3600 SERIES
HEAVY DUTY PUMPS

GENERAL PURPOSE PUMPS
FOR MIXING, BLENDING, RECIRCULATING, FIXED & MOBILE TRANSFER

The Roper Pump
Family of Positive Displacement Pumps

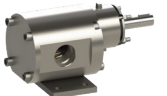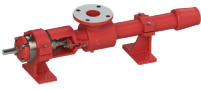|		Typical Applications	Primary Features
	3600	• Mix, circulate, and transfer viscous liquids • Gasoline, asphalt, molasses • Ink, roofing compounds, oils	• Precise tolerances for maximum efficiency • Direct drive or built-on gear reducers • Bi-directional rotation*
	3600 EVO	• Waste oil recycling • Resins and paints • Asphalt sealcoat, molasses-based liquid feed supplements • Condensate and oilfield produced water	• Extremely wear-resistant pump internals • Proprietary ROPLATE™ coated shafts • Severe-duty bushing material
	Z	• Industrial applications requiring a special mechanical seal	• ANSI Flanges • Many parts interchangeable with 3600 Series • Direct drive or built-on gear reducers • Bi-directional rotation*
	3800	• Oil fields including light & heavy crude oil • Kerosene mixtures, condensates and hot oils	• Sealed ball bearings • Quadruple grease purged lip seals • Helical gears for quiet operation • Bi-directional rotation*
	Bulk	• Fuels, solvents, petrochemicals • Residual fuel oils, molasses, resins • Tankers, barges, process plants, refineries	• Large ports (6" and 8" available) allow more efficient transfer of fluids • Through port design allows for lower inlet and outlet losses
	5600	• Hydroseeding • Grouting, seal coating, oil and sand • Wastewater, waste oil, sludge, slurries • Brine, paper pulp, fertilizer feeds	• Rubber covered gears • Bi-directional rotation* • Abrasive applications; up to pea size particles
	A	• Pressure lubrication • Hydraulic service • General transfer applications	• Operates at motor speeds • Bi-directional rotation* • Close coupled capability
	2835	• Roofing compounds • Molasses • Feed supplements	• Operates at standard motor speeds • Large ports allow easier fluid entry • Built-in relief valve
	V	• Hazardous liquid transfer • "Zero leakage" applications due to environmental concerns • Chemical and petroleum applications	• Mag-drive, seal-less design eliminates leakage, seal repair costs, and down time • C-face mount eliminates misalignment • Bi-directional rotation and self-priming*
	F	• Hydraulic power for lifts, machine actuation, fuel burners, and blenders • General transfer of oil and petroleum fluids	• 2 inlet ports, 2 outlet ports allow multiple piping arrangements (except F150 - F300) • High Pressure Range • Maintain pump without pipe removal
	ROC	• Chemical processing • Pharmaceutical industry • Injection or transfer of acids & solvents	• Stainless steel construction • Bi-directional rotation* • Mag-drive, sealless option (X5-03 only)
	9622	• Chemical and transport applications • Corrosive liquid transfer	• 316SS Housing • 17-4 PH SST Gears / Shafts • Built-in relief valve
	PC	• Viscous, abrasive and solids-containing liquids • Transfer of wastewater sludge, polymers, grouts, paints and adhesives	• Pulsation free pumping • High suction lift capabilities • Ideal for shear sensitive liquids • XERIC metal stator for tough applications

* 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
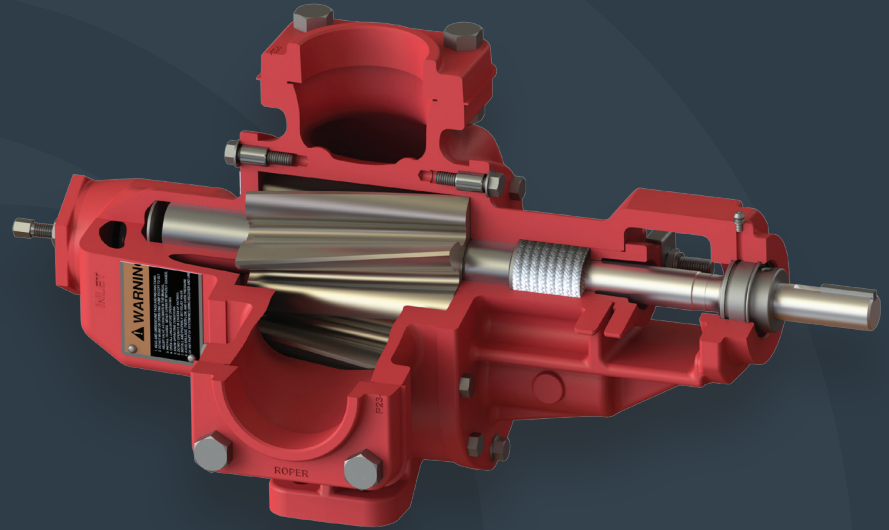
3600 Series pumps operate smoothly and with equal efficiency in either direction of rotation. They effectively handle heavy, viscous materials such as asphalt, molasses, roofing compounds, and printing inks, as well as fuel oils, gasolines, and similar thin liquids.

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.

Ask us about the 3600 EVO pump, which is configured with our proprietary ROPLATE™ coated shafts, severe-duty bushing material, and leak-free seal options.

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

THEORETICAL CAPACITY

Chart: Flow Rate (GPM) [lpm] vs Pump Speed (RPM)

Y-axis: Flow Rate (GPM) [lpm]: 0, 50 [189], 100 [379], 150 [568], 200 [758], 250 [947], 300 [1137], 350 [1326], 400 [1516], 450 [1705], 500 [1895]

X-axis: Pump Speed (RPM): 200, 300, 400, 500, 600, 700, 800, 900

Curves labeled: 3X48, 3X43, 3X58, 3X32, 3X35, 3X22, 3X17, 3X11
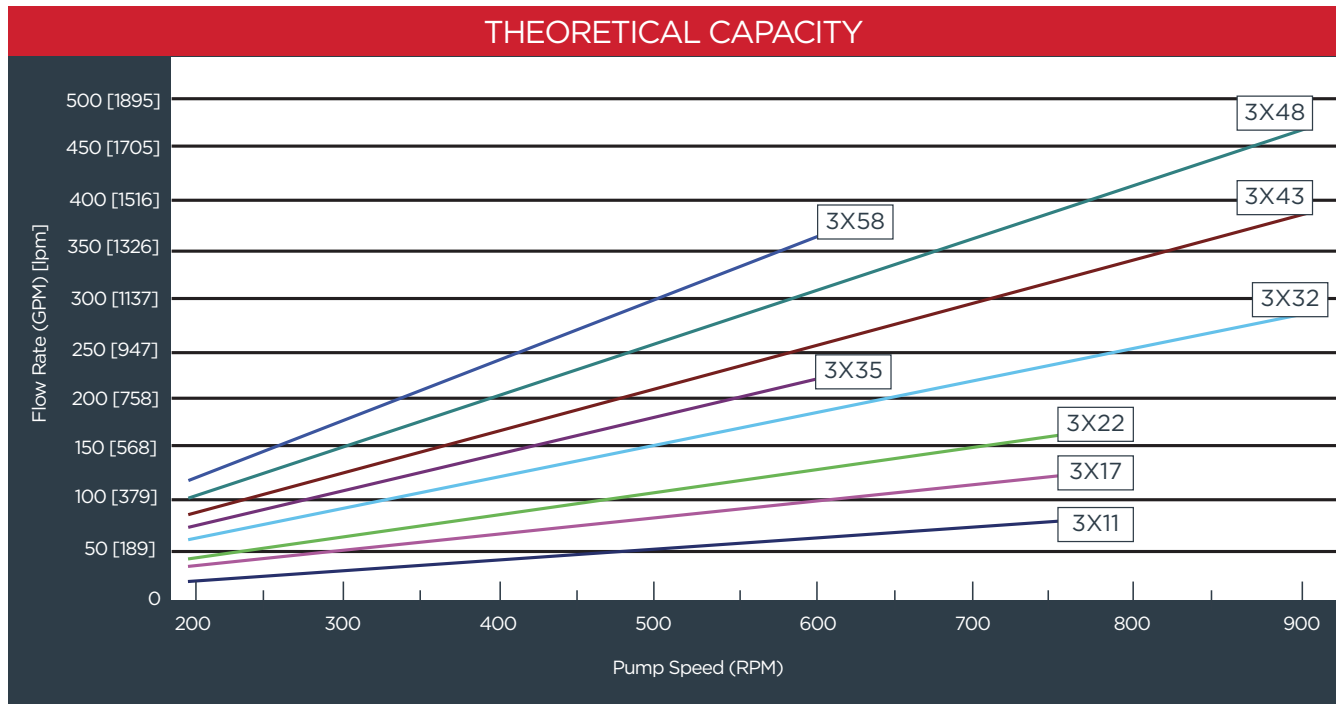
NOMENCLATURE — 3611 G H B F R V

3	Port Location	3 – Right Angle Ports	
		4 – Straight Through Ports	
6	Seal Option	2 – Triple Lip Seal with Packing Backup	
		5 – Triple Lip Seal	
		6 – Packing	
		7 – Mechanical Seal	
		8 – Lip Seal with Ball Bearings	
11	Size	11 – 11 Gal/100 Rev [41.6 L/100 Rev]	35 – 35 Gal/100 Rev [132.5 L/100 Rev]
		17 – 17 Gal/100 Rev [64.4 L/100 Rev]	43 – 43 Gal/100 Rev [162.8 L/100 Rev]
		22 – 22 Gal/100 Rev [83.3 L/100 Rev]	48 – 48 Gal/100 Rev [181.7 L/100 Rev]
		32 – 32 Gal/100 Rev [121.1 L/100 Rev]	58 – 58 Gal/100 Rev [219.6 L/100 Rev]
Configuration*	H	Pump Head without Outboard Ball Bearing	
	HB	Tapped Port Case with Outboard Ball Bearing	
	HBF	Flanged Ports with Outboard Bearing	
	HBFRV	Flanged Ports with Outboard Bearing and Relief Valve	
	HBFBV	Flanged Ports with Outboard Bearing and Bi-Directional Relief Valve	
	GHBFRV	Flanged Ports with Outboard Bearing, Relief Valve, and Gear Reducer	
	GHBFBV	Flanged Ports with Outboard Bearing, Bi-Directional Relief Valve, and Gear Reducer	
	BH	Tapped Ports, No Outboard Bearing, Mounting for Hyd. Drive	
	BHF	Flanged Ports, No Outboard Bearing, Mounting for Hyd. Drive	
	BHFRV	Flanged Ports, No Outboard Bearing, Mounting for Hyd. Drive, Relief Valve	
	BHFBV	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
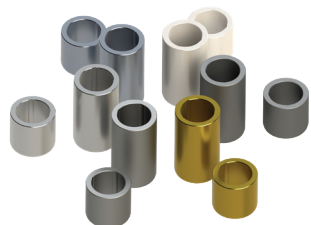
BEARINGS

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 rated to 400°F/204°C.
- Iron rated to 450°F/232°C.
- Standard carbon rated to 320°F/160°C.
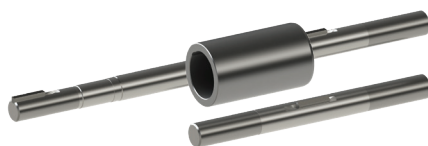
EVO BUSHINGS AND INFUSED SHAFTS

The proprietary EVO bushings and shafts technology allows for greater resistance to general wear or extremely abrasive liquids that tend to wear most pumps out in very short periods. With better lubricating properties than bronze and carbon, and better wear resistance than iron, the EVO setup is perfect for heavy or light liquids with or without abrasives. Always known for our durability, the EVO technology will evolve your maintenance down-time to a minimum.

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.
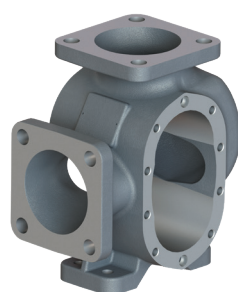
HOUSINGS

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.
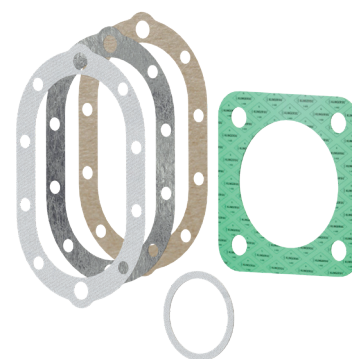

GASKETS

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.
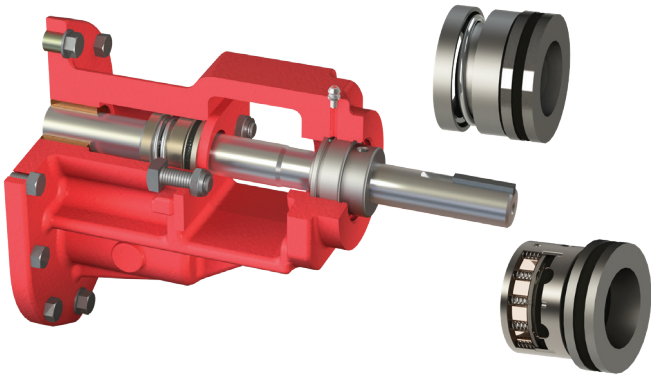
MECHANICAL SEAL

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.
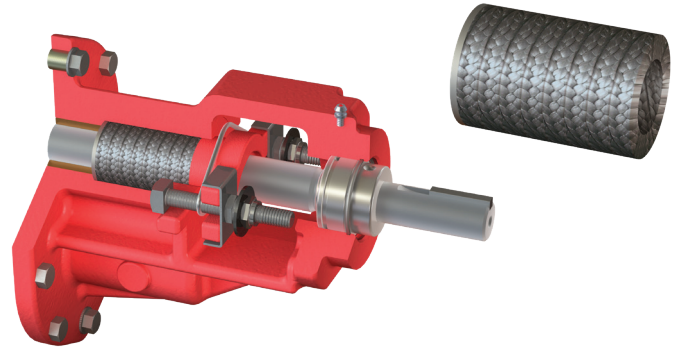
PACKED BOX

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.

WEDGEE™ SEAL
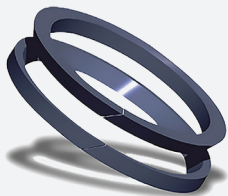
REDUCES LEAKING COMPARED TO STANDARD PACKING SETUPS

TWO-PIECE TEFLON® WEDGE SEAL FITTED TO THE BOTTOM OF THE STUFFING BOX

- Provides close clearance flow restriction at the bottom of the stuffing box.
- Filters out abrasive solids that otherwise would damage the shaft and/or packing.
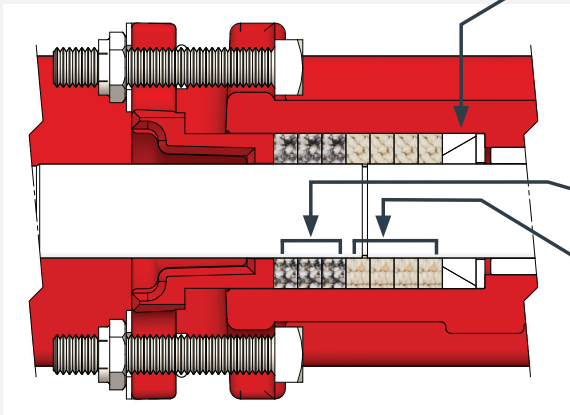
MIXED MEDIA PACKING SETS

Self-lubricating packing next to the gland where effective sealing work is done.

Dense and hard intermediate rings transfer force to keep the two-piece wedge seal closed.
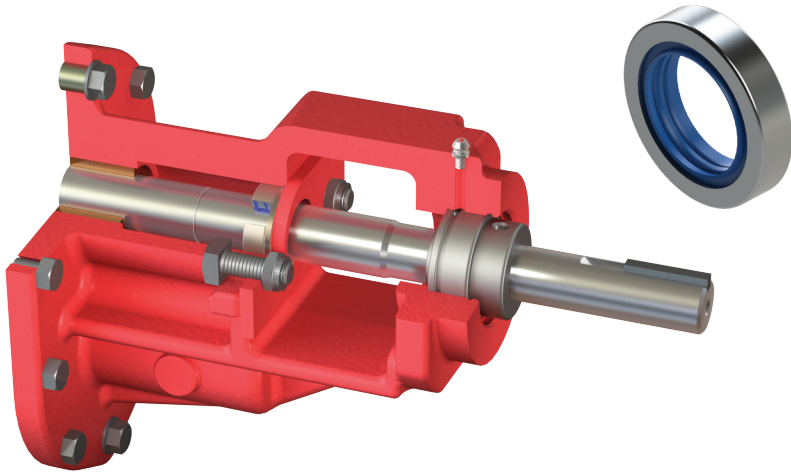
OPTIONAL: TRIPLE LIP SEAL WITH PACKING BACKUP

With the addition of the packing backup, users can tighten the packing down if the TLS fails to control a leak until maintenance can be performed.

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.
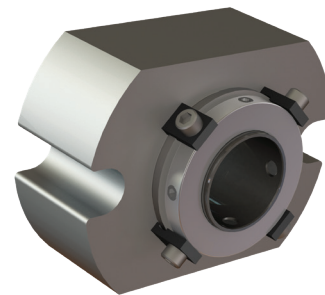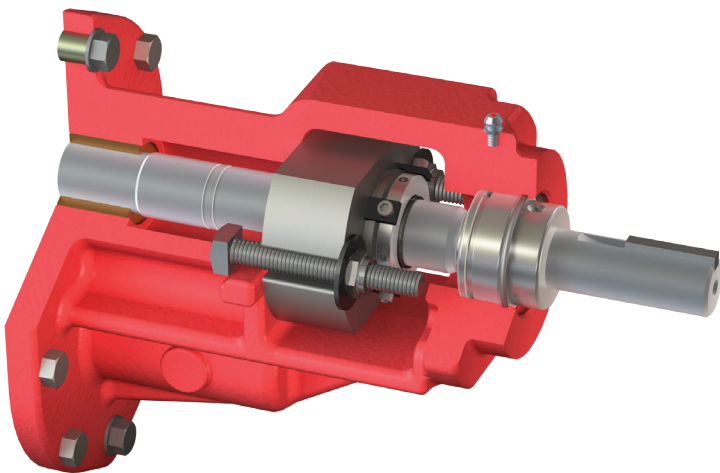
CARTRIDGE SEAL

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 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.
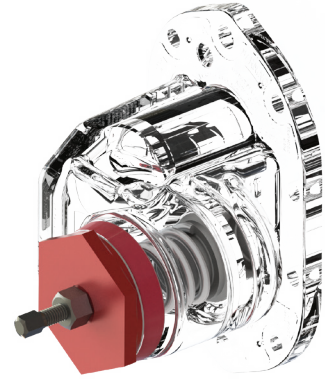
BI-DIRECTIONAL RELIEF VALVE

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.
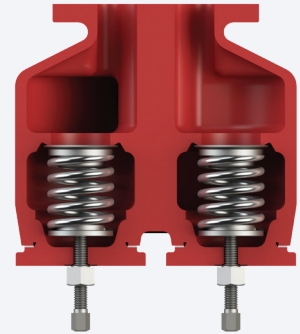
JACKETING

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.
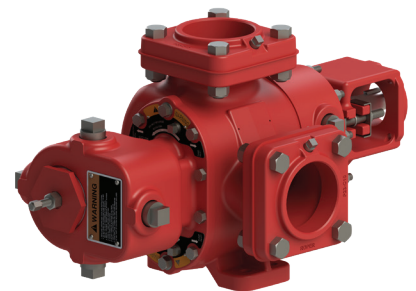
GEAR RATIOS & CAPACITIES FOR GHB UNITS

	MOTOR RPM	GEAR RATIO	PUMP RPM	MAX. PERMISSIBLE HP
11 THROUGH 22	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
32 THROUGH 58	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.
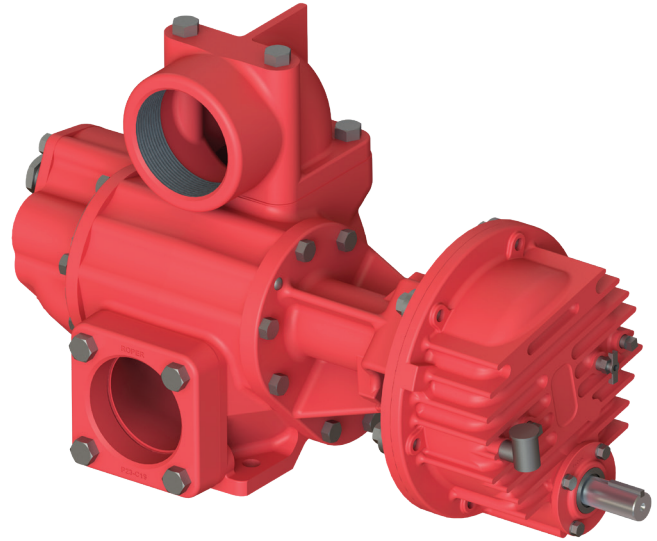
Note: Pump image configured with optional flange short radius elbow.
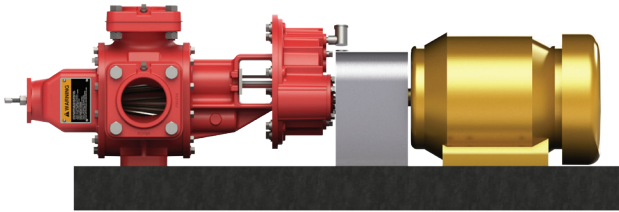
ROPER GHB GEARBOX

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.
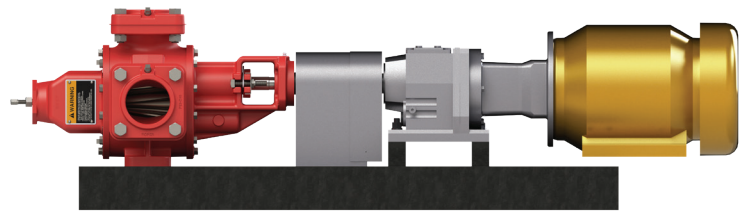
INDUSTRIAL STANDARD

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.

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]	25 [95]	26 [98]	27 [102]	27 [102]	29 [110]	30 [114]	31 [117]	31 [117]	37 [140]	38 [144]	39 [148]	39 [148]	40 [151]
		HP [kw]	.7 [.52]	.7 [.52]	.9 [.57]	1.3 [.97]	.9 [.67]	.9 [.67]	1.2 [.89]	1.5 [1.12]	1.1 [.82]	1.1 [.82]	1.4 [1.04]	2.2 [1.64]	1.1 [.82]
	50 [3.4]	GPM [lpm]	23 [87]	25 [95]	27 [102]	27 [102]	27 [102]	29 [110]	31 [117]	31 [117]	35 [132]	37 [140]	39 [148]	39 [148]	38 [144]
		HP [kw]	1.1 [.82]	1.1 [.82]	1.3 [.97]	1.7 [1.27]	1.3 [.97]	1.3 [.97]	1.5 [1.12]	1.9 [1.42]	1.7 [1.27]	1.7 [1.27]	2.0 [1.49]	2.8 [2.09]	1.7 [1.27]
	100 [6.9]	GPM [lpm]		23 [87]	26 [98]	27 [102]		27 [102]	30 [114]	31 [117]		35 [132]	38 [144]	39 [148]	33 [125]
		HP [kw]		1.9 [1.42]	2.1 [1.57]	2.5 [1.86]		2.2 [1.64]	2.4 [1.79]	3.0 [2.24]		2.8 [2.09]	3.1 [2.31]	3.9 [2.91]	2.9 [2.16]
	125 [8.6]	GPM [lpm]		22 [83]	26 [98]	27 [102]		26 [98]	30 [114]	31 [117]		34 [129]	38 [144]	39 [148]	
		HP [kw]		2.2 [1.64]	2.4 [1.79]	2.8 [2.09]		2.7 [2.01]	2.9 [2.16]	3.5 [2.61]		3.3 [2.46]	3.6 [2.68]	4.4 [3.28]	
17	25 [1.7]	GPM [lpm]	38 [144]	40 [151]	41 [155]	42 [159]	45 [170]	47 [178]	48 [182]	49 [185]	57 [216]	59 [223]	60 [227]	61 [231]	60 [227]
		HP [kw]	.8 [.6]	.8 [.6]	1.1 [.82]	1.8 [1.34]	1.0 [.75]	1.0 [.75]	1.3 [.97]	2.2 [1.64]	1.2 [.89]	1.2 [.89]	1.8 [1.34]	3.0 [2.24]	1.3 [.97]
	50 [3.4]	GPM [lpm]	33 [125]	38 [144]	41 [155]	42 [159]	40 [151]	45 [170]	48 [182]	49 [185]	52 [197]	57 [216]	60 [227]	61 [231]	55 [208]
		HP [kw]	1.4 [1.04]	1.4 [1.04]	1.7 [1.27]	2.4 [1.79]	1.6 [1.19]	1.6 [1.19]	1.9 [1.42]	2.8 [2.09]	2.1 [1.57]	2.1 [1.57]	2.7 [2.01]	3.9 [2.91]	2.3 [1.72]
	100 [6.9]	GPM [lpm]		34 [129]	40 [151]	41 [155]		41 [155]	47 [178]	48 [182]	49 [185]	53 [201]	59 [223]	60 [227]	52 [197]
		HP [kw]		2.5 [1.86]	2.9 [2.16]	3.6 [2.68]		3.0 [2.24]	3.3 [2.46]	4.2 [3.13]	3.8 [2.83]	3.8 [2.83]	4.4 [3.28]	5.6 [4.18]	4.2 [3.13]
	125 [8.6]	GPM [lpm]			39 [148]	41 [155]			46 [174]	48 [182]	49 [185]	51 [193]	58 [220]	60 [227]	52 [197]
		HP [kw]			3.4 [2.54]	4.1 [3.06]			4.0 [2.98]	4.9 [3.65]	4.6 [3.43]	4.6 [3.43]	5.2 [3.88]	6.4 [4.77]	5.0 [3.73]
22	25 [1.7]	GPM [lpm]	52 [197]	53 [201]	55 [208]	55 [208]	60 [227]	61 [231]	63 [238]	63 [238]	76 [288]	77 [291]	79 [299]	79 [299]	80 [303]
		HP [kw]	1.1 [.82]	1.1 [.82]	1.4 [1.04]	1.9 [1.42]	1.3 [.97]	1.3 [.97]	1.7 [1.27]	2.5 [1.86]	2.0 [1.49]	2.0 [1.49]	2.6 [1.94]	3.9 [2.91]	2.2 [1.64]
	50 [3.4]	GPM [lpm]	52 [197]	52 [197]	54 [204]	55 [208]	58 [220]	60 [227]	62 [235]	63 [238]	74 [280]	76 [288]	78 [295]	79 [299]	78 [295]
		HP [kw]	2.0 [1.49]	2.0 [1.49]	2.3 [1.72]	2.8 [2.09]	2.3 [1.72]	2.3 [1.72]	2.6 [1.94]	3.4 [2.54]	3.1 [2.31]	3.1 [2.31]	3.7 [2.76]	5.0 [3.73]	3.3 [2.46]
	100 [6.9]	GPM [lpm]	44 [167]	50 [189]	53 [201]	55 [208]	52 [197]	58 [220]	61 [231]	63 [238]	68 [257]	74 [280]	77 [291]	79 [299]	72 [273]
		HP [kw]	3.5 [2.61]	3.5 [2.61]	3.8 [2.83]	4.3 [3.21]	4.2 [3.13]	4.2 [3.13]	4.5 [3.36]	5.3 [3.95]	5.4 [4.03]	5.4 [4.03]	6.0 [4.47]	7.3 [5.44]	5.7 [4.25]
	125 [8.6]	GPM [lpm]		49 [185]	53 [201]	55 [208]	50 [189]	57 [216]	61 [231]	63 [238]	66 [250]	73 [276]	77 [291]	79 [299]	70 [265]
		HP [kw]		4.2 [3.13]	4.5 [3.36]	5.0 [3.73]	5.2 [3.88]	5.2 [3.88]	5.5 [4.1]	6.3 [4.7]	6.5 [4.85]	6.5 [4.85]	7.1 [5.29]	8.4 [6.26]	6.9 [5.15]

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]	54 [204]	57 [216]	61 [231]	65 [246]	64 [242]	67 [254]	71 [269]	75 [284]	75 [284]	78 [295]	82 [310]	86 [326]	88 [333]
		HP [kw]	1 [.75]	1.2 [.89]	1.4 [1.04]	1.8 [1.34]	1.3 [9.7]	1.5 [1.12]	1.8 [1.34]	2.3 [1.72]	1.7 [1.27]	1.9 [1.42]	2.5 [1.86]	3 [2.24]	2.1 [1.57]
	50 [3.4]	GPM [lpm]	41 [155]	47 [178]	55 [208]	59 [223]	51 [193]	57 [216]	66 [250]	70 [265]	62 [235]	68 [257]	77 [291]	81 [307]	75 [284]
		HP [kw]	2 [1.49]	2.2 [1.64]	2.4 [1.79]	2.8 [2.09]	2.3 [1.72]	2.5 [1.86]	2.8 [2.09]	3.3 [2.46]	3 [2.24]	3.2 [2.39]	3.8 [2.83]	4.3 [3.21]	3.5 [2.61]
	100 [6.9]	GPM [lpm]			44 [167]	52 [197]			54 [204]	62 [235]		47 [178]	65 [246]	73 [276]	
		HP [kw]			4.4 [3.26]	4.8 [3.56]			5.1 [3.8]	5.6 [4.18]		5.9 [4.4]	6.5 [4.85]	7 [5.22]	
	125 [8.6]	GPM [lpm]				49 [185]			46 [174]	59 [223]			57 [216]	70 [265]	
		HP [kw]				5.8 [4.33]			6.6 [4.92]	7.1 [5.29]			8 [5.97]	8.5 [6.34]	
35	25 [1.7]	GPM [lpm]	71 [269]	72 [273]	73 [276]	75 [284]	83 [314]	84 [318]	85 [322]	87 [329]	96 [363]	97 [367]	98 [371]	100 [379]	110 [416]
		HP [kw]	2.6 [1.94]	2.6 [1.94]	2.8 [2.09]	4.3 [3.21]	3.1 [2.31]	3.1 [2.31]	3.3 [2.46]	5.2 [3.88]	3.7 [2.76]	3.7 [2.76]	3.9 [2.91]	6.2 [4.62]	4.4 [3.28]
	50 [3.4]	GPM [lpm]	67 [254]	69 [261]	71 [269]	73 [276]	79 [299]	81 [307]	83 [314]	85 [322]	92 [348]	94 [356]	96 [363]	98 [371]	106 [401]
		HP [kw]	3.7 [2.76]	3.7 [2.76]	3.9 [2.91]	5.4 [4.03]	4.4 [3.28]	4.4 [3.28]	4.6 [3.43]	6.5 [4.85]	5.1 [3.8]	5.1 [3.8]	5.3 [3.95]	7.6 [5.97]	6 [4.47]
	100 [6.9]	GPM [lpm]		61 [231]	68 [257]	71 [269]		73 [276]	80 [303]	83 [314]	82 [310]	86 [326]	93 [352]	96 [363]	96 [363]
		HP [kw]		5.8 [4.33]	6 [4.47]	7.5 [5.59]		6.8 [5.07]	7 [5.22]	8.9 [6.64]	8 [5.97]	8 [5.97]	8.2 [6.11]	10.5 [7.83]	9.4 [7.01]
	125 [8.6]	GPM [lpm]			65 [246]	70 [265]			77 [291]	82 [310]		83 [314]	90 [341]	95 [360]	
		HP [kw]			7.2 [5.37]	8.7 [6.49]			8.3 [6.19]	10.2 [7.61]		9.5 [7.08]	9.7 [7.23]	12.0 [8.95]	
43	25 [1.7]	GPM [lpm]	76 [288]	79 [299]	83 [314]	85 [322]	90 [341]	93 [352]	97 [367]	99 [375]	105 [397]	108 [409]	112 [424]	114 [432]	122 [462]
		HP [kw]	1.8 [1.34]	2 [1.49]	2.3 [1.72]	3 [2.24]	2 [1.49]	2.3 [1.72]	2.8 [2.09]	3 [2.24]	2.4 [1.79]	2.9 [2.16]	3.3 [2.46]	3.7 [2.78]	3 [2.24]
	50 [3.4]	GPM [lpm]	62 [235]	68 [257]	77 [291]	81 [307]	76 [288]	82 [310]	91 [344]	95 [360]	91 [344]	97 [367]	106 [401]	110 [416]	108 [409]
		HP [kw]	2.5 [1.86]	2.7 [2.01]	3 [2.24]	3.7 [2.76]	3.2 [2.39]	3.5 [2.61]	4 [2.98]	4.2 [3.13]	4 [2.98]	4.5 [3.36]	4.9 [3.65]	5.3 [3.95]	5 [3.73]
	100 [6.9]	GPM [lpm]			62 [235]	72 [273]			76 [288]	86 [326]		73 [276]	91 [344]	101 [382]	
		HP [kw]			5.5 [4.1]	6.2 [4.62]			7 [5.22]	7.2 [5.37]		8 [5.97]	8.4 [6.26]	8.8 [6.56]	
	125 [8.6]	GPM [lpm]			56 [212]	69 [261]			70 [265]	83 [314]			85 [322]	98 [371]	
		HP [kw]			6.6 [4.92]	7.3 [5.44]			8.5 [6.34]	8.7 [6.49]			9.5 [7.08]	9.9 [7.38]	
48	25 [1.7]	GPM [lpm]	94 [356]	97 [367]	101 [382]	103 [390]	111 [420]	114 [432]	118 [447]	120 [454]	129 [488]	132 [500]	136 [515]	138 [522]	149 [564]
		HP [kw]	2.5 [1.86]	2.8 [2.09]	3.2 [2.39]	3.8 [2.83]	3 [2.24]	3.4 [2.54]	3.9 [2.91]	4.6 [3.43]	3.7 [2.76]	3.9 [2.91]	4.7 [3.5]	5.7 [4.25]	4.4 [3.28]
	50 [3.4]	GPM [lpm]			93 [352]	99 [375]		103 [390]	110 [416]	116 [439]		121 [458]	128 [485]	134 [507]	133 [503]
		HP [kw]			4.7 [3.5]	5.3 [3.95]		5.1 [3.8]	5.6 [4.18]	6.3 [4.7]		5.9 [4.4]	6.7 [5.0]	7.7 [5.74]	6.8 [5.07]
	100 [6.9]	GPM [lpm]				88 [333]			105 [397]				123 [466]		
		HP [kw]				8.5 [6.34]			10 [7.46]				11.1 [8.28]		
	125 [8.6]	GPM [lpm]			101 [382]								119 [450]		
		HP [kw]			11.7 [8.72]								14 [10.44]		
58	25 [1.7]	GPM [lpm]	116 [439]	119 [450]	121 [458]	123 [466]	136 [515]	139 [526]	141 [534]	143 [541]	157 [594]	160 [606]	162 [613]	164 [621]	181 [685]
		HP [kw]	2.7 [2.01]	2.7 [2.01]	2.8 [2.09]	4.8 [3.58]	4.3 [3.21]	4.3 [3.21]	4.6 [3.43]	7 [5.22]	5 [3.73]	5 [3.73]	5.5 [4.1]	9.8 [7.31]	6 [4.47]
	50 [3.4]	GPM [lpm]	106 [401]	114 [432]	120 [454]	122 [462]	126 [477]	134 [507]	140 [530]	142 [538]	147 [556]	155 [587]	161 [609]	163 [617]	171 [647]
		HP [kw]	5.6 [4.18]	5.6 [4.18]	5.7 [4.25]	7.7 [5.74]	6.3 [4.7]	6.3 [4.7]	6.6 [4.92]	9 [6.71]	7.3 [5.44]	7.3 [5.44]	7.8 [5.82]	12.1 [9.02]	8.7 [6.49]
	100 [6.9]	GPM [lpm]			117 [443]	121 [458]			137 [519]	141 [534]			158 [598]	162 [613]	
		HP [kw]			9.4 [7.01]	11.4 [8.5]			11 [8.2]	13.4 [9.99]			12.6 [9.4]	16.9 [12.6]	
	125 [8.6]	GPM [lpm]			115 [435]	120 [454]			135 [511]	140 [530]			156 [591]	161 [609]	
		HP [kw]			11.1 [8.28]	13.1 [9.77]			13 [9.69]	15.4 [11.48]			15.1 [11.26]	19.4 [14.47]	

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 [.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 [.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]		17
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]		
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]		22
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]		
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]	102 [386] 12.1 [9.02]	115 [435] 13 [9.69]		145 [549] 17.8 [13.27]	166 [628] 19.1 [14.24]	179 [678] 21.1 [15.73]	
111 [420] 4.4 [3.28]	112 [424] 4.6 [3.43]	114 [432] 7.5 [5.59]	129 [488] 5.3 [3.95]	130 [492] 5.3 [3.95]	131 [496] 5.7 [4.25]	133 [503] 9.4 [7.01]	148 [560] 6.2 [4.62]	149 [564] 2.6 [4.62]	150 [568] 6.7 [5.0]		221 [837] 10.9 [8.13]	222 [840] 10.9 [8.13]	223 [844] 11.9 [8.87]		35
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]		
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]		
	104 [394] 11.2 [8.35]	110 [413] 14.1 [10.51]			123 [466] 13.4 [9.99]	128 [485] 17.1 [12.75]			142 [538] 15.6 [11.63]				215 [814] 25.2 [18.79]		
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]	43
114 [432] 5.2 [3.88]	123 [466] 5.7 [4.25]	127 [481] 6.4 [4.77]	130 [492] 5.8 [4.33]	136 [515] 6 [4.47]	145 [549] 6.8 [5.07]	149 [564] 7.7 [5.74]	151 [572] 7.1 [5.29]	156 [594] 7.6 [5.67]	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 [7.9]	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]	
	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 [11.19]		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]	
152 [575] 4.7 [3.5]	156 [591] 5.7 [4.25]	158 [598] 6.9 [5.15]	176 [666] 5.4 [4.03]	179 [678] 5.9 [4.4]	183 [693] 7 [5.22]	185 [700] 8.5 [6.34]	202 [765] 6.3 [4.7]	205 [776] 6.8 [5.07]	209 [791] 8.4 [6.26]	211 [799] 10.3 [7.68]	305 [1155] 10.9 [8.13]	308 [1166] 12 [8.95]	312 [1181] 16.8 [12.53]	314 [1189] 19.7 [14.69]	48
141 [534] 7.1 [5.29]	148 [560] 8.1 [6.04]	154 [583] 9.3 [6.94]	160 [606] 8.0 [5.97]	168 [636] 8.5 [6.34]	175 [662] 9.6 [7.16]	181 [685] 11.1 [8.28]	186 [704] 9.5 [7.08]	194 [734] 10 [7.46]	201 [761] 11.6 [8.65]	207 [784] 13.5 [10.07]	209 [791] 15.4 [11.48]	297 [1124] 16.5 [12.3]	304 [1151] 19.3 [14.39]	310 [1173] 24.2 [18.05]	
	132 [500] 12.7 [9.47]	143 [541] 13.9 [10.37]			159 [602] 15.1 [11.26]	170 [644] 16.6 [12.38]			185 [700] 17.7 [13.2]	196 [742] 19.6 [14.62]		266 [1007] 25.6 [19.26]	288 [1090] 28.4 [21.18]	299 [1132] 33.3 [24.83]	
		139 [526] 16.2 [12.08]				166 [628] 19.2 [14.32]			176 [666] 20.8 [15.51]	192 [727] 22.7 [16.93]			279 [1056] 32.9 [24.53]	295 [1117] 37.3 [27.81]	
184 [697] 6 [4.47]	186 [704] 6.7 [5.0]	188 [712] 11 [8.2]	212 [803] 6.3 [4.7]	215 [814] 7.1 [5.29]	217 [821] 8.2 [6.11]	219 [829] 13.5 [10.7]	243 [920] 8.3 [6.19]	246 [931] 8.4 [6.26]	248 [939] 10.2 [7.61]	250 [946] 18 [13.42]			369 [1397] 18.8 [14.02]		58
179 [678] 8.7 [6.49]	185 [700] 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]		
	182 [689] 14.9 [11.11]	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]		
	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]		

3600 SERIES 90° *PORTS*

H & HB

GHB

4600 SERIES Thru Ports 180°

H & HB

GHB
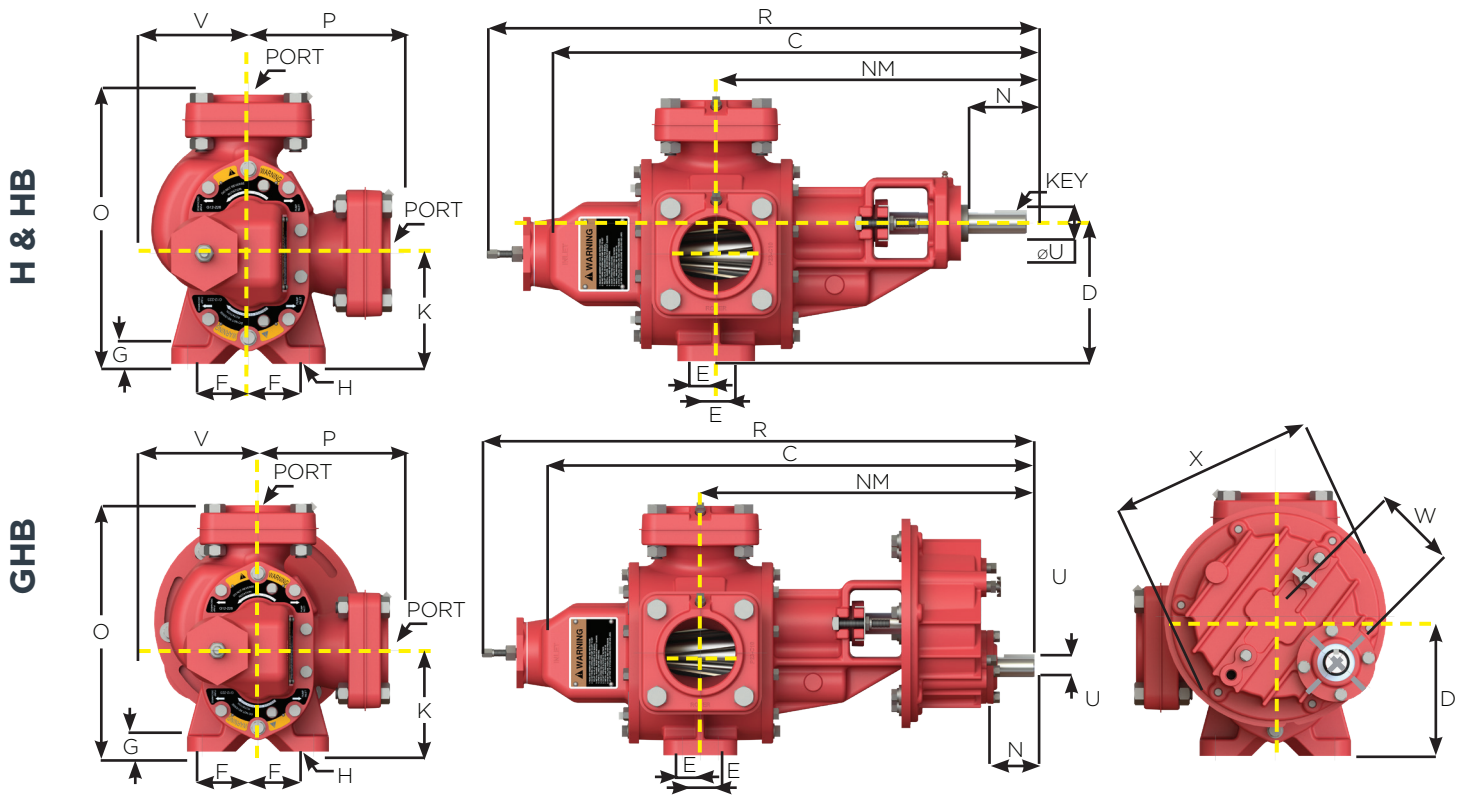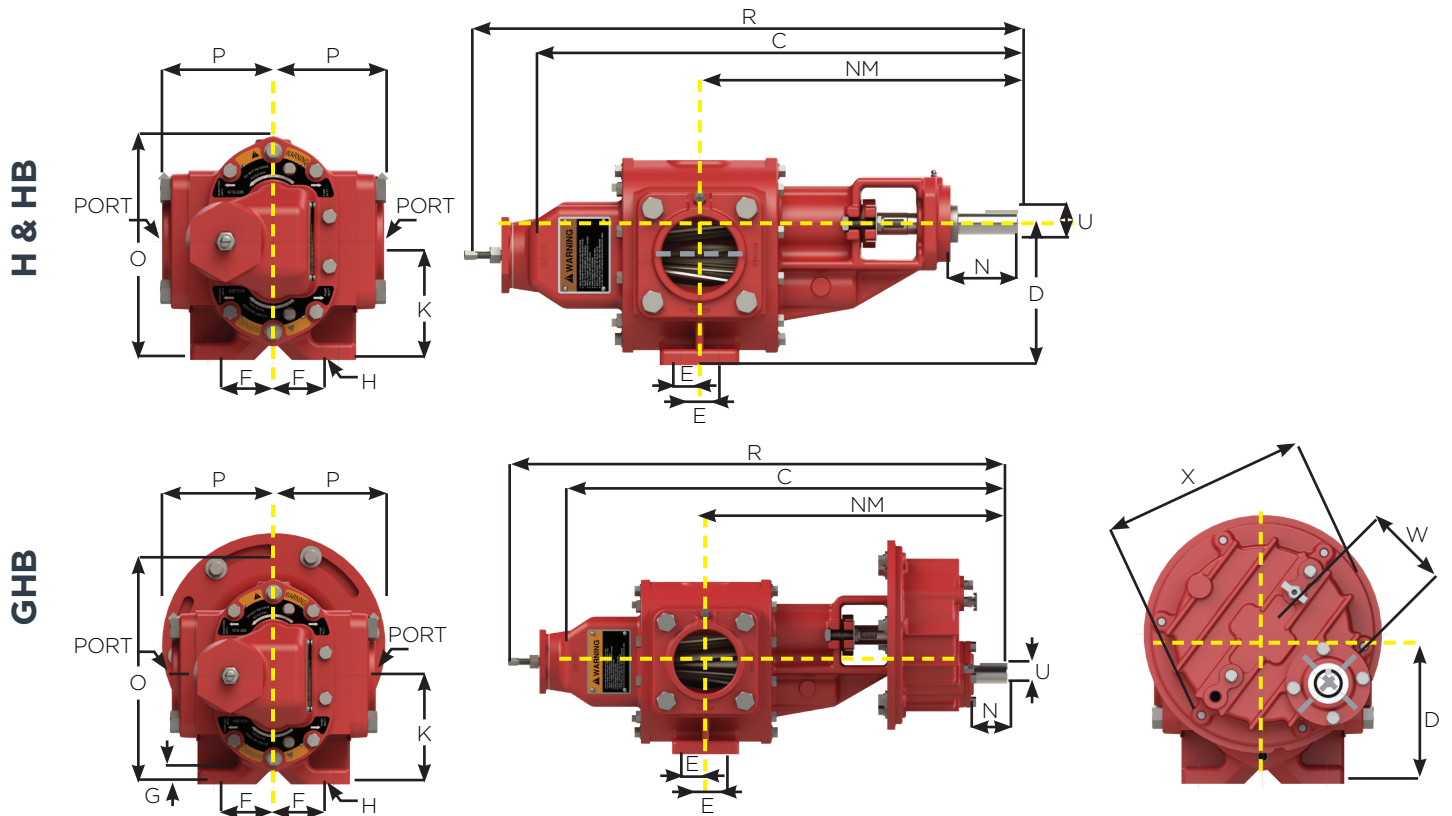
3600 SERIES 90° PORTS

	IN [mm]	3600 SERIES	BV	C	D HIGH	E	F	G	H HOLE DIAMETER	K	N	NM	O	P	R	U	V	W	X	KEY	PORTS
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)											11.54 [293]	4.3 [109]							2 NPT FLANGE
	17	H, HRV & HBV (SPEC G)	21.33 [542]	16.72 [424]							1.83 [46]		10.75 [273]	3.62 [91]	20.33 [516]						2 NPT TAPPED
		H, HFRV & HFBV (SPEC G)											11.54 [293]	4.3 [109]							2 NPT FLANGE
	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]	6.88 [175]	23.04 [585]	1.437 [36.5]	6 [152]			.38 SQ x 1.62	3 NPT TAPPED
		H & HFRV											16.66 [423]	7.91 [200]							3 NPT FLANGE
	58	H & HFRV (SPEC G)		22.51 [571]							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
		HBF, HBFRV & HBFBV						0.62 [15]					11.54 [293]	4.3 [109]							2 NPT FLANGE
	17	HB, HBRV & HBBV	24.67 [627]	20.07 [509]							2.7 [68]		10.75 [273]	3.62 [91]	23.67 [601]						2 NPT TAPPED
		HBF, HBFRV & HBFBV						0.75 [19]					11.54 [293]	4.3 [109]							2 NPT FLANGE
	22	HBF, HBFRV & HBFBV	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]	15.63 [397]	6.88 [174]	27.2 [690]	1.25 [31.75]	6 [152]				3 NPT TAPPED
		HBF & HBFRV											16.66 [423]	7.91 [200]							3 NPT FLANGE
	58	HBF & HBFRV		26.53 [673]								17.54 [445]	17.35 [440]	8.1 [205]	30.04 [763]		6.28 [159]			.38 SQ x 2.25	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]	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
		GHBF, GHBFRV & GHBFBV						0.62 [15]					11.54 [293]	4.3 [109]							2 NPT FLANGE
	17	GHB, GHBRV & GHBBV	26.57 [675]	21.97 [558]							1.74 [44]	15.58 [395]	10.75 [273]	3.62 [91]	25.57 [649]						2 NPT TAPPED
		GHBF, GHBFRV & GHBFBV						0.75 [19]					11.54 [293]	4.3 [109]							2 NPT FLANGE
	22	GHBF, GHBFRV & GHBFBV	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]	15.63 [397]	6.88 [174]	29.39 [746]	1.125 [28.58]	6 [152]	4.189 [106]	11.25 [285]		3 NPT TAPPED
		GHBF & GHBFRV											16.66 [423]	7.91 [200]							3 NPT FLANGE
	58	GHBF & GHBFRV		28.72 [729]								19.73 [501]	17.35 [440]	8.1 [205]	32.23 [818]		6.28 [159]				4 NPT FLANGE

4600 SERIES Thru Ports 180°

	IN [mm]	4600 SERIES	BV	C	D HIGH	D LOW	E	F	G	H HOLE DIAMETER	K	N	NM	O	P	R	U	V	W	X	KEY	PORTS
NO OUTBOARD BEARING	11	HF, HFRV & HFBV (SPEC G)	20.57 [522]	15.97 [405]	6.44 [163]	3.56 [90]	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
	17	HF, HFRV & HFBV (SPEC G)	21.33 [542]	16.72 [424]					0.75 [19]			1.83 [46]			4.41 [112]	20.33 [516]						3 NPT FLANGE
	22	HF, HFRV & HFBV (SPEC G)	23.19 [589]	18.59 [472]								2.2 [55]	11.46 [291]		4.85 [123]	22.19 [563]						4 NPT FLANGE
	58	HF & HFRV (SPEC G)	N/A	22.51 [571]	9.25 [234]	5 [127]		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]				.38 SQ x 1.62	
WITH OUTBOARD BEARING	11	HBF, HBFRV & HBFBV	23.92 [608]	19.32 [490]	6.44 [163]	3.56 [90]	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
	17	HBF, HBFRV, HBFBV	24.67 [627]	20.07 [509]					0.75 [19]			3.05 [77]			4.41 [112]	23.67 [601]						3 NPT FLANGE
	22	HBF, HBFRV, HBFBV	26.17 [665]	21.57 [547]									14.44 [366]		4.85 [123]	25.17 [639]						4 NPT FLANGE
	48	HBF, HBFRV, HBF, V	31.95 [812]	27.02 [686]	8.25 [210]	4.50 [114]	1.81 [46]	2.19 [56]	1.5 [38]	1/2-13 UNC	6.63 [168]	3.94 [100]	17.38 [441]	11.81 [300]	5.56 [141]	27.93 [709]	1.25 [32]					
	58	HBF & HBFRV	N/A	26.53 [673]	9.25 [234]	5 [127]	0.88 [22]	5.19 [131]		0.69 [17]	9.25 [234]	3.25 [82]	17.54 [445]	9.25 [234]	8.1 [205]	30.04 [763]					.25 SQ x 1.62	2 NPT TAPPED
WITH REDUCTION UNIT	11	GHBF, GHBFRV & GHBFBV	25.07 [637]	20.47 [519]	6.44 [163]	3.56 [90]	0.88 [22]	2.75 [69]	0.62 [15]	0.56 [14]	5 [127]		14.83 [376]	5 [127]	4.3 [109]	24.07 [611]	1 [25]	N/A	3.523 [89]	10.24 [260]	.25 SQ x 1.50	2 NPT TAPPED
	17	GHBF, GHBFRV & GHBFBV	26.57 [675]	21.97 [558]					0.75 [19]			1.74 [44]	15.58 [395]			25.57 [649]						3 NPT FLANGE
	22	GHBF, GHBFRV & GHBFBV	28.07 [713]	23.47 [596]									16.33 [414]			27.07 [687]						
	48	GHBF, GHBFRV & GHBF	33.57 [853]	28.63 [727]	8.25 [210]	4.50 [114]	1.81 [46]	2.19 [56]	1.5 [38]	1/2-13 UNC	6.63 [168]	2.29 [58]	19.00 [482]	13.88 [352]	5.56 [141]	29.55 [751]	1.12 [29]		4.189 [106]	11.25 [285]		4 NPT FLANGE
	58	GHBF & GHBFRV	N/A	28.72 [729]	9.25 [234]	5 [127]	0.88 [22]	5.19 [131]		0.69 [17]	9.25 [234]	2.29 [58]	19.73 [501]	9.25 [234]	8.1 [205]	32.23 [818]	1.25 [32]				.25 SQ x 2.25	

HIGH-DRIVE
PORT
3.25 [82]
11.50 [292]
3.15 [80]
LOW-DRIVE
2.65 [67]
1.91 [48]
6.09 [157]
6.84 [173]
5.10 [129]

R
C
NM
.25 SQ X 2.25 KEY
3.94 [100]
1.25 [31.75] ∅
6.40 [162] HIGH-DRIVE
3.75 [95] LOW-DRIVE
FOUR HOLES ∅ 11/16
3.00 [76]
3.00 [76]
0.625 [15]

PORT
3.25 [82]
11.50 [292]
6.40 [163]
3.75 [95]
3.15 [80]
2.65 [67]
1.91 [48]
6.09 [157]
6.84 [173]
5.10 [129]

R
C
NM
2.29 [58]
.25 SQ X 1.5 KEY
∅ 1.125 [28.58]
VARIABLE
3.00 [76]
3.00 [76]

∅ 11.25 [285]
4.19 [106]
1.75 [44]
0.625 [15]

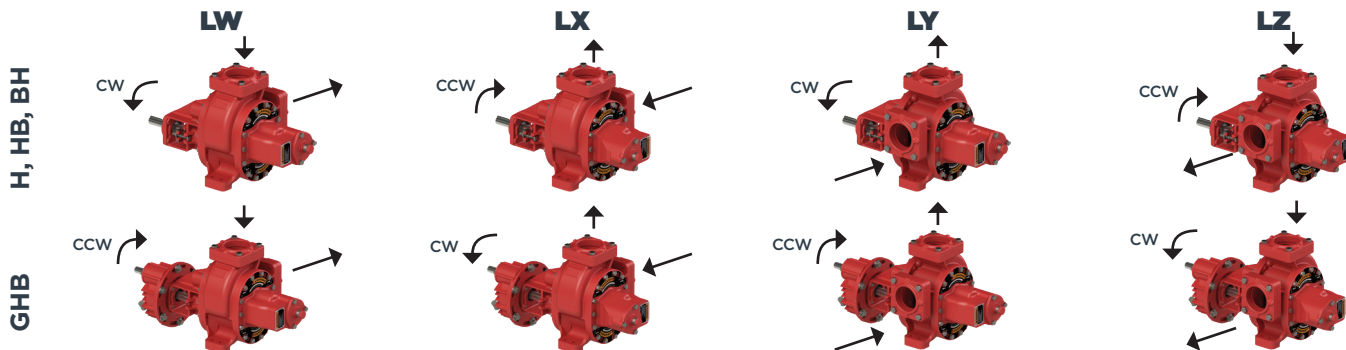| IN [mm]		3600 SERIES ANGLED GEARS	BV	C	NM	R	PORT
NO OUTBOARD BEARING	32	HF, HFRV, & HFBV	25.42 [646]	20.48 [520]	12.25 [311]	21.40 [544]	3 NPT FLANGE
	43		27.04 [687]	22.10 [561]	13.07 [332]	23.02 [585]	3 NPT FLANGE
	48		28.23 [717]	23.19 [589]	13.66 [347]	24.21 [615]	4 NPT FLANGE
WITH OUTBOARD BEARING	32	HBF, HBFRV, & HBFBV	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, & GHBFBV	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.
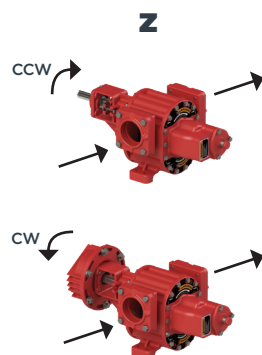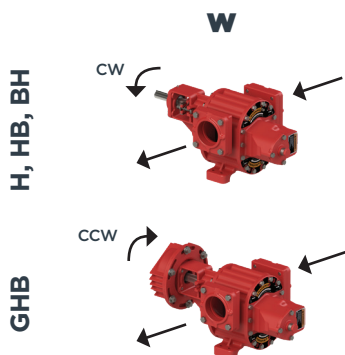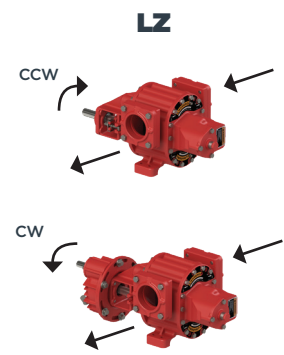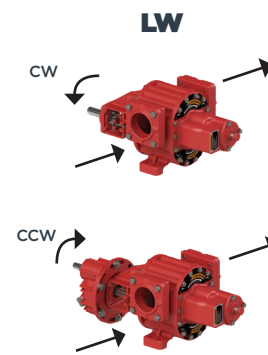
CW   CCW

3600 SERIES 90° WITH *HIGH DRIVE*

W **X** **Y** **Z**

H, HB, BH

CW   CCW   CW   CCW

GHB

CCW   CW   CCW   CW
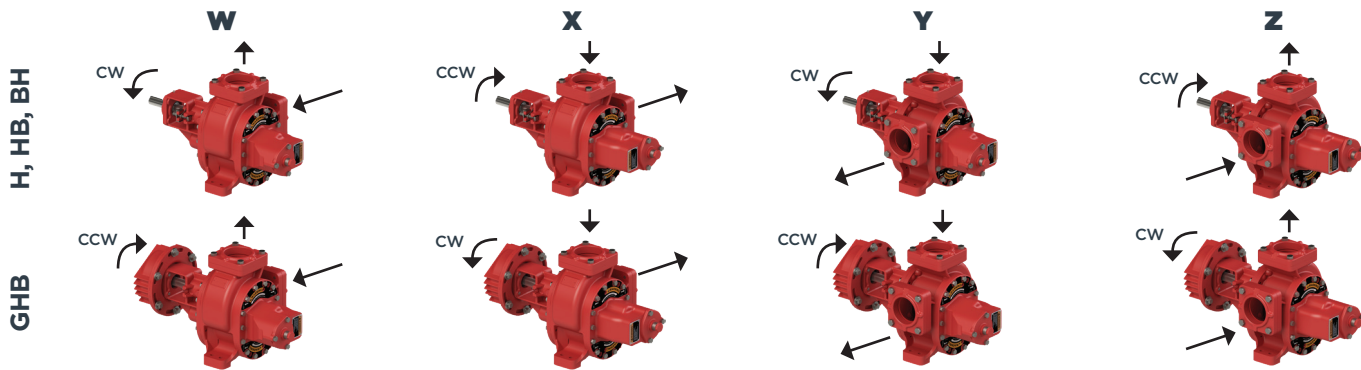
3600 SERIES 90° WITH *LOW DRIVE*

LW **LX** **LY** **LZ**

H, HB, BH

CW   CCW   CW   CCW

GHB

CCW   CW   CCW   CW

4600 SERIES 180° WITH *HIGH DRIVE*   4600 SERIES 180° WITH *LOW DRIVE*

W **Z** **LW** **LZ**

H, HB, BH

CW   CCW   CW   CCW

GHB

CCW   CW   CCW   CW

ROPER PUMPS®

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.

Industrial

Roper Pump Company's rugged and dependable range of positive displacement pumps provides versatile pumping solutions for even the most challenging industrial applications.

Transport

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.

Power Gen.

For reliable operation of engines, compressors and turbines, thousands of customers depend on Roper Pump Company fuel pumps, lube pumps and liquid fuel flow dividers.