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Revised: August 1, 2011

Application Data Sheet

Customer_____ Date _____

Phone _____ Fax _____

Application/Project name _____

Liquid Data:

Liquid name _____
Viscosity _____ (SSU) (CKS) (CPS) at Temperature _____ (F) (C)
Specific gravity _____ Characteristics: Clean ___ Dirty ___ Acidic ___ Solids ___
Other information _____

_____

_____

Service Requirements:

Capacity required _____ GPM at discharge pressure _____ PSID
Operating temperatures _____ Duty Cycle: (Intermittent) (Continuous)
Material requirements: (Cast iron) (Stainless steel) Relief Valve: (Yes) (No)
Seal Requirements _____ Other _____

_____

Inlet Conditions:

Flooded _____ Dry _____ Wet _____ Vacuum _____ In. Hg. _____
Ft. Lift _____ Ft. head _____ Ft. pipe length _____ Pipe diameter _____
Other information _____

Prime Mover/Power Data:

Horsepower _____ RPM _____ Phase: (01) (03) Hertz: (50) (60) (Dual)
AC _____ Voltage _____ or DC _____ Voltage _____
Motor frame _____ Mounting: (Close coupled) (Bed Plate)
Enclosures (ODP) (TENV) (TEFC) (EXPP) (Washdown) Other_____

Additional application data: _____

_____

_____

_____

_____

Pricing Worksheet

Customer_____ Date _____

Phone _____ Fax _____ **List Price**

Description: Part #/Model # _____ _____

Pump: Size _____ (U) (UR) Serial # _____ _____
Haight Part # _____ _____

Seals: Lip: (Buna-N) (Viton) (Teflon) _____
Packing: (Graphoil Packing) (Teflon Packing) _____
Mechanical: (Buna-N Mechanical-21) (Viton Mechanical-21) _____
Other (Type 9 etc.): _____ _____

Bearings: (Gramix Iron) (DU®) (Carbon Graphite) (Bronze) _____

Bracket: (W48) (E56) (E182) (Z56R) (Y56R) (Z56S) (Z182S) (Z213S) _____
(Y56S) (H140) (H182) (H213) (H254) _____

Outboard Bearing Bracket: 1-8U/UR: (R1856) 10-40U/UR: (S1040) _____

Coupling: (L70) (L75) (L90) (L95) (L100) _____

Motor: Motor Part # _____ Description _____ _____
HP _____ PH _____ HZ _____ RPM _____
Voltage _____ Encl _____ C-FF _____
Mounting: (C-Faced) (C-Faced & Footed) (Rigid Base)

Bedplate: 1 - 5 U/UR or 6 - 9 EU/EUR or 10 - 40 U/UR: _____

Special Modifications _____ _____

_____

Price/Availability: Total List Price _____
Discount _____

Availability _____ Net Selling Price _____

Pump Sizing Outline

The most important step for successful pump sizing is gathering complete and accurate information regarding the application.

Three basic types of information are required

- Pump performance requirements
- Characteristics of the fluid being pumped
- System design

Two worksheets provide a guideline for the information gathering process:

1) Application Data Sheet - covers the fluid characteristics, pump performance requirements, mounting requirements, and prime mover data

2) System Outline - provides a guide to the system configuration including elevation changes, piping arrangement, fittings, valves, and equipment.

Step 1: Convert your raw information into common units

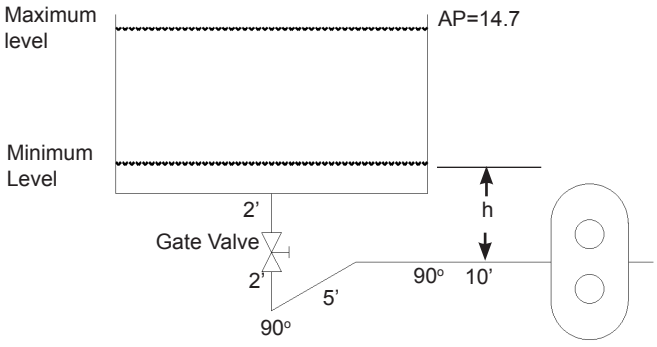
- Flow - gallons per minute (GPM)
- Pressure - pounds per square inch (PSI)
- Viscosity - saybolt seconds universal (SSU)
- Temperature - degrees fahrenheit (F)

Easy to use charts, graphs and tables for this purpose are located on pages 14 - 30.

Step 2: Calculate the pump inlet suction condition

Net positive suction head available (NPSHA) = AP +/- H - VP - FL

- Elevation (H) of the fluid surface, above (+) or below (-) the pump inlet. It is best to use the lowest level found in normal operation.
- Add atmospheric pressure (AP) on the surface of the fluid. Be sure to allow for height above sea level. Closed vessels can operate under a vacuum condition.
- Subtract the Vapor Pressure (VP) of the liquid. Vapor pressure can be significantly influenced by the fluid temperature.



Example: 20 gpm; 500 SSU; VP = 7.5 PSI; 1" piping; H_{min} = 6 ft.

Equivalent Length (page 30)

Gate Valve	1/2
2 - 90° Elbows	5
Piping	19
	$24^{1}/_{2}$ ft

Pipe Loss (pages 28-29)

$\frac{.5 \text{ psi}}{\text{ft}} \times 24^{1}/_{2} = 12.25$ PSI

$$NPSHA = \frac{6}{2.31} + 14.7 - 7.5 - 12.25 = -2.45$$

Note: -2.45 PSI indicates the pump will be operating with an inlet vacuum. This will subject the pump to cavitation. Possible solutions to remedy this include :

- move the pump next to the tank, or
- use $1^1/_4$" pipe

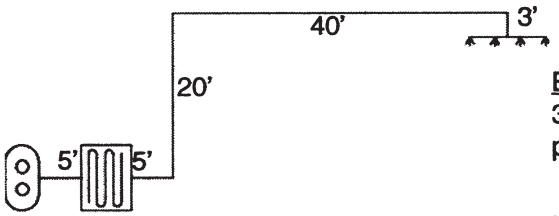
- Subtract the friction losses (FL) for the connecting piping, including:
  - exit condition from the supply tank
  - elbows, fittings, valves, filters, etc. between the supply tank and the pump
  - the length of piping between the supply tank and the pump

Charts and graphs are provided on pages 28 - 30 to simplify these calculations.

If the NPSHA is less than the suction head required, or negative, then cavitation and reduced flow are possible. Almost 80% of all pump related problems occur on the suction side of the pump. Careful attention to this crucial area is essential for successful sizing.

Consideration of the fluid cleanliness is an important factor when calculating NPSHA. Positive displacement pumps can draw fluids through a filter, preventing damage to the pump from suspended particles. However, filters create friction losses on the inlet piping. The exact amount of pressure drop will depend on the fluid, and the size and area of the filter being used.

Step 3: Calculate the system pressure requirements for 20 GPM; 500 SSU; 1-1/4" pipe; heat exchanger at 17 PSI; spray nozzle at 35 PSI.



Equivalent Length-Ft		h = +20-3 = 17ft.
3-90° Elbow	9	$\frac{17}{2.31}$ = 7.4 psi
pipe	73	
	82ft.	

.17 x 82 = 14 psi FL = 7.4 + 14 + 17 + 35 = 73.4 psi

- Elevation (H) of the fluid surface, above (+) or below (-) the pump inlet. It is best to use the highest discharge point in normal operation.
- Add the friction losses (FL) for the connecting piping, including:
  - exit condition from the piping
  - elbows, fittings, valves, filters, heat exchangers, etc. between the pump, and discharge
  - the length of piping between the pump, and discharge point

Charts and graphs are provided on pages 28 - 30 to simplify these calculations.

System pressure = FL +/- H

Friction losses for a specific system will vary due to flow rate, viscosity, and temperature. Factors to consider changing to improve a design are:

- Pump location
- Pipe size
- Pump size and speed

Step 4: Select a pump size (see example on page 6). Requirement 11 GPM (41.6 lpm) @ 100 PSI (6.9 bar) and 10,000 SSU fluid viscosity.

Haight pump model numbers reflect the nominal capacity of the pump at 1800 rpm, for example, a 40D model pump will produce 40 GPM @ 1800 RPMand 200 SSU. Given the information you have developed:

- Enter the pump performance curves for a flow similar to your requirement.
- Select the specific curve with a viscosity near or greater than the fluid being pumped. Performance curves are provided at viscosities of 32, 200, 500, 2,000, 5,000, and 10,000 SSU.
- Draw a straight, horizontal line (line # 1) from the capacity scale to the right until the line intersects with the desired outlet pressure curve (Point A). Pressures are shown in 50 PSI increments, intermittent pressures maybe established by extrapolating between two adjacent curves. (See page 8 for sample curves).
- Draw a straight, vertical line (line # 2) downward from the point of intersection of the horizontal and pressure curve line (Point A) to the pump speed scale (Point B). This establishes the speed required for a specific flow rate, viscosity and discharge pressure.
- The vertical line also intersects a second set of pressure curves at the bottom half of the page (Point C). Draw a straight, horizontal line (line # 3) to the right from the point of intersection (Point C) to the horsepower scale (Point D). Divide the horsepower required by the specific gravity of the fluid, this establishes the horsepower requirement for a specific flow, viscosity, and discharge pressure.

NOTE: It is advisable to evaluate the potential for using synchronous speed motors whenever possible. This allows for direct coupled mounting and avoids the additional expense of bedplates and gearboxes. Be sure to evaluate both larger and smaller model sizes to ensure the best overall selection.

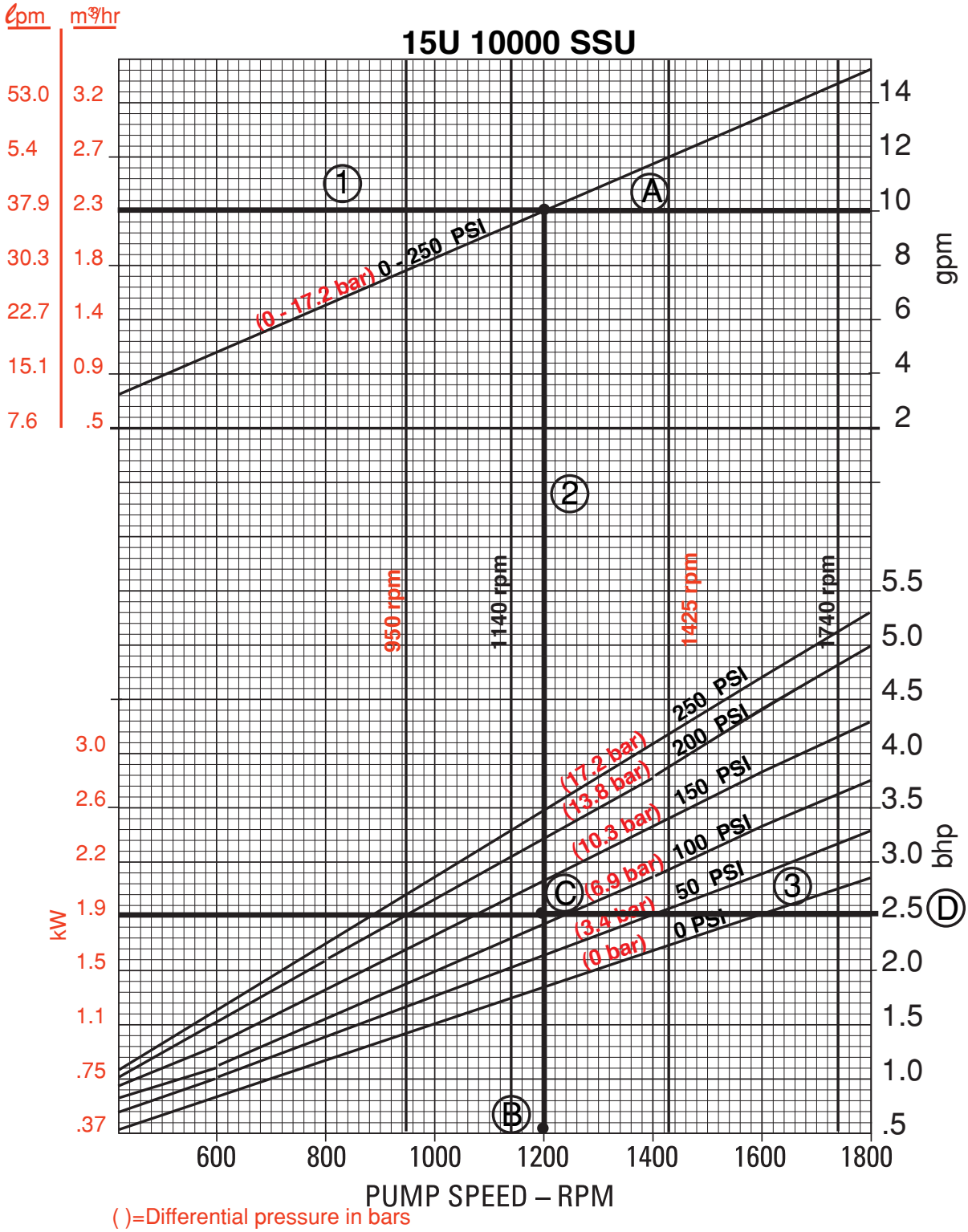
In this example, alternate selections are:

1) 15D @ 1200 RPM would produce 10 GPM @ 100 PSI, 2.4 HP
2) 10D @ 1800 RPM would produce 10.8 GPM @ 100 PSI, 2.9 HP
3) 20D @ 1020 RPM would produce 11 GPM @ 100 PSI, 2.0 HP

Step 5: Configuring the pump, Haight offers a broad variety of options to meet specific application requirements:

- Materials - Ductile iron (standard) and 316 Stainless Steel (see Chemical Compatibility Charts I, II, and III on pages 37 - 52)
- Hardening - Hatriding (case hardened) and extra hard
- Bearings - Gramix iron (standard), DU laminated, Bronze, and Carbon Graphite
- Rotors - Ductile iron (standard), Teflon, Delrin, NiResist
- Pinion and Shaft - Centerless ground, hardened (standard), and Stainless steel
- Elastomers - Buna N (standard), Viton, Kalraz, Teflon, and Silicone
- Seals - Single lip (standard), Double lip, Packing gland, and single Mechanical
- Mounting - Hub mounted, Close-coupled, and Bedplate
- Motors - Electric, Pneumatic, Hydraulic, and Gas
- Integral Relief Valve, with return to suction or return to tank options

See Pump Option Selection Guide, pages 8 and 9,
for general description and application parameters



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

Pump Option Selection Guide

Bearings:

Gramix iron: Standard. Good, general purpose bearing for normal applications.

Bronze: Improved performance characteristics for thin liquids, and moderate pressures.

DU: Tri-laminate style bearing with an inner layer of Teflon, recommended for thin fluids and pressures exceeding 100 PSI.

Carbon Graphite: Excellent performance in aggressive liquids, and high temperatures.

Shaft Seals:

Lip seal: Standard. Excellent general purpose shaft seal which avoids the weeping and adjustment requirements normally associated with packing gland designs. Lip seals will generally provide 3000+ hours of service life, and offer simple, low cost replacement.
Operating limitations:

- Maximum discharge pressure is 75 PSI without venting to suction option.
- Maximum of 3" Hg suction pressure in single seal design, consult factory for double and triple seal application information.

Packing gland: Good for high temperature applications (up to 585° F). The Hydraulic Institute recommends a minimum seal weep rate of 1 ml/minute to provide adequate cooling and lubrication for the seal and shaft. Experienced maintenance personnel are required for periodic adjustment of the packing gland to avoid damage to the seal and/or shaft.

Mechanical: Excellent for improved service life performance, high temperature (625°F) and high pressure (650 PSID) applications. Some seal face materials are susceptible to shock and vibration damage. A broad variety of seal face materials are available to meet specific application conditions. Consult factory for additional information.

Rotors:

Iron: Standard. Good general purpose rotor material providing excellent wear performance in many applications. Available Hatrided, Extra Hard, and with Hot tolerances for enhanced rotor performance characteristics.

Teflon: Very good material selection for thin, and/or aggressive fluids at moderate pressure and temperature conditions. Do not use above 100 PSI or 200° F. Limited suction capability. Excellent when used in combination with hardened pumps in abrasive applications as a sacrificial component.

Delrin: Improved abrasion resistance versus Teflon. Good for use with thin, aggressive fluids at somewhat lower operating conditions. Do not use above 80 PSI or 120° F. Limited suction capability.

Ni-resist: Stainless iron alloy. Excellent performance characteristics in aggressive fluids at high temperatures and pressures.

Hardening:

Hatriding: Case hardening. Provides limited resistance to abrasion, and mildly aggressive fluids. Excellent for applications that experience periodic fluid contamination.

Extra Hard: Fully hardened pump components for improved service life in abrasive applications. Especially useful when used in conjunction with either a Teflon or Delrin rotor.

Tank Return:

The integral relief valve is modified to direct fluid flow, caused by overpressurization, back to the supply tank rather than to the suction side of the pump. This can simplify piping requirements and reduce system cost.

Hot Tolerances:

Should be used in applications where the pump will experience thermal shock conditions. Thermal shock will occur with temperature differentials exceeding 150° F.

Venting:

Available for both the seal cavity/rear bearing and the front bearing areas. This provides a return to pump suction pathway which avoids overpressurization and improves lubrication for the bearings and seals. Provided as standard in the seal cavity/rear bearing area on mechanical seal pumps. Recommended for the front seal area in applications exceeding 150 PSI discharge pressure.

Brackets:

E & H Series: Used for pedestal mounting of the pump only. Typically used for bedplate type mounting.

Z Series: Close-coupled mounting bracket used in conjunction with a footed motor. This bracket eliminates the component alignment problem commonly associated with bedplate mounting. The motor foot supports both pump and motor, and may require disconnecting the piping to replace the motor.

Y Series: Close-coupled mounting bracket which supports the pump and motor. Eliminates component alignment problems, and allows the motor to be replaced without disconnecting the piping.

F48: Used for hub mount, direct drive applications. Available for size 1 - 8 pumps and requires a standard 4 point mount “T” type motor. Consult factory for information.

Outboard Bearing Bracket: Provides additional shaft support for pulley drives, reducers, and direct drive off larger systems.

Elastomers:

Buna-N: Standard. Good general purpose elastomer suitable to 300° F. Check the material compatibility tables elsewhere in the technical manual for additional information.

Viton: Very good compatibility with a broad range of aggressive fluids, suitable to 400° F.

Kalraz: Excellent fluid compatibility. Suitable to 625° F.

Teflon: Excellent fluid compatibility. Suitable to 400° F. Usually less expensive and more readily available than Kalraz, but tends to take a compression set.

Motor Trouble Shooting Chart for Leeson Motors
Heed the Following Warning Before Any Maintenance Procedures Are Attempted

CAUTION

1. Do not perform any maintenance or service on a motor before disconnecting the power source.
2. Discharge all capacitors before servicing the motor.
3. Always keep hands and clothing away from moving parts.
4. Electrical repairs should be performed by trained and qualified personnel only.
5. Failure to follow instructions and safe electrical procedures could result in serious injury.
6. If safety guards are required, be sure the guards are in use.

Trouble	Cause	What To Do
Motor fails to start.	Blown fuses.	Replace fuses with proper type of rating.
	Improper current supply.	Check and reset overload in starter.
	Improper line connections.	Check connections with diagram supplied with motor.
	Open circuit in winding or starting switch.	Indicated by humming sound when switch is closed. Check for loose wiring connections. Also see if starting switch inside rotor is closed.
	Mechanical failure. Short circuited stator.	Check to see if motor and drive turn freely. Indicated by blown fuses. Motor must be rewound.
	Motor may be overloaded.	Reduce load.
	If three phase motor, one phase may be open.	Check lines for open phase.
	Defective capacitor.	Check for short circuit, grounded or open capacitor, or connection. Replace if necessary.
Motor stalls.	Overload motor.	Reduce load.
	Low motor voltage.	See that nameplate voltage is maintained. Check connetion.
	Open circuit.	Fuses blown, check overload relay, stator and push buttons.
Motor runs and then dies down.	Power failure.	Check for loose connections to line, fuses, and controls.

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6. If safety guards are required, be sure the guards are in use.

Trouble	Cause	What To Do
Motor does not come up to speed.	Not applied properly.	Consult supplier for proper type.
	Voltage too low at motor terminals because of line drop.	Use higher voltage on transformer or reduce load. Check connections.
Starting load too high.	Check conductors for proper size.	Check the load motor is supposed to carry at start.
Motor takes too long to accelerate.	Excess loading.	Reduce load.
	Poor circuit.	Check for high resistance.
	Applied voltage too low.	Get power company to increase power tap.
Wrong rotation.	Wrong sequence of phases.	Reverse connection at motor or at switchboard.
Motor overheats while running under load.	Overloaded.	Reduce load.
	Frame or bracket vents may be clogged with dirt, thus preventing proper ventilation of the motor.	Open vent holes and check for a continuous stream of air form the motor.
	Motor may have one phase open.	Check to make sure that all leads are well connected.
	Unbalanced terminal voltage. and transformers.	Check for faulty leads, connections,

Motor Trouble Shooting Chart for Leeson Motors
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3. Always keep hands and clothing away from moving parts.
4. Electrical repairs should be performed by trained and qualified personnel only.
5. Failure to follow instructions and safe electrical procedures could result in serious injury.
6. If safety guards are required, be sure the guards are in use.

Trouble	Cause	What To Do
Motor vibrates.	Motor misaligned.	Realign.
	Weak support.	Strengthen base.
	Coupling out of balance.	Balance coupling.
	Driven equipment unbalanced.	Re-balance drive equipment.
	Defective ball bearing.	Replace ball bearing.
	Bearings not in line.	Line up properly.
	Polyphase motor running single phase.	Check for open circuits.
	Excessive end play.	Adjust bearing or add washer.
Unbalanced line current.	Unequal terminal volts single phase operation.	Check leads and connections. Check for open contacts.
Scraping noise.	Fan rubbing.	Remove interference.
	Fan striking insulation.	Clear fan.
	Loose mounting plate.	Tighten holding bolts.
Hot bearings - general.	Bent or sprung shaft.	Straighten or replace shaft.
	Excessive belt pull.	Decrease belt tension.
	Pulleys too far away.	Move pulley closer to motor bearing.
	Pulley diameter too small.	Use larger pulleys.
	Misalignment.	Correct by realignment of drive.
Hot bearings - ball.	Overloaded bearing.	Check alignment, side and end thrust.
	Broken ball or rough races.	Check alignment, side and end thrust. Replace bearing, but first clean housing thoroughly.

Pump Trouble Shooting Chart for Haight Pumps
Heed the Following Warning Before Any Maintenance Procedures Are Attempted

CAUTION

1. Prior to performing any service on the pump or motor:
   (a) Disconnect and lockout the power source to the motor (refer to OSHA 1910.147.)
   (b) Shut off any liquid heating source.
   (c) If the unit operates at elevated temperatures, allow it to cool to room temperature before performing any service.
2. Drain the pump and piping of excess liquid. Caution: handle and dispose of liquids in accordance to the manufacturers Material Safety Data Sheets.
3. Utilize appropriate protective clothing/safety equipment prior to starting any pump maintenance.

Trouble	Probable Cause
No liquid delivered.	• Pump not primed. • Suction lift too high; check with a gauge at the pump suction. • Wrong direction of rotation. • Pump not rotating (failure of drive from prime mover).

Not enough liquid delivered.	• Air leaks in suction line or through shaft seal box.
	• Speed too low.
	• Suction lift too high, or not enough suction head (for hot liquids).
	• Foot valve too small or obstructed.
	• Foot valve or end of suction pipe not immersed deeply enough.
	• Piping improperly installed, permitting air or gas to pocket in pump.
	• Mechanical defects:
	  • Pump damaged
	  • Pump badly worn
	  • Packing defective
	  • Relief valve not sealing or jammed by foreign matter.

Pump works for awhile, then loses suction.	• Leaky suction lines. • Suction lift too high. • Air or gases in liquid. • Plugged lines or filter

Pump takes too much power.	• Speed too high.
	• Liquid heavier or more viscous than design condition.
	• Suction or discharge line obstructed.
	• Mechanical defects:
	  • Shaft bent
	  • Rotating element binds
	  • Stuffing boxes too tight
	  • Misalignment due to improper connection of pipe lines or driver.
	• Check pressure is being measured at the pump and not some distance away from the pump, thus ignoring pressure losses in piping, valves, etc.

Pump Trouble Shooting Chart for Haight Pumps
Heed the Following Warning Before Any Maintenance Procedures Are Attempted

CAUTION

1. Prior to performing any service on the pump or motor:
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   (b) Shut off any liquid heating source.
   (c) If the unit operates at elevated temperatures, allow it to cool to room temperature before performing any service.
2. Drain the pump and piping of excess liquid. Caution: handle and dispose of liquids in accordance to the manufacturers Material Safety Data Sheets.
3. Utilize appropriate protective clothing/safety equipment prior to starting any pump maintenance.

Trouble	Probable Cause
Noisy pump.	• Speed too high. • Suction lift or viscosity too high (piping diameter too small). • Wrong direction of rotation (recesses in the pump covers to prevent hydraulic noise operate only in one direction). • Badly supported pipe or bedplates causing resonant vibration. • Relief valve chattering. • Pressure too low; an increase in pressure can prevent gear noise in low pressure applications. • Cavitation due to inlet or outlet conditions.
Gland leakage.	• Packing hard and shaft scored. • Pressure on pump too high or pressure relief passage blocked. • Shaft run out excessive. • When re-packing a gland, all the old packing must be removed; it is not good enough to just add extra rings as the original packing becomes compressed.

Viscosity Conversion Chart

When Specific Gravity Is 1		When Specific Gravity Is Other than 1												
Read Directly Across		Find CKS Then Multiply CKSxSG = CPS	Find Stokes Then Multiply StokexSG = Poise											
CPS	**Poise**	**CKS**	**Stoke**	**Redwood Standard #1**	**Redwood Admiralty #2**	**Saybolt Furol**	**Stormer 100 KG Load**	**Ford #3**	**Ford #4**	**Zahn #1**	**Zahn #2**	**Zahn #3**	**Zahn #4**	**Zahn #5**
1	.01	1	.01	29										
2	.02	2	.02	32										
4	.04	4	.04	36	4.9									
7	.07	7	.07	44	5.9		2.5	8						
10	.10	10	.10	52	6.8		3.6	9	5	30	16			
15	.15	15	.15	63	8.4	13	5.8	10	8	34	17			
20	.20	20	.20	86	10.1	15	7.3	12	10	37	18			
25	.24	25	.24	112	12.5	17	9.6	15	12	41	19			
30	.30	30	.30	138	14.8	19	11.9	19	14	44	20			
40	.40	40	.40	181	19.5	24	15.6	25	18	52	22			
50	.50	50	.50	225	24.2	29	19.5	29	22	60	24			
60	.60	60	.60	270	28.8	34	24.0	33	25	68	27			
70	.70	70	.70	314	33.3	39	28.1	36	28	72	30			
80	.80	80	.80	364	38.0	42	32.5	41	31	81	34			
90	.90	90	.90	405	42.5	49	36.5	45	32	88	37	10		
100	1.0	100	1.0	445	47.0	54	40.7	50	34		41	12	10	
120	1.2	120	1.2	492	56.0	59	44.5	58	41		49	14	11	
140	1.4	140	1.4	585	65.1	70	53.0	66	45		58	16	13	
160	1.6	160	1.6	670	74.0	79	61	72	50		66	18	14	
180	1.8	180	1.8	762	83.0	91	70	81	54		74	20	16	
200	2.0	200	2.0	817	91.5	100	77	90	58		82	23	17	10
220	2.2	220	2.2	933	99.5	110	85	98	62		88	25	18	11
240	2.4	240	2.4	1,020	108.0	120	92	106	65			27	20	12
260	2.6	260	2.6	1,085	115.0	128	98	115	68			30	21	13
280	2.8	280	2.8	1,170	124	138	106	122	70			32	22	14
300	3.0	300	3.0	1,250	133	148	114	130	74			34	24	15
320	3.2	320	3.2	1,295	141	153	118	136	89			36	25	16
340	3.4	340	3.4	1,380	150	163	125	142	95			39	26	17
360	3.6	360	3.6	1,465	159	173	133	150	100			41	27	18
380	3.8	380	3.8	1,570	170	185	143	160	106			43	29	19
400	4.0	400	4.0	1,650	179	195	150	170	112			46	30	20
420	4.2	420	4.2	1,740	188	205	158	180	118			48	32	21
440	4.4	440	4.4	1,830	199	216	166	188	124			50	33	22
460	4.6	460	4.6	1,925	209	227	175	200	130			52	34	23
480	4.8	480	4.8	2,020	219	238	183	210	137			54	36	24
500	5.0	500	5.0	2,100	228	248	191	218	143			58	38	25
550	5.5	550	5.5	2,255	245	266	204	230	153			64	40	27
600	6.0	600	6.0	2,460	267	290	221	250	170			68	45	30
700	7.0	700	7.0	2,860	311	338	260	295	194			76	51	35
800	8.0	800	8.0	3,290	357	388	298	340	223				57	40
900	9.0	900	9.0	3,640	396	430	331	365	247				63	45
1,000	10.0	1,000	10.0	3,900	424	460	354	390	264				69	49
1,100	11	1,100	11	4,410	479	520	400	445	299				77	55
1,200	12	1,200	12	4,680	509	562	433	480	323					59
1.300	13	1,300	13	5,160	560	610	470	520	350					64
1.400	14	1,400	14	5,490	596	648	498	550	372					70
1.500	15	1,500	15	5,940	645	700	539	595	400					75
1.600	16	1,600	16	6,350	690	750	577	635	430					80
1,700	17	1,700	17	6,780	735	800	615	680	460					85
1,800	18	1,800	18	7,200	780	850	654	720	490					91
1,900	19	1,900	19	7,620	829	900	695	760	520					96
2,000	20	2,000	20	7,950	865	940	723	800	540					
2,100	21	2,100	21	8,350	906	985	757	835	565					
2,200	22	2,200	22	8,730	950	1,030	793	875	592					
2,300	23	2,300	23	9,110		1,075	827	910	617					
2,400	24	2,400	24	9,500		1,120	861	950	645					
2,500	25	2,500	25	9,830		1,160	893	985	676					
3,000	30	3,000	30	12,300		1,450	1,115	1,230	833					
3,500	35	3,500	35	14,000		1,650	1,223	1,400	950					
4,000	40	4,000	40	15,650		1,850	1,420	1,570	1,060					
4,500	45	4,500	45	17,800		2,100	1,610		1,175					
5,000	50	5,000	50	19,900		2,350	1,810		1,350					
5,500	55	5,500	55			2,600	2,000		1,495					
6,000	60	6,000	60			2,800	2,150		1,605					
6,500	65	6,500	65			3,000	2,310		1,720					
7,000	70	7,000	70			3,250	2,500		1,870					
7,500	75	7,500	75			3,500	2,690		2,010					
8,000	80	8,000	80			3,700	2,850		2,120					
8,500	85	8,500	85			3,950	3,040		2,270					
9,000	90	9,000	90			4,100	3,150		2,350					
9,500	95	9,500	95			4,350	3,310		2,470					
10,000	100	10,000	100			4,650	3,580		2,670					
15,000	150	15,000	150			6,940								
20,000	200	20,000	200			9,250								
30,000	300	30,000	300			13,860								
40,000	400	40,000	400			18,500								
50,000	500	50,000	500			23,100								
60,000	600	60,000	600			27,750								
70,000	700	70,000	700			32,350								
80,000	800	80,000	800			37,000								
90,000	900	90,000	900			41,550								
100,000	1,000	100,000	1,000			46,200								
125,000	1,250	125,000	1,250			57,800								
150,000	1,500	150,000	1,500			69,400								
175,000	1,750	175,000	1,750			81,000								
200,000	2,000	200,000	2,000			92,500								

Viscosity Conversion Chart

When Specific Gravity Is 1		When Specific Gravity Is Other than 1											
Read Directly Across		Find CKS Then Multiply CKSxSG = CPS	Find Stokes Then Multiply StokexSG = Poise										
CPS	**Poise**	**CKS**	**Stoke**	**Saybolt Universal (SSU)**	**Seconds Engler**	**Degrees Engler**	**Dupont Parlin #7**	**Dupont Parlin #10**	**Dupont Parlin #15**	**Dupont Parlin #20**	**Krebs Units**	**Mac-Michael**	**Pratt & Lambert F**
1	.01	1	.01	31	54	1.0	20		4.2				
2	.02	2	.02	34	57	1.1	23		4.3				
4	.04	4	.04	38	61	1.3	24		4.4				
7	.07	7	.07	47	75	1.6	26		4.6				
10	.10	10	.10	60	94	1.9	28	11	4.7				
15	.15	15	.15	80	125	2.5	30	12	4.9				
20	.20	20	.20	100	170	3.0	32	13	5.0			125	
25	.24	25	.24	130	190	4.1	37	14	5.1			139	
30	.30	30	.30	160	210	4.9	43	15	5.4			151	
40	.40	40	.40	210	300	6.0	50	16	5.7		30	177	
50	.50	50	.50	260	350	7.5	57	17	6.0		33	201	
60	.60	60	.60	320	450	9.1	63	18	6.3	3.1		230	
70	.70	70	.70	370	525	10.5	68	20	6.8	3.2	35	260	
80	.80	80	.80	430	600	12.4	73	22	7.5	3.3	37	290	7.3
90	.90	90	.90	480	675	14.0	78	23	7.7	3.4	38	315	7.8
100	1.0	100	1.0	530	750	15.3	81	25	8.0	3.5	40	335	8.3
120	1.2	120	1.2	580	900	16.1	90	30	8.3	3.6	43	380	8.9
140	1.4	140	1.4	690	1050	20.0	106	32	8.9	3.9	46	415	9.8
160	1.6	160	1.6	790	1,200	23.0	120	37	9.7	4.1	48	465	10.8
180	1.8	180	1.8	900	1,350	26.3	135	41	10.7	4.3	50	520	11.9
200	2.0	200	2.0	1,000	1,500	29.2	149	43	11.5	4.5	52	570	12.5
220	2.2	220	2.2	1,100	1,650	32.2		45	12.2	4.8	54	610	13.0
240	2.4	240	2.4	1,200	1,800	35.0		49	13.0	5.0	56	660	14.2
260	2.6	260	2.6	1,280	1,950	37.7		53	13.7	5.3	58	700	15.1
280	2.8	280	2.8	1,380	2,100	40.5		58	14.4	5.6	59	750	15.6
300	3.0	300	3.0	1,475	2,250	43.0		64	15.0	5.9	60	800	16.7
320	3.2	320	3.2	1,530	2,400	44.7		66	15.5	6.1		825	17.3
340	3.4	340	3.4	1,630	2,550	47.5		70	16.4	6.4		875	18.5
360	3.6	360	3.6	1,730	2,700	50.3		74	17.3	6.7	62	925	19.6
380	3.8	380	3.8	1,850	2,850	54.0		79	18.2	7.0		980	21.0
400	4.0	400	4.0	1,950	3,000	57.0		84	19.1	7.3	64	1,035	22.1
420	4.2	420	4.2	2,050	3,150	59.9		88	20.0	7.6		1,070	23.2
440	4.4	440	4.4	2,160	3,300	63.6		93	21.0	8.0		1,125	24.4
460	4.6	460	4.6	2,270	3,450	67.0		100	22.0	8.5	65	1,180	26.7
480	4.8	480	4.8	2,380	3,600	69.5		104	23.0	8.9	67	1,240	27.0
500	5.0	500	5.0	2,480	3,750	73.1		107	23.9	9.2	68	1,290	28.1
550	5.5	550	5.5	2,660	4,125	78.0		115	26.3	9.7	69	1,385	30.1
600	6.0	600	6.0	2,900	4,500	85.0		126	28.5	10.6	71	1,510	32.8
700	7.0	700	7.0	3,380	5,250	95.0		145	31.9	12.1	74	1,760	38.2
800	8.0	800	8.0	3,880	6,000	110.0		168	36.4	13.9	77	2,020	44.4
900	9.0	900	9.0	4,300	8,750	125.0		185	40.0	15.5	81	2,240	48.6
1,000	10.0	1,000	10.0	4,600	7,500	135.0		198	43.0	16.8	85	2,395	52.0
1,100	11	1,100	11	5,200	8,250	151		224	48.0	18.7	88	2,710	58.1
1,200	12	1,200	12	5,620	9,000	164		242	53.2	20.2	92	2,930	63.6
1.300	13	1,300	13	6,100	9,750	177		262	58.0	22.0	95	3,180	69.0
1.400	14	1,400	14	6,480	10,350	188		280	61.6	23.2	96	3,370	73.4
1.500	15	1,500	15	7,000	11,100	203		300	69.0	25.0	98	3,650	79.3
1.600	16	1,600	16	7,500	11,850	217		322	72.0	26.7	100	3,900	85.0
1,700	17	1,700	17	8,000	12,600	233		344	76.0	28.5	101	4,180	90.5
1,800	18	1,800	18	8,500	13,300	248		366	81.0	30.0		4,420	96.2
1,900	19	1,900	19	9,000	13,900	263		387	86.0	31.8		4,830	102.0
2,000	20	2,000	20	9,400	14,600	275		405	90.0	33.0	103	4,900	106.2
2,100	21	2,100	21	9,850	15,300	287		433	94.5	34.7		5,120	111.3
2,200	22	2,200	22	10,300	16,100	300		453	99.0	36.0		5,360	116.6
2,300	23	2,300	23	10,750	16,800	314		473	105.7	38.0	105	5,600	124
2,400	24	2,400	24	11,200	17,500	325		493	110.3	39.5	109	5,840	127
2,500	25	2,500	25	11,600	18,250	339		510	114	40.8	114	6,040	131
3,000	30	3,000	30	14,500	21,800	425		638	142	51.0	121	7,550	165
3,500	35	3,500	35	16,500	25,200	485		725	164	57.0	129	8,600	187
4,000	40	4,000	40	18,500	28,800	540		814	186	64.5	133	9,640	210
4,500	45	4,500	45	21,000	32,400	615		924	214	73.5	136	10,920	238
5,000	50	5,000	50	23,500	36,000	690			239	82.0		12,220	267
5,500	55	5,500	55	26,000	39,600	765			265	90.6		13,510	295
6,000	60	6,000	60	28,000	43,100	820			285	97.5		14,570	318
6,500	65	6,500	65	30,000	46,000	885			306	104.0		15,610	340
7,000	70	7,000	70	32,500	49,600	960			331	113.0		16,900	369
7,500	75	7,500	75	35,000	53,200	1.035			356	122		18,200	397
8,000	80	8,000	80	37,000	56,800	1.095			377	129		19,250	420
8,500	85	8,500	85	39,500	60,300	1.175			402	138		20,600	449
9,000	90	9,000	90	41,080	63,900	1.220			417	143		21,350	465
9,500	95	9,500	95	43,000	67,400	1.280			433	150		22,400	488
10,000	100	10,000	100	46,500		1.385			464	162		24,200	527
15,000	150	15,000	150	69,400	106,000					242			
20,000	200	20,000	200	92,500	140,000					322			
30,000	300	30,000	300	138,500	210,000					483			
40,000	400	40,000	400	185,000	276,000					645			
50,000	500	50,000	500	231,000	345,000					805			
60,000	600	60,000	600	277,500	414,000					957			
70,000	700	70,000	700	323,500	484,000					1,127			
80,000	800	80,000	800	370,000	550,000					1,290			
90,000	900	90,000	900	415,500	620,000					1,445			
100,000	1,000	100,000	1,100	462,000	689,000					1,810			
125,000	1,250	125,000	1,250	578,000	850,000					2,010			
150,000	1,500	150,000	1,500	694,000						2,420			
175,000	1,750	175,000	1,750	810,000						2,820			
200,000	2,000	200,000	2,000	925,000						3,220			

Viscosities & Specific Gravity of Common Liquids

Viscosity Shown in SSU Unless Marked * for Centistokes

Liquid	Sp. Gr. at 60° F	Viscosity*	Temp. °F
ASPHALTS:			
Unblended or virgin asphalts	1.1 to 1.5	2,500 to 12,000	250
Blended Asphalt:			
RS-1, MS-1 or SS-1 emulsified primer or binder	Approx. 1.0	155 to 1,000	77
RC-0, MC-0 or SC-0 cutbacks or binders	Approx. 1.0	737 to 1,500	77
RC-1, MC-1 or SC-1 cutbacks or binders	Approx. 1.0	2,400 to 5,000	100
RC-2, MC-2 or SC-2 cutbacks or binders	Approx. 1.0	2,400 to 5,000	122
RC-3, MC-3 or SC-3 cutbacks or binders	Approx. 1.0	6,000 to 13,000	122
RC-4, MC-4 or SC-4 cutbacks or binders	Approx. 1.0	8,000 to 20,000	140
RC-5, MC-5 or SC-5 cutbacks or binders	Approx. 1.0	28,000 to 85,000	140
Asphalt Emulsion Type I Federal Specification	Approx. 1.0	1,000 to 7,000	77
Asphalt Emulsion Type II, V & VI Federal Specification	Approx. 1.0	155 to 1,000	77
CHEMICALS:			
Acetic Acid (100%)	1.049-1.055	*1.13	68
Acetone (100%)	.792	*.41	68
Alcohol-Ethyl (100%)	.79	*1.54	68
Benzol	.879 @ 68° F	*.744	68
Black Liquor (typical)	1.30	5,000	122
Carbon Tetrachloride	1.594 @ 68° F	*.612	68
Caustic Soda Solutions:			
20% NaOH	1.22	39.4	65
30% NaOH	1.33	58.1	65
40% NaOH	1.43	110.1	65
Ethyl Acetate	.90 @ 68° F	*.49	68
Freon	1.37 to 1.49 @ 70° F	*.27–.32	70
Glycerine (100%)	1.26 @ 68° F	2,950	68
Glycol:			
Propylene	1.038 @ 68° F	240.6	70
Triethylene	1.125 @ 68° F	185.7	70
Diethylene	1.12	149.7	70
Ethylene	1.125	88.4	70
Phenol (Carbolic Acid)	.95 to 1.08	65	65
Silicate of Soda	40° B	365	100
Sulfuric Acid (100%)	1.83	75.7	68
FISH & ANIMAL OILS:			
Bone Oil	.918	220	130
Cod Oil	.928	150	100
Lard	.96	287	100
Lard Oil	.912 to .925	190 to 220	100
Menhadden Oil	.933	140	100
Neatsfoot Oil	.917	230	100
Sperm Oil	.883	110	100
Whale Oil	.925	163 to 184	100
MINERAL OILS:			
Automobile Crankcase Oils (Average Midcontinent Paraffin Base):			
SAE 10	**.880 to .935	170 to 220	100
SAE 20	**.880 to .935	220 to 550	100
SAE 30	**.880 to .935	550 to 800	100
SAE 40	**.880 to .935	800 to 1,100	100
SAE 50	**.880 to .935	1,100 to 1,800	100
SAE 60	**.880 to .935	1,800 to 2,500	100
SAE 70	**.880 to .935	2,500 to 4,000	100
Automobile Transmission Lubricants:			
SAE 80	**.880 to .935	100,000 max.	0
SAE 90	**.880 to .935	800 to 1,500	100
SAE 140	**.880 to .935	950 to 2,300	130
SAE 250	**.880 to .935	Over 2,300	130
Crude Oils:			
Texas, Oklahoma	.81 to .916	40 to 783	60
Wyoming, Montana	.86 to .88	74 to 1.215	60
California	.78 to .92	40 to 4,840	60
Pennsylvania	.8 to .85	46 to 216	60
Diesel Engine Lubricating Oils (Based on Average Midcontinent Paraffin Base):			
Fed. Spec. #9110	**.880 to .935	165 to 240	100
Fed. Spec. #9170	**.880 to .935	300 to 410	100
Fed. Spec. #9250	**.880 to .935	470 to 590	100
Fed. Spec. #9370	**.880 to .935	800 to 1,100	100
Fed. Spec. #9500	**.880 to .935	490 to 600	130
Diesel Fuel Oils:			
No. 2D	**.82 to .95	32.6 to 45.5	100
No. 3D	**.82 to .95	45.5 to 65	100
No. 4D	**.82 to .95	140 max.	100
No. 5D	**.82 to .95	400 max.	122
Fuel Oils:			
No. 1	**.82 to .95	34 to 40	70
No. 2	**.82 to .95	36 to 50	70
No. 3	**.82 to .95	35 to 45	100
No. 5A	**.82 to .95	50 to 125	100
No. 5B	**.82 to .95	125 to 400	100
No. 6	**.82 to .95	450 to 3,000	122
Fuel Oil–Navy Specification	**.989 max.	110 to 225	122
Fuel Oil–Navy II	1.0 max.	1,500 max.	122
Gasoline	.68 to .74	*.46 to .88	60
Gasoline (Natural)	76.5° API	*.41	68

Viscosities & Specific Gravity of Common Liquids

(Continued)

Liquid	Sp. Gr. at 60° F	Viscosity*	Temp. °F
Gas Oil	28° API	73	70
Insulating Oil:			
Transformer, switches and circuit breakers		115 max.	70
Kerosene	.78 to .82	35	68
Machine Lubricating Oil (Average Pennsylvania Paraffin Base):			
Fed. Spec. #8	**.880 to .935	112 to 160	100
Fed. Spec. #10	**.880 to .935	160 to 235	100
Fed. Spec. #20	**.880 to .935	235 to 385	100
Fed. Spec. #30	**.880 to .935	385 to 550	100
Mineral Lard Cutting Oil:			
Fed. Spec. Grade 1		140 to 190	100
Fed. Spec. Grade 2		190 to 220	100
Petrolatum	.825	100	130
Turbine Lubricating Oil:			
Fed. Specification	.91 Average	400 to 440	100
VEGETABLE OILS:			
Castor Oil	.96 @ 68° F	1,200 to 1,500	100
China Wood Oil	.943	1,425	69
Cocoanut Oil	.925	140 to 148	100
Corn Oil	.924	135	130
Cotton Seed Oil	.88 to .925	176	100
Linseed Oil, Raw	.925 to .939	143	100
Olive Oil	.912 to .918	200	100
Palm Oil	.924	221	100
Peanut Oil	.920	195	100
Rape Seed Oil	.919	250	100
Rosin Oil	.980	1,500	100
Rosin (Wood)	1.09 (Avg.)	500 to 20,000	200
Sesame Oil	.923	184	100
Soja Bean Oil	.927 to .98	165	100
Turpentine	.86 to .87	33	60
SUGAR, SYRUPS, MOLASSES, ETC.			
Corn Syrups	1.4 to 1.47	5,000 to 500,000	100
Glucose	1.35 to 1.44	35,000 to 100,000	100
Honey (Raw)		340	100
Molasses “A”	1.40 to 1.46	1,300 to 23,000	100
Molasses “B”	1.43 to 1.48	6,400 to 60,000	100
Molasses “C”	1.46 to 1.49	17,000 to 250,000	100
Sucrose Solutions (Sugar Syrups)			
60 Brix	1.29	230	70
62 Brix	1.30	310	70
64 Brix	1.31	440	70
66 Brix	1.326	650	70
68 Brix	1.338	1,000	70
70 Brix	1.35	1,650	70
72 Brix	1.36	2,700	70
74 Brix	1.376	5,500	70
76 Brix	1.39	10,000	70

Liquid	Sp. Gr. at 60° F	Viscosity*	Temp. °F
TARS:			
Tar-Coke Oven	1.12+	3,000 to 8,000	71
Tar-Gas House	1.16 to 1.30	15,000 to 300,000	70
Road Tar:			
Grade RT-2	1.07+	200 to 300	122
Grade RT-4	1.08+	400 to 700	122
Grade RT-6	1.09+	1,000 to 2,000	122
Grade RT-8	1.13+	3,000 to 8,000	122
Grade RT-10	1.14+	20,000 to 60,000	122
Grade RT-12	1.15+	114,000 to 456,000	122
Pine Tar	1.06	2,500	100
MISCELLANEOUS			
Corn Starch Solutions:			
22° B	1.18	150	70
24	1.20	600	70
25	1.21	1,400	70
Ink–Printers	1.00 to 1.38	2,500 to 10,000	100
Tallow	.918 (Avg.)	56	212
Milk	1.02 to 1.05	*1.13	68
Varnish–Spar	.9	1,425	68
Water–Fresh	1.0	*1	66

**Depends on origin or percent and type of solvent.

The Viscosities shown are at one temperature only.

Viscosity & Specific Gravity of Common Liquids

LIQUID	*SPECIFIC GRAVITY AT 60°F.	VISCOSITIES IN SSU AT VARIOUS TEMPERATURES							
		30°F	60°F	80°F	100°F	130°F	170°F	210°F	250°F
Corn Starch Solutions									
22 Baumè	1.18	190	160	144	130	115	99	88	79
24 Baumè	1.20	1,025	680	550	440	330	240	178	140
25 Baumè	1.21	3,600	1,745	1,170	800	500	295	187	130
Freon	1.37 to 1.49 % 70°F								
Glycerin 99% Soluble		10,200	2,260	1,190	620	280	128	74	54
Glycerin 100%	1.26% 68°F	21,000	4,200	1,700	813	325	130	74	52
Glycol:									
Proplylene	1.038 @68°F			240 @ 70°					
Triethylene	1.125 @68°F			185 @ 70°					
Diethylene	1.12			149 @ 70°					
Ethylene	1.125			88 @ 70°					
Glucose – Corn Products 2 Star	1.35 to 1.44					12,500	1,500	340	121
Glucose – Corn Products 3 Star	1.35 to 1.44					10,200	2,400	750	300
Honey – (Raw)					340				
Hydrochloric Acid	1.05 @ 68°F								
Ink – Newspaper		65,000	20,000	10,000	5,500	2,400	1,025	500	280
Ink – Printers	1.00 to 1.38		100,000	30,300	12,500	3,800	1,100	420	200
Kerosene	78 to 82				32.6				
Lard	.96				287	160	91	62.5	49.5
Mercury	13.6								
Molasses									
A. Max.	1.40 to 1.46	42,500	22,500	15,000	10,000	5,900			
A. Min.		9,000	3,600	2,100	1,300	700			
B. Max.	1.43 to 1.48				60,000	15,000			
B. Min.		70,000	22,000	10,900	6,500	3,000			
C. Max.	1.46 to 1.49				250,000	75,000			
C. Min.			90,000	35,000	17,000	6,000			
Oils – Auto. Lubricating									
S.A.E. 10 Max.	.880 to .935	4,400	1,090	430	240	120	66		
20 Max.	.880 to .935	6,900	1,650	750	400	185	90	57	
30 Max.	.880 to .935	13,000	2,700	1,200	580	255	120	66	49
40	.880 to .935	25,000	4,850	2,000	950	380	150	80	55
50	.880 to .935	58,000	10,000	3,700	1,600	600	220	105	67
60	.880 to .935	100,000	15,000	5,300	2,300	800	285	128	76
70	.880 to .935		22,000	7,500	3,100	1,050	342	150	86
10W	.880 to .935								
20W	.880 to .935								
Oil – Castor	.96 @ 68°F	35,000	7,500	3,200	1,500	600	228	116	73
Oil – Chinawood	.943	6,900	2,000	1,040	580	285	135	82	58
Oil – Cocoanut	.925	2,250	550	270	150	81	50.5		
Oil – Cod	.928	2,350	620	310	175	92	55		
Oil – Corn	.924	2,150	740	410	250	135	77.5	54.8	
Oil – Cotton	.88 to .925	1,590	525	295	176	100	61.5		
Oil – Cylinder – 600 W	.82 to .95	80,000	14,500	6,000	2,650	1,000	360	165	94
Oil – Diesel Fuel No. 2D	.82 to .95	138	70	53.6	45.5	39			
Oil – Diesel Fuel No. 3D	.82 to .95	390	145	92	65	48	39		
Oil – Diesel Fuel No. 4D	.82 to .95	4,400	700	280	140	70	44.2		
Oil – Diesel Fuel No. 5D	.82 to .95	16,500	3,500	1,500	750	320	136	76.5	54
Oil – Fuel No. 1	.82 to .95				35				
Oil – Fuel No. 2	.82 to .95	104	56	45.5	40				
Oil – Fuel No. 3	.82 to .95	126	68	53	45	39			
Oil – Fuel No. 5A	.82 to .95	1,480	420	215	125	72	48		
Oil – Fuel No. 5B	.82 to .95	850	600	490	400	315	235	178	141
Oil – Fuel No. 6	.82 to .95		72,000	21,500	7,800	2,150	590	225	110
Oil – Fuel – Navy Spec.	.989 Max.	3,300	1,100	600	360	190	100	66	50.2
Oil – Fuel – Navy II	1.0 Max.		24,000	8,600	3,500	1,150	370	160	89

Conversion Factors

TO CONVERT. . .	INTO. . .	MULTIPLY BY. . .
	A	
abampere	ampere (A)	10
abcoulomb	coulomb (C)	10
abcoulomb	statcoulombs	2.998×10^{10}
abfarad	farad (F)	10^{9}
abhenry	henry (H)	10^{-9}
abmho	siemens (S)	10^{9}
abohm	ohm ( )	10^{-9}
abvolt	volt (V)	10^{-8}
acre	sq. chain (Gunters)	10
acre	rods	160
acre	square links (Gunters)	1×10^{5}
acre	hectare or sq hectometer	.4047
acres	sq feet	43,560.0
acres	sq meters	4,047.
acres	sq miles	1.562×10^{-3}
acres	sq yards	4,840.
acre-feet	cu feet	43,560.0
acre-foot (U.S. survey)	metre^3 (m^3)	1.233×10^{3}
acre (U.S. survey)	metre^2 (M^2)	4.47×10^{3}
acre-feet	gallons	3.259×10^{5}
amperes/sq cm	amps/sq in.	6.452
amperes/sq cm	amps/sq meter	10^{4}
amperes/sq in.	amps/sq cm	0.1550
amperes/sq in.	amps/sq meter	1,550.0
amperes/sq meter	amps/sq cm	10^{-4}
amperes/sq meter	amps/sq in.	6.452×10^{-4}
ampere-hours	coulombs	3,600.0
ampere-hours	faradays	0.03731
ampere-turns	gilberts	1.257
ampere-turns/cm	amp-turns/in.	2.540
ampere-turns/cm	amp-turns/meter	100.0
ampere-turns/cm	gilberts/cm	1.257
ampere-turns/in.	amp-turns/cm	0.3937
ampere-turns/in.	amp-turns/meter	39.37
ampere-turns/in.	gilberts/cm	0.4950
ampere-turns/meter	amp/turns/cm	0.01
ampere-turns/meter	amp-turns/in.	0.0254
ampere-turns/meter	gilberts/cm	0.01257
angstrom unit	inch	3937×10^{-9}
angstrom unit	meter	1×10^{-10}
angstrom unit	micron or (Mu)	1×10^{-4}
are	acre (US)	.02471
ares	sq. yards	119.60
ares	acres	0.02471
ares	sq meters	100.0
astronomical unit	kilometers	1.495×10^{8}
atmospheres	bars	1.013
atmospheres	ton/sq. inch	.007348
atmospheres	cms of mercury	76.0
atmospheres	ft of water (at 4°C)	33.90
atmospheres	in. of mercury (at 0°C)	29.92
atmospheres	kgs/sq cm	1.0333
atmospheres	kgs/sq meter	10,332.
atmospheres	pounds/sq in.	14.70
atmospheres	tons/sq ft	1.058
	B	
barrels (U.S., dry)	cu. inches	7056.
barrels (U.S., dry)	quarts (dry)	105.0
barrels (U.S., liquid)	gallons	31.5
barrels (oil)	gallons (oil)	42.0
bars	atmospheres	0.9869
bars	dynes/sq cm	10^{6}
bars	kgs/sq meter	1.020×10^{4}
bars	pounds/sq ft	2,089.
bars	pounds/sq in.	14.50
baryl	dyne/sq. cm.	1.000
bolt (US Cloth)	meters	36.576
btu	liter-atmosphere	10.409
btu	ergs	1.0550×10^{10}
btu	foot-lbs	778.3
btu	gram-calories	252.0
btu	horsepower-hrs	3.931×10^{-4}
btu	joules	1,054.8
btu	kilogram-calories	0.2520
btu	kilogram-meters	107.5
btu	kilowatt-hrs	2.928×10^{-4}
btu/hr	foot-pounds/sec	0.2162
btu/hr	gram-cal/sec	0.0700
btu/hr	horsepower-hrs	3.929×10^{-4}
btu/hr	watts	0.2931
btu/min	foot-lbs/sec	12.96
btu/min	horsepower	0.02356
btu/min	kilowatts	0.01757
btu/min	watts	17.57
btu/sq ft/min	watts/sq in.	0.1221
bucket (Br. dry)	cubic Cm.	1.818×10^{4}
bushels	cu ft	1.2445
bushels	cu in.	2,150.4
bushels	cu meters	0.03524
bushels	liters	35.24
bushels	pecks	4.0
bushels	pints (dry)	64.0
bushels	quarts (dry)	32.0
	C	
calories, gram (mean)	B.T.U. (mean)	3.9685×10^{-3}
candle/sq. cm.	lamberts	3.142
candle/sq. inch	lamberts	.4870
centares (centiares)	sq meters	1.0
centigrade	fahrenheit	(C° x 9/5)+32
centigrams	grams	0.01
centiliter	ounce fluid (US)	.3282
centiliter	cubic inch	.6103
centiliter	drams	2.705
centiliters	liters	0.01
centimeters	feet	3.281×10^{-2}
centimeters	inches	0.3937
centimeters	kilometers	10^{-5}
centimeters	meters	0.01
centimeters	miles	6.214×10^{-6}
centimeters	millimeters	10.0
centimeters	mils	393.7
centimeters	yards	1.094×10^{-2}
centimeter-dynes	cm-grams	1.020×10^{-3}
centimeter-dynes	meter-kgs	1.020×10^{-8}
centimeter-dynes	pound-feet	7.376×10^{-8}
centimeter-grams	cm-dynes	980.7
centimeter-grams	meter-kgs	10^{-5}
centimeter-grams	pound-feet	7.233×10^{-5}
centimeters of mercury	atmospheres	0.01316
centimeters of mercury	feet of water	0.4461
centimeters of mercury	kgs/sq meter	136.0
centimetre of mercury (0°C)	pascal (Pa)	1.333×10^{3}
centimeters of mercury	pounds/sq ft	27.85
centimeters of mercury	pounds/sq in.	0.1934
centimetre of water (4°C)	pascal (Pa)	98.06
centimeters/sec	miles/hr	0.02237
centimeters/sec	miles/min	3.728×10^{-4}
centimeters/sec/sec	feet/sec/sec	0.03281
centimeters/sec/sec	kms/hr/sec	0.036
centimeters/sec/sec	meters/sec/sec	0.01
centimeters/sec/sec	miles/hr/sec	0.02237
centipoise	pascal-second (Pa s)	10^{-3}
centistokes	metre^2/second (m^2/s)	10^{-6}
chain	Inches	792.00
chain	meters	20.12
chains (surveyors' of Gunter's)	yards	22.00
corci,ar mils	sq cms	5.067×10^{-6}
circular mils	sq mils	0.7854
circumference	radians	6.283
circular mils	sq inches	7.854×10^{-7}
cords	cord feet	8
cord feet	cu. feet	16
coulomb	statcoulombs	2.998×10^{9}
coulombs	faradays	1.036×10^{-5}
coulombs/sq cm	coulombs/sq in.	64.52
coulombs/sq cm	coulombs/sq meter	10^{4}
coulombs/sq in.	coulombs/sq cm	0.1550
coulombs/sq in.	coulombs/sq meter	1,550.

Conversion Factors

TO CONVERT. . .	INTO. . .	MULTIPLY BY. . .
coulombs/sq meter	coulombs/sq cm	10^{-4}
coulombs/sq meter	coulombs/sq in.	6.452×10^{-4}
cubic centimeters	cu feet	3.531×10^{-5}
cubic centimeters	cu inches	0.06102
cubic centimeters	cu meters	10^{-6}
cubic centimeters	cu yards	1.308×10^{-6}
cubic centimeters	gallons (U.S. liq.)	2.642×10^{-4}
cubic centimeters	liters	0.001
cubic centimeters	pints (U.S. liq.)	2.113×10^{-3}
cubic centimeters	quarts (U.S. liq.)	1.057×10^{-3}
cuibic feet	bushels (dry)	0.8036
cubic feet	cu cms	28,320.0
cubic feet	cu inches	1,728.0
cubic feet	cu meters	-0.02832
cubic feet	cu yards	0.03704
cubic feet	gallons (U.S. liq.)	7.48052
cubic feet	liters	28.32
cubic feet	pints (U.S. liq.)	59.84
cubic feet	quarts (U.S. liq.)	29.92
cubic feet/min	cu cms/sec	472.0
cubic feet/min	gallons/sec	0.1247
cubic feet/min	liters/sec	0.4720
cubic feet/min	pounds of water/min	62.43
cubic feet/sec	millions of gals/day	0.646317
cubic feet/sec	gallons/min	448.831
cubic inches	cu cms	16.39
cubic inches	cu feet	5.787×10^{-4}
cubic inches	cu meters	1.639×10^{-5}
cubic inches	cu yards	2.143×10^{-5}
cubic inches	gallons	4.329×10^{-3}
cubic inches	liters	0.01639
cubic inches	mil-feet	1.061×10^{5}
cubic inches	pints (U.S. liq.)	0.03463
cubic inches	quarts (U.S. liq.)	0.01732
cubic meters	bushels (dry)	28.38
cubic meters	cu cms	10^{6}
cubic meters	cu feet	35.31
cubic meters	cu inches	61,023.0
cubic meters	cu yards	1.308
cubic meters	gallons (U.s. liq.)	264.2
cubic meters	liters	1,000.0
cubic meters	pints (U.S. liq.)	2,113.0
cubic meters	quarts (U.S. liq.)	1,057.
cubic yards	cu cms	7.646×10^{5}
cubic yards	cu feet	27.0
cubic yards	cu inches	46,656.0
cubic yards	cu meters	0.7646
cubic yards	gallons (U.S. liq.)	202.0
cubic yards	liters	764.6
cubic yards	pints (U.S. liq.)	1,615.9
cubic yards	quarts (U.S. liq.)	807.9
cubic yards/min	cubic ft/sec	0.45
cubic yards/min	gallons/sec	3.367
cubic yards/min	liters/sec	12.74
	D	
dalton	fram	1.650×10^{-24}
days (mean solar)	seconds	86,400.0
day (sidereal)	second (s)	86116.0
decibar	pascal (Pa)	10^{4}
degree (angle	radian (rad)	1.745×10^{-2}
degrees (angle)	quadrants	0.01111
degrees (angle)	radians	0.01745
degrees (angle)	seconds	3,600.0
degrees/sec	radians/sec	0.01745
degrees/sec	revolutions/min	0.1667
degrees/sec	revolutions/sec	2.778×10^{-3}
degree Celsius	kelvin (K)	tk = t^{o}c + 273.15
degree centigrade	same as celsius	
degree Fahrenheit	degree Celsius	t^{o}c - (t^{o}F - 32)/1.8
degree Fahrenheit	kelvin (K)	tk = (t^{o}F + 459.67)/1.8
drams (apothecaries' or troy)	ounces (avoirdupois)	0.1371429
drams (apothecaries' or troy)	ounces (troy)	0.125
drams (U.S. fluid or apoth)	cubic cm.	3.6967
drams	grams	1.7718
drams	grains	27.3437
drams	ounces	0.0625
dyne/cm	erg/sq. millimeter	.01
dyne/sq. cm.	atmospheres	9.869×10^{-7}
dyne/sq. cm.	Inch of Mercury at 0°C	2.953×10^{-5}
dyne/sq. cm.	Inch of Water at 4°C	4.015×10^{-4}
dynes	grams	1.020×10^{-3}
dynes	joules/cm	10^{-7}
dynes	joules/meter (newtons)	10^{-5}
dynes	kilograms	1.020×10^{-6}
dynes	poundals	7.233×10^{-5}
dynes	pounds	2.248×10^{-6}
dynes/sq cm	bars	10^{-6}
	E	
ell	cm.	114.30
ell	inches	45
em. Pica	inch	.167
em, Pica	cm.	.4233
erg/sec	dyne-cm/sec	1.00
ergs	btu	9.480×10^{-11}
ergs	dyne-centimeters	1.0
ergs	foot-pounds	7.367×10^{-8}
ergs	gram-calories	0.2389×10^{-7}
ergs	gram-cms	1.020×10^{-3}
ergs	horsepower-hrs	3.7250×10^{-14}
ergs	joules	10^{-7}
ergs	kg-calories	2.389×10^{-11}
ergs	kg-meters	1.020×10^{-8}
ergs	kilowatt-hrs	0.2778×10^{-13}
ergs	watt-hours	0.2778×10^{-10}
ergs/sec	btu/min	$5,688 \times 10^{-9}$
ergs-sec	ft-lbs/min	4.427×10^{-6}
ergs/sec	ft-lbs./sec	7.3756×10^{-8}
ergs/sec	horsepower	1.341×10^{-10}
ergs/sec	kg-calories/min	1.433×10^{-9}
ergs/sec	kilowatts	10^{-10}
	F	
farads	microfarads	10^{6}
faraday/sec	ampere (absolute)	9.6500×10^{4}
faradays	ampere-hours	26.80
faradays	coulombs	9.649×10^{4}
fathom	meter	1.828804
fathoms	feet	6.0
feet	centimeters	30.48
feet	kilometers	3.048×10^{-4}
feet	meters	0.3048
feet	miles (naut.)	1.645×10^{-4}
feet	miles (stat.)	1.894×10^{-4}
feet	millimeters	304.8
feet	mils	1.2×10^{4}
feet of water	atmospheres	0.02950
feet of water	in. of mercury	0.8826
feet of water	kg/sq cm	0.03048
feet of water	kgs/sq meter	304.8
feet of water	pounds/sq ft.	62.43
feet of water	pounds/sq in.	0.4335
feet/min	cms/sec	0.5080
feet/min	feet/sec	0.01667
feet/min	kms/hr	0.01829
feet/min	meters/min	0.3048
feet/min	miles/hr	0.01136
feet/sec	cms/sec	30.48
feet/sec	kms/hr	1.097
feet/sec	knots	0.5921
feet/sec	meters/min	18.29
feet/sec	miles/hr	0.6818
feet/sec	miles/min	0.01136
feet/sec/sec	cms/sec/sec	30.48
feet/sec/sec	kms/hr/sec	1.097
feet/sec/sec	meters/sec/sec	0.3048
feet/sec/sec	miles/hr/sec	0.6818
feet/100 feet	per cent grade	1.0
foot-candle	Lumen/sq. meter	10.764
foot-pounds	btu	1.286×10^{-3}
foot-pounds	ergs	1.356×10^{7}

Conversion Factors

TO CONVERT. . .	INTO. . .	MULTIPLY BY. . .
foot-pounds	gram-calories	0.3238
foot-pounds	hp-hrs	5.050×10^{-7}
foot-pounds	joules	1.356
foot-pounds	kg-calories	3.24×10^{-4}
foot-pounds	kg-meters	0.1383
foot-pounds	kilowatt-hrs	3.766×10^{-7}
foot-pounds/min	Btu/min	1.286×10^{-3}
foot-pounds/min	foot-pounds/sec	0.01667
foot-pounds/min	horsepower	3.030×10^{-5}
foot-pounds/min	kg-calories/min	3.24×10^{-4}
foot-pounds/min	kilowatts	2.260×10^{-5}
foot-pounds/sec	btu/hr	4.6263
foot-pounds/sec	btu/min	0.07717
foot-pounds/sec	horsepower	1.818×10^{-3}
foot-pounds/sec	kg-calories/min	0.01945
foot-pounds/sec	kilowatts	1.356×10^{-3}
furlongs	miles (U.S.)	0.125
furlongs	rods	40.0
furlongs	feet	660.0
	G	
gallons	cu cms	3,785.0
gallons	cu feet	0.1337
gallons	cu inches	231.0
gallons	cu meters	3.785×10^{3}
gallons	cu yards	4.951×10^{-3}
gallons	liters	3.785
gallons (liq. Br. Imp.)	gallons (U.S. liq.)	1.20095
gallons (U.S.)	gallons (Imp.)	0.83267
gallons of water	pounds of water	8.3453
gallons/min	cu ft/sec	2.228×10^{-3}
gallons/min	liters/sec	0.06308
gallons/min	cu ft/hr	8.0208
gausses	lines/sq. in.	6.452
gausses	webers/sq cm	10^{-8}
gausses	webers/sq in.	6.542×10^{-8}
gausses	webers/sq meter	10^{-4}
gilberts	ampere-turns	0.7958
gilberts/cm	amp-turns/cm	0.7958
gilberts/cm	amp-turns/in	2.021
gilberts/cm	amp-turns/meter	79.58
gills (British)	cubic cm.	142.07
gills	liters	0.1183
gills	pints (liq.)	0.25
grade	radian	.01571
grains	drams (avoirdupois)	0.03657143
grains (troy)	grains (advp)	1.0
grains (troy)	grams	0.06480
grains (troy)	ounces (avdp)	2.0833×10^{-3}
grains (troy)	pennyweight (troy)	0.04167
grains/U.S. gal	parts/million	17.118
grains/U.S. gal	pounds/million gal	142.86
grains/Imp. gal	parts/million	14.286
grams	dynes	980.7
grams	grains	15.43
grams	joules/cm	9.807×10^{-5}
grams	joules/meter (newtons)	9.807×10^{-3}
grams	kilograms	0.001
grams	milligrams	1,000.
grams	ounces (avdp)	0.03527
grams	ounces (troy)	0.03215
grams	poundals	0.07093
grams	pounds	2.205×10^{-3}
grams/cm	pounds/inch	5.600×10^{-3}
grams/cu cm	pounds/cu ft	62.43
grams/cu cm	pounds/cu in	0.03613
grams/cu cm	pounds/mil-foot	3.405×10^{-7}
grams/liter	grains/gal	58.417
grams/liter	pounds/1,000 gal	8.345
grams/liter	pounds/cu ft	0.062427
grams/liter	parts/million	1,000.00
grams/sq cm	pounds/sq ft	2.0481
gram-calories	btu	3.9683×10^{-3}
gram-calories	ergs	4.1868×10^{7}
gram-calories	foot-pounds	3.0880
gram-calories	horsepower-hrs	1.5596×10^{-6}
gram-calories	kilowatt-hrs	1.1630×10^{-6}
gram-calories	watt-hrs	1.1630×10^{-3}
gram-calories/sec	btu/hr	14.286
gram-centimeters	btu	9.297×10^{-8}
gram-centimeters	ergs	980.7
gram-centimeters	joules	9.807×10^{-5}
gram-centimeters	kg-cal	2.343×10^{-8}
gram-centimeters	kg-meters	10^{-5}
	H	
hand	cm.	10.16
hectares	acres	2.471
hectares	sq ft	1.076×10^{5}
Hogsheads (British)	cubic ft.	10.114
Hogsheads (U.S.)	cubic ft.	8.42184
Hogsheads (U.S.)	gallons (U.S.)	63
horsepower	btu/min	42.44
horsepower	foot-lbs/min	33,000.
horsepower	foot-lbs/sec	550.0
horsepower (metric) (542.5 ft lb/sec)	horsepower (550 ft lb/sec)	0.9863
horsepower (550 ft lb/sec)	horsepower (metric) (542.5 ft lb/sec)	1.014
horsepower	kg-calories/min	10.68
horsepower (550 ft lbf/s)	watt (W)	745.6
horsepower (boiler)	watt (W)	9809.5
horsepower (electric)	watt (W)	746.0
horsepower (metric)	watt (W)	735.5
horsepower (water)	watt (W)	746.04
horsepower (U.K.)	watt (W)	745.7
horsepower-hrs	Btu	2,547.
horsepower-hrs	ergs	2.6845×10^{13}
horsepower-hrs	foot-lbs	1.98×10^{6}
horsepower-hrs	gram-calories	641,190.
horsepower-hrs	joules	2.684×10^{6}
horsepower-hrs	kg-calories	641.1
horsepower-hrs	kg-meters	2.737×10^{5}
horsepower-hrs	kilowatt-hrs	0.7457
hours	days	4.167×10^{-2}
hours	weeks	5.952×10^{-3}
hundredweights (long)	pounds	112
hundredweights (long)	tons (long)	0.05
hundredweights (short)	ounces (avoirdupois)	1600.0
hundredweights (short)	pounds	100.0
hundredweights (short)	tons (metric)	0.0453592
hundredweights (short)	tons (long)	0.0446429
	I	
inches	centimeters	2.540
inches	meters	2.540×10^{-2}
inches	miles	1.578×10^{-5}
inches	millimeters	25.40
inches	mils	1,000.0
inches	yards	2.778×10^{-2}
inches of mercury	atmospheres	0.03342
inches of mercury	feet of water	1.133
inches of mercury	kgs/sq cm	0.03453
inches of mercury	kg/sq meter	345.3
inch of mercury (32°F)	pascal (Pa)	3.39×10^{3}
inch of mercury (60°F)	pascal (Pa)	3.38×10^{3}
inches of mercury	pounds/sq ft	70.73
inches of mercury	pounds/sq in.	0.4912
inches of water (at 4°C)	atmospheres	2.458×10^{-3}
inches of water (at 4°C)	inches of mercury	0.07355
inches of water (at 4°C)	kg/sq cm	2.540×10^{-3}
inches of water (at 4°C)	ounces/sq in.	0.5781
inch of water (39.2°F)	pascal (Pa)	2.491×10^{2}
inch of water (60°F)	pascal (Pa)	2.488×10^{2}
inches of water (at 4°C)	pounds/sq ft	5.204
inches of water (at 4°C)	pounds/sq in .	0.03613
international ampere	ampere (absolute)	.9998
international volt	volts (absolute)	1.0003
international volt	joules (absolute)	1.59×10^{-19}
international volt	joules	9.654×10^{4}
	J	
joules	btu	9.480×10^{-4}
joules	ergs	10^{7}

Conversion Factors

TO CONVERT. . .	INTO. . .	MULTIPLY BY. . .
joules	foot-pounds	0.7376
joules	kg-calories	2.389×10^{4}
joules	kg-meters	0.1020
joules	watt-hrs	2.778×10^{-4}
joules/cm	grams	1.020×10^{4}
joules/cm	dynes	10^{7}
joules/cm	joules/meter (newtons)	100.0
joules/cm	poundals	723.3
joules/cm	pounds	22.48
	K	
kelvin	degree Celsius	tc = tk - 273.15
kilograms	dynes	980,665
kilograms	grams	1,000.0
kilograms	joules/cm	0.09807
kilograms	joules/meter (newtons)	9.807
kilograms	poundals	70.93
kilograms	pounds	2.205
kilograms	tons (long)	9.842×10^{-4}
kilograms	tons (short)	1.102×10^{-3}
kilograms/cu meter	grams/cu cm	0.001
kilograms/cu meter	pounds/cu ft	0.06243
kilograms/cu meter	pounds/cu in.	3.613×10^{-5}
kilograms/cu meter	pounds/mil-foot	3.405×10^{-10}
kilograms/meter	pounds/ft	0.6720
kilograms/sq. cm.	dynes	980,665
kilograms/sq cm	atmospheres	0.9678
kilograms/sq cm	feet of water	32.81
kilograms/sq cm	inches of mercury	28.96
kilograms/sq cm	pounds/sq ft	2,048.
kilograms/sq cm	pounds/sq in.	14.22
kilograms/sq meter	atmospheres	9.678×10^{-5}
kilograms/sq meter	bars	98.07×10^{-6}
kilograms/sq meter	feet of water	3.281×10^{-3}
kilograms/sq meter	inches of mercury	2.896×10^{-3}
kilograms/sq meter	pounds/sq ft	0.2048
kilograms/sq meter	pascal (Pa)	9.807
kilograms/sq meter	pounds/sq in.	1.422×10^{-3}
kilograms/sq mm	kgs/sq meter	10^{6}
kilogram-calories	btu	3.968
kilogram-calories	foot-pounds	3,088.
kilogram-calories	hp-hrs	1.560×10^{-3}
kilogram-calories	joules	4,186.
kilogram-calories	kg-meters	426.9
kilogram-calories	kilojoules	4.186
kilogram-calories	kilowatt-hrs	1.163×10^{-3}
kilogram meters	btu	9.294×10^{-3}
kilogram meters	ergs	9.804×10^{7}
kilogram meters	foot-pounds	7.233
kilogram meters	joules	9.804
kilogram meters	kg-calories	2.342×10^{-3}
kilogram meters	kilowatt-hrs	2.723×10^{-6}
kilolines	maxwells	1,000.0
kiloliters	liters	1,000.0
kilometers	centimeters	10^{5}
kilometers	feet	3,281.
kilometers	inches	3.937×10^{4}
kilometers	meters	1,000.0
kilometers	miles	0.6214
kilometers	millimeters	10^{6}
kilometers	yards	1,094.
kilometers/hr	cms/sec	27.78
kilometers/hr	feet/min	54.68
kilometers/hr	feet/sec	0.9113
kilometers/hr	knots	0.5396
kilometers/hr	meters/min	16.67
kilometers/hr	miles/hr	0.6214
kilometers/hr/sec	cms/sec/sec	27.78
kilometers/hr/sec	ft/sec/sec	0.9113
kilometers/hr/sec	meters/sec/sec	0.2778
kilometers/hr/sec	miles/hr/sec	0.6214
kilowatts	btu/min	56.92
kilowatts	foot-lbs/min	4.426×10^{4}
kilowatts	foot-lbs/sec	737.6
kilowatts	horsepower	1.341
kilowatts	kg-calories/min	14.34
kilowatts	watts	1,000.0

TO CONVERT. . .	INTO. . .	MULTIPLY BY. . .
kilowatt-hrs	btu	3,413.
kilowatt-hrs	ergs	$3,600 \times 10^{13}$
kilowatt-hrs	foot-lbs	$2,655 \times 10^{6}$
kilowatt-hrs	gram-calories	859,850.
kilowatt-hrs	horsepower-hrs	1.341
kilowatt-hrs	joules	3.6×10^{6}
kilowatt-hrs	kg-calories	860.5
kilowatt-hrs	kg-meters	3.671×10^{5}
kilowatt-hrs	pounds of water evaporated from & at 212°F	3.53
kilowatt-hrs	pounds of water raised from 62° to 212°F	22.75
knots	feet/hr	6,080.
knots	kilometers/hr	1.8532
knots	nautical miles/hr	1.0
knots	statute miles/hr	1.151
knots	yards/hr	2,027.
knots	feet/sec	1.689
	L	
league	miles (approx.)	3.0
light year	miles	5.9×10^{12}
light year	meters	9.46×10^{15}
light year	kilometers	9.46091×10^{12}
lines/sq cm	gausses	1.0
lines/sq in.	gausses	0.1550
lines/sq in.	webers/sq cm	1.550×10^{-9}
lines/sq in.	webers/sq in .	10^{-8}
lines/sq in.	webers/sq meter	1.550×10^{-5}
links (engineer's)	inches	12.0
links (surveyor's)	inches	7.92
liters	bushels (U.S. dry)	0.02838
liters	cu cm	1,000.0
liters	cu feet	0.03531
liters	cu inches	61.02
liters	cu meters	0.001
liters	cu yards	1.308×10^{-3}
liters	gallons (U.S. liq.)	0.2642
liters	pints (U.S. liq.)	2.113
liters	quarts (U.S. liq.)	1.057
liters/min	cu ft/sec	5.886×10^{-4}
liters/min	gals/sec	4.403×10^{-3}
	M	
maxwells	kilolines	0.001
maxwells	webers	10^{-8}
megalines	maxwells	10^{6}
megohms	microhms	10^{12}
megohms	ohms	10^{6}
meters	centimeters	100.0
meters	feet	3.281
meters	inches	39.37
meters	kilometers	0.001
meters	miles (naut.)	5.396×10^{-4}
meters	miles (stat.)	6.214×10^{-4}
meters	millimeters	1,000.0
meters	yards	1.094
meters	varas	1.179
meters/min	cms/sec	1.667
meters/min	feet/min	3.281
meters/min	feet/sec	0.05468
meters/min	kms/hr	0.06
meters/min	knots	0.03238
meters/min	miles/hr	0.03728
meters/sec	feet/min	196.8
meters/sec	feet/sec	3.281
meters/sec	kilometers/hr	3.6
meters/sec	kilometers/min	0.06
meters/sec	miles/hr	2.237
meters/sec	miles/min	0.03728
meters/sec/sec	cms/sec/sec	100.0
meters/sec/sec	ft/sec/sec	3.281
meters/sec/sec	kms/hr/sec	3.6
meters/sec/sec	miles/hr/sec	2.237
meter-kilograms	cm-dynes	9.807×10^{7}
meter-kilograms	cm-grams	10^{5}

Conversion Factors

TO CONVERT. . .	INTO. . .	MULTIPLY BY. . .
meter-kilograms	pound-feet	7.233
microns	inches	39×10^{-6}
,icrons	meters	1×10^{-6}
miles (naut.)	feet	6,080.27
miles (naut.)	kilometers	1.583
miles (naut.)	meters	1,853.
miles (naut.)	miles (statute)	1.1516
miles (naut.)	yards	2,027.
miles (statute)	centimeters	1.609×10^{5}
miles (statute)	feet	5,280.
miles (statute)	inches	6.336×10^{4}
miles (statute)	kilometers	1.609
miles (statute)	meters	1,609.
miles (statute)	miles (naut.)	0.8684
miles (statute)	yards	1,760.
miles/hr	cms/sec	44.70
miles/hr	feet/min	88.
miles/hr	feet/sec	1.467
miles/hr	kms/hr	1.609
miles/hr	kms/min	0.02682
miles/hr	knots	0.8684
miles/hr	meters/min	26.82
miles/hr	miles/min	0.1667
miles/hr/sec	cms/sec/sec	44.70
miles/hr/sec	feet/sec/sec	1.467
miles/hr/sec	kms/hr/sec	1.609
miles/hr/sec	meters/sec/sec	0.4470
miles/min	cms/sec	2,682.
miles/min	feet/sec	88.
miles/min	kms/min	1.609
miles/min	knots/min	0.8684
miles/min	miles/hr	60.0
mil-feet	cu inches	9.425×10^{-6}
milliers	kilograms	1,000.
millibar	pascal (Pa)	100.
millimetre of mercury (0°C)	pascal (Pa)	133.3
millimicrons	meters	1×10^{-9}
milligrams	grains	0.01543236
milligrams	grams	0.001
milligrams/liter	parts/million	1.0
millihenries	henries	0.001
milliliters	liters	0.001
millimeters	centimeters	0.1
millimeters	feet	3.281×10^{-3}
millimeters	inches	0.03937
millimeters	kilometers	10^{-6}
millimeters	meters	0.001
millimeters	miles	6.214×10^{-7}
millimeters	mils	39.37
millimeters	yards	1.094×10^{-3}
million gals/day	cu ft/sec	1.54723
mils	centimeters	2.540×10^{-3}
mils	feet	8.333×10^{-5}
mils	inches	0.001
mils	kilometers	2.540×10^{-8}
mils	yards	2.778×10^{-5}
miner's inches	cu ft/min	1.5
minims (British)	cubic cm.	0.059192
m,inims (U.S. fluid)	cubic cm.	0.061612
minutes (angles)	degrees	0.01667
minutes (angles)	quadrants	1.852×10^{-4}
minutes (angles)	radians	2.909×10^{-4}
minutes (angles)	seconds	60.0
myriagrams	kilograms	10.0
myriameters	kilometers	10.0
myriawatts	kilowatts	10.0
	N	
nepers	decibels	8.686
newton	dynes	10^{5}
	O	
ohm (international)	ohm (absolute)	1.0005
ohms	megohms	10^{-6}
ohms	microhms	10^{6}
ounces	drams	16.0
ounces	grains	437.5
ounces	grams	28.349527
ounces	pounds	0.0625
ounces	ounces (troy)	0.9115
ounces	tons (long)	2.790×10^{-5}
ounces	tons (metric)	2.835×10^{-5}
ounce-force (avoirdupois)	newton (N)	2.78×10^{-1}
ounce-force-inch	newton-metre (N m)	7.06×10^{-3}
ounces (fluid)	cu inches	1.805
ounces (fluid)	liters	0.02957
ounces (troy)	grains	480.0
ounces (troy)	grams	31.103481
ounces (troy)	ounces (avdp.)	1.09714
ounces (troy)	pennyweights (troy)	20.0
ounches (troy)	pounds (troy)	0.08333
ounce/sq. inch	dynes/sq. cm.	.4309
ounces/sq in.	pounds/sq in.	0.0625
	P	
parsec	miles	19×10^{12}
parsec	kilometers	3.084×10^{13}
parts/million	grains/U.S. gal	0.0584
parts/mill	grains/Imp. gal	0.07016
parts/million	pounds/million gal	8.345
pascal (Pa)	atmosphre (normal = 760torr)	9.87×10^{-4}
pascal (Pa)	bar	10^{-5}
pascal (Pa)	centimetre of mercury (0°C)	7.5×10^{-4}
pascal (Pa)	centimetre of water (4°C)	1.02×10^{-2}
pascal (Pa)	dyne/centimetre^2	10
pascal (Pa)	foot of water (39.2°F)	3.35×10^{-4}
pascal (Pa)	gram-force/centimetre^2	1.02×10^{-2}
pascal (Pa)	inch of mercury (60°F)	2.96×10^{-4}
pascal (Pa)	inch of water (60°F)	4.02×10^{-3}
pascal (Pa)	kilogram/metre^2	1.02×10^{-1}
pascal (Pa)	millibar	10^{-2}
pascal (Pa)	pound/foot2	2.09×10^{-2}
pascal (Pa)	pound/inch2	1.45×10^{-4}
pecks (British)	cubic inches	554.6
pecks (British)	liters	9.091901
pecks (U.S.)	bushels	0.25
pecks (U.S.)	cubic inches	537.605
pecks (U.S.)	liters	8.809582
pecks (U.S.)	quarts (dry)	8
pennyweights (troy)	grains	24.0
pennyweights (troy)	ounces (troy)	0.05
pennyweights (troy)	grams	1.55517
pennyweights (troy)	pounds (troy)	4.1667×10^{-3}
pints (dry)	cu inches	33.60
pints (liq.)	cu cms.	473.2
pints (liq.)	cu feet	0.01671
pints (liq.)	cu inches	28.87
pints (liq.)	cu meters	4.732×10^{-4}
pints (liq.)	cu yards	6.189×10^{-4}
pints (liq.)	gallons	0.125
pints (liq.)	liters	0.4732
pints (liq.)	quarts (liq.)	0.5
planck's quatum	erg-second	6.624×10^{-27}
poise	gram/cm. sec.	1.00
pounds (avoirdupois)	ounces (troy)	14.5833
poundals	dynes	13,826.
poundals	grams	14.10
poundals	joules/cm	1.383×10^{-3}
poundals	joules/meter (newtons)	0.1383
poundals	kilograms	0.01410
poundals	pounds	0.03108
pounds	drams	256.
pounds	dynes	44.4823×10^{4}
pounds	grains	7,000.
pounds	grams	453.5924
pounds	joules/cm	0.04448
pounds	joules/meter (newtons)	4.448
pounds	kilograms	0.4536
pounds	ounces	16.0
pounds	ounces (troy)	14.5833
pounds	poundals	32.17
pounds	pounds (troy)	1.21528
pounds	tons (short)	0.0005
pounds (troy)	grains	5,760.

Conversion Factors

TO CONVERT. . .	INTO. . .	MULTIPLY BY. . .
pounds (troy)	grams	373.24177
pounds (troy)	ounces (avdp.)	13.1657
pounds (troy)	ounces (troy)	12.0
pounds (troy)	pennyweights (troy)	240.0
pounds (troy)	pounds (avdp.)	0.822857
pounds (troy)	tons (long)	3.6735×10^{-4}
pounds (troy)	tons (metric)	3.7324×10^{-4}
pounds (troy)	tons (short)	4.1143×10^{-4}
pounds of water	cu feet	0.01602
pounds of water	cu inches	27.68
pounds of water	gallons	0.1198
pounds of water/min	cu ft/sec	2.670×10^{-4}
pound-feet	cm-dynes	1.356×10^{7}
pound-feet	cm-grams	13,825
pound-feet	meter-kgs	0.1383
pounds/cu ft	grams/cu cm	0.01602
pounds/cu ft	kgs/cu meter	16.02
pounds/cu ft	pounds/cu in.	5.787×10^{-4}
pounds/cu ft	pounds/mil-foot	5.456×10^{-9}
pounds/cu in.	gms/cu cm	27.68
pounds/cu in.	kgs/cu meter	2.768×10^{4}
pounds/cu in.	pounds/cu ft	1,728.
pounds/cu in.	pounds/mil-foot	9.425×10^{-6}
pounds/ft	kgs/meter	1.488
pounds/in.	gms/cm	178.6
pounds/mil-foot	gms/cu cm	2.306×10^{6}
pounds/sq ft	atmospheres	4.725×10^{-4}
pounds/sq ft.	feet of water	0.01602
pounds/sq ft	inches of mercury	0.01414
pounds/sq ft.	kgs/sq meter	4.882
pounds/sq ft	pounds/sq in.	6.944×10^{-3}
pounds/sq in.	atmospheres	0.06804
pounds/sq in.	feet of water	2.307
pounds/sq in.	inches of mercury	2.036
pounds/sq in.	kgs/sq meter	703.1
pounds/sq in.	pascal (Pa)	6.895×10^{3}
pounds/sq in.	pounds/sq ft.	144.0
	Q	
quadrants (angle)	degrees	90.0
quadrants (angle)	minutes	5,400.0
quadrants (angle)	radians	1.571
quadrants (angle)	seconds	3.24×10^{5}
quarts (dry)	cu inches	67.20
quarts (liq.)	cu cms	946.4
quarts (liq.)	cu feet	0.03342
quarts (liq.)	cu inches	57.75
quarts (liq.)	cu meters	9.464×10^{-4}
quarts (liq.)	cu yards	1.238×10^{-3}
quarts (liq.)	gallons	0.25
quarts (liq.)	liters	0.9463
	R	
radians	degrees	57.30
radians	minutes	3,438.
radians	quadrants	0.6366
radians	seconds	2.063×10^{5}
radians/sec	degrees/sec	57.30
radians/sec	revolutions/min	9.549
radians/sec	revolutions/sec	0.1592
radians/sec/sec	revs/min/min	573.0
radians/sec/sec	revs/min/sec	9.549
radians/sec/sec	revs/sec/sec	0.1592
revolutions	degrees	360.0
revolutions	quadrants	4.0
revolutions	radians	6.283
revolutions/min	degrees/sec	6.0
revolutions/min	radians/sec	0.1047
revolutions/min	revs/sec	0.01667
revolutions/min/min	radians/sec/sec	1.745×10^{-3}
revolutions/min/min	revs/min/sec	0.01667
revolutions/min/min	revs/sec/sec	2.778×10^{-4}
revolutions/sec	degrees/sec	360.0
revolutions/sec	radians/sec	6.283
revolutions/sec	revs/min	60.0
revolutions/sec/sec	radians/sec/sec	6.283
revolutions/sec/sec	revs/min/min	3,600.0
revolutions/sec/sec	revs/min/sec	60.0
rod	chain (Gunters)	.25
rod	meters	5.029
rods (Surveyors meas.)	yards	5.5
rods	feet	16.5
	S	
scruples	grains	20
seconds (angle)	degrees	2.778×10^{-4}
seconds (angle)	minutes	0.01667
seconds (angle)	quadrants	3.087×10^{-6}
seconds (angle)	radians	4.848×10^{-6}
slug	kilogram	14.59
slug	pounds	32.17
sphere	steradians	12.57
square centimeters	circular mils	1.973×10^{5}
square centimeters	sq feet	1.076×10^{-3}
square centimeters	sq inches	0.1550
square centimeters	sq meters	0.0001
square centimeters	sq miles	3.861×10^{-11}
square centimeters	sq millimeters	100.0
square centimeters	sq yards	1.196×10^{-4}
square feet	acres	2.296×10^{-5}
square feet	circular mils	1.833×10^{8}
square feet	sq cms	929.0
square feet	sq inches	144.0
square feet	sq meters	0.09290
square feet	sq miles	3.587×10^{-8}
square feet	sq millimeters	9.929×10^{4}
square feet	sq yards	0.1111
square inches	circular mils	1.273×10^{6}
square inches	sq cms	6.452
square inches	sq feet	6.944×10^{-3}
square inches	sq millimeters	645.2
square inches	sq mils	10^{6}
square inches	sq yards	7.716×10^{-4}
square kilometers	acres	247.1
square kilometers	sq cms	10^{10}
square kilometers	sq ft	10.76×10^{6}
square kilometers	sq inches	1.550×10^{9}
square kilometers	sq meters	10^{6}
square kilometers	sq miles	0.3861
square kilometers	sq yards	1.196×10^{6}
square meters	acres	2.471×10^{-4}
square meters	sq cms	10^{4}
square meters	sq feet	10.76
square meters	sq inches	1,550.
square meters	sq miles	3.861×10^{-7}
square meters	sq millimeters	10^{6}
square meters	sq yards	1.196
square miles	acres	640.0
square miles	sq feet	27.88×10^{6}
square miles	sq kms	2.590
square miles	sq meters	2.590×10^{6}
square miles	sq yards	3.098×10^{6}
square millimeters	circular mils	1,973.
square millimeters	sq cms	0.01
square millimeters	sq feet	1.076×10^{-5}
square millimeters	sq inches	1.550×10^{-3}
square mils	circular mils	1.273
square mils	sq cms	6.452×10^{-6}
square mils	sq inches	10^{6}
square yards	acres	2.066×10^{-4}
square yards	sq cms	8,361.
square yards	sq feet	9.0
square yards	sq inches	1,296.
square yards	sq meters	0.8361
square yards	sq miles	3.228×10^{-7}
square yards	sq millimeters	8.361×10^{5}
	T	
temperature (°C) + 273	absolute temperature (°C)	1.0
temperature (°C) x 17.78	temperature °F)	1.8
temperature (°F) + 460	absolute temperature (°F)	1.0

Conversion Factors

TO CONVERT. . .	INTO. . .	MULTIPLY BY. . .
temperature (ºF) -32	temperature (ºC)	5/9
tons (long)	kilograms	1,016.
tons (long)	pounds	2,240
tons (long)	tons (short)	1.120
tons (metric)	kilograms	1,000.
tons (metric)	pounds	2,204.
tons (short)	kilograms	907.1848
tons (short)	ounces	32,000.
tons (short)	ounces (troy)	29,166.66
tons (short)	pounds	2.000.
tons (short)	pounds (troy)	2,430.56
tons (short)	tons (long)	0.89287
tonsk (short)	tons (metric)	0.9078
tons (short)/sq ft	kgs/sq meter	9,765
tons (short)/sq ft	pounds/sq in.	2,000
tons of water/24 hrs	pounds of water/hr	83.333
tons of water/24 hrs	gallons/min	0.16643
tons of water/24 hrs	cu ft/hr	1.3349
	V	
volt/inch	volt/cm.	.39370
volt (absolute)	stratvolts	.003336
	W	
watts	btu/hr	3.4129
watts	btu/min	0.05688
watts	ergs/sec	107.
watts	foot-lbs/min	44.27
watts	foot-lbs/sec	0.7378
watts	horsepower	1.341×10^{-3}
watts	horsepower (metric)	1.360×10^{-3}
watts	kg-calories/min	0.01433
watts	kilowatts	0.001
watts (Abs.)	btu (mean)/min	0.056884
watts (Abs.)	joules/sec	1
watt-hours	btu	3.413
watt-hours	ergs	3.60×10^{10}
watt-hours	foot-pounds	2,656.
watt-hours	gram-calories	859.85
watt-hours	horsepower-hrs	1.341×10^{-3}
watt-hours	kilogram-calories	0.8605
watt-hours	kilogram-meters	367.2
watt-hours	kilowatt-hrs	0.001
Watt (international)	watt (absolute)	1.0002
webers	maxwells	10^8
webers	kilolines	10^5
webers/sq in.	gausses	1.550×10^7
webers/sq in.	lines/sq in.	10^8
webers/sq in.	webers/sq cm	0.1550
webers/sq in.	webers/sq meter	1,550
webers/sq meter	gausses	10^4
webers/sq meter	lines/sq in.	6.452×10^4
webers/sq meter	webers/sq cm	10^{-4}
webers/sq meter	webers/sq in.	6.542×10^{-4}
	Y	
yards	centimeters	91.44
yards	kilometers	9.144×10^{-4}
yards	meters	0.9144
yards	miles (naut.)	4.934×10^{-4}
yards	miles (stat.)	5.682×10^{-4}
yards	millimeters	914.4

Pump Displacement Table

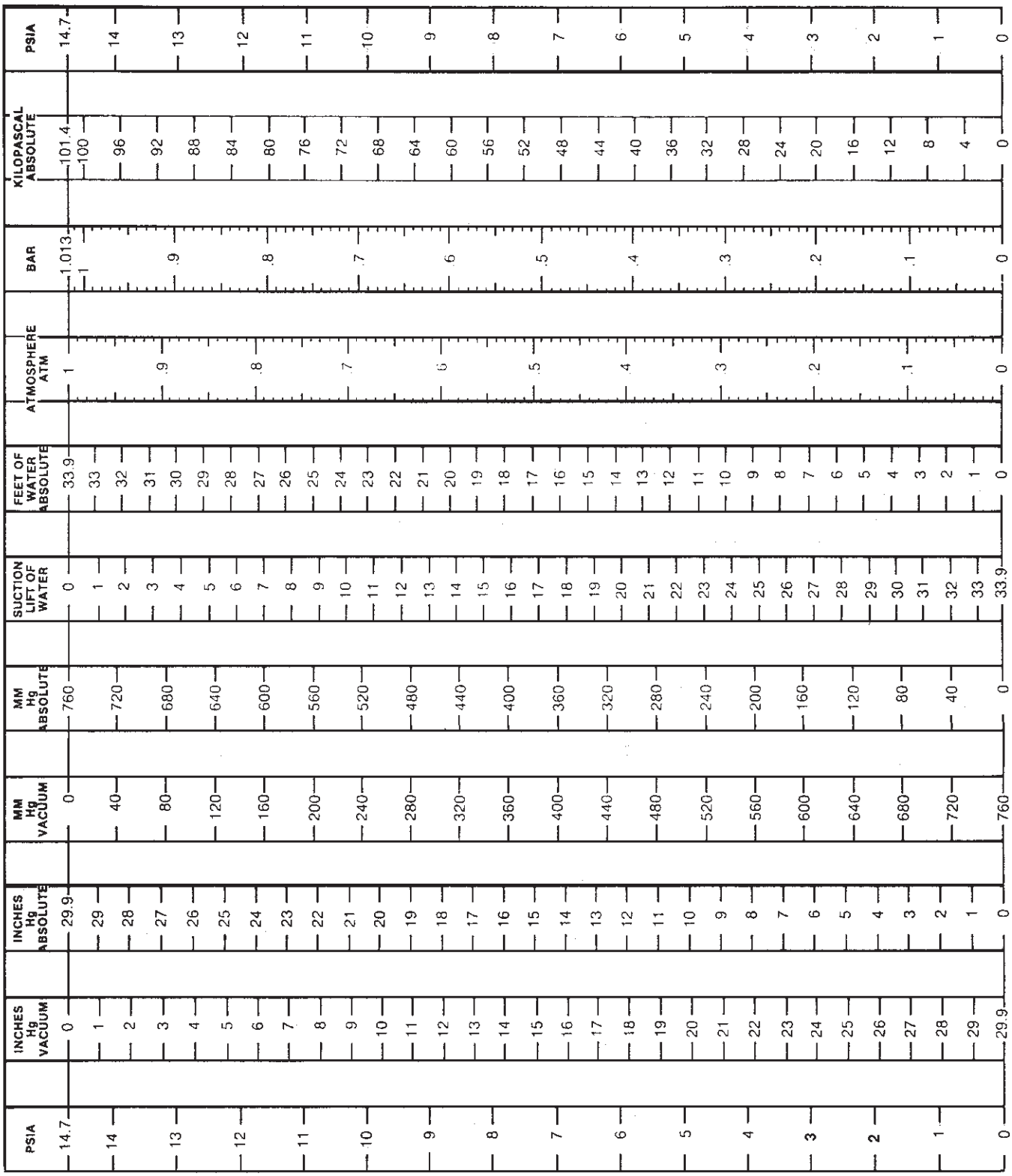
Displacement per Revolution Pump Sizes 1U thru 240U

Pump Models	Displacement per Revolution (U.S. GPM)	@1750 RPM
1U	.0009	1.57
3U	.0019	3.32
5U	.00265	4.64
6U	.0034	5.95
8U	.0048	8.35
10U	.0069	12.07
15U	.0090	15.75
20U	.0115	20.20
24U	.0137	24.00
30U	.0180	31.50
40U	.02370	41.50
44U	.0274	47.95
54U	.0317	55.50
60U	.036	63.00
70U	.0417	72.80
80U	.0474	82.90
120U	.0680	120.00
180U	.1020	180.00
240U	.1370	240.00

@ 200 SSU; 50 PSI discharge pressure

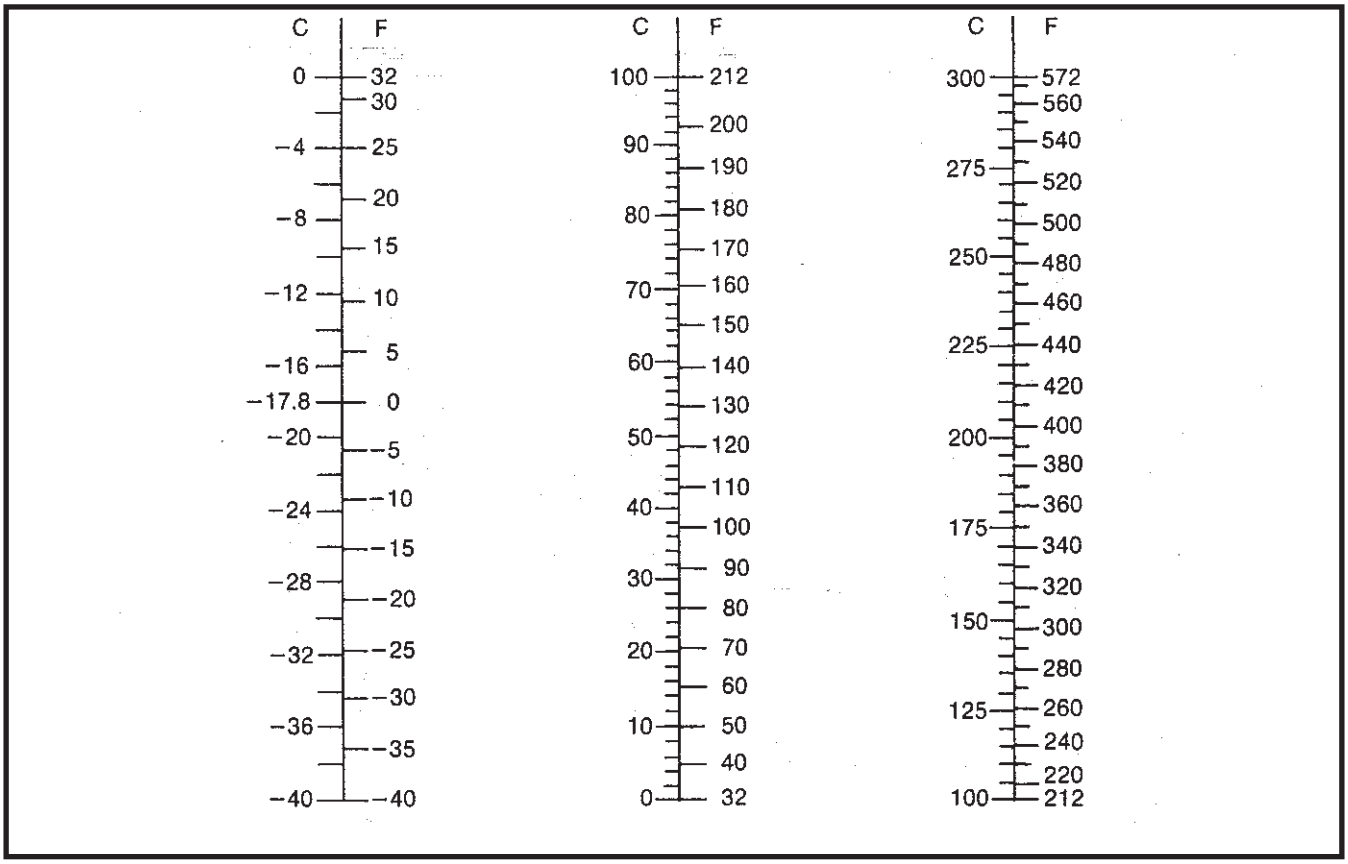
Absolute Pressure Conversion

The scales below show different ways of expressing pressures below atmospheric pressure (0 PSIG, 14.7 PSI). The preferred scale is PSIA (lbs./sq. in. absolute) which is used throughout this manual. Other scales can be converted to PSIA easily by use of this chart.

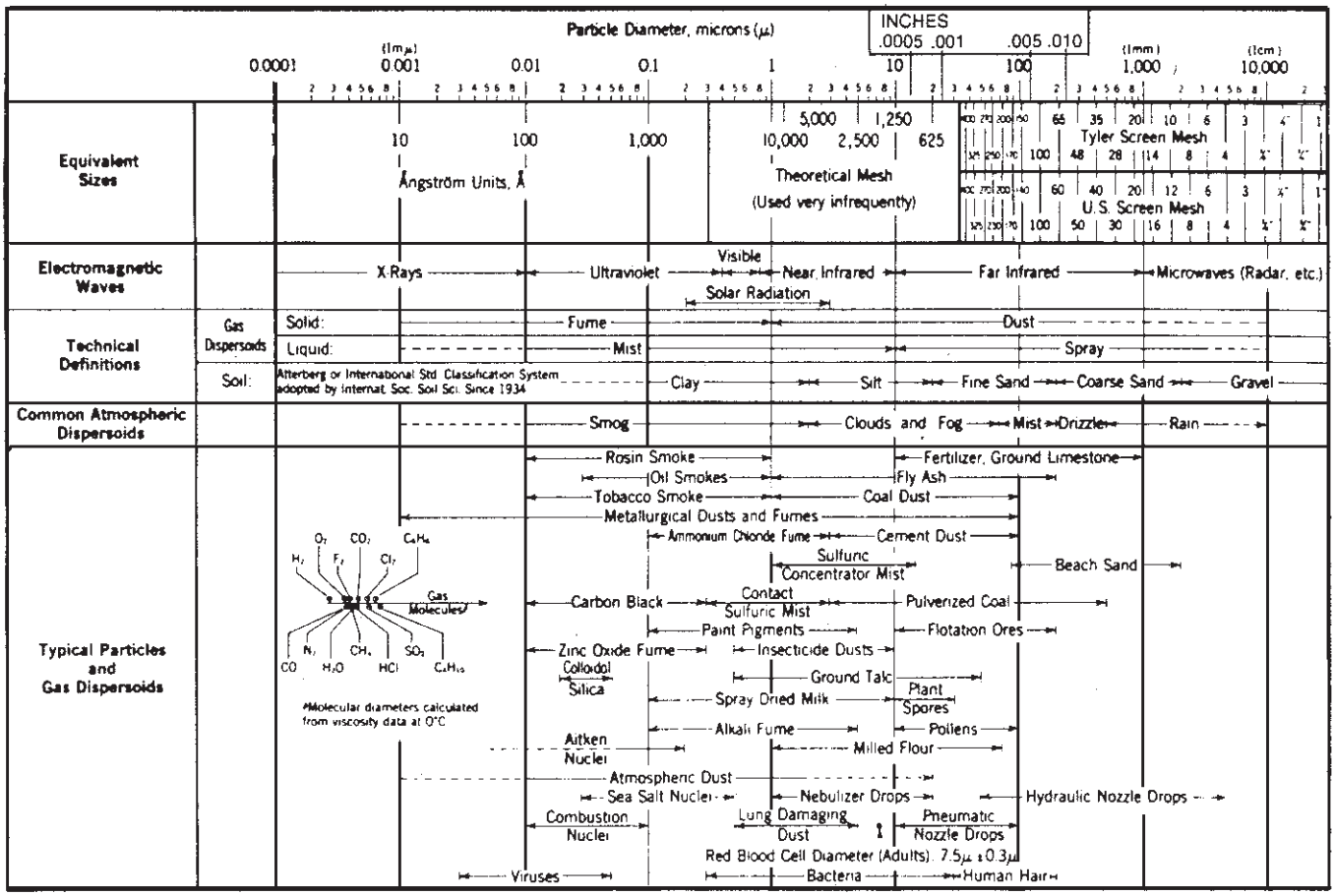


Temperature Conversion

.555 (°F - 32) = °C (1.8 X °C) + 32 = °F



Particle Sizes



Pressure Losses From Pipe Friction

(New Schedule 40 Steel Pipe)

Loss in Pounds Per Square Inch per Foot of Pipe*

GPM	Pipe Size	VISCOSITY, SSU																
		32 Water	50	100	200	400	600	800	1000	2000	3000	4000	5000	6000	7000	8000	9000	10,000
1 1/2	3/8	.033	.050	.14	.28	.60	.87	1.2	1.5	3.3	4.5	6.0	7.5	8.8				
	1/2	.013	.020	.055	.11	.24	.35	.47	.60	1.3	1.8	2.4	3.0	3.5	4.2	5.0	5.4	6.0
	3/4	.0038	.0065	.018	.038	.080	.12	.16	.20	.40	.60	.80	1.0	1.2	1.4	1.6	1.8	2.0
	1	.0010	.0025	.0070	.015	.030	.045	.060	.075	.15	.23	.30	.36	.45	.52	.60	.67	.73
3 1/2	1/2	.060	.10	.13	.27	.56	.85	1.1	1.4	2.8	4.3	5.6	7.0	8.5	9.8			
	3/4	.014	.015	.044	.090	.18	.28	.36	.45	.90	1.4	1.9	2.3	2.8	3.2	3.7	4.1	4.6
	1	.0045	.0060	.016	.035	.070	.10	.13	.18	.35	.50	.70	.85	1.0	1.2	1.3	1.6	1.8
	1 1/4	.0011	.0020	.0055	.011	.023	.035	.046	.059	.12	.17	.24	.29	.34	.40	.46	.52	.59
5	3/4	.029	.045	.060	.13	.26	.40	.52	.65	1.3	2.0	2.6	3.2	4.0	4.5	5.2	6.0	6.5
	1	.0090	.0092	.018	.050	.10	.15	.20	.25	.50	.72	1.0	1.3	1.5	1.8	2.0	2.2	2.5
	1 1/4	.0022	.0028	.0079	.016	.033	.050	.066	.083	.17	.25	.33	.41	.50	.56	.66	.72	.83
	1 1/2	.0012	.0015	.0041	.0090	.018	.027	.036	.045	.090	.13	.18	.23	.27	.32	.36	.40	.45
7	3/4	.055	.075	.090	.18	.36	.55	.73	.90	1.8	2.8	3.6	4.5	5.5	6.2	7.3	8.1	9.0
	1	.016	.025	.032	.070	.14	.21	.28	.35	.70	1.1	1.4	1.8	2.1	2.5	2.8	3.1	3.5
	1 1/4	.0040	.009	.011	.023	.046	.070	.092	.11	.23	.35	.46	.60	.70	.80	.92	1.0	1.1
	1 1/2	.0019	.0021	.0060	.013	.025	.038	.050	.062	.13	.19	.25	.31	.37	.45	.50	.55	.62
10	3/4	.10	.14	.14	.26	.52	.80	1.1	1.3	2.6	4.0	5.2	6.4	8.0	9.0			
	1	.030	.045	.047	.10	.20	.30	.40	.50	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
	1 1/4	.0080	.013	.016	.033	.066	.10	.13	.17	.34	.50	.68	.85	1.0	1.2	1.3	1.5	1.7
	1 1/2	.0035	.0055	.0085	.018	.036	.053	.071	.090	.18	.27	.35	.45	.54	.62	.71	.81	.90
15	1	.064	.092	.14	.15	.30	.45	.60	.75	1.5	2.3	3.0	3.8	4.5	5.2	6.0	7.0	7.5
	1 1/4	.016	.025	.025	.050	.10	.15	.20	.25	.50	.75	1.0	1.3	1.5	1.8	2.0	2.3	2.5
	1 1/2	.0075	.011	.013	.026	.052	.080	.11	.13	.28	.40	.52	.66	.80	.92	1.1	1.2	1.3
	2	.0022	.0036	.0047	.010	.020	.030	.040	.050	.10	.15	.20	.25	.30	.35	.40	.45	.50
18	1	.090	.12	.17	.18	.36	.54	.70	.90	1.8	2.7	3.6	4.5	5.4	6.1	7.0	8.0	9.0
	1 1/4	.023	.030	.033	.060	.12	.18	.24	.30	.60	.90	1.2	1.5	1.8	2.1	2.4	2.8	3.0
	1 1/2	.011	.016	.016	.032	.064	.098	.13	.16	.32	.49	.64	.82	.98	1.1	1.3	1.5	1.6
	2	.0031	.0050	.0056	.012	.024	.036	.050	.060	.12	.18	.24	.30	.36	.42	.50	.55	.60
20	1	.11	.15	.20	.28	.40	.60	.80	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0
	1 1/4	.028	.040	.060	.065	.13	.20	.26	.32	.65	1.0	1.3	1.6	2.0	2.3	2.6	3.0	3.2
	1 1/2	.013	.018	.019	.036	.071	.11	.15	.18	.36	.53	.70	.80	1.1	1.3	1.5	1.7	1.8
	2	.0039	.0058	.0061	.013	.026	.040	.054	.067	.13	.20	.27	.34	.40	.48	.54	.60	.67
25	1 1/4	.042	.060	.075	.080	.16	.25	.34	.42	.82	1.3	1.6	2.1	2.5	2.9	3.4	3.7	4.2
	1 1/2	.020	.029	.035	.045	.090	.13	.18	.23	.45	.67	.90	1.1	1.3	1.6	1.8	2.0	2.3
	2	.0058	.0083	.0085	.017	.033	.050	.069	.083	.17	.25	.33	.42	.50	.60	.69	.78	.83
	2 1/2	.0025	.0036	.0038	.0080	.016	.025	.032	.038	.080	.14	.16	.20	.25	.29	.32	.36	.38
30	1 1/4	.060	.083	.10	.10	.20	.30	.40	.50	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
	1 1/2	.027	.040	.045	.054	.11	.16	.21	.28	.52	.80	1.1	1.4	1.6	1.9	2.1	2.4	2.8
	2	.011	.012	.016	.020	.040	.060	.080	.10	.20	.30	.40	.50	.60	.70	.80	.90	1.0
	2 1/2	.0034	.0047	.0048	.0095	.019	.030	.038	.047	.098	.15	.19	.24	.30	.35	.38	.44	.47
35	1 1/4	.080	.11	.13	.13	.23	.35	.46	.59	1.1	1.8	2.3	2.9	3.5	4.0	4.6	5.2	5.9
	1 1/2	.037	.052	.065	.065	.13	.19	.25	.32	.62	.94	1.3	1.6	1.9	2.3	2.5	2.8	3.2
	2	.0080	.015	.020	.023	.046	.070	.094	.12	.23	.35	.46	.59	.70	.81	.94	1.1	1.2
	2 1/2	.0045	.0065	.009	.011	.023	.035	.045	.056	.11	.17	.22	.28	.35	.40	.45	.51	.56
40	1 1/2	.047	.066	.078	.080	.15	.22	.29	.36	.72	1.1	1.5	1.8	2.2	2.5	2.9	3.2	3.6
	2	.013	.020	.024	.026	.053	.80	.11	.13	.30	.40	.53	.68	.80	.92	1.1	1.2	1.3
	2 1/2	.0056	.0084	.011	.013	.025	.039	.050	.064	.13	.19	.25	.31	.39	.45	.50	.58	.64
	3	.0020	.0025	.0025	.0053	.011	.016	.022	.027	.055	.082	.11	.13	.16	.20	.22	.25	.27
50	1 1/2	.072	.097	.10	.10	.18	.28	.36	.46	.90	1.4	1.8	2.3	2.8	3.2	3.6	4.0	4.6
	2	.020	.029	.033	.033	.067	.10	.13	.17	.34	.50	.68	.83	1.0	1.1	1.3	1.5	1.7
	2 1/2	.0085	.012	.016	.016	.032	.050	.064	.080	.16	.24	.32	.40	.50	.59	.64	.72	.80
	3	.0030	.0045	.0060	.0068	.014	.020	.028	.035	.070	.10	.13	.17	.20	.24	.28	.31	.35
60	1 1/2	.10	.14	.16	.16	.22	.32	.43	.54	1.0	1.6	2.2	2.8	3.2	3.8	4.3	4.9	5.4
	2	.029	.040	.044	.044	.080	.12	.16	.20	.40	.60	.80	1.0	1.2	1.4	1.6	1.8	2.0
	2 1/2	.012	.017	.022	.019	.038	.059	.078	.097	.19	.29	.38	.49	.59	.70	.78	.88	.97
	3	.0040	.0060	.0080	.0080	.017	.025	.032	.040	.081	.13	.16	.20	.25	.28	.32	.37	.40
80	2	.050	.068	.086	.093	.10	.16	.22	.28	.52	.80	1.0	1.3	1.6	1.9	2.2	2.5	2.8
	2 1/2	.020	.028	.037	.045	.050	.079	.10	.13	.26	.39	.50	.65	.79	.90	1.0	1.1	1.3
	3	.0070	.010	.012	.012	.022	.032	.044	.054	.11	.17	.22	.28	.32	.37	.44	.50	.54
	4	.0018	.0027	.0030	.0035	.0072	.011	.015	.018	.036	.056	.074	.091	.11	.13	.15	.17	.18
90	2	.063	.082	.10	.11	.12	.18	.25	.30	.60	.90	1.2	1.5	1.8	2.2	2.5	2.8	3.0
	2 1/2	.025	.035	.045	.052	.058	.089	.11	.14	.29	.44	.58	.73	.89	1.0	1.1	1.3	1.4
	3	.0089	.013	.016	.022	.025	.037	.049	.060	.13	.19	.25	.30	.37	.42	.49	.55	.60
	4	.0022	.0034	.0040	.0040	.0081	.013	.016	.020	.040	.062	.081	.10	.13	.14	.16	.18	.20
100	2	.080	.10	.13	.13	.13	.20	.28	.34	.68	1.0	1.3	1.7	2.0	2.4	2.8	3.1	3.4
	2 1/2	.032	.043	.055	.060	.063	.099	.13	.16	.33	.50	.63	.80	.99	1.1	1.3	1.5	1.6
	3	.011	.015	.019	.024	.027	.040	.053	.068	.14	.21	.27	.35	.40	.47	.53	.61	.68
	4	.0028	.0040	.0046	.0046	.0091	.014	.018	.023	.045	.070	.092	.11	.14	.16	.18	.21	.23

*For liquids with a specific gravity other than 1.00, multiply the value from the above table by the specific gravity of the liquid. For old pipe, add 20% to the above values. Figures to right of the gray line are laminar flow. Figures to left of gray line are turbulent flow. To convert the above values to kPa (kilopascals) per metre of pipe, multiply by 22.6. To convert the above values to kg per cm^2 per metre of pipe, multiply by 0.23.

Pressure Losses From Pipe Friction

(New Schedule 40 Steel Pipe)

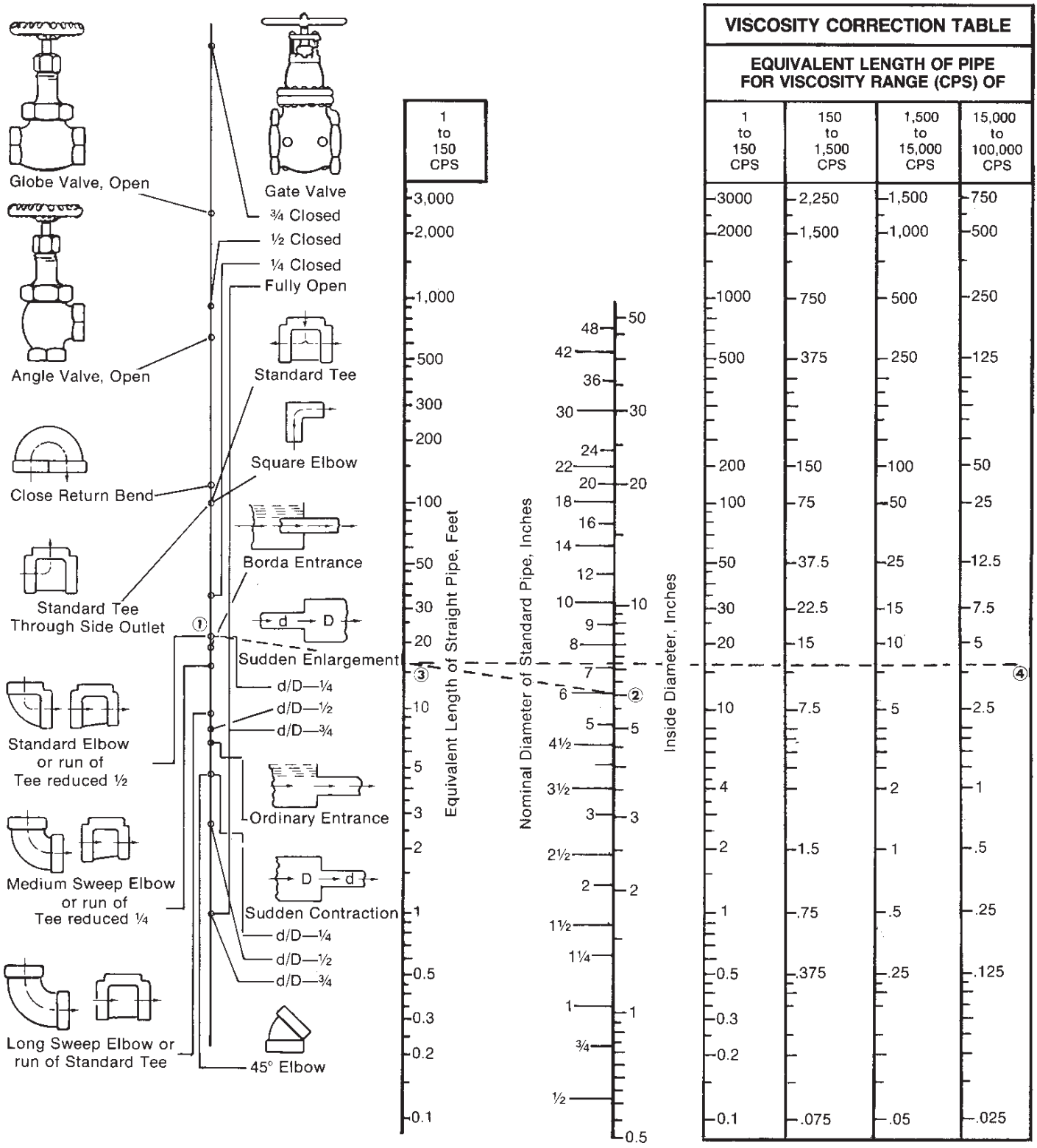
Loss in Pounds Per Square Inch per Foot of Pipe*

GPM	PIPE SIZE	VISCOSITY, SSU												
		15,000	20,000	25,000	30,000	40,000	50,000	60,000	70,000	80,000	90,000	100,000	150,000	250,000
1 1/2	1 1/4	.37	.50	.62	.73	1.0	1.3	1.5	1.7	1.9	2.2	2.5	3.7	6.2
	1 1/2	.20	.27	.35	.40	.53	.69	.80	.92	1.1	1.2	1.3	2.0	3.5
	2	.075	.10	.13	.15	.20	.25	.30	.35	.40	.46	.50	.75	1.3
	2 1/2	.036	.050	.060	.072	.095	.12	.14	.17	.20	.23	.25	.36	.60
3 1/2	1 1/4	.88	1.2	1.5	1.7	2.4	2.9	3.5	4.0	4.5	5.1	5.9	8.8	
	1 1/2	.47	.60	.80	.92	1.2	1.6	1.8	2.3	2.5	2.8	3.1	4.7	8.0
	2	.18	.23	.29	.35	.46	.57	.70	.85	.93	1.1	1.2	1.8	2.9
	2 1/2	.085	.11	.14	.17	.22	.28	.34	.40	.45	.50	.55	.85	1.4
5	1 1/2	.66	.89	1.1	1.3	1.8	2.3	2.7	3.2	3.6	4.1	4.5	6.6	
	2	.25	.33	.41	.50	.67	.82	1.0	1.2	1.3	1.5	1.7	2.5	4.1
	2 1/2	.13	.16	.21	.25	.33	.41	.50	.59	.66	.75	.81	1.3	2.1
	3	.050	.070	.085	.10	.13	.17	.20	.24	.28	.30	.34	.50	.85
7	1 1/2	.92	1.3	1.6	1.9	2.5	3.1	3.8	4.5	5.0	5.5	6.1	9.2	
	2	.35	.46	.59	.70	.93	1.1	1.4	1.7	1.9	2.1	2.4	3.5	5.8
	2 1/2	.17	.23	.28	.34	.45	.55	.68	.80	.90	1.0	1.1	1.7	2.8
	3	.070	.095	.12	.15	.19	.24	.29	.34	.38	.43	.47	.70	1.2
10	1 1/2	1.3	1.8	2.3	2.7	3.5	4.5	5.4	6.3	7.1	8.0	8.9		
	2	.40	.65	.84	1.0	1.3	1.7	2.0	2.4	2.8	3.0	3.3	4.0	8.4
	2 1/2	.25	.33	.40	.49	.64	.80	.98	1.1	1.3	1.5	1.6	2.5	4.0
	3	.10	.14	.17	.20	.27	.35	.40	.48	.55	.61	.69	1.0	1.7
15	2	.75	1.0	1.3	1.5	2.0	2.5	3.0	3.6	4.1	4.6	5.0	7.5	
	2 1/2	.36	.50	.60	.72	.95	1.2	1.4	1.7	2.0	2.3	2.5	3.6	5.0
	3	.15	.20	.25	.30	.40	.50	.60	.70	.80	.90	1.0	1.5	2.5
	4	.050	.066	.085	.10	.13	.17	.21	.24	.28	.31	.34	.50	.85
18	2	.90	1.2	1.5	1.8	2.4	3.0	3.7	4.3	4.9	5.4	6.0	9.0	
	2 1/2	.44	.59	.72	.88	1.1	1.4	1.7	2.0	2.3	2.6	2.9	4.4	7.2
	3	.18	.25	.30	.36	.50	.60	.71	.85	.98	1.1	1.2	1.8	3.0
	4	.060	.080	.10	.13	.17	.20	.25	.28	.32	.37	.41	.60	1.0
20	2	1.0	1.3	1.7	2.0	2.7	3.4	4.1	4.8	5.4	6.1	6.8	10.0	
	2 1/2	.49	.65	.80	.96	1.3	1.6	1.9	2.3	2.6	2.9	3.2	4.9	8.0
	3	.20	.28	.34	.41	.54	.69	.80	.95	1.1	1.2	1.3	2.0	3.4
	4	.069	.090	.11	.14	.18	.23	.28	.31	.36	.41	.46	.69	1.1
25	2 1/2	.60	.80	1.0	1.2	1.6	2.0	2.4	2.9	3.2	3.7	4.0	6.0	10.0
	3	.25	.35	.42	.51	.70	.85	1.0	1.1	1.3	1.6	1.7	2.5	4.2
	4	.085	.11	.14	.18	.23	.28	.35	.40	.45	.52	.58	.85	1.4
	6	.016	.022	.028	.032	.043	.053	.064	.074	.085	.095	.11	.16	.28
30	2 1/2	.72	.99	1.2	1.4	1.9	2.4	2.8	3.4	4.0	4.5	4.9	7.2	
	3	.30	.40	.50	.61	.81	1.0	1.2	1.4	1.6	1.8	2.0	3.0	5.0
	4	.10	.13	.18	.21	.28	.34	.42	.49	.55	.64	.70	1.0	1.8
	6	.020	.026	.033	.040	.051	.065	.078	.092	.10	.12	.13	.20	.33
35	2 1/2	.85	1.1	1.4	1.7	2.3	2.8	3.4	4.0	4.5	5.0	5.5	8.5	
	3	.35	.48	.60	.72	.95	1.2	1.4	1.7	1.9	2.1	2.4	3.5	6.0
	4	.12	.16	.20	.25	.32	.40	.50	.55	.64	.73	.80	1.2	2.0
	6	.023	.030	.039	.046	.060	.076	.091	.10	.12	.13	.15	.23	.39
40	2 1/2	.97	1.3	1.6	2.0	2.5	3.2	3.8	4.5	5.0	5.8	6.3	9.7	
	3	.40	.55	.69	.82	1.1	1.3	1.6	1.9	2.2	2.5	2.7	4.0	6.9
	4	.14	.18	.23	.28	.37	.46	.57	.65	.73	.83	.90	1.4	2.3
	6	.027	.035	.045	.052	.070	.089	.10	.12	.14	.16	.18	.27	.45
50	2 1/2	1.2	1.6	2.0	2.4	3.2	4.0	4.8	5.5	6.4	7.3	8.0		
	3	.50	.70	.85	1.0	1.4	1.7	2.0	2.4	2.8	3.1	3.4	5.0	8.5
	4	.17	.23	.29	.35	.46	.60	.70	.81	.90	1.0	1.1	1.7	2.9
	6	.033	.044	.055	.065	.086	.11	.13	.15	.17	.19	.22	.33	.55
60	3	.60	.81	1.0	1.3	1.6	2.0	2.5	2.9	3.2	3.7	4.0	6.0	10.0
	4	.20	.27	.35	.41	.55	.70	.84	.99	1.1	1.3	1.4	2.0	3.5
	6	.040	.052	.065	.079	.10	.13	.15	.18	.20	.24	.26	.40	.65
	8	.014	.018	.023	.027	.036	.045	.054	.063	.072	.081	.090	.14	.23
80	3	.80	1.1	1.4	1.7	2.2	2.8	3.2	3.8	4.3	5.0	5.4	8.0	
	4	.27	.36	.46	.55	.74	.91	1.1	1.3	1.5	1.7	1.8	2.7	4.6
	6	.052	.070	.090	.10	.14	.18	.21	.25	.28	.31	.35	.52	.90
	8	.018	.024	.030	.036	.048	.060	.072	.085	.096	.11	.12	.18	.30
90	3	.91	1.2	1.6	1.9	2.5	3.0	3.7	4.3	4.9	5.5	6.1	9.1	
	4	.30	.40	.51	.62	.83	1.0	1.3	1.4	1.6	1.8	2.1	3.0	5.1
	6	.060	.079	.10	.12	.15	.20	.23	.27	.31	.36	.39	.60	.79
	8	.020	.027	.034	.040	.055	.067	.080	.095	.11	.12	.12	.20	.34
100	3	1.0	1.4	1.7	2.1	2.8	3.4	4.0	4.7	5.4	6.1	6.9	10.0	
	4	.35	.45	.60	.70	.91	1.1	1.4	1.6	1.8	2.1	2.3	3.5	6.0
	6	.065	.085	.11	.13	.18	.22	.26	.30	.35	.38	.44	.65	1.1
	8	.023	.030	.037	.045	.060	.073	.090	.10	.12	.13	.15	.23	.37

*For liquids with a specific gravity other than 1.00, multiply the value from the above table by the specific gravity of the liquid. For old pipe, add 20% to the above values. Figures to right of the gray line are laminar flow. Figures to left of gray line are turbulent flow. To convert the above values to kPa (kilopascals) per metre of pipe, multiply by 22.6. To convert the above values to kg per cm^2 per metre of pipe, multiply by 0.23.

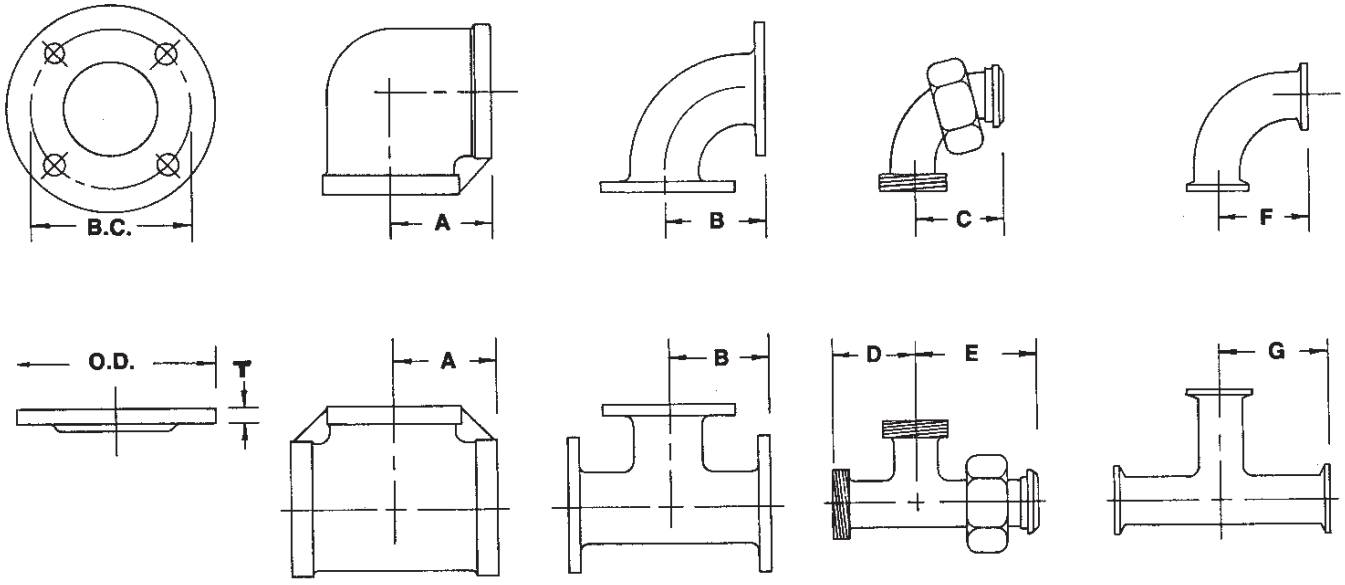
Friction Loss in Valves and Fittings

Find fitting reference point ①, line size point ②, read equivalent length at point ③, and read point ④ in proper viscosity column.



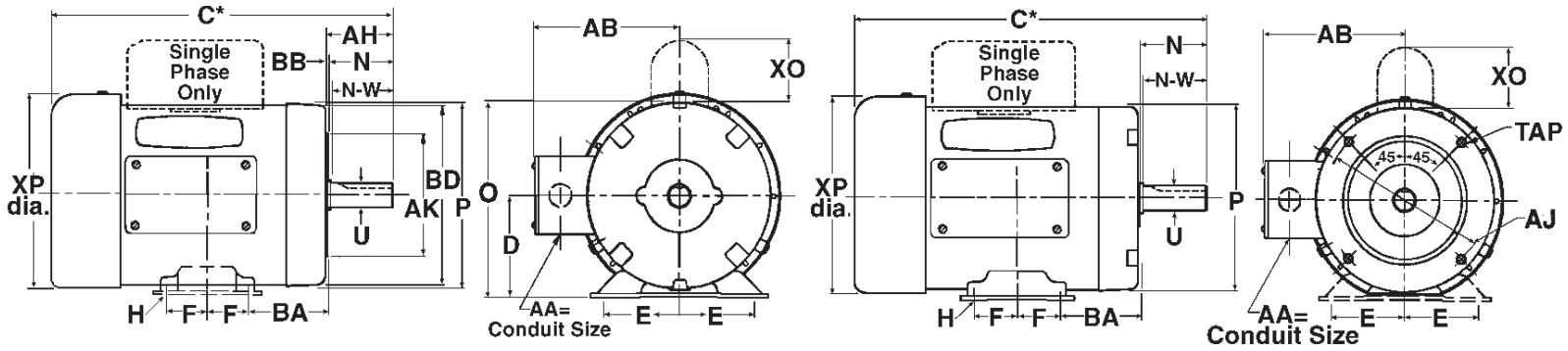
Fitting Dimensions

FLANGE **THREADED** **FLANGED** **I.M.D.A.** **TRI-CLAMP**



PIPE					150# MSS FLANGE				FITTINGS						
	SANITARY		SCH. 40												
NOM. SIZE	I.D.	O.D.	I.D.	O.D.	O.D.	T	B.C.	HOLES No-Dia	A	B	C	D	E	F	G
1	.870	1.000	1.049	1.315	4 1/4	3/8	3 1/8	(4) 5/8	1 1/2	--	2	1 13/16	2 11/16	2	2 3/8
1 1/4	--	--	1.380	1.660	4 5/8	13/32	3 1/2	(4) 5/8	1 3/4	--	--	--	--	--	--
1 1/2	1.370	1.500	1.610	1.900	5	7/16	3 7/8	(4) 5/8	1 15/16	--	2 7/8	2 3/8	3 13/32	2 3/4	2 3/4
2	1.870	2.000	2.067	2.375	6	1/2	4 3/4	(4) 3/4	2 1/4	4 1/2	3 23/32	2 25/32	3 13/16	3 1/2	3 1/2
2 1/2	2.370	2.500	2.469	2.875	7	9/16	5 1/2	(4) 3/4	2 11/16	5	4 27/32	3 3/16	4 1/4	4 1/4	3 1/2
3	2.834	3.000	3.068	3.500	7 1/2	5/8	6	(4) 3/4	3 1/16	5 1/2	5 29/32	3 1/2	4 5/8	5	3 3/4
4	3.834	4.000	4.026	4.500	9	11/16	7 1/2	(8) 3/4	3 13/16	6 1/2	8 1/16	4 21/32	6 1/8	6 5/8	4 1/2
6	5.782	6.000	6.065	6.625	11	13/16	9 1/2	(8) 7/8	--	8	--	--	--	10 1/2	6 1/2
8	7.782	8.000	7.981	8.625	13 1/2	15/16	11 3/4	(8) 7/8	--	9	---	---	---	13 1/2	7 1/2

NEMA Quick Reference Motor Dimensions



NEMA T FRAME DIMENSIONS

NEMA* FRAME	D	E	F	H	N	O	P	U	N-W	AA SIZE	AB	AH	AJ	AK	BA✦	BB	BD	XO/**	XP	TAP	KEY SIZE SQ.
42	2 5/8	1 3/4	27/32	9/32 SLOT	1 1/4	5 1/16	4 7/8	3/8	1 1/8	3/8	4 1/2	1 5/16	3 3/4	3	2 1/16	1/8	4 7/8	1 5/8	5 1/8	1/4-20(4)	3/64 FLAT
48	3	2 1/8	1 3/8	11/32 SLOT	1 5/8	5 7/8	5 5/8	1/2	1 1/2	1/2	4 7/8	1 11/16	3 3/4	3	2 1/2	1/8	5	2 1/4	5 7/8	1/4-20(4)	3/64 FLAT
56 56H	3 1/2	2 7/16	1 1/2 2 1/2	11/32 SLOT	2	6 7/8	6 5/8	5/8	1 7/8	1/2	5 3/8	2 1/16	5 7/8	4 1/2	2 3/4	1/8	6 1/2	2 1/4	7 1/4	3/8-16(4)	3/16
143T 145T	3 1/2	2 3/4	2 2 1/2	11/32	2 3/8	6 7/8	6 5/8	7/8	2 1/4	3/4	5 3/8	2 1/8	5 7/8	4 1/2	2 1/4✦	1/8	6 1/2	2 1/4	7 1/4	3/8-16(4)	3/16
182T 184T	4 1/2	3 3/4	2 1/4 2 3/4	13/32	--	8 3/4	8 1/2	1 1/8	2 3/4	3/4	6 3/8	2 5/8	7 1/4	8 1/2	2 3/4✦	1/4	8 7/8	2 1/4	9 1/8	1/2-13(4)	1/4
213T 215T	5 1/4	4 1/4	2 3/4 3 1/2	13/32	--	10 3/4	10 3/4	1 3/8	3 3/8	3/4	8 3/8	3 1/8	7 1/4	8 1/2	3 1/2✦	1/4	9	2 1/4	10 3/4	1/2-13(4)	5/16
254T 256T	6 1/4	5	4 1/8 5	17/32	--	13	13	1 5/8	4	1	10 1/2	3 3/4	7 1/4	8 1/2	4 1/4✦	1/4	10	2 1/4	13	1/2-13(4)	3/8
284T 284TS 286T 286TS	7	5 1/2	4 3/4 5 1/2	17/32	--	14 1/2	13 3/8	1 7/8 1 5/8 1 7/8 1 5/8	4 5/8 3 1/4 4 5/8 3 1/4	1 1/2	11 7/8	4 3/8 3 4 3/8 3	9	10 1/2	4 3/4	1/4	11 1/4	2 1/4	14 1/2	1/2-13(4)	1/2 3/8 1/2 3/8
324T 324TS 326T 326TS	8	6 1/4	5 1/4 6	21/32	--	16 1/8	15 7/8	2 1/8 1 7/8 2 1/8 1 7/8	5 1/4 3 3/4 5 1/4 3 3/4	2	13	5 3 1/2 5 3 1/2	11	12 1/2	5 1/4	1/4	14	2 5/8	16 1/8	5/8-11(4)	1/2
364T 364TS 365T 365TS	9	7	5 5/8 6 1/8	21/32	--	18 3/8	17 7/8	2 3/8 1 7/8 2 3/8 1 7/8	5 7/8 3 3/4 5 7/8 3 3/4	3	14	5 5/8 3 1/2 5 5/8 3 1/2	11	12 1/2	5 7/8	1/4	14	2 5/8	18 3/8	5/8-11(8)	5/8 1/2 5/8 1/2
404T 404TS 405T 405TS	10	8	6 1/8 6 7/8	13/16	--	20	19 5/8	2 7/8 2 1/8 2 7/8 2 1/8	7 1/4 4 1/4 7 1/4 4 1/4	3	16	7 4 7 4	11	12 1/2	6 5/8	1/4	14	2 5/8	20	5/8-11(8)	3/4 1/2 3/4 1/2
444T 444TS 445T 447T	11	9	7 1/4 7 1/4 8 1/4 10	13/16	--	22 1/2	22	3 3/8 2 3/8 3 3/8 3 3/8	8 1/2 4 3/4 8 1/2 8 1/2	3	20	8 1/4 4 1/2 8 1/4 8 1/4	14	16	7 1/2	1/4	14	3	22 1/2	5/8-11(8)	7/8 5/8 7/8 7/8

PRIOR NEMA FRAME MOUNTING DIMENSIONS

	D	E	F	H	U	BA	N-W	KEY
66	4 1/8	2 15/16	2 1/2	13/32	3/4	3 1/8	2 1/4	3/16
143 145	3 1/2	2 3/4	2 2 1/2	11/32	3/4	2 1/4	2	3/16
182 184	4 1/2	3 3/4	2 1/4 2 3/4	13/32	7/8	2 3/4	2 1/4	3/16
203 204	5	4	2 3/4 3 1/4	13/32	3/4	3 1/8	2 1/4	3/16
213 215	5 1/4	4 1/4	2 3/4 3 1/2	13/32	1 1/8	3 1/2	3	1/4
224 225	5 1/2	4 1/2	3 3/8 3 3/4	13/32	1	3 1/2	3	1/4
254 254U	6 1/4	5	4 1/8	17/32	1 1/8 1 3/8	4 1/4	3 3/8 3 3/4	1/4 5/16
256U			5					
284 284U 286U	7	5 1/2	4 3/4	17/32	1 1/4 1 5/8	4 3/4	3 3/4 4 7/8	1/4 3/8
			5 1/2					
324 324U	8	6 1/4	5 1/4	21/32	1 5/8 1 7/8	5 1/4	4 7/8 5 5/8	3/8 1/2
326 326U			6		1 5/8 1 7/8		4 7/8 5 5/8	3/8 1/2
364 364U	9	7	5 5/8	21/32	1 7/8 2 1/8	5 7/8	5 5/8 6 3/8	1/2 1/2
365 365U			6 1/8		1 7/8 2 1/8		5 5/8 6 3/8	1/2 1/2
404 404U	10	8	6 1/8	13/16	2 1/8 2 3/8	6 5/8	6 3/8 7 1/8	1/2 5/8
405 405U			6 7/8		2 1/8 2 3/8		6 3/8 7 1/8	1/2 5/8
444 444U	11	9	7 1/4	13/16	2 3/8 2 7/8	7 1/2	7 1/8 8 5/8	5/8 3/4
445 445U			8 1/4		2 3/8 2 7/8		7 1/8 8 5/8	5/8 3/4
504U	12 1/2	10	8	15/16	2 7/8	8 1/2	8 5/8	3/4
505			9					

*The dimensions listed here are intended for reference purposes only. Dimensions shown in the shaded areas will not change from one brand to another for motors built to NEMA rigid base or "C" face mounted dimensional standards. Other dimensions shown are determined by the manufacturer rather than NEMA standards. Those listed are for LEESON motors and may differ from other brands, beware of NEMA frame suffix letters, other than those listed above as they denote different mounting or shaft dimensions. For example, Suffix letter Y denotes special mounting provisions and Z denotes special shaft dimensions (as in 184TYZ for example). Motors having no suffix letters (other than NEMA frames 42, 48 and 56) are built to prior NEMA standards.

Prefix letters are often used by manufacturers (as in G184T) to indicate the overall length of a motor but do not denote differences in the NEMA standardized mounting dimensions. The overall length ("C" dimension) will change with the enclosure, horsepower and speed for the same brand and will vary from one brand to another for motors of the same HP, speed or enclosure. For detailed dimensions of all LEESON motors please request Bulletin 1051.

uNEMA C face motors also have a rigid base have different BA dimensions in the following instances:
143TC & 145TC – 23/4" instead of 21/4"
182TC & 184TC – 31/2" insted of 2 3/4"
213TC & 215TC – 41/4" instead of 31/2"
254TC & 256TC – 43/4" instead of 41/4"

**XO denotes clearance for the capacitors of single phase motors through the 215T frame. On three phase 254T frame and larger motors T denotes clearance for the lifting eyebolt.

Nema Frame Assignments

OPEN & TEFC (TEFC FRAMES (*) WHERE DIFFERENT THAN OPEN)

	3600 RPM			1800 RPM			1200 RPM			900 RPM		
NEMA Frame Program / HP	"T" Frames 1964	"U" Frames 1952	Original NEMA Frames	"T" Frames 1964	"U" Frames 1952	Original NEMA Frames	"T" Frames 1964	"U" Frames 1952	Original NEMA Frames	"T" Frames 1964	"U" Frames 1952	Original NEMA Frames
1	--	--	--	143T	182	203	145T	184	204	182T	213	225
1-1/2	143T	182	203	145T	184	204	182T	184	224	184T	213	254
2	145T	184	204	145T	184	224	184T	213	225	213T	215	254
3	145T/182T*	184	224	182T	213	225	213T	215	254	215T	254U	284
5	182T/184T*	213	225	184T	215	254	215T	254U	284	254T	256U	324
7-1/2	184T/213T*	215	254	213T	254U	284	254T	256U	324	256T	284U	326
10	213T/215T*	254U	284	215T	256U	324	256T	284	326	284T	286U	364
15	215T/254T*	256U	324	254T	284U	326	284T	324U	364	286T	326U	365
20	254T/256T*	284U/286U*	326	256T	286U	364	286T	326U	365	324T	364U	404
25	256T/284TS*	286U/324U*	364S/365S*	284T	324U	364/365*	324T	364U	404	326T	365U	405
30	284TS/286TS*	324S/326S*	364S/404S*	286T	326U	365/404*	326T	365U	405	364T	404U	444
40	286TS/324TS*	326S/364US*	365S/405S*	324T	364U	404/405*	364T	404U	444	365T	405U	445
50	324TS/326TS*	364US	404S/444S*	326T	365US	405S/444S*	365T	405U	445	404T	444U	504U
60	326TS/364TS*	365US/405US*	405S/445S*	364TS	404US/405US*	444S/445S*	404T	444U	504U	405T	445U	505
75	364TS/365TS*	404US/444US*	444S/504S*	365TS	405US/444US*	445S/504S*	405T	445U	505	444T	--	--
100	365TS/405TS*	405US/445US*	445S/505S*	404TS/405S*	444US/445US*	504S/505S*	444T	--	--	445T	--	--
125	404TS/444TS*	444US	504S	405TS/444TS*	445US	505S	445T	--	--	--	--	--
150	405TS/445TS*	445US	505S	444TS/445TS*	--	--	--	--	--	--	--	--
200	444TS	--	--	445TS	--	--	--	--	--	--	--	--
250	445TS	--	--	--	--	--	--	--	--	--	--	--

IEC/Nema Comparision

		DIMENSIONS IN MILLIMETERS							KW/HP** FRAME ASSIGNMENTS		
IEC	NEMA	D	E	F	H	U	BA	N-W	3 PHASE - TEFC		
									2 Pole	4 Pole	6 Pole
56	NA	56 --	45 --	35.5 --	5.8 --	9 --	36 --	20 --	-- --	-- --	-- --
63	42	63 66.7	50 44.5	40 21.4	7 7.1	11 9.5	40 52.4	23	.25KW 1/3 HP	.18KW 1/4 HP	-- --
71	48	71 76.2	56 54	45 34.9	7 8.7	14 12.7	45 63.5	30 38.1	.55 3/4	.37 1/2	-- --
80	56	80 88.9	62.5 61.9	50 38.1	10 8.7	19 15.9	50 69.9	40 47.6	1.1 11/2	.75 1	.55 KW 3/4 HP
90S	143T	90 88.9	70 69.8	50 50.8	10 8.7	24 22.2	56 57.2	50 57.2	1.5 2	1.1 11/2	.75 1
90L	145T	90 88.9	70 69.8	62.5 63.5	10 8.7	24 22.2	56 57.2	50 57.2	2.2 3	1.5 2	1.1 11/2
100L	NA	100 --	80 --	70 --	12 --	28 --	63 --	60 --	3 4	2.2 3	1.5 2
112S	182T	112 114.3	95 95.2	57 57.2	12 10.7	28 28	70 70	60 69.9	3.7 5	2.2 3	1.5 2
112M	184T	112 114.3	95 95.2	70 68.2	12 10.7	28 28	70 70	60 69.9	3.7 5	4 5.4/5	2.2 --
132S	213T	132 133.4	108 108	70 69.8	12 10.7	38 34.9	89 89	80 85.7	7.5 10	5.5 71/2	3 --
132M	215T	132 133.4	108 108	89 88.8	12 10.7	38 34.9	89 89	80 85.7	-- --	7.5 10	5.5 71/2
160M*	254T	160 158.8	127 127	105 104.8	15 13.5	42 41.3	108 108	110 101.6	15 20	11 15	7.5 10
160L*	256T	160 158.8	127 127	127 127	15 13.5	42 41.3	108 108	110 101.6	18.5 25	15 20	11 15
180M*	284T	180 177.8	139.5 139.8	120.5 120.2	15 13.5	48 47.6	121 121	110 117.5	22 --	18.5 25	-- --
180L*	286T	180 177.8	139.5 139.8	139.5 139.8	15 13.5	48 47.6	121 121	110 117.5	22 30	22 30	15 20
200M*	324T	180 203.3	159 158.8	133.5 133.4	19 16.7	55 54	133 133	110 133.4	30 40	30 40	-- --
200L*	326T	200 203.2	159 158.8	152.5 152.4	19 16.7	55 54	133 133	110 133.4	37 50	37 50	22 30
225S*	364T	225 228.6	178 117.8	143 142.8	19 16.7	60 60.3	149 149	140 149.2	-- --	37 50/75◊	30 40
225M*	365T	225 228.6	178 177.8	155.5 155.6	19 16.7	60 60.3	149 149	140 149.2	45 60/75◊	45 60/75◊	37 50
250M*	405T	250 254	203 203.2	174.5 174.6	24 20.6	65 73	168 168	140 184.2	55 75/100◊	55 75/100◊	-- --
280S*	444T	280 279.4	228.5 228.6	184 184.2	24 20.6	75 85.7	190 190	140 215.9	-- --	-- --	45 60/100◊
280M*	445T	280 279.4	228.5 228.6	209.5 209.6	24 20.6	75 85.7	190 190	140 215.9	-- --	-- --	55 75/125◊

* Shaft demensions of these IEC frames may vary between manufacturers.

** Horsepower listed is closet comparable rating with similar mounting dimensions. In some instances this results in a greater HP rating than required. For example, 37KW 4 pole converts to 50HP but nearest HP rating in the Nema framehaving comparable dimensions is 75HP. In these instances the HP rating without ◊ is the direct conversion, and HP with ◊ is the HP of the dimensionally desirable frame. OBSERVE CAUTION if the drive train or driven load is likely to be damaged by the greater HP.

Equivalent HP can be calculated by multiplying the KW rating by 1.341.
Multiply HP by .7457 to convert HP to KW.

To convert from millimeters to inches multiply by .03937.
To convert from inches to millimeters multiply by 25.4

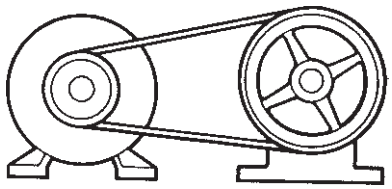
Fraction/Decimal/Millimeter Conversions

Fraction	Decimal	Millimeter		Fraction	Decimal	Millimeter		MM	Inch
1/64	.015625	0.397		33/64	.515625	13.097		1	.039
1/32	.03125	0.794		17/32	.53125	13.494		2	.0790
3/64	.046875	1.191		35/64	.546875	13.891		3	.1181
1/16	.0625	1.588		9/16	.5625	14.288		4	.1575
5/64	.078125	1.984		37/64	.578125	14.684		5	.1969
3/32	.09375	2.381		19/32	.59375	15.081		6	.2362
7/64	.109375	2.778		39/64	.609375	15.478		7	.2756
1/8	.125	3.175		5/8	.625	15.875		8	.3150
9/64	.140625	3.572		41/64	.640625	16.272		9	.3543
5/32	.15625	3.696		21/32	.65625	16.669		10	.3937
11/64	.171875	4.366		43/64	.671875	17.066		11	.4331
3/16	.1875	4.762		11/16	.6875	17.462		12	.4724
13/64	.203125	5.129		45/64	.703125	17.859		13	.5119
7/32	.21875	5.556		23/32	.71875	18.256		14	.5519
15/64	.234375	5.953		47/64	.734375	18.653		15	.5906
1/4	.25	6.350		3/4	.75	19.050		16	.6300
17/64	.265625	6.747		49/64	.765625	19.447		17	.6693
9/32	.28125	7.144		25/32	.78125	19.844		18	.7087
19/64	.296875	7.541		51/64	.796875	20.241		19	.7480
5/16	.3125	7.938		13/16	.8125	20.638		20	.7874
21/64	.328125	8.334		53/64	.828125	21.034		21	.8268
11/32	.34375	8.731		27/32	.84375	21.431		22	.8661
23/64	.359375	9.128		55/64	.859375	21.828		23	.9055
3/8	.375	9.525		7/8	.875	22.225		24	.9449
25/64	.390625	9.921		57/64	.890625	22.622		25	.9843
13/32	.40625	10.319		29/32	.90625	23.019			
27/64	.421875	10.716		59/64	.921875	23.416			
7/16	.4375	11.112		15/16	.9375	23.812			
29/64	.453125	11.509		61/64	.953125	24.209			
15/32	.46875	11.906		31/32	.96875	24.606			
31/64	.484375	12.303		63/64	.984375	25.003			
1/2	.5	12.70		1	1.	25.400			

To convert millimeters into inches, multiply by .03937.
To convert inches into millimeters, multiply by 25.40.

V-Belt Drives

V-belt drives are usually the lowest initial cost constant speed drive, and offer some flexibility to change pump speeds by a change in sheave size. Using readily available standard motors of 1750 and 1150 rpm, a range of medium pump speeds are possible. Due to sheave size and space limitations, the useful range of pump speeds is generally 200 to 600 rpm. The table below shows practical combinations for use with pumps.



Pump Speed	Motor Speed	V-Belt Section	Motor Sheave Dia.	Pump Sheave Dia.	Practical Center Distance	Approx. HP/Belt
220	1160	A	3	15.6	18.8	1.23
260	1160	A	3	13.2	15.1	1.14
290	1160	A	3	12.0	11.0	1.12
330	1160	A	3	10.6	12.4	1.12
390	1160	A	3	9.0	11.9	1.13
440	1750	A	3	12.	13.6	1.62
495	1750	A	3	10.6	12.4	1.52
580	1750	A	3	9.0	11.9	1.54
640	1750	A	3	8.2	12.6	1.62
210	1160	B	3.4	18.4	15.9	1.49
260	1160	B	3.4	15.4	14.8	1.47
290	1160	B	3.4	13.6	16.5	1.49
360	1160	B	3.4	11.0	16.5	1.51
440	1750	B	3.4	13.6	14.0	1.88
480	1750	B	3.4	12.4	15.2	1.93
540	1750	B	3.4	11.0	16.5	1.93
630	1750	B	3.4	9.4	17.9	1.97
690	1750	B	3.4	8.6	16.8	1.97
220	1160	3V	2.65	14	12.1	1.14
270	1750	3V	3	19	16.3	2.2
305	1750	3V	3.5	19	16	2.74
370	1750	3V	3	14	15.6	2.25
430	1750	3V	2.65	10.6	12.7	1.66
490	1750	3V	3	10.6	12.5	2.22
555	1750	3V	3.35	10.6	12.2	2.73
605	1750	3V	2.8	8	11.2	1.92
650	1750	3V	3	8	11.1	2.27
700	1750	3V	2.8	6.9	10.9	1.92
340	1160	C	7	24	23.6	7.56
400	1160	C	7	20	21.8	7.83
450	1160	C	7	18	21.6	7.73
505	1160	C	7	16	20.4	7.53
510	1750	C	7	24	23.6	9.57
610	1750	C	7	20	21.8	9.57
680	1750	C	7	18	21.6	9.69
290	1160	5V	7.1	28	29.6	11.48
380	1160	5V	7.1	21.2	21.6	10.83
430	1160	5V	8	21.2	21.0	13.1
510	1160	5V	7.1	16	21.4	11.2
545	1160	5V	7.1	15	19.8	10.9
580	1750	5V	7.1	21.2	21.6	14.9
620	1750	5V	7.5	21.2	21.4	16.3

Chart I
Chemical Compatibility of Pump Materials

The following table is a partial list of common fluids that Haight Pumps are compatible with. The list is based primarily on acceptable corrosion rates. Rates of 0 to .010 inches per year (IPY) are considered acceptable for even low viscosity fluids, as pump clearances, and thus pump performance will not change greatly in normal service. Corrosion rates of .010 to .020 IPY can often be tolerated with higher viscosity liquids (above 1,000 CPS). Corrosion rates are greatly influenced by concentration, temperature, and fluid viscosity. Mixtures of liquids, aerated liquids, or liquids with certain ions present (ie., chloride) may have considerably different corrosion rates, and should be investigated in references, or by actual test. Unless otherwise indicated, the temperature for the fluid is 70° F, concentration 0 to 100%. Many other liquids can be handled at a variety of conditions. Corrosion tables, such as the Corrosion Data Survey of The National Association of Corrosion Engineers can be consulted for an indication of material acceptability, and Haight Pumps will be happy to furnish recommendations for your fluid. This table is intended as a guide only and Haight Pumps reserves the right of approval of all applications. Following are additional website that you can visit for information. www.corrosionsource.com and www.dupont-dow.com/crg.

A–Acceptable C–Conditionally Acceptable X–Not Recommended

FLUIDS	Stainless Steel Pumps	Metal Pumps	Iron Pumps	FLUIDS	Stainless Steel Pumps	Metal Pumps	Iron Pumps
Acetic Anhydride	A	X	X	Black Liquor	A	X	A
Acetone	A	A	A	Blood	A	X	X
Acetylene	A	A	A	Butadiene	A	A	A
Acid				Brines	A	X	X
Acetic below 50°	A	X	X	Butter	A	X	X
Boric below 30%	A	X	X	Carbon Disulfide	A	A	A
Carbolic above 80%	A	X	A	Carbon Tetrachloride	A	X	X
Citric	A	X	X	Carbonated Beverages	A	A	X
Fatty Acids	A	X	A	Calcium			
Fruit	A	X	X	Carbonate	A	X	X
Lactic below 10%	A	X	X	Cane Sugar & Liquor	A	A	A
Nitric	A	X	X	Chocolate Syrup	A	A	A
Oxalic	X	A	X	Chlorine (Dry)	A	A	X
Palmitic	A	X	X	Clay Slurries & Coatings	A	X	A
Phosphoric below 85%	A	X	X	Castor Oil	A	A	X
Phyroligneous below 10%	A	X	X	Catsup	A	X	X
Sulphuric below 25%	A	X	X	Cellulose Acetate	A	X	X
Tannic	A	A	A	Cheese	A	X	X
Adhesives	A	A	A	Chloroform below 80%	C	X	X
Alcohol				Coffee Extracts	A	X	X
Butyl	A	A	A	Corn Syrup	A	A	A
Ethyl	C	A	C	Cottonseed Oil	A	A	A
Methyl	A	C	C	Creosote	A	X	A
Propyl	A	X	A	Detergents	A	X	X
Aluminum Sulfate	A	X	X	Dextrose	A	A	A
Anydrous Ammonia	A	A	A	Dyes	A	X	X
Ammonium				Eggs	A	X	X
Chloride below 20%	A	X	X	Ether	A	X	X
Hydroxide below 50%	A	X	X	Ferric Sulfate below 20%	A	X	X
Nitrate	A	X	X	Formaldehyde	A	A	X
Meta-Phosphate	A	X	X	Fruit Juice	A	X	X
Analine Dyes	A	X	X	Freon	A	X	A
Animal Fats	A	A	A	Furfural (below 20%)	A	X	X
Asphalt	A	A	A	Gasoline	A	X	A
Beet Juice & Pulps	A	A	A	Gelatine	A	X	X
Beer	A	X	X	Glucose	A	X	A
Beer Wort	A	A	A	Glue	A	A	A
Benzene	A	X	X	Glycerin	A	A	A

Chart I
Chemical Compatibility of Pump Materials

FLUIDS	Stainless Steel Pumps	Metal Pumps	Iron Pumps	FLUIDS	Stainless Steel Pumps	Metal Pumps	Iron Pumps
Glycols-Ethylene	A	C	C	Waxes & Emulsions	A	X	A
Hydrazine	A	X	X	Wine	A	X	X
Herbicides	A	X	A	Xylene	A	X	X
Hydrogen Peroxide				Yeast	A	A	X
below 10%, above 90%	A	X	X	Zinc Sulfate below 25%	A	X	X
Insecticides	A	X	A				
Ink	A	X	A				
Ketones	A	X	X				
Lactose	A	X	X				
Lacquers	A	X	A				
Latex	A	X	C				
Linseed Oil	A	X	A				
Lubricating Oils	A	A	A				
Lye-Caustic below 25%	A	X	X				
Magnesium Sulfate	A	A	A				
Margarine	A	X	X				
Mayonnaise	A	X	X				
Meats–Ground	A	X	X				
Meats–Fats	A	A	A				
Methane	A	A	A				
Methyl Ethyl Ketone	A	X	A				
Milk	A	A	X				
Molasses	A	X	A				
Naptha	A	A	A				
Oil							
Most Types of							
Mineral & Vegetable	A	A	A				
Paint	A	X	A				
Plasticizers	A	X	A				
Polyvinyl Acetate	A	X	X				
Polyvinyl Chloride	A	X	X				
Potassium Chloride	A	X	X				
Propane	A	X	A				
Rosin	A	X	A				
Sewage	A	X	A				
Soap Liquors & Solutions	A	X	A				
Sodium Acetate	X	A	A				
Carbonate	A	A	A				
Sodium Cyanide	A	A	A				
Hydroxide below 0.25%	A	X	X				
Bisulfide	A	X	X				
Sulfate	A	X	X				
Peroxide	X	X	A				
Phosphate (Neutral)	X	A	X				
Silicate	A	A	A				
Nitrate	A	X	A				
Starch	A	A	X				
Styrene	A	X	A				
Sucrose	A	A	A				
Sugar Solutions	A	A	C				
Tallow	A	X	A				
Tomato–							
Juice, Concentrate, Catsup	A	X	X				
Trichloroethylene	A	X	X				
Toluene	A	A	A				
Turpentine	A	X	A				

Chart II
Chemical Resistance Charts

These ratings have been developed from technical publications, material suppliers, and laboratory tests, and are presented for your evaluation and not as a guarantee. Due to the effects of temperature, concentration, combination of chemicals, pressure, agitation, aeration, duration of exposure, combustion, toxicity, and other conditions, Haight Pumps recommends that their products be tested under simulated field service conditions, by qualified personnel, before acceptance. If you are pumping a chemical which is not presently rated in our chart, please give us a call. Our staff will help determine material selections for testing.

Warning

The information in this chart has been supplied to Baker/Haight Pumps Division by other reputable sources and is to be used ONLY as a guide in selecting equipment for appropriate chemical compatibility. Before permanent installation, test the equipment with the chemicals using the specific conditions of your application. Ratings of chemical behavior listed in this chart apply to a 48-hour exposure period. Baker/Haight Pumps Division does not warrant (neither express nor imply) that the information in this chart is accurate or complete or that any material is suitable for any purpose.

DANGER

Variations in chemical behavior during handling due to factors such as temperature, pressure, and concentration can cause equipment to fail, even though it passed an initial test.

SERIOUS INJURY MAY RESULT!

Use suitable guards and/or personal safety protection when handling chemicals.

	302 Stainless Steel	304 Stainless Steel	316 Stainless Steel	440 Stainless Steel	Aluminum	**TITANIUM**	**HASTELLOY C**	Cast Bronze	Brass	Cast Iron	Carbon Steel	**KYNAR**	PVC (Type 1)	Tygon (E-3606)	Teflon	Noryl	Polyacetal	Nylon	Cycolac (ABS)	Polyethylene	**POLYPROPYLENE**	**RYTON**	**CARBON**	**CERAMIC**	**CERAMGNET "A"**	**VITON**	**BUNA N (NITRILE)**	Silicon	Neoprene	Ethylene Propylene (EPM)	Rubber (Natural)	Epoxy
Acetaldehyde[5]	A	A	A		B	**A**	**A**	D			C		D	D	A		A	A	D	C	**B**	**A**	**A**	**A**		**D**	**B**	B	D	B	C	A
Acetamide		B	A								C						B							**A**		**A**	**A**		A	A	D	A
Acetate Solvent[2]	A	B	A	B	B			A	C	B	A		B	D	A			A		B	**D**		**A**	**A**		**D**	**D**		D			A
Acetic Acid, Glacia[1]		B	A	A	B	**A**	**A**	C	C	D	A		C	B	A	C	D	D	D	B	**B**	**A**	**A**	**A**		**D**	**D**	B	C	B	C	B
Acetic Acid 20%		B	A			**A**	**A**		C			**A**	B		A	A		D			**A**	**A**		**A**		**A**	**C**		C			B
Acetic Acid 80%		B	A			**A**	**A**		C			**A**	D		A	B		D			**B**			**A**		**A**	**C**		D			B
Acetic Acid		B	A	B	B	**A**	**A**	C	C	D	C	**B**	A	B	A	A	D	D	C	B	**A**	**A**	**A**	**A**		**C**	**C**		C	B	C	A
Acetic Anhydride	B	A	A	B	B	**A**	**A**	C	D	B	D	**D**	D	D	A	D	D	D	D	A	**A**	**A**	**A**	**A**		**D**	**A**	C	B	B	C	A
Acetone[6]	A	A	A	B	A	**A**	**A**	A	A	A	A	**D**	D	D	A	D	B	A	D	C	**B**	**A**	**A**	**A**	**A**	**D**	**D**	B	C	A	D	B
Acetyl Chloride		C	A					D							A							**A**				**A**					A	A
Acetylene[2]	A	A	A	A	A	**B**		B		A	A		B				A	A			**D**	**A**	**A**	**A**		**A**	**A**	C	B	A	C	A
Acrylonitrile	A	A	C		B	**B**	**B**	A		C							B		D		**B**	**A**	**A**	**A**		**C**	**D**		D	D		A
Alcohols: Amyl	A	A	A		C	**A**	**A**	A	B	C	C	**A**	A	B	A	C	A	A	B	B	**B**	**A**	**A**	**A**		**A**	**A**	D	A	A	C	A
Benzyl		A	A		B	**A**	**A**	A	C				D	B		A	A	A	D	D	**A**		**A**	**A**		**A**	**D**		B	B	D	A
Butyl	A	A	A		B	**B**	**A**	B	C	C	C	**A**	A	B	A	A	A	A		B	**B**	**A**	**A**	**A**		**A**	**A**	D	A	A	A	A
Diacetone[2]		A	A		A	**A**	**A**	A	C		A		D			A	A	A			**D**		**A**	**A**		**D**	**D**		D	A	D	A
Ethyl		A	A	A	B	**A**	**A**	A	C	A	A		A	C		A	B	A	B	B	**A**		**A**	**A**	**A**	**A**	**A**	B	A	B	A	A
Hexyl		A	A		A	**A**	**A**	A	C		A					A	A	A			**A**		**A**	**A**		**A**	**A**	D	B	A	A	A
Isobutyl		A	A		B	**A**	**A**	A	C		A					A	A	A	B		**A**		**A**	**A**		**A**	**C**	B	A	A	A	A

A — No effect — Excellent
B — Minor effect — Good
C — Moderate effect — Fair
D — Severe effect — Not recommended

1. **P.V.C. — Satisfactory to 72° F.**
2. **Polypropylene — Satisfactory to 72° F.**
3. **Polypropylene — Satisfactory to 120° F.**
4. **Buna-N — Satisfactory for "O" Rings**
5. **Polyacetal — Satisfactory to 72° F.**
6. **Ceramag — Satisfactory to 72° F.**

Chart II
Chemical Resistance Charts

	302 Stainless Steel	304 Stainless Steel	316 Stainless Steel	440 Stainless Steel	Aluminum	**TITANIUM**	**HASTELLOY C**	Cast Bronze	Brass	Cast Iron	Carbon Steel	**KYNAR**	PVC (Type 1)	Tygon (E-3606)	Teflon	Noryl	Polyacetal	Nylon	Cycolac (ABS)	Polyethylene	**POLYPROPYLENE**	**RYTON**	**CARBON**	**CERAMIC**	**CERAMAGNET "A"**	**VITON**	**BUNA N (NITRILE)**	Silicon	Neoprene	Ethylene Propylene (EPM)	Rubber (Natural)	Epoxy
Alcohols: Isopropyl		A	A		B	**A**	**A**	A	C	C	A					A	A	A			**A**		**A**	**A**		**A**	**C**	C	B	A	A	A
Methyl[6]		A	A	A	B	**A**	**A**	A	C	A	A		B		A	A	C	A	D	B	**A**		**A**	**A**	**A**	**C**	**B**		A	A	A	A
Octyl		A	A		A	**A**	**A**	A	C		A					A	A	A					**A**	**A**		**A**	**B**		B	A	C	A
Propyl		A	A		A	**A**	**A**	A			A	**B**	A		A	A	A	A			**A**		**A**	**A**		**A**	**A**	B	A	A	A	A
Aluminum Chloride 20%		D	C	D	B	**A**	**A**	D		D	A		A	B		A	C	A		B	**A**	**A**	**A**	**A**		**A**	**A**		A	A	A	A
Aluminum Chloride	C	D	C		D	**C**	**A**	C		D	B	**A**	A	A	A	A		D			**A**	**A**	**A**	**A**		**A**	**A**	C	A			A
Aluminum Fluoride		D	C	D		**D**	**B**				A	**A**	A		A	A	C	D		B	**A**		**A**			**A**	**A**	C	A		C	A
Aluminum Hydroxide[6]		A	A	A	A			A		D	A		A		A	A	B	A			**A**		**A**	**A**	**A**	**A**	**A**		A		A	A
Aluminum Potassium Sulfate (Alum), 10%		A			A		**B**			D	A		A		A			A		A			**A**	**A**		**A**			A		A	A
Aluminum Potassium Sulfate (Alum), 100%		D	A	B	B		**B**	C			A		A	B	A	A	C	D		B	**A**		**A**	**A**		**A**	**A**		A		A	A
Aluminum Sulfate		C	C	A	A	**A**	**A**	C	C	D	A	**A**	A	B	A	A	C	A		B	**A**	**A**	**A**	**A**		**A**	**A**		A	A	A	A
Amines	A	A	A		A	**B**	**A**	B		A	B		C	A	A	B	D	A					**A**	**A**		**D**	**D**	C	B	B	C	A
Ammonia 10%			A			**A**	**A**					**D**	A		A	A		A			**A**	**A**		**A**		**A**	**D**		A			B
Ammonia, Anhydrous	A	B	A	A	B	**B**	**A**	D		D	B	**D**	A	B	A	A	D	A		B	**A**	**B**	**C**	**A**		**D**	**B**	B	A	A	D	A
Ammonia, Liquids		A	A	A	D		**B**	D		A	A		A	B	A	A	D			D	**A**		**A**	**A**		**D**	**B**	B	A	A	D	A
Ammonia, Nitrate		A	A	A	C			D			A		B	B		A	C				**A**		**A**	**A**			**A**		C			A
Ammonium Bifluoride		C	A		D		**B**						A			A	D				**A**			**A**		**A**	**A**		A			A
Ammonium Carbonate	B	A	A	A	C	**A**	**B**	B		C	B		A	B	A	A	D	A			**A**		**A**	**A**		**B**	**D**	C	A	A		A
Ammonium Casenite			A													A	D												A			A
Ammonium Chloride	C	A	C	A	C	**D**	**A**	D	C	D	D	**A**	A	B	A	A	B	A		B	**A**	**A**	**A**	**A**		**A**	**A**	C	A	A	A	A
Ammonium Hydroxide	A	A	A	A	C	**A**	**A**	D	D	A	C		A	B	A	A	D	A	B	B	**A**	**A**	**A**	**A**		**B**	**B**	B	A	A	C	A
Ammonium Nitrate	A	A	A	A	B	**A**	**A**	D	D	A	D		A	B	A	A	C	D		B	**A**	**A**	**A**	**A**		**D**	**A**	C	A	A	A	A
Ammonium Oxalate		A	A	A			**A**				A						B						**A**				**A**		A			A
Ammonium Persulfate		A	A	A	C	**C**	**A**	A		D	A	**D**	A		A	A	D	D			**A**		**A**	**A**		**C**	**A**		A	A	A	A
Ammonium Phosphate, Dibasic	B	A	A	A	B	**A**	**A**	C			D		A		A	A	B	A		B	**A**		**A**	**A**		**A**	**A**	B	A	A	A	A
Ammonium Phosphate, Monobasic		A	A	A	B	**A**	**A**	D			A		A	A	A	A	B	A		B	**A**		**A**	**A**		**A**	**A**	B	A	A	A	A
Ammonium Phosphate, Tribasic	B	A	A	A	B	**A**	**A**	C		C	D		A		A	A	B	A		B	**A**		**A**	**A**		**A**	**A**	B	A	A	A	A
Ammonium Sulfate	C	D	B	A	B	**A**	**A**	B	C	C	C	**A**	A	D	A	A	B	D		B	**A**	**A**	**A**	**A**		**D**	**A**	B	A	A	A	A
Ammonium Thio-Sulfate			A			**A**				D	A						B						**A**	**A**			**A**		A			A
Amyl-Acetate	B	A	A	C	B	**A**	**A**	C			C	**C**	D	D	A	D	A	B		D	**D**	**A**	**A**	**A**		**D**	**D**	D	D	A	D	A
Amyl Alcohol		A	A		B	**A**	**A**	A			A	**A**	A	B	A	C	A	A		B	**A**		**A**	**A**		**B**	**B**	D	A	A	C	A
Amyl Chloride		C	B		D		**A**	A			A	**A**	D	C	A	D	A	C		D	**D**		**A**	**A**		**A**	**D**		D	D	D	A
Aniline	B	A	A	A	C	**A**	**B**	C			C	**C**	D	D	A	D	D	C	D	C	**B**	**A**	**A**	**A**		**C**	**D**	C	D	B	D	A
Antifreeze		A	A		A		**A**	B	B	B	C		A	B	A	A	A	A	B	B	**A**	**A**	**A**	**A**	**A**	**A**	**A**	C	A	A	A	A
Antimony Trichloride		D	D		D	**C**	**A**						A	A	A			D		A				**A**		**A**			C		A	A
Aqua Regia (80%, HCL, 20%, HNO)		D	D		D	**A**	**D**	D				**C**	D	D	A	D	D	D		D	**C**			**D**		**C**	**D**	C	D	D	D	D
Arochlor 1248											A					D							**A**			**A**	**D**		D	B	D	A
Aromatic Hydrocarbons			A		A			A		A	A		D			D	A			C			**A**			**A**	**D**		D	D	D	A
Arsenic Acid	B	A	A		D			D	B	D	D	**A**	A	B	A	A	D	A		B	**A**		**A**	**A**		**A**	**A**		A		C	A
Asphalt		B	A		C			A		C			A				A	A			**A**	**A**		**A**	**A**	**A**	**B**	C	B	D	D	A
Barium Carbonate	B	A	A	A	B	**A**	**A**	B		B	B		A	A	A	A	A	A		B	**A**		**A**	**A**	**A**	**A**	**A**		A		A	A
Barium Chloride	C	D	A	A	D	**A**	**A**	B			C	**A**	A	B	A	A	A	B		B	**A**	**A**	**A**	**A**		**A**	**A**	B	A	A	A	A
Barium Cyanide			A					C			A						B			B			**A**			**A**	**C**		A	A		A
Barium Hydroxide	B	C	A	A	D	**B**	**B**	B		C	C	**A**	A		A	A	D	A		B	**A**	**A**	**A**	**A**	**A**	**A**	**A**	C	A	A	A	A

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2. **Polypropylene — Satisfactory to 72° F.**
3. **Polypropylene — Satisfactory to 120° F.**
4. **Buna-N — Satisfactory for "O" Rings**
5. **Polyacetal — Satisfactory to 72° F.**
6. **Ceramag — Satisfactory to 72° F.**

Chart II
Chemical Resistance Charts

	302 Stainless Steel	304 Stainless Steel	316 Stainless Steel	440 Stainless Steel	Aluminum	**TITANIUM**	**HASTELLOY C**	Cast Bronze	Brass	Cast Iron	Carbon Steel	**KYNAR**	PVC (Type 1)	Tygon (E-3606)	Teflon	Noryl	Polyacetal	Nylon	Cycolac (ABS)	Polyethylene	**POLYPROPYLENE**	**RYTON**	**CARBON**	**CERAMIC**	**CERAMAGNET "A"**	**VITON**	**BUNA N (NITRILE)**	Silicon	Neoprene	Ethylene Propylene (EPM)	Rubber (Natural)	Epoxy
Barium Nitrate		A	A			**A**		D		A	A		B			A	A						**A**	**A**		**A**	**A**		A	A		B
Barium Sulfate	B	A	A	A	D	**A**	**A**	C		C	C	**A**	A		A	A	A	A		B	**A**	**A**	**A**	**B**		**A**	**A**	D	A	A		B
Barium Sulfide	B	A	A		D	**B**		C		C	C		A	A	A	A	A	A		B	**A**		**A**	**A**		**A**	**A**	C	A	A	A	A
Beer[2]	A	A	A		A	**A**	**A**	A	B	D	D	**A**	A		A	A	B	D	B	B	**D**		**A**	**A**		**A**	**D**	C	A	A	A	A
Beet Sugar Liquids	A	A	A		A			A	B	A			A		A	A	B	A	B		**A**		**A**	**A**		**A**	**A**		B	A	A	A
Benzaldehyde[3]	A	A	A		B	**A**	**A**	A		B	A	**C**	D	D	A	D	A	C	D	D	**D**	**A**	**A**	**A**		**D**	**D**	B	D	A	D	A
Benzene[2]	B	A	A	A	B	**A**	**B**	B	A	B	C	**B**	D	C	A	D	A	A	D	D	**D**	**A**	**A**	**A**	**A**	**A**	**D**		D	D	D	A
Benzoic Acid[2]	B	A	A	A	B	**A**	**A**	B		D		**A**	A	B	A	A	B	D		B	**D**		**A**	**B**		**A**	**D**		D	D	D	A
Benzol		A	A		B	**A**	**A**	B	A				D		A	D	A	A			**A**		**A**	**A**	**A**	**D**	**D**		D			A
Borax (Sodium Borate)		A	A	A	C	**B**	**A**	A	B	A	C	**A**	A	A	A	A	A	A		B	**A**	**A**	**A**	**A**	**A**	**A**	**B**	C	A	A	C	A
Boric Acid	B	A	A	A	B	**A**	**A**	B	C	D		**A**	A	B	A	A	A	A		B	**A**		**A**	**A**	**A**	**A**	**A**		A	A	A	A
Brewery Slop			A					A		A							A						**A**	**A**		**A**	**A**		A			A
Bromine[2] **(wet)**	D	D	D	D	D	**A**	**A**	C		D	D	**A**	B	B	A	D	D	D	D	D	**D**	**D**	**D**	**A**	**D**	**A**	**D**	D	D	D	D	C
Butadiene	A	A	A		A			C	A	C	C	**A**	A		A		A	A				**B**	**A**	**A**		**A**	**A**		B	A		A
Butane[2] [1]	A	A	A		A			A	A	C	C	**A**	A	C	A	D	A	A	B	C	**D**	**A**	**A**	**A**		**A**	**A**	D	B	D	D	A
Butanol		A	A		A		**A**	A							A																
Butter		B	A		A			D		D				B		B	A		B				**A**	**A**		**A**	**A**		B	A	D	A
Buttermilk	A	A	A	A	A			D		D				B	A	A	A	A	B				**A**	**A**		**A**	**A**		A		D	A
Butylene	A	B	A		A			A	A	A	A		B		A		A					**A**	**A**	**A**		**A**	**B**			D	D	A
Butyl Acetate[1]			C		A		**A**	A			A	**C**	D	D	A	D	A			C	**D**	**A**	**A**	**A**		**D**	**B**	D	D	B	D	A
Butyric Acid[1]	B	B	A	A	B	**A**	**A**	C		D		**A**	B		A	A	C	D	D		**A**		**A**	**D**		**D**	**D**		D	B		A
Calcium Bisulfate	C	D	A		D			D	D	D			A	A	A			A								**A**	**A**	C	C		A	A
Calcium Bisulfide			B		C	**A**	**A**	C					A		A	A	D	A		B	**A**		**A**	**A**		**A**	**A**		A	D		A
Calcium Bisulfite		B	A		C	**A**	**A**	C				**A**	A		A	A		A			**A**			**A**		**A**	**A**		A		A	
Calcium Carbonate	B	A	A	A	C	**A**	**A**	C		D			A	A	A	A	A	A		B	**A**		**A**	**A**		**A**	**A**		A		A	A
Calcium Chlorate		B	A			**B**	**B**	C					A	A	A			A		A			**A**			**A**			A		A	A
Calcium Chloride	C	A	D	C	C	**A**	**A**	B		C		**A**	A	A	A	A	D	A	B	B	**A**	**A**	**A**	**A**	**B**	**A**	**A**	B	D	A	A	A
Calcium Hydroxide	B	A	A		C	**A**	**A**	B					A	A	A	A	B	A		B	**A**		**A**	**A**	**A**	**A**	**A**	C	A	A	A	A
Calcium Hypochlorite	D	D	C	C	C	**A**	**B**	D		D		**A**	D		A	A	D	D		B	**A**		**A**	**A**		**A**	**B**	C	D	A	C	A
Calcium Sulfate	B	A	A	A	B	**A**	**B**	B				**A**	A	A	A	A	A	A	C	B	**A**	**A**	**A**	**A**		**A**	**A**		D		C	A
Calgon		A	A					C		D						A	B				**A**		**A**	**A**		**A**	**A**		A			A
Cane Juice[2]		A	A		B			B	C	A			A				A	A			**D**		**A**	**A**			**A**		A		A	A
Carbolic Acid (See Phenol)																																
Carbon Bisulfide[2]	B	A	A	A	A			C		B			D	D			A	A			**D**		**A**	**A**	**A**	**A**	**D**		D	D	D	A
Carbon Dioxide (wet)		A	A		C		**A**	C	C	C					A								**A**	**A**								
Carbon Disulfide[2]		B	A		C			C	C	B	C		D	C	A	D	A	A		D	**D**	**A**	**A**	**B**		**A**	**D**		D	D	D	A
Carbon Monoxide		A	A		A								A			B	A	A		B	**A**		**A**	**A**		**A**	**A**	B	B	A	C	A
Carbon Tetrachloride[2] [1]	B	B	B	A	C	**A**	**A**	C	A	C	D	**A**	C	C	A	D	A	A	D	D	**D**	**C**	**A**	**A**	**A**	**A**	**C**	C	D		D	C
Carbonated Water	B	A	A	A	A			B		D			A			A	A	A			**A**		**A**	**A**		**A**	**A**		A	A		A
Carbonic Acid	B	A	B	A	A		**A**	B		D		**A**	A		A	A	A	A		B	**A**		**A**	**A**		**A**	**B**	B	A	A	A	A
Catsup		A	A	A	D			C		D			A			A	B	A	B		**A**		**A**	**A**		**A**	**A**		C			A
Chloracetic Acid[2]	D	D	D	D	C	**A**	**A**	D		D		**D**	A	D	A		D	D		D	**D**		**A**	**A**		**D**	**D**		D	B	D	B
Chloric Acid		D	D										D		A												**D**		D			D
Chlorinated Glue		A	A		D			C		D						C		C	D					**A**		**A**	**C**		D	B	D	A

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Chart II
Chemical Resistance Charts

	302 Stainless Steel	304 Stainless Steel	316 Stainless Steel	440 Stainless Steel	Aluminum	**TITANIUM**	**HASTELLOY C**	Cast Bronze	Brass	Cast Iron	Carbon Steel	**KYNAR**	PVC (Type 1)	Tygon (E-3606)	Teflon	Noryl	Polyacetal	Nylon	Cycolac (ABS)	Polyethylene	**POLYPROPYLENE**	**RYTON**	**CARBON**	**CERAMIC**	**CERAMAGNET "A"**	**VITON**	**BUNA N (NITRILE)**	Silicon	Neoprene	Ethylene Propylene (EPM)	Rubber (Natural)	Epoxy
Chlorine, Anhydrous Liquid		D	D	D	D	D	A	D		C			D	B	A	A	D	D		D	D	C	A	D		A	D		D	B	D	B
Chlorine (dry)	B	A	A		D	D	A	A	B	A					A							C	A	A		D			D		D	D
Chlorine Water	D		D		D	A	B	D	D	D		A	A		A	C		D			D	C	C	A		A	D	C	D			
Chlorobenzene (Mono)	A	A	A		B		A	B		B	C	A	D	D	A	D	A	A	D	D	D	A	A	A		A	D		D	D	D	A
Chloroform	A	A	A	A	D	A	A	B		D	C	C	D	C	A	D	A	C	D	D	D	C	A	A	A	A	D	D	D	D	D	A
Chlorosulfonic Acid[1]	D	D		D	D	A	B	D			D	D	C	C	A	D	D	D		D	D	D		C		D	D	D	D	D	D	C
Chlorox (Bleach)		A	A		C		A	A		D	C		A	B	A	A	D	D	B		D	C	A	A		A	C		B	B	D	A
Chocolate Syrup		A	A		A					D						A	A	A			A			A		A	A		A		D	A
Chromic Acid 5%		A	A	B	C	A	A	D	D	D			A	B		C	D	D	B	B	A	A	D	C		A	D	C	D	A	B	B
Chromic Acid 10%		B				A	A		D			A	A		A	A		D			A			A		A	D		D			C
Chromic Acid 30%		B				A	A		D			B	A		A	D		D			A			A		A	D		D			D
Chromic Acid 50%	C	B	B		C	A	A	D	D	D		C	B	B	A	D	D	D	C	C	B	B	D	A		A	D		D	A	D	C
Cider		A	A	A	B			A		D			A			A	B			B			A	A		A	A		A			A
Citric Acid		A	A	A	C	A	A	D	C	D		A	A		A	A	B	C	C	B	B		A	A	B	A	D	C	A	A	A	A
Citric Oils		A	A		C			B								A	B				A		A	A		A	A	C	D			A
Coffee	A	A	A	A	A			B		C					A	A	A	A			A		A	A		A	A		A		A	A
Copper Chloride	C	D	D	B	D	A	A	D		D		A	A	B	A	A	B	D		B	A	A		A		A	A		A	A	A	A
Copper Cyanide		A	A	A	D	A	A	C		D		A	A		A	A	B	A		B	A	A	A	A		B	B		A	A	A	C
Copper Fluoborate		D	D		D		B	D		D			A		A		B			A			A			A	B		A		A	A
Copper Nitrate	B	A	A	B	D	A	A	D				A	A		A	A	B	D		B	A		A	A		A	A		A			A
Copper Sulfate (5% Solution)		A	A	A	D	A	A	D	D	D			A		A	A	B	D		B	A	A	A	A		A	A	C	A		C	A
Copper Sulfate	B	B				A	A	C	D			A	A		A	A		C			A		A			B	B		A	A		A
Cream		A	A		A			C		D						A	A	A			A		A	A		A	A		C			A
Cresols[2]		A	A		B			D	C				D	D			D		D	D	C	A	A	A		D	D	D	D	D	D	A
Cresylic Acid	B	A	A		C	A	B	C				B	B	D	A		D	D		C			A	A		A	D		D	D	D	A
Cyclohexane		A			A	A		A			A			D		D	A				D	A	A	A		A	A	D	D	D	D	A
Cyanic Acid		A															D										C		D			A
Detergents		A	A		A			A			A		A			A	B	A	B	B	A	A	A	A		A	A		B	A	C	A
Dichlorethane		A	A				A						D	D	A			A		D						B			D		D	A
Diesel Fuel	A	A	A		A			A		A	A					D	A				D	A	A	A		A	A		D	D	D	A
Diethylamine	A	A			A			A					D		A	B	D				C		A	A		D	B		B	B	C	A
Diethylene Glycol		A						A								A	A	A	B	B			A	A		A	A	C	A	A	A	A
Diphenyl Oxide		A						A									A						A	A		A	D		D	D	D	A
Dyes		A	A		B			C								A	A									A			C			A
Epsom Salts (Magnesium Sulfate)	B	A	A	A	A	A	B	B					A			A	A				A		A	A		A	A		A		C	A
Ethane	A	A			A			A								D	A						A	A		A	A		B	D	D	A
Ethanolamine		A	A								C						D					A	A	A		D	B	C	B		C	A
Ether[3]	A	A	A	A	A		B	B	A		B		D	C		D	A	C				A	A	A	A	C	D		D	C	D	A
Ethyl Acetate[2]		A	A		B		B	B			C	D	D	D	A	D	A	A	D	C	C	A	A	A		D	D	C	D	B	D	A
Ethyl Chloride		A	A	A	B	A	B	B		C	D	A	D	D	A	D	A	A		D	D	A	A	A		A	D	D	C	A	A	A
Ethyl Sulfate		D															B						A	A		A	A					A
Ethylene Chloride[2]		A	A		C	B	B	A		C	C		D		A	D	A		D		D	A	A	A		A	D	D	D	C	D	A
Ethylene Dichloride		A	A		D	A	B	C			C		D	D	A	D	A	A		D	A	A	C	A		A	D	D	D	C	D	A
Ethylene Glycol[4]		A	A		A		A	B	B	B	C	A	A	B	A	A	A	A	B	B	A	A	A	A	A	A	A	C	A	A	A	A

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Ethylene Oxide			A		A			A					D		A	A	A	A					A	A		D	D	D	D	C	D	A
Fatty Acids		A	A		B	**A**	**A**	C		D		**A**	A	B	A	B	A	A		B	**A**		A	A		A	C	C	B	C	C	A
Ferric Chloride		D	D	D	D	**A**	**B**	D	D	D		**A**	A	B	A	A	B	D		B	**A**	**A**	A	A		A	D	C	B	A	A	A
Ferric Nitrate		A	A	A	D	**A**	**A**	D				**A**	A		A	A	B	D		B	**A**	**A**	A	A		A	A	D	A	A	A	A
Ferric Sulfate		A	C	A	D	**A**	**A**	D	D	D		**A**	A	B	A	A	B	A	C		**A**	**A**	C	A		A	B	C	A		A	A
Ferrous Chloride		D	D		D	**A**	**B**	C		D		**A**	A	B	A	A	B	D		B	**A**	**A**	A	A		A	B	C	A		A	A
Ferrous Sulfate	B	A	C		D	**A**	**B**	C		D	D	**A**	A	B	A	A	B	D		B	**A**	**A**	A	A		A	B		A		A	A
Fluoboric Acid		D	B			**D**	**A**			D		**A**	A	B	A	B	B	C		B	**A**		A	D		A	B		A			A
Fluorine	D	D	D		D	**D**	**A**	D		D	D		C		C			D		C			D									D
Fluosilicic Acid			B		D	**D**	**B**			D		**A**	A	B	A	A	B	D		B	**A**		A	D		B	**A**		A			C
Formaldehyde 40%			A			**A**	**A**					**B**	B		A	A		D			**A**	**A**		A		D	**B**	B	A			A
Formaldehyde	A	A	A		A	**A**	**B**	A	B	D	A		A	B	A	D	A	A		B	**A**	**A**	A	A		D	**C**	B	D	B	C	A
Formic Acid[6]	C	A	B	B	D	**C**	**A**	C	C	D	D	**A**	D	B	A	A	D	D		B	**A**	**A**	A	A	**B**	B	D	C	D	A	C	B
Fruit Juice	A	A	A	A	B			B		D	D		A		D	A	B	A		B	**A**		A	A	**A**	A	A		A			A
Fuel Oils	A	A	A		A	**A**	**A**	B		C	B	**A**	A		A	A	A	A		D	**B**	**A**	A	A		A	A	C	B	D	D	A
Furan Resin		A	A		A			A		A	A				A		A					**A**		A		A	**D**		D		D	A
Furfural[1]	A	A	A		A		**B**	A			A	**D**	D		A	D	B	A	D	D	D	A	A	A		D	D	D	D	B	D	A
Gallic Acid	B	A	A		A		**A**	A		D	D		A	A	A			A								B	**A**					
Gasoline[1 4]	A	A	A	A	A	**D**	**A**	A		A	A	**A**	C		A	D	A	A	D	D	**C**	**A**	A	A	**A**	A	A	D	D	C	D	A
Gelatin	A	A	A	A	A		**A**	A	C	D	D		A		A	A	A	A			**A**		A	A		A	A		A	A	A	A
Glucose	A		A		A			A	A	B	B		A	B	A	B	A	A	B	B	**A**		A	A		A	A	B	A	A	A	A
Glue P.V.A.[1]	B	B	A		B	**A**		A			A		A	B	A		A	A					A	A		A	A		A			A
Glycerine	A	A	A	A	A	**A**	**A**	A	B	B	B	**A**	A	B	A	A	A	A	C		**A**		A	A		A	A	B	A	A	A	A
Cycolic Acid							**A**							A		A	C			B	**A**	**A**	A			A	A		A			A
Gold Monocyanide			A					A		D							A						A	A		A	A		A			A
Grape Juice		A	A		B			B		D			A			A	B		B	B			A	A		A	A		A			A
Grease[4]	A	A	A		A			B		A	A				A		A	A					A	A		A	A		D			A
Heptane[1]	A		A		A		**A**	A			B	**A**	A		A	D	A	A	C	D	**D**	**A**	A	A		A	A		B	D		A
Hexane[1]	A	A	A		A		**A**	B			B	**A**	C		A	D	A	A	D		**C**	**A**	A	A		A	A	B	B	D	D	A
Honey		A	A		A			A		A			A			A	A	A	B		**A**		A	A		A	A		A	A		A
Hydraulic Oils (Petroleum)[1]	A	A	A		A			B		A	A				A		A	A			**D**		A	A		A	A		B	D	D	A
Hydraulic Oils (Synthetic)[1]		A	A		A			A		A							A	A			**D**		A	A		A	C	D				A
Hydrazine		A	A							C							D						A			A	B	D	B	A	C	A
Hydrobromic Acid 20%			D			**A**	**A**					**A**	A		A	A		D			**A**			B		A	D		C			B
Hydrobromic Acid[4]	D	D	D	D	D	**A**	**A**	D		D	D	**A**	A	B	A	C	D	D		B	**B**		A	A		A	D	D	D	A	A	A
Hydrochloric/Muratic Acid (Dry gas)	D	C	A		D		**A**				D		A		A								A							A		A
Hydrochloric/Muratic Acid (20%)[4]		D	D	D	D	**C**	**B**	D		D		**A**	A	B	A	A	D	D	B	A	**A**	**D**	A	A	**D**	A	**C**		C	A	C	A
Hydrochloric/Muratic Acid (37%)[4]		D	D	D	D	**C**	**B**	D		D		**A**	A	B	A	A	D	D	C	A	**A**	**D**	A	**C**	**D**	A	**C**	C	C	C	D	A
Hydrochloric/Muratic Acid (100%)		D	D		D	**D**	**C**	D		D			A	A	A			D		A			**A**	**C**		**C**	**D**		C		A	A
Hydrocyanic Acid	A	A	A	C	A	**A**	**A**	D	D		C		A	B	A	A	B	A		B	**A**		**A**	**A**		A	**C**		B		A	A
Hydrocyanic Acid (Gas 10%)		D	D										A		A														C	A	C	A
Hydrofluoric Acid (20%)[1]		D	D	D	D	**D**	**B**	D		D			D	B	A	A	D	D		C	**A**	**C**	**B**	**C**	**D**	**A**	**D**		C	A	C	B
Hydrofluoric Acid (75%)[1 2]		C	D		D	**D**	**C**	D		D		**A**	C	B	A	D	D	D		C	**B**	**C**	**D**	**D**	**D**	**A**	**D**	D	D	C	C	C
Hydrofluoric Acid 100%	D	D	D		D	**D**	**B**	D		D	D		C	D	A					D		**C**	**D**	**D**			**D**		D		D	A

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1. **P.V.C. — Satisfactory to 72° F.**
2. **Polypropylene — Satisfactory to 72° F.**
3. **Polypropylene — Satisfactory to 120° F.**
4. **Buna-N — Satisfactory for "O" Rings**
5. **Polyacetal — Satisfactory to 72° F.**
6. **Ceramag — Satisfactory to 72° F.**

Chart II
Chemical Resistance Charts

	302 Stainless Steel	304 Stainless Steel	316 Stainless Steel	440 Stainless Steel	Aluminum	**TITANIUM**	**HASTELLOY C**	Cast Bronze	Brass	Cast Iron	Carbon Steel	**KYNAR**	PVC (Type 1)	Tygon (E-3606)	Teflon	Noryl	Polyacetal	Nylon	Cycolac (ABS)	Polyethylene	**POLYPROPYLENE**	**RYTON**	**CARBON**	**CERAMIC**	**CERAMAGNET "A"**	**VITON**	**BUNA N (NITRILE)**	Silicon	Neoprene	Ethylene Propylene (EPM)	Rubber (Natural)	Epoxy
Hydrofluosilicic Acid (20%)		D	D		D	D	B	A		D			D		A	B	D	D			A		A	D		A	B		B	A	A	C
Hydrofluosilicic Acid		D	D		C		C	D						C	A								A					D	A			
Hydrogen Gas	A	A	A		A			A		B	B	A	A		A											A						A
Hydrogen Peroxide 10%		C	C		A	C	A	D	D	D			A	A	A			D		A		B	A	A			A		D		C	D
Hydrogen Peroxide 30%			B			B	A		D				A		A			D			A	C				A	D		C			B
Hydrogen Peroxide		A	B	A	A	B	A	D	D	D	D	C	A	C	A	B	D	D		B	A	C		A	A	A	D	C	D	C	C	A
Hydrogen Sulfide, Aqueous Solution		D	A	C	C	A	A	D	C	D		A	A	B	A	A	D	D		B	A	A	A	A	A	D	C		B	A	D	A
Hydrogen Sulfide (dry)	A	C	A		D		A	D	C	B	B		A		A			D				A		A		D					A	A
Hydroxyacetic Acid (70%)					D	B							A				D						A	A		A	A		A	A		A
Ink	A	A	A		C			C		D	D					B	A	A		B			A	A	A	A	A		A			A
Iodine		D	D	D	D	A	B	D		D			D	B	A	A	C	D	D	D	D		D	A		A	B		D	B	D	A
Iodine (In Alcohol)			B			D	A						D		A	C		D			B			A		A	D		D			
Iodoform	B	C	A		A			C		C	B				A			A								A						
Isotane[2]					A											D	A				D			A		A	A				D	A
Isopropyl Acetate			B		C												A						A	A		D	D		D	B	D	A
Isopropyl Ether[2]	A		A		A			A			A				A	D	A				D		A	A		D	B		D	D	D	
Jet Fuel (JP#, JP4, JP5)	A	A	A		A			A		A	A	A	A		A	D	A	A			D	A	A	A		A	A	D	D	D	D	A
Kerosene[2]	A	A	A	A	A	A	A	A	A	A	B	A	A	D	A	D	A	A	B	D	D	A	A	A	A	A	A	D	D	A	D	A
Ketones	A	A	A		B	A	A	A		A	A	D	D	D	A	D	B	A		D	D	A	C	A		D	D		D	D	C	C
Lacquers	A	A	A		A			A	C	C	C			D		C	A	A			A		A	A		D	D		D		D	A
Lacquer Thinners			A			A	A		C				C		A	D		A			B			A			D		D	A		
Lactic Acid	A	A	B	C	C	A	A	D		D	D	C	A	B	A	A	B	C		B	A	A	A	A		B	B		A	B	A	A
Lard	B	A	A	A	A			A		A	C		A				A	A	C		A		A	A		A	A	C	B		D	A
Latex		A	A		A			A								A	A	A		B			A		A	A		C	A		A
Lead Acetate	B	A	A		D	A	A	C			D		A	B	A	A	A	A		B	A		A	A		D	B		D	A	A	A
Lead Sulfamate																	A				A					A	B	C	A	D	C	A
Ligroin[3]			A					A								D	A				D			A		A	A		B	A	D	A
Lime		A	A		C	A		A		A			A			A	D		C				A	A		A	A	C	B	D		A
Lubricants		A	A		A	A	A	B					A		A		A	A	B		A	A	A	A		A	A	C	D		D	A
Magnesium Carbonate		A	A	A			B						A			A	A			B	A			A			A		A	A		A
Magnesium Chloride	B	B	B	A	D	A	A	B	C	D	C		A	B	A	A	A	A		B	A	A		A		A	A		A	A	A	A
Magnesium Hydroxide	A	A	A		D	A	A	C	B	B	B	A	A		A	A	A	A		B	A	A	A	A		A	B		B		C	A
Magnesium Nitrate		A	A	A		A	A						A		A	A	A	A		B	A			A		A	A		A			A
Magnesium Oxide		A	A														A							A			A		A	A		A
Magnesium Sulfate	B	B	A		B	A	B	B	B	C	B		A	B	A	A	A	A		B	A	A	A	A		A	A		A	D	C	A
Maleic Acid	C	A	A	A	B	A	A	C			B		A	B	A	A	C	A			C		A	A		A	D		A	D	D	A
Maleic Anhydride							A										C						A	A		A	D		D		D	A
Malic Acid	B	A	A		C		A	D			D		A		A			A						A		B			A		A	
Mash		A	A					A								A	A						A	A			A		A			A
Mayonnaise	A	A	A		D			D		D	D				A	A	A	A	B		A		A	A		A	A					A
Melamine		D	D					D									D						A	A			C					A
Mercuric Chloride (Dilute Solution)	D	D	D	D	D	A	B	D	D	D	D		A	A	A	A	A	A		B	A		A	A		A	A		A	A	A	A
Mercuric Cyanide	A	A	A		D	A		D			D		A		A	A	A			B	A		A	A			A					A
Mercury	A	A	A	A	C	C	A	D	D	A	A		A		A	A	A	A		B	A		A	A		A	A		A	A	A	A

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3. Polypropylene — Satisfactory to 120° F.
4. Buna-N — Satisfactory for "O" Rings
5. Polyacetal — Satisfactory to 72° F.
6. Ceramag — Satisfactory to 72° F.

Chart II
Chemical Resistance Charts

	302 Stainless Steel	304 Stainless Steel	316 Stainless Steel	440 Stainless Steel	Aluminum	**TITANIUM**	**HASTELLOY C**	Cast Bronze	Brass	Cast Iron	Carbon Steel	**KYNAR**	PVC (Type 1)	Tygon (E-3606)	Teflon	Noryl	Polyacetal	Nylon	Cycolac (ABS)	Polyethylene	**POLYPROPYLENE**	**RYTON**	**CARBON**	**CERAMIC**	**CERAMAGNET "A"**	**VITON**	**BUNA N (NITRILE)**	Silicon	Neoprene	Ethylene Propylene (EPM)	Rubber (Natural)	Epoxy
Methanol (See Alcohol Methyl)																																
Methyl Acetate	A		A		A		**A**	A			B				A		A		D				**A**	**A**		**D**	**D**	D	B	B	D	
Methyl Acrylate																	A						**A**	**A**		**D**	**D**		B	B	D	A
Methyl Acetone	A		A		A			A		A	A				A	D	A							**A**		**D**	**D**		D			C
Methyl Alcohol 10%	A		A		C		**A**	C			B		A		A			A									**B**				A	A
Methyl Bromide																	A			D			**A**	**A**		**A**	**B**		D	D	D	B
Methyl Butyl Ketone			A		A											D	B						**A**	**A**		**D**	**D**	C	D	A	D	B
Methyl Cellosolve					A			A								C	B				**A**		**A**	**A**		**D**	**D**		D	B	D	C
Methyl Chloride		A	A		D	**A**	**A**	A				**A**	D		A	D	A	A		D	**D**		**A**	**A**		**A**	**D**	D	D	C	D	A
Methyl Dichloride																D	A						**A**	**A**		**A**	**D**		D	D	D	A
Methyl Ethyl Ketone		A	A		A	**A**	**A**	A				**D**	D		A	D	B	A	D	D	**A**	**A**	**A**	**A**		**D**	**D**	C	D	A	D	B
Methyl Isobutyl Ketone[2]			A			**A**	**A**					**D**	D		A	D	B	A	D		**C**	**A**	**A**	**A**		**D**	**D**	C	D	C	D	B
Methyl Isopropyl Ketone			A													D	B	A					**A**	**A**		**D**	**D**	B	D	B	D	B
Methyl Methacrylate																	A						**A**	**A**		**D**	**D**		D	D	D	A
Methylamine	A		A		A			D		B	B					B	D						**A**	**A**			**B**					A
Methylene Chloride	A	A	A		A	**A**	**A**	A	C		B	**D**	D		A	D	A	D		D	**D**		**A**	**A**		**D**	**D**		D	D	D	A
Milk	A	A	A	A	A			C	C	D	D		A			A	A	A	B	B	**A**		**A**	**A**	**A**	**A**	**A**	B	A	A	A	A
Molasses	A	A	A	A	A			A	B	A	A		A			B	A	A		B	**A**		**A**	**A**	**A**	**A**	**A**		A			A
Mustard	A	A	A	A	B			B		C	B		A			B	B	A	B		**A**		**A**	**A**		**A**	**B**	C	C			A
Naphtha	A	A	A	A	A	**A**	**A**	B		B	B	**A**	A	C	A	D	A	A	C	D	**A**	**A**	**A**	**A**		**A**	**B**	D	D	D	D	A
Naphthalene	B	A	B		B	**A**	**A**	C		B	A	**A**	D		A	D	A			D	**B**	**A**	**A**	**A**		**B**	**D**		D	D	D	A
Nickel Chloride		A	B		D	**A**	**A**	D		D		**A**	A	B	A	A	B	A		B	**A**		**A**	**A**		**A**	**A**		A	A	A	A
Nickel Sulfate	B	A	B		D	**A**	**B**	C	C	D	D	**A**	A	A	A	A	B	A		B	**A**		**A**	**A**		**A**	**A**		A	A	C	A
Nitric Acid (10% Solution)	A	A	A	A	D	**A**	**A**	D		D	D	**A**	A	B	A	A	D	D	C	B	**A**	**D**	**C**	**B**	**D**	**A**	**D**		D	B	D	A
Nitric Acid (20% Solution)		A	A	A	D	**A**	**A**	D		D		**B**	A	B	A	A	D	D	D	B	**A**	**C**	**D**	**C**	**D**	**A**	**D**		D	D	D	B
Nitric Acid (50% Solution)		A	A	A	D	**A**	**A**	D		D		**B**	A	B	A	A	D	D	D	C	**D**	**C**	**D**	**A**		**A**	**D**		D	D	D	D
Nitric Acid (Concentrated Solution)		D	B	A	B	**A**	**B**	D	D	D			D	C	A	D	D	D	D	D	**D**	**C**	**D**	**A**	**C**	**B**	**D**		D	D	D	D
Nitrobenzene[2]	B	A	B		C	**A**	**B**	D		B	B	**D**	D	D	A	D	B	C	D	D	**C**	**B**	**A**	**A**		**D**	**D**	D	D	D	D	B
Oils: Aniline		A	A		C	**A**	**D**	A		A			D		A	D	D	C	D		**A**		**A**	**A**		**A**	**D**		D	B	D	A
Anise		A	A														A						**A**	**A**					D			A
Bay		A	A														A						**A**	**A**		**A**			D			A
Bone		A	A					A									A						**A**	**A**		**A**	**A**		D			A
Castor		A	A		A			A		A			A				A						**A**	**A**	**A**	**A**	**A**		A	B	A	A
Cinnamon		A	A												A		A				**A**		**A**	**A**		**D**			D			A
Citric		A	A					D		D							A	A			**A**		**A**	**A**		**A**	**A**		D			A
Clove		A	A														A	A			**B**		**A**	**A**			**A**					A
Coconut		A	A		B			A		A							A	A			**A**		**A**	**A**		**A**	**A**		A	A	D	A
Cod Liver		A	A		B												A	A	C		**A**		**A**	**A**		**A**	**A**		B	A	D	A
Corn		A	A	A	B			B		A							A	A	C		**A**		**A**	**A**		**A**	**A**		D	C	D	A
Cotton Seed	B	A	A	A	B			B		A	C		A		A		A	A	C		**A**	**A**	**A**	**A**		**A**	**A**		D	C	D	A
Creosote[2]		A	A		A												D				**D**		**A**	**A**		**A**	**A**		B	D	D	A
Diesel Fuel (2D, 3D, 4D, 5D)		A	A		A			A								D	A	A			**A**	**A**	**A**	**A**		**A**	**A**		D	D	D	A
Fuel (1, 2, 3, 5A, 5B, 6)		A	A		A	**A**	**A**	A					A		A	D	A				**B**		**A**	**A**		**A**	**B**		D	D	D	A
Ginger		A	A														A						**A**	**A**		**A**	**A**		A			A

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Oils: Hydraulic (See Hydraulic)																																
Lemon		A	A														A				D		A	A		A			D			A
Linseed		A	A	A	A			A		A			A	B			A	A	C		A		A	A	A	A	A		D	D	D	A
Mineral	A	A	A	A	A			A		A	B		A			B	A	A			B	A	A	A	A	A	A		B	D	D	A
Olive	A	A	A		A			B		A	B		A		A		A	A			A		A	A		A	A	C	B		D	A
Orange		A	A												A		A	A			A		A	A		A	A		D			A
Palm		A	A		A			B					A				A	A					A	A		A	A		D			A
Peanut[3]		A	A		A			A		A			A				A				D		A	A		A	A		D		D	A
Peppermint[2]		A	A					A									A				D		A	A		A	D		D			A
Pine	A	A	A		A			D		C	B		A		A		A						A	A		A	A		D		D	A
Rape Seed		A	A					A					A				A						A	A		A	B		D		D	A
Rosin		A	A		A												A	A			A		A	A		A	A					A
Sesame Seed		A	A		A			A		A			A				A						A	A		A	A		D			A
Silicone		A	A					A		A						A	A	A			A		A	A	A	A	A		A		A	A
Soybean		A	A		A			B		A			A				A	A			A		A	A		A	A		D		D	A
Sperm		A	A					A					A				A						A	A		A	A		D			A
Tanning		A	A														A						A	A		A	A		D			A
Turbine		A	A		A			A		A			A				A		C				A	A		A	A		D		D	A
Oleic Acid	B	A	A	B	B		B	B	C	C	C		A	C	A	C	B	A	B	D	C		A	A		D	B	D	D	D	D	A
Oleum 25%							A					B	D		A	D								A		A	D	D	D	D		D
Oleum	B		A		B			C	C		B	D	D		A		D				D			A		A	C	D	D	D	D	A
Oxalic Acid (cold)	C	A	B	A	C	C	B	B	C	D	D		A	B	A	C	C	D		A	A		A	A		A	B	C	B	A	C	A
Paraffin	A	A	A	A	A			A		B	B	A	A		A	B	A	A	B		A		A	A		A	A					A
Pentane	A	C	C		A		B	A		B	B				A	D	A	A	D				A	A		A	A		B	D	D	A
Perchloroethylene[2]	B	A	A		A			C		B	B	A			A	D	A		D		D	A	A	A		A	C	D	D	D	D	A
Petrolatum	A		A		B			B		C	C				A	D	A	A	B				A	A		A	A		B	A	D	A
Phenol 10%	B	A	A		A		B	C		B	D		A	C	A			D				A				B	D		C	D	C	C
Phenol (Carbolic Acid)	B	A	A	A	B	C	A	B	D	D	D	A	A	C	A	C	D	D		D	B	A	A	D	A	A	D		D	D	D	B
Phosphoric Acid (40% Solution)		B	A	A	D	A	A	D	D	D			A	B	A	A	D	D	C	B	A	A	B	C	D	A	D		D	B	C	A
Phosphoric Acid (40% - 100% Solution)		C	B	B	D	B	A	D	D	D			A	B	A	A	D	D	D	C	A	A	B	D	D	A	D		D	B	C	C
Phosphoric Acid (Crude)		D	C	C	D	C	A	D	D	D	D	A			A		D	D	D	C		A	C	D		A	D		D	B		A
Phosphoric Anhydride (Dry or Moist)		A	A						D				D	D	A								A			D	D		D		A	
Phosphoric Anhydride (Molten)		A	A		D			D	D				D		A			A		D						D	C		D		D	A
Photographic (Developer)		C	A	C	C	A	A			D			A			A	C			B	A		A	A		A	A		A			A
Phthalic Anhydride	B	A	B		B		A	B		C	C				A			A								A	C					
Picric Acid	B	A	A		C		A	D	D	D	D		A	A	A			A		A						A	A	D	A		A	A
Plating Solutions																																
Antimony Plating 130° F			A			A	A						A		A	A		D			A			A		A	A	D	A			B
Arsenic Plating 110° F			A			A	A						A		A	A		A			A			C		A	A	D	A			B
Brass Plating																																
Regular Brass Bath 100° F			A			A	A						A		A	A		A			A			C		A	A	D	A			B
High Speed Brass Bath 110° F			A			A	A						A		A	A		A			A			D		A	A	D	A			B
Bronze Plating																																
Copper Cadmium Bronze Bath R.T.			A			A	A						A		A	A		A			A			C		A	A	D	A			B
Copper-Tin Bronze Bath 160° F			A			A	A						D		A	A		A			A			D		A	A	D	B			C
Copper-Zinc Bronze Bath 100° F			A			A	A						A		A	A		A			A			C		A	A		A			B
Cadmium Plating																																
Cyanide Bath 90° F			A			A	A						A		A	A		A			A			C		A	A		A			B

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5. Polyacetal — Satisfactory to 72° F.
6. Ceramag — Satisfactory to 72° F.

Chart II
Chemical Resistance Charts

	302 Stainless Steel	304 Stainless Steel	316 Stainless Steel	440 Stainless Steel	Aluminum	TITANIUM	HASTELLOY C	Cast Bronze	Brass	Cast Iron	Carbon Steel	KYNAR	PVC (Type 1)	Tygon (E-3606)	Teflon	Noryl	Polyacetal	Nylon	Cycolac (ABS)	Polyethylene	POLYPROPYLENE	RYTON	CARBON	CERAMIC	CERAMAGNET "A"	VITON	BUNA N (NITRILE)	Silicon	Neoprene	Ethylene Propylene (EPM)	Rubber (Natural)	Epoxy
Cadmium Plating																																
Fluoborate Bath 100° F			A			D	A						A		A	A		D			A			D		A	B		C			B
Chromium Plating																																
Chromic-Sulfuric Bath 130° F			C			A	A						A		A	D		D			A			A		C	D		D			D
Fluosilicate Bath 95° F			C			C	A						A		A	D		D			A			B		C	D		D		D	D
Fluoride Bath 130° F			D			C	A						A		A	D		D			A			B		C	D		D			D
Black Chrome Bath 115° F			C			A	A						A		A	D		D			A			A		C	D		D			D
Barrel Chrome Bath 95° F			D			C	A						A		A	D		D			A			A		C	D		D			D
Copper Plating (Cyanide)																																
Copper Strike Bath 120° F					A	A	A								A	A								C		B			A			
Rochelle Salt Bath 150° F			A			A	A						D		A	A		A			A			D		A	A		B			C
High Speed Bath 180° F			A			A	A						D		A	A		A			A			D		A	A		B			C
Copper Plating (Acid)																																
Copper Sulfate Bath R.T.			D			A	A						A		A	A		D			A			D		A	A		A			D
Copper Fluoborate Bath 120° F			D			D	A						A		A	A		D			A			D		A	B		C			D
Copper (Misc.)																																
Copper Pyrophosphate 140° F			A			A	A						A		A	A		A			A			B		A	A		A			B
Copper (Electroless) 140° F								D					A		A	A		A			A			D		A	D		D			B
Gold Plating																																
Cyanide 150° F			A			A	A	C					D		A	A		A			A			B		A	A		A			D
Neutral 75° F			C			A	A						A		A	A		A			A			A		A	A		A			A
Acid 75° F			C			A	A						A		A	A		A			A			A		A	A		A			A
Indium Sulfamate Plating R.T.			C			A	A						A		A	A		D			A			A		A	A		A			A
Iron Plating																																
Ferrous Chloride Bath 190° F			D			A	D						D		A	A		D			C			A		A	B		D			D
Ferrous Sulfate Bath 150° F			C			A	A						D		A	A		D			A			A		A	A		B			D
Ferrous Am. Sulfate Bath 150° F			C			A	A						D		A	A		D			A			A		A	A		B			D
Sulfate-Chloride Bath 160° F			D			A	D						D		A	A		D			A			A		A	B		C			D
Fluoborate Bath 145° F			D			D	B						D		A	A		D			A			D		A	B		C			D
Sulfamate 140° F			D			A	B						A		A	A		D			A			A		A	A		A			A
Lead Fluoborate Plating			C			D	A						A		A	A		D			A			D		A	B		C			A
Nickel Plating																																
Watts Type 115 - 160° F			C			A	A						D		A	A		A			A			A		A	A		A			D
High Chloride 130 - 160° F			C			A	A						D		A	A		D			A			A		A	A		B			D
Fluoborate 100 - 170° F			C			D	A	D					D		A	A		D			A			D		A	B		C			D
Sulfamate 140° F			C			A	A						A		A	A		A			A			A		A	A		A			A
Electroless 200° F													D		A	D		D			D			A		A	D		D			B
Rhodium Plating 120° F			D			D	D						A		A	A	D	D			A			A		A	A		B			A
Silver Plating 80 - 120° F			A			A	A						A		A	A		A			A			B		A	A		A			A
Tin-Fluoborate Plating 100° F			C			D	A						A		A	A		D			A			D		A	B		C			A
Tine-Lead Plating 100° F			C			D	A						A		A	A		D			A			D		A	B		C			A
Zinc Plating																																
Acid Chloride 140° F			D			A	D						A		A	A		D			A			A		A	A		A			A
Acid Sulfate Bath 150° F			C			A	A						D		A	A		D			A			A		A	A		B			D
Acid Fluoborate Bath R.T.				C		D							A		A	A		D			A			D		A	B		C			A
Alkaline Cyanide Bath R.T.				A		A	A						A		A	A		A			A			D		A	A		A			A
Potash		A		A	C		A	C		B			A	B		A	B	A		B	A		A	A	A	A	A		B		B	A
Potassium Bicarbonate		A		B	C	A	B	B		D		A	A		A	A	C	A	C	B	A	A	A	A		A	A		A		B	A
Potassium Bromide	A	A		B	C	A	B	C		D	D	A	A		A	A	A	C		B	A	C	A	A		A	A		A	A	B	A

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Chart II
Chemical Resistance Charts

	302 Stainless Steel	304 Stainless Steel	316 Stainless Steel	440 Stainless Steel	Aluminum	**TITANIUM**	**HASTELLOY C**	Cast Bronze	Brass	Cast Iron	Carbon Steel	**KYNAR**	PVC (Type 1)	Tygon (E-3606)	Teflon	Noryl	Polyacetal	Nylon	Cycolac (ABS)	Polyethylene	**POLYPROPYLENE**	**RYTON**	**CARBON**	**CERAMIC**	**CERAMAGNET "A"**	**VITON**	**BUNA N (NITRILE)**	Silicon	Neoprene	Ethylene Propylene (EPM)	Rubber (Natural)	Epoxy
Potassium Carbonate	B	A		A	C	**A**	**A**	C		B	B	**A**	A	B	A	A	B	A		B	**A**	**A**	**A**	**A**	**A**	**A**	**B**		A		B	A
Potassium Chlorate	B	A	A	A	B	**A**	**B**	B		B	B	**A**	A	B	A	A	B	D		B	**A**	**A**	**A**	**A**		**A**	**A**		A		B	A
Potassium Chloride	C	A	A	B	B	**A**	**A**	C	C	B	B	**A**	A	A	A	A	A	B	C	B	**A**	**A**	**A**	**A**		**A**	**A**		A	A	A	A
Potassium Chromate			B	B	A		**B**	A		A			A			A	C			B		**A**	**A**	**D**		**A**	**A**		A		B	C
Potassium Cyanide Solutions	B	A	B	A	D	**A**	**A**	D		B	B	**A**	A		A	A	C	A		B	**A**	**A**	**C**	**A**		**B**	**A**		A	A	A	A
Potassium Dichromate	B	A	A	A	A	**A**	**B**	C		B	C	**A**	A		A	A	C	D		B	**A**	**A**	**A**	**A**		**B**	**A**		A	A	A	A
Potassium Ferrocyanide	B	A		A	C		**B**	A			C		A		A			A		A							**D**				A	A
Potassium Hydroxide (50%)	A	B	B	B	D	**C**	**A**	D	D	C	A	**D**	A	B	A	A	D	A	C	B	**A**	**A**		**D**	**A**	**D**	**B**	C	A	A	C	A
Potassium Nitrate	B	A	B	A	B	**A**	**B**	B			B	**A**	A	C	A	A	B	C		B	**A**	**C**	**A**	**A**		**B**	**A**		A	A	A	A
Potassium Permanganate	B	A	B	B	B	**B**	**B**	B		B	B	**A**	A		A	A	C	D	C	B	**B**	**A**	**A**	**A**		**B**	**A**		A		B	B
Potassium Sulfate	B	A	B	B	A	**A**	**A**	B	B	B	B	**A**	A	A	A	A	B	C		B	**A**	**A**	**A**	**A**		**A**	**A**	C	A	A	C	A
Potassium Sulfide	A	A		A	B		**B**	B		B	B		A		A												**A**					
Propane (Liquified)[1] [2]	A	A		A	A			A	A		B		D		A	D	A	A			**D**		**A**	**A**		**A**	**A**	D	B	D	D	A
Propylene Glycol	B	B		A	A			B		B	B				A		B	B	B	B			**A**	**A**		**A**	**A**		C			A
Pyridine		C		B	B					B	A	**D**		D	A	D	D			C	**B**	**A**	**A**	**A**		**D**	**D**		D	B	D	A
Pyrogallic Acid	B	A	A	A	B		**A**	B		B	B		A		A		D	A					**A**	**A**		**A**	**A**					A
Rosins	A	A	A	A	A		**B**	A	C		C				A		B	A			**A**		**A**	**A**			**A**					A
Rum		A		A									A			A	A	A			**A**		**A**	**A**		**A**	**A**		A			A
Rust Inhibitors		A		A				A		A							A				**A**		**A**	**A**		**A**	**A**		C			A
Salad Dressing		A		A	B			B		D			A			A	A	A			**A**		**A**	**A**		**A**	**A**					A
Sea Water	A	A	C	A	C	**A**		C			D		A		A	A	A	A		B	**A**		**A**	**A**	**A**	**A**	**A**	B	B	A	A	A
Shellac (Bleached)	A	A		A	A			A	B	B	A				A		A	A			**A**			**A**			**A**					A
Shellac (Orange)	A	A		A	A			A	C	C	A				A		A	A			**A**			**A**			**A**					A
Silicone		B		A	B			A								A	A	A			**A**		**A**	**A**		**A**	**A**	B	A	A	A	A
Silver Bromide		C	C	B	D											A	C						**A**									A
Silver Nitrate	B	A	B	A	D	**A**	**A**	D		D	D	**A**	A	B	A	A	C	A		B	**A**		**A**	**A**		**A**	**C**		A	C	A	A
Soap Solutions[1]	A	A	A	A	C	**A**	**B**	B		B	A		B	B	A	A	A	A		B	**A**	**A**	**A**	**A**	**A**	**A**	**A**	B	B		C	A
Soda Ash (See Sodium Carbonate)																																
Sodium Acetate	B	A	A	B	B	**A**		B		C	C	**A**	A		A	A	B	A		B	**A**		**A**	**A**		**D**	**D**		C		A	A
Sodium Aluminate	B			A	C	**B**	**B**	B			C				A	A	B	A				**A**	**A**	**A**		**A**	**A**		A	A	B	A
Sodium Bicarbonate	B	A	A	A	A	**A**		B	A	C	C	**A**	A	B	A	A	B	A	B	B	**A**	**A**	**A**	**A**	**A**	**A**	**A**	C	A	A	A	A
Sodium Bisulfate	A	A		A	D	**B**	**B**	C	C	D	D	**A**	A	B	A	A	B	C	C	B	**A**	**A**	**A**	**A**		**B**	**A**	C	A		A	A
Sodium Bisulfite		A		A	A	**A**	**B**	C		D		**A**	A	B	A	A	B	D	B	B	**A**	**A**	**A**	**A**		**A**	**A**	C	A		A	A
Sodium Borate	B	A		A	C		**A**	A		C	C		C		A			A		A						**A**		B	A			
Sodium Carbonate	B	A	B	B	C	**A**	**A**	B	B	B	B	**A**	A	B	A	A	A	A	C	B	**A**	**A**	**B**	**A**		**A**	**A**		A	A	A	A
Sodium Chlorate	B	A		A	B	**A**	**B**	B			C	**A**	A	B	A	A	D	A		B	**A**	**A**	**A**	**A**		**A**	**D**		A		A	A
Sodium Chloride	B	A	C	B	C	**A**	**A**	B	C	B	C	**A**	A	B	A	A	A	A	B	B	**A**	**A**	**A**	**A**	**A**	**A**	**A**	C	A	A	B	A
Sodium Chromate	A	A	A		D		**B**	B		B	B				A	A	D	A			**A**	**A**	**A**	**B**		**B**	**A**		A			C
Sodium Cyanide	B	A		A	D	**A**		D	D	B	B	**A**	A		A	A	D	C		B	**A**	**A**	**A**	**A**		**A**	**A**	D	A	A	A	A
Sodium Fluoride	B	C		C	C	**A**	**A**	C		D	D		D	D	A			A		C						**B**	**D**		D		D	A
Sodium Hydrosulfite					A		**A**	C					C	A	A			A						**A**		**A**			A		A	
Sodium Hydroxide/Caustic Soda (20%)		A	A	A	D	**A**	**A**	C	D	A		**A**	A	B	A	A	D	C	C	B	**A**	**A**	**C**	**D**	**A**	**A**	**A**	D	B	A	A	A
Sodium Hydroxide/Caustic Soda (50%)		A	B		D	**A**	**A**	C	D	B		**D**	A	B	A	A	D	C	C	C	**A**	**B**	**C**	**D**	**A**	**D**	**D**	D	C		A	A
Sodium Hydroxide/Caustic Soda (80%)		A	D		D	**A**	**B**	C	D	C			A	B	A	A	D	C	C	C	**A**	**B**	**C**	**D**	**A**	**B**	**D**	D	C		B	A

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Chemical Resistance Charts

	302 Stainless Steel	304 Stainless Steel	316 Stainless Steel	440 Stainless Steel	Aluminum	**TITANIUM**	**HASTELLOY C**	Cast Bronze	Brass	Cast Iron	Carbon Steel	**KYNAR**	PVC (Type 1)	Tygon (E-3606)	Teflon	Noryl	Polyacetal	Nylon	Cycolac (ABS)	Polyethylene	**POLYPROPYLENE**	**RYTON**	**CARBON**	**CERAMIC**	**CERAMAGNET "A"**	**VITON**	**BUNA N (NITRILE)**	Silicon	Neoprene	Ethylene Propylene (EPM)	Rubber (Natural)	Epoxy
Sodium Hypochlorite/Bleach[3] (to 20%)		C	C	C	C	**A**	**A**	D	D	D			A	B	A	A	D	A		B	**C**	**C**	**D**	**A**	**B**	**A**	**C**	D	D	B	C	B
Sodium Hypochlorite/Bleach	D		D		D	**A**	**A**	D		D	D	**A**	A		A	A		A			**C**	**C**		**D**		**B**	**B**	C	A			A
Sodium Hyposulfate		A	A		D			D							A														C		C	C
Sodium Metaphosphate[2]	A		A		A			C	C	B	B				A		B	A			**D**		**A**	**A**		**A**	**A**		B	A	A	A
Sodium Metasilicate	A		A		B			B		C	C				A		D						**A**			**A**	**A**	D	A			A
Sodium Nitrate	B	A	A	A	A	**A**	**B**	B	C	A	B	**A**	A	B	A	A	B	A		B	**A**		**A**	**A**	**A**	**D**	**C**	D	B	A	C	A
Sodium Perborate	B		C		B			C	C	B	B				A	A	B	A			**A**		**A**	**A**		**A**	**B**	D	B	A	C	A
Sodium Peroxide	B	A	A		C		**B**	C	C	D	C		A		A		D	D					**A**	**A**		**A**	**C**	D	B	A	C	A
Sodium Polyphosphate (Mono, Di, Tribasic)		A	A		D	**A**	**A**	C							A	A	B						**A**	**A**		**A**	**A**		D	A	A	A
Sodium Silicate	B	A	B	A	C	**A**	**B**	C	C		B		A	B	A	A	C	A			**A**		**A**	**A**		**A**	**A**		A	A	A	A
Sodium Sulfate	B	A	A	C	B	**A**	**B**	B	B	A	B		A		A	A	B	A		B	**A**	**A**	**A**	**A**		**A**	**A**		A	A	C	A
Sodium Sulfide	B	A	B		D	**A**	**B**	D	D	A	B		A	B	A	A	B	A		B	**A**	**A**	**A**	**A**		**A**	**C**		A	A	C	A
Sodium Sulfite		C	C		C	**A**	**A**	C		A			A	A	A			D		A			**A**	**A**		**A**	**A**		A		A	A
Sodium Tetraborate			A										A			A	B						**A**	**A**		**A**	**A**					A
Sodium Thiosulphate ("Hypo")	A	A	A		B	**A**		D	D	C	B		A		A	A	C	A			**A**	**A**	**A**	**A**		**A**	**B**		A	A	C	A
Sorghum		A	A							A							A	A					**A**	**A**		**A**	**A**		A			A
Soy Sauce		A	A		A			A		D						A	A	A					**A**	**A**		**A**	**A**		A		D	A
Stannic Chloride	D	D	D		D	**A**	**B**	D		D	D	**A**	A		A	A	C	A		B	**A**			**A**		**A**	**A**	D	A	A	A	A
Stannic Fluoborate			A							D						A	C						**A**		**A**	**A**		A			A
Stannous Chloride	D	D	C		D	**A**	**A**	D		D	D		A	A	A			D		A						**B**	**C**	D	D		A	A
Starch	B	A	A		A			B		C	C		A		A	A	A	A		B			**A**	**A**		**A**	**A**		A			A
Stearic Acid[2]	B	A	A	A	B	**A**	**A**	C	C	C	C	**A**	A	B	A	A	A	A		B	**D**		**A**	**A**	**A**	**A**	**B**	D	B	B	C	A
Stoddard Solvent	A	A	A	A	A	**A**	**A**	A	A	B	B	**A**	A	D	A	D	A	A	B	D	**D**	**A**	**A**	**A**		**A**	**B**	D	D	D	D	A
Styrene	A	A	A		A			A			A				A	A	A						**A**	**A**		**B**	**D**	D	D	D	D	A
Sugar (Liquids)	A	A	A	A	A		**A**	A		B	B				A	A	A	A	B		**A**		**A**	**A**	**A**	**A**	**A**		B		A	A
Sulfate Liquors		C	C		B		**A**	C									D				**A**		**A**	**A**					C			A
Sulfur Chloride		D	D	D	D			C	D				A	C	A	A	D	A		A	**D**		**A**	**C**		**A**	**D**		D	D	D	C
Sulfur Dioxide[2]		A	A	C	A	**A**	**B**	B				**B**	D	B	A	D	B	D	D	C	**D**	**A**	**A**	**A**		**D**	**D**	C	B	A	D	A
Sulfur Dioxide (dry)	A	A	A		A		**A**	A	C	A	B		D		A			A		D			**A**	**A**		**D**			D		D	D
Sulfur Trioxide (dry)	A	A	C		A			B		B	B		A	B	A	D	D	D					**B**	**A**		**A**	**D**		D	B	C	A
Sulfuric Acid (to 10%)		D	C	C	C	**A**	**A**	D	D	D		**A**	A	B	A	A	D	D	B	B	**A**	**A**	**A**	**A**		**A**	**C**		D	D	C	A
Sulfuric Acid (10% - 75%)[2]		D	D	D	D	**C**	**B**	D	D	D		**A**	A	B	A	B	D	D	B	C	**A**	**B**	**A**	**A**	**C**	**A**	**D**		D	D	D	B
Sulfuric Acid (75% - 100%)			D			**D**	**B**		D			**A**	B		A	A		D			**B**	**C**		**A**		**A**	**D**		D			D
Sulfurous Acid	C	C	B	C	C	**A**	**B**	D		D	D		A	B	A	A	D	D		B	**A**		**B**	**A**		**A**	**C**	D	B	B	C	A
Sulfuryl Chloride													A		A									**A**								A
Syrup		A	A	A	A			D					A			A	A	A	B		**A**		**A**	**A**	**A**	**A**	**A**		B		A	A
Tallow		A	A		A											A	A	A		C			**A**	**A**		**A**	**A**					A
Tannic Acid	B	A	A	A	C	**A**	**B**	B		C	C	**A**	A	B	A	A	B	D		B	**A**		**A**	**A**	**A**	**A**	**D**	C	A	A	A	A
Tanning Liquors		A	A		C	**A**	**A**	A					A	B	A		B				**A**		**A**	**A**		**A**	**C**					A
Tartaric Acid	B	A	B	B	C	**A**	**B**	A	C	D	D	**A**	A	B	A	A	B	A		B	**A**		**A**	**A**		**A**	**D**	C	A		A	A
Tetrachlorethane			A			**A**	**A**						D		A	D	A	A			**A**		**A**	**A**		**A**	**D**			D	D	A
Tetrahydrofuran		A	A		D			D		D	A	**D**	D		A	D	A	A		D	**C**	**A**	**A**	**A**		**D**	**D**		D	B	D	A
Toluene, Toluol[3]	A	A	A		A	**A**	**A**	A	A	A	A	**A**	D	D	A	D	A	A	D	D	**D**	**A**	**A**	**A**	**A**	**C**	**D**	D	D	D	D	A
Tomato Juice	A	A	A		A			C		C	C				A	A	B	A	B		**A**	**A**	**A**	**A**		**A**	**A**		A			A

A — No effect — Excellent
B — Minor effect — Good
C — Moderate effect — Fair
D — Severe effect — Not recommended

1. **P.V.C. — Satisfactory to 72° F.**
2. **Polypropylene — Satisfactory to 72° F.**
3. **Polypropylene — Satisfactory to 120° F.**
4. **Buna-N — Satisfactory for "O" Rings**
5. **Polyacetal — Satisfactory to 72° F.**
6. **Ceramag — Satisfactory to 72° F.**

Chart II
Chemical Resistance Charts

	302 Stainless Steel	304 Stainless Steel	316 Stainless Steel	440 Stainless Steel	Aluminum	**TITANIUM**	**HASTELLOY C**	Cast Bronze	Brass	Cast Iron	Carbon Steel	**KYNAR**	PVC (Type 1)	Tygon (E-3606)	Teflon	Noryl	Polyacetal	Nylon	Cycolac (ABS)	Polyethylene	**POLYPROPYLENE**	**RYTON**	**CARBON**	**CERAMIC**	**CERAMAGNET "A"**	**VITON**	**BUNA N (NITRILE)**	Silicon	Neoprene	Ethylene Propylene (EPM)	Rubber (Natural)	Epoxy
Trichlorethane		C	A		C	A	A	C		C					A	D	A						A	A		A	D	D	D	D	D	A
Trichlorethylene[2]	B	A	A		B	A	A	B	A	C	B	A	D		A	D	A	C	D	D	D	C	A	A	C	A	D	D	D	D	D	A
Trichloropropane			A					A								D	A		D				A	A		A	A		A			A
Tricresylphosphate			A			B	A	A					D		A	C	C						A	A		B	D		D	A		A
Triethylamine								A					A			B	D						A	A		A	A	D	B			A
Turpentine[3]	B	A	A		C		A	B	C	B	B	A	A	B	A	D	A	A		D	B	A	A	A		A	D		D	D	D	A
Urine		A	A		B			C		B			A			A	A	A		B	A		A	A		A	A		D	A		A
Vegetable Juice		A	A		A			C		D						A	A	A					A	A		A	A	B	D		D	A
Vinegar	A	A	A	A	D	A	A	B	B	C	D	A	A		A	A	B	A	B	B	A	A	A	A	A	A	C		B	A	C	A
Varnish (Use Viton for Aromatic)	A	A	A	A	A			A	B		C				A	D	A	A			A		A	A	A	A	B	C	D		D	A
Water, Acid, Mine		A	A		C			C	D	C			A	B		A	D	A	B		A	B	A	A		A	A		B		B	A
Water, Distilled, Lab Grade 7		A	A		B			A		D			A	B	A	A	A	A	A		A	A	A	A	A	A	A		B	A	A	A
Water, Fresh	A	A	A		A			A	C	B	D		A	B	A	A	A	A	A	A	A	A	A	A	A	A	A		B	A	A	A
Water, Salt		A	A		B			B	C	D			A	B		A	A	A			A	A	A	A	A	A	A		B	A	A	A
Weed Killers		A	A		C			C									A	A					A	A		A	B		C			A
Whey		A	A		B												A						A	A		A	A					A
Whiskey and Wines	A	A	A	A	D			B	B	D	D		A		A	A	A	A		B	A		A	A		A	A	B	A	A	A	A
White Liquor (Pulp Mill)		A	A				A	D		C			A		A	A	D	A			A		A	A		A	A		A			A
White Water (Paper Mill)		A	A					A									B	A			A		A	A		A			A			A
Xylene[2]	A	A	A		A		A	A	A	A	B	A	D		A	D	A	A	D	D	D	A	A	A	A	A	D	D	D	D	D	A
Zinc Chloride	D	D	B	B	D	A	B	D	D	D	D	A	A		A	A	C	A		B	A	A	A	A		A	A		A	A	A	A
Zinc Hydrosulphite			A		D			D		D						A	C					A	A	A			A		A	A		A
Zinc Sulfate	B	A	A	A	D	A	B	B	C	C	D	A	C	B	A	A	C	A		B	A	A	A	A		A	A		A	A	C	A

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HAIGHT® PUMPS
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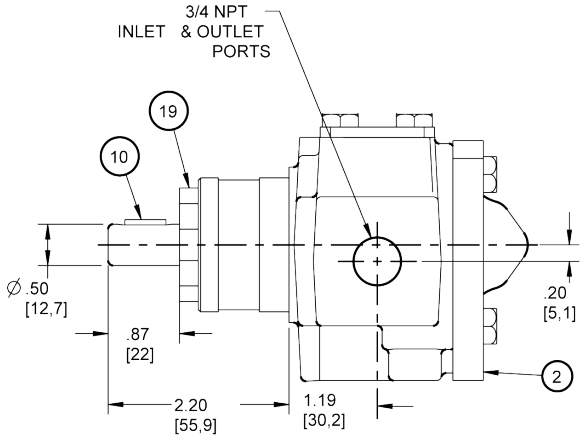
Phone: 800-871-9250 • Fax: 608-882-3777

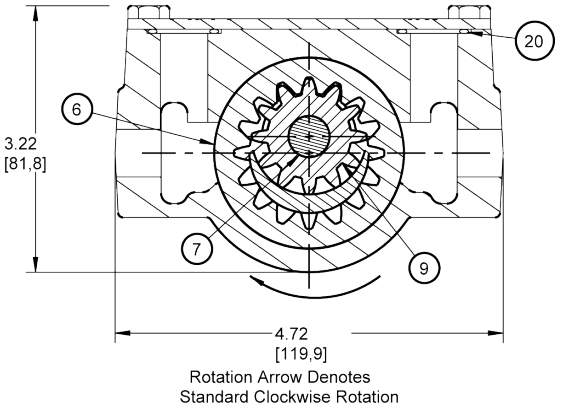
1U - 1 GPM Universal Pump

1U-1 GPM HAIGHT PUMP

Item	Part Number	Description	Qty.
1	E90HC.6	Screw, Cover	4
2	ED130A	Cover	1
3	E11F	Bearing	1
4	E21E	Wiper Seal	1
5	E28E	O-Ring, Cover	1
6	D126F1	Rotor	1
7	DU1C13PK	Shaft & Pinion Assembly	1
8	D514PK	Shaft	1
9	D115C1	Pinion	1
10	E13C50	Key 1/8 Sq X 1/2 Lg	1
11	E11F2	Bearing	1
12	E49E	Set Screw, Vent	2
13	ED56A7	Case	1
14	E24SE	O-ring-Gland	1
16	E25C3	Washer	2
17	E18AM	Shaft Seal	1
18	E11TB2	Thrust Bearing	1
19	E22SS3F4	Gland	1
20	SE2018N90	O-Ring, Cover Plate	2
21	ED530CP	Cover Plate	1
22	E90HC.5	Screw, Cover Plate	4

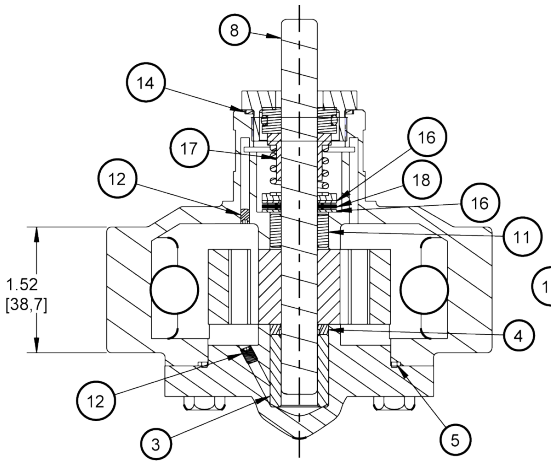


Right Side

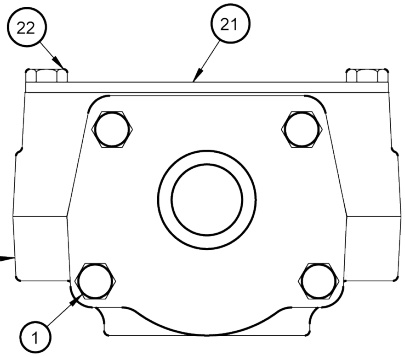


Rotation Arrow Denotes
Standard Clockwise Rotation

Cutaway View
Shaft End



Cutaway View
Top



Cover End View

Bracketed Dimensions are mm.

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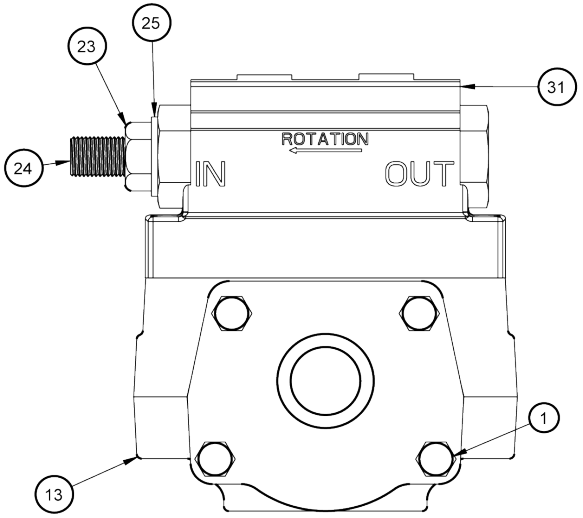
1UR - 1 GPM
Universal Relief Valve Pump

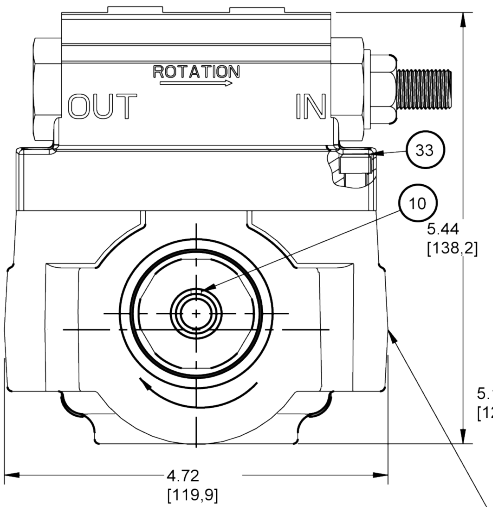
1UR - 1 GPM HAIGHT PUMP WITH RELIEF VALVE

Item	Part Number	Description	Qty.
1	E90HC.6	Screw, Cover	4
2	ED130A	Cover	1
3	E11F	Bearing	1
4	E21E	Wiper Seal	1
5	E28E	O-Ring, Cover	1
6	D126F1	Rotor	1
7	DU1C13PK	Shaft & Pinion Assembly	1
8	D514PK	Shaft	1
9	D115C1	Pinion	1
10	E13C50	Key, 1/8 Sq X 1/2 Lg	1
11	E11F2	Bearing	1
12	E49F	Set Screw, Vent	2
13	ED56A7	Case	1
14	E24SE	O-ring-Gland	1
16	E25C3	Washer	2

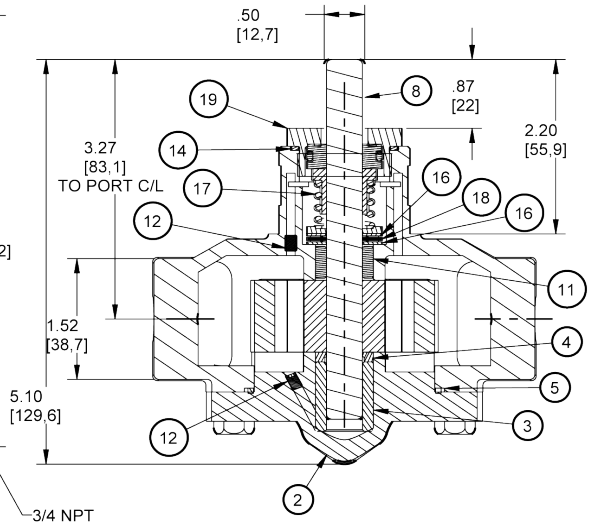
Item	Part Number	Description	Qty.
17	E18AM	Shaft Seal	1
18	E11TB2	Thrust Bearing	1
19	E22SS3F4	Gland	1
20	SE2018N90	O-Ring, Valve Body	2
23	E64C	Lock Nut	1
24	E55C	Adjustment Screw	1
25	E25N1	Sealing Washer	1
26	E57C	Bonnet	1
27	SE2020N70	O-ring, Valve	2
28	E52S	Spring	1
29	E51C	Poppet	1
30	E50C	Cap	1
31	ED55A	Valve Body	1
32	ZA285	Pipe Plug	2
33	E90SC.8	Screw, Valve Body	4



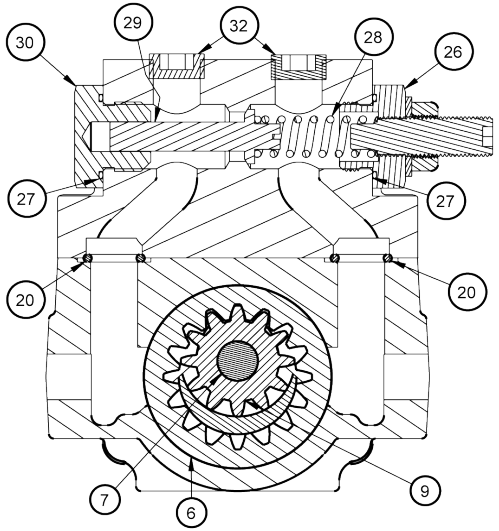
Cover End View



Shaft End View

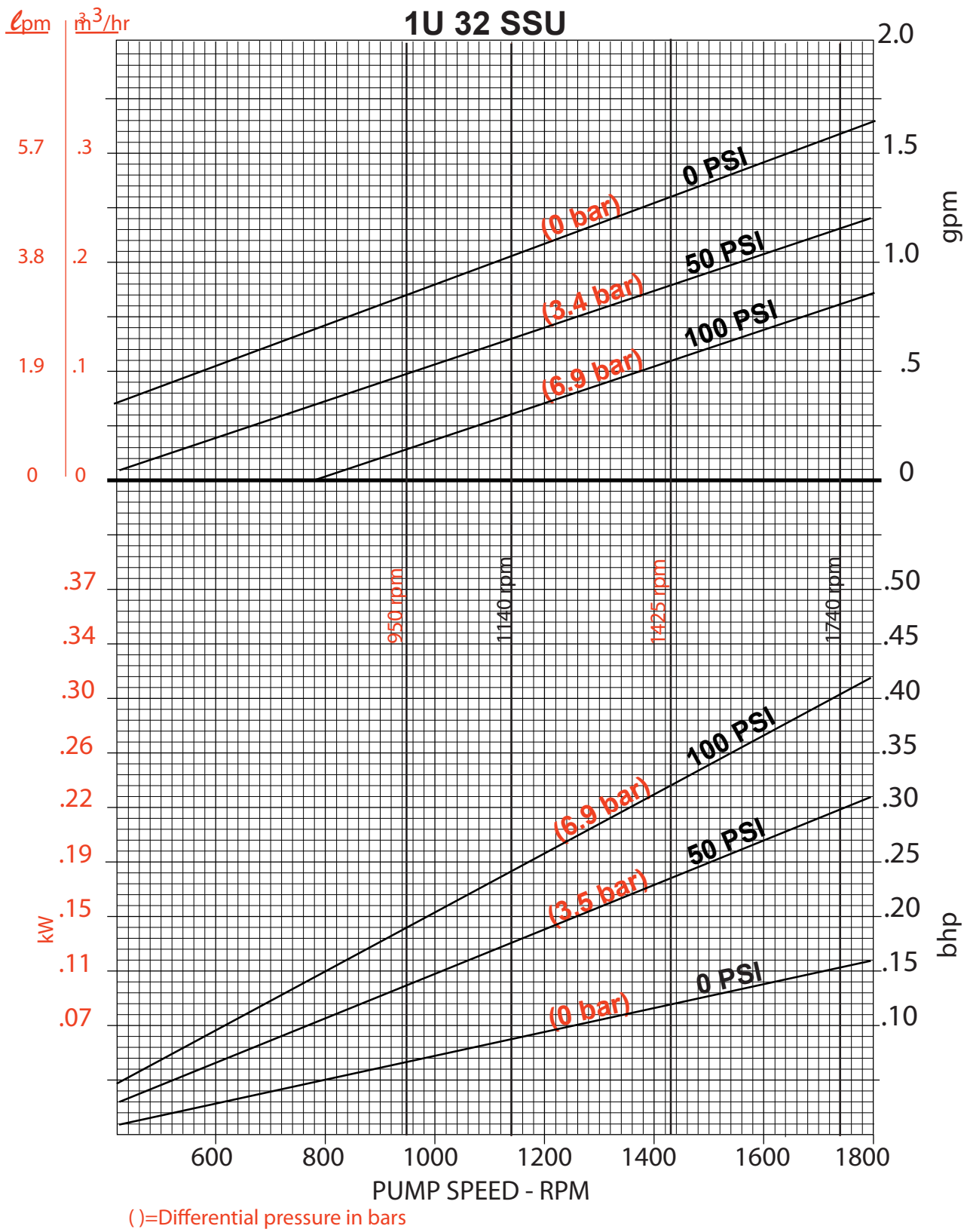


Cutaway View
Top


Cutaway View
Shaft End

Bracketed Dimensions are mm.

(Revised 8-1-11



( )=Differential pressure in bars

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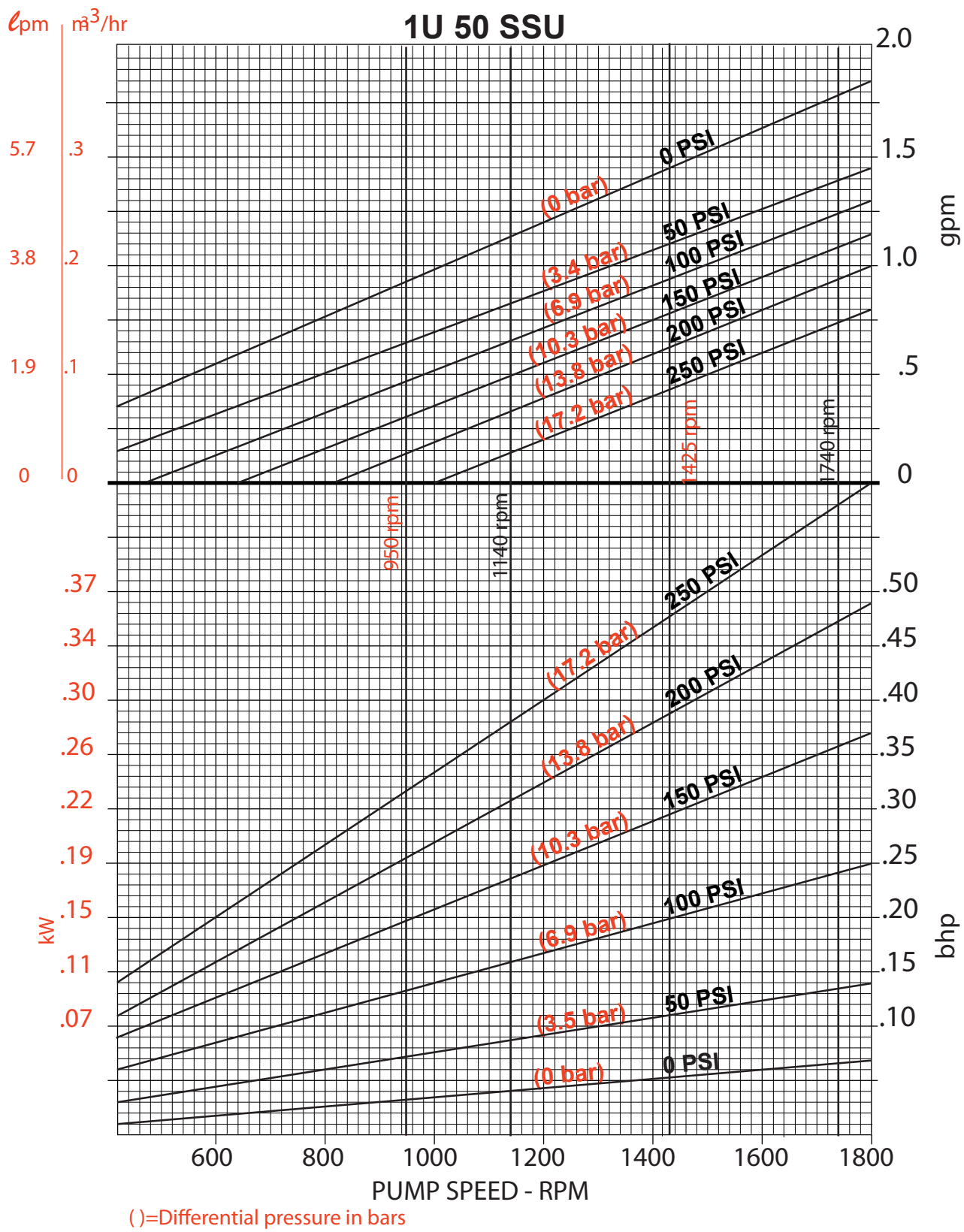

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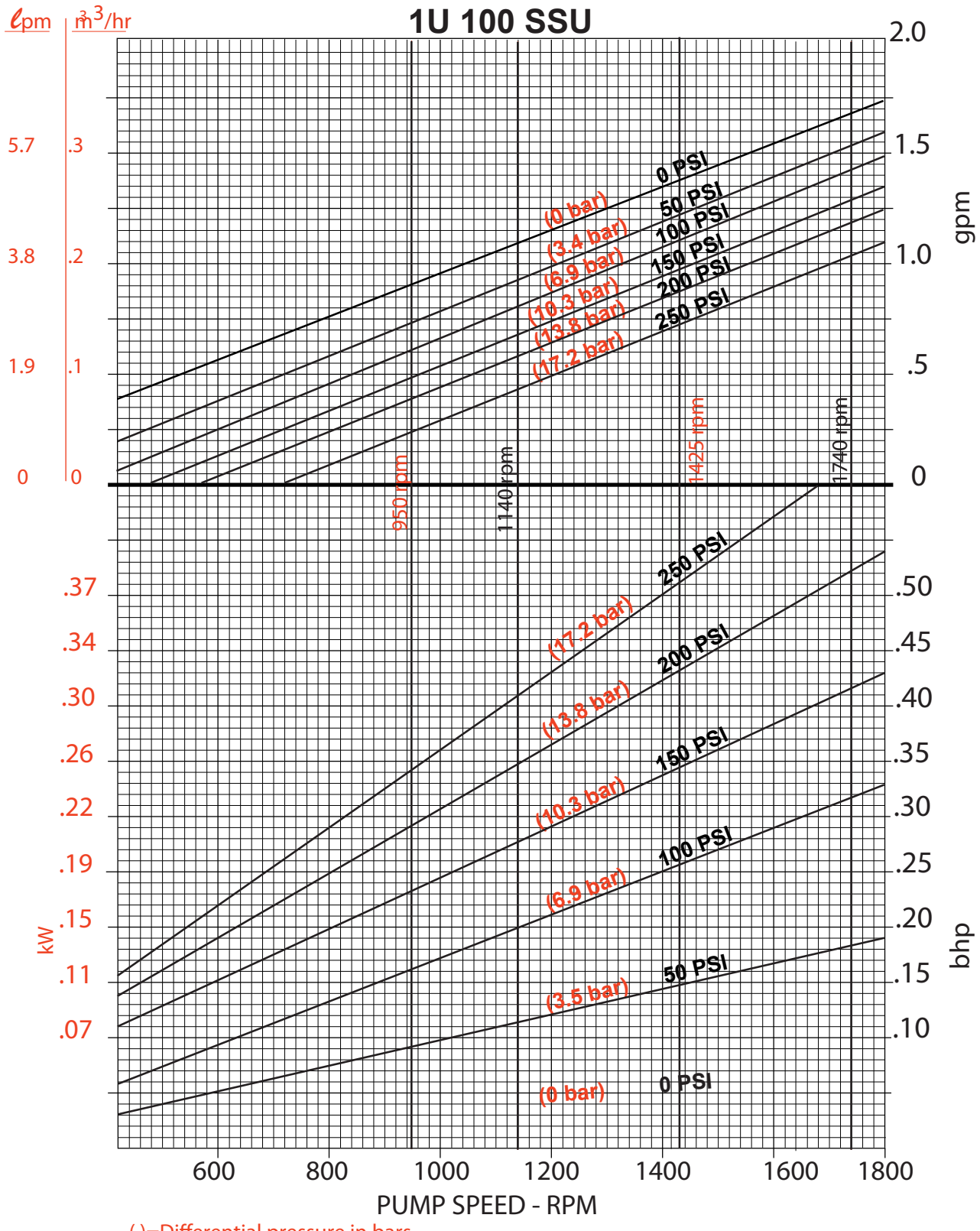

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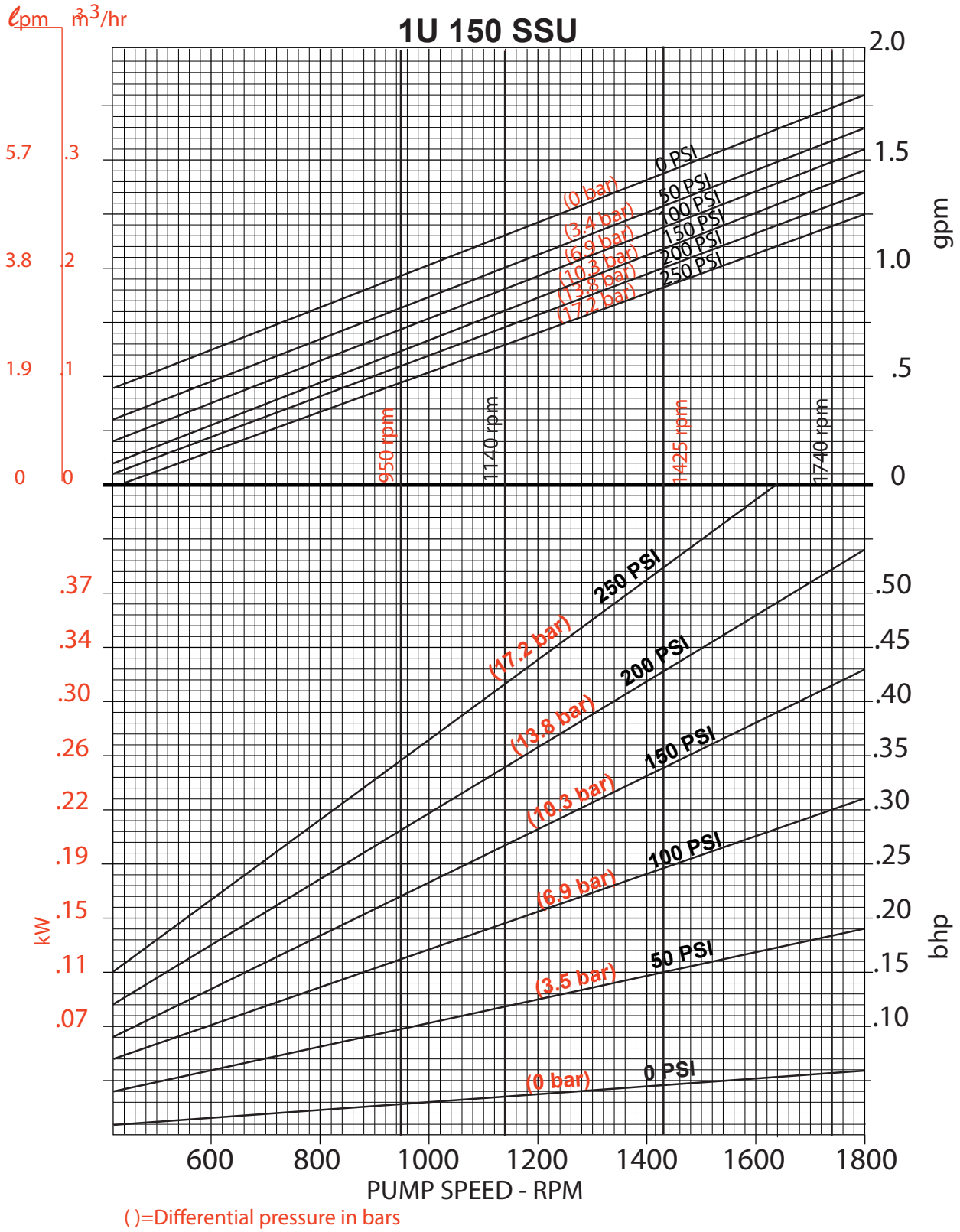

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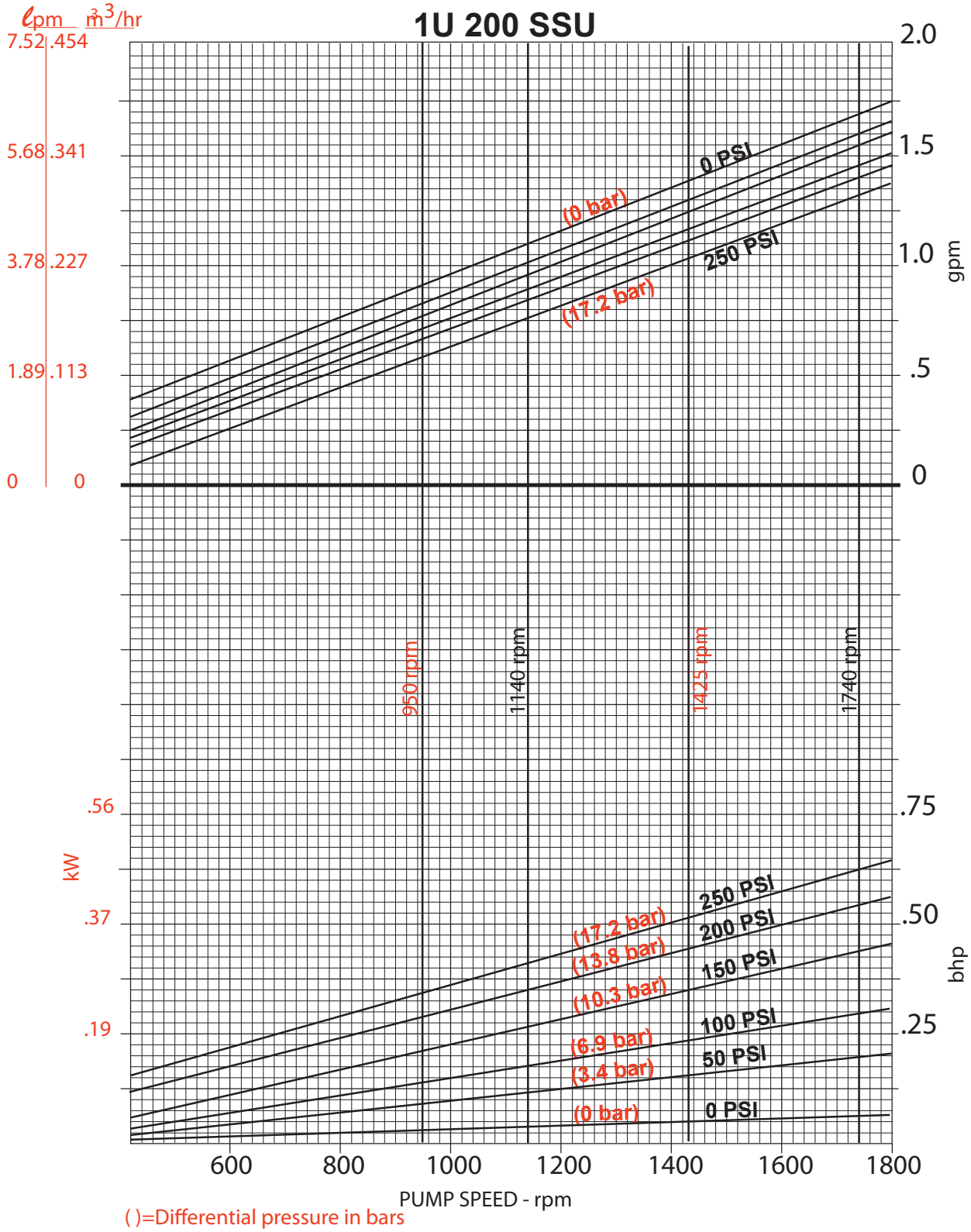

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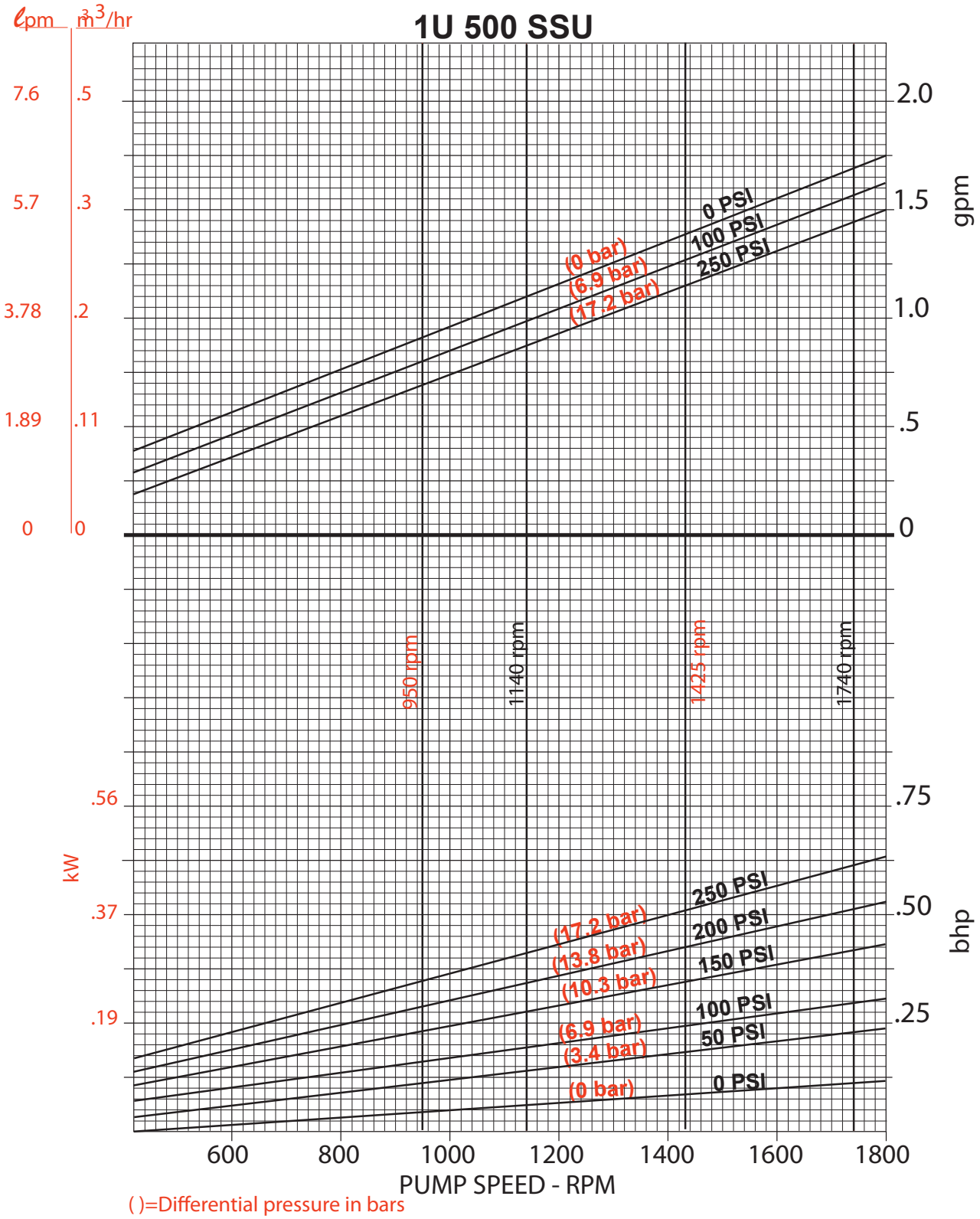

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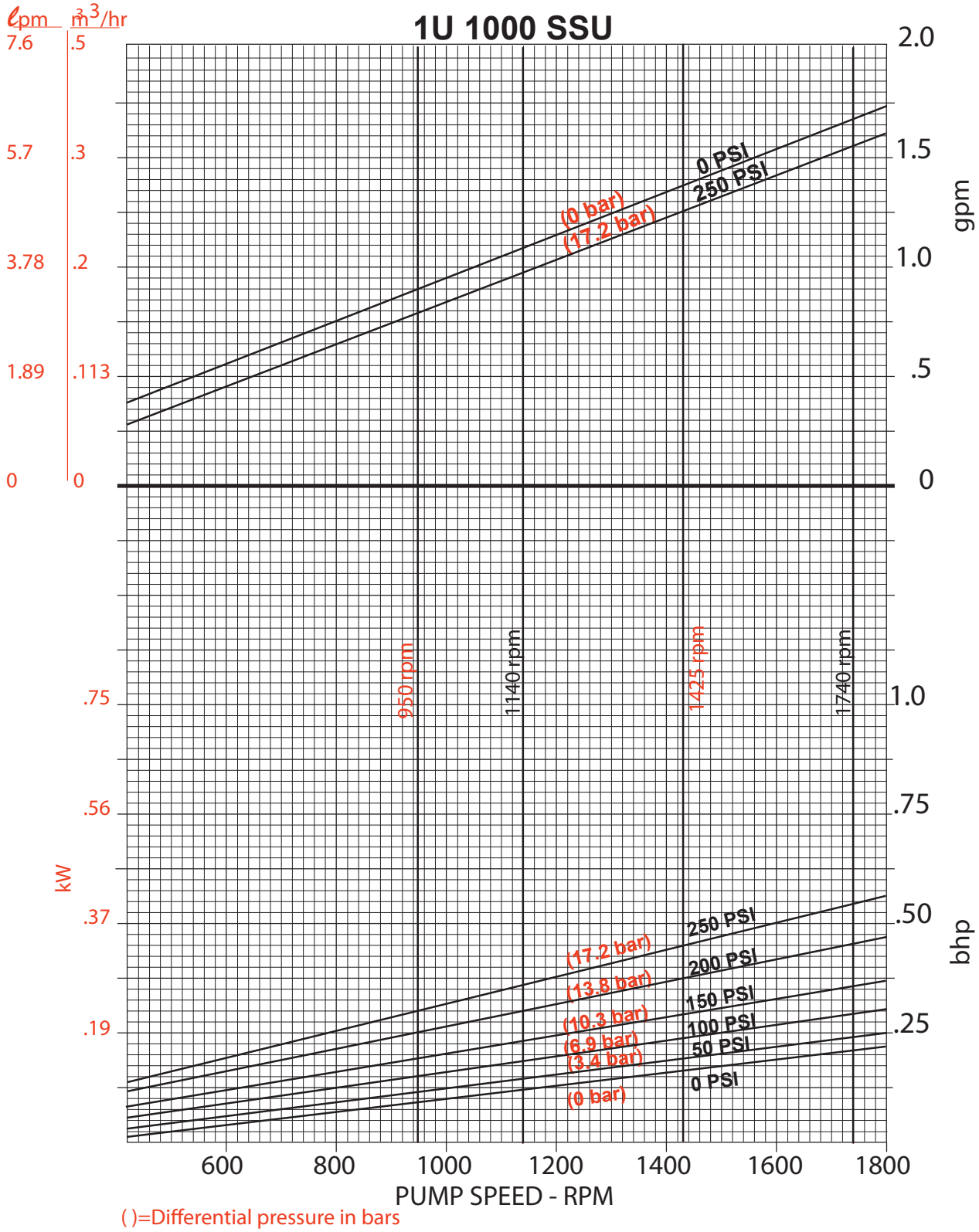

HAIGHT® PUMPS
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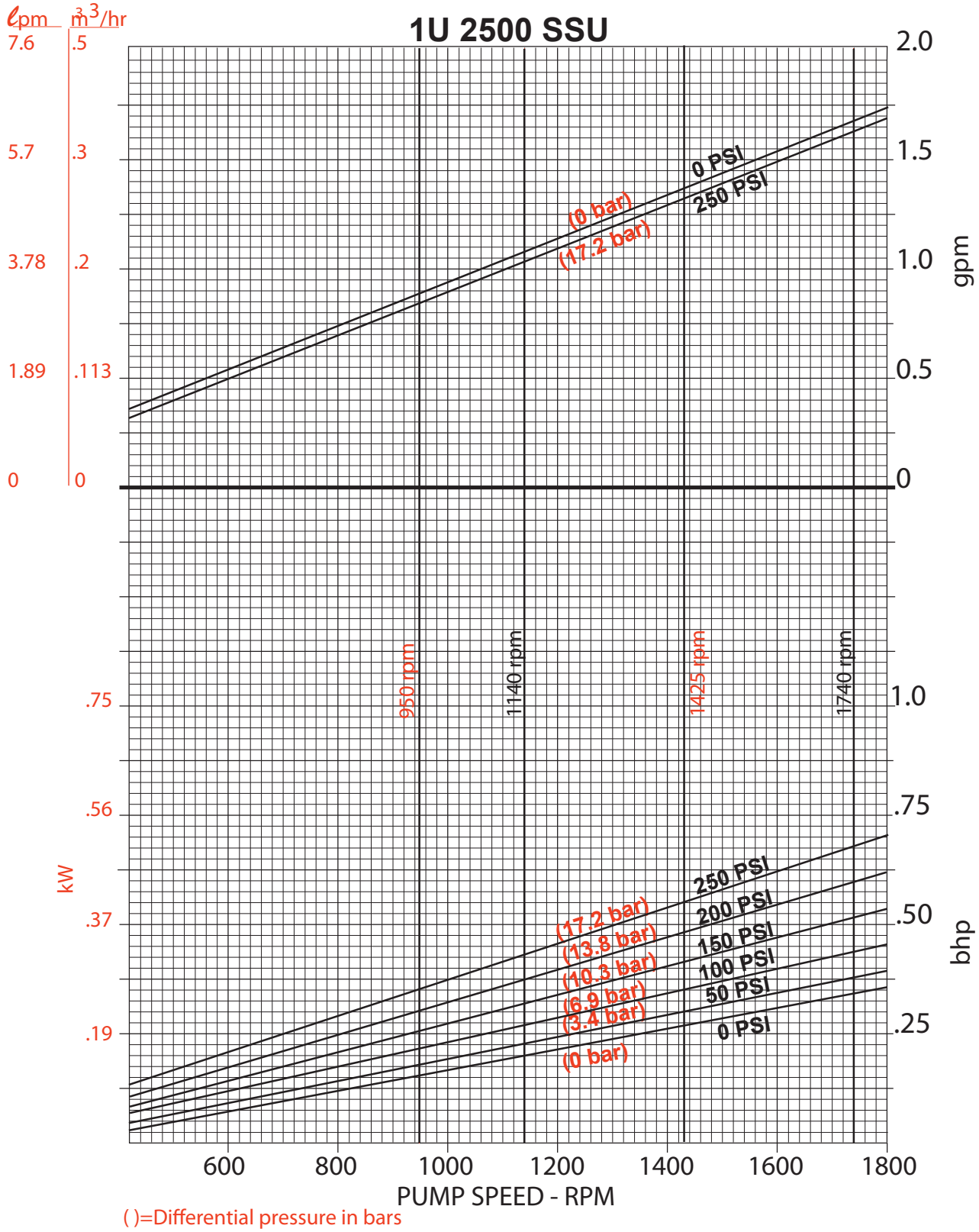

HAIGHT® PUMPS
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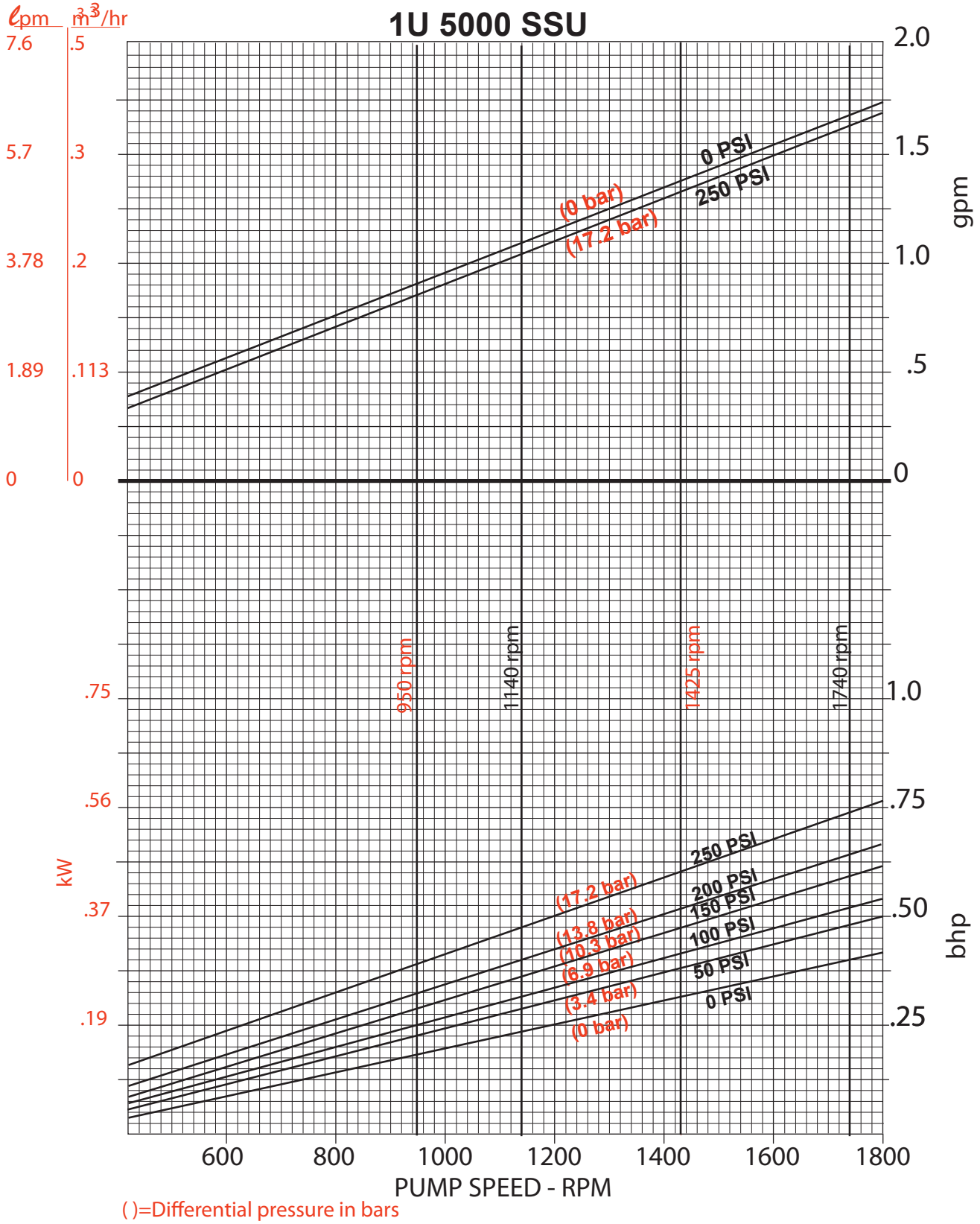
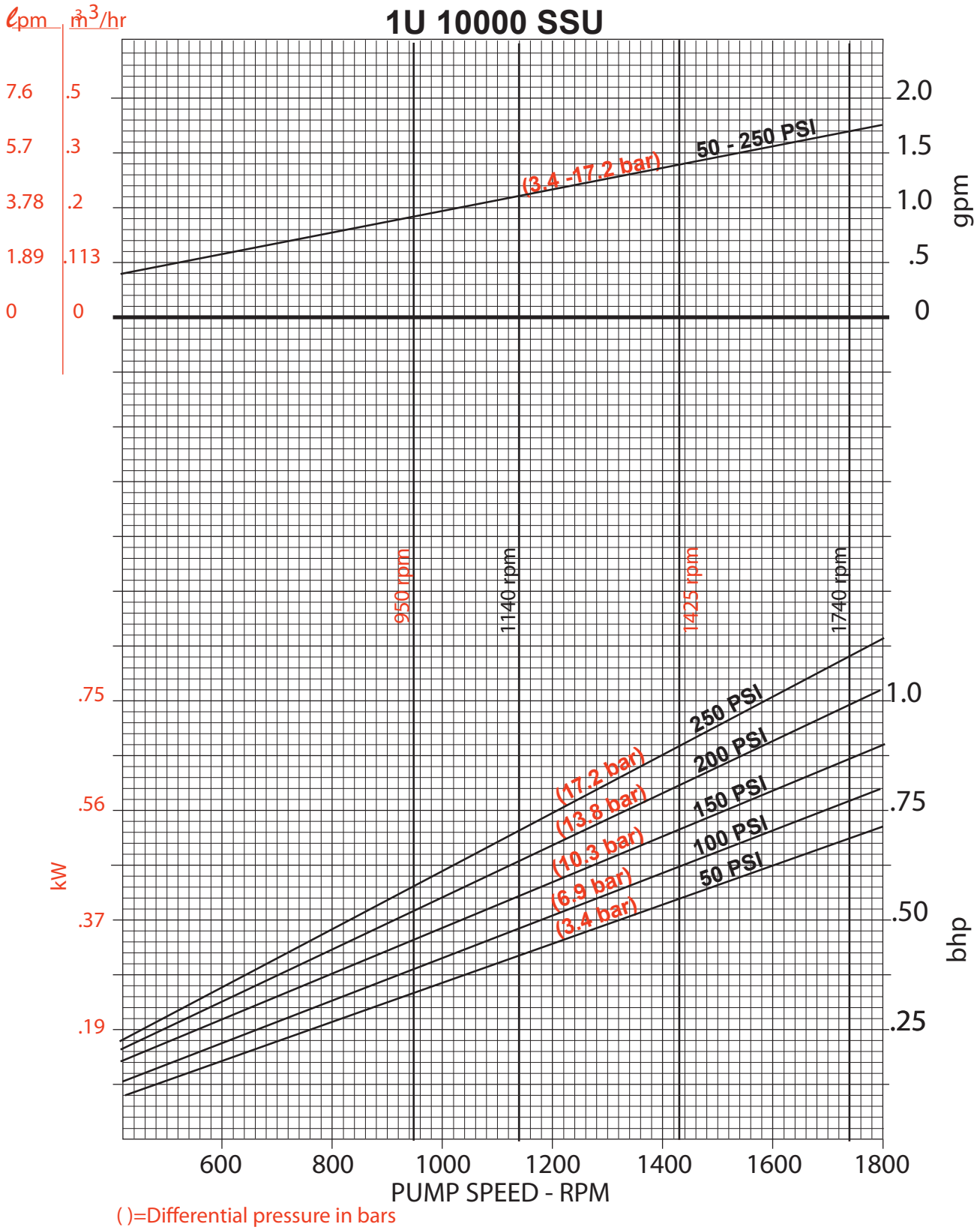


( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

1U 10000 SSU



( )=Differential pressure in bars

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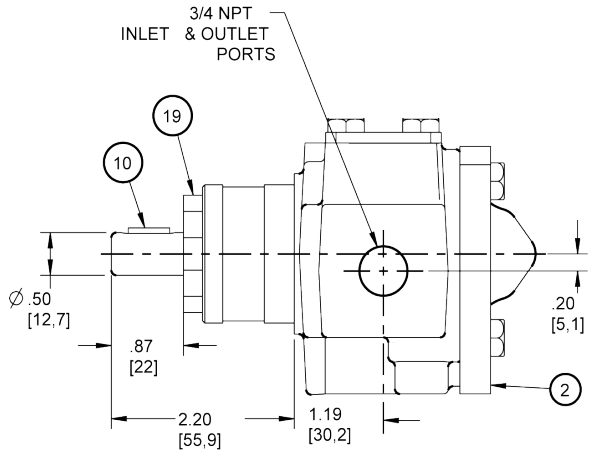
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

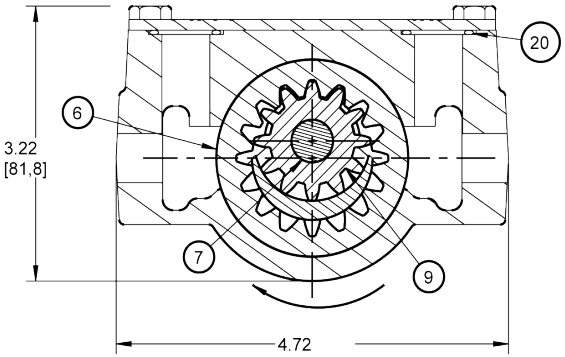
3U - 3 GPM Universal Pump

3U-3 GPM HAIGHT PUMP

Item	Part Number	Description	Qty.
1	E90HC.6	Screw, Cover	4
2	ED330A	Cover	1
3	E11F	Bearing	1
4	E21E	Wiper Seal	1
5	E28E	O-Ring, Cover	1
6	D326F1	Rotor	1
7	DU3C13PK	Shaft & Pinion Assembly	1
8	D514PK	Shaft	1
9	D315C1	Pinion	1
10	E13C50	Key 1/8 Sq X 1/2 Lg	1
11	E11F2	Bearing	1
12	E49E	Set Screw, Vent	2
13	ED56A7	Case	1
14	E24SE	O-ring-Gland	1
16	E25C3	Washer	2
17	E18AM	Shaft Seal	1
18	E11TB2	Thrust Bearing	1
19	E22SS3F4	Gland	1
20	SE2018N90	O-Ring, Cover Plate	2
21	ED530CP	Cover Plate	1
22	E90HC.5	Screw, Cover Plate	4

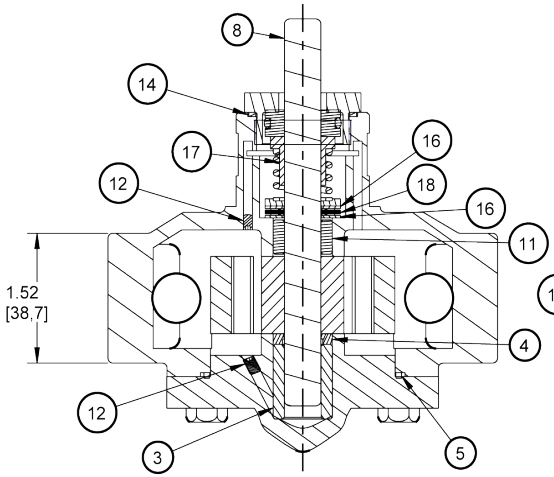


Right Side

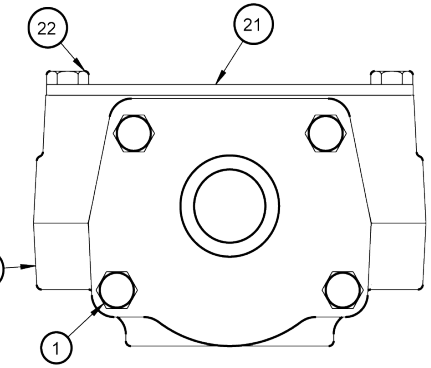


Rotation Arrow Denotes
Standard Clockwise Rotation

Cutaway View
Shaft End



Cutaway View
Top



Cover End View

Bracketed Dimensions are mm.

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

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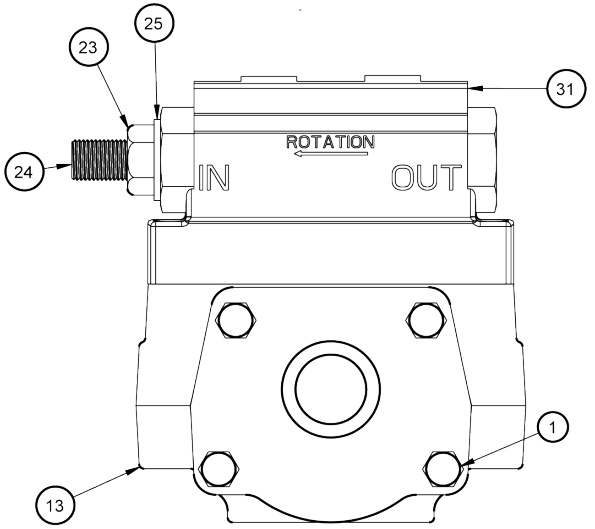
3UR - 3 GPM
Universal Relief Valve Pump

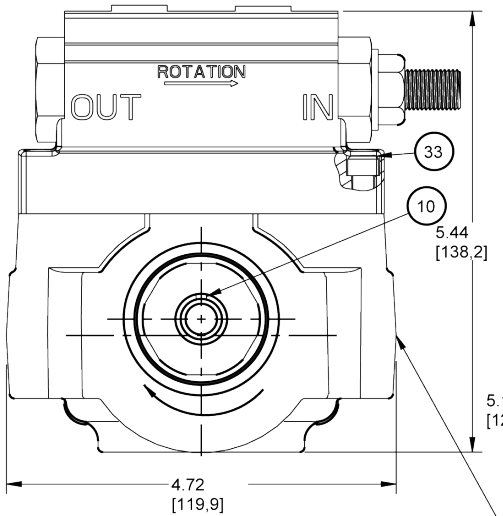
3UR - 3 GPM HAIGHT PUMP WITH RELIEF VALVE

Item	Part Number	Description	Qty.
1	E90HC.6	Screw, Cover	4
2	ED330A	Cover	1
3	E11F	Bearing	1
4	E21E	Wiper Seal	1
5	E28E	O-Ring, Cover	1
6	D326F1	Rotor	1
7	DU3C13PK	Shaft & Pinion Assembly	1
8	D514PK	Shaft	1
9	D315C1	Pinion	1
10	E13C50	Key, 1/8 Sq X 1/2 Lg	1
11	E11F2	Bearing	1
12	E49F	Set Screw, Vent	2
13	ED56A7	Case	1
14	E24SE	O-ring-Gland	1
16	E25C3	Washer	2

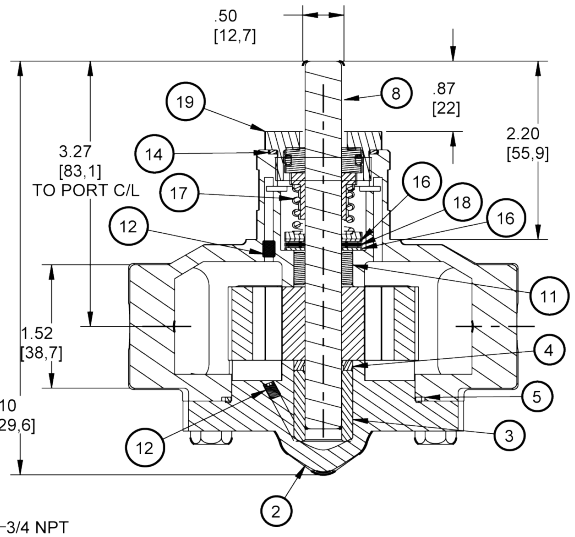
Item	Part Number	Description	Qty.
17	E18AM	Shaft Seal	1
18	E11TB2	Thrust Bearing	1
19	E22SS3F4	Gland	1
20	SE2018N90	O-Ring, Valve Body	2
23	E64C	Lock Nut	1
24	E55C	Adjustment Screw	1
25	E25N1	Sealing Washer	1
26	E57C	Bonnet	1
27	SE2020N70	O-ring, Valve	2
28	E52S	Spring	1
29	E51C	Poppet	1
30	E50C	Cap	1
31	ED55A	Valve Body	1
32	ZA285	Pipe Plug	2
33	E90SC.8	Screw, Valve Body	4



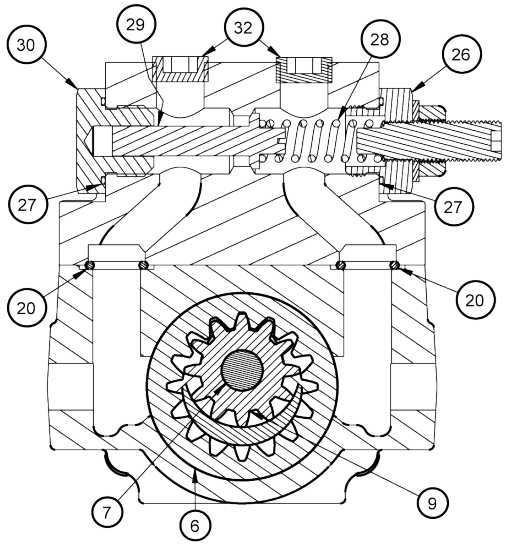
Cover End View



Shaft End View



Cutaway View
Top


Cutaway View
Shaft End

Bracketed Dimensions are mm.

(Revised 8-1-11)

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133 Enterprise Street • Evansville, WI 53536
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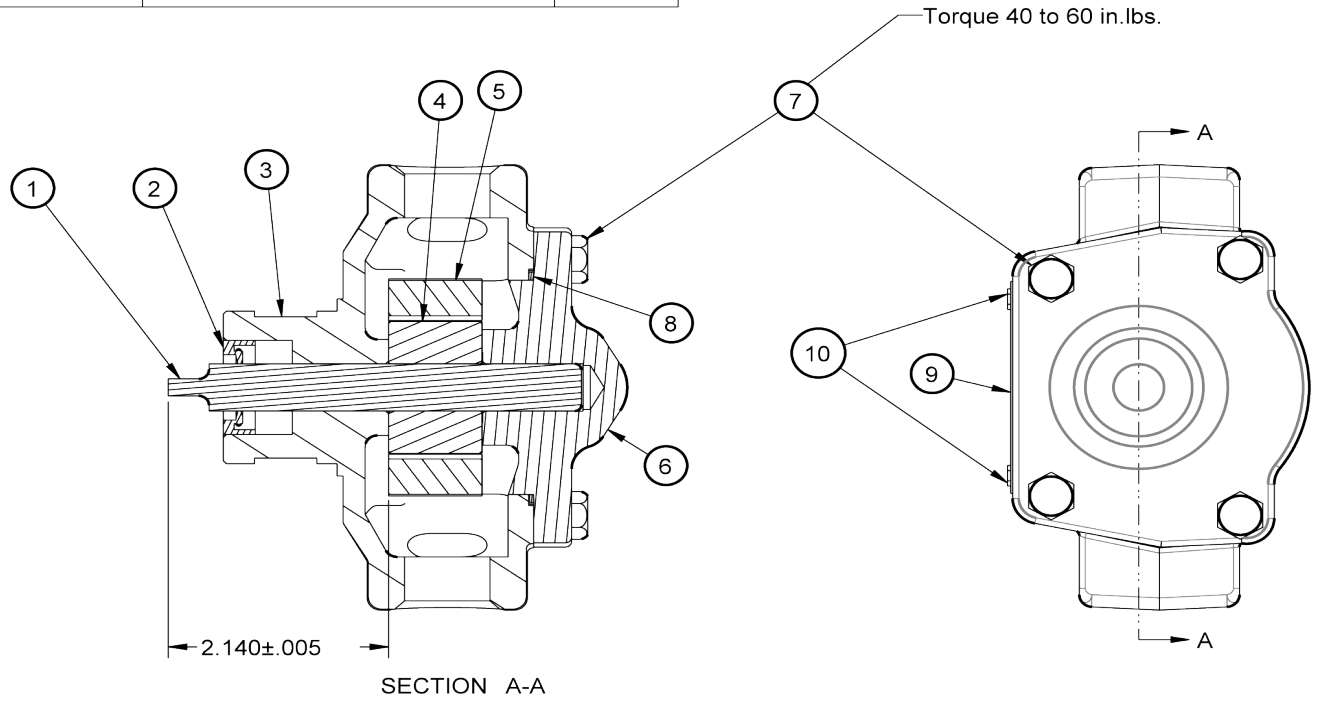
3E001000 Pump
Installation View

Item	Part No.	Description	Qty.
1	ED514BC	Shaft	1
2	E18V	Seal	1
3	ED53F5	Case	1
4	D315C1	Pinion	1
5	D326F1	Rotor	1
6	ED330F	Cover	1
7	E90HC.7	Screw 1/4-20X.63 HHCS	4
8	E28V1	Seal	1
9	ED47A	Nameplate	1
10	E46C	Drive Screw	2
1 & 4	ED3C13BC	Shaft & Pinion Assembly	1

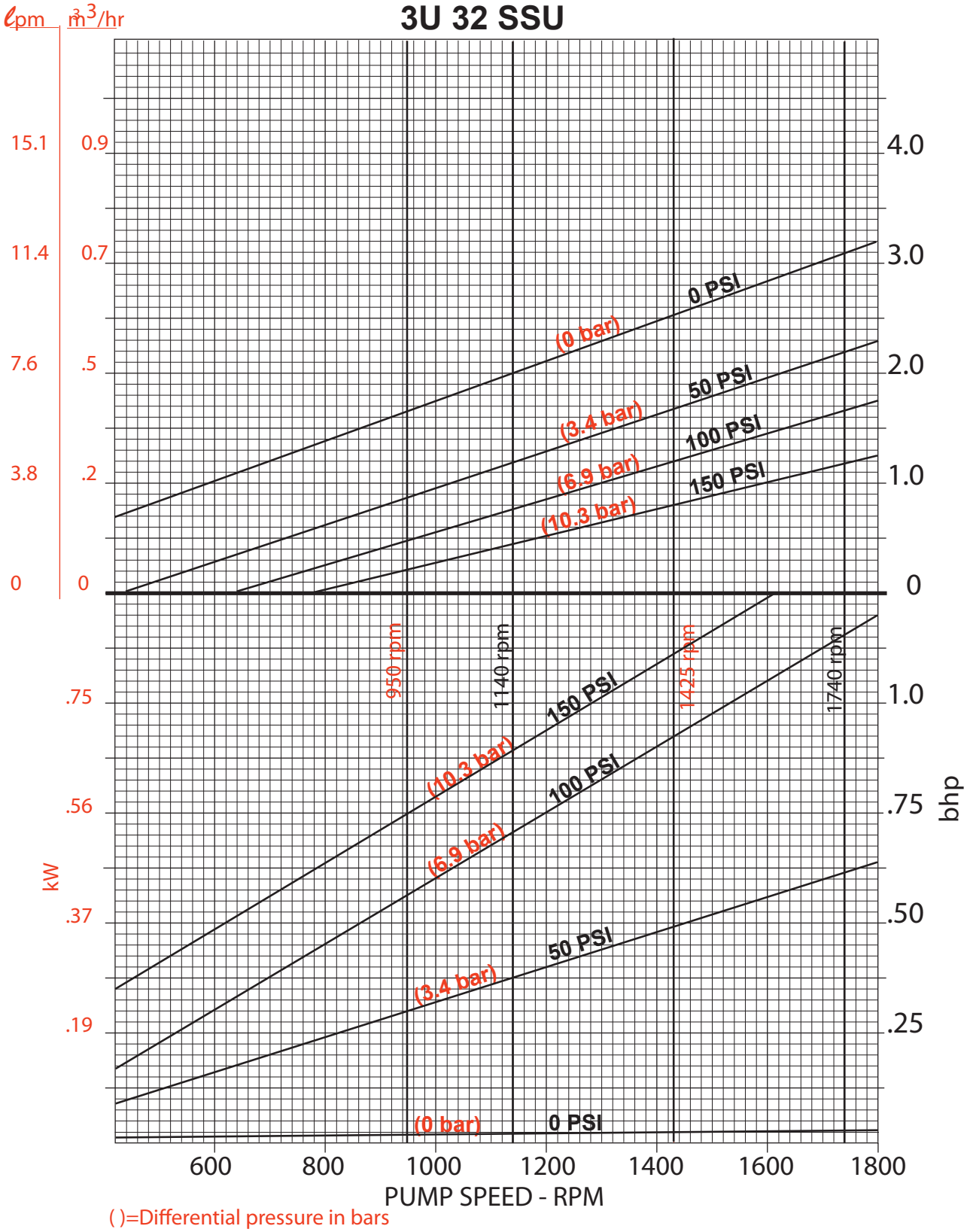


SECTION A-A

3E5FF220CECF1 Pump
Part No. 3E001000

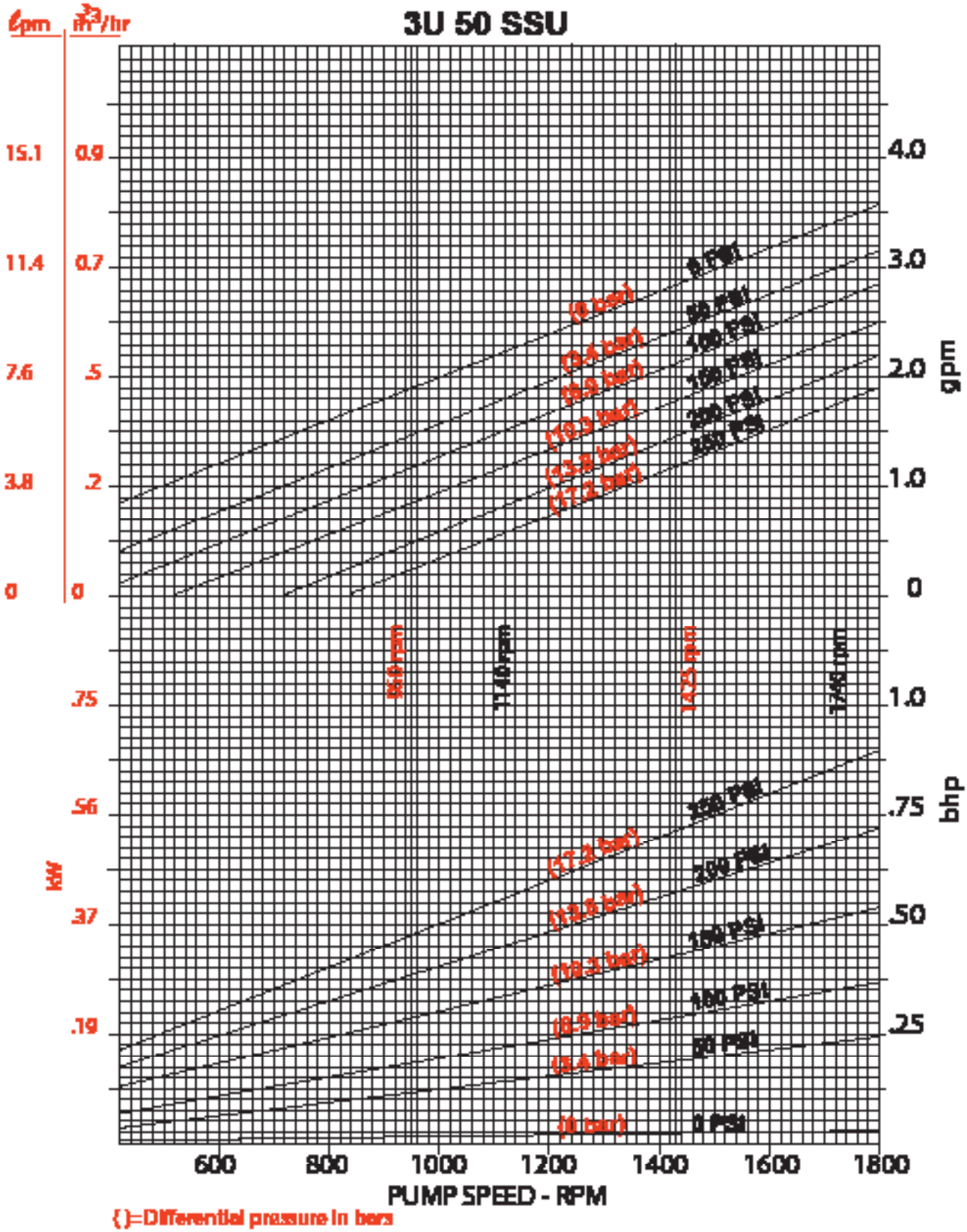
(Revised 8-1-11)

3U 32 SSU



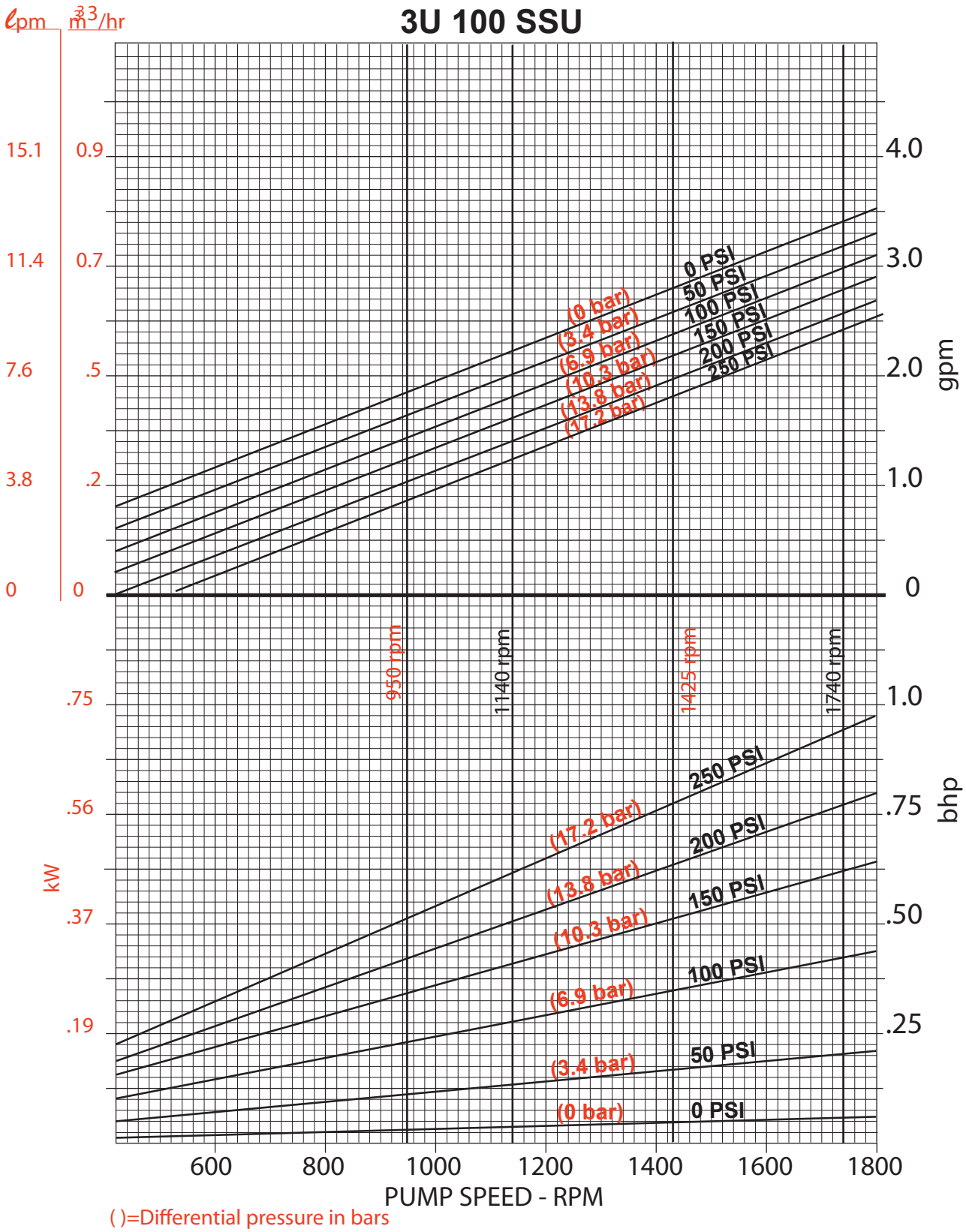
( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



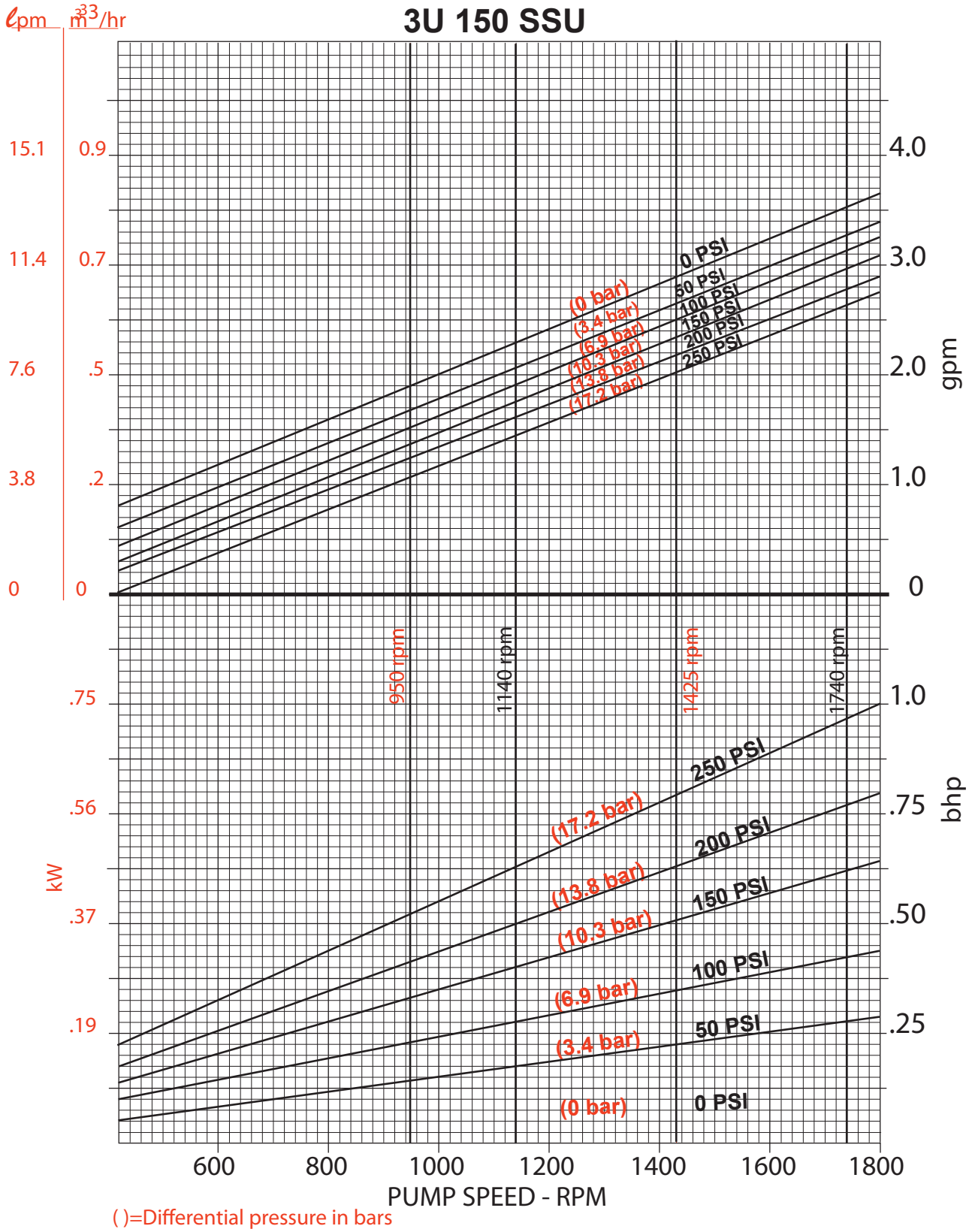
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

3U 100 SSU



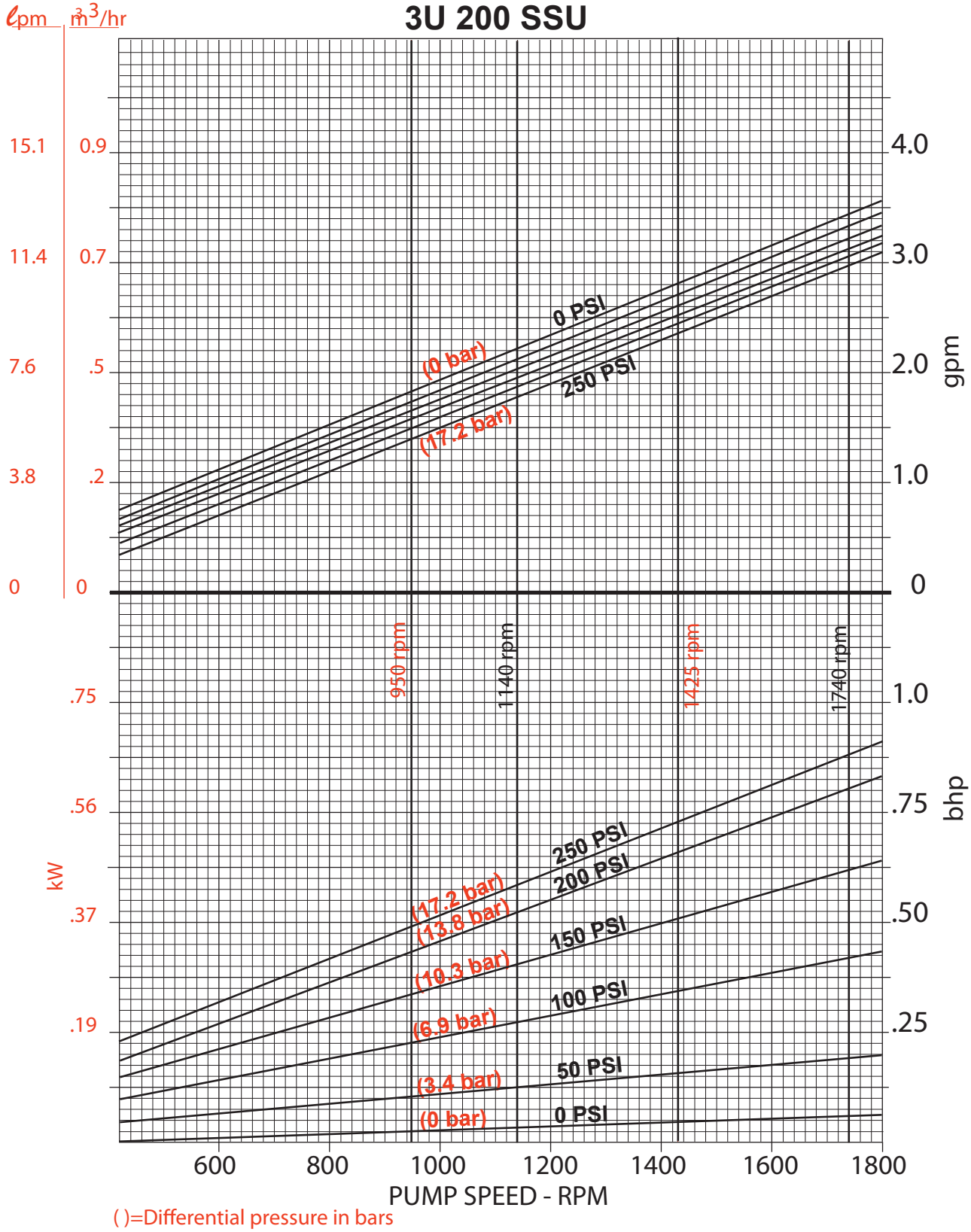
( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

3U 200 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
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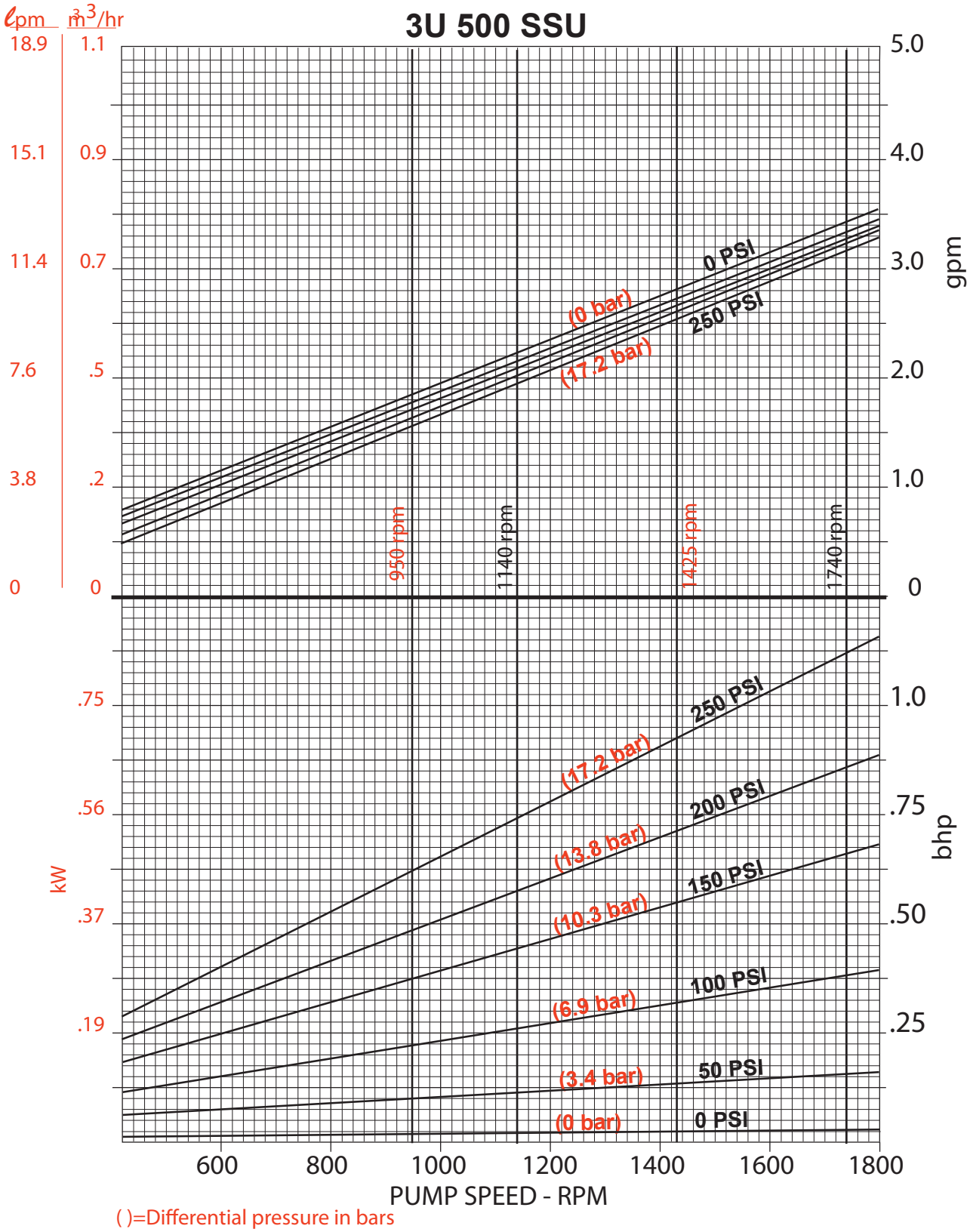

( )=Differential pressure in bars

HAIGHT® PUMPS
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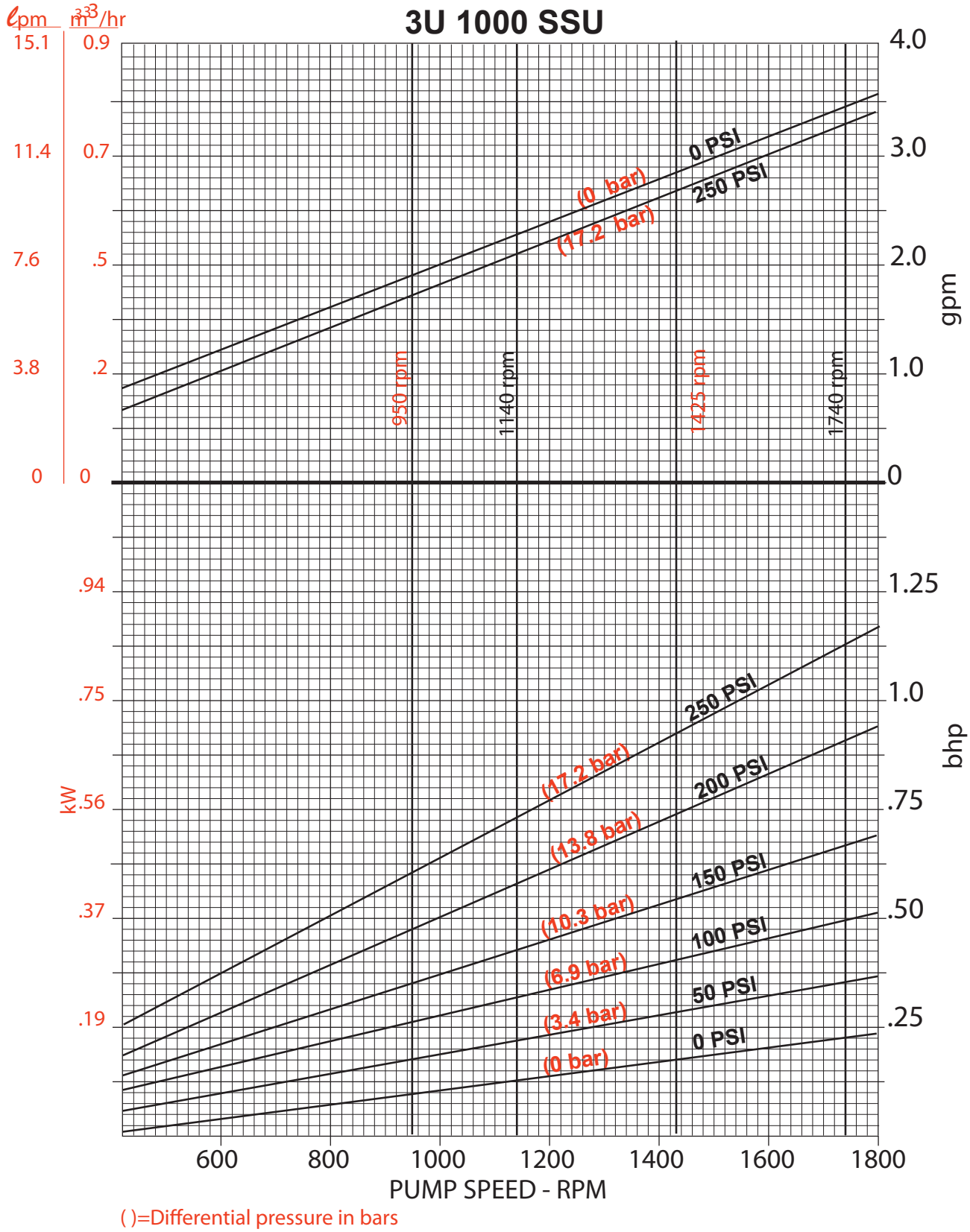

( )=Differential pressure in bars

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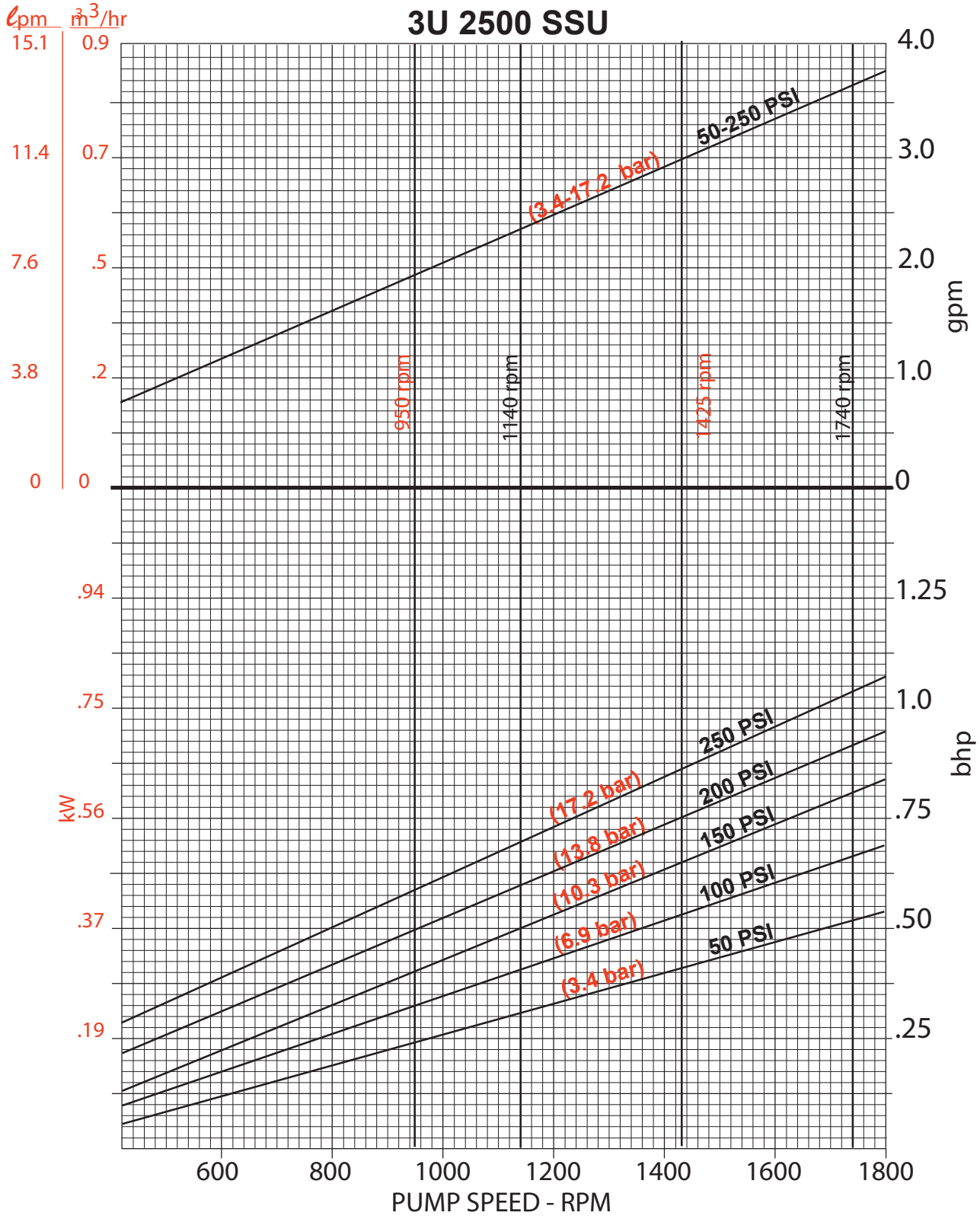

( )=Differential pressure in bars

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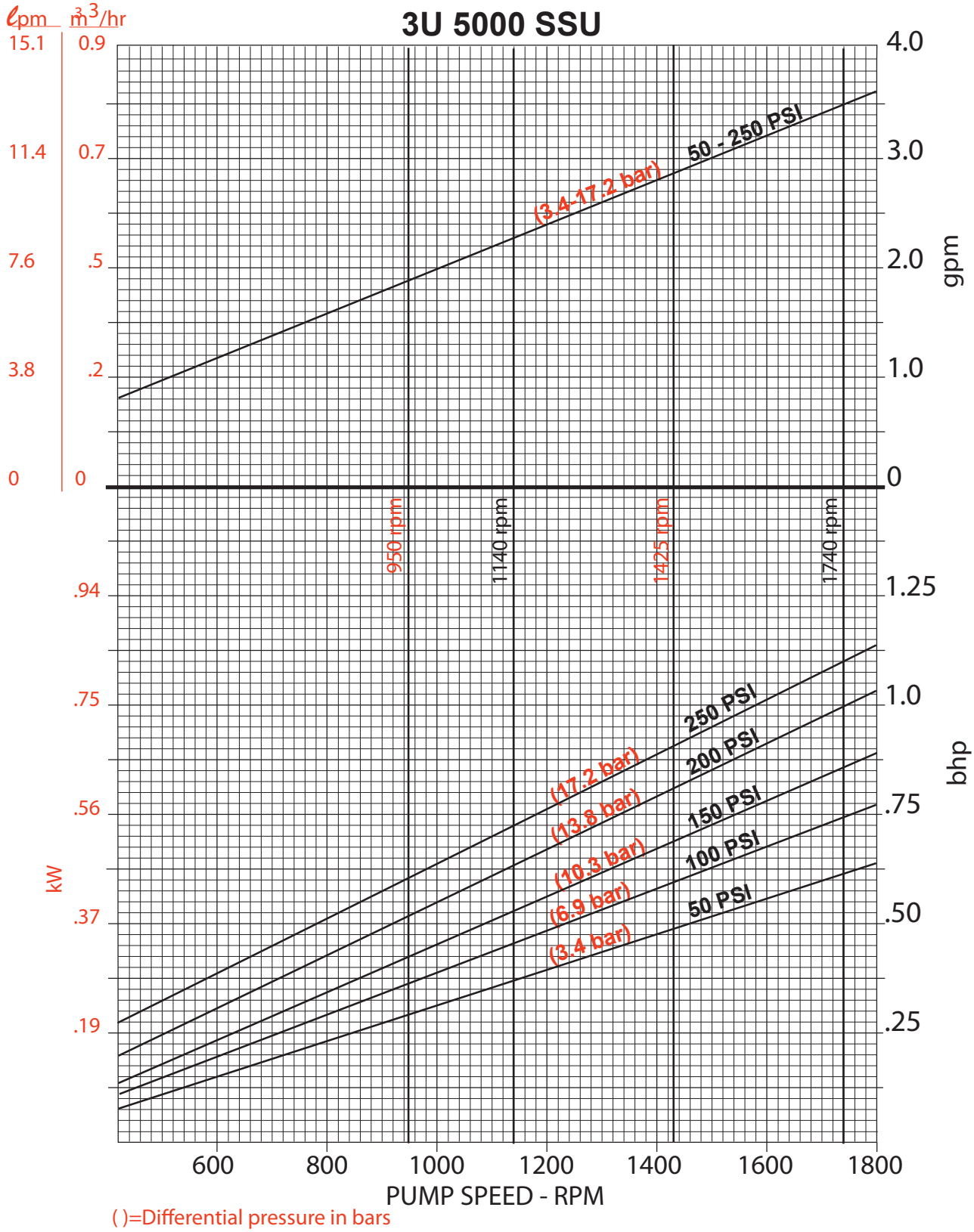

( )=Differential pressure in bars

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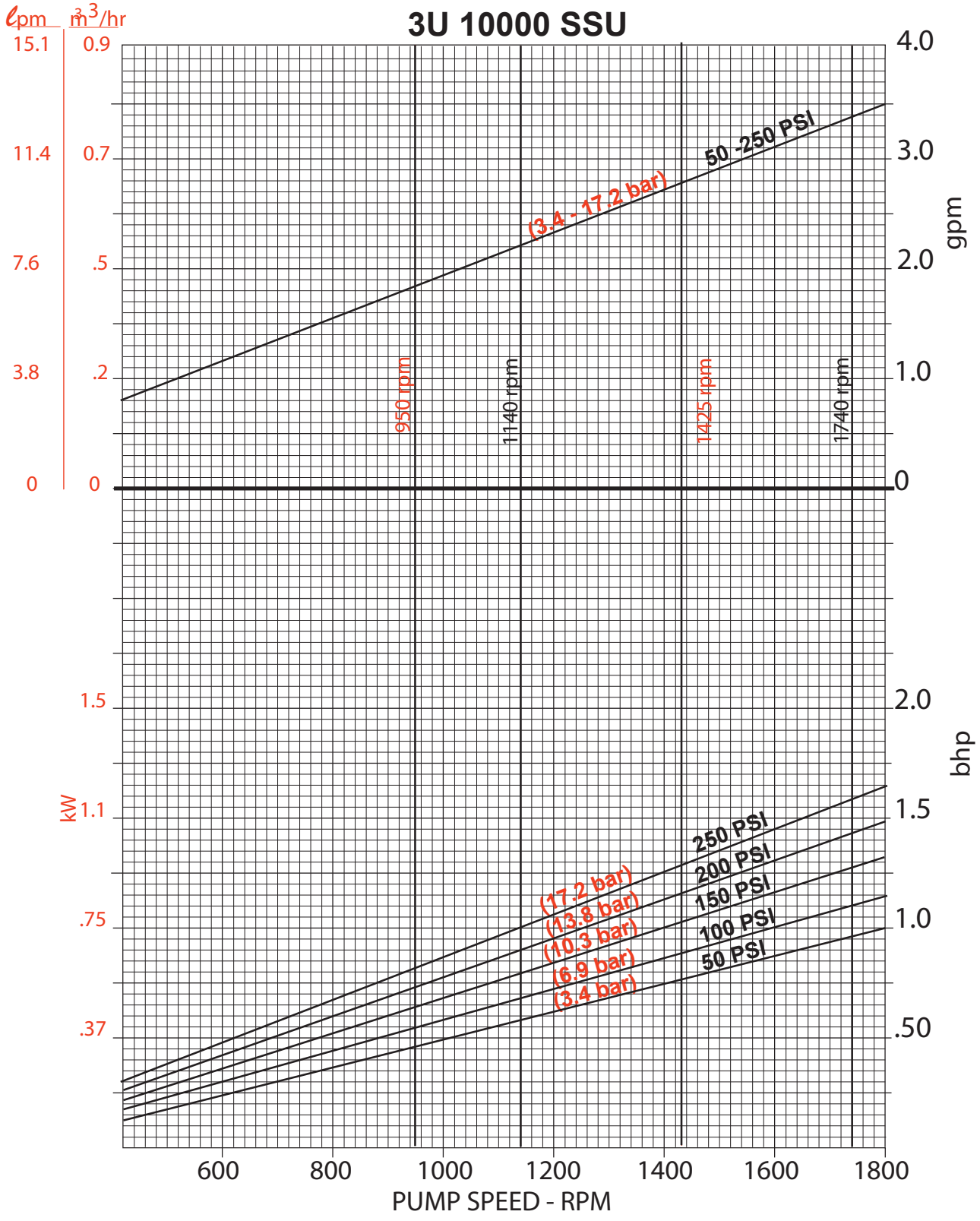

( )=Differential pressure in bars

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HAIGHT® PUMPS
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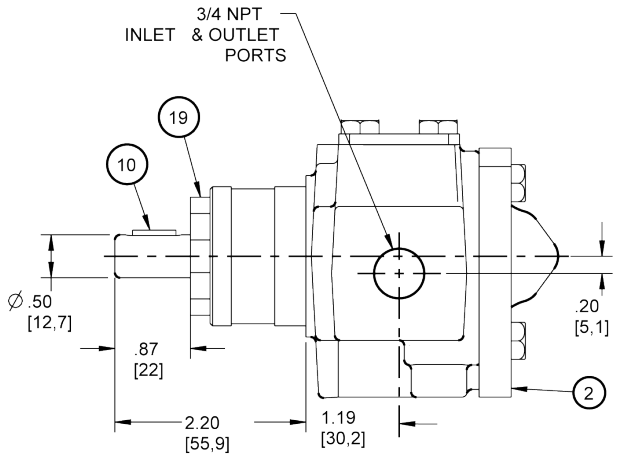
Phone: 800-871-9250 • Fax: 608-882-3777

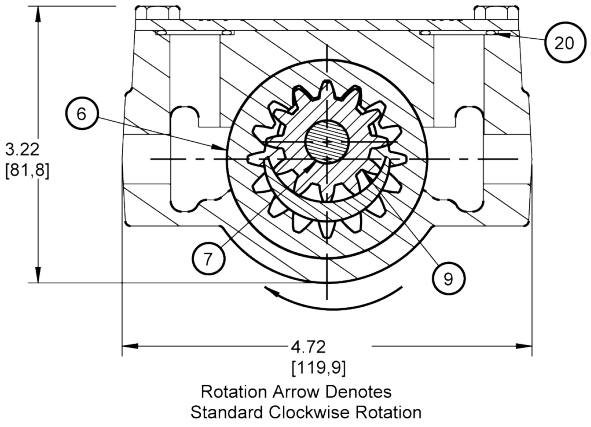
5U - 5 GPM Universal Pump

5U-5 GPM HAIGHT PUMP

Item	Part Number	Description	Qty.
1	E90HC.6	Screw, Cover	4
2	ED530A	Cover	1
3	E11F	Bearing	1
4	E21E	Wiper Seal	1
5	E28E	O-Ring, Cover	1
6	D526F1	Rotor	1
7	DU5C13PK	Shaft & Pinion Assembly	1
8	D514PK	Shaft	1
9	D515C1	Pinion	1
10	E13C50	Key 1/8 Sq X 1/2 Lg	1
11	E11F2	Bearing	1
12	E49E	Set Screw, Vent	2
13	ED56A7	Case	1
14	E24SE	O-ring-Gland	1
16	E25C3	Washer	2
17	E18AM	Shaft Seal	1
18	E11TB2	Thrust Bearing	1
19	E22SS3F4	Gland	1
20	SE2018N90	O-Ring, Cover Plate	2
21	ED530CP	Cover Plate	1
22	E90HC.5	Screw, Cover Plate	4

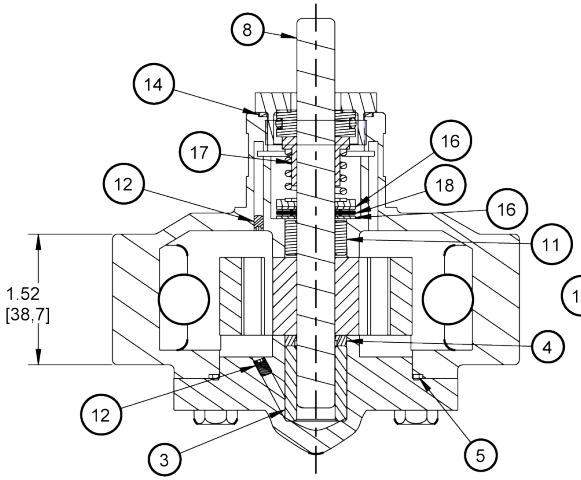


Right Side

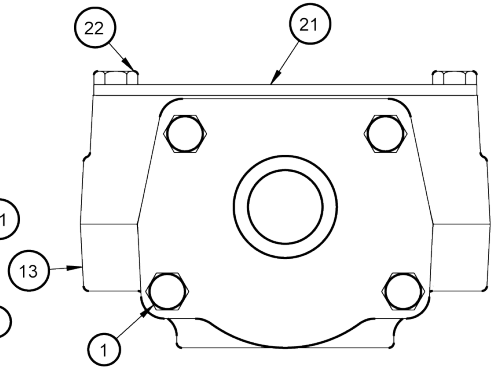


Rotation Arrow Denotes
Standard Clockwise Rotation

Cutaway View
Shaft End



Cutaway View
Top



Cover End View

Bracketed Dimensions are mm.

(Revised 8-1-11)

HAIGHT® PUMPS
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133 Enterprise Street • Evansville, WI 53536
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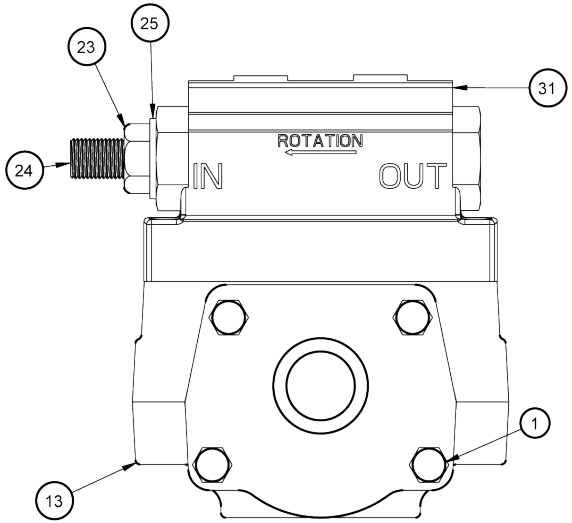
5UR - 5 GPM
Universal Relief Valve Pump

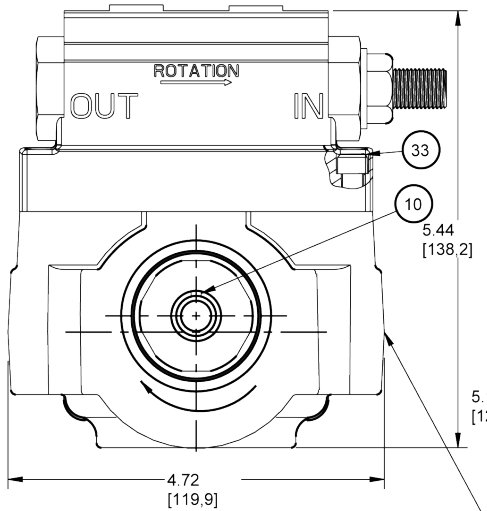
5UR - 5 GPM HAIGHT PUMP WITH RELIEF VALVE

Item	Part Number	Description	Qty.
1	E90HC.6	Screw, Cover	4
2	ED530A	Cover	1
3	E11F	Bearing	1
4	E21E	Wiper Seal	1
5	E28E	O-Ring, Cover	1
6	D526F1	Rotor	1
7	DU5C13PK	Shaft & Pinion Assembly	1
8	D514PK	Shaft	1
9	D515C1	Pinion	1
10	E13C50	Key, 1/8 Sq X 1/2 Lg	1
11	E11F2	Bearing	1
12	E49F	Set Screw, Vent	2
13	ED56A7	Case	1
14	E24SE	O-ring-Gland	1
16	E25C3	Washer	2

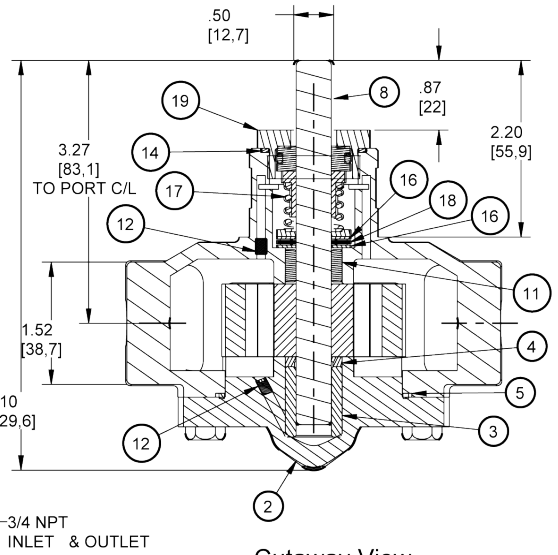
Item	Part Number	Description	Qty.
17	E18AM	Shaft Seal	1
18	E11TB2	Thrust Bearing	1
19	E22SS3F4	Gland	1
20	SE2018N90	O-Ring, Valve Body	2
23	E64C	Lock Nut	1
24	E55C	Adjustment Screw	1
25	E25N1	Sealing Washer	1
26	E57C	Bonnet	1
27	SE2020N70	O-ring, Valve	2
28	E52S	Spring	1
29	E51C	Poppet	1
30	E50C	Cap	1
31	ED55A	Valve Body	1
32	ZA285	Pipe Plug	2
33	E90SC.8	Screw, Valve Body	4



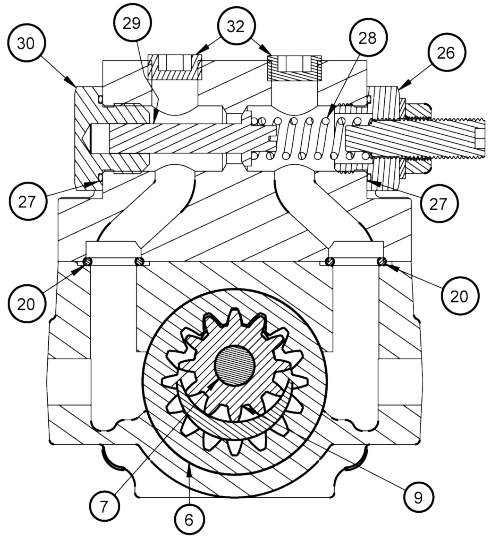
Cover End View



Shaft End View



Cutaway View
Top


Cutaway View
Shaft End

Bracketed Dimensions are mm.

(Revised 8-1-11)

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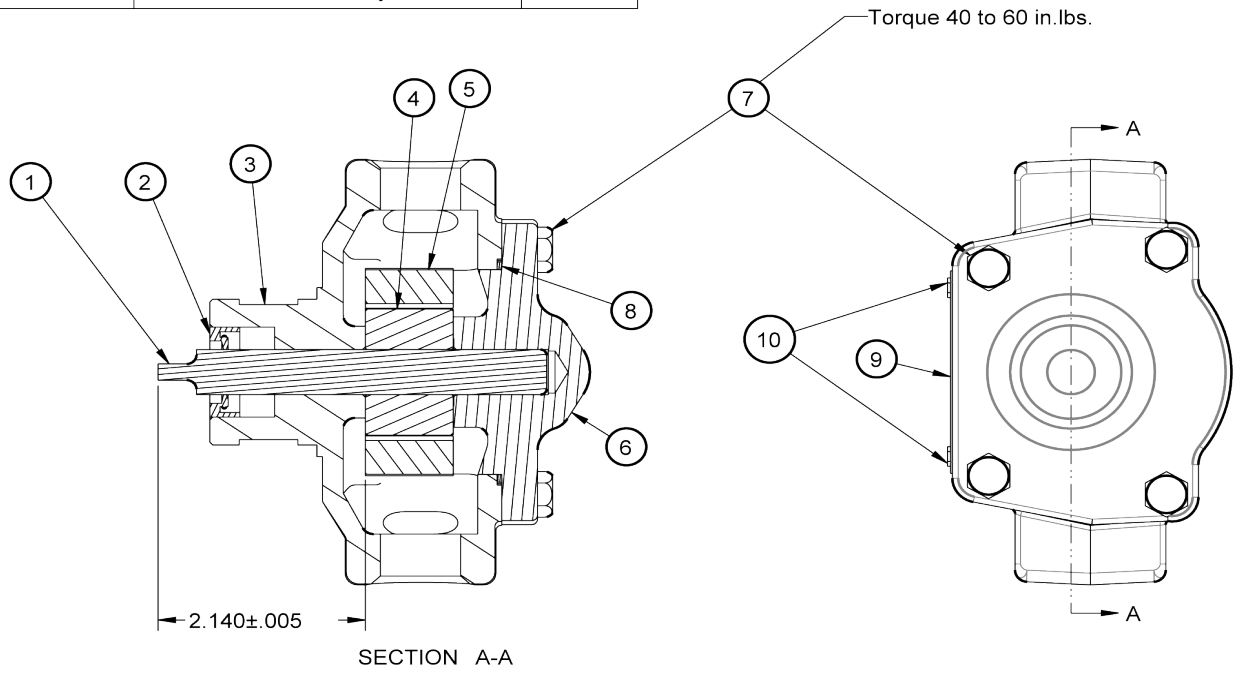
5E001000 Pump
Installation View

Item	Part No.	Description	Qty.
1	ED514BC	Shaft	1
2	E18V	Seal	1
3	ED53F5	Case	1
4	D515C1	Pinion	1
5	D526F1	Rotor	1
6	ED530F	Cover	1
7	E90HC.7	Screw 1/4-20X.63 HHCS	4
8	E28V1	Seal	1
9	ED47A	Nameplate	1
10	E46C	Drive Screw	2
1 & 4	ED5C13BC	Shaft & Pinion Assembly	1

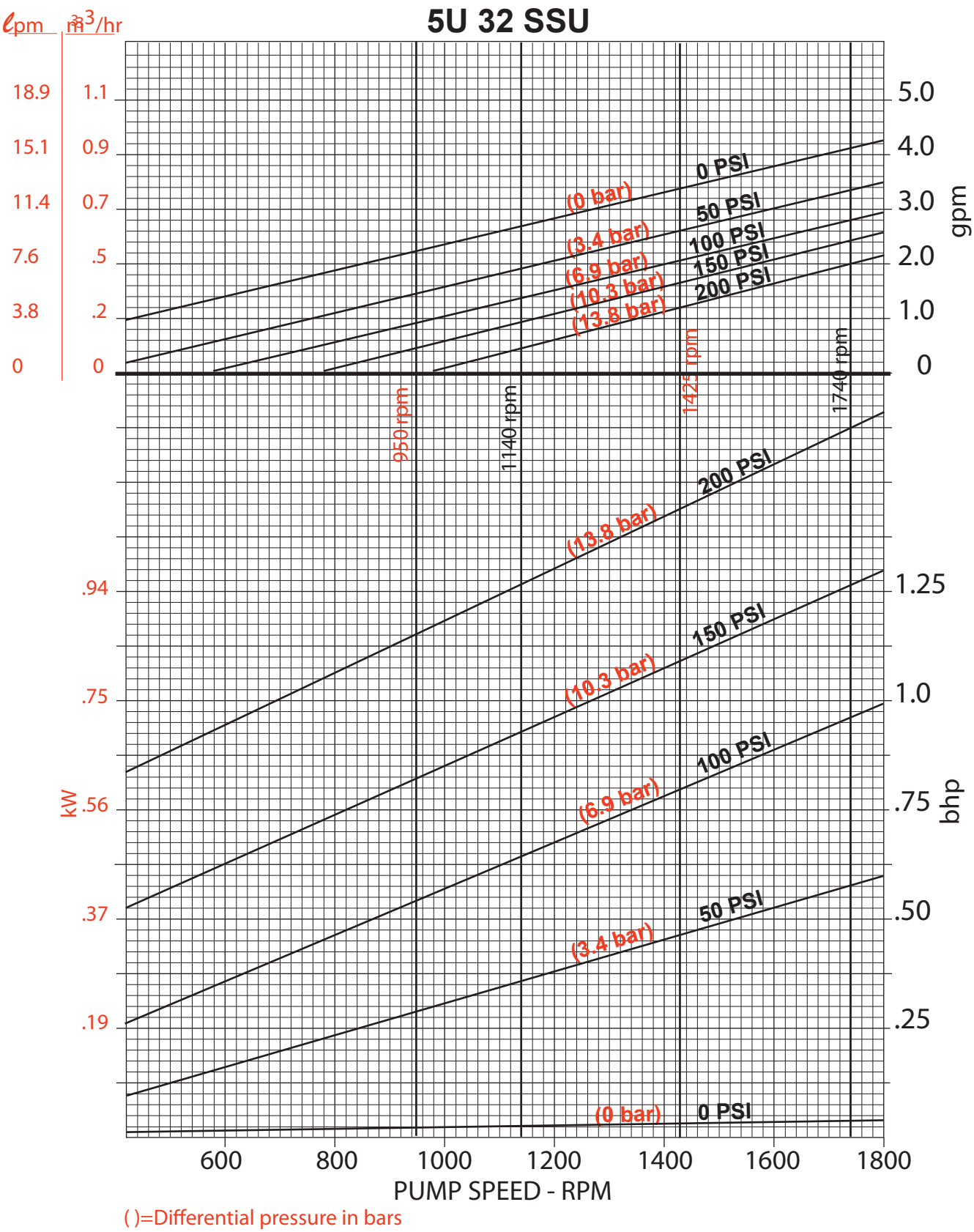


SECTION A-A

5E5FF220CECF1 Pump
Part No. 5E001000

(Revised 8-1-11)

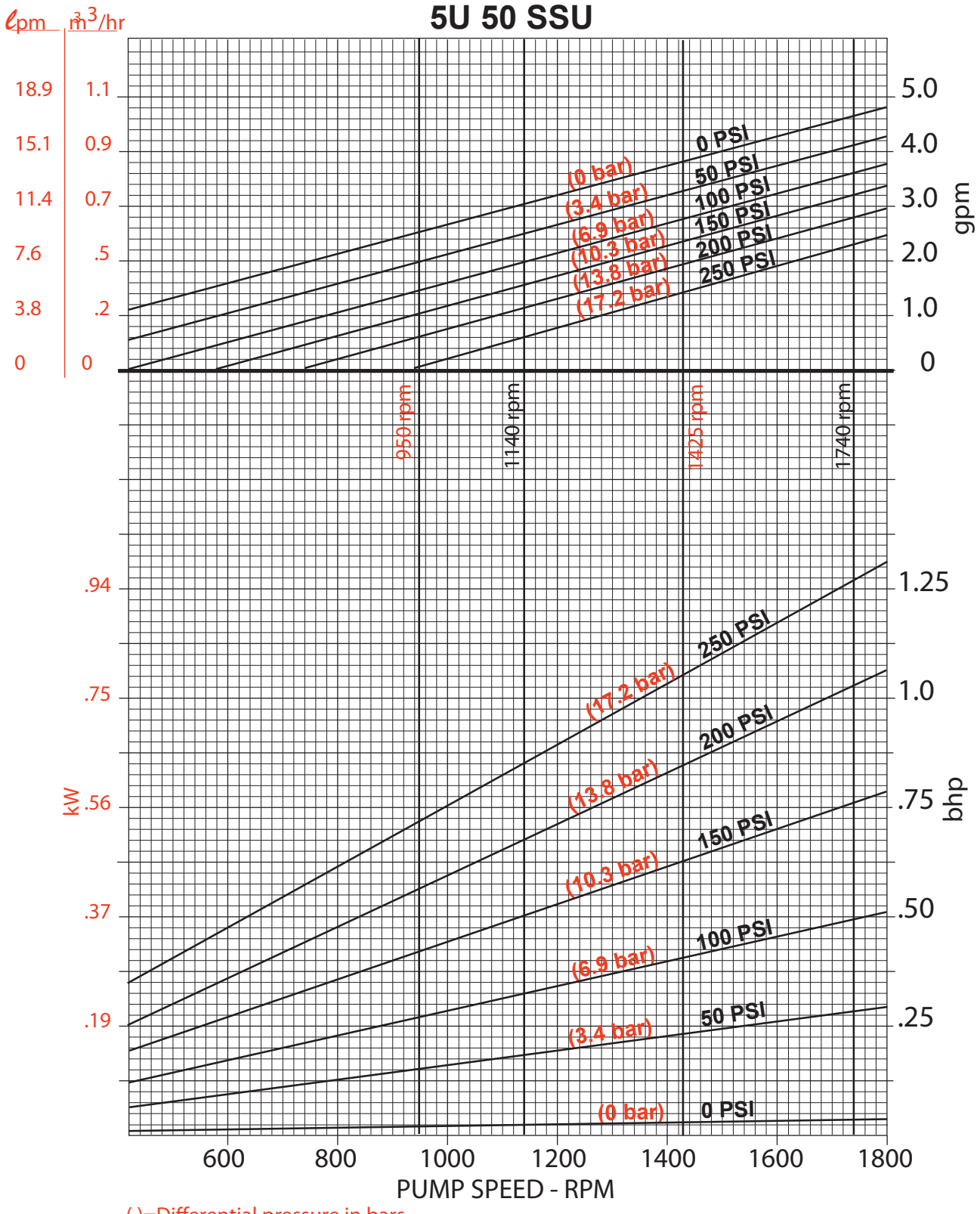
5U 32 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

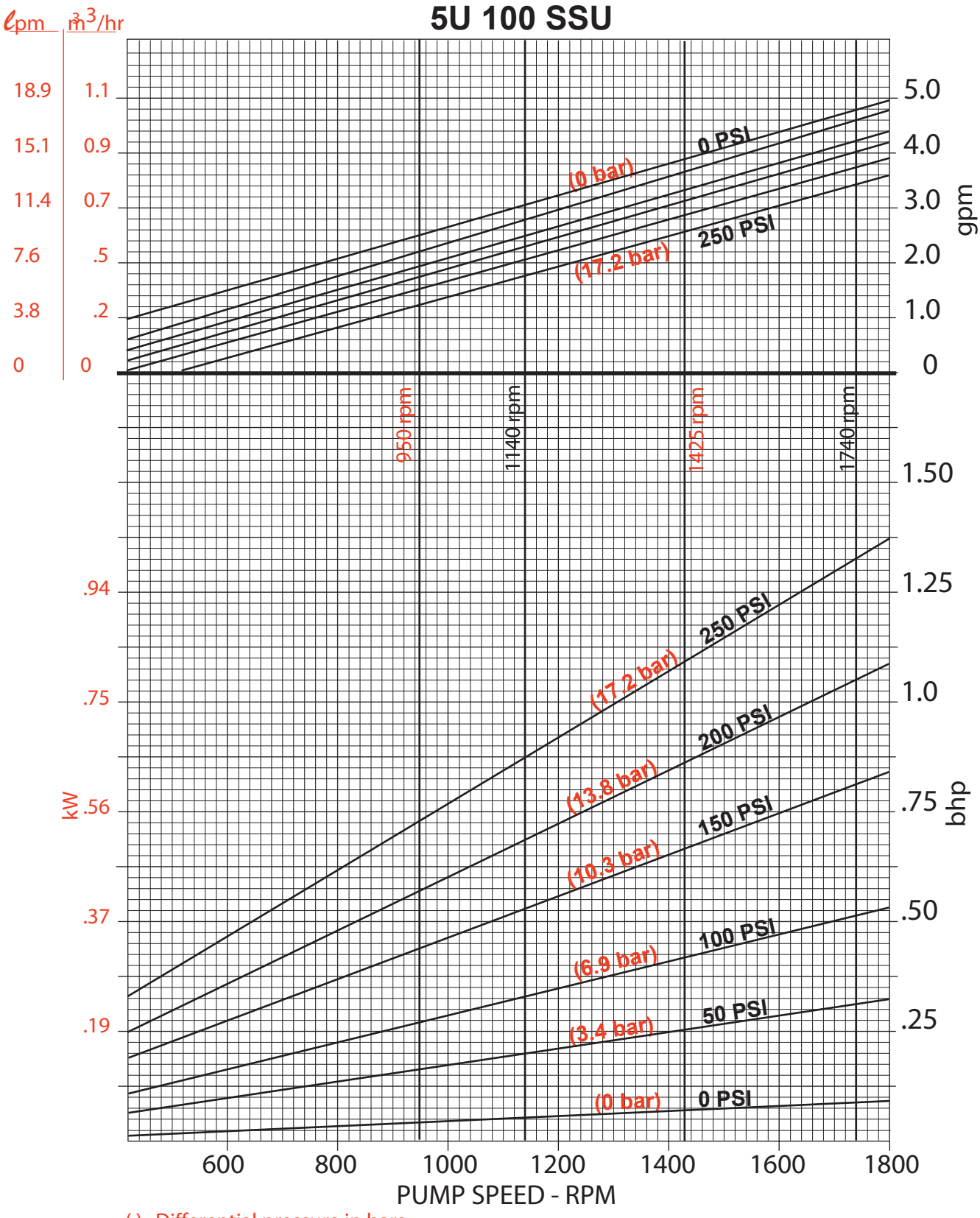
5U 50 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

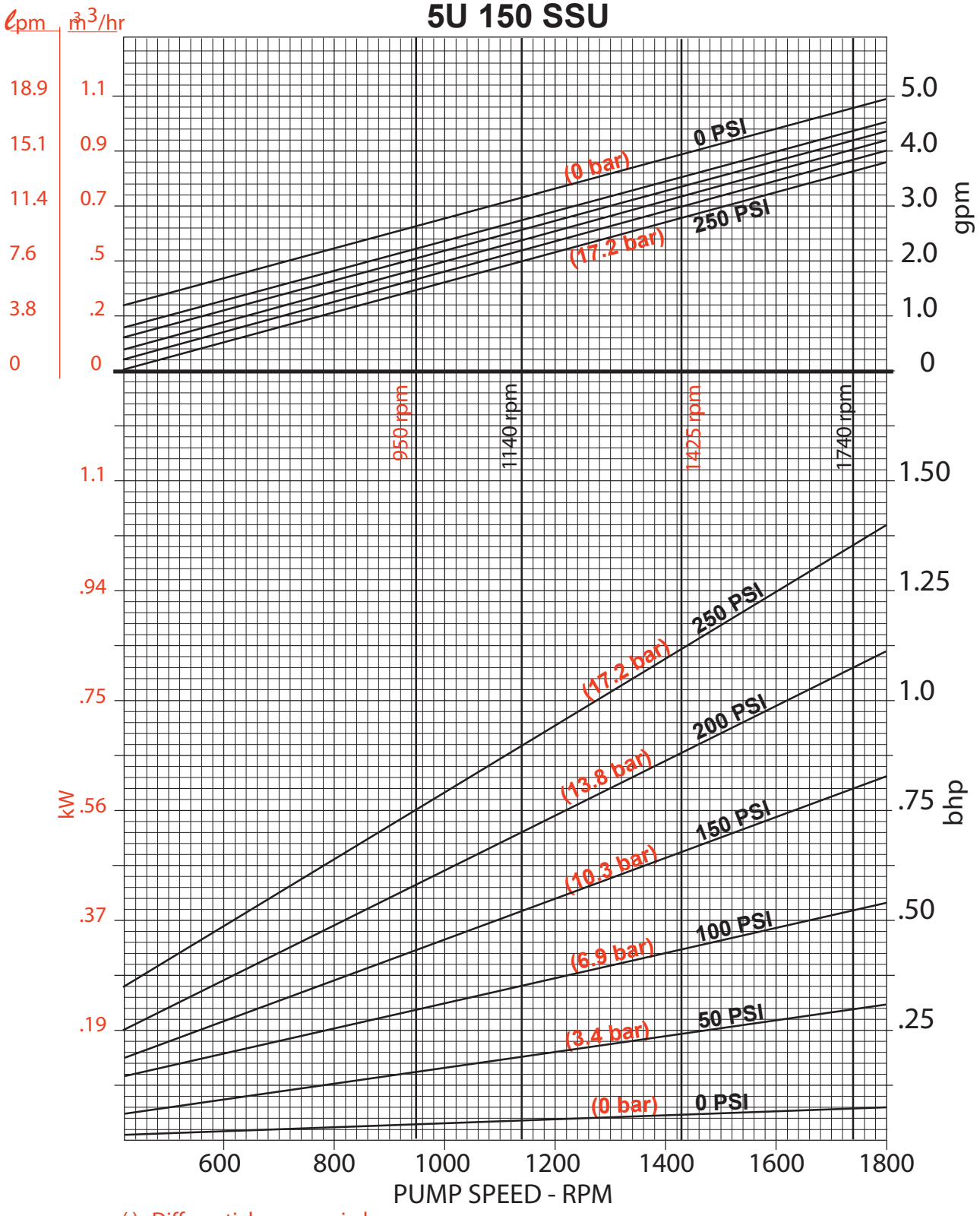
5U 100 SSU



( )=Differential pressure in bars

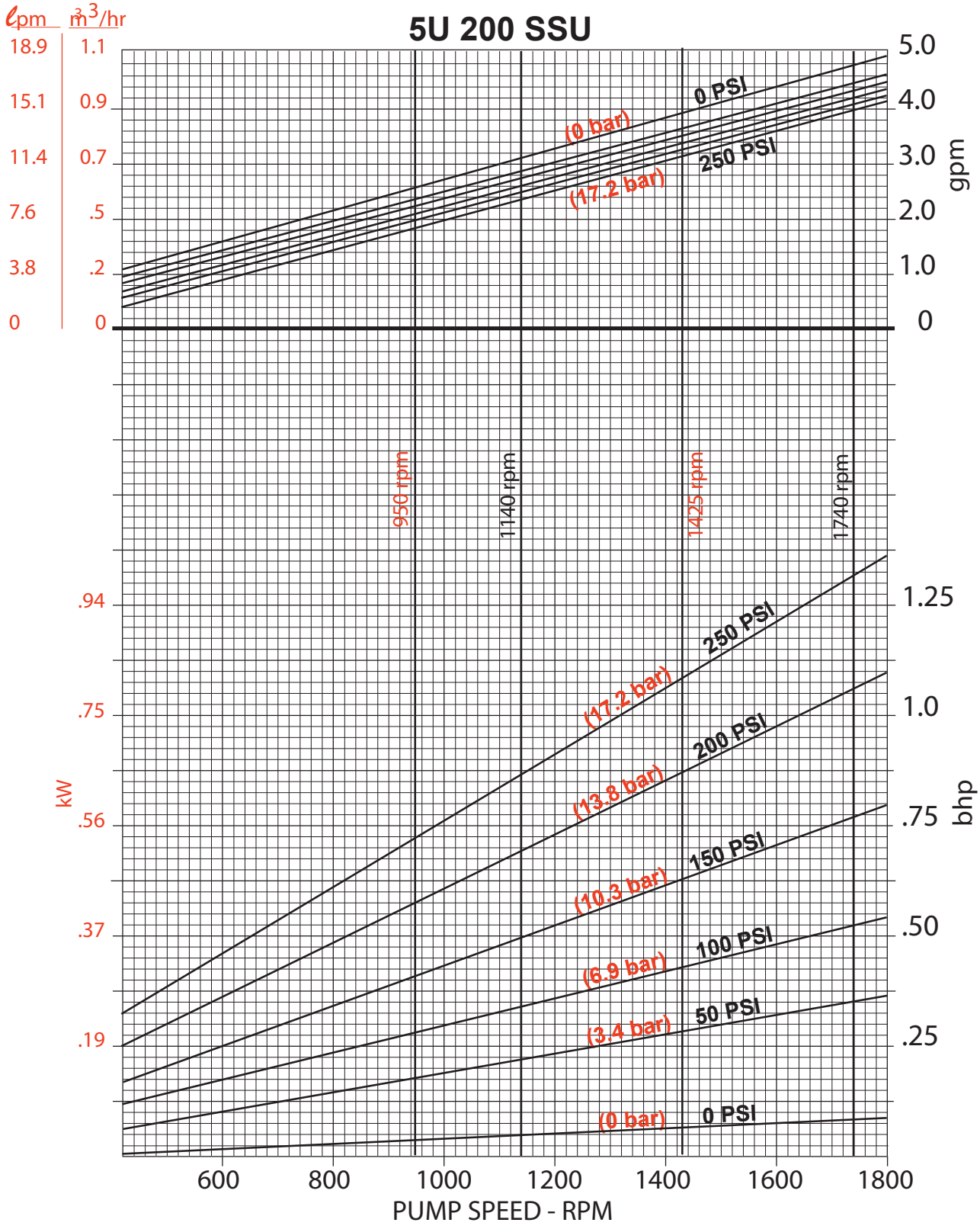
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

5U 150 SSU



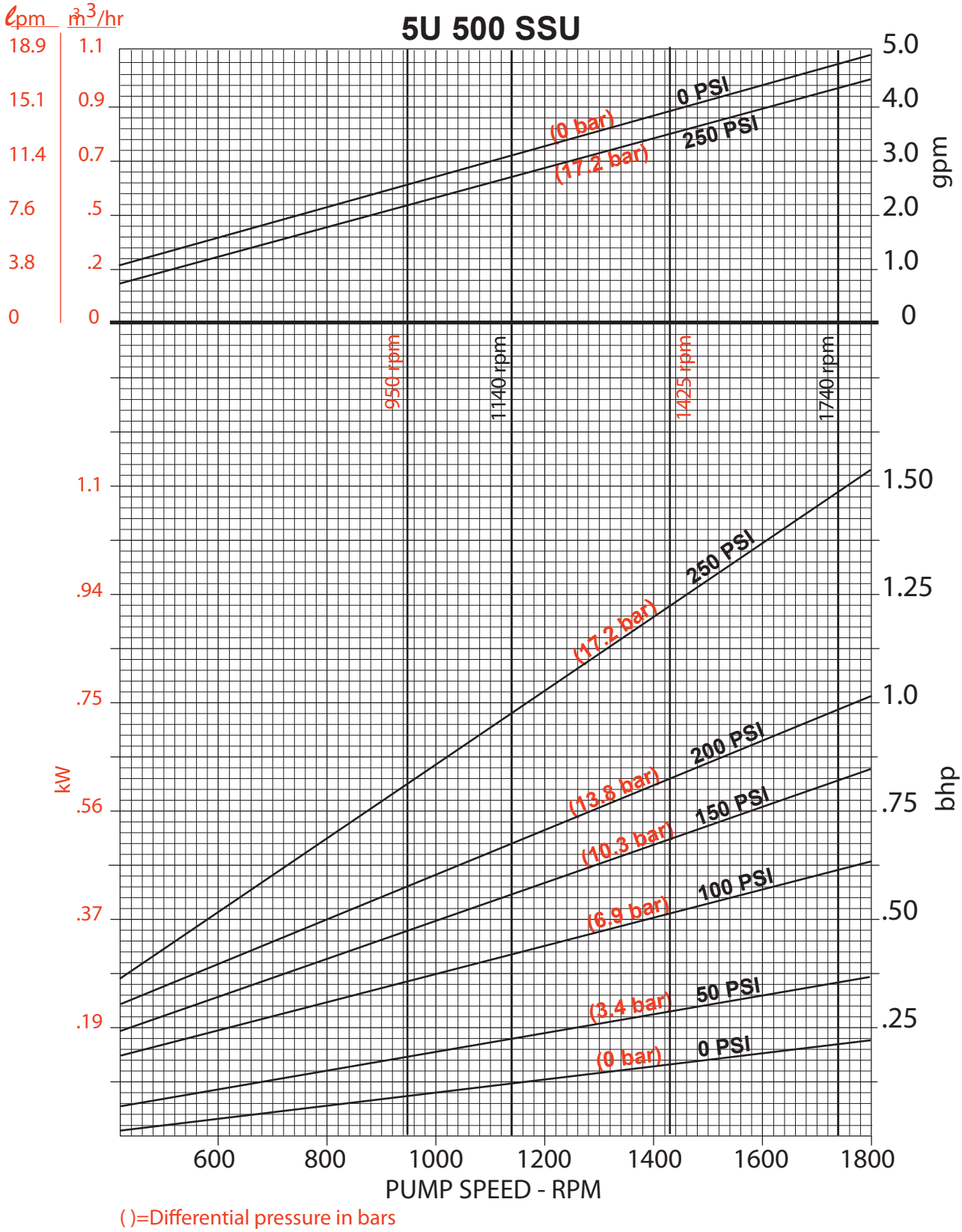
( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



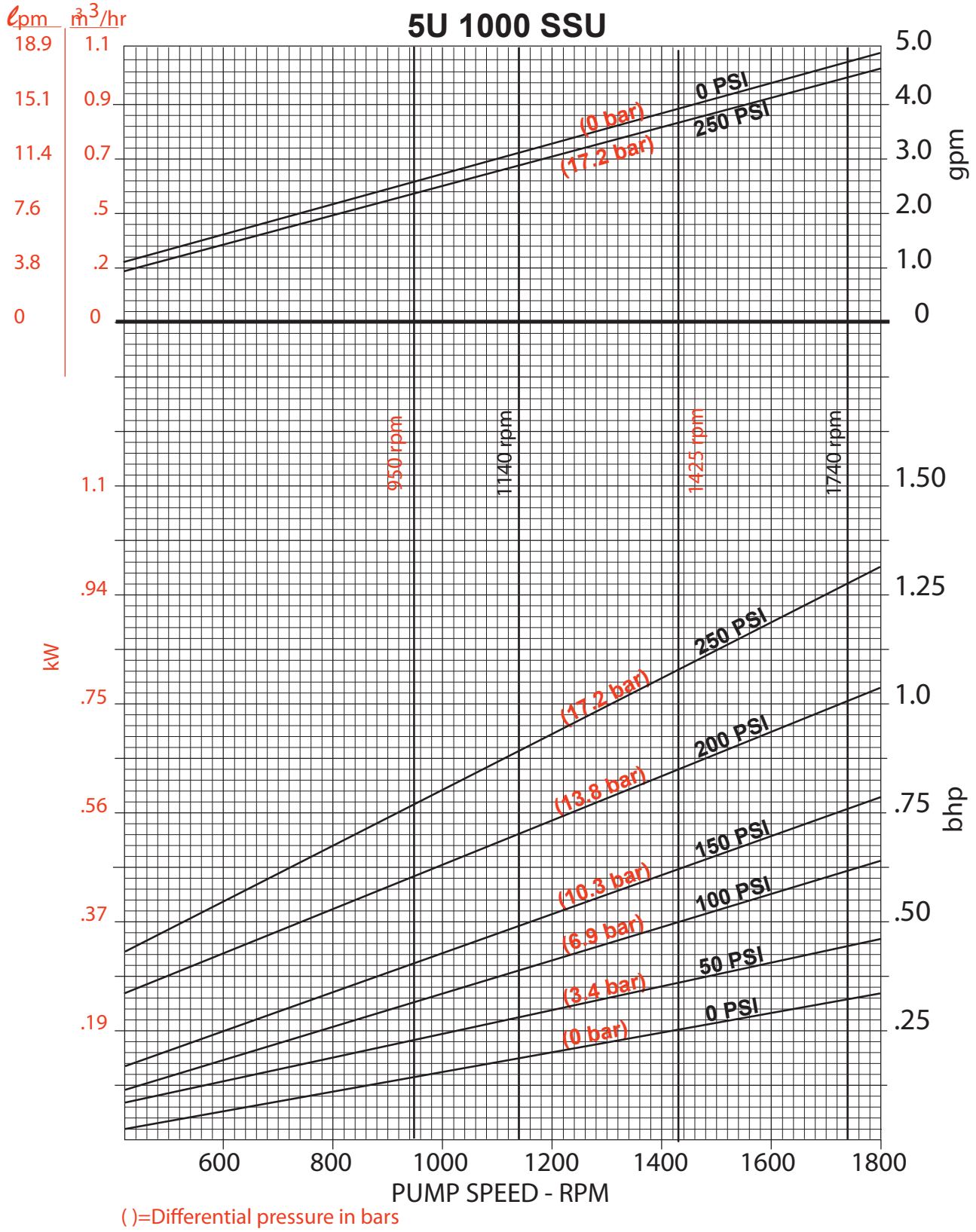
( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



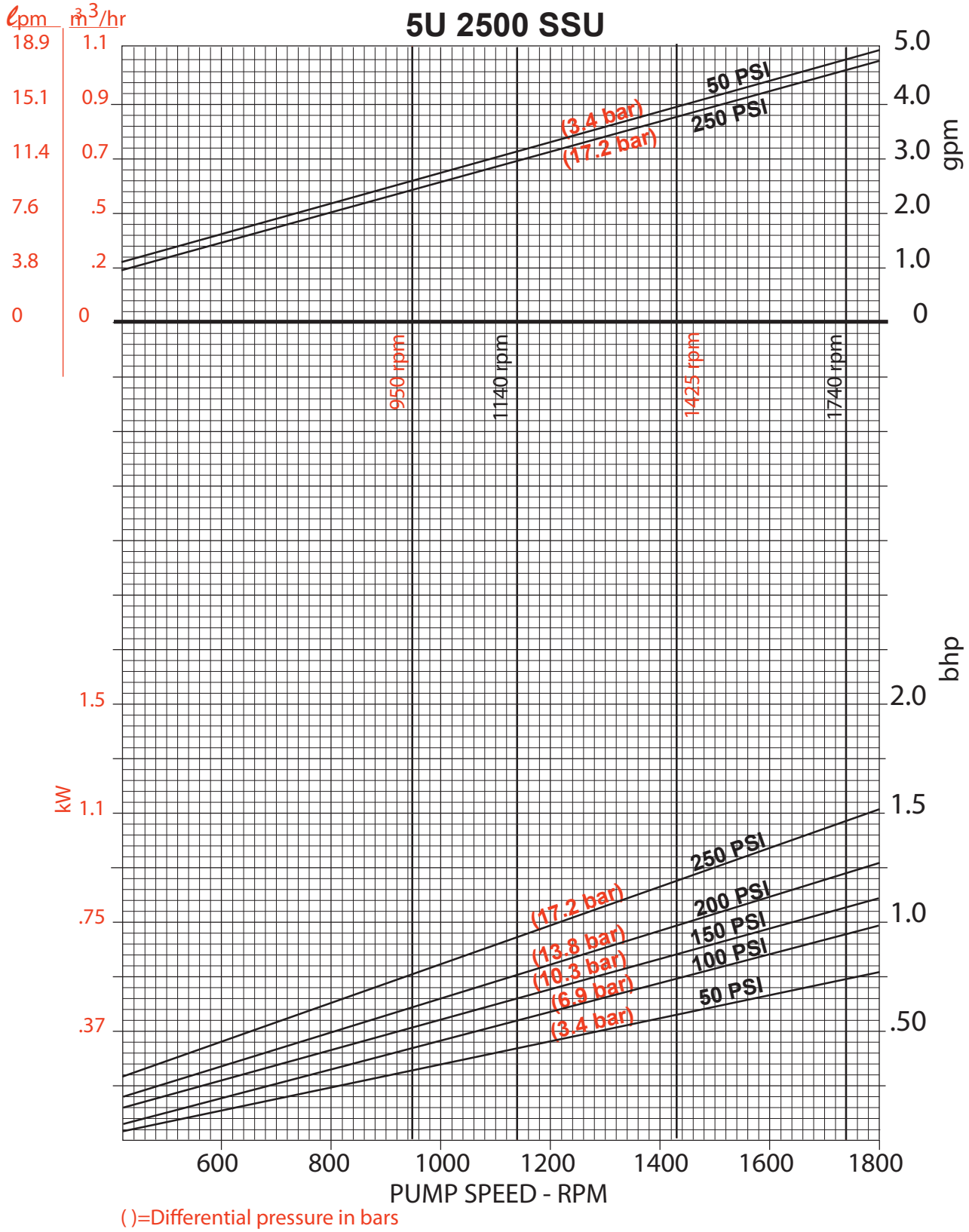
( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



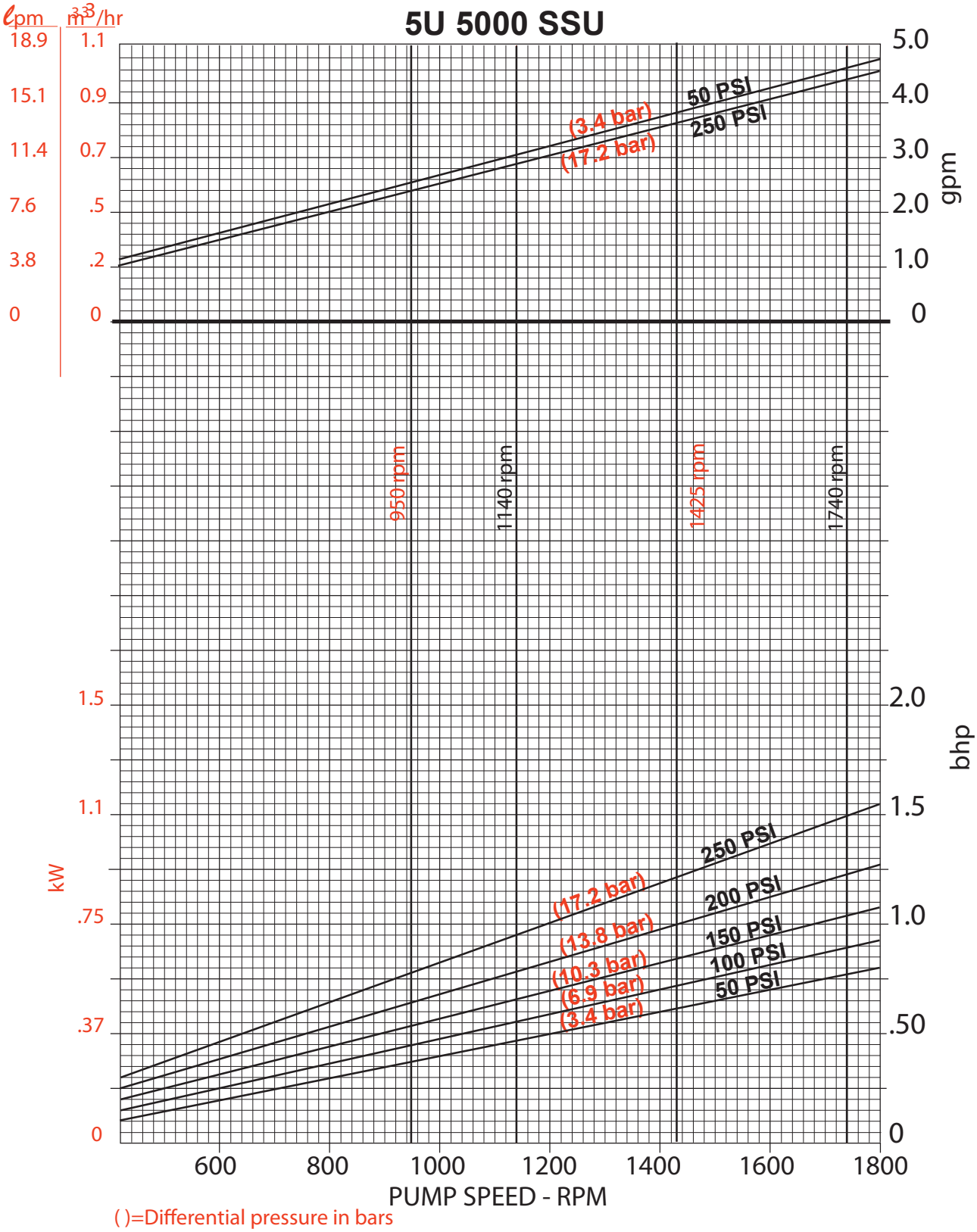
( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



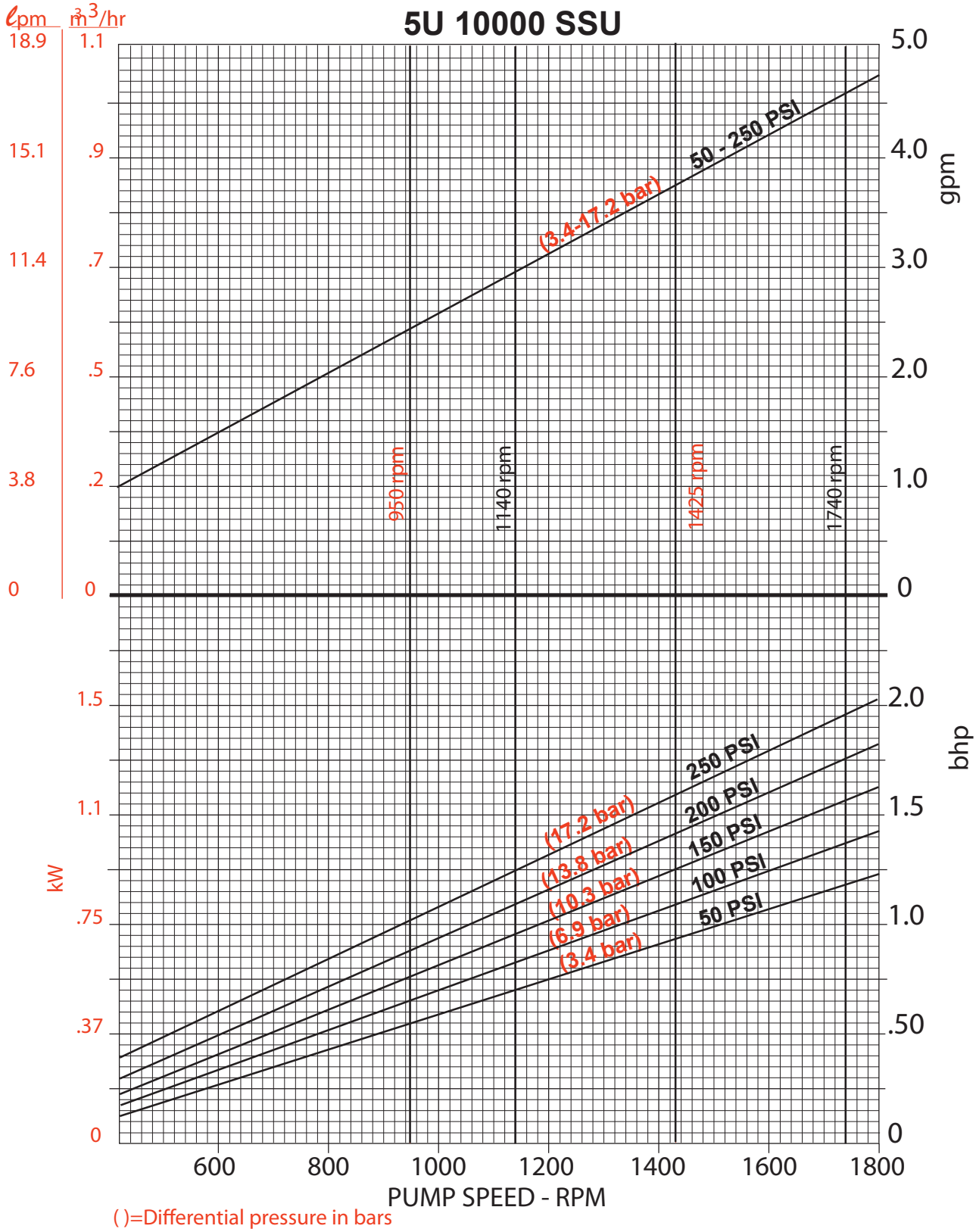
( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



( )=Differential pressure in bars

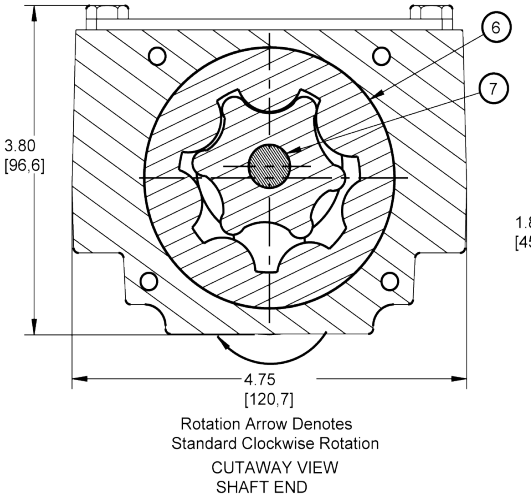
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

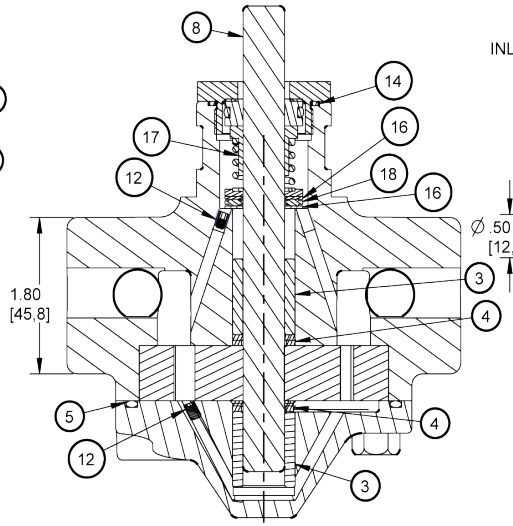
6U - 6 GPM Universal Pump

6U - 6 GPM HAIGHT PUMP

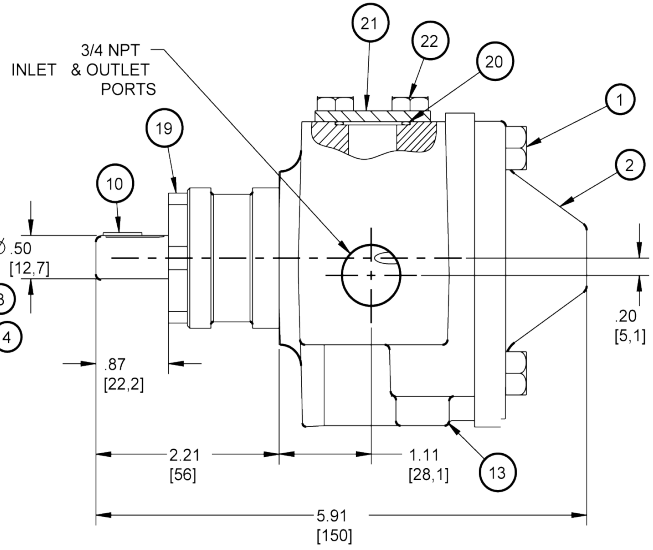
Item	Part Number	Description	Qty.
1	E90HC.6	Screw, Cover	4
2	EG830A	Cover	1
3	E11F	Bearing	2
4	E21E	Wiper Seal	2
5	SE2151N70	O-ring-Cover	1
6	HJ169A	Gerotor Set	1
7	DU6C13PK	Gerotor Set & Shaft Assembly	1
8	D814PK	Shaft	1
10	E13C50	Key, 1/8 Sq X 1/2 Lg	1
12	E49G	Set Screw, Vent	2
13	EG66A7	Case	1
14	E24SE	O-ring-Gland	1
16	E25C3	Washer	2
17	E18AM	Shaft Seal	1
18	E11TB2	Thrust Bearing	1
19	E22SS3F4	Gland	1
20	SE2018N90	O-Ring, Cover Plate	2
21	ED530CP	Cover Plate	1
22	E90HC.5	Screw, Cover Plate	4



CUTAWAY VIEW
SHAFT END



CUTAWAY VIEW
TOP



RIGHT SIDE

Bracketed Dimensions are mm.

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

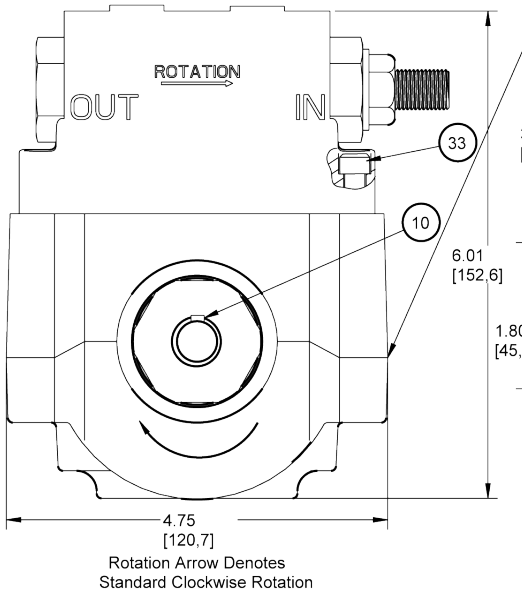
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

6UR - 6 GPM
Universal Relief Valve Pump

6UR - 6 GPM HAIGHT PUMP WITH RELIEF VALVE

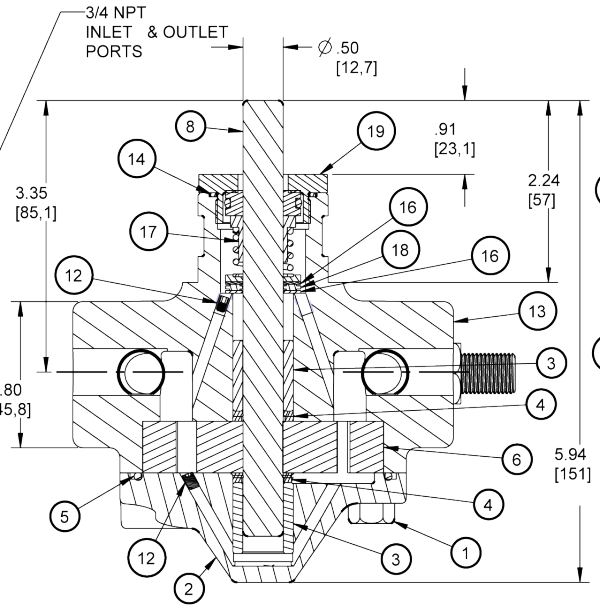
Item	Part Number	Description	Qty.
1	E90HC.6	Screw, Cover	4
2	EG830A	Cover	1
3	E11F	Bearing	2
4	E21E	Wiper Seal	2
5	SE2151N70	O-ring-Cover	1
6	HJ169A	Gerotor Set	1
7	DU6C13PK	Gerotor Set & Shaft Assembly	1
8	D814PK	Shaft	1
10	E13C50	Key, 1/8 Sq X 1/2 Lg	1
12	E49G	Set Screw, Vent	2
13	EG66A7	Case	1
14	E24SE	O-ring-Gland	1
16	E25C3	Washer	2
17	E18AM	Shaft Seal	1

Item	Part Number	Description	Qty.
18	E11TB2	Thrust Bearing	1
19	E22SS3F4	Gland	1
20	SE2018N90	O-Ring, Valve Body	2
23	E64C	Lock Nut	1
24	E55C	Adjustment Screw	1
25	E25N1	Sealing Washer	1
26	E57C	Bonnet	1
27	SE2020N70	O-Ring, Valve	2
28	E52S	Spring	1
29	E51C	Poppet	1
30	E50C	Cap	1
31	ED55A	Valve Body	1
32	ZA285	Pipe Plug	2
33	E90SC.8	Screw, Valve Body	4



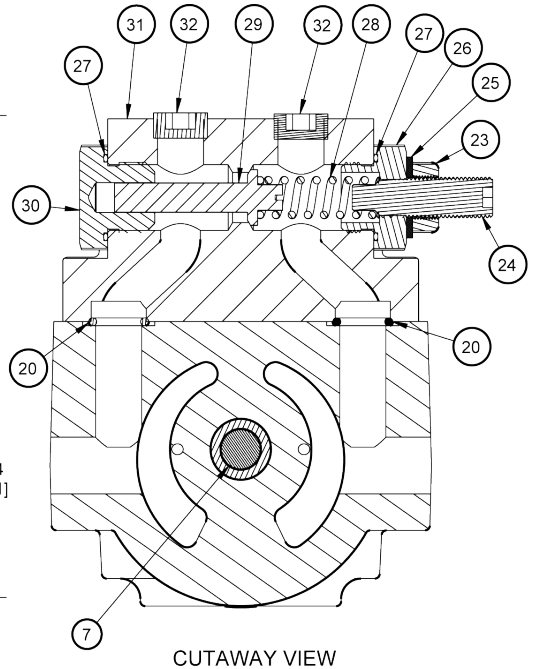
Rotation Arrow Denotes
Standard Clockwise Rotation

SHAFT END VIEW



CUTAWAY VIEW
TOP

Bracketed Dimensions are mm.



CUTAWAY VIEW
SHAFT END

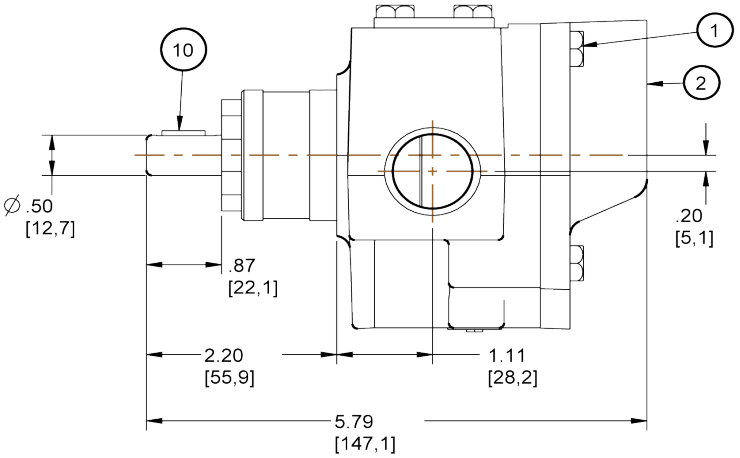
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

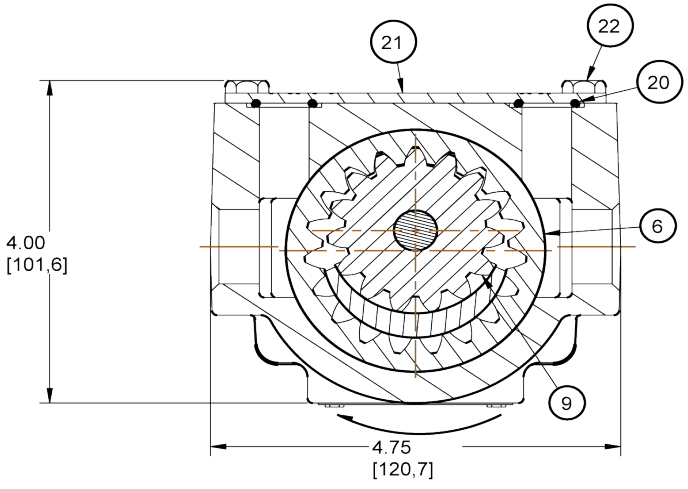
6EU - 6 GPM Universal Pump

6EU-6 GPM HAIGHT PUMP

Item	Part Number	Description	Qty.
1	E90HC.6	Screw, Cover	4
2	ED630A	Cover	1
3	E11F	Bearing	1
4	E21E	Wiper Seal	1
5	E28E	O-Ring, Cover	1
6	ED626F1	Rotor	1
7	EU6C13PK	Shaft & Pinion Assembly	1
8	D814PK	Shaft	1
9	ED615C1	Pinion	1
10	E13C50	Key 1/8 Sq X 1/2 Lg	1
11	E11F2	Bearing	1
12	E49E	Set Screw, Vent	2
13	ED83A7	Case	1
14	E24SE	O-ring-Gland	1
15	E18E	Shaft Seal	2
19	E22SS3F4	Gland	1
20	SE2018N90	O-Ring, Cover Plate	2
21	ED530CP	Cover Plate	1
22	E90HC.5	Screw, Cover Plate	4

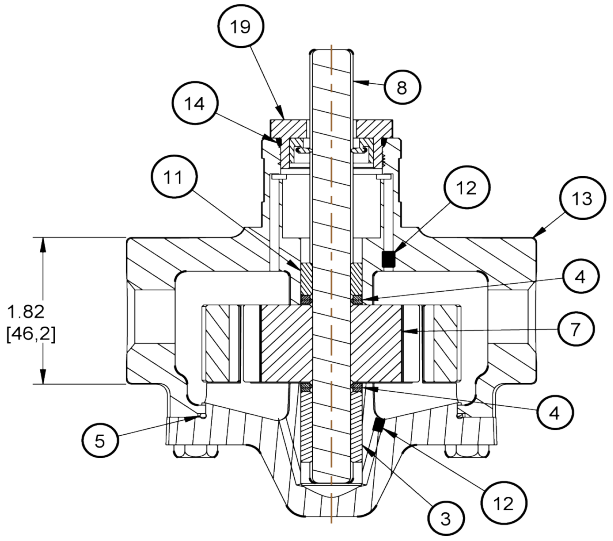


Right Side



Rotation Arrow Denotes
Standard Clockwise Rotation

Cutaway View
Shaft End



Cutaway View
Bottom

Bracketed Dimensions are mm.

(Revised 8-1-11)

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

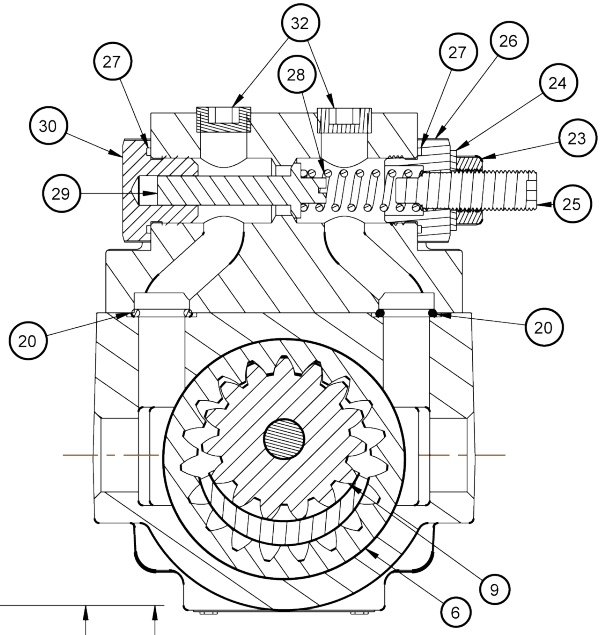
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

6EUR - 6 GPM
Universal Relief Valve Pump

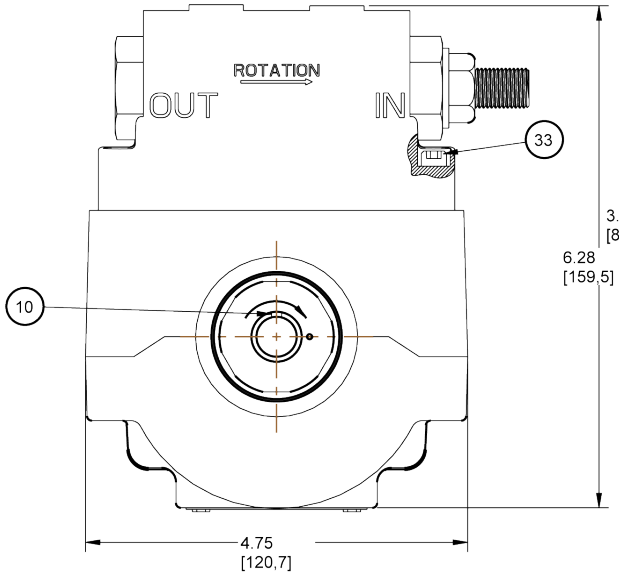
6EUR-6 GPM HAIGHT RELIEF VALVE PUMP

Item	Part Number	Description	Qty.
1	E90HC.6	Screw, Cover	4
2	ED630A	Cover	1
3	E11F	Bearing	1
4	E21E	Wiper Seal	1
5	E28E	O-Ring, Cover	1
6	ED626F1	Rotor	1
7	EU6C13PK	Shaft & Pinion Assembly	1
8	D814PK	Shaft	1
9	ED615C1	Pinion	1
10	E13C50	Key 1/8 Sq X 1/2 Lg	1
11	E11F2	Bearing	1
12	E49E	Set Screw, Vent	2
13	ED83A7	Case	1
14	E24SE	O-ring-Gland	1

Item	Part Number	Description	Qty.
15	E18E	Shaft Seal	1
19	E22SS3F4	Gland	1
20	SE2018N90	O-Ring, Relief Valve	2
23	E64C	Nut	1
24	E25N1	Sealing Washer	1
25	E55C	Adjusting Screw	1
26	E57C	Bonnet	1
27	SE2020N70	O-Ring, Bonnet	2
28	E52S	Spring	1
29	E51C	Poppet	1
30	E50C	Cap	1
31	ED55A	Relief Valve Housing	1
32	ZA285	Pipe Plug	2
33	E90SC.9	Screw, Relief Valve	4

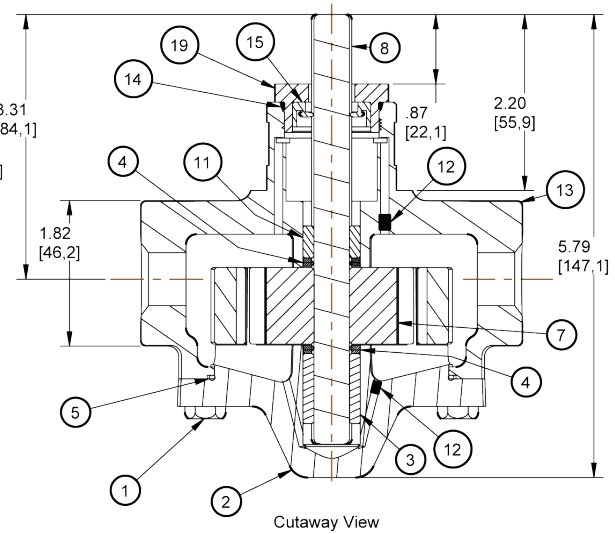


Cutaway View
Back



Rotation Arrow Denotes
Standard Clockwise Rotation

Shaft End View

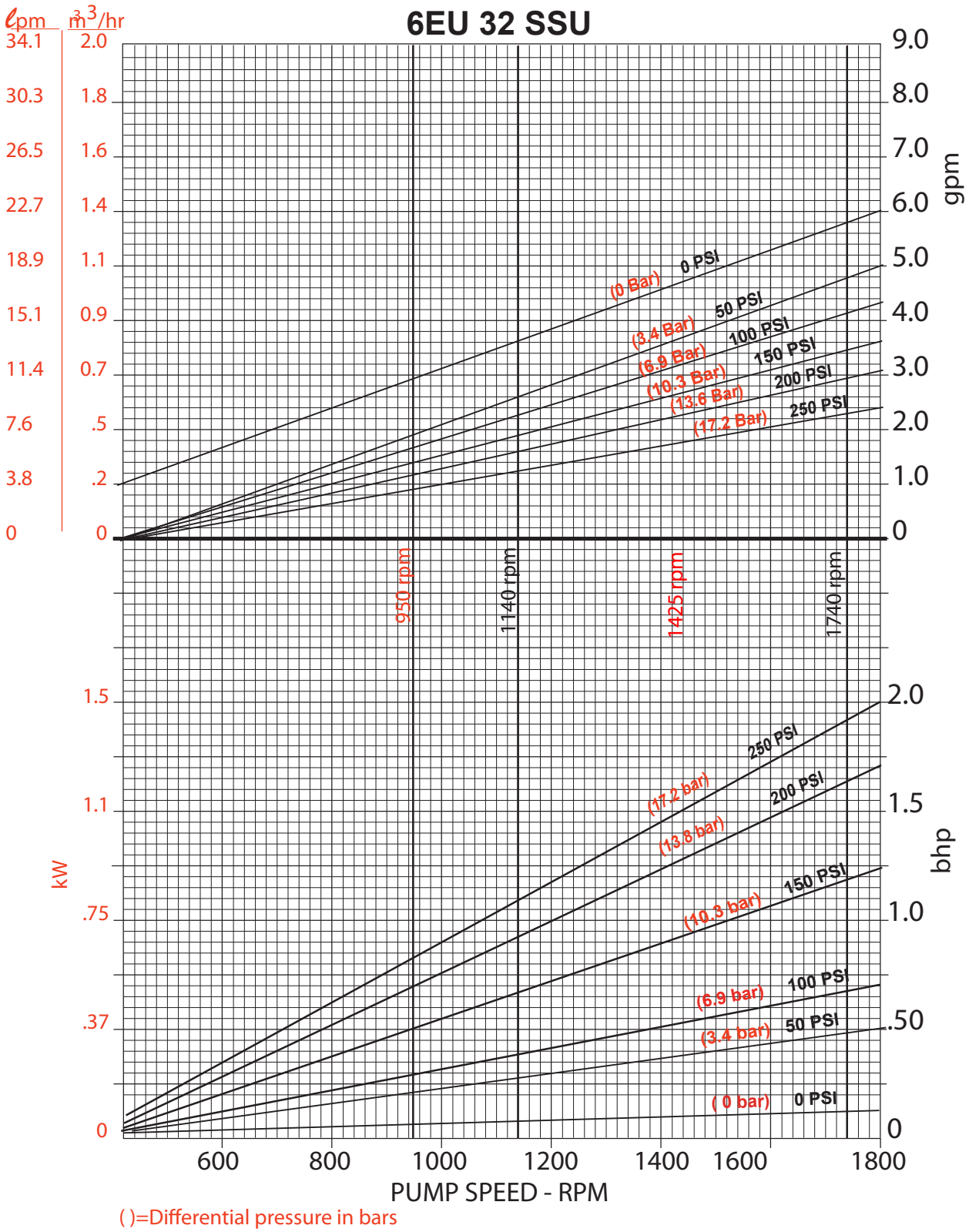


Cutaway View
Bottom

Bracketed Dimensions are mm.

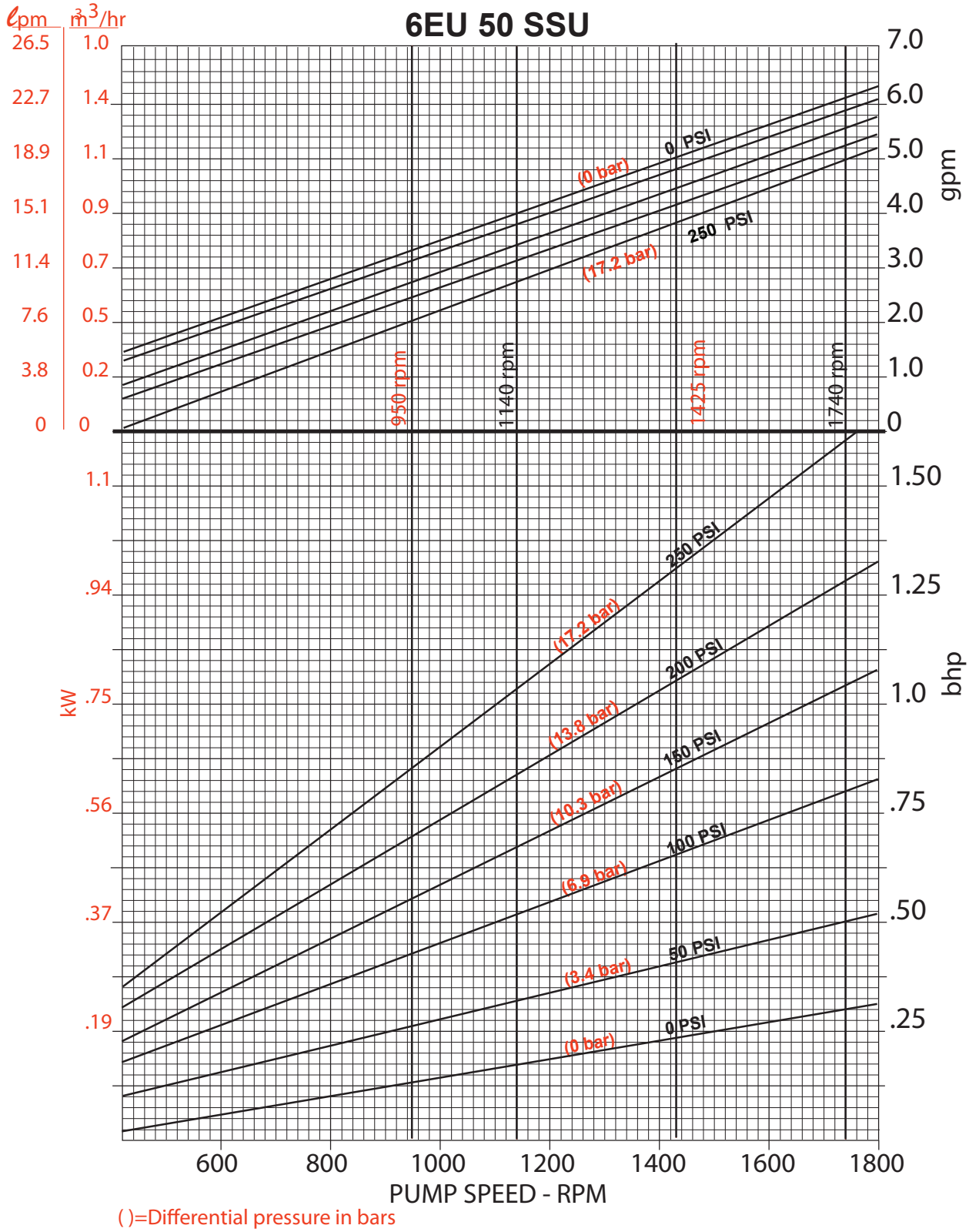
6EUR - 6 GPM
Universal Relief Valve Pump

(Revised 8-1-11)



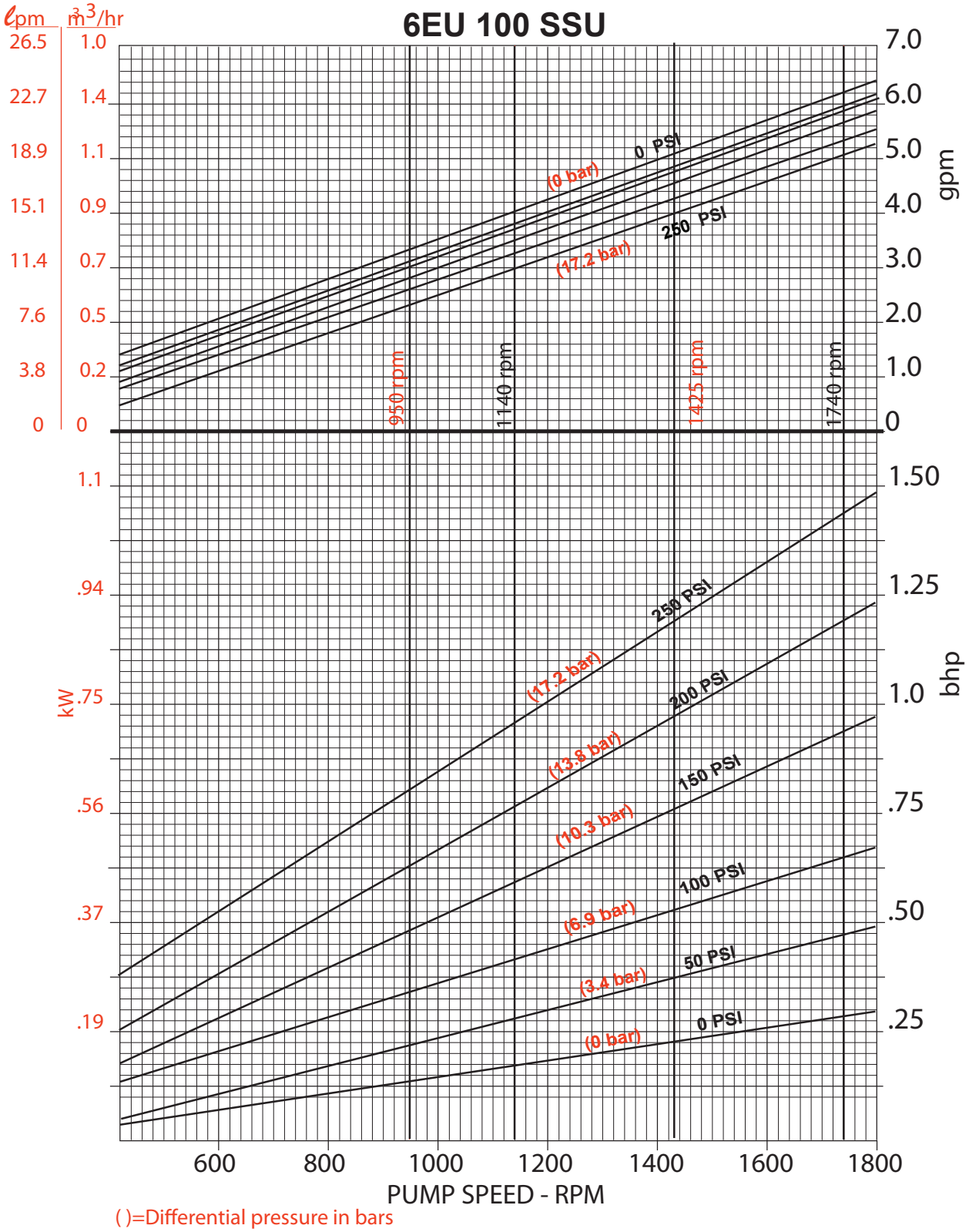
( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



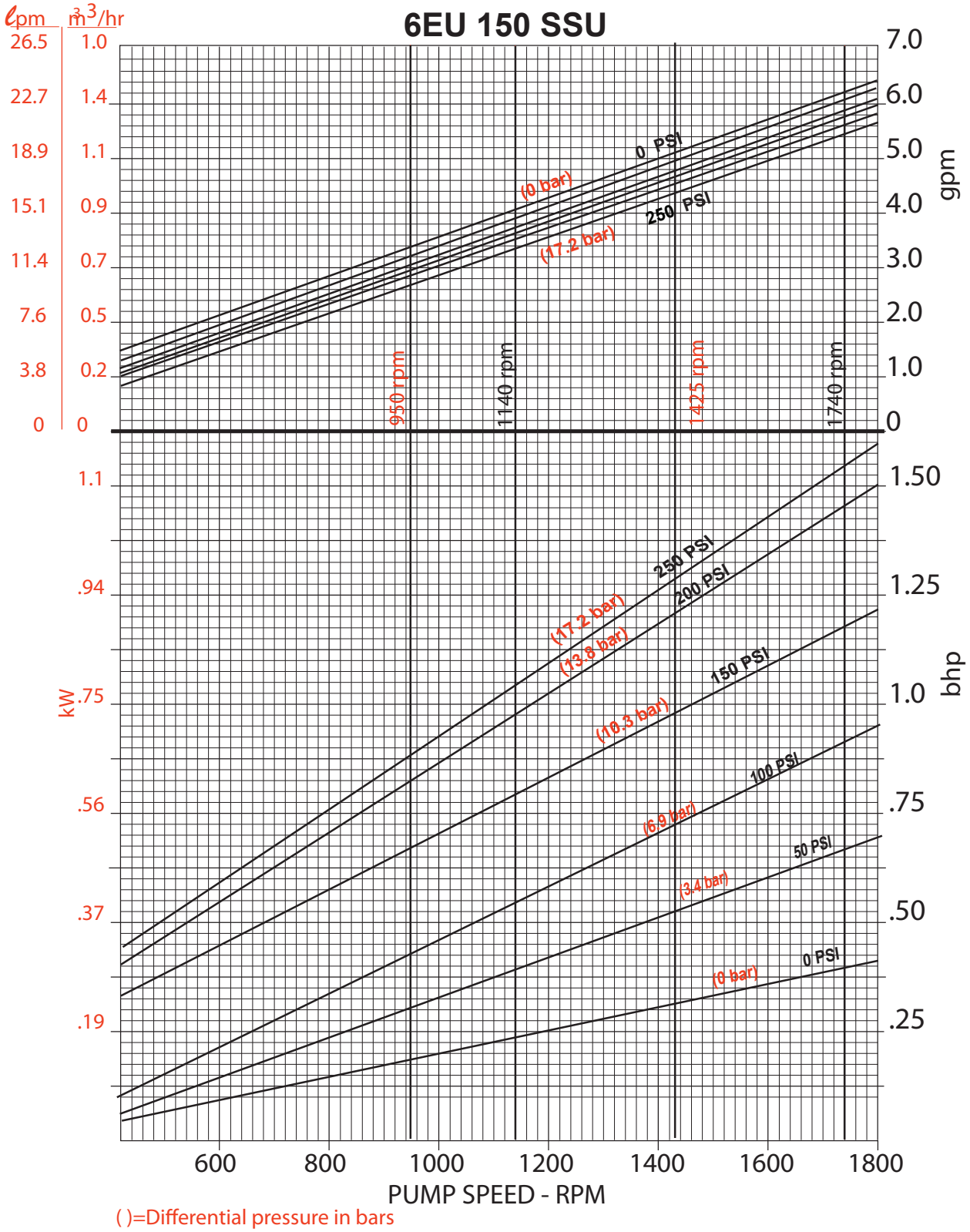
( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



( )=Differential pressure in bars

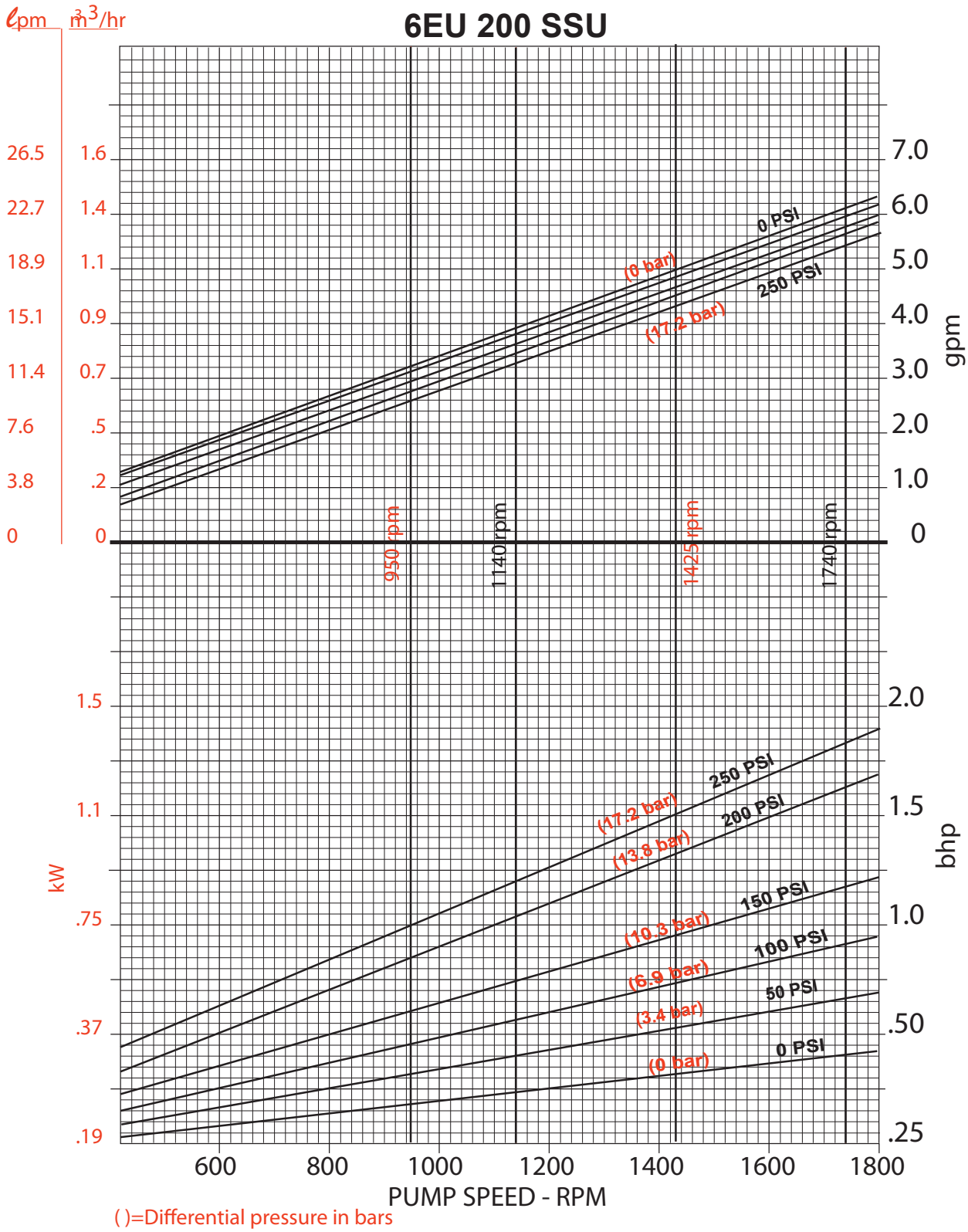
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



( )=Differential pressure in bars

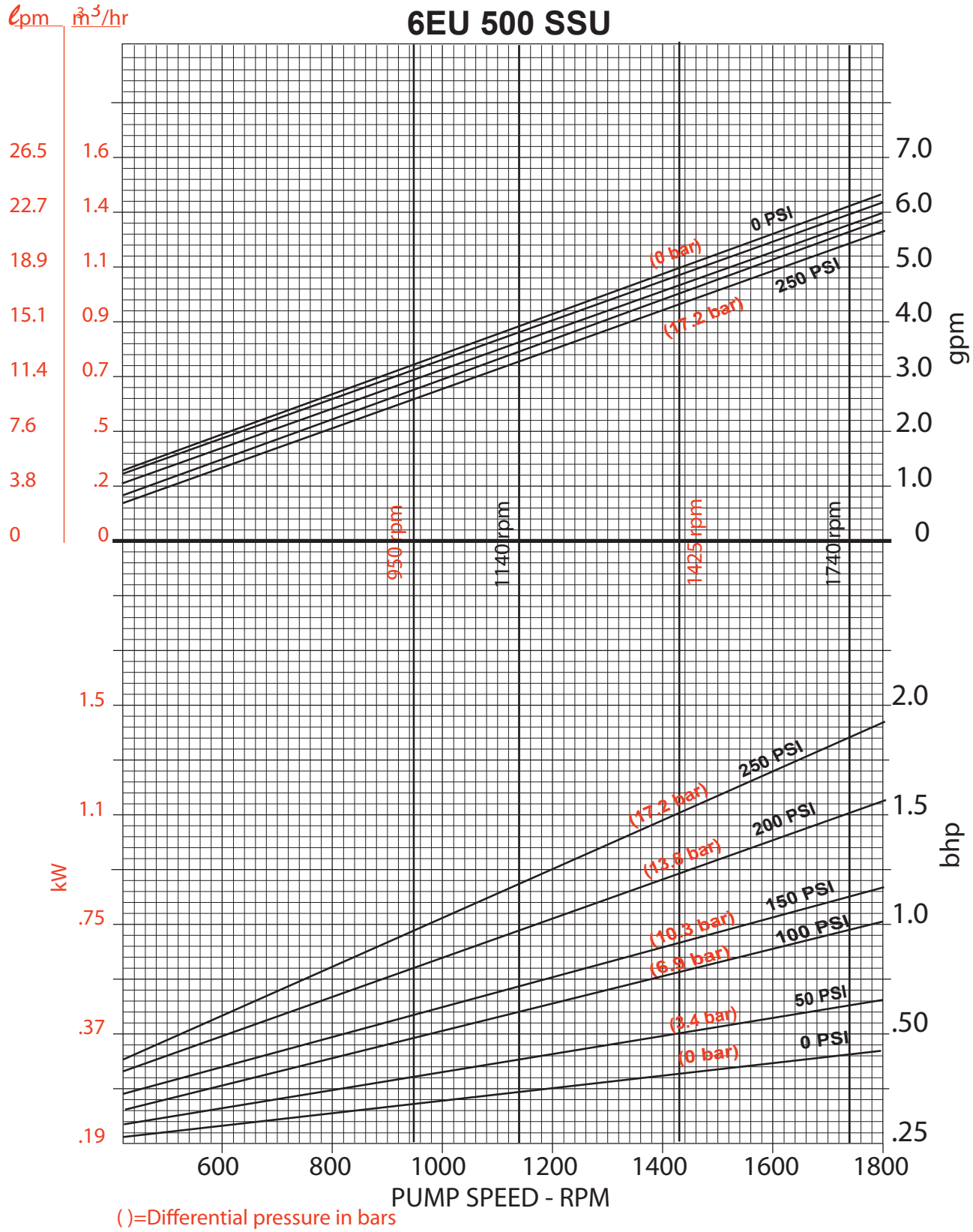
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

6EU 200 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



( )=Differential pressure in bars

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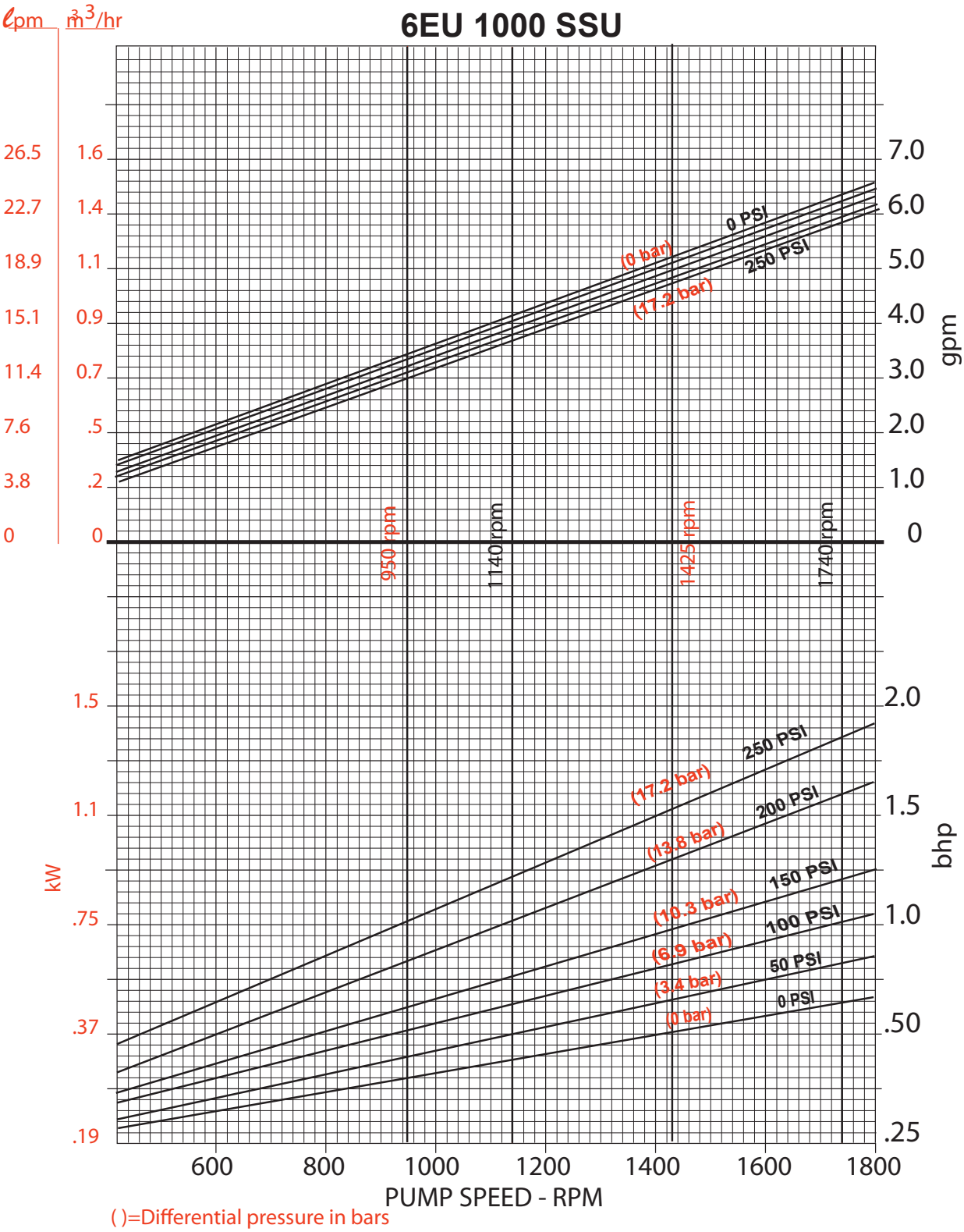
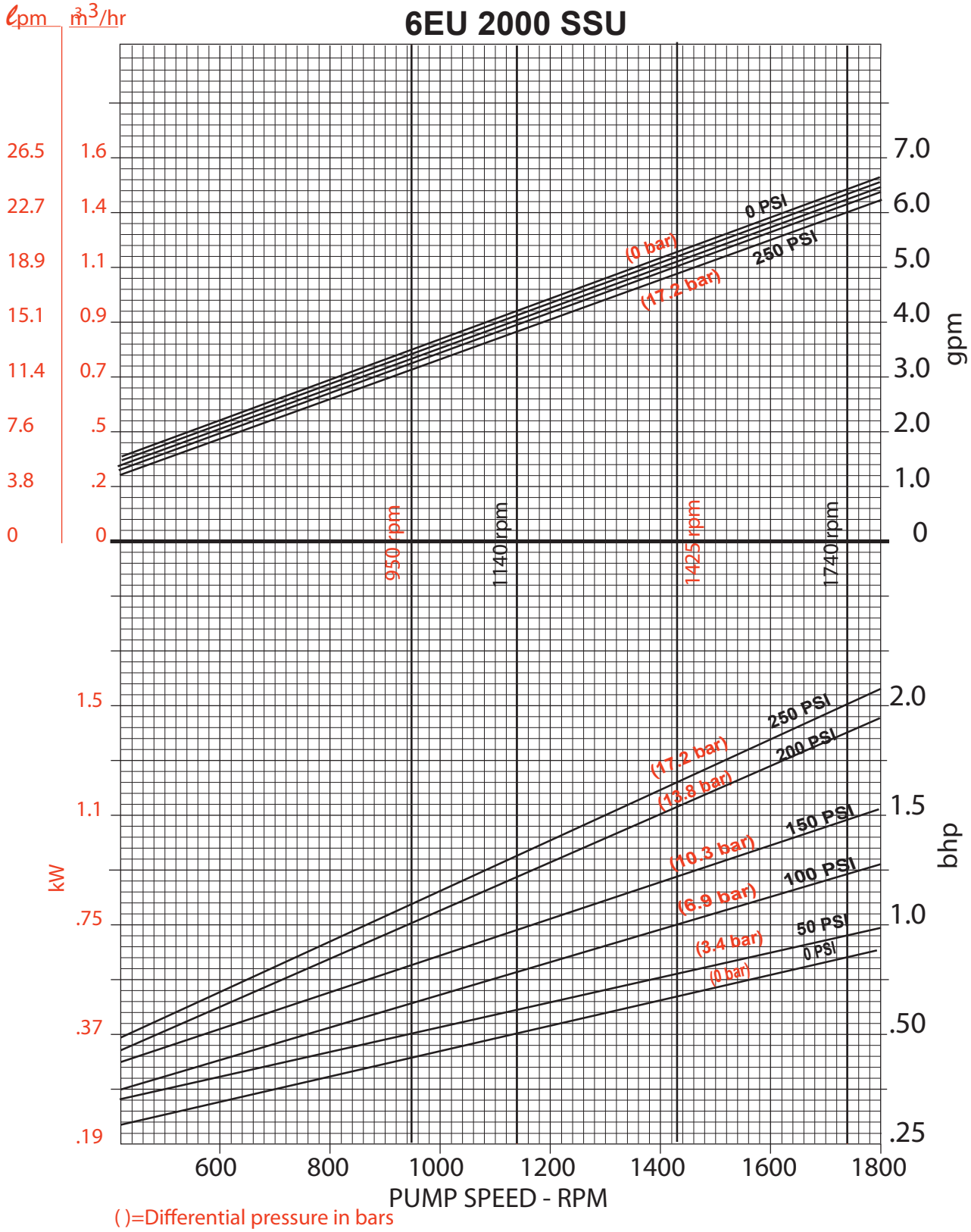


( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

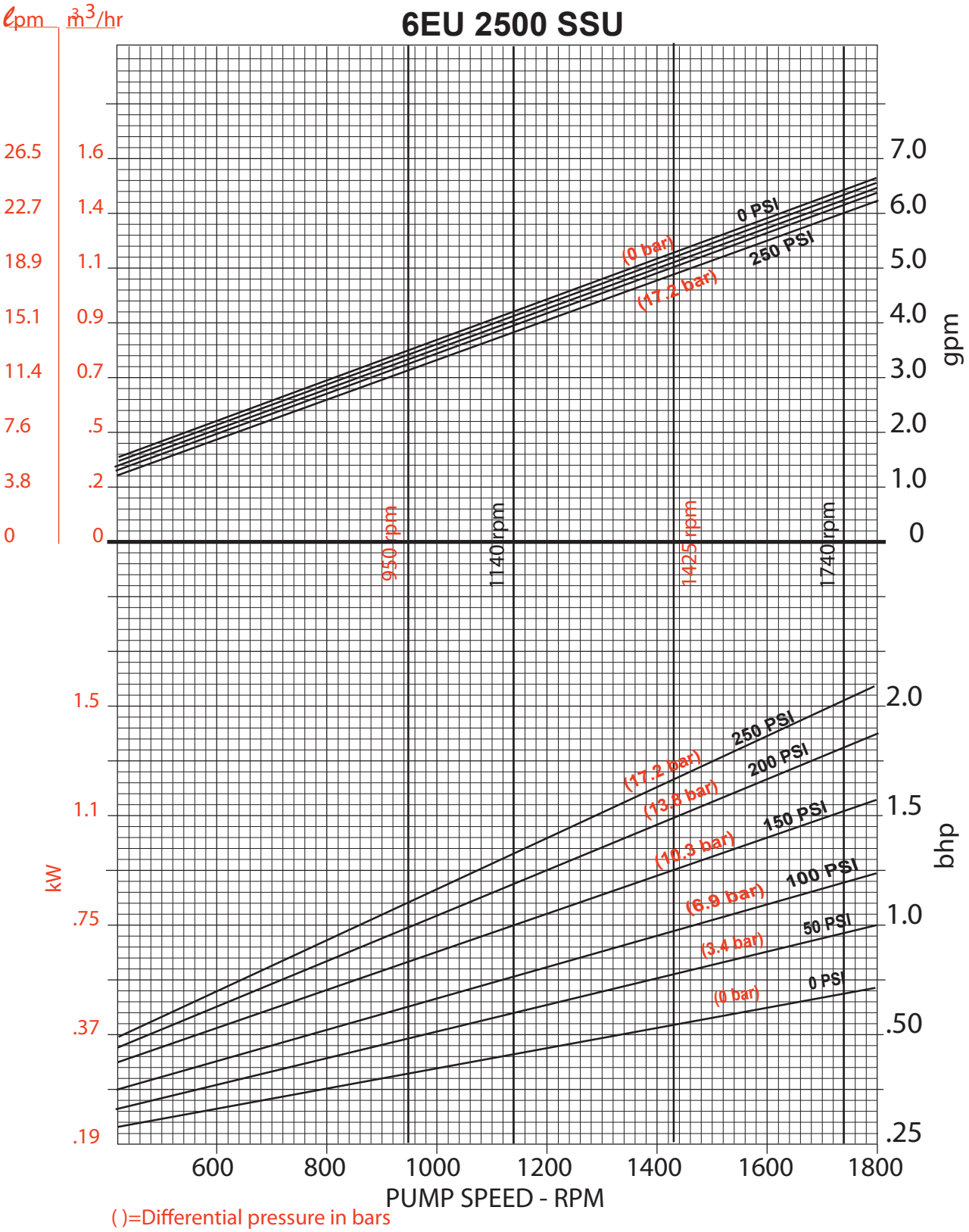
6EU 2000 SSU



( )=Differential pressure in bars

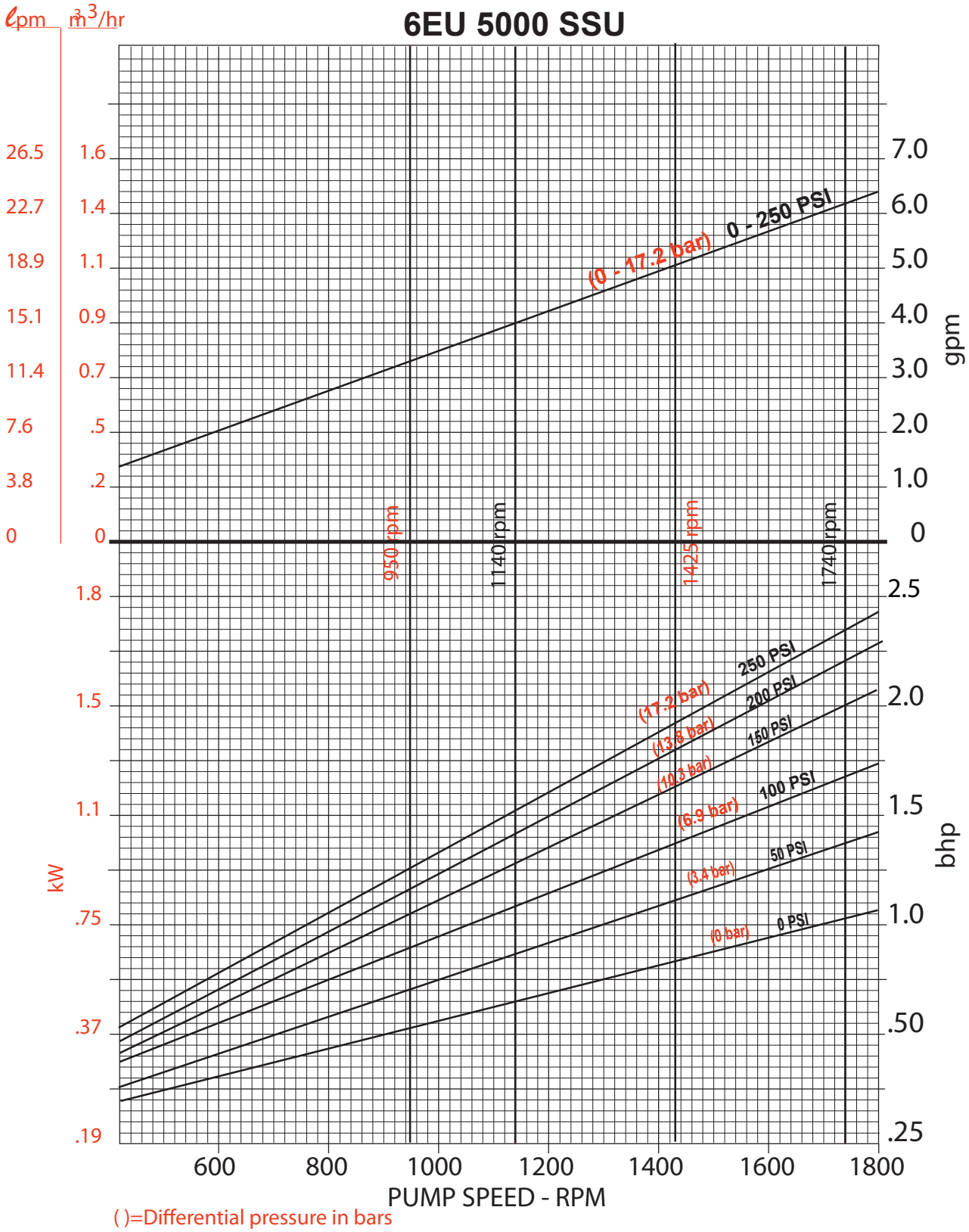
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

6EU 2500 SSU



( )=Differential pressure in bars

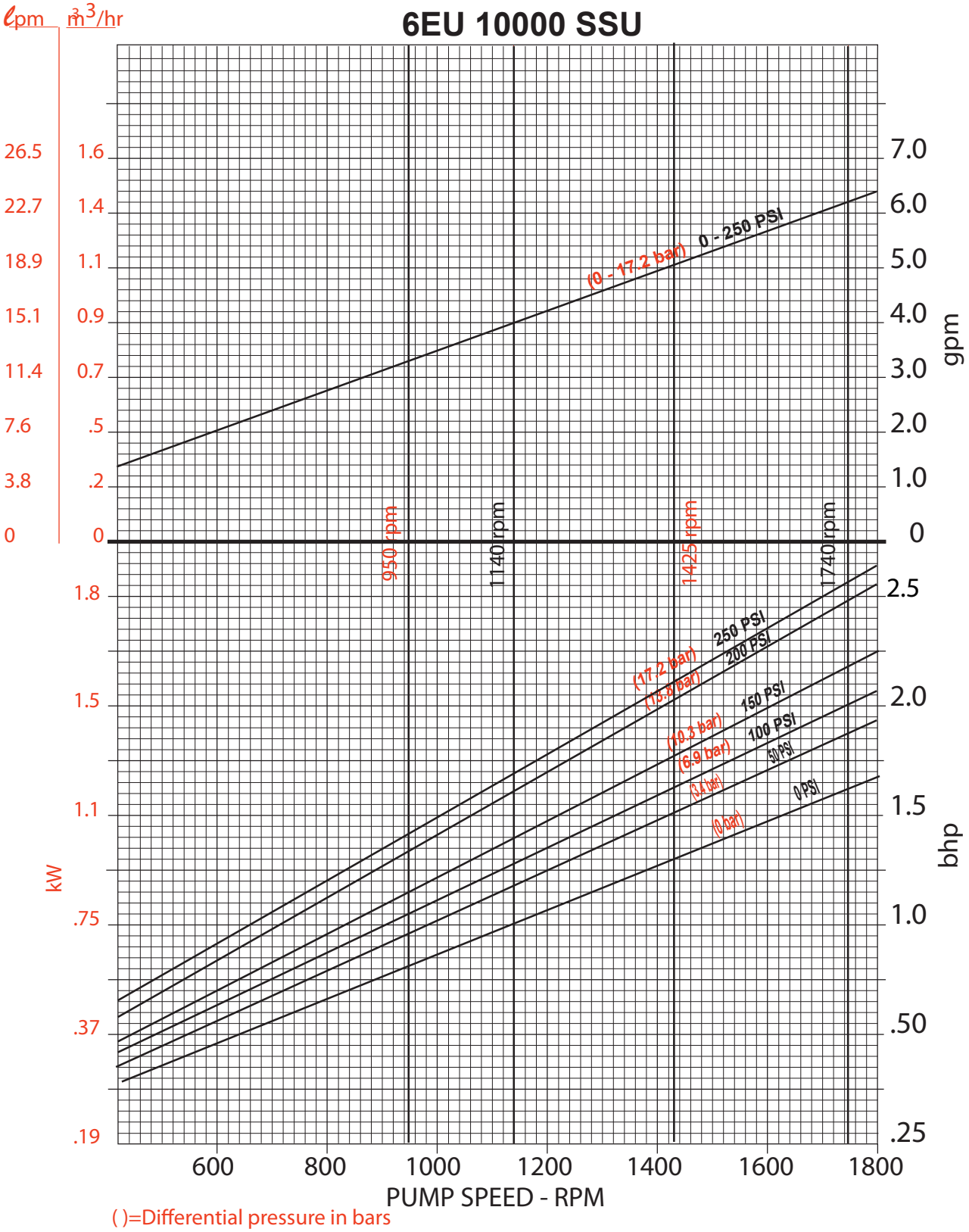
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

6EU 10000 SSU



( )=Differential pressure in bars

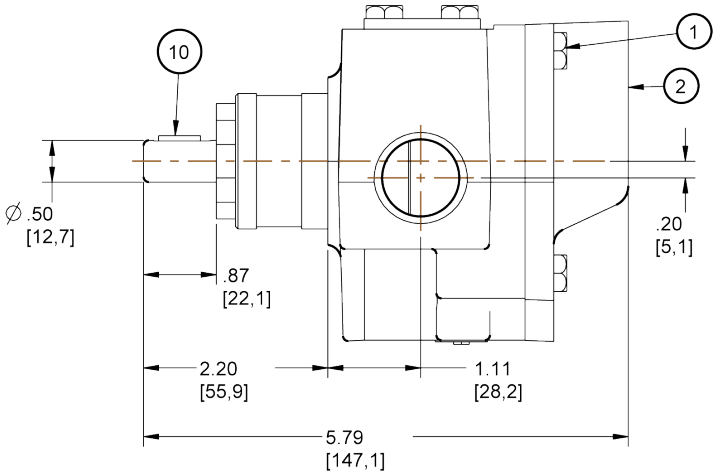
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

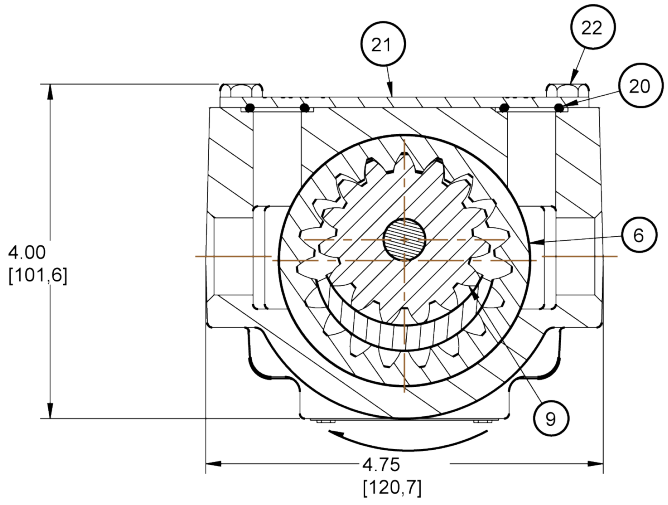
7EU - 7GPM Universal Pump

7EU-7 GPM HAIGHT PUMP

Item	Part Number	Description	Qty.
1	E90HC.6	Screw, Cover	4
2	ED730A	Cover	1
3	E11F	Bearing	1
4	E21E	Wiper Seal	1
5	E28E	O-Ring, Cover	1
6	ED726F1	Rotor	1
7	EU7C13PK	Shaft & Pinion Assembly	1
8	D814PK	Shaft	1
9	ED715C1	Pinion	1
10	E13C50	Key 1/8 Sq X 1/2 Lg	1
11	E11F2	Bearing	1
12	E49E	Set Screw, Vent	2
13	ED83A7	Case	1
14	E24SE	O-ring-Gland	1
15	E18E	Shaft Seal	2
19	E22SS3F4	Gland	1
20	SE2018N90	O-Ring, Cover Plate	2
21	ED530CP	Cover Plate	1
22	E90HC.5	Screw, Cover Plate	4

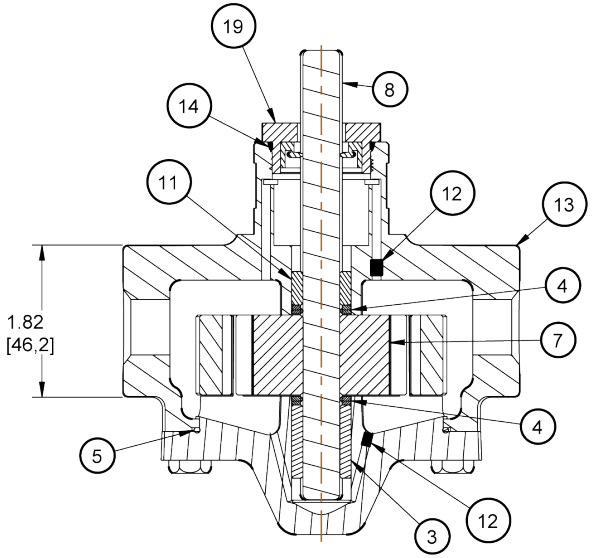


Right Side



Rotation Arrow Denotes
Standard Clockwise Rotation

Cutaway View
Shaft End



Cutaway View
Bottom

Bracketed Dimensions are mm.

(Revised 8-1-11)

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

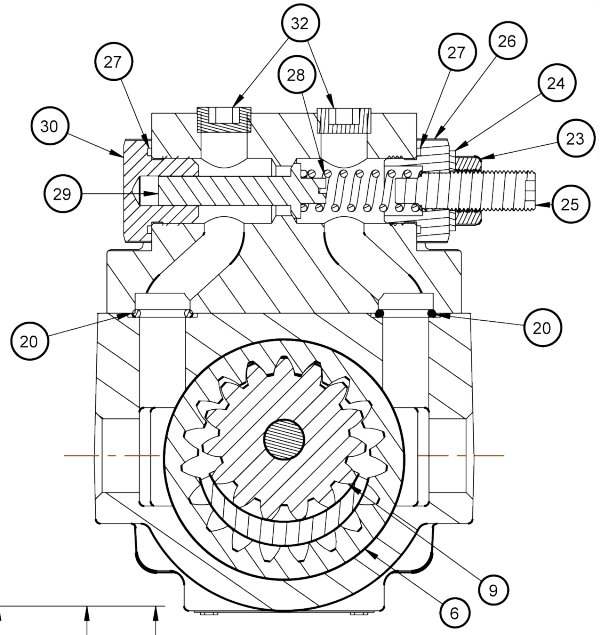
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

7EUR - 7GPM
UNIVERSAL PUMP W/Relief Valve

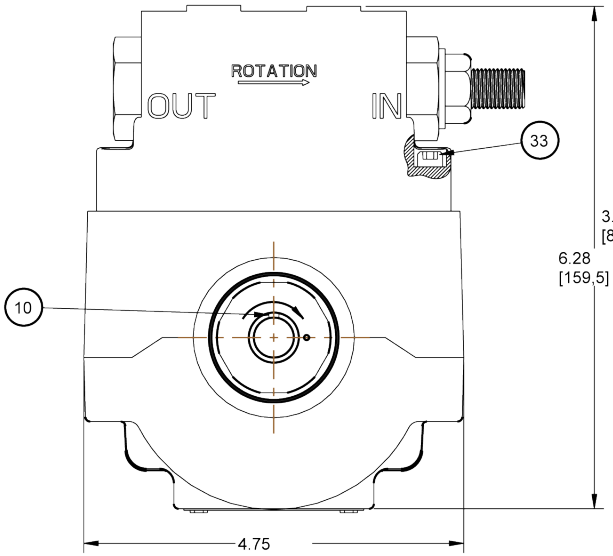
7EUR-7 GPM HAIGHT RELIEF VALVE PUMP

Item	Part Number	Description	Qty.
1	E90HC.6	Screw, Cover	4
2	ED730A	Cover	1
3	E11F	Bearing	1
4	E21E	Wiper Seal	1
5	E28E	O-Ring, Cover	1
6	ED726F1	Rotor	1
7	EU7C13PK	Shaft & Pinion Assembly	1
8	D814PK	Shaft	1
9	ED715C1	Pinion	1
10	E13C50	Key 1/8 Sq X 1/2 Lg	1
11	E11F2	Bearing	1
12	E49E	Set Screw, Vent	2
13	ED83A7	Case	1
14	E24SE	O-ring-Gland	1

Item	Part Number	Description	Qty.
15	E18E	Shaft Seal	1
19	E22SS3F4	Gland	1
20	SE2018N90	O-Ring, Relief Valve	2
23	E64C	Nut	1
24	E25N1	Sealing Washer	1
25	E55C	Adjusting Screw	1
26	E57C	Bonnet	1
27	SE2020N70	O-Ring, Bonnet	2
28	E52S	Spring	1
29	E51C	Poppet	1
30	E50C	Cap	1
31	ED55A	Relief Valve Housing	1
32	ZA285	Pipe Plug	2
33	E90SC.9	Screw, Relief Valve	4

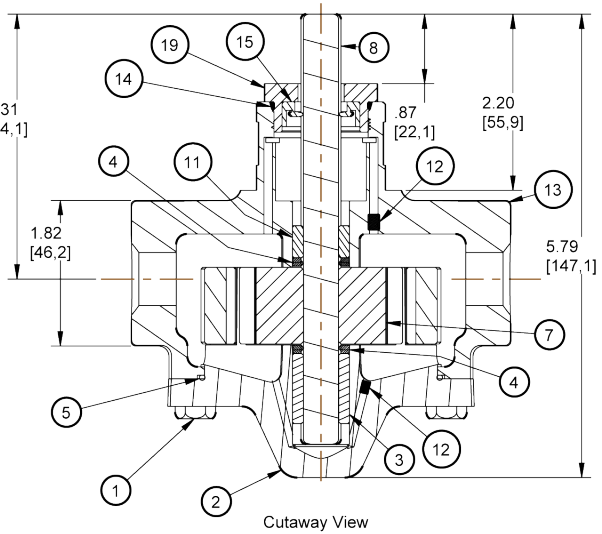


Cutaway View
Back



Rotation Arrow Denotes
Standard Clockwise Rotation

Shaft End View



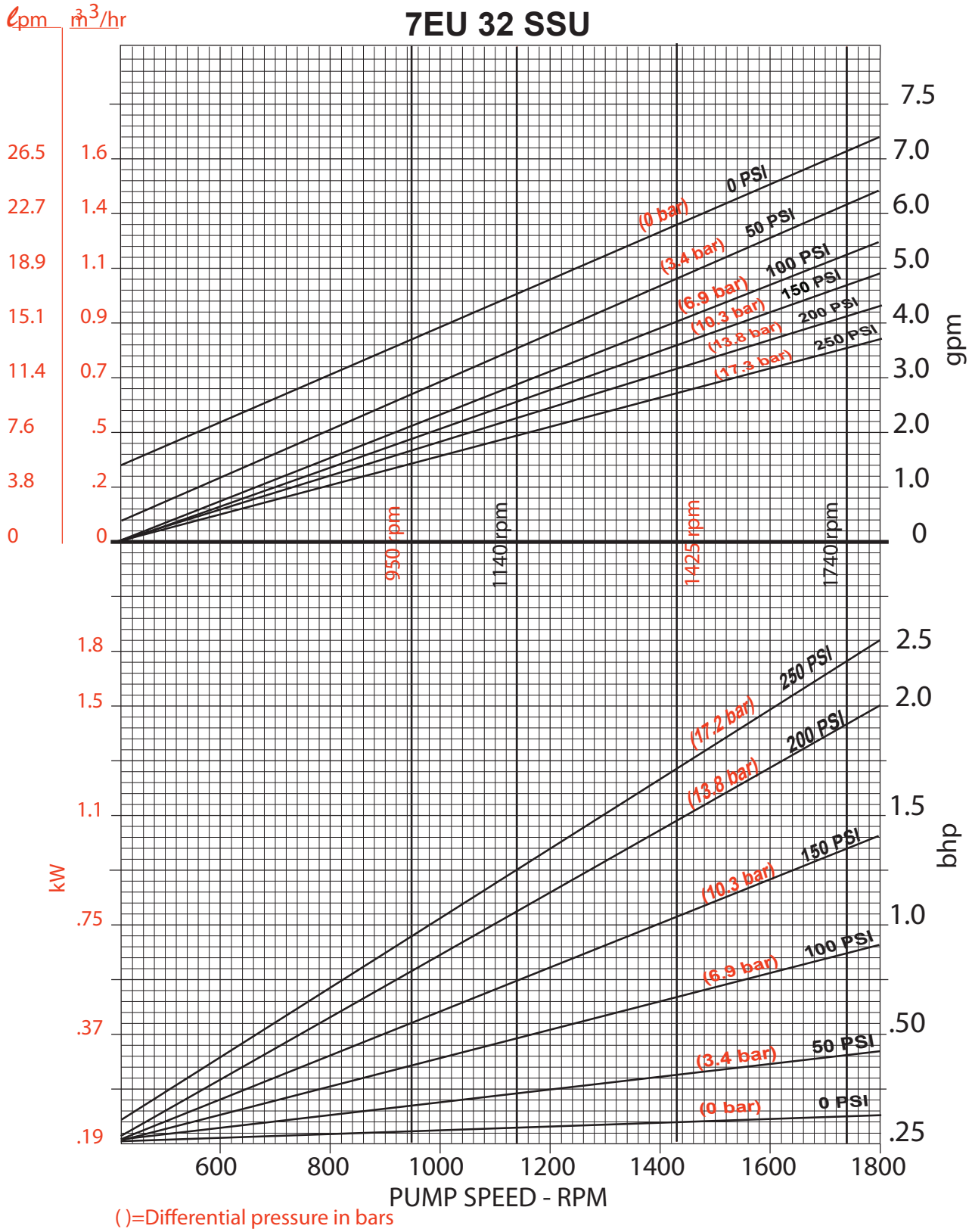
Cutaway View
Bottom

Bracketed Dimensions are mm.

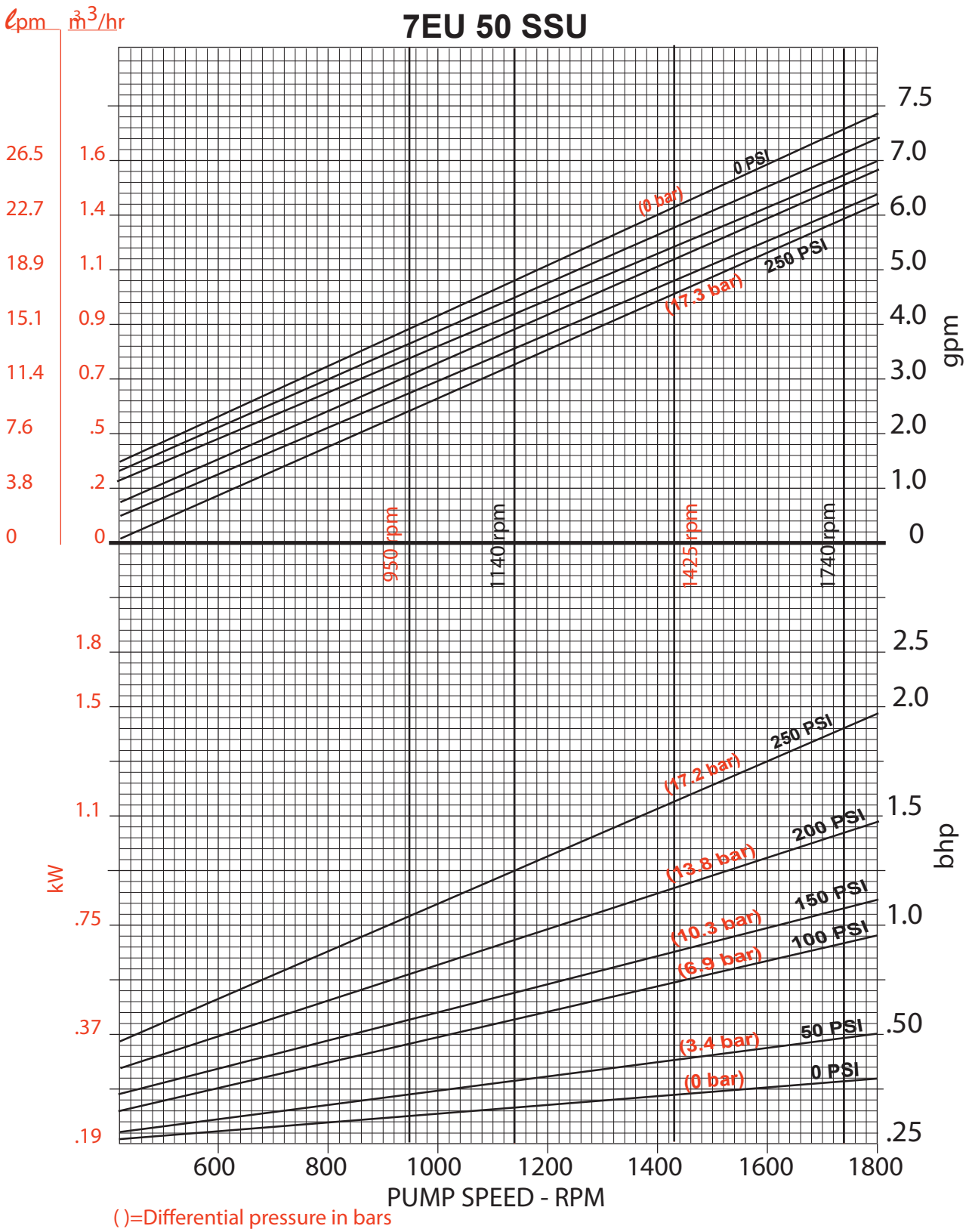
(Revised 8-1-11)

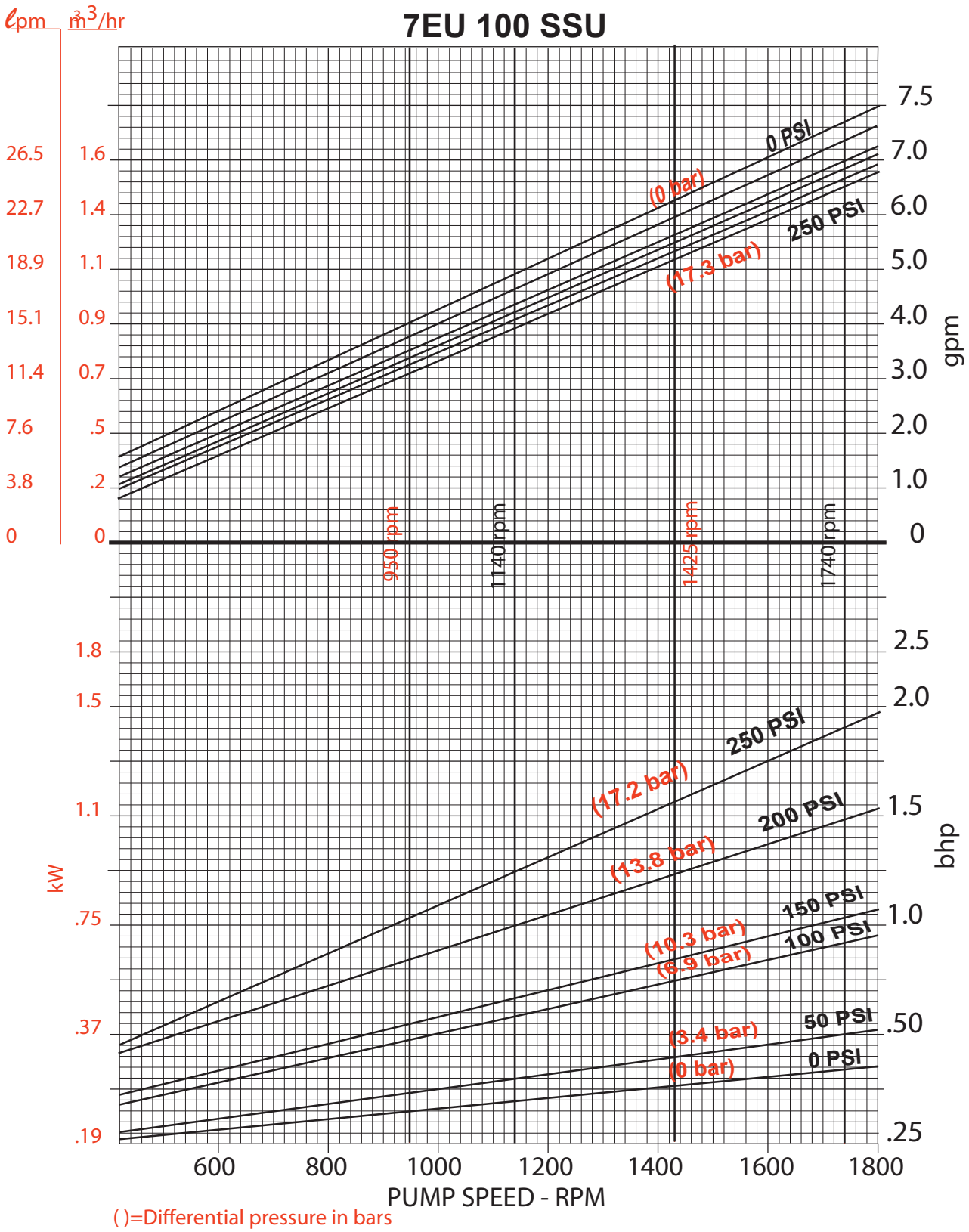
7EUR - 7 GPM
Universal Pump W/Relief Valve

7EU 32 SSU

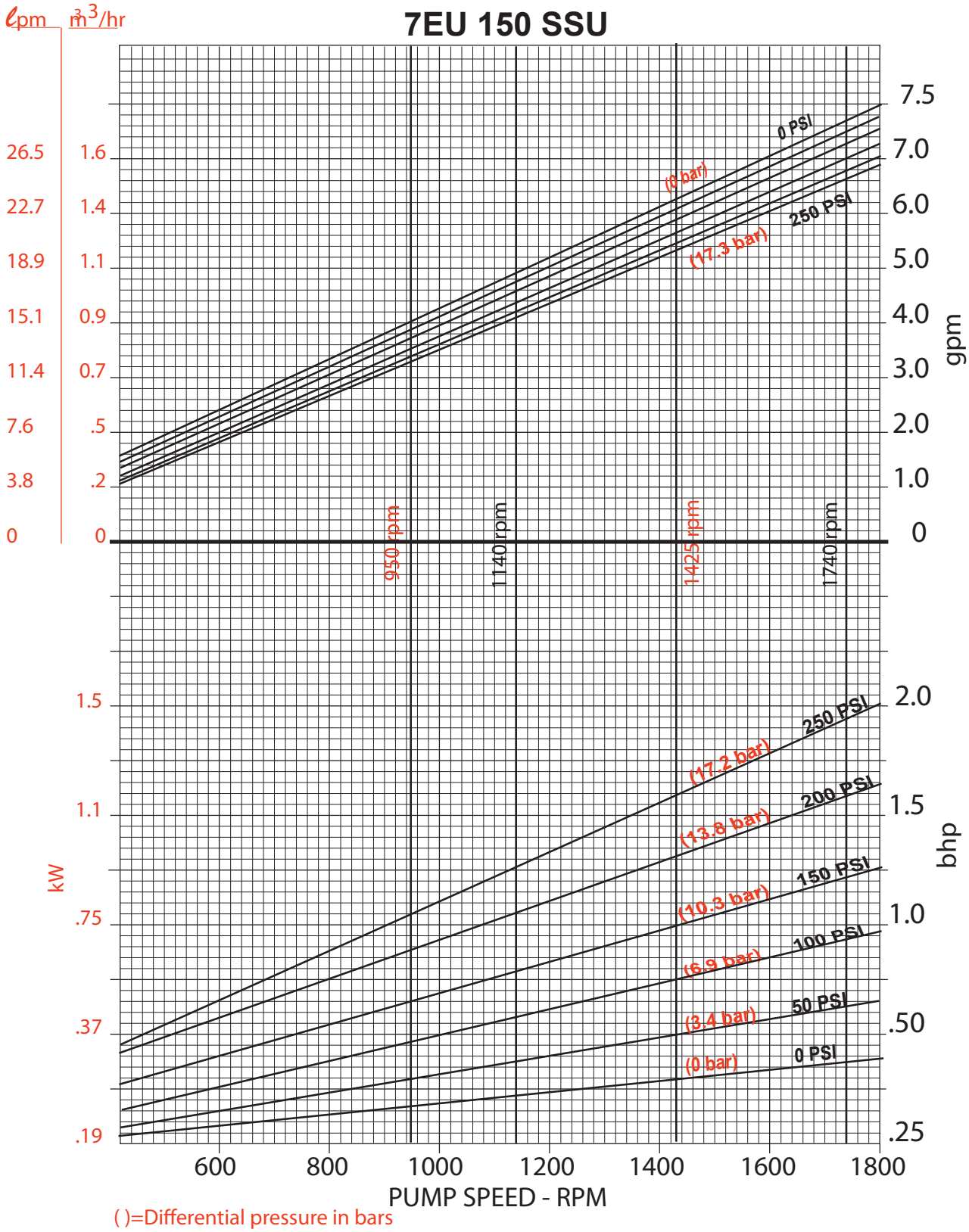


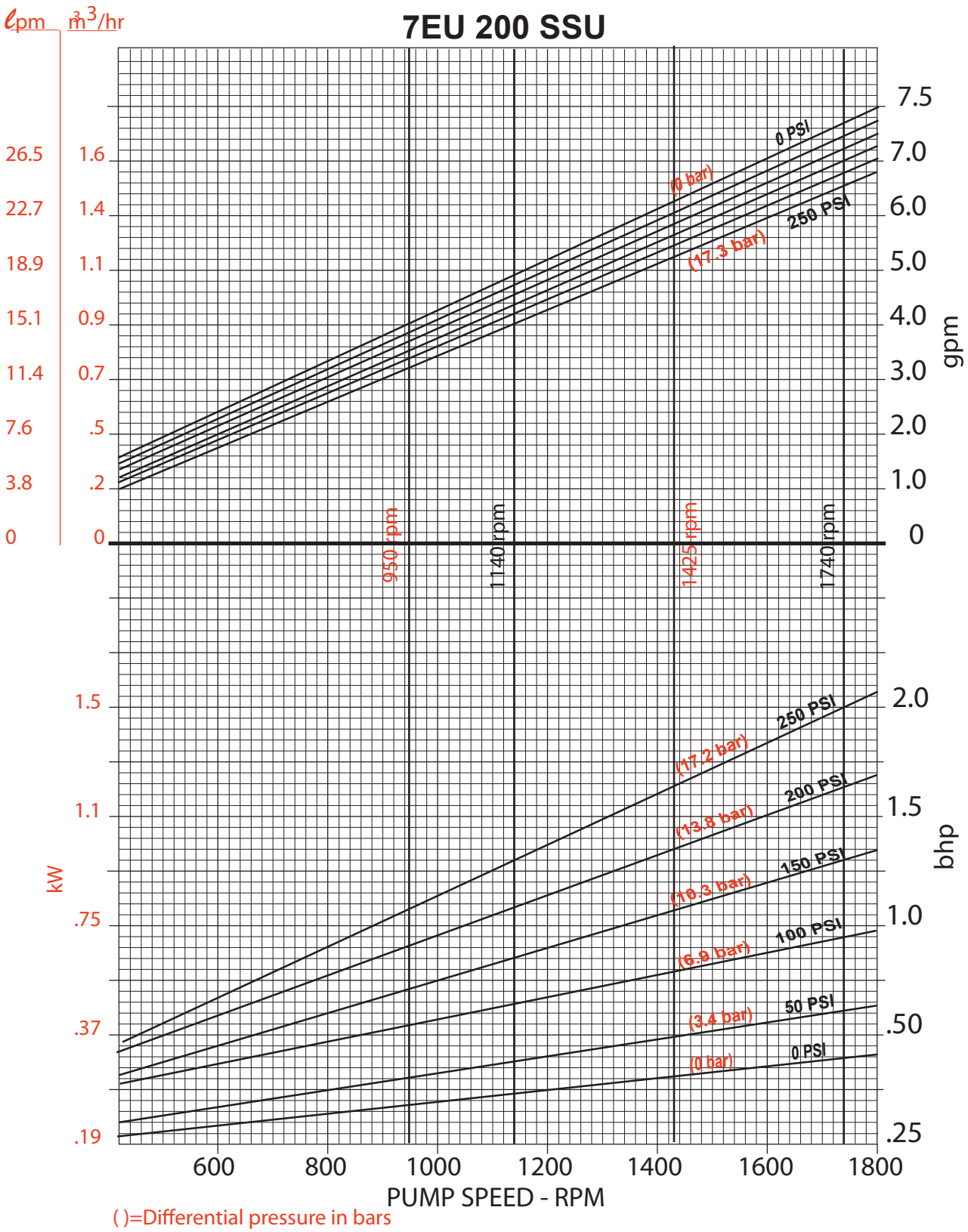
( )=Differential pressure in bars


7EU 50 SSU
ℓpm
m3/hr
26.5
22.7
18.9
15.1
11.4
7.6
3.8
0
1.6
1.4
1.1
0.9
0.7
.5
.2
0
0 PSI
(0 bar)
250 PSI
(17.3 bar)
950 rpm
1140rpm
1425 rpm
1740rpm
7.5
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0
gpm
1.8
1.5
1.1
.75
.37
.19
kW
250 PSI
(17.2 bar)
200 PSI
(13.8 bar)
150 PSI
(10.3 bar)
100 PSI
(6.9 bar)
50 PSI
(3.4 bar)
0 PSI
(0 bar)
2.5
2.0
1.5
1.0
.50
.25
bhp
600
800
1000
1200
1400
1600
1800
PUMP SPEED - RPM
( )=Differential pressure in bars



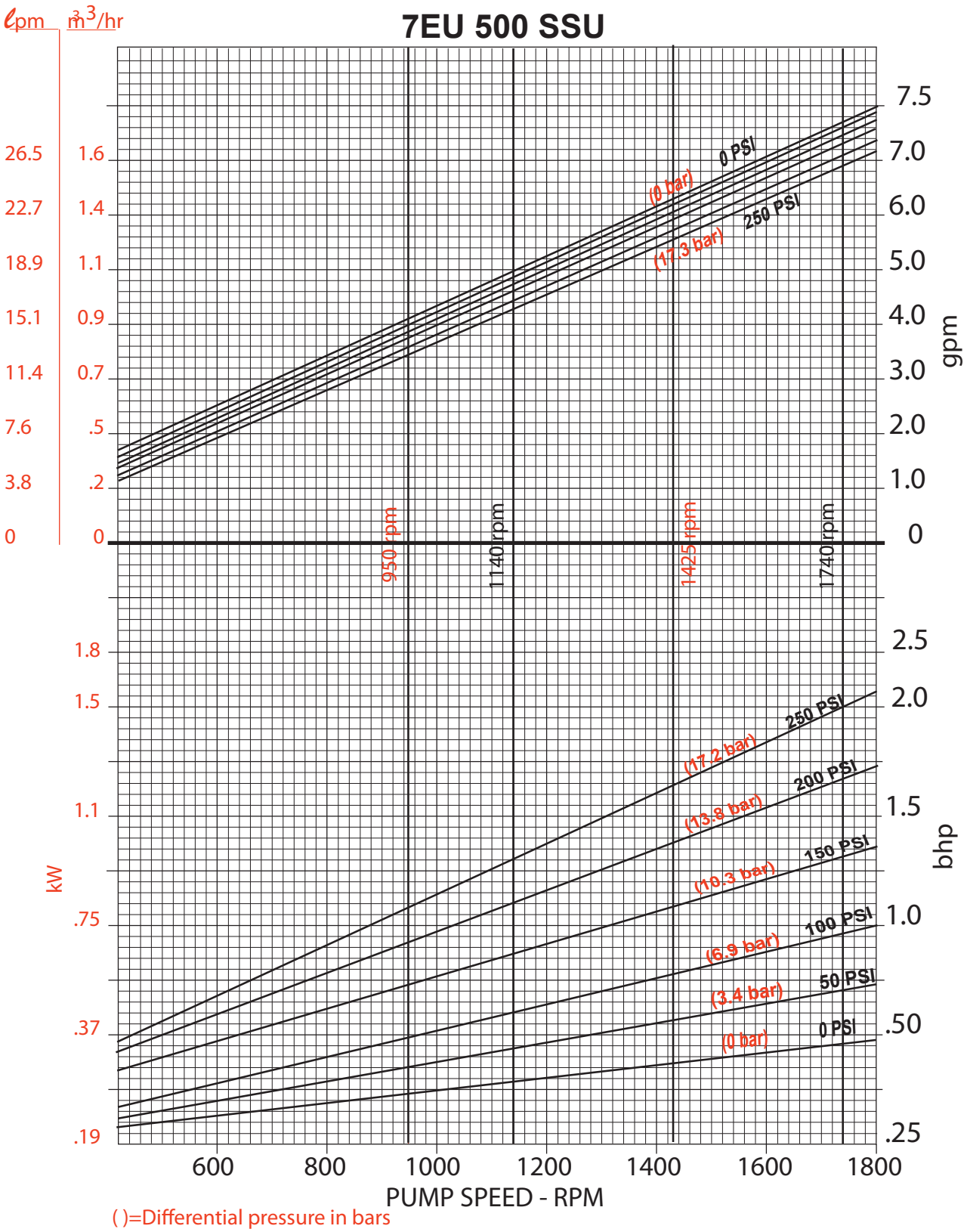
( )=Differential pressure in bars


7EU 150 SSU
ℓpm
m³/hr
26.5
22.7
18.9
15.1
11.4
7.6
3.8
0
1.6
1.4
1.1
0.9
0.7
.5
.2
0
7.5
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0
gpm
0 PSI
(0 bar)
250 PSI
(17.3 bar)
950 rpm
1140 rpm
1425 rpm
1740 rpm
1.5
1.1
.75
.37
.19
kW
2.0
1.5
1.0
.50
.25
bhp
250 PSI
(17.2 bar)
200 PSI
(13.8 bar)
150 PSI
(10.3 bar)
100 PSI
(6.9 bar)
50 PSI
(3.4 bar)
0 PSI
(0 bar)
600
800
1000
1200
1400
1600
1800
PUMP SPEED - RPM
( )=Differential pressure in bars



( )=Differential pressure in bars

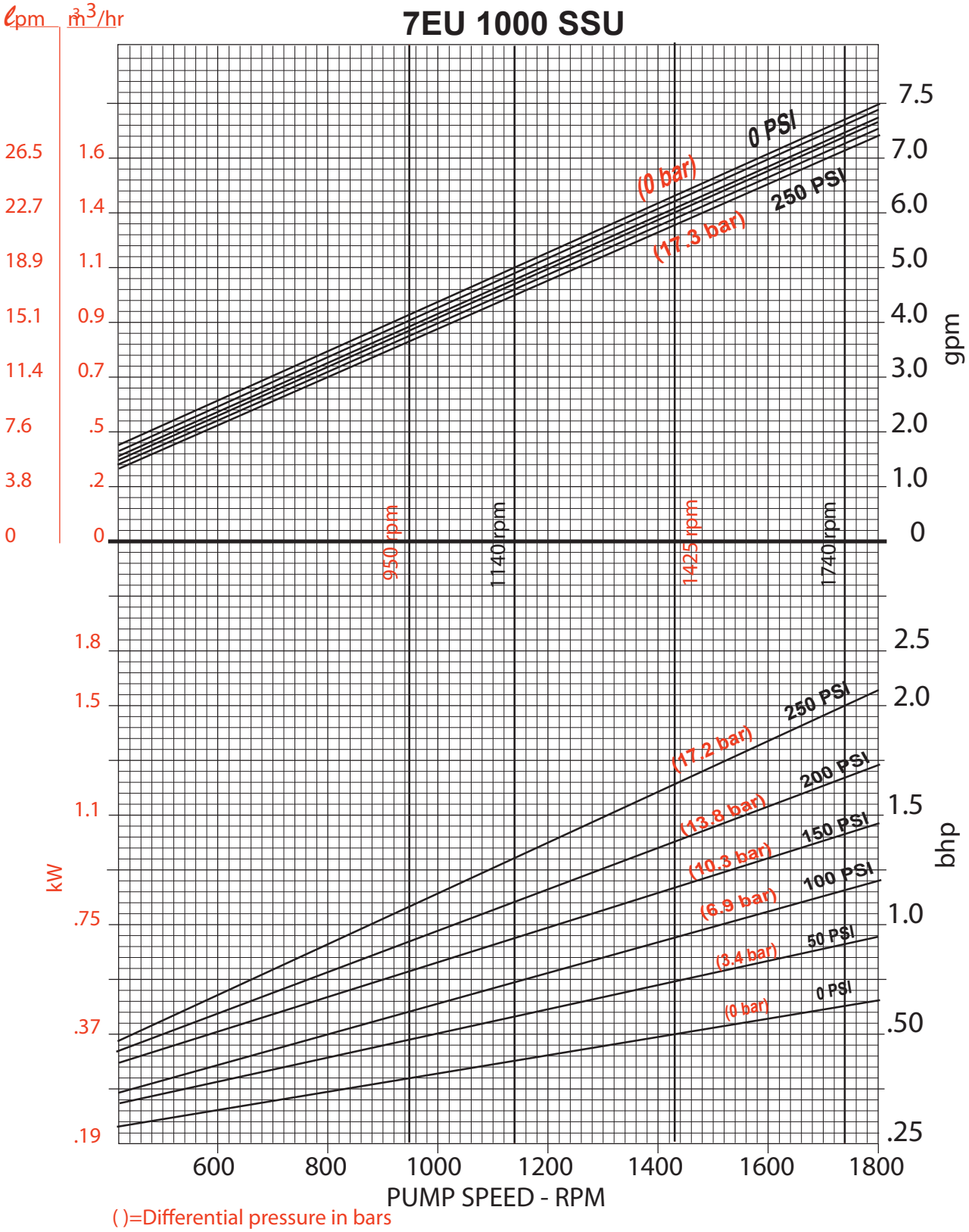
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

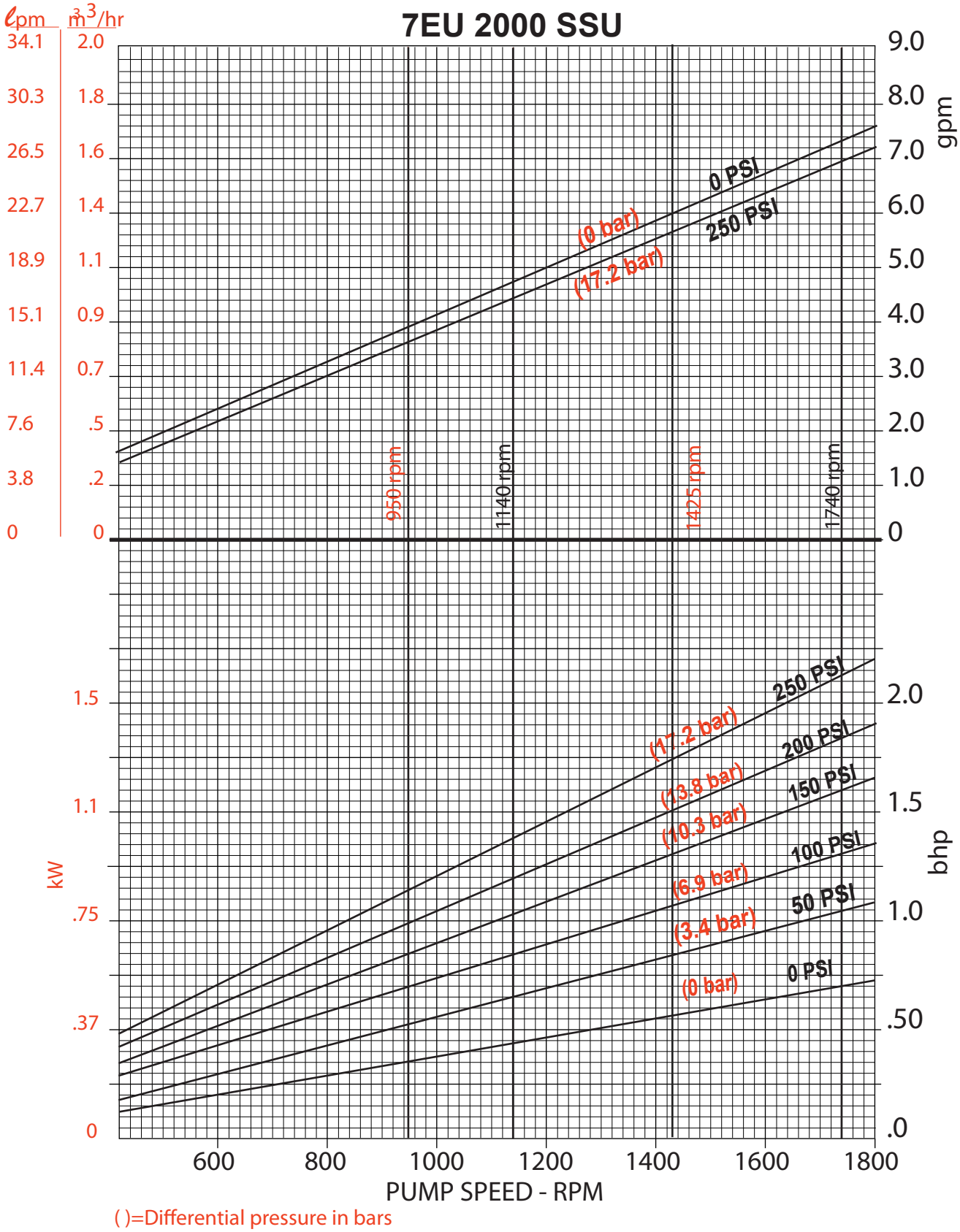
7EU 1000 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

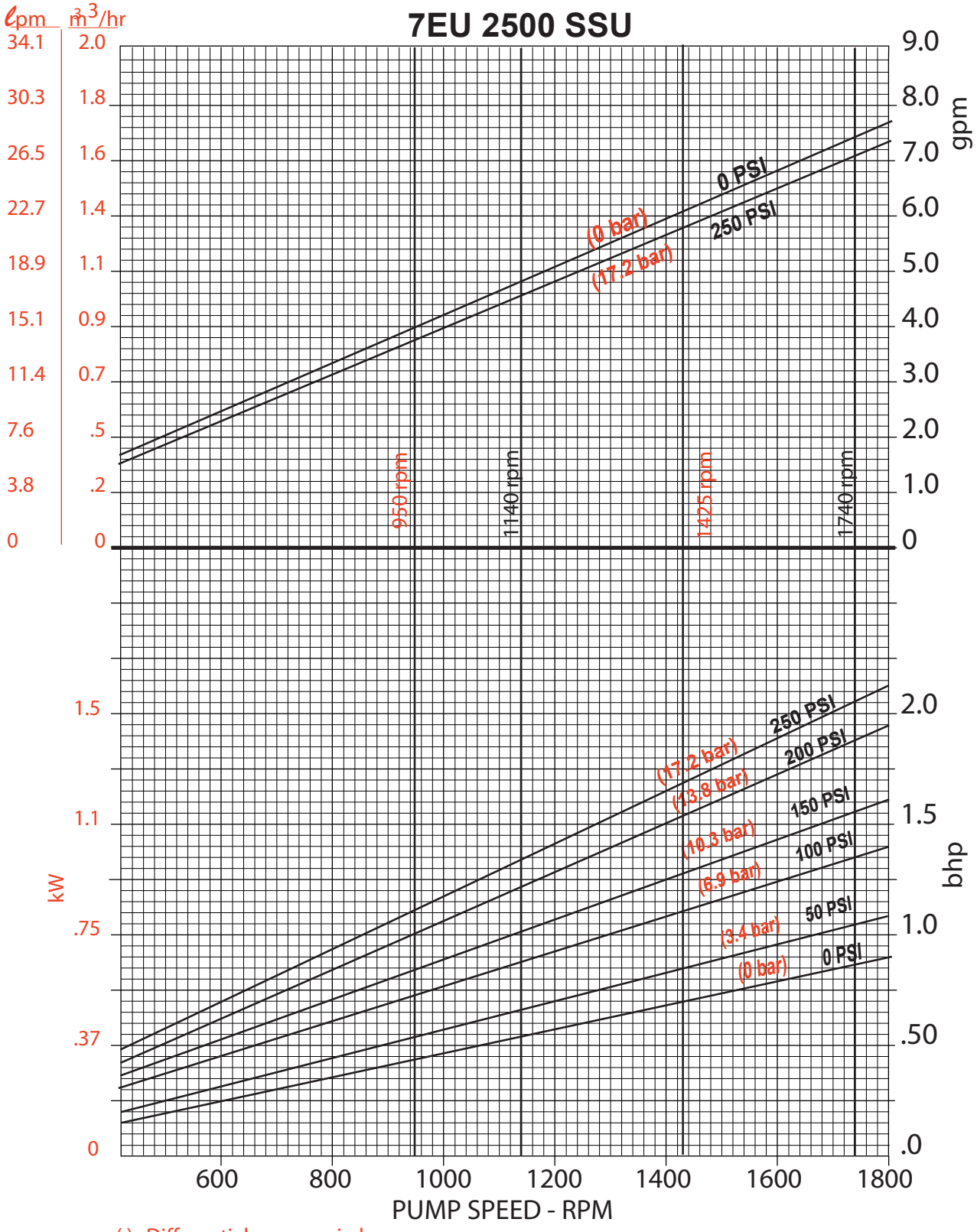
7EU 2000 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

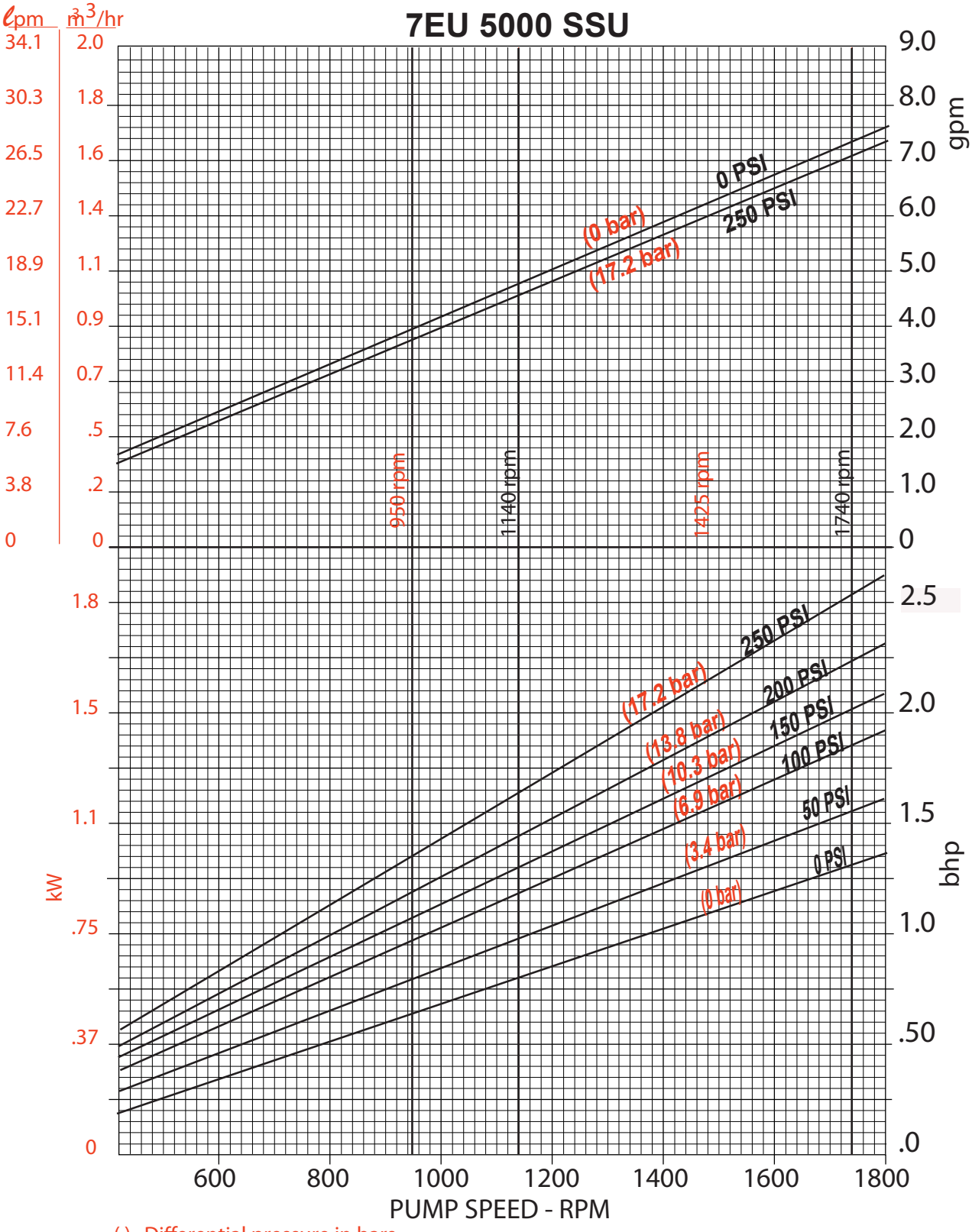
7EU 2500 SSU



( )=Differential pressure in bars

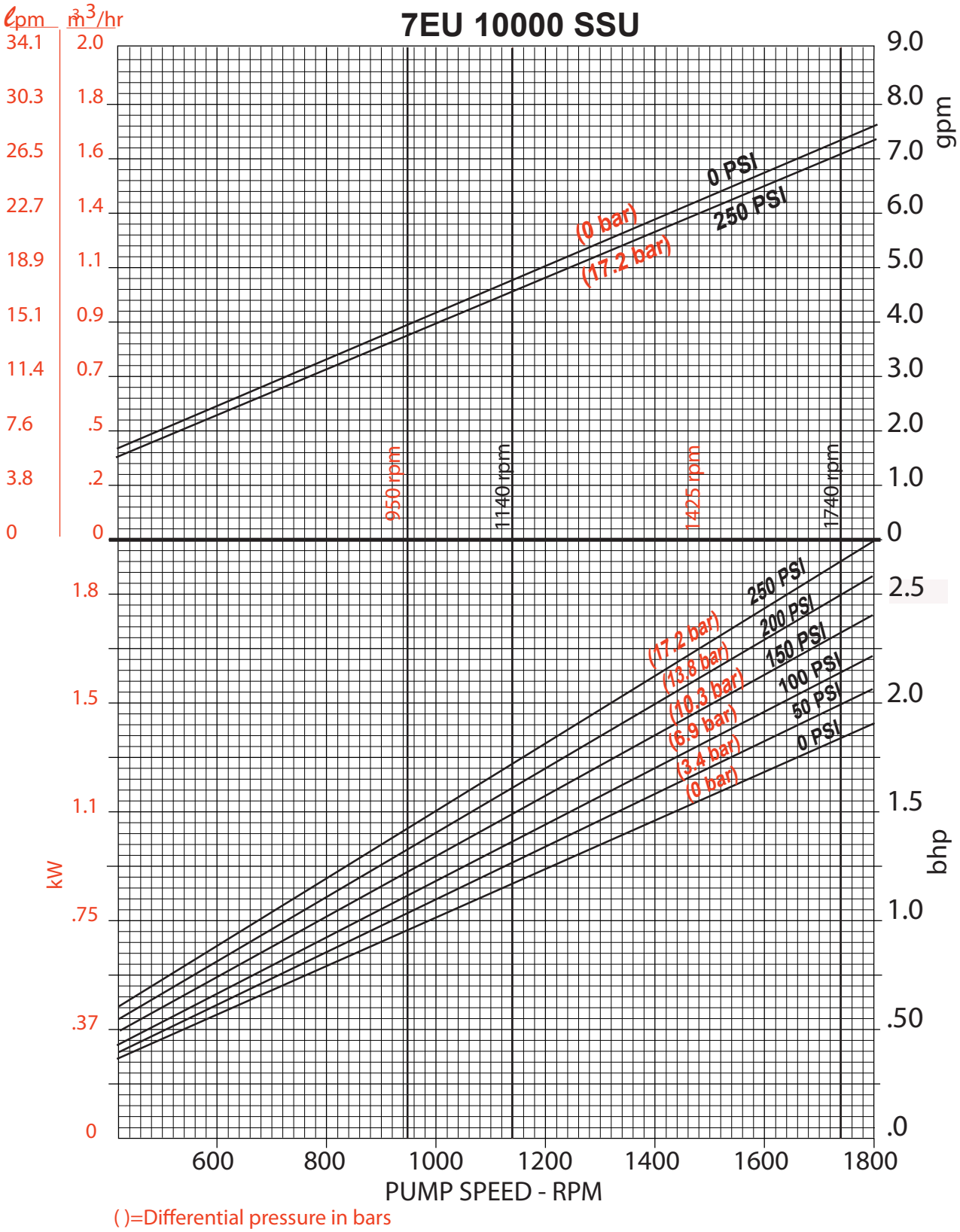
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

7EU 5000 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



( )=Differential pressure in bars

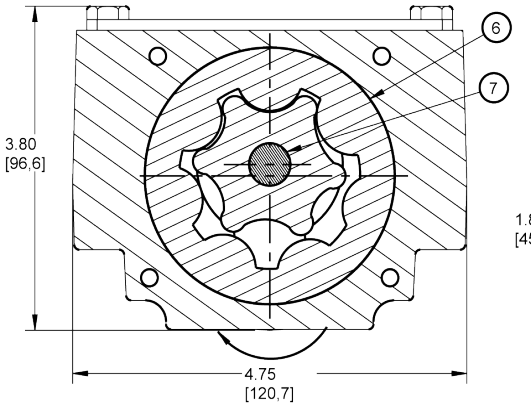
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

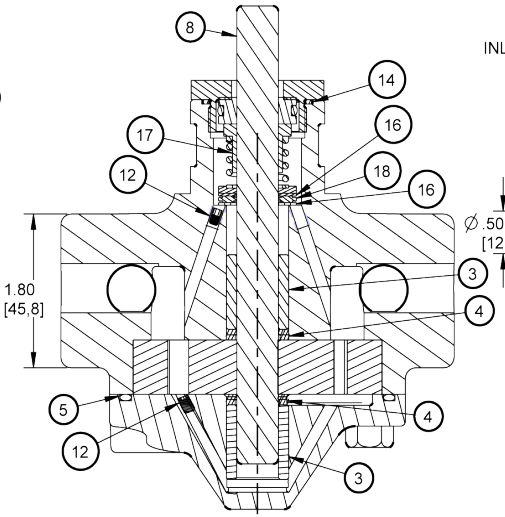
8U - 8 GPM Universal Pump

8U - 8 GPM HAIGHT PUMP

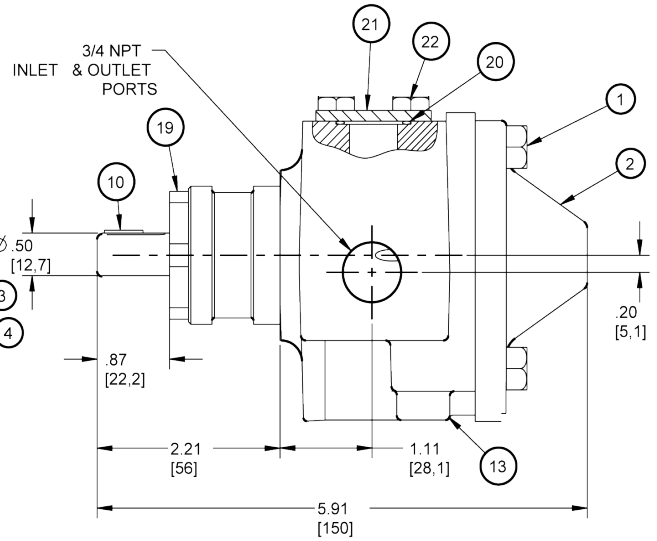
Item	Part Number	Description	Qty.
1	E90HC.6	Screw, Cover	4
2	EG830A	Cover	1
3	E11F	Bearing	2
4	E21E	Wiper Seal	2
5	SE2151N70	O-ring-Cover	1
6	HJ89A	Gerotor Set	1
7	DU8C13PK	Gerotor Set & Shaft Assembly	1
8	D814PK	Shaft	1
10	E13C50	Key, 1/8 Sq X 1/2 Lg	1
12	E49G	Set Screw, Vent	2
13	EG86A7	Case	1
14	E24SE	O-ring-Gland	1
16	E25C3	Washer	2
17	E18AM	Shaft Seal	1
18	E11TB2	Thrust Bearing	1
19	E22SS3F4	Gland	1
20	SE2018N90	O-Ring, Cover Plate	2
21	ED530CP	Cover Plate	1
22	E90HC.5	Screw, Cover Plate	4



Rotation Arrow Denotes
Standard Clockwise Rotation
CUTAWAY VIEW
SHAFT END



CUTAWAY VIEW
TOP



RIGHT SIDE

Bracketed Dimensions are mm.

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

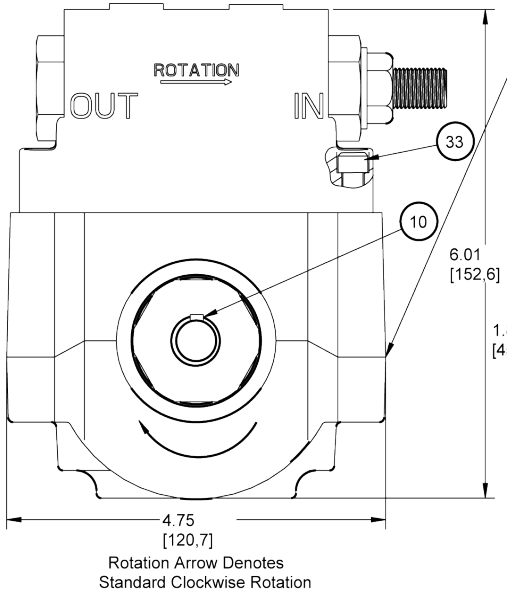
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

8UR - 8 GPM
Universal Relief Valve Pump

8UR - 8 GPM HAIGHT PUMP WITH RELIEF VALVE

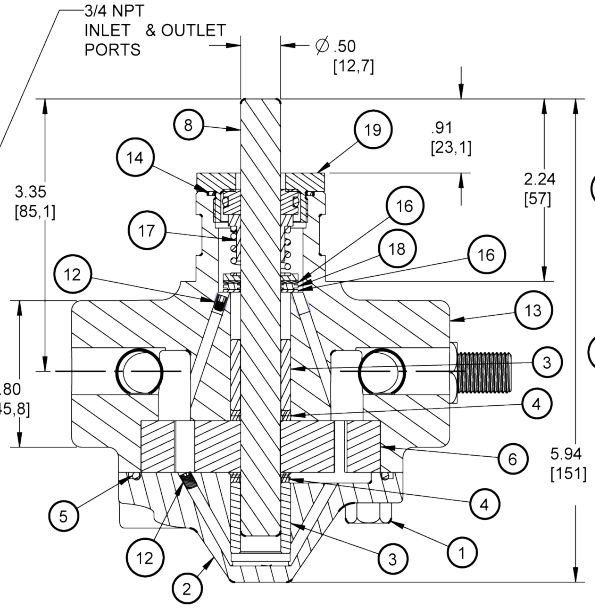
Item	Part Number	Description	Qty.
1	E90HC.6	Screw, Cover	4
2	EG830A	Cover	1
3	E11F	Bearing	2
4	E21E	Wiper Seal	2
5	SE2151N70	O-ring-Cover	1
6	HJ89A	Gerotor Set	1
7	DU8C13PK	Gerotor Set & Shaft Assembly	1
8	D814PK	Shaft	1
10	E13C50	Key, 1/8 Sq X 1/2 Lg	1
12	E49G	Set Screw, Vent	2
13	EG86A7	Case	1
14	E24SE	O-ring-Gland	1
16	E25C3	Washer	2
17	E18AM	Shaft Seal	1

Item	Part Number	Description	Qty.
18	E11TB2	Thrust Bearing	1
19	E22SS3F4	Gland	1
20	SE2018N90	O-Ring, Valve Body	2
23	E64C	Lock Nut	1
24	E55C	Adjustment Screw	1
25	E25N1	Sealing Washer	1
26	E57C	Bonnet	1
27	SE2020N70	O-Ring, Valve	2
28	E52S	Spring	1
29	E51C	Poppet	1
30	E50C	Cap	1
31	ED55A	Valve Body	1
32	ZA285	Pipe Plug	2
33	E90SC.8	Screw, Valve Body	4

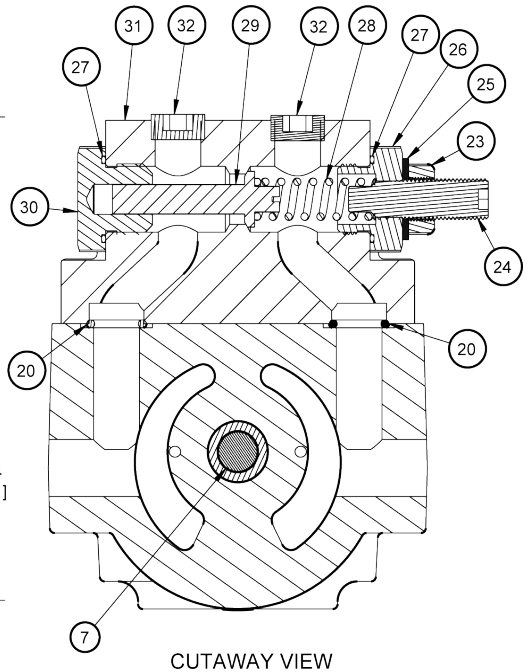


Rotation Arrow Denotes
Standard Clockwise Rotation

SHAFT END VIEW



CUTAWAY VIEW
TOP



CUTAWAY VIEW
SHAFT END

Bracketed Dimensions are mm.

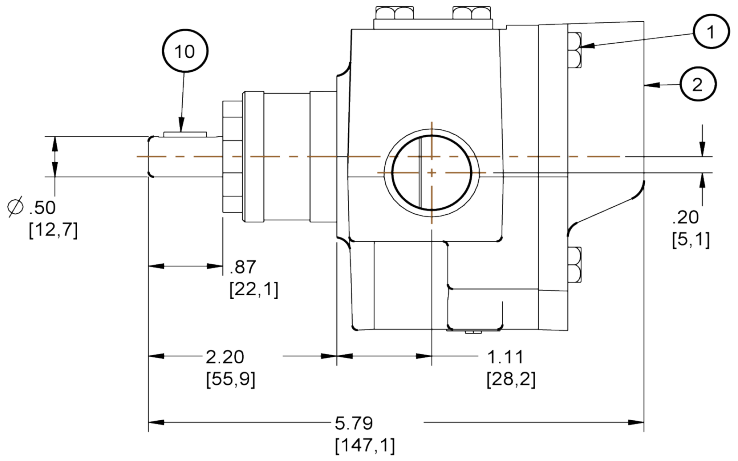
(Revised 3-1-03)

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

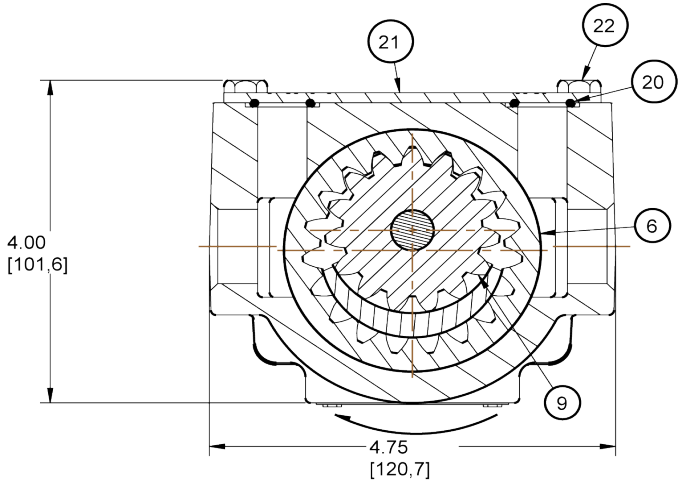
8EU - 8 GPM Universal Pump

8EU-8 GPM HAIGHT PUMP

Item	Part Number	Description	Qty.
1	E90HC.6	Screw, Cover	4
2	ED830A	Cover	1
3	E11F	Bearing	1
4	E21E	Wiper Seal	1
5	E28E	O-Ring, Cover	1
6	ED826F1	Rotor	1
7	EU8C13PK	Shaft & Pinion Assembly	1
8	D814PK	Shaft	1
9	ED815C1	Pinion	1
10	E13C50	Key 1/8 Sq X 1/2 Lg	1
11	E11F2	Bearing	1
12	E49E	Set Screw, Vent	2
13	ED83A7	Case	1
14	E24SE	O-ring-Gland	1
15	E18E	Shaft Seal	2
19	E22SS3F4	Gland	1
20	SE2018N90	O-Ring, Cover Plate	2
21	ED530CP	Cover Plate	1
22	E90HC.5	Screw, Cover Plate	4

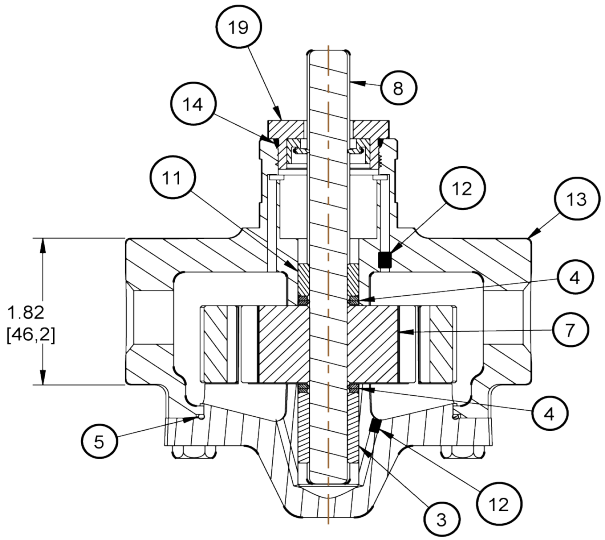


Right Side



Rotation Arrow Denotes
Standard Clockwise Rotation

Cutaway View
Shaft End



Cutaway View
Bottom

Bracketed Dimensions are mm.

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

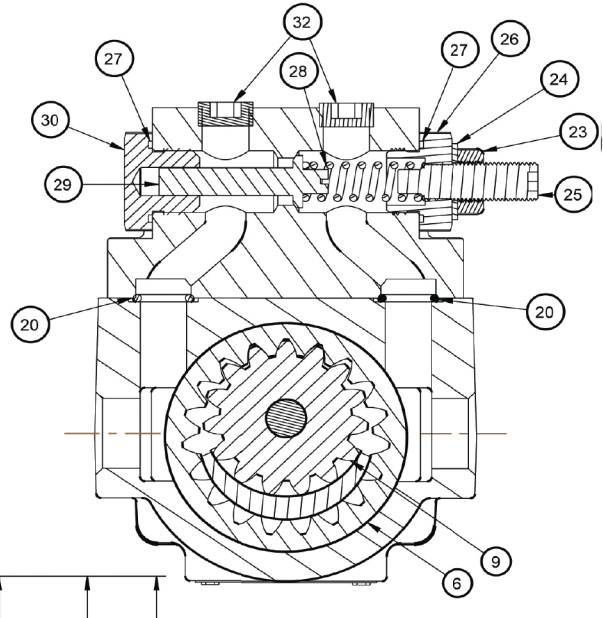
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

8EUR - 8 GPM
Universal Relief Valve Pump

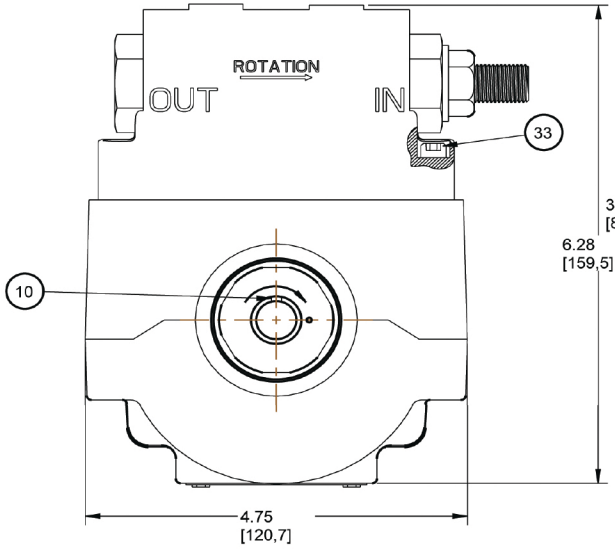
8EUR-8 GPM HAIGHT RELIEF VALVE PUMP

Item	Part Number	Description	Qty.
1	E90HC.6	Screw, Cover	4
2	ED830A	Cover	1
3	E11F	Bearing	1
4	E21E	Wiper Seal	1
5	E28E	O-Ring, Cover	1
6	ED826F1	Rotor	1
7	EU8C13PK	Shaft & Pinion Assembly	1
8	D814PK	Shaft	1
9	ED815C1	Pinion	1
10	E13C50	Key 1/8 Sq X 1/2 Lg	1
11	E11F2	Bearing	1
12	E49E	Set Screw, Vent	2
13	ED83A7	Case	1
14	E24SE	O-ring-Gland	1

Item	Part Number	Description	Qty.
15	E18E	Shaft Seal	1
19	E22SS3F4	Gland	1
20	SE2018N90	O-Ring, Relief Valve	2
23	E64C	Nut	1
24	E25N1	Sealing Washer	1
25	E55C	Adjusting Screw	1
26	E57C	Bonnet	1
27	SE2020N70	O-Ring, Bonnet	2
28	E52S	Spring	1
29	E51C	Poppet	1
30	E50C	Cap	1
31	ED55A	Relief Valve Housing	1
32	ZA285	Pipe Plug	2
33	E90SC.9	Screw, Relief Valve	4

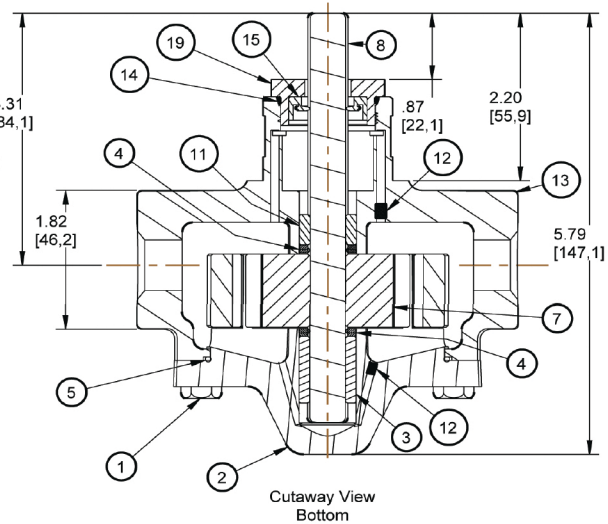


Cutaway View
Back



Rotation Arrow Denotes
Standard Clockwise Rotation

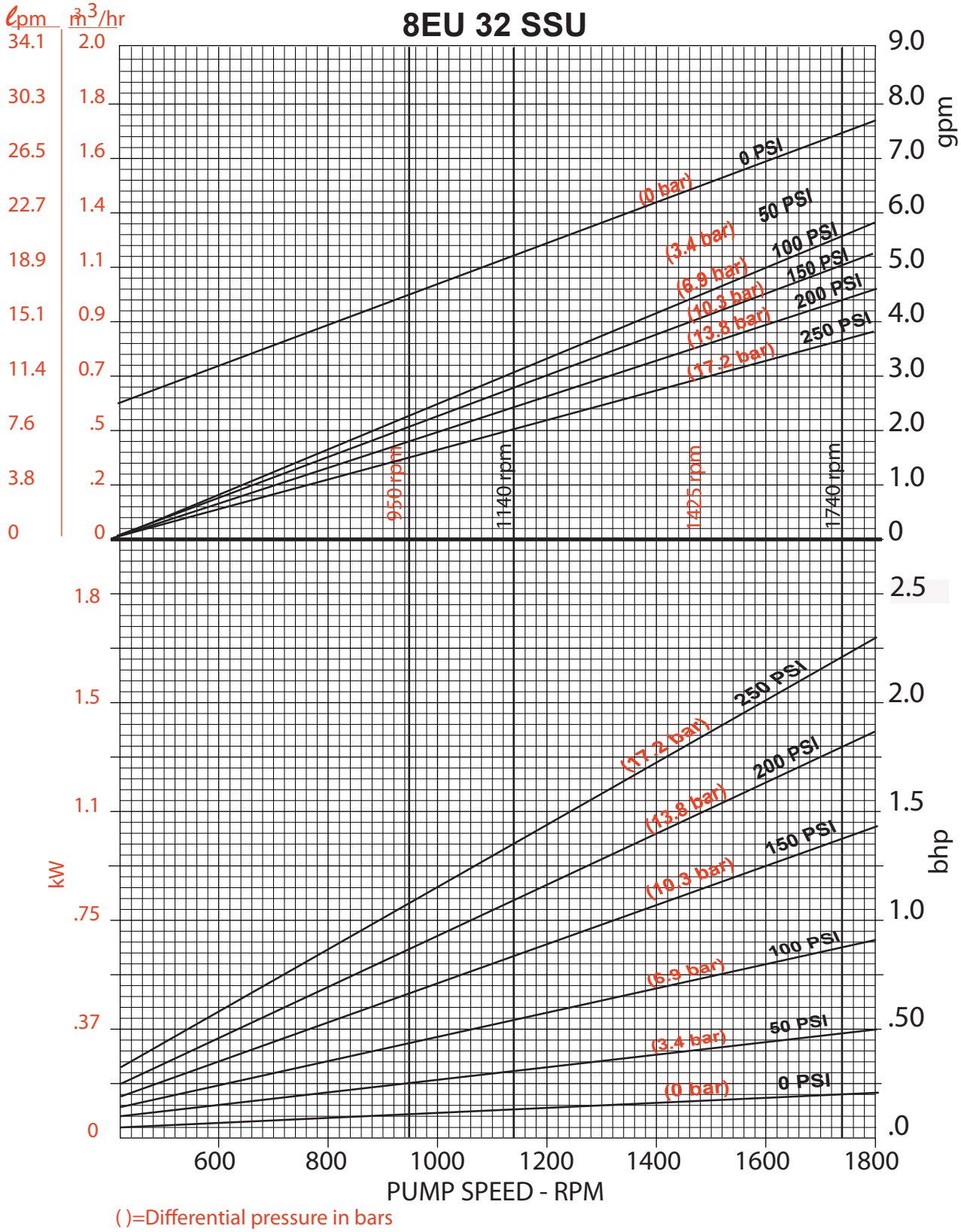
Shaft End View



Cutaway View
Bottom

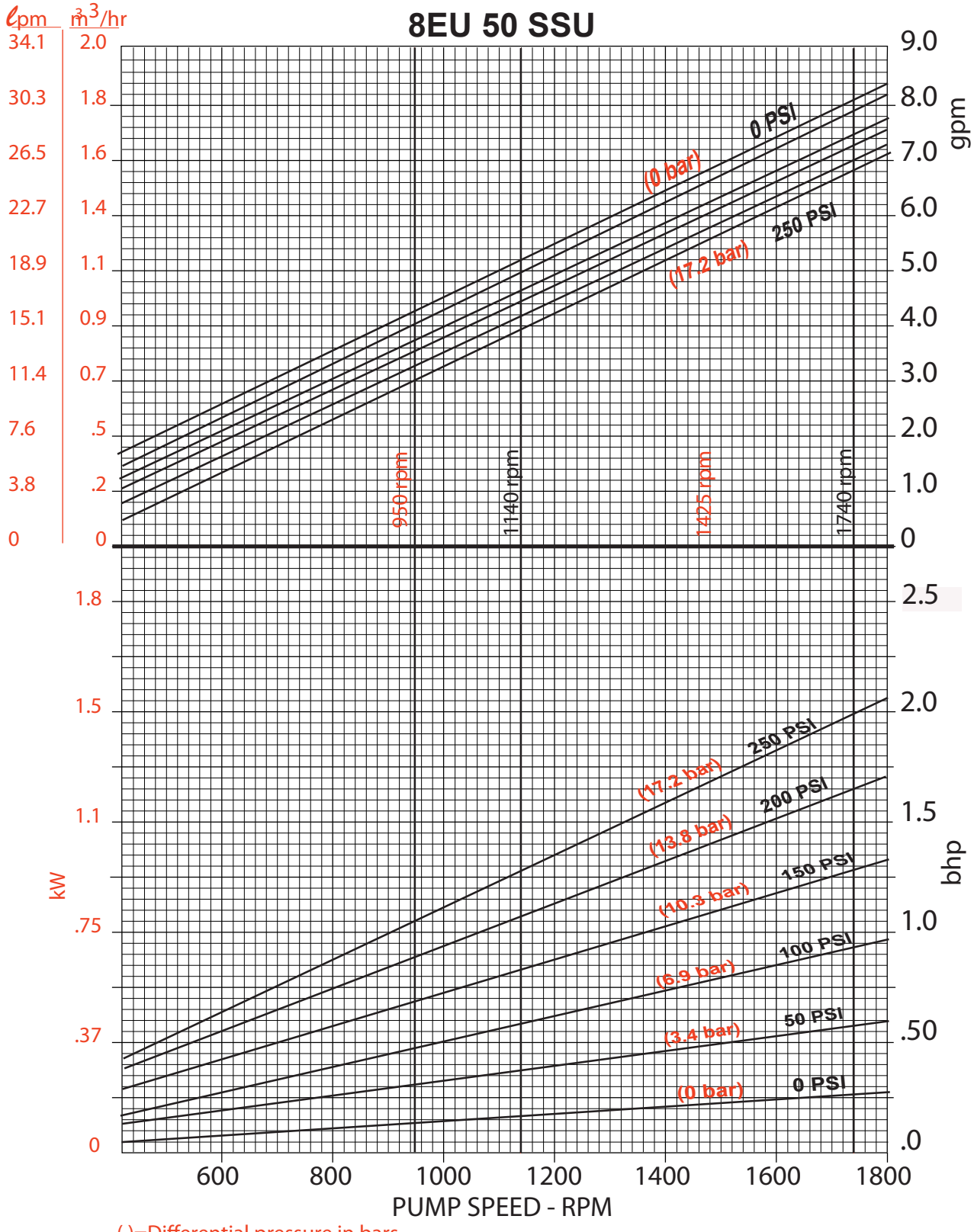
Bracketed Dimensions are mm.

(Revised 5-12-2015)



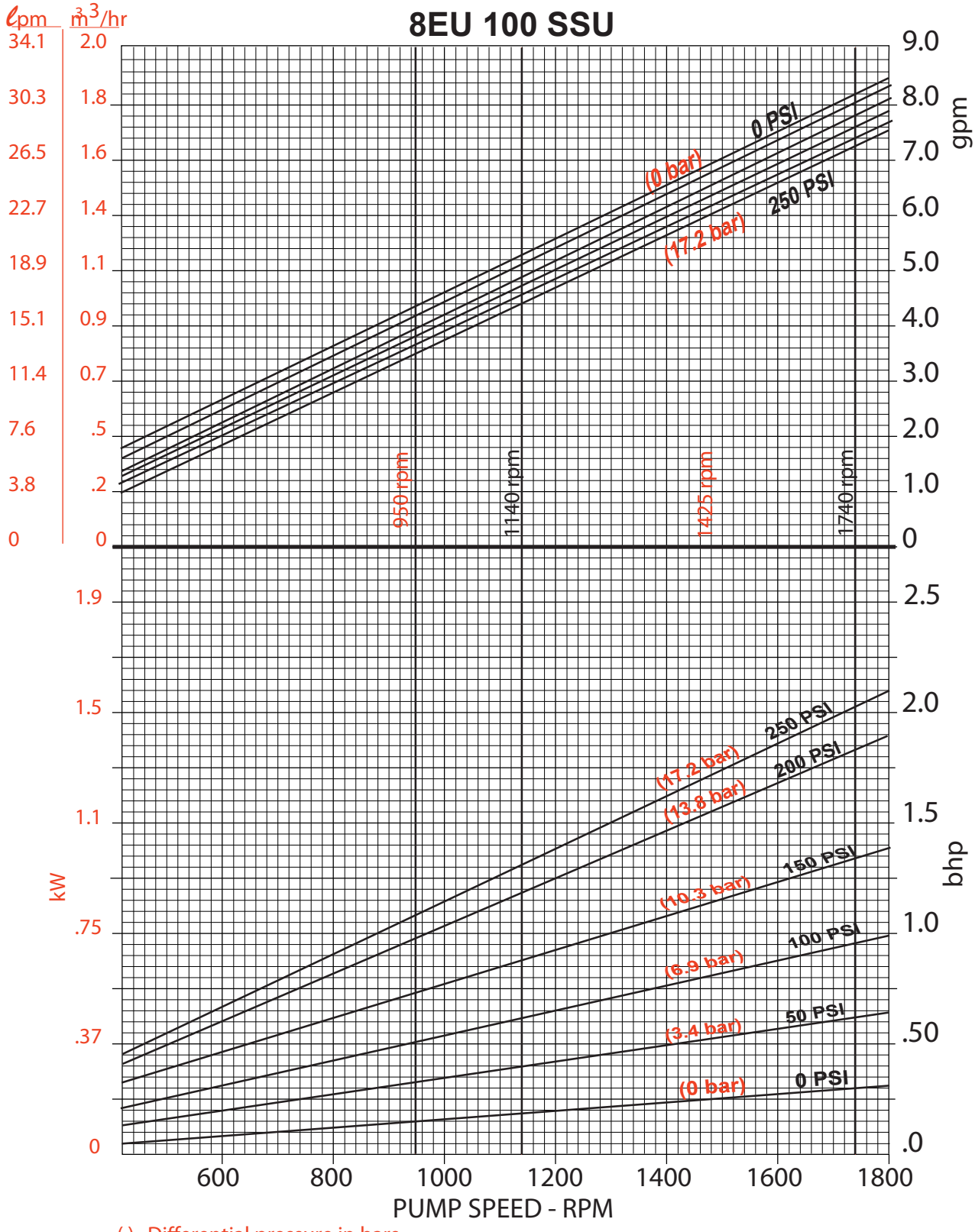
( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



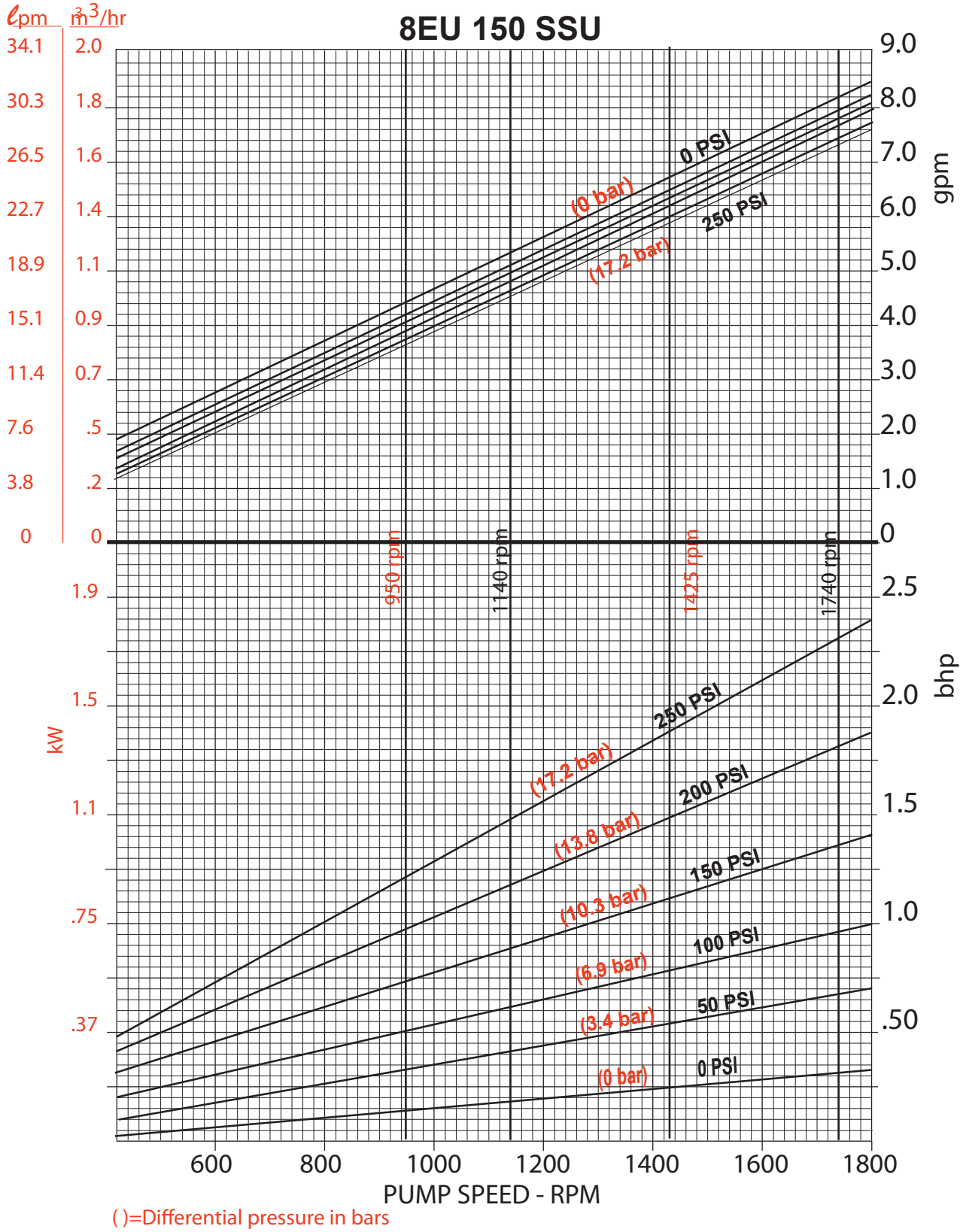
( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



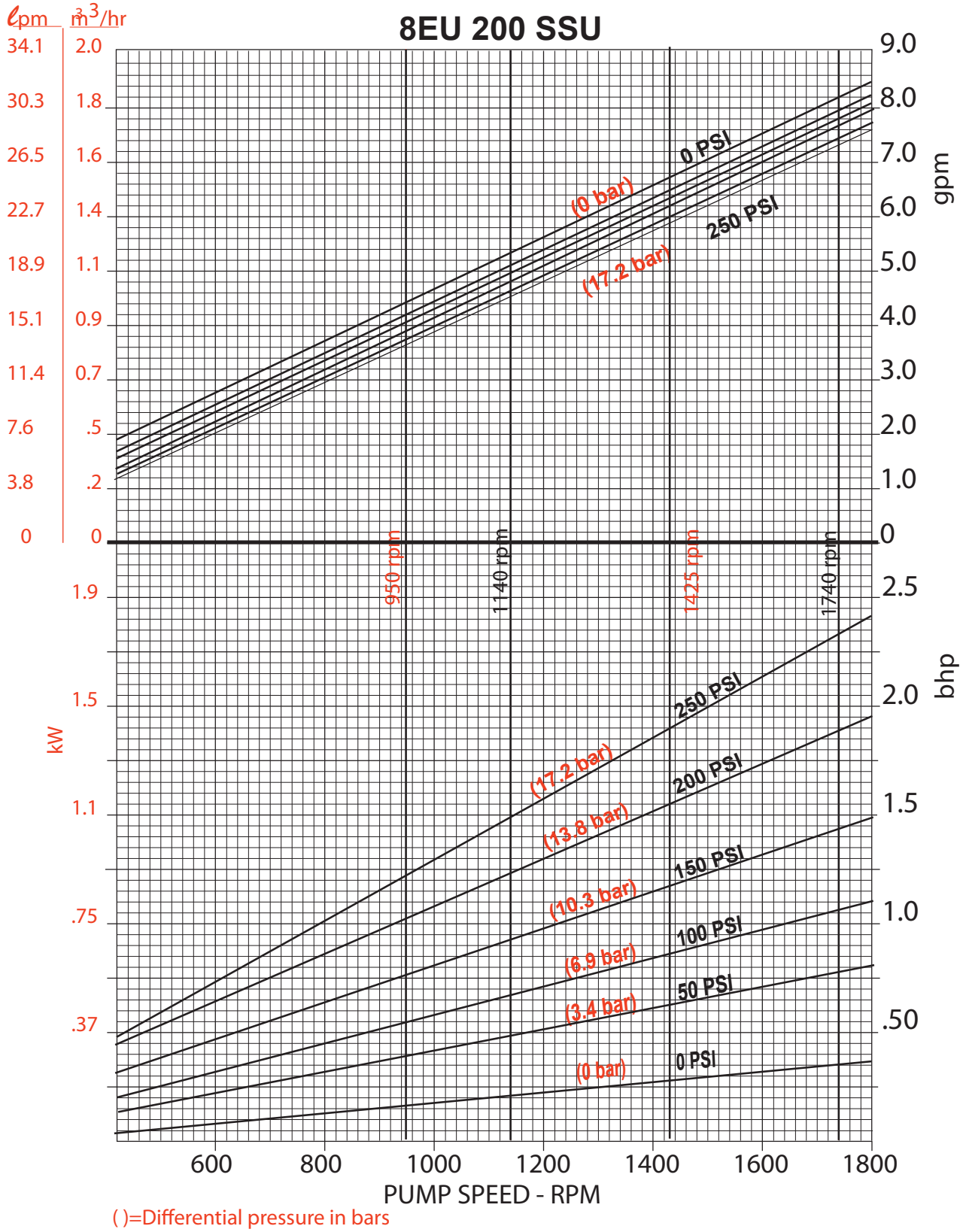
( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



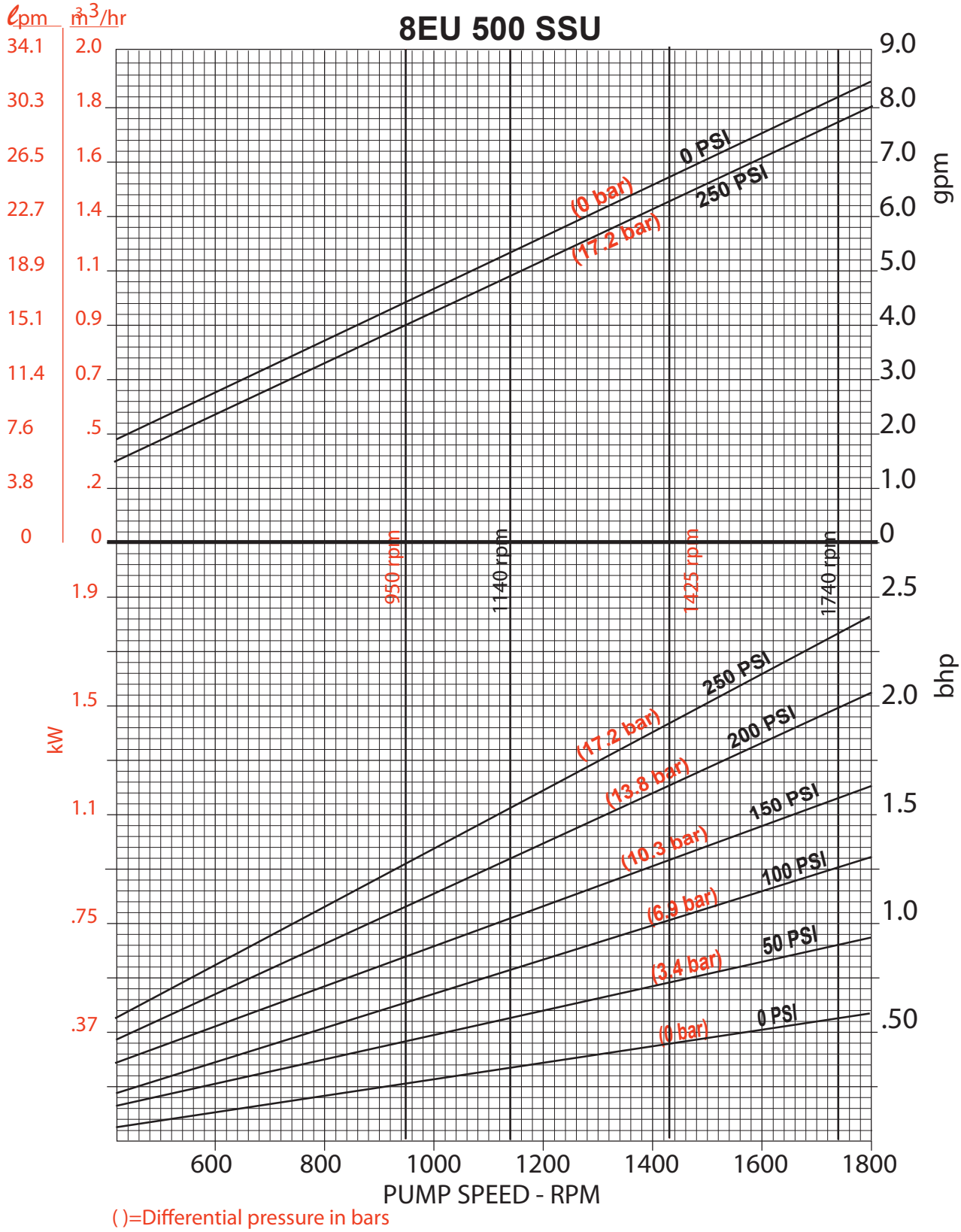
( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

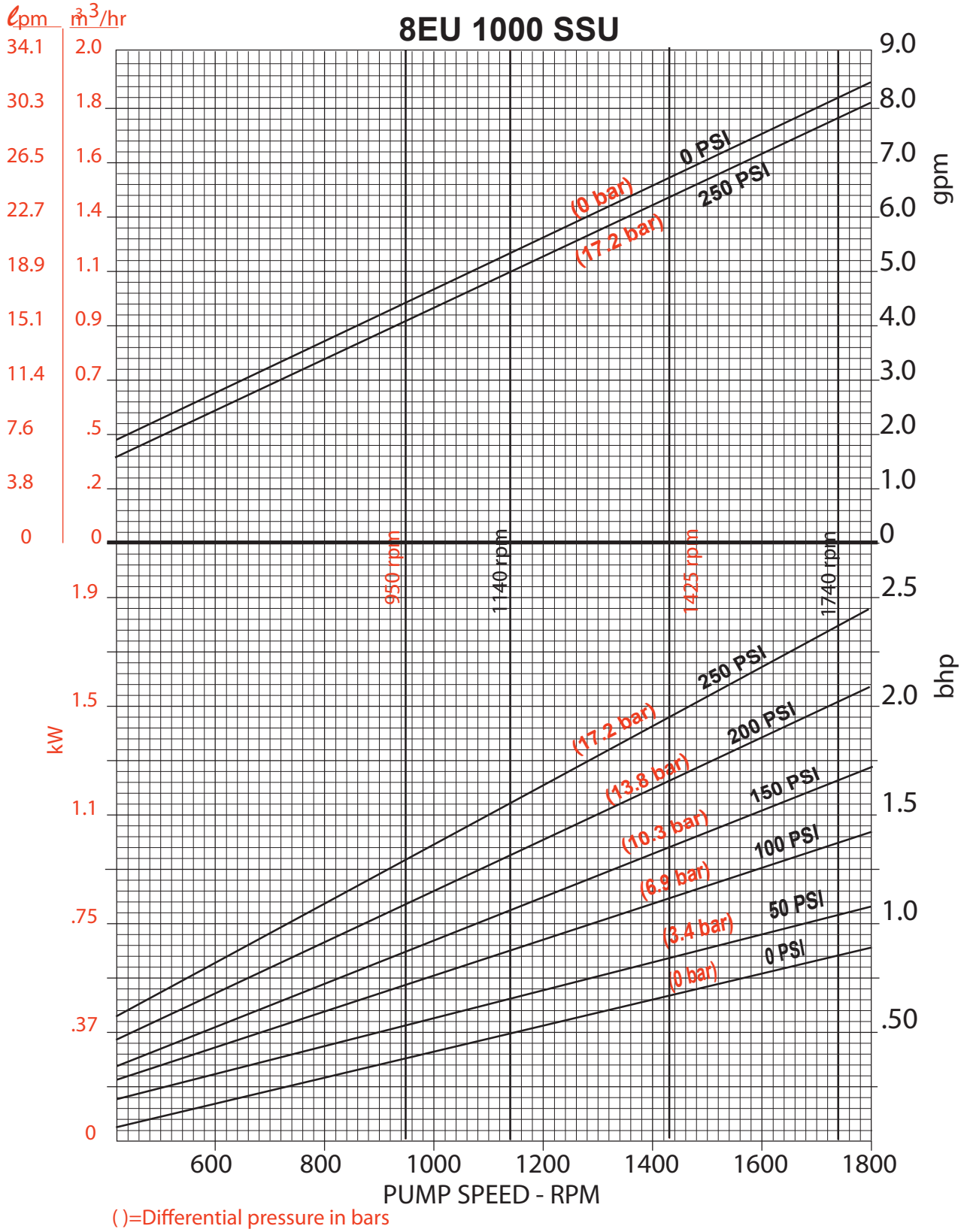


( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



( )=Differential pressure in bars



( )=Differential pressure in bars

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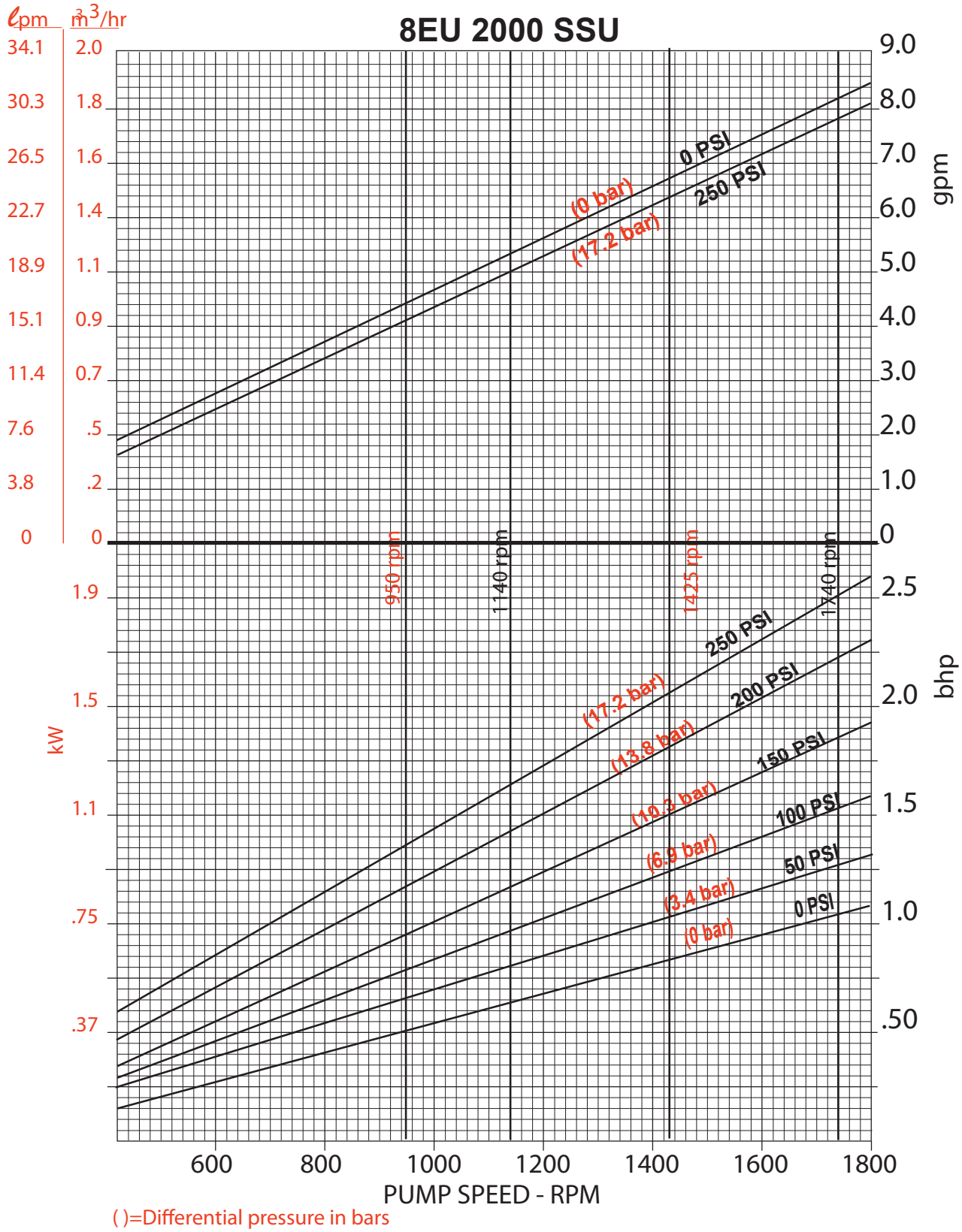
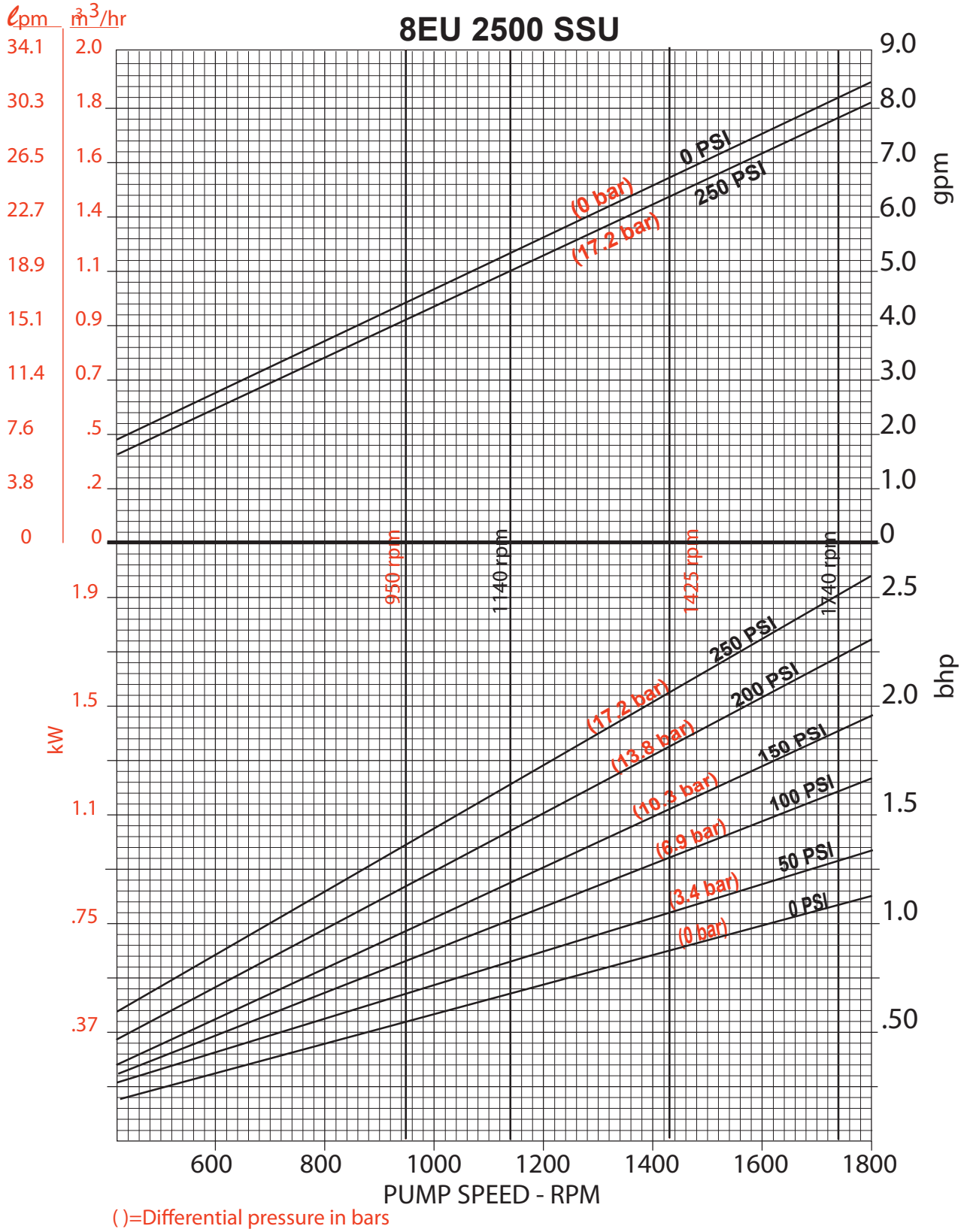
DIVISION OF: BAKER MANUFACTURING CO., LLC



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



( )=Differential pressure in bars

HAIGHT® PUMPS
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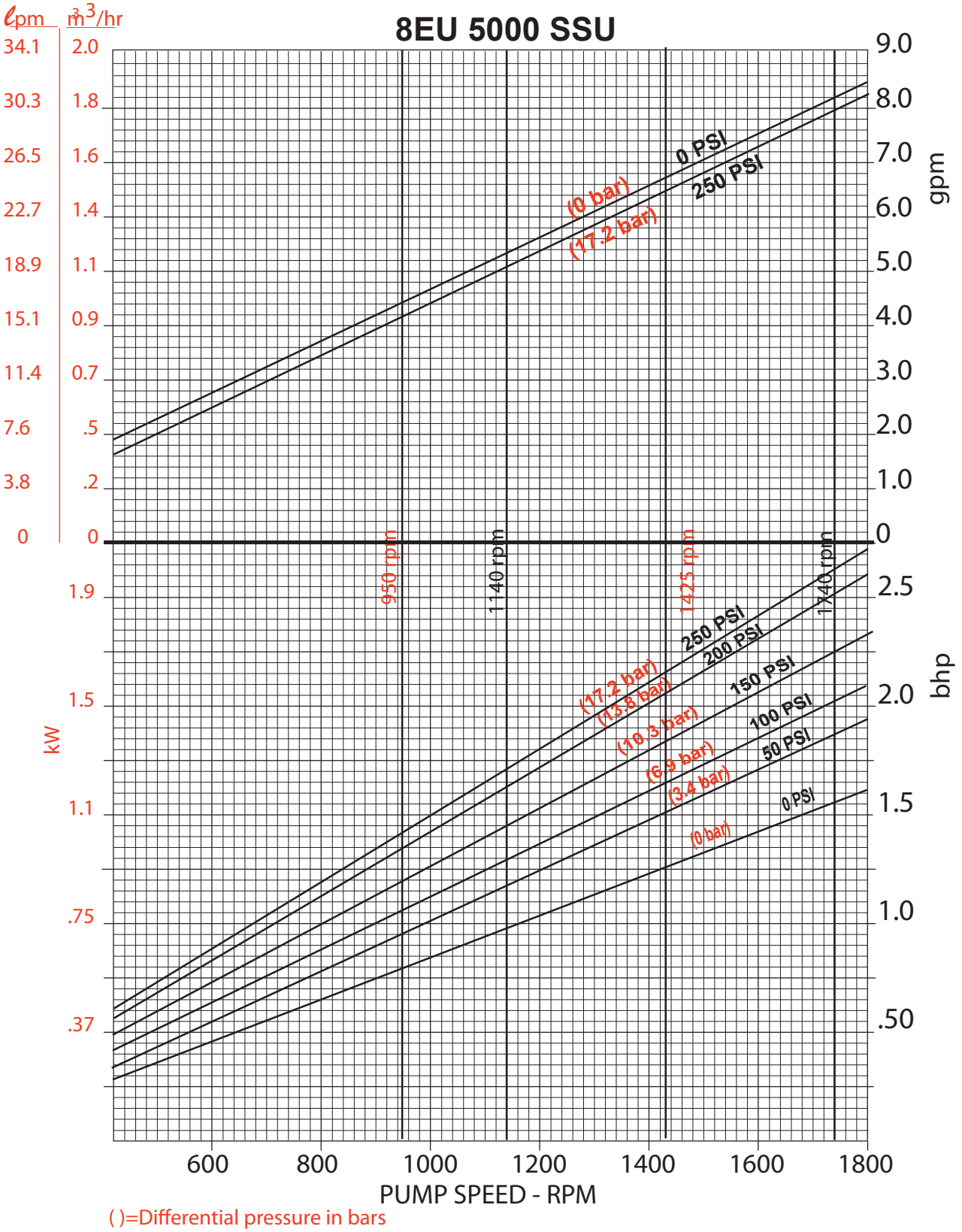

( )=Differential pressure in bars

HAIGHT® PUMPS
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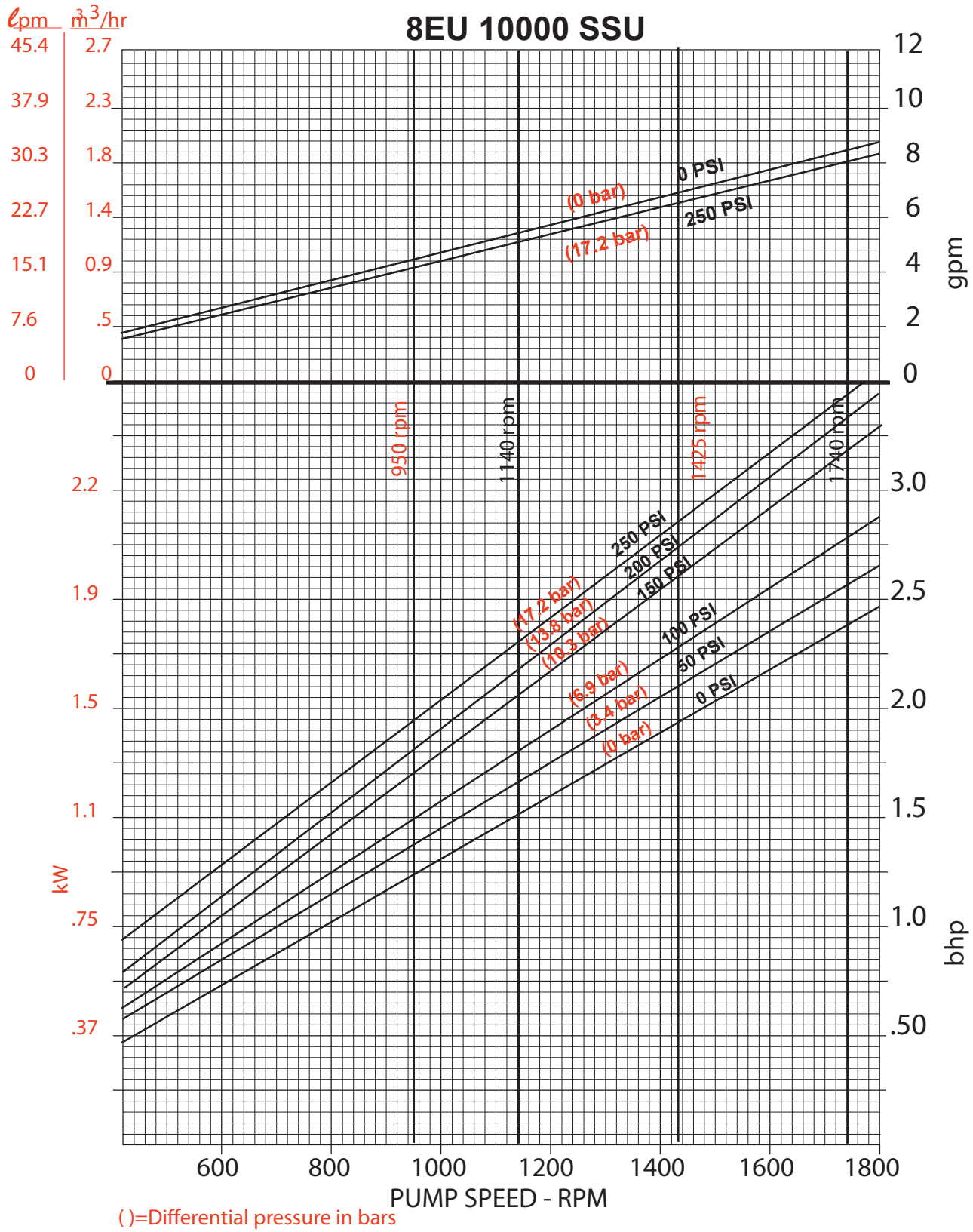

( )=Differential pressure in bars

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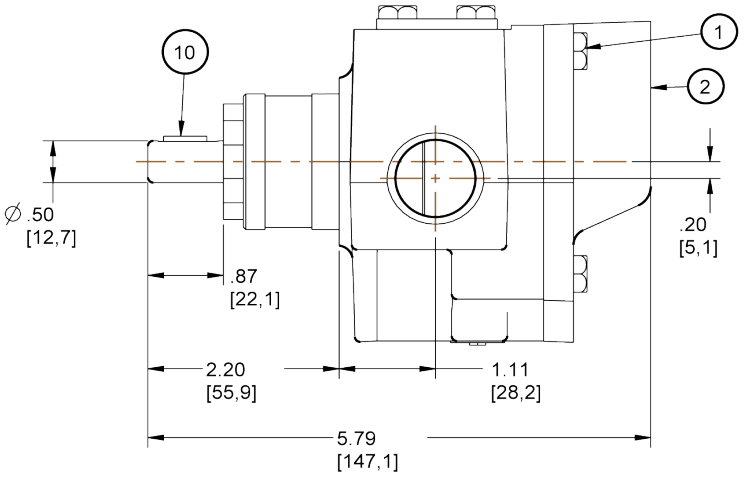
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

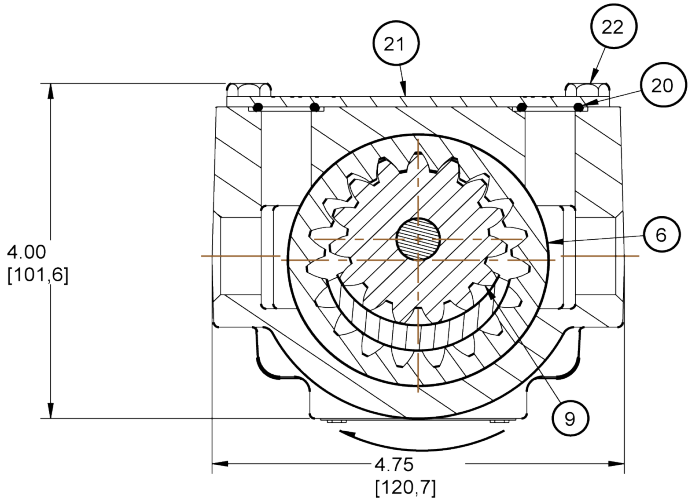
9EU - 9 GPM Universal Pump

9EU-9 GPM HAIGHT PUMP

Item	Part Number	Description	Qty.
1	E90HC.6	Screw, Cover	4
2	ED930A	Cover	1
3	E11F	Bearing	1
4	E21E	Wiper Seal	1
5	E28E	O-Ring, Cover	1
6	ED926F1	Rotor	1
7	EU9C13PK	Shaft & Pinion Assembly	1
8	D814PK	Shaft	1
9	ED915C1	Pinion	1
10	E13C50	Key 1/8 Sq X 1/2 Lg	1
11	E11F2	Bearing	1
12	E49E	Set Screw, Vent	2
13	ED83A7	Case	1
14	E24SE	O-ring-Gland	1
15	E18E	Shaft Seal	2
19	E22SS3F4	Gland	1
20	SE2018N90	O-Ring, Cover Plate	2
21	ED530CP	Cover Plate	1
22	E90HC.5	Screw, Cover Plate	4

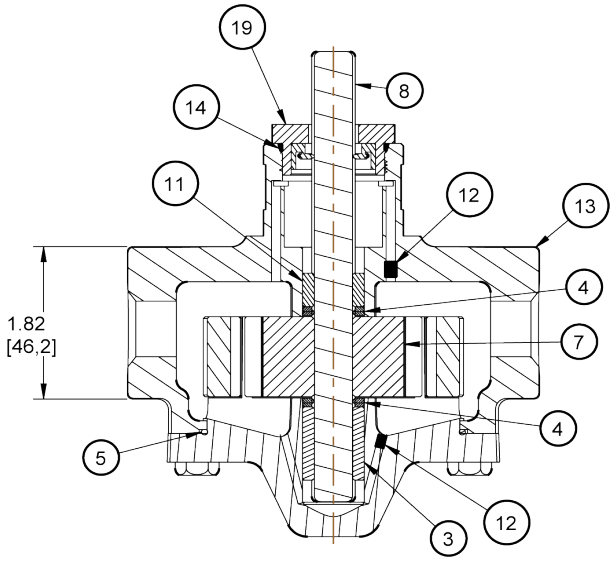


Right Side



Rotation Arrow Denotes
Standard Clockwise Rotation

Cutaway View
Shaft End



Cutaway View
Bottom

Bracketed Dimensions are mm.

(Revised 8-1-11)

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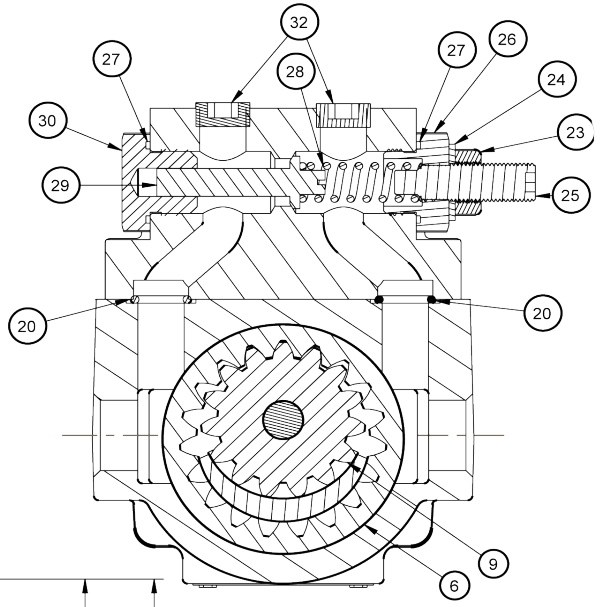
Phone: 800-871-9250 • Fax: 608-882-3777

9EUR - 9 GPM
Universal Relief Valve Pump

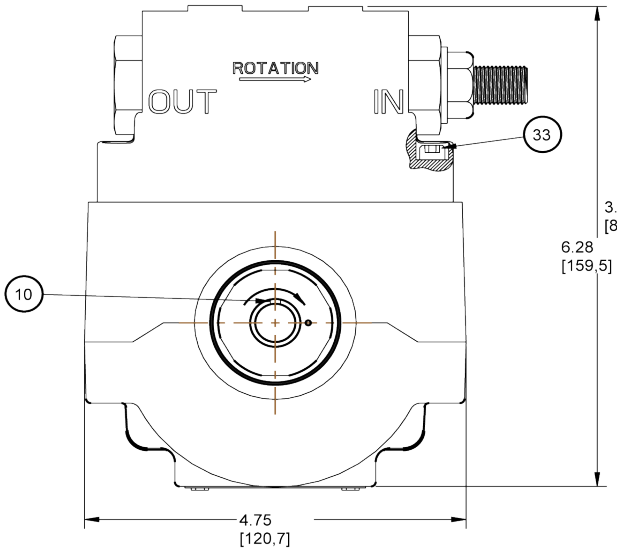
8EUR-8 GPM HAIGHT RELIEF VALVE PUMP

Item	Part Number	Description	Qty.
1	E90HC.6	Screw, Cover	4
2	ED830A	Cover	1
3	E11F	Bearing	1
4	E21E	Wiper Seal	1
5	E28E	O-Ring, Cover	1
6	ED826F1	Rotor	1
7	EU8C13PK	Shaft & Pinion Assembly	1
8	D814PK	Shaft	1
9	ED815C1	Pinion	1
10	E13C50	Key 1/8 Sq X 1/2 Lg	1
11	E11F2	Bearing	1
12	E49E	Set Screw, Vent	2
13	ED83A7	Case	1
14	E24SE	O-ring-Gland	1

Item	Part Number	Description	Qty.
15	E18E	Shaft Seal	1
19	E22SS3F4	Gland	1
20	SE2018N90	O-Ring, Relief Valve	2
23	E64C	Nut	1
24	E25N1	Sealing Washer	1
25	E55C	Adjusting Screw	1
26	E57C	Bonnet	1
27	SE2020N70	O-Ring, Bonnet	2
28	E52S	Spring	1
29	E51C	Poppet	1
30	E50C	Cap	1
31	ED55A	Relief Valve Housing	1
32	ZA285	Pipe Plug	2
33	E90SC.9	Screw, Relief Valve	4

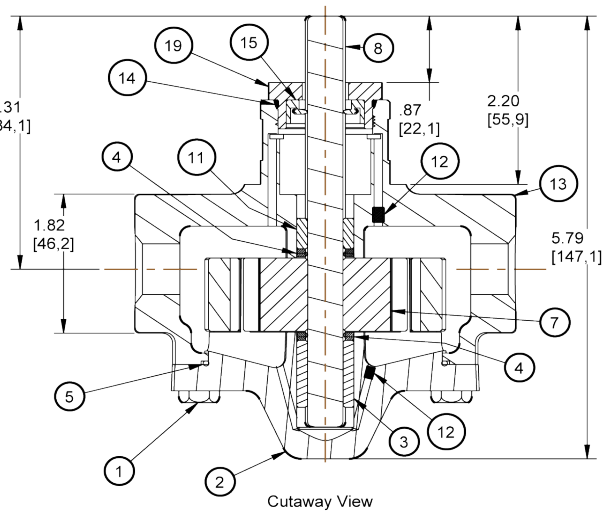


Cutaway View
Back



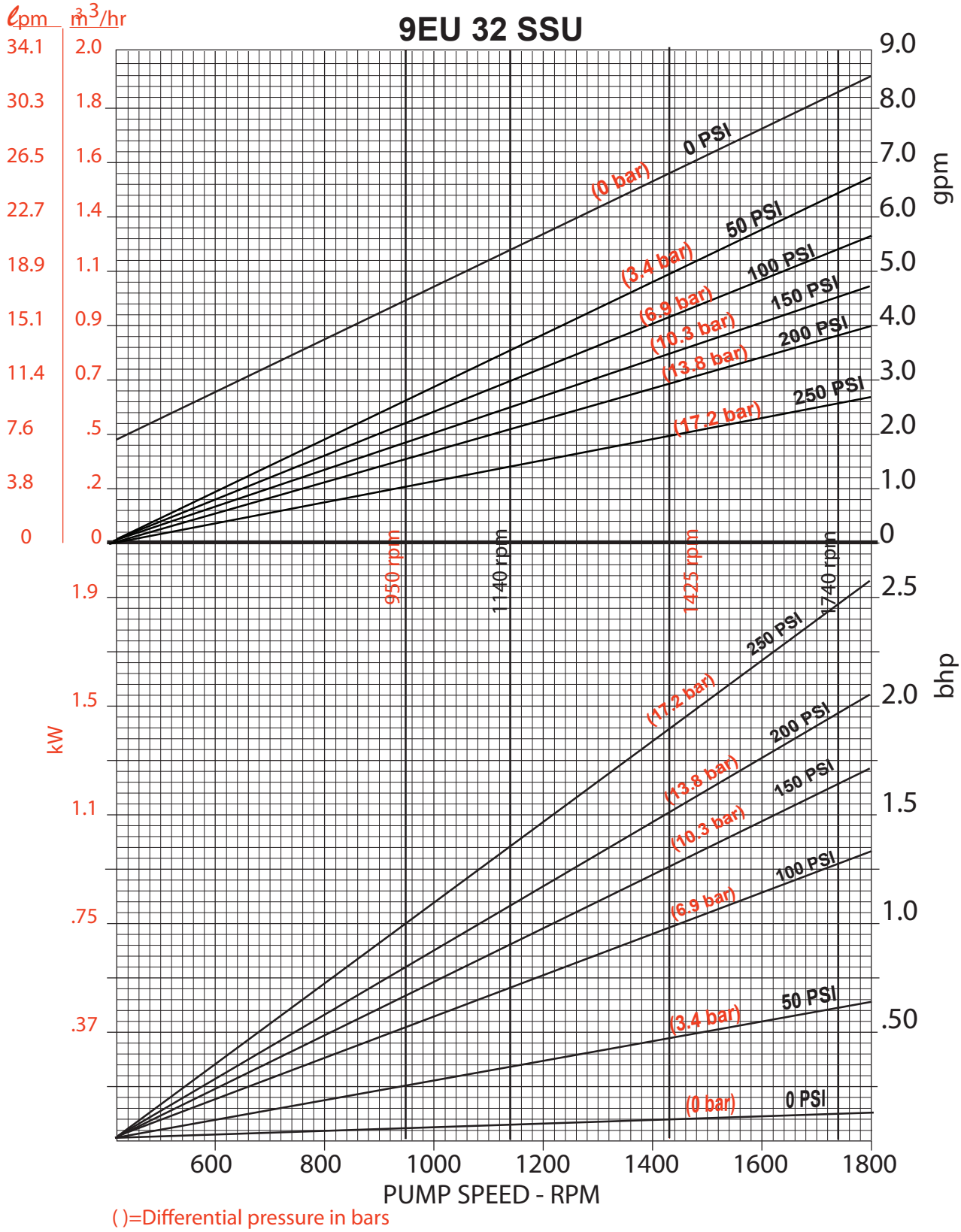
Rotation Arrow Denotes
Standard Clockwise Rotation

Shaft End View



Cutaway View
Bottom

Bracketed Dimensions are mm.



HAIGHT® PUMPS
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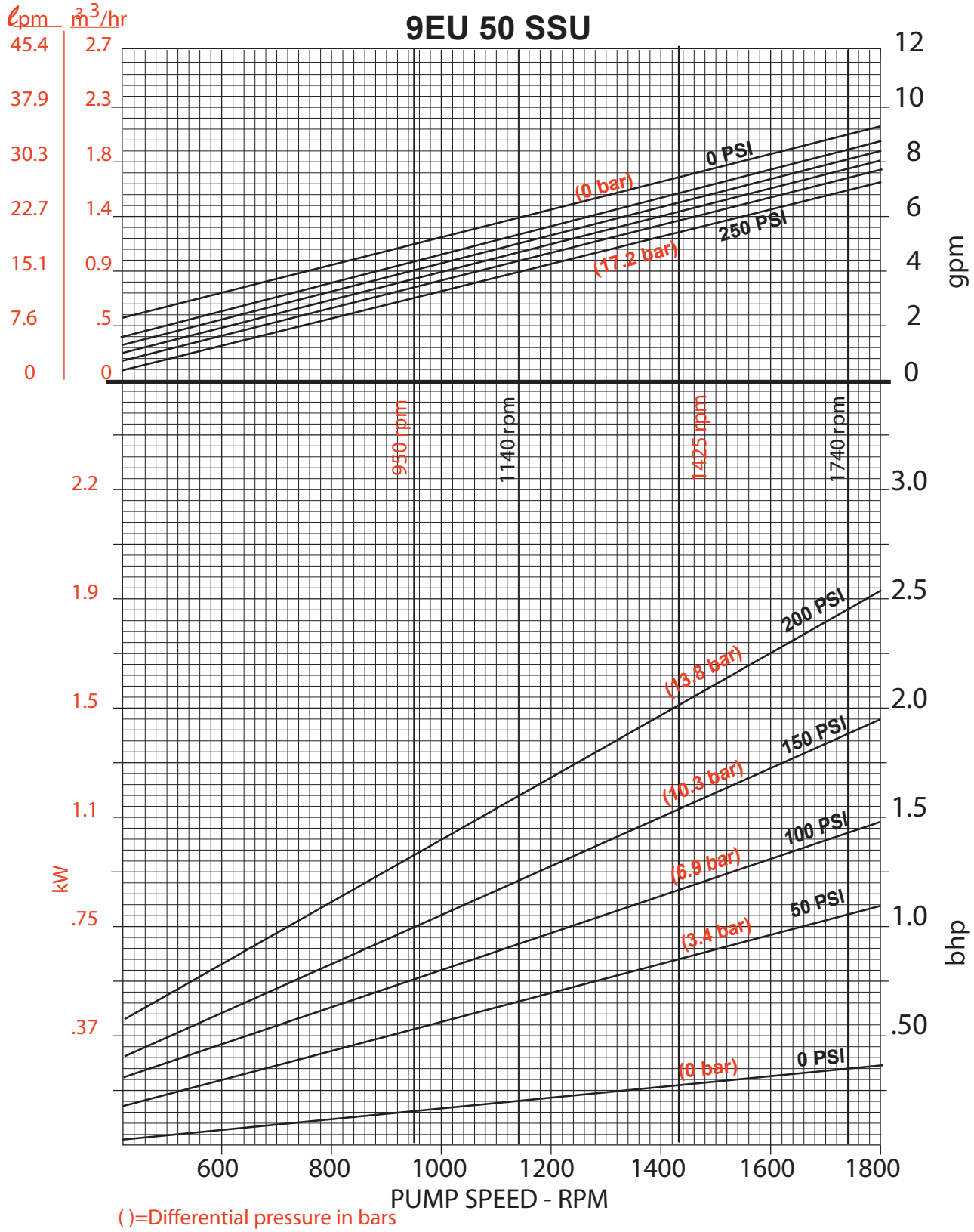

( )=Differential pressure in bars

HAIGHT® PUMPS
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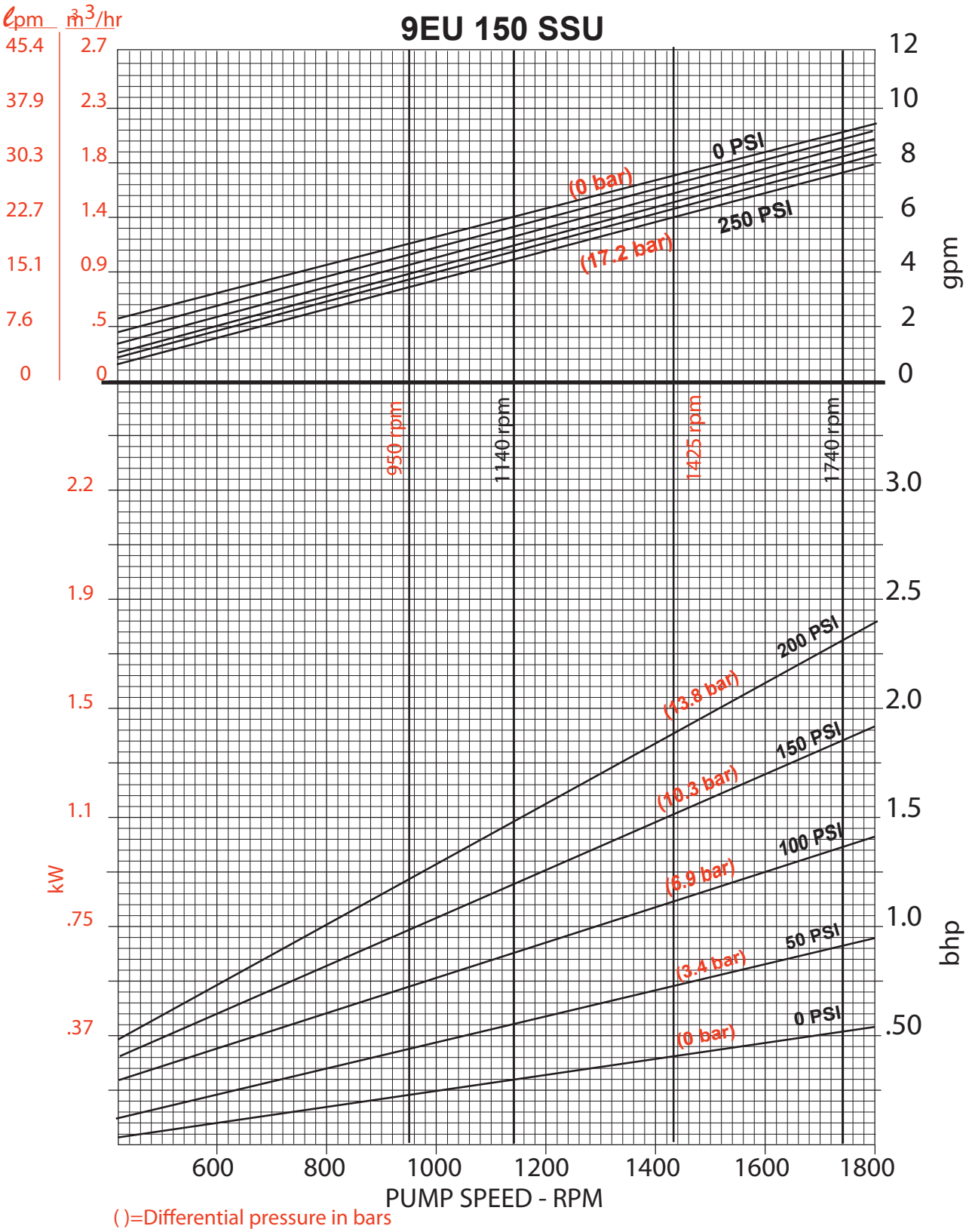

HAIGHT® PUMPS
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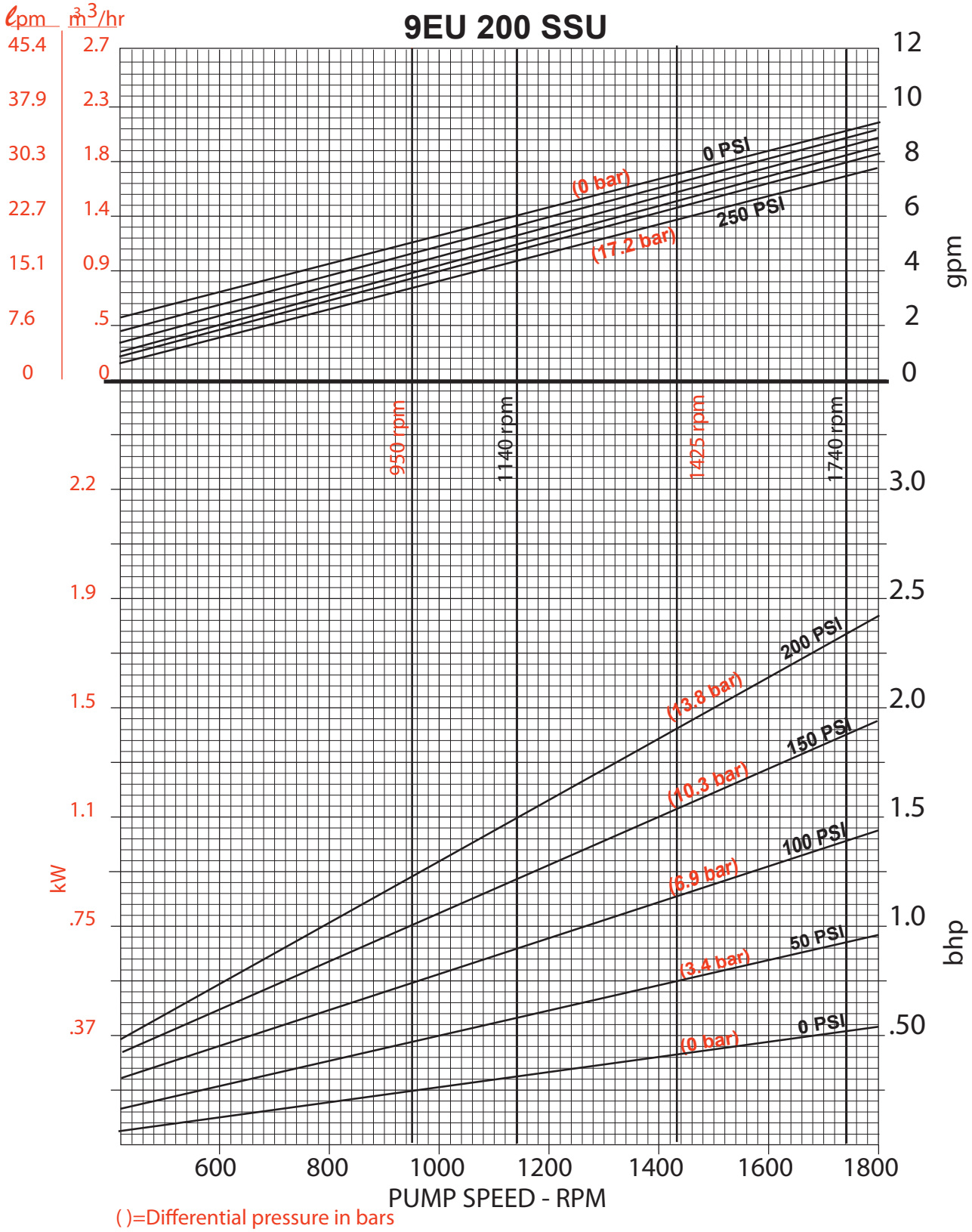

( )=Differential pressure in bars

HAIGHT® PUMPS
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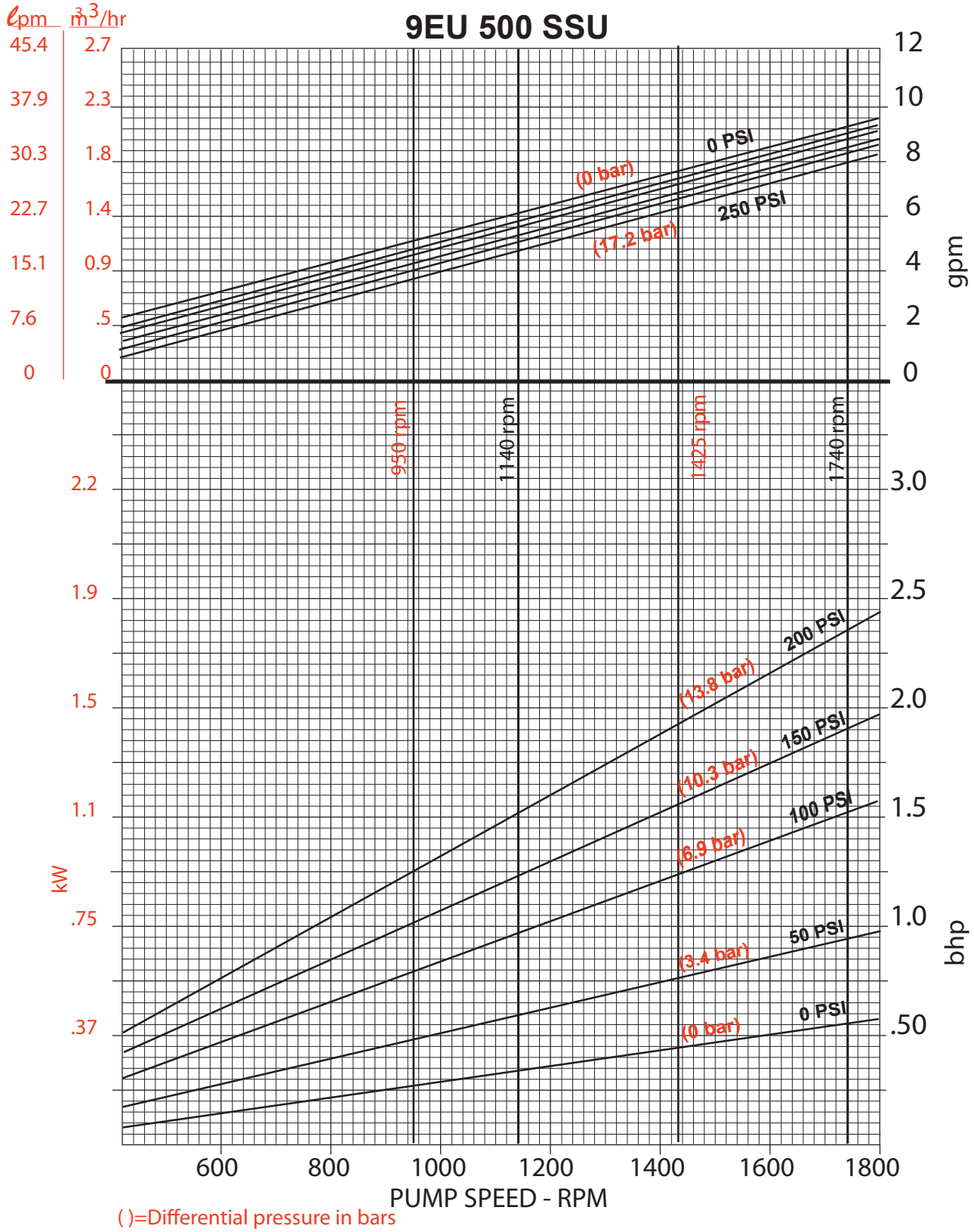
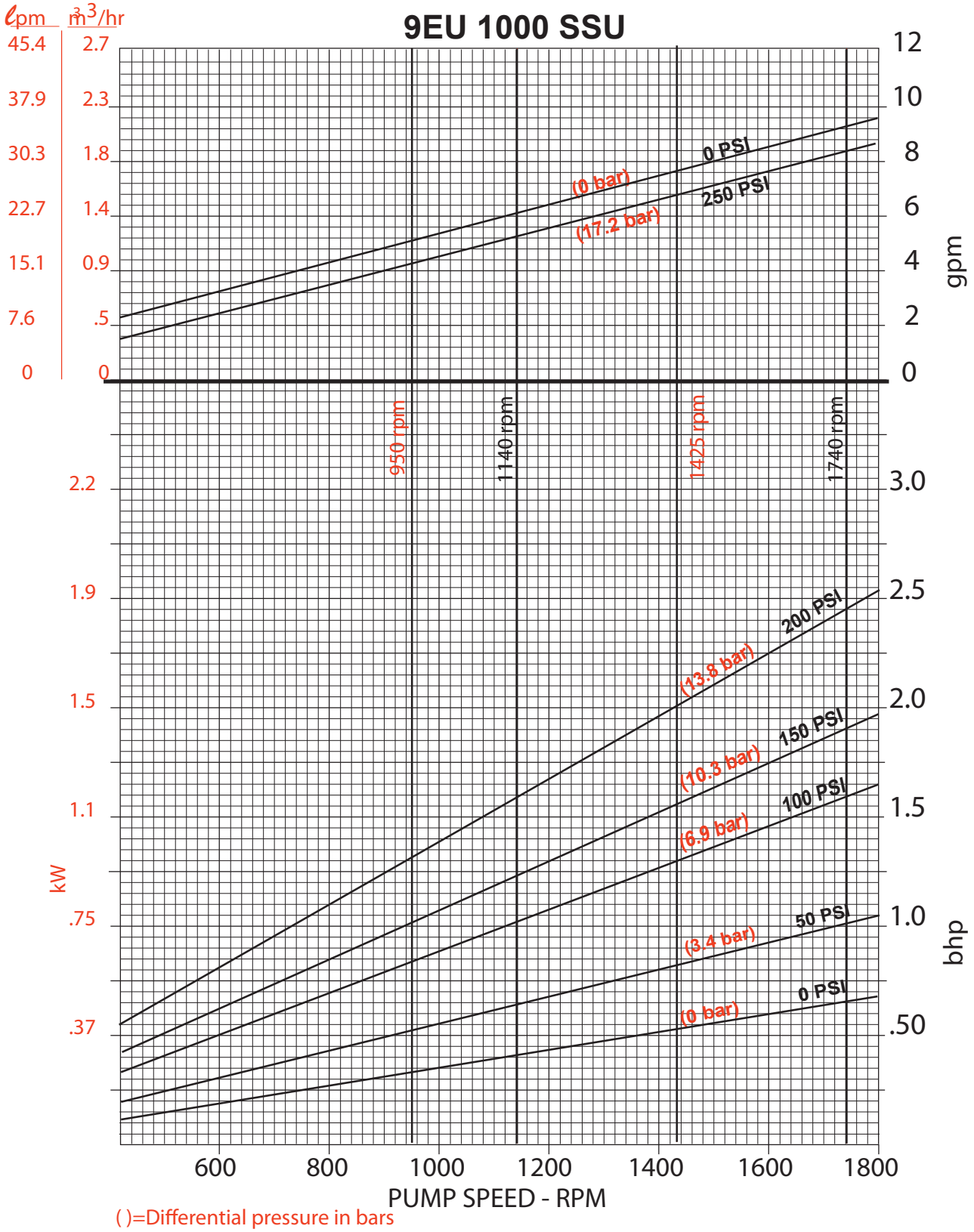
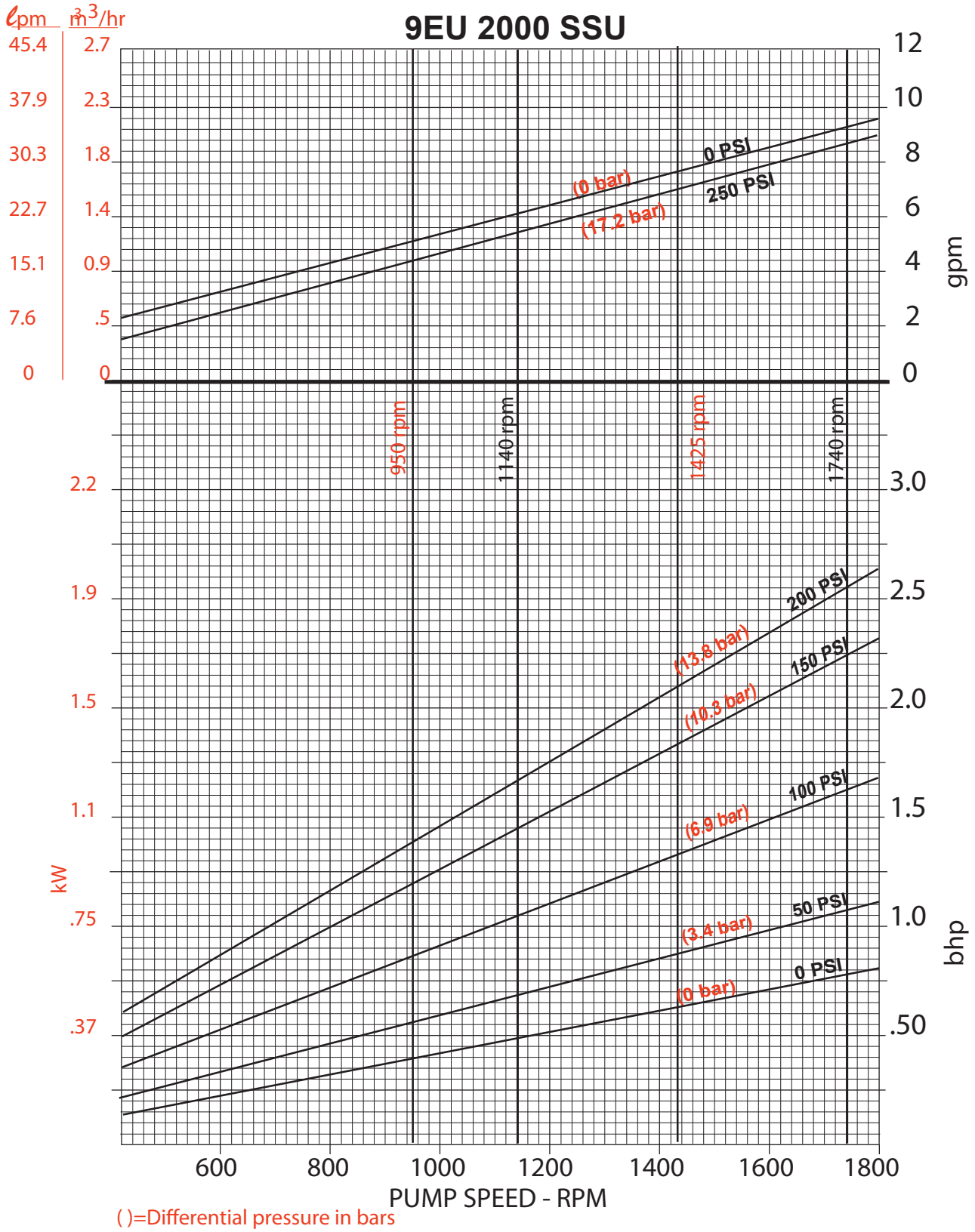

9EU 500 SSU
ℓpm
m³/hr
45.4
37.9
30.3
22.7
15.1
7.6
0
2.7
2.3
1.8
1.4
0.9
.5
0
12
10
8
6
4
2
0
gpm
0 PSI
(0 bar)
250 PSI
(17.2 bar)
950 rpm
1140 rpm
1425 rpm
1740 rpm
2.2
1.9
1.5
1.1
.75
.37
kW
3.0
2.5
2.0
1.5
1.0
.50
bhp
200 PSI
(13.8 bar)
150 PSI
(10.3 bar)
100 PSI
(6.9 bar)
50 PSI
(3.4 bar)
0 PSI
(0 bar)
600
800
1000
1200
1400
1600
1800
PUMP SPEED - RPM
( )=Differential pressure in bars

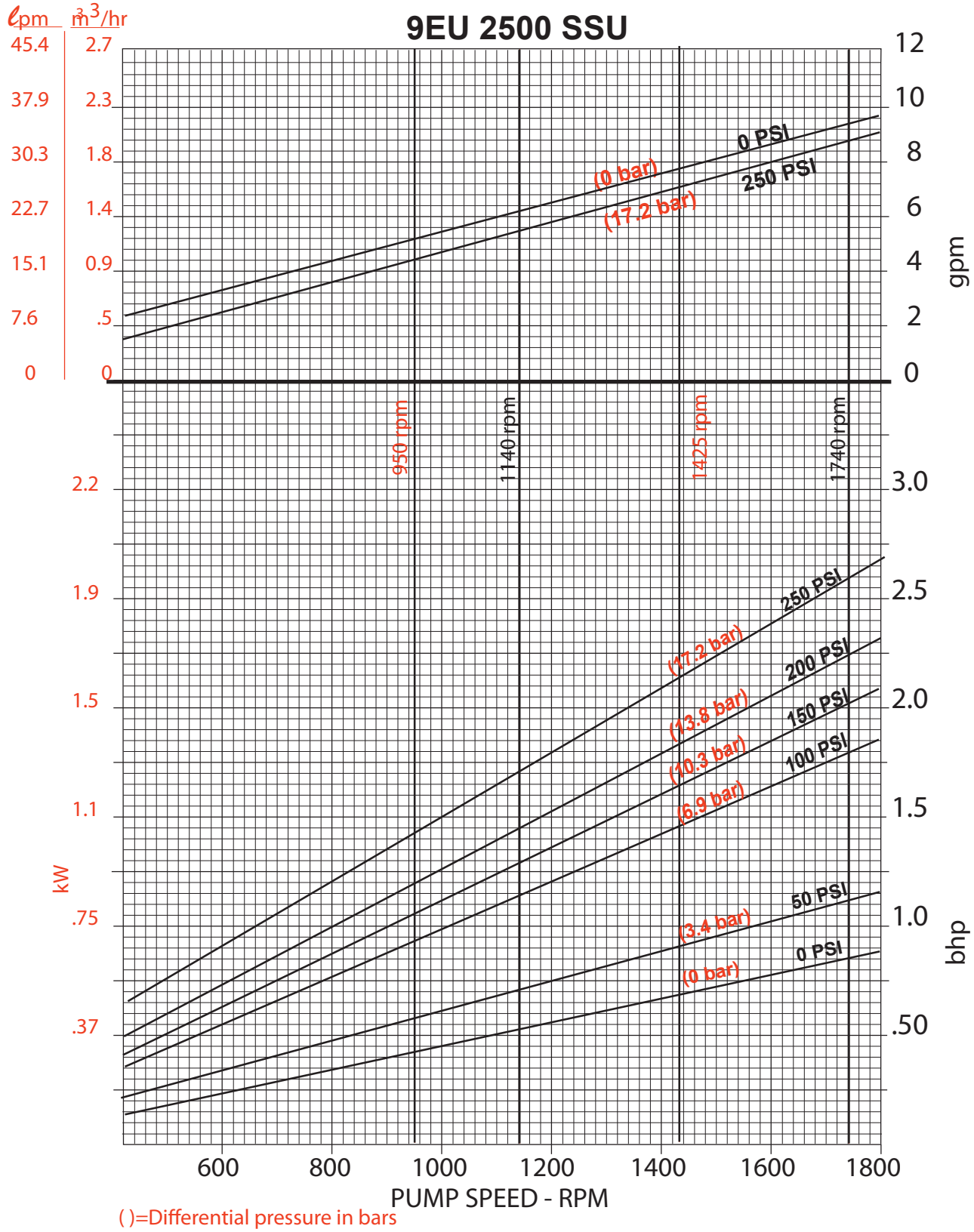

9EU 1000 SSU
lpm
m3/hr
45.4
37.9
30.3
22.7
15.1
7.6
0
2.7
2.3
1.8
1.4
0.9
.5
0
12
10
8
6
4
2
0
gpm
0 PSI
(0 bar)
250 PSI
(17.2 bar)
950 rpm
1140 rpm
1425 rpm
1740 rpm
2.2
1.9
1.5
1.1
.75
.37
kW
3.0
2.5
2.0
1.5
1.0
.50
bhp
200 PSI
(13.8 bar)
150 PSI
(10.3 bar)
100 PSI
(6.9 bar)
50 PSI
(3.4 bar)
0 PSI
(0 bar)
600
800
1000
1200
1400
1600
1800
PUMP SPEED - RPM
( )=Differential pressure in bars



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

9EU 2500 SSU



( )=Differential pressure in bars

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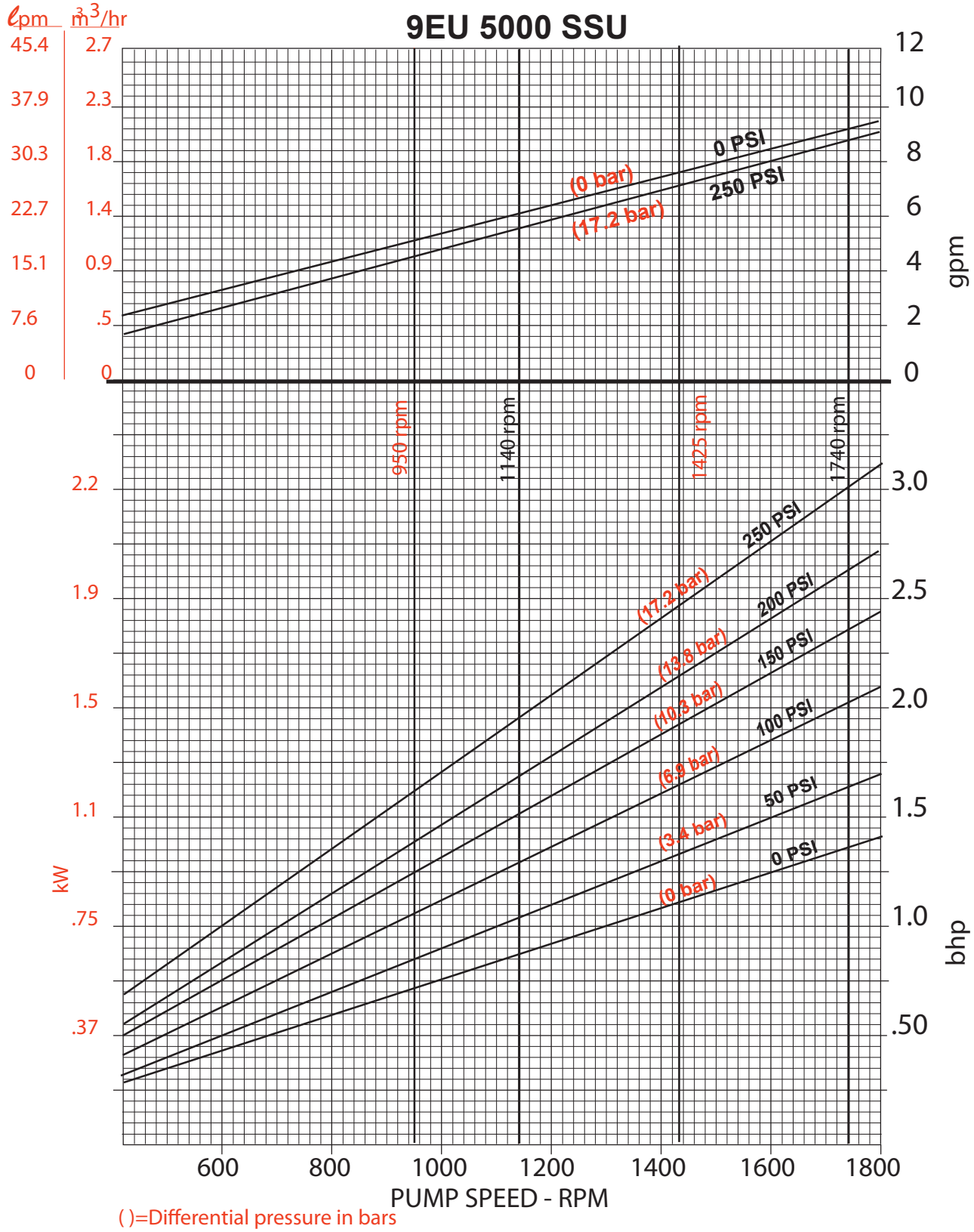

( )=Differential pressure in bars

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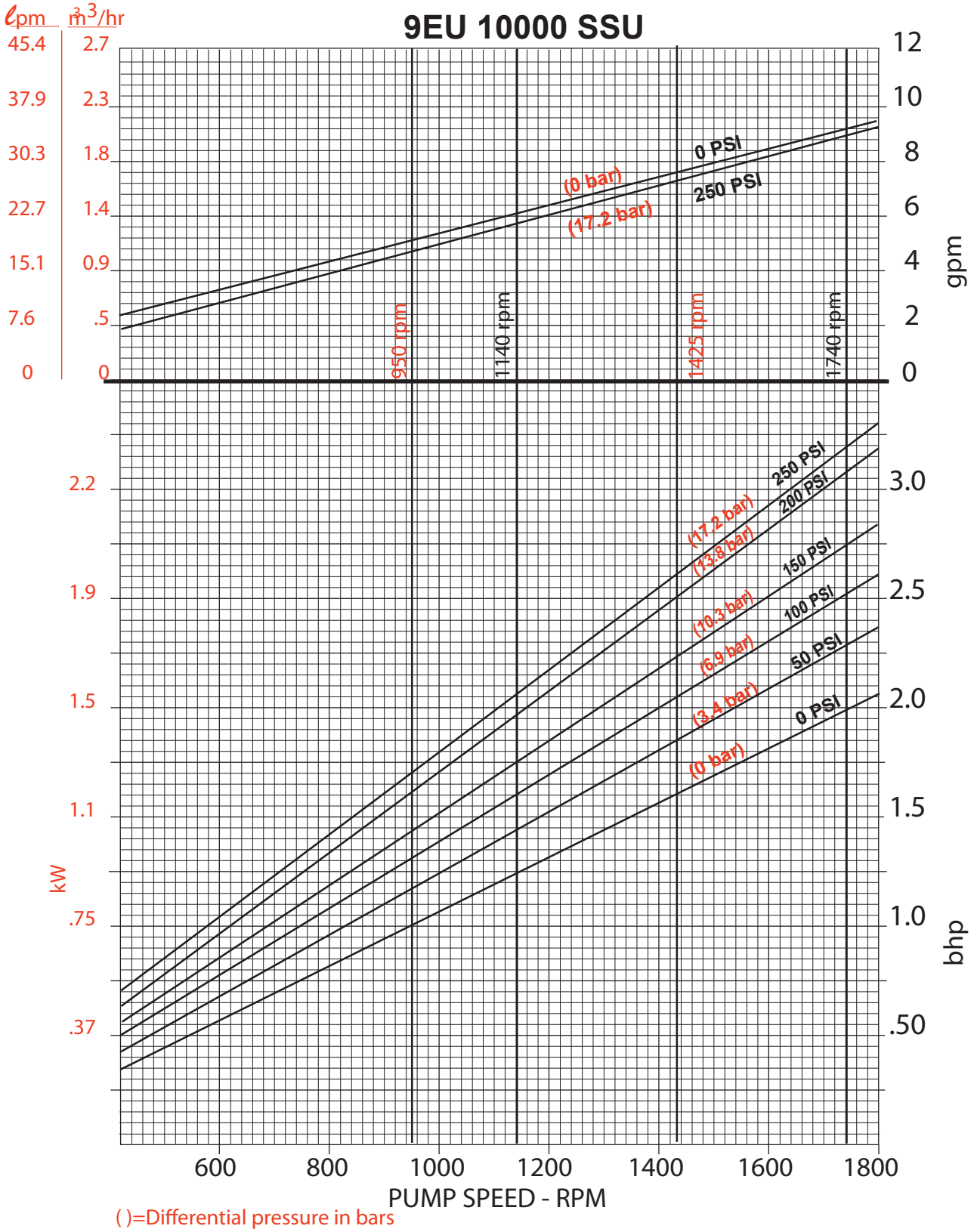

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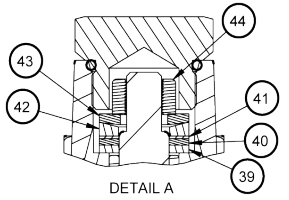
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

10U - 10 GPM Universal Pump

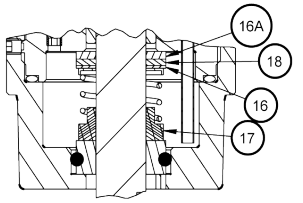
10U - 10 GPM Universal Pump

Item	Part No.	Description	Qty.
1	SAE16	Screw On Plug	1
2	SE3916N70	O-Ring, Plug	1
4	PC262	Screw, Cover	8
5	D1030A11	Cover	1
6	F11F	Bearing	1
6A	F11F	Bearing	1
7	F21E	Wiper Seal	2
8	F28E	O-Ring, Cover	1
9	DU10C13MC3	Shaft & Pinion Assembly	1
10	D1015C1	Pinion	1
11	D2014MC3	Shaft	1
12	F18C75	Key, 3/16 Sq X 3/4 Lg	1
13	D1026F1	Rotor	1
14	D203A11K	Case	1
16	F25C3	Washer	1
16A	F25C2	Washer	1
17	F18AM	Shaft Seal	1

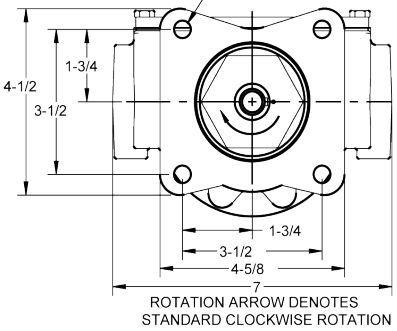
Item	Part No.	Description	Qty.
18	F11TB2	Thrust Bearing	1
19	E49E	Set Screw, Vent	2
20	F43C1	Pin	1
21	SE2137N70	O-Ring, Gland	1
22	SE2122N90	O-Ring, Cover Plate	2
23	E90HC.6	Screw, Cover Plate	4
24	D1030CP	Cover Plate	1
37	F22SS2A	Gland	1
38	E49D	Set Screw, Gland	1
39	F25C2	Washer	1
40	F11TB2	Thrust Bearing	1
41	F25C3	Washer	1
42	F25C5	Spherical Washer	1
43	F25C4	Spherical Washer	1
44	ZA532A	Nut	1
45	F41C	Pin	1



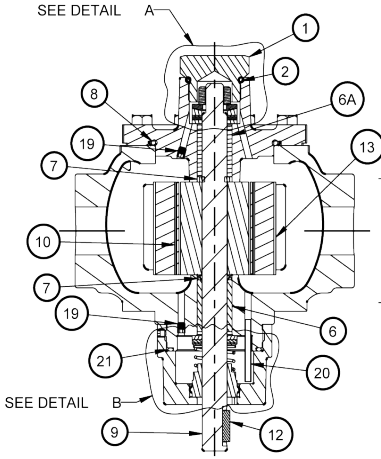
DETAIL A



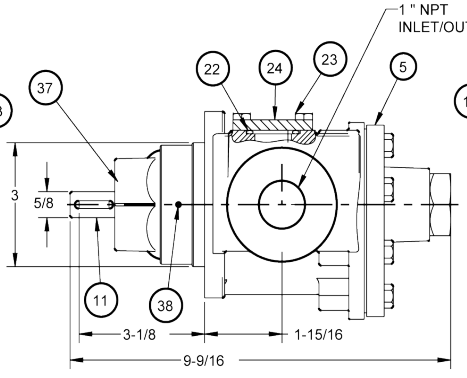
DETAIL B



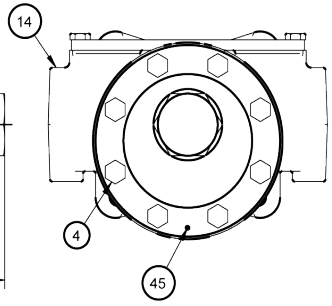
SHAFT END VIEW



CUTAWAY VIEW BOTTOM



RIGHT SIDE


COVER END VIEW

(Revised 8-1-11)

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

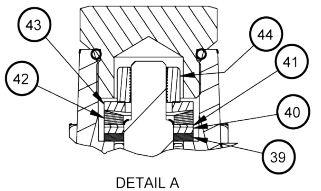
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

10UR - 10 GPM
Universal Relief Valve Pump

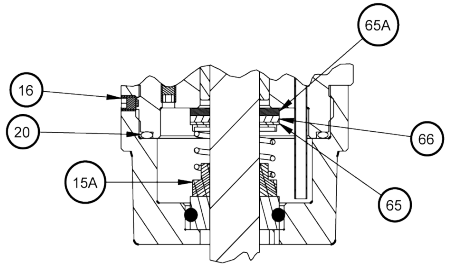
10UR - 10 GPM HAIGHT PUMP WITH RELIEF VALVE

Item	Part No.	Description	Qty.
1	SAE16	Screw On Plug	1
2	SE3916N70	O-Ring, Plug	1
4	PC262	Screw, Cover	8
5	D1030A11	Cover	1
6	F11F	Bearing	1
6A	F11F	Bearing	1
7	F21E	Wiper Seal	2
8	F28E	O-Ring, Cover	1
9	DU10C13MC3	Shaft & Pinion Assembly	1
10	D1015C1	Pinion	1
11	D2014MC3	Shaft	1
12	F18C75	Key, 3/16 Sq X 3/4 Lg	1
13	D1026F1	Rotor	1
14	D203A11K	Case	1
15A	F18AM	Shaft Seal	1
16	E49D	Set Screw, Gland	1
17	F22SS2A	Gland	1
18	E49E	Set Screw, Vent	2
19	F43C1	Pin	1
20	SE2137N70	Oring, Gland	1
22	SE2122N90	Oring, Valve Body	2

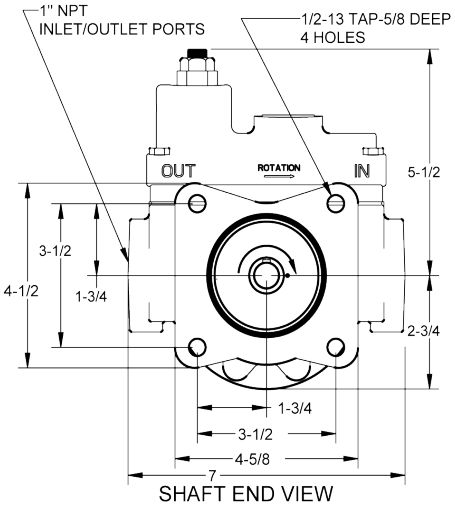
Item	Part No.	Description	Qty.
39	F25C2	Washer	1
40	F11TB2	Thrust Bearing	1
41	F25C3	Washer	1
42	F25C5	Spherical Washer	1
43	F25C4	Spherical Washer	1
44	ZA532A	Nut	1
45	F41C	Pin	1
56	E90HC1.2	Screw	4
57	FD55SA	Valve Body	1
58	F65C	Pipe Plug	1
59	RVP05	Piston	1
60	F92B	Oring, Piston	1
61	H52M	Spring	1
62	F56A	Bonnet	1
63	E64JN	Nut	1
64	F55C	Adjustment Screw	1
65	F25C3	Washer	1
65A	F25C2	Washer	1
66	F11TB2	Thrust Bearing	1



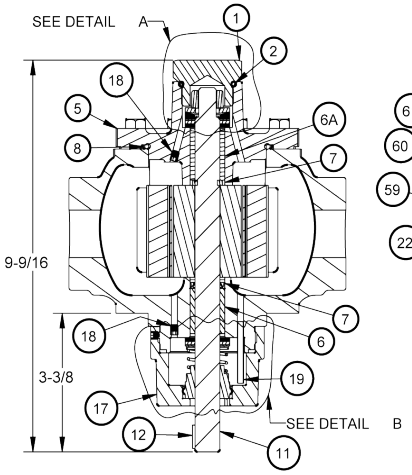
DETAIL A



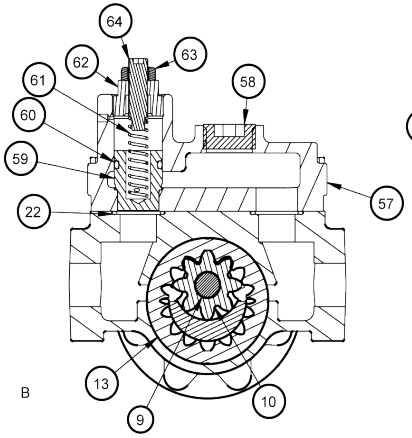
DETAIL B



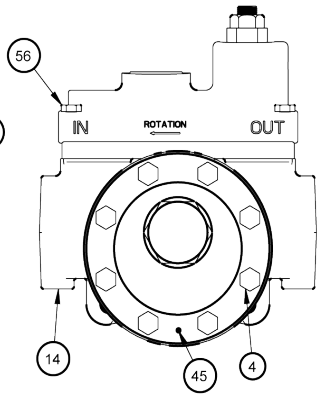
SHAFT END VIEW
ROTATION ARROW DENOTES
STANDARD CLOCKWISE ROTATION



CUTAWAY VIEW
BOTTOM



CUTAWAY VIEW
SHAFT END



COVER END VIEW

(Revised 8-1-11)

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

133 Enterprise Street • Evansville, WI 53536
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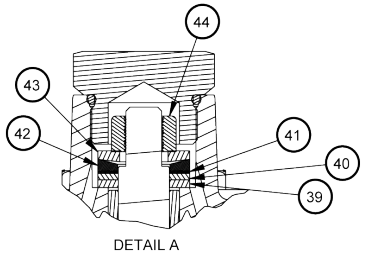
BS10U - 10 GPM Barrier Seal
Pump w/o Relief Valve

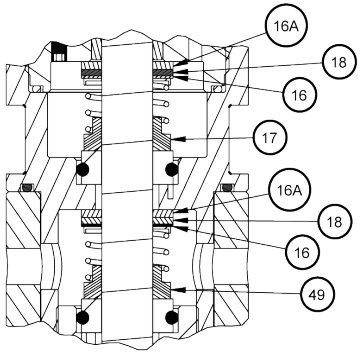
BS10U-10 GPM Barrier Seal Pump

Item	Part No.	Description	Qty.
1	SAE16	Screw On Plug	1
2	SE3916N70	O-Ring, Plug	1
4	PC262	Screw, Cover	8
5	D1030A11	Cover	1
6	F11F	Bearing	1
6A	F11F	Bearing	1
7	F21E	Wiper Seal	2
8	F28E	O-Ring, Cover	1
9	BS10C13MC	Shaft & Pinion Assembly	1
10	D1015C1	Pinion	1
11	D2014MC4	Shaft	1
12	F18C75	Drive Key, 3/16 Sq X 3/4 Lg	1
13	D1026F1	Rotor	1
14	D203A11K	Case	1
16	F25C3	Washer	2
16A	F25C2	Washer	2
17	F18AM	Shaft Seal, Primary	1
18	F11TB2	Thrust Bearing	2
19	E49E	Set Screw, Vent	2

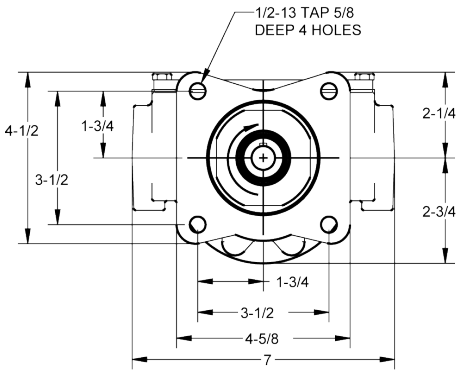
Item	Part No.	Description	Qty.
21	SE137N70	O-Ring, Gland	1
22	SE2122N90	O-Ring, Cover Plate	2
23	E90HC.6	Screw, Cover Plate	4
24	D1030CP	Cover Plate	1
37	F22DD2F	Gland	1
39	F25C2	Washer	1
40	F11TB2	Thrust Bearing	1
41	F25C3	Washer	1
42	F25C5	Spherical Washer	1
43	F25C4	Spherical Washer	1
44	ZA532A	Nut	1
45	F41C	Pin	1
49	F18AM	Shaft Seal, Secondary	1
50	SE3932N70	O-Ring, Sleeve	2
51	H33RDS	Sleeve	1
52	F33SS3F	Gland	1
53	F11TB	Roller Bearing	1
54	F19A	Locking Collar	1



DETAIL A

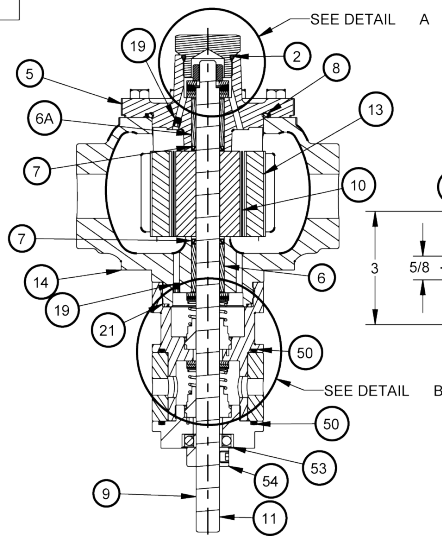


DETAIL B

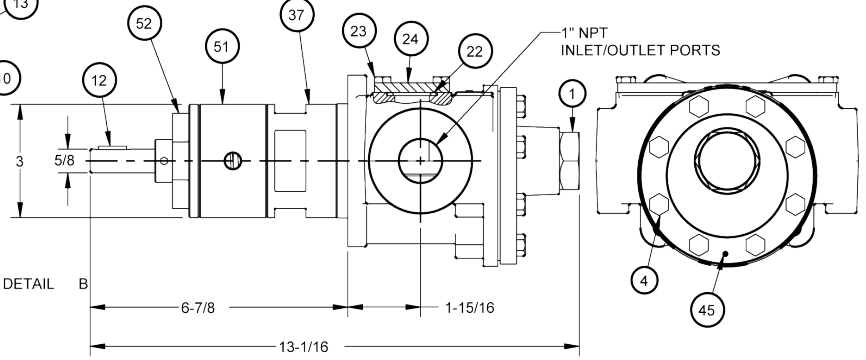


ROTATION ARROW DENOTES
STANDARD CLOCKWISE ROTATION

SHAFT END VIEW



CUTAWAY VIEW



RIGHT SIDE

COVER END VIEW

(Revised 8-1-11)

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

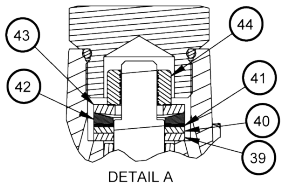
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

BS10UR - 10 GPM Barrier Seal Pump w/Relief Valve

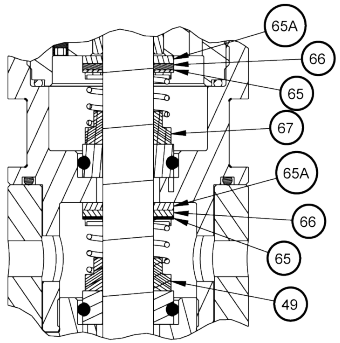
BS10UR-10 GPM Barrier Seal Relief Valve Pump

Item	Part No.	Description	Qty.
1	SAE16	Screw On Plug	1
2	SE3916N70	O-Ring, Plug	1
4	PC262	Screw, Cover	8
5	D1030A11	Cover	1
6	F11F	Bearing	1
6A	F11F	Bearing	1
7	F21E	Wiper Seal	2
8	F28E	O-Ring, Cover	1
9	BS10C13MC	Shaft & Pinion Assembly	1
10	D1015C1	Pinion	1
11	D2014MC4	Shaft	1
12	F18C75	Key, 3/16 Sq X 3/4 Lg	1
13	D1026F1	Rotor	1
14	D203A11K	Case	1
18	E49E	Set Screw, Vent	2
20	SE2137N70	O-Ring, Gland	1
22	SE2122N90	O-Ring, Valve Body	2
37	F22DD2F	Gland	1
39	F25C2	Washer	1
40	F11TB2	Thrust Bearing	1
41	F25C3	Washer	1
42	F25C5	Washer	1

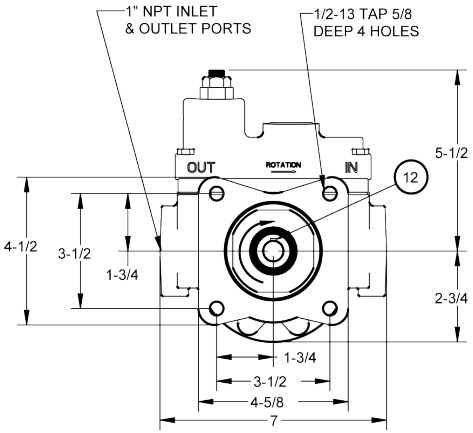
Item	Part No.	Description	Qty.
43	F25C4	Washer	1
44	ZA532A	Nut	1
45	F41C	Pin	1
49	F18AM	Shaft Seal, Secondary	1
50	SE3932N70	Oring, Sleeve	2
51	H33RDS	Sleeve	1
52	F33SS3F	Gland	1
53	F11TB	Roller Bearing	1
54	F19A	Locking Collar	1
56	E90HC1.2	Screw	4
57	FD55SA	Valve Body	1
58	F65C	Pipe Plug	1
59	RVP05	Piston	1
60	F92B	Oring, Piston	1
61	H52M	Spring	1
62	F56A	Bonnet	1
63	E64JN	Nut	1
64	F55C	Adjustment Screw	1
65	F25C3	Washer	1
65A	F25C2	Washer	1
66	F11TB2	Thrust Bearing	1
67	F18AM	Shaft Seal, Primary	1



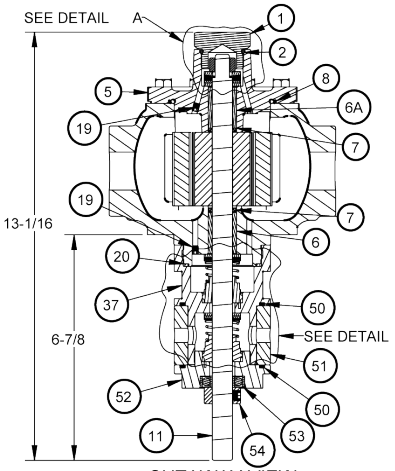
DETAIL A



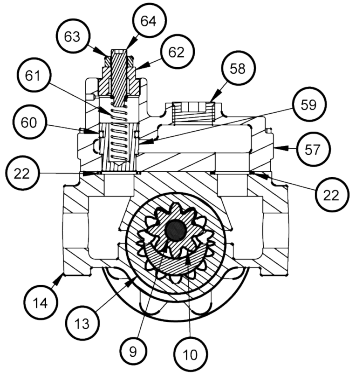
DETAIL B



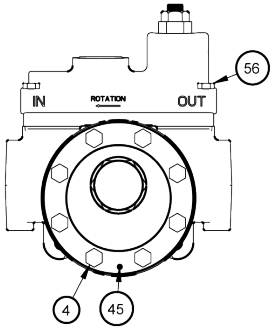
SHAFT END VIEW
ROTATION ARROW DENOTES
STANDARD CLOCKWISE ROTATION



CUTAWAY VIEW
BOTTOM

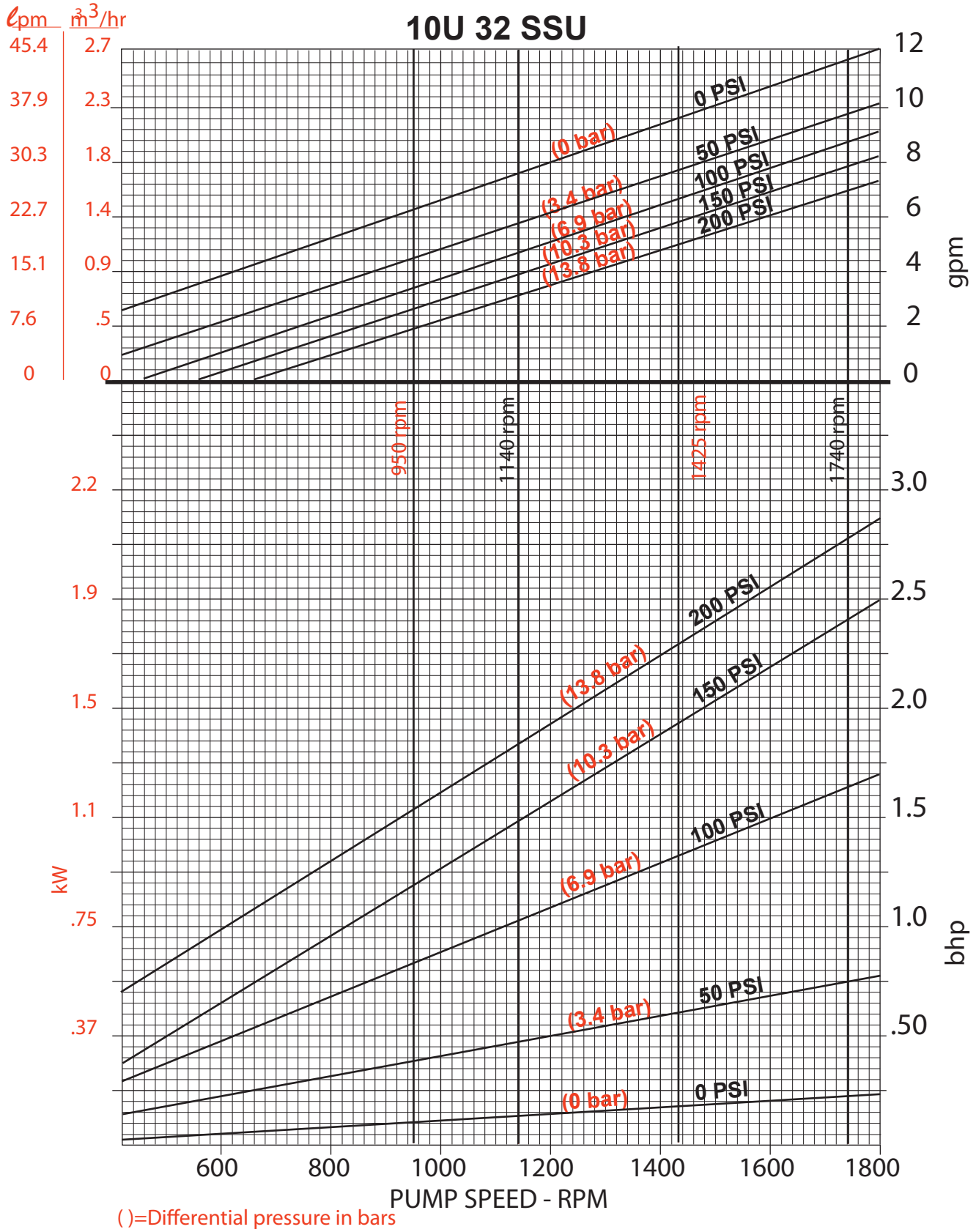


CUTAWAY VIEW
SHAFT END



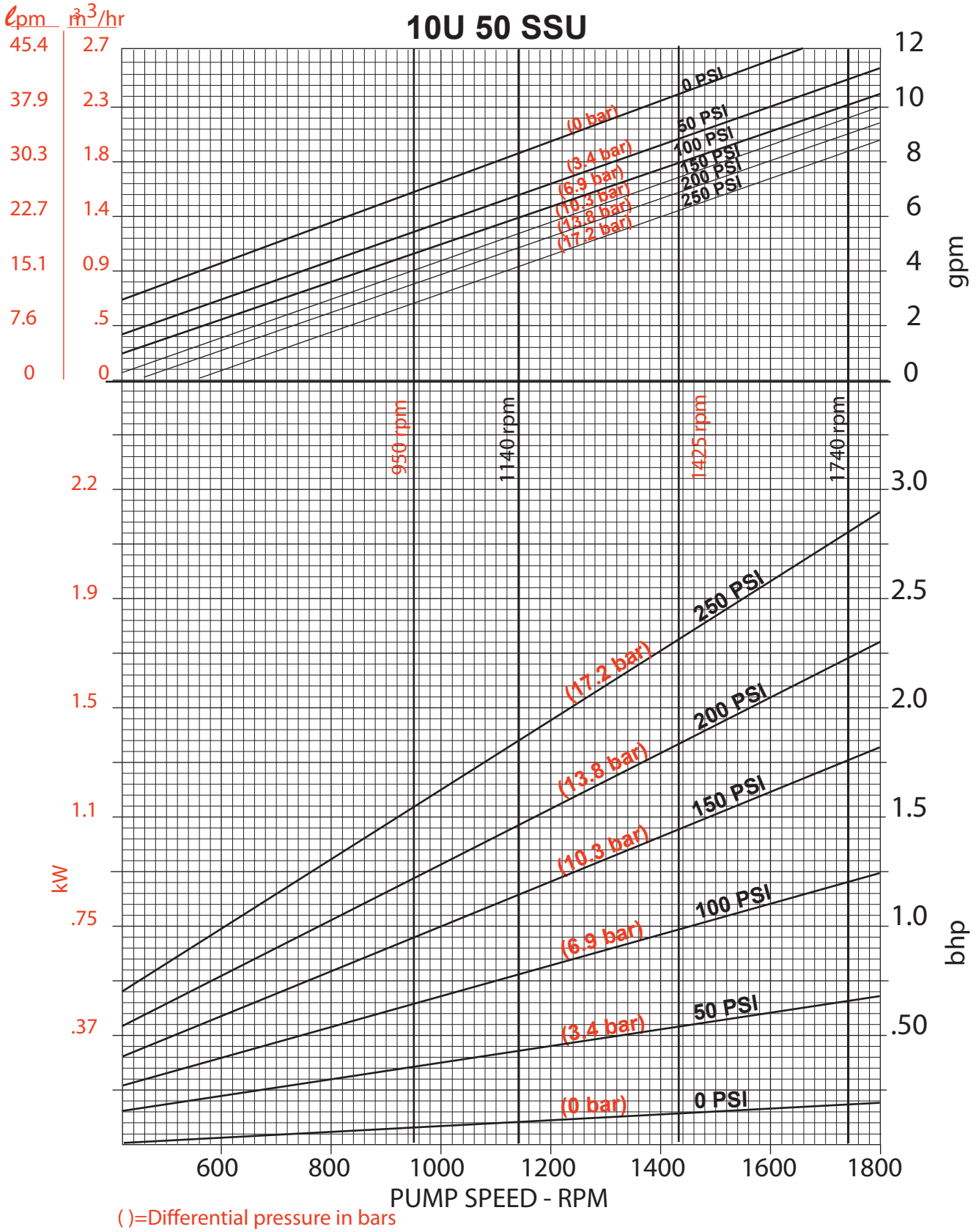
COVER END VIEW

(Revised 8-1-11)



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



HAIGHT® PUMPS
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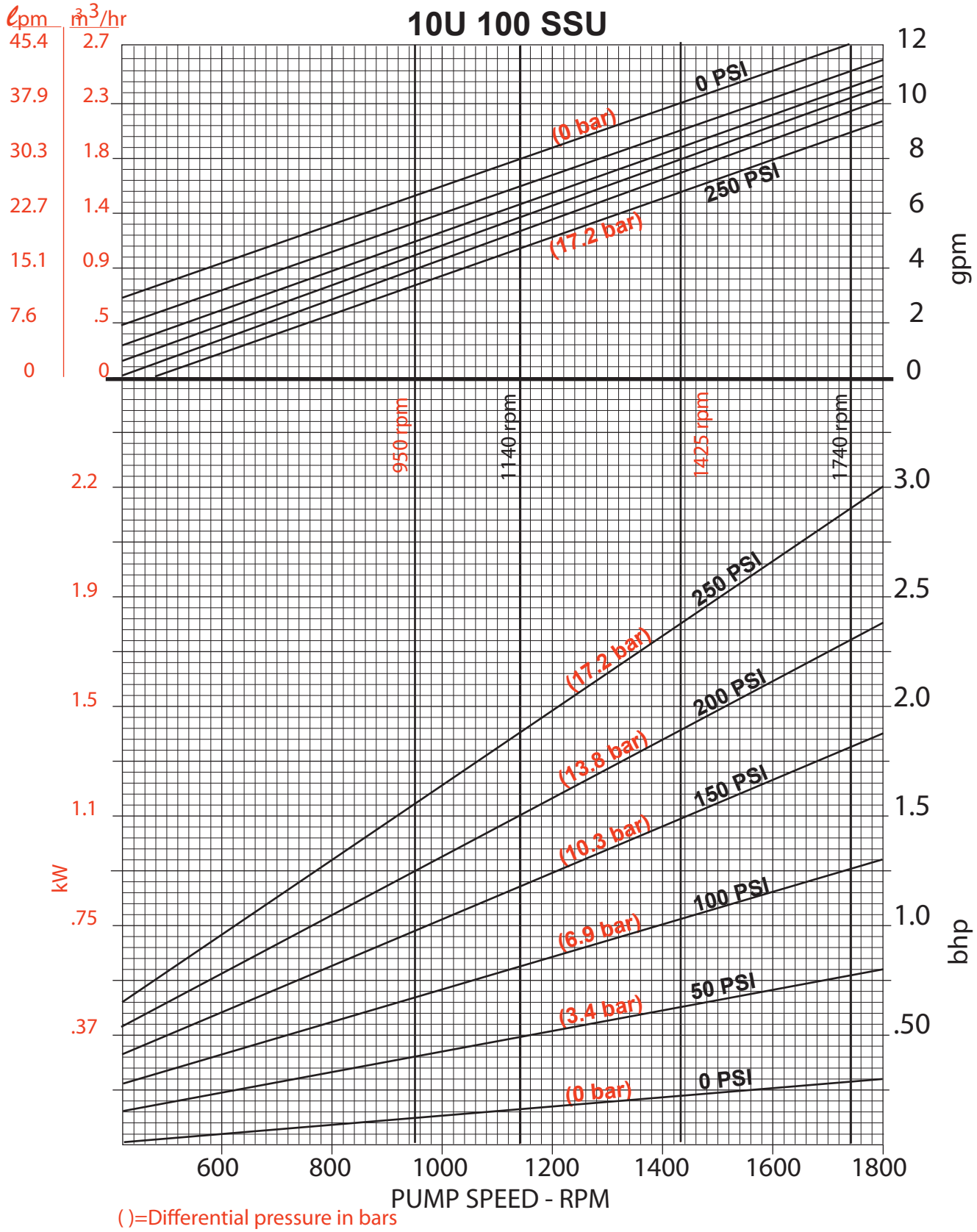
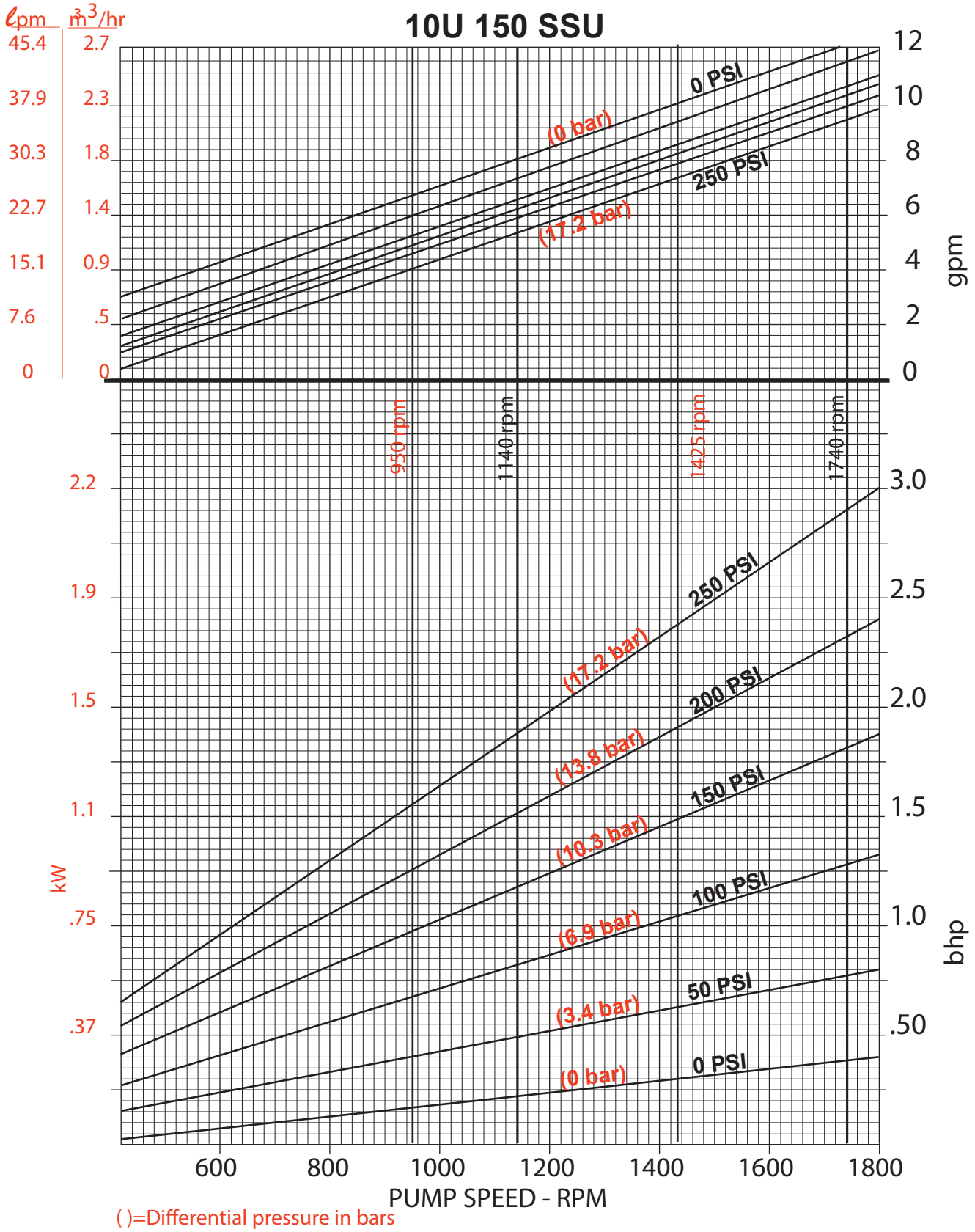


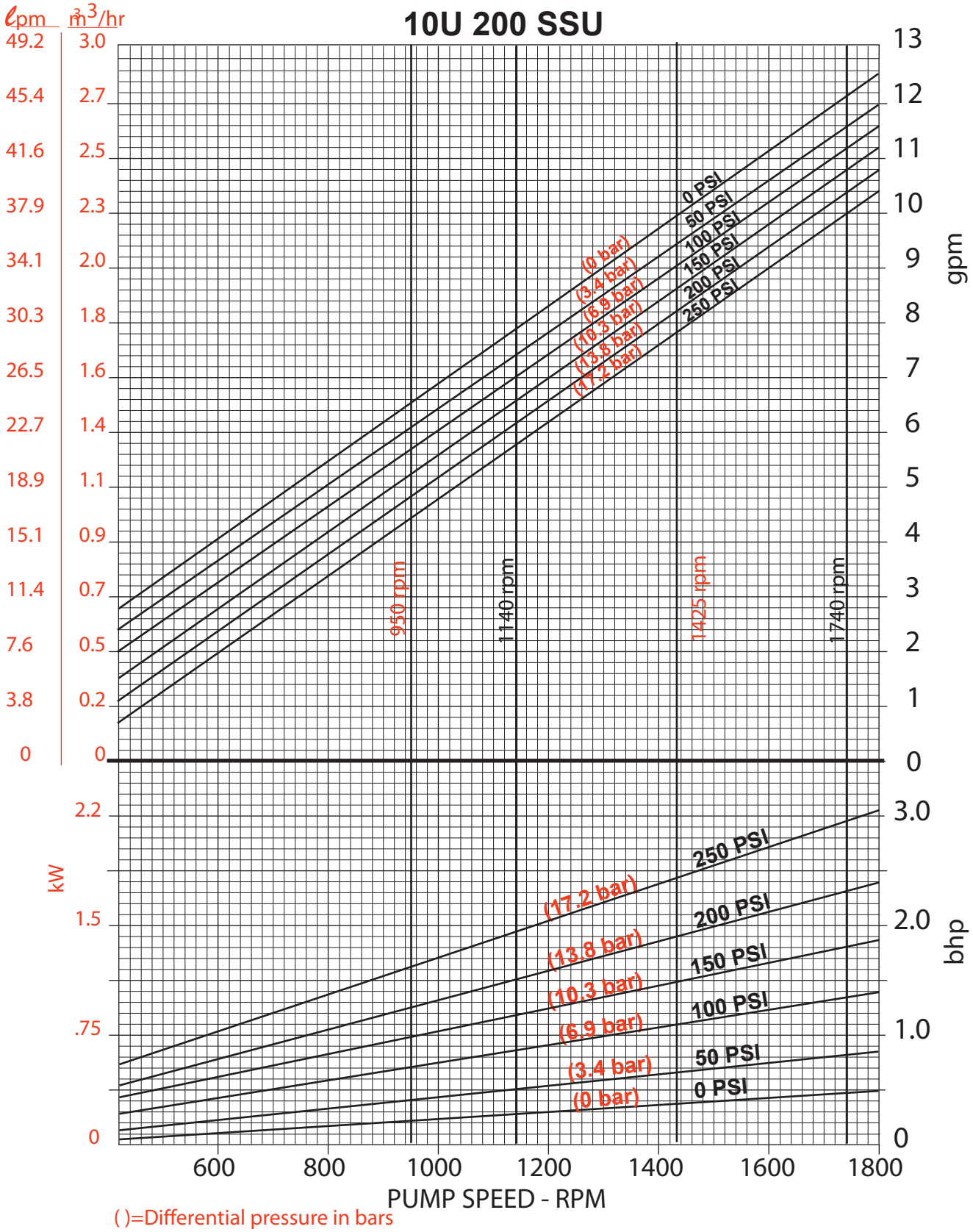
( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



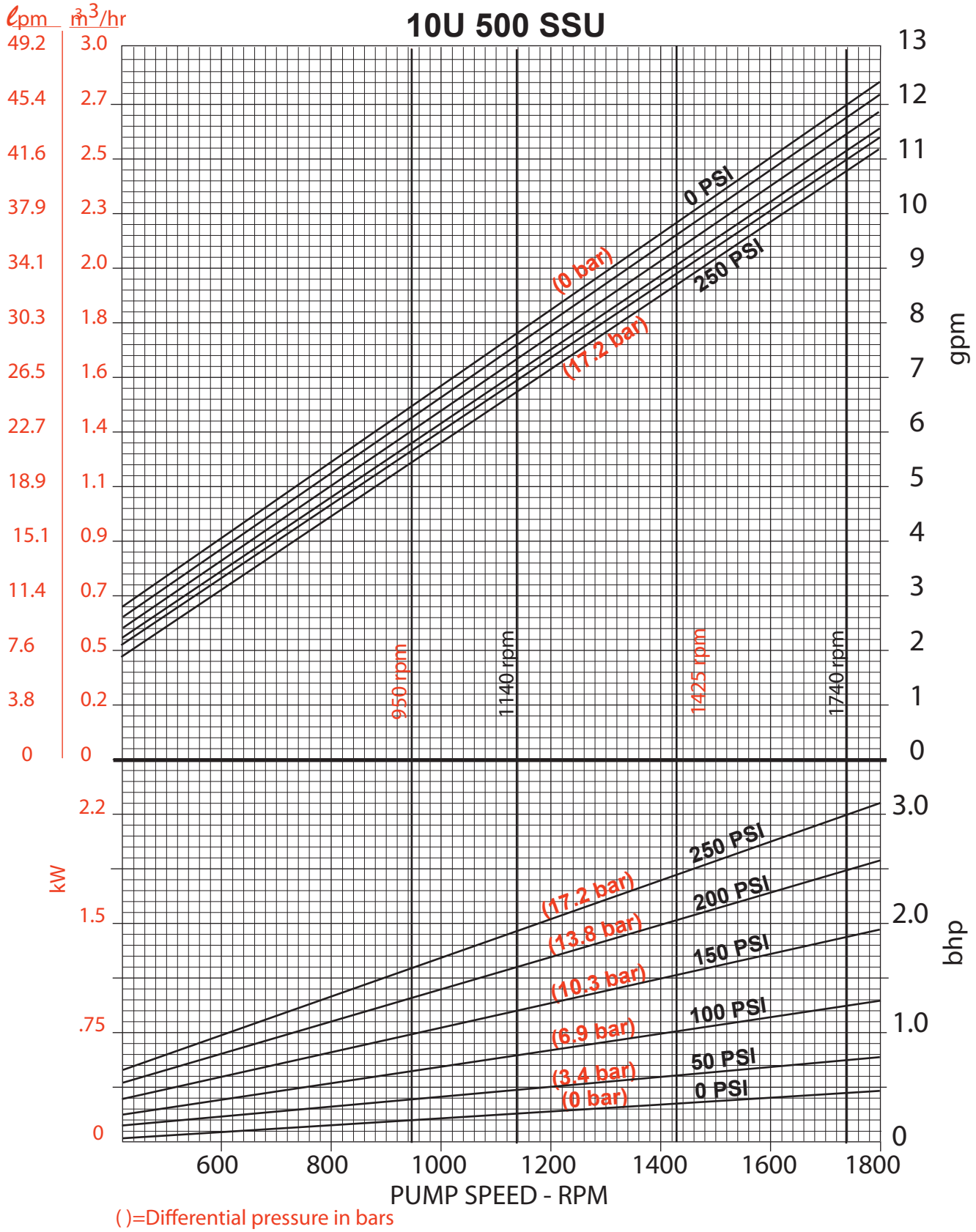
( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



( )=Differential pressure in bars

HAIGHT® PUMPS
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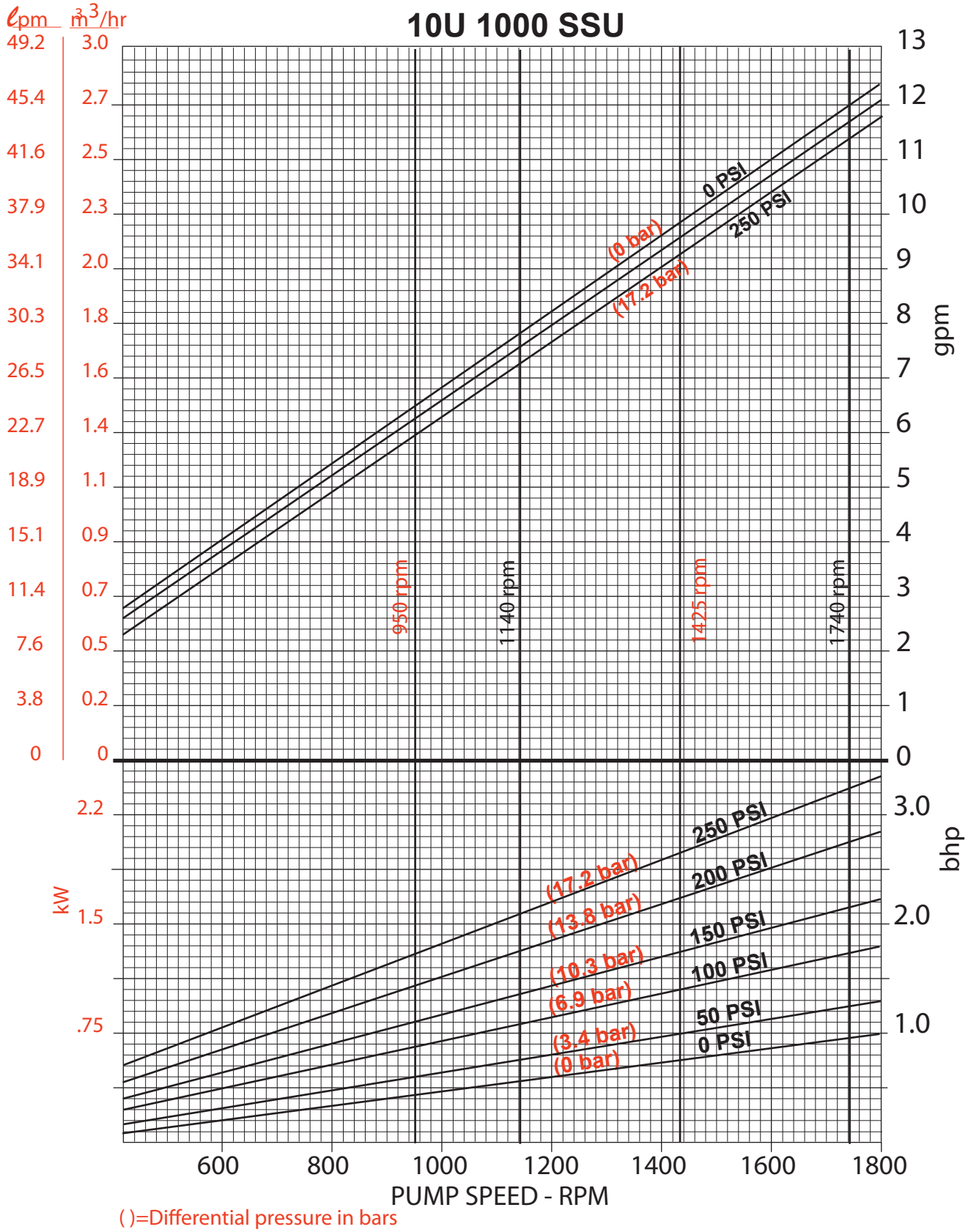
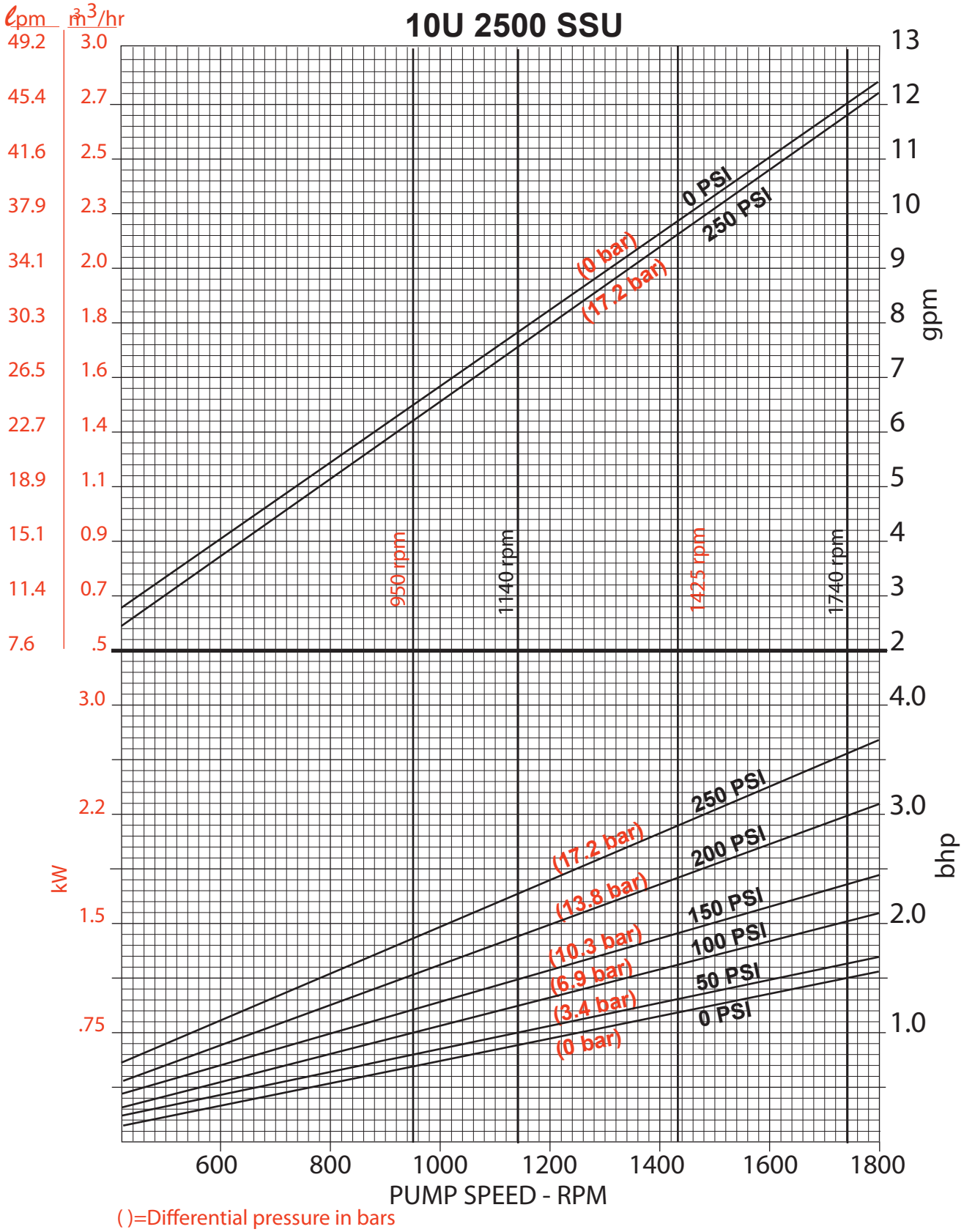


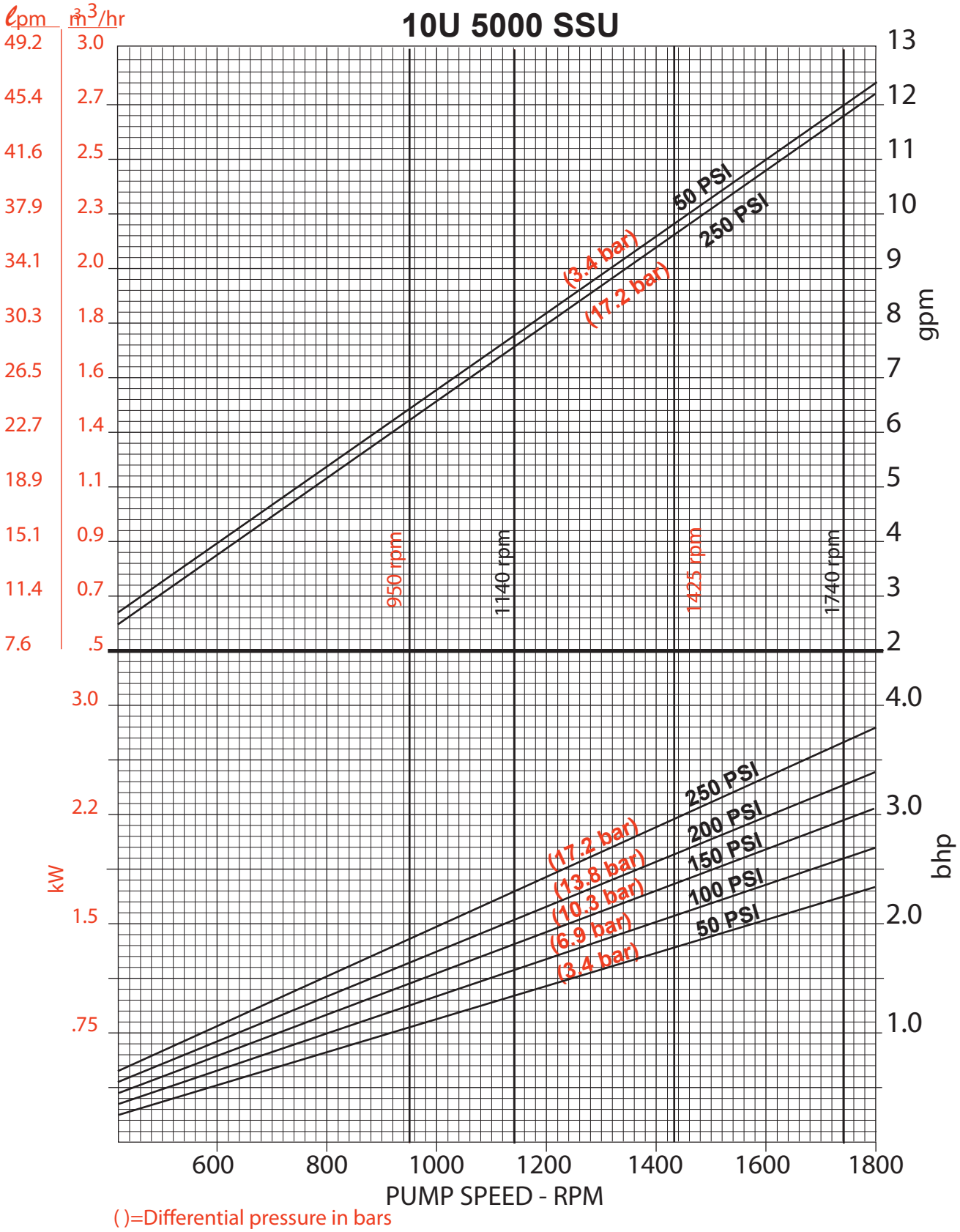
( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



( )=Differential pressure in bars

HAIGHT® PUMPS
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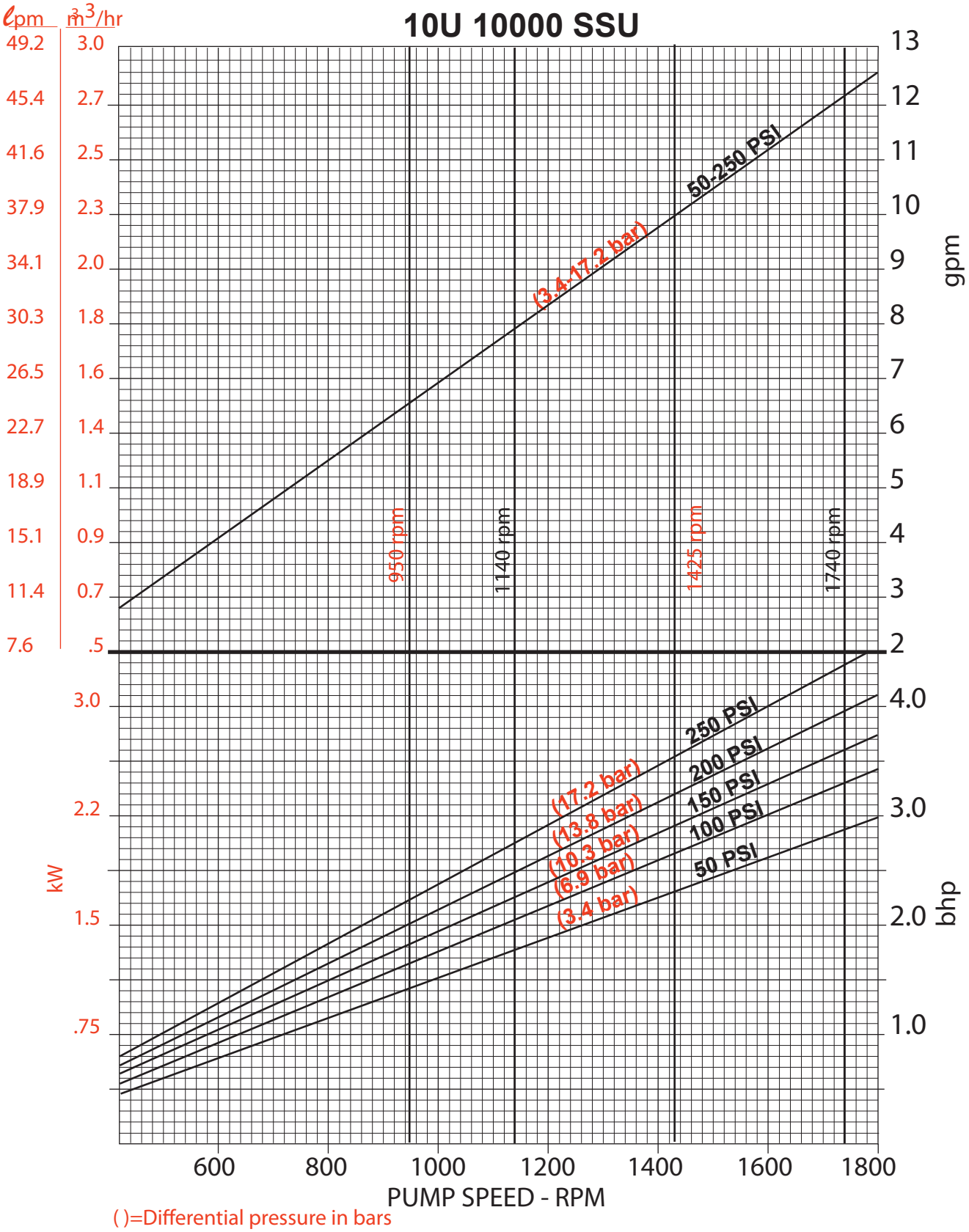


( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

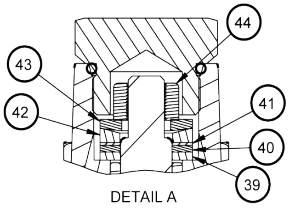
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

15U - 15 GPM Universal Pump

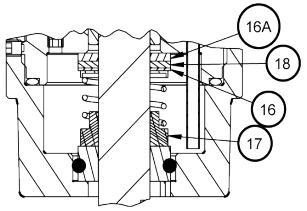
15U - 15 GPM Universal Pump

Item	Part No.	Description	Qty.
1	SAE16	Screw On Plug	1
2	SE3916N70	O-Ring, Plug	1
4	PC262	Screw, Cover	8
5	D1530A11	Cover	1
6	F11F	Bearing	1
6A	F11F	Bearing	1
7	F21E	Wiper Seal	2
8	F28E	O-Ring, Cover	1
9	DU15C13MC3	Shaft & Pinion Assembly	1
10	D1515C1	Pinion	1
11	D2014MC3	Shaft	1
12	F18C75	Key, 3/16 Sq X 3/4 Lg	1
13	D1526F1	Rotor	1
14	D203A11L	Case	1
16	F25C3	Washer	1
16A	F25C2	Washer	1
17	F18AM	Shaft Seal	1

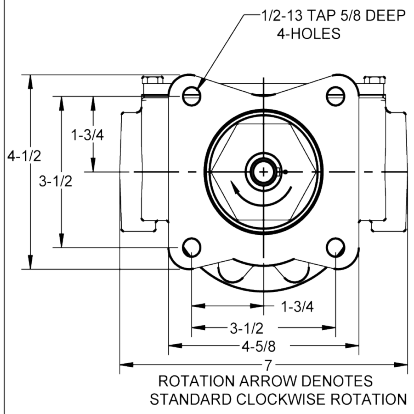
Item	Part No.	Description	Qty.
18	F11TB2	Thrust Bearing	1
19	E49E	Set Screw, Vent	2
20	F43C1	Pin	1
21	SE2137N70	O-Ring, Gland	1
22	SE2122N90	O-Ring, Cover Plate	2
23	E90HC.6	Screw, Cover Plate	4
24	D1030CP	Cover Plate	1
37	F22SS2A	Gland	1
38	E49D	Set Screw, Gland	1
39	F25C2	Washer	1
40	F11TB2	Thrust Bearing	1
41	F25C3	Washer	1
42	F25C5	Spherical Washer	1
43	F25C4	Spherical Washer	1
44	ZA532A	Nut	1
45	F41C	Pin	1



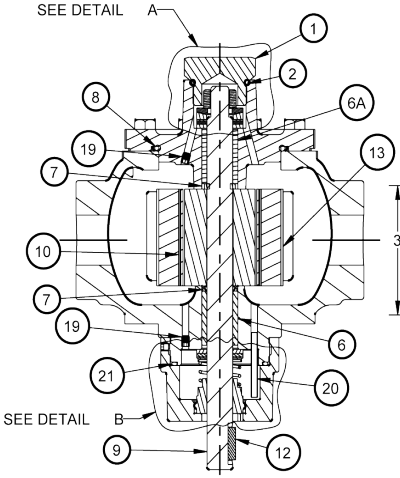
DETAIL A



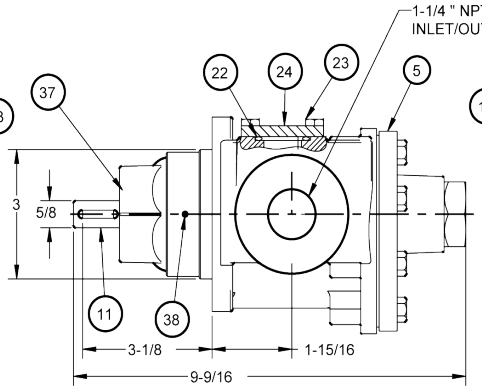
DETAIL B



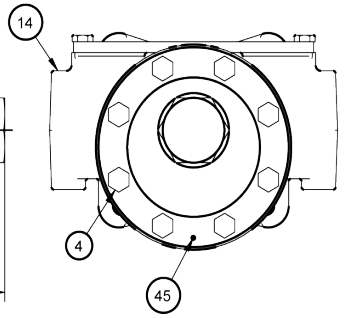
SHAFT END VIEW



CUTAWAY VIEW BOTTOM



RIGHT SIDE


COVER END VIEW

(Revised 8-1-11)

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

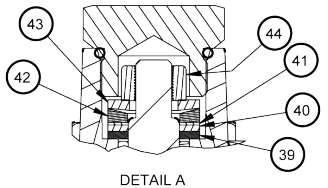
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

15UR - 15 GPM
Universal Relief Valve Pump

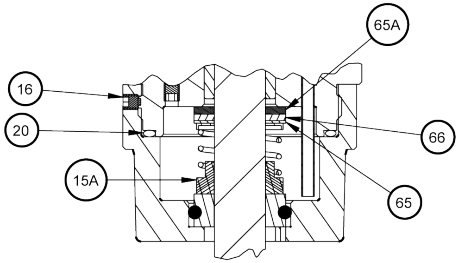
15UR - 15 GPM HAIGHT PUMP WITH RELIEF VALVE

Item	Part No.	Description	Qty.
1	SAE16	Screw On Plug	1
2	SE3916N70	O-Ring, Plug	1
4	PC262	Screw, Cover	8
5	D1530A11	Cover	1
6	F11F	Bearing	1
6A	F11F	Bearing	1
7	F21E	Wiper Seal	2
8	F28E	O-Ring, Cover	1
9	DU15C13MC3	Shaft & Pinion Assembly	1
10	D1515C1	Pinion	1
11	D2014MC3	Shaft	1
12	F18C75	Key, 3/16 Sq X 3/4 Lg	1
13	D1526F1	Rotor	1
14	D203A11L	Case	1
15A	F18AM	Shaft Seal	1
16	E49D	Set Screw, Gland	1
17	F22SS2A	Gland	1
18	E49E	Set Screw, Vent	2
19	F43C1	Pin	1
20	SE2137N70	Oring, Gland	1
22	SE2122N90	Oring, Valve Body	2

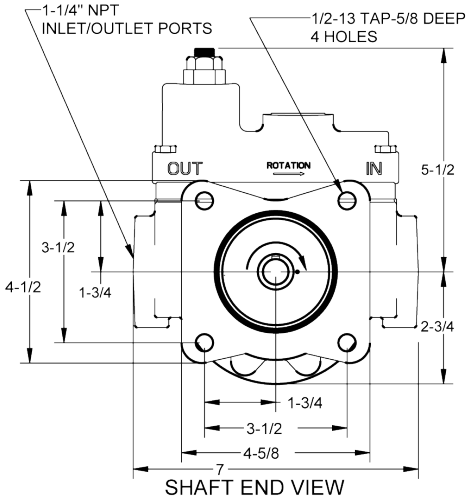
Item	Part No.	Description	Qty.
39	F25C2	Washer	1
40	F11TB2	Thrust Bearing	1
41	F25C3	Washer	1
42	F25C5	Spherical Washer	1
43	F25C4	Spherical Washer	1
44	ZA532A	Nut	1
45	F41C	Pin	1
56	E90HC1.2	Screw	4
57	FD55SA	Valve Body	1
58	F65C	Pipe Plug	1
59	RVP05	Piston	1
60	F92B	Oring, Piston	1
61	H52M	Spring	1
62	F56A	Bonnet	1
63	E64JN	Nut	1
64	F55C	Adjustment Screw	1
65	F25C3	Washer	1
65A	F25C2	Washer	1
66	F11TB2	Thrust Bearing	1



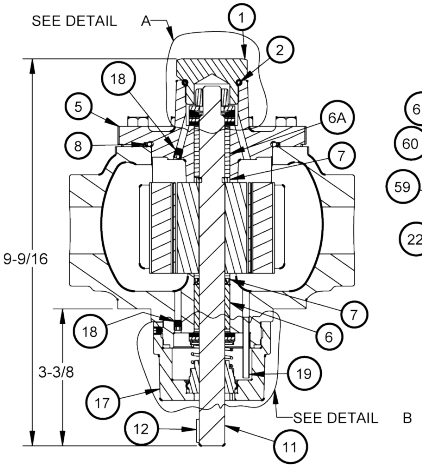
DETAIL A



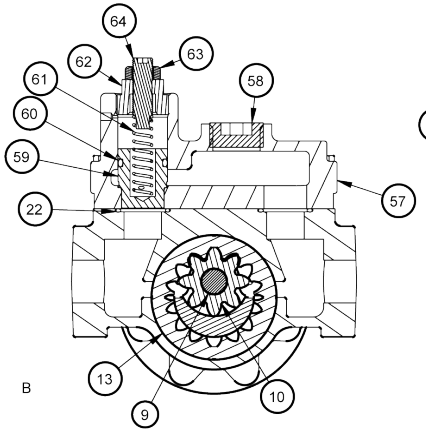
DETAIL B



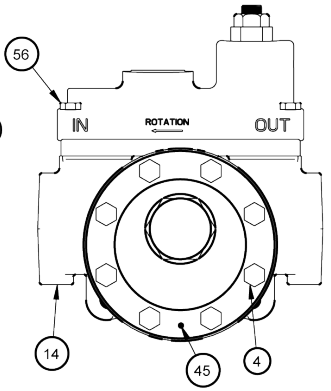
SHAFT END VIEW
ROTATION ARROW DENOTES
STANDARD CLOCKWISE ROTATION



CUTAWAY VIEW
BOTTOM



CUTAWAY VIEW
SHAFT END



COVER END VIEW

(Revised 8-1-11)

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

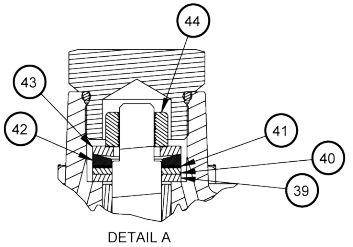
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

BS15U - 105GPM Barrier Seal
Pump w/o Relief Valve

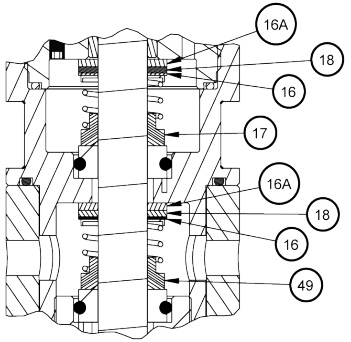
BS15U-15 GPM Barrier Seal Pump

Item	Part No.	Description	Qty.
1	SAE16	Screw On Plug	1
2	SE3916N70	O-Ring, Plug	1
4	PC262	Screw, Cover	8
5	D1530A11	Cover	1
6	F11F	Bearing	1
6A	F11F	Bearing	1
7	F21E	Wiper Seal	2
8	F28E	O-Ring, Cover	1
9	BS15C13MC	Shaft & Pinion Assembly	1
10	D1515C1	Pinion	1
11	D2014MC4	Shaft	1
12	F18C75	Drive Key, 3/16 Sq X 3/4 Lg	1
13	D1526F1	Rotor	1
14	D203A11L	Case	1
16	F25C3	Washer	2
16A	F25C2	Washer	2
17	F18AM	Shaft Seal, Primary	1
18	F11TB2	Thrust Bearing	2
19	E49E	Set Screw, Vent	2

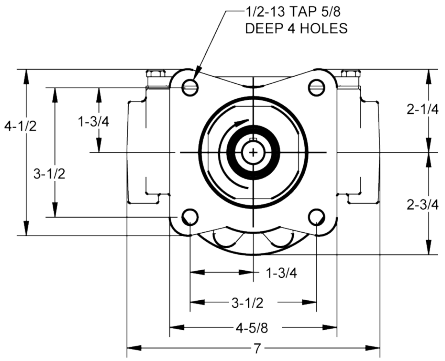
Item	Part No.	Description	Qty.
21	SE137N70	O-Ring, Gland	1
22	SE2122N90	O-Ring, Cover Plate	2
23	E90HC.6	Screw, Cover Plate	4
24	D1030CP	Cover Plate	1
37	F22DD2F	Gland	1
39	F25C2	Washer	1
40	F11TB2	Thrust Bearing	1
41	F25C3	Washer	1
42	F25C5	Spherical Washer	1
43	F25C4	Spherical Washer	1
44	ZA532A	Nut	1
45	F41C	Pin	1
49	F18AM	Shaft Seal, Secondary	1
50	SE3932N70	O-Ring, Sleeve	2
51	H33RDS	Sleeve	1
52	F33SS3F	Gland	1
53	F11TB	Roller Bearing	1
54	F19A	Locking Collar	1



DETAIL A

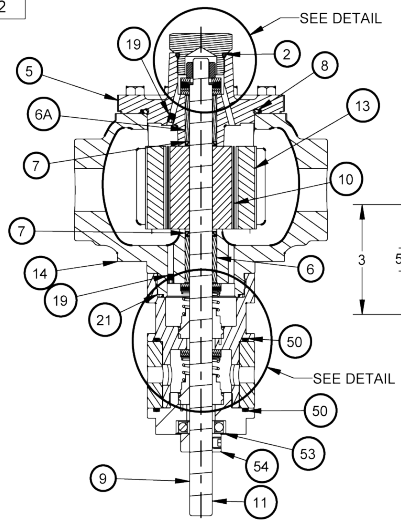


DETAIL B

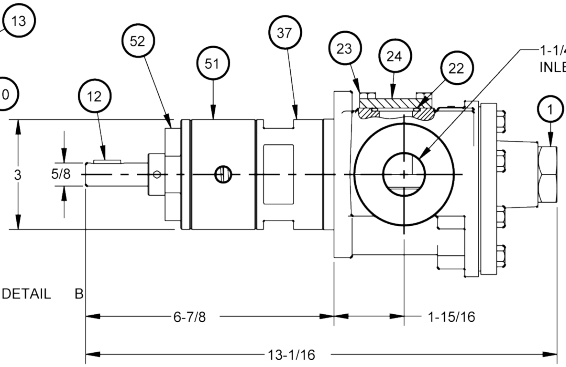


ROTATION ARROW DENOTES
STANDARD CLOCKWISE ROTATION

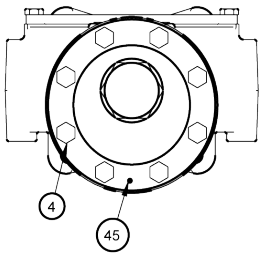
SHAFT END VIEW



CUTAWAY VIEW
BOTTOM



RIGHT SIDE



COVER END VIEW

(Revised 8-1-11)

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

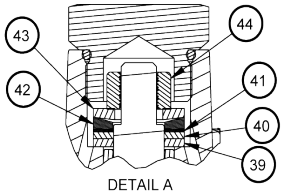
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

BS15UR - 15 GPM Barrier Seal Pump w/Relief Valve

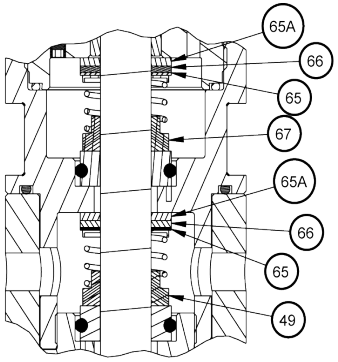
BS15UR-15 GPM Barrier Seal Relief Valve Pump

Item	Part No.	Description	Qty.
1	SAE16	Screw On Plug	1
2	SE3916N70	O-Ring, Plug	1
4	PC262	Screw, Cover	8
5	D1530A11	Cover	1
6	F11F	Bearing	1
6A	F11F	Bearing	1
7	F21E	Wiper Seal	2
8	F28E	O-Ring, Cover	1
9	BS15C13MC	Shaft & Pinion Assembly	1
10	D1515C1	Pinion	1
11	D2014MC4	Shaft	1
12	F18C75	Key, 3/16 Sq X 3/4 Lg	1
13	D1526F1	Rotor	1
14	D203A11L	Case	1
18	E49E	Set Screw, Vent	2
20	SE2137N70	O-Ring, Gland	1
22	SE2122N90	O-Ring, Valve Body	2
37	F22DD2F	Gland	1
39	F25C2	Washer	1
40	F11TB2	Thrust Bearing	1
41	F25C3	Washer	1
42	F25C5	Washer	1

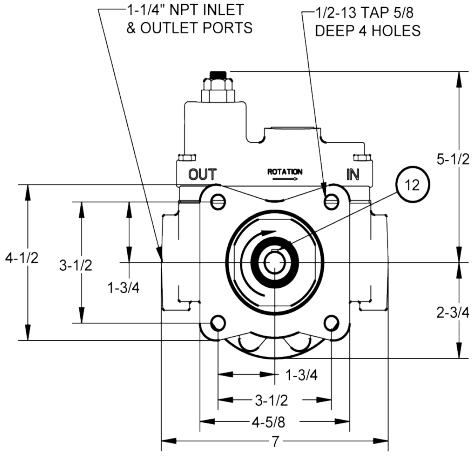
Item	Part No.	Description	Qty.
43	F25C4	Washer	1
44	ZA532A	Nut	1
45	F41C	Pin	1
49	F18AM	Shaft Seal, Secondary	1
50	SE3932N70	Oring, Sleeve	2
51	H33RDS	Sleeve	1
52	F33SS3F	Gland	1
53	F11TB	Roller Bearing	1
54	F19A	Locking Collar	1
56	E90HC1.2	Screw	4
57	FD55SA	Valve Body	1
58	F65C	Pipe Plug	1
59	RVP05	Piston	1
60	F92B	Oring, Piston	1
61	H52M	Spring	1
62	F56A	Bonnet	1
63	E64JN	Nut	1
64	F55C	Adjustment Screw	1
65	F25C3	Washer	1
65A	F25C2	Washer	1
66	F11TB2	Thrust Bearing	1
67	F18AM	Shaft Seal, Primary	1



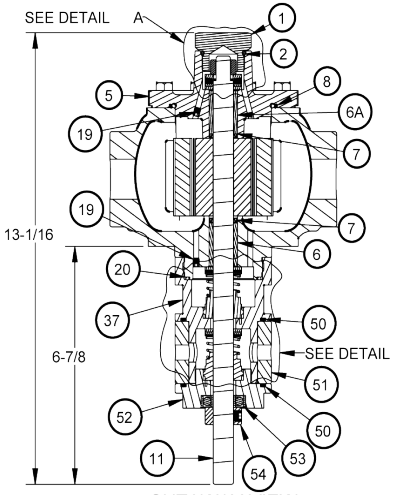
DETAIL A



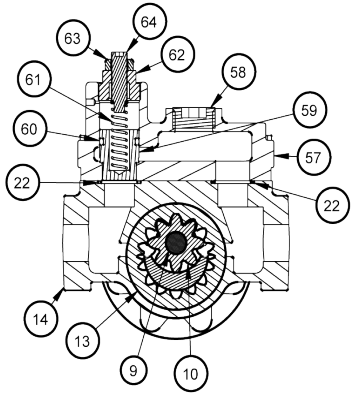
DETAIL B



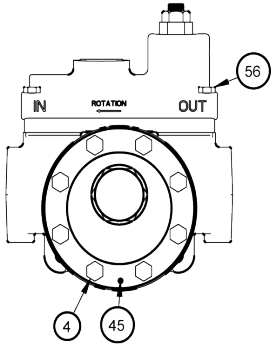
SHAFT END VIEW
ROTATION ARROW DENOTES
STANDARD CLOCKWISE ROTATION



CUTAWAY VIEW
BOTTOM



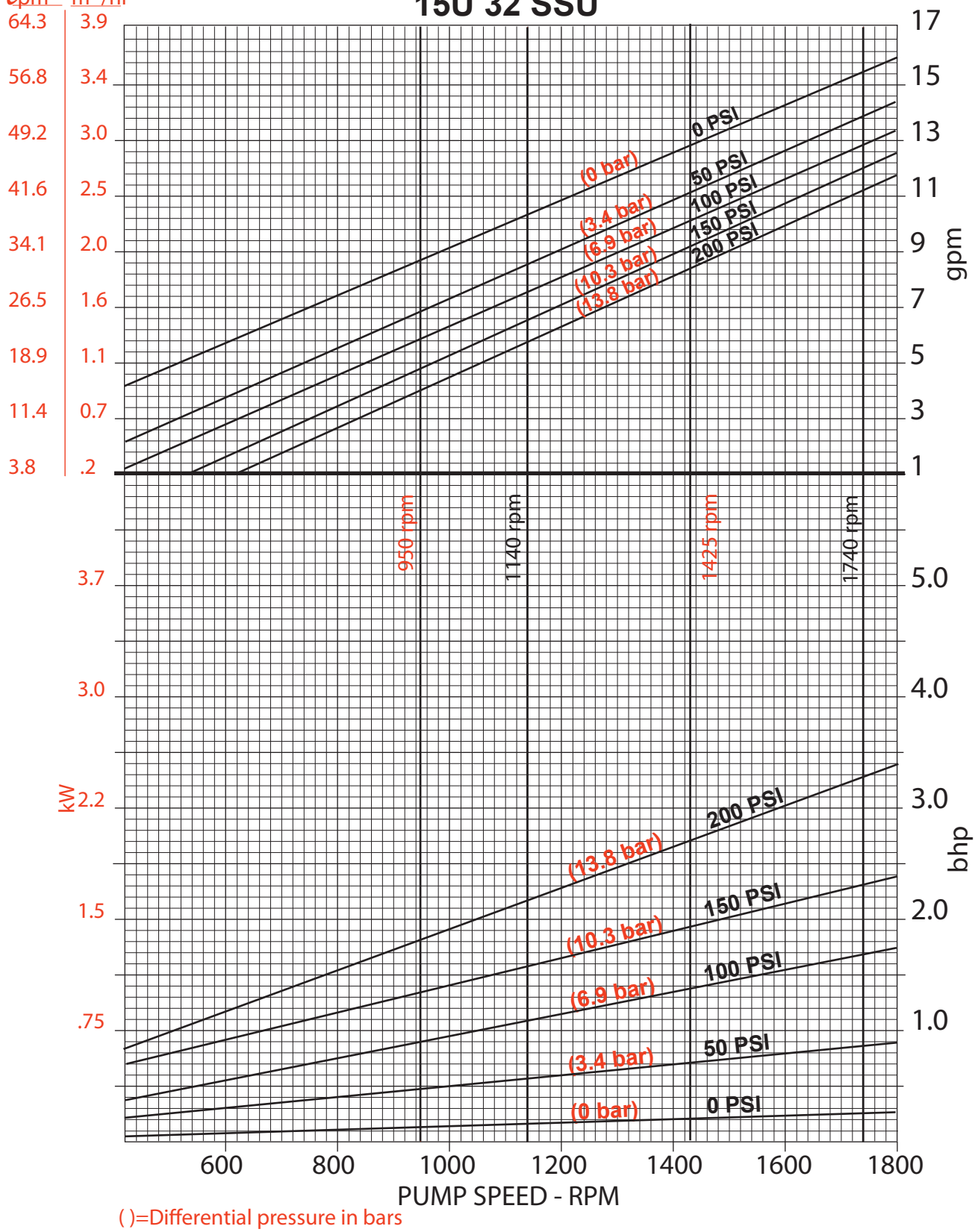
CUTAWAY VIEW
SHAFT END



COVER END VIEW

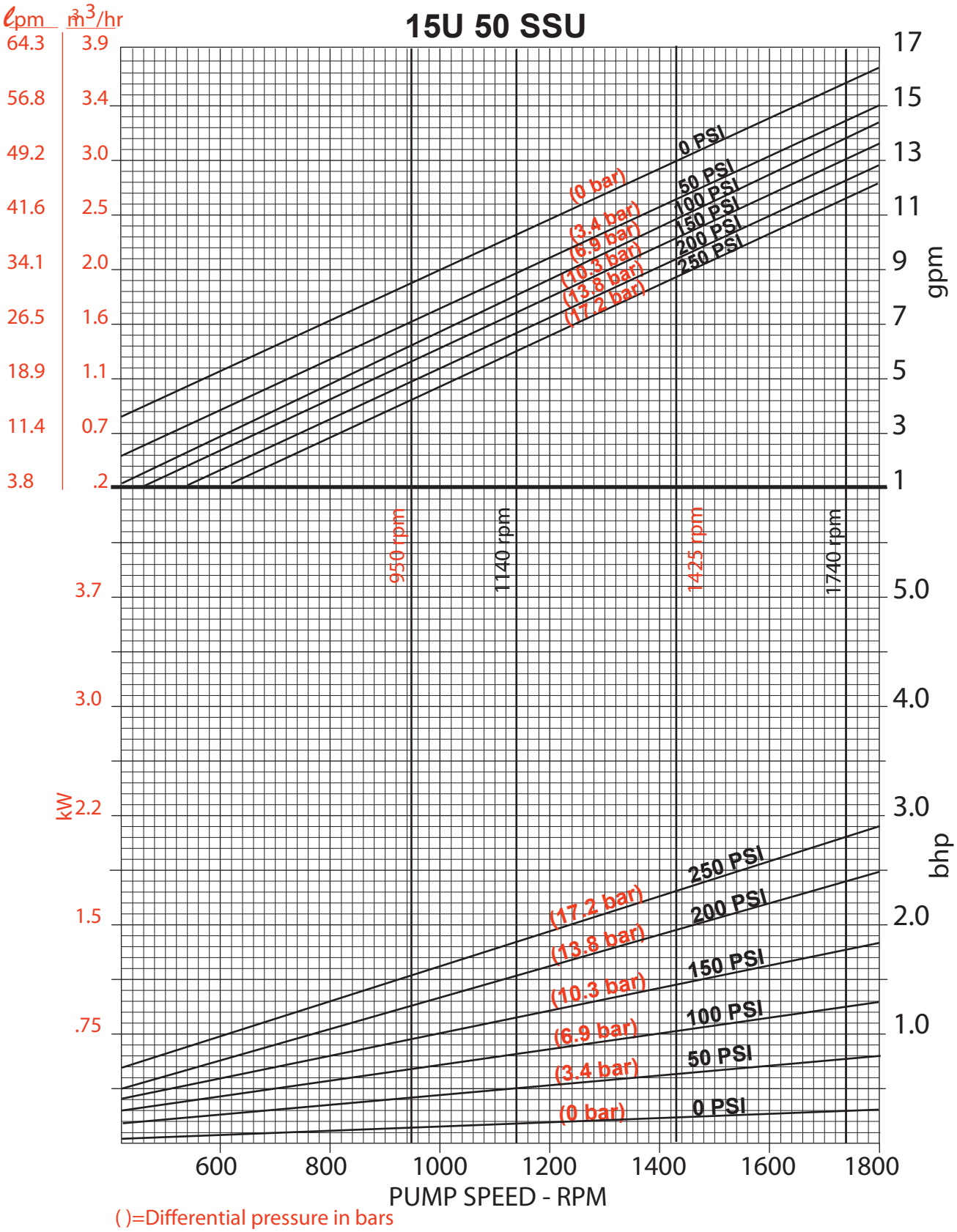
(Revised 8-1-11)

15U 32 SSU



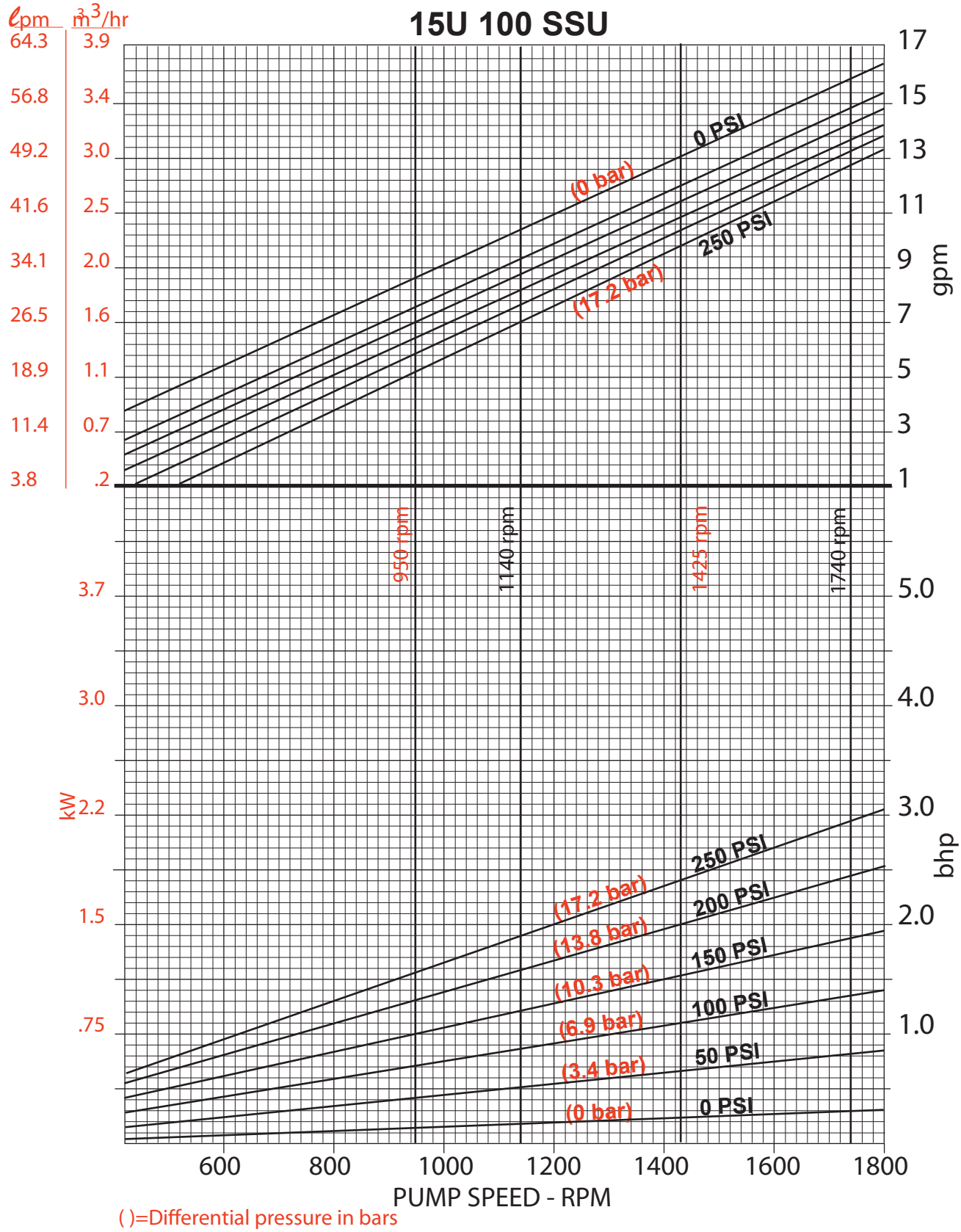
( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



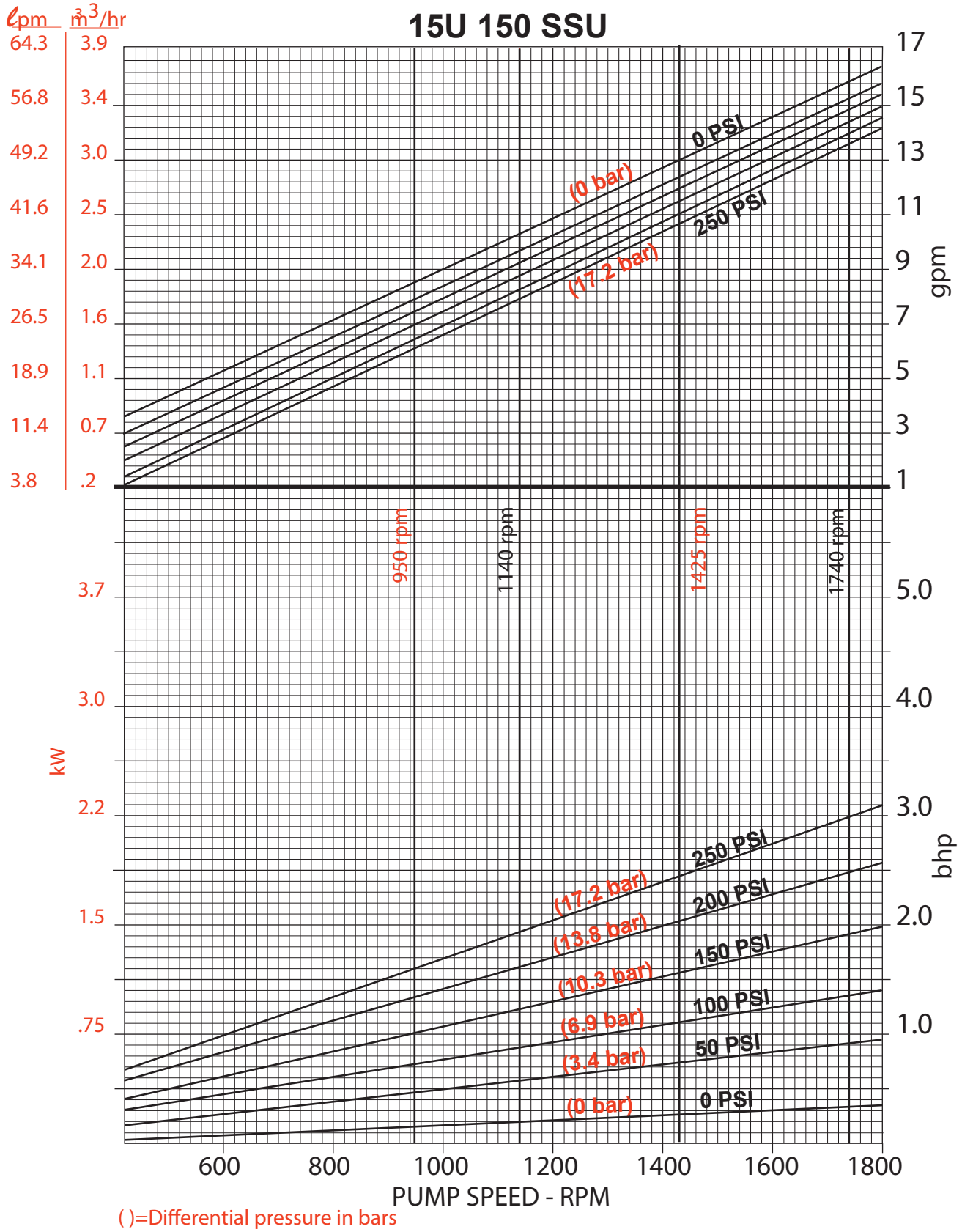
( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



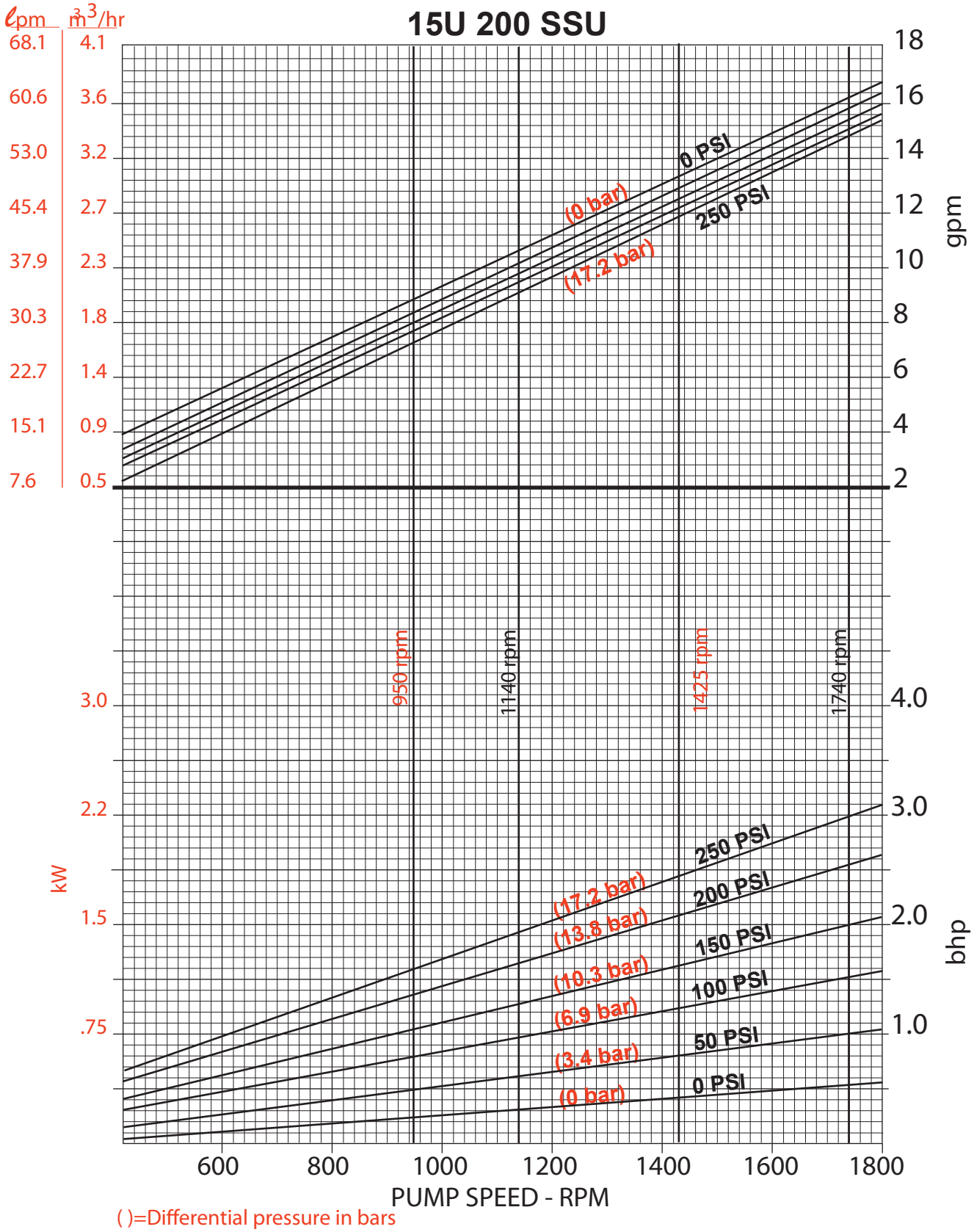
( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



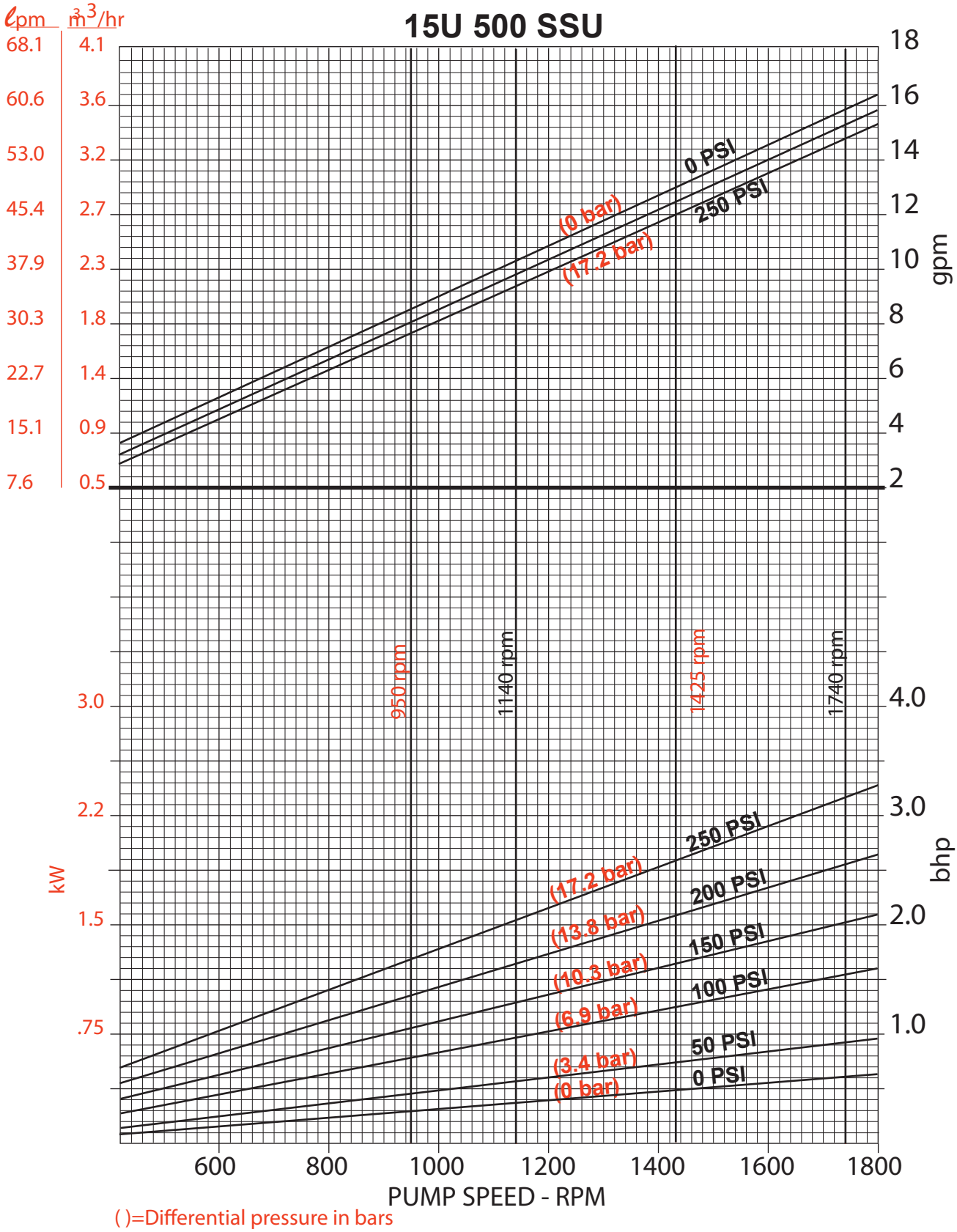
( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



( )=Differential pressure in bars

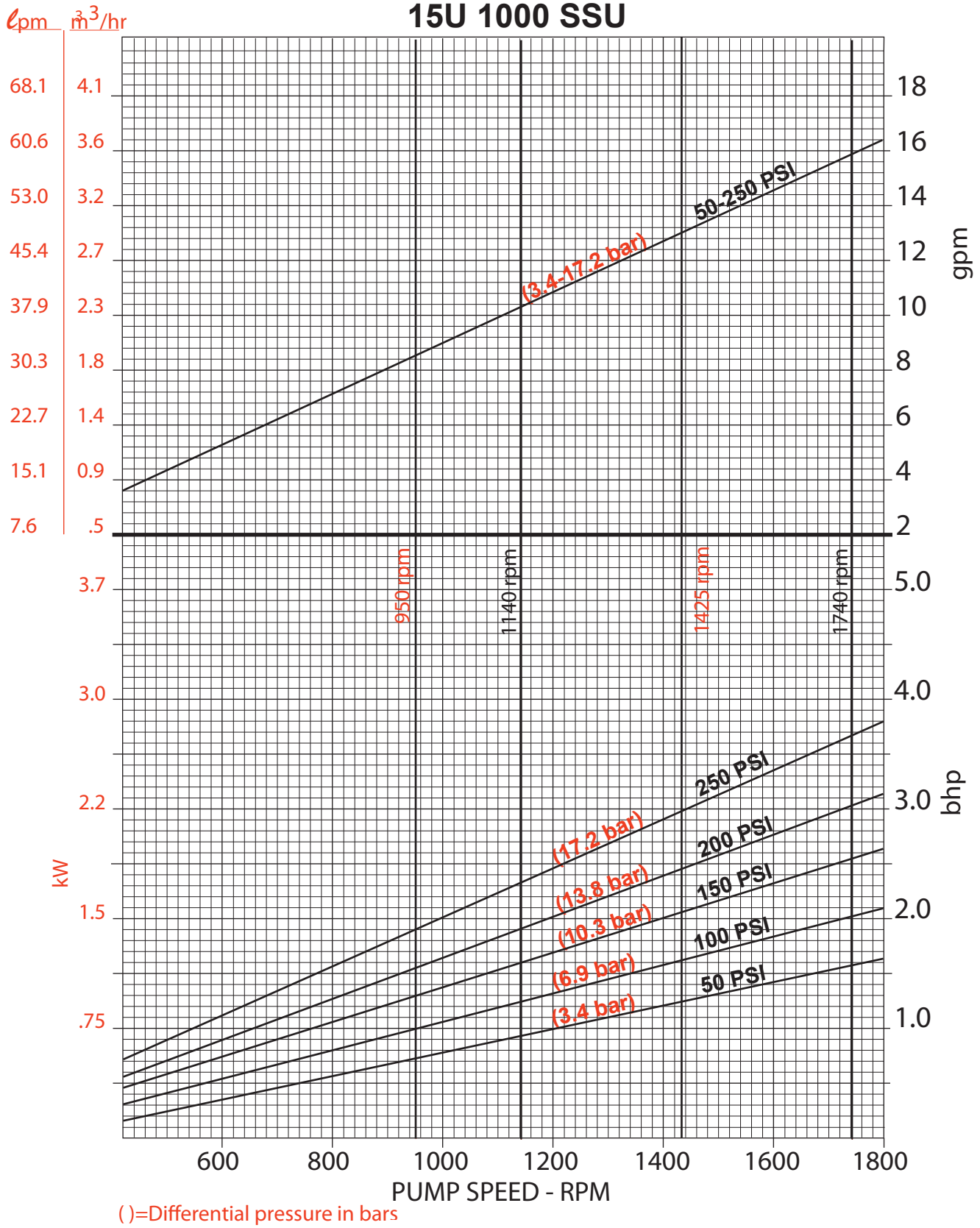
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

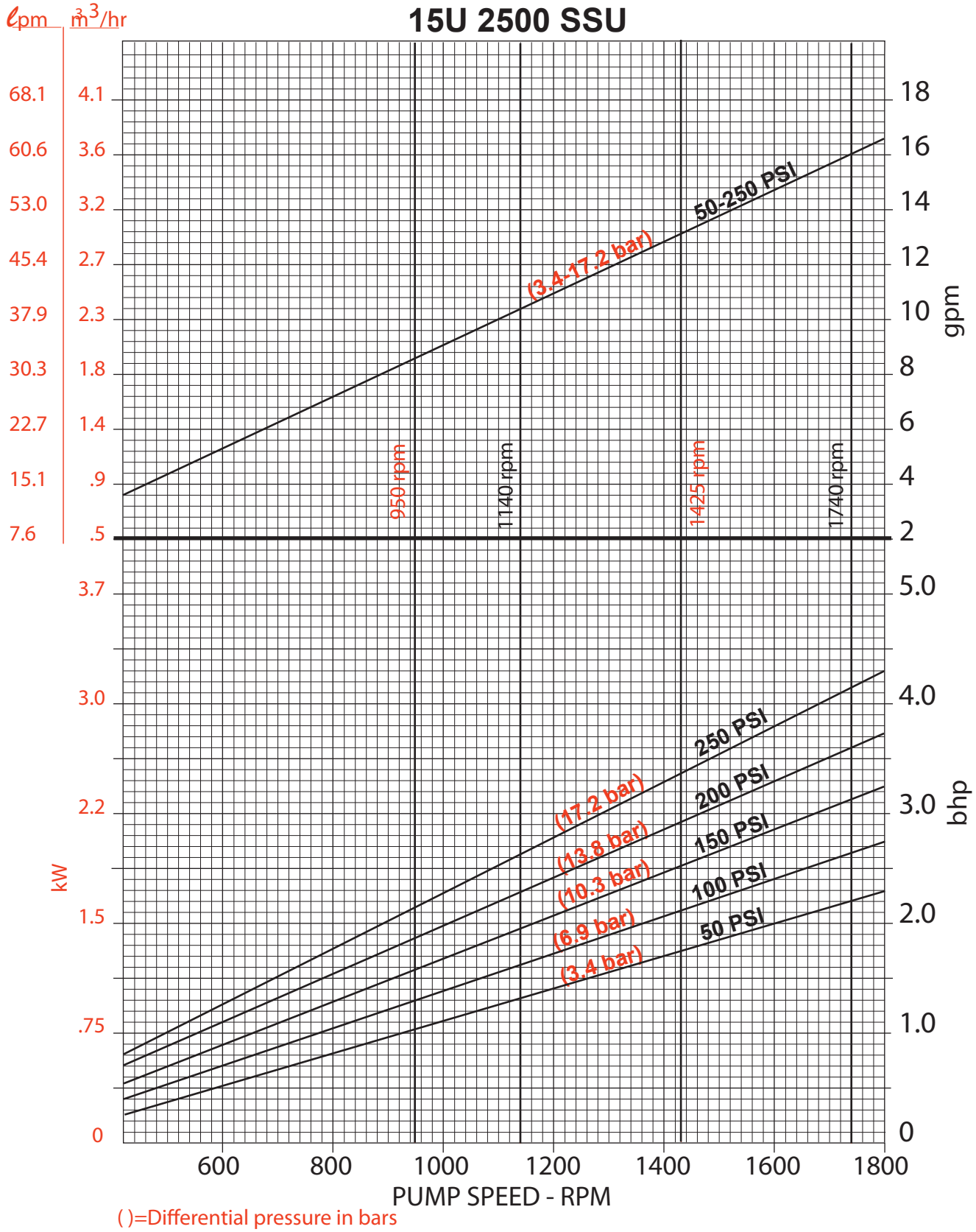
15U 1000 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

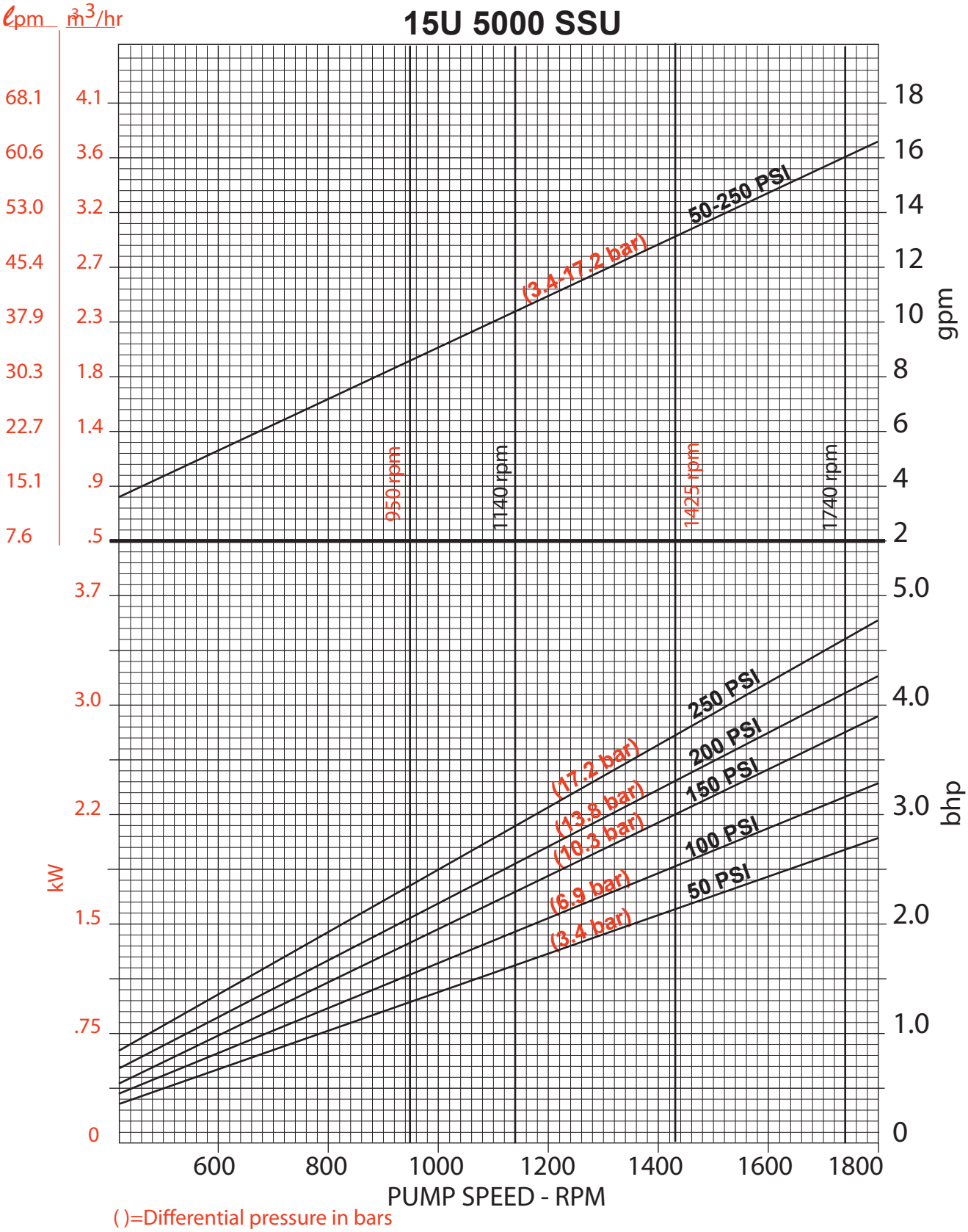
15U 2500 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

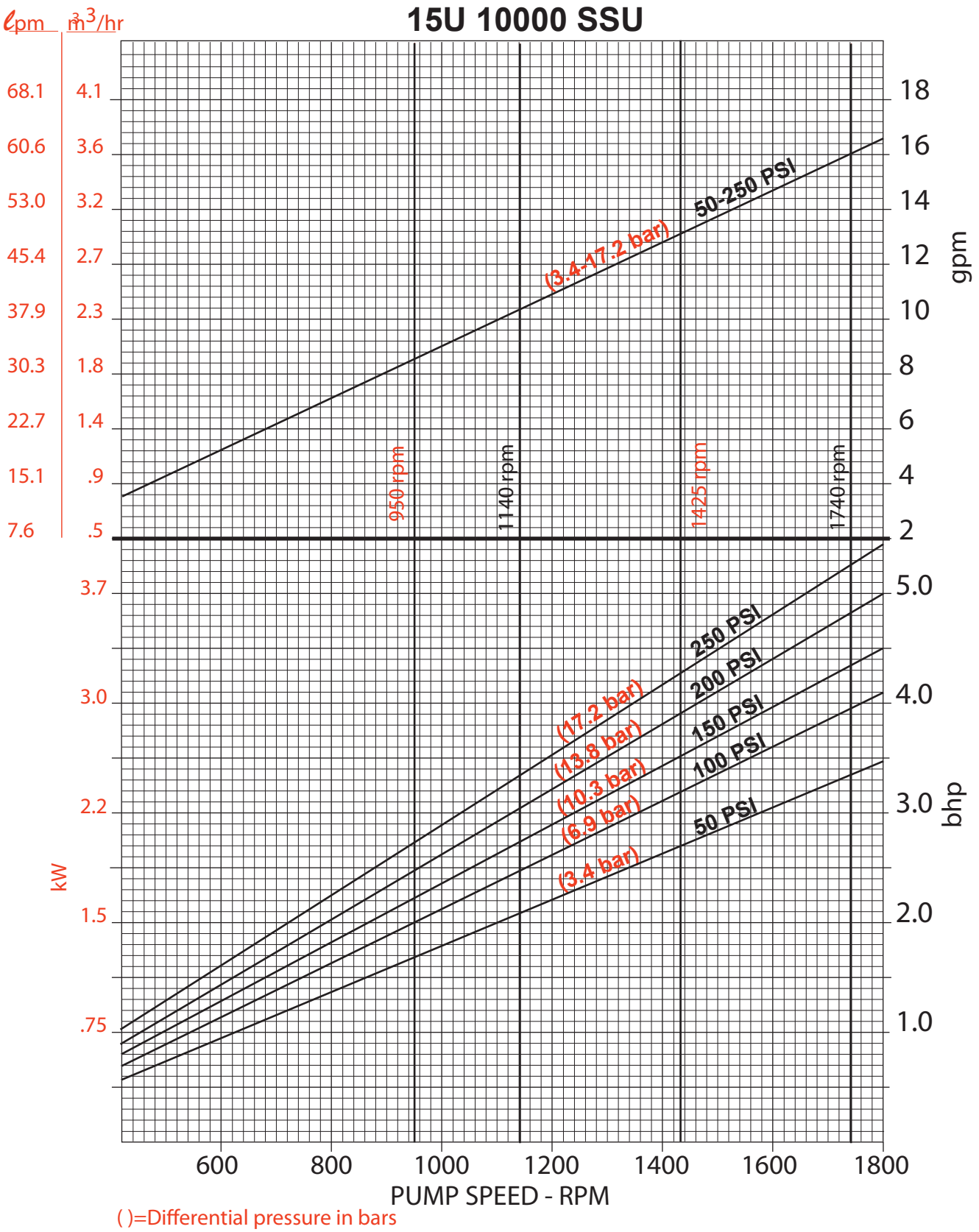
15U 5000 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

15U 10000 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

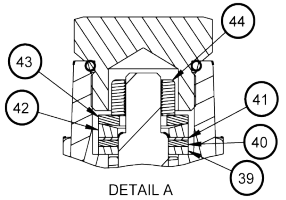
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

20U - 20 GPM Universal Pump

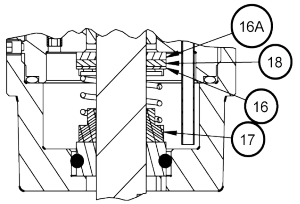
20U - 20 GPM Universal Pump

Item	Part No.	Description	Qty.
1	SAE16	Screw On Plug	1
2	SE3916N70	O-Ring, Plug	1
4	PC262	Screw, Cover	8
5	D2030A11	Cover	1
6	F11F	Bearing	1
6A	F11F	Bearing	1
7	F21E	Wiper Seal	2
8	F28E	O-Ring, Cover	1
9	DU20C13MC3	Shaft & Pinion Assembly	1
10	D2015C1	Pinion	1
11	D2014MC3	Shaft	1
12	F18C75	Key, 3/16 Sq X 3/4 Lg	1
13	D2026F1	Rotor	1
14	D203A11L	Case	1
16	F25C3	Washer	1
16A	F25C2	Washer	1
17	F18AM	Shaft Seal	1

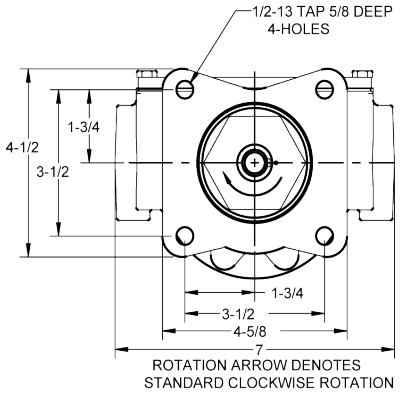
Item	Part No.	Description	Qty.
18	F11TB2	Thrust Bearing	1
19	E49E	Set Screw, Vent	2
20	F43C1	Pin	1
21	SE2137N70	O-Ring, Gland	1
22	SE2122N90	O-Ring, Cover Plate	2
23	E90HC.6	Screw, Cover Plate	4
24	D1030CP	Cover Plate	1
37	F22SS2A	Gland	1
38	E49D	Set Screw, Gland	1
39	F25C2	Washer	1
40	F11TB2	Thrust Bearing	1
41	F25C3	Washer	1
42	F25C5	Spherical Washer	1
43	F25C4	Spherical Washer	1
44	ZA532A	Nut	1
45	F41C	Pin	1



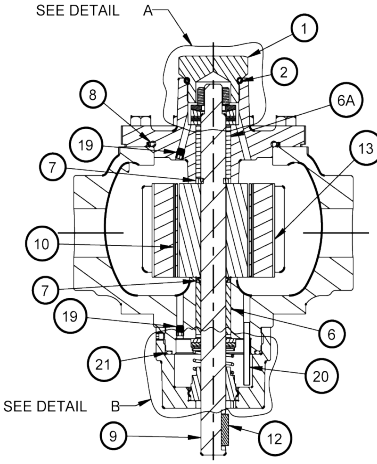
DETAIL A



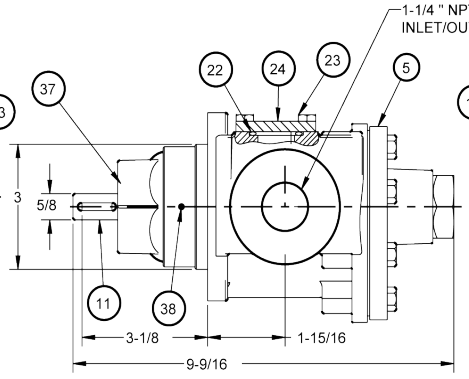
DETAIL B



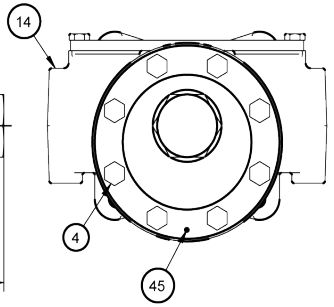
SHAFT END VIEW



CUTAWAY VIEW BOTTOM



RIGHT SIDE



COVER END VIEW

(Revised 8-1-11)

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

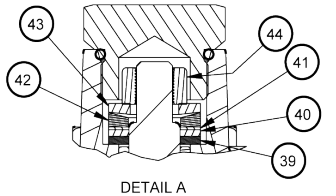
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

20UR - 20 GPM
Universal Relief Valve Pump

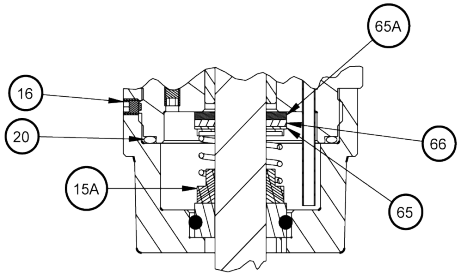
20UR - 20 GPM HAIGHT PUMP WITH RELIEF VALVE

Item	Part No.	Description	Qty.
1	SAE16	Screw On Plug	1
2	SE3916N70	O-Ring, Plug	1
4	PC262	Screw, Cover	8
5	D2030A11	Cover	1
6	F11F	Bearing	1
6A	F11F	Bearing	1
7	F21E	Wiper Seal	2
8	F28E	O-Ring, Cover	1
9	DU20C13MC3	Shaft & Pinion Assembly	1
10	D2015C1	Pinion	1
11	D2014MC3	Shaft	1
12	F18C75	Key, 3/16 Sq X 3/4 Lg	1
13	D2026F1	Rotor	1
14	D203A11L	Case	1
15A	F18AM	Shaft Seal	1
16	E49D	Set Screw, Gland	1
17	F22SS2A	Gland	1
18	E49E	Set Screw, Vent	2
19	F43C1	Pin	1
20	SE2137N70	Oring, Gland	1
22	SE2122N90	Oring, Valve Body	2

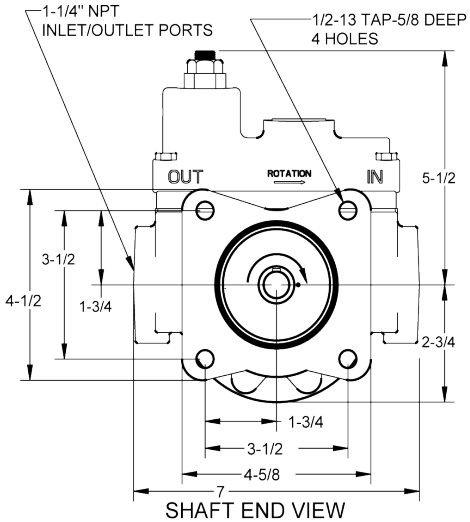
Item	Part No.	Description	Qty.
39	F25C2	Washer	1
40	F11TB2	Thrust Bearing	1
41	F25C3	Washer	1
42	F25C5	Spherical Washer	1
43	F25C4	Spherical Washer	1
44	ZA532A	Nut	1
45	F41C	Pin	1
56	E90HC1.2	Screw	4
57	FD55SA	Valve Body	1
58	F65C	Pipe Plug	1
59	RVP05	Piston	1
60	F92B	Oring, Piston	1
61	H52M	Spring	1
62	F56A	Bonnet	1
63	E64JN	Nut	1
64	F55C	Adjustment Screw	1
65	F25C3	Washer	1
65A	F25C2	Washer	1
66	F11TB2	Thrust Bearing	1



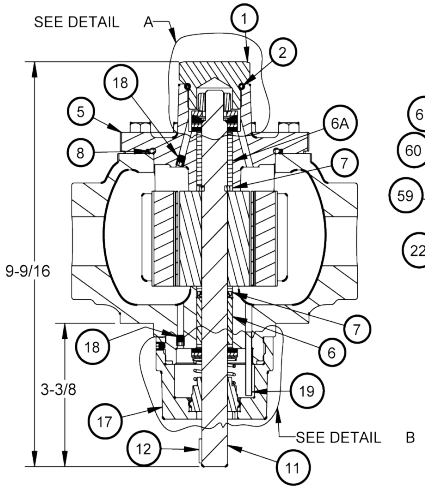
DETAIL A



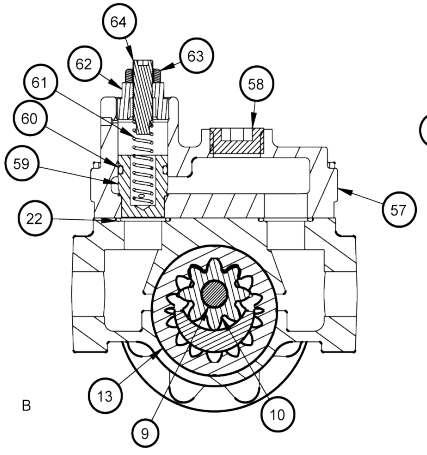
DETAIL B



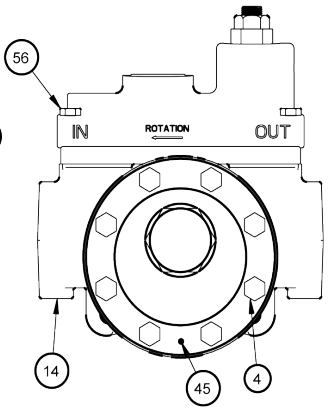
SHAFT END VIEW
ROTATION ARROW DENOTES
STANDARD CLOCKWISE ROTATION



CUTAWAY VIEW
BOTTOM



CUTAWAY VIEW
SHAFT END



COVER END VIEW

(Revised 8-1-11)

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

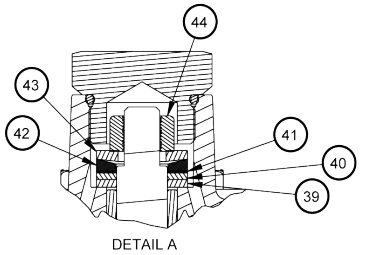
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

BS20U - 20 GPM Barrier Seal
Pump w/o Relief Valve

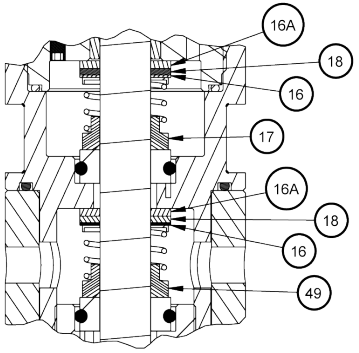
BS20U-20 GPM Barrier Seal Pump

Item	Part No.	Description	Qty.
1	SAE16	Screw On Plug	1
2	SE3916N70	O-Ring, Plug	1
4	PC262	Screw, Cover	8
5	D2030A11	Cover	1
6	F11F	Bearing	1
6A	F11F	Bearing	1
7	F21E	Wiper Seal	2
8	F28E	O-Ring, Cover	1
9	BS20C13MC	Shaft & Pinion Assembly	1
10	D2015C1	Pinion	1
11	D2014MC4	Shaft	1
12	F18C75	Drive Key, 3/16 Sq X 3/4 Lg	1
13	D2026F1	Rotor	1
14	D203A11L	Case	1
16	F25C3	Washer	2
16A	F25C2	Washer	2
17	F18AM	Shaft Seal, Primary	1
18	F11TB2	Thrust Bearing	2
19	E49E	Set Screw, Vent	2

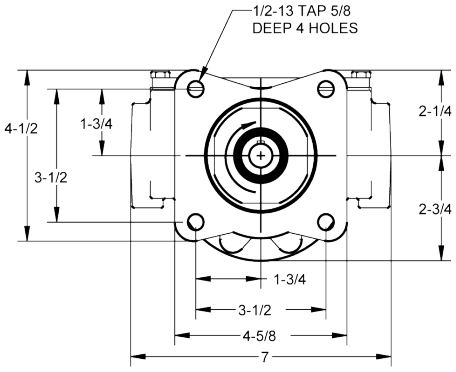
Item	Part No.	Description	Qty.
21	SE137N70	O-Ring, Gland	1
22	SE2122N90	O-Ring, Cover Plate	2
23	E90HC.6	Screw, Cover Plate	4
24	D1030CP	Cover Plate	1
37	F22DD2F	Gland	1
39	F25C2	Washer	1
40	F11TB2	Thrust Bearing	1
41	F25C3	Washer	1
42	F25C5	Spherical Washer	1
43	F25C4	Spherical Washer	1
44	ZA532A	Nut	1
45	F41C	Pin	1
49	F18AM	Shaft Seal, Secondary	1
50	SE3932N70	O-Ring, Sleeve	2
51	H33RDS	Sleeve	1
52	F33SS3F	Gland	1
53	F11TB	Roller Bearing	1
54	F19A	Locking Collar	1



DETAIL A

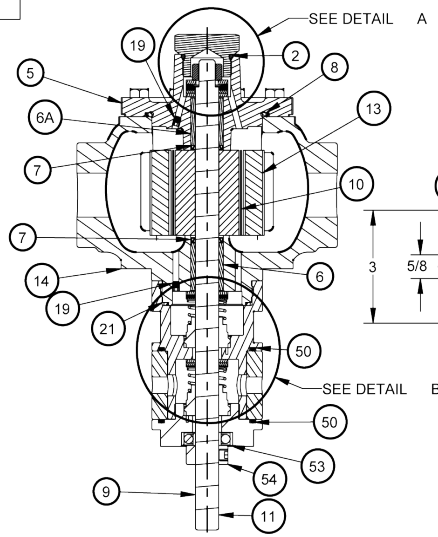


DETAIL B

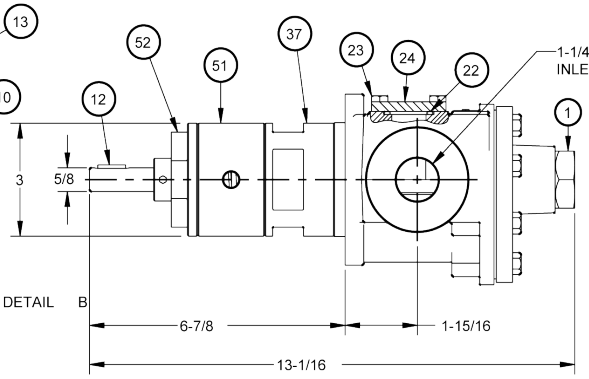


ROTATION ARROW DENOTES
STANDARD CLOCKWISE ROTATION

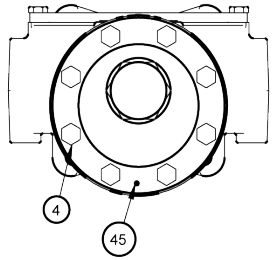
SHAFT END VIEW



CUTAWAY VIEW
BOTTOM



RIGHT SIDE



COVER END VIEW

(Revised 8-1-11)

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

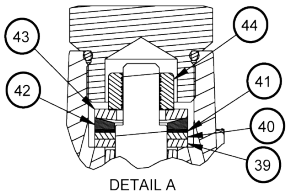
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

BS20UR - 20 GPM Barrier Seal Pump w/Relief Valve

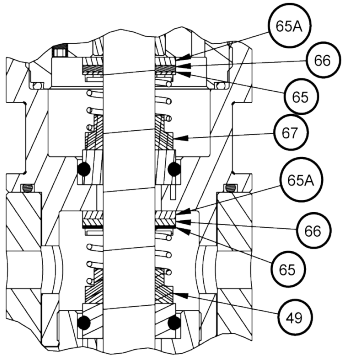
BS20UR-20 GPM Barrier Seal Relief Valve Pump

Item	Part No.	Description	Qty.
1	SAE16	Screw On Plug	1
2	SE3916N70	O-Ring, Plug	1
4	PC262	Screw, Cover	8
5	D2030A11	Cover	1
6	F11F	Bearing	1
6A	F11F	Bearing	1
7	F21E	Wiper Seal	2
8	F28E	O-Ring, Cover	1
9	BS20C13MC	Shaft & Pinion Assembly	1
10	D2015C1	Pinion	1
11	D2014MC4	Shaft	1
12	F18C75	Key, 3/16 Sq X 3/4 Lg	1
13	D2026F1	Rotor	1
14	D203A11L	Case	1
18	E49E	Set Screw, Vent	2
20	SE2137N70	O-Ring, Gland	1
22	SE2122N90	O-Ring, Valve Body	2
37	F22DD2F	Gland	1
39	F25C2	Washer	1
40	F11TB2	Thrust Bearing	1
41	F25C3	Washer	1
42	F25C5	Washer	1

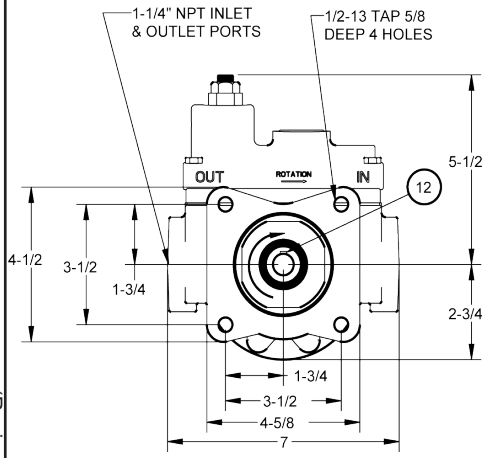
Item	Part No.	Description	Qty.
43	F25C4	Washer	1
44	ZA532A	Nut	1
45	F41C	Pin	1
49	F18AM	Shaft Seal, Secondary	1
50	SE3932N70	Oring, Sleeve	2
51	H33RDS	Sleeve	1
52	F33SS3F	Gland	1
53	F11TB	Roller Bearing	1
54	F19A	Locking Collar	1
56	E90HC1.2	Screw	4
57	FD55SA	Valve Body	1
58	F65C	Pipe Plug	1
59	RVP05	Piston	1
60	F92B	Oring, Piston	1
61	H52M	Spring	1
62	F56A	Bonnet	1
63	E64JN	Nut	1
64	F55C	Adjustment Screw	1
65	F25C3	Washer	1
65A	F25C2	Washer	1
66	F11TB2	Thrust Bearing	1
67	F18AM	Shaft Seal, Primary	1



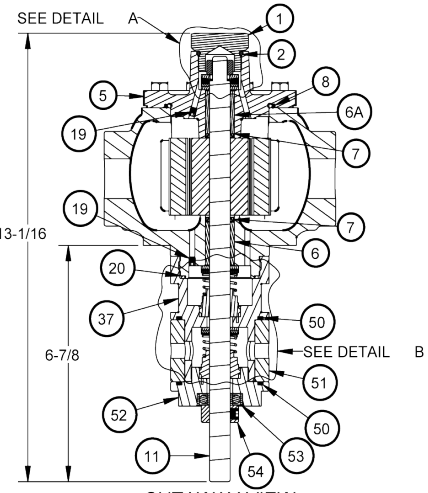
DETAIL A



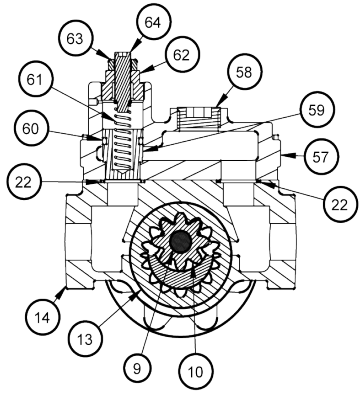
DETAIL B



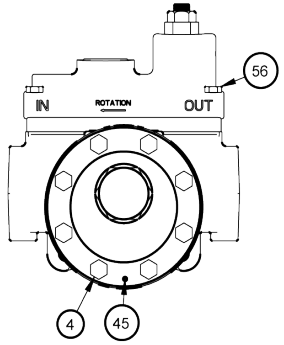
SHAFT END VIEW
ROTATION ARROW DENOTES
STANDARD CLOCKWISE ROTATION



CUTAWAY VIEW
BOTTOM



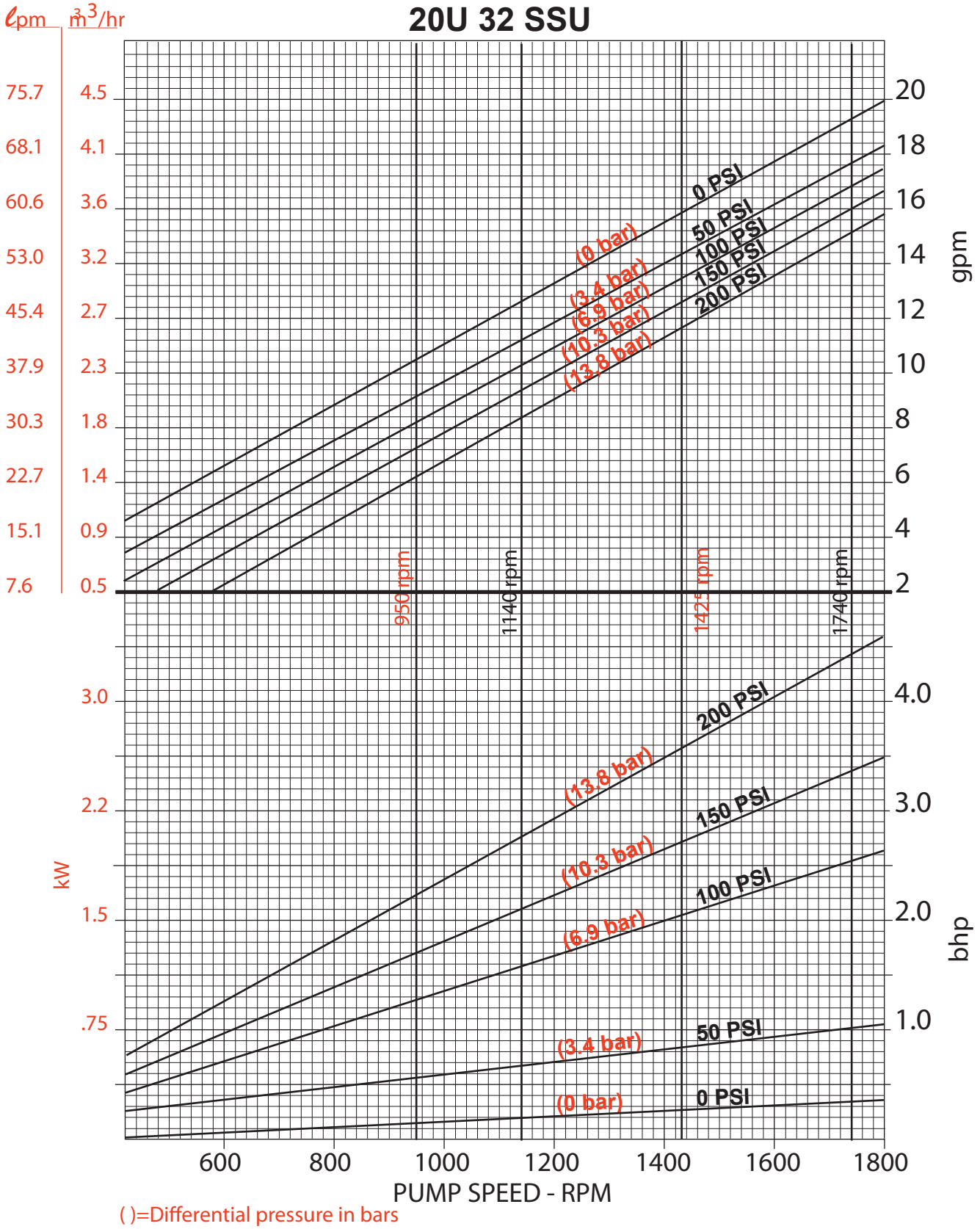
CUTAWAY VIEW
SHAFT END



COVER END VIEW

(Revised 8-1-11)

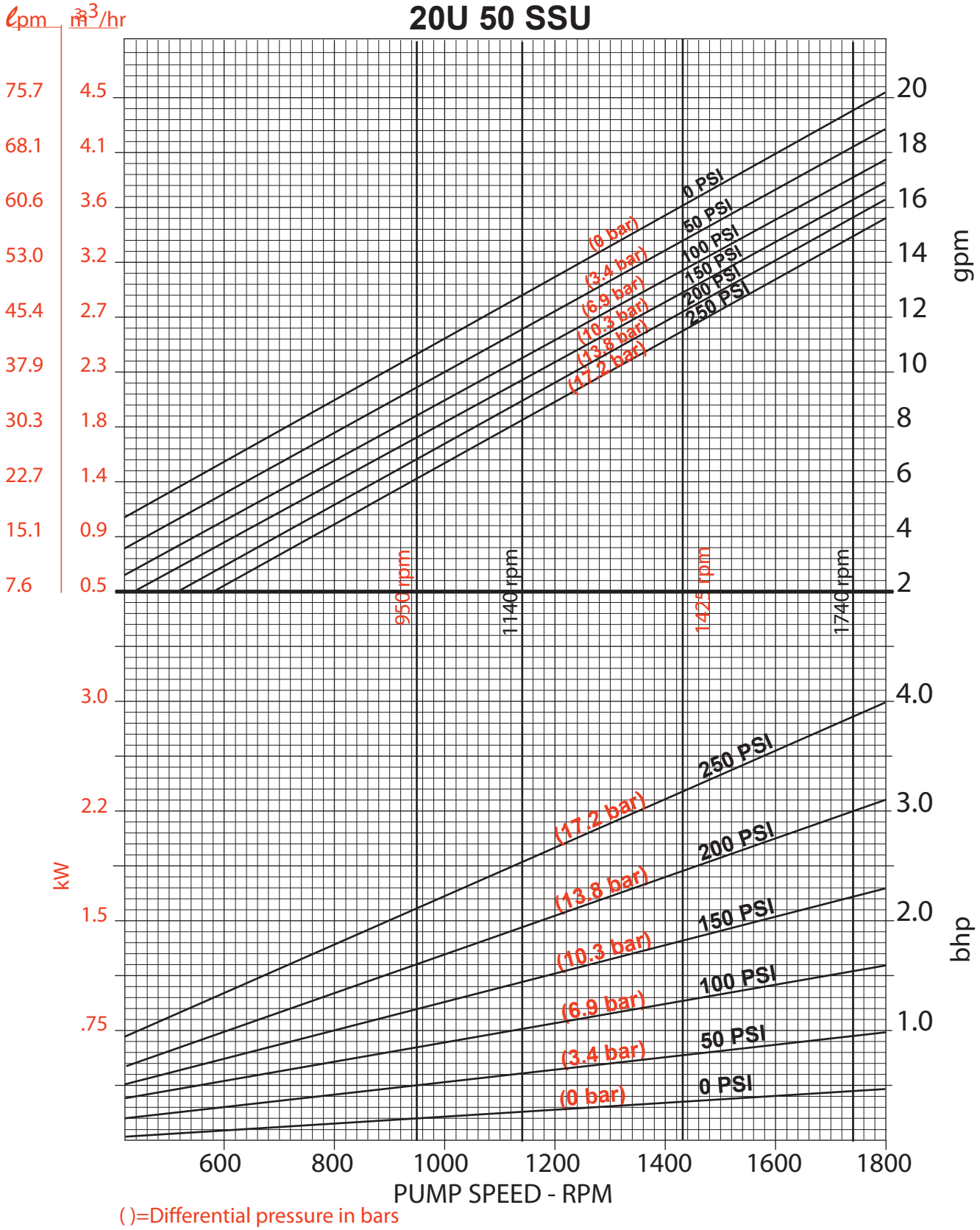
20U 32 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

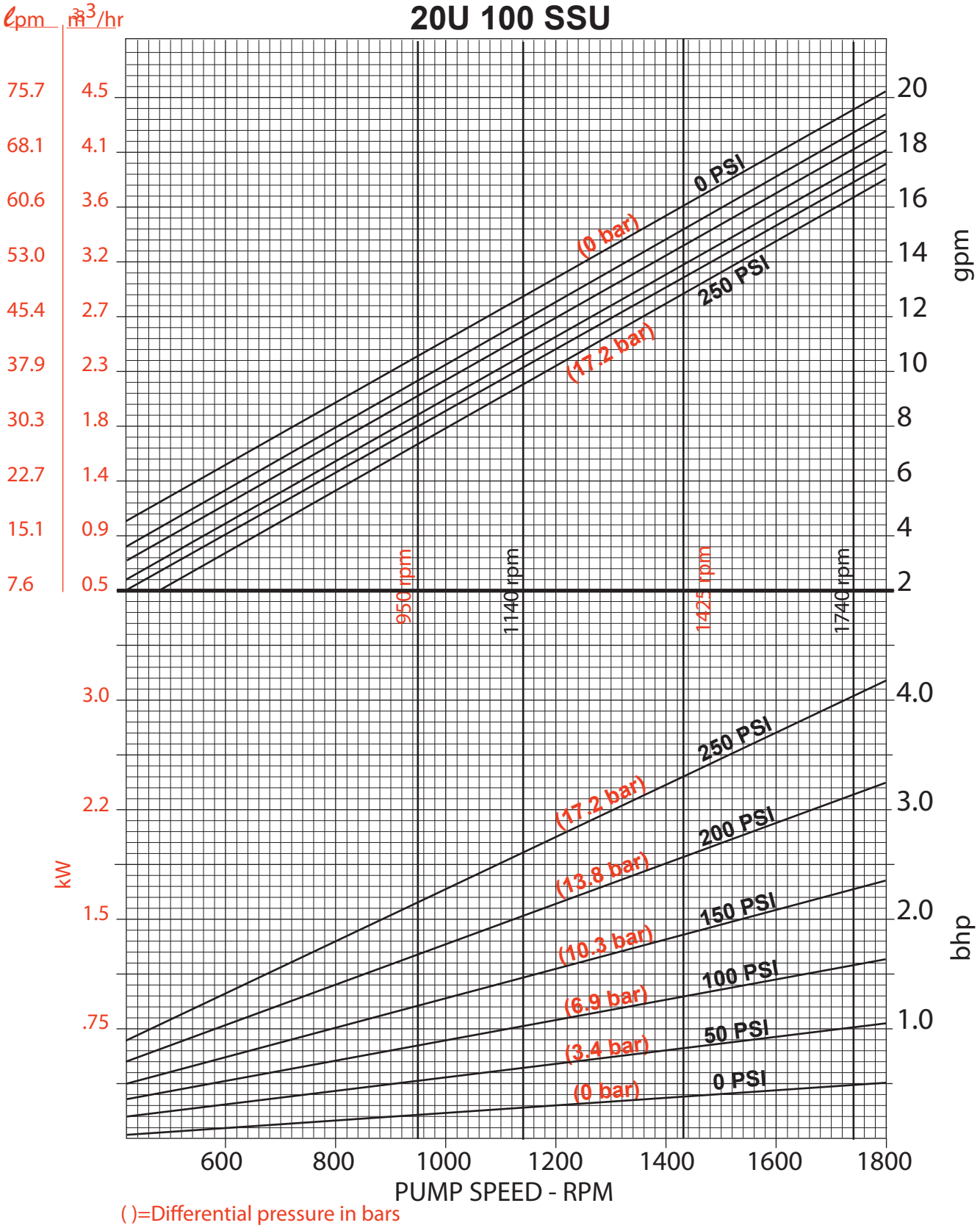
20U 50 SSU



( )=Differential pressure in bars

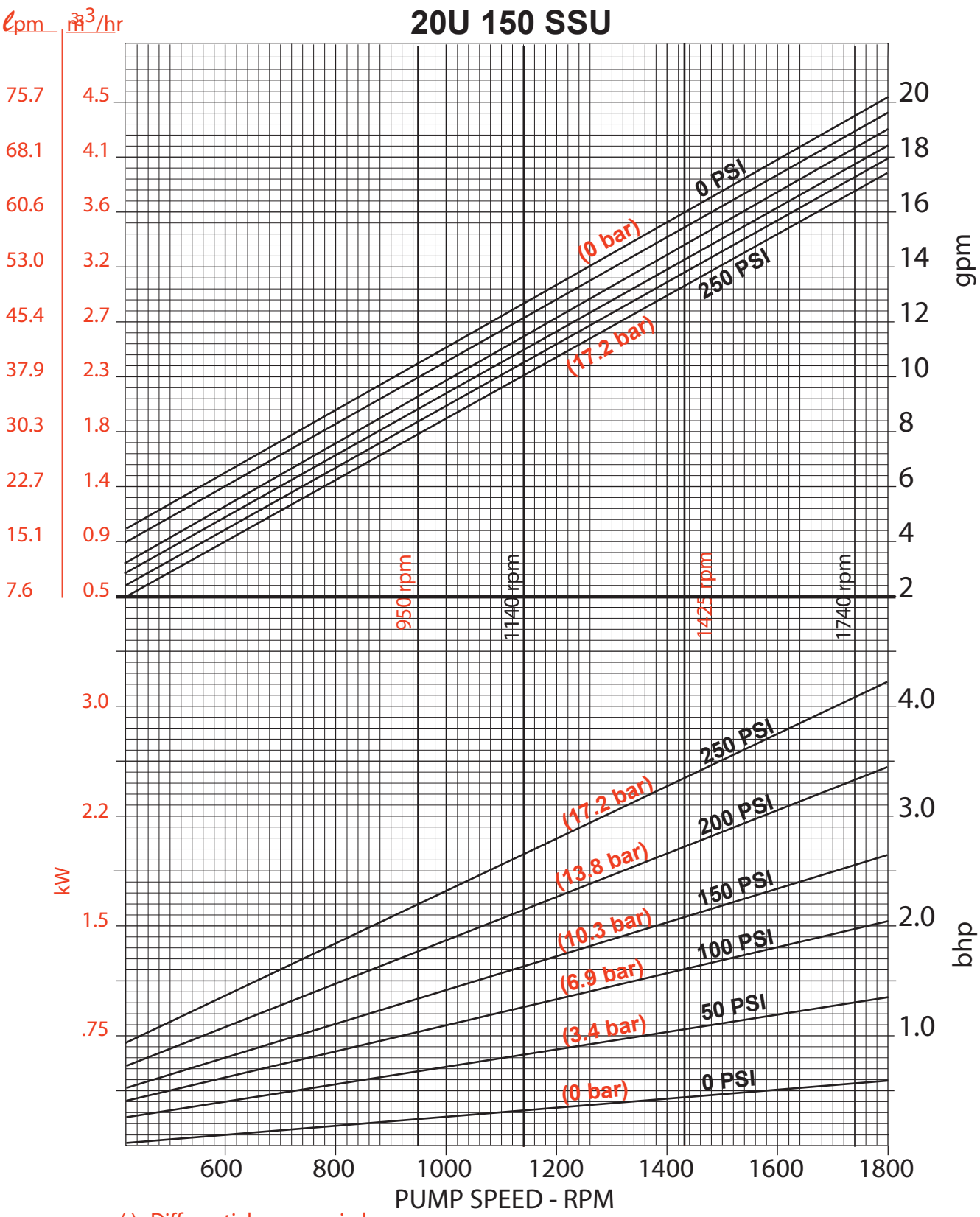
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

20U 100 SSU



( )=Differential pressure in bars

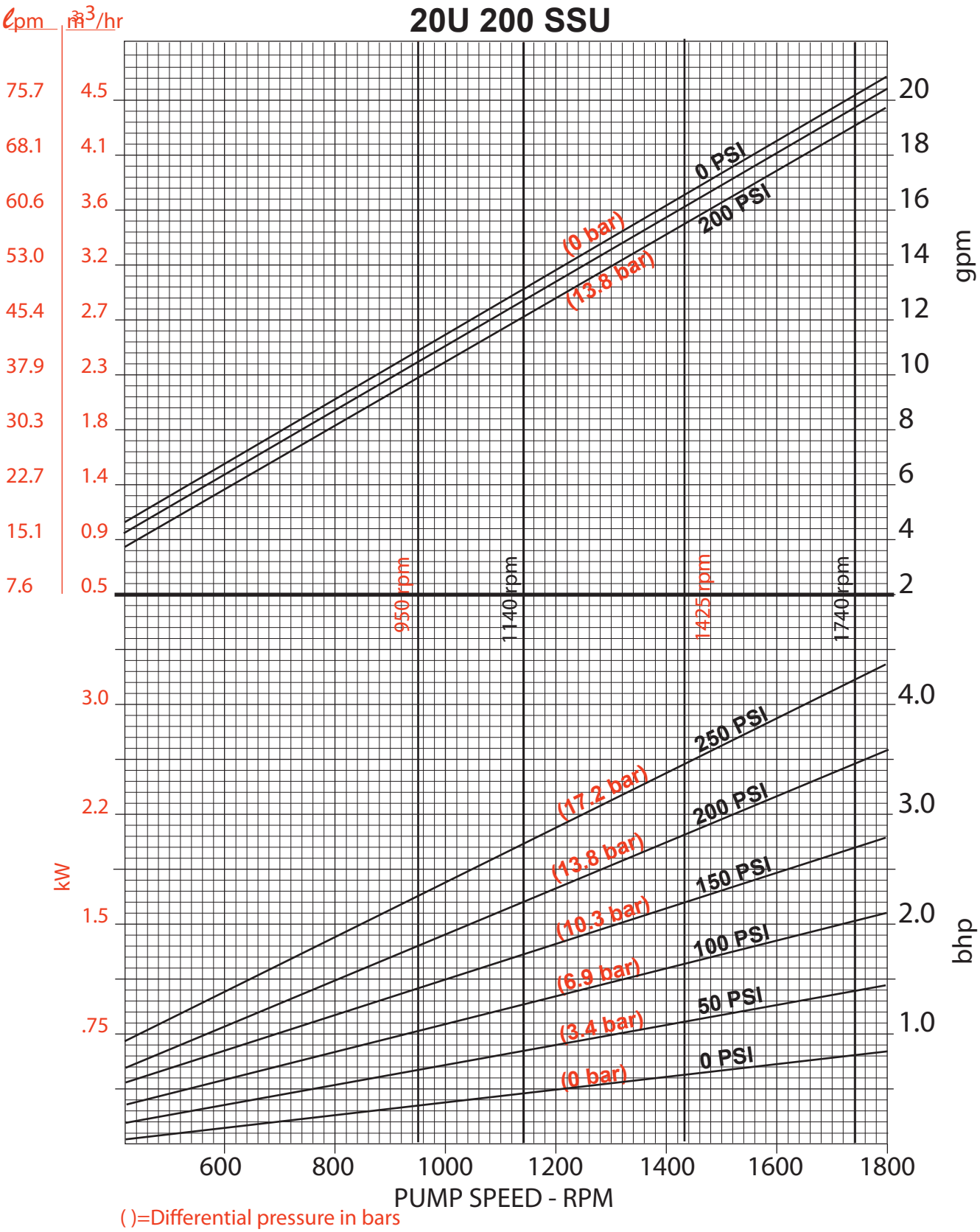
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



( )=Differential pressure in bars

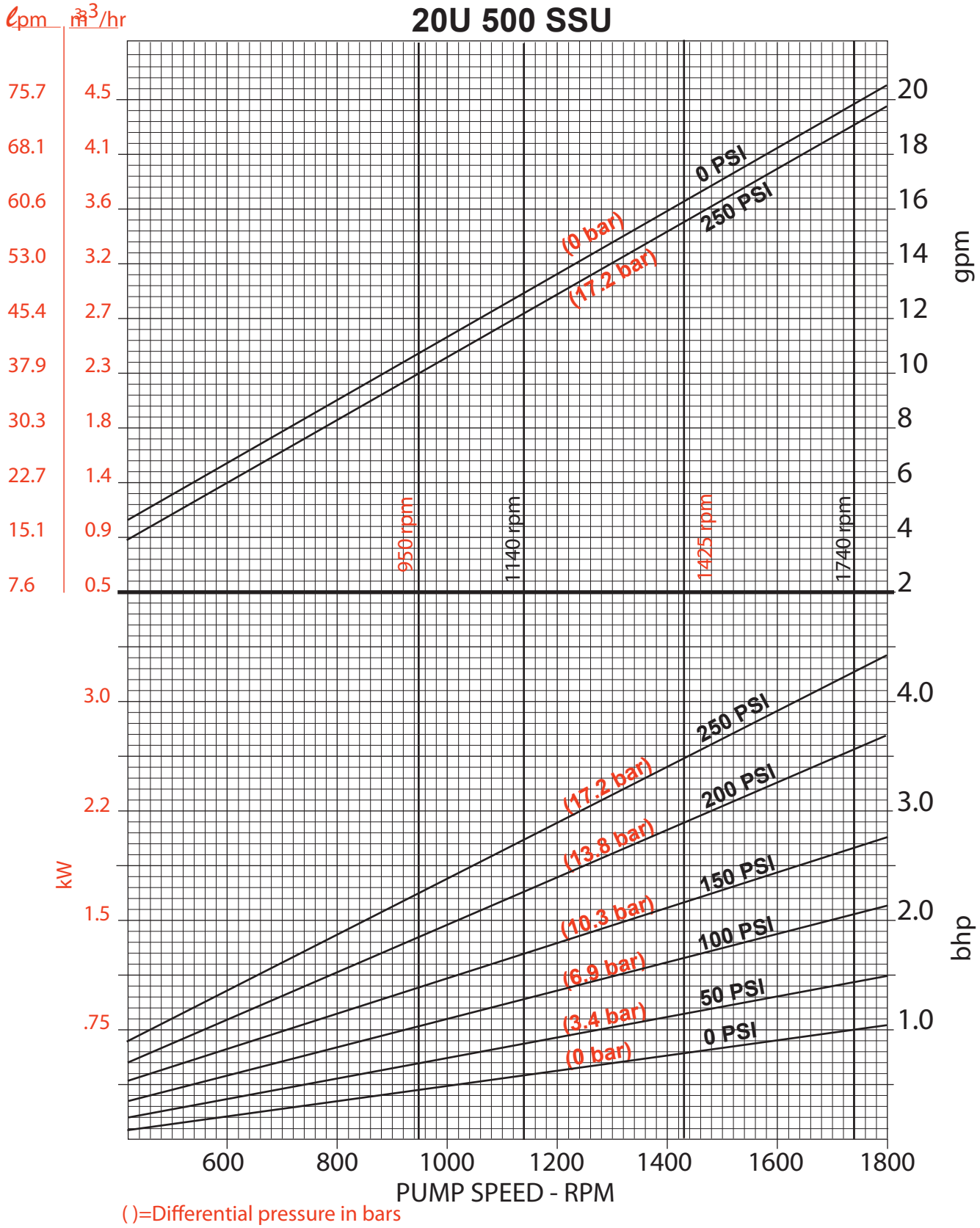
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

20U 200 SSU



( )=Differential pressure in bars

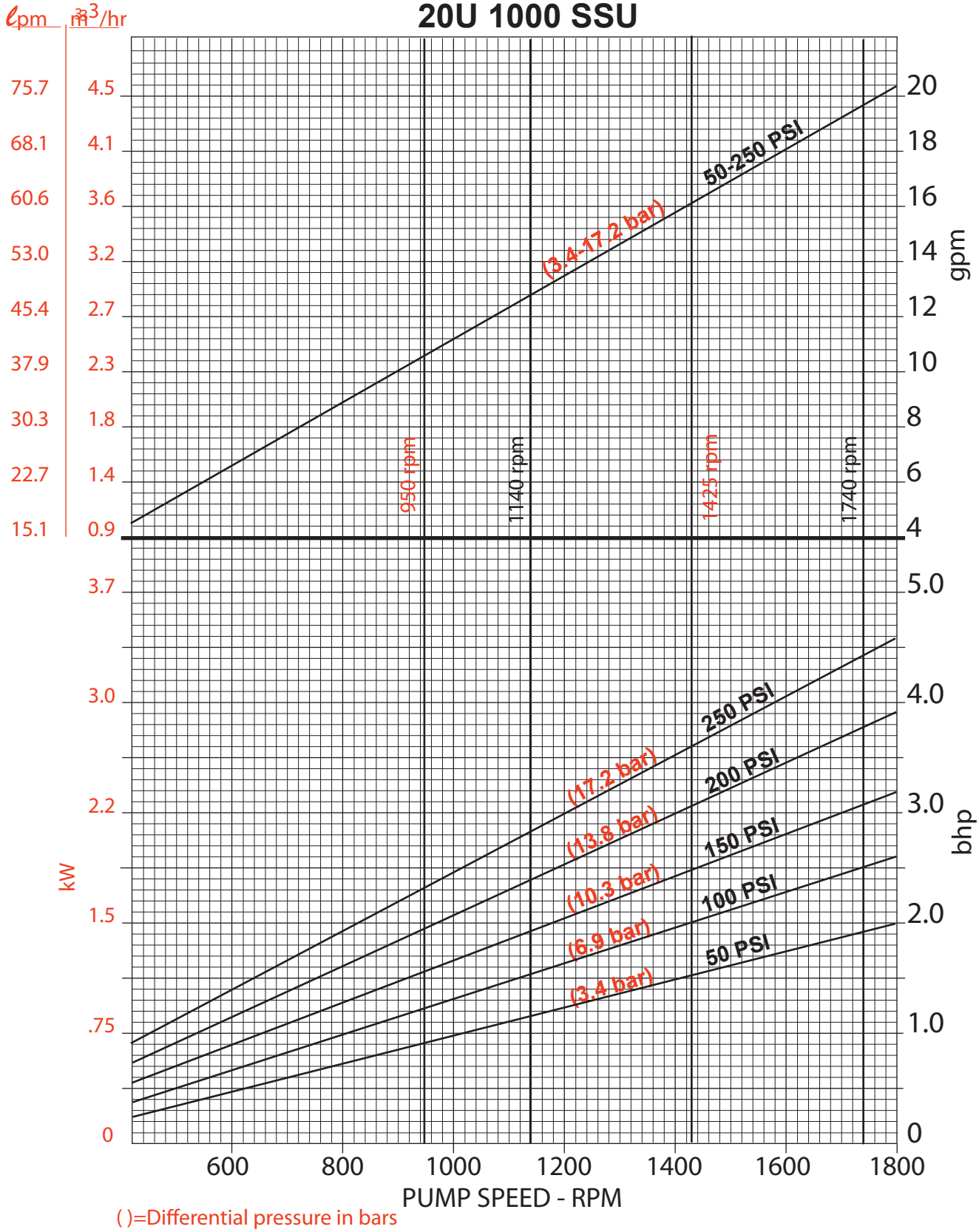
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



( )=Differential pressure in bars

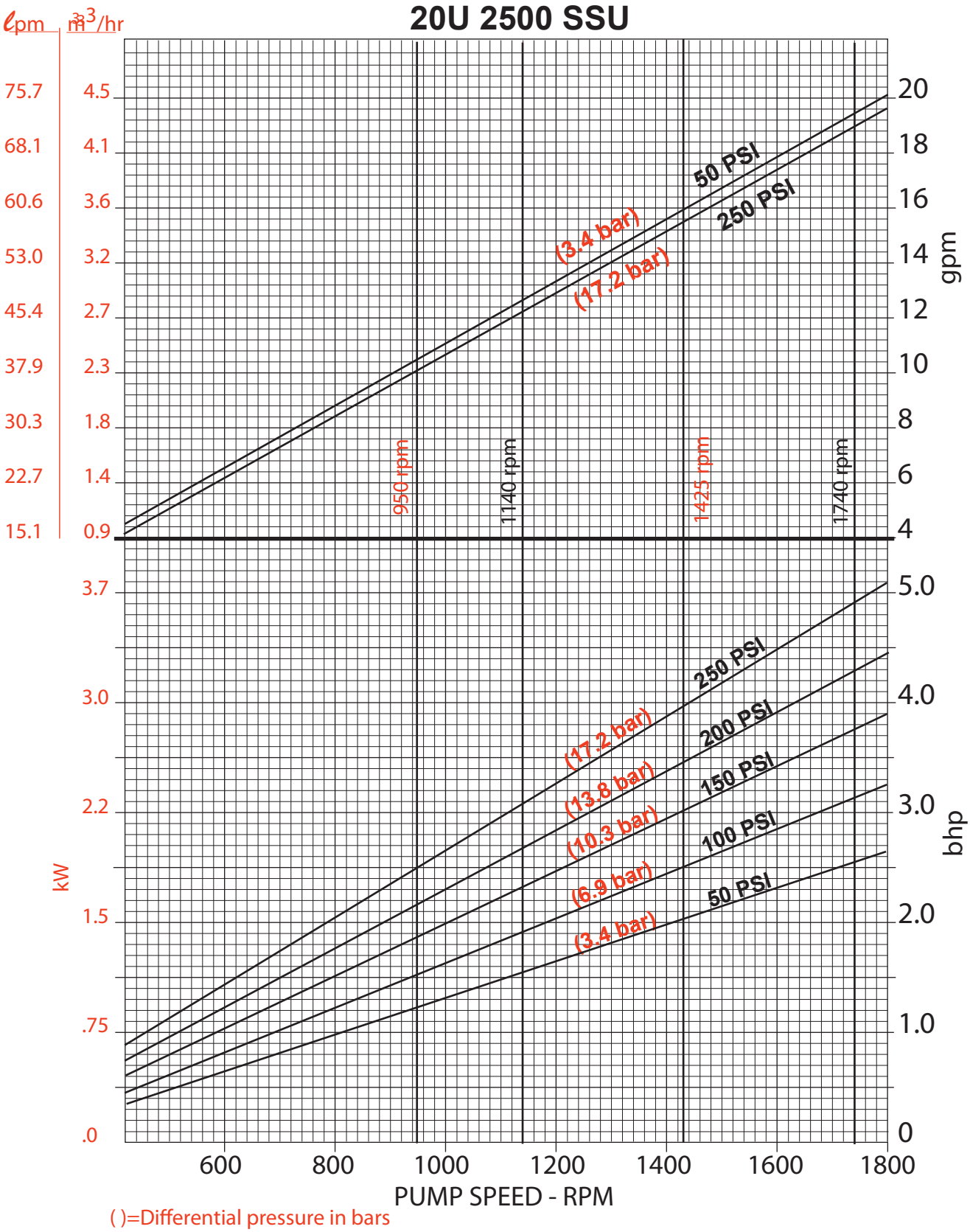
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

20U 1000 SSU



( )=Differential pressure in bars

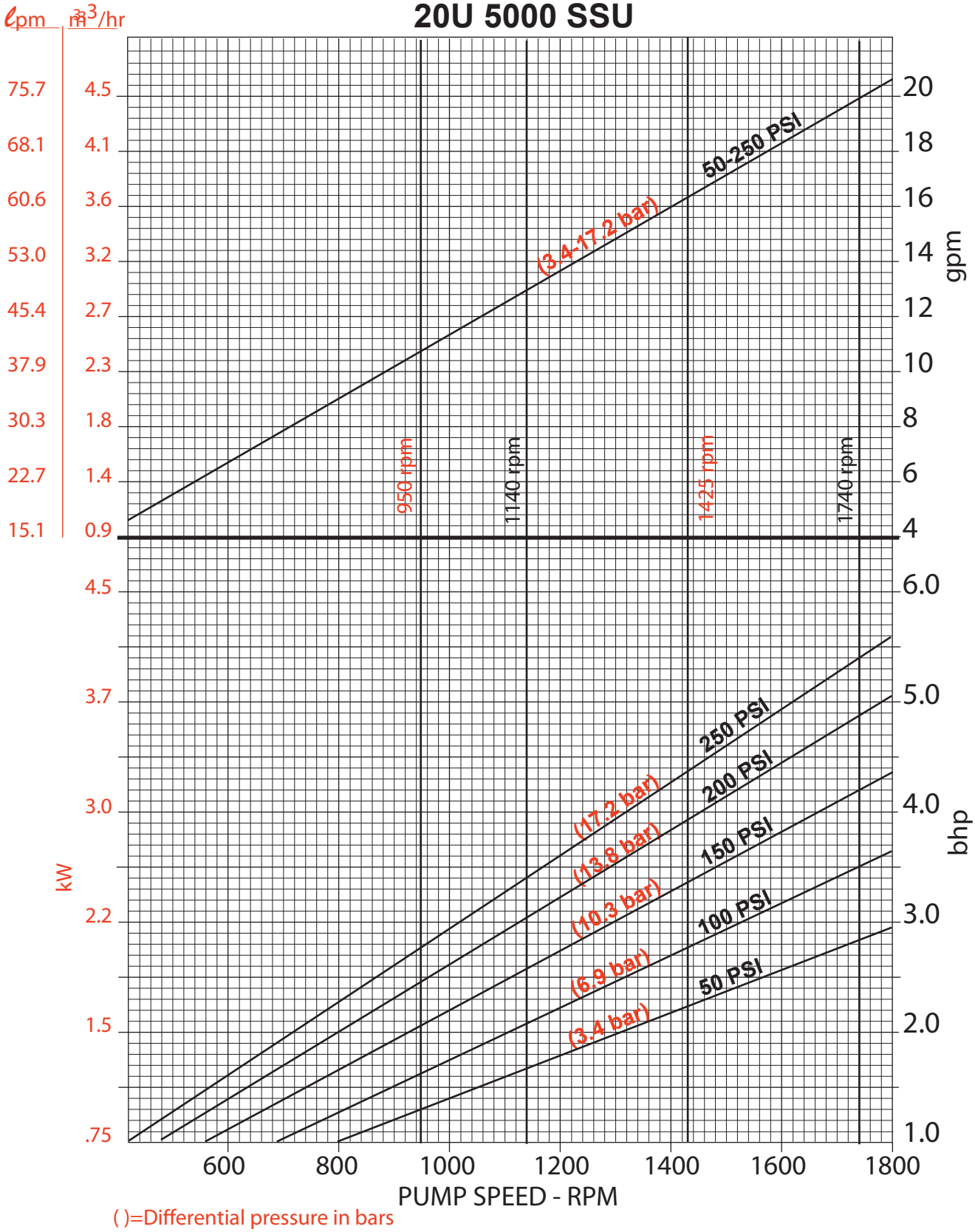
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

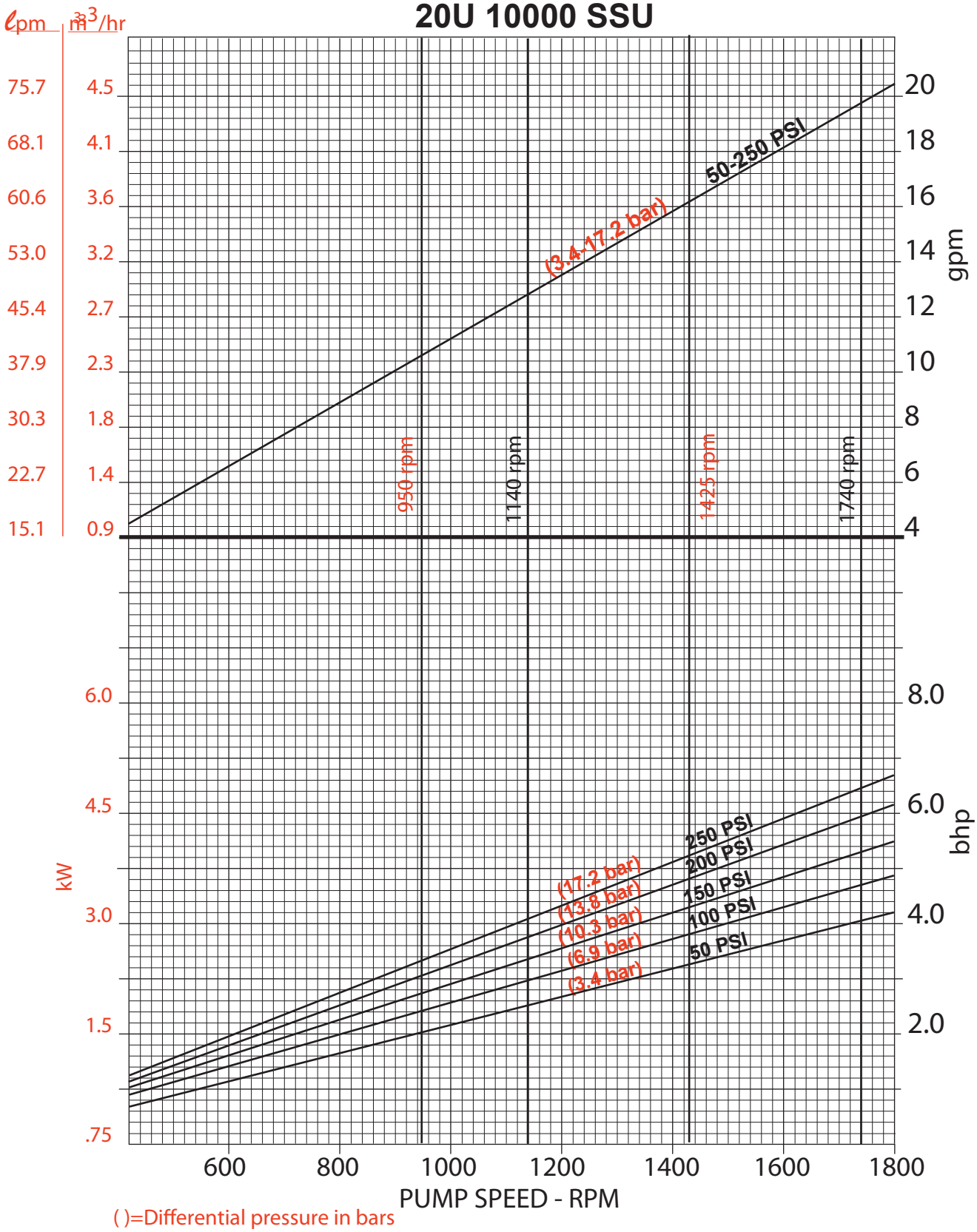
20U 5000 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

20U 10000 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
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HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

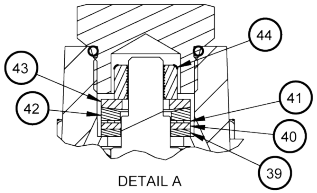
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

24U - 24 GPM Universal Pump

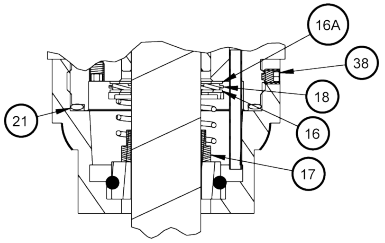
24U - 24 GPM Universal Pump

Item	Part No.	Description	Qty.
1	SAE16	Screw On Plug	1
2	SE3916N70	O-Ring, Plug	1
4	KR364	Screw, Cover	8
5	D2230A11	Cover	1
6	H11F	Bearing	1
6A	H11F	Bearing	1
7	H21E	Wiper Seal	2
8	H28E	O-Ring, Cover	1
9	DU24C13MC7	Shaft & Pinion Assembly	1
10	D2215C1	Pinion	1
11	D4014MC7	Shaft	1
12	F18C75	Key, 3/16 Sq X 3/4 Lg	1
13	D2226F1	Rotor	1
14	D403A11M	Case	1
16	H25C2	Washer	1
16A	H25C2	Washer	1
17	H18AM	Shaft Seal	1

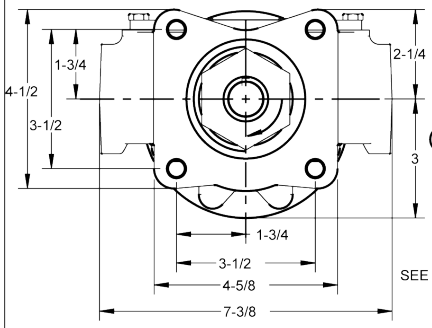
Item	Part No.	Description	Qty.
18	H11TB2	Thrust Bearing	1
19	E49E	Set Screw, Vent	2
20	F43C1	Pin	1
21	SE2137N70	O-Ring, Gland	1
22	SE2122N90	O-Ring, Cover Plate	2
23	E90HC.6	Screw, Cover Plate	4
24	D1030CP	Cover Plate	1
37	H22SS2A	Gland	1
38	E49D	Set Screw, Gland	1
39	F25C2	Washer	1
40	F11TB2	Thrust Bearing	1
41	F25C3	Washer	1
42	F25C5	Spherical Washer	1
43	F25C4	Spherical Washer	1
44	ZA532A	Nut	1
45	F41C	Pin	1



DETAIL A

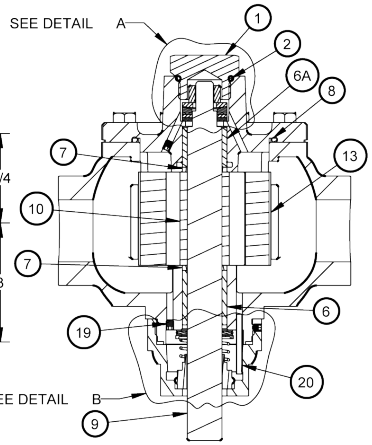


DETAIL B

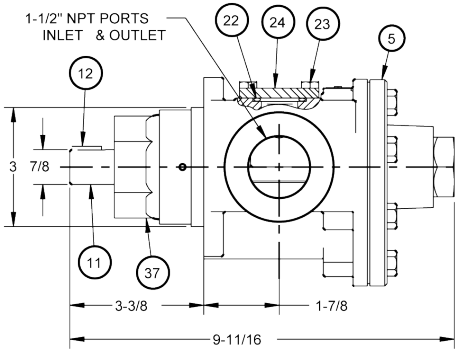


ROTATION ARROW DENOTES
STANDARD CLOCKWISE ROTATION

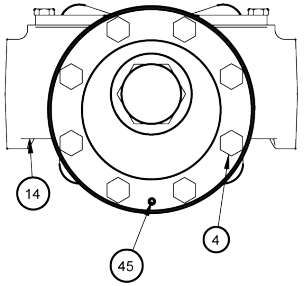
SHAFT END VIEW



CUTAWAY VIEW BOTTOM



RIGHT SIDE



COVER END VIEW

(Revised 8-1-11)

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

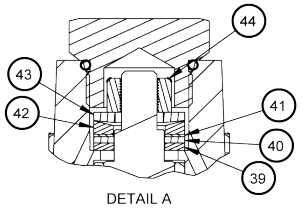
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

24UR - 24 GPM
Universal Relief Valve Pump

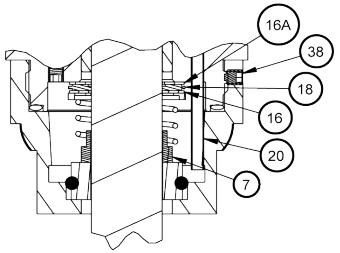
24UR - 24 GPM UNIVERSAL RELIEF VALVE PUMP

Item	Part No.	Description	Qty.
1	SAE16	Screw On Plug	1
2	SE3916N70	O-Ring, Plug	1
4	KR364	Screw, Cover	8
5	D2230A11	Cover	1
6	H11F	Bearing	1
6A	H11F	Bearing	1
7	H21E	Wiper Seal	2
8	H28E	O-Ring, Cover	1
9	DU24C13MC7	Shaft & Pinion Assembly	1
10	D2215C1	Pinion	1
11	D2014MC7	Shaft	1
12	F18C75	Key, 3/16 Sq X 3/4 Lg	1
13	D2226F1	Rotor	1
14	D403A11M	Case	1
16	H25C2	Washer	1
16A	H25C2	Washer	1
17	H18AM	Shaft Seal	1
18	H11TB2	Thrust Bearing	1
19	E49E	Set Screw, Vent	2
20	F43C1	Pin	1
21	SE2137N70	O-Ring, Gland	1
22	SE2122N90	O-Ring, Valve Body	2

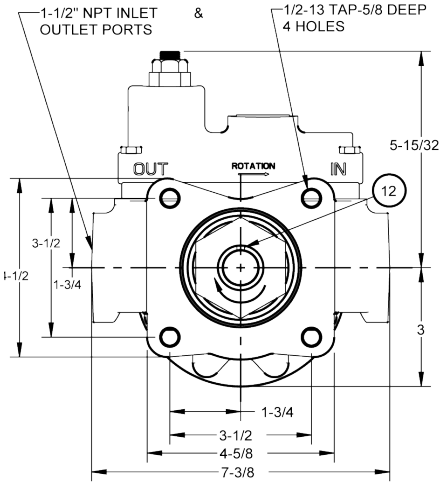
Item	Part No.	Description	Qty.
37	H22SS2A	Gland	1
38	E49D	Set Screw, Gland	4
39	F25C2	Washer	2
40	F11TB2	Thrust Bearing	1
41	F25C3	Washer	1
42	F25C5	Spherical Washer	1
43	F25C4	Spherical Washer	2
44	ZA532A	Nut	1
45	F41C	Pin	3
56	E90HC1.2	Screw, Valve Body	1
57	FD55SA	Valve Body	1
58	F65C	Pipe Plug	1
59	RVP05	Piston	1
60	F92B	Oring, Piston	1
61	H52M	Spring	1
62	F56A	Bonnet	1
63	E64JN	Nut	1
64	F55C	Adjustment Screw	1



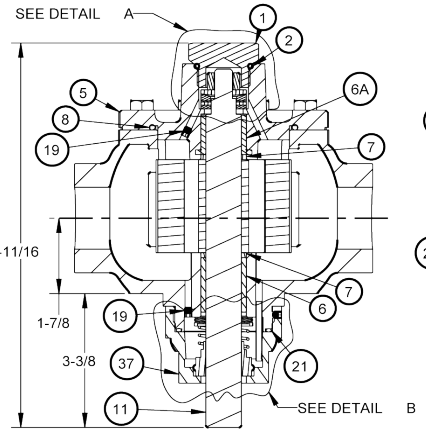
DETAIL A



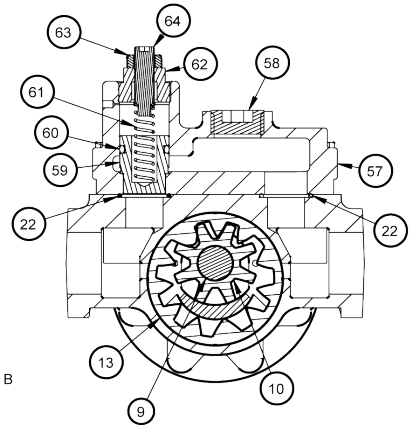
DETAIL B



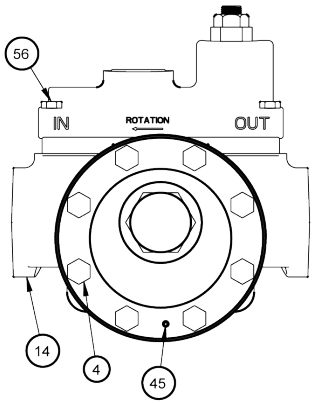
ROTATION ARROW DENOTES STANDARD CLOCKWISE ROTATION
SHAFT END VIEW



CUTAWAY VIEW BOTTOM



CUTAWAY VIEW SHAFT END



COVER END VIEW

(Revised 8-1-11)

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

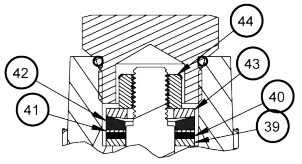
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

BS24U - 24 GPM Barrier Seal
Pump w/o Relief Valve

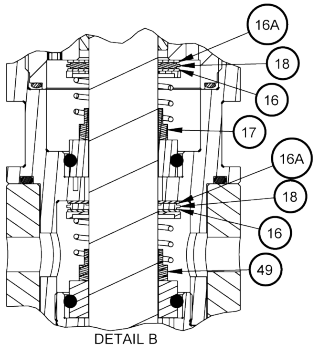
BS24U-24 GPM Barrier Seal Pump

Item	Part No.	Description	Qty.
1	SAE16	Screw On Plug	1
2	SE3916N70	O-Ring, Plug	1
4	KR364	Screw, Cover	8
5	D2230A11	Cover	1
6	H11F	Bearing	1
6A	H11F	Bearing	1
7	H21E	Wiper Seal	2
8	H28E	O-Ring, Cover	1
9	BS24C13MC	Shaft & Pinion Assembly	1
10	D2215C1	Pinion	1
11	D4014MC8	Shaft	1
12	F18C75	Key, 3/16 Sq X 3/4 Lg	1
13	D2226F1	Rotor	1
14	D403A11M	Case	1
16	H25C2	Washer	2
16A	H25C2	Washer	2
17	H18AM	Shaft Seal, Primary	1
18	H11TB2	Thrust Bearing	2
19	E49E	Set Screw, Vent	2

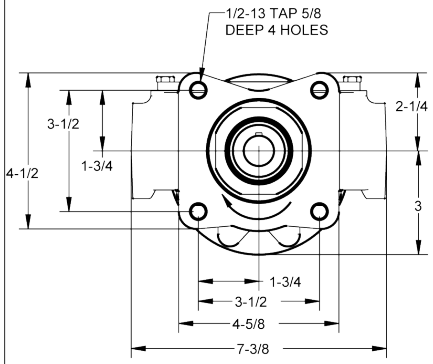
Item	Part No.	Description	Qty.
21	SE2137N70	O-Ring, Gland	1
22	SE2122N90	O-Ring, Cover Plate	2
23	E90HC.6	Screw, Cover Plate	4
24	D1030CP	Cover Plate	1
37	H22DD2F	Gland	1
39	F25C2	Washer	1
40	F11TB2	Thrust Washer	1
41	F25C3	Washer	1
42	F25C5	Spherical Washer	1
43	F25C4	Spherical Washer	1
44	ZA532A	Nut	1
45	F41C	Pin	1
49	H18AM	Shaft Seal, Secondary	1
50	SE3932N70	O-Ring, Sleeve	2
51	H33RDS	Sleeve	1
52	H33SS3F	Gland	1
53	H11TB	Roller Bearing	1
54	H19A	Locking Collar	1



DETAIL A

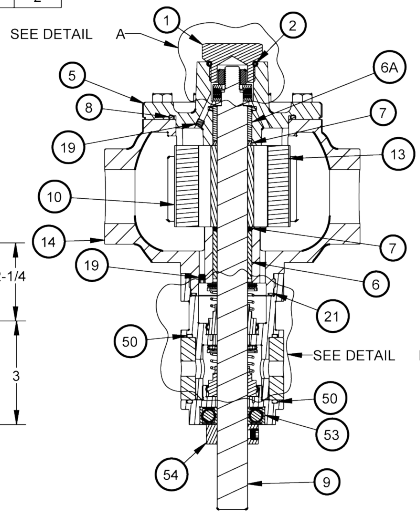


DETAIL B

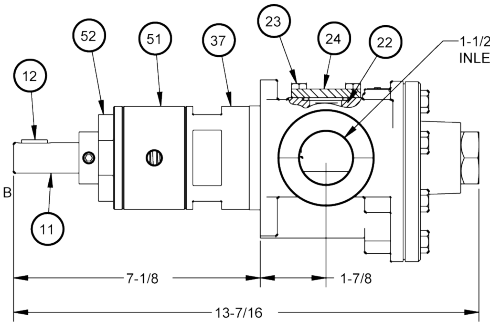


ROTATION ARROW DENOTES
STANDARD CLOCKWISE ROTATION

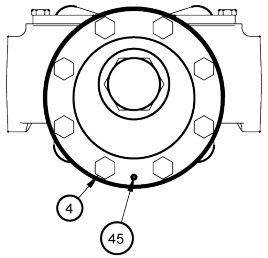
SHAFT END VIEW



CUTAWAY VIEW
BOTTOM



RIGHT SIDE



COVER END VIEW

(Revised 8-1-11)

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

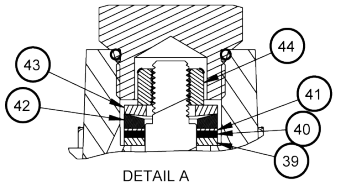
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

BS24UR - 24 GPM Barrier Seal Pump w/Relief Valve

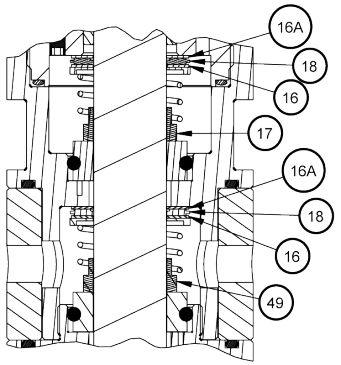
BS24UR-24 GPM Barrier Seal Pump With Relief Valve

Item	Part No.	Description	Qty.
1	SAE16	Screw On Plug	1
2	SE3916N70	O-Ring, Plug	1
4	KR364	Screw, Cover	8
5	D2230A11	Cover	1
6	H11F	Bearing	1
6A	H11F	Bearing	1
7	H21E	Wiper Seal	2
8	H28E	O-Ring, Cover	1
9	BS24C13MC	Shaft & Pinion Assembly	1
10	D2215C1	Pinion	1
11	D4014MC8	Shaft	1
12	F18C75	Key, 3/16 Sq X 3/4 Lg	1
13	D2226F1	Rotor	1
14	D403A11M	Case	1
16	H25C2	Washer	2
16A	H25C2	Washer	2
17	H18AM	Shaft Seal, Primary	1
18	H11TB2	Thrust Bearing	2
19	E49E	Set Screw, Vent	2
21	SE2137N70	O-Ring, Gland	1
22	SE2122N90	O-Ring, Valve Body	2
37	H22DD2F	Gland	1

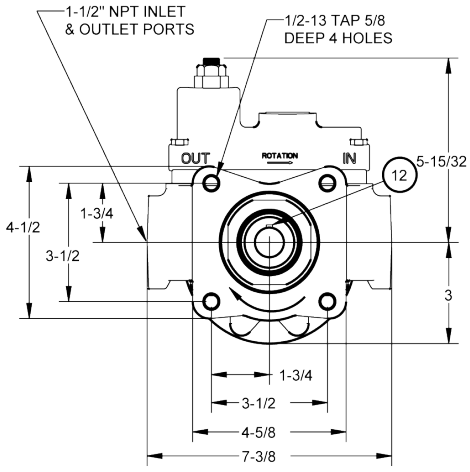
Item	Part No.	Description	Qty.
39	F25C2	Washer	1
40	F11TB2	Thrust Bearing	1
	F25C3	Washer	1
42	F25C5	Spherical Washer	1
43	F25C4	Spherical Washer	1
44	ZA532A	Nut	1
45	F41C	Pin	1
49	H18AM	Shaft Seal, Secondary	1
50	SE3932N70	O-Ring, Sleeve	2
51	H33RDS	Sleeve	1
52	H33SS3F	Gland	1
53	H11TB	Roller Bearing	1
54	H19A	Locking Collar	1
56	E90HC1.2	Screw, Valve Body	4
57	FD55SSA	Valve Body	1
58	F65C	Pipe Plug	1
59	RVP05	Piston	1
60	F92B	O-ring, Piston	2
61	H52M	Spring	1
62	F56A	Bonnet	1
63	E64JN	Nut	1
64	F55C	Adjustment Screw	1



DETAIL A

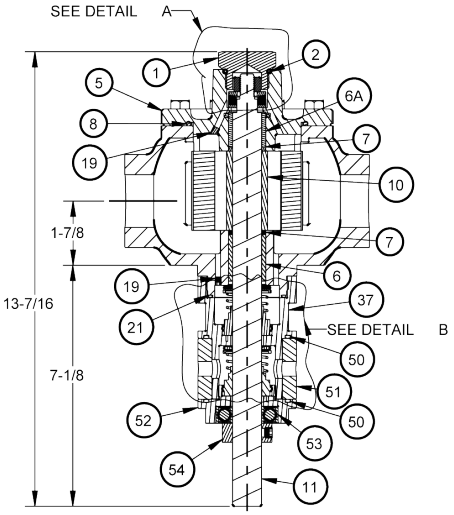


DETAIL B

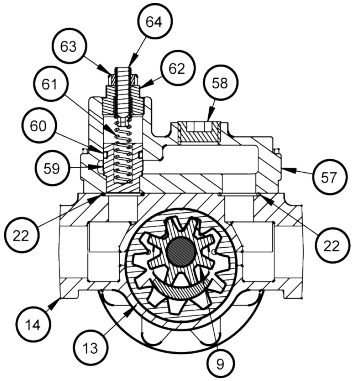


ROTATION ARROW DENOTES
STANDARD CLOCKWISE ROTATION

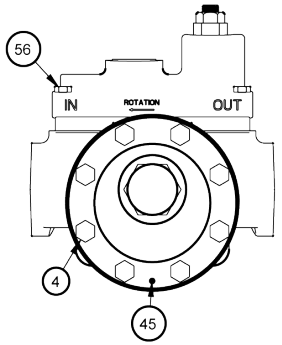
SHAFT END VIEW



CUTAWAY VIEW
BOTTOM



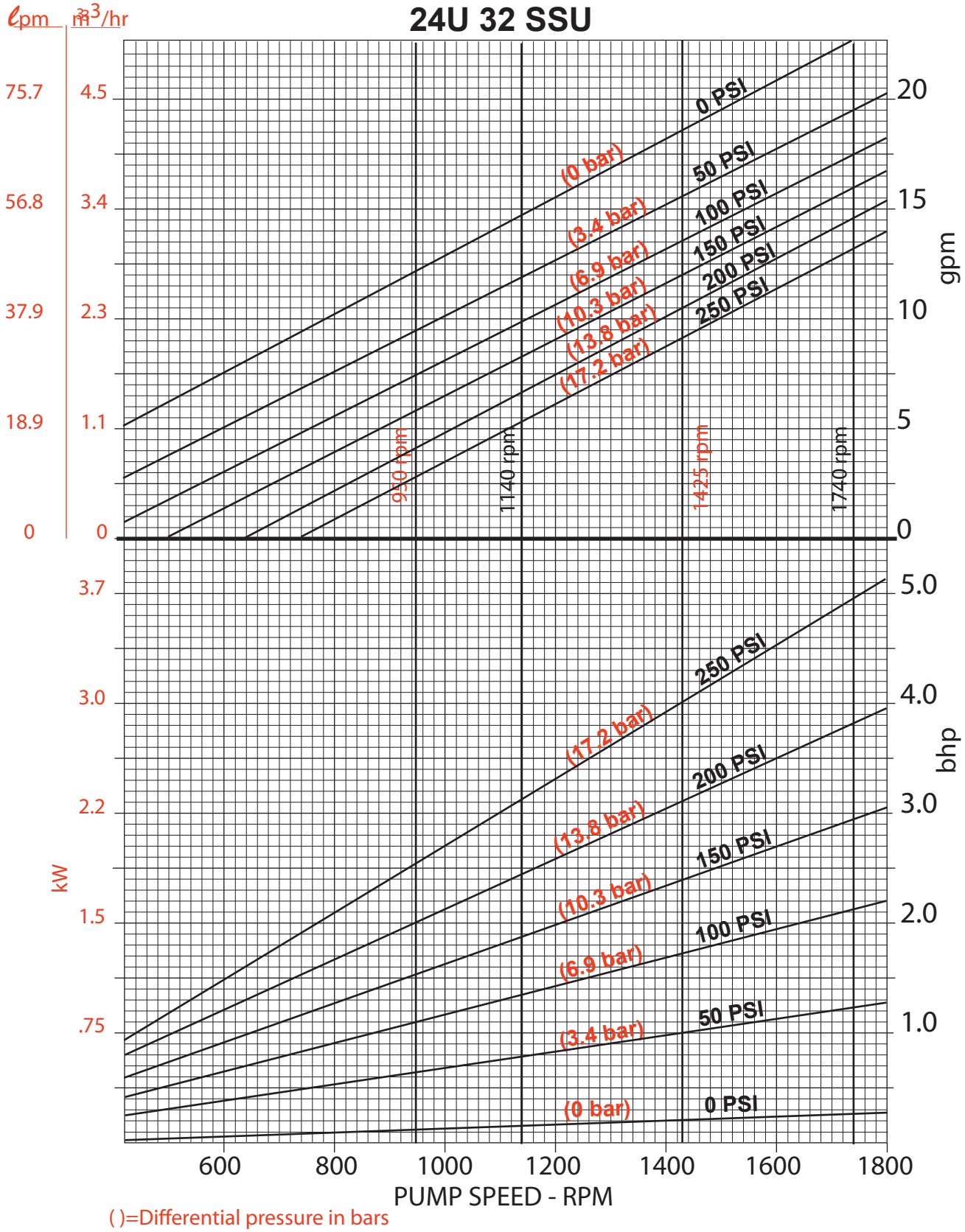
CUTAWAY VIEW
SHAFT END



COVER END VIEW

(Revised 8-1-11)

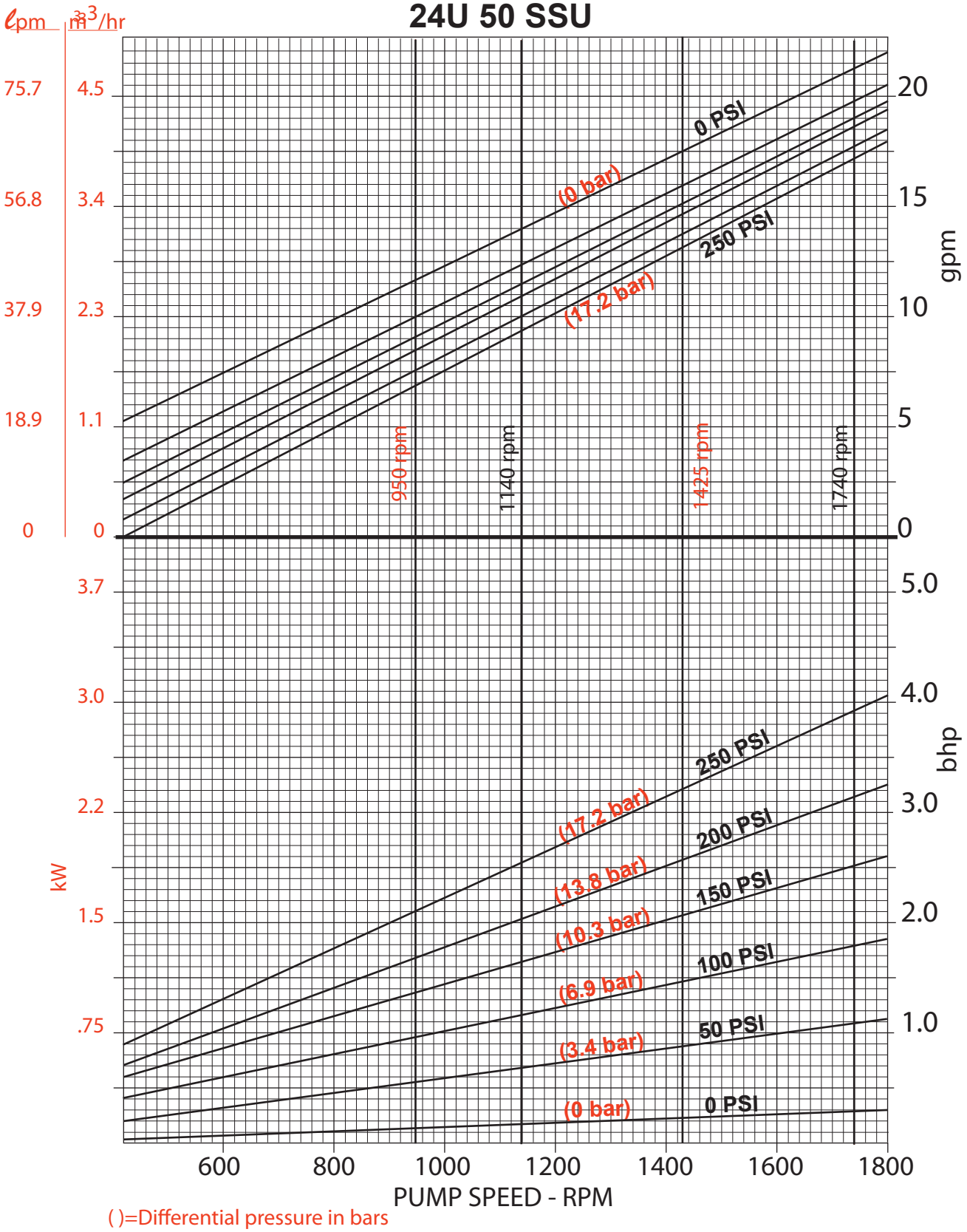
24U 32 SSU



( )=Differential pressure in bars

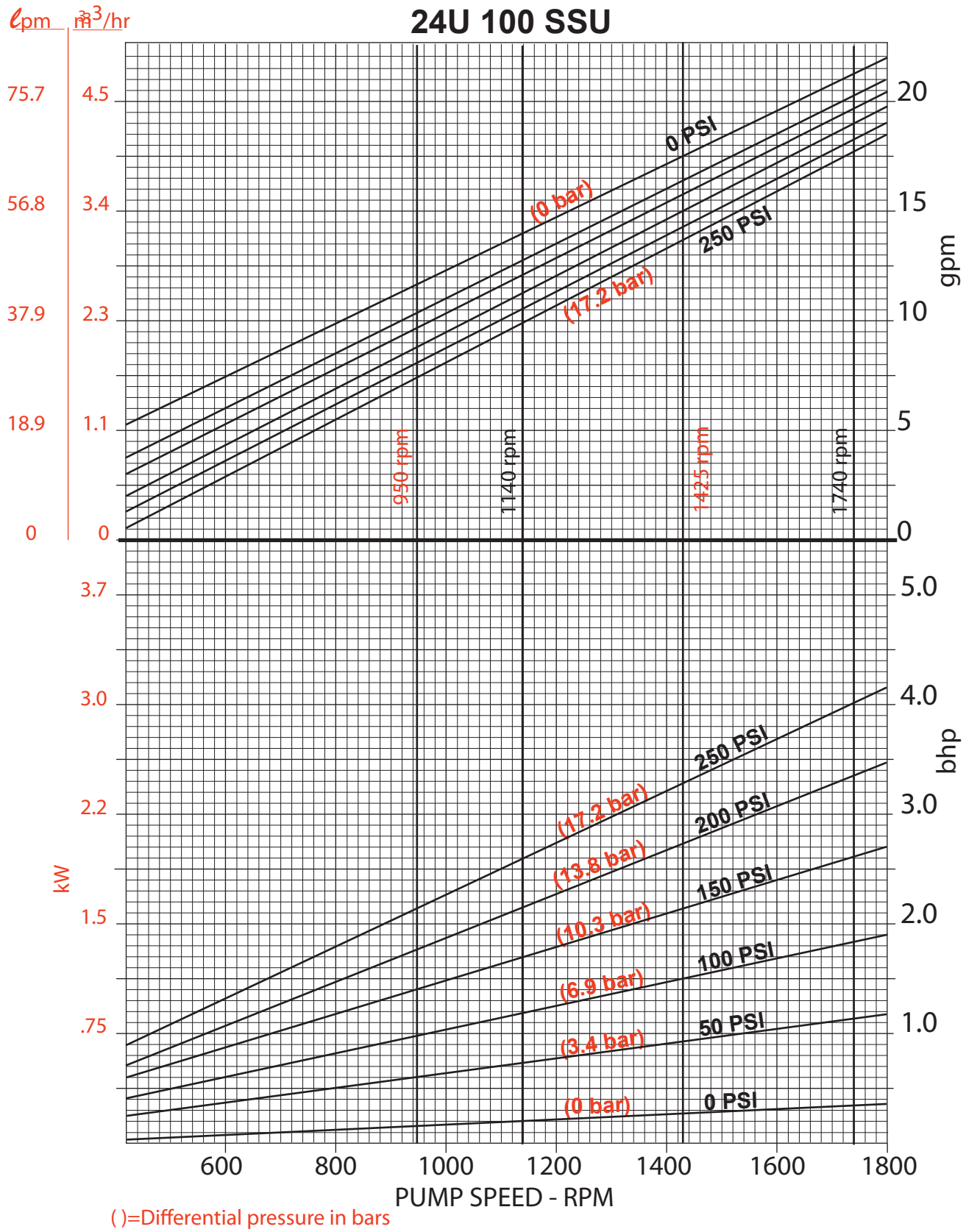
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

24U 50 SSU



( )=Differential pressure in bars

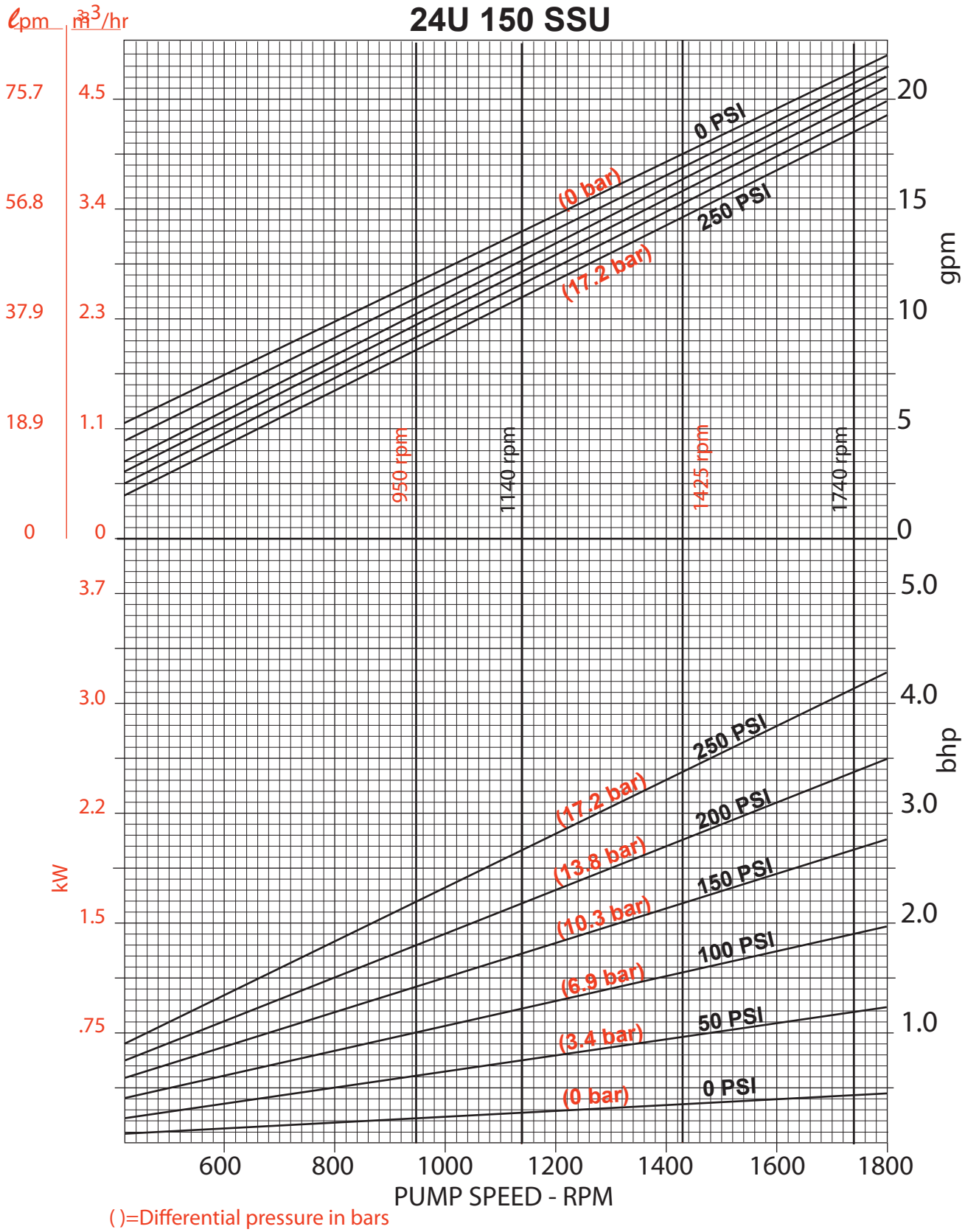
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

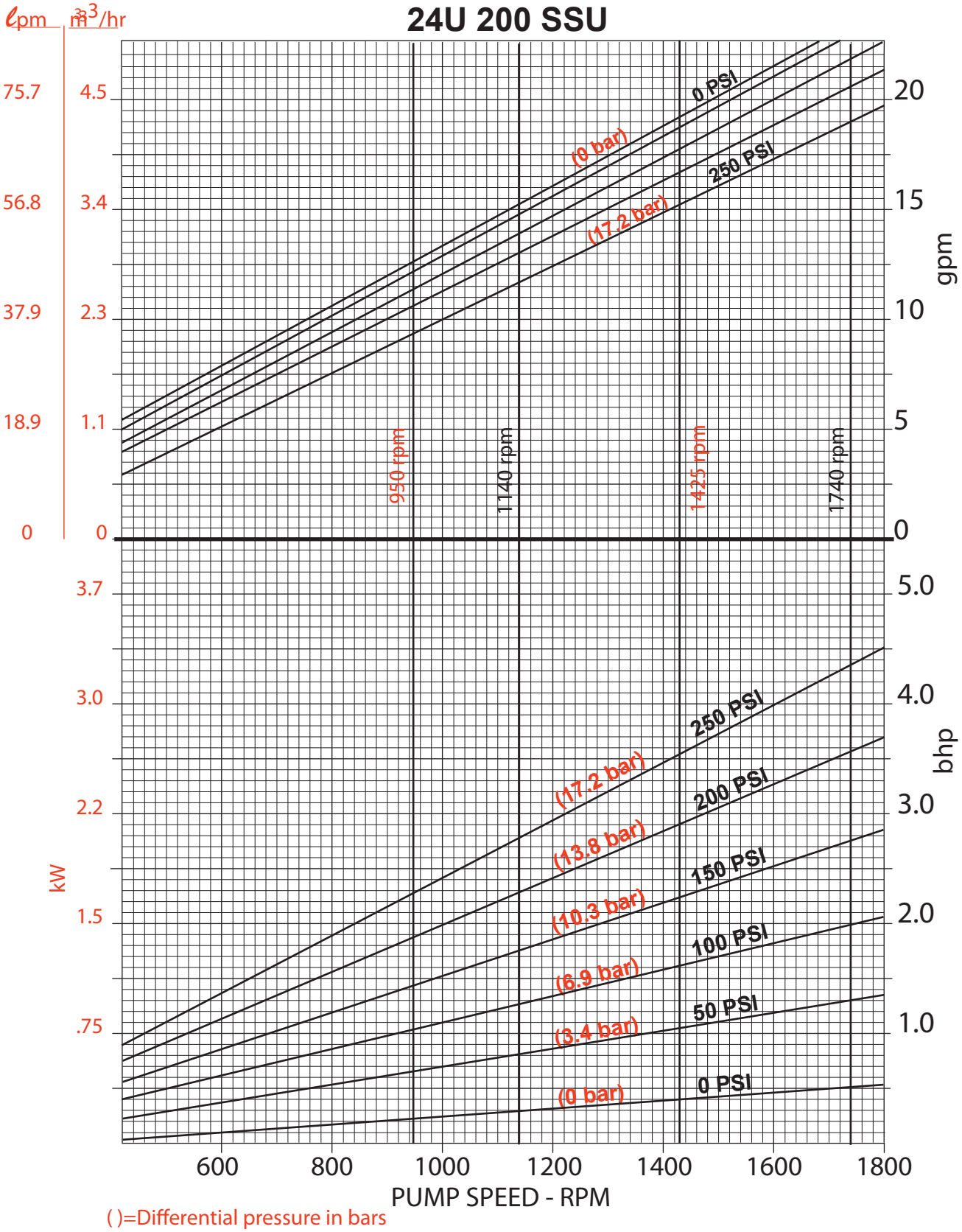
24U 150 SSU



( )=Differential pressure in bars

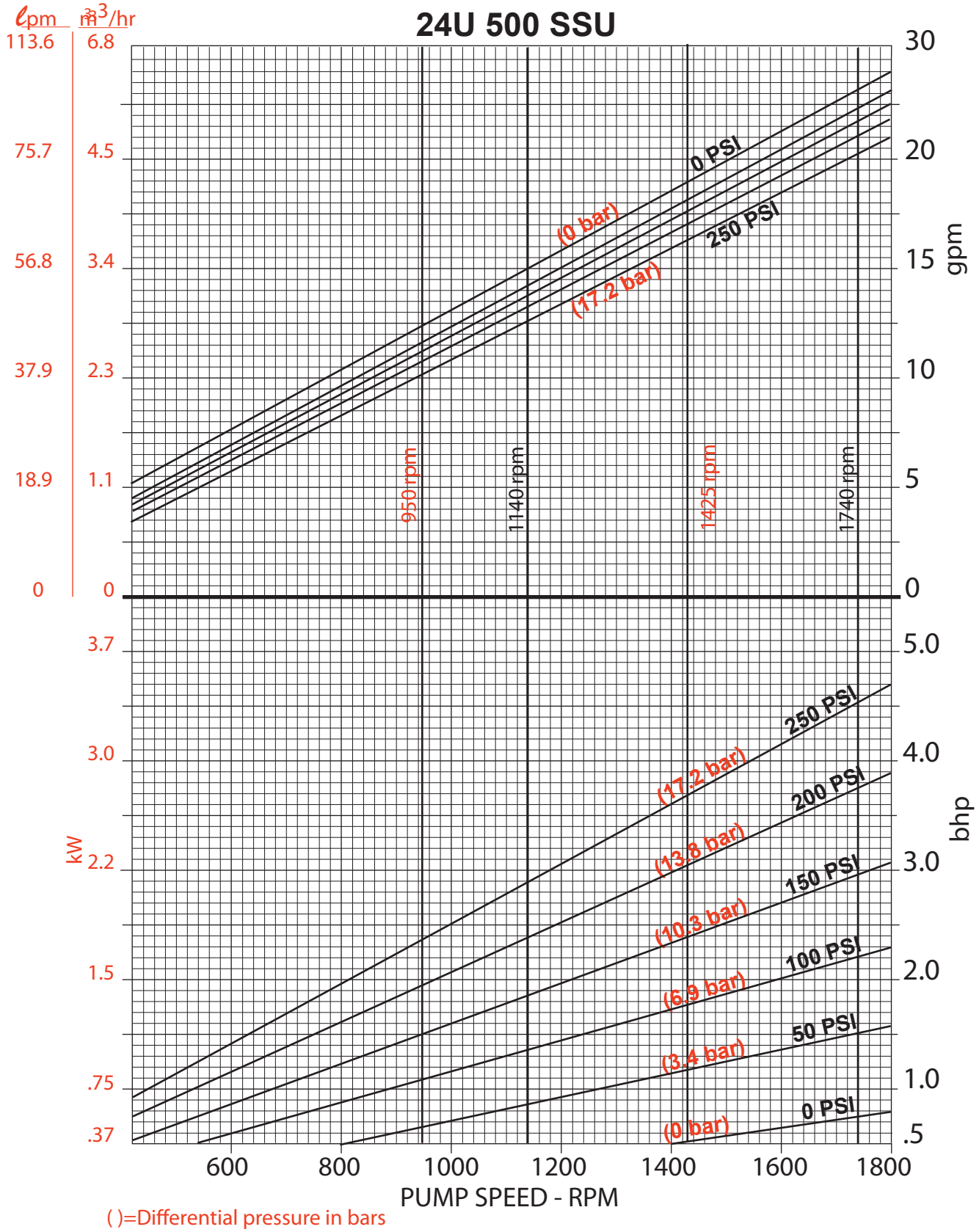
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

24U 200 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



( )=Differential pressure in bars

HAIGHT® PUMPS
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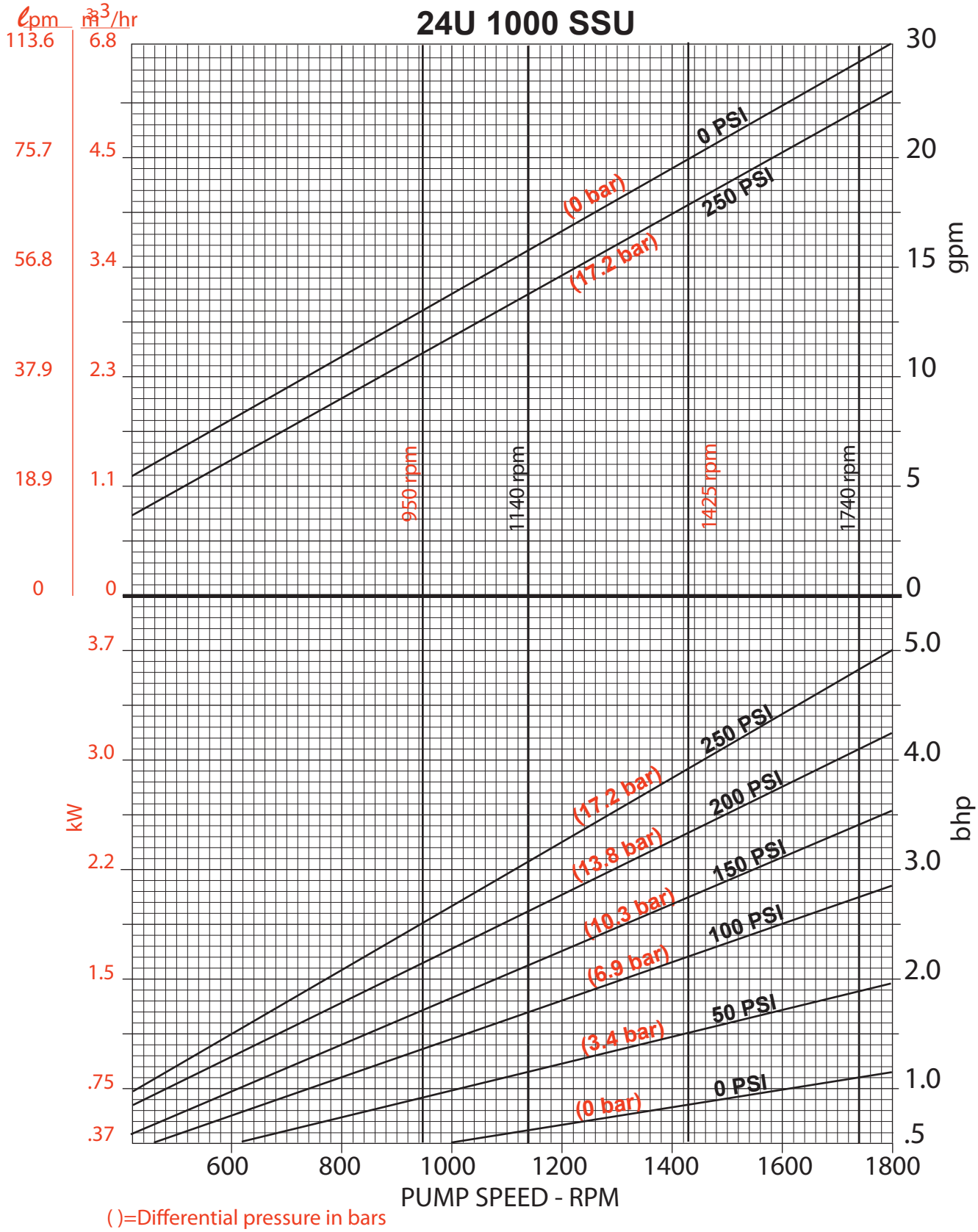
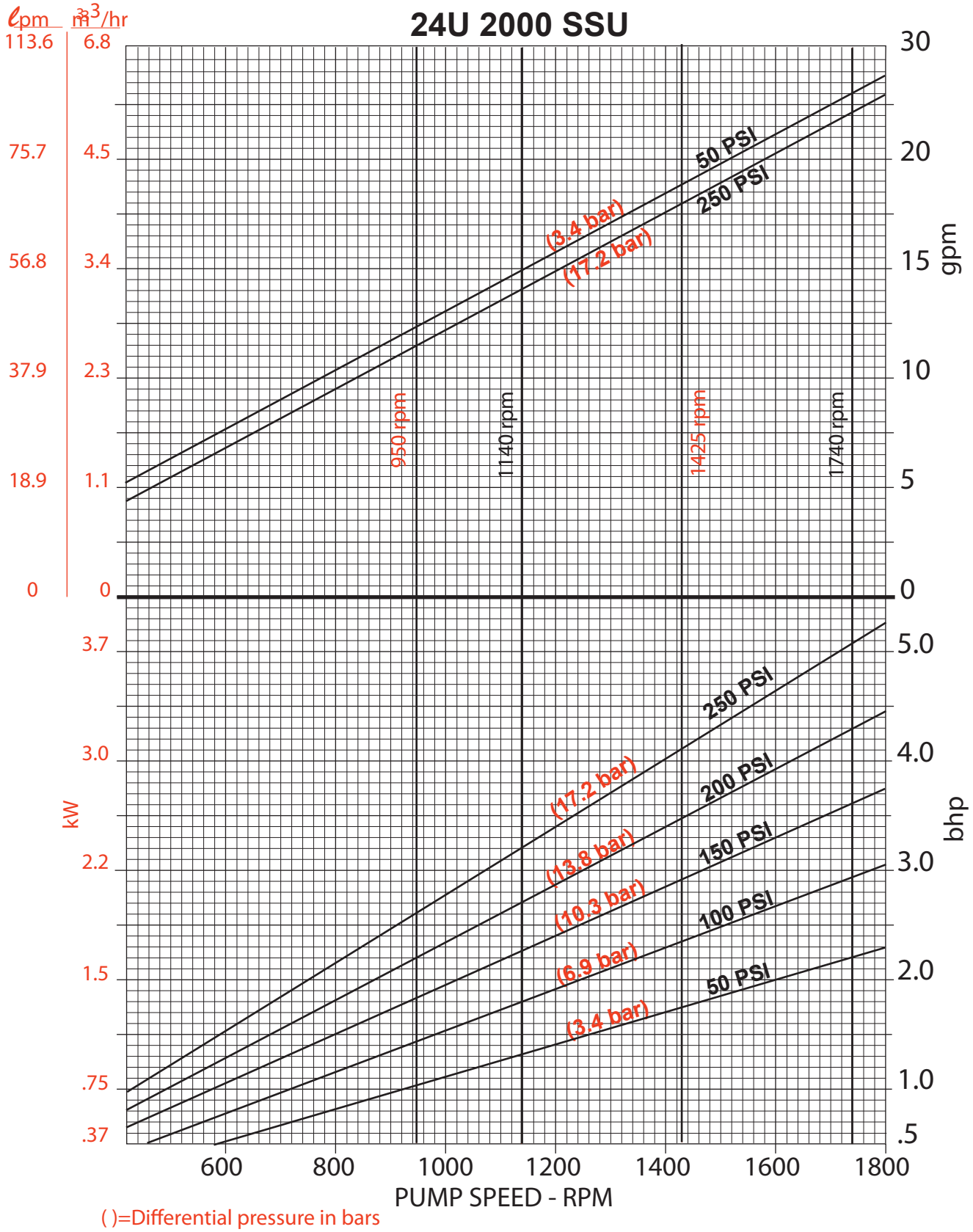


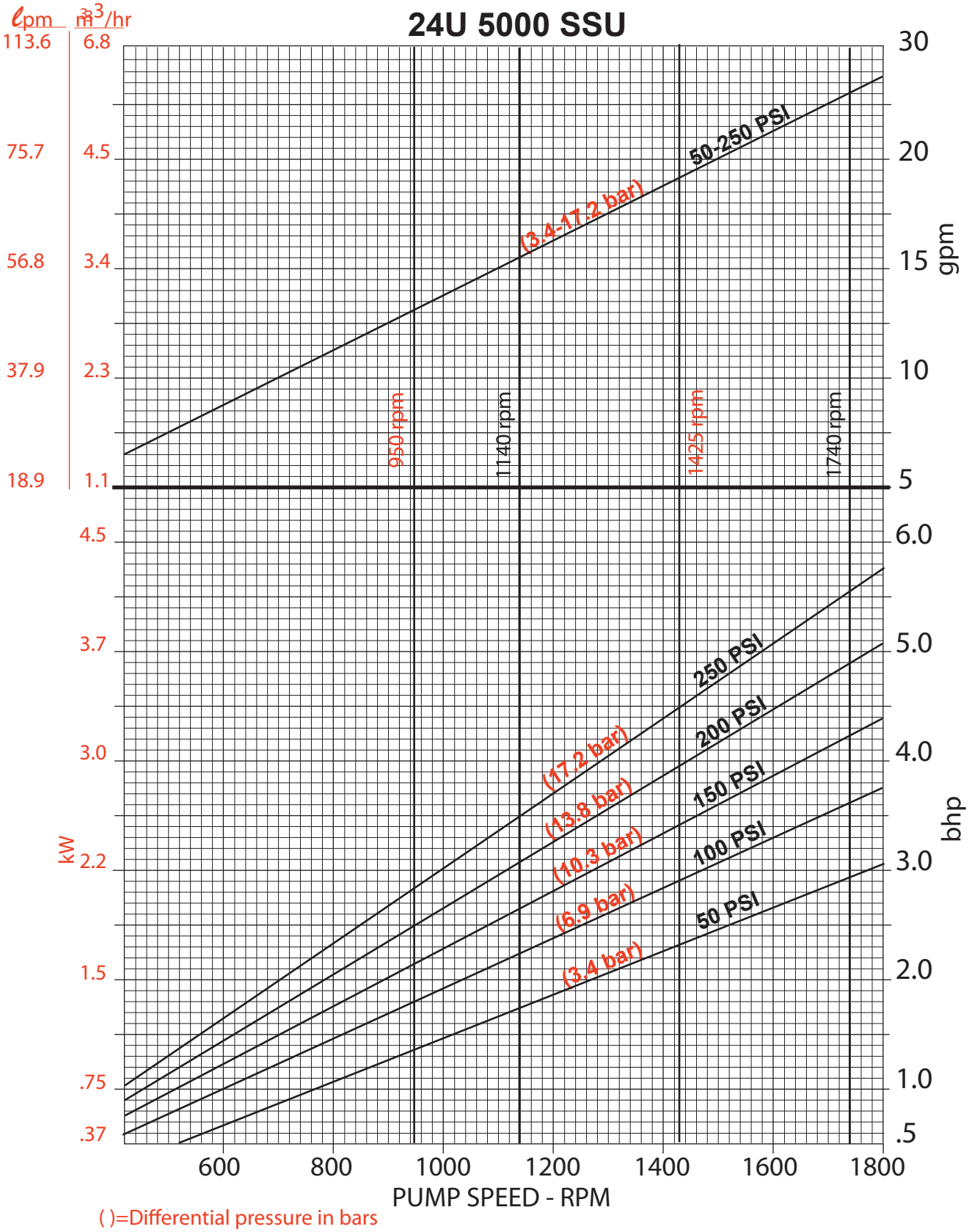
( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



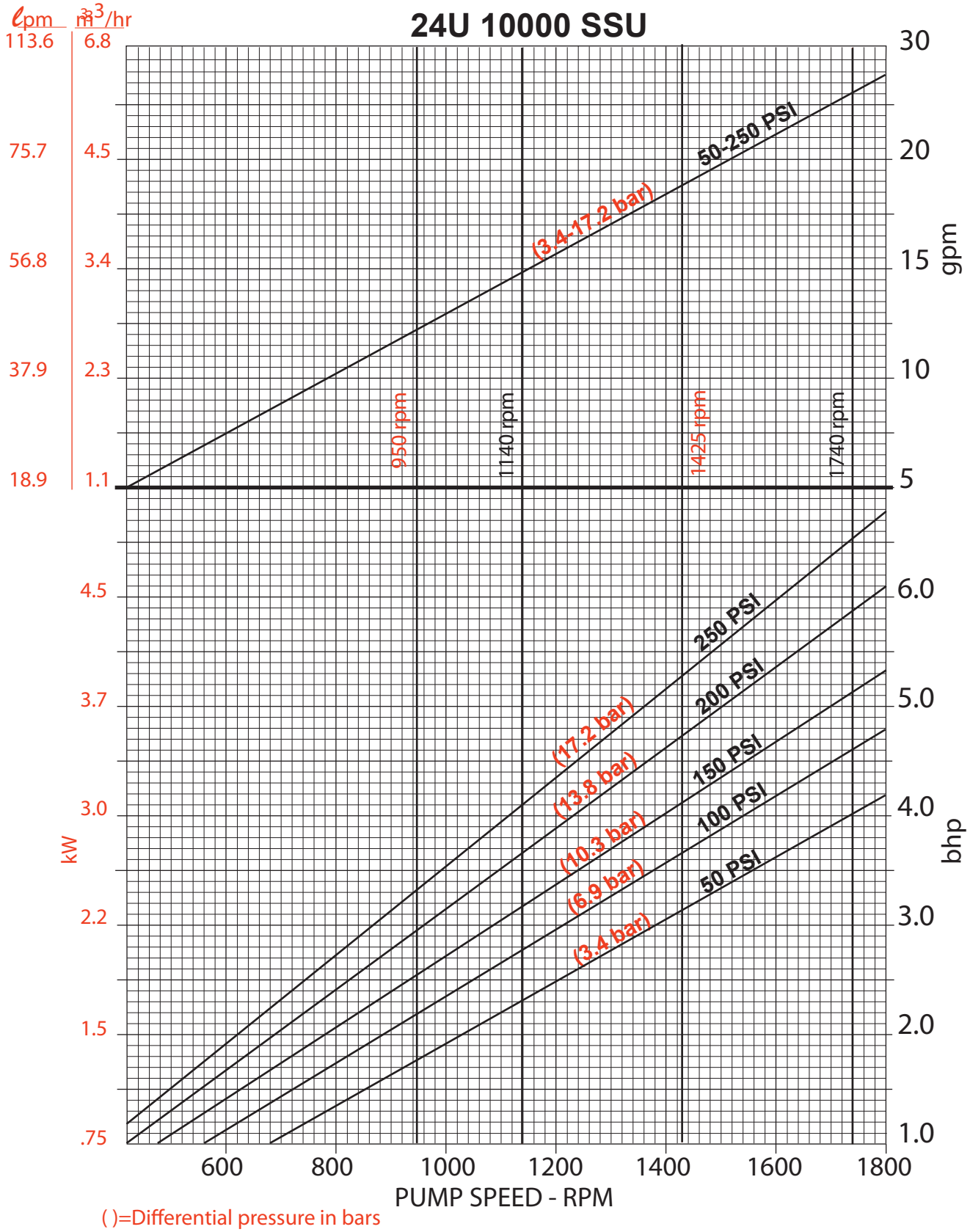
( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



( )=Differential pressure in bars

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HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

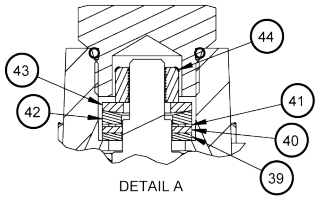
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

30U - 30 GPM Universal Pump

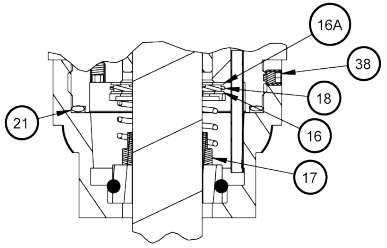
30U - 30 GPM Universal Pump

Item	Part No.	Description	Qty.
1	SAE16	Screw On Plug	1
2	SE3916N70	O-Ring, Plug	1
4	KR364	Screw, Cover	8
5	D3030A11	Cover	1
6	H11F	Bearing	1
6A	H11F	Bearing	1
7	H21E	Wiper Seal	2
8	H28E	O-Ring, Cover	1
9	DU30C13MC7	Shaft & Pinion Assembly	1
10	D3015C1	Pinion	1
11	D4014MC7	Shaft	1
12	F18C75	Key, 3/16 Sq X 3/4 Lg	1
13	D3026F1	Rotor	1
14	D403A11M	Case	1
16	H25C2	Washer	1
16A	H25C2	Washer	1
17	H18AM	Shaft Seal	1

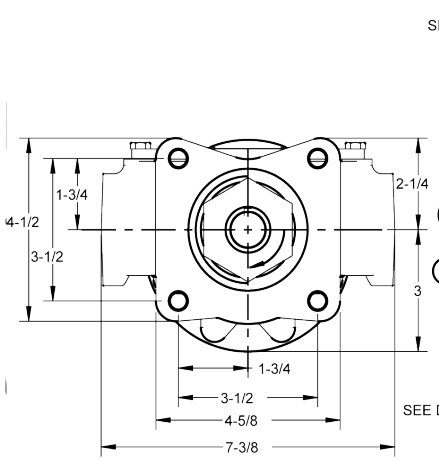
Item	Part No.	Description	Qty.
18	H11TB2	Thrust Bearing	1
19	E49E	Set Screw, Vent	2
20	F43C1	Pin	1
21	SE2137N70	O-Ring, Gland	1
22	SE2122N90	O-Ring, Cover Plate	2
23	E90HC.6	Screw, Cover Plate	4
24	D1030CP	Cover Plate	1
37	H22SS2A	Gland	1
38	E49D	Set Screw, Gland	1
39	F25C2	Washer	1
40	F11TB2	Thrust Bearing	1
41	F25C3	Washer	1
42	F25C5	Spherical Washer	1
43	F25C4	Spherical Washer	1
44	ZA532A	Nut	1
45	F41C	Pin	1



DETAIL A

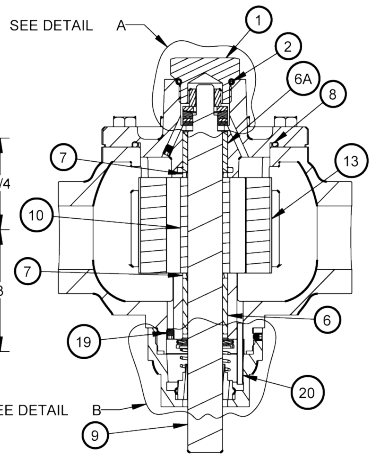


DETAIL B

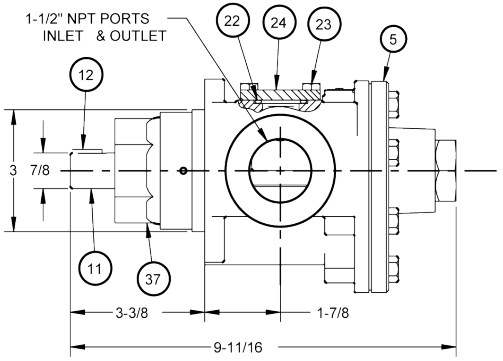


ROTATION ARROW DENOTES
STANDARD CLOCKWISE ROTATION

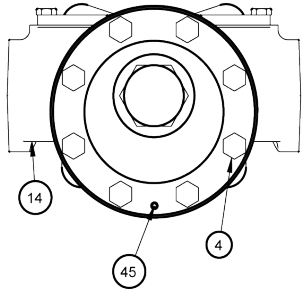
SHAFT END VIEW



CUTAWAY VIEW BOTTOM



RIGHT SIDE



COVER END VIEW

(Revised 8-1-11)

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

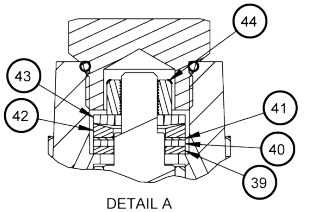
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

30UR - 30 GPM
Universal Relief Valve Pump

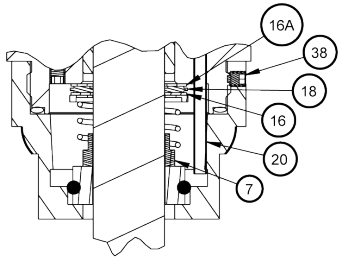
30UR - 30 GPM UNIVERSAL RELIEF VALVE PUMP

Item	Part No.	Description	Qty.
1	SAE16	Screw On Plug	1
2	SE3916N70	O-Ring, Plug	1
4	KR364	Screw, Cover	8
5	D3030A11	Cover	1
6	H11F	Bearing	1
6A	H11F	Bearing	1
7	H21E	Wiper Seal	2
8	H28E	O-Ring, Cover	1
9	DU30C13MC7	Shaft & Pinion Assembly	1
10	D3015C1	Pinion	1
11	D2014MC7	Shaft	1
12	F18C75	Key, 3/16 Sq X 3/4 Lg	1
13	D3026F1	Rotor	1
14	D403A11M	Case	1
16	H25C2	Washer	1
16A	H25C2	Washer	1
17	H18AM	Shaft Seal	1
18	H11TB2	Thrust Bearing	1
19	E49E	Set Screw, Vent	2
20	F43C1	Pin	1
21	SE2137N70	O-Ring, Gland	1
22	SE2122N90	O-Ring, Valve Body	2

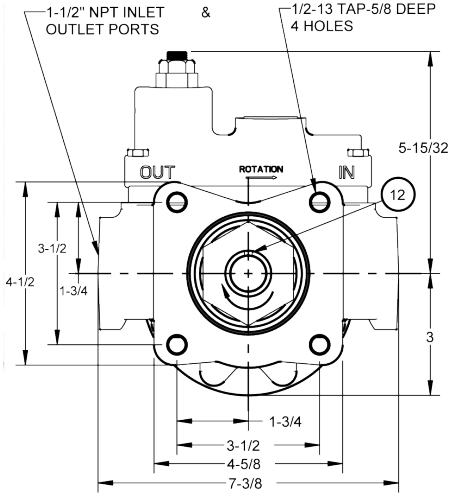
Item	Part No.	Description	Qty.
37	H22SS2A	Gland	1
38	E49D	Set Screw, Gland	4
39	F25C2	Washer	2
40	F11TB2	Thrust Bearing	1
41	F25C3	Washer	1
42	F25C5	Spherical Washer	1
43	F25C4	Spherical Washer	2
44	ZA532A	Nut	1
45	F41C	Pin	3
56	E90HC1.2	Screw, Valve Body	1
57	FD55SA	Valve Body	1
58	F65C	Pipe Plug	1
59	RVP05	Piston	1
60	F92B	Oring, Piston	1
61	H52M	Spring	1
62	F56A	Bonnet	1
63	E64JN	Nut	1
64	F55C	Adjustment Screw	1



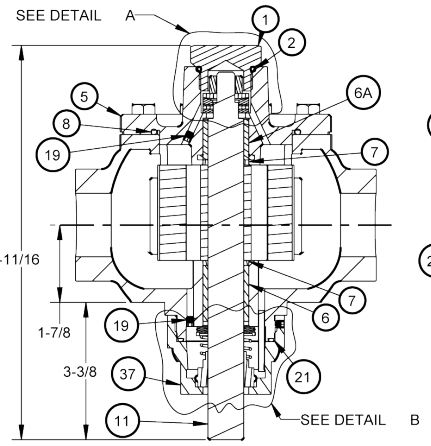
DETAIL A



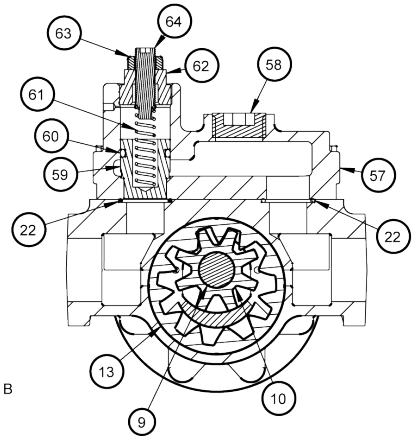
DETAIL B



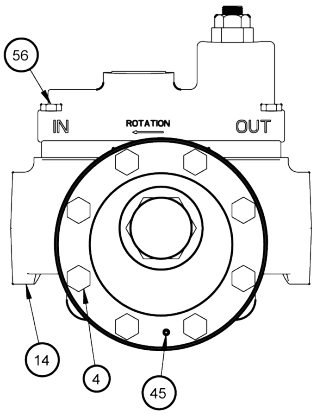
ROTATION ARROW DENOTES STANDARD CLOCKWISE ROTATION
SHAFT END VIEW



CUTAWAY VIEW BOTTOM



CUTAWAY VIEW SHAFT END



COVER END VIEW

(Revised 8-1-11)

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

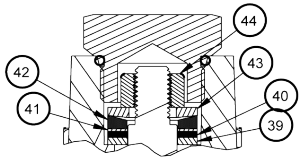
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

BS30U - 30 GPM Barrier Seal
Pump w/o Relief Valve

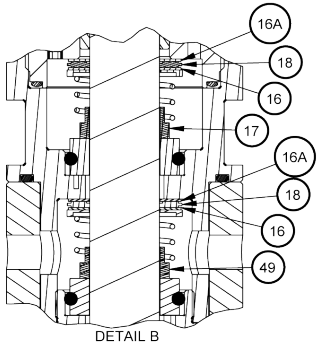
BS30U-30 GPM Barrier Seal Pump

Item	Part No.	Description	Qty.
1	SAE16	Screw On Plug	1
2	SE3916N70	O-Ring, Plug	1
4	KR364	Screw, Cover	8
5	D3030A11	Cover	1
6	H11F	Bearing	1
6A	H11F	Bearing	1
7	H21E	Wiper Seal	2
8	H28E	O-Ring, Cover	1
9	BS30C13MC	Shaft & Pinion Assembly	1
10	D3015C1	Pinion	1
11	D4014MC8	Shaft	1
12	F18C75	Key, 3/16 Sq X 3/4 Lg	1
13	D3026F1	Rotor	1
14	D403A11M	Case	1
16	H25C2	Washer	2
16A	H25C2	Washer	2
17	H18AM	Shaft Seal, Primary	1
18	H11TB2	Thrust Bearing	2
19	E49E	Set Screw, Vent	2

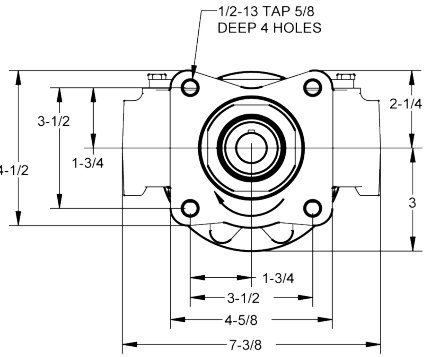
Item	Part No.	Description	Qty.
21	SE2137N70	O-Ring, Gland	1
22	SE2122N90	O-Ring, Cover Plate	2
23	E90HC.6	Screw, Cover Plate	4
24	D1030CP	Cover Plate	1
37	H22DD2F	Gland	1
39	F25C2	Washer	1
40	F11TB2	Thrust Washer	1
41	F25C3	Washer	1
42	F25C5	Spherical Washer	1
43	F25C4	Spherical Washer	1
44	ZA532A	Nut	1
45	F41C	Pin	1
49	H18AM	Shaft Seal, Secondary	1
50	SE3932N70	O-Ring, Sleeve	2
51	H33RDS	Sleeve	1
52	H33SS3F	Gland	1
53	H11TB	Roller Bearing	1
54	H19A	Locking Collar	1



DETAIL A

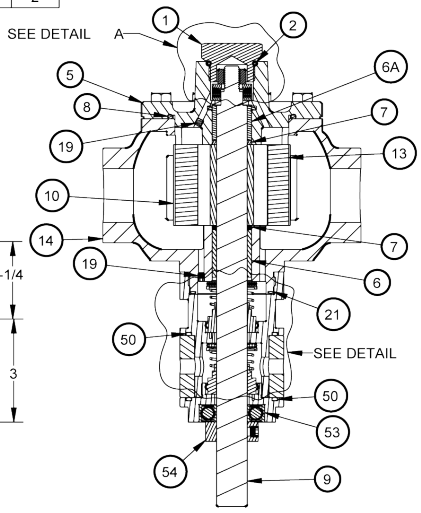


DETAIL B

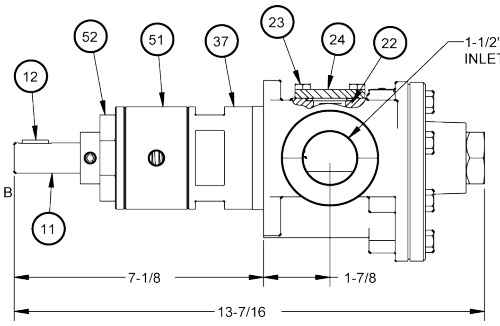


ROTATION ARROW DENOTES
STANDARD CLOCKWISE ROTATION

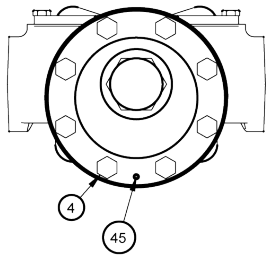
SHAFT END VIEW



CUTAWAY VIEW
BOTTOM



RIGHT SIDE



COVER END VIEW

(Revised 8-1-11)

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

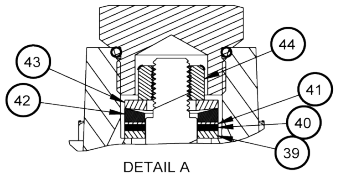
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

BS30UR - 30 GPM Barrier Seal Pump w/Relief Valve

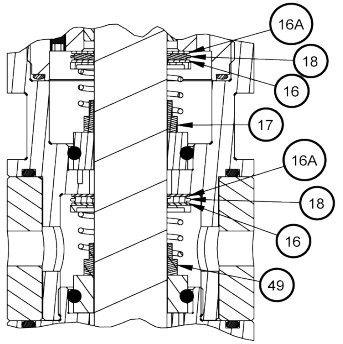
BS30UR-30 GPM Barrier Seal Pump With Relief Valve

Item	Part No.	Description	Qty.
1	SAE16	Screw On Plug	1
2	SE3916N70	O-Ring, Plug	1
4	KR364	Screw, Cover	8
5	D3030A11	Cover	1
6	H11F	Bearing	1
6A	H11F	Bearing	1
7	H21E	Wiper Seal	2
8	H28E	O-Ring, Cover	1
9	BS30C13MC	Shaft & Pinion Assembly	1
10	D3015C1	Pinion	1
11	D4014MC8	Shaft	1
12	F18C75	Key, 3/16 Sq X 3/4 Lg	1
13	D3026F1	Rotor	1
14	D403A11M	Case	1
16	H25C2	Washer	2
16A	H25C2	Washer	2
17	H18AM	Shaft Seal, Primary	1
18	H11TB2	Thrust Bearing	2
19	E49E	Set Screw, Vent	2
21	SE2137N70	O-Ring, Gland	1
22	SE2122N90	O-Ring, Valve Body	2
37	H22DD2F	Gland	1

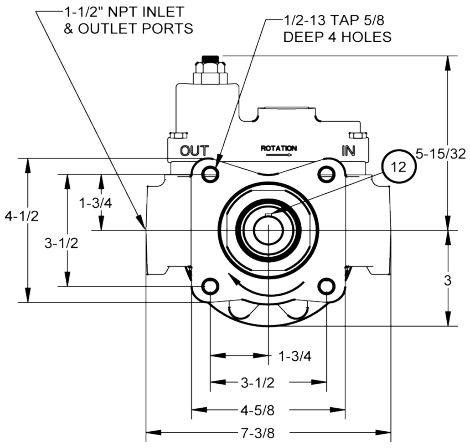
Item	Part No.	Description	Qty.
39	F25C2	Washer	1
40	F11TB2	Thrust Bearing	1
	F25C3	Washer	1
42	F25C5	Spherical Washer	1
43	F25C4	Spherical Washer	1
44	ZA532A	Nut	1
45	F41C	Pin	1
49	H18AM	Shaft Seal, Secondary	1
50	SE3932N70	O-Ring, Sleeve	2
51	H33RDS	Sleeve	1
52	H33SS3F	Gland	1
53	H11TB	Roller Bearing	1
54	H19A	Locking Collar	1
56	E90HC1.2	Screw, Valve Body	4
57	FD55SSA	Valve Body	1
58	F65C	Pipe Plug	1
59	RVP05	Piston	1
60	F92B	O-ring, Piston	2
61	H52M	Spring	1
62	F56A	Bonnet	1
63	E64JN	Nut	1
64	F55C	Adjustment Screw	1



DETAIL A

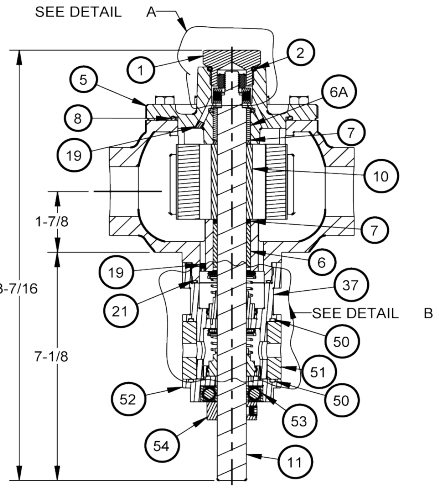


DETAIL B

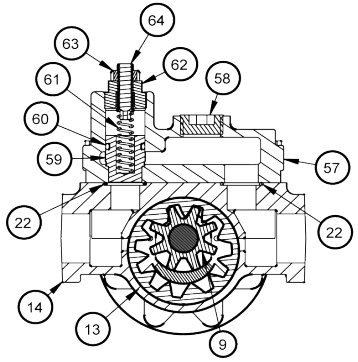


ROTATION ARROW DENOTES
STANDARD CLOCKWISE ROTATION

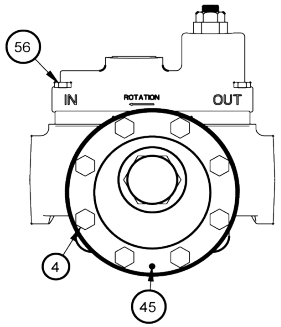
SHAFT END VIEW



CUTAWAY VIEW
BOTTOM

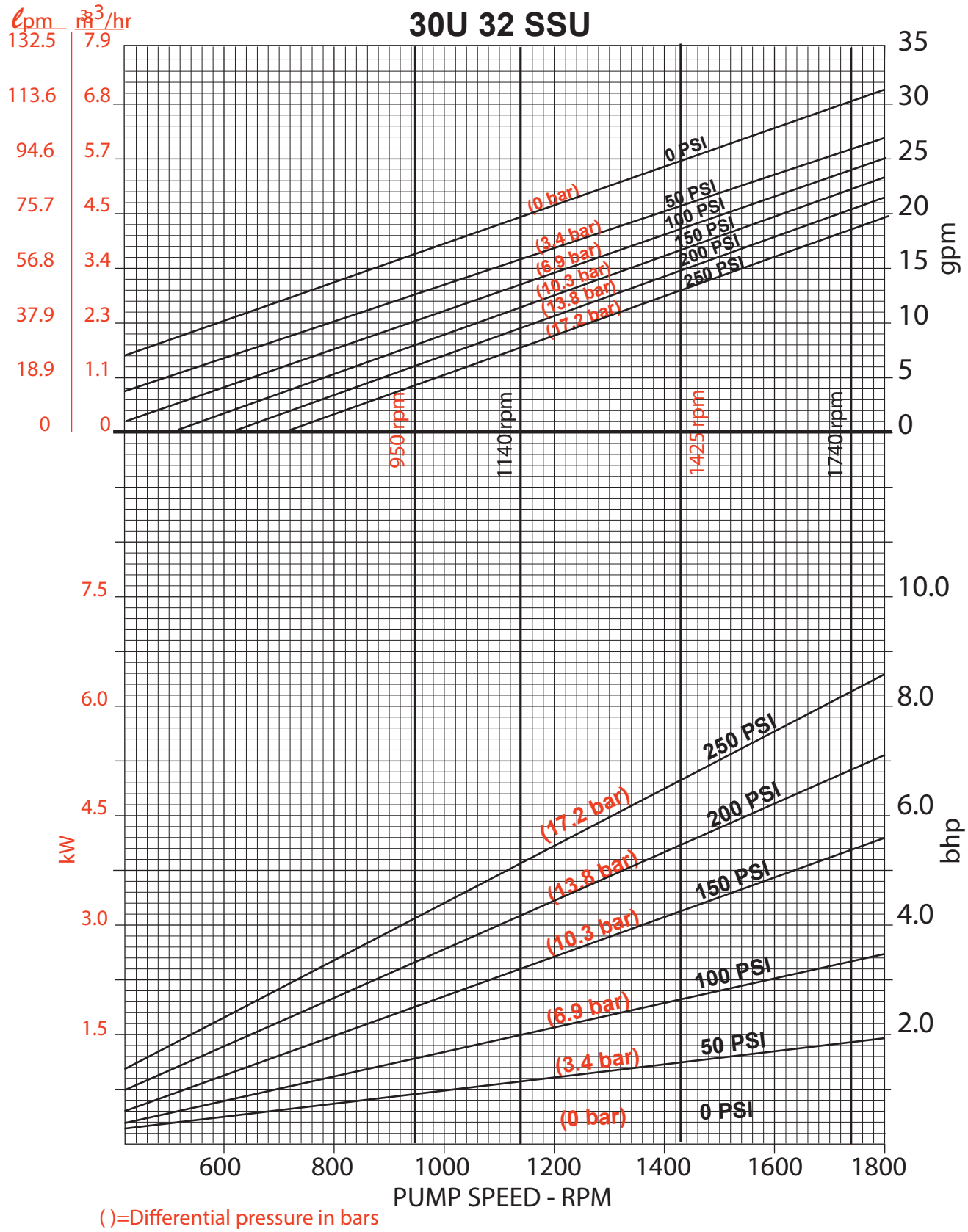


CUTAWAY VIEW
SHAFT END



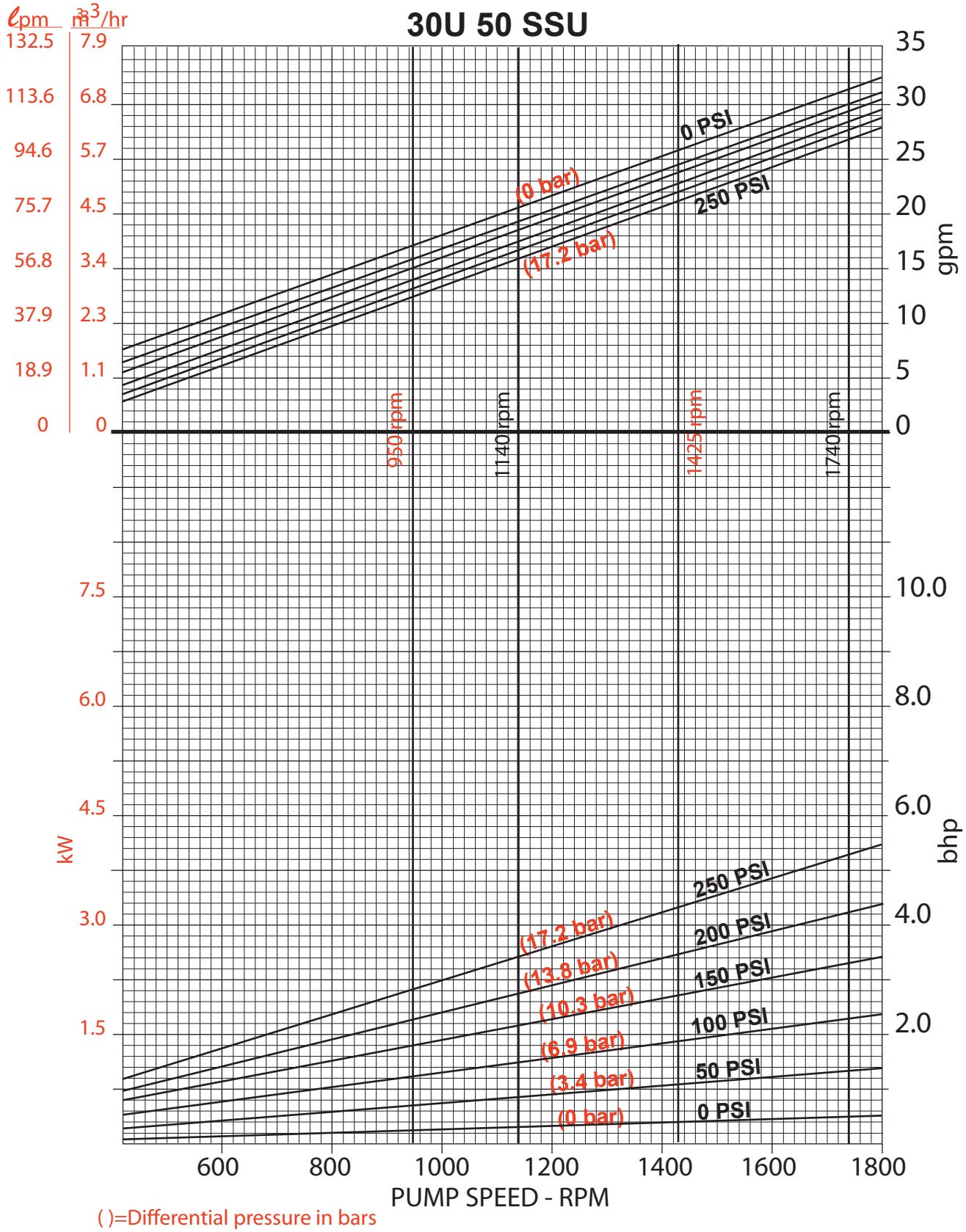
COVER END VIEW

(Revised 8-1-11)



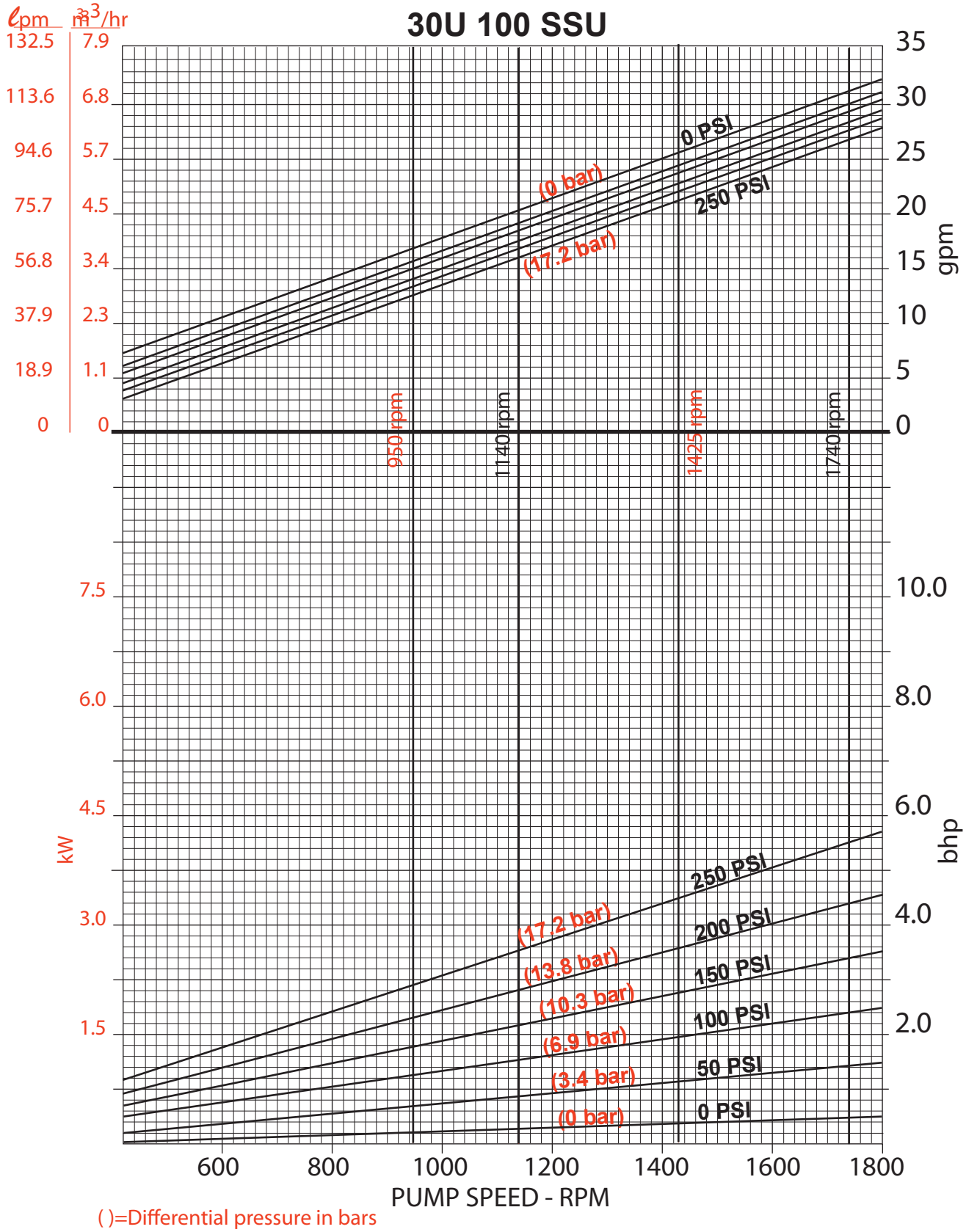
( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



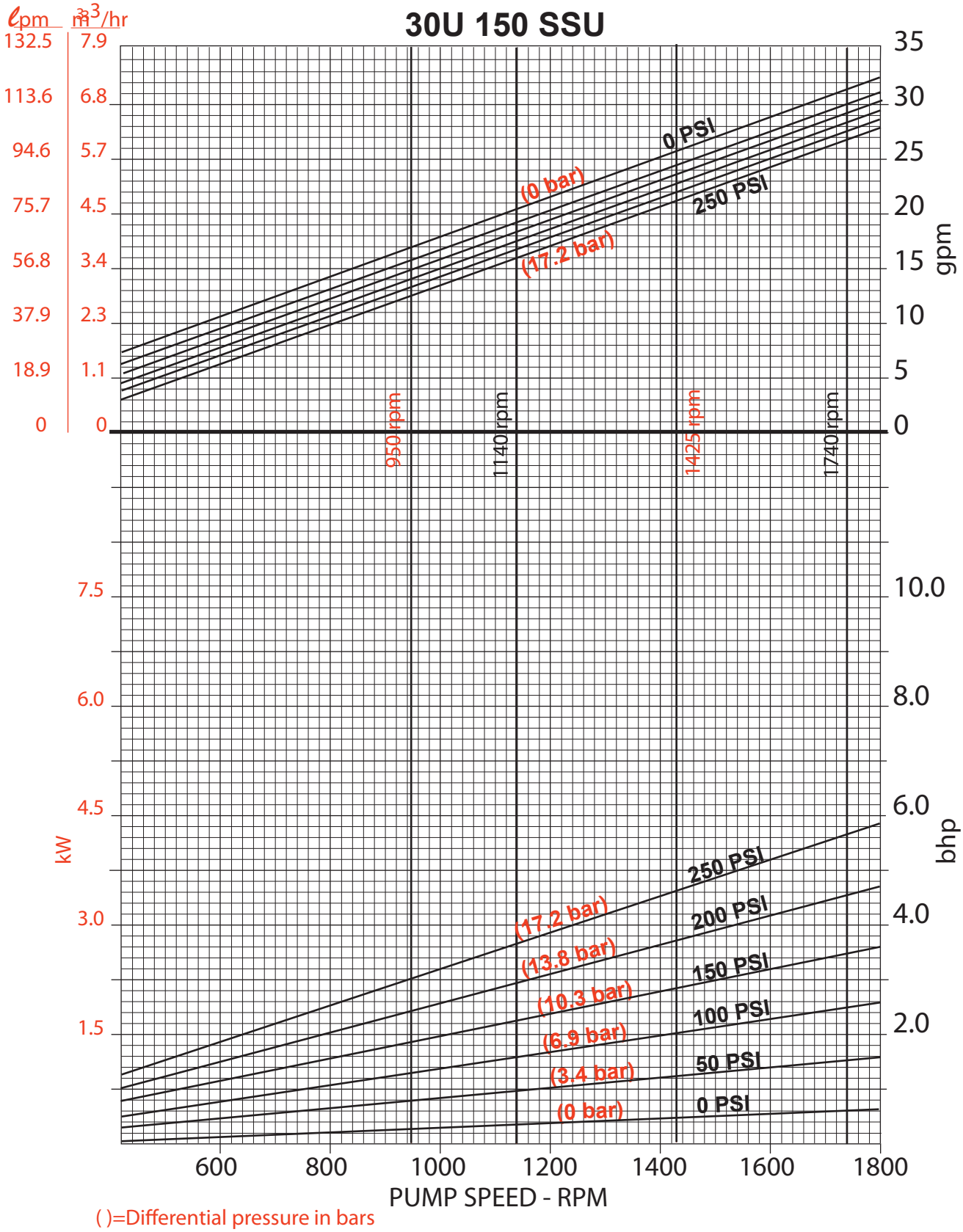
( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



( )=Differential pressure in bars

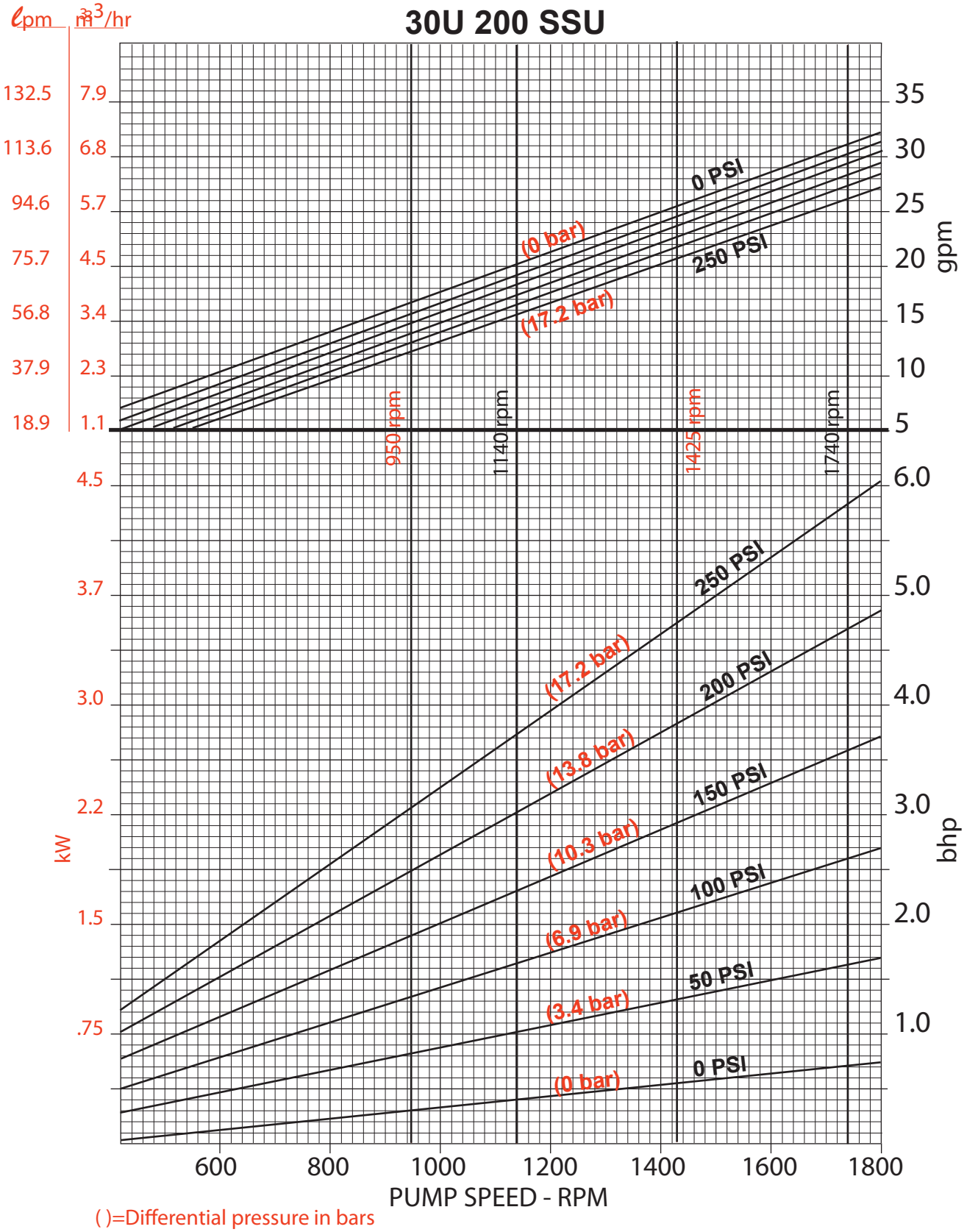
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

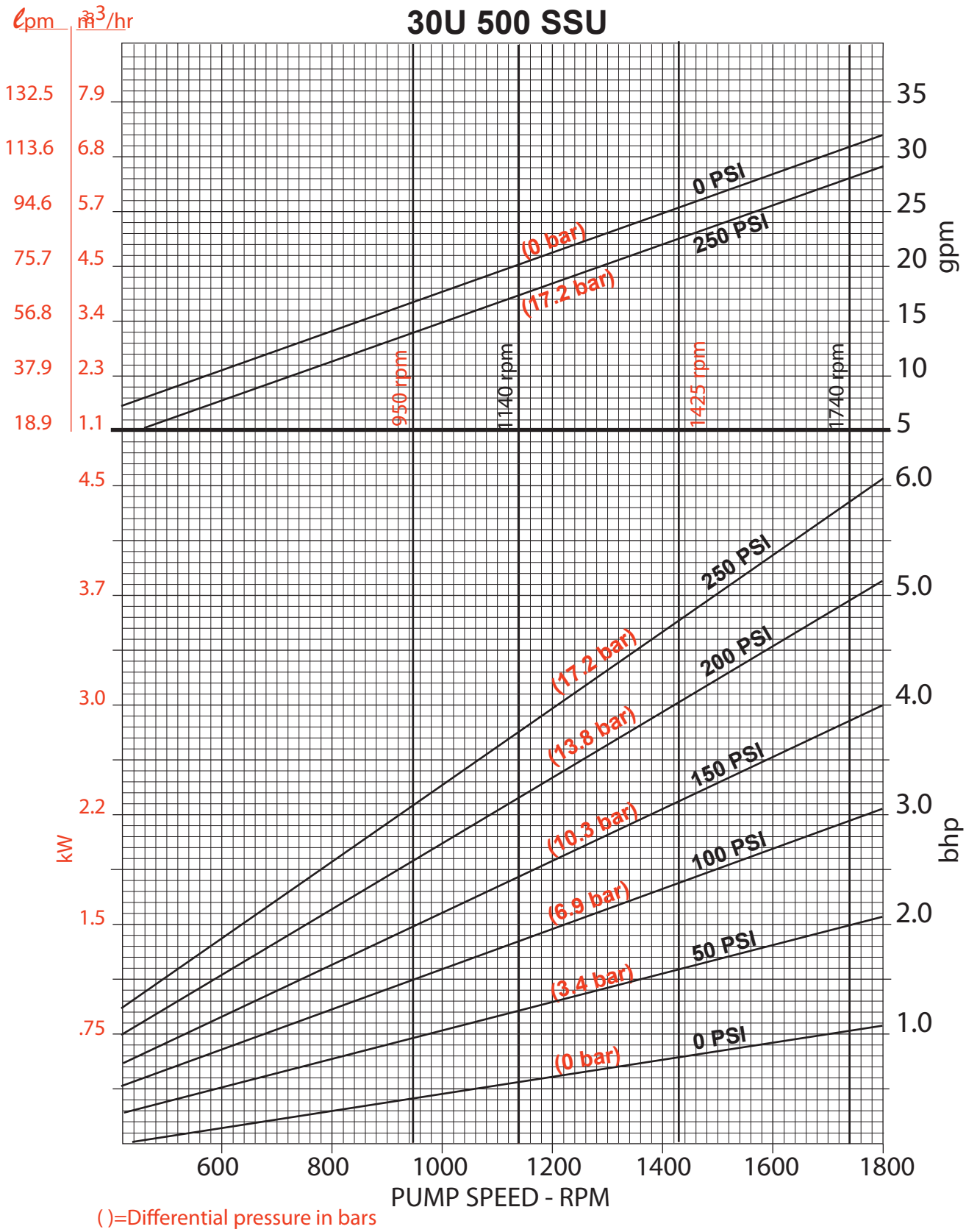
30U 200 SSU



( )=Differential pressure in bars

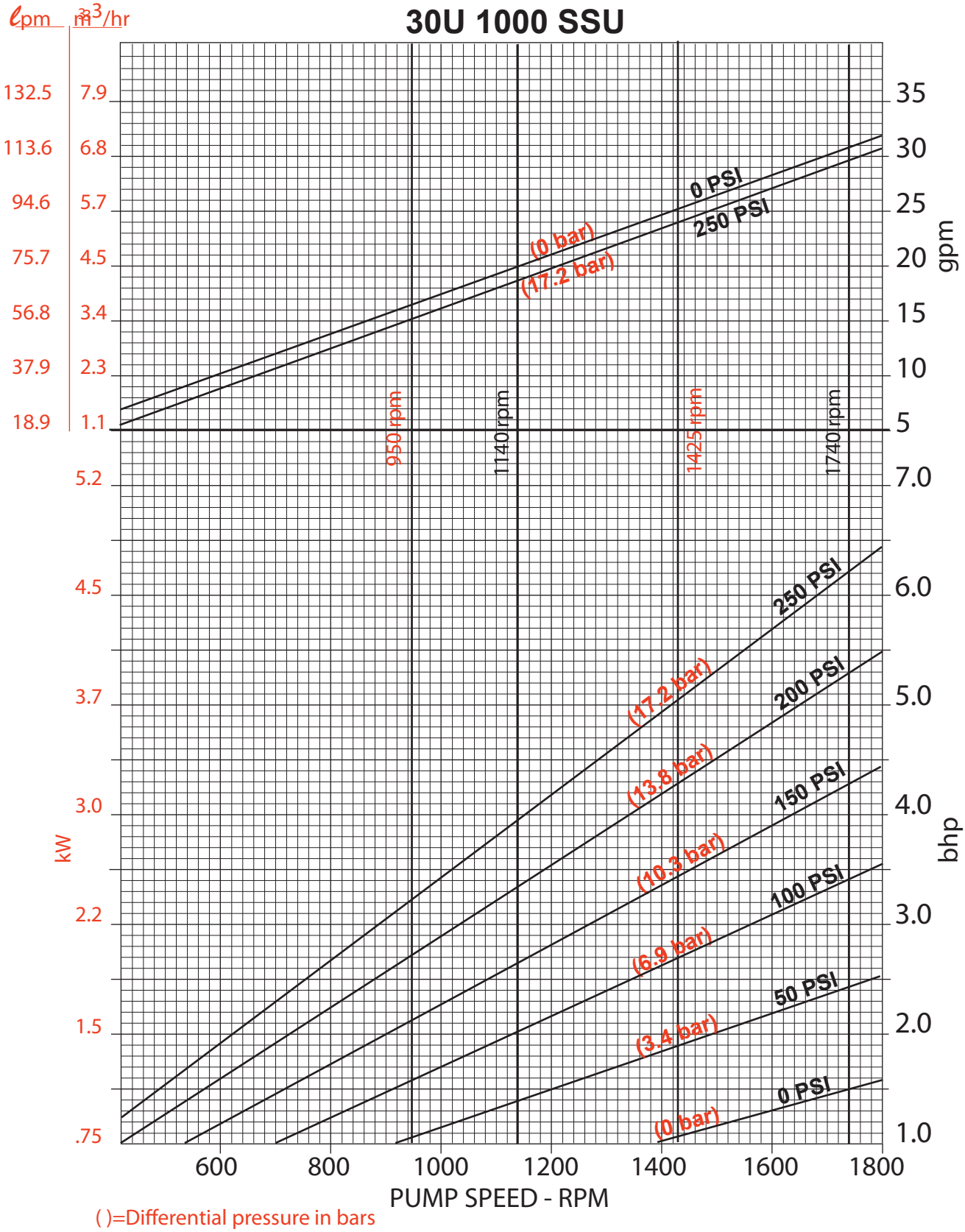
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

30U 500 SSU



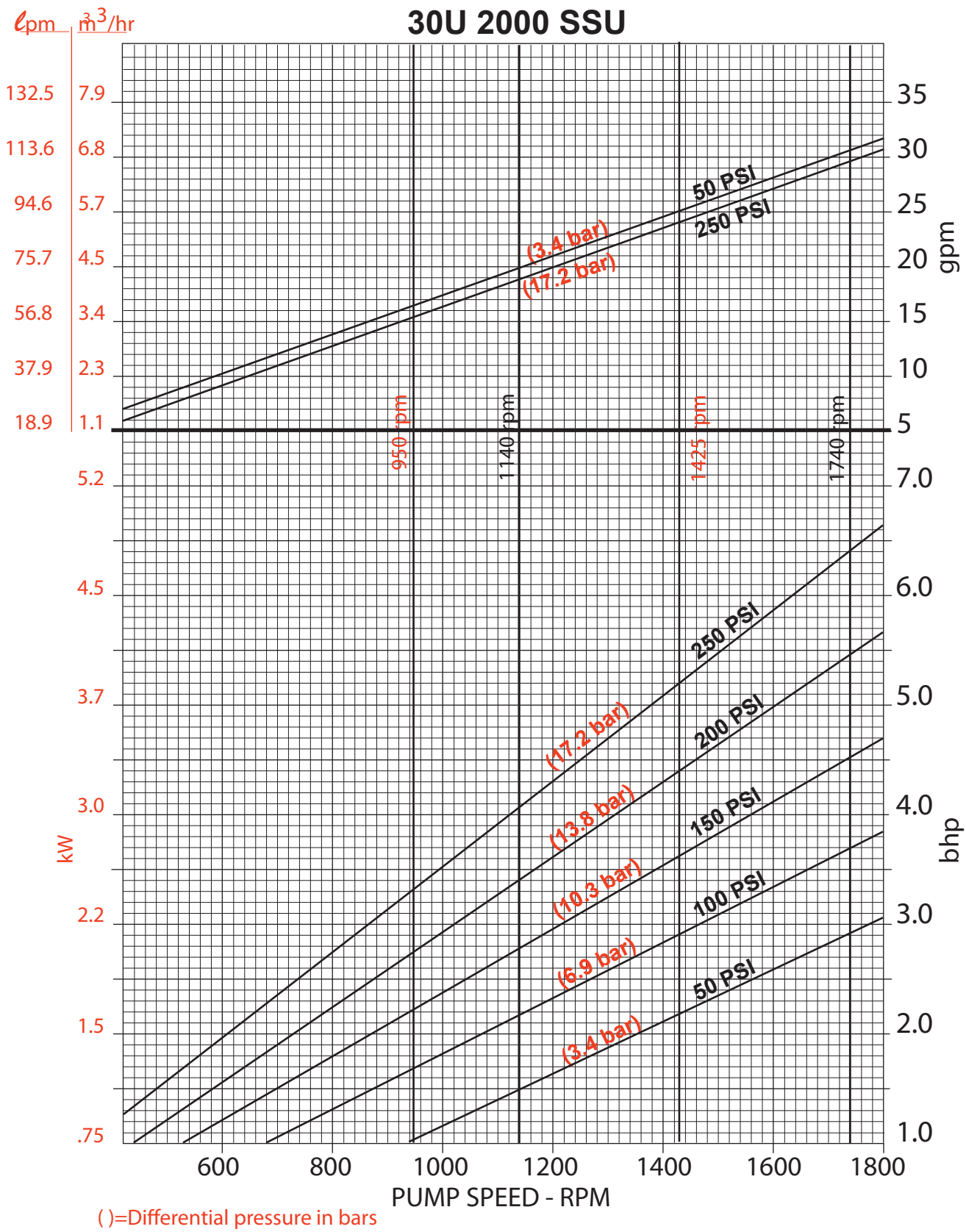
( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



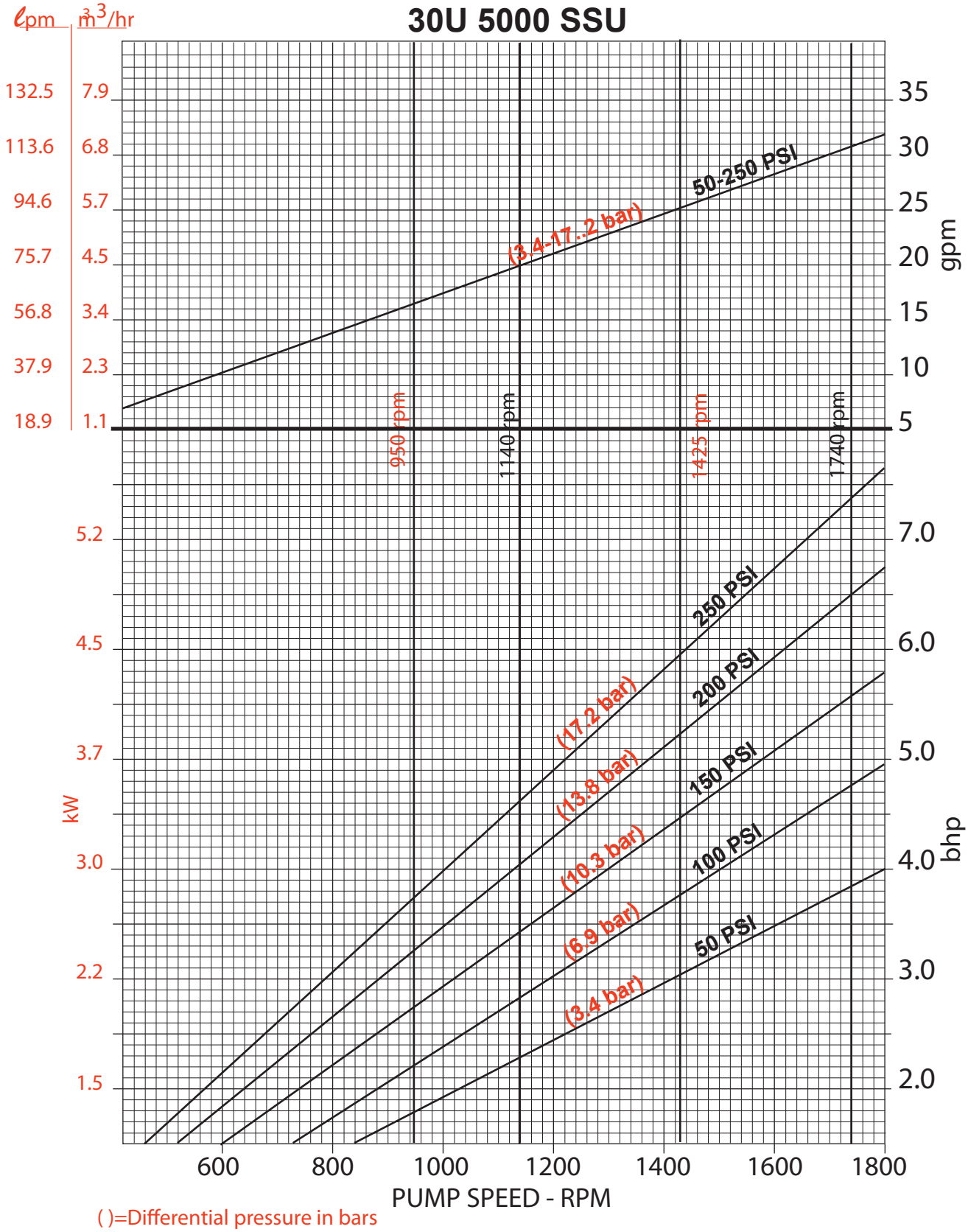
( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



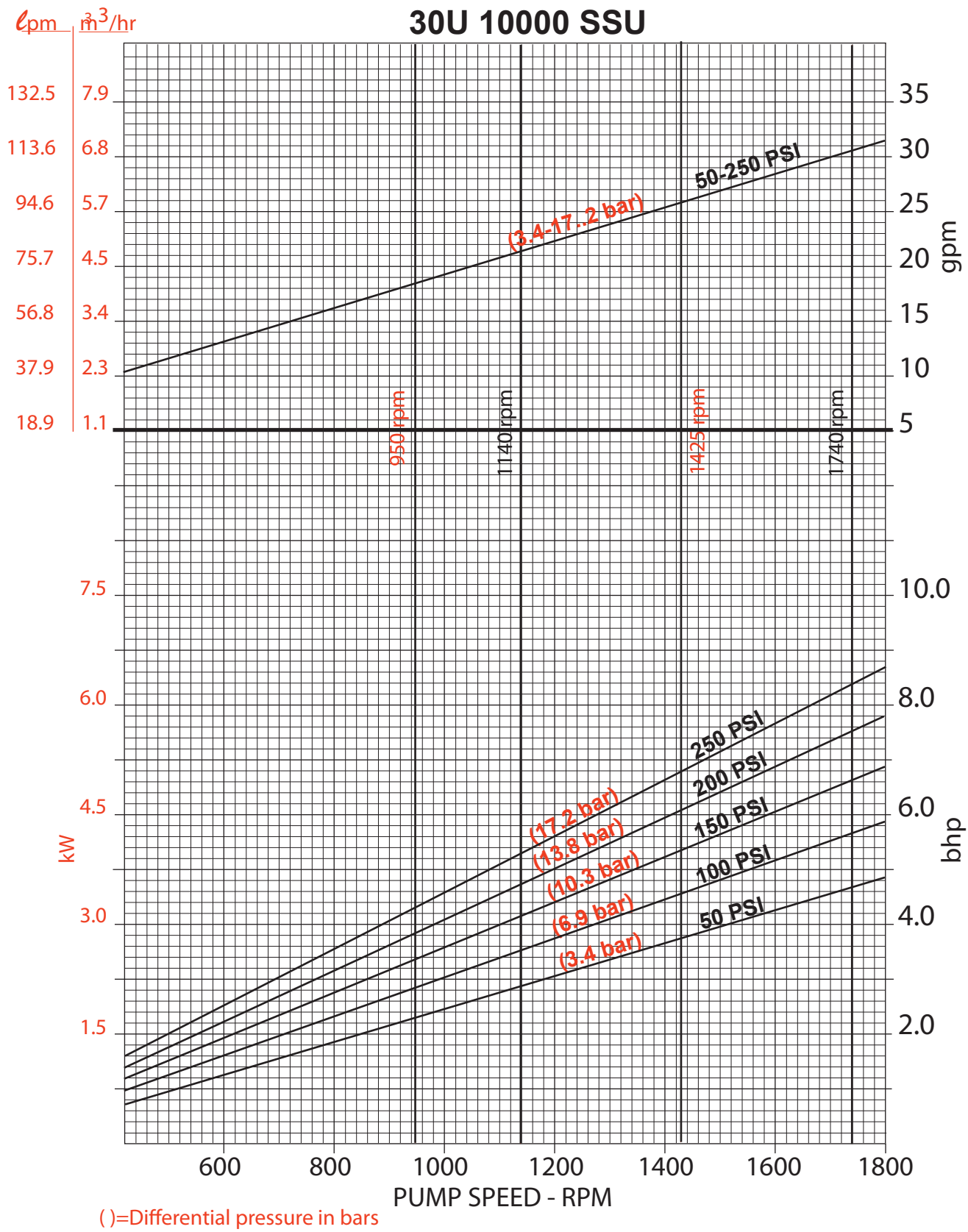
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

30U 5000 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

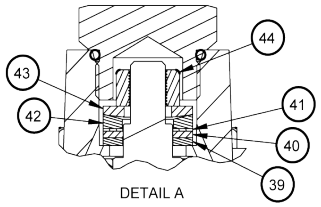
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

40U - 40 GPM Universal Pump

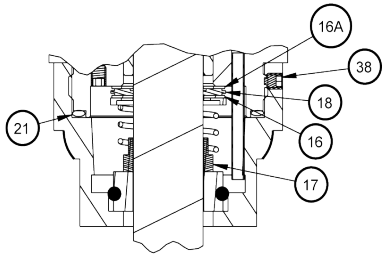
40U - 40 GPM Universal Pump

Item	Part No.	Description	Qty.
1	SAE16	Screw On Plug	1
2	SE3916N70	O-Ring, Plug	1
4	KR364	Screw, Cover	8
5	D4030A11	Cover	1
6	H11F	Bearing	1
6A	H11F	Bearing	1
7	H21E	Wiper Seal	2
8	H28E	O-Ring, Cover	1
9	DU40C13MC7	Shaft & Pinion Assembly	1
10	D4015C1	Pinion	1
11	D4014MC7	Shaft	1
12	F18C75	Key, 3/16 Sq X 3/4 Lg	1
13	D4026F1	Rotor	1
14	D403A11M	Case	1
16	H25C2	Washer	1
16A	H25C2	Washer	1
17	H18AM	Shaft Seal	1

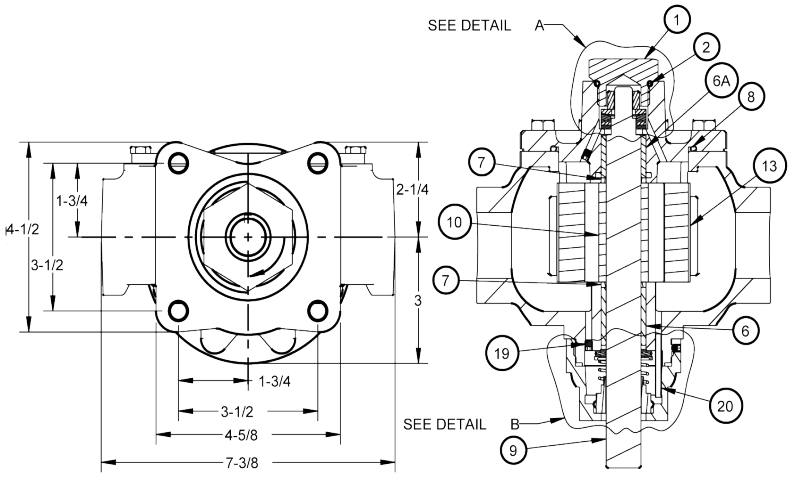
Item	Part No.	Description	Qty.
18	H11TB2	Thrust Bearing	1
19	E49E	Set Screw, Vent	2
20	F43C1	Pin	1
21	SE2137N70	O-Ring, Gland	1
22	SE2122N90	O-Ring, Cover Plate	2
23	E90HC.6	Screw, Cover Plate	4
24	D1030CP	Cover Plate	1
37	H22SS2A	Gland	1
38	E49D	Set Screw, Gland	1
39	F25C2	Washer	1
40	F11TB2	Thrust Bearing	1
41	F25C3	Washer	1
42	F25C5	Spherical Washer	1
43	F25C4	Spherical Washer	1
44	ZA532A	Nut	1
45	F41C	Pin	1



DETAIL A



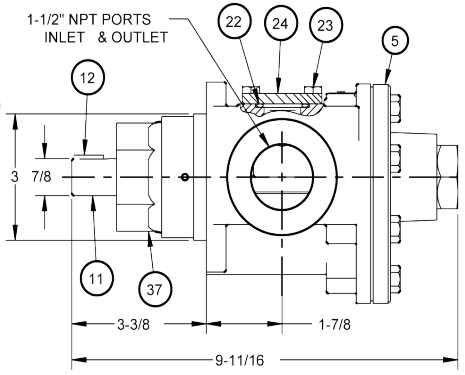
DETAIL B



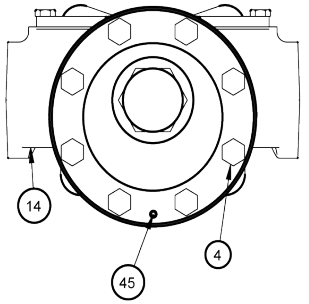
ROTATION ARROW DENOTES
STANDARD CLOCKWISE ROTATION

SHAFT END VIEW

CUTAWAY VIEW BOTTOM



RIGHT SIDE



COVER END VIEW

(Revised 8-1-11)

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

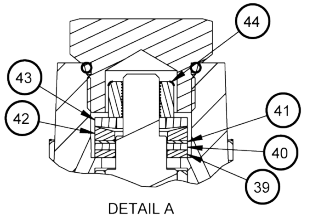
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

40UR - 40 GPM
Universal Relief Valve Pump

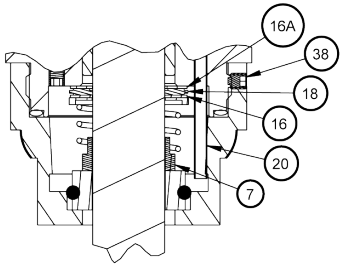
40UR - 40 GPM UNIVERSAL RELIEF VALVE PUMP

Item	Part No.	Description	Qty.
1	SAE16	Screw On Plug	1
2	SE3916N70	O-Ring, Plug	1
4	KR364	Screw, Cover	8
5	D4030A11	Cover	1
6	H11F	Bearing	1
6A	H11F	Bearing	1
7	H21E	Wiper Seal	2
8	H28E	O-Ring, Cover	1
9	DU40C13MC7	Shaft & Pinion Assembly	1
10	D4015C1	Pinion	1
11	D2014MC7	Shaft	1
12	F18C75	Key, 3/16 Sq X 3/4 Lg	1
13	D4026F1	Rotor	1
14	D403A11M	Case	1
16	H25C2	Washer	1
16A	H25C2	Washer	1
17	H18AM	Shaft Seal	1
18	H11TB2	Thrust Bearing	1
19	E49E	Set Screw, Vent	2
20	F43C1	Pin	1
21	SE2137N70	O-Ring, Gland	1
22	SE2122N90	O-Ring, Valve Body	2

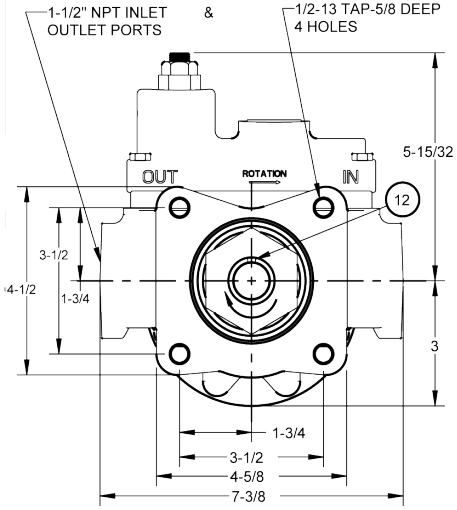
Item	Part No.	Description	Qty.
37	H22SS2A	Gland	1
38	E49D	Set Screw, Gland	4
39	F25C2	Washer	2
40	F11TB2	Thrust Bearing	1
41	F25C3	Washer	1
42	F25C5	Spherical Washer	1
43	F25C4	Spherical Washer	2
44	ZA532A	Nut	1
45	F41C	Pin	3
56	E90HC1.2	Screw, Valve Body	1
57	FD55SA	Valve Body	1
58	F65C	Pipe Plug	1
59	RVP05	Piston	1
60	F92B	Oring, Piston	1
61	H52M	Spring	1
62	F56A	Bonnet	1
63	E64JN	Nut	1
64	F55C	Adjustment Screw	1



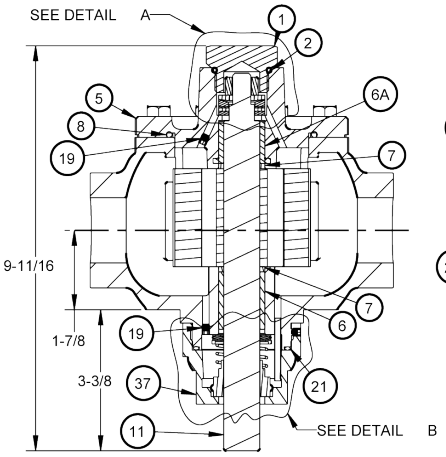
DETAIL A



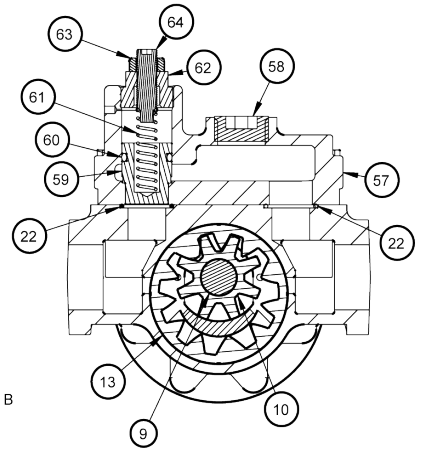
DETAIL B



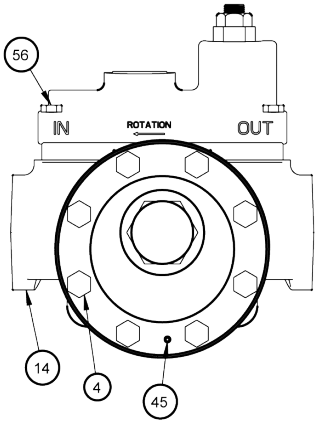
ROTATION ARROW DENOTES STANDARD CLOCKWISE ROTATION
SHAFT END VIEW



CUTAWAY VIEW BOTTOM



CUTAWAY VIEW SHAFT END



COVER END VIEW

(Revised 8-1-11)

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

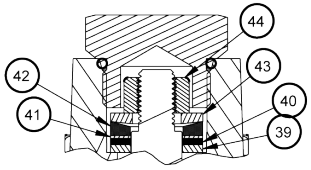
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

BS40U - 40 GPM Barrier Seal
Pump w/o Relief Valve

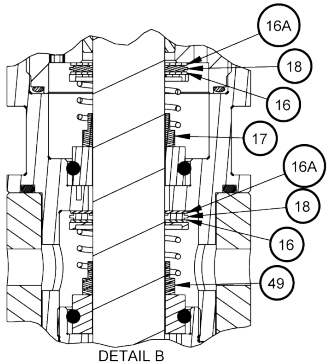
BS40U-40 GPM Barrier Seal Pump

Item	Part No.	Description	Qty.
1	SAE16	Screw On Plug	1
2	SE3916N70	O-Ring, Plug	1
4	KR364	Screw, Cover	8
5	D4030A11	Cover	1
6	H11F	Bearing	1
6A	H11F	Bearing	1
7	H21E	Wiper Seal	2
8	H28E	O-Ring, Cover	1
9	BS40C13MC	Shaft & Pinion Assembly	1
10	D4015C1	Pinion	1
11	D4014MC8	Shaft	1
12	F18C75	Key, 3/16 Sq X 3/4 Lg	1
13	D4026F1	Rotor	1
14	D403A11M	Case	1
16	H25C2	Washer	2
16A	H25C2	Washer	2
17	H18AM	Shaft Seal, Primary	1
18	H11TB2	Thrust Bearing	2
19	E49E	Set Screw, Vent	2

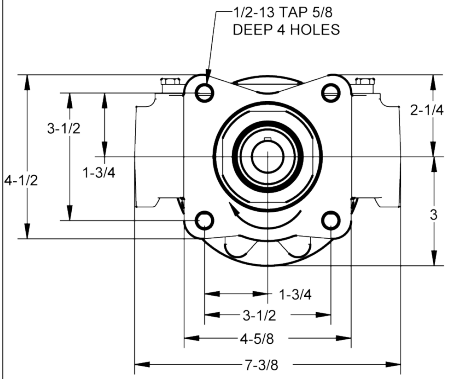
Item	Part No.	Description	Qty.
21	SE2137N70	O-Ring, Gland	1
22	SE2122N90	O-Ring, Cover Plate	2
23	E90HC.6	Screw, Cover Plate	4
24	D1030CP	Cover Plate	1
37	H22DD2F	Gland	1
39	F25C2	Washer	1
40	F11TB2	Thrust Washer	1
41	F25C3	Washer	1
42	F25C5	Spherical Washer	1
43	F25C4	Spherical Washer	1
44	ZA532A	Nut	1
45	F41C	Pin	1
49	H18AM	Shaft Seal, Secondary	1
50	SE3932N70	O-Ring, Sleeve	2
51	H33RDS	Sleeve	1
52	H33SS3F	Gland	1
53	H11TB	Roller Bearing	1
54	H19A	Locking Collar	1



DETAIL A

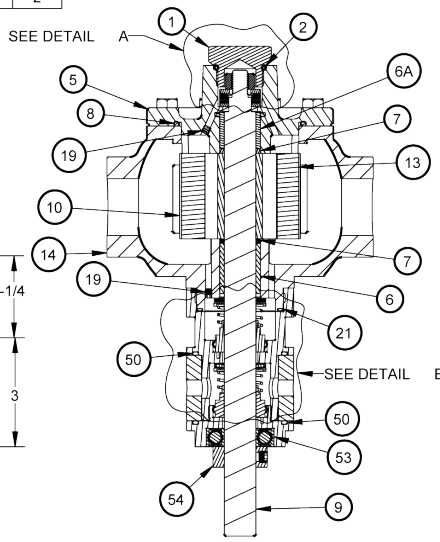


DETAIL B

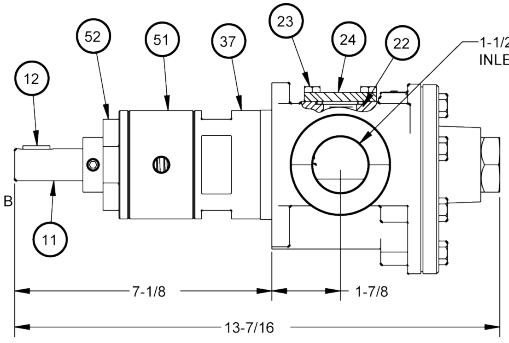


ROTATION ARROW DENOTES
STANDARD CLOCKWISE ROTATION

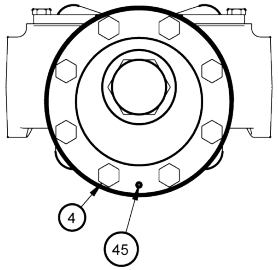
SHAFT END VIEW



CUTAWAY VIEW
BOTTOM



RIGHT SIDE



COVER END VIEW

(Revised 8-1-11)

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

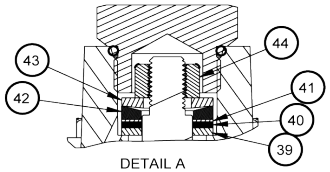
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

BS40UR - 40 GPM Barrier Seal Pump w/Relief Valve

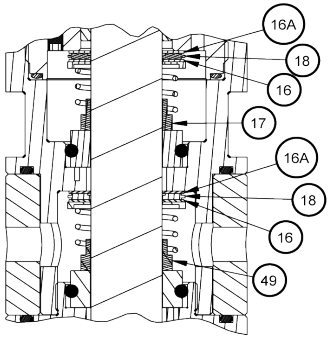
BS40UR-40 GPM Barrier Seal Pump With Relief Valve

Item	Part No.	Description	Qty.
1	SAE16	Screw On Plug	1
2	SE3916N70	O-Ring, Plug	1
4	KR364	Screw, Cover	8
5	D4030A11	Cover	1
6	H11F	Bearing	1
6A	H11F	Bearing	1
7	H21E	Wiper Seal	2
8	H28E	O-Ring, Cover	1
9	BS40C13MC	Shaft & Pinion Assembly	1
10	D4015C1	Pinion	1
11	D4014MC8	Shaft	1
12	F18C75	Key, 3/16 Sq X 3/4 Lg	1
13	D4026F1	Rotor	1
14	D403A11M	Case	1
16	H25C2	Washer	2
16A	H25C2	Washer	2
17	H18AM	Shaft Seal, Primary	1
18	H11TB2	Thrust Bearing	2
19	E49E	Set Screw, Vent	2
21	SE2137N70	O-Ring, Gland	1
22	SE2122N90	O-Ring, Valve Body	2
37	H22DD2F	Gland	1

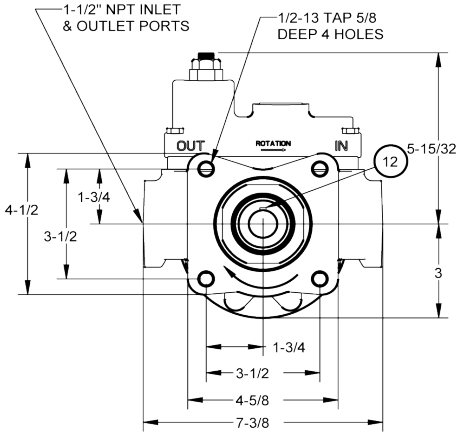
Item	Part No.	Description	Qty.
39	F25C2	Washer	1
40	F11TB2	Thrust Bearing	1
	F25C3	Washer	1
42	F25C5	Spherical Washer	1
43	F25C4	Spherical Washer	1
44	ZA532A	Nut	1
45	F41C	Pin	1
49	H18AM	Shaft Seal, Secondary	1
50	SE3932N70	O-Ring, Sleeve	2
51	H33RDS	Sleeve	1
52	H33SS3F	Gland	1
53	H11TB	Roller Bearing	1
54	H19A	Locking Collar	1
56	E90HC1.2	Screw, Valve Body	4
57	FD55SSA	Valve Body	1
58	F65C	Pipe Plug	1
59	RVP05	Piston	1
60	F92B	O-ring, Piston	2
61	H52M	Spring	1
62	F56A	Bonnet	1
63	E64JN	Nut	1
64	F55C	Adjustment Screw	1



DETAIL A

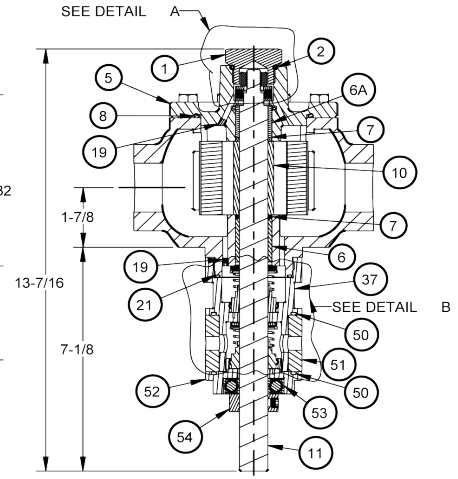


DETAIL B

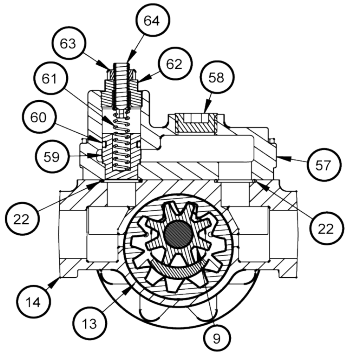


ROTATION ARROW DENOTES
STANDARD CLOCKWISE ROTATION

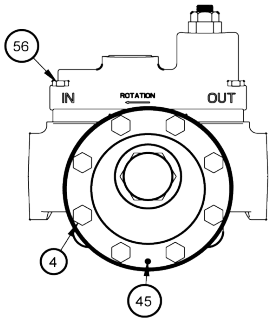
SHAFT END VIEW



CUTAWAY VIEW
BOTTOM



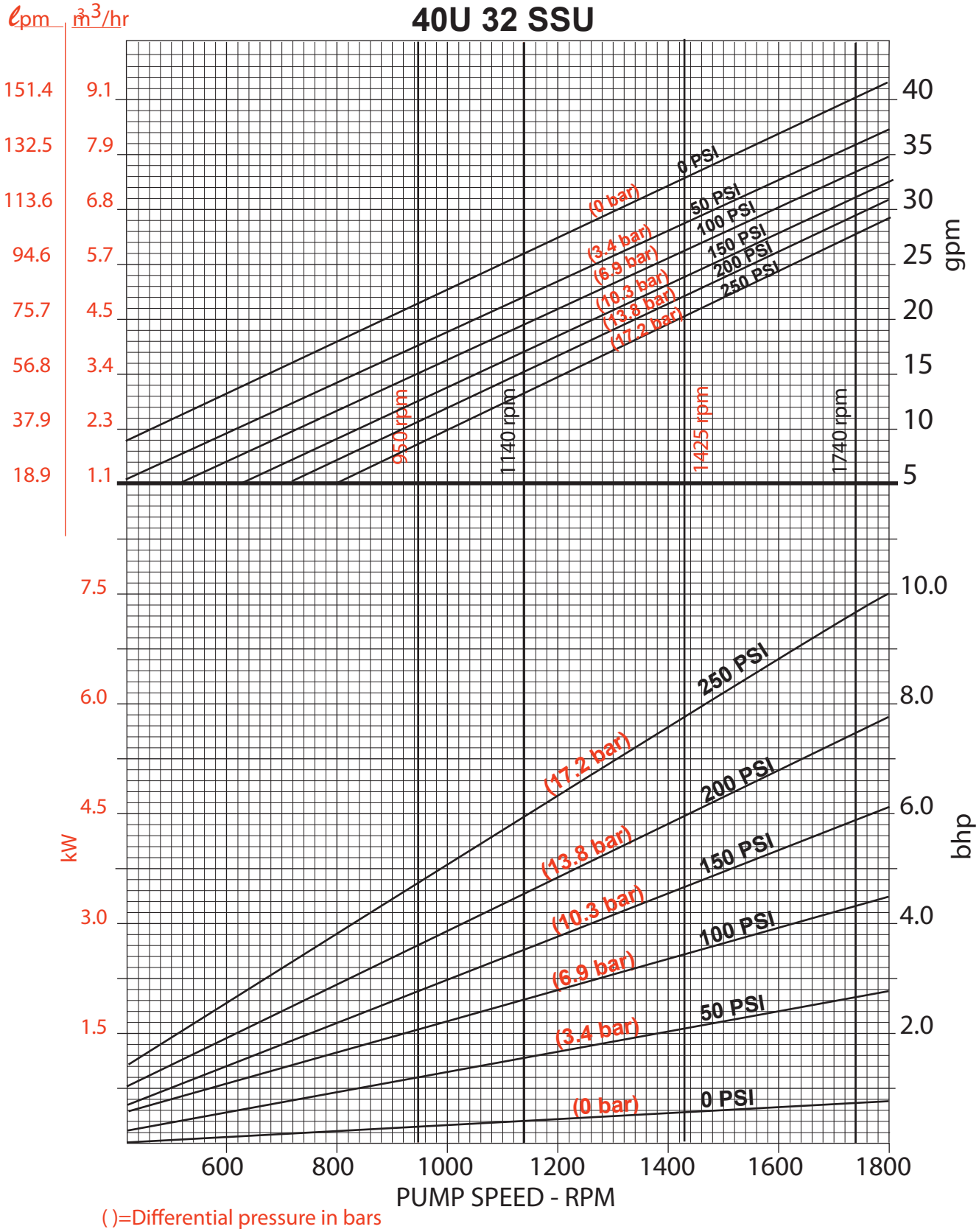
CUTAWAY VIEW
SHAFT END



COVER END VIEW

(Revised 8-1-11)

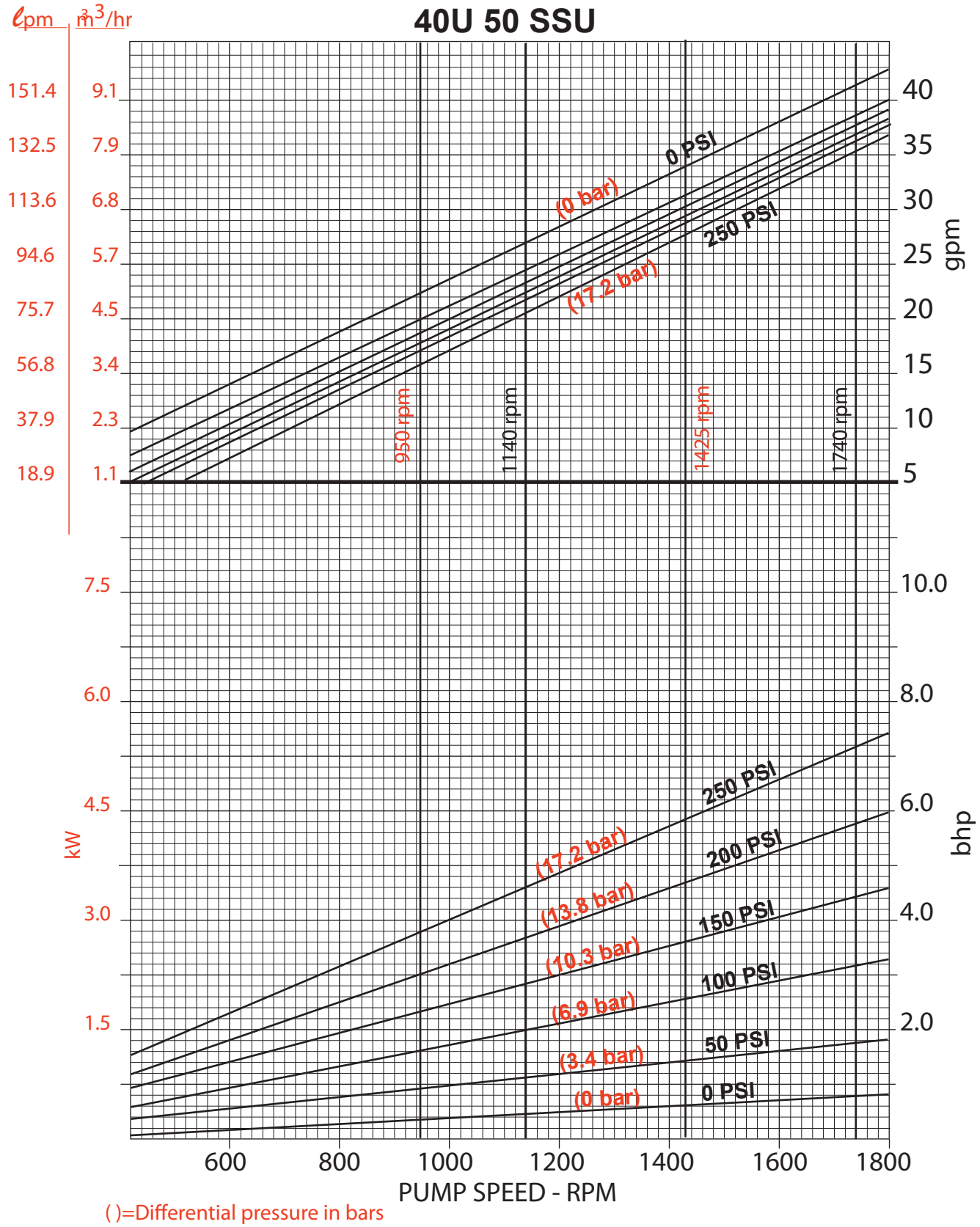
40U 32 SSU



( )=Differential pressure in bars

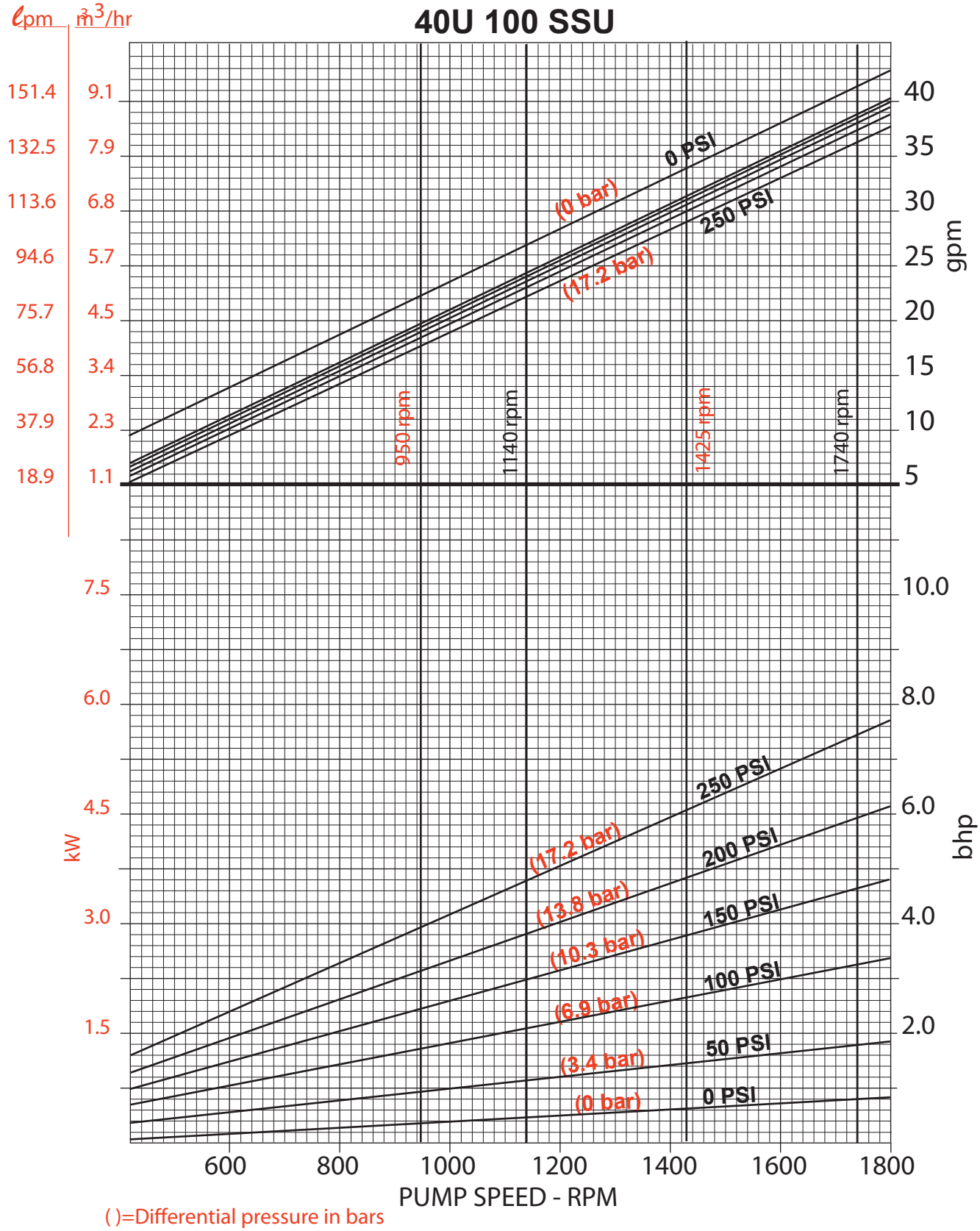
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

40U 50 SSU



( )=Differential pressure in bars

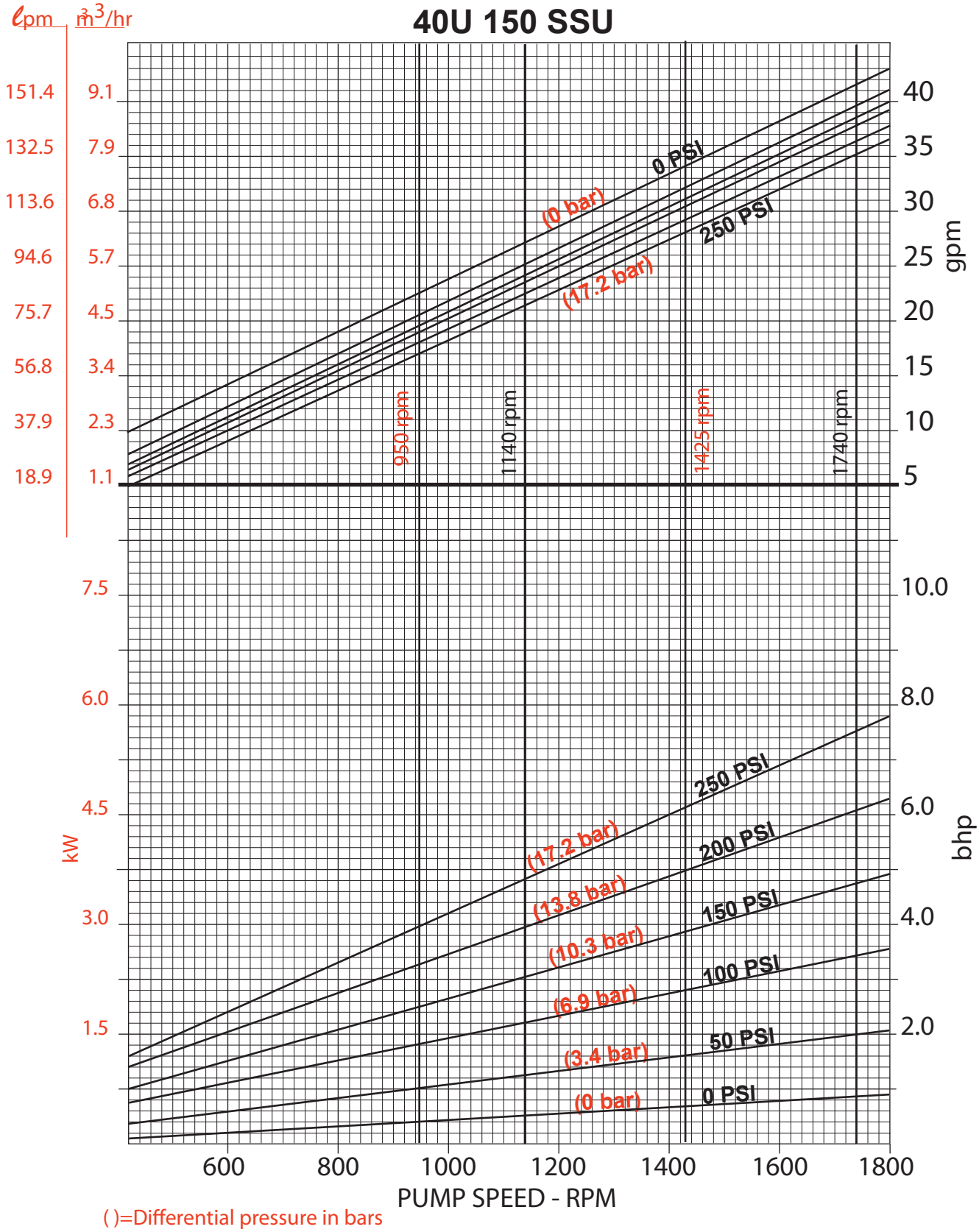
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

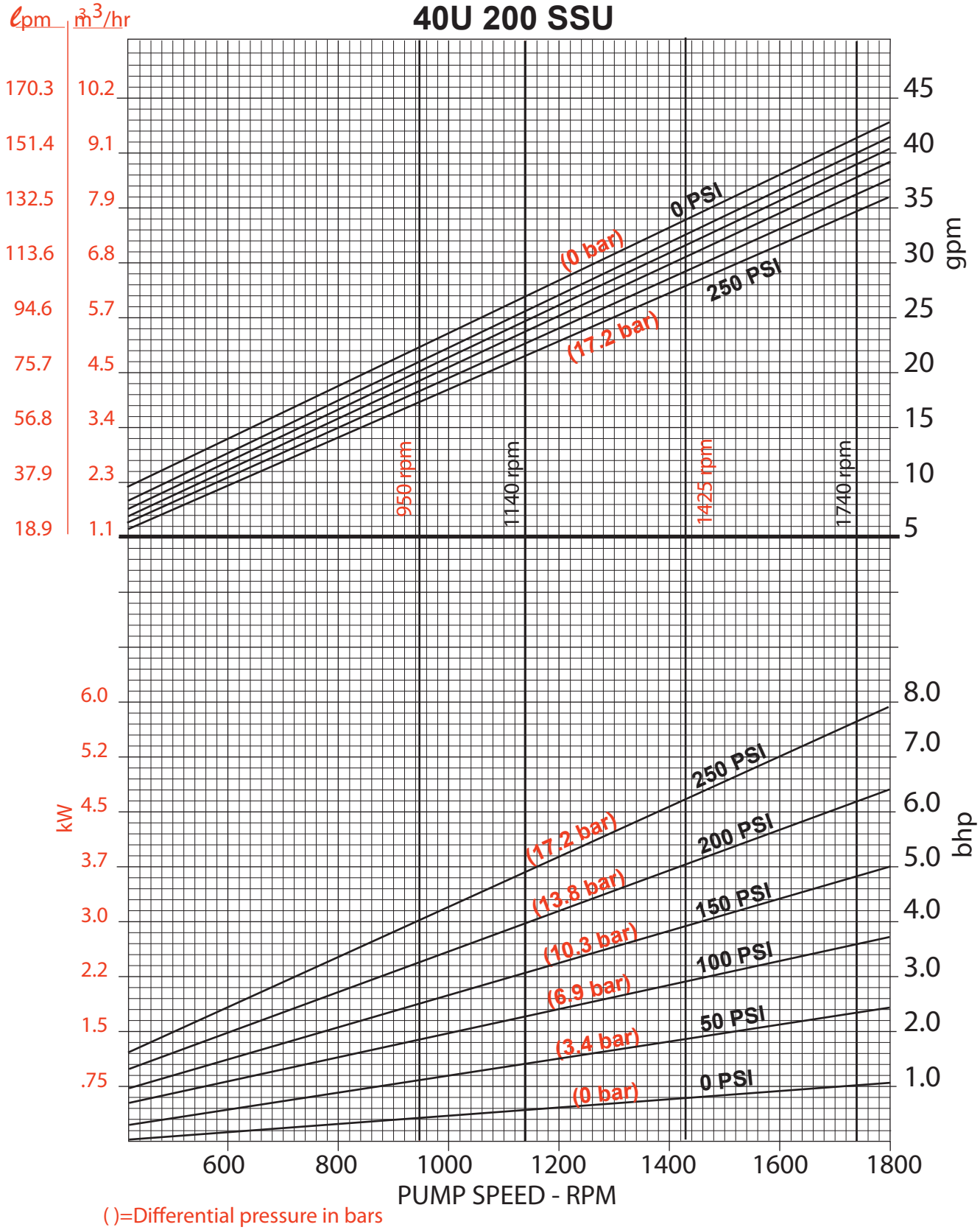
40U 150 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

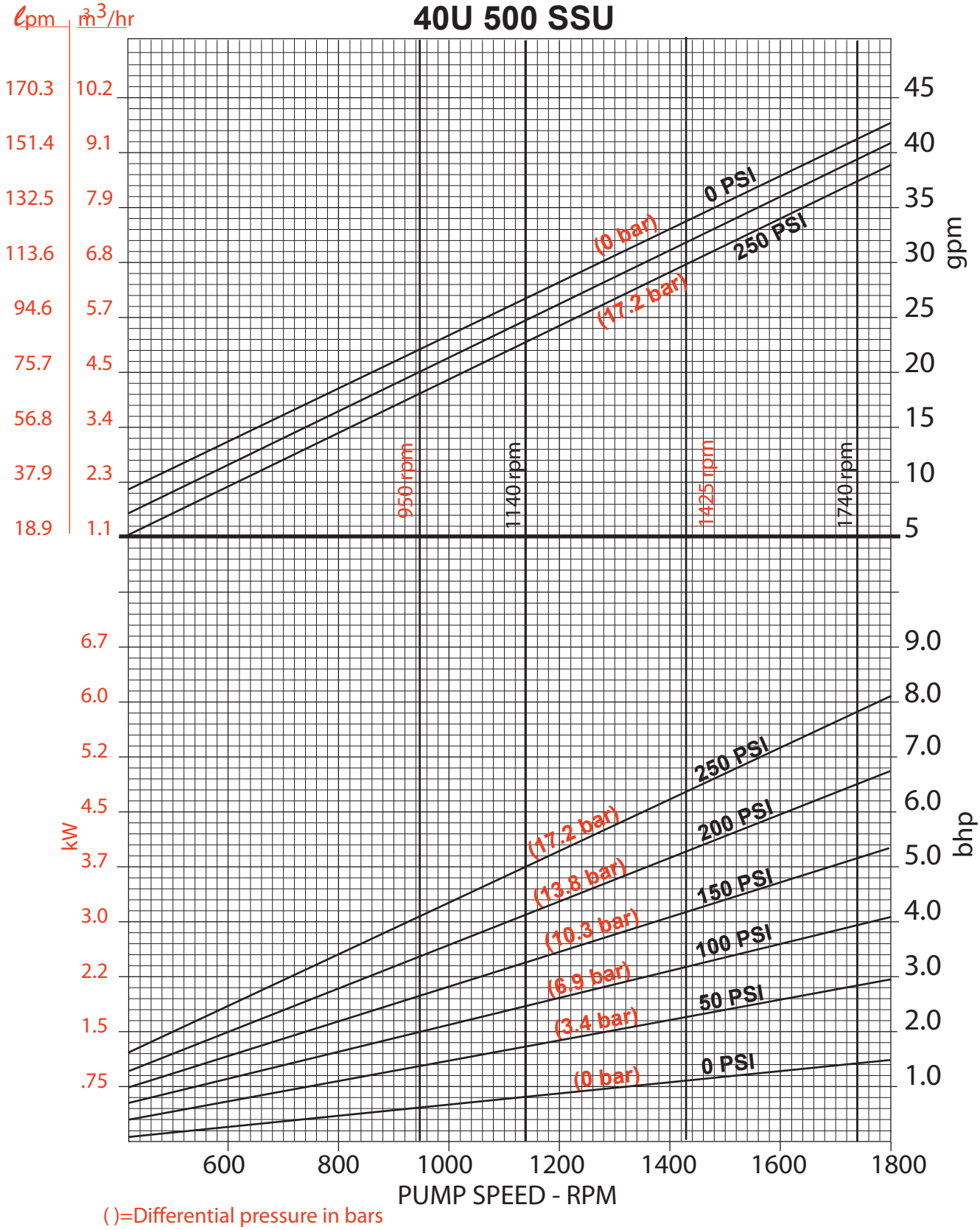
40U 200 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

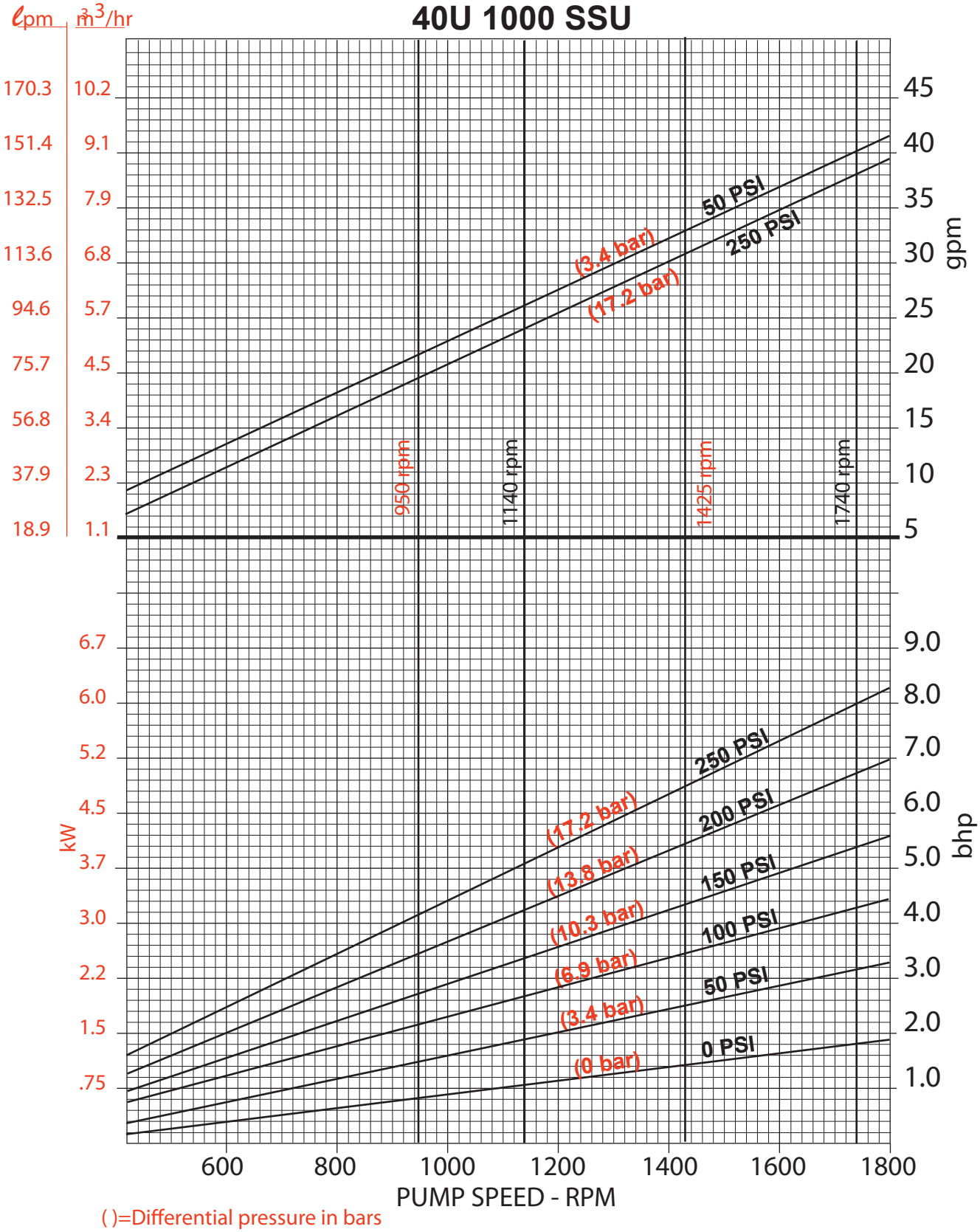
40U 500 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

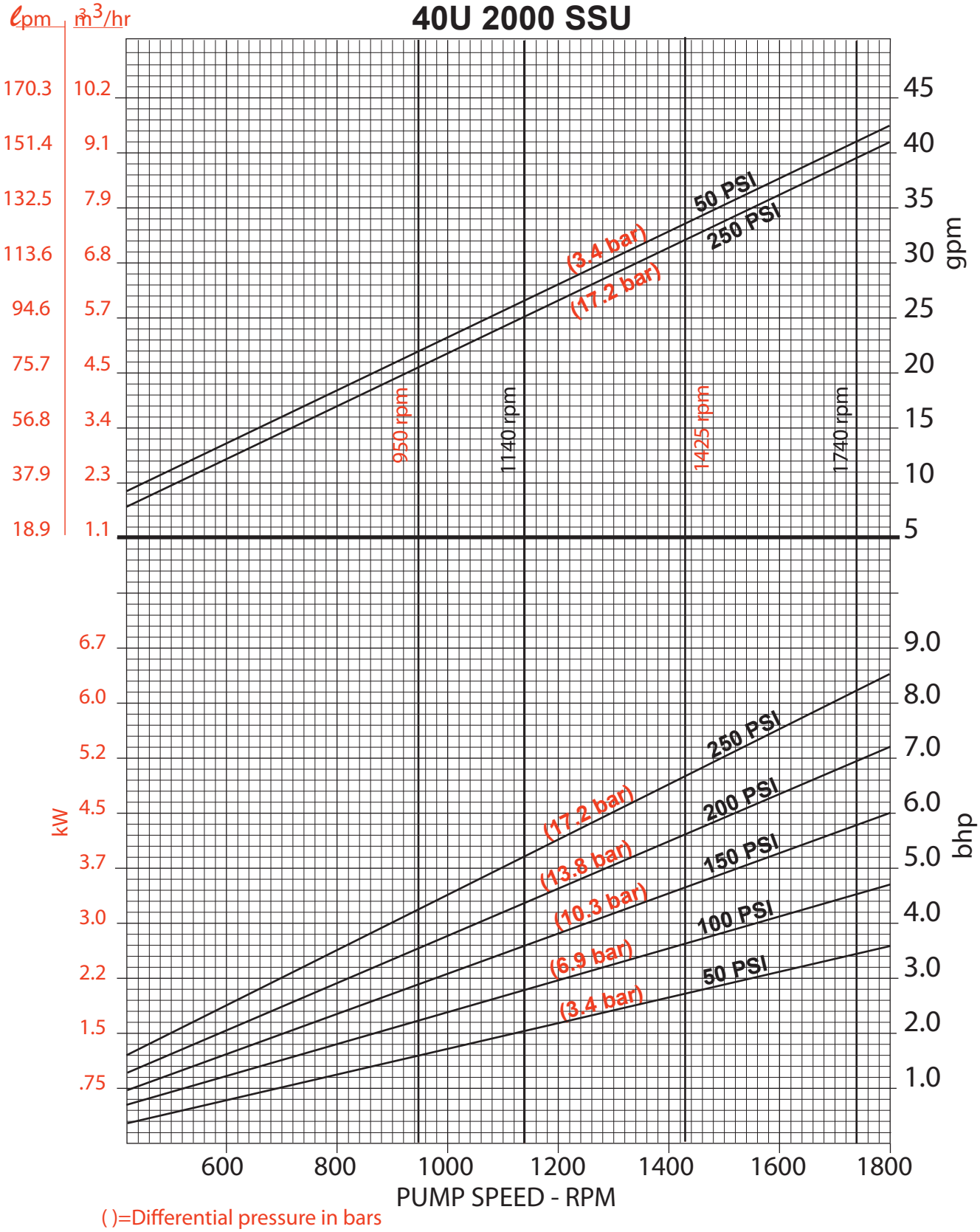
40U 1000 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

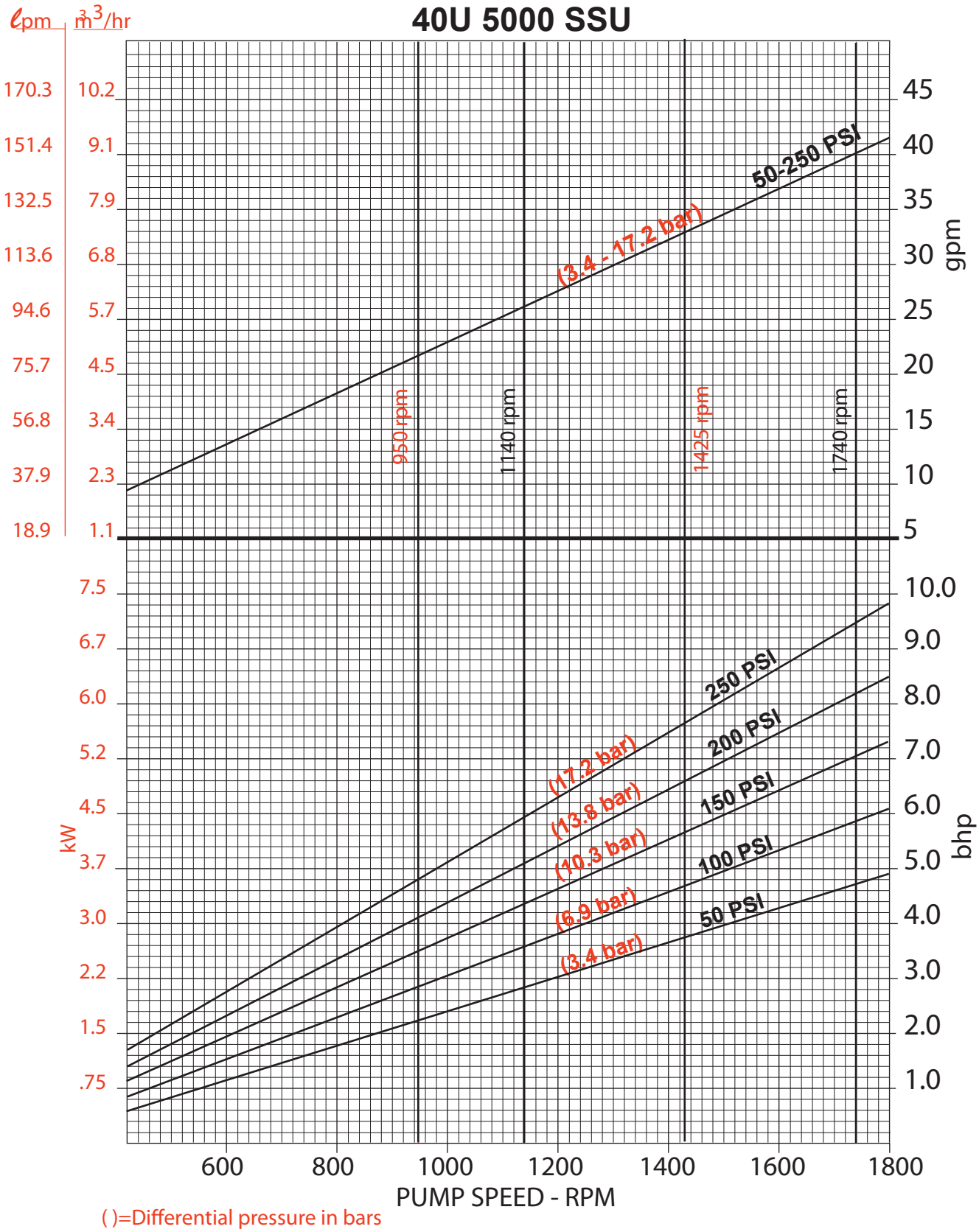
40U 2000 SSU



( )=Differential pressure in bars

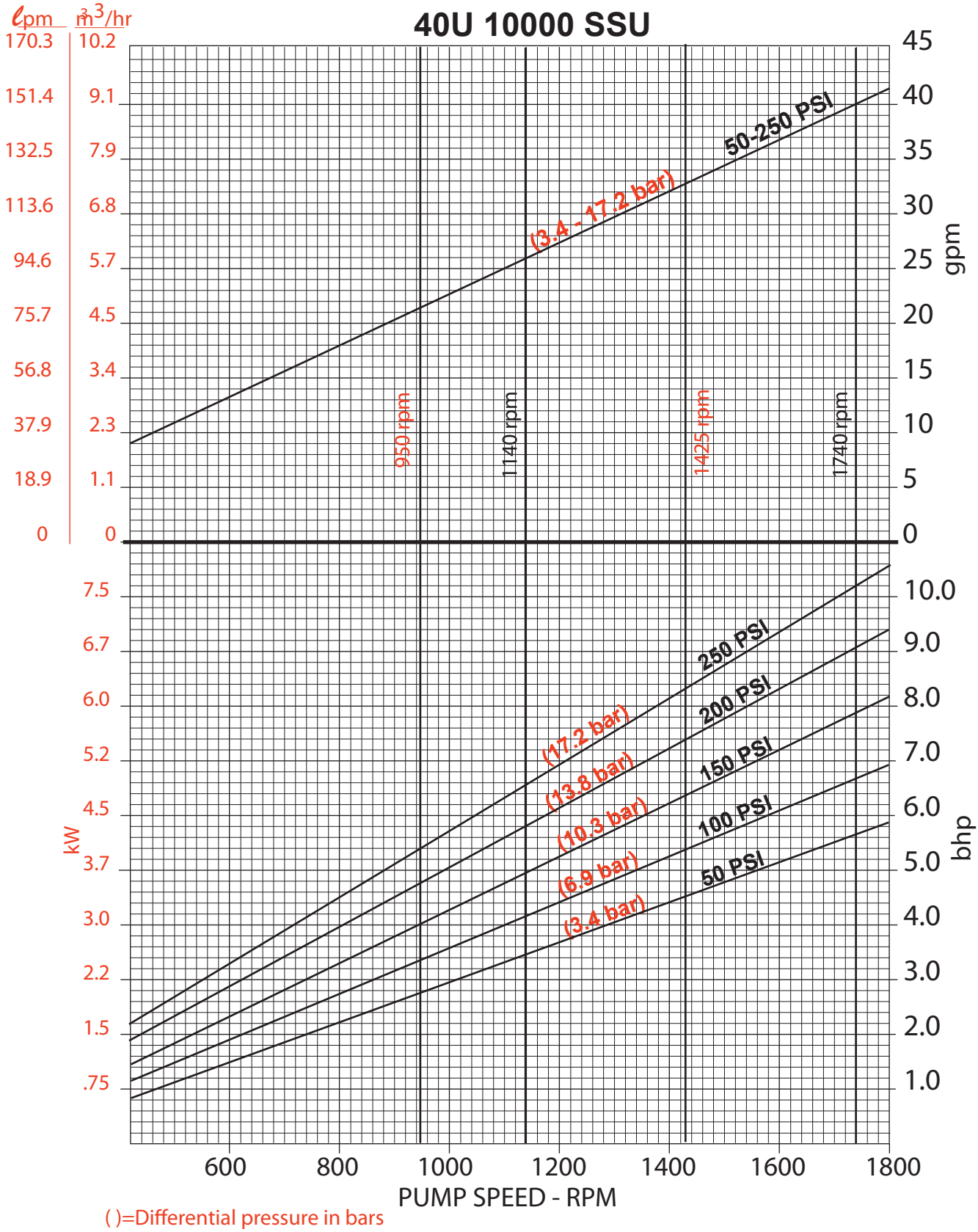
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

40U 5000 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

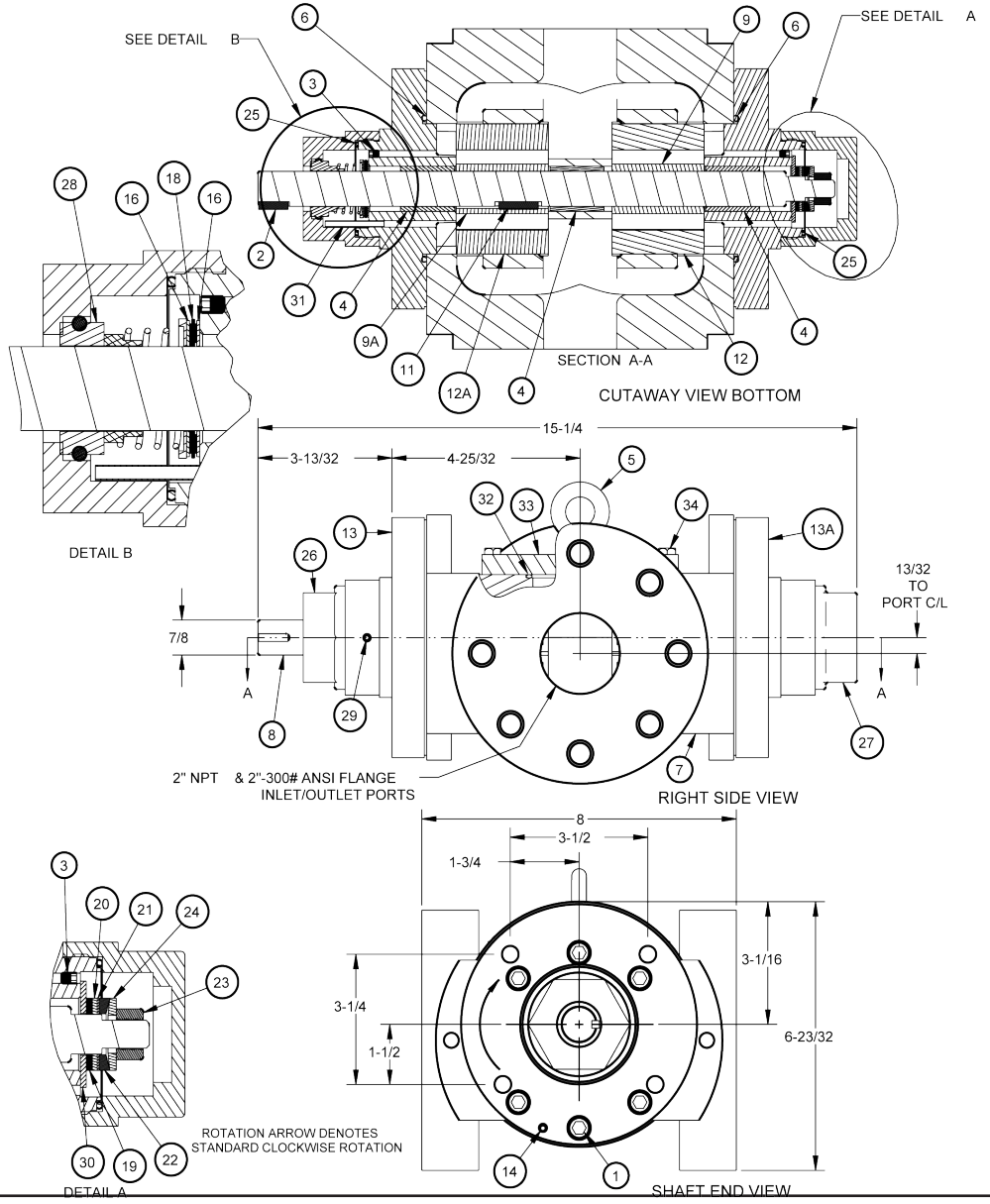
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

44U - 44 GPM
Double Pump w/o Relief Valve

DOUBLE PUMP W/OUT RELIEF VALVE-44 GPM

Item	Part No.	Description	Qty.
1	H90SC.8	Screw, Cover	12
2	F18C75	Drive Key 3/16 Sq.X3/4 Lg	1
3	E49E	Set Screw, Vent	2
4	H11F	Bearing	3
5	EYB1	Eye Bolt	1
6	H28E	O-Ring, Cover	2
7	D403A4	Case	1
8	RSK001	Shaft & Pinion Assembly	1
9	D2215C1	Pinion	1
9A	D2215C9	Pinion, Keyed	1
10	D4014MC6	Shaft	1
11	F18C100	Key, 3/16 Sq X 1.00 Lg	1
12	D2226F1	Rotor	1
12A	D2226F1	Rotor	1
13	D2230A8	Cover	1
13A	D2230A8	Cover	1
14	F41C	Pin	2
16	H25C2	Washer	2
18	H11TB2	Thrust Bearing	1
19	F25C2	Washer	1
20	F11TB2	Bearing	1
21	F25C3	Washer	1
22	F25C5	Spherical Washer	1
23	ZA532A	Nut	1
24	F25C4	Spherical Washer	1
25	SE2137N70	O-Ring, Gland	2
26	H22SS2A	Gland	1
27	F22SM2A	Gland	1
28	H18AM	Shaft Seal	1
29	E49D	Set Screw, Gland	1
30	F25C7	Washer	1
31	F43C1	Roll Pin	1
32	SE2122N90	O-Ring, Cover Plate	4
33	D8030CP	Cover Plate	1
34	E90SC.9	Screw, Cover Plate	4



(Revised 8-1-11)

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

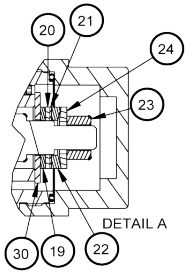
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

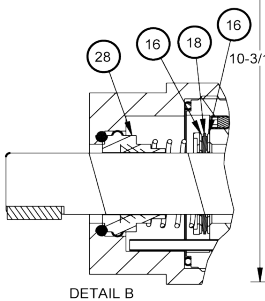
44UR - 44 GPM
Double Pump w/Relief Valve

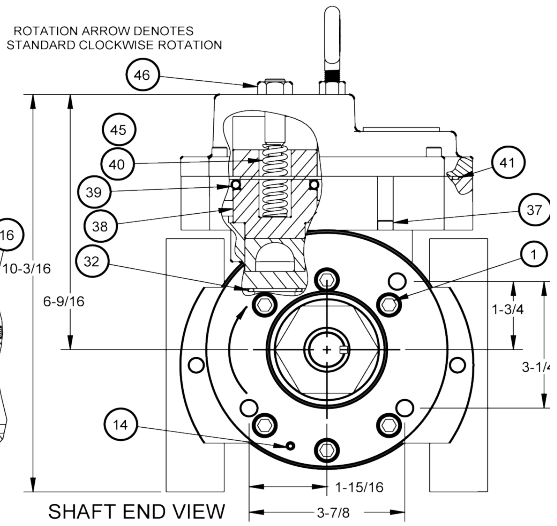
DOUBLE PUMP WITH RELIEF VALVE-44 GPM

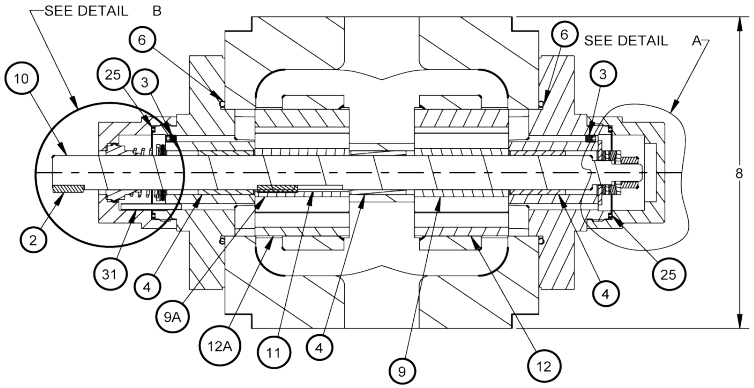
Item	Part No.	Description	Qty.
1	H90SC.8	Screw, Cover	12
2	F18C75	Drive Key 3/16 SqX3/4 Lg	1
3	E49E	Set Screw, Vent	2
4	H11F	Bearing	3
5	EYB1	Eye Bolt	1
6	H28E	O-Ring, Cover	2
7	D403A4	Case	1
8	RSK001	Shaft & Pinion Assembly	1
9	D2215C1	Pinion	1
9A	D2215C9	Pinion, Keyed	1
10	D4014MC6	Shaft	1
11	F18C100	Key, 3/16 Sq X 1.00 Lg	1
12	D2226F1	Rotor	1
12A	D2226F1	Rotor	1
13	D2230A8	Cover	1
13A	D2230A8	Cover	1
14	F41C	Pin	2
16	H25C2	Washer	2
18	H11TB2	Thrust Bearing	1
19	F25C2	Washer	1
20	F11TB2	Thrust Bearing	1
21	F25C3	Washer	1

Item	Part No.	Description	Qty.
22	F25C5	Spherical Washer	1
23	ZA532A	Nut	1
24	F25C4	Spherical Washer	1
25	SE2137N70	O-Ring, Gland	2
26	H22SS2A	Gland	1
27	F22SM2A	Gland	1
28	H18AM	Shaft Seal	1
29	E49D	Set Screw, Gland	1
30	F25C7	Washer	1
31	F43C1	Roll Pin	1
32	SE2122N90	O-Ring, Valve	4
35	RVB03	Valve Body	1
37	E90SC2.0	Valve	4
38	RVP04	Valve Piston	1
39	SE2327N70	O-Ring, Valve Piston	1
40	H52E	Spring	1
41	SE2160N70	O-Ring, Valve Cover	1
42	RVC30	Valve Cover	1
43	E90SC1.0	Screw, Valve Cover	4
44	H65C	Pipe Plug	1
45	F55C	Adjustment Screw	1
46	E64C	Lock Nut	1

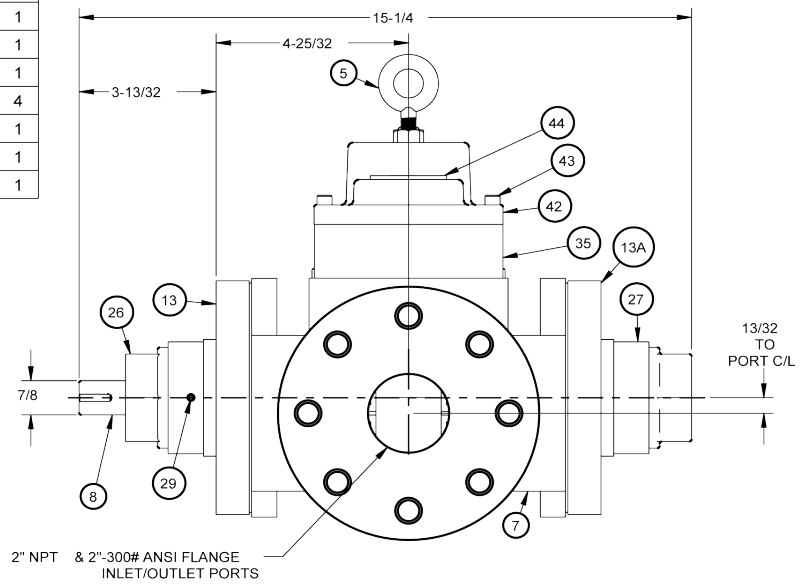








CUTAWAY VIEW BOTTOM



RIGHT SIDE VIEW

(Revised 8-1-11)

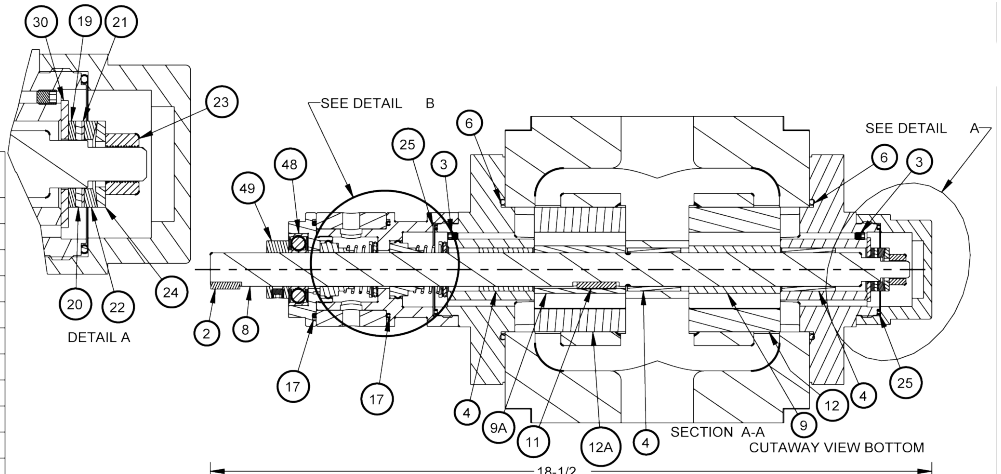
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

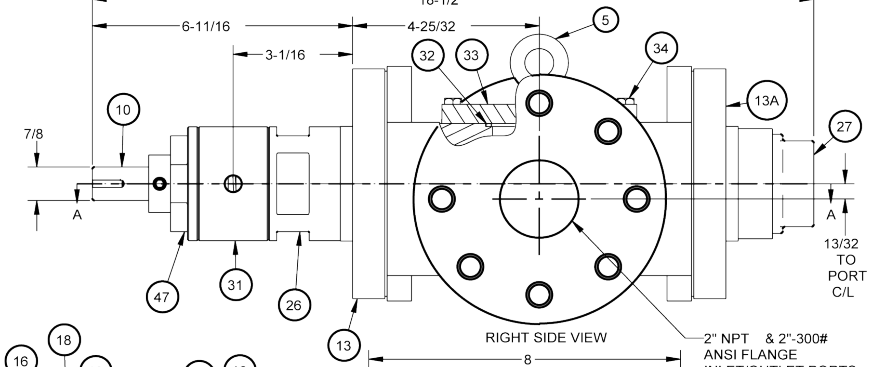
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

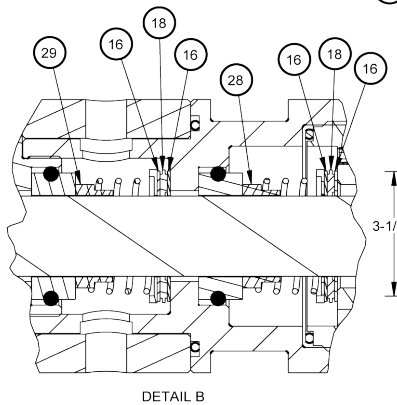
BS44U - 44 GPM
Barrier Seal Double Pump w/o Relief Valve

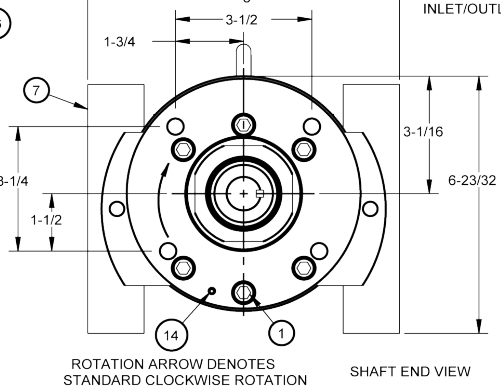
BARRIER SEAL DOUBLE PUMP W/OUT RELIEF VALVE-44 GPM

Item	Part No.	Description	Qty.
1	H90SC.8	Screw, Cover	12
2	F18C75	Drive Key, 3/16 Sq X 3/4 Lg	1
3	E49E	Set Screw, Vent	2
4	H11F	Bearing	3
5	EYB1	Eye Bolt	1
6	H28E	O-Ring, Cover	2
7	D403A4	Case	1
8	RSK006	Shaft & Pinion Assembly	1
9	D2215C1	Pinion	1
9A	D2215C9	Pinion, Keyed	1
10	D4014MC9	Shaft	1
11	F18C100	Key, 3/16 Sq X 1.00 Lg	1
12	D2226F1	Rotor	1
12A	D2226F1	Rotor	1
13	D2230A8	Cover	1
13A	D2230A8	Cover	1
14	F41C	Pin	2
16	H25C2	Washer	4
17	SE3932N70	O-Ring, Sleeve	2
18	H11TB2	Thrust Bearing	2
19	F25C2	Washer	1
20	F11TB2	Thrust Bearing	1
21	F25C3	Washer	1
22	F25C5	Spherical Washer	1
23	ZA532A	Nut	1
24	F25C4	Spherical Washer	1
25	SE2137N70	O-Ring, Gland	2
26	H22DD2F	Gland	1
27	F22SM2A	Gland	1
28	H18AM	Shaft Seal, Primary	1
29	H18AM	Shaft Seal, Secondary	1
30	F25C7	Washer	1
31	H33RDS	Sleeve	1
32	SE2122N90	O-Ring, Cover Plate	4
33	D8030CP	Cover Plate	1
34	E90SC.9	Screw, Cover Plate	4
47	H33SS3F	Gland	1
48	H11TB	Roller Bearing	1
49	H19A	Locking Collar	1









(Revised 8-1-11)

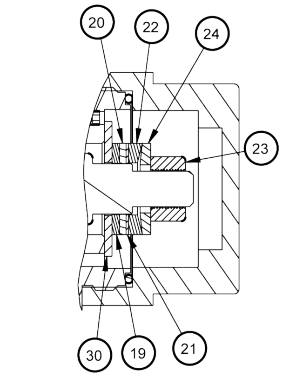
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

BS44UR - 44 GPM
Barrier Seal Double Pump w/Relief Valve

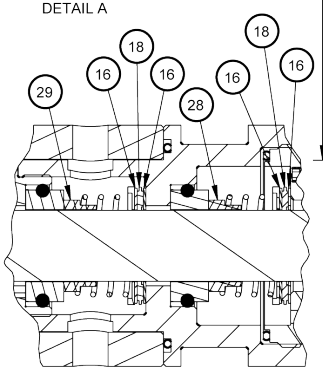
BARRIER SEAL PUMP W/RELIEF VALVE- 44 GPM

Item	Part No.	Description	Qty.
1	H90SC.8	Screw, Cover	12
2	F18C75	Drive Key, 3/16 Sq X 3/4 Lg	1
3	E49E	Set Screw, Vent	2
4	H11F	Bearing	3
5	EYB1	Eye Hook	1
6	H28E	O-Ring, Cover	2
7	D403A4	Case	1
8	RSK006	Shaft & Pinion Assembly	1
9	D2215C1	Pinion	1
9A	D2215C9	Pinion, Keyed	1
10	D4014MC9	Shaft	1
11	F18C100	Key, 3/16 Sq X 1.00 Lg	1
12	D2226F1	Rotor	1
12A	D2226F1	Rotor	1
13	D2230A8	Cover	1
13A	D2230A8	Cover	1
14	F41C	Pin	2
16	H25C2	Washer	4
17	SE3932N70	O-Ring, Sleeve	2
18	H11TB2	Thrust Bearing	2
19	F25C2	Washer	1
20	F11TB2	Bearing	1
21	F25C3	Washer	1
22	F25C5	Spherical Washer	1

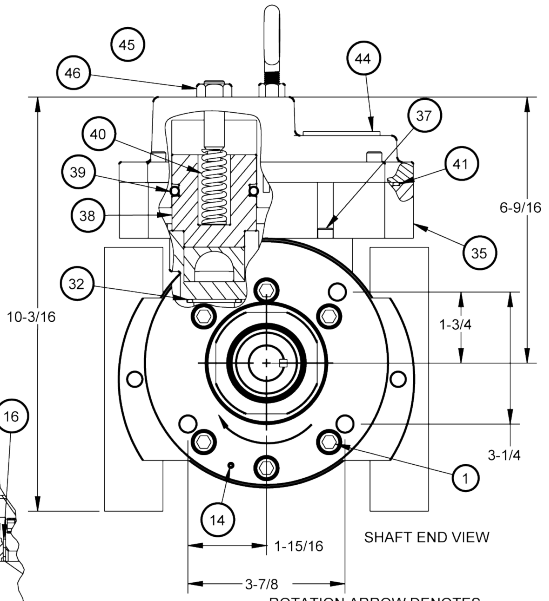
Item	Part No.	Description	Qty.
23	ZA532A	Nut	1
24	F25C4	Spherical Washer	1
25	SE2137N70	O-Ring, Gland	2
26	H22DD2F	Gland	1
27	F22SM2A	Gland	1
28	H18AM	Shaft Seal, Primary	1
29	H18AM	Shaft Seal, Secondary	1
30	F25C7	Washer	1
31	H33RDS	Sleeve	1
32	SE2122N90	O-Ring, Relief Valve	4
35	RVB03	Valve Body	1
37	E90SC2.0	Screw, Valve Body	4
38	RVP04	Valve Piston	1
39	SE2327N70	O-Ring, Valve Piston	1
40	H52E	Spring	1
41	SE2160N70	O-Ring, Valve Cover	1
42	RVC30	Valve Cover	1
43	E90SC1.0	Screw, Valve Cover	4
44	H65C	Pipe Plug	1
45	F55C	Adjustment Screw	1
46	E64C	Lock Nut	1
47	H33SS3F	Gland	1
48	H11TB	Roller Bearing	1
49	H19A	Locking Collar	1



DETAIL A

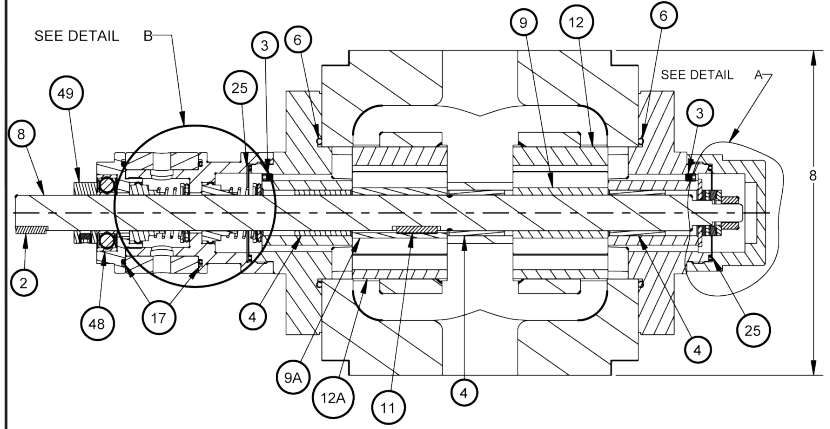


DETAIL B

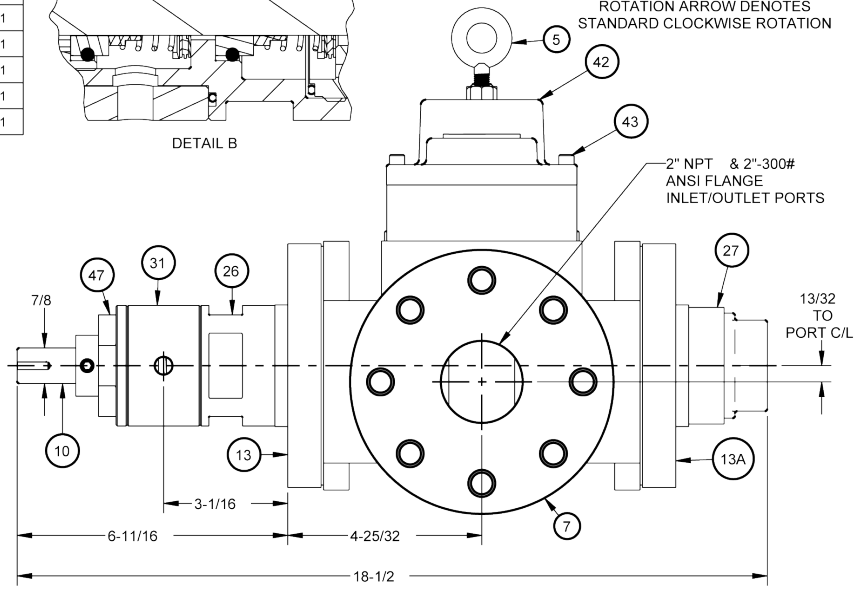


SHAFT END VIEW

ROTATION ARROW DENOTES
STANDARD CLOCKWISE ROTATION



CUTAWAY VIEW BOTTOM

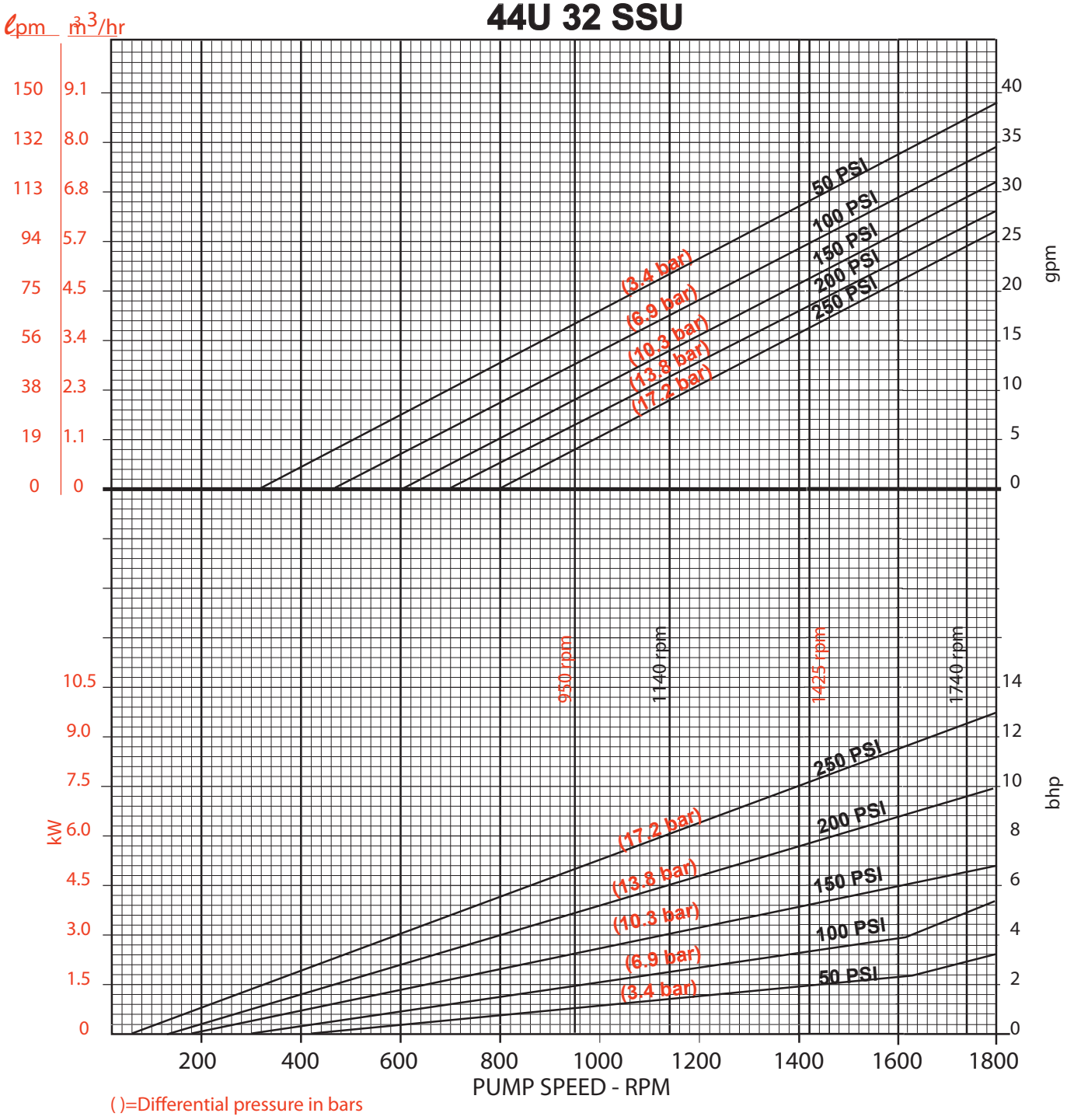


RIGHT SIDE VIEW

(Revised 8-1-11)

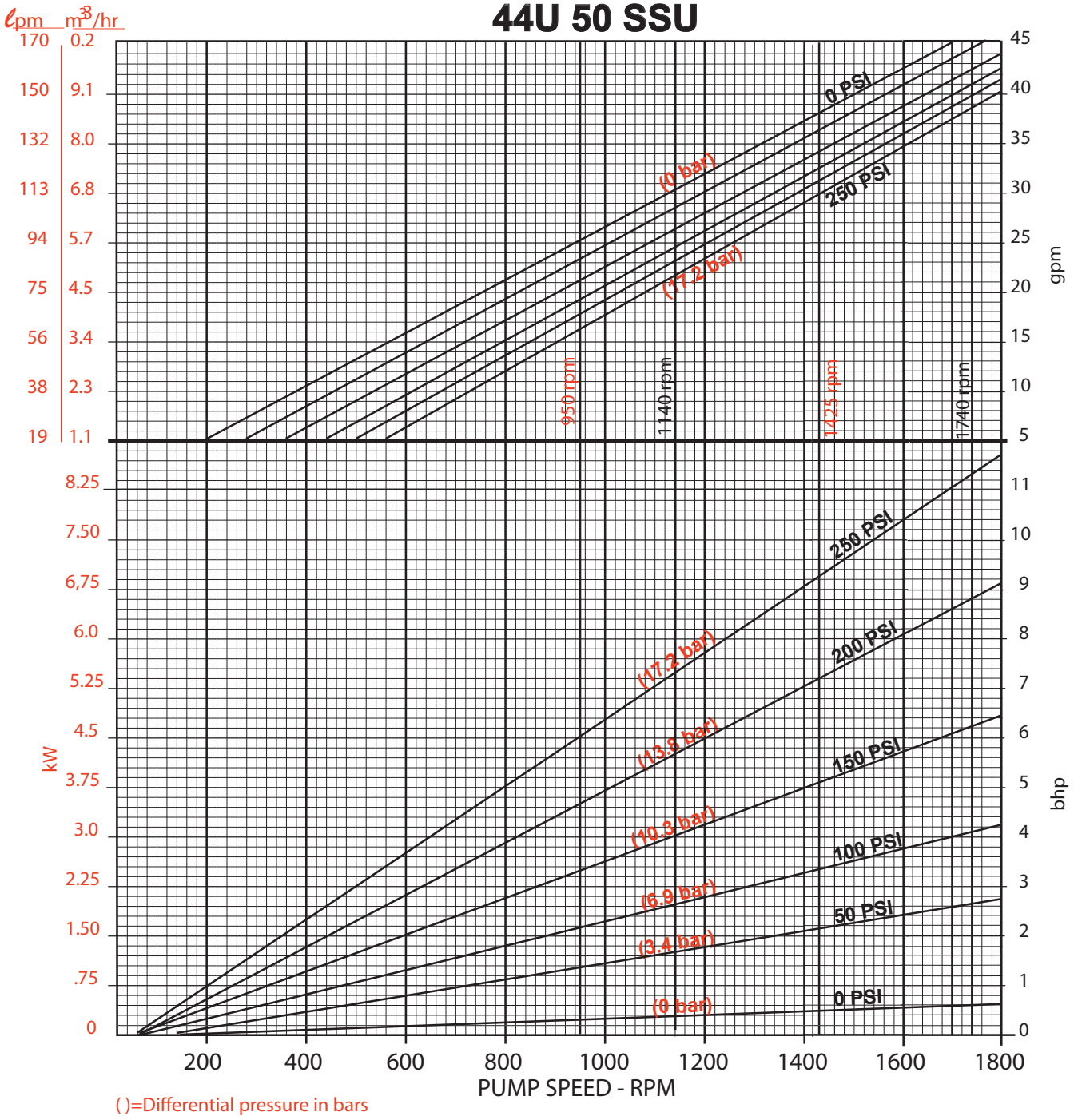
BS44UR - 44 GPM
Barrier Seal Double Pump w/Relief Valve

44U 32 SSU



HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

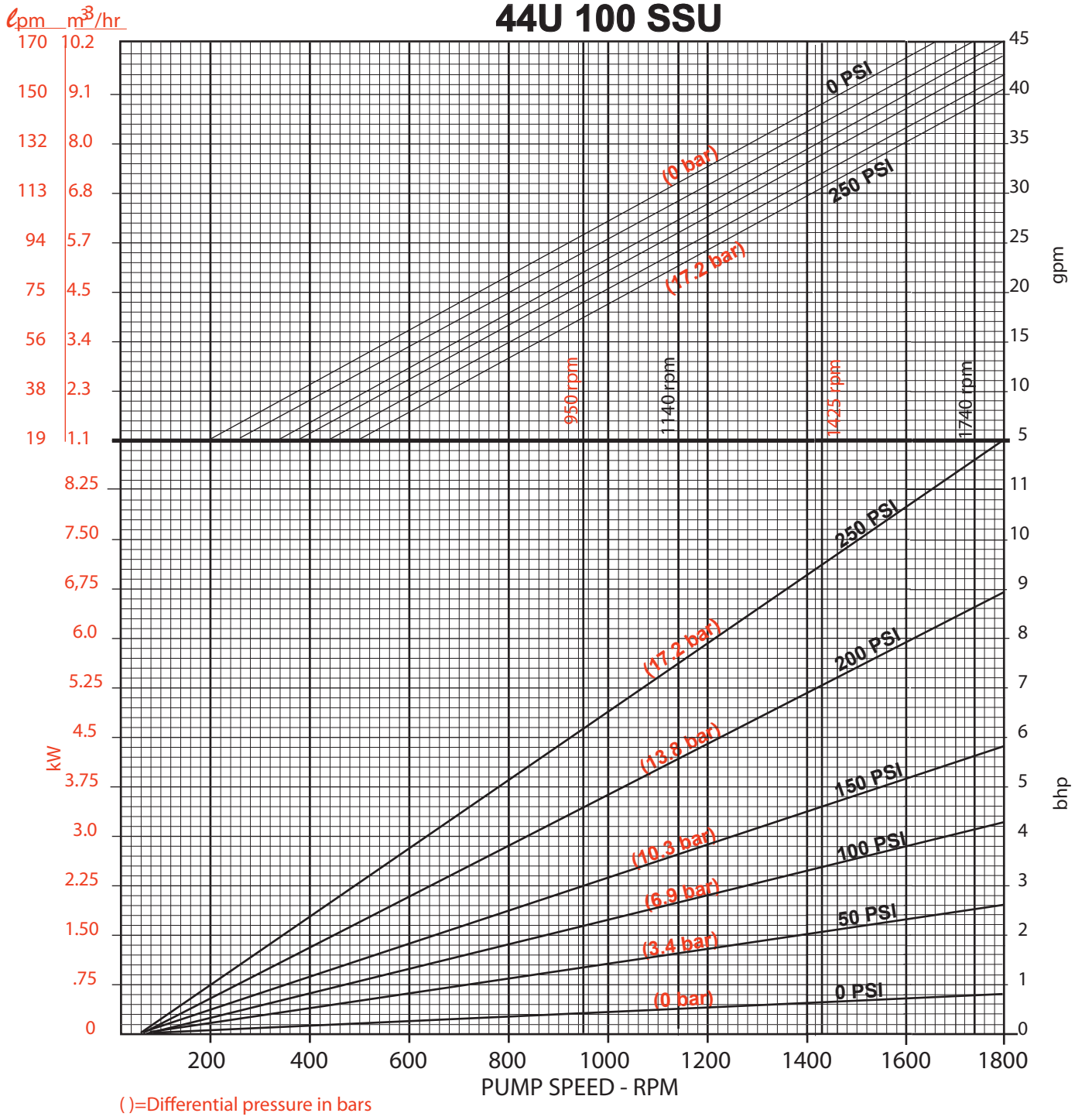
44U 50 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

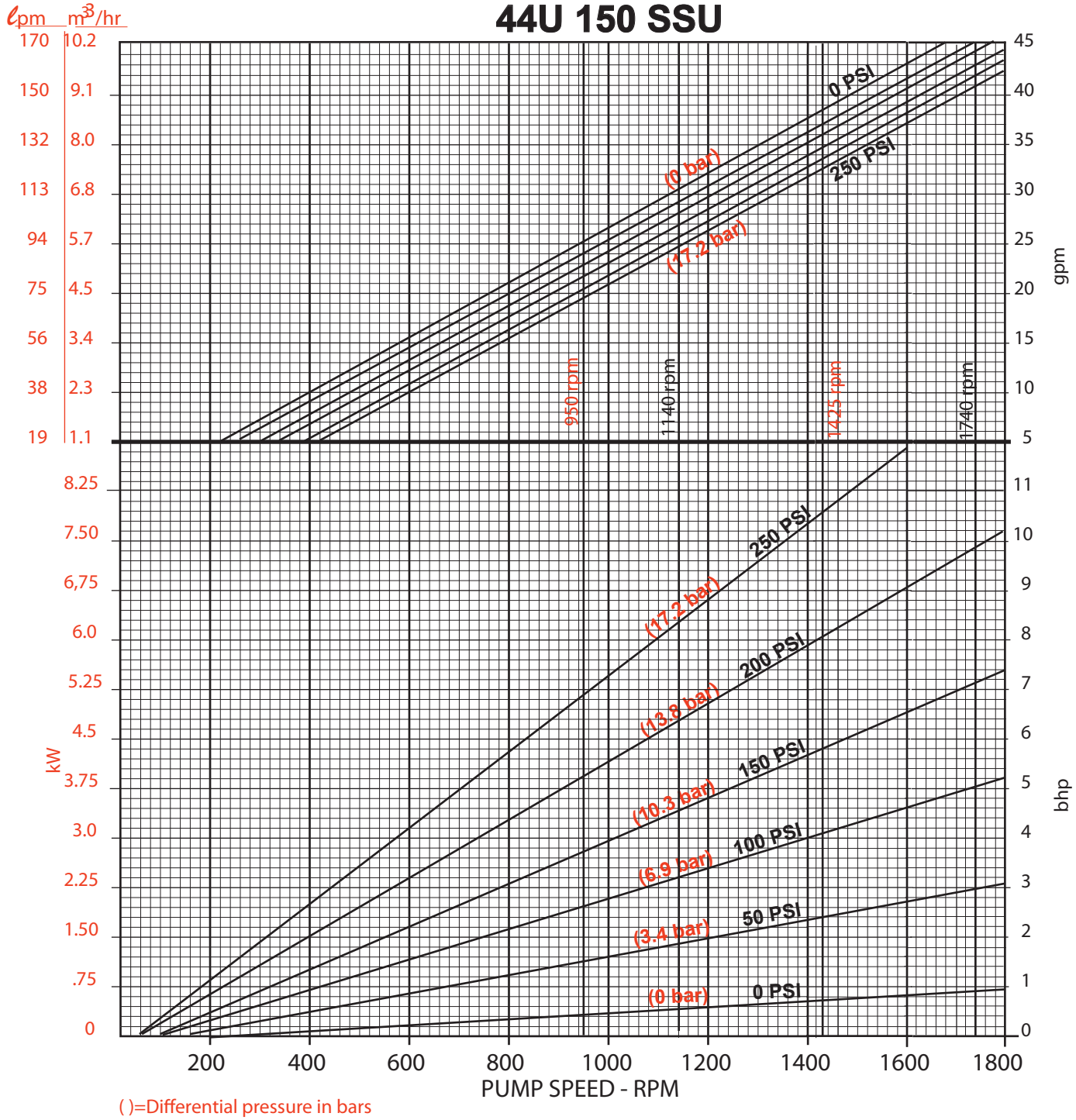
44U 100 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

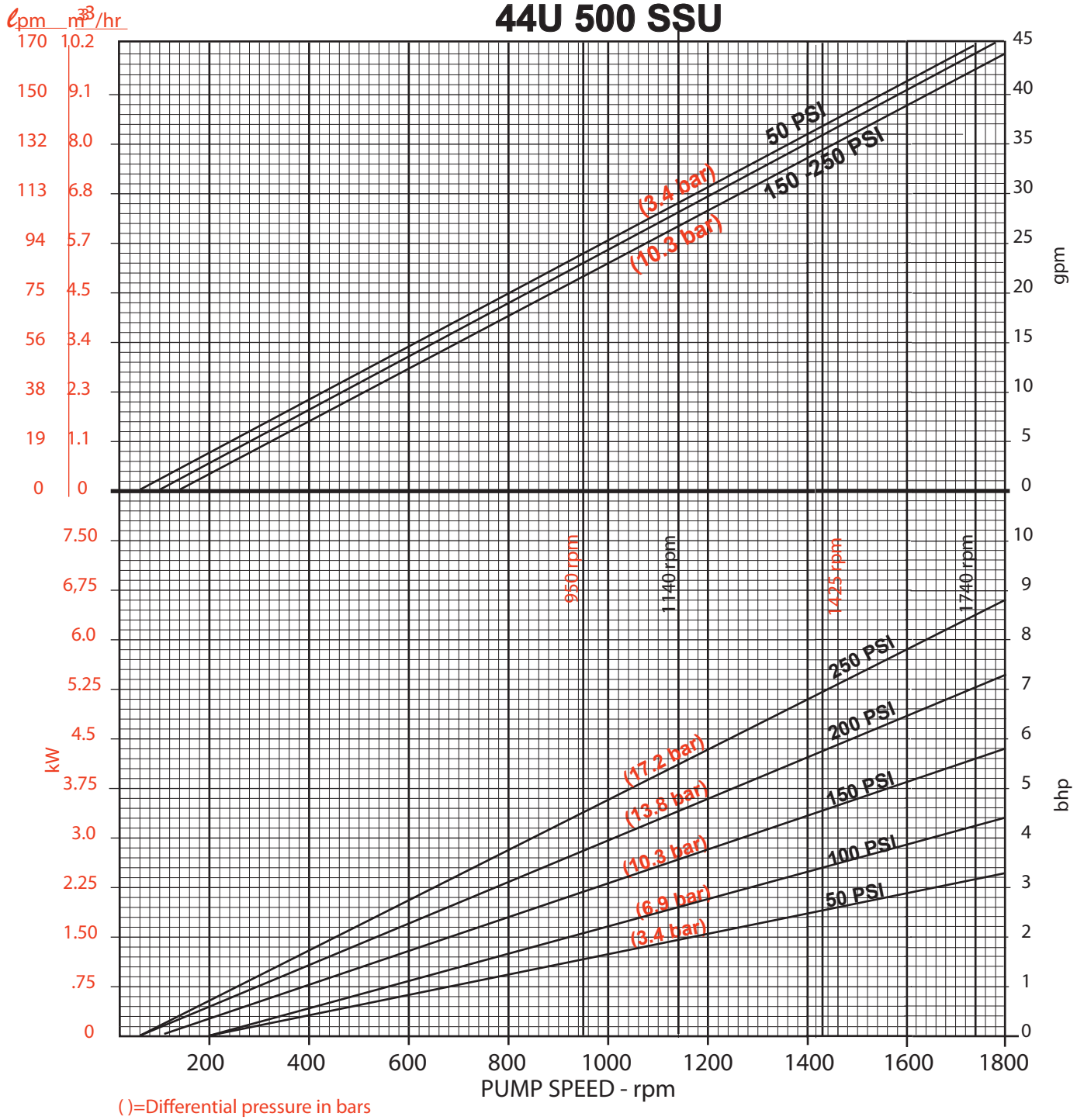
44U 150 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

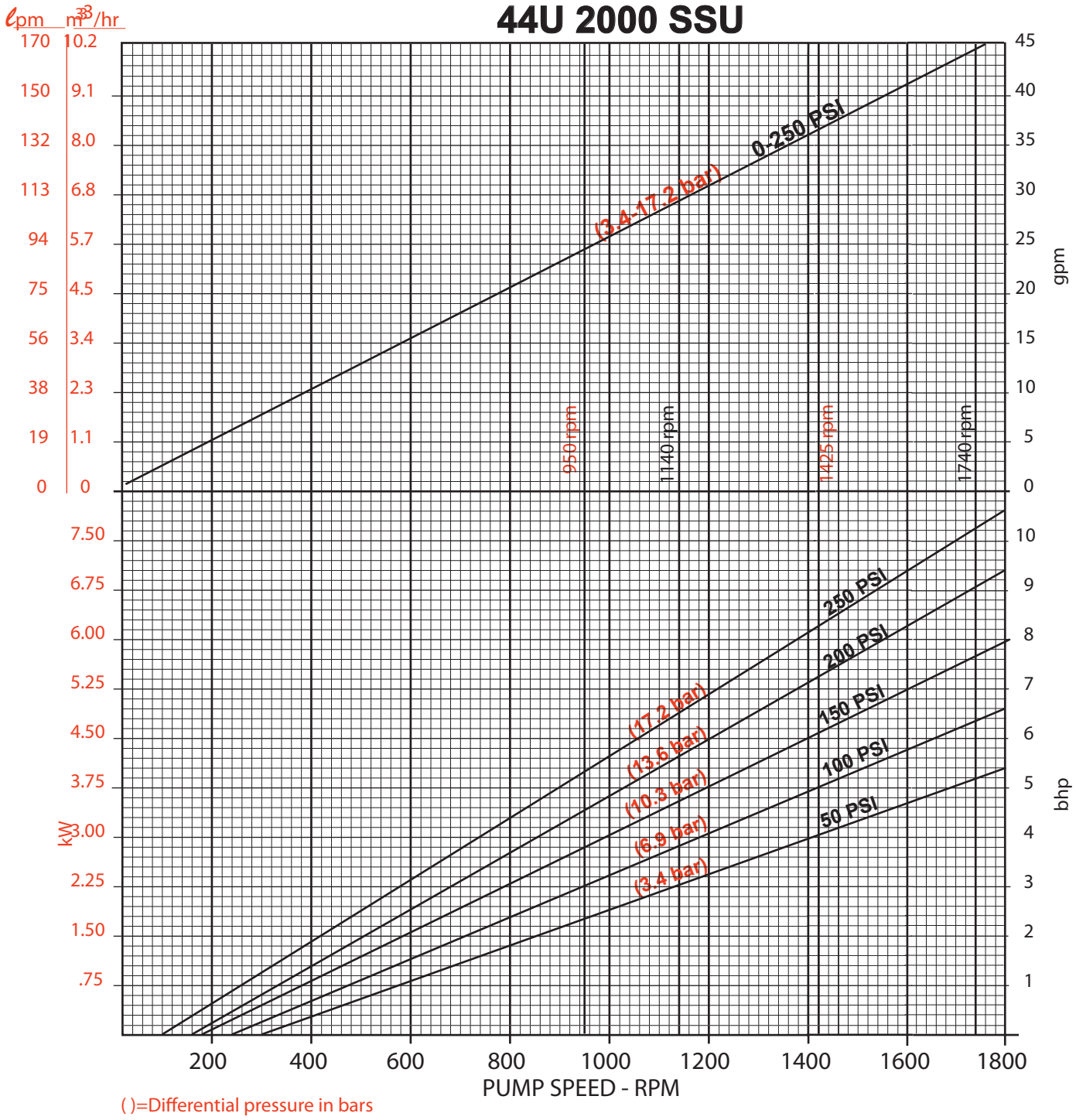
44U 500 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

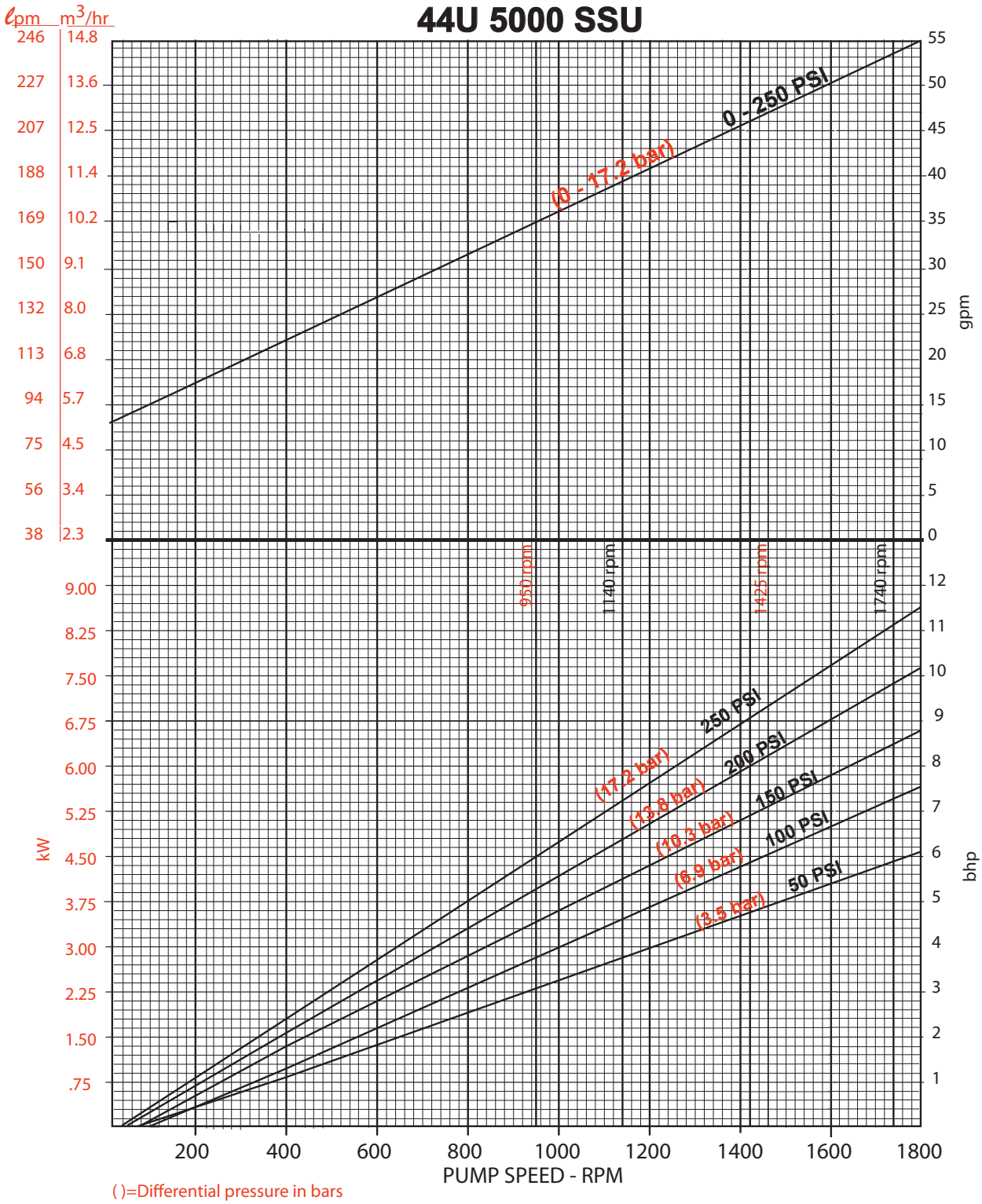
44U 2000 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

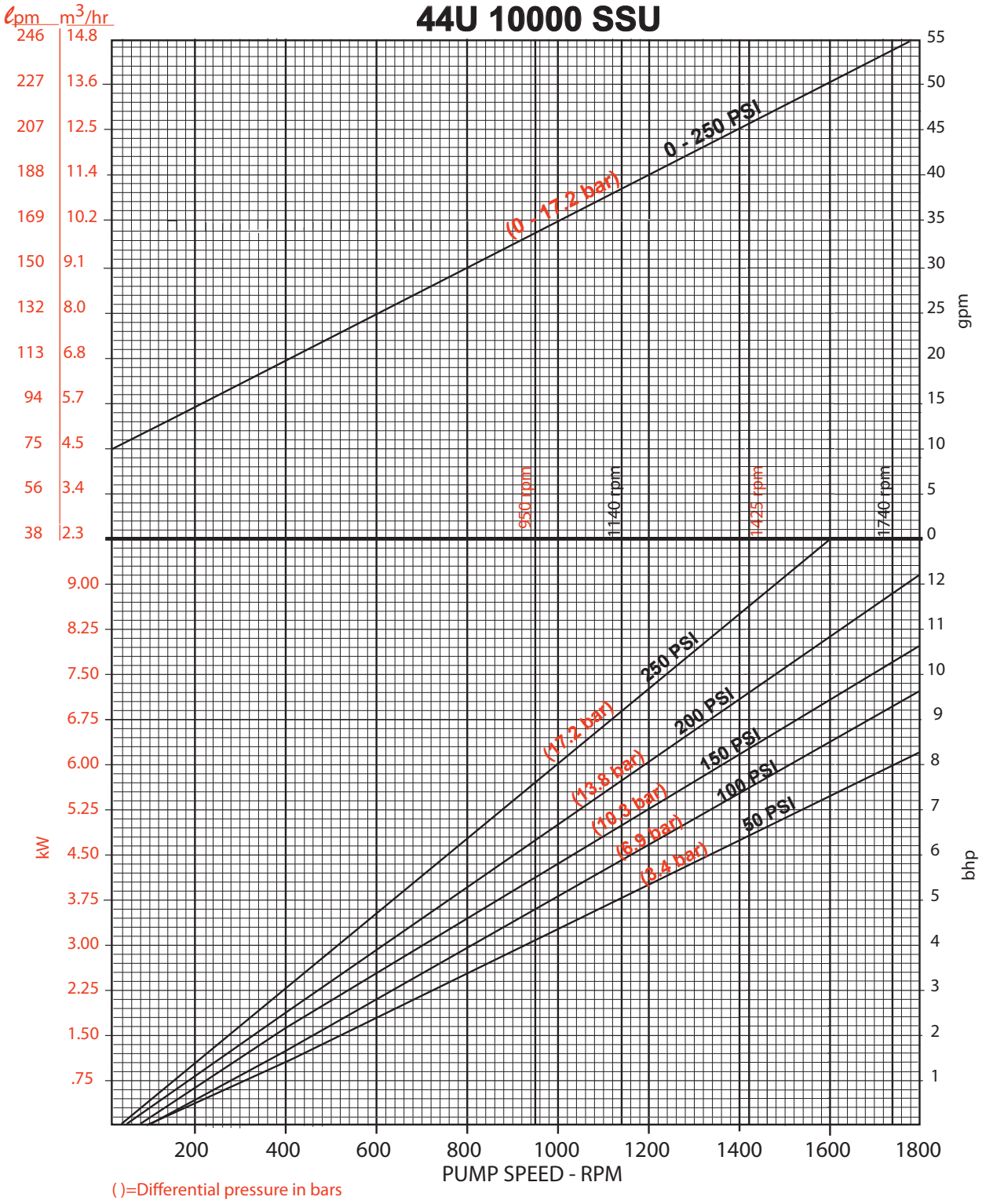
44U 5000 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

44U 10000 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

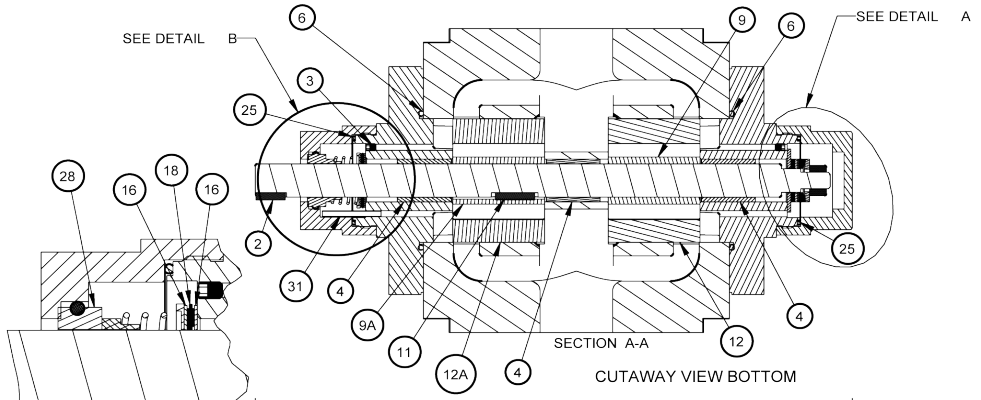
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

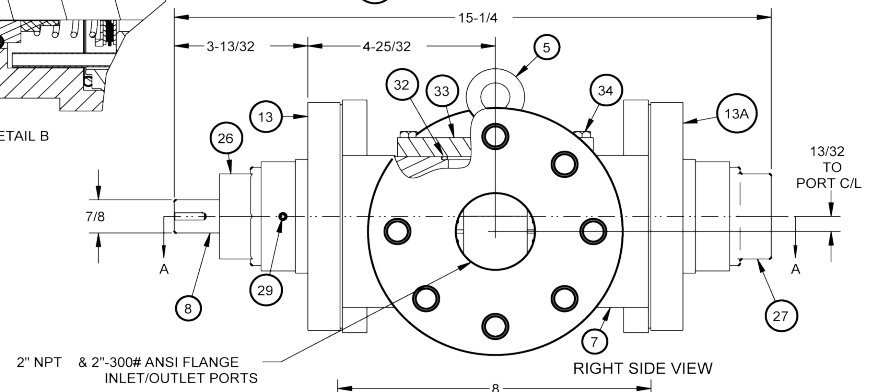
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

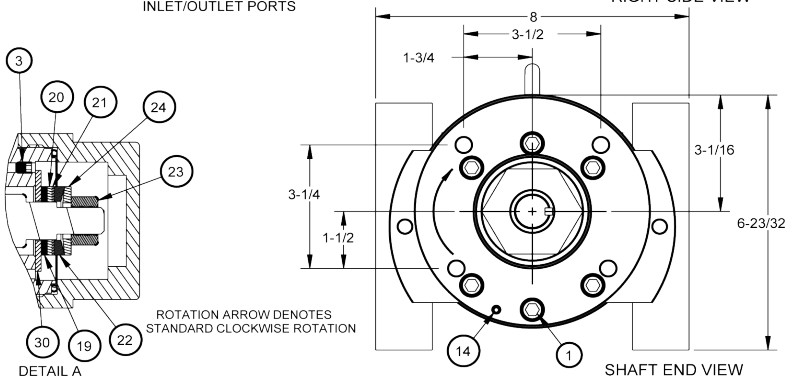
54U - 54 GPM
Double Pump w/o Relief Valve

DOUBLE PUMP W/OUT RELIEF VALVE-54 GPM

Item	Part No.	Description	Qty.
1	H90SC.8	Screw, Cover	12
2	F18C75	Drive Key 3/16 Sq.X3/4 Lg	1
3	E49E	Set Screw, Vent	2
4	H11F	Bearing	3
5	EYB1	Eye Bolt	1
6	H28E	O-Ring, Cover	2
7	D403A4	Case	1
8	RSK002	Shaft & Pinion Assembly	1
9	D2215C1	Pinion	1
9A	D3015C9	Pinion, Keyed	1
10	D4014MC6	Shaft	1
11	F18C100	Key, 3/16 Sq X 1.00 Lg	1
12	D2226F1	Rotor	1
12A	D3026F1	Rotor	1
13	D3030A8	Cover	1
13A	D2230A8	Cover	1
14	F41C	Pin	2
16	H25C2	Washer	2
18	H11TB2	Thrust Bearing	1
19	F25C2	Washer	1
20	F11TB2	Bearing	1
21	F25C3	Washer	1
22	F25C5	Spherical Washer	1
23	ZA532A	Nut	1
24	F25C4	Spherical Washer	1
25	SE2137N70	O-Ring, Gland	2
26	H22SS2A	Gland	1
27	F22SM2A	Gland	1
28	H18AM	Shaft Seal	1
29	E49D	Set Screw, Gland	1
30	F25C7	Washer	1
31	F43C1	Roll Pin	1
32	SE2122N90	O-Ring, Cover Plate	4
33	D8030CP	Cover Plate	1
34	E90SC.9	Screw, Cover Plate	4







(Revised 8-1-11)

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

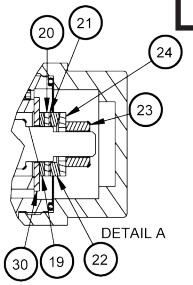
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

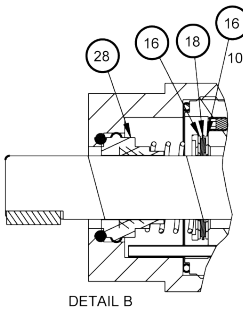
54UR - 54 GPM
Double Pump w/ Relief Valve

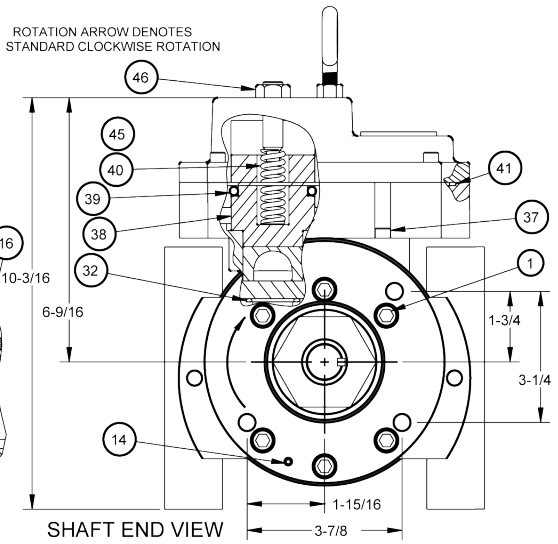
DOUBLE PUMP WITH RELIEF VALVE-54 GPM

Item	Part No.	Description	Qty.
1	H90SC.8	Screw, Cover	12
2	F18C75	Drive Key 3/16 SqX3/4 Lg	1
3	E49E	Set Screw, Vent	2
4	H11F	Bearing	3
5	EYB1	Eye Bolt	1
6	H28E	O-Ring, Cover	2
7	D403A4	Case	1
8	RSK002	Shaft & Pinion Assembly	1
9	D2215C1	Pinion	1
9A	D3015C9	Pinion, Keyed	1
10	D4014MC6	Shaft	1
11	F18C100	Key, 3/16 Sq X 1.00 Lg	1
12	D2226F1	Rotor	1
12A	D3026F1	Rotor	1
13	D3030A8	Cover	1
13A	D2230A8	Cover	1
14	F41C	Pin	2
16	H25C2	Washer	2
18	H11TB2	Thrust Bearing	1
19	F25C2	Washer	1
20	F11TB2	Thrust Bearing	1
21	F25C3	Washer	1

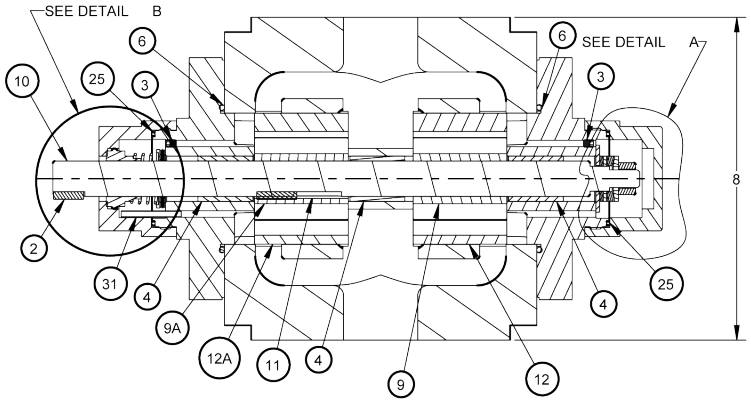
Item	Part No.	Description	Qty.
22	F25C5	Spherical Washer	1
23	ZA532A	Nut	1
24	F25C4	Spherical Washer	1
25	SE2137N70	O-Ring, Gland	2
26	H22SS2A	Gland	1
27	F22SM2A	Gland	1
28	H18AM	Shaft Seal	1
29	E49D	Set Screw, Gland	1
30	F25C7	Washer	1
31	F43C1	Roll Pin	1
32	SE2122N90	O-Ring, Valve	4
35	RVB03	Valve Body	1
37	E90SC2.0	Valve	4
38	RVP04	Valve Piston	1
39	SE2327N70	O-Ring, Valve Piston	1
40	H52E	Spring	1
41	SE2160N70	O-Ring, Valve Cover	1
42	RVC30	Valve Cover	1
43	E90SC1.0	Screw, Valve Cover	4
44	H65C	Pipe Plug	1
45	F55C	Adjustment Screw	1
46	E64C	Lock Nut	1



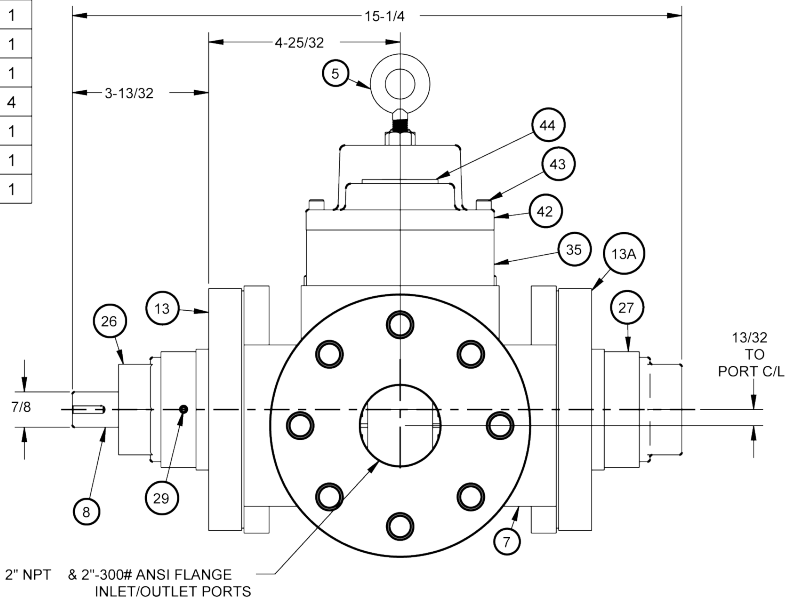




SHAFT END VIEW



CUTAWAY VIEW BOTTOM



RIGHT SIDE VIEW

(Revised 8-1-11)

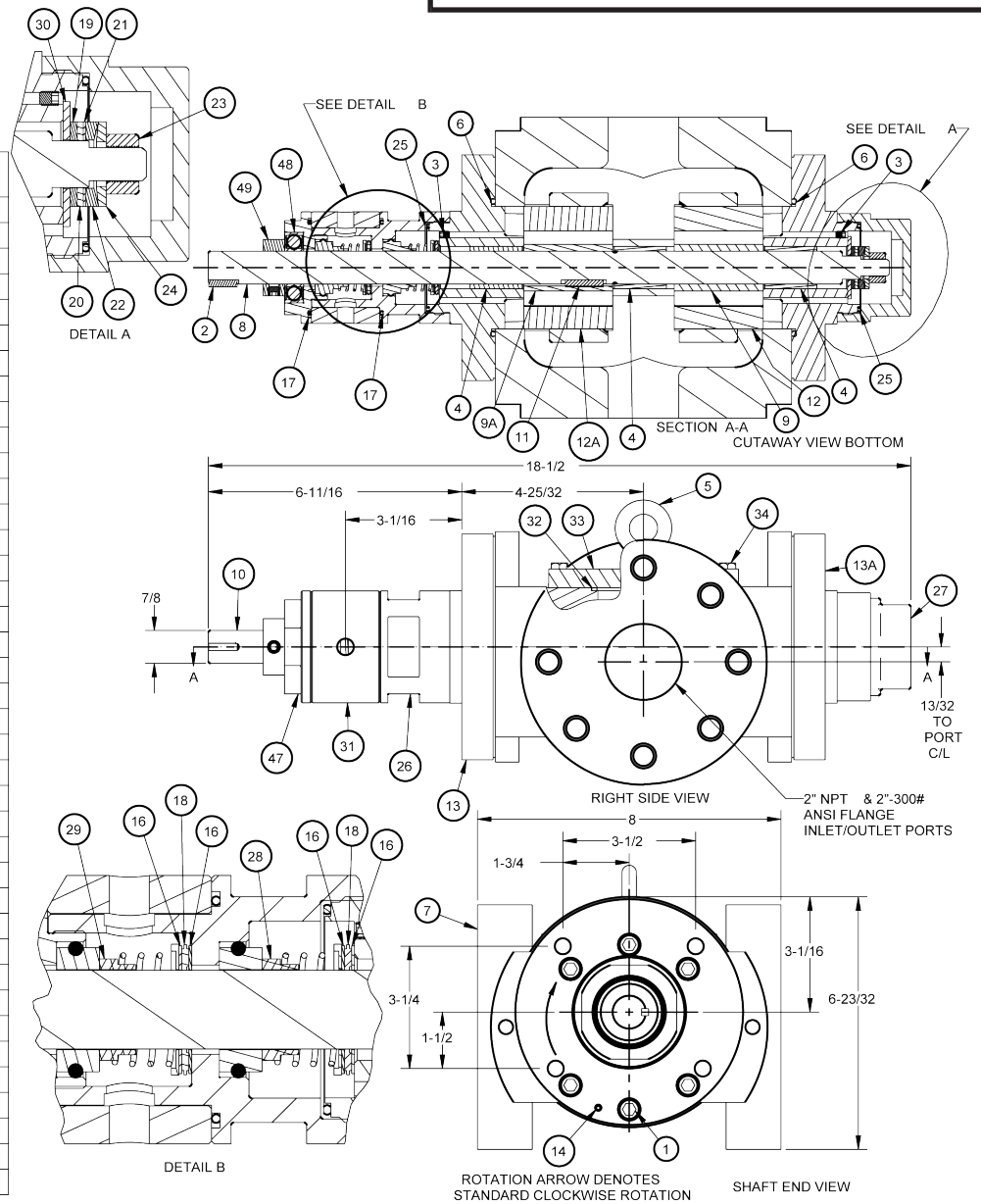
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

BS54U - 54 GPM
Barrier Seal Double Pump w/o Relief Valve

BARRIER SEAL DOUBLE PUMP W/OUT RELIEF VALVE-54 GPM

Item	Part No.	Description	Qty.
1	H90SC.8	Screw, Cover	12
2	F18C75	Drive Key, 3/16 Sq X 3/4 Lg	1
3	E49E	Set Screw, Vent	2
4	H11F	Bearing	3
5	EYB1	Eye Bolt	1
6	H28E	O-Ring, Cover	2
7	D403A4	Case	1
8	RSK007	Shaft & Pinion Assembly	1
9	D2215C1	Pinion	1
9A	D3015C9	Pinion, Keyed	1
10	D4014MC9	Shaft	1
11	F18C100	Key, 3/16 Sq X 1.00 Lg	1
12	D2226F1	Rotor	1
12A	D3026F1	Rotor	1
13	D3030A8	Cover	1
13A	D2230A8	Cover	1
14	F41C	Pin	2
16	H25C2	Washer	4
17	SE3932N70	O-Ring, Sleeve	2
18	H11TB2	Thrust Bearing	2
19	F25C2	Washer	1
20	F11TB2	Thrust Bearing	1
21	F25C3	Washer	1
22	F25C5	Spherical Washer	1
23	ZA532A	Nut	1
24	F25C4	Spherical Washer	1
25	SE2137N70	O-Ring, Gland	2
26	H22DD2F	Gland	1
27	F22SM2A	Gland	1
28	H18AM	Shaft Seal, Primary	1
29	H18AM	Shaft Seal, Secondary	1
30	F25C7	Washer	1
31	H33RDS	Sleeve	1
32	SE2122N90	O-Ring, Cover Plate	4
33	D8030CP	Cover Plate	1
34	E90SC.9	Screw, Cover Plate	4
47	H33SS3F	Gland	1
48	H11TB	Roller Bearing	1
49	H19A	Locking Collar	1



(Revised 8-1-11)

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

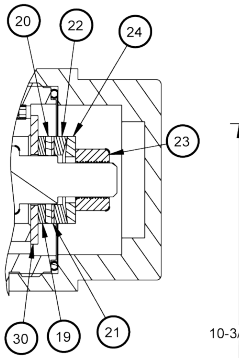
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

BS54UR - 54 GPM
Barrier Seal Double Pump w/Relief Valve

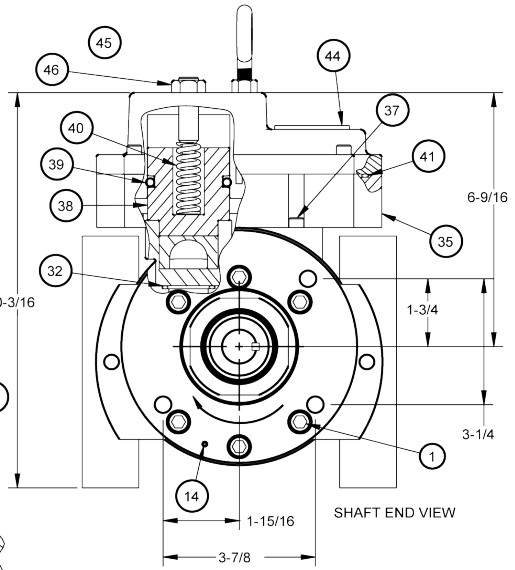
BARRIER SEAL PUMP W/RELIEF VALVE- 54 GPM

Item	Part No.	Description	Qty.
1	H90SC.8	Screw, Cover	12
2	F18C75	Drive Key, 3/16 Sq X 3/4 Lg	1
3	E49E	Set Screw, Vent	2
4	H11F	Bearing	3
5	EYB1	Eye Hook	1
6	H28E	O-Ring, Cover	2
7	D403A4	Case	1
8	D44C13MC19	Shaft & Pinion Assembly	1
9	D2215C1	Pinion	1
9A	D3015C8	Pinion, Keyed	1
10	D4014MC9	Shaft	1
11	F18C100	Key, 3/16 Sq X 1.00 Lg	1
12	D2226F1	Rotor	1
12A	D3026F1	Rotor	1
13	D3030A8	Cover	1
13A	D2230A8	Cover	1
14	F41C	Pin	2
16	H25C2	Washer	4
17	SE3932N70	O-Ring, Sleeve	2
18	H11TB2	Thrust Bearing	2
19	F25C2	Washer	1
20	F11TB2	Bearing	1
21	F25C3	Washer	1
22	F25C5	Spherical Washer	1

Item	Part No.	Description	Qty.
23	ZA532A	Nut	1
24	F25C4	Spherical Washer	1
25	SE2137N70	O-Ring, Gland	2
26	H22DD2F	Gland	1
27	F22SM2A	Gland	1
28	H18AM	Shaft Seal, Primary	1
29	H18AM	Shaft Seal, Secondary	1
30	F25C7	Washer	1
31	H33RDS	Sleeve	1
32	SE2122N90	O-Ring, Relief Valve	4
35	RVB03	Valve Body	1
37	E90SC2.0	Screw, Valve Body	4
38	RVP04	Valve Piston	1
39	SE2327N70	O-Ring, Valve Piston	1
40	H52E	Spring	1
41	SE2160N70	O-Ring, Valve Cover	1
42	RVC30	Valve Cover	1
43	E90SC1.0	Screw, Valve Cover	4
44	H65C	Pipe Plug	1
45	F55C	Adjustment Screw	1
46	E64C	Lock Nut	1
47	H33SS3F	Gland	1
48	H11TB	Roller Bearing	1
49	H19A	Locking Collar	1

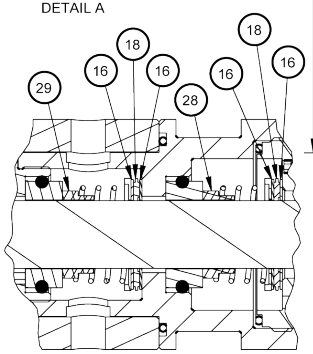


DETAIL A

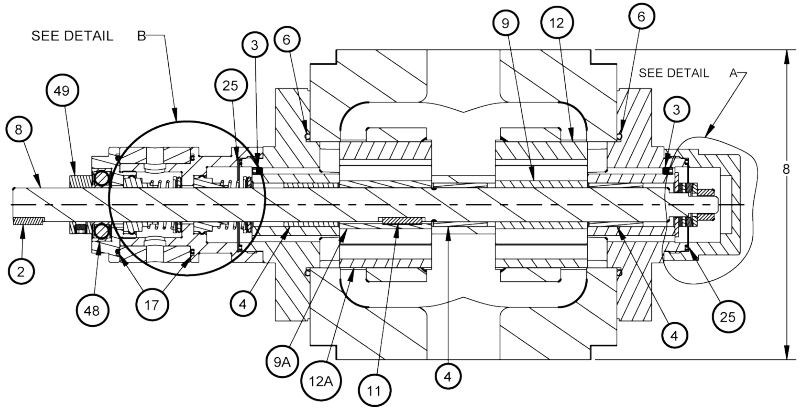


SHAFT END VIEW

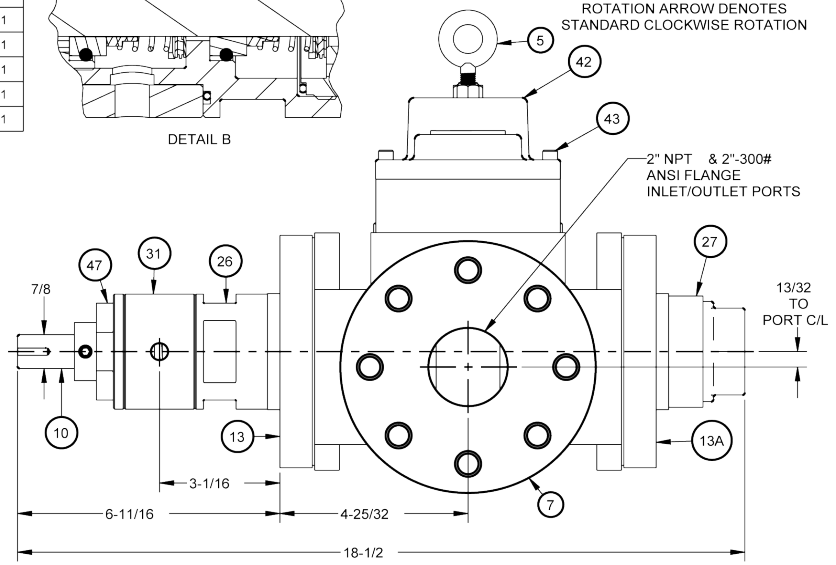
ROTATION ARROW DENOTES
STANDARD CLOCKWISE ROTATION



DETAIL B



CUTAWAY VIEW BOTTOM

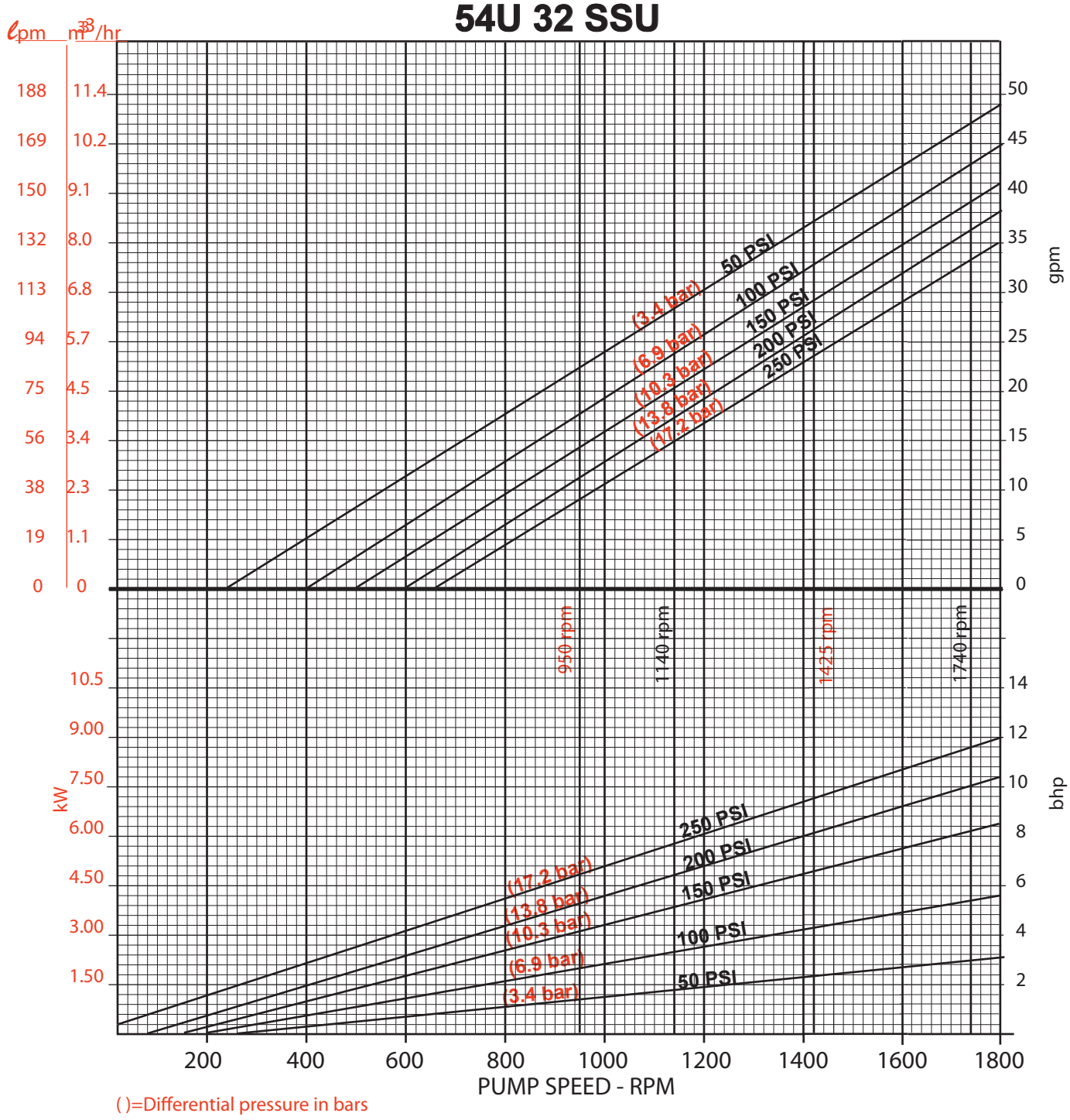


RIGHT SIDE VIEW

(Revised 8-1-11)

BS54UR - 54 GPM
Barrier Seal Double Pump w/Relief Valve

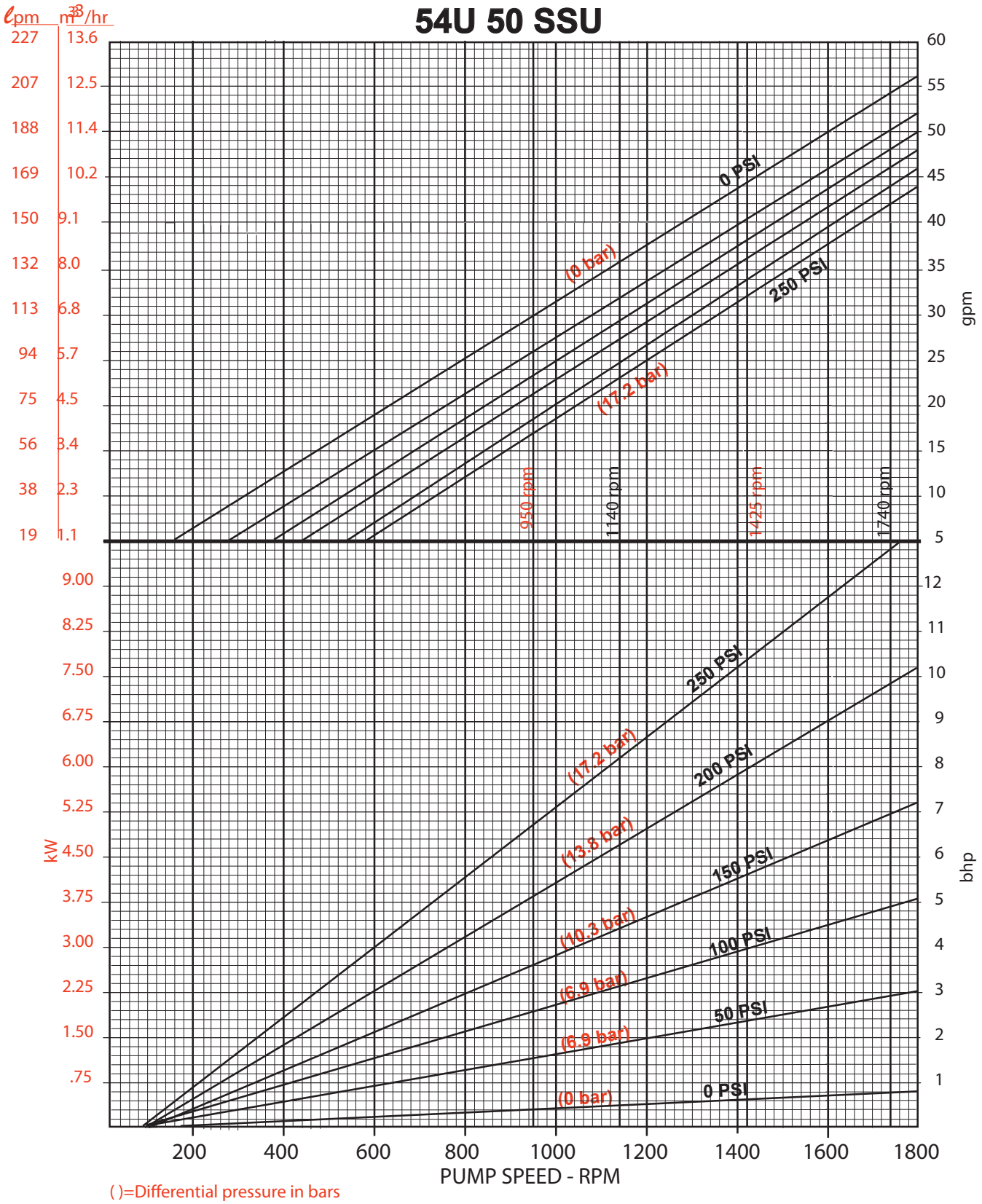
54U 32 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

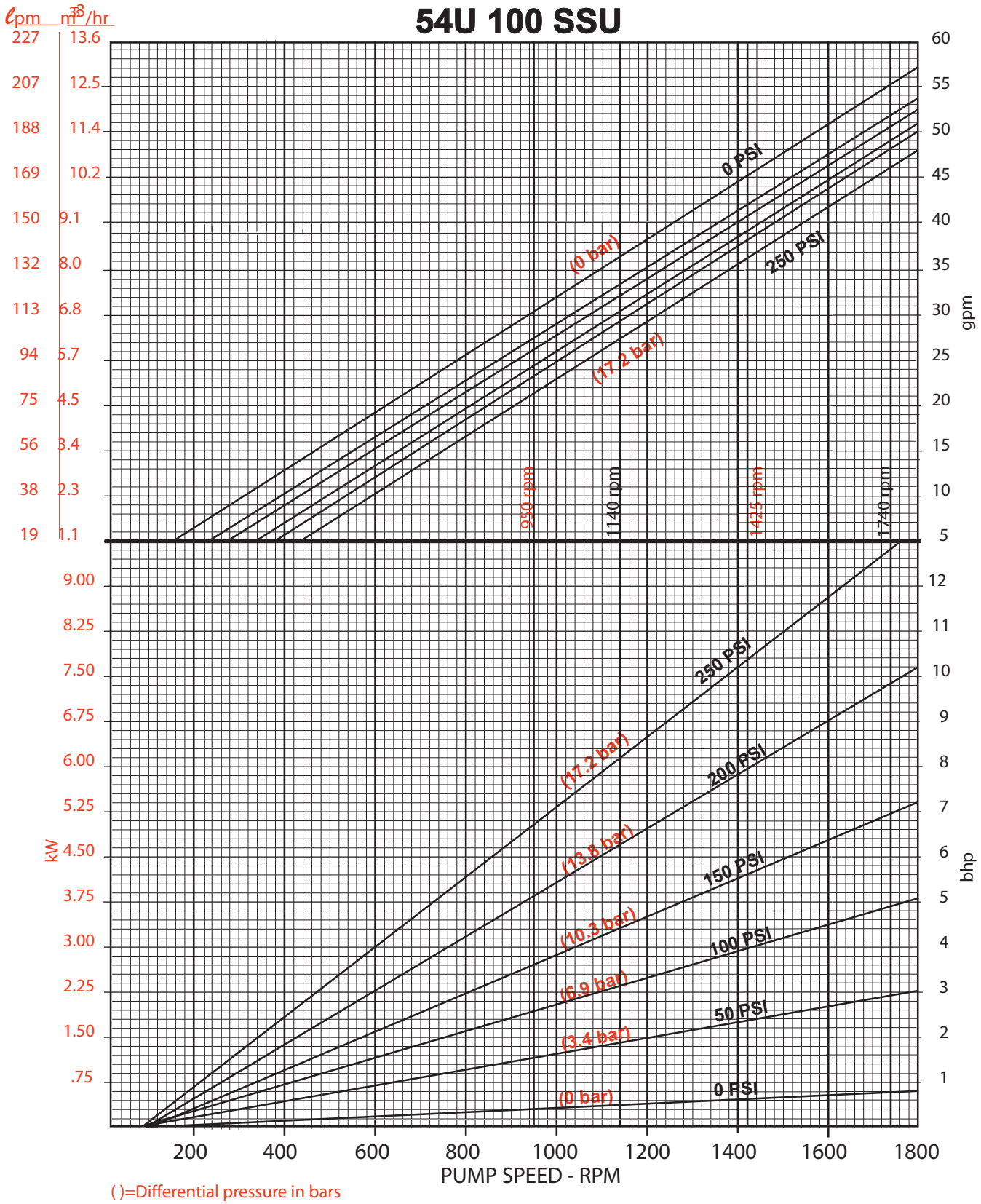
54U 50 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

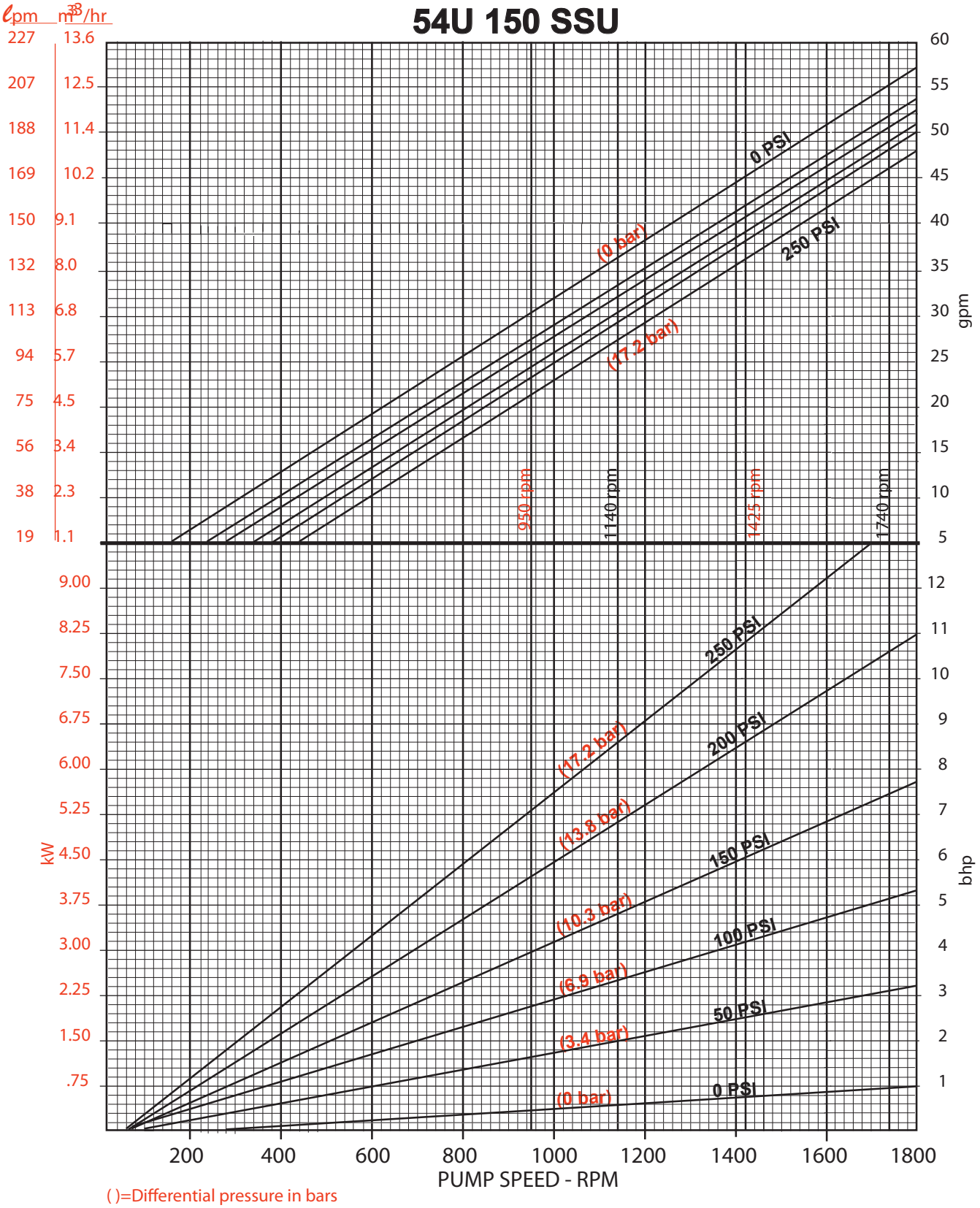
54U 100 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

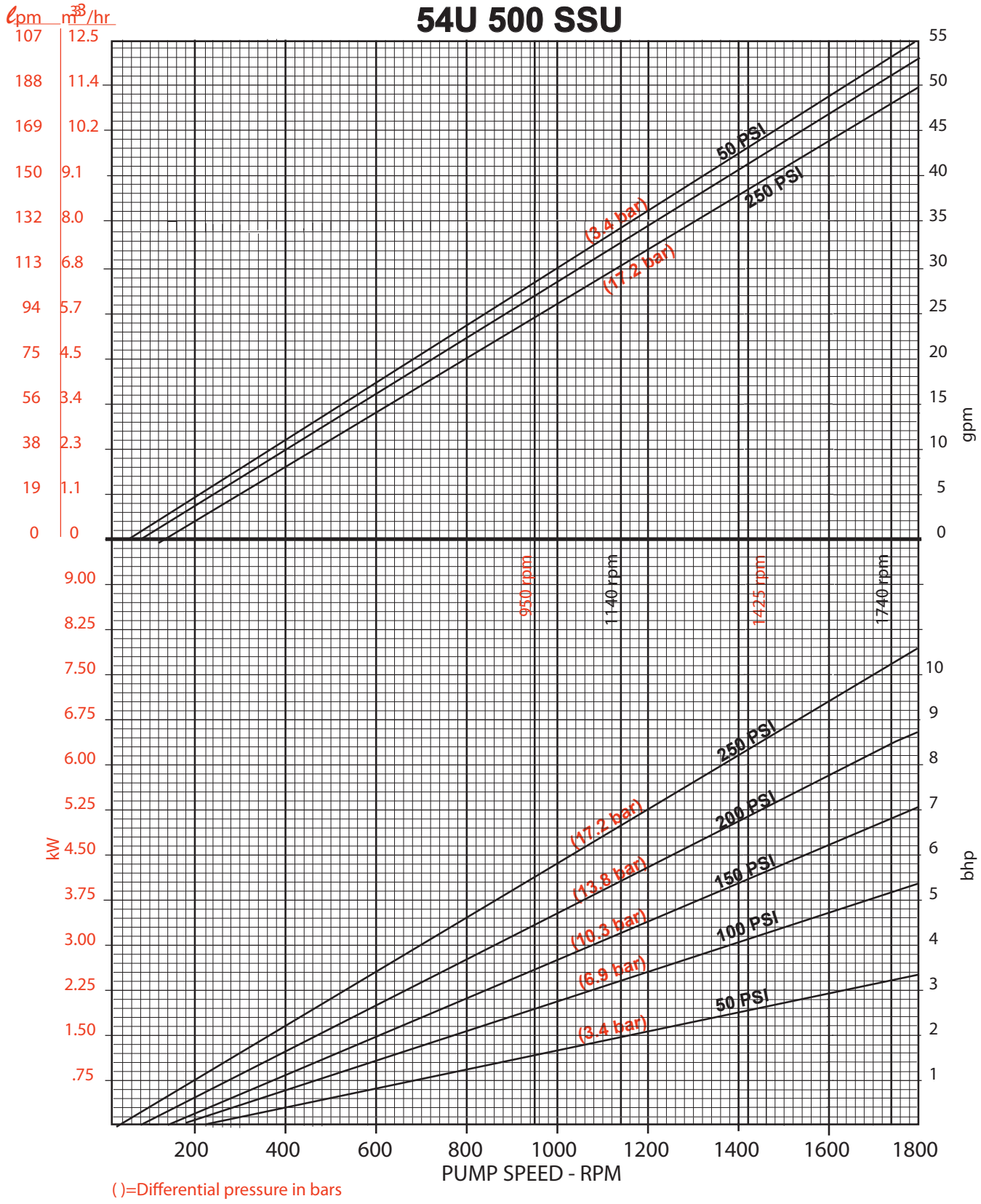
54U 150 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

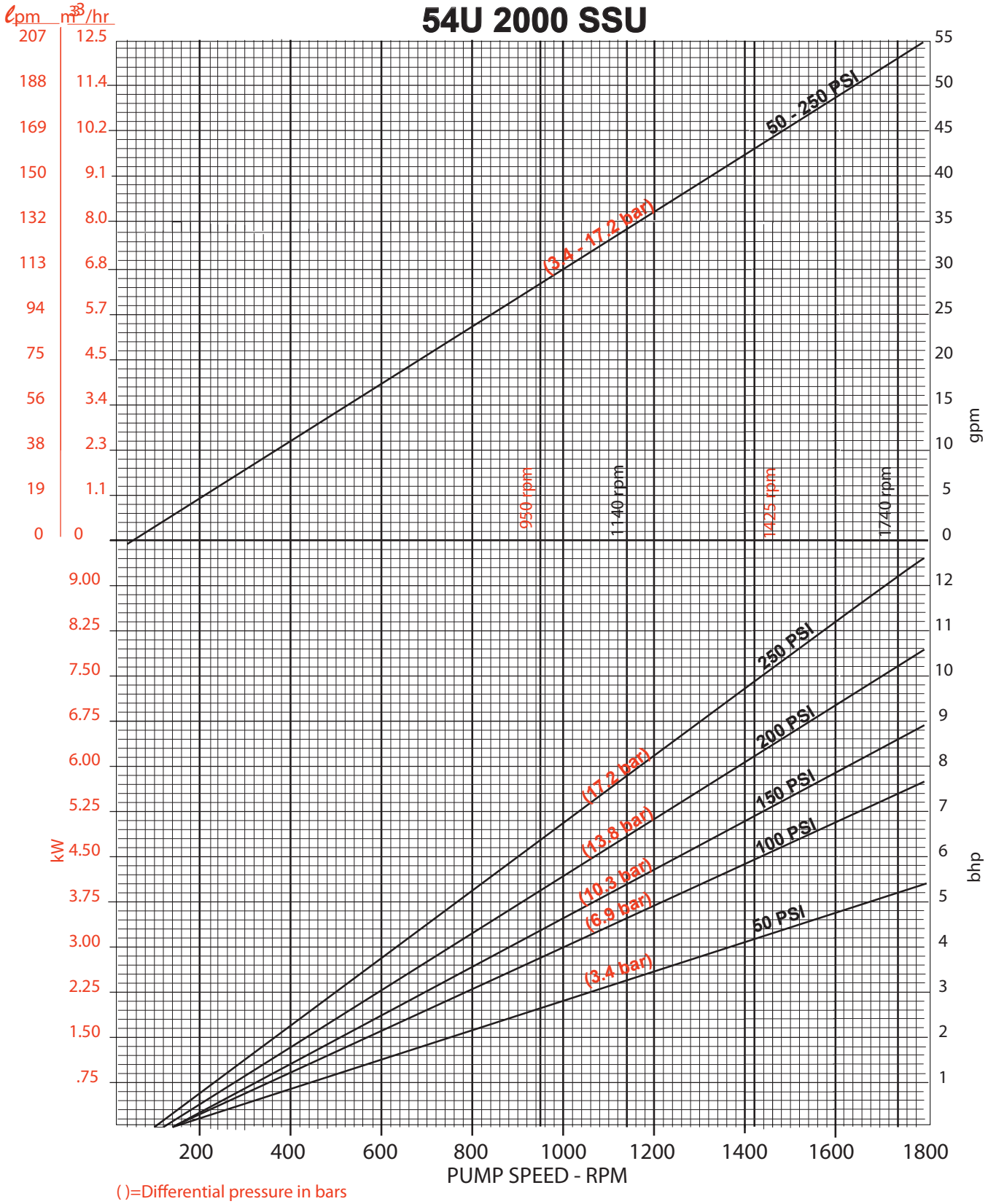
54U 500 SSU



( )=Differential pressure in bars

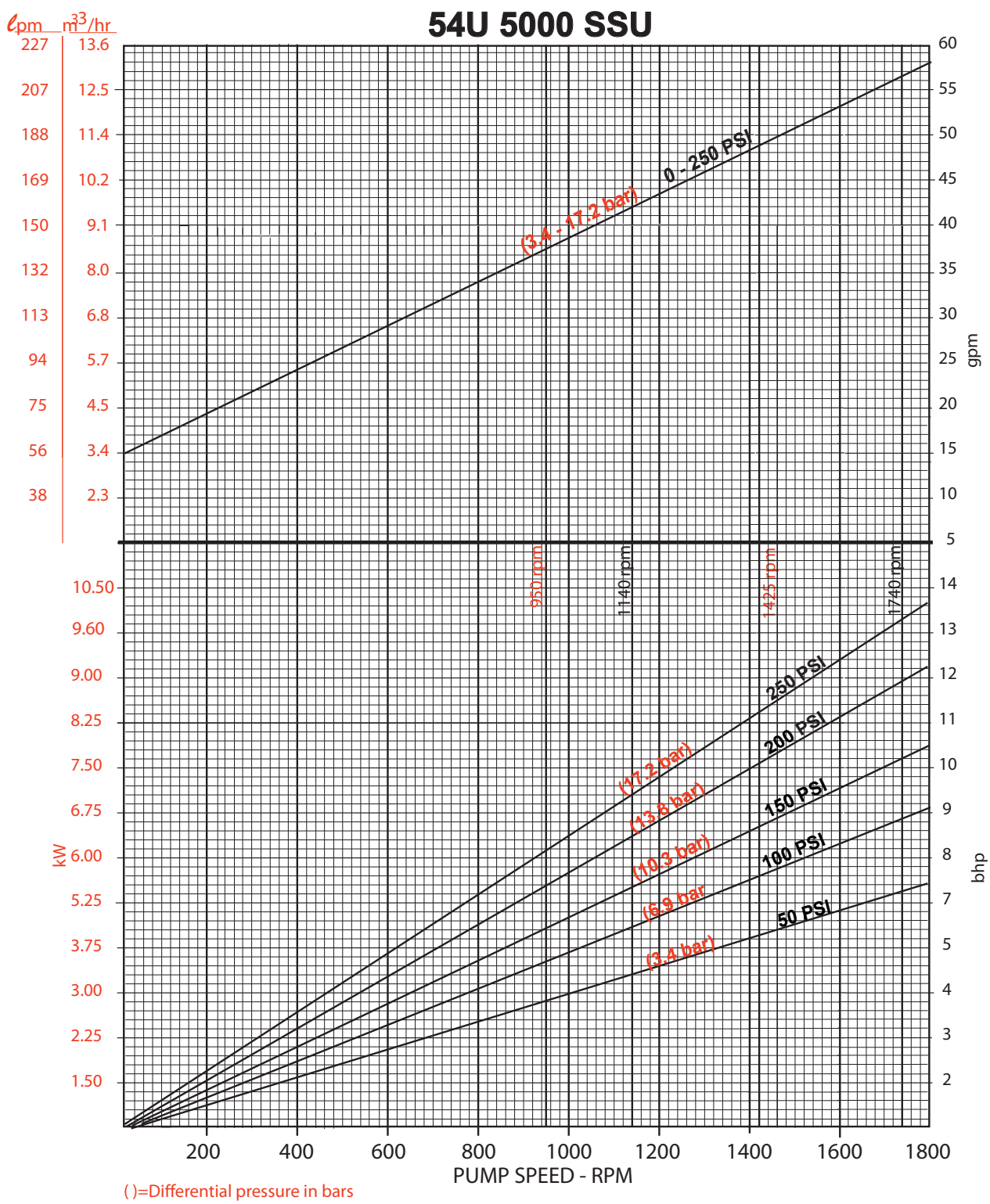
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

54U 2000 SSU



( )=Differential pressure in bars

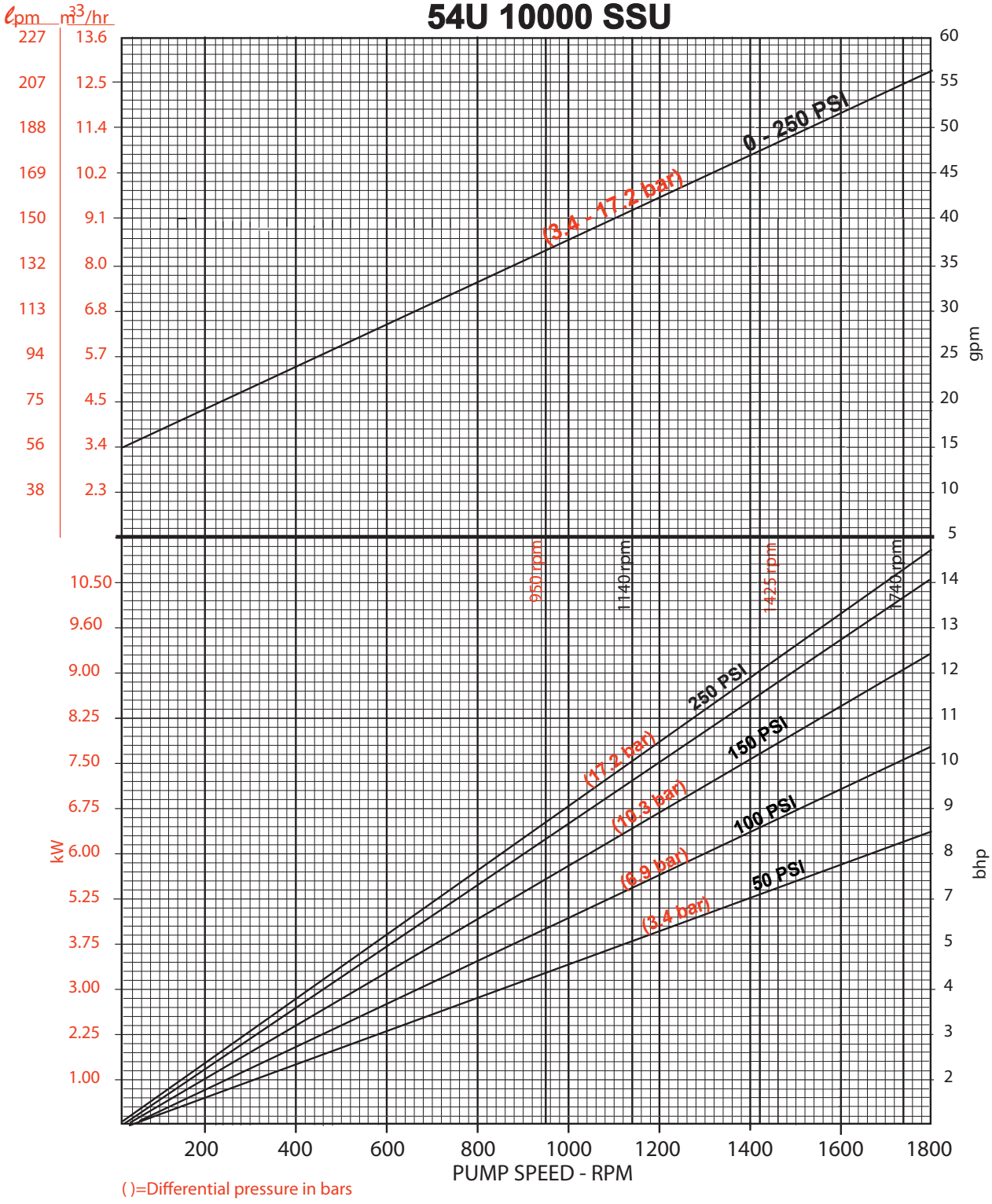
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

54U 10000 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
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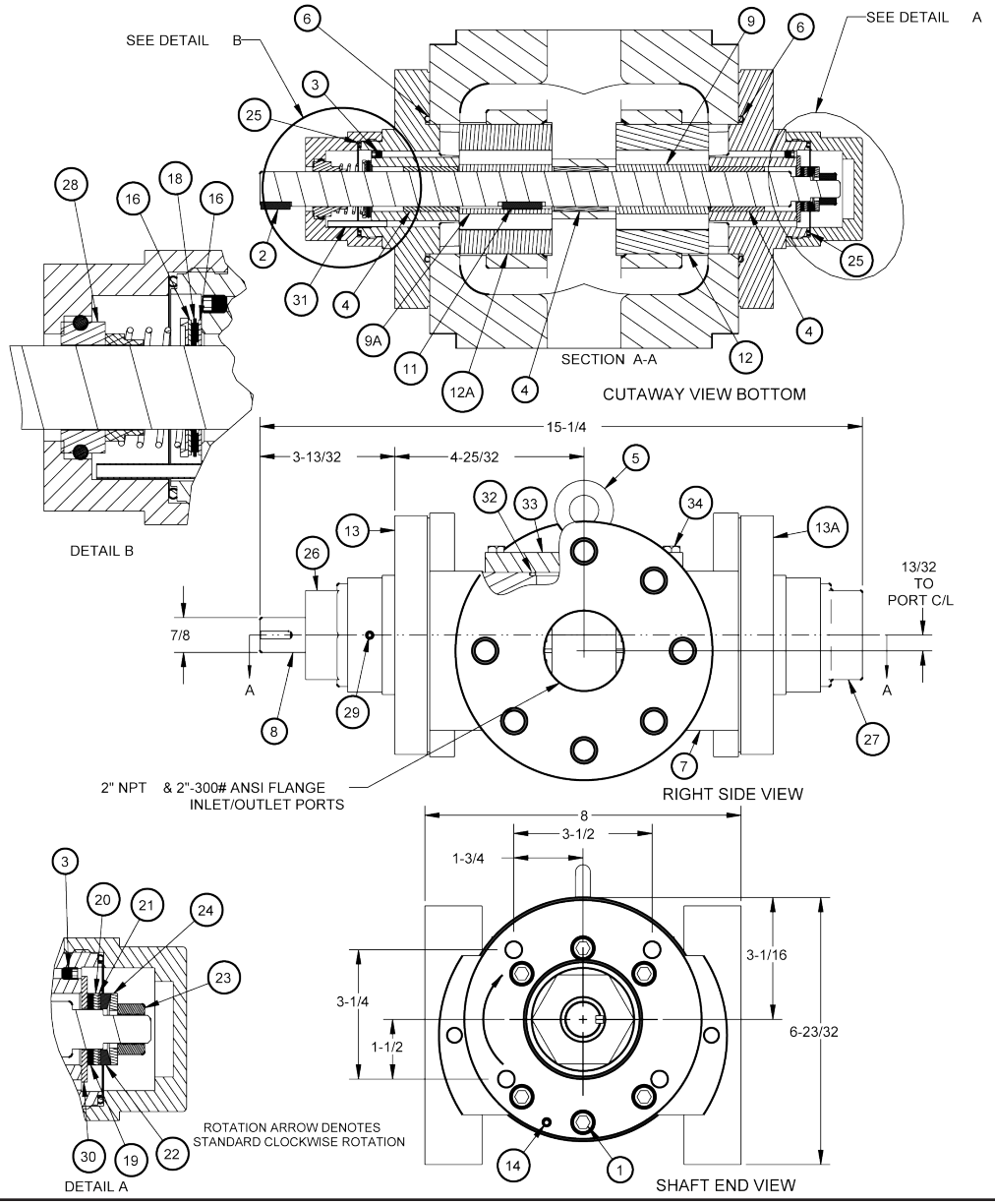
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

60U - 60 GPM
Double Pump w/o Relief Valve

DOUBLE PUMP W/OUT RELIEF VALVE-60 GPM

Item	Part No.	Description	Qty.
1	H90SC.8	Screw, Cover	12
2	F18C75	Drive Key 3/16 Sq.X3/4 Lg	1
3	E49E	Set Screw, Vent	2
4	H11F	Bearing	3
5	EYB1	Eye Bolt	1
6	H28E	O-Ring, Cover	2
7	D403A4	Case	1
8	RSK003	Shaft & Pinion Assembly	1
9	D3015C1	Pinion	1
9A	D3015C9	Pinion, Keyed	1
10	D4014MC6	Shaft	1
11	F18C100	Key, 3/16 Sq X 1.00 Lg	1
12	D3026F1	Rotor	1
12A	D3026F1	Rotor	1
13	D3030A8	Cover	1
13A	D3030A8	Cover	1
14	F41C	Pin	2
16	H25C2	Washer	2
18	H11TB2	Thrust Bearing	1
19	F25C2	Washer	1
20	F11TB2	Bearing	1
21	F25C3	Washer	1
22	F25C5	Spherical Washer	1
23	ZA532A	Nut	1
24	F25C4	Spherical Washer	1
25	SE2137N70	O-Ring, Gland	2
26	H22SS2A	Gland	1
27	F22SM2A	Gland	1
28	H18AM	Shaft Seal	1
29	E49D	Set Screw, Gland	1
30	F25C7	Washer	1
31	F43C1	Roll Pin	1
32	SE2122N90	O-Ring, Cover Plate	4
33	D8030CP	Cover Plate	1
34	E90SC.9	Screw, Cover Plate	4



(REVISED 8-1-11)

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

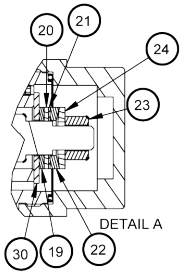
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

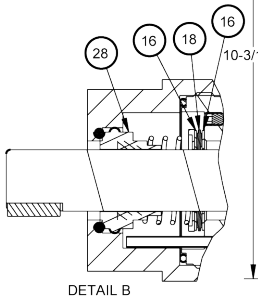
60UR - 60 GPM
Double Pump w/Relief Valve

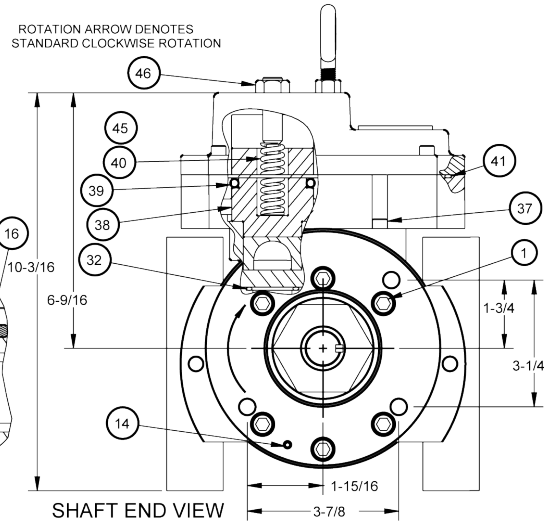
DOUBLE PUMP WITH RELIEF VALVE-60 GPM

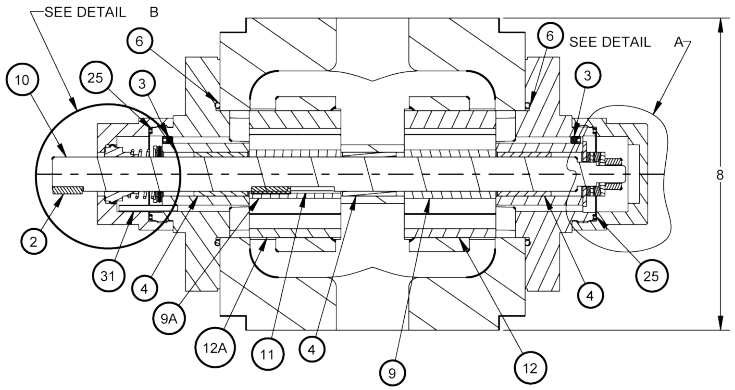
Item	Part No.	Description	Qty.
1	H90SC.8	Screw, Cover	12
2	F18C75	Drive Key 3/16 SqX3/4 Lg	1
3	E49E	Set Screw, Vent	2
4	H11F	Bearing	3
5	EYB1	Eye Bolt	1
6	H28E	O-Ring, Cover	2
7	D403A4	Case	1
8	RSK003	Shaft & Pinion Assembly	1
9	D3015C1	Pinion	1
9A	D3015C9	Pinion, Keyed	1
10	D4014MC6	Shaft	1
11	F18C100	Key, 3/16 Sq X 1.00 Lg	1
12	D3026F1	Rotor	1
12A	D3026F1	Rotor	1
13	D3030A8	Cover	1
13A	D3030A8	Cover	1
14	F41C	Pin	2
16	H25C2	Washer	2
18	H11TB2	Thrust Bearing	1
19	F25C2	Washer	1
20	F11TB2	Thrust Bearing	1
21	F25C3	Washer	1

Item	Part No.	Description	Qty.
22	F25C5	Spherical Washer	1
23	ZA532A	Nut	1
24	F25C4	Spherical Washer	1
25	SE2137N70	O-Ring, Gland	2
26	H22SS2A	Gland	1
27	F22SM2A	Gland	1
28	H18AM	Shaft Seal	1
29	E49D	Set Screw, Gland	1
30	F25C7	Washer	1
31	F43C1	Roll Pin	1
32	SE2122N90	O-Ring, Valve	4
35	RVB03	Valve Body	1
37	E90SC2.0	Valve	4
38	RVP04	Valve Piston	1
39	SE2327N70	O-Ring, Valve Piston	1
40	H52E	Spring	1
41	SE2160N70	O-Ring, Valve Cover	1
42	RVC30	Valve Cover	1
43	E90SC1.0	Screw, Valve Cover	4
44	H65C	Pipe Plug	1
45	F55C	Adjustment Screw	1
46	E64C	Lock Nut	1

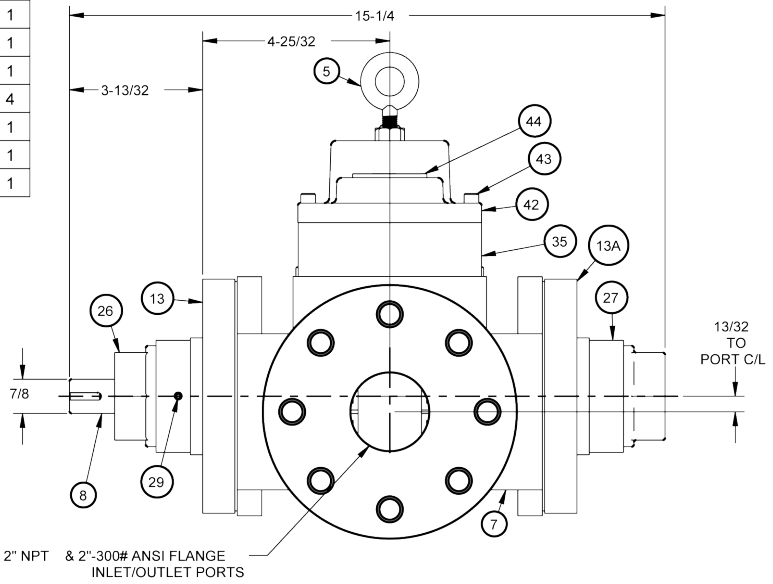








CUTAWAY VIEW BOTTOM



RIGHT SIDE VIEW

(Revised 8-1-11)

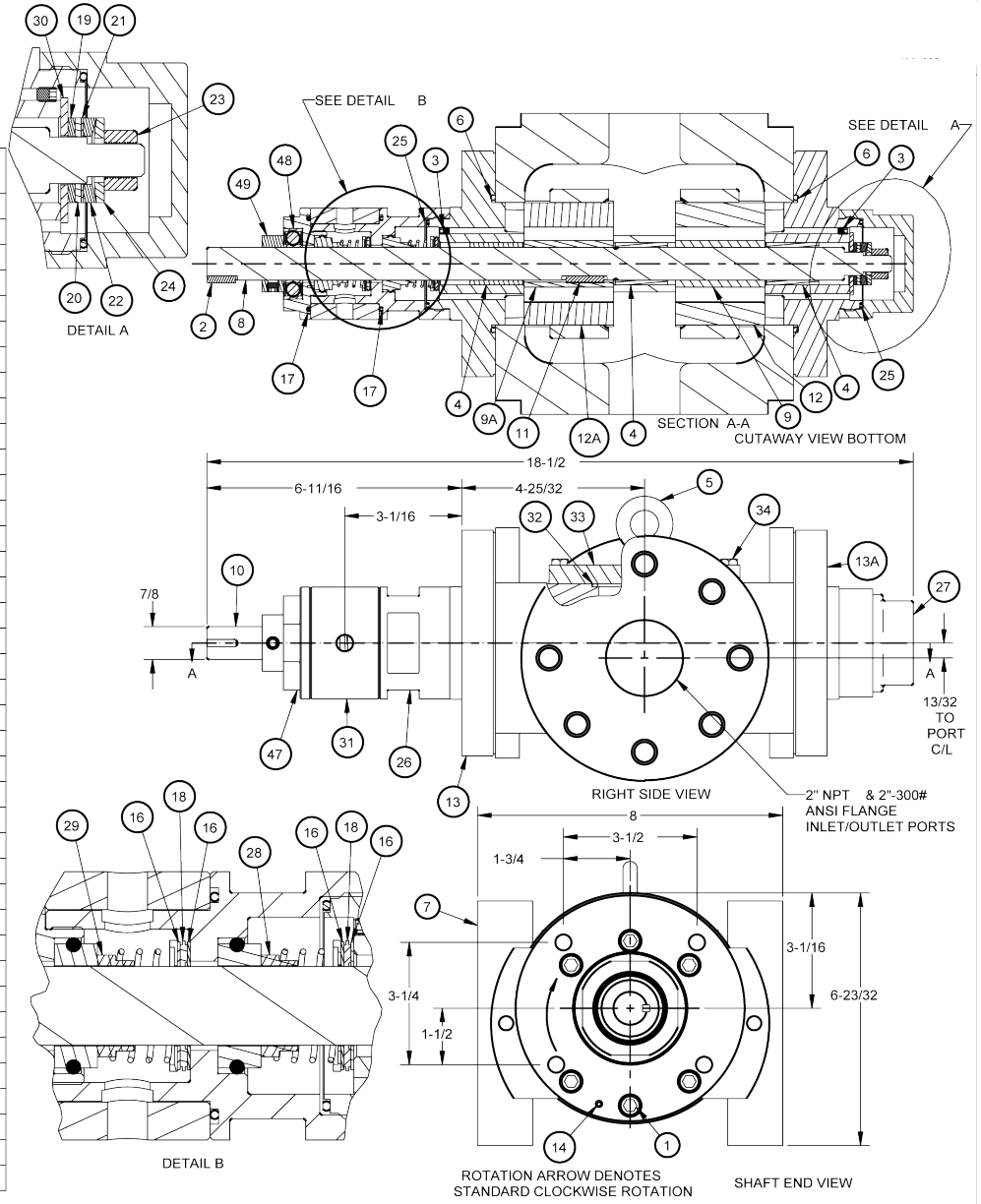
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

BS60U - 60 GPM
Barrier Seal Double Pump w/o Relief Valve

BARRIER SEAL DOUBLE PUMP W/OUT RELIEF VALVE-60 GPM

Item	Part No.	Description	Qty.
1	H90SC.8	Screw, Cover	12
2	F18C75	Drive Key, 3/16 Sq X 3/4 Lg	1
3	E49E	Set Screw, Vent	2
4	H11F	Bearing	3
5	EYB1	Eye Bolt	1
6	H28E	O-Ring, Cover	2
7	D403A4	Case	1
8	RSK008	Shaft & Pinion Assembly	1
9	D3015C1	Pinion	1
9A	D3015C9	Pinion, Keyed	1
10	D4014MC9	Shaft	1
11	F18C100	Key, 3/16 Sq X 1.00 Lg	1
12	D3026F1	Rotor	1
12A	D3026F1	Rotor	1
13	D3030A8	Cover	1
13A	D3030A8	Cover	1
14	F41C	Pin	2
16	H25C2	Washer	4
17	SE3932N70	O-Ring, Sleeve	2
18	H11TB2	Thrust Bearing	2
19	F25C2	Washer	1
20	F11TB2	Thrust Bearing	1
21	F25C3	Washer	1
22	F25C5	Spherical Washer	1
23	ZA532A	Nut	1
24	F25C4	Spherical Washer	1
25	SE2137N70	O-Ring, Gland	2
26	H22DD2F	Gland	1
27	F22SM2A	Gland	1
28	H18AM	Shaft Seal, Primary	1
29	H18AM	Shaft Seal, Secondary	1
30	F25C7	Washer	1
31	H33RDS	Sleeve	1
32	SE2122N90	O-Ring, Cover Plate	4
33	D8030CP	Cover Plate	1
34	E90SC.9	Screw, Cover Plate	4
47	H33SS3F	Gland	1
48	H11TB	Roller Bearing	1
49	H19A	Locking Collar	1



BS60U - 60 GPM
Barrier Seal Double Pump w/o Relief Valve

(Revised 8-1-11)

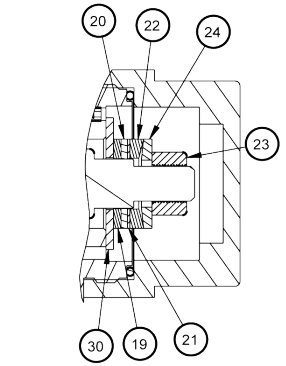
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

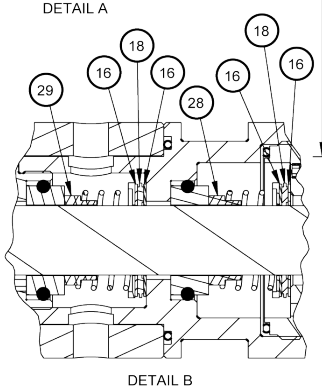
BS60UR- 60 GPM
Barrier Seal Double Pump w/Relief Valve

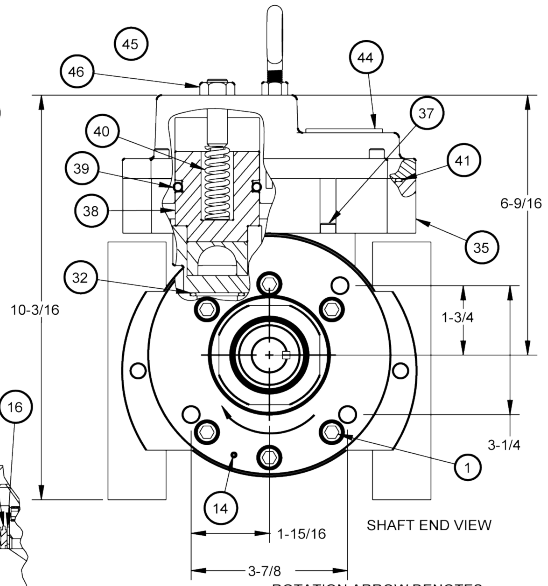
BARRIER SEAL PUMP W/RELIEF VALVE- 60 GPM

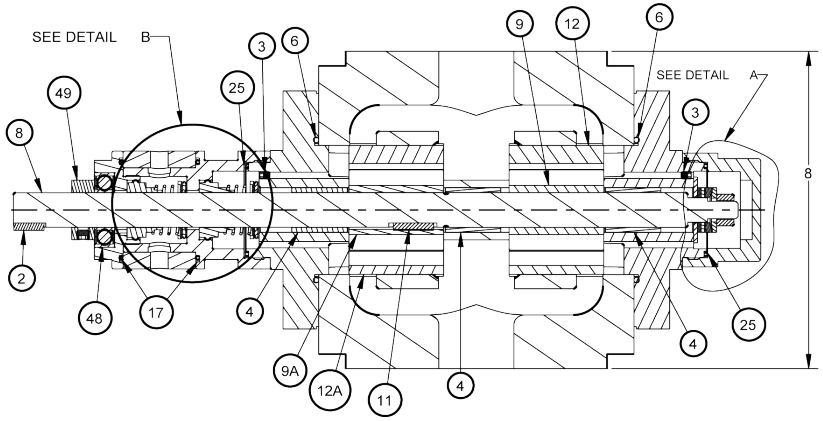
Item	Part No.	Description	Qty.
1	H90SC.8	Screw, Cover	12
2	F18C75	Drive Key, 3/16 Sq X 3/4 Lg	1
3	E49E	Set Screw, Vent	2
4	H11F	Bearing	3
5	EYB1	Eye Hook	1
6	H28E	O-Ring, Cover	2
7	D403A4	Case	1
8	RSK008	Shaft & Pinion Assembly	1
9	D3015C1	Pinion	1
9A	D3015C9	Pinion, Keyed	1
10	D4014MC9	Shaft	1
11	F18C100	Key, 3/16 Sq X 1.00 Lg	1
12	D3026F1	Rotor	1
12A	D3026F1	Rotor	1
13	D3030A8	Cover	1
13A	D3030A8	Cover	1
14	F41C	Pin	2
16	H25C2	Washer	4
17	SE3932N70	O-Ring, Sleeve	2
18	H11TB2	Thrust Bearing	2
19	F25C2	Washer	1
20	F11TB2	Bearing	1
21	F25C3	Washer	1
22	F25C5	Spherical Washer	1

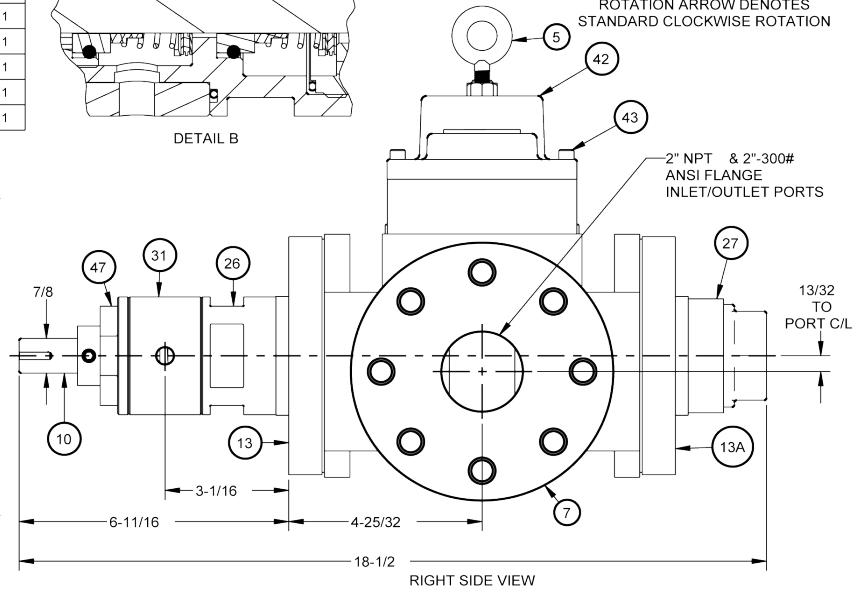
Item	Part No.	Description	Qty.
23	ZA532A	Nut	1
24	F25C4	Spherical Washer	1
25	SE2137N70	O-Ring, Gland	2
26	H22DD2F	Gland	1
27	F22SM2A	Gland	1
28	H18AM	Shaft Seal, Primary	1
29	H18AM	Shaft Seal, Secondary	1
30	F25C7	Washer	1
31	H33RDS	Sleeve	1
32	SE2122N90	O-Ring, Relief Valve	4
35	RVB03	Valve Body	1
37	E90SC2.0	Screw, Valve Body	4
38	RVP04	Valve Piston	1
39	SE2327N70	O-Ring, Valve Piston	1
40	H52E	Spring	1
41	SE2160N70	O-Ring, Valve Cover	1
42	RVC30	Valve Cover	1
43	E90SC1.0	Screw, Valve Cover	4
44	H65C	Pipe Plug	1
45	F55C	Adjustment Screw	1
46	E64C	Lock Nut	1
47	H33SS3F	Gland	1
48	H11TB	Roller Bearing	1
49	H19A	Locking Collar	1





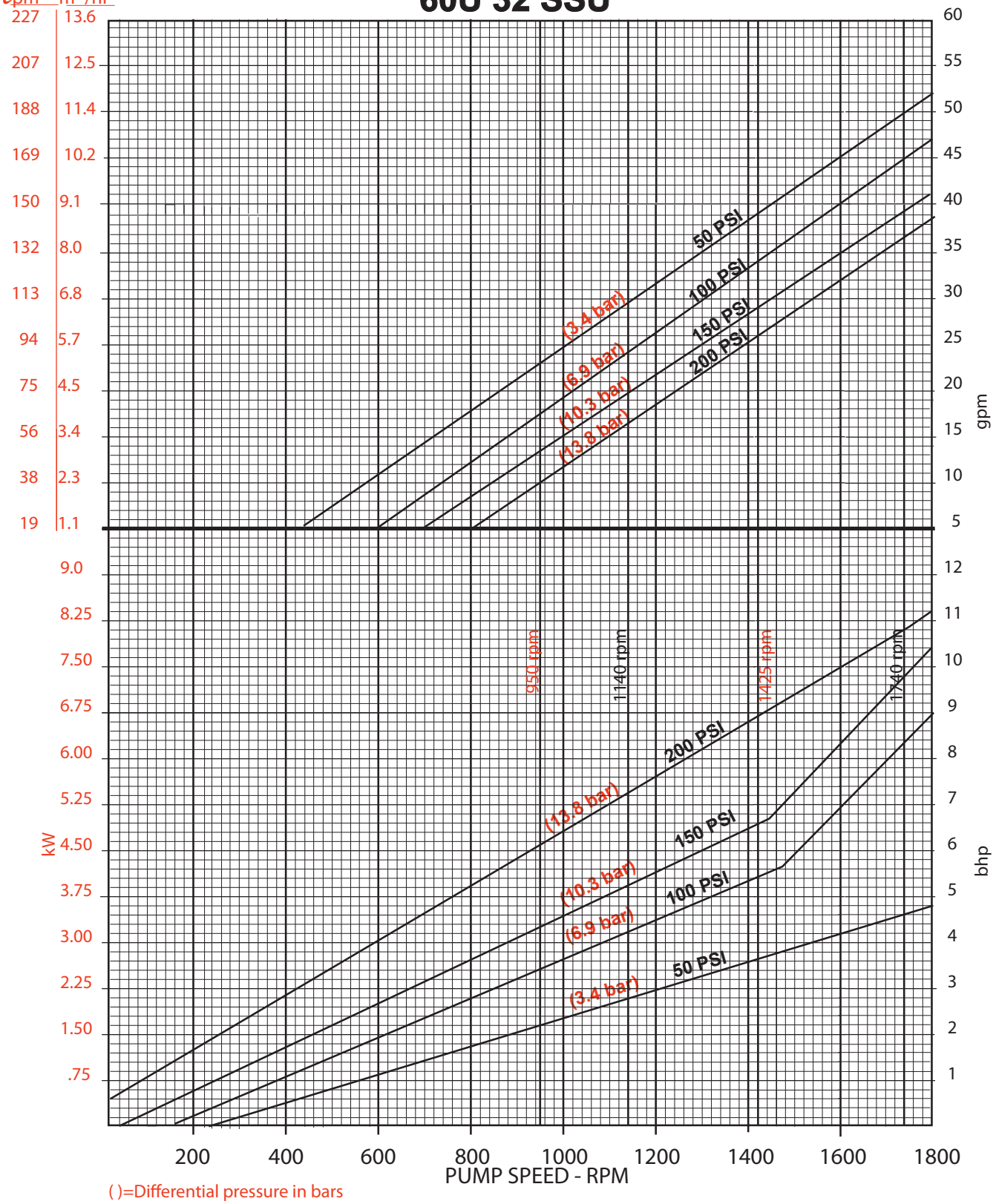






(Revised 8-1-11)

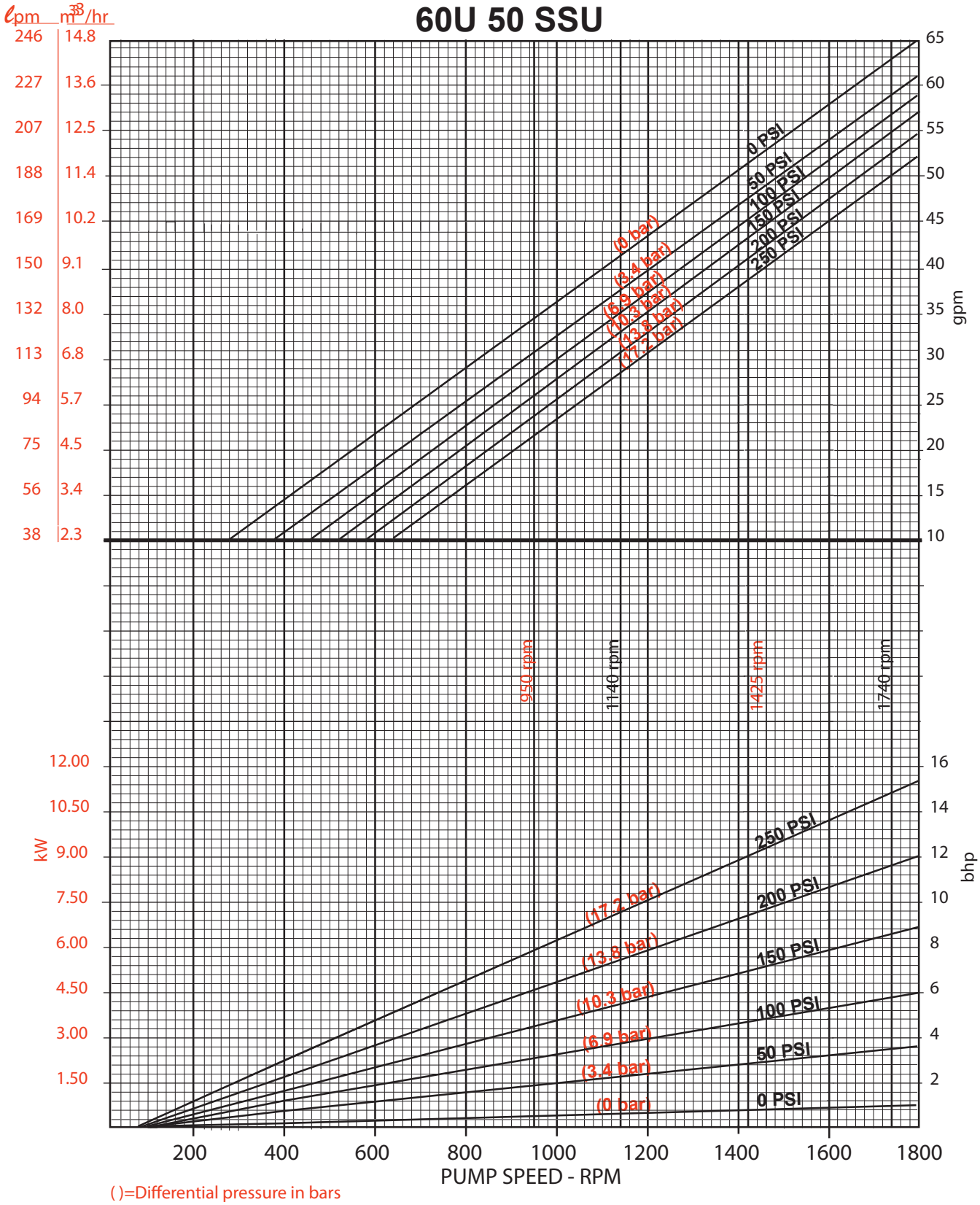
60U 32 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

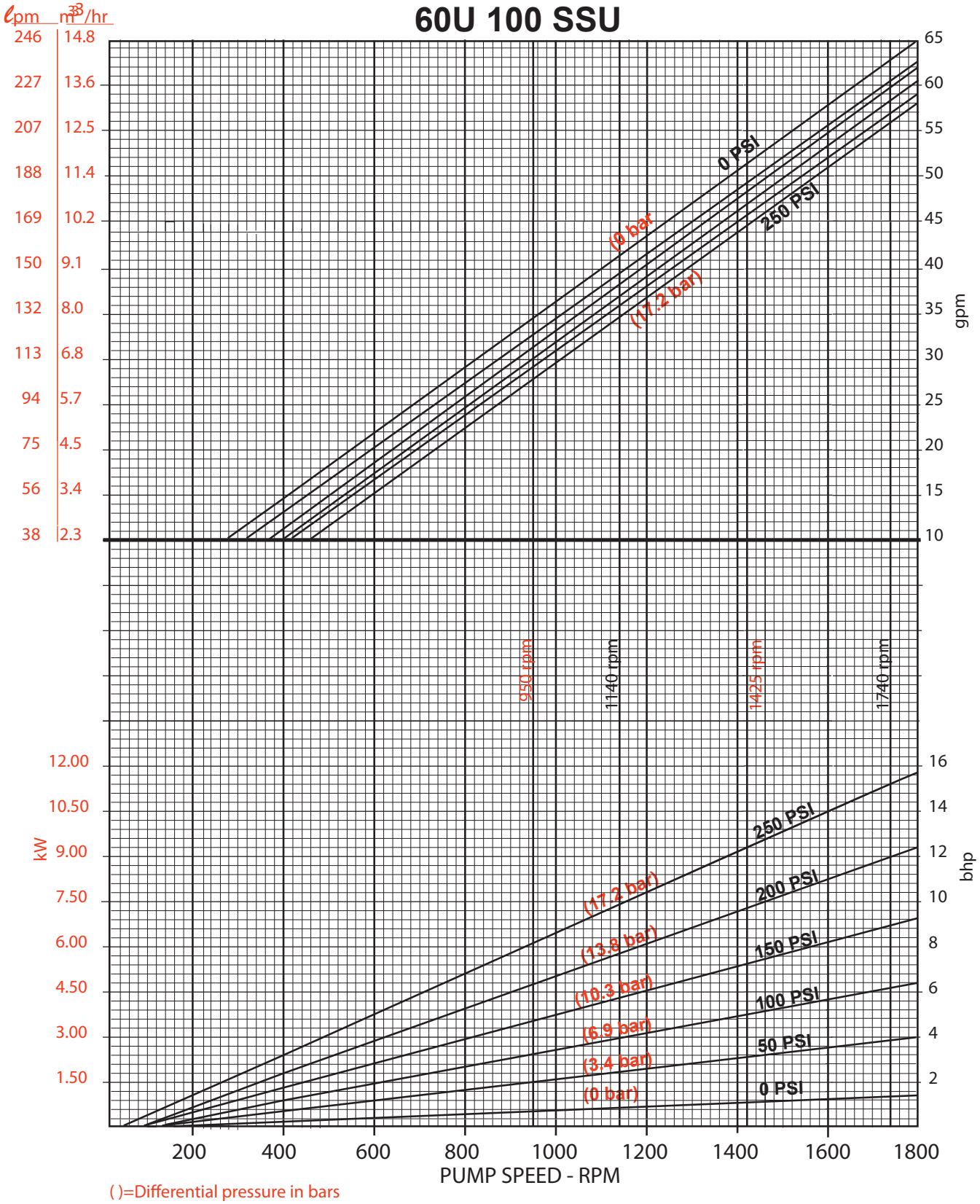
60U 50 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

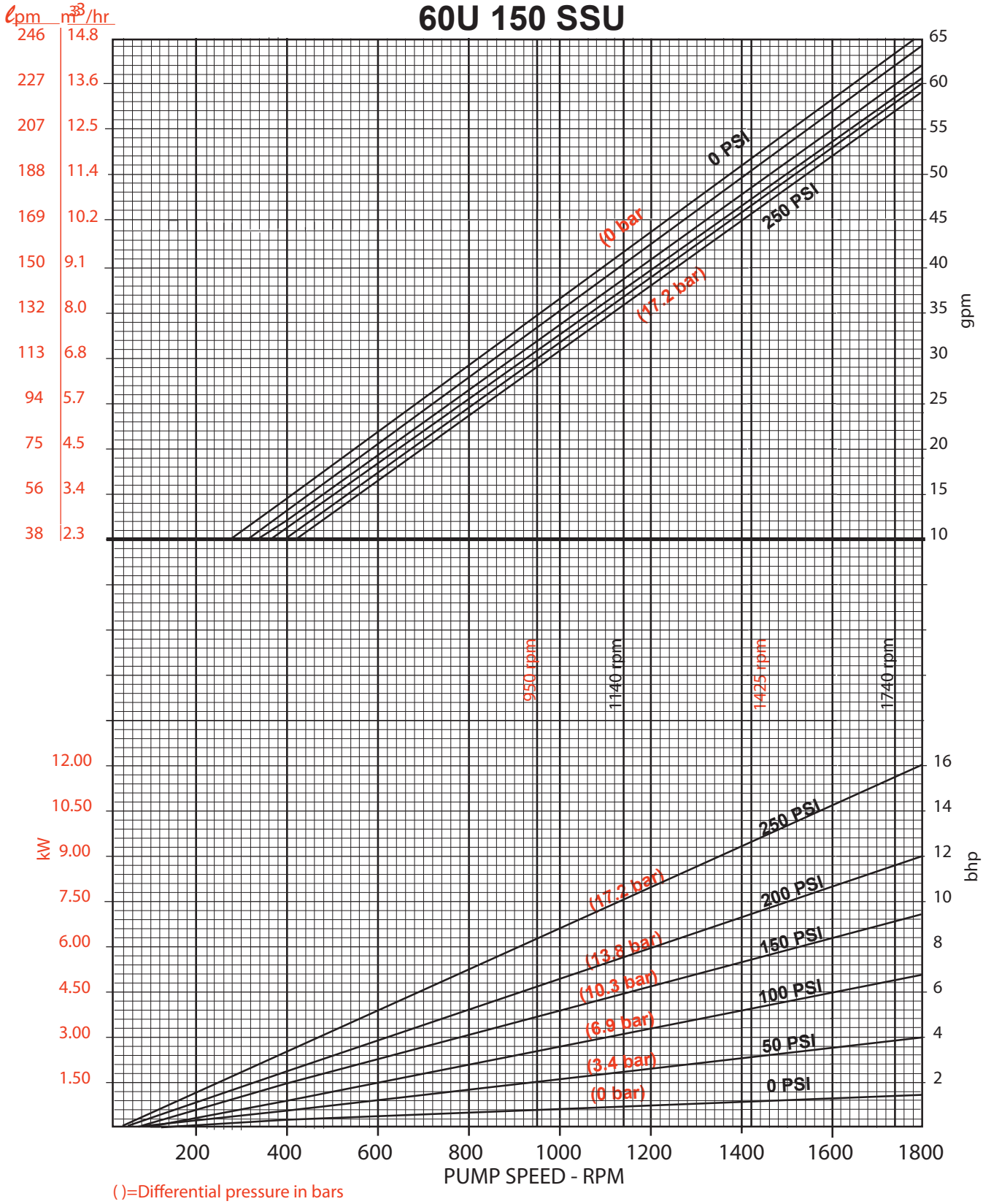
60U 100 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

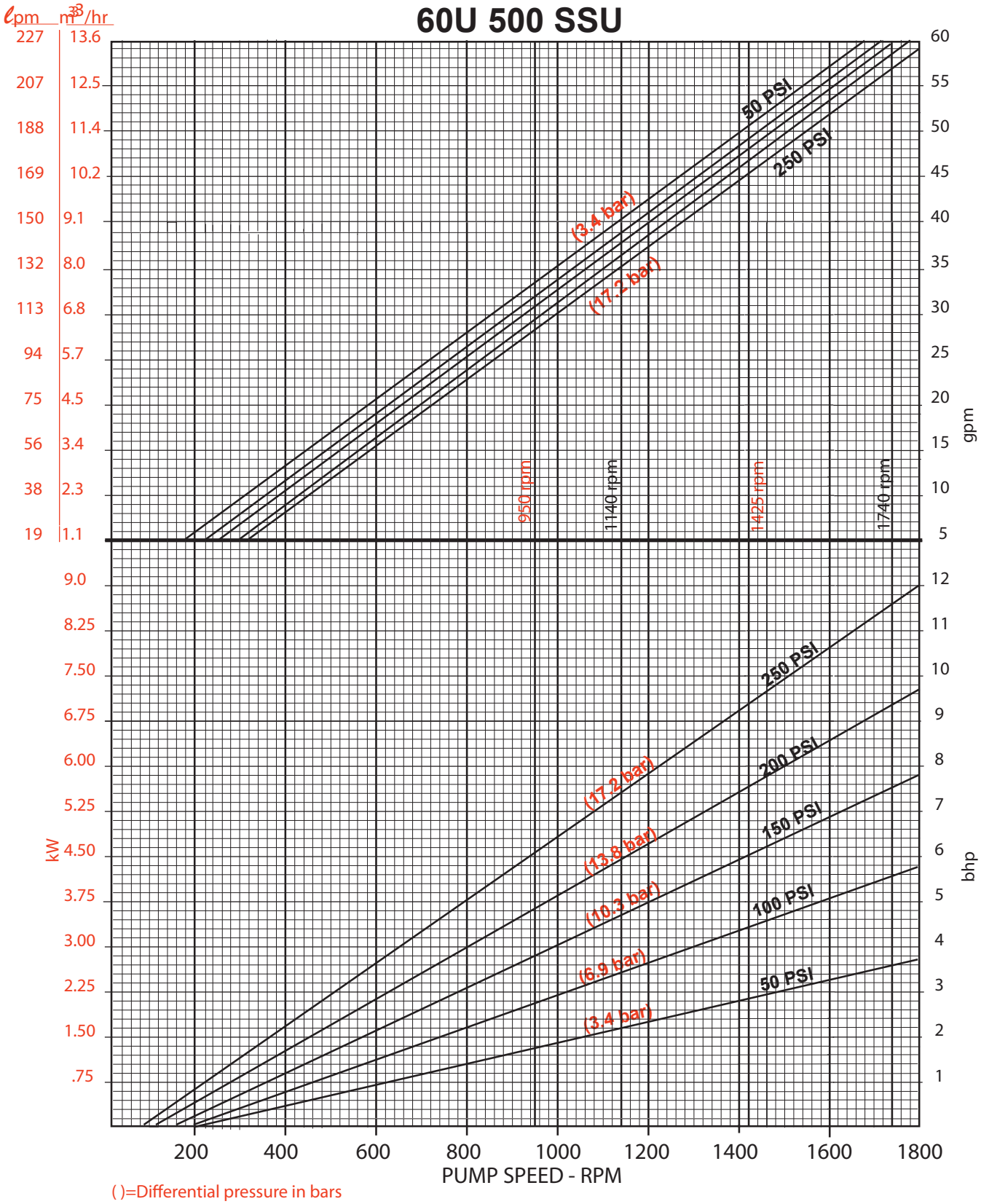
60U 150 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

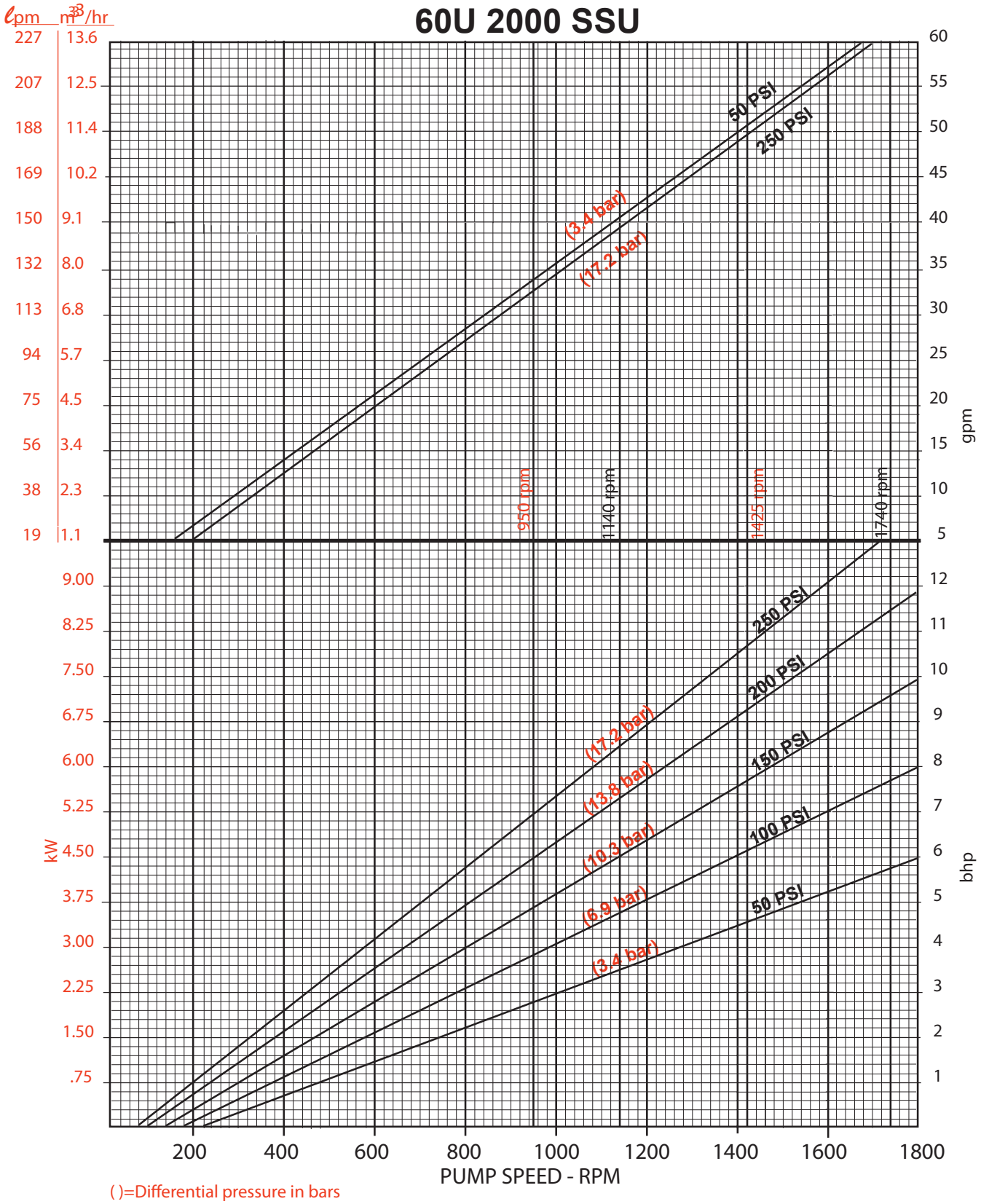
60U 500 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

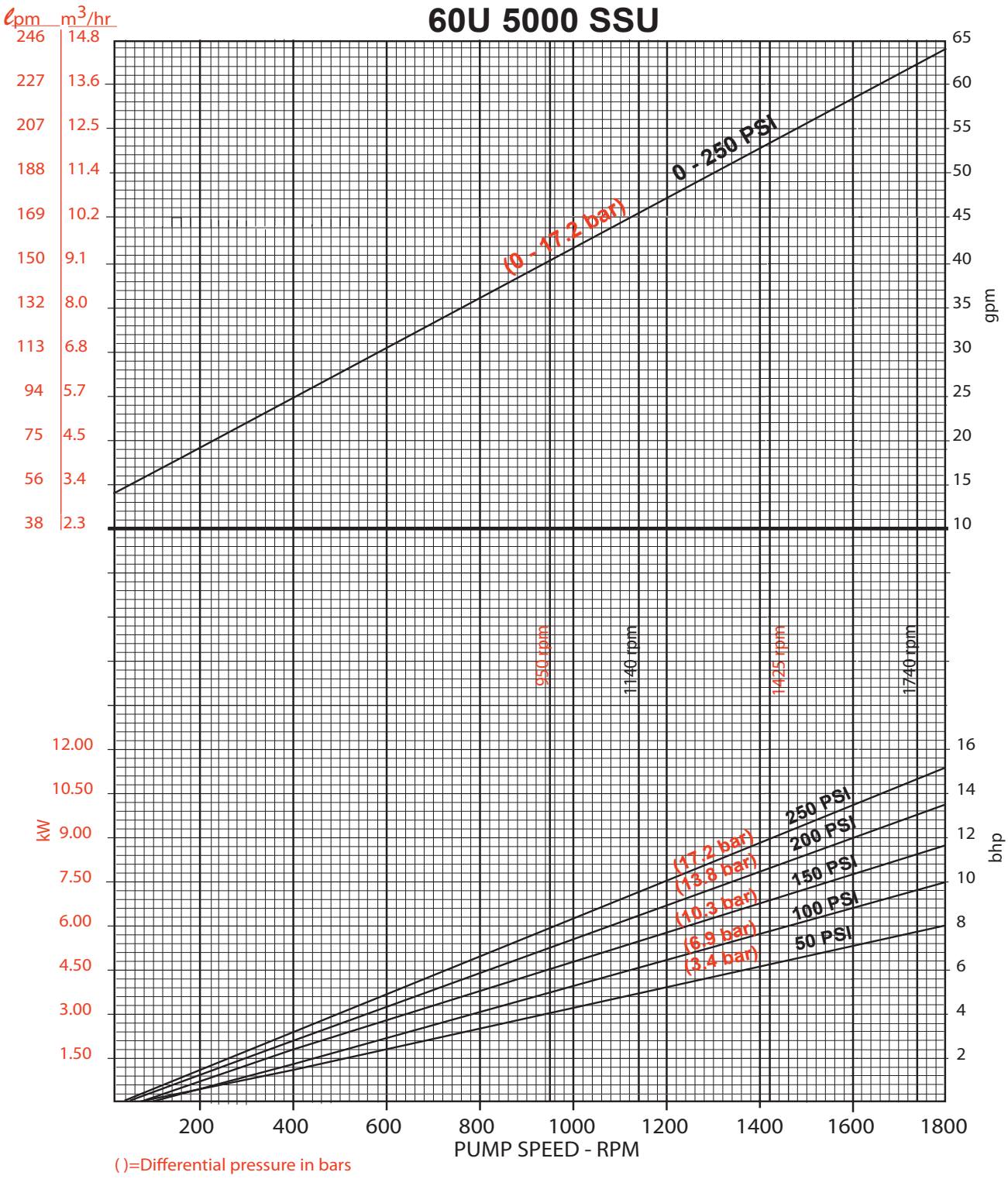
60U 2000 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

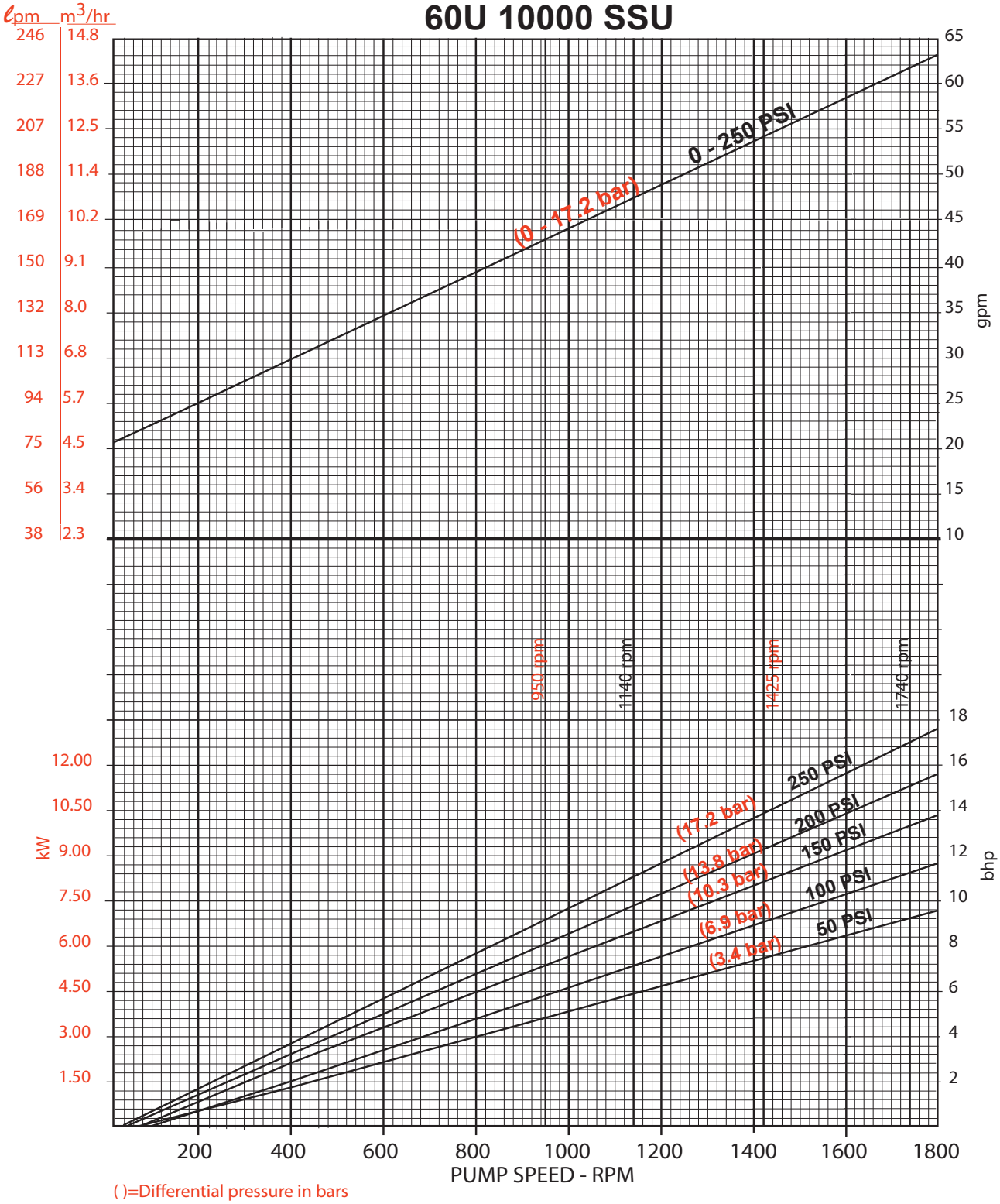
60U 5000 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

60U 10000 SSU



( )=Differential pressure in bars

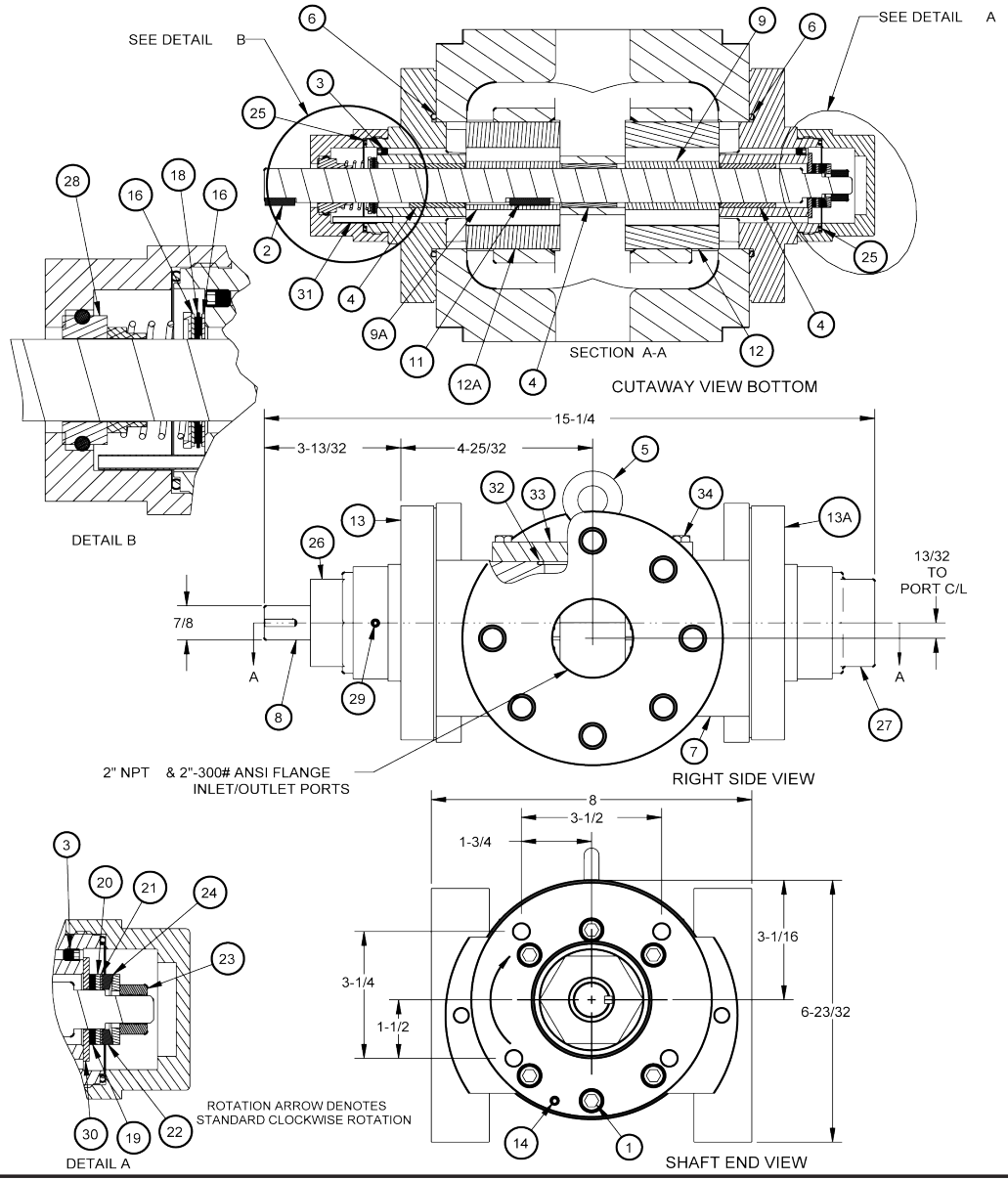
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

70U - 70 GPM
Double Pump w/o Relief Valve

DOUBLE PUMP W/OUT RELIEF VALVE-70 GPM

Item	Part No.	Description	Qty.
1	H90SC.8	Screw, Cover	12
2	F18C75	Drive Key 3/16 Sq.X3/4 Lg	1
3	E49E	Set Screw, Vent	2
4	H11F	Bearing	3
5	EYB1	Eye Bolt	1
6	H28E	O-Ring, Cover	2
7	D403A4	Case	1
8	RSK004	Shaft & Pinion Assembly	1
9	D4015C1	Pinion	1
9A	D3015C9	Pinion, Keyed	1
10	D4014MC6	Shaft	1
11	F18C100	Key, 3/16 Sq X 1.00 Lg	1
12	D4026F1	Rotor	1
12A	D3026F1	Rotor	1
13	D3030A8	Cover	1
13A	D4030A8	Cover	1
14	F41C	Pin	2
16	H25C2	Washer	2
18	H11TB2	Thrust Bearing	1
19	F25C2	Washer	1
20	F11TB2	Bearing	1
21	F25C3	Washer	1
22	F25C5	Spherical Washer	1
23	ZA532A	Nut	1
24	F25C4	Spherical Washer	1
25	SE2137N70	O-Ring, Gland	2
26	H22SS2A	Gland	1
27	F22SM2A	Gland	1
28	H18AM	Shaft Seal	1
29	E49D	Set Screw, Gland	1
30	F25C7	Washer	1
31	F43C1	Roll Pin	1
32	SE2122N90	O-Ring, Cover Plate	4
33	D8030CP	Cover Plate	1
34	E90SC.9	Screw, Cover Plate	4



(Revised 8-1-11)

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

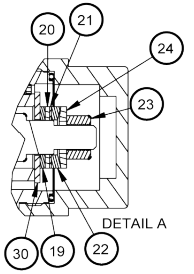
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

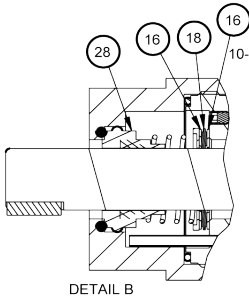
70UR - 70 GPM
Double Pump w/Relief Valve

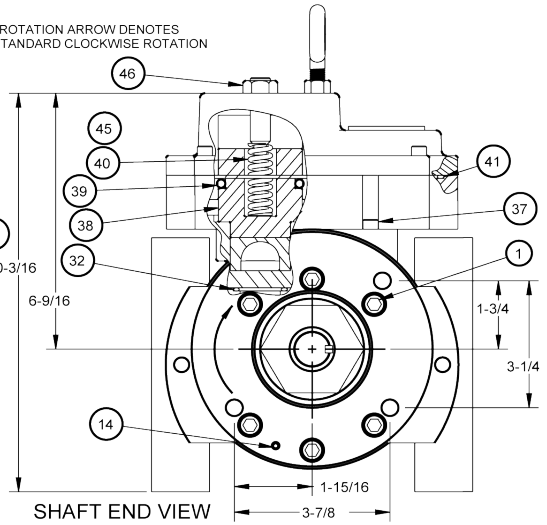
DOUBLE PUMP WITH RELIEF VALVE-70 GPM

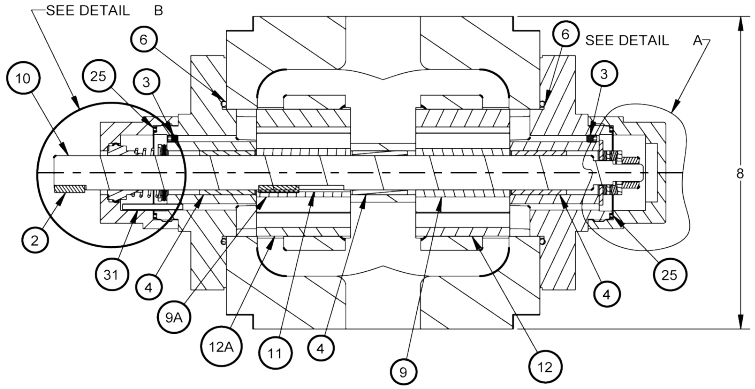
Item	Part No.	Description	Qty.
1	H90SC.8	Screw, Cover	12
2	F18C75	Drive Key 3/16 SqX3/4 Lg	1
3	E49E	Set Screw, Vent	2
4	H11F	Bearing	3
5	EYB1	Eye Bolt	1
6	H28E	O-Ring, Cover	2
7	D403A4	Case	1
8	RSK004	Shaft & Pinion Assembly	1
9	D4015C1	Pinion	1
9A	D3015C9	Pinion, Keyed	1
10	D4014MC6	Shaft	1
11	F18C100	Key, 3/16 Sq X 1.00 Lg	1
12	D4026F1	Rotor	1
12A	D3026F1	Rotor	1
13	D3030A8	Cover	1
13A	D4030A8	Cover	1
14	F41C	Pin	2
16	H25C2	Washer	2
18	H11TB2	Thrust Bearing	1
19	F25C2	Washer	1
20	F11TB2	Thrust Bearing	1
21	F25C3	Washer	1

Item	Part No.	Description	Qty.
22	F25C5	Spherical Washer	1
23	ZA532A	Nut	1
24	F25C4	Spherical Washer	1
25	SE2137N70	O-Ring, Gland	2
26	H22SS2A	Gland	1
27	F22SM2A	Gland	1
28	H18AM	Shaft Seal	1
29	E49D	Set Screw, Gland	1
30	F25C7	Washer	1
31	F43C1	Roll Pin	1
32	SE2122N90	O-Ring, Valve	4
35	RVB03	Valve Body	1
37	E90SC2.0	Valve	4
38	RVP04	Valve Piston	1
39	SE2327N70	O-Ring, Valve Piston	1
40	H52E	Spring	1
41	SE2160N70	O-Ring, Valve Cover	1
42	RVC30	Valve Cover	1
43	E90SC1.0	Screw, Valve Cover	4
44	H65C	Pipe Plug	1
45	F55C	Adjustment Screw	1
46	E64C	Lock Nut	1

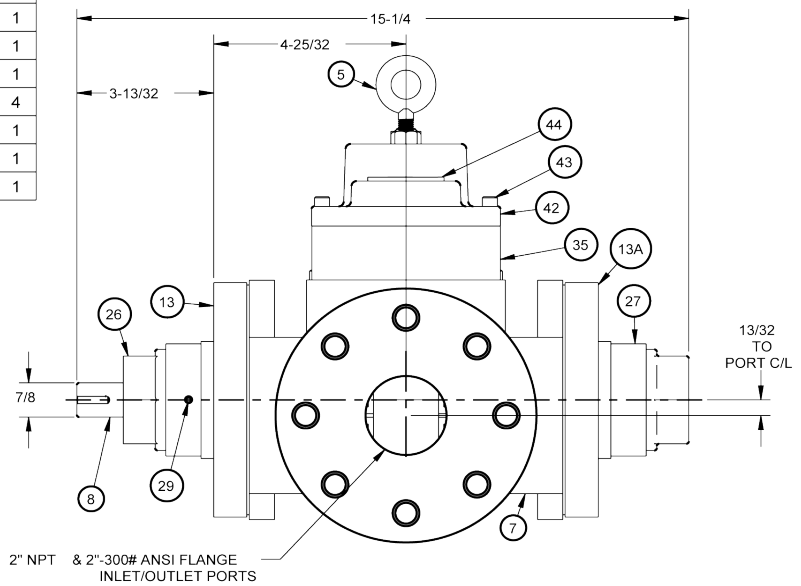








CUTAWAY VIEW BOTTOM



RIGHT SIDE VIEW

(Revised 8-1-11)

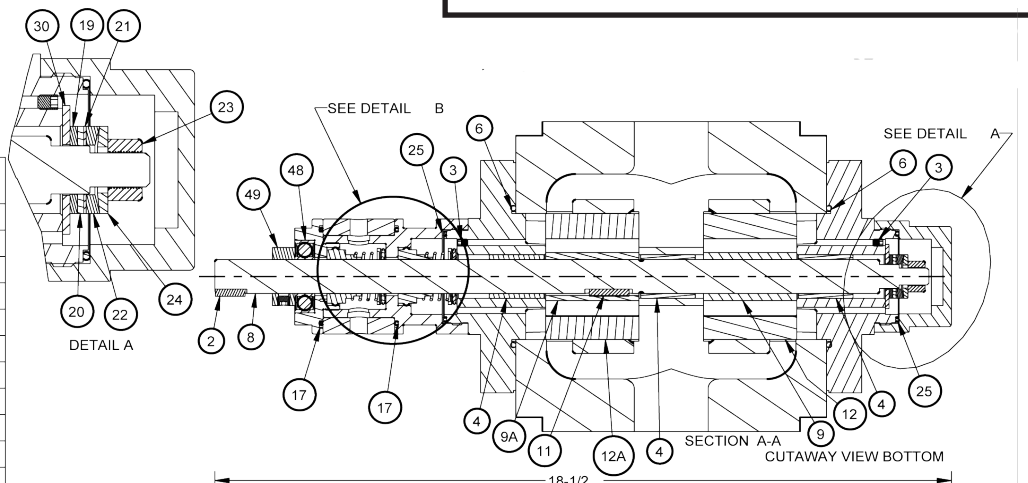
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

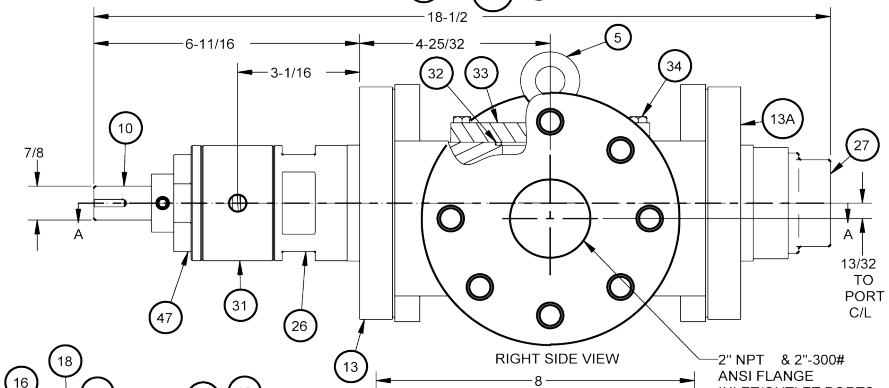
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

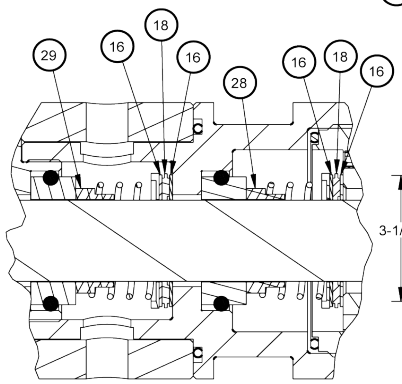
BS70U - 70 GPM
Barrier Seal Double Pump w/o Relief Valve

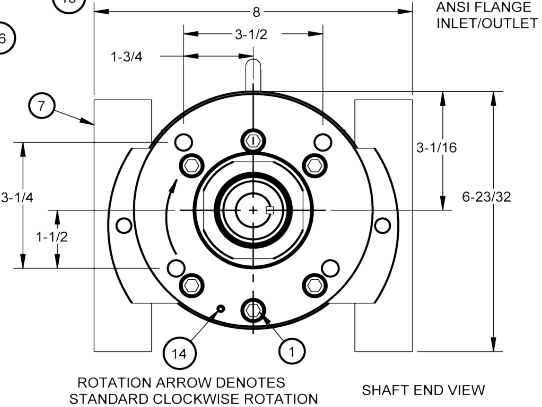
BARRIER SEAL DOUBLE PUMP W/OUT RELIEF VALVE-70 GPM

Item	Part No.	Description	Qty.
1	H90SC.8	Screw, Cover	12
2	F18C75	Drive Key, 3/16 Sq X 3/4 Lg	1
3	E49E	Set Screw, Vent	2
4	H11F	Bearing	3
5	EYB1	Eye Bolt	1
6	H28E	O-Ring, Cover	2
7	D403A4	Case	1
8	RSK009	Shaft & Pinion Assembly	1
9	D4015C1	Pinion	1
9A	D3015C9	Pinion, Keyed	1
10	D4014MC9	Shaft	1
11	F18C100	Key, 3/16 Sq X 1.00 Lg	1
12	D4026F1	Rotor	1
12A	D3026F1	Rotor	1
13	D3030A8	Cover	1
13A	D4030A8	Cover	1
14	F41C	Pin	2
16	H25C2	Washer	4
17	SE3932N70	O-Ring, Sleeve	2
18	H11TB2	Thrust Bearing	2
19	F25C2	Washer	1
20	F11TB2	Thrust Bearing	1
21	F25C3	Washer	1
22	F25C5	Spherical Washer	1
23	ZA532A	Nut	1
24	F25C4	Spherical Washer	1
25	SE2137N70	O-Ring, Gland	2
26	H22DD2F	Gland	1
27	F22SM2A	Gland	1
28	H18AM	Shaft Seal, Primary	1
29	H18AM	Shaft Seal, Secondary	1
30	F25C7	Washer	1
31	H33RDS	Sleeve	1
32	SE2122N90	O-Ring, Cover Plate	4
33	D8030CP	Cover Plate	1
34	E90SC.9	Screw, Cover Plate	4
47	H33SS3F	Gland	1
48	H11TB	Roller Bearing	1
49	H19A	Locking Collar	1









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HAIGHT® PUMPS
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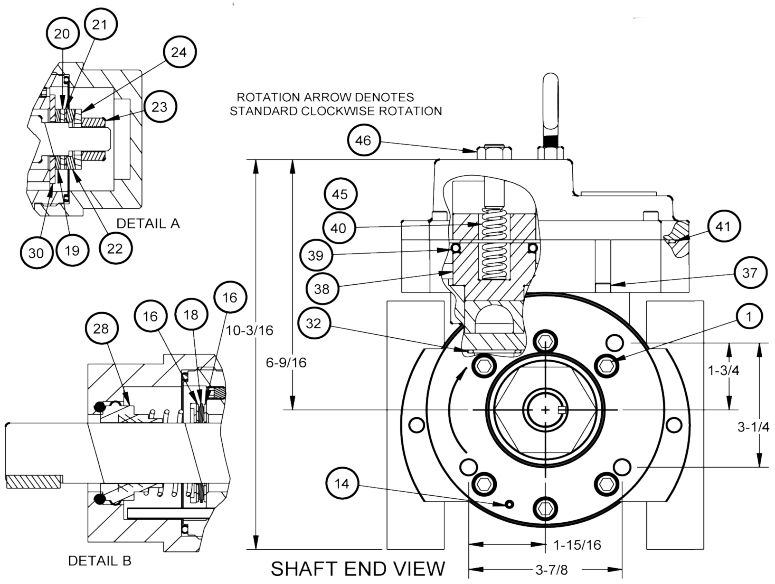
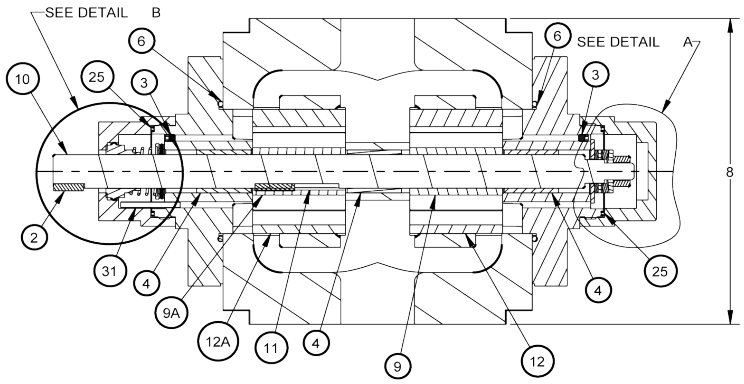
BS70UR- 70 GPM
Barrier Seal Double Pump w/Relief Valve

DOUBLE PUMP WITH RELIEF VALVE-70 GPM

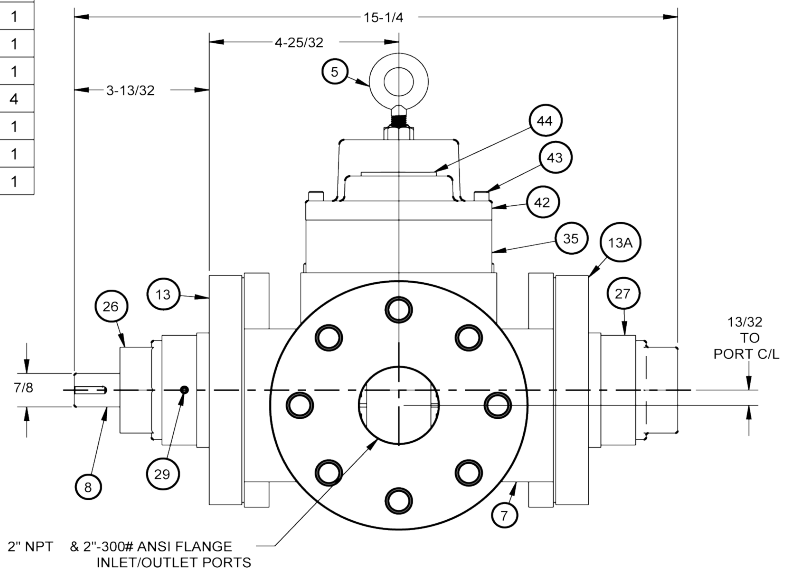
Item	Part No.	Description	Qty.
1	H90SC.8	Screw, Cover	12
2	F18C75	Drive Key 3/16 SqX3/4 Lg	1
3	E49E	Set Screw, Vent	2
4	H11F	Bearing	3
5	EYB1	Eye Bolt	1
6	H28E	O-Ring, Cover	2
7	D403A4	Case	1
8	RSK004	Shaft & Pinion Assembly	1
9	D4015C1	Pinion	1
9A	D3015C9	Pinion, Keyed	1
10	D4014MC6	Shaft	1
11	F18C100	Key, 3/16 Sq X 1.00 Lg	1
12	D4026F1	Rotor	1
12A	D3026F1	Rotor	1
13	D3030A8	Cover	1
13A	D4030A8	Cover	1
14	F41C	Pin	2
16	H25C2	Washer	2
18	H11TB2	Thrust Bearing	1
19	F25C2	Washer	1
20	F11TB2	Thrust Bearing	1
21	F25C3	Washer	1

Item	Part No.	Description	Qty.
22	F25C5	Spherical Washer	1
23	ZA532A	Nut	1
24	F25C4	Spherical Washer	1
25	SE2137N70	O-Ring, Gland	2
26	H22SS2A	Gland	1
27	F22SM2A	Gland	1
28	H18AM	Shaft Seal	1
29	E49D	Set Screw, Gland	1
30	F25C7	Washer	1
31	F43C1	Roll Pin	1
32	SE2122N90	O-Ring, Valve	4
35	RVB03	Valve Body	1
37	E90SC2.0	Valve	4
38	RVP04	Valve Piston	1
39	SE2327N70	O-Ring, Valve Piston	1
40	H52E	Spring	1
41	SE2160N70	O-Ring, Valve Cover	1
42	RVC30	Valve Cover	1
43	E90SC1.0	Screw, Valve Cover	4
44	H65C	Pipe Plug	1
45	F55C	Adjustment Screw	1
46	E64C	Lock Nut	1





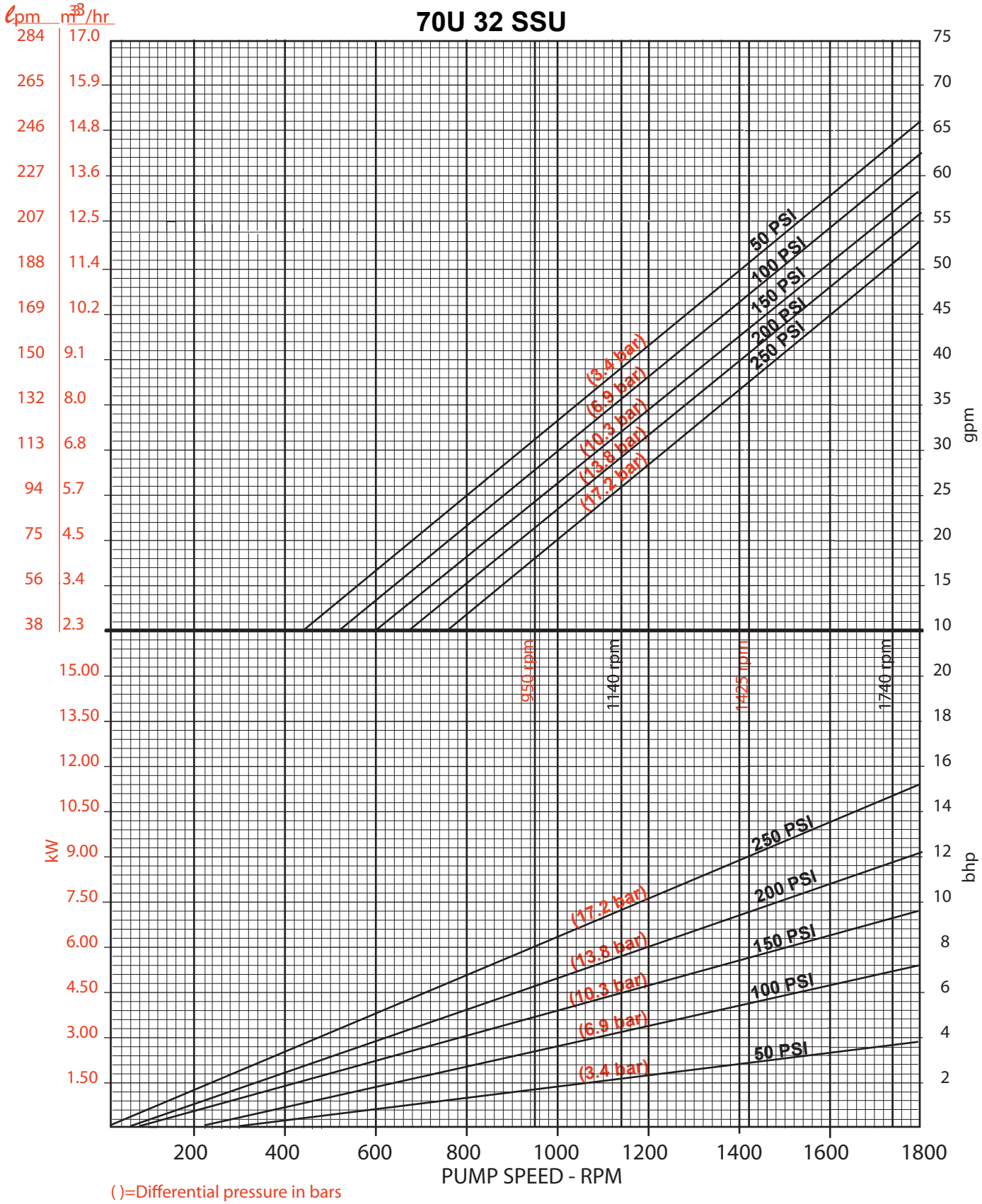
CUTAWAY VIEW BOTTOM



RIGHT SIDE VIEW

(Revised 8-1-11)

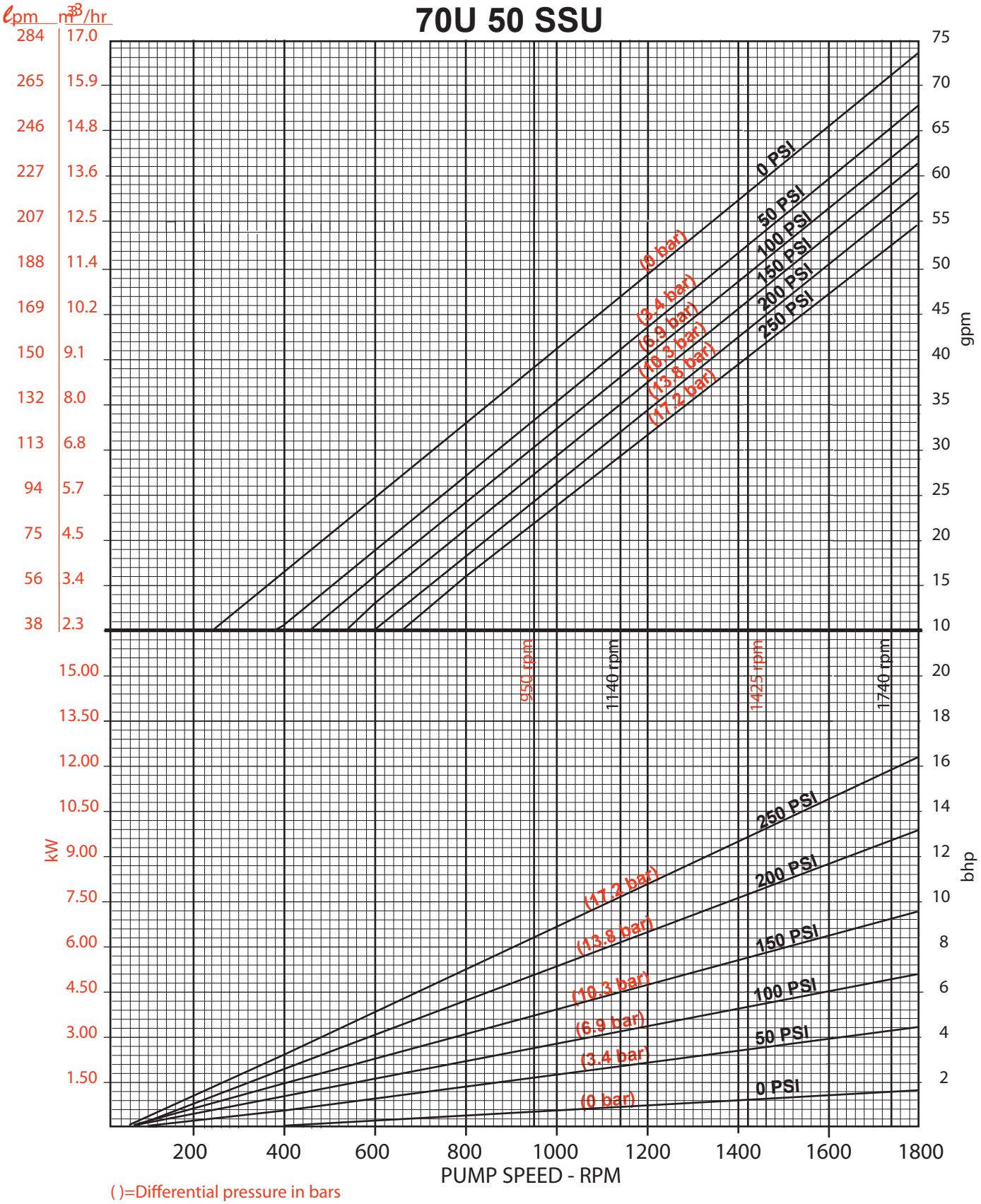
70U 32 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

70U 50 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
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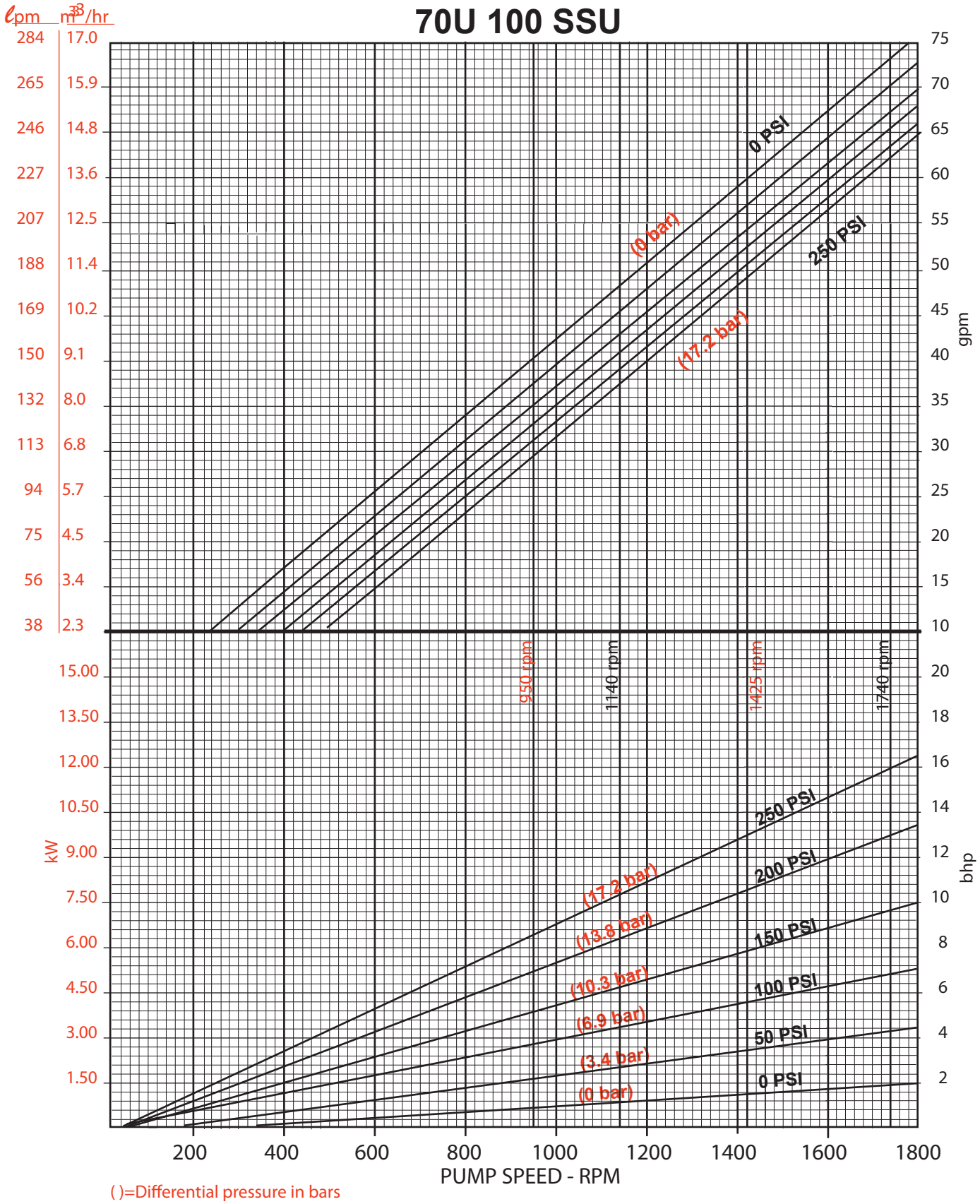
70U 100 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
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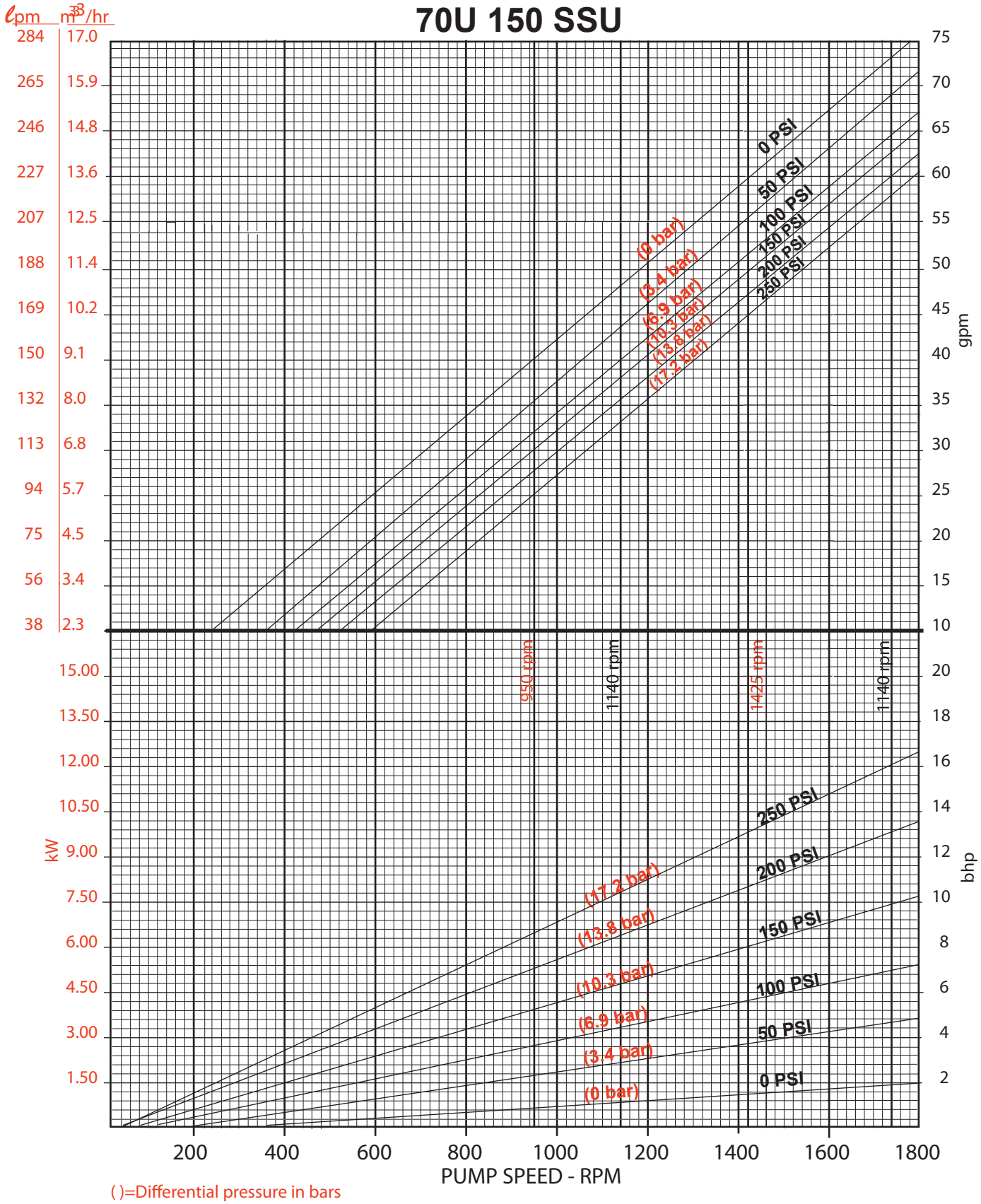
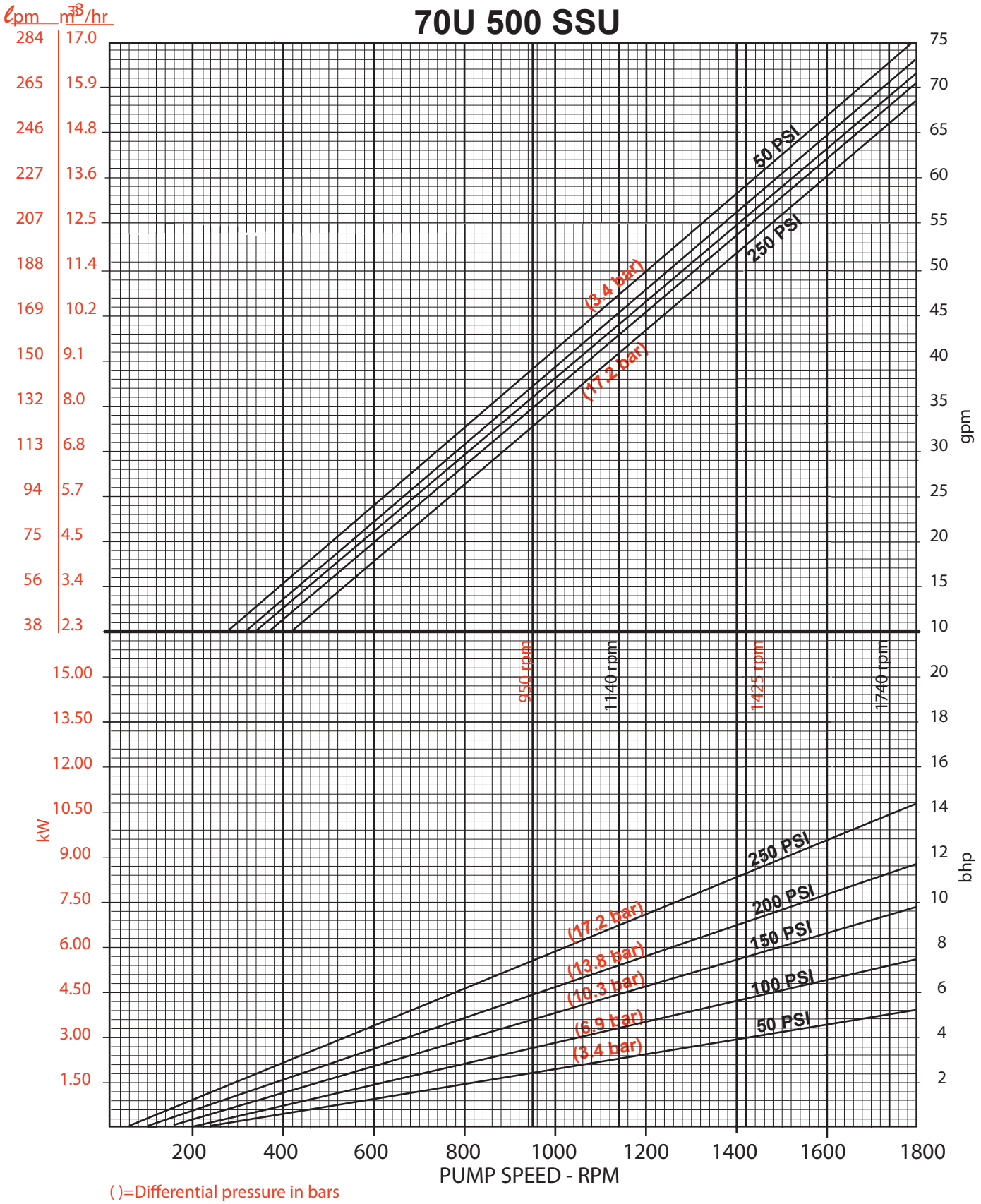
70U 150 SSU



( )=Differential pressure in bars

70U 500 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
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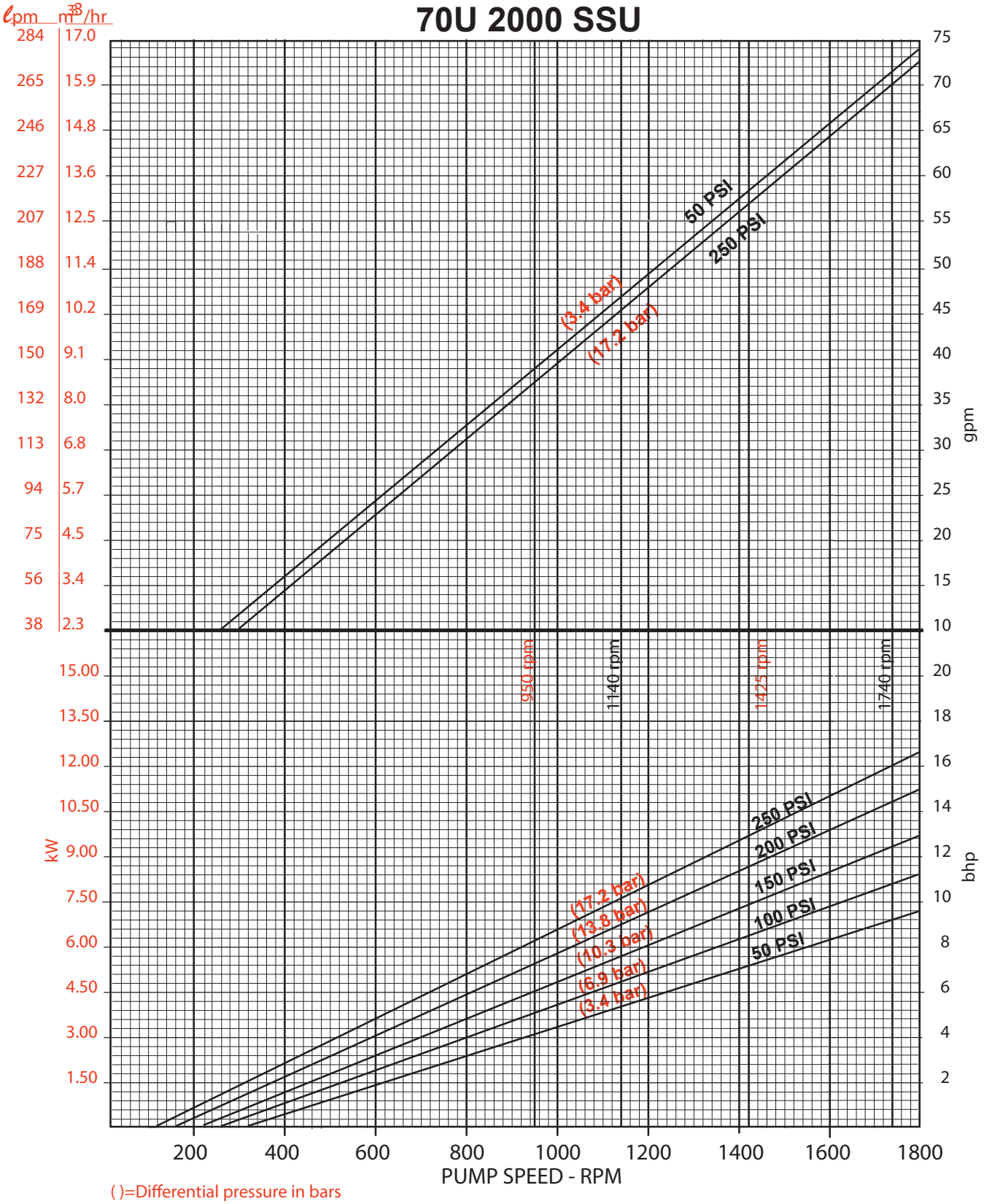
70U 2000 SSU



( )=Differential pressure in bars

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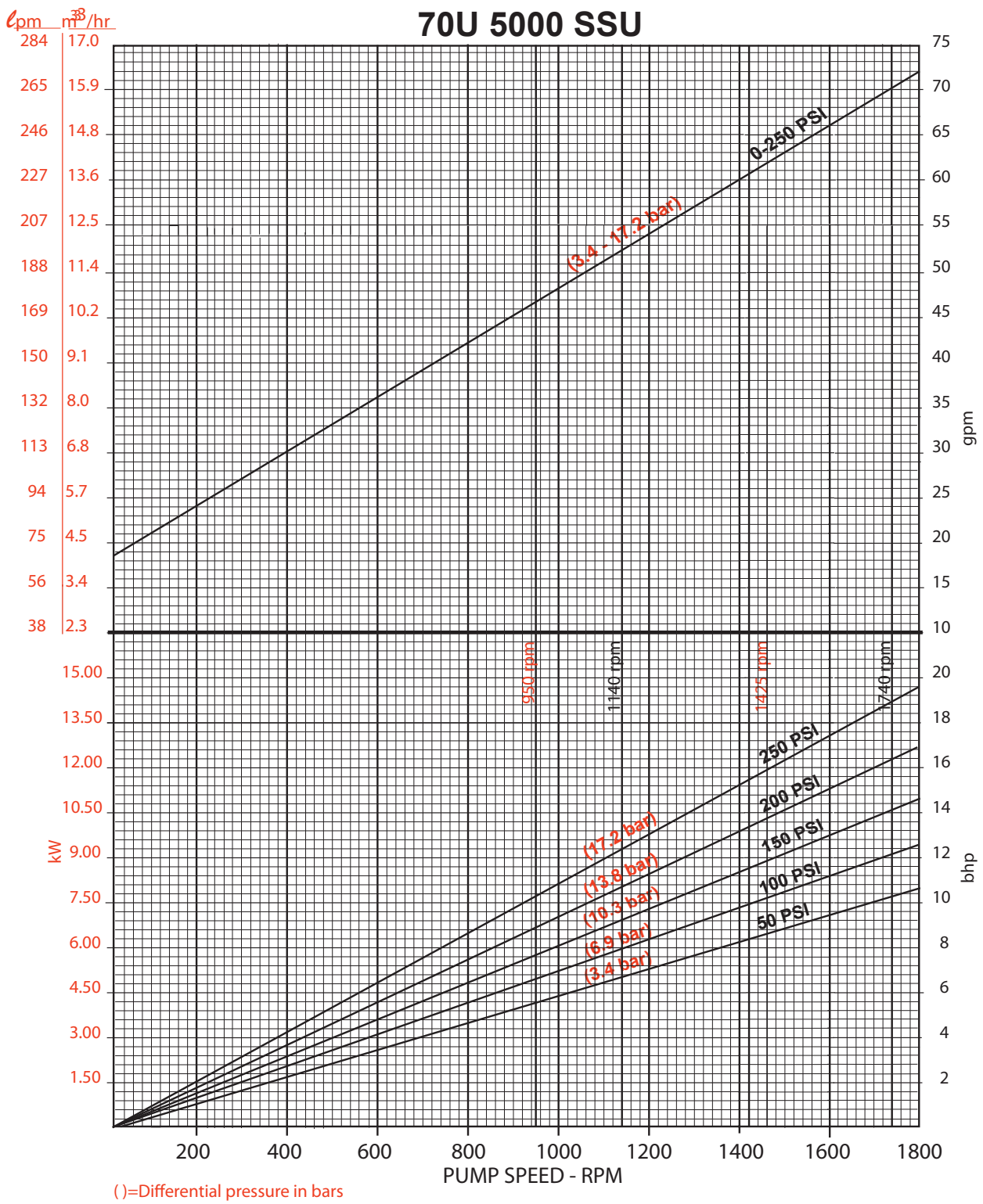

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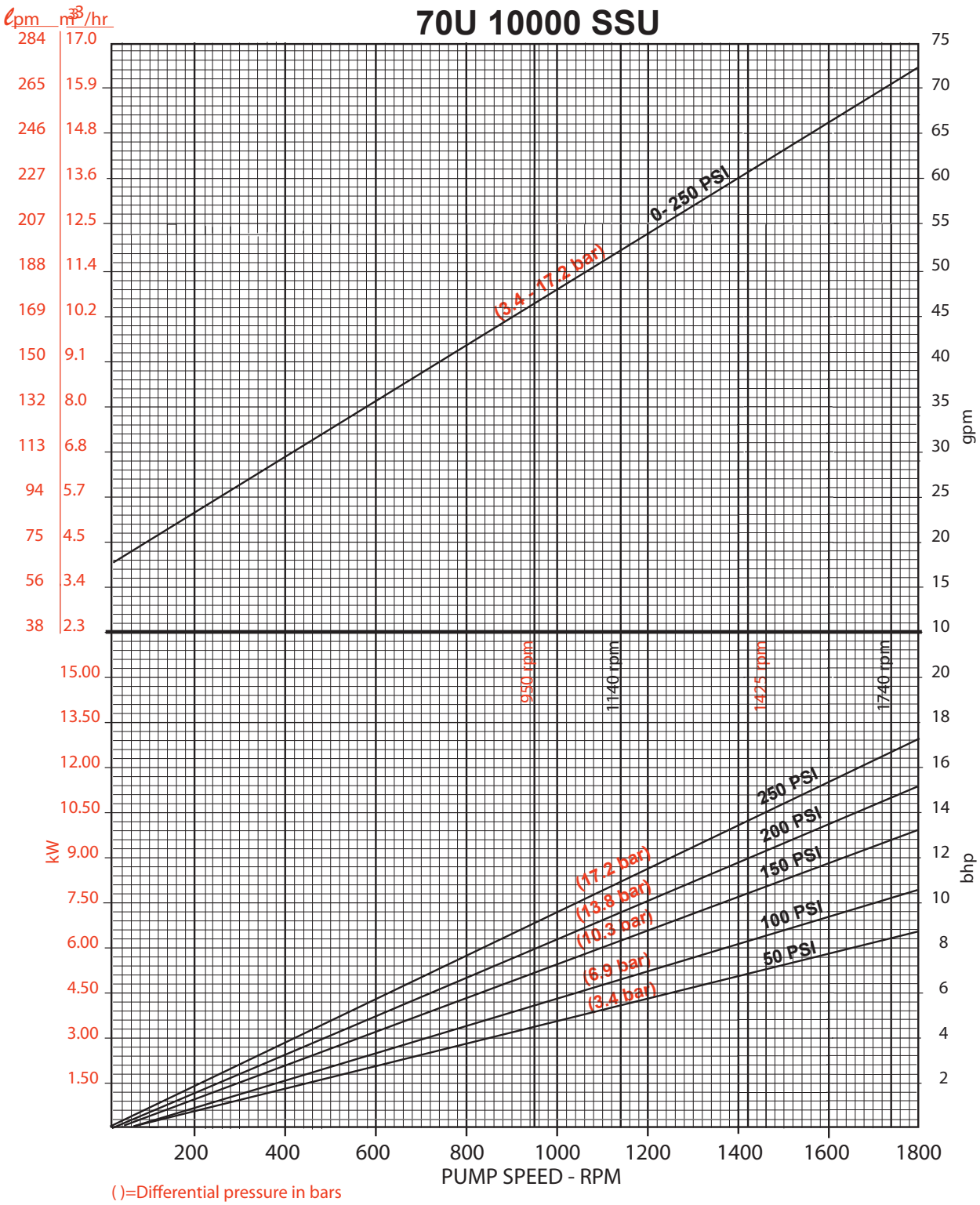

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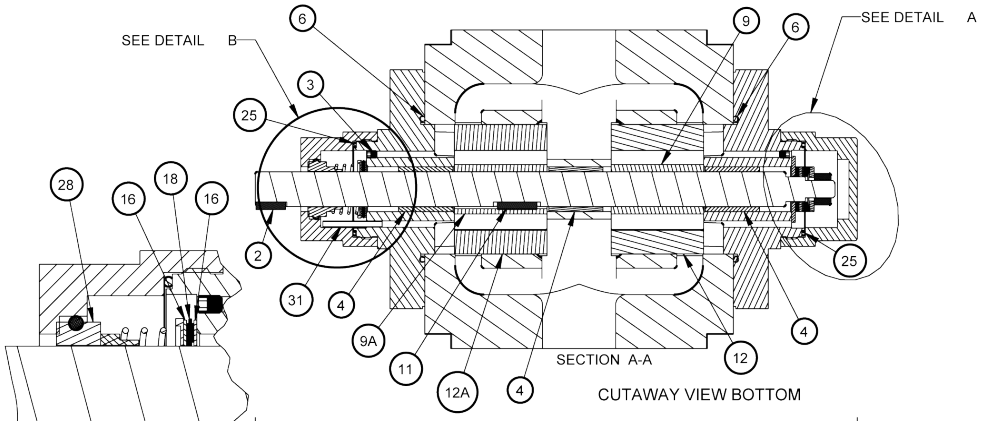
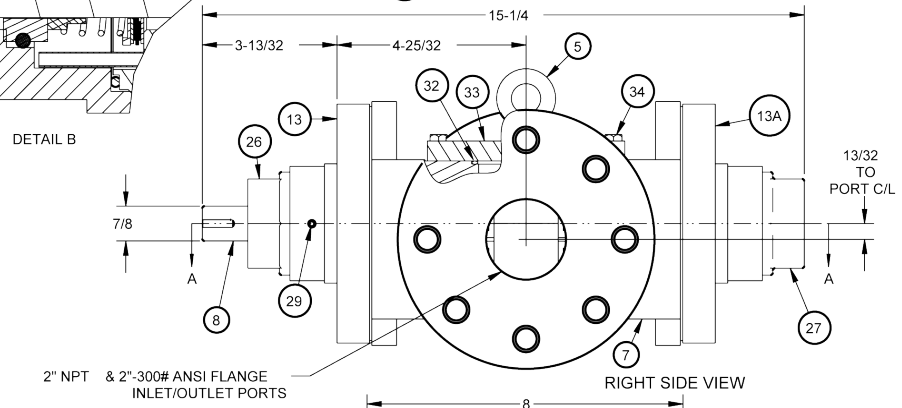
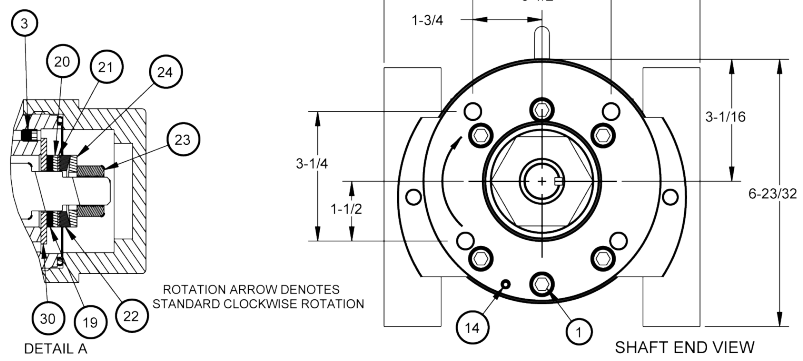
80U - 80 GPM
Double Pump w/o Relief Valve

DOUBLE PUMP W/OUT RELIEF VALVE-80 GPM

Item	Part No.	Description	Qty.
1	H90SC.8	Screw, Cover	12
2	F18C75	Drive Key 3/16 Sq.X3/4 Lg	1
3	E49E	Set Screw, Vent	2
4	H11F	Bearing	3
5	EYB1	Eye Bolt	1
6	H28E	O-Ring, Cover	2
7	D403A4	Case	1
8	RSK005	Shaft & Pinion Assembly	1
9	D4015C1	Pinion	1
9A	D4015C9	Pinion, Keyed	1
10	D4014MC6	Shaft	1
11	F18C100	Key, 3/16 Sq X 1.00 Lg	1
12	D4026F1	Rotor	1
12A	D4026F1	Rotor	1
13	D4030A8	Cover	1
13A	D4030A8	Cover	1
14	F41C	Pin	2
16	H25C2	Washer	2
18	H11TB2	Thrust Bearing	1
19	F25C2	Washer	1
20	F11TB2	Bearing	1
21	F25C3	Washer	1
22	F25C5	Spherical Washer	1
23	ZA532A	Nut	1
24	F25C4	Spherical Washer	1
25	SE2137N70	O-Ring, Gland	2
26	H22SS2A	Gland	1
27	F22SM2A	Gland	1
28	H18AM	Shaft Seal	1
29	E49D	Set Screw, Gland	1
30	F25C7	Washer	1
31	F43C1	Roll Pin	1
32	SE2122N90	O-Ring, Cover Plate	4
33	D8030CP	Cover Plate	1
34	E90SC.9	Screw, Cover Plate	4







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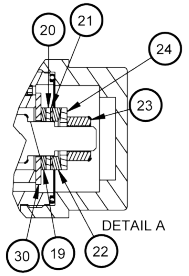
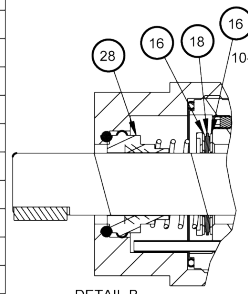
80UR - 80 GPM
Double Pump w/Relief Valve

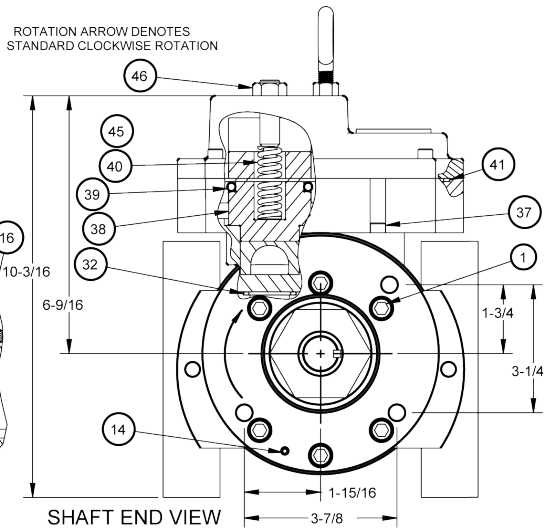
DOUBLE PUMP WITH RELIEF VALVE-80 GPM

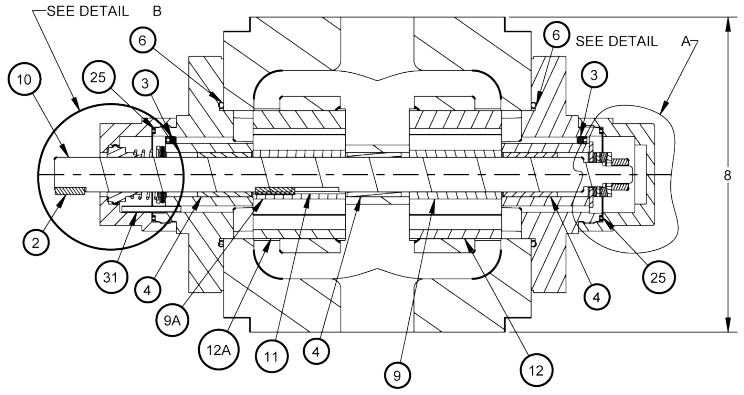
Item	Part No.	Description	Qty.
1	H90SC.8	Screw, Cover	12
2	F18C75	Drive Key 3/16 SqX3/4 Lg	1
3	E49E	Set Screw, Vent	2
4	H11F	Bearing	3
5	EYB1	Eye Bolt	1
6	H28E	O-Ring, Cover	2
7	D403A4	Case	1
8	RSK005	Shaft & Pinion Assembly	1
9	D4015C1	Pinion	1
9A	D4015C9	Pinion, Keyed	1
10	D4014MC6	Shaft	1
11	F18C100	Key, 3/16 Sq X 1.00 Lg	1
12	D4026F1	Rotor	1
12A	D4026F1	Rotor	1
13	D4030A8	Cover	1
13A	D4030A8	Cover	1
14	F41C	Pin	2
16	H25C2	Washer	2
18	H11TB2	Thrust Bearing	1
19	F25C2	Washer	1
20	F11TB2	Thrust Bearing	1
21	F25C3	Washer	1

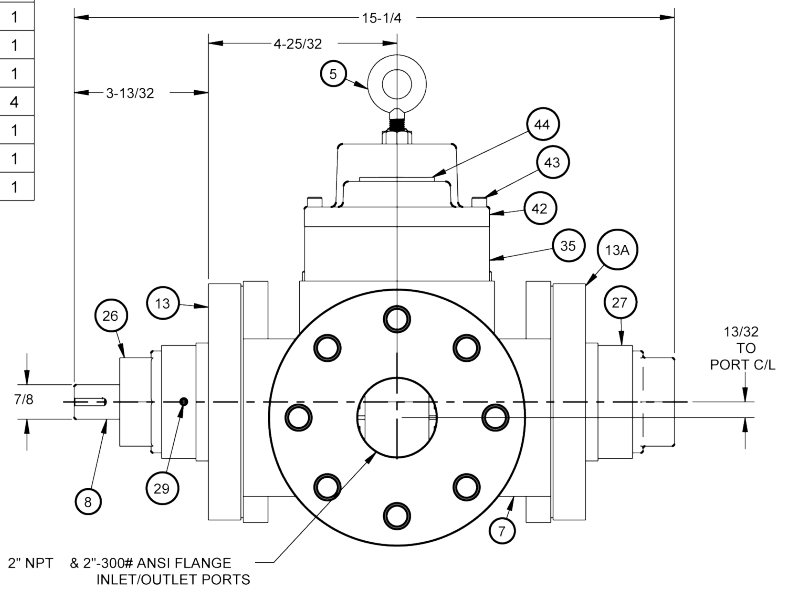
Item	Part No.	Description	Qty.
22	F25C5	Spherical Washer	1
23	ZA532A	Nut	1
24	F25C4	Spherical Washer	1
25	SE2137N70	O-Ring, Gland	2
26	H22SS2A	Gland	1
27	F22SM2A	Gland	1
28	H18AM	Shaft Seal	1
29	E49D	Set Screw, Gland	1
30	F25C7	Washer	1
31	F43C1	Roll Pin	1
32	SE2122N90	O-Ring, Valve	4
35	RVB03	Valve Body	1
37	E90SC2.0	Valve	4
38	RVP04	Valve Piston	1
39	SE2327N70	O-Ring, Valve Piston	1
40	H52E	Spring	1
41	SE2160N70	O-Ring, Valve Cover	1
42	RVC30	Valve Cover	1
43	E90SC1.0	Screw, Valve Cover	4
44	H65C	Pipe Plug	1
45	F55C	Adjustment Screw	1
46	E64C	Lock Nut	1











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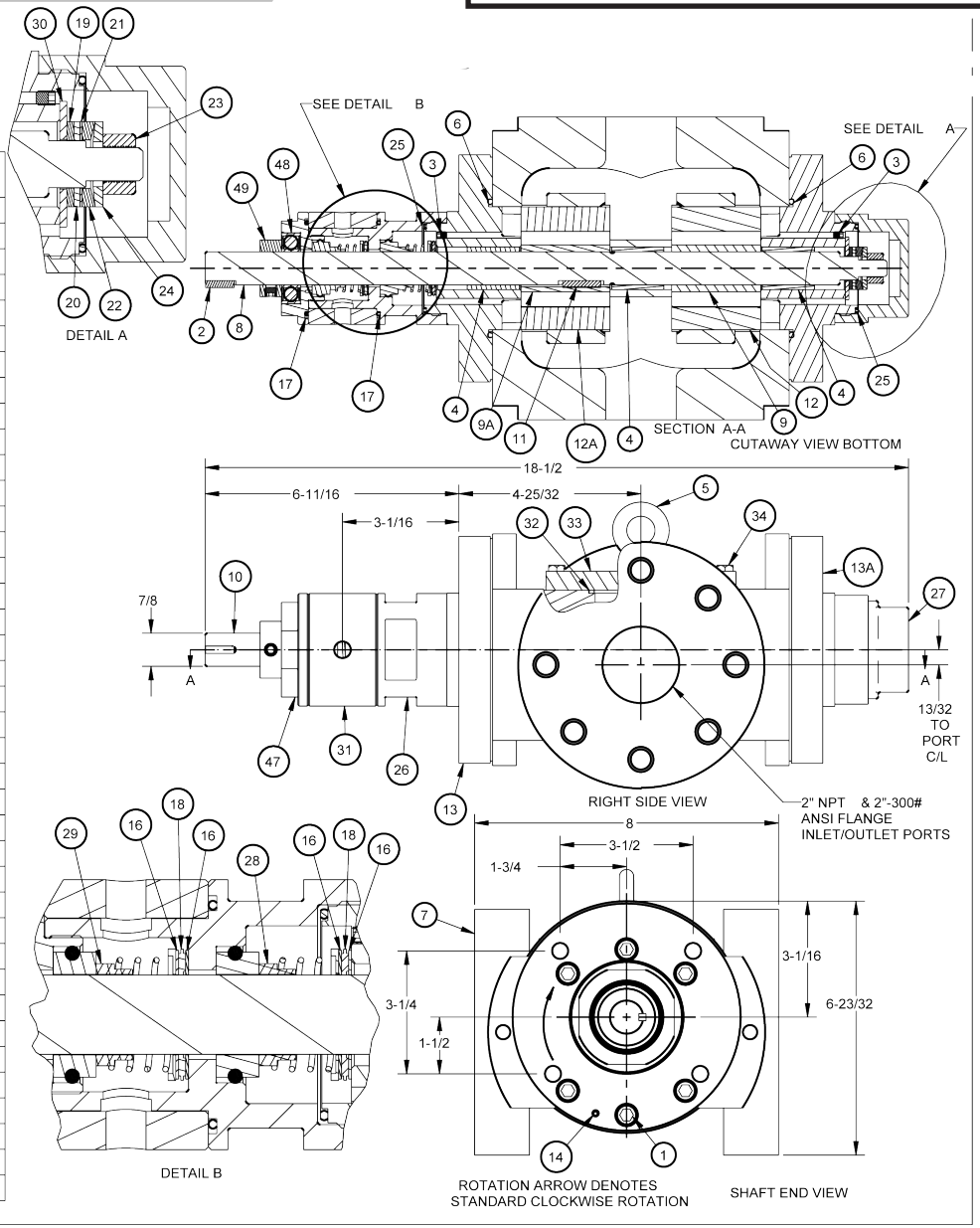
BS80U - 80 GPM
Barrier Seal Double Pump w/o Relief Valve

BARRIER SEAL DOUBLE PUMP W/OUT RELIEF VALVE-80 GPM

Item	Part No.	Description	Qty.
1	H90SC.8	Screw, Cover	12
2	F18C75	Drive Key, 3/16 Sq X 3/4 Lg	1
3	E49E	Set Screw, Vent	2
4	H11F	Bearing	3
5	EYB1	Eye Bolt	1
6	H28E	O-Ring, Cover	2
7	D403A4	Case	1
8	RSK010	Shaft & Pinion Assembly	1
9	D4015C1	Pinion	1
9A	D4015C9	Pinion, Keyed	1
10	D4014MC9	Shaft	1
11	F18C100	Key, 3/16 Sq X 1.00 Lg	1
12	D4026F1	Rotor	1
12A	D4026F1	Rotor	1
13	D4030A8	Cover	1
13A	D4030A8	Cover	1
14	F41C	Pin	2
16	H25C2	Washer	4
17	SE3932N70	O-Ring, Sleeve	2
18	H11TB2	Thrust Bearing	2
19	F25C2	Washer	1
20	F11TB2	Thrust Bearing	1
21	F25C3	Washer	1
22	F25C5	Spherical Washer	1
23	ZA532A	Nut	1
24	F25C4	Spherical Washer	1
25	SE2137N70	O-Ring, Gland	2
26	H22DD2F	Gland	1
27	F22SM2A	Gland	1
28	H18AM	Shaft Seal, Primary	1
29	H18AM	Shaft Seal, Secondary	1
30	F25C7	Washer	1
31	H33RDS	Sleeve	1
32	SE2122N90	O-Ring, Cover Plate	4
33	D8030CP	Cover Plate	1
34	E90SC.9	Screw, Cover Plate	4
47	H33SS3F	Gland	1
48	H11TB	Roller Bearing	1
49	H19A	Locking Collar	1



(Revised 8-1-11)

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

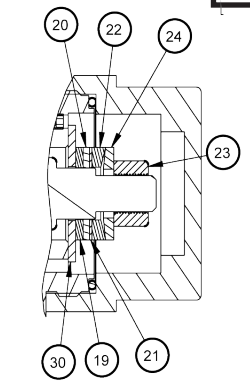
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

BS80UR- 80 GPM
Barrier Seal Double Pump w/Relief Valve

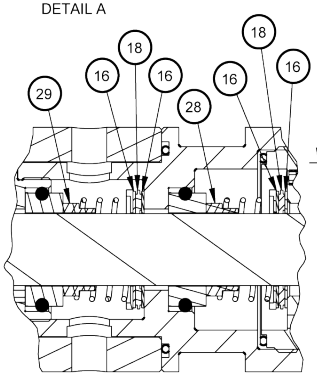
BARRIER SEAL PUMP W/RELIEF VALVE- 80 GPM

Item	Part No.	Description	Qty.
1	H90SC.8	Screw, Cover	12
2	F18C75	Drive Key, 3/16 Sq X 3/4 Lg	1
3	E49E	Set Screw, Vent	2
4	H11F	Bearing	3
5	EYB1	Eye Hook	1
6	H28E	O-Ring, Cover	2
7	D403A4	Case	1
8	RSK010	Shaft & Pinion Assembly	1
9	D4015C1	Pinion	1
9A	D4015C9	Pinion, Keyed	1
10	D4014MC9	Shaft	1
11	F18C100	Key, 3/16 Sq X 1.00 Lg	1
12	D4026F1	Rotor	1
12A	D4026F1	Rotor	1
13	D4030A8	Cover	1
13A	D4030A8	Cover	1
14	F41C	Pin	2
16	H25C2	Washer	4
17	SE3932N70	O-Ring, Sleeve	2
18	H11TB2	Thrust Bearing	2
19	F25C2	Washer	1
20	F11TB2	Bearing	1
21	F25C3	Washer	1
22	F25C5	Spherical Washer	1

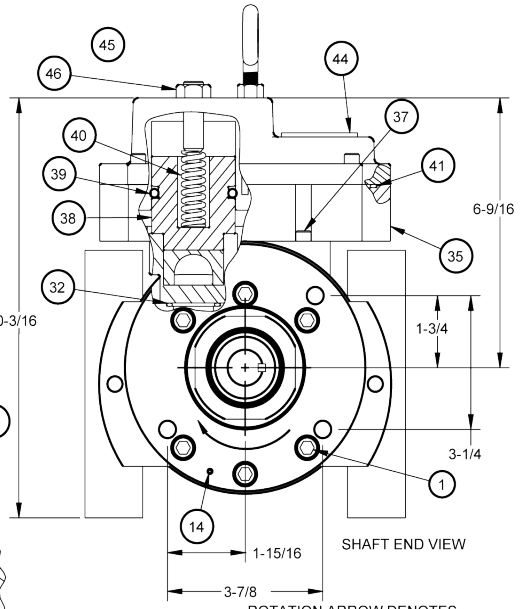
Item	Part No.	Description	Qty.
23	ZA532A	Nut	1
24	F25C4	Spherical Washer	1
25	SE2137N70	O-Ring, Gland	2
26	H22DD2F	Gland	1
27	F22SM2A	Gland	1
28	H18AM	Shaft Seal, Primary	1
29	H18AM	Shaft Seal, Secondary	1
30	F25C7	Washer	1
31	H33RDS	Sleeve	1
32	SE2122N90	O-Ring, Relief Valve	4
35	RVB03	Valve Body	1
37	E90SC2.0	Screw, Valve Body	4
38	RVP04	Valve Piston	1
39	SE2327N70	O-Ring, Valve Piston	1
40	H52E	Spring	1
41	SE2160N70	O-Ring, Valve Cover	1
42	RVC30	Valve Cover	1
43	E90SC1.0	Screw, Valve Cover	4
44	H65C	Pipe Plug	1
45	F55C	Adjustment Screw	1
46	E64C	Lock Nut	1
47	H33SS3F	Gland	1
48	H11TB	Roller Bearing	1
49	H19A	Locking Collar	1



DETAIL A

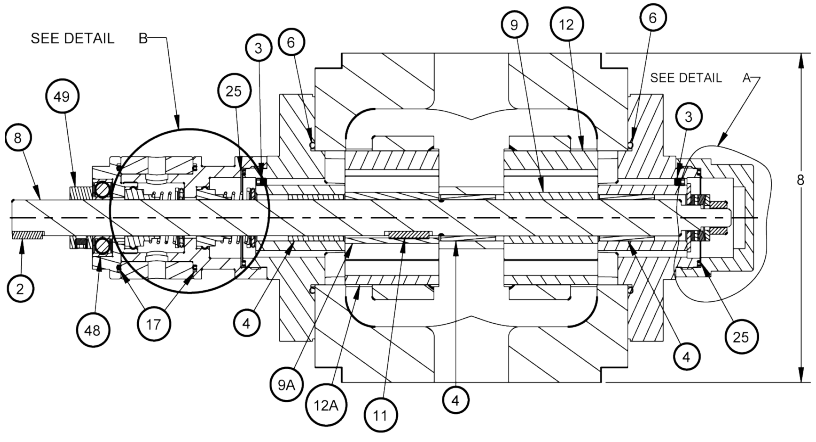


DETAIL B

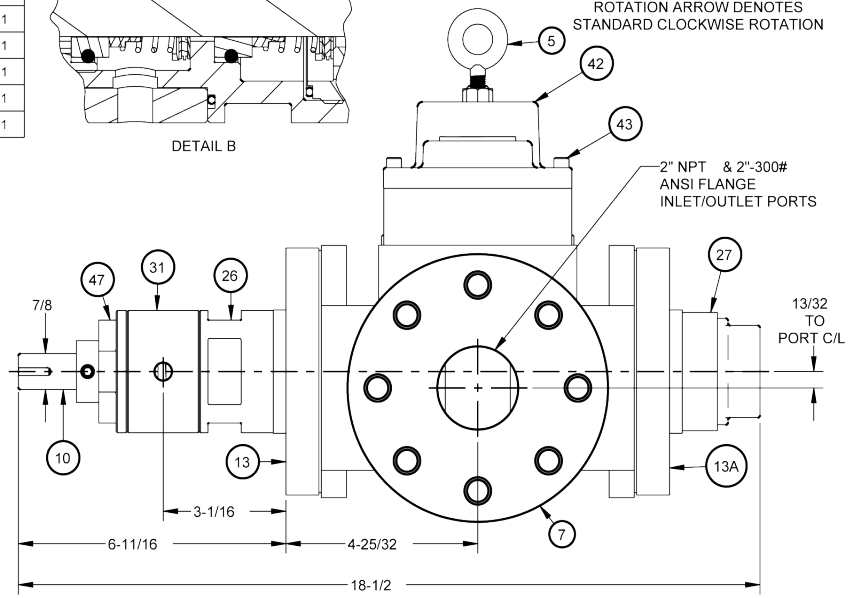


SHAFT END VIEW

ROTATION ARROW DENOTES
STANDARD CLOCKWISE ROTATION



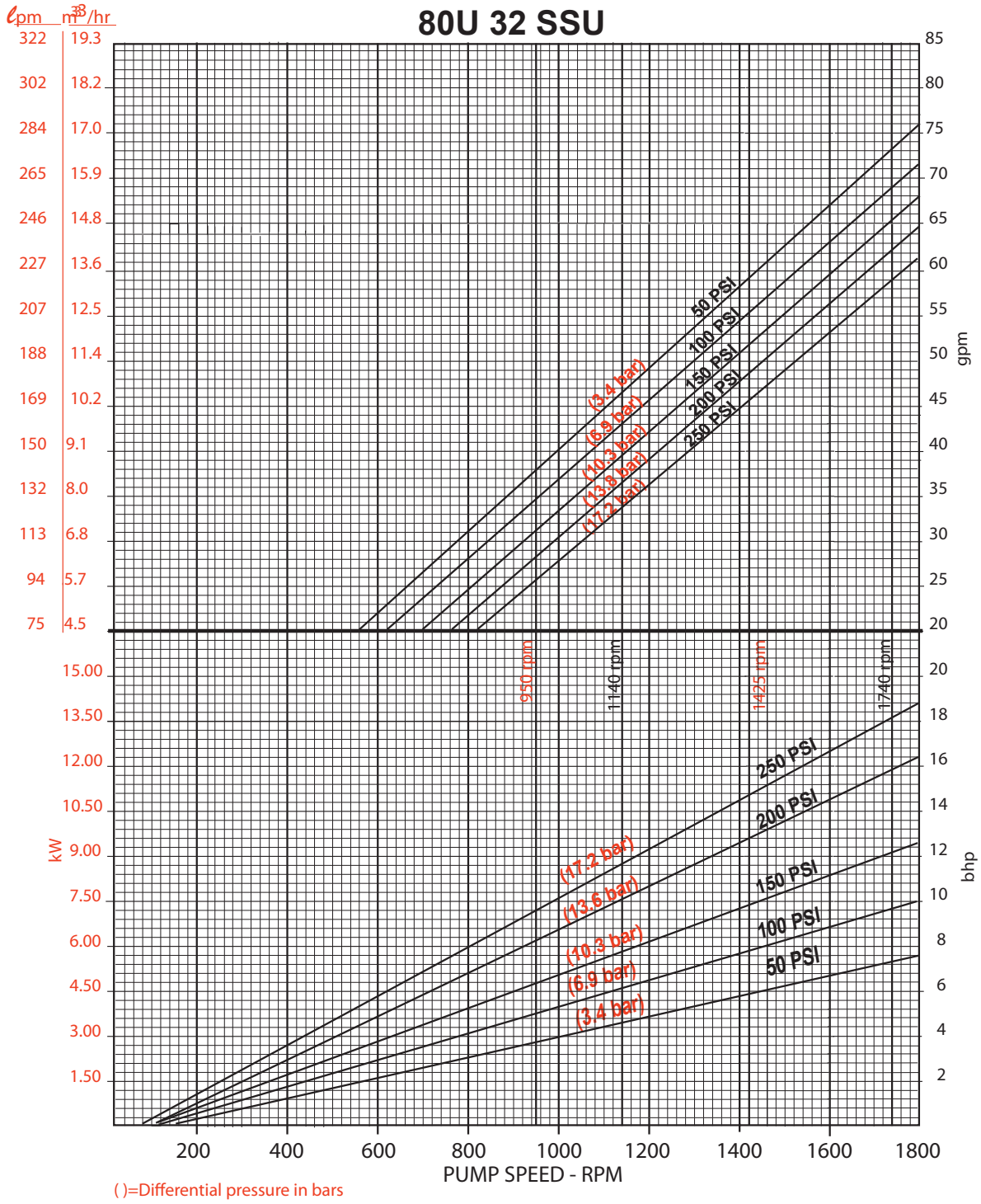
CUTAWAY VIEW BOTTOM



RIGHT SIDE VIEW

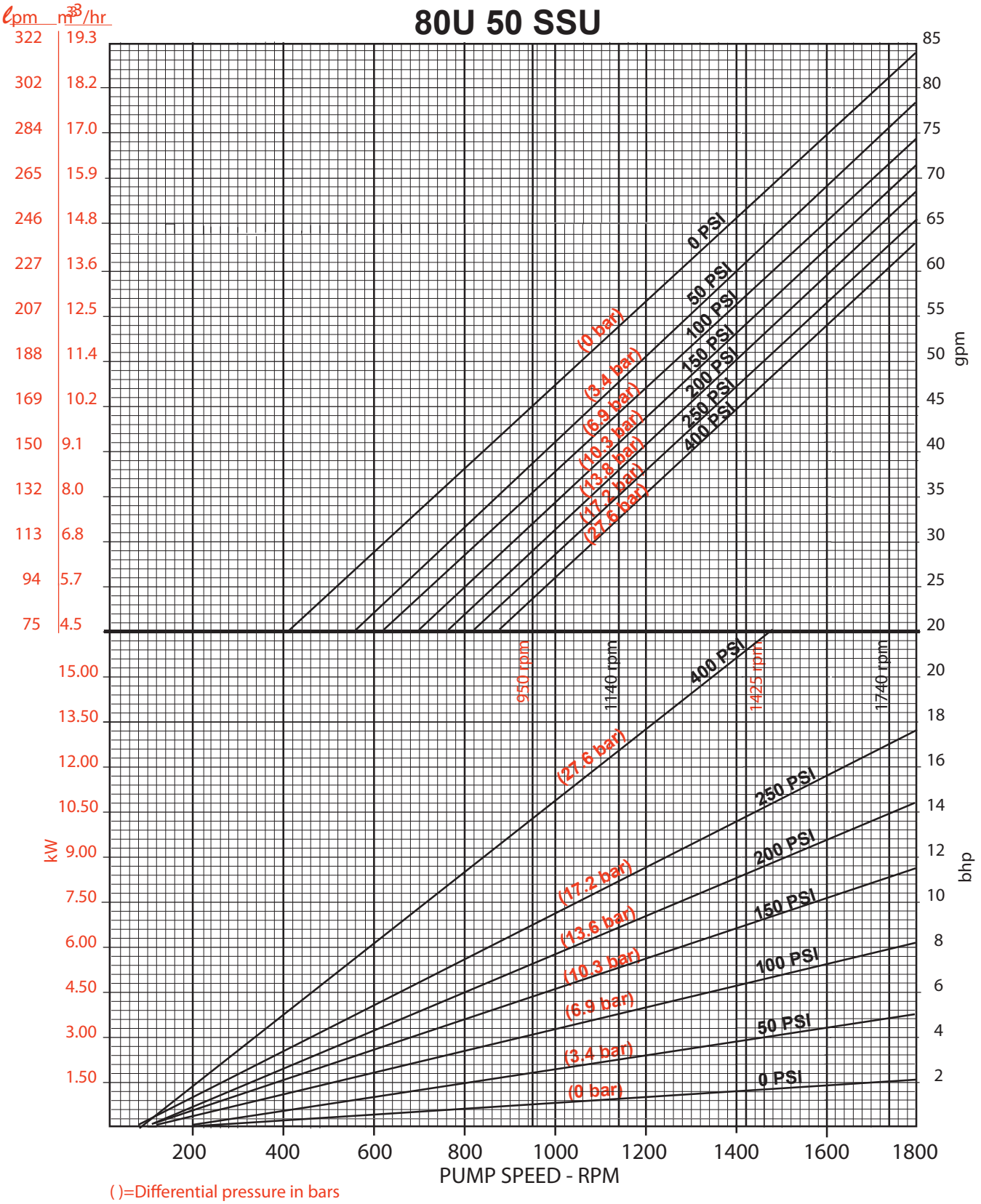
BS80UR - 80 GPM
Barrier Seal Double Pump w/Relief Valve

(Revised 8-1-11)



HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

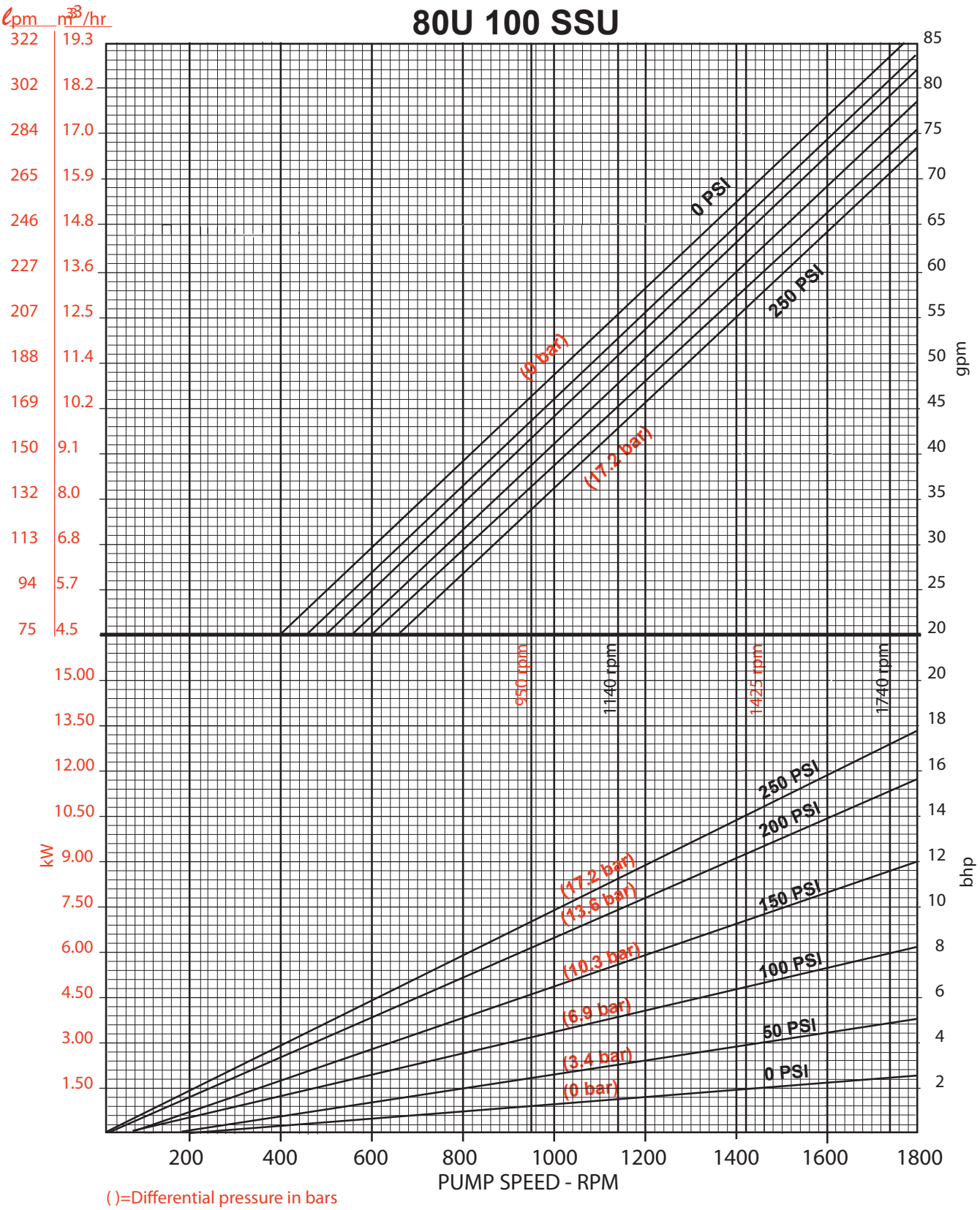
80U 50 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

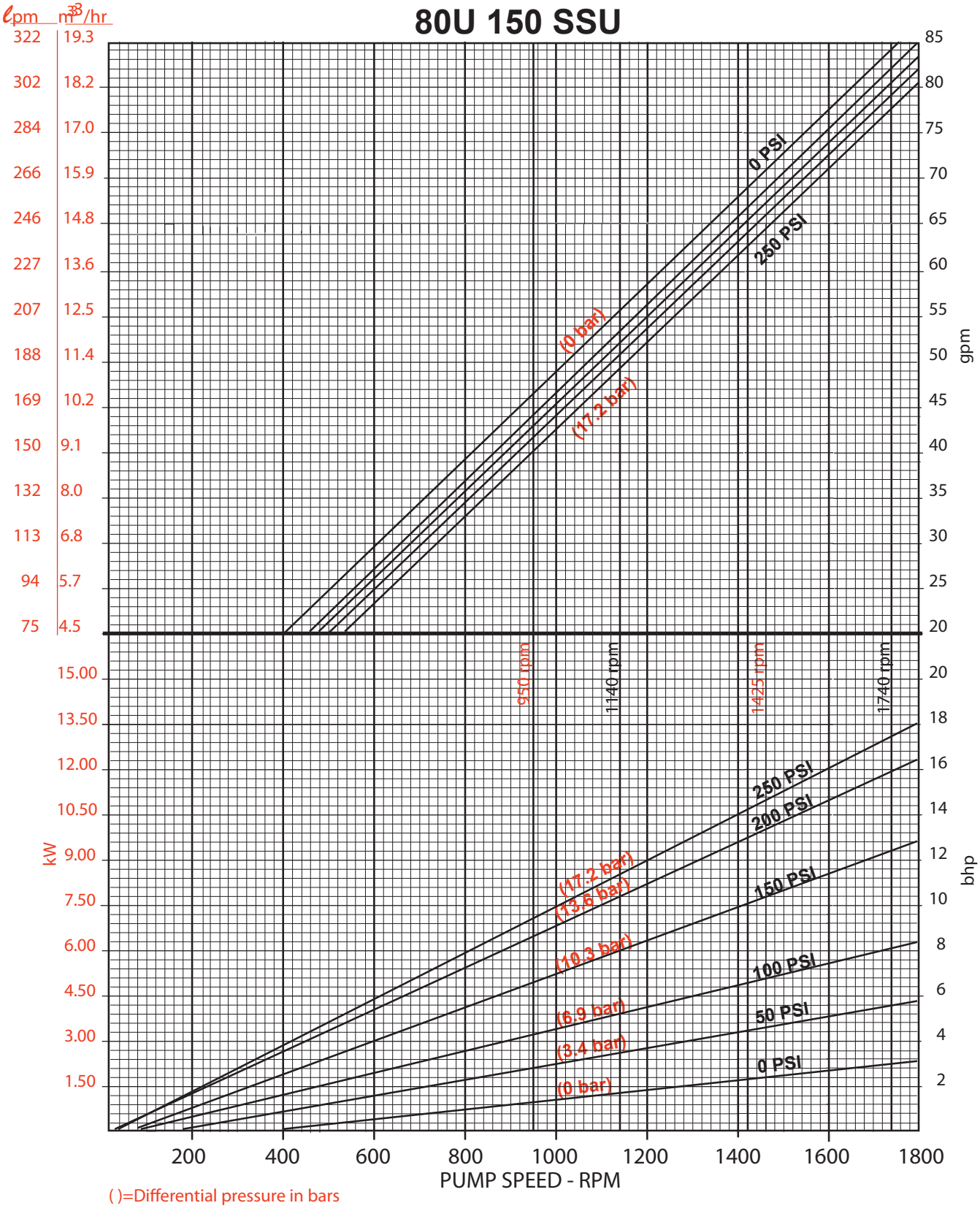
80U 100 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

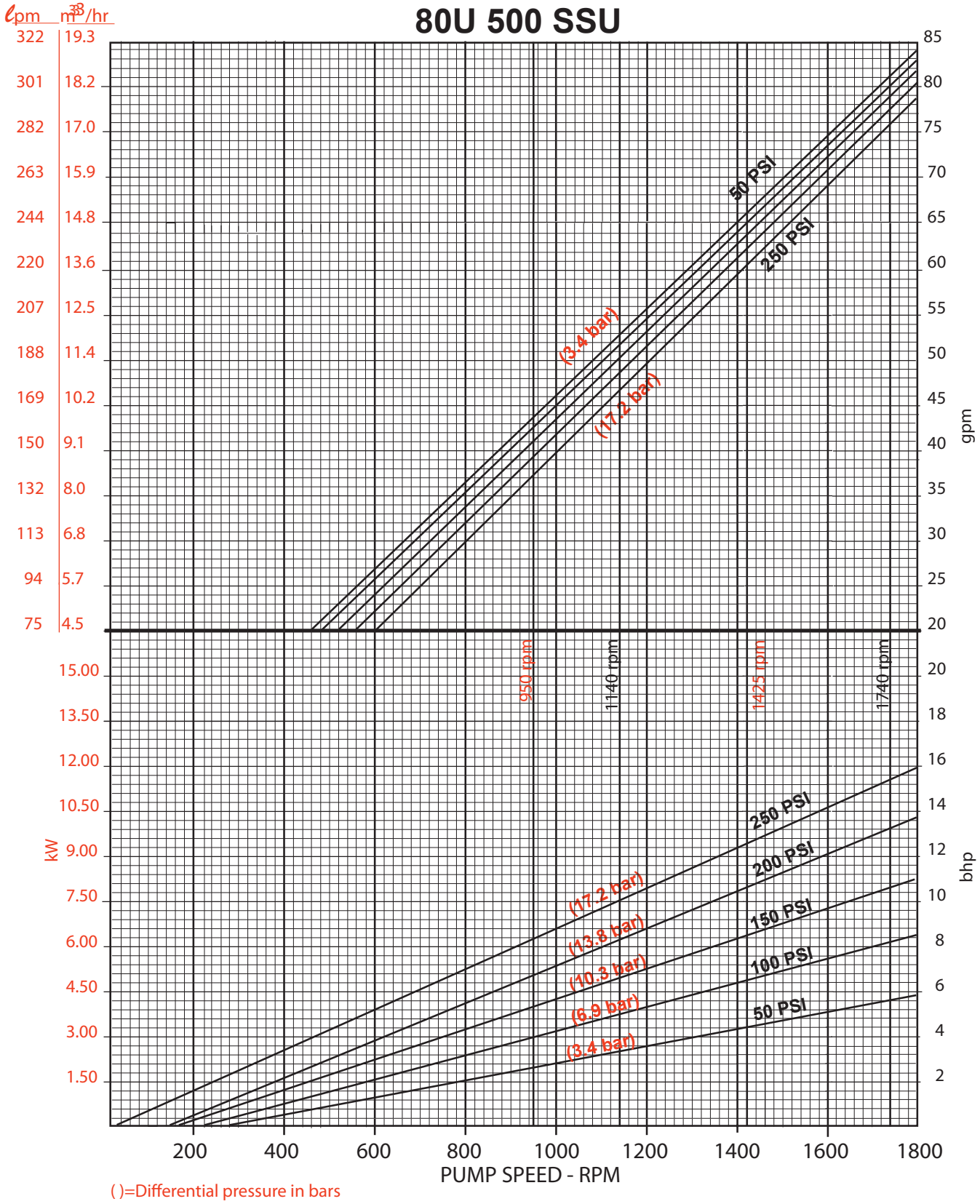
80U 150 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

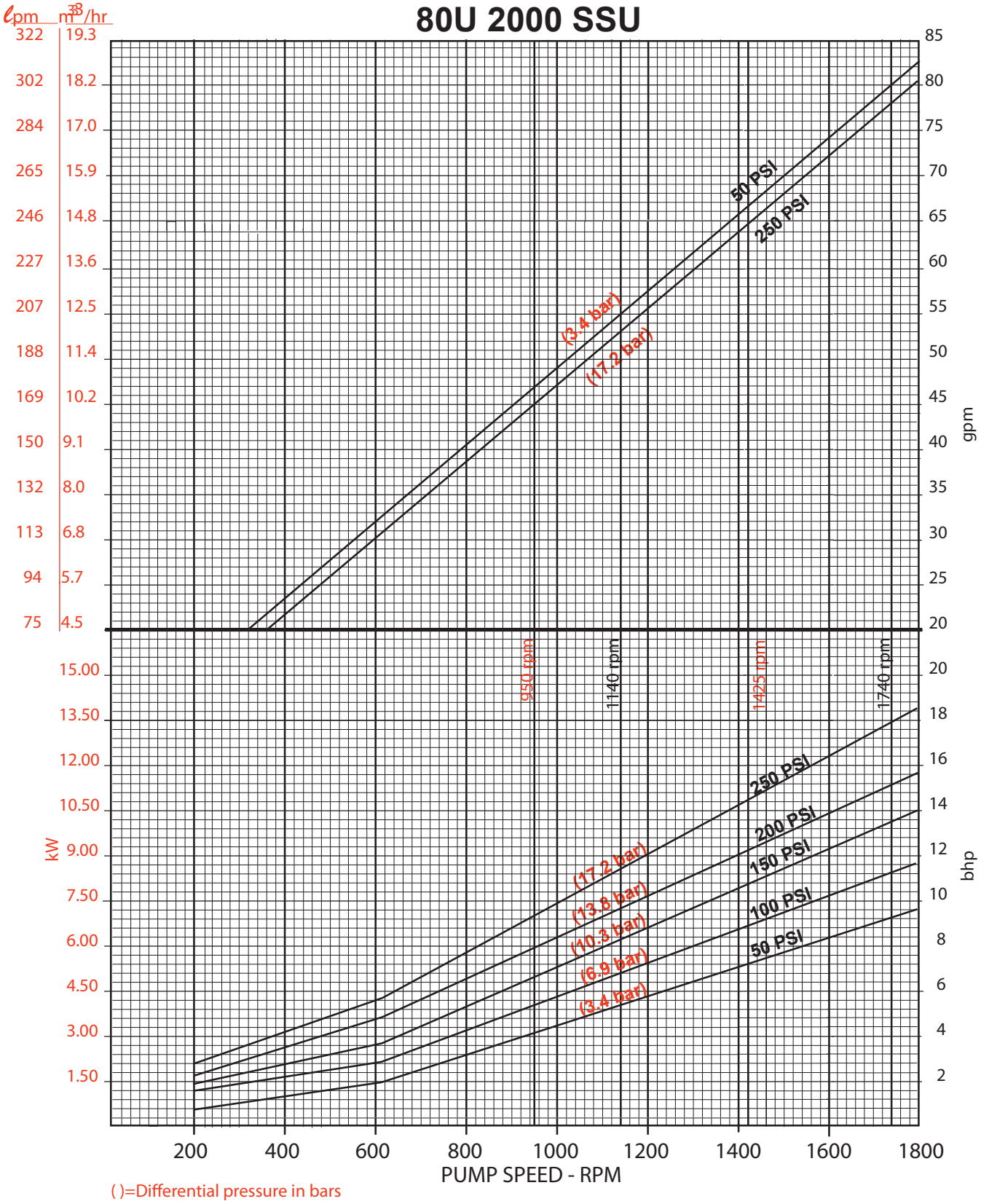
80U 500 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

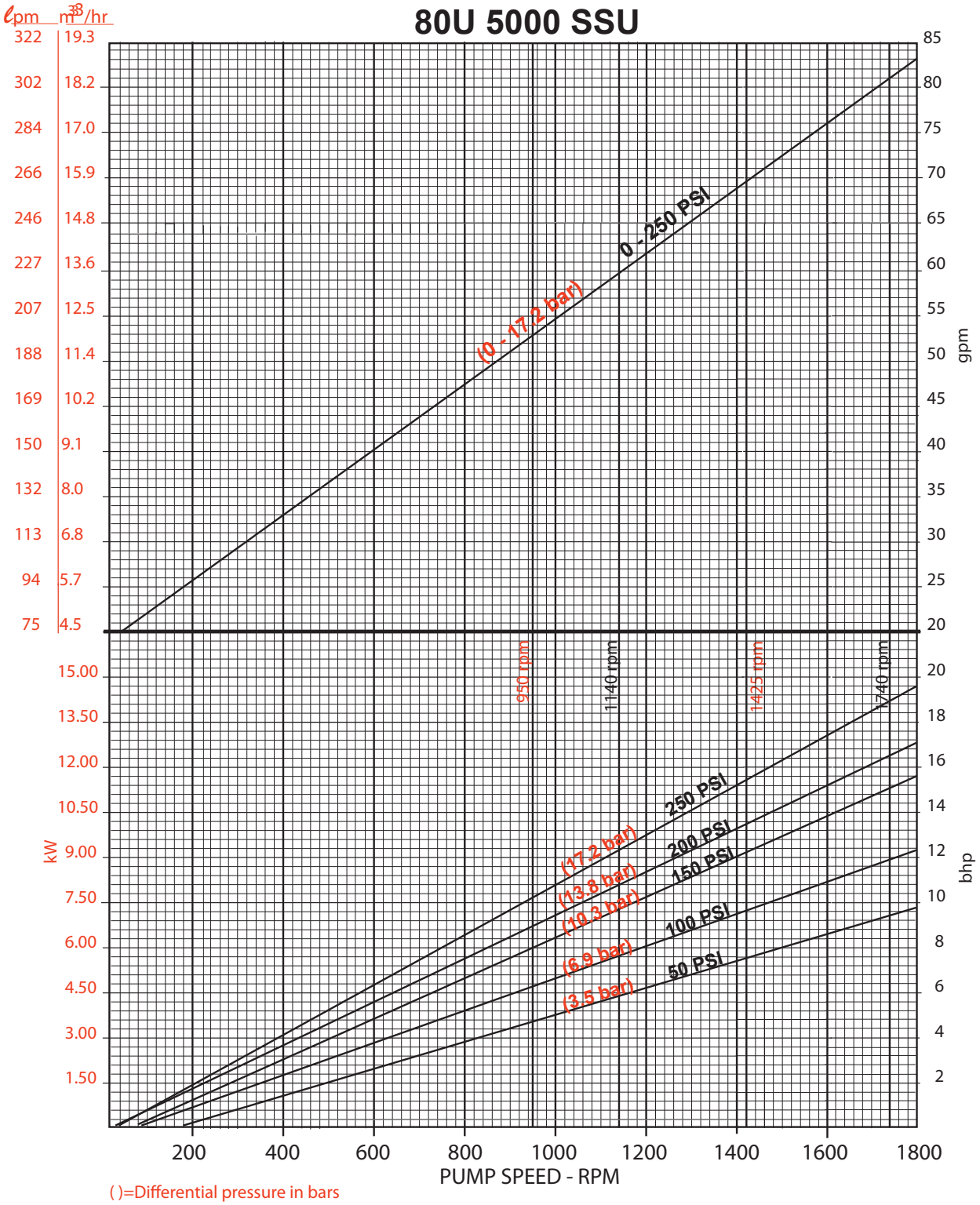
80U 2000 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

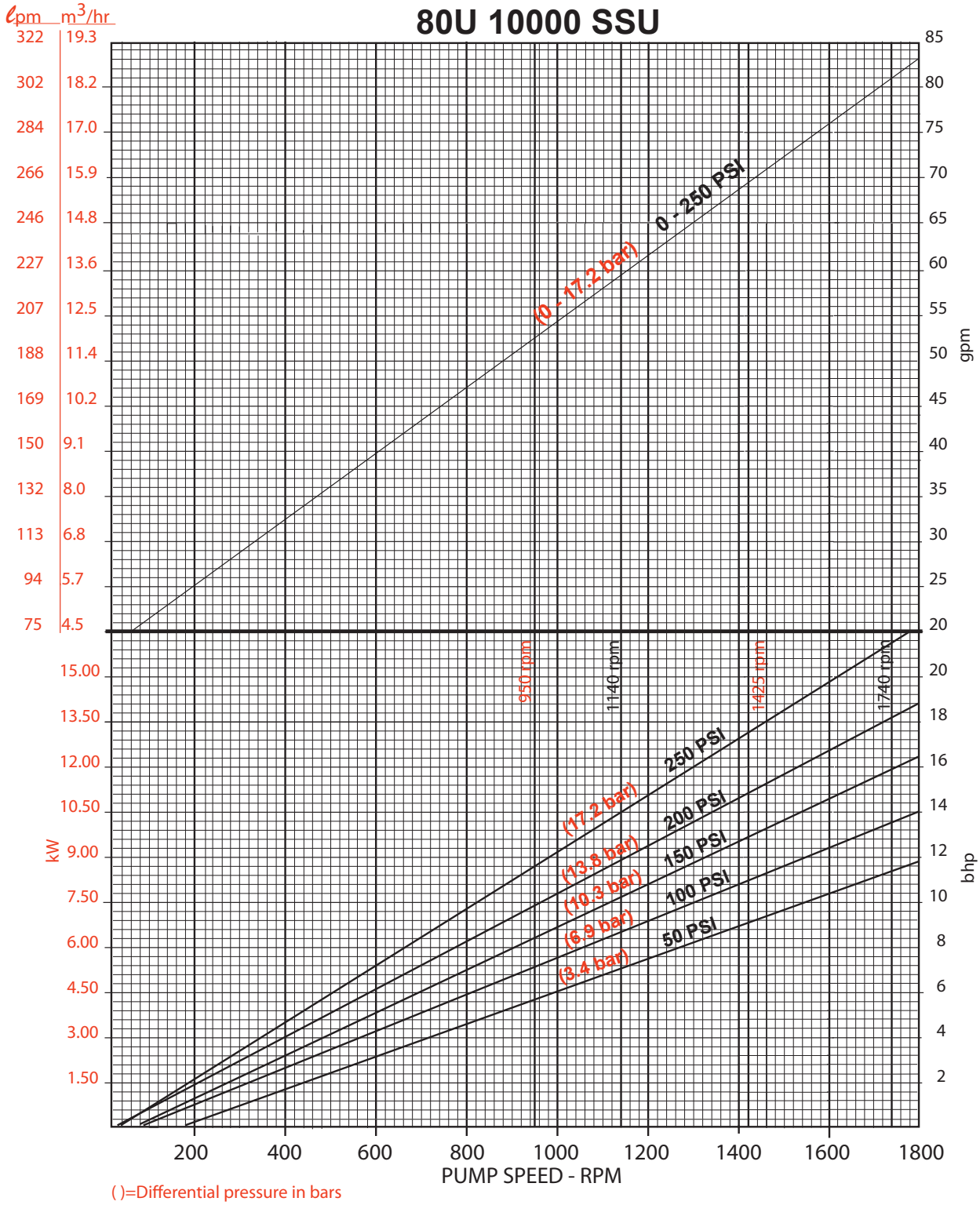
80U 5000 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

80U 10000 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

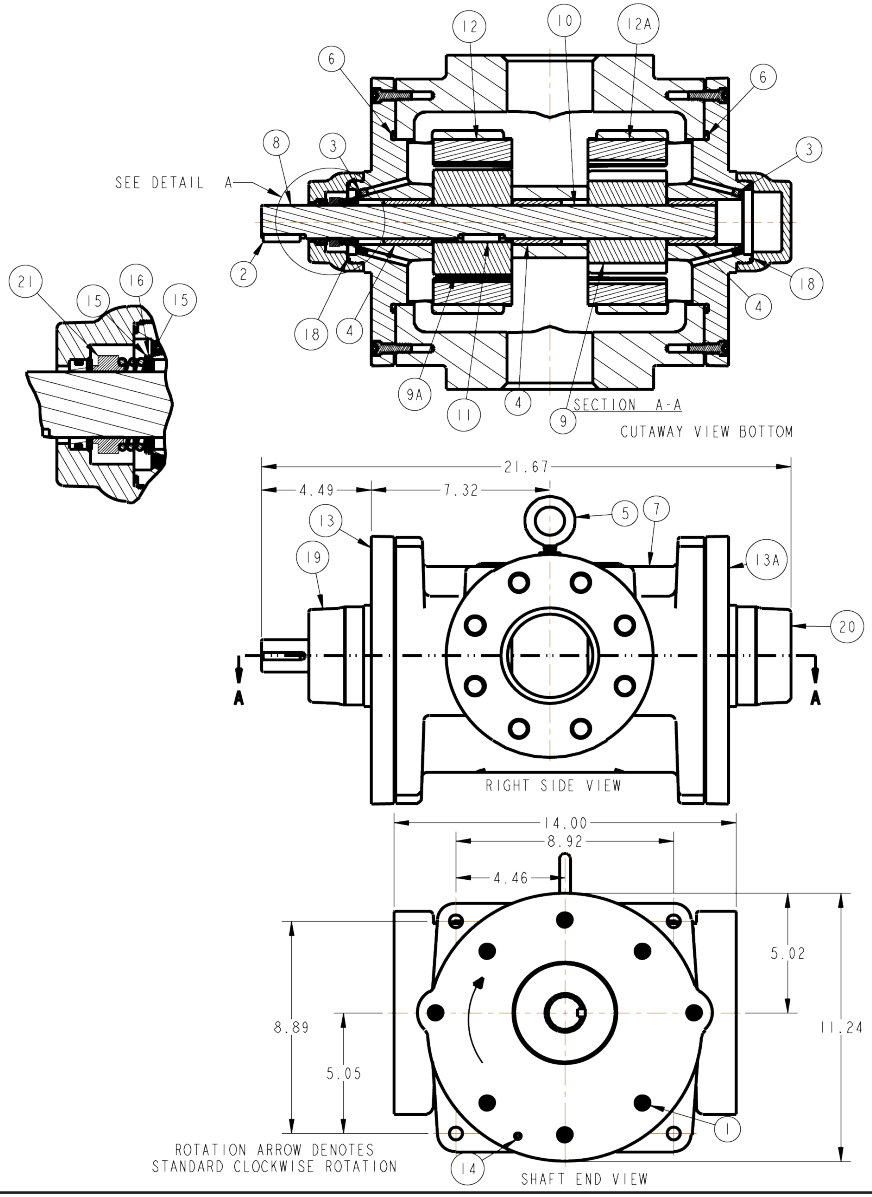
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

120U- 120 GPM
Large Flow Pump w/out Relief Valve

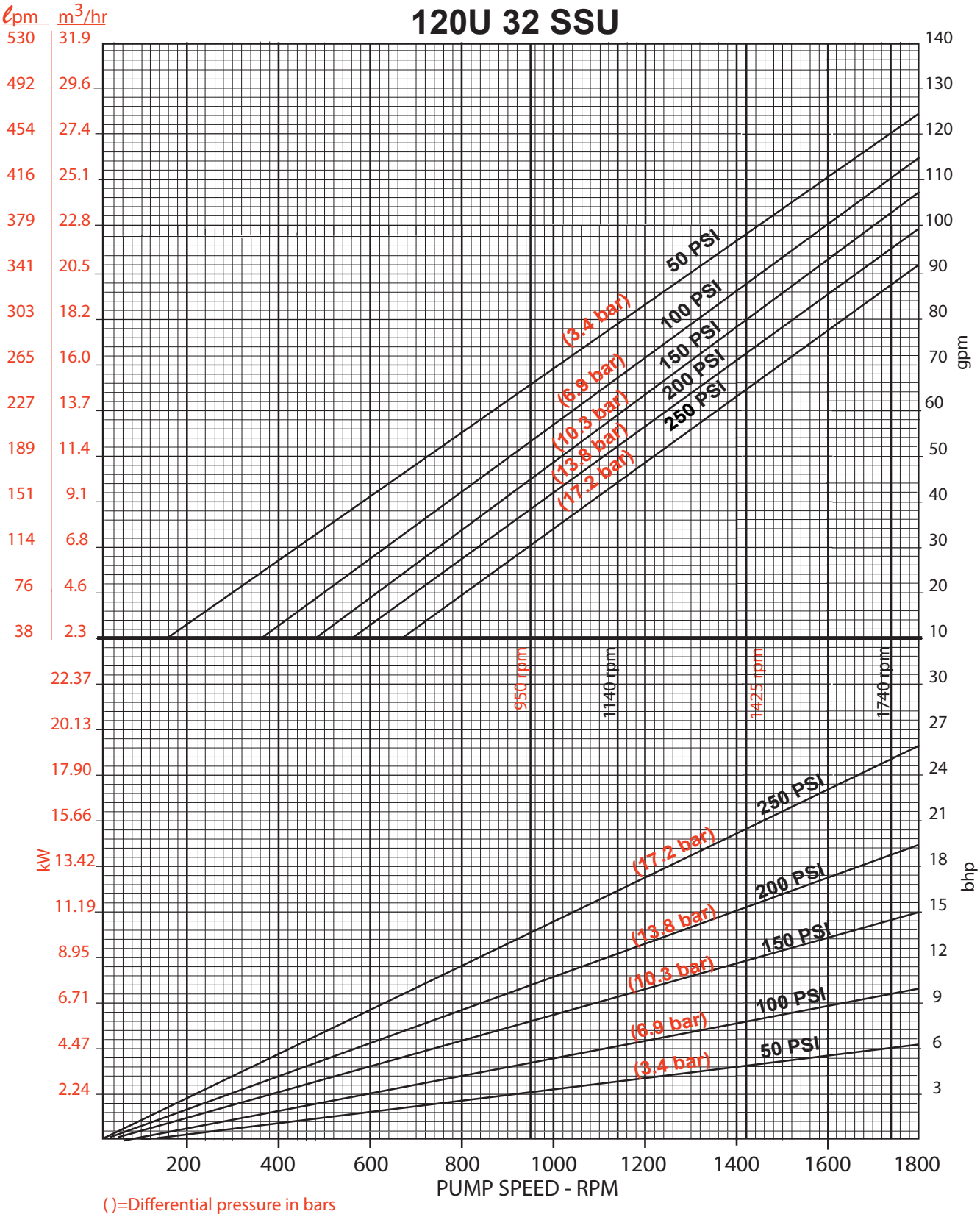
LARGE FLOW PUMP W/OUT RELIEF VALVE-120 GPM

Item	Part No.	Description	Qty.
1	H90SC1.2	Screw, Cover	16
2	J3IC15A	Drive Key 5/16 Sq X 1.50 Lg	1
3	J49E	Set Screw, Vent	2
4	J11F	Bearing	3
5	EYB4	Eye Bolt	1
6	SE2366N70	O-Ring, Cover	2
7	D2403A	Case	1
8	D60C13D1	Shaft & Pinion Assembly	1
9	D6015C	Pinion	1
9A	D6015C8	Pinion, Keyed	1
10	D24014C	Shaft	1
11	J3IC15A	Key, 5/16 Sq X 1.50 Lg	1
12	D6026F	Rotor	1
12A	D6026F	Rotor	1
13	D6030A	Cover	1
13A	D6030A	Cover	1
14	F4IC5	Pin	2
15	J25C2	Washer	2
16	J11TB2	Thrust Bearing	1
17	F25C2	Washer	1
18	SE215IN70	O-Ring, Gland	2
19	J22SS2A	Gland	1
20	J22SS2AS	Gland	1
21	J18AM	Shaft Seal	1



(Revised 8-1-11)

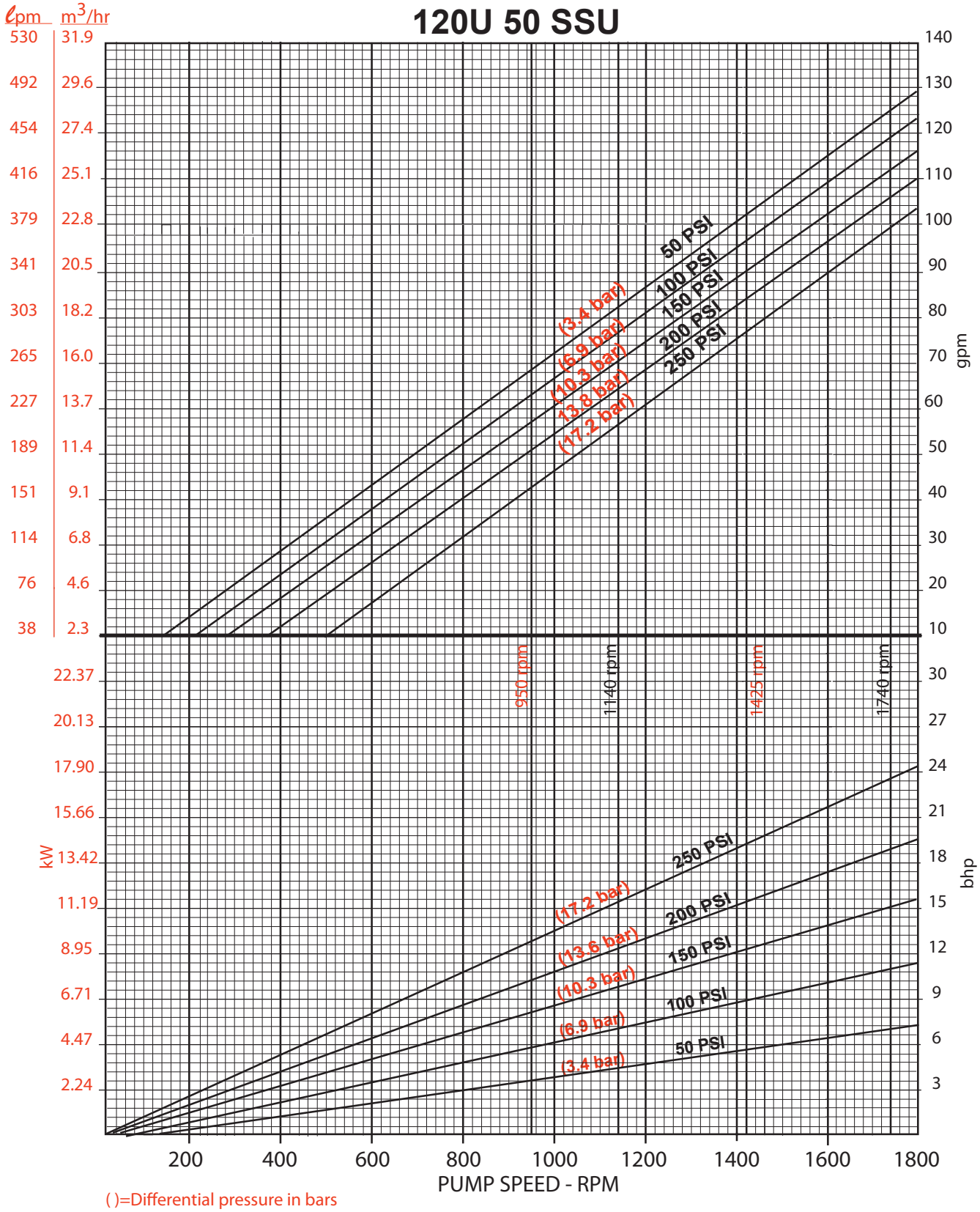
120U 32 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

120U 50 SSU

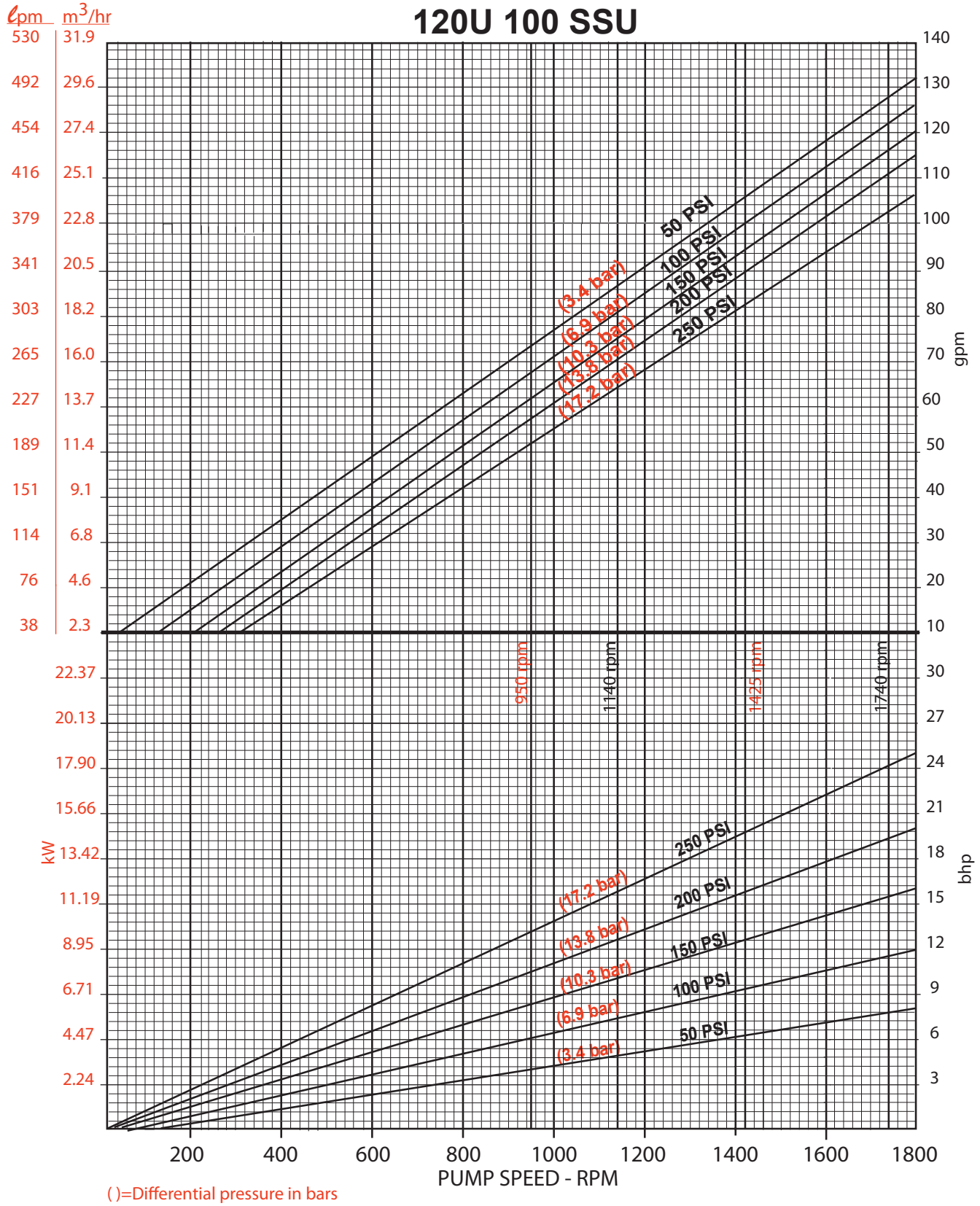


( )=Differential pressure in bars

Revised 03/12/08

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

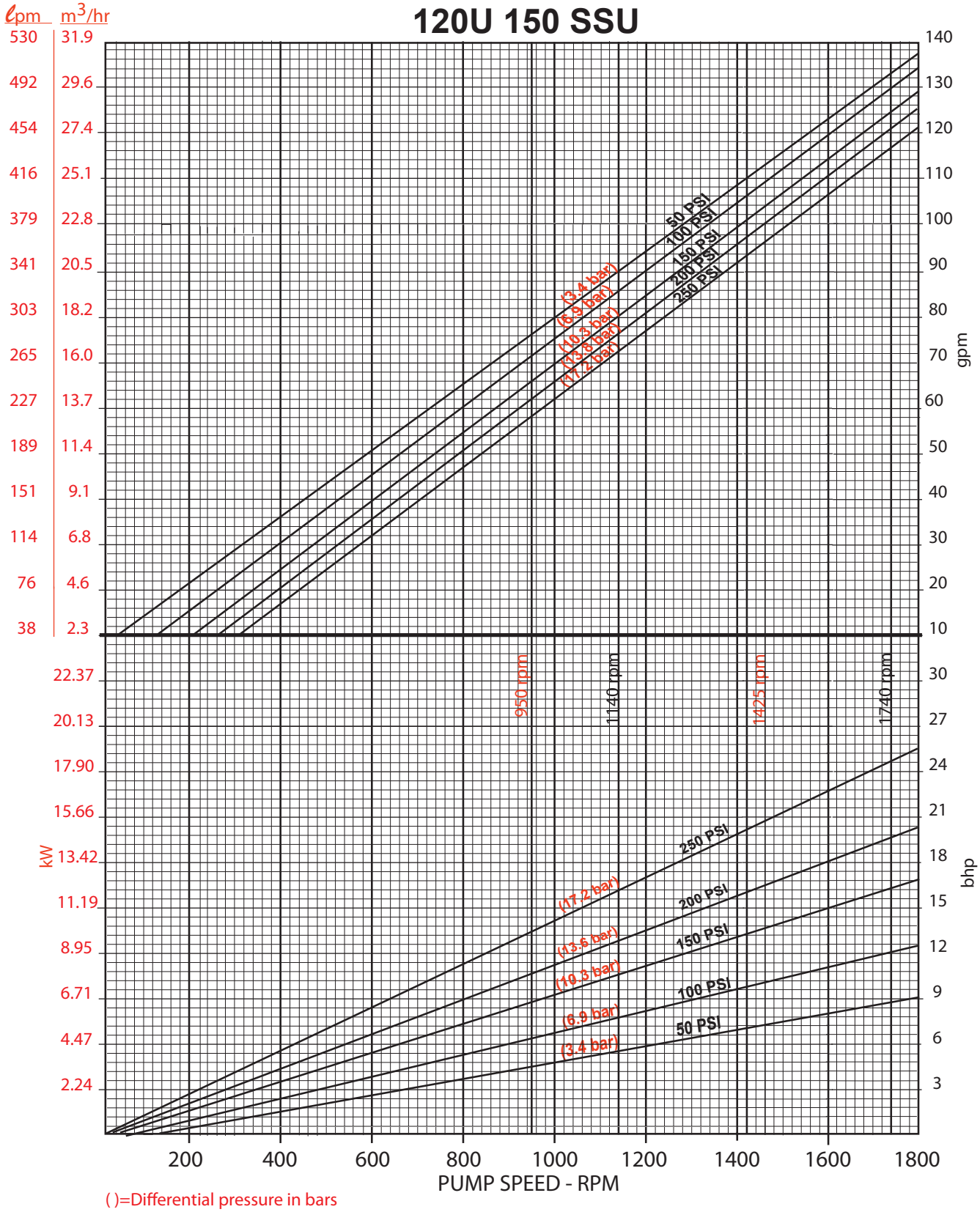
120U 100 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

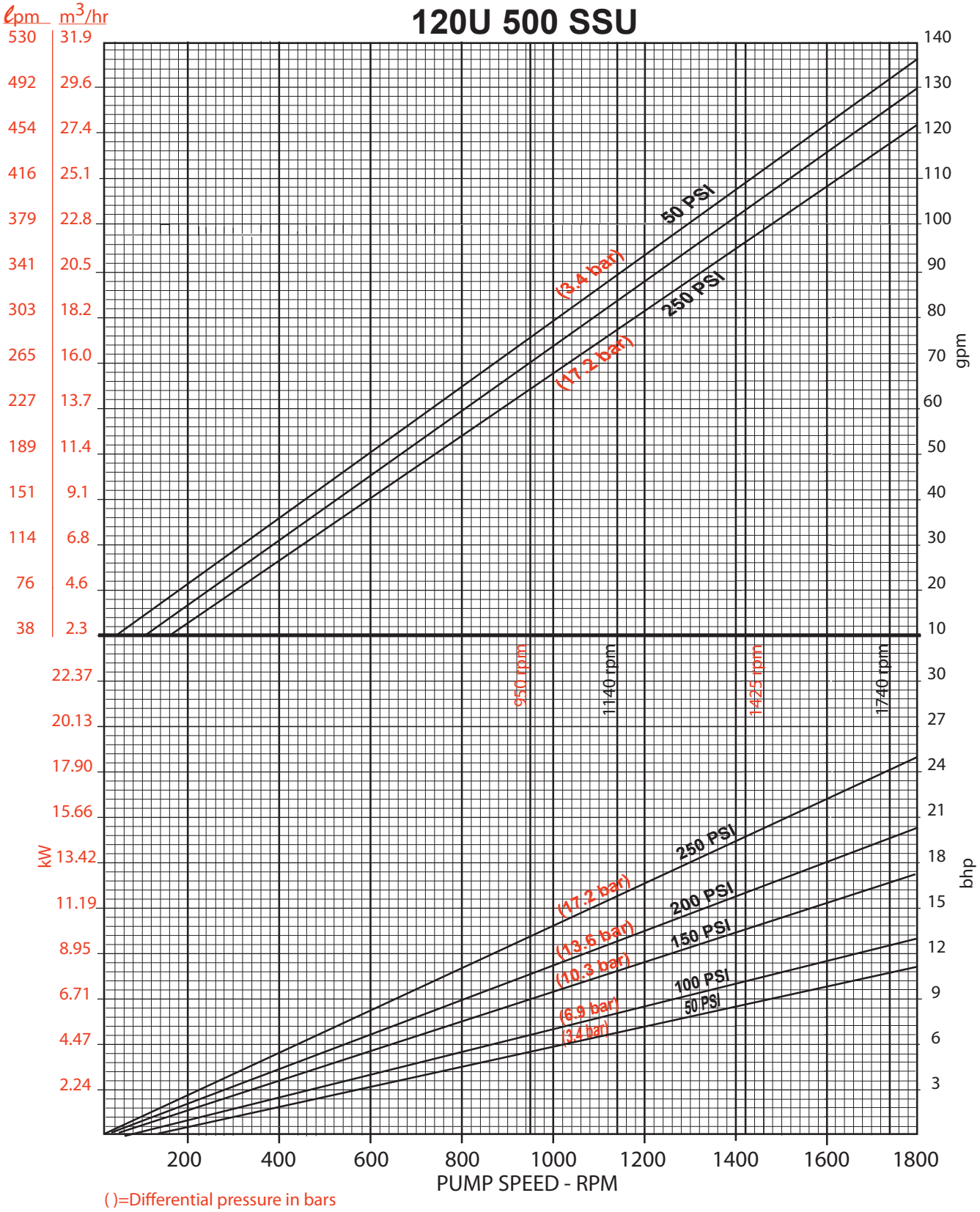
120U 150 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

120U 500 SSU



( )=Differential pressure in bars

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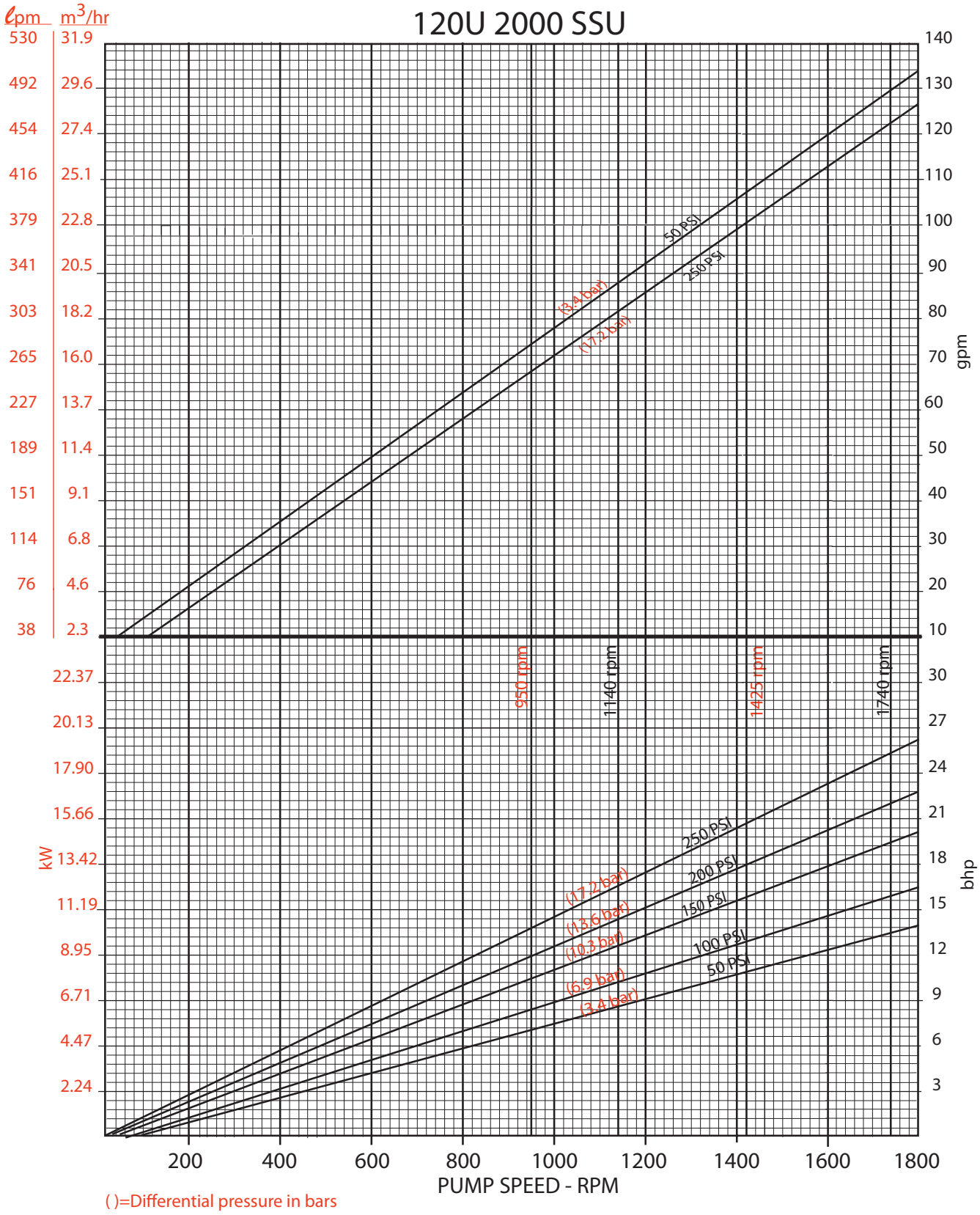
DIVISION OF: BAKER MANUFACTURING CO., LLC



( )=Differential pressure in bars

Revised 03/13/2008

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

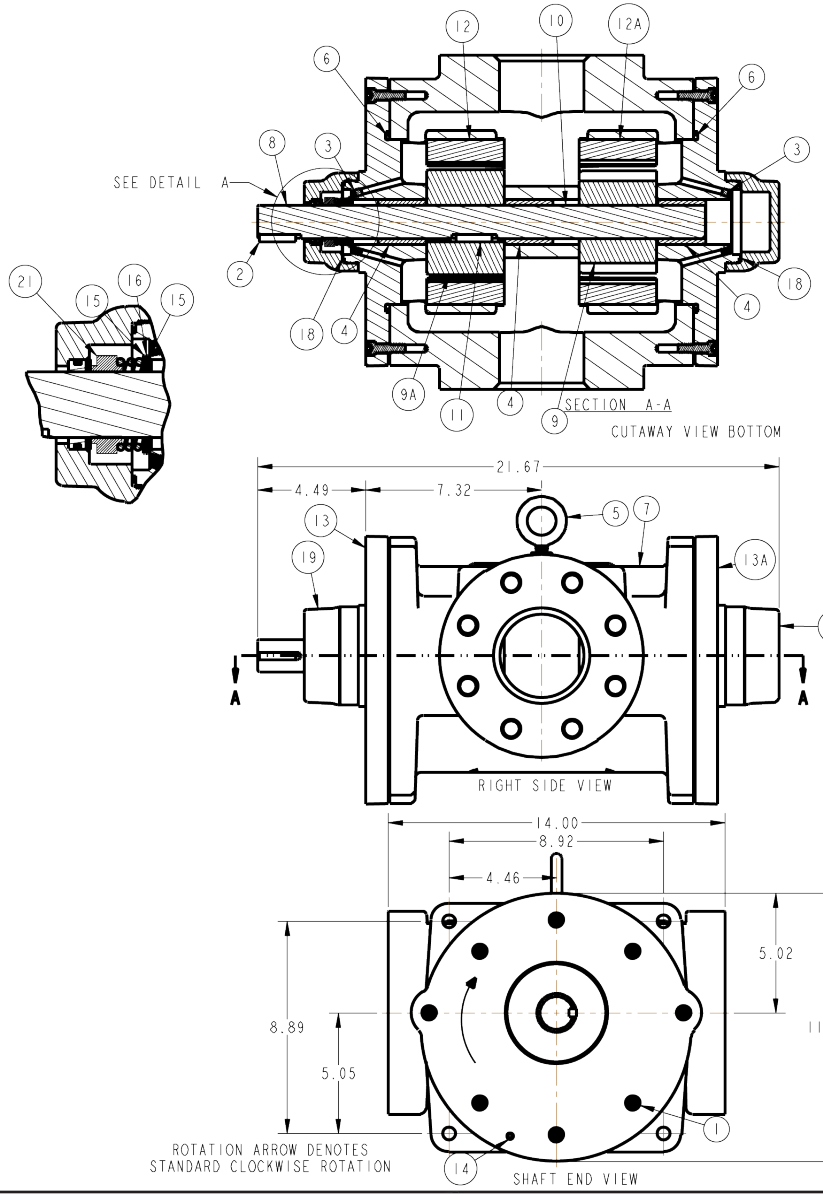
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

180U- 180 GPM
Large Flow Pump w/out Relief Valve

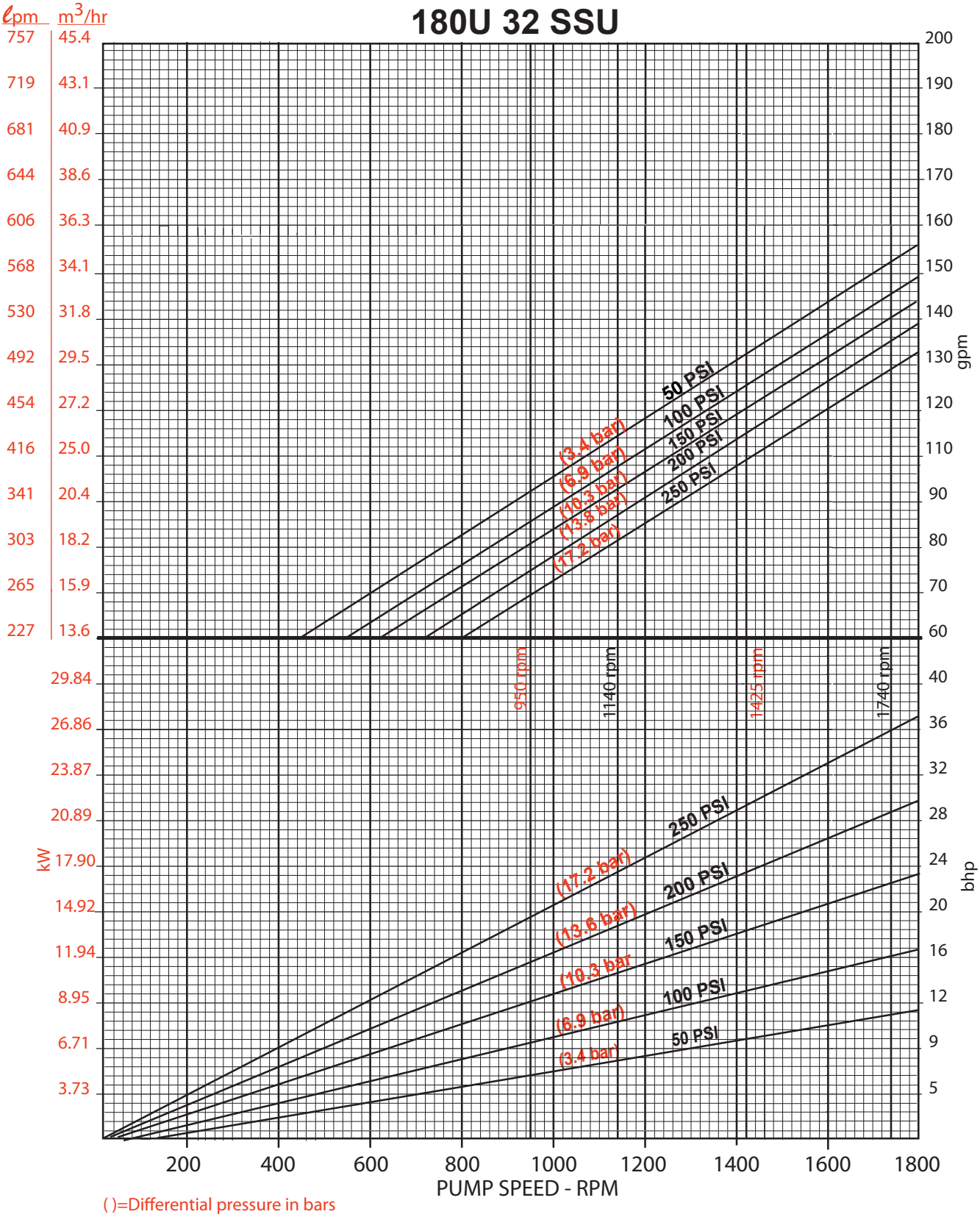
LARGE FLOW PUMP W/OUT RELIEF VALVE-180 GPM

Item	Part No.	Description	Qty.
1	H90SC1.2	Screw, Cover	16
2	J31C15A	Drive Key 5/16 Sq X 1.50 Lg	1
3	J49E	Set Screw, Vent	2
4	J11F	Bearing	3
5	EYB4	Eye Bolt	1
6	SE2366N70	O-Ring, Cover	2
7	D2403A	Case	1
8	D60C13D1	Shaft & Pinion Assembly	1
9	D6015C	Pinion	1
9A	D12015C8	Pinion, Keyed	1
10	D24014C	Shaft	1
11	J31C15A	Key, 5/16 Sq X 1.50 Lg	1
12	D12026F	Rotor	1
12A	D6026F	Rotor	1
13	D12030A	Cover	1
13A	D6030A	Cover	1
14	F41C5	Pin	2
15	J25C2	Washer	2
16	J11TB2	Thrust Bearing	1
17	F25C2	Washer	1
18	SE215IN70	O-Ring, Gland	2
19	J22SS2A	Gland	1
20	J22SS2AS	Gland	1
21	J18AM	Shaft Seal	1



(Revised 8-1-11)

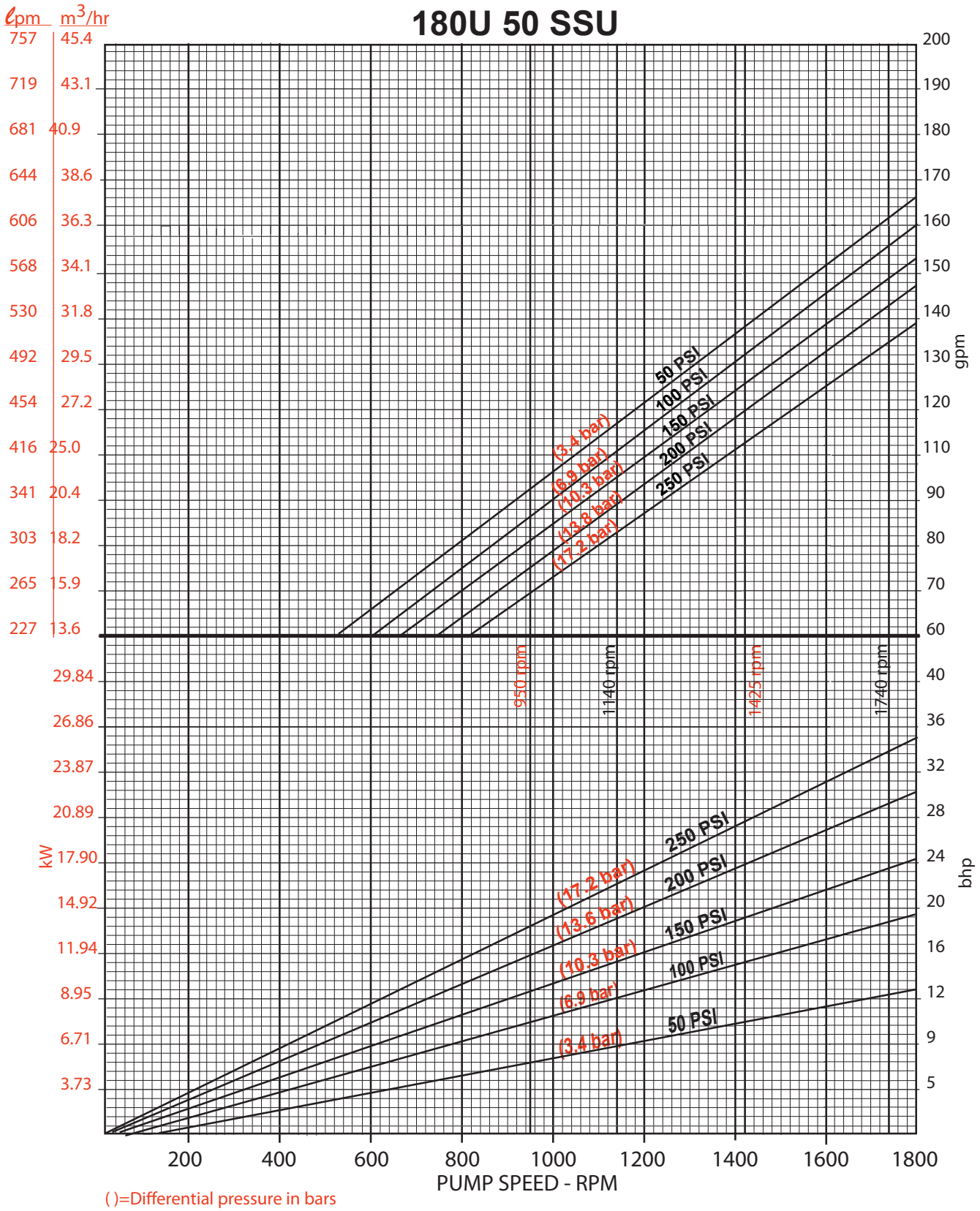
180U 32 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

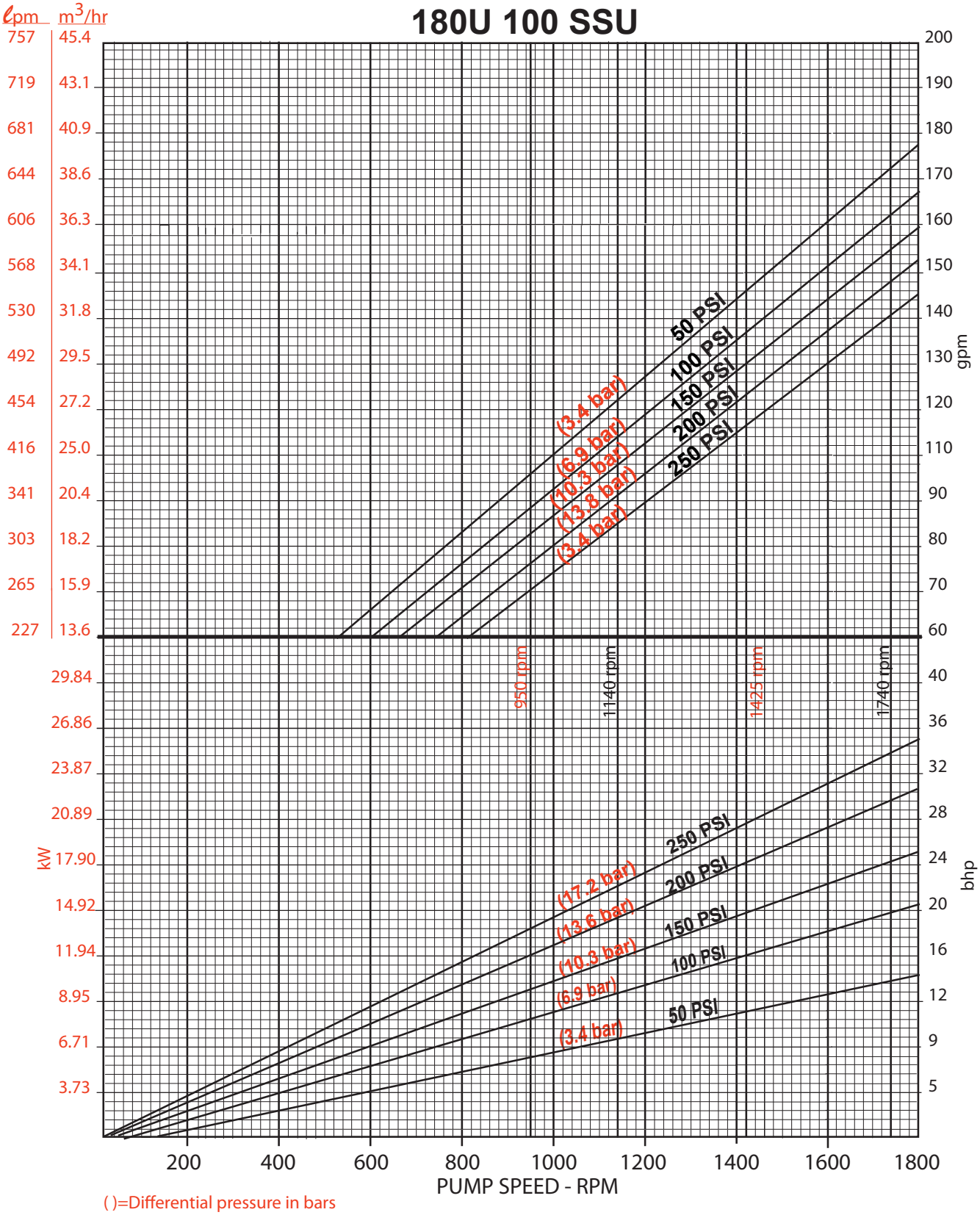
180U 50 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

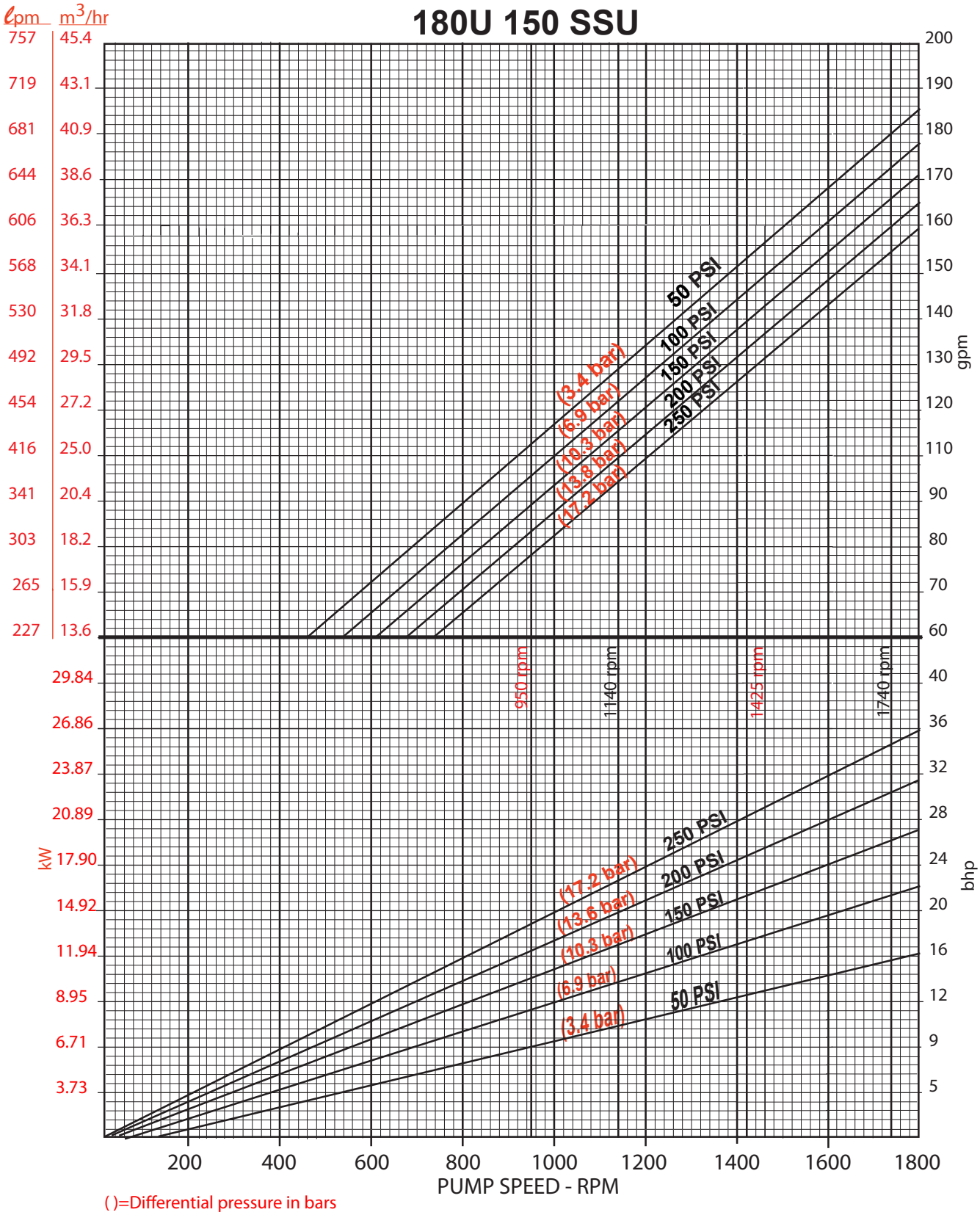
180U 100 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

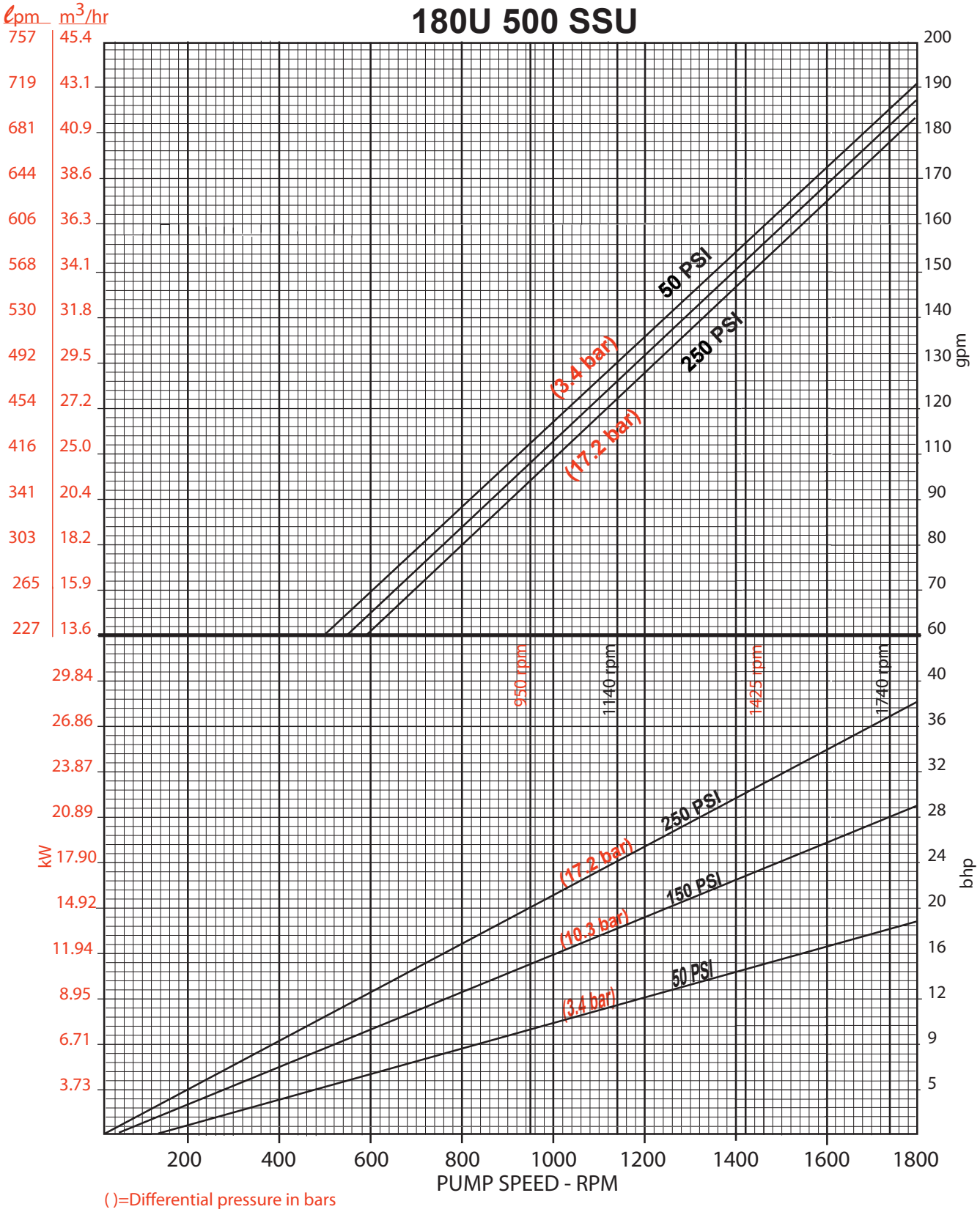
180U 150 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

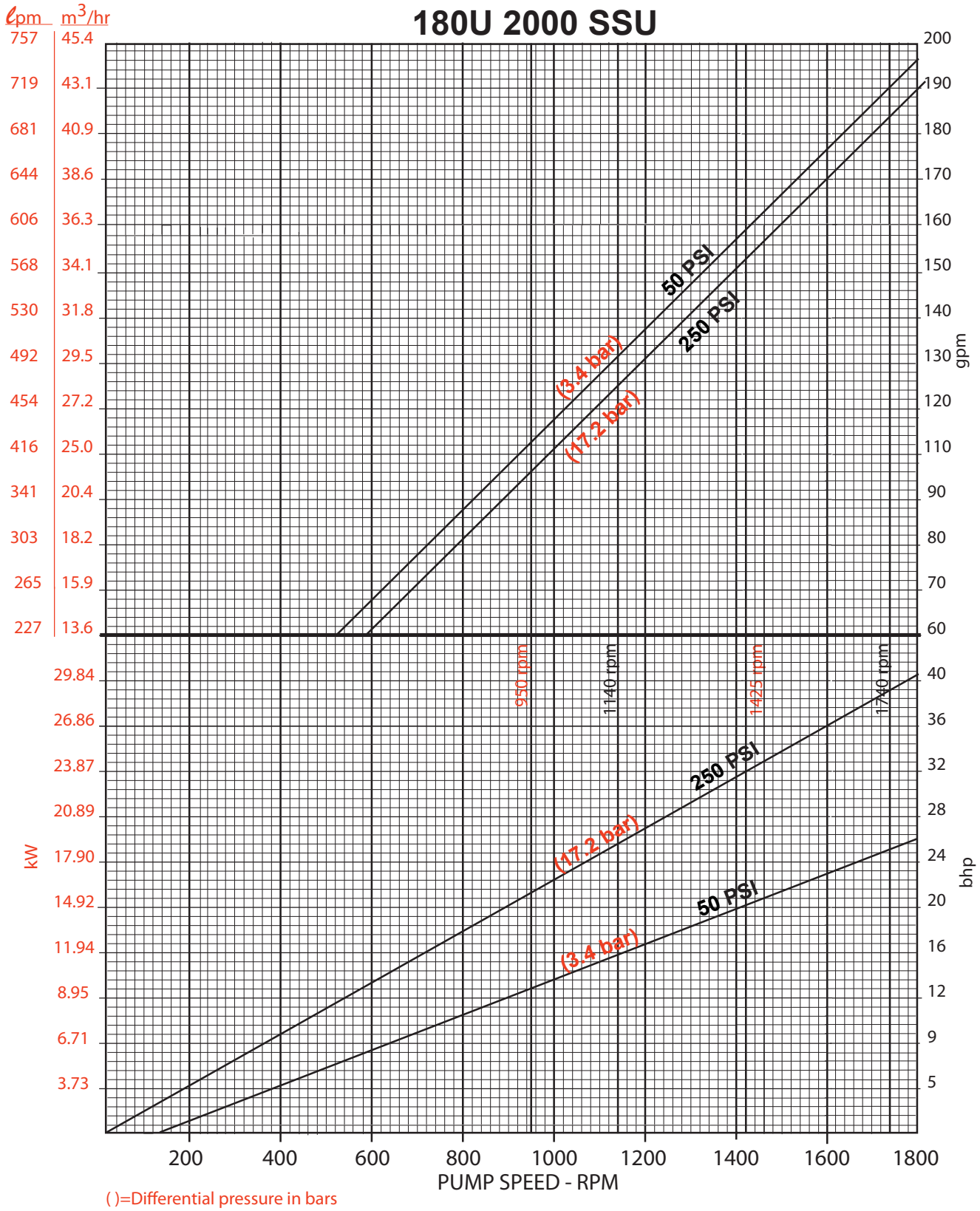
180U 500 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

180U 2000 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

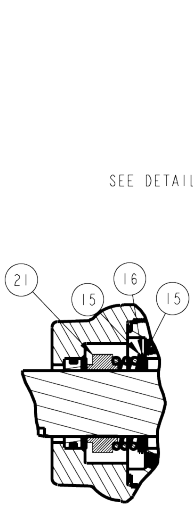
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

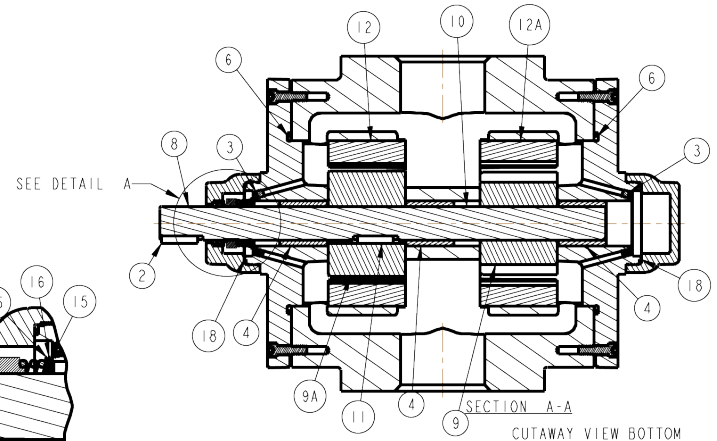
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

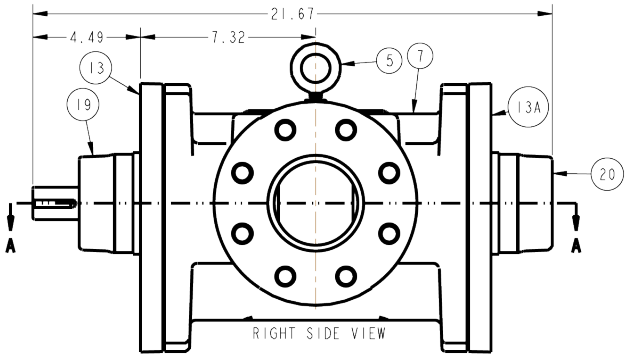
240U- 240 GPM
Large Flow Pump w/out Relief Valve

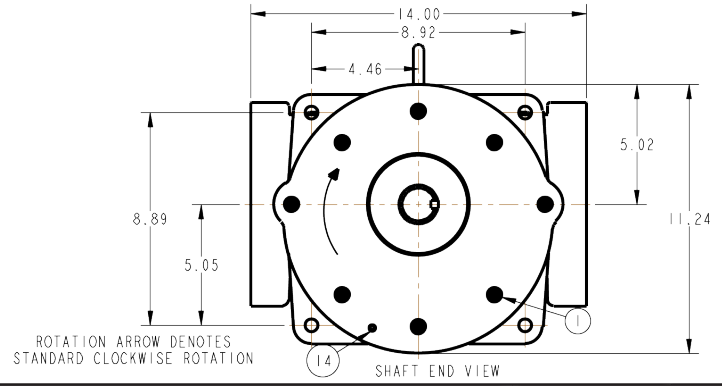
LARGE FLOW PUMP W/OUT RELIEF VALVE-240 GPM

Item	Part No.	Description	Qty.
1	H90SC1.2	Screw, Cover	16
2	J3IC15A	Drive Key 5/16 Sq X 1.50 Lg	1
3	J49E	Set Screw, Vent	2
4	J11F	Bearing	3
5	EYB4	Eye Bolt	1
6	SE2366N70	O-Ring, Cover	2
7	D2403A	Case	1
8	D120C13D1	Shaft & Pinion Assembly	1
9	D12015C	Pinion	1
9A	D12015C8	Pinion, Keyed	1
10	D24014C	Shaft	1
11	J3IC15A	Key, 5/16 Sq X 1.50 Lg	1
12	D12026F	Rotor	1
12A	D12026F	Rotor	1
13	D12030A	Cover	1
13A	D12030A	Cover	1
14	F41C5	Pin	2
15	J25C2	Washer	2
16	J11TB2	Thrust Bearing	1
17	F25C2	Washer	1
18	SE215IN70	O-Ring, Gland	2
19	J22SS2A	Gland	1
20	J22SS2AS	Gland	1
21	J18AM	Shaft Seal	1



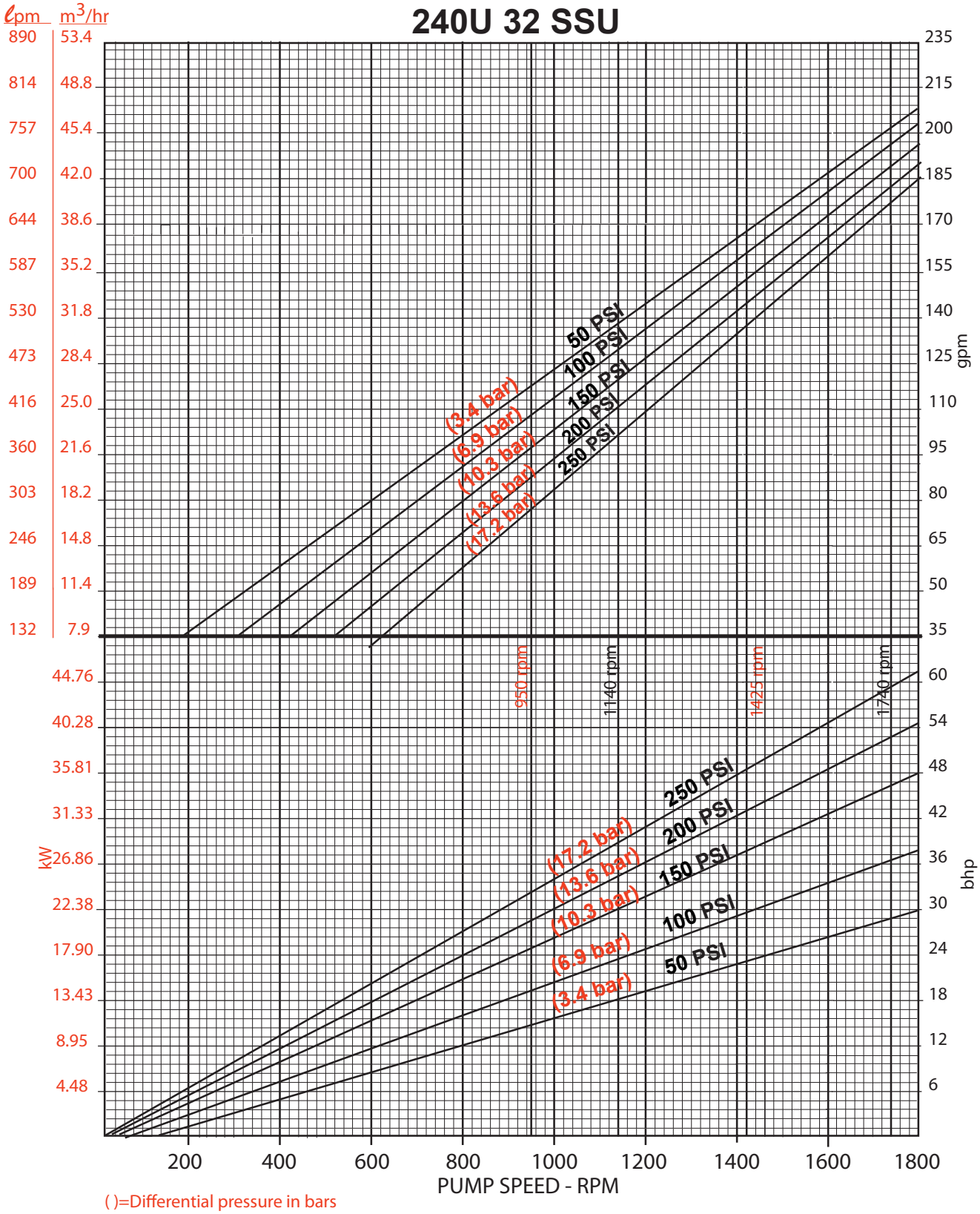






(Revised 8-1-11)

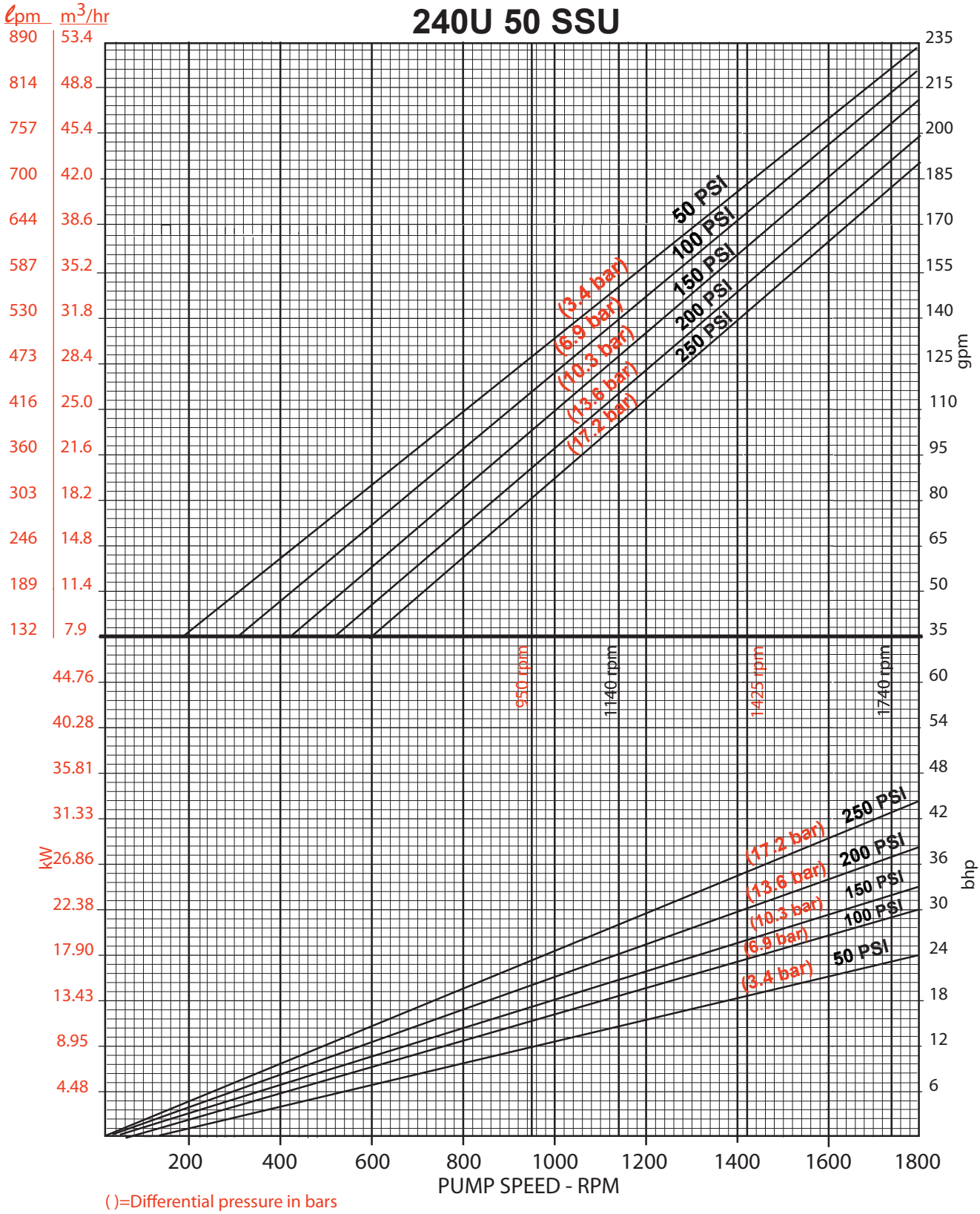
240U 32 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

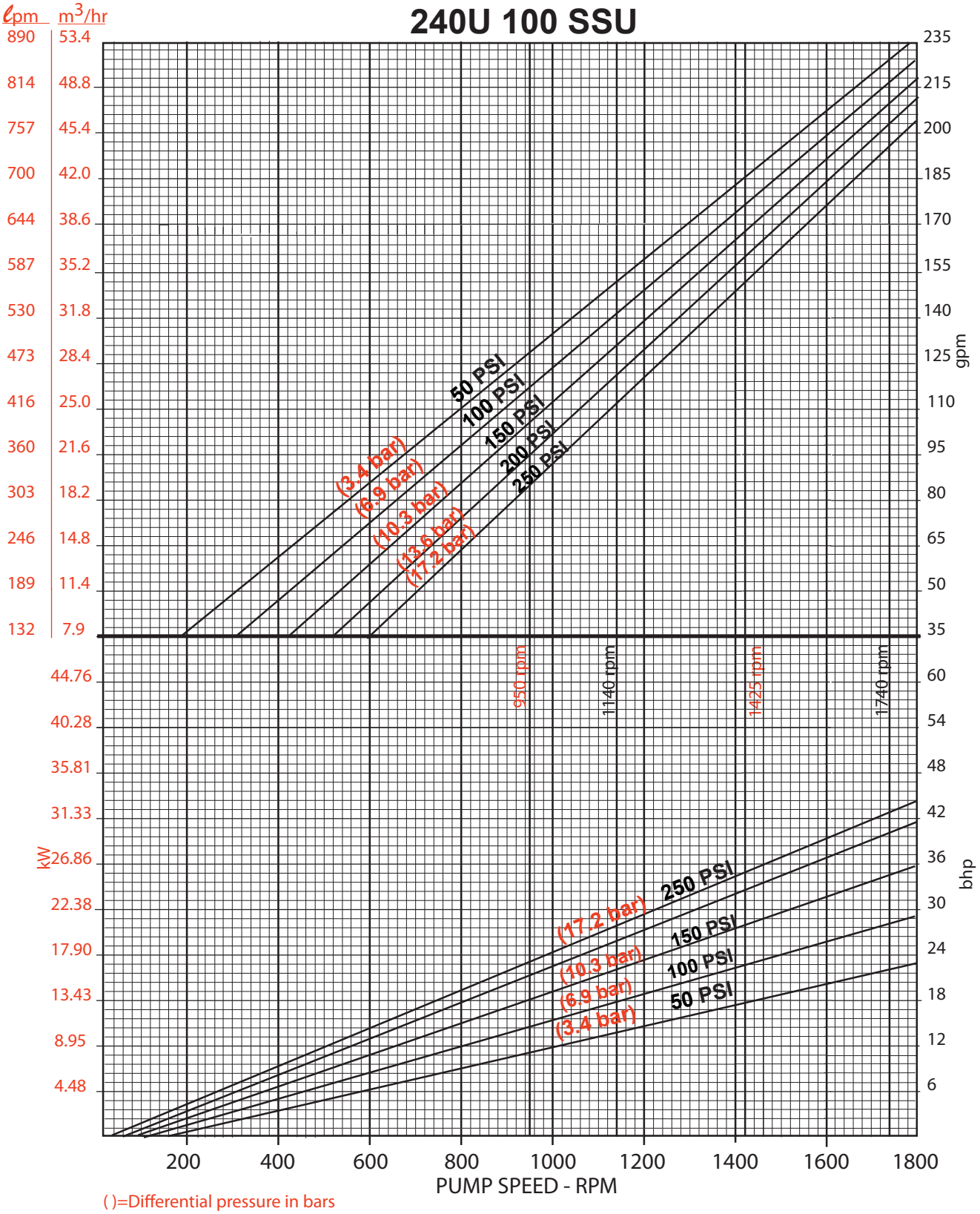
240U 50 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO., LLC

240U 100 SSU



( )=Differential pressure in bars

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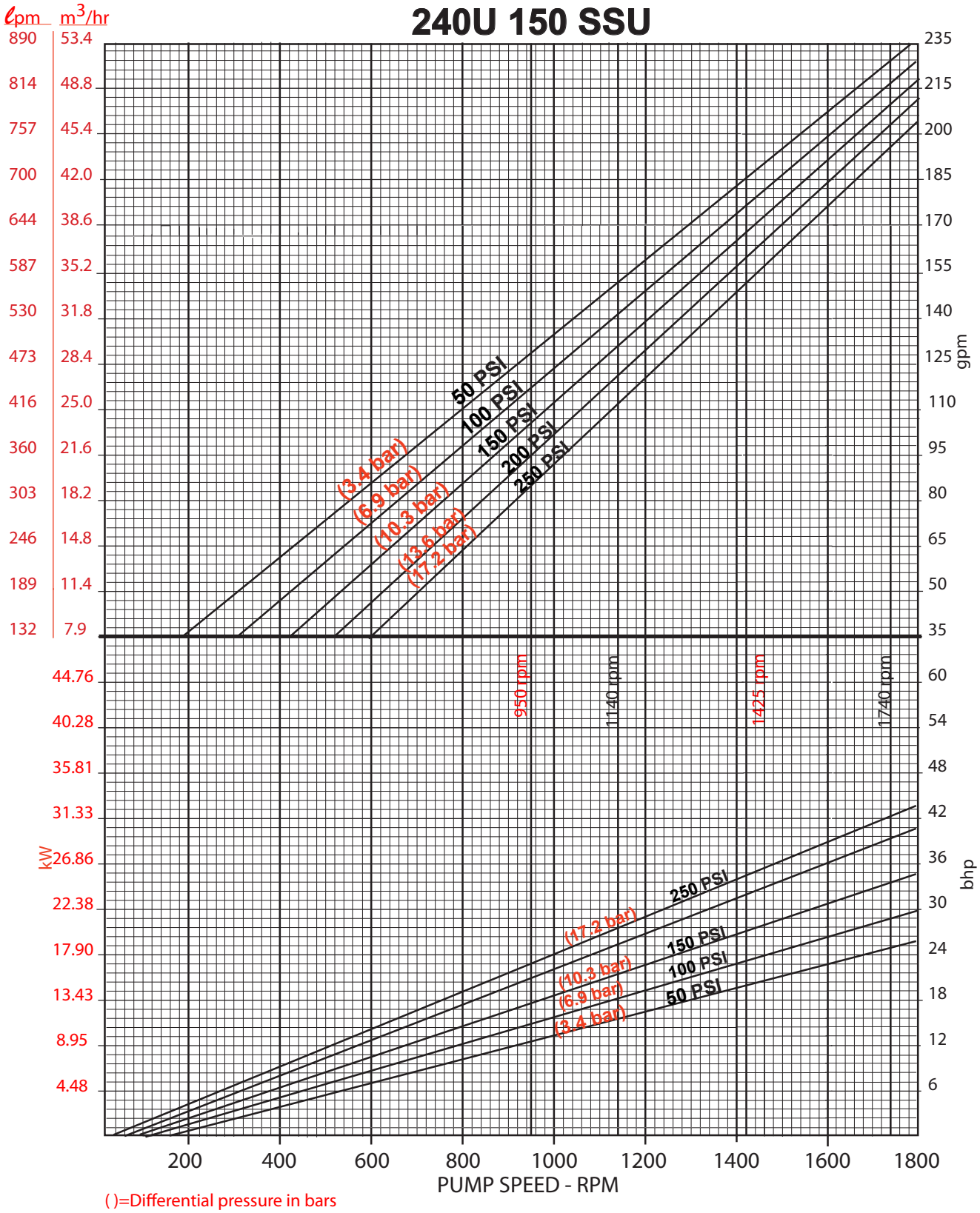
240U 150 SSU



( )=Differential pressure in bars

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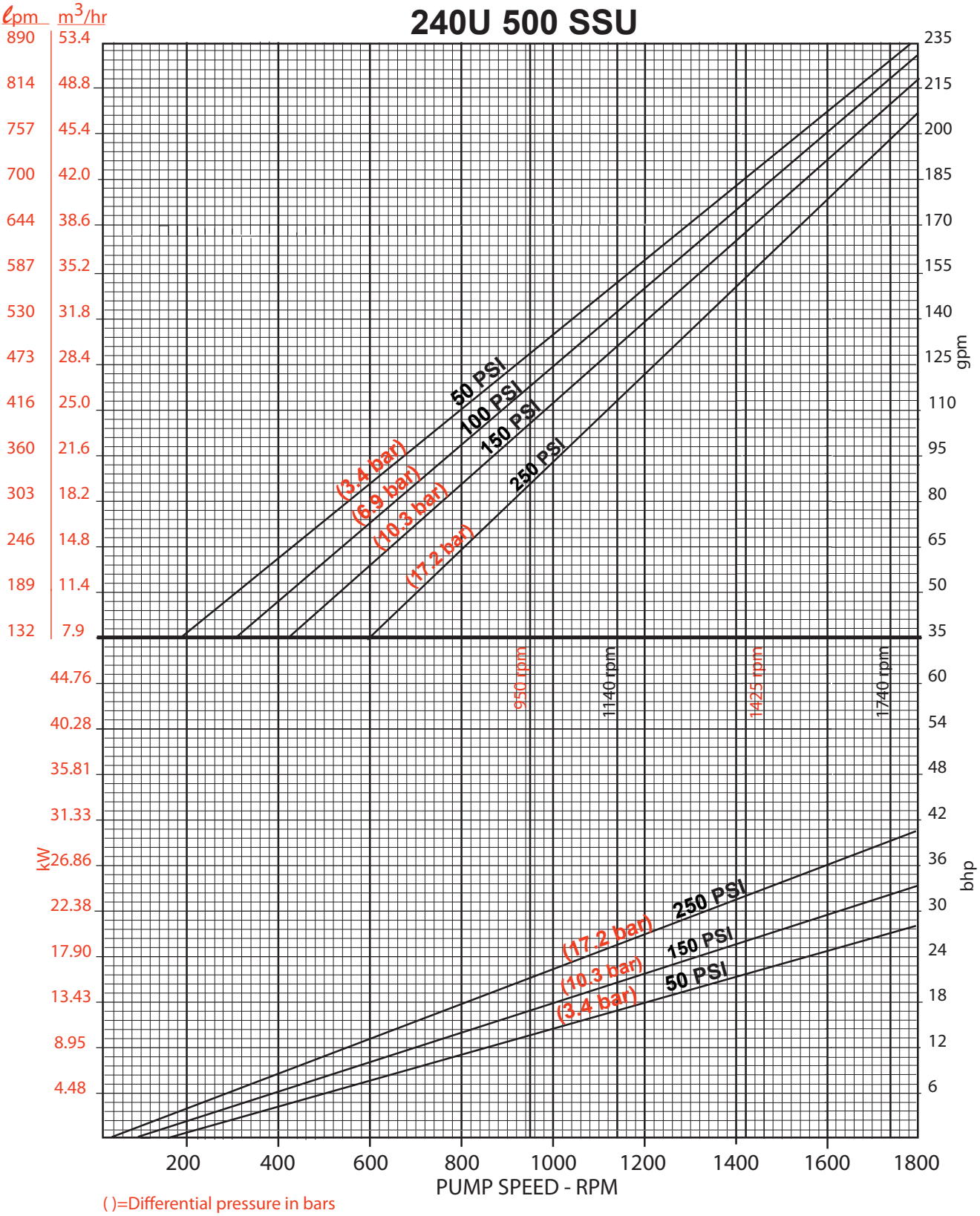
240U 500 SSU



( )=Differential pressure in bars

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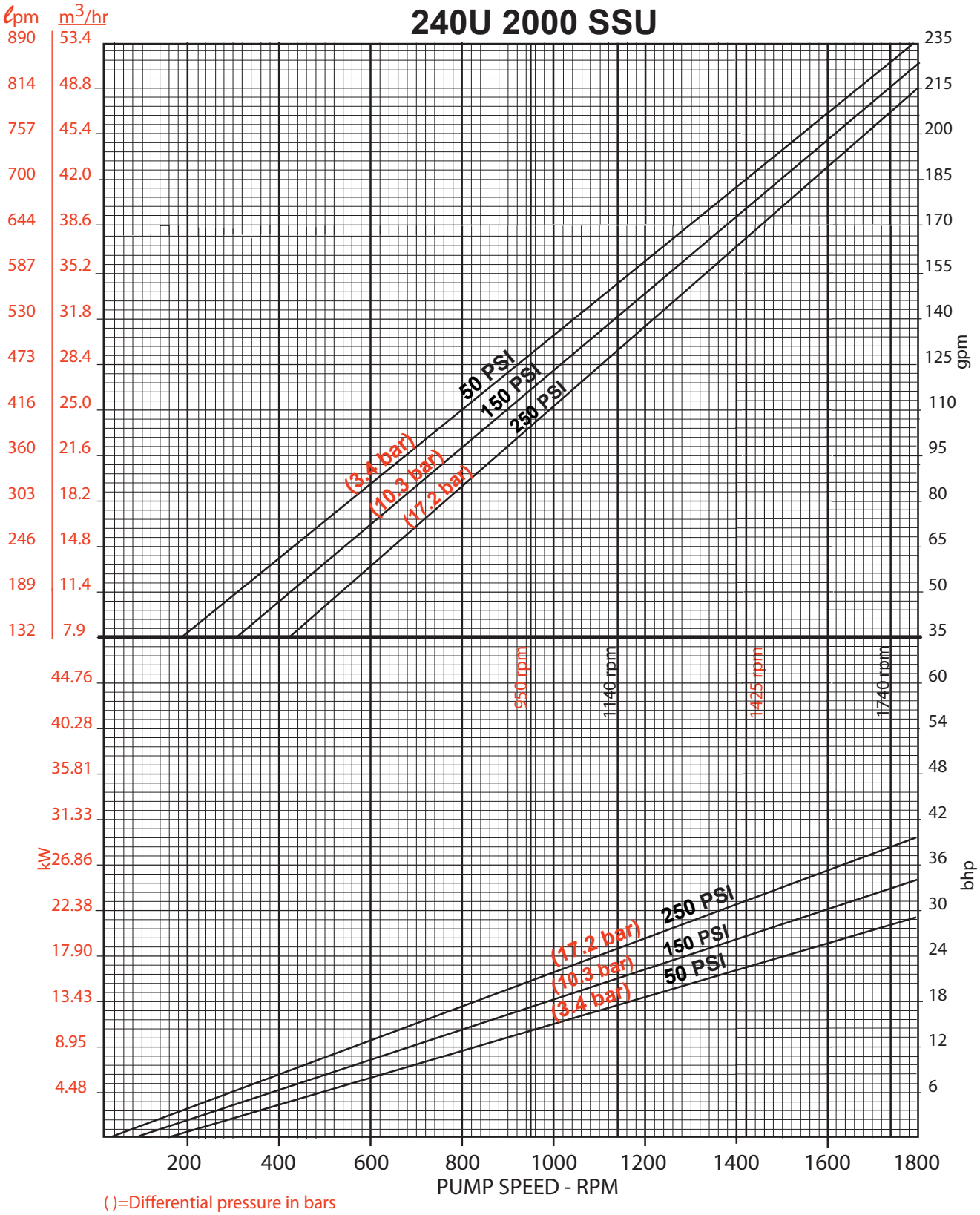
240U 2000 SSU



( )=Differential pressure in bars

HAIGHT® PUMPS
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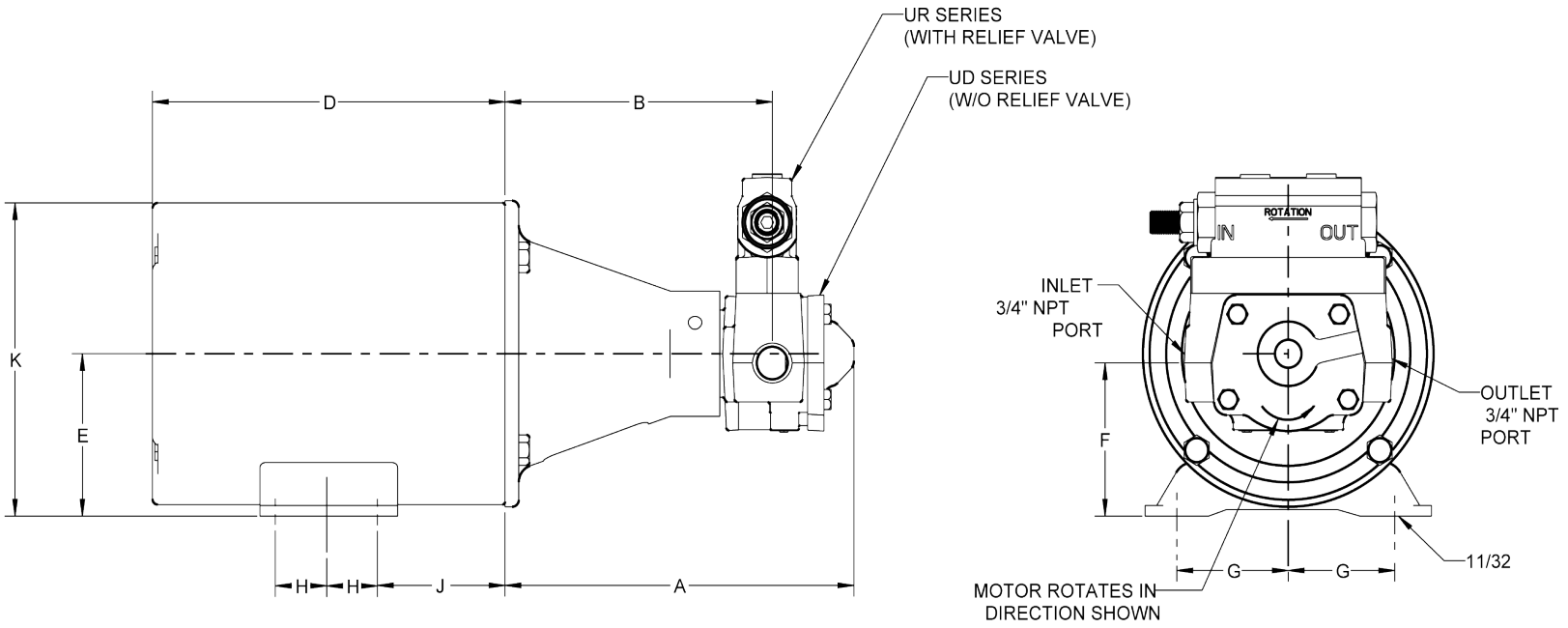
HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

Z56RO Bracket for 1-9EU GPM Round Hub Pumps

Z56RO Bracket for 1-8 GPM Round Hub Pumps

		A	B	D	E	F	G	H	J	K
MODEL	1UR	7 13/16	5-15/16							
	3UR	7 13/16	5-15/16							
	5UR	8	5-15/16							
	6UR	8 5/16	6							
	8UR	8 7/16	6							
	6EUR	8 9/16	5 7/8							
	7EUR	8 9/16	5 7/8							
	8EUR	8 9/16	5 7/8							
	9EUR	8 9/16	5 7/8							
FRAME	48			✲ 9 3/8	3	2 13/16	2 1/8	1 3/8	2 5/16	5 13/16
	56			✲ 9 3/4	3 1/2	3 5/16	2 7/16	1 1/2	2 9/16	6 3/4

✲ "D" Dimension will vary with motor enclosure



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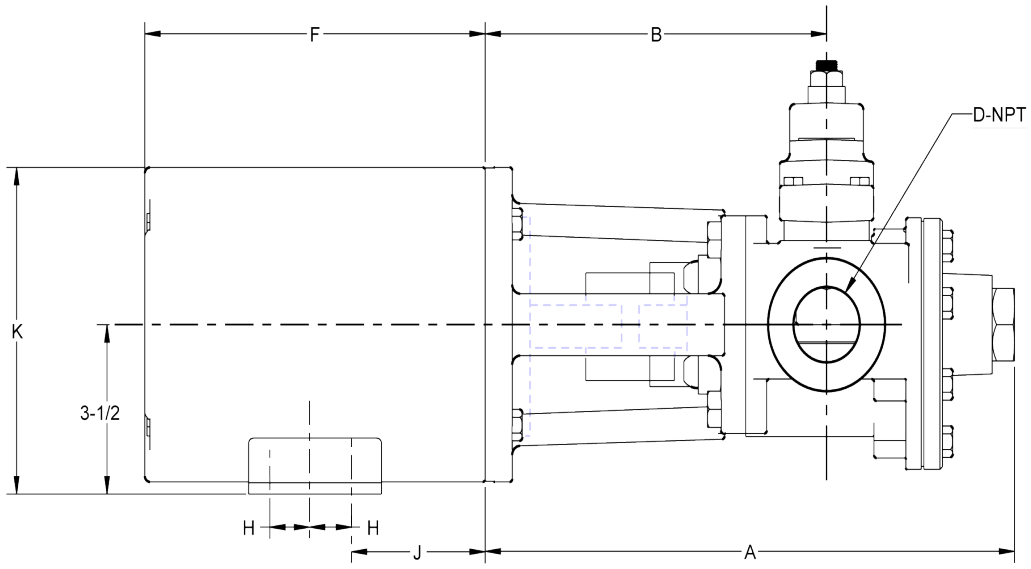
Z56SO Bracket for 10-40 GPM Square Flanged Pumps

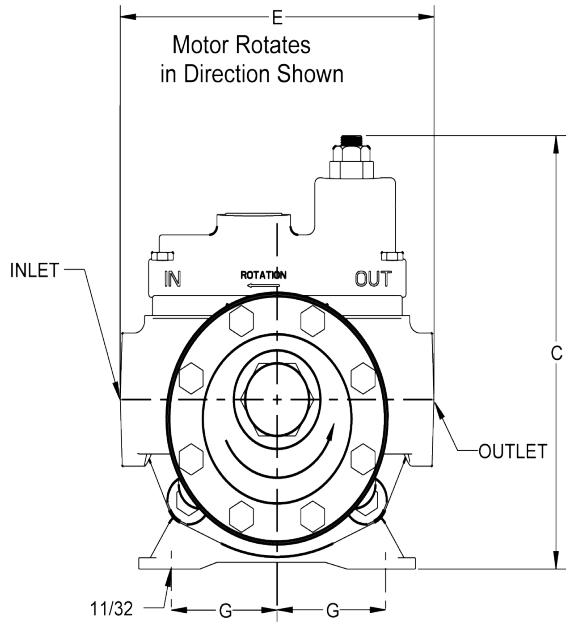
Z56S0 Bracket For 10-40 GPM Square Flanged Pumps

		A	B	C	D	E	F	G	H	J	K
MODEL	10UR	12-5/16	8-1/16	8-31/32	1	7					
	15UR	12-5/16	8-1/16	8-31/32	1-1/4	7					
	20UR	12-5/16	8-1/16	8-31/32	1-1/4	7					
	24UR	12-7/16	8-1/32	8-31/32	1-1/2	7-3/8					
	30UR	12-7/16	8-1/32	8-31/32	1-1/2	7-3/8					
	40UR	12-7/16	8-1/32	8-31/32	1-1/2	7-3/8					
FRAME											
	56						* 9-3/4	2-7/16	1-1/2	2-9/16	6-3/4
	143						* 10	2-3/4	2	2-3/4	6-13/16
	145						* 10	2-3/4	2-1/2	2-3/4	6-13/16

* "F" Dimension will vary with motor enclosure



LEFT SIDE



FRONT VIEW

HAIGHT® PUMPS
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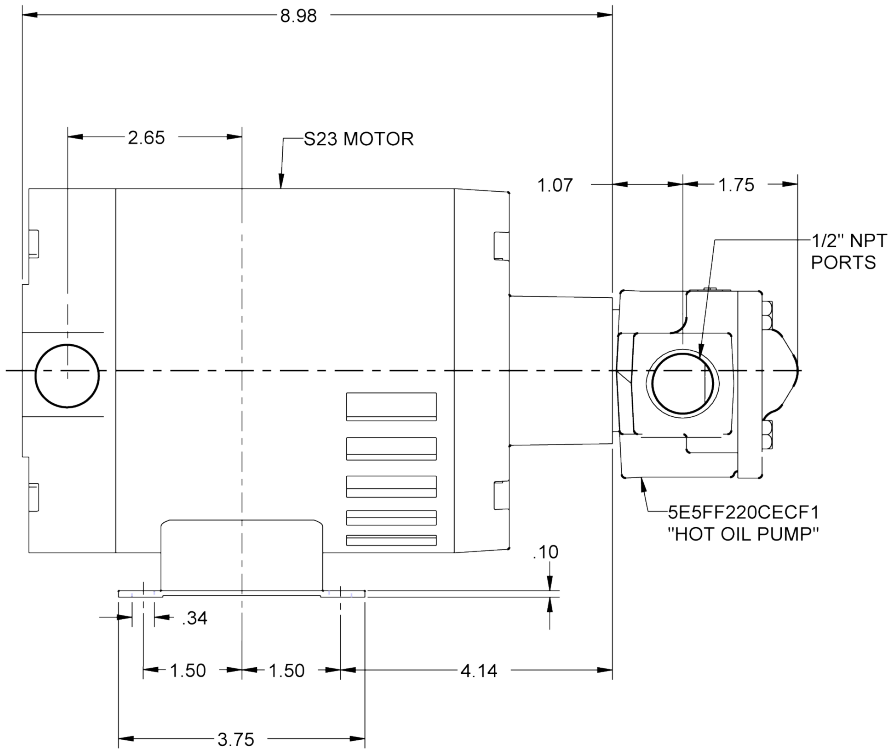
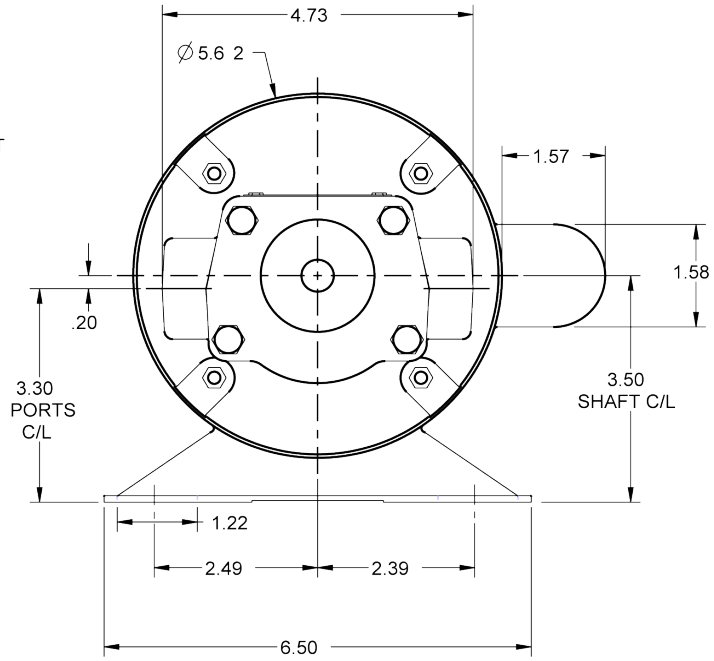
5E with S23
Pump & Motor Assembly



Right Side



Front View

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC

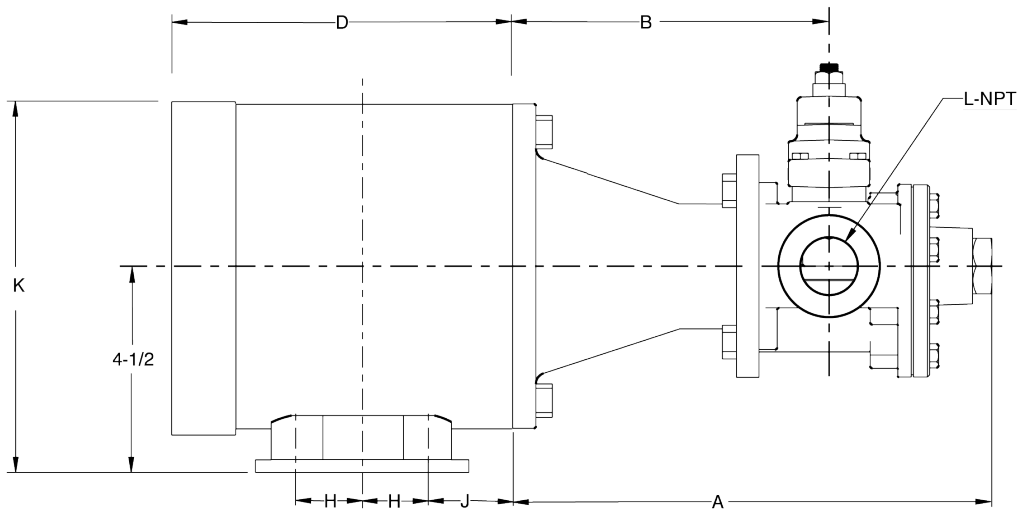
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

Z182S Bracket for 10-40 GPM Square Flanged Pumps

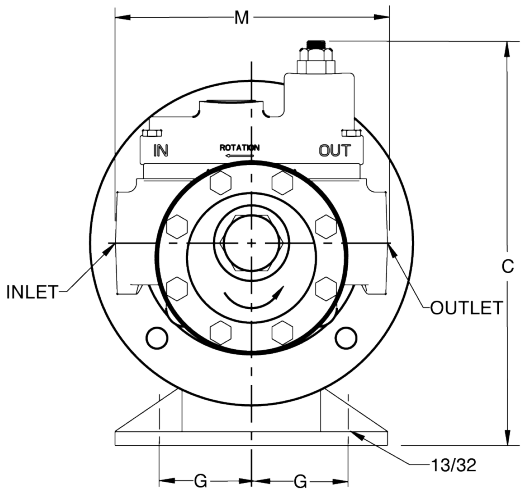
Z182S Bracket For 10-40 GPM Square Flanged Pumps

		A	B	C	L	M	D	G	H	J	K
MODEL	10UR	12-7/8	8-19/32	9-31/32	1	7					
	15UR	12-7/8	8-19/32	9-31/32	1-1/4	7					
	20UR	12-7/8	8-19/32	9-31/32	1-1/4	7					
	24UR	13	8-9/16	9-31/32	1-1/2	7-3/8					
	30UR	13	8-9/16	9-31/32	1-1/2	7-3/8					
	40UR	13	8-9/16	9/31/32	1-1/2	7-3/8					
FRAME											
	182						*	3-3/4	2-1/4	3-1/2	8-3/4
	184						*	3-3/4	2-3/4	3-1/2	8-3/4

* "D" Dimension will vary with motor enclosure



LEFT SIDE



ROTATION ARROW DENOTES
STANDARD CLOCKWISE ROTATION

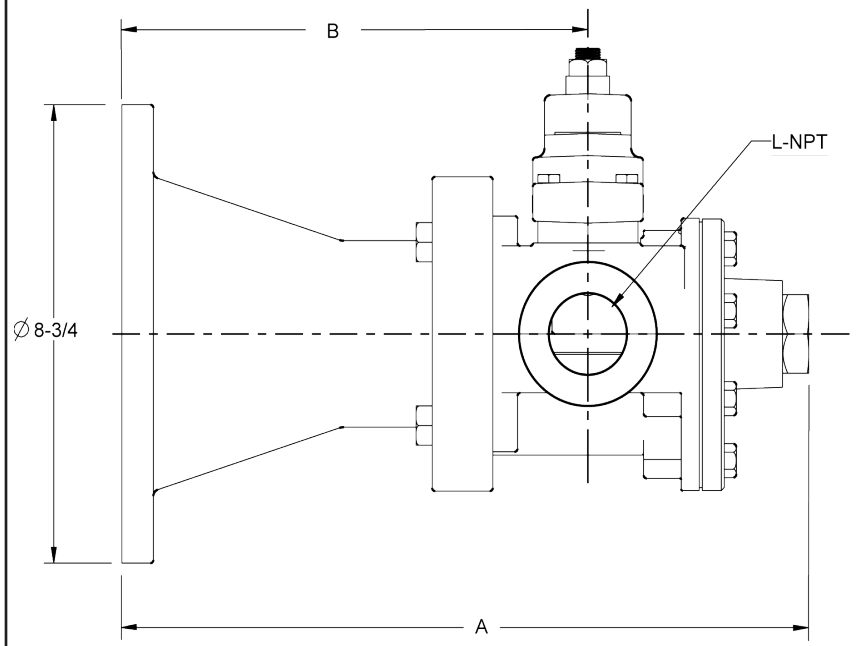
FRONT VIEW

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

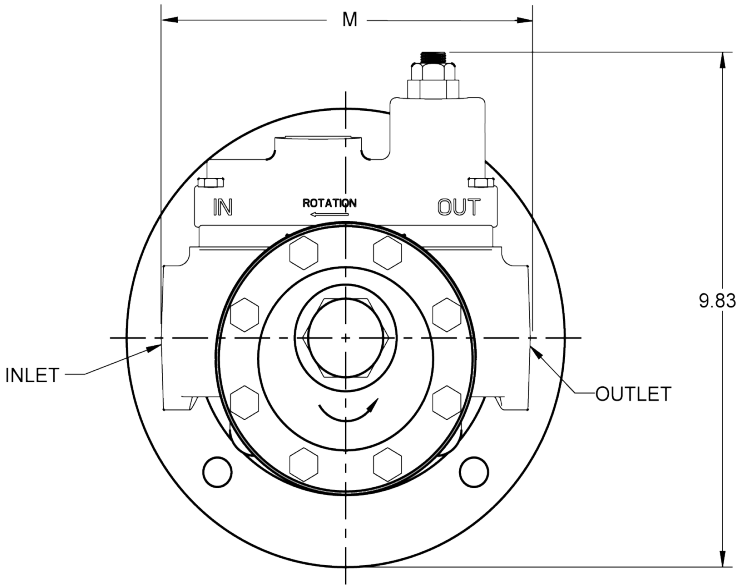
Z213S Bracket for 10-40 GPM Square Flanged Pumps

Z213S Bracket For 10-40 GPM Square Flanged Pumps

		A	B	L	M
MODEL	10UR	13-15/32	9-7/32	1	7
	15UR	13-15/32	9-7/32	1-1/4	7
	20UR	13-15/32	9-7/32	1-1/4	7
	24UR	13-19/32	9-3/16	1-1/2	7-3/8
	30UR	13-19/32	9-3/16	1-1/2	7-3/8
	40UR	13-19/32	9-3/16	1-1/2	7-3/8



LEFT SIDE



ROTATION ARROW DENOTES
STANDARD CLOCKWISE ROTATION

FRONT VIEW

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

Y56R Bracket

Y56R Bracket for 1-8 GPM Round Hub Pumps

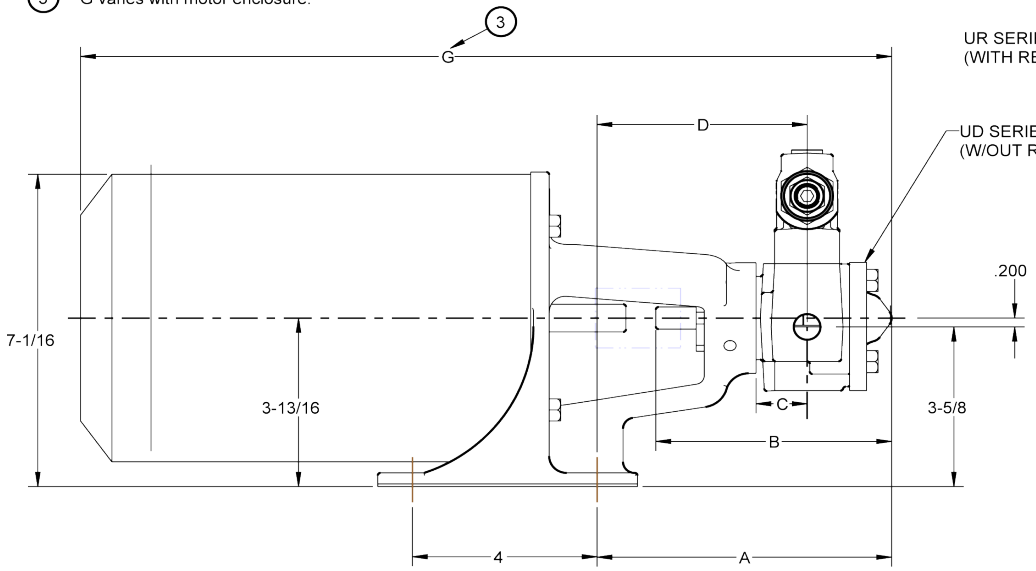
PUMP MODEL	A	B	C	D
1UR	5-5/8	5-1/8	1-3/16	4-3/4
3UR	5-5/8	5-1/8	1-3/16	4-3/4
5UR	5-13/16	5-5/16	1-3/16	4-3/4
6UR	6-1/4	5-3/4	1-1/8	4-9/16
8UR	6-7/16	5-15/16	1-1/8	4-9/16
6EUR	6-3/8	6-1/2	1-1/8	4-9/16
7EUR	6-3/8	6-1/2	1-1/8	4-9/16
8EUR	6-3/8	6-1/2	1-1/8	4-9/16
9EUR	6-3/8	6-1/2	1-1/8	4-9/16

DIMENSION "G"					
MOTOR FRAME	1UR	3UR	5UR	6UR	8UR
48	17-3/16	17-3/16	17-3/8	17-13/16	18
56	17-9/16	17-9/16	17-7/16	18-3/16	18-3/8

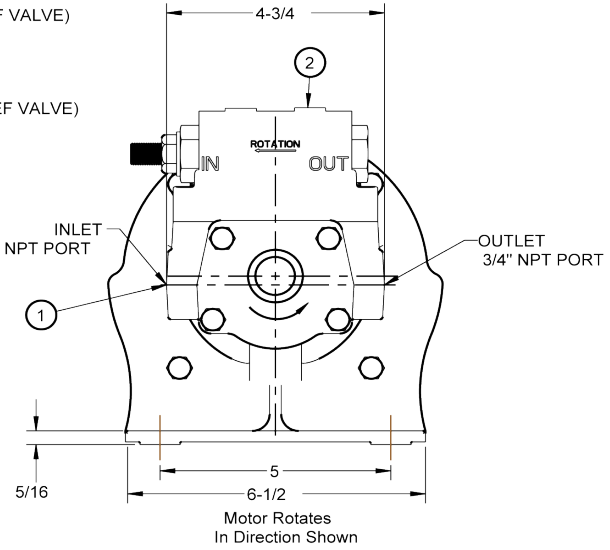
(1) 3/4 in. NPT ports standard- 1/2 in. NPT ports on order.

(2) Relief valve pipe plug is 3/8 in. NPT- same for tank return port.

(3) G varies with motor enclosure.



LEFT SIDE



FRONT VIEW

HAIGHT® PUMPS
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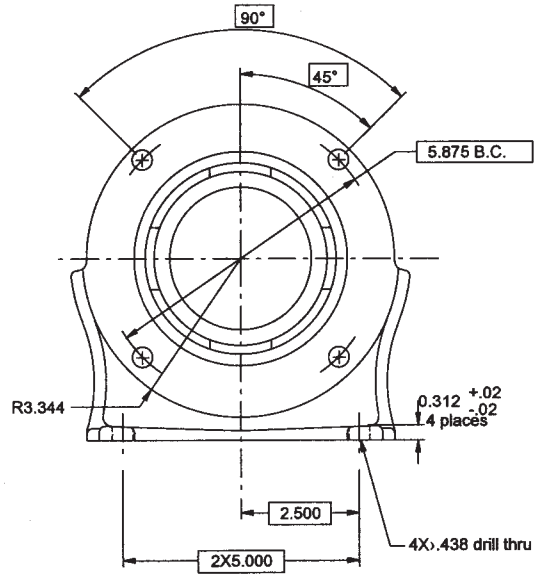
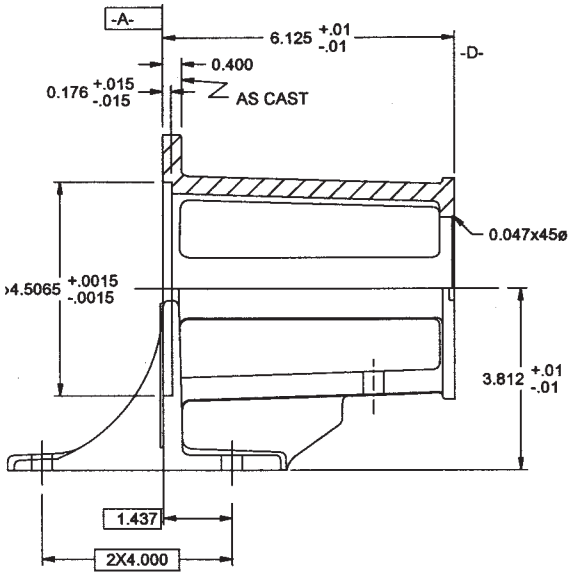
Y56S Bracket

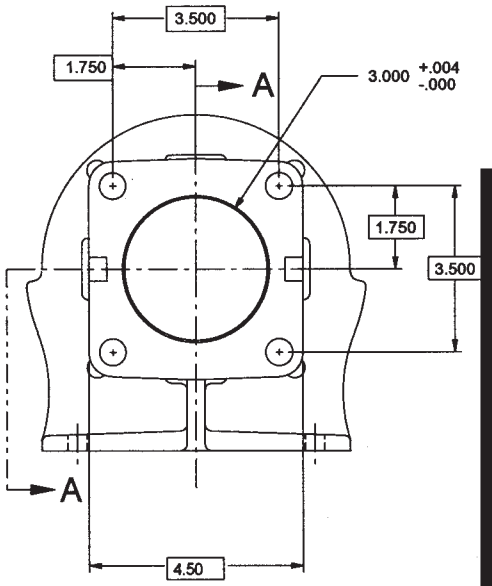
Motor End Of Bracket



Right Side



Pump End of Bracket



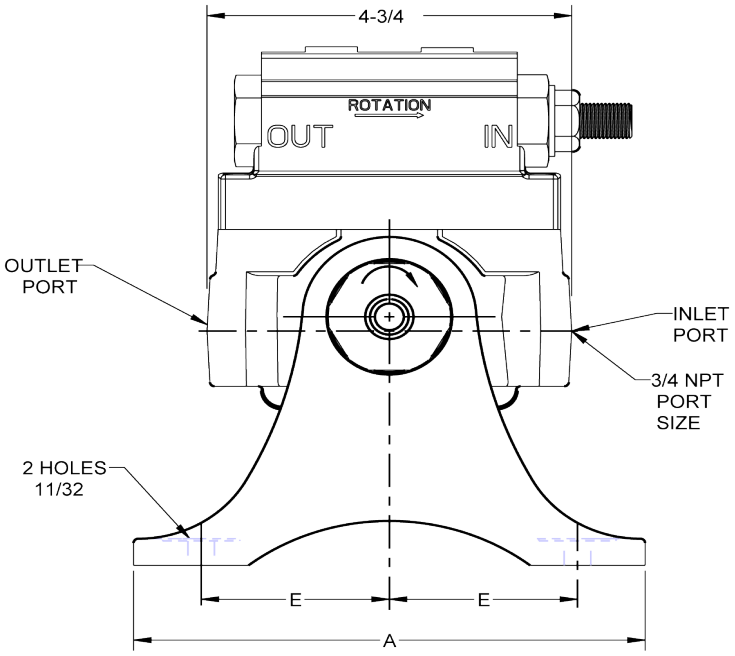
Rotation Arrow Denotes StandardClockwise Rotation

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO. LLC
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

W48 & E56 Bracket & Pump Assembly

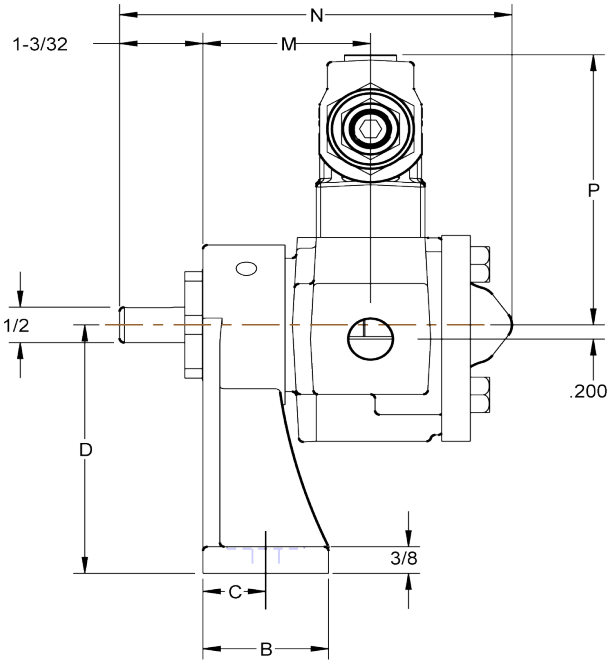
Footed Bracket For Base Mounting

		A	B	C	D	E	M	N	P
BRACKETS	W48	3-1/8	1-7/16	22/32	3	1			
	E56	6-1/2	1-5/8	13/16	3-1/2	2-7/16			
PUMPS	1UR-3UR						2-1/4	5-1/8	3-11/32
	5UR						2-1/4	5-1/4	3-11/32
	6UR						2-3/16	5-3/4	3-21/32
	8UR						2-3/16	5-15/16	3-21/32
	6EUR						2-3/16	5-13/16	4-5/32
	7EUR						2-3/16	5-13/16	4-5/32
	8EUR						2-3/16	5-13/16	4-5/32
	9EUR						2-3/16	5-13/16	4-5/32



Rotation Arrow Denotes
Standard Clockwise Rotation

SHAFT END VIEW



RIGHT SIDE

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

H140 Footed Bracket for Base Mounting for 10-40 GPM Pumps

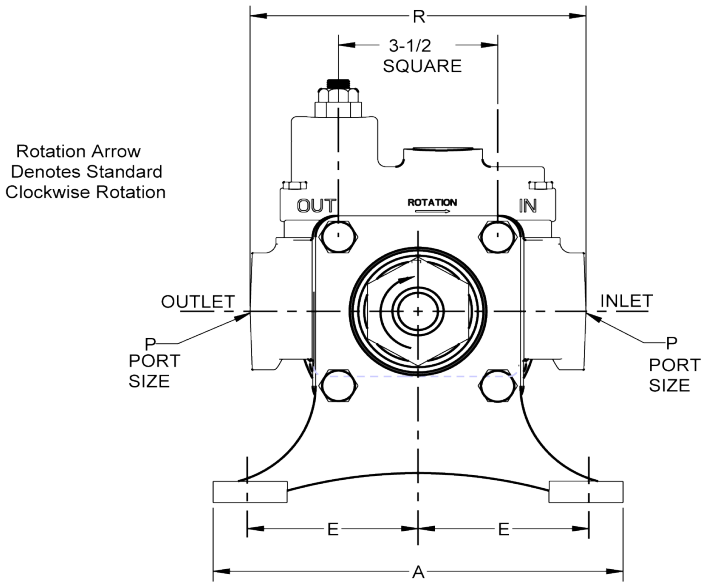
H140 Footed Bracket for Base Mounting for 10-40 GPM Haight Pumps

Pump

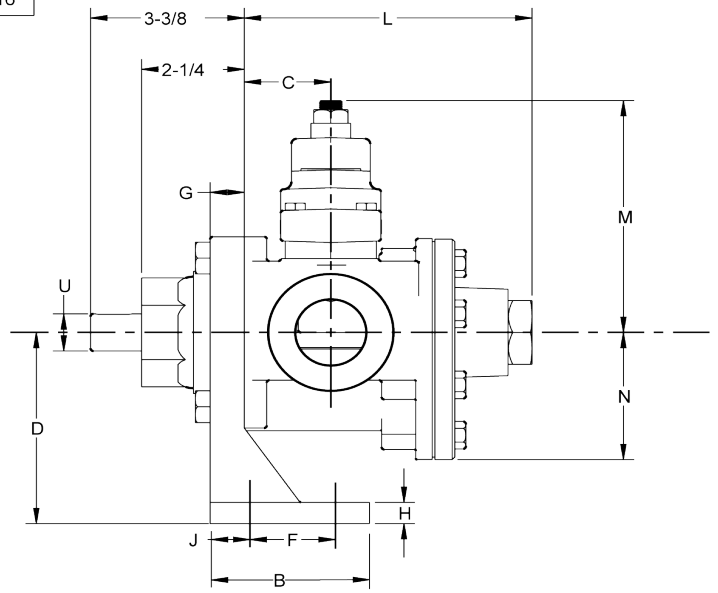
WITH R.V.	W/O R.V.	P NPT	R	U	C	L	M (UR)	M (UD)	N
10UR	10UD	1	7	5/8	1-15/16	6-3/16	5-15/32	2-1/4	2-3/4
15UR	15UD	1-1/4	7	5/8	1-15/16	6-3/16	5-15/32	2-1/4	2-3/4
20UR	20UD	1-1/4	7	5/8	1-15/16	6-3/16	5-15/32	2-1/4	2-3/4
24UR	22UD	1-1/2	7-3/8	7/8	1-29/32	6-5/16	5-15/32	2-1/4	3
30UR	30UD	1-1/2	7-3/8	7/8	1-29/32	6-5/16	5-15/32	2-1/4	3
40UR	40UD	1-1/2	7-3/8	7/8	1-29/32	6-5/16	5-15/32	2-1/4	3

Bracket

SIZE	D	A	B	E	F	H	G	J
H140	3-1/2	7	2-1/8	2-3/4	0	1/2	5/8	1-1/2
H182	4-1/2	9	3-1/2	3-3/4	1-7/8	1/2	3/4	7/8
H213	5-1/4	10	3-1/2	4-1/4	1-7/8	1/2	3/4	7/8
H254	6-1/4	12-1/8	4-5/8	5	1-1/2	11/16	3/4	1-1/16



SHAFT END VIEW



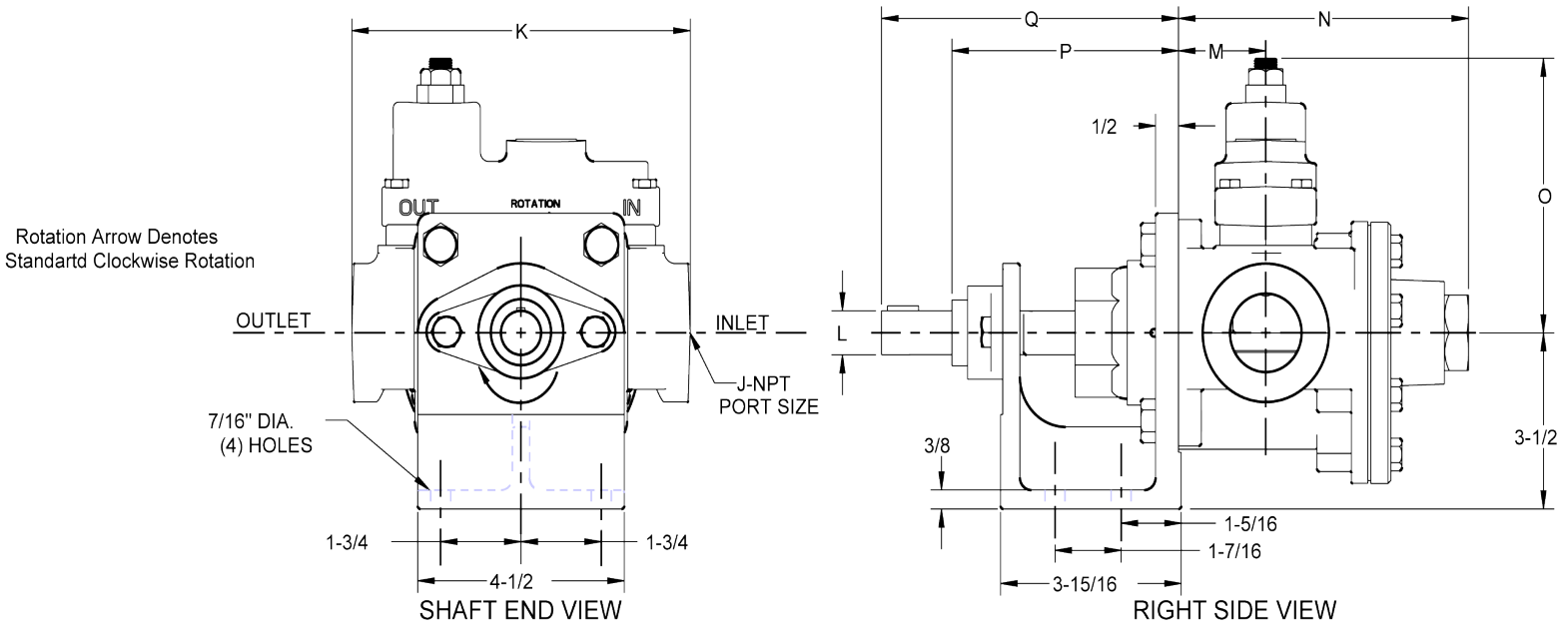
RIGHT SIDE VIEW

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

S1040 Outboard Bearing Bracket for 10-40 GPM Pumps

S1040 Outboard Bearing Bracket for 10-40 GPM Haight Pumps

Pump	J	K	L	M	N	O	P	Q
10UD	1	7	5/8	1-15/16	6-3/16	2-1/4	5	6-7/8
10UR	1	7	5/8	1-15/16	6-3/16	5-15/32	5	6-7/8
15UD, 20UD	1-1/4	7	5/8	1-15/16	6-3/16	2-1/4	5	6-7/8
15UR, 20UR	1-1/4	7	5/8	1-15/16	6-3/16	5-15/32	5	6-7/8
24UD, 30UD, 40UD	1-1/2	7-3/8	7/8	1-29/32	6-5/16	2-1/4	5-1/8	7-1/8
24UR, 30, 40UR	1-1/2	7-3/8	7/8	1-29/32	6-5/16	5-15/32	5-1/8	7-1/8



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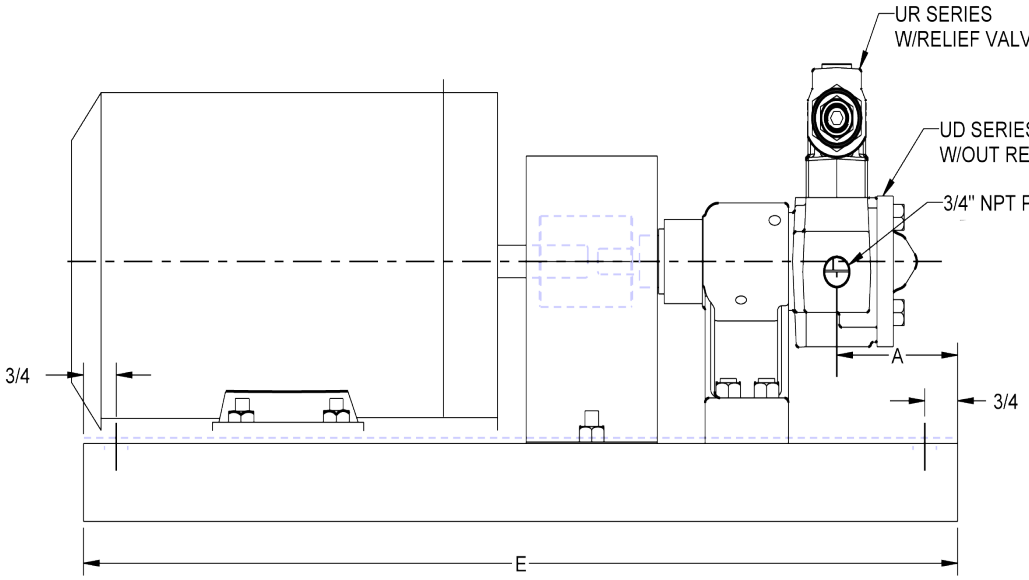
1U - 9EU
Bedplate Assembly

1UD/UR THROUGH 9UD/UR
BEDPLATE ASSEMBLY

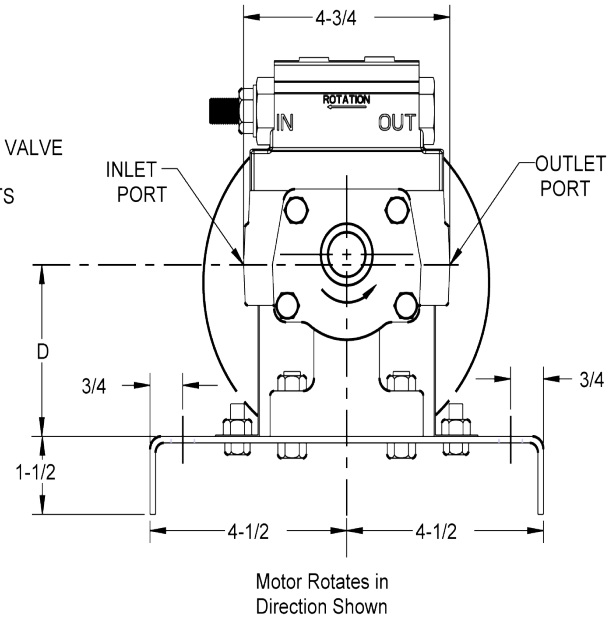
BEDPLATE	FRAME	D	E
S56B	48	3	* 20
	56, 143 145	3-1/2	
S140B	182 184	3-1/2	* 24

PUMP	A
1-5 UD/UR	2-13/16
6 & 8 UD/UR	2-3/4
6-9 EU/EUR	2-3/4

* "E" Dimension will vary with motor enclosure



LEFT SIDE



FRONT VIEW

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO. LLC
133 Enterprise Street • Evansville, WI 53536
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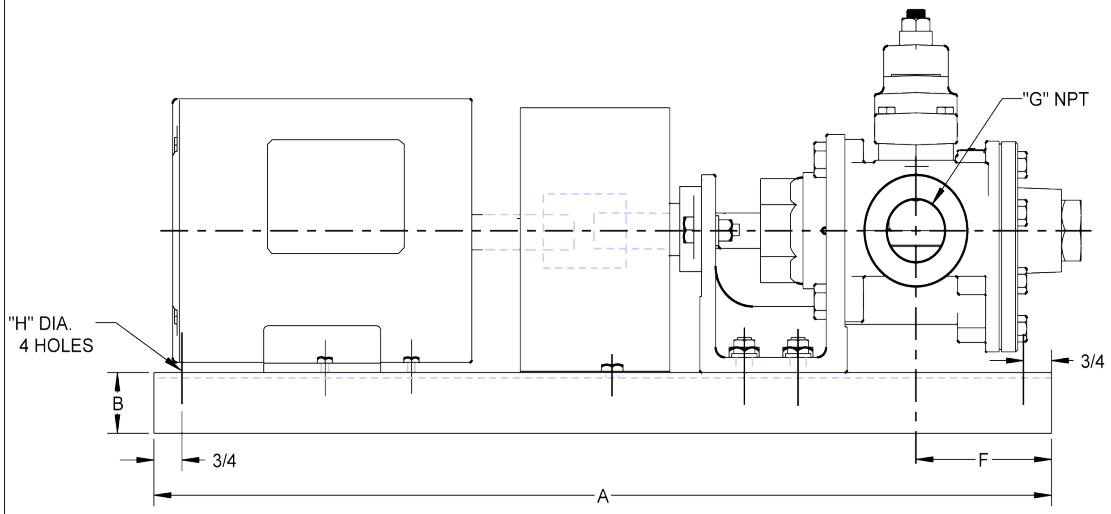
Bedplate Assembly for 10-40 GPM Pumps

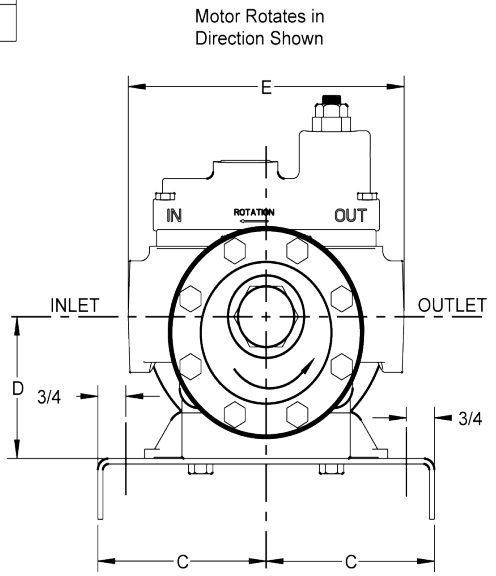
Bedplate Assembly for 10-40 GPM Haight Pumps

MODEL	BEDPLATE	FRAME	A	B	C	D	E	F	G	H
10UD 10UR	S140B	56 143 145	* 24	1-1/2	4-1/2	3-1/2	7	3-7/8	1	17/32
	S180B	182 184	* 26	1-5/8	5-1/2	4-1/2	7		1	21/32
	S213B	213 215	* 30	1-5/8	5-1/2	5-1/4	7		1	21/32
15UD 15UR 20UD 20UR	S140B	56 143 145	* 24	1-1/2	4-1/2	3-1/2	7	3-7/8	1-1/4	17/32
	S180B	182 184	* 26	1-5/8	5-1/2	4-1/2	7		1-1/4	21/32
	S213B	213 215	* 30	1-5/8	5-1/2	5-1/4	7		1-1/4	21/32
24UD 24UR 30UD 30UR 40UD 40UR	S140B	56 143 145	* 24	1-1/2	4-1/2	3-1/2	7-3/8	3-5/8	1-1/2	17/32
	S180B	182 184	* 26	1-5/8	5-1/2	4-1/2	7-3/8		1-1/2	21/32
	S213B	213 215	* 30	1-5/8	5-1/2	5-1/4	7-3/8		1-1/2	21/32

* "A" Dimension will vary with motor enclosure



LEFT SIDE VIEW



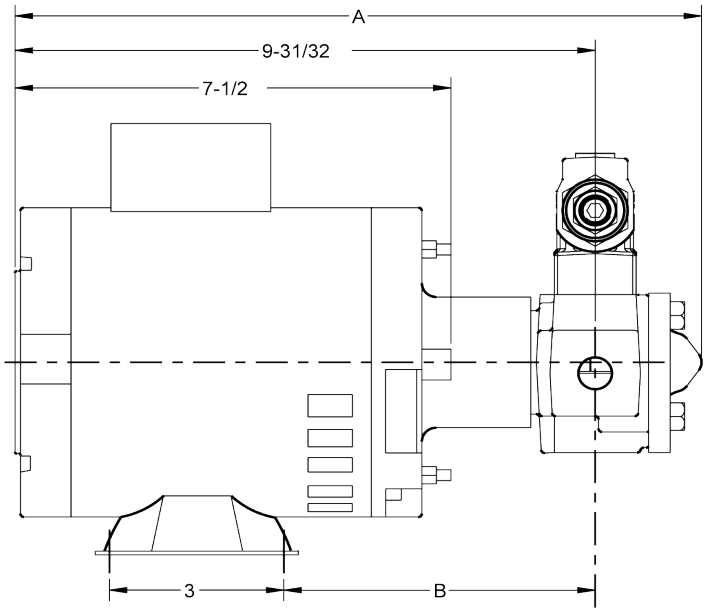
FRONT VIEW

HAIGHT® PUMPS
DIVISION OF: BAKER MANUFACTURING CO.,LLC
133 Enterprise Street • Evansville, WI 53536
Phone: 800-871-9250 • Fax: 608-882-3777

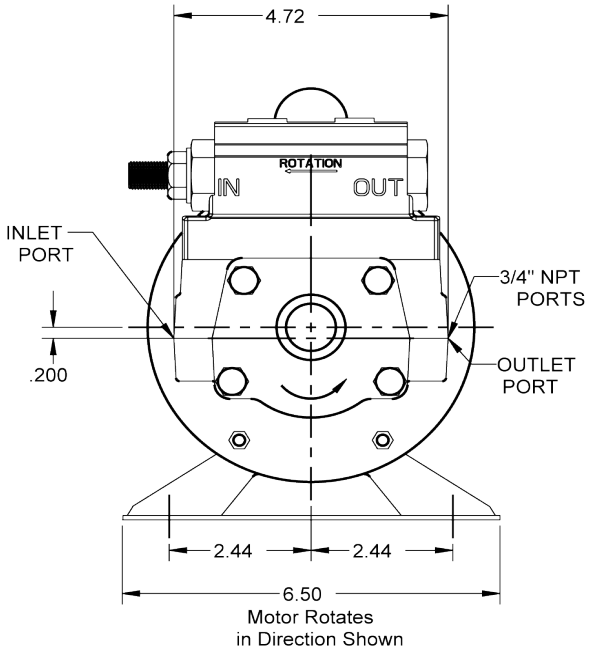
Hub Mount Assembly
1U - 9EU Pumps

HUB MOUNT ASSEMBLY
1UD/UR THROUGH 9EU/9EUR

PUMP	A	B
1UD & 1UR	11-13/16	5-13/32
3UD & 3UR	11-13/16	5-13/32
5UD & 5UR	11-15/16	5-13/32
6UD & 6UR	12-7/16	5-11/32
8UD & 8UR	12-7/8	5-11/32
6EU & 6EUR	12-1/2	5-11/32
7EU & 7EUR	12-1/2	5-11/32
8EU & 8EUR	12-1/2	5-11/32
9EU & 9EUR	12-1/2	5-11/32



LEFT SIDE



FRONT VIEW

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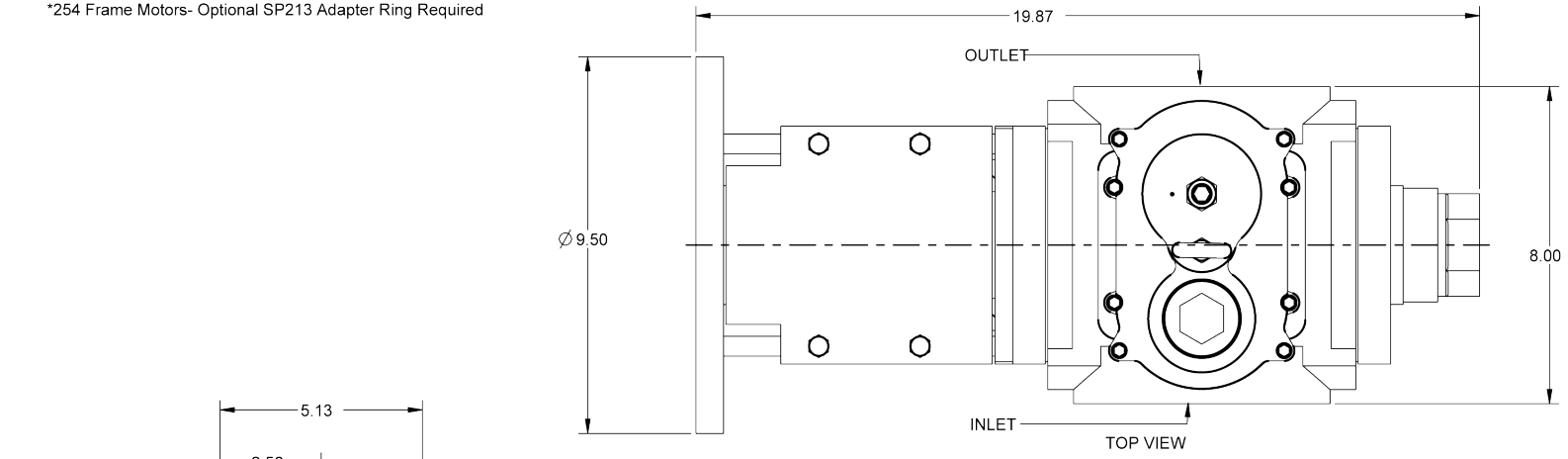
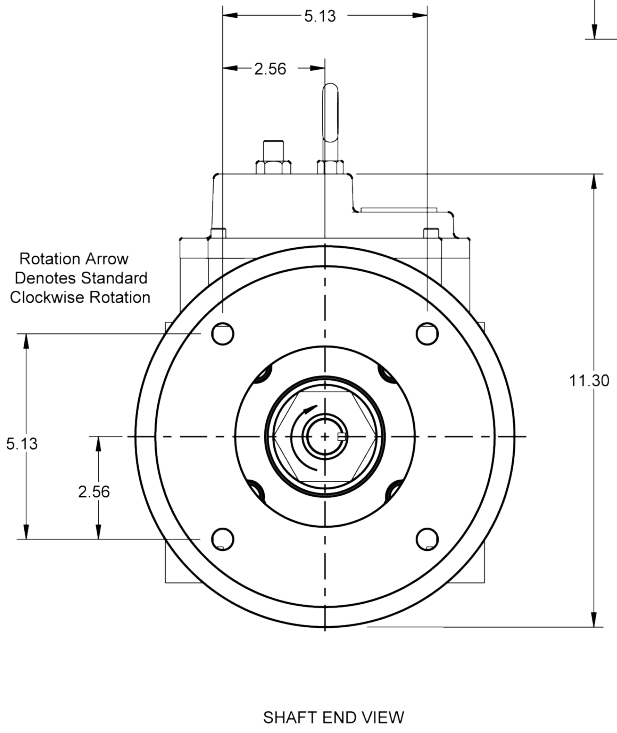
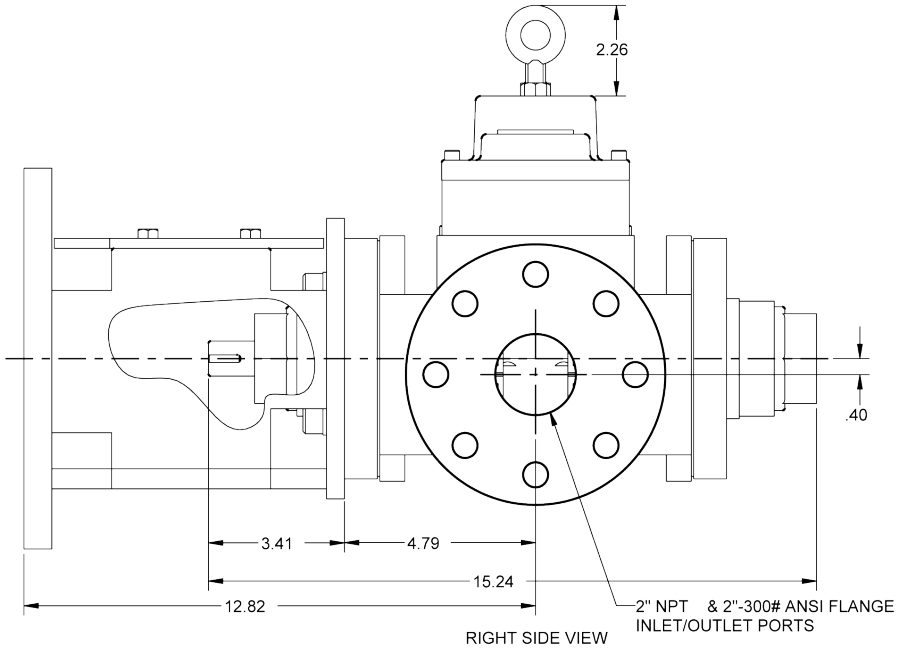
Z213D Bracket for Double Pump

Note: Z213D Bracket Will Accept:
*182 Frame Motors- Long Coupling Required
*254 Frame Motors- Optional SP213 Adapter Ring Required







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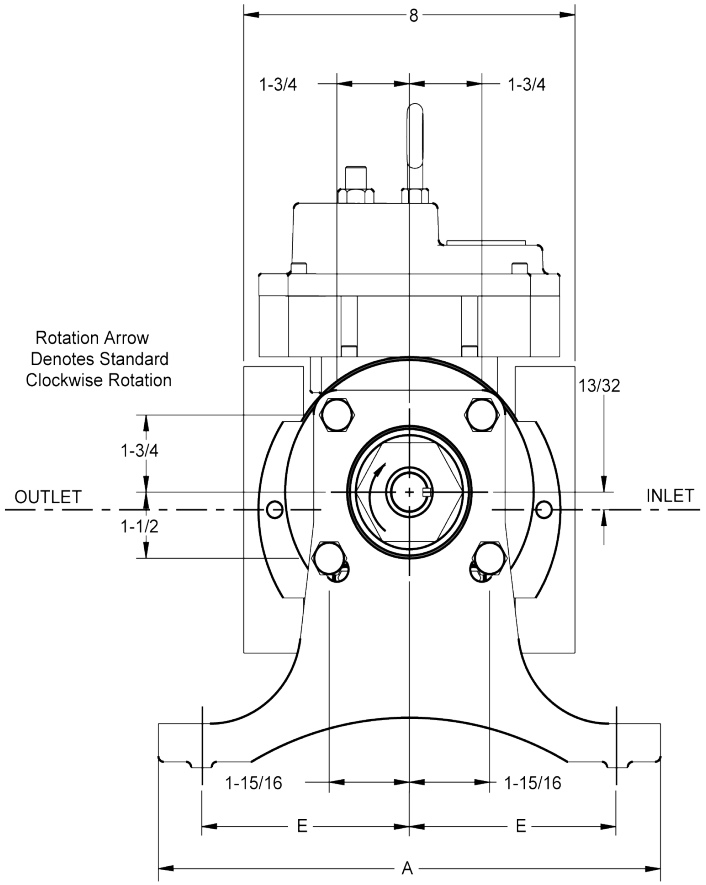
Footed Bracket for Base Mounting for 44-80 GPM Double Pumps

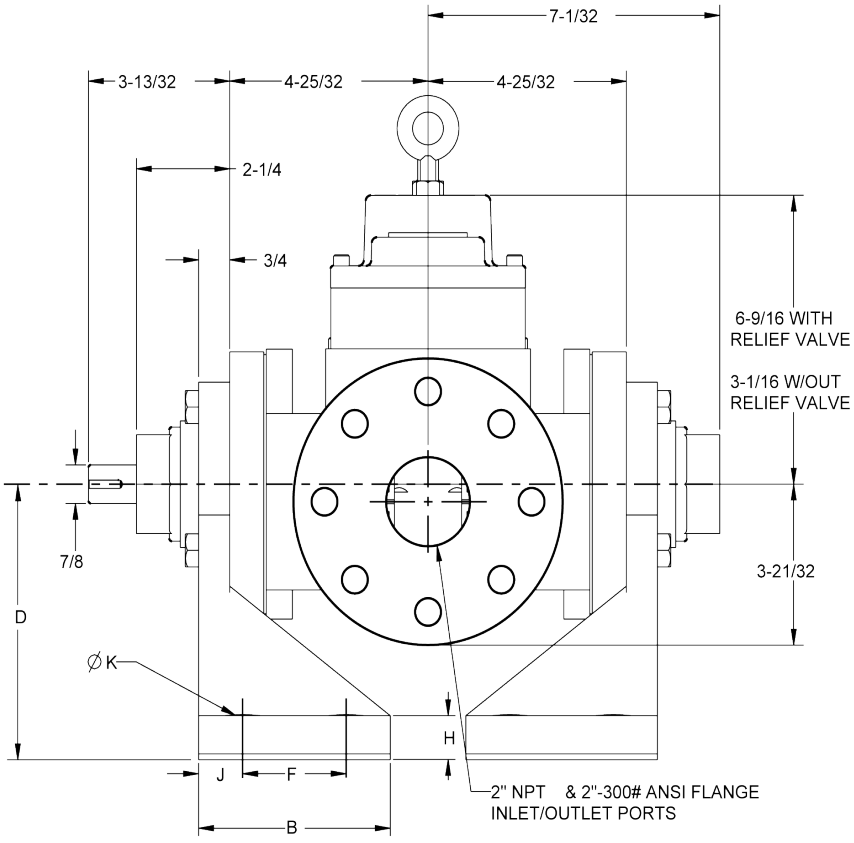
Bracket

SIZE	D	A	B	E	F	H	J	K
H182	4-1/2	9-5/16	3-9/16	3-3/4	1-7/8	11/16	7/8	13/32
H213	5-1/4	10	3-1/2	4-1/4	1-7/8	1/2	7/8	13/32
H254	6-1/4	12-1/8	4-5/8	5	1-1/2	11/16	1-1/16	17/32

Bracket sizes coincide with NEMA motor frame designations



SHAFT END VIEW



RIGHT SIDE VIEW

HAIGHT® PUMPS
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H254 Footed Bracket for Base Mounting for 10-40 GPM Barrier Seal Pumps

Pump

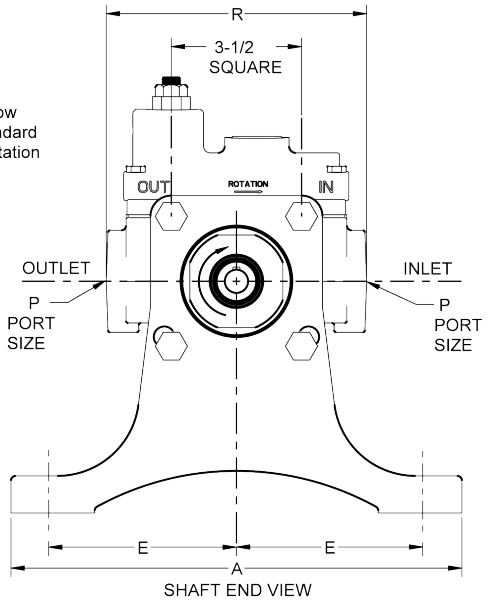
WITH R.V.	P NPT	R	U	C	L	M WITH R.V.	M W/OUT R.V.	N	S
10UR	1	7	5/8	1-15/16	6-3/16	5-1/2	2-1/4	2-3/4	6-7/8
15UR	1-1/4	7	5/8	1-15/16	6-3/16	5-1/2	2-1/4	2-3/4	6-7/8
20UR	1-1/4	7	5/8	1-15/16	6-3/16	5-1/2	2-1/4	2-3/4	6-7/8
24UR	1-1/2	7-3/8	7/8	1-29/32	6-5/16	5-1/2	2-1/4	3	7-1/8
30UR	1-1/2	7-3/8	7/8	1-29/32	6-5/16	5-1/2	2-1/4	3	7-1/8
40UR	1-1/2	7-3/8	7/8	1-29/32	6-5/16	5-1/2	2-1/4	3	7-1/8

Bracket sizes coincide with NEMA motor frame designations

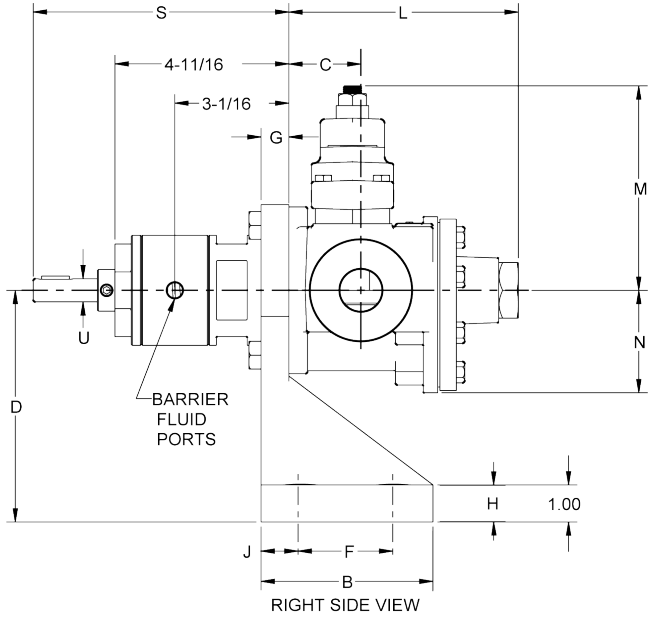
Bracket

SIZE	D	A	B	E	F	H	G	J
H140	3-1/2	7	2-1/8	2-3/4	0	1/2	5/8	1-1/2
H182	4-1/2	9	3-1/2	3-3/4	1-7/8	1/2	3/4	7/8
H213	5-1/4	10	3-1/2	4-1/4	1-7/8	1/2	3/4	7/8
H254	6-1/4	12-1/8	4-5/8	5	1-1/2	11/16	3/4	1-1/16

Rotation Arrow Denotes Standard Clockwise Rotation



SHAFT END VIEW



RIGHT SIDE VIEW

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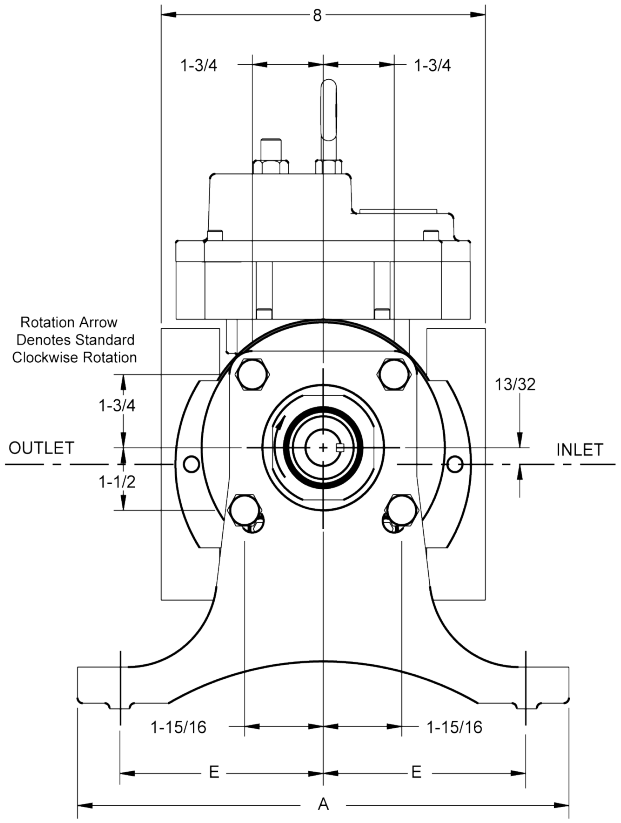
Footed Bracket For Base Mounting For 44-80 GPM Barrier Seal Double Pumps

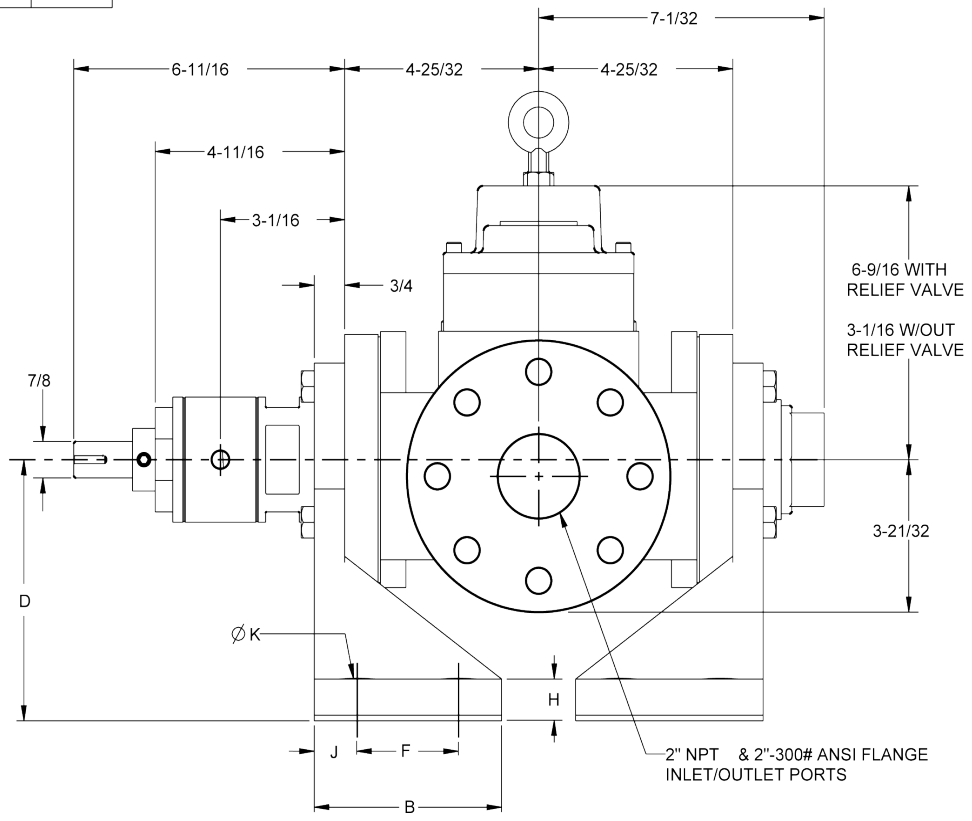
Bracket

SIZE	D	A	B	E	F	H	J	K
H182	4-1/2	9-5/16	3-9/16	4-1/4	1-7/8	1/2	7/8	13-32
H213	5-1/4	10	3-1/2	4-1/4	1-7/8	1/2	7/8	13/32
H254	6-1/4	12-1/8	4-5/8	5	1-1/2	11/16	1-1/16	17/32

Bracket sizes coincide with NEMA motor frame designations



SHAFT END VIEW



RIGHT SIDE VIEW

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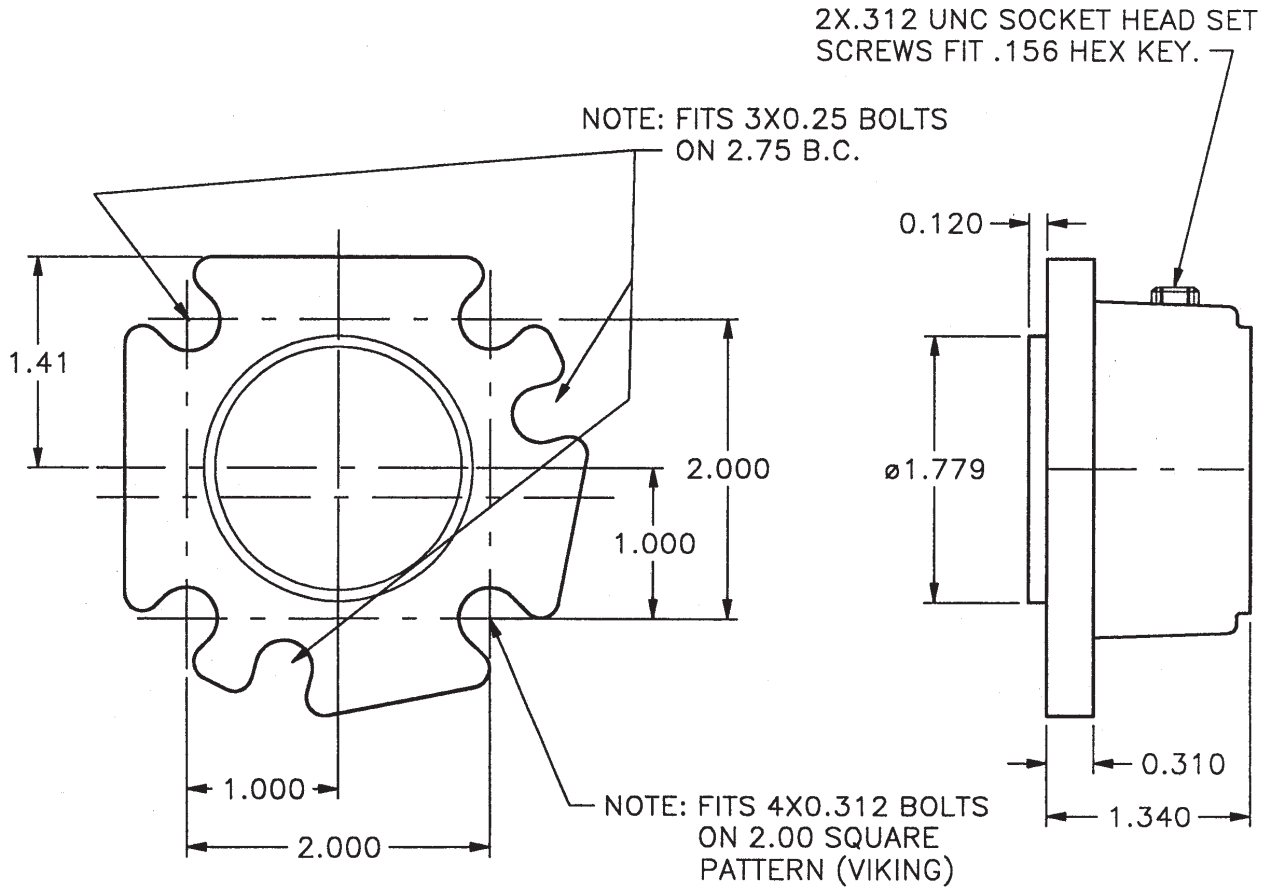
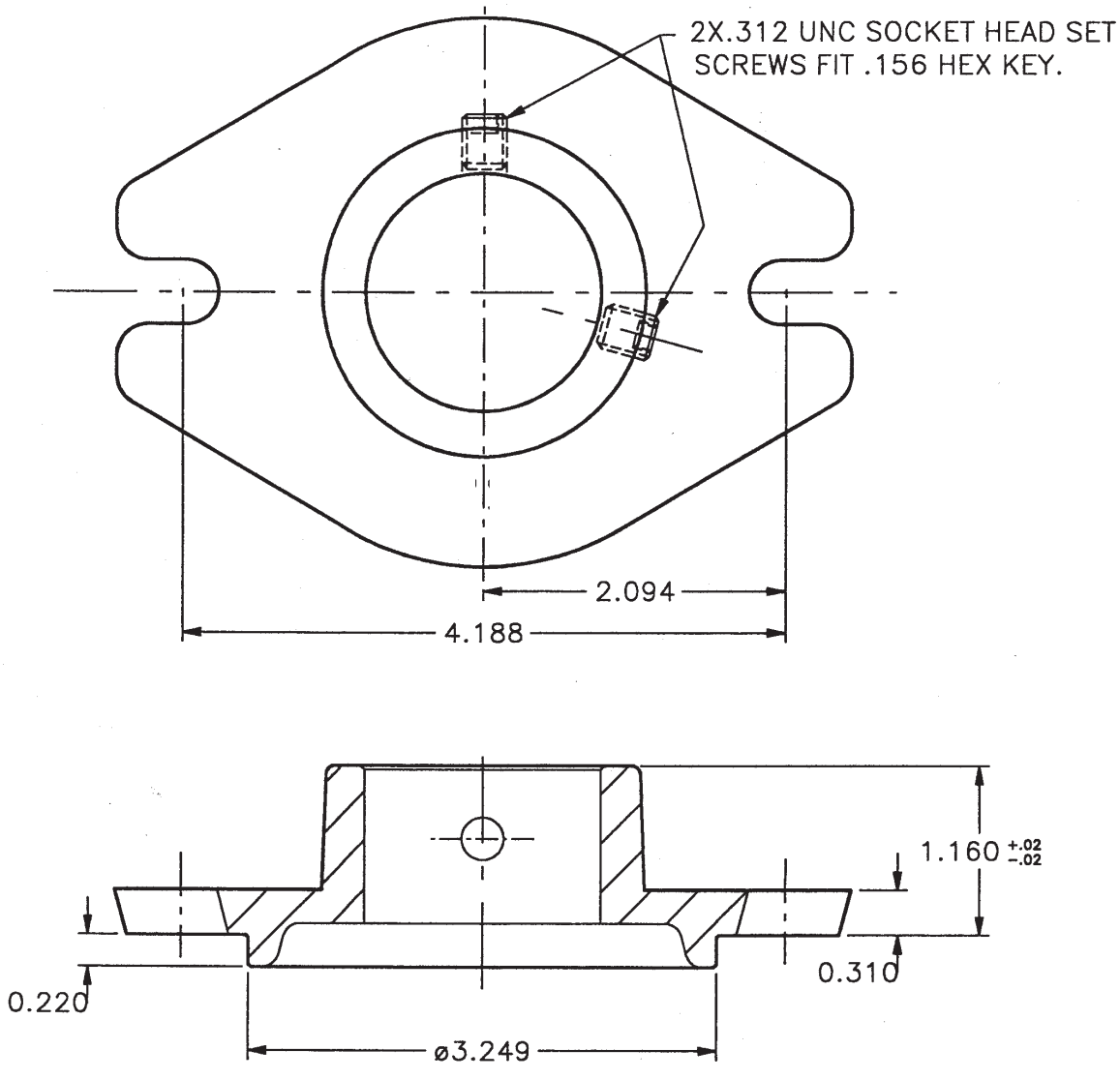
3 or 4 Bolt Style Mounting
Configuration used for direct coupled
Model 1-9EU pumps



F48SAE Bracket Assembly

SAE Style Mounting Configuration, used for direct coupled Model 1- 9EU pumps

NOTE: FITS HAIGHT HUB MOUNT PUMPS
NOTE: CONFORMS TO ANSI B93.6 82–2 CODE (SAE A)
PART NO. F48SAE



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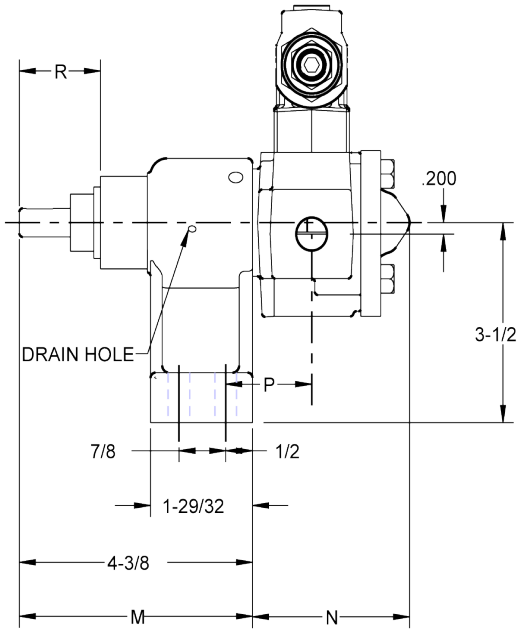
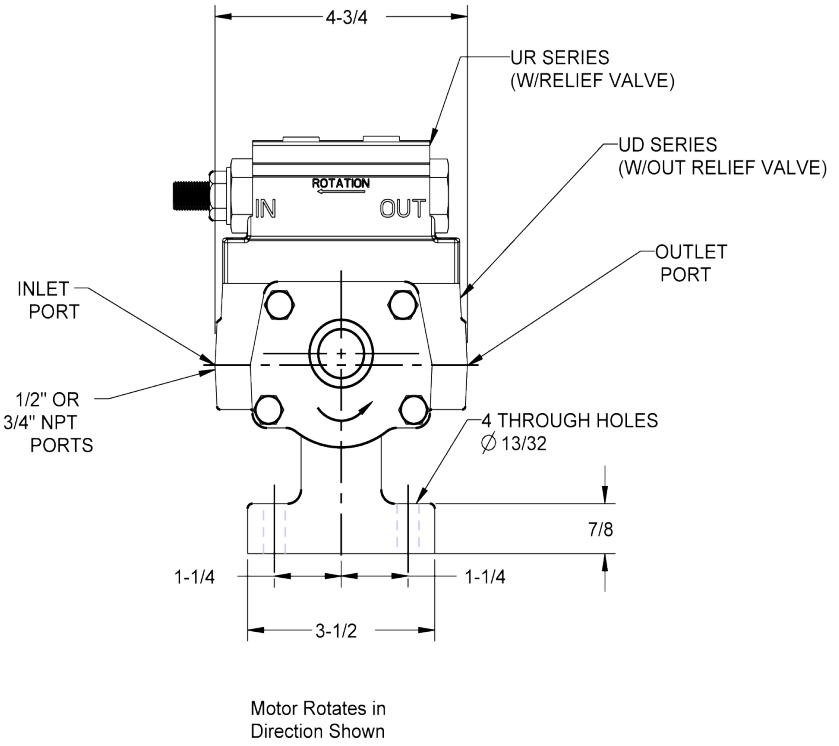
Outboard Bearing Bracket & Pump Assembly

Outboard Bearing Bracket & Pump Assembly

PUMP	M	N	P	R
1UD & 1UR	4-3/8	2-15/16	1-19/32	1-1/2
3UD & 3UR	4-3/8	2-15/16	1-19/32	1-1/2
5UD & 5UR	4-3/8	3-1/16	1-19/32	1-1/2
6UD & 6UR	4-13/32	3-19/32	1-1/2	1-17/32
8UD & 8UR	4-13/32	3-19/32	1-1/2	1/17/32
6EU & 6EUR	4-13/32	3-5/8	1-1/2	1-17/32
7EU & 7EUR	4-13/32	3-5/8	1-1/2	1-17/32
8EU & 8EUR	4-13/32	3-5/8	1-1/2	1-17/32
9EU & 9EUR	4-13/32	3-5/8	1-1/2	1-17/32



LEFT SIDE



FRONT VIEW