

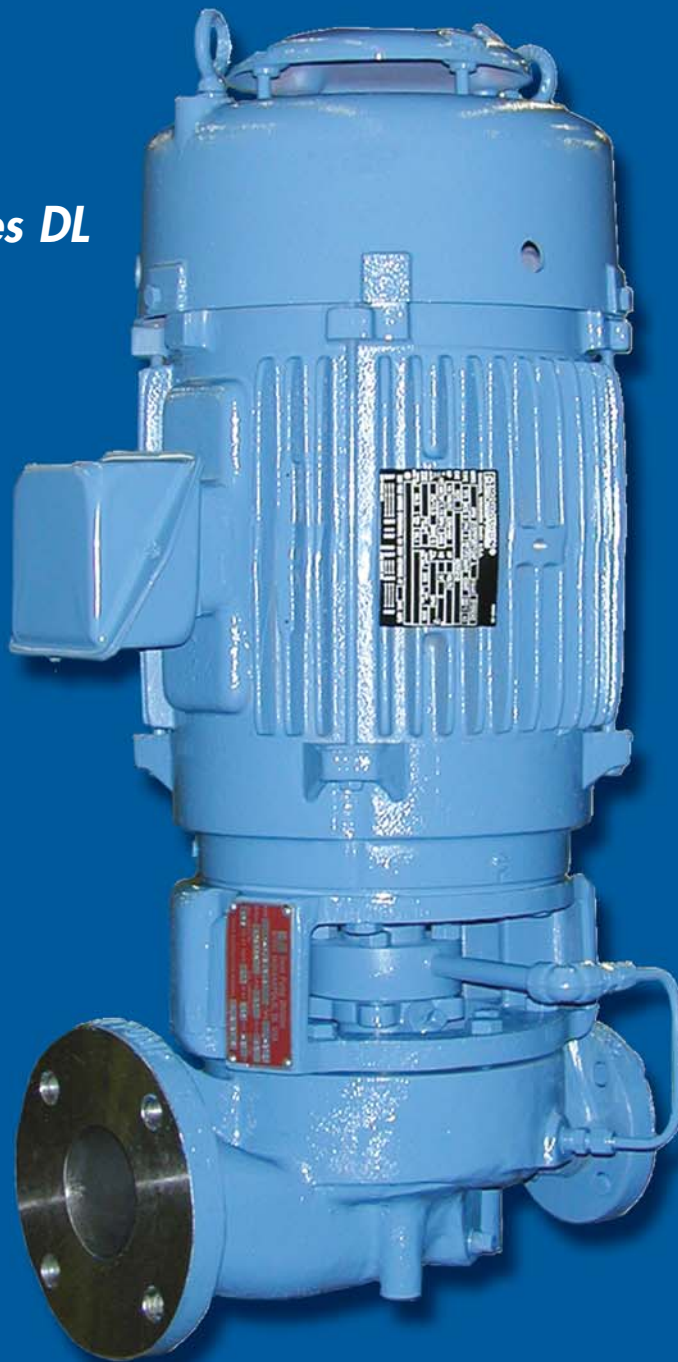


Dean Pump Division

High Temperature

Chemical Process Inline Pumps

Series DL



Series DL High Temperature Chemical Process Inline Pumps

- Capacities to 600 GPM (182 m³/hr)
- Heads to 550 feet (167 m)
- Pumping Temperatures to 550°F (288°C)
- Working Pressures to 275 PSIG (1,896 kPa)
- Seven Sizes

DL Series Pumps are excellent for high temperature chemical process applications. Features include a space saving design and a fully open impeller. Seven sizes are available in ductile iron and 316SS construction.

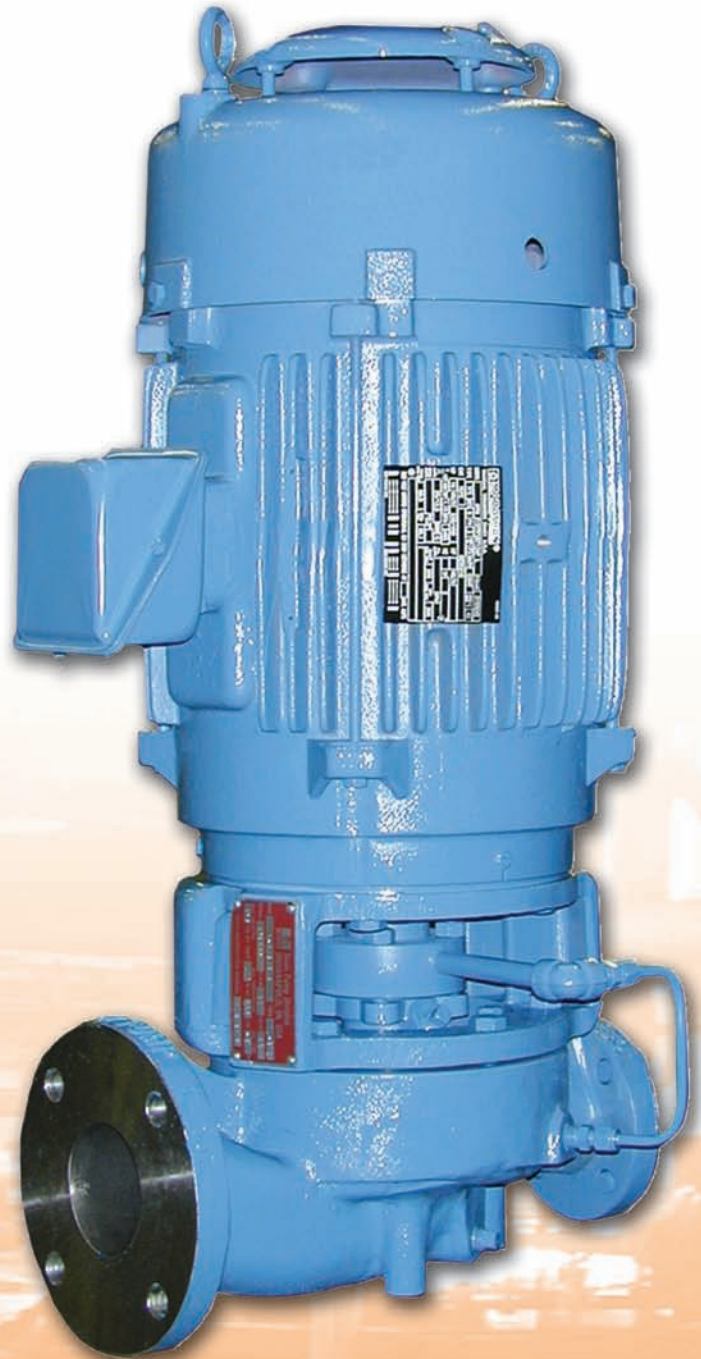
The quality construction of the DL200/230 Series Pumps provides a pump with maximum service life that is simple to install and maintain.

DL200/230 Series Pumps utilize a close-coupled design which eliminates the need for couplings. There are no shaft alignment problems often associated with coupled pumps.

Shafts are furnished by the motor manufacturers to Dean's rigid specifications for materials, size and configuration to insure long, trouble-free operation. Shafts have a maximum end play of 0.006" thereby extending the life of the mechanical seal.

Additional Features Include:

- **Removable Backhead** allows removal of the entire rotating assembly without removing the pump casing from the line.
- **Low Shaft Deflection** design provides a maximum of 0.002 inch shaft deflection at the face of the stuffing box, assuring maximum packing and seal life.
- **Renewable Shaft Sleeve** is a standard Dean Pump feature.
- **Seal Face Flushing** is provided for pumps furnished with mechanical seals. Dean Seal guards may be used.
- **Positive Impeller Adjustment** can be set on the impeller/backhead/motor before insertion into the casing.
- **Stuffing Box Versatility** provides for standard packing and a wide selection of mechanical seal types and materials.
- **Choice of Materials** includes ductile iron and 316 stainless steel.



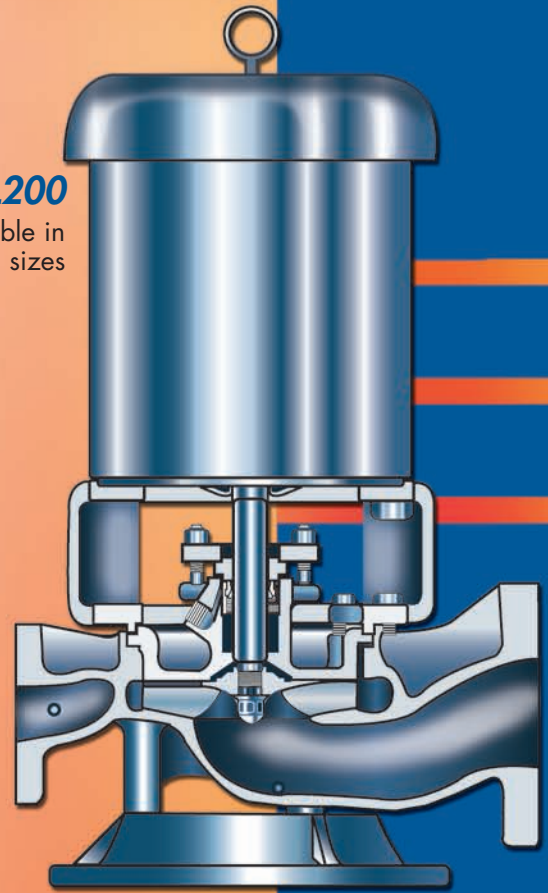
Common Features

DL200/230

- Chemical duty design
- Class 150 flat face flanges
- Close-coupled design eliminates alignment issues
- Space saving vertical design
- Ductile iron and 316SS construction available
- ANSI type fully open impeller
- ANSI type backhead
- 400°F (205°C) operating temperature without cooling
- 550°F (288°C) maximum operating temperature with cooling
- Back pull-out design
- Positive impeller adjustment
- Single and double seal arrangements available
- Oversized gland bolts

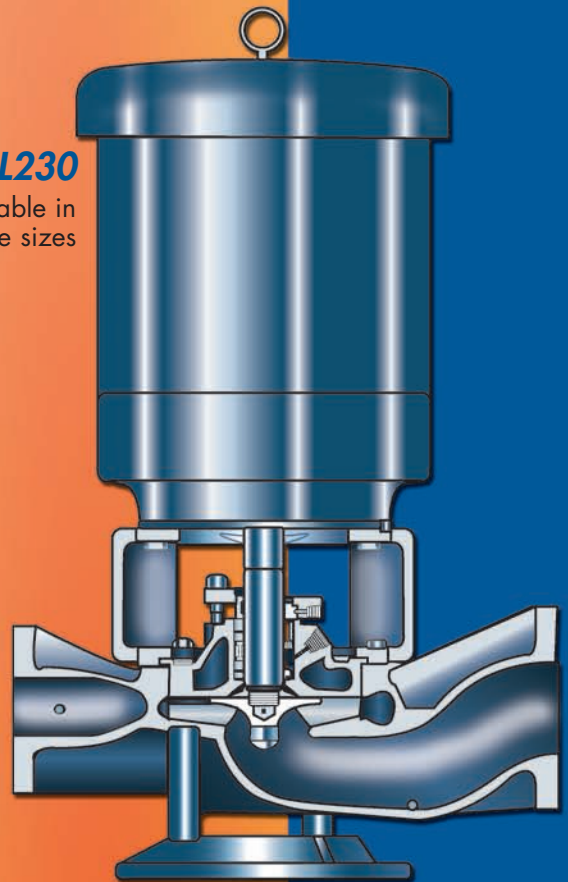
DL200

Available in two sizes

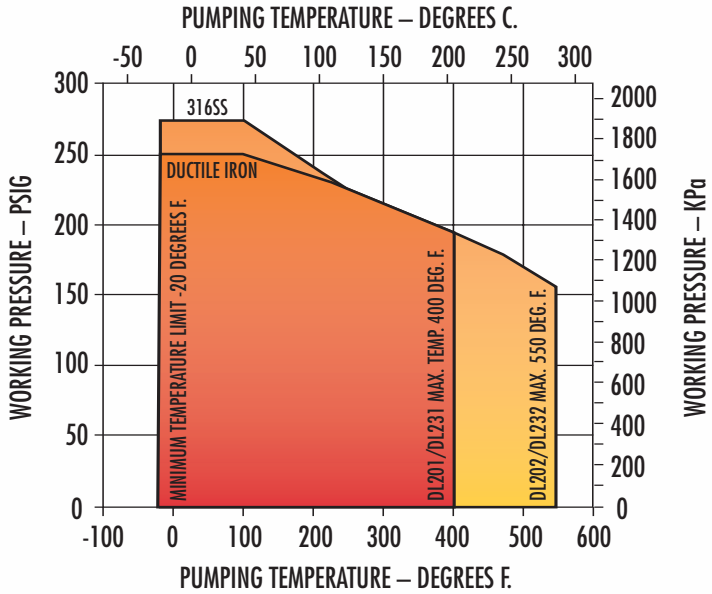


DL230

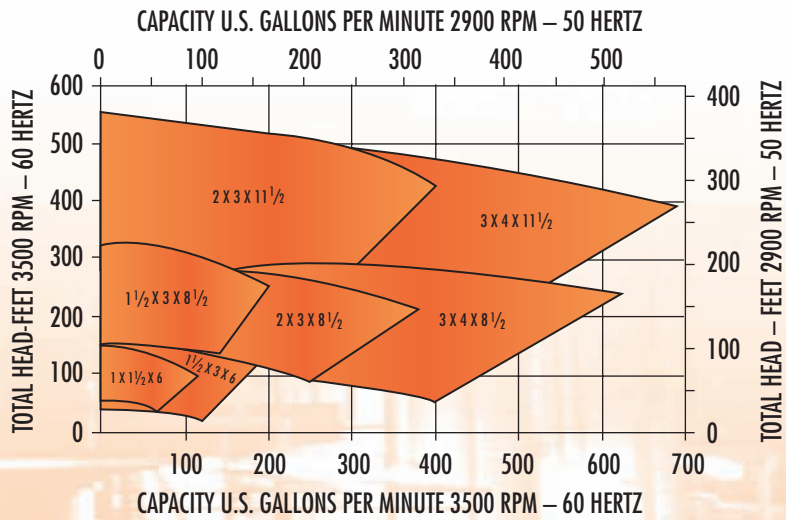
Available in five sizes



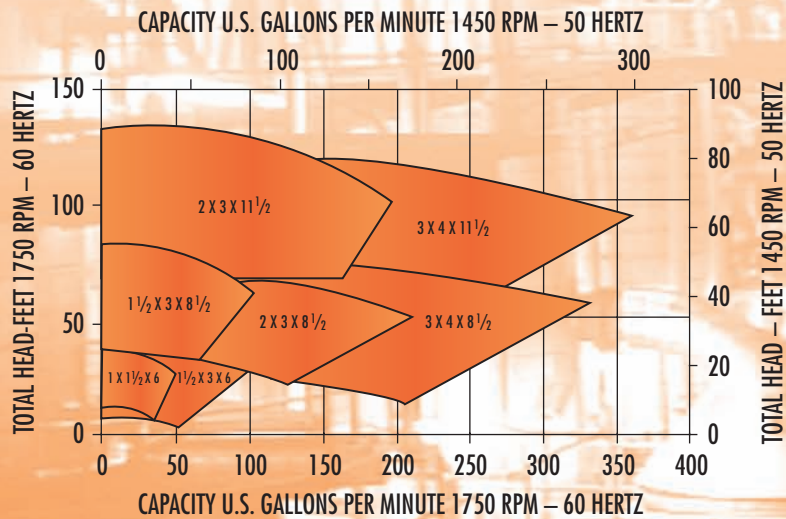
ALLOWABLE WORKING PRESSURE VS. PUMPING TEMPERATURE

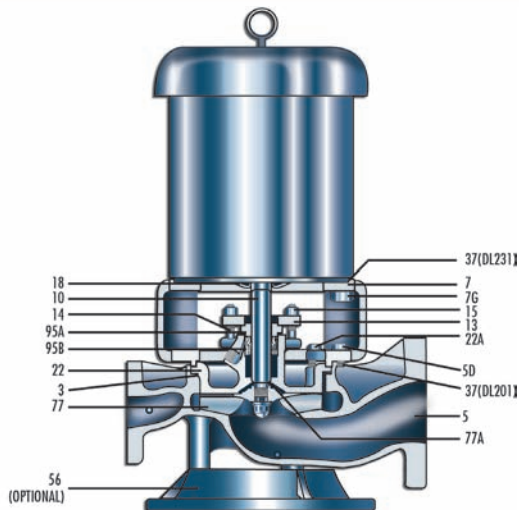


DL HEAD – CAPACITY RANGE CHART WITH TWO POLE MOTOR

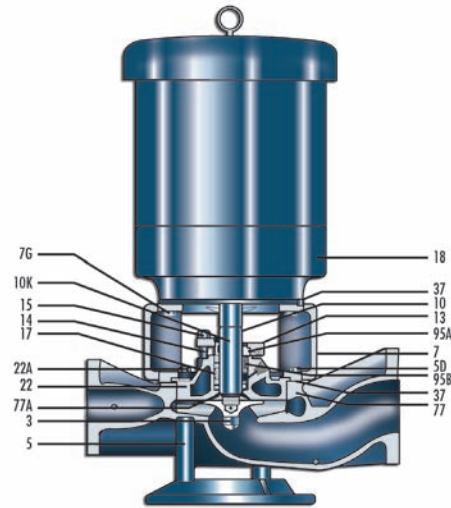


DL HEAD – CAPACITY RANGE CHART WITH FOUR POLE MOTOR





DL201 and DL231 standard inline model with plain casing back cover.
DL201 Section No. 01934-1, DL231 Section No. 01935-1



DL202 and DL232 standard inline model with jacketed casing back cover.
DL202 Section No. 01934-3, DL232 Section No. 01935-3

MECHANICAL DESIGN SPECIFICATIONS		
	DL200	DL230
Direction of Rotation: Viewed From Motor End	Clockwise	
Horsepower Rating, Maximum: Rated Horsepower of Driver Not to Exceed @1750 rpm @3500 rpm	7 1/2 HP 15 HP	50 HP 100 HP
Casing Thickness, Minimum	5/16"	
Bearings – Ball Type: Motor Lubrication	Grease	
Flanges: ASME/ANSI Rating Ductile Iron (Cl.22) 316SS (Cl.50) Facing Finish	CL.150 FF 125 Ra	
Impeller	Single Plane Dynamic Balanced	
Maximum Suction Pressure For 2-Year Minimum Thrust Bearing Life	100 psig	
Stuffing Box Jacket Pressure	Maximum 125 psig	
Hydrostatic Test Pressure: Ductile Iron (Cl.22) 316SS (Cl.50)	415 psig	
Stuffing Box Dimensions:		
Length (Depth)	2 1/8"	2 3/4"
Inside Diameter (Bore Dia.)	1 5/8"	2 1/2"
Shaft Sleeve Diameter	1"	1 3/4"
Lantern Gland Width	7/16"	5/8"
Distance: Lantern Gland To Open End of Stuffing Box	1 3/8"	1 3/4"
Packing:		
Size (Square)	5/16"	3/8"
Number of Rings With Lantern Gland Spacing	5 2-R-3	5 2-R-3
Number of Rings Lantern Gland Omitted	6	7

MECHANICAL SEAL SPECIFICATIONS			
Pump Type	Material Class	Pumping Temperature °F	
		Min.	Max.
DL201 and DL231	22 or 50	-20	+400
DL202 and DL232	22 or 50	-20	+550

All single mechanically sealed pumps contain a seal flushing connection in the gland and internal seal circulating piping.

All single mechanically sealed DL202 and DL232 pumps used with cooling jackets require a Min-Flo Bushing.

STANDARD MATERIALS OF CONSTRUCTION			
Part#	Part Name	Iron (Class 22)	316SS (Class 50)
3	Impeller	C.I. (1)	316SS (3)
5	Casing	D.I. (7)	316SS (3)
5D	Casing Capscrew	Steel (8)	
7	Cradle Spacer	C.I. (1)	
7G	Cradle Spacer Capscrew	Steel (9)	
10	Shaft Sleeve	316SS (6)	
10K	Shaft Sleeve Key (DL 230 Series only)	304SS	
13	Stuffing Box Gland	Steel (4)	316SS (3)
14	Stuffing Box Gland Stud	304SS (5)	
14A	External Seal Flush Plug	Steel (2)	316SS (6)
15	Stuffing Box Gland Stud Nut	304SS (5)	
17	Lantern Ring	Teflon [†]	
18	Splash Collar	18-8 Stainless Steel ^{^^}	
22	Casing Back Cover	D.I. (7)*	316SS (3)
22A	Back Cover Capscrew	Steel (9)	
37	Clearance Shim	Steel	
56	Base (Optional)	C.I. (1)	
77	Casing Gasket	Teflon [†]	
77A	Impeller Gasket	Teflon [†]	
95A	Stationary Seal Element	Optional – See Seal Data	
95B	Rotating Seal Face	Optional – See Seal Data	

[†] Trademark of E.I. duPont de Nemours & Co.

* DL 202 & DL 232: jacketed backhead is Cast Steel – A.S.T.M. A216 Grade WCB

^{^^} DL230 pumps with motor frames 182TC and 184TC will have a Cast Iron (1) Splash Collar

Material Specifications

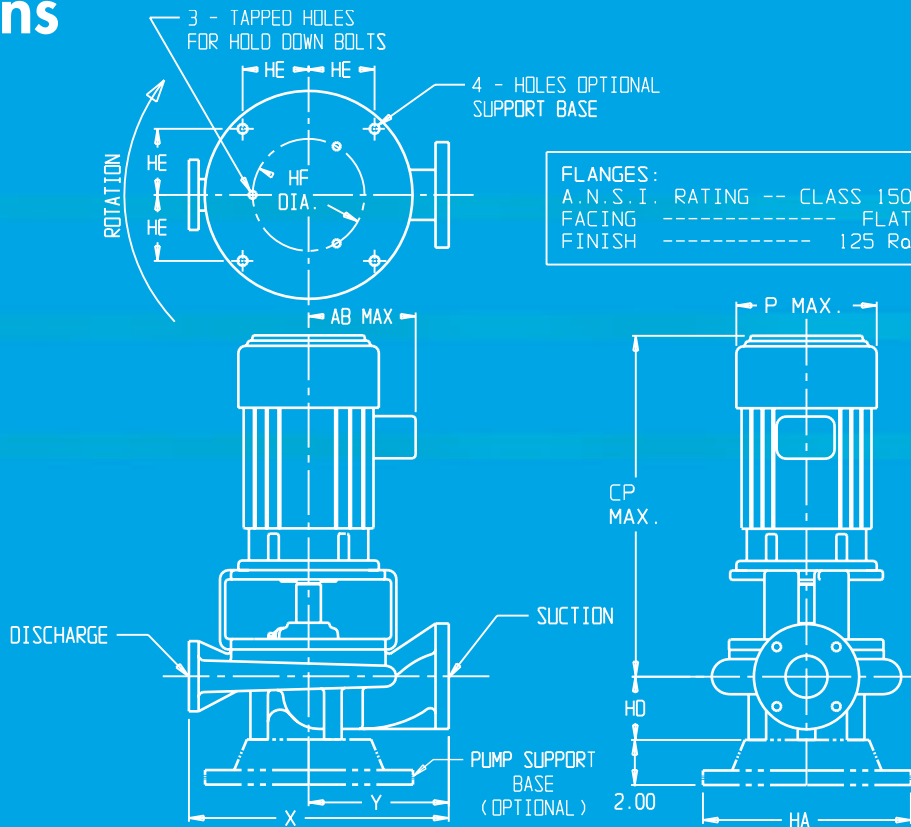
- | | |
|---|---------------------------------|
| (1) Cast Iron | (6) A.I.S.I. 316SS |
| (2) A.I.S.I. 1020 | (7) Ductile Iron-A.S.T.M. A 395 |
| (3) A.S.T.M. A 744 Grade CF-8M | (8) A.S.T.M. A449 Type 1 |
| (4) Cast Steel A.S.T.M. A216
Grade WCB | (9) A.S.T.M. A307 |

*Specifications subject to change without notice.

Electric Motor Specifications

Standard motors are vertical, solid shaft, normal thrust, "C" base, 230/460 volts, 3 phase, 60 cycle, Class B insulation, NEMA Design B, for 40°C maximum ambient temperature. The motor shaft is steel. The bearings are regreasable. Stocked explosion proof motors are Dual label, Class I Group D and Class II Groups F&G, with T-3B temperature code and a 1.0 service factor.

Dimensions



FRAME	P (MAX)	CP (MAX)	AB (MAX)
143TC	9.000	21.250	9.250
145TC	9.000	22.250	9.250
182TC	10.500	26.250	10.750
184TC	10.500	26.250	10.750
213TC	12.750	30.000	11.375
215TC	12.750	30.000	11.375
254TC	14.000	32.250	12.500
256TC	14.000	32.250	12.500

FRAME	P (MAX)	CP (MAX)	AB (MAX)
284TC	16.250	34.500	14.500
286TC	16.250	34.500	14.500
324TC	17.750	36.250	17.500
326TC	17.750	36.250	17.500
364TC	20.000	42.250	18.500
365TC	20.000	42.250	18.500
405TC	22.000	44.250	19.000

PUMP SIZE	SUCTION					DISCHARGE					HA	HD	HE	HF	X	Y
	SIZE	OD	BC	BOLTS	THK	SIZE	OD	BC	BOLTS	THK						
1 X 1 1/2 X 6	1.50	5.00	3.88	4 - 1/2	.688	1.00	4.25	3.13	4 - 1/2	.563	11.00	2.38	3.50	6.00	12.50	6.50
1 1/2 X 3 X 6	3.00	7.50	6.00	4 - 5/8	.938	1.50	5.00	3.88	4 - 1/2	.688	11.00	2.88	3.50	6.00	14.50	8.00
1 1/2 X 3 X 8 1/2	3.00	7.50	6.00	4 - 5/8	.938	1.50	5.00	3.88	4 - 1/2	.688	13.00	4.50	4.13	7.00	18.50	10.00
2 X 3 X 8 1/2	3.00	7.50	6.00	4 - 5/8	.938	2.00	6.00	4.75	4 - 5/8	.750	13.00	4.50	4.13	7.00	20.50	11.00
3 X 4 X 8 1/2	4.00	9.00	7.50	8 - 5/8	1.00	3.00	7.50	6.00	4 - 5/8	.938	13.00	5.50	4.13	7.00	24.00	13.00
2 X 3 X 11 1/2	3.00	7.50	6.00	4 - 5/8	.938	2.00	6.00	4.75	4 - 5/8	.750	17.00	4.50	5.50	10.00	22.50	12.00
3 X 4 X 11 1/2	4.00	9.00	7.50	8 - 5/8	1.00	3.00	7.50	6.00	4 - 5/8	.938	17.00	5.75	5.50	10.00	25.00	14.00

All dimensions are in inches.

IMPORTANT: Do not use for construction unless certified.



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