

Technical Specification

90018801_2.0



Flygt 3153

60 Hz

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1 F-pump, Standard Motor

1.1 Product description



Usage

A submersible chopper pump for liquid manure, fish waste, or heavily contaminated sewage and sludge. The N-hydraulic is fitted with a cutting insert ring. Both impeller and insert ring are manufactured in Hard-Iron™.

Denomination

Type	Non-explosion proof version	Explosion proof version	Pressure class	Installation types
Hard-Iron™ Chopper	3153.350	3153.390	MT — Medium head HT — High head SH — Super head	P, S, T, Z

The pump can be used in the following installations:

- P Semipermanent, wet well arrangement with the pump installed on two guide bars. The connection to the discharge is automatic.
- S Portable semipermanent, wet well arrangement with hose coupling or flange for connection to the discharge pipeline.
- T Vertical permanent, dry well arrangement with flange connection to the suction and discharge piping.
- Z Horizontal permanent, dry well arrangement with flange connection to the suction and discharge piping.

Application limits

Feature	Description
Liquid temperature	Maximum 40°C (104°F)
Liquid temperature, warm water version	Maximum 70°C (158°F)
Depth of immersion	Maximum 20 m (65 ft)
pH of the pumped liquid	5.5 – 14
Liquid density	Maximum 1100 kg/m ³

Motor data

Feature	Description
Motor type	Squirrel cage induction motor
Frequency	60 Hz
Power supply	3-phase
Starting method	• Direct on-line • Star-delta • Variable frequency drive (VFD)
Number of starts for each hour	Maximum 30
Code compliance	IEC 60034-1
Voltage variation	• Continuously running: Maximum $\pm 5\%$ • Intermittent running: Maximum $\pm 10\%$
Voltage imbalance between phases	Maximum 2%
Stator insulation class	H (180°C, 356°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 ² 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 ² with unscreened control cores.

Monitoring equipment

- Thermal contacts opening temperature 140°C (284°F)
- Leakage sensor in the inspection chamber (FLS10)

Materials

Table 1: Major parts, except mechanical seals

Denomination	Material	ASTM	EN
Major castings	Cast iron, gray	35B	GJL-250
Pump housing	Cast iron, gray	35B	GJL-250
Impeller	Cast iron, Hard-Iron™	A 532 IIIA	GJN-HB555(XCR23)
Insert ring	Cast iron, Hard-Iron™	A 532 IIIA	GJN-HB555(XCR23)
Cooling jacket, inner	Steel	A572 Grade 60	1.0045, 1.0553, ...
Cooling jacket, outer, alternative 1	Steel	GR65	S235JRG2

Denomination	Material	ASTM	EN
Cooling jacket, outer, alternative 2	Stainless steel	AISI 316L	1.4404, 1.4432, ...
Lifting handle	Stainless steel	AISI 316L	1.4404, 1.4432, ...
Shaft	Stainless steel	AISI 431	1.4057+QT800
Screws and nuts	Stainless steel, A4	AISI 316L, 316, 316Ti	1.4401, 1.4404, ...
O-rings, alternative 1	Nitrile rubber (NBR) 70° IRH	-	-
O-rings, alternative 2	Fluorinated rubber (FPM) 70° IRH	-	-
Glycol	Heat transfer fluid based on monopropylene glycol.	-	-

Table 2: Mechanical seals

Alternative	Inner seal	Outer seal
1	Corrosion resistant cemented carbide (WCCR)/ Corrosion resistant cemented carbide (WCCR)	Corrosion resistant cemented carbide (WCCR)/ Corrosion resistant cemented carbide (WCCR)
2	Corrosion resistant cemented carbide (WCCR)/ Corrosion resistant cemented carbide (WCCR)	Silicon carbide (RSiC)/ Silicon carbide (RSiC)

Surface treatment

Priming	Finish
Painted with a primer, see internal standard M0700.00.0002	Navy gray color NCS 5804-B07G. Two-component high-solid top coating, see internal standard M0700.00.0004 for standard painting and M0700.00.0008 for special painting.

Options

- Warm liquid version (non-explosion proof versions)
- Sensors: Thermistor, FLS, Pt100
- Feed control (chopper)
pressure class MT
- Aqua cutting knife (chopper)
pressure class MT, HT
- Surface treatment (Epoxy)
- Zinc anodes

Accessories

Discharge connections, adapters, hose connections, and other mechanical accessories

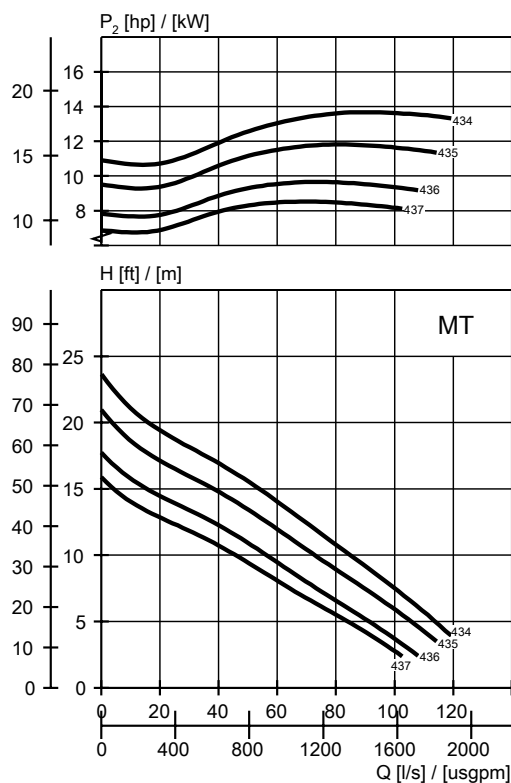
Electrical accessories such as pump controller, control panels, starters, monitoring relays, cables

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.

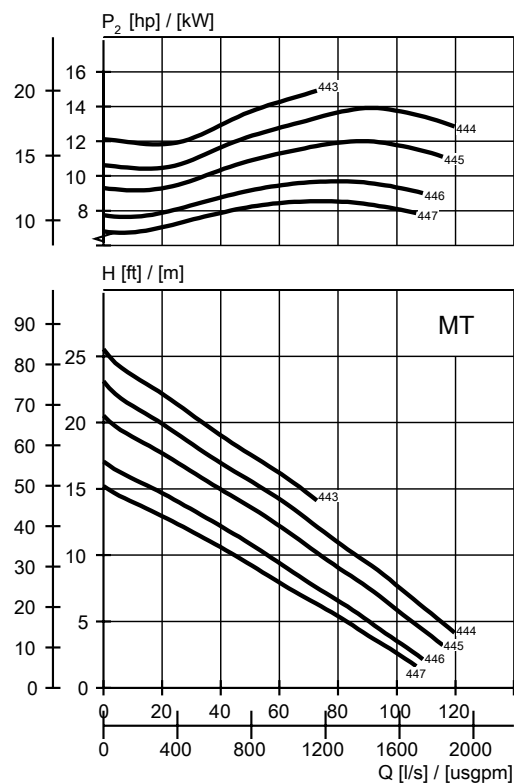
Star-delta starting current is 1/3 of Direct on-line starting current.

MT



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Figure 1: Manure



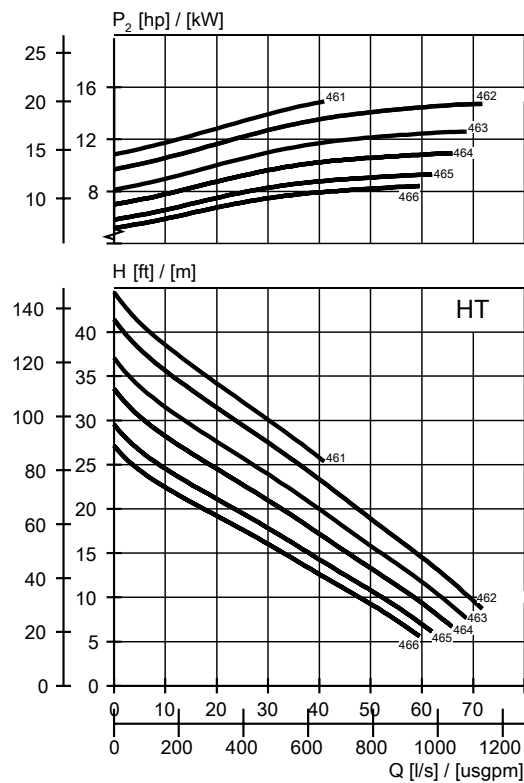
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Figure 2: Long fibrous manure

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

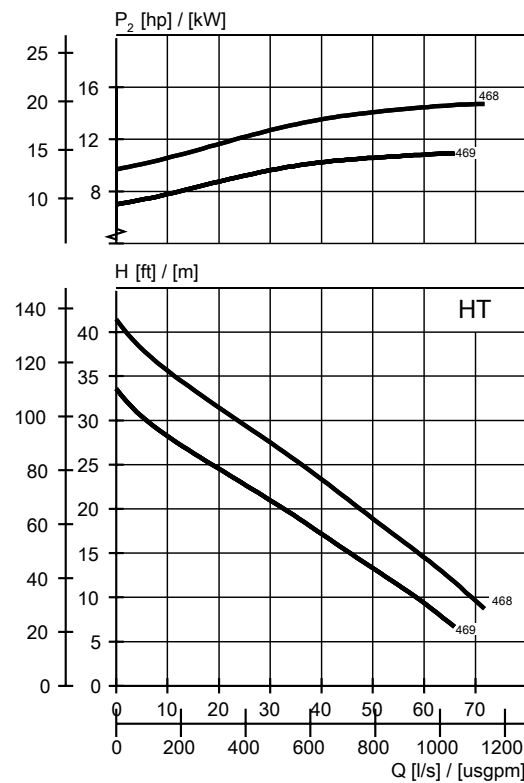
Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated current, A	Starting current, A	Power factor, $\cos \varphi$	Installation
8.9	12	437	1765	16	112	0.8	P,S,T,Z
8.9	12	447	1765	16	112	0.8	P,S,T,Z
11.2	15	436	1765	19	112	0.84	P,S,T,Z
11.2	15	437	1755	19	112	0.84	P,S,T,Z
11.2	15	446	1755	19	112	0.84	P,S,T,Z
11.2	15	447	1755	19	112	0.84	P,S,T,Z
14.9	20	434	1760	26	157	0.83	P,S,T,Z
14.9	20	435	1760	26	157	0.83	P,S,T,Z
14.9	20	436	1760	26	157	0.83	P,S,T,Z
14.9	20	437	1760	26	157	0.83	P,S,T,Z
14.9	20	443	1760	26	157	0.83	P,S,T,Z
14.9	20	444	1760	26	157	0.83	P,S,T,Z
14.9	20	445	1760	26	157	0.83	P,S,T,Z
14.9	20	446	1760	26	157	0.83	P,S,T,Z
14.9	20	447	1760	26	157	0.83	P,S,T,Z

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Figure 3: Manure



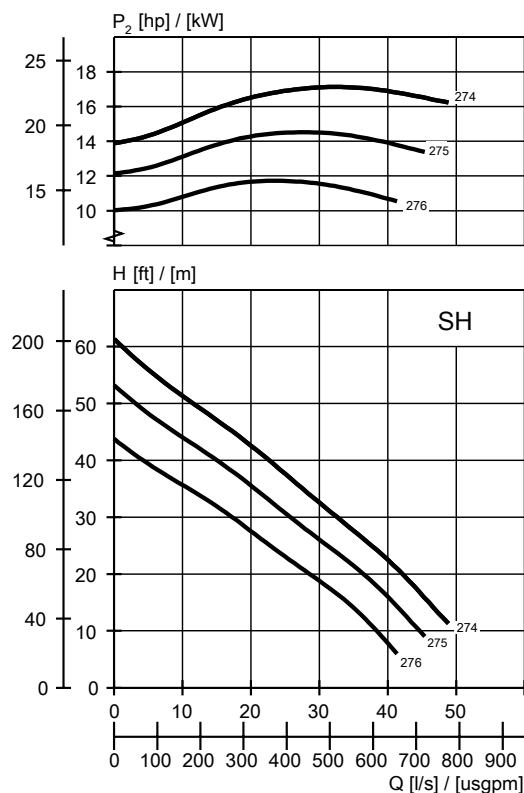
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Figure 4: Long fibrous manure

Table 4: 460 V, 60 Hz, 3-phase

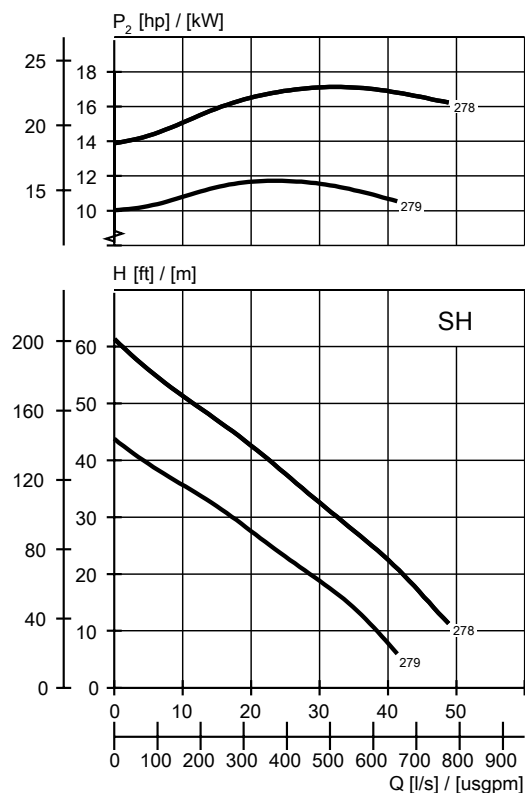
Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated current, A	Starting current, A	Power factor, cos φ	Installation
8.9	12	465	1765	16	112	0.8	P,S,T,Z
8.9	12	466	1765	16	112	0.8	P,S,T,Z
11.2	15	464	1755	19	112	0.84	P,S,T,Z
11.2	15	465	1755	19	112	0.84	P,S,T,Z
11.2	15	466	1755	19	112	0.84	P,S,T,Z
11.2	15	469	1755	19	112	0.84	P,S,T,Z
14.9	20	461	1760	26	157	0.83	P,S,T,Z
14.9	20	462	1760	26	157	0.83	P,S,T,Z
14.9	20	463	1760	26	157	0.83	P,S,T,Z
14.9	20	464	1760	26	157	0.83	P,S,T,Z
14.9	20	465	1760	26	157	0.83	P,S,T,Z
14.9	20	466	1760	26	157	0.83	P,S,T,Z
14.9	20	468	1760	26	157	0.83	P,S,T,Z
14.9	20	469	1760	26	157	0.83	P,S,T,Z

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Figure 5: Manure



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Figure 6: Long fibrous manure

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

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated current, A	Starting current, A	Power factor, $\cos \varphi$	Installation
12.7	17	276	3500	19	141	0.94	P,S,T,Z
12.7	17	279	3500	19	141	0.94	P,S,T,Z
17.2	23	274	3510	26	215	0.9	P,S,T,Z
17.2	23	275	3510	26	215	0.9	P,S,T,Z
17.2	23	276	3510	26	215	0.9	P,S,T,Z
17.2	23	278	3510	26	215	0.9	P,S,T,Z
17.2	23	279	3510	26	215	0.9	P,S,T,Z

2 F-pump, Premium Efficiency Motor (IE3)

2.1 Product description



Usage

A submersible chopper pump for liquid manure, fish waste, or heavily contaminated sewage and sludge. The N-hydraulic is fitted with a cutting insert ring. Both impeller and insert ring are manufactured in Hard-Iron™.

Denomination

Type	Non-explosion proof version	Explosion proof version	Pressure class	Installation types
Hard-Iron™ Chopper	3153.840	3153.850	MT — Medium head HT — High head SH — Super head	P, S, T, Z

The pump can be used in the following installations:

- P Semipermanent, wet well arrangement with the pump installed on two guide bars. The connection to the discharge is automatic.
- S Portable semipermanent, wet well arrangement with hose coupling or flange for connection to the discharge pipeline.
- T Vertical permanent, dry well arrangement with flange connection to the suction and discharge piping.
- Z Horizontal permanent, dry well arrangement with flange connection to the suction and discharge piping.

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 ³

Motor data

Feature	Description
Motor type	Line started permanent magnet synchronous motor (LSPM) Squirrel cage induction motor
Frequency	60 Hz
Power supply	3-phase
Starting method	• Direct on-line • Star-delta • Variable frequency drive (VFD)
Number of starts for each hour	Maximum 30
Code compliance	IEC 60034-1
Voltage variation	• Continuously running: Maximum $\pm 5\%$ • Intermittent running: Maximum $\pm 10\%$
Voltage imbalance between phases	Maximum 2%
Stator insulation class	H (180°C, 356°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 ² 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 ² with unscreened control cores.

Monitoring equipment

- Thermal contacts opening temperature 140°C (284°F)
- Leakage sensor in the inspection chamber (FLS10)

Materials

Table 6: Major parts, except mechanical seals

Denomination	Material	ASTM	EN
Major castings	Cast iron, gray	35B	GJL-250
Pump housing	Cast iron, gray	35B	GJL-250
Impeller	Cast iron, Hard-Iron™	A 532 IIIA	GJN-HB555(XCR23)
Insert ring	Cast iron, Hard-Iron™	A 532 IIIA	GJN-HB555(XCR23)
Cooling jacket, inner	Steel	A572 Grade 60	1.0045, 1.0553, ...

Denomination	Material	ASTM	EN
Cooling jacket, outer, alternative 1	Steel	GR65	S235JRG2
Cooling jacket, outer, alternative 2	Stainless steel	AISI 316L	1.4404, 1.4432, ...
Lifting handle	Stainless steel	AISI 316L	1.4404, 1.4432, ...
Shaft	Stainless steel	AISI 431	1.4057+QT800
Screws and nuts	Stainless steel, A4	AISI 316L, 316, 316Ti	1.4401, 1.4404, ...
O-rings, alternative 1	Nitrile rubber (NBR) 70° IRH	-	-
O-rings, alternative 2	Fluorinated rubber (FPM) 70° IRH	-	-
Glycol	Heat transfer fluid based on monopropylene glycol.	-	-

Table 7: Mechanical seals

Alternative	Inner seal	Outer seal
1	Corrosion resistant cemented carbide (WCCR)/ Corrosion resistant cemented carbide (WCCR)	Corrosion resistant cemented carbide (WCCR)/ Corrosion resistant cemented carbide (WCCR)
2	Corrosion resistant cemented carbide (WCCR)/ Corrosion resistant cemented carbide (WCCR)	Silicon carbide (RSiC)/ Silicon carbide (RSiC)

Surface treatment

Priming	Finish
Painted with a primer, see internal standard M0700.00.0002	Navy gray color NCS 5804-B07G. Two-component high-solid top coating, see internal standard M0700.00.0004 for standard painting and M0700.00.0008 for special painting.

Options

- Sensors: Thermistor, FLS, Pt100
- Feed control (chopper)
pressure class MT
- Aqua cutting knife (chopper)
pressure class MT, HT
- Surface treatment (Epoxy)
- Zinc anodes

Accessories

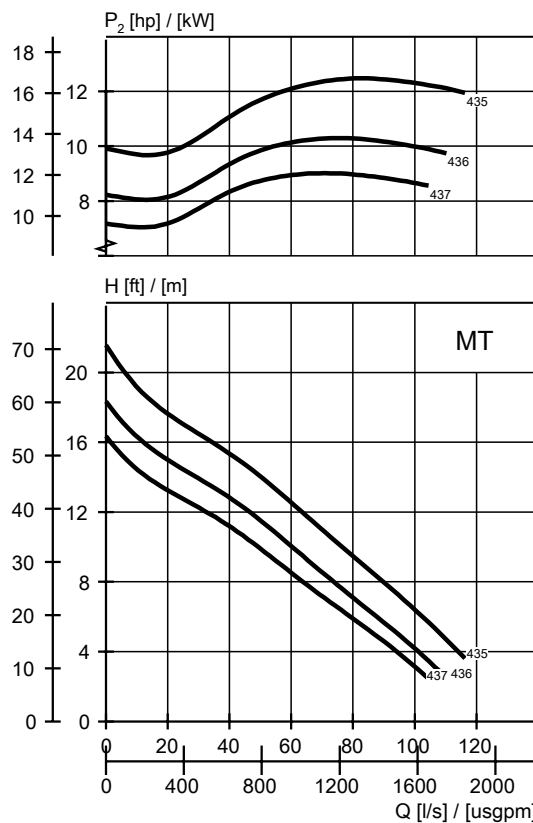
Discharge connections, adapters, hose connections, and other mechanical accessories
Electrical accessories such as pump controller, control panels, starters, monitoring relays, cables

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.

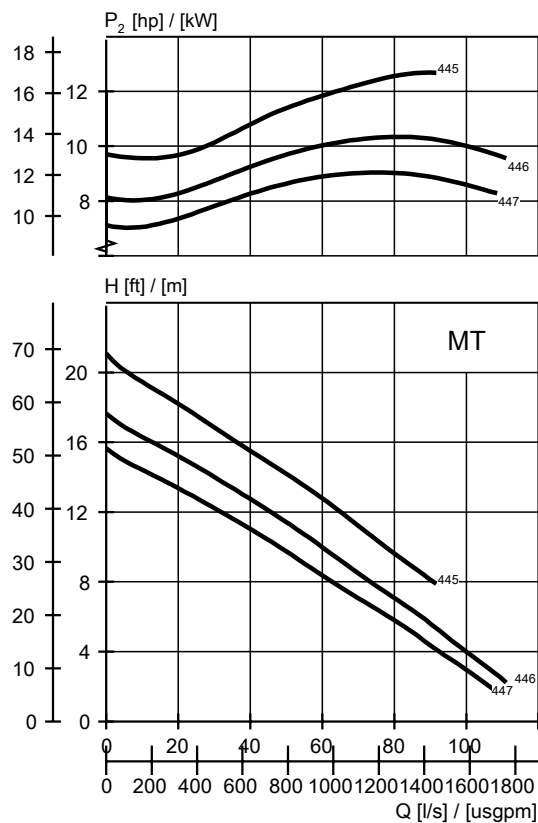
Star-delta starting current is 1/3 of Direct on-line starting current.

MT



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Figure 7: Manure



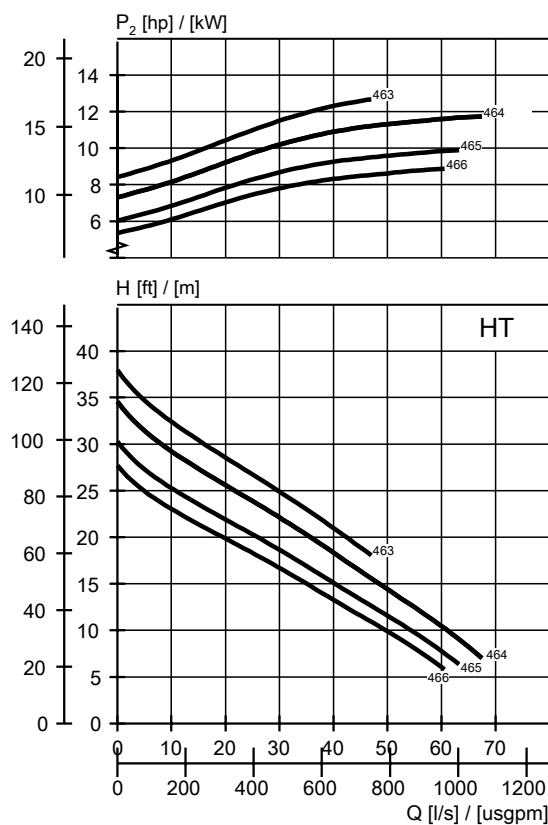
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Figure 8: Long fibrous manure

Table 8: 460 V, 60 Hz, 3-phase

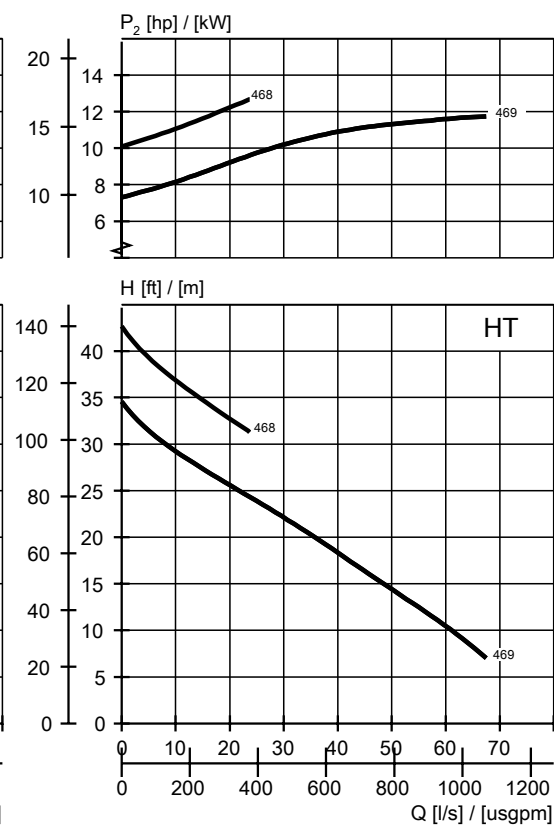
Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated current, A	Starting current, A	Power factor, $\cos \varphi$	Installation
10.4	14	436	1800	15	112	0.98	P,S,T,Z
10.4	14	437	1800	15	112	0.98	P,S,T,Z
10.4	14	446	1800	15	112	0.98	P,S,T,Z
10.4	14	447	1800	15	112	0.98	P,S,T,Z
12.7	17	435	1800	18	157	0.96	P,S,T,Z
12.7	17	436	1800	18	157	0.96	P,S,T,Z
12.7	17	437	1800	18	157	0.96	P,S,T,Z
12.7	17	445	1800	18	157	0.96	P,S,T,Z
12.7	17	446	1800	18	157	0.96	P,S,T,Z
12.7	17	447	1800	18	157	0.96	P,S,T,Z

HT



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Figure 9: Manure



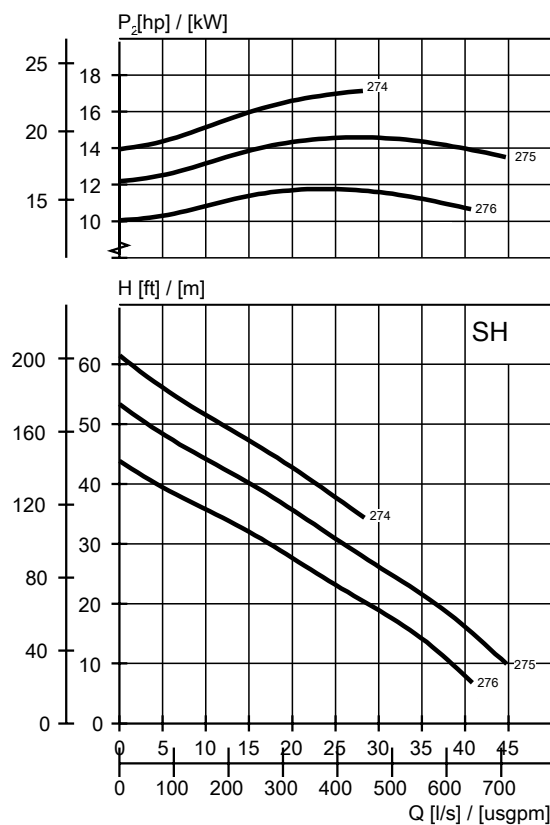
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Figure 10: Long fibrous manure

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

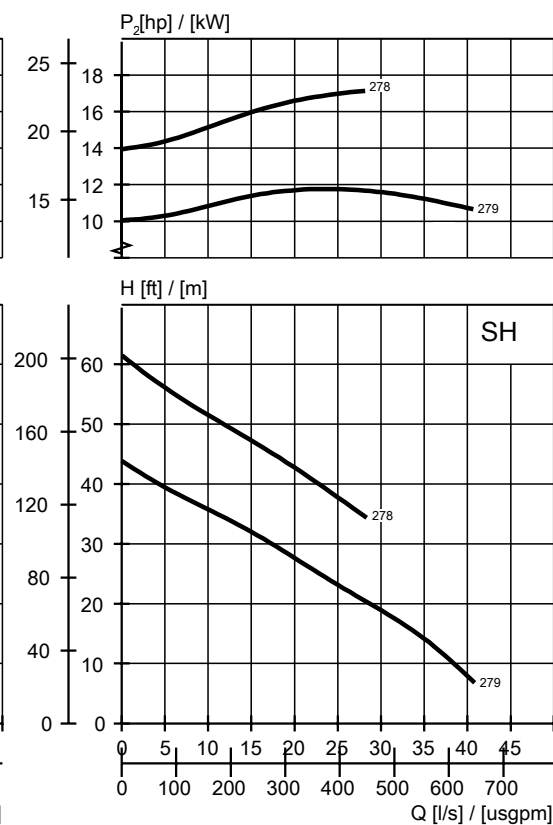
Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated current, A	Starting current, A	Power factor, $\cos \varphi$	Installation
10.4	14	464	1800	15	112	0.98	P,S,T,Z
10.4	14	465	1800	15	112	0.98	P,S,T,Z
10.4	14	466	1800	15	112	0.98	P,S,T,Z
10.4	14	469	1800	15	112	0.98	P,S,T,Z
12.7	17	463	1800	18	157	0.96	P,S,T,Z
12.7	17	464	1800	18	157	0.96	P,S,T,Z
12.7	17	465	1800	18	157	0.96	P,S,T,Z
12.7	17	466	1800	18	157	0.96	P,S,T,Z
12.7	17	468	1800	18	157	0.96	P,S,T,Z
12.7	17	469	1800	18	157	0.96	P,S,T,Z

SH



WS004105C

Figure 11: Manure



WS008528A

Figure 12: Long fibrous manure

Table 10: 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
12.7	17	276	3510	18	147	0.94	P,S,T,Z
12.7	17	279	3510	18	147	0.94	P,S,T,Z
17.2	23	274	3515	26	216	0.91	P,S,T,Z
17.2	23	275	3515	26	216	0.91	P,S,T,Z
17.2	23	276	3515	26	216	0.91	P,S,T,Z
17.2	23	278	3515	26	216	0.91	P,S,T,Z
17.2	23	279	3515	26	216	0.91	P,S,T,Z

3 MAS 801

MAS 801 is a monitoring system that is designed to protect the pump, based on measurements. The measurements are acquired from pump sensors and measurement modules. The system has these functions for different user categories:

- A graphical user interface, called the configuration and analysis tool, for the computer and the HMI
- Local and remote information of pump status, key data, and alarms
- Analysis and troubleshooting that are based on graphs, alarms, and black boxes
- Service reminders and reports
- Configuration of the system and monitoring channels
- Protocols for communication with external automation electronics, SCADA, and cloud applications

The system consists of the following components:

- A central unit
- Base units
- Pump electronic modules
- An HMI

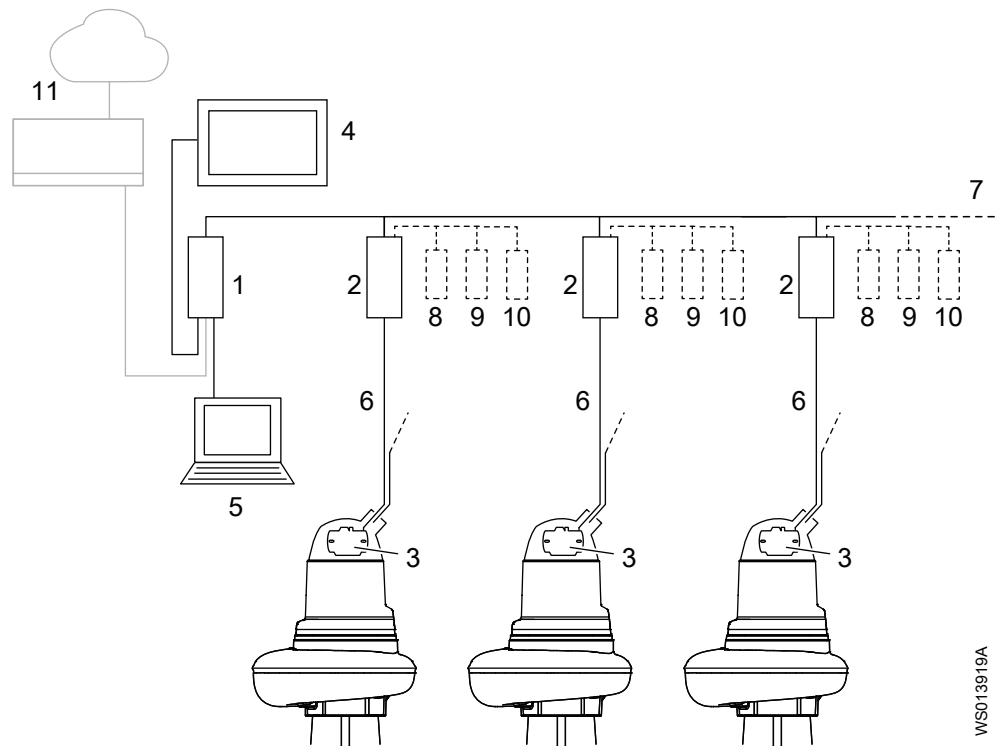


Table 11: Parts

Number	Part	Product name	Description
1	Central unit (CU)	MAS CU 801	• The central unit communicates with all the base units in the system. • It includes the configuration and analysis tool that consists of embedded webpages, used to interact with the monitoring system. • It is installed in an electrical cabinet.

Number	Part	Product name	Description
2	Base unit (BU)	MAS BU 812	The base unit communicates data between the pump electronic module and the central unit. If necessary, the base unit also protects the pump by stopping it. It is installed in an electrical cabinet.
3	Pump electronic module (PEM)	MAS PEM 811	The pump electronic module monitors the pump through connected pump sensors. It communicates digitally with the base unit and has these features: • Contains the default settings that are specific to the pump • Stores measured data It is installed in the pump junction box.
4	Human-machine interface (HMI)	FOP 4X2	The HMI is connected to the central unit and shows the configuration and analysis tool that is used for user interaction. It is installed on an electrical cabinet door. The HMI is approved for use in industrial applications. If the HMI is installed in a residential application, then special precautions must be taken to decrease the electromagnetic interference to other equipment in the surroundings.
5	Computer	-	The computer is an alternative to the HMI. It is connected to the central unit and shows the configuration and analysis tool that is used for user interaction.
6	Two-wire communication	-	The noise-tolerant bus communication, in the SUBCAB™ cable, between the pump electronic module and the base unit
7	DeviceNet	-	The communication bus that connects the central unit to the base units
8	Power analyzer, optional	PAN 312	The power analyzer measures the following: • System power • Power factor • System voltage • Voltage imbalance • Pump current • Current imbalance • Total energy
9	Relay module, optional	MRM 01	The relay module has four relays that can be individually configured for: • A certain channel, A-alarm or B-alarm • Combined B-alarm • Combined A-alarm A maximum of 8 relay modules can be used.
10	Frequency converter, optional	SRC 311 (SmartRun™)	The frequency converter measures the following: • System power • Pump current
11	Higher system level components	-	• Controller • SCADA system

4 N-pump, Standard Motor

4.1 Product description



Usage

A submersible pump for efficient pumping of clean water, surface water, and wastewater containing solids or long-fibered material. The pump is designed for sustained high efficiency. For abrasive media, Hard-Iron™ is required. Stainless steel N-impeller is available as an option.

Denomination

Type	Non-explosion proof version	Explosion proof version	Pressure class	Installation types
Gray iron	3153.182	3153.091	LT — Low head MT — Medium head HT — High head SH — Super head	P, S, T, Z
Hard-Iron™	3153.185	3153.095	LT — Low head MT — Medium head HT — High head SH — Super head	P, S, T, Z
Stainless steel	3153.660	3153.670	LT — Low head MT — Medium head HT — High head SH — Super head	P, S, T, Z

The pump can be used in the following installations:

- P Semipermanent, wet well arrangement with the pump installed on two guide bars. The connection to the discharge is automatic.
- S Portable semipermanent, wet well arrangement with hose coupling or flange for connection to the discharge pipeline.
- T Vertical permanent, dry well arrangement with flange connection to the suction and discharge piping.
- Z Horizontal permanent, dry well arrangement with flange connection to the suction and discharge piping.

Application limits

Feature	Description
Liquid temperature	Maximum 40°C (104°F)
Liquid temperature, warm water version	Maximum 70°C (158°F)
Depth of immersion	Maximum 20 m (65 ft)
pH of the pumped liquid	5.5 – 14
Liquid density	Maximum 1100 kg/m ³

Motor data

Feature	Description
Motor type	Squirrel cage induction motor
Frequency	60 Hz
Power supply	3-phase
Starting method	• Direct on-line • Star-delta • Variable frequency drive (VFD)
Number of starts for each hour	Maximum 30
Code compliance	IEC 60034-1
Voltage variation	• Continuously running: Maximum ±5% • Intermittent running: Maximum ±10%
Voltage imbalance between phases	Maximum 2%
Stator insulation class	H (180°C, 356°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 ² 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 ² with unscreened control cores.

Monitoring equipment

Table 12: MAS 801 monitoring packages

Component	Package 1	Package 2
PEM 811 monitoring and logging device	X	X
Thermal contacts	X	X

Component	Package 1	Package 2
FLS in junction box	X	X
FLS in leakage chamber	X	X
Pt100 temperature measurement in the main bearing	X	X
Pt100 temperature measurement in stator winding 1	X	X
Triple axis vibration measurement	X	X
Current and frequency measurement	X	X
Pt100 temperature measurement in the support bearing	—	X

For more information, see [MAS 801](#) on page 14.

Materials

Table 13: Major parts, except mechanical seals

Denomination	Material	ASTM	EN
Major castings	Cast iron, gray	35B	GJL-250
Pump housing	Cast iron, gray	35B	GJL-250
Impeller, alternative 1	Cast iron, gray	35B	GJL-250
Impeller, alternative 2	Cast iron, Hard-Iron™	A 532 IIIA	GJN-HB555(XCR23)
Impeller, alternative 3	Stainless steel, Duplex	CD-4MCuN	10283:2010 -1.4474
Insert ring, alternative 1	Cast iron, gray	35B	GJL-250
Insert ring, alternative 2	Cast iron, Hard-Iron™	A 532 IIIA	GJN-HB555(XCR23)
Cooling jacket, inner	Steel	A572 Grade 60	1.0045, 1.0553, ...
Cooling jacket, outer, alternative 1	Steel	GR65	S235JRG2
Cooling jacket, outer, alternative 2	Stainless steel	AISI 316L	1.4404, 1.4432, ...
Lifting handle	Stainless steel	AISI 316L	1.4404, 1.4432, ...
Shaft	Stainless steel	AISI 431	1.4057+QT800
Screws and nuts	Stainless steel, A4	AISI 316L, 316, 316Ti	1.4401, 1.4404, ...
O-rings, alternative 1	Nitrile rubber (NBR) 70° IRH	-	-
O-rings, alternative 2	Fluorinated rubber (FPM) 70° IRH	-	-
Glycol	Heat transfer fluid based on monopropylene glycol.	-	-

Table 14: Mechanical seals

Alternative	Inner seal	Outer seal
1	Corrosion resistant cemented carbide (WCCR)/ Corrosion resistant cemented carbide (WCCR)	Corrosion resistant cemented carbide (WCCR)/ Corrosion resistant cemented carbide (WCCR)
2	Corrosion resistant cemented carbide (WCCR)/ Corrosion resistant cemented carbide (WCCR)	Silicon carbide (RSiC)/ Silicon carbide (RSiC)

Surface treatment

Priming	Finish
Painted with a primer, see internal standard M0700.00.0002	Navy gray color NCS 5804-B07G. Two-component high-solid top coating, see internal standard M0700.00.0004 for standard painting and M0700.00.0008 for special painting.

Options

- Warm liquid version (non-explosion proof versions)
- Sensors: Thermistor, FLS, Pt100
- Surface treatment (Epoxy)
- Zinc anodes

Accessories

Discharge connections, adapters, hose connections, and other mechanical accessories

Electrical accessories such as pump controller, control panels, starters, monitoring relays, cables

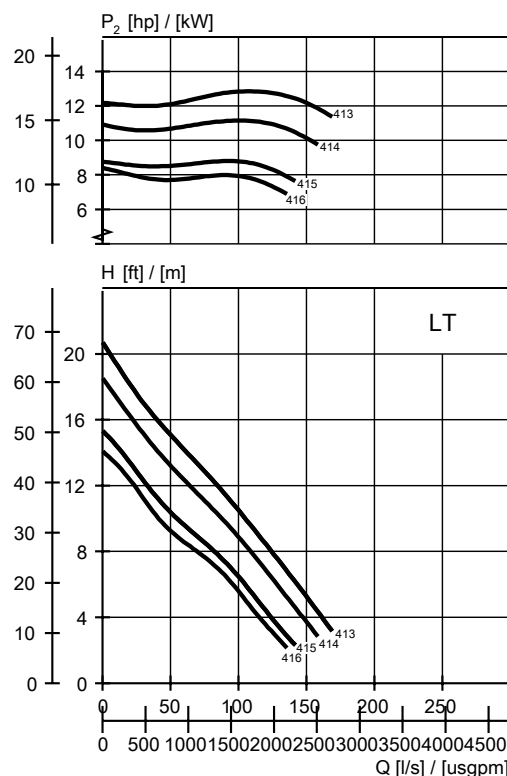
4.2 Motor rating and performance curves

3153.182/.091/.185/.095/.660/.670

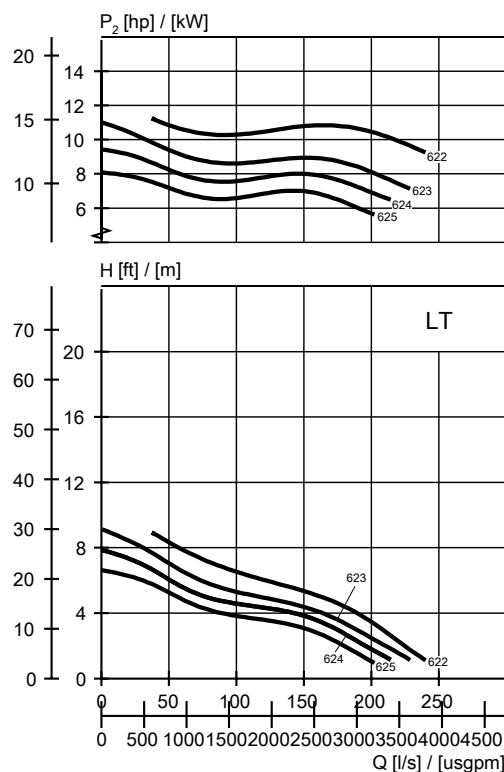
These are examples of motor rating and curves. For more information, please contact your local sales and service representative.

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

LT



WS004075A

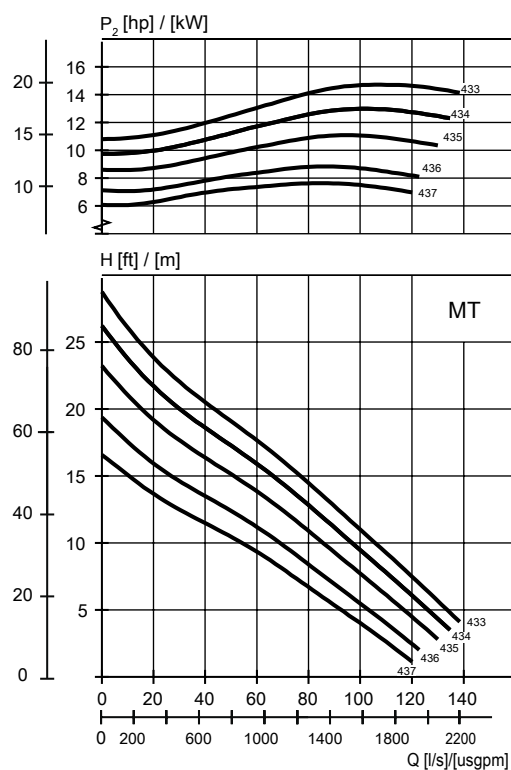


WS004076A

Table 15: 460 V, 60 Hz, 3-phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated current, A	Starting current, A	Power factor, cos ϕ	Installation
8.9	12	415	1765	16	112	0.8	P,S,T,Z
8.9	12	416	1765	16	112	0.8	P,S,T,Z
11.2	15	414	1755	19	112	0.84	P,S,T,Z
11.2	15	415	1755	19	112	0.84	P,S,T,Z
11.2	15	622	1150	21	95	0.75	P,S,T,Z
11.2	15	623	1150	21	95	0.75	P,S,T,Z
11.2	15	624	1150	21	95	0.75	P,S,T,Z
11.2	15	625	1150	21	95	0.75	P,S,T,Z
14.9	20	413	1760	26	157	0.83	P,S,T,Z
14.9	20	414	1760	26	157	0.83	P,S,T,Z

MT



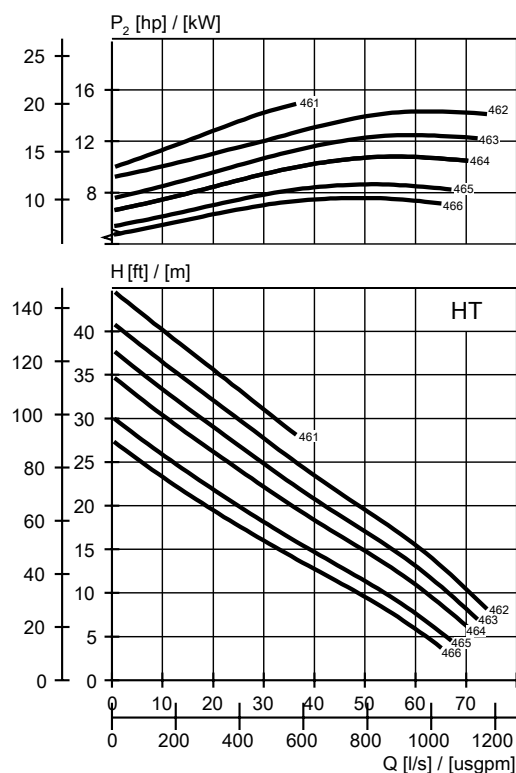
WS004077A

Table 16: 460 V, 60 Hz, 3-phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated current, A	Starting current, A	Power factor, cos ϕ	Installation
8.9	12	436	1765	16	112	0.8	P,S,T,Z
8.9	12	437	1765	16	112	0.8	P,S,T,Z
11.2	15	435	1755	19	112	0.84	P,S,T,Z
11.2	15	436	1755	19	112	0.84	P,S,T,Z
11.2	15	437	1755	19	112	0.84	P,S,T,Z

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated current, A	Starting current, A	Power factor, cos ϕ	Installation
14.9	20	433	1760	26	157	0.83	P,S,T,Z
14.9	20	434	1760	26	157	0.83	P,S,T,Z
14.9	20	435	1760	26	157	0.83	P,S,T,Z
14.9	20	436	1760	26	157	0.83	P,S,T,Z
14.9	20	437	1760	26	157	0.83	P,S,T,Z

HT



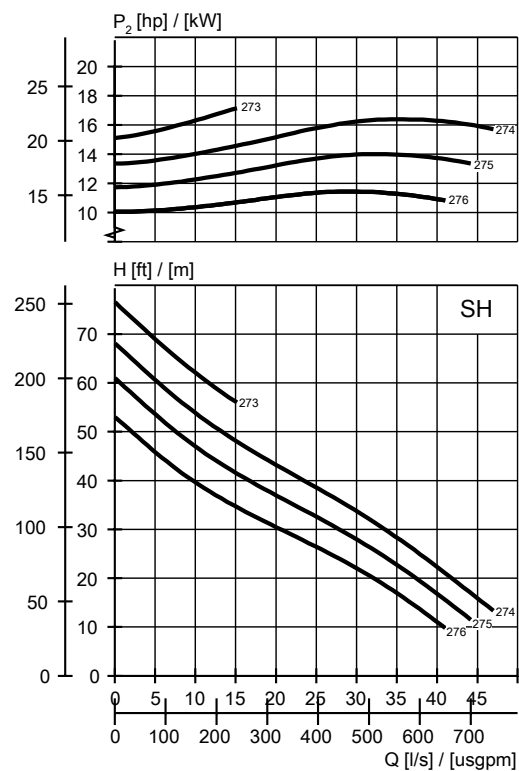
WS004078A

Table 17: 460 V, 60 Hz, 3-phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated current, A	Starting current, A	Power factor, cos ϕ	Installation
8.9	12	464	1765	16	112	0.8	P,S,T,Z
8.9	12	465	1765	16	112	0.8	P,S,T,Z
8.9	12	466	1765	16	112	0.8	P,S,T,Z
11.2	15	463	1755	19	112	0.84	P,S,T,Z
11.2	15	464	1755	19	112	0.84	P,S,T,Z
11.2	15	465	1755	19	112	0.84	P,S,T,Z
11.2	15	466	1755	19	112	0.84	P,S,T,Z
14.9	20	461	1760	26	157	0.83	P,S,T,Z
14.9	20	462	1760	26	157	0.83	P,S,T,Z
14.9	20	463	1760	26	157	0.83	P,S,T,Z
14.9	20	464	1760	26	157	0.83	P,S,T,Z

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated current, A	Starting current, A	Power factor, cos ϕ	Installation
14.9	20	465	1760	26	157	0.83	P,S,T,Z
14.9	20	466	1760	26	157	0.83	P,S,T,Z

SH



WS004079A

Table 18: 460 V, 60 Hz, 3-phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated current, A	Starting current, A	Power factor, cos ϕ	Installation
12.7	17	275	3500	19	141	0.94	P,S,T,Z
12.7	17	276	3500	19	141	0.94	P,S,T,Z
17.2	23	273	3510	26	215	0.9	P,S,T,Z
17.2	23	274	3510	26	215	0.9	P,S,T,Z
17.2	23	275	3510	26	215	0.9	P,S,T,Z
17.2	23	276	3510	26	215	0.9	P,S,T,Z

5 N-pump, Premium Efficiency Motor (IE3)

5.1 Product description



Usage

A submersible pump for efficient pumping of clean water, surface water, and wastewater containing solids or long-fibered material. The pump is designed for sustained high efficiency. For abrasive media, Hard-Iron™ is required. Stainless steel N-impeller is available as an option.

Denomination

Type	Non-explosion proof version	Explosion proof version	Pressure class	Installation types
Gray iron	3153.800	3153.810	LT — Low head MT — Medium head HT — High head SH — Super head	P, S, T, Z
Hard-Iron™	3153.820	3153.830	LT — Low head MT — Medium head HT — High head SH — Super head	P, S, T, Z
Stainless steel	3153.860	3153.870	LT — Low head MT — Medium head HT — High head SH — Super head	P, S, T, Z

The pump can be used in the following installations:

- P Semipermanent, wet well arrangement with the pump installed on two guide bars. The connection to the discharge is automatic.
- S Portable semipermanent, wet well arrangement with hose coupling or flange for connection to the discharge pipeline.
- T Vertical permanent, dry well arrangement with flange connection to the suction and discharge piping.

- Z Horizontal permanent, dry well arrangement with flange connection to the suction and discharge piping.

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 ³

Motor data

Feature	Description
Motor type	Line started permanent magnet synchronous motor (LSPM) Squirrel cage induction motor
Frequency	60 Hz
Power supply	3-phase
Starting method	• Direct on-line • Star-delta • Variable frequency drive (VFD)
Number of starts for each hour	Maximum 30
Code compliance	IEC 60034-1
Voltage variation	• Continuously running: Maximum $\pm 5\%$ • Intermittent running: Maximum $\pm 10\%$
Voltage imbalance between phases	Maximum 2%
Stator insulation class	H (180°C, 356°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 ² 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 ² with unscreened control cores.

Monitoring equipment

Table 19: MAS 801 monitoring packages

Component	Package 1	Package 2
PEM 811 monitoring and logging device	X	X
Thermal contacts	X	X
FLS in junction box	X	X
FLS in leakage chamber	X	X
Pt100 temperature measurement in the main bearing	X	X
Pt100 temperature measurement in stator winding 1	X	X
Triple axis vibration measurement	X	X
Current and frequency measurement	X	X
Pt100 temperature measurement in the support bearing	—	X

For more information, see [MAS 801](#) on page 14.

Materials

Table 20: Major parts, except mechanical seals

Denomination	Material	ASTM	EN
Major castings	Cast iron, gray	35B	GJL-250
Pump housing	Cast iron, gray	35B	GJL-250
Impeller, alternative 1	Cast iron, gray	35B	GJL-250
Impeller, alternative 2	Cast iron, Hard-Iron™	A 532 IIIA	GJN-HB555(XCR23)
Impeller, alternative 3	Stainless steel, Duplex	CD-4MCuN	10283:2010 -1.4474
Insert ring, alternative 1	Cast iron, gray	35B	GJL-250
Insert ring, alternative 2	Cast iron, Hard-Iron™	A 532 IIIA	GJN-HB555(XCR23)
Cooling jacket, inner	Steel	A572 Grade 60	1.0045, 1.0553, ...
Cooling jacket, outer, alternative 1	Steel	GR65	S235JRG2
Cooling jacket, outer, alternative 2	Stainless steel	AISI 316L	1.4404, 1.4432, ...
Lifting handle	Stainless steel	AISI 316L	1.4404, 1.4432, ...
Shaft	Stainless steel	AISI 431	1.4057+QT800
Screws and nuts	Stainless steel, A4	AISI 316L, 316, 316Ti	1.4401, 1.4404, ...
O-rings, alternative 1	Nitrile rubber (NBR) 70° IRH	-	-
O-rings, alternative 2	Fluorinated rubber (FPM) 70° IRH	-	-
Glycol	Heat transfer fluid based on monopropylene glycol.	-	-

Table 21: Mechanical seals

Alternative	Inner seal	Outer seal
1	Corrosion resistant cemented carbide (WCCR)/ Corrosion resistant cemented carbide (WCCR)	Corrosion resistant cemented carbide (WCCR)/ Corrosion resistant cemented carbide (WCCR)
2	Corrosion resistant cemented carbide (WCCR)/ Corrosion resistant cemented carbide (WCCR)	Silicon carbide (RSiC)/ Silicon carbide (RSiC)

Surface treatment

Priming	Finish
Painted with a primer, see internal standard M0700.00.0002	Navy gray color NCS 5804-B07G. Two-component high-solid top coating, see internal standard M0700.00.0004 for standard painting and M0700.00.0008 for special painting.

Options

- Sensors: Thermistor, FLS, Pt100
- Surface treatment (Epoxy)
- Zinc anodes

Accessories

Discharge connections, adapters, hose connections, and other mechanical accessories

Electrical accessories such as pump controller, control panels, starters, monitoring relays, cables

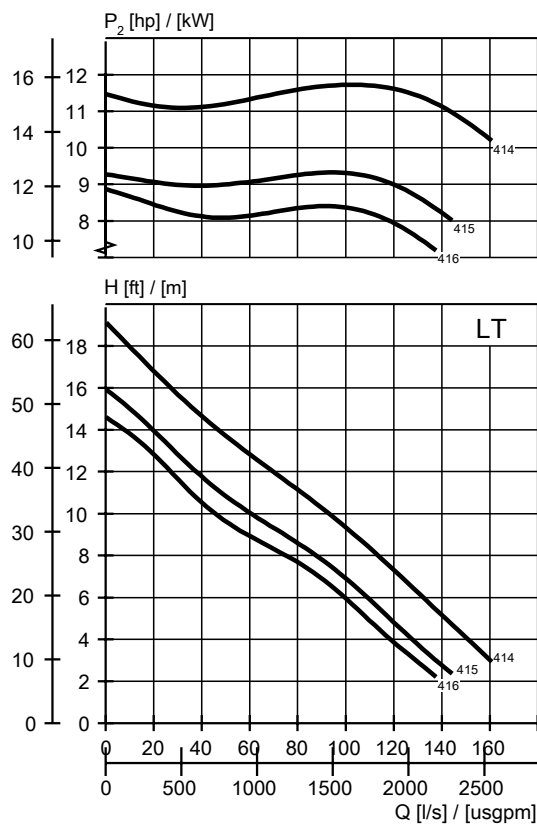
5.2 Motor rating and performance curves

3153.800/.810/.820/.830/.860/.870

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.

LT

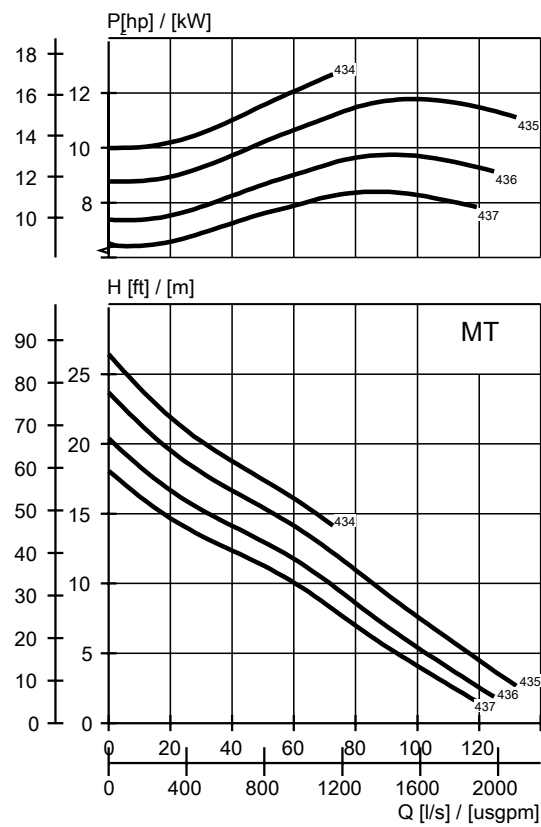


WS004094A

Table 22: 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
10.4	14	415	1800	15	112	0.98	P,S,T,Z
10.4	14	416	1800	15	112	0.98	P,S,T,Z
12.7	17	414	1800	18	157	0.96	P,S,T,Z
12.7	17	415	1800	18	157	0.96	P,S,T,Z
12.7	17	416	1800	18	157	0.96	P,S,T,Z

MT

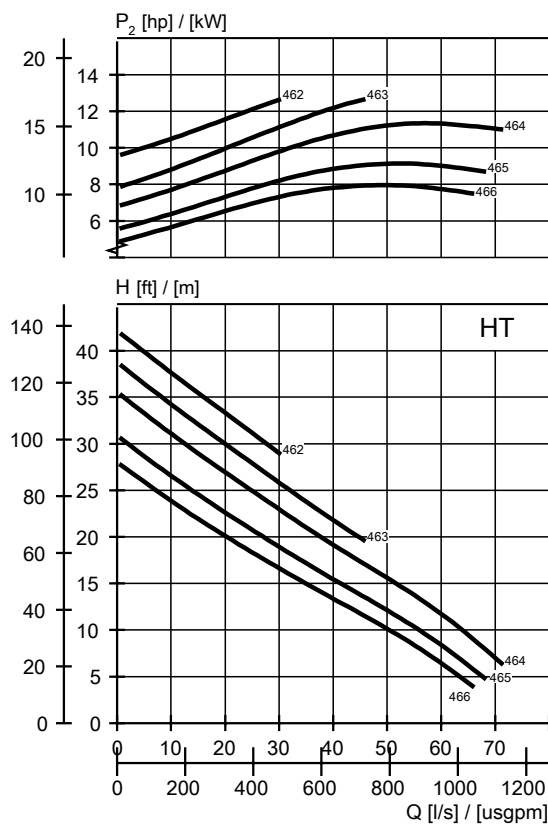


WS004095B

Table 23: 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
10.4	14	436	1800	15	112	0.98	P,S,T,Z
10.4	14	437	1800	15	112	0.98	P,S,T,Z
12.7	17	434	1800	18	157	0.96	P,S,T,Z
12.7	17	435	1800	18	157	0.96	P,S,T,Z
12.7	17	436	1800	18	157	0.96	P,S,T,Z
12.7	17	437	1800	18	157	0.96	P,S,T,Z

HT

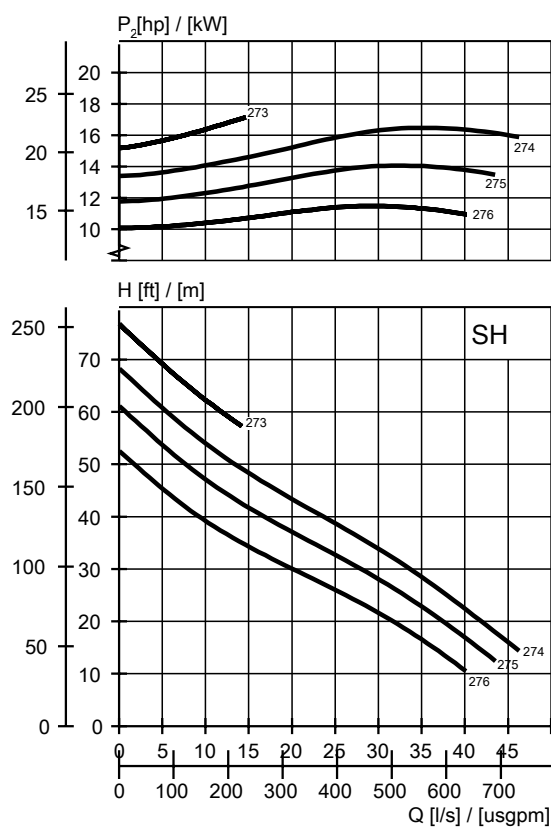


WS004096A

Table 24: 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
10.4	14	463	1800	15	112	0.98	P,S,T,Z
10.4	14	464	1800	15	112	0.98	P,S,T,Z
10.4	14	465	1800	15	112	0.98	P,S,T,Z
10.4	14	466	1800	15	112	0.98	P,S,T,Z
12.7	17	462	1800	18	157	0.96	P,S,T,Z
12.7	17	463	1800	18	157	0.96	P,S,T,Z
12.7	17	464	1800	18	157	0.96	P,S,T,Z
12.7	17	465	1800	18	157	0.96	P,S,T,Z
12.7	17	466	1800	18	157	0.96	P,S,T,Z

SH



WS004097B

Table 25: 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
12.7	17	275	3510	18	147	0.94	P,S,T,Z
12.7	17	276	3510	18	147	0.94	P,S,T,Z
17.2	23	273	3515	26	216	0.91	P,S,T,Z
17.2	23	274	3515	26	216	0.91	P,S,T,Z
17.2	23	275	3515	26	216	0.91	P,S,T,Z
17.2	23	276	3515	26	216	0.91	P,S,T,Z

6 Dimensions and Weight

6.1 Drawings

All drawings are available as Acrobat documents (.pdf) and AutoCad drawings (.dwg).
Contact a local sales and service representative for more information.

All dimensions are in mm.

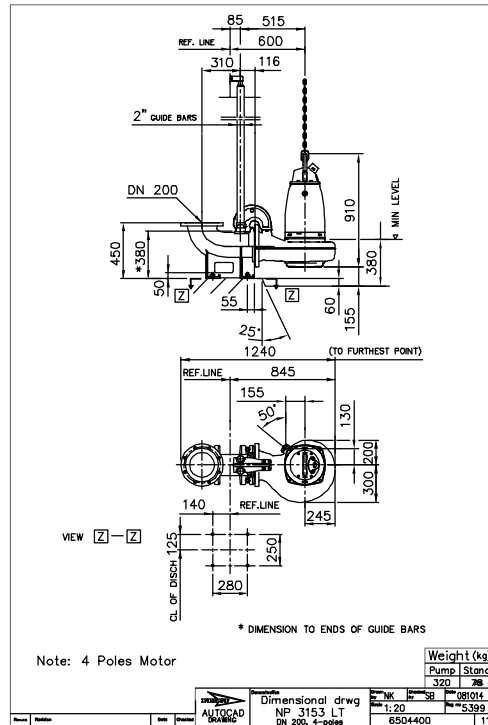


Figure 13: LT, P-installation

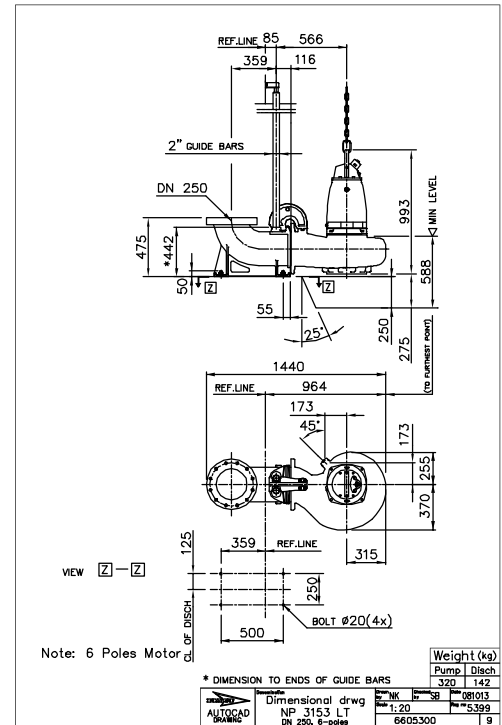


Figure 14: LT, P-installation

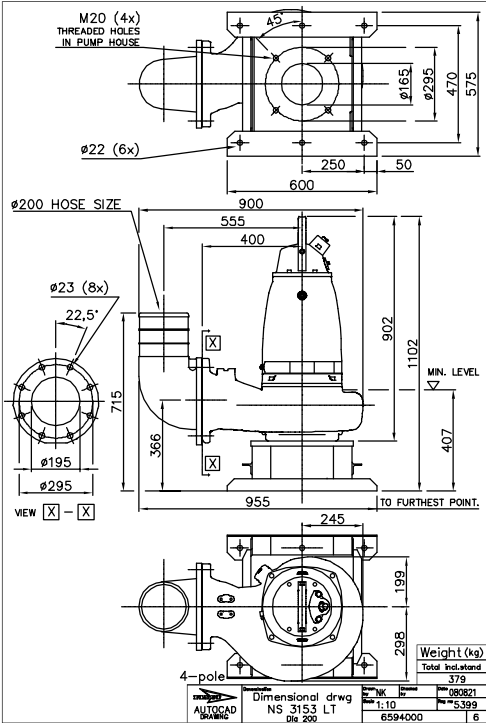


Figure 15: LT, S-installation

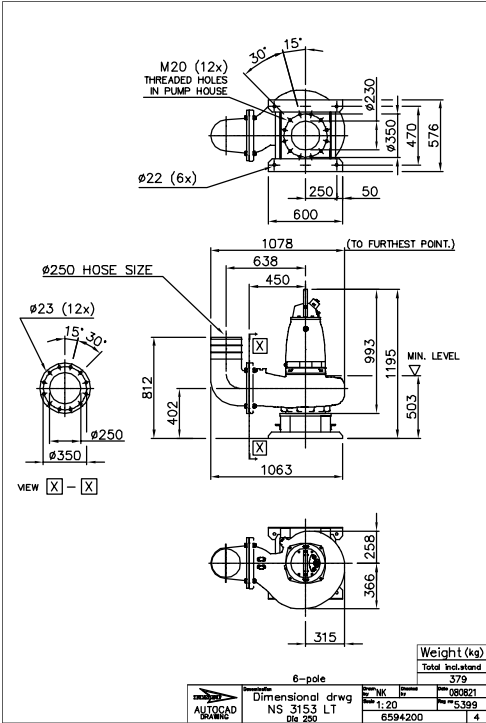


Figure 16: LT, S-installation

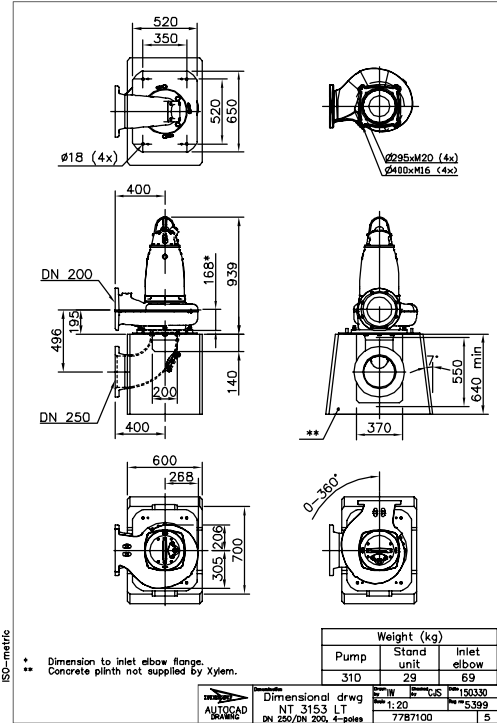


Figure 17: LT, T-installation

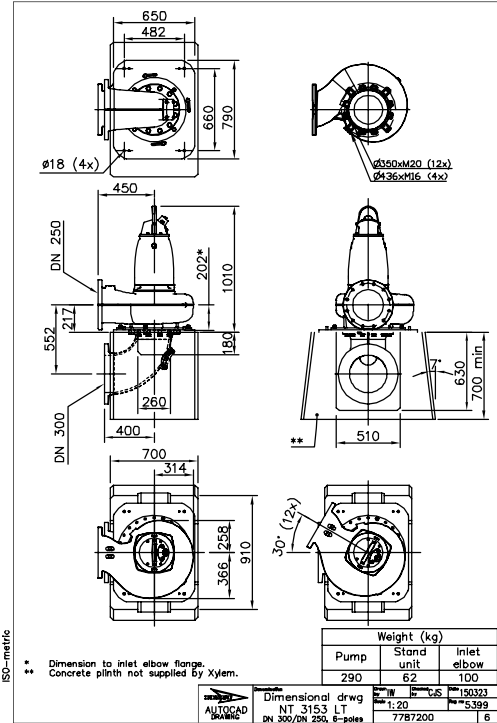


Figure 18: LT, T-installation

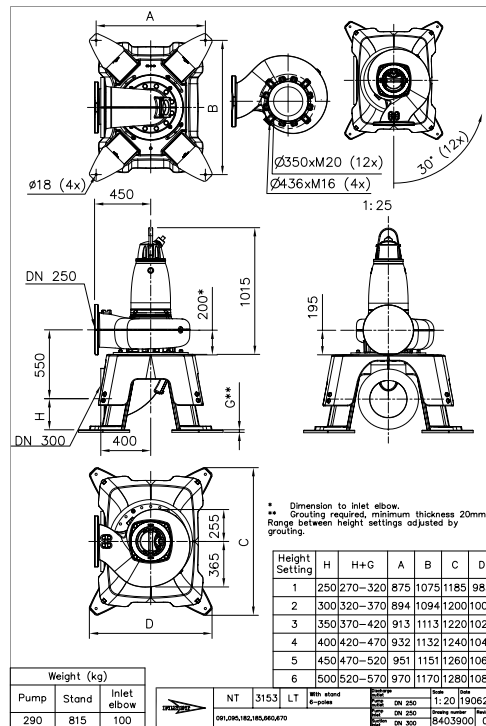


Figure 19: LT, T-installation

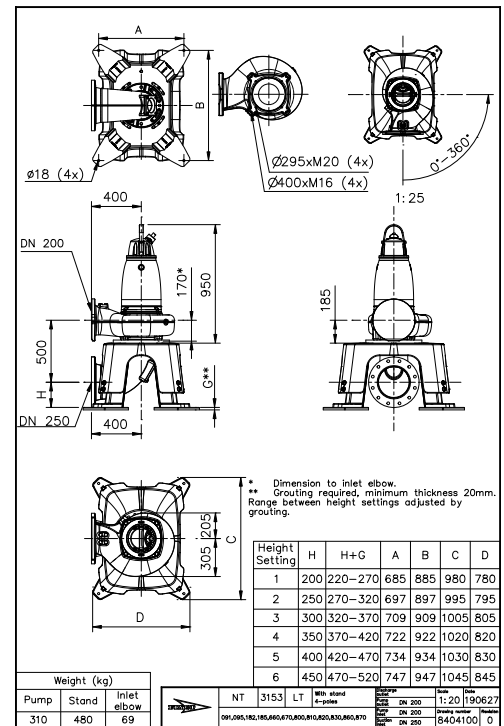


Figure 20: LT, T-installation

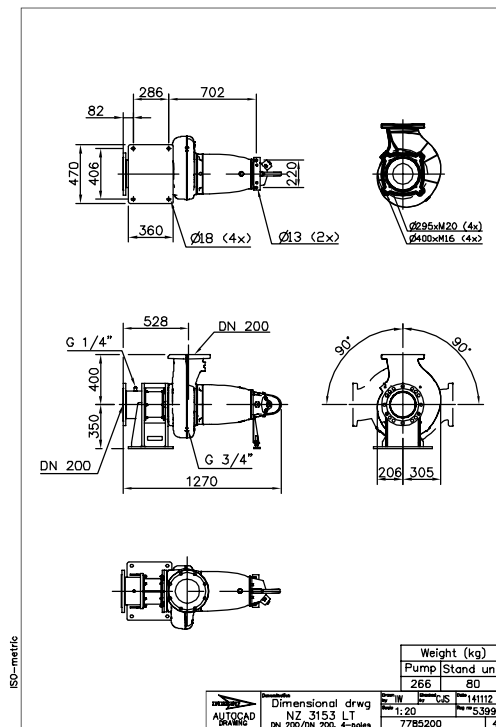


Figure 21: LT, Z-installation

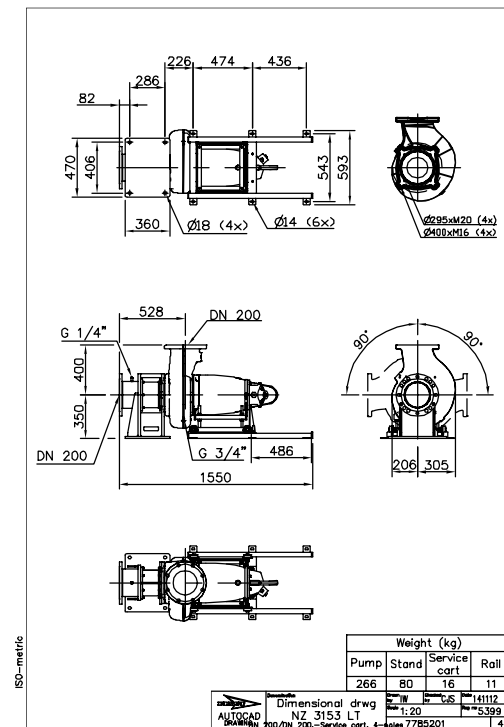


Figure 22: LT, Z-installation

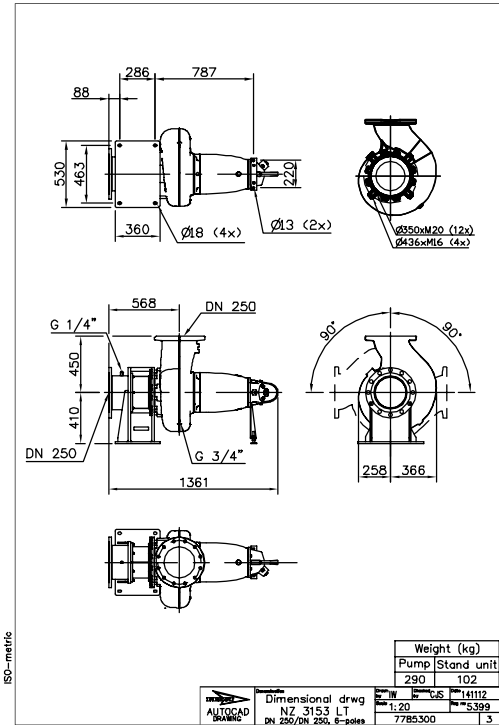


Figure 23: LT, Z-installation

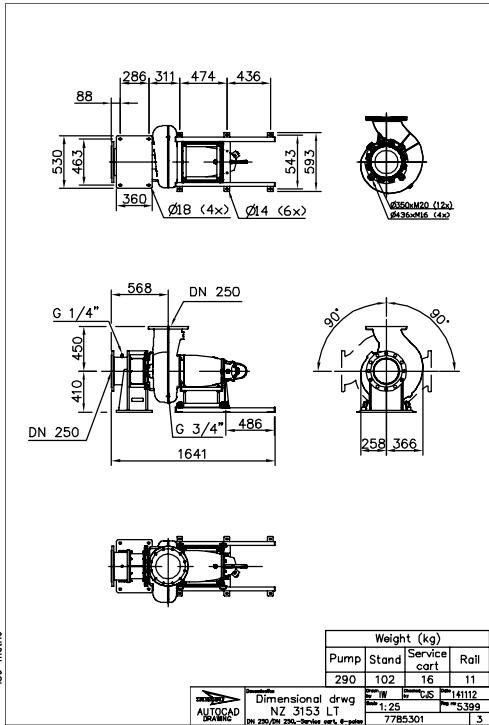


Figure 24: LT, Z-installation

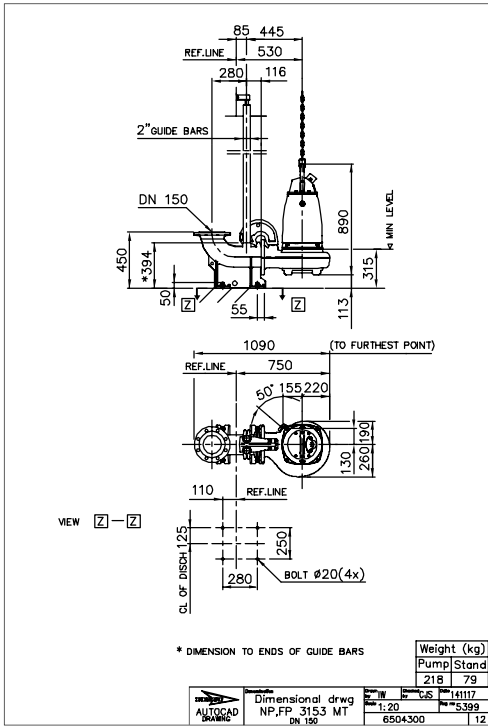


Figure 25: MT, P-installation

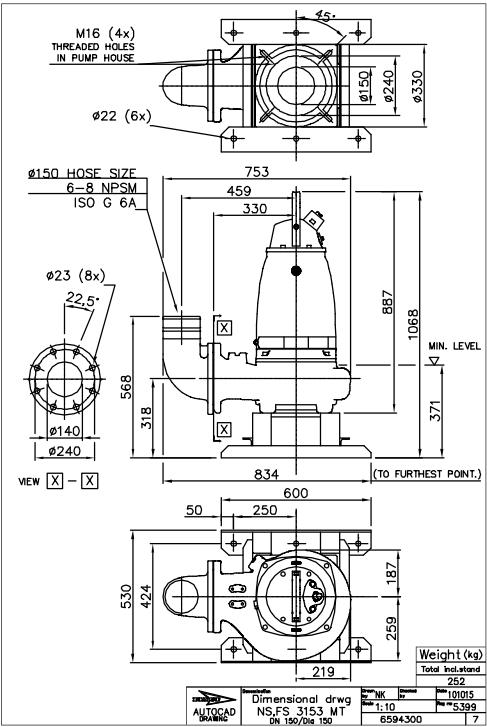


Figure 26: MT, S-installation

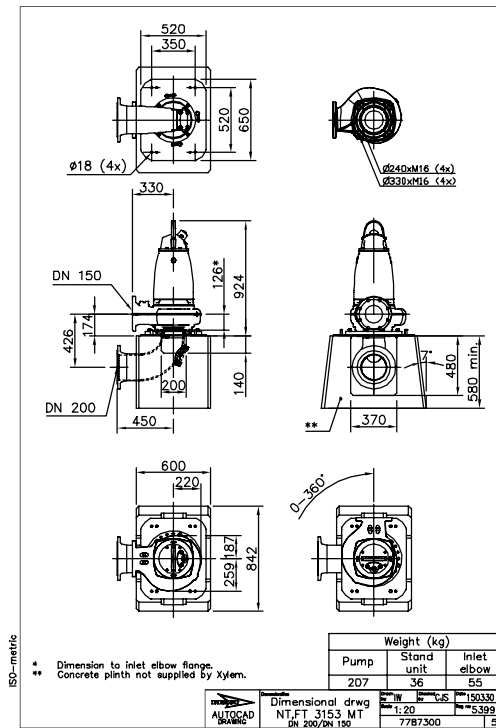


Figure 27: MT, T-installation

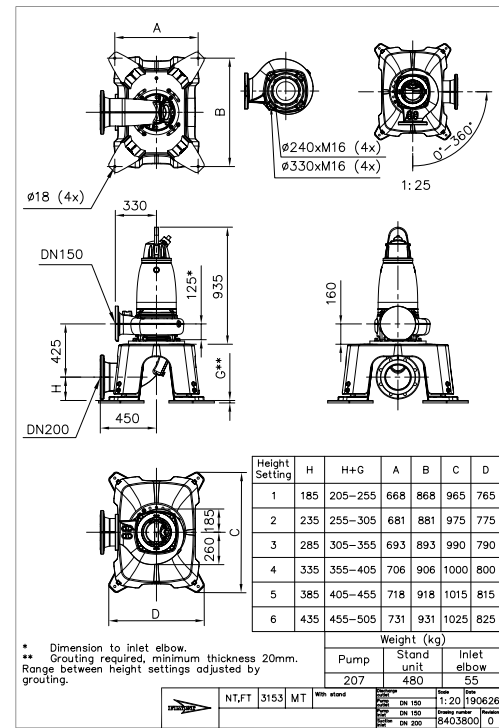


Figure 28: MT, T-installation

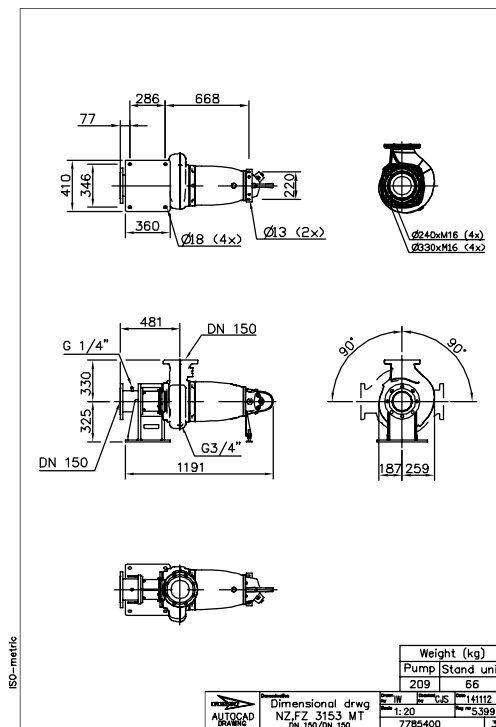


Figure 29: MT, Z-installation

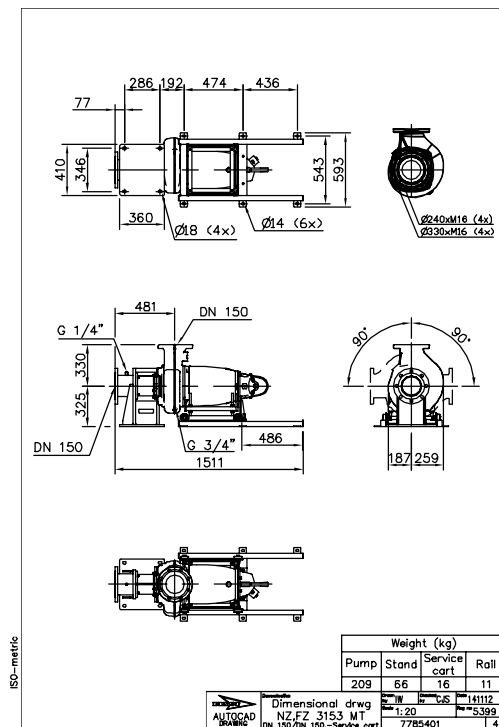
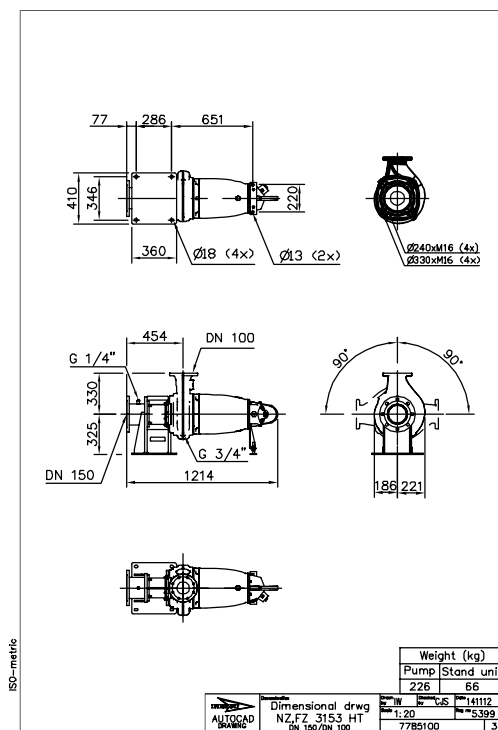


Figure 30: MT, Z-installation



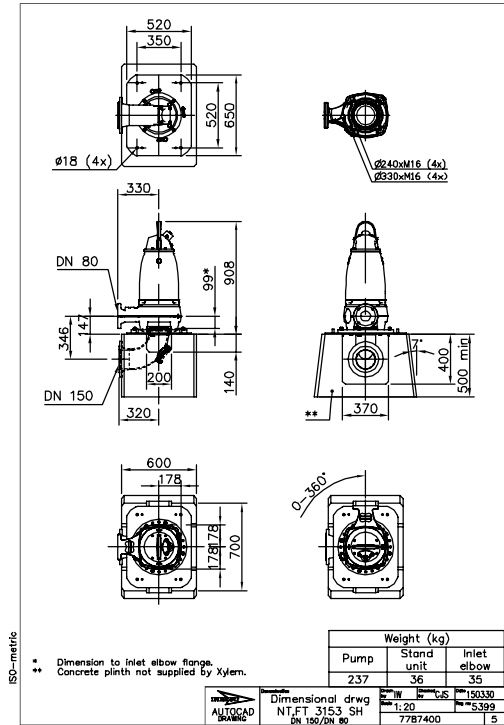


Figure 39: SH, T-installation

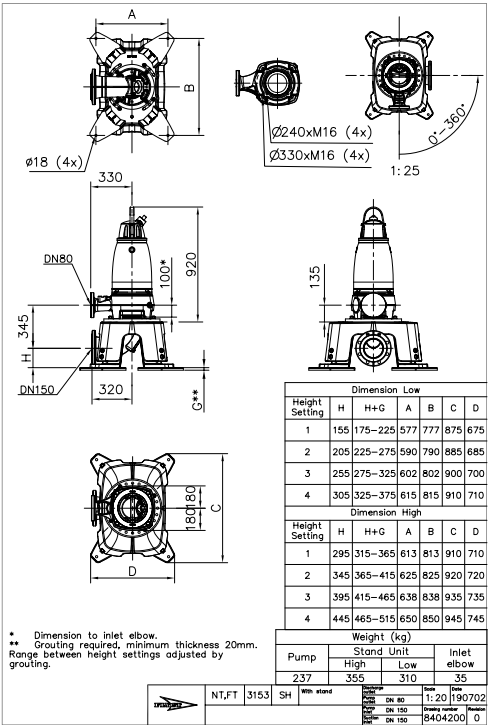


Figure 40: SH, T-installation

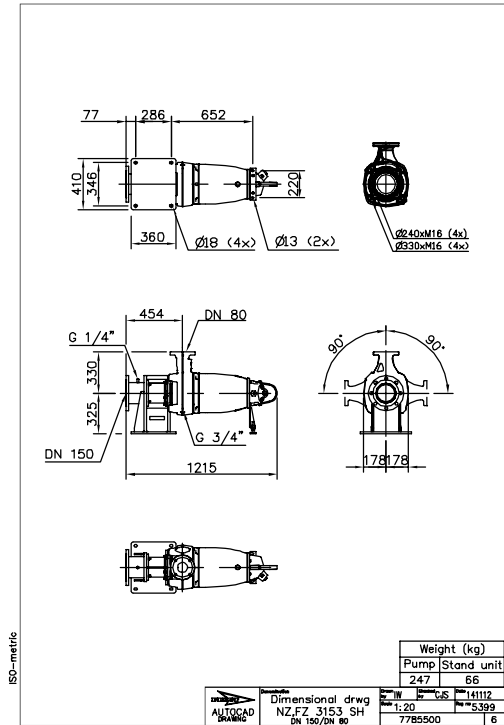


Figure 41: SH, Z-installation

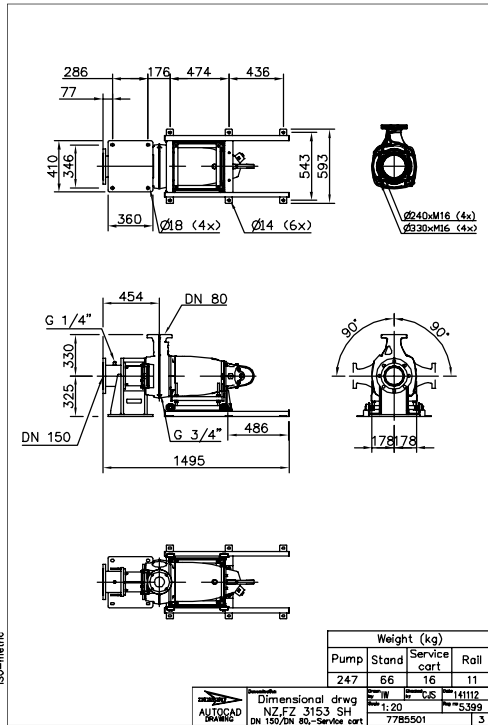


Figure 42: SH, Z-installation

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.

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



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

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