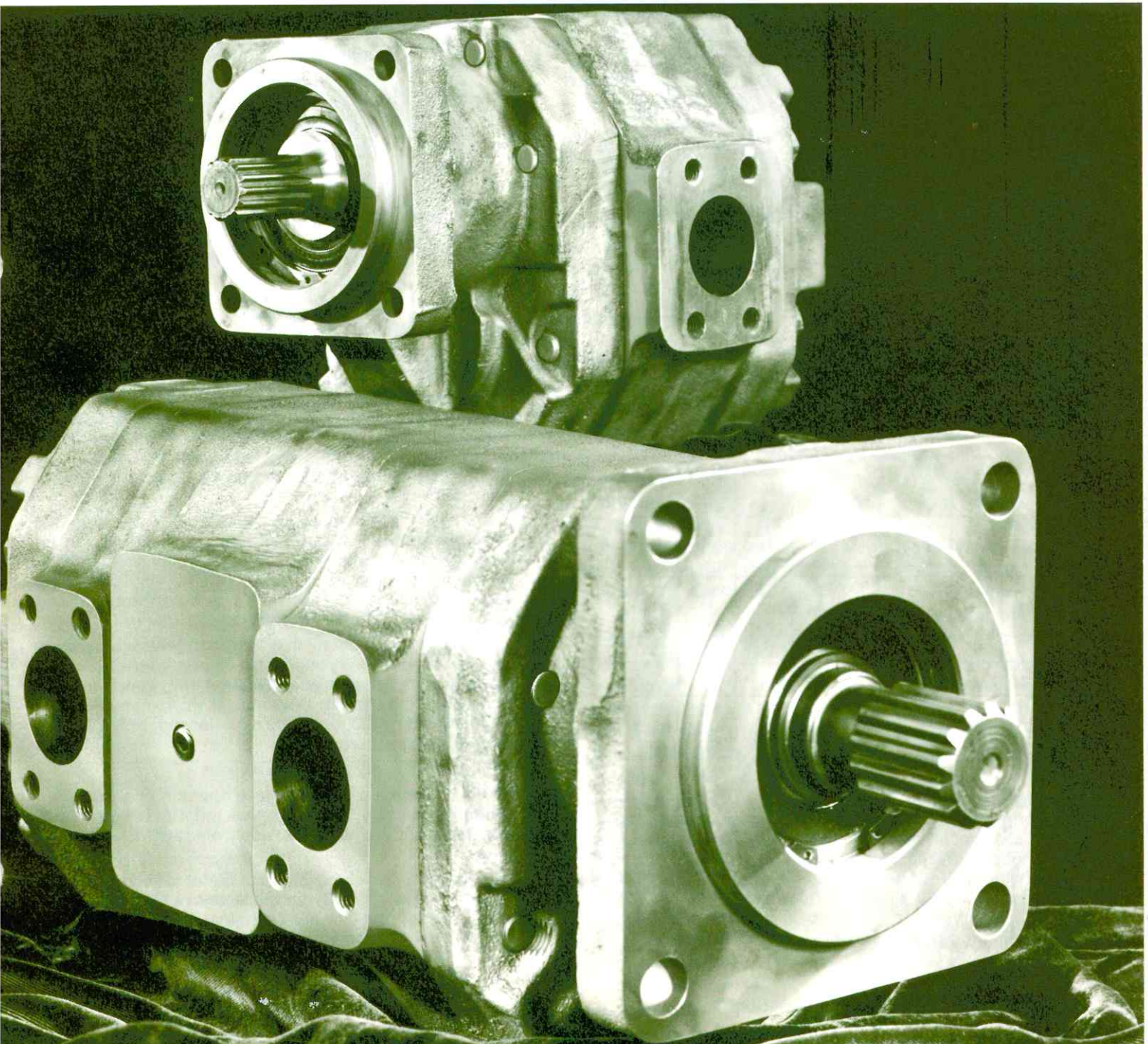
Section A-A back front	Rot.	Split Flange Ports*		Width mm Inches	CODE SAE Metric	Straight Thread Ports		Width mm Inches	CODE SAE Metric
		Flange Hole Diameter (in.) Left	Flange Hole Diameter (in.) Right			O.D. Tube Inches Left	O.D. Tube Inches Right		
	Double	NONE	NONE	187.3 7.38	B B	NONE	NONE	187.3 7.38	B B
Pump applications involving the use of Code B Bearing Carriers subject to approval of Technical Service Department.									
	Double	1¼	1¼	184.2 7.25	MM SS	1¼	1¼	187.3 7.38	BB JJ
		1½	1½	196.8 7.75	NN XX	1½	1½		FF ZZ

* When specifying split flange porting on multiple units, all coding MUST be cleared by our Technical Service Dept.

† Not recommended for use at pressures in excess of 100 bar/1500 psi.

P125™
OIL HYDRAULIC
SINGLE & MULTIPLE
PUMPS & MOTORS

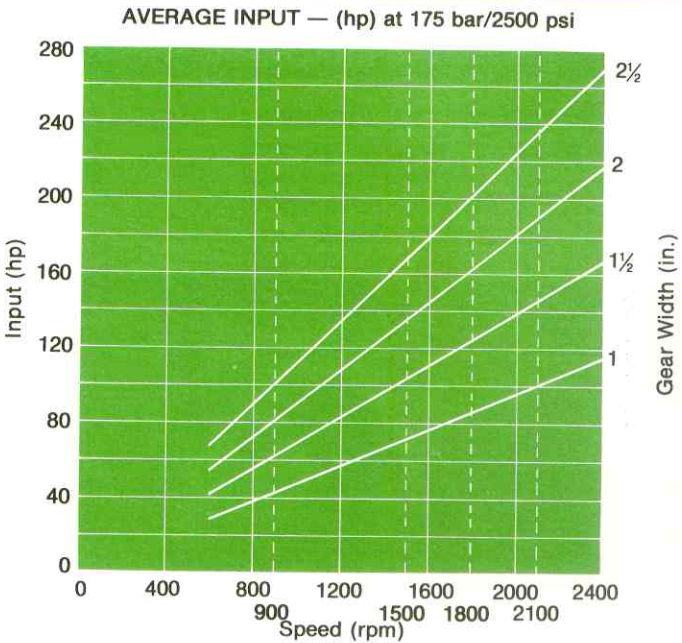
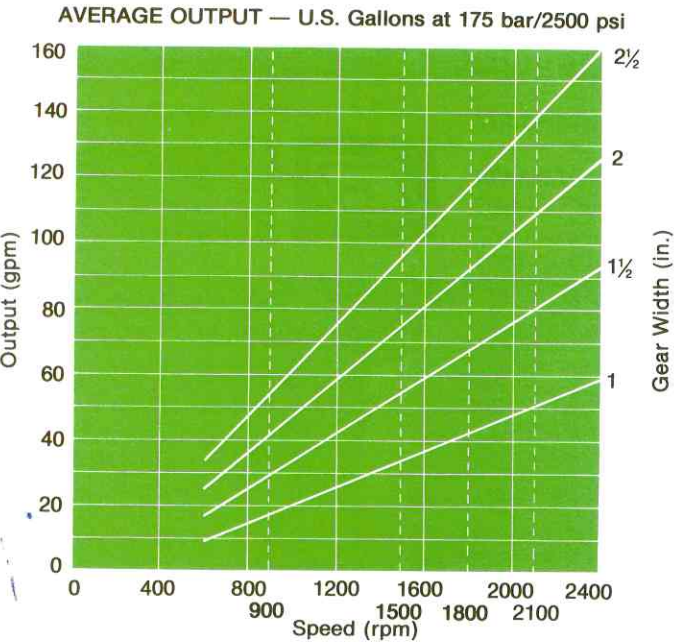
pressures to 175 bar
2500 psi • output to 160 gpm
motors up to 175 hp



performance data

P125™ PUMPS

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



Average output flow • U.S. Gallons per Minute
• British Imperial Gallons per Minute
• Litres per Minute

Speed rpm	Gear Width (inches)						
	1	1¼	1½	1¾	2	2¼	2½
900	17	23	29	35.5	41.5	48	54
	14	19	24	29.5	34.5	40	45
	64.5	87	110	134	157	182	204
1200	25.5	33.5	42	50	58.5	66.5	75
	21	28	35	41.5	48.5	55.5	62.5
	96.5	127	159	189	221	252	284
1500	34	44	54.5	65	75	85.5	96
	28.5	36.5	45.5	54	62.5	71	80
	129	167	206	246	284	324	363
1800	42.5	55	67	79.5	92	104.5	117
	35.5	46	56	66	76.5	87	97.5
	161	208	254	301	348	396	443
2100	51	65	80	94.5	108.5	123.5	138
	42.5	54	66.5	78.5	90.5	103	115
	193	246	303	358	411	467	522
2400	59	75.5	92.5	109	125.5	142	159
	49	63	77	91	104.5	118	132.5
	223	286	350	413	475	537	602

performance data

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 SSU at 100°F. Requests for more specific data should be directed to our Technical Service Department through our sales representatives.

multiple units

Each section of a multiple pump should be regarded as a single pumping unit with corresponding delivery and power input requirements. Since the entire input is fed through the drive shaft, the power delivered to or from the pump is limited by the physical strength of the shaft. To define this power limitation, we use a "PL" factor, "P" being the operating pressure and "L" the summation of gear widths.

For P125 C Series, the PL factor is 8000. This means, for example, that a maximum of 140 bar/2000 psi can be permitted to act simultaneously on two 2 inch gear widths in a multiple assembly, since 2000 x (2 + 2) = 8000. If the PL factor exceeds 8000, the shaft may be overloaded, and premature failure may be anticipated.

A fatigue factor enters into any shaft life consideration and it is consequently impossible to predict shaft life with any accuracy because of application, duty requirements, and spline lubrication. Where high PL factors, such as anything over 7000, are to be experienced, only Code 34 should be considered.

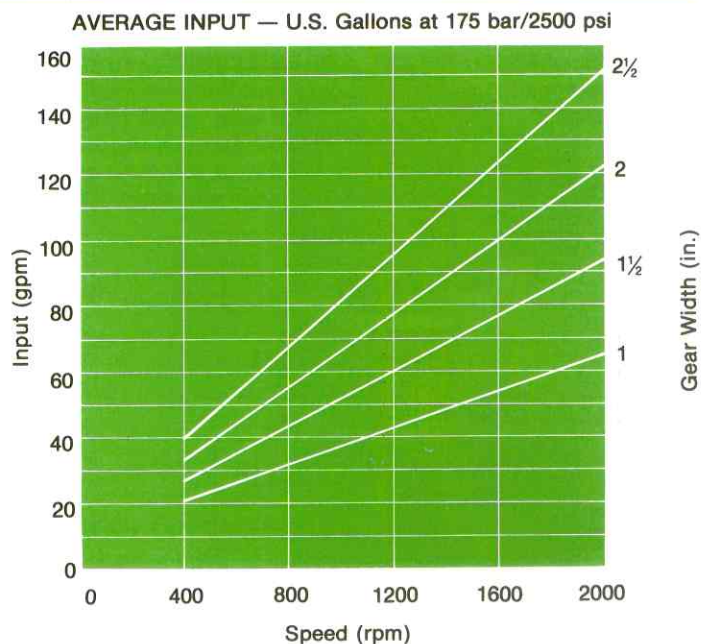
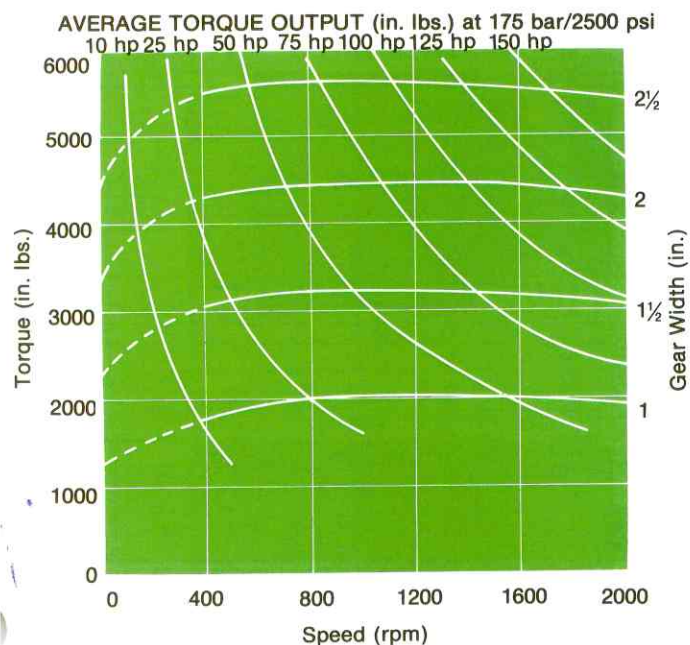
PL factors apply to motors as well.

Where there are three or more operating sections in a multiple assembly, the application must be reviewed with Commercial's Technical Service Department.

NOTE:

Installations involving pump or motor speeds below 400 rpm or exceeding 2000 rpm and/or above 175 bar/2500 psi should be approved by our Technical Service Department through your Commercial representative.

M125™ MOTORS



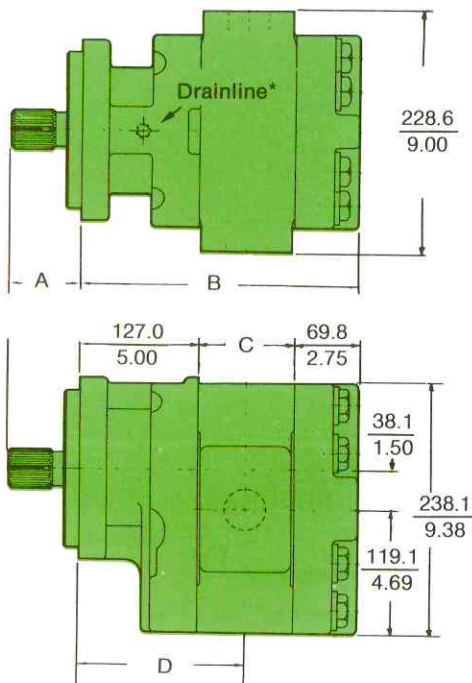
MOTOR DATA (extracted from the average performance curves above)

Speed rpm	1" GEAR			1 1/2" GEAR			2" GEAR			2 1/2" GEAR		
	Output		Input gpm igpm lpm	Output		Input gpm igpm lpm	Output		Input gpm igpm lpm	Output		Input gpm igpm lpm
	Torque in. lbs. N m kpm	Power hp met. hp		Torque in. lbs. N m kpm	Power hp met. hp		Torque in. lbs. N m kpm	Power hp met. hp		Torque in. lbs. N m kpm	Power hp met. hp	
800	1990	25.5	31.5	3200	40.5	43.5	4400	56	55	5650	72	67
	225		26	361.5		36	497		46	638.5		56
	23	26	119	37	41	165	50.5	57	208	65	73	254
1200	2000	38	43	3225	61.5	60	4400	84	78	5650	107.5	95
	226		36	364.5		50	497		65	638.5		79
	23	38.5	163	37	62.5	227	50.5	85	295	65	109	360
1600	2000	51	54	3220	82	77	4370	111	100	5580	141.5	123
	226		45	364		64	493.5		83.5	630.5		102.5
	23	51.5	204	37	83	291	50.5	112.5	378	64.5	143.5	466
2000	1900	60	65.5	3070	97.5	94	4240	134.5	122	5410	171.5	151
	214.5		54.5	347		78.5	479		101.5	611		125.5
	22	61	248	35.5	99	356	49	136.5	462	62.5	174	572

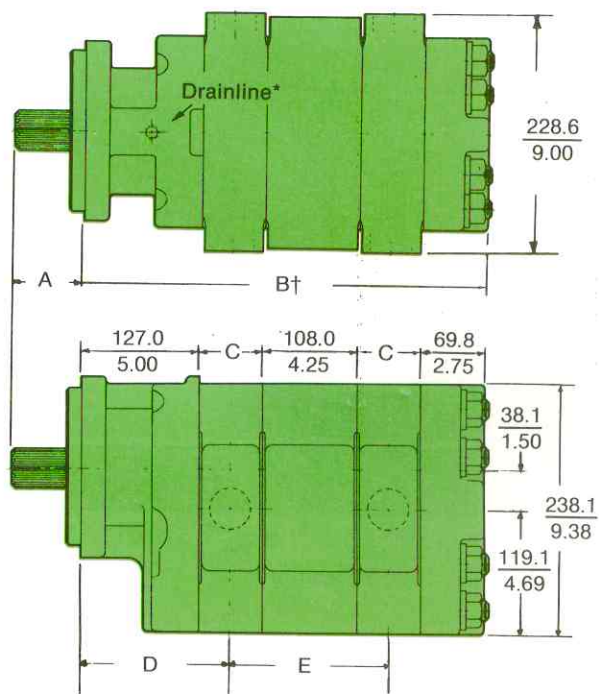
dimensional data

Dimensional data shown in $\frac{\text{mm}}{\text{inches}}$

P125™ SINGLE UNITS



P125™ MULTIPLE UNITS



SINGLE UNITS

A	B	C	D
See Drive Shaft Codes, Page 6	$\frac{228.6}{9.00}$ +Gear Width	$\frac{31.8}{1.25}$ +Gear Width	$\frac{142.9}{5.62}$ +½ Gear Width

MULTIPLE UNITS

A	B	C	D	E
See Drive Shaft Codes, Page 6	$\frac{368.3}{14.50}$ +Gear Widths	$\frac{31.8}{1.25}$ +Gear Width	$\frac{142.9}{5.62}$ +½ Gear Width	$\frac{139.7}{5.50}$ +½ Total Gear Widths

*Drainline location for motor applications.

Motors are internally drained and generally do not require a drainline connection. In certain applications where motor shaft seals may be subjected to high pressure, a drainline should be installed. Your Commercial representative can offer suggestions.

†For overall length of multiple units with more than two sections ADD $\frac{139.7}{5.50}$ plus gear widths for each additional section.

fractional to decimal conversion chart $\frac{\text{mm}}{\text{inches}}$

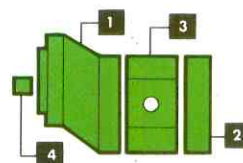
4ths	8ths	16ths	32nds	To 2 Places	To 3 Places	To 4 Places
			$\frac{1}{32}$	0.79 .03	0.794 .031	0.7938 .0312
		$\frac{1}{16}$		1.59 .06	1.588 .062	1.5875 .0625
			$\frac{3}{32}$	2.38 .09	2.381 .094	2.3813 .0938
	$\frac{1}{8}$			3.18 .12	3.175 .125	3.1750 .1250
			$\frac{5}{32}$	3.97 .16	3.969 .156	3.9688 .1562
		$\frac{3}{16}$		4.76 .19	4.762 .188	4.7625 .1875
			$\frac{7}{32}$	5.56 .22	5.556 .219	5.5563 .2188
$\frac{1}{4}$				6.35 .25	6.350 .250	6.3500 .2500
			$\frac{9}{32}$	7.14 .28	7.144 .281	7.1438 .2812
		$\frac{5}{16}$		7.94 .31	7.938 .312	7.9375 .3125
			$\frac{11}{32}$	8.73 .34	8.731 .344	8.7313 .3438
	$\frac{3}{8}$			9.52 .38	9.525 .375	9.5250 .3750
			$\frac{13}{32}$	10.32 .41	10.319 .406	10.3188 .4062
		$\frac{7}{16}$		11.11 .44	11.112 .438	11.1125 .4375
			$\frac{15}{32}$	11.91 .47	11.906 .469	11.9063 .4688
$\frac{1}{2}$				12.70 .50	12.700 .500	12.7000 .5000
			$\frac{17}{32}$	13.49 .53	13.494 .531	13.4938 .5312
		$\frac{9}{16}$		14.29 .56	14.288 .562	14.2875 .5625
			$\frac{19}{32}$	15.08 .59	15.081 .594	15.0813 .5938
	$\frac{5}{8}$			15.88 .62	15.875 .625	15.8750 .6250
			$\frac{21}{32}$	16.67 .66	16.669 .656	16.6688 .6562
		$\frac{11}{16}$		17.46 .69	17.462 .688	17.4625 .6875
			$\frac{23}{32}$	18.26 .72	18.256 .719	18.2563 .7188
$\frac{3}{4}$				19.05 .75	19.050 .750	19.0500 .7500
			$\frac{25}{32}$	19.84 .78	19.844 .781	19.8438 .7812
		$\frac{13}{16}$		20.64 .81	20.638 .812	20.6375 .8125
			$\frac{27}{32}$	21.43 .84	21.431 .844	21.4313 .8438
	$\frac{7}{8}$			22.22 .88	22.225 .875	22.2250 .8750
			$\frac{29}{32}$	23.02 .91	23.019 .906	23.0188 .9062
		$\frac{15}{16}$		23.81 .94	23.812 .938	23.8125 .9375
			$\frac{31}{32}$	24.61 .97	24.606 .969	24.6063 .9688
1				25.40 1.00	25.400 1.000	25.4000 1.0000

how to specify and code

This catalog contains codes for most widely used models only. Complete codes for assembling all configurations are readily available from our sales representatives.

SINGLE UNITS

Commercial's P125 pumps and motors are available as single or multiple assemblies. The full assembly code for the finished unit combines individual codes for shaft end cover, port end cover, gear housing, and drive shaft as selected to do the job you require. It is preceded by the letter P or M for pump or motor — and by 125 C to designate the series and model. Here is an example of the procedure:



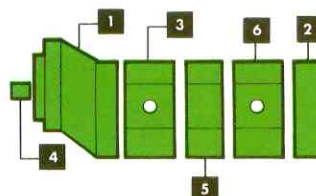
M125 SINGLE MOTOR

Assembly Code M125 C 880 BE GA10-34

Motor M	1. Shaft End Cover (Page 6) 880
Series 125	2. Port End Cover (Page 7) BE
Model C	3. Gear Housing (Page 9) GA10
	4. Drive Shaft (Page 10) 34

MULTIPLE UNITS

Multiple units are coded in the same manner except that additional designations for added sub-components must be included. Each section added to the single assembly requires a proper code for a bearing carrier, gear housing, and connecting shaft. Here is an example of an assembly code for a two-section P125 C pump:



P125 MULTIPLE PUMP

Assembly Code P125 C 478 BI OV15-34 C OV15-1

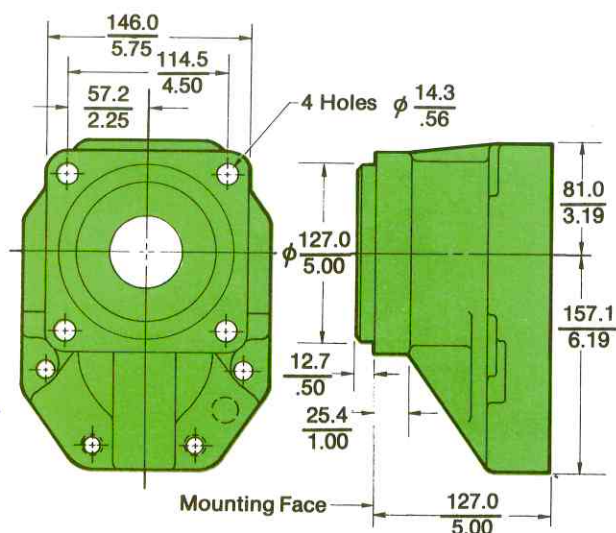
Pump P	1. Shaft End Cover (Page 6) 478
Series 125	2. Port End Cover (Page 7) BI
Model C	3. Gear Housing (Page 9) OV15
	4. Drive Shaft (Page 10) 34
	5. Bearing Carrier (Page 11) C
	6. Gear Housing (Page 9) OV15
	7. Connecting Shaft (Page 10) 1

shaft end covers

Dimensional data shown in $\frac{\text{mm}}{\text{inches}}$

P125™

SAE C 4-BOLT/ANSI 127-4



NOTE:

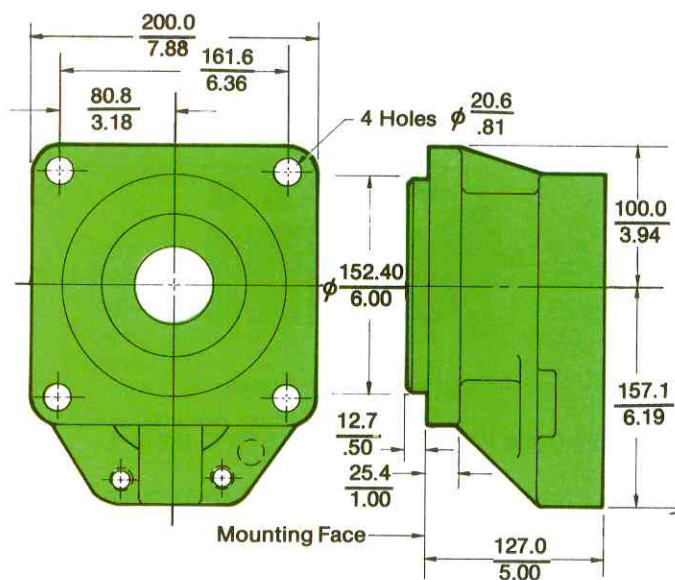
Codes shown in black are NPT threads.

Codes shown in color are BSPP threads.

Drain-line Thread & Location 	CODE SELECTION PUMPS Rotation		MOTORS Rotation
	Clockwise	Counter-Clockwise	Double
NONE	478	578	—
¼ NPT	—	—	878
¼ BSPP	—	—	1878

To determine direction of shaft rotation, view the unit with the shaft pointing toward you, and the idler (driven) gear beneath the shaft. With clockwise rotation, flow will be left to right. The inlet port will be on the left, outlet on the right. The flow is in the opposite direction with counter-clockwise rotation. Inverting the pump will reverse the inlet and outlet ports but not the direction of rotation.

SAE D 4-BOLT/ANSI 152-4



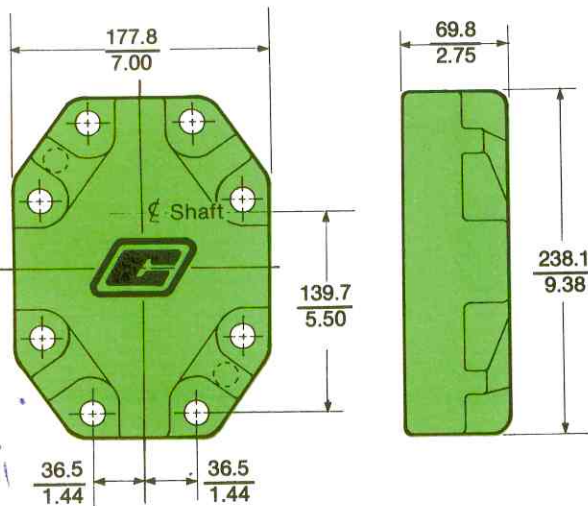
Drain-line Thread & Location 	CODE SELECTION PUMPS Rotation		MOTORS Rotation
	Clockwise	Counter-Clockwise	Double
NONE	480	580	—
¼ NPT	—	—	880
¼ BSPP	—	—	1880

port end covers

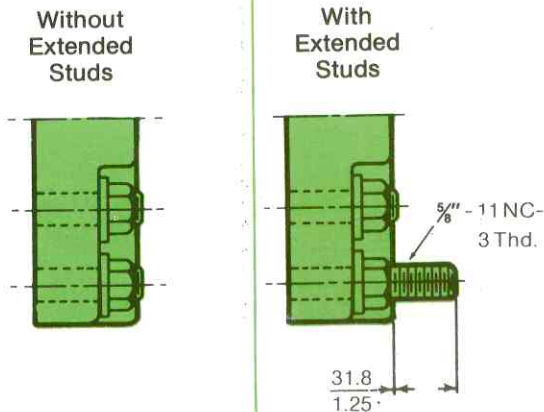
Dimensional data shown in $\frac{\text{mm}}{\text{inches}}$

This catalog contains codes for most widely used models only. Complete codes for assembling all configurations are readily available from our sales representatives.

P125™



CODE SELECTION



	Without Extended Studs	With Extended Studs
Single Units	BE	—
Multiple Units	BI	BY

approximate weight

TABLE 1 SINGLE UNITS

Approximate weight of single pump or motor with SAE C* 4-bolt mounting.

TABLE 1 Model	Unit Weight	Gear Width (inches)						
		1	1¼	1½	1¾	2	2¼	2½
P125	Pounds	121	124	128	132	135	139	143
	KG	55	56	58	60	61	63	65

TABLE 2 MULTIPLE UNITS

To determine the approximate weight of a pump or motor with SAE C* 4-bolt mounting:

1. Determine from Table 1 the approximate weight of a single unit the same size as the first unit of the multiple assembly.
2. From Table 2 determine the approximate weight of each additional unit of the multiple assembly and add to the unit weight of the first unit to estimate total weight of multiple assembly.

*Add 11 pounds/5 KG for SAE D 4-bolt mounting.

TABLE 2 Model	Add per Gear Section	Gear Width (inches)						
		1	1¼	1½	1¾	2	2¼	2½
P125	Pounds	108	111	115	119	122	126	130
	KG	49	50	52	54	55	57	59

gear housings

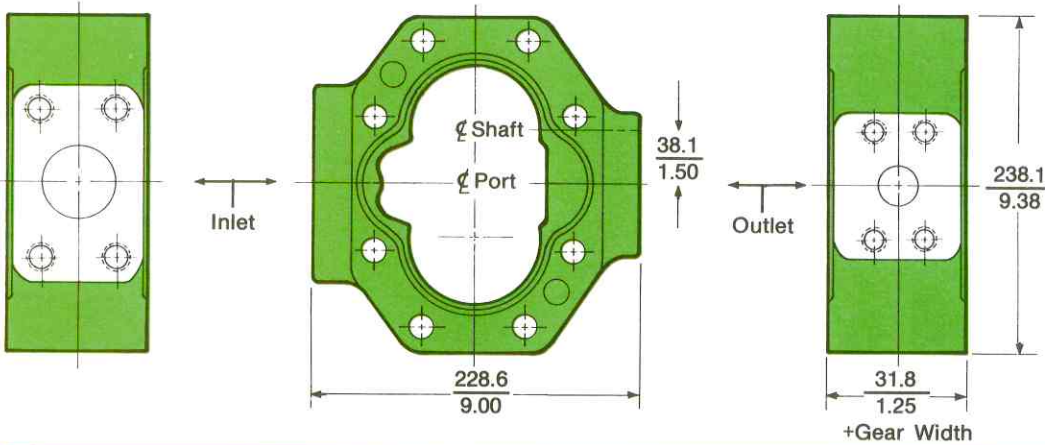
Dimensional data shown in $\frac{\text{mm}}{\text{inches}}$

P125™ PUMPS

CODE SELECTION

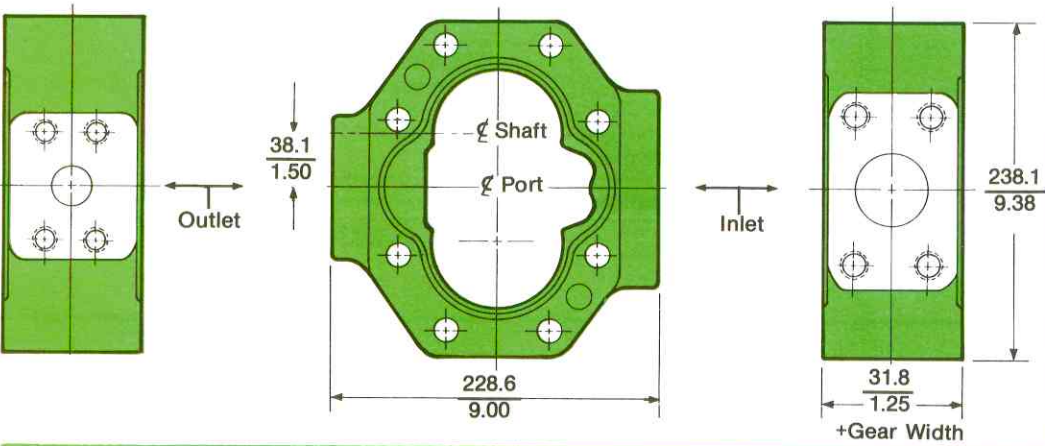
SPLIT FLANGE PORTS

CLOCKWISE
ROTATION
ONLY



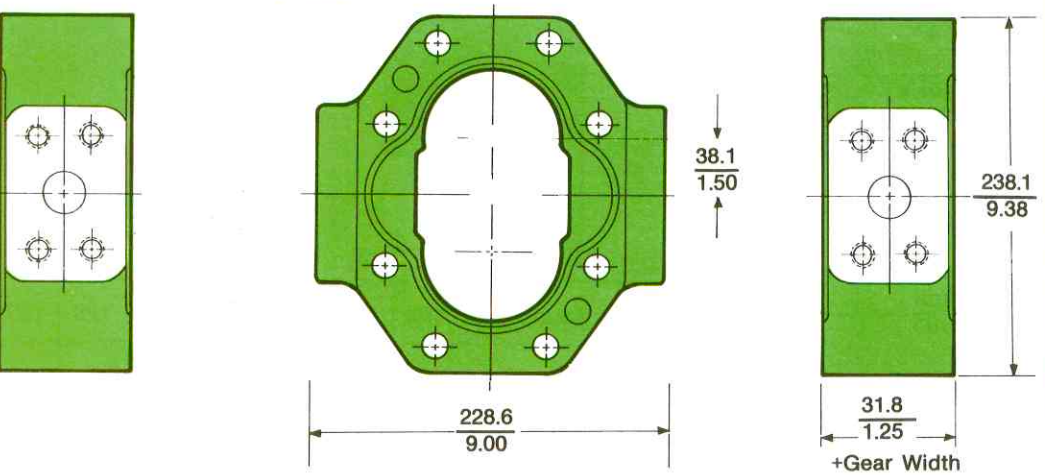
SPLIT FLANGE PORTS

COUNTER-
CLOCKWISE
ROTATION
ONLY



M125™ MOTORS
SPLIT FLANGE PORTS

DOUBLE
ROTATION



NOTE:

Codes shown in black are SAE threads.
Codes shown in color are metric threads.

This catalog contains codes for most widely used models only. Complete codes for assembling all configurations are readily available from our sales representatives.

SAE split flange/metric split flange

Flange Hole Diameter (in.)		Gear Width (in.)						
Left	Right	1	1¼	1½	1¾	2	2¼	2½
1¼	1	OJ10 UX10						
1¼	1¼	OL10 PO10						
1½	1¼		OP12 SO12	OP15 SO15	OP17 SO17			
2	1¼			OQ15 JM15	OQ17 JM17			
1½	1½		OR12 SV12	OR15 SV15				
2	1½			OV15 JQ15	OV17 JQ17	OV20 JQ20	OV22 JQ22	
2½	1½					OW20 LJ20	OW22 LJ22	OW25 LJ25
3	1½							UT25 LM25
2	2					OX20 JS20	OX22 JS22	
2½	2					OZ20 LS20	OZ22 LS22	OZ25 LS25
3	2							UW25 LW25

Flange Hole Diameter (in.)		Gear Width (in.)						
Left	Right	1	1¼	1½	1¾	2	2¼	2½
1	1¼	OG10 VU10						
1¼	1¼	OL10 PO10						
1¼	1½		OM12 QO12	OM15 QO15	OM17 QO17			
1¼	2			ON15 JR15	ON17 JR17			
1½	1½		OR12 SV12	OR15 SV15				
1½	2			OS15 JN15	OS17 JN17	OS20 JN20	OS22 JN22	
1½	2½					OT20 JX20	OT22 JX22	OT25 JX25
1½	3							UZ25 JZ25
2	2					OX20 JS20	OX22 JS22	
2	2½					OY20 LN20	OY22 LN22	OY25 LN25
2	3							UV25 LQ25

Flange Hole Diameter (in.)		Gear Width (in.)						
Left	Right	1	1¼	1½	1¾	2	2¼	2½
1¼	1¼	GA10 GO10						
1½	1½		WA12 WO12	WA15 WO15	WA17 WO17			
2	2					XA20 XO20	XA22 XO22	XA25 XO25

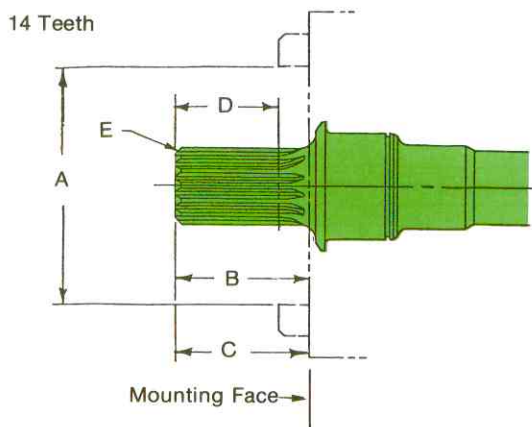
drive shafts

Dimensional data shown in $\frac{\text{mm}}{\text{inches}}$

P125™

These illustrations do not necessarily portray the exact drive shaft configuration. For purposes of determining coupling engagement, specific details for any shaft may be obtained from your Commercial Shearing sales representative or by phoning our District Sales Office.

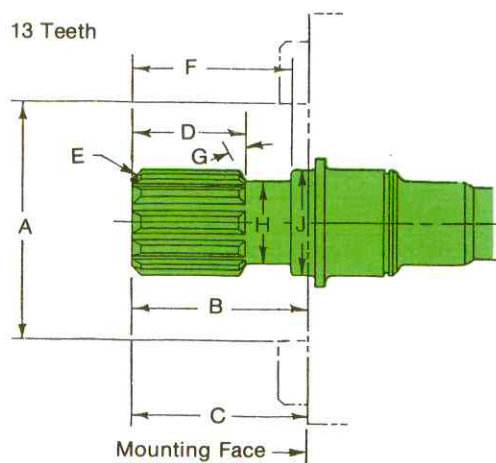
SPLINED SAE C/ANSI 32-4



CODE SELECTION

A Throat Opening Dia.	B Throat Opening Depth	C	D Full Spline	E Cham.	CODE
$\frac{99.8}{3.93}$	$\frac{55.6}{2.19}$	$\frac{55.6}{2.19}$	$\frac{42.9}{1.69}$	.09 x 45°	7

SPLINED SAE D/ANSI 44-4

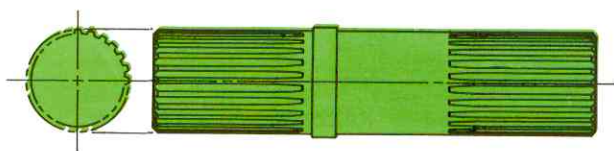


CODE SELECTION

A Throat Opening Dia.	B Throat Opening Depth	C	D Full Spline	E Cham.	F	G	H	J	CODE
$\frac{99.8}{3.93}$	$\frac{74.6}{2.94}$	$\frac{74.6}{2.94}$	$\frac{47.6}{1.88}$	.12 x 45°	$\frac{66.5}{2.62}$	30°	$\frac{36.8}{1.45}$ Dia.	$\frac{44.4}{1.75}$ Dia.	34

CONNECTING SHAFT

For multiple units only



CODE SELECTION

CODE
1

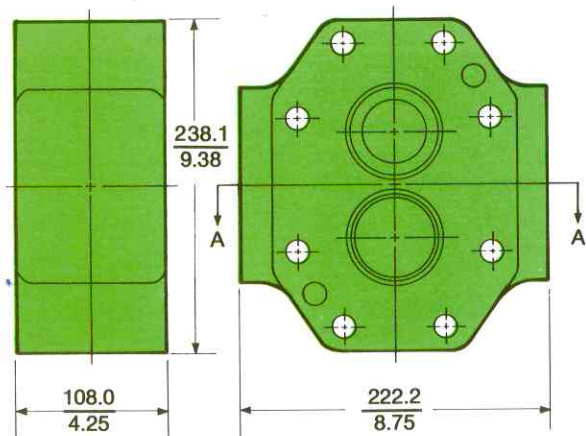
Connecting shafts furnish a continuous driveline through tandem pumps and motors. Adjacent units in tandem are joined by the connecting shaft. When specifying tandem pumps or motors, one connecting shaft (CODE 1) must be specified for every two adjacent pumps or motors.

bearing carriers

Dimensional data shown in $\frac{\text{mm}}{\text{inches}}$

P125™

In a tandem pump assembly up to 86 gpm may be fed to the second section through the bearing carrier in Codes A and U only. Both pump sections are then supplied through the main inlet port in the front gear housing. Total velocity through the inlet should not exceed 8-10 fps. In these cases Codes A and U bearing carriers must be used in place of Codes C and D.



Porting through the bearing carrier is available on request.

This catalog contains codes for most widely used models only. Complete codes for assembling all configurations are readily available from our sales representatives.

NOTE:

Codes shown in black are SAE.

Codes shown in color are metric.

P125™ PUMPS

For tandem pumps use A, C, D, or U codes.

For tandem motors use B code.

Section A-A back front	CODE SELECTION		CODE	
	Rotation	Porting	SAE	Metric
	CW	NONE	$\frac{C}{C}$	$\frac{A†}{A†}$
	CCW	NONE	$\frac{D}{D}$	$\frac{U†}{U†}$

M125™ MOTORS

Section A-A back front	CODE SELECTION		CODE	
	Rotation	Porting	SAE	Metric
	Double	NONE	$\frac{B}{B}$	

†In tandem units when feeding a gear section through the bearing carrier from an adjacent section, Codes A and U bearing carriers must be used in place of Codes C and D.

U.S. standard and metric threads

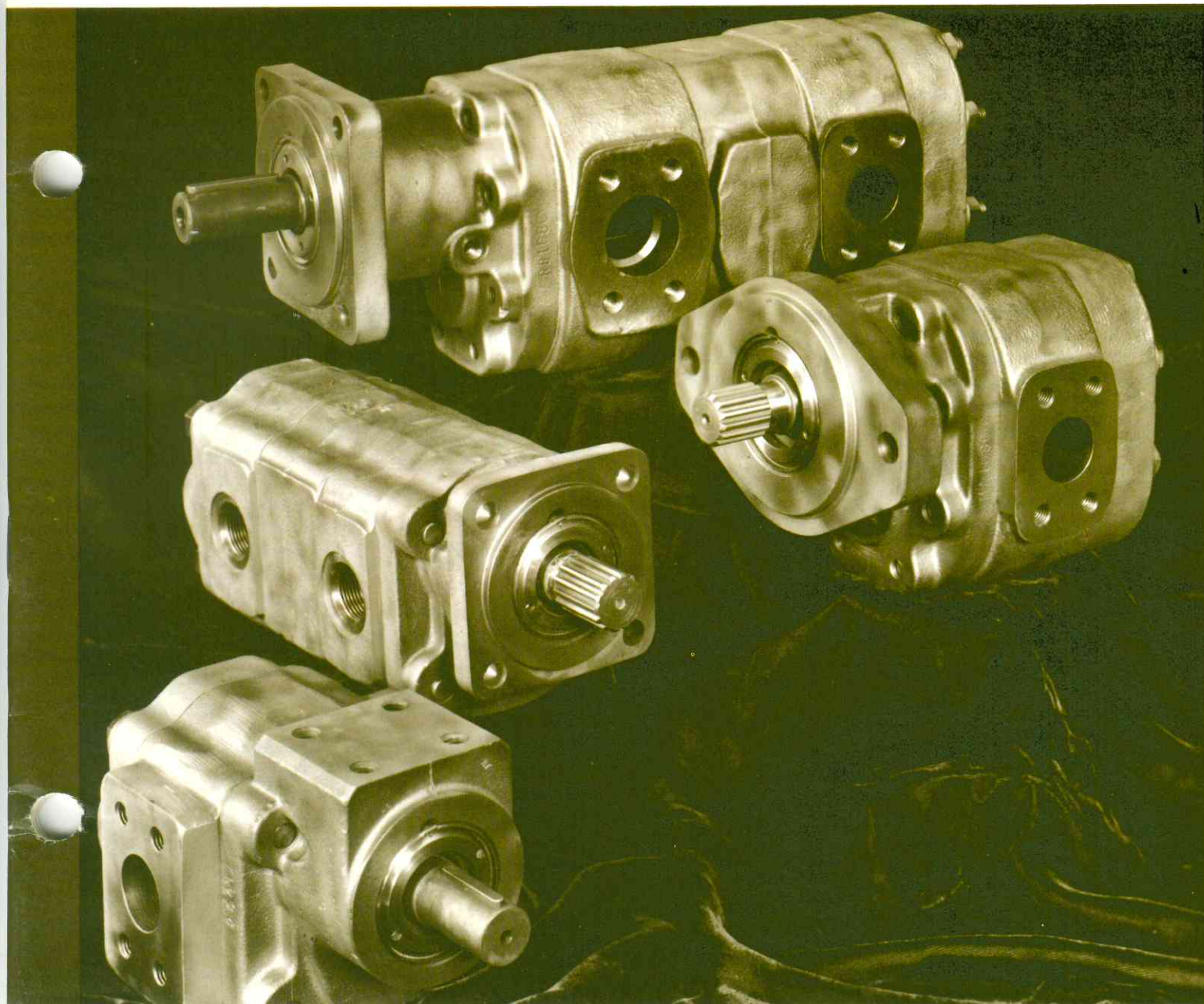
Units ordered from codes shown in this catalog will accommodate the following U.S. Standard or Metric threads:

Port Size		Split Flange Mounting Bolts	
Inches	Millimeters	SAE	Metric
1	25.40	$\frac{3}{8}$ — 16	M10 x 1.5
1¼	31.75	$\frac{7}{16}$ — 14	M10 x 1.5
1½	38.10	$\frac{1}{2}$ — 13	M12 x 1.75
2	50.80	$\frac{1}{2}$ — 13	M12 x 1.75
2½	63.50	$\frac{1}{2}$ — 13	M12 x 1.75
3	76.20	$\frac{5}{8}$ — 11	M16 x 2.0

**25X™ / 37X™
OIL HYDRAULIC
SINGLE & MULTIPLE
PUMPS & MOTORS**

pressures to
2000 psi/140 bar
output to
90 U.S. gpm/341 lpm
motors up to 80 hp

®  **Commercial
Intertech**



performance data

25X™/37X™ PUMPS

performance data

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 SSU at 100°F. Requests for more specific data should be directed to our Technical Service Department through our sales representatives.

multiple units

The shaft selected to drive a multiple pump must be strong enough to carry the power requirements of the application. Each pump series has a PL factor which if exceeded will result in premature shaft failure.

For P25X B Series, the PL factor is 8000. This means, for example, that a maximum of 140 bar/2000 psi can be permitted to act simultaneously on two 2 inch gear widths in a multiple assembly, since $2000 \times (2 + 2) = 8000$. If the PL factor exceeds 8000, the shaft may be overloaded, and premature failure may be anticipated.

Similarly the PL factor of the 37X Series is 10,000.

The same rule applies to three, four or more section assemblies. At high PL factors, say over 6000 for the 25X series (8000 for the 37X), the Code 7 shaft should be used.

side loads

When the drive shaft of a pump or motor is subjected to a side or overhung load, the shaft end cover code should call for the double outboard bearing.

Assemblies with the double outboard bearing may be driven by a standard pinion on the shaft and will carry the load up to the maximum PL rating for the unit. The load on the shaft in such cases, should be no more than 2 inches from the mounting face of the shaft end cover.

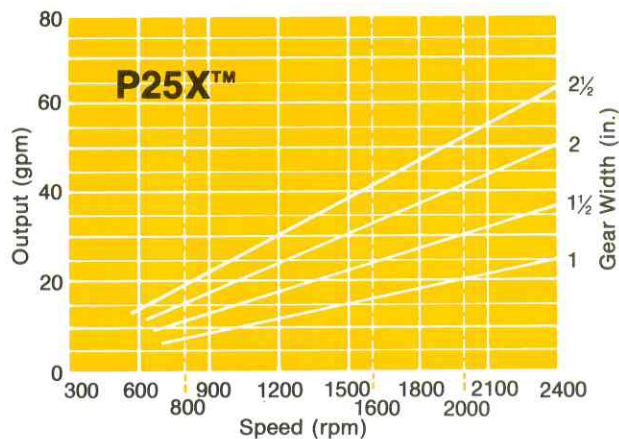
NOTE:

Installations involving pump or motor speeds below 400 rpm or exceeding 2000 rpm and/or above 140 bar/2000 psi should be approved by our Technical Service Department through your Commercial representative.

**Keep your 25X™/37X™
pumps and motors at
their original efficiency...
Use only genuine
Commercial replacement
parts available through your
original equipment dealer
or your Authorized
Commercial Intertech Distributor**

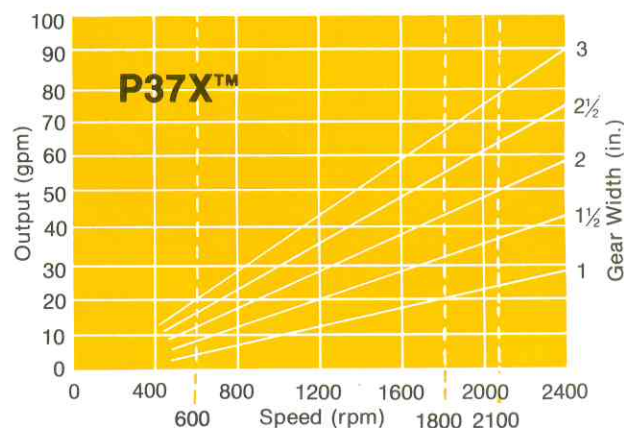
P25X™

AVERAGE OUTPUT — U.S. Gallons at 140 bar/2000 psi



P37X™

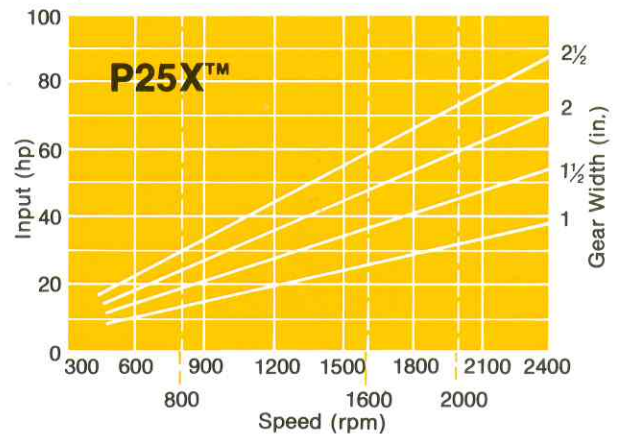
AVERAGE OUTPUT — U.S. Gallons at 140 bar/2000 psi



Average output flow • U.S. Gallons per Minute
 • British Imperial Gallons per Minute
 • Litres per Minute

Speed rpm	Gear Width (inches)						
	1	1¼	1½	1¾	2	2¼	2½
900	8.5	10.5	13	15	17.5	20	22
	7	8.5	11	12.5	14.5	16.5	18.5
	32	40	49	57	66	76	83
1200	12	15	18	21	24	27	30
	10	12.5	15	17.5	20	22.5	25
	45	57	68	79	91	102	113
1500	15	19	23	27	31	35	39
	12.5	16	19	22.5	26	29	32.5
	57	72	87	102	117	132	147
1800	18	23	27.5	32.5	37.5	42	47
	15	19	23	27	31	35	39
	68	87	104	123	142	159	178
2100	21.5	27	32.5	38.5	44	49.5	55
	18	22.5	27	32	36.5	41	46
	81	102	123	145	167	187	208
2400	25	31	37	44	51	57	63.5
	21	26	31	36.5	42.5	47.5	53
	95	117	140	167	193	215	240

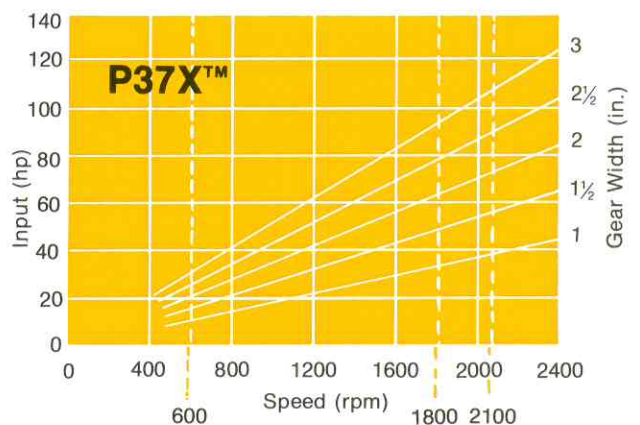
AVERAGE INPUT — (hp) at 140 bar/2000 psi



Average output flow • U.S. Gallons per Minute
 • British Imperial Gallons per Minute
 • Litres per Minute

Speed rpm	Gear Width (inches)							
	1	1¼	1½	1¾	2	2¼	2½	3
600	4.5	6.5	8.5	10.5	12.5	14	16.5	20
	3.5	5.5	7	8.5	10.5	11.5	13.5	16.5
	17	25	32	40	47	53	62	76
1200	12.5	16.5	20	24	28	31.5	35.5	43
	10.5	13.5	16.5	20	23	26	29.5	35.5
	47	62	76	91	106	119	134	163
1800	20	26	31.5	37.5	43.5	49.5	55	66.5
	16.5	21.5	26	31	36	41	46	55.5
	76	98	119	142	165	187	208	252
2100	24	31	37.5	44.5	51	58	64.5	78
	20	26	31	37	42.5	48.5	53.5	65
	91	117	142	168	193	219	244	295
2400	28	36	43.5	51	59	67	74.5	90
	23	30	36	42.5	49	56	62	75
	106	136	165	193	223	254	282	341

AVERAGE INPUT — (hp) at 140 bar/2000 psi

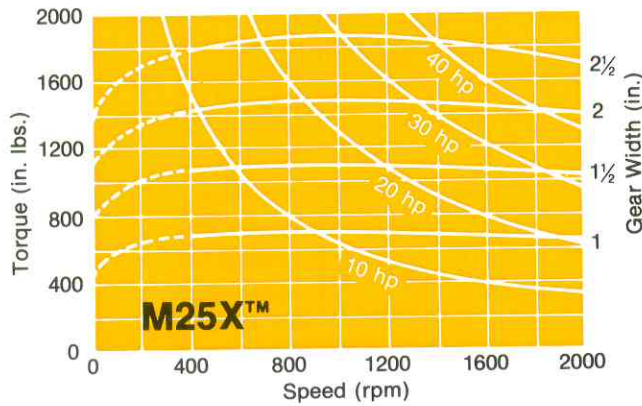


performance data

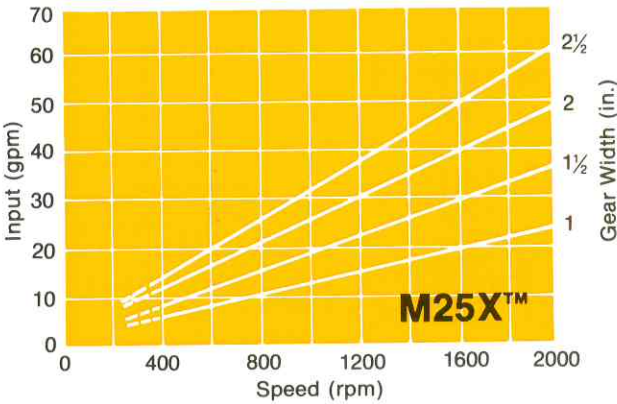
25X™/37X™ MOTORS

M25X™

AVERAGE TORQUE OUTPUT (in. lbs.) at 140 bar/2000 psi

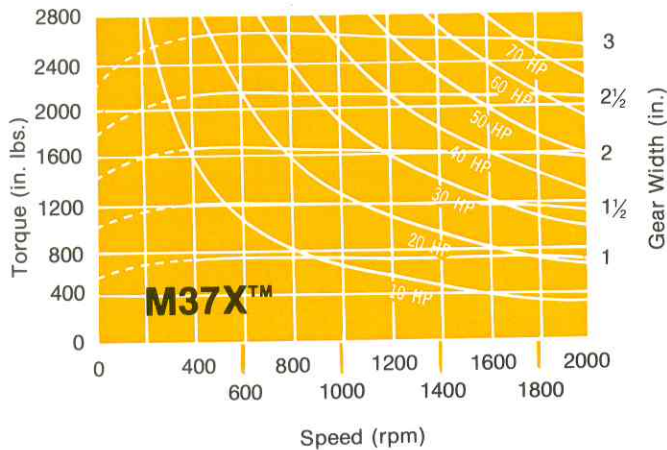


AVERAGE INPUT — U.S. Gallons at 140 bar/2000 psi

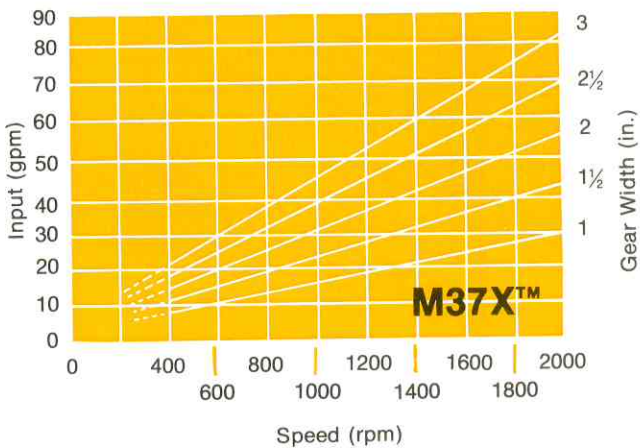


M37X™

AVERAGE TORQUE OUTPUT (in. lbs.) at 140 bar/2000 psi



AVERAGE INPUT — U.S. Gallons at 140 bar/2000 psi



MOTOR DATA (extracted from the average performance curves on the opposite page)

Speed rpm	1" GEAR			1½" GEAR			2" GEAR			2½" GEAR		
	Output		Input gpm igpm l/min.	Output		Input gpm igpm l/min.	Output		Input gpm igpm l/min.	Output		Input gpm igpm l/min.
	Torque	Power		Torque	Power		Torque	Power		Torque	Power	
	in. lbs.	hp		in. lbs.	hp		in. lbs.	hp		in. lbs.	hp	
	N m kpm	met. hp		N m kpm	met. hp		N m kpm	met. hp		N m kpm	met. hp	
800	670	8.5	10.5	1070	13.5	15.5	1450	18	21	1850	23.5	26
	75.5		8.5	121		13	164		17.5	209		21.5
	7.5	8.5	40	12	13.5	59	16.5	18	79	21	23.5	98
1200	680	13	15.5	1075	20.5	22.5	1450	27.5	30.5	1840	35	37.5
	77		13	121.5		18.5	164		25.5	208		31
	7.5	13	59	12	20.5	85	16.5	28	115	21	35.5	142
1600	670	17	20	1045	26.5	30	1440	36.5	40	1750	44.5	49.5
	75.5		16.5	118		25	162.5		33.5	197.5		41
	7.5	17	76	12	27	114	16.5	37	151	20	45	187
2000	660	21	25	1030	32.5	37	1415	44.5	49	1720	54.5	61.5
	74.5		21	116.5		31	160		40.5	194.5		51
	7.5	21	95	12	33	140	16	45	185	20	55	233

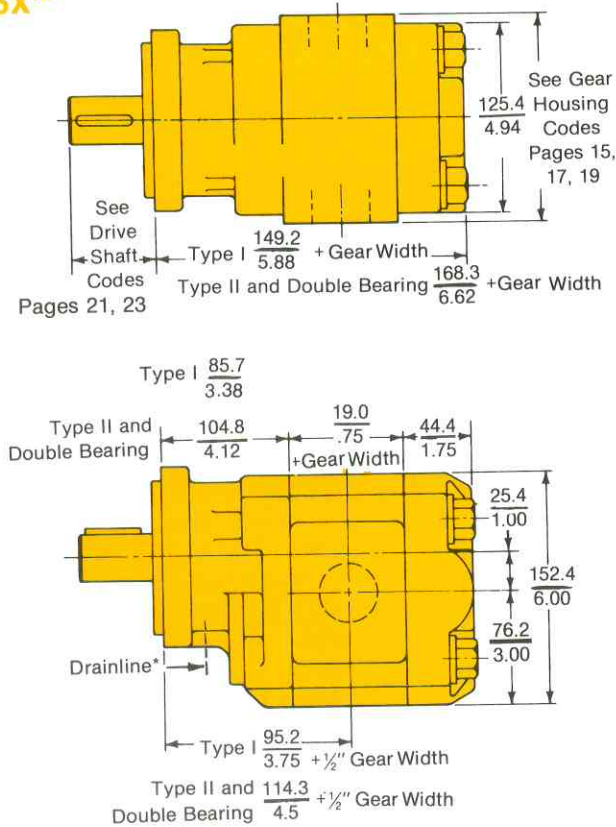
Speed rpm	1" GEAR			1½" GEAR			2" GEAR			2½" GEAR			3" GEAR		
	Output		Input gpm igpm l/min.	Output		Input gpm igpm l/min.	Output		Input gpm igpm l/min.	Output		Input gpm igpm l/min.	Output		Input gpm igpm l/min.
	Torque	Power		Torque	Power		Torque	Power		Torque	Power		Torque	Power	
	in. lbs.	hp		in. lbs.	hp		in. lbs.	hp		in. lbs.	hp		in. lbs.	hp	
	N m kpm	met. hp		N m kpm	met. hp		N m kpm	met. hp		N m kpm	met. hp		N m kpm	met. hp	
600	750	7	10.5	1200	11.5	15	1650	15.5	20	2125	20	24.5	2670	25.5	28
	84.5		8.5	135.5		12.5	186.5		16.5	240		20.5	301.5		23
	8.5	7	40	13.5	11.5	57	19	15.5	76	24.5	20	93	30.5	25.5	106
1000	745	12	16	1180	19	23	1630	26	31	2115	34.5	38	2635	42	44
	84		13.5	133.5		19	184		26	239		31.5	297.5		36.5
	8.5	12	61	13.5	19	87	18.5	26	117	24	35	144	30	42.5	167
1400	730	16.5	21	1165	26	31	1610	35	41	2100	47.5	51	2595	57.5	60
	82.5		17.5	131.5		26	182		34	237		42.5	293		50
	8.5	16.5	79	13.5	26	117	18.5	35.5	155	24	48	193	30	58.5	227
1800	700	20	26.5	1140	32.5	39	1590	45	52	2075	60	64	2560	73	76
	79		22	129		32.5	179.5		43	234.5		53	289		63
	8	20	100	13	33	147	18	45.5	197	24	61	242	29.5	74	288

dimensional data

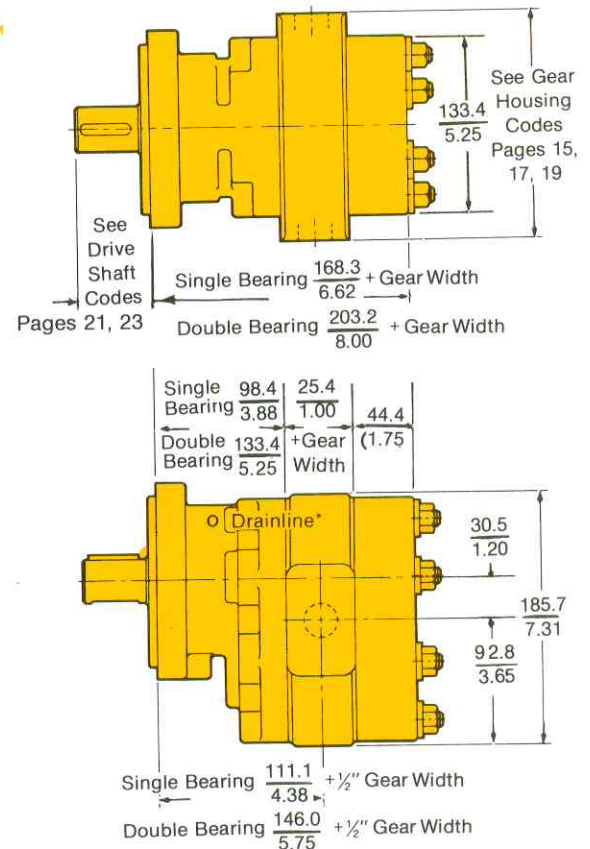
Dimensional data shown in $\frac{\text{mm}}{\text{inches}}$

SINGLE UNIT

25X™

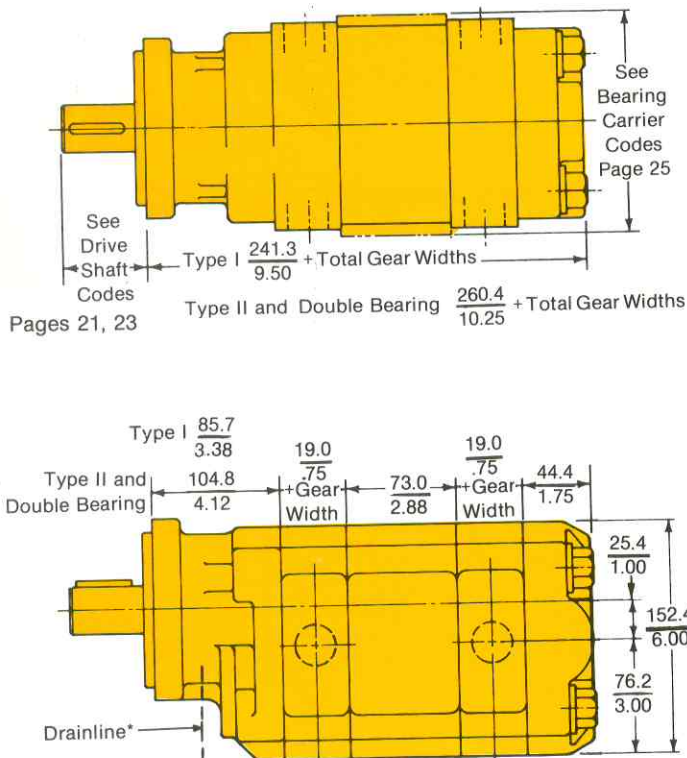


37X™

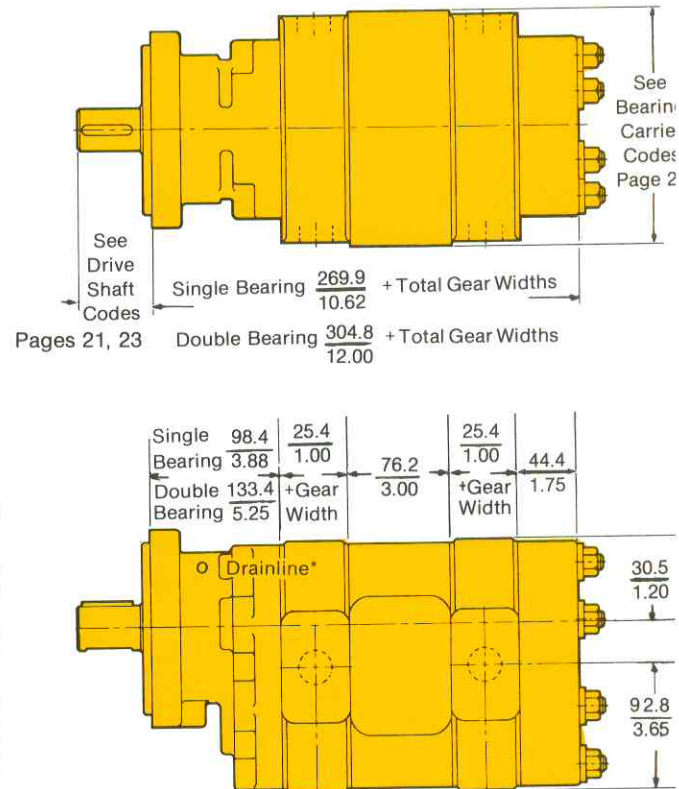


MULTIPLE UNIT

25X™



37X™



*Drainline location for motor application.

approximate weight

SINGLE UNIT

Approximate weight of single pump or motor with SAE B 4-bolt mounting.

TABLE 1

Model	Unit Weight	Gear Width (inches)				
		1/2	3/4	1	1 1/4	1 1/2
25X	Pounds	37	38.5	40	41.5	43
	KG	16.8	17.5	18.1	18.8	19.5
37X	Pounds	56	58	60	62	64
	KG	25.4	26.3	27.2	28.1	29.0

Model	Unit Weight	Gear Width (inches)				
		1 3/4	2	2 1/4	2 1/2	3
25X	Pounds	44.5	46	51.5	53	—
	KG	20.2	20.9	23.4	24.0	—
37X	Pounds	66	68	70	72	76
	KG	29.9	30.8	31.8	32.7	34.5

MULTIPLE UNIT

To determine the approximate weight of a pump or motor with SAE B 4-bolt mounting...

1. Determine from Table 1 the approximate weight of a single unit the same size as the first unit of the multiple assembly.
2. From Table 2 determine the approximate weight of each additional unit of the multiple assembly and add to the unit weight of the first unit to estimate total weight of multiple assembly.

TABLE 2

Model	Unit Weight	Gear Width (inches)				
		1/2	3/4	1	1 1/4	1 1/2
25X	Pounds	27	28.5	30	31.5	33
	KG	12.2	12.9	13.6	14.3	15.0
37X	Pounds	42	44	46	48	50
	KG	19.1	20.0	20.9	21.8	22.7

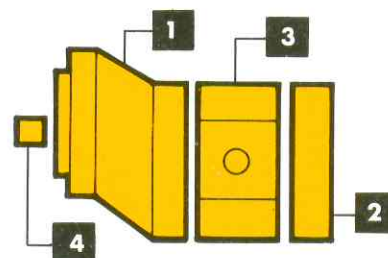
Model	Unit Weight	Gear Width (inches)				
		1 3/4	2	2 1/4	2 1/2	3
25X	Pounds	34.5	36	41.5	43	—
	KG	15.6	16.3	18.8	19.5	—
37X	Pounds	52	54	56	58	62
	KG	23.6	24.5	25.4	26.3	28.1

how to specify and code

This catalog contains codes for most widely used models only. Complete codes for assembling all configurations are readily available from our sales representatives.

SINGLE UNIT

Commercial's 25X and 37X pumps and motors are available as single or multiple assemblies. The full assembly code for the finished unit combines individual codes for shaft end cover, port end cover, gear housing, and drive shaft as selected to do the job you require. It is preceded by the letter P or M for pump or motor — and by 25 or 37 to designate the series. Here is an example of the procedure:



M25X™ SINGLE MOTOR

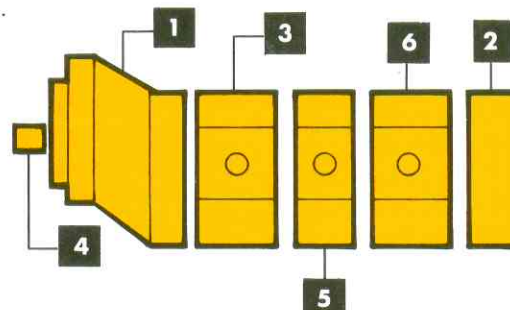
Assembly Code M25X 942 BE IT20-25

Motor	M	1. Shaft End Cover (Page 8)	942
Series	25	2. Port End Cover (Page 12)	BE
Model	X	3. Gear Housing (Page 19)	IT20
		4. Drive Shaft (Page 21)	25

MULTIPLE UNIT

Multiple units are coded in the same manner except that additional designations for added sub-components must be included. Each section added to the single assembly requires a proper code for a bearing carrier, gear housing, and connecting shaft. Here is an example of an assembly code for a two-section 37X pump:

When specifying split flange porting on multiple units, all coding MUST be cleared by our Technical Service Department.



P37X™ MULTIPLE PUMP

Assembly Code P37X 178 BY VZ20-7 B IL15-1

Pump	P	1. Shaft End Cover (Page 8)	178
Series	37	2. Port End Cover (Page 13)	BY
Model	X	3. Gear Housing (Page 15)	VZ20
		4. Drive Shaft (Page 21)	7
		5. Bearing Carrier (Page 25)	B
		6. Gear Housing (Page 19)	IL15
		7. Connecting Shaft (Page 20)	1

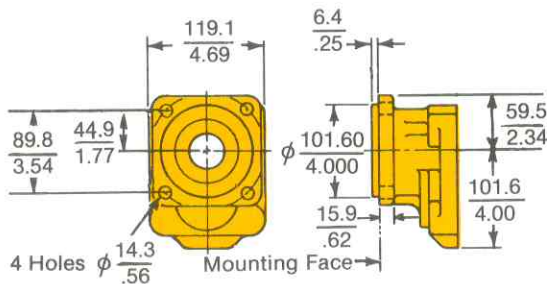
shaft end covers, Type I

To determine direction of shaft rotation, view the unit with the shaft pointing toward you, and the idler (driven) gear beneath the shaft. With clockwise rotation, flow will be left to right. The inlet port will be on the left, outlet on

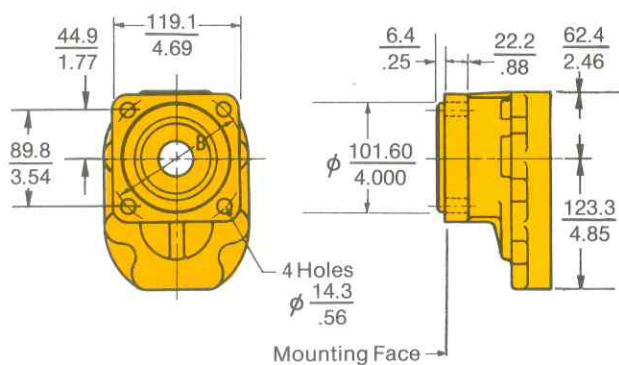
the right. The flow is in the opposite direction with counter-clockwise rotation. Inverting the pump will reverse the inlet and outlet ports but not the direction of rotation.

SAE B 4-BOLT

25X™



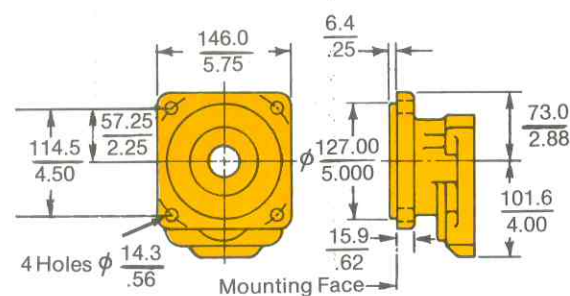
37X™



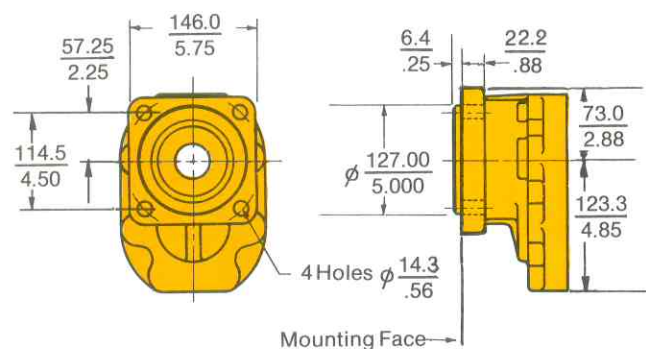
Drain-line Thread	CODE SELECTION PUMPS			MOTORS	
	Single-Bearing		Double-Bearing	Single-Bearing	Double-Bearing
	Rotation Clockwise	Counter- Clockwise	Double	Rotation	Rotation
NONE	142	242	342	—	942
1/4 NPT	—	—	—	642	742
1/4 BSPP	—	—	—	1642	1742

SAE C 4-BOLT

25X™



37X™



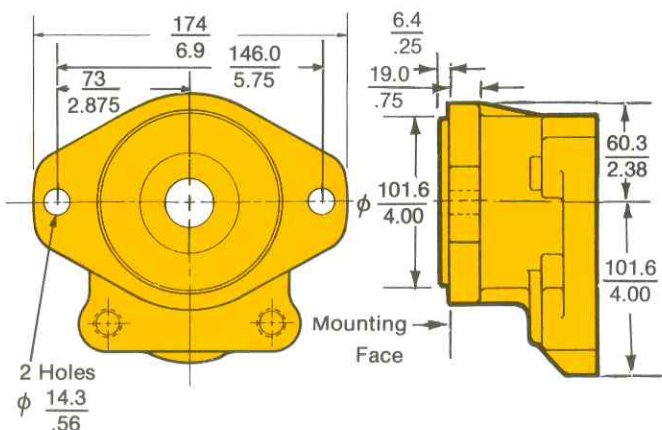
Drain-line Thread	CODE SELECTION PUMPS			MOTORS	
	Single-Bearing		Double-Bearing	Single-Bearing	Double-Bearing
	Rotation Clockwise	Counter- Clockwise	Double	Rotation	Rotation
NONE	178	278	378	—	978
1/4 NPT	—	—	—	678	778
1/4 BSPP	—	—	—	1678	1778

Double bearing shaft end covers can only be used with Code 73, drive shaft (see page 23).

When the drive shaft of a pump or motor is subjected to a side or overhung load, the shaft end cover code should call for the double outboard bearing.

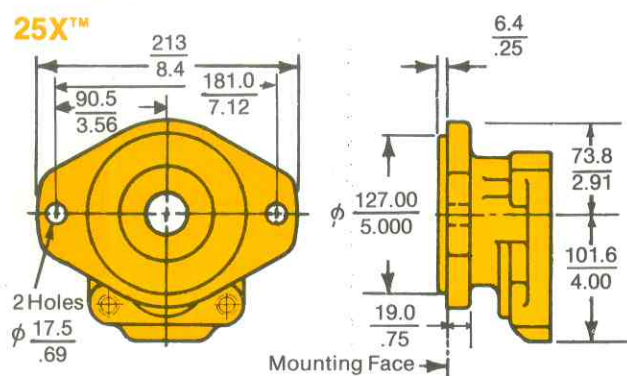
This catalog contains codes for most widely used models only. Complete codes for assembling all configurations are readily available from our sales representatives.

SAE B 2-BOLT 25X™ ONLY



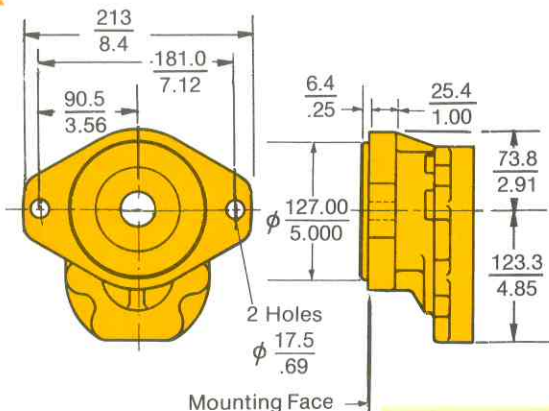
Drain-line Thread	CODE SELECTION PUMPS			MOTORS	
	Single-Bearing		Double-Bearing	Single-Bearing	Double-Bearing
	Rotation Clockwise	Counter- Clockwise	Double	Rotation	Rotation
NONE	197	297	397	—	997
1/4 NPT	—	—	—	697	897
1/2 BSPP	—	—	—	1697	1897

SAE C 2-BOLT 25X™



Drain-line Thread	CODE SELECTION PUMPS			MOTORS	
	Single-Bearing		Double-Bearing	Single-Bearing	Double-Bearing
	Rotation Clockwise	Counter- Clockwise	Double	Rotation	Rotation
NONE	198	298	398	—	998
1/4 NPT	—	—	—	798	—
1/2 BSPP	—	—	—	1798	—

37X™



Double bearing shaft end covers can only be used with Code 73, drive shaft (see page 23).

shaft end covers, Type I, continued

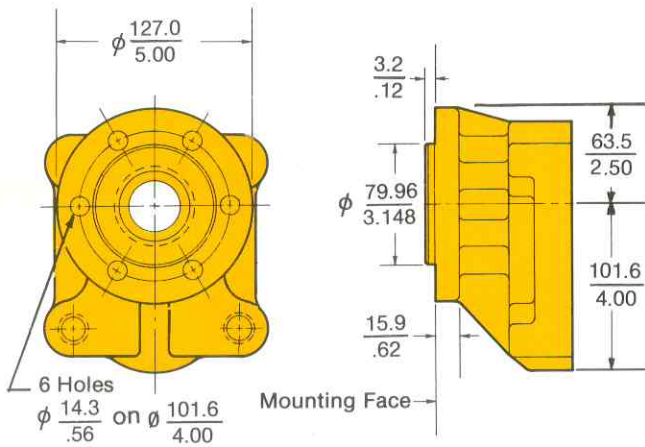
Dimensional data shown in $\frac{\text{mm}}{\text{inches}}$

To determine direction of shaft rotation, view the unit with the shaft pointing toward you, and the idler (driven) gear beneath the shaft. With clockwise rotation, flow will be left to right. The inlet port will be on the left, outlet on

the right. The flow is in the opposite direction with counter-clockwise rotation. Inverting the pump will reverse the inlet and outlet ports but not the direction of rotation.

ROUND FLANGE 6-BOLT

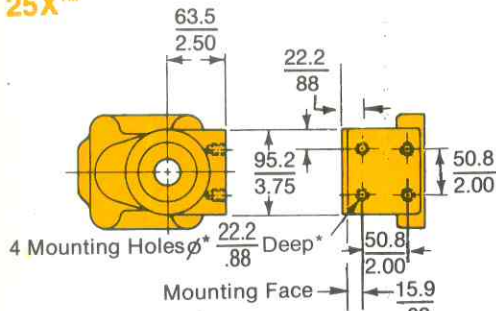
25X™



Drain-line 	CODE SELECTION PUMPS Single-Bearing			MOTORS Single-Bearing Rotation
	Rotation			Double
	Thread	Clockwise	Counter-Clockwise	
NONE	103	203	303	903
1/4 NPT	—	—	—	703
1/4 BSPP	—	—	—	1703

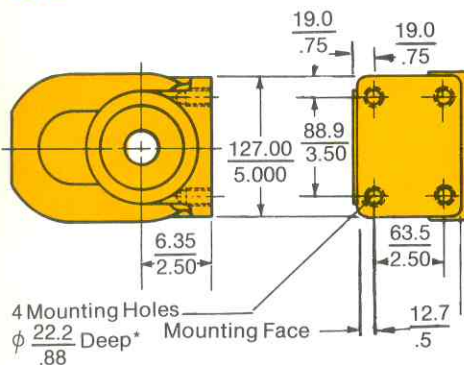
PAD MOUNTING

25X™



*See table to the right for thread size and style.

37X™



*See table to the right for thread size and style.

Series	Drain-line 	Mounting Hole Thread	CODE SELECTION PUMPS Single-Bearing			MOTORS		
			Rotation			Double-Bearing Rotation	Single-Bearing Rotation	Double-Bearing Rotation
			Clockwise	Counter-Clockwise	Double	Double	Double	Double
25X	NONE	1/2-13Thd.	100	200	300	—	900	—
		M12 x 1.75	—	—	—	—	—	1900
		1/4 NPT	—	—	—	600	700	800
37X	NONE	1/2-13 Thd.	—	—	—	1600	1700	1800
		M12 x 1.75	—	—	—	—	—	—
		1/4 NPT	—	—	—	611	711	811
37X	NONE	5/8-11 Thd.	111	211	311	—	911	—
		M16 x 2	—	—	—	—	—	1911
		1/4 NPT	—	—	—	611	711	811
37X	NONE	5/8-11 Thd.	—	—	—	1611	1711	1811
		M16 x 2	—	—	—	—	—	—
		1/4 NPT	—	—	—	611	711	811

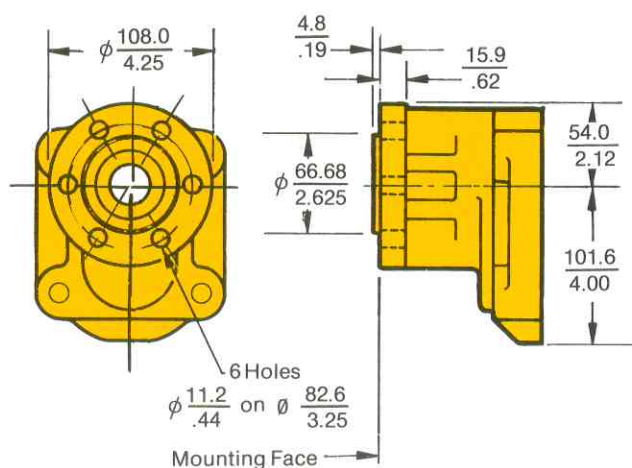
Double bearing shaft end covers can only be used with Code 73, drive shaft (see page 23)

Type II, 25X™ only

This catalog contains codes for most widely used models only. Complete codes for assembling all configurations are readily available from our sales representatives.

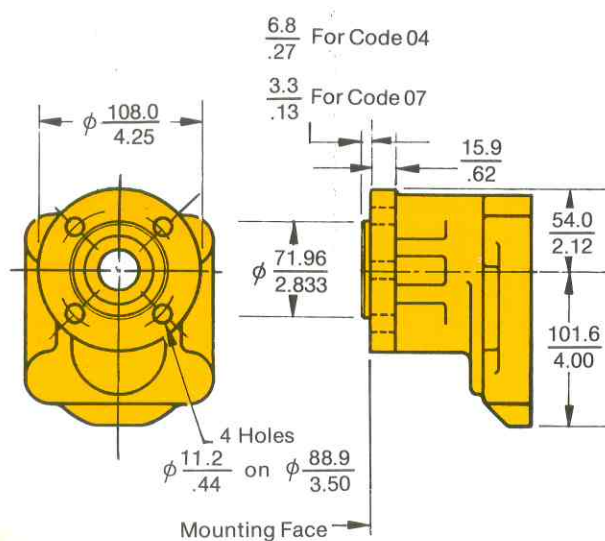
When the drive shaft of a pump or motor is subjected to a side or overhung load, the shaft end cover code should call for the double outboard bearing.

ROUND FLANGE 6-BOLT 25X™



Drain-line 	CODE SELECTION			
	PUMPS Single-Bearing			MOTORS Single-Bearing
	Rotation Clockwise	Rotation Counter-Clockwise	Double	Rotation Double
Thread	Clockwise	Counter-Clockwise	Double	Double
NONE	105	205	305	905
$\frac{1}{8}$ NPT	—	—	—	705
$\frac{1}{8}$ BSPP	—	—	—	1705

ROUND FLANGE 4-BOLT 25X™

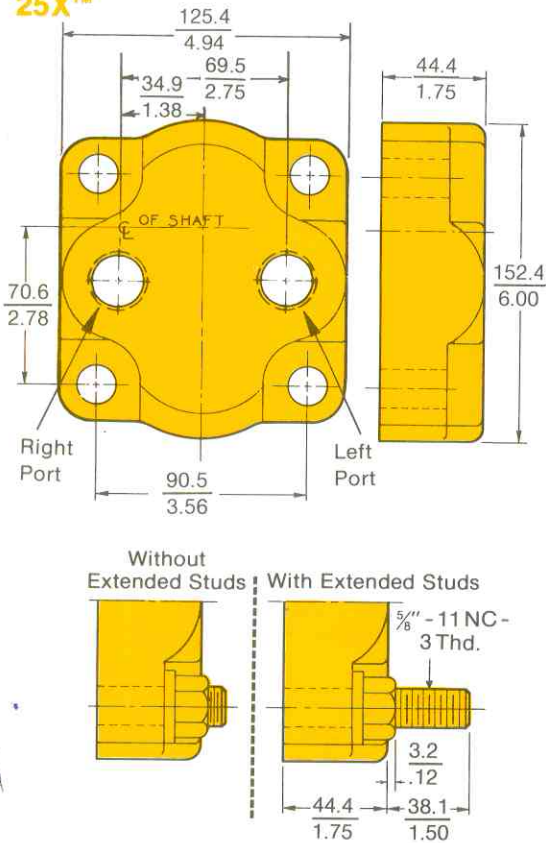


Drain-line 	CODE SELECTION			
	PUMPS Single-Bearing			MOTORS Single-Bearing
	Rotation Clockwise	Rotation Counter-Clockwise	Double	Rotation Double
Thread	Clockwise	Counter-Clockwise	Double	Double
NONE	104	204	304	904
	107	207	307	907
$\frac{1}{8}$ NPT	—	—	—	704
	—	—	—	707
$\frac{1}{8}$ BSPP	—	—	—	1704
	—	—	—	1707

port end covers

Dimensional data shown in $\frac{\text{mm}}{\text{inches}}$

25X™



CODE SELECTION

Port Size inches BSPP Metric		For Single Units Only	Pipe Thread		For Single Units Only	Straight Thread	
			NPT+			SAE	
			BSPP			Metric	
Left	Right		For Tandem Units Only			For Tandem Units only	
			Without Extended Studs	With Extended Studs		Without Extended Studs	With Extended Studs
NONE	NONE	BE	BI	BY	BE	BI	BY
NONE	3/4	CE	CI	CY	LE	LI	LY
NONE	3/4	QE	QI	QY	—	—	—
NONE	M26 x 1.5	—	—	—	WE	WI	WY
3/4	NONE	FE	FI	FY	KE	KI	KY
3/4	NONE	AE	AI	AY	—	—	—
M26 x 1.5	NONE	—	—	—	TE	TI	TY
3/4	3/4	GE	GI	GY	ME	MI	MY
3/4	3/4	SE	SI	SY	—	—	—
M26 x 1.5	M26 x 1.5	—	—	—	XE	XI	XY

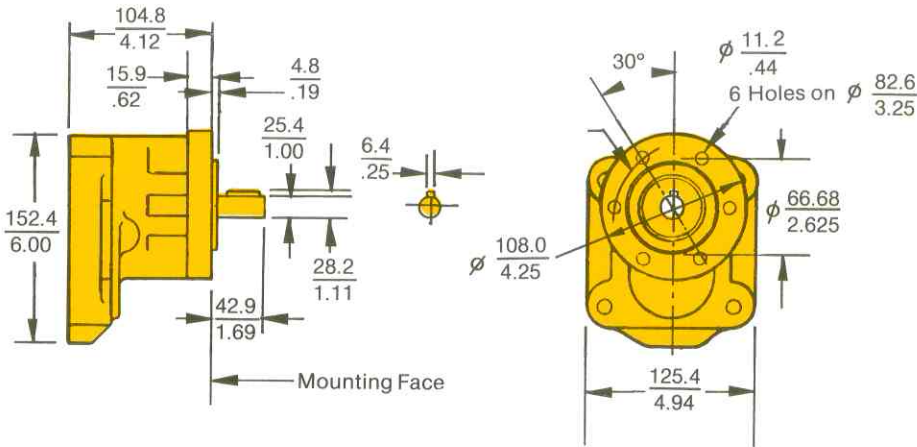
OUTPUT SHAFT TYPE/PUMP ONLY*

25X™

The direction of rotation of the output shaft in the port end cover is the same as that of the input drive shaft. The sum of the torque load on the output shaft and the torque required to drive the pump must not exceed the torque limit of the input shaft.

Each application for this shaft end cover must be cleared through our Technical Service Department.

*Cannot be coded for motors but special assembly numbers are available for motor assemblies.



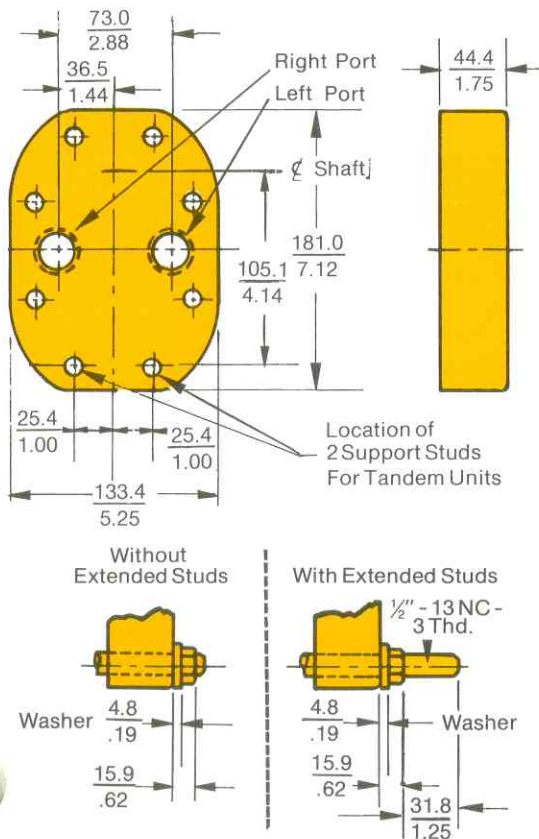
PUMP CODE SELECTION

Rotation		
Clockwise	Counter-Clockwise	Double
DO	CO	BO

This catalog contains codes for most widely used models only. Complete codes for assembling all configurations are readily available from our sales representatives.

†NPT threads are not recommended for use at pressures in excess of 100 bar/1500 psi.

37X™



CODE SELECTION

Port Size inches BSPP Metric		Pipe Thread NPT† BSPP			Straight Thread SAE Metric		
		For Single Units Only	For Tandem Units Only		For Single Units Only	For Tandem Units only	
			Without Extended Studs	With Extended Studs		Without Extended Studs	With Extended Studs
Left	Right						
NONE	NONE	BA	BU	BY	BA	BU	BY
NONE	3/4	CA	CU	CY	NA	NU	NY
NONE	3/4	QA	QU	QY	—	—	—
NONE	M26 x 1.5	—	—	—	WA	WU	WY
3/4	NONE	FA	FU	FY	PA	PU	PY
3/4	NONE	AA	AU	AY	—	—	—
M26 x 1.5	NONE	—	—	—	TA	TU	TY
3/4	3/4	GA	GU	GY	MA	MU	MY
3/4	3/4	SA	SU	SY	—	—	—
M26 x 1.5	M26 x 1.5	—	—	—	XA	XU	XY
NONE	1	DA	DU	DY	—	—	—
1	NONE	JA	JU	JY	—	—	—
1	1	LA	LU	LY	—	—	—

U.S. standard and metric thread

Units ordered from codes shown in this catalog will accommodate the following U.S. Standard or Metric threads.

Port Size		Split Flange Mounting Bolts		SAE Straight Thread	Metric Straight Thread	NPT Tapered Thread	BSPP Parallel Thread
Inches	Millimeters	SAE	Metric				
1/4	6.35	—	—	—	—	1/4 — 18	1/4 — 19
3/8	9.52	—	—	—	—	3/8 — 18	3/8 — 19
1/2	12.70	5/16 — 18	M8 x 1.25	3/4 — 16	M18 x 1.5	1/2 — 14	1/2 — 14
5/8	15.88	—	—	7/8 — 14	M22 x 1.5	—	—
3/4	19.05	3/8 — 16	M10 x 1.5	1 1/16 — 12	M26 x 1.5	3/4 — 14	3/4 — 14
7/8	22.22	—	—	1 1/8 — 12	M30 x 1.5	—	—
1	25.40	3/8 — 16	M10 x 1.5	1 1/8 — 12	M33 x 2	1 — 11 1/2	1 — 11
1 1/4	31.75	7/16 — 14	M10 x 1.5	1 5/8 — 12	M42 x 2	1 1/4 — 11 1/2	1 1/4 — 11
1 1/2	38.10	1/2 — 13	M12 x 1.75	1 7/8 — 12	M48 x 2	1 1/2 — 11 1/2	1 1/2 — 11
2	50.80	1/2 — 13	M12 x 1.75	2 1/2 — 12	—	—	2 — 11
2 1/2	63.50	1/2 — 13	M12 x 1.75	—	—	—	—
3	76.20	5/8 — 11	M16 x 2.0	—	—	—	—

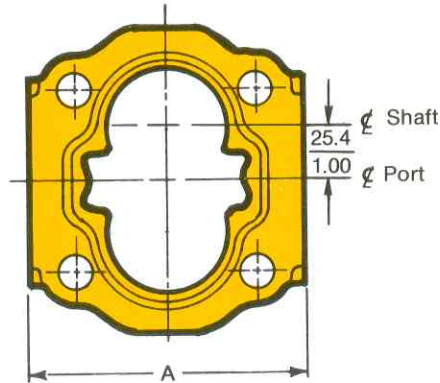
gear housings

Dimensional data shown in $\frac{\text{mm}}{\text{inches}}$

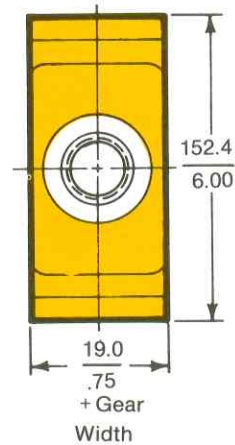
Porting shown in color panels a rated to 2000 psi/140 bar. For oth available porting, contact your sal representative from Commercial.

STRAIGHT THREAD PORTS

25X™



$$A = \frac{138.1}{5.44} \text{ For Gear Widths Through 2"} \\ \frac{171.4}{6.75} \text{ For } 2\frac{1}{4}" \text{ and } 2\frac{1}{2}" \text{ Gear Widths Only}$$

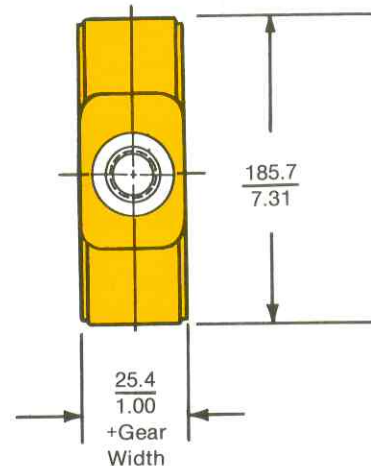
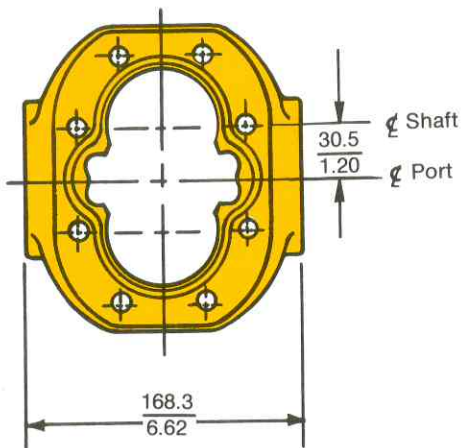


$\frac{1}{2}"$ and $\frac{3}{4}"$ gear sections are available without porting for secondary pumps in multiple assemblies only.

Code for $\frac{1}{2}"$ gear is AB05
Code for $\frac{3}{4}"$ gear is AB07

STRAIGHT THREAD PORTS

37X™



NOTE:

Codes shown in black are SAE threads
Codes shown in color are metric threads

Port Size		CODE SELECTION						
O.D. Tube	Inches Metric	Gear Width (inches)						
Left	Right	1	1¼	1½	1¾	2	2¼	2½
NONE	NONE	<u>AB10</u> AB10	<u>AB12</u> AB12	<u>AB15</u> AB15	<u>AB17</u> AB17	<u>AB20</u> AB20		
³ / ₄ M26 x 1.5	NONE	<u>UR10</u> VA10						
NONE	³ / ₄ M26 x 1.5	<u>UF10</u> WM10						
³ / ₄ M26 x 1.5	³ / ₄ M26 x 1.5	<u>YR10</u> WJ10	<u>YR12</u> WJ12					
³ / ₄ M26 x 1.5	1* M33 x 2*	<u>YT10*</u> WK10*	<u>YT12*</u> WK12*					
1* M33 x 2*	³ / ₄ M26 x 1.5	<u>VJ10*</u> WN10*	<u>VJ12*</u> WN12*					
1 M33 x 2	1 M33 x 2			<u>VL15</u> WQ15	<u>VL17</u> WQ17			
1 M33 x 2	1¼* M42 x 2*			<u>VM15*</u> WS15*	<u>VM17*</u> WS17*			
1¼* M42 x 2*	1 M33 x 2			<u>VS15*</u> VR15*	<u>VS17*</u> VR17*			
1¼ M42 x 2	1¼ M42 x 2					<u>VT20</u> YE20	<u>VT22</u> YE22	<u>VT25</u> YE25
1¼ M42 x 2	1½* M48 x 2*					<u>VU20*</u> UA20*	<u>VU22*</u> UA22*	<u>VU25</u> UA25
1½* M48 x 2*	1¼ M42 x 2					<u>VZ20*</u> WF20*	<u>VZ22*</u> WF22*	<u>VZ25</u> WF25

Port Size		CODE SELECTION						
O.D. Tube	Inches Metric	Gear Width (inches)						
Left	Right	1	1¼	1½	1¾	2		
NONE	NONE	<u>AB10</u> AB10	<u>AB12</u> AB12	<u>AB15</u> AB15	<u>AB17</u> AB17	<u>AB20</u> AB20		
³ / ₄ M26 x 1.5	NONE	<u>UR10</u> VA10						
NONE	³ / ₄ M26 x 1.5	<u>UF10</u> WM10						
³ / ₄ M26 x 1.5	³ / ₄ M26 x 1.5	<u>YR10</u> WJ10	<u>YR12</u> WJ12					
³ / ₄ M26 x 1.5	1* M33 x 2*	<u>YT10*</u> WK10*	<u>YT12</u> WK12					
1* M33 x 2*	³ / ₄ M26 x 1.5	<u>VJ10*</u> WN10*	<u>VJ12</u> WN12					
1 M33 x 2	1 M33 x 2			<u>VL15</u> WQ15	<u>VL17</u> WQ17			
1 M33 x 2	1¼* M42 x 2*			<u>VM15*</u> WS15*	<u>VM17</u> WS17*			
1¼* M42 x 2*	1 M33 x 2			<u>VS15*</u> VR15*	<u>VS17</u> VR17*			
1¼ M42 x 2	1¼ M42 x 2				<u>VT17</u> YE17	<u>VT20</u> YE20		
1¼ M42 x 2	1½* M48 x 2*					<u>VU20*</u> UA20*		
1½* M48 x 2*	1¼ M42 x 2					<u>VZ20*</u> WF20*		

*Low pressure inlet only.

gear housings

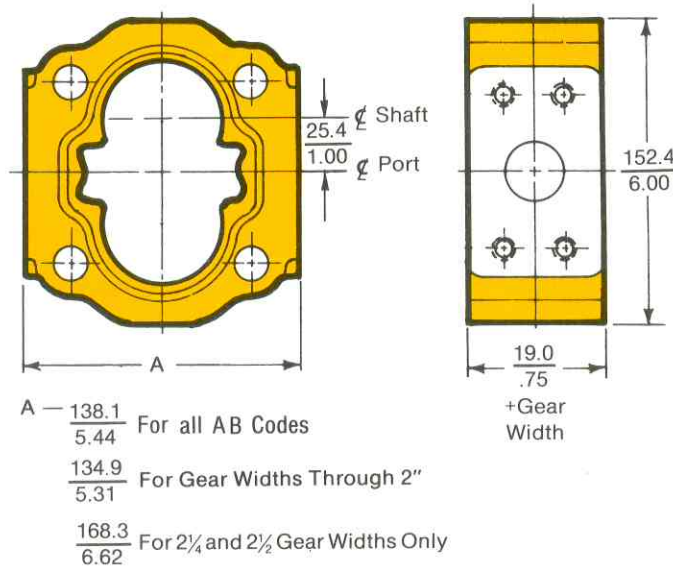
Dimensional data shown in $\frac{\text{mm}}{\text{inches}}$

Porting shown in color panels a rated to 2000 psi/140 bar. For oth available porting, contact your sal representative from Commercial.

SPLIT FLANGE PORTS

25X™

When specifying split flange porting on multiple units, all coding **MUST** be cleared by our Technical Service Dept.

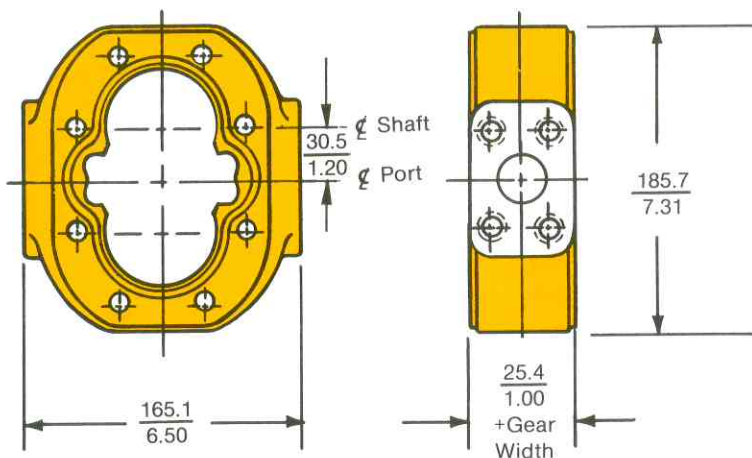


SPLIT FLANGE PORTS

37X™

½" and ¾" gear sections are available without porting for secondary pumps in multiple assemblies only.

Code for ½" gear is AB05
AB05
 Code for ¾" gear is AB07
AB07



This catalog contains codes for most widely used models only. Complete codes for assembling all configurations are readily available from our sales representatives.

NOTE:

Codes shown in black are SAE threads.

Codes shown in color are metric threads

Port Size Flange Hole Diameter (in.)		CODE SELECTION SAE Metric Gear Width (inches)						
Left	Right	1	1¼	1½	1¾	2	2¼	2½
NONE	NONE	<u>AB10</u> <u>AB10</u>	<u>AB12</u> <u>AB12</u>	<u>AB15</u> <u>AB15</u>	<u>AB17</u> <u>AB17</u>	<u>AB20</u> <u>AB20</u>		
1	1		<u>RL12</u> <u>ZQ12</u>					
1	1¼*		<u>RM12*</u> <u>ZS12*</u>					
1¼*	1		<u>RS12*</u> <u>SR12*</u>					
1¼	1¼			<u>RT15</u> <u>ZE15</u>	<u>RT17</u> <u>ZE17</u>			
1¼	1½*			<u>RU15*</u> <u>OA15*</u>	<u>RU17*</u> <u>OA17*</u>			
1½*	1¼			<u>RZ15*</u> <u>RF15*</u>	<u>RZ17*</u> <u>RF17*</u>			
1½	1½					<u>SC20</u> <u>RV20</u>	<u>SC22</u> <u>RV22</u>	<u>SC25</u> <u>RV25</u>
1½	2*					<u>SD20*</u> <u>HG20*</u>	<u>SD22*</u> <u>HG22*</u>	<u>SD25</u> <u>RG25</u>
2*	1½					<u>SH20*</u> <u>RD20*</u>	<u>SH22*</u> <u>RD22*</u>	<u>SH25</u> <u>RD25</u>

Port Size Flange Hole Diameter (in.)		CODE SELECTION SAE Metric Gear Width (inches)							
Left	Right	1	1¼	1½	1¾	2	2¼	2½	3
NONE	NONE	<u>AB10</u> <u>AB10</u>	<u>AB12</u> <u>AB12</u>	<u>AB15</u> <u>AB15</u>	<u>AB17</u> <u>AB17</u>	<u>AB20</u> <u>AB20</u>			
¾	1	<u>ZT10</u> <u>ZK10</u>							
1	¾	<u>RJ10</u> <u>ZN10</u>							
1	1		<u>RL12</u> <u>ZQ12</u>						
1	1¼*		<u>RM12*</u> <u>ZS12*</u>	<u>RM15</u> <u>ZS15</u>					
1¼*	1		<u>RS12*</u> <u>SR12*</u>	<u>RS15</u> <u>SR15</u>					
1¼	1¼			<u>RT15</u> <u>ZE15</u>	<u>RT17</u> <u>ZE17</u>	<u>RT20</u> <u>ZE20</u>			
1¼	1½*				<u>RU17*</u> <u>OA17*</u>	<u>RU20</u> <u>OA20</u>			
1½*	1¼				<u>RZ17*</u> <u>RF17*</u>	<u>RZ20</u> <u>RF20</u>			
1½	1½					<u>SC20</u> <u>RV20</u>	<u>SC22</u> <u>RV22</u>	<u>SC25</u> <u>RV25</u>	<u>SC30</u> <u>RV30</u>
1½	2						<u>SD22</u> <u>RG22</u>	<u>SD25</u> <u>RG25</u>	<u>SD30</u> <u>RG30</u>
2	1½						<u>SH22</u> <u>RD22</u>	<u>SH25</u> <u>RD25</u>	<u>SH30</u> <u>RD30</u>
2	2							<u>SK25</u> <u>OU25</u>	<u>SK30</u> <u>OU30</u>

*Low pressure inlet only.

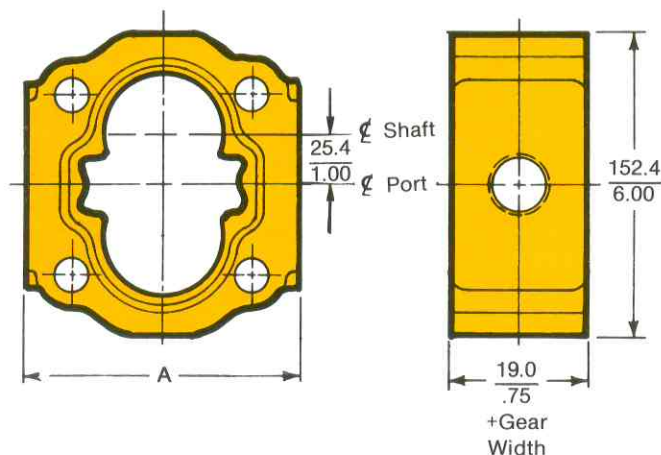
gear housings

Dimensional data shown in $\frac{\text{mm}}{\text{inches}}$

Metric porting shown in color panels are rated to 2000 psi/140 bar. For other available porting, contact your sales representative from Commercial.

PIPE THREAD PORTS

25X™



$$A = \frac{138.1}{5.44} \text{ For Gear Widths Through 2"} \\ \frac{171.4}{6.75} \text{ For } 2\frac{1}{4} \text{ and } 2\frac{1}{2} \text{ Gear Widths Only}$$

PIPE THREAD PORTS

37X™

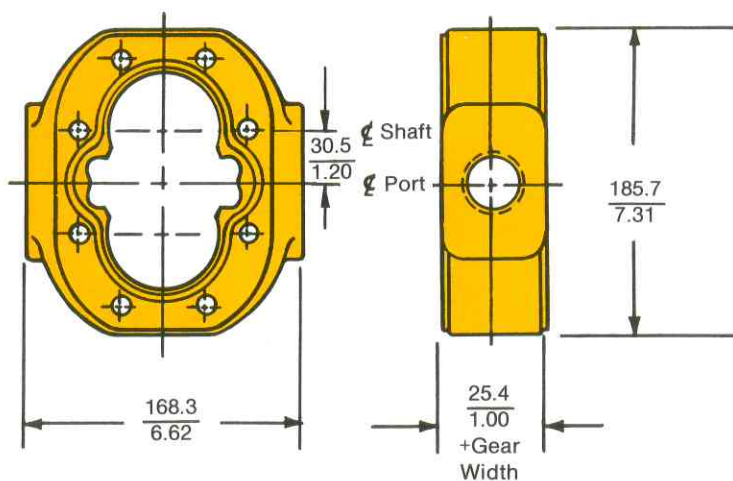
1/2" and 3/4" gear sections are available without porting for secondary pumps in multiple assemblies only.

Code for 1/2" gear is AB05

AB05

Code for 3/4" gear is AB07

AB07



This catalog contains codes for most widely used models only. Complete codes for assembling all configurations are readily available from our sales representatives.

NOTE:

Codes shown in black are NPT threads
Codes shown in color are BSPP threads

†NPT threads are not recommended for use at pressures in excess of 100 bar/1500 psi.

Port Size Pipe Diameter (inches)		CODE SELECTION						
		Gear Width (inches)						
Left	Right	1	1¼	1½	1¾	2	2¼	2½
NONE	NONE	AB10 AB10	AB12 AB12	AB15 AB15	AB17 AB17	AB20 AB20		
NONE	¾	AF10 EM10						
¾	NONE	AR10 EA10						
¾	¾	ER10 EJ10	ER12 EJ12					
¾	1*	ET10* EK10*	ET12 EK12*					
1*	¾	IJ10* EN10*	IJ12 EN12*					
1	1		IL12 —	IL15 EQ15				
1	1¼*			IM15* ES15*	IM17 ES17*			
1¼*	1			IS15* IR15*	IS17 IR17*			
1¼	1¼				IT17 —	IT20 —	IT22 IE22	IT25 IE25
1¼	1½						IU22 IA22	IU25 IA25
1½	1¼						IZ22 JF22	IZ25 JF25

Port Size Pipe Diameter (inches)		CODE SELECTION							
		NPT† BSPP							
		Gear Width (inches)							
Left	Right	1	1¼	1½	1¾	2	2¼	2½	3
NONE	NONE	<u>AB10</u> AB10	<u>AB12</u> AB12	<u>AB15</u> AB15	<u>AB17</u> AB17	<u>AB20</u> AB20			
NONE	¾	<u>AF10</u> EM10							
¾	NONE	<u>AR10</u> EA10							
¾	¾	<u>ER10</u> EJ10							
¾	1 *	<u>ET10</u> EK10 *	<u>ET12</u> EK12						
1 *	¾	<u>IJ10</u> EN10 *	<u>IJ12</u> EN12						
1	1	<u>IL10</u> EQ10	<u>IL12</u> EQ12	<u>IL15</u> EQ15					
1	1¼ *			<u>IM15</u> ES15 *	<u>IM17</u> ES17 *				
1¼ *	1			<u>IS15</u> IR15 *	<u>IS17</u> IR17 *				
1¼	1¼				<u>IT17</u> IE17	<u>IT20</u> IE20	<u>IT22</u> IE22	<u>IT25</u> IE25	<u>IT30</u> IE30
1¼	1½ *					<u>IU20</u> IA20 *	<u>IU22</u> IA22	<u>IU25</u> IA25	<u>IU30</u> IA30
1½ *	1¼					<u>IZ20</u> JF20 *	<u>IZ22</u> JF22	<u>IZ25</u> JF25	<u>IZ30</u> JF30
1½	1½							<u>JC25</u> JV25	<u>JC30</u> JV30

*Low pressure inlet only.

STYLE OF SPLINED SHAFTS

drive shafts, splined

Dimensional data shown in $\frac{\text{mm}}{\text{inches}}$

SAE B

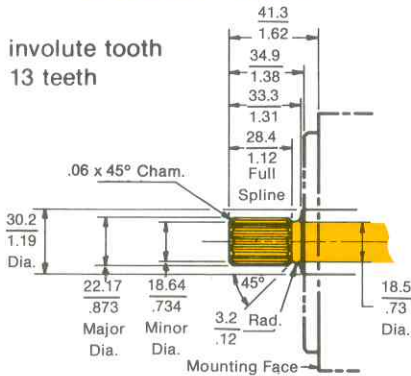
13 Teeth
16/32 Pitch
30° Pressure Angle

SAE C

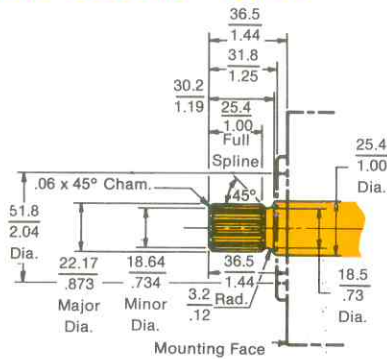
14 Teeth
12/24 Pitch
30° Pressure Angle

SAE B

25X™ CODE 25 Type 1

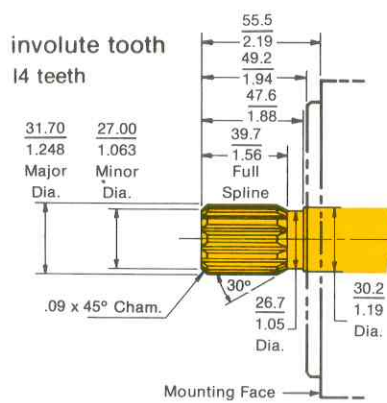


25X™ CODE 48 Type 2



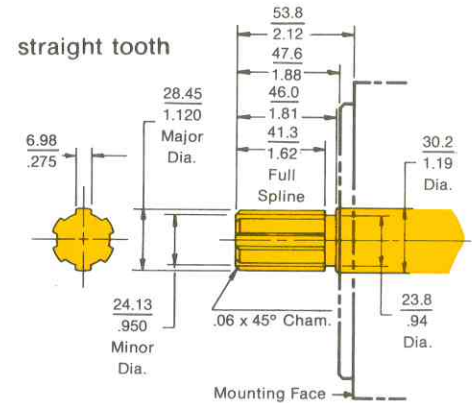
SAE C

25X™ CODE 7 Type 1



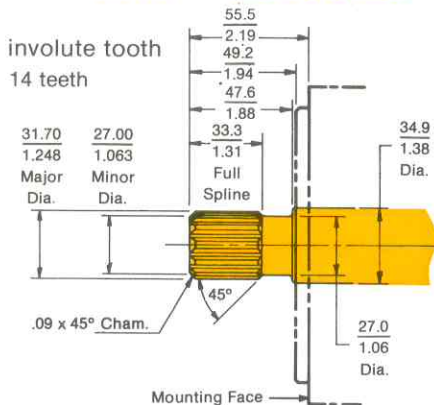
SPLINED 6 TEETH

25X™ CODE 6 Type 1



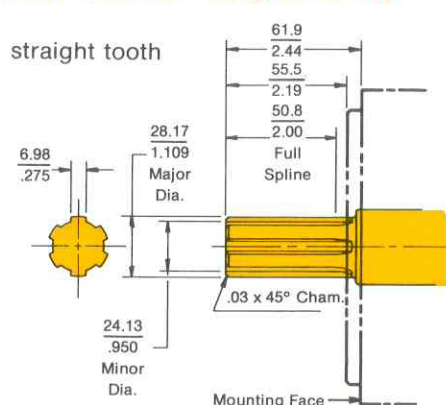
SAE C

37X™ CODE 7 Single Bearing



SPLINED 6 TEETH

37X™ CODE 3 Single Bearing

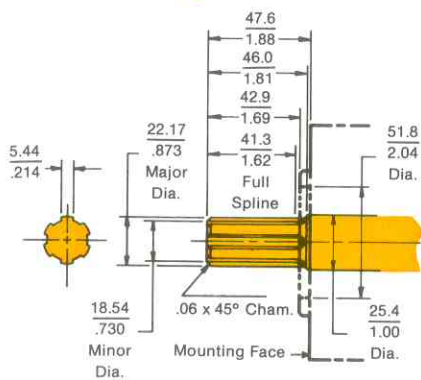


This catalog contains codes for most widely used models only. Complete codes for assembling all configurations are readily available from our sales representatives.

ATTENTION

These illustrations do not necessarily portray the exact drive shaft configuration due to design purposes. To determine coupling engagement, specific details for any shaft may be obtained from your Commercial Intertech sales representative or by phoning our District Sales Office.

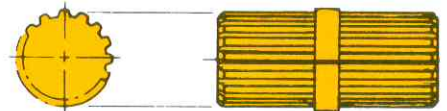
25X™ CODE 99 Type 2



CONNECTING SHAFT

25X™ and 37X™ CODE 1
Type 1, Type 2, Single Bearing,
Double Bearing

For Multiple Units Only



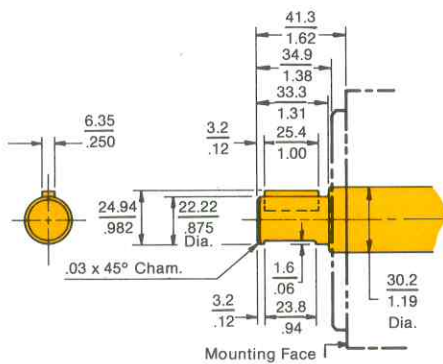
Connecting shafts furnish a continuous driveline through tandem pumps and motors. Adjacent units in tandem are joined by the connecting shaft. When specifying tandem pumps or motors, one connecting shaft (CODE 1) must be specified for every two adjacent pumps or motors.

drive shafts, straight keyed

Dimensional data shown in $\frac{\text{mm}}{\text{inches}}$

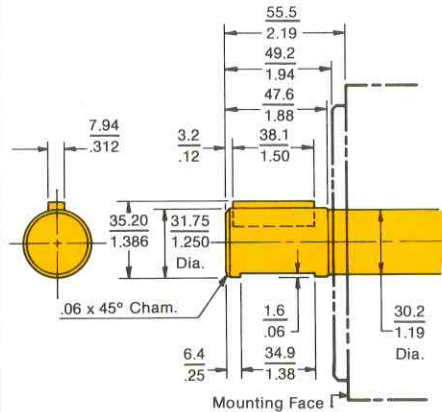
SAE B

25X™ CODE 30 Type 1



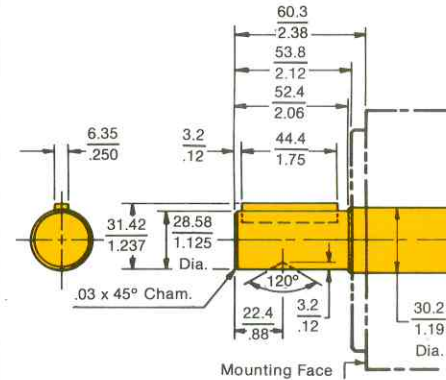
SAE C

25X™ CODE 11 Type 1

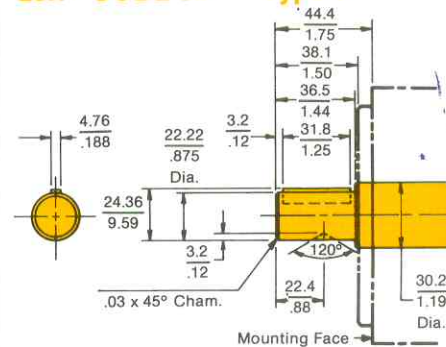


STRAIGHT KEYED

25X™ CODE 2 Type 1

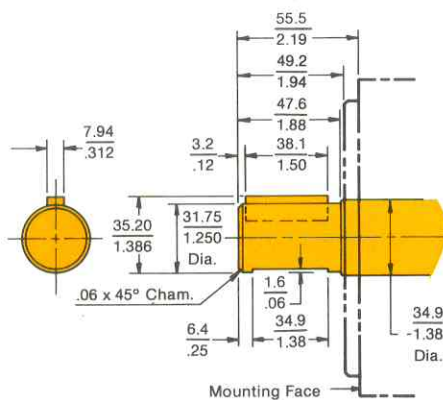


25X™ CODE 38 Type 1



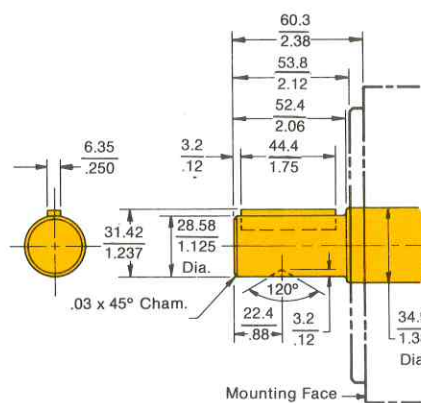
SAE C

37X™ CODE 11 Single Bearing

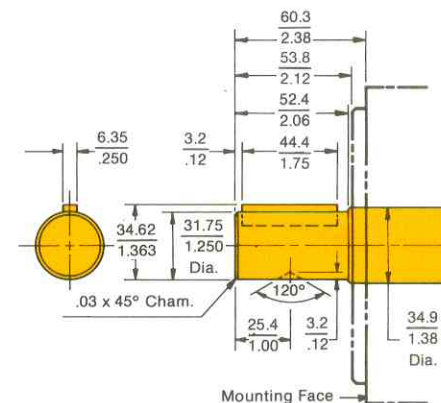


STRAIGHT KEYED

37X™ CODE 2 Single Bearing



37X™ CODE 8 Single Bearing

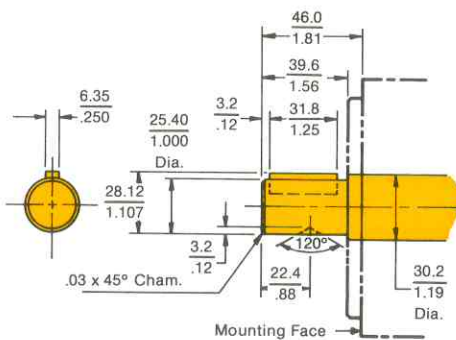


This catalog contains codes for most widely used models only. Complete codes for assembling all configurations are readily available from our sales representatives.

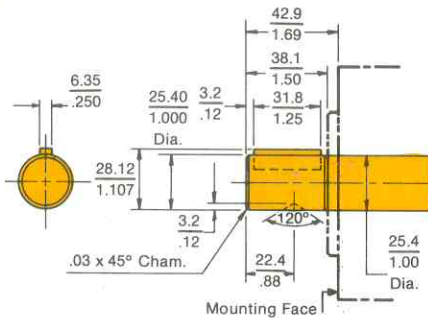
ATTENTION

These illustrations do not necessarily portray the exact drive shaft configuration due to design purposes. To determine coupling engagement, specific details for any shaft may be obtained from your Commercial Intertec sales representative or by phoning our District Sales Office.

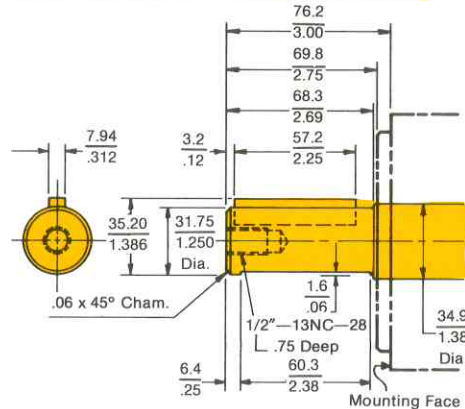
25X™ CODE 43 Type 1



25X™ CODE 47 Type 2



25X™ CODE 73* Double Bearing



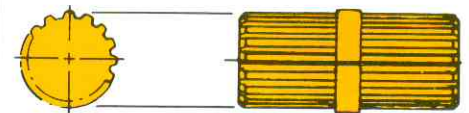
*Code 73 drive shafts can only be used with double-bearing shaft end covers (see pages 8, 9 and 10).

CONNECTING SHAFT

25X™ and 37X™ CODE 1

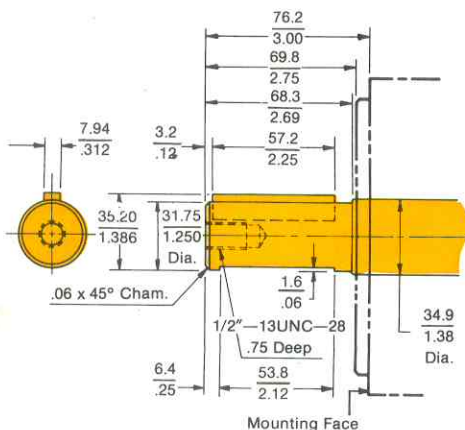
Type 1, Type 2, Single Bearing, Double Bearing

For Multiple Units Only



Connecting shafts furnish a continuous driveline through tandem pumps and motors. Adjacent units in tandem are joined by the connecting shaft. When specifying tandem pumps or motors, one connecting shaft (CODE 1) must be specified for every two adjacent pumps or motors.

37X™ CODE 73* Double Bearing



*Code 73 drive shafts can only be used with double-bearing shaft end covers (see pages 8, 9 and 10).

Use Type 1 drive shafts with Type 1 shaft end covers only.

Use Type 2 drive shafts with Type 2 shaft end covers only.

4500 PSI

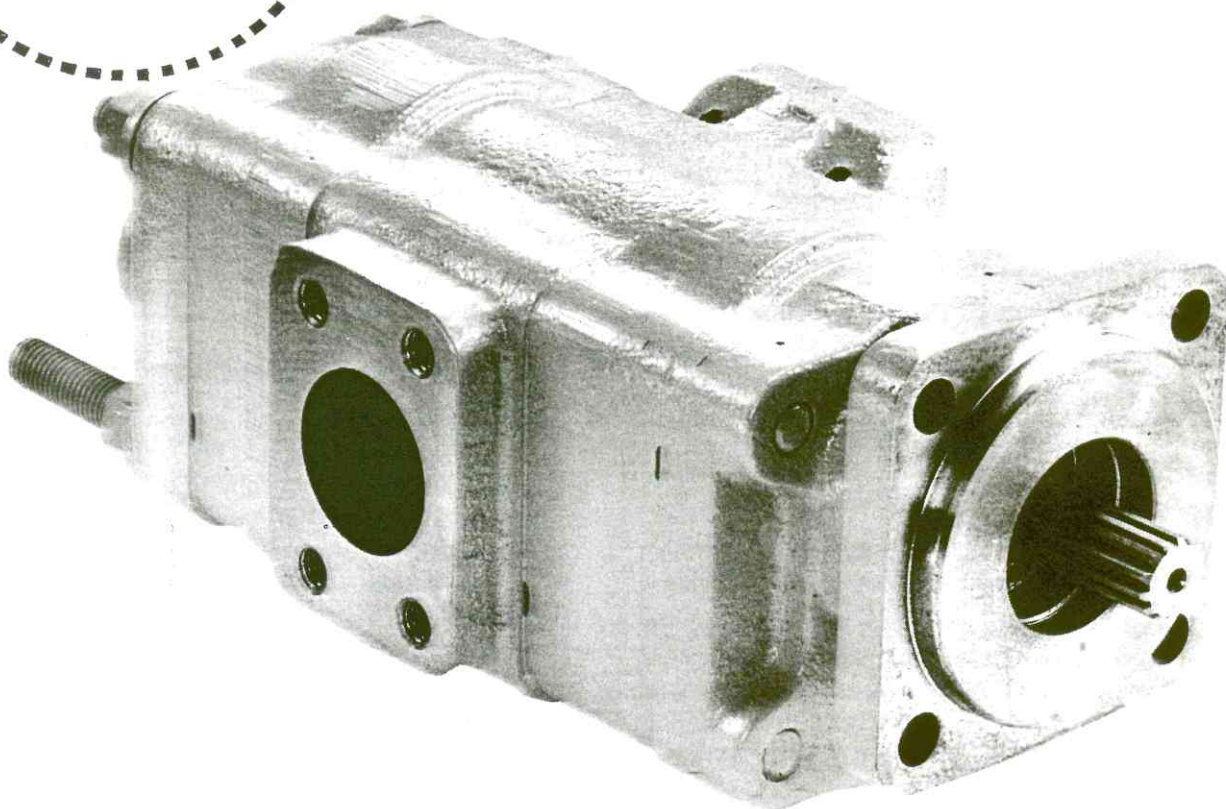
P400

oil Hydraulic

GEAR PUMPS

NEW

High Pressure Pumps



®



Commercial
Intertech

bearing carriers

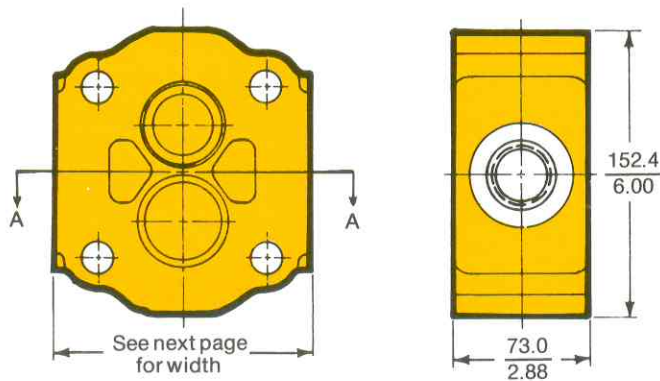
Multiple unit motor installation must be cleared through Commercial's Technical Service Department.

Both pump units of a tandem pump assembly may be fed through the bearing carrier provided inlet flow to each unit does not exceed 21 gpm for the 25X (31 gpm for the 37X). If both units discharge through common porting in the bearing carrier, maximum flow from either unit must not exceed 40 gpm for the 25X (60 gpm for the 37X).

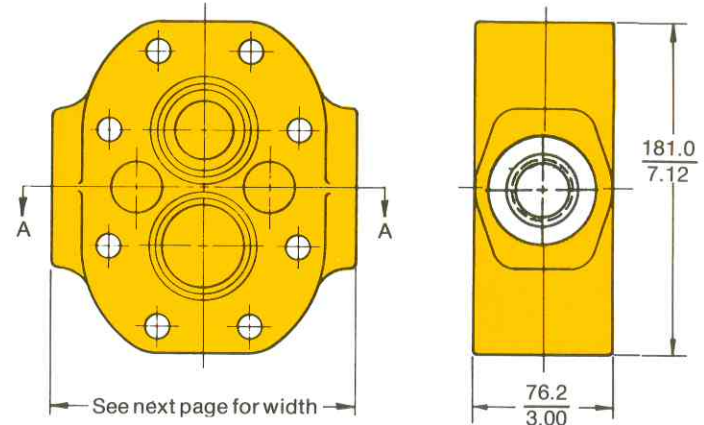
dimensional data shown in $\frac{\text{mm}}{\text{inches}}$

STRAIGHT THREAD PORTS (O.D. Tube)

25X™



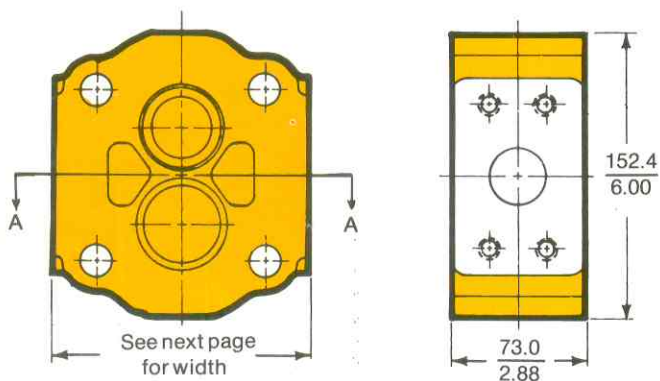
37X™



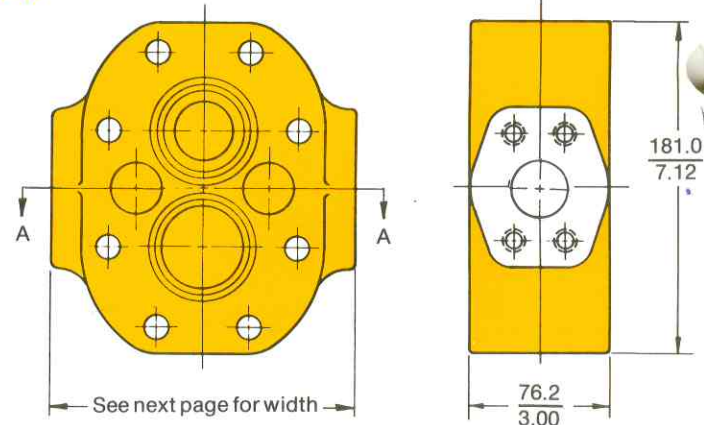
SPLIT FLANGE PORTS

When specifying split flange porting on multiple units, all coding MUST be cleared by our Technical Service Dept.

25X™

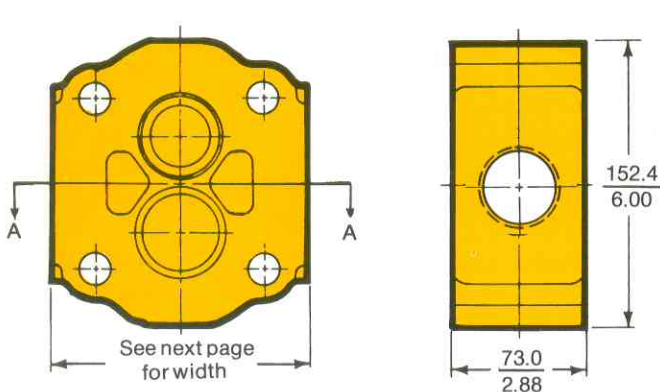


37X™

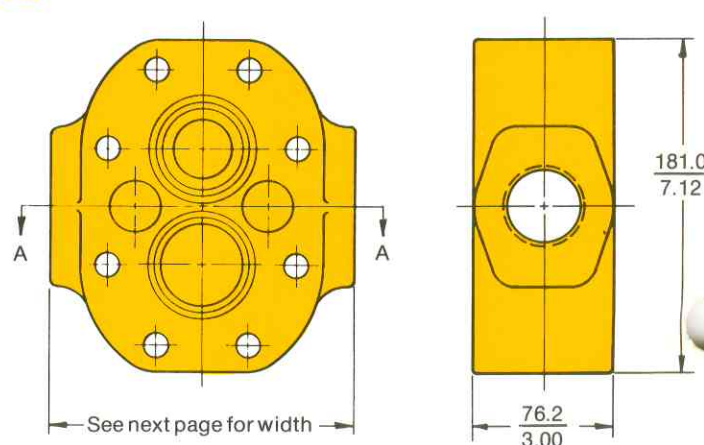


PIPE THREAD PORTS

25X™



37X™



This catalog contains codes for most widely used models only. Complete codes for assembling all configurations are readily available from our sales representatives.

CODE SELECTION

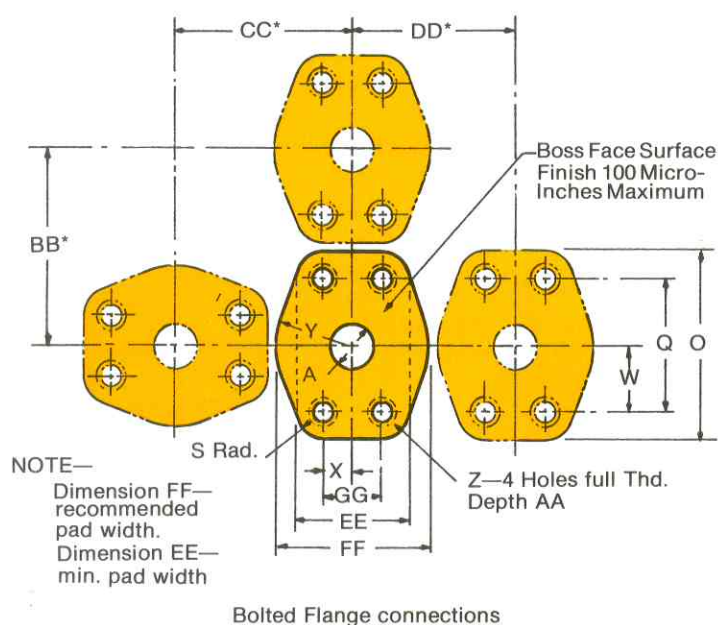
Section A-A 	25X Port Size		Width mm inches	CODE SAE Metric	37X Port Size		Width mm inches	CODE SAE Metric
	Left	inches metric Right			Left	inches metric Right		
	NONE	NONE	$\frac{131.8}{5.19}$	$\frac{B}{B}$	NONE	NONE	$\frac{161.9}{6.38}$	$\frac{B}{B}$
	$\frac{1}{2}$ M48 x 2	NONE	$\frac{146.0}{5.75}$	$\frac{TH}{NO}$	$\frac{1}{4}$ M42 x 2	NONE	$\frac{174.6}{6.88}$	$\frac{NG}{NN}$
	NONE	M48 x 2	$\frac{146.0}{5.75}$	$\frac{TM}{ZZ}$	NONE	M42 x 2	$\frac{174.6}{6.88}$	$\frac{NK}{NZ}$
	$\frac{1}{2}$ M48 x 2	1 M33 x 2	$\frac{146.0}{5.75}$	$\frac{TK}{PV}$	$\frac{1}{4}$ M42 x 2	1 M33 x 2	$\frac{174.6}{6.88}$	$\frac{XX}{PS}$
	1 M33 x 2	$\frac{1}{2}$ M48 x 2	$\frac{146.0}{5.75}$	$\frac{TN}{RR}$	1 M33 x 2	$\frac{1}{4}$ M42 x 2	$\frac{174.6}{6.88}$	$\frac{XZ}{RO}$
	1 M33 x 2	1 M33 x 2	$\frac{146.0}{5.75}$	$\frac{QD}{GN}$	1 M33 x 2	1 M33 x 2	$\frac{174.6}{6.88}$	$\frac{QD}{GN}$
	$\frac{1}{4}$ M42 x 2	$\frac{1}{4}$ M42 x 2	$\frac{146.0}{5.75}$	$\frac{NV}{XF}$	$\frac{1}{4}$ M42 x 2	$\frac{1}{4}$ M42 x 2	$\frac{174.6}{6.88}$	$\frac{NV}{XF}$

Section A-A 	Port Size (inches)		Width mm inches	Width mm inches	CODE SAE Metric
	Left	Right			
	NONE	NONE	$\frac{131.8}{5.19}$	$\frac{161.9}{6.38}$	$\frac{B}{B}$
	$\frac{1}{2}$	NONE	$\frac{144.5}{5.69}$	$\frac{173.0}{6.81}$	$\frac{FP}{XN}$
	NONE	$\frac{1}{2}$	$\frac{144.5}{5.69}$	$\frac{173.0}{6.81}$	$\frac{FT}{CQ}$
	$\frac{1}{2}$	1	$\frac{142.9}{5.62}$	$\frac{171.4}{6.75}$	$\frac{XV}{JM}$
	1	$\frac{1}{2}$	$\frac{142.9}{5.62}$	$\frac{171.4}{6.75}$	$\frac{XW}{JR}$
	1	1	$\frac{142.9}{5.62}$	$\frac{171.4}{6.75}$	$\frac{LP}{JT}$
	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{142.9}{5.62}$	$\frac{171.4}{6.75}$	$\frac{GL}{QZ}$

Section A-A 	Port Size (inches)		Width mm inches	Width mm inches	CODE NPT† BSPP
	Left	Right			
	NONE	NONE	$\frac{131.8}{5.19}$	$\frac{161.9}{6.38}$	$\frac{B}{B}$
	$\frac{1}{2}$	NONE	$\frac{146.0}{5.75}$	$\frac{174.6}{6.88}$	$\frac{TL}{MM}$
	NONE	$\frac{1}{2}$	$\frac{146.0}{5.75}$	$\frac{174.6}{6.88}$	$\frac{TJ}{MX}$
	$\frac{1}{2}$	1	$\frac{146.0}{5.75}$	$\frac{174.6}{6.88}$	$\frac{XS}{HN}$
	1	$\frac{1}{2}$	$\frac{146.0}{5.75}$	$\frac{174.6}{6.88}$	$\frac{XT}{HX}$
	1	1	$\frac{146.0}{5.75}$	$\frac{174.6}{6.88}$	$\frac{DH}{AS}$
	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{146.0}{5.75}$	$\frac{174.6}{6.88}$	$\frac{BF}{OE}$

†NPT threads are not recommended for use at pressures in excess of 100 bar/1500 psi.

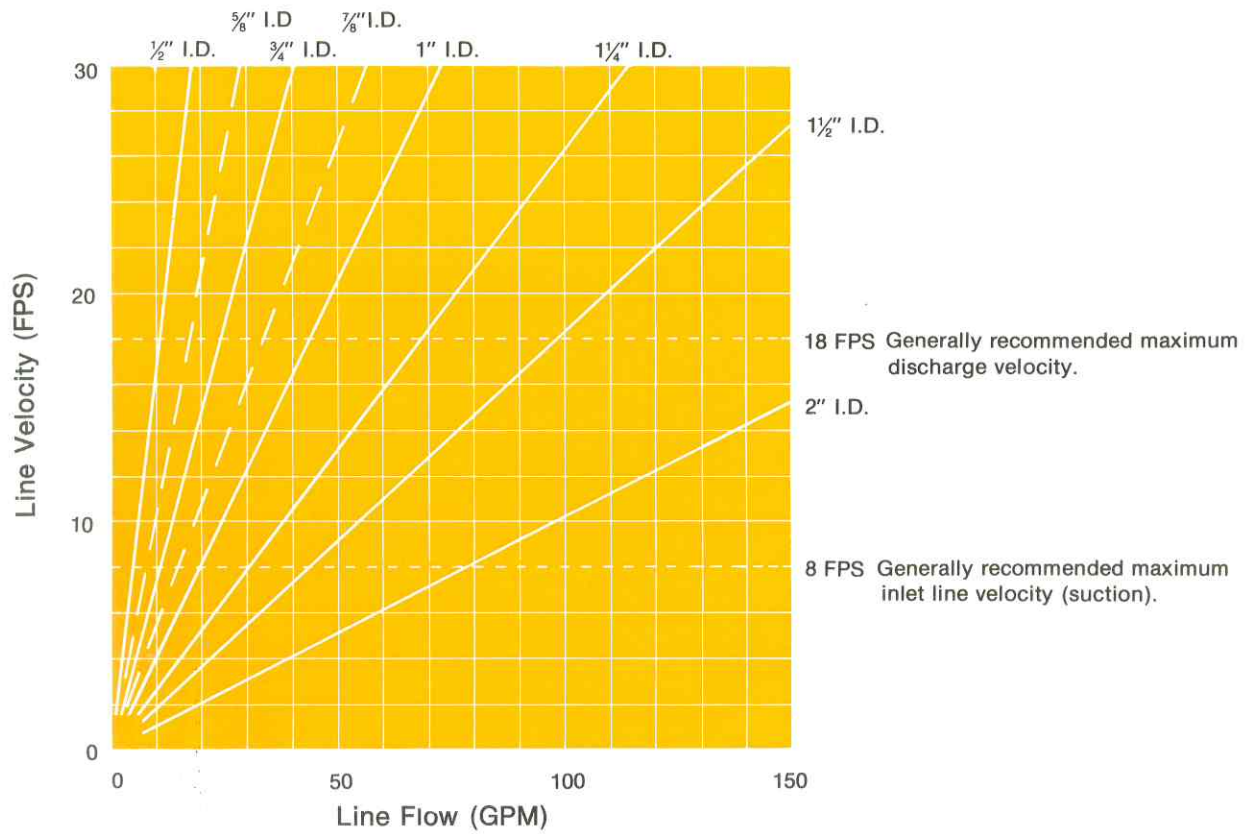
4 BOLT FLANGE PORT DIMENSIONS, SAE STANDARD IN INCHES



Nominal Flange Size	A Dia.	O	FF	Q ±0.010	GG ± 0.010	S Rad.	W	X	Y Rad.	Z Thread UNC-2B	AA Min.	BB* Min.	CC* Min.	DD* Min.	EE Min.
1/2	0.50	2.12	1.81	1.500	0.688	0.31	0.75	0.34	0.91	5/16-18	0.94	2.22	2.06	1.91	1.31
3/4	0.75	2.56	2.06	1.875	0.875	0.34	0.94	0.44	1.03	3/8-16	0.88	2.66	2.41	2.16	1.62
1	1.00	2.75	2.31	2.062	1.031	0.34	1.03	0.52	1.16	3/8-16	0.88	2.84	2.62	2.41	1.88
1 1/4	1.25	3.12	2.88	2.312	1.188	0.41	1.16	0.59	1.44	7/16-14	1.12	3.22	3.09	2.97	2.12
1 1/2	1.50	3.69	3.25	2.750	1.406	0.47	1.38	0.70	1.62	1/2-13	1.06	3.78	3.56	3.34	2.50
2	2.00	4.00	3.81	3.062	1.688	0.47	1.53	0.84	1.91	1/2-13	1.06	4.09	4.00	3.91	3.00
2 1/2	2.50	4.50	4.28	3.500	2.000	0.50	1.75	1.00	2.14	1/2-13	1.19	4.59	4.50	4.38	3.50
3	3.00	5.31	5.16	4.188	2.438	0.56	2.09	1.22	2.58	5/8-11	1.19	5.41	5.34	5.25	4.19

*Dimensions BB, CC, and DD provide .06 in. clearance between flanges, dimensionally on the high limit, when the same size flanges are used on adjacent ports. These dimensions do not apply when more than one size of flanges are used on adjacent ports.

FLOW VELOCITIES THROUGH HOSES AND PIPES



$$\text{FPS} = .41 \frac{\text{GPM}}{d^2} \text{ (Approx.)}$$

$$\text{GPM} = 2.4 d^2 \times \text{FPS} \text{ (Approx.)}$$

d = I.D. of hose or pipe.

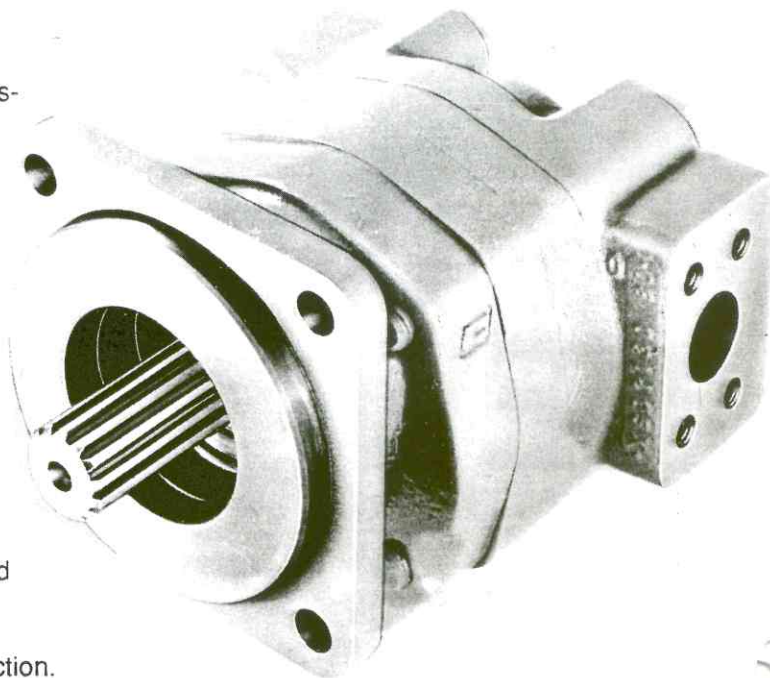
Series P400 Pumps

Commercial's P400 series of high pressure, fixed displacement gear pumps are available in single and multiple assemblies. These units are rated for service up to 4500 psi. They're available in three models offering you a displacement range from 1.5 to 5.5 CIR.

These units are cast from high-strength iron which provides the structural integrity needed at high pressures. Gear widths have been selected to keep shaft deflections and bearing loads within acceptable design limits. Body seals have been strengthened and the fastener pre-load increased to assure reliability under high pressure conditions.

A wide variety of SAE B and C mounting flanges and drive shaft configurations are available. Porting is through SAE split flange or "O" Ring fittings. Special hardened steel alloy gears with integral drive shaft run between pressure-balanced, bronze wear plates to make these rugged pumps highly efficient. Long shaft journals provide superior bearing surfaces and add to long service life.

Pumps can be assembled for rotation in either direction. Motors are not available as of January 1990.



Displacement per inch of gear

P430 1.97 CIR

P450 2.55 CIR

P465 3.60 CIR

Performance Data

The performance data shown on the adjacent page 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 at 4500 psi with the oil reservoir temperature at 180°F and viscosity of 150 SUS @ 100°.

Oil Recommendations

Commercial's pumps work well on most good hydraulic oil as well as synthetic and fire resistant fluids. Please check with our product support department before using any fire resistant or non-petroleum based fluid. Some of these products require special seals.

Viscosity - 50 SUS minimum @ operating temperature.
7500 SUS maximum @ starting temperature

Viscosity index - 90 minimum

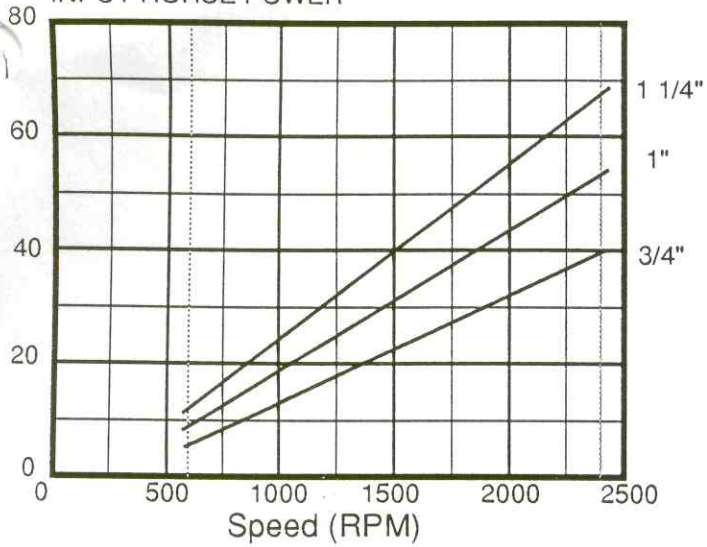
Aniline point - 175 minimum

Additives - Foam depressant
Rust inhibitors

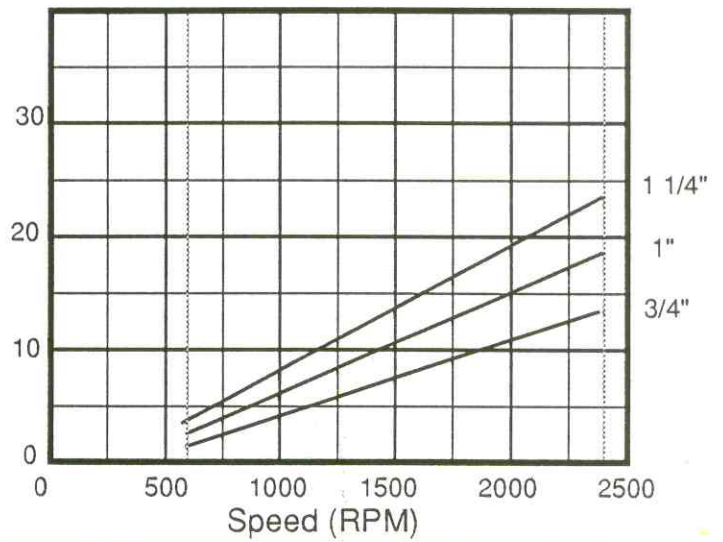
Maximum recommended system operating temperature is 180° F or 82° C.

P430 Pumps

INPUT HORSE POWER

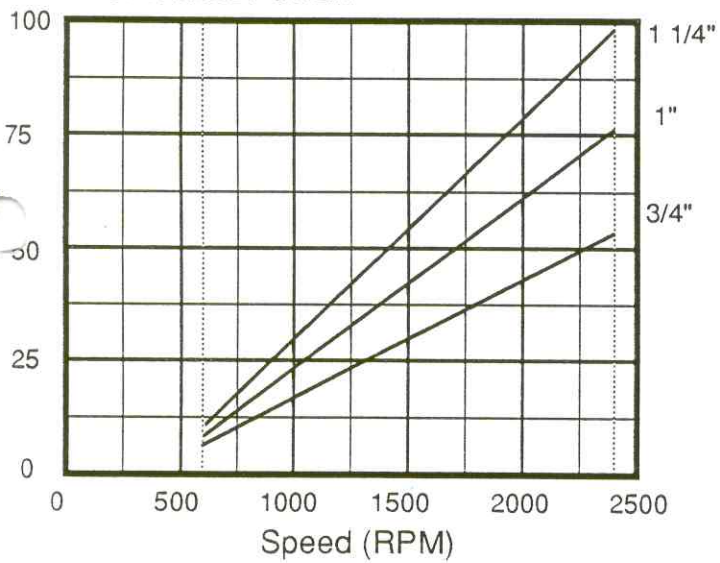


OUTPUT FLOW (gpm)

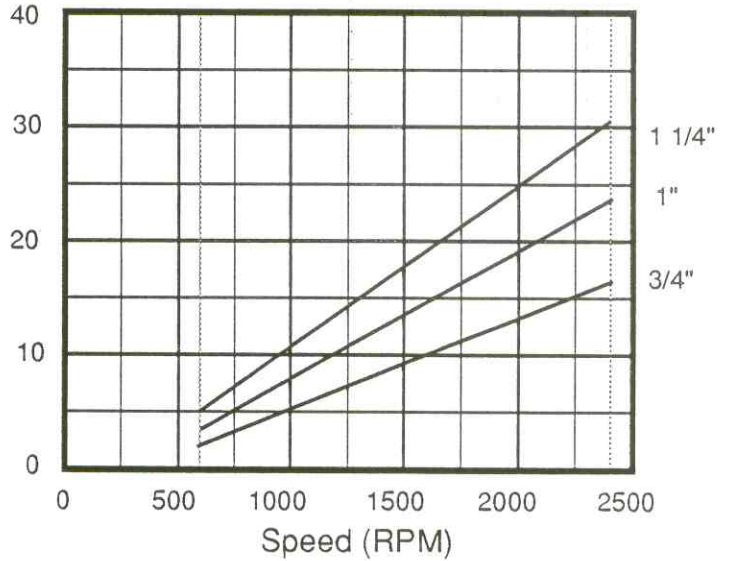


P450 Pumps

INPUT HORSE POWER

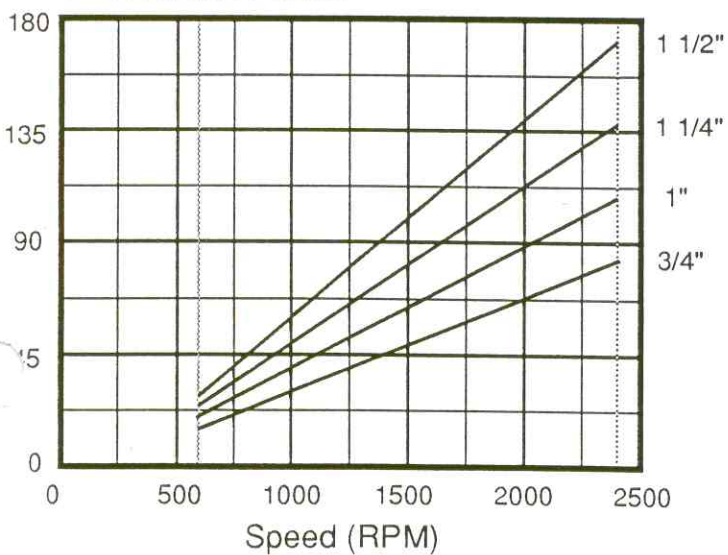


OUTPUT FLOW (gpm)

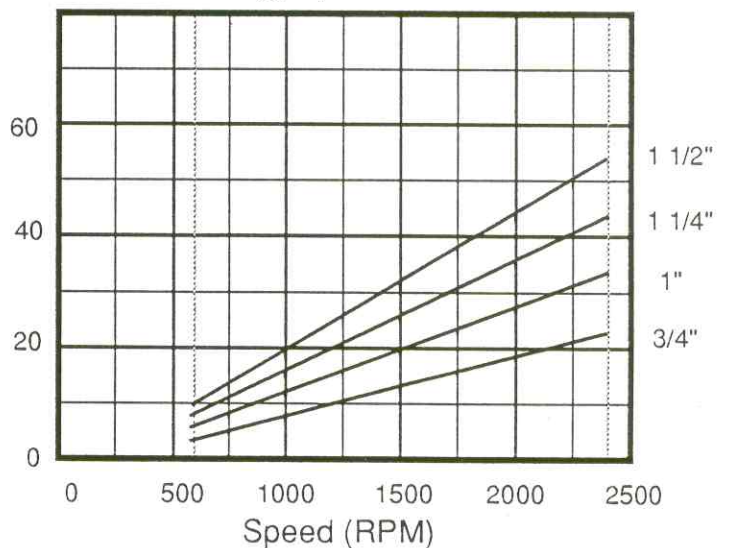


P465 Pumps

INPUT HORSE POWER



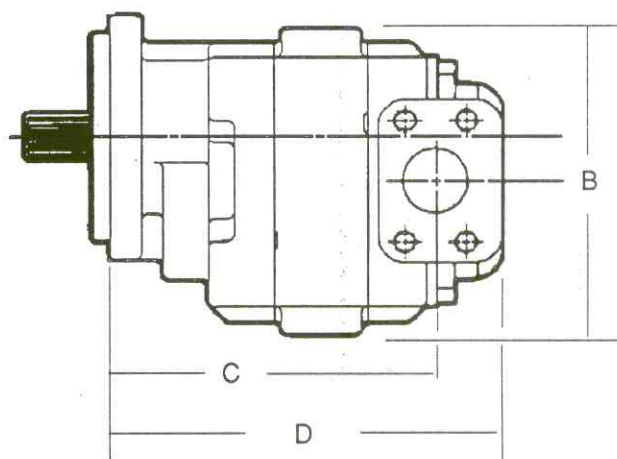
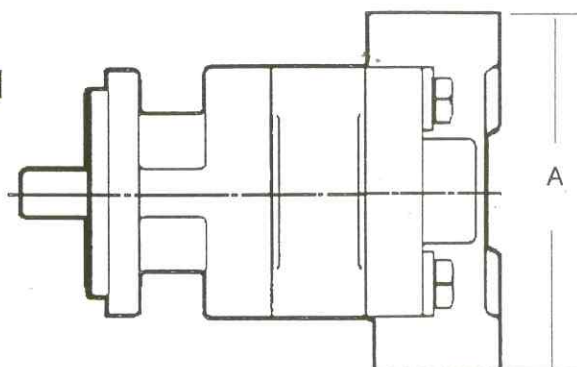
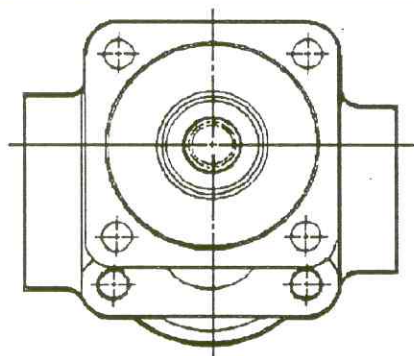
OUTPUT FLOW (gpm)



Dimensional Data

SINGLE UNITS

Model	A	B	C	D	
P430	6.88	5.88	4.94 + GW	6.19 + GW	INCHES
	174.7	149.3	125.5 + GW	157.2 + GW	MM
P450	7.12	6.00	5.56 + GW	7.06 + GW	INCHES
	108.8	152.4	141.2 + GW	179.3 + GW	MM
P465	7.38	7.25	5.81 + GW	7.31 + GW	INCHES
	187.4	184.1	147.6 + GW	185.7 + GW	MM



MULTIPLE UNITS

Model	A	B	C	D	
P430	6.78	5.88	5.38 + GW	9.88 + GW	INCHES
	172.2	149.3	136.7 +GW	250.9 +GW	MM
P450	7.68	6.00	5.75 +GW	10.25 +GW	INCHES
	195.1	152.4	146.8 +GW	254.6 +GW	MM
P465	8.38	7.25	6.25 + GW	11.38 + GW	INCHES
	212.8	184.1	158.7 +GW	289.0 +GW	MM

