xylem
Let's Solve Water

Technical Specification

883467_8.0

Flygt 3171

60 Hz

FLYGT
a xylem brand

Table of Contents

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	3171.350	3171.390	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 ±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.
Variable Frequency drive	Screened Flygt SUBCAB® - a heavy duty 4 screened cores motor power cable with four 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.

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
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, VIS 10
- Surface treatment (Epoxy)
- Zinc anodes
- Other cables

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 3171.350/.390

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

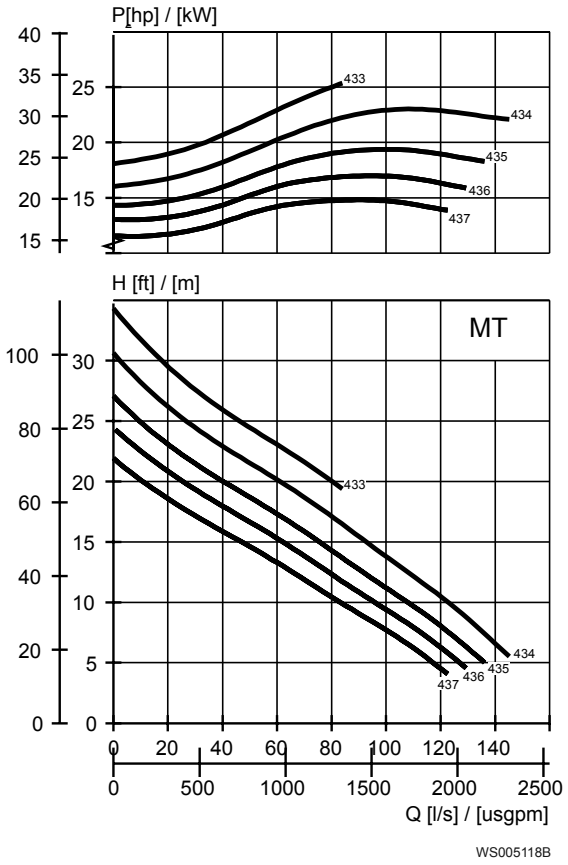


Table 3: 460 V, 60 Hz, 3–phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated current, A	Starting current, A	Power factor, cos φ	Installation
18.6	25	436	1755	30	183	0.89	P,S,T,Z
18.6	25	437	1755	30	183	0.89	P,S,T,Z
22	30	435	1755	36	231	0.87	P,S,T,Z
22	30	436	1755	36	231	0.87	P,S,T,Z
22	30	437	1755	36	231	0.87	P,S,T,Z
25	34	433	1755	40	256	0.9	P,S,T,Z
25	34	434	1755	40	256	0.9	P,S,T,Z
25	34	435	1755	40	256	0.9	P,S,T,Z
25	34	436	1755	40	256	0.9	P,S,T,Z
25	34	437	1755	40	256	0.9	P,S,T,Z

HT

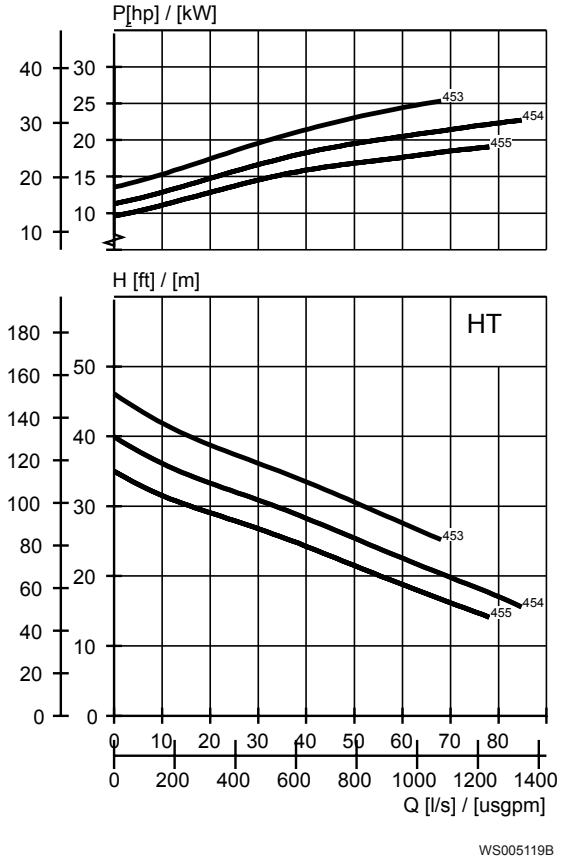


Table 4: 460 V, 60 Hz, 3–phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated current, A	Starting current, A	Power factor, cos φ	Installation
18.6	25	455	1755	30	183	0.89	P,S,T,Z
22	30	454	1755	36	231	0.87	P,S,T,Z
22	30	455	1755	36	231	0.87	P,S,T,Z
25	34	453	1755	40	256	0.9	P,S,T,Z
25	34	454	1755	40	256	0.9	P,S,T,Z
25	34	455	1755	40	256	0.9	P,S,T,Z

SH

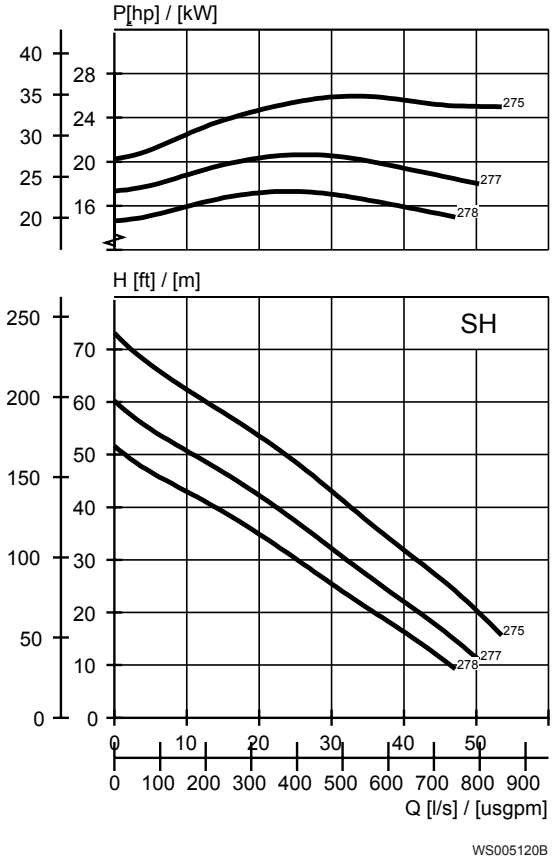


Table 5: 460 V, 60 Hz, 3–phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated current, A	Starting current, A	Power factor, cos φ	Installation
26	35	275	3520	39	273	0.92	P,S,T,Z
26	35	277	3520	39	273	0.92	P,S,T,Z
26	35	278	3520	39	273	0.92	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	3171.840	3171.850	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	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.
Variable Frequency drive	Screened Flygt SUBCAB® - a heavy duty 4 screened cores motor power cable with four 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.

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, …
Cooling jacket, outer	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, VIS 10
- Surface treatment (Epoxy)
- Zinc anodes
- Other cables

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 3171.840/.850

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

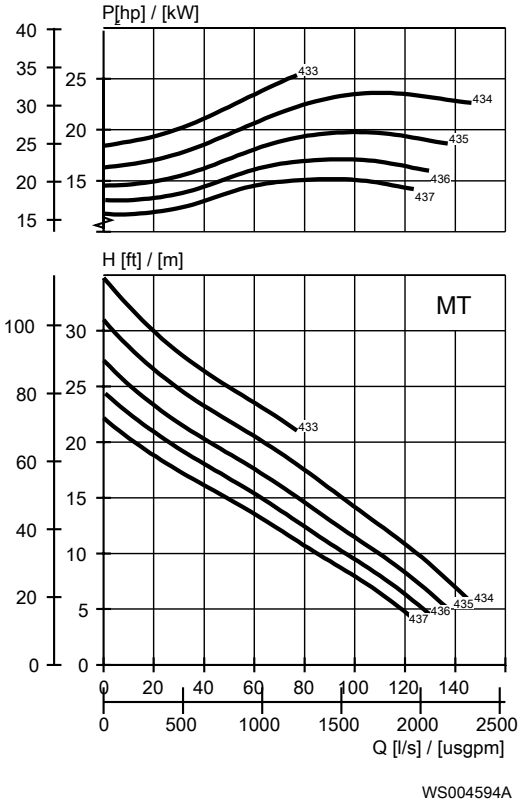


Table 8: 460 V, 60 Hz, 3–phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated current, A	Starting current, A	Power factor, cos φ	Installation
18.6	25	436	1775	28	218	0.9	P,S,T,Z
18.6	25	437	1775	28	218	0.9	P,S,T,Z
22	30	435	1775	33	251	0.91	P,S,T,Z
22	30	436	1775	33	251	0.91	P,S,T,Z
22	30	437	1775	33	251	0.91	P,S,T,Z
25	34	433	1775	38	300	0.89	P,S,T,Z
25	34	434	1775	38	300	0.89	P,S,T,Z
25	34	435	1775	38	300	0.89	P,S,T,Z
25	34	436	1775	38	300	0.89	P,S,T,Z
25	34	437	1775	38	300	0.89	P,S,T,Z

HT

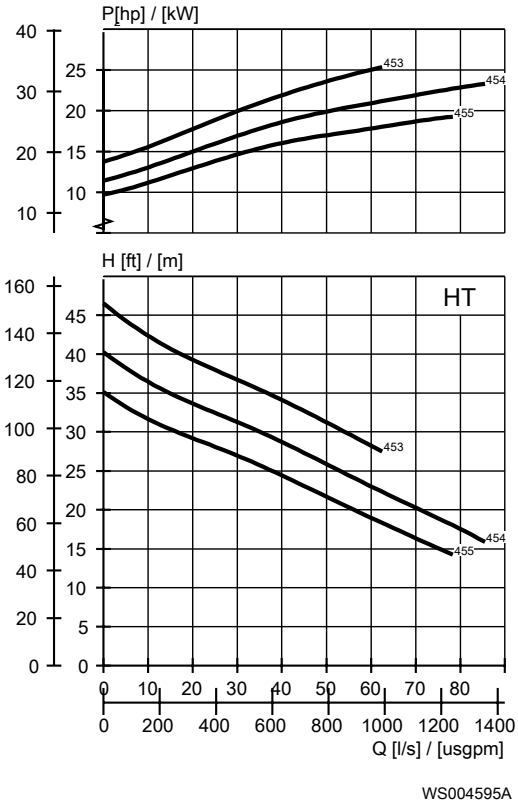
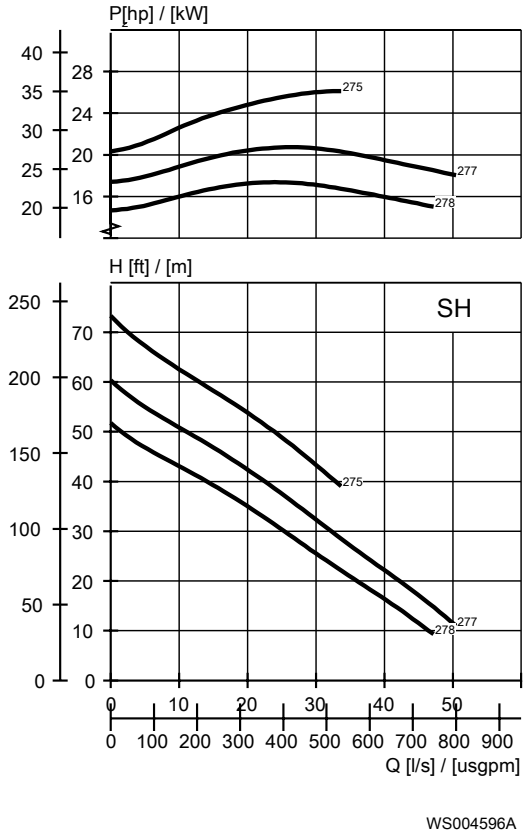


Table 9: 460 V, 60 Hz, 3–phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated current, A	Starting current, A	Power factor, cos φ	Installation
18.6	25	454	1775	28	218	0.9	P,S,T,Z
18.6	25	455	1775	28	218	0.9	P,S,T,Z
22	30	454	1775	33	251	0.91	P,S,T,Z
22	30	455	1775	33	251	0.91	P,S,T,Z
25	34	453	1775	38	300	0.89	P,S,T,Z
25	34	454	1775	38	300	0.89	P,S,T,Z
25	34	455	1775	38	300	0.89	P,S,T,Z

SH



WS004596A

Table 10: 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
26	35	275	3530	38	284	0.93	P,S,T,Z
26	35	277	3530	38	284	0.93	P,S,T,Z
26	35	278	3530	38	284	0.93	P,S,T,Z

3 F-pump, Manure Application

3.1 Product description

Usage

A submersible pump for liquid manure, or heavily contaminated sewage and sludge. The impeller is S-shaped and has a cutting function.

Denomination

Type	Non-explosion proof version	Explosion proof version	Pressure class	Installation types
Gray iron	3171.360	-	• LT — Low head • HT — High head	P, S, X

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.

X Optional installation, wet or dry well arrangement without predetermined mechanical connection and with drilled flanges. Dry well arrangement requires cooling system or de-rated motor.

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	Squirrel cage induction motor
Frequency	60 Hz
Power supply	3-phase

Feature	Description
Starting method	• Direct on-line • Star-delta • Soft starter • 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.
Variable Frequency drive	Screened Flygt SUBCAB® - a heavy duty 4 screened cores motor power cable with four 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.

Monitoring equipment

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

Materials

Table 11: 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, nodular	-	GJS-400-18-LT
Suction cover	Cast iron, Hard-Iron™	A 532 IIIA	GJN-HB555(XCR23)

Denomination	Material	ASTM	EN
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 12: 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
- Aqua cutting knife (chopper)
- Surface treatment (Epoxy)
- Closed loop cooling
- Zinc anodes
- Other cables

Accessories

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

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

3.2 Motor rating and performance curves 3171.360

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

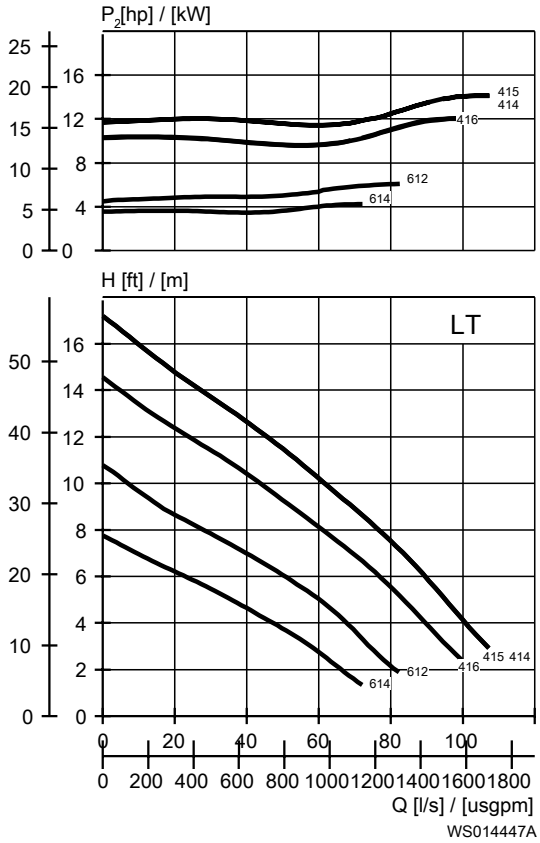


Table 13: 460 V, 60 Hz, 3–phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated current, A	Starting current, A	Power factor, cos φ	Installation
10.4	14	612	1160	18	96	0.85	P,S,X
10.4	14	614	1160	18	96	0.85	P,S,X
14.9	20	415	1755	26	166	0.82	P,S,X
14.9	20	414	1755	26	166	0.82	P,S,X
14.9	20	416	1755	26	166	0.82	P,S,X

HT

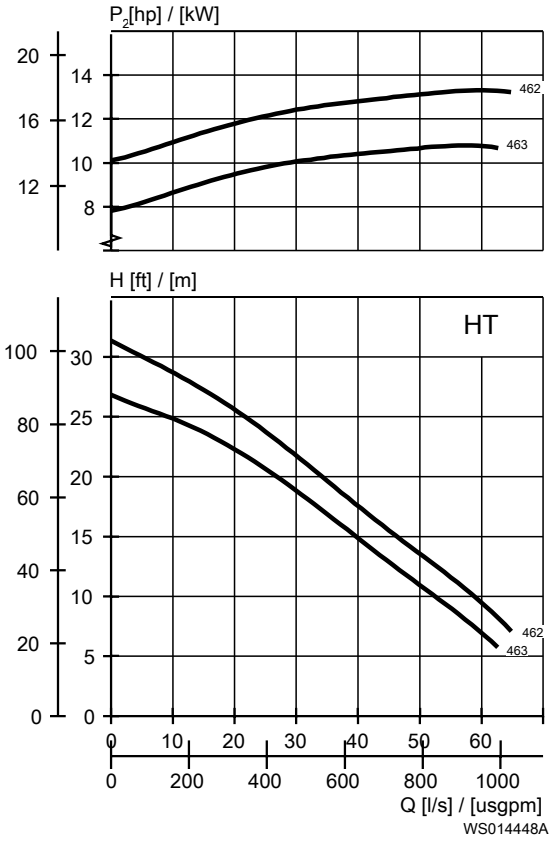


Table 14: 460 V, 60 Hz, 3–phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated current, A	Starting current, A	Power factor, cos φ	Installation
11.2	15	463	1750	20	126	0.84	P,S,X
14.9	20	462	1755	26	166	0.82	P,S,X
14.9	20	463	1755	26	166	0.82	P,S,X

4 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

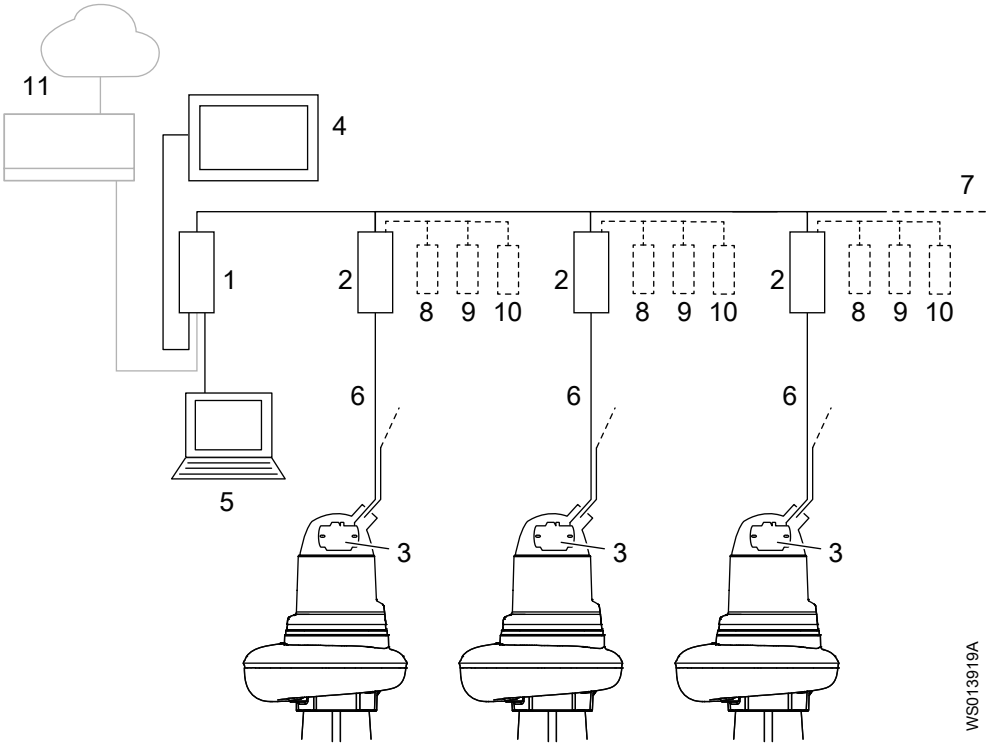


Table 15: Parts

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

5 N-pump, Standard Motor

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	3171.181	3171.091	LT — Low head MT — Medium head HT — High head SH — Super head	P, S, T, Z
Hard-Iron™	3171.185	3171.095	LT — Low head MT — Medium head HT — High head SH — Super head	P, S, T, Z
Stainless steel	3171.660	3171.670	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.

Application	Type
Variable Frequency drive	Screened Flygt SUBCAB® - a heavy duty 4 screened cores motor power cable with four 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.

Monitoring equipment

Table 16: 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 19.

Materials

Table 17: 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	See the standard M0326.2172.00.	
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, …

Denomination	Material	ASTM	EN
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 18: 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, VIS 10
- Surface treatment (Epoxy)
- Zinc anodes
- Other cables

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 3171.181/.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

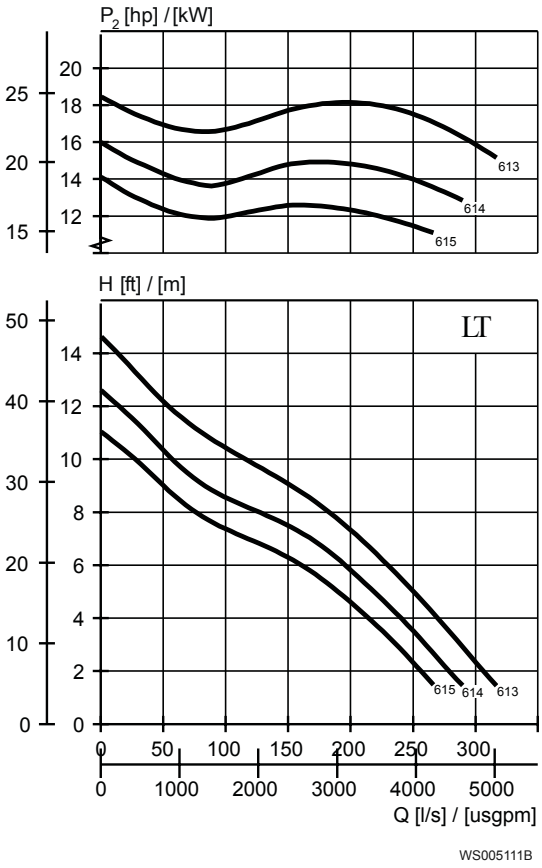


Table 19: 460 V, 60 Hz, 3–phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated current, A	Starting current, A	Power factor, cos φ	Installation
18.6	25	613	1160	31	174	0.86	P,S,T,Z
18.6	25	614	1160	31	174	0.86	P,S,T,Z
18.6	25	615	1160	31	174	0.86	P,S,T,Z

MT

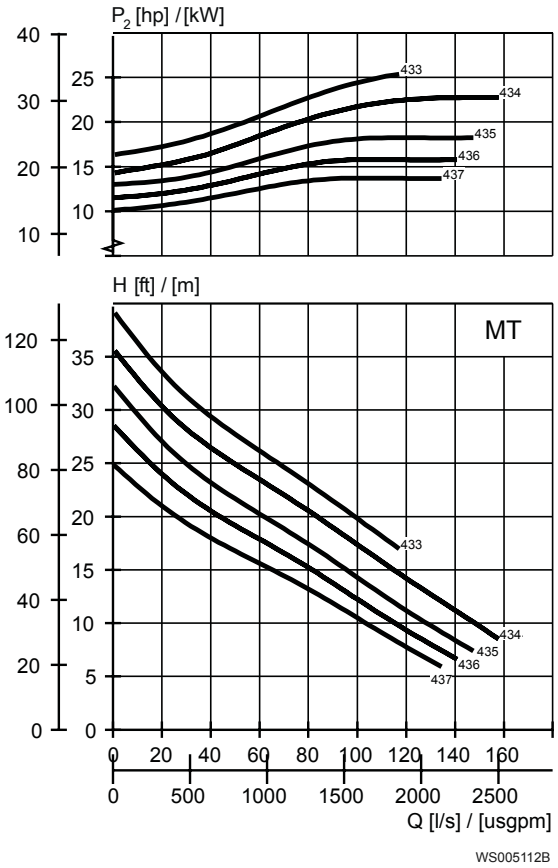


Table 20: 460 V, 60 Hz, 3–phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated current, A	Starting current, A	Power factor, cos φ	Installation
18.6	25	435	1755	30	183	0.89	P,S,T,Z
18.6	25	436	1755	30	183	0.89	P,S,T,Z
18.6	25	437	1755	30	183	0.89	P,S,T,Z
22	30	433	1755	36	231	0.87	P,S,T,Z
22	30	434	1755	36	231	0.87	P,S,T,Z
22	30	435	1755	36	231	0.87	P,S,T,Z
22	30	436	1755	36	231	0.87	P,S,T,Z
22	30	437	1755	36	231	0.87	P,S,T,Z
25	34	433	1755	40	256	0.9	P,S,T,Z
25	34	434	1755	40	256	0.9	P,S,T,Z
25	34	435	1755	40	256	0.9	P,S,T,Z
25	34	436	1755	40	256	0.9	P,S,T,Z
25	34	437	1755	40	256	0.9	P,S,T,Z

HT

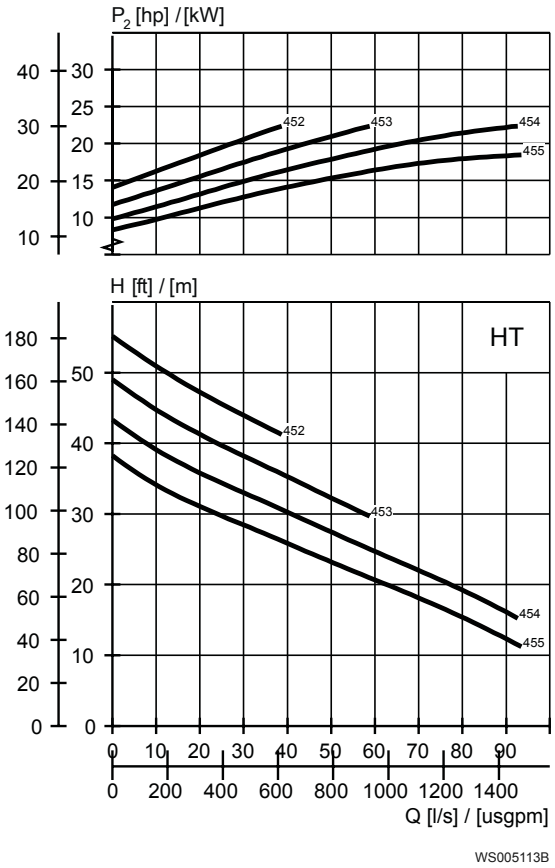


Table 21: 460 V, 60 Hz, 3–phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated current, A	Starting current, A	Power factor, cos φ	Installation
18.6	25	453	1755	30	183	0.89	P,S,T,Z
18.6	25	454	1755	30	183	0.89	P,S,T,Z
18.6	25	455	1755	30	183	0.89	P,S,T,Z
22	30	452	1755	36	231	0.87	P,S,T,Z
22	30	453	1755	36	231	0.87	P,S,T,Z
22	30	454	1755	36	231	0.87	P,S,T,Z
22	30	455	1755	36	231	0.87	P,S,T,Z
25	34	452	1755	40	256	0.9	P,S,T,Z
25	34	453	1755	40	256	0.9	P,S,T,Z
25	34	454	1755	40	256	0.9	P,S,T,Z
25	34	455	1755	40	256	0.9	P,S,T,Z

SH

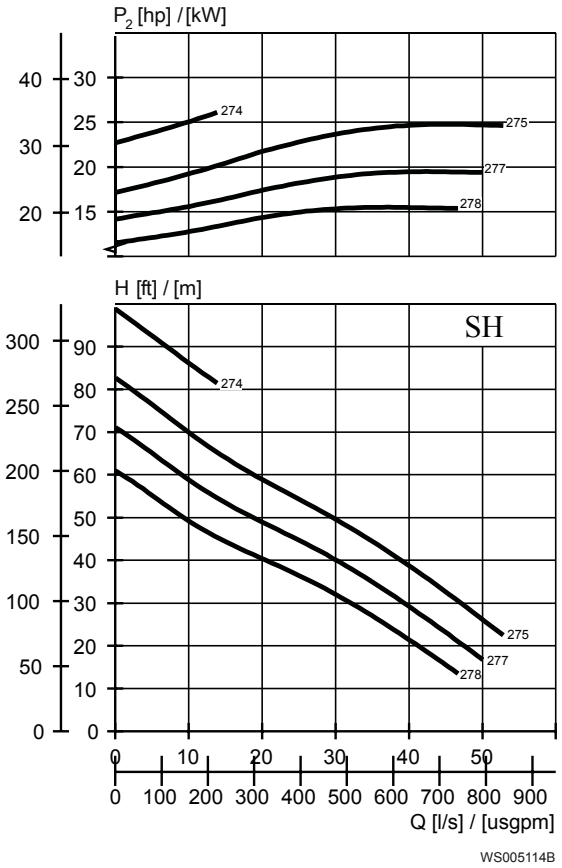


Table 22: 460 V, 60 Hz, 3–phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated current, A	Starting current, A	Power factor, cos φ	Installation
26	35	274	3520	39	273	0.92	P,S,T,Z
26	35	275	3520	39	273	0.92	P,S,T,Z
26	35	277	3520	39	273	0.92	P,S,T,Z
26	35	278	3520	39	273	0.92	P,S,T,Z

6 N-pump, Premium Efficiency Motor (IE3)

6.1 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	3171.800	3171.810	LT — Low head MT — Medium head HT — High head SH — Super head	P, S, T, Z
Hard-Iron™	3171.820	3171.830	LT — Low head MT — Medium head HT — High head SH — Super head	P, S, T, Z
Stainless steel	3171.860	3171.870	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	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.

Application	Type
Variable Frequency drive	Screened Flygt SUBCAB® - a heavy duty 4 screened cores motor power cable with four 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.

Monitoring equipment

Table 23: 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 19.

Materials

Table 24: 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	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	-	-

Denomination	Material	ASTM	EN
Glycol	Heat transfer fluid based on monopropylene glycol.	-	-

Table 25: 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, VIS 10
- Surface treatment (Epoxy)
- Zinc anodes
- Other cables

Accessories

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

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

6.2 Motor rating and performance curves 3171.800/.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

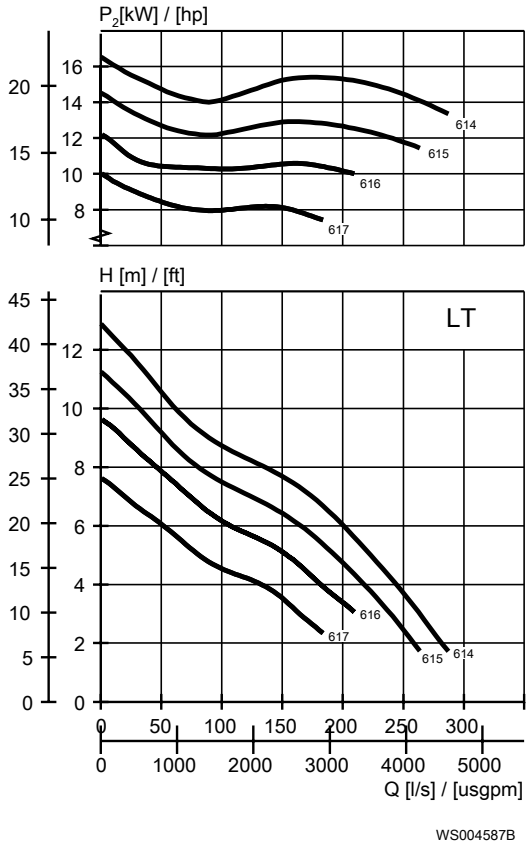
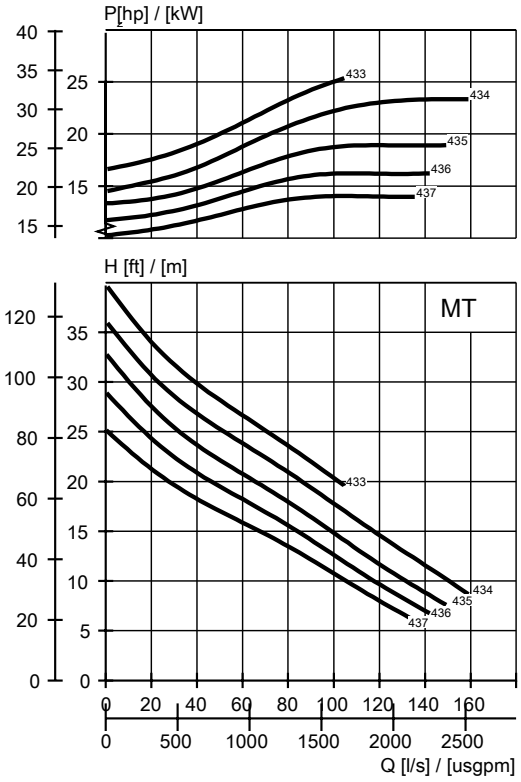


Table 26: 460 V, 60 Hz, 3–phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated Current, A	Start current, A	Power Factor, cos φ	Installation
13.4	18	615	1180	21	155	0.86	P,S,T,Z
13.4	18	616	1180	21	155	0.86	P,S,T,Z
13.4	18	617	1180	21	155	0.86	P,S,T,Z
16.4	22	614	1180	28	209	0.79	P,S,T,Z
16.4	22	615	1180	28	209	0.79	P,S,T,Z
16.4	22	616	1180	28	209	0.79	P,S,T,Z
16.4	22	617	1180	28	209	0.79	P,S,T,Z

MT

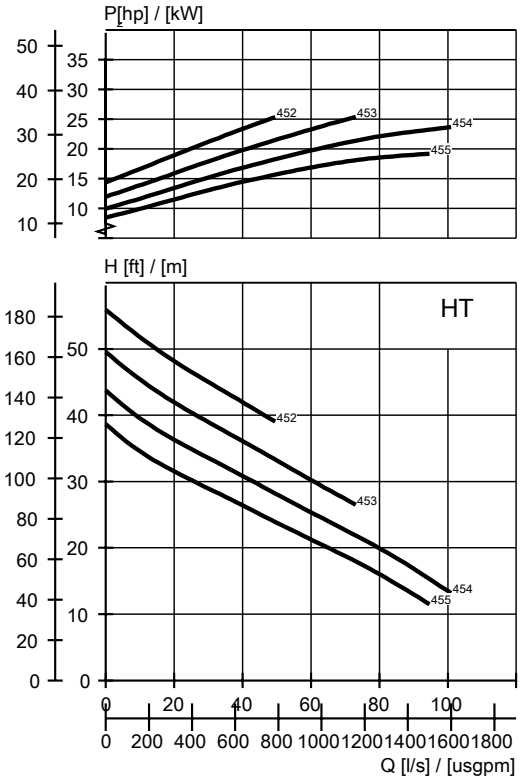


WS004588A

Table 27: 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
18.6	25	436	1775	28	218	0.9	P,S,T,Z
18.6	25	437	1775	28	218	0.9	P,S,T,Z
22	30	434	1775	33	251	0.91	P,S,T,Z
22	30	435	1775	33	251	0.91	P,S,T,Z
22	30	436	1775	33	251	0.91	P,S,T,Z
22	30	437	1775	33	251	0.91	P,S,T,Z
25	34	433	1775	38	300	0.89	P,S,T,Z
25	34	434	1775	38	300	0.89	P,S,T,Z
25	34	435	1775	38	300	0.89	P,S,T,Z
25	34	436	1775	38	300	0.89	P,S,T,Z
25	34	437	1775	38	300	0.89	P,S,T,Z

HT



WS004589A

Table 28: 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
18.6	25	453	1775	28	218	0.9	P,S,T,Z
18.6	25	454	1775	28	218	0.9	P,S,T,Z
18.6	25	455	1775	28	218	0.9	P,S,T,Z
22	30	452	1775	33	251	0.91	P,S,T,Z
22	30	453	1775	33	251	0.91	P,S,T,Z
22	30	454	1775	33	251	0.91	P,S,T,Z
22	30	455	1775	33	251	0.91	P,S,T,Z
25	34	452	1775	38	300	0.89	P,S,T,Z
25	34	453	1775	38	300	0.89	P,S,T,Z
25	34	454	1775	38	300	0.89	P,S,T,Z
25	34	455	1775	38	300	0.89	P,S,T,Z

SH

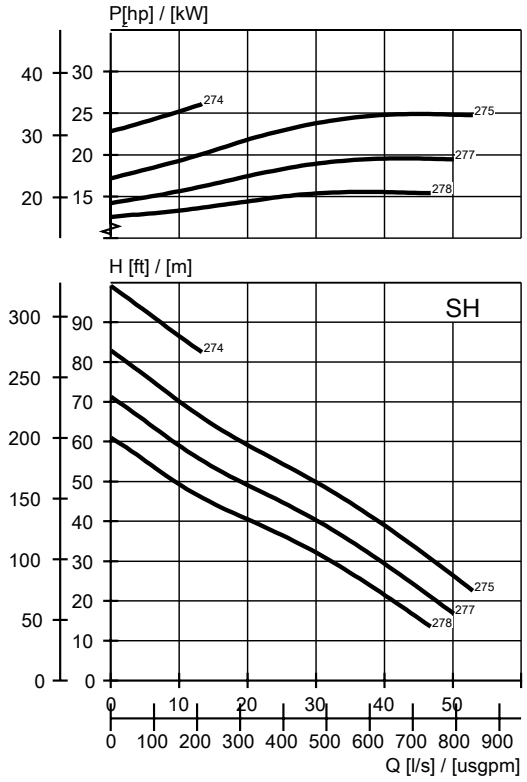


Table 29: 460 V, 60 Hz, 3–phase

Rated power, kW	Rated power, hp	Curve/Impeller No	Revolutions per minute, rpm	Rated current, A	Starting current, A	Power factor, cos φ	Installation
26	35	274	3530	38	284	0.93	P,S,T,Z
26	35	275	3530	38	284	0.93	P,S,T,Z
26	35	277	3530	38	284	0.93	P,S,T,Z
26	35	278	3530	38	284	0.93	P,S,T,Z

7 Dimensions and Weight, Standard Motor

7.1 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.

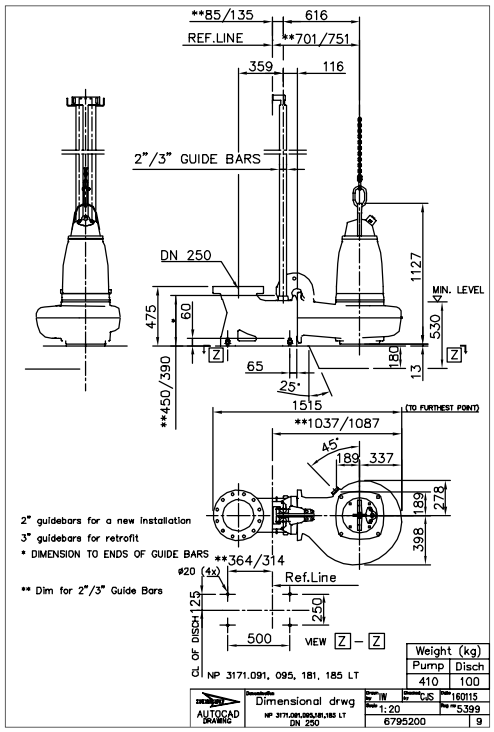


Figure 1: LT, P-installation

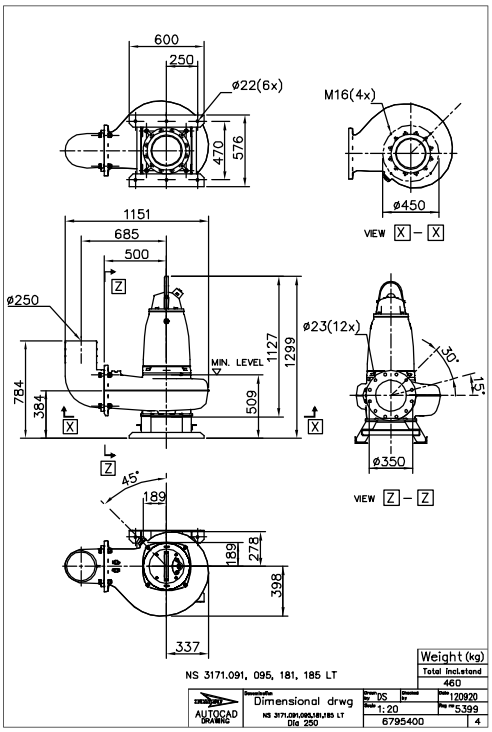


Figure 2: LT, S-installation

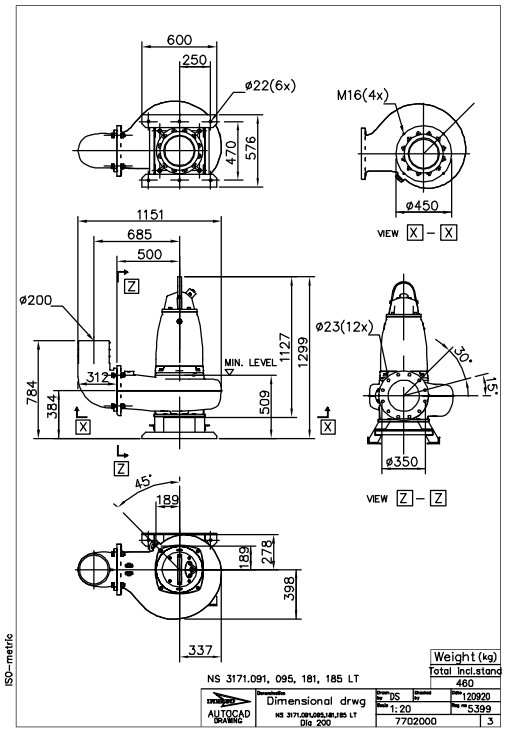


Figure 3: LT, S-installation

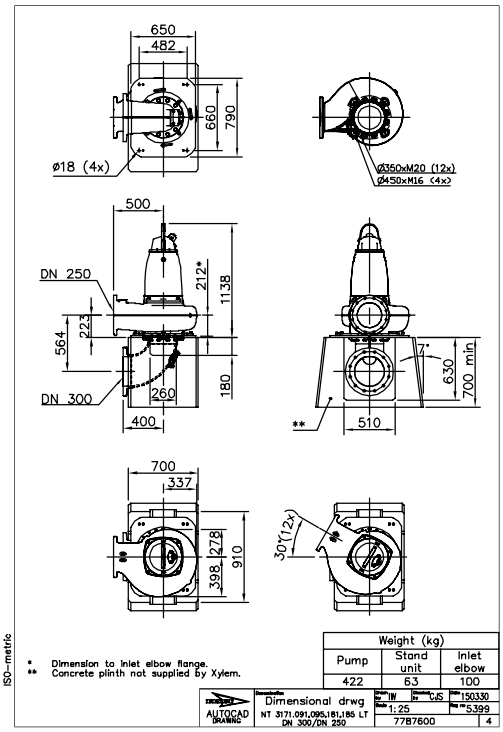
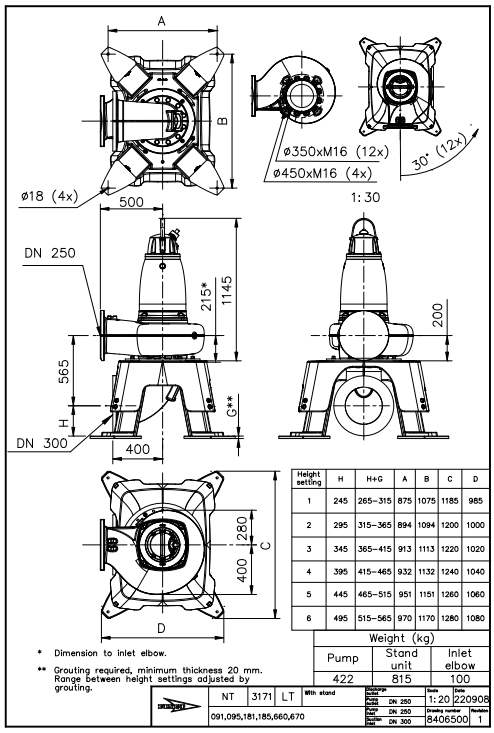


Figure 4: LT, T-installation



Height setting	H	H+G	A	B	C	D
1	245	265–315	875	1075	1185	985
2	295	315–365	894	1094	1200	1000
3	345	365–415	913	1113	1220	1020
4	395	415–465	932	1132	1240	1040
5	445	465–515	951	1151	1260	1060
6	495	515–565	970	1170	1280	1080

Figure 5: LT, T-installation

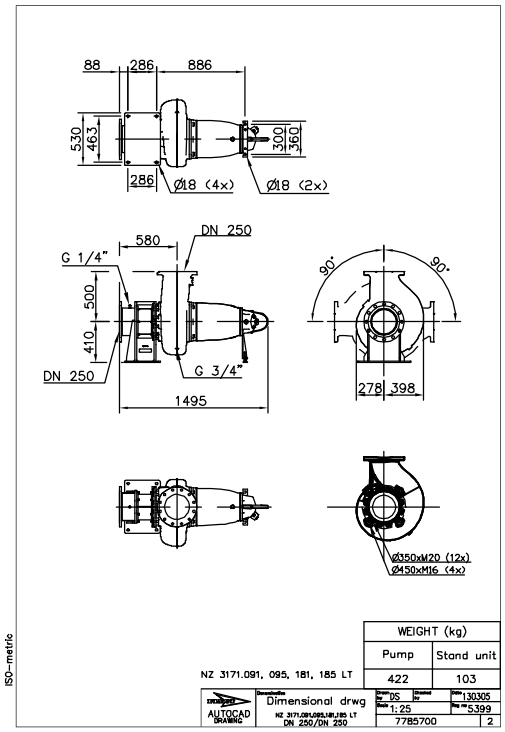


Figure 6: LT, Z-installation

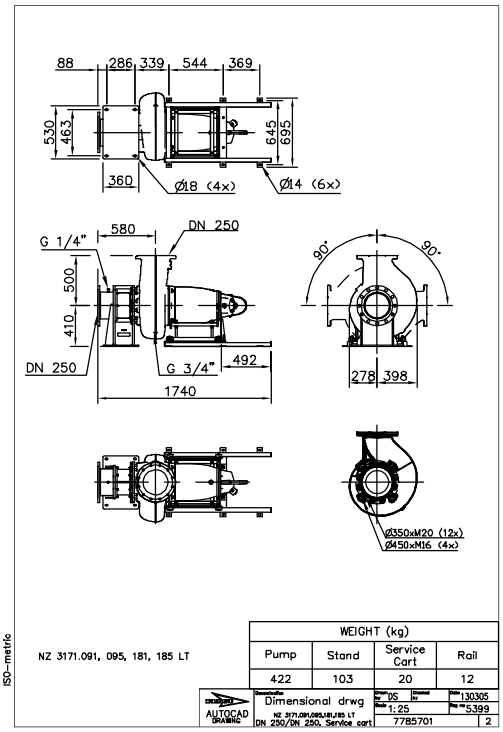


Figure 7: LT, Z-installation

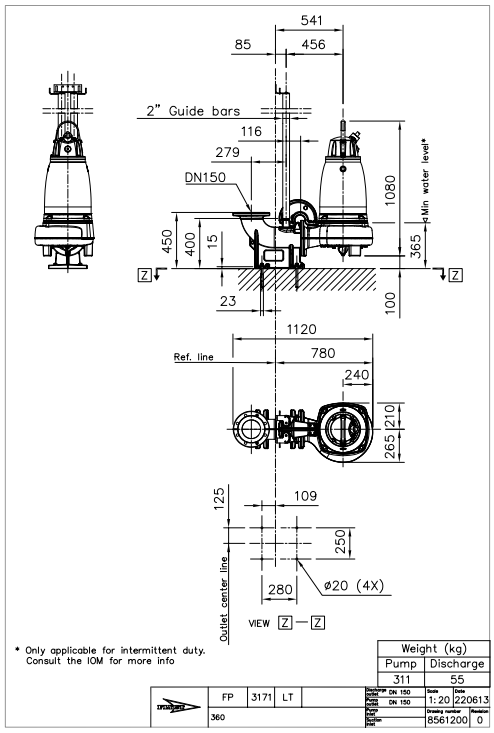


Figure 8: LT, P-installation

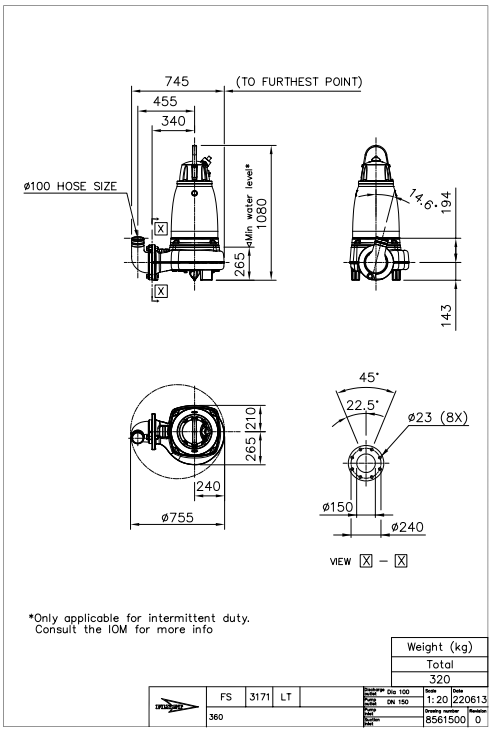


Figure 9: LT, S-installation

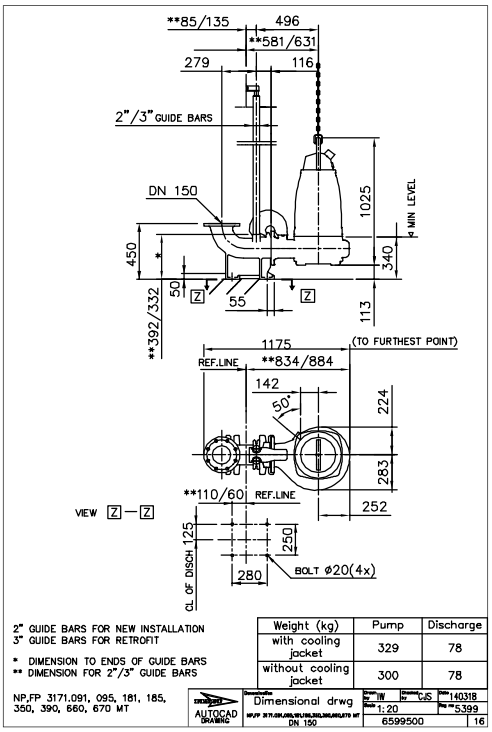


Figure 10: MT, P-installation

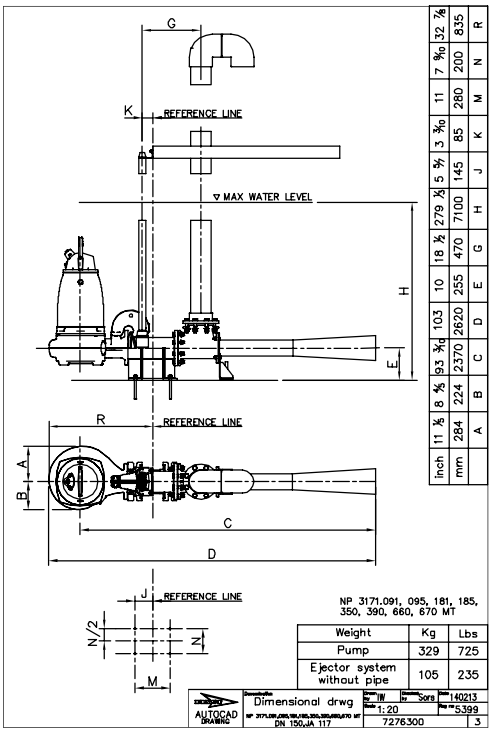


Figure 11: MT, P-installation

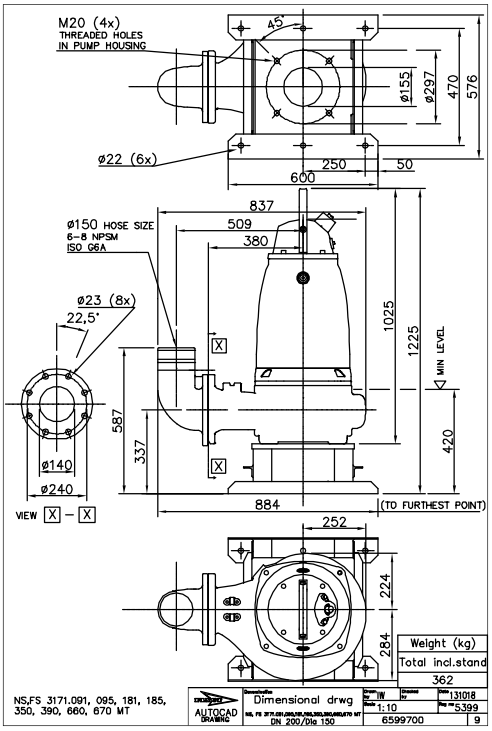


Figure 12: MT, S-installation

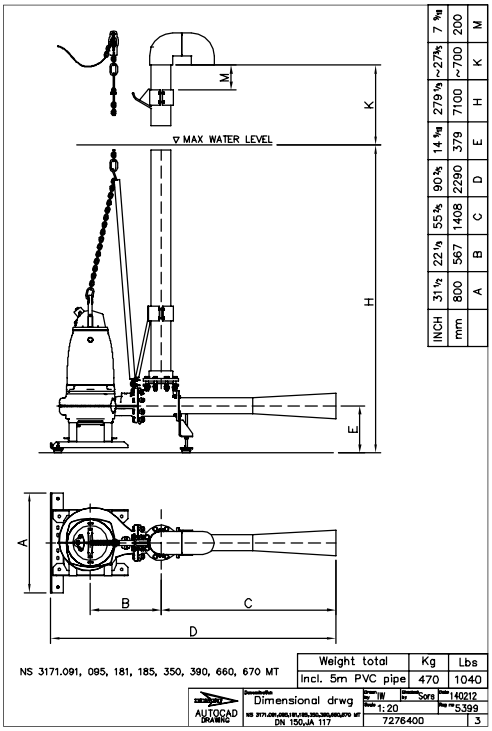


Figure 13: MT, S-installation

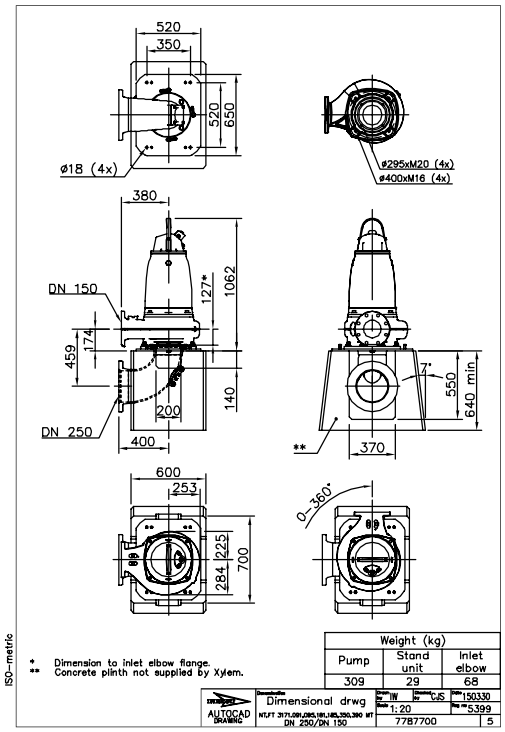


Figure 14: MT, T-installation

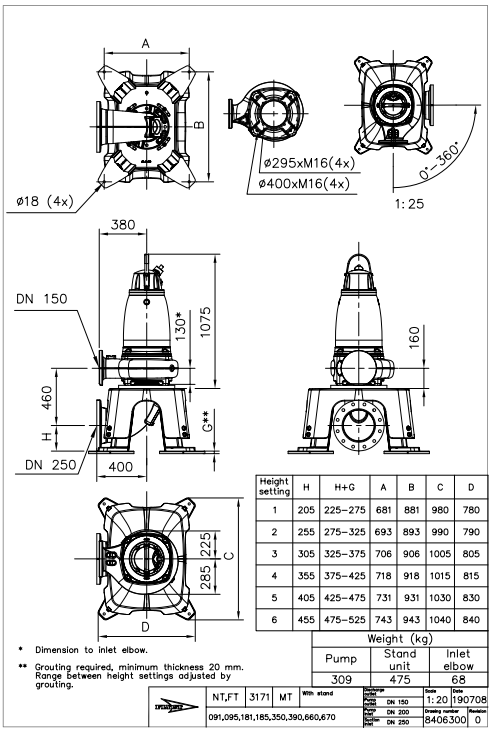


Figure 15: MT, T-installation

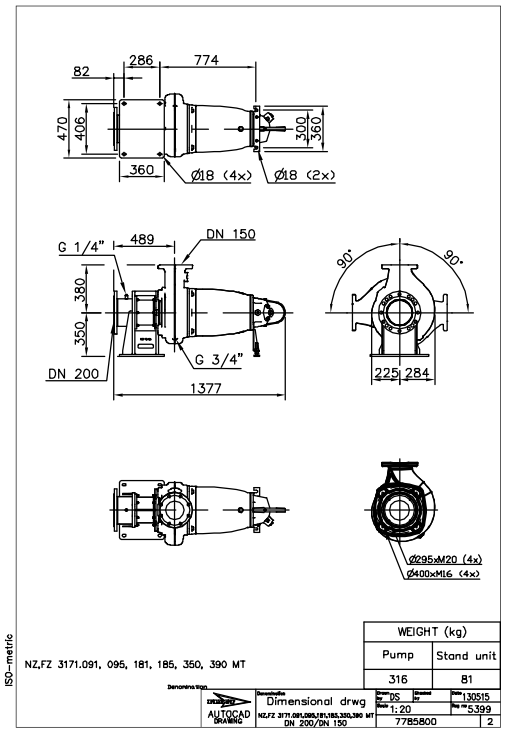


Figure 16: MT, Z-installation

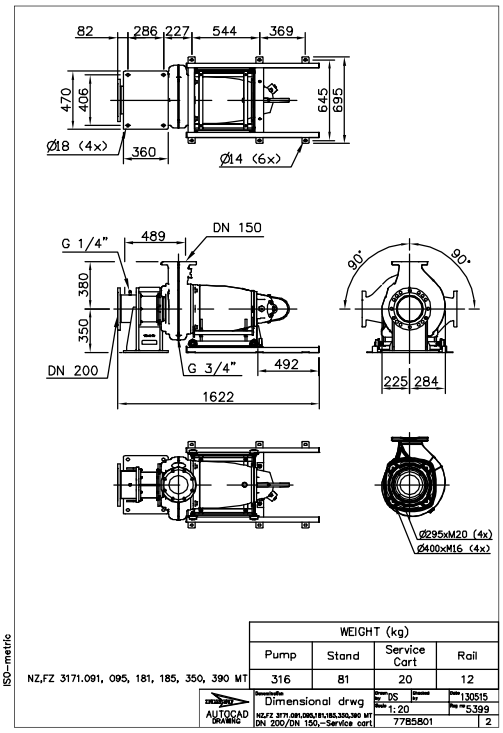


Figure 17: MT, Z-installation

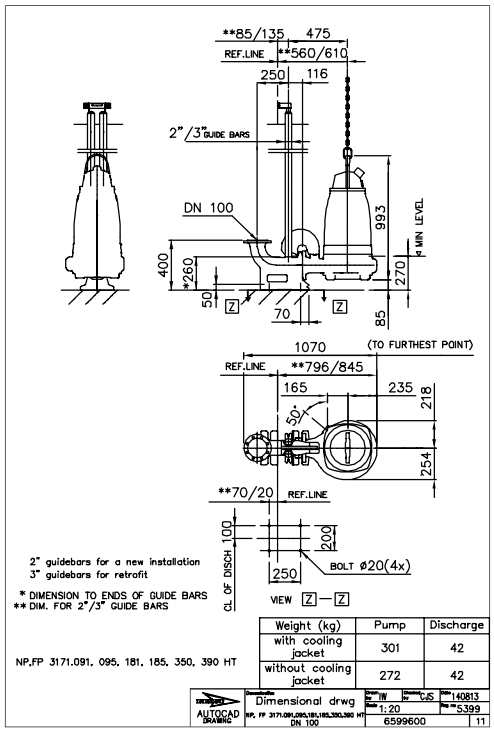


Figure 18: HT, P-installation

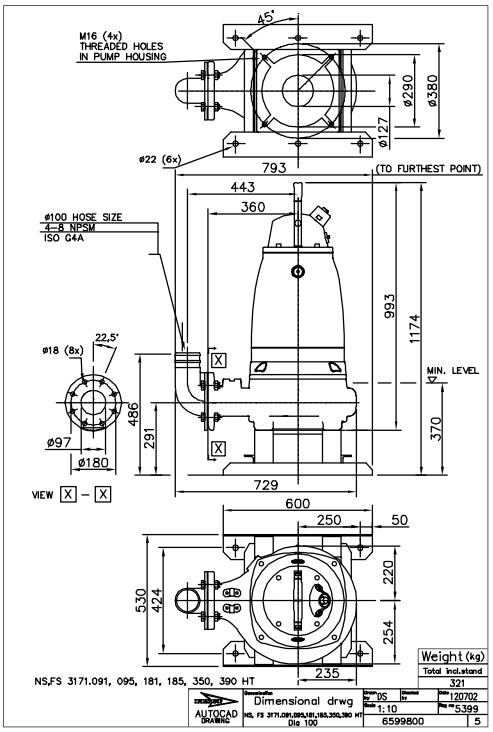


Figure 19: HT, S-installation

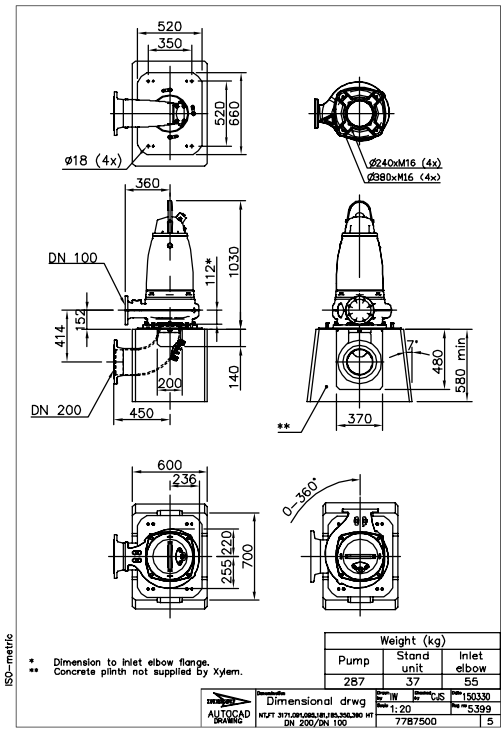


Figure 20: HT, T-installation

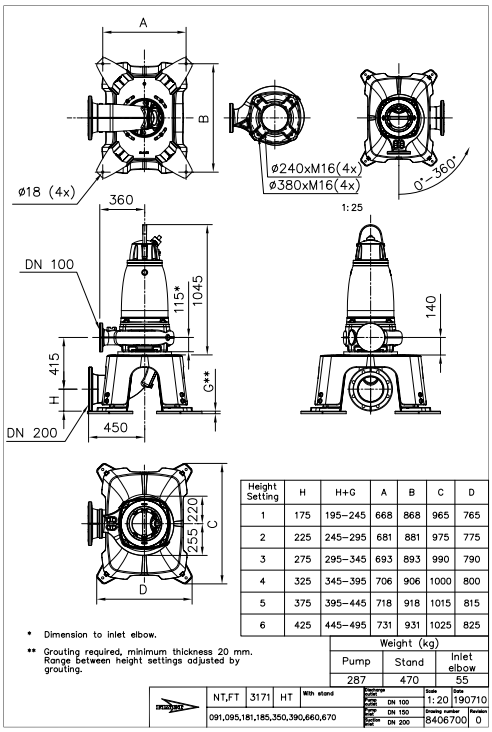


Figure 21: HT, T-installation

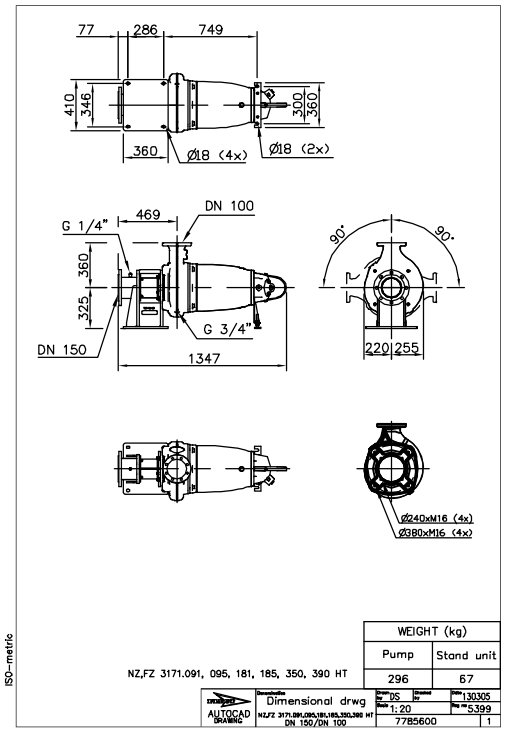


Figure 22: HT, Z-installation

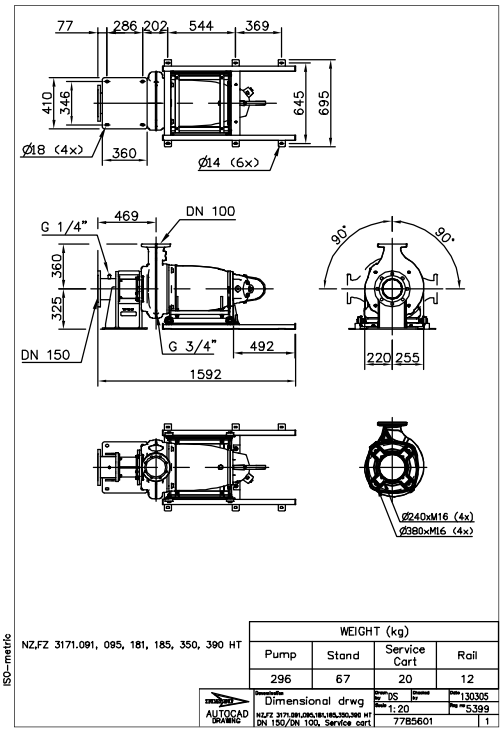


Figure 23: HT, Z-installation

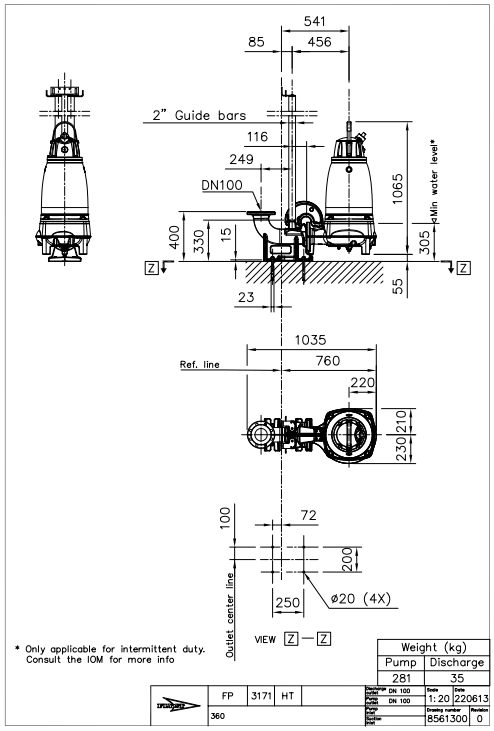


Figure 24: HT, P-installation

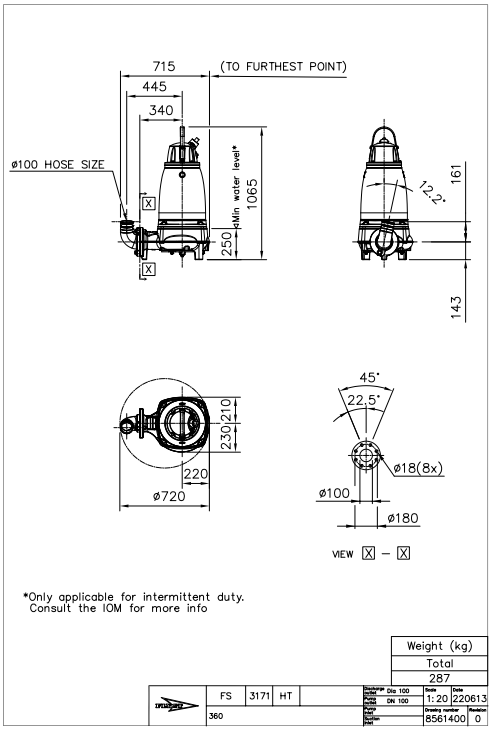


Figure 25: HT, S-installation

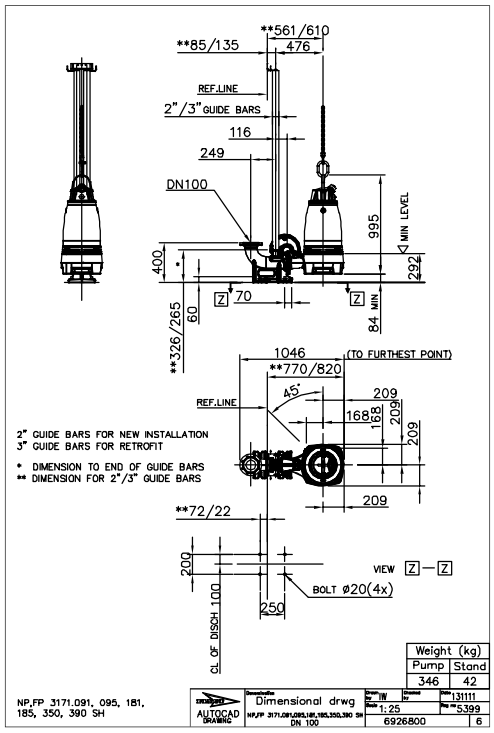


Figure 26: SH, P-installation

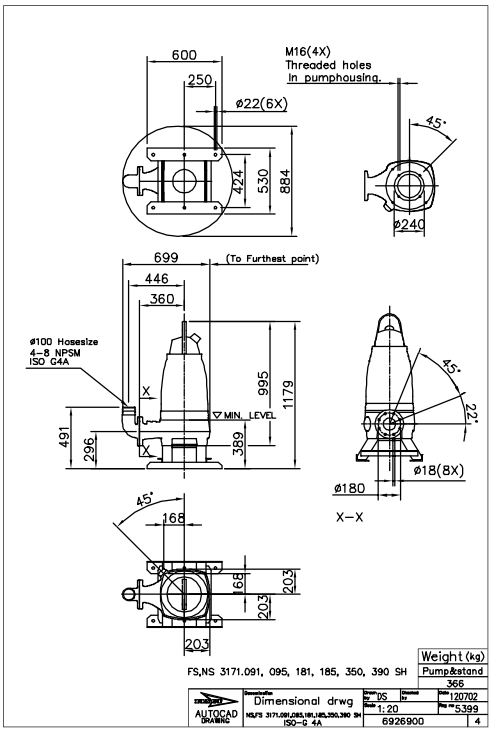


Figure 27: SH, S-installation

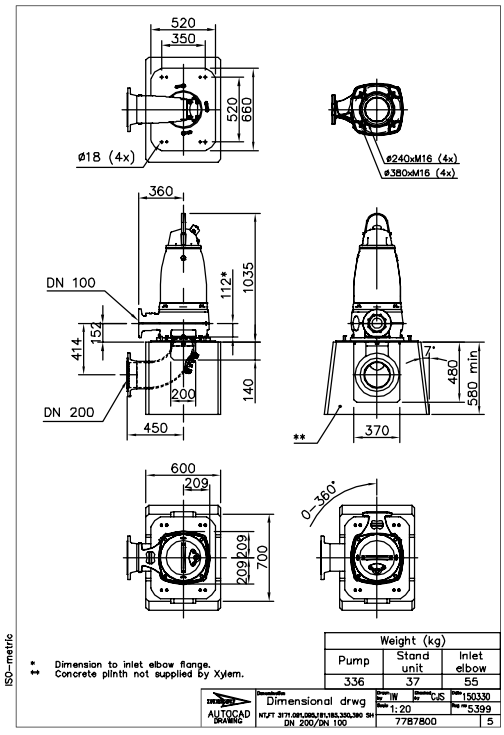


Figure 28: SH, T-installation

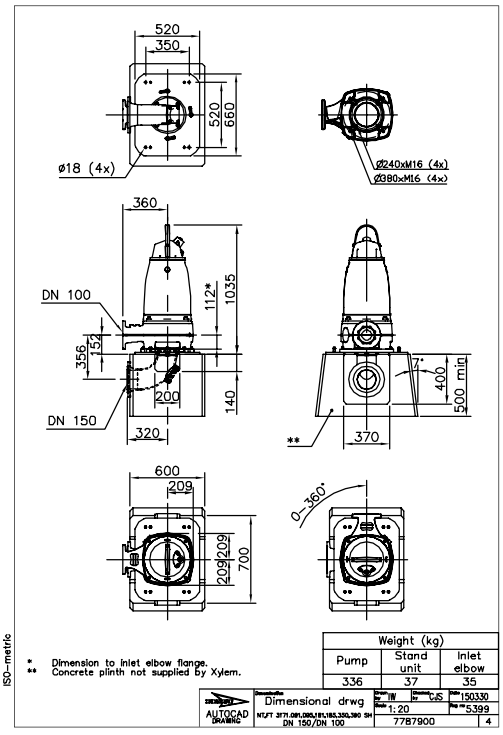


Figure 29: SH, T-installation

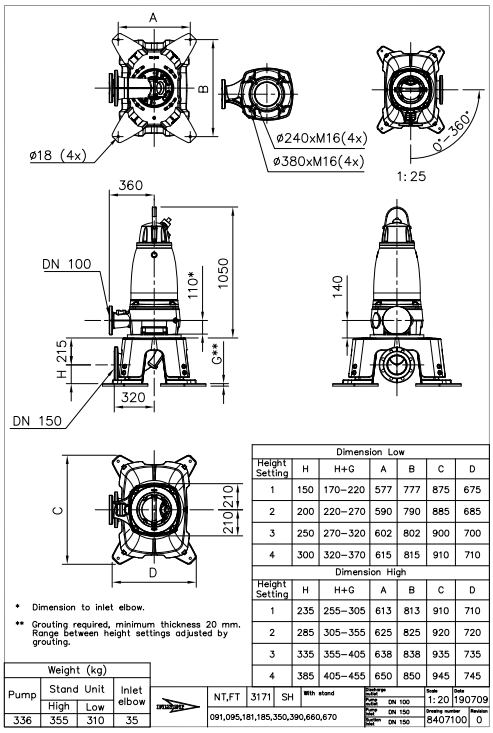


Figure 30: SH, T-installation

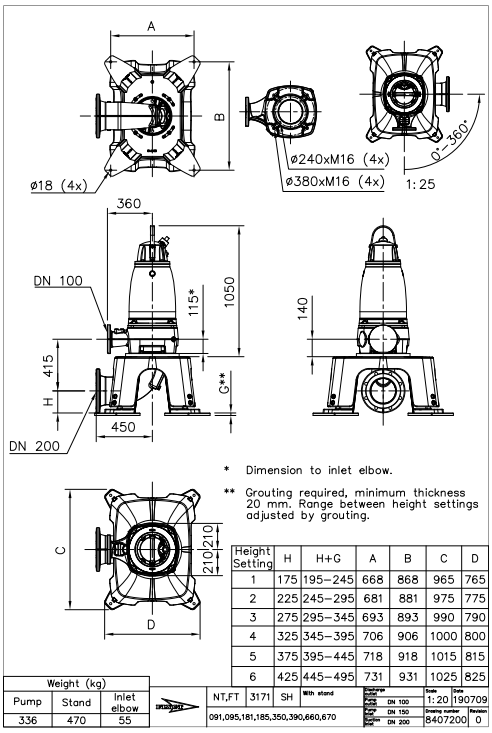


Figure 31: SH, T-installation

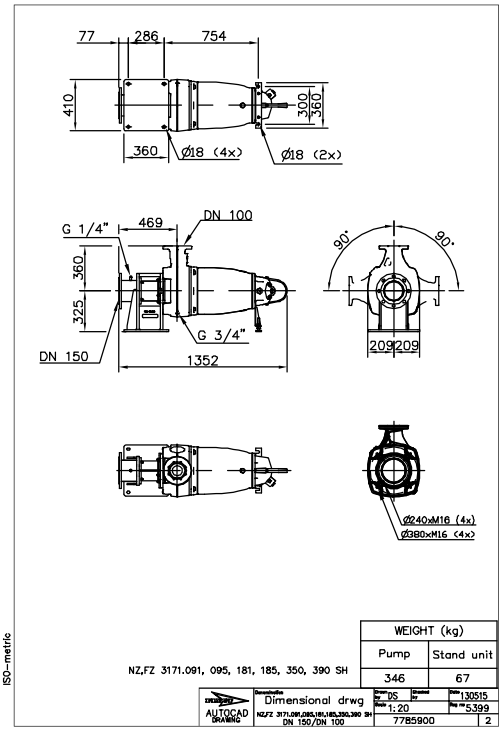


Figure 32: SH, Z-installation

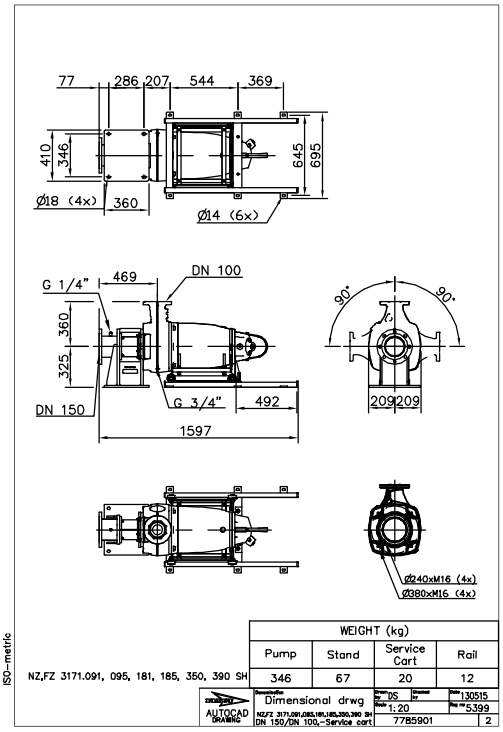


Figure 33: SH, Z-installation

8 Dimensions and Weight, Premium Efficiency Motor (IE3)

8.1 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.

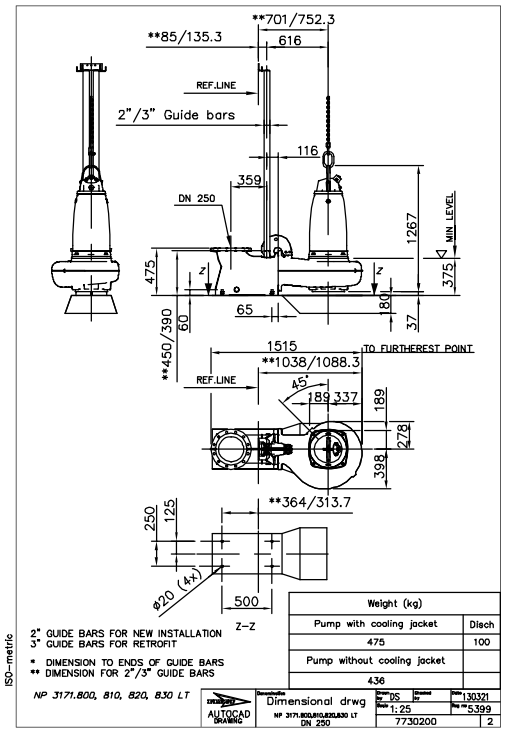


Figure 34: LT, P-installation

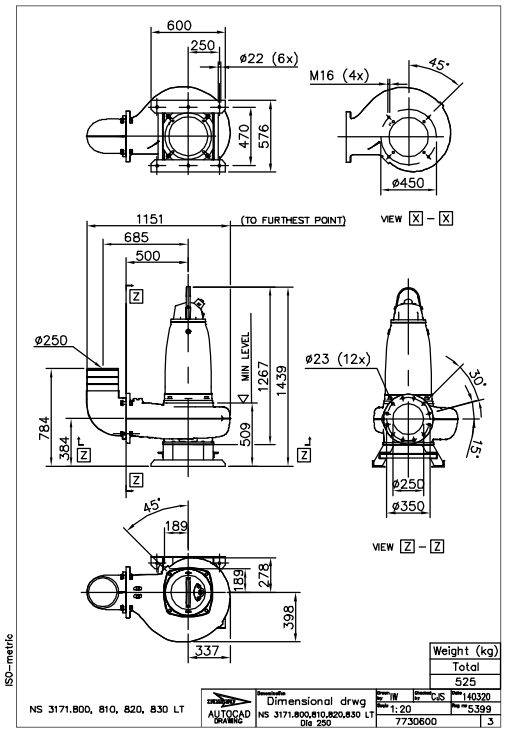


Figure 35: LT, S-installation

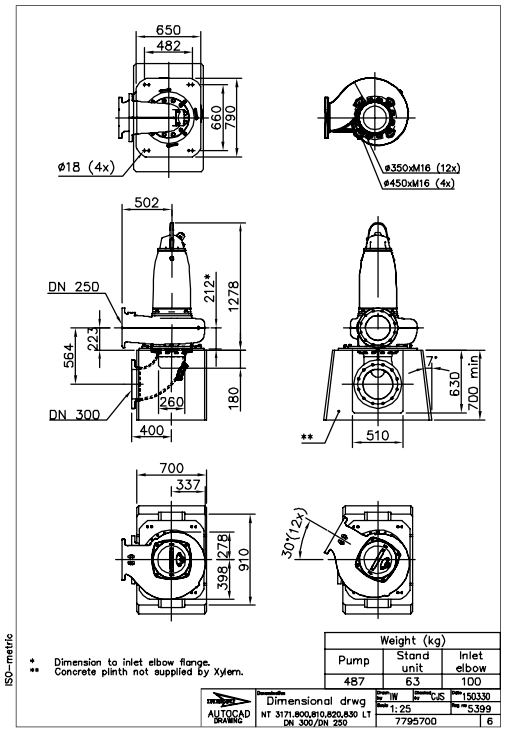


Figure 36: LT, T-installation

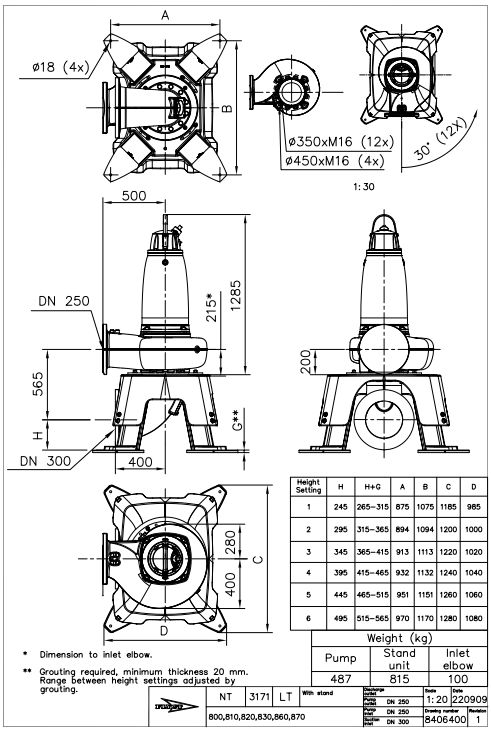


Figure 37: LT, T-installation

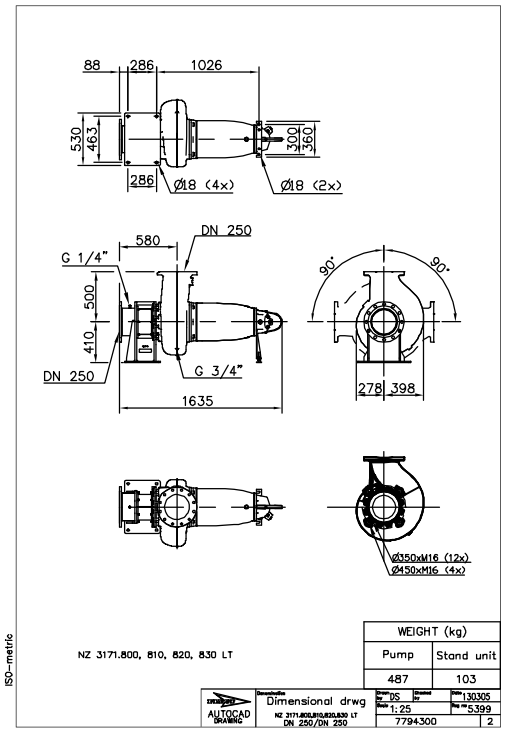


Figure 38: LT, Z-installation

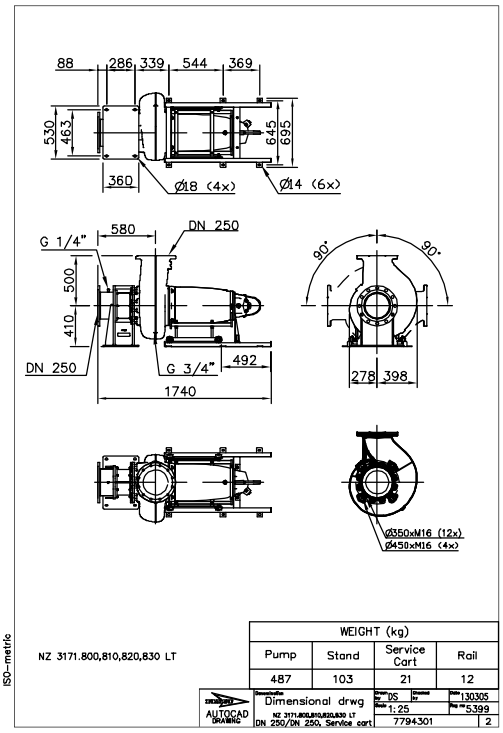


Figure 39: LT, Z-installation

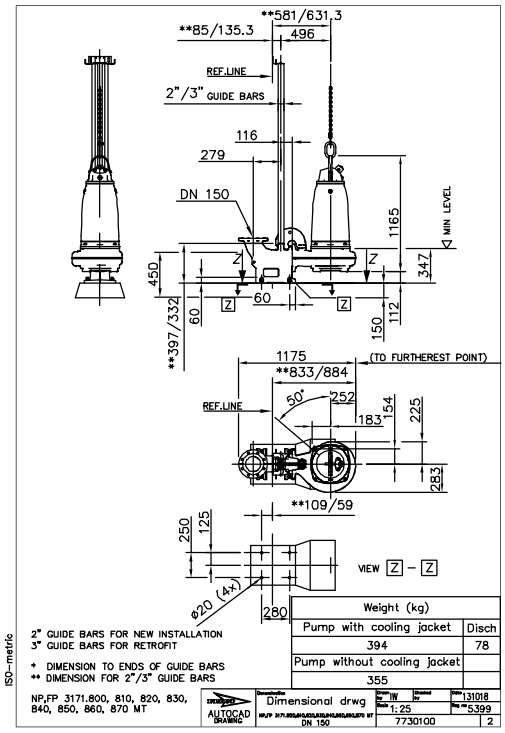


Figure 40: MT, P-installation

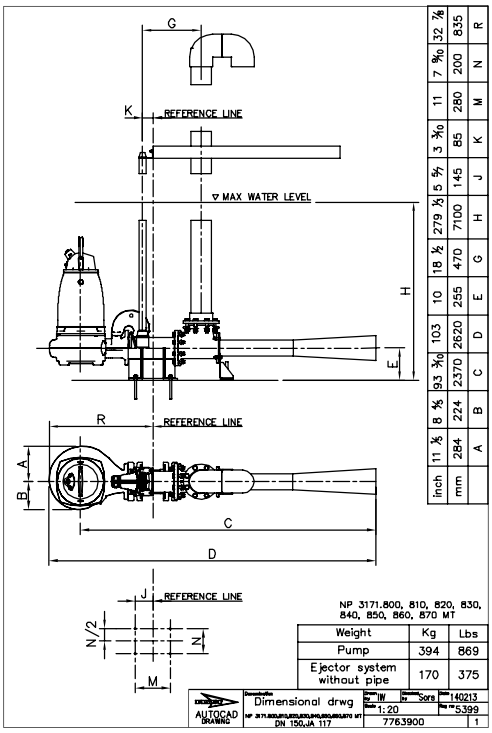


Figure 41: MT, P-installation

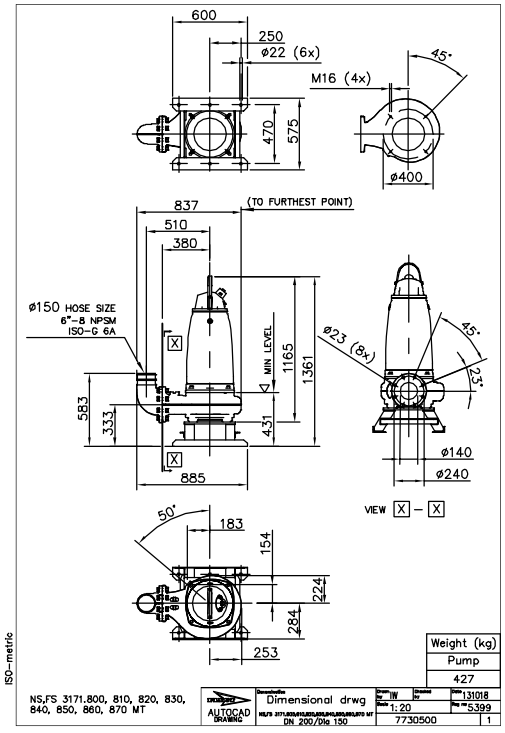


Figure 42: MT, S-installation

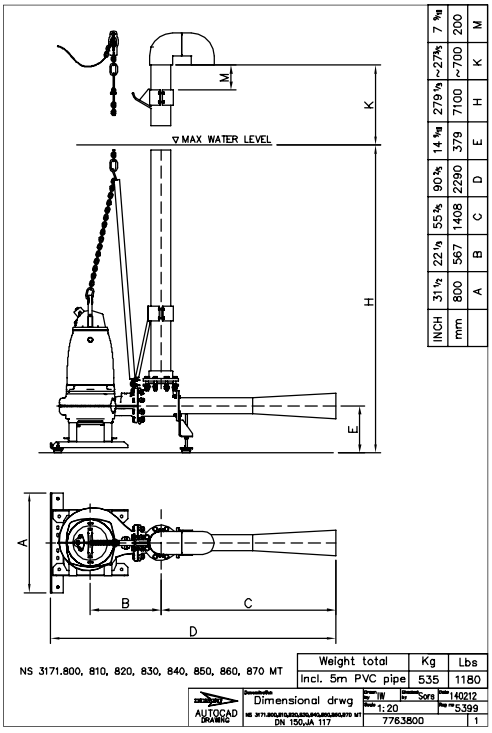


Figure 43: MT, S-installation

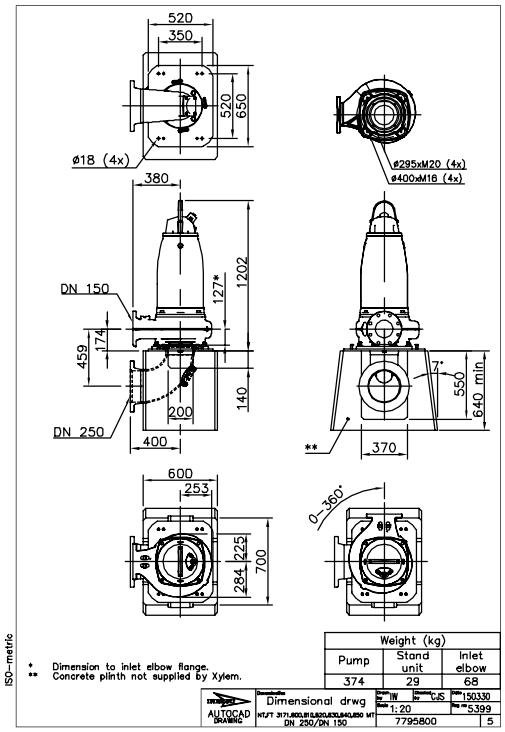
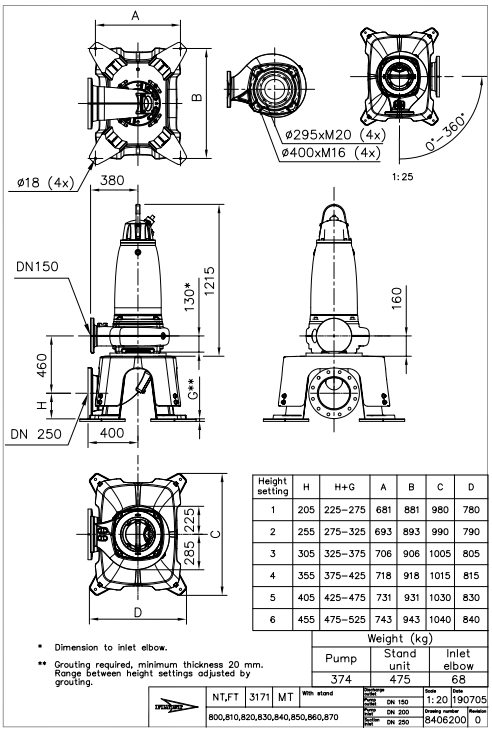


Figure 44: MT, T-installation



Height setting	H	H+G	A	B	C	D
1	205	225–275	681	881	980	780
2	255	275–325	693	893	990	790
3	305	325–375	706	906	1005	805
4	355	375–425	718	918	1015	815
5	405	425–475	731	931	1030	830
6	455	475–525	743	943	1040	840

Figure 45: MT, T-installation

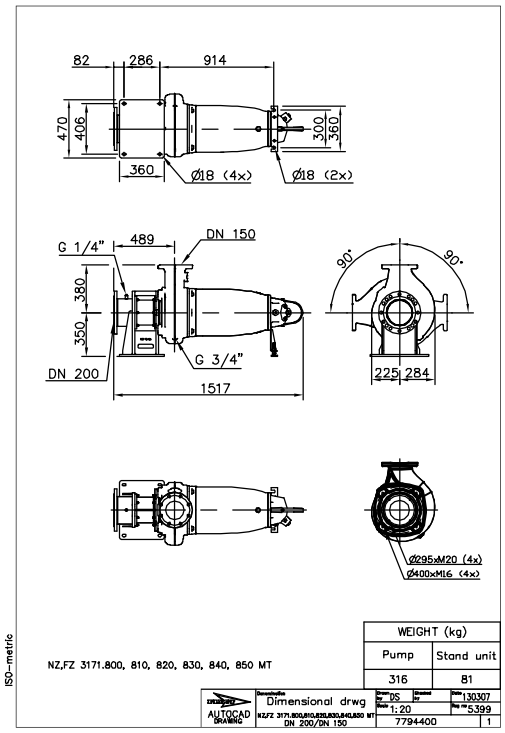


Figure 46: MT, Z-installation

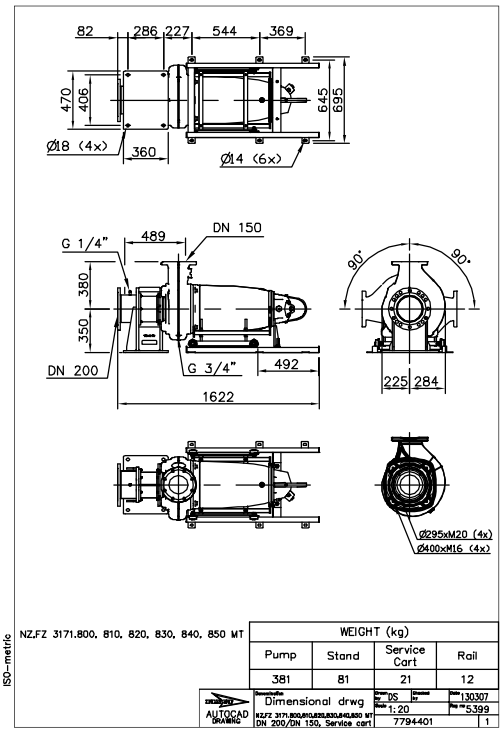


Figure 47: MT, Z-installation

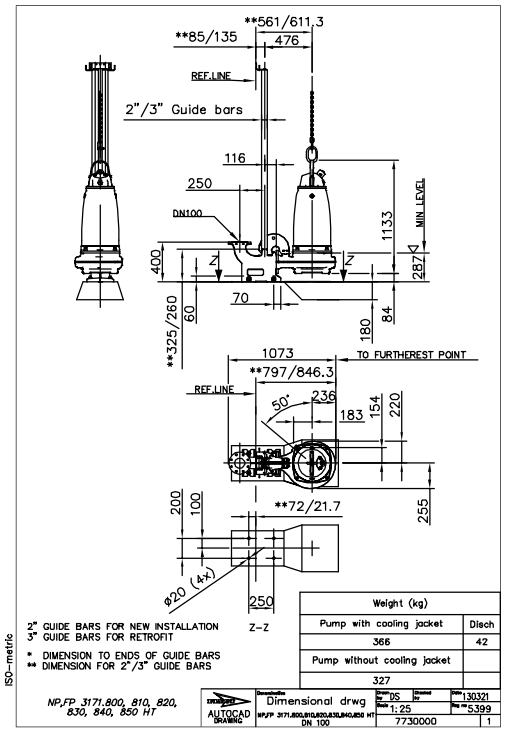


Figure 48: HT, P-installation

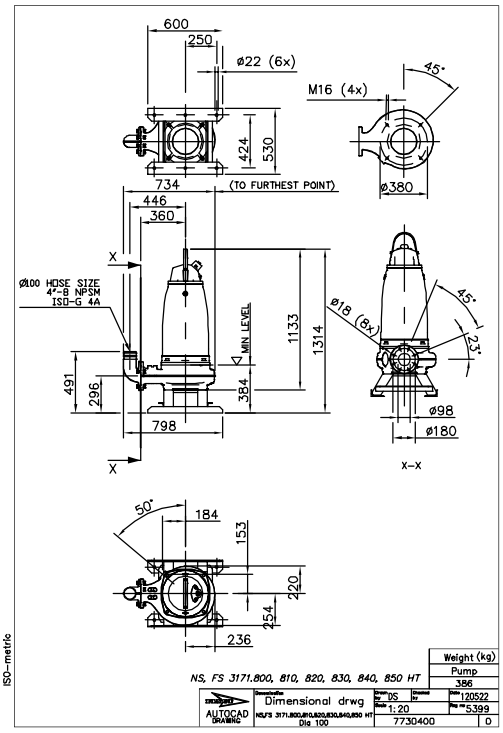


Figure 49: HT, S-installation

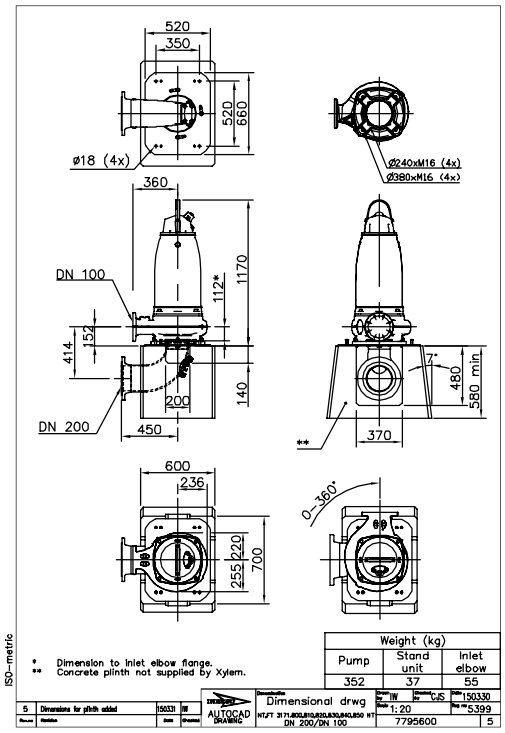
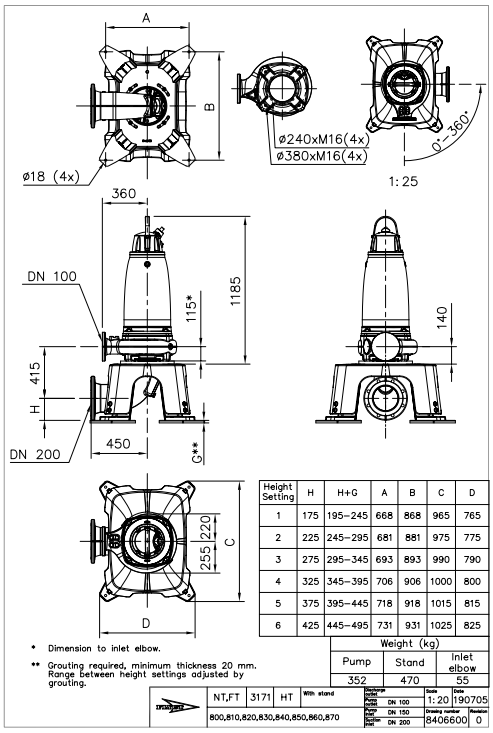


Figure 50: HT, T-installation



Height Setting	H	H+G	A	B	C	D
1	175	195–245	668	868	965	765
2	225	245–295	681	881	975	775
3	275	295–345	693	893	990	790
4	325	345–395	706	906	1000	800
5	375	395–445	718	918	1015	815
6	425	445–495	731	931	1025	825

Figure 51: HT, T-installation

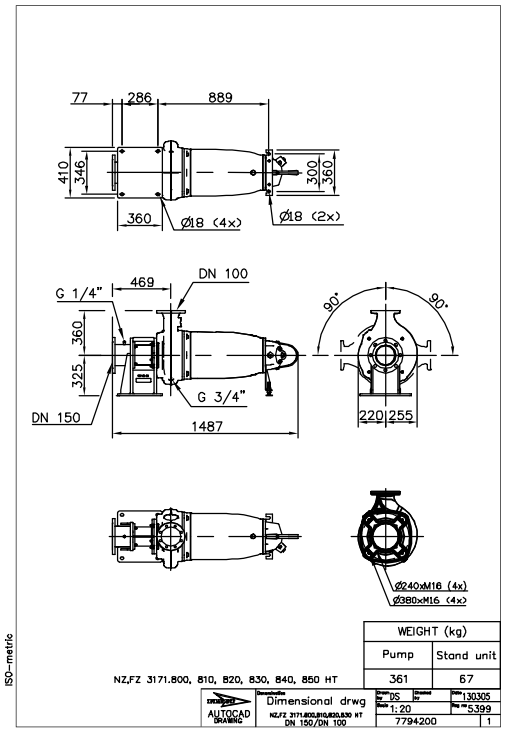


Figure 52: HT, Z-installation

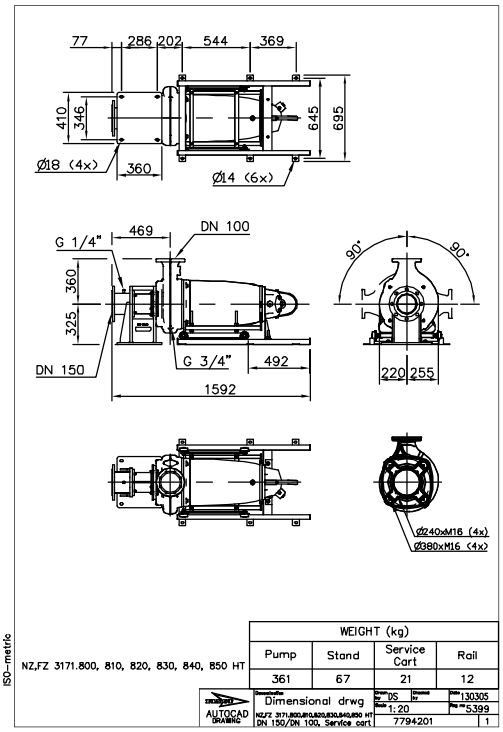


Figure 53: HT, Z-installation

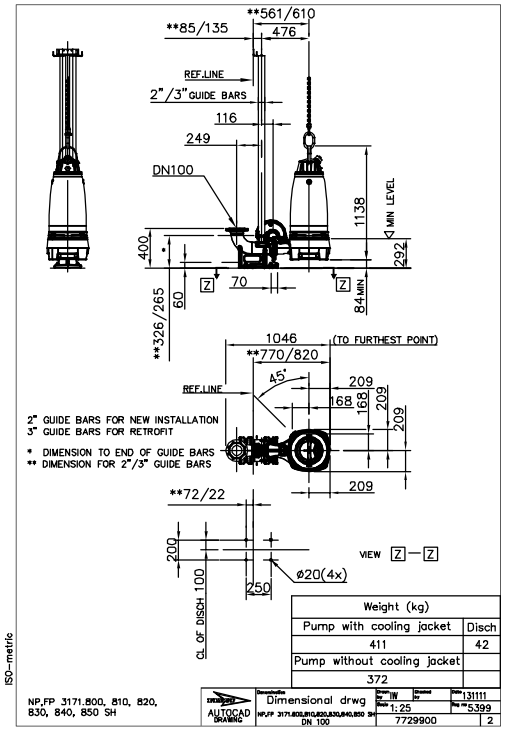


Figure 54: SH, P-installation

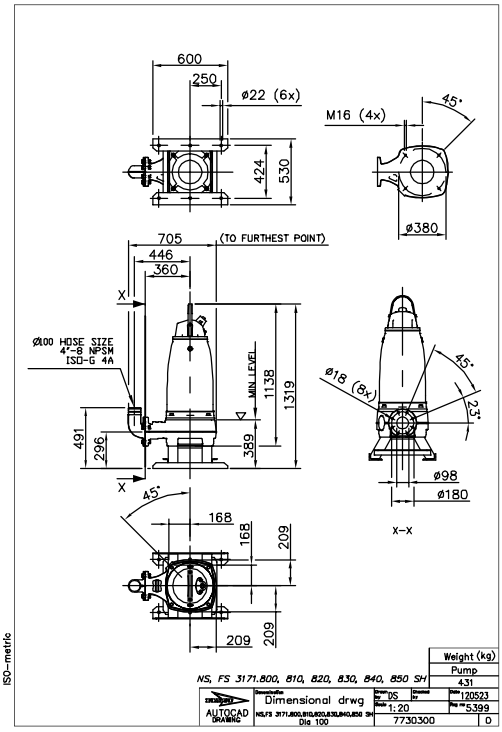


Figure 55: SH, S-installation

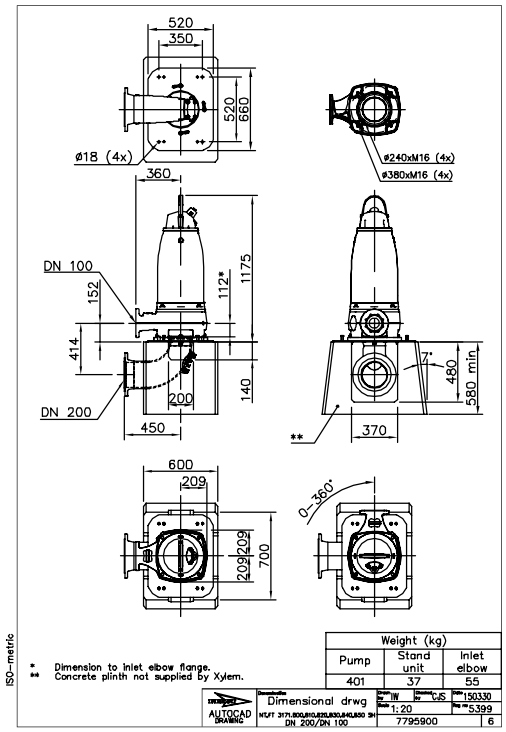


Figure 56: SH, T-installation

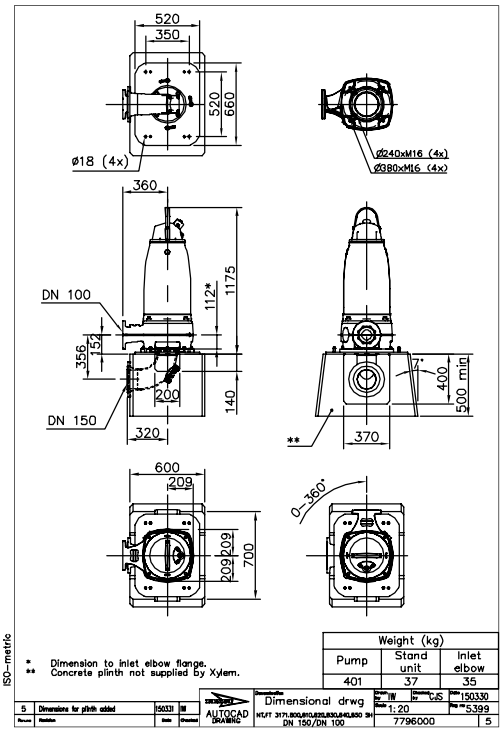


Figure 57: SH, T-installation

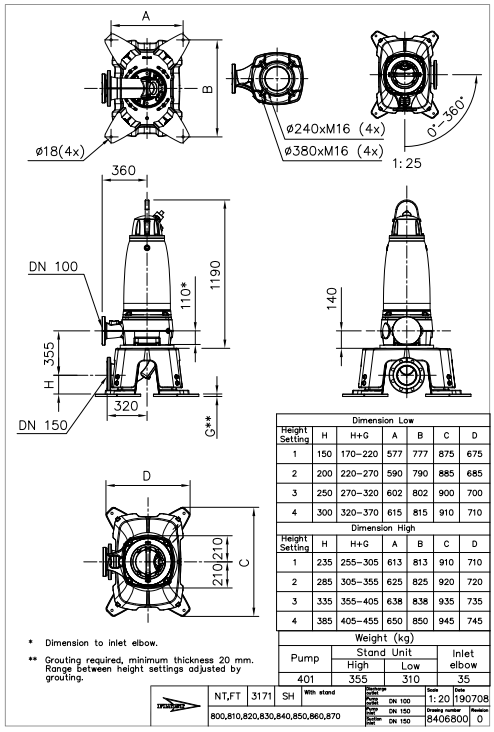


Figure 58: SH, T-installation

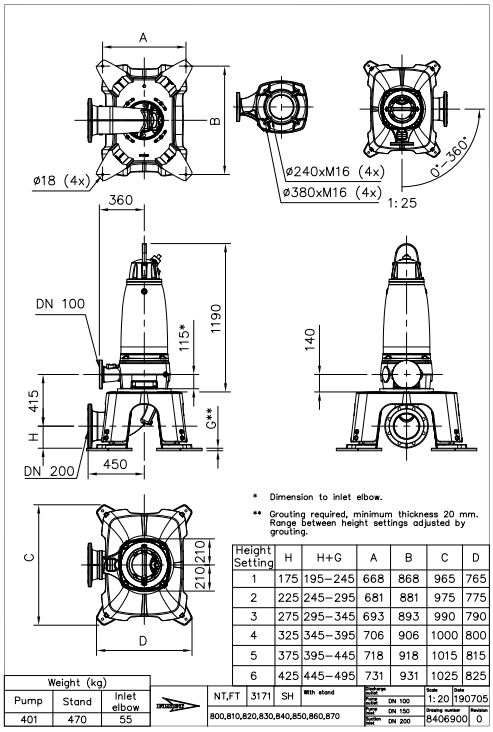


Figure 59: SH, T-installation

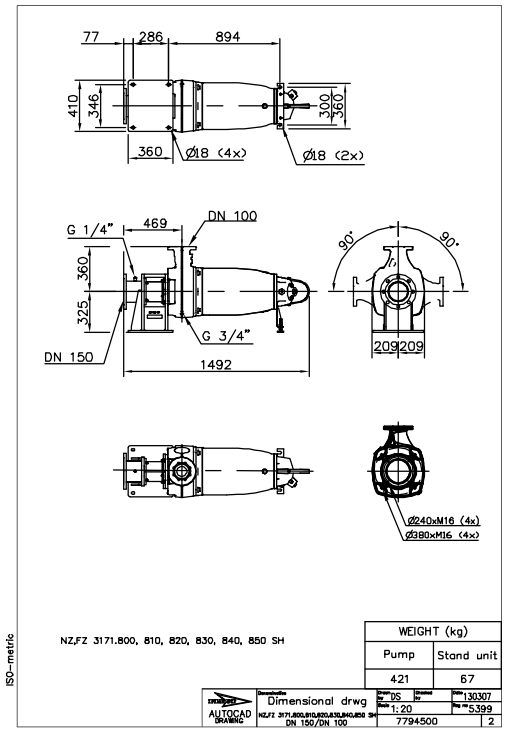


Figure 60: SH, Z-installation

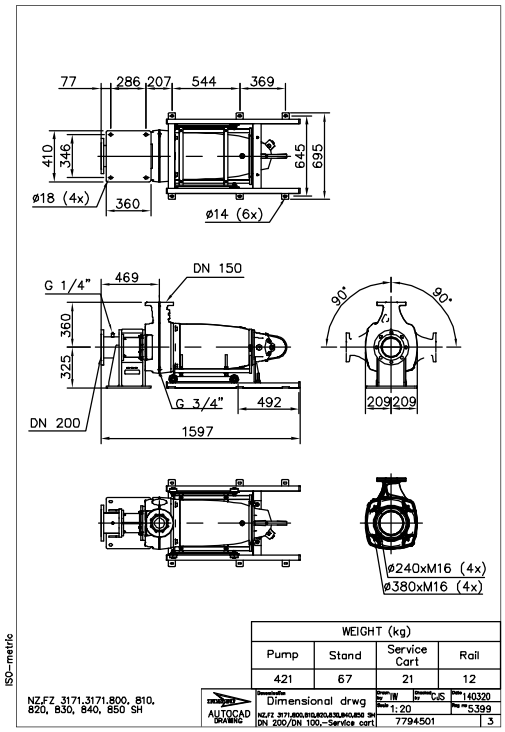


Figure 61: SH, Z-installation

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

xylem
Let’s Solve Water

Xylem Water Solutions Global Services AB 556782-9253
361 80 Emmaboda
Sweden
Tel: +46-471-24 70 00
Fax: +46-471-24 74 01
https://xapps.xyleminc.com/tpi
www.xylemwatersolutions.com/contacts/

Visit our Web site for the latest version of this document and more information

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

883467_8.0_en-US_2023-11_TS_Flygt 3171