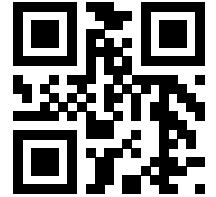




Technical Specification

90018701_1.0



Flygt 3153

50 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	50 Hz
Power supply	3-phase
Starting method	<ul style="list-style-type: none"> • Direct on-line • Star-delta • Variable Frequency Drive (VFD)
Number of starts per hour	Maximum 30
Code compliance	IEC 60034-1
Voltage variation	<ul style="list-style-type: none"> • 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.
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)



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 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

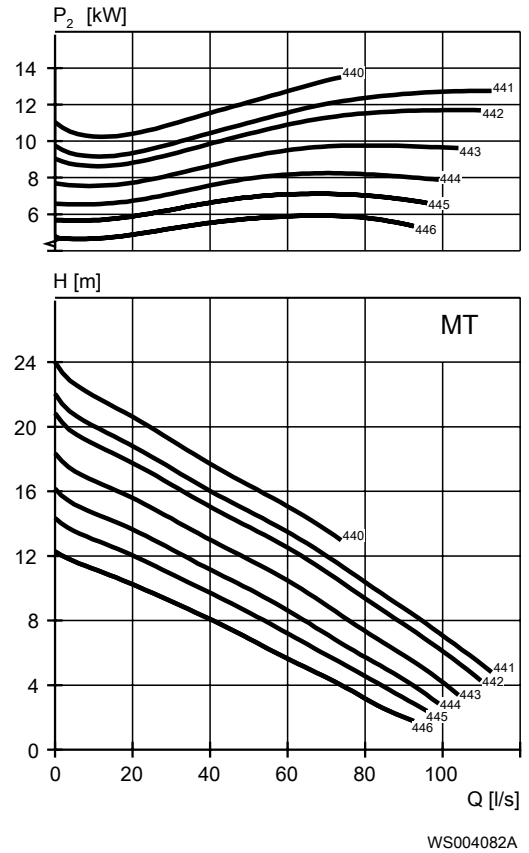
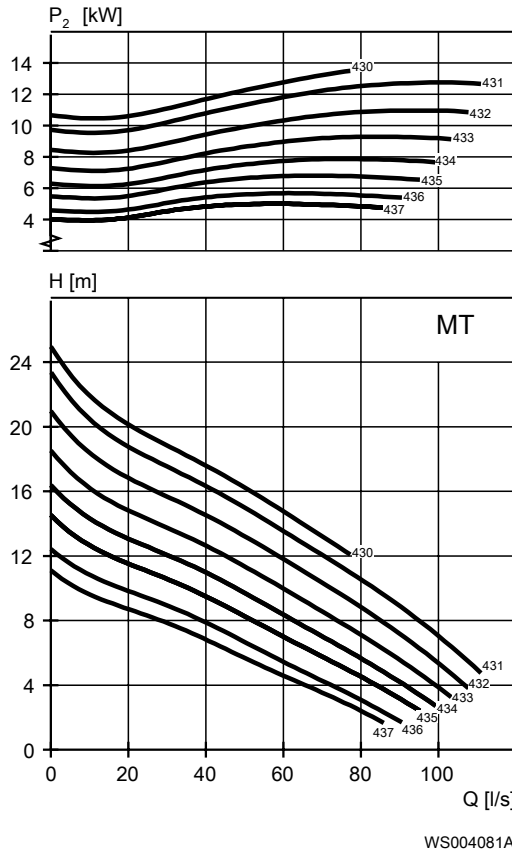


Figure 1: Manure

Figure 2: Long fibrous manure

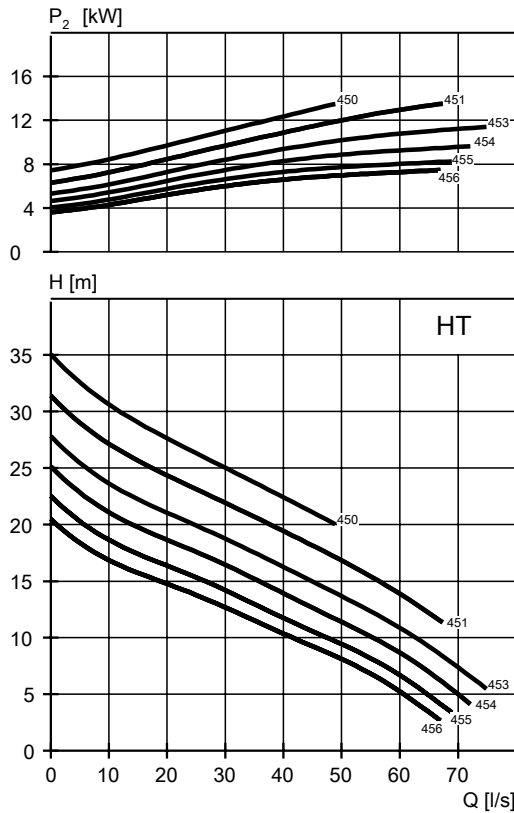
Table 3: 400 V, 50 Hz, 3-phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated current, A	Starting current, A	Power factor, cos φ	Installation
7.5	10.1	435	1465	16	107	0.76	P,S,T,Z
7.5	10.1	436	1465	16	107	0.76	P,S,T,Z
7.5	10.1	437	1465	16	107	0.76	P,S,T,Z
7.5	10.1	445	1465	16	107	0.76	P,S,T,Z
7.5	10.1	446	1465	16	107	0.76	P,S,T,Z
9	12.1	434	1460	19	107	0.8	P,S,T,Z
9	12.1	435	1460	19	107	0.8	P,S,T,Z
9	12.1	436	1460	19	107	0.8	P,S,T,Z
9	12.1	437	1460	19	107	0.8	P,S,T,Z
9	12.1	444	1460	19	107	0.8	P,S,T,Z
9	12.1	445	1460	19	107	0.8	P,S,T,Z
9	12.1	446	1460	19	107	0.8	P,S,T,Z
13.5	18.1	430	1455	27	145	0.82	P,S,T,Z
13.5	18.1	431	1455	27	145	0.82	P,S,T,Z
13.5	18.1	432	1455	27	145	0.82	P,S,T,Z
13.5	18.1	433	1455	27	145	0.82	P,S,T,Z
13.5	18.1	434	1455	27	145	0.82	P,S,T,Z



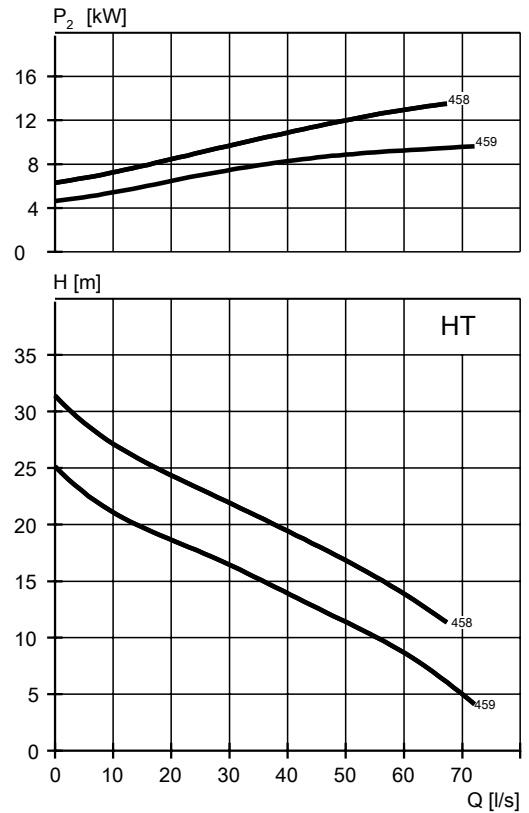
Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated current, A	Starting current, A	Power factor, cos φ	Installation
13.5	18.1	435	1455	27	145	0.82	P,S,T,Z
13.5	18.1	436	1455	27	145	0.82	P,S,T,Z
13.5	18.1	437	1455	27	145	0.82	P,S,T,Z
13.5	18.1	440	1455	27	145	0.82	P,S,T,Z
13.5	18.1	441	1455	27	145	0.82	P,S,T,Z
13.5	18.1	442	1455	27	145	0.82	P,S,T,Z
13.5	18.1	443	1455	27	145	0.82	P,S,T,Z
13.5	18.1	444	1455	27	145	0.82	P,S,T,Z
13.5	18.1	445	1455	27	145	0.82	P,S,T,Z
13.5	18.1	446	1455	27	145	0.82	P,S,T,Z

HT



WS004083B

Figure 3: Manure



WS008522A

Figure 4: Long fibrous manure

Table 4: 400 V, 50 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
7.5	10.1	456	1465	16	107	0.76	P,S,T,Z
9	12.1	454	1460	19	107	0.8	P,S,T,Z
9	12.1	455	1460	19	107	0.8	P,S,T,Z
9	12.1	456	1460	19	107	0.8	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
9	12.1	459	1460	19	107	0.8	P,S,T,Z
13.5	18.1	450	1455	27	145	0.82	P,S,T,Z
13.5	18.1	451	1455	27	145	0.82	P,S,T,Z
13.5	18.1	453	1455	27	145	0.82	P,S,T,Z
13.5	18.1	454	1455	27	145	0.82	P,S,T,Z
13.5	18.1	455	1455	27	145	0.82	P,S,T,Z
13.5	18.1	456	1455	27	145	0.82	P,S,T,Z
13.5	18.1	458	1455	27	145	0.82	P,S,T,Z
13.5	18.1	459	1455	27	145	0.82	P,S,T,Z

SH

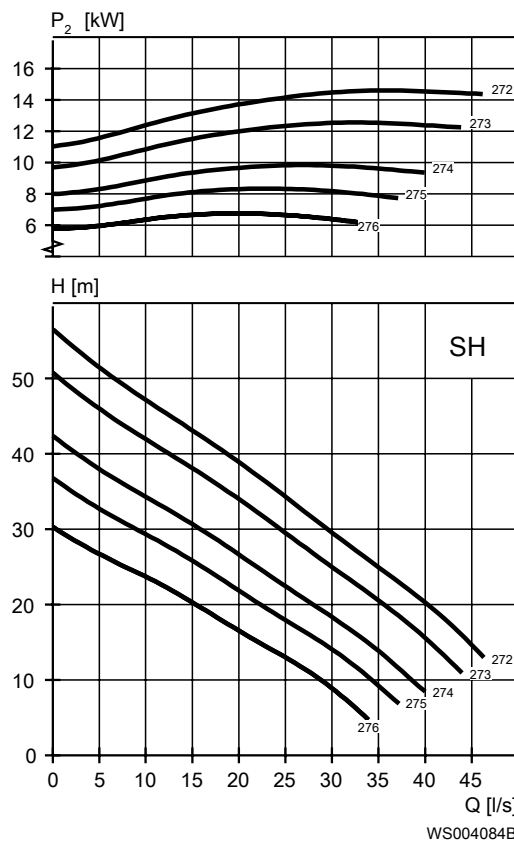


Figure 5: Manure

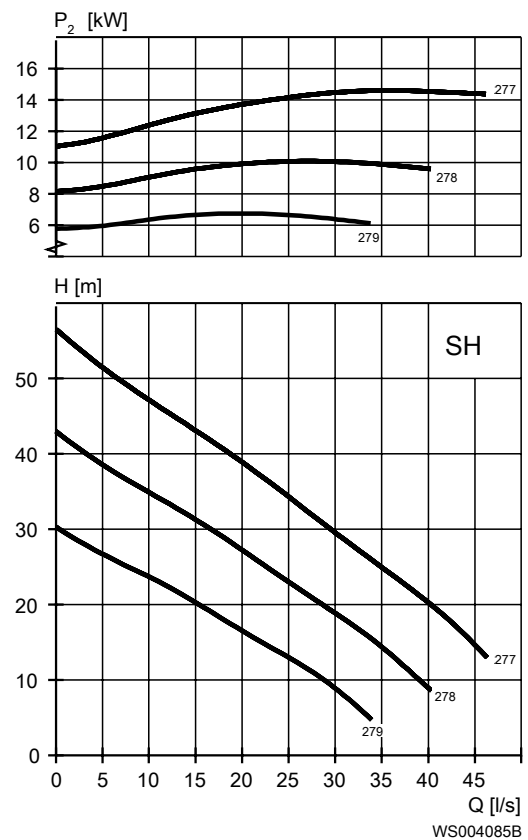


Figure 6: Long fibrous manure

Table 5: 400 V, 50 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	14.8	273	2905	19	139	0.94	P,S,T,Z
11	14.8	274	2905	19	139	0.94	P,S,T,Z
11	14.8	275	2905	19	139	0.94	P,S,T,Z
11	14.8	276	2905	19	139	0.94	P,S,T,Z
11	14.8	278	2905	19	139	0.94	P,S,T,Z
11	14.8	279	2905	19	139	0.94	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
15	20	272	2910	27	213	0.89	P,S,T,Z
15	20	273	2910	27	213	0.89	P,S,T,Z
15	20	274	2910	27	213	0.89	P,S,T,Z
15	20	275	2910	27	213	0.89	P,S,T,Z
15	20	276	2910	27	213	0.89	P,S,T,Z
15	20	277	2910	27	213	0.89	P,S,T,Z
15	20	278	2910	27	213	0.89	P,S,T,Z
15	20	279	2910	27	213	0.89	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 motor (LSPM) Squirrel-cage induction motor
Frequency	50 Hz
Power supply	3-phase
Starting method	<ul style="list-style-type: none"> • Direct on-line • Star-delta • Variable Frequency Drive (VFD)
Number of starts per hour	Maximum 30
Code compliance	IEC 60034-1
Voltage variation	<ul style="list-style-type: none"> • 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.
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)



Denomination	Material	ASTM	EN
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 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

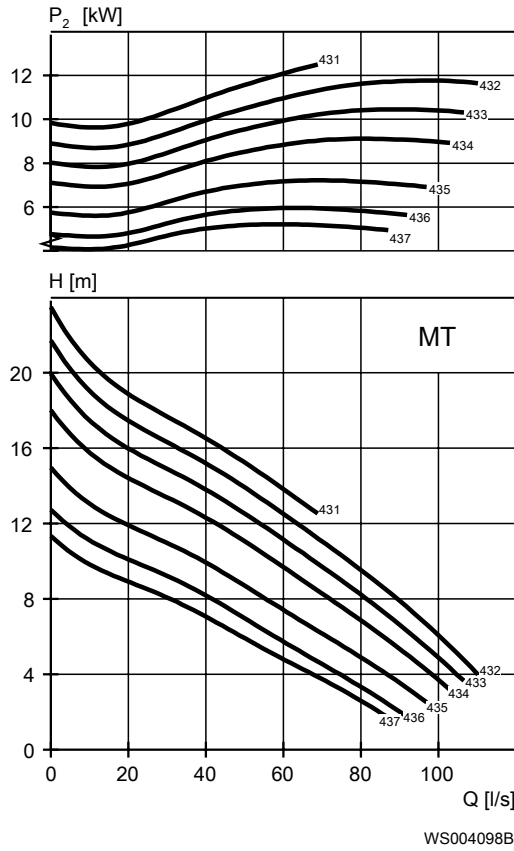


Figure 7: Manure

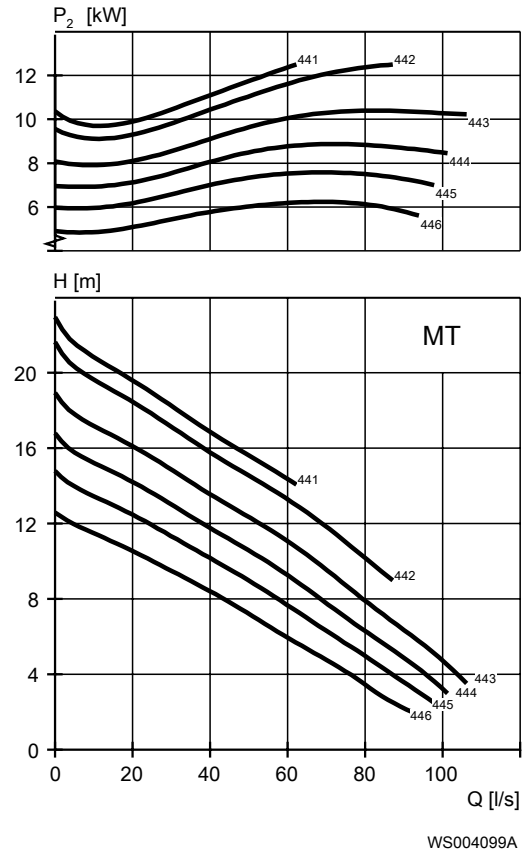


Figure 8: Long fibrous manure

Table 8: 400 V, 50 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
12.5	16.8	431	1500	21	145	0.95	P,S,T,Z
12.5	16.8	432	1500	21	145	0.95	P,S,T,Z
12.5	16.8	433	1500	21	145	0.95	P,S,T,Z
12.5	16.8	434	1500	21	145	0.95	P,S,T,Z
12.5	16.8	435	1500	21	145	0.95	P,S,T,Z
12.5	16.8	436	1500	21	145	0.95	P,S,T,Z
12.5	16.8	437	1500	21	145	0.95	P,S,T,Z
12.5	16.8	441	1500	21	145	0.95	P,S,T,Z
12.5	16.8	442	1500	21	145	0.95	P,S,T,Z
12.5	16.8	443	1500	21	145	0.95	P,S,T,Z
12.5	16.8	444	1500	21	145	0.95	P,S,T,Z
12.5	16.8	445	1500	21	145	0.95	P,S,T,Z
12.5	16.8	446	1500	21	145	0.95	P,S,T,Z

HT

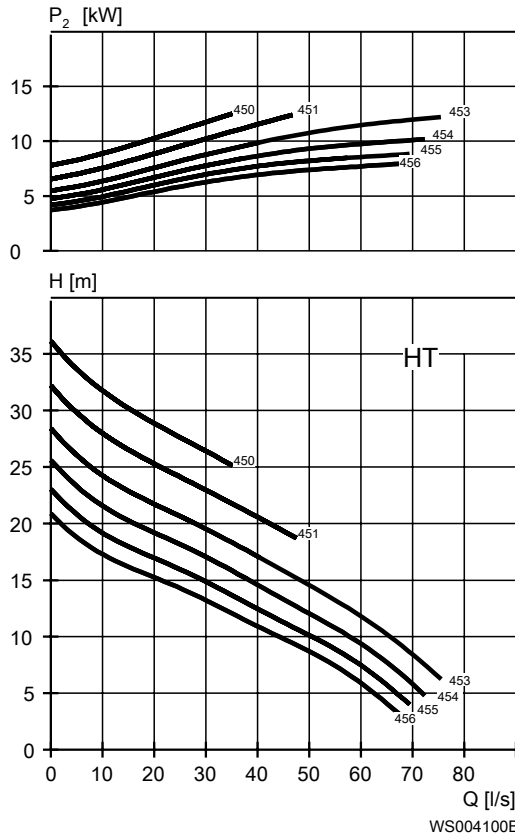


Figure 9: Manure

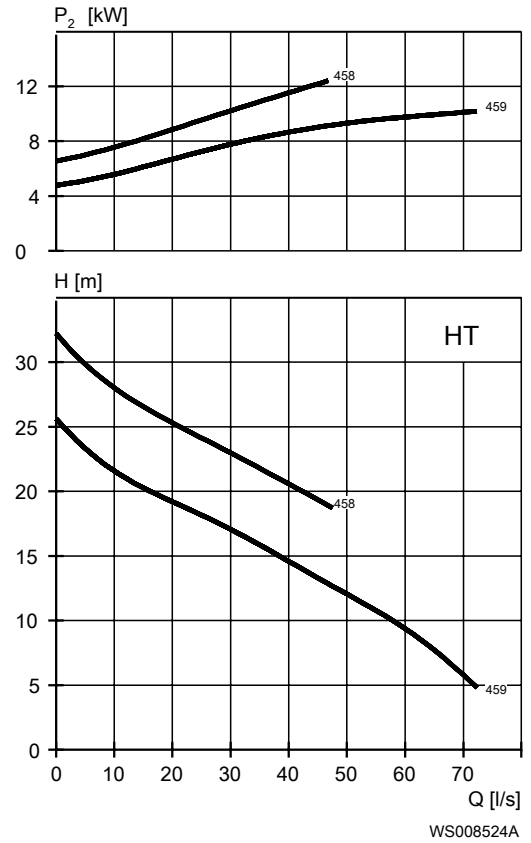


Figure 10: Long fibrous manure

Table 9: 400 V, 50 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
12.5	16.8	450	1500	21	145	0.95	P,S,T,Z
12.5	16.8	451	1500	21	145	0.95	P,S,T,Z
12.5	16.8	453	1500	21	145	0.95	P,S,T,Z
12.5	16.8	454	1500	21	145	0.95	P,S,T,Z
12.5	16.8	455	1500	21	145	0.95	P,S,T,Z
12.5	16.8	456	1500	21	145	0.95	P,S,T,Z
12.5	16.8	458	1500	21	145	0.95	P,S,T,Z
12.5	16.8	459	1500	21	145	0.95	P,S,T,Z

SH

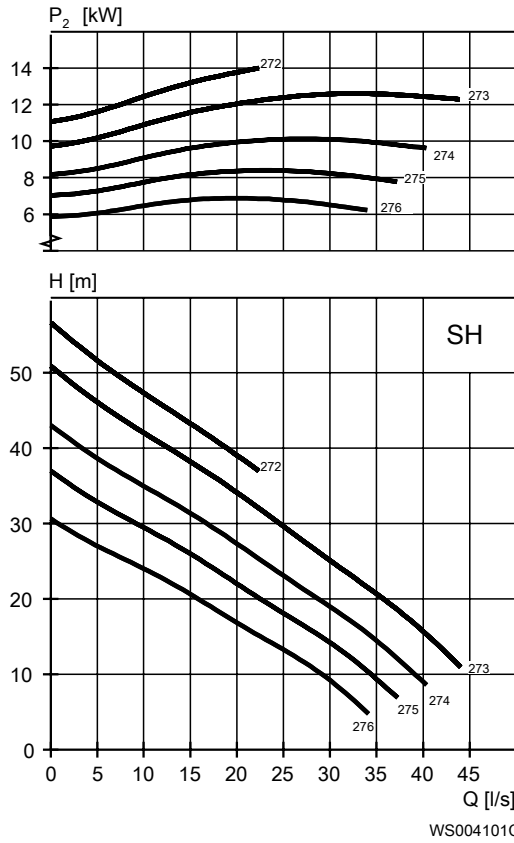


Figure 11: Manure

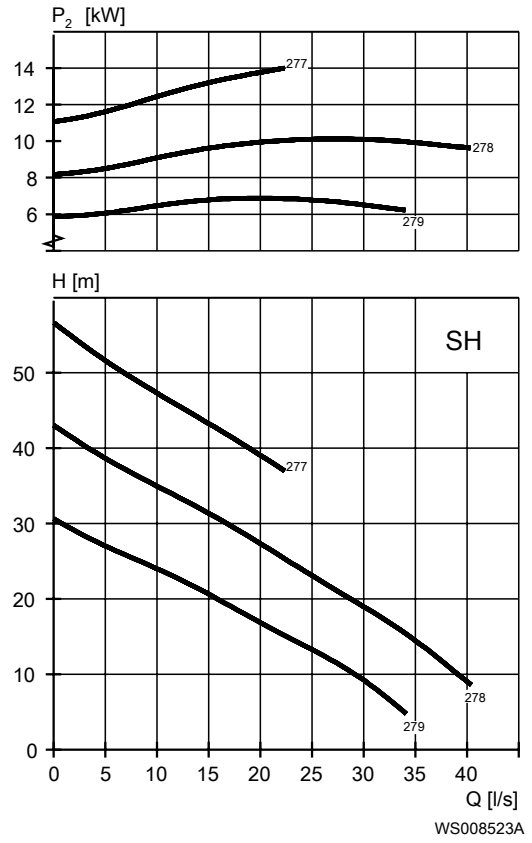


Figure 12: Long fibrous manure

Table 10: 400 V, 50 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
11	14.8	273	2915	19	147	0.93	P,S,T,Z
11	14.8	274	2915	19	147	0.93	P,S,T,Z
11	14.8	275	2915	19	147	0.93	P,S,T,Z
11	14.8	276	2915	19	147	0.93	P,S,T,Z
11	14.8	278	2915	19	147	0.93	P,S,T,Z
11	14.8	279	2915	19	147	0.93	P,S,T,Z
14	18.8	272	2925	25	214	0.88	P,S,T,Z
14	18.8	273	2925	25	214	0.88	P,S,T,Z
14	18.8	274	2925	25	214	0.88	P,S,T,Z
14	18.8	275	2925	25	214	0.88	P,S,T,Z
14	18.8	276	2925	25	214	0.88	P,S,T,Z
14	18.8	277	2925	25	214	0.88	P,S,T,Z
14	18.8	278	2925	25	214	0.88	P,S,T,Z
14	18.8	279	2925	25	214	0.88	P,S,T,Z

3 N-pump, Standard Motor



3.1 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	MT – Medium head HT – High head	P, S

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



Motor data

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

Feature	Description
Motor type	Squirrel-cage induction motor
Frequency	50 Hz
Power supply	3-phase
Starting method	<ul style="list-style-type: none"> • Direct on-line • Star-delta • Variable Frequency Drive (VFD)
Number of starts per hour	Maximum 30
Code compliance	IEC 60034-1
Voltage variation	<ul style="list-style-type: none"> • 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, 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 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

- 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

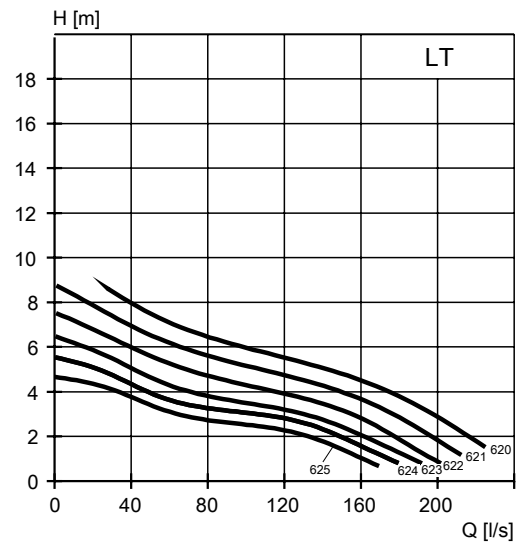
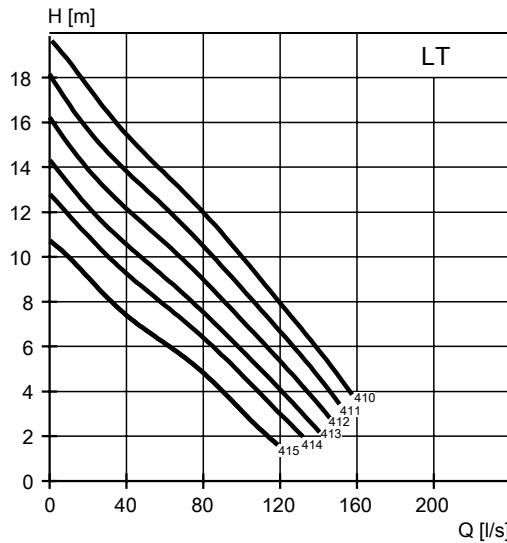
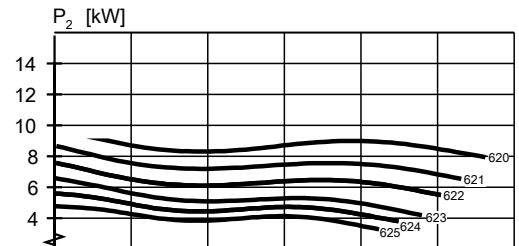
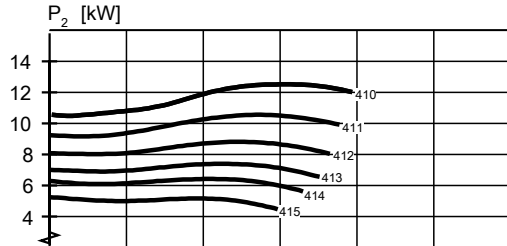
Electrical accessories such as pump controller, control panels, starters, monitoring relays, cables

3.2 Motor rating and performance curves 3153.182/.091/.185/.095

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

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

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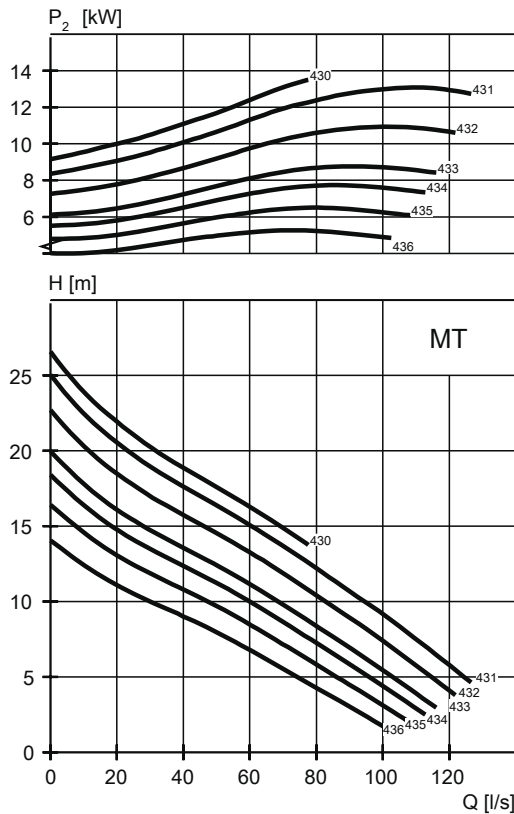
Table 13: 400 V, 50 Hz, 3-phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated current, A	Starting current, A	Power factor, cos φ	Installation
7.5	10.1	413	1465	16	107	0.76	P,S,T,Z
7.5	10.1	414	1465	16	107	0.76	P,S,T,Z
7.5	10.1	415	1465	16	107	0.76	P,S,T,Z
9	12.1	412	1460	19	107	0.8	P,S,T,Z
9	12.1	413	1460	19	107	0.8	P,S,T,Z
9	12.1	414	1460	19	107	0.8	P,S,T,Z
9	12.1	415	1460	19	107	0.8	P,S,T,Z
9	12.1	620	955	21	90	0.72	P,S,T,Z
9	12.1	620	955	21	90	0.72	P,S,T,Z
9	12.1	622	955	21	90	0.72	P,S,T,Z
9	12.1	623	955	21	90	0.72	P,S,T,Z
9	12.1	624	955	21	90	0.72	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
9	12.1	625	955	21	90	0.72	P,S,T,Z
13.5	18.1	410	1455	27	145	0.82	P,S,T,Z
13.5	18.1	411	1455	27	145	0.82	P,S,T,Z
13.5	18.1	412	1455	27	145	0.82	P,S,T,Z
13.5	18.1	413	1455	27	145	0.82	P,S,T,Z
13.5	18.1	414	1455	27	145	0.82	P,S,T,Z
13.5	18.1	415	1455	27	145	0.82	P,S,T,Z

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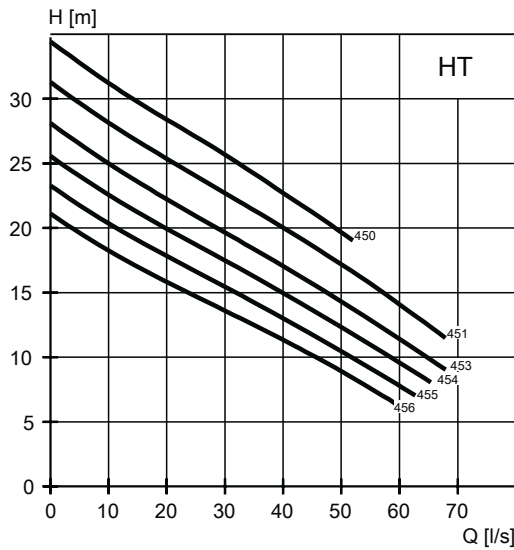
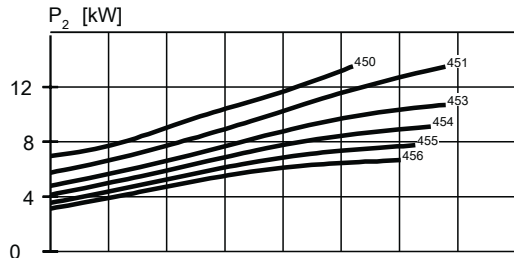
Table 14: 400 V, 50 Hz, 3-phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated current, A	Starting current, A	Power factor, cos ϕ	Installation
7.5	10.1	435	1465	16	107	0.76	P,S,T,Z
7.5	10.1	436	1465	16	107	0.76	P,S,T,Z
9	12.1	433	1460	19	107	0.8	P,S,T,Z
9	12.1	434	1460	19	107	0.8	P,S,T,Z
9	12.1	435	1460	19	107	0.8	P,S,T,Z
9	12.1	436	1460	19	107	0.8	P,S,T,Z
13.5	18.1	430	1455	27	145	0.82	P,S,T,Z
13.5	18.1	431	1455	27	145	0.82	P,S,T,Z
13.5	18.1	432	1455	27	145	0.82	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
13.5	18.1	433	1455	27	145	0.82	P,S,T,Z
13.5	18.1	434	1455	27	145	0.82	P,S,T,Z
13.5	18.1	435	1455	27	145	0.82	P,S,T,Z
13.5	18.1	436	1455	27	145	0.82	P,S,T,Z

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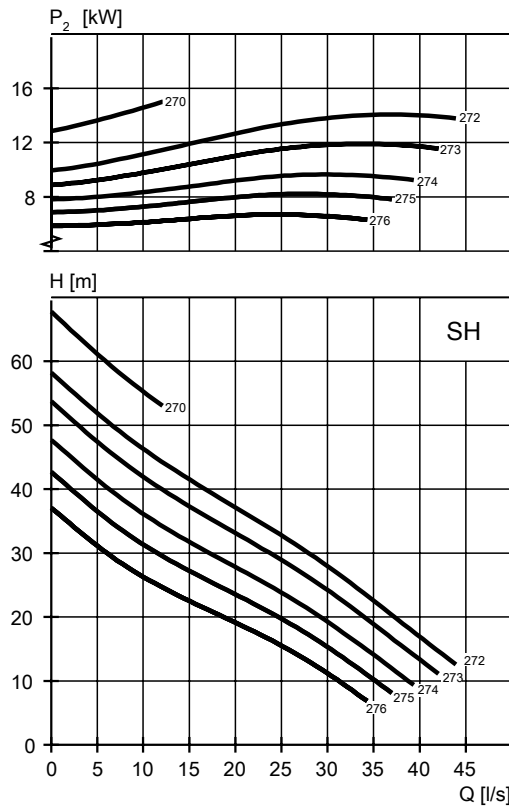
Table 15: 400 V, 50 Hz, 3-phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated current, A	Starting current, A	Power factor, cos φ	Installation
7.5	10.1	451	1465	16	107	0.76	P,S,T,Z
7.5	10.1	453	1465	16	107	0.76	P,S,T,Z
7.5	10.1	454	1465	16	107	0.76	P,S,T,Z
7.5	10.1	455	1465	16	107	0.76	P,S,T,Z
7.5	10.1	456	1465	16	107	0.76	P,S,T,Z
9	12.1	450	1460	19	107	0.8	P,S,T,Z
9	12.1	451	1460	19	107	0.8	P,S,T,Z
9	12.1	453	1460	19	107	0.8	P,S,T,Z
9	12.1	454	1460	19	107	0.8	P,S,T,Z
9	12.1	455	1460	19	107	0.8	P,S,T,Z
9	12.1	456	1460	19	107	0.8	P,S,T,Z
13.5	18.1	450	1455	27	145	0.82	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
13.5	18.1	451	1455	27	145	0.82	P,S,T,Z
13.5	18.1	453	1455	27	145	0.82	P,S,T,Z
13.5	18.1	454	1455	27	145	0.82	P,S,T,Z
13.5	18.1	455	1455	27	145	0.82	P,S,T,Z
13.5	18.1	456	1455	27	145	0.82	P,S,T,Z

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Table 16: 400 V, 50 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	14.8	273	2905	19	139	0.94	P,S,T,Z
11	14.8	274	2905	19	139	0.94	P,S,T,Z
11	14.8	275	2905	19	139	0.94	P,S,T,Z
11	14.8	276	2905	19	139	0.94	P,S,T,Z
15	20	270	2910	27	213	0.89	P,S,T,Z
15	20	271	2910	27	213	0.89	P,S,T,Z
15	20	272	2910	27	213	0.89	P,S,T,Z
15	20	273	2910	27	213	0.89	P,S,T,Z
15	20	274	2910	27	213	0.89	P,S,T,Z
15	20	275	2910	27	213	0.89	P,S,T,Z
15	20	276	2910	27	213	0.89	P,S,T,Z

3.3 Motor rating and performance curves 3153.660/.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.

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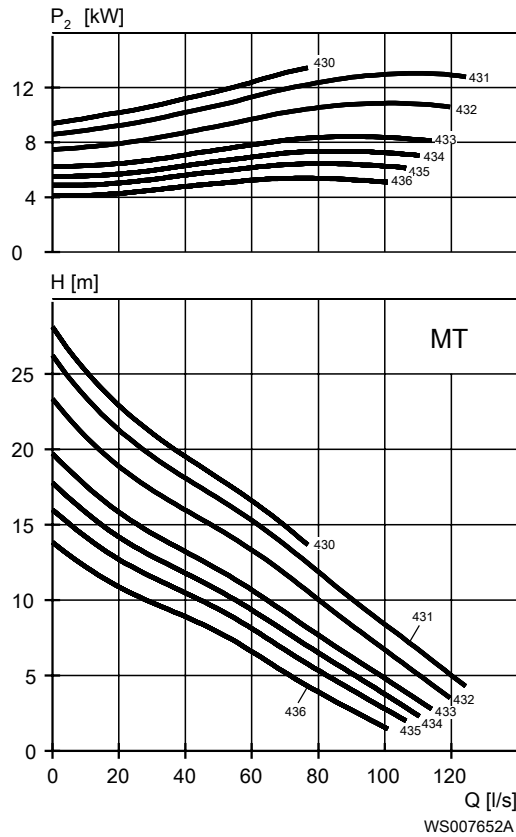


Table 17: 400 V, 50 Hz, 3-phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated Current, A	Start current, A	Power Factor, cos φ	Installation
7.5	10.1	434	1465	16	107	0.76	P,S
7.5	10.1	435	1465	16	107	0.76	P,S
7.5	10.1	436	1465	16	107	0.76	P,S
9	12.1	433	1460	19	107	0.8	P,S
9	12.1	434	1460	19	107	0.8	P,S
9	12.1	435	1460	19	107	0.8	P,S
9	12.1	436	1460	19	107	0.8	P,S
13.5	18.1	430	1455	27	145	0.82	P,S
13.5	18.1	431	1455	27	145	0.82	P,S
13.5	18.1	432	1455	27	145	0.82	P,S
13.5	18.1	433	1455	27	145	0.82	P,S
13.5	18.1	434	1455	27	145	0.82	P,S
13.5	18.1	435	1455	27	145	0.82	P,S
13.5	18.1	436	1455	27	145	0.82	P,S

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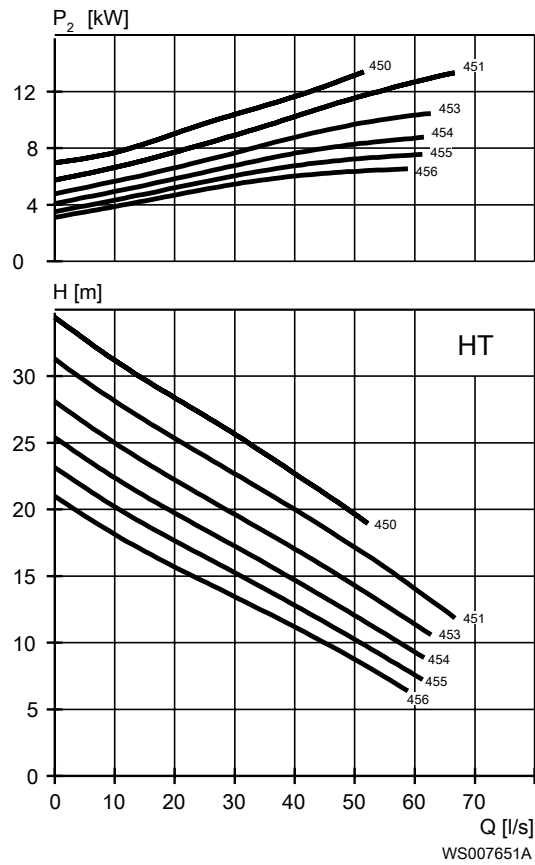


Table 18: 400 V, 50 Hz, 3-phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated Current, A	Start current, A	Power Factor, cos φ	Installation
7.5	10.1	456	1465	16	107	0.76	P,S
9	12.1	454	1460	19	107	0.8	P,S
9	12.1	455	1460	19	107	0.8	P,S
9	12.1	456	1460	19	107	0.8	P,S
13.5	18.1	450	1455	27	145	0.82	P,S
13.5	18.1	451	1455	27	145	0.82	P,S
13.5	18.1	453	1455	27	145	0.82	P,S
13.5	18.1	454	1455	27	145	0.82	P,S
13.5	18.1	455	1455	27	145	0.82	P,S
13.5	18.1	456	1455	27	145	0.82	P,S

4 N-pump, Premium Efficiency Motor (IE3)

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	3153.800	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	MT – Medium head HT – High head	P, S

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 motor (LSPM) Squirrel-cage induction motor
Frequency	50 Hz
Power supply	3-phase
Starting method	<ul style="list-style-type: none"> • Direct on-line • Star-delta • Variable Frequency Drive (VFD)
Number of starts per hour	Maximum 30
Code compliance	IEC 60034-1
Voltage variation	<ul style="list-style-type: none"> • 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.
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 19: 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 20: 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

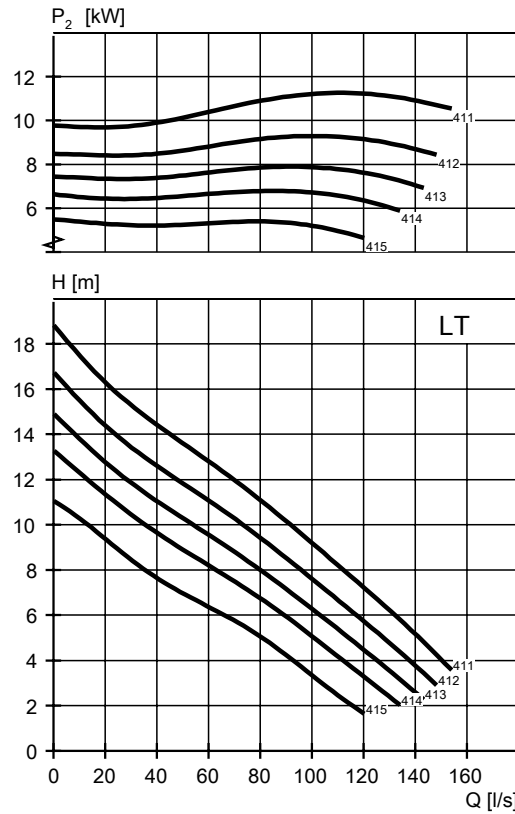
Discharge connections, adapters, hose connections, and other mechanical accessories
Electrical accessories such as pump controller, control panels, starters, monitoring relays, cables

4.2 Motor rating and performance curves 3153.800/.810/.820/.830

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



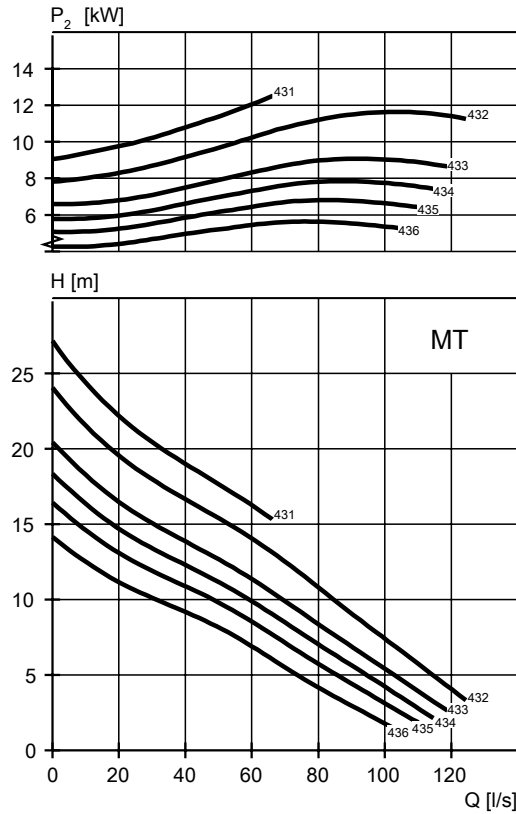
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Table 21: 400 V, 50 Hz, 3-phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated Current, A	Start current, A	Power Factor, $\cos \phi$	Installation
8.5	11.4	413	1500	14	107	0.98	P,S,T,Z
8.5	11.4	414	1500	14	107	0.98	P,S,T,Z
8.5	11.4	415	1500	14	107	0.98	P,S,T,Z
10	13.4	412	1500	16	107	0.98	P,S,T,Z
10	13.4	413	1500	16	107	0.98	P,S,T,Z
10	13.4	414	1500	16	107	0.98	P,S,T,Z
10	13.4	415	1500	16	107	0.98	P,S,T,Z
12.5	16.8	411	1500	21	145	0.95	P,S,T,Z
12.5	16.8	412	1500	21	145	0.95	P,S,T,Z
12.5	16.8	413	1500	21	145	0.95	P,S,T,Z
12.5	16.8	414	1500	21	145	0.95	P,S,T,Z
12.5	16.8	415	1500	21	145	0.95	P,S,T,Z



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Table 22: 400 V, 50 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
8.5	11.4	433	1500	14	107	0.98	P,S,T,Z
8.5	11.4	434	1500	14	107	0.98	P,S,T,Z
8.5	11.4	435	1500	14	107	0.98	P,S,T,Z
8.5	11.4	436	1500	14	107	0.98	P,S,T,Z
10	13.4	433	1500	16	107	0.98	P,S,T,Z
10	13.4	434	1500	16	107	0.98	P,S,T,Z
10	13.4	435	1500	16	107	0.98	P,S,T,Z
10	13.4	436	1500	16	107	0.98	P,S,T,Z
12.5	16.8	431	1500	21	145	0.95	P,S,T,Z
12.5	16.8	432	1500	21	145	0.95	P,S,T,Z
12.5	16.8	433	1500	21	145	0.95	P,S,T,Z
12.5	16.8	434	1500	21	145	0.95	P,S,T,Z
12.5	16.8	435	1500	21	145	0.95	P,S,T,Z
12.5	16.8	436	1500	21	145	0.95	P,S,T,Z

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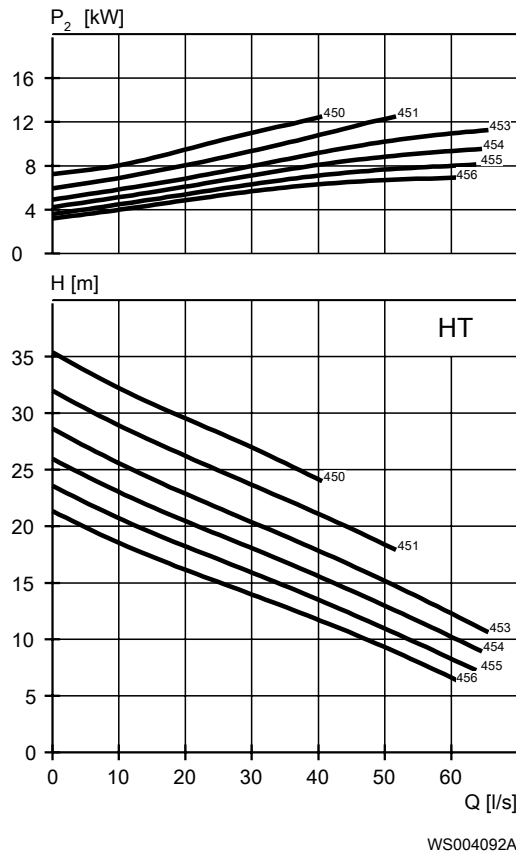
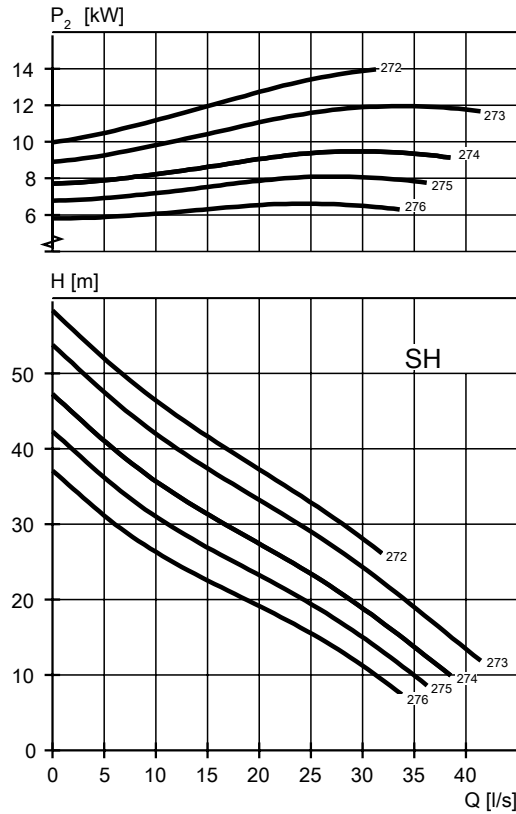


Table 23: 400 V, 50 Hz, 3-phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated Current, A	Start current, A	Power Factor, cos φ	Installation
8.5	11.4	451	1500	14	107	0.98	P,S,T,Z
8.5	11.4	453	1500	14	107	0.98	P,S,T,Z
8.5	11.4	454	1500	14	107	0.98	P,S,T,Z
8.5	11.4	455	1500	14	107	0.98	P,S,T,Z
8.5	11.4	456	1500	14	107	0.98	P,S,T,Z
10	13.4	450	1500	16	107	0.98	P,S,T,Z
10	13.4	451	1500	16	107	0.98	P,S,T,Z
10	13.4	453	1500	16	107	0.98	P,S,T,Z
10	13.4	454	1500	16	107	0.98	P,S,T,Z
10	13.4	455	1500	16	107	0.98	P,S,T,Z
10	13.4	456	1500	16	107	0.98	P,S,T,Z
12.5	16.8	450	1500	21	145	0.95	P,S,T,Z
12.5	16.8	451	1500	21	145	0.95	P,S,T,Z
12.5	16.8	453	1500	21	145	0.95	P,S,T,Z
12.5	16.8	454	1500	21	145	0.95	P,S,T,Z
12.5	16.8	455	1500	21	145	0.95	P,S,T,Z
12.5	16.8	456	1500	21	145	0.95	P,S,T,Z

SH



WS004093B

Table 24: 400 V, 50 Hz, 3-phase

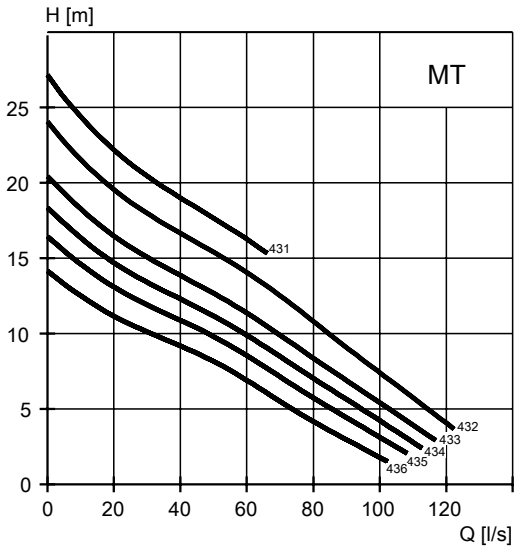
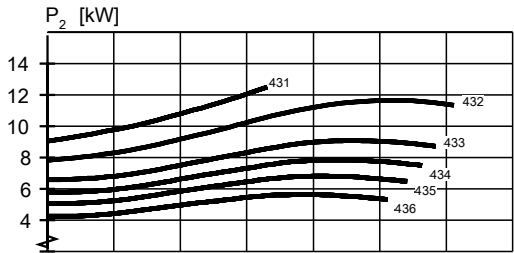
Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolution s per minute, rpm	Rated Current, A	Start current, A	Power Factor, cos φ	Installation
11	14.8	273	2915	19	147	0.93	P,S,T,Z
11	14.8	274	2915	19	147	0.93	P,S,T,Z
11	14.8	275	2915	19	147	0.93	P,S,T,Z
11	14.8	276	2915	19	147	0.93	P,S,T,Z
14	18.8	272	2925	25	214	0.88	P,S,T,Z
14	18.8	273	2925	25	214	0.88	P,S,T,Z
14	18.8	274	2925	25	214	0.88	P,S,T,Z
14	18.8	275	2925	25	214	0.88	P,S,T,Z
14	18.8	276	2925	25	214	0.88	P,S,T,Z

4.3 Motor rating and performance curves 3153.860/.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.

MT



WS007656A

Table 25: 400 V, 50 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
8.5	11.4	434	1500	14	107	0.98	P,S
8.5	11.4	435	1500	14	107	0.98	P,S
8.5	11.4	436	1500	14	107	0.98	P,S
10	13.4	433	1500	16	107	0.98	P,S
10	13.4	434	1500	16	107	0.98	P,S
10	13.4	435	1500	16	107	0.98	P,S
10	13.4	436	1500	16	107	0.98	P,S
12.5	16.8	431	1500	21	145	0.95	P,S
12.5	16.8	432	1500	21	145	0.95	P,S
12.5	16.8	433	1500	21	145	0.95	P,S
12.5	16.8	434	1500	21	145	0.95	P,S
12.5	16.8	435	1500	21	145	0.95	P,S
12.5	16.8	436	1500	21	145	0.95	P,S

HT

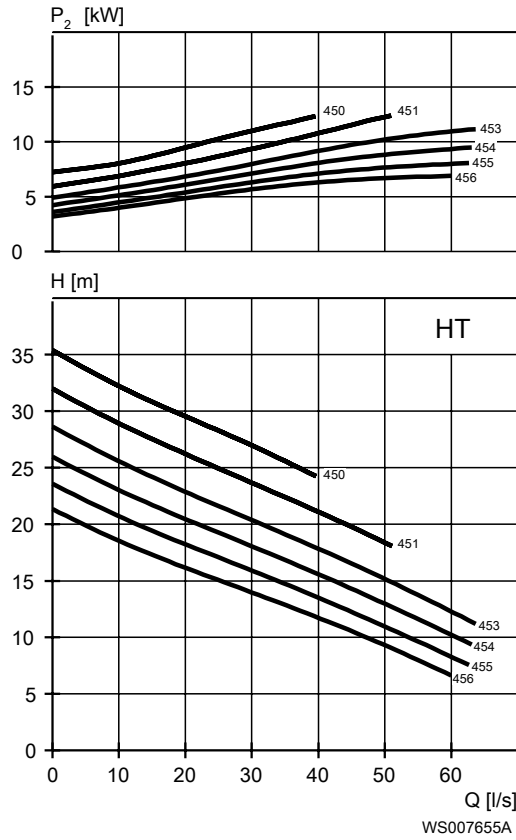


Table 26: 400 V, 50 Hz, 3-phase

Rated power, kW	Rated power, hp	Curve/ Impeller No	Revolutions per minute, rpm	Rated Current, A	Start current, A	Power Factor, cos φ	Installation
8.5	11.4	455	1500	14	107	0.98	P,S
8.5	11.4	456	1500	14	107	0.98	P,S
10	13.4	454	1500	16	107	0.98	P,S
10	13.4	455	1500	16	107	0.98	P,S
10	13.4	456	1500	16	107	0.98	P,S
12.5	16.8	450	1500	21	145	0.95	P,S
12.5	16.8	451	1500	21	145	0.95	P,S
12.5	16.8	453	1500	21	145	0.95	P,S
12.5	16.8	454	1500	21	145	0.95	P,S
12.5	16.8	455	1500	21	145	0.95	P,S
12.5	16.8	456	1500	21	145	0.95	P,S

5 Dimensions and Weight

5.1 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.

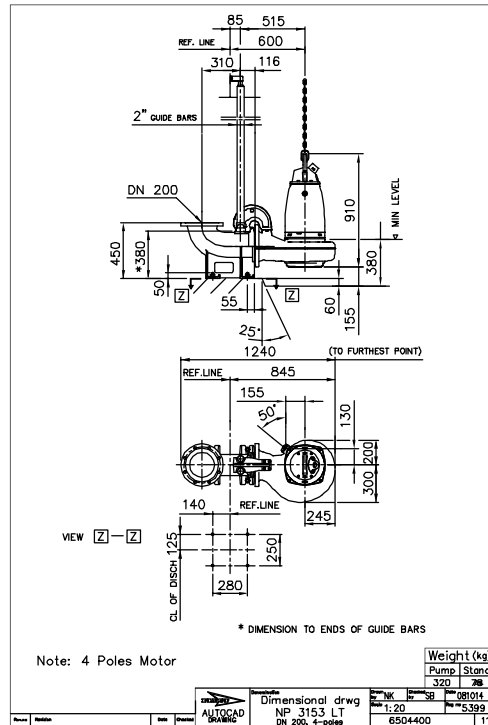


Figure 13: LT, P-installation

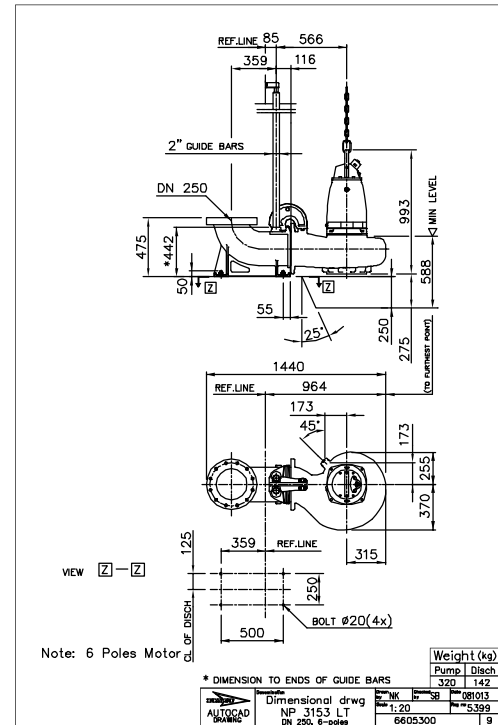


Figure 14: LT, P-installation



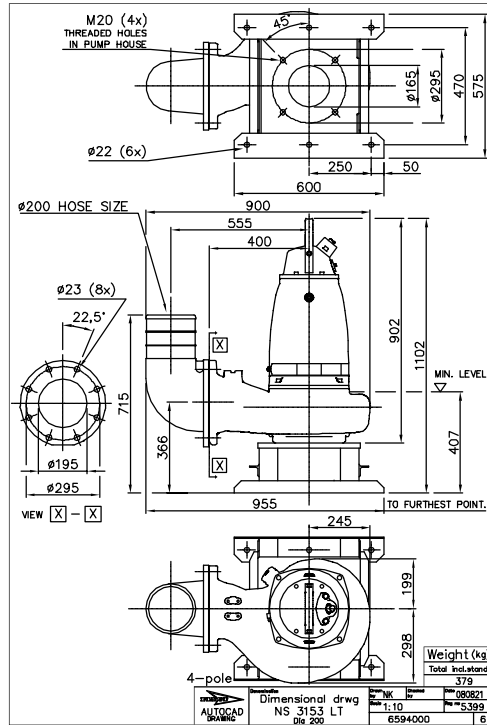


Figure 15: LT, S-installation

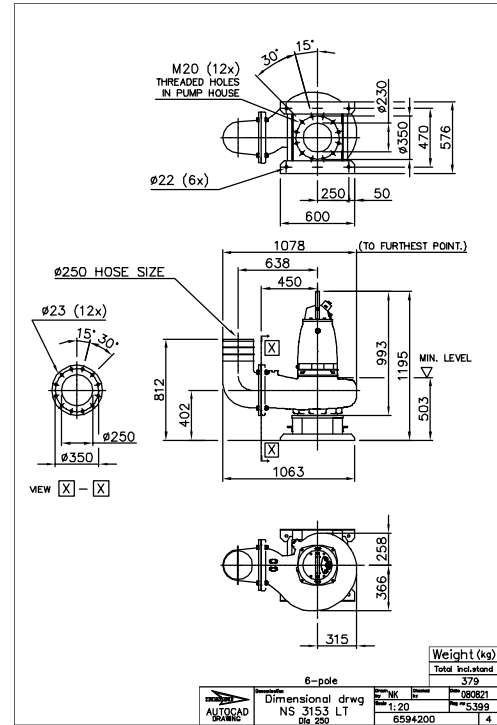


Figure 16: LT, S-installation

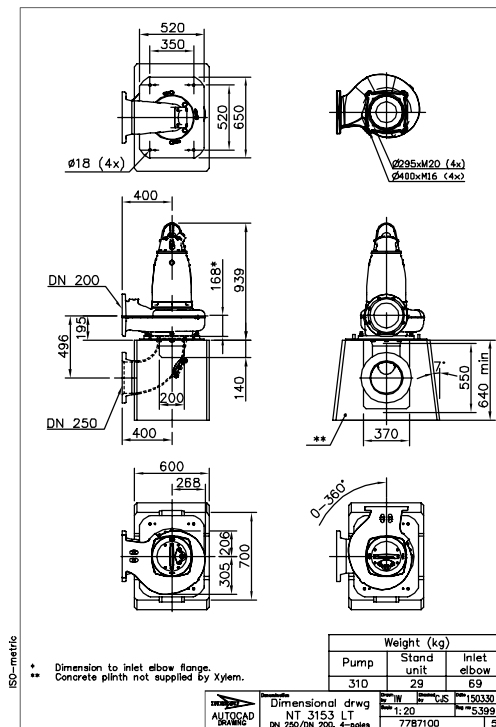


Figure 17: LT, T-installation

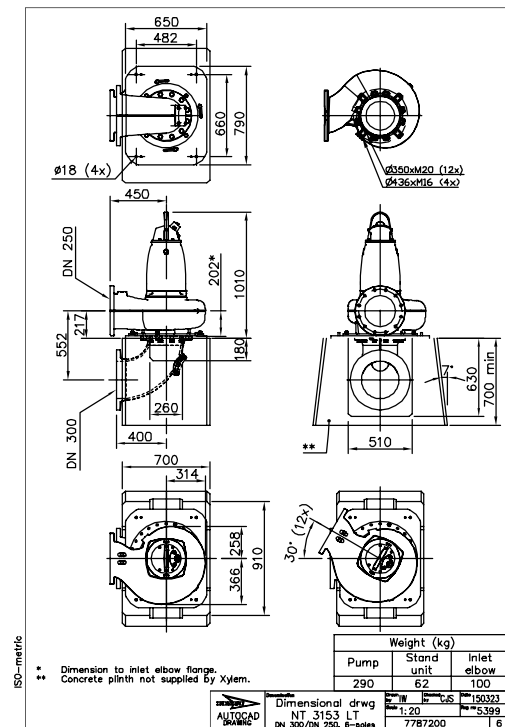


Figure 18: LT, T-installation



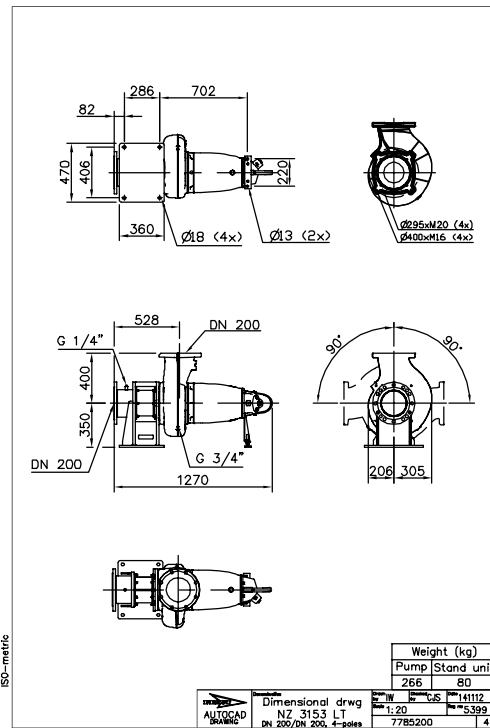


Figure 19: LT, Z-installation

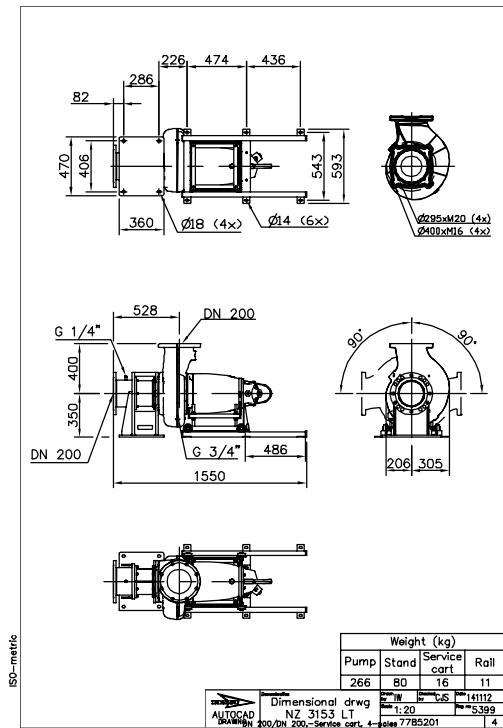


Figure 20: LT, Z-installation

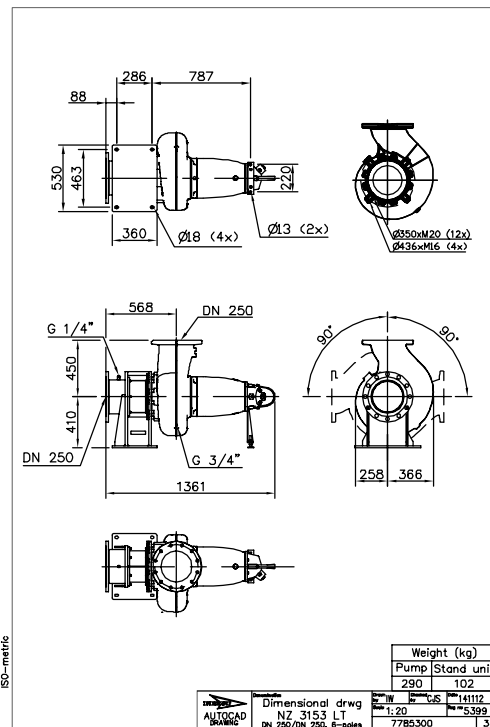


Figure 21: LT, Z-installation

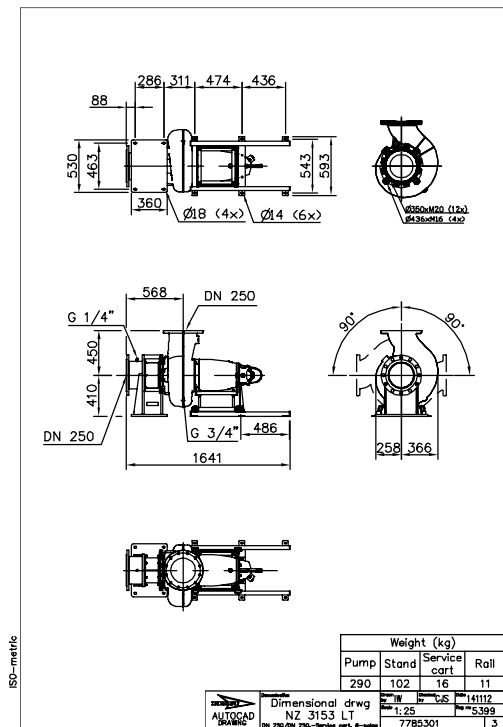


Figure 22: LT, Z-installation



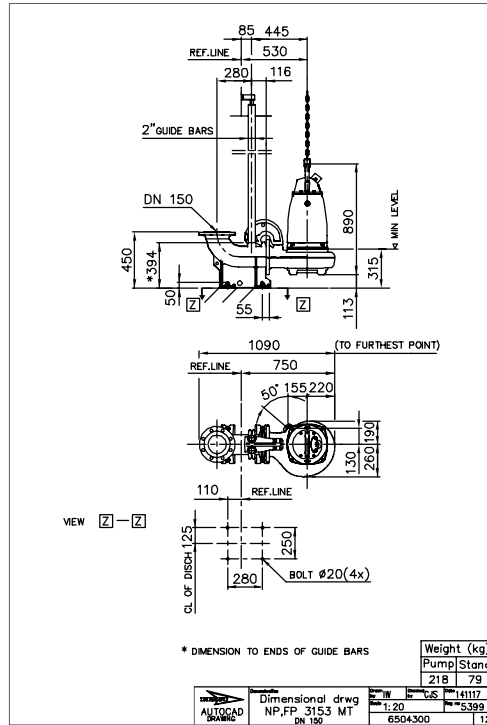


Figure 23: MT, P-installation

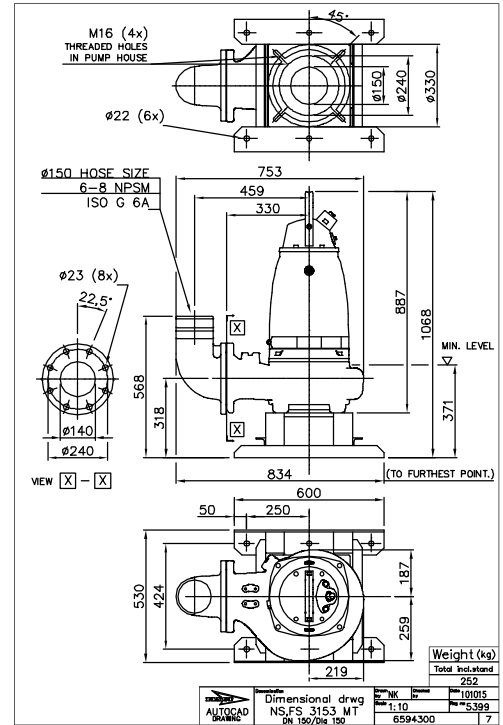


Figure 24: MT, S-installation

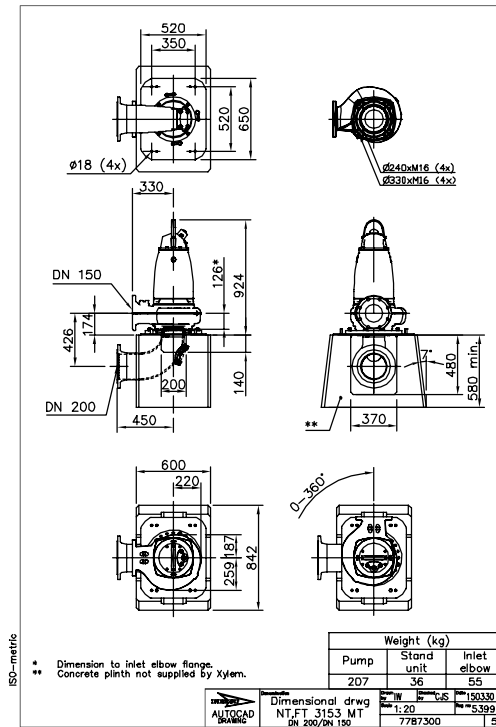


Figure 25: MT, T-installation

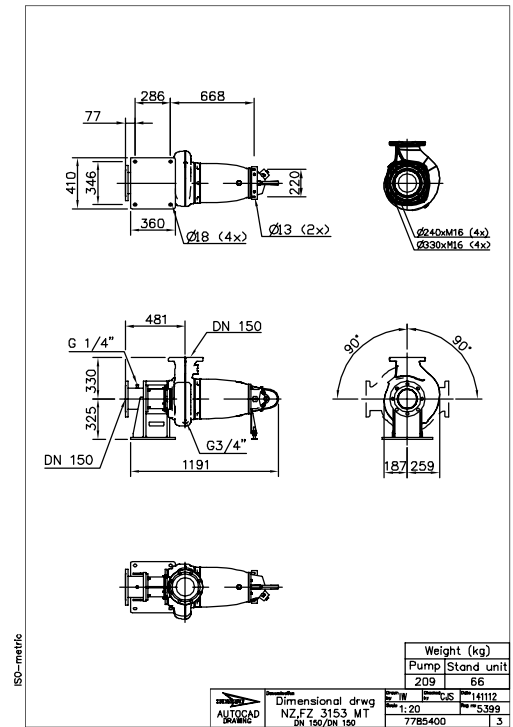


Figure 26: MT, Z-installation

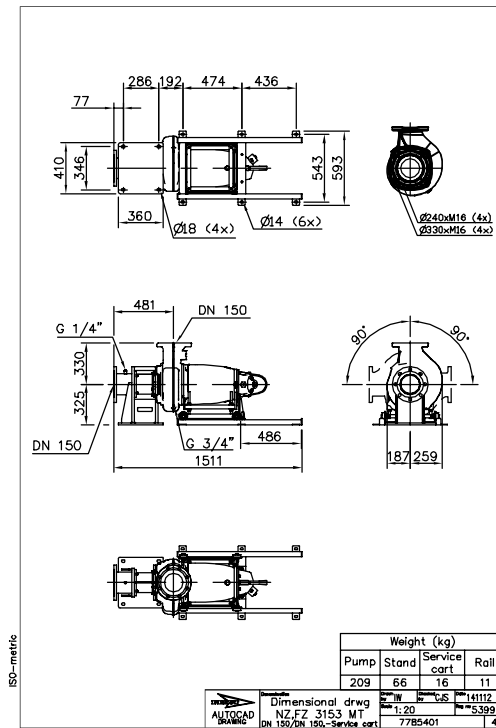


Figure 27: MT, Z-installation

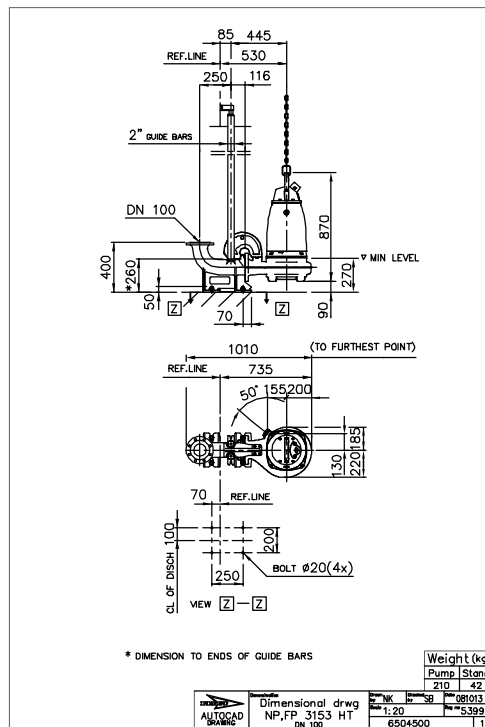


Figure 28: HT, P-installation

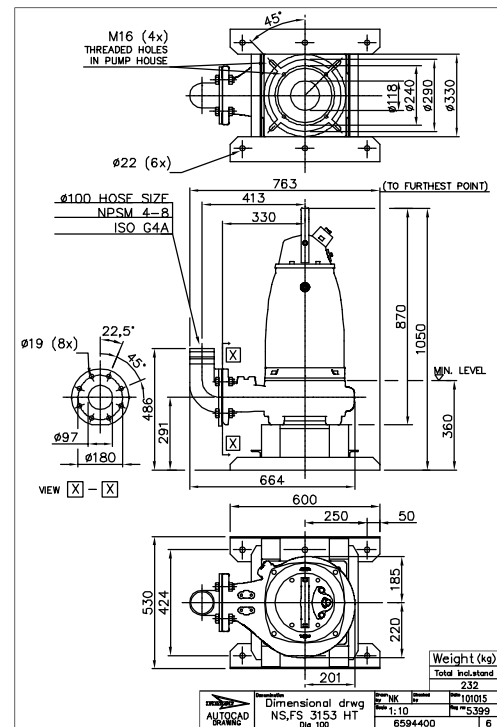


Figure 29: HT, S-installation

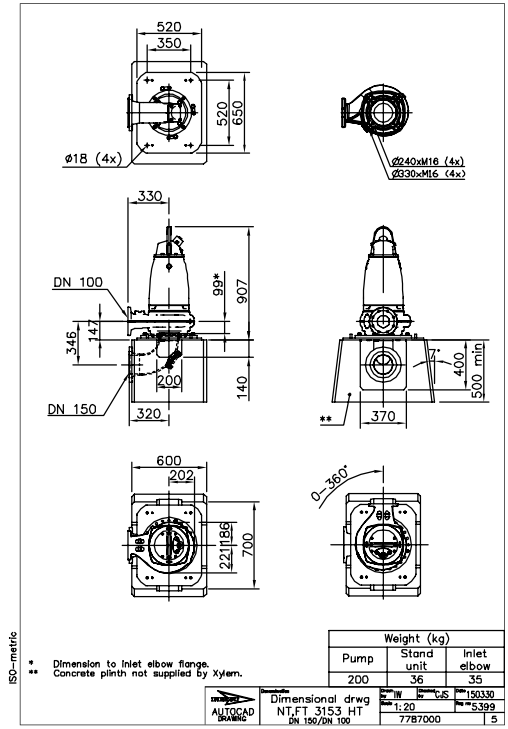


Figure 30: HT, T-installation

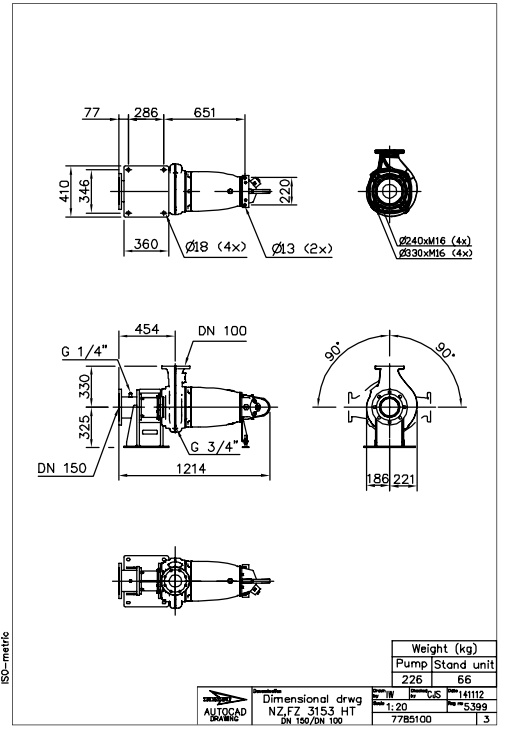


Figure 31: HT, Z-installation

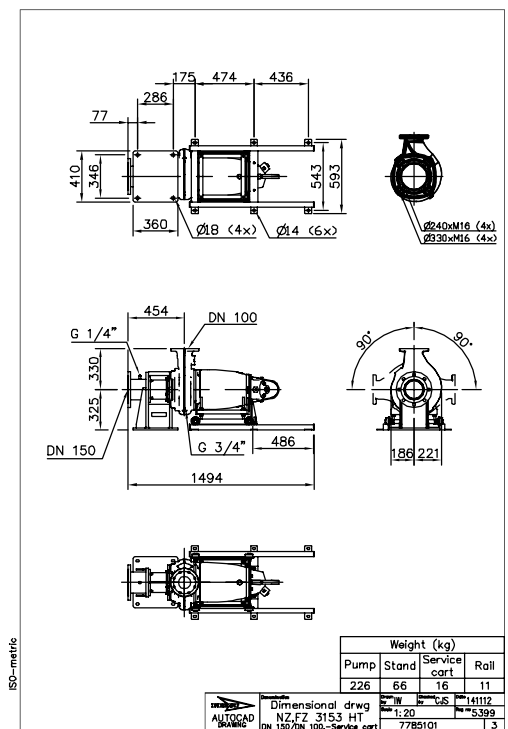


Figure 32: HT, Z-installation

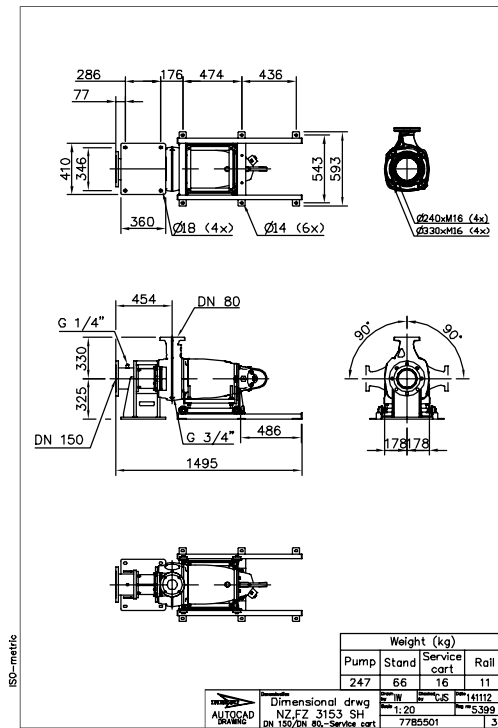


Figure 37: SH, Z-installation

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

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

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