Technical Specification

L3356, L3400, L3602

FLYGT

a xylem brand

Table of Contents

Product Description

Product overview

Submersible pump for pumping water and wastewater containing solids or long-fibred material.

Installation

L-installation

Accessories

Mechanical accessories which are available include the following:

- Cable handling systems
- Lifting equipment

Electrical accessories which are available include the following:

- Pump controller
- Control panels
- Starters
- MAS and other monitoring relays

See your local sales and service representative for further information.

Options

The following options are available:

- Zinc anodes for corrosion protection
- Special coating system (with epoxy base coat) for demanding environments
- Power monitoring
- Monitoring options for temperature, vibration and water in the oil housing

Materials

Impeller

Table 1: L3356, L3400

Material	Internal material number	Standard	
		Europe	USA
Cast iron	M0314.0125.00	EN 1561 No. JL 1040	ASTM-A 48 – No 35 B
Duplex stainless steel	M0344.2324.12	EN 10283 No. 1.4474	ASTM (CD-4MCuN)

Table 2: L3602

Material	Internal material number	Standard	
		Europe	USA
Cast iron	M0314.0125.00	EN 1561 No. JL 1040	ASTM-A 48 – No 35 B
Duplex stainless steel	M0344.2324.12	EN 10283 No. 1.4474	ASTM (CD-4MCuN)

Pump housing

Table 3: L3356, L3400, L3602

Material	Internal material number	Standard	
		Europe	USA
Cast iron	M0314.0125.00	EN 1561 No. JL 1040	ASTM-A 48 – No 35 B

Mechanical face seals

The inner seal is always corrosion resistant cemented tungsten carbide (WCCR). The outer seal can be either corrosion resistant cemented tungsten carbide (WCCR), or corrosion resistant silicon carbide (RSiC).

Seal	Material, rotating ring	Material, stationary ring
Inner	Corrosion resistant cemented tungsten carbide (WCCR)	WCCR
Outer	WCCR	WCCR
	Corrosion resistant silicon carbide (RSiC)	RSiC

Drive unit shaft

Material	Internal material number	Standard	
		Europe	USA
Martensitic stainless steel	M0344.2321.03	EN 10088-3 No. 1.4057	ASTM/AISI 431
Duplex stainless steel	M0344.2324.02	EN 10088-3 No. 1.4460	ASTM/AISI 329

O-rings

Material	Internal material number	Standard	
		Europe	USA
Nitrile rubber 70º IRH	M0516.2637.04	–	–

Coating system

The following table describes the two variants of paint systems available for the pump, Standard and Special. The choice of coating system depends upon the service environment.

Coating system	Basecoat	Topcoat	Total dry film thickness
Standard	Acrylic (waterborne) or alkyd (solventborne)	Oxirane ester, 2–pack	120–350 µm
Special (option)	Epoxy, 2 layers	Oxirane ester, 2–pack, 1 layer	350–700 µm

Other coating systems are available for special requirements such as drinking water, high temperature or erosion applications. See the Xylem internal standard M0700.00.0001 (Coating Selection Guidelines).

Mounting-related data

Depth of immersion

The maximum depth of immersion is 20 m (65 ft.).

Weight

See the dimensional drawing for pump weights.

Cables

Table 4: L3356

SUBCAB®	Maximum voltage 600–1000 V, intended for drive units up to 1 kV. To be dimensioned by Xylem.

Table 5: L3400, L3602

SUBCAB®	Maximum voltage 600–1000 V, intended for drive units up to 1 kV. To be dimensioned by Xylem.
NTSCGEWTOEUS	For use with medium voltage (1.2–6.6 kV) drive units. To be dimensioned by Xylem.

Engineering data

Performance curves, motor data and dimensional drawings are available from your local sales and service representative.

Impeller throughlet

Pump	Throughlet	
	mm	in.
L3356	102	4.02
L3400	105	4.13
L3602	126	4.96

Drive units

L3356

Voltage range	Standard drive units	Explosion-proof drive units	Maximum number of starts per hour
Up to 1 kV	605	615	15
	665	675	15
Up to 1 kV	705	715	15
	735	745	15
	765	775	15
Up to 1 kV	706	716	8
	736	746	8
	766	776	8

L3400

Voltage range	Standard drive units	Explosion-proof drive units	Maximum number of starts per hour
Up to 1 kV	705	715	15
	735	745	15
	765	775	15
Up to 1 kV	706	716	8
	736	746	8
	766	776	8

Voltage range	Standard drive units	Explosion-proof drive units	Maximum number of starts per hour
Up to 1 kV	805	815	15
	835	845	15
	865	875	15
	885	895	8
1.2-6.6 kV	862	872	15
	882	892	8

L3602

Voltage range	Standard drive units	Explosion-proof drive units	Maximum number of starts per hour
Up to 1 kV	735	745	15
	765	775	15
Up to 1 kV	736	746	8
	766	776	8
Up to 1 kV	805	815	15
	835	845	15
	865	875	15
	885	895	8
Up to 1 kV	905	915	8
	935	945	8
1.2-6.6 kV	862	872	15
	882	892	8
	950	960	8
	985	995	8
	988	998	8

Operational data

Application limits

Table 6: Process data

Parameter	Value
Liquid temperature	Max. +40°C (+105°F)
Depth of immersion	Max. 20 m (65 ft)
pH of pumped liquid	pH 5.5–14
Liquid density	Max. 1100 kg/m^3 (9.17 lb per gal.)

Motor Data

Motor characteristics

Insulation class	H (+180°C, +356°F)
Voltage variation	Max. +/- 10%
Voltage imbalance between phases	Max. 2%

Frequency

Pump	50 Hz	60 Hz
L3356	X	X
L3400	X	X
L3602	X	X

Monitoring with MAS-711

The pump is designed for use with the Flygt MAS-711 monitoring system. The parameters tracked are chosen by the customer and can include the following:

- Temperature (main and support bearings, stator windings)
- Vibration
- Leakage (in stator housing, junction box, and water into oil chamber)
- Power monitoring

Table 7: Parameters monitored

Description	Sensor	Standard or optional
Pump memory	Printed circuit board for pump memory includes a temperature sensor.	Standard
Leakage in the junction box	Float Switch Leakage Sensor (FLS)	Standard
Main bearing temperature	Pt100 analogue temperature sensor	Standard
Leakage in the stator housing	Float Switch Leakage Sensor (FLS)	Standard
Stator winding temperature	See table below.	Standard
Support bearing temperature	Pt100 analogue temperature sensor	Optional
Water in oil (not applicable for 7X6 drive units)	Capacitive Leakage Sensor (CLS)	Optional
Vibration	VIS 10	Optional
Power monitoring	Separate electronic instrument using three current transformers.	Optional
Pump current	A current transformer in the control cabinet is required.	

Table 8: Stator winding temperature, monitoring configurations

Drive units	Sensors in coil ends of stator windings	Additional sensors, incorporated in the stator windings:	
		Always (standard)	Additional option
Up to 1 kV	One of the following choices: • 3 thermal switches (standard), or • 3 PTC-thermistors (optional)	Pt100 analogue temperature sensor in 1 stator winding (standard)	Pt100 analogue temperature sensors in 2 additional stator windings (optional)
1.2–6.6 kV	PTC-thermistors (3+3) 3 sensors are connected in series, and 3 are built-in reserves.	Pt100 analogue temperature sensors in all 3 stator windings (3+3) Each winding has 1 sensor connected, and 1 built-in reserve.	

L3356 Motor rating and performance, 50 Hz

Low voltage

Table 9: L3356, 50 Hz, low voltage

Curve / impeller no.	Rotations per minute	Drive unit	Voltage, V	Rated power, kW	Rated current, A	Starting current, A	Power factor cos φ
610	985	605 / 615	400	58	118	660	0.78
		665 / 675	400	75	150	835	0.79
		665 / 675	400	90	185	1160	0.76
		705 / 715	400	110	219	1150	0.79
		706 / 716	400	110	222	1130	0.76
		735 / 745	400	160	300	1545	0.82
		736 / 746	400	160	290	1540	0.84
810	730	605 / 615	400	45	95	425	0.77
		665 / 675	400	55	115	525	0.77

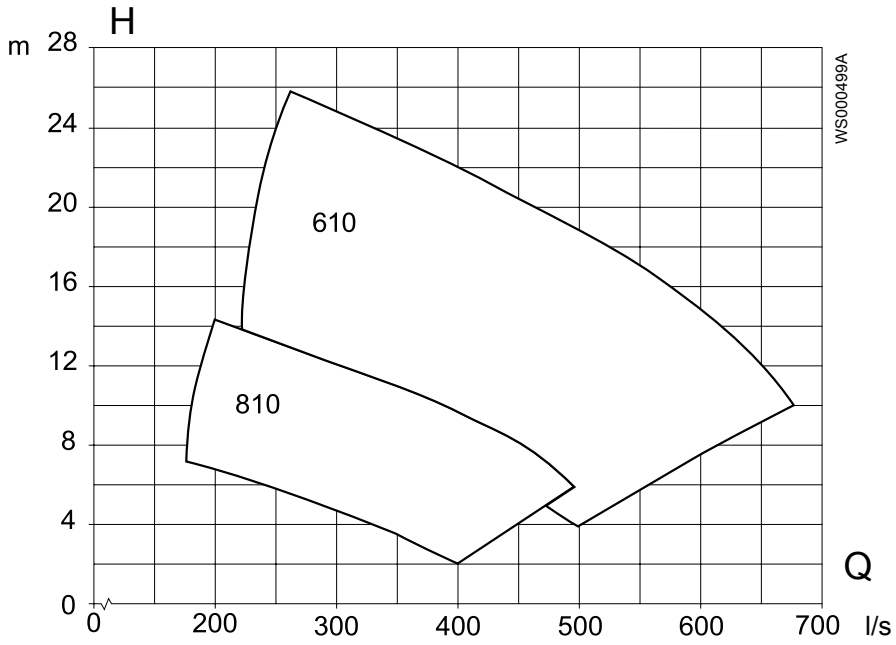

Figure 1: L3356, 50 Hz, low voltage

L3400 Motor rating and performance, 50 Hz

Low voltage

Table 10: L3400, 50 Hz, low voltage

Curve / impeller no.	Rotations per minute	Drive unit	Voltage, V	Rated power, kW	Rated current, A	Starting current, A	Power factor cos φ
1290	490	705 / 715	400	30	81	289	0.6
			400	40	110	390	0.59
			400	45	140	455	0.53
		706 / 716	400	30	79	355	0.60
			400	40	101	390	0.64
			400	45	117	435	0.62
1090	590	705 / 715	400	40	88	385	0.73
			400	70	154	550	0.73
		706 / 716	400	40	86	360	0.72
			400	70	158	510	0.7
890	730	705 / 715	400	90	182	775	0.79
			400	100	227	920	0.72
		706 / 716	400	90	184	705	0.77
			400	100	220	835	0.72
		735 / 745	400	140	275	1070	0.81
		736 / 746	400	140	275	985	0.8
690	990	805 / 815	400	200	365	1765	0.84
		835 / 845	400	250	465	2645	0.82
		865 / 875	400	340	625	3370	0.83

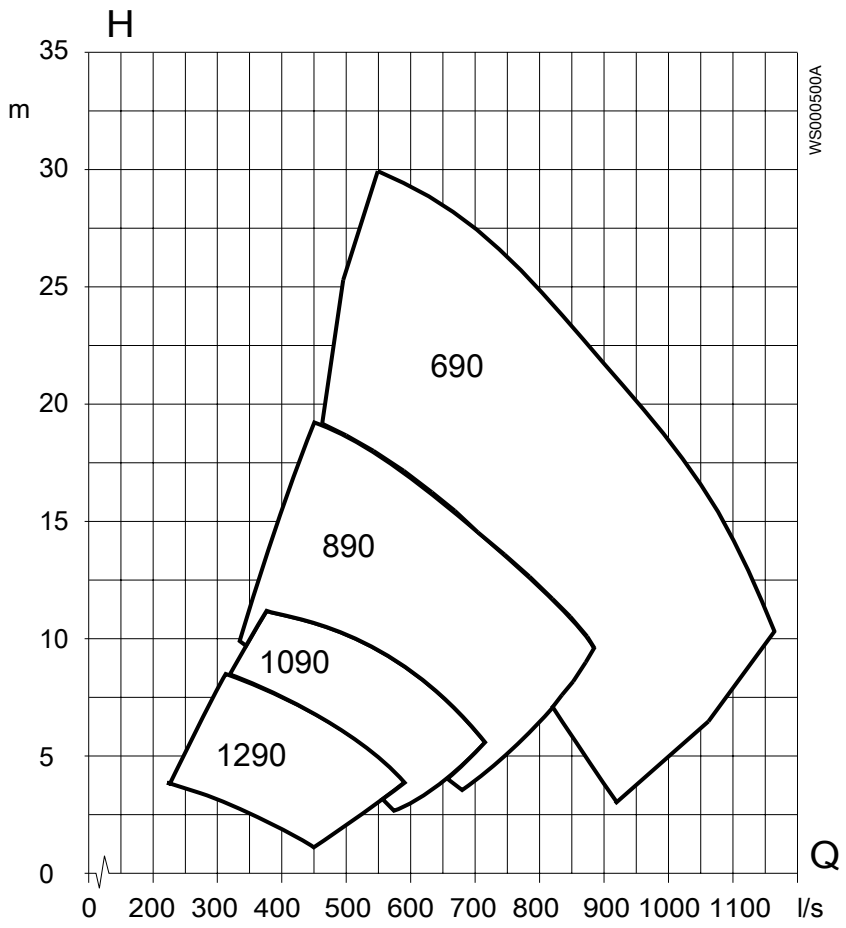

Figure 2: L3400, 50 Hz, low voltage

Medium voltage

Table 11: L3400, 50 Hz, medium voltage

Curve / impeller no.	Rotations per minute	Drive unit	Voltage, V	Rated power, kW	Rated current, A	Starting current, A	Power factor cos φ
690	990	862 / 872	6000	200	24	140	0.86
			3300	210	46	262	0.86
		882 / 892	6000	265	32	218	0.85
			3300	275	59	390	0.86
			6000	340	41	292	0.85
			3300	375	79	510	0.87

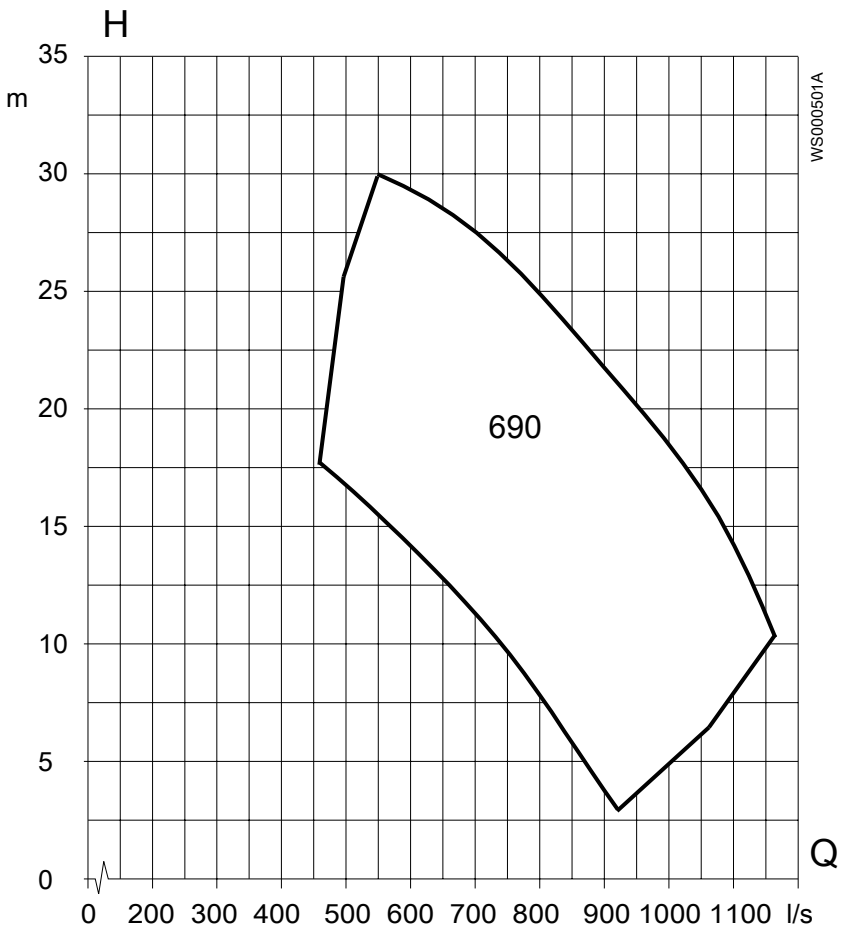

Figure 3: L3400, 50 Hz, medium voltage

L3602 Motor rating and performance, 50 Hz

Low voltage

Table 12: L3602, 50 Hz, low voltage

Curve / impeller no.	Rotations per minute	Drive unit	Voltage, V	Rated power, kW	Rated current, A	Starting current, A	Power factor cos φ
1440	420	705 / 715	400	40	127	350	0.53
		706 / 716	400	40	115	330	0.57
		735 / 745	400	60	178	585	0.57
		736 / 746	400	60	181	460	0.54
		765 / 775	400	70	193	610	0.59
		766 / 776	400	70	204	555	0.55
1240	490	735 / 745	400	60	158	550	0.61
		735 / 745	400	70	194	655	0.58
		736 / 746	400	60	156	550	0.61
		736 / 746	400	70	173	550	0.64
		765 / 775	400	80	207	710	0.62
		765 / 775	400	90	258	885	0.56
		766 / 776	400	80	204	715	0.62
		766 / 776	400	90	222	715	0.64
		805 / 815	400	110	273	1025	0.63
		835 / 845	400	160	395	1455	0.64
1040	590	735 / 745	400	100	244	940	0.66
		736 / 746	400	100	239	730	0.67
		805 / 815	400	140	297	1245	0.74
		835 / 845	400	190	415	1920	0.72
		865 / 875	400	230	475	2045	0.75
840	730	835 / 845	400	230	460	2385	0.77
		865 / 875	400	300	580	2730	0.8
		935 / 945	400	430	780	4510	0.83

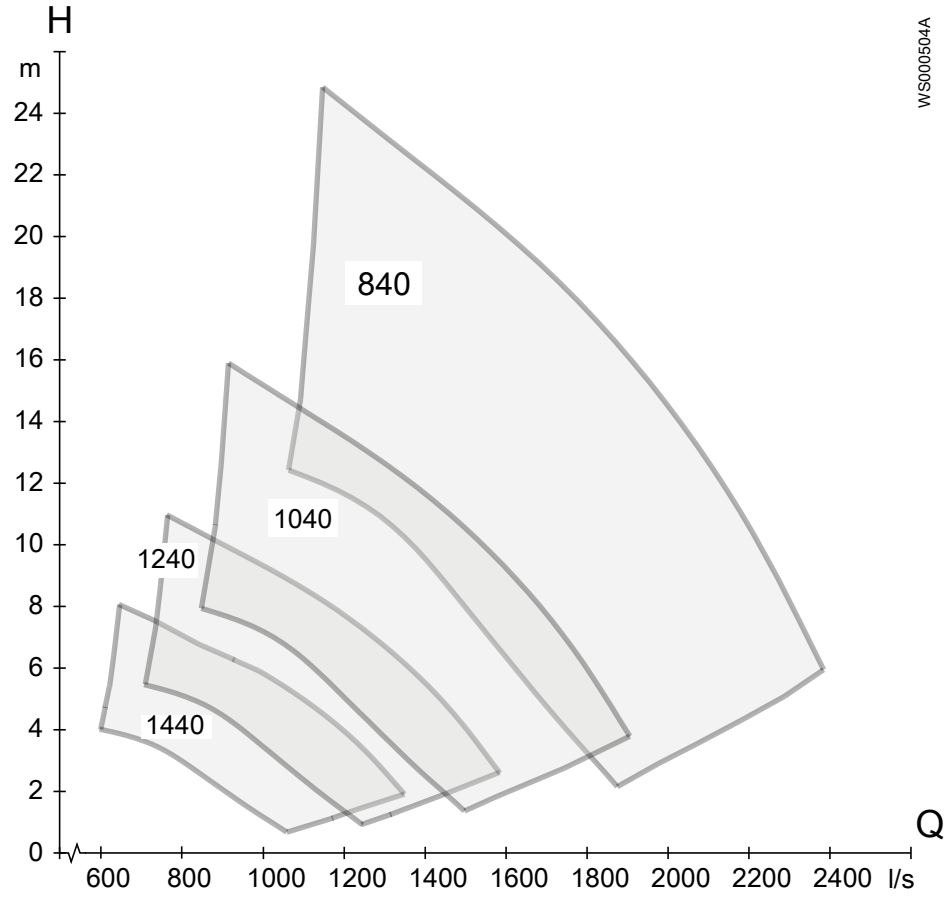

Figure 4: L3602, 50 Hz, low voltage

Medium voltage

Table 13: L3602, 50 Hz, medium voltage

Curve / impeller no.	Rotations per minute	Drive unit	Voltage, V	Rated power, kW	Rated current, A	Starting current, A	Power factor cos φ
1240	495	862 / 872	6000	120	20	82	0.64
			3300	135	39	148	0.66
		882 / 892	6000	145	22	94	0.69
			3300	155	43	172	0.70
1040	595	862 / 872	6000	145	21	87	0.73
			3300	155	40	162	0.73
		882 / 892	6000	180	25	103	0.75
			3300	195	49	184	0.75
			6000	225	31	148	0.76
840	745	882 / 892	3300	240	57	320	0.79
			6000	260	33	179	0.80
			3300	275	62	320	0.82

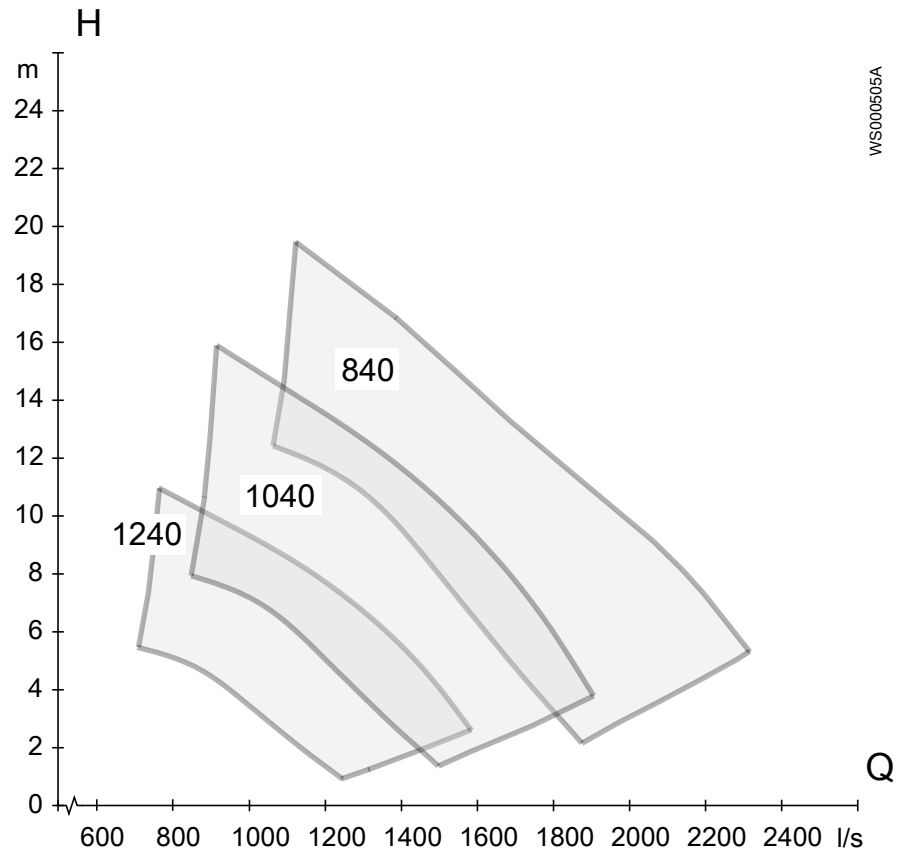

Figure 5: L3602, 50 Hz, medium voltage

L3356 Motor rating and performance, 60 Hz

Low voltage

Table 14: L3356, 60 Hz, low voltage

Curve / impeller no.	Rotations per minute	Drive unit	Voltage, V	Rated power, HP (kW)	Rated current, A	Starting current, A	Power factor cos φ
610	1185	665 / 675	460	140 (104)	179	1195	0.79
			600	140 (104)	137	905	0.79
		705 / 715	460	170 (127)	212	1155	0.81
			600	170 (127)	166	940	0.79
		706 / 716	460	170 (127)	211	1130	0.8
			600	170 (127)	155	785	0.83
		735 / 745	460	240 (179)	288	1555	0.84
			600	240 (179)	226	1 305	0.81
		736 / 746	460	240 (179)	275	1540	0.86
			600	240 (179)	217	1295	0.83
		765 / 775	460	310 (231)	380	2230	0.81
			600	310 (231)	287	1 640	0.82
		766 / 776	460	310 (231)	346	1785	0.88
			600	310 (231)	275	1640	0.85
810	880	605 / 615	460	70 (52)	93	440	0.79
			600	70 (52)	74	385	0.75
		665 / 675	460	85 (63)	112	560	0.78
			600	85 (63)	89	480	0.75
		665 / 675	460	100 (75)	128	660	0.8
			600	100 (75)	102	575	0.77
		705 / 715	460	135 (101)	173	790	0.81
			600	135 (101)	135	625	0.8
		706 / 716	460	135 (101)	173	710	0.79
			600	135 (101)	134	565	0.78

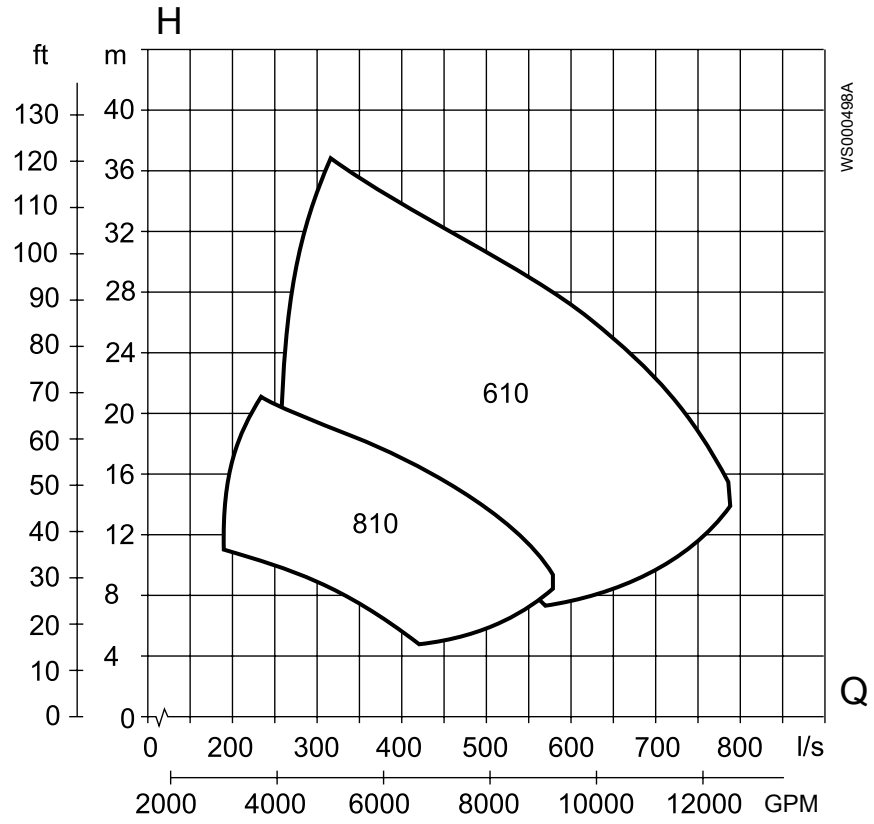

Figure 6: L3356, 60 Hz, low voltage

L3400 Motor rating and performance, 60 Hz

Low voltage

Table 15: L3400. 60 Hz, low voltage

Curve / impeller no.	Rotations per minute	Drive unit	Voltage, V	Rated power, HP (kW)	Rated current, A	Starting current, A	Power factor cos φ
1490	505	705 / 715	460	35 (26)	65	230	0.57
			600	35 (26)	49	175	0.57
			460	60 (45)	110	375	0.57
			600	60 (45)	85	297	0.57
		706 / 716	460	60 (45)	107	330	0.58
			600	60 (45)	86	269	0.56
			460	60 (45)	104	305	0.6
1290	590	705 / 715	460	45 (34)	77	295	0.6
			600	45 (34)	61	239	0.59
			460	60 (45)	103	395	0.61
			600	60 (45)	76	282	0.63
			460	70 (52)	131	465	0.56
			600	70 (52)	107	385	0.53
		706 / 716	460	45 (34)	75	355	0.62
			600	45 (34)	60	289	0.60
			460	60 (45)	95	395	0.65
			600	60 (45)	74	310	0.64
			460	70 (52)	111	440	0.64
			600	70 (52)	91	370	0.6
		735 / 745	460	90 (67)	148	565	0.63
			600	90 (67)	116	445	0.62
			460	110 (82)	187	665	0.61
			600	110 (82)	147	530	0.6
		736 / 746	460	90 (67)	145	555	0.63
			600	90 (67)	114	440	0.61
			460	110 (82)	168	555	0.67
			600	110 (82)	141	495	0.61
1090	705	705 / 715	460	110 (82)	154	565	0.74
			600	110 (82)	121	485	0.72
		706 / 716	460	110 (82)	155	515	0.73
			600	110 (82)	124	445	0.69
1090	705	735 / 745	460	150 (112)	227	960	0.68
			600	150 (112)	180	775	0.66
		736 / 746	460	150 (112)	222	735	0.69
			600	150 (112)	180	620	0.65

Curve / impeller no.	Rotations per minute	Drive unit	Voltage, V	Rated power, HP (kW)	Rated current, A	Starting current, A	Power factor cos φ
890	880	705 / 715	460	135 (101)	173	790	0.81
			600	135 (101)	135	625	0.8
			460	150 (112)	210	930	0.74
			600	150 (112)	161	710	0.75
		706 / 716	460	135 (101)	173	710	0.79
			600	135 (101)	134	565	0.78
			460	150 (112)	203	840	0.75
			600	150 (112)	155	640	0.75
		735 / 745	460	215 (160)	270	1085	0.82
			600	215 (160)	207	840	0.82
		736 / 746	460	215 (160)	265	995	0.81
			600	215 (160)	203	765	0.81
		765 / 775	460	250 (186)	310	1355	0.82
		766 / 776	460	250 (186)	307	1250	0.81
		835 / 845	460	355 (265)	450	2425	0.78
			600	355 (265)	355	2045	0.76

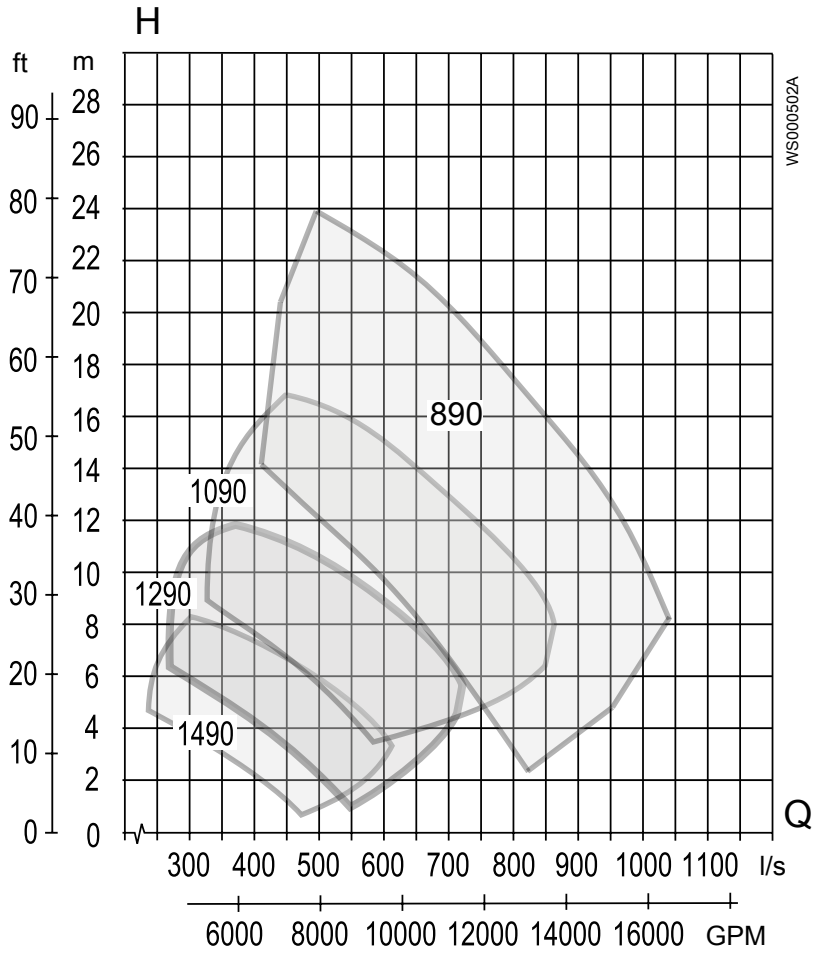

Figure 7: L3400. 60 Hz, low voltage

Medium voltage

Table 16: L3400, 60 Hz, medium voltage

Curve / impeller no.	Rotations per minute	Drive unit	Voltage, V	Rated power, HP	Rated current, A	Starting current, A	Power factor cos φ
890	885	862 / 872	4160	275	37	213	0.82
		882 / 892	4160	370	51	305	0.80

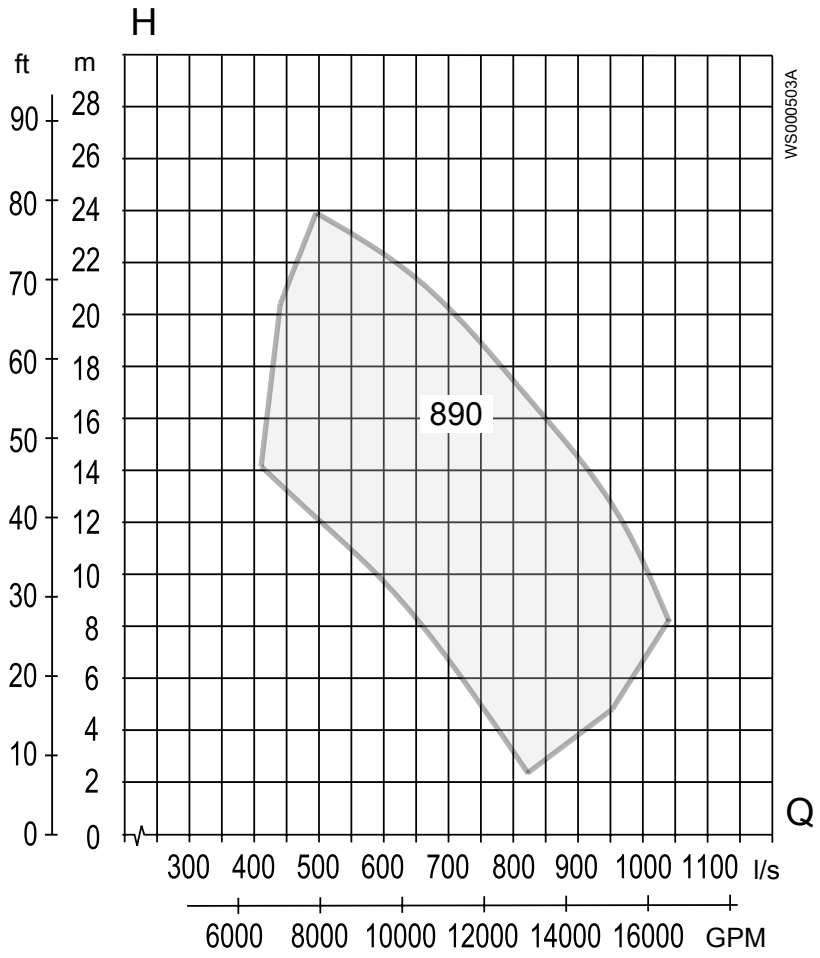

Figure 8: L3400, 60 Hz, medium voltage

L3602 Motor rating and performance, 60 Hz

Low voltage

Table 17: L3602, 60 Hz, low voltage

Curve / impeller no.	Rotations per minute	Drive unit	Voltage, V	Rated power, HP	Rated current, A	Starting current, A	Power factor cos φ
1440	505	735 / 745	460	90 (67)	157	515	0.6
			600	90 (67)	123	420	0.58
		736 / 746	460	90 (67)	167	460	0.55
			600	90 (67)	134	375	0.53
		765 / 775	460	110 (82)	190	625	0.6
			600	110 (82)	153	540	0.57
		766 / 776	460	110 (82)	196	555	0.57
			600	110 (82)	163	480	0.53
		805 / 815	460	135 (101)	220	855	0.63
			600	135 (101)	177	730	0.6
		835 / 845	460	185 (138)	288	1035	0.66
			600	185 (138)	238	960	0.62
1240	590	765 / 775	460	120 (89)	195	725	0.63
			600	120 (89)	154	590	0.61
			460	135 (101)	240	900	0.58
			600	135 (101)	185	695	0.58
		766 / 776	460	120 (89)	190	715	0.63
			600	120 (89)	151	580	0.61
			460	135 (101)	208	715	0.66
			600	135 (101)	164	580	0.64
		805 / 815	460	170 (127)	266	1055	0.65
			600	170 (127)	208	860	0.63
		835 / 845	460	240 (179)	375	1500	0.64
			600	240 (179)	300	1270	0.62
		865 / 875	460	310 (231)	470	1800	0.66
			600	310 (231)	380	1580	0.63

Curve / impeller no.	Rotations per minute	Drive unit	Voltage, V	Rated power, HP	Rated current, A	Starting current, A	Power factor cos φ
1040	710	805 / 815	460	215 (160)	289	1275	0.75
			600	215 (160)	234	1180	0.71
		835 / 845	460	280 (209)	385	1965	0.72
			600	280 (209)	300	1555	0.72
		865 / 875	460	355 (265)	465	2095	0.76
			600	355 (265)	355	1530	0.77
		905 / 915	460	455 (339)	545	2485	0.82
			600	455 (339)	415	1815	0.83
			460	565 (421)	675	3095	0.83
			600	565 (421)	535	2780	0.8

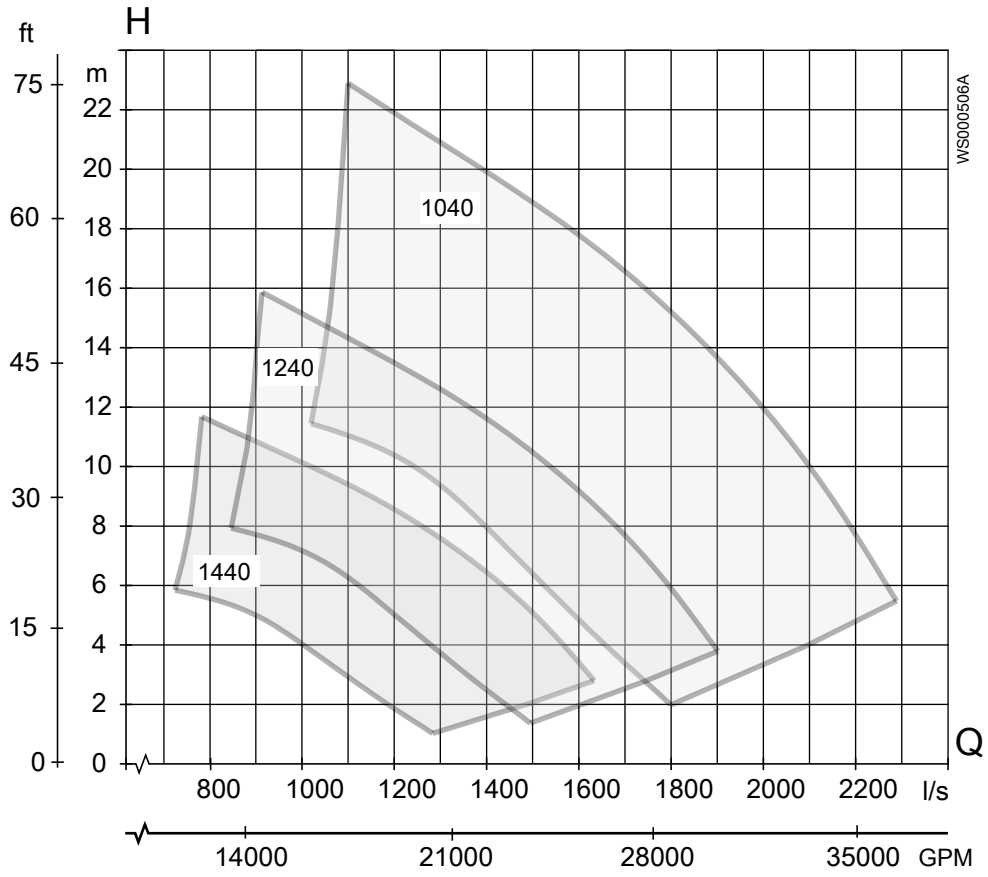

Figure 9: L3602, 60 Hz, low voltage

Medium voltage

Table 18: L3602, 60 Hz, medium voltage

Curve / impeller no.	Rotations per minute	Drive unit	Voltage, V	Rated power, HP	Rated current, A	Starting current, A	Power factor cos φ
1440	510	862 / 872	4160	150	28	95	0.62
		882 / 892	4160	200	37	118	0.63
			4160	250	42	133	0.67

Curve / impeller no.	Rotations per minute	Drive unit	Voltage, V	Rated power, HP	Rated current, A	Starting current, A	Power factor cos φ
1240	595	862 / 872	4160	210	37	153	0.65
		882 / 892	4160	250	41	175	0.70
			4160	335	52	208	0.72
1040	715	862 / 872	4160	240	35	147	0.75
		882 / 892	4160	300	44	184	0.76
			4160	390	55	264	0.78

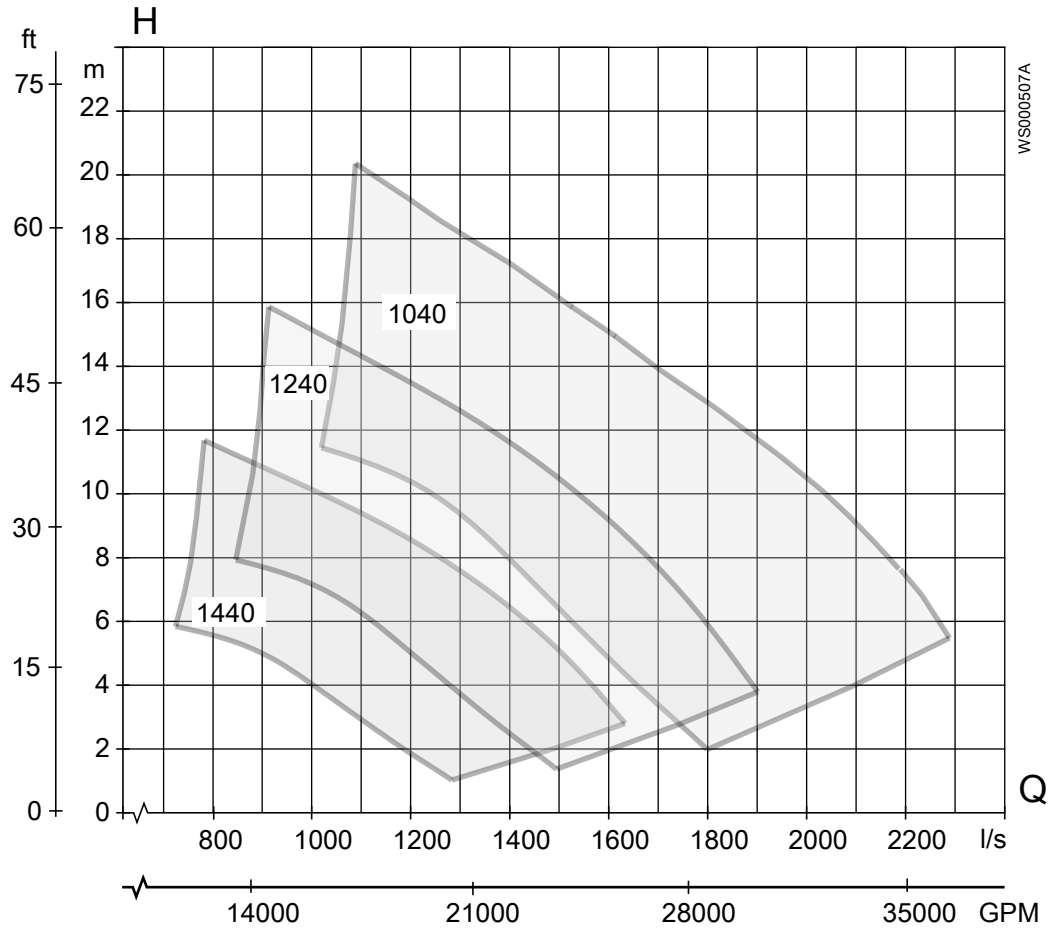

Figure 10: L3602, 60 Hz, medium voltage

Xylem |'zīləm|

1) The tissue in plants that brings water upward from the roots
2) A leading global water technology company

We're 12,500 people unified in a common purpose: creating innovative solutions to meet our world's water needs. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. We move, treat, analyze, and return water to the environment, and we help people use water efficiently, in their homes, buildings, factories and farms. 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, backed by a legacy of innovation.

For more information on how Xylem can help you, go to xyleminc.com

Refer to www.xylemwatersolutions.com/contacts/ for contact details of your local sales and service representative.

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The original instruction is in English. All non-English instructions are translations of the original instruction.

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