



System One®

Pump Catalog



Industry Standard for Reliability

- High-strength, low maintenance line of innovative process pumps
- Designed specifically for the toughest, most extreme environments
- Sets the industry standard for high-quality and durability

Durability

- Lowest shaft stiffness ratio (L^3/D^4) in the process industry:
 - Frame S – 46 (1.9)
 - Frame LD17 – 17 (.65)
 - Frame M – 19 (.87)

Exclusive Features

- Designed around the seal and bearings where 90% of failures occur
- Designed to maximize system reliability – stronger, more vibration-resistant pump
- Heavy-duty, solid, low deflection shaft prevents common vibration damage and greater stability at the seal area to improve seal life
- Heavy-duty bearings offer greater load capacity and extend bearing life
- Patented System One® Labyrinth Seals provide non-wearing lifetime protection for radial and thrust bearings

Heavy-Duty Construction

- Heavy-duty shaft, bearings, seals and housing design means this pump is built for reliability in the most extreme environments
- Offers the widest window of operation off the BEP of any conventional centrifugal pump

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¹ SpiralTrac is a registered trademark of the manufacturer, EnviroSeal Engineering Products Ltd., Waverly, Nova Scotia



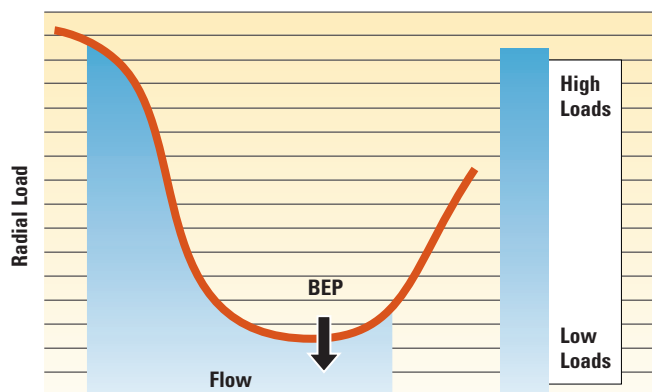
blackOPS: Blackmer Optimum Pump Solutions

blackOPS is a selection software program created specifically for Blackmer's System One centrifugal and positive displacement pump lines. The program allows you to print (or save) your pump selection data and pump curves in a PDF format. For additional information on blackOPS, please visit our web site.

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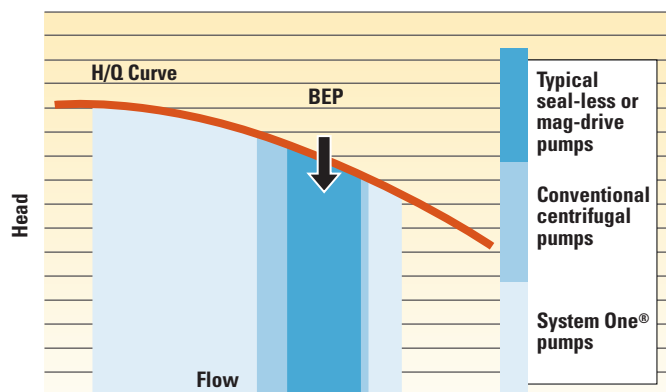
Wider Window of Operation Off the BEP (Best Efficiency Point)



Many processes demand operation off the BEP where higher loads can create damaging vibration.

Process Pump Challenges:

- Due to process changes and variations, the majority of process pumps operate off the BEP where radial loads create high stresses.
- Conventional pumps are prone to damaging shaft vibration under off-BEP conditions.
- Seal and bearing failures result from vibration damage.

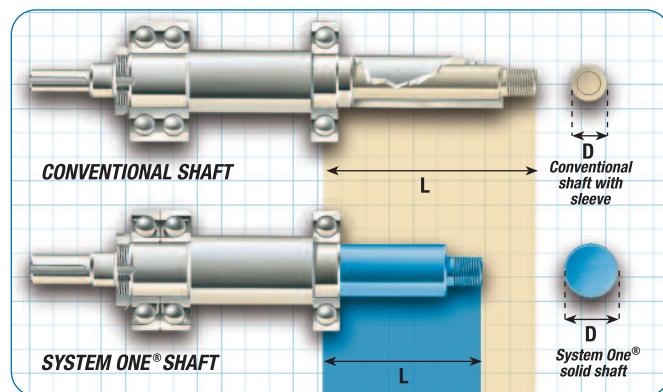


System One® pumps resist vibration for a larger operational window off the BEP and greater reliability.

System One® Is The Solution:

- Heavy-duty design for the toughest applications in the process industry.
- System One® pumps are designed to prevent vibration under high radial loads.
- System One® pumps offer the widest operational window off the BEP of any standard process pump.
- Seals and bearings last longer for greater system reliability.
- When your process demands that pumps vary from the BEP, System One® will save you money and prevent lost production.

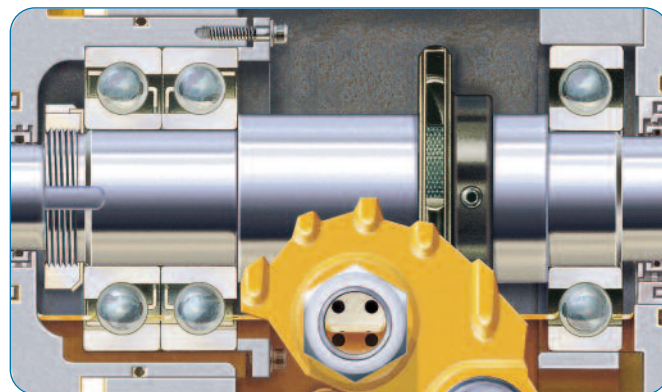
Shaft



Solid design, low deflection shaft prevents common vibration damage

- Prevents common vibration damage.
- Heavier duty construction and lower stiffness ratios than competing pumps.
 - Frame S – 46 (1.9)
 - Frame LD17 – 17 (.65)
 - Frame M – 19 (.87)
- Greater stability at seal area improves seal life.
- Short shaft overhang reduces bearing load to extend bearing life.

Bearings



Heavy-duty bearings with longer bearing life

- Larger bearings than competing pumps for greater load capacity and bearing life.
- Bolted retainer cover locks thrust bearing into cartridge for enhanced reliability.
- Angular contact thrust bearings as required by API 610 specification.

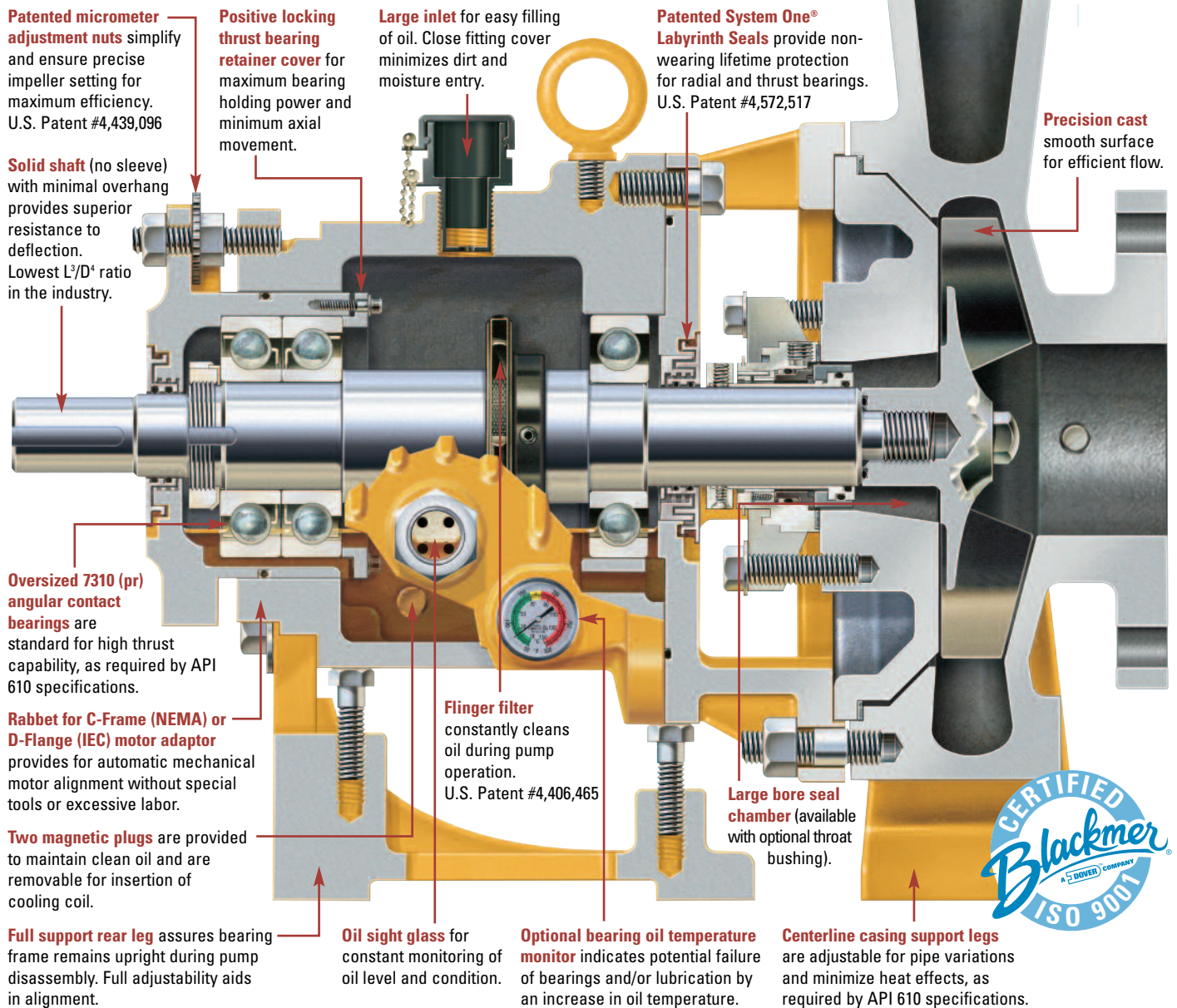




Construction

Pumps designed specifically to operate in severe applications. Resist vibration that would otherwise cause frequent maintenance shutdowns.

Frame LD17 shown.



Blackmer System One® Performance Assurance

Five Year Power End Performance Assurance – Should any System One® power end component fail within 5 years of the original installation, including bearings or shafts that have fractured, a free replacement component will be provided. This offer is limited to a claim for one of each component per power end.*

One Year Mechanical Seal Performance Assurance – Should any factory supplied and installed mechanical seal

fail within one year after the sale of the pump and seal, a spare parts kit (with materials the same as the original seal) will be provided at no charge. Program includes power end conversions that were purchased with Blackmer System One® back cover conversions. Limit of one seal claim per application.*

*See current Blackmer System One® Warranty, Form 001-002, for full product warranty details including exclusions and limitations of liability.



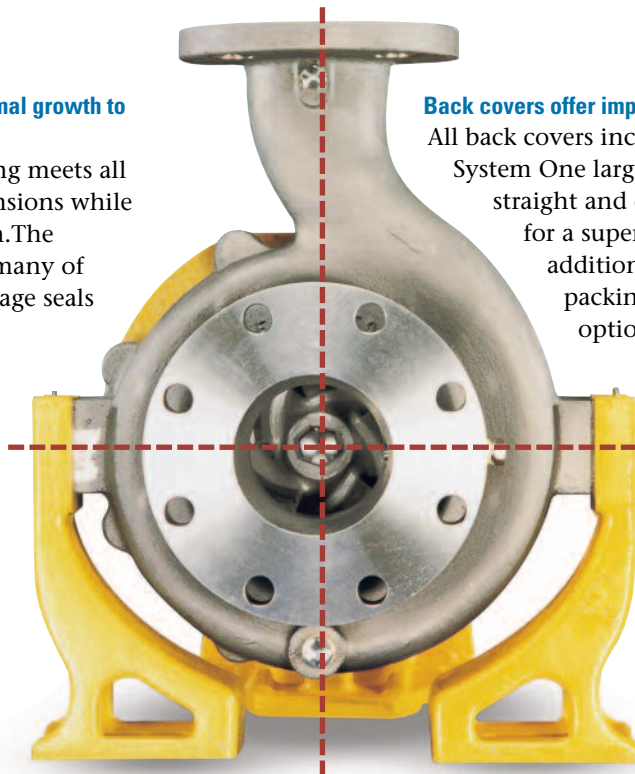
blackOPS: Blackmer Optimum Pump Solutions – blackOPS is a selection software program created specifically for Blackmer's System One centrifugal and positive displacement pump lines. The program allows you to print (or save) your pump selection data and pump curves in a PDF format. For additional information on blackOPS, log onto www.blackmer.com.



Wet Ends

Centerline design provides balanced thermal growth to prevent mechanical stresses

The System One Frame A pump casing meets all ASME/ANSI specifications and dimensions while offering a centerline mounted design. The centerline configuration eliminates many of the stresses and strains that can damage seals and bearings due to thermal growth in elevated temperature applications. Centerline design, required by API 610 specifications, is standard on all Frame A and LD17 pumps. The Frame S offers an optional bearing frame foot with overhung casing, while the Frame M offers steel centerline casing legs as an option. Casing wall thickness includes 1/8" (3.2 mm) corrosion allowance.



Back covers offer improved mechanical reliability

All back covers incorporate the state-of-the-art System One large bore seal chamber in both straight and open taper bore configurations for a superior sealing environment. In addition, a separate patented radial packing chamber is available as an option for those applications where packing is desired. The 13" (330 mm) back covers are bolted to the casing by their own flange, offering improved mechanical reliability compared to conventional designs. Carbon, polyurethane and SpiralTrac¹ throat bushings are available when required.



Patented micrometer impeller adjustment mechanism results in precise, repeatable settings

Impeller clearances are set by a patented micrometer adjustment mechanism (pat. #4,439,096). This enables the pump to achieve maximum efficiency with precise repeatability.

Precision cast/ high efficiency impellers

System One pump wet end components incorporate the finest quality castings available today. Impellers are investment cast with precision vane layout, resulting in superior finish and balance for maximum hydraulic efficiency. The impeller design incorporates back pump-out vanes for reduction of pressure in the seal chamber, plus threaded-to-shaft attachment.



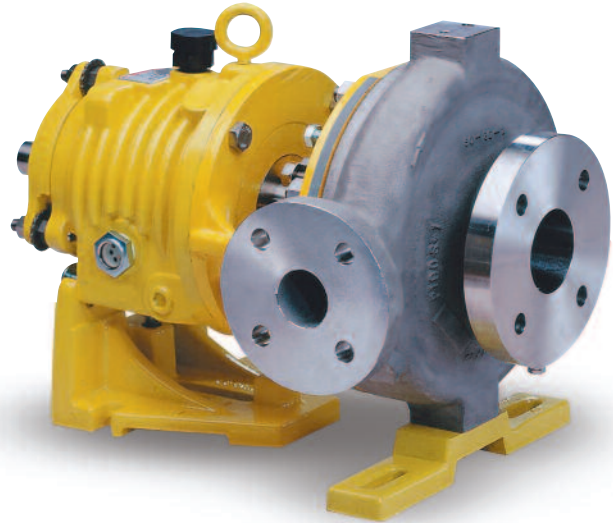
¹ SpiralTrac is a registered trademark of the manufacturer, EnviroSeal Engineering Products Ltd., Waverly, Nova Scotia.



Mounting

Maximum installation flexibility

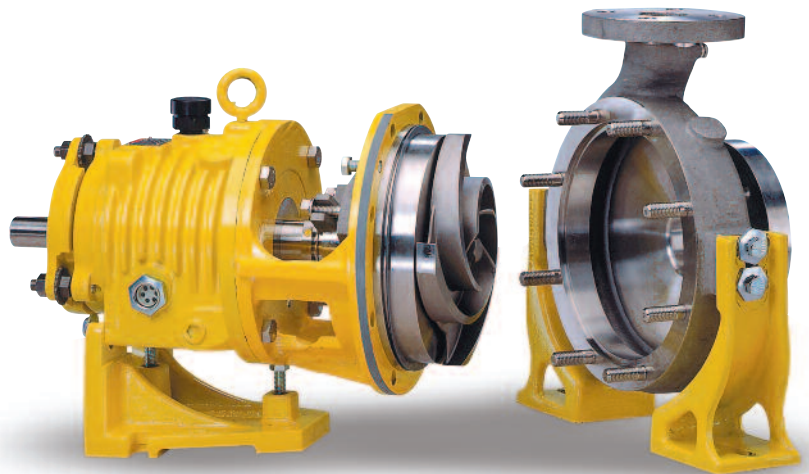
System One pumps allow maximum flexibility to meet any application criteria. Side discharge is possible with the addition of a special foot. System One pumps are the only ASME/ANSI pump with these mounting configuration options.



Right or left side discharge available

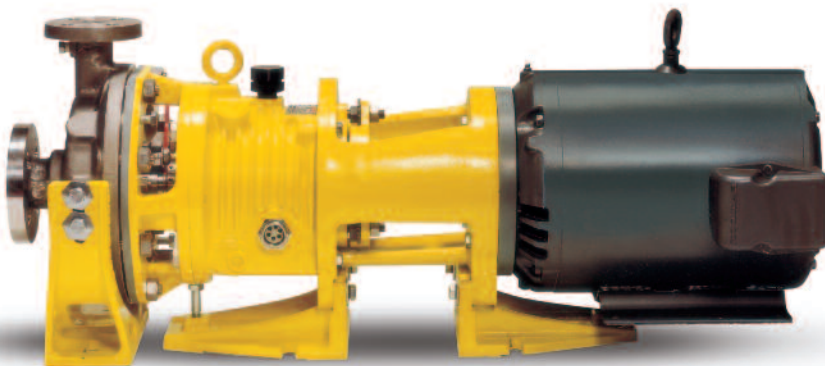
Self-supporting power end

A unique feature of System One Frame A/LD17 pumps which provides ease of maintenance.



Motor alignment is automatically, mechanically achieved

Every System One pump is equipped to accept a C-Frame (NEMA)/D-Flange (IEC) motor adaptor. This provides for alignment of motor and power end without special tools or excessive labor. Because alignment is mechanical, it is fast and repeatable thus reducing misalignment-induced vibration.





Frames S & SD

- Mid-size frame strength and reliability in small frame space – heavy-duty alternative to standard small frame pumps
- Lowest L^3/D^4 stiffness ratio of any competitive size pump – 46 (1.9) Frame S
- Meets ASME/ANSI dimensional specifications
- Frame SD is the DIN/ISO (metric) version
- Capacities to 450 gpm (102 m³/hr)



Vortex

Vortex pump puts System One® strength and reliability in the service of handling entrained solids without clogging. Available in the LD17 and IPP Metric configurations. Capacities to 1,500 gpm (340 m³/hr).

- Frame A and LD17 pump with vortex casing and impeller, designed specifically for difficult pumping situations:
 - Sludges and slurries with large solids
 - Pumped material with entrained air
 - Pumped fluids with stringy or fibrous materials
 - Minimum product shearing
- ASME/ANSI & IPP Metric flanges available
- Especially suited for:
 - Waste treatment
 - Food and chemical processing
 - Pulp and paper
 - Agriculture



Frame A/LD17

- Low maintenance, long life, maximum value process pump
- Most stable shaft in the industry
- Lowest L^3/D^4 stiffness ratio of any competitive size pump – 17 (.65) Frame LD17
- Dramatically reduces bearing, sealing device and shaft failures
- Frame A meets ASME/ANSI dimensional specifications
- LD17 configuration available for severe-duty applications
- Available in IPP Metric construction
- Capacities to 1,400 gpm (320 m³/hr)

Frame M

- Engineered reliability for the most demanding environments
- Lowest L^3/D^4 ratio of any process pump in this size range – 19 (.87) Frame M
- The only ASME/ANSI B73.1 pump of its size that offers centerline mount for high temperature applications
- Optional left/right side discharge

Power End Conversions

- Upgrade existing pumps to System One® heavy-duty design
- Low stiffness ratio power end for maximum reliability
- Direct replacements available for popular models
- Universal configurations to fit most other pumps



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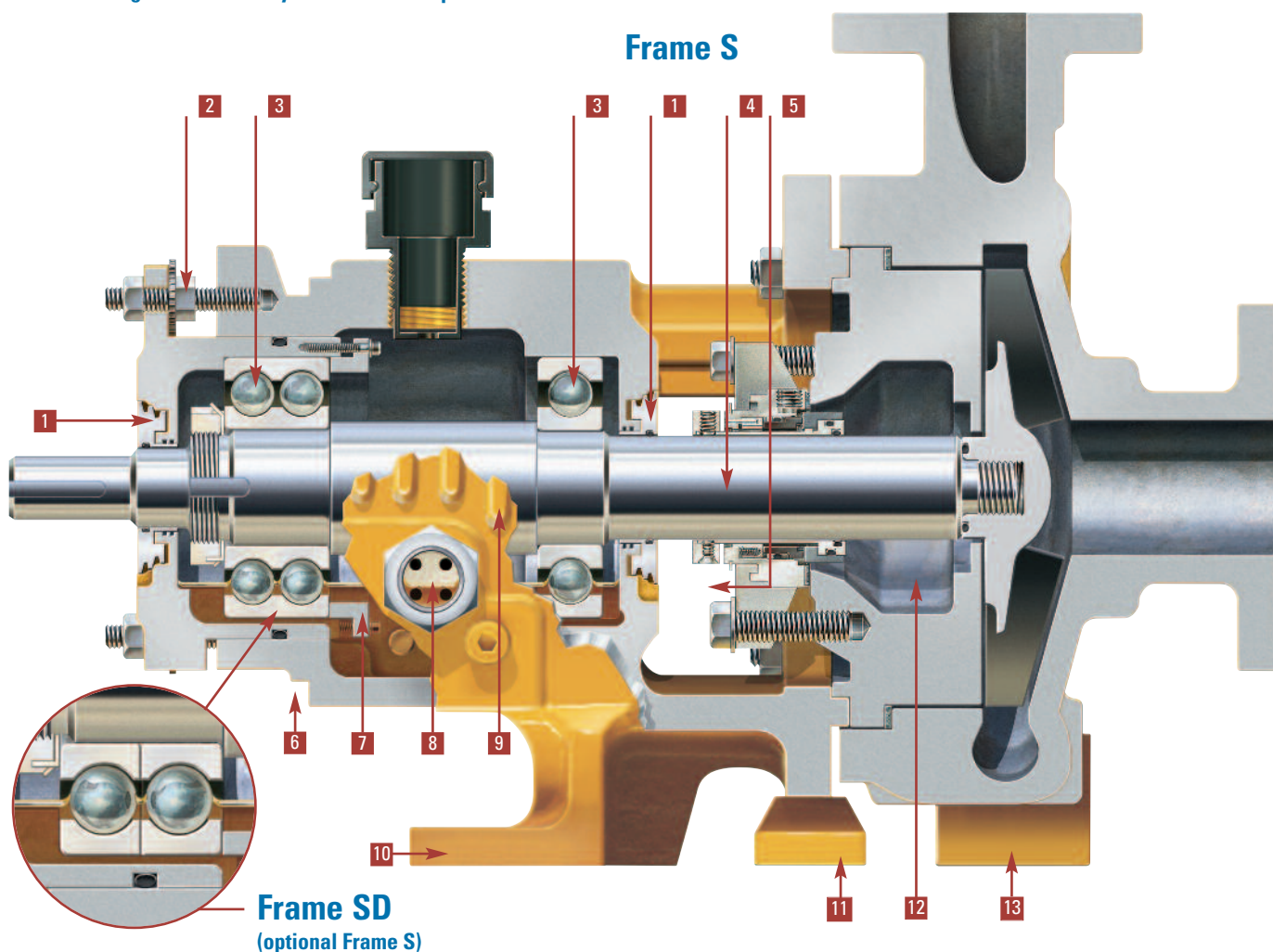
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Construction

Mid-frame strength and reliability in small-frame space.

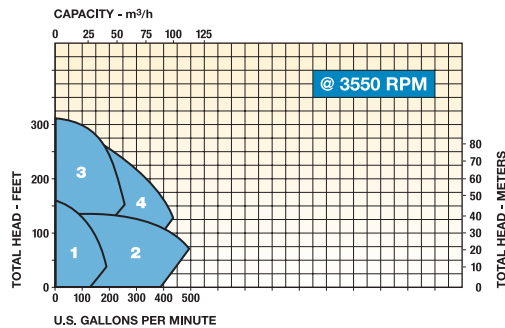
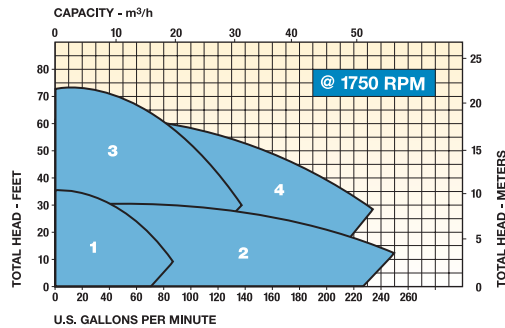
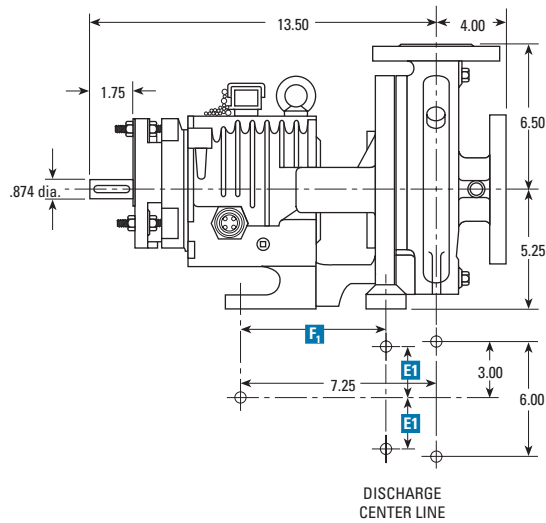


- 1** Patented lifetime labyrinth seals (pat. #4,512,517) protect bearings from intrusion of contaminants without causing the shaft damage typical of lip seals.
- 2** Patented micrometer adjustment nuts (pat. #4,439,096) fine tune impeller setting for maximum efficiency.
- 3** Heavy-duty bearings (two sizes larger than industry standard) provide maximum durability and life. Angular contact thrust bearings optional on Frame S, standard on Frame SD.
- 4** Large shaft cross-section combined with short span adds to structural integrity and resists vibration for longer bearing and seal life.
- 5** Open frame concept for ease of seal maintenance.
- 6** Rabbet for C-Frame (NEMA) or D-Flange (IEC) motor adaptor provides for automatic mechanical motor alignment without special tools or excessive labor.

- 7** Positive locking thrust bearing retaining cover for maximum bearing holding power and minimum axial movement.
- 8** Sight glass for easy observation of oil condition and level.
- 9** Cooling fins to reduce temperature of oil and bearings.
- 10** Self-supporting foot.
- 11** Frame mounted foot provides self-supporting power end and ideal mounting configuration for high temperature applications.
- 12** Seal chamber with large fluid volume promotes better cooling and cleaning action for longer seal life. Optional seal chamber jacket capability for cooling the mechanical seal.
- 13** Optional casing mounted foot to conform to ASME/ANSI standard. (Standard on Frame SD to DIN/ISO spec.)



Frame S (ASME/ANSI)

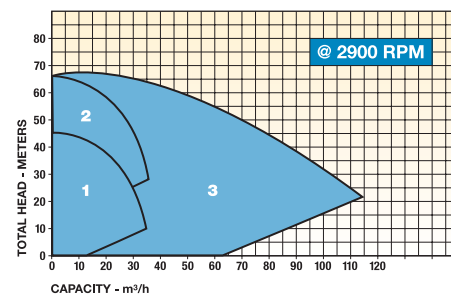
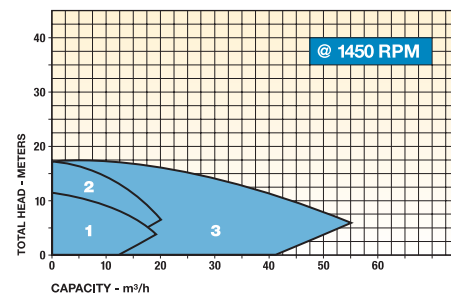
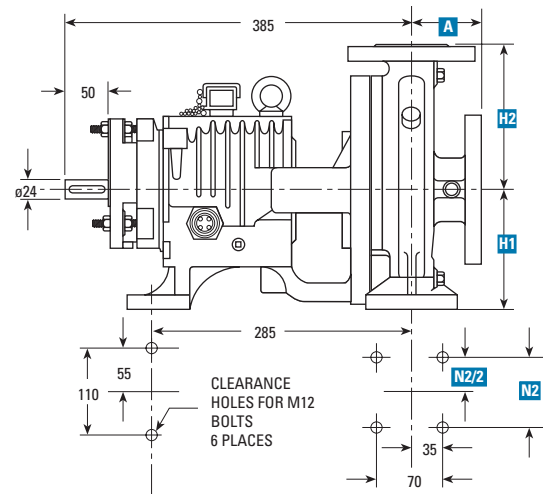


Frame S Pump – ASME/ANSI

| | Pump Size | F ₁ | 2E ₁ |
|---|-----------|----------------|-----------------|
| 1 | 1 x 1.5-6 | 4.88 | 5.50 |
| 2 | 2 x 3-6 | 4.88 | 5.50 |
| 3 | 1 x 1.5-8 | 4.25 | 7.50 |
| 4 | 1.5 x 3-8 | 4.25 | 7.50 |

All dimensions are in inches.

Frame SD (DIN/ISO)



Frame SD Pump – DIN/ISO

| | Pump Size | A | H ₁ | H ₂ | N ₂ |
|---|-------------|-----|----------------|----------------|----------------|
| 1 | 32 x 50-160 | 80 | 132 | 160 | 190 |
| 2 | 32 x 50-200 | 80 | 160 | 180 | 190 |
| 3 | 50 x 80-200 | 100 | 160 | 200 | 212 |

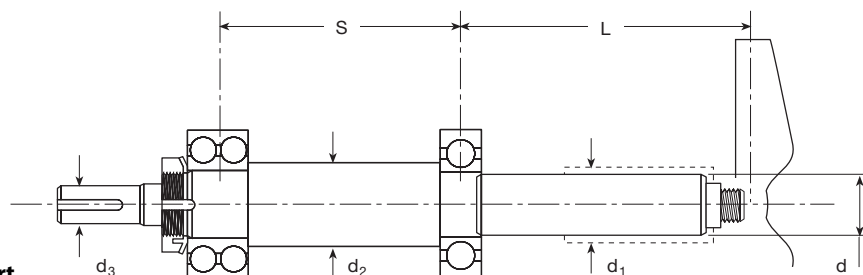
All dimensions are in millimeters.

- Heavy-duty alternative to standard small frame pumps
- Lowest L^3/D^4 stiffness ratio of any competitive size pump
- Designed and built for the toughest applications



| | 1x1.5-6 | 2x3-6 | 1x1.5-8 | 1.5x3-8 |
|--------------------------------------|--|-------------|-------------|-------------|
| Shaft | | | | |
| L ³ /D ⁴ Ratio | 46 (1.9) | | | |
| Diameter at Impeller | .75-10UNC Thread (19) | | | |
| Diameter at Seal | 1.500 (38) | | | |
| Diameter Between Bearings | 1.98 (50) | | | |
| Diameter at Coupling | 0.874 (22) | | | |
| Bearings | | | | |
| Thrust | 5308 AHC3 | | | |
| Thrust Option | 7308 BEGBY (pair) | | | |
| Radial | 6308 C3 | | | |
| Bearing Span | 3.86 (98) | | | |
| Shaft Overhang | 6.15 (156) | | | |
| Seal Chamber | | | | |
| Seal Bore Diameter (nose) | 2.38 (60) | | | |
| Inside Bore | 3.44 (87) | | | |
| Depth | 2.21 (56) | | | |
| Back Cover/Shaft Clearance | .02 Diametral (.5) | | | |
| Gland Bolting | 4X .375-16UNC on 3.50 Bolt Circle Diameter (10 on 89 B.C.) | | | |
| Distance to Nearest Obstruction | 2.38 (60) | | | |
| Open Impeller | | | | |
| Clearance | .06 (1.5) Total .015 (0.4)Suction Side | | | |
| Eye Area sq. in. (cm²) | 3.30 (21) | 8.10 (52) | 4.13 (27) | 5.71 (37) |
| Maximum Diameter Solids | 0.3 (8) | 0.6 (15) | 0.4 (10) | 0.5 (13) |
| Number of Vanes | 4 | 5 | 5 | 5 |
| Pumps Weights lbs/kg | | | | |
| Pump Only | 110 (50) | 130 (59) | 112 (50) | 126 (57) |
| Casing | | | | |
| Type | Single Volute | | | |
| Wall Thickness | 0.44 (11) Minimum | | | |
| Maximum Working Pressure | See Pressure vs. Temperature Limit Chart | | | |
| Test pressure | Class 150 Flanges-250PSIG, Class 300 Flanges-450PSIG | | | |
| Rotating Element | | | | |
| Wk² Dry lbs-ft² (kg-m²) | 0.18 (.007) | 0.24 (.010) | 0.38 (.015) | 0.43 (.018) |
| Wk² Wet lbs-ft² (kg-m²) | 0.27 (.011) | 0.36 (.015) | 0.57 (.024) | 0.66 (.028) |
| Maximum Speed (oil lube) | 3500 | 3500 | 3500 | 3500 |
| Power Limits | | | | |
| HP (KW)/100 RPM 316SS | 1.1 (0.9) | | | |

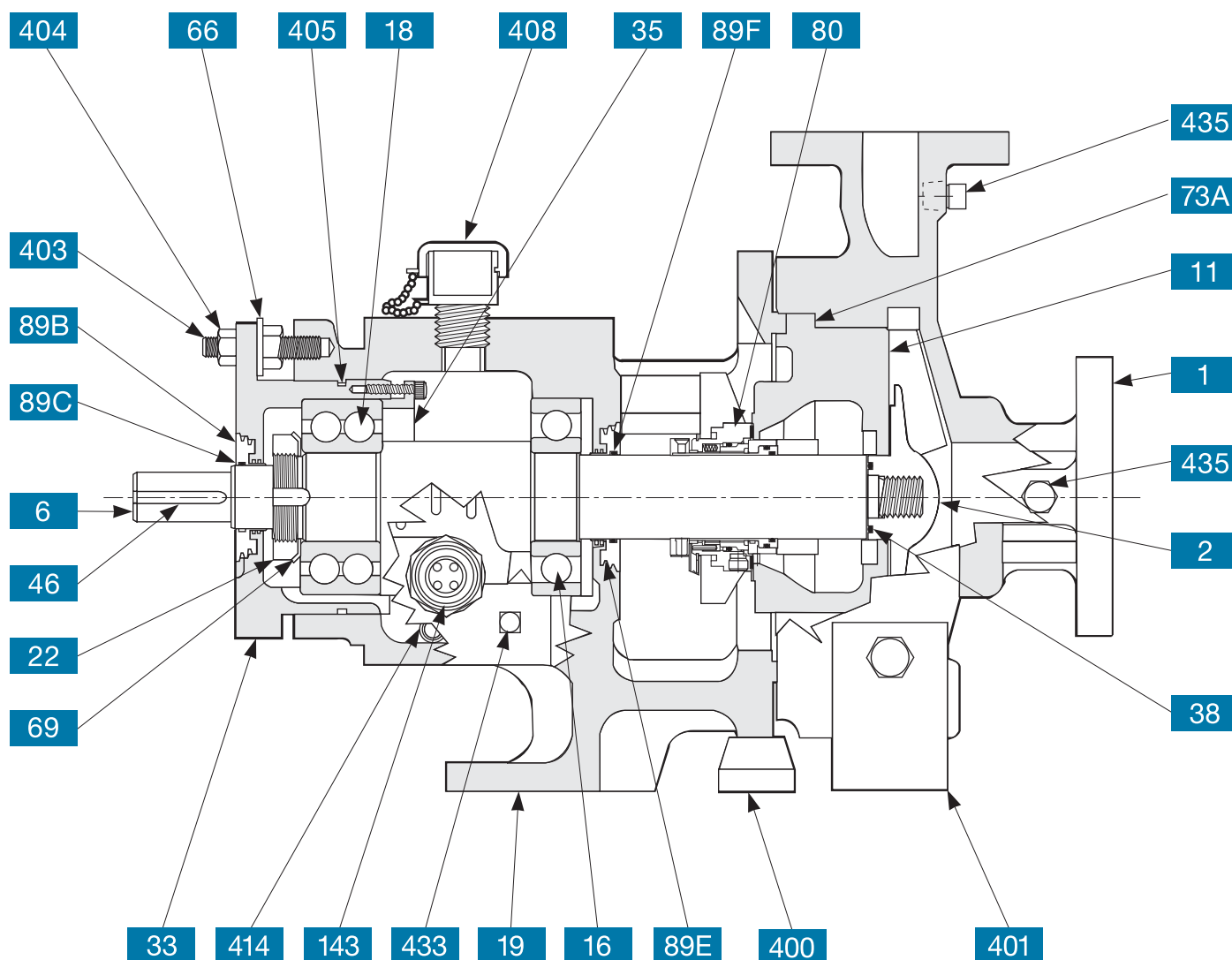
Lowest L³/D⁴ stiffness ratio for any competitive size pump in the industry.



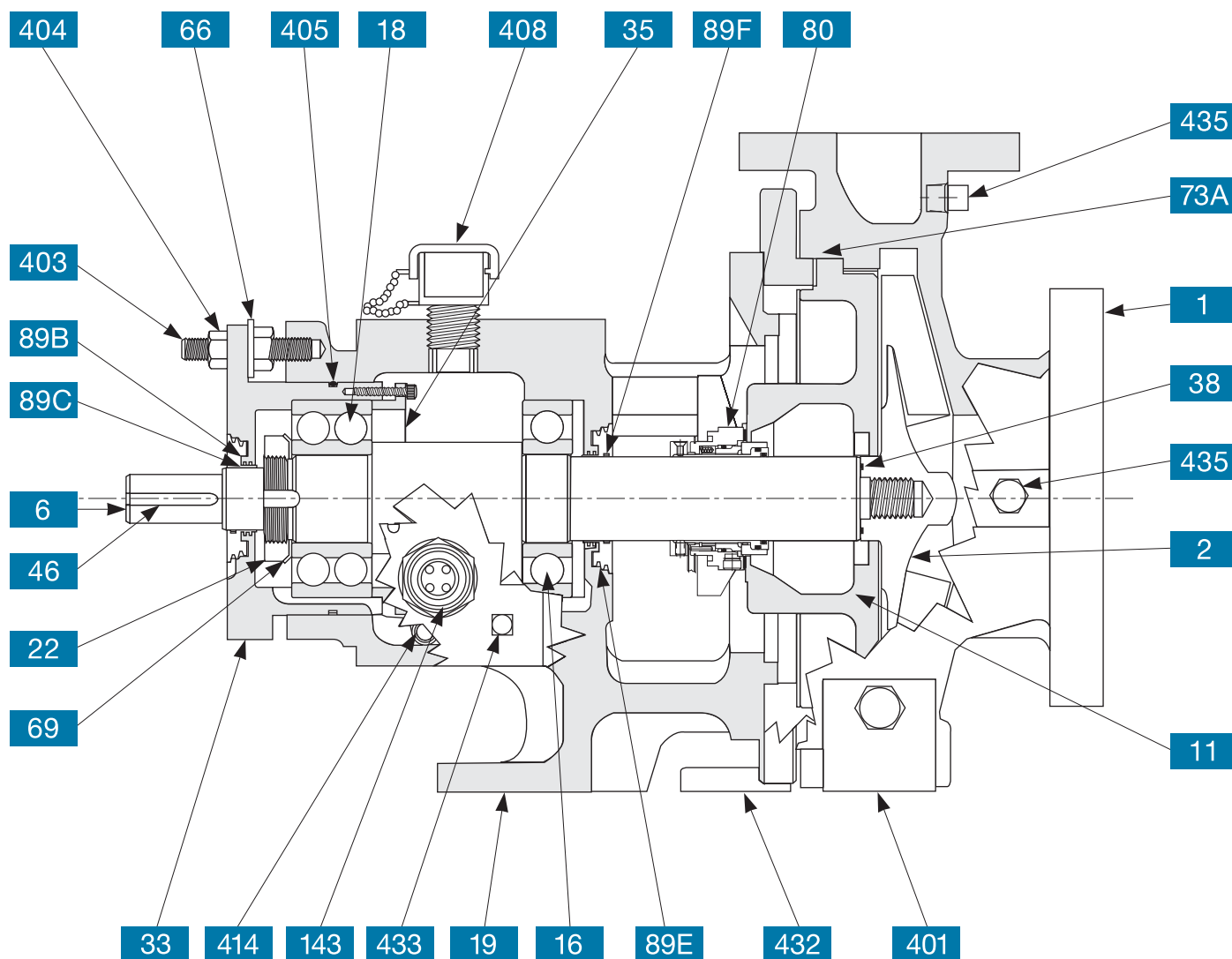
Shaft Stiffness Ratio Comparison Chart

| | | System One Frame S | Competitor A with Sleeve | Competitor A Solid Shaft | Competitor B with Sleeve | Competitor B Solid Shaft |
|--|--|-----------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| SHAFT DIAMETERS | In Stuffing Box (Less Sleeve)(d) | 1 1/2 (38) | 1 1/8 (28) | 1 3/8 (35) | 7/8 (22) | 1 1/8 (28) |
| | In Stuffing Box (With Sleeve)(d ₁) | N/A | 1 3/8 (35) | N/A | 1 1/8 (28) | N/A |
| | Between Bearings (d ₂) | 2 (51) | 1 1/2 (38) | 1 1/2 (38) | 1 1/4 (32) | 1 1/4 (32) |
| | At Coupling (d ₃) | 7/8 (22) | 7/8 (22) | 7/8 (22) | 7/8 (22) | 7/8 (22) |
| BEARINGS | Radial | 6308 | 6207 | 6207 | 6206 | 6206 |
| | Thrust | 5308 | 5306 | 5306 | 5305 | 5305 |
| | Bearing Span (S) | 3.86 (98) | 4.12 (105) | 4.12 (105) | 4.06 (103) | 4.06 (103) |
| | Shaft Overhang (L) | 6.15 (156) | 6.12 (155) | 6.12 (155) | 5.87 (149) | 5.87 (149) |
| STIFFNESS RATIO¹ | L ³ /D ⁴ | 46 (1.9) | 143 (4.5) | 64 (2.5) | 346 (14.3) | 127 (4.4) |

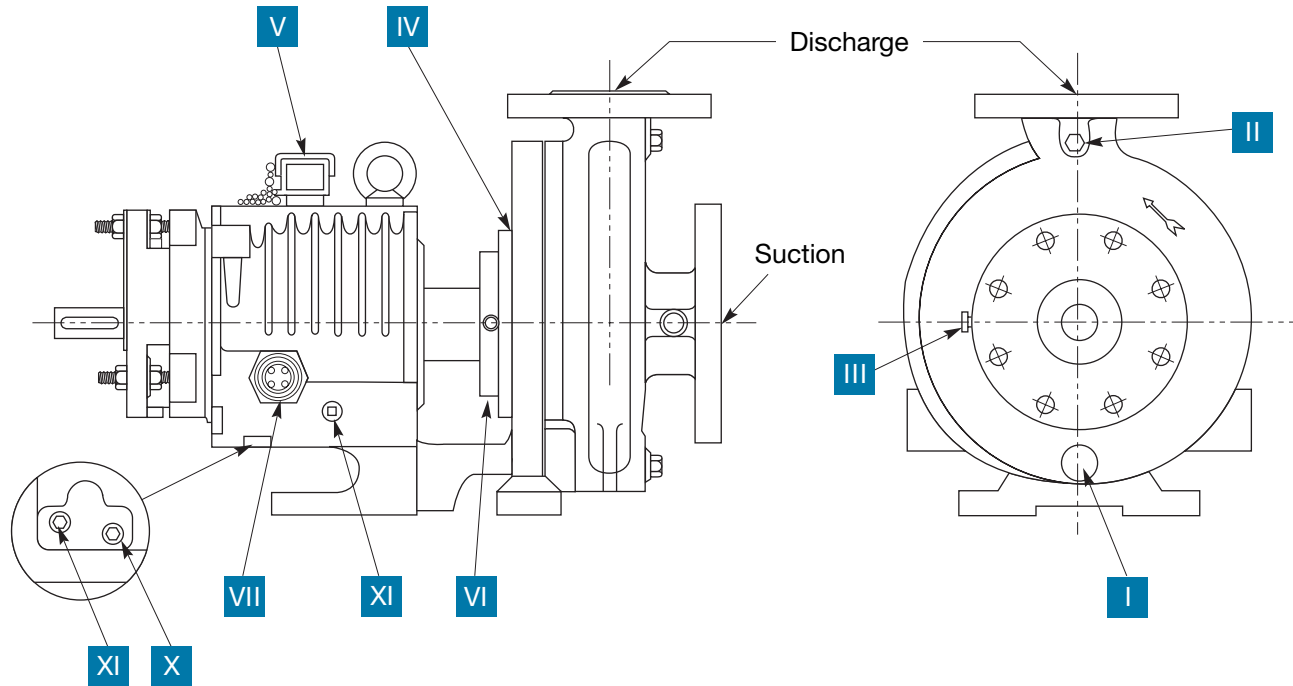
¹ For good vibration resistance, especially at speeds above 1750 RPM, the stiffness ratio should not exceed 60 in the seal area. The higher the ratio, the higher the frequency of downtimes, especially as related to bearing and seal failures. The pump has less resistance to the common running conditions which cause vibration – running off Best Efficiency Point (BEP), cavitation, motor misalignment, water hammer, worn parts, plugged or unbalanced impellers, poor piping.



| NO. | ITEM | NO. | ITEM | NO. | ITEM |
|-----|-------------------------|-----|--------------------------------|-----|-------------------------|
| 1 | Casing | 38 | O-ring, Impeller Hub | 143 | Oil Sight Glass |
| 2 | Impeller | 46 | Key, Coupling | 400 | Foot, Bearing Frame |
| 6 | Shaft | 66 | Micrometer Nut | 401 | Foot, casing (optional) |
| 11 | Back Cover | 69 | Lockwasher, Thrust Bearing | 403 | Stud, Cartridge |
| 16 | Bearing, Radial | 73A | Gasket, Casing | 404 | Locknut, Cartridge |
| 18 | Bearing, Thrust | 80 | Mechanical Seal | 405 | O-Ring, Cartridge |
| 19 | Bearing, Frame | 89E | Seal, Labyrinth Rotor, Radial | 408 | Oil Filler Assembly |
| 22 | Locknut, Thrust Bearing | 89F | Seal, Labyrinth O-Ring, Radial | 414 | Plug, Magnetic |
| 33 | Bearing Cartridge | 89B | Seal, Labyrinth Rotor, Thrust | 433 | Plug, Bearing Frame |
| 35 | Retainer Cover | 89C | Seal, Labyrinth O-Ring, Thrust | 435 | Plug, Casing |



| NO. | ITEM | NO. | ITEM | NO. | ITEM |
|-----|-------------------------|-----|--------------------------------|-----|-------------------------|
| 1 | Casing | 46 | Key, Coupling | 401 | Foot, casing (optional) |
| 2 | Impeller | 66 | Micrometer Nut | 403 | Stud, Cartridge |
| 6 | Shaft | 69 | Lockwasher, Thrust Bearing | 404 | Locknut, Cartridge |
| 11 | Back Cover | 73A | Gasket, Casing | 405 | O-Ring, Cartridge |
| 16 | Bearing, Radial | 80 | Mechanical Seal | 408 | Oil Filler Assembly |
| 18 | Bearing, Thrust | 89E | Seal, Labyrinth Rotor, Radial | 414 | Plug, Magnetic |
| 19 | Bearing, Frame | 89F | Seal, Labyrinth O-Ring, Radial | 432 | Adapter Plate |
| 22 | Locknut, Thrust Bearing | 89B | Seal, Labyrinth Rotor, Thrust | 433 | Plug, Bearing Frame |
| 33 | Bearing Cartridge | 89C | Seal, Labyrinth O-Ring, Thrust | 435 | Plug, Casing |
| 35 | Retainer Cover | 143 | Oil Sight Glass | | |
| 38 | O-ring, Impeller Hub | 400 | Foot, Bearing Frame | | |



| ITEM NUMBER | NPT SIZE | NUMBER OF TAPS | CONNECTION |
|-------------|-------------------|----------------|------------------------------------|
| * I | 0.38-18 | 1 | Casing Drain |
| II | 0.25-18 | 1 | Discharge Gage |
| III | 0.25-18 | 1 | Suction Gage |
| IV | 0.12-27 | 1 | Seal Chamber Flush |
| V | 0.75-14 | 1 | Oil Fill |
| * VI | 0.25-18 & 0.12-27 | 2 | Seal Chamber Jacket-Inlet & Outlet |
| # VII | 0.75-14 | 1 | Oil Sight Glass |
| ## X | 0.25-18 | 1 | Oil Drain |
| XI | 0.25-18 | 2 | Magnetic Plug or Cooling Coil * |

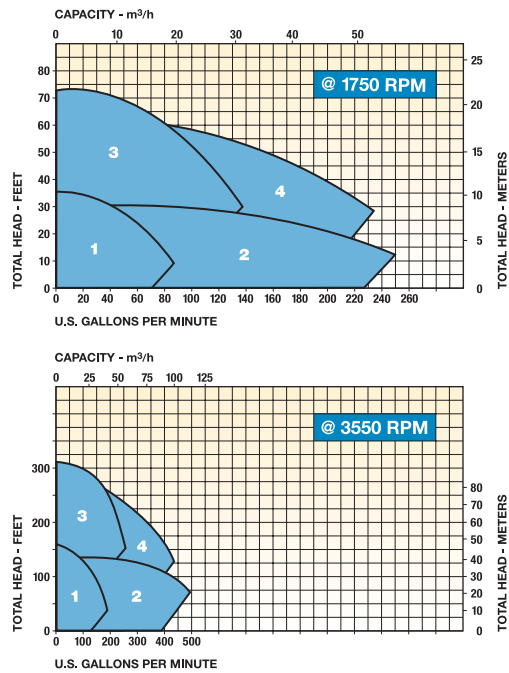
* Optional

Left side of pump facing suction end

Right side of pump facing suction end



Frame S (ASME/ANSI)

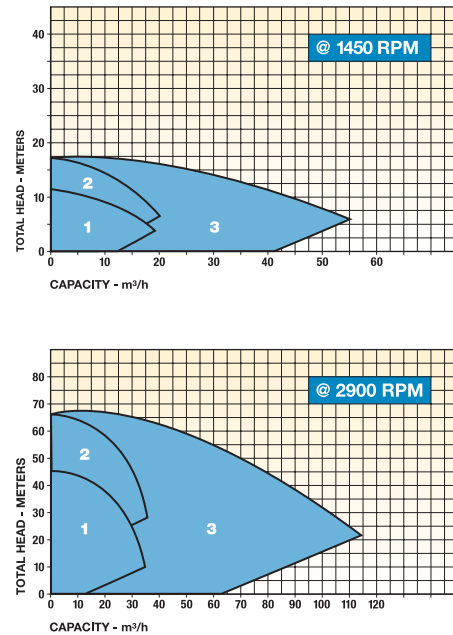


Frame S Pump – ASME/ANSI

| | Pump Size | F ₁ | 2E ₁ |
|---|-----------|----------------|-----------------|
| 1 | 1 x 1.5-6 | 4.88 | 5.50 |
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All dimensions are in inches.

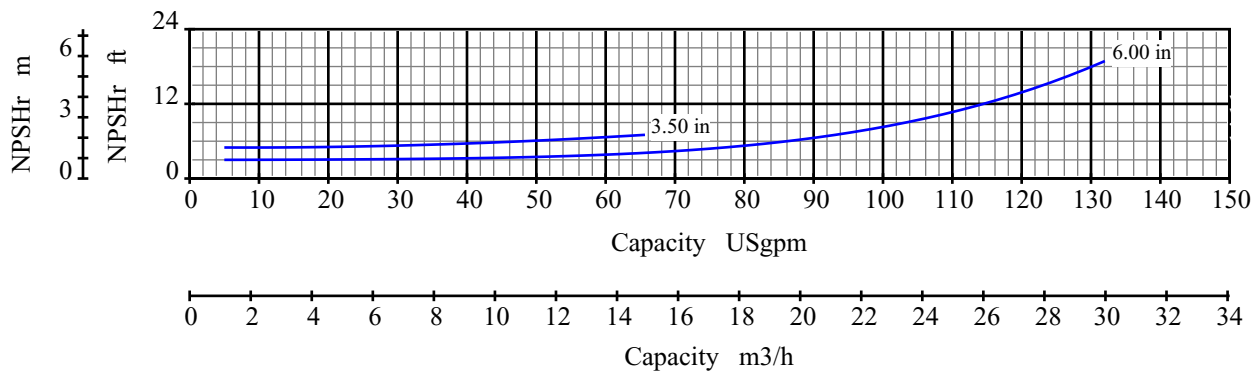
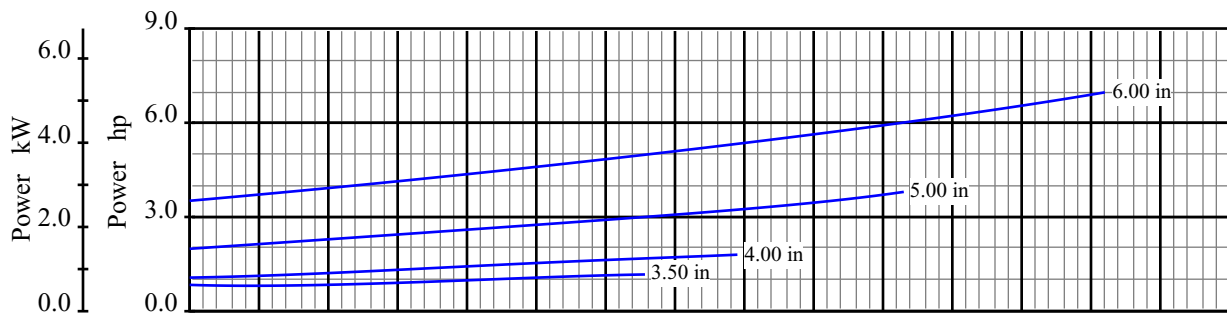
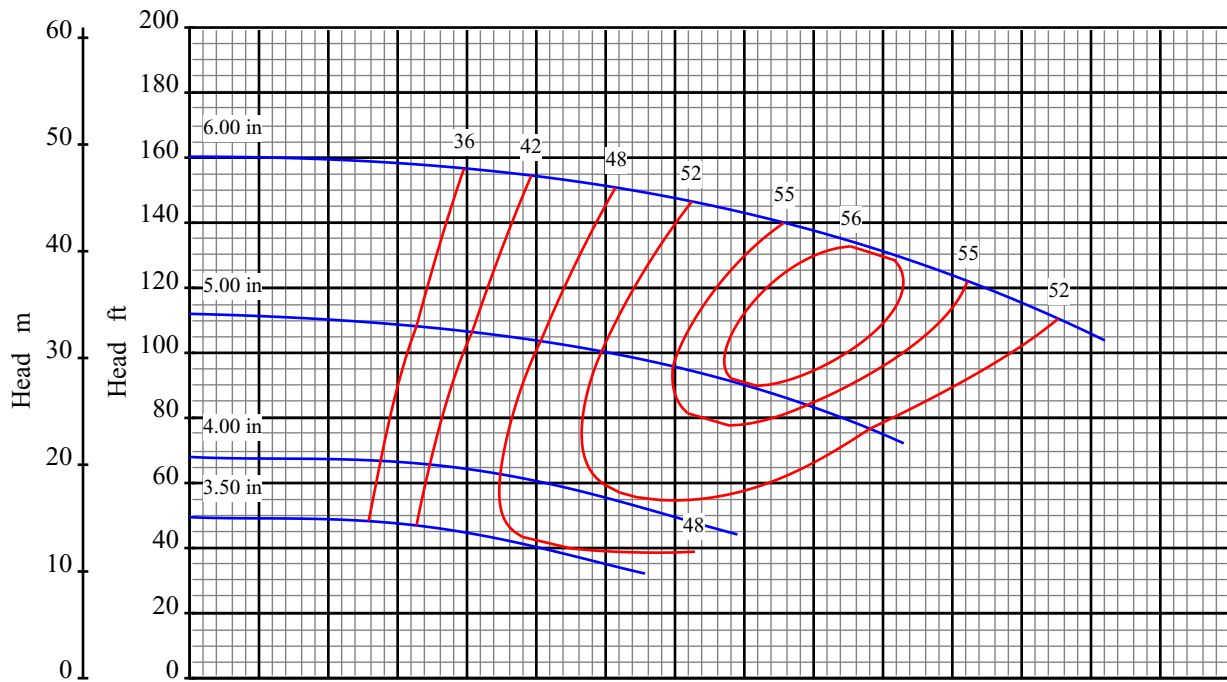
Frame SD (DIN/ISO)



Frame SD Pump – DIN/ISO

| | Pump Size | A | H ₁ | H ₂ | N ₂ |
|---|-------------|-----|----------------|----------------|----------------|
| 1 | 32 x 50-160 | 80 | 132 | 160 | 190 |
| 2 | 32 x 50-200 | 80 | 160 | 180 | 190 |
| 3 | 50 x 80-200 | 100 | 160 | 200 | 212 |

All dimensions are in millimeters.



Curve No: S18100V1

Blackmer System One

Pump Size: 1x1.5 6

Pump Performance Characteristics

Effective Date: Jan/2005

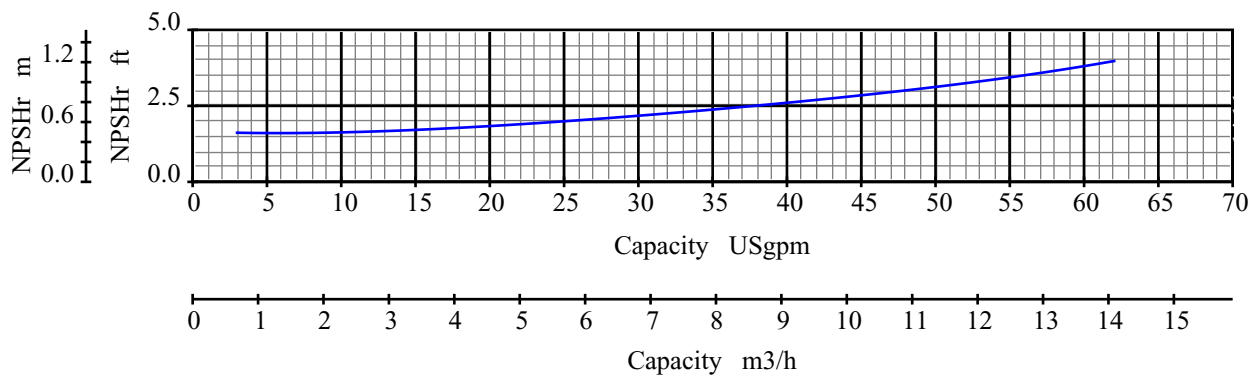
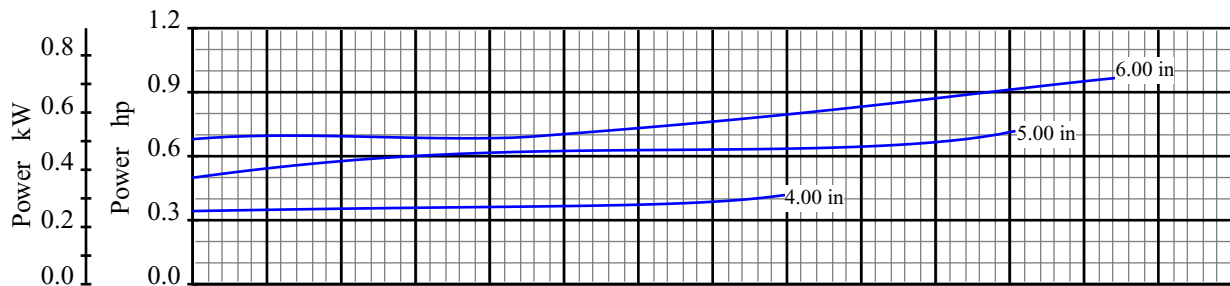
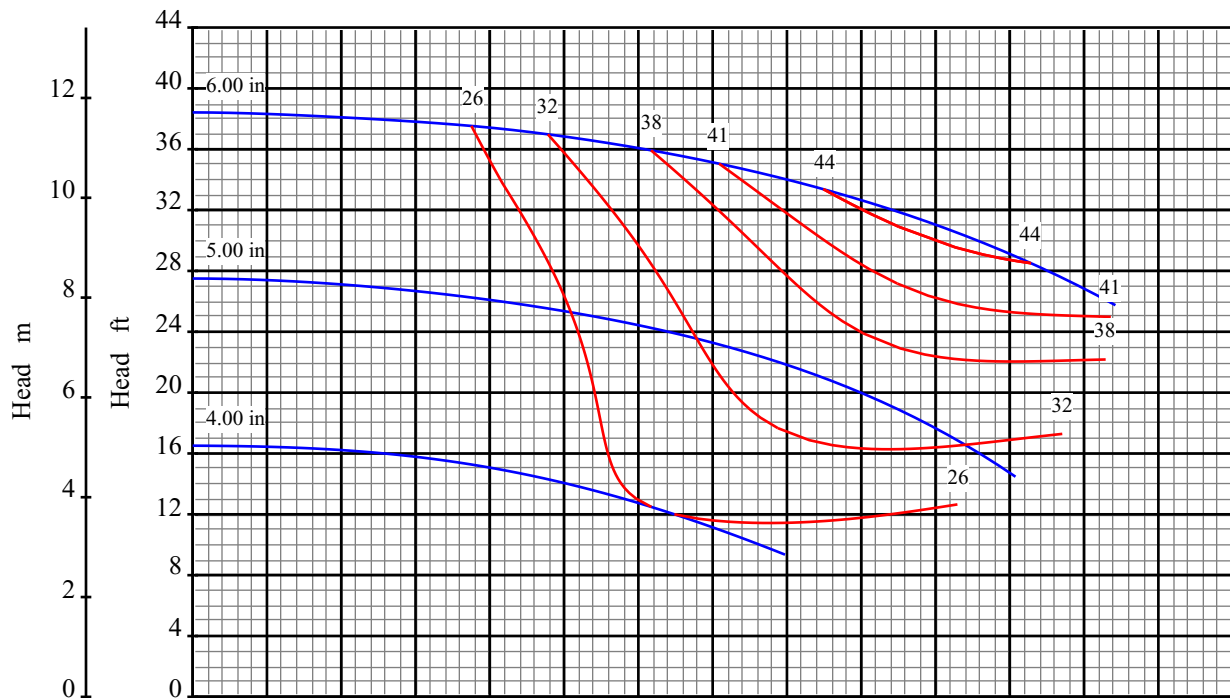
Catalog: 1301

Speed: 3550 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18102V1

Blackmer System One

Pump Size: 1x1.5 6

Pump Performance Characteristics

Effective Date: Jan/2005

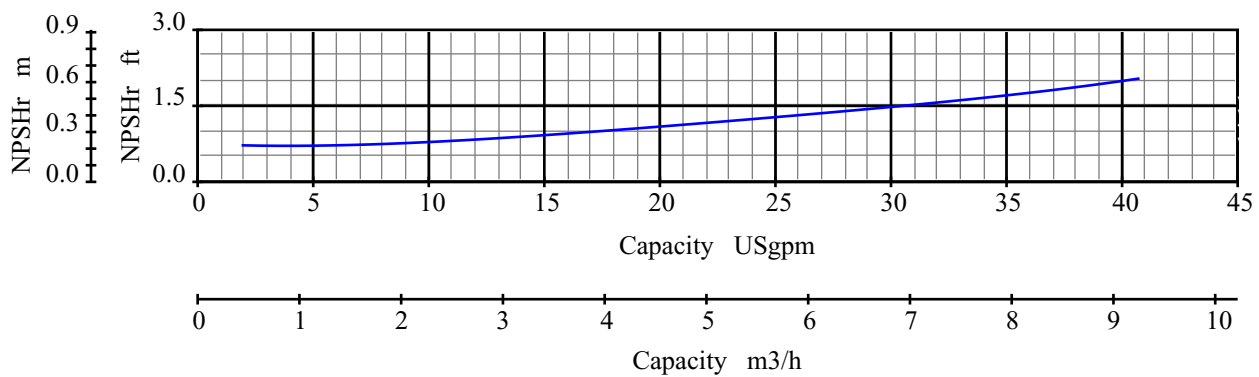
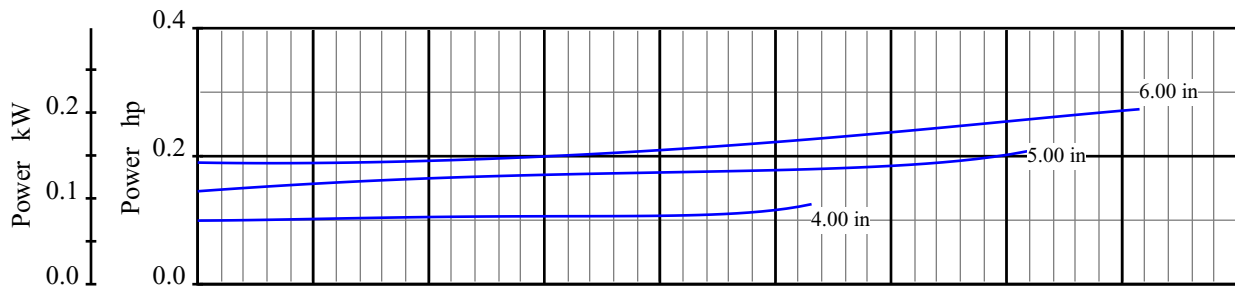
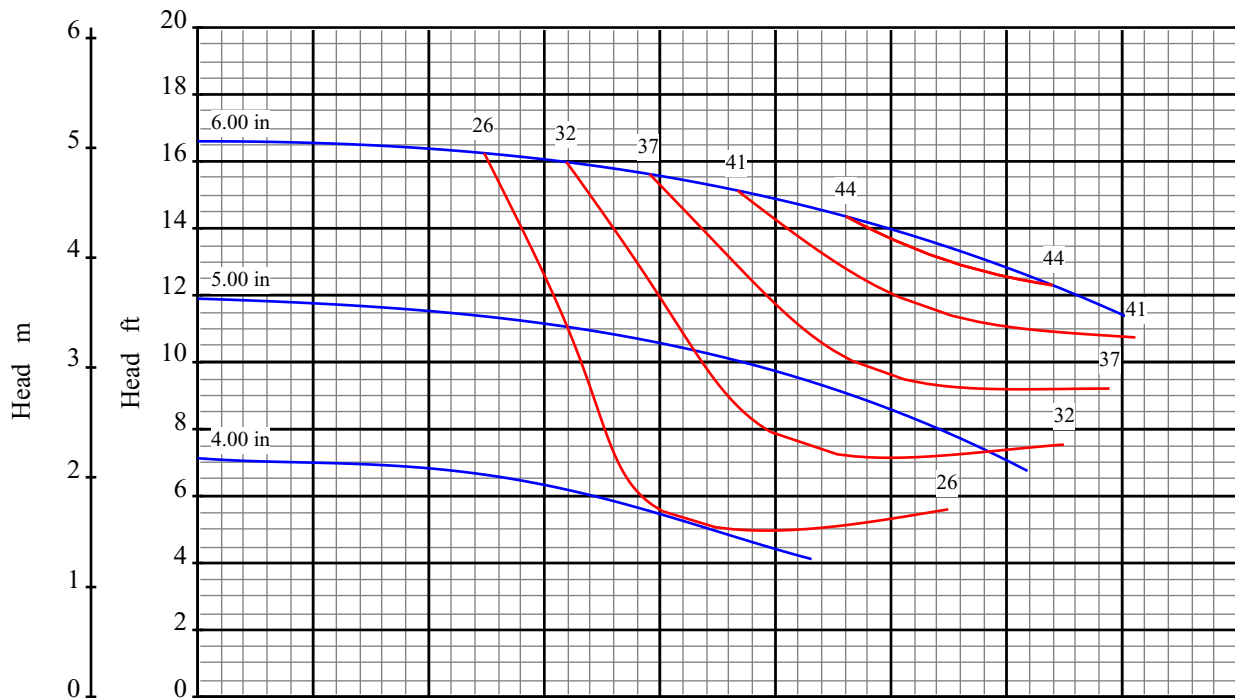
Catalog: 1301

Speed: 1750 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18104V1

Blackmer System One

Pump Size: 1x1.5 6

Pump Performance Characteristics

Effective Date: Jan/2005

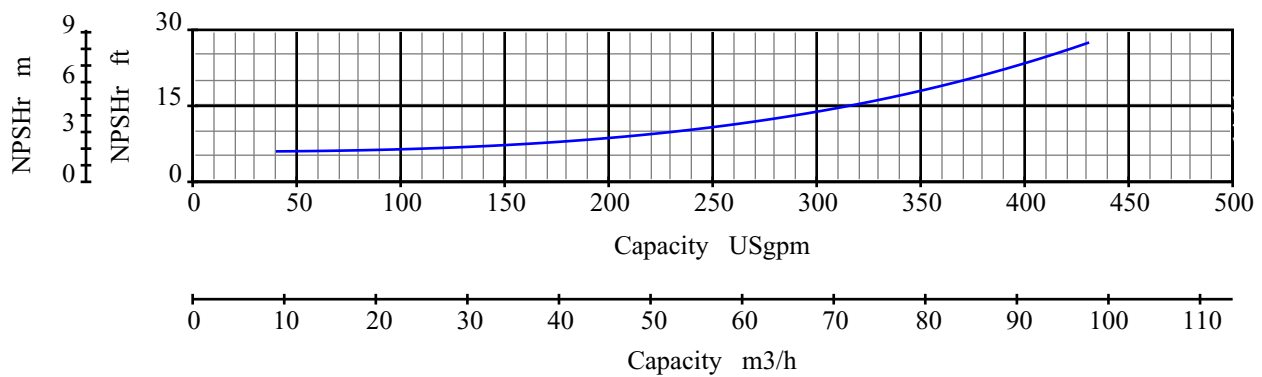
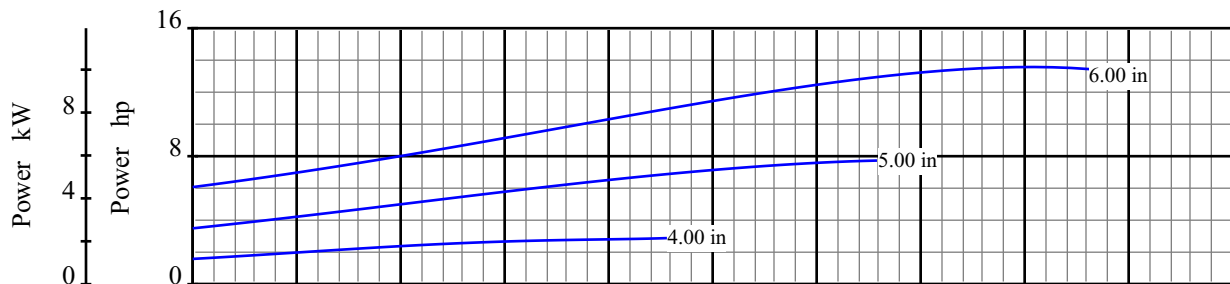
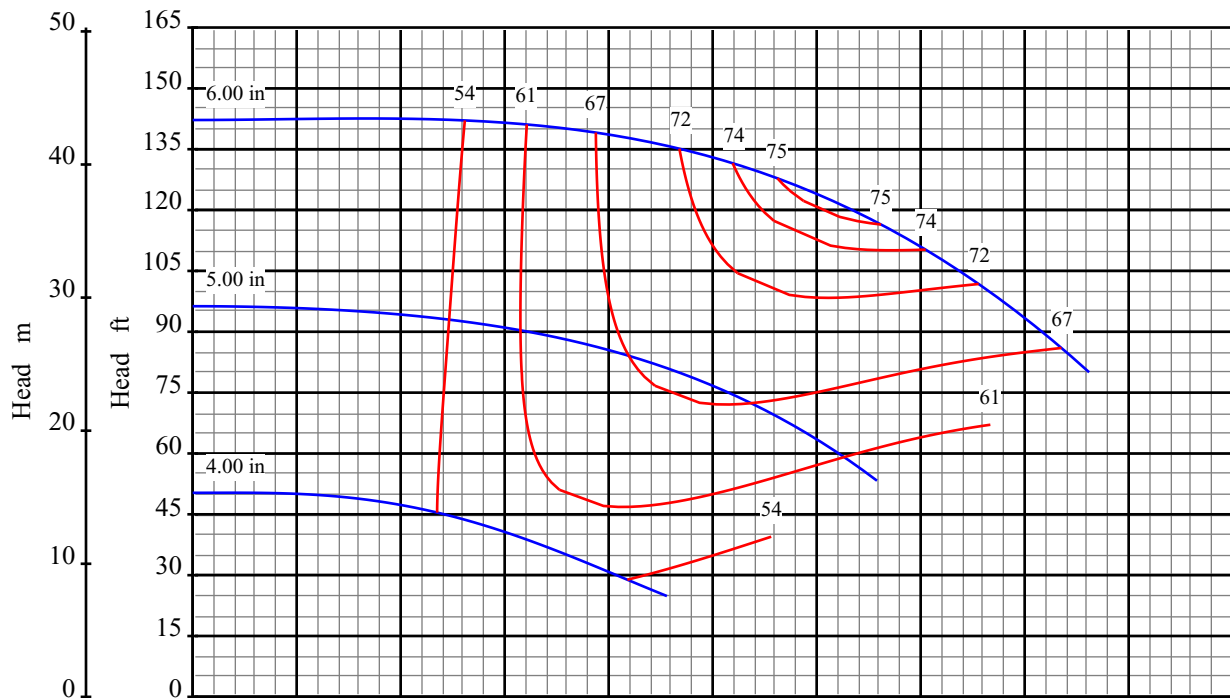
Catalog: 1301

Speed: 1150 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18106V1

Blackmer System One

Pump Size: 2x3 6

Pump Performance Characteristics

Effective Date: Jan/2005

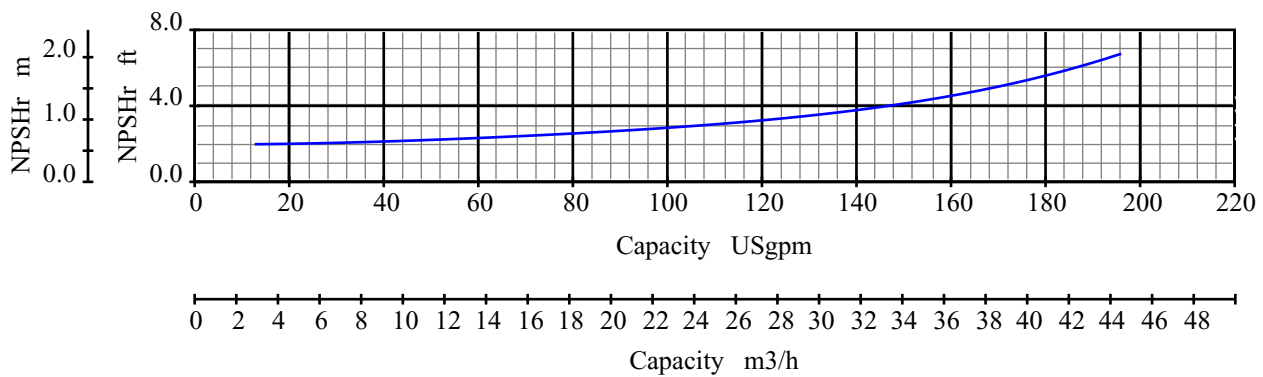
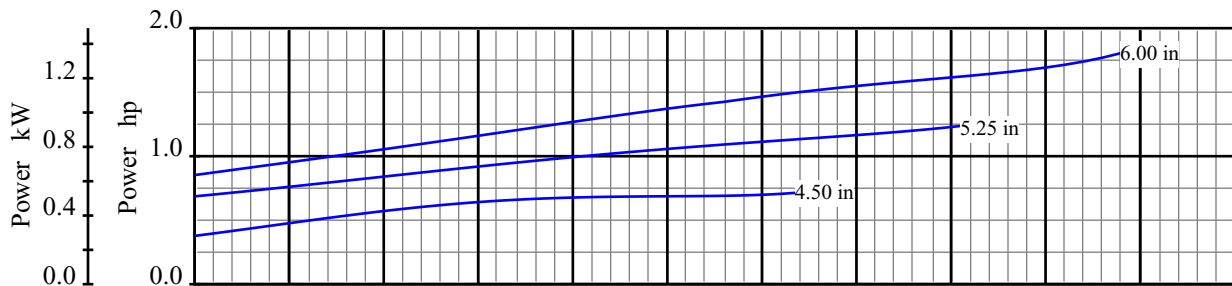
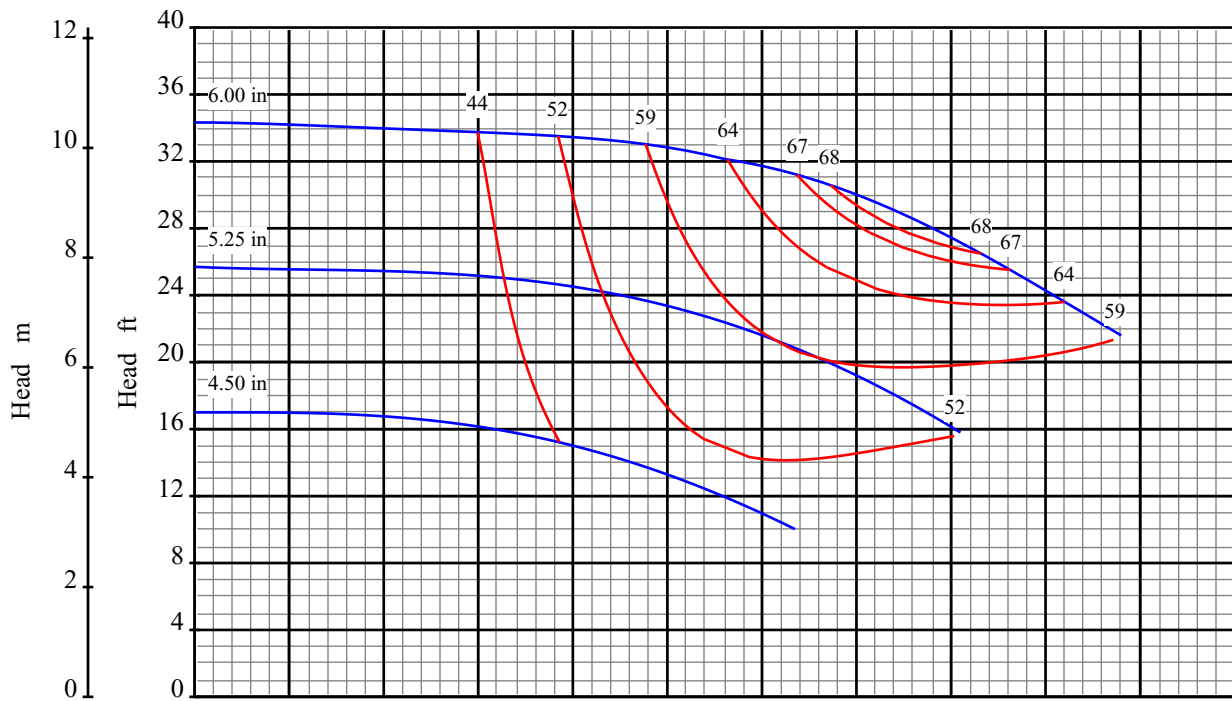
Catalog: 1301

Speed: 3550 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18108V1

Blackmer System One

Pump Size: 2x3 6

Pump Performance Characteristics

Effective Date: Jan/2005

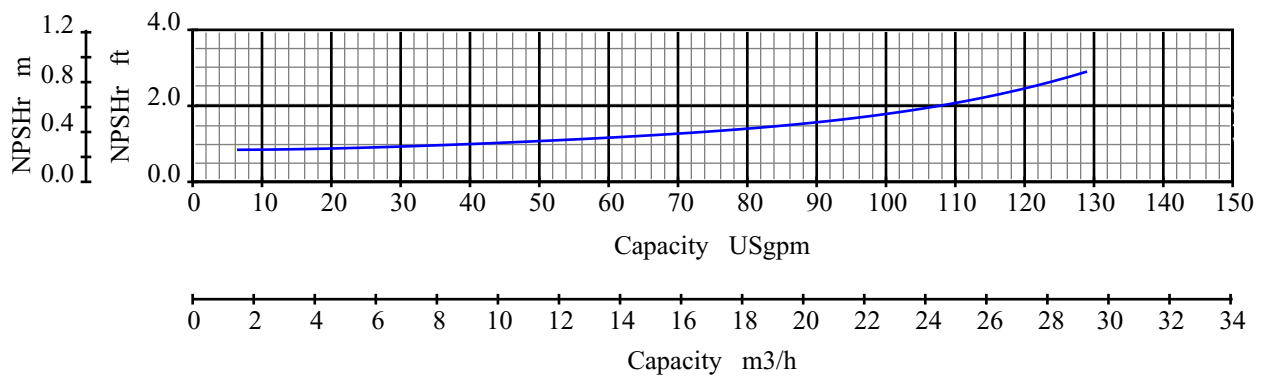
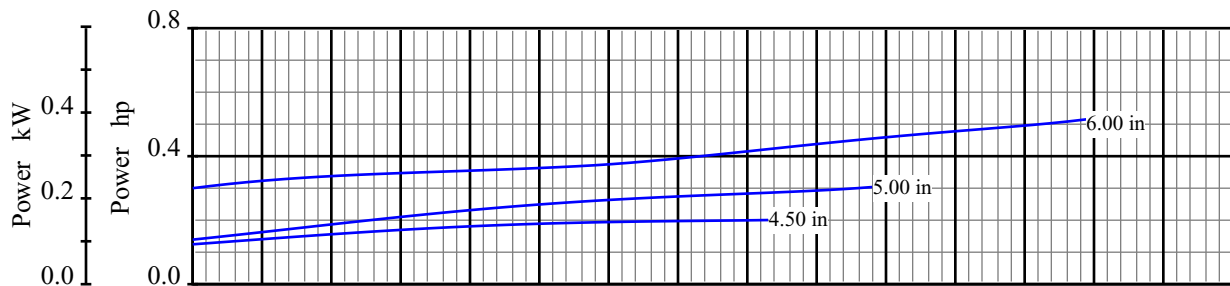
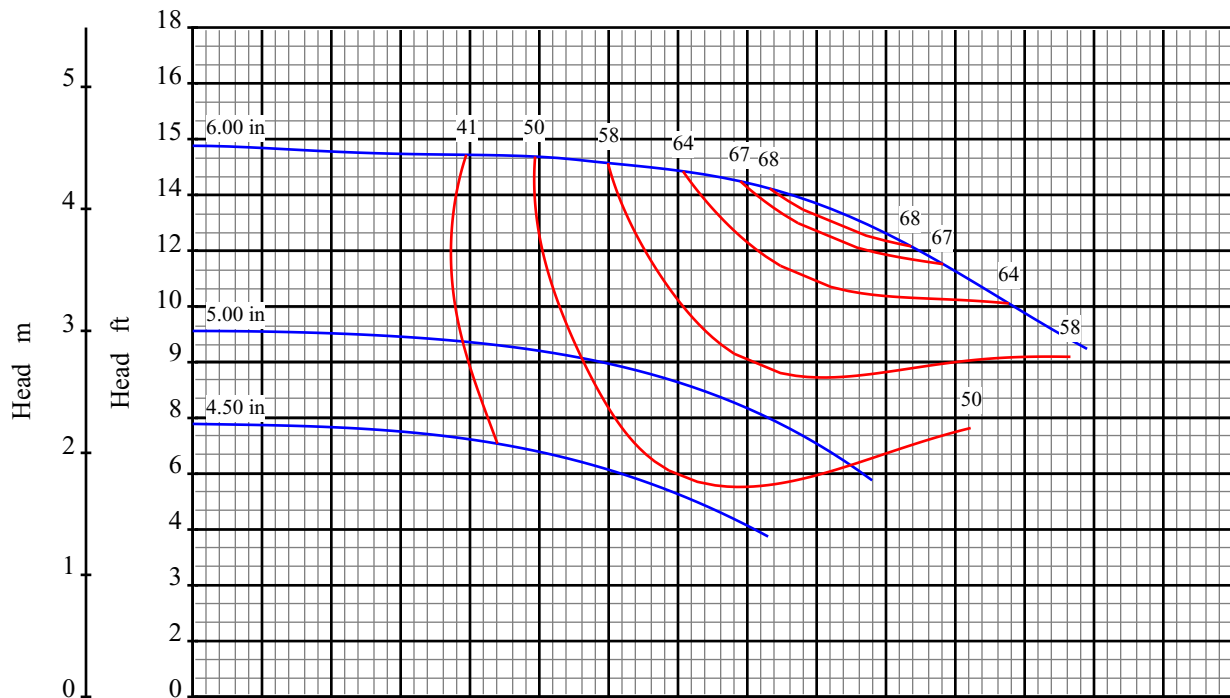
Catalog: 1301

Speed: 1750 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18110V1

Blackmer System One

Pump Size: 2x3 6

Pump Performance Characteristics

Effective Date: Jan/2005

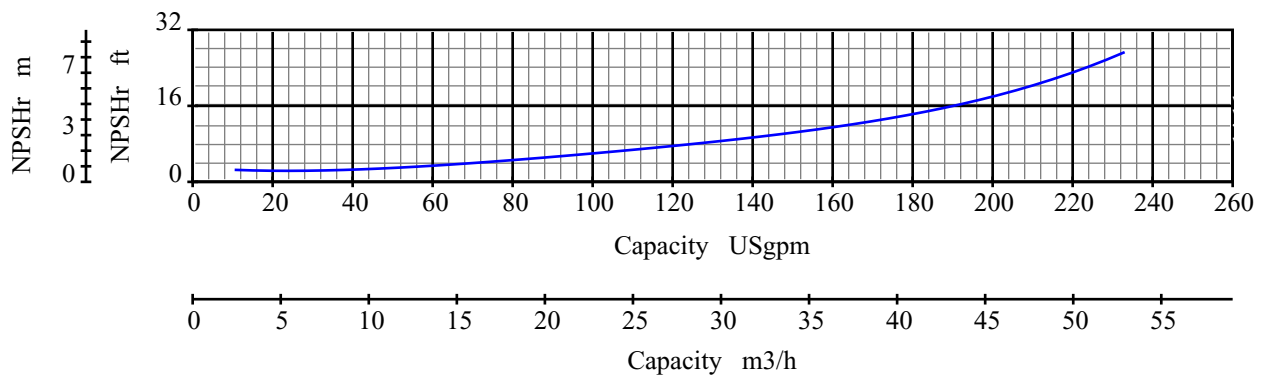
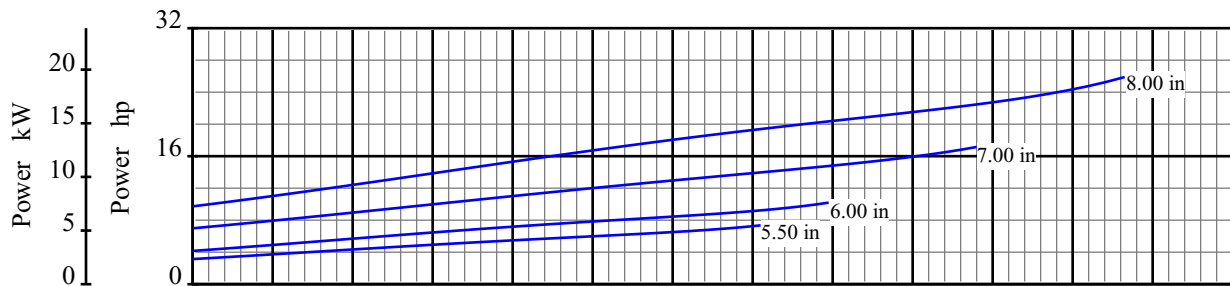
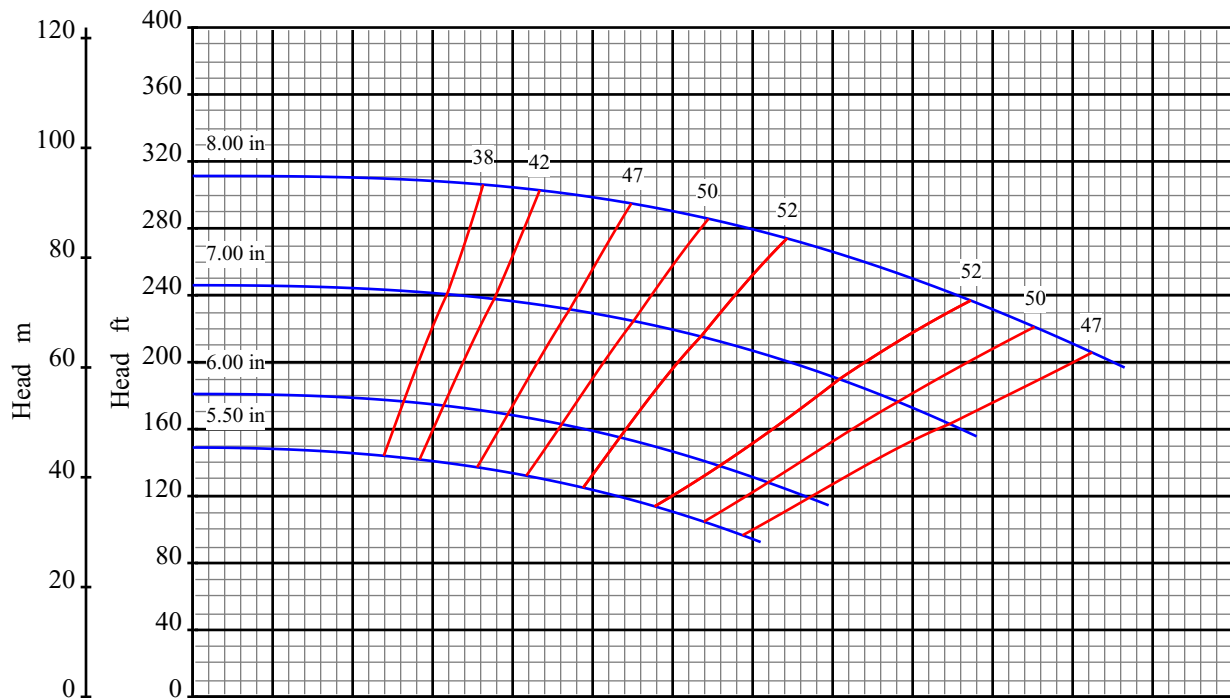
Catalog: 1301

Speed: 1150 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18112V1

Blackmer System One

Pump Size: 1x1.5 8

Pump Performance Characteristics

Effective Date: Jan/2005

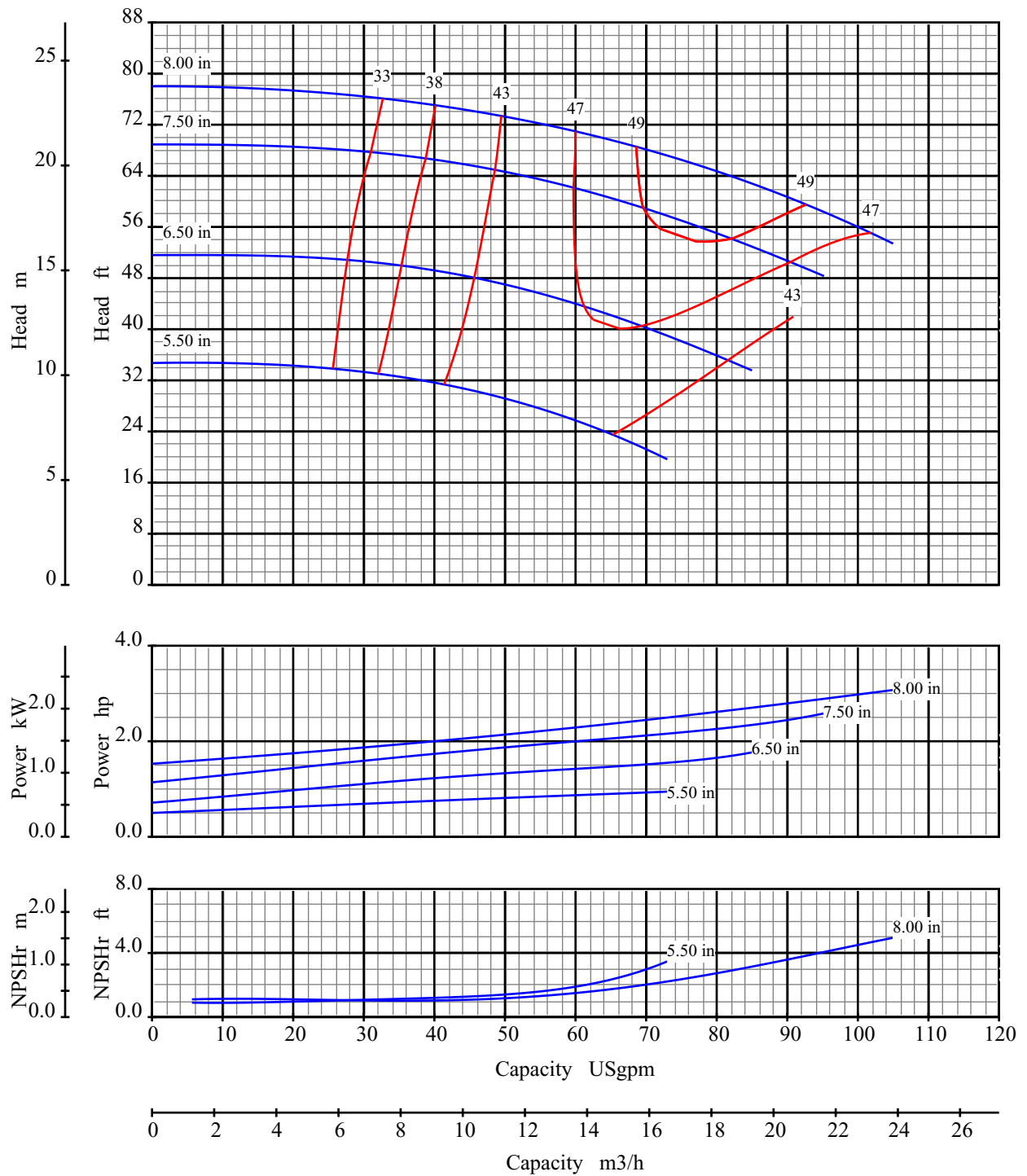
Catalog: 1301

Speed: 3550 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18114V1

Blackmer System One

Pump Size: 1x1.5 8

Pump Performance Characteristics

Effective Date: Jan/2005

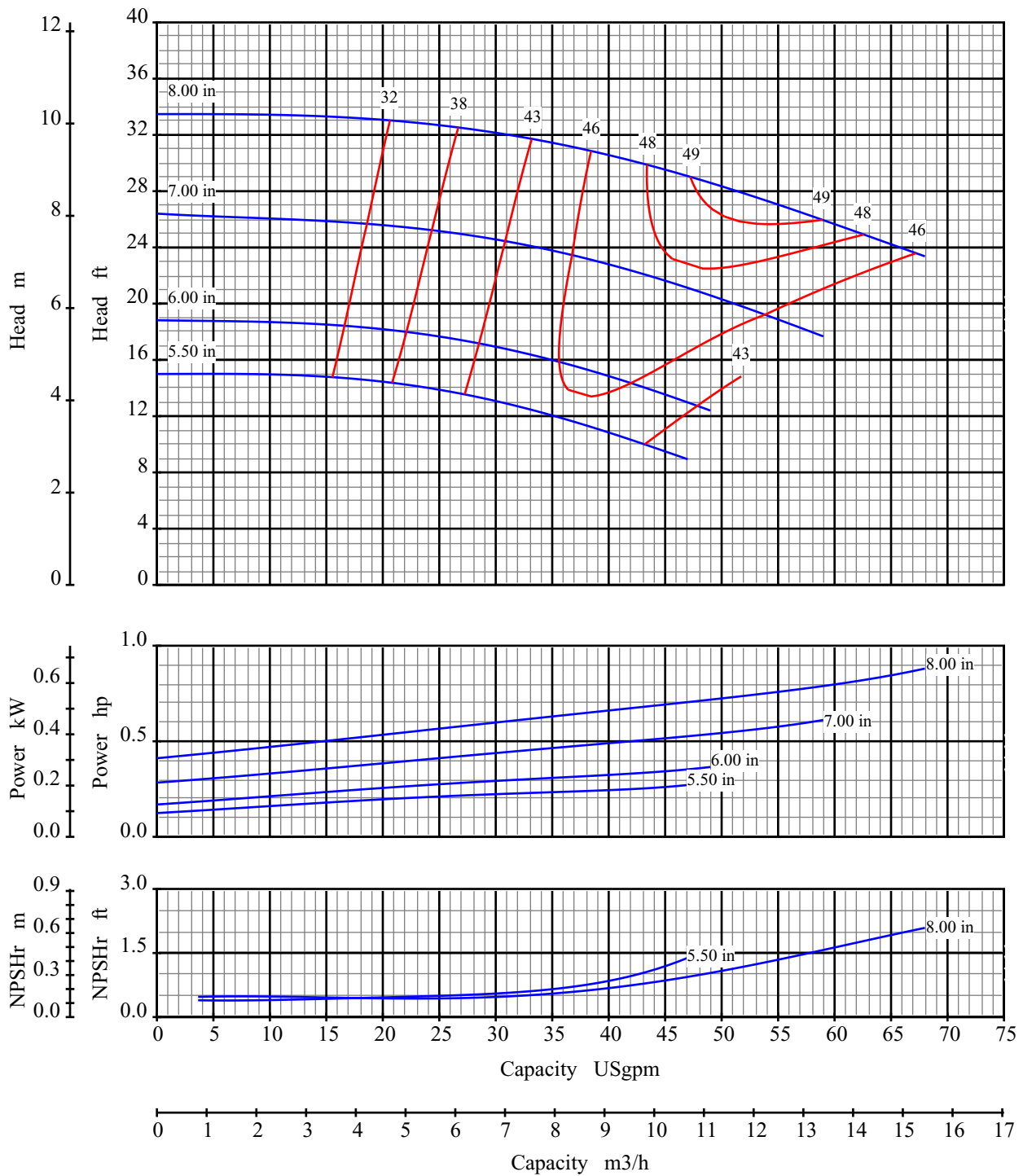
Catalog: 1301

Speed: 1750 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18116V1

Blackmer System One

Pump Size: 1x1.5 8

Pump Performance Characteristics

Effective Date: Jan/2005

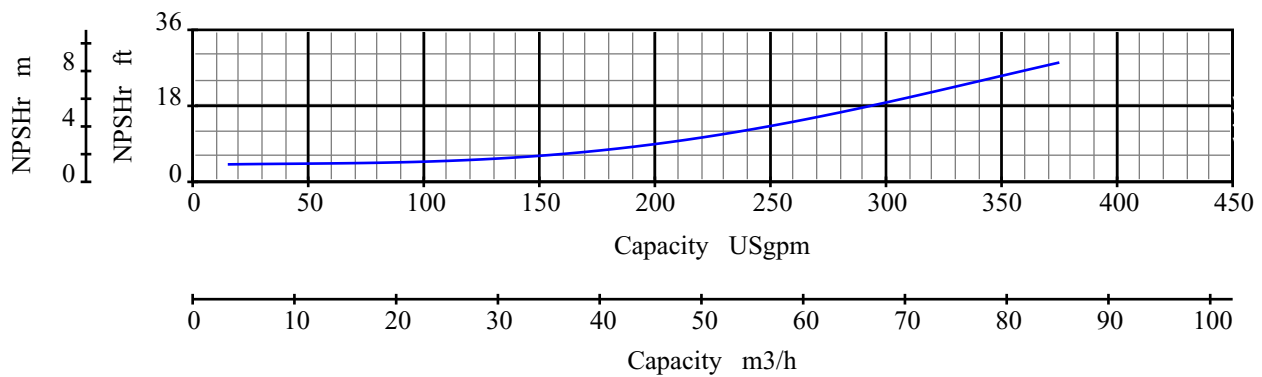
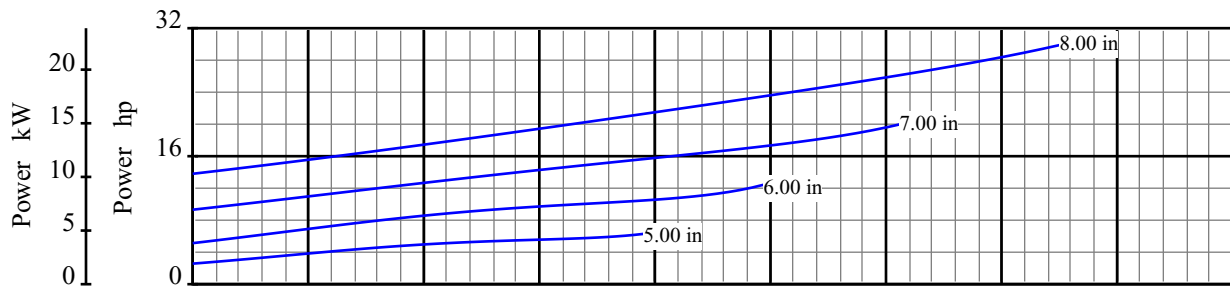
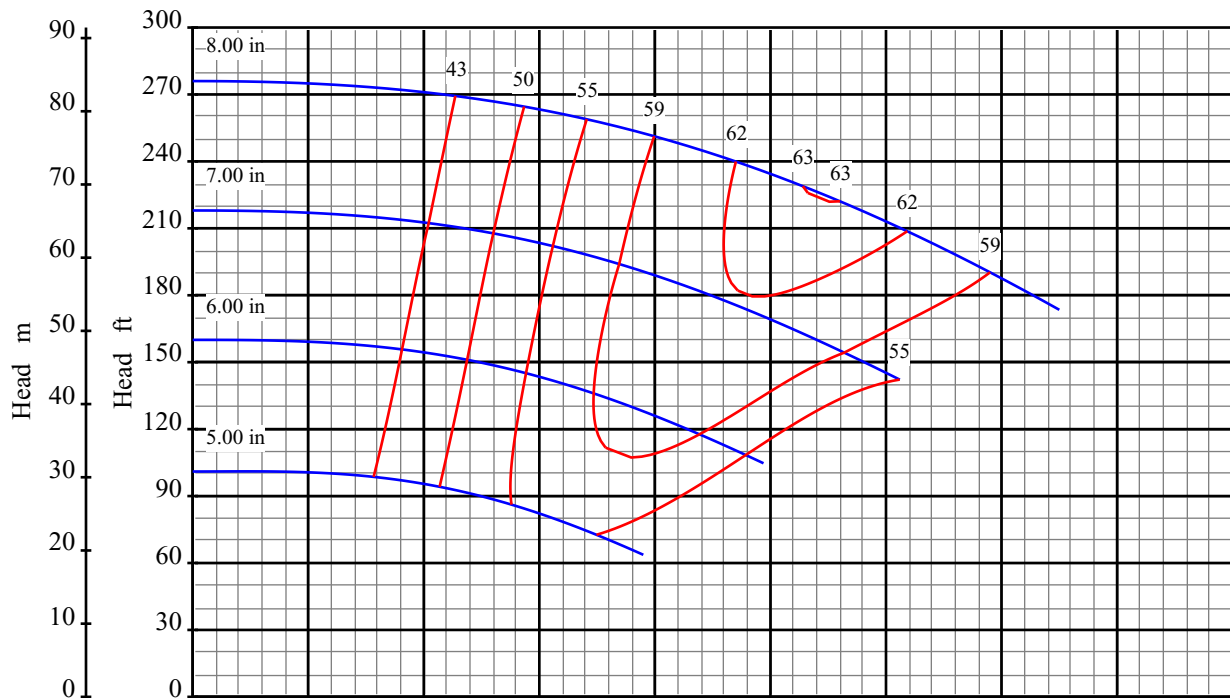
Catalog: 1301

Speed: 1150 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18118V1

Blackmer System One

Pump Size: 1.5x3 8

Pump Performance Characteristics

Effective Date: Jan/2005

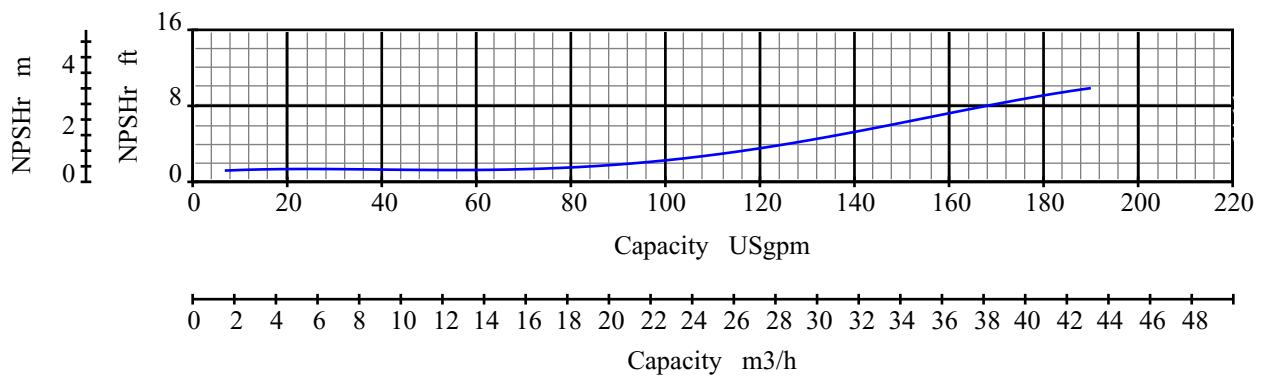
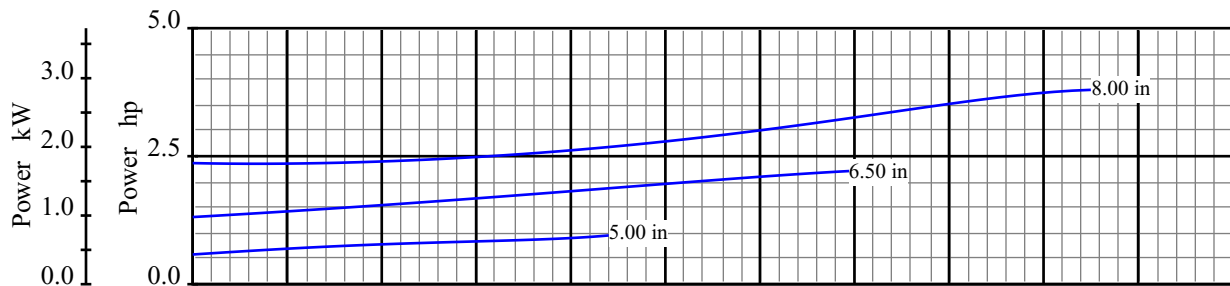
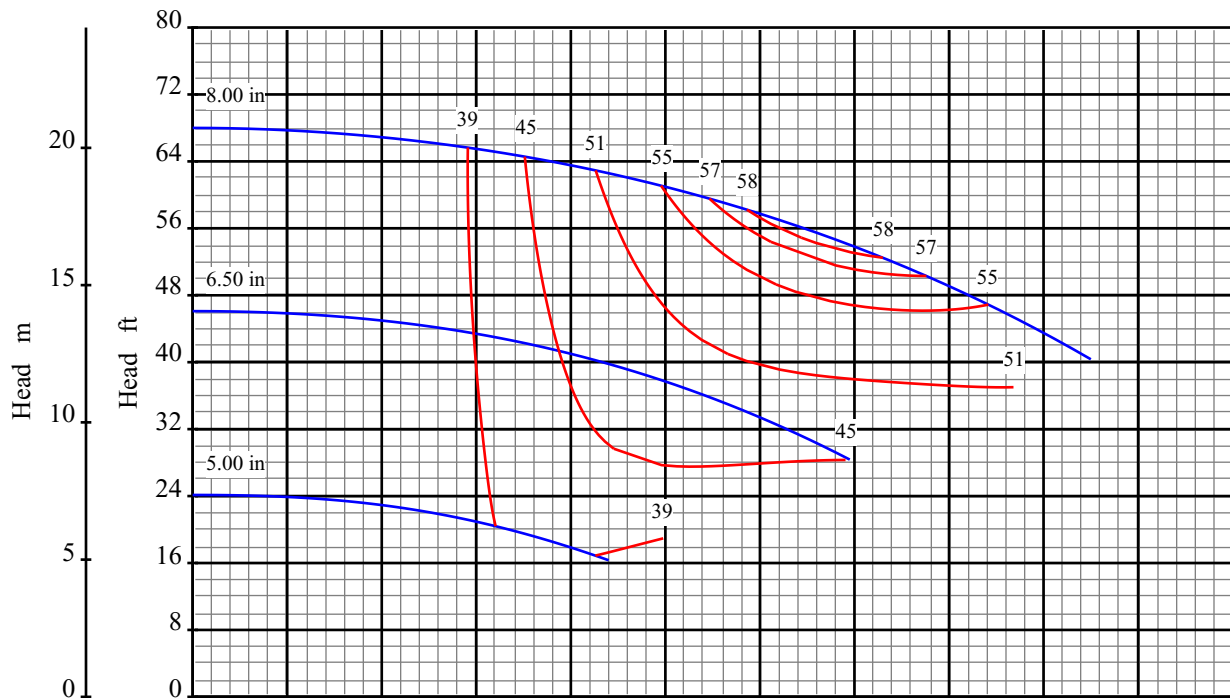
Catalog: 1301

Speed: 3550 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18120V1

Blackmer System One

Pump Size: 1.5x3 8

Pump Performance Characteristics

Effective Date: Jan/2005

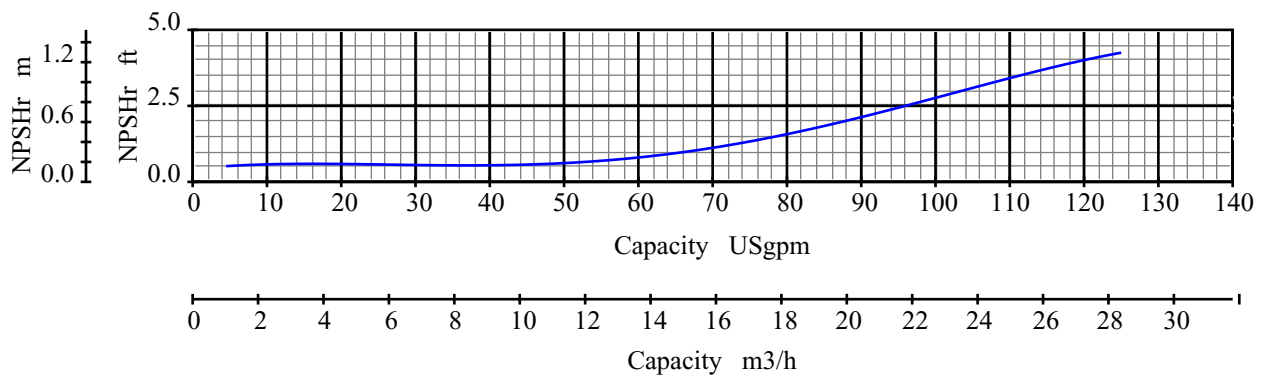
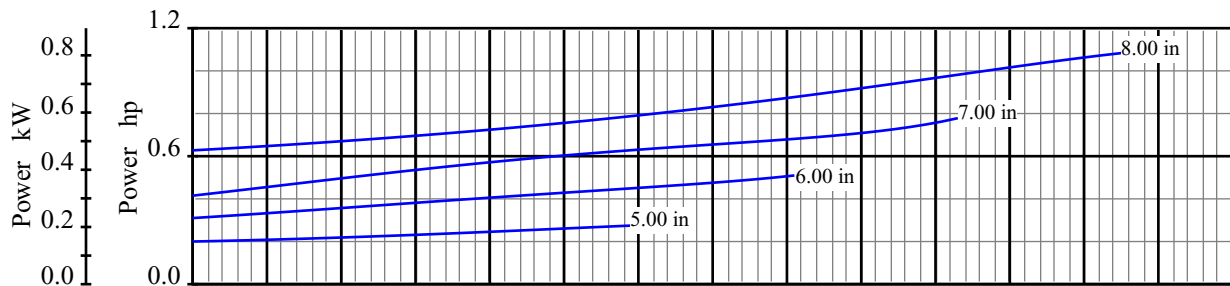
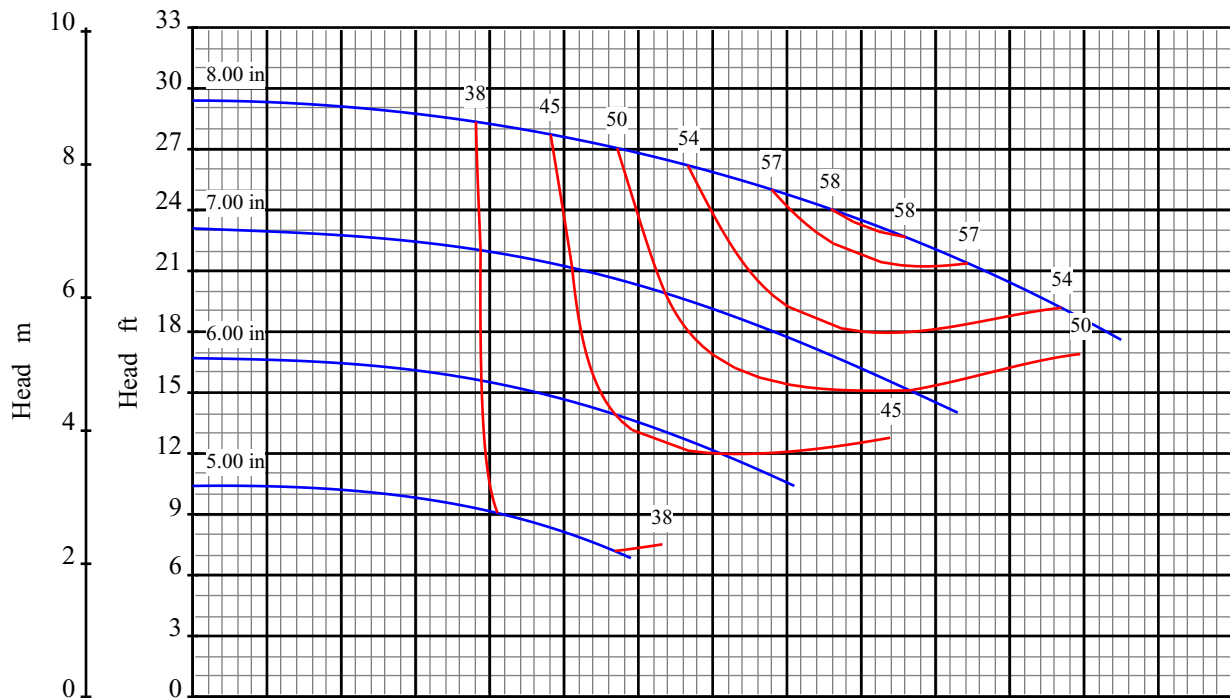
Catalog: 1301

Speed: 1750 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18122V1

Blackmer System One

Pump Size: 1.5x3 8

Pump Performance Characteristics

Effective Date: Jan/2005

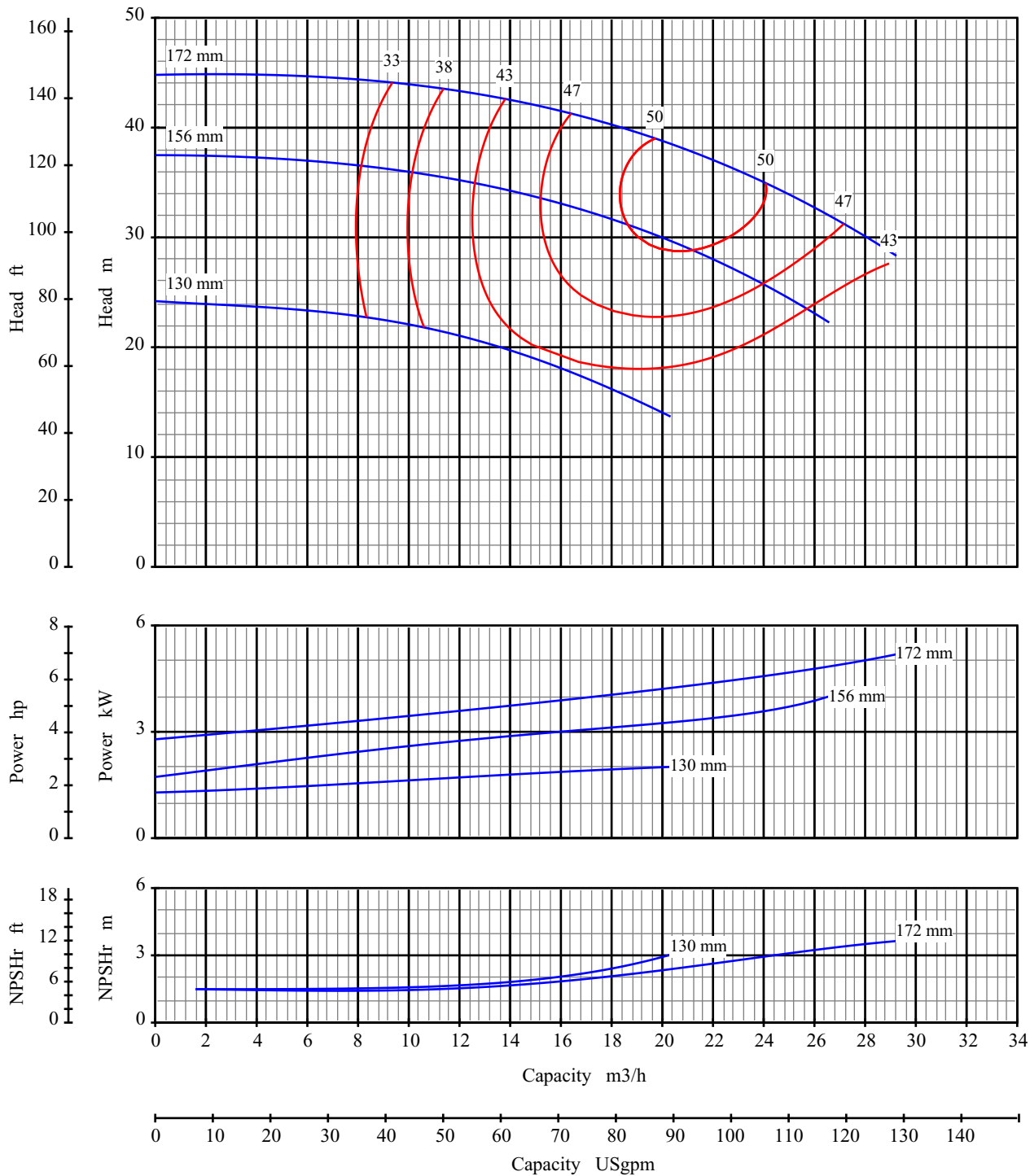
Catalog: 1301

Speed: 1150 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18125V1

Blackmer System One

Pump Size: 32x50 160

Pump Performance Characteristics

Effective Date: Jan/2005

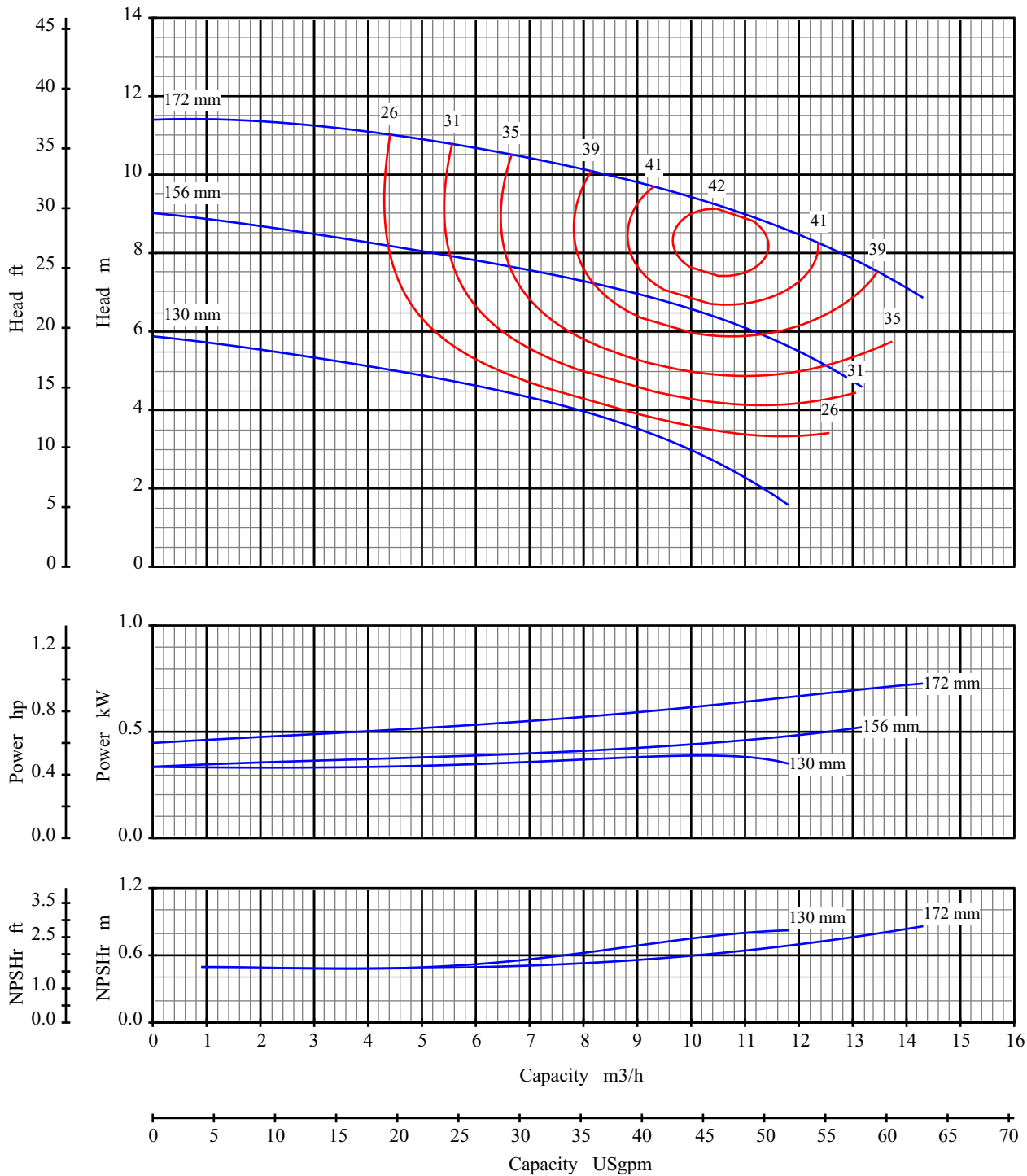
Catalog: 1301

Speed: 2900 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18127V1

Blackmer System One

Pump Size: 32x50 160

Pump Performance Characteristics

Effective Date: Jan/2005

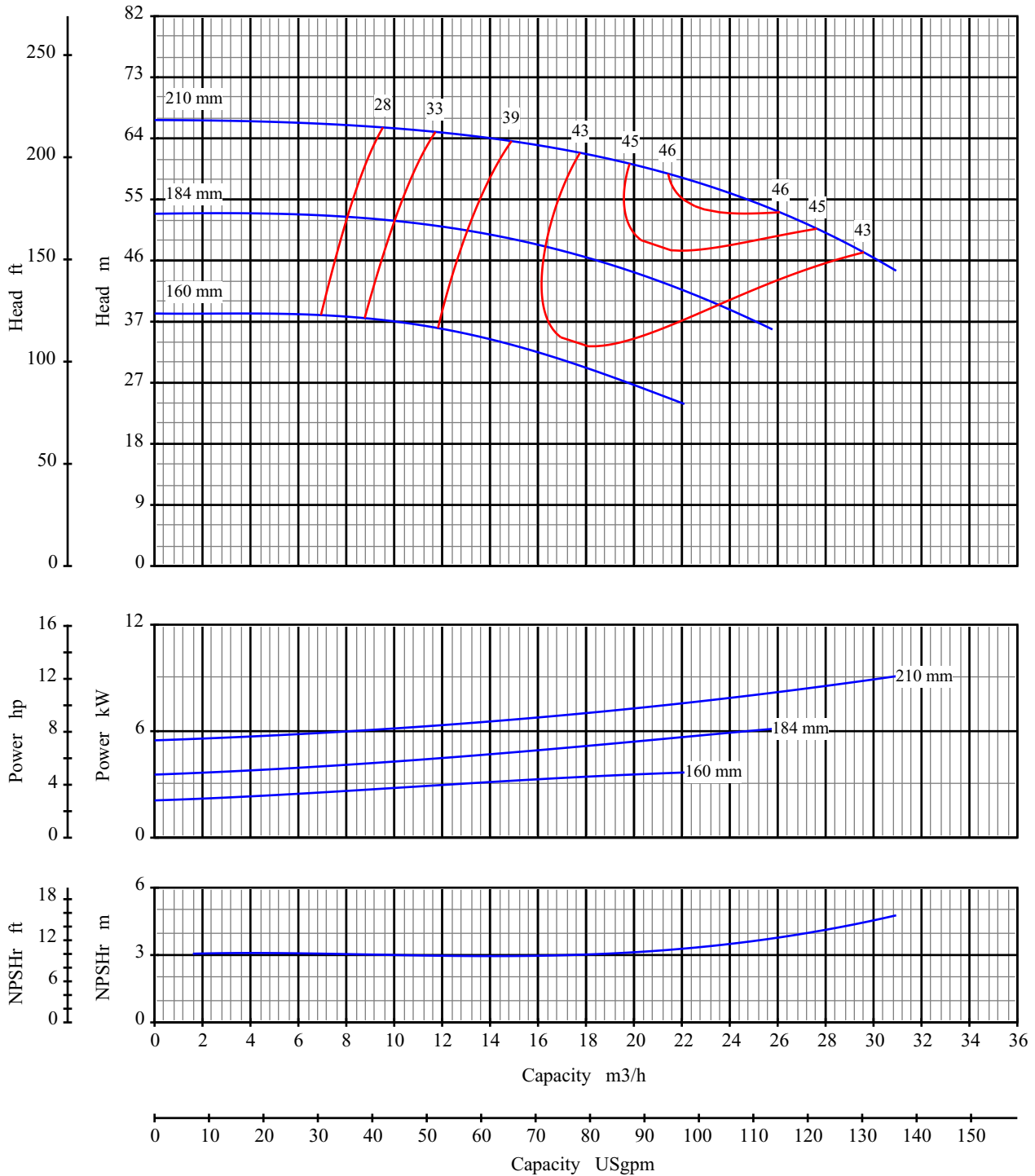
Catalog: 1301

Speed: 1450 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18131V1

Blackmer System One

Pump Size: 32x50 200

Pump Performance Characteristics

Effective Date: Jan/2005

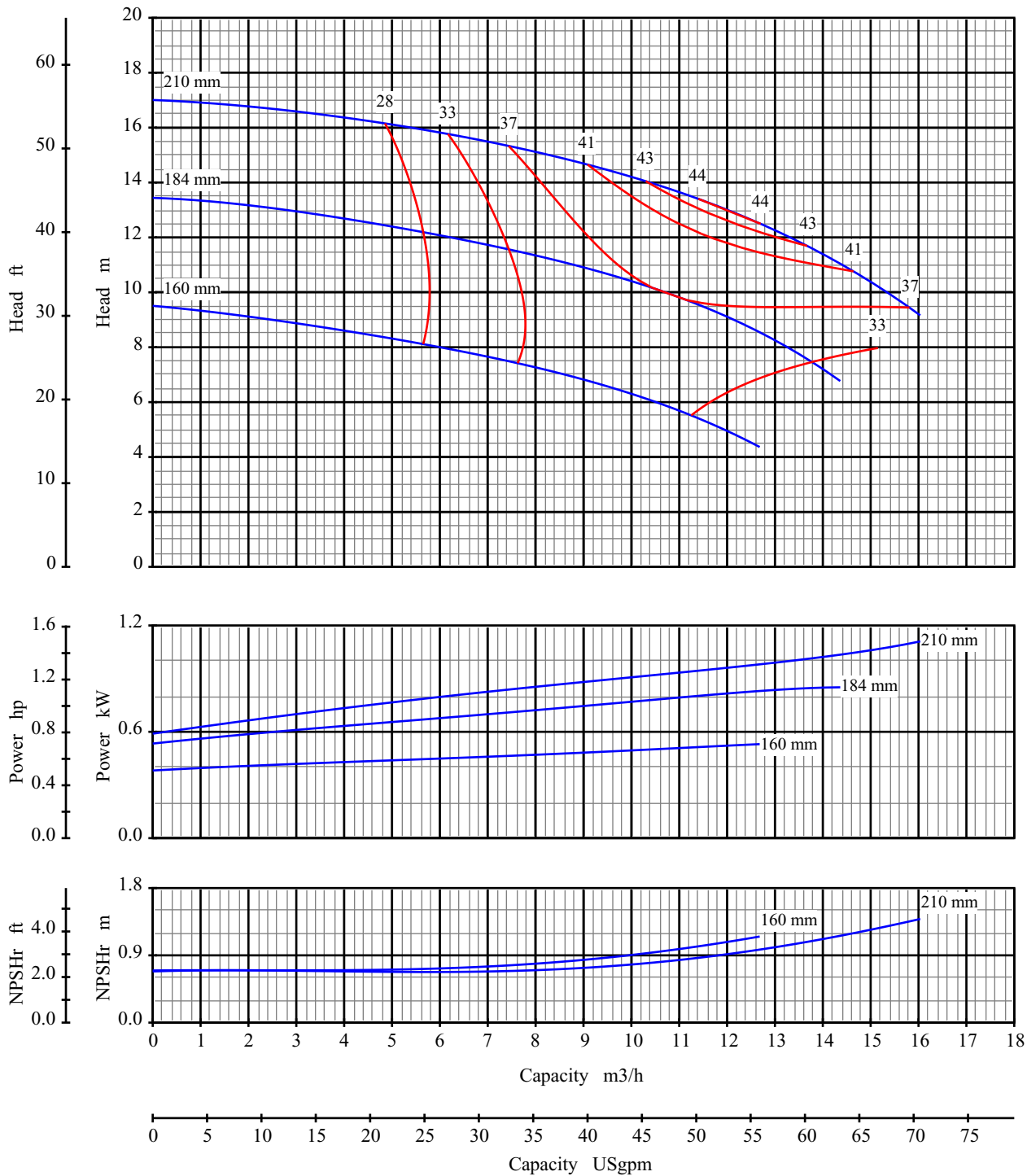
Catalog: 1301

Speed: 2900 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18133V1

Blackmer System One

Pump Size: 32x50 200

Pump Performance Characteristics

Effective Date: Jan/2005

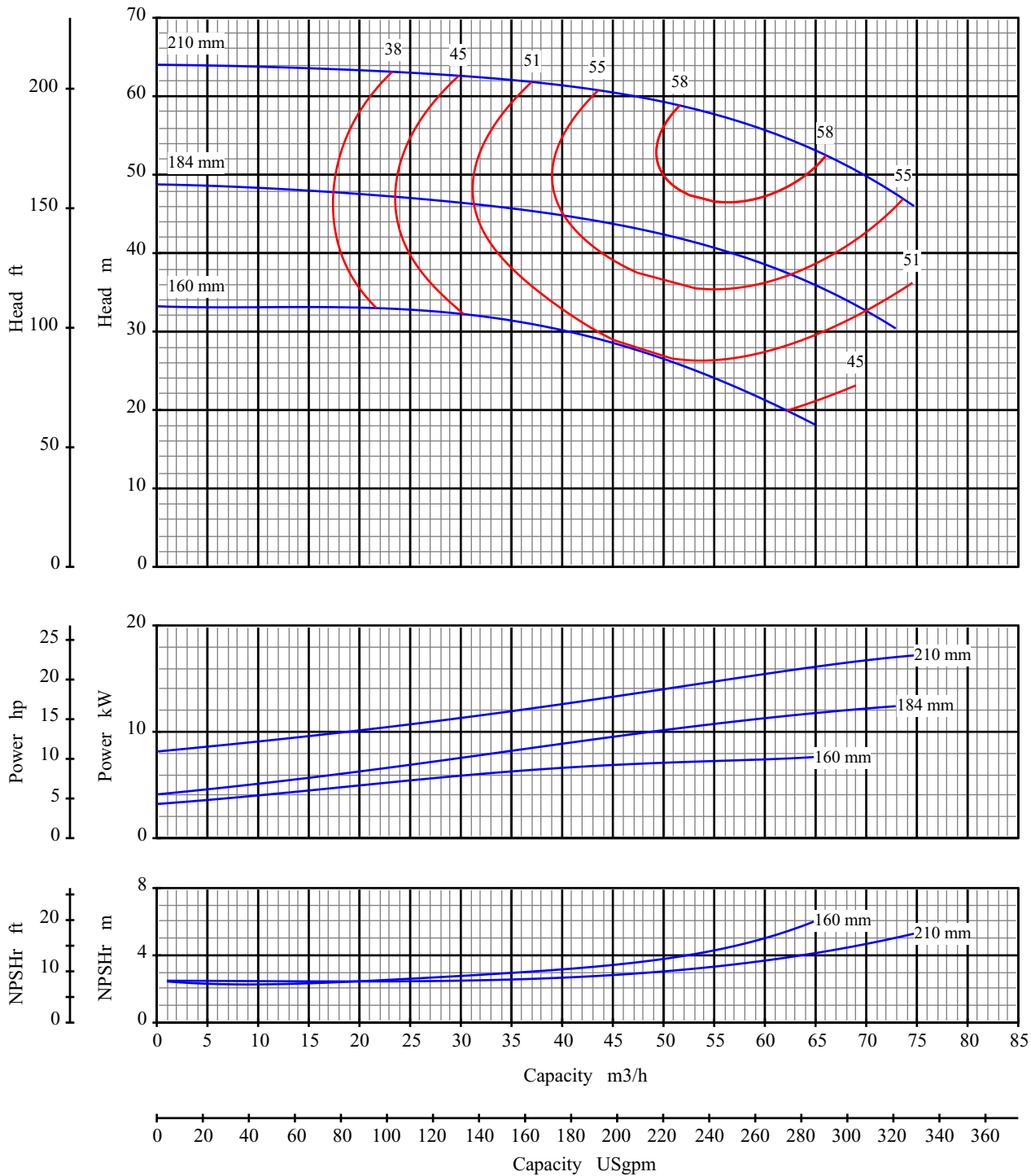
Catalog: 1301

Speed: 1450 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18137V1

Blackmer System One

Pump Size: 50x80 200

Pump Performance Characteristics

Effective Date: Jan/2005

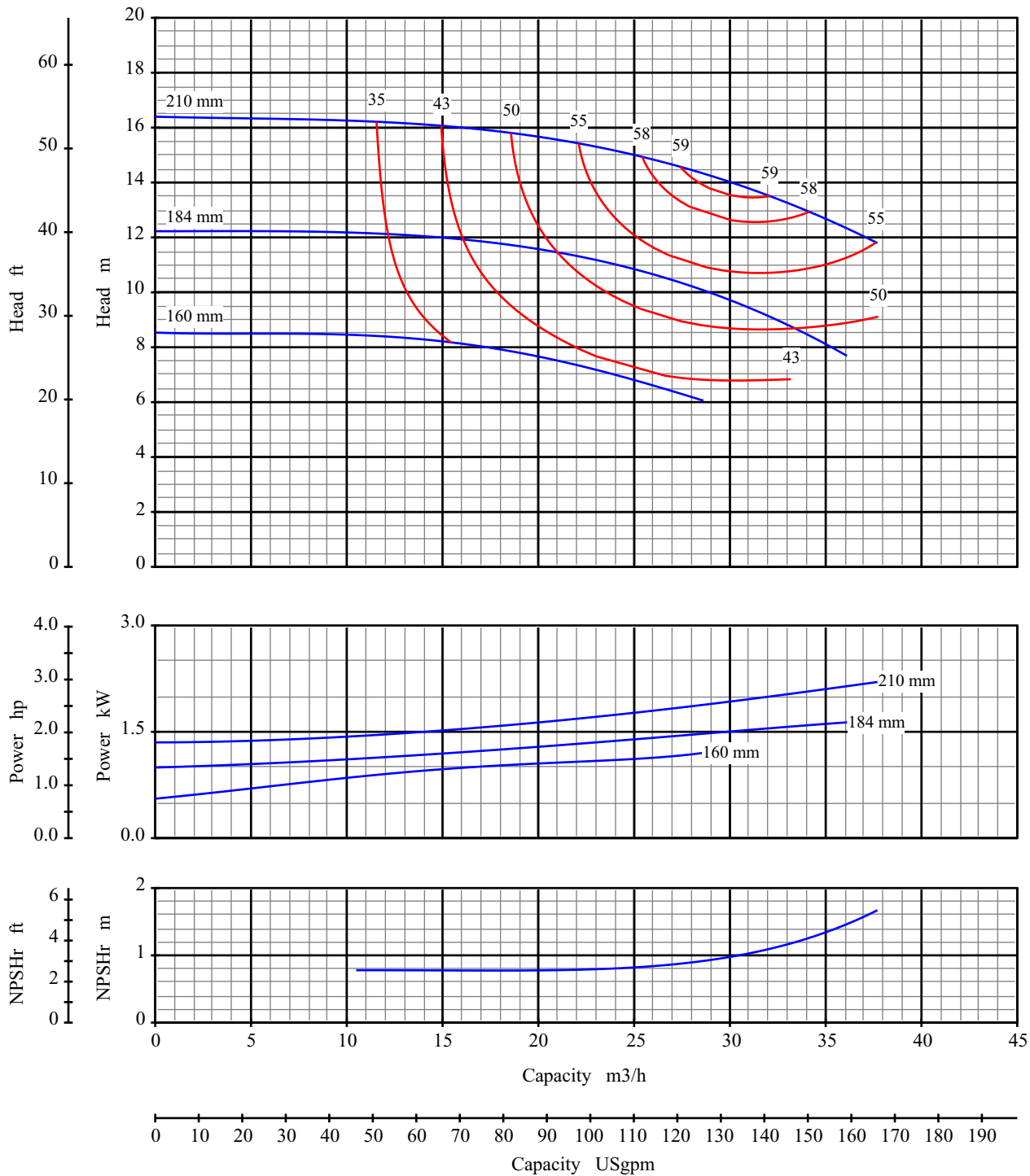
Catalog: 1301

Speed: 2900 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18139V1

Blackmer System One

Pump Size: 50x80 200

Pump Performance Characteristics

Effective Date: Jan/2005

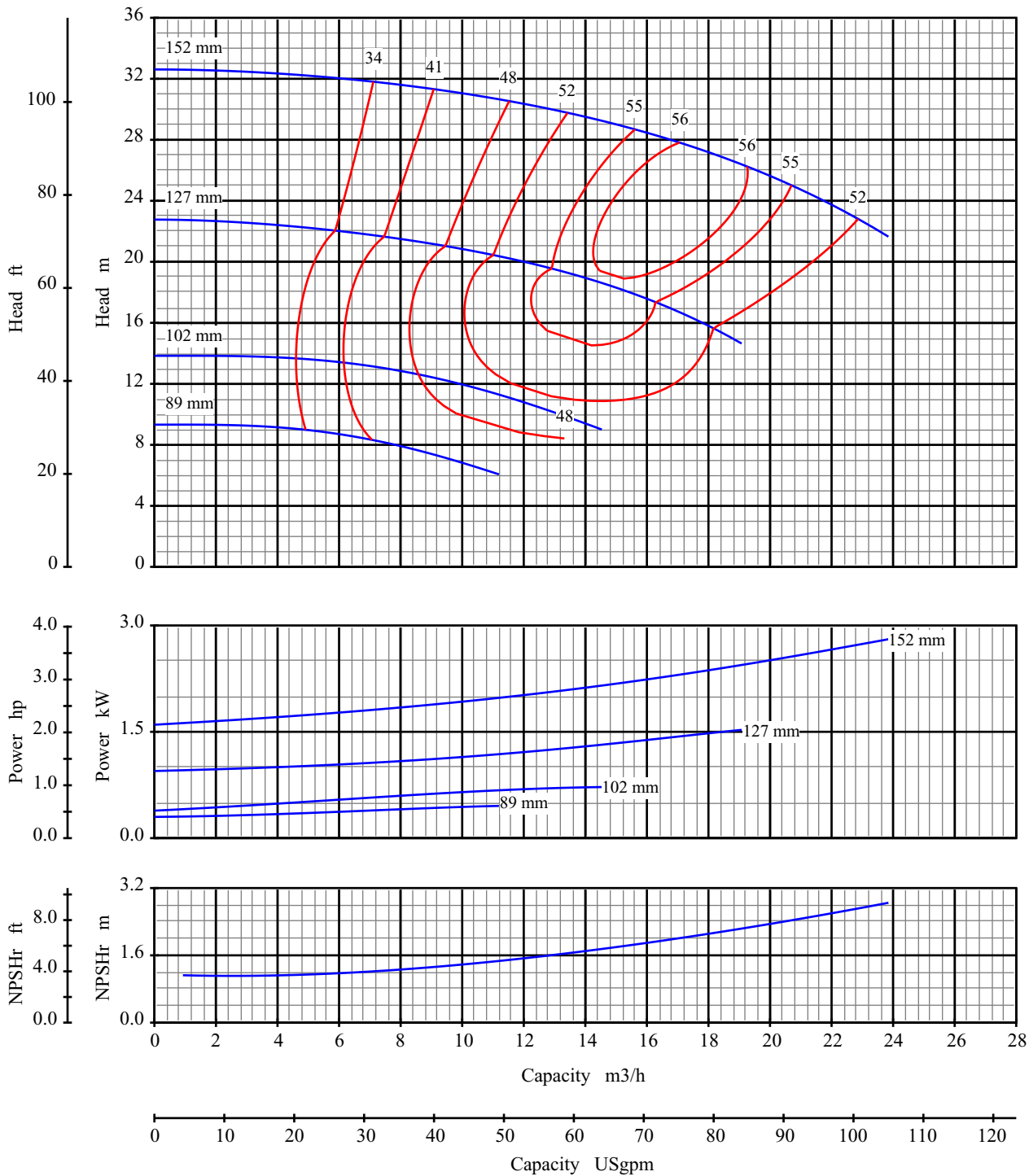
Catalog: 1301

Speed: 1450 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18101V1

Blackmer System One

Pump Size: 1x1.5 6

Pump Performance Characteristics

Effective Date: Jan/2005

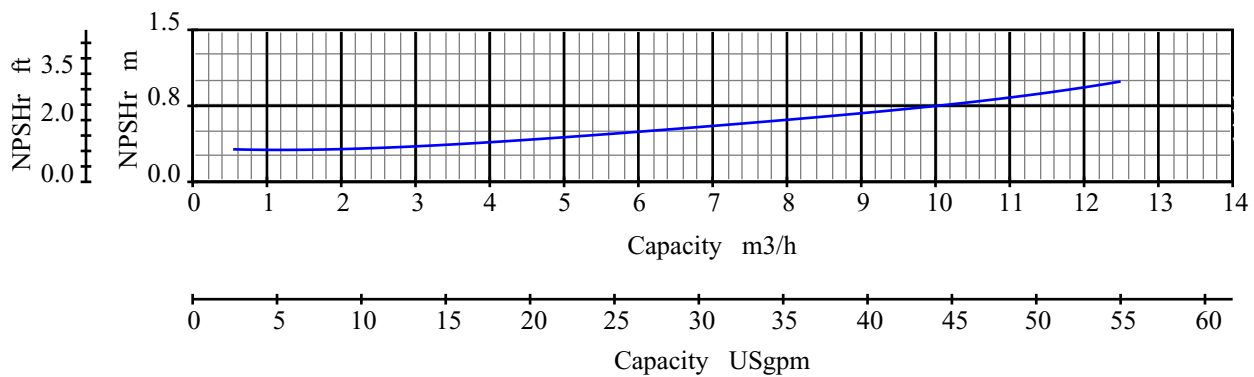
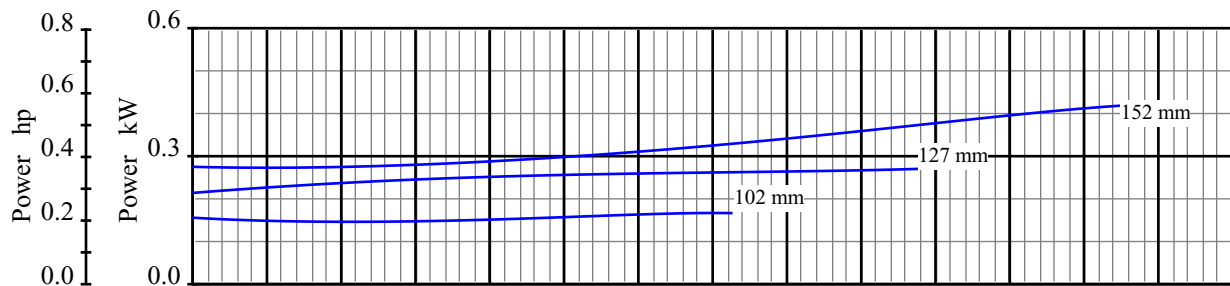
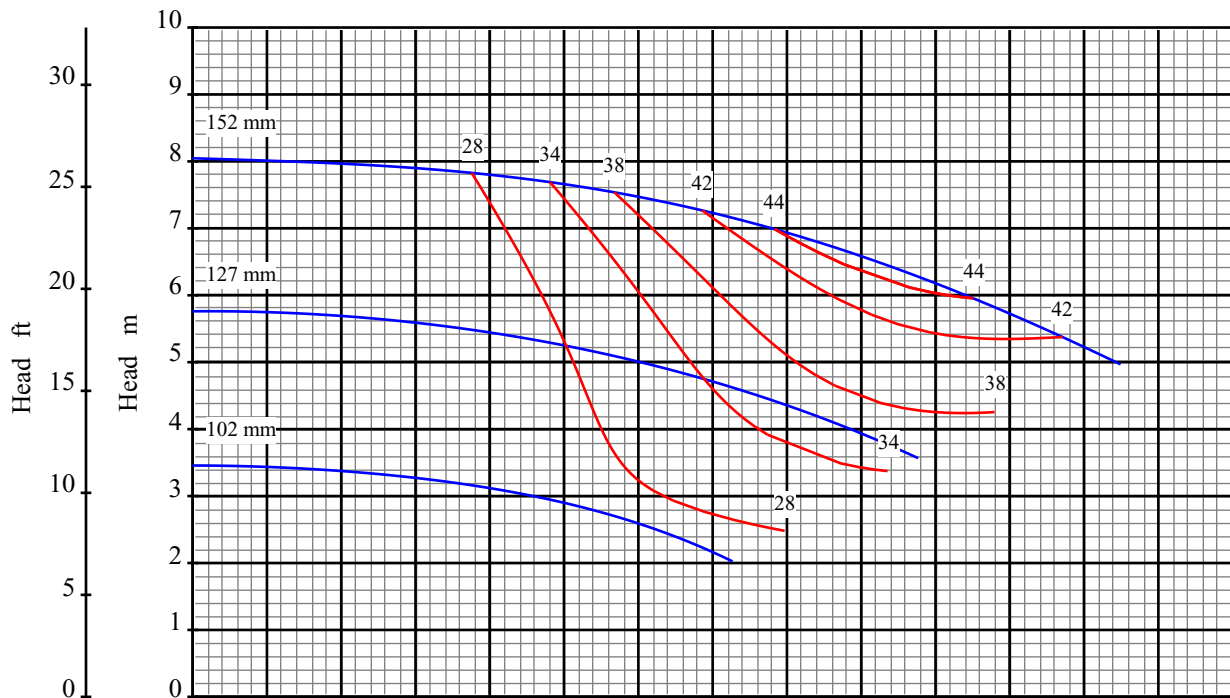
Catalog: 1301

Speed: 2900 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18103V1

Blackmer System One

Pump Size: 1x1.5 6

Pump Performance Characteristics

Effective Date: Jan/2005

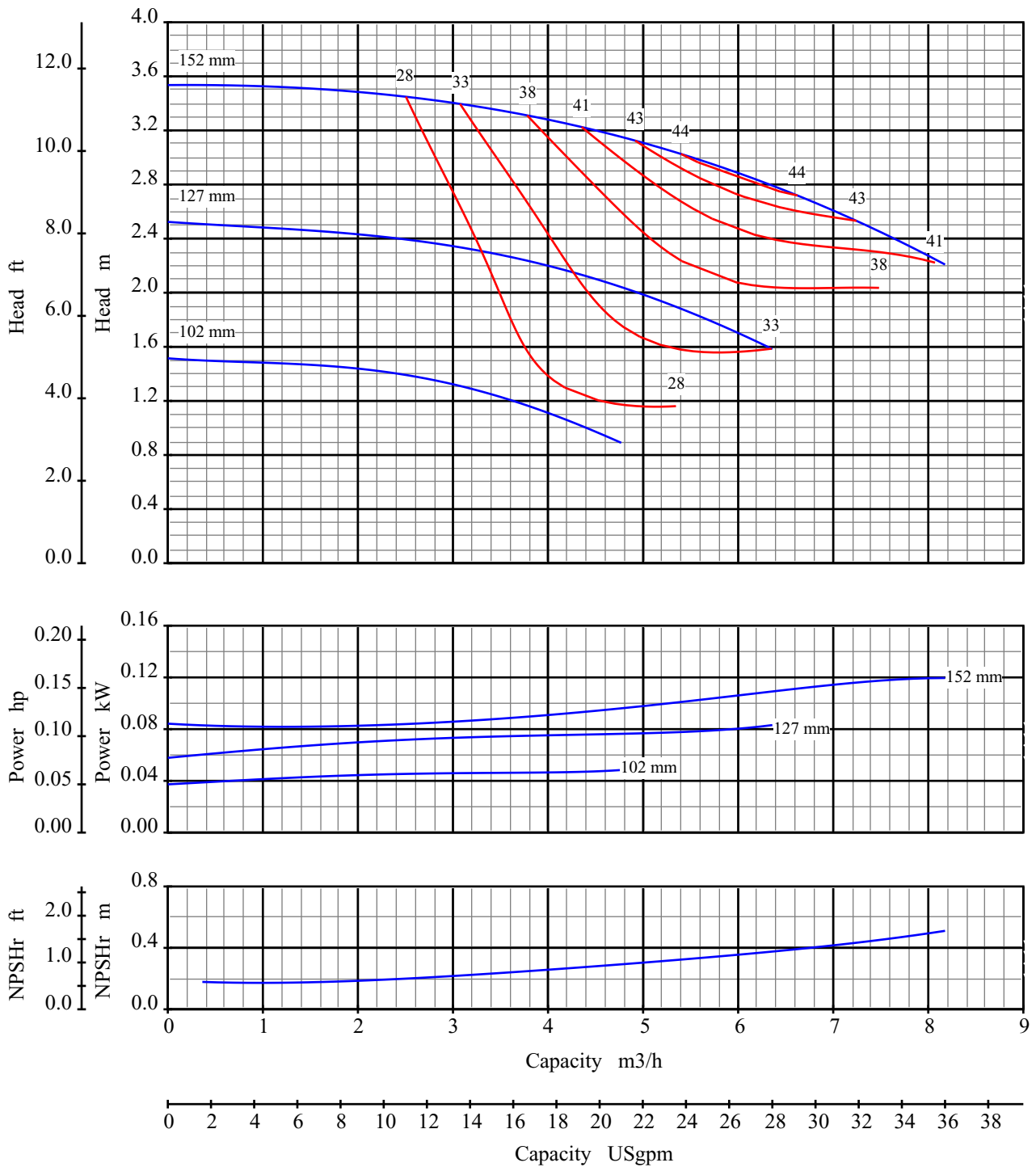
Catalog: 1301

Speed: 1450 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18105V1

Blackmer System One

Pump Size: 1x1.5 6

Pump Performance Characteristics

Effective Date: Jan/2005

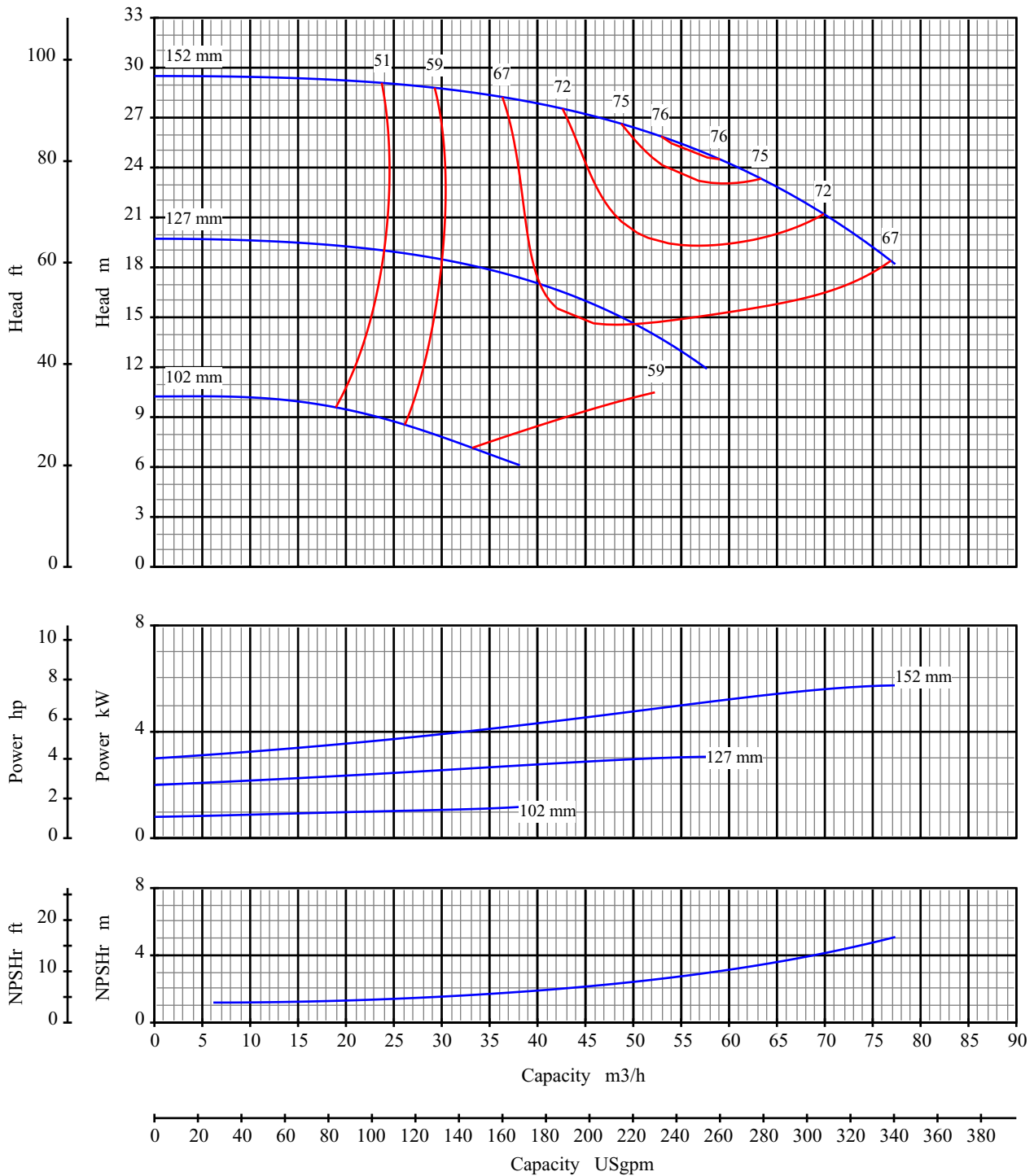
Catalog: 1301

Speed: 960 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18107V1

Blackmer System One

Pump Size: 2x3 6

Pump Performance Characteristics

Effective Date: Jan/2005

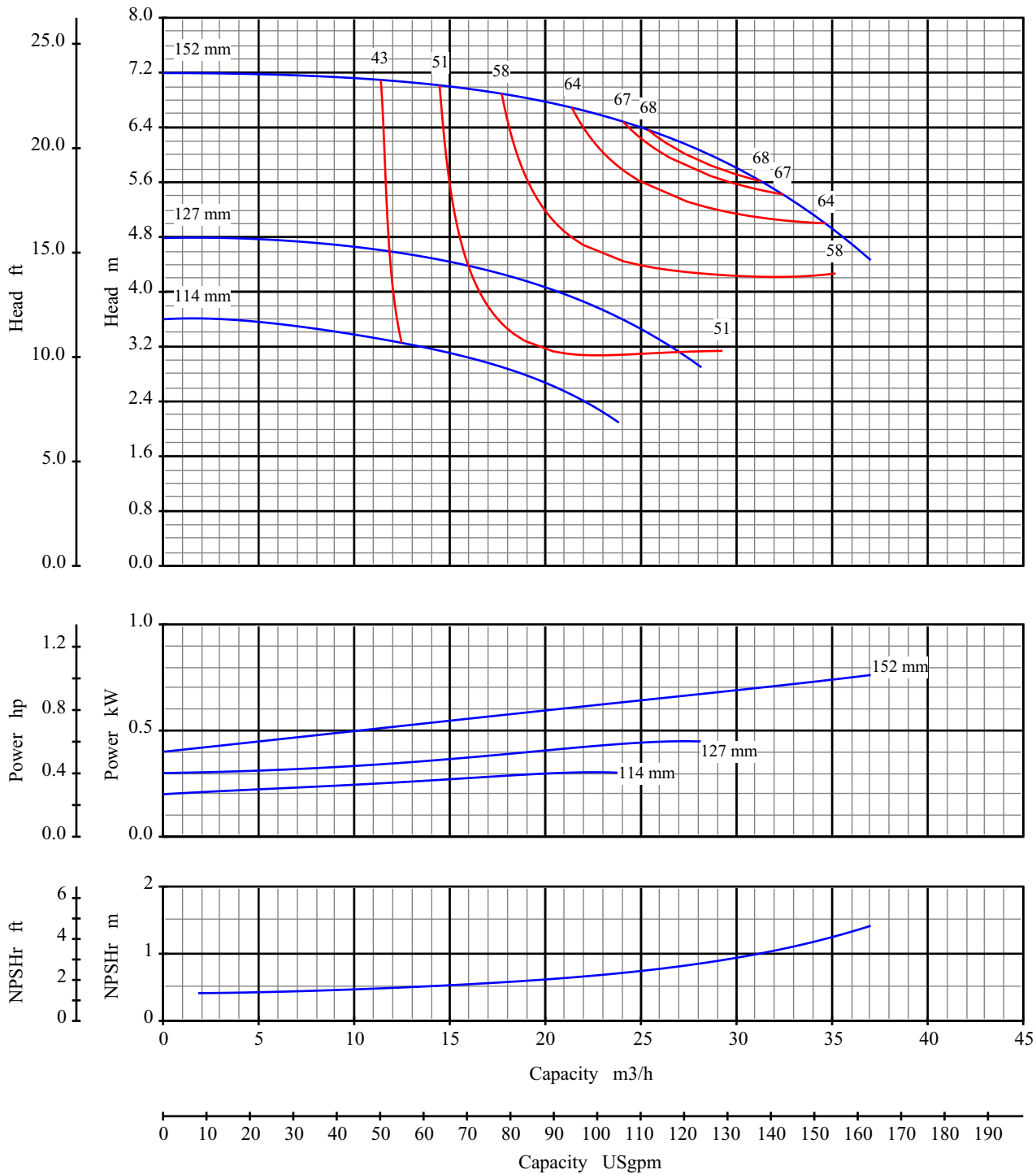
Catalog: 1301

Speed: 2900 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18109V1

Blackmer System One

Pump Size: 2x3 6

Pump Performance Characteristics

Effective Date: Jan/2005

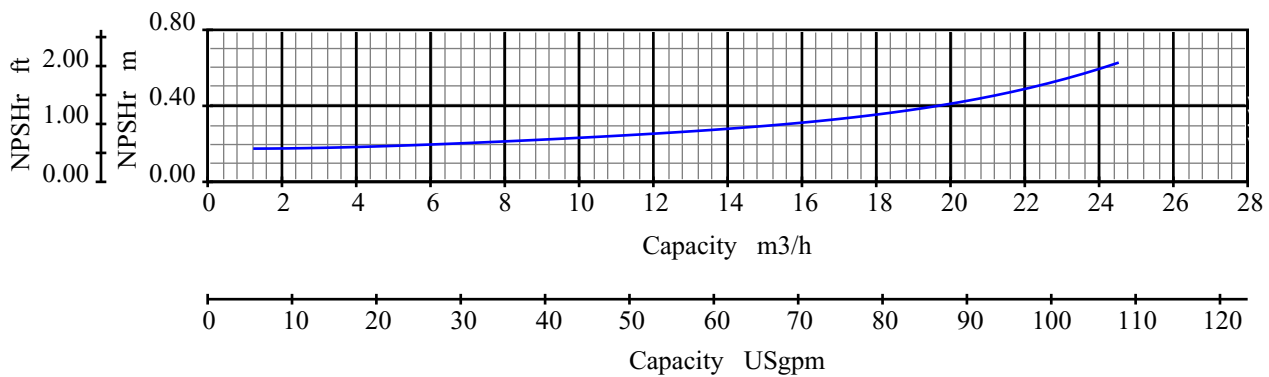
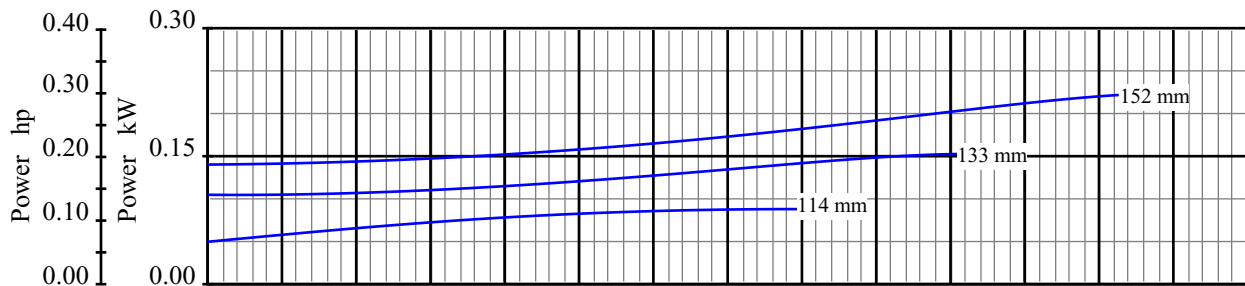
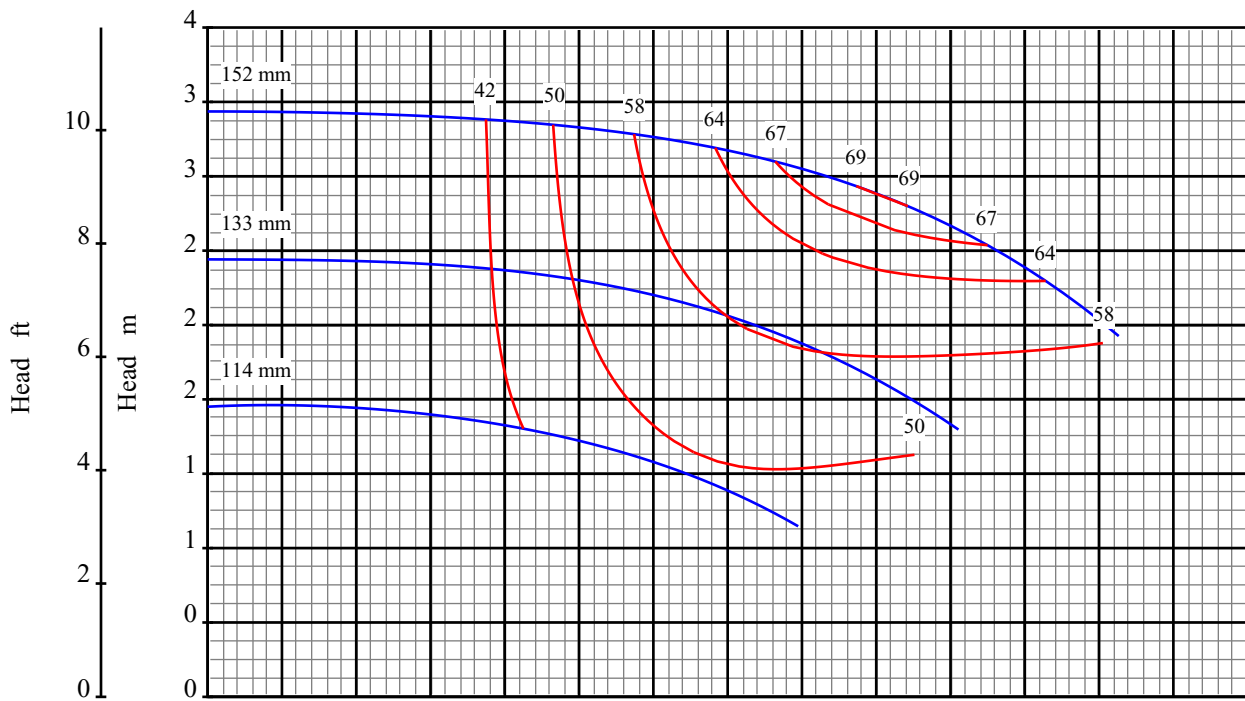
Catalog: 1301

Speed: 1450 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18111V1

Blackmer System One

Pump Size: 2x3 6

Pump Performance Characteristics

Effective Date: Jan/2005

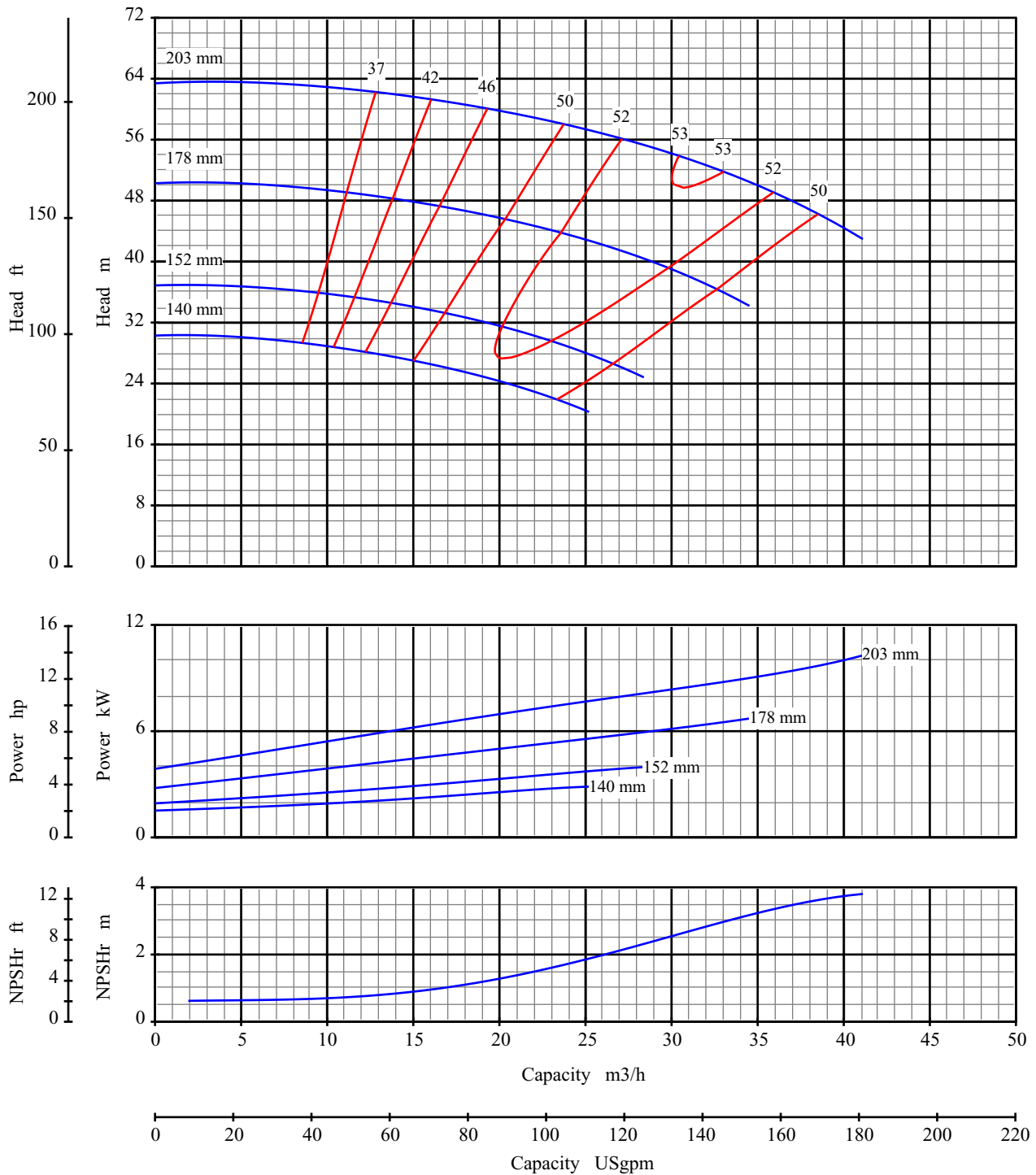
Catalog: 1301

Speed: 960 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18113V1

Blackmer System One

Pump Size: 1x1.5 8

Pump Performance Characteristics

Effective Date: Jan/2005

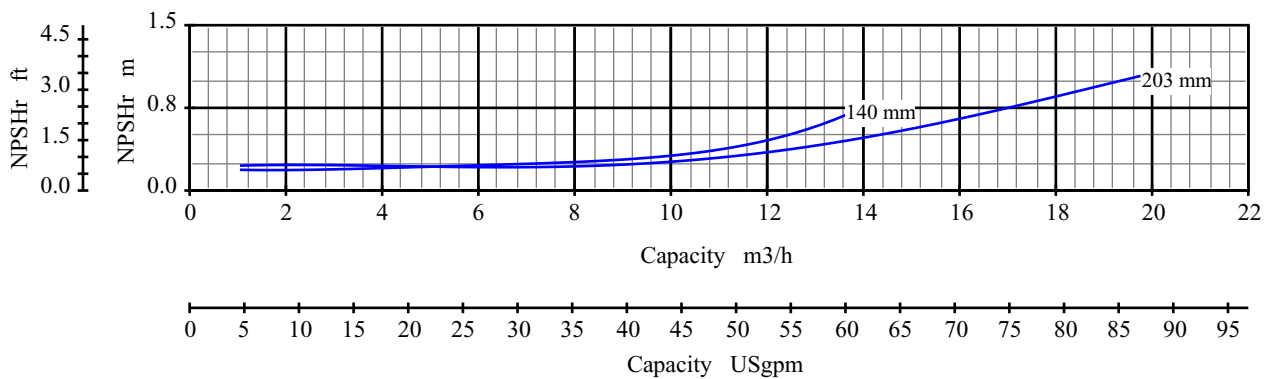
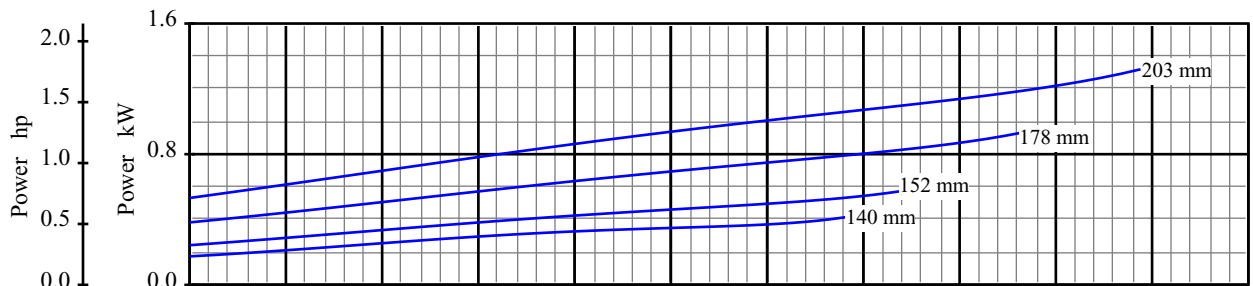
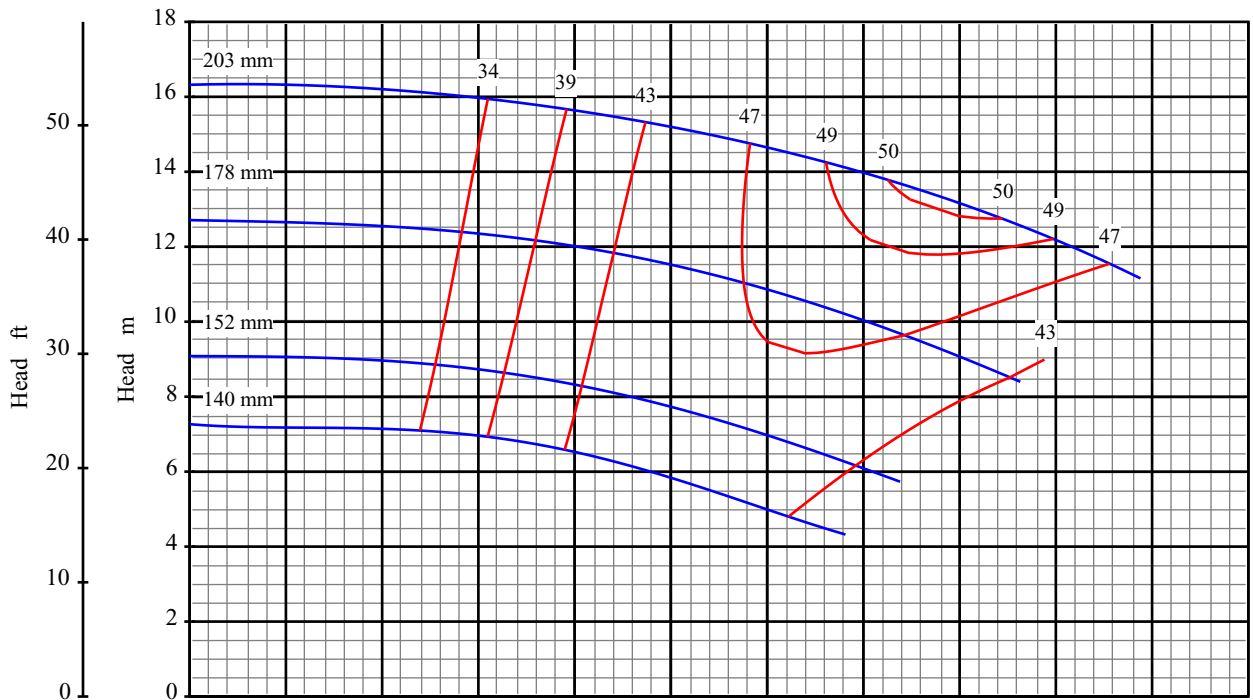
Catalog: 1301

Speed: 2900 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18115V1

Blackmer System One

Pump Size: 1x1.5 8

Pump Performance Characteristics

Effective Date: Jan/2005

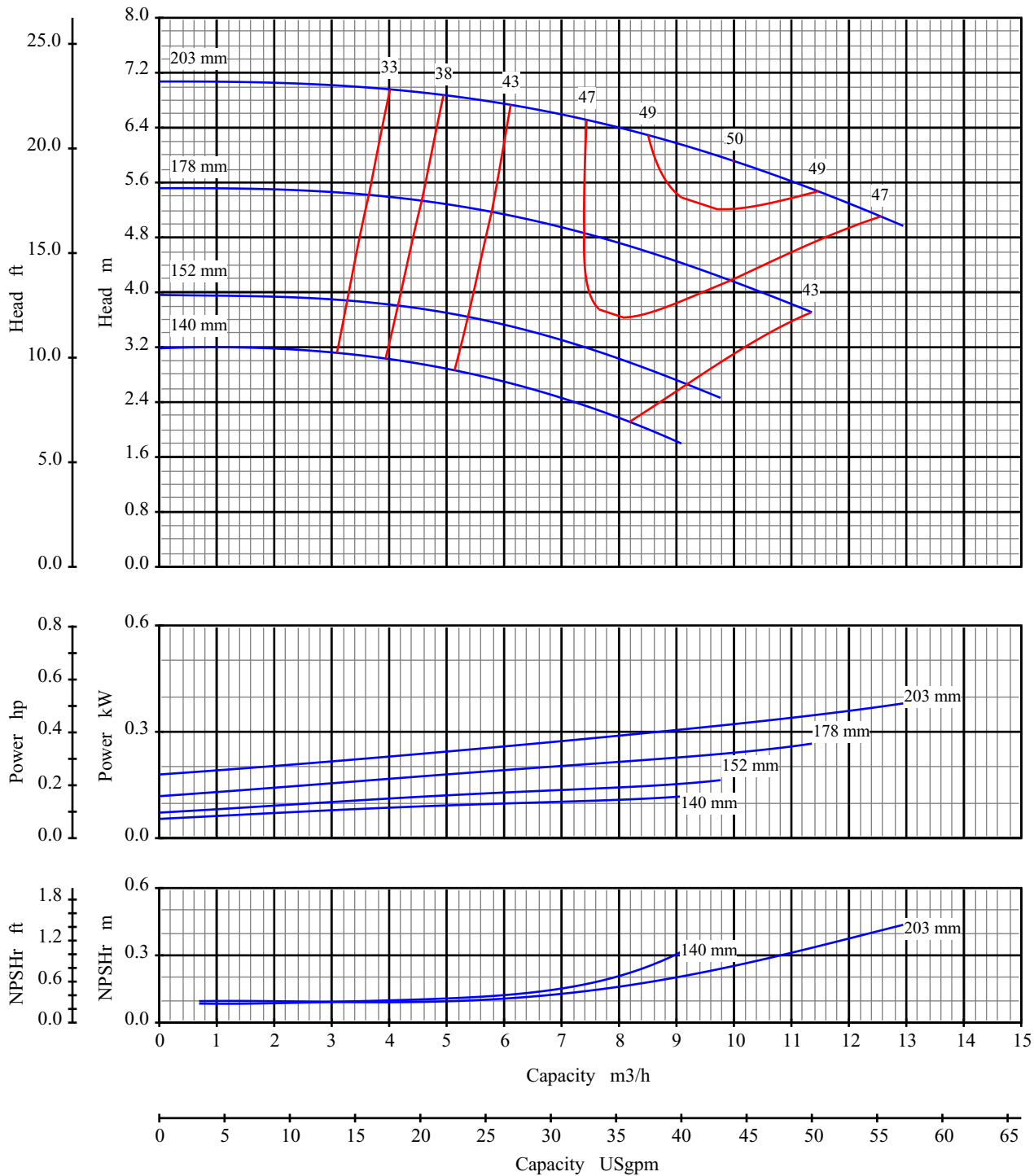
Catalog: 1301

Speed: 1450 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18117V1

Blackmer System One

Pump Size: 1x1.5 8

Pump Performance Characteristics

Effective Date: Jan/2005

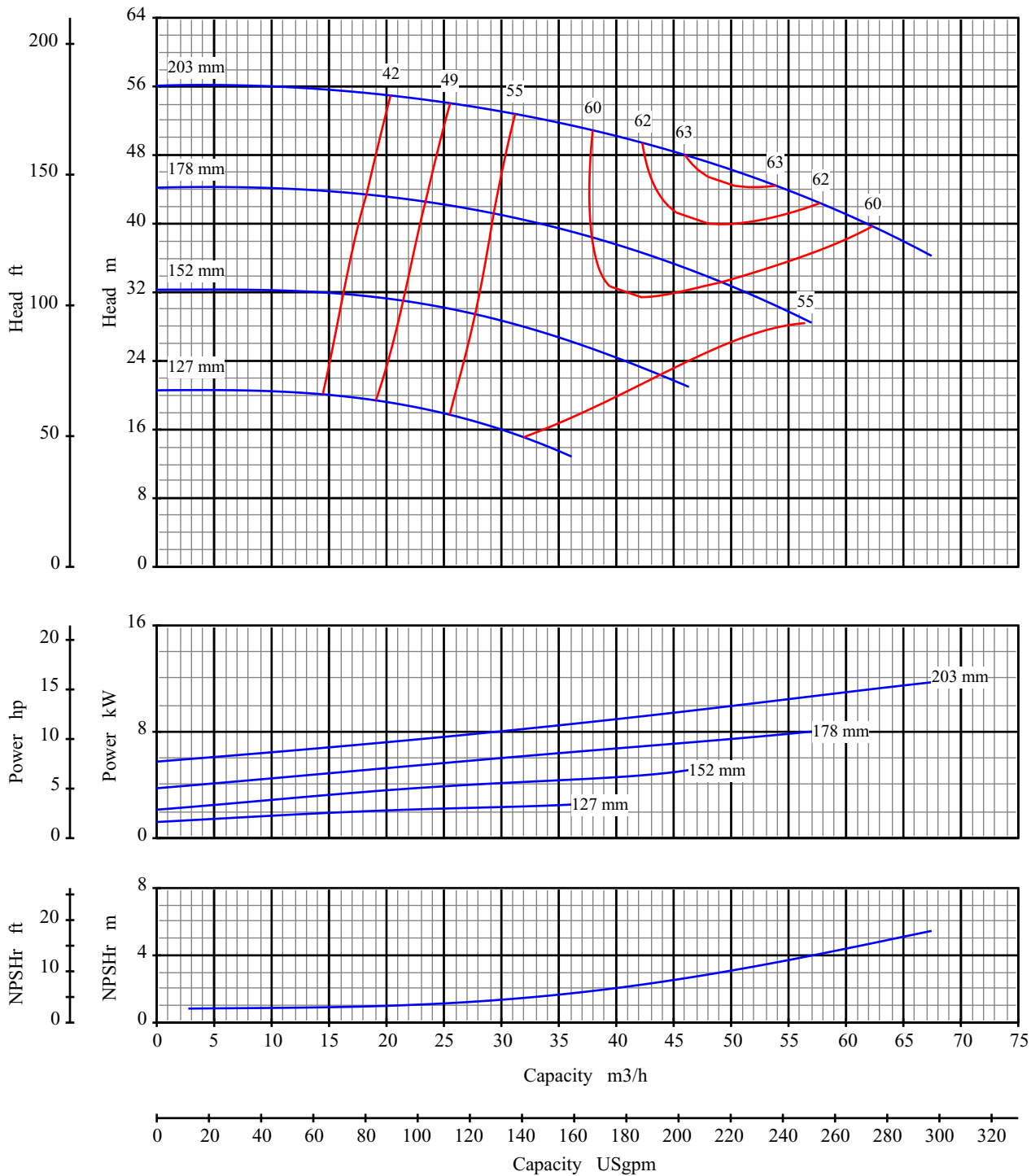
Catalog: 1301

Speed: 960 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18119V1

Blackmer System One

Pump Size: 1.5x3 8

Pump Performance Characteristics

Effective Date: Jan/2005

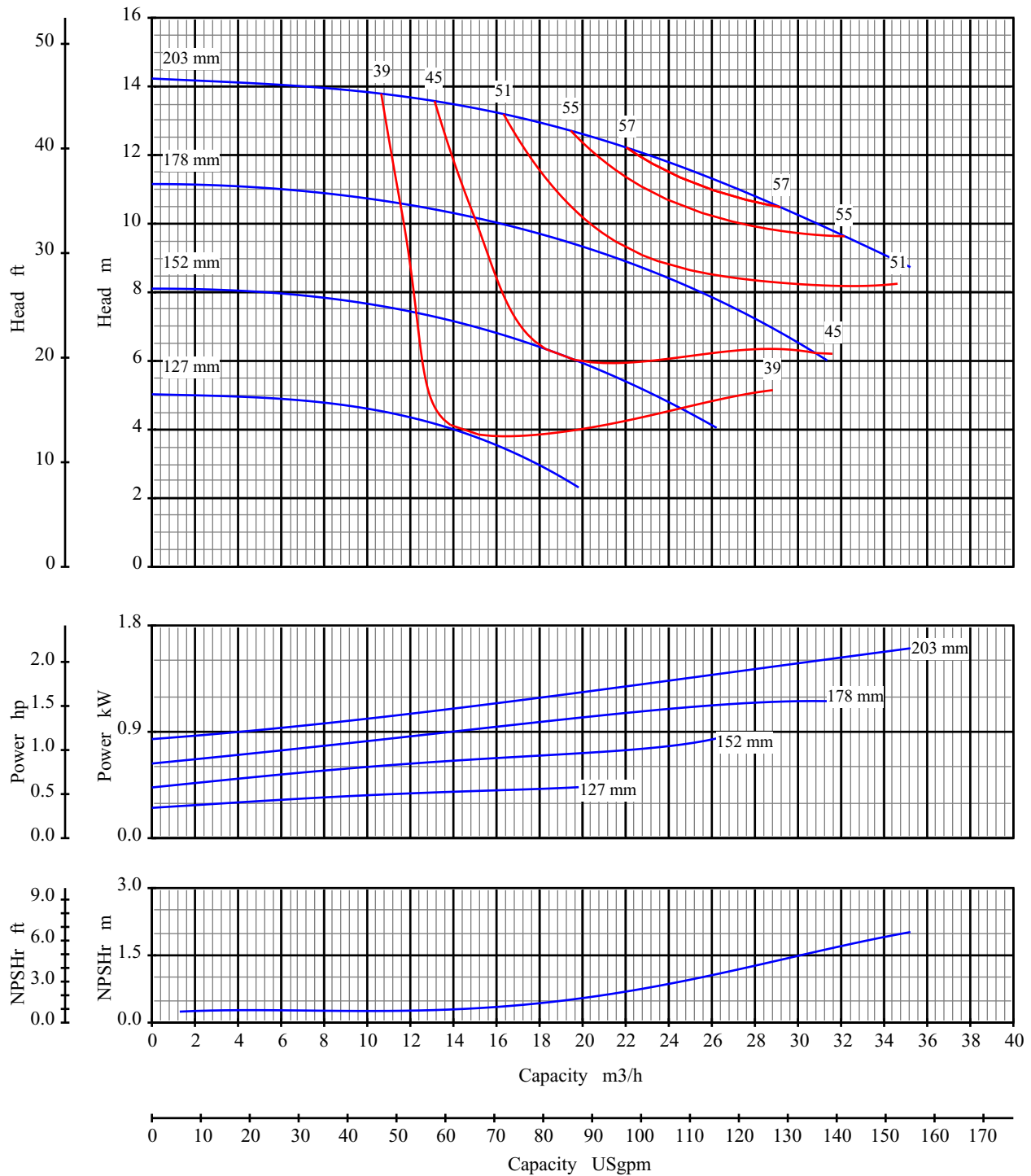
Catalog: 1301

Speed: 2900 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18121V1

Blackmer System One

Pump Size: 1.5x3 8

Pump Performance Characteristics

Effective Date: Jan/2005

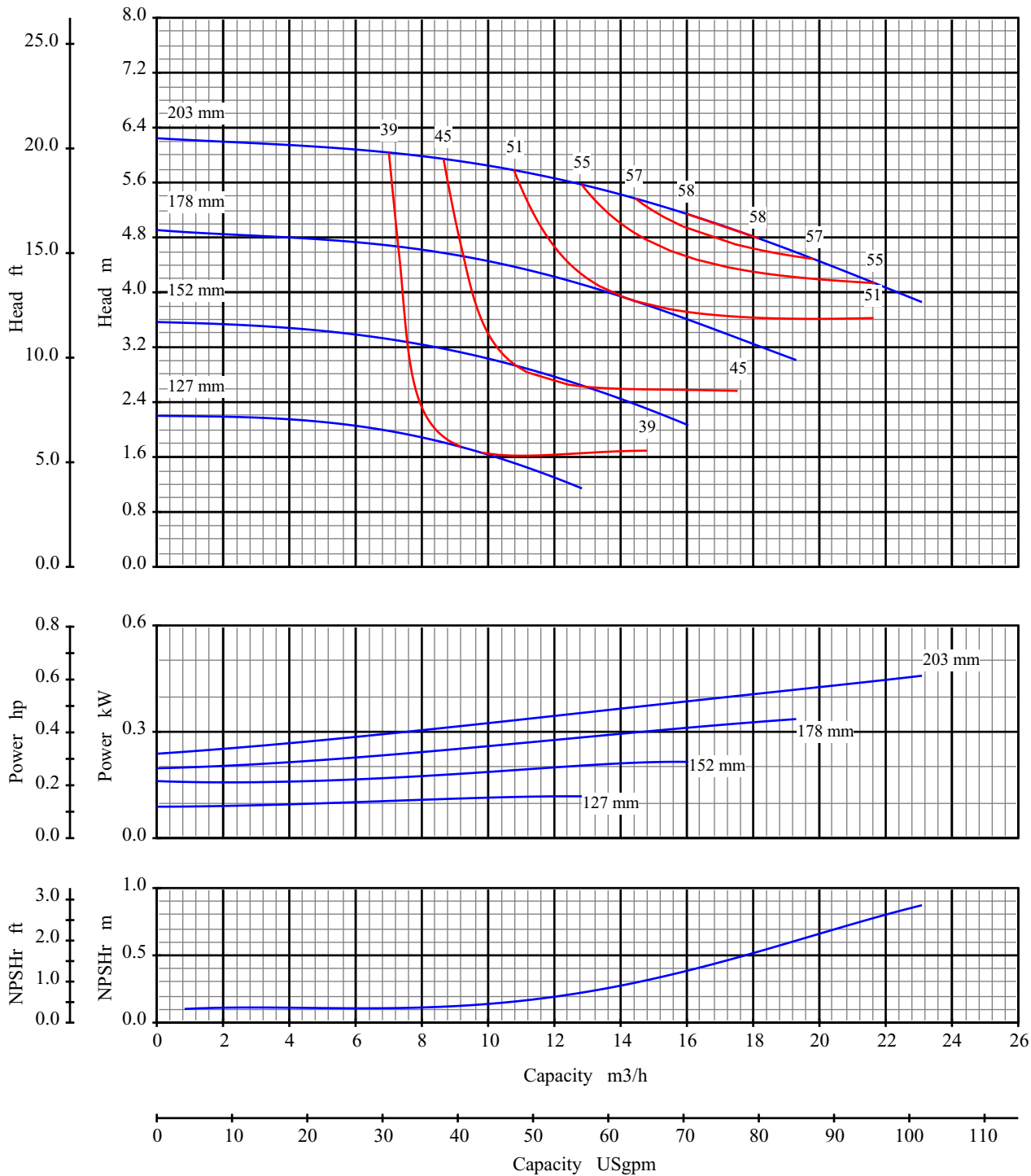
Catalog: 1301

Speed: 1450 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18123V1

Blackmer System One

Pump Size: 1.5x3 8

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Speed: 960 rpm

Open Impeller

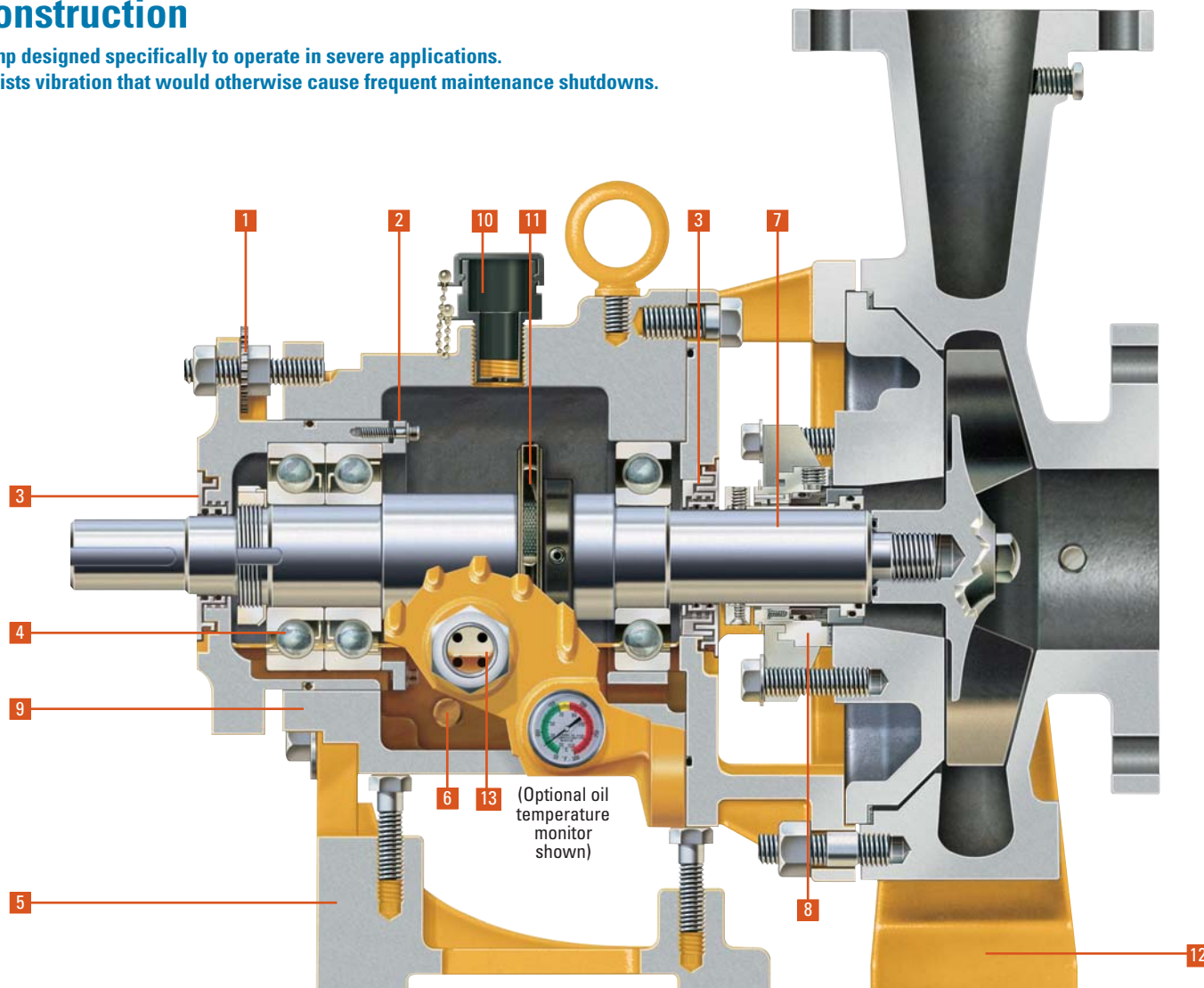
Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Construction

Pump designed specifically to operate in severe applications.
Resists vibration that would otherwise cause frequent maintenance shutdowns.

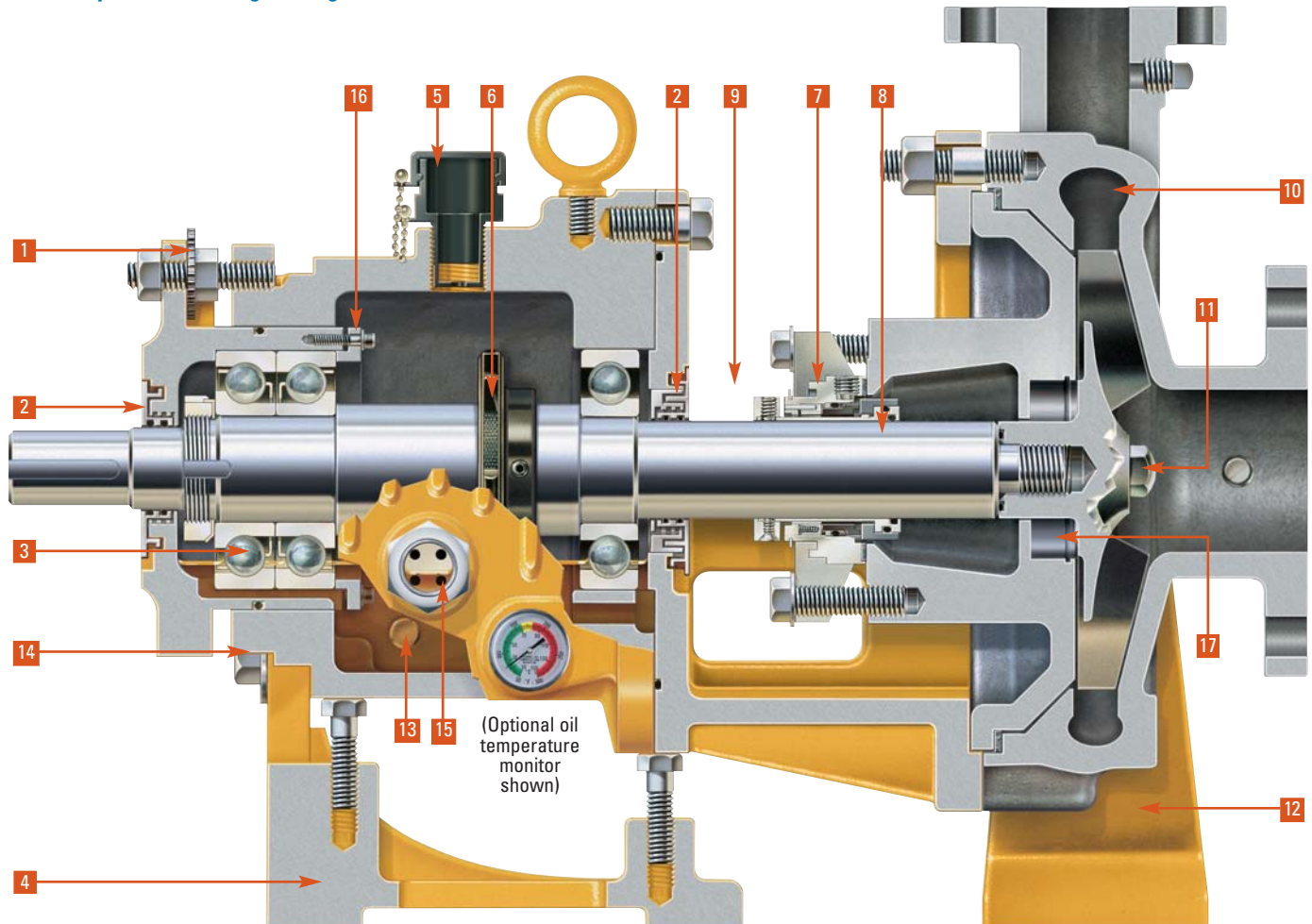


- 1** Patented micrometer adjustment nuts (pat. #4,439,096) fine tune impeller setting for maximum efficiency.
- 2** Positive locking thrust bearing retainer cover for maximum bearing holding power and minimum axial movement.
- 3** Patented System One Labyrinth Seals (pat. #4,572,517) provide a non-wearing lifetime protection for radial and thrust bearings.
- 4** 7310 (pr) angular contact bearings are standard for high thrust capability.
- 5** Full support rear leg assures bearing frame remains upright during pump disassembly. Full adjustability aids in alignment.
- 6** Two magnetic plugs are provided to maintain clean oil and are removable for insertion of cooling coil.
- 7** Solid shaft (no sleeve) with minimal overhang provides superior resistance to deflection. Lowest L^3/D^4 stiffness ratio in the industry.
- 8** Accepts most standard mechanical seals.
- 9** Rabbet for C-Frame (NEMA) or D-Flange (IEC) motor adaptor provides for automatic mechanical motor alignment without special tools or excessive labor.
- 10** Large oil inlet for easy filling of oil. The sealed cover minimizes dirt and moisture entry.
- 11** Flinger filter constantly cleans oil during pump operation.
- 12** Centerline casing support legs are adjustable for pipe variations and minimize heat effects as required by API 610 spec.
- 13** Oil sight glass for constant monitoring of oil level and condition.
- Optional throat bushing available for specific seals.



Construction

Low maintenance, long life, maximum value process pump.
Dramatically reduces bearing, sealing device and shaft failures.



1 Patented micrometer adjustment nuts (pat. #4,439,096) fine tune impeller setting for maximum efficiency.

2 Patented System One Labyrinth Seals (pat. #4,572,517) provide a non-wearing lifetime protection for radial and thrust bearings.

3 7310 (pr) angular contact bearings provided for maximum thrust capacity.

4 Full support rear leg assures bearing frame remains upright during pump disassembly. Full adjustability aids in alignment.

5 Large oil inlet for easy filling of oil. The sealed cover minimizes dirt and moisture entry.

6 Flinger filter constantly cleans oil during pump operation.

7 All standard mechanical seals can be installed on a System One pump. Optional seal chamber jacket for cooling the mechanical seal.

8 Solid alloy shaft (no sleeve) and minimal overhang assure the highest rigidity and corrosion resistance.

9 Frame adaptor has a 180° unobstructed opening for ease of maintenance.

10 State-of-the-art casting methods provide smoothest possible surfaces for highest efficiency.

11 Cast-in impeller nut makes removal easy.

12 Centerline casing support legs are adjustable for pipe variations and minimize heat effects as required by API 610 spec.

13 Two magnetic plugs are provided to maintain clean oil and are removable for insertion of cooling coil.

14 Rabbet for C-Frame (NEMA) or D-Flange (IEC) motor adaptor provides for automatic mechanical motor alignment without special tools or excessive labor.

15 Oil sight glass for constant monitoring of oil level and condition.

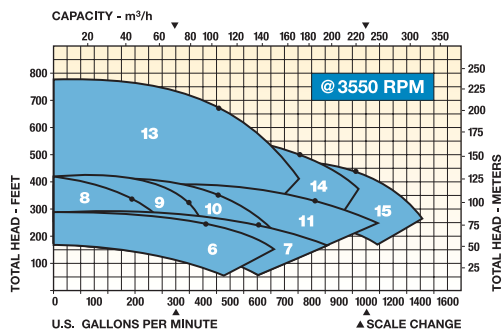
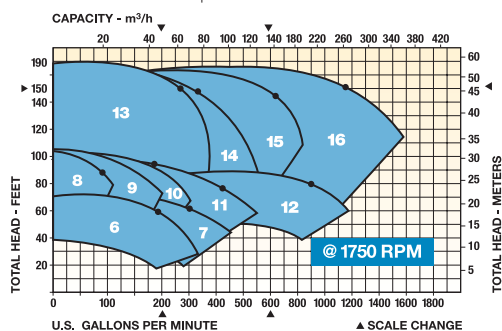
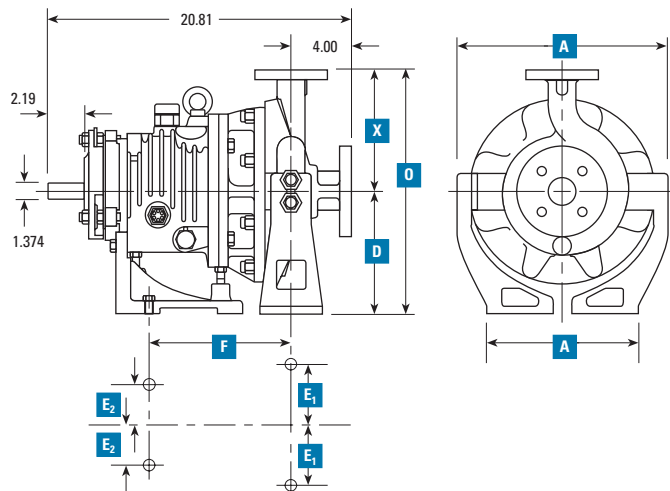
16 Positive locking thrust bearing retainer cover for maximum bearing holding power and minimum axial movement.

17 Bushing options include carbon, polyurethane and SpiralTrac¹.

1 SpiralTrac is a registered trademark of the manufacturer, EnviroSeal Engineering Products Ltd., Waverly, Nova Scotia.



LD17 Pump (ASME/ANSI)

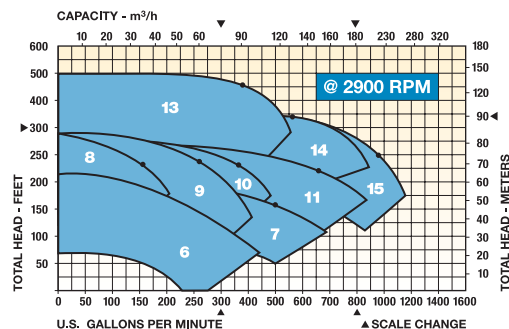
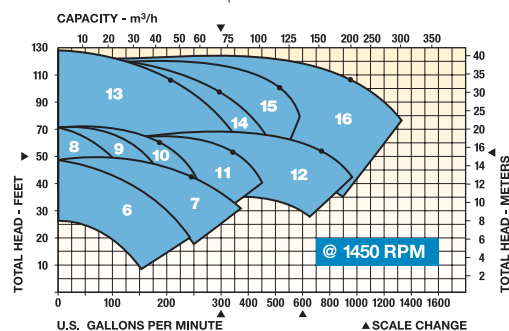
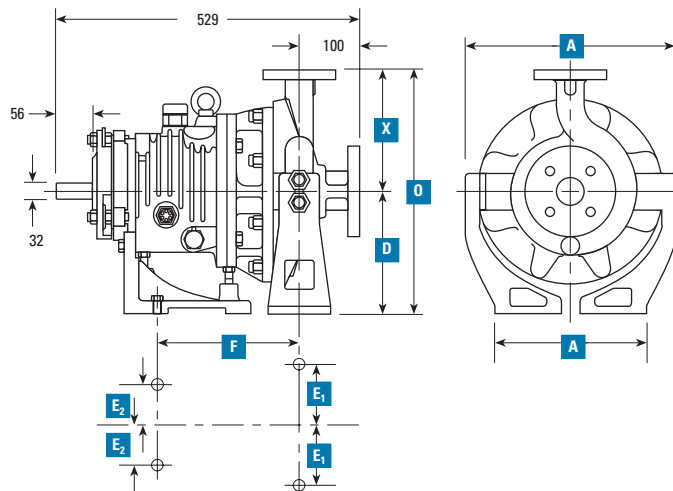


LD17 Pump – ASME/ANSI

| | Pump Size | Discharge | Suction | X | D | O | F | 2E ₁ | 2E ₂ | A | A ₁ |
|----|--------------|-----------|---------|-------|-------|-------|------|-----------------|-----------------|-------|----------------|
| 6 | 2 x 3-8 | 2.0 | 3.0 | 9.50 | 8.25 | 17.75 | 9.81 | 9.75 | 7.25 | 15.00 | 15.00 |
| 7 | 3 x 4-8 | 3.0 | 4.0 | 11.00 | 8.25 | 19.25 | 9.81 | 9.75 | 7.25 | 15.75 | 15.75 |
| 8 | 1 x 2-10 | 1.0 | 2.0 | 8.50 | 8.25 | 16.75 | 9.81 | 9.75 | 7.25 | 15.75 | 15.75 |
| 9 | 1.5 x 3-10 | 1.5 | 3.0 | 8.50 | 8.25 | 16.75 | 9.81 | 9.75 | 7.25 | 16.13 | 16.13 |
| 10 | 2 x 3-10 | 2.0 | 3.0 | 9.50 | 8.25 | 17.75 | 9.81 | 9.75 | 7.25 | 16.38 | 16.38 |
| 11 | 3 x 4-10 | 3.0 | 4.0 | 11.10 | 8.25 | 19.25 | 9.81 | 9.75 | 7.25 | 13.63 | 17.63 |
| 12 | 4 x 6-10 | 4.0 | 6.0 | 13.50 | 10.00 | 23.50 | 9.81 | 9.75 | 7.25 | 14.44 | 19.94 |
| 13 | 1.5 x 3-13 | 1.5 | 3.0 | 10.50 | 10.00 | 20.50 | 9.81 | 9.75 | 7.25 | 15.00 | 20.50 |
| 14 | 2 x 3-13 | 2.0 | 3.0 | 11.50 | 10.00 | 21.50 | 9.81 | 9.75 | 7.25 | 15.38 | 20.88 |
| 15 | 3 x 4-13 | 3.0 | 4.0 | 12.50 | 10.00 | 22.50 | 9.81 | 13.00 | 7.25 | 16.63 | 22.13 |
| 16 | 4 x 6-13 | 4.0 | 6.0 | 13.50 | 10.00 | 23.50 | 9.81 | 13.00 | 7.25 | 17.56 | 23.07 |

All dimensions are in inches.

LD17 Pump (IPP Metric)



LD17 Pump – IPP Metric

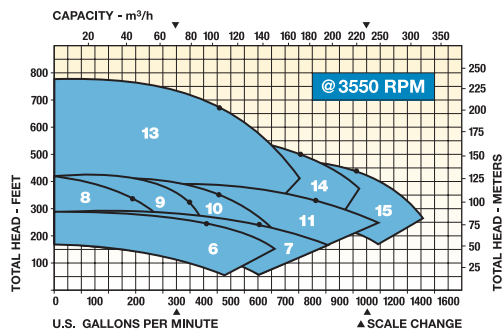
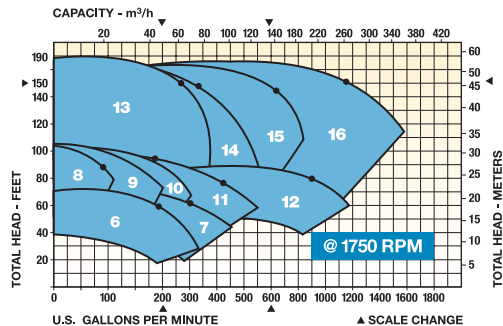
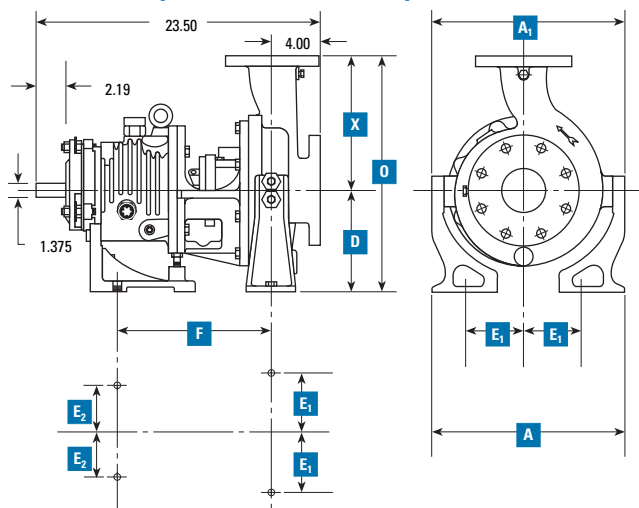
| | Pump Size | Discharge | Suction | X | D | O | F | 2E ₁ | 2E ₂ | A | A ₁ |
|----|---------------|-----------|---------|-----|-----|-----|-----|-----------------|-----------------|-----|----------------|
| 6 | 50 x 80-200 | 50 | 80 | 241 | 200 | 441 | 249 | 250 | 184 | 279 | 381 |
| 7 | 80 x 100-200 | 80 | 100 | 279 | 200 | 479 | 249 | 250 | 184 | 298 | 400 |
| 8 | 25 x 50-250 | 25 | 50 | 216 | 200 | 416 | 249 | 250 | 184 | 298 | 400 |
| 9 | 40 x 80-250 | 40 | 80 | 216 | 200 | 416 | 249 | 250 | 184 | 318 | 419 |
| 10 | 50 x 80-250 | 50 | 80 | 241 | 200 | 441 | 249 | 250 | 184 | 314 | 416 |
| 11 | 80 x 100-250 | 80 | 100 | 279 | 200 | 479 | 249 | 250 | 184 | 346 | 448 |
| 12 | 100 x 150-250 | 100 | 150 | 343 | 250 | 593 | 249 | 250 | 184 | 367 | 506 |
| 13 | 40 x 80-330 | 40 | 80 | 267 | 250 | 517 | 249 | 250 | 184 | 381 | 521 |
| 14 | 50 x 80-330 | 50 | 80 | 292 | 250 | 542 | 249 | 250 | 184 | 391 | 530 |
| 15 | 80 x 100-300 | 80 | 100 | 318 | 250 | 568 | 249 | 330 | 184 | 422 | 562 |
| 16 | 100 x 150-300 | 100 | 150 | 343 | 250 | 593 | 249 | 330 | 184 | 460 | 586 |

All dimensions are in millimeters.

■ The most stable shaft in the industry keeps mechanical seal faces perfectly centered for the lowest possible VOC emissions.



Frame A (ASME/ANSI)

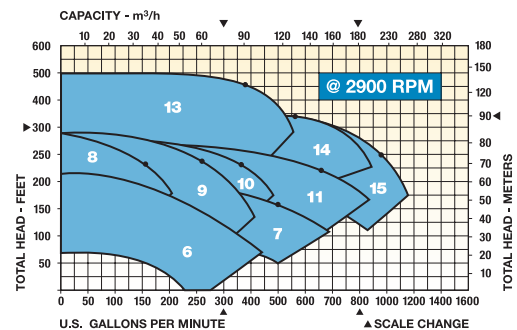
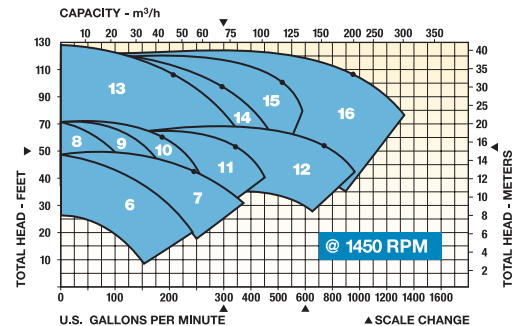
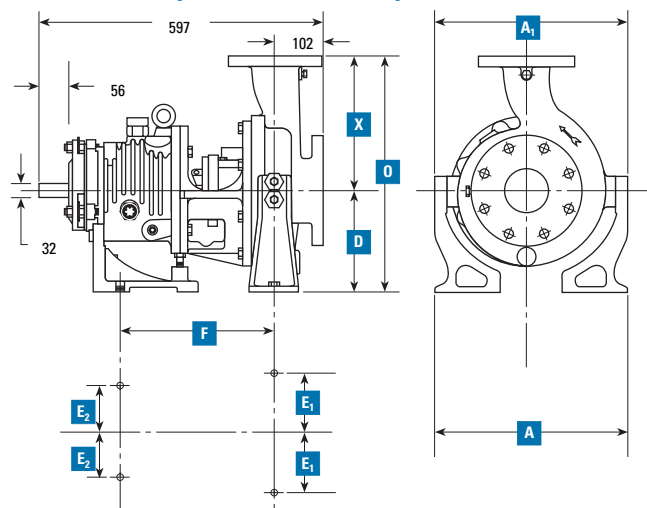


Frame A Pump – ASME/ANSI

| Pump Size | Discharge | Suction | X | D | O | F | 2E ₁ | 2E ₂ | A | A ₁ |
|---------------|-----------|---------|-------|-------|-------|-------|-----------------|-----------------|-------|----------------|
| 6 2 x 3-8 | 2.0 | 3.0 | 9.50 | 8.25 | 17.75 | 12.50 | 9.75 | 7.25 | 15.00 | 15.00 |
| 7 3 x 4-8 | 3.0 | 4.0 | 11.00 | 8.25 | 19.25 | 12.50 | 9.75 | 7.25 | 15.75 | 15.75 |
| 8 1 x 2-10 | 1.0 | 2.0 | 8.50 | 8.25 | 16.75 | 12.50 | 9.75 | 7.25 | 15.75 | 15.75 |
| 9 1.5 x 3-10 | 1.5 | 3.0 | 8.50 | 8.25 | 16.75 | 12.50 | 9.75 | 7.25 | 16.38 | 16.38 |
| 10 2 x 3-10 | 2.0 | 3.0 | 9.50 | 8.25 | 17.75 | 12.50 | 9.75 | 7.25 | 16.38 | 16.38 |
| 11 3 x 4-10 | 3.0 | 4.0 | 11.10 | 8.25 | 19.25 | 12.50 | 9.75 | 7.25 | 13.63 | 17.63 |
| 12 4 x 6-10 | 4.0 | 6.0 | 13.50 | 10.00 | 23.50 | 12.50 | 9.75 | 7.25 | 14.44 | 19.94 |
| 13 1.5 x 3-13 | 1.5 | 3.0 | 10.50 | 10.00 | 20.50 | 12.50 | 9.75 | 7.25 | 15.00 | 20.50 |
| 14 2 x 3-13 | 2.0 | 3.0 | 11.50 | 10.00 | 21.50 | 12.50 | 9.75 | 7.25 | 15.38 | 20.88 |
| 15 3 x 4-13 | 3.0 | 4.0 | 12.50 | 10.00 | 22.50 | 12.50 | 13.00 | 7.25 | 16.63 | 22.13 |
| 16 4 x 6-13 | 4.0 | 6.0 | 13.50 | 10.00 | 23.50 | 12.50 | 13.00 | 7.25 | 17.56 | 23.07 |

All dimensions are in inches.

Frame A (IPP Metric)



Frame A Pump – IPP Metric

| Pump Size | Discharge | Suction | X | D | O | F | 2E ₁ | 2E ₂ | A | A ₁ |
|------------------|-----------|---------|-----|-----|-----|-----|-----------------|-----------------|-----|----------------|
| 6 50 x 80-200 | 50 | 80 | 241 | 200 | 441 | 318 | 250 | 184 | 279 | 381 |
| 7 80 x 100-200 | 80 | 100 | 279 | 200 | 479 | 318 | 250 | 184 | 298 | 400 |
| 8 25 x 50-250 | 25 | 50 | 216 | 200 | 416 | 318 | 250 | 184 | 298 | 400 |
| 9 40 x 80-250 | 40 | 80 | 216 | 200 | 416 | 318 | 250 | 184 | 318 | 419 |
| 10 50 x 80-250 | 50 | 80 | 241 | 200 | 441 | 318 | 250 | 184 | 314 | 416 |
| 11 80 x 100-250 | 80 | 100 | 279 | 200 | 479 | 318 | 250 | 184 | 346 | 448 |
| 12 100 x 150-250 | 100 | 150 | 343 | 250 | 593 | 318 | 250 | 184 | 367 | 506 |
| 13 40 x 80-330 | 40 | 80 | 267 | 250 | 517 | 318 | 250 | 184 | 381 | 521 |
| 14 50 x 80-330 | 50 | 80 | 292 | 250 | 542 | 318 | 250 | 184 | 391 | 530 |
| 15 80 x 100-330 | 80 | 100 | 318 | 250 | 568 | 318 | 330 | 184 | 422 | 562 |
| 16 100 x 150-330 | 100 | 150 | 343 | 250 | 593 | 318 | 330 | 184 | 460 | 586 |

All dimensions are in millimeters.

- Centerline mount for high temperature applications
- Optional left or right side discharge



Inches (mm)

| | 2.0 x 3.0-08 | 3.0 x 4.0-08 | 1.0 x 2.0-10 | 1.5 x 3.0-10 | 2.0 x 3.0-10 | 3.0 x 4.0-10 | 4.0 x 6.0-10 | 1.5 x 3.0-13 | 2.0 x 3.0-13 | 3.0 x 4.0-13 | 4.0 x 6.0-13 |
|------------------------------------|---|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Shaft | | | | | | | | | | | |
| L3/D4 Ratio | 17 (.65) | | | | | | | | | | |
| Diameter at Impeller | 1.06 (27) 1.00-12 UNF Thread High Torque 1.31 (33) 1.25-12 UNF Thread | | | | | | | | | | |
| Diameter at Seal | 1.875 (47.63) | | | | | | | | | | |
| Diameter Between Bearings | 2.45 (62) | | | | | | | | | | |
| Diameter at Coupling | 1.375 (34.93) | | | | | | | | | | |
| Bearings | | | | | | | | | | | |
| Thrust | SKF 7310 BEGAY (pair) | | | | | | | | | | |
| Radial | 6310 C3 | | | | | | | | | | |
| Bearing Span | 6.02 (153) | | | | | | | | | | |
| Shaft Overhang | 5.94 (151) | | | | | | | | | | |
| Seal Chamber | | | | | | | | | | | |
| Seal Bore Diameter (nose) | 2.69 (68) nose | | | | | | | | | | |
| Inside Bore | 3.00 (76) | | | | | | | | | | |
| Depth | 2.00 (51) | | | | | | | | | | |
| Back Cover/Shaft Clearance | Open 5 Degree Taper | | | | | | | | | | |
| Gland Bolting ANSI | 4X .500-13UNC on 4.62 B.C. (12 on 117 B.C.) | | | | | | | | | | |
| Distance to Nearest Obstruction | 2.19 (56) | | | | | | | | | | |
| Open Impeller | | | | | | | | | | | |
| Clearance | .06 (1.5) Total .015 (0.4) Suction Side | | | | | | | | | | |
| Eye Area sq. in. (cm²) | 10.6 (68) | 10.6 (68) | 2.8 (18) | 7.9 (51) | 9.4 (61) | 10.6 (68) | 26.8 (173) | 7.7 (50) | 13.5 (87) | 14.4 (93) | 30.2 (195) |
| Maximum Dia. Solids | 0.5 (13) | 0.6 (15) | 0.4 (10) | 0.4 (10) | 0.7 (18) | 0.8 (20) | 0.8 (20) | 0.5 (13) | 0.6 (15) | 0.7 (18) | 1.0 (25) |
| Number of Vanes | 5 | 5 | 4 | 5 | 4 | 4 | 6 | 4 | 4 | 4 | 5 |
| Pumps Weights lbs/kg | | | | | | | | | | | |
| Pump Only | 258 (116) | 268 (121) | 244 (110) | 259 (117) | 268 (121) | 278 (125) | 318 (143) | 338 (152) | 359 (162) | 374 (168) | 401 (180) |
| Casing | | | | | | | | | | | |
| Type | Single Volute | | | | | | | | | | |
| Wall Thickness | 0.44 (11) Minimum | | | | | | | | | | |
| Maximum Working Pressure | See Pressure vs. Temperature Limit Chart | | | | | | | | | | |
| Test pressure | Class 150 Flanges-250PSIG, Class 300 Flanges-450PSIG | | | | | | | | | | |
| Rotating Element | | | | | | | | | | | |
| Wk² Dry lbs-ft² (kg-m²) | 0.53 (.022) | 0.52 (.022) | 0.68 (.029) | 0.79 (.033) | 1.04 (.043) | 1.04 (.043) | 1.08 (.045) | 1.50 (.063) | 1.80 (.076) | 2.14 (.09) | 2.48 (.104) |
| Wk² Wet lbs-ft² (kg-m²) | 0.80 (.033) | 0.78 (.033) | 1.02 (.043) | 1.19 (.05) | 1.56 (.066) | 1.56 (.066) | 1.62 (.068) | 2.25 (.095) | 2.70 (.113) | 3.21 (.135) | 3.72 (.156) |
| Maximum Speed (oil lube) | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 1750 | 3500 | 3500 | 3500 | 1750 |
| Power Limits | | | | | | | | | | | |
| HP (KW)/100 RPM 316SS | 3.4 (2.6) | | | | | | | | | | |
| HP (KW)/100 RPM 17-4Ph | 4.2 (3.1) | | | | | | | | | | |
| HP (KW)/100 RPM 17-4Ph High Torque | 5.6 (4.2) | | | | | | | | | | |

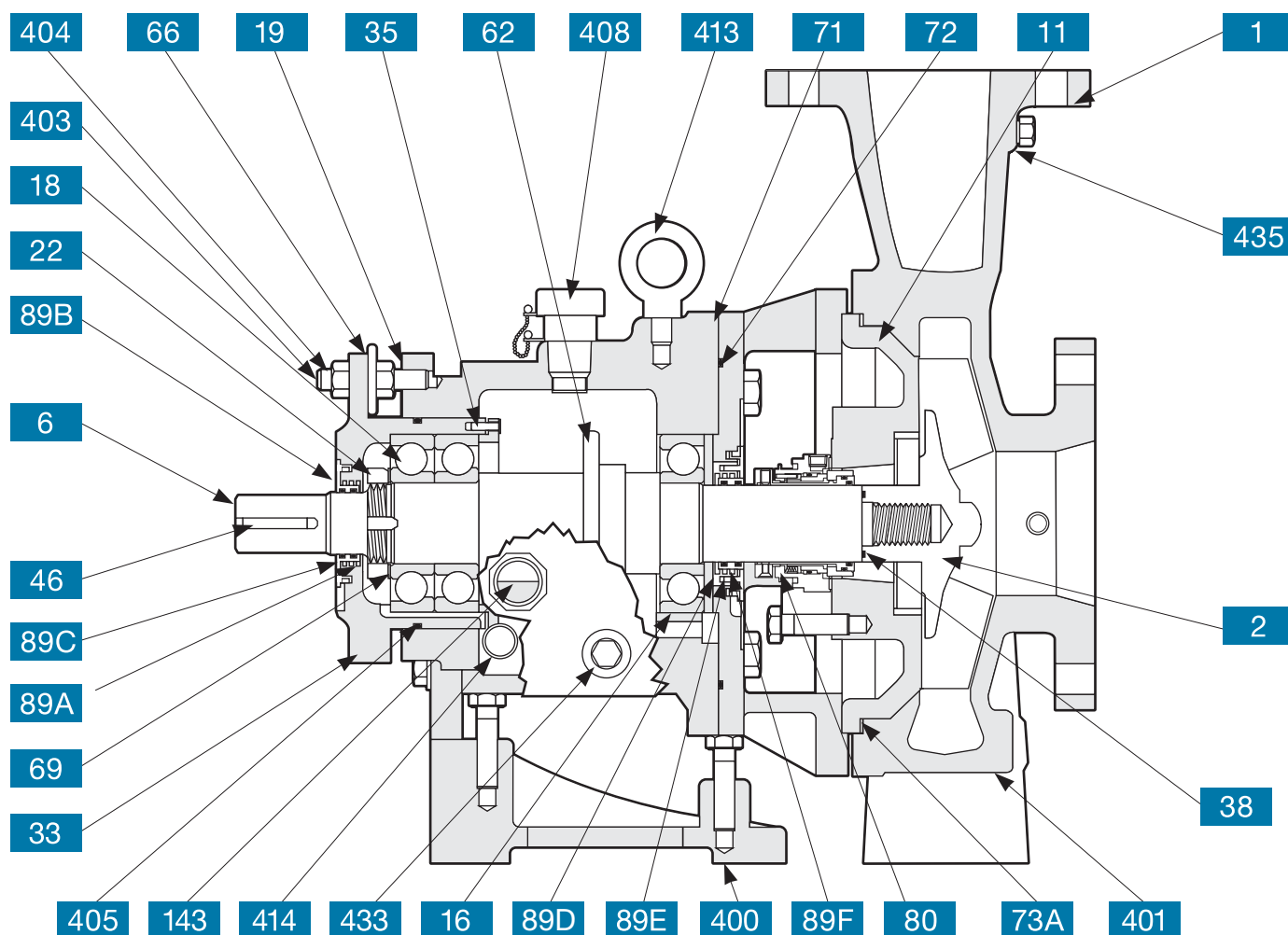
Reference drawings A40210, A40211



Inches (mm)

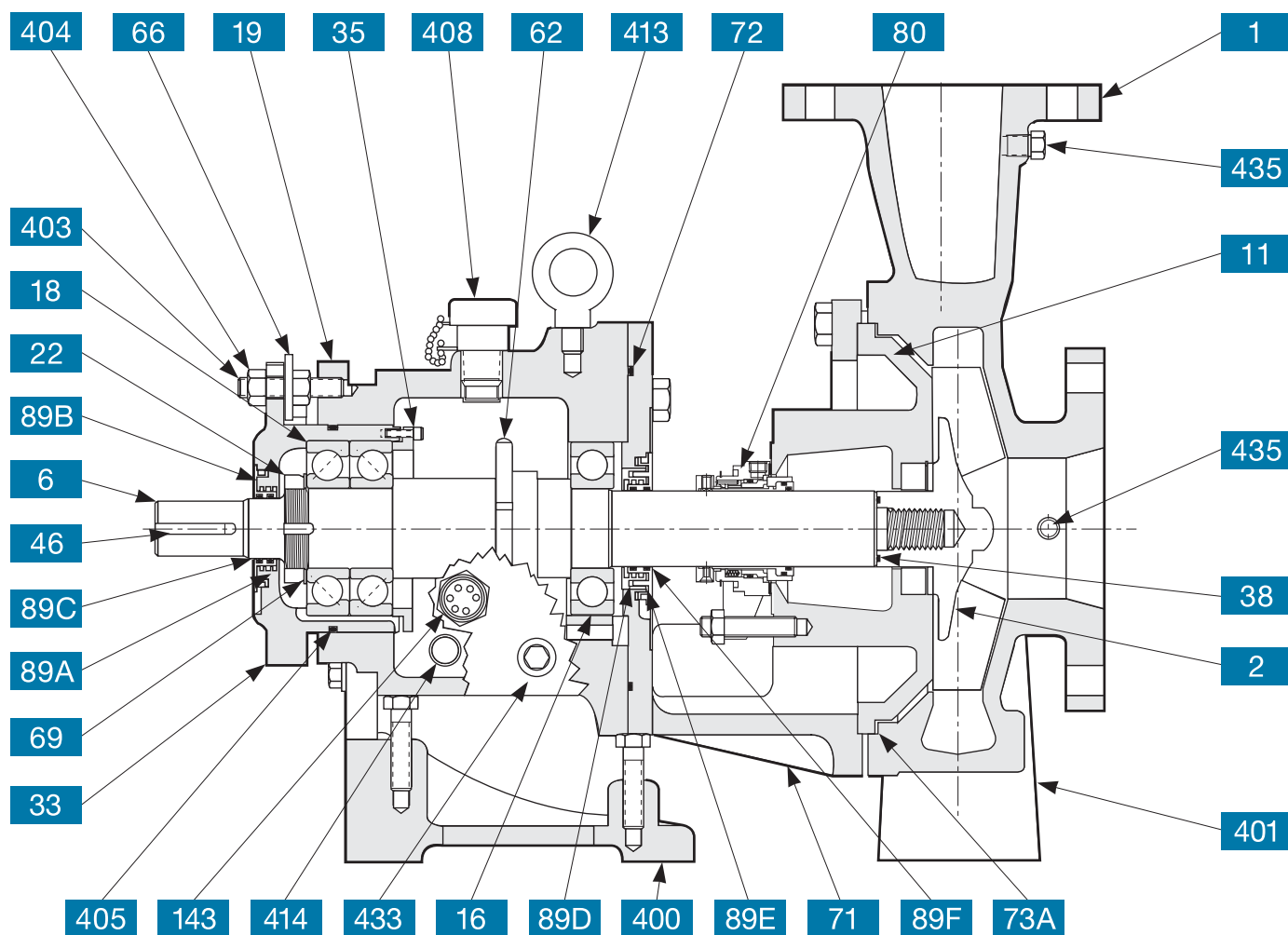
| | 2.0 x 3.0-08 | 3.0 x 4.0-08 | 1.0 x 2.0-10 | 1.5 x 3.0-10 | 2.0 x 3.0-10 | 3.0 x 4.0-10 | 4.0 x 6.0-10 | 1.5 x 3.0-13 | 2.0 x 3.0-13 | 3.0 x 4.0-13 | 4.0 x 6.0-13 |
|------------------------------------|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Shaft | | | | | | | | | | | |
| L3/D4 Ratio | 52 (1.98) | | | | | | | | | | |
| Diameter at Impeller | 1.06 (27) 1.00-12 UNF Thread High Torque 1.31 (33) 1.25-12 UNF Thread | | | | | | | | | | |
| Diameter at Seal | 1.875 (48) | | | | | | | | | | |
| Diameter Between Bearings | 2.45 (62) | | | | | | | | | | |
| Diameter at Coupling | 1.375 (35) | | | | | | | | | | |
| Bearings | | | | | | | | | | | |
| Thrust | SKF 7310 BEGAY (pair) | | | | | | | | | | |
| Radial | 6310 C3 | | | | | | | | | | |
| Bearing Span | 6.02 (153) | | | | | | | | | | |
| Shaft Overhang | 8.63 (219) | | | | | | | | | | |
| Seal Chamber | | | | | | | | | | | |
| Seal Bore Diameter (nose) | 2.69 (68) nose | | | | | | | | | | |
| Inside Bore | 3.75 (95) | | | | | | | | | | |
| Depth | 2.88 (73) | | | | | | | | | | |
| Back Cover/Shaft Clearance | .12 (3) Diametral | | | | | | | | | | |
| Gland Bolting ANSI | 4X .500-13UNC on 4.75 B.C. (12 on 121 B.C.) | | | | | | | | | | |
| Distance to Nearest Obstruction | 3.00 (76) | | | | | | | | | | |
| Open Impeller | | | | | | | | | | | |
| Clearance | .06 (1.5) Total .015 (0.4) Suction Side | | | | | | | | | | |
| Eye Area sq. in. (cm²) | 10.6 (68) | 10.6 (68) | 2.8 (18) | 7.9 (51) | 9.4 (61) | 10.6 (68) | 26.8 (173) | 7.7 (50) | 13.5 (87) | 14.4 (93) | 30.2 (195) |
| Maximum Dia. Solids | 0.5 (13) | 0.6 (15) | 0.4 (10) | 0.4 (10) | 0.7 (18) | 0.8 (20) | 0.8 (20) | 0.5 (13) | 0.6 (15) | 0.7 (18) | 1.0 (25) |
| Number of Vanes | 5 | 5 | 4 | 5 | 4 | 4 | 6 | 4 | 4 | 4 | 5 |
| Pumps Weights/Lbs. (kg.) | | | | | | | | | | | |
| Pump Only | 258 (116) | 268 (121) | 244 (110) | 259 (117) | 268 (121) | 278 (125) | 318 (143) | 338 (152) | 359 (162) | 374 (168) | 401 (180) |
| Casing | | | | | | | | | | | |
| Type | Single Volute | | | | | | | | | | |
| Wall Thickness | 0.44 (11) Minimum | | | | | | | | | | |
| Maximum Working Pressure | See Pressure vs. Temperature Limit Chart | | | | | | | | | | |
| Test pressure | Class 150 Flanges-250PSIG, Class 300 Flanges-450PSIG | | | | | | | | | | |
| Rotating Element | | | | | | | | | | | |
| Wk² Dry lbs-ft² (kg-m²) | 0.53 (.022) | 0.52 (.022) | 0.68 (.029) | 0.79 (.033) | 1.04 (.043) | 1.04 (.043) | 1.08 (.045) | 1.50 (.063) | 1.80 (.076) | 2.14 (.09) | 2.48 (.104) |
| Wk² Wet lbs-ft² (kg-m²) | 0.80 (.033) | 0.78 (.033) | 1.02 (.043) | 1.19 (.05) | 1.56 (.066) | 1.56 (.066) | 1.62 (.068) | 2.25 (.095) | 2.70 (.113) | 3.21 (.135) | 3.72 (.156) |
| Maximum Speed (oil lube) | 3500 | 3500 | 3500 | 3500 | 3500 | 3500 | 1750 | 3500 | 3500 | 3500 | 1750 |
| Power Limits | | | | | | | | | | | |
| HP (KW)/100 RPM 316SS | 3.4 (2.6) | | | | | | | | | | |
| HP (KW)/100 RPM 17-4Ph | 4.2 (3.1) | | | | | | | | | | |
| HP (KW)/100 RPM 17-4Ph High Torque | 5.6 (4.2) | | | | | | | | | | |

Reference drawings A40210, A40211



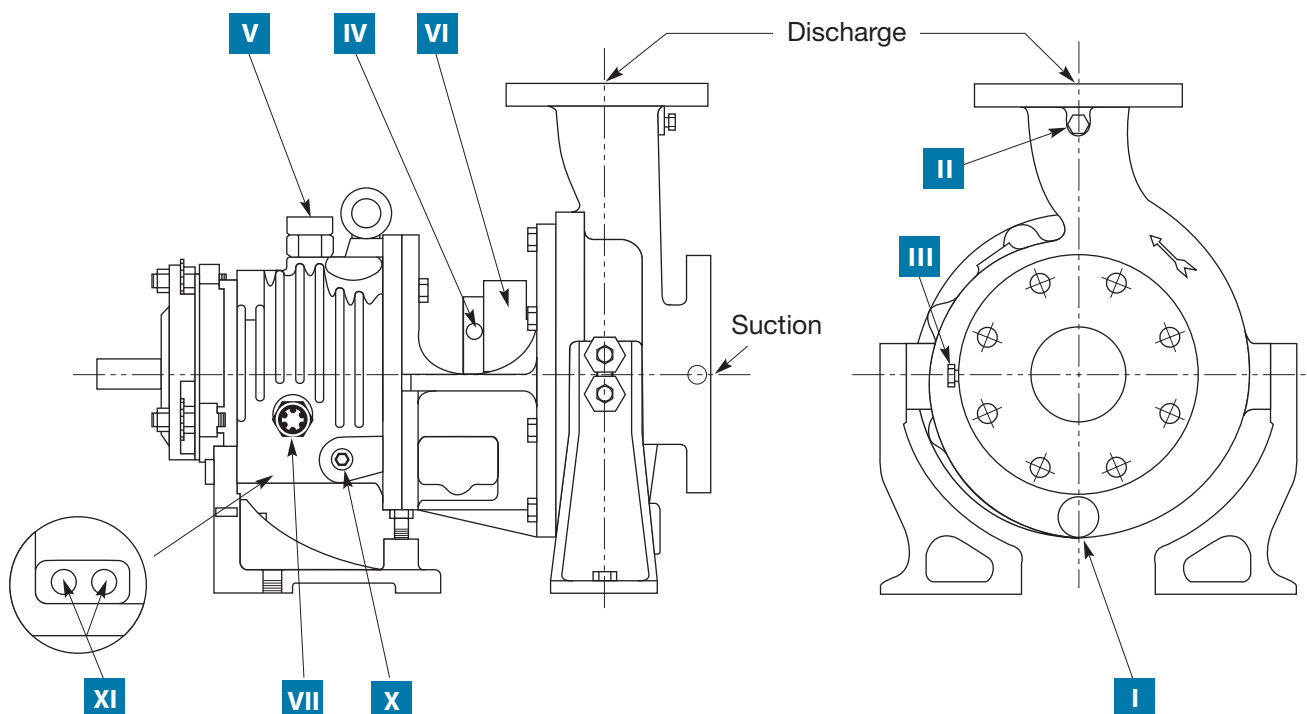
| NO. | ITEM | NO. | ITEM | NO. | ITEM |
|-----|-------------------------|-----|---|-----|---------------------------------|
| 1 | Casing | 62 | Flinger | 89F | Seal, Labyrinth O-Ring (Radial) |
| 2 | Impeller | 66 | Micrometer Nut | 143 | Oil Sight Glass |
| 6 | Shaft | 69 | Lockwasher, Thrust Bearing | 400 | Foot, Bearing Frame |
| 11 | Back Cover | 71 | Frame Adapter | 401 | Foot, casing |
| 16 | Bearing, Radial | 72 | O-Ring Frame Adapter | 403 | Stud, Cartridge |
| 18 | Bearing, Thrust | 73A | Gasket, Casing | 404 | Locknut, Cartridge |
| 19 | Bearing, Frame | 80 | Mechanical Seal | 405 | O-Ring, Cartridge |
| 22 | Locknut, Thrust Bearing | 89A | Seal, Labyrinth Stator, (Thrust) ¹ | 408 | Oil Filler Assembly |
| 33 | Bearing Cartridge | 89B | Seal, Labyrinth Rotor, (Thrust) | 413 | Bolt, Eye |
| 35 | Retainer Cover | 89C | Seal, Labyrinth O-Ring, (Thrust) | 414 | Pipe Plug, Magnetic |
| 38 | O-ring, Impeller Hub | 89D | Seal, Labyrinth Stator, (Radial) | 433 | Pipe Plug, Bearing Frame |
| 46 | Key, Coupling | 89E | Seal, Labyrinth Rotor, (Radial) | 435 | Pipe Plug, Casing |

¹Incorporated as part of cartridge in 2000.



| NO. | ITEM | NO. | ITEM | NO. | ITEM |
|-----|-------------------------|-----|---|-----|---------------------------------|
| 1 | Casing | 62 | Flinger | 89F | Seal, Labyrinth O-Ring (Radial) |
| 2 | Impeller | 66 | Micrometer Nut | 143 | Oil Sight Glass |
| 6 | Shaft | 69 | Lockwasher, Thrust Bearing | 400 | Foot, Bearing Frame |
| 11 | Back Cover | 71 | Frame Adapter | 401 | Foot, casing |
| 16 | Bearing, Radial | 72 | O-Ring Frame Adapter | 403 | Stud, Cartridge |
| 18 | Bearing, Thrust | 73A | Gasket, Casing | 404 | Locknut, Cartridge |
| 19 | Bearing, Frame | 80 | Mechanical Seal | 405 | O-Ring, Cartridge |
| 22 | Locknut, Thrust Bearing | 89A | Seal, Labyrinth Stator, (Thrust) ¹ | 408 | Oil Filler Assembly |
| 33 | Bearing Cartridge | 89B | Seal, Labyrinth Rotor, (Thrust) | 413 | Bolt, Eye |
| 35 | Retainer Cover | 89C | Seal, Labyrinth O-Ring, (Thrust) | 414 | Pipe Plug, Magnetic |
| 38 | O-ring, Impeller Hub | 89D | Seal, Labyrinth Stator, (Radial) | 433 | Pipe Plug, Bearing Frame |
| 46 | Key, Coupling | 89E | Seal, Labyrinth Rotor, (Radial) | 435 | Pipe Plug, Casing |

¹Incorporated as part of cartridge in 2000.



| ITEM NUMBER | NPT SIZE | NUMBER OF TAPS | CONNECTION |
|-------------|-----------|----------------|--|
| * I | 0.50-14 | 1 | Casing Drain |
| II | 0.25-18 | 1 | Discharge Gage |
| # III | 0.25-14 | 1 | Suction Gage |
| * IV | 0.25-18 | 1 | Seal Chamber Flush (not available on LD17) |
| V | 0.75-14 | 1 | Oil Fill |
| VI | 0.25-18 | 2 | Seal Chamber Jacket*- Inlet & Outlet (not available on LD17) |
| # VII | 1.00-11.5 | 1 | Oil Sight Glass |
| # X | 0.25-18 | 1 | Oil Drain |
| ## XI | 0.50-14 | 2 | Magnetic Plug or Cooling Coil * |

* Optional

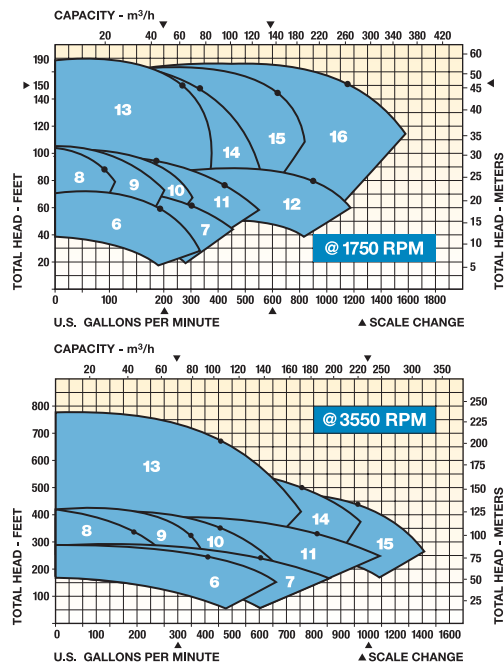
Left side of pump facing suction end

Right side of pump facing suction end

(4x6-10 & 4x6-13 Casings have discharge tap only)



Frame LD17/A (ASME/ANSI)

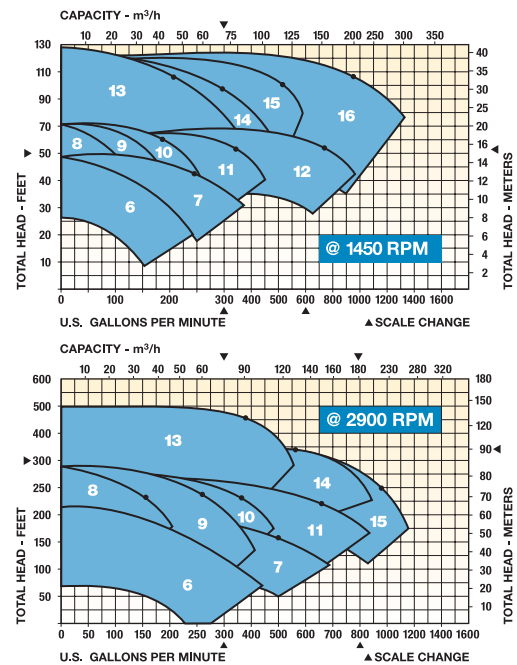


LD17 Pump – ASME/ANSI

| Pump Size | Discharge | Suction | X | D | O | F | 2E ₁ | 2E ₂ | A | A ₁ |
|-----------|------------|---------|-----|-------|-------|-------|-----------------|-----------------|------|----------------|
| 6 | 2 x 3-8 | 2.0 | 3.0 | 9.50 | 8.25 | 17.75 | 9.81 | 9.75 | 7.25 | 15.00 |
| 7 | 3 x 4-8 | 3.0 | 4.0 | 11.00 | 8.25 | 19.25 | 9.81 | 9.75 | 7.25 | 15.75 |
| 8 | 1 x 2-10 | 1.0 | 2.0 | 8.50 | 8.25 | 16.75 | 9.81 | 9.75 | 7.25 | 15.75 |
| 9 | 1.5 x 3-10 | 1.5 | 3.0 | 8.50 | 8.25 | 16.75 | 9.81 | 9.75 | 7.25 | 16.13 |
| 10 | 2 x 3-10 | 2.0 | 3.0 | 9.50 | 8.25 | 17.75 | 9.81 | 9.75 | 7.25 | 16.38 |
| 11 | 3 x 4-10 | 3.0 | 4.0 | 11.10 | 8.25 | 19.25 | 9.81 | 9.75 | 7.25 | 13.63 |
| 12 | 4 x 6-10 | 4.0 | 6.0 | 13.50 | 10.00 | 23.50 | 9.81 | 9.75 | 7.25 | 14.44 |
| 13 | 1.5 x 3-13 | 1.5 | 3.0 | 10.50 | 10.00 | 20.50 | 9.81 | 9.75 | 7.25 | 15.00 |
| 14 | 2 x 3-13 | 2.0 | 3.0 | 11.50 | 10.00 | 21.50 | 9.81 | 9.75 | 7.25 | 15.38 |
| 15 | 3 x 4-13 | 3.0 | 4.0 | 12.50 | 10.00 | 22.50 | 9.81 | 13.00 | 7.25 | 16.63 |
| 16 | 4 x 6-13 | 4.0 | 6.0 | 13.50 | 10.00 | 23.50 | 9.81 | 13.00 | 7.25 | 17.56 |

All dimensions are in inches.

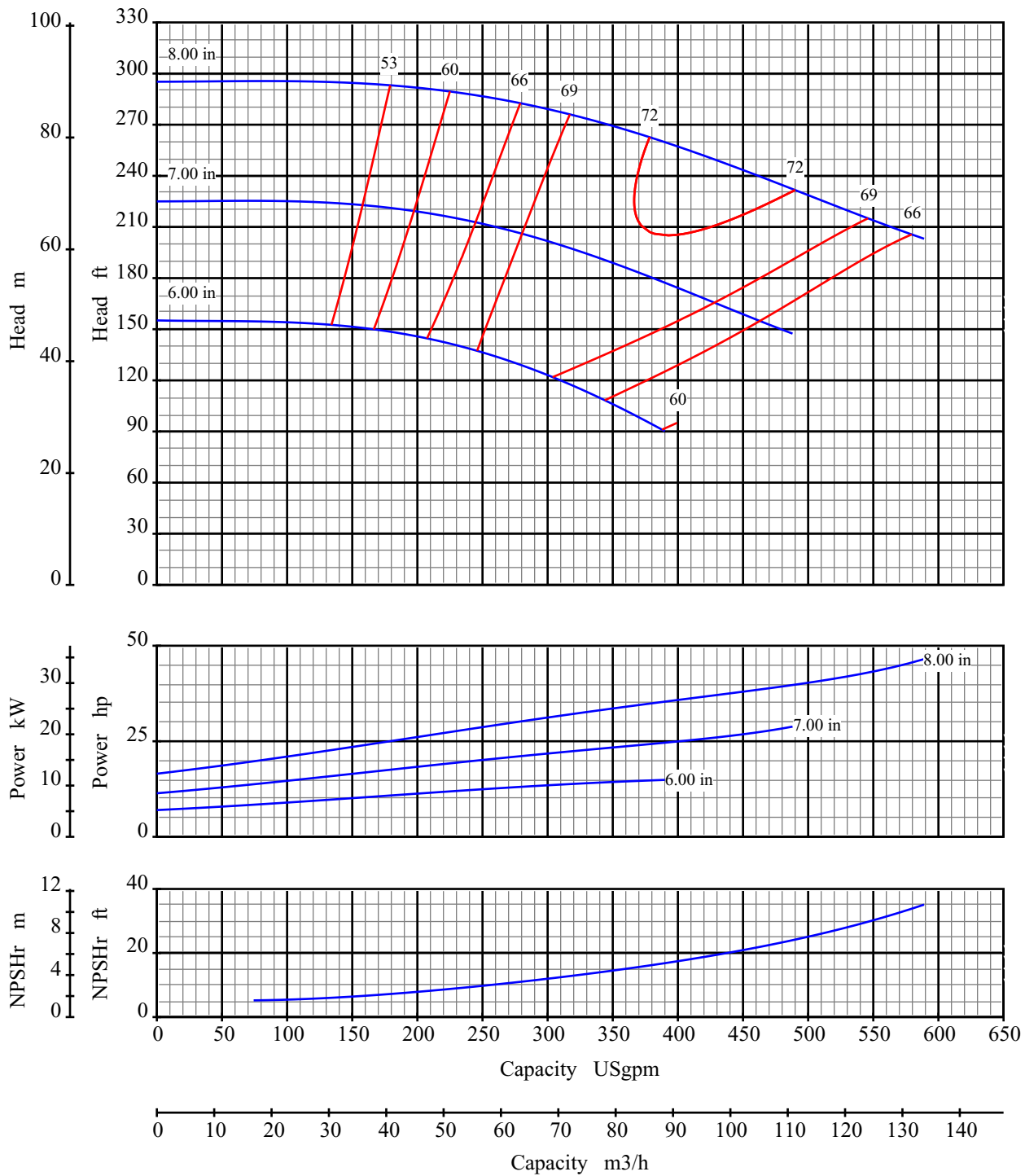
Frame LD17/A Pump (IPP Metric)



LD17 Pump – IPP Metric

| Pump Size | Discharge | Suction | X | D | O | F | 2E ₁ | 2E ₂ | A | A ₁ |
|-----------|---------------|---------|-----|-----|-----|-----|-----------------|-----------------|-----|----------------|
| 6 | 50 x 80-200 | 50 | 80 | 241 | 200 | 441 | 249 | 250 | 184 | 279 |
| 7 | 80 x 100-200 | 80 | 100 | 279 | 200 | 479 | 249 | 250 | 184 | 298 |
| 8 | 25 x 50-250 | 25 | 50 | 216 | 200 | 416 | 249 | 250 | 184 | 298 |
| 9 | 40 x 80-250 | 40 | 80 | 216 | 200 | 416 | 249 | 250 | 184 | 318 |
| 10 | 50 x 80-250 | 50 | 80 | 241 | 200 | 441 | 249 | 250 | 184 | 314 |
| 11 | 80 x 100-250 | 80 | 100 | 279 | 200 | 479 | 249 | 250 | 184 | 346 |
| 12 | 100 x 150-250 | 100 | 150 | 343 | 250 | 593 | 249 | 250 | 184 | 367 |
| 13 | 40 x 80-330 | 40 | 80 | 267 | 250 | 517 | 249 | 250 | 184 | 381 |
| 14 | 50 x 80-330 | 50 | 80 | 292 | 250 | 542 | 249 | 250 | 184 | 391 |
| 15 | 80 x 100-300 | 80 | 100 | 318 | 250 | 568 | 249 | 330 | 184 | 422 |
| 16 | 100 x 150-300 | 100 | 150 | 343 | 250 | 593 | 249 | 330 | 184 | 460 |

All dimensions are in millimeters.



Curve No: S18142V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 2x3 8

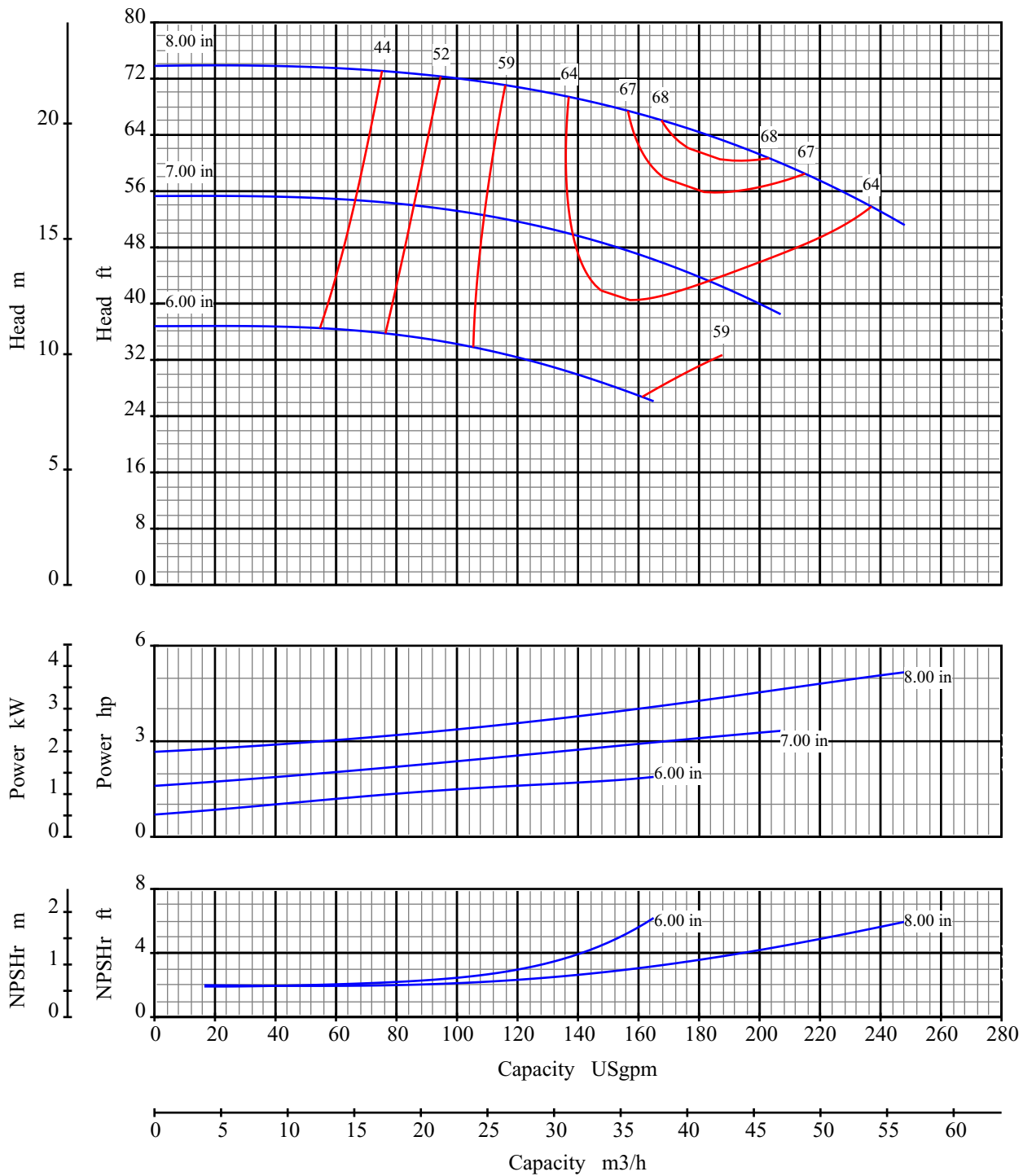
Pump Size: 50x80 200

Speed: 3550 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18144V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 2x3 8

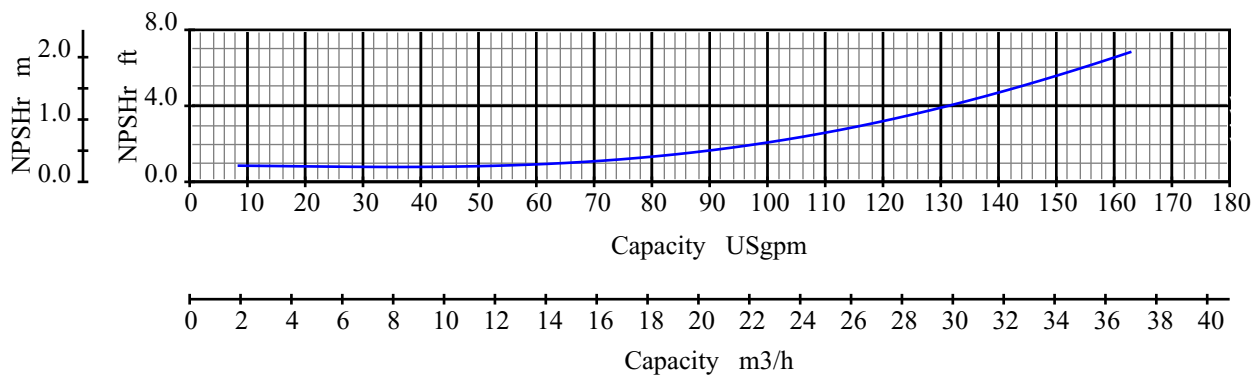
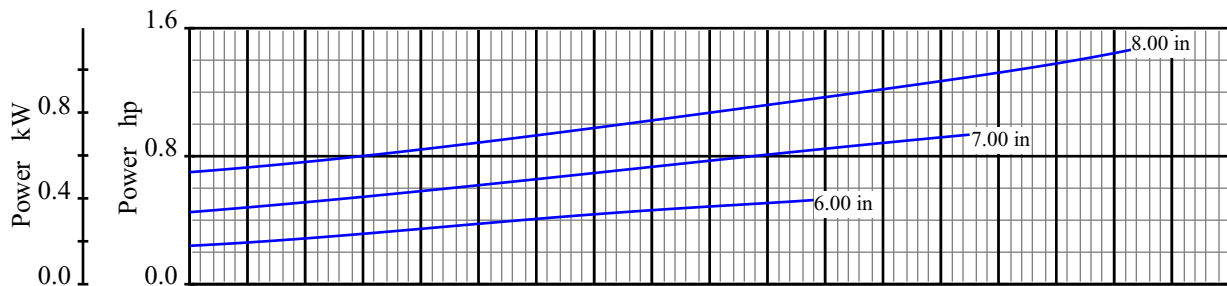
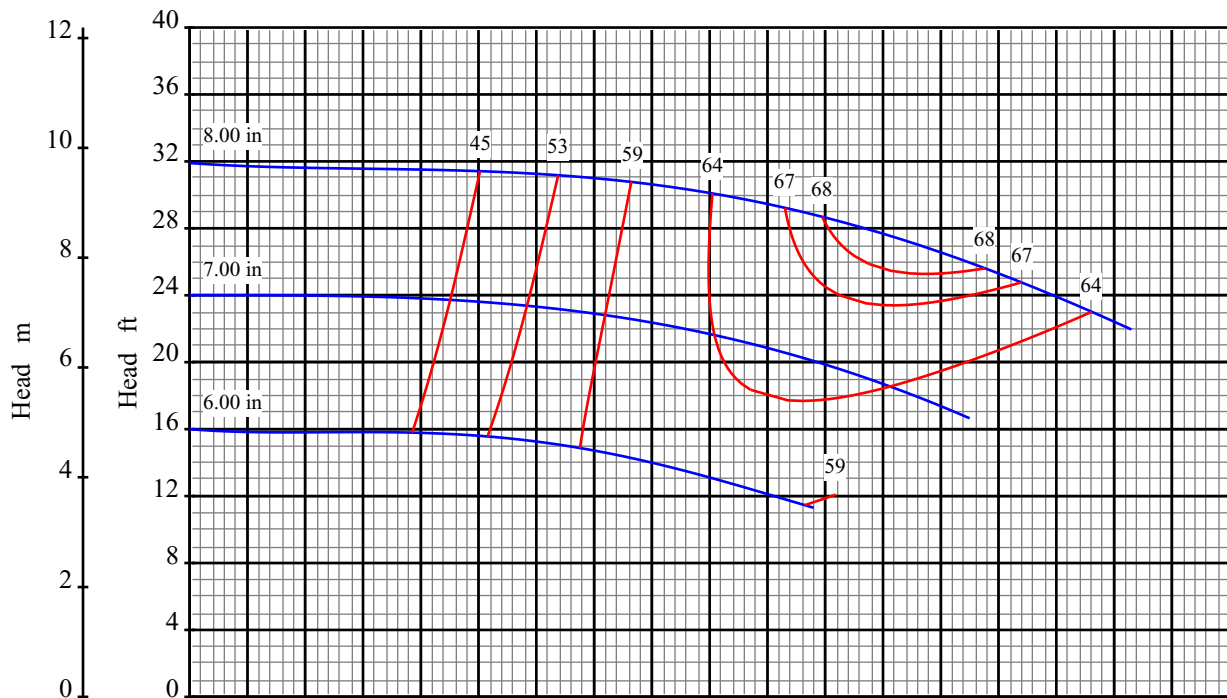
Pump Size: 50x80 200

Speed: 1750 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18146V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 2x3 8

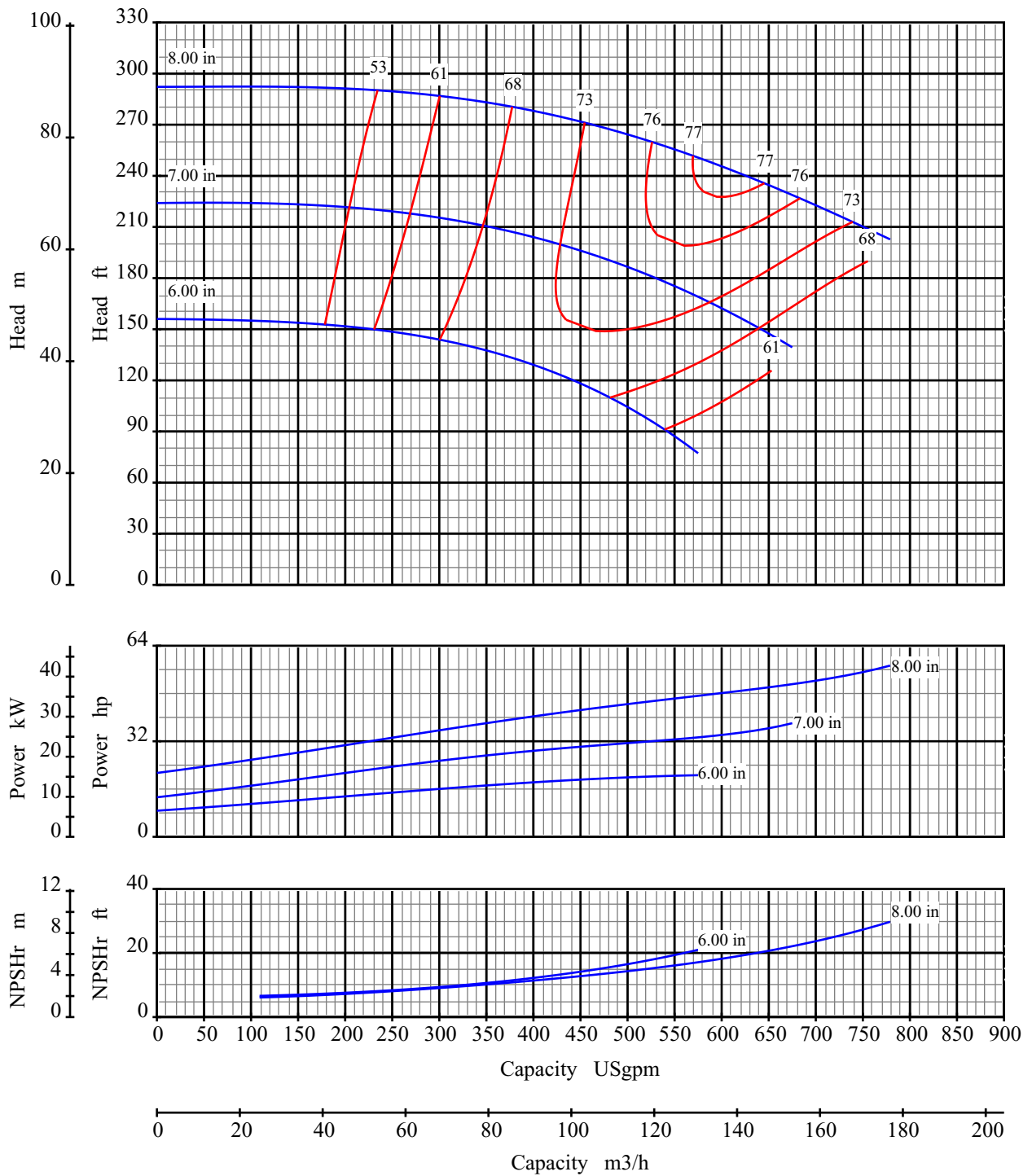
Pump Size: 50x80 200

Speed: 1150 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18148V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 3x4 8

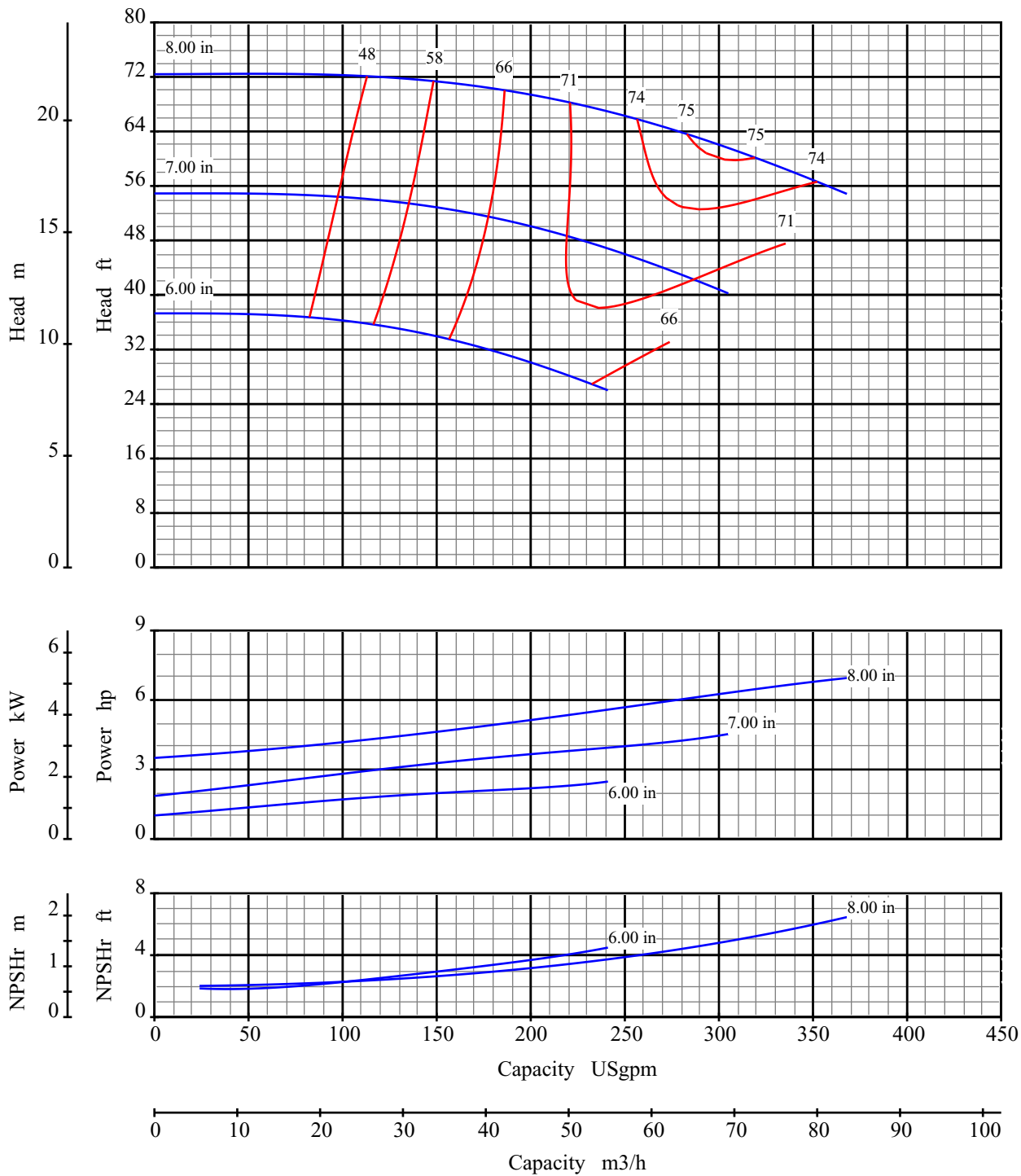
Pump Size: 80x100 200

Speed: 3550 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18150V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 3x4 8

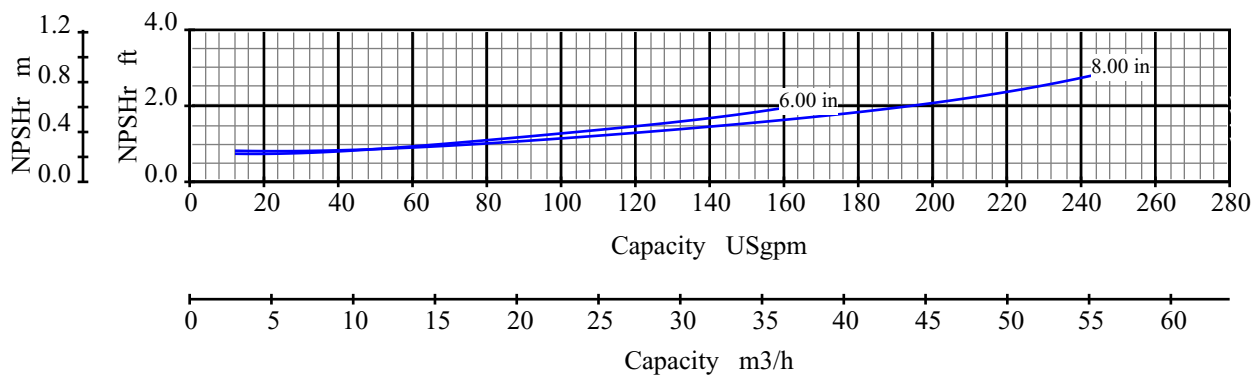
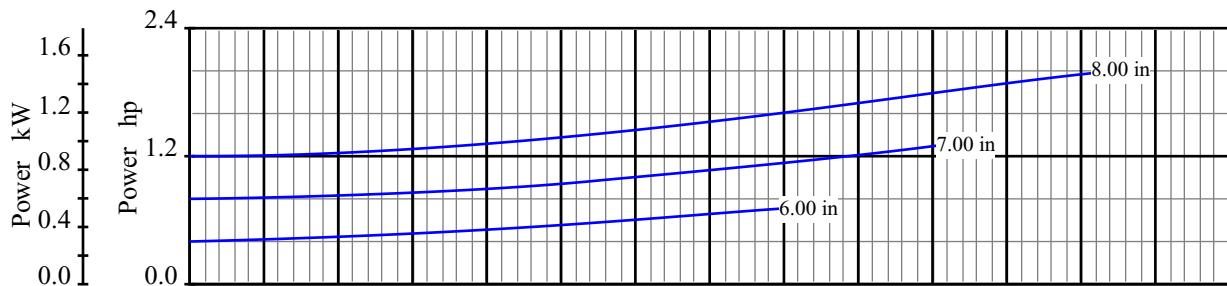
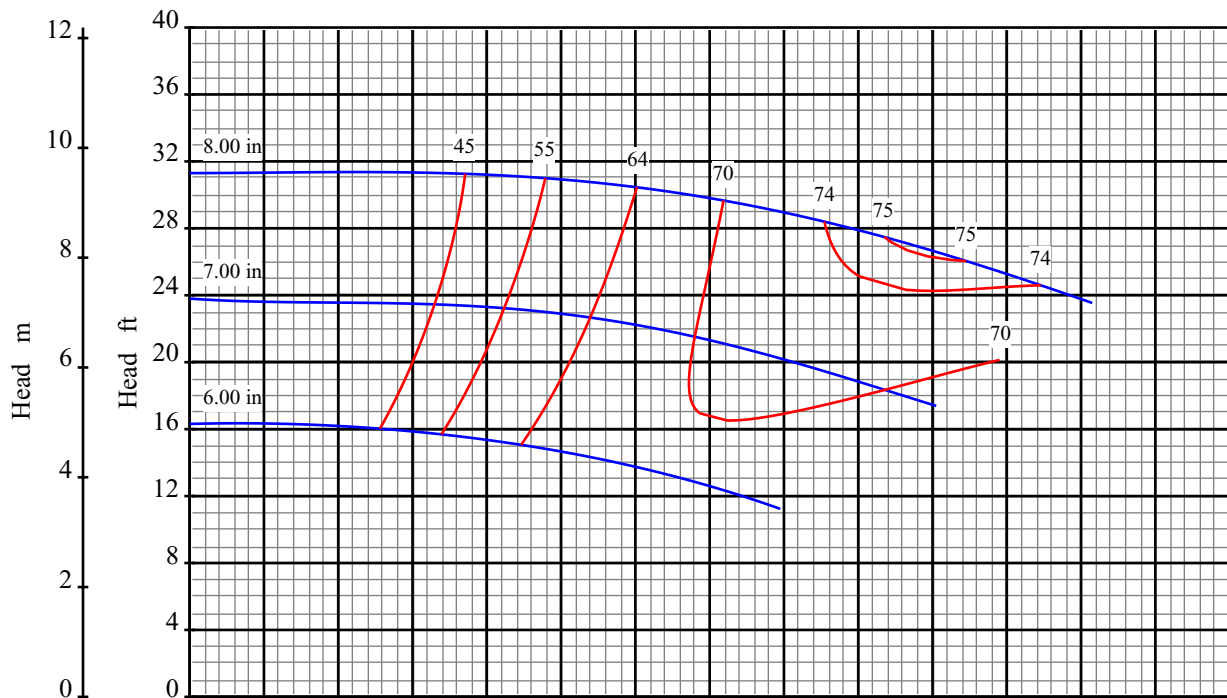
Pump Size: 80x100 200

Speed: 1750 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18152V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 3x4 8

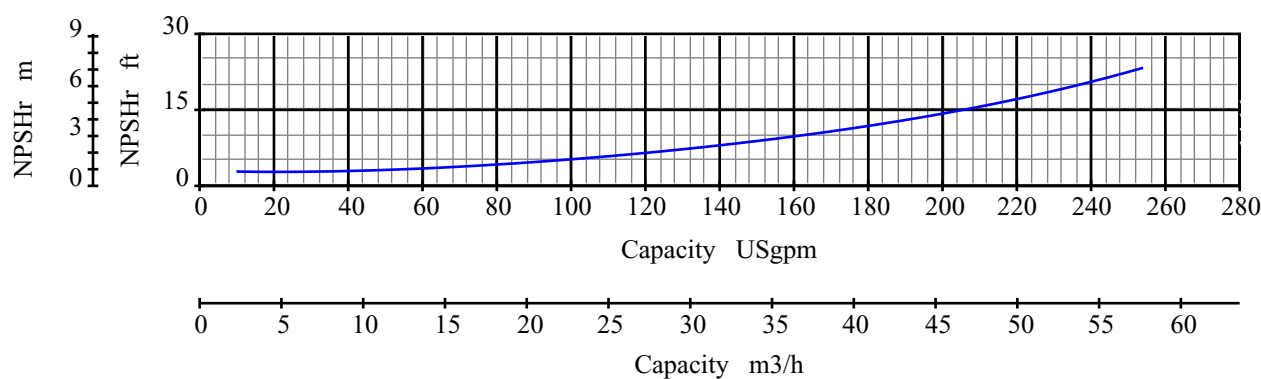
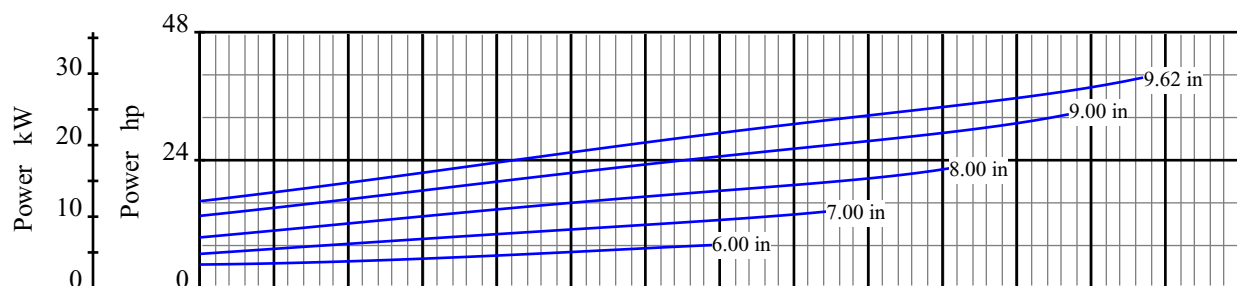
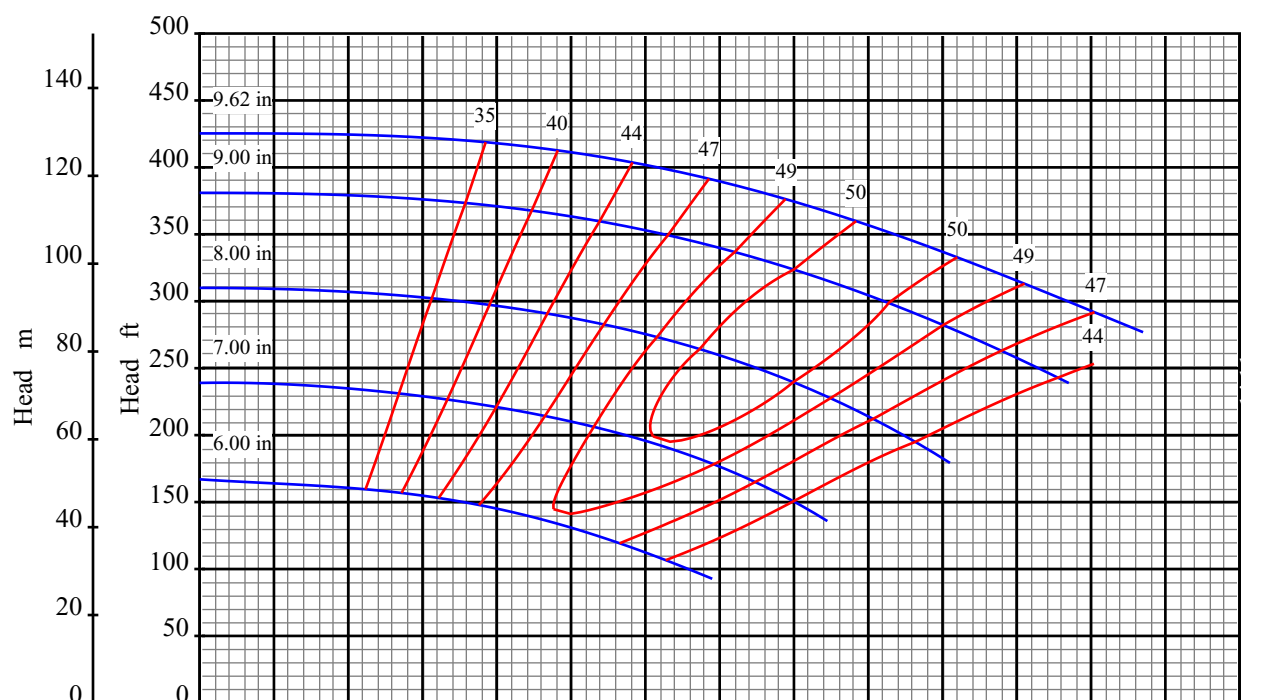
Pump Size: 80x100 200

Speed: 1150 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18154V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 1x2 10

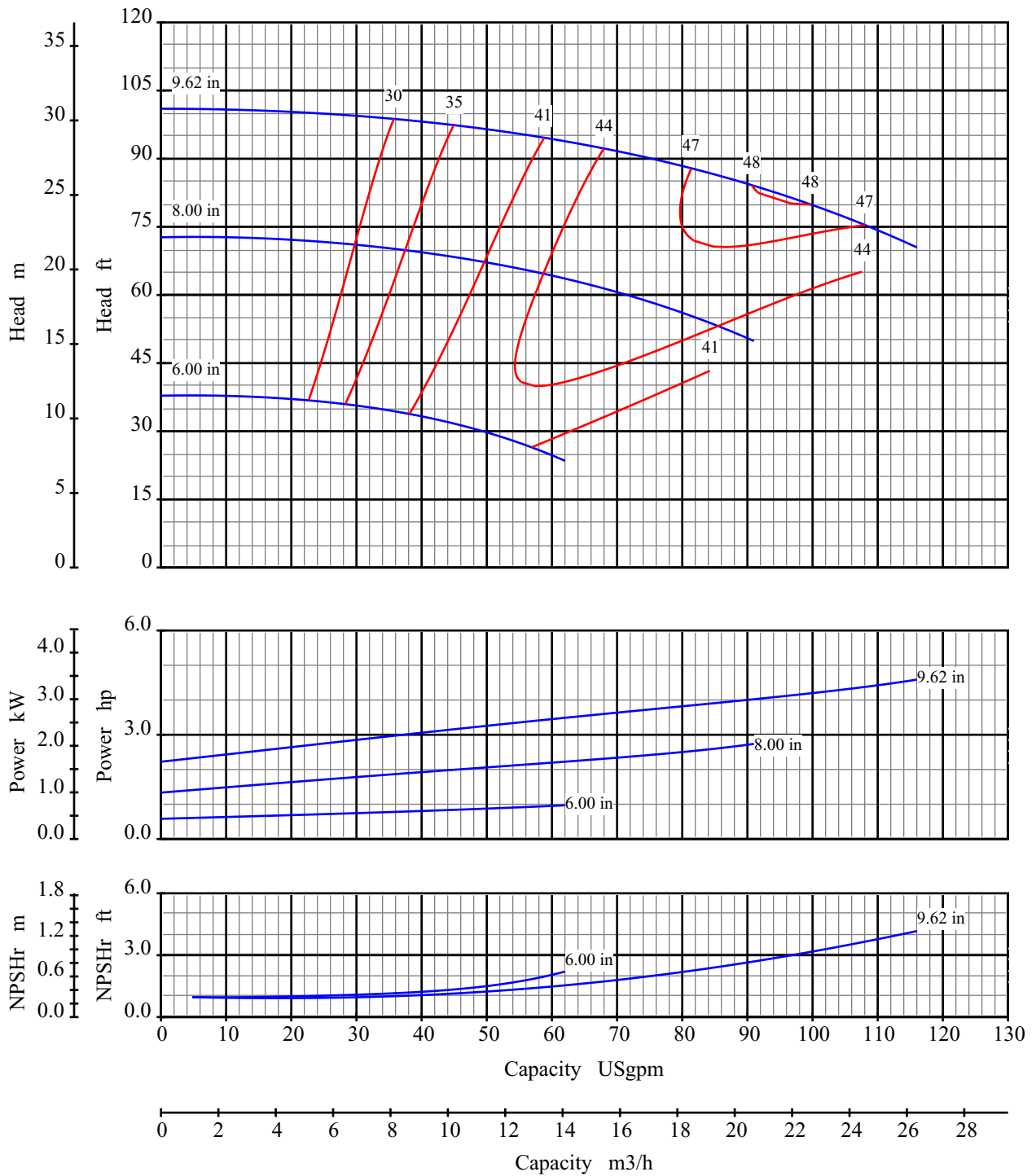
Pump Size: 25x50 250

Speed: 3550 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18156V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 1x2 10

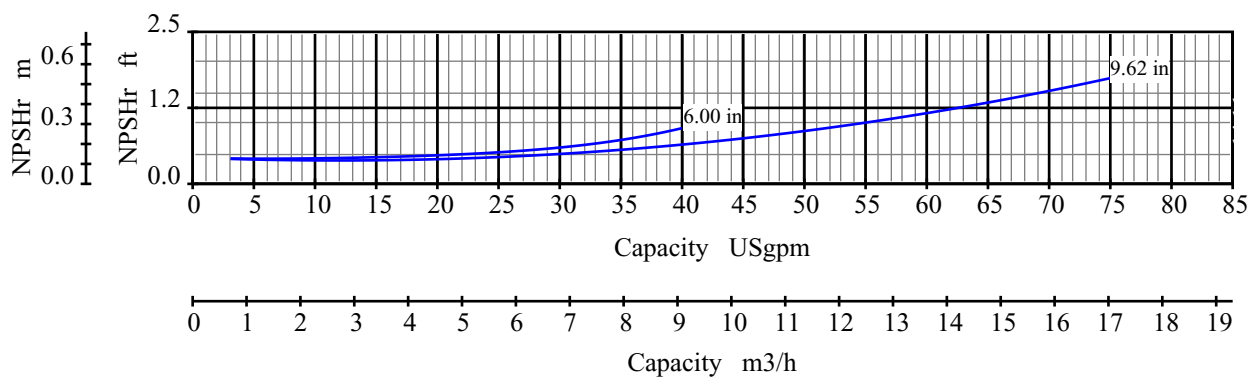
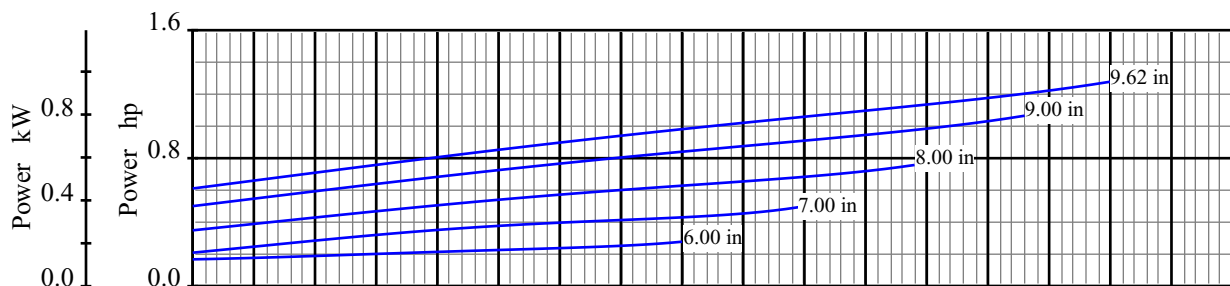
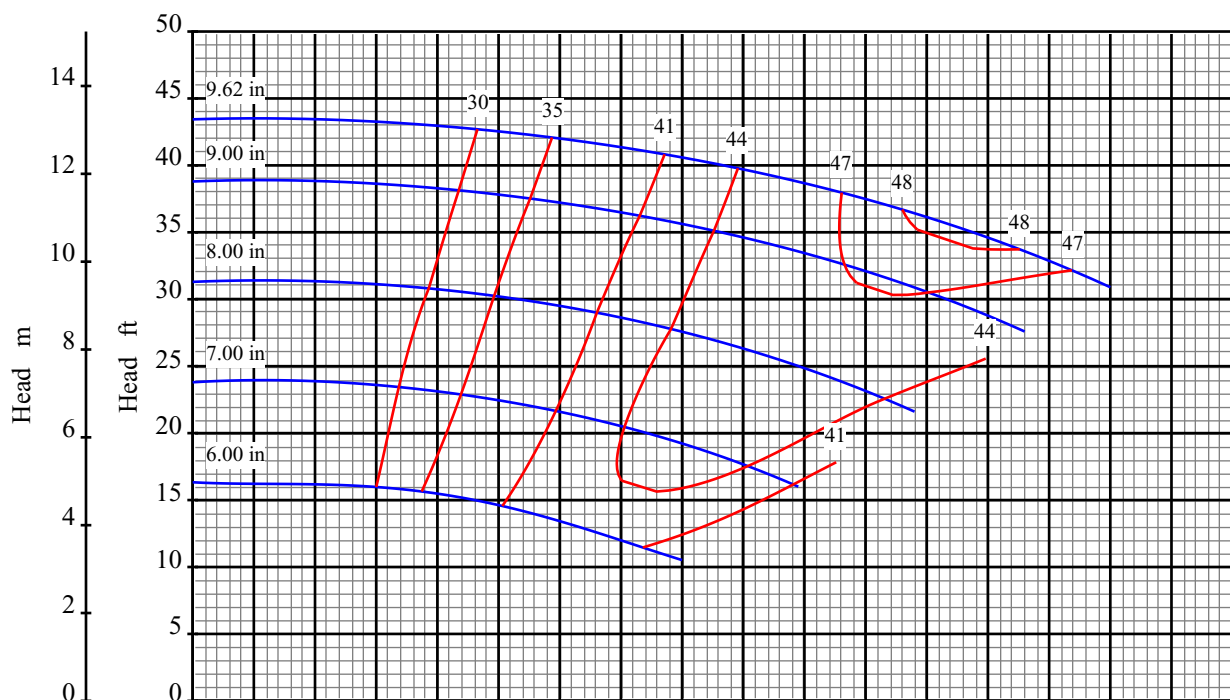
Pump Size: 25x50 250

Speed: 1750 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18158V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 1x2 10

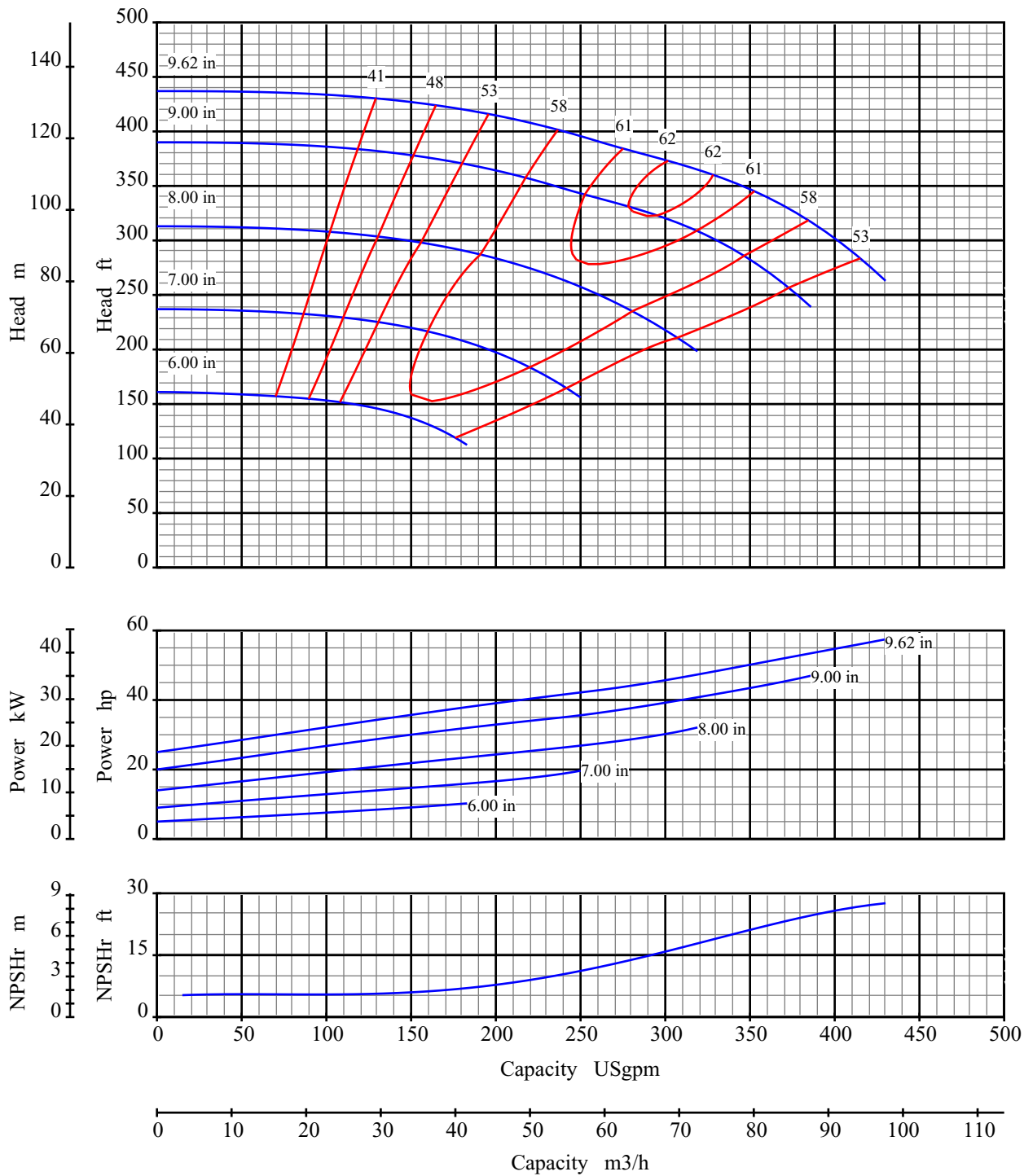
Pump Size: 25x50 250

Speed: 1150 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18160V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 1.5x3 10

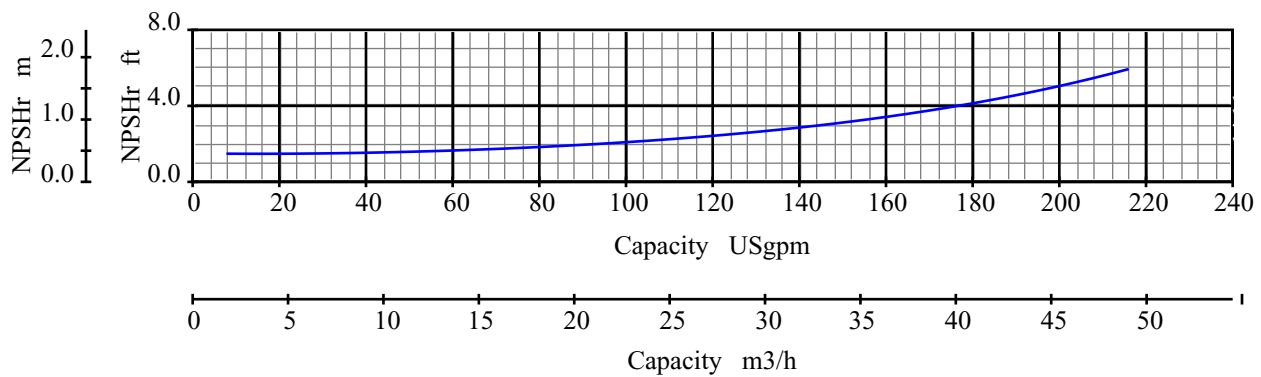
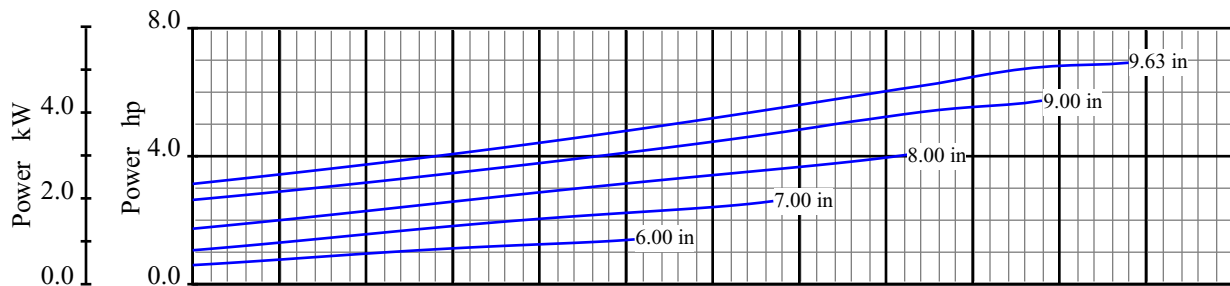
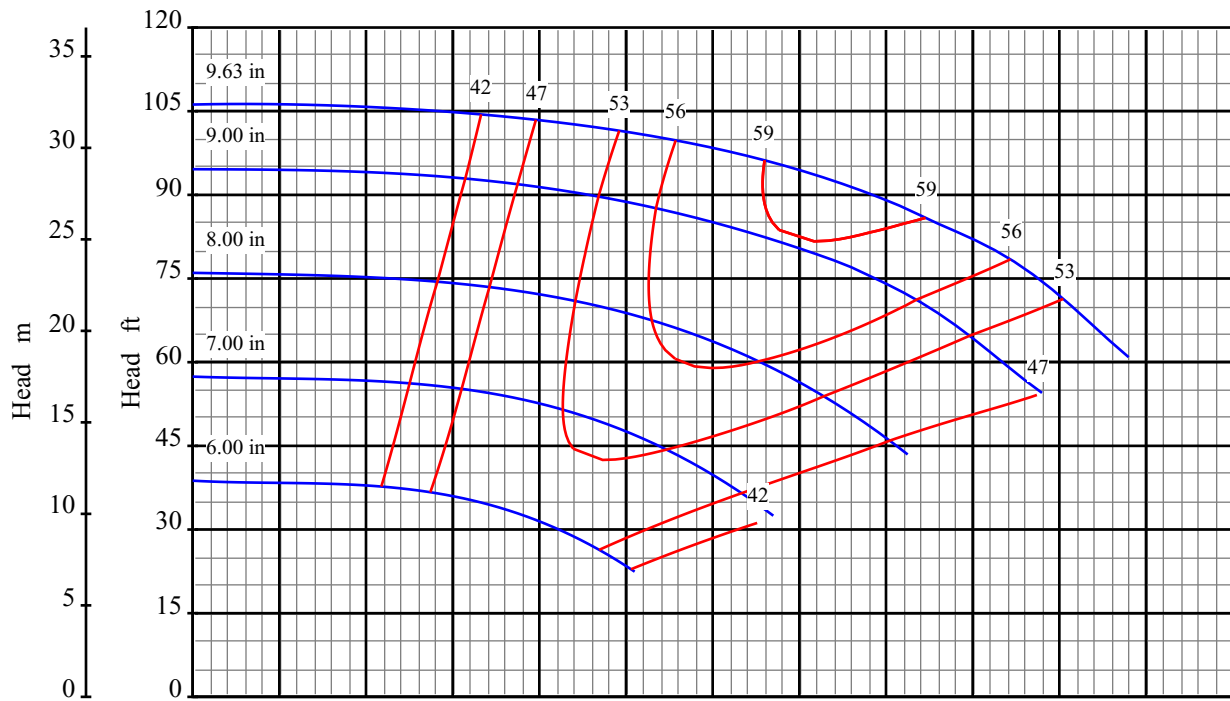
Pump Size: 40x80 250

Speed: 3550 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18162V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 1.5x3 10

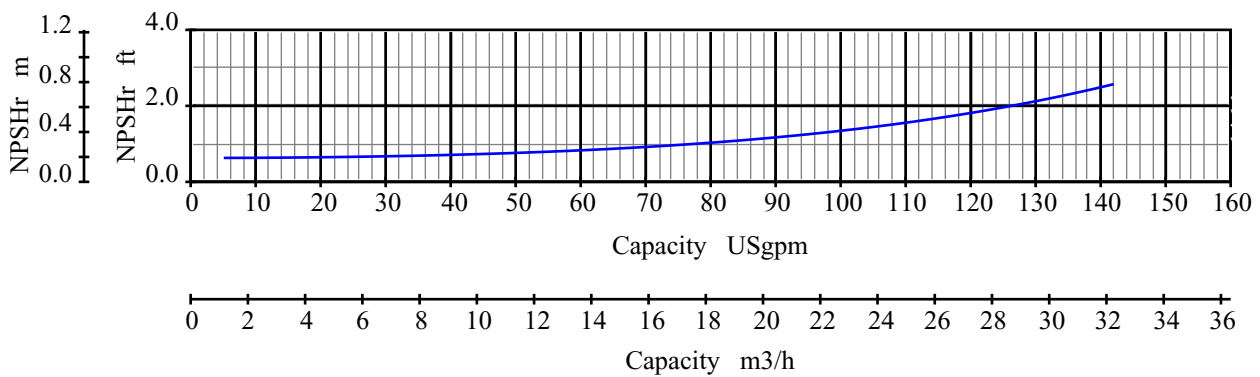
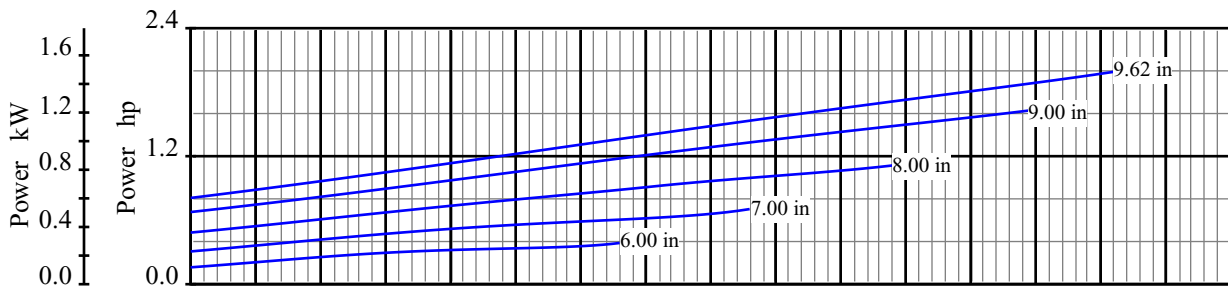
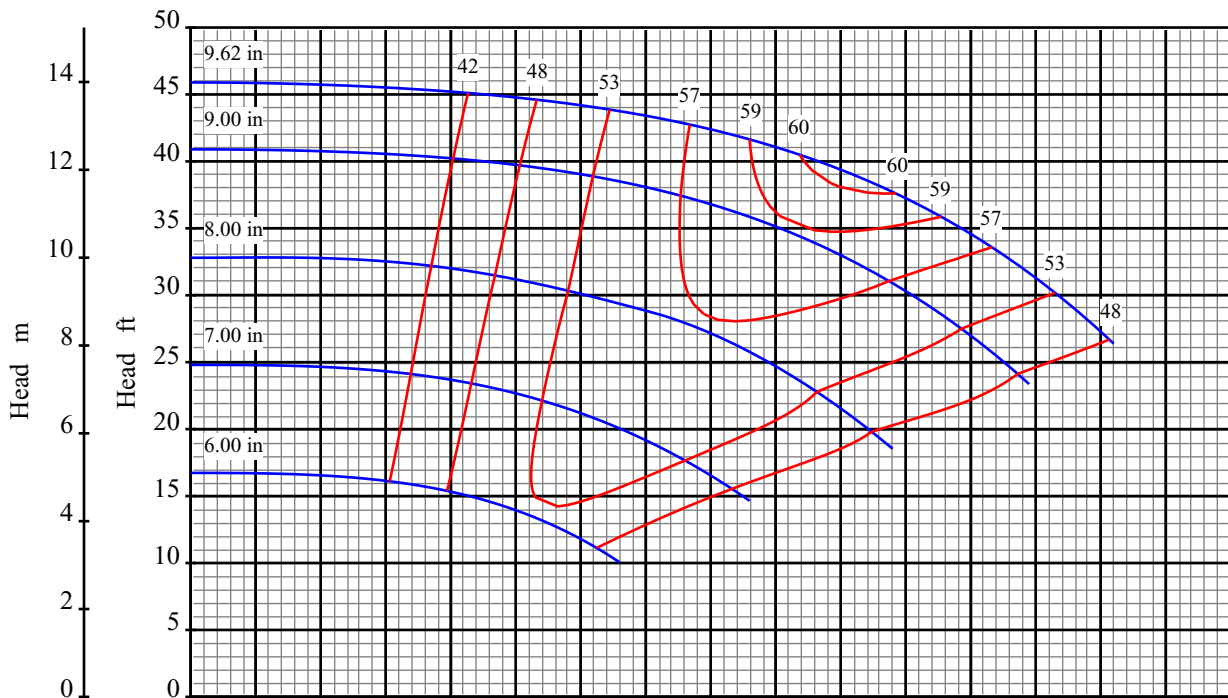
Pump Size: 40x80 250

Speed: 1750 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18164V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 1.5x3 10

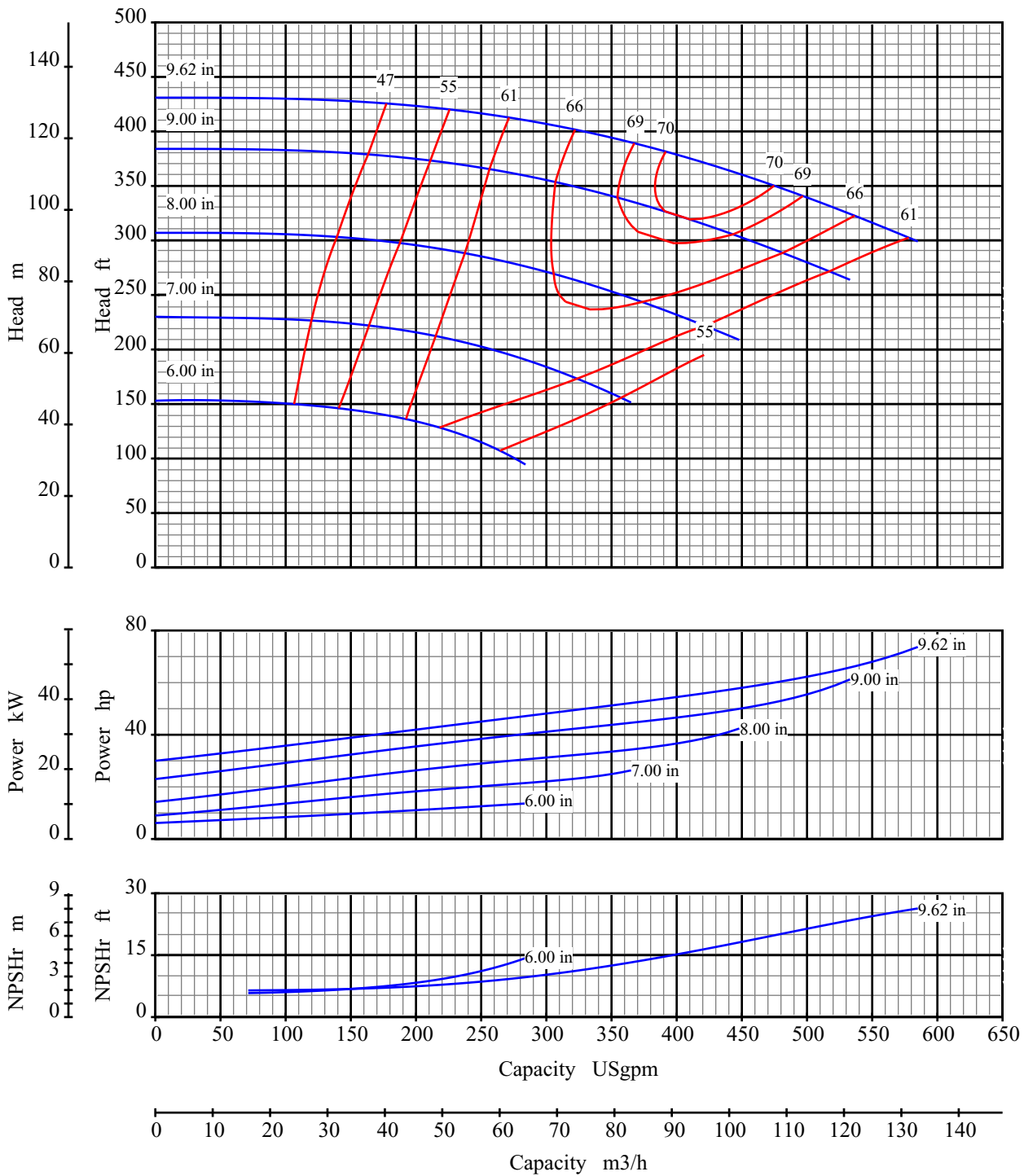
Pump Size: 40x80 250

Speed: 1150 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18166V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 2x3 10

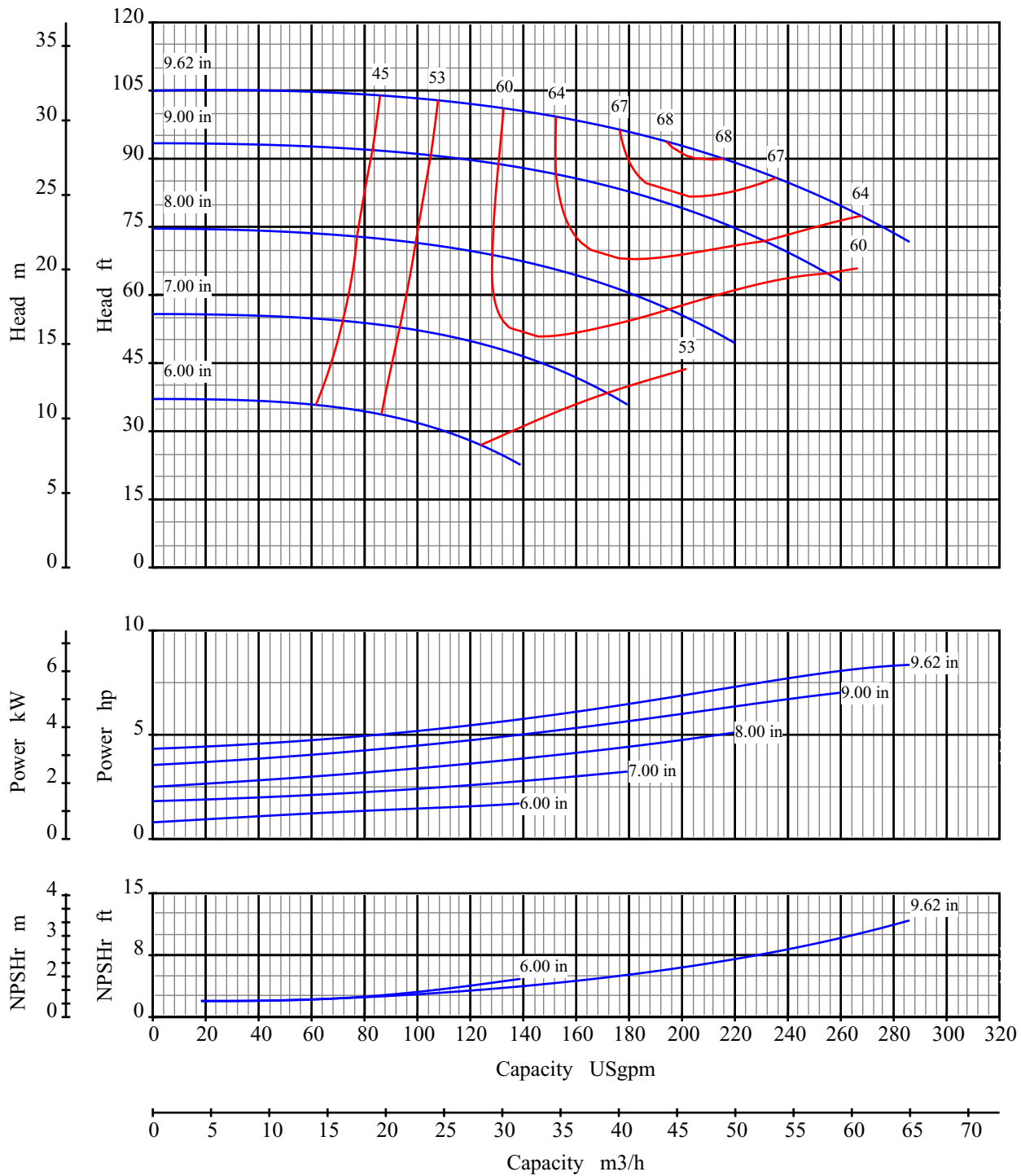
Pump Size: 50x80 250

Speed: 3550 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18168V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 2x3 10

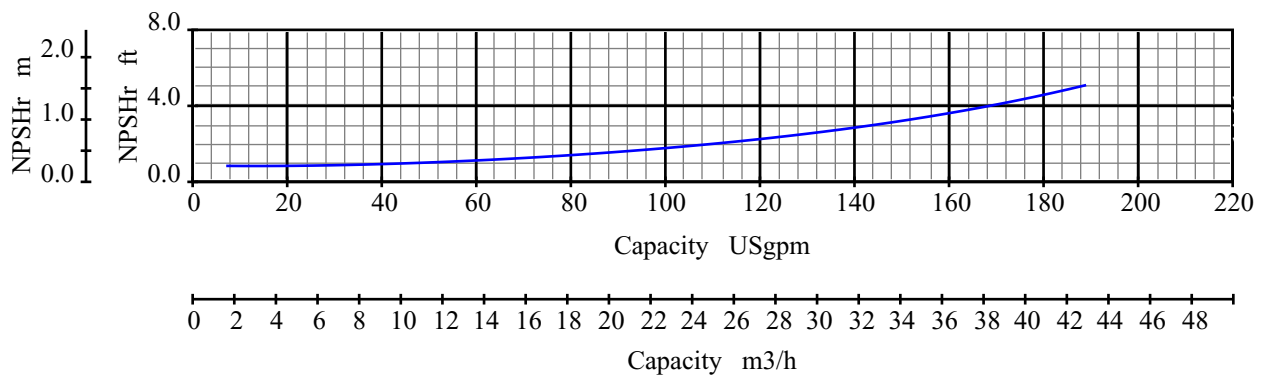
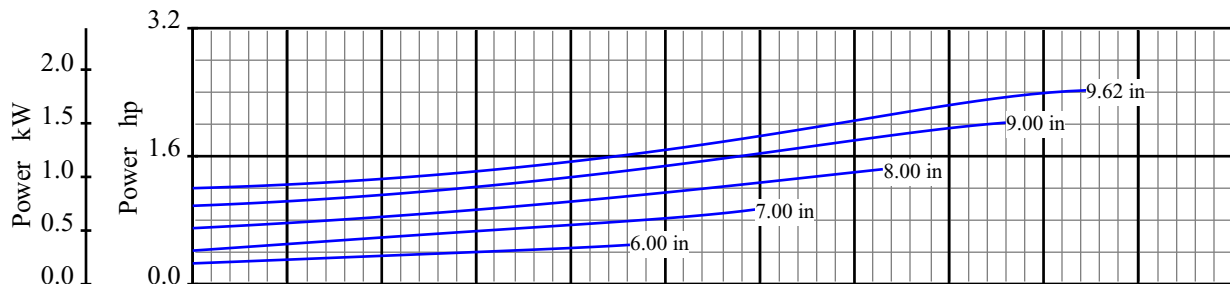
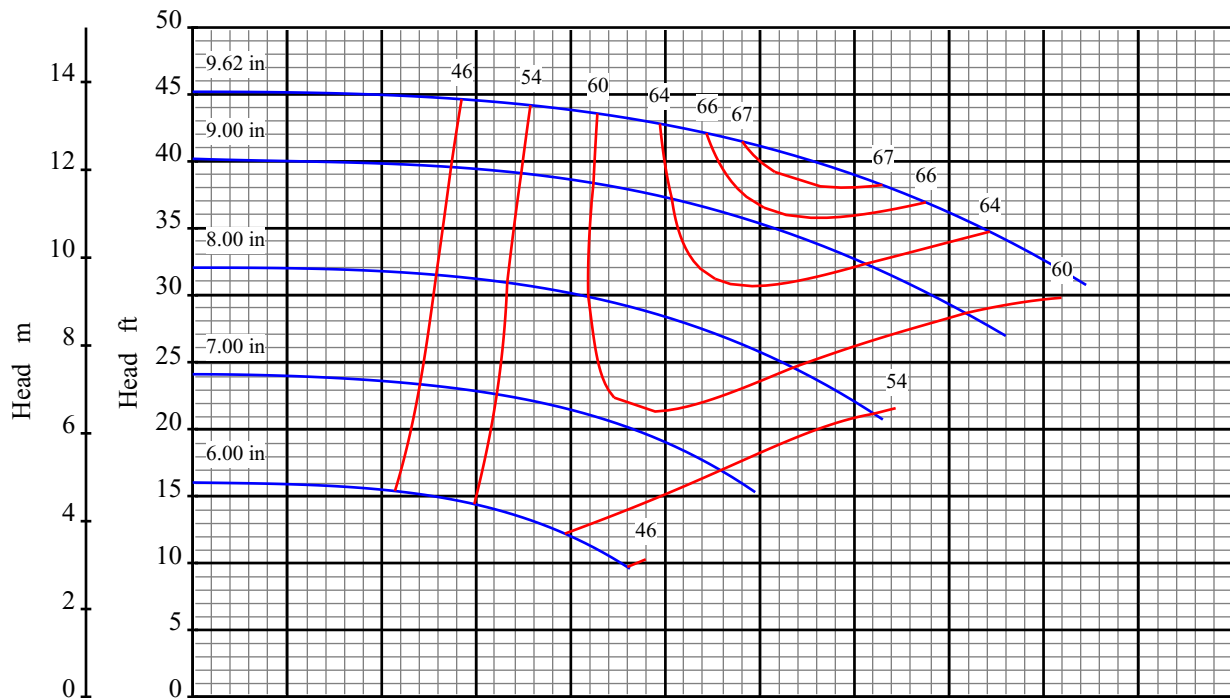
Pump Size: 50x80 250

Speed: 1750 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18170V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 2x3 10

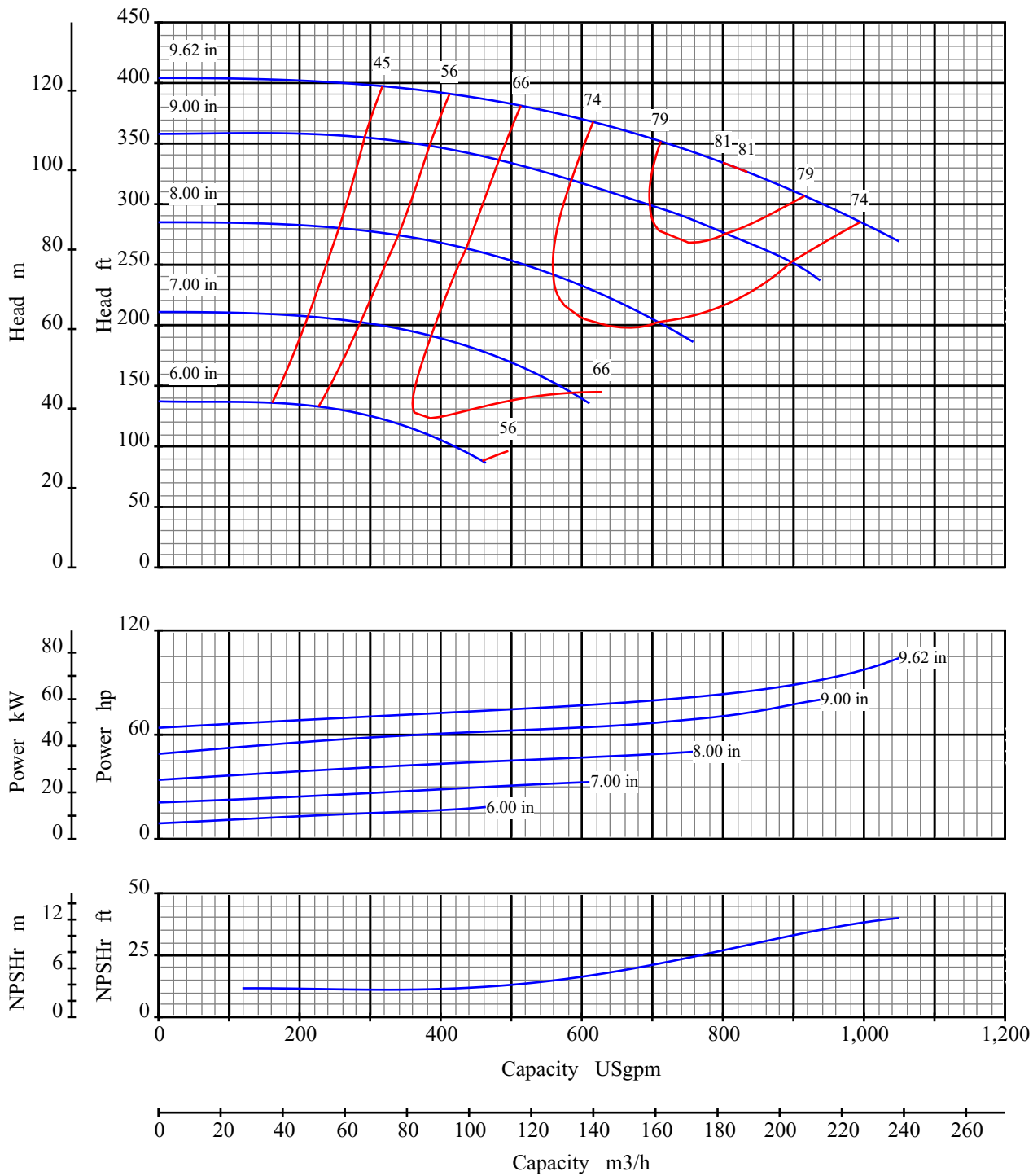
Pump Size: 50x80 250

Speed: 1150 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18172V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 3x4 10

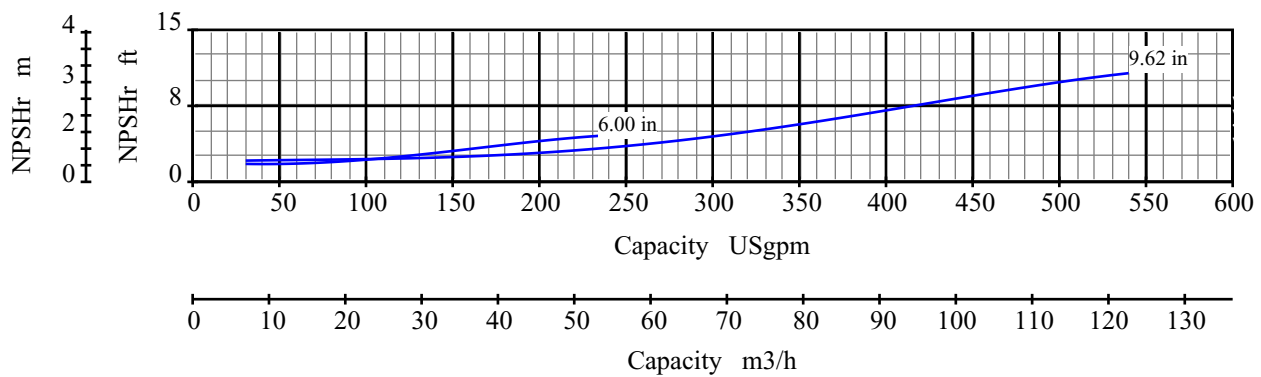
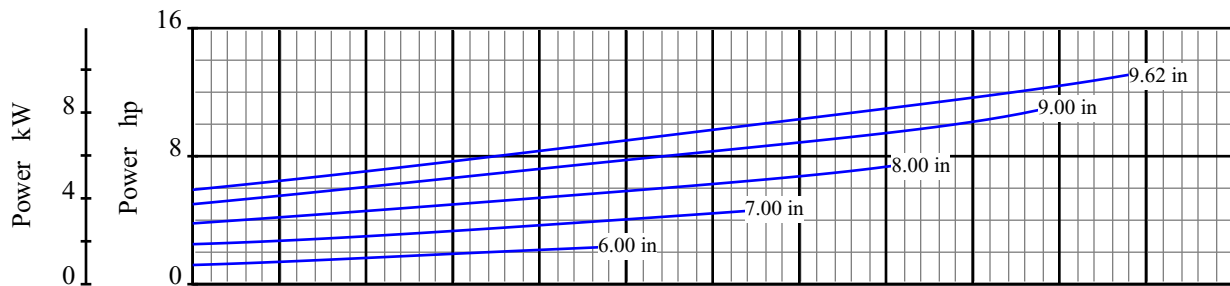
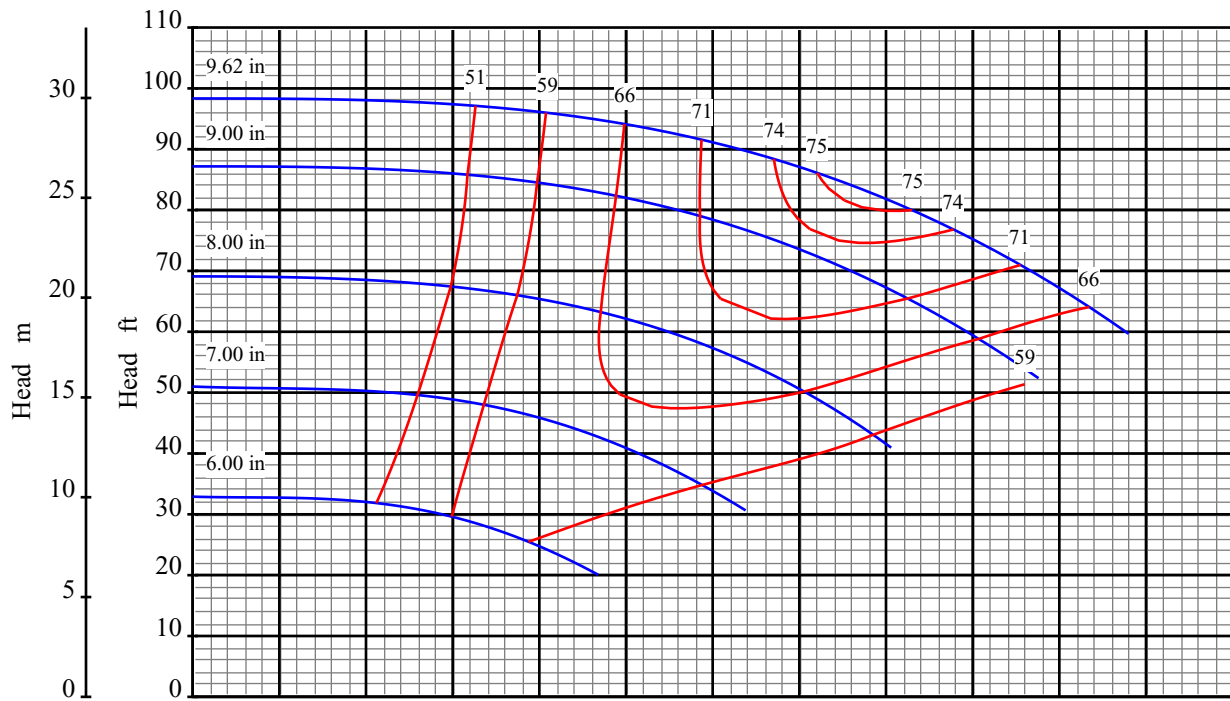
Pump Size: 80x100 250

Speed: 3550 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18174V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 3x4 10

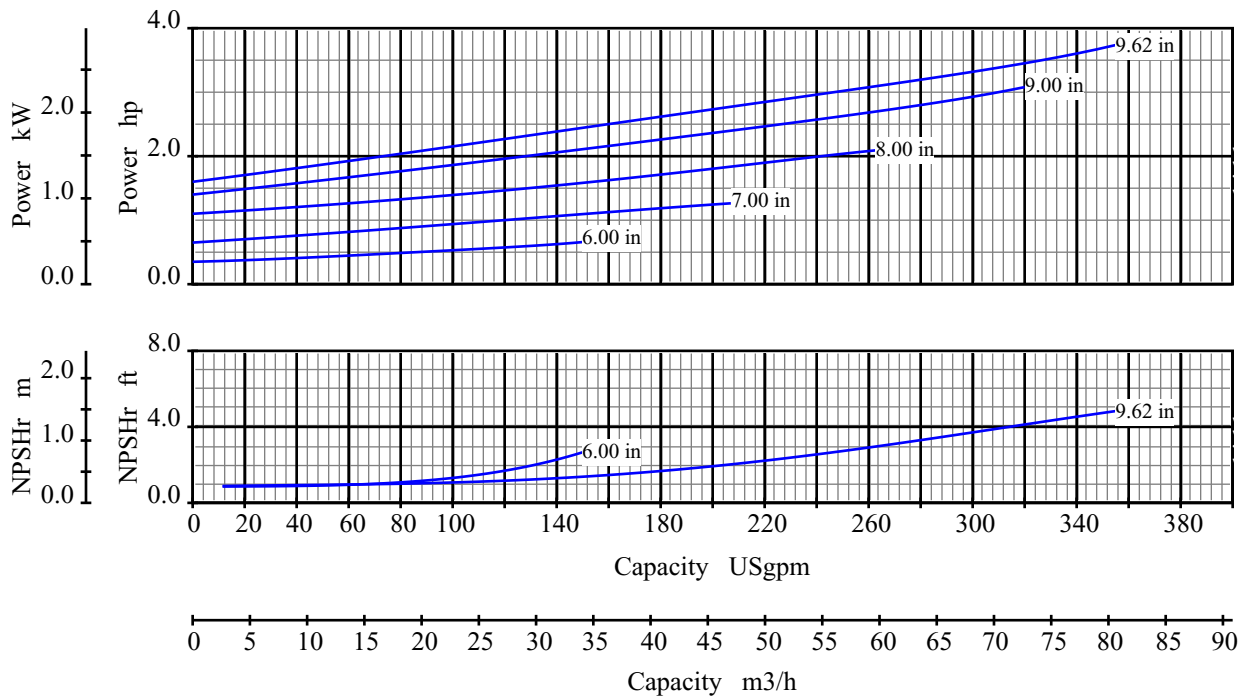
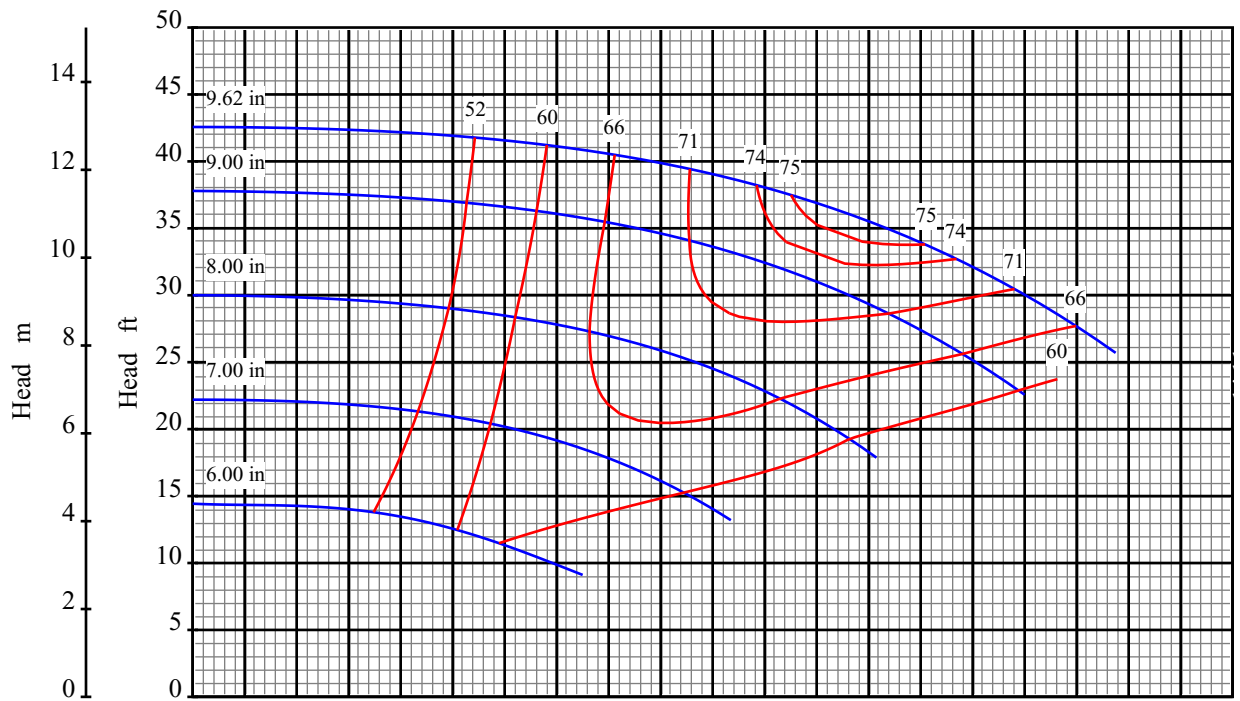
Pump Size: 80x100 250

Speed: 1750 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18176V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 3x4 10

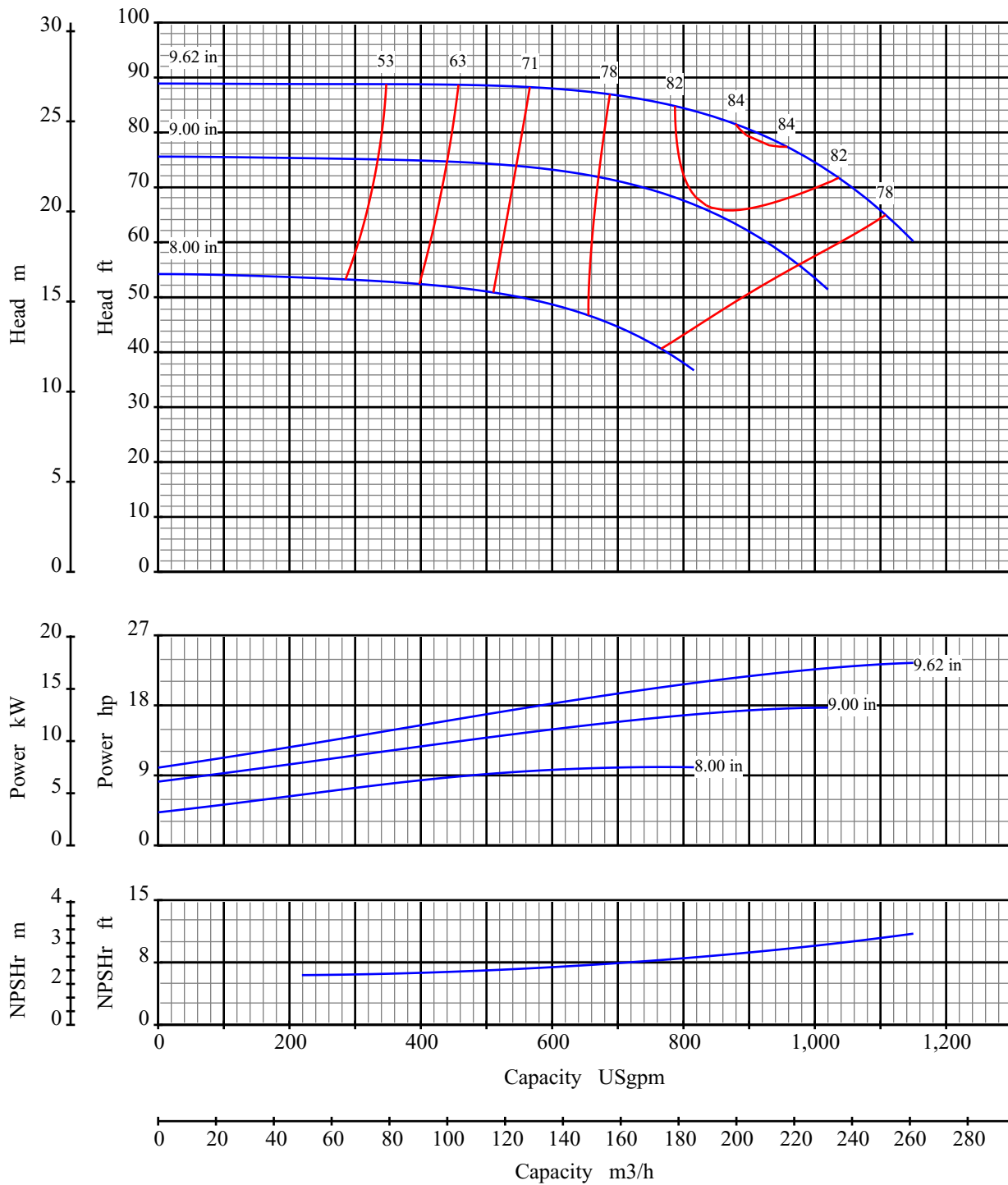
Pump Size: 80x100 250

Speed: 1150 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18180V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 4x6 10

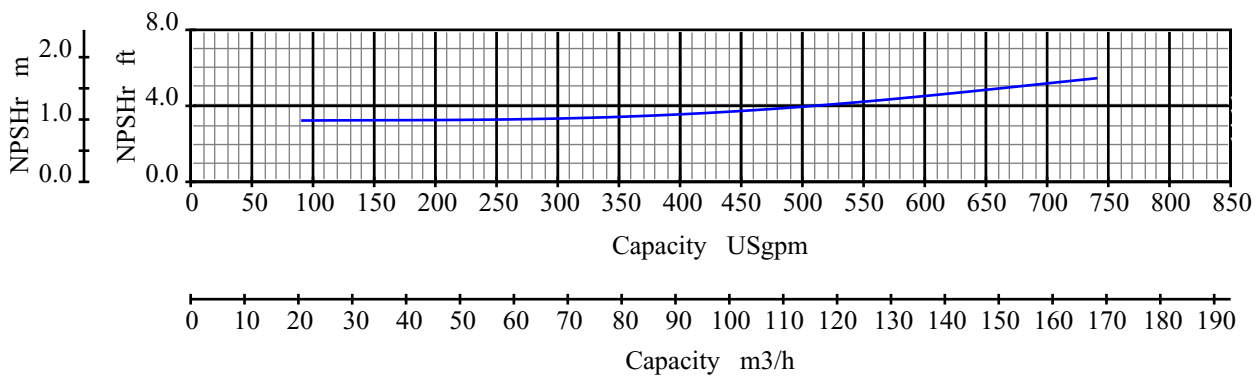
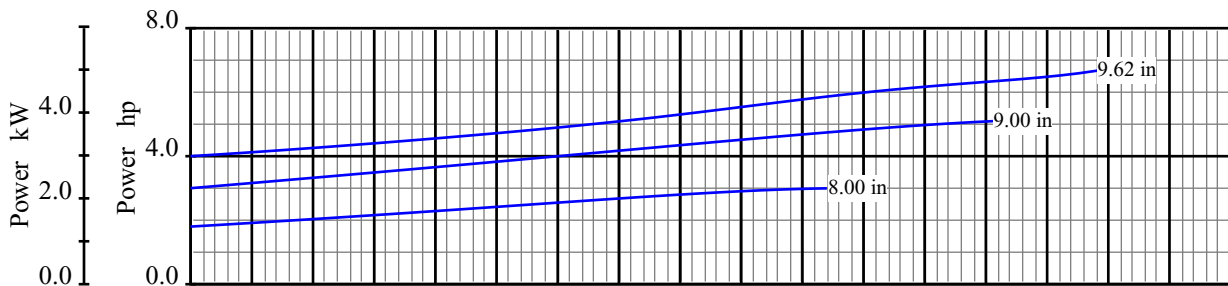
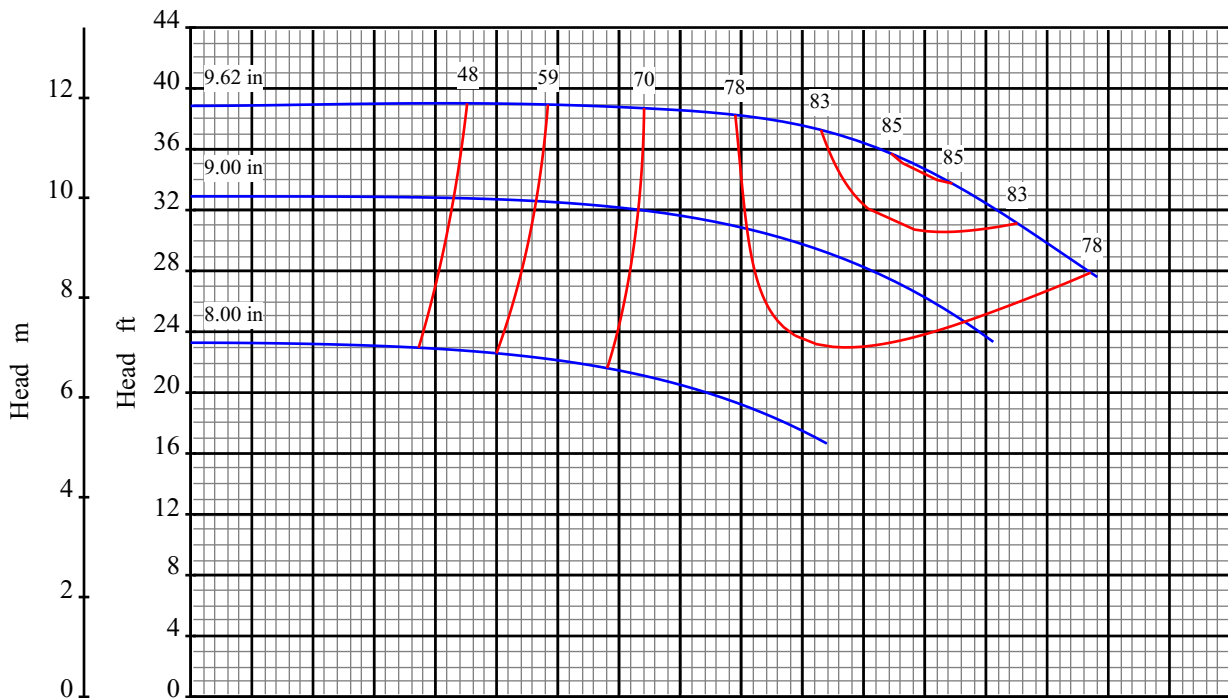
Pump Size: 100x150 250

Speed: 1750 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18182V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 4x6 10

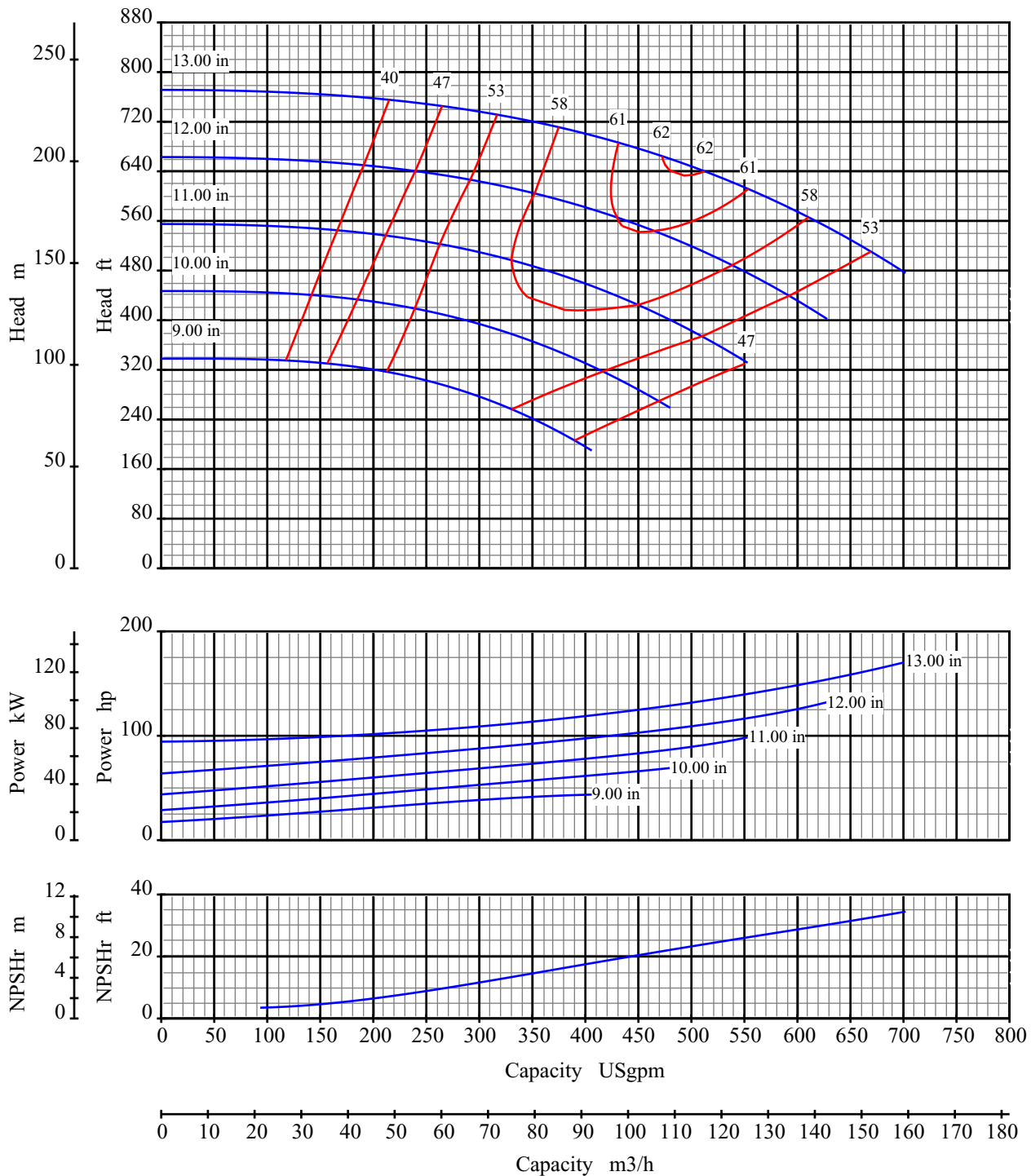
Pump Size: 100x150 250

Speed: 1150 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18184V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 1.5x3 13

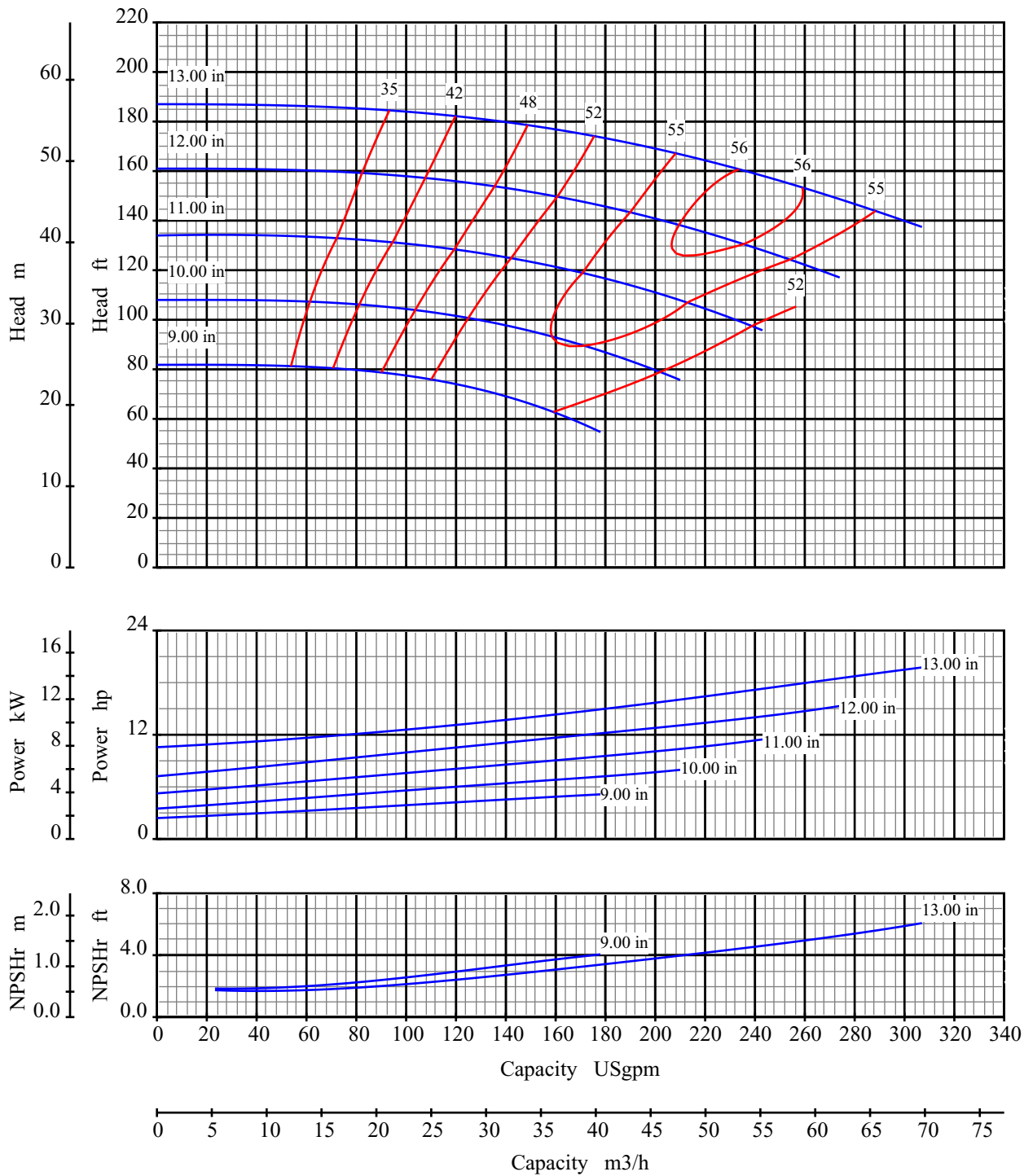
Pump Size: 40x80 330

Speed: 3550 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18186V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 1.5x3 13

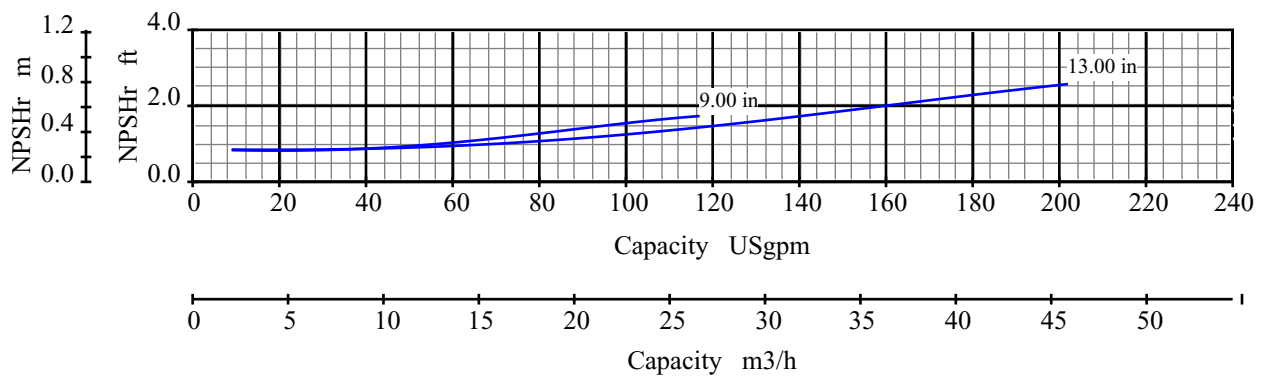
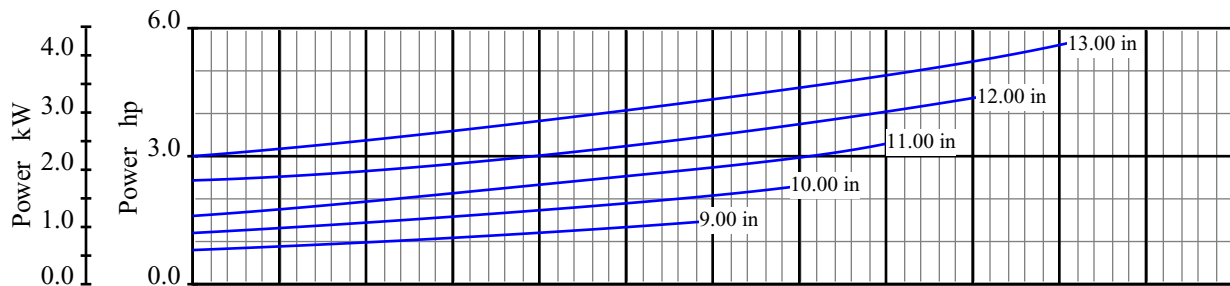
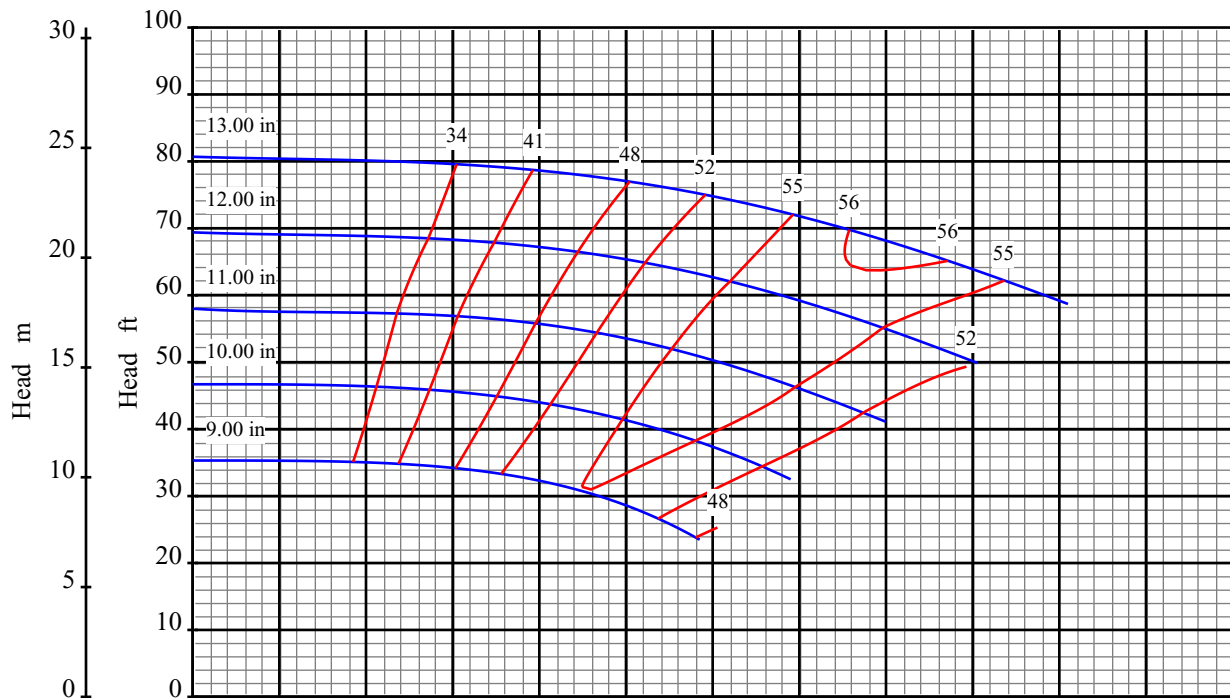
Pump Size: 40x80 330

Speed: 1750 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18188V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 1.5x3 13

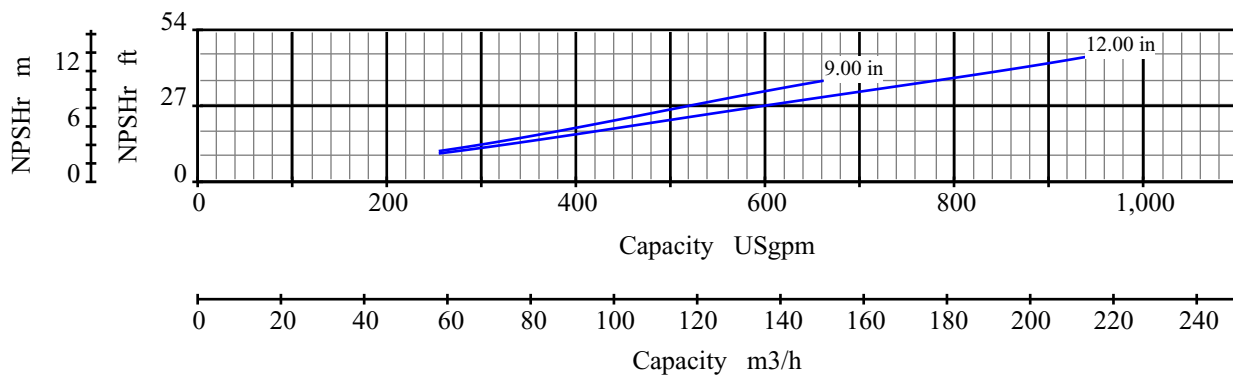
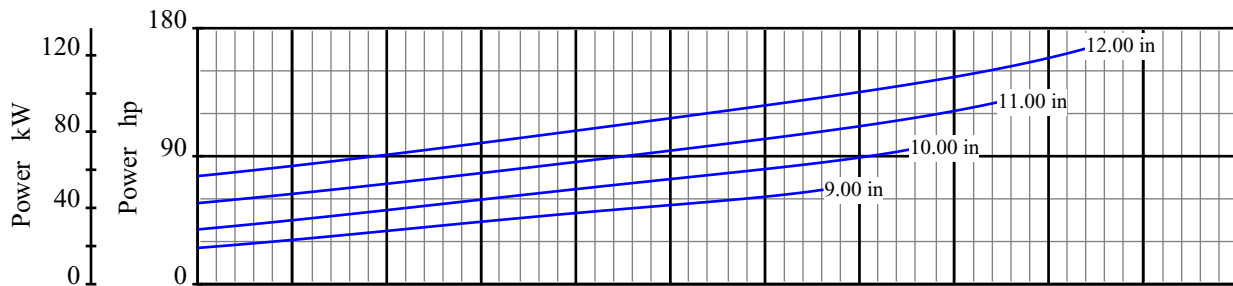
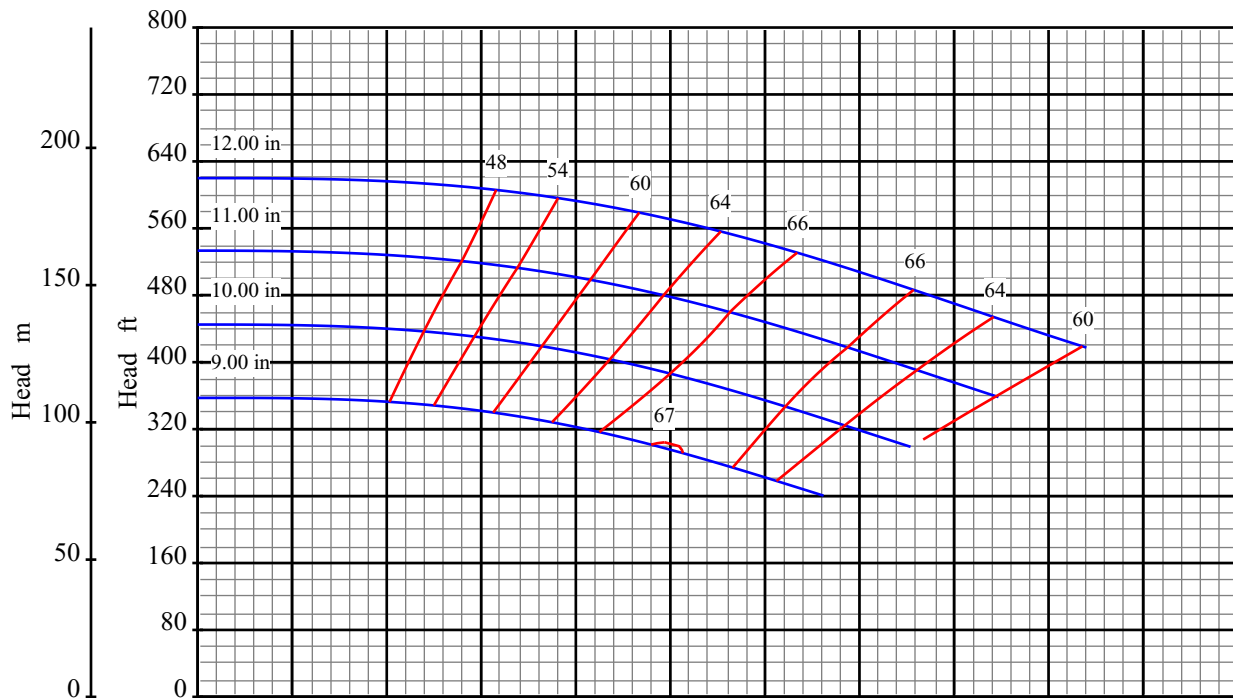
Pump Size: 40x80 330

Speed: 1150 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18190V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 2x3 13

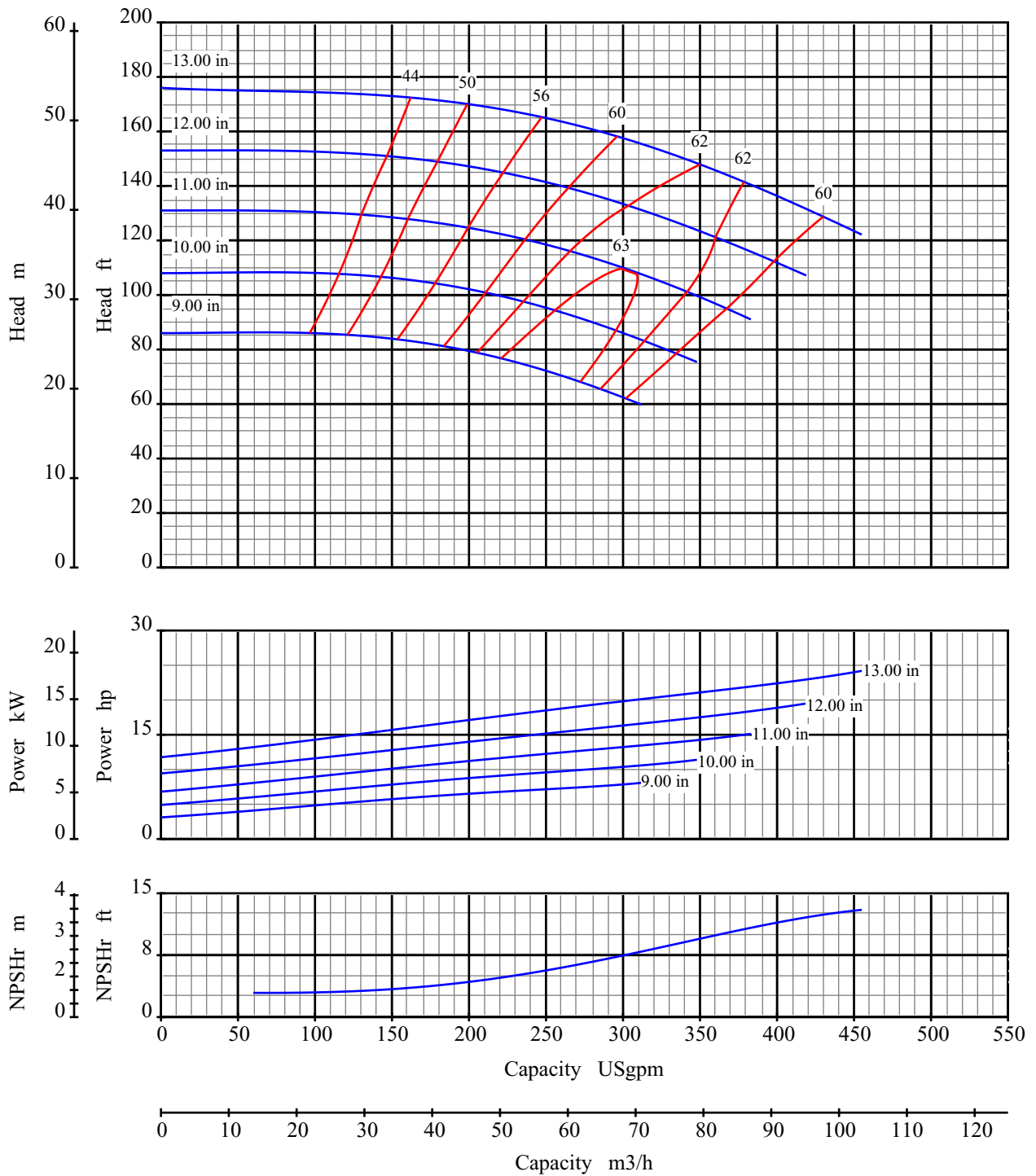
Pump Size: 50x80 330

Speed: 3550 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18192V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 2x3 13

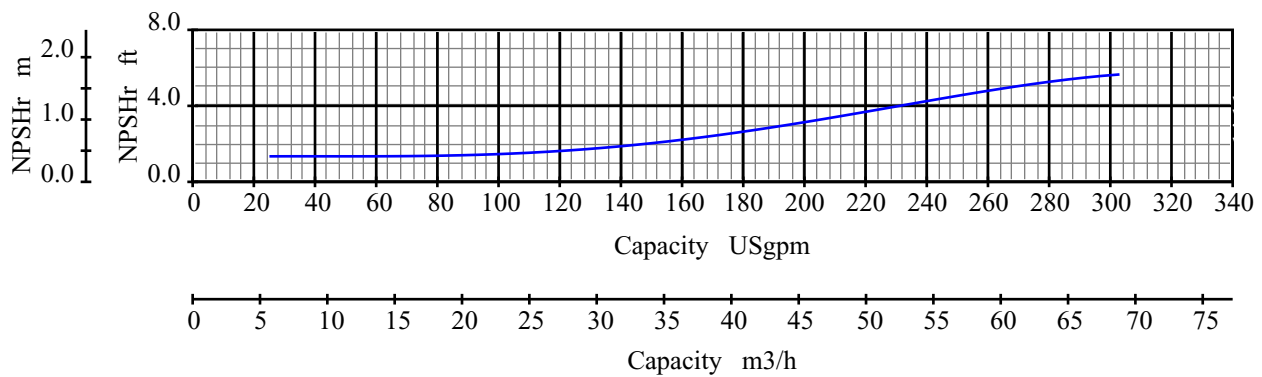
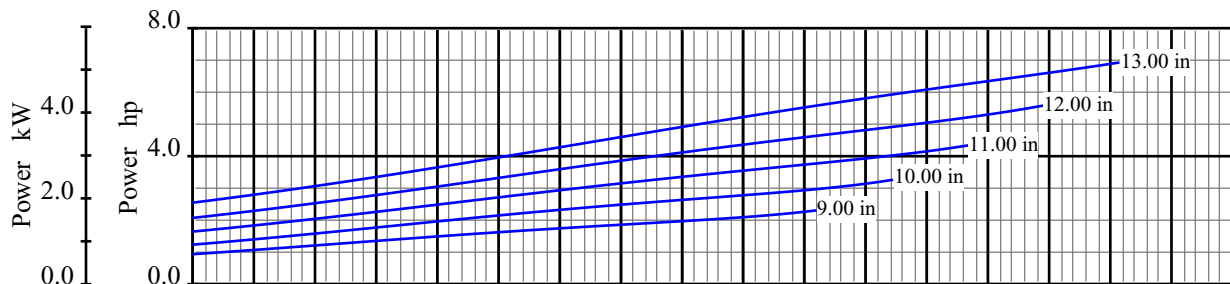
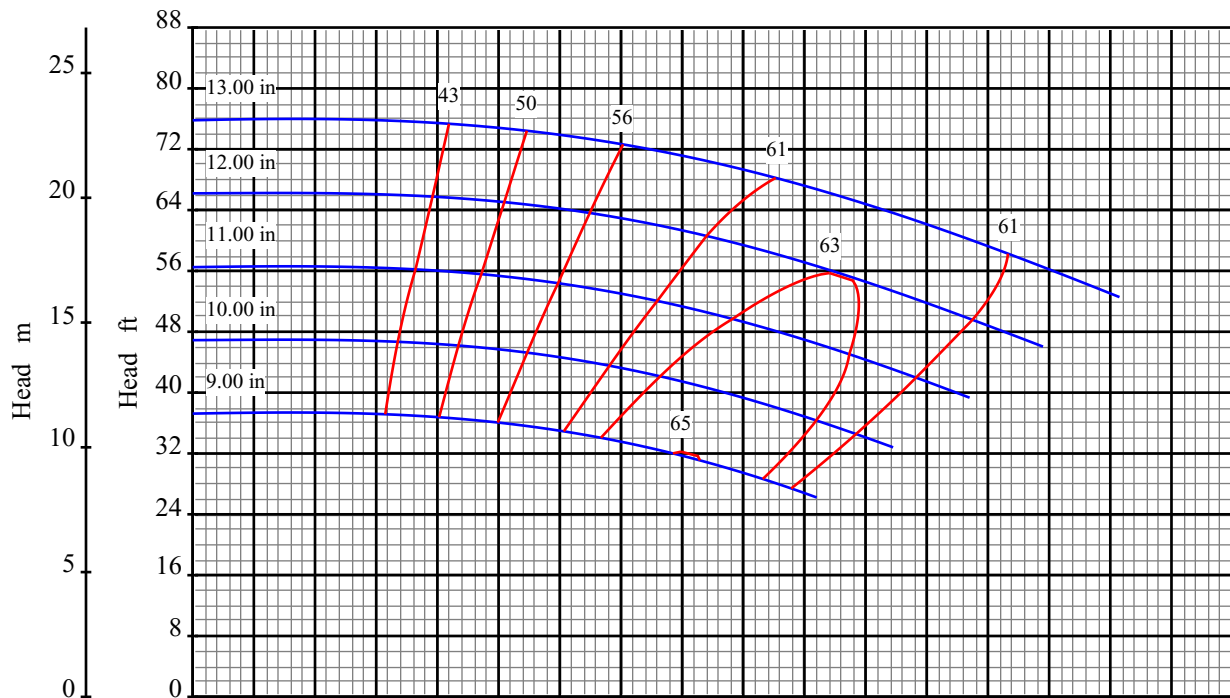
Pump Size: 50x80 330

Speed: 1750 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18194V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 2x3 13

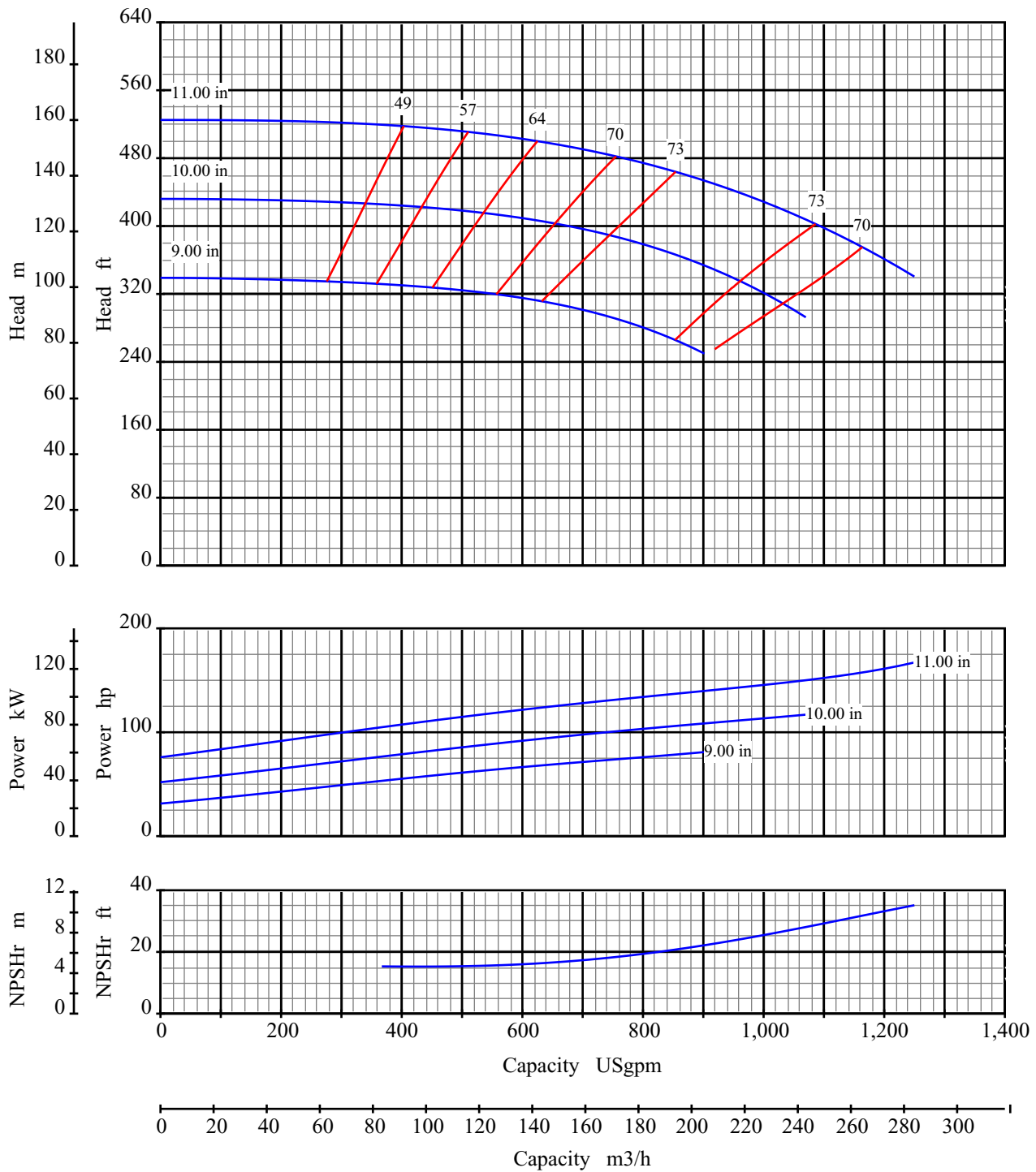
Pump Size: 50x80 330

Speed: 1150 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18196V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 3x4 13

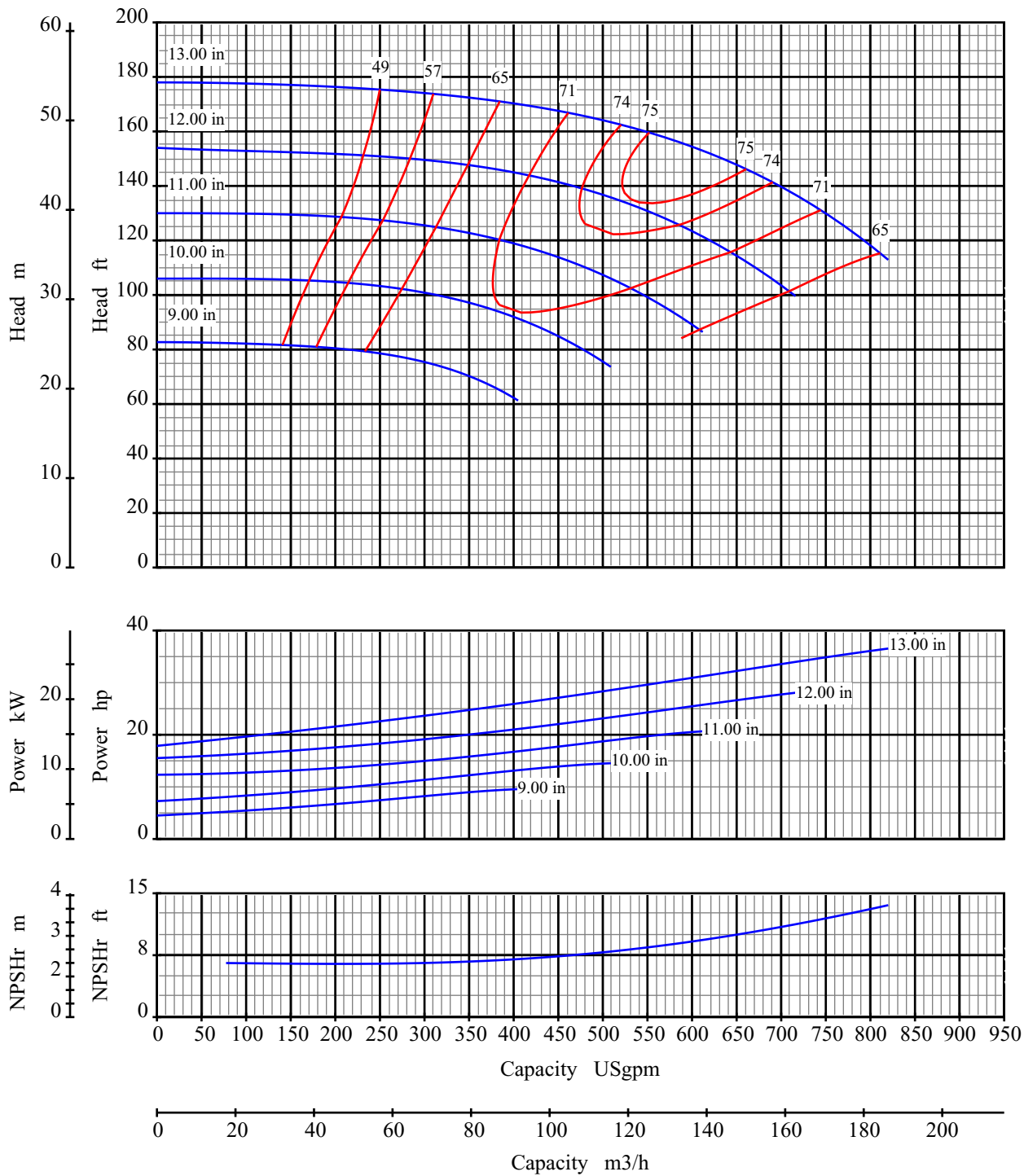
Pump Size: 80x100 330

Speed: 3550 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18198V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 3x4 13

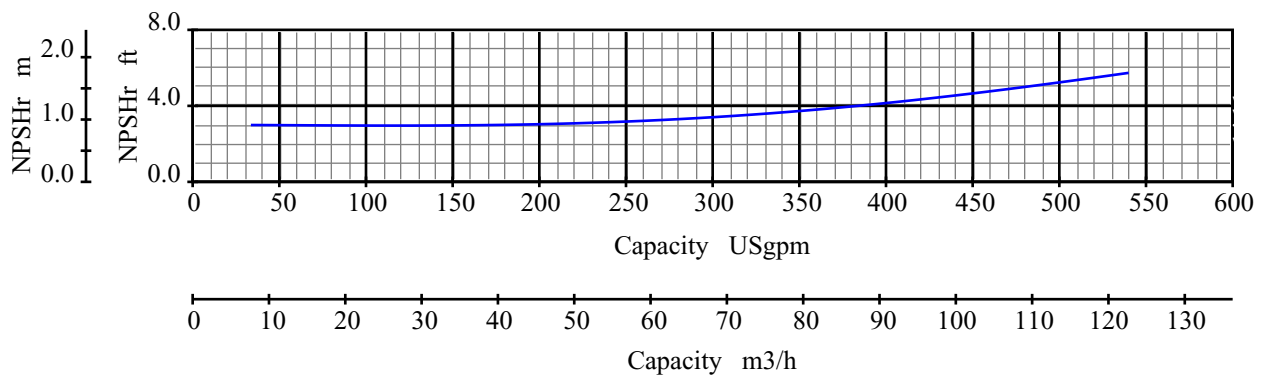
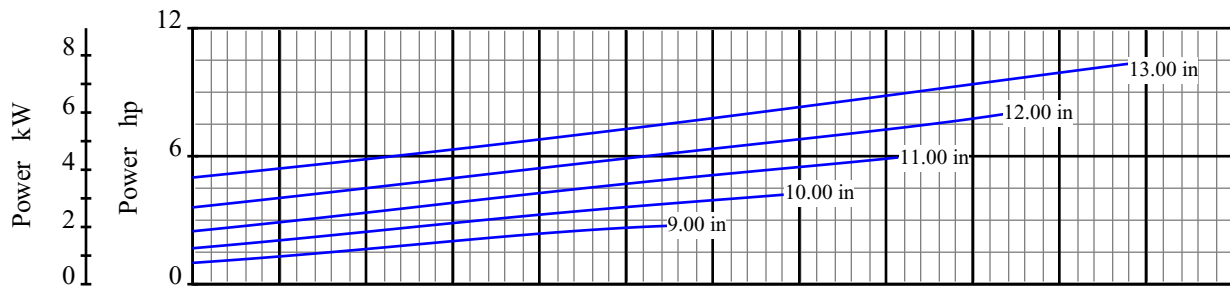
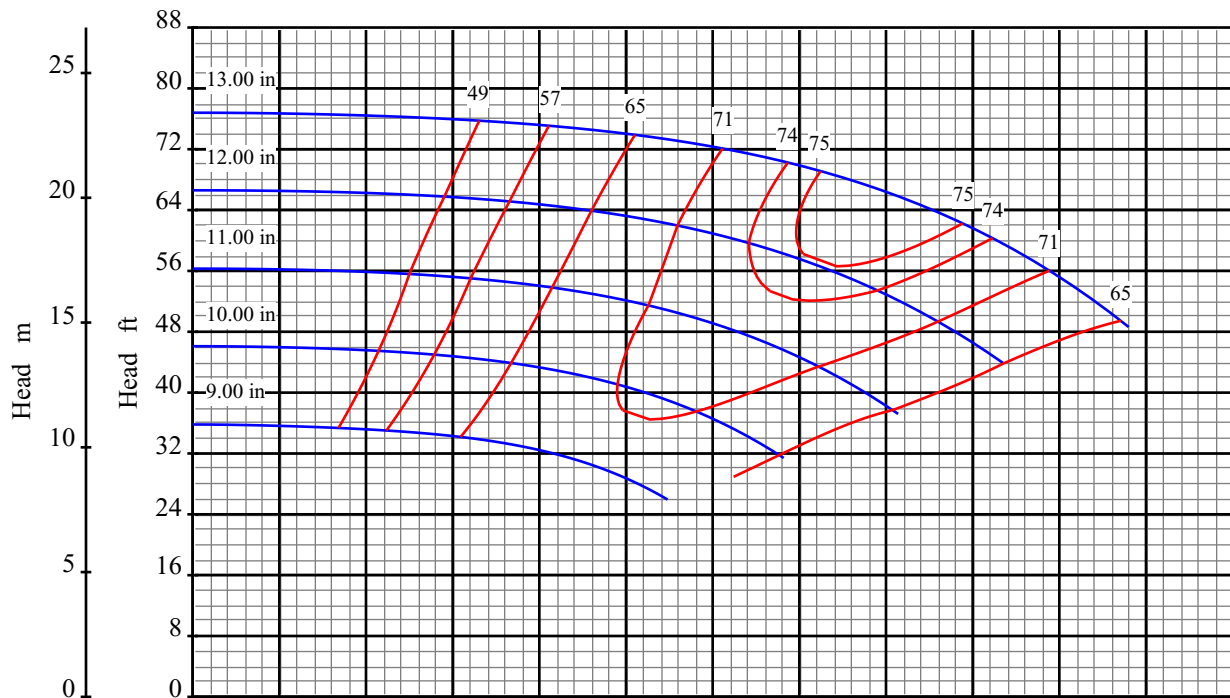
Pump Size: 80x100 330

Speed: 1750 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18200V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 3x4 13

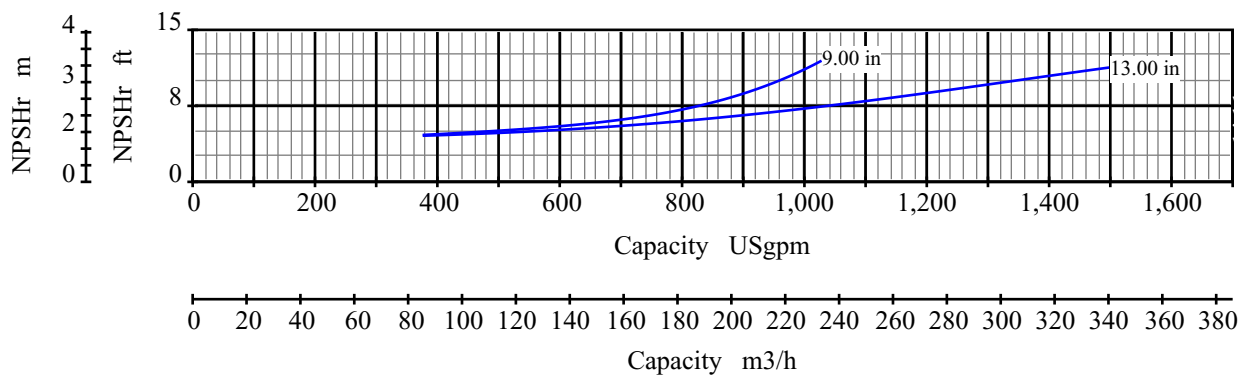
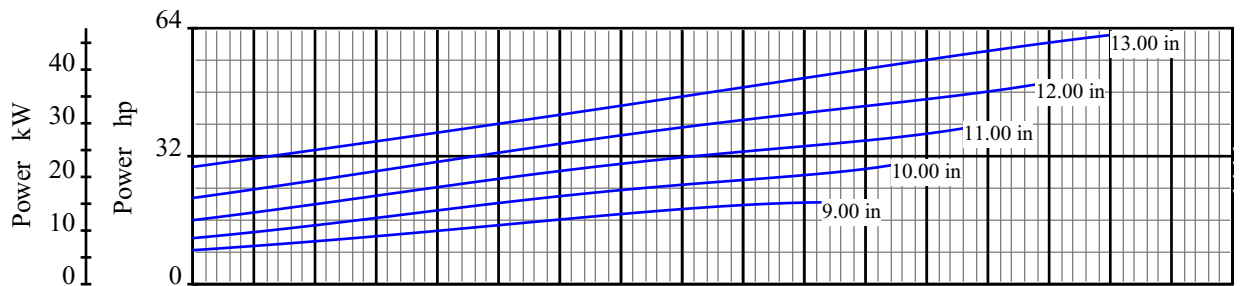
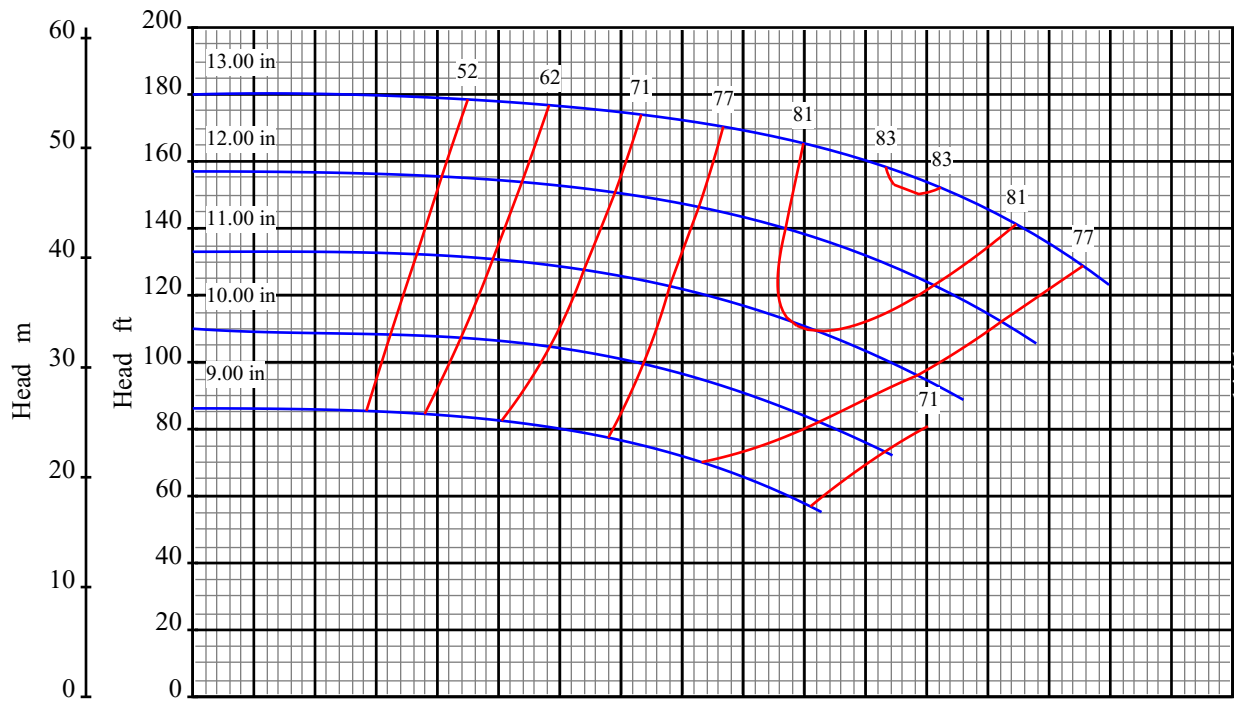
Pump Size: 80x100 330

Speed: 1150 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18204V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 4x6 13

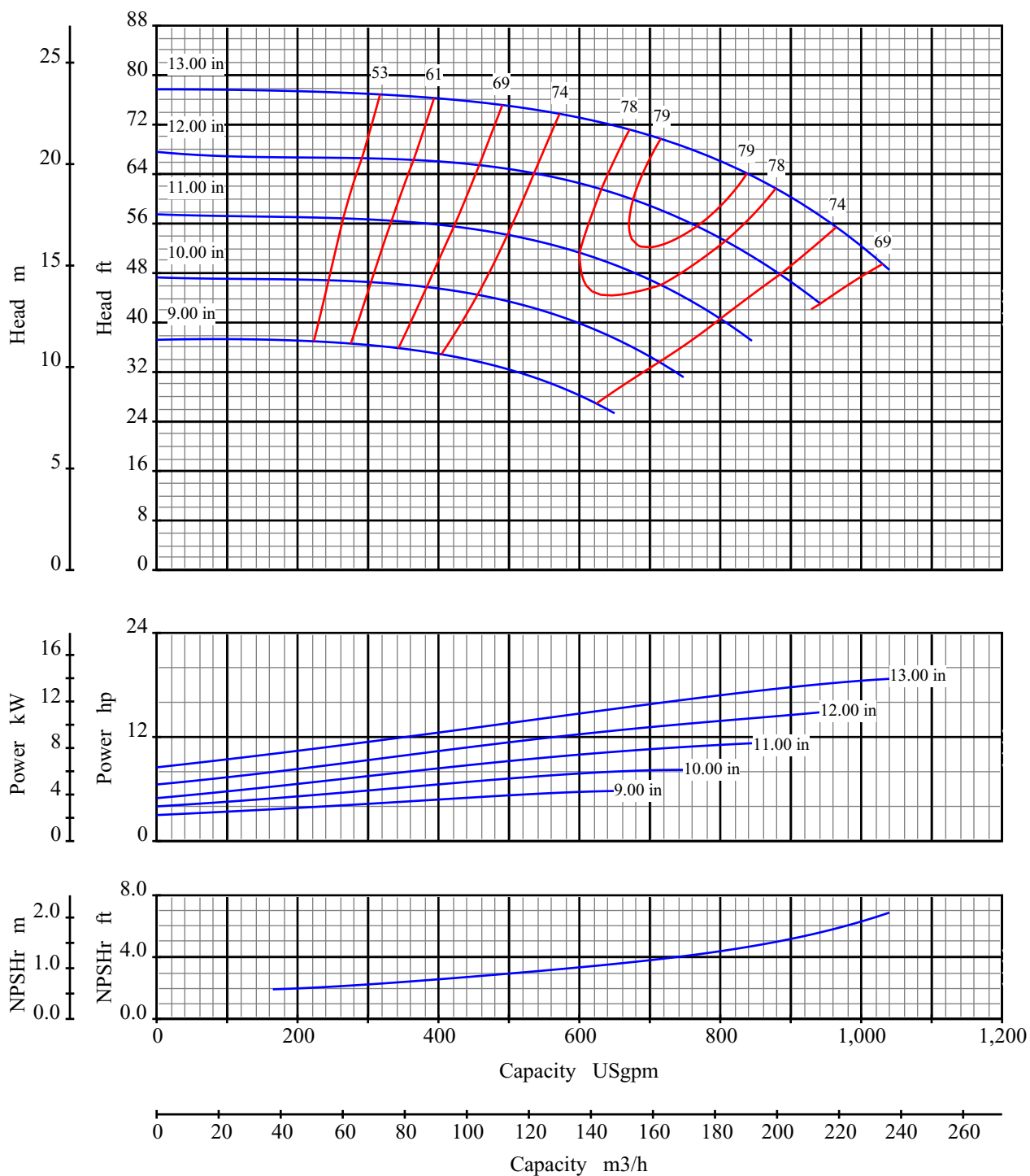
Pump Size: 100 150 330

Speed: 1750 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18206V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 4x6 13

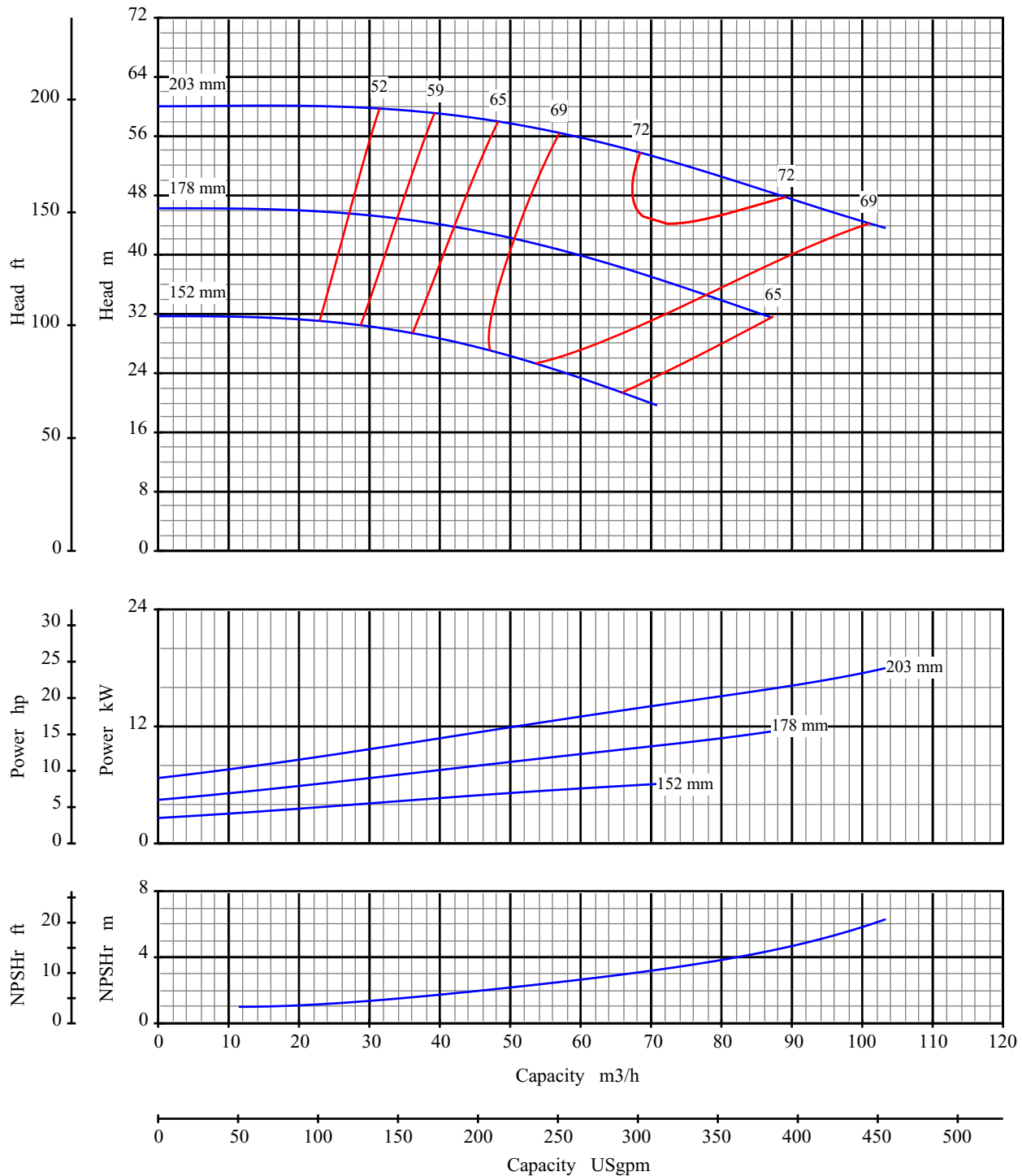
Pump Size: 100 150 330

Speed: 1150 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18143V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 50x80 200

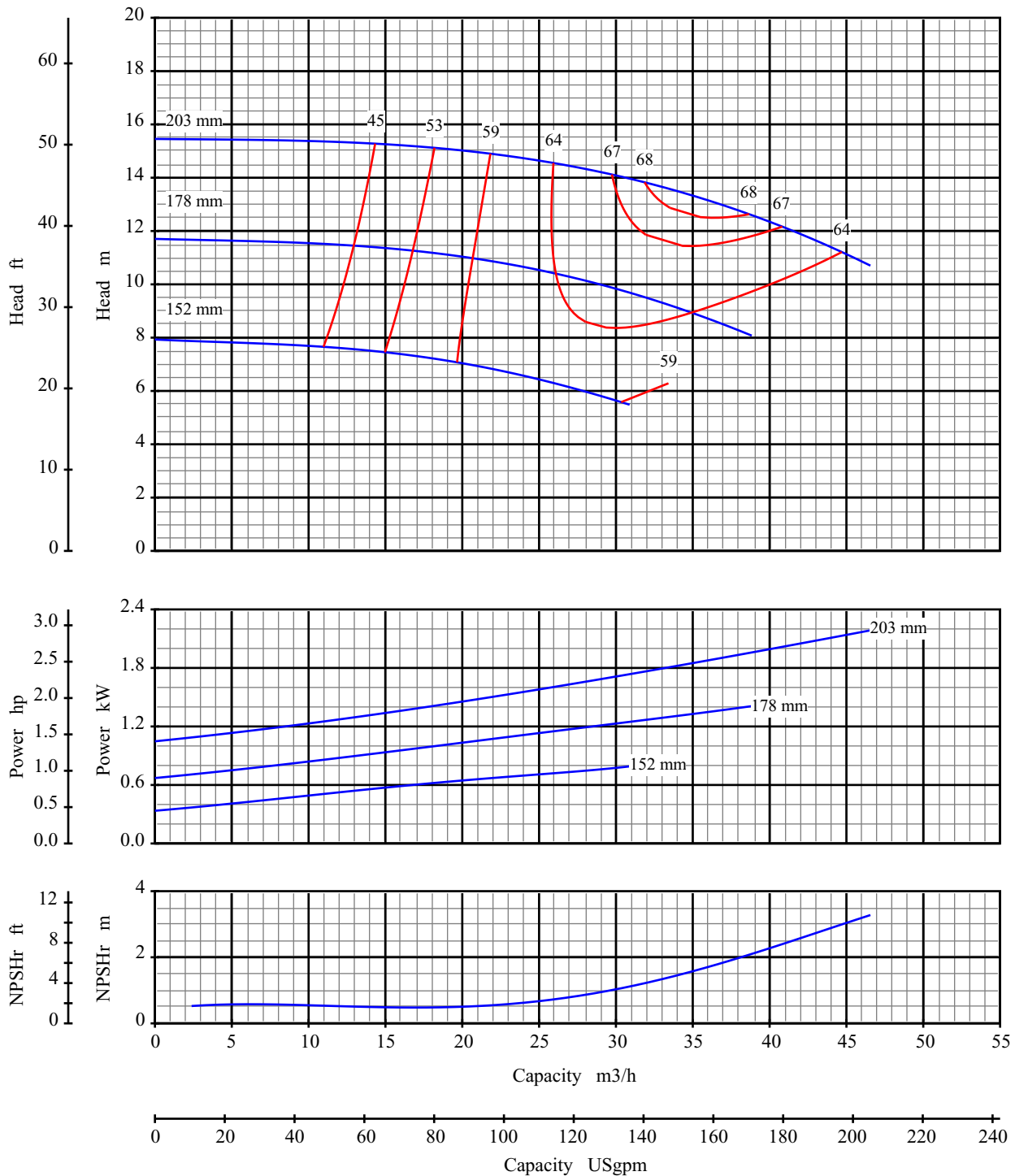
Pump Size: 2x3 8

Speed: 2900 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18145V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 50x80 200

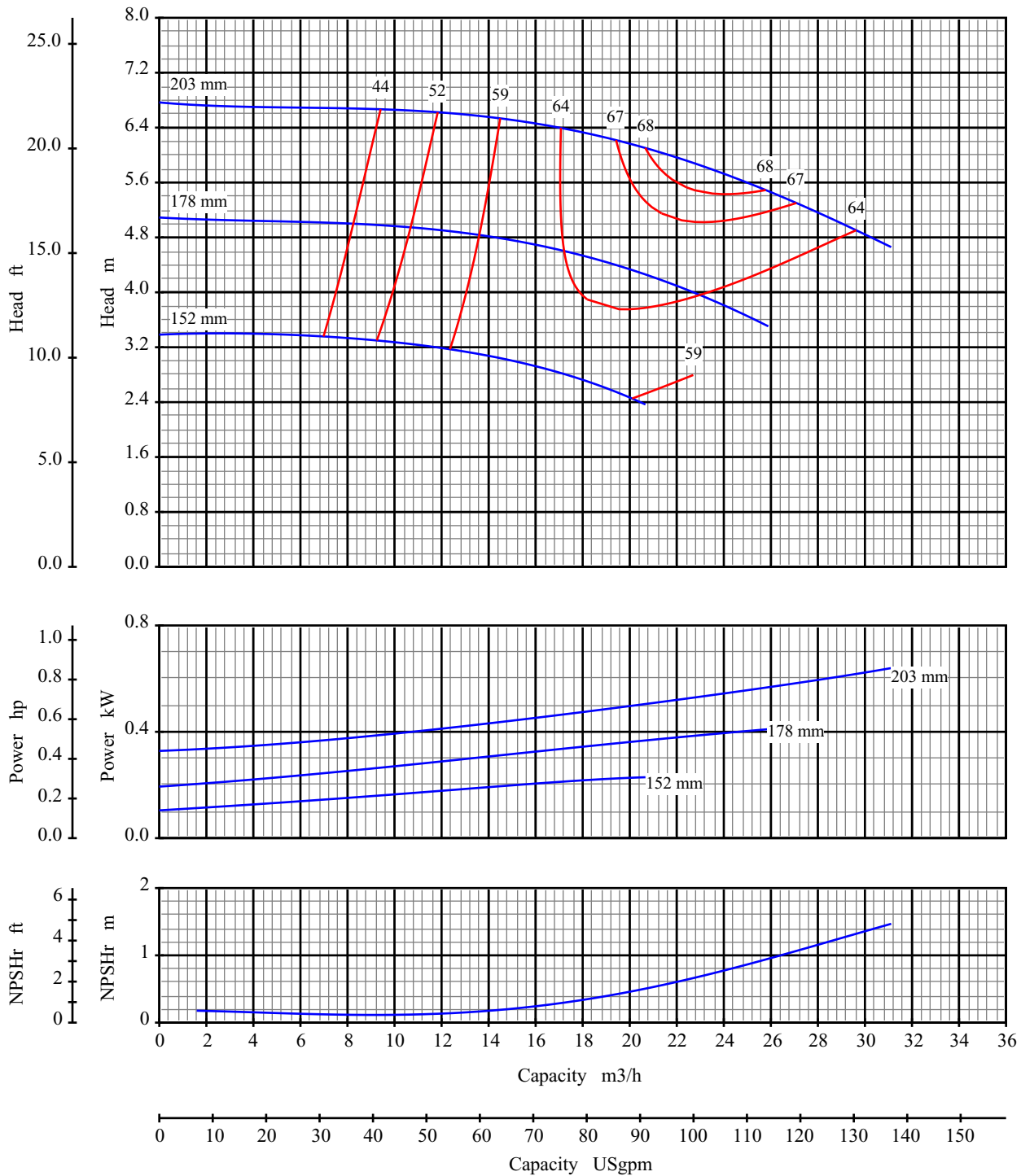
Pump Size: 2x3 8

Speed: 1450 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18147V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 50x80 200

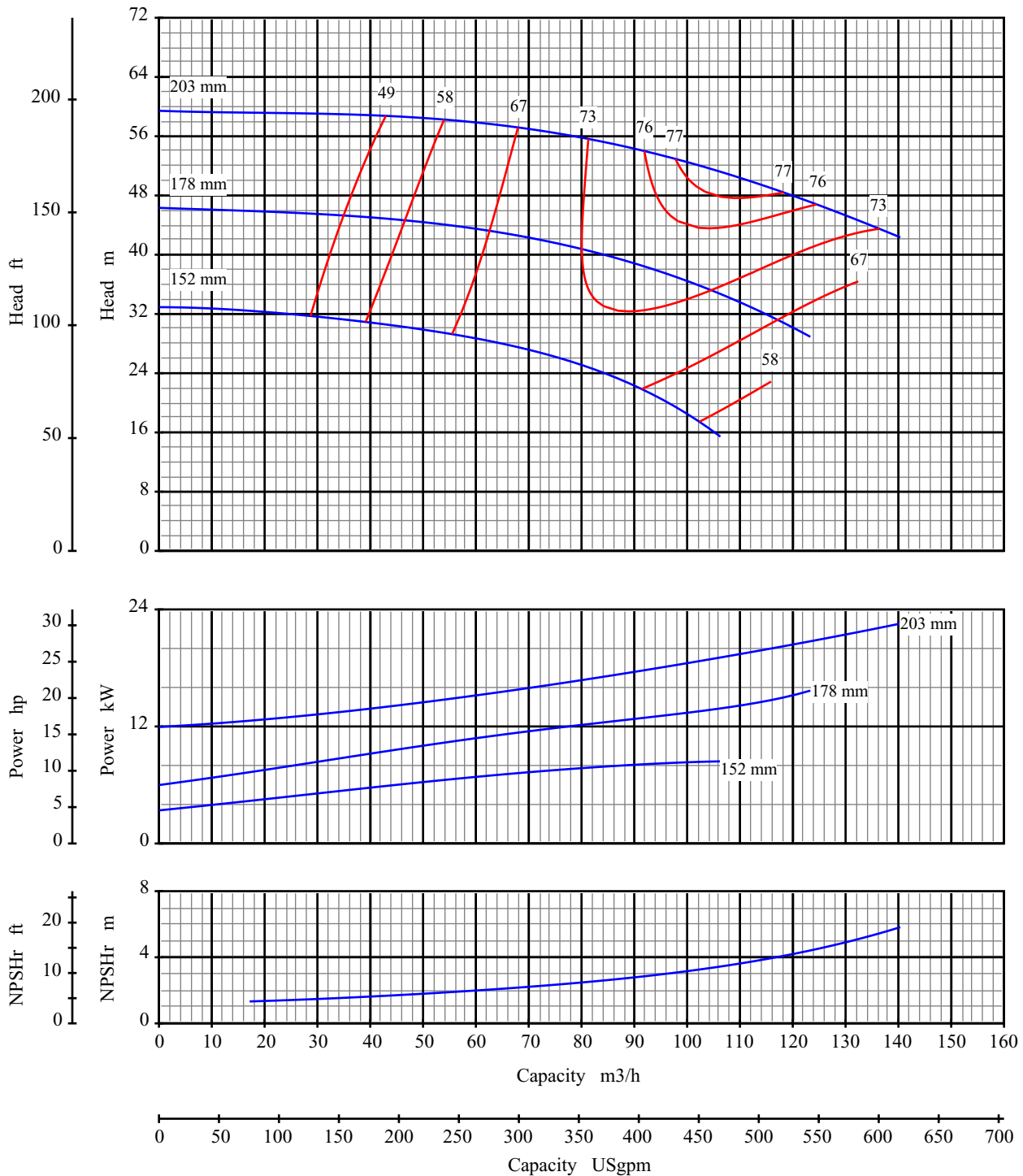
Pump Size: 2x3 8

Speed: 960 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18149V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 80x100 200

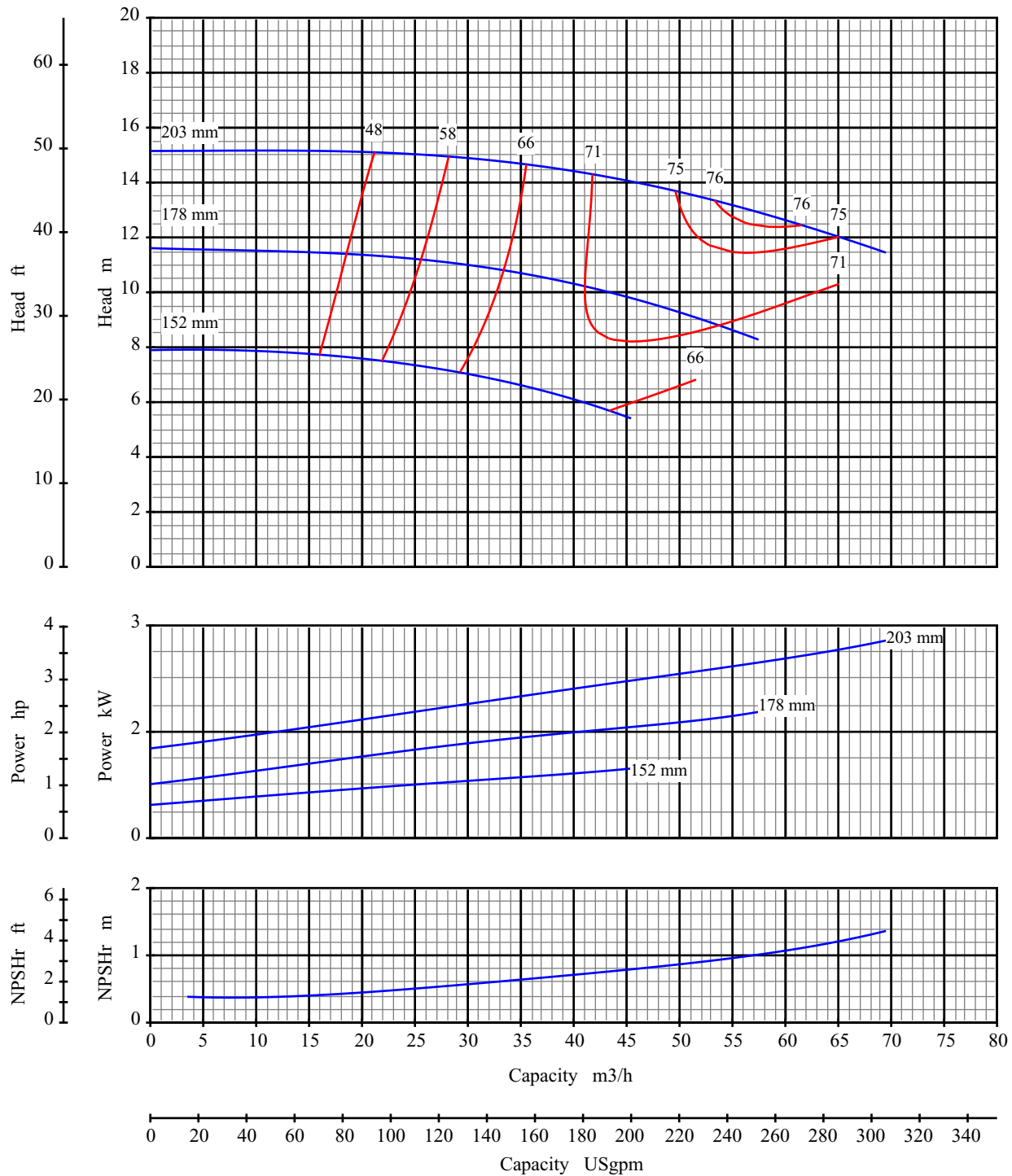
Pump Size: 3x4 8

Speed: 2900 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18151V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 80x100 200

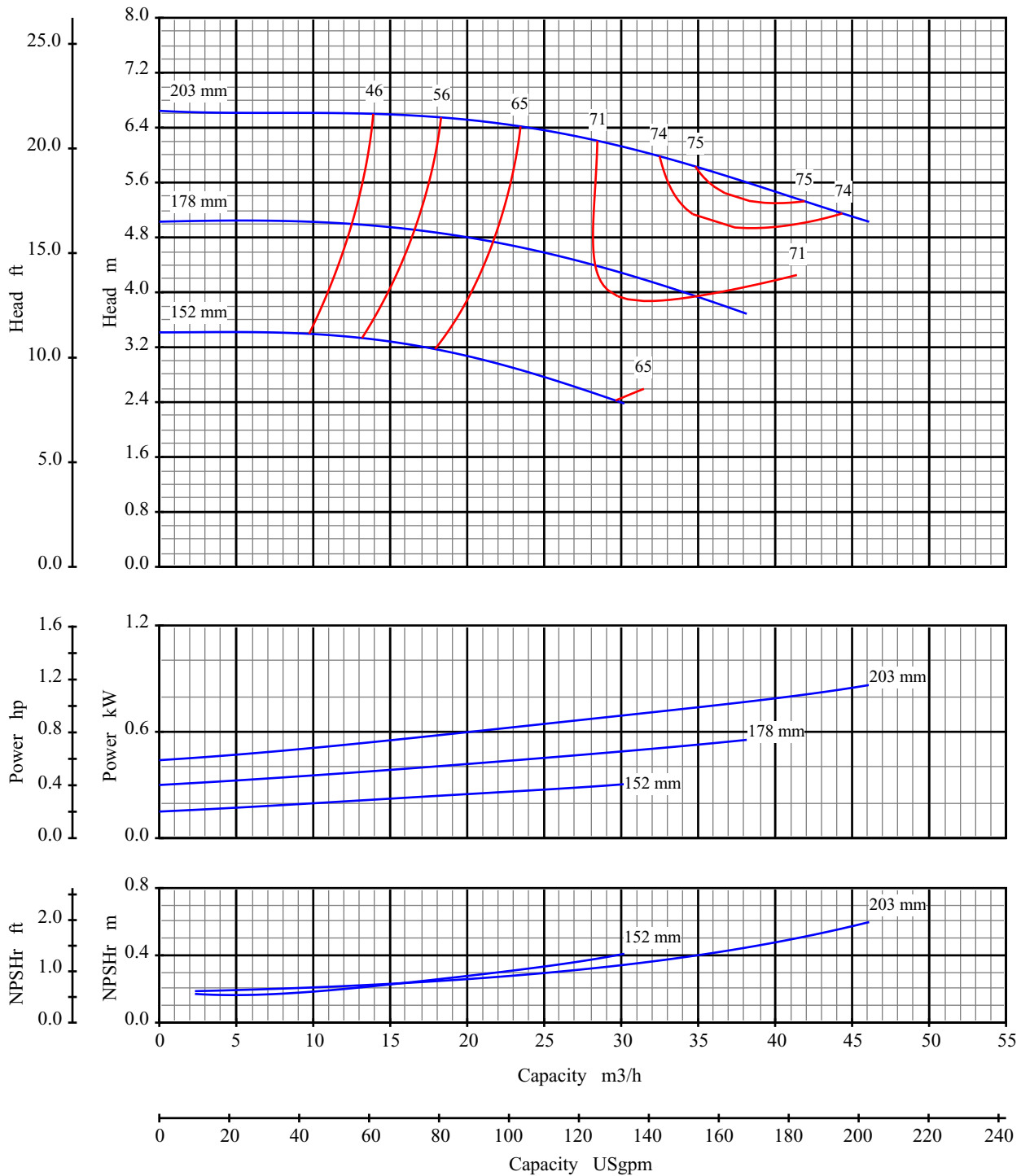
Pump Size: 3x4 8

Speed: 1450 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18153V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 80x100 200

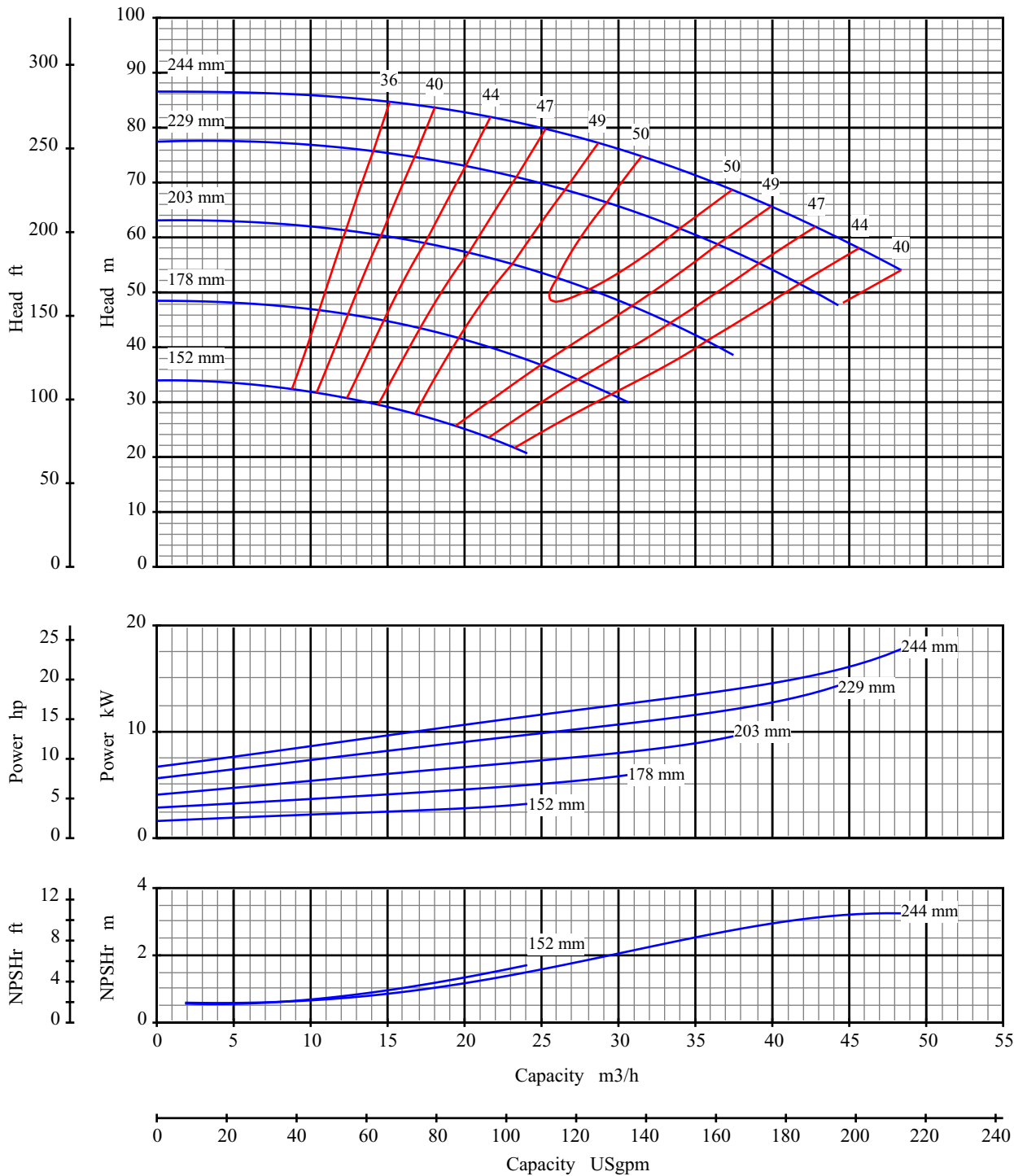
Pump Size: 3x4 8

Speed: 960 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18155V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 25x50 250

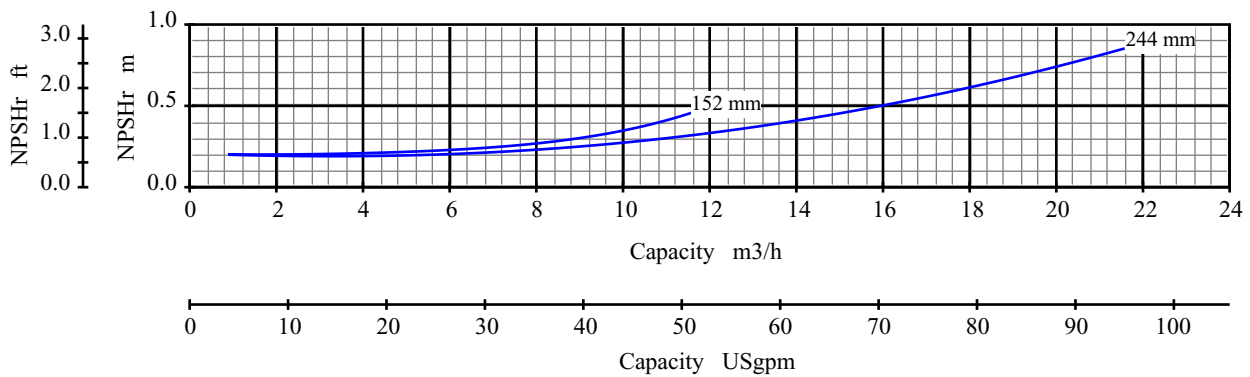
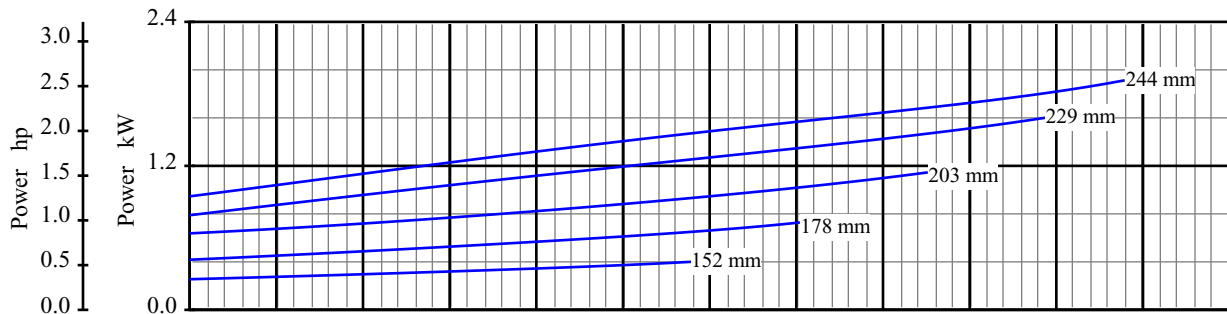
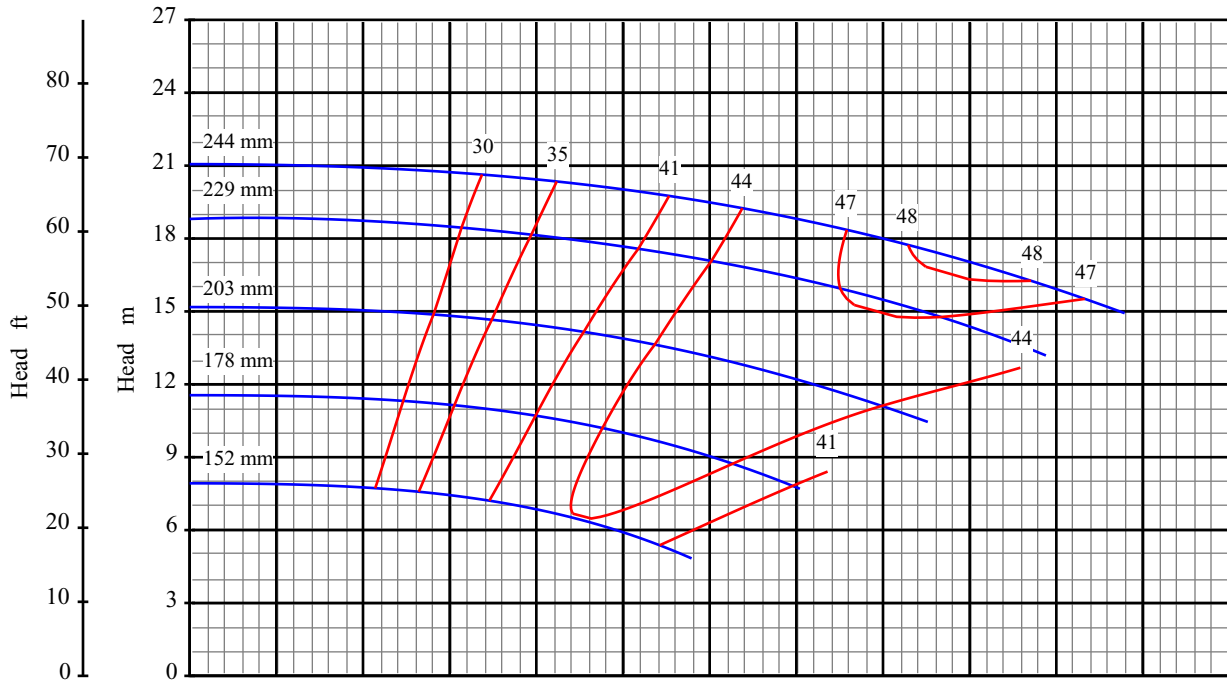
Pump Size: 1x2 10

Speed: 2900 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18157V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 25x50 250

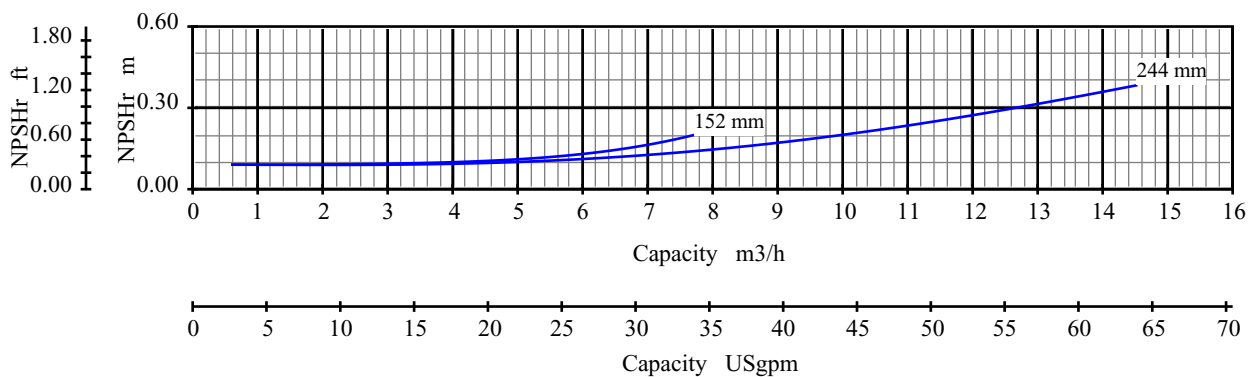
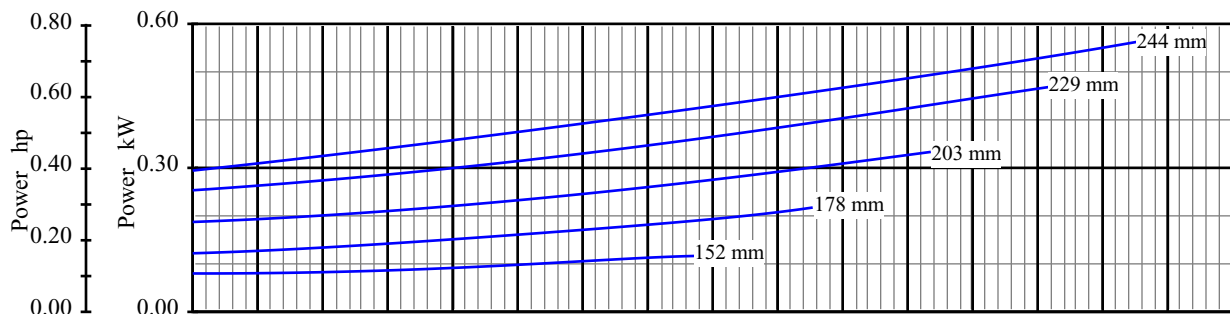
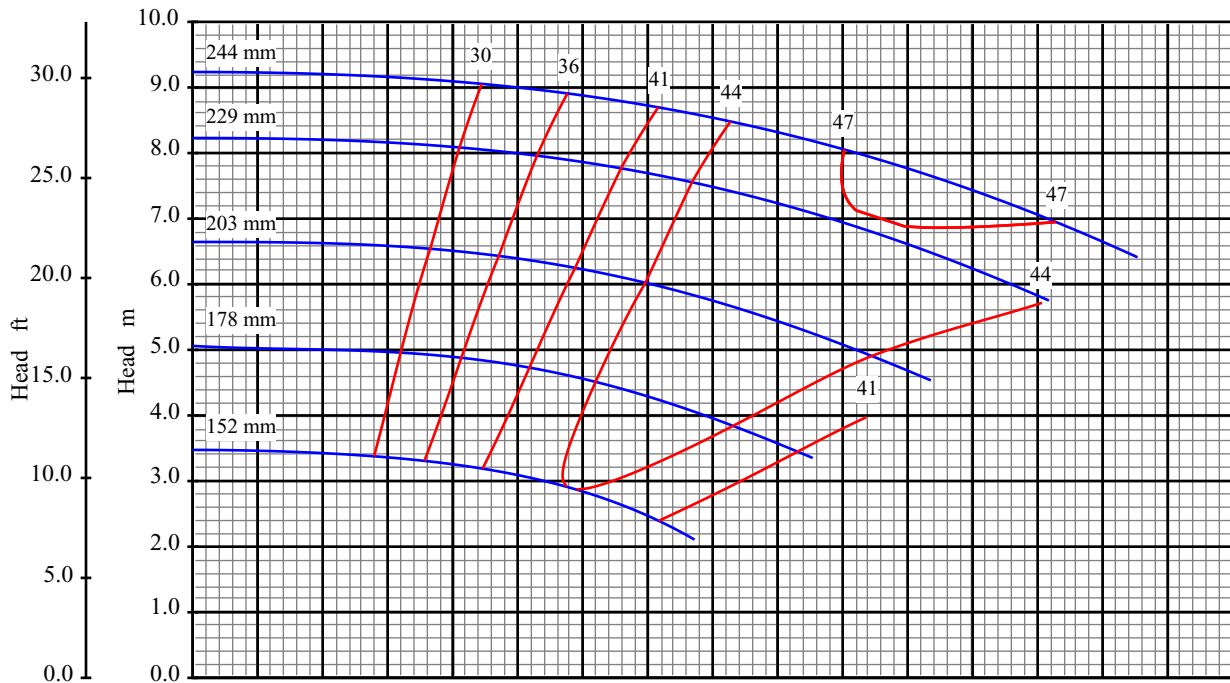
Pump Size: 1x2 10

Speed: 1450 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18159V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 25x50 250

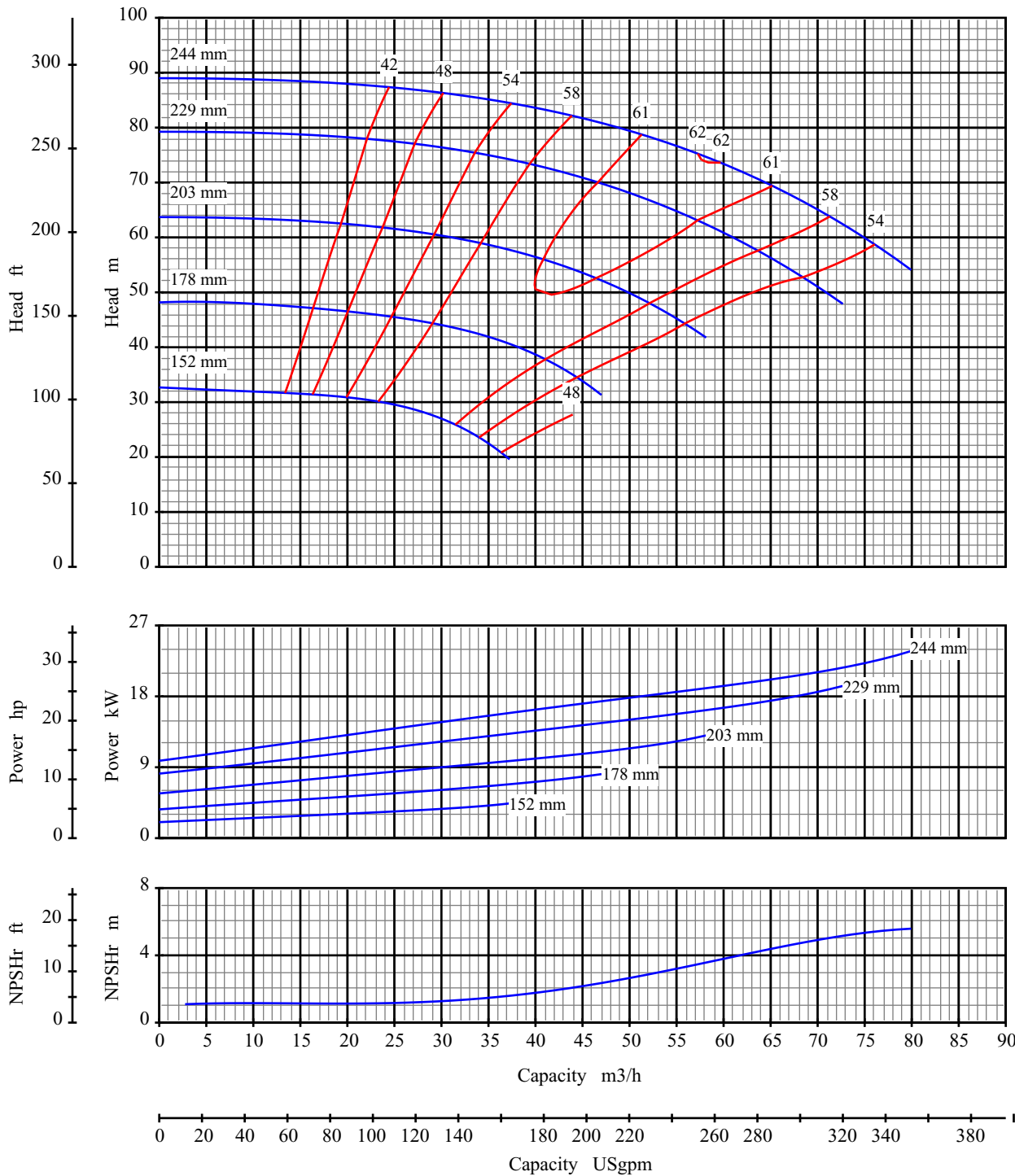
Pump Size: 1x2 10

Speed: 960 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18161V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 40x80 250

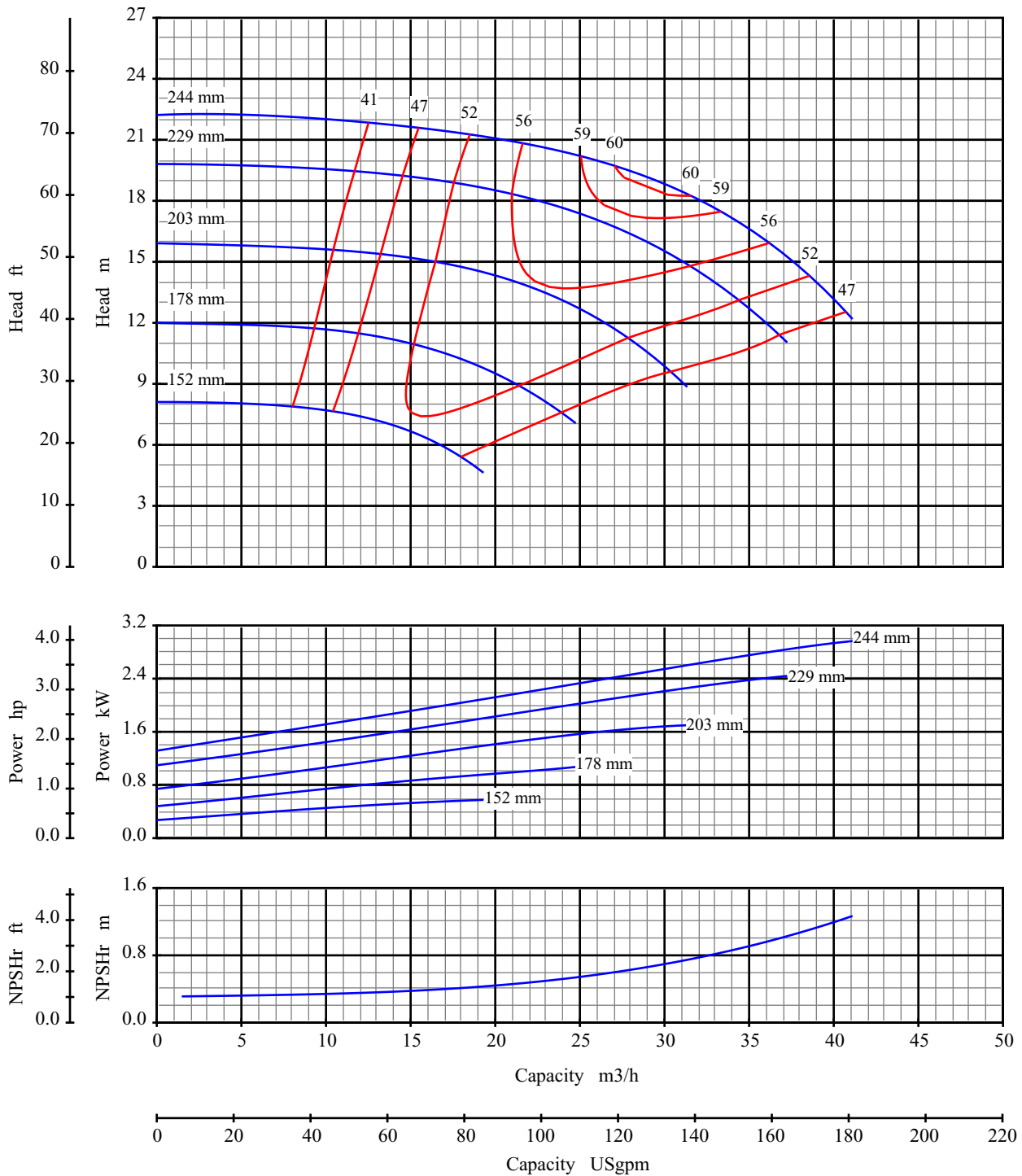
Pump Size: 1.5x3 10

Speed: 2900 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18163V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 40x80 250

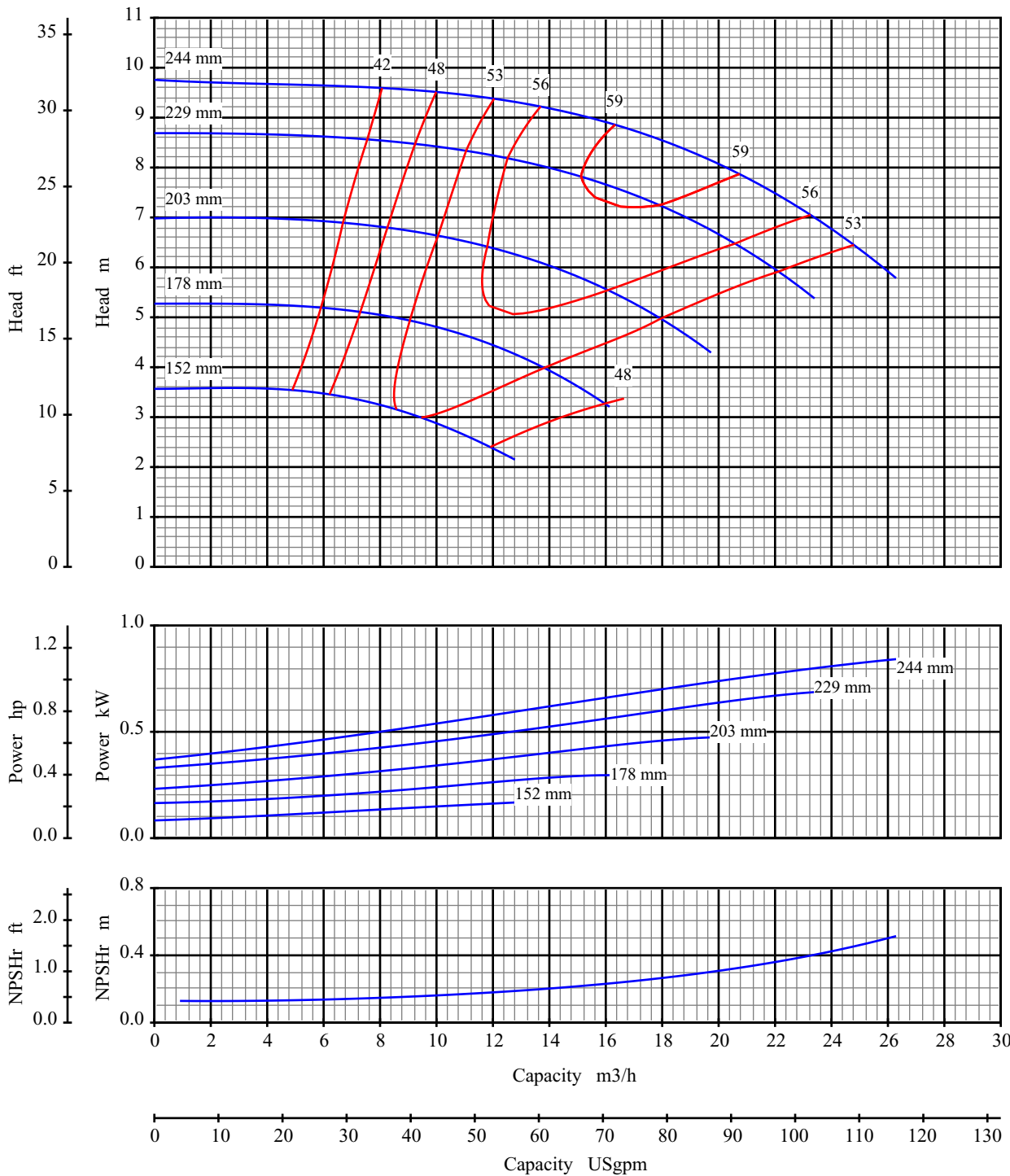
Pump Size: 1.5x3 10

Speed: 1450 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18165V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 40x80 250

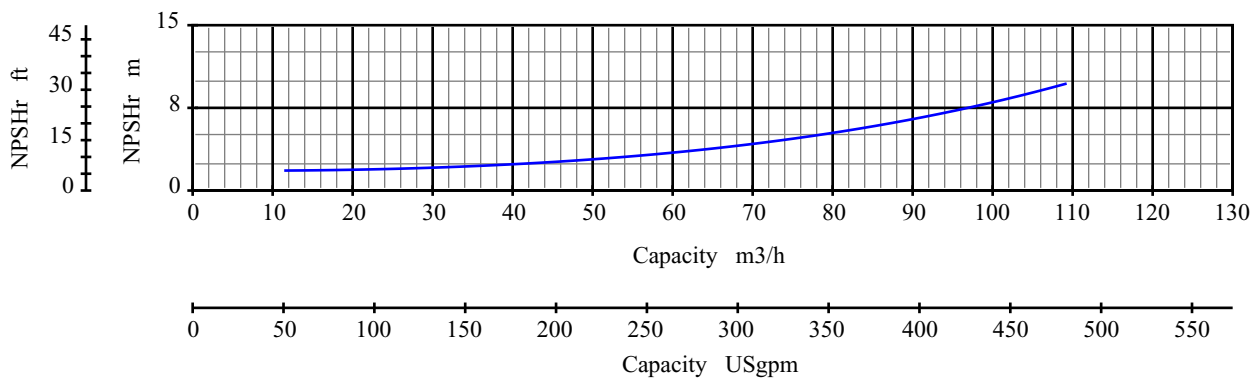
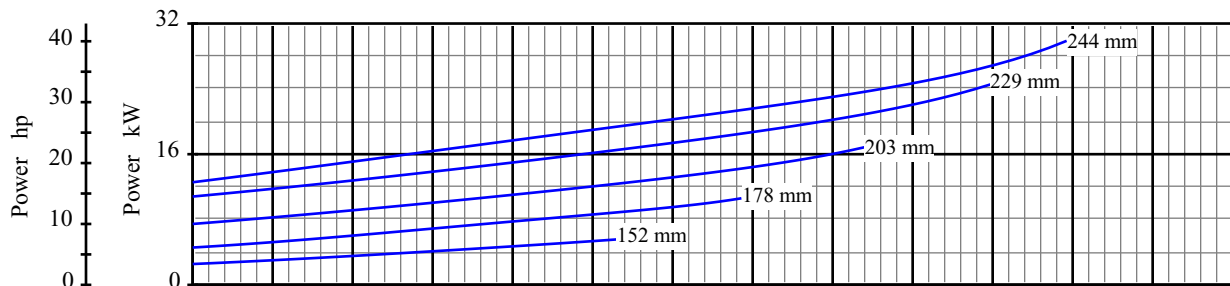
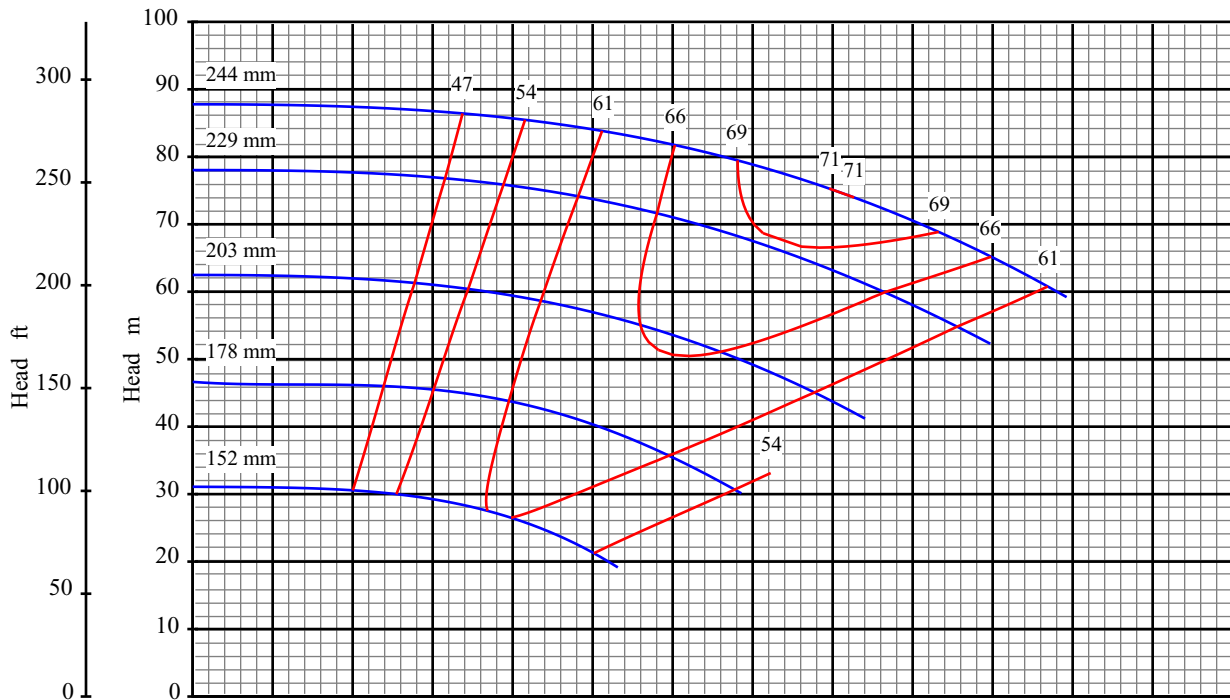
Pump Size: 1.5x3 10

Speed: 960 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18167V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 50x80 250

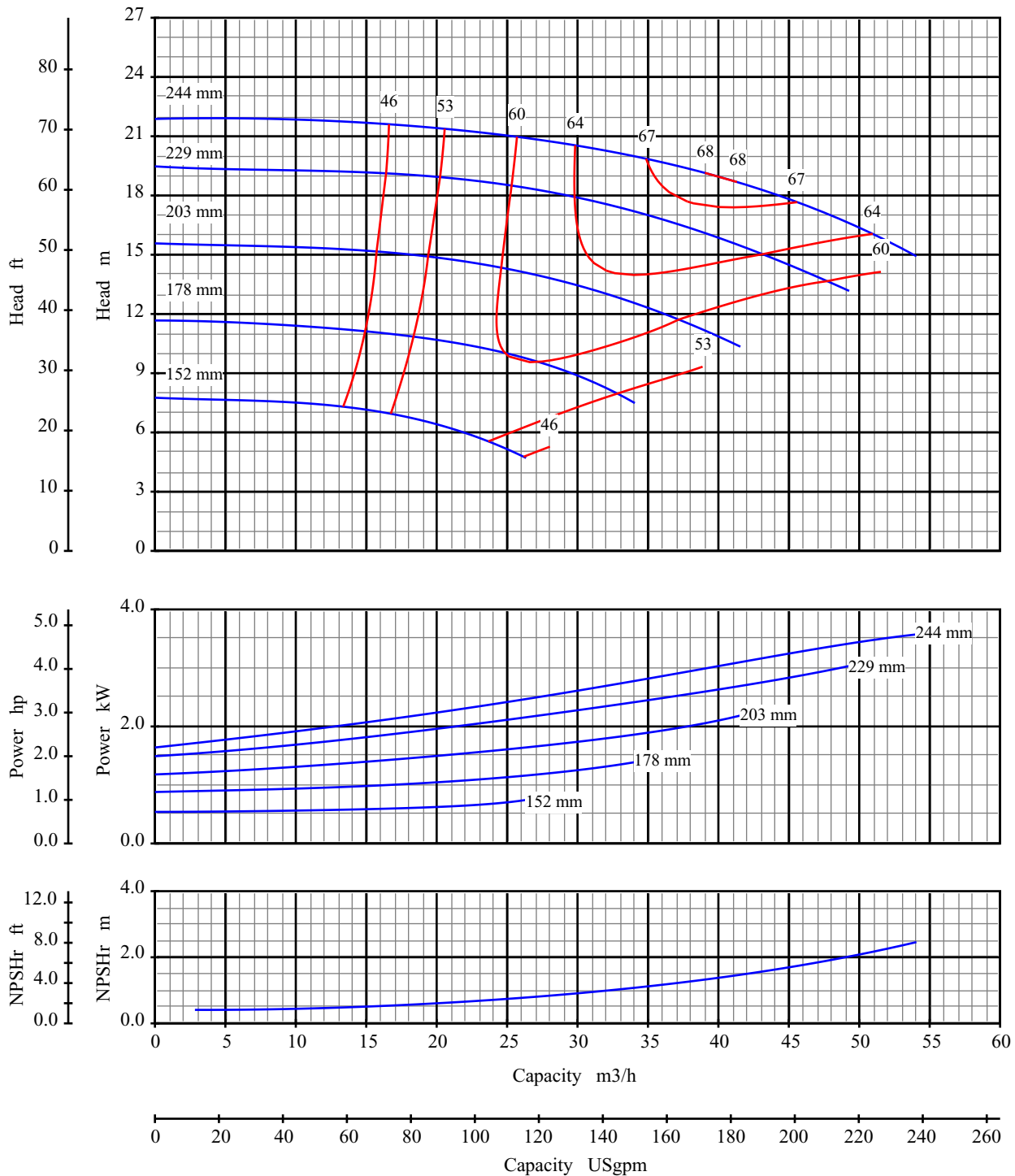
Pump Size: 2x3 10

Speed: 2900 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18169V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 50x80 250

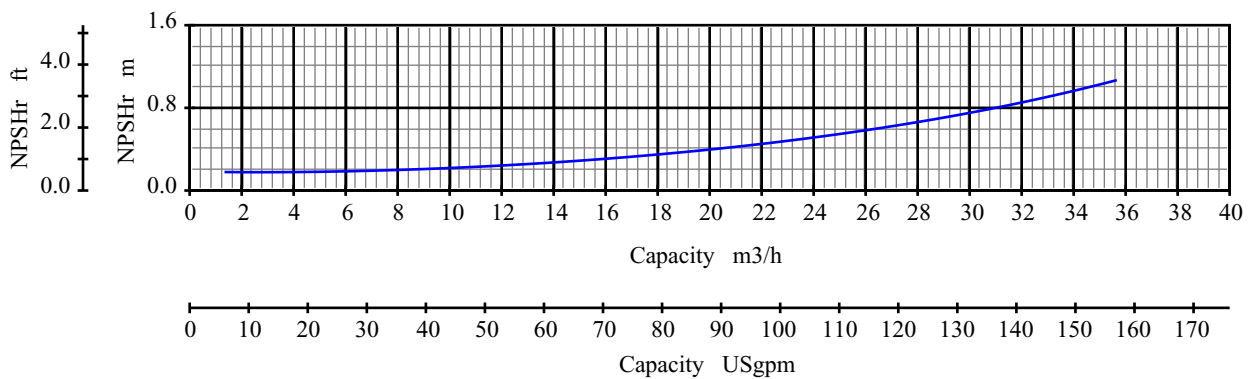
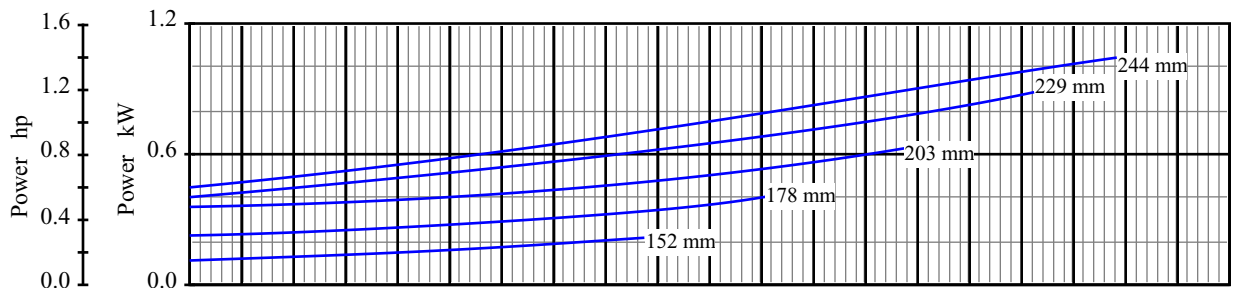
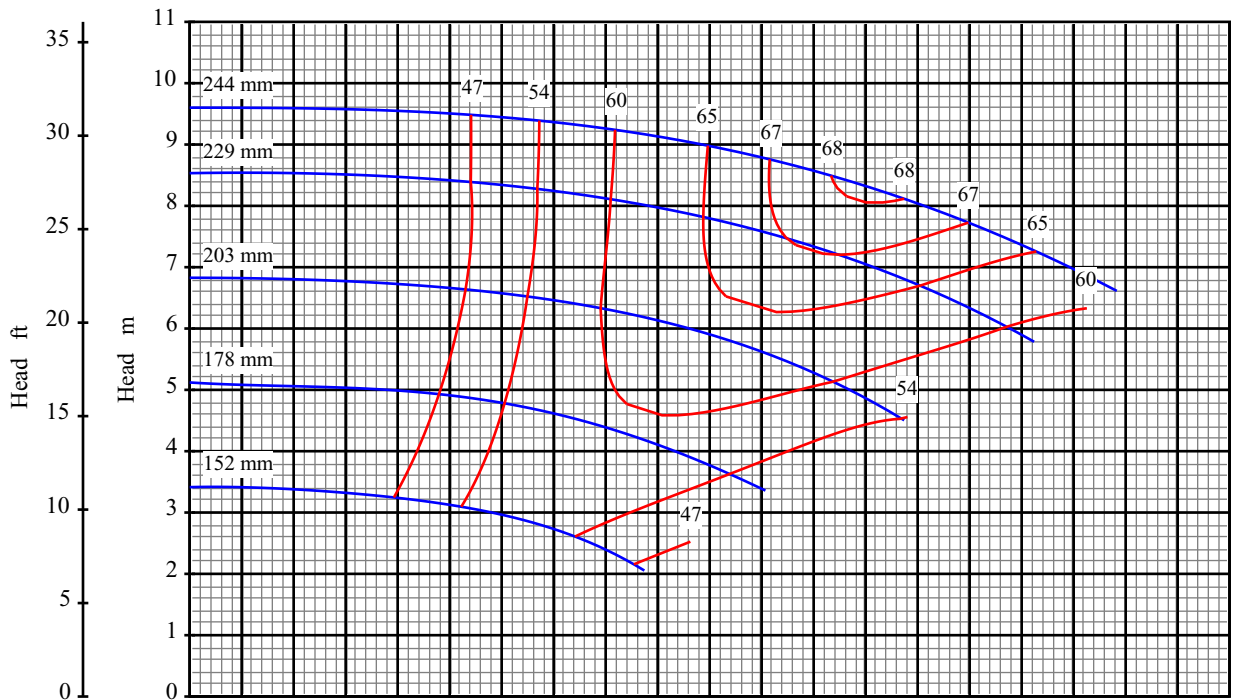
Pump Size: 2x3 10

Speed: 1450 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18171V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 50x80 250

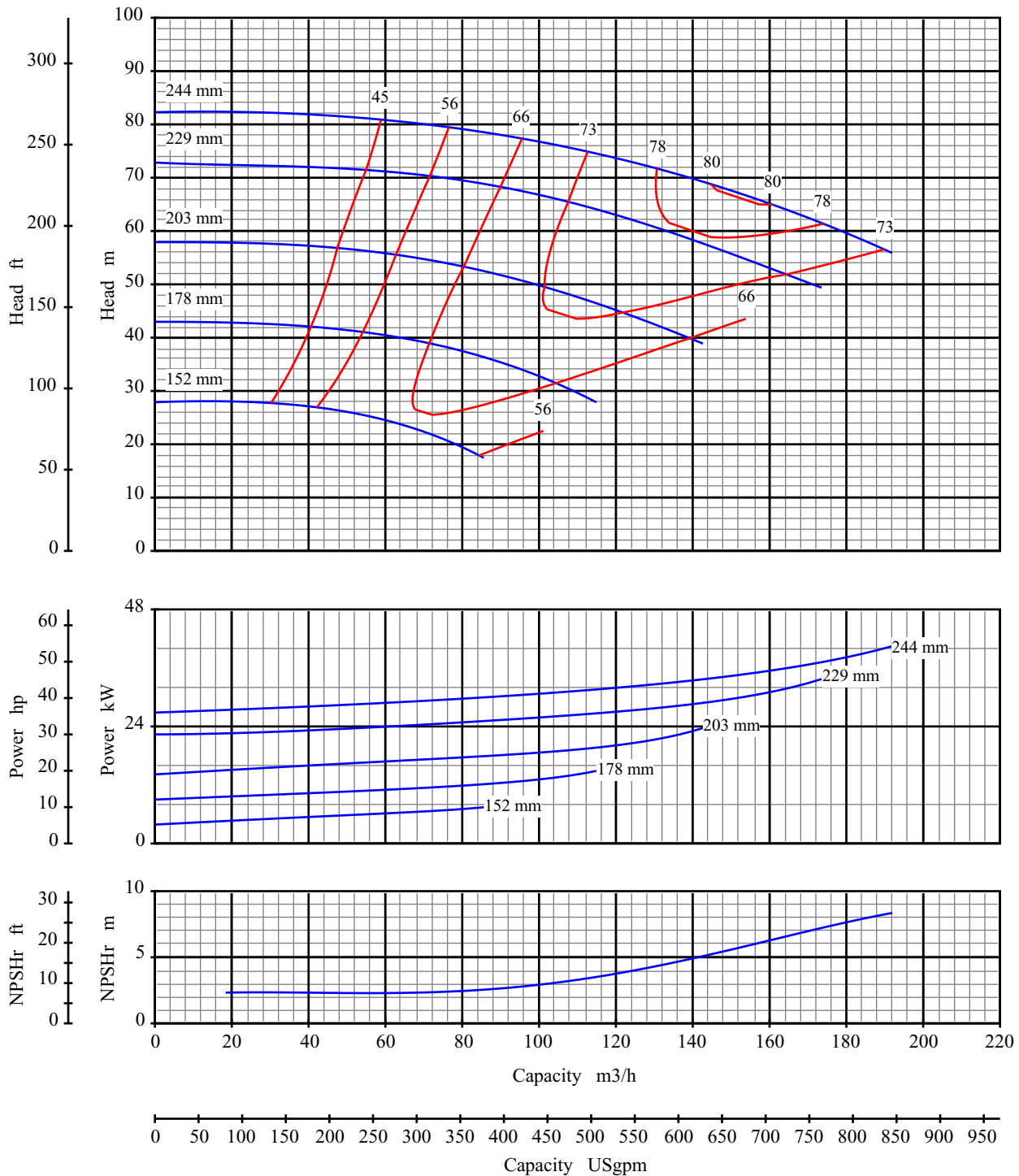
Pump Size: 2x3 10

Speed: 960 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18173V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 80x100 250

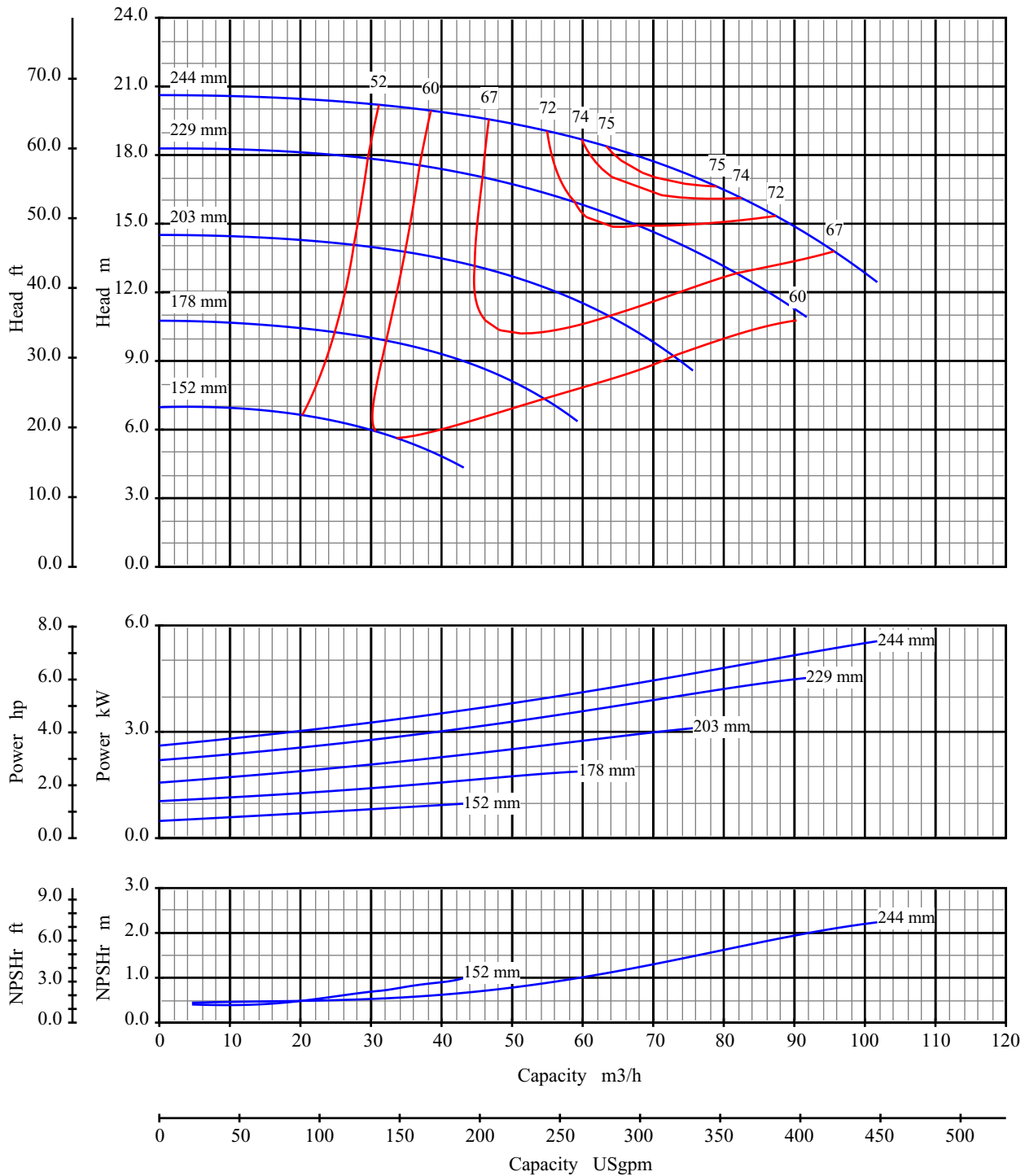
Pump Size: 3x4 10

Speed: 2900 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18175V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 80x100 250

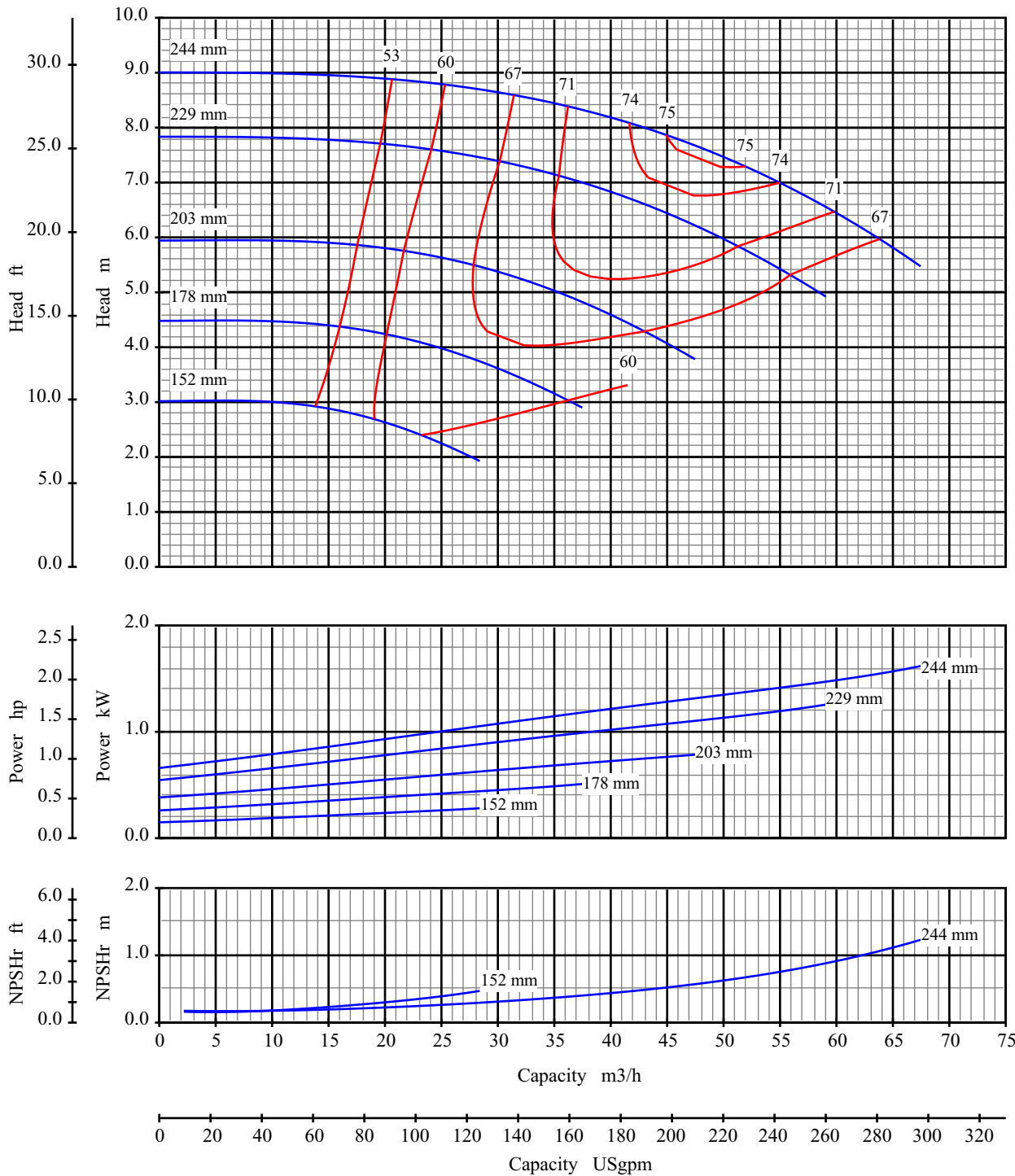
Pump Size: 3x4 10

Speed: 1450 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18177V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 80x100 250

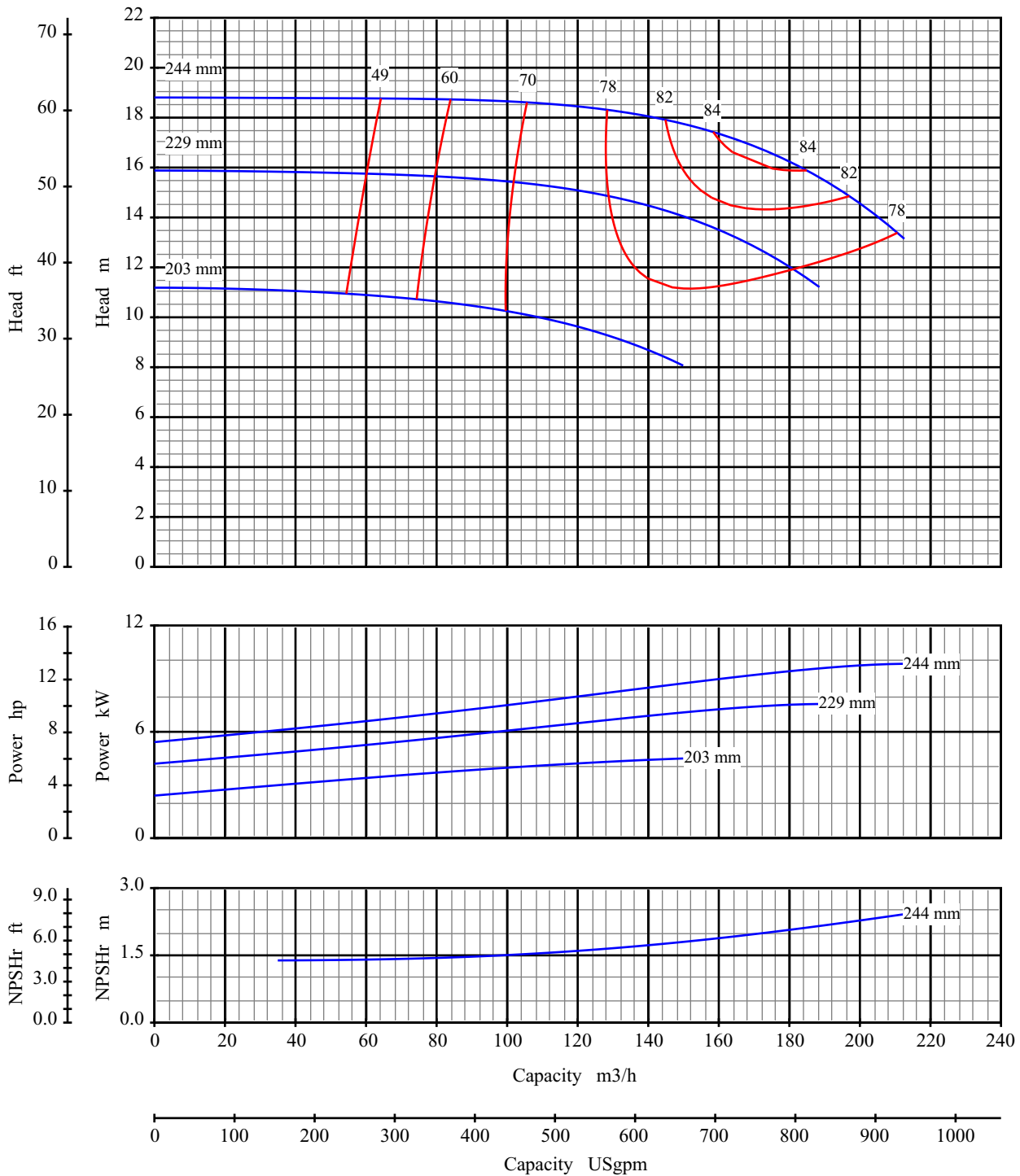
Pump Size: 3x4 10

Speed: 960 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18181V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 100x150 250

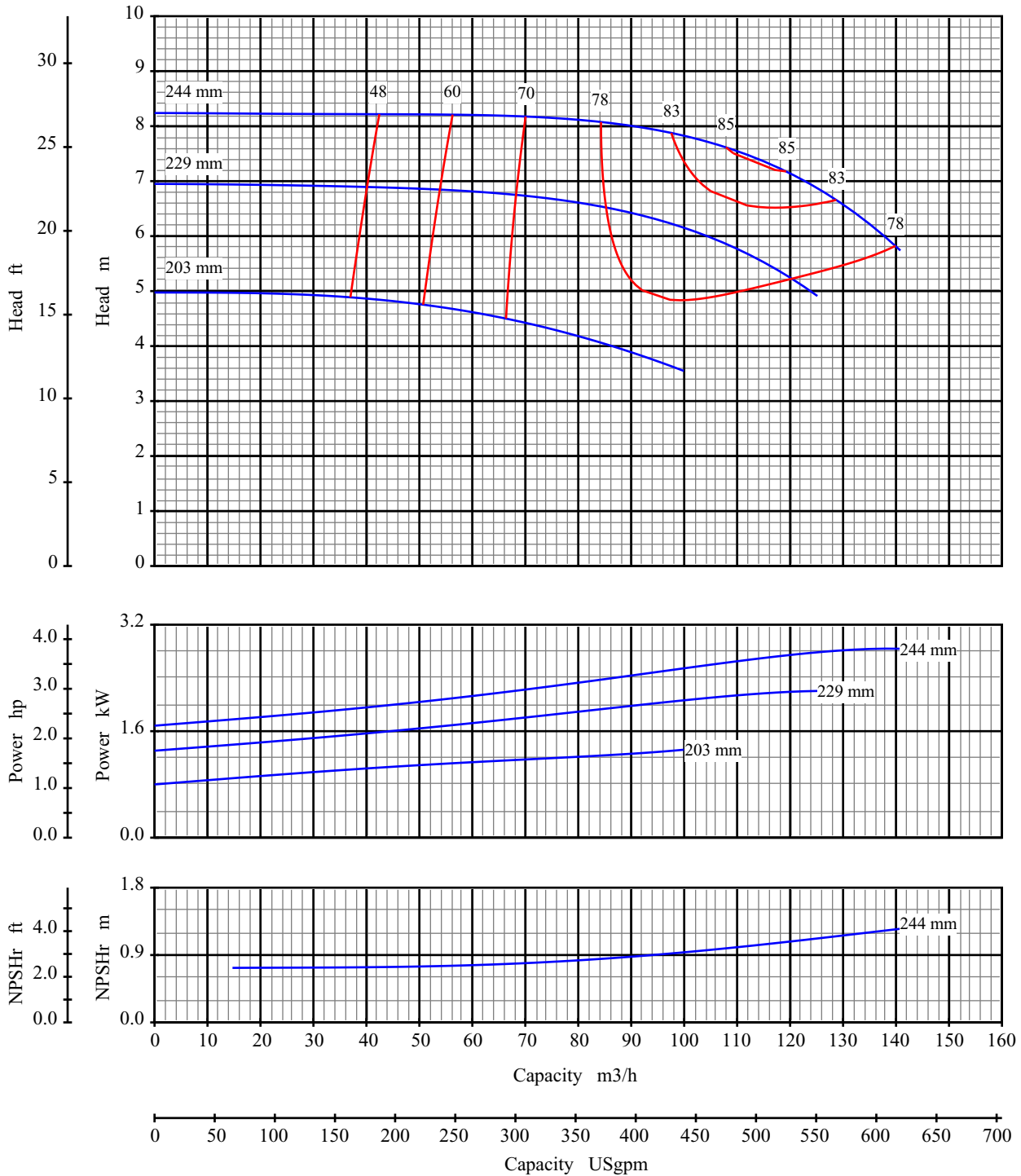
Pump Size: 4x6 10

Speed: 1450 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18183V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 100x150 250

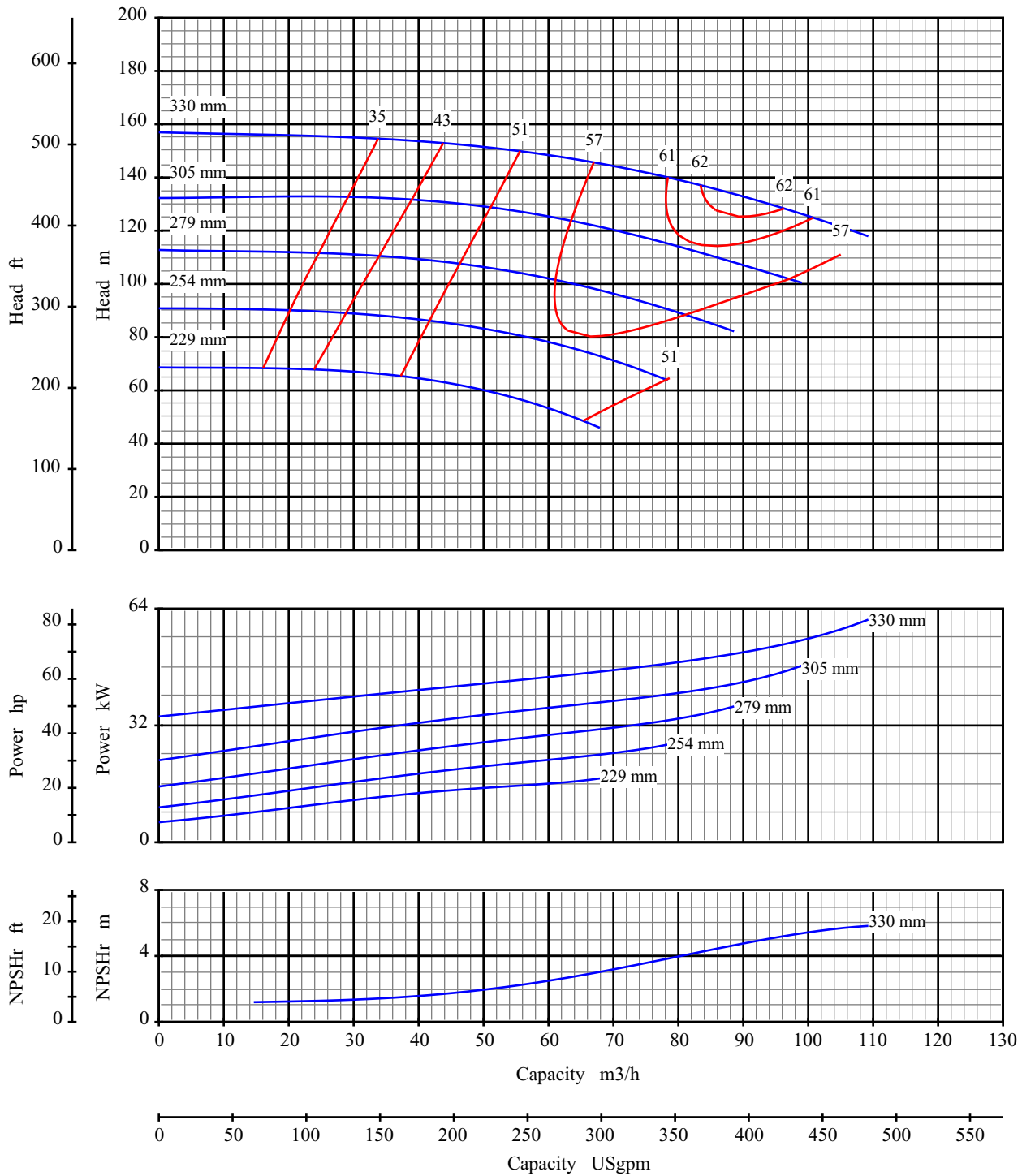
Pump Size: 4x6 10

Speed: 960 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18185V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 40x80 330

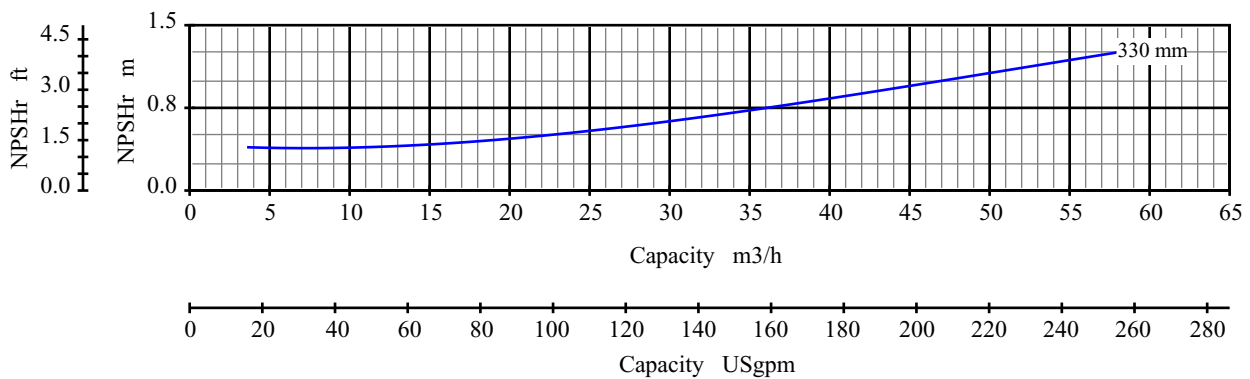
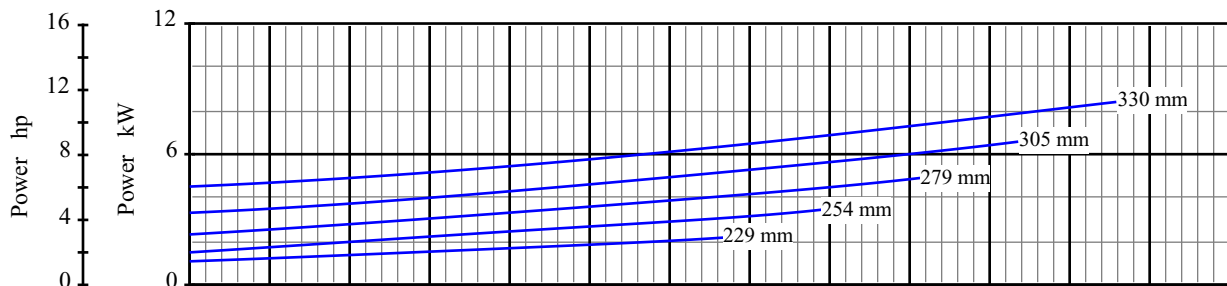
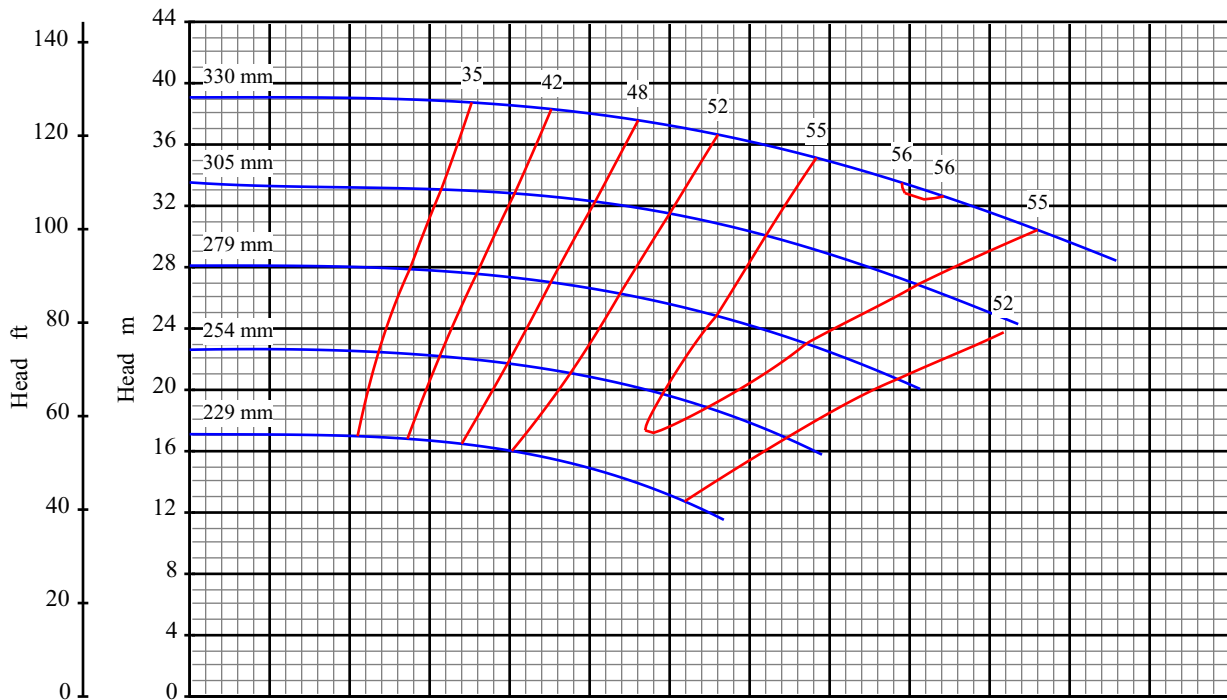
Pump Size: 1.5x3 13

Speed: 2900 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18187V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 40x80 330

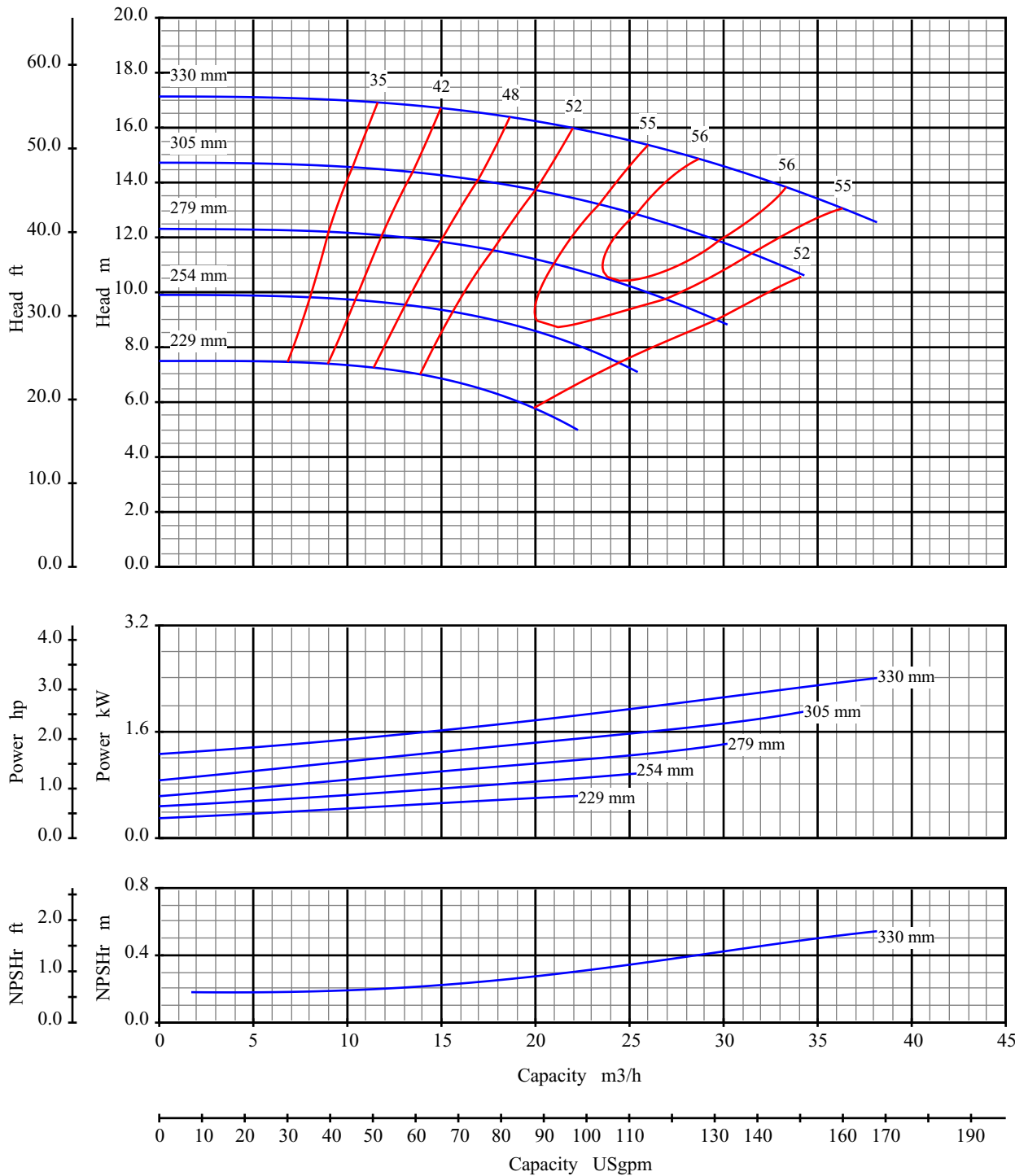
Pump Size: 1.5x3 13

Speed: 1450 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18189V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 40x80 330

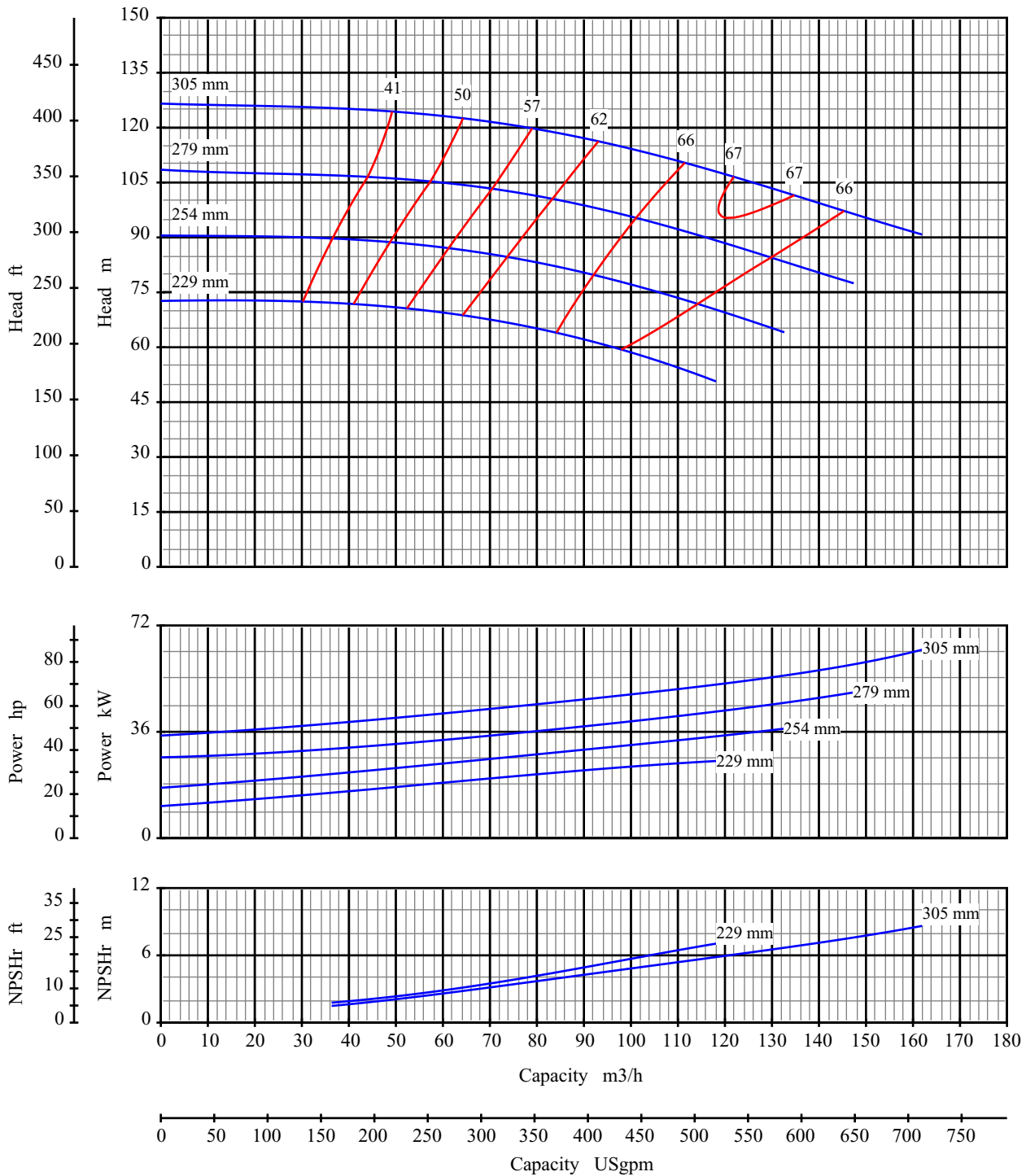
Pump Size: 1.5x3 13

Speed: 960 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18191V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 50x80 330

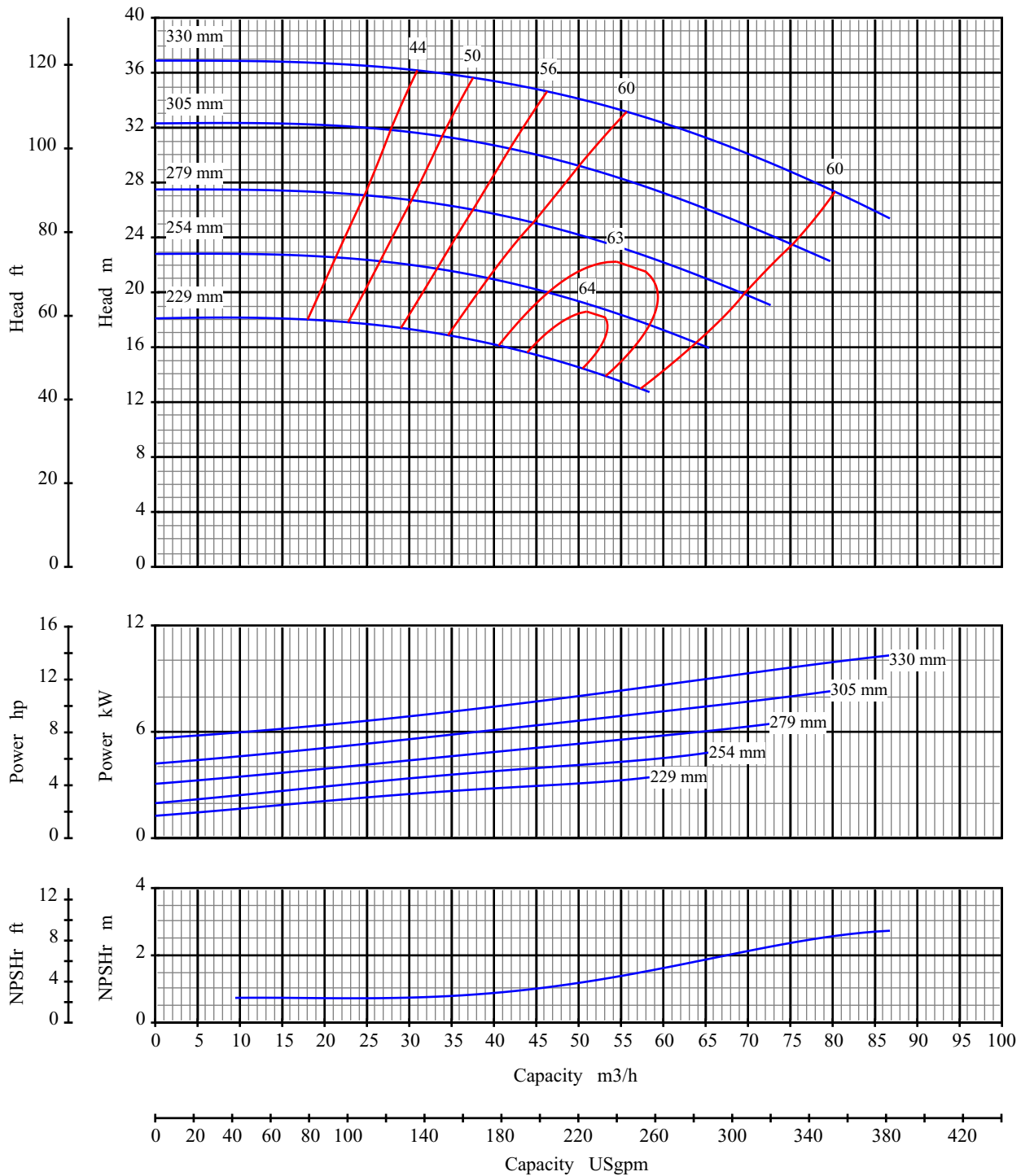
Pump Size: 2x3 13

Speed: 2900 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18193V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 50x80 330

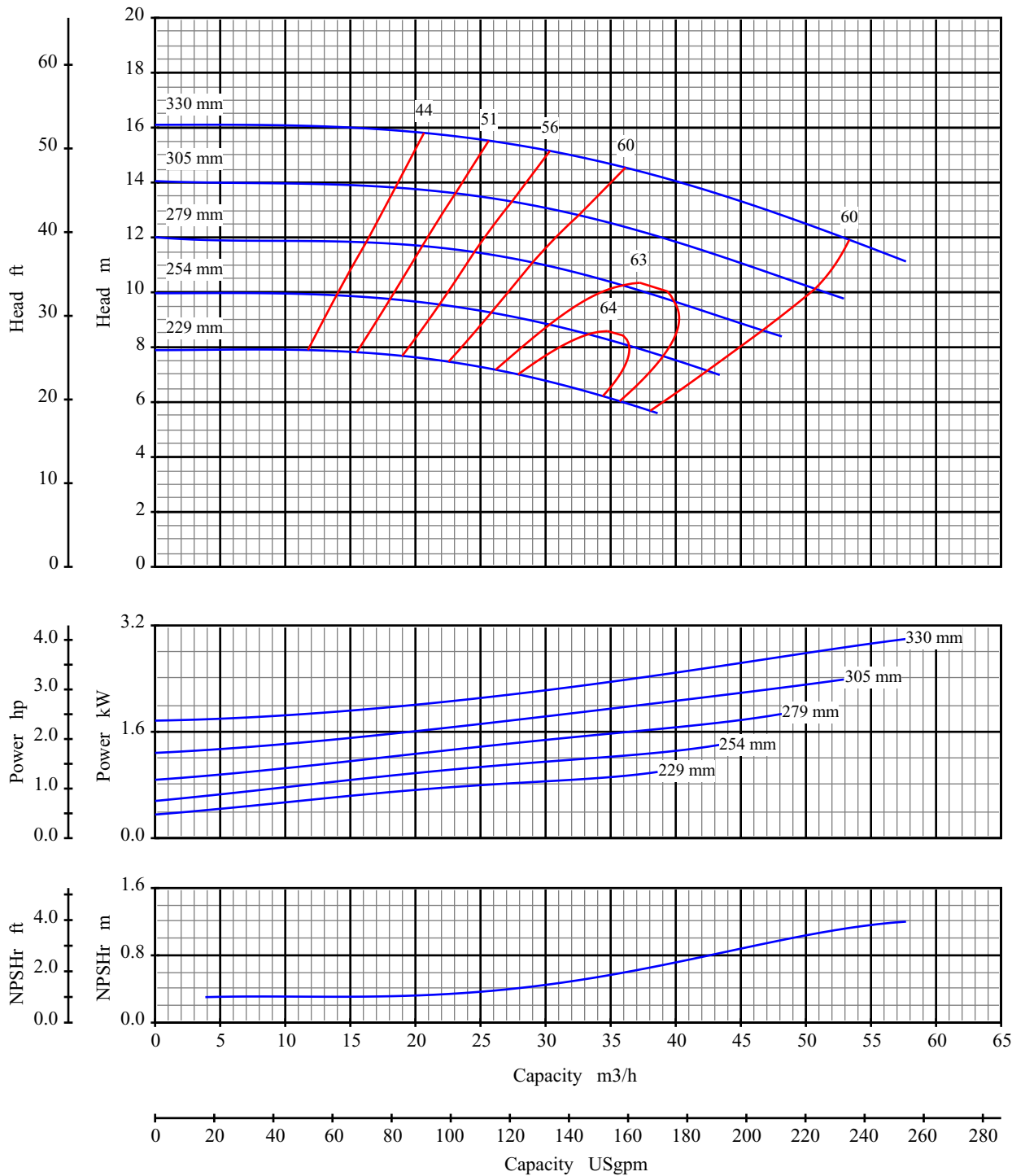
Pump Size: 2x3 13

Speed: 1450 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18195V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 50x80 330

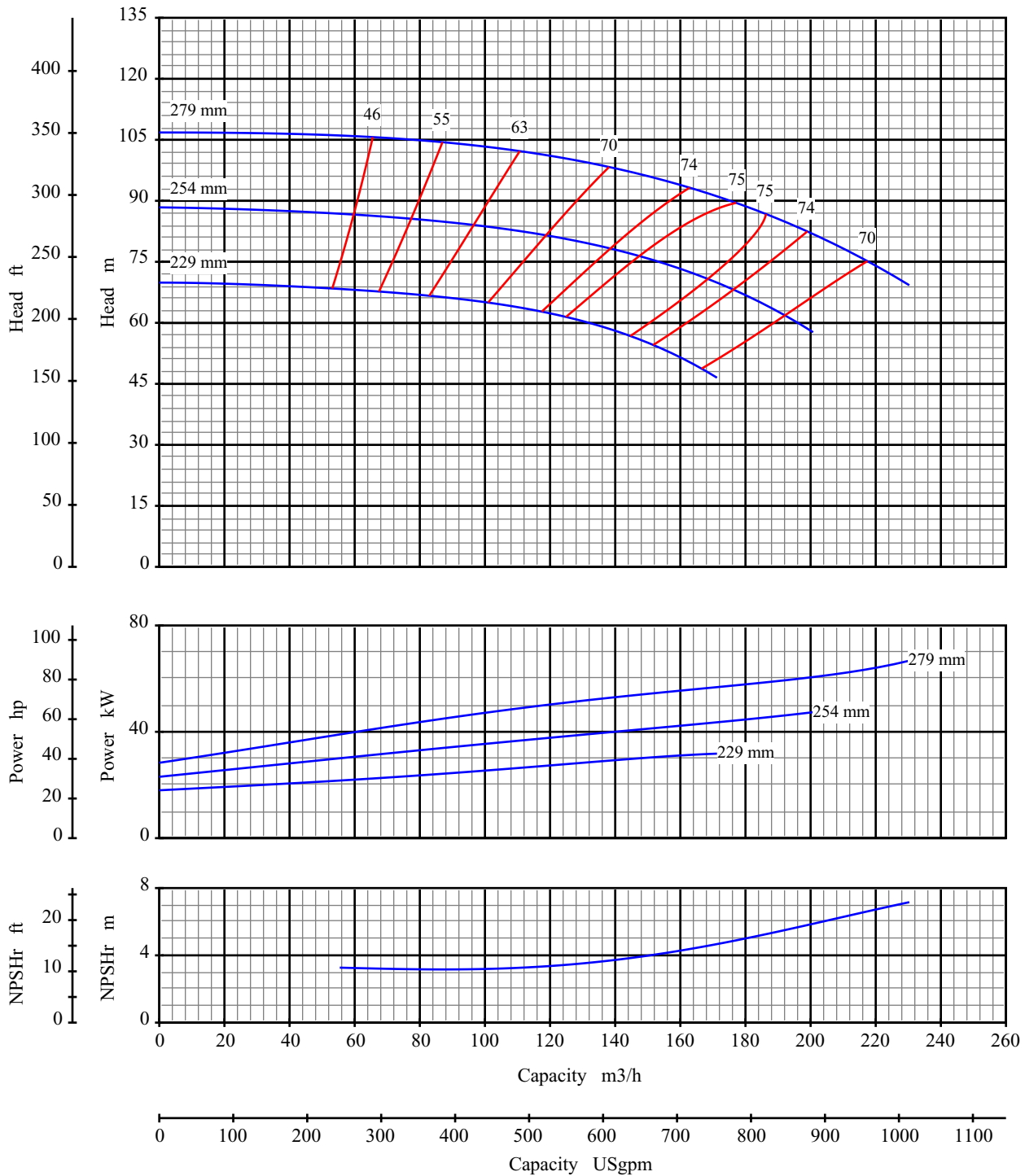
Pump Size: 2x3 13

Speed: 960 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18197V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 50x80 330

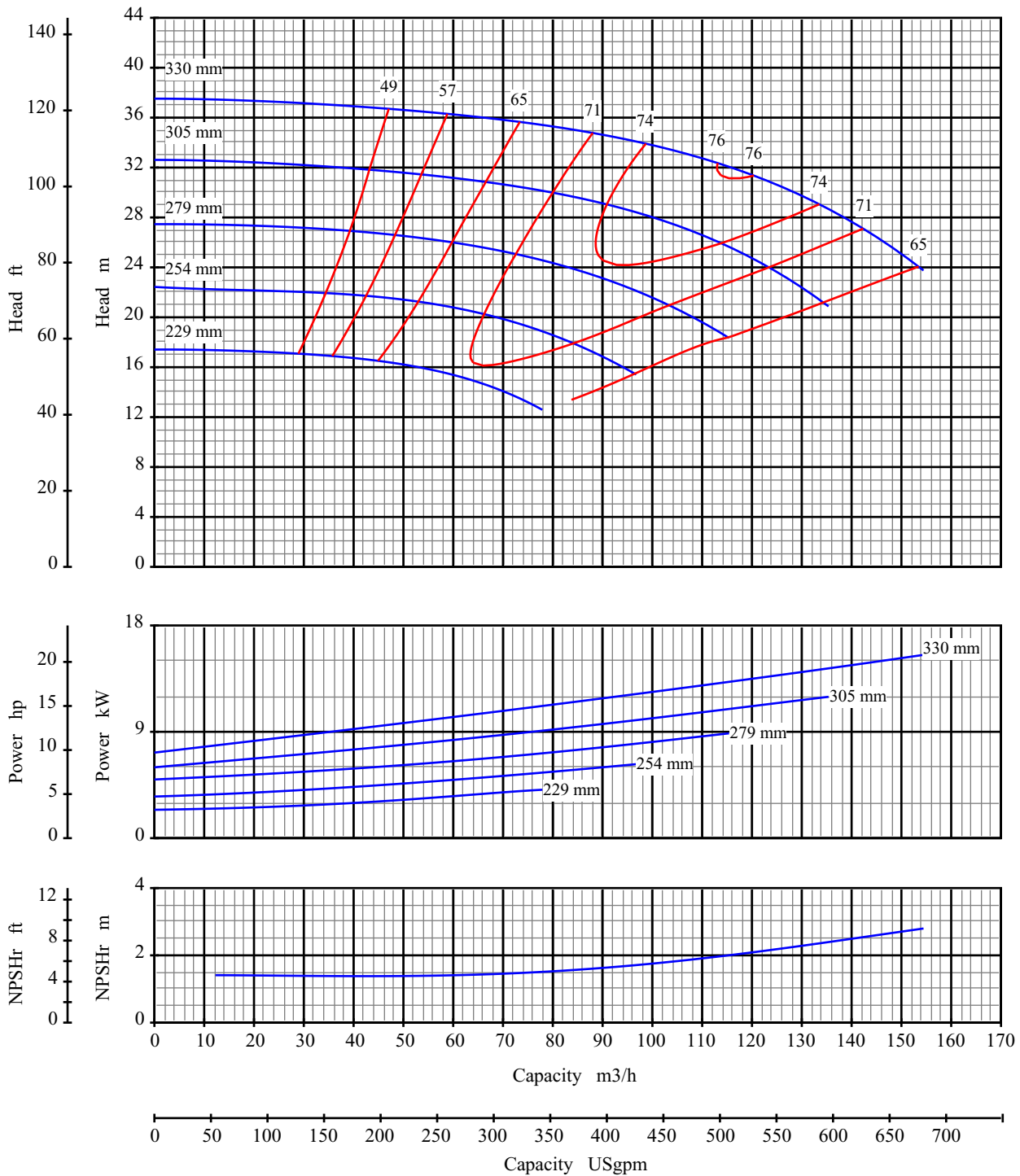
Pump Size: 2x3 13

Speed: 2900 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18199V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 80x100 330

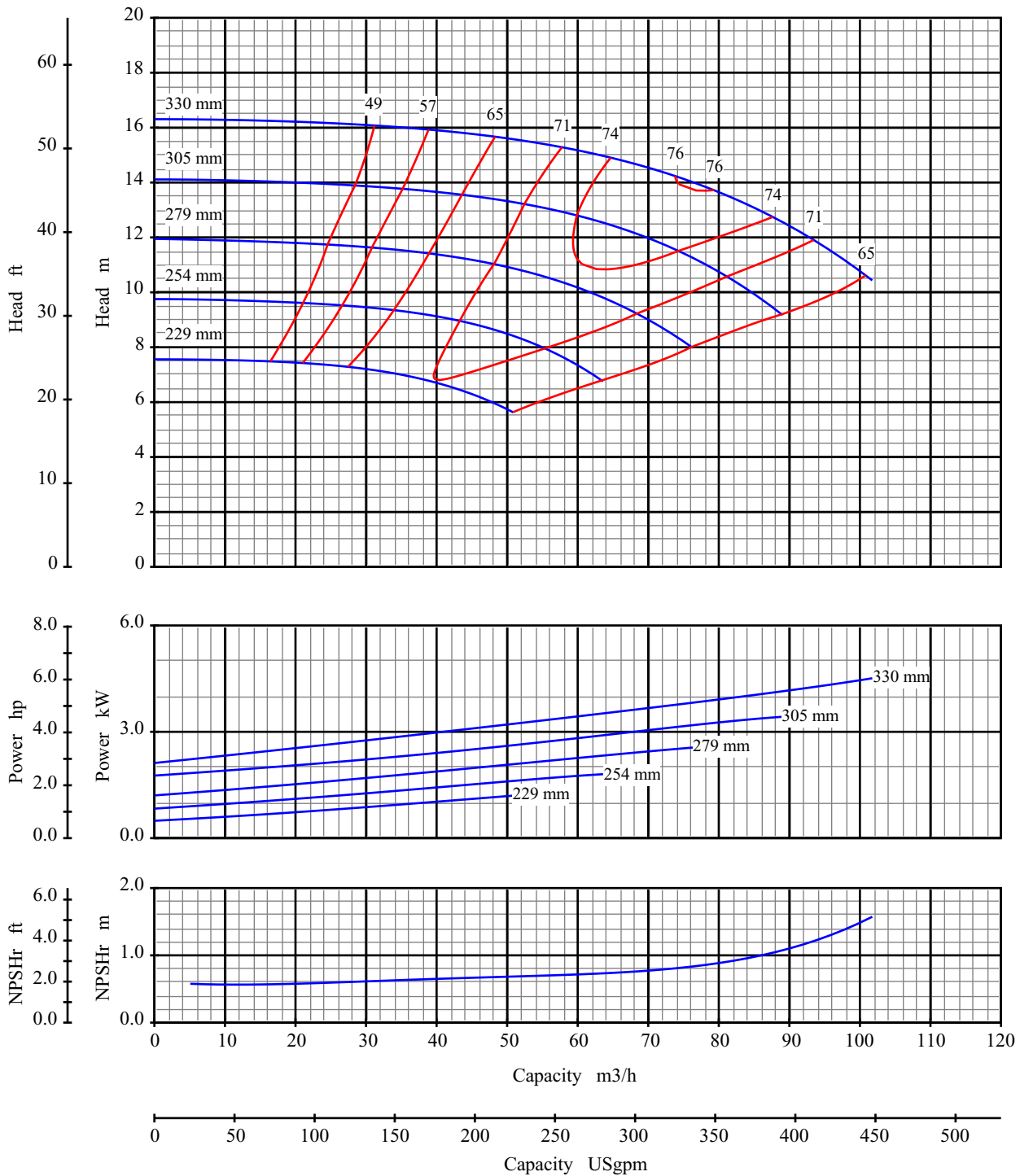
Pump Size: 3x4 13

Speed: 1450 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18201V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 80x100 330

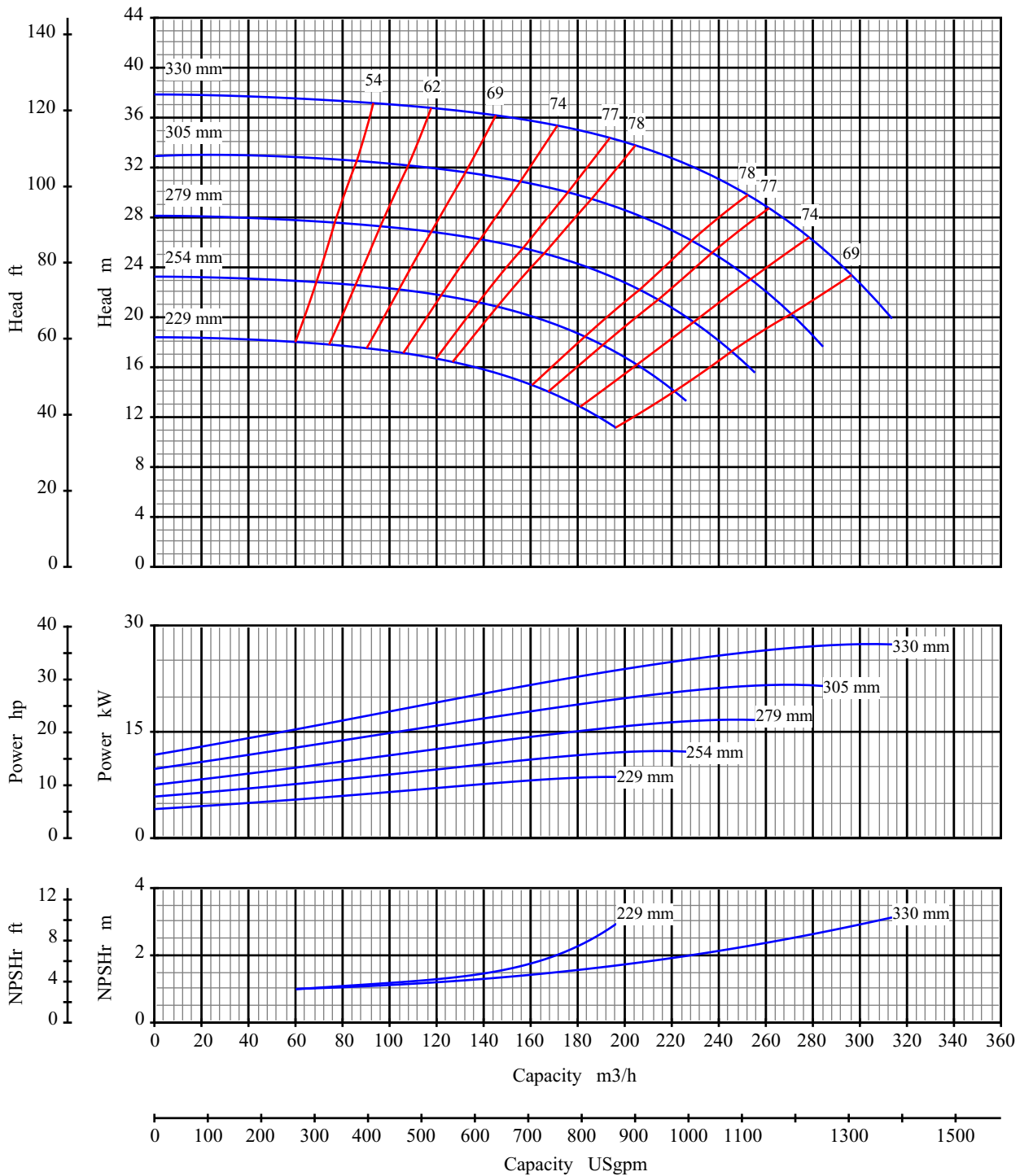
Pump Size: 3x4 13

Speed: 960 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18205V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 100 150 330

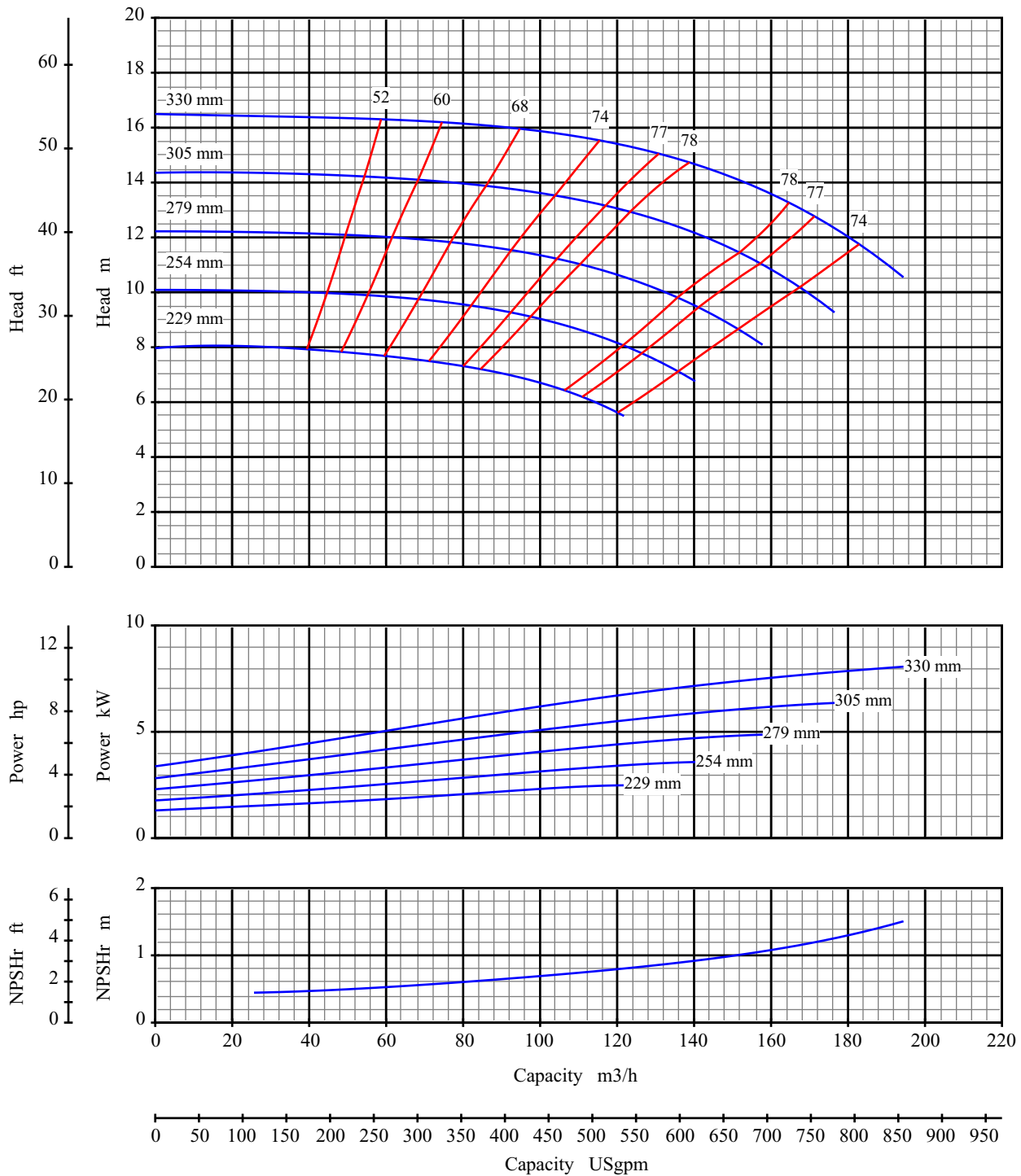
Pump Size: 4x6 13

Speed: 1450 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18207V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 100 150 330

Pump Size: 4x6 13

Speed: 960 rpm

Open Impeller

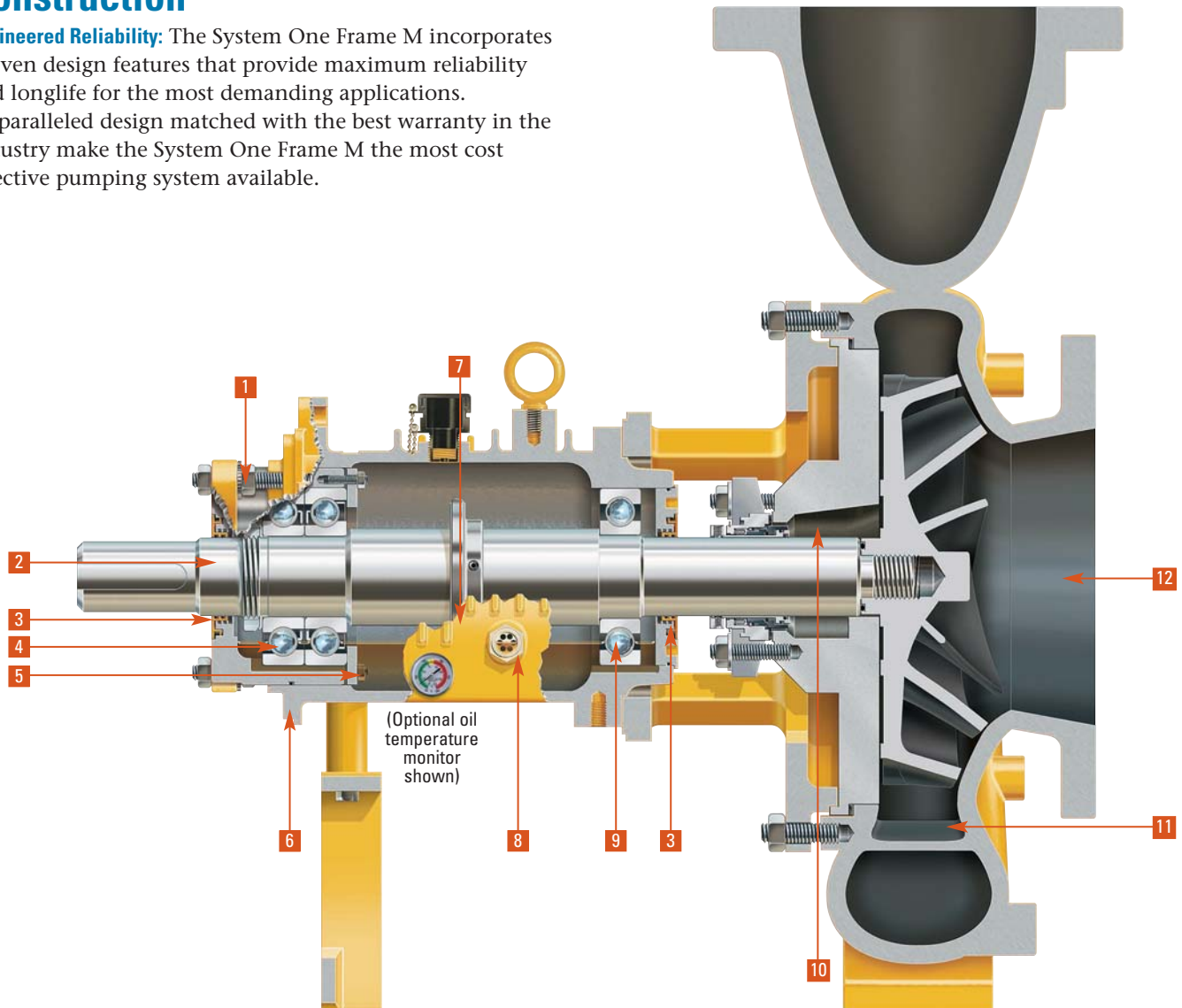
Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Construction

Engineered Reliability: The System One Frame M incorporates proven design features that provide maximum reliability and longlife for the most demanding applications. Unparalleled design matched with the best warranty in the industry make the System One Frame M the most cost effective pumping system available.



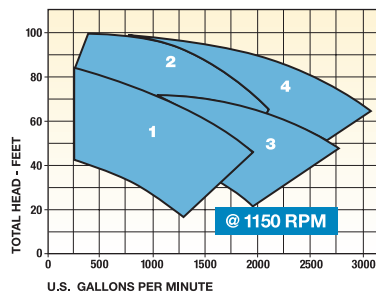
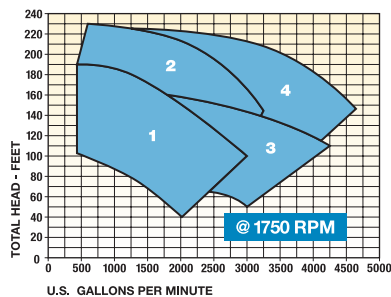
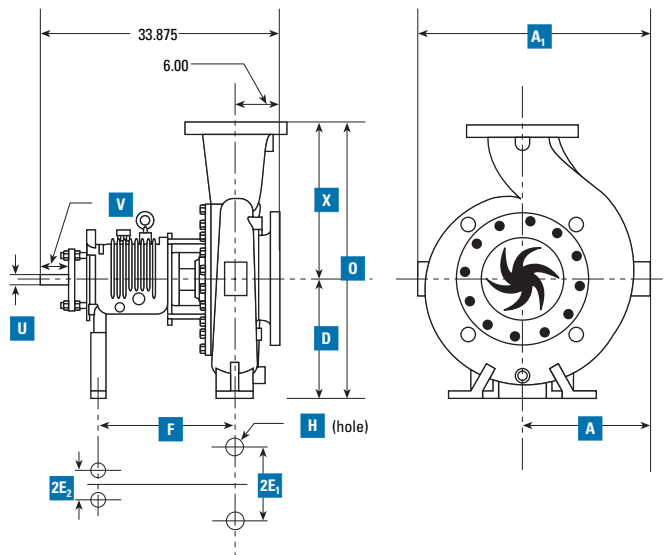
- 1** Patented micrometer adjustment nuts (pat. #4,439,096) fine tune impeller setting for maximum efficiency.
- 2** Solid shaft (no sleeve) with L^3/D^4 ratio of 19 is the lowest for any process pump in this size range.
- 3** Patented non-wearing labyrinth seals (pat. #4,572,517) provide unparalleled protection of oil and bearings.
- 4** Ultra-high capacity angular contact thrust bearings (7314 pr.) provide shaft rigidity and eliminate axial movement even during off BEP operation.
- 5** Bolted retainer cover provides positive clamping of thrust bearing and prevents axial shaft movement.
- 6** Rabbet for C-Frame (NEMA) or D-Flange (IEC) motor adaptor provides for automatic mechanical motor alignment without special tools or excessive labor. Accepts motor frame sizes up to 449TSC or 315L.

- 7** Cast-in cooling fins and large oil reservoir enhance heat transfer and promote oil cooling. Finned cooling coil available for high temperature applications.
- 8** Large oil sight glass enables instant analysis of oil level and condition.
- 9** Oversized radial bearing (6314) provides greater load carrying capabilities and extended bearing life in even the harshest conditions.
- 10** Large volume seal chamber provides proper cooling and lubrication to seal faces. Available in straight and taper bore to meet all applications. Accepts all standard mechanical seals. Throat bushing options include carbon, polyurethane or SpiralTrac¹.
- 11** Double volute construction reduces hydraulic forces within the casing thus lowering radial load on the shaft and bearings.
- 12** High efficiency wet ends help reduce energy costs.

1 SpiralTrac is a registered trademark of the manufacturer, EnviroSeal Engineering Products Ltd., Waverly, Nova Scotia.



Frame M Pump (ASME/ANSI)

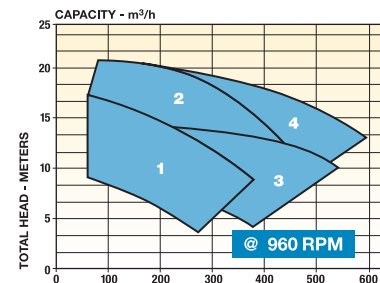
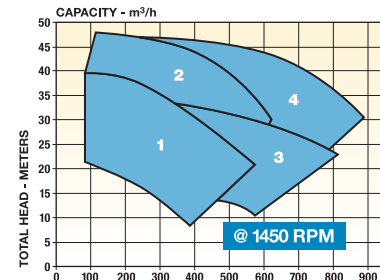
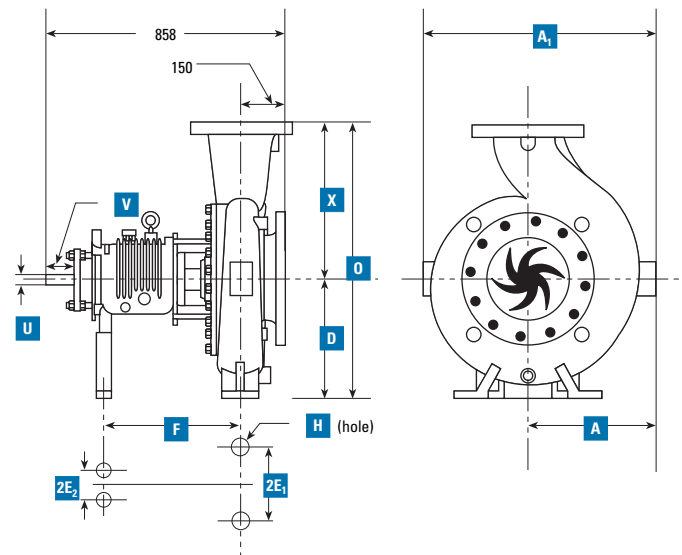


Frame M Pump – ASME/ANSI

| Pump Size | A ₁ | A | D | 2E ₁ | 2E ₂ | F | H | O | U | V | X |
|-------------|----------------|-------|-------|-----------------|-----------------|-------|-------|-------|-------|------|----|
| 1 6 x 8-13 | 25.50 | 14.00 | 14.50 | 16.00 | 9.00 | 18.75 | 0.875 | 30.50 | 2.375 | 4.00 | 16 |
| 2 6 x 8-15 | 27.25 | 14.75 | 14.50 | 16.00 | 9.00 | 18.75 | 0.875 | 32.50 | 2.375 | 4.00 | 18 |
| 3 8 x 10-13 | 27.25 | 15.25 | 14.50 | 16.00 | 9.00 | 18.75 | 0.875 | 32.50 | 2.375 | 4.00 | 18 |
| 4 8 x 10-15 | 28.75 | 15.75 | 14.50 | 16.00 | 9.00 | 18.75 | 0.875 | 33.50 | 2.375 | 4.00 | 19 |

All dimensions are in inches.

Frame M Pump (Metric)



Frame M Pump – Metric

| Pump Size | A ₁ | A | D | 2E ₁ | 2E ₂ | F | H | O | U | V | X |
|-----------------|----------------|-----|-----|-----------------|-----------------|-----|----|-----|----|-----|-----|
| 1 150 x 200-330 | 648 | 356 | 368 | 406 | 229 | 476 | 22 | 775 | 60 | 102 | 406 |
| 2 150 x 200-380 | 692 | 375 | 368 | 406 | 229 | 476 | 22 | 826 | 60 | 102 | 457 |
| 3 200 x 250-330 | 692 | 387 | 368 | 406 | 229 | 476 | 22 | 826 | 60 | 102 | 457 |
| 4 200 x 250-330 | 730 | 400 | 368 | 406 | 229 | 476 | 22 | 851 | 60 | 102 | 483 |

All dimensions are in millimeters.

- Optional centerline mount for high temperature applications
- Optional left or right side discharge



Inches (mm)

| | 6 x 8-13 | 6 x 8-15 | 8 x 10-13 | 8 x 10-15 |
|---------------------------------|---|-------------|---------------------|-------------|
| Shaft | | | | |
| L3/D4 Ratio | 17.98 (.87) | 17.22 (.83) | 19.85 (.96) | 19.55 (.94) |
| Diameter at Impeller | 1.50-8UN (38) | | | |
| Diameter at Seal | 2.625 (66.7) | | | |
| Diameter Between Bearings | 3.25 (82.6) | | | |
| Diameter at Coupling | 2.375 (60.3) | | | |
| Bearings | | | | |
| Thrust | 7314 BEGAY | | | |
| Thrust Option | N/A | | | |
| Radial | 6314 C3 | | | |
| Bearing Span | 10.53 (267) | | | |
| Shaft Overhang | 9.49 (241) | 9.35 (237) | 9.80 (249) | 9.75 (248) |
| Seal Chamber | Standard | | Taper | |
| Seal Bore Diameter (nose) | 3.627 (92) | | 3.627 (92) | |
| Inside Bore | 4.125 (105) | | 4.125 Minimum (105) | |
| Depth | 2.56 (65) | | 3.56 (90) | |
| Back Cover/Shaft Clearance | .02 (Radial) (.50) | | .75 (Radial) (19) | |
| Gland Bolting | 4X .625-11UNC On 5.75 Bolt Circle Diameter (16 on 146 AC) | | | |
| Distance to Nearest Obstruction | 3.13 (79.5) | | | |
| Open Impeller | | | | |
| Clearance | .06 Total .015 Suction Side (1.5 total 0.4 Suction Side) | | | |
| Eye Area sq. in. (cm²) | 45 (290) | 50 (322) | 60 (387) | 63 (406) |
| Maximum Dia. Solids | 1.00 (25) | 1.13 (29) | 1.50 (38) | 1.19 (30) |
| Number of Vanes | 6 | 6 | 5 | 6 |
| Pumps Weights lbs (kg) | | | | |
| Pump Only | 545 (245) | 618 (278) | 657 (296) | 730 (329) |
| Casing | | | | |
| Type | Double Volute | | | |
| Wall Thickness | 0.75 Minimum (19) | | | |
| Maximum Working Pressure | See Pressure vs. Temperature Limit Chart | | | |
| Test pressure | Class 150 Flanges-250PSIG, Class 300 Flanges-450PSIG | | | |
| Rotating Element | | | | |
| Wk² Dry lbs/ft² (kg-m²) | 3.68 (.154) | 4.9 (.206) | 5.75 (.242) | 7.65 (.321) |
| Wk² Wet lbs/ft² (kg-m²) | 5.19 (.218) | 6.91 (.290) | 8.11 (.341) | 10.8 (.454) |
| Maximum Speed (oil lube) | 4000 RPM | | | |
| Power Limits | | | | |
| HP (KW)/100 RPM 316SS | 14.25 (10.65) | | | |

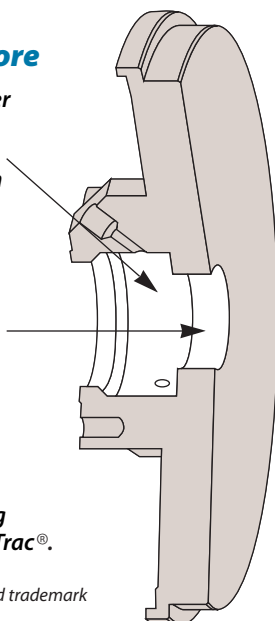
Reference drawings A40210, A40211

Cylindrical Bore

Large seal chamber volume provides optimum volume for seal lubrication and cooling.

Cast restriction bushing reduces fluid exchange between casing and seal chamber and allows maximum cooling of fluid. Other bushing options are available including carbon and SpiralTrac®.

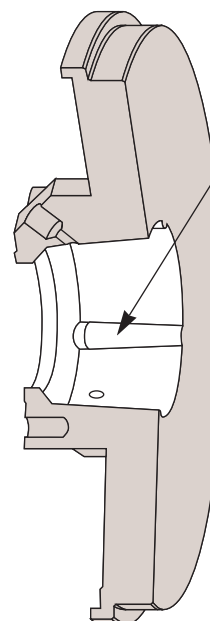
SpiralTrac® is a registered trademark of the manufacturer, EnviroSeal Engineering Products Ltd., Waverly, Nova Scotia.



Two industry-tested seal chamber designs provide the right seal environment for virtually any process application.

Large volume seal chambers accept standard sized glands.

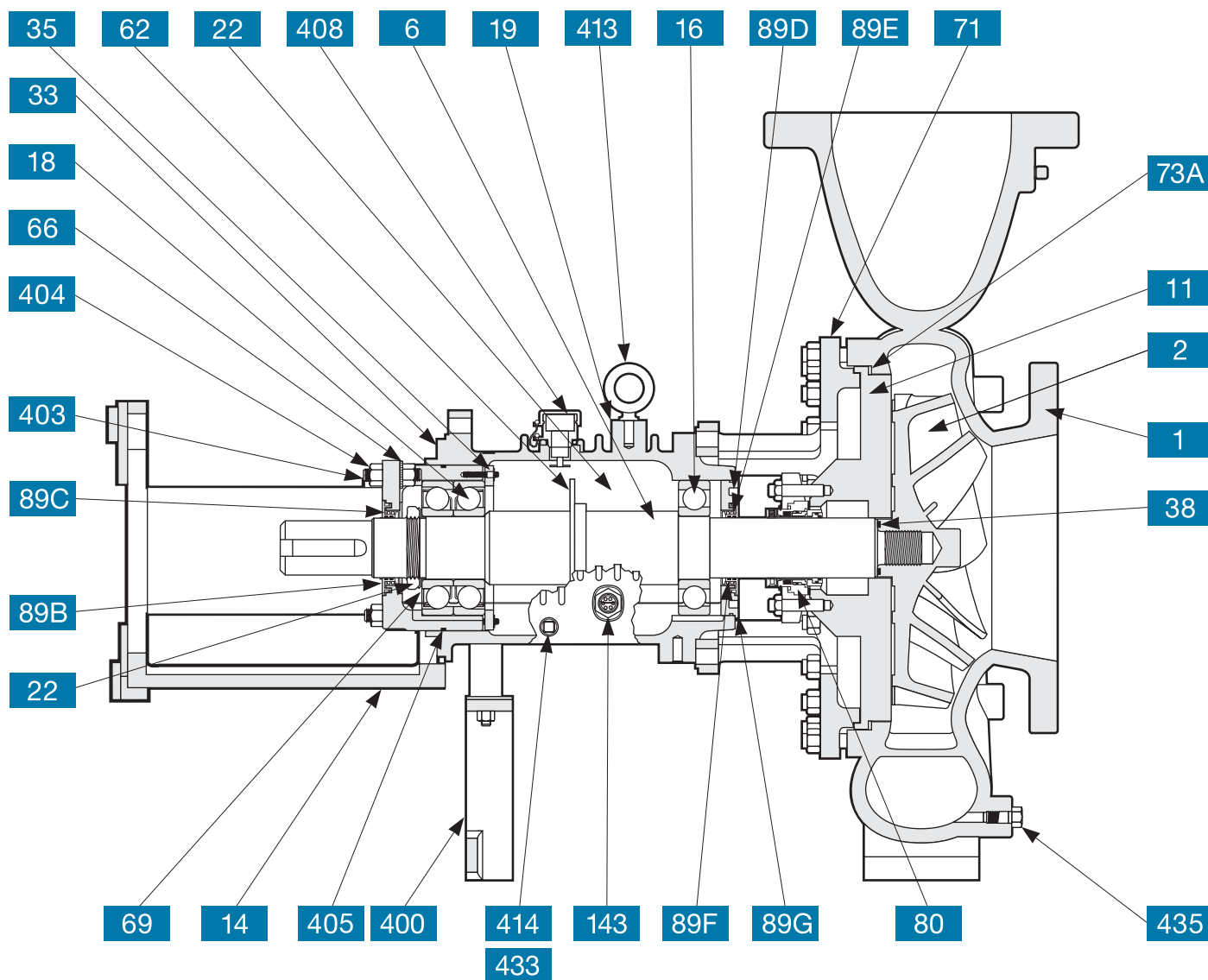
Available seal chamber jackets provide optimum cooling or heating of seal chamber fluid to maximize seal life.



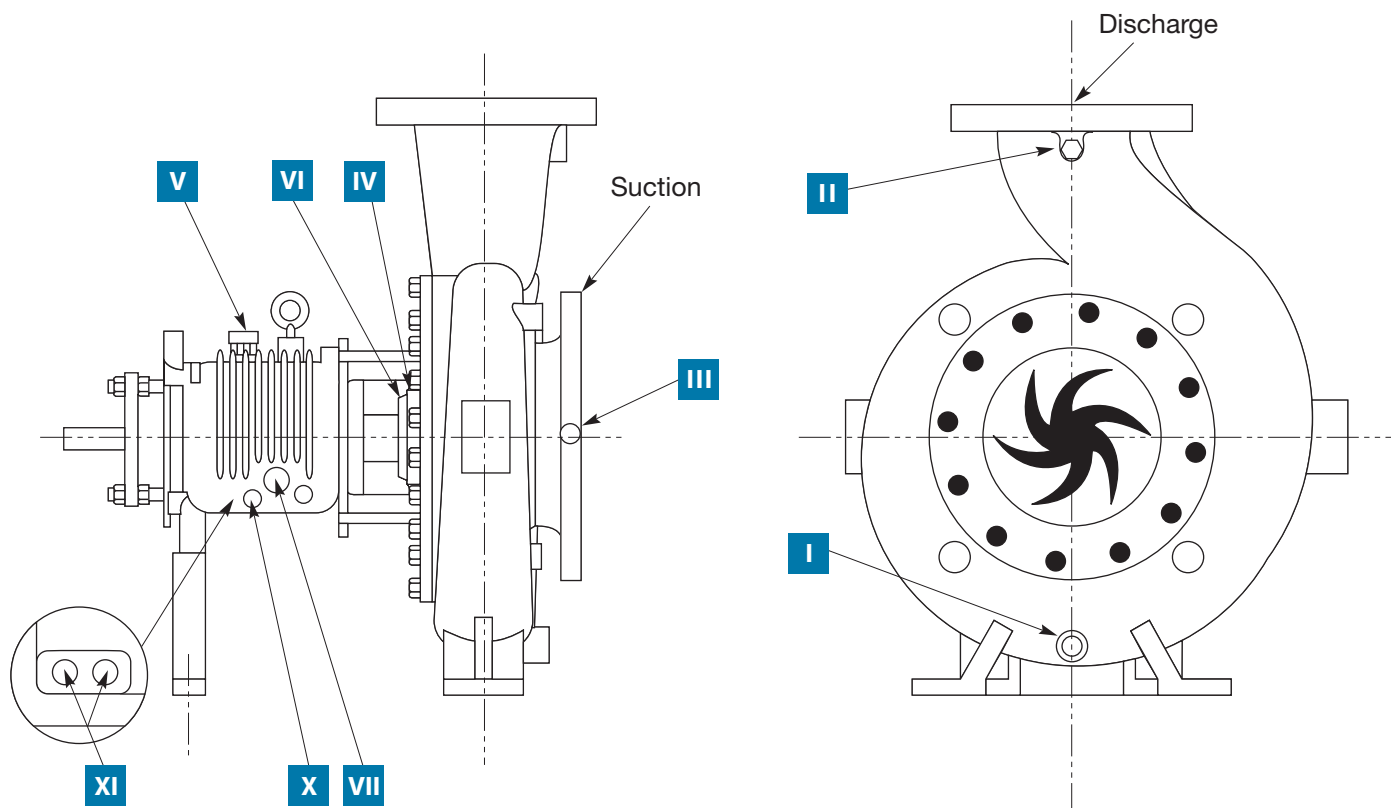
Taper Bore

Vortex breakers alter seal chamber flow patterns to move solids out and away from the seal.

Air or gas buildup can be detrimental to seal life. Taper design allows trapped air and gases to escape.



| NO. | ITEM | NO. | ITEM | NO. | ITEM |
|-----|-------------------------|-----|---------------------------------------|-----|---------------------|
| 1 | Casing | 62 | Flinger | 143 | Oil Sight Glass |
| 2 | Impeller | 66 | Micrometer Nut | 400 | Foot, Bearing Frame |
| 6 | Shaft | 69 | Lockwasher, Thrust Bearing | 403 | Stud, Cartridge |
| 11 | Back Cover | 71 | Frame Adapter | 404 | Locknut, Cartridge |
| 14 | C Frame motor Adapter | 73A | Gasket, Casing | 405 | O-Ring, Cartridge |
| 16 | Bearing, Radial | 80 | Mechanical Seal | 408 | Oil Filler Assembly |
| 18 | Bearing, Thrust | 89B | Seal, Labyrinth Rotor, Thrust | 413 | Bolt, Eye |
| 19 | Bearing, Frame | 89C | Seal, Labyrinth Rotor O-ring, Thrust | 414 | Plug, Magnetic |
| 22 | Locknut, Thrust Bearing | 89D | Seal, Labyrinth Stator, Radial | 433 | Plug, Bearing Frame |
| 33 | Bearing Cartridge | 89E | Seal, Labyrinth Rotor, Radial | 435 | Plug, Casing |
| 35 | Retainer Cover | 89F | Seal, Labyrinth Rotor O-ring, Radial | | |
| 38 | O-ring, Impeller Hub | 89G | Seal, Labyrinth Stator O-ring, Radial | | |



| ITEM NUMBER | NPT SIZE | NUMBER OF TAPS | CONNECTION |
|-------------|-----------|----------------|------------------------------------|
| I | 0.50-14 | 1 | Casing Drain |
| II | 0.25-18 | 1 | Discharge Gage |
| * III | 0.25-18 | 1 | Suction Gage |
| IV | 0.50-14 | 2 | Seal Chamber Flush |
| V | 0.75-14 | 1 | Oil Fill |
| * VI | 0.50-14 | 2 | Seal Chamber Jacket inlet & outlet |
| # VII | 1.00-11.5 | 1 | Oil Sight Glass |
| # X | 0.25-18 | 1 | Oil Drain |
| ## XI | 0.50-14 | 2 | Plug or (cooling coil*) |

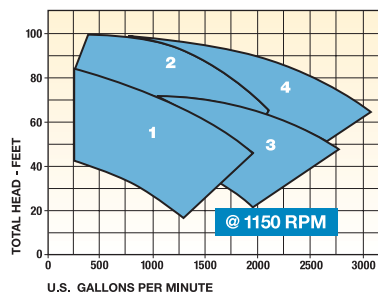
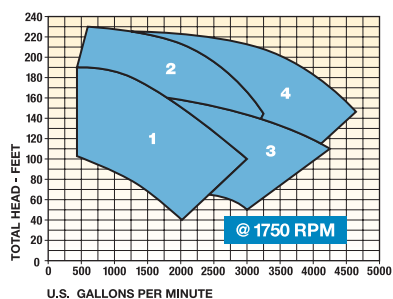
*Optional

Left side of pump facing suction end

Right side of pump facing suction end



Frame M Pump (ASME/ANSI)

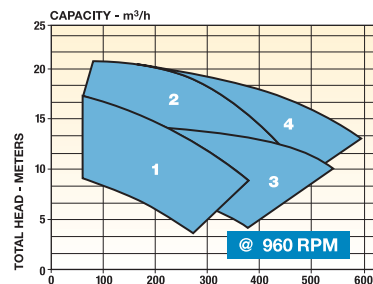
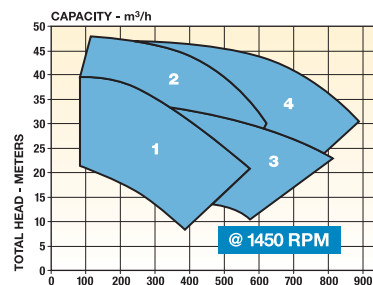


Frame M Pump – ASME/ANSI

| | Pump Size | A ₁ | A | D | 2E ₁ | 2E ₂ | F | H | O | U | V | X |
|---|--------------|----------------|-------|-------|-----------------|-----------------|-------|-------|-------|-------|------|----|
| 1 | 6 x 8-13 | 25.50 | 14.00 | 14.50 | 16.00 | 9.00 | 18.75 | 0.875 | 30.50 | 2.375 | 4.00 | 16 |
| 2 | 6 x 8-15 | 27.25 | 14.75 | 14.50 | 16.00 | 9.00 | 18.75 | 0.875 | 32.50 | 2.375 | 4.00 | 18 |
| 3 | 8 x 10-13 | 27.25 | 15.25 | 14.50 | 16.00 | 9.00 | 18.75 | 0.875 | 32.50 | 2.375 | 4.00 | 18 |
| 4 | 8 x 10-15 | 28.75 | 15.75 | 14.50 | 16.00 | 9.00 | 18.75 | 0.875 | 33.50 | 2.375 | 4.00 | 19 |

All dimensions are in inches.

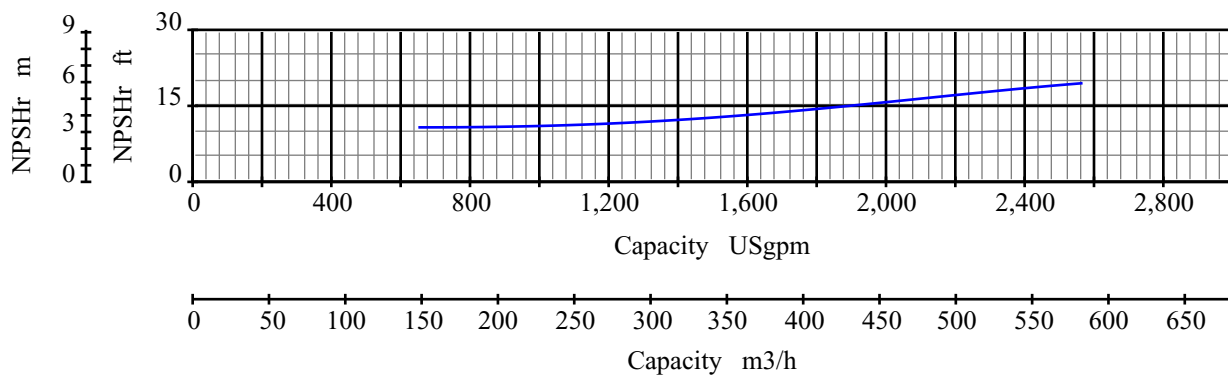
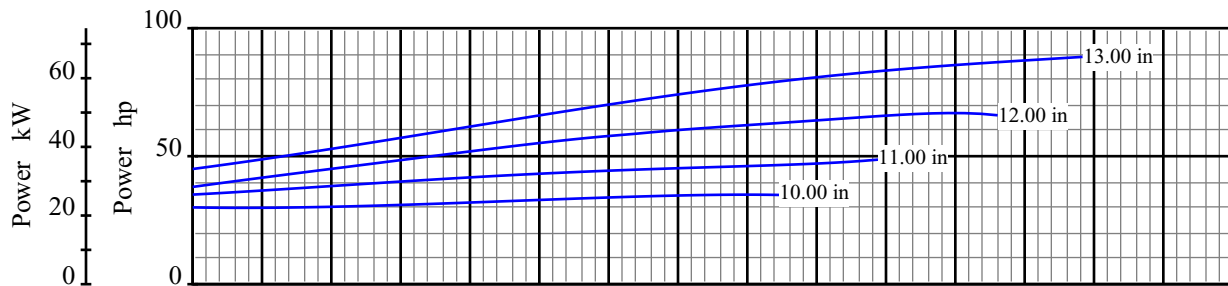
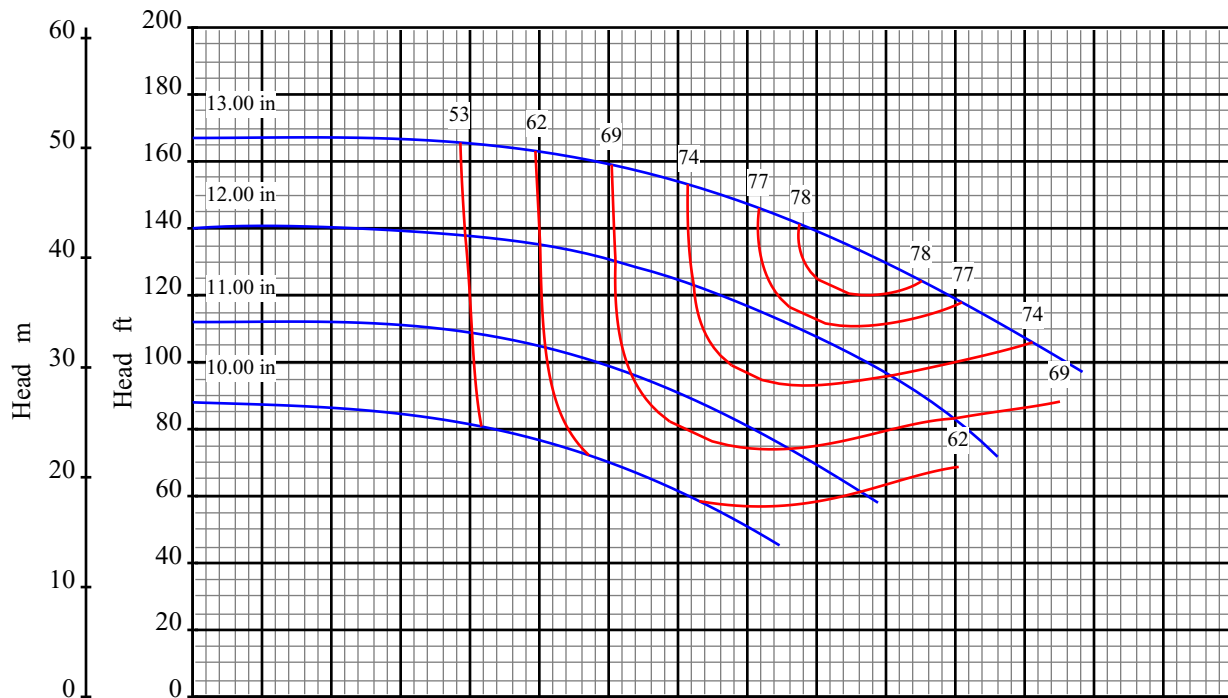
Frame M Pump (Metric)



Frame M Pump – Metric

| | Pump Size | A ₁ | A | D | 2E ₁ | 2E ₂ | F | H | O | U | V | X |
|---|---------------|----------------|-----|-----|-----------------|-----------------|-----|----|-----|----|-----|-----|
| 1 | 150 x 200-330 | 648 | 356 | 368 | 406 | 229 | 476 | 22 | 775 | 60 | 102 | 406 |
| 2 | 150 x 200-380 | 692 | 375 | 368 | 406 | 229 | 476 | 22 | 826 | 60 | 102 | 457 |
| 3 | 200 x 250-330 | 692 | 387 | 368 | 406 | 229 | 476 | 22 | 826 | 60 | 102 | 457 |
| 4 | 200 x 250-330 | 730 | 400 | 368 | 406 | 229 | 476 | 22 | 851 | 60 | 102 | 483 |

All dimensions are in millimeters.



Curve No: S18210V1

Blackmer System One

Pump Size: 6x8 13

Pump Performance Characteristics

Effective Date: Jan/2005

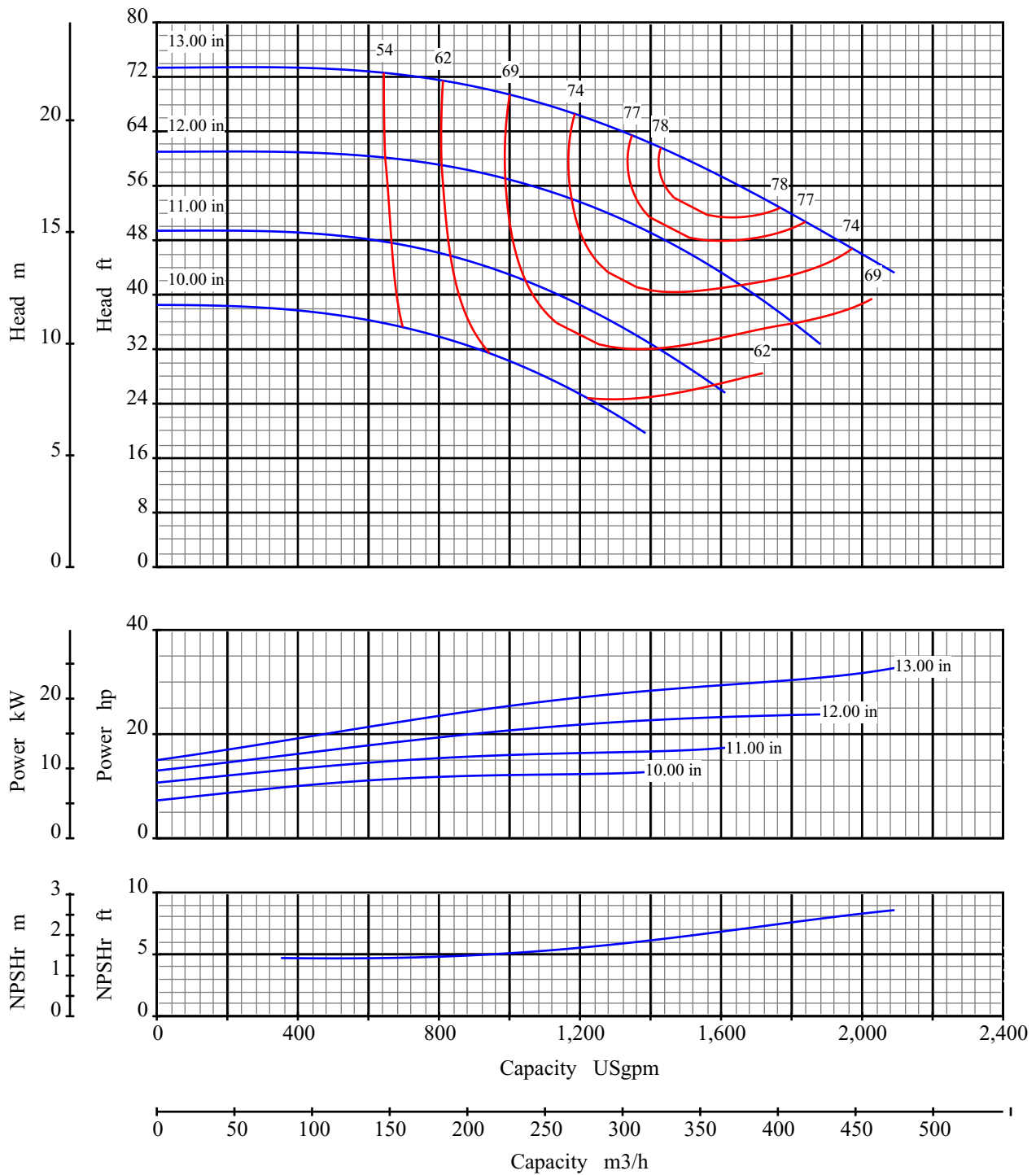
Catalog: 1301

Speed: 1750 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18212V1

Blackmer System One

Pump Size: 6x8 13

Pump Performance Characteristics

Effective Date: Jan/2005

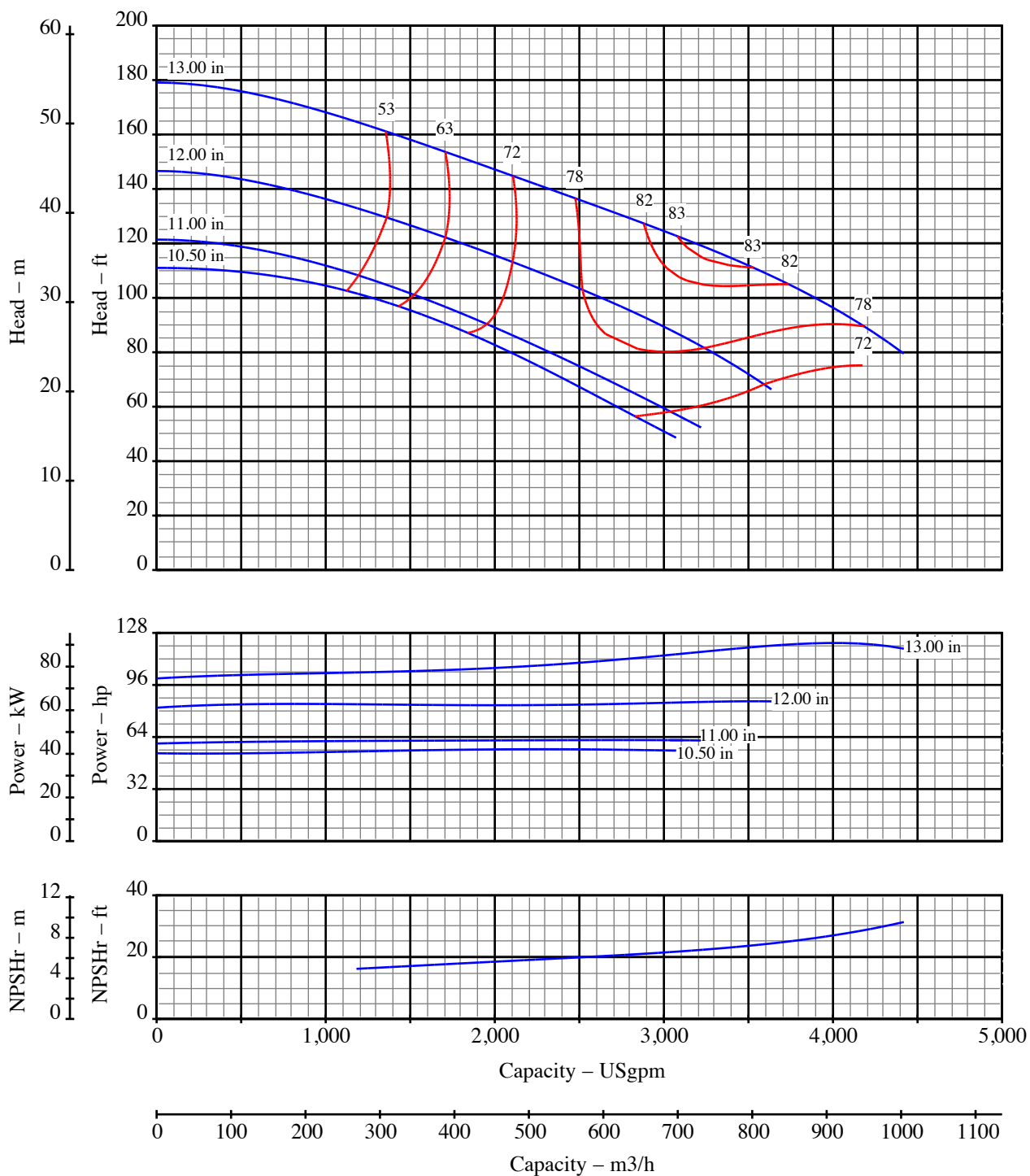
Catalog: 1301

Speed: 1150 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18216V1

Blackmer System One

Pump Size: 8x10-13

Pump Performance Characteristics

Effective Date: Jan/2005

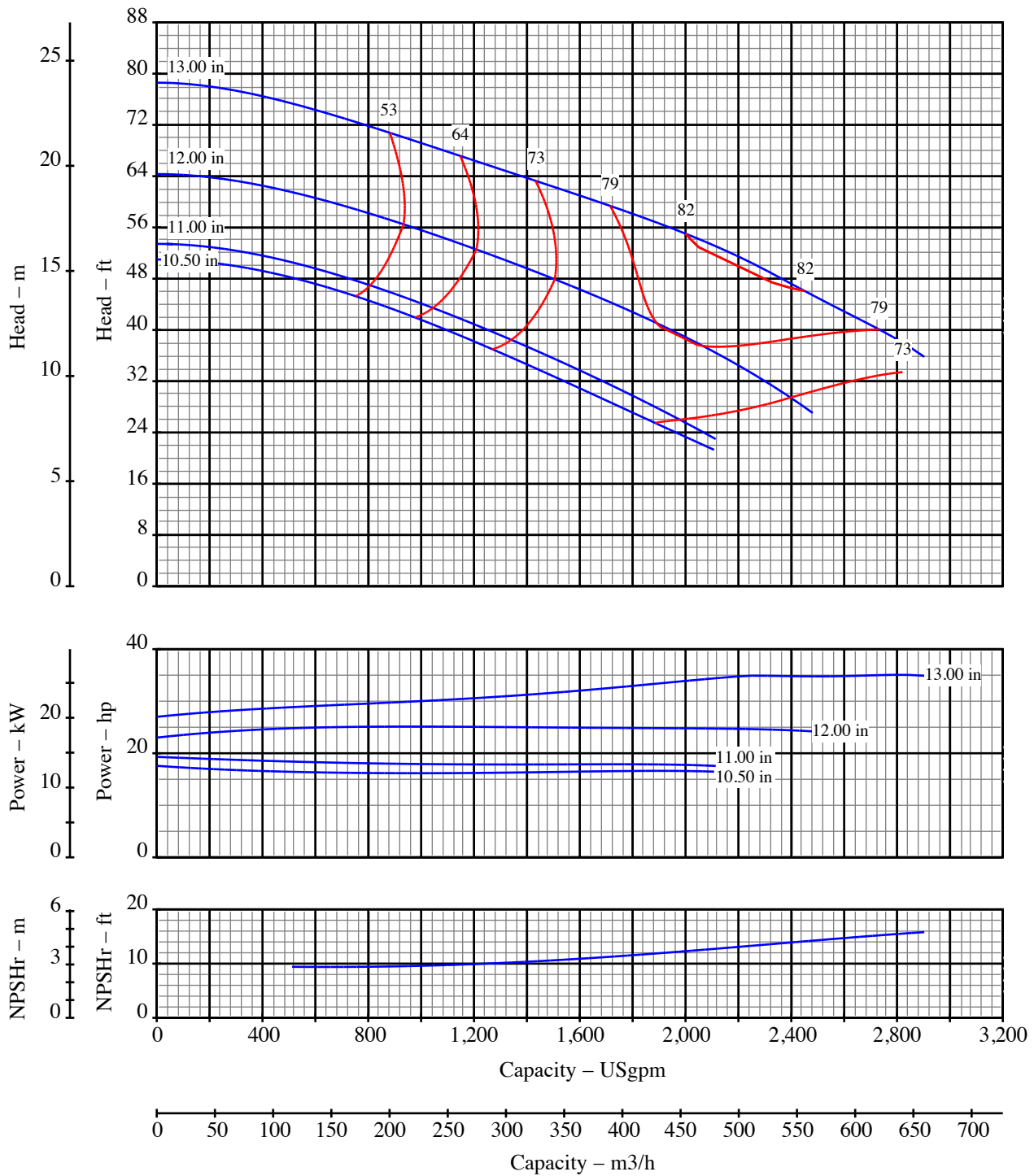
Catalog: 1301

Speed: 1750 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503-1530 USA

telephone: 616-241-1611 fax: 616-241-3752 www.blackmer.com



Curve No: S18218V1

Blackmer System One

Pump Size: 8x10-13

Pump Performance Characteristics

Effective Date: Jan/2005

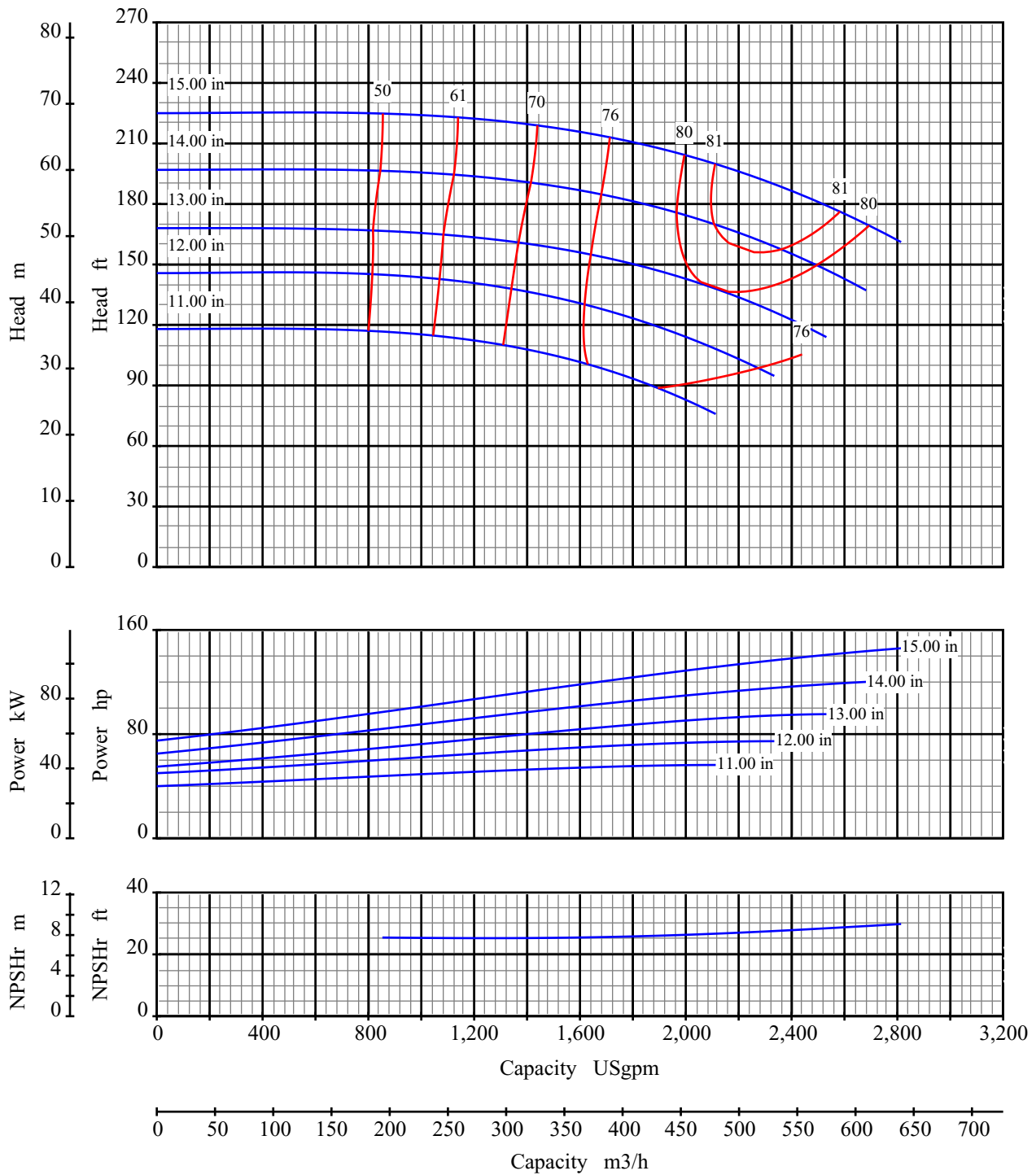
Catalog: 1301

Speed: 1150 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503-1530 USA

telephone: 616-241-1611 fax: 616-241-3752 www.blackmer.com



Curve No: S18222V1

Blackmer System One

Pump Size: 6x8 15

Pump Performance Characteristics

Effective Date: Jan/2005

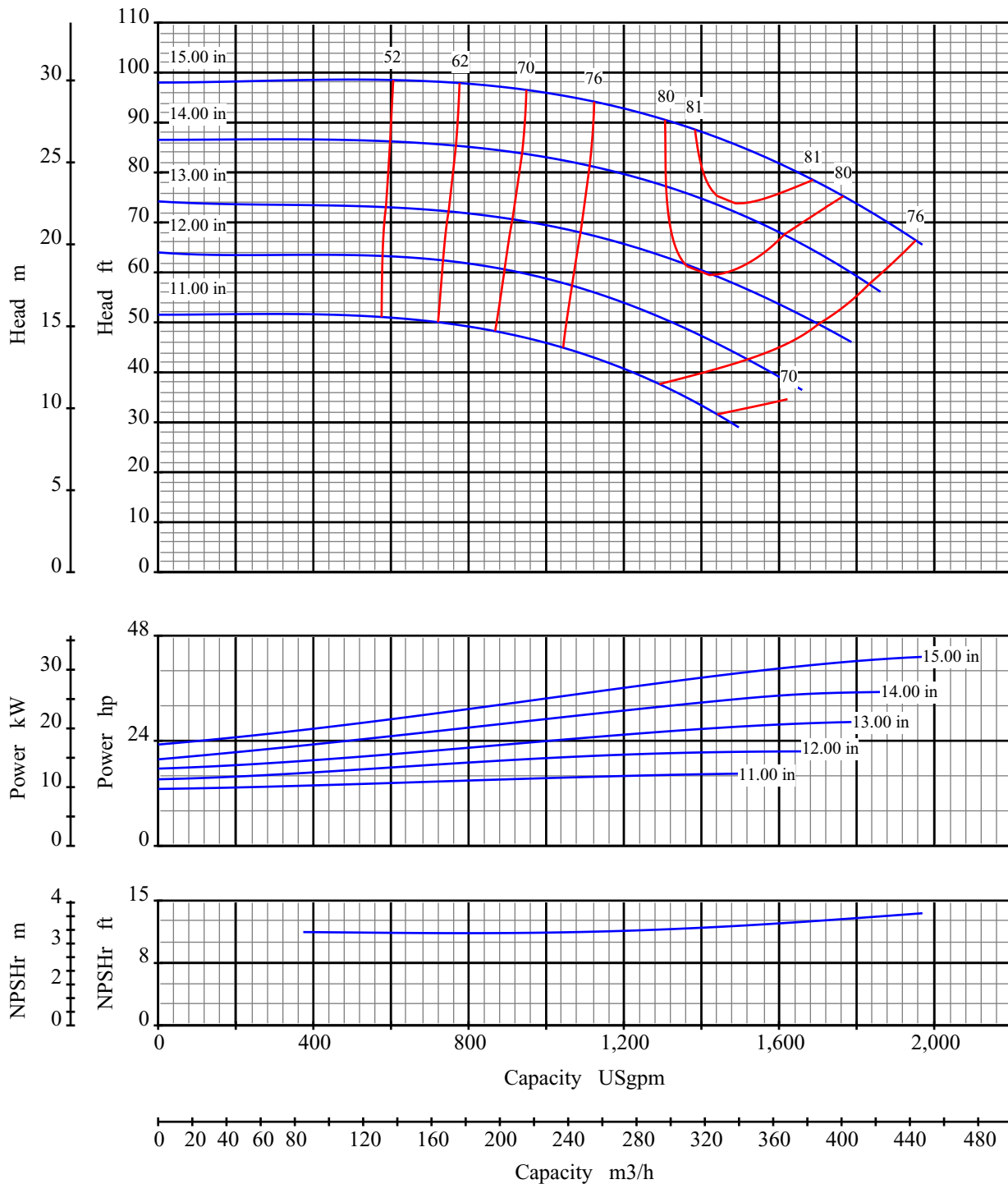
Catalog: 1301

Speed: 1750 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18224V1

Blackmer System One

Pump Size: 6x8 15

Pump Performance Characteristics

Effective Date: Jan/2005

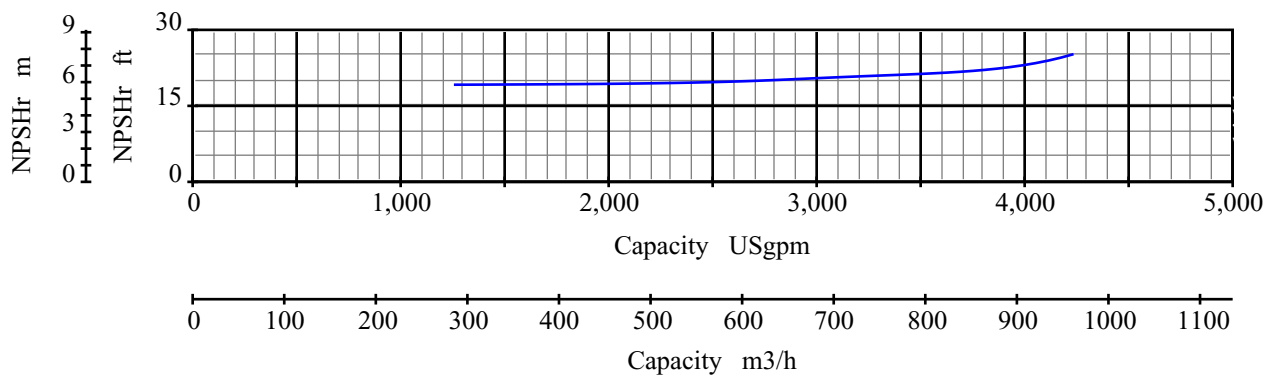
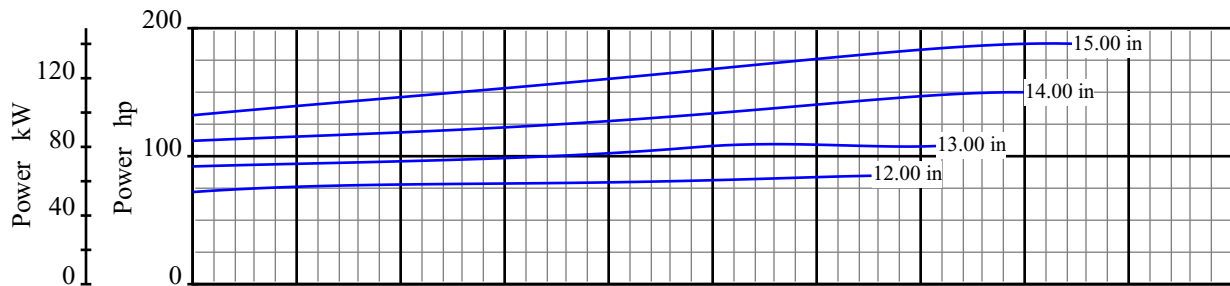
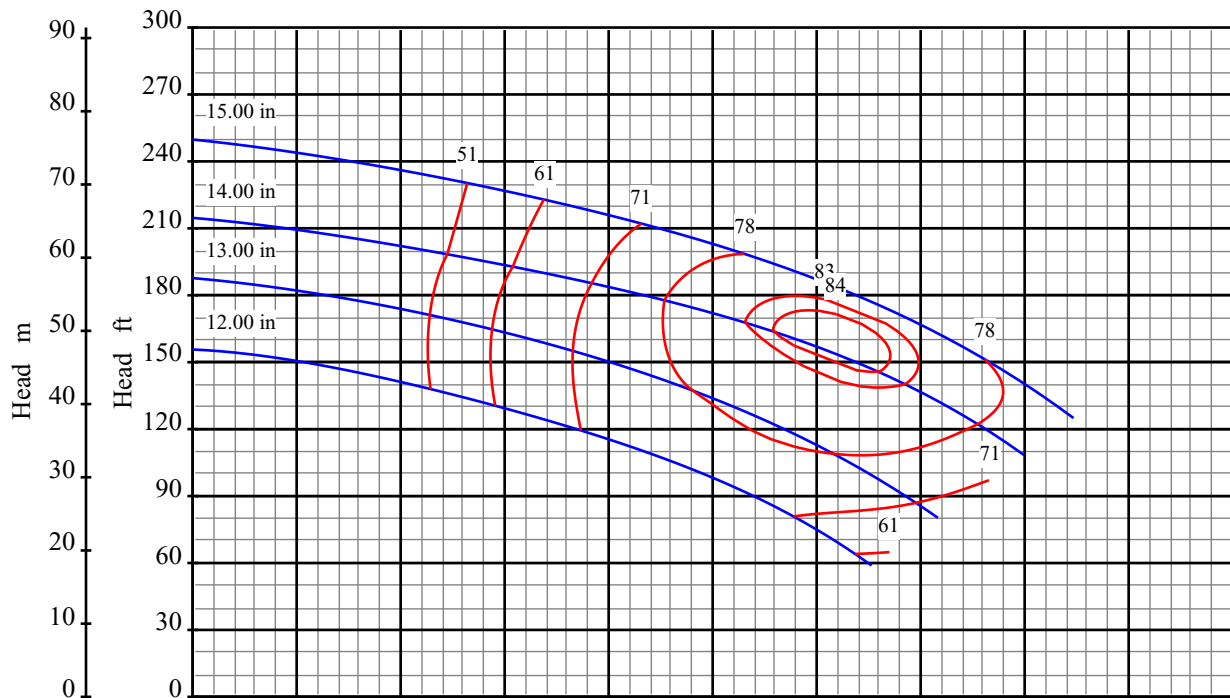
Catalog: 1301

Speed: 1150 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18228V1

Blackmer System One

Pump Size: 8x10 15

Pump Performance Characteristics

Effective Date: Jan/2005

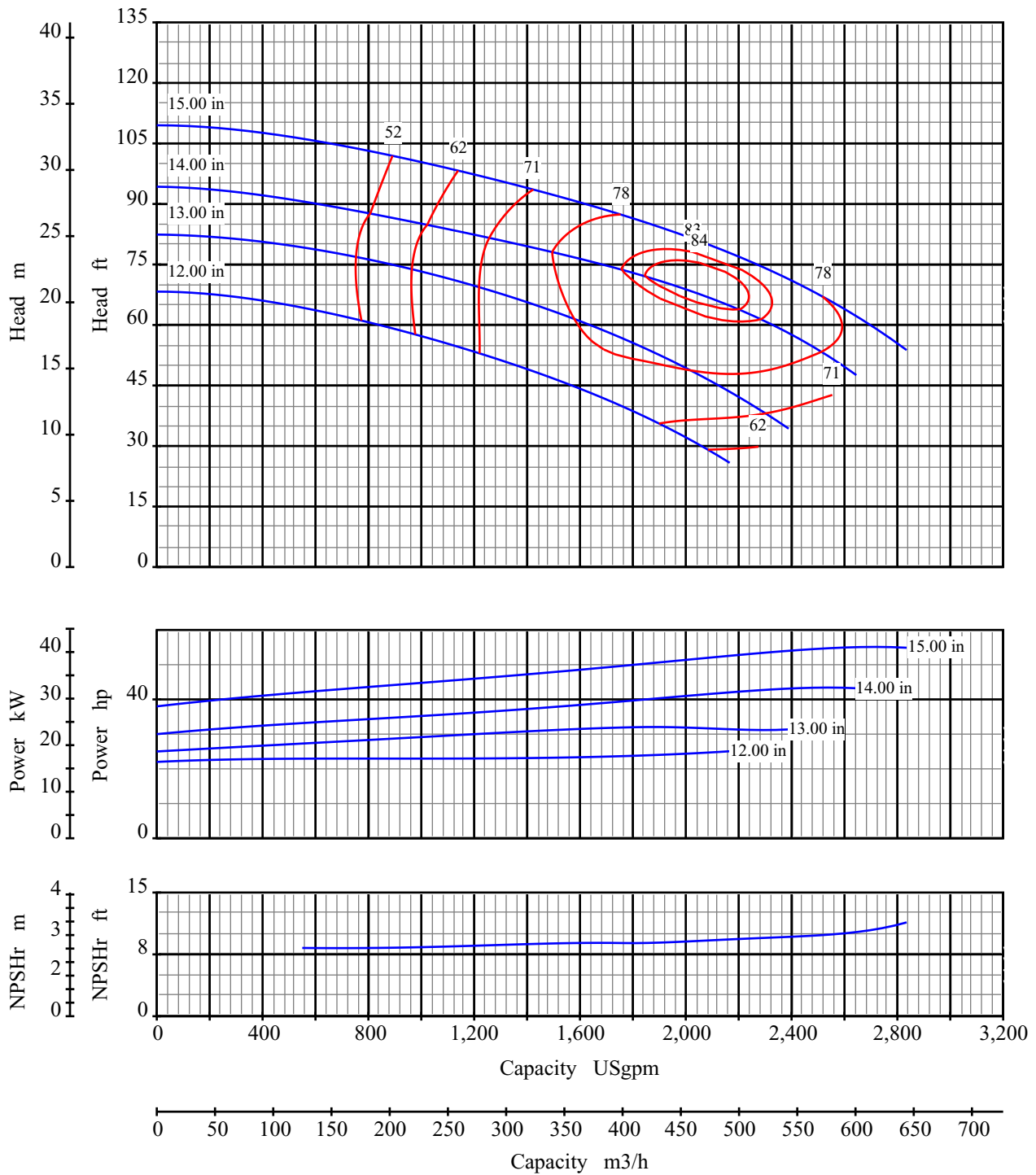
Catalog: 1301

Speed: 1750 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18230V1

Blackmer System One

Pump Size: 8x10 15

Pump Performance Characteristics

Effective Date: Jan/2005

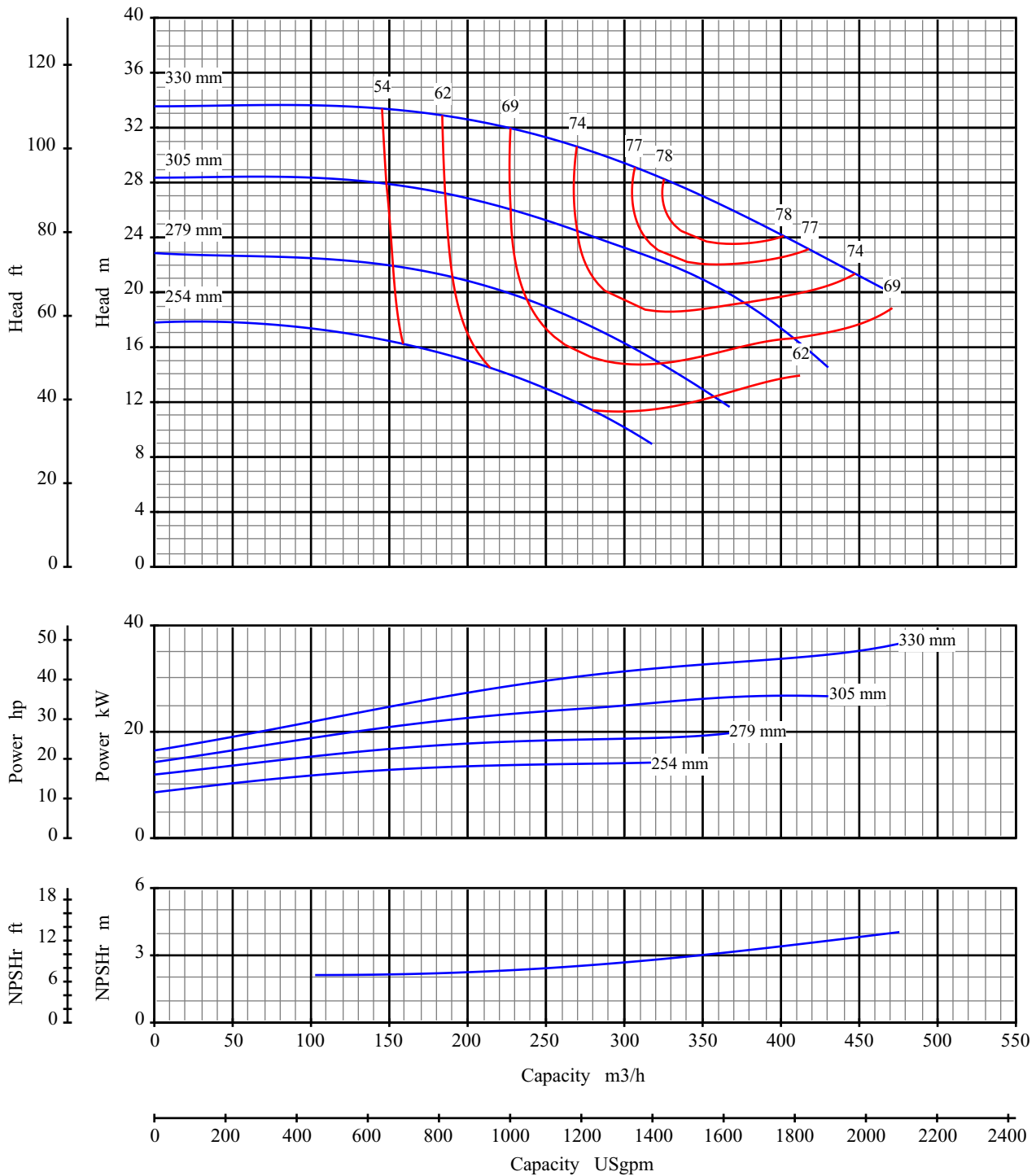
Catalog: 1301

Speed: 1150 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18211V1

Blackmer System One

Pump Size: 6x8 13

Pump Performance Characteristics

Effective Date: Jan/2005

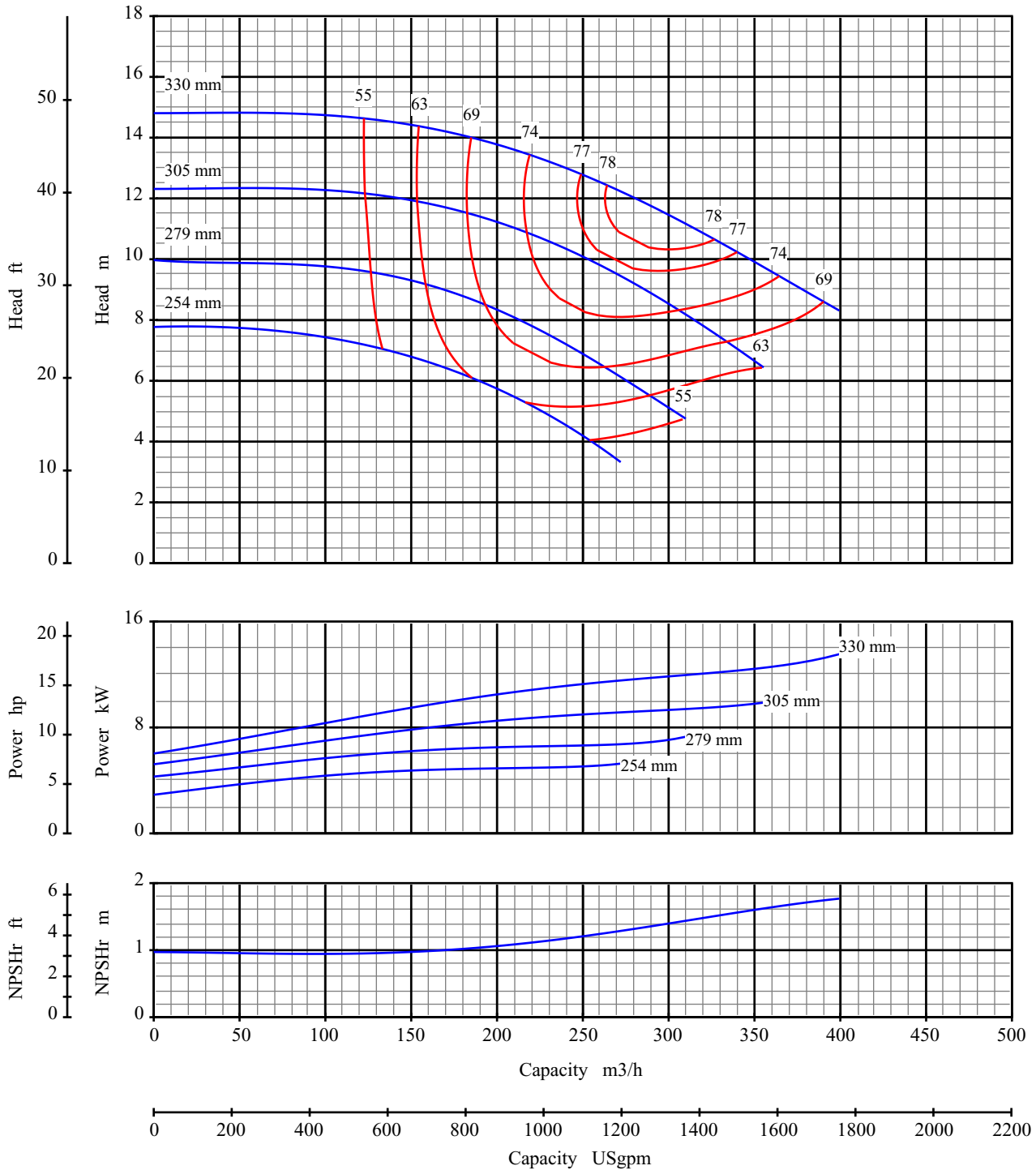
Catalog: 1301

Speed: 1450 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18213V1

Blackmer System One

Pump Size: 6x8 13

Pump Performance Characteristics

Effective Date: Jan/2005

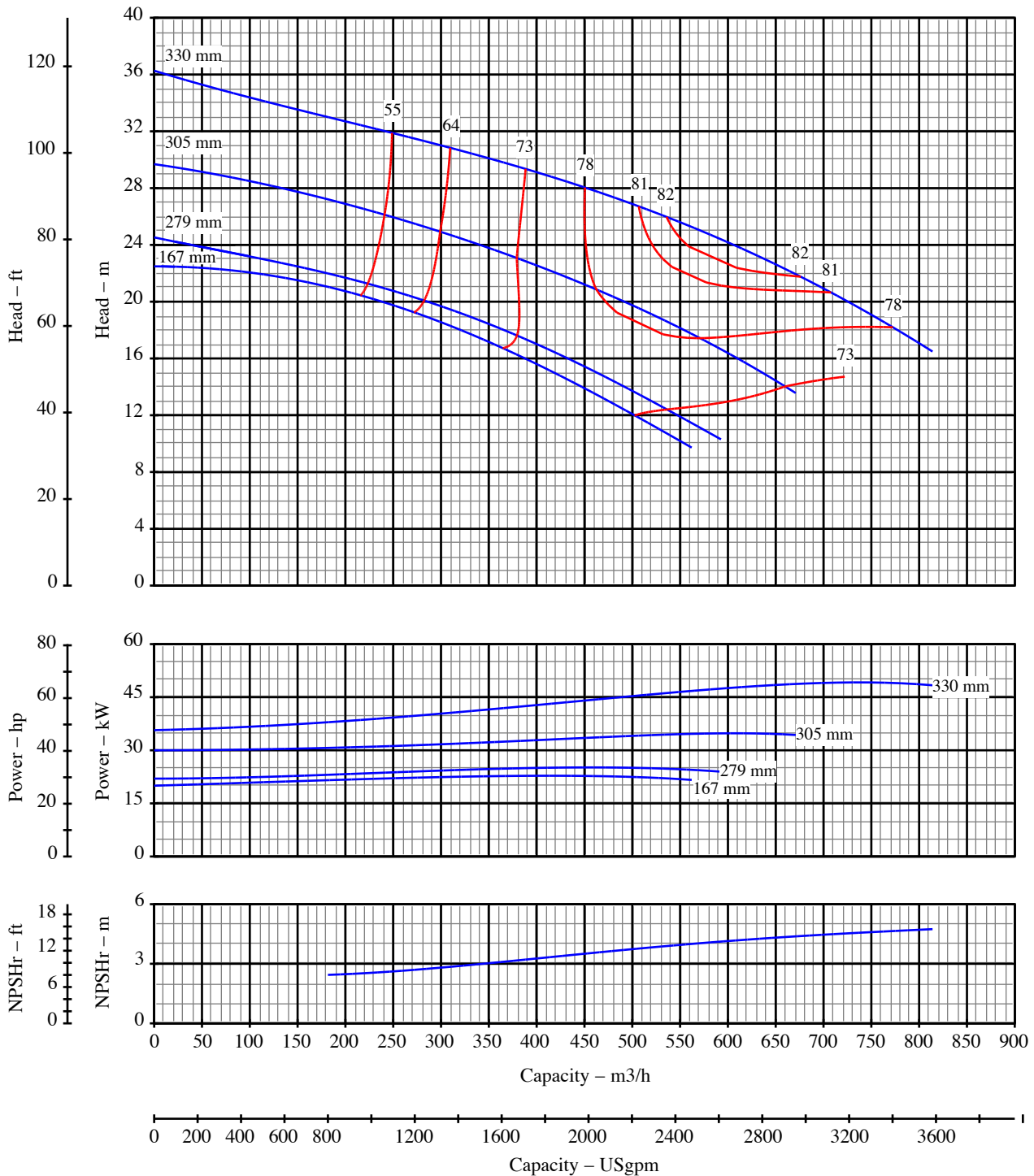
Catalog: 1301

Speed: 960 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18217V1

Blackmer System One

Pump Size: 8x10-13

Pump Performance Characteristics

Effective Date: Jan/2005

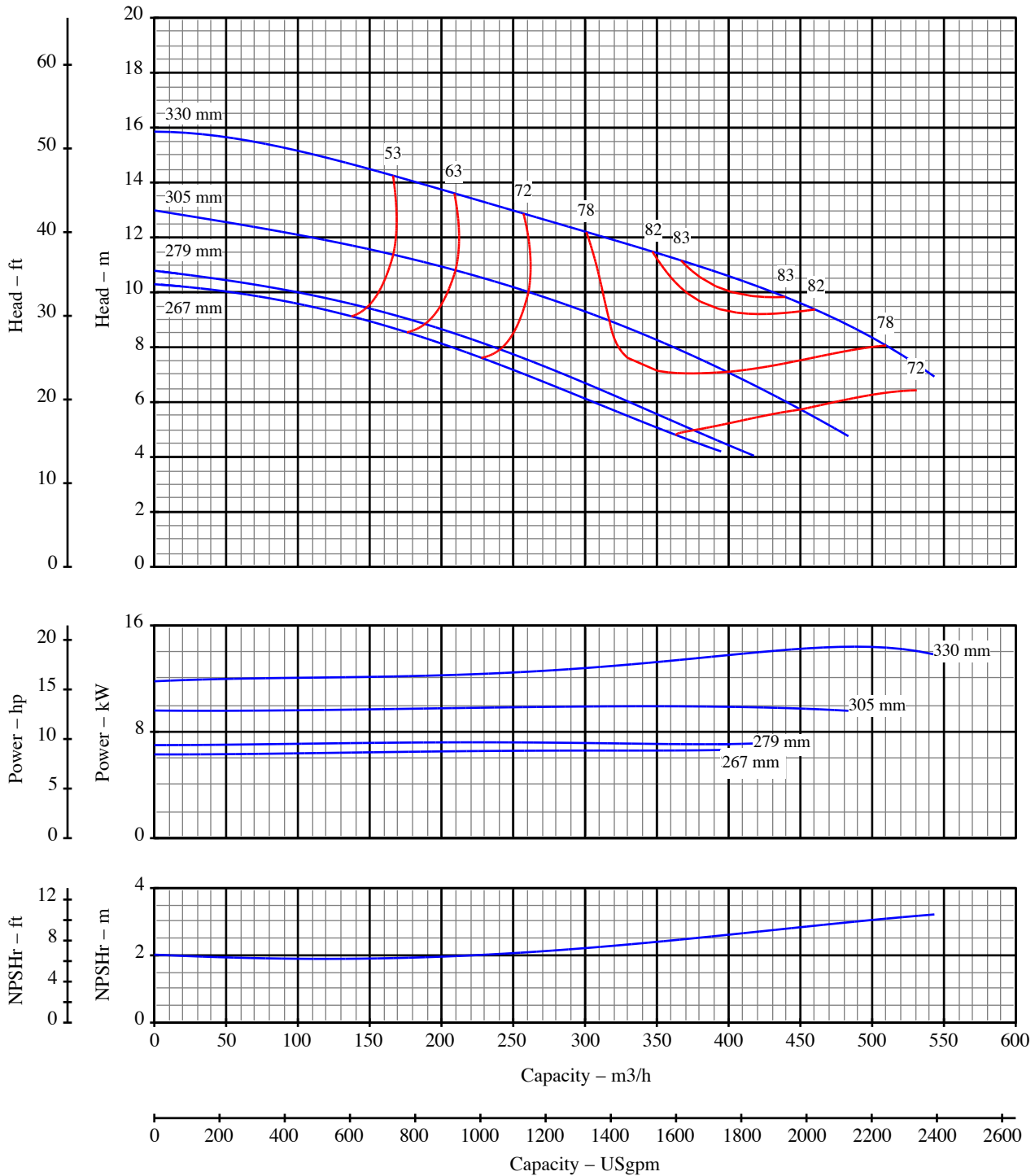
Catalog: 1301

Speed: 1450 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503-1530 USA

telephone: 616-241-1611 fax: 616-241-3752 www.blackmer.com



Curve No: S18219V1

Blackmer System One

Pump Size: 8x10-13

Pump Performance Characteristics

Effective Date: Jan/2005

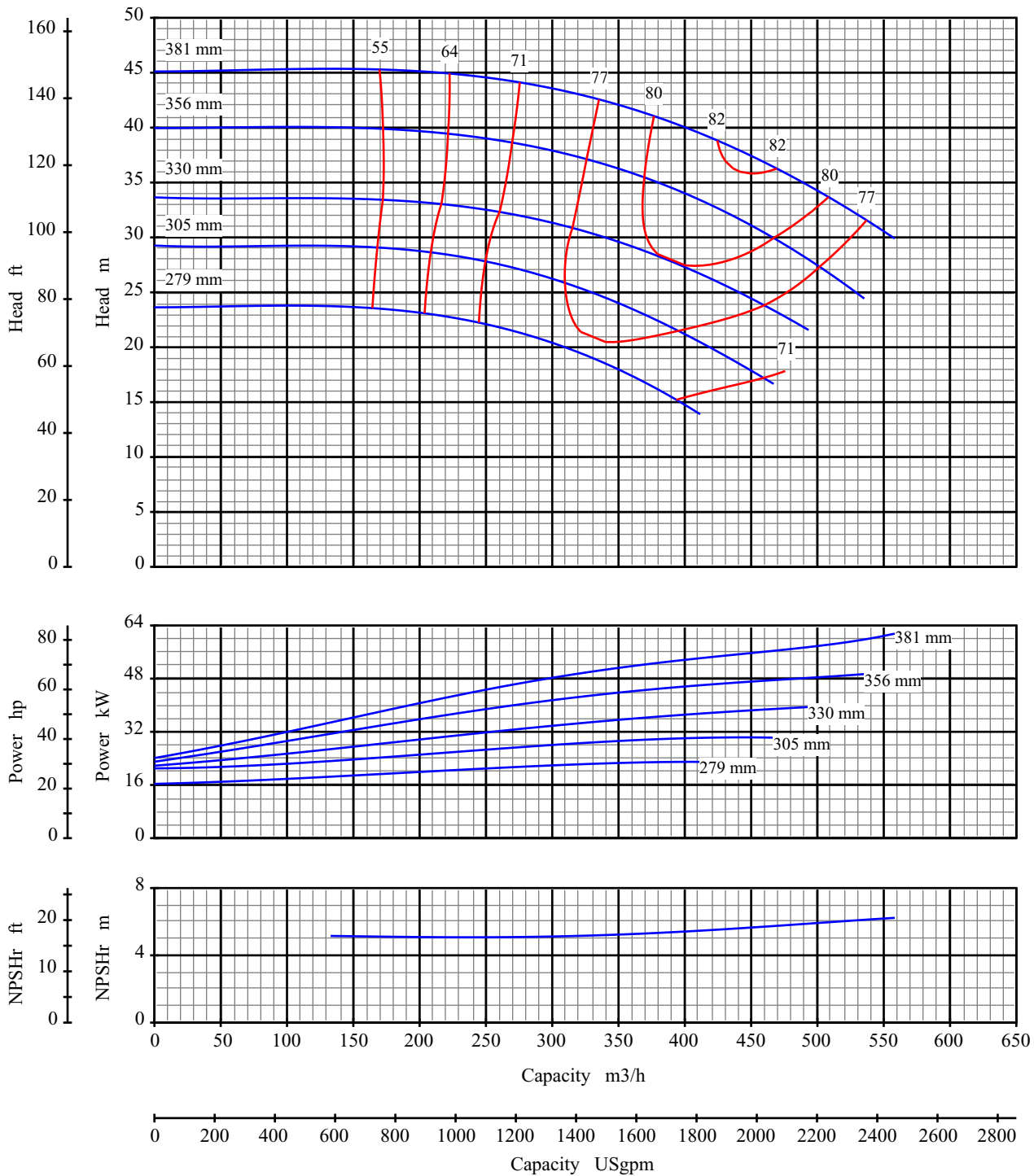
Catalog: 1301

Speed: 960 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503-1530 USA

telephone: 616-241-1611 fax: 616-241-3752 www.blackmer.com



Curve No: S18223V1

Blackmer System One

Pump Size: 6x8 15

Pump Performance Characteristics

Effective Date: Jan/2005

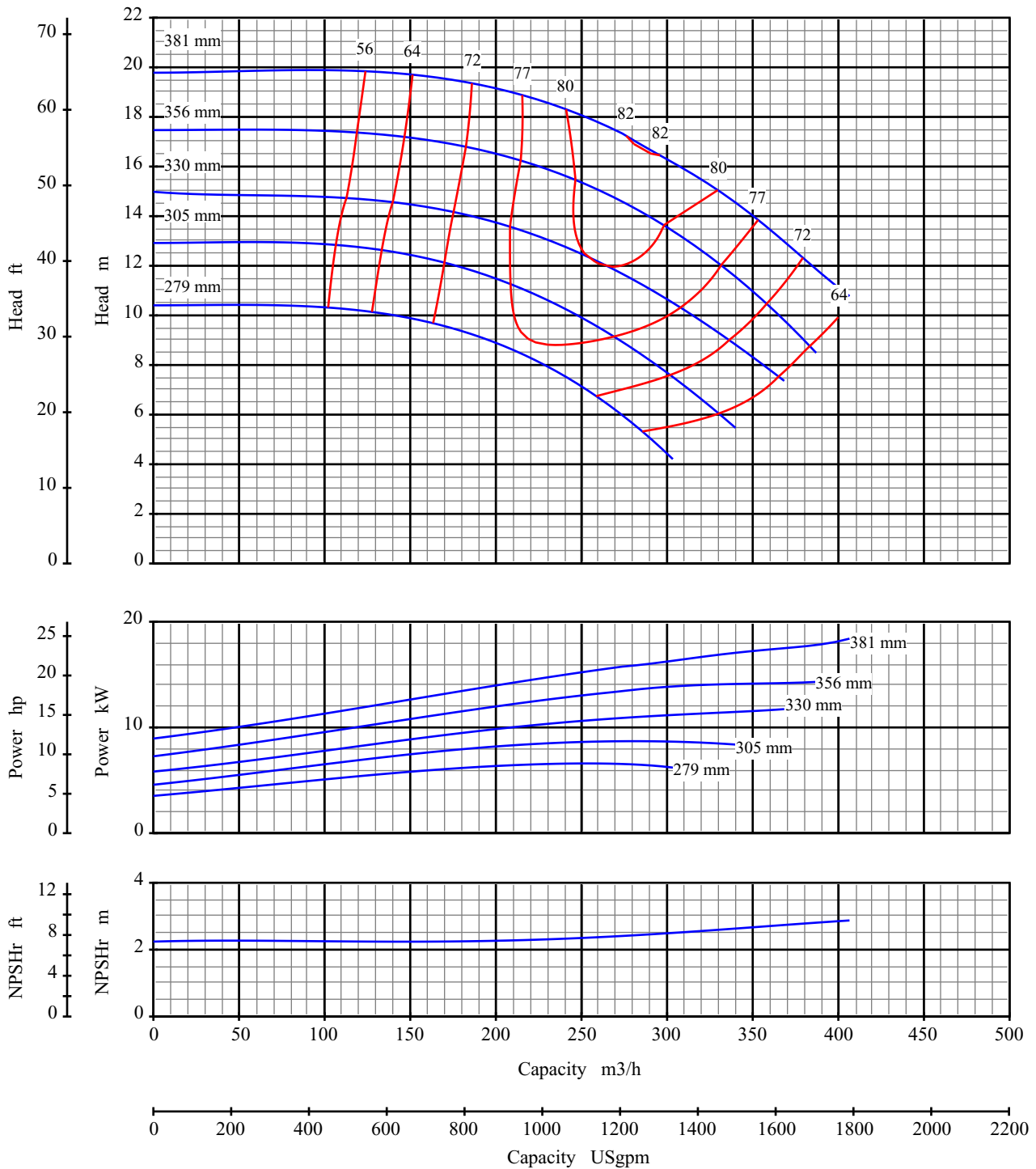
Catalog: 1301

Speed: 1450 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18225V1

Blackmer System One

Pump Size: 6x8 15

Pump Performance Characteristics

Effective Date: Jan/2005

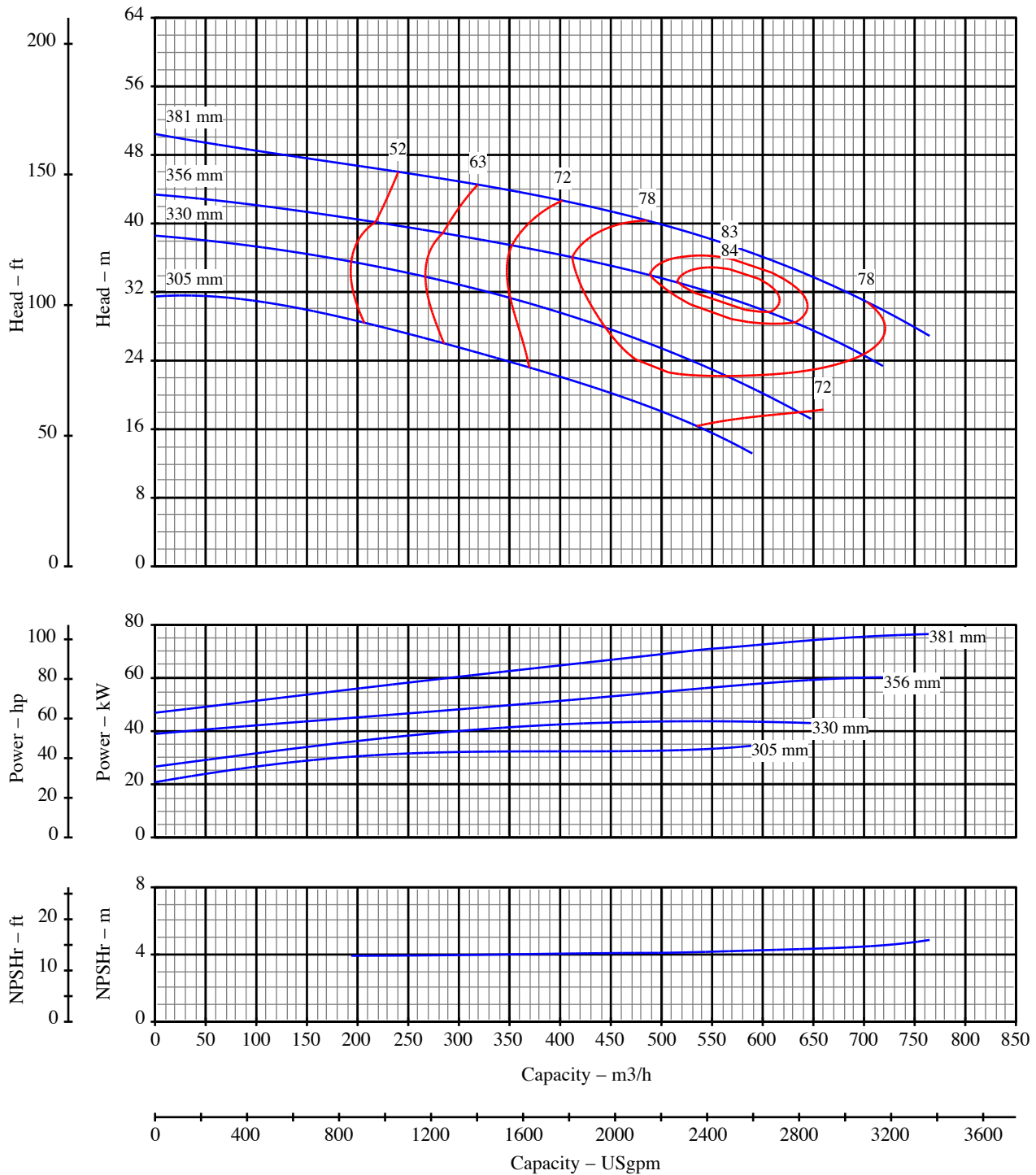
Catalog: 1301

Speed: 960 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S18229V1

Blackmer System One

Pump Size: 8x10-15

Pump Performance Characteristics

Effective Date: Jan/2005

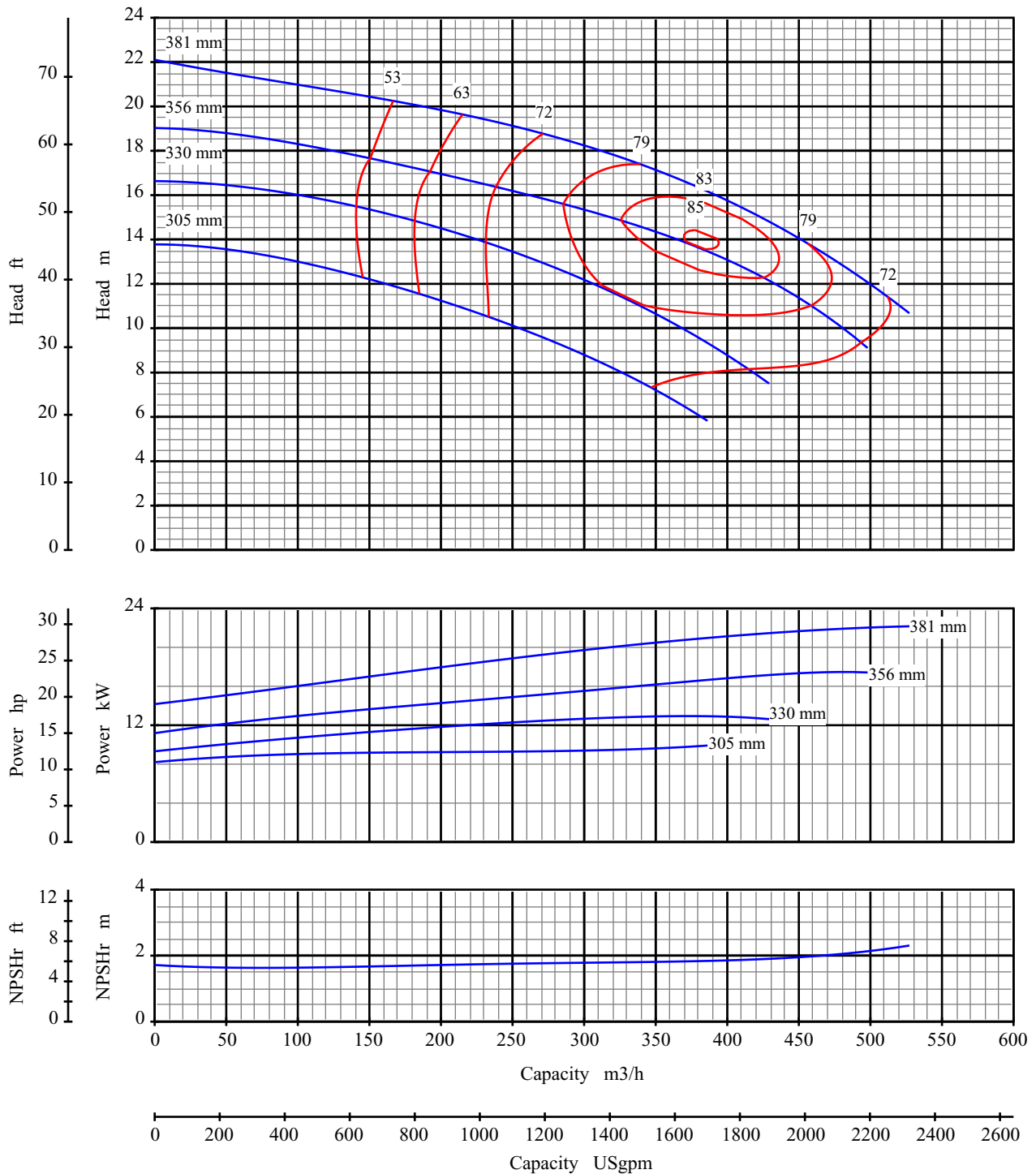
Catalog: 1301

Speed: 1450 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503-1530 USA

telephone: 616-241-1611 fax: 616-241-3752 www.blackmer.com



Curve No: S18231V1

Blackmer System One

Pump Size: 8x10 15

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Speed: 960 rpm

Open Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

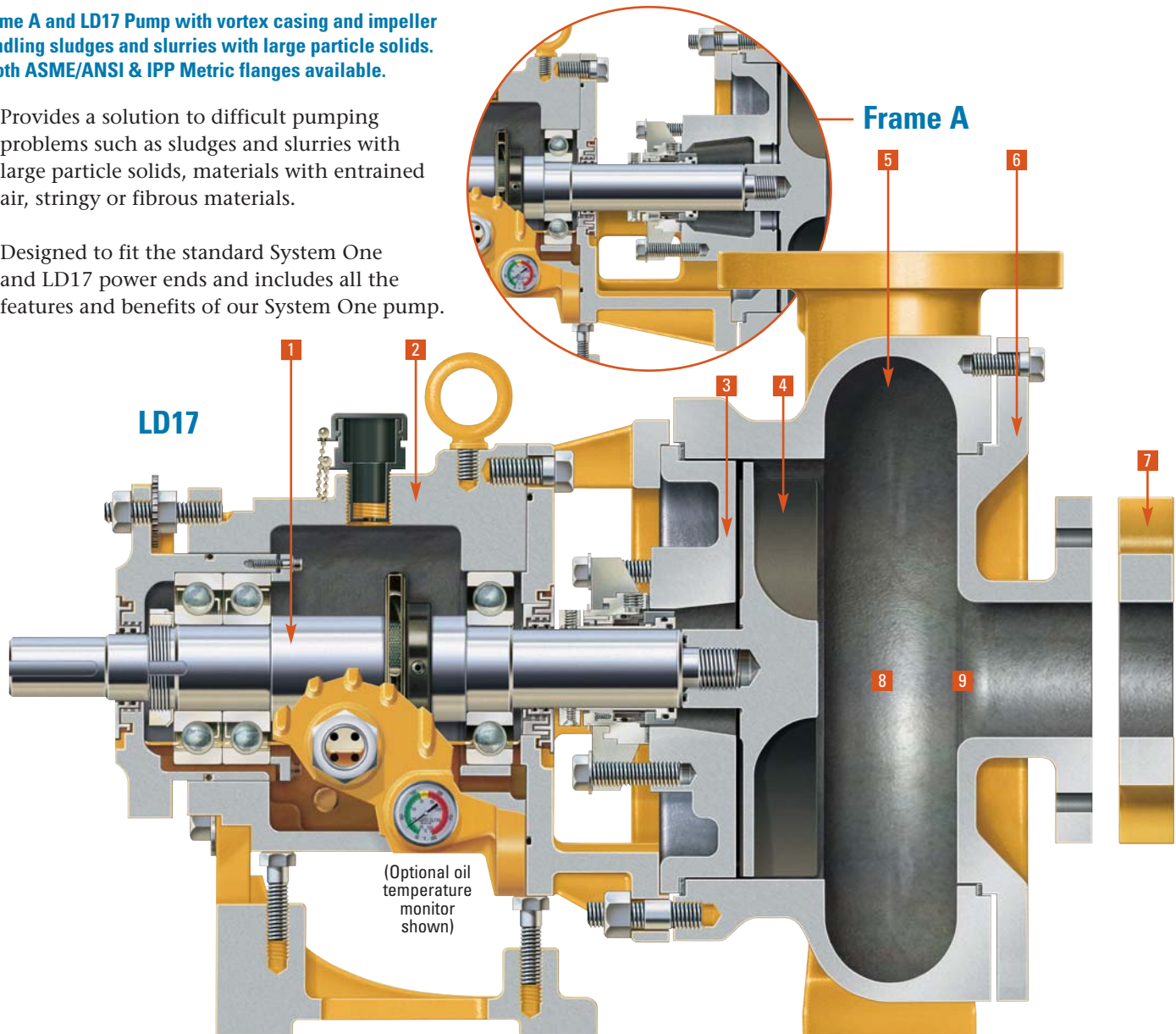
telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Construction

Frame A and LD17 Pump with vortex casing and impeller handling sludges and slurries with large particle solids.
***Both ASME/ANSI & IPP Metric flanges available.**

- Provides a solution to difficult pumping problems such as sludges and slurries with large particle solids, materials with entrained air, stringy or fibrous materials.
- Designed to fit the standard System One and LD17 power ends and includes all the features and benefits of our System One pump.

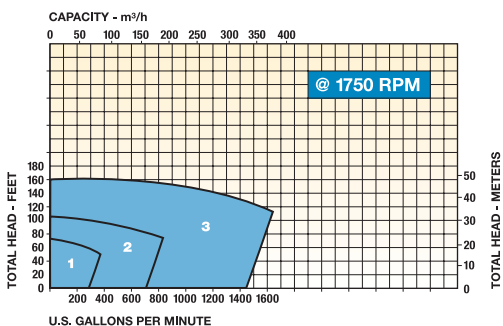
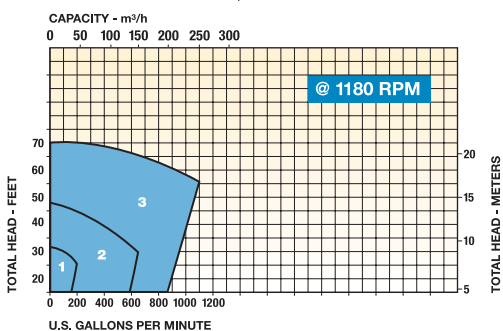
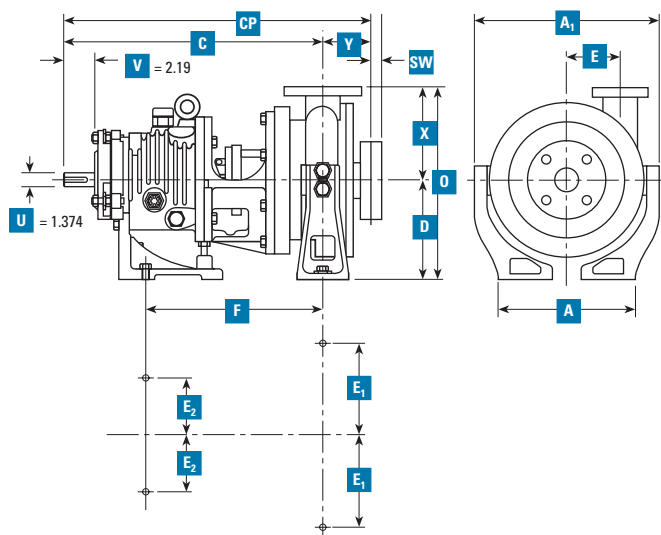


- 1 LD17 shaft²
- 2 LD17 power end²
- 3 Back cover/seal chamber
 - Taper bore provided on LD17.
 - Straight bore with cast restriction bushing or open taper configurations available for Frame A.
- 4 Vortex impeller recessed out of passageway.
- 5 Vortex casing
- 6 Removable suction cover
- 7 Optional spacer flange allows removal of separate suction cover for cleanout without disturbing piping.
- 8 Solids are drawn into the vortex of swirling liquid and are discharged by centrifugal force through the open area of the casing with minimum impeller contact for minor particle degradation.
- 9 Suction and discharge passageways are one continuous open area.
 - 2" pump can pass a 2" (50 mm) solid
 - 3" pump can pass a 3" (75 mm) solid
 - 4" pump can pass a 4" (100 mm) solid

2. Also available in Frame A (see circle inset above and System One Frame A Pump section for details of Power End).



Vortex Pump (FRAME A & LD17)



Vortex Pump – Frame A & LD17

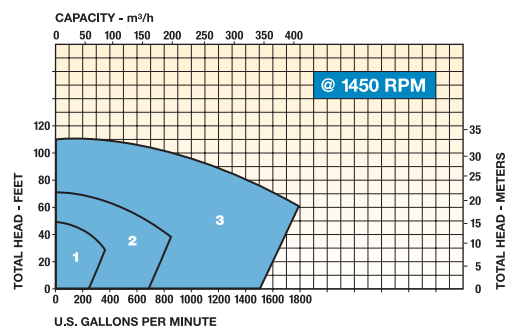
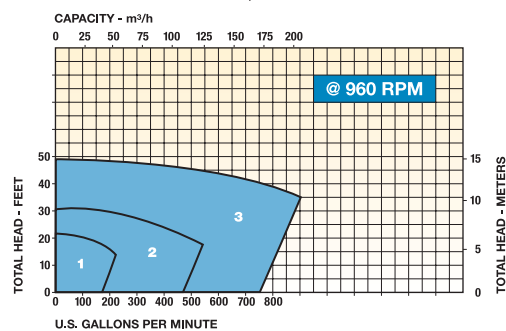
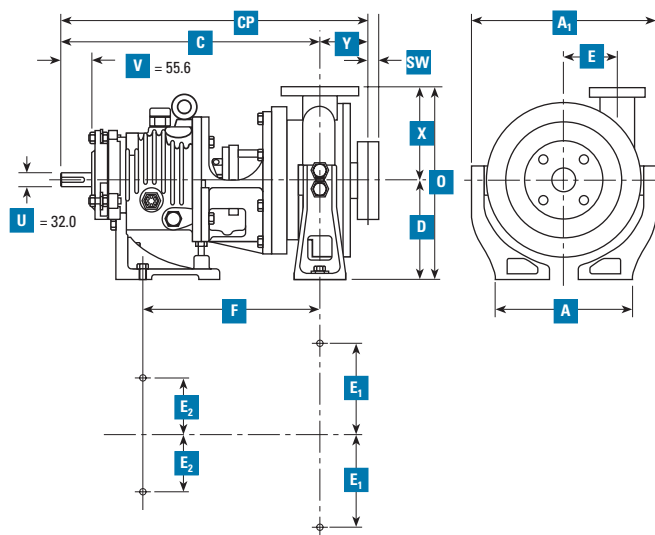
| Pump Size | CP FrA | CP LD17 | C FrA | C LD17 | Y | X | E | D | O | F FrA | F LD17 | A | A ₁ | 2E ₁ | 2E ₂ | SW |
|------------|--------|---------|-------|--------|------|-------|------|-------|------|-------|--------|-------|----------------|-----------------|-----------------|------|
| 1 2 x 2-8 | 25.62 | 22.93 | 21.62 | 18.93 | 4.00 | 7.75 | 4.37 | 8.25 | 16.0 | 14.62 | 11.93 | 11.25 | 15.25 | 7.50 | 7.25 | 1.00 |
| 2 3 x 3-10 | 27.18 | 24.49 | 22.56 | 19.87 | 4.62 | 9.50 | 5.50 | 10.00 | 19.5 | 15.58 | 12.89 | 13.75 | 19.25 | 7.12 | 7.25 | 1.12 |
| 3 4 x 4-12 | 29.38 | 26.69 | 23.88 | 21.19 | 5.50 | 11.50 | 6.50 | 10.00 | 21.5 | 16.83 | 14.14 | 16.50 | 22.00 | 9.88 | 7.25 | 1.38 |

SW dim. indicates width of optional spacer flange.
All dimensions are in inches.

Designed for difficult pumping problems such as:

- Sludges and slurries with large solids
- Pumped materials with entrained air
- Pumped fluids with stringy or fibrous materials
- Minimum product shearing

Vortex Pump (Metric Flange)



Vortex Pump – Metric Flange

| Pump Size | CP FrA | CP LD17 | C FrA | C LD17 | Y | X | E | D | O | F FrA | F LD17 | A | A ₁ | 2E ₁ | 2E ₂ | SW |
|-----------------|--------|---------|-------|--------|-----|-----|-----|-----|-----|-------|--------|-----|----------------|-----------------|-----------------|----|
| 1 50 x 50-200 | 651 | 582 | 550 | 481 | 100 | 195 | 111 | 200 | 406 | 382 | 303 | 285 | 387 | 191 | 185 | 25 |
| 2 80 x 80-250 | 690 | 622 | 573 | 505 | 117 | 241 | 140 | 250 | 495 | 396 | 327 | 350 | 489 | 181 | 185 | 28 |
| 3 100 x 100-300 | 746 | 678 | 606 | 538 | 140 | 292 | 165 | 250 | 546 | 427 | 359 | 420 | 559 | 250 | 185 | 35 |

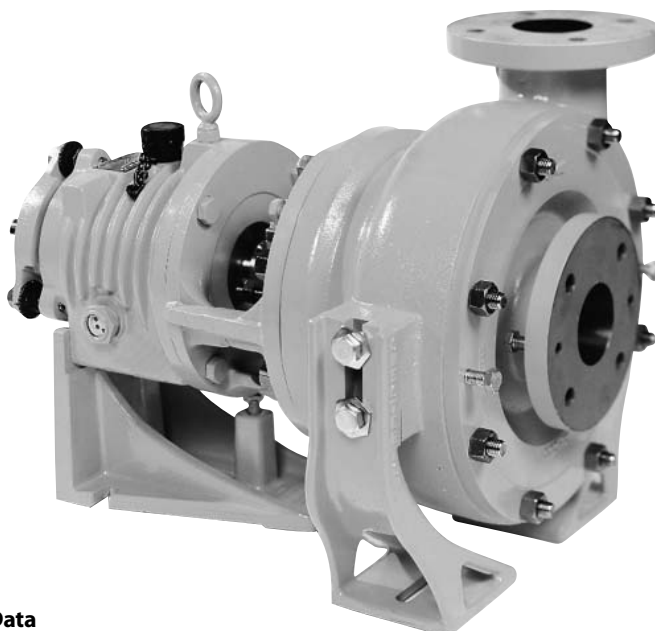
SW dim. indicates width of optional spacer flange.
All dimensions are in millimeters.

Especially suited for the following industries:

- Waste treatment
- Food and chemical processing
- Pulp and paper
- Agriculture



**NON-CLOGGING
RECESSED IMPELLER**
Designed for:
**WASTE TREATMENT
FOOD & CHEMICAL
PROCESSING
PULP & PAPER
AGRICULTURE**
and other industries
pumping difficult
materials



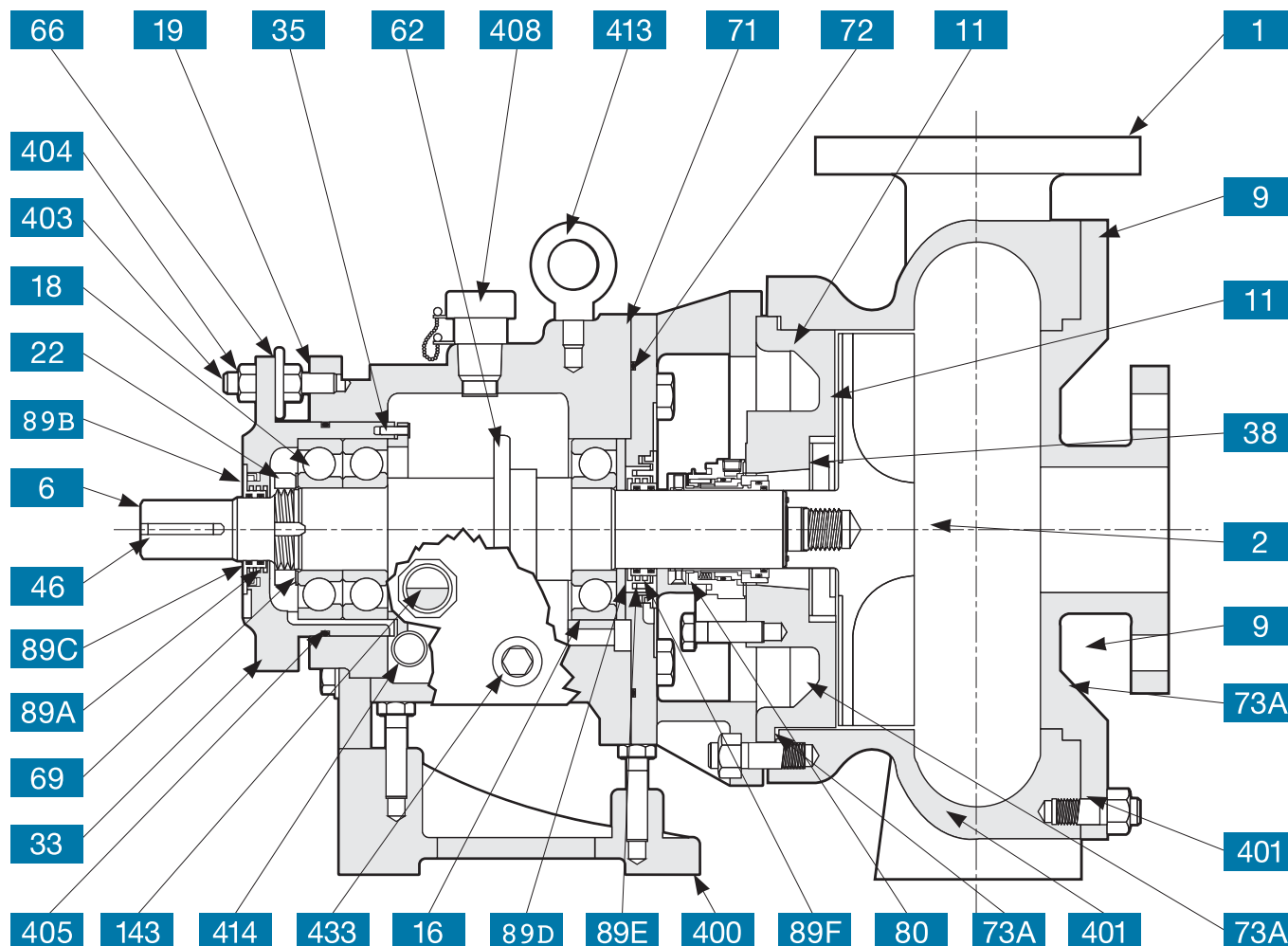
**System One Pumps Design Data
VORTEX ANSI**

| | 2.0 x 2.0-08 | 3.0 x 3.0-10 | 4.0 x 4.0-12 |
|---------------------------------|--|--------------|--------------|
| Shaft | | | |
| L3/D4 Ratio FRAME A | 61 (2.3) | 64 (2.4) | 75 (2.9) |
| L3/D4 Ratio LD17 | 21 (0.8) | 23 (0.8) | 28 (1.06) |
| Diameter at Impeller | 1.06 (27) 1.00-12 UNF Thread | | |
| Diameter at Seal | 1.875 (47.63) | | |
| Diameter Between Bearings | 2.45 (62) | | |
| Diameter at Coupling | 1.375 (34.93) | | |
| Bearings | | | |
| Thrust | SKF 7310 BEGAY (pair) | | |
| Radial | 6310 C3 | | |
| Bearing Span | 6.02 (153) | | |
| Shaft Overhang FRAME A | 9.11 (231) | 9.25 (235) | 9.73 (247) |
| Shaft Overhang LD17 | 6.42 (163) | 6.56 (167) | 7.04 (179) |
| Seal Chamber | | | |
| Seal Bore Diameter (nose) | 2.69 (68) nose | | |
| Inside Bore | FRAME A 3.75 (95) LD17 3.00 (76) | | |
| Depth | FRAME A 2.88 (73) LD17 2.00 (51) | | |
| Back Cover/Shaft Clearance | FRAME A .12 (3) Diametral LD17 Open 5 degree Taper | | |
| Gland Bolting FRAME A ANSI | 4X .500-13UNC on 4.75 B.C. (12 on 121 B.C.) | | |
| Gland Bolting LD17 | 4X .500-13UNC on 4.62 B.C. (12 on 117 B.C.) | | |
| Distance to Nearest Obstruction | FRAME A 3.00 (76) LD17 2.19 (56) | | |
| Open Impeller | | | |
| Clearance | .05 (1.3) Back of Impeller | | |
| Maximum Diameter Solids | 2.0 (51) | 3.0 (76) | 4.0 (102) |
| Number of Vanes | 8 | | |
| Pumps Weights/Lbs. (kg) | | | |
| Pump Only | 302 (136) | 357 (160) | 470 (211) |
| Casing | | | |
| Type | Single Volute | | |
| Wall Thickness | 0.44 (11) Minimum | | |
| Maximum Working Pressure | See Pressure vs. Temperature Limit Chart | | |
| Test pressure | Class 150 Flanges-250PSIG, Class 300 Flanges-450PSIG | | |
| Rotating Element | | | |
| Maximum Speed (oil lube) | 1750 | 1750 | 1750 |
| Power Limits | | | |
| HP (KW)/100 RPM 316SS | 3.4 (2.6) | | |

Reference Drawings A40210, A40211

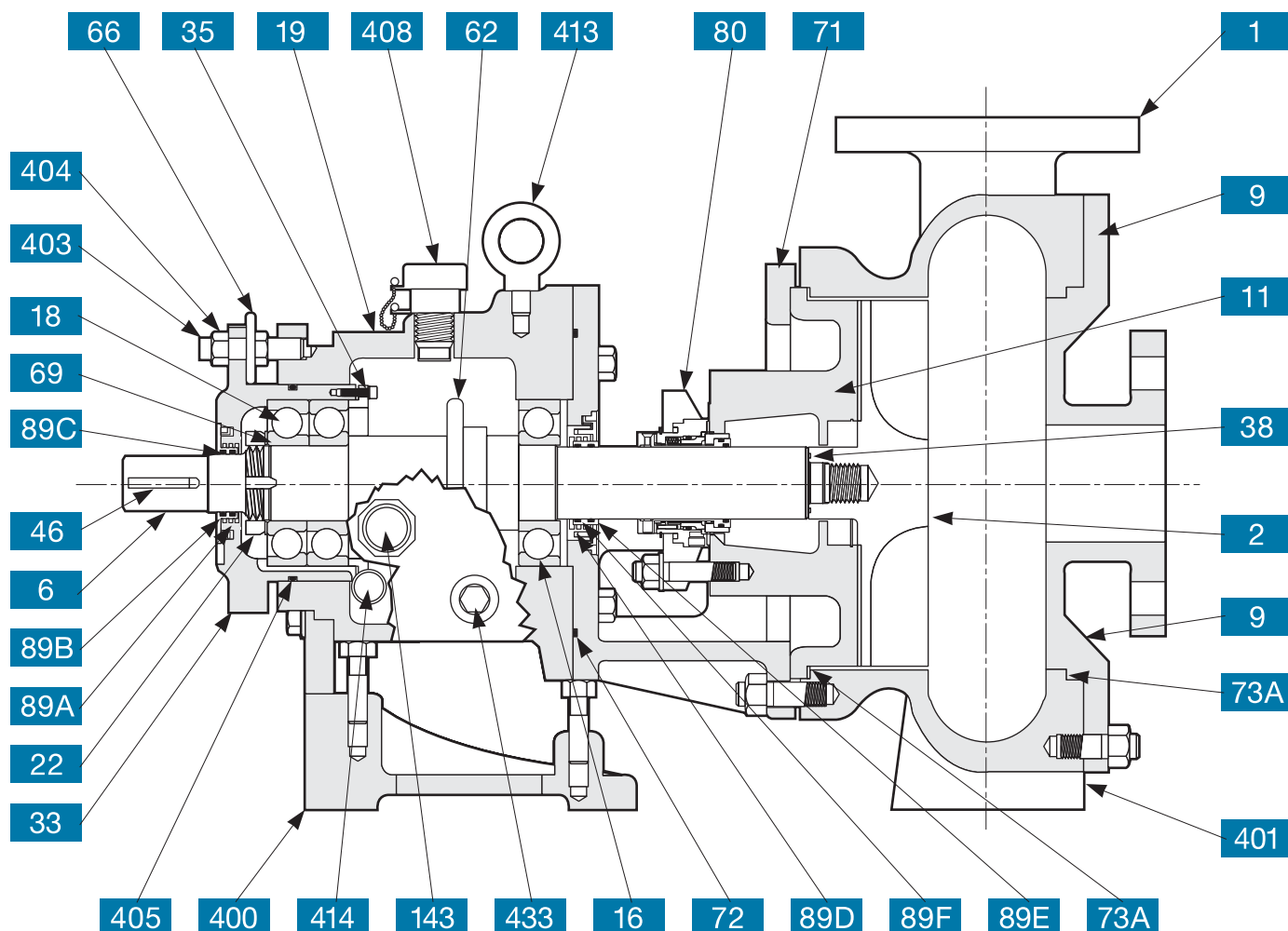


LD17



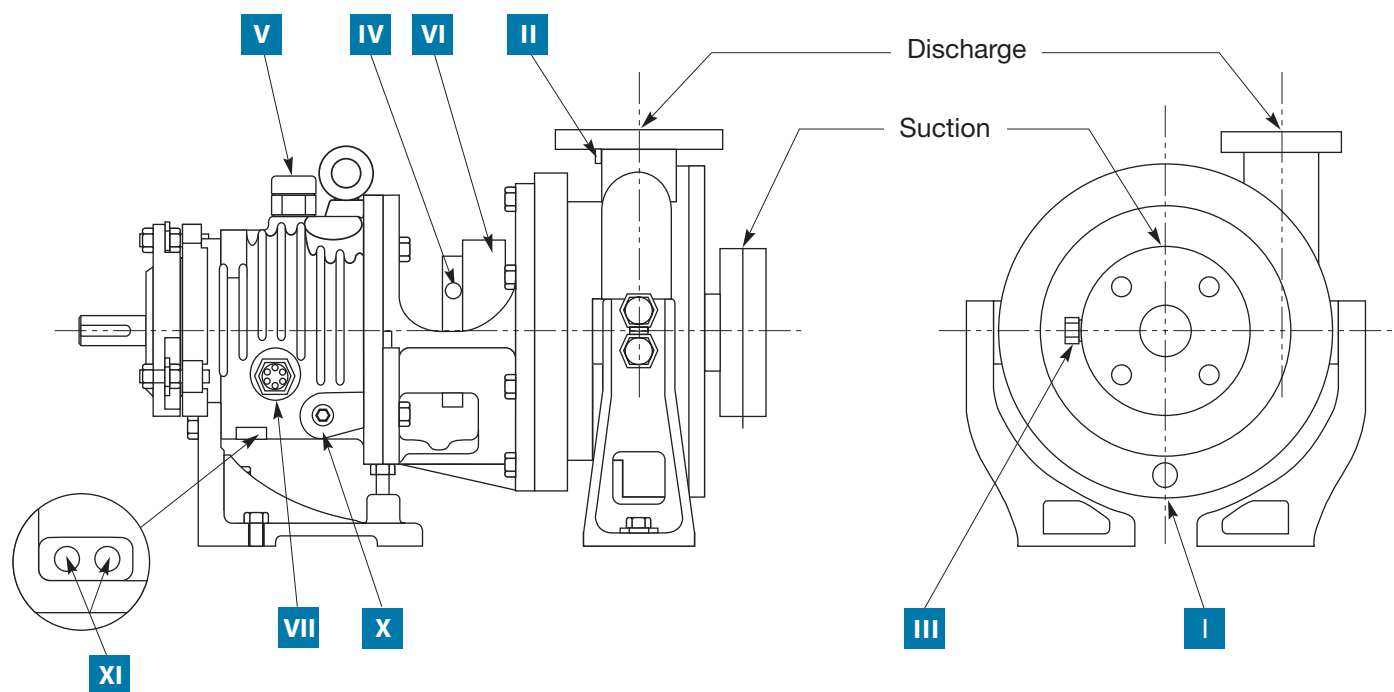
| NO. | ITEM | NO. | ITEM | NO. | ITEM |
|-----|-------------------------|-----|---|-----|---------------------------------|
| 1 | Casing | 46 | Key, Coupling | 89E | Seal, Labyrinth Rotor, (Radial) |
| 2 | Impeller | 62 | Flinger | 89F | Seal, Labyrinth O-Ring (Radial) |
| 6 | Shaft | 66 | Micrometer Nut | 143 | Oil Sight Glass |
| 9 | Suction Cover | 69 | Lockwasher, Thrust Bearing | 400 | Foot, Bearing Frame |
| 11 | Back Cover | 71 | Frame Adapter | 401 | Foot, casing |
| 16 | Bearing, Radial | 72 | O-Ring Frame Adapter | 403 | Stud, Cartridge |
| 18 | Bearing, Thrust | 73A | Gasket, Casing | 404 | Locknut, Cartridge |
| 19 | Bearing, Frame | 80 | Mechanical Seal | 405 | O-Ring, Cartridge |
| 22 | Locknut, Thrust Bearing | 89A | Seal, Labyrinth Stator, (Thrust) ¹ | 408 | Oil Filler Assembly |
| 33 | Bearing Cartridge | 89B | Seal, Labyrinth Rotor, (Thrust) | 413 | Bolt, Eye |
| 35 | Retainer Cover | 89C | Seal, Labyrinth O-Ring, (Thrust) | 414 | Plug, Magnetic |
| 38 | O-ring, Impeller Hub | 89D | Seal, Labyrinth Stator, (Radial) | 433 | Plug, Bearing Frame |

¹Incorporated as part of cartridge in 2000.



| NO. | ITEM | NO. | ITEM | NO. | ITEM |
|-----|-------------------------|-----|---|-----|---------------------------------|
| 1 | Casing | 46 | Key, Coupling | 89E | Seal, Labyrinth Rotor, (Radial) |
| 2 | Impeller | 62 | Flinger | 89F | Seal, Labyrinth O-Ring (Radial) |
| 6 | Shaft | 66 | Micrometer Nut | 143 | Oil Sight Glass |
| 9 | Suction Cover | 69 | Lockwasher, Thrust Bearing | 400 | Foot, Bearing Frame |
| 11 | Back Cover | 71 | Frame Adapter | 401 | Foot, casing |
| 16 | Bearing, Radial | 72 | O-Ring Frame Adapter | 403 | Stud, Cartridge |
| 18 | Bearing, Thrust | 73A | Gasket, Casing | 404 | Locknut, Cartridge |
| 19 | Bearing, Frame | 80 | Mechanical Seal | 405 | O-Ring, Cartridge |
| 22 | Locknut, Thrust Bearing | 89A | Seal, Labyrinth Stator, (Thrust) ¹ | 408 | Oil Filler Assembly |
| 33 | Bearing Cartridge | 89B | Seal, Labyrinth Rotor, (Thrust) | 413 | Bolt, Eye |
| 35 | Retainer Cover | 89C | Seal, Labyrinth O-Ring, (Thrust) | 414 | Plug, Magnetic |
| 38 | O-ring, Impeller Hub | 89D | Seal, Labyrinth Stator, (Radial) | 433 | Plug, Bearing Frame |

¹Incorporated as part of cartridge in 2000.



| ITEM NUMBER | NPT SIZE | NUMBER OF TAPS | CONNECTION |
|-------------|----------|----------------|--|
| * I | 0.50-14 | 1 | Casing Drain |
| * II | 0.25-18 | 1 | Discharge Gage |
| * III | 0.25-18 | 1 | Suction Gage |
| * IV | 0.25-18 | 1 | Seal Chamber Flush (not available on LD17) |
| V | 0.75-14 | 1 | Oil Fill |
| * VI | 0.25-18 | 2 | Seal Chamber Jacket – Inlet & Outlet (not available on LD17) |
| # VII | 1.0-11.5 | 1 | Oil Sight Glass |
| # X | 0.25-18 | 1 | Oil Drain |
| ## XI | 0.50-14 | 2 | Magnetic Plug or Cooling Coil* |

* Optional

Left side of pump facing suction end

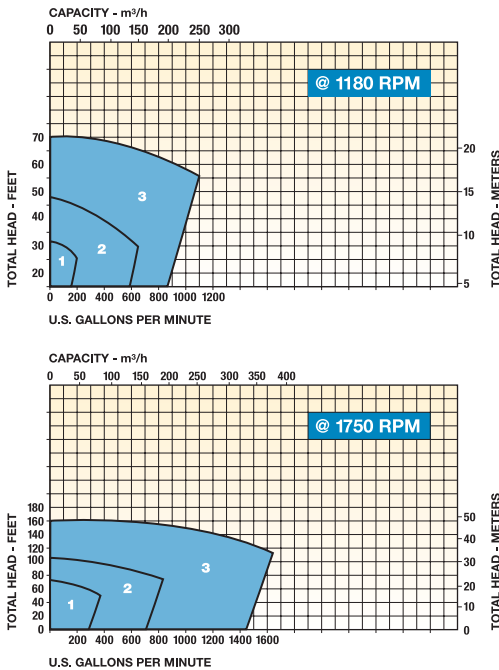
Right side facing suction end



System One® Vortex Pump Composite Pump Curves - Frame LD17 and A and Metric Flange



Vortex Pump (FRAME LD17 and A)

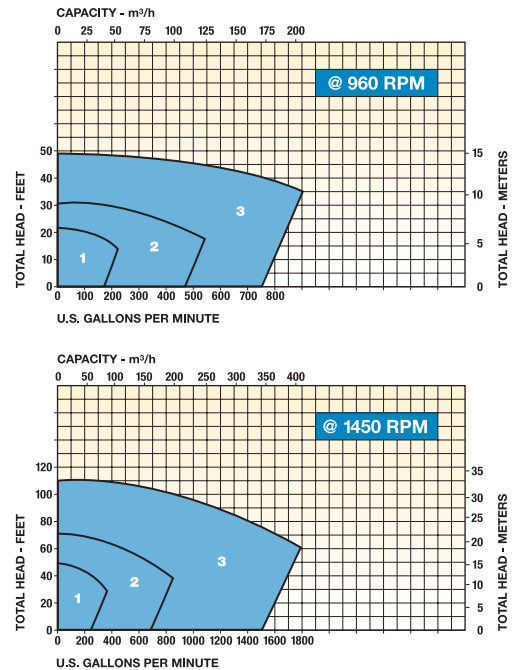


Vortex Pump – Frame LD17 and A

| Pump Size | CP FrA | CP LD17 | C FrA | C LD17 | Y | X | E | D | O | F FrA | F LD17 | A | A ₁ | 2E ₁ | 2E ₂ | SW |
|------------|--------|---------|-------|--------|------|-------|------|-------|------|-------|--------|-------|----------------|-----------------|-----------------|------|
| 1 2 x 2-8 | 25.62 | 22.93 | 21.62 | 18.93 | 4.00 | 7.75 | 4.37 | 8.25 | 16.0 | 14.62 | 11.93 | 11.25 | 15.25 | 7.50 | 7.25 | 1.00 |
| 2 3 x 3-10 | 27.18 | 24.49 | 22.56 | 19.87 | 4.62 | 9.50 | 5.50 | 10.00 | 19.5 | 15.58 | 12.89 | 13.75 | 19.25 | 7.12 | 7.25 | 1.12 |
| 3 4 x 4-12 | 29.38 | 26.69 | 23.88 | 21.19 | 5.50 | 11.50 | 6.50 | 10.00 | 21.5 | 16.83 | 14.14 | 16.50 | 22.00 | 9.88 | 7.25 | 1.38 |

SW dim. indicates width of optional spacer flange.
All dimensions are in inches.

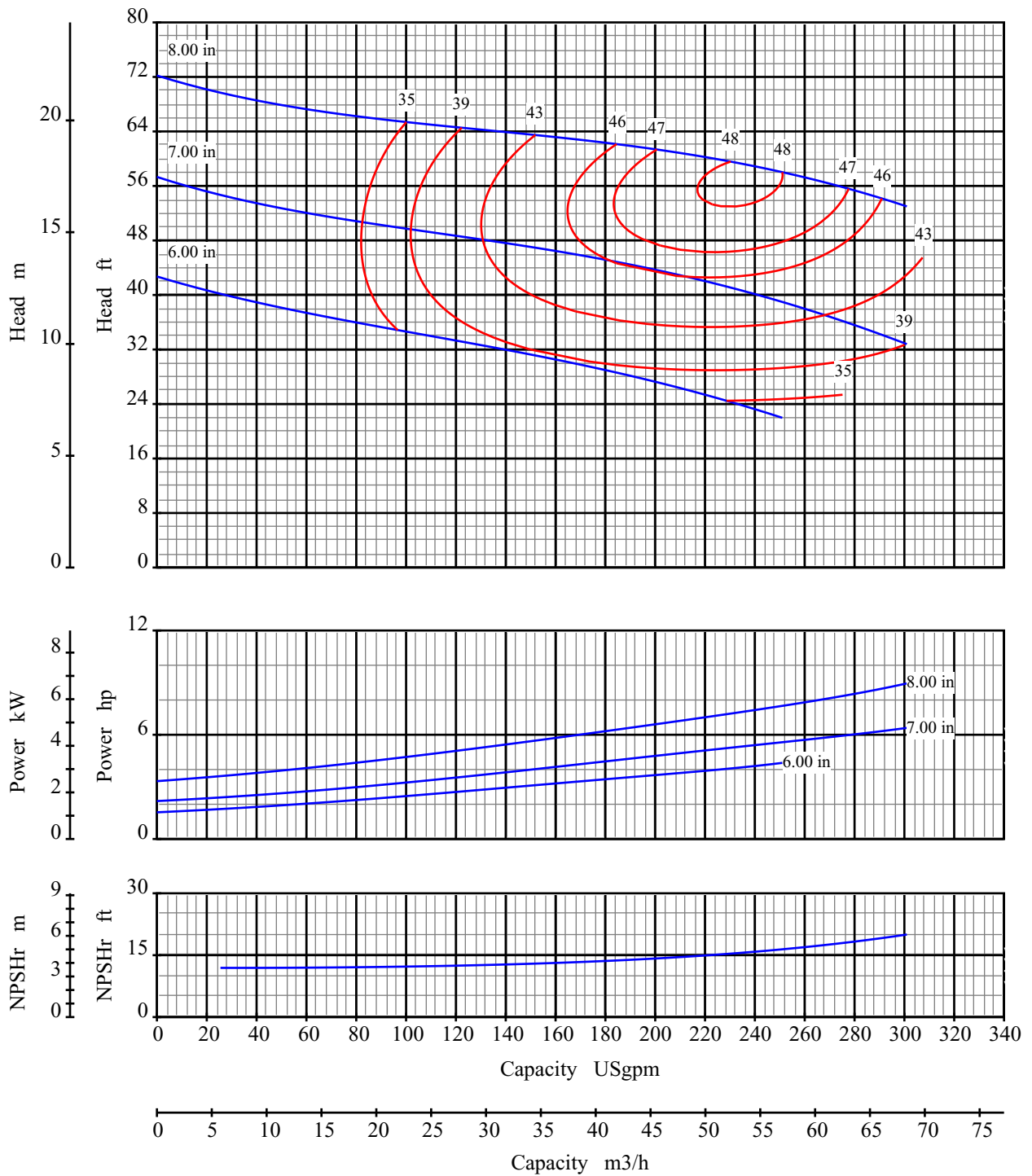
Vortex Pump (Metric Flange)



Vortex Pump – Metric Flange

| Pump Size | CP FrA | CP LD17 | C FrA | C LD17 | Y | X | E | D | O | F FrA | F LD17 | A | A ₁ | 2E ₁ | 2E ₂ | SW |
|-----------------|--------|---------|-------|--------|-----|-----|-----|-----|-----|-------|--------|-----|----------------|-----------------|-----------------|----|
| 1 50 x 50-200 | 651 | 582 | 550 | 481 | 100 | 195 | 111 | 200 | 406 | 382 | 303 | 285 | 387 | 191 | 185 | 25 |
| 2 80 x 80-250 | 690 | 622 | 573 | 505 | 117 | 241 | 140 | 250 | 495 | 396 | 327 | 350 | 489 | 181 | 185 | 28 |
| 3 100 x 100-300 | 746 | 678 | 606 | 538 | 140 | 292 | 165 | 250 | 546 | 427 | 359 | 420 | 559 | 250 | 185 | 35 |

SW dim. indicates width of optional spacer flange.
All dimensions are in millimeters.



Curve No: S17102V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 2x2 8

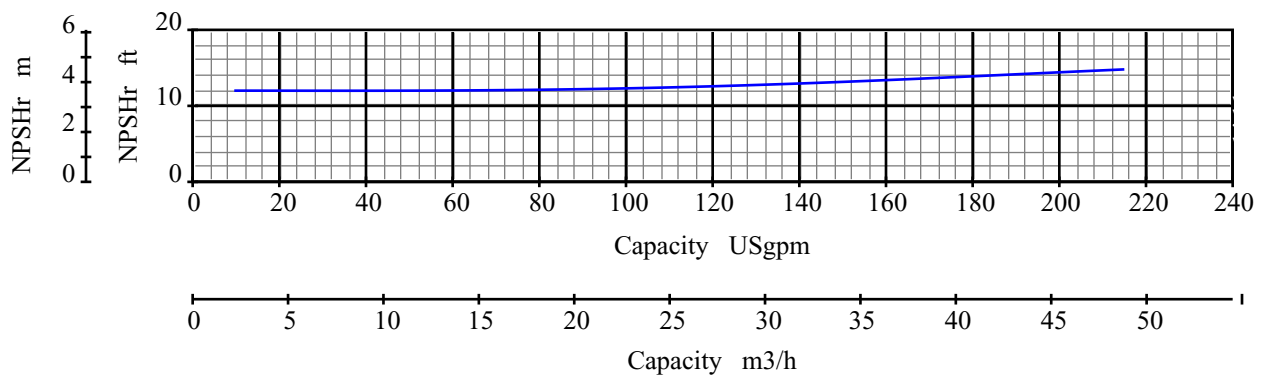
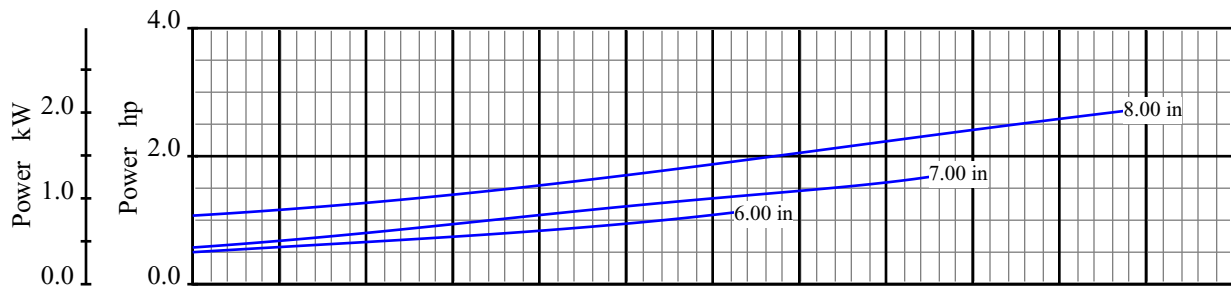
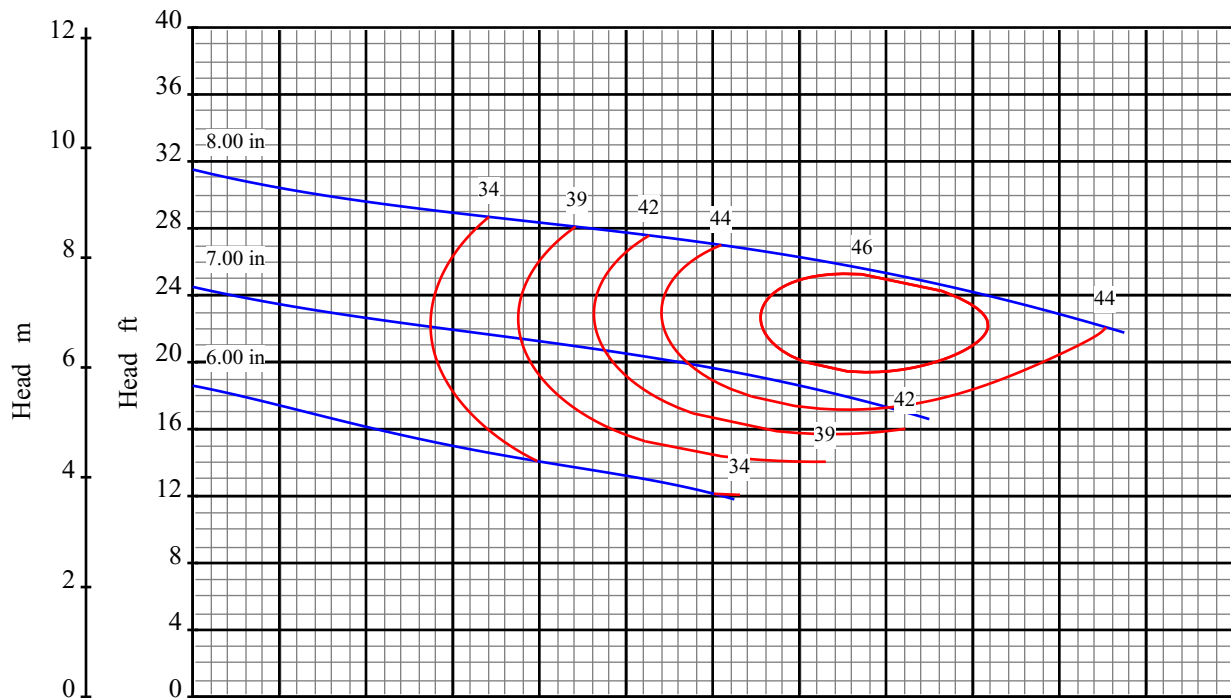
Pump Size: 50x50 200

Speed: 1750 rpm

Vortex Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S17104V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 2x2 8

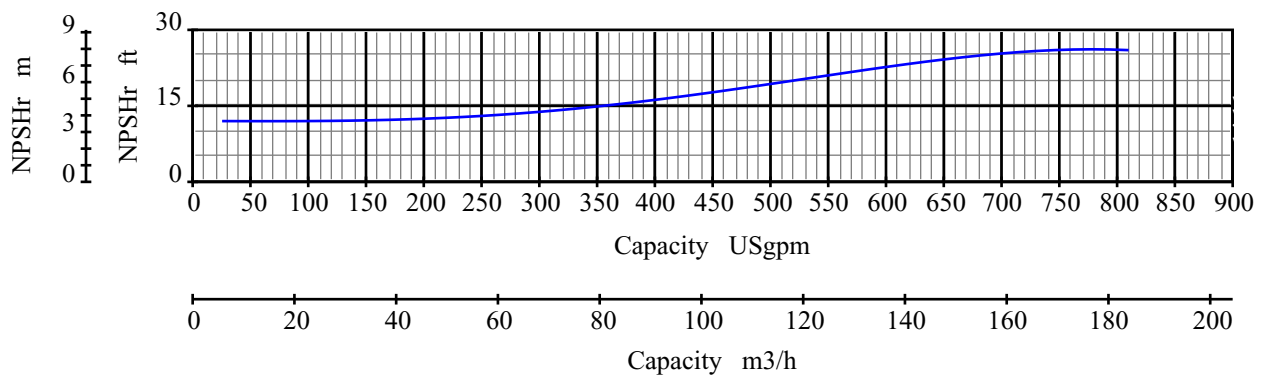
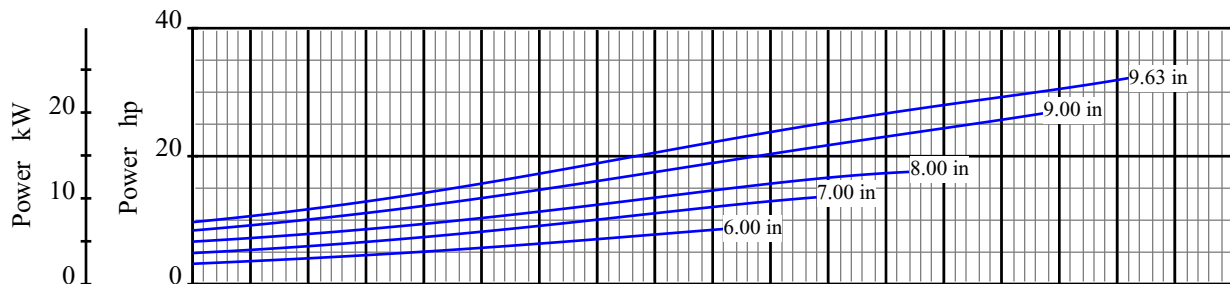
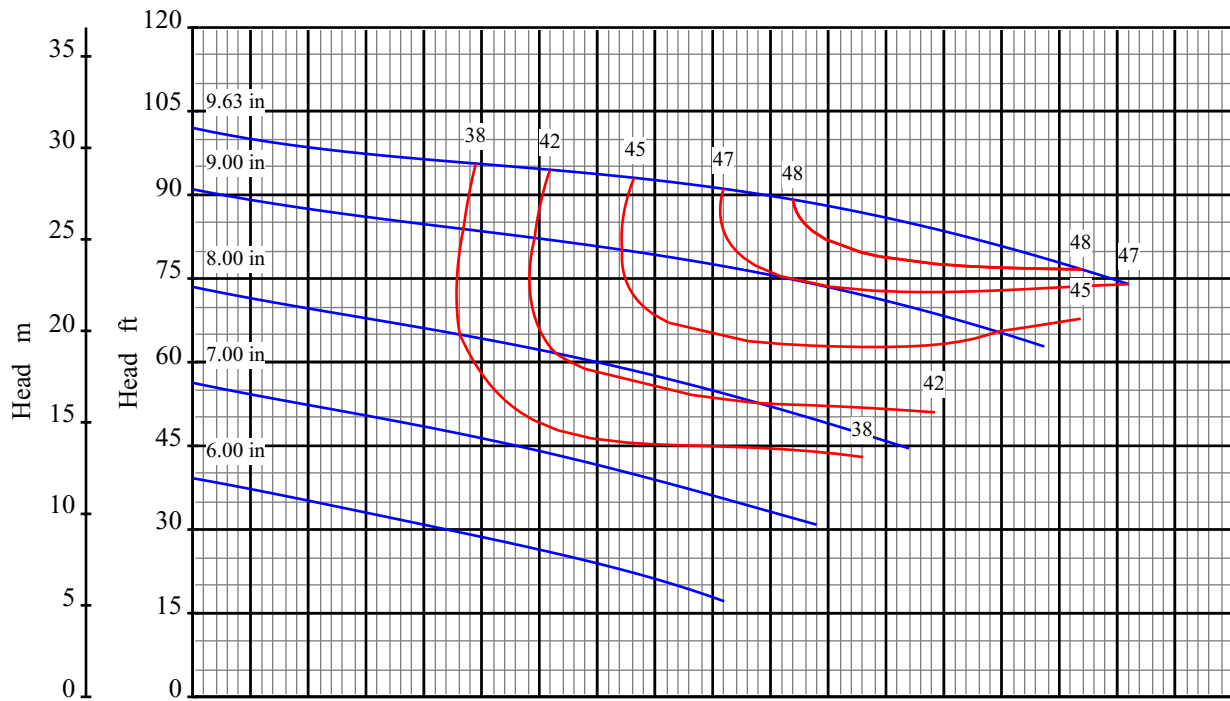
Pump Size: 50x50 200

Speed: 1150 rpm

Vortex Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S17108V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 3x3 10

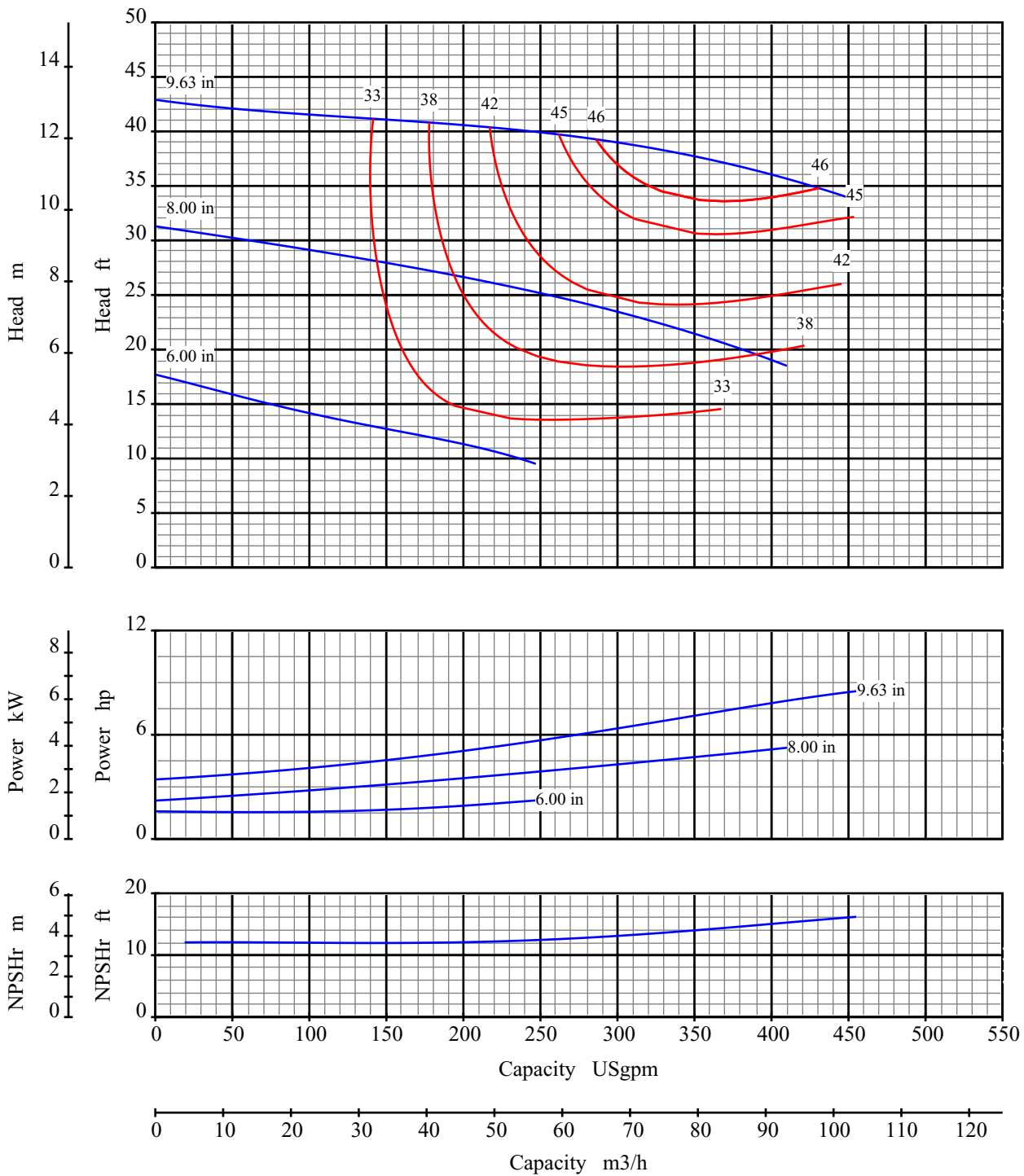
Pump Size: 80x80 250

Speed: 1750 rpm

Vortex Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S17110V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 3x3 10

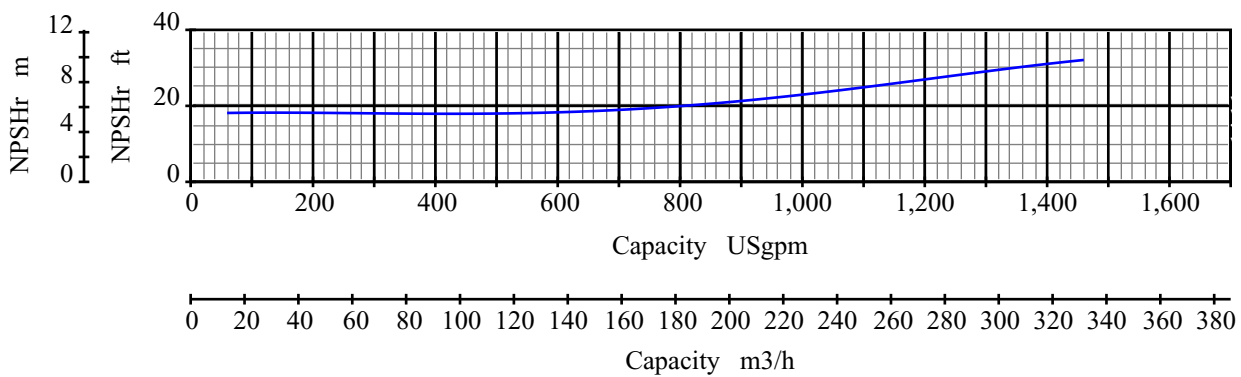
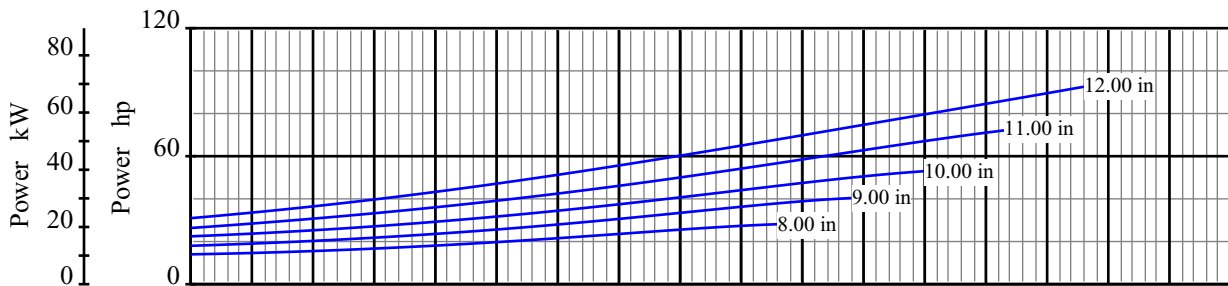
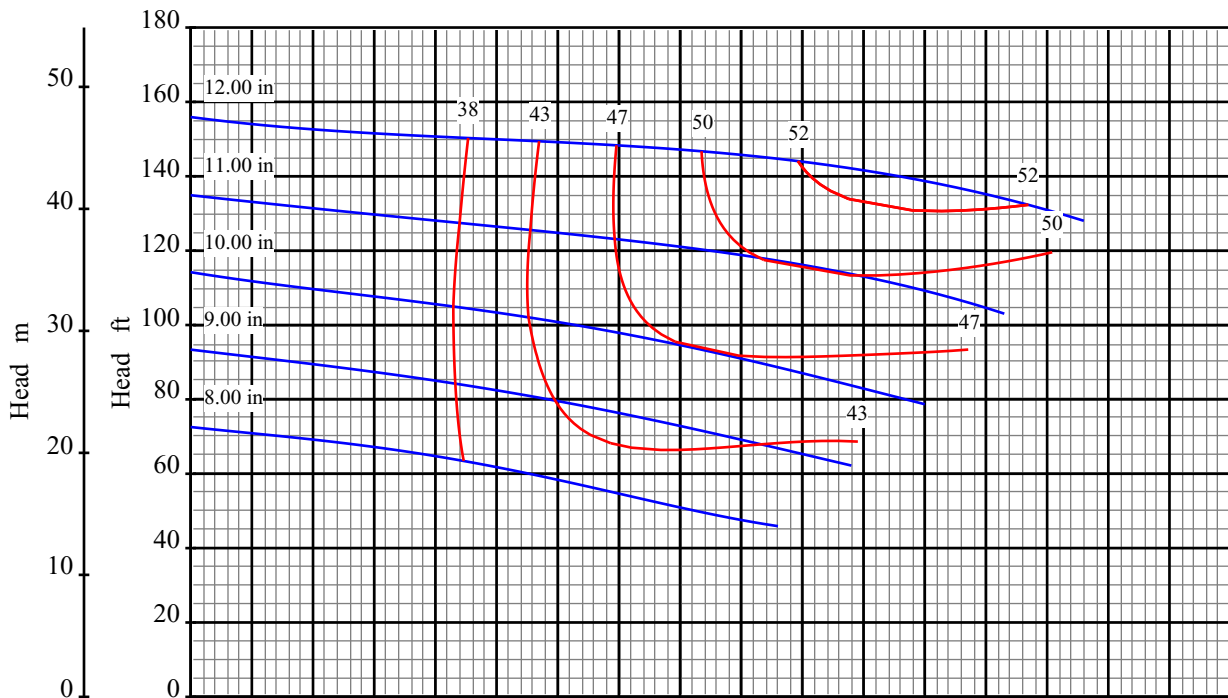
Pump Size: 80x80 250

Speed: 1150 rpm

Vortex Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S17114V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 4x4 12

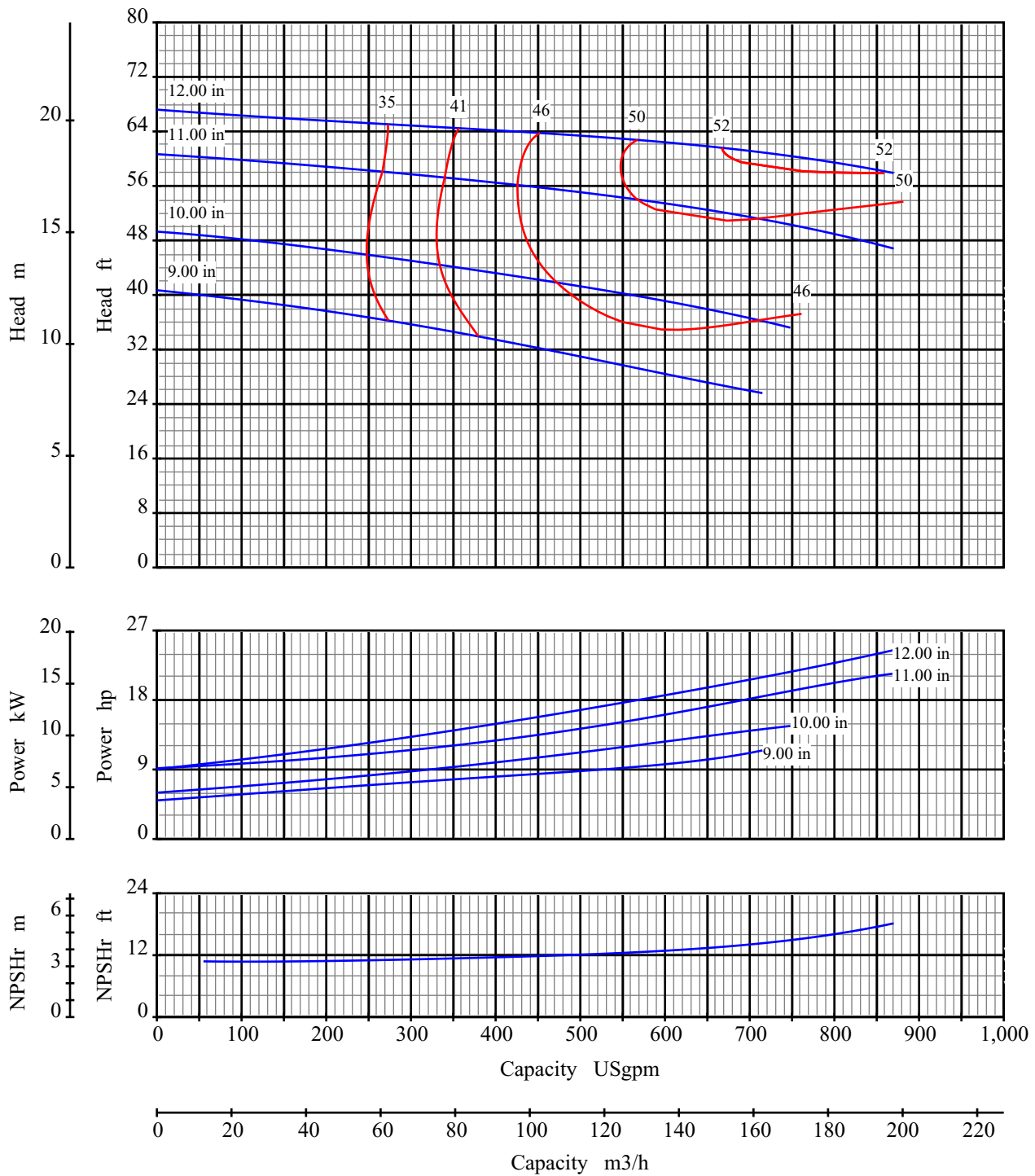
Pump Size: 100x100 300

Speed: 1750 rpm

Vortex Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S17116V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 4x4 12

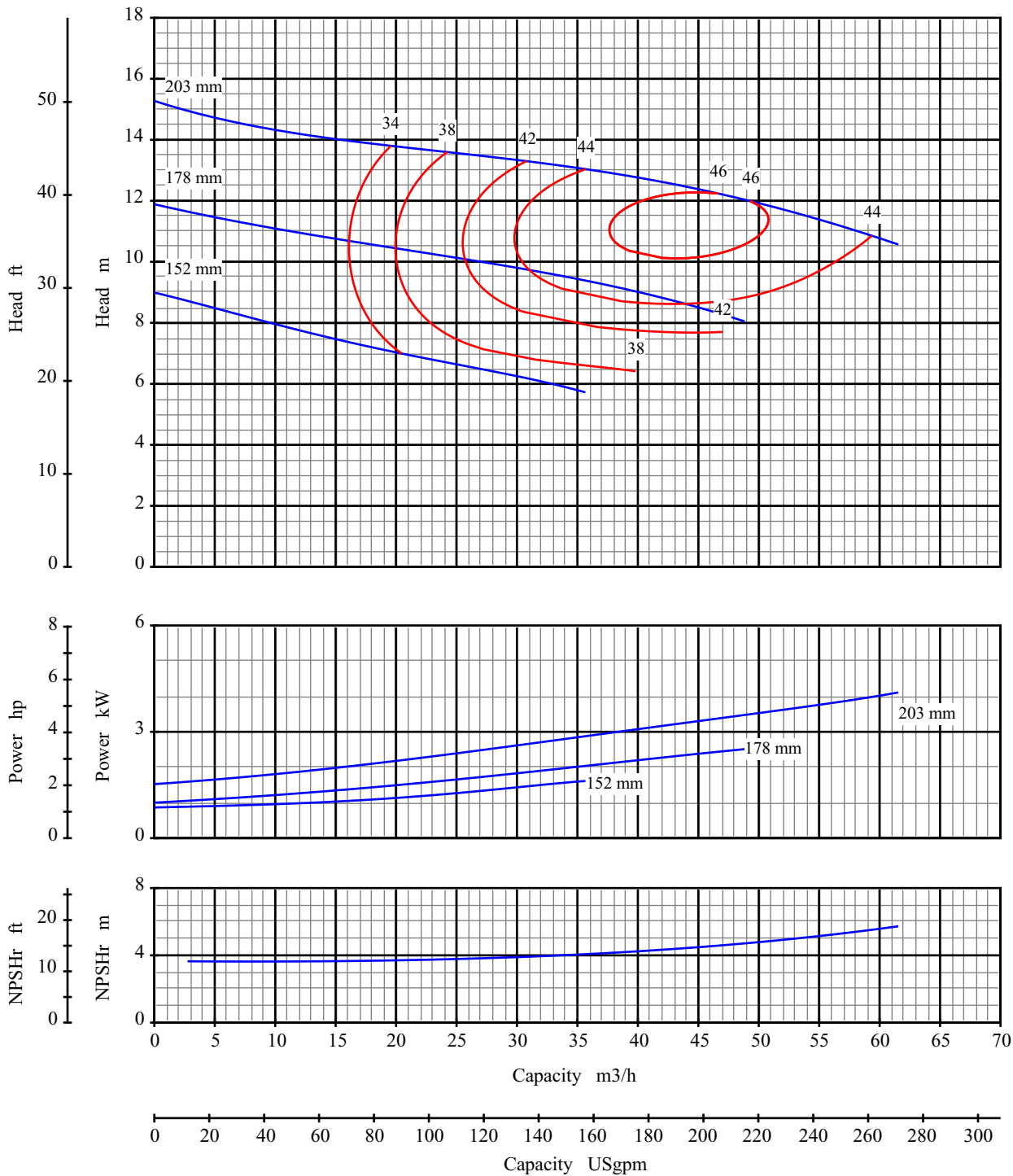
Pump Size: 100x100 300

Speed: 1150 rpm

Vortex Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S17103V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 50x50 200

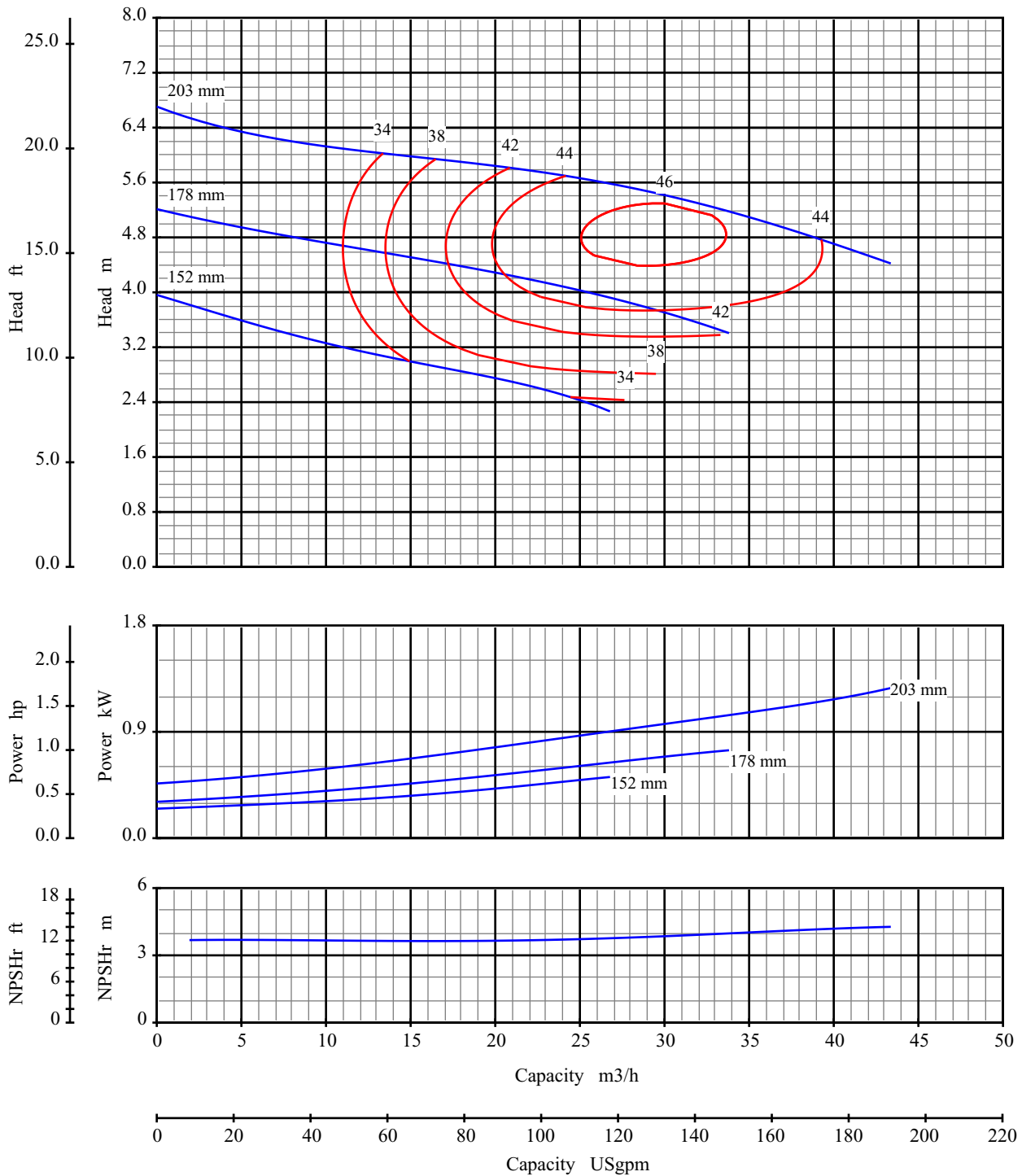
Pump Size: 2x2 8

Speed: 1450 rpm

Vortex Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S17105V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 50x50 200

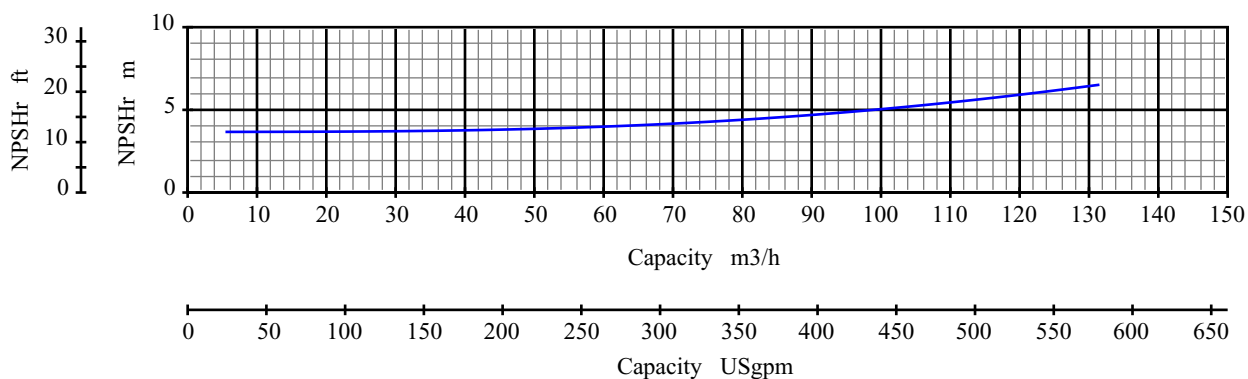
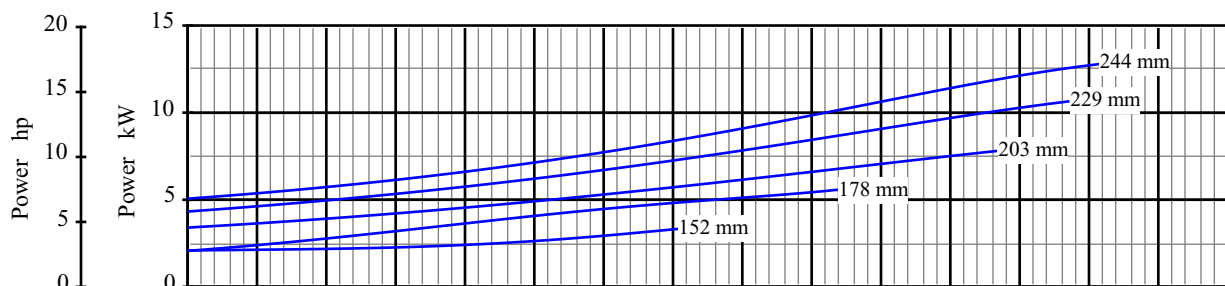
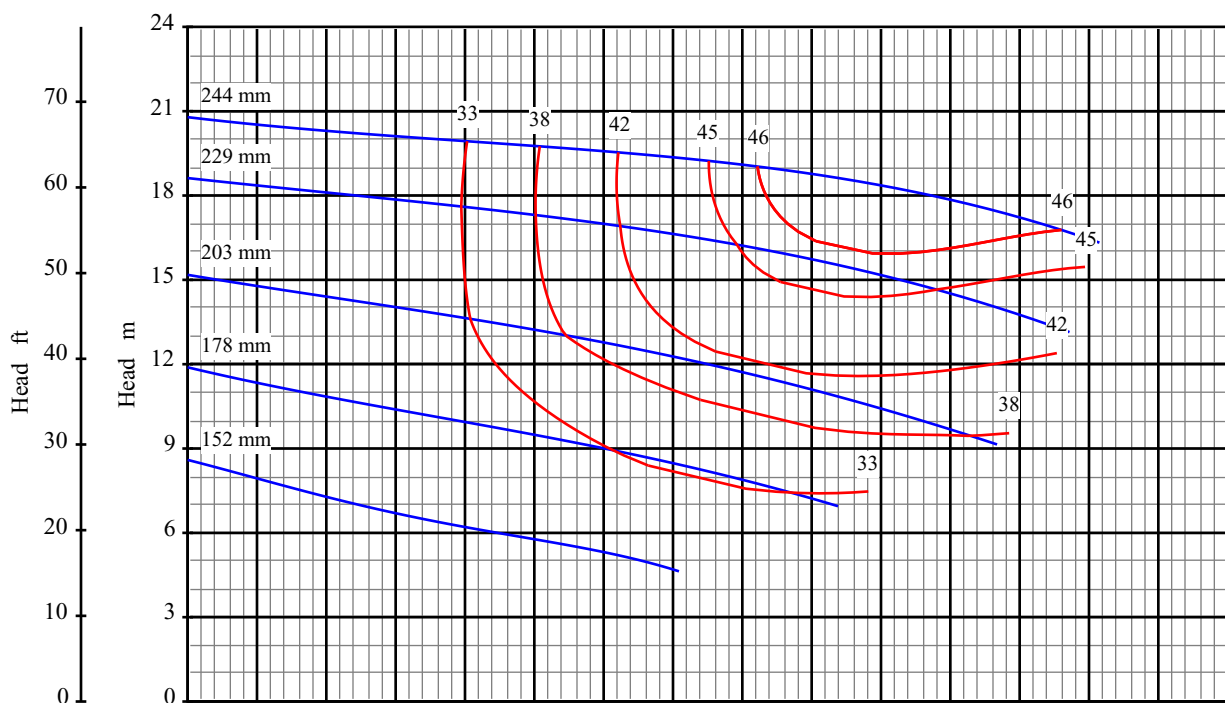
Pump Size: 2x2 8

Speed: 960 rpm

Vortex Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S17109V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 80x80 250

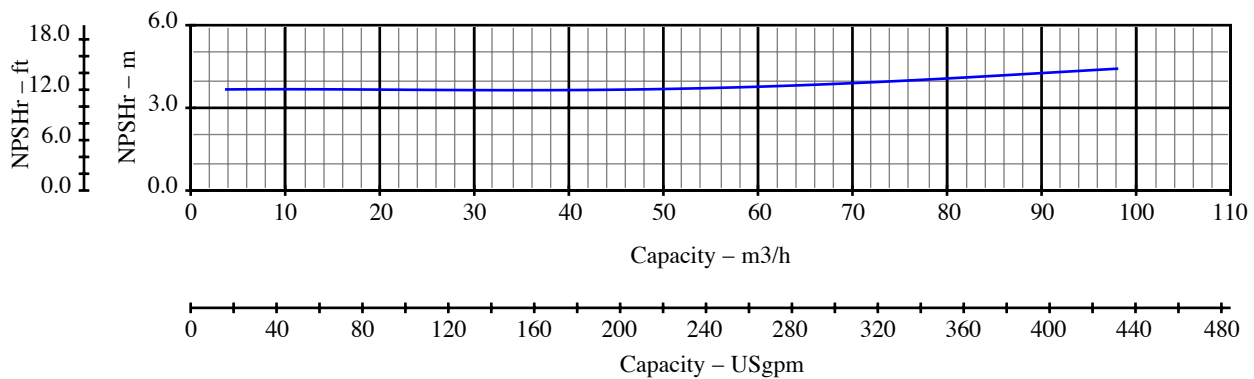
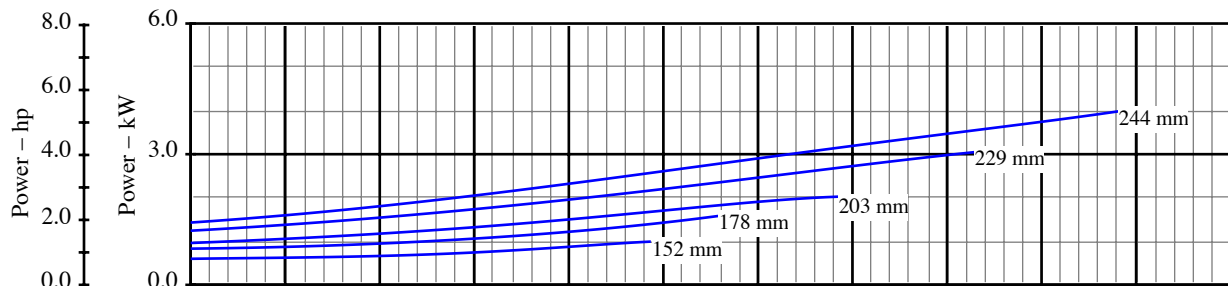
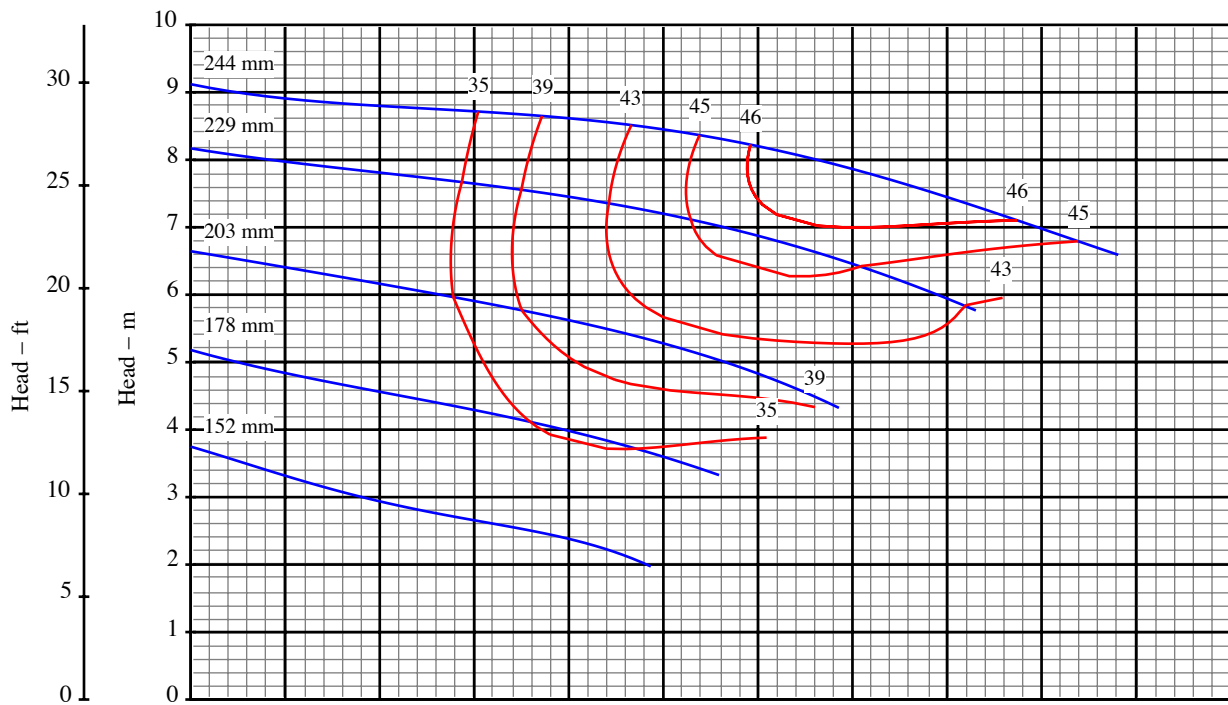
Pump Size: 3x3 10

Speed: 1450 rpm

Vortex Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S17111V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 80x80-250

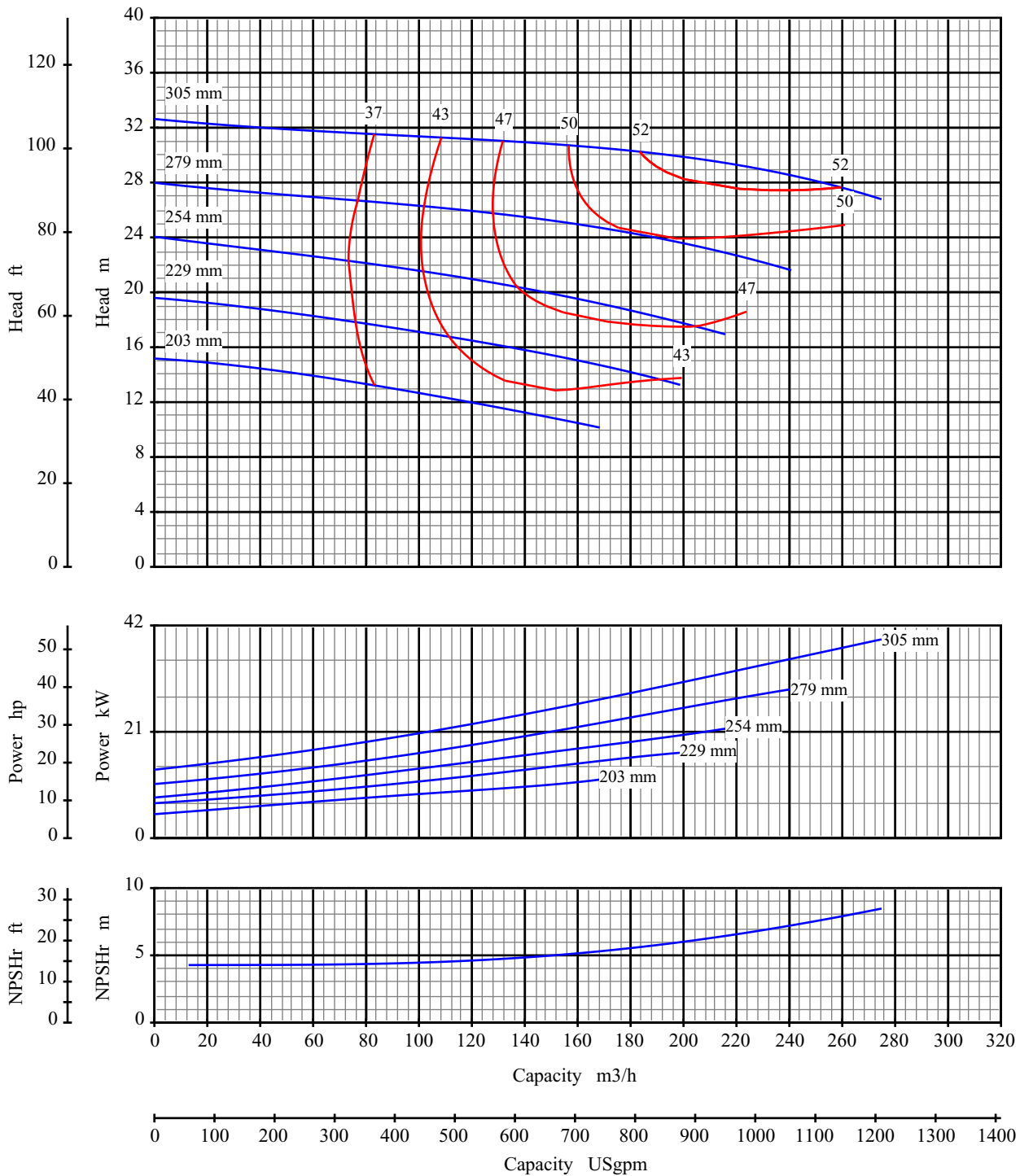
Pump Size: 3x3-10

Speed: 960 rpm

Vortex Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503-1530 USA

telephone: 616-241-1611 fax: 616-241-3752 www.blackmer.com



Curve No: S17115V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 100x100 300

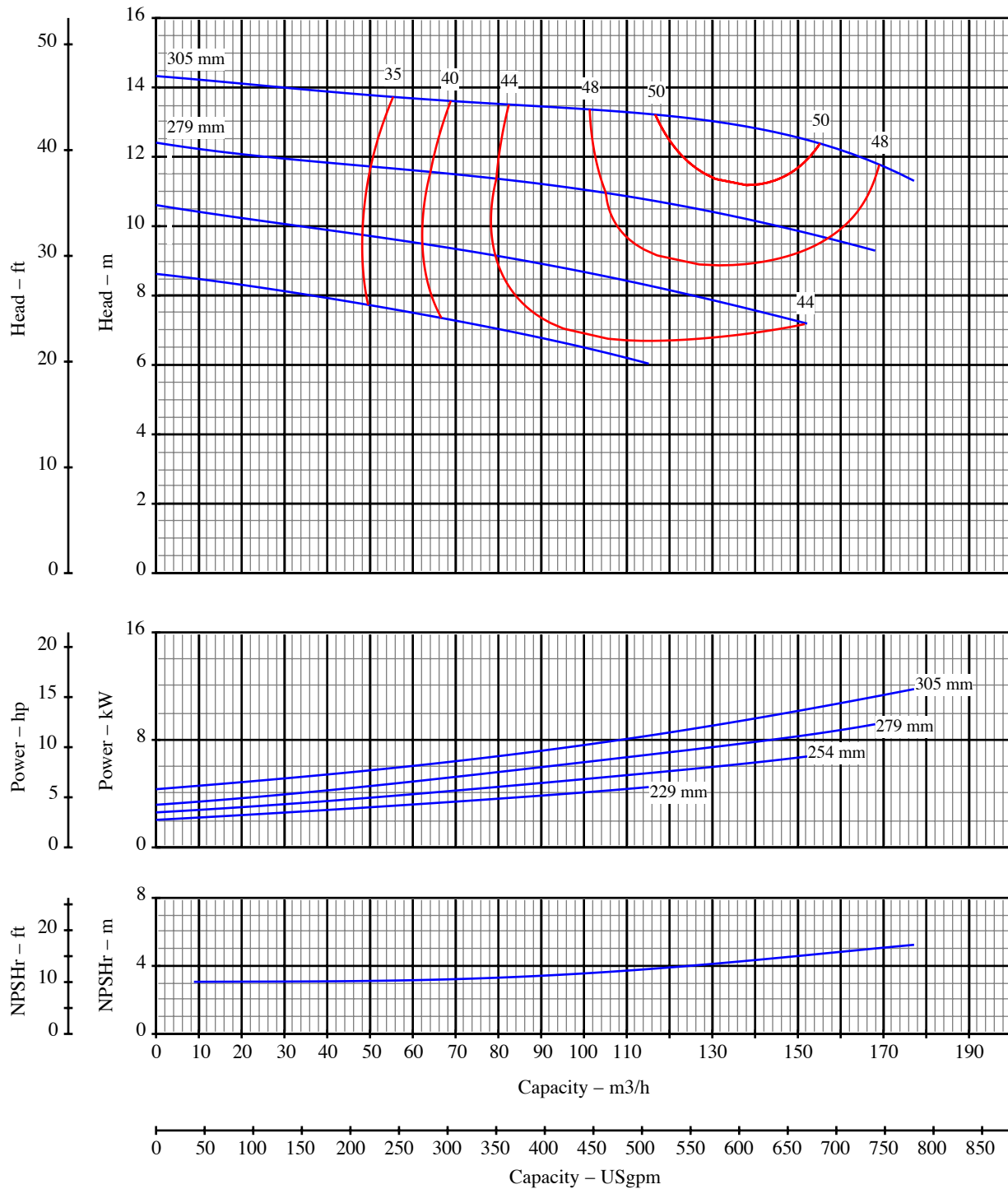
Pump Size: 4x4 12

Speed: 1450 rpm

Vortex Impeller

Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503 1530 USA

telephone: 616 241 1611 f ax: 616 241 3752 www .blackmer.com



Curve No: S17117V1

Blackmer System One

Pump Performance Characteristics

Effective Date: Jan/2005

Catalog: 1301

Pump Size: 100x100-300

Pump Size: 4x4-12

Speed: 960 rpm

Vortex Impeller

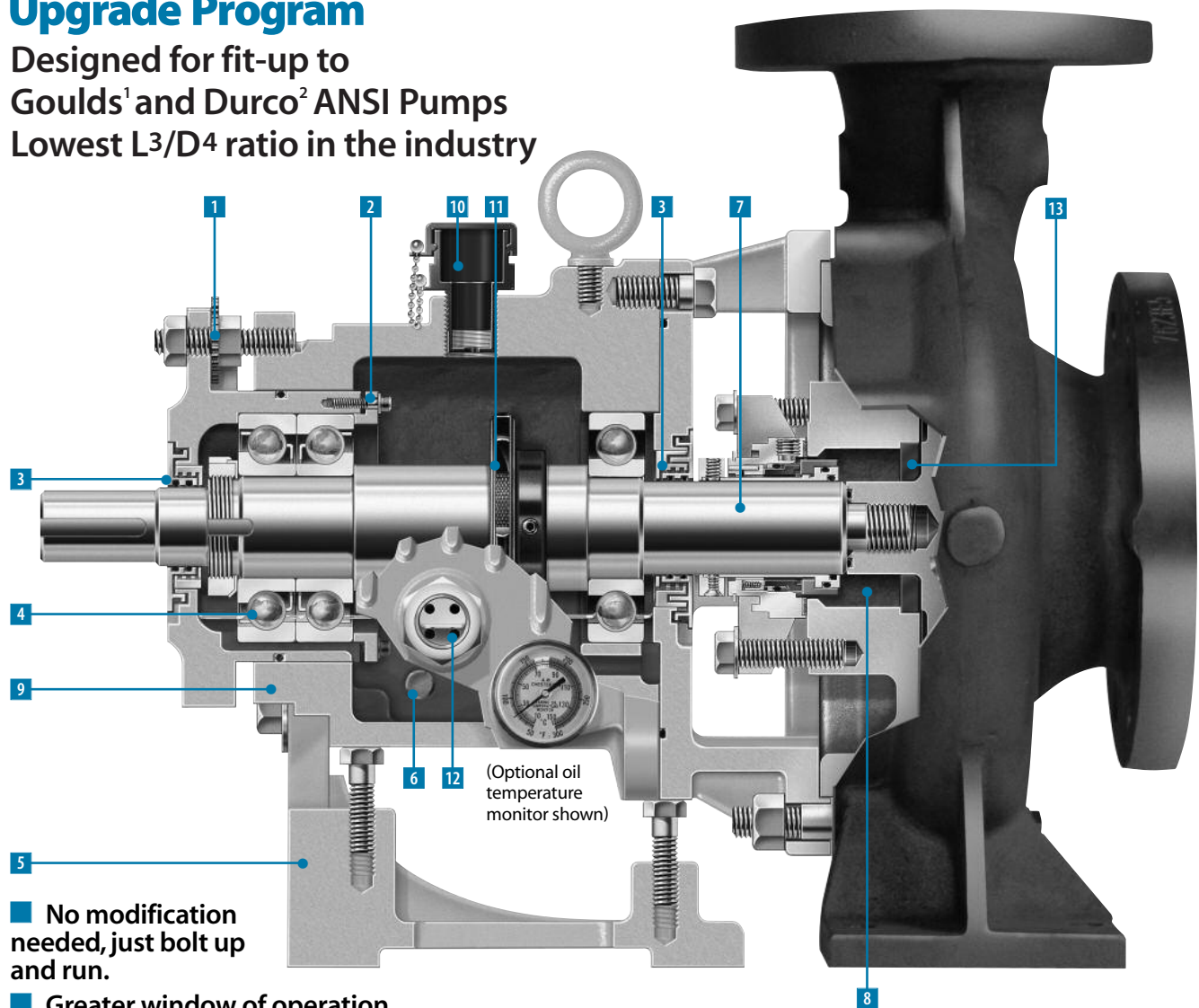
Blackmer 1809 Century Avenue SW Grand Rapids, MI 49503-1530 USA

telephone: 616-241-1611 fax: 616-241-3752 www.blackmer.com



System One LD Power End Upgrade Program

Designed for fit-up to
Goulds¹ and Durco² ANSI Pumps
Lowest L³/D⁴ ratio in the industry



■ No modification needed, just bolt up and run.

■ Greater window of operation away from Best Efficiency Point.

¹Goulds is a registered trademark.

²Durco is a registered trademark.

1 Patented micrometer adjustment nuts (Pat. # 4,439,096) fine tune impeller setting for maximum efficiency.

2 Positive locking thrust bearing retainer cover for maximum bearing holding power and minimum axial movement.

3 Patented System One Labyrinth Seals (Pat. # 4,572,517) provide a non-wearing lifetime protection for radial and thrust bearings.

4 Angular contact bearings are standard for high thrust capability.

5 Full support rear leg assures bearing frame remains upright during pump disassembly. Full adjustability aids in alignment.

6 Two magnetic plugs are provided to maintain clean oil and are removable for insertion of cooling oil.

7 Solid shaft (no sleeve) with minimal overhang provides superior resistance to deflection.

8 System One large bore back cover accepts most standard mechanical seals.

9 Rabbit for C-Frame (NEMA) or D-Flange (IEC) motor adapter for instantaneous and precise motor alignment.

10 Large oil inlet for easy filling of oil; the sealed cover minimizes dirt and moisture entry.

11 Flinger filter constantly cleans oil during pump operation. (Frame A only)

12 Oil sight glass for constant monitoring of oil level and condition.

13 Optional throat bushing available for specific seals.



4 out of 5 pump downtimes are caused by seal and bearing failures.

The System One LD Power End is designed specifically to eliminate the root causes of these failures.

Stronger shaft, greater resistance to damaging vibration

Existing shafts with sleeves have a relatively small diameter and long overhang, resulting in a poor L^3/D^4 ratio. Unless conditions are perfect, the weak, slender shaft will bend under stress, causing vibration along its entire length. Shaft vibration hammers the mechanical seal and bearings, causing premature failures.

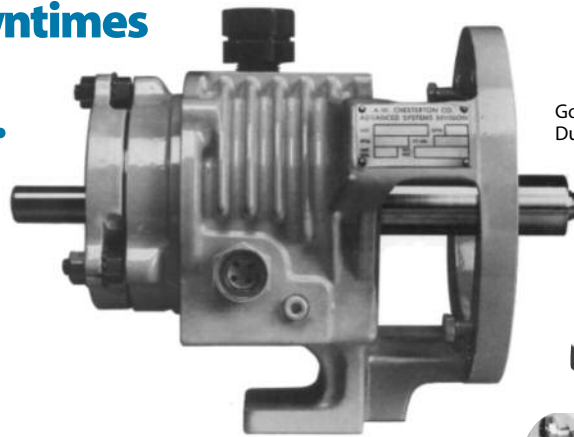
Converting to the LD Power End increases resistance to vibration by up to 5 times compared to original equipment. Seals and bearings are protected, even when the pump is running off the BEP, or subject to pipe strain or other external stresses.



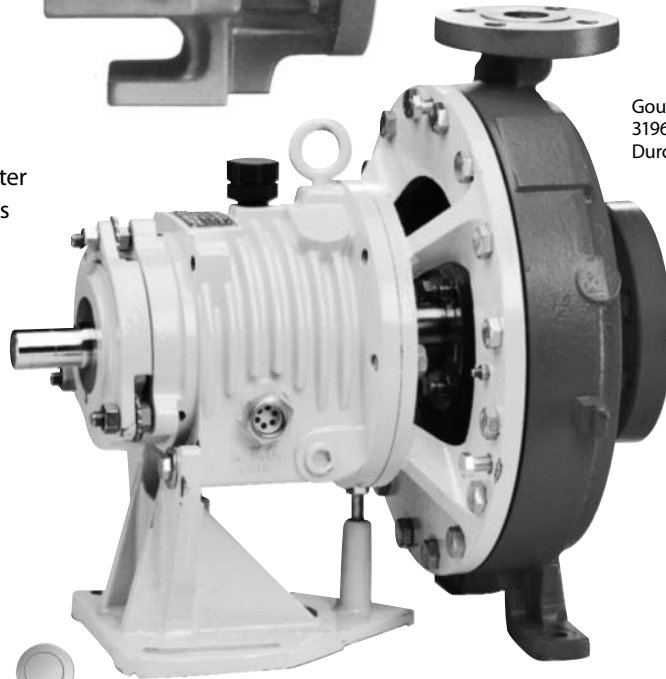
Original equipment:
high L^3/D^4 equals high vibration.



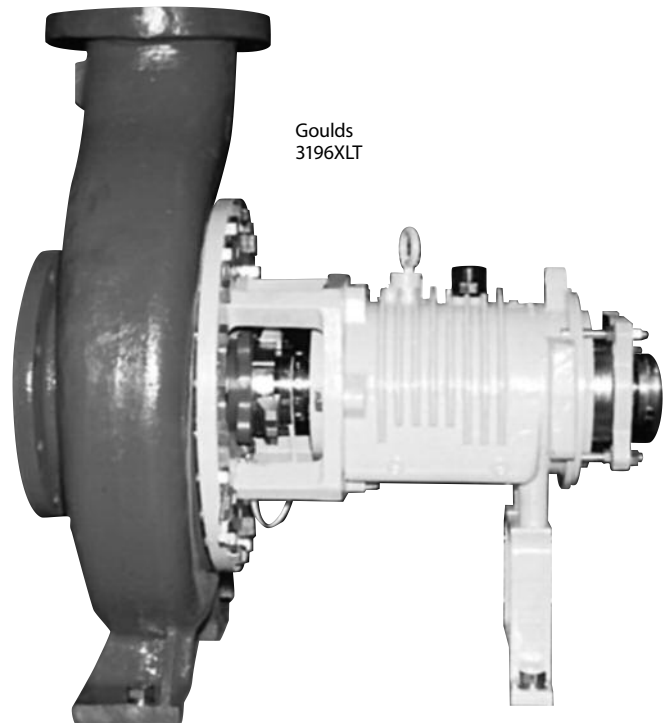
System One LD shaft
has the lowest L^3/D^4 ratio in the industry.



Goulds¹ 3196ST
Durco² MII G I



Goulds
3196MT
Durco MII G II



Goulds
3196XLT

LD Power End Upgrades are available today for the following popular ANSI pumps

- Goulds ST
- Goulds 3196MT
- Goulds XLT
- Durco MII G I
- Durco MII G II

¹Goulds is a registered trademark.

²Durco is a registered trademark.



L³/D⁴ and bearing Comparison

| | System One Frame S | Goulds ST ¹ | Durco GI ² | System One Frame A Power End Conversion | Goulds MT ¹ | Durco GI ² | System One Frame M | Goulds XLT ¹ |
|--|-----------------------|---------------------------|--------------------------|---|---------------------------|--------------------------|-----------------------|----------------------------|
| L ³ D ⁴ without sleeve | 46 (1.9) | 64 (2.5) | 127 (4.4) | 23 Gld/18 Dur (0.9/0.7) | 62 (2.3) | 37 (1.7) | 19 (.72) | 25 (.94) |
| L ³ D ⁴ with sleeve | N/A | 143 (4.5) | 346 (14.3) | N/A | 116 (4.4) | 65 (2.5) | N/A | 61 (2.3) |
| bearings: radial | 6308 | 6207 | 6206,7 | 6310 | 6309 | 6310 | 6314 | 313 |
| thrust | 5308 | 5306 | 5305,6 | 7310(2) | 5309 | 5310 | 7314(2) | 5313 |
| shaft diameter at seal | 1.500 (38) | 1.375 (35) | 1.125 (29) | 1.875 (48) | 1.750 (45) | 1.875 (48) | 2.625 (67) | 2.50 (64) |

System One LD Power End Conversions are also available as a “universal” version that allows adaptation to many existing process pumps. Universal frame adapters are available to retrofit various configurations.

Stronger shaft resists damaging vibration

The System One LD power ends increase resistance to deflection and vibration. With a solid shaft (no sleeve) and shorter overhang, System One pumps offer the lowest LD ratio in the industry and are especially suited for maximizing seal/bearing life and operation off the BEP.

Quality motor alignments

The System One LD power end features C-frame motor adapter capability that provides precise alignment for quick and repeatable motor mounting and eliminates vibration. And, skill level, temperature concerns, and time constraints are all eliminated with the simplified motor mounting.

Improved seal environment

The System One large volume seal chamber has an increased volume for enhanced cooling, cleaning, and seal lubrication. The first process pump manufacturer to offer large bore seal chambers as standard equipment.

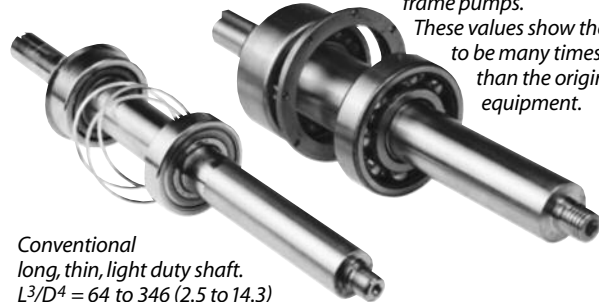
Superior bearing protection

System One Labyrinth seals provide lifetime, non-wearing protection against contaminants that can decrease bearing life. The seals replace short-lived and shaft-damaging rubber lip seals. In addition, pressure tight face seals are available for moisture-laden environments or immersion.

System One Upgrade shaft.

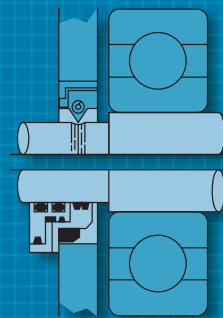
L³/D⁴ = 46 (1.9) for small frame pumps.
L³/D⁴ = 18 to 23 (0.7 to 0.9) for medium frame pumps.

These values show the shaft to be many times stiffer than the original equipment.

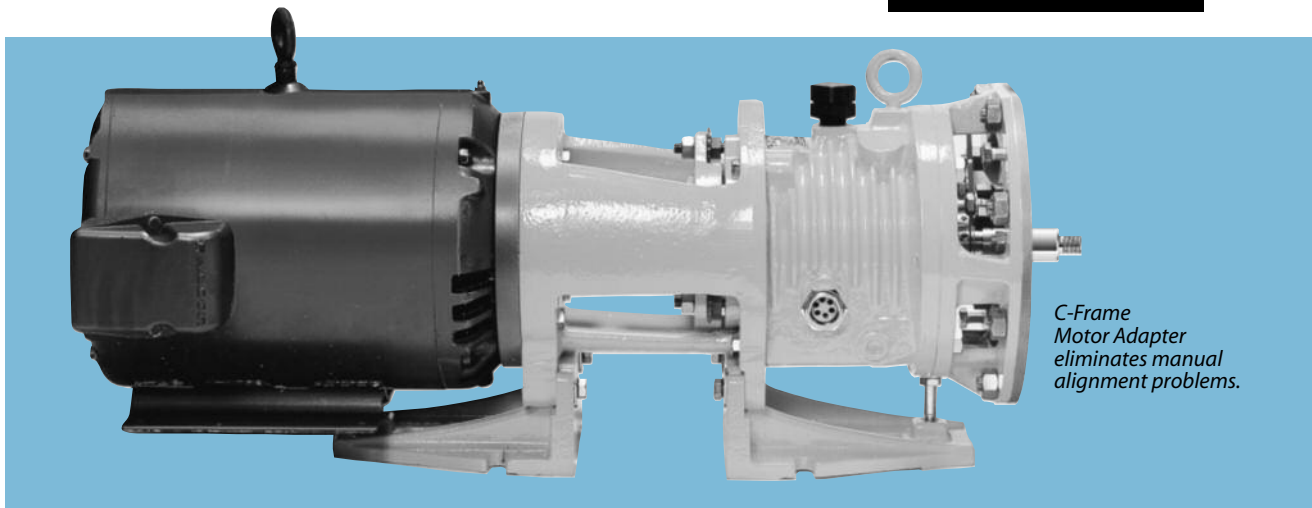


Conventional long, thin, light duty shaft.
L³/D⁴ = 64 to 346 (2.5 to 14.3) for small frame pumps.
L³/D⁴ = 38 to 116 (1.7 to 4.4) for medium frame pumps.

Top: Lip seals damage shafts and lose effectiveness rapidly.



Bottom: Long term effective Labyrinth seal protection is standard on the LD Power End.

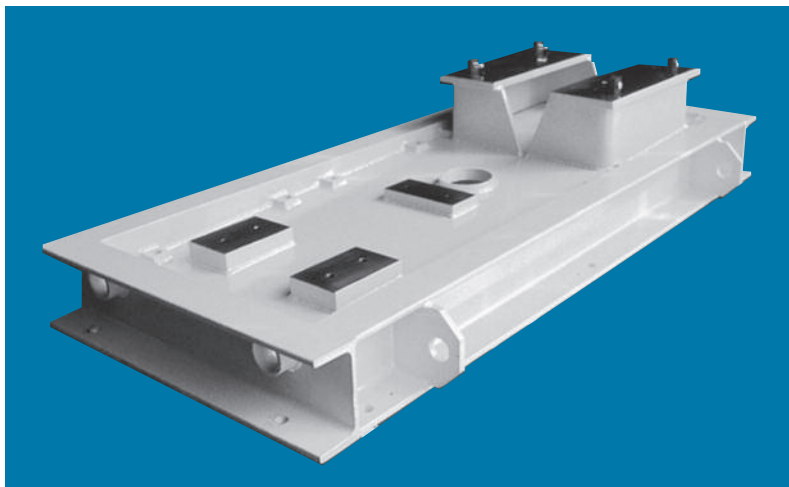


C-Frame Motor Adapter eliminates manual alignment problems.



System One Pumps Baseplates

**Specialized baseplates available
for all Blackmer System One Pumps**



PIP Type Base – boxed ends, lifting lugs and sloped top with drain

Types Offered:

Standard System One steel channel

P.I.P. specification RESP002

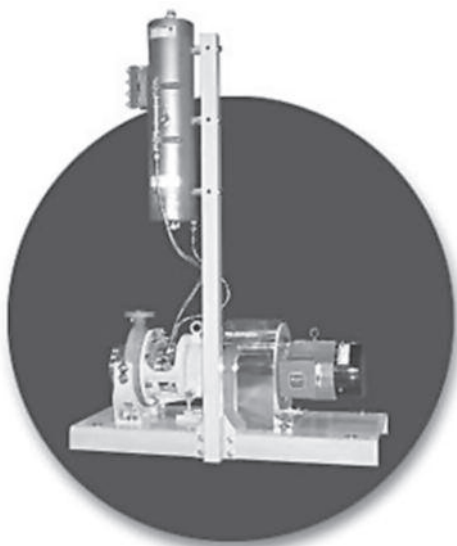
Per Customer specific requirements

Options available:

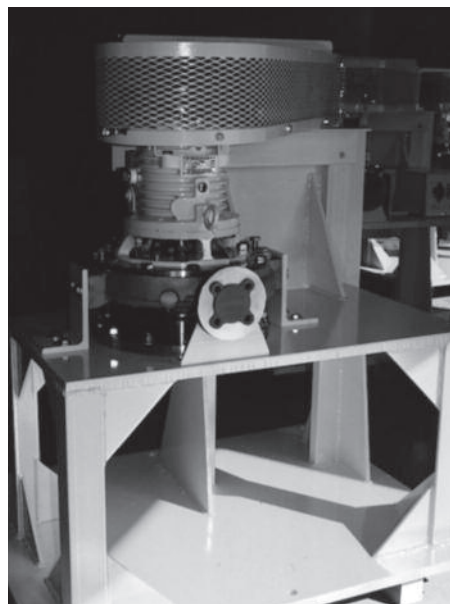
- Drip rim with drain
- Boxed ends
- Sloped base
- Leveling screws
- Grout holes - Vent holes
- Motor adjusting jacks
- Lifting lugs

Materials:

- Carbon Steel
- 304 or 316 Stainless Steel
- Galvanized Steel



System One Pump on standard steel channel base with barrier fluid tank support stand



Standard System One Pump mounted on a Vertical Stand for "V" Belt Drive



System One SpiralTrac¹ Seal Chamber Bushings

Innovative Technology for Improvement of the Seal Environment

SpiralTrac is a specially designed bushing that is inserted in the bottom of a seal chamber (or stuffing box if a packed pump) and is made from 316SS, 416SS, carbon graphite or PTFE material.

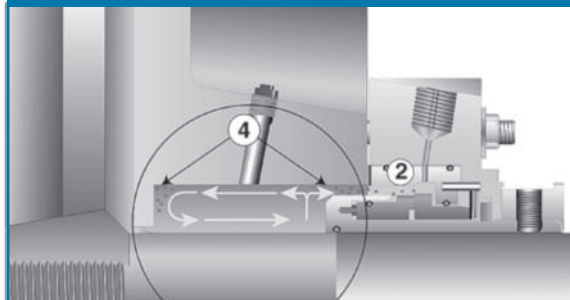
The SpiralTrac is designed to improve the operating environment for the mechanical seal through the use of a variable geometry spiral grooving system.

During operation, SpiralTrac converts the rotating flow to an axial flow in the seal cavity and drives it away from the seal toward the impeller.

- The contaminants are swept by centrifugal force toward the SpiralTrac and into the groove where the main spiral forces the contaminants out through the exit groove at the shaft.
- SpiralTrac contains a unique air vent in the top of the bushing to purge air on initial pump flooding.
- If the product is aerated or the pump runs dry, an external flush, a single seal with a quench, or a double seal is required.

SpiralTrac enables venting of the seal chamber, drives circulation and exchange of fluid, and removes abrasives or contaminants.

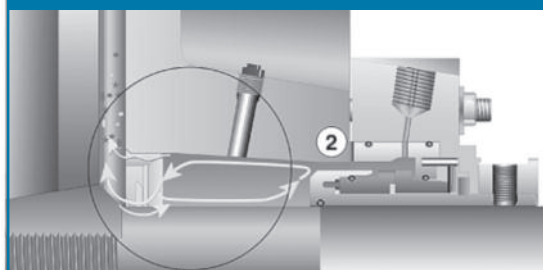
Seal Cavity Without SpiralTrac



- 1 Air**
Air is trapped in cavity upon flooding of pump
- 2 Circulation**
No circulation around seal (No face cooling)
- 3 Exchange**
No fluid exchange in or out of the seal cavity causing higher operating temperatures
- 4 Particulate**
Thrown outward and driven to the seal and throat area by axial flow causing erosion and damage to the seal faces

No Environmental Control

Seal Cavity With SpiralTrac



- 1 Air**
Vented from cavity when pump is stationary (Eliminates crystallization, coking, over heating due to air)
- 2 Circulation**
Driven around seal (Excellent face cooling)
- 3 Exchange**
In and out of cavity (Heat removed from cavity)
- 4 Particulate**
Immediately removed from cavity through the exit groove-flush or no flush

SpiralTrac Version N Type I

Total Environmental Control

¹ SpiralTrac is a registered trademark of the manufacturer, EnviroSeal Engineering Products Ltd., Waverly, Nova Scotia.



System One SpiralTrac¹ Benefits

Increases Seal MTBF

By preventing accumulation of solids in the cavity, circulating fluid around the seal, exchanging internal cleaned flush and venting the cavity when the pump is stationary.

Decreases or eliminates flush

Spiraltrac's patented design permits users to greatly reduce or eliminate flush in many standard process applications. Complete elimination of flush is dependent on the type of application and mechanical seal specified. Please check with the factory to determine the application's suitability for total flush elimination.

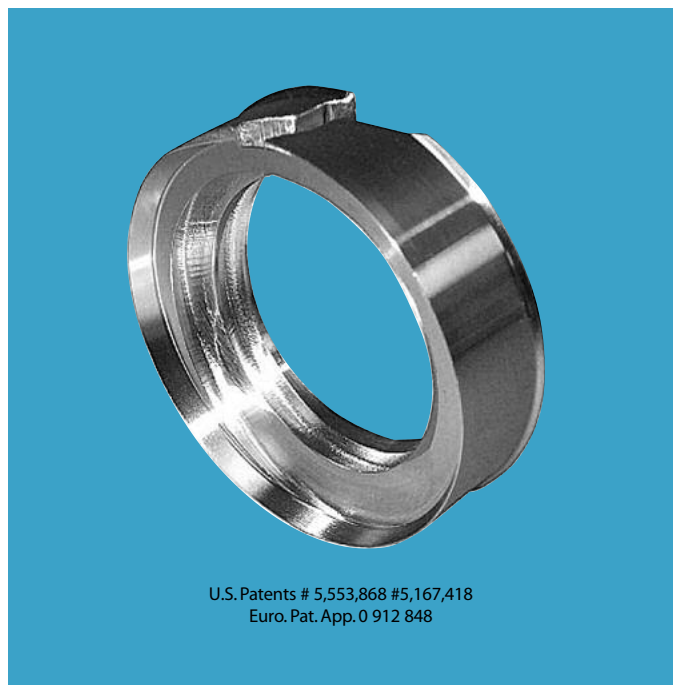
Eliminates seal and cavity erosion

In most mill and mining services, the flush itself contains solids from pipe scale, silt or settling ponds. This dirt is injected with the flush and due to flow patterns within the seal cavity, causes premature wear of the seal and cavity itself.

SpiralTrac develops a flow pattern whereby solids are drawn towards the front of the box, and subsequently channeled through the exit groove of the device and expelled at the impeller. This same phenomenon also significantly reduces erosion of the shaft.

Reduces seal cavity sensitivity to flush pressure loss

In a standard seal cavity, if flush pressure is lost for a period of time, solids will enter the cavity. Once inside the cavity, centrifugal force will throw the solids to the bore, and even when the flush returns, it cannot push the solids out because they are trapped along the bore. With SpiralTrac installed, solids are continuously removed even if flush pressure is lost. Since solids are kept away from the seal, premature failure as a result should not occur.



Enables seals to operate in applications not possible before

Many customers have had poor results using mechanical seals because of high solids / fibre content in the process fluid. These solids get in around the seal area, de-water and consequently cause the seal to overheat and fail. SpiralTrac's inherent ability to remove solids / fibres from around the seal allows many of the applications to become successful.

Protects single or double seals

Solids will enter the seal cavity whether or not a single or double seal is installed. SpiralTrac will develop a flow to remove these solids regardless of the seal design.

The SpiralTrac offers a dramatic improvement of mechanical seal life over a broad range of applications and operating conditions.

These devices can be designed to operate with reduced or no flush in both fibrous and non-fibrous applications.

SpiralTrac significantly improves mechanical seal MTBF over a conventional seal operating alone.

¹ SpiralTrac is a registered trademark of the manufacturer, EnviroSeal Engineering Products Ltd., Waverly, Nova Scotia.



System One SpiralTrac¹ Environmental Controller & Throat Bushing Selection Chart

| SpiralTrac | Frame S | Durco ² MK II GRI Goulds ³ ST BCC | 8" Durco ² MK II GR II Goulds ³ MT BCC | 10" & 13" Durco ² MK II GR II Goulds ³ MT BCC | LD18 Durco ² SLS LD 23 Goulds ³ SLS |
|---------------------------------|---------------|--|--|---|--|
| Backcover Counterbore | 3.468 x .75 | 3.468 x .75 | 4.500 x 1 | 5.250 x 1 | 3.468 x .75 |
| SpiralTrac ³ CG/PTFE | 1.500 x 3.468 | 1.375 x 3.468 | 1.875 x 4.500 | 1.875 x 5.250 | 1.875 x 3.468 |
| SpiralTrac 316SS | 1.500 x 3.468 | 1.375 x 3.468 | 1.875 x 4.500 | 1.875 x 5.250 | 1.875 x 3.468 |
| SpiralTrac 416SS | 1.500 x 3.468 | 1.375 x 3.468 | 1.875 x 4.500 | 1.875 x 5.250 | 1.875 x 3.468 |
| SealMate ³ 316SS | 1.500 x 3.470 | 1.375 x 3.470 | N/A | N/A | 1.875 x 3.470 |
| SealMate Hast C22 | 1.500 x 3.470 | 1.375 x 3.470 | N/A | N/A | 1.875 x 3.470 |

| SpiralTrac | Frame A ANSI | Frame A LD17 | Mid Frame | Short Seal Chamber |
|-----------------------|---------------|-------------------------------|---------------|--|
| Backcover Counterbore | 3.982 x 1 | 3.468 x .75 | 4.125 x .87 | Frame A ⁴ boreBC+SC thru 3.653 |
| SpiralTrac CG/PTFE | 1.875 x 3.982 | 1.875 x 3.468 | 2.625 x 4.125 | |
| SpiralTrac CG/PTFE | | for 280 Seal 2.567 x 3.468 | | |
| SpiralTrac 316SS | 1.875 x 3.982 | 1.875 x 3.468 | 2.625 x 4.125 | 1.875 x 3.653 |
| SpiralTrac 416SS | 1.875 x 3.982 | 1.875 x 3.468 | 2.625 x 4.125 | |
| SealMate 316SS | 1.875 x 3.984 | 1.875 x 3.470 | N/A | |
| SealMate Hast C22 | 1.875 x 3.984 | 1.875 x 3.470 | N/A | |

⁴Frame A Short Seal Chamber – 0.6 wide x 3.653/3.659 bore

| Throat Bushings | Frame S | Durco M II GRI Goulds ST BCC | Durco M II GR II Goulds MT BCC | LD 18 Durco SLS LD 23 Goulds SLS |
|--|--|----------------------------------|--|-------------------------------------|
| Carbon bushings Counterbore Bushing | 2.39 x .35 special machining 1.50 x 2.39 | consult factory | 3.00 x .62 standard 1.87/1.75 x 3.00 | consult factory |
| 14K Bushings ⁵ Counterbore 14KRB (PTFE) ⁵ 14KRB2P (poly) | 3.468 x .75 special machining 1.500 x 3.468 x .500 | 3.468 x .75 special machining | 3.00 x .62 standard | consult factory |

| Throat Bushings | Frame A ANSI | Frame LD17 | Frame M | |
|--|---|--|---|--|
| Carbon bushings Counterbore Bushing | 3.25 x .780 standard (incl.) 1.87 x 3.25 | 3.25 x .780 special machining 1.87 x 3.25 | 3.627 x .75 special machining 2.63 x 3.62 x .74 | |
| 14K Bushings ⁵ Counterbore 14KRB (PTFE) ⁵ 14KRB2P (poly) | 3.25 x .780 standard 1.890 x 3.235 x .56 1.890 x 3.235 x .56 | 3.25 x .780 special machining 1.890 x 3.235 x .56 1.890 x 3.235 x .56 | | |

¹ SpiralTrac is a registered trademark of the manufacturer, EnviroSeal Engineering Products Ltd., Waverly, Nova Scotia.

² Durco is a registered trademark

³ Goulds is a registered trademark

⁵ Product of A. W. Chesterton Company



System One Pump Accessories

Bearing Oil Temperature Monitors

**Early warning
helps prevent
bearing failures
and improve
equipment
reliability**



Increase in oil temperature indicates bearing or lube failure

- Constant monitoring of lubrication environment
- Adapts to any type of oil-lubricated machinery by screwing into a 1/4" NPT connection
- Corrosion-resistant, hermetically sealed stainless steel housing
- Polycarbonate lens and easy-to-read color coded dial
- Calibrated in both Fahrenheit and Celsius scales
- Rustproof...Dustproof...Leakproof...
Hermetically sealed
- Graduated in both Fahrenheit and Centigrade degrees; accuracy $\pm 1\%$ total scale range.

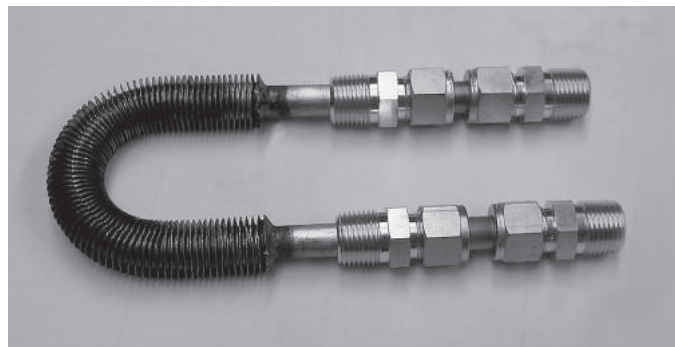
Monitor clearly indicates potential failure of bearings and/or lubrication by an increase in oil temperature.

The System One Bearing Oil Temperature Monitor is a simple and effective preventive maintenance tool that improves equipment reliability by the constant monitoring of the lubrication environment. All types of pumps and other oil lubricated machinery will benefit from this product. The device simply screws into any 1/4" NPT connection and instantly registers the temperature of the oil.

To order

Frame S or any 1/4" NPT application – No. 685362.

Frame A & M (with 3/4" x 1/4" reducing bushing) – No. 685361.



Cooling coil with swagelock tube fittings.

Available for Frame S, Frame A, and Frame M pumps.
(Frame A shown)

- Required for temperature greater than:
400°F (205°C) @ 1800 RPM (1450 RPM)
300°F (150°C) @ 3600 RPM (2900 RPM).
- More efficient than cast jackets.
- Oil is cooled directly, thus cooling the bearings simultaneously.
- Installed in place of magnetic plugs.



System One Pumps Control Heat Casing Jackets¹

Full range of heating jackets for Frame S and Frame A Pumps

Jackets are required for applications where liquids must be maintained at a certain temperature or will solidify if cooled. Bolt on system provides thermal performance necessary to meet narrow-envelope processing.

Several recent applications for heating jackets include:

- Maleic anhydride
- Molten sulfur
- Food products
- Polyester resins
- Chlorinated resins
- Waxes
- Calcium chloride
- Coal tars

Construction:

- Jackets are made by casting aluminum alloy around steel tubing for connection to the heating liquid.
- Couplings are 3000 lb. 3/4" NPT fittings, 2 on each side.
- Custom designed to fit snugly against the casing walls for each casing size.
- Jackets are split into two sections to allow bolting around the casing.
- Special heat transfer cement is applied between the casing and the jacket to allow for maximum thermal conduction.

The System One Pump is particularly suited for high temperature operation due to the following design features:

- Centerline casing support
- Bearing frame fins for cooling
- C Frame motor adapter for alignment
- Finned cooling coil in the oil sump
- Jacketed large bore seal chamber

The System One Pump combined with the casing jacket provides the finest and most reliable high temperature pump in the industry today.



Side view of jacket showing clamp to discharge flange. Note piping connections to jacketed seal chamber.



Front view showing 3/4" NPT couplings for connection of steam piping. Jacket is split along vertical axis.

¹Product of Controls Southeast of Charlotte, NC.



| Part Name | # Req. per Pump | Frame S | Frame SD | Frame A & LD17 | Frame A & LD17 Vortex | Frame M |
|--|-----------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| Casing | 1 | D.I., 316SS CD-4, A-20, Hast. | D.I., 316SS CD-4, A-20, Hast. | D.I., 316SS CD-4, A-20, Hast. | D.I., 316SS CD-4, A-20, Hast. | D.I., 316SS CD-4, A-20, Hast. |
| Casing Gasket | 1 | 1/16" per Application | 1.5 mm per Application | 1/16" per Application | 1/16" per Application | 1/16" per Application |
| Casing Foot | 2 | Steel | Cast | D.I./Centerline | D.I./Centerline | Cast (Steel CL option) |
| Impeller | 1 | CD4MCu A-20, Hast. | CD4MCu A-20, Hast. | CD4MCu A-20, Hast. | D.I., CD4MCu A-20, Hast. | D.I., CD4MCu A-20, Hast. |
| Impeller Hub O-Ring Seal | 1 | PTFE | PTFE | PTFE | PTFE | PTFE |
| Suction Cover | 1 | N/A | N/A | N/A | D.I., 316SS CD-4, A-20, Hast. | N/A |
| Back Cover | 1 | D.I., 316SS CD-4, A-20, Hast. | D.I., 316SS CD-4, A-20, Hast. | D.I., 316SS CD-4, A-20, Hast. | D.I., 316SS CD-4, A-20, Hast. | D.I., 316SS CD-4, A-20, Hast. |
| Mechanical Seal Assembly | 1 | Refer to Seal Dwg. | Refer to Seal Dwg. | Refer to Seal Dwg. | Refer to Seal Dwg. | Refer to Seal Dwg. |
| Shaft – bimetallic standard (Steel w/alloy wetted end) | 1 | 316SS A-20, Hast. | 316SS A-20, Hast. | 316SS, A-20 17-4 Ph, Hast. | 316SS, A-20 17-4 Ph, Hast. | 316SS A-20, Hast. |
| Radial Bearing | 1 | 6308 | 6308 | 6310 | 6310 | 6314 |
| Thrust Bearing | 2 1 | 5308 7308 (2) (opt.) | 7308(2) | 7310 (2) | 7310 (2) | 7314 (2) |
| Thrust Bearing Locknut | 1 | Steel N08 | Steel KM8 | Steel N10 | Steel N10 | Steel N14 |
| Thrust Bearing Lock Washer | 1 | Steel W08 | Steel MB8 | Steel W10 | Steel W10 | Steel W14 |
| Flinger | 1 | N/A | N/A | Nylon 66 | Nylon 66 | Alum |
| Radial Bearing Oil Seal Laby Thrust Bearing Oil Seal Laby | 1 1 | 316SS | 316SS | 316SS | 316SS | 316SS |
| Thrust Bearing Cartridge | 1 | D.I. | D.I. | C.I. | C.I. | C.I. |
| Thrust Bearing Retainer Cover | 1 | Steel | Steel | Steel | Steel | Steel |
| Thrust Bearing Cartridge O-Ring | 1 | Buna | Buna | Buna | Buna | Buna |
| Bearing Frame | 1 | C.I. | C.I. | C.I. | C.I. | C.I. |
| Bearing Frame Foot | 1 | C.I. option | N/A | C.I. | C.I. | C.I. |
| Oil Sight Glass | 1 | Steel-Zinc Plated | Steel-Zinc Plated | Steel-Zinc Plated | Steel-Zinc Plated | Steel-Zinc Plated |
| Frame Adaptor and O-Ring | 1 | N/A | N/A | D.I./C.I. Buna | D.I./C.I. Buna | D.I. Buna |
| Micrometer Adjustment Nut | 3 | 304SS | 304SS | 304SS | 304SS | 304SS |
| Cartridge Stud | 3 | 304SS | 304SS | 304SS | 304SS | 304SS |
| Cartridge Locknut | 3 | 304SS | 304SS | 304SS | 304SS | 304SS |
| Oil Filler and Cap | 1 | Nylon 66 | Nylon 66 | Nylon 66 | Nylon 66 | Nylon 66 |
| C-Frame Motor Adaptor | 1 | C.I. | C.I. | C.I. | C.I. | C.I. |

Material and equivalent ASTM: A-20 Grade CN7M, ASTM A-743; 316SS Grade CF8M, ASTM A-743; CD4MCu, ASTM A-743;

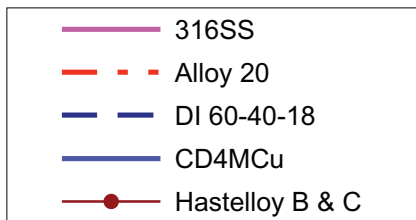
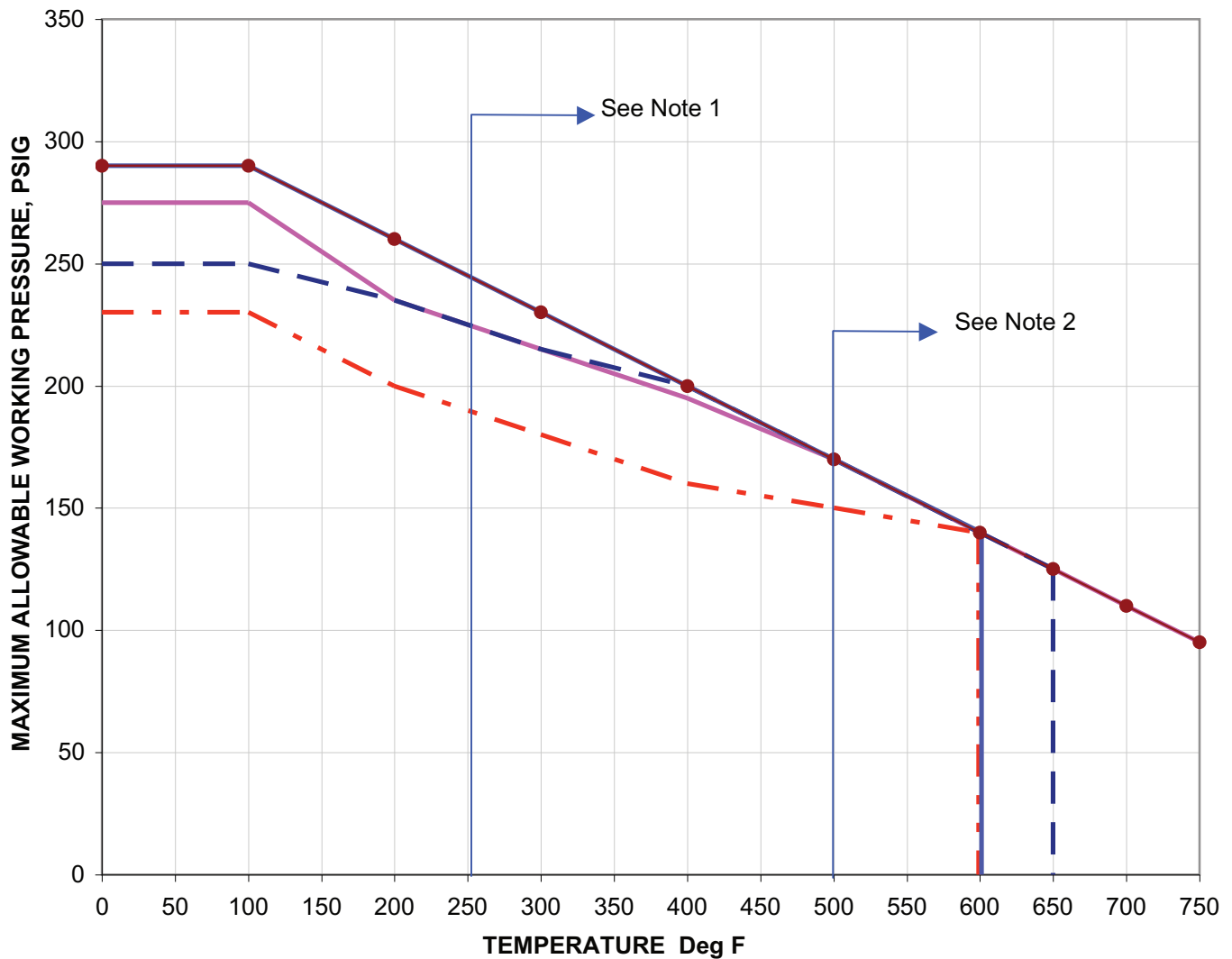
Shaft, Steel portion, AISI 1018/316SS, ASTM A-276; Shaft 17-4 Ph, ASTM A-276; D.I. Ductile Iron, ASTM A-536; C.I. Cast Iron, ASTM A-48, CL 35.



| Motor Adaptor | Power End | Back Cover | Impeller Open | Casing | Pump Size ASME/ANSI | Pump Size IPP |
|---------------|--|------------|---------------|--------|----------------------|--------------------|
| | Frame S ASME/ANSI | | | | 1 x 1½ – 6 | N/A |
| | | | | | 2 x 3 – 6 | N/A |
| | | | | | 1 x 1½ – 8 | N/A |
| | | | | | 1½ x 3 – 8 | N/A |
| | Frame SD DIN | | | | N/A | 32 x 50 – 160 |
| | | | | | N/A | 32 x 50 – 200 |
| | | | | | N/A | 50 x 80 – 200 |
| | Frame A ASME/ANSI LD17 | | | | 2 x 3 – 8 | 50 x 80 – 200 |
| | | | | | 3 x 4 – 8 | 80 x 100 – 200 |
| | | | | | 2 x 2 – 8 Vortex | 50 x 50 – 200 |
| | | | | | 1 x 2 – 10 | 25 x 50 – 250 |
| | | | | | 1½ x 3 – 10 | 40 x 80 – 250 |
| | | | | | 2 x 3 – 10 | 50 x 80 – 250 |
| | | | | | 3 x 4 – 10 | 80 x 100 – 250 |
| | | | | | 4 x 6 – 10 | 100 x 150 – 250 |
| | | | | | 3 x 3 – 10 Vortex | 80 x 80 – 250 |
| | | | | | 1½ x 3 – 13 | 40 x 80 – 330 |
| | | | | | 2 x 3 – 13 | 50 x 80 – 330 |
| | | | | | 3 x 4 – 13 | 80 x 100 – 330 |
| | | | | | 4 x 6 – 13 | 100 x 150 – 330 |
| | | | | | 4 x 4 – 12 Vortex | 100 x 100 – 300 |
| | Frame M | | | | 6 x 8 – 13 | Check with factory |
| | | | | | 8 x 10 – 13 | Check with factory |
| | | | | | 6 x 8 – 15 | Check with factory |
| | | | | | 8 x 10 – 15 | Check with factory |



For Pumps with standard 150 lb. flanges (all sizes).



Notes:

- 1) Center Line Mount Only.
- 2) Frame A (excluding LD17) and Frame M units only.

Warning : A pump or pump component used under the jurisdiction of the ASME Boiler & Pressure Vessel Code, the ASME Code for Piping, or Governmental Regulations is subject to any limitation of that code or regulation. This may include maximum temperature and/or pressure limitations, rules governing use of material at low temperature and restrictions on fluids or gases permitted to be contained by the pump material. The limitations defined in the chart provide application guidelines only and offer no guarantee that all applicable codes and regulations are met in any given application.



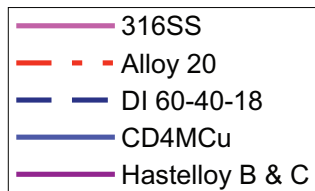
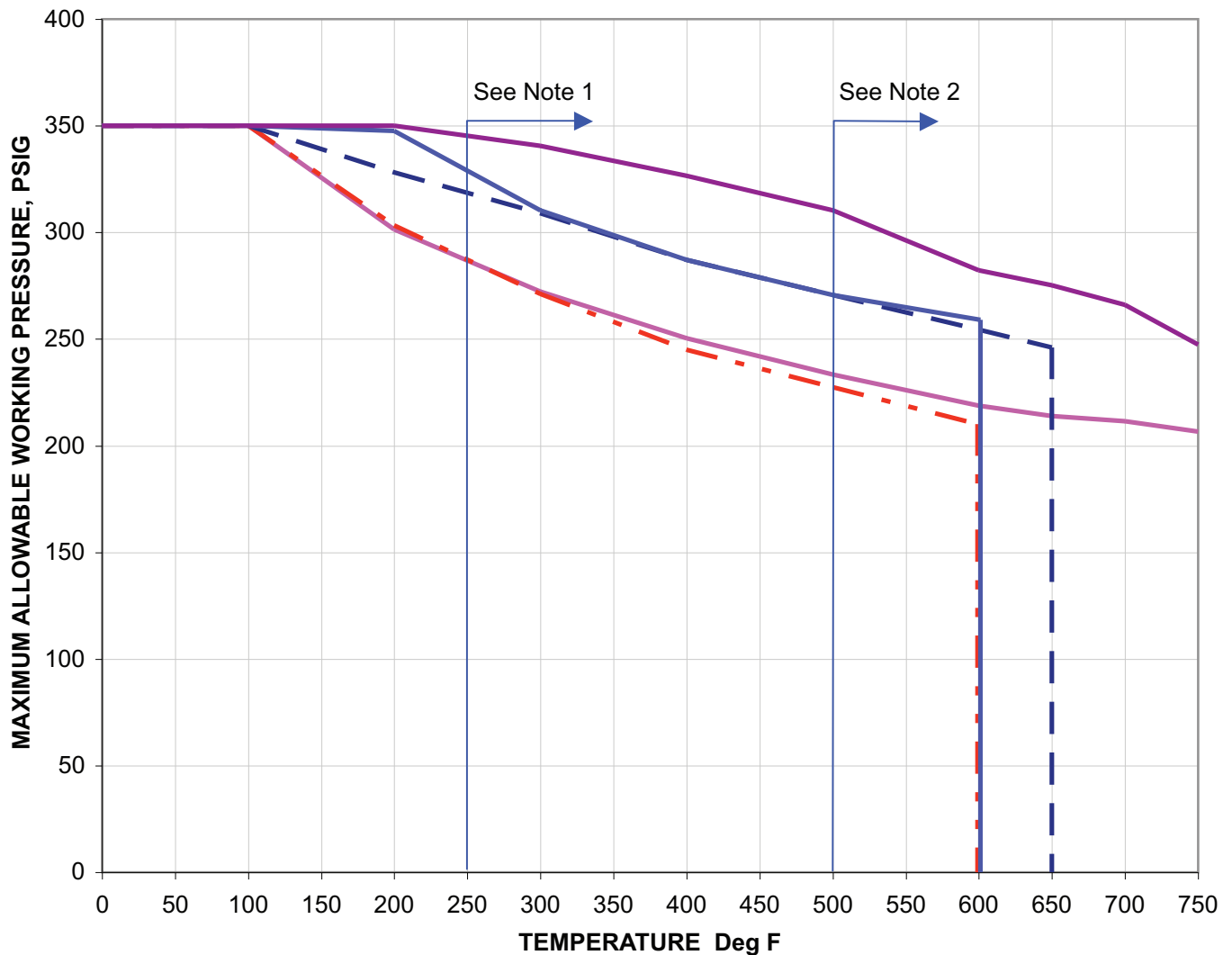
System One® Pumps - ANSI Pressure/Temperature Limits



FRS 6", 8" & 10" with 300 LB Flanges.

FRA/LD17 6", 8" & 10" with 300 LB Flanges.

FRM 13" with 300 LB Flanges.



Notes:

1) Center Line Mount Only.

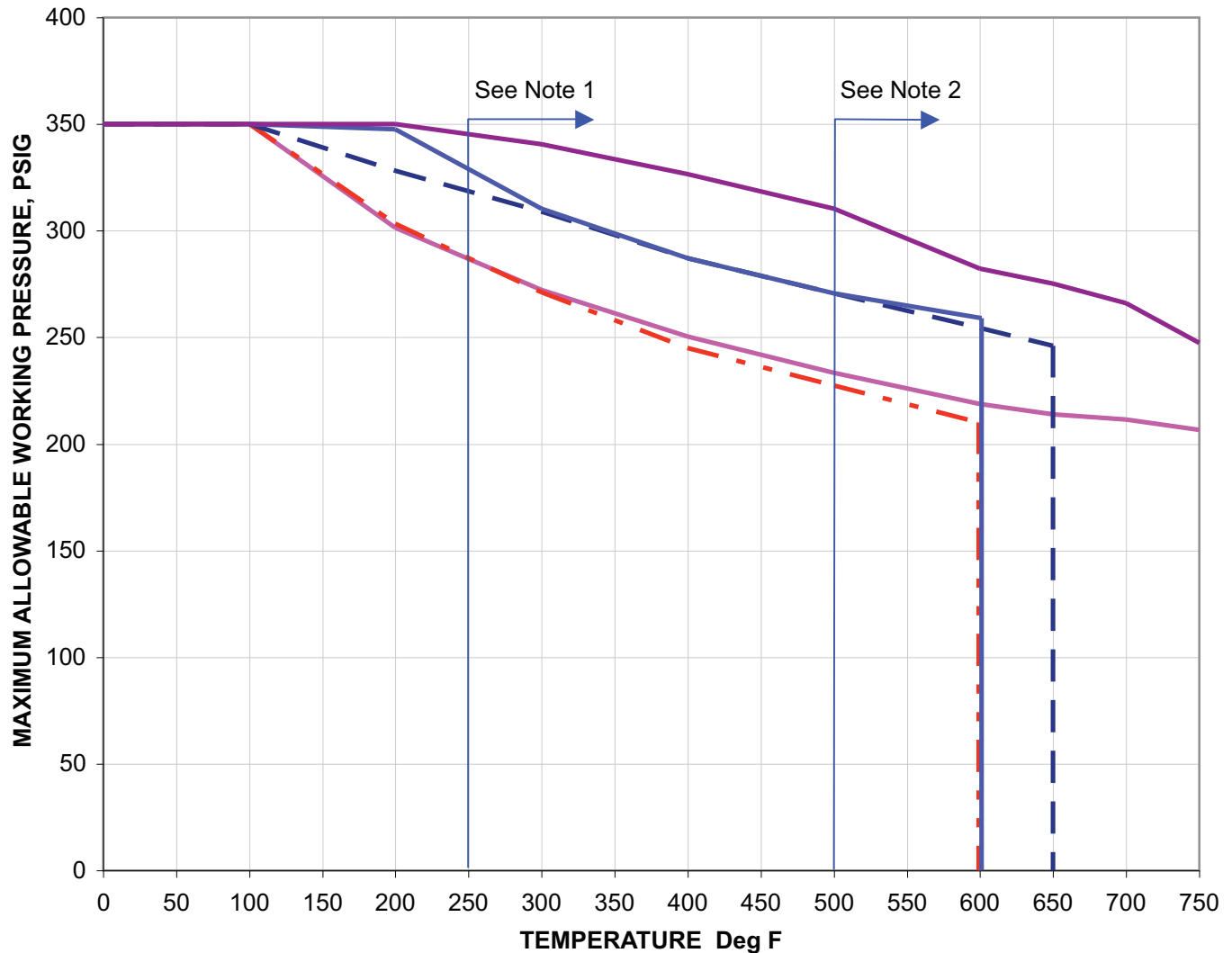
2) Frame A(excluding LD17) and Frame M units only.

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FRA/LDI7 13" with 300 LB Flanges.

FRM 15" with 300 LB Flanges.



| | |
|--|-----------------|
| | 316SS |
| | Alloy 20 |
| | DI 60-40-18 |
| | CD4MCu |
| | Hastelloy B & C |

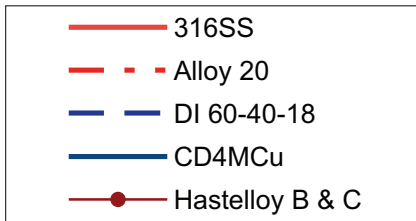
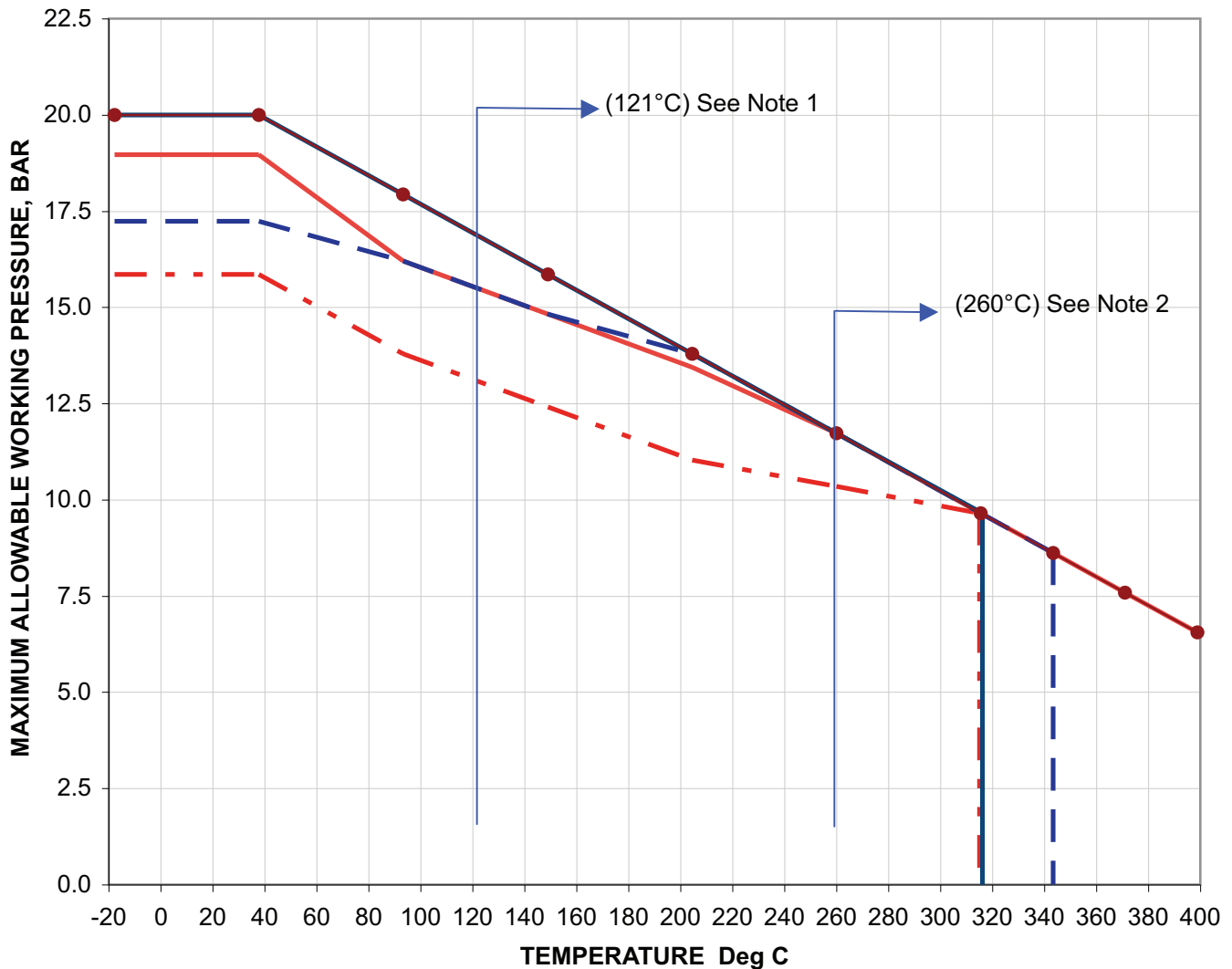
Notes:

- 1) Center Line Mount Only.
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Warning: A pump or pump component used under the jurisdiction of the ASME Boiler & Pressure Vessel Code, the ASME Code for Piping, or Governmental Regulations is subject to any limitation of that code or regulation. This may include maximum temperature and/or pressure limitations, rules governing use of material at low temperature and restrictions on fluids or gases permitted to be contained by the pump material. The limitations defined in the chart provide application guidelines only and offer no guarantee that all applicable codes and regulations are met in any given application.



For Pumps with standard 150 lb. flanges (all sizes).



Notes:

- 1) Center Line Mount Only.
- 2) Frame A (excluding LD17) and Frame M units only.

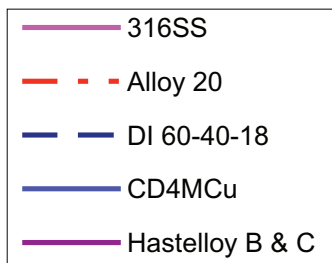
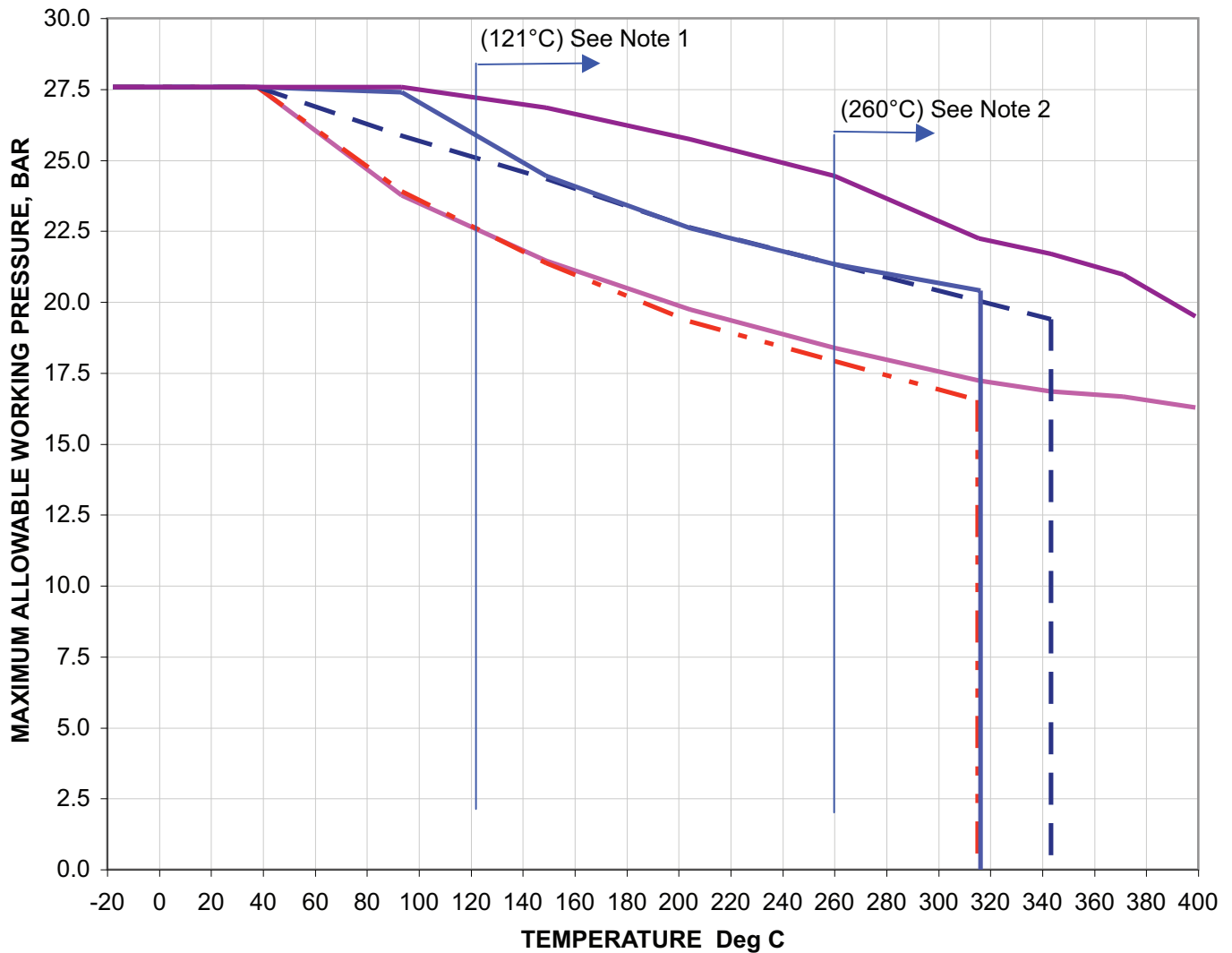
Warning: A pump or pump component used under the jurisdiction of the ASME Boiler & Pressure Vessel Code, the ASME Code for Piping, or Governmental Regulations is subject to any limitation of that code or regulation. This may include maximum temperature and/or pressure limitations, rules governing use of material at low temperature and restrictions on fluids or gases permitted to be contained by the pump material. The limitations defined in the chart provide application guidelines only and offer no guarantee that all applicable codes and regulations are met in any given application.



FRS 6", 8" & 10" with 300 LB Flanges.

FRA/LD17 6", 8" & 10" with 300 LB Flanges.

FRM 13" with 300 LB Flanges.



Notes:

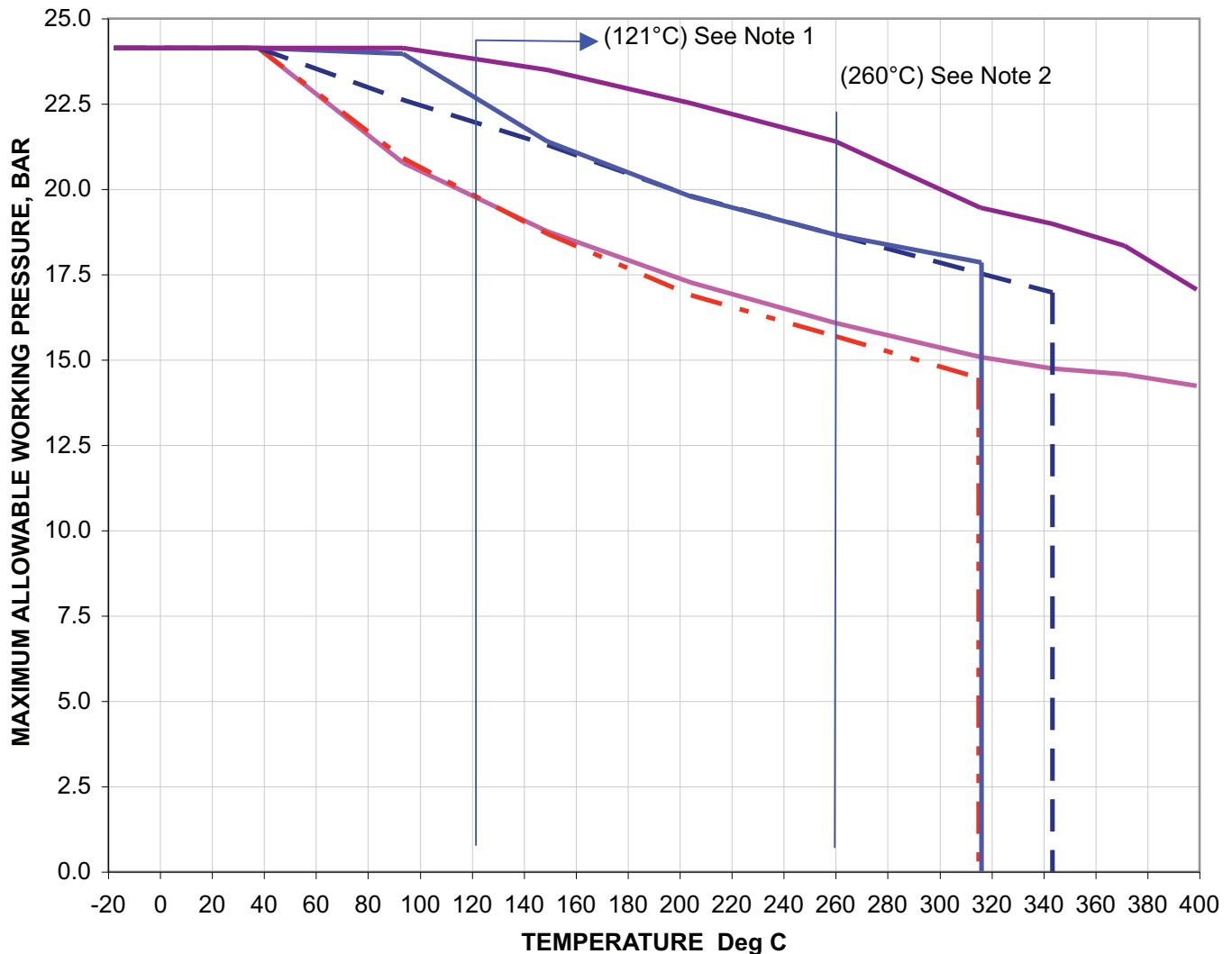
- 1) Center Line Mount Only.
- 2) High Strength Bolting only.
- 3) Frame A(excluding LD17) and Frame M units only.

Warning: A pump or pump component used under the jurisdiction of the ASME Boiler & Pressure Vessel Code, the ASME Code for Piping, or Governmental Regulations is subject to any limitation of that code or regulation. This may include maximum temperature and/or pressure limitations, rules governing use of material at low temperature and restrictions on fluids or gases permitted to be contained by the pump material. The limitations defined in the chart provide application guidelines only and offer no guarantee that all applicable codes and regulations are met in any given application.



FRA/LDI7 13" with 300 LB Flanges.

FRM 15" with 300 LB Flanges.



Notes:

- 1) Center Line Mount Only.
- 2) Frame A (excluding LD17) and Frame M units only.

Warning: A pump or pump component used under the jurisdiction of the ASME Boiler & Pressure Vessel Code, the ASME Code for Piping, or Governmental Regulations is subject to any limitation of that code or regulation. This may include maximum temperature and/or pressure limitations, rules governing use of material at low temperature and restrictions on fluids or gases permitted to be contained by the pump material. The limitations defined in the chart provide application guidelines only and offer no guarantee that all applicable codes and regulations are met in any given application.



inches/mm

| Frame Size | Shaft Size | Seal Chamber Arrangement | First Obstruction Distance | Available Inboard Length | Seal Chamber Bore | Mounting Bolt Circle |
|------------|------------|---------------------------------------|----------------------------|--------------------------|-------------------|----------------------|
| SD | 38 mm | Back Cover (Seal Chamber) | 56 mm | 53 mm | 58 mm | 95 mm |
| S | 1.50 | Back Cover (Seal Chamber) | 2.38 (60) | 2.21 (56) | 2.38 (60) | 3.50 (89) |
| | | Back Cover (Seal Chamber) with Jacket | 2.38 (60) | 2.12 (54) | 2.30 (58) | 3.50 (89) |
| A | 1.88 | Back Cover (Seal Chamber) | 3.00 (76) | 2.88 (73) | 2.69 (68) | 4.75 (121) |
| | | Seal Chamber | 2.19 (55) | 2.62 (66) | 2.69 (68) | 4.88 (124) |
| | | Short Seal Chamber | 2.81 (71) | 2.19 (55) | 2.69 (68) | 4.88 (124) |
| | | LD17 Back Cover | 2.19 (55) | 2.00 (51) | 2.69 (68) | 4.62 (117) |
| | | LD17 Back Cover with SealAdapter | 2.19 (55) | 1.88 (48) | 2.75 (70) | 4.62 (117) |
| M | 2.625 | Seal Chamber | 3.13 (79) | 2.56 (65) | 3.62 (92) | 5.75 (146) |
| | | Taper Bore | 3.13 (79) | 3.56 (90) | 3.62 (92) | 5.75 (146) |



Centrifugal Pump Specification for Horizontal End Suction Pumps

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System One® Centrifugal Pump Specification for Horizontal End Suction Pumps



1.0 SCOPE

This specification applies to the selection and performance of centrifugal pumps. The intent of the specification is that the supplied equipment shall be designed to offer long service life, minimize life cycle cost and be easily installed and maintained.

2.0 PUMP SELECTION

2.1.1

The pumps for this project shall be selected to allow maximum interchangeability of parts without limiting pump performance. The rotating assembly/power end for each pump shall be interchangeable with all the pump wet ends selected, unless otherwise designated.

2.1.2

The pumps shall operate in accordance with the hydraulic performance requirements.

2.1.3

The pump shall operate smoothly throughout the entire design operating flow range or rpm range with low vibrations. Acceptable vibration limits shall be as specified in Hydraulic Institute Standards for Centrifugal Pumps.

2.1.4

The pump impeller shall provide the design head and flow rate as designated by the purchaser. The impeller diameter selected to meet design conditions shall not be smaller than the minimum as shown in the manufacturers published performance curves.

2.1.5

The pumps defined herein are for general/industrial/chemical process service. They shall be designed for continuous duty, with extended performance life and low maintenance and operations costs.

2.1.6

The pump shall be a back pull-out design with a radially split casing.

2.1.7

The noise level generated by the pump and motor shall not exceed 85 dB, or motor noise level plus 3 dB, when measured at a distance of 3 feet.

2.2.0

The pump suction and discharge flange arrangement shall conform to ANSI B73.1 (or DIN 16 bar standard where applicable).

2.2.1

Castings shall be sound and free of shrink holes, blow holes, scale, blisters and other obvious defects.

2.2.2

Pressure containing castings shall not be repaired by plugging, peening, burring in or impregnating.

2.2.3

The pump shall be permanently tagged with a 300 series stainless steel nameplate. Nameplate information shall include pump size, gpm, TDH, speed, material of construction, rated impeller diameter and serial number. An arrow shall appear on the pump clearly showing the direction of rotation.

2.2.4

Casing discharge shall be centerline discharge unless otherwise specified. Side discharge to be an available option.

2.2.5

Pump shall be selected based on minimizing life cycle costs and emissions, not on minimizing initial purchase costs. Proposed selection will be based on rotor dynamics evaluation, hydraulic performance and effective window of operation. Debits/credits will be used to evaluate vendor proposals.

2.2.6

The pump casing shall incorporate centerline support feet for design operating temperatures above 250°F (120°C).

3.0 PUMP SPECIFICATION

The pump shall be horizontal end suction, in accordance with the following specification.

3.1.1 CASING

The pump casing shall be constructed of ductile iron, 316 SS, CD4MCU, Alloy 20, or other material as required by the application. The casing for pump sizes 4 x 6-13 (100 x 150-330) and below (ANSI designation A80) shall be single volute design, with the discharge flange located on the vertical centerline of the casing, and meet ANSI B73.1 specifications and dimensions. For all sizes above A80, double volute construction is required.

Centerline mounted casing feet are required for all applications over 250° F (120°C), on medium and large frame pumps. The casing is to be supported on two (2) separate legs; made of ductile iron or carbon steel, to prevent misalignment of the pump rotating element within the pump casing at elevated temperatures.

The casing suction and discharge nozzles shall have flat faced, 150 lb., 300 lb., or 16 bar flanges as required by the application. The casing shall be capable of accepting full API 610 suction and discharge nozzle loading.

The suction and discharge neck shall be drilled and tapped with 1/4" NPT connections, for pressure gauges and/or auxiliary piping. The casing wall thickness will include 1/8" corrosion allowance. A rotation arrow will be cast on the surface of the casing to indicate the proper direction of rotation.



System One® Centrifugal Pump Specification for Horizontal End Suction Pumps



3.1.2 IMPELLER

The impeller shall be open type, cast in CD4MCU or material as required by the application. Repelling vanes shall be cast on the back side of the impeller, to reduce the pressure behind the impeller in the immediate area of the mechanical seal and/or packing chamber.

The impeller hubs shall incorporate a threaded fit to the pump shaft. The impeller threads shall be sealed from corrosive environment by a PTFE O-ring in the hub.

Open impellers are preferred.

The impeller shall be balanced to ISO specification G.6.3 or better unless otherwise specified. Balancing must be performed in a minimum of two planes. Balancing shall, unless detrimental to the component or its performance, be attained by the removal of material.

3.1.3 SHAFT

The pump shaft shall be constructed of solid 316SS, 17-4PH, or as required by the application. Bimetallic shafts are acceptable. Shaft sleeves are not acceptable. The pump shaft shall be mechanically non-contacting throughout the entire rotating element, with the exception of the ball bearings, to prevent wear at the bearing oil seal and mechanical seal. The stiffness ratios (L^3/D^4), where L= length of shaft from impeller centerline to nearest bearing in inches and D= shaft diameter under the seal in inches, shall not exceed the following values in order to establish satisfactory mechanical seal life.

| Shaft size at seal | L^3/D^4 |
|---|-----------|
| • Shafts $\leq 1.5"$ | 46 (1.9) |
| • Shafts $> 1.5", \leq 2.0"$ | 20 (0.8) |
| • Shafts $> 1.5", \leq 2.0"$ ¹ | 551 (2.1) |
| • Shafts $> 2"$ | 19 (0.7) |

¹special requirements

3.1.4 THRUST AND RADIAL BEARINGS

The pumps shall be fitted with the following bearings:

Small Frame Pumps (ANSI AA through A50):

The thrust bearing shall be at a minimum a 5308, AHC3 clearance, double row, deep groove bearing. A pair of 7308 BEGAY, back to back angular contact bearings shall be provided as an option when required. The radial bearing shall be at least a 6308, C3 clearance, single row, deep groove.

Medium Frame Pumps (ANSI A60 through A80):

The thrust bearing shall be at a minimum a pair of 7310 BEGAY clearance, back to back angular contact bearings. The radial bearing shall be at least a 6310 C3 clearance, single row, deep groove.

Large Frame Pumps (ANSI A90 through A120):

The thrust bearing shall be at a minimum a pair of 7314 BEGAY clearance, back to back angular contact bearings.

The radial bearing shall be at least 6314 C3 clearance single row, deep groove.

The thrust and radial bearings shall be fitted to the shaft based on SKF tolerance specifications. The method of lubrication shall be oil bath for horizontals and grease for verticals. The thrust bearings shall be locked into the cartridge by a bolt-on retainer cover. Snap ring bearing retainers are not acceptable. The radial bearing shall be permitted to slide within the inside diameter of the bearing frame to prevent axial load and permit radial load only. Double row filled slot bearings are not acceptable. Bearings shall be designed for a minimum L-10 life of 60,000 hours.

3.1.5 BEARING FRAME

The bearing frame shall be heavy-duty cast iron construction, with radial fins for maximum cooling. The oil sump shall contain a minimum of 8 ounces (.23L) of oil for small frame pumps, 24 ounces (.71) of oil for mid-frames and 32 (.94) ounces of oil for large frames to allow for more heat dissipation, better lubrication and a cooler running rotating element. The oil level within the bearing frame shall be monitored by an oil sight glass. The level shall not exceed the bearing lower ball centerline for both the thrust and radial bearings in order to provide ample lubrication and heat dissipation. The oil sight glass shall have a white color perforated background to permit visual inspection of the condition of the oil and also permit circulation of oil in the sight glass to keep the interior surface of the glass clean. An oil drain plug is required at the bottom of the bearing frame. Two (2) magnetic pipe plugs shall be located near the bottom of the bearing frame. The oil fill fitting at the top shall be of nylon with an easily removable cap for adding oil. Trico or bottle type constant level oilers are not acceptable.

3.1.6 BEARING OIL SEALS

Each end of the bearing frame assembly shall incorporate non-contacting labyrinth oil seals. This type of seal is required to eliminate shaft damage due to fretting and to eliminate the heat generated by the use of contact type lip seals. Materials of construction shall be nickel plated (or built in cast iron) stators and 316SS rotors. Other seal systems will be considered only if they are non-fretting. Shaft contacting type lip seals will not be accepted. Face type oil seals are to be available for severe applications where specified.



System One® Centrifugal Pump Specification for Horizontal End Suction Pumps



3.1.7 FRAME ADAPTER

The frame adapter shall be designed to maintain accurate alignment of the bearing frame and rotating element to the wet end and allow proper access to the mechanical seal and environmental seal control piping. The frame adapter shall use a machined rabbit type fit to align with the bearing frame and pump casing.

3.2.0 MECHANICAL SEAL CHAMBER

The back cover and seal chamber shall be of ductile iron, 316 SS, CD4MCU, Alloy 20, or other material as required by the application. A corrosion allowance of 1/8" (3 mm) is required. The back cover shall be fastened to the pump casing with a confined type gasket.

The pump shall incorporate a large bore seal chamber. The seal chamber shall be designed with a minimum radial clearance of at least 0.75 (19 mm) inches. This will result in improved cooling, cleaning, lubricating and circulation to prolong the life of the mechanical seal. The chamber shall have an optional tangential flush connection on the side to flush the mechanical seal, and provide maximum cleaning capability. The seal chamber shall be capable of incorporating a jacket (when required) for cooling on high temperature applications or steam heating of liquids that tend to congeal in the seal chamber. Taper bore seal chambers shall have a minimum taper of 4° and a maximum radial clearance of 0.625 inches (16 mm) where abrasive solids are present to minimize rotation. Deep taper bore seal chambers must include vortex breakers and are not acceptable in abrasive applications.

3.2.1 CENTERLINE SUPPORT LEGS and POWER END FOOT

All Mid-frame and Large-frame pumps operating above 250°F (120°C) shall be supplied with adjustable centerline casing support legs. These feet will be affixed to the volute at the horizontal centerline of the volute. Small-frame pumps, when specified for applications above 200 °F (94°C), must allow unrestricted casing thermal growth. A casing without feet (frame mounted pump) is required for these applications. Small frame and medium frame pumps shall have a bearing frame foot that will support the power end in an upright position when removed from the wet end for service. The bearing frame foot may be height adjustable, if possible, to allow for ease of alignment.

3.2.2 IMPELLER CLEARANCE ADJUSTMENT

The thrust bearing end of the bearing frame shall be capable of precision impeller adjustments without the need to add or remove shims. The minimum delineation shall be .003" (.08mm) and permit impeller clearance settings or readjustments without the need to remove the bearing frame from the volute section and without requiring shims, dial indicators, feeler gauges or disassembly.

3.2.3 BACK PULL-OUT FEATURE

The pump shall permit the removal of the entire bearing frame assembly, including shaft, mechanical seal or packing chamber, and impeller, without disturbing the pump discharge and suction piping and without disturbing the motor. A spacer type coupling shall be furnished on non-motor adapter pumps to allow removal of the power end without disturbing the motor.

3.2.4 C- FRAME OR D-FLANGE MOTOR ADAPTERS

The pump shall have the capability of incorporating a C-Frame motor adapter, which permits mounting of motors up to NEMA frame size 256TC (IEC 132) for small frame, 405TC (447TSC) (IEC 180) for medium frame, and 449T(S)C (IEC 180) for large frame, without the need for parallel and angular alignment measurements and adjustments. The motor adapter may be equipped with adjustable feet in order to avoid frame soft foot and eliminate the need to use shims under the adapter assembly.

3.2.5 WARRANTY

The pump shall be warranted for a period of one (1) year from the date of installation, but not to exceed eighteen (18) months after the date of shipment to the user, to be free of defects in material and workmanship. In addition the following warranty, exclusive of erosion and corrosion, is required:

- Should the mechanical seal fail within one year of the original pump and seal installation, a rebuild kit or a rebuilt seal will be provided at no charge.
- If the mechanical seal causes shaft fretting damage that minimizes or eliminates sealing capability, a new replacement seal and/or shaft will be provided.
- Should any power end component, including bearings, fail within five (5) years of the original installation, a free replacement component will be provided.



System One® Centrifugal Pump Specification for Horizontal End Suction Pumps



4.0 PUMP PAINT SELECTION

Surface preparation:

Parts are cleaned in an industrial washer with appropriate cleaner.

All parts are then rinsed in a rinse tank.

Paint:

One coat of Rustoleum "High Performance Epoxy 9100 Series System" Yellow #A91-4412 base with A5275 activator or equivalent epoxy coat system.

This product is a two component, high build, polyamide / amine-modified low VOC epoxy coating.

Total Paint Thickness:

Dry film thickness range of epoxy coating shall be .005" to .008" (0.12-0.20 mm).

Total Paint Thickness:

Dry film thickness range of epoxy coating shall be .005" to .008".

5.0 QUOTATION REQUIREMENTS

5.1.1

Quotation shall be completed in strict accordance with the requisition requirement.

5.1.2

Vendor shall state all exceptions to this specification in the bid package. All deviations and/or exceptions from this specification must be outlined in full detail and the reasons for these exceptions fully explained.

5.1.3

Unless the vendors proposal takes exception as outlined in the section above (5.1.2) conformance is implied and assumed. Alternates and exceptions shall be clearly defined and described in the vendors proposal.

5.1.4

Alternates may be submitted with the bid. They shall be clearly described and defined in the vendors proposal.

5.1.5

The proposal shall include a Pump Performance Curve showing gpm, TDH, NPSHR, Efficiency, Power requirements @ design and runout, and design and maximum/minimum impeller. Also included shall be shaft stiffness ratios and descriptive literature for the pump and the mechanical seal.

5.1.6

The quotation shall include a complete list of recommended spare parts with price and delivery information.

6.0 DOCUMENTATION REQUIREMENTS

Within ten (10) working days after the purchase order is received the vendor will supply the following:

- A) Dimensional Prints () Copy
- B) Parts List () Copy
- C) Operation and Installation Manual () Copy
- D) Certified Performance Curve () Copy
- E) Mechanical Seal Drawing () Copy

7.0 VENDOR REQUIREMENTS

The vendor shall have the capability of flying spare parts to any location within a 24 hour period. All applicable spare parts must be available from the plant within this time period.

Service capabilities will include start-up, troubleshooting and personnel training by a vendor authorized representative.