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1320, 60Hz

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# 1 Vortex

## 1.1 Product description



### Usage

A submersible pump, with vortex hydraulic, for liquids containing solids and abrasive media, or light wastewater.

### Denomination

Type	Non-explosion proof version	Explosion proof version	Model variant	Installation types
Vortex	1320.181	1320.090	<ul style="list-style-type: none"><li>• H - High head</li><li>• M - Medium head</li></ul>	<ul style="list-style-type: none"><li>• Free-standing</li><li>• Wet-well</li></ul>

The pump can be used in the following installations:

Free-standing      Portable semipermanent, wet well arrangement with hose coupling or flange for connection to the discharge pipeline.

Wet-well              Semipermanent, wet well arrangement with the pump installed on two guide bars. The connection to the discharge is automatic.

### Application limits

Feature	Description
Liquid temperature	Maximum 40°C (104°F)
Depth of immersion	Maximum 20 m (65 ft)
pH of the pumped liquid	5.5 - 14
Liquid density	Maximum 1100 kg/m <sup>3</sup>

### Motor data

Feature	Description
Motor type	Squirrel-cage induction motor
Frequency	60 Hz

Feature	Description
Power supply	1-phase or 3-phase
Starting method	<ul style="list-style-type: none"> <li>• Direct on-line</li> <li>• Star-delta</li> <li>• Variable Frequency Drive (VFD)</li> </ul>
Number of starts per hour	Maximum 15
Code compliance	IEC 60034-1
Voltage variation without overheating	±10%, if it does not run continuously at full load
Voltage imbalance between phases	Maximum 2%
Stator insulation class	F (155°C [311°F])

## Cables

Application	Type
Direct-on-line start or Y/D start with two cables	Flygt SUBCAB® - a heavy duty 4 cores motor power cable with two twisted pair screened control cores. Conductor insulation rating of 90°C, which allows for increased current. Superior mechanical strength and high abrasion and tear resistant. Chemical resistant within pH 3-10 and ozone, oil, and flame resistant. Used up to 70°C water temperature. Cables < 10 mm <sup>2</sup> with unscreened control cores.
Y/D start	Flygt SUBCAB® - a heavy duty 7 cores motor power cable with two twisted pair screened control cores. Conductor insulation rating of 90°C, which allows for increased current. Superior mechanical strength and high abrasion and tear resistant. Chemical resistant within pH 3-10 and ozone, oil, and flame resistant. Used up to 70°C water temperature. Cables < 7G6 mm <sup>2</sup> with unscreened control cores.

## Monitoring equipment

Motor	Thermal contacts opening temperature
18-15-2Z, 18-15-4Z	140°C (284°C)

## Materials

Table 1: Major parts except mechanical seals

Denomination	Material	ASTM	EN
Major castings	Cast iron, gray	30B	GJL-200
Pump housing	Cast iron, gray	30B	GJL-200
Impeller, alternative 1	Cast iron, gray	35B	GJL-250
Impeller, alternative 2	Cast iron, gray	30B	GJL-200
Lifting eye bolt	Steel electro zinc coated	-	EN 10084 - C15E
Lifting handle	Stainless steel	AISI 304	1,4301
Shaft	Stainless steel	AISI 431	1.4057+QT800
Screws and nuts	Stainless steel, A2	AISI 304	1.4301, 1.4306, 1.4307, 1.4311
O-rings	Nitrile rubber (NBR) 70° IRH	-	-
Oil, part no 901752	Medical white oil of paraffin type. Fulfills FDA 172.878 (a)	-	-

Table 2: Mechanical seals

Inner seal	Outer seal
Carbon (CSb)/ Corrosion resistant cemented carbide (WCCR)	Corrosion resistant cemented carbide (WCCR)/ Corrosion resistant cemented carbide (WCCR)

Surface treatment

Finish
Black or blue two-component high-solid top coating. See internal standard M 0700.00.0004 for standard painting.

Options

- Leakage sensor in the stator housing (FLS)

Accessories

- Installation equipment  
Sold in kits
- Mechanical accessories such as discharge connections, adapters, and hose connections
- Electrical accessories such as pump controller, control panels, starters, monitoring relays, and cables

1.2 Motor rating and performance curves

These are examples of motor rating and curves. For more information, please contact your local sales and service representative.

Star-delta starting current is 1/3 of Direct on-line starting current.

H

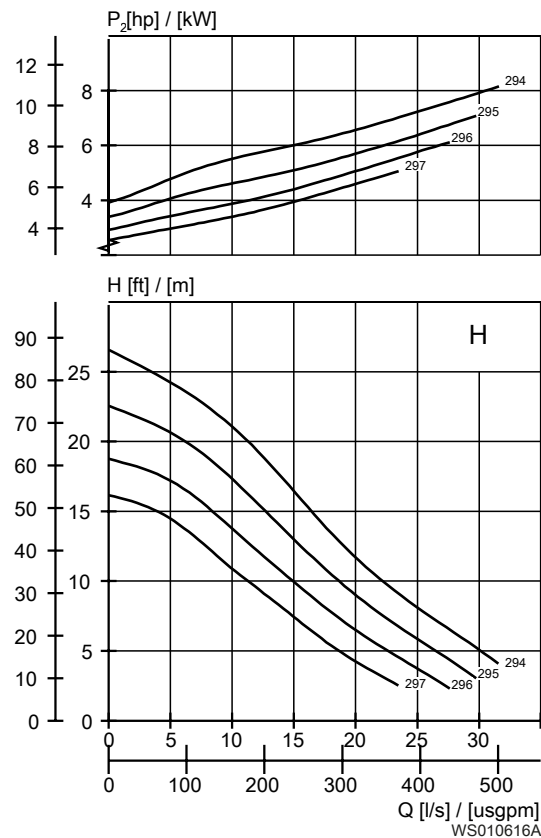


Table 3: 460 V, 60 Hz, 3-phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated Current, A	Start current, A	Power Factor, cos $\phi$	Installation
8.2	11	294	3500	13	110	0.9	FS, WW
7.1	9.5	295	3515	11	110	0.88	FS, WW
6.1	8.2	296	3525	10	110	0.86	FS, WW
5.6	7.5	297	3535	9.3	110	0.84	FS, WW

- FS= Free-standing
- WW=Wet-well

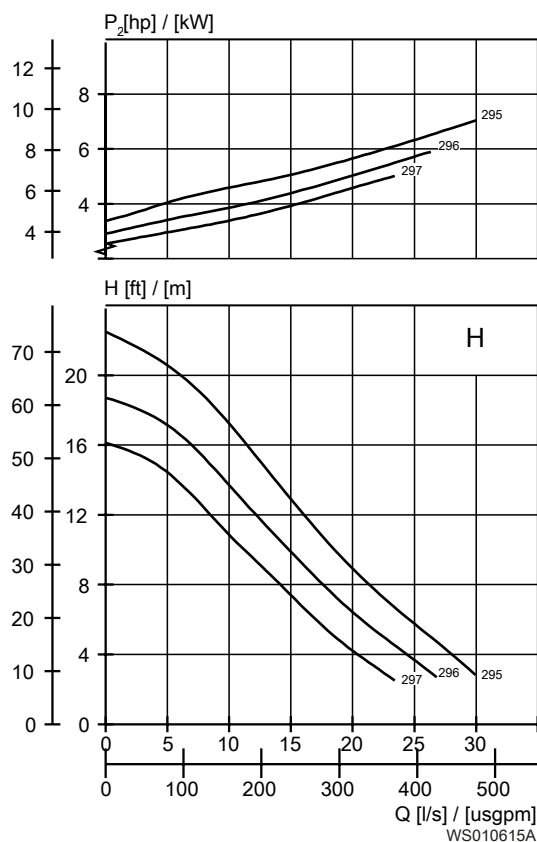


Table 4: 230 V, 60 Hz, 1-phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated Current, A	Start current, A	Power Factor, cos $\phi$	Installation
7.1	9.5	295	3500	42	138	0.87	FS, WW
5.6	7.5	297	3525	34	138	0.84	FS, WW
6	8	296	3515	36	138	0.85	FS, WW

- FS= Free-standing
- WW=Wet-well

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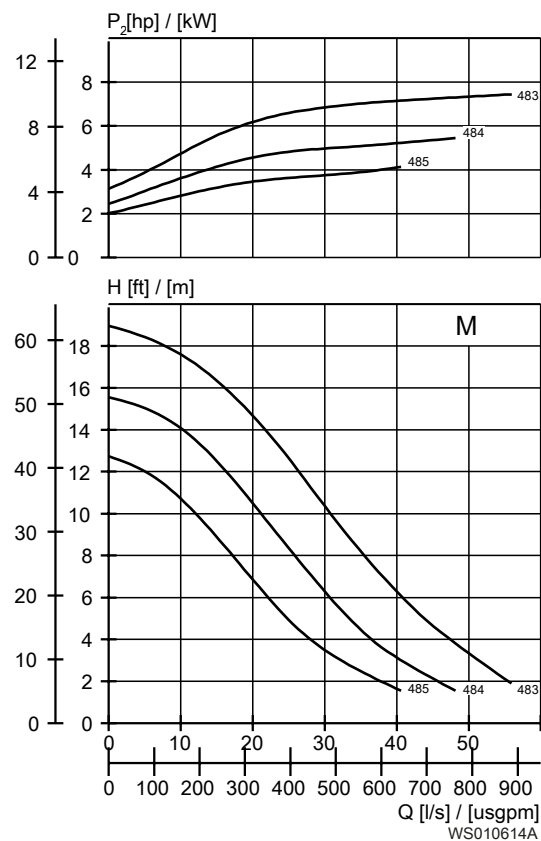


Table 5: 460 V, 60 Hz, 3-phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated Current, A	Start current, A	Power Factor, cos φ	Installation
7.5	10	483	1735	13	68	0.82	FS, WW
5.6	7.5	484	1755	11	68	0.77	FS, WW
4.5	6	485	1765	9.1	68	0.72	FS, WW

- FS= Free-standing
- WW=Wet-well

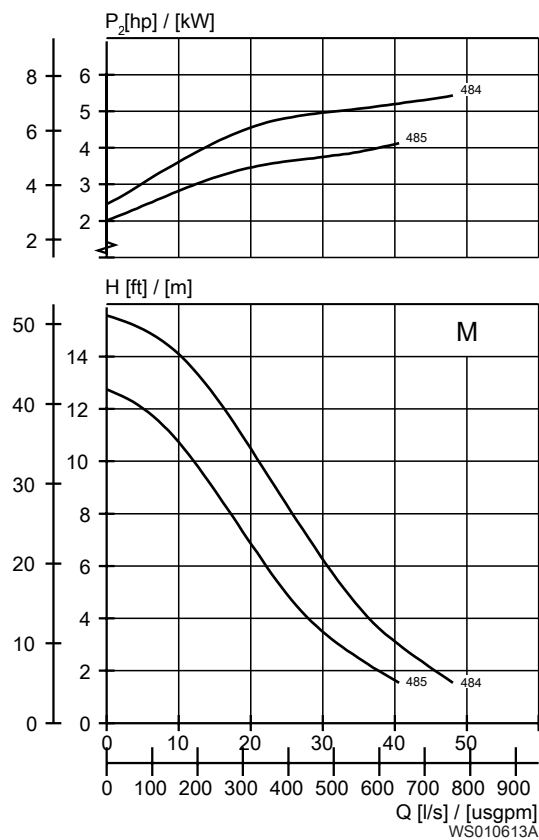


Table 6: 230 V, 60 Hz, 1-phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated Current, A	Start current, A	Power Factor, cos $\varphi$	Installation
5.6	7.5	484	1750	35	107	0.85	FS, WW
4.5	6	485	1765	28	107	0.83	FS, WW

- FS= Free-standing
- WW=Wet-well



# 2 Non-clog

## 2.1 Product description



### Usage

A submersible pump for efficient pumping of clean water, surface water, and wastewater containing solids. The pump is designed for sustained efficiency over time.

### Denomination

Type	Non-explosion proof version	Explosion proof version	Model variant	Installation types
Non-clog	1320.181	1320.090	<ul style="list-style-type: none"><li>• H - High head</li><li>• M - Medium head</li><li>• S - Super high head</li></ul>	<ul style="list-style-type: none"><li>• Free-standing</li><li>• Wet-well</li></ul>

The pump can be used in the following installations:

- Free-standing
- Portable semipermanent, wet well arrangement with hose coupling or flange for connection to the discharge pipeline.
- Wet-well
- Semipermanent, wet well arrangement with the pump installed on two guide bars. The connection to the discharge is automatic.

### Application limits

Feature	Description
Liquid temperature	Maximum 40°C (104°F)
Depth of immersion	Maximum 20 m (65 ft)
pH of the pumped liquid	5.5 - 14
Liquid density	Maximum 1100 kg/m <sup>3</sup>

### Motor data

Feature	Description
Motor type	Squirrel-cage induction motor

Feature	Description
Frequency	60 Hz
Power supply	1-phase or 3-phase
Starting method	<ul style="list-style-type: none"> <li>• Direct on-line</li> <li>• Star-delta</li> <li>• Variable Frequency Drive (VFD)</li> </ul>
Number of starts per hour	Maximum 15
Code compliance	IEC 60034-1
Voltage variation without overheating	±10%, if it does not run continuously at full load
Voltage imbalance between phases	Maximum 2%
Stator insulation class	F (155°C [311°F])

## Cables

Application	Type
Direct-on-line start or Y/D start with two cables	Flygt SUBCAB® - a heavy duty 4 cores motor power cable with two twisted pair screened control cores. Conductor insulation rating of 90°C, which allows for increased current. Superior mechanical strength and high abrasion and tear resistant. Chemical resistant within pH 3-10 and ozone, oil, and flame resistant. Used up to 70°C water temperature. Cables < 10 mm <sup>2</sup> with unscreened control cores.
Y/D start	Flygt SUBCAB® - a heavy duty 7 cores motor power cable with two twisted pair screened control cores. Conductor insulation rating of 90°C, which allows for increased current. Superior mechanical strength and high abrasion and tear resistant. Chemical resistant within pH 3-10 and ozone, oil, and flame resistant. Used up to 70°C water temperature. Cables < 7G6 mm <sup>2</sup> with unscreened control cores.

## Monitoring equipment

Motor	Thermal contacts opening temperature
18-15-2Z, 18-15-4Z	140°C (284°C)

## Materials

Table 7: Major parts except mechanical seals

Denomination	Material	ASTM	EN
Major castings	Cast iron, gray	30B	GJL-200
Pump housing	Cast iron, gray	30B	GJL-200
Impeller	Cast iron, gray	30B	GJL-200
Lifting eye bolt	Steel electro zinc coated	-	EN 10084 - C15E
Lifting handle	Stainless steel	AISI 304	1,4301
Shaft	Stainless steel	AISI 431	1.4057+QT800
Screws and nuts	Stainless steel, A2	AISI 304	1.4301, 1.4306, 1.4307, 1.4311
O-rings	Nitrile rubber (NBR) 70° IRH	-	-
Oil, part no 901752	Medical white oil of paraffin type. Fulfills FDA 172.878 (a)	-	-

Table 8: Mechanical seals

Inner seal	Outer seal
Carbon (CSb)/ Corrosion resistant cemented carbide (WCCR)	Corrosion resistant cemented carbide (WCCR)/ Corrosion resistant cemented carbide (WCCR)

Surface treatment

Finish
Black or blue two-component high-solid top coating. See internal standard M 0700.00.0004 for standard painting.

Options

- Leakage sensor in the stator housing (FLS)

Accessories

- Installation equipment  
Sold in kits
- Mechanical accessories such as discharge connections, adapters, and hose connections
- Electrical accessories such as pump controller, control panels, starters, monitoring relays, and cables

2.2 Motor rating and performance curves

These are examples of motor rating and curves. For more information, please contact your local sales and service representative.

Star-delta starting current is 1/3 of Direct on-line starting current.

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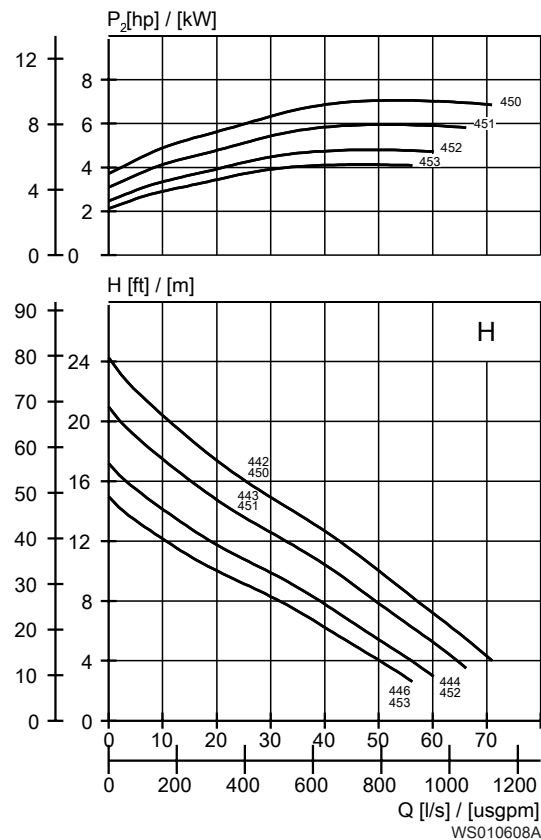


Table 9: 460 V, 60 Hz, 3-phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated Current, A	Start current, A	Power Factor, cos $\phi$	Installation
7.5	10	442	1735	13	68	0.82	FS, WW
7.5	10	443	1735	13	68	0.82	FS, WW
7.5	10	450	1735	13	68	0.82	FS, WW
7.5	10	451	1735	13	68	0.82	FS, WW
5.6	7.5	444	1755	11	68	0.77	FS, WW
5.6	7.5	452	1755	11	68	0.77	FS, WW
4.5	6	446	1765	9.1	68	0.72	FS, WW
4.5	6	453	1765	9.1	68	0.72	FS, WW

- FS= Free-standing
- WW=Wet-well

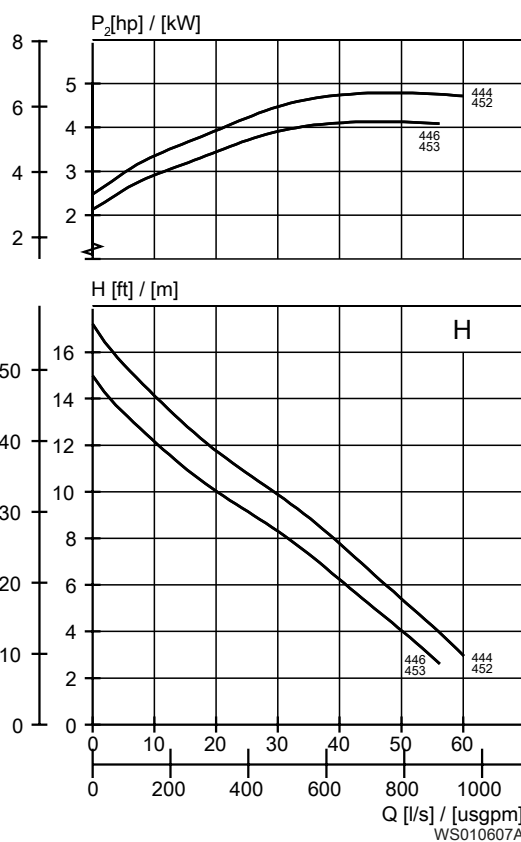


Table 10: 230 V, 60 Hz, 1-phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated Current, A	Start current, A	Power Factor, cos $\phi$	Installation
5.6	7.5	444	1750	35	107	0.85	FS, WW
5.6	7.5	452	1750	35	107	0.85	FS, WW
4.5	6	446	1765	28	107	0.83	FS, WW
4.5	6	453	1765	28	107	0.83	FS, WW

- FS= Free-standing
- WW=Wet-well

M

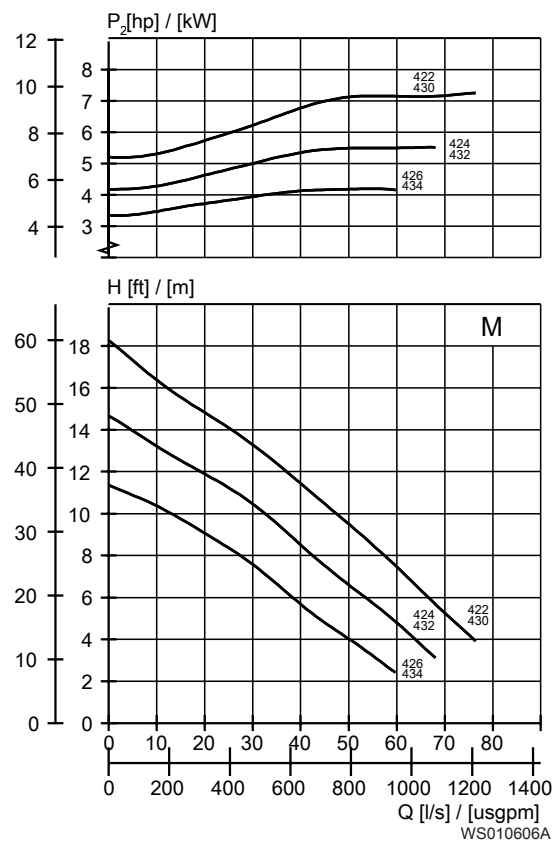


Table 11: 460 V, 60 Hz, 3-phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated Current, A	Start current, A	Power Factor, cos $\phi$	Installation
7.5	10	422	1735	13	68	0.82	FS, WW
7.5	10	430	1735	13	68	0.82	FS, WW
5.6	7.5	424	1755	11	68	0.77	FS, WW
5.6	7.5	432	1755	11	68	0.77	FS, WW
4.5	6	426	1765	9.1	68	0.72	FS, WW
4.5	6	434	1765	9.1	68	0.72	FS, WW

- FS= Free-standing
- WW=Wet-well

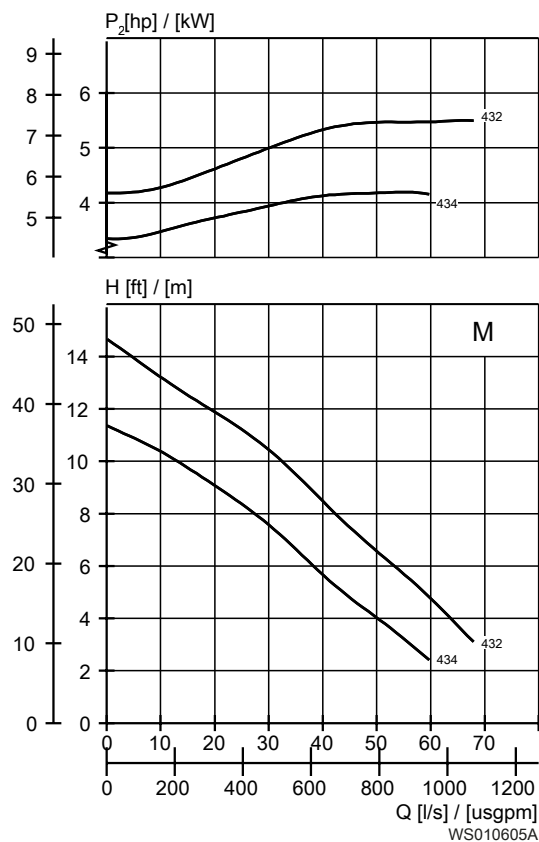


Table 12: 230 V, 60 Hz, 1-phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated Current, A	Start current, A	Power Factor, $\cos \phi$	Installation
5.6	7.5	424	1750	35	107	0.85	FS, WW
5.6	7.5	432	1750	35	107	0.85	FS, WW
4.5	6	426	1765	28	107	0.83	FS, WW
4.5	6	434	1765	28	107	0.83	FS, WW

- FS= Free-standing
- WW=Wet-well

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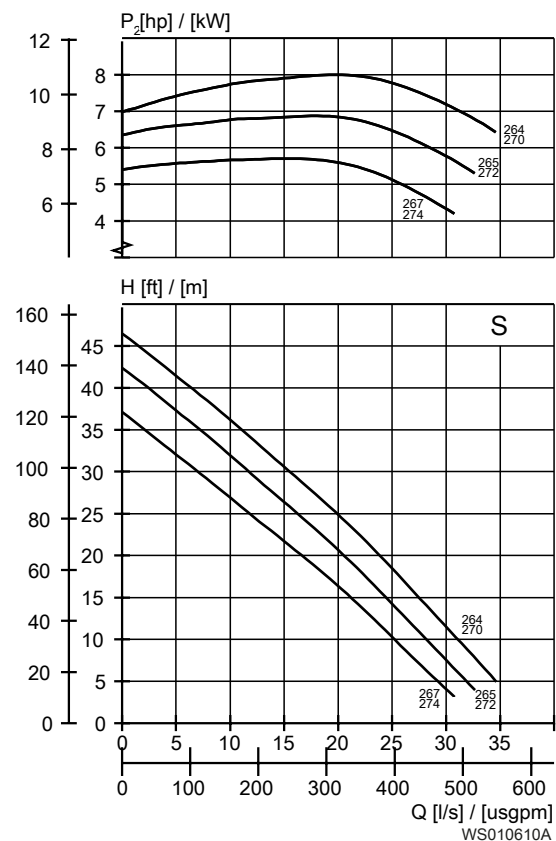


Table 13: 460 V, 60 Hz, 3-phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated Current, A	Start current, A	Power Factor, cos $\phi$	Installation
8.2	11	264	3500	13	110	0.9	FS, WW
8.2	11	270	3500	13	110	0.9	FS, WW
7.1	9.5	265	3515	11	110	0.88	FS, WW
7.1	9.5	272	3515	11	110	0.88	FS, WW
6.1	8.2	267	3525	10	110	0.86	FS, WW
6.1	8.2	274	3525	10	110	0.86	FS, WW

- FS= Free-standing
- WW=Wet-well

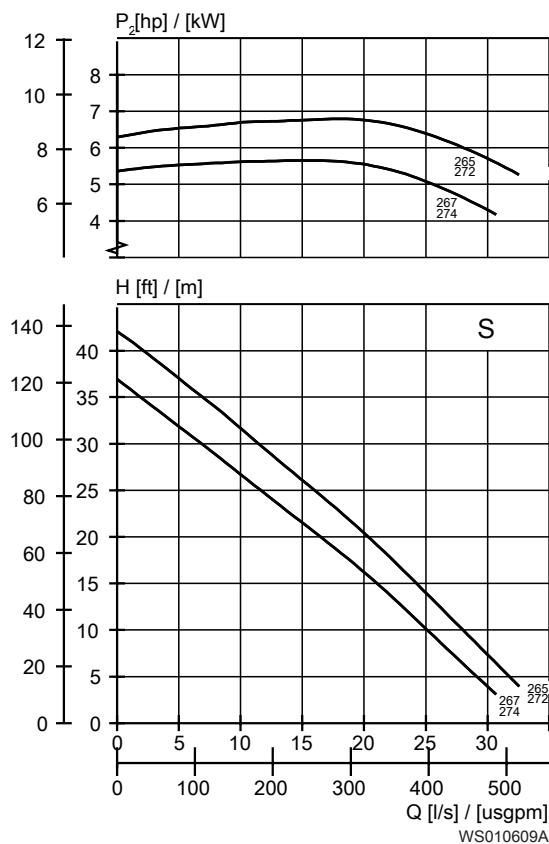


Table 14: 230 V, 60 Hz, 1-phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated Current, A	Start current, A	Power Factor, $\cos \phi$	Installation
7.1	9.5	265	3500	42	138	0.87	FS, WW
7.1	9.5	272	3500	42	138	0.87	FS, WW
6	8	267	3515	36	138	0.85	FS, WW
6	8	274	3515	36	138	0.85	FS, WW

- FS= Free-standing
- WW=Wet-well







# Xylem |'zīləm|

- 1) The tissue in plants that brings water upward from the roots;
- 2) a leading global water technology company.

We're a global team unified in a common purpose: creating advanced technology solutions to the world's water challenges. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. Our products and services move, treat, analyze, monitor and return water to the environment, in public utility, industrial, residential and commercial building services settings. Xylem also provides a leading portfolio of smart metering, network technologies and advanced analytics solutions for water, electric and gas utilities. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise with a strong focus on developing comprehensive, sustainable solutions.



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