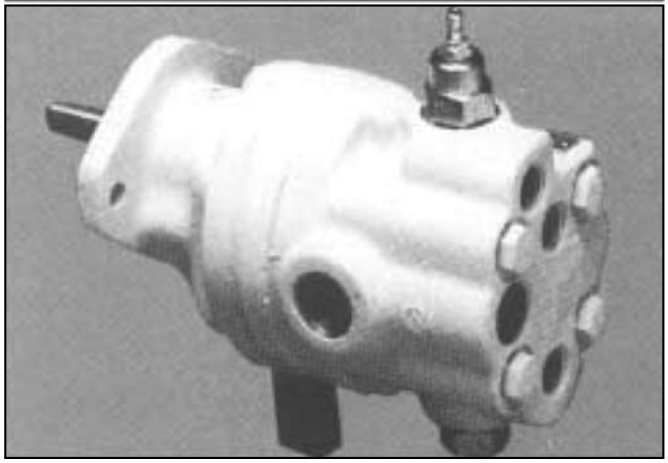
Roller Bearing Gear Pumps and Motors (Bi-Rotational)

High Performance Features:

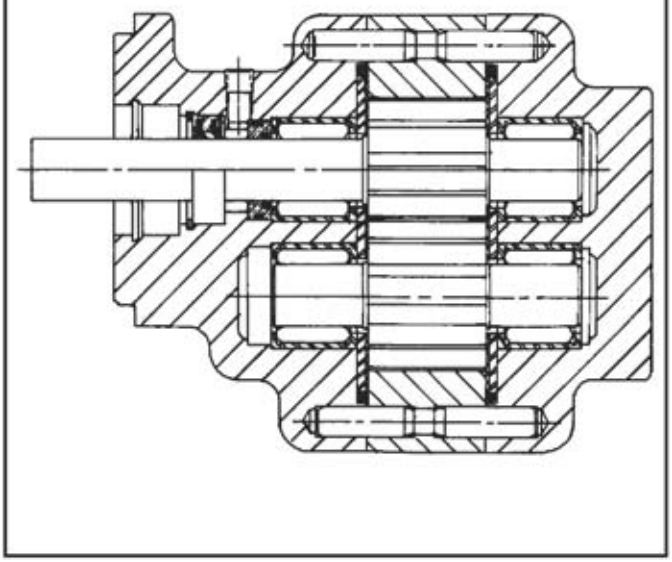
- The 1500K Series Pump/Motor utilizes the many design and application features of the widely accepted HYDRECO Series modern high pressure, high speed, gear pump and motor technology.
- Operating as pumps, the smaller units can be applied at speeds up to 4000 rpm and pressures to 2500 psi. Operating as motors, the same pressures can be used, but the speed ratings of the larger units are further increased. In addition to all this added capability, expected life of the heavy duty version exceeds the long life experienced from the 1500 series.
- The series maintains its bi-rotational pump or motor capabilities made possible by the use of check valves which drain back to the low pressure side. This allow the units to be applied as either a pump or motor with full system pressure on both the inlet and outlet if required. When used as such, a small external drain line will be required if inlet pressure exceeds 150 psi.
- The 1500K configuration uses heavy duty iron castings for the higher working pressures and it maintains the unique four-bolt design which places all four assembly bolts within the area of greatest internal pressure. This design maintains perfect alignment and thus eliminates any decrease in efficiency at high pressures. This greatly reduces internal distortion and the resulting wear of internal parts.
- An important feature of the 1500K pump/motor is the deflecting pressure-balanced wear plates. By balancing pressure forces on the front and back of the wear plates a precise balance is obtained between minimum clearances for high volumetric efficiencies and minimum contact of rotating and fixed parts for low mechanical losses.
- A new plus is the relief cover and the flow control cover available on the 1500K. You may also have the relief and flow control combined in the same cover. The flow is rated from 2 to 13 gpm. This will make the 1500K pump/motor much more versatile by providing oil for two circuits with one pump.
- The roller bearing design which uses fully pressure lubricated, long life roller bearings makes these units relatively insensitive to contamination. This feature also makes the unit fully repairable.
- The use of an outboard bearing in some models allows limited side loading of the input/output shaft.

1500K rpm Ratings

Model	Max. Continuous psi (bar)	Max. rpm as pump	Max. rpm as Motor
1506K	2500 (172.5)	4000	
1510K	2500 (172.5)	4000	
1512K	2500 (172.5)	3600	4000
1515K	2500 (172.5)	3200	3600
1518K	2000 (138)	2600	3200



Cross Section of 1500K Series Gear Pump/Motor



Model Number and Shafts (Single Pumps)

Model Number System

1506K	A	1	A	1	A	B	10	20
Pump Series (GPM / 2000 RPM)	Design	Shaft	Adapter	Housing	Cover	Rotation	Priority Flow Setting (M,N,R & S)	Relief Setting (K,L,N & R cover only)

PUMP SERIES
1500K

GPM/2OOO rpm

06 - 0.738 cir (12.10 ccr)*

10 - 1.180 cir (19.34 ccr) *

12 - 1.476 cir (24.19 ccr)

15 - 1.771 cir (29.02 ccr)

18 - 2.066 cir (33.86 ccr)

DESIGN

A - No outboard bearing

C - With shielded outboard bearing

E - Telltale drain

SHAFT

1. SAE A" Spline 1-5/32' Long 5/8" Dia. Full spline 9 tooth

2. Short Key - 5/8" Dia. 1-1/8" Long 3/16" Sq. Key 7/8" Long

3. Long Key - 5/8" Dia. 2-1/4" Long 3/16" Sq. Key-1-1/4" Long

4. Standard Threaded 5/8" Dia. 1/2" 20 UNF-2A SAE #505 Woodruff Key

6. Straight Shaft with Key 3/4" Dia. 2-3/4" Long 3/16" Sq. Key-1-5/8" Long

9. 3/4" Dia. Straight Shaft with Key -1.35" Long - 5/16" hole in end

10. 3/4" Dia. Straight Shaft with Key-1-1/2" Long

50. SAE "B" Spline 1-5/8" Long 7/8" Dia. 1-5/16" Full Spline, 13 tooth

51. SAE "B" Keyed 7/8" Dia 3/16" X 1-3/4" Long key

ADAPTERS

A. SAE "A" 2-Bolt

C. Foot Mount - 4-Bolt

D. SAE "B" 2-Bolt

HOUSING

1. No Ports

COVERS

A. 3/4" - 14 ANPT Pipe Thread Ports (4) Side & Rear - Side Ports have pipe plugs

B. 1-1/16"-12 UN-2B Straight Thread Rear Ports only

C. 3/4"-14 ANPT Pipe Thread Ports (4) Side & Rear Rear Ports have pipe plugs

D. 7/8" Dia. Rear Ports for Ground Dr. (check with David Brown for valving)

F. 1-1/16"-12 UN 2B Straight Thread-Side Ports only.

K. Relief Cover (uni-directional)-3/4"-14 ANPT Pipe Thread Ports (4) Side & Rear-Side Ports have pipe plugs 1/2"-14 ANPT Drain to Tank

L. Relief Cover (uni-directional)-1-1/16"-12 UN-2B Straight Thread - Side Ports 7/8" 14 U.N.F.-2B Drain to Tank

M. Priority Cover (uni-directional) 3/4"-14 ANPT Pipe Thread Ports (3). Side Port has pipe plug. 2-1/2"-14 ANPT priority ports. 13 GPM rating.

N. Priority Relief Cover (uni-directional)-3/4"-14 ANPT Pipe Thread Ports (3). Side Port has pipe plug. 1-1/2" 14ANPT Priority Port. 1-1/2" 14ANPT Secondary Port. 1-1/2" 14ANPT Drain Port. 13GPM rating

R. Priority Relief Cover (uni-directional)-1-1/16"-12 UN-2B Straight Thread Ports (3) Side Port has plug One-3/4"-16 UNF-2B Priority Port One-3/4"-16 UNF-2B Secondary Port One-3/4"-16 UNF-2B Drain Port. 13GPM Rating

S. Priority Cover (uni-directional) 1-1/16"-12 UN-2B Straight Thread Ports (3) Side Port is plugged. Priority and secondary ports are 3/4"-16 UNF-2Ba

ROTATION

B. Bi-rotational

L. Left hand rotation (for K, L, M, N, R & S covers only)

R. Right hand rotation (for K, L, M, N, R & S covers only) (Rotation viewed from shaft end of pump)

PRIORITY FLOW SETTING
(ADJUSTABLE)

3. 2.1 TO 3.9 GPM

6. 4.2 TO 7.8 GPM

9. 7 TO 13GPM

NOTE:
Blocking Priority Flow Port will also block secondary flow.

RELIEF SETTING
8 = 800 psi setting
(Example only)
17 = 1700 psi setting
(Example only)

Range 100 psi to 2500 psi indicate on model no. systems for setting (If not specified, relief will be set at 1000 psi)

*Notes if used as a motor. See page 9.
Other shafts are available on request.

Shafts

- Pump rotation as viewed from the shaft end: clockwise rotation - outlet on right; counter-clockwise rotation - outlet on left.
- Motor rotation as viewed from the shaft end: clockwise rotation - inlet on left; counter-clockwise rotation - inlet on right.

(1) SAE volumetric rating is per SAE J745C.

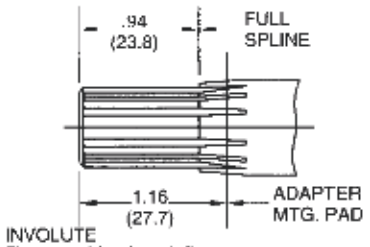
(2) Mounting flanges noted as SAE conform to SAE J744C.

1500K Maximum Recommended Drive Shaft Torque Transmission Capacity

Satisfactory drive shaft torque transmission capacity is indicated with the product of pressure (P) and dis placement (D) is less than or equal to (<) a given con stant. The units of "P" and "D" are expressed in psig and in3/rev. (cir) respectively.

Shafts

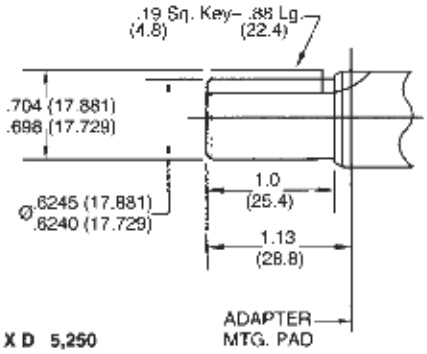
No. 1 SAE "A" Spline



INVOLUTE
Flat root-side of tooth fit
Dia. Pitch-16/32
Press. angle-30°
No. of teeth-9
Major Dia.- .6245-.618
(15.862-15.697)

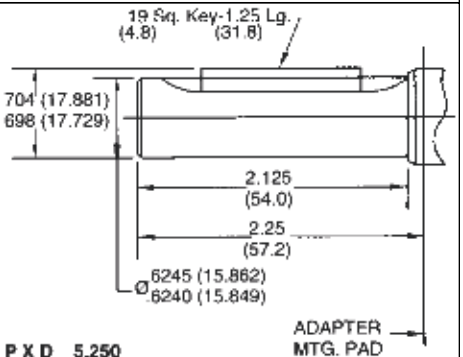
P X D 5,480

No. 2 5/8" St. Shaft w/ Key



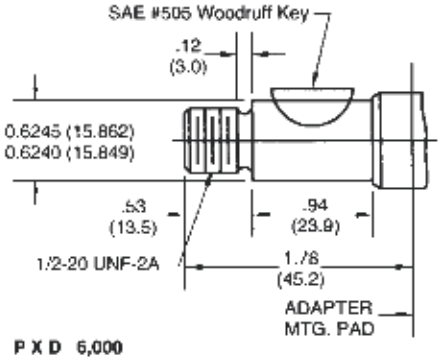
P X D 5,250

No. 3 5/8" St. Shaft w/ Key



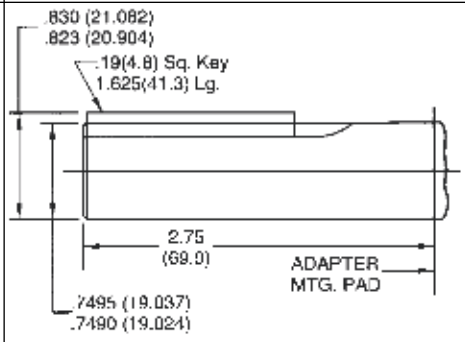
P X D 5,250

No. 4 5/8" St. Key with Nut



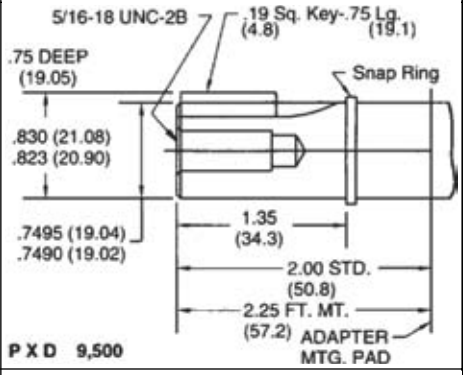
P X D 6,000

No. 6 3/4" St. Shaft w/ Key



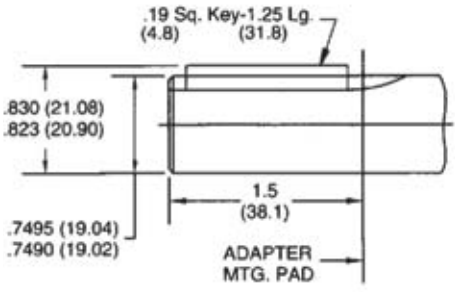
P X D 9,075

No. 9 3/4" St. Shaft w/ Key



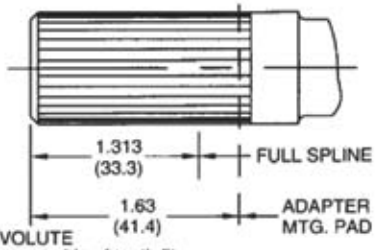
P X D 9,500

No. 10 3/4" St. Shaft w/ Key



P X D 9,075

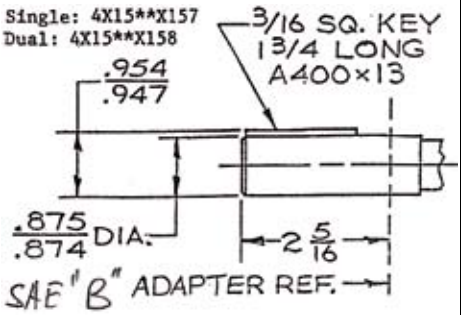
No. 50 7/8" SAE "B" Spline



INVOLUTE
Flat root-side of tooth fit
Dia. Pitch-16/32
Press Angle-30°
No. of teeth-13
Major Dia.- .873-.868
(22.174)-(22.047)

P X D 8,526

No. 51 7/8" St. Shaft w/ Key



Fire Resistant Fluids -

Side loading Performance Data (Single Pumps)

1500 Operating Parameters with Fire Resistant Fluids

Synthetic

- 2000 rpm maximum
- 2000 psi (137.6 bar) maximum
- 180° F (82.2° C) maximum
- 5 inches of Hg. minimum inlet pressure
- 100% bearing life compared to oil

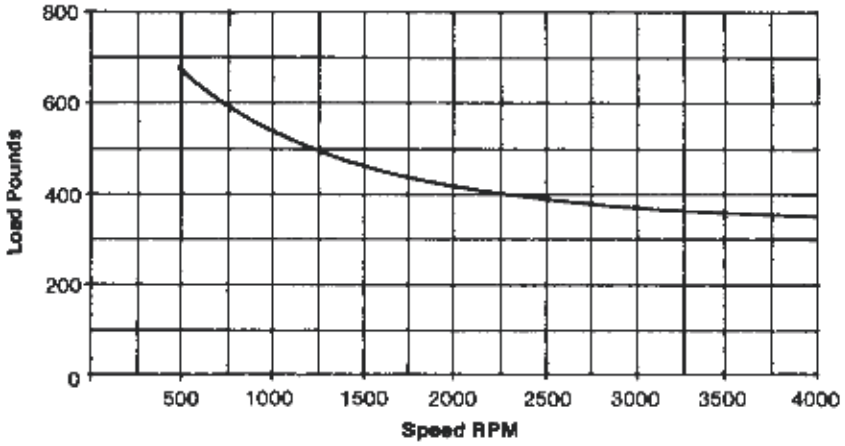
Water Glycol

- 1800 rpm maximum
- 1000 psi (68.8 bar) maximum
- 130° F (54.4°) maximum
- 3 inches of Hg. minimum inlet pressure
- 100% bearing life compared to oil

Invert Emulsion

- 1800 rpm maximum
- 1000 psi (68.8 bar) maximum
- 130°F (54.4°) maximum
- 3 inches of Hg. minimum inlet pressure
- 100% bearing life compared to oil

1500K
Maximum Allowable Side Loads
with outboard bearing load applied 1" from mounting face.

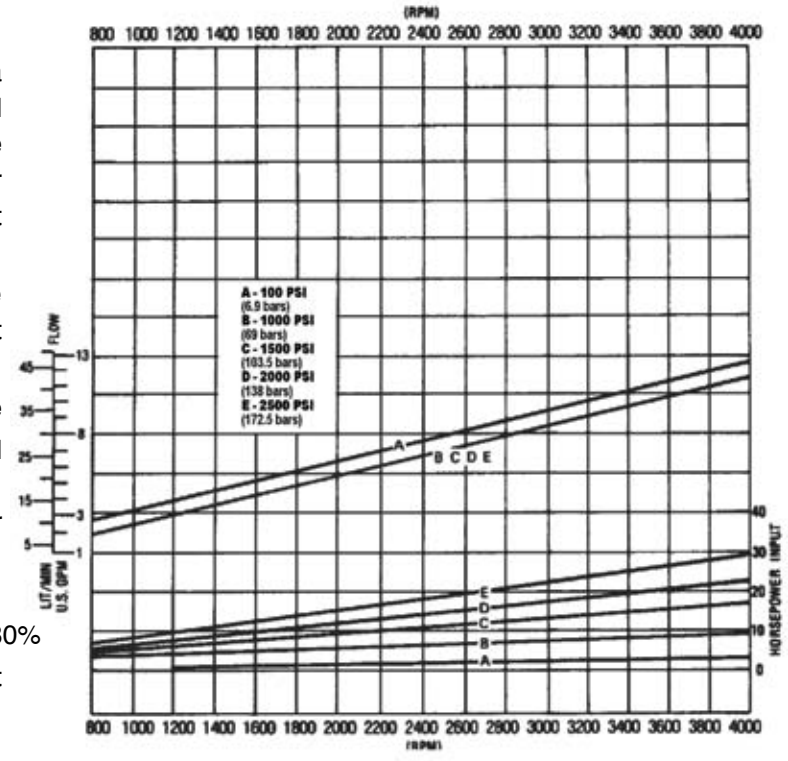


Performance Data on Hydraulic Gear Pump

- 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 David Brown Sales Representative for operation of pumps at (1) pressures and speeds above those shown on charts, (2) temperatures above 180° F, (3) speeds under 600 rpm when under load.
- Ten micron Wear Protective filtration is recommended for maximum pump life. Beta of 80%
- Feed Characteristics: Max. 5" Hg. vacuum at rated speed.

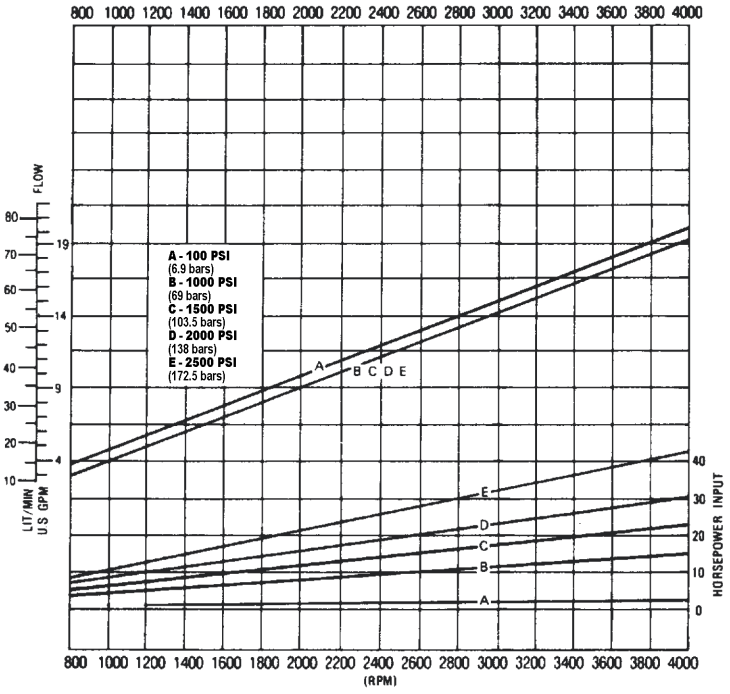
1506K Pump



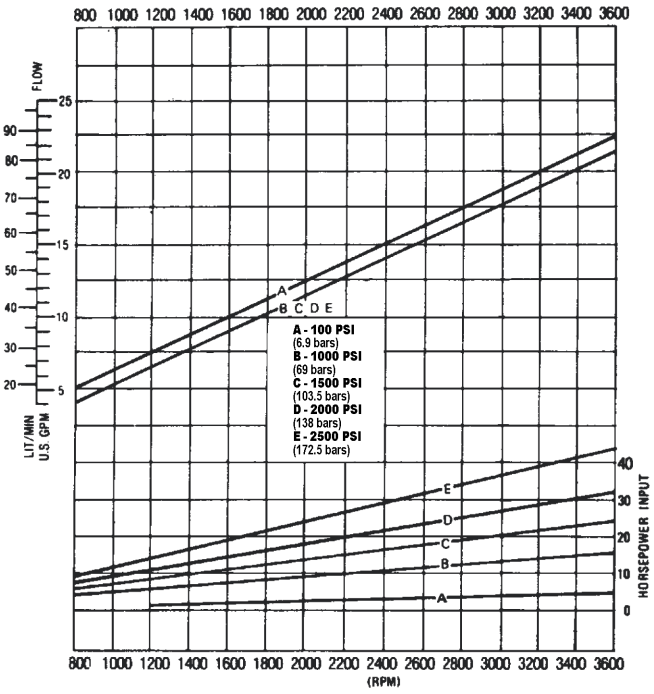
Gear Pump Performance Data

For 1500K Dual Pump, Combine the Chart Output

1510K Pump

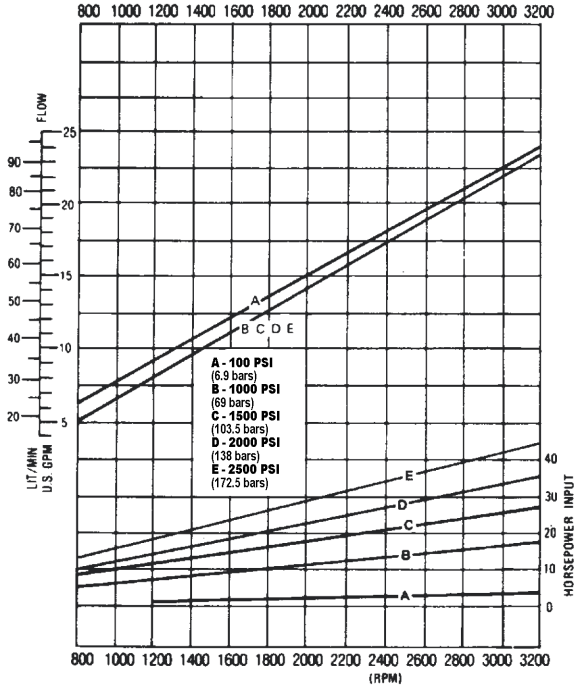


1512K Pump

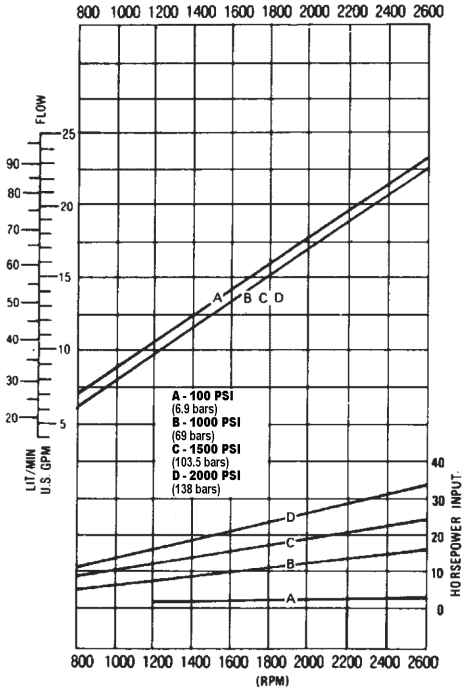


For 1500K Dual Pump, Combine the Chart Output

1515K Pump



1518K Pump



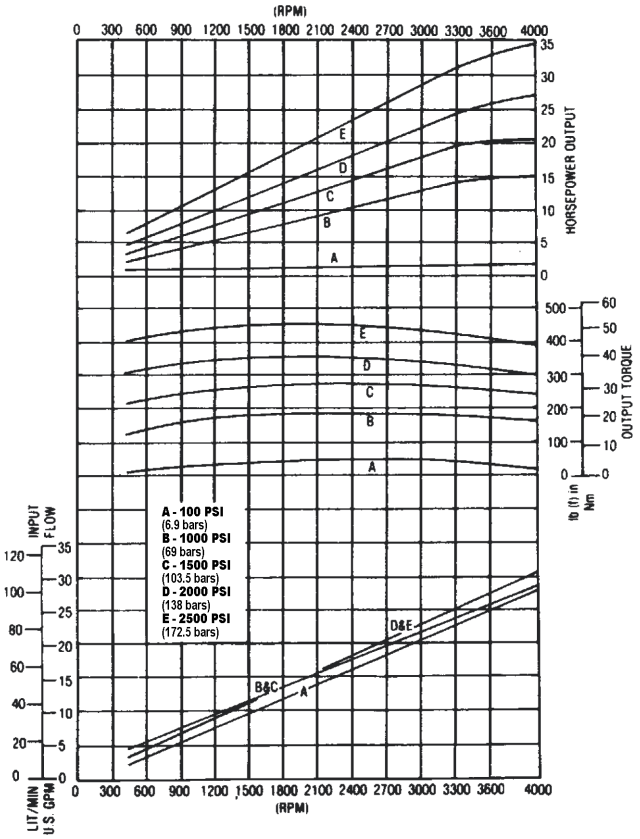
Performance Data on Hydraulic Gear Motor

- 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 150 SSU at 100° F Requests for more specific data should be directed to our Technical Service Department through our Sales Representatives.
- Consult your David Brown Sales Representative for operation of pumps at (1) pressures and speeds above those shown on charts, (2) temperatures above 180° F, (3) speeds under 600 rpm when under load.
- Ten micron Wear Protective filtration is recommended for maximum motor life.
- Positive input pressure recommended at all speeds. NOTE: If low pressure side is above 150 psi use external drain.

NOTE: 1506K and 1510K not recommended for use as motors. Consult David Brown.

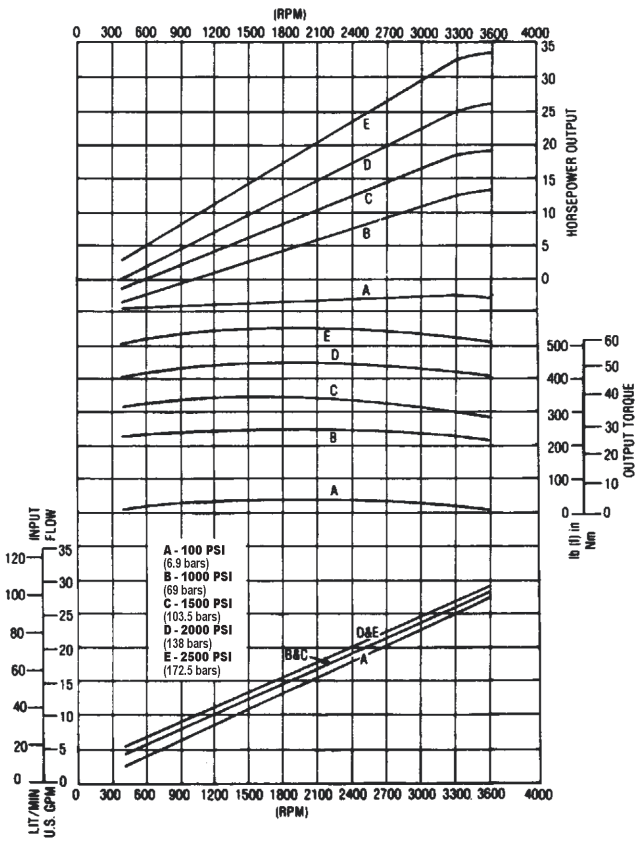
For 1500K Dual Motor
Combine the Chart Output

1512K Motor

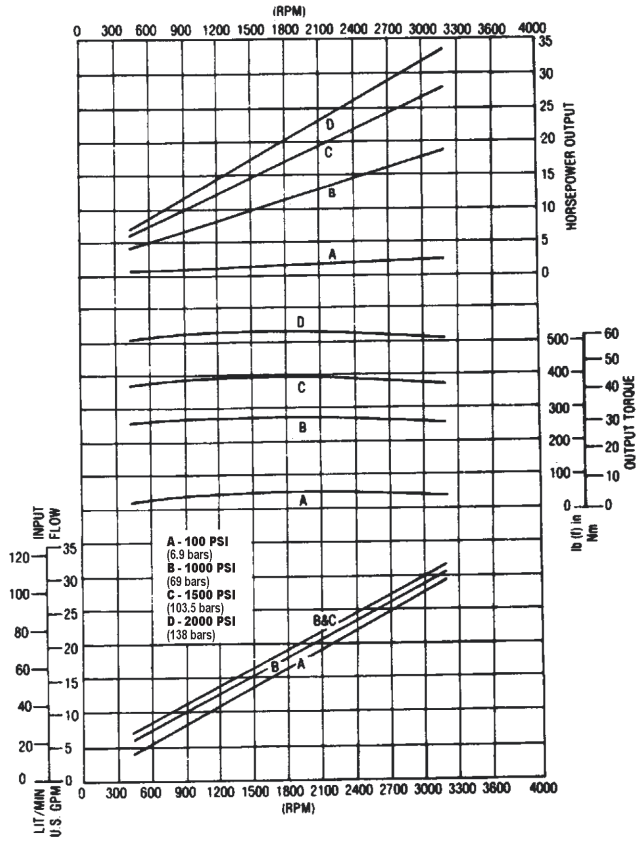


Gear Pump Performance Data

1515K Motor



1518K Motor



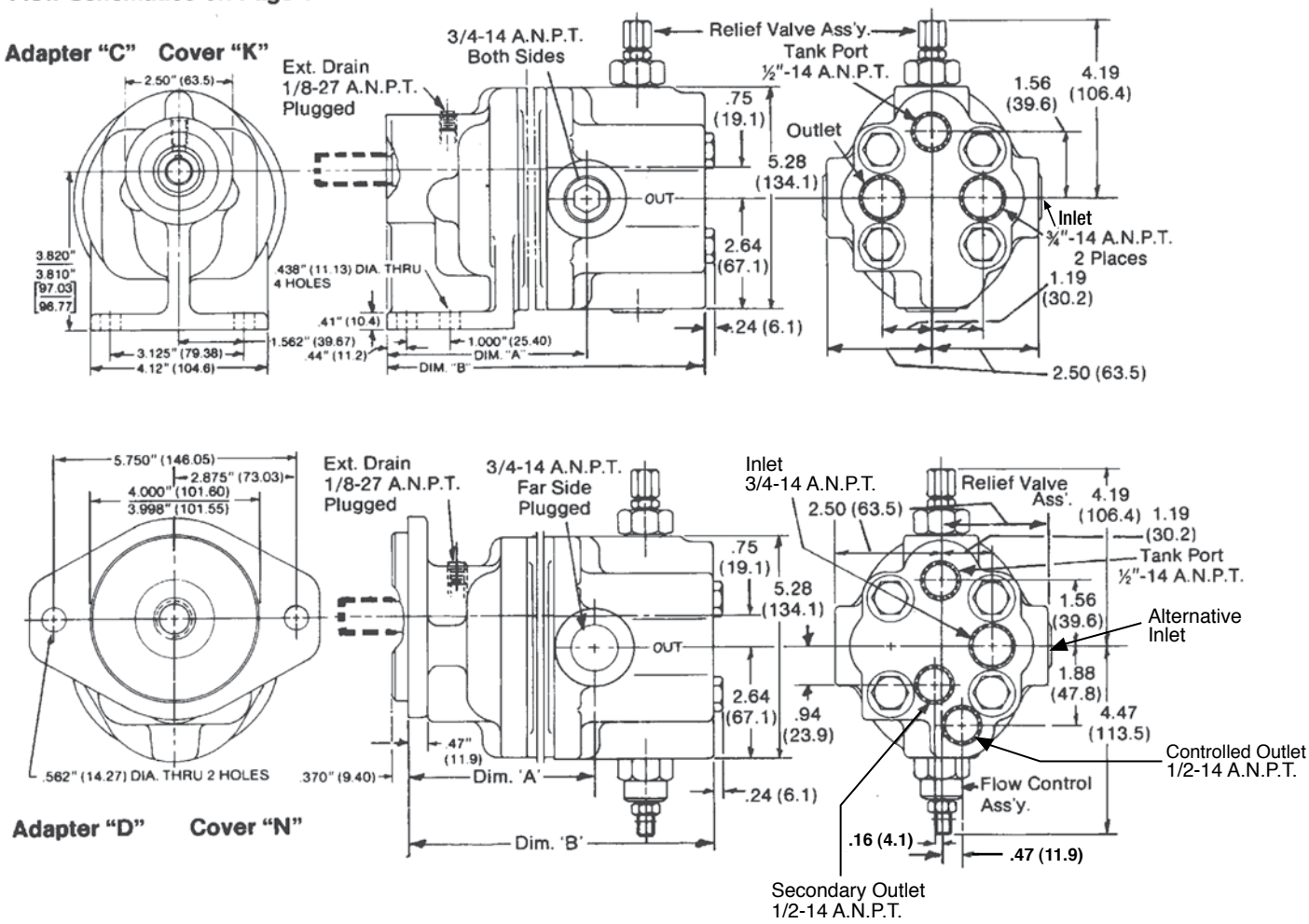
1500K Installation Dimensions - (Single Pumps)

(See pages 10 and 14)

- Cover “L” is the same as cover “K”, except for 1-1/16-12 UN-2B Side Ports, 7/8-14 UNF-2B Tank Port
- Cover “S” is the same as cover “M”, except for two 1-1/16-12 UN-2B ports and two 3/4-16 UNF-2B Priority and Secondary Ports
- Cover “R” is the same as cover “N”, except for three 1-1/16-12 UN-2B ports and 3/4-16 UNF-2B Priority Port, Secondary Port and Drain Port

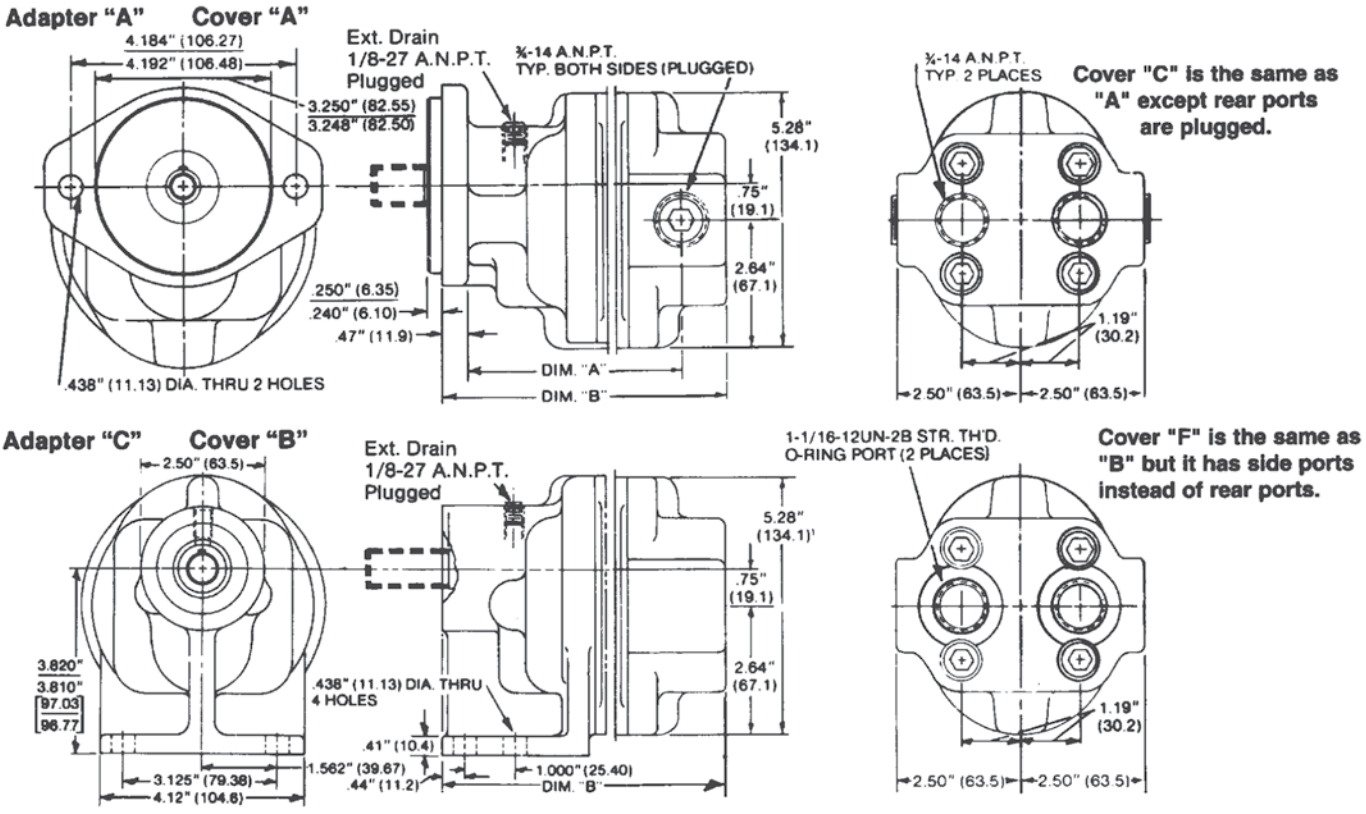
Installation Dimensions (Single Pumps)

Flow Schematics on Page 11



Model No. with K, L, M, N, R Covers	Dim. "B" with Adapters A, B, D	Dim. "B" with Adapter C	Dim. "A" with Adapter A, B, D	Dim. "A" with Adapter C	Max. Opr PSI & (bars)	Max. RPM
1506 - .738 cir	7.16" (181.9)	7.41"(188.2)	4.38" (111.3)	4.63" (117.6)	2500 (172.5)	4000
1510 - 1.180 cir	7.53" (191.3)	7.78" (197.6)	4.75" (120.7)	5.00" (127.0)	2500 (172.5)	4000
1512 - 1.476 cir	7.78" (197.6)	8.03" (204.0)	5.00" (127.0)	5.25" (133.4)	2500 (172.5)	3600
1515 - 1.771 cir	8.03" (204.0)	8.28" (210.3)	5.25" (133.4)	5.50" (139.7)	2500(172.5)	3200
1518 - 2.066 cir	8.28" (210.3)	8.53" (216.7)	5.50" (139.7)	5.75" (146.1)	2000 (138.0)	2600

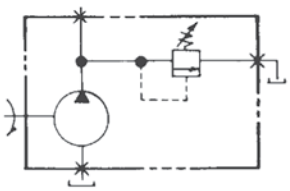
Installation Dimensions (Single Pumps)



Model No. with A, B, C Covers	Dim. "B" with Adapters A, B, D	Dim. "B" with Adapter C	Dim. "A" with Adapter A, B, D	Dim. "A" with Adapter C	Max. Opr. PSI & (bar)	Max. RPM
1506 - .738 in^3/ rev	5.44" (138.2)	5.69" (144.5)	4.38" (111.3)	4.63" (117.6)	2500 (172.5)	4000
1510 - 1.180 in^3/rev	5.81" (147.6)	6.06" (153.9)	4.75" (120.7)	5.00" (127.0)	2500 (172.5)	4000
1512 - 1.476 in^3/rev	6.06" (153.9)	6.31" (160.3)	5.00" (127.0)	5.25" (133.4)	2500(172.5)	3600
1515 - 1.771 in^3/rev	6.31" (160.3)	6.56" (166.6)	5.25" (133.4)	5.50" (139.7)	2500 (172.5)	3200
1518 - 2.066 in^3/rev	6.56" (166.6)	6.81" (173.0)	5.50" (139.7)	5.75" (146.1)	2000(138.0)	2600

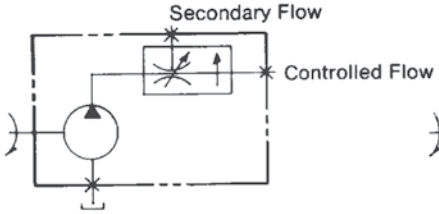
*** See Shaft Model No. Page for Dimensions**

Relief Cover



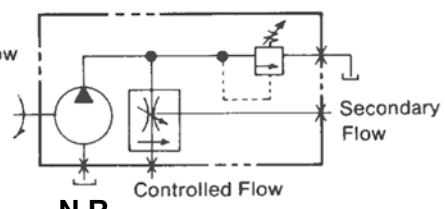
Use Cover K,L

Flow Control Cover



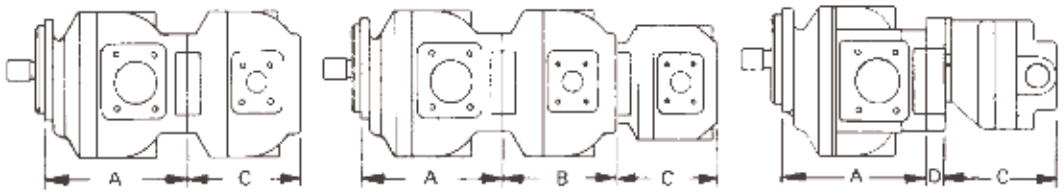
M,S

Relief & Flow Control Cover



N,R

1500K Series Can Be Connected To Other Series Hydreco Pumps



To determine overall length from the mounting face of the front module add dimensions A, B, C, & D as required.

For Fire Resistant (Synthetic Fluids) Contact Factory
Possible Multiple Combination with Assembly Kit No. & Hanger Kit No.

Front	Center	Assembly Kit No. Center Pump	Assembly Kit No. Rear	Hanger Kit Rear Pump	Service Gasket Kit Number	SKO No.*
1900 Series	1900	SKO 1019A	1900	SKO 1019A	SKO 1053	SKO 1337
			1400	SKO 1056A		SKO 1338
			1500K	SKO 1056A		SKO 1338
2200 Series	2200	SKO 1224A	2200	SKO 793A	SKO 1054	SKO 1341
	1900	SKO 793A	1900	SKO 793A	SKO 1053	SKO 1341
			1400	SKO 789A		SKO 1342
			1500K	SKO 789A		SKO 1342
2400 Series	2400	SKO 796A	2400	SKO 796A	SKO 1053	SKO 1345
	2200	SKO 795A	2200	SKO 795A	SKO 1054	SKO 1345
	1900	SKO 795A	1900	SKO 795A	SKO 1053	SKO 1345
			1400	SKO 903A		SKO 1346
			1500K	SKO 903A		SKO 1346
2900 Series	2900	SKO 1225A	2900	SKO 800A	SKO 1052	SKO 1348
	2400	SKO 799A	2400	SKO 799A	SKO 1053	SKO 1350
	2200	SKO 798A	2200	SKO 798A	SKO 1054	SKO 1349
	1900	SKO 1300A	1900	SKO 1300A	SKO 1053	SKO 1349
			1400	SKO 1296A		SKO 1351
			1500K	SKO 1296A		SKO 1351
2900 Short Stack			2200	SKO 793A	SKO 1054	SKO 1341
			1900	SKO 793A	SKO 1053	SKO 1341

*** For field service requirements**

- To order assembled multiple pumps, list the individual module model numbers in the order that they are to be assembled (starting with the front) with a slash (/) between each model number. David Brown will add the proper combining kits to your order and to the assembly price.
- Refer to input shaft torque limitations in the shaft listing to determine maximum number of modules that can be assembled into one unit.
- When 1400 or 1500K is required as the rear pump, utilize standard single units with SAE "A" 2-bolt flange and SAE "A" 9 tooth splined shaft - without outboard bearing. Does not utilize common inlet.

Model	Dim. "A"	Dim. "B"	Dim. "C"	Dim. "D"
1407	none	none	4-21/32 (118.3)	1-1/16 (27.0)
1409	none	none	4-27/32 (123.0)	1-1/16 (27.01
1411	none	none	5-1/32 (127.81	1-1/16 (27.0)
1413	none	none	5-1/4 (133.4)	1-1/16 (27.0)
1506K	none	none	5-7/16 (138.2)	1-1/16 (27.0)
1510K	none	none	5-13/16 (147.6)	1-1/16 (27.0)
1512K	none	none	6-1/16 (153.9)	1-1/16 (27.0)
1515K	none	none	6-5/16 (160.3)	1-1/16 (27.0)
1913	7 (177.8)	6-9/16 (166.7)	5-13/16 (147.6)	1-1/4 (31.8) w/ 2900 only
1916	7 (177.8)	6-9/16 (166.7)	6-5/16 (160.3)	1-1/4(31.8) w/ 2900 only
2218	7-9/16 (192.0)	7-1/8 (181.0)	6-1/2 (165.1)	1-1/4(31.8) w/ 2900 only
2222	7-9/16 (192.0)	7-1/8 (181.0)	6-1/2 (165.1)	1-1/4(31.8) w/ 2900 only
2226	none	none	6-7/8 (174.8)	1-1/4 (31.8) w/ 2900 only
2428	8-1/4 (209.6)	contact factory	6-7/16 (163.5)	1-1/4(31.8) w/ 2900 only
2433	8-1/4 (209.6)	contact factory	6-7/16 (163.5)	1-1/4(31.8) w/ 2900 only
2436	8-7/16 (214.2)	contact factory	6-3/4 (171.5)	1-1/4(31.8) w/2900 only
2442	8-7/16 (214.2)	contact factory	6-3/4 (171.5)	1-1/4 (31.8) w/ 2900 only
2936	9-3/64 (229.9)	8-9/32 (210.3)	7-21/32 (194.6)	none
2942	9-1/4 (235.0)	8-3/16 (208.0)	7-3/4 (196.9)	none
2950	9-1/4 (235.0)	8-3/16 (208.0)	7-3/4 (196.9)	none
2956	9-13/16 (249.2)	8-3/4 (222.3)	7-3/4 (196.9)	none

Dual Bi-Rotational Roller Bearing Gear Pump & Motor

Features

- Rated to 2500 psi (172.5 bar) except 2000 psi (138 bar) for 1518 size
- Ratings up to 4000 rpm (see chart on page 3)
- Heavy-duty cast iron with roller bearing construction
- Fully pressure-lubricated roller bearing
- Only one mounting for two pumps
- Less weight and space required than for 2 separate pumps
- More cost efficient
- Optional adjustable relief cover (uni-directional only)
- Optional priority flow cover (uni-directional only)
- Contact Factory for Triples
- Common inlet makes plumbing much easier

Model Number System

15	15	10	K	A	1	A	1	A	1	A	B	3	00
Pump Series	Front Pump Size	Rear Pump Size	Series	Design	Shafts	Adaptor	Housing Front	Bearing Carrier	Housing Rear	Cover	Rotation	Priority Flow Setting (M,N,R & S cover only)	Relief Setting (K,L,N & R cover only)

PUMP SERIES
1500K

GPM/2000 rpm
06 0.738 cir (12.10 ccr)
10 1.180 cir (19.34 ccr)
12 1.476 cir (24.19 ccr)
15 1.771 cir (29.02 ccr)
18 2.066 cir (33.86 ccr)

DESIGN
A - No outboard bearing
C - With shielded outboard bearing
E - Telltale drain

SHAFT
1. SAE "A" Spline 1-5/32" Long 5/8" Dia. Full spline 9 tooth
2. Short Key - 5/8" Dia. 1-1/8" Long 3/16" Sq. Key 7/8" Long
3. Long Key - 5/8" Dia. 2-1/4" Long 3/16" Sq. Key-1-1/4" Long
4. Standard Threaded 5/8" Dia. 1/2" 20 UNF-2A SAE #505 Woodruff Key
6. Straight Shaft with Key 3/4" Dia. 2-3/4" Long 3/16" Sq. Key - 1-5/8" Long
7. SAE "B" Spline 7/8" Dia. 1-5/8" Lg. Full Spline 1-5/16" - 13 tooth
9. 3/4" Dia. Straight Shaft with Key -1.35" Long - 5/16" hole in end
10. 3/4" Dia. Straight Shaft with Key-1-1/2" Long
50. SAE "B" Spline 1-5/8" Long 7/8" Dia. 1-5/16" Full Spine, 13 tooth

ADAPTERS
A. SAE "A," 2-Bolt
C. Foot Mount, 4-Bolt
D. SAE "B," 2-Bolt

HOUSING FRONT
1. No Ports

BEARING CARRIER
(Front Cover)
A. 3/4" - 14ANPT (Side Ports only)
B. 1-1/16" - 12 UN-2B Straight Thread (2 places Side Ports only)
C. 1-5/16" - 12 UN-2B common inlet 1-1/16" - 12 UN-2B outlet (use with #3 rear housing).

Consult David Brown for speeds above 1800 rpm

HOUSING REAR
1. No Ports
3. No Ports (use only with "C" bearing carrier)

COVERS
A. 3/4" - 14 ANPT Pipe Thread Ports (4) Side & Rear-Side Ports have pipe plugs.
B. 1-1/16" - 12 UN-2B Straight Thread Rear Ports only
C. 3/4" - l4 ANPT Pipe Thread Ports (4) Side & Rear-Rear Ports have pipe plugs.
F. 1-1/16"-12UN2B Straight Thread-Side Ports only.
K. Relief Cover (uni-directional) 3/4" - 14 ANPT Pipe Thread Ports (4) Side & Rear-Side ports have pipe plugs. 1/2" - 14 ANPT Drain to Tank
L. Relief Cover (uni-directional) 1-1/16" - 12 UN-2B Straight Thread-Side Ports 7/8"-14 U.N.F.-2B Drain to Tank
M. Priority Cover (uni-directional) 3/4"-14 ANPT Pipe Thread Ports (3). Side Port has pipe plug 2-1/2"-14 ANPT Priority Ports. 13 GPM rating
N. Priority Relief Cover (uni-directional)-3/4"-14ANPT Pipe Thread Ports (3). Side Port has pipe plug. 1-1/2"-14 ANPT Priority Port. 1-1/2" 14 ANPT Secondary Port 1-1/2" 14ANPT Drain Port 13 GPM rating
R. Priority Relief Cover (unidirectional) - 1-l/16"-12 UN-2B Straight Thread Ports (3) Side Port has plug. One-3/4"-16 UNF-2B Priority Port One-3/4"-16 UNF-2B Secondary Port One-3/4"-16 UNF-2B Drain Port 13 GPM rating
S. Priority Cover (uni-directional) l-1/16"-12 UN-2B Straight Thread Ports (3) Side Port is plugged. Priority and Secondary Ports are 3/4"-16 UNF-2B.

ROTATION
B. Bi-rotational
L. Left hand rotation (for K, L, M, N, R & S covers only)
R. Right hand rotation (for K, L, M, N, R & S covers only) Rotation viewed from shaft end of pump)

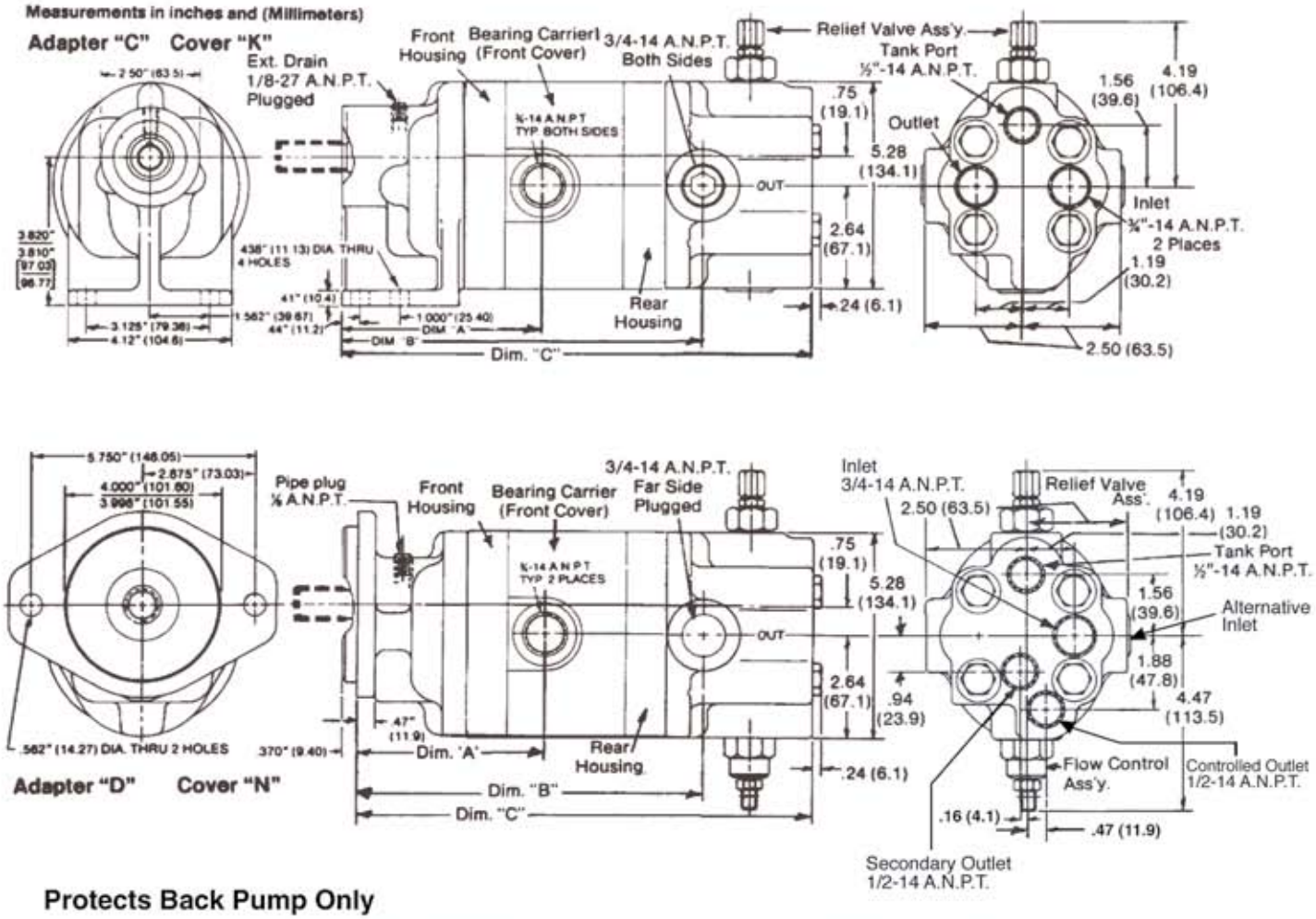
PRIORITY FLOW SETTING
(ADJUSTABLE)
3. 2.1 TO 3.9 GPM
6. 4.2 TO 7.8 GPM
9. 7 TO 13 GPM

NOTE:
Blocking Priority Flow Port will also block secondary flow.

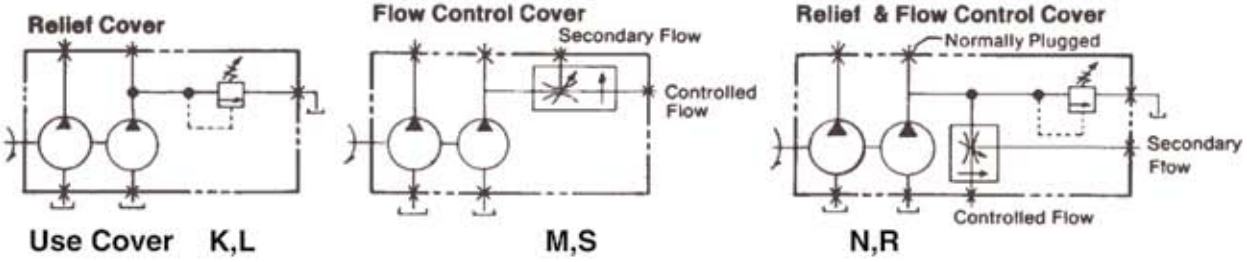
RELIEF SETTING
8 = 800 psi setting (Example only)
17 = 1700 psi setting (Example only)
Range 100 psi to 2500 psi indicate on model no. systems for setting (If not specified, relief will be set at 1000 psi)

See Single Pump for Shaft Information

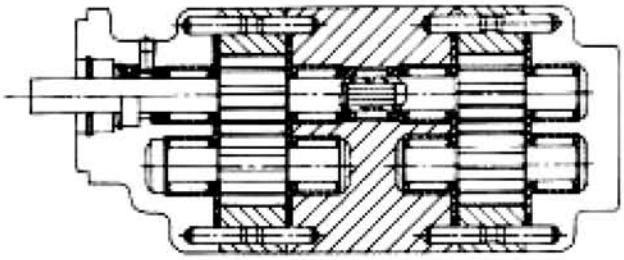
Installation Dimensions (Dual Gear Pump / Motor)

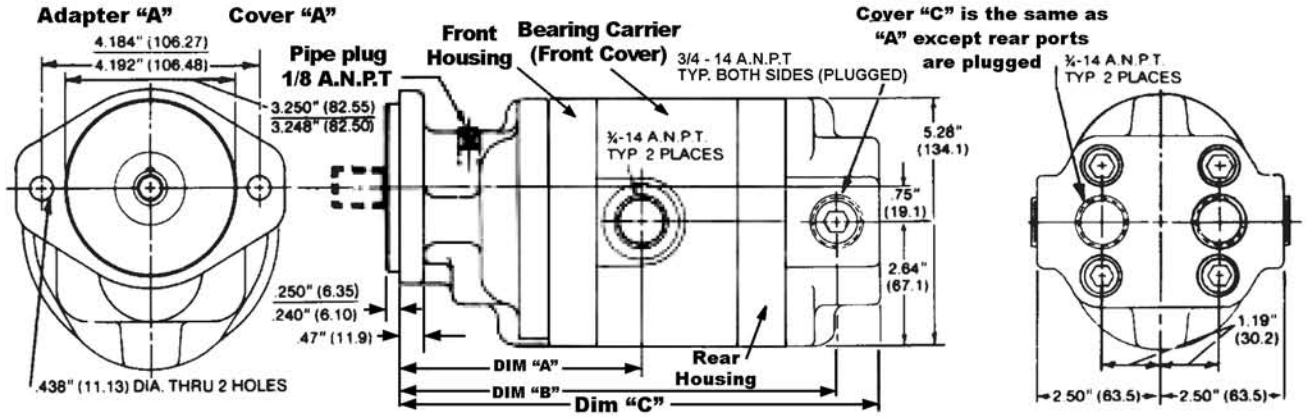


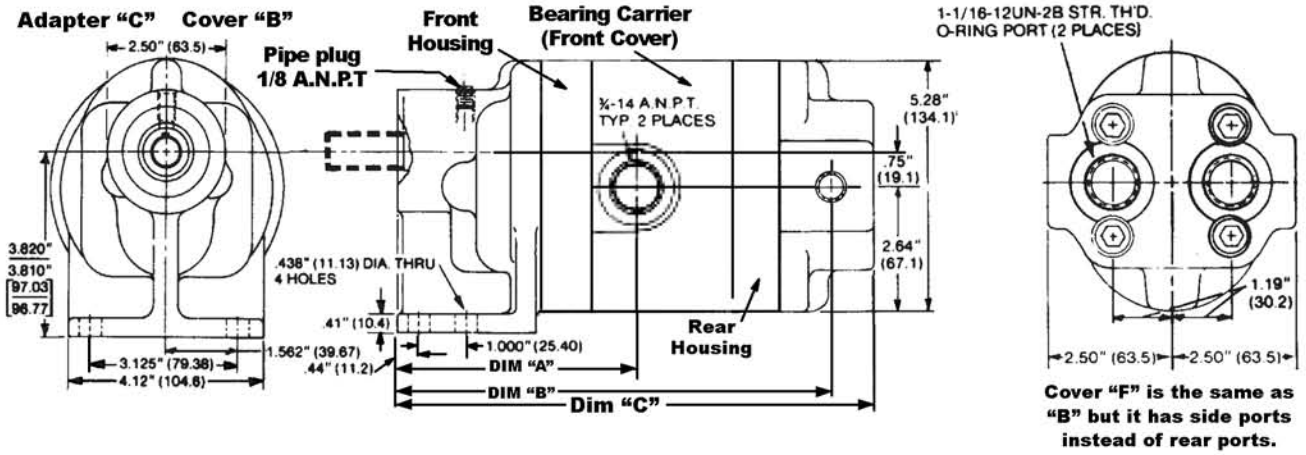
Protects Back Pump Only



Installation Dimensions (Dual Gear Pump / Motor)







Cover "F" is the same as "B" but it has side ports instead of rear ports.

Model No. with A. B. C Covers	Dim. "A" with Adapter A, B, D	Dim. "A" with Adapter C	Dim. "B" with Adapter A. B. D	Dim. "B" with Adapter C	Dim. "C" with Adapter A, B, D	Dim. "C" with Adapter C	Max. Opr. ** psi & bar)	Max rpm as Pump	Max rpm as Motor
151818	5.5" (139.7)	5.75" (146.1)	10.81" (274.6)	11.06" (280.9)	11.88" (301.8)	12.13" (308.1)	2000 (138)	2600	3200
151815	5.5" (139.7)	5.75" (146.1)	10.56" (268.2)	10.81" (274.6)	11.62" (295.1)	11.87" (30.1.5)	2000 (138)	2600	3200
151812	5.5" (139.7)	5.75" (146.1)	10.31" (261.9)	10.56" (268.2)	11.38" (289.1)	11.63" (295.4)	2000 (138)	2600	3200
151810	5.5" (139.7)	5.75" (146.1)	10.06" (255.5)	10.31" (261.9)	11.12" (282.4)	11.37" (288.8)	2000 (138)	2600	3200
151806	5.5" (139.7)	5.75" (146.1)	9.69" (246.1)	9.94" (252.5)	10.75" (273.1)	11.0" (279.4)	2000 (138)	2600	3200
151515	5.25" (133.4)	5.5" (139.7)	10.31" (261.9)	10.56" (268.2)	11.38" (289.1)	11.63" (295.4)	2500 (172.5)	3200	3600
151512	5.25" (133.4)	5.5" (139.7)	10.06" (255.5)	10.31" (261.9)	11.12" (282.4)	11.37" (288.8)	2500 (172.5)	3200	3600
151510	5.25" (133.4)	5.5" (139.7)	9.81" (249.2)	10.06" (255.5)	10.88" (276.4)	11.13" (282.7)	2500 (172.5)	3200	3600
151506	5.25" (133.4)	5.5" (139.7)	9.44" (239.8)	9.69" (246.1)	10.5" (266.7)	10.75" (273.1)	2500 (172.5)	3200	3600
151512	5.0" (127)	5.25" (133.4)	9.81" (249.2)	10.06" (255.5)	10.88" (276.4)	11.13" (282.7)	2500 (172.5)	3600	4000
151210	5.0" (127)	5.25" (133.4)	9.56" (242.8)	9.81" (249.2)	10.62" (269.7)	10.87" (276.1)	2500 (172.5)	3600	4000
151206	5.0" (127)	5.25" (133.4)	9.19" (233.4)	9.44" (239.8)	9.69" (246.1)	10.25" (260.4)	2500 (172.5)	3600	4000
151010	4.75" (120.7)	5.0" (127)	9 31" (236.5)	9.56" (242.8)	10.38" (263.7)	10.63" (270)	2500 (172.5)	4000	4000
151006	4.75" (120.7)	5.0" (127)	8.94" (227.1)	9.19" (233.4)	10.0" (254)	10.25" (260.4)	2500 (172.5)	4000	4000
150606	4.38" (111.3)	4.63" (117.6)	8.56" (217.4)	8.81" (223.8)	9.62" (244.3)	9.87" (250.7)	2500 (172.5)	4000	4000

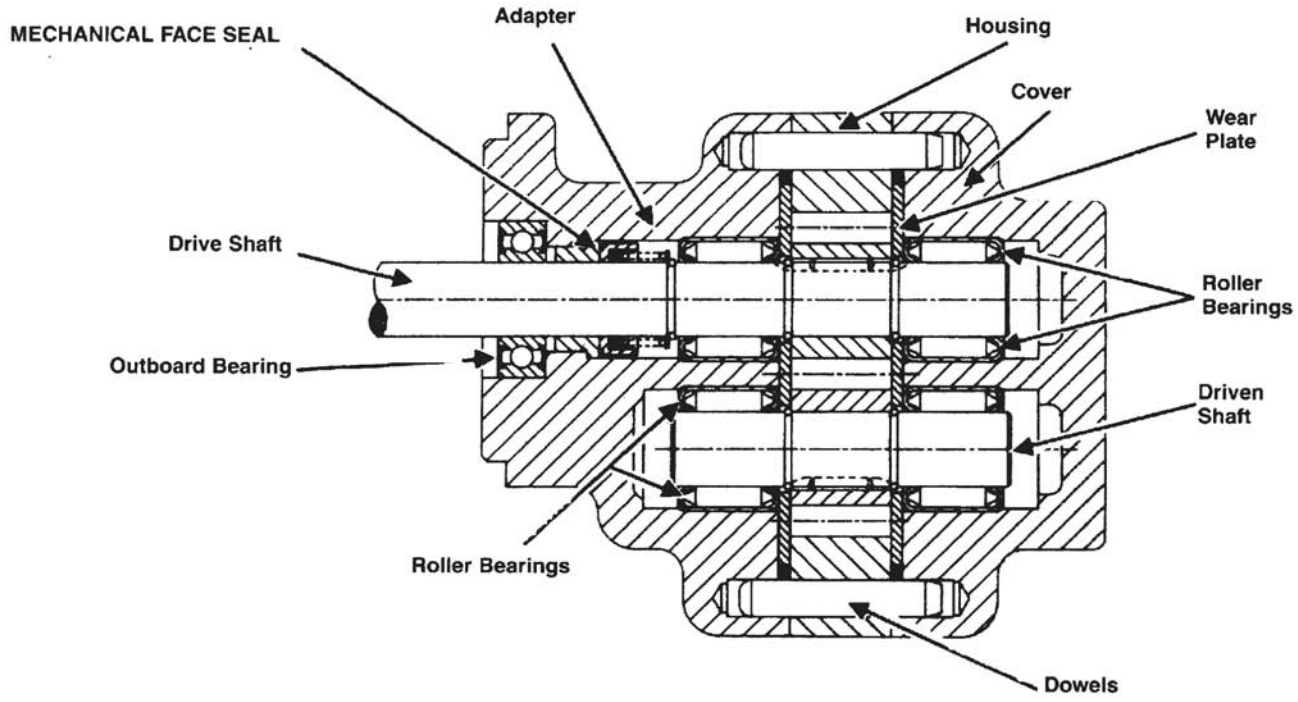
Note 1518 pump is rated at 2000 psi (138 bar) all others are rated at 2500 psi (172.5 bar)
Add 1.72" (43.7) to Dim. "C" when using covers K, L, M, N, & R
**** P x D may limit maximum pressure (see page 5)**

Features
1500M Bi-Rotational Gear Pump/Motor

- The 1500M Series Pump/Motor utilizes the features of the widely accepted HYDRECO 1500 Series pumps and 2M0 motors.
- Operating as pumps, the smaller units can be applied at speeds up to 3200 rpm and pressures up to 2000 psi. Operating as motors, the same pressure can be used, but the speed ratings are further increased.
- The most important feature of the 1500M is its mechanical face seal. The seal allows for back pressure up to 2000 psi with no case drain. By eliminating case drain lines, system costs are greatly reduced, especially in series circuit applications.
- The 1500 configuration uses heavy-duty-cast-iron construction and maintains the unique four-bolt design, which places all four assembly bolts within the area of greatest internal pressure. This greatly reduces internal distortion and the wear of internal parts.
- The roller-bearing design, which uses fully pressurelubricated,long-life roller bearings, makes these units relatively insensitive to contamination. This feature also makes the units fully repairable and rebuildable.
- The use of an outboard bearing in some models allows limited side loading of the input/output shaft.

1500M rpm Ratings

Model	Maximum psi	Maximum Pump rpm	Maximum Motor rpm
1506M	2000	3200	3600
1510M	2000	3000	3600
1512M	2000	2800	3600
1515M	2000	2800	3600



Cross section of 1500M Bi-Rotational Series

Gear Pump / Motor Model Number System

1506M	A	2	A	1	B	B
Model (GPM / 2000 RPM)	Design	Shaft	Adapter	Housing	Cover	Rotation

MODEL
1500M
GPM/2000 rpm
06 - 0.738 cir (12.10 cir)
10 - 1.180 cir (19.84 cir)
12 - 1.467 cir (24.19 cir)
15 - 1.771 cir (29.02 cir)

DESIGN
A- No outboard bearing
C- With shielded outboard bearing

SHAFTS
1. SAE "A" spline 5/8" Dia., 1.03 ext., use with adapters A & C only
2. 5/8" Dia. Short Key, 3/16" sq. key 7/8" long, 1.03 ext., use with adapters A & C only
3. 5/8" Dia. Long Key, 3/16" Sq. Key 1-1/4" long, 2.00 ext., use with adapters B, E & G only
4. 3/4" Dia. keyed, 3/16" Sq. Key 1-5/8" long, 2.50 ext., use with adapter D only
5. 5/8" Dia. threaded with Woodruff Key 1.78" ext., use with adapter E only
6. 3/4" Dia. keyed, 3/16" Sq. Key 1-5/8" long, 2.28 ext., use with adapters F & H only

ADAPTERS
A. 6 Bolt round, use with shafts 1 and 2 only No outboard bearing
B. 6 Bolt round with outboard bearing, use with #3 shafts only
C. SAE "A" 2 Bolt with 5/8" shaft use with shafts 1 & 2 only No outboard bearing
D. SAE "A" 2 Bolt with 3/4" shaft, use with #4 shaft only
E. SAE "A" 2 Bolt 5/8" shaft with outboard bearing, use with shafts 3 and 5 only
F. SAE "A" 2 Bolt with out board bearing 3/4" shaft, use with #6 shaft only
G. Foot mount, 5/8" shaft with outboard bearing, use with #3 shaft only
H. Foot mount, 3/4" shaft with outboard bearing, use with #6 shaft only

HOUSINGS
1. No Ports (Do not use with Cover A)
2. ANPT Pipe 1512 (1/2") only 1515 (3/4") only
3. Straight Threads 7/8" 1512 and 1515 only
4. Straight Threads 1-1/16", 1515 only

COVERS
A. No Ports (Do not use with #1 Housing)
B. 3/4" ANPT both ports (rear)
C. 7/8" Straight Thread both ports (rear)
D. 1-1/16" Straight Thread both ports (rear)
E. 7/8" Straight Thread both ports (side)
F. 1/2" ANPT both ports (side)
G. 3/4" ANPT both ports (side)

ROTATION
B. Bi-rotational

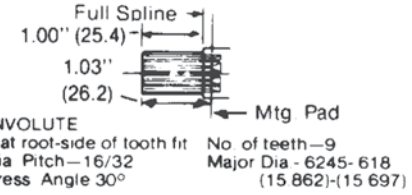
SHAFTS

- Pump rotation as viewed from the shaft end: clockwise rotation - outlet on right; counter-clockwise rotation - outlet on left.
- Motor rotation as viewed from the shaft end: clockwise rotation - inlet on left; counter-clockwise rotation - inlet on right
- Mounting flanges noted as SAE conform to SAE J744C.

Maximum Recommended Drive Shaft Torque Transmission Capacity

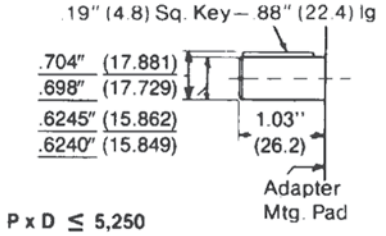
Satisfactory drive shaft torque transmission capacity is indicated when the product of pressure (P) and displace ment (D) is less than or equal to (<) a given constant. The units of "P" and "D" are expressed in psig and in^3/rev. (cir) respectively.

No. 1 SAE "A" Spline



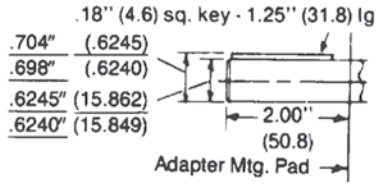
P x D ≤ 5,480

No. 2 5/8" Short Key



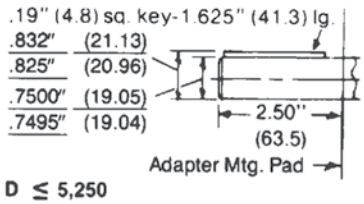
P x D ≤ 5,250

No. 3 5/8" Long Key



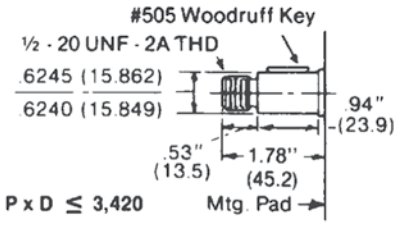
P x D ≤ 5,250

No. 4 3/4" Keyed



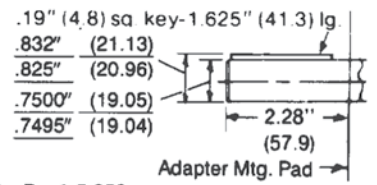
P x D ≤ 5,250

No. 5 5/8" Keyed



P x D ≤ 3,420

No. 6 3/4" Keyed



P x D ≤ 5,250

1500M Operating Parameters with Fire-Resistant Fluids

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

Synthetic

- 2000 rpm maximum
- 1500 psi (137.6 bar) maximum
- 180° F (82.2° C) maximum
- 5 inches of Hg. minimum inlet pressure
- 100% bearing life compared to oil

Water Glycol

- 1800 rpm maximum
- 750 psi (68.8 bar) maximum
- 130° F (54.4° C) maximum
- 3 inches of Hg. minimum inlet pressure
- 100% bearing life compared to oil

Invert Emulsion

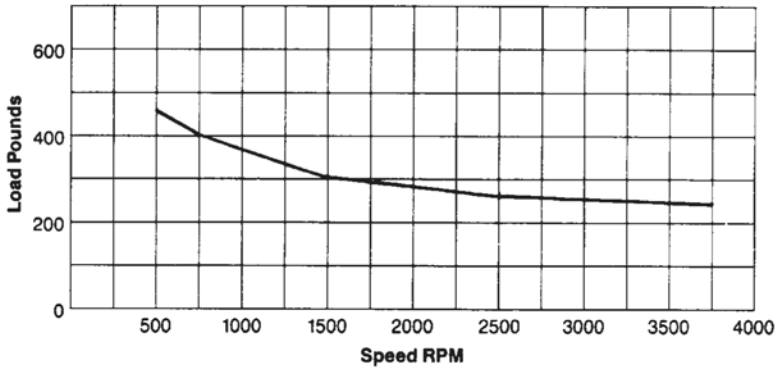
- 1800 rpm maximum
- 750 psi (68.8 bar) maximum
- 130° F (54.4° C) maximum
- 3 inches of Hg. minimum inlet pressure
- 100% bearing life compared to oil

1500M Thrust Loads

The 1500M can handle much more inward thrust than outward thrust. Maximum thrust loading depends on system pressure. Contact factory for information.

1500M Maximum Allowable Side Loads

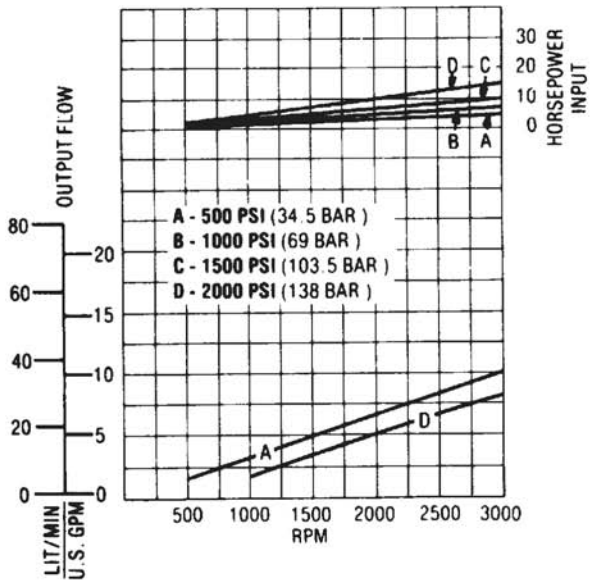
with Outboard Bearing Load Applied 1“ from Mounting Face (Petroleum-Based Fluid)



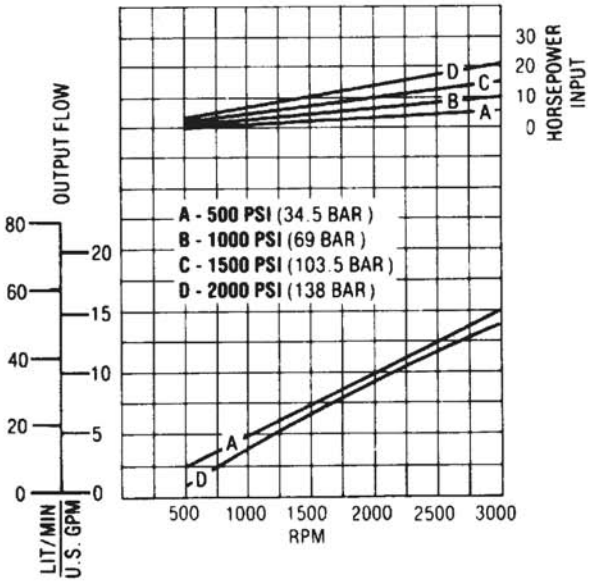
Gear Pump Performance Data

- Tests performed at 115 SSU 120° F.
- Consult David Brown for operation of pumps at (1) pressures and speeds above those shown on charts, (2) temperatures above 1 80° F, (3) speeds under 600 rpm when under load.
- Inlet conditions: max. 5" Hg. vacuum at rated speed.

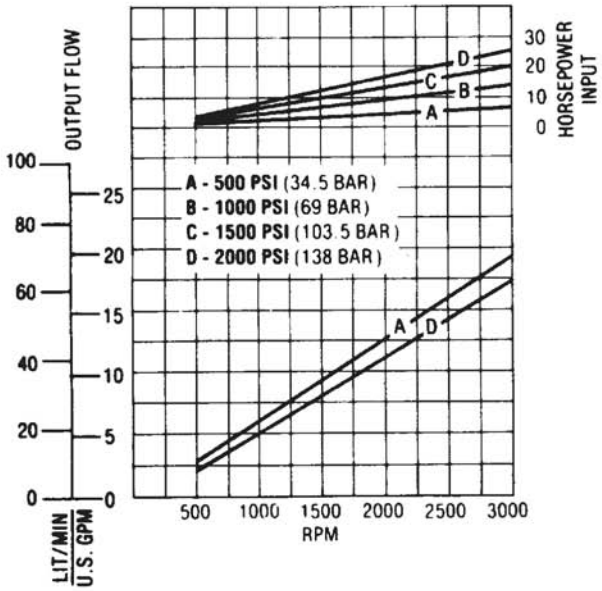
1506 Pump



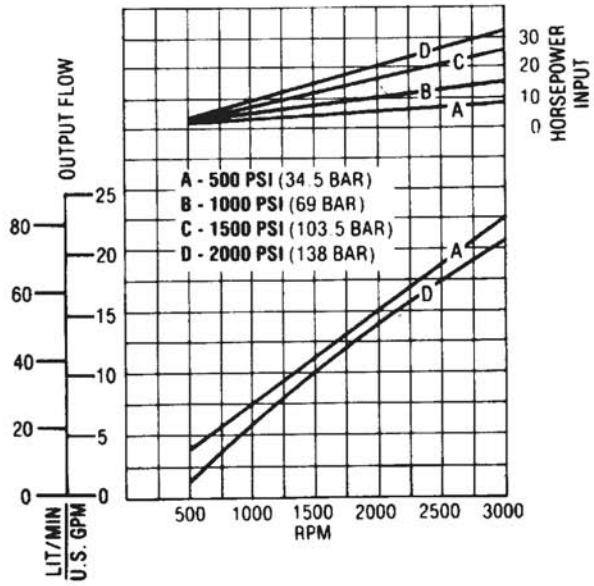
1510 Pump



1512 Pump

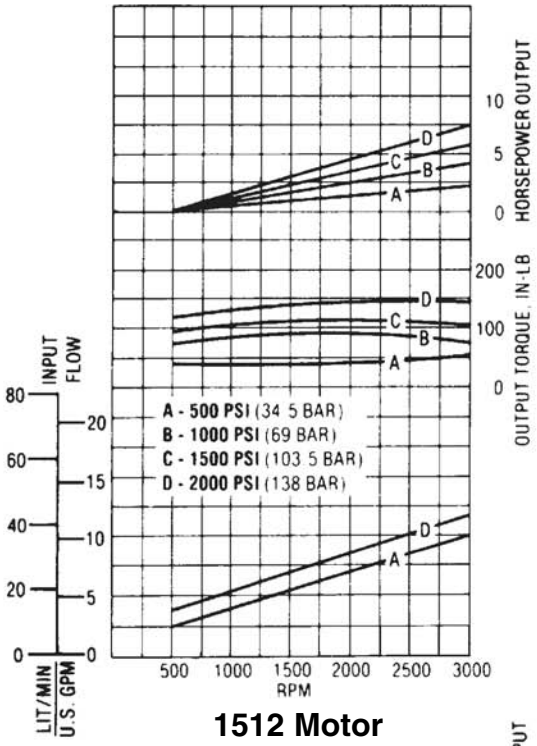


1515 Pump

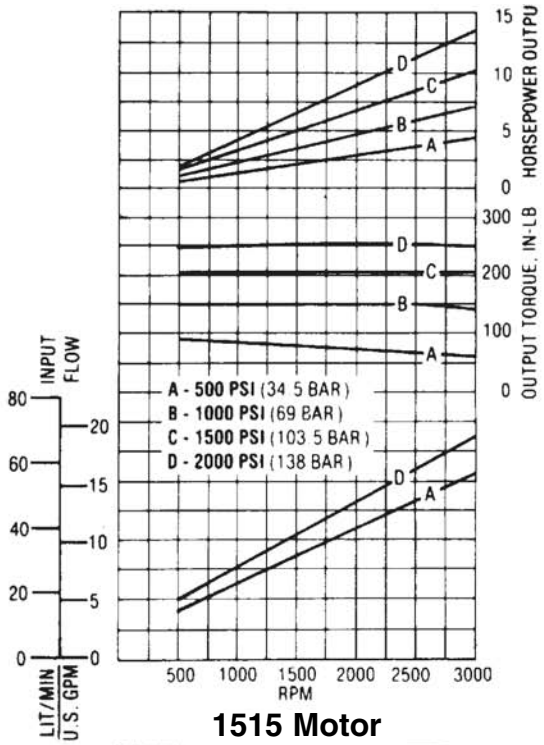


- Tests performed at 115 SSU 120° F.
- Consult David Brown for operation of motors at (1) pressures and speeds above those shown on charts, (2) temperatures above 1 800 F, (3) speeds under 600 rpm when under load.
- Positive inlet pressure recommended at all speeds.

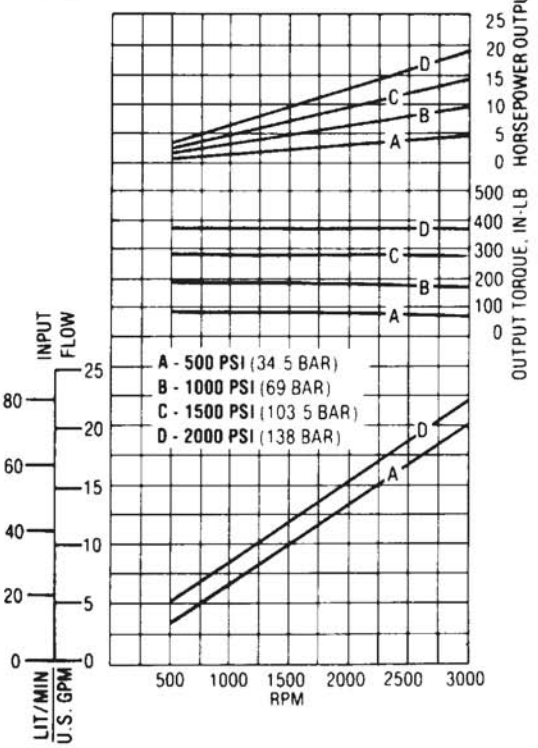
1506 Motor



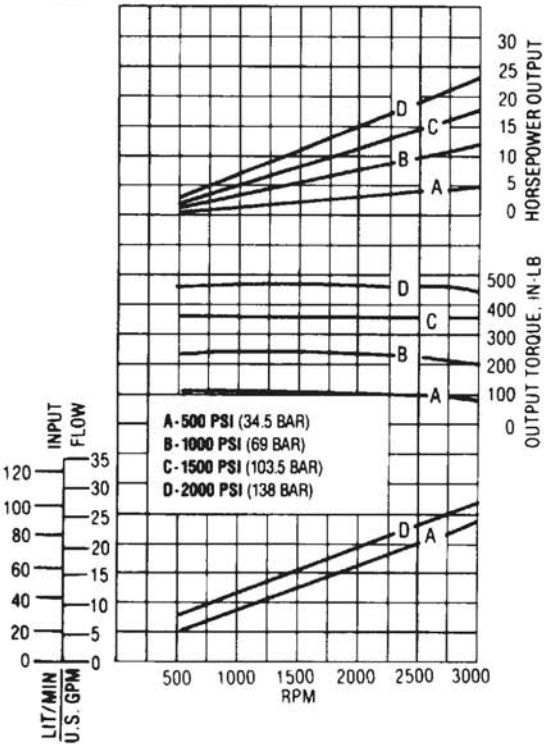
1510 Motor



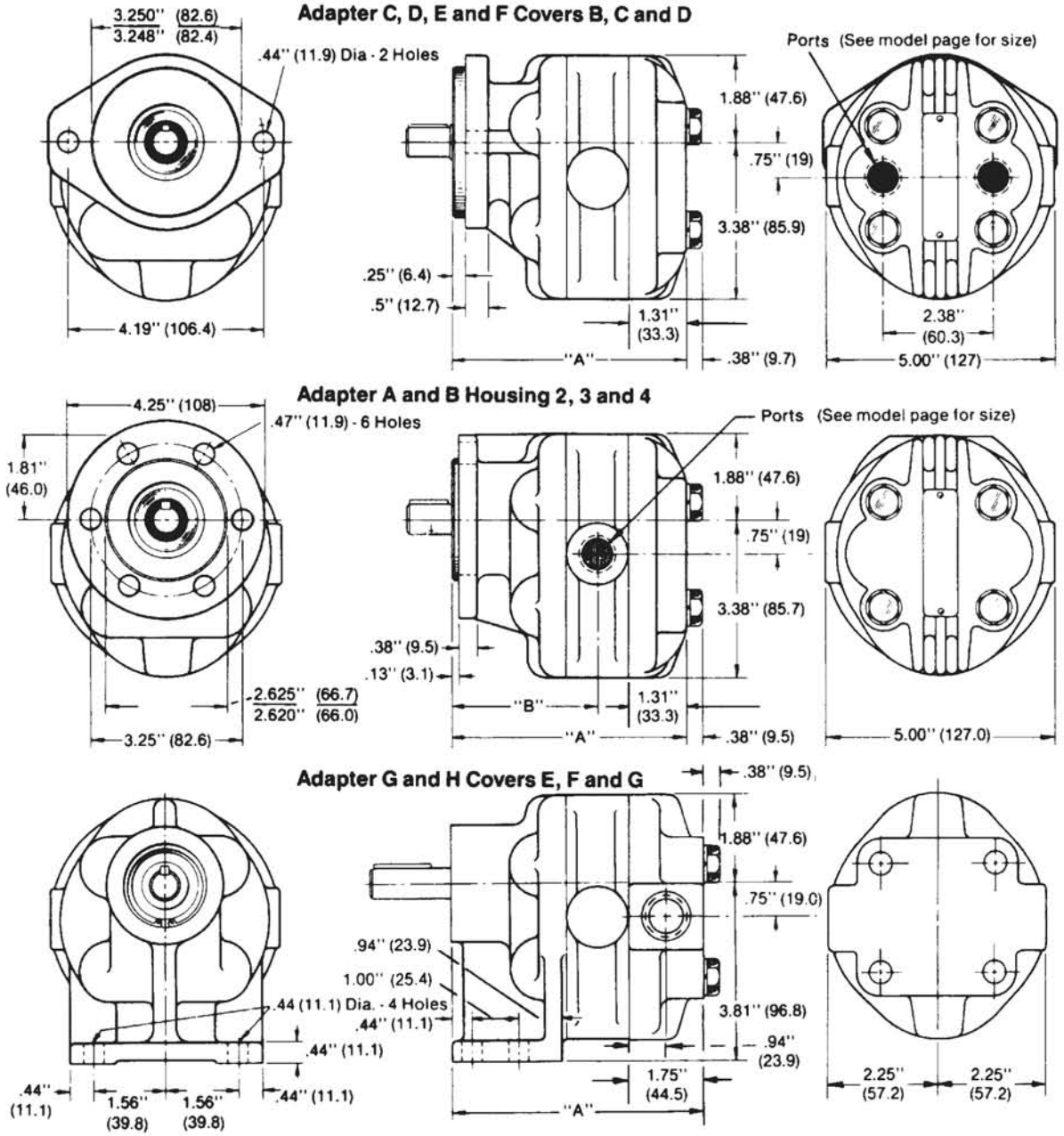
1512 Motor



1515 Motor



Gear Pump / Motor Installation Dimensions



With Adapters									
Model	Dim A & B	A	B	C	D	E	F	G	H
1506	Dim "A"	440" (111.8)	4.90" (24.5)	4.22" (107.2)	4.22" (107.2)	4.78" (121.4)	4.78" (121.4)	5.03" (127.8)	5.03" (127.8)
	Dim "B"	-	-	-	-	-	-	-	-
1510	Dim "A"	4.78" (121.4	5.28" (134.1)	4.60" (116.8)	4.60" (116.8)	5.16" (131.1)	5.16" (131.1)	5.41" (137.4)	5.41" (137.4)
	Dim "B"	-	-	-	-	-	-	-	-
1512	Dim "A"	5.03" (127.8	5.53" (140.5)	4.85" (123.2)	4.85" (123.2)	5.41" (137.4)	5.41" (137.4)	5.66" (143.8)	5.66" (143.8)
	Dim "B"	3.06" (77.7)	3.56" (90.4)	2.88" (73.2)	2.88" (73.2)	3.44" (87.4)	3.44" (87.4)	3.69" (93.7)	3.69" (93.7)
1515	Dim "A"	5.28" (134.1	5.78" (146.8)	5.10" (129.5)	5.10" (129.5)	5.66" (143.8)	5.66" (143.8)	5.91" (150.1)	5.91" (150.1)
	Dim "B"	3.19" (81.0)	3.69" (93.7)	3.00" (76.2)	3.00" (76.2)	3.56" (90.4)	3.56" (90.4)	3.81" (96.8)	3.81" (96.8)

When Using E, F, & G Covers - Add .44" (11.2) To All "A" Dim.