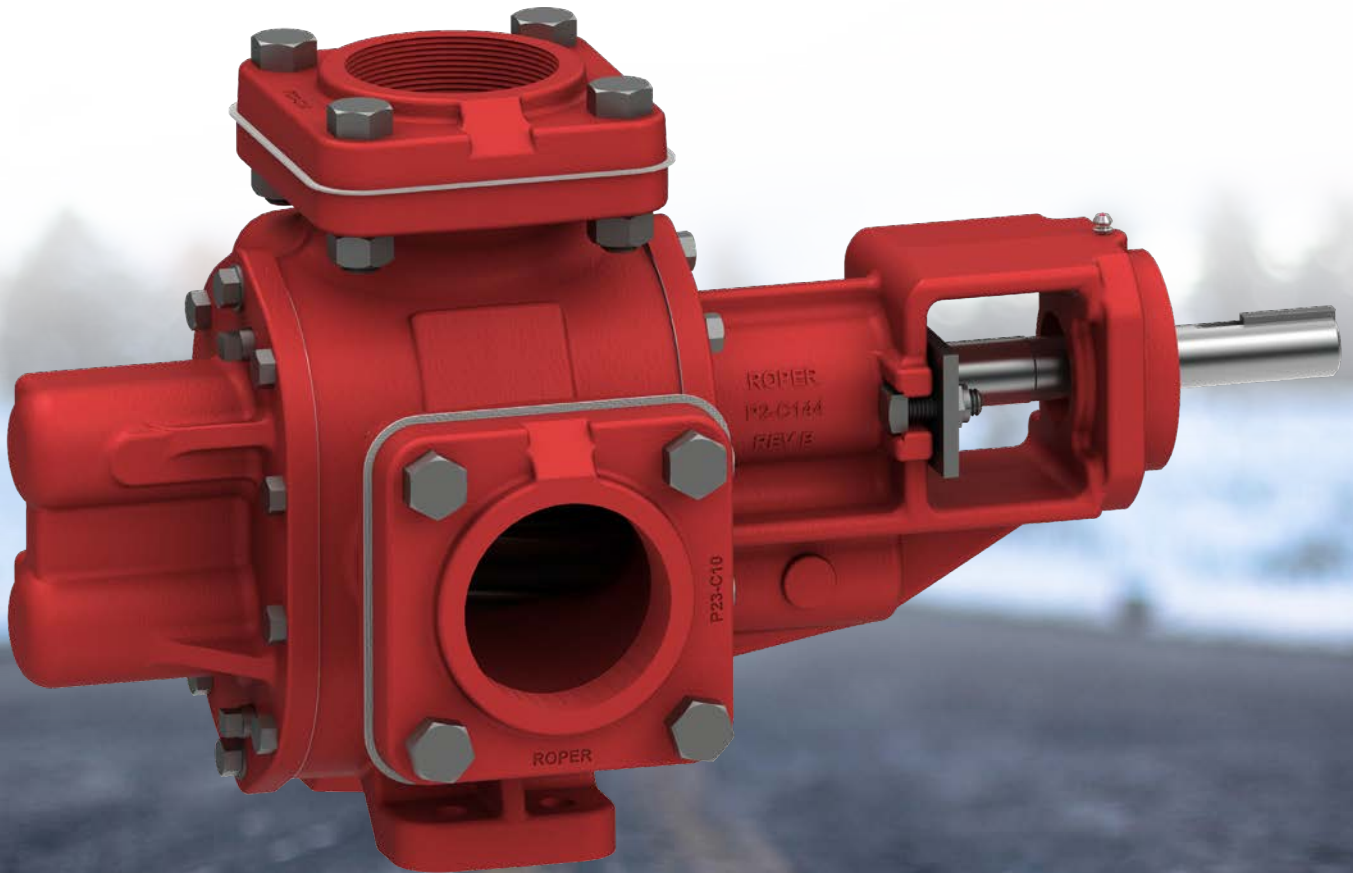




**THE LEADING FORCE** behind liquids™ since 1857

# 3600 SERIES

## HEAVY DUTY PUMPS















**GENERAL PURPOSE PUMPS**

FOR MIXING, BLENDING, RECIRCULATING, FIXED & MOBILE TRANSFER

# The Roper Pump Family of Positive Displacement Pumps

## Typical Applications

## Primary Features

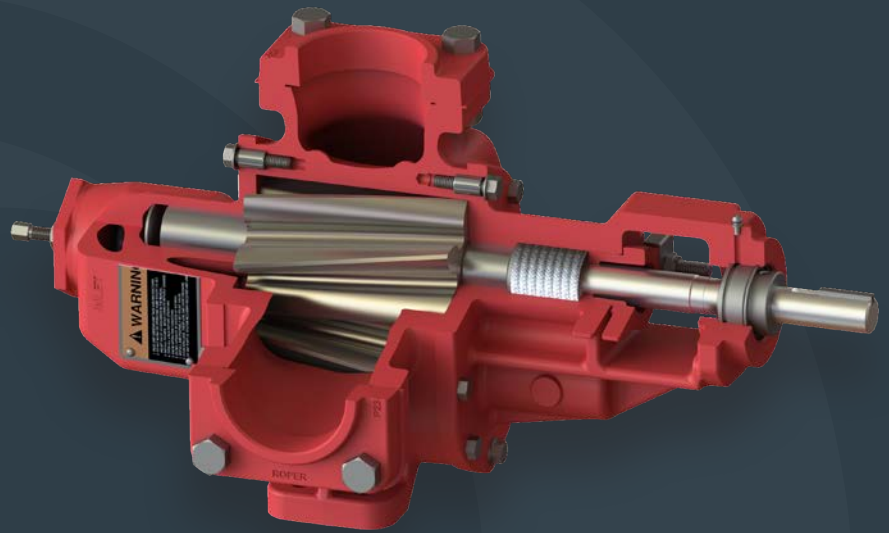
	<b>3600</b>	<ul style="list-style-type: none"> <li>Mix, circulate, and transfer viscous liquids</li> <li>Gasoline, asphalt, molasses</li> <li>Ink, roofing compounds, oils</li> </ul>	<ul style="list-style-type: none"> <li>Precise tolerances for maximum efficiency</li> <li>Direct drive or built-on gear reducers</li> <li>Bi-directional rotation*</li> </ul>
	<b>Z</b>	<ul style="list-style-type: none"> <li>Industrial applications requiring a special mechanical seal</li> </ul>	<ul style="list-style-type: none"> <li>ANSI Flanges</li> <li>Many parts interchangeable with 3600 Series</li> <li>Direct drive or built-on gear reducers</li> <li>Bi-directional rotation*</li> </ul>
	<b>3800</b>	<ul style="list-style-type: none"> <li>Oil fields including light &amp; heavy crude oil</li> <li>Kerosene mixtures, condensates and hot oils</li> </ul>	<ul style="list-style-type: none"> <li>Sealed ball bearings</li> <li>Quadruple grease purged lip seals</li> <li>Helical gears for quiet operation</li> <li>Bi-directional rotation*</li> </ul>
	<b>Bulk</b>	<ul style="list-style-type: none"> <li>Fuels, solvents, petrochemicals</li> <li>Residual fuel oils, molasses, resins</li> <li>Tankers, barges, process plants, refineries</li> </ul>	<ul style="list-style-type: none"> <li>Large ports (6" and 8" available) allow more efficient transfer of fluids</li> <li>Through port design allows for lower inlet and outlet losses</li> </ul>
	<b>5600</b>	<ul style="list-style-type: none"> <li>Hydroseeding</li> <li>Grouting, seal coating, oil and sand</li> <li>Wastewater, waste oil, sludge, slurries</li> <li>Brine, paper pulp, fertilizer feeds</li> </ul>	<ul style="list-style-type: none"> <li>Rubber covered gears</li> <li>Bi-directional rotation*</li> <li>Abrasive applications; up to pea size particles</li> </ul>
	<b>A</b>	<ul style="list-style-type: none"> <li>Pressure lubrication</li> <li>Hydraulic service</li> <li>General transfer applications</li> </ul>	<ul style="list-style-type: none"> <li>Operates at motor speeds</li> <li>Bi-directional rotation*</li> <li>Close coupled capability</li> </ul>
	<b>2835</b>	<ul style="list-style-type: none"> <li>Roofing Compounds</li> <li>Molasses</li> <li>Feed Supplements</li> </ul>	<ul style="list-style-type: none"> <li>Operates at standard motor speeds</li> <li>Large ports allow easier fluid entry</li> <li>Built-in relief valve</li> </ul>
	<b>V</b>	<ul style="list-style-type: none"> <li>Hazardous liquid transfer</li> <li>"Zero leakage" applications due to environmental concerns</li> <li>Chemical and petroleum applications</li> </ul>	<ul style="list-style-type: none"> <li>Mag-drive, seal-less design eliminates leakage, seal repair costs, and down time</li> <li>C-face mount eliminates misalignment</li> <li>Bi-directional rotation and self-priming*</li> </ul>
	<b>F</b>	<ul style="list-style-type: none"> <li>Hydraulic power for lifts, machine actuation, fuel burners, and blenders</li> <li>General transfer of oil and petroleum fluids</li> </ul>	<ul style="list-style-type: none"> <li>2 inlet ports, 2 outlet ports allow multiple piping arrangements (except F150 - F300)</li> <li>High Pressure Range</li> <li>Maintain pump without pipe removal</li> </ul>
	<b>ROC</b>	<ul style="list-style-type: none"> <li>Chemical processing</li> <li>Pharmaceutical industry</li> <li>Injection or transfer of acids &amp; solvents</li> </ul>	<ul style="list-style-type: none"> <li>Stainless steel construction</li> <li>Bi-directional rotation*</li> <li>Mag-drive, sealless option (X5-03 only)</li> </ul>
	<b>9622</b>	<ul style="list-style-type: none"> <li>Chemical and transport applications</li> <li>Corrosive liquid transfer</li> </ul>	<ul style="list-style-type: none"> <li>316SS Housing</li> <li>17-4 PH SST Gears / Shafts</li> <li>Built-in Relief Valve</li> </ul>
	<b>PC</b>	<ul style="list-style-type: none"> <li>Viscous, abrasive and solids-containing liquids</li> <li>Transfer of wastewater sludge, polymers, grouts, paints and adhesives</li> </ul>	<ul style="list-style-type: none"> <li>Pulsation free pumping</li> <li>High suction lift capabilities</li> <li>Ideal for shear sensitive liquids</li> <li>XERIC metal stator for tough applications</li> </ul>

\* Pump reconfiguration may be required



# 3600 Series Heavy Duty Pumps

**GENERAL PURPOSE PUMPS FOR MIXING,  
BLENDING, RECIRCULATING, FIXED  
AND MOBILE TRANSFER  
UP TO 468 GPM • UP TO 125 PSI**



These pumps operate smoothly and with equal efficiency in either direction of rotation. They effectively handle heavy, viscous materials such as asphalt, molasses, roofing compounds, and printing inks, as well as fuel oils, gasolines, and similar thin liquids.

Pumps can be supplied in several materials of construction, with or without built-in relief valves.

Pumps can be assembled either high-drive or low-drive, and are available with conventional packed box or lapped-face mechanical shaft seal. They can be direct driven or driven through a built-in gear reducer with a wide range of ratios. These pumps operate equally well regardless of the mounting configuration or the direction of rotation.

## MATERIALS OF CONSTRUCTION\* STANDARD FITTED

Housings .....Cast Iron  
Gears .....Cast Iron  
Bearings.....Bronze  
Shafts .....Steel

## OPTIONAL MATERIALS\*\*

Gears .....Bronze / Stainless Steel / Delrin (Idler only)  
Bearings.....Iron / Carbon  
Shafts .....Stainless Steel

\*The 3600 EVO line offers alternate materials of construction.

\*\*Some of the optional materials may not be available for all sizes.

Delrin® is a registered trademark of E. I. du Pont de Nemours and Company.

## FEATURES

### QUIET-RUNNING HELICAL GEARS

- Heat treated cast-iron pumping gears are accurately machined for quiet, efficient operation and long life.
- The pumping gears are keyed to their shafts with a sliding fit and are easily replaced.
- Accurate machining ensures proper meshing and reduces friction and vibration.

### PRECISION-GROUND SHAFTS

- The steel shafts are induction hardened in the bearing and sealing areas and are precision ground to exacting standards for maximum life.
- Hardened stainless steel shafts available.

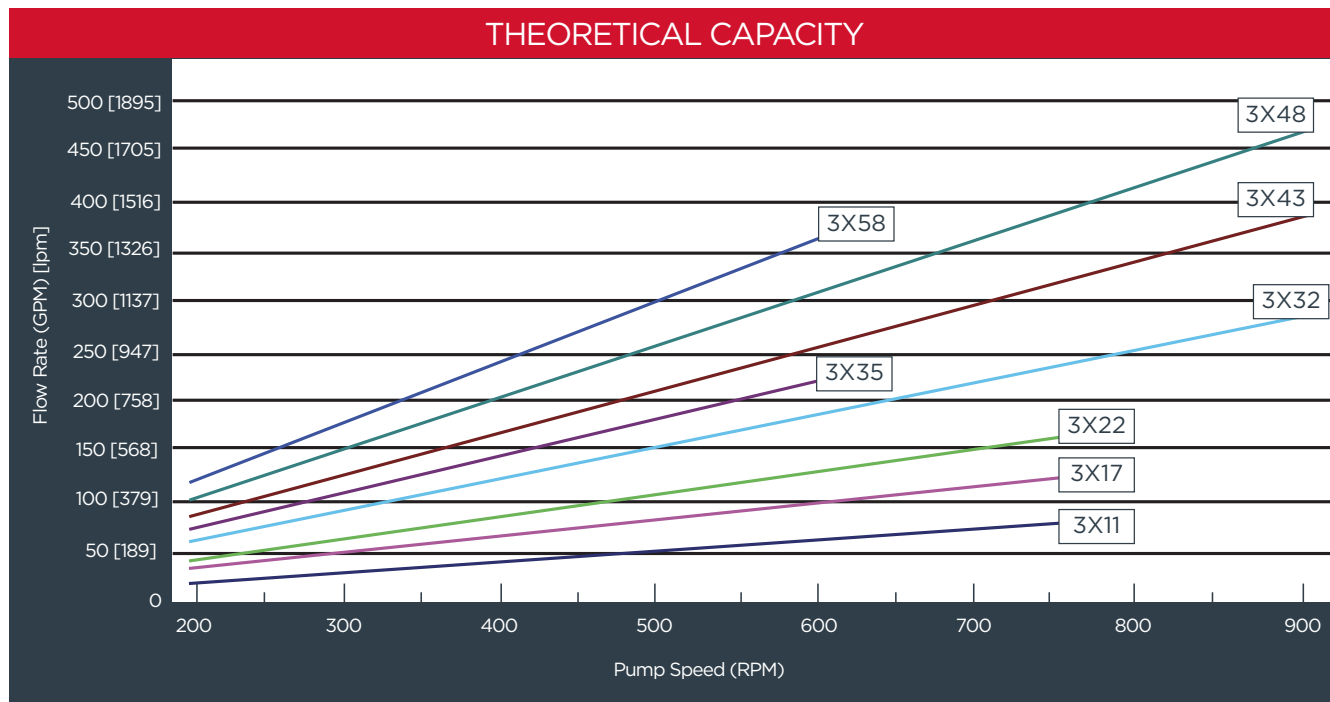
### LONG-LASTING BEARING SURFACES

- Bearings are special wear-resistant, high-lead bronze. Iron and carbon bearings are available.
- Four heavy duty sleeve bearings provide positive support to pumping gears and ensure long, efficient service.
- Bearing grooves allow circulation of the liquid being pumped for lubrication & control of bearing temperature.
- Outboard drive shaft bearing supports external radial loads and absorbs axial thrust loads.

### RUGGED HOUSINGS

- Standard castings are cast iron.
- Precise manufacturing tolerances provide minimum clearances for maximum pumping efficiency.
- Large, hardened steel dowel pins ensure positive alignment between the faceplate, case, and backplate.

# CAPACITIES & NOMENCLATURE

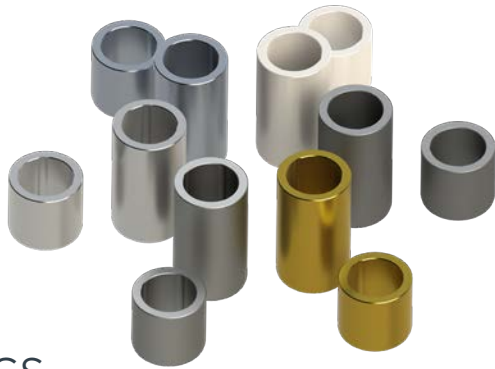


## NOMENCLATURE – 3611 G H B F R V

<b>3</b>	<b>Port Location</b>	<b>3</b> - Right Angle Ports	
		<b>4</b> - Straight Through Ports	
<b>6</b>	<b>Seal Option</b>	<b>5</b> - Triple Lip Seal	
		<b>6</b> - Packing	
		<b>7</b> - Mechanical Seal	
		<b>8</b> - Lip Seal with Ball Bearings	
<b>11</b>	<b>Size</b>	<b>11</b> - 11 Gal/100 Rev [41.6 L/100 Rev]	<b>35</b> - 35 Gal/100 Rev [132.5 L/100 Rev]
		<b>17</b> - 17 Gal/100 Rev [64.4 L/100 Rev]	<b>43</b> - 43 Gal/100 Rev [162.8 L/100 Rev]
		<b>22</b> - 22 Gal/100 Rev [83.3 L/100 Rev]	<b>48</b> - 48 Gal/100 Rev [181.7 L/100 Rev]
		<b>32</b> - 32 Gal/100 Rev [121.1 L/100 Rev]	<b>58</b> - 58 Gal/100 Rev [219.6 L/100 Rev]
<b>Configuration*</b>	<b>H</b>	Pump Head without Outboard Ball Bearing	
	<b>HB</b>	Tapped Port Case with Outboard Ball Bearing	
	<b>HBFB</b>	Flanged Ports with Outboard Bearing	
	<b>HBFRV</b>	Flanged Ports with Outboard Bearing and Relief Valve	
	<b>HBFBV</b>	Flanged Ports with Outboard Bearing and Bi-Directional Relief Valve	
	<b>GHBFRV</b>	Flanged Ports with Outboard Bearing, Relief Valve, and Gear Reducer	
	<b>GHBFBV</b>	Flanged Ports with Outboard Bearing, Bi-Directional Relief Valve, and Gear Reducer	
	<b>BH</b>	Tapped Ports, No Outboard Bearing, Mounting for Hyd. Drive	
	<b>BHF</b>	Flanged Ports, No Outboard Bearing, Mounting for Hyd. Drive	
	<b>BHFRV</b>	Flanged Ports, No Outboard Bearing, Mounting for Hyd. Drive, Relief Valve	
	<b>BHFBV</b>	Flanged Ports, No Outboard Bearing, Mounting for Hyd. Drive, Bi-Directional Relief Valve	

\* There are over 40 basic configurations and several thousand custom designs. Please consult your local Roper Pump distributor to decide which configuration best fits your needs.

# KEY COMPONENTS



## BEARINGS

Four heavy-duty sleeve bearings provide positive support to pumping gears and ensure long, efficient service. A special wear-resistant, high-lead bronze bearing is standard on 3600 Series Pumps. For thin non-abrasive liquids we offer optional carbon bearings, as well as iron bearings for abrasive liquids. The bearings are grooved to allow circulation of the liquid being pumped for lubrication & control of bearing temperature.

- Bronze bearings are rated to 400°F/204°C.
- Iron bearings are rated to 450°F/232°C.
- Standard carbon bearings are rated to 320°F/160°C.



## GEARS

The helical pumping gears are machined from heat treated cast iron because of its excellent wear resistance.

For chemical pumping applications, the standard gears can be replaced with stainless steel or bronze. An optional Delrin® idler gear can be used for quieter operation when running thin liquids.



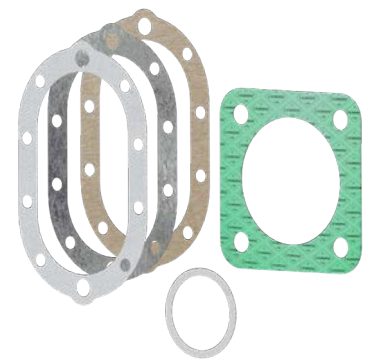
## SHAFTS

Standard steel shafts are induction hardened in the bearing and sealing areas, and are precision ground to exacting standards for maximum life. Hardened stainless steel shafts are also available upon request.



## HOUSINGS

Our rugged cast-iron housings are manufactured to precise tolerances, providing minimum clearances for maximum pumping efficiency. Large, hardened steel dowel pins ensure positive alignment between the faceplate, case, and backplate.

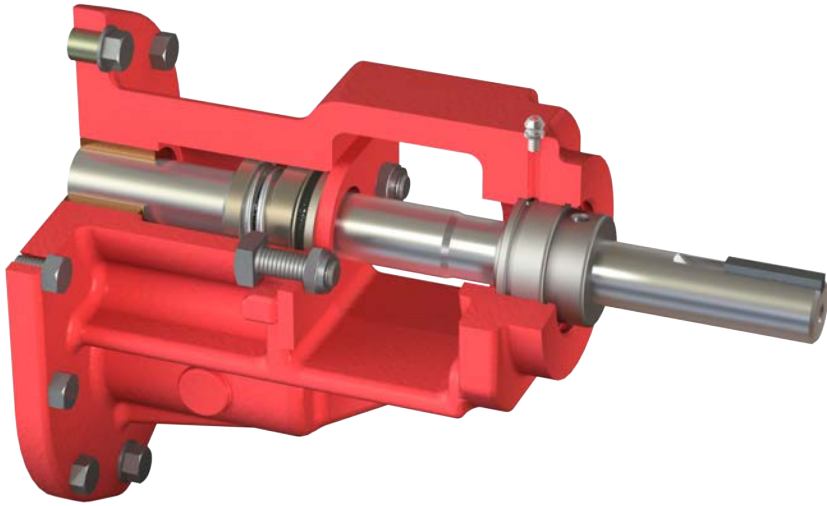


## GASKETS

3600 Series Pumps come standard with fiber gaskets (for use up to 212°F/100°C).

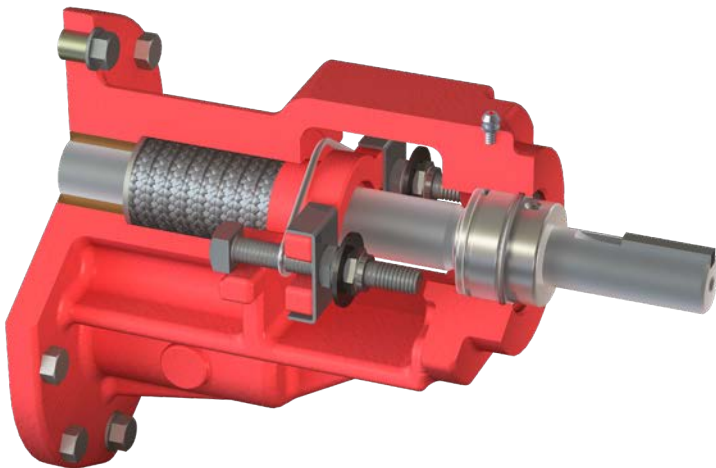
For temperature applications up to 450°F/232°C, we offer aluminum and Teflon gaskets.

# PUMP SEALS



## MECHANICAL SEAL

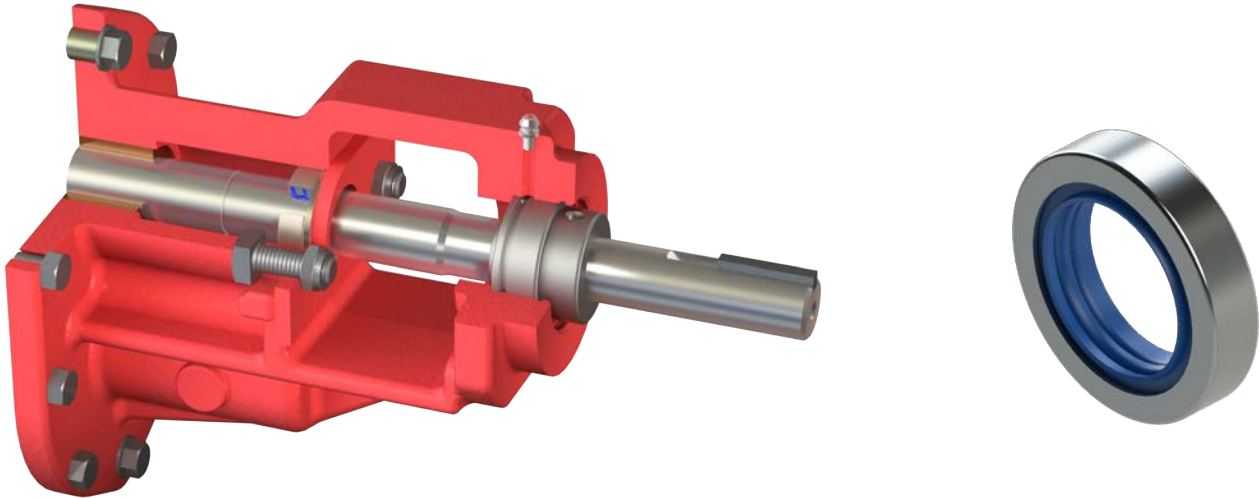
Mechanical seals are for those applications where product leakage is unacceptable. Under proper conditions, the mechanical seal has a longer service life than the packed box and does not require adjustment. The standard mechanical seal is an elastomeric bellows type seal. A PTFE wedge seal is also available.



## PACKED BOX

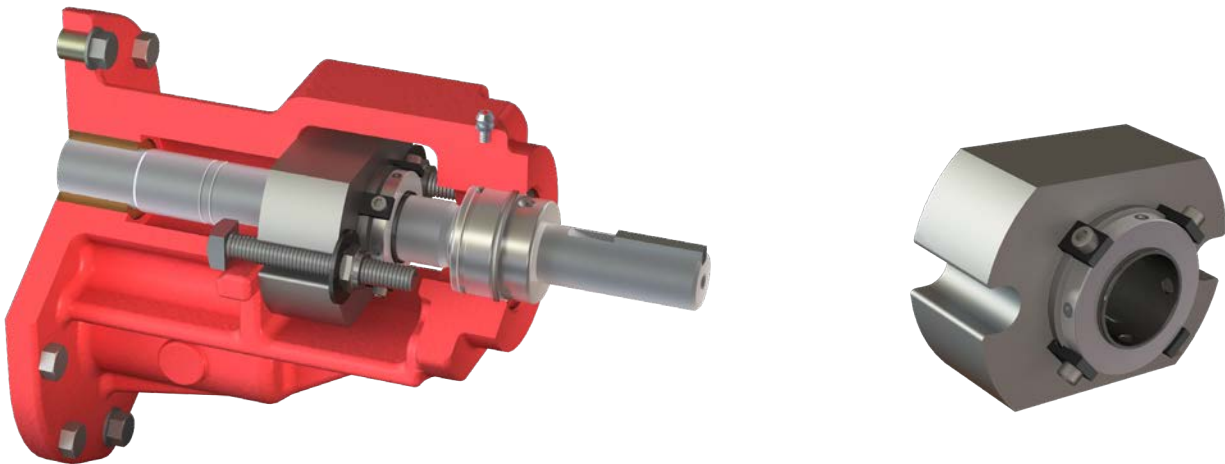
Our standard packing is suited for general purpose applications, and is easily replaced with split ring packing. For optimum performance, the gland must be adjusted to allow slight seepage. Standard packing is graphite, with several optional packing materials available for applications involving high temperatures or mildly corrosive liquids, or those requiring compatibility with food products.

# PUMP SEALS CONT.



## TRIPLE LIP SEAL

Offering the same high degree of sealing reliability as a mechanical seal, triple lip seals are better suited for viscous products that tend to set up while the pump is idle. Mechanical seal faces tend to stick together with high viscosity liquids, such as resins, glues and paints. The lips create an effective barrier to product leakage, and will move freely upon resumption of pumping a thickening substance. In cases where extreme circumstances can cause catastrophic failure of mechanical seals, the resilient nature of the triple lip seal makes it relatively immune to sudden failure.



## CARTRIDGE SEAL

Cartridge seals are available in a wide range of material options for sealing faces and elastomers. This diversity in material allows for easy rebuilding and serviceability via repair kits. The 3500C is the standard cartridge seal option. It consists of a Teflon triple lip seal in a 304SS gland, running on a silicon carbide shaft sleeve. A mechanical seal cartridge seal is also available as a 3700C. Pumps can be shipped without the seal to allow for the install of after-market seal brands.

# RELIEF VALVES & JACKETING

## RELIEF VALVE

In the event of overpressure situations, our adjustable relief valve protects personnel and equipment by returning liquids to the suction side of the pump. Various spring sizes can be specified to handle a wide range of operating conditions.

### Small 3600 (3611-4722)

Spring "A" pressure range: 20-80PSI

Spring "B" pressure range: 81-125PSI

### Large 3600 (3632-4758)

Spring "A" pressure range: 20-45PSI

Spring "B" pressure range: 46-125PSI

Roper Pump's inverted poppet relief valve is designed without close fitting guides that can clog and cause excessive pressures when the valve does not open freely. The valve will provide protection in only one direction of rotation. However it can be positioned easily to either side of the pump to accommodate flow direction.

Standard tempered steel RV spring recommended for temps up to 350°F/177°C

Stainless RV spring recommended for temps over 350°F/177°C.



## BI-DIRECTIONAL RELIEF VALVE

Roper Pump's integral bi-directional pressure relief valve offers reliable protection of your personnel and equipment, regardless of which direction you are pumping. You can reverse flow without disabling pressure relief operability, or compromising operator safety.

Based on our rugged and time proven standard relief valves, this offers you a lighter weight, lower cost alternative compared to externally plumbed relief valves.

Available on 11, 17, 22, 32, 43, & 48 sizes.



## JACKETING

Whether the fluid to be pumped must be heated, cooled, or maintained at a specific temperature, a jacketed Roper pump will handle difficult-to-pump materials such as Bunker C, molasses, asphalt mixes, refined sugars, creosote, printing ink, and other viscous fluids which require temperature control for satisfactory handling.

Roper Pump jacketed pumps provide efficient heat transfer to and from the packing, seal, relief valve, bearing areas, and endplates of the pump. The jackets are suitable for use with steam (up to 350°F/177°C), or liquids (up to 450°F/232°C) such as hot or cold water, heat transfer oil, glycol, etc., as heating or cooling mediums. Jacketing can be configured as faceplate only, backplate only, or both.

Jacketing is not available on 32, 43 and 48 sizes



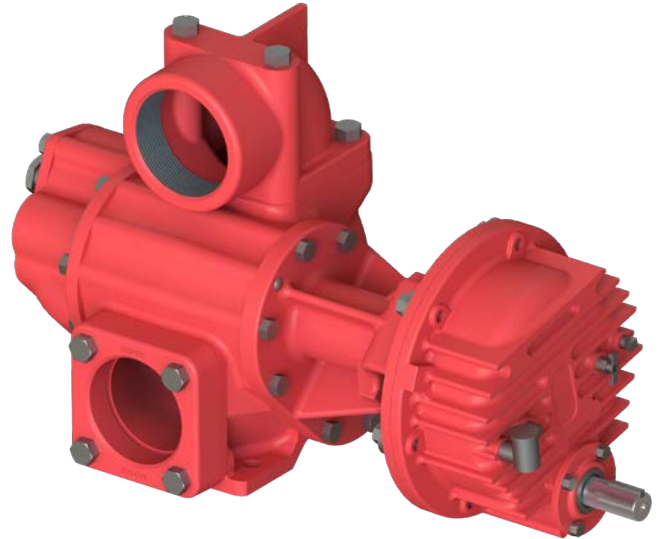


# BASE-MOUNTED UNITS

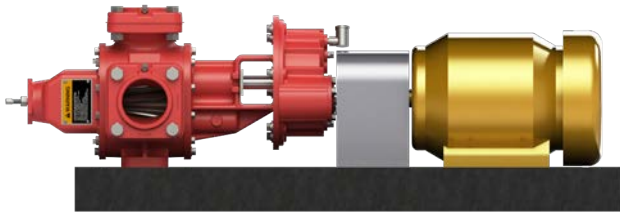
## GEAR RATIOS & CAPACITIES FOR GHB UNITS

	MOTOR RPM	GEAR RATIO	PUMP RPM	MAX. PERMISSIBLE HP
<b>11 THROUGH 22</b>	1150	4.60:1 3.94:1 3.20:1	250 290 360	5.5 6.5 8.0
	1750	4.60:1 3.94:1 3.20:1	380 445 545	8.5 10.0 10.0
	3450*	4.60:1	750	10.0
<b>32 THROUGH 58</b>	1150	5.66:1 4.88:1 4.26:1	203 235 270	8.5 10.0 11.0
	1750	5.66:1 4.88:1 4.26:1	309 360 410	13.0 15.0 15.0
	3450*	5.66:1	609	15.0

\*3450 RPM motors are used in handling low viscosity lubricating liquids.



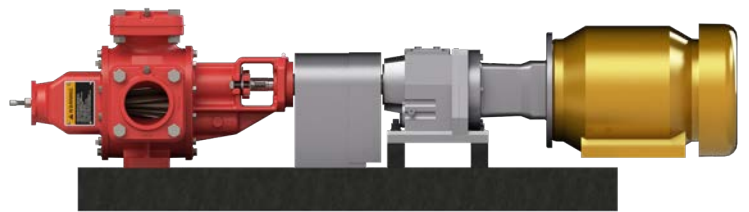
Note: Pump image configured with optional flange short radius elbow.



## ROPER GHB GEARBOX

The versatile GHB gearbox configuration features a built-on gear reduction unit that allows minute adjustments for various driver shaft heights.

This feature makes alignment to the motor shaft very simple. The carefully selected ratios convert standard motor speeds to ranges suitable for most pumping applications.



## INDUSTRIAL STANDARD

Using an industrial standard gearbox offers virtually unlimited gear ratio options, including the ability to easily change pump speeds by simply changing the gearbox.

Roper Pump offers extensive expertise in spacing, mounting and aligning the complete drive package of motor, gearbox and pump.

# GEAR REDUCTION (GHB UNIT)

## Performance Charts

Performance figures show maximum horsepower requirements for minimum rated gallons per minute at the various speeds, viscosities and pressures. The charts are intended as a guide for conditions at the pump. In determining the proper conditions of operation for the pump, many factors must be considered

including inlet conditions, liquid characteristics, and temperature. If there is any question concerning these charts or the recommended operating conditions, please consult your Roper distributor, district representative, or the home office.

SIZE		RPM		250 RPM				290 RPM				360 RPM				
Pump	PSI [bar]	SSU	30	100	1000	10,000	30	100	1000	10,000	30	100	1000	10,000	30	
11	25 [1.7]	GPM [lpm] HP [kw]	25 [95] .7 [52]	26 [98] .7 [52]	27 [102] .9 [57]	27 [102] 1.3 [97]	29 [110] .9 [67]	30 [114] .9 [67]	31 [117] 1.2 [89]	31 [117] 1.5 [112]	37 [140] 1.1 [82]	38 [144] 1.1 [82]	39 [148] 1.4 [104]	39 [148] 2.2 [164]	40 [151] 1.1 [82]	
	50 [3.4]	GPM [lpm] HP [kw]	23 [87] 1.1 [82]	25 [95] 1.1 [82]	27 [102] 1.3 [97]	27 [102] 1.7 [127]	27 [102] 1.3 [97]	29 [110] 1.3 [97]	31 [117] 1.5 [112]	31 [117] 1.9 [142]	35 [132] 1.7 [127]	37 [140] 1.7 [127]	39 [148] 2.0 [149]	39 [148] 2.8 [209]	38 [144] 1.7 [127]	
	100 [6.9]	GPM [lpm] HP [kw]		23 [87] 1.9 [142]	26 [98] 2.1 [157]	27 [102] 2.5 [186]		27 [102] 2.2 [164]	30 [114] 2.4 [179]	31 [117] 3.0 [224]		35 [132] 2.8 [209]	38 [144] 3.1 [231]	39 [148] 3.9 [291]	33 [125] 2.9 [216]	
	125 [8.6]	GPM [lpm] HP [kw]		22 [83] 2.2 [164]	26 [98] 2.4 [179]	27 [102] 2.8 [209]		26 [98] 2.7 [201]	30 [114] 2.9 [216]	31 [117] 3.5 [261]		34 [129] 3.3 [246]	38 [144] 3.6 [268]	39 [148] 4.4 [328]		
17	25 [1.7]	GPM [lpm] HP [kw]	38 [144] .8 [6]	40 [151] .8 [6]	41 [155] 1.1 [82]	42 [159] 1.8 [134]	45 [170] 1.0 [75]	47 [178] 1.0 [75]	48 [182] 1.3 [97]	49 [185] 2.2 [164]	57 [216] 1.2 [89]	59 [223] 1.2 [89]	60 [227] 1.8 [134]	61 [231] 3.0 [224]	60 [227] 1.3 [97]	
	50 [3.4]	GPM [lpm] HP [kw]	33 [125] 1.4 [104]	38 [144] 1.4 [104]	41 [155] 1.7 [127]	42 [159] 2.4 [179]	45 [170] 1.6 [119]	47 [178] 1.6 [119]	48 [182] 1.9 [142]	49 [185] 2.8 [209]	52 [197] 2.1 [157]	57 [216] 2.1 [157]	60 [227] 2.7 [201]	61 [231] 3.9 [291]	55 [208] 2.3 [172]	
	100 [6.9]	GPM [lpm] HP [kw]		34 [129] 2.5 [186]	40 [151] 2.9 [216]	41 [155] 3.6 [268]		41 [155] 3.0 [224]	47 [178] 3.3 [246]	48 [182] 4.2 [313]	49 [185] 4.2 [313]	53 [201] 3.8 [288]	59 [223] 4.4 [328]	60 [227] 5.6 [418]	52 [197] 4.2 [313]	
	125 [8.6]	GPM [lpm] HP [kw]			39 [148] 3.4 [254]	41 [155] 4.1 [306]			46 [174] 4.0 [298]	48 [182] 4.9 [365]	49 [185] 4.6 [343]	51 [193] 4.6 [343]	58 [220] 5.2 [388]	60 [227] 6.4 [477]	52 [197] 5.0 [373]	
22	25 [1.7]	GPM [lpm] HP [kw]	52 [197] 1.4 [104]	53 [201] 1.4 [104]	55 [208] 1.5 [104]	55 [208] 1.9 [282]	60 [227] 1.3 [97]	61 [231] 1.3 [97]	63 [238] 1.7 [127]	63 [238] 2.5 [186]	76 [288] 2.0 [149]	77 [291] 2.0 [149]	79 [299] 2.6 [194]	79 [299] 3.9 [291]	80 [303] 2.2 [164]	
	50 [3.4]	GPM [lpm] HP [kw]	52 [197] 2.0 [149]	52 [197] 2.0 [149]	54 [204] 2.3 [172]	55 [208] 2.8 [209]	58 [220] 2.3 [172]	60 [227] 2.3 [172]	62 [235] 2.6 [194]	63 [238] 3.4 [254]	74 [280] 3.1 [231]	76 [288] 3.1 [231]	78 [295] 3.7 [276]	79 [299] 5.0 [373]	78 [295] 3.3 [246]	
	100 [6.9]	GPM [lpm] HP [kw]	44 [167] 3.5 [261]	50 [189] 3.5 [261]	53 [201] 3.8 [283]	55 [208] 4.3 [321]	52 [197] 4.2 [313]	58 [220] 4.2 [313]	61 [231] 4.5 [336]	63 [238] 5.3 [395]	68 [257] 5.4 [403]	74 [280] 5.4 [403]	77 [291] 6.0 [447]	79 [299] 7.3 [544]	72 [273] 5.7 [425]	
	125 [8.6]	GPM [lpm] HP [kw]		49 [185] 4.2 [313]	53 [201] 4.5 [336]	55 [208] 5.0 [373]	50 [189] 5.2 [388]	57 [216] 5.2 [388]	61 [231] 5.5 [411]	63 [238] 6.3 [477]	66 [250] 6.5 [485]	73 [276] 6.5 [485]	77 [291] 7.1 [529]	79 [299] 8.4 [626]	70 [265] 6.9 [515]	

SIZE		RPM		203 RPM				235 RPM				270 RPM				
Pump	PSI [bar]	SSU	30	100	1000	10,000	30	100	1000	10,000	30	100	1000	10,000	30	
32	25 [1.7]	GPM [lpm] HP [kw]	54 [204] 1.7 [51]	57 [216] 1.2 [89]	61 [231] 1.4 [104]	65 [246] 1.8 [134]	64 [242] 1.3 [97]	67 [254] 1.5 [112]	71 [269] 1.8 [134]	75 [284] 2.3 [172]	75 [284] 1.7 [127]	78 [295] 1.9 [142]	82 [310] 2.5 [186]	86 [326] 3 [224]	88 [333] 2.1 [157]	
	50 [3.4]	GPM [lpm] HP [kw]	41 [155] 2 [149]	47 [178] 2.2 [164]	55 [208] 2.4 [179]	59 [223] 2.8 [209]	51 [193] 2.3 [172]	57 [216] 2.5 [186]	66 [250] 2.8 [209]	70 [265] 3.2 [246]	62 [235] 3 [224]	68 [257] 3.2 [239]	77 [291] 3.8 [283]	81 [307] 4.3 [321]	75 [284] 3.5 [261]	
	100 [6.9]	GPM [lpm] HP [kw]			44 [167] 4.4 [326]	52 [197] 4.8 [356]			54 [204] 5.1 [38]	62 [235] 5.6 [418]		47 [178] 5.9 [44]	65 [246] 6.5 [485]	73 [276] 7 [522]		
	125 [8.6]	GPM [lpm] HP [kw]				49 [185] 5.8 [433]			46 [174] 6.6 [492]	59 [223] 7.1 [529]			57 [216] 8 [597]	70 [265] 8.5 [634]		
35	25 [1.7]	GPM [lpm] HP [kw]	71 [269] 2.6 [194]	72 [273] 2.6 [194]	73 [276] 2.8 [209]	75 [284] 4.3 [321]	83 [314] 3.1 [231]	84 [318] 3.1 [231]	85 [322] 3.3 [246]	87 [329] 5.2 [388]	96 [363] 3.7 [276]	97 [367] 3.7 [276]	98 [371] 3.9 [291]	100 [379] 6.2 [462]	110 [416] 4.4 [328]	
	50 [3.4]	GPM [lpm] HP [kw]	67 [254] 3.7 [276]	69 [261] 3.7 [276]	71 [269] 3.9 [291]	73 [276] 5.4 [403]	79 [299] 4.4 [328]	81 [307] 4.4 [328]	83 [314] 4.6 [343]	85 [322] 6.5 [485]	92 [348] 5.1 [38]	94 [356] 5.1 [38]	96 [363] 5.3 [395]	98 [371] 7.6 [597]	106 [401] 6 [447]	
	100 [6.9]	GPM [lpm] HP [kw]			61 [231] 5.8 [433]	68 [257] 6 [447]	71 [269] 7.5 [599]		73 [276] 6.8 [507]	80 [303] 7 [522]	83 [314] 8 [597]	82 [310] 8 [597]	86 [326] 8 [597]	93 [352] 8.2 [611]	96 [363] 10.5 [783]	
	125 [8.6]	GPM [lpm] HP [kw]				65 [246] 7 [599]	70 [265] 8.7 [649]			77 [291] 8.3 [619]	82 [310] 10.2 [761]		83 [314] 9.5 [708]	90 [341] 9.7 [723]	95 [360] 12.0 [895]	
43	25 [1.7]	GPM [lpm] HP [kw]	76 [288] 1.8 [134]	79 [299] 2 [149]	83 [314] 2.3 [172]	85 [322] 3 [224]	90 [341] 2 [149]	93 [352] 2.3 [172]	97 [367] 2.8 [209]	99 [375] 3 [224]	105 [397] 2.4 [179]	108 [409] 2.9 [216]	112 [424] 3.3 [246]	114 [432] 3.7 [278]	122 [462] 3 [224]	
	50 [3.4]	GPM [lpm] HP [kw]	62 [235] 2.5 [186]	68 [257] 2.7 [201]	77 [291] 3 [224]	81 [307] 3.7 [276]	76 [288] 3.2 [239]	82 [310] 3.5 [261]	91 [344] 4 [298]	95 [360] 4.2 [313]	91 [344] 4 [298]	97 [367] 4.5 [336]	106 [401] 4.9 [365]	110 [416] 5.3 [395]	108 [409] 5 [373]	
	100 [6.9]	GPM [lpm] HP [kw]			62 [235] 5.5 [411]	72 [273] 6.2 [462]			76 [288] 7 [522]	86 [326] 7.2 [527]		73 [276] 8 [597]	91 [344] 8.4 [626]	101 [382] 8.8 [656]		
	125 [8.6]	GPM [lpm] HP [kw]				56 [212] 6.6 [492]	69 [261] 7.3 [544]			70 [265] 8.5 [634]	83 [314] 8.7 [649]		85 [322] 9.5 [708]	98 [371] 9.9 [738]		
48	25 [1.7]	GPM [lpm] HP [kw]	94 [356] 2.5 [186]	97 [367] 2.8 [209]	101 [382] 3.2 [239]	103 [390] 3.8 [283]	111 [420] 3 [224]	114 [432] 3.4 [254]	118 [447] 3.9 [291]	120 [454] 4.6 [343]	129 [488] 3.7 [276]	132 [500] 3.9 [291]	136 [515] 4.7 [352]	138 [522] 5.7 [425]	149 [564] 4.4 [328]	
	50 [3.4]	GPM [lpm] HP [kw]			93 [352] 4.7 [352]	99 [375] 5.3 [395]		103 [390] 5.1 [38]	110 [416] 5.6 [418]	116 [439] 6.3 [477]	121 [458] 5.9 [44]	128 [485] 6.7 [50]	134 [507] 7.7 [574]	133 [503] 6.8 [507]		
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58	25 [1.7]	GPM [lpm] HP [kw]	116 [439] 2.7 [201]	119 [450] 2.7 [201]	121 [458] 2.8 [209]	123 [466] 4.8 [358]	136 [515] 4.3 [321]	139 [526] 4.3 [321]	141 [534] 4.6 [343]	143 [541] 7 [522]	157 [594] 5 [373]	160 [606] 5 [373]	162 [613] 5.5 [411]	164 [621] 9.8 [731]	181 [685] 6 [447]	
	50 [3.4]	GPM [lpm] HP [kw]	106 [401] 5.6 [418]	114 [432] 5.6 [418]	120 [454] 5.7 [425]	122 [462] 7.7 [574]	126 [477] 6.3 [477]	134 [507] 6.3 [477]	140 [507] 6.6 [492]	142 [538] 9 [671]	147 [556] 7.3 [544]	155 [587] 7.3 [544]	161 [609] 7.8 [582]	163 [617] 12.1 [902]	171 [647] 8.7 [649]	
	100 [6.9]	GPM [lpm] HP [kw]			117 [443] 9.4 [701]	121 [458] 11.4 [85]			137 [519] 11 [82]	141 [534] 13.4 [999]			158 [598] 12.6 [94]	162 [613] 16.9 [126]		
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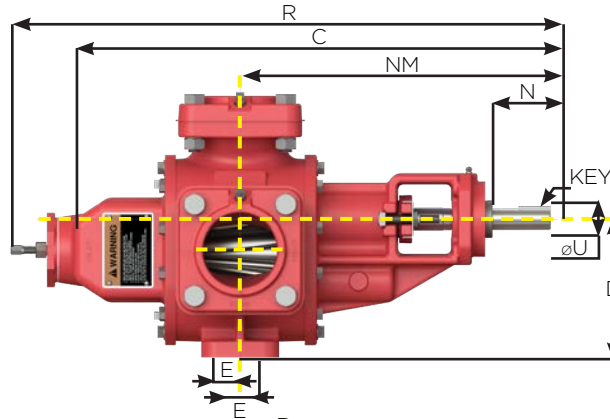
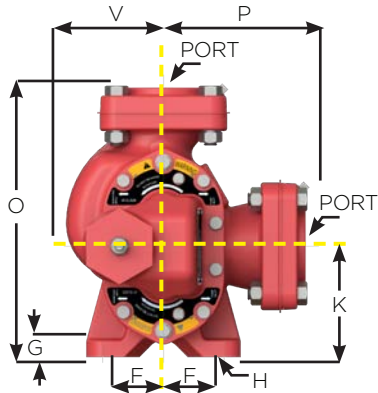
# GEAR REDUCTION (GHB UNIT)

380 RPM			445 RPM				545 RPM				750 RPM				SIZE
100	1000	10,000	30	100	1000	10,000	30	100	1000	10,000	30	100	1000	10,000	Pump
41 [155] 1.1 [1.82]	42 [159] 1.5 [1.12]	42 [159] 2.3 [1.72]	47 [178] 1.4 [1.04]	48 [181] 1.4 [1.04]	49 [185] 2.0 [1.49]		58 [220] 1.9 [1.42]	59 [223] 1.9 [1.42]	60 [227] 2.7 [2.01]		80 [303] 2.8 [2.09]	81 [307] 2.8 [2.09]	82 [310] 3.8 [2.83]		11
40 [151] 1.7 [1.27]	42 [159] 2.1 [1.57]	42 [159] 2.9 [2.16]	45 [170] 2.1 [1.57]	47 [178] 2.1 [1.57]	49 [185] 2.6 [1.94]		56 [212] 2.7 [2.01]	58 [223] 2.7 [2.01]	60 [227] 3.5 [2.61]		78 [295] 3.9 [2.91]	80 [303] 3.9 [2.91]	82 [310] 4.9 [3.65]		
38 [144] 2.9 [2.16]	41 [155] 3.3 [2.46]	42 [159] 4.1 [3.06]	40 [151] 3.5 [2.61]	45 [170] 3.5 [2.61]	48 [182] 4.0 [2.98]		51 [193] 4.4 [3.28]	56 [212] 4.4 [3.28]	59 [223] 5.2 [3.88]		73 [276] 6.3 [4.7]	78 [295] 6.3 [4.7]	81 [307] 7.3 [5.44]		
37 [140] 3.5 [2.61]	41 [155] 3.9 [2.91]	42 [159] 4.7 [3.5]		44 [167] 4.2 [3.13]	48 [182] 4.7 [3.5]		48 [181] 5.4 [4.03]	55 [208] 5.4 [4.03]	59 [223] 6.2 [4.62]		70 [265] 7.5 [5.59]	77 [291] 7.5 [5.59]	81 [307] 8.5 [6.34]		
62 [235] 1.3 [1.97]	63 [238] 1.9 [1.42]	64 [242] 3.3 [2.46]	71 [269] 1.7 [1.27]	73 [276] 1.7 [1.27]	74 [280] 2.5 [1.86]		88 [333] 2.3 [1.72]	90 [341] 2.3 [1.72]	91 [344] 3.6 [2.68]		123 [466] 3.5 [2.61]	125 [473] 3.5 [2.61]	126 [477] 6.0 [4.47]		
60 [227] 2.3 [1.72]	63 [238] 2.9 [2.16]	64 [242] 4.3 [3.21]	66 [250] 2.9 [2.16]	71 [269] 2.9 [2.16]	74 [280] 3.7 [2.76]		83 [314] 3.6 [2.68]	88 [333] 3.6 [2.68]	91 [344] 4.9 [3.65]		118 [447] 5.4 [4.03]	123 [466] 5.4 [4.03]	126 [477] 7.9 [5.89]		17
56 [212] 4.2 [3.13]	62 [235] 4.8 [3.58]	63 [238] 6.2 [4.62]	63 [238] 5.0 [3.73]	67 [254] 5.0 [3.73]	73 [276] 5.8 [4.33]		80 [303] 6.3 [4.7]	84 [318] 6.3 [4.7]	90 [341] 7.6 [5.67]		115 [435] 9.0 [6.71]	119 [450] 9.0 [6.71]	125 [473] 11.5 [8.58]		
54 [204] 5.0 [3.73]	61 [231] 5.6 [4.18]	63 [238] 7.0 [5.22]	63 [238] 6.0 [4.47]	65 [246] 6.0 [4.47]	72 [273] 6.8 [5.07]		80 [303] 7.5 [5.59]	82 [310] 7.5 [5.59]	89 [337] 8.8 [6.56]		115 [435] 10.8 [8.05]	117 [443] 10.8 [8.05]	124 [469] 13.3 [9.92]		
81 [307] 2.2 [1.64]	83 [314] 3.0 [2.24]	83 [314] 4.3 [3.21]	94 [356] 2.7 [2.01]	95 [360] 2.7 [2.01]	97 [367] 3.5 [2.61]		116 [439] 3.2 [2.39]	117 [443] 3.2 [2.39]	119 [450] 4.4 [3.28]		162 [613] 5.1 [3.8]	163 [617] 5.1 [3.8]	165 [625] 7.2 [5.37]		
80 [303] 3.3 [2.46]	82 [310] 4.1 [3.06]	83 [314] 5.4 [4.03]	92 [348] 4.1 [3.06]	94 [356] 4.1 [3.06]	96 [363] 4.9 [3.65]		114 [432] 4.8 [3.58]	116 [439] 4.8 [3.58]	118 [447] 6.0 [4.47]		161 [609] 7.3 [5.44]	162 [613] 7.3 [5.44]	164 [621] 9.4 [7.01]		
78 [295] 5.7 [4.25]	81 [307] 6.5 [4.85]	83 [314] 7.8 [5.82]	86 [326] 6.8 [5.07]	92 [348] 6.8 [5.07]	95 [360] 7.6 [5.67]		108 [409] 8.2 [6.11]	114 [432] 8.2 [6.11]	117 [443] 9.4 [7.01]		154 [583] 12.0 [8.95]	160 [606] 12.0 [8.95]	163 [617] 14.1 [10.51]		22
77 [291] 6.9 [5.15]	81 [307] 7.7 [5.74]	83 [314] 9.0 [6.71]	84 [318] 8.3 [6.19]	91 [344] 8.3 [6.19]	95 [360] 9.1 [6.79]		106 [401] 10.2 [7.61]	113 [428] 10.2 [7.61]	117 [443] 11.4 [8.5]		152 [575] 14.7 [10.96]	159 [602] 14.7 [10.96]	163 [617] 16.8 [12.53]		

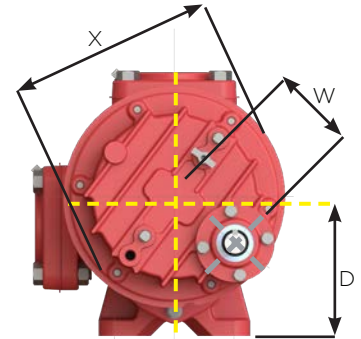
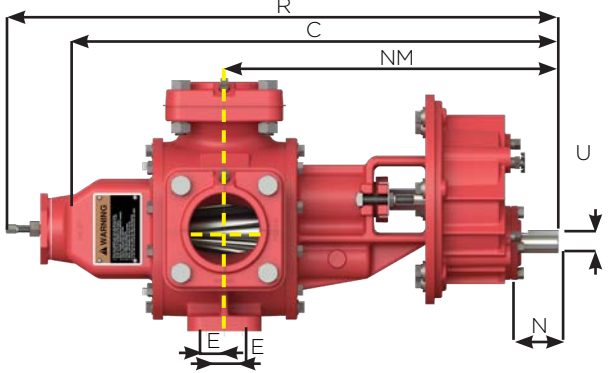
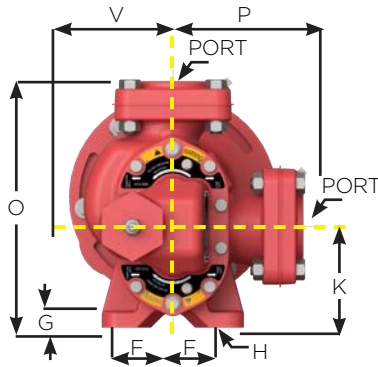
309 RPM			360 RPM				410 RPM				609 RPM				SIZE
100	1000	10,000	30	100	1000	10,000	30	100	1000	10,000	30	100	1000	10,000	Pump
91 [344] 2.3 [1.72]	95 [360] 2.8 [2.09]	99 [375] 3.4 [2.54]	104 [394] 2.8 [2.09]	107 [405] 3 [2.24]	111 [420] 3.6 [2.68]	115 [435] 4.3 [3.21]	120 [454] 3.5 [2.61]	123 [466] 3.7 [2.76]	127 [481] 4.3 [3.21]	131 [496] 5.2 [3.88]	184 [697] 6 [4.47]	187 [708] 6.7 [5.0]	191 [723] 8 [5.97]	195 [738] 10 [7.46]	32
81 [307] 3.7 [2.76]	89 [337] 4.2 [3.13]	93 [352] 4.8 [3.58]	91 [344] 4.5 [3.36]	97 [367] 4.7 [3.5]	106 [401] 5.3 [3.95]	110 [416] 6 [4.47]	107 [405] 5.5 [4.1]	113 [428] 5.7 [4.25]	122 [462] 6.3 [4.7]	126 [477] 7.2 [5.37]	171 [647] 9 [6.71]	177 [670] 9.7 [7.23]	185 [700] 11 [8.2]	189 [715] 13 [9.69]	
60 [227] 6.7 [5.0]	78 [295] 7.2 [5.37]	86 [326] 7.8 [5.82]	65 [246] 7.5 [5.59]	76 [288] 7.7 [5.74]	94 [356] 8.3 [6.19]	102 [386] 9 [6.71]	81 [307] 9.5 [7.08]	92 [348] 9.7 [7.23]	110 [416] 10.3 [7.68]	118 [447] 11.2 [8.35]	145 [549] 14.5 [10.81]	156 [590] 15.2 [11.33]	174 [659] 16.5 [12.3]	182 [689] 18.5 [13.8]	
	70 [265] 8.7 [6.49]	83 [314] 9.3 [6.94]	45 [170] 9.2 [6.86]	65 [246] 9.4 [7.01]	86 [326] 10 [7.46]	99 [375] 10.7 [7.98]	81 [307] 11.5 [8.58]	92 [348] 12.1 [9.02]	102 [386] 13 [9.69]	115 [435] 15 [9.69]		145 [549] 17.8 [13.27]	166 [628] 19.1 [14.24]	179 [678] 21.1 [15.73]	
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108 [409] 6 [4.47]	110 [416] 6.2 [4.62]	112 [424] 9.1 [6.79]	125 [473] 7.1 [5.29]	127 [481] 7.1 [5.29]	129 [488] 7.5 [5.99]	131 [496] 11.2 [8.35]	144 [545] 8.4 [6.26]	146 [553] 8.4 [6.26]	148 [560] 8.9 [6.64]	217 [821] 14.2 [10.59]	219 [829] 14.2 [10.59]	221 [837] 15.2 [11.33]	221 [837] 15.2 [11.33]	221 [837] 15.2 [11.33]	35
100 [379] 9.4 [7.01]	107 [405] 9.6 [7.16]	110 [416] 12.5 [9.32]			126 [477] 11.4 [8.5]	129 [488] 15.1 [11.26]			145 [549] 13.4 [9.99]			218 [825] 21.8 [16.26]		218 [825] 21.8 [16.26]	
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125 [473] 3.2 [2.39]	128 [485] 3.7 [2.76]	131 [496] 4.4 [3.28]	144 [545] 3.7 [2.76]	147 [556] 3.9 [2.91]	150 [568] 4.7 [3.5]	153 [579] 5.6 [4.18]	165 [625] 4.4 [3.28]	168 [636] 4.9 [3.65]	172 [651] 5.7 [4.25]	174 [659] 7 [5.22]	251 [950] 8.2 [6.11]	254 [961] 9 [6.71]	257 [973] 11 [8.2]	260 [984] 14 [10.44]	
114 [432] 5.2 [3.88]	123 [466] 6.4 [4.77]	127 [481] 6.4 [4.77]	130 [492] 5.8 [4.33]	136 [515] 5.3 [3.95]	145 [549] 6.8 [5.07]	149 [564] 7.7 [5.74]	151 [572] 7.1 [5.29]	156 [594] 8.4 [6.26]	166 [628] 8.4 [6.26]	170 [644] 9.7 [7.23]	237 [897] 12 [8.95]	243 [920] 12.8 [9.54]	252 [954] 14.8 [11.04]	256 [969] 17.8 [13.27]	
90 [341] 9.2 [6.86]	108 [409] 9.7 [7.23]	118 [447] 10.4 [7.76]	95 [360] 10.6 [7.99]	112 [424] 10.8 [8.05]	130 [492] 11.6 [8.65]	140 [530] 12.5 [9.32]	116 [439] 12.2 [9.1]	133 [503] 12.7 [9.47]	151 [572] 13.5 [10.07]	161 [609] 14.8 [11.04]	202 [765] 19.4 [14.47]	219 [829] 20.2 [15.08]	237 [897] 22.2 [16.55]	247 [935] 25.2 [18.79]	43
	102 [386] 11.2 [8.35]	115 [435] 11.9 [8.87]	55 [208] 13.1 [9.77]	97 [367] 13.3 [9.92]	124 [469] 14.1 [10.51]	137 [519] 15 [11.9]		118 [447] 15.4 [11.48]	145 [549] 16.2 [12.08]	158 [598] 17.5 [13.05]	162 [613] 23.2 [17.3]	204 [772] 24 [17.9]	231 [874] 26 [19.39]	244 [924] 29 [21.63]	
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179 [678] 8.7 [6.49]	185 [708] 9.4 [7.01]	187 [708] 13.7 [10.22]	202 [765] 10.1 [7.53]	210 [795] 10.4 [7.76]	216 [818] 11.5 [8.58]	218 [825] 16.8 [12.53]	233 [882] 11.9 [8.87]	241 [912] 12 [8.95]	247 [935] 13.8 [10.29]	249 [943] 21.6 [16.11]		368 [1393] 24.3 [18.12]		368 [1393] 24.3 [18.12]	
	182 [689] 19.2 [14.11]	186 [704] 19.2 [14.32]			213 [806] 17.8 [13.27]	217 [821] 23.1 [17.23]			244 [924] 21 [15.66]	248 [939] 28.8 [21.48]		365 [1382] 35 [26.1]		365 [1382] 35 [26.1]	
	180 [681] 17.8 [13.27]	185 [700] 22.1 [16.48]			211 [799] 21 [15.66]	216 [818] 26.3 [19.61]			242 [916] 24.7 [18.42]	247 [935] 32.5 [24.24]		363 [1374] 40.5 [30.2]		363 [1374] 40.5 [30.2]	

# 3600 SERIES 90° PORTS

H & HB

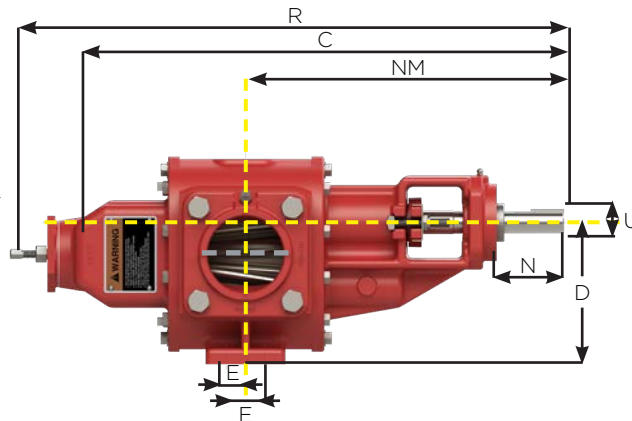
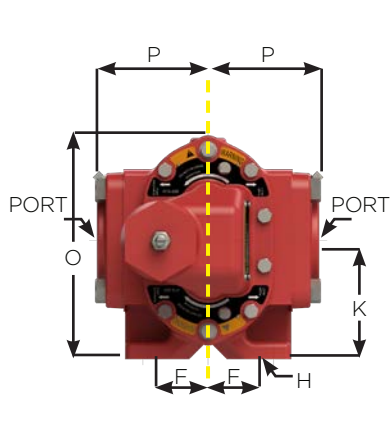


GHB

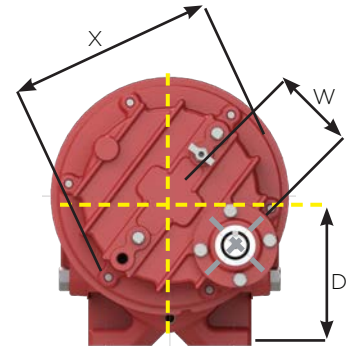
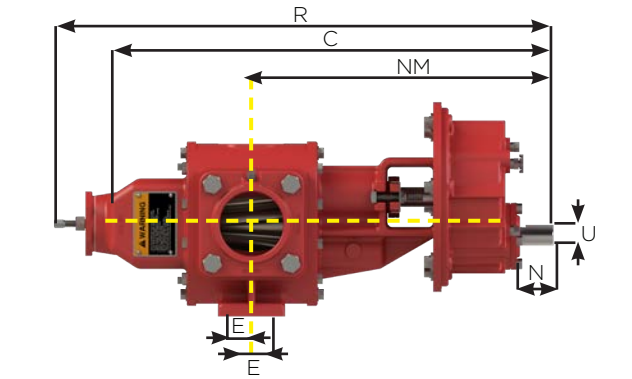
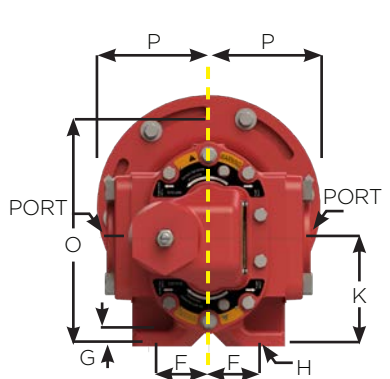


# 4600 SERIES Thru Ports 180°

H & HB



GHB



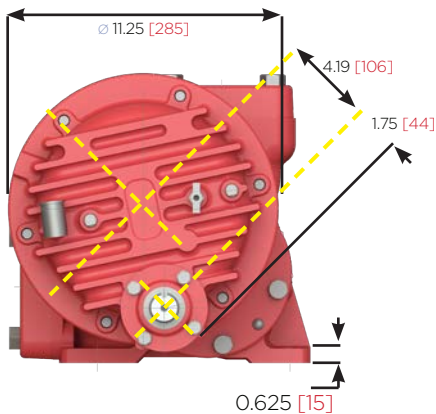
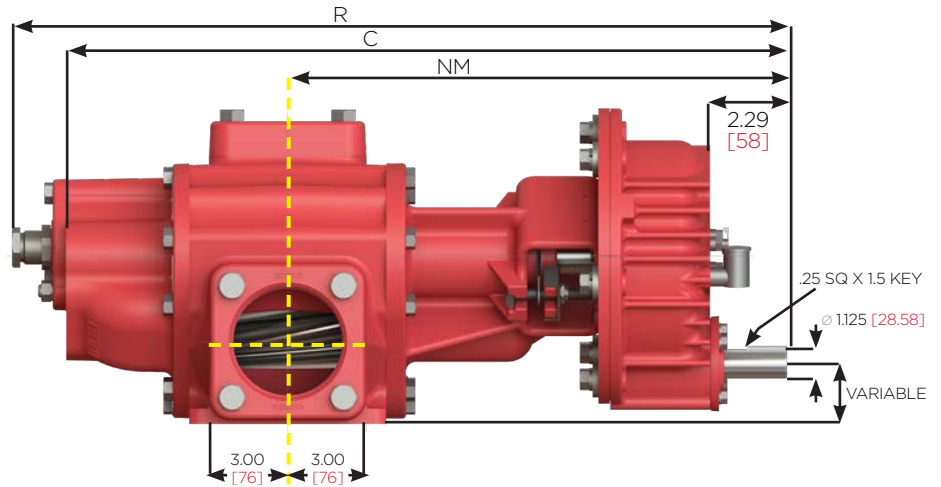
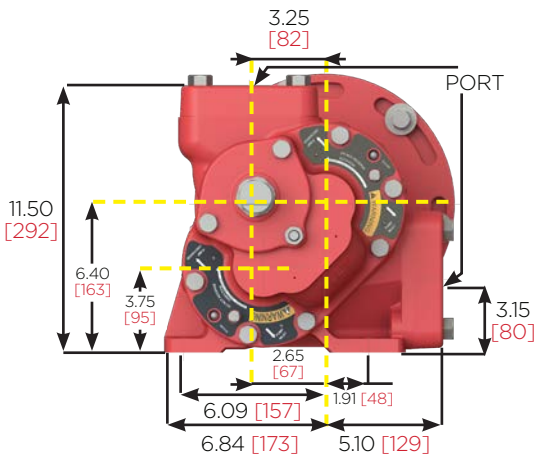
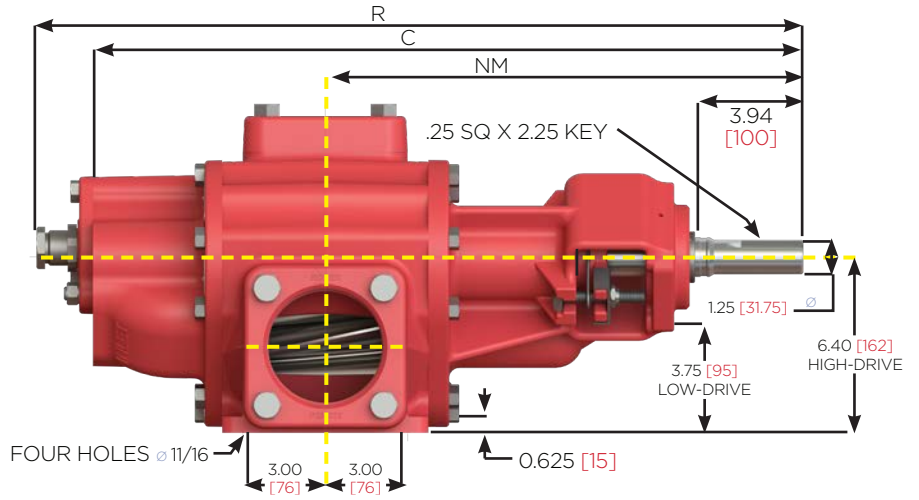
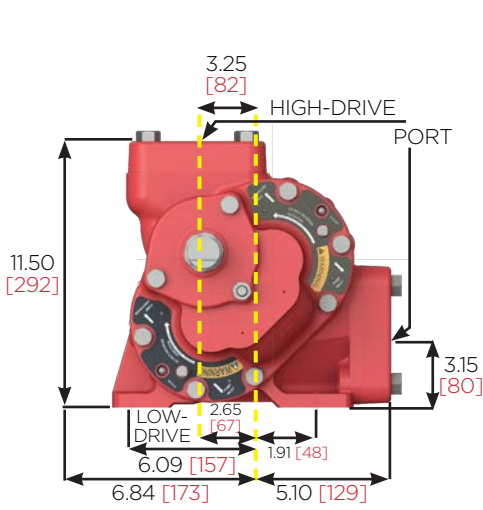
# 3600 SERIES 90° PORTS

IN [mm]	3600 SERIES		BV	C	D		E	F	G	H HOLE DIAMETER	K	N	NM	O	P	R	U	V	W	X	KEY	PORTS						
					HIGH	LOW																						
NO OUTBOARD BEARING	11	H, HRV & HBV (SPEC G)	20.57 [522]	15.97 [405]	6.44 [163]	0.88 [22]	2.75 [69]	0.75 [19]	0.56 [14]	5 [127]	2.58 [65]	10.34 [262]	10.75 [273]	3.62 [91]	19.57 [497]	1.06 [26.9]	4 [101]	N/A	N/A	.25 SQ. x 1.50	2 NPT TAPPED							
		H, HFRV & HFBV (SPEC G)																			2 NPT FLANGE							
	17	H, HRV & HBV (SPEC G)	21.33 [542]	16.72 [424]																	1.83 [46]	2.2 [55]	11.46 [291]	10.75 [273]	3.62 [91]	20.33 [516]	4.41 [112]	3 NPT FLANGE
		H, HFRV & HFBV (SPEC G)																										
	22	H, HFRV & HFBV (SPEC G)	23.19 [589]	18.59 [472]																	2.2 [55]	11.46 [291]	12.16 [308]	6.41 [162]	22.19 [563]	4.41 [112]	3 NPT FLANGE	
	35	H & HRV	N/A	19.53 [496]																	9.25 [234]	5.19 [131]	1.5 [38]	0.69 [17]	9.25 [234]	2.15 [54]	11.96 [303]	15.63 [397]
H & HFRV		3 NPT FLANGE																										
58	H & HFRV (SPEC G)	N/A	22.51 [571]	9.25 [234]	5.19 [131]	1.5 [38]	0.69 [17]	9.25 [234]	2.29 [58]	13.52 [343]	17.35 [441]	8.1 [205]	26.02 [660]	6.28 [159]	4 NPT FLANGE													
WITH OUTBOARD BEARING	11	HB, HBRV & HBBV	23.92 [608]	19.32 [490]	6.44 [163]	0.88 [22]	2.75 [69]	0.75 [19]	0.56 [14]	5 [127]	3.45 [87]	13.69 [347]	10.75 [273]	3.62 [91]	22.92 [582]	1 [25.4]	4 [101]	N/A	N/A	.25 SQ x 1.50	2 NPT TAPPED							
		HB, HBRV & HBBV																			2 NPT FLANGE							
	17	HB, HBRV & HBBV	24.67 [627]	20.07 [509]																	2.7 [68]	14.4 [366]	12.16 [308]	6.41 [162]	25.17 [639]	4.41 [112]	3 NPT FLANGE	
		HB, HBRV & HBBV																										2 NPT TAPPED
	22	HB, HBRV & HBBV	26.17 [665]	21.57 [547]																	14.4 [366]	12.16 [308]	6.41 [162]	25.17 [639]	4.41 [112]	3 NPT FLANGE		
	35	HB & HBRV	N/A	23.69 [601]																	9.25 [234]	5.19 [131]	1.5 [38]	0.69 [17]	9.25 [234]	3.25 [82]	16.12 [409]	16.66 [423]
HB & HBRV		3 NPT FLANGE																										
58	HB & HBRV	N/A	26.53 [673]	9.25 [234]	5.19 [131]	1.5 [38]	0.69 [17]	9.25 [234]	17.54 [445]	17.35 [440]	8.1 [205]	30.04 [763]	6.28 [159]	4 NPT FLANGE														
WITH GEAR REDUCTION UNIT	11	GHB, GHBRV & GHBBV	25.07 [637]	20.47 [519]	6.44 [163]	0.88 [22]	2.75 [69]	0.75 [19]	0.56 [14]	5 [127]	1.74 [44]	14.83 [376]	10.75 [273]	3.62 [91]	24.07 [611]	1 [25.4]	4 [101]	3.523 [89]	10.24 [260]	.25 SQ x 1.50	2 NPT TAPPED							
		GHB, GHBRV & GHBBV																			2 NPT FLANGE							
	17	GHB, GHBRV & GHBBV	26.57 [675]	21.97 [558]																	15.58 [395]	15.54 [423]	10.75 [273]	3.62 [91]	25.57 [649]	4.41 [112]	2 NPT TAPPED	
		GHB, GHBRV & GHBBV																										2 NPT FLANGE
	22	GHB, GHBRV & GHBBV	28.07 [713]	23.47 [596]																	16.33 [414]	12.16 [308]	6.41 [162]	27.07 [687]	4.41 [112]	3 NPT FLANGE		
	35	GHB & GHBRV	N/A	25.88 [657]																	9.25 [234]	5.19 [131]	1.5 [38]	0.69 [17]	9.25 [234]	2.29 [58]	18.31 [465]	16.66 [423]
GHB & GHBRV		3 NPT FLANGE																										
58	GHB & GHBRV	N/A	28.72 [729]	9.25 [234]	5.19 [131]	1.5 [38]	0.69 [17]	9.25 [234]	19.73 [501]	17.35 [440]	8.1 [205]	32.23 [818]	6.28 [159]	4 NPT FLANGE														

# 4600 SERIES Thru Ports 180°

I2 [mm]	4600 SERIES		BV	C	D		E	F	G	H HOLE DIAMETER	K	N	NM	O	P	R	U	V	W	X	KEY	PORTS							
					HIGH	LOW																							
NO OUTBOARD BEARING	11	HF, HFRV & HFBV (SPEC G)	20.57 [522]	15.97 [405]	6.44 [163]	0.88 [22]	2.75 [69]	0.62 [15]	0.56 [14]	5 [127]	2.58 [65]	10.34 [262]	9.44 [239]	4.17 [105]	19.57 [497]	1.06 [26]	N/A	N/A	N/A	.25 SQ. x 1.50	2 NPT TAPPED								
		HF, HFRV & HFBV (SPEC G)																			3 NPT FLANGE								
	22	HF, HFRV & HFBV (SPEC G)	23.19 [589]	18.59 [472]																	2.2 [55]	11.46 [291]	12.16 [308]	6.41 [162]	22.19 [563]	4.85 [123]	22.19 [563]	1.44 [36]	4 NPT FLANGE
		HF, HFRV & HFBV (SPEC G)																											
58	HF & HFRV (SPEC G)	N/A	22.51 [571]	9.25 [234]	5.19 [131]	1.5 [38]	0.69 [17]	9.25 [234]	2.29 [58]	13.52 [343]	9.25 [234]	8.1 [205]	26.02 [660]	1.44 [36]	4 NPT FLANGE														
WITH OUTBOARD BEARING	11	HB, HBRV & HBBV	23.92 [608]	19.32 [490]	6.44 [163]	0.88 [22]	2.75 [69]	0.62 [15]	0.56 [14]	5 [127]	3.8 [96]	13.69 [347]	5 [127]	4.17 [105]	22.92 [582]	1 [25]	N/A	N/A	N/A	.25 SQ x 1.50	2 NPT TAPPED								
		HB, HBRV & HBBV																			3 NPT FLANGE								
	22	HB, HBRV & HBBV	26.17 [665]	21.57 [547]																	14.4 [366]	12.16 [308]	6.41 [162]	25.17 [639]	4.85 [123]	25.17 [639]	4.41 [112]	4 NPT FLANGE	
		HB, HBRV & HBBV																											4 NPT FLANGE
58	HB & HBRV	N/A	26.53 [673]	9.25 [234]	5.19 [131]	1.5 [38]	0.69 [17]	9.25 [234]	3.25 [82]	17.54 [445]	9.25 [234]	8.1 [205]	30.04 [763]	1.25 [32]	4 NPT FLANGE														
WITH REDUCTION UNIT	11	GHB, GHBRV & GHBBV	25.07 [637]	20.47 [519]	6.44 [163]	0.88 [22]	2.75 [69]	0.62 [15]	0.56 [14]	5 [127]	1.74 [44]	14.83 [376]	5 [127]	4.17 [105]	24.07 [611]	1 [25]	N/A	3.523 [89]	10.24 [260]	.25 SQ x 1.50	2 NPT TAPPED								
		GHB, GHBRV & GHBBV																			3 NPT FLANGE								
	22	GHB, GHBRV & GHBBV	28.07 [713]	23.47 [596]																	16.33 [414]	12.16 [308]	6.41 [162]	27.07 [687]	4.85 [123]	27.07 [687]	4.41 [112]	4 NPT FLANGE	
		GHB, GHBRV & GHBBV																											4 NPT FLANGE
58	GHB & GHBRV	N/A	28.72 [729]	9.25 [234]	5.19 [131]	1.5 [38]	0.69 [17]	9.25 [234]	2.29 [58]	19.73 [501]	17.35 [440]	8.1 [205]	32.23 [818]	1.25 [32]	4 NPT FLANGE														

# 3600 SERIES Angled Gears



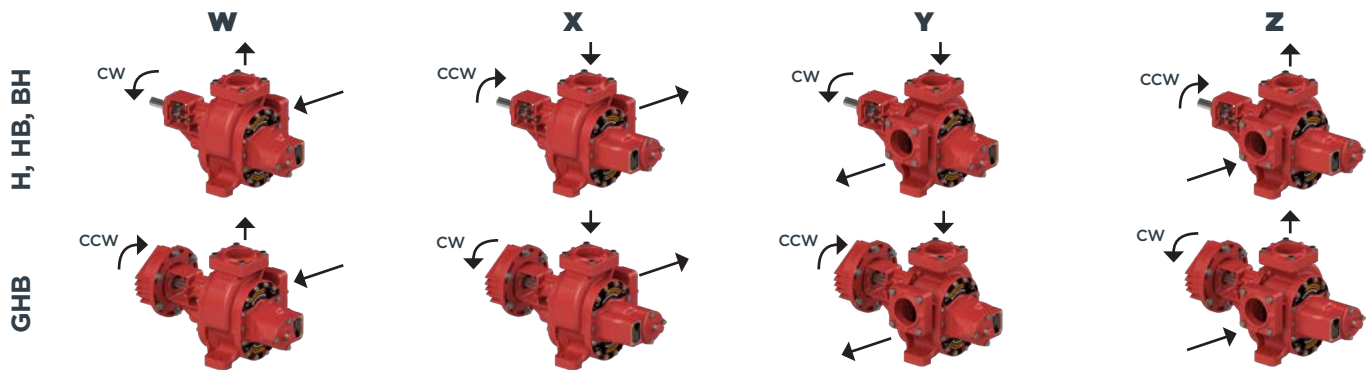
IN [mm]	3600 SERIES ANGLED GEARS		BV	C	NM	R	PORT
NO OUTBOARD BEARING	32	HF, HFRV, & HFBV	25.42 [646]	20.48 [520]	12.25 [311]	21.40 [544]	3 NPT FLANGE
	43		27.04 [687]	22.10 [561]	13.07 [332]	23.02 [585]	3 NPT FLANGE
	48		28.23 [717]	23.19 [589]	13.66 [347]	24.21 [615]	4 NPT FLANGE
WITH OUTBOARD BEARING	32	HBF, HBFRV, & HBFV	28.60 [726]	23.67 [601]	15.44 [392]	24.58 [624]	3 NPT FLANGE
	43		30.26 [769]	25.52 [643]	16.29 [414]	26.24 [666]	3 NPT FLANGE
	48		31.95 [812]	27.02 [686]	17.38 [441]	27.93 [709]	4 NPT FLANGE
WITH GEAR REDUCTION UNIT	32	GHBF, GHBFRV, & GHBFV	30.76 [781]	25.82 [656]	17.59 [447]	26.74 [679]	3 NPT FLANGE
	43		32.37 [822]	27.43 [697]	18.40 [467]	28.35 [720]	3 NPT FLANGE
	48		33.57 [853]	28.63 [727]	19.00 [482]	29.55 [751]	4 NPT FLANGE

# DIRECTION OF ROTATION

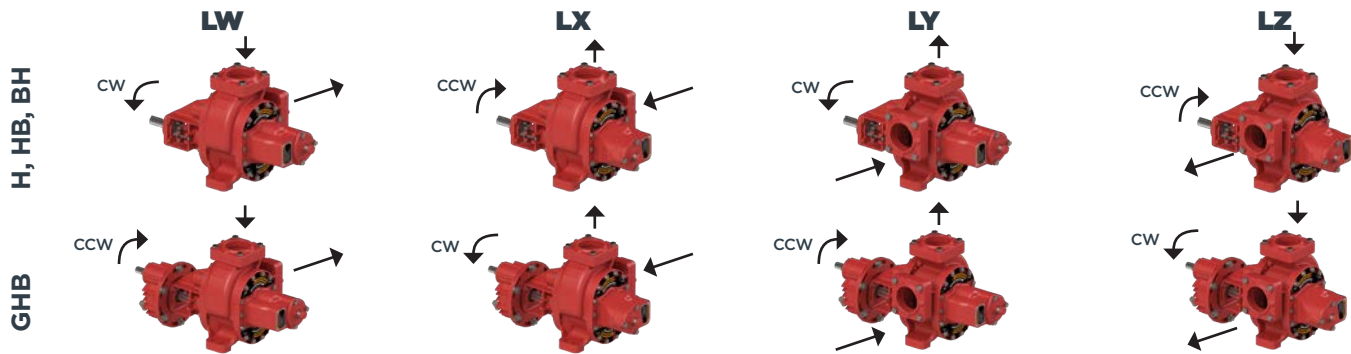
Rotation direction is determined when facing the drive shaft. Pumps can be built to meet your installation requirements. If the pump build is not specified, it will be shipped in the standard “W” configuration. Once in the field, if you need to change the configuration, it can be done easily by disassembling the pump and rebuilding it to your desired arrangement. No new parts are needed.



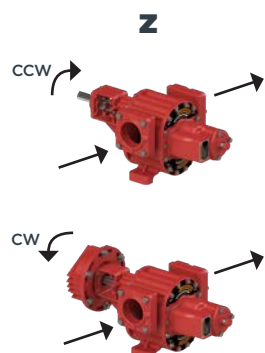
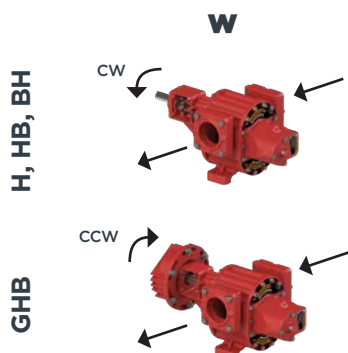
## 3600 SERIES 90° WITH HIGH DRIVE



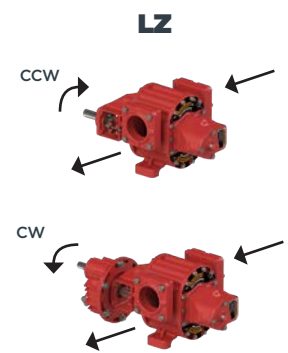
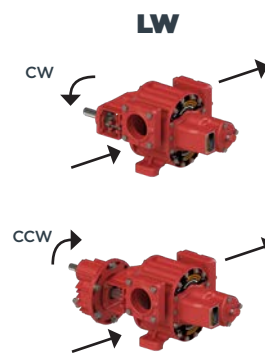
## 3600 SERIES 90° WITH LOW DRIVE



## 4600 SERIES 180° WITH HIGH DRIVE



## 4600 SERIES 180° WITH LOW DRIVE





**THE LEADING FORCE** behind liquids™ since 1857

**Roper Pump Company** is a global supplier of high quality positive displacement pumps, designed to handle a broad range of industrial applications.

In addition to helical gear pumps and progressing cavity pumps, we design and develop numerous custom pumps for customers with unique and demanding applications.

From a small pump company founded in 1857, Roper Pump Company has grown into a technological leader. With a large installed base, we have both the knowledge and experience to help you solve your most challenging pumping problems...and our strong global distribution network ensures that your needs are met on time, every time.



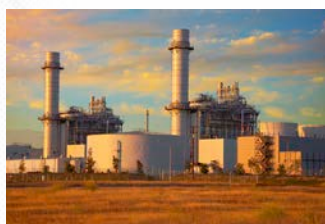
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With over a century of experience in liquid cargo transfer, Roper Pump Company has always been trusted to load and unload your tankers quickly and safely.



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