1900 Series

Roller Bearing Gear Pumps and Motors (Bi-Rotational)

1900

► DESCRIPTION:

The 1900 Series Pump/Motor utilizes the many design and application features of the widely accepted Hydreco gear pump and motor technology. The pump contains pressure-balanced wear plates. The series maintains its bi-rotational pump or motor capabilities made possible by use of check valves which drain back to the low pressure side.

► PERFORMANCE:

Max operating pressure:	PSI [bar]	3000 (206.9)
Drain flow rate	GPM [l/min]	≤ 0.21 [≤ 0.8]
Ambient temperature range	°F [°C]	-4 to 140 [-20 to +60]
Fluid temperature range	°F [°C]	-4 to 176 [-20 to +80]
Fluid viscosity range	cSt	10 - 400
Recommended viscosity	cSt	25
Fluid contamination degree	according to ISO 4406:1999 class 20/18/15	

1900 RPM RATINGS				
Model	**Max. Continuous psi (bar)**	**Max. rpm as pump**	**Max. rpm as motor**	**Mass:**
1910	3000 (206.9)	3000	3600	43 lbs
1913	3000 (206.9)	4000	3600	44 lbs
1916	3000 (206.9)	3600	3600	45 lbs
1919	2500 (172.5)	3200	3600	46 lbs
1923	2000 (138)	2600	3600	47 lbs

► FLUIDS:

FIRE RESISTANT FLUIDS

Non-Mineral Based Fluids change the rating of units due to specific gravity and lubricity of the fluid.

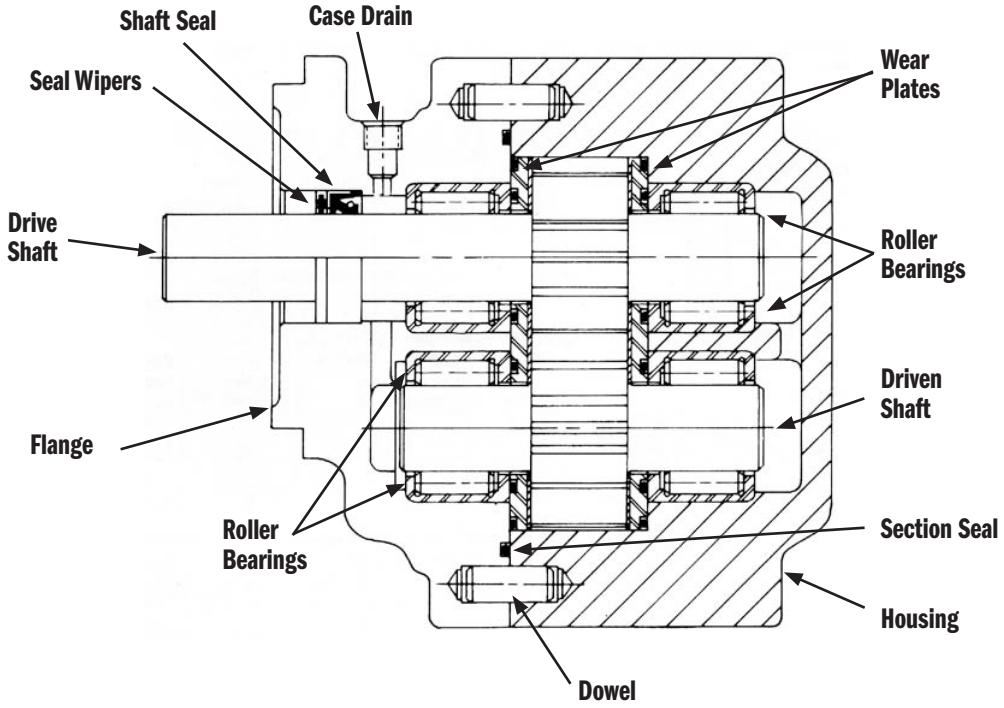
FLUIDS					
Type	**Maximum RPM**	**Maximum Pressure**	**Maximum Temperature**	**Minimum inlet Pressure**	**Bearing life in comparison to petroleum based fluid**
Synthetic	2200	2500 psi (172.0 bar)	180° F (82.2° C)	5 inches of Hg.	100%
Water Glycol	1800	1500 psi (103.3 bar)	130° F (54.4° C)	3 inches of Hg.	100%
Invert Emulsion	1800	1250 psi (86.0 bar)	130° F (54.4° C)	3 inches of Hg.	100%

► FEATURES:

High Performance

- Rated to 3000 PSI and 3000 RPM (motors to 3600 RPM) the 1900 series pumps & motors utilize a very rigid, doweled, two piece construction. This simplified construction method is combined with integral gears and shafts and Hydreco's four-bolt design which places all four high strength assembly bolts within the area of greatest internal pressure. This design maintains perfect alignment and thus eliminates any decrease in efficiency due to "center section shift" at high pressures. The four-bolt design further reduces internal distortion and the resulting wear on working parts.
- Roller bearing 1900 series units have a pressure balanced seal plate, on each side of the gears. By balancing pressure forces on these plates, a precise balance is obtained between minimum clearances for high volumetric efficiencies, and minimum contact with rotating parts for low mechanical losses. This design results in exceptionally high overall efficiency.
- Long life, precision roller bearings are continuously pressure lubricated even when pump is under no load.
- Rugged high density cast iron construction further maintains high volumetric efficiency even at high operating temperatures.
- Pumps exhibit high horsepower-to-weight ratios. May be used as a unidirectional motor. Mounting flanges are of the versatile HYDRECO combination SAE two or four bolt design.
- Multiple units are of a modular design. This allows assembly of modules from stock to meet any multiple pump requirement.
- Modular design allows field replacement of any one section.
- Units are repairable due to roller bearing design.
- Roller bearing construction is relatively insensitive to moderate amounts of contamination.
- Professional applications and engineering assistance available upon request. Consult your Hydreco sales representative.
- Displacements: 2.53 cir, (41.47 ccr) - 5.58 cir (91.46)
- Operating as pumps, 3000 RPM and 3000 psi (206.9)
- Operating as motors, 3600 RPM and 3000 psi (206.9)
- The 1900 can be used as a pump or motor by adding a case drain as a motor.

CROSS SECTION 1900K SERIES PUMP/MOTOR



► IDENTIFICATION CODE:

TYPICAL ORDERING CODE:
1910A4B6B

1900 [ ] [ ] [ ] [ ] [ ]

PUMP SERIES 1900	
CODE	**GPM / 1000 PRM CIR (CCR)**
1910	2.53 cir (41.47 ccr)
1913	3.16 cir (51.79 ccr)*
1916	3.80 cir (62.28 ccr)
1919	4.53 cir (74.28 ccr)
1923	5.58 cir (91.46 ccr)

DESIGN	
CODE	**DESCRIPTION**
A	(Standard) Roller Bearing

FLANGES	
CODE	**DESCRIPTION**
B	(Standard) SAE "B" 2&4-Bolt
C	(Standard) SAE "C" 2&4-Bolt

SHAFT			
CODE	**NAME**	**DIA.**	**DESCRIPTION**
1	SAE "C" Spline	1-1/4"	2.19" Long Full spline 14 teeth
3	SAE "B-B" Parallel ST. Shaft W/Key	1.00"	1.81" Long 1/4" Sq. Key 1-1/4" Long
4	(STANDARD) SAE "B" Spline	7/8"	1.625" Long Full spline 13 teeth

COVERS	
CODE	**DESCRIPTION**
6	SAE #20 Rear Ported Only for Size code 10 and 13
7	SAE #20 Side Ported
9	1.00" NPT Pipe Thread Ports *1.25" NPT (4) Side & Rear

ROTATIONS	
CODE	**DESCRIPTION**
B	(Standard) Bi-rotational

SHAFT

(1) SAE volumetric rating is per SAE J745C.

(2) Mounting flanges noted as SAE conform to SAE J744C.

1900 MAXIMUM RECOMMENDED DRIVE SHAFT TORQUE TRANSMISSION CAPACITY

Satisfactory drive shaft torque transmission capacity is indicated with the product of pressure (P) and is displacement (D) is less then or equal to (<) a given constant. The unit of "P" and "D" are expressed in psig and in^3/rev. (cir) respectively.

1900 MAX INPUT TORQUE LIMITATIONS

The drive shaft can withstand the input torque if the product of pressure (PSIG) times displacement (cubic inches/rev.) does not exceed the P x D constant indicated. Pump sections must be added together and not exceed P x D constant listed below.

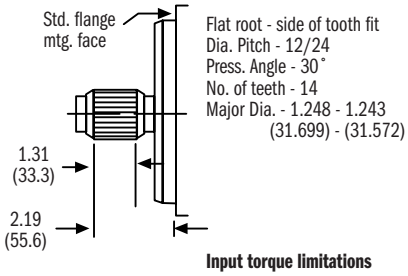
► SHAFT OPTIONS:

Dimensions:
inches (± .125")
millimeters (± 1 mm)

NO. 1

SAE "C" SPLINED

11/4" Dia. - SAE 14 Tooth Involute Spline

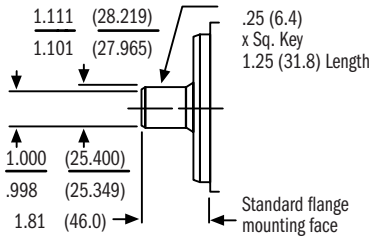


Input torque limitations
PxD = 16,800

NO. 3

SAE "B-B" Straight Keyed

1" Dia. - SAE Straight Shaft with Key

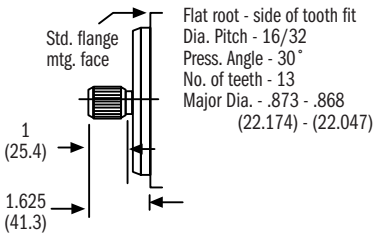


Input torque limitations
PxD = 11,000

NO. 4

SAE "B" SPLINED

7/8" Dia. - SAE 13 Tooth Involute Spline



Input torque limitations
PxD = 11,800

SHAFT			
CODE	**NAME**	**DIA.**	**DESCRIPTION**
1	SAE "C" Spline	1-1/4"	2.19" Long Full spline 14 teeth
3	SAE "B-B" Parallel ST. Shaft W/Key	1.00"	1.81" Long 1/4" Sq. Key 1-1/4" Long
4	(STANDARD) SAE "B" Spline	7/8"	1.625" Long Full spline 13 teeth

ADDITIONAL SHAFT OPTIONS ARE AVAILABLE

Contact Sales for more details.

1900 MAXIMUM RECOMMENDED DRIVE SHAFT TORQUE TRANSMISSION CAPACITY

Satisfactory drive shaft torque transmission capacity is indicated with the product of pressure (P) and is displacement (D) is less then or equal to (<) a given constant. The unit of "P" and "D" are expressed in psig and in^3/rev. (cir) respectively.

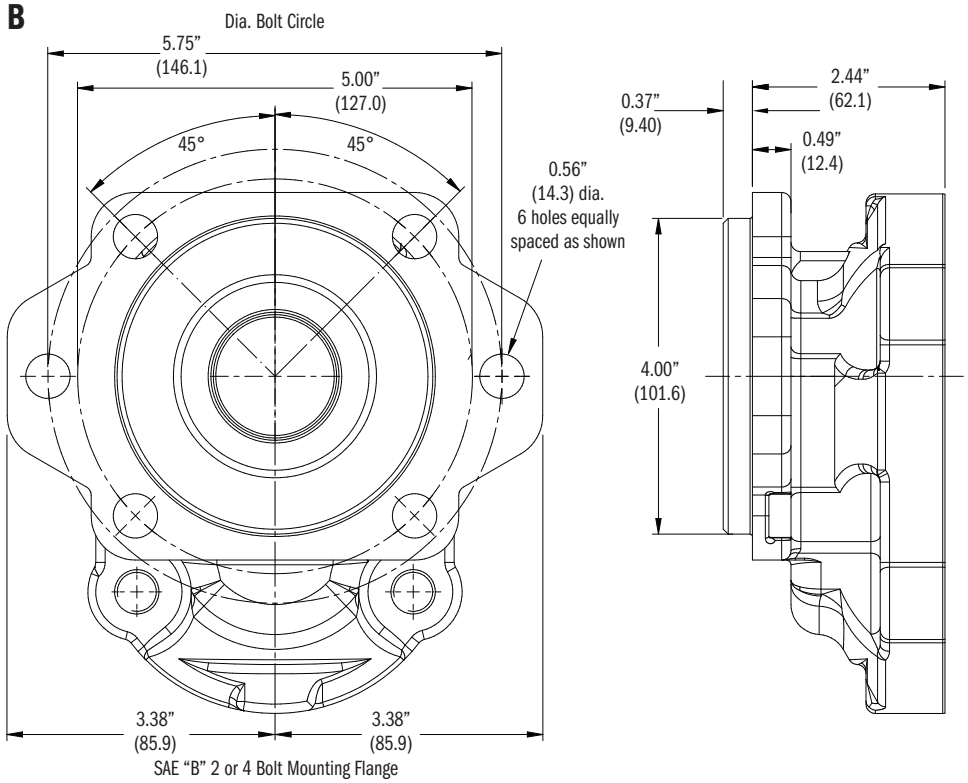
1900 MAX INPUT TORQUE LIMITATIONS

The drive shaft can withstand the input torque if the product of pressure (PSIG) times displacement (cubic inches/rev.) does not exceed the P x D constant indicated. Pump sections must be added together and not exceed P x D constant listed below.

▶ FLANGE OPTIONS:

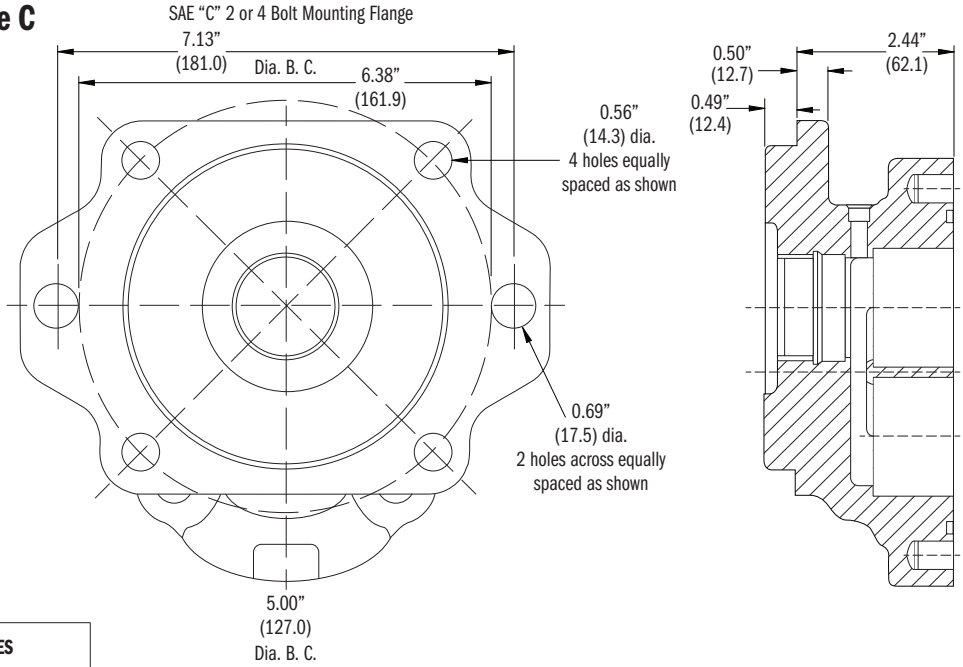
Dimensions:
inches (± .125")
millimeters (± 1 mm)

Flange B



SAE "B" 2 or 4 Bolt Mounting Flange

Flange C



FLANGES	
CODE	**DESCRIPTION**
B	(Standard) SAE "B" 2&4-Bolt
C	(Standard) SAE "C" 2&4-Bolt

► PERFORMANCE DATA:

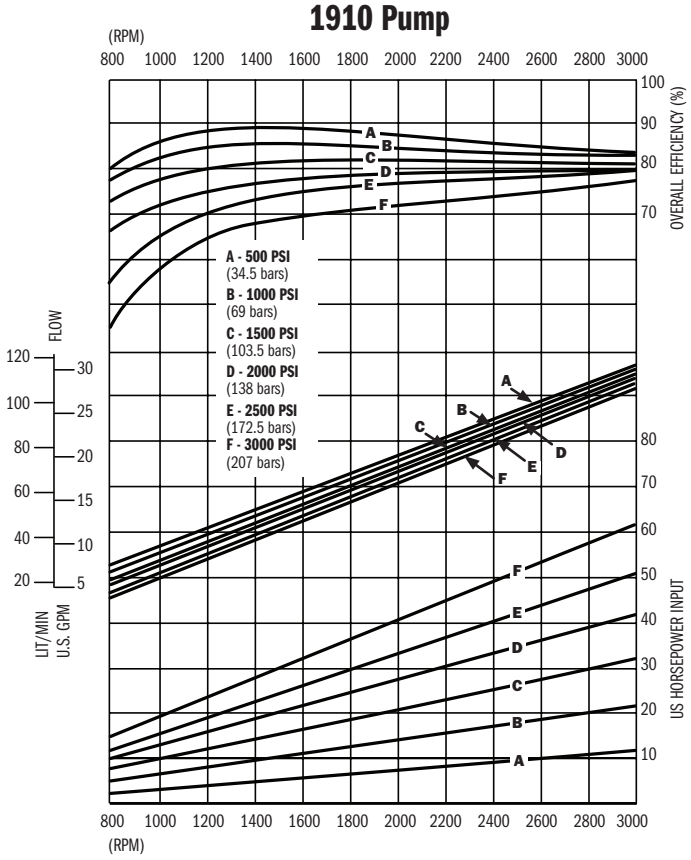
Single Gear Pump

- 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.
- Consult your Hydreco Sales Representative for operation of pumps at (1) pressures and speeds above those shown on charts, (2) temperatures above 180˚F, (3) speeds under 400 rpm when under load.
- Inlet Conditions: Max. 5” HG. at rated speed.

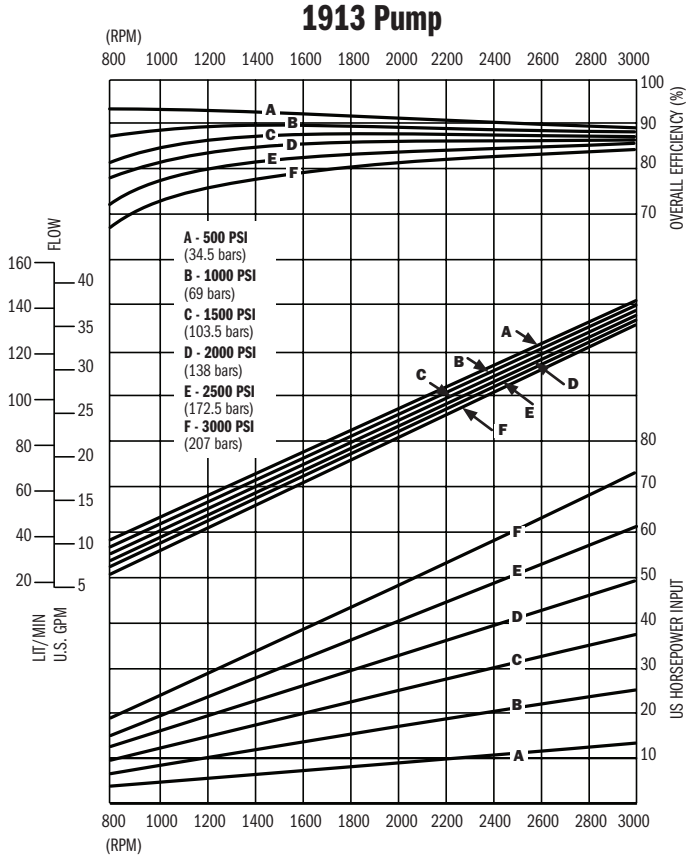
Refer to individual model listings to deter-mine which sizes are available as single, front, center or rear modules.

Pressure rating may be higher depending on duty cycle. Contact factory.

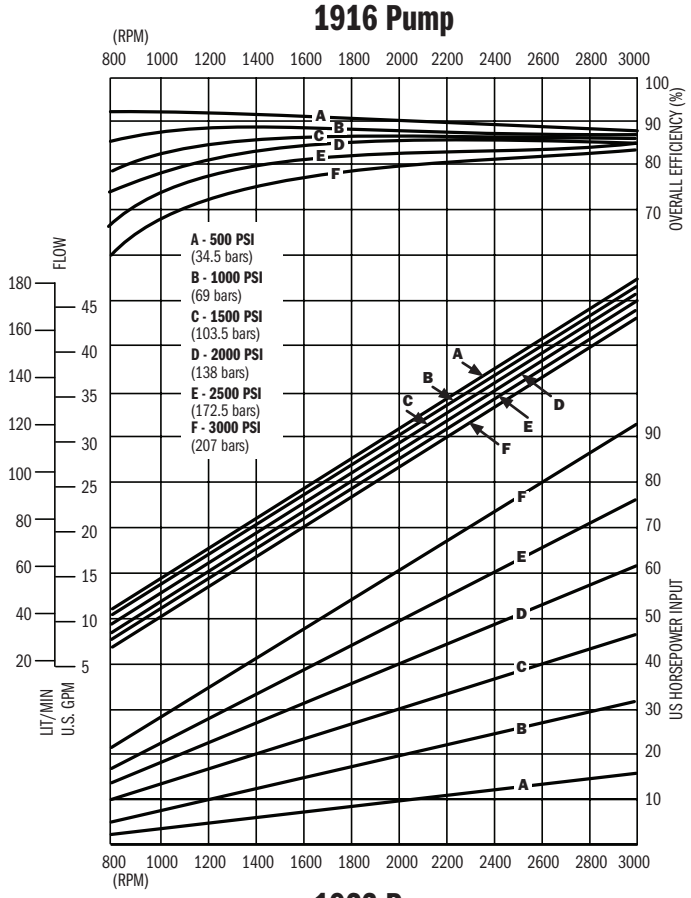
1910 Pump



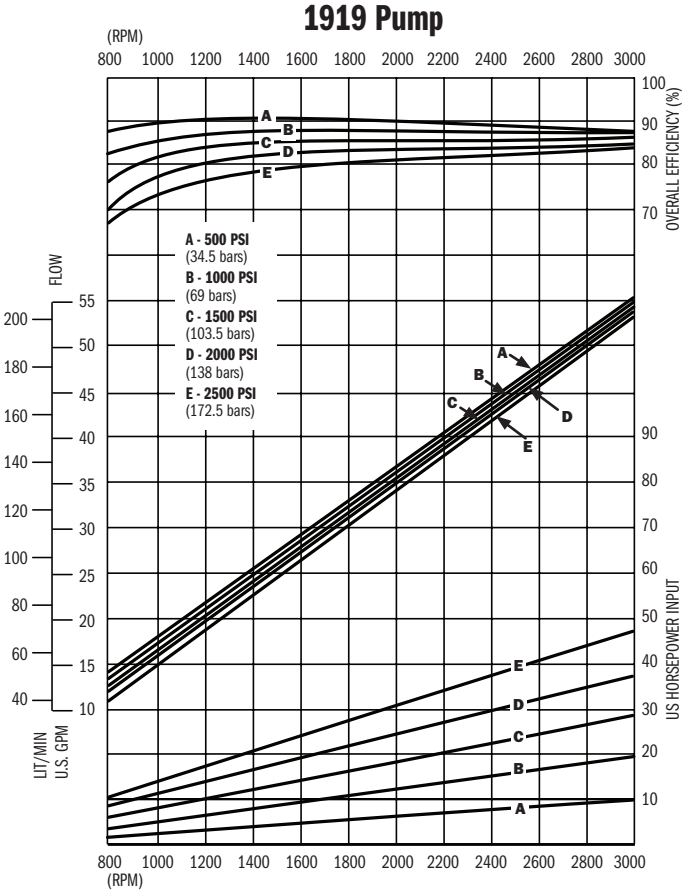
1913 Pump



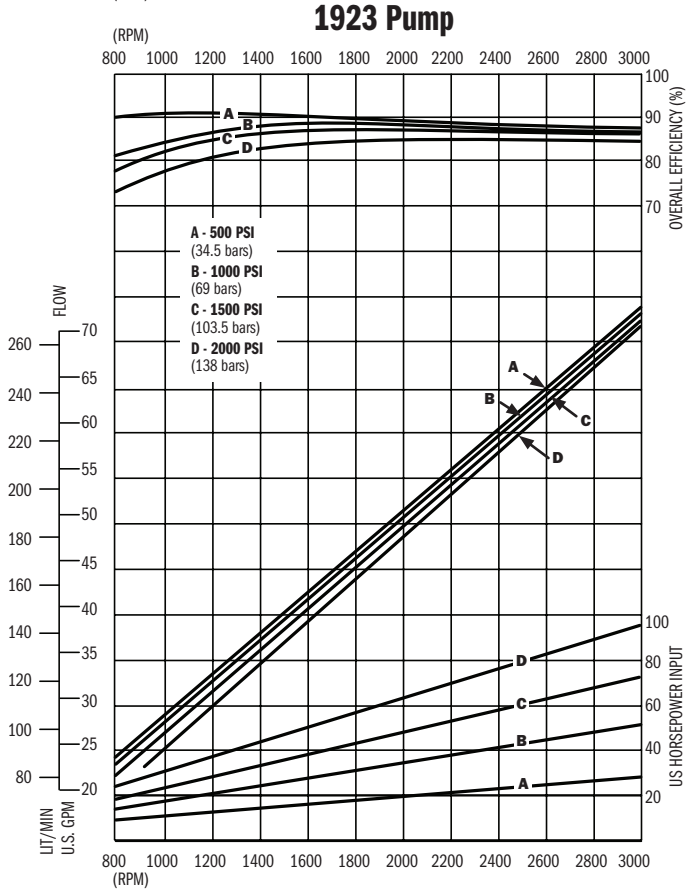
1916 Pump



1919 Pump



1923 Pump



► PERFORMANCE DATA:

Hydraulic Gear Motor

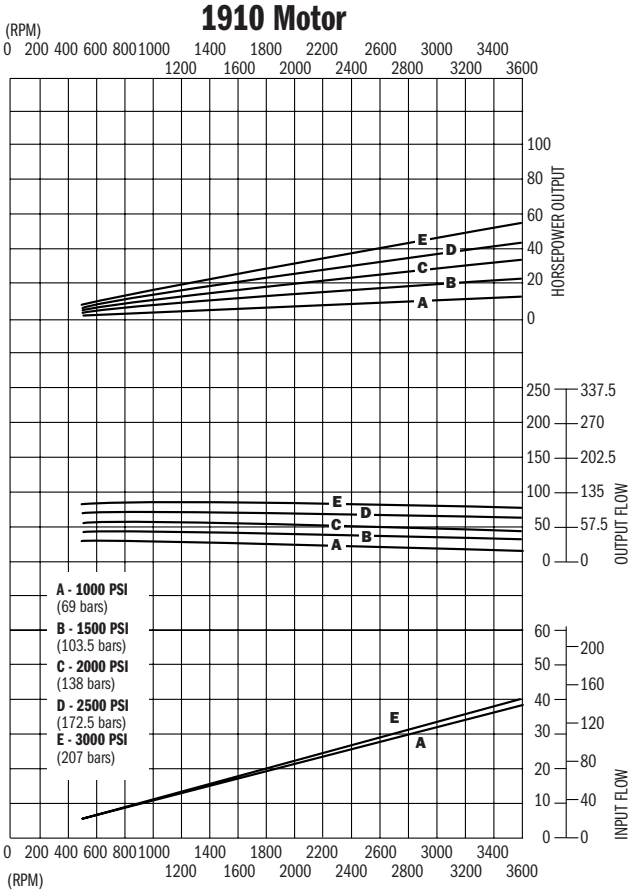
- Shown are the average results based on a series of laboratory tests of production units and are not necessarily representative of any one unit. Tests were run with the oil reservoir temperature at 120˚F and viscosity 173 to 185 SSU at 100° F. Requests for more specific data should be directed to our Technical Service Department through our Sales Representatives.
- Consult your Hydreco Sales Representative for operation of pumps at
  (1) pressures and speeds above those shown on charts,
  (2) speeds under 600 rpm when under load.
- Positive input pressure recommended at all speed.

Note: If pressure side is above 150 psi use external drain.

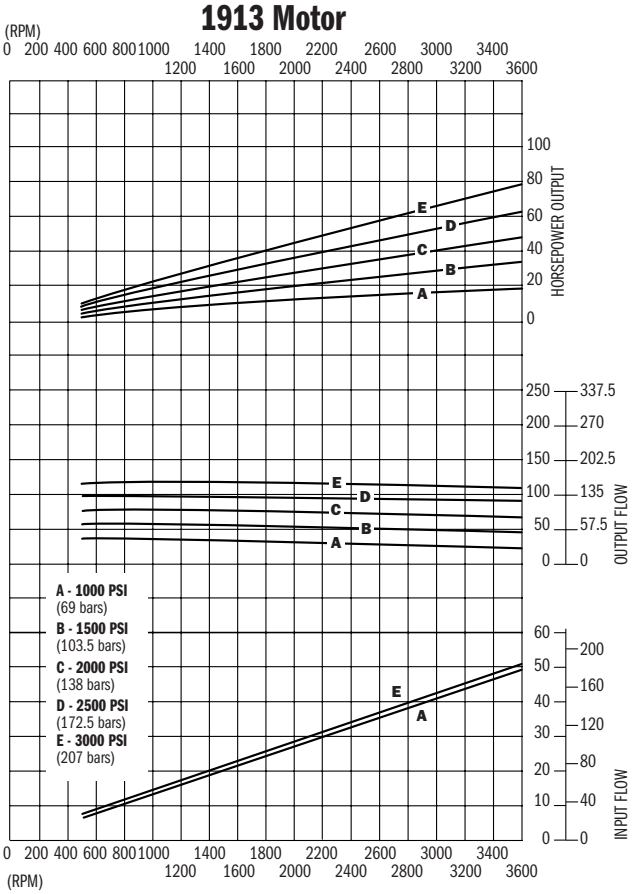
For 1900 Dual Motor, Combine the Chart Output.

Pressure rating may be higher depending on duty cycle.

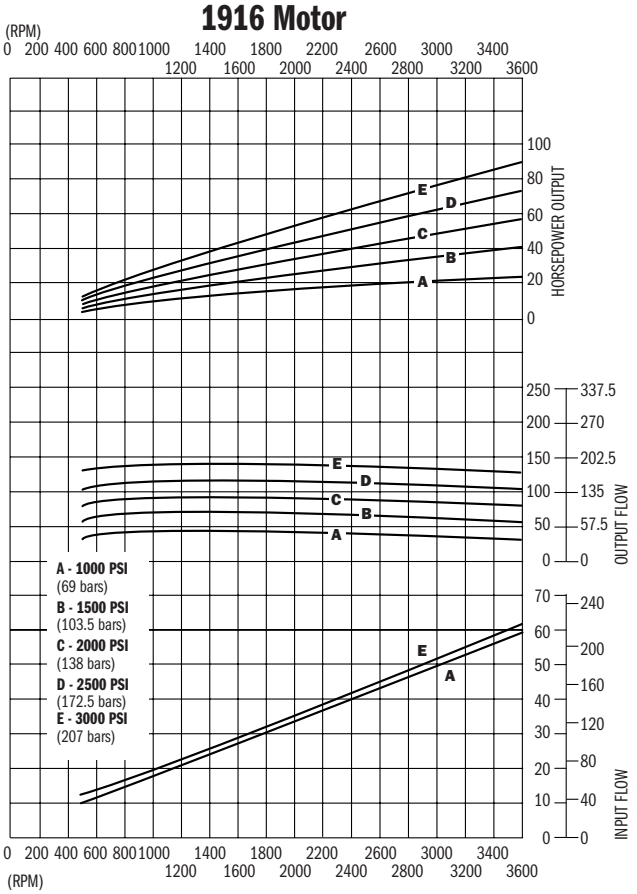
1910 Motor



1913 Motor

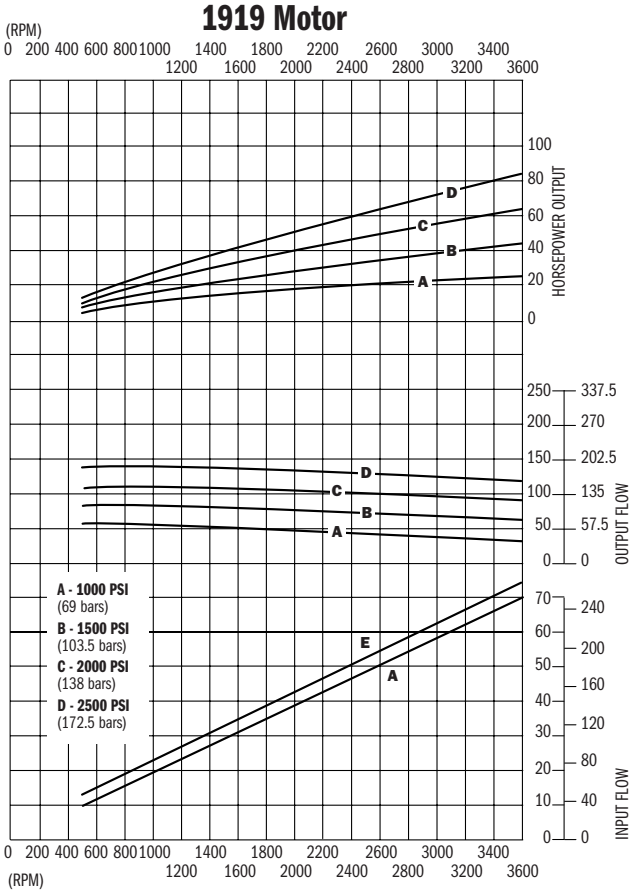


1916 Motor

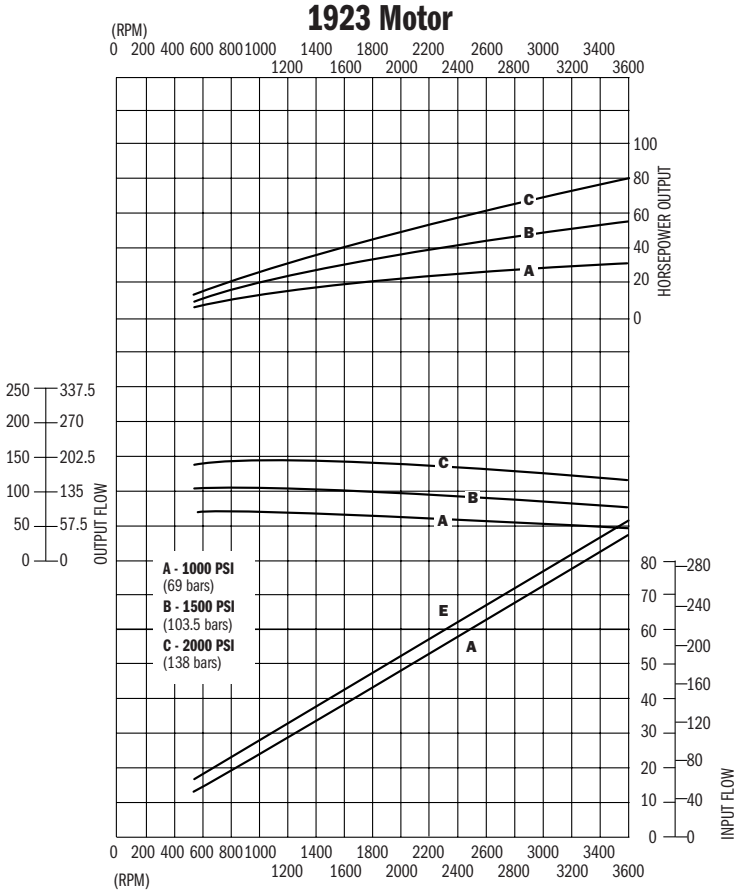


▶ PERFORMANCE DATA:

1919 Motor



1923 Motor

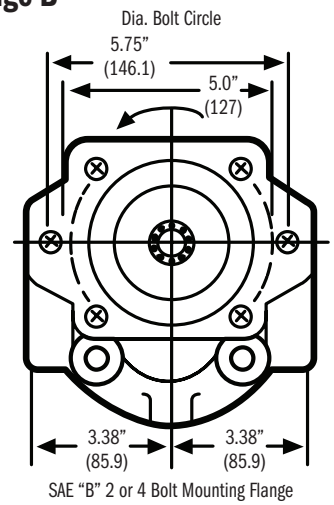


Pressure rating may be higher depending on duty cycle. Contact factory.

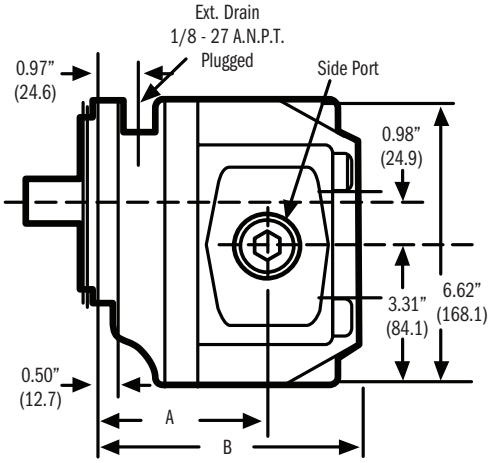
▶ INSTALLATION DATA:

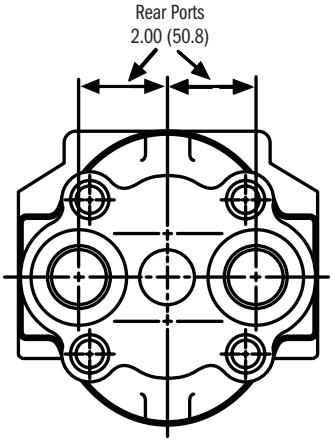
Dimensions:
inches (± .125")
millimeters (± 1 mm)

Flange B

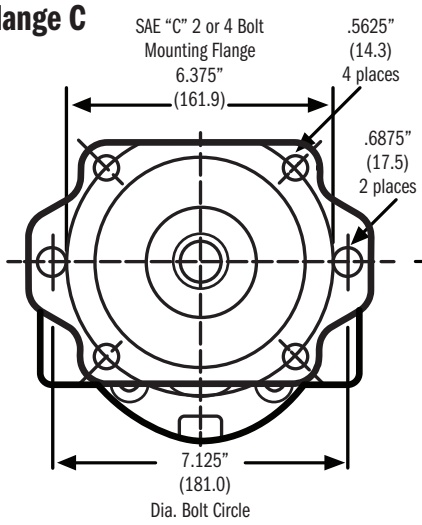


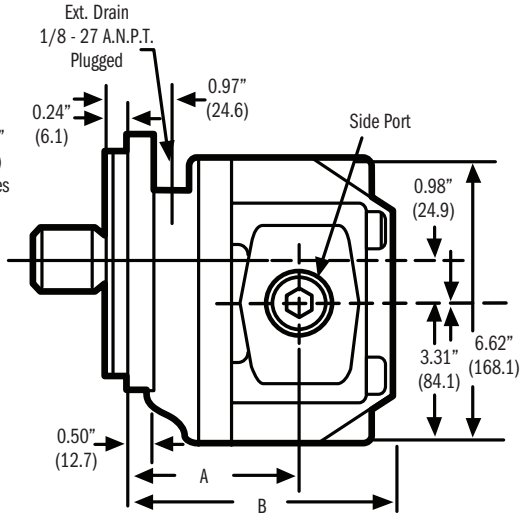
SAE "B" 2 or 4 Bolt Mounting Flange

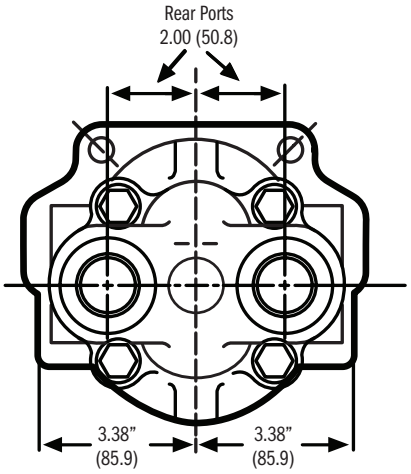




Flange C







Dimensions with Cover Numbers 6, 7, & 9.		
Model with No. 6, 7, 9, Covers	**Dim. "A" with Flange B, C**	**Dim. "B" with Flange B, C**
1910 - 2.53 cir	3.75" (95.3)	6.00" (152.4)
1913 - 3.16 cir	4" (101.6)	6.25" (158.8)
1916 - 3.80 cir	4" (101.6)	6.25" (158.8)
1919 - 4.53 cir	4" (101.6)	6.88" (174.8)
1923 - 5.58 cir	4" (101.6)	6.88" (174.8)
1927 - 6.20 cir	4.09" (103.9)	7.47" (189.7)
1929 - 7.70 cir	4.09" (103.9)	7.47" (189.7)

CONTINENTAL HYDRAULICS a member of DAIKIN group

HYDRECO a member of DAIKIN group

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