

2400 Series

Roller Bearing Gear Pumps and Motors (Uni-Directional)

► DESCRIPTION:

The 2400 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 is available in a uni-directional pump or motor capabilities made possible by use of check valves which drain back to the low pressure side.

Key Features:

- Displacements: 6.50 cir, (106.5 ccr) - 8.33 cir (136.5)
- Operating as pumps, 2750 RPM and 3000 psi (206.9)
- Operating as motors, 3350 RPM and 3000 psi (206.9)
- The 2400 can be used as a pump or motor by adding a case drain as a motor.

► 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	

2400

2400 RPM RATINGS				
Model	Max. Continuous psi (bar)	Max. rpm as pump	Max. rpm as motor	Mass:
2428	3000 (206.9)	2750	3350	66 lbs
2433	3000 (206.9)	2750	3350	66 lbs
2436	3000 (206.9)	2750	3350	67 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	1550 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%

PLAIN BEARINGS

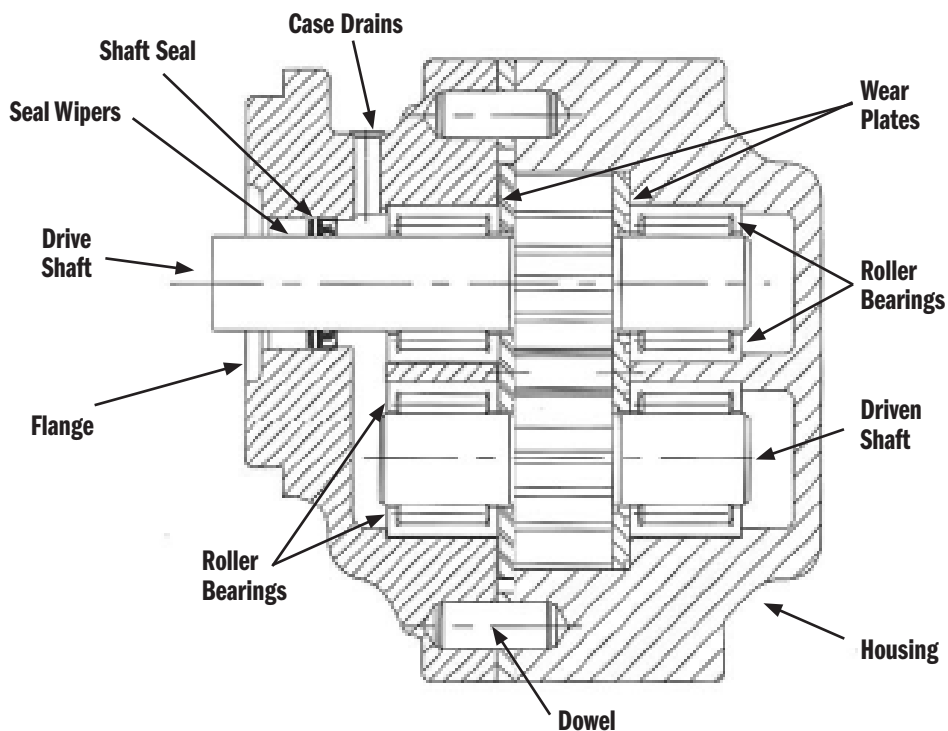
Fluid Cleanliness
ISO 4406
Start up period 21/17 Maximum
in-service 19/15 Optimum
16/11 Maximum water 0.1%

► FEATURES:

High Performance

- Rated to 3000 PSI and 3000 RPM (motors to 3350 RPM) the 2400 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 2400 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.

CROSS SECTION 2400A SERIES PUMP/MOTOR UNIDIRECTIONAL SERIES



► **IDENTIFICATION CODE:**

2400

PUMP SERIES 2400	
CODE	GPM / 1000 RPM CIR (CCR)
28	6.50 cir (106.5 ccr)
33	7.52 cir (123.2 ccr)
36	8.33 cir (136.5 ccr)

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

ROTATIONS	
CODE	DESCRIPTION
R	Clockwise
L	Counter Clockwise

DESIGN	
CODE	DESCRIPTION
A	(Standard) No outboard bearing

COVERS						
COVER NO.	INLET SIZE	OUTLET SIZE	PORT LOCATION	PUMP SIZE		
				28	33	36
1	1 1/2" S.F	1 1/4" S.F	Side	X		
	2" S.F	1 1/4" S.F	Side		X	X

SHAFT				
CODE	NAME	DIA.	DESCRIPTION	ADAPTERS
1	SAE "C" Spline	1-1/4"	2-3/16" Long Full spline 14 teeth	C
2	SAE "C" Parallel ST. Shaft W/Key	1-1/4"	2-3/16" Long 5/16" Sq. Key 1-1/2" Long	C

TYPICAL ORDERING CODE:
2428A1C1R

SHAFT

- 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.

2400 MAXIMUM 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.

NOTE: Additional adapters, shaft,
and port options are available.
Consult Factory.

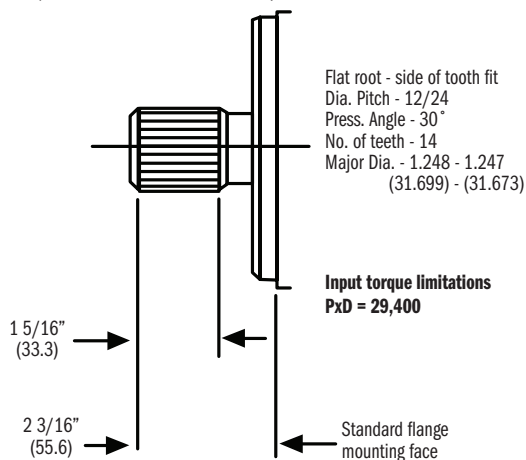
► **SHAFT OPTIONS:**

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

NO. 1

SAE "C" SPLINED

1 1/4" Dia. - SAE 14 Tooth Involute Spline



SHAFT			
CODE	NAME	DIA.	DESCRIPTION
1	SAE "C" Spline	1-1/4"	2-3/16" Long Full spline 14 teeth
2	SAE "C" Parallel ST. Shaft W/Key	1-1/4"	2-3/16" Long 5/16" Sq. Key 1-1/2" Long

**ADDITIONAL SHAFT OPTIONS
ARE AVAILABLE**

Contact Sales for more details.

SHAFT

· 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.

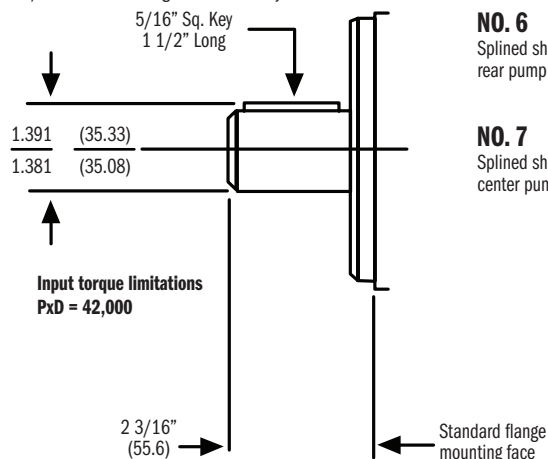
2400 MAXIMUM INPUT TORQUE LIMITATIONS

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.

NO. 2

SAE "C" KEYED

1 1/4" Dia. - SAE Straight Shaft with Key



NO. 6

Splined shaft for
rear pump

NO. 7

Splined shaft for
center pump

► PERFORMANCE DATA:

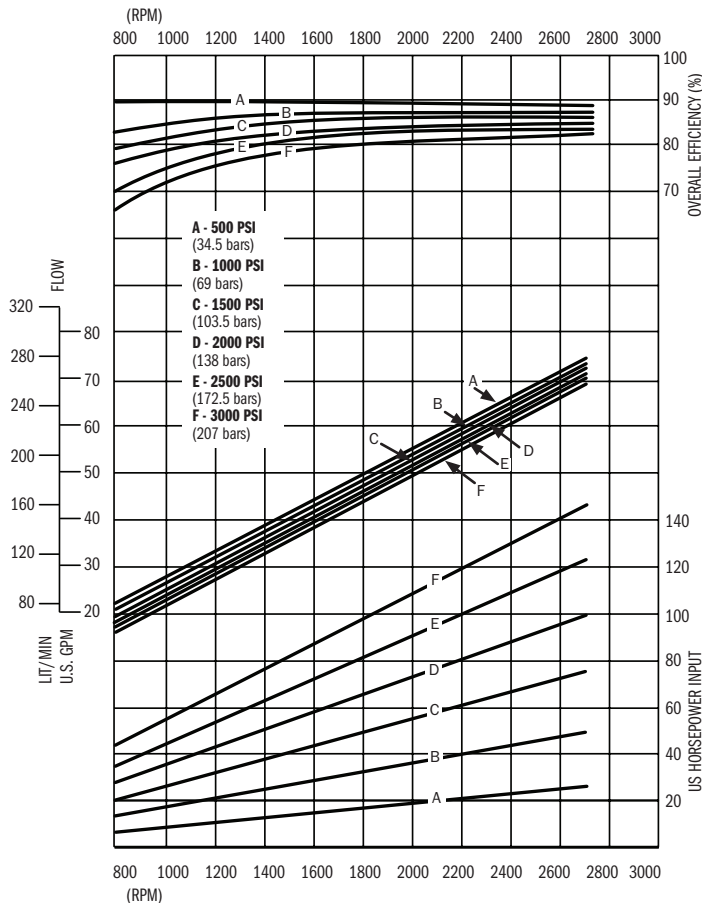
Single Gear Pump

- 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.

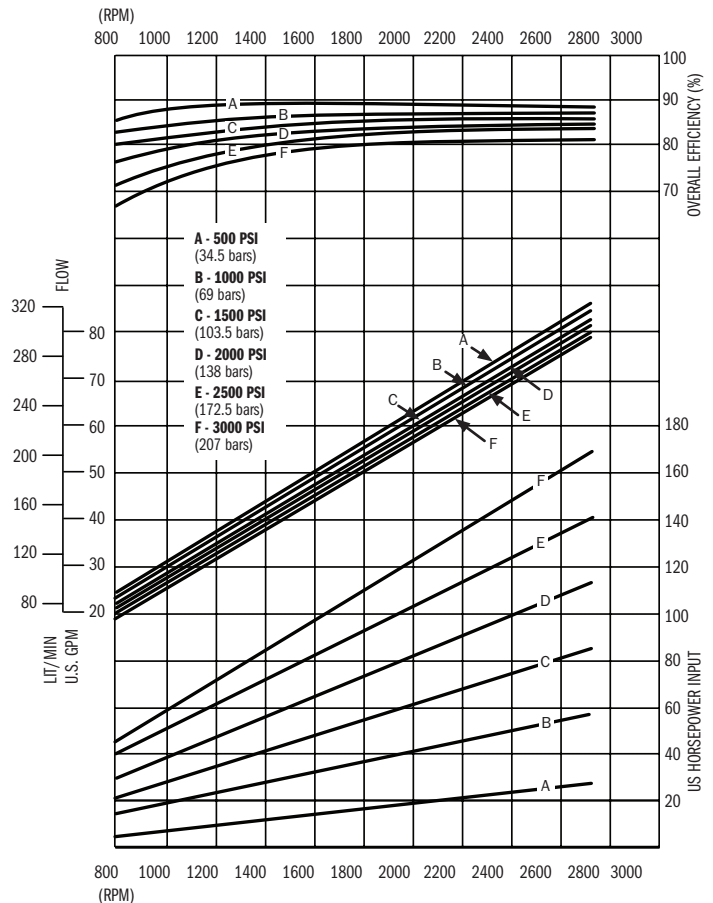
Refer to individual model listings to determine which sizes are available as single, front, center or rear modules.

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

2428 Pump



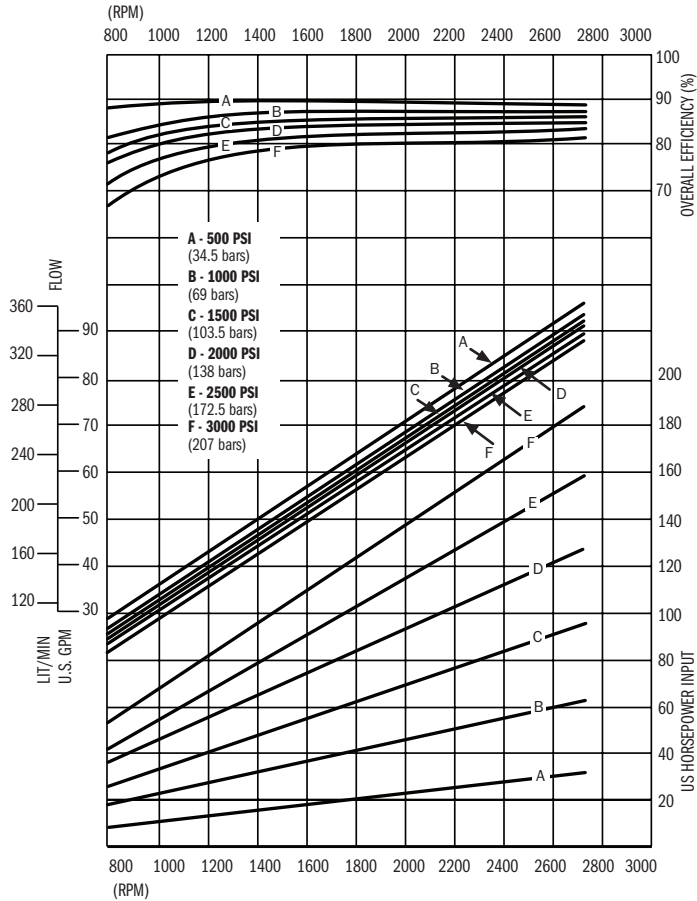
2433 Pump



► **PERFORMANCE DATA:**

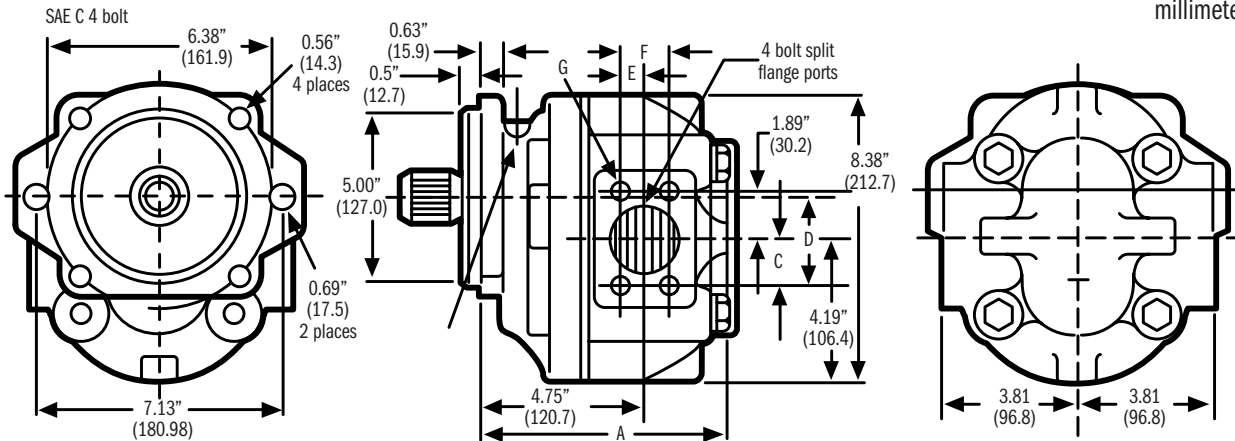
Dimensions:
inches (± .125")
millimeters (± 1 mm)

2436 Pump



► **INSTALLATION DATA:**

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



SAE "B" 2 or 4 Bolt Mounting Flange

All 2400 Series Single Pumps are Available in R or L Rotations (See model no. page)

Model No. & Displacement	Max. Operating PSI (bars)	Max. Operating R.P.M.	Shaft Type	Dim "A"
2428A1 C1 6.50 cir	3000 (207.0)	2750	SAE "C" Splined	7.19" (182.6)
2433A1 C1 7.52 cir	3000 (207.0)	2750	SAE "C" Splined	7.19" (182.6)
2436A1 C1 8.33 cir	3000 (207.0)	2750	SAE "C" Splined	7.5" (190.5)
2442A1 C1 9.76 cir	2500 (172.5)	2750	SAE "C" Splined	7.5" (190.5)

Approx. weight of the 2400 series front pumps is 66 lbs. or (29.94 Kg.)
Mounting flanges conform to SAE J744C except two bolt and four bolt mounts are combined.