

Pump Performance Datasheet

| | |
|-----------------------|----------------------------------------------|
| Customer : | Quote number : |
| Customer reference : | Size : LVI 150-400 |
| Item number : Default | Stages : 1 |
| Service : | Based on curve number : LVI 150-150-400-4-60 |
| Quantity : 1 | Date last saved : 16 Nov 2023 6:36 PM |

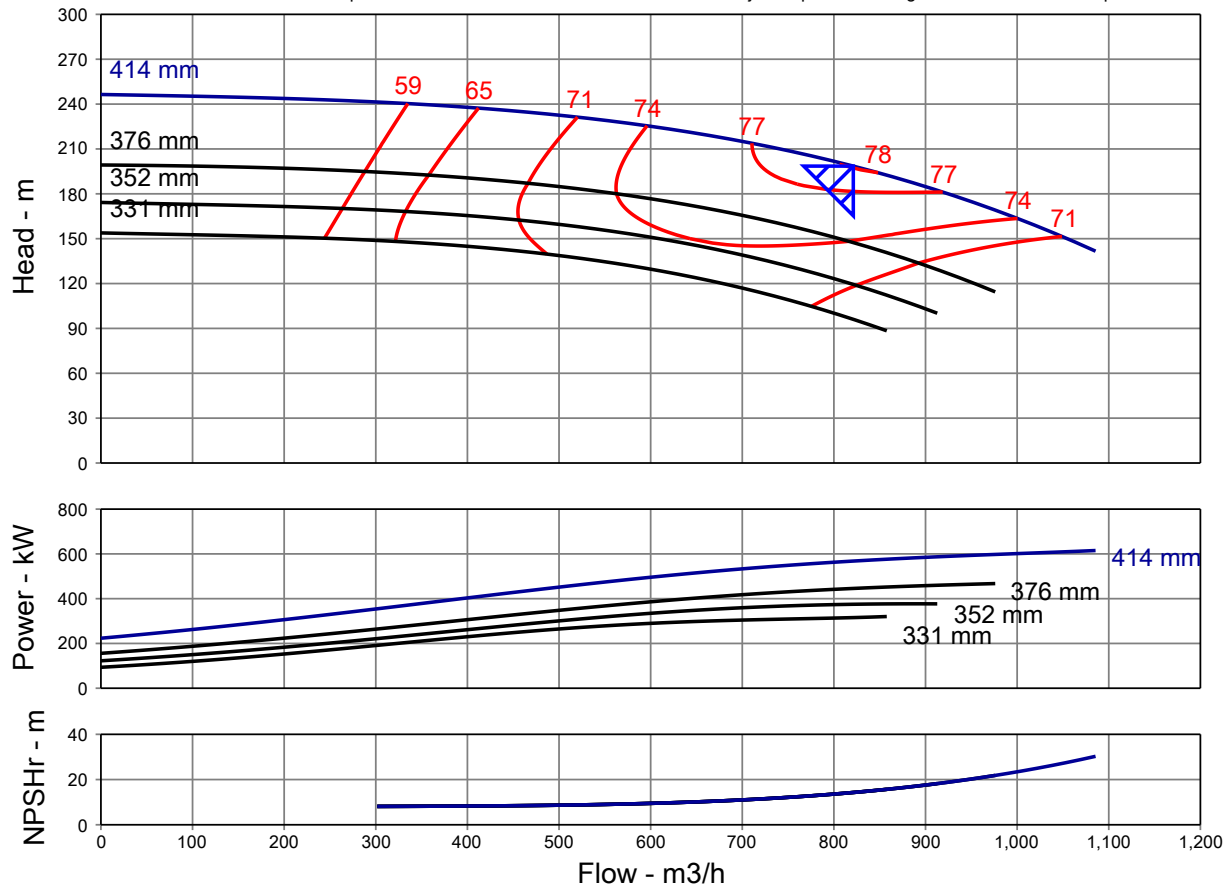
| Operating Conditions | Liquid |
|---------------------------------------------------|------------------------------------------|
| Flow, rated : 821.2 m3/h | Liquid type : Water |
| Head, rated (requested) : 198.5 m | Additional liquid description : |
| Head, rated (actual) : 198.5 m | Solids diameter, max : 0.0 mm |
| Suction pressure, rated / max : 0.00 / 0.00 bar.g | Solids concentration, by volume : 0.00 % |
| NPSH available : Ample | Temperature : 20.00 deg C |
| Site Supply Frequency : 50 Hz | Fluid density : 0.999 / 0.999 kg/dm3 |
| | Viscosity : 1.00 cSt |
| | Vapor pressure, rated : 0.00 bar.a |

| Performance | Material |
|----------------------------------------------------------------|------------------------------|
| Speed criteria : Synchronous | Material selected : Standard |
| Speed : 2915 rpm | |
| Impeller dia. : 414 mm | |
| Impeller diameter, maximum : 414 mm | |
| Impeller diameter, minimum : 331 mm | |
| Efficiency : 78.08 % | |
| NPSH required / margin required : 14.28 / 0.00 m | |
| nq (imp. eye flow) / S (imp. eye flow) : 26 / 189 Metric units | |
| MCSF : - | |
| Head max. : 246.4 m | |
| Head rise to shutoff : 24.12 % | |
| Flow, best eff. point : 821.2 m3/h | |
| Flow ratio, rated / BEP : 100.00 % | |
| Diameter ratio (rated / max) : 100.00 % | |
| Head ratio (rated dia / max dia) : 100.00 % | |
| Cq/Ch/Ce/Cn [ANSI/HI 9.6.7-2010] : 1.00 / 1.00 / 1.00 / 1.00 | |
| Selection status : Acceptable | |

| Pressure Data | |
|------------------------------------|---------------|
| Maximum working pressure | : 24.13 bar.g |
| Maximum allowable working pressure | : 25.00 bar.g |
| Maximum allowable suction pressure | : 2.50 bar.g |
| Hydrostatic test pressure | : 37.50 bar.g |

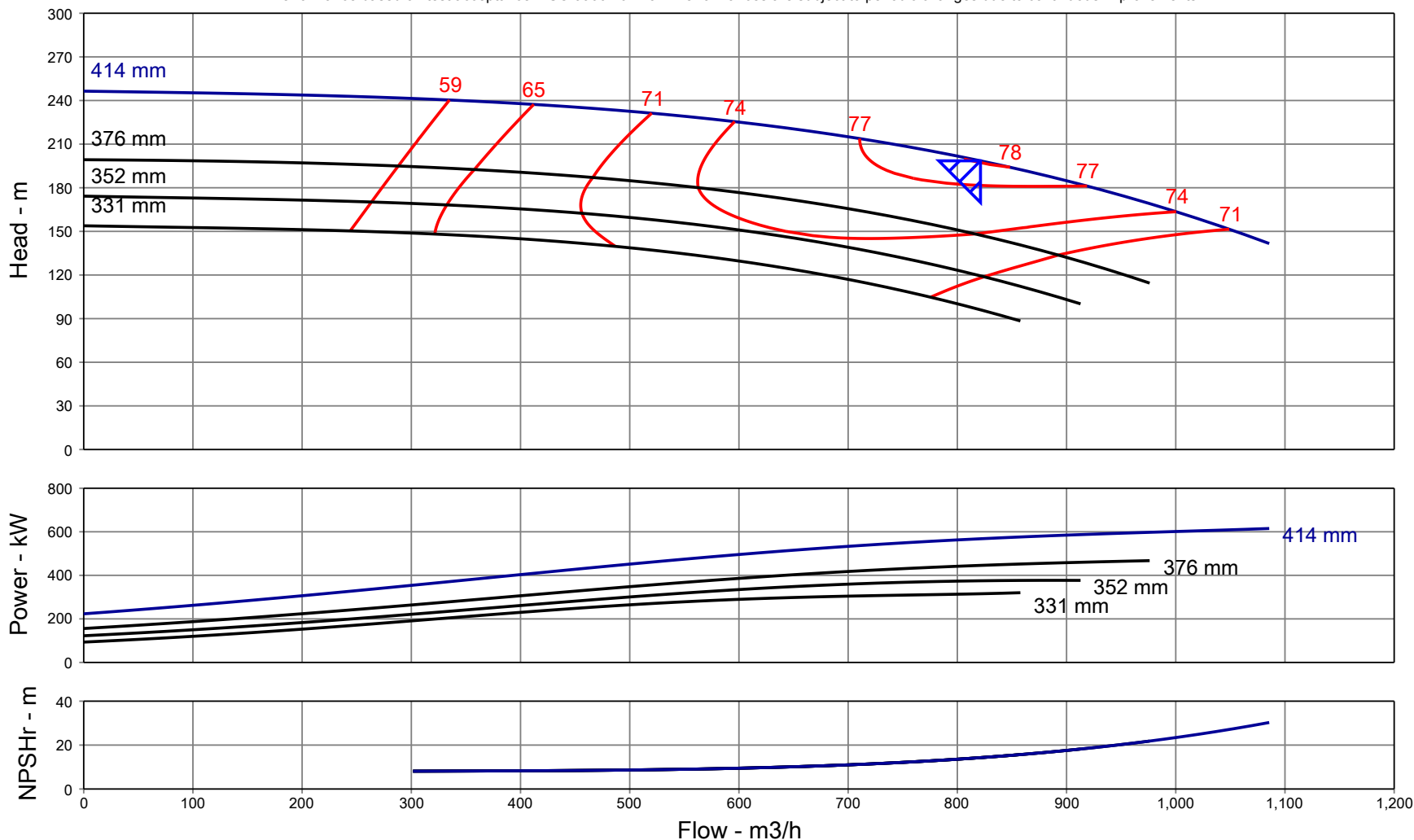
| Driver & Power Data (@Max density) | |
|------------------------------------|-----------------|
| Driver sizing specification | : Maximum power |
| Margin over specification | : 0.00 % |
| Service factor | : 1.00 |
| Power, hydraulic | : 443 kW |
| Power, rated | : 568 kW |
| Power, maximum | : 615 kW |
| Motor rating | : N/A |

Performance based on test acceptance - ISO 9906:2012 3B. Performances are subject to periodic changes due to continuous improvements.



Pump Performance Curve

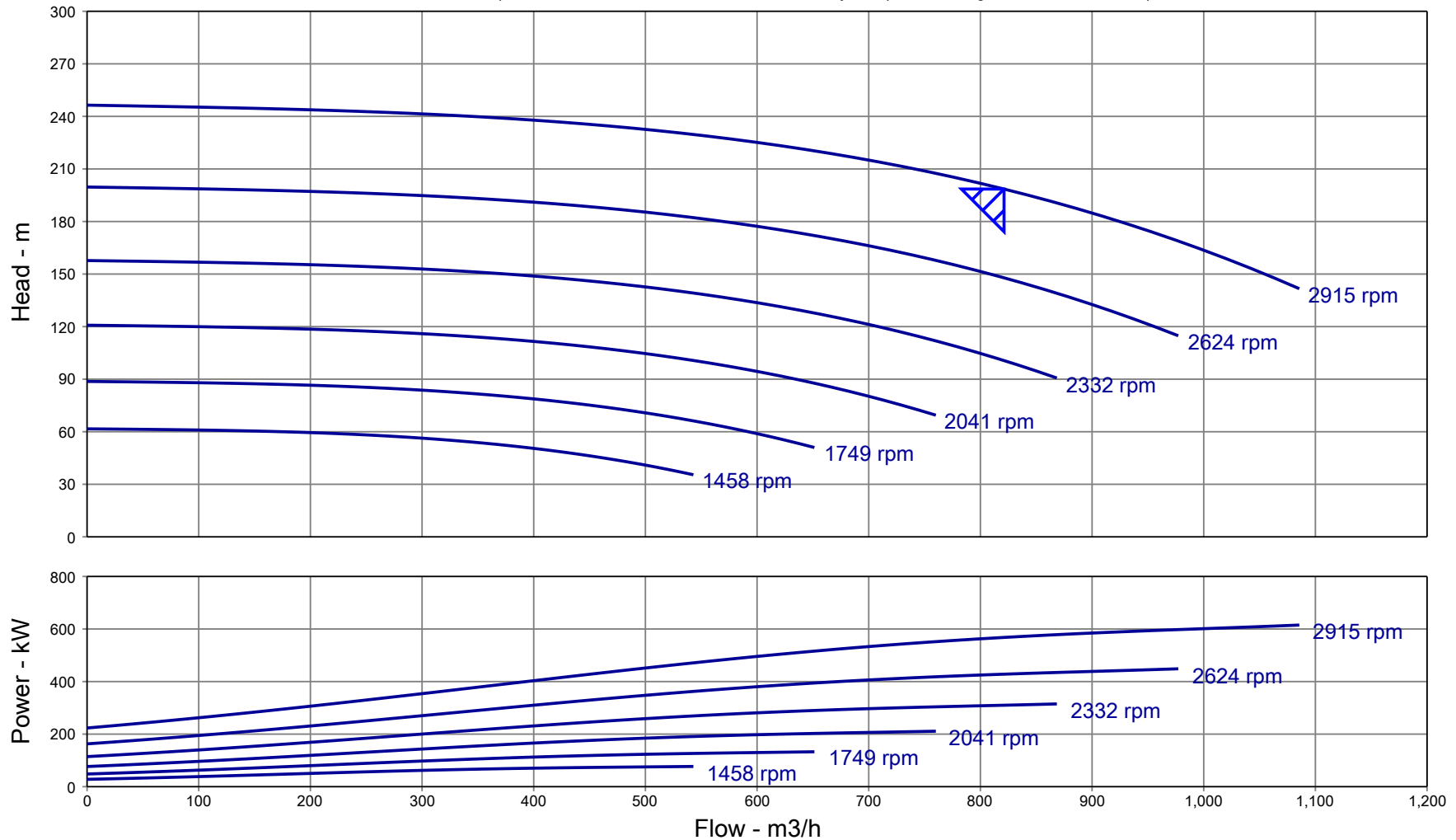
Performance based on test acceptance - ISO 9906:2012 3B. Performances are subject to periodic changes due to continuous improvements.



| | | |
|---------------------------------------|----------------------------------------------|--------------------------------------------------------------|
| Customer : | Size : LVI 150-400 | Flow, rated : 821.2 m3/h |
| Customer reference : | Stages : 1 | Head, rated : 198.5 m |
| Item number : Default | Speed : 2915 rpm | Fluid density : 0.999 / 0.999 kg/dm3 |
| Service : | Based on curve number : LVI 150-150-400-4-60 | Viscosity : 1.00 cSt |
| Quantity : 1 | Efficiency : 78.08 % | Cq/Ch/Ce/Cn [ANSI/HI 9.6.7-2010] : 1.00 / 1.00 / 1.00 / 1.00 |
| Quote number : | Power, rated : 568 kW | |
| Date last saved : 16 Nov 2023 6:36 PM | NPSH required : 14.28 m | |

Multi-Speed Performance Curve

Performance based on test acceptance - ISO 9906:2012 3B. Performances are subject to periodic changes due to continuous improvements.



| | | |
|---------------------------------------|----------------------------------------------|--------------------------------------------------------------|
| Customer : | Stages : 1 | Nominal speed : 2915 rpm |
| Customer reference : | Based on curve number : LVI 150-150-400-4-60 | Flow, rated : 821.2 m ³ /h |
| Item number : Default | Efficiency : 78.08 % | Head, rated : 198.5 m |
| Service : | Power, rated : 568 kW | Speed : 2915 rpm |
| Quantity : 1 | NPSH required : 14.28 m | Impeller dia. : 414 mm |
| Quote number : | Site Supply Frequency : 50 Hz | Fluid density : 0.999 / 0.999 kg/dm ³ |
| Date last saved : 16 Nov 2023 6:36 PM | | Viscosity : 1.00 cSt |
| Size : LVI 150-400 | | Cq/Ch/Ce/Cn [ANSI/HI 9.6.7-2010] : 1.00 / 1.00 / 1.00 / 1.00 |

Life Cycle Cost Datasheet

| | | |
|-----------------------|---------------------------------------|--------------------|
| Customer : | Quantity : 1 | Size : LVI 150-400 |
| Customer reference : | Quote number : | Stages : 1 |
| Item number : Default | Date last saved : 16 Nov 2023 6:36 PM | Speed : 2915 |
| Service : | | |

Load Profiles and Energy Costs

| Expected pump life: 20 years | Load Profile #1 | Load Profile #2 | Load Profile #3 | Load Profile #4 | Load Profile #5 | Total |
|-----------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Flow: (m3/h) | 15.35 | - | - | - | - | - |
| Operation: (hours per year) | 8,760 | - | - | - | - | 8,760 |
| Energy cost, present value (\$ per kWh) | 0.1 | - | - | - | - | - |
| Speed (rpm) | 2915 | - | - | - | - | - |
| Head (m) | 246.3 | - | - | - | - | - |
| Efficiency (%) | 4.49 | - | - | - | - | - |
| Power, rated (kW) | 229 | - | - | - | - | - |
| Motor efficiency (%) | 100.00 | - | - | - | - | - |
| Drive/gear efficiency (%) | 100.00 | - | - | - | - | - |
| System curve | - | - | - | - | - | - |
| Energy, total (kWh) | 40,111,717.8 | - | - | - | - | 40,111,717.8 |
| Energy cost, per year | \$ 200,558.59 | - | - | - | - | \$ 200,558.59 |
| Energy cost, total present value | \$ 3,008,053.65 | - | - | - | - | \$ 3,008,053.65 |

Life Cycle Cost Calculation

| Additional Annual Costs | Additional One-time Costs, Year 0 | Interest and Inflation Rates |
|---------------------------------|--------------------------------------------|------------------------------------------|
| Routine maintenance cost : 0.00 | Initial investment cost : 0.00 | Interest rate, % : 6.00 |
| Repair cost : 0.00 | Installation and commissioning cost : 0.00 | Inflation rate, % : 3.00 |
| Operating cost : 0.00 | Other one-time costs, year 0 : 0.00 | Total Net Present Value Costs |
| Downtime cost : 0.00 | Additional One-time Costs, Year 20 | Total energy cost : \$ 3,008,053.65 |
| Environmental cost : 0.00 | Decommissioning cost : 0.00 | Total additional annual cost : \$ 0.00 |
| Other annual costs : 0.00 | Other one-time costs, year 20 : 0.00 | Total additional one-time cost : \$ 0.00 |
| Total, present value : \$ 0.00 | Total, present value : \$ 0.00 | Total life cycle cost : \$ 3,008,053.65 |

Pump Performance - Additional Data

| | |
|-----------------------|---------------------------------------|
| Customer : | Quote number : |
| Customer reference : | Size : LVI 150-400 |
| Item number : Default | Stages : 1 |
| Service : | Speed : 2915 rpm |
| Quantity : 1 | Intellicode : |
| | Date last saved : 16 Nov 2023 6:36 PM |

| Performance Data | Stage, Speed and Solids Limits |
|------------------------------------------------------------|---------------------------------------|
| Head, maximum diameter, rated flow : 198.5 m | Stages, maximum : 1 |
| Head, minimum diameter, rated flow : 96.07 m | Stages, minimum : 1 |
| Head max. : 246.4 m | Pump speed limit, maximum : 3600 rpm |
| Efficiency adjustment factor, total : 1.00 | Pump speed limit, minimum : 950 rpm |
| Power adjustment, total : 0.00 kW | Curve speed limit, maximum : 3600 rpm |
| Head adjustment factor, total : 1.00 | Curve speed limit, minimum : 950 rpm |
| Flow adjustment factor, total : 1.00 | Variable speed limit, maximum : - |
| Flow adjustment factor, efficiency only (shift BEP) : 1.00 | Variable speed limit, minimum : - |
| Flow adjustment factor, end-of-curve only, total : 1.00 | Solids size limit : 0.0 mm |
| MCSF adjustment factor : 1.00 | |
| NPSHR adjustment factor, total : 1.00 | |
| NPSHR slope correction factor : 1.00 | |
| User applied performance adjustment comments : | |
| NPSH margin dictated by pump supplier : 0.00 m | |
| NPSH margin dictated by user : 0.00 m | |
| NPSH margin used (added to 'required' values) : 0.00 m | |

| Mechanical Limits | Typical Driver Data |
|----------------------------------------------------------|-----------------------------------------|
| Torque, rated power, rated speed : 195 kW/1000 rpm | Driver speed, full load : 2915 rpm |
| Torque, maximum power, rated speed : 211 kW/1000 rpm | Driver speed, rated load : 2915 rpm |
| Torque, driver power, full load speed : 0.00 kW/1000 rpm | Driver efficiency, 100% load : 100.00 % |
| Torque, driver power, rated speed : 0.00 kW/1000 rpm | Driver efficiency, 75% load : 100.00 % |
| Torque, pump shaft limit : - | Driver efficiency, 50% load : 100.00 % |
| Radial load, worst case : - | |
| Radial load limit : - | |
| Impeller peripheral speed, rated : - | |
| Impeller peripheral speed limit : - | |

| Various Performance Data | Flow (m3/h) | Head (m) | Efficiency (%) | NPSHr (m) | Power (kW) |
|---------------------------------|-------------|----------|----------------|-----------|------------|
| Shutoff, rated diameter | 0.00 | 246.4 | - | - | 223 |
| Shutoff, maximum diameter | 0.00 | 246.4 | - | - | 223 |
| MCSF | - | - | - | - | - |
| Rated flow, minimum diameter | 821.2 | 96.07 | 68.03 | - | 315 |
| Rated flow, maximum diameter | 821.2 | 198.5 | 78.08 | - | 568 |
| BEP flow, rated diameter | 821.2 | 198.5 | 78.08 | 14.28 | 568 |
| 120% rated flow, rated diameter | 985.4 | 167.0 | 74.73 | 22.43 | 599 |
| End of curve, rated diameter | 1,085.6 | 141.7 | 68.01 | 30.28 | 615 |
| End of curve, minimum diameter | 857.7 | 88.41 | 64.42 | 15.67 | 320 |
| End of curve, maximum diameter | 1,085.6 | 141.7 | 68.01 | 30.28 | 615 |
| Maximum value, rated diameter | - | 246.4 | 78.08 | - | 615 |
| Maximum value, maximum diameter | - | - | 78.08 | - | 615 |

| System differential pressure | @ Density, rated | | @ Density, max | |
|---------------------------------------------------------|---------------------------|-------------------------|---------------------------|-------------------------|
| Differential pressure, rated flow, rated diameter (bar) | 19.44 | | 19.44 | |
| Differential pressure, shutoff, rated diameter (bar) | 24.13 | | 24.13 | |
| Differential pressure, shutoff, maximum diameter (bar) | 24.13 | | 24.13 | |
| Discharge pressure | @ Suction pressure, rated | @ Suction pressure, max | @ Suction pressure, rated | @ Suction pressure, max |
| Discharge pressure, rated flow, rated diameter (bar.g) | 19.44 | 19.44 | 19.44 | 19.44 |
| Discharge pressure, shutoff, rated diameter (bar.g) | 24.13 | 24.13 | 24.13 | 24.13 |
| Discharge pressure, shutoff, maximum diameter (bar.g) | 24.13 | 24.13 | 24.13 | 24.13 |

| Ratios | |
|------------------------------------------------------|--------------------------------------------------------------------|
| Maximum flow / rated flow, rated diameter : 132.20 % | Head rated diameter / head minimum diameter, rated flow : 206.64 % |



Pump Performance - Additional Data

Construction

| | | |
|---------------------------------------|------------|--|
| Vertical In-Line Pump Classifications | : Standard | |
|---------------------------------------|------------|--|