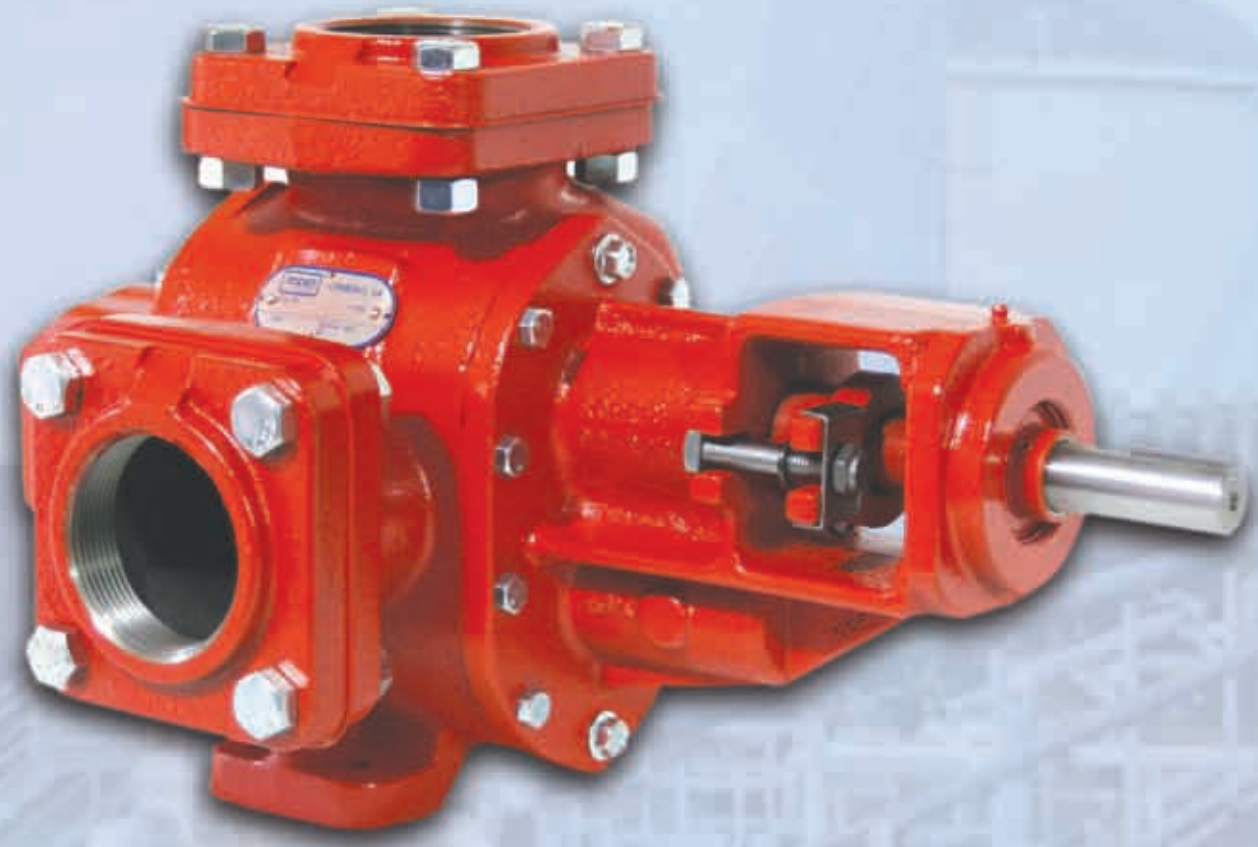
ROPER PUMPS®

THE LEADING FORCE behind liquids™ since 1857



3600 Series Heavy Duty Pumps

General Purpose Pumps for Mixing, Blending, Recirculating, Fixed and Mobile Transfer

THE UNSTOPPABLE

ROPERS

The early history of the Roper Company is truly a triumph of American grit over adversity.

George D. Roper, was challenged from childhood by the loss of his left arm in a train accident. He chopped wood and performed other duties as well as other boys with two good hands, asking no consideration because of having only one arm.

In 1889 at age 34, George D. Roper founded the Roper legacy with the purchase of a 50% interest in the Van Wie Gas Stove Company of Cleveland, Ohio. He persuaded them to move to Rockford, Illinois, operating as Secretary and Treasurer to company president P.G. Van Wie.

As the U.S. moved into Depression in the early 1890's, the Van Wie plant passed into trusteeship. George Roper was to operate as trustee until the obligations against the plant were paid off, at which time the Gas Stove Works would become his sole property. All debts were liquidated fully on September 1, 1894. Ten days later, the institution was entirely destroyed by fire.

Salvaged and rebuilt as the Eclipse Gas Stove Company, the business grew steadily, expanding to include the American Foundry Company in 1901, and the Trahern Pump Company in 1906. Trahern's hand operated well pumps had been helping to build the American dream since 1857.

Within a few years the company was pioneering new pump developments, and becoming a major supplier to the rapidly growing petroleum industry.

In 1919, George D. Roper merged all of his companies into one company named the George D. Roper Corporation. He passed away In 1925, and left the presidency of the corporation to his son, Mabon P. Roper.

The company survived the Great Depression of 1929, and during World War II developed diesel engine lubricating pumps for war plants and naval vessels. They also manufactured projectiles and ammunition boxes.

Mabon P. Roper died in 1942, ending the Roper family line. He was succeeded by Stanley Hobson, who continued the Roper tradition of quality and dependability.

From Legacy to Leadership

In the two decades that followed, the George D. Roper Corporation grew and evolved. They sold the original Stove Company in 1957, and renamed the remaining pump portion Roper Hydraulics Inc. In 1959, Roper Hydraulics acquired O.E. Szekely & Co., pump specialists located in Commerce, Georgia, where Roper Pump Company maintains operations to this day.

In 1961, Roper Hydraulics changed their name to Roper Industries Inc. Roper Industries became a publicly traded company in 1992 (NYSE symbol: ROP). Roper Pump Company is a division of their Industrial Technology Group.

Tradition Built Locally

ROPER PUMPS®

150 years 1857-2007

For a Globally Geared Future

Through continued product line expansion, Roper Pump Company has secured its position as a leader in the transport industry and is gaining influence in the chemical industry with unique and reliable stainless steel products. Today, Roper Pump Company offers its innovation, state-of-the-art technology, quality and value, combined with a tradition of reliability that dates back 150 years.

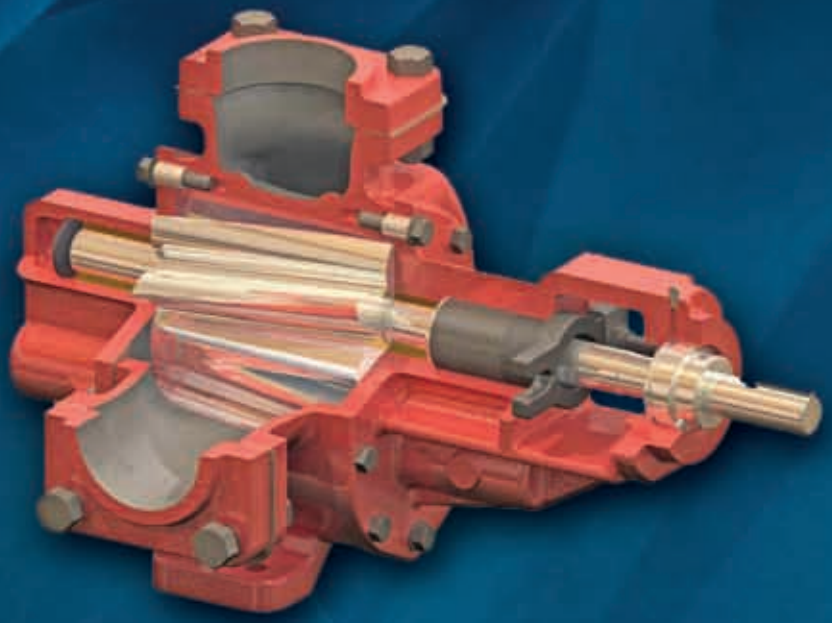
Hydraulic Institute

ISO9001:2000 Certified

ROPER PUMPS®

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 hi-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 reduction 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

Housing	Cast Iron
Gears	Cast Iron
Bearings	Bronze
Shafts	Steel

Optional Materials*

Gears	Bronze Stainless Steel Delrin®
Bearings	Iron Carbon
Shafts	Stainless Steel

**some of the optional materials may not be available for all sizes*

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 insures proper meshing, and reduces friction and vibration.

Long-Lasting Bearing Surfaces
- Bearings are special wear-resistant, high-lead bronze. Iron and carbon bearings are available.
- Four heavy duty sleeve bearings give positive support to pumping gears and insure 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 most thrust loads.

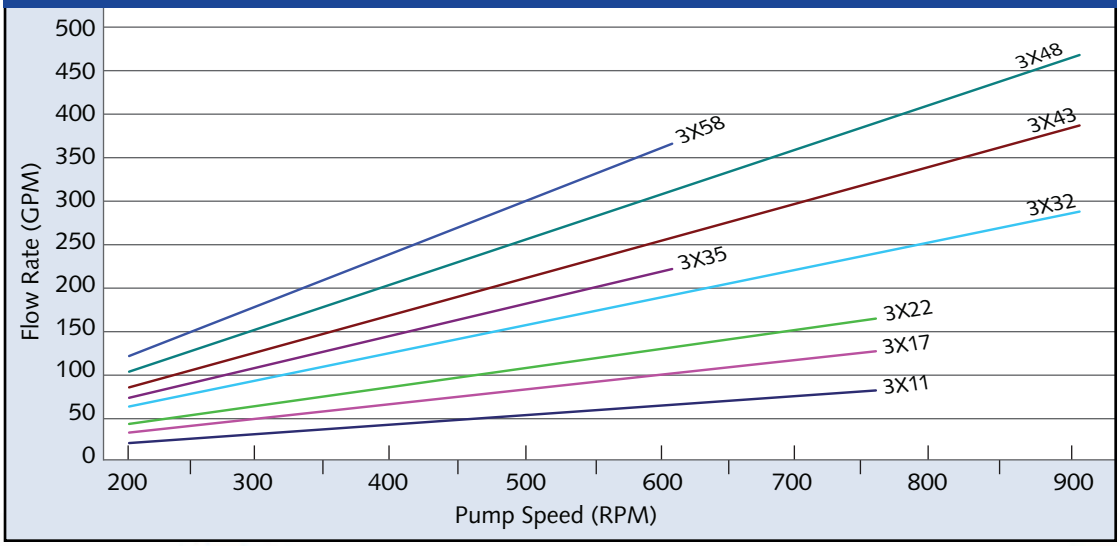
Precision-Ground Shafts
- The steel shafts are induction hardened in the bearing and packing areas and are precision ground to exacting standards for maximum life.
- Hardened stainless steel shafts available.

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

THE LEADING FORCE behind liquids since 1857

Capacities & Nomenclature

THEORETICAL CAPACITY



NOMENCLATURE – 3611 G H B F R V

3	Port Location	**3** – Right Angle Ports	
		4 – Straight Through Ports	
6	Seal Option	**5** – Triple Lip Seal	
		6 – Packing	
		7 – Mechanical Seal	
		8 – Lip Seal with Ball Bearings	
11	Size	**11** – 11 Gal/100 Rev	**35** – 35 Gal/100 Rev
		17 – 17 Gal/100 Rev	**43** – 43 Gal/100 Rev
		22 – 22 Gal/100 Rev	**48** – 52 Gal/100 Rev
		32 – 32 Gal/100 Rev	**58** – 58 Gal/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	
	GHBFRV	Flanged Ports with Outboard Bearing, Relief Valve, and Gear Reducer	
	BH	Tapped Ports, No Outboard Bearing, Mounting for Hyd. Drive or CCD Bracket	
	BHF	Flanged Ports, No Outboard Bearing, Mounting for Hyd. Drive or CCD Bracket	
	BHFRV	Flanged Ports, No Outboard Bearing, Mounting for Hyd. Drive or CCD Bracket, and Relief Valve	

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

Key Components

BEARINGS

Four heavy duty sleeve bearings give positive support to pumping gears and insure 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.

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 packing areas, and are precision ground to exacting standards for maximum life. Hardened stainless steel shafts are also available upon request.

HOUSING

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.

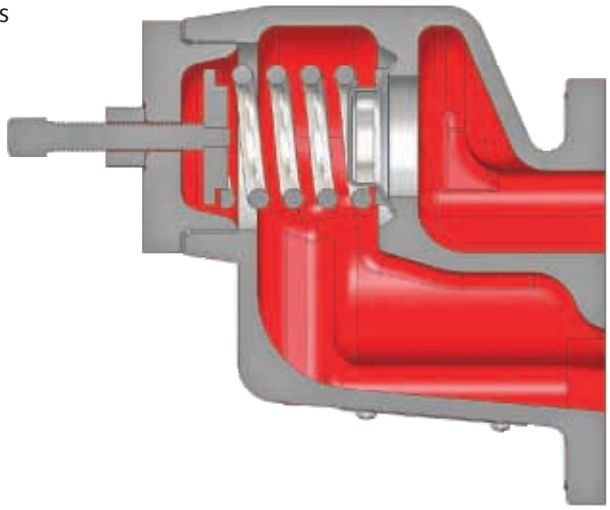
GASKETS

3600 Series Pumps come standard with fiber gaskets that are used up to 212°F/100°C. For higher temperature applications (up to 450°F/232°C) we offer other optional gasket materials.

Relief Valves & Jacketing

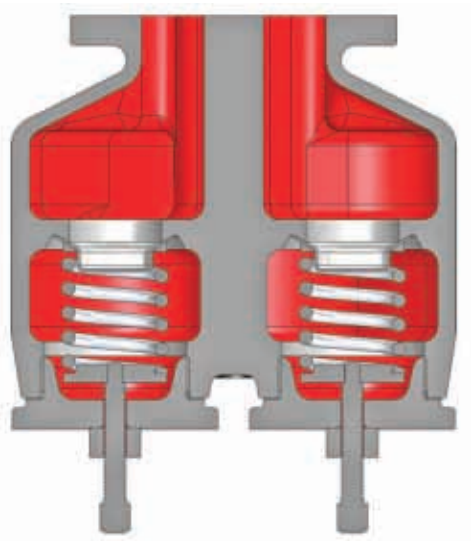
RELIEF VALVE

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



BI-DIRECTIONAL RELIEF VALVE

Roper'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 systems.



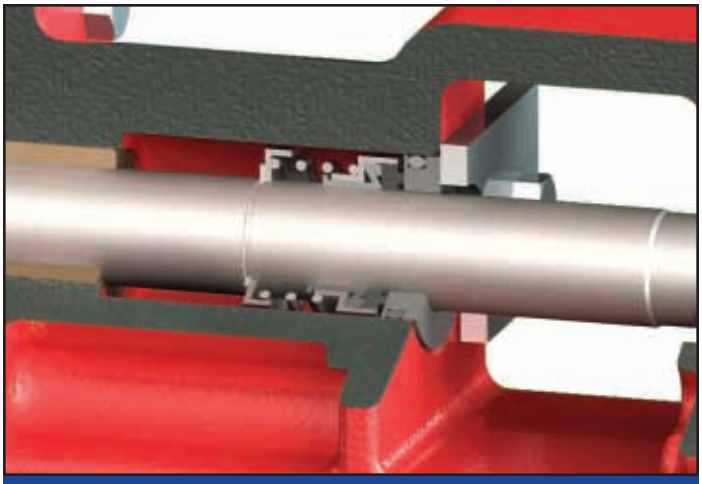
JACKETING

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 jacketed pumps provide efficient heat transfer to the packing, seal relief valve, bearing areas, and endplates of the pump. The jackets are suitable for use with steam, hot or cold water, heat transfer oil, etc., as heating or cooling mediums.

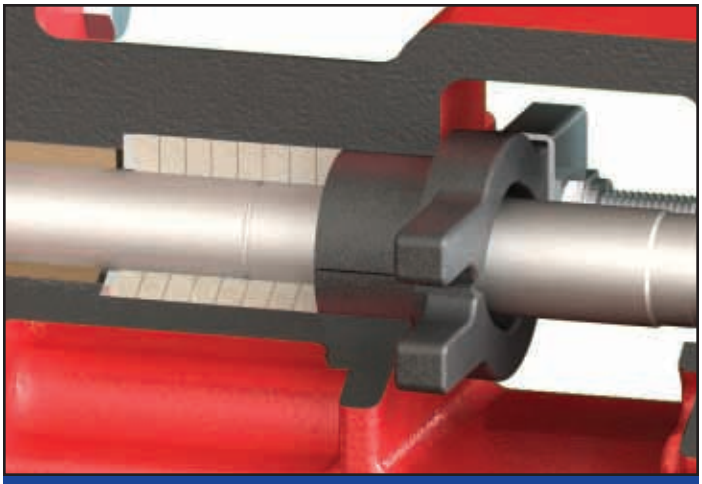
Jacketing is available on the faceplate only, backplate only, or on both.

Pump Seals



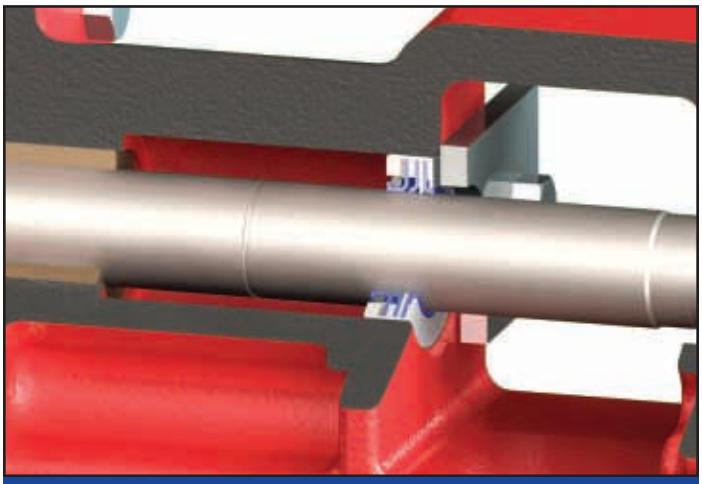
MECHANICAL SEAL

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 best performance, the gland should 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.



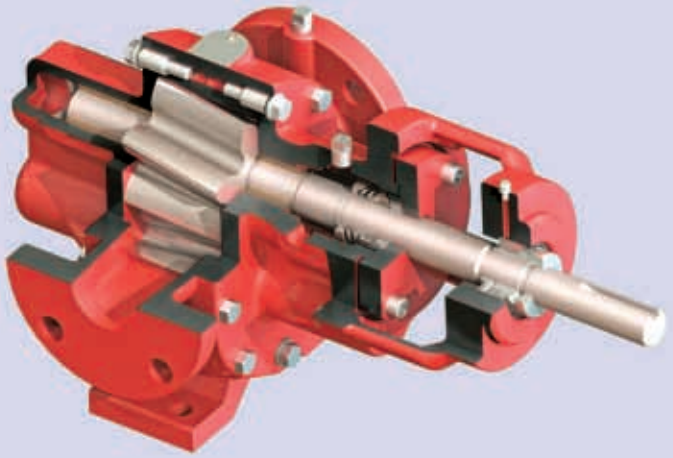
TRIPLE LIP SEAL

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, such as resins, glues and paints. The Teflon® filled elastomer 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 elastomer makes it relatively immune to sudden failure.

Need More Seal Options?

OUR Z SERIES...

Based on our 3600 Series, the Roper "Z" Series features a larger seal chamber in a two-piece backplate that allows for virtually unlimited options, and facilitates easy seal maintenance. Many parts are interchangeable with the 3600 Series.



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

Gear Reduction (GHB) Unit

Totally enclosed and running in oil, the reduction gears are made of hardened steel to assure longer life. Antifriction bearings are used throughout. Three interchangeable gear ratios are available in each size. For additional ratios look at using a Roper CCD bracket and an industrial standard gearmotor.

GEAR RATIOS AND CAPACITIES FOR GHB UNITS

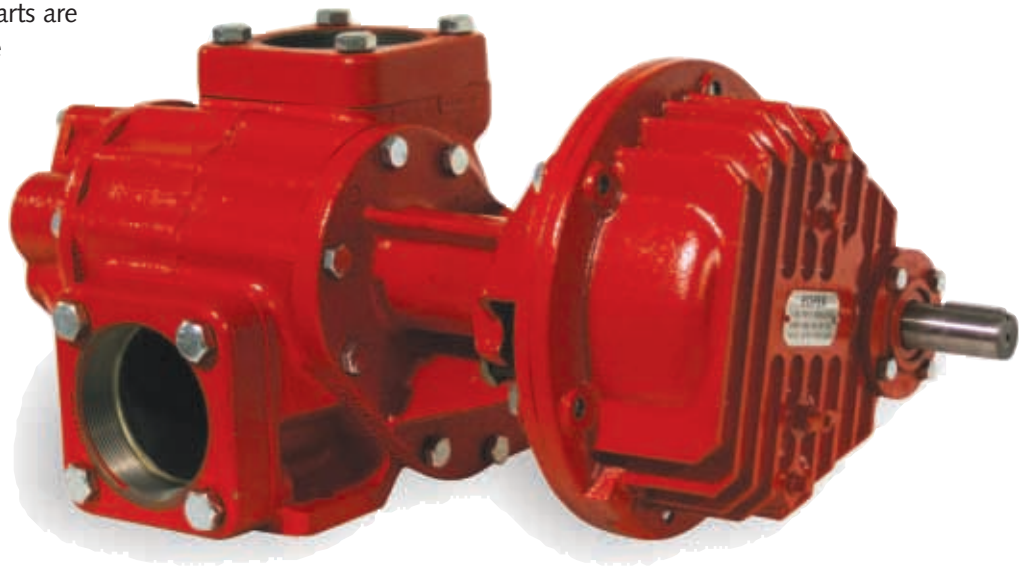
	Motor RPM	Gear Ratio	Pump RPM	Max. Permissible HP
11 through 22	1150	4.60:1 3.94:1 3.20:1	250 290 360	5.5 6.5 8.0
	1750	4.60:1 3.94:1 3.20:1	380 445 545	8.5 10.0 10.0
	3450*	4.60:1	750	10.0

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

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.

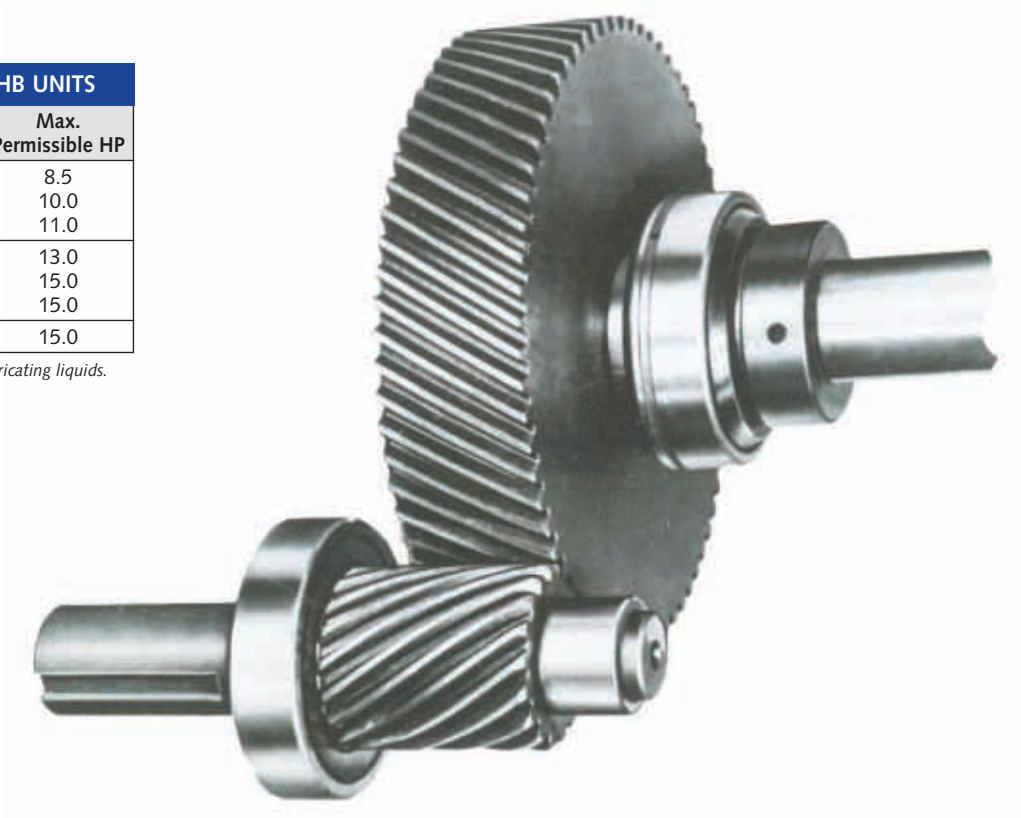


SIZE	RPM			250 RPM			290 RPM				360 RPM				380 RPM				445 RPM				545 RPM				750 RPM			
Pump	PSI	SSU	30	100	1000	10,000	30	100	1000	10,000	30	100	1000	10,000	30	100	1000	10,000	30	100	1000	10,000	30	100	1000	10,000	30	100	1000	10,000
11	25	GPM	25	26	27	27	29	30	31	31	37	38	39	39	40	41	42	42	47	48	49		58	59	60		80	81	82	
		HP	.7	.7	.9	1.3	.9	.9	1.2	1.5	1.1	1.1	1.4	2.2	1.1	1.1	1.5	2.3	1.4	1.4	2.0		1.9	1.9	2.7		2.8	2.8	3.8	
	50	GPM	23	25	27	27	27	29	31	31	35	37	39	39	38	40	42	42	45	47	49		56	58	60		78	80	82	
		HP	1.1	1.1	1.3	1.7	1.3	1.3	1.5	1.9	1.7	1.7	2.0	2.8	1.7	1.7	2.1	2.9	2.1	2.1	2.6		2.7	2.7	3.5		3.9	3.9	4.9	
	100	GPM		23	26	27		27	30	31		35	38	39	33	38	41	42	40	45	48		51	56	59		73	78	81	
		HP		1.9	2.1	2.5		2.2	2.4	3.0		2.8	3.1	3.9	2.9	2.9	3.3	4.1	3.5	3.5	4.0		4.4	4.4	5.2		6.3	6.3	7.3	
	125	GPM		22	26	27		26	30	31		34	38	39		37	41	42		44	48		48	55	59		70	77	81	
		HP		2.2	2.4	2.8		2.7	2.9	3.5		3.3	3.6	4.4		3.5	3.9	4.7		4.2	4.7		5.4	5.4	6.2		7.5	7.5	8.5	
17	25	GPM	38	40	41	42	45	47	48	49	57	59	60	61	60	62	63	64	71	73	74		88	90	91		123	125	126	
		HP	.8	.8	1.1	1.8	1.0	1.0	1.3	2.2	1.2	1.2	1.8	3.0	1.3	1.3	1.9	3.3	1.7	1.7	2.5		2.3	2.3	3.6		3.5	3.5	6.0	
	50	GPM	33	38	41	42	40	45	48	49	52	57	60	61	55	60	63	64	66	71	74		83	88	91		118	123	126	
		HP	1.4	1.4	1.7	2.4	1.6	1.6	1.9	2.8	2.1	2.1	2.7	3.9	2.3	2.3	2.9	4.3	2.9	2.9	3.7		3.6	3.6	4.9		5.4	5.4	7.9	
	100	GPM		34	40	41		41	47	48	49	53	59	60	52	56	62	63	63	67	73		80	84	90		115	119	125	
		HP		2.5	2.9	3.6		3.0	3.3	4.2	3.8	3.8	4.4	5.6	4.2	4.2	4.8	6.2	5.0	5.0	5.8		6.3	6.3	7.6		9.0	9.0	11.5	
	125	GPM			39	41			46	48	49	51	58	60	52	54	61	63	63	65	72		80	82	89		115	117	124	
		HP			3.4	4.1			4.0	4.9	4.6	4.6	5.2	6.4	5.0	5.0	5.6	7.0	6.0	6.0	6.8		7.5	7.5	8.8		10.8	10.8	13.3	
22	25	GPM	52	53	55	55	60	61	63	63	7	77	79	79	80	81	83	83	94	95	97		116	117	119		162	163	165	
		HP	1.1	1.1	1.4	1.9	1.3	1.3	1.7	2.5	2.0	2.0	2.6	3.9	2.2	2.2	3.0	4.3	2.7	2.7	3.5		3.2	3.2	4.4		5.1	5.1	7.2	
	50	GPM	50	52	54	55	58	60	62	63	74	76	78	79	78	80	82	83	92	94	96		114	116	118		161	162	164	
		HP	2.0	2.0	2.3	2.8	2.3	2.3	2.6	3.4	3.1	3.1	3.7	5.0	3.3	3.3	4.1	5.4	4.1	4.1	4.9		4.8	4.8	6.0		7.3	7.3	9.4	
	100	GPM	44	50	53	55	52	58	61	63	68	74	77	79	72	78	81	83	86	92	95		108	114	117		154	160	163	
		HP	3.5	3.5	3.8	4.3	4.2	4.2	4.5	5.3	5.4	5.4	6.0	7.3	5.7	5.7	6.5	7.8	6.8	6.8	7.6		8.2	8.2	9.4		12.0	12.0	14.1	
	125	GPM		49	53	55	50	57	61	63	66	73	77	79	70	77	81	83	84	91	95		106	113	117		152	159	163	
		HP		4.2	4.5	5.0	5.2	5.2	5.5	6.3	6.5	6.5	7.1	8.4	6.9	6.9	7.7	9.0	8.3	8.3	9.1		10.2	10.2	11.4		14.7	14.7	16.8	

GEAR RATIOS AND CAPACITIES FOR GHB UNITS

	Motor RPM	Gear Ratio	Pump RPM	Max. Permissible HP
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.*



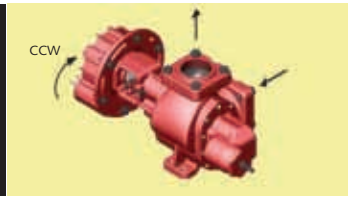
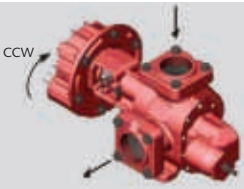
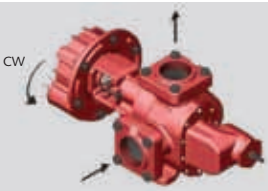
SIZE	RPM		203 RPM				235 RPM				270 RPM				309 RPM				360 RPM				410 RPM				609 RPM			
Pump	PSI	SSU	30	100	1000	10,000	30	100	1000	10,000	30	100	1000	10,000	30	100	1000	10,000	30	100	1000	10,000	30	100	1000	10,000	30	100	1000	10,000
32	25	GPM	54	57	61	65	64	67	71	75	75	78	82	86	88	91	95	99	104	107	111	115	120	123	127	131	184	187	191	195
		HP	1	1.2	1.4	1.8	1.3	1.5	1.8	2.3	1.7	1.9	2.5	3	2.1	2.3	2.8	3.4	2.8	3	3.6	4.3	3.5	3.7	4.3	5.2	6	6.7	8	10
	50	GPM	41	47	55	59	51	57	66	70	62	68	77	81	75	81	89	93	91	97	106	110	107	113	122	126	171	177	185	189
		HP	2	2.2	2.4	2.8	2.3	2.5	2.8	3.3	3	3.2	3.8	4.3	3.5	3.7	4.2	4.8	4.5	4.7	5.3	6	5.5	5.7	6.3	7.2	9	9.7	11	13
	100	GPM			44	52			54	62		47	65	73		60	78	86	65	76	94	102	81	92	110	118	145	156	174	182
		HP			4.4	4.8			5.1	5.6		5.9	6.5	7		6.7	7.2	7.8	7.5	7.7	8.3	9	9.5	9.7	10.3	11.2	14.5	15.2	16.5	18.5
	125	GPM				49			46	59			57	70			70	83	45	65	86	99		81	102	115		145	166	179
		HP				5.8			6.6	7.1			8	8.5			8.7	9.3	9.2	9.4	10	10.7		11.5	12.1	13		17.8	19.1	21.1
35	25	GPM	71	72	73	75	83	84	85	87	96	97	98	100	110	111	112	114	129	130	131	133	148	149	150		221	222	223	
		HP	2.6	2.6	2.8	4.3	3.1	3.1	3.3	5.2	3.7	3.7	3.9	6.2	4.4	4.4	4.6	7.5	5.3	5.3	5.7	9.4	6.2	6.2	6.7		10.9	10.9	11.9	
	50	GPM	67	69	71	73	79	81	83	85	92	94	96	98	106	108	110	112	125	127	129	131	144	146	148		217	219	221	
		HP	3.7	3.7	3.9	5.4	4.4	4.4	4.6	6.5	5.1	5.1	5.3	7.6	6.0	6.0	6.2	9.1	7.1	7.1	7.5	11.2	8.4	8.4	8.9		14.2	14.2	15.2	
	100	GPM		61	68	71		73	80	83	82	86	93	96	96	100	107	110			126	129			145				218	
		HP		5.8	6.0	7.5		6.8	7.0	8.9	8.0	8.0	8.2	10.5	9.4	9.4	9.6	12.5			11.4	15.1			13.4				21.8	
	125	GPM			65	70			77	82		83	90	95			104	109			123	128			142				215	
		HP			7.2	8.7			8.3	10.2		9.5	9.7	12.0			11.2	14.1			13.4	17.1			15.6				25.2	
43	25	GPM	76	79	83	85	90	93	97	99	105	108	112	114	122	125	128	131	144	147	150	153	165	168	172	174	251	254	257	260
		HP	1.8	2	2.3	3	2	2.3	2.8	3	2.4	2.9	3.3	3.7	3	3.2	3.7	4.4	3.7	3.9	4.7	5.6	4.4	4.9	5.7	7	8.2	9	11	14
	50	GPM	62	68	77	81	76	82	91	95	91	97	106	110	108	114	123	127	130	136	145	149	151	157	166	170	237	243	252	256
		HP	2.5	2.7	3	3.7	3.2	3.5	4	4.2	4	4.5	4.9	5.3	5	5.2	5.7	6.4	5.8	6	6.8	7.7	7.1	7.6	8.4	9.7	12	12.8	14.8	17.8
	100	GPM			62	72			76	86		73	91	101		90	108	118	95	112	130	140	116	133	151	161	202	219	237	247
		HP			5.5	6.2			7	7.2		8	8.4	8.8		9.2	9.7	10.4	10.6	10.8	11.6	12.5	12.2	12.7	13.5	14.8	19.4	20.2	22.2	25.2
	125	GPM			56	69			70	83			85	98			102	115	55	97	124	137		118	145	158	182	204	231	244
		HP			6.6	7.3			8.5	8.7			9.5	9.9			11.2	11.9	13.1	13.3	14.1	15		15.4	16.2	17.5	23.2	24	26	29
48	25	GPM	94	97	101	103	111	114	118	120	129	132	136	138	149	152	156	158	176	179	183	185	202	205	209	211	305	308	312	314
		HP	2.5	2.8	3.2	3.8	3.0	3.4	3.9	4.6	3.7	3.9	4.7	5.7	4.4	4.7	5.7	6.9	5.4	5.9	7.0	8.5	6.3	6.8	8.4	10.3	10.9	12.0	16.8	19.7
	50	GPM			93	99		103	110	116		121	128	134	133	141	148	154	160	168	175	181	186	194	201	207	209	297	304	310
		HP			4.7	5.3		5.1	5.6	6.3		5.9	6.7	7.7	6.8	7.1	8.1	9.3	8.0	8.5	9.6	11.1	9.5	10.0	11.6	13.5	15.4	16.5	19.3	24.2
	100	GPM				88				105				123			132	143			159	170			185	196		266	288	299
		HP				8.5				10.0				11.1			12.7	13.9			15.1	16.6			17.7	19.6		25.6	28.4	33.3
	125	GPM								101				119				139				166			176	192			279	295
		HP								11.7				14.0				16.2				19.2			20.8	22.7			32.9	37.3
58	25	GPM	116	119	121	123	136	139	141	143	157	160	162	164	181	184	186	188	212	215	217	219	243	246	248	250			369	
		HP	2.7	2.7	2.8	4.8	4.3	4.3	4.6	7.0	5.0	5.0	5.5	9.8	6.0	6.0	6.7	11.0	6.3	7.1	8.2	13.5	8.3	8.4	10.2	18.0			18.8	
	50	GPM	106	114	120	122	126	134	140	142	147	155	161	163	171	179	185	187	202	210	216	218	233	241	247	249			368	
		HP	5.6	5.6	5.7	7.7	6.3	6.3	6.6	9.0	7.3	7.3	7.8	12.1	8.7	8.7	9.4	13.7	10.1	10.4	11.5	16.8	11.9	12.0	13.8	21.6			24.3	
	100	GPM			117	121			137	141			158	162			182	186			213	217			244	248			365	
		HP			9.4	11.4			11.0	13.4			12.6	16.9			14.9	19.2			17.8	23.1			21.0	28.8			35.0	
	125	GPM			115	120			135	140			156	161			180	185			211	216			242	247			363	
		HP			11.1	13.1			13.0	15.4			15.1	19.4			17.8	22.1			21.0	26.3			24.7	32.5			40.5	

Direction of Rotation

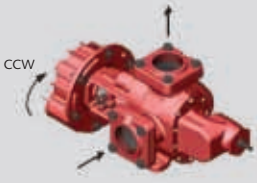
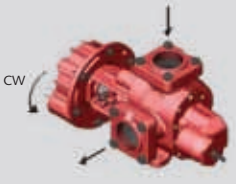
Rotation direction is determined when facing the drive shaft. The diagrams will serve as a helpful basis for you to determine the direction of rotation wanted according to your piping system. We can build the pump at the factory to meet your installation requirements. If the pump build is not specified, it will be shipped the standard "W" configuration. Once in the field, if you need to change the configuration, it can easily be done by just disassembling the pump and rebuilding it to your desired arrangement. No new parts are needed.

Note: top picture in each section is a standard pump and the bottom picture is the same pump with gear box added.

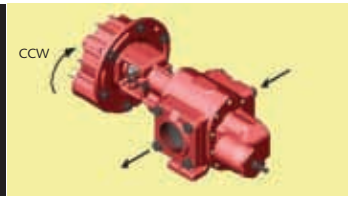
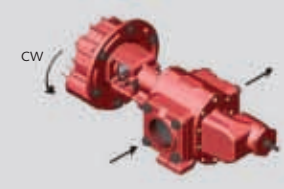
3600 SERIES (90°) WITH HIGH DRIVE

	W	X	Y	Z
H, HB, B, BH				
GHB				

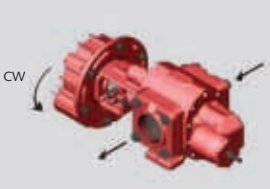
3600 SERIES (90°) WITH LOW DRIVE

	LW	LX	LY	LZ
H, HB, BH				
GHB				

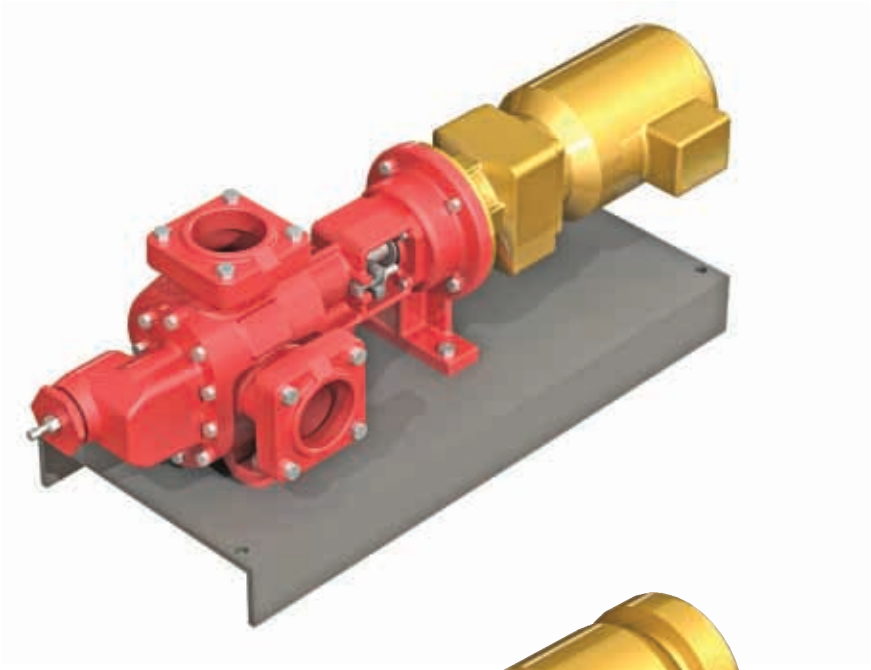
4600 SERIES (180°) WITH HIGH DRIVE

	W	Z
H, HB, BH		
GHB		

4600 SERIES (180°) WITH LOW DRIVE

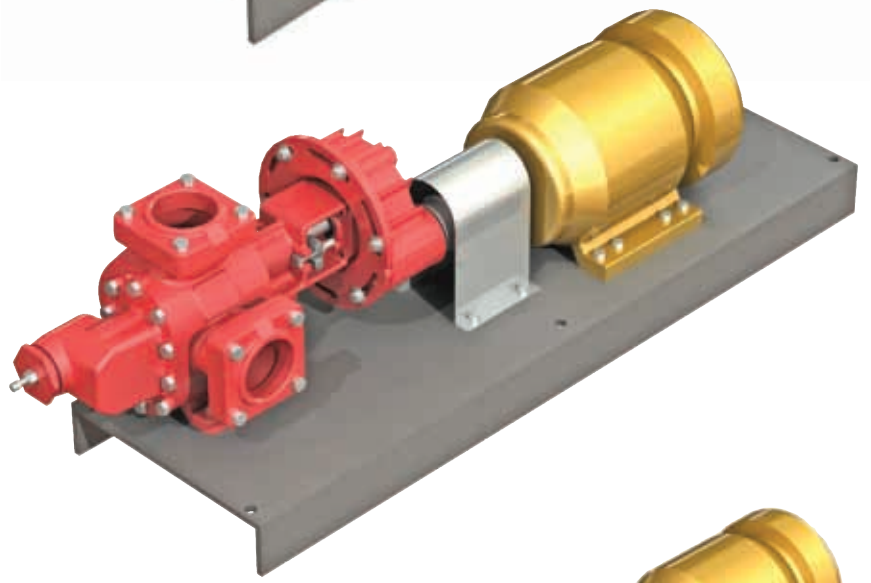
	LW	LZ
H, HB, BH		
GHB		

Base Mounted Units



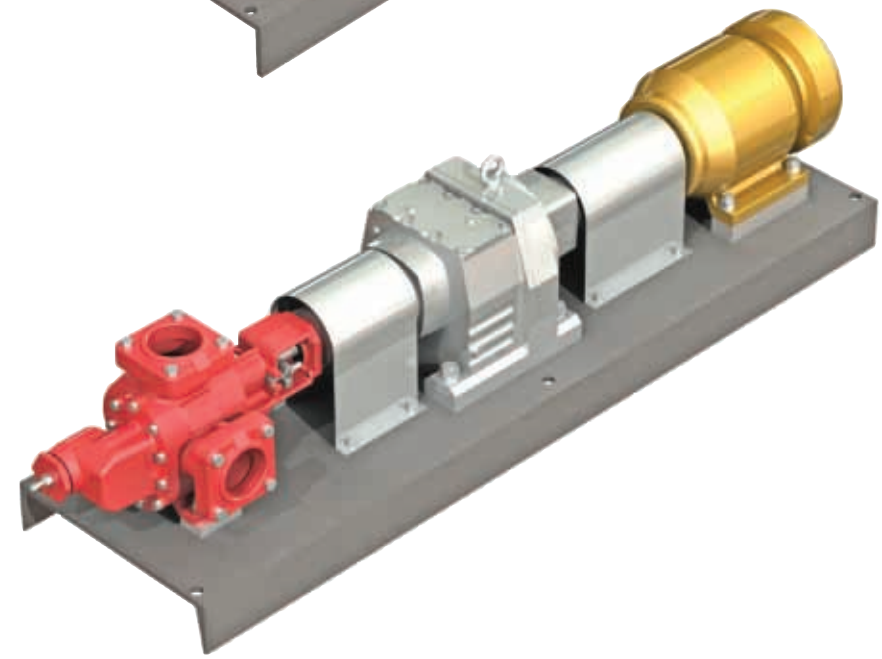
CLOSE COUPLED DRIVES (CCD)

The close coupled drive configuration provides an enhanced level of safety in a compact package. Guards and alignment are not required because this complete drive package easily mounts to DIN flanged gear motors. Since the CCD bracket creates a unified system from the motor to the pump, the baseplate become an optional component to the system. These units will attach to our standard 3600 BH pumps.



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. See pages 8-9 for more information on available gear ratios.

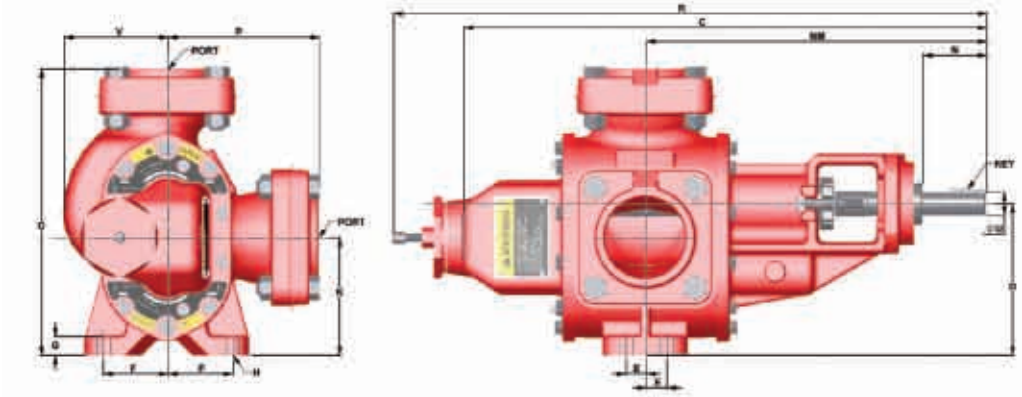


INDUSTRIAL STANDARD

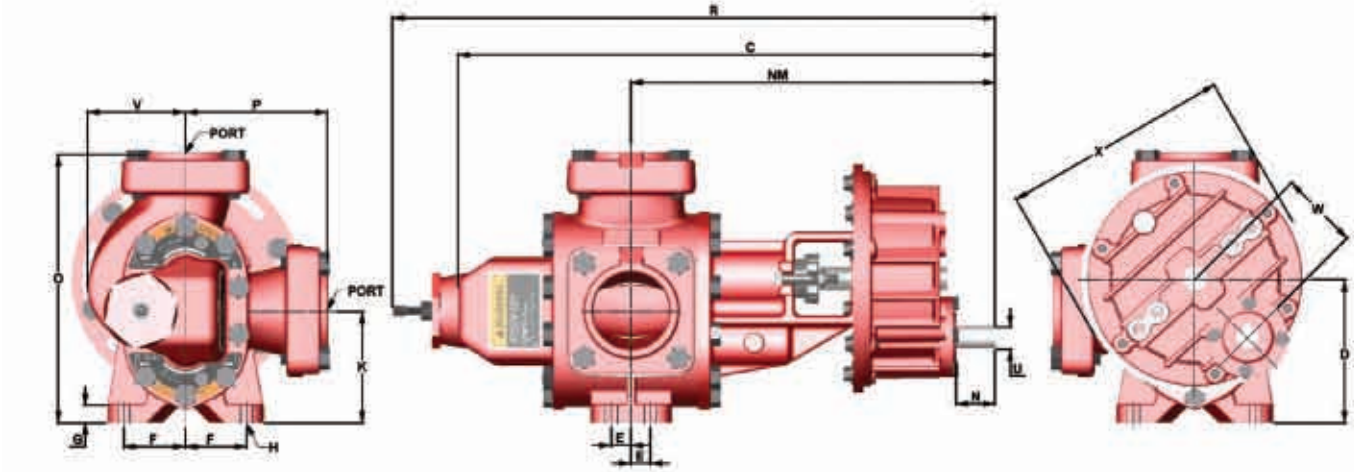
Using an industrial standard gearbox offers virtually unlimited gear ratio options and the ability to easily change pump speeds by simply changing the gearbox. Roper Pump offers extensive expertise in spacing, mounting and aligning the complete drive package of motor, gearbox and pump.

3600 SERIES - 90° Ports

H & HB

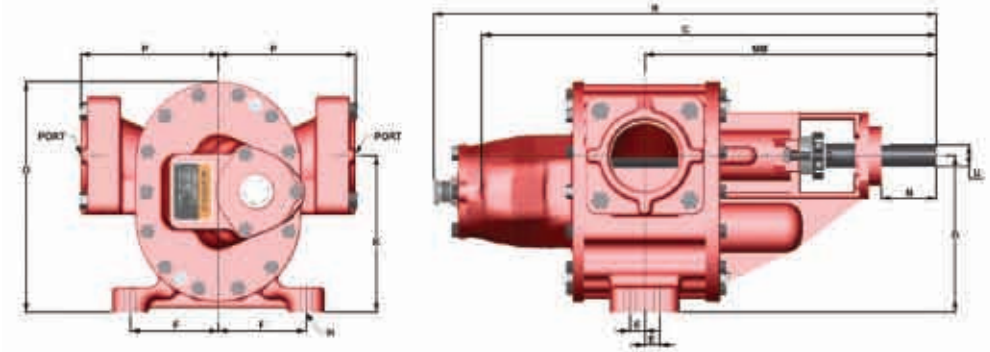


GHB

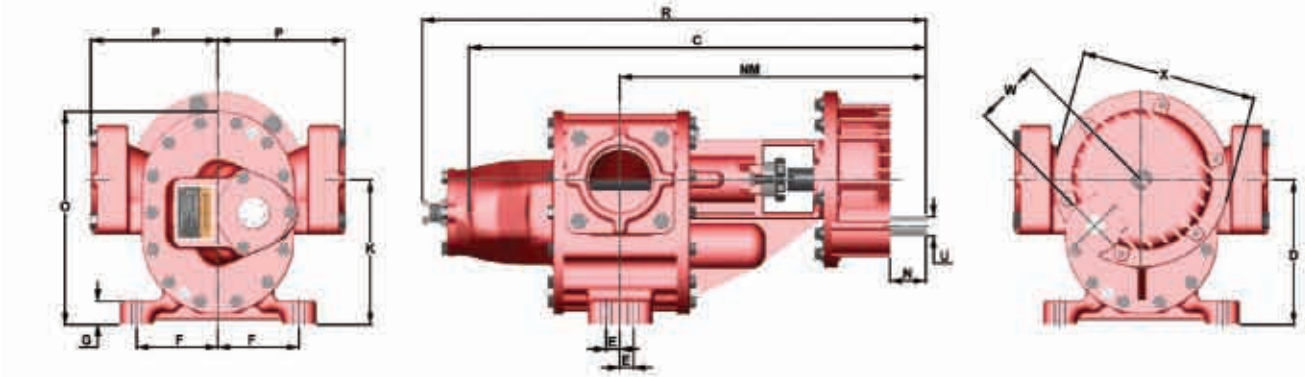


4600 SERIES - Thru Ports 180°

H & HB

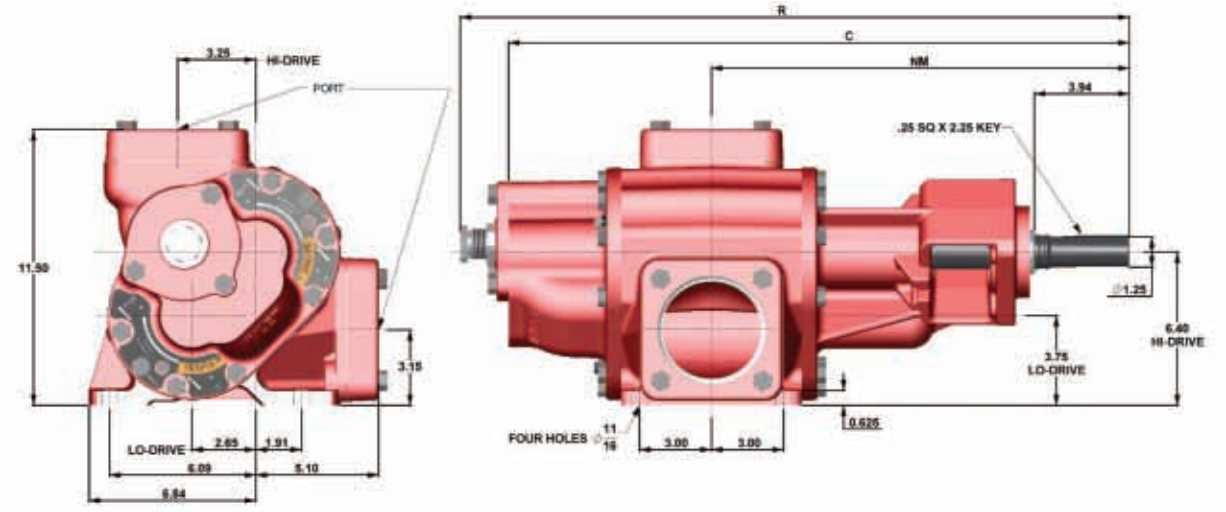


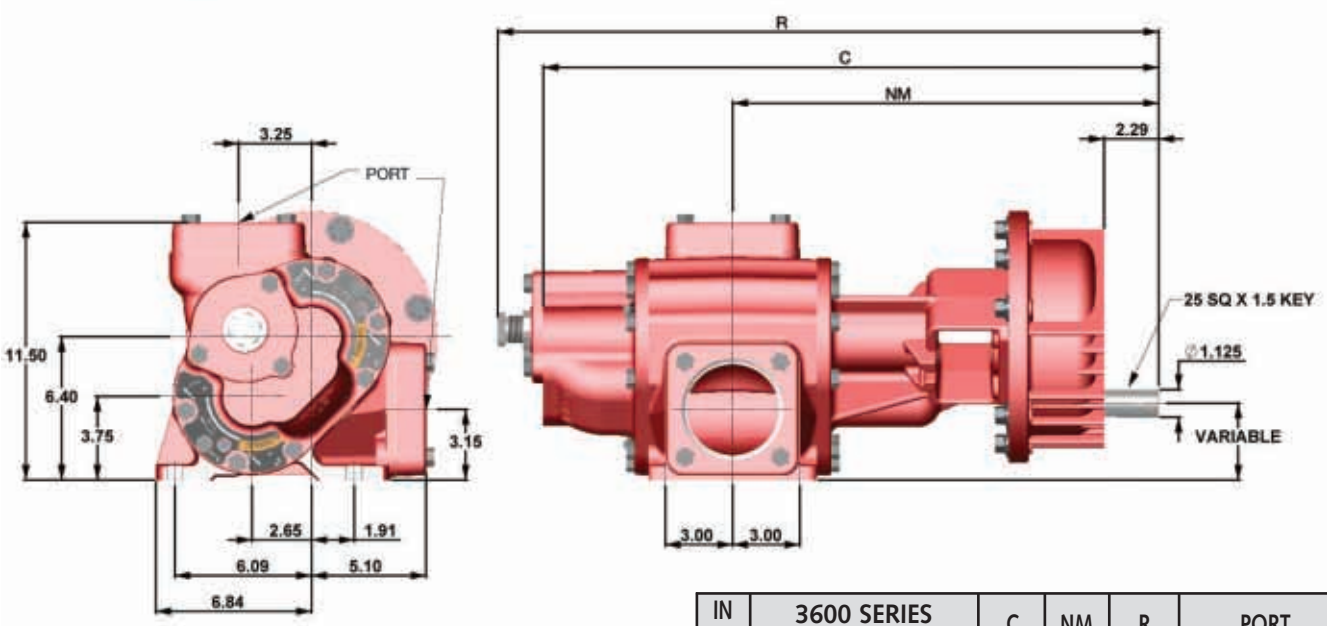
GHB

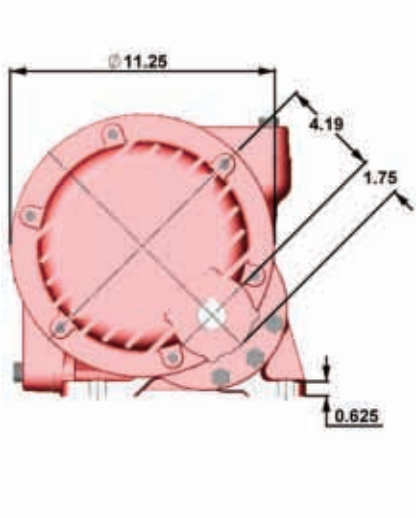


IN [mm]	3600 SERIES		C	D HIGH	E	F	G	H	K	N	NM	O	P	R	U	V	W	X	KEY	PORTS
NO OUTBOARD BEARING	11	H & HRV (SPEC G)	15.97 [405]	6.44 [163]	0.88 [22]	2.75 [69]	0.75 [19]	0.56 [14]	5 [127]	2.58 [65]	10.34 [262]	10.75 [273]	3.62 [91]	19.57 [497]	1.06 [26]	4 [101]	N/A	N/A	.25 SQ X 1.50	2 NPT TAPPED
		HF & HFRV (SPEC G)										11.54 [293]	4.3 [109]							2 NPT FLANGED
	17	H & HRV (SPEC G)	16.72 [424]							1.83 [46]		10.75 [273]	3.62 [91]	20.33 [516]						2 NPT TAPPED
		HF & HFRV (SPEC G)										11.54 [293]	4.3 [109]							2 NPT FLANGED
	22	HF & HFRV (SPEC G)	18.59 [472]							2.2 [55]	11.46 [291]	12.16 [308]	6.41 [162]	22.19 [563]		4.41 [112]				3 NPT FLANGED
	35	H & HRV	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 [174]	23.04 [585]	1.44 [36]	6 [152]			.38 SQ X 1.62	3 NPT TAPPED
		HF & HFRV										16.66 [423]	7.91 [200]							3 NPT FLANGED
	58	HF & HFRV (SPEC G)	22.51 [571]							2.29 [58]	13.52 [343]	17.35 [440]	8.1 [205]	26.02 [660]		6.28 [159]				4 NPT FLANGED
WITH OUTBOARD BEARING	11	HB & HBRV	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 [101]	N/A	N/A	.25 SQ X 1.50	2 NPT TAPPED
		HBF & HBFRV					0.62 [15]					11.54 [293]	4.3 [109]							2 NPT FLANGED
	17	HB & HBRV	20.07 [509]				0.75 [19]			2.7 [68]		10.75 [273]	3.62 [91]	23.67 [601]						2 NPT TAPPED
		HBF & HBFRV										11.54 [293]	4.3 [109]							2 NPT FLANGED
	22	HBF & HBFRV	21.57 [547]								14.4 [366]	12.16 [308]	6.41 [162]	25.17 [639]		4.41 [112]				3 NPT FLANGED
	35	HB & HBRV	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]	6 [152]				3 NPT TAPPED
		HBF & HBFRV										16.66 [423]	7.91 [200]							3 NPT FLANGED
	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 FLANGED
WITH GEAR REDUCTION UNIT	11	GHB & GHBRV	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 [101]	3.523 [89]	10.24 [260]	.25 SQ X 1.50	2 NPT TAPPED
		GHBF & GHBFRV					0.62 [15]					11.54 [293]	4.3 [109]							2 NPT FLANGED
	17	GHB & GHBRV	21.97 [558]				0.75 [19]				15.58 [395]	10.75 [273]	3.62 [91]	25.57 [649]						2 NPT TAPPED
		GHBF & GHBFRV										11.54 [293]	4.3 [109]							2 NPT FLANGED
	22	GHBF & GHBFRV	23.47 [596]								16.33 [414]	12.16 [308]	6.41 [162]	27.07 [687]		4.41 [112]				3 NPT FLANGED
	35	GHB & GHBRV	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]	1.25 [31]	6 [152]	4.189 [106]	11.25 [285]	.25 SQ X 2.00	3 NPT TAPPED
		GHBF & GHBFRV										16.66 [423]	7.91 [200]							3 NPT FLANGED
	58	GHBF & GHBFRV	28.72 [729]								19.73 [501]	17.35 [440]	8.1 [205]	32.23 [818]		6.28 [159]			.25 SQ X 1.50	4 NPT FLANGED

IN [mm]	4600 SERIES		C	D HIGH	D LOW	E	F	G	H	K	N	NM	O	P	R	U	V	W	X	KEY	PORTS
NO OUTBOARD BEARING	11	HF & HFRV (SPEC G)	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 (SPEC G)	16.72 [424]					0.75 [19]			1.83 [46]			4.41 [112]	20.33 [516]						3 NPT FLANGED
	22	HF & HFRV (SPEC G)	18.59 [472]								2.2 [55]	11.46 [291]		4.85 [123]	22.19 [563]						4 NPT FLANGED
	58	HF & HFRV (SPEC G)	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	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	20.07 [509]					0.75 [19]			3.05 [77]			4.41 [112]	23.67 [601]						3 NPT FLANGED
	22	HBF & HBFRV	21.57 [547]									14.44 [366]		4.85 [123]	25.17 [639]						4 NPT FLANGED
	58	HBF & HBFRV	26.53 [673]	9.25 [234]	5 [127]		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 [31]				.25 SQ X 1.50	
WITH REDUCTION UNIT	11	GHBF & GHBFRV	20.47 [519]	6.44 [163]	3.56 [90]	0.88 [22]	2.75 [69]	0.62 [15]	0.56 [14]	5 [127]	1.74 [44]	14.83 [376]	5 [127]	4.3 [109]	24.07 [611]	1 [25]	N/A	3.523 [89]	10.24 [260]	.25 SQ X 2.00	2 NPT TAPPED
	17	GHBF & GHBFRV	21.97 [558]					0.75 [19]				15.58 [395]			25.57 [649]						3 NPT FLANGED
	22	GHBF & GHBFRV	23.47 [596]									16.33 [414]			27.07 [687]						4 NPT FLANGED
	58	GHBF & GHBFRV	28.72 [729]	9.25 [234]	5 [127]		5.19 [131]	1.5 [38]	0.69 [17]	9.25 [234]	2.29 [58]	19.73 [501]	9.25 [234]	8.1 [205]	32.23 [818]	1.25 [32]		4.189 [106]	11.25 [285]		



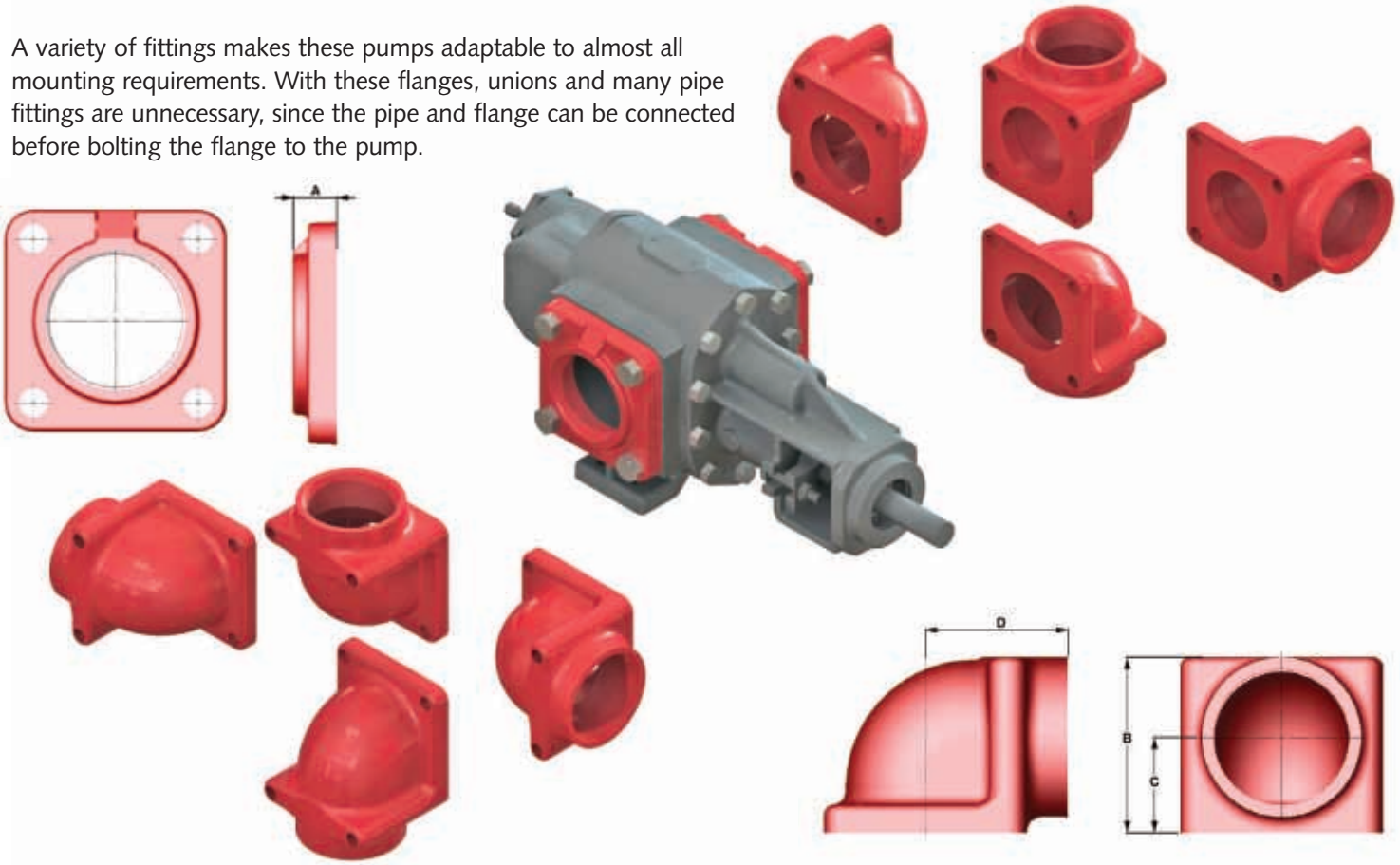




IN [mm]	3600 SERIES ANGLED GEARS		C	NM	R	PORT
NO OUTBOARD BEARING	32	HF & HFRV	20.48	12.25	21.40	3 NPT FLANGE
	43		22.10	13.07	23.02	3 NPT FLANGE
	48		23.19	13.66	24.21	4 NPT FLANGE
WITH OUTBOARD BEARING	32	HBF & HBFRV	23.67	15.44	24.58	3 NPT FLANGE
	43		25.32	16.29	26.24	3 NPT FLANGE
	48		27.02	17.38	27.93	4 NPT FLANGE
WITH GEAR REDUCTION UNIT	32	GHBF & GHBFRV	25.82	17.59	26.74	3 NPT FLANGE
	43		27.43	18.40	28.35	3 NPT FLANGE
	48		28.63	19.00	29.55	4 NPT FLANGE

Flanges

A variety of fittings makes these pumps adaptable to almost all mounting requirements. With these flanges, unions and many pipe fittings are unnecessary, since the pipe and flange can be connected before bolting the flange to the pump.



PUMP SIZE	FITTING TYPE	PORT SIZE	ASSEMBLY NUMBER	FLANGE PART NO.	A	B	C	D
3611 4611	Straight Flange (Std.) Flanged Elbow (vertical) Flanged Elbow (horizontal)	2" 2" 2"	N14-14 N14-15 N14-16	P23-30 P23-32 P23-31	7/8 - -	- 3 3/16 3 7/16	- 1 11/16 1 15/16	- 3 13/16 2 1/2
3617	Straight Flange (Std.) Flanged Elbow Flanged Elbow Straight Flange	2" 2" 3" 2½"	N14-17 N14-19 N14-20 N14-62	P23-12 P23-60 P23-36 P23-72	7/8 - - 1 1/8	- 3 7/16 4 7/16 -	- 1 15/16 2 3/8 -	- 2 7/16 4 3/16 -
4617	Straight Flange (Std.) Flanged Elbow Flanged Elbow Straight Flange	3" 2" 3" 2½"	N14-18 N14-19 N14-20 N14-62	P23-35 P23-60 P23-36 P23-72	1 1/8 - - 1 1/8	- 3 7/16 4 7/16 -	- 1 15/16 2 3/8 -	- 2 7/16 4 3/16 -
3622	Straight Flange Straight Flange Straight Flange (Std.) Flanged Elbow Straight Flange	2" 2½" 3" 3" 4"	N14-28 N14-29 N14-30 N14-31 N14-59	P23-18 P23-22 P23-10 P23-59 P23-19	1 1/8 1 1/8 1 1/8 - 1 5/16	- - - 4 1/4 -	- - - 2 1/8 -	- - - 4 5/8 -
3632	Straight Flange (Std.)	3"	N14-121	P23-150	1 1/8	4 7/16	2 3/8	4 3/16
3635	Straight Flange (Std.) Flanged Elbow	3" 3"	N14-76 N14-77	P23-35 P23-36	1 1/8	4 7/16	2 3/8	4 3/16
4622 3643 3648	Straight Flange Straight Flange Straight Flange (Std.) Flanged Elbow Flanged Elbow	2" 3" 4" 3" 4"	N14-57 N14-21 N14-22 N14-23 N14-24	P23-18 P23-10 P23-19 P23-59 P23-37	1 1/8 1 1/8 1 5/16 - -	- - - 4 1/4 5 1/2	- - - 2 1/8 2 3/4	- - - 4 5/8 5 3/8
3658, 4658	Straight Flange (Std.)	4"	N14-26	P23-52	15/16	-	-	-

Each assemby includes: flange, gasket, and hardware.
For simplicity, the pump sizes above are only shown with PACKING ("6" in the model number).
Flanges are interchangeable with 3500 (triple lip seal), 3600 (packing) and 3700 (mechanical seal) variations.

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

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