REEVES YOUNG

December 28, 2022

Matt McCormack
Reeves Young
45 Peachtree Industrial Blvd
Sugar Hill, GA 30518

Terry Peters
Fulton County
141 Pryor St. SW
Atlanta, GA 30303

Subject: Xylem/ABS Pump to KSB Change Order
Contract: Graham Drive Pump Station Upgrade

Total Cost Impact: $ 236,000.00

Terry,

Reeves Young hereby submits Proposed Change Order #01 for costs associated with KSB Pumps. We are submitting this pricing at the request of Fulton County due to a preference in the pump provided for this project. Based off the responses received on bid Questions and Answers Q101-Q107, the Sulzer ABS pump has been confirmed an approved equal. Reeves Young can provide Xylem or ABS Pumps for our current contract price. If Fulton County desires to proceed with the KSB pumps, there will be a price increase in the amount of two-hundred and thirty-six thousand dollars ($236,000.00).

Following acceptance of this change order, Reeves Young can execute a purchase order for the KSB pump.

Please review and advise if this change order request is acceptable.

Sincerely,

Matt McCormack
Senior Vice President

mmccormack@reevesyoung.com I reevesyoung.com
T 678.288.2063 I M 678.414.9875
45 Peachtree Industrial Boulevard, Sugar Hill, GA 30518

REEVES YOUNG

REEVES + YOUNG

Graham Drive Pump Station **Description:** KSB pumps replacing ABS pumps

PCO#: 001

Date: 12-30-2022

DESCRIPTION	QTY	UNIT	UNIT LABOR	TOTAL LABOR	UNIT EQUIPMENT	TOTAL EQUIPMENT	UNIT MATERIAL	TOTAL MATERIAL	UNIT SUB-CONTRACTOR	TOTAL SUB-CONTRACTOR	TOTAL
LABOR											
		MH		$ -							$ -
		-	$ -	$ -							$ -
											$ -
EQUIPMENT											
						$ -					$ -
					$ -	$ -			$ -	$ -	$ -
					$ -	$ -					$ -
MATERIALS											
ABS Pump	-1	LS					$ 1,227,600.00	$ (1,227,600.00)			$ (1,227,600.00)
KSB Pump	1	LS					$ 1,442,000.00	$ 1,442,000.00			$ 1,442,000.00
							$ -	$ -			$ -
							$ -	$ -			$ -
							$ -	$ -			$ -
							$ -	$ -			$ -
SUBCONTRACTORS											
									$ -	$ -	$ -
									$ -	$ -	$ -
									$ -	$ -	$ -
									$ -	$ -	$ -
PCO Sub-Total:				$ -		$ -		$ 214,400.00		$ -	$ 214,400.00
Tax						$ -		$ 19,081.60			$ 19,081.60
PCO Sub-Total w/ Tax				$ -		$ -		$ 233,481.60		$ -	$ 233,481.60
Mark Up	1%			$ -		$ -		$ 2,518.40		$ -	$ 2,518.40
Total Change:											**$ 236,000.00**

No	Question/Answer	Question Date
Q101	**Question: Section 11500 2.05.B.1** Will a closed loop cooling system be considered equal? **Answer:** For pump cooling system – a true closed-Loop cooling, including the use of oil or glycol, without the recirculation of pumped fluid is preferred due to clogging issues with recirculating raw sewage within the motor housing. No external water source is allowed	09/02/2022
Q102	**Question: Submersible Pump** For this project, attached you will find the only option for the Sulzer ABS pump. Sulzer ABS pump is an approved equal for this project. Below are my comments, please confirm this pump will be approved. 1.The pump will have a higher speed motor than called for and would be supplied with a 6-pole motor. 2.The pump motor will be 557 HP which is 60 HP lower, and will be a premium efficient motor, which will reduce the cost to the end user. 3.The pump will have a 16” suction and discharge connection. The pump will be supplied with a 16”x20” suction to match the piping, and for the discharge side, an increaser will need to be provided by the contractor. 4.Attached are the curves based on the duty points called out in the specification for your review. 5.Spec calls for a shielded cable, and per Sulzer, a shielded cable can’t be offered, and still carry the FM approval. This would most likely be the same issue for Grundfos if they look deeper into it. To prevent interference, it would be recommended to have the power and control cable run in different conduits, and keep them separate when running them to the control panel. **Answer:** Sulzer ABS pump is an approved equal.	09/02/2022
Q103	**Question: Vertical Pumps** 1.The pump will have a higher speed motor than called for and would be supplied with a 6-pole motor. **Answer:** See Response to Question 102.	09/02/2022
Q104	**Question: Vertical Pumps** The pump motor will be 557 HP which is 60 HP lower, and will be a premium efficient motor, which will reduce the cost to the end user **Answer:** See Response to Question 102.	09/02/2022
Q105	**Question: Vertical Pumps** The pump will have a 16” suction and discharge connection. The pump will be supplied with a 16”x20” suction to match the piping, and for the discharge side, an increaser will need to be provided by the contractor **Answer:** See Response to Question 102.	09/02/2022
Q106	**Question: Vertical Pumps** The curves are available for your review based on the duty points called out in the specification. **Answer:** See Response to Question 102.	09/02/2022
Q107	**Question: Vertical Pumps** 5.offered, and still carry the FM approval. This would most likely be the same issue for Grundfos if they look deeper into it. To prevent interference, it would be recommended to have the power and control cable run in different conduits, and keep them separate when running them to the control panel. **Answer:** See Response to Question 102.	09/02/2022

Pump and Process Equipment

8343 Roswell Road, Suite 315
Atlanta, GA 30350
Cell (404) 796-1995
Office (770) 814-0402

Sales
Service
Support

October 25, 2022 **Quote #22-1191G**

To: **Bidding Contractors**

From: **Zack Dunnam @ Pump & Process Equipment, Inc.**

Re: **Graham Drive PS Upgrades**

Pump and Process Equipment, Inc. is pleased to offer the following equipment for your consideration:

(5) KSB KRT K350-713/4406XNG-D(**536HP**, 460V) with 50ft Cable

Cooling Jacket for Closed Loop Glycol Cooling System
Casing and Impeller Wear Ring Duplex SS
Bearing Temperature Sensors
Foundation Rails for Dry Pit Construction
Lifting Bail in Ductile Iron
3X PT100 in motor winding
Insulated Upper Bearing for VFD Usage
Suction Elbow 14"x20" long radius
Witnessed Performance Tests, HI level 1U, 5 Points (Includes travel and accom for four)
Bearing Life Calculation
Critical Speed Calculation
Anchor/foundation rail calculation-Non-PE Stamped
KSB Pump Safe Systems for Sensors
40ft SS Lifting Chain with Shackles
Five Sets Spare Parts Including: O-ring and Gasket Set, Mech Seal Set, Bearing Set, Wear Rings
Submittals and O&M Manuals
Start-up and Testing
Seven Year Prorated Warranty
Standard Delivery for Pumps 38-40 Weeks
**See Specification Review Below

Note: Freight to Jobsite Included. Taxes Not Included. Project Specific T&C, Including Progress Payments.

Price. **$1,750,000.00** 1,442,000

Note: Tax not included.

We appreciate the opportunity to offer this proposal for your approval and look forward to earning your business. Should you have any questions or need any additional information please do not hesitate to contact us.

Sincerely,

Zach Dunnam

Zach Dunnam
Pump and Process Equipment Inc.

Pump and Process Equipment

8343 Roswell Road, Suite 315
Atlanta, GA 30350
Cell (404) 796-1995
Office (770) 814-0402

Sales
Service
Support

zach@pumpandprocess.net
404-796-1995

**Graham Drive – Pump Specification Review

Submittals Section – 01300

1.02:	No samples of materials to be provided for any components being offered.

Pump Specification – 11500 – September revision

1.04.A.	Complete engineering data is a vague term, not all engineering data can be shared due to proprietary nature of the information. MOI calcs are considered proprietary.
1.05.H	Any additional calculation requests not included in the original specification that require engineering time & services will be quoted at the time of request.
1.05.I.4	Due to the size of the pumps, maximum head operating tests to be determined by KSB at the time of testing.
1.05.I.6	KSB test engineers to administer tests and KSB Inc. staff engineers to review and certify final pump curves prior to submission to project engineers.
1.05.O.1.a	Critical spare parts are included with the offer for each set of pumps.
1.07. B	7 year pro-rated warranty is included in the bid price.
2.01.B	Not included in KSB scope of supply.
2.01.C	Not included in KSB scope of supply. Threaded taps to be provided on pump and suction elbow for installation of customer supplied gauges.
2.02. E.2:	KSB pump speed is 1150 RPM
2.02. E.3:	KSB motor HP is 536HP (per spec the requirement is 525HP)
2.02. E.6:	KSB Pump efficiency is 81.22%
2.02. E.8:	Cooling jacket provided is with closed loop cooling system.

2.02. G. Duty point is at 108% of BEP

2.03. C. Pump critical speed calculation included in the price

2.05.B Closed loop internal cooling system is proposed.

2.05.F.2 Bearing life calculation included in the proposal

2.05.G: KSB 4STC type mechanical seal with SiC/SiC face combination meets the specs.

2.05. I.2 **DEVIATION: The wearing clearances in KSB pumps are fixed for mean time between preventive maintenance. No initial adjustments required.**

2.05. J.1 **DEVIATION: No Smart Trim system required for KSB pumps. The clearances between wearing are fixed for mean time between preventive maintenance**

2.05.K **DEVIATION: KSB pumps are supplied with Cast Heavy Duty Ductile Iron Lifting Bail**

2.05. L.1: Motor windings will be aPT100 sensors but the monitoring relays will be supplied by others

2.05. L.2: Thermal switch monitoring will be by others

2.05. D.6: 2 Component epoxy resin high solid. 150 microns (0.0059") will the DFT for the pump. Stainless steel cooling jacket not to be coated.

2.06.A Not Included in KSB scope of supply

2.06.B KSB foundation rails are included within the scope of supply. Rails to be imbedded in concrete pedestals by contractor for connection to the pump bases.

*** DEVIATION: Pumps to be provided with long radius suction elbows, 14" x 20" to be provided. Contractor to provide 24" x 20" reducer for piping connection.**

Hydra Service [E], Inc.
SPECIALIST IN FLUID MOVEMENT

150 Dean Goss Dr, Jasper GA 30143
Telephone (706) 807-2383

TO:	All Bidders	FROM:	Matthew Delong
		PHONE:	770-315-1247
PHONE:		DATE:	October 21, 2022
EMAIL:		QUOTE:	0222-156
REF:	Graham Drive PS - Quad Station w/spare		

WE ARE PLEASED TO OFFER THE FOLLOWING QUOTATION:

QTY	DESCRIPTION
5	Sulzer XFP400T-CH3 PE4150/6 pump • 556hp 460v 3ph, PE7 frame • Standard Full Monitor w/3 RTDs • Dry Pit w/open loop cooling system • total of 49' of Cable • SS Lifting bail • Duty Point: 9,620 gpm @ 161' tdh (1 pump running) *Spec calls for a shielded cable, and per Sulzer, a shielded cable can't be offered, and still carry the FM approval* *Sulzer offers SS 1.4021 (AISI 40) as a standard shaft material. This has been Sulzer's standard for many thousand of wastewater application. Duplex SS shaft is available for an additional cost of $14,500.00 per pump.*
5	Vibration Test
5	Certified Hydraulic Test
5	Witness of Hydraulic Test
4	Air Fare & Lodging per person
1	*PE Stamp is not available.*
20	SS Cable Support Grips (4 per pump)
5	SS Cable Support Grips (1 per pump)
5	Vertical Dry Pit Skirt Base - Steel •Dry pit skirt bases must be mounted to jobsite constructed concrete piers.
5	Elbow, Long Radius 16" x 20" w/cleanout • Material: Steel
5	316SS Hardware Kit (suction elbow to pump)
5	Cast Iron Volute Wear Ring
5	Repair Kit • includes seals, bearing and orings

5	PC441 Pump Panel • VFD to be provided by others • Panel to include Moisture & Temperature Module • 120V 1ph incoming power required
1	Delivery Included
1	Start up

TOTAL PRICE: $1,155,100.00

Note: The material quoted is the best interpretation of the items provided for this project, and the customer shall review to ensure no additional items are needed.

The quote is good for 30 days unless otherwise noted. All material is subject to the engineer's final approval of submittal if required. Price is plus any taxes. Delivery, labor, and start-up are not included unless otherwise noted on the quote. Not included: any applicable taxes, installation costs, wetwell, valves, concrete work, foundation or pole for control panel, electrical connections, offloading, intermediate guide rail brackets, unless otherwise noted. No retainage is allowed.

Matt DeLong
REVIEWED BY HSI REPRESENTATIVE

October 21, 2022
DATE OF REVIEW

PURCHASER SIGNATURE

DATE ACCEPTED

Base Bid	$ 1,155,100.00
Adder to go from Mfr's Std Shaft to Duplex SS	$ 72,500.00
	$ 1,227,600.00

Hydra Service, Inc.
SPECIALIST IN FLUID MOVEMENT

SECTION 11500 DRY PIT SUBMERSIBLE WASTEWATER PUMPS

PART 1 – GENERAL

1.04.D.1. NPSH tests are not included in the scope. NPSH requirements can be found on the published curve attached. These values are plotted from pumps tested in the past, showing the required NPSH values.
1.05.C. A pressure transducer and ultrasonic devices are not provided.
1.05.I. Due to the fact, these pumps will require witness testing at the factory in Sweden, a P.E. is unavailable to certify the test.
1.07.B. The warranty is to start from the time of start-up.

PART 2 – PRODUCTS

2.02.E.2. The pump offer uses a 6-pole motor.
2.02.G. The pumps falls with Sulzer-defined AOR.
2.04.B. Chains are not provided, as these pumps dry pit installation.
2.05.B.1. Open cooling is used, no cooling jacket is available, and open loop cooling is called for earlier in spec. The pump uses the media to cool the motor, and the ports for the water are large enough to prevent clogging issues. Also, Grundfos doesn't have a closed-loop option in this motor size.
2.05.D.1. & 2.05.E.1. To keep the FM approval for the pump, a shielded cable can't be offered. The pilot cable for the pump's alarms is in a separate cable. It is recommended to have these cable run in different conduits to prevent interference.
2.05.H.1. Sulzer offers SS 1.4021 (AISI 420) as standard shaft material. We have been extensively using this material for today's challenging wastewater applications and is Sulzer's standard for many thousands of wastewater applications.
2.05.J.1. The smart trim system is only offered on the Grundfos pump. When the performance of the pump has decreased, the wear ring found in the volute shall be replaced.
2.05.K.1. Stainless steel lifting bail is offered, and a bracket can be offered.
2.06.A. A chain holder is not offered, as these pumps are dry pit installations.
2.06.B Hole sizes for the anchor bolts will be provided on the pump's installation drawings. Anchor bolt sizes are determined by local code, and shall be sized, and provided by others.

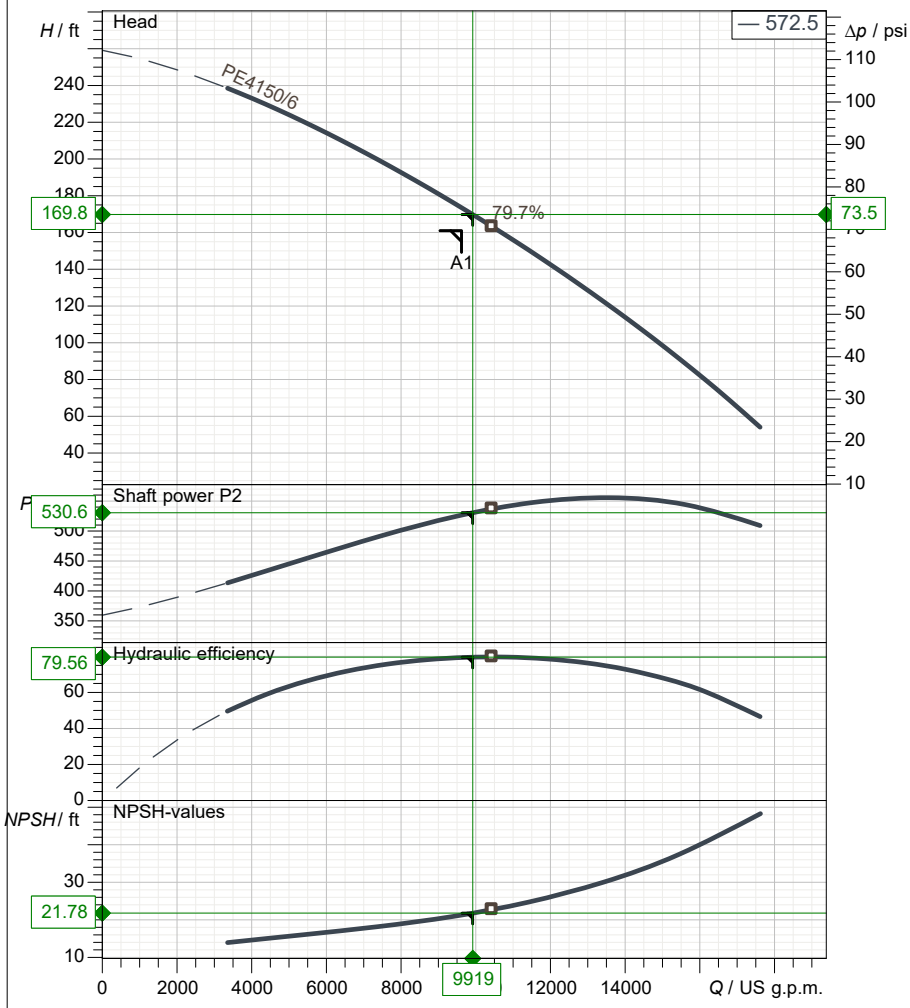
PART 3 – EXECUTION

3.03.A,. Pressure gauges are by others.
3.05.C. Start-up and training will be provided by Hydra Service.

Sincerely,

Kyle Martin
Hydra Service(E), Inc.

XFP 400T-CH3 60 HZ



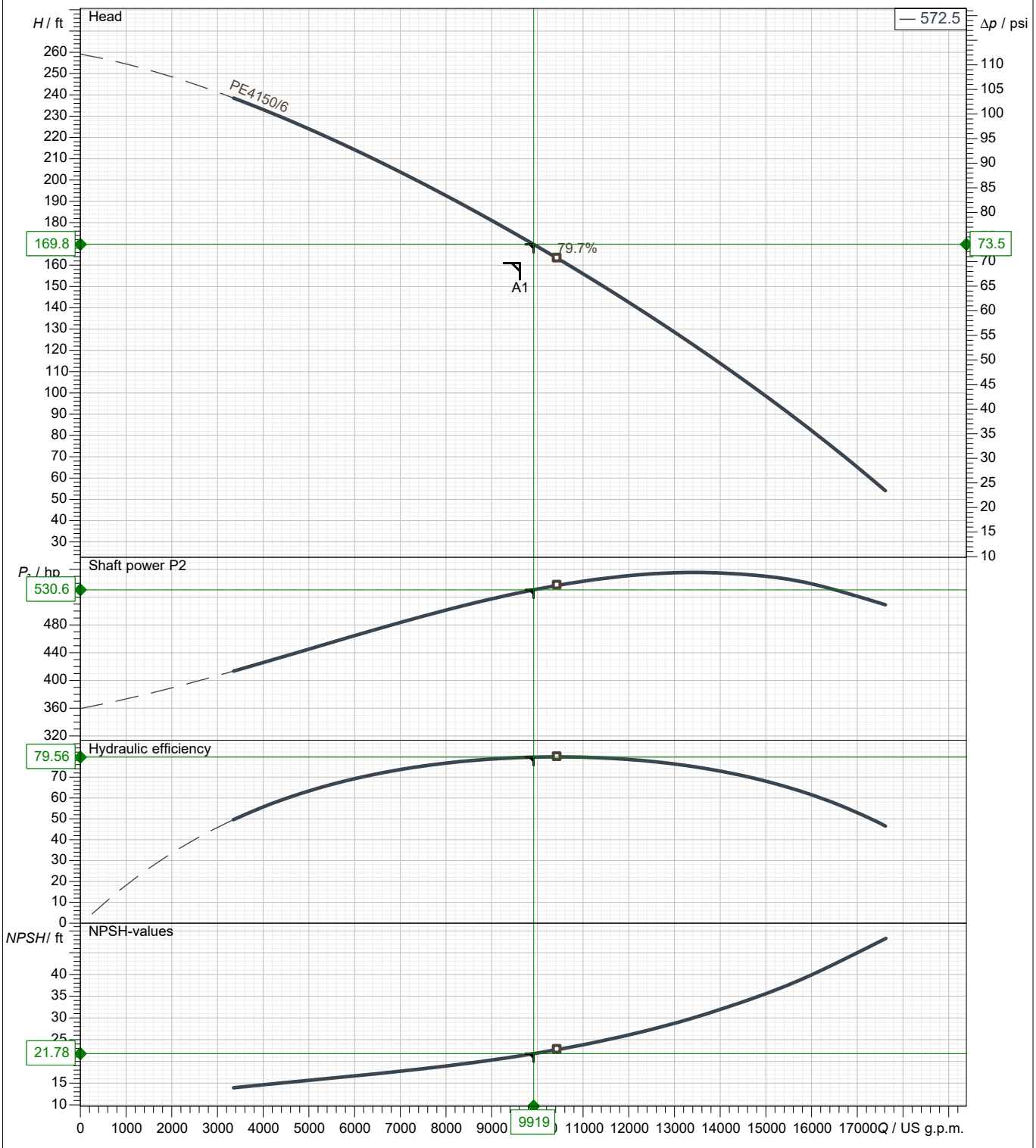
Test Standard
ISO 9906, HI 11.6/14.6 Gr 2B

2022-08-23

Operating data specification			
Flow	9919 US g.p.m.	Power input	554 hp
Efficiency	79.6 %	Head	170 ft
NPSH	21.8 ft	Shaft power	531 hp
Temperature	68 °F	Fluid	Water
No. of pumps	1	Nature of system	Single head pump
Pump data			
Type	XFP 400T-CH3 60 HZ	Make	SULZER
Series	XFP PE4-PE7	Impeller	3-vane channel impeller
N° of vanes	3	Impeller size	572.5 mm
Free passage	100 mm	Suction flange	DN400
Discharge flange	DN400	Type of installation	Wet well vertical installation 2"
Moment of inertia	30.1 lb ft²		
Motor data			
Rated voltage	460 V	Frequency	60 Hz
Rated power P2	557 hp	Nominal Speed	1190 rpm
Number of poles	6	Efficiency	95.8 %
Power factor	0.837	Rated current	650 A
Starting current	5390 A	Rated torque	2450 lbf ft
Starting torque	7610 lbf ft	Degree of protection	IP 68
Insulation class	F	No. starts per hour	15

Curve number	Pump performance curves	SULZER
Reference curve XFP 400T-CH3 60 Hz	**XFP 400T-CH3 60 HZ**	

					Discharge	Frequency
					DN400	60 Hz
Density	Viscosity	Test Standard			Rated speed	Date
62.31 lb/ft³	1.077E-5 ft²/s	ISO 9906, HI 11.6/14.6 Gr 2B			1191 rpm	2022-08-23
Flow	Head	Shaft power	Power input	Rated power P2	Hyd. efficiency	NPSH
9919 US g.p.m.	170 ft	531 hp	554 hp	557 hp	79.6 %	21.8 ft



Wet well vertical installation 2"

Impeller size	N° of vanes	Impeller	Solid size	Revision
572.5 mm	3	3-vane channel impeller	100 mm	

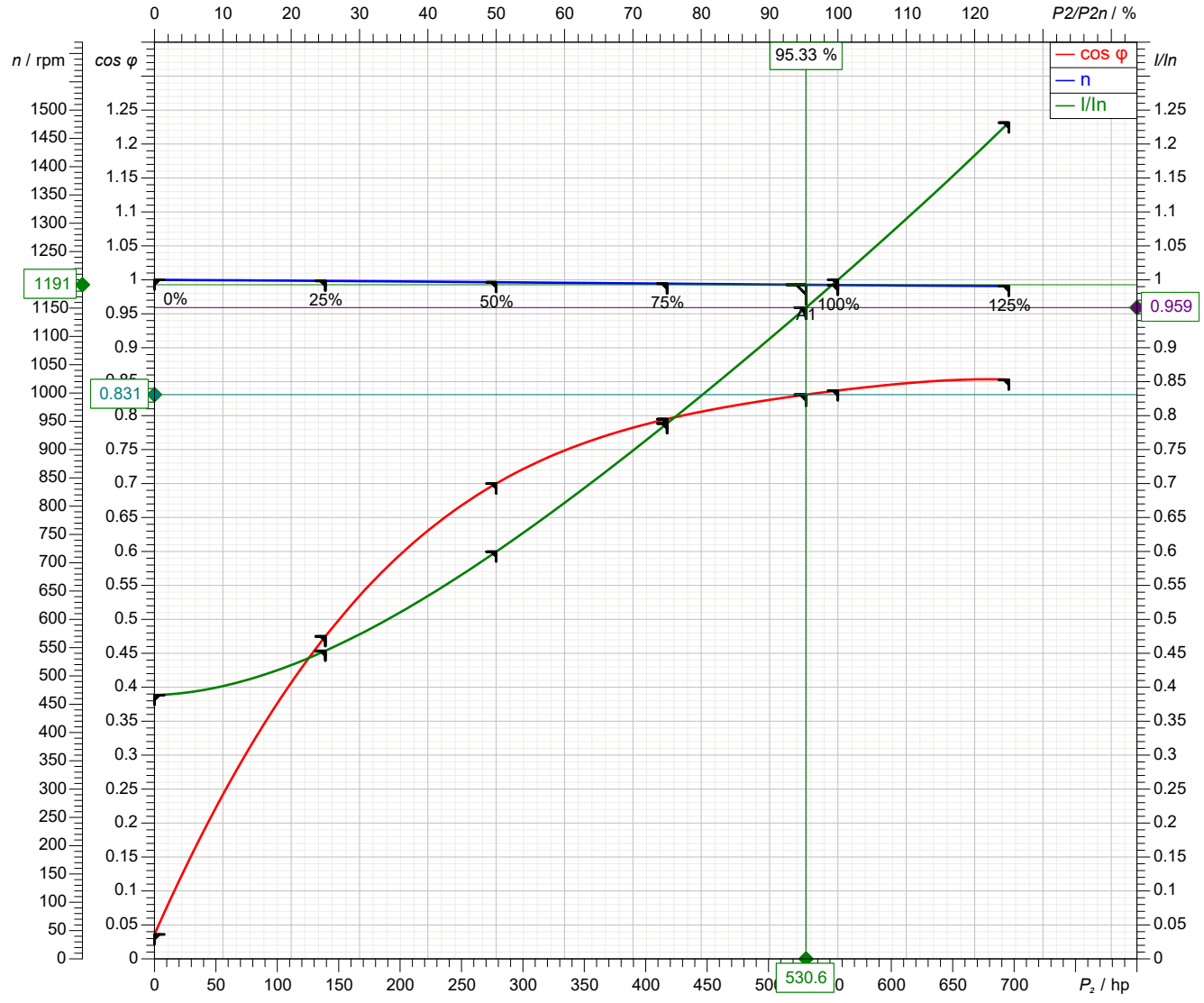
Frequency	PE7C
60 Hz	

Motor performance curve

PE4150/6

SULZER

Rated power	Service factor	Nominal Speed	Number of poles	Rated voltage	Date
557 hp	1	1190 rpm	6	460 V	2022-08-23

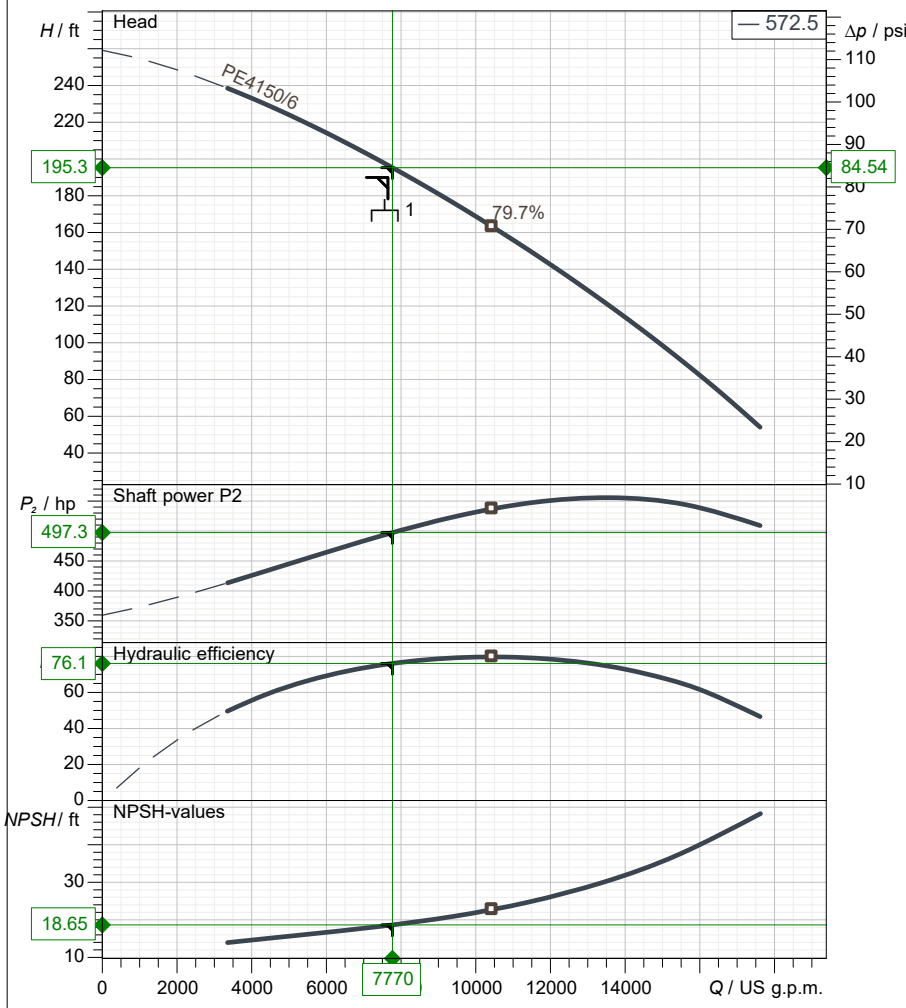


Symbol	No load	25 %	50 %	75 %	100 %	125 %
P2/ hp	0	139.1	278.3	417.4	556.5	695.7
P1/ hp	9.709	149.6	291.5	435.3	581.2	729.4
n / rpm	1200	1198	1196	1193	1191	1189
cos φ	0.036	0.475	0.7	0.795	0.837	0.853
I / A	252.4	294.8	389.7	512.4	649.9	800.4
s / %	0.001984	0.1567	0.3532	0.5635	0.7599	0.9147
M / lbf ft	0	609.9	1222	1837	2455	3073
η / %	0	92.98	95.47	95.89	95.76	95.37

Tolerance according to VDE 0530 T1 12.84 for rated power

Starting current	Starting torque	Moment of inertia	No. starts per hour
5390 A	7610 lbf ft	394 lb ft²	15

XFP 400T-CH3 60 HZ



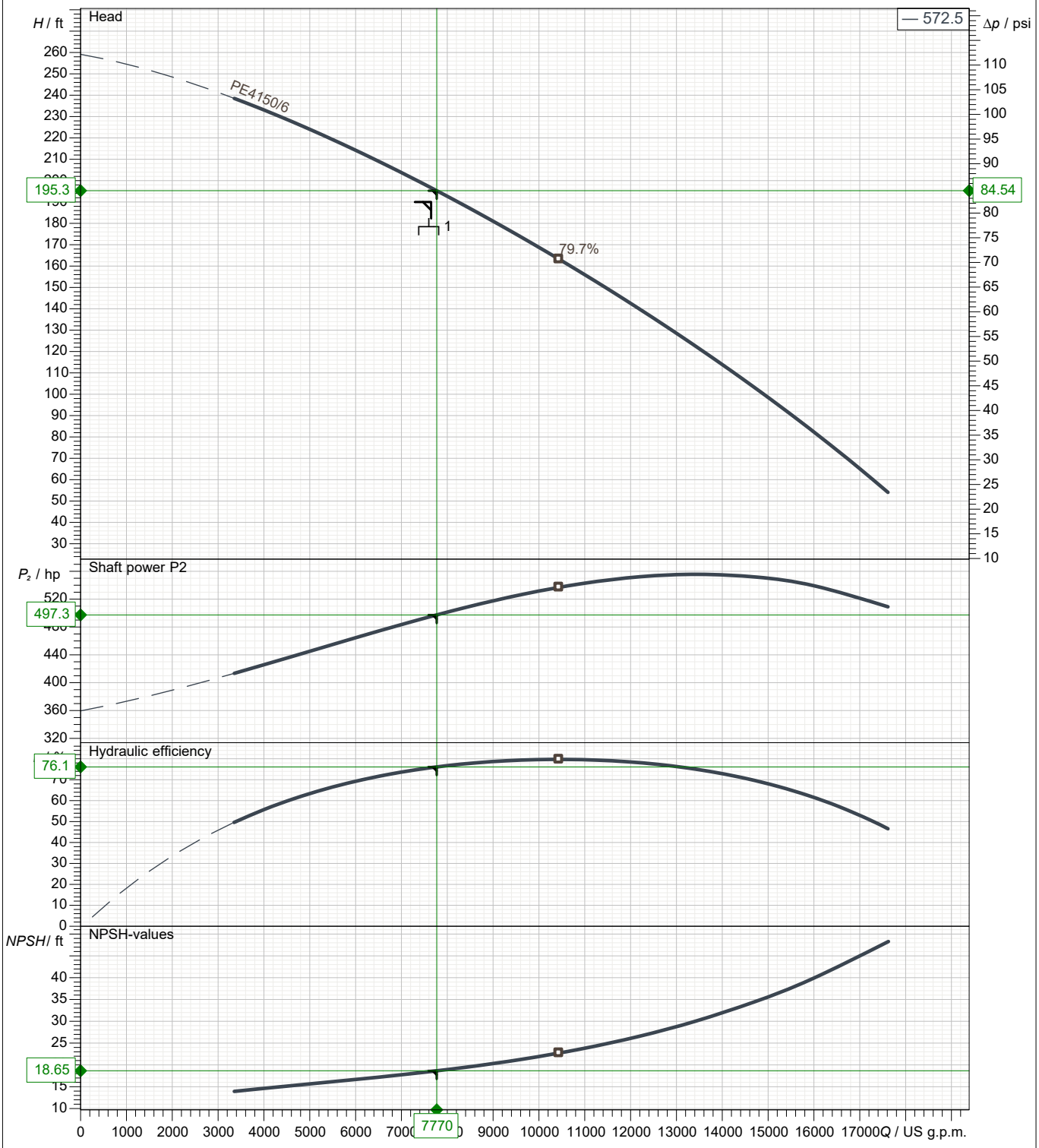
Test Standard
ISO 9906, HI 11.6/14.6 Gr 2B

2022-08-23

Operating data specification			
Flow	7770 US g.p.m.	Power input	519 hp
Efficiency	76.1 %	Head	195 ft
NPSH	18.7 ft	Shaft power	497 hp
Temperature	68 °F	Fluid	Water
No. of pumps	2	Nature of system	Single pumps as parallel circuit
Pump data			
Type	XFP 400T-CH3 60 HZ	Make	SULZER
Series	XFP PE4-PE7	Impeller	3-vane channel impeller
N° of vanes	3	Impeller size	572.5 mm
Free passage	100 mm	Suction flange	DN400
Discharge flange	DN400	Type of installation	Dry well vertical installation
Moment of inertia	30.1 lb ft²		
Motor data			
Rated voltage	460 V	Frequency	60 Hz
Rated power P2	557 hp	Nominal Speed	1190 rpm
Number of poles	6	Efficiency	95.8 %
Power factor	0.837	Rated current	650 A
Starting current	5390 A	Rated torque	2450 lbf ft
Starting torque	7610 lbf ft	Degree of protection	IP 68
Insulation class	F	No. starts per hour	15

Curve number	Pump performance curves	SULZER
Reference curve XFP 400T-CH3 60 Hz	**XFP 400T-CH3 60 HZ**	

					Discharge	Frequency
					DN400	60 Hz
Density	Viscosity	Test Standard			Rated speed	Date
62.31 lb/ft³	1.077E-5 ft²/s	ISO 9906, HI 11.6/14.6 Gr 2B			1192 rpm	2022-08-23
Flow	Head	Shaft power	Power input	Rated power P2	Hyd. efficiency	NPSH
7770 US g.p.m.	195 ft	497 hp	519 hp	557 hp	76.1 %	18.7 ft

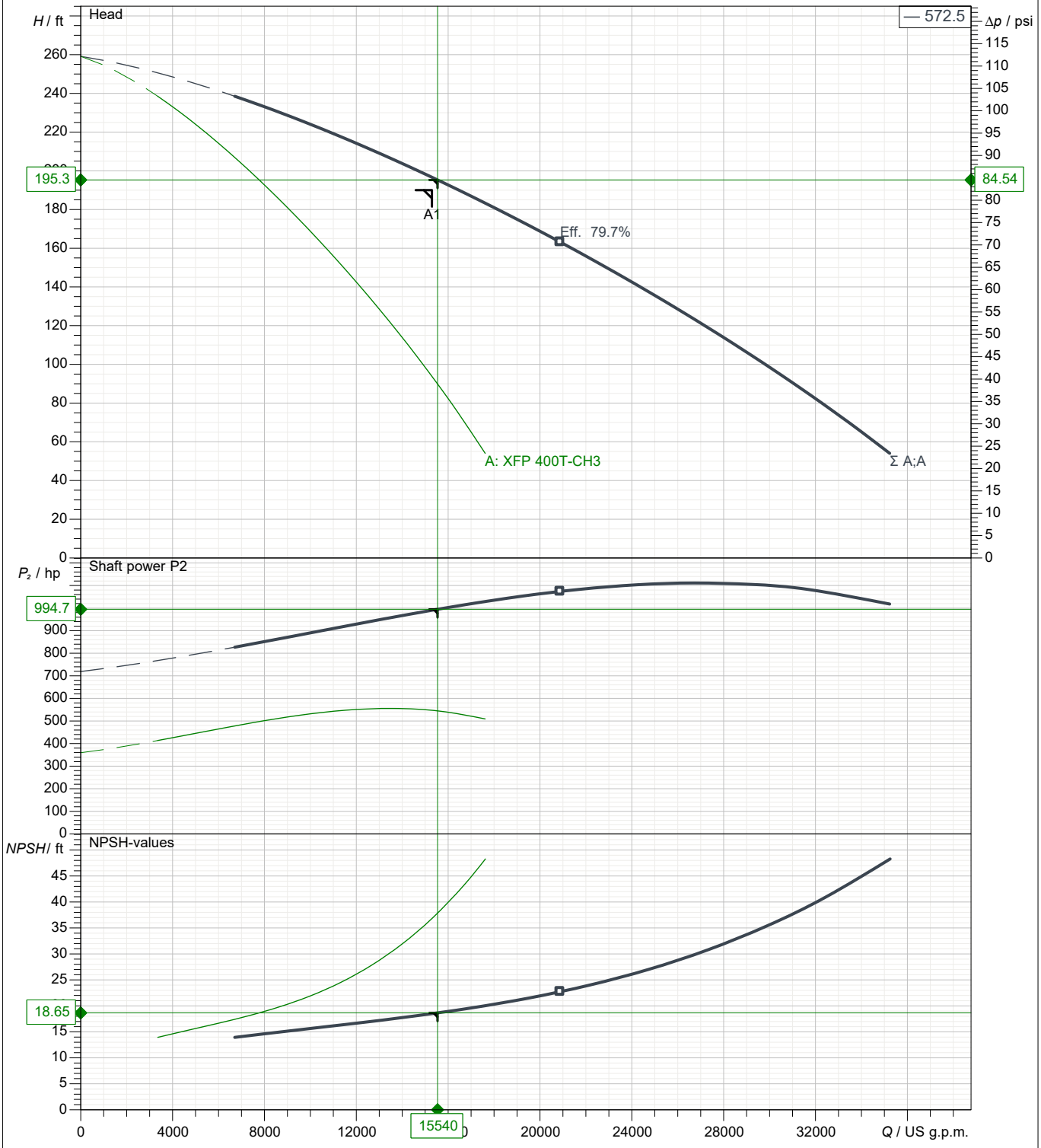


Dry well vertical installation

Impeller size	N° of vanes	Impeller	Solid size	Revision
572.5 mm	3	3-vane channel impeller	100 mm	

Curve number	Pump performance curves	SULZER
Reference curve XFP 400T-CH3 60 Hz	XFP 400T-CH3 60 HZ	

					Discharge	Frequency
					DN400	60 Hz
Density	Viscosity	Test Standard			Rated speed	Date
62.31 lb/ft³	1.077E-5 ft²/s	ISO 9906, HI 11.6/14.6 Gr 2B			1192 rpm	2022-08-23
Flow	Head	Shaft power	Power input	Rated power P2	Hyd. efficiency	NPSH
15540 US g.p.m.	195 ft	497 hp	519 hp	557 hp	76.1 %	18.7 ft



Dry well vertical installation

Impeller size	N° of vanes	Impeller	Solid size	Revision
572.5 mm	3	3-vane channel impeller	100 mm	

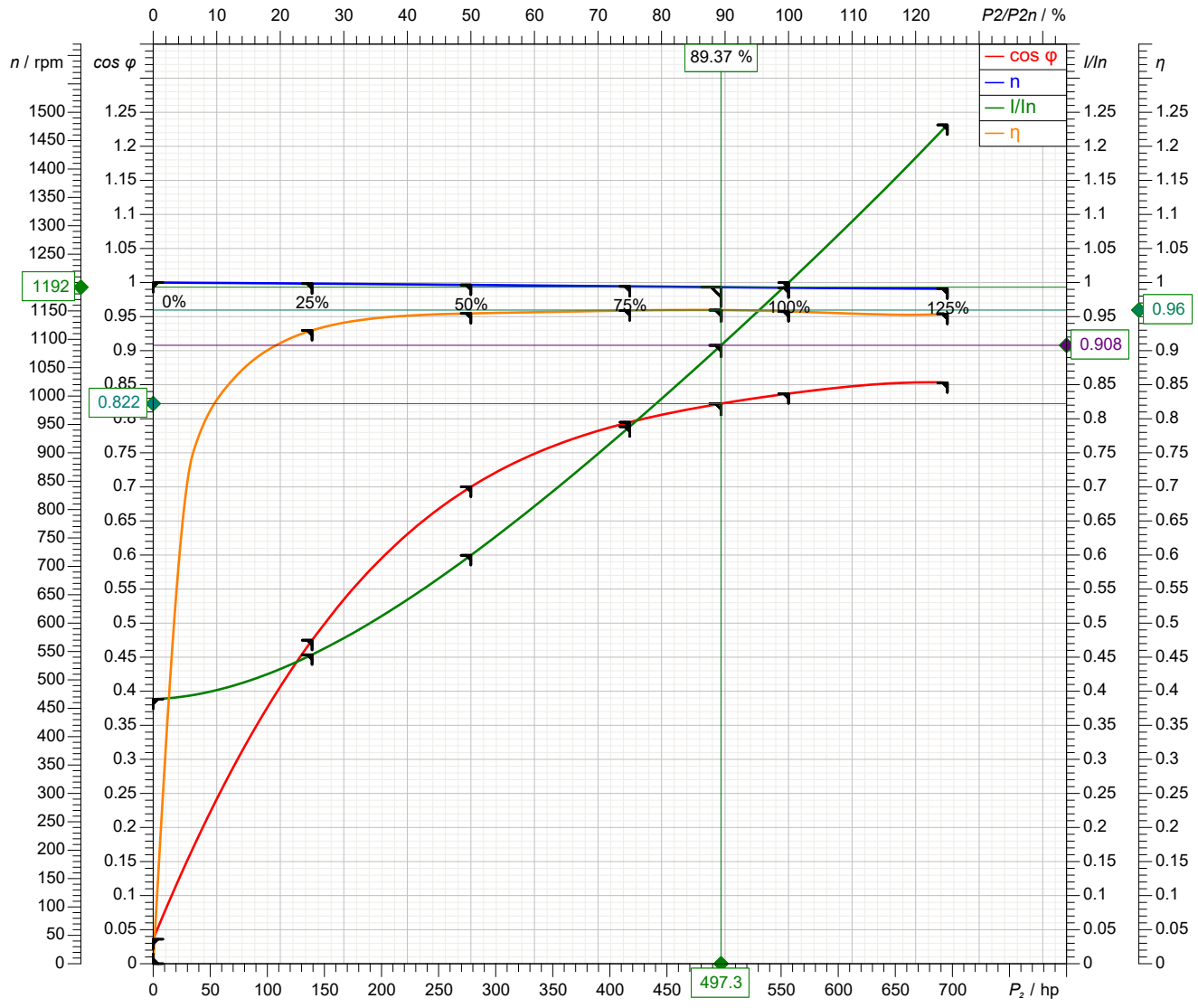
Frequency	PE7C
60 Hz	

Motor performance curve

PE4150/6

SULZER

Rated power	Service factor	Nominal Speed	Number of poles	Rated voltage	Date
557 hp	1	1190 rpm	6	460 V	2022-08-23



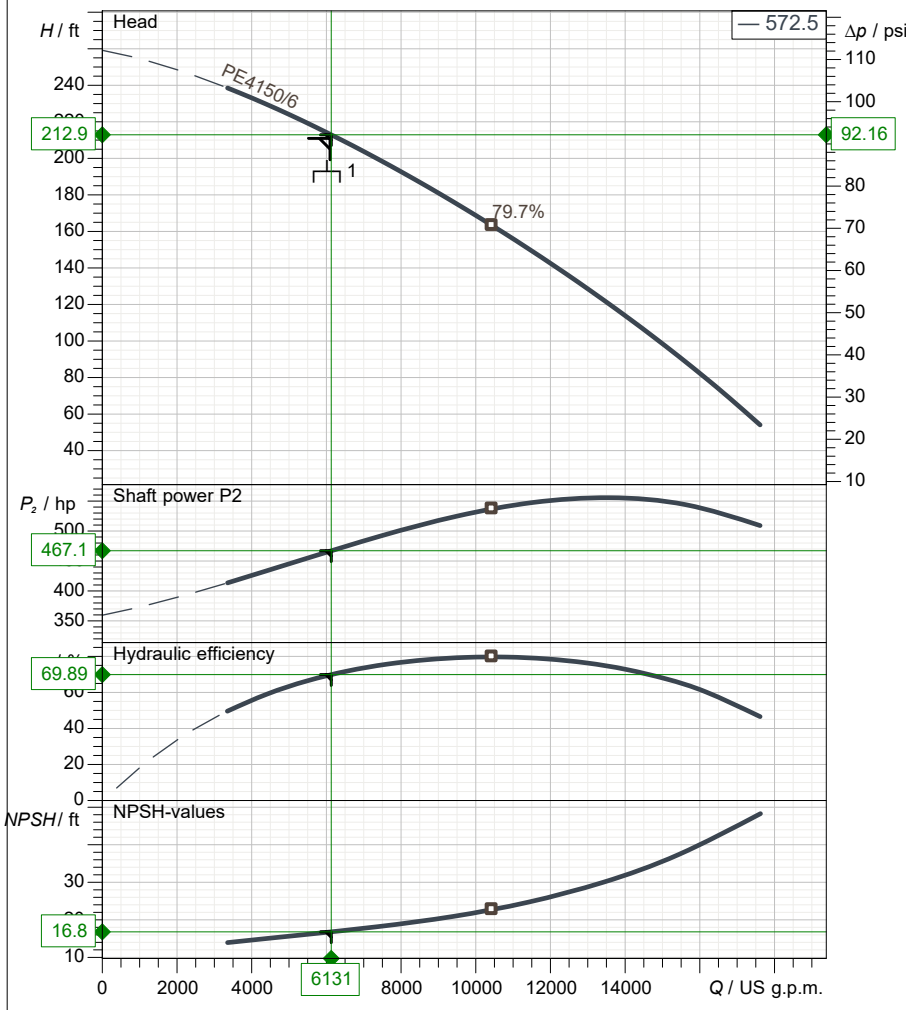
Symbol	No load	25 %	50 %	75 %	100 %	125 %
P2/ hp	0	139.1	278.3	417.4	556.5	695.7
P1/ hp	9.709	149.6	291.5	435.3	581.2	729.4
n / rpm	1200	1198	1196	1193	1191	1189
cos φ	0.036	0.475	0.7	0.795	0.837	0.853
I / A	252.4	294.8	389.7	512.4	649.9	800.4
s / %	0.001984	0.1567	0.3532	0.5635	0.7599	0.9147
M / lbf ft	0	609.9	1222	1837	2455	3073
η / %	0	92.98	95.47	95.89	95.76	95.37

Tolerance according to VDE 0530 T1 12.84 for rated power

Starting current	Starting torque	Moment of inertia	No. starts per hour
5390 A	7610 lbf ft	394 lb ft²	15

Spaix® 5-2022.2 - 2022/08/09 (Build 471), 64 bi
Data version June 22.1

XFP 400T-CH3 60 HZ



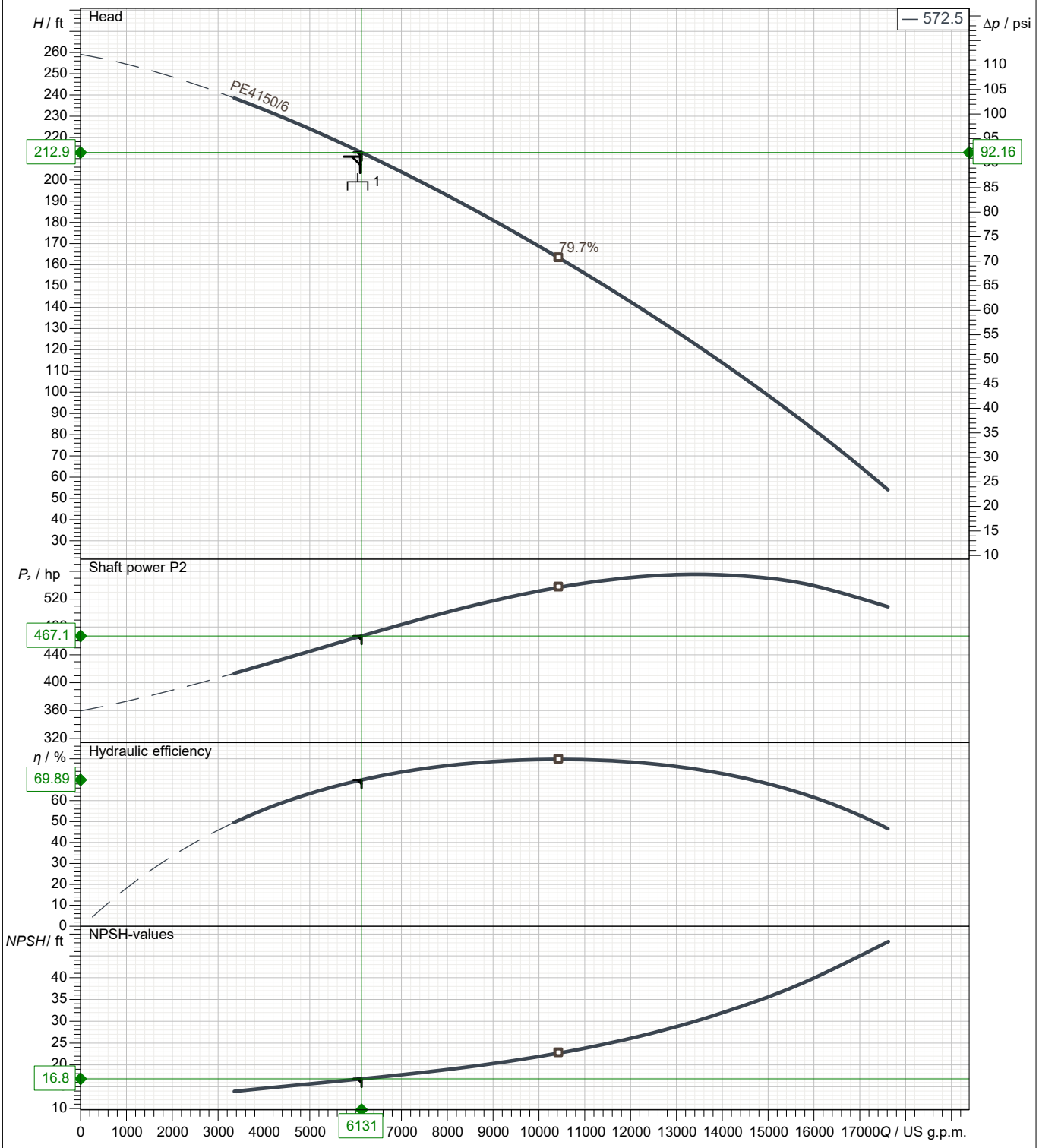
Test Standard
ISO 9906, HI 11.6/14.6 Gr 2B

2022-08-23

Operating data specification			
Flow	6131 US g.p.m.	Power input	487 hp
Efficiency	69.9 %	Head	213 ft
NPSH	16.8 ft	Shaft power	467 hp
Temperature	68 °F	Fluid	Water
No. of pumps	3	Nature of system	Single pumps as parallel circuit
Pump data			
Type	XFP 400T-CH3 60 HZ	Make	SULZER
Series	XFP PE4-PE7	Impeller	3-vane channel impeller
N° of vanes	3	Impeller size	572.5 mm
Free passage	100 mm	Suction flange	DN400
Discharge flange	DN400	Type of installation	Wet well vertical installation 2"
Moment of inertia	30.1 lb ft²		
Motor data			
Rated voltage	460 V	Frequency	60 Hz
Rated power P2	557 hp	Nominal Speed	1190 rpm
Number of poles	6	Efficiency	95.8 %
Power factor	0.837	Rated current	650 A
Starting current	5390 A	Rated torque	2450 lbf ft
Starting torque	7610 lbf ft	Degree of protection	IP 68
Insulation class	F	No. starts per hour	15

Curve number	Pump performance curves	SULZER
Reference curve XFP 400T-CH3 60 Hz	**XFP 400T-CH3 60 HZ**	

					Discharge	Frequency
					DN400	60 Hz
Density	Viscosity	Test Standard			Rated speed	Date
62.31 lb/ft³	1.077E-5 ft²/s	ISO 9906, HI 11.6/14.6 Gr 2B			1192 rpm	2022-08-23
Flow	Head	Shaft power	Power input	Rated power P2	Hyd. efficiency	NPSH
6131 US g.p.m.	213 ft	467 hp	487 hp	557 hp	69.9 %	16.8 ft

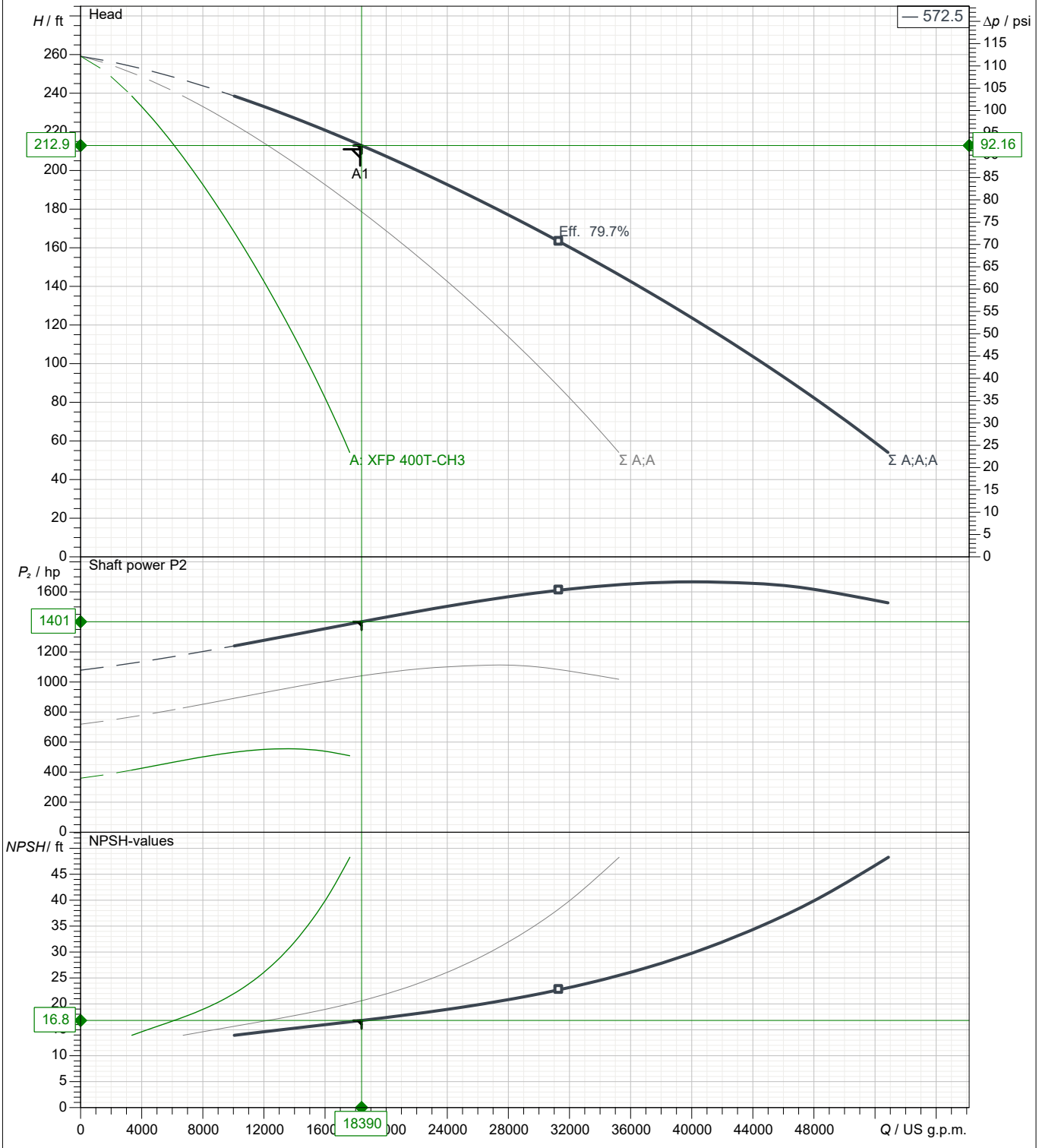


Wet well vertical installation 2"

Impeller size	N° of vanes	Impeller	Solid size	Revision
572.5 mm	3	3-vane channel impeller	100 mm	

Curve number	Pump performance curves	SULZER
Reference curve XFP 400T-CH3 60 Hz	XFP 400T-CH3 60 HZ	

					Discharge	Frequency
					DN400	60 Hz
Density	Viscosity	Test Standard			Rated speed	Date
62.31 lb/ft³	1.077E-5 ft²/s	ISO 9906, HI 11.6/14.6 Gr 2B			1192 rpm	2022-08-23
Flow	Head	Shaft power	Power input	Rated power P2	Hyd. efficiency	NPSH
18390 US g.p.m	213 ft	467 hp	487 hp	557 hp	69.9 %	16.8 ft



Wet well vertical installation 2"

Impeller size	N° of vanes	Impeller	Solid size	Revision
572.5 mm	3	3-vane channel impeller	100 mm	

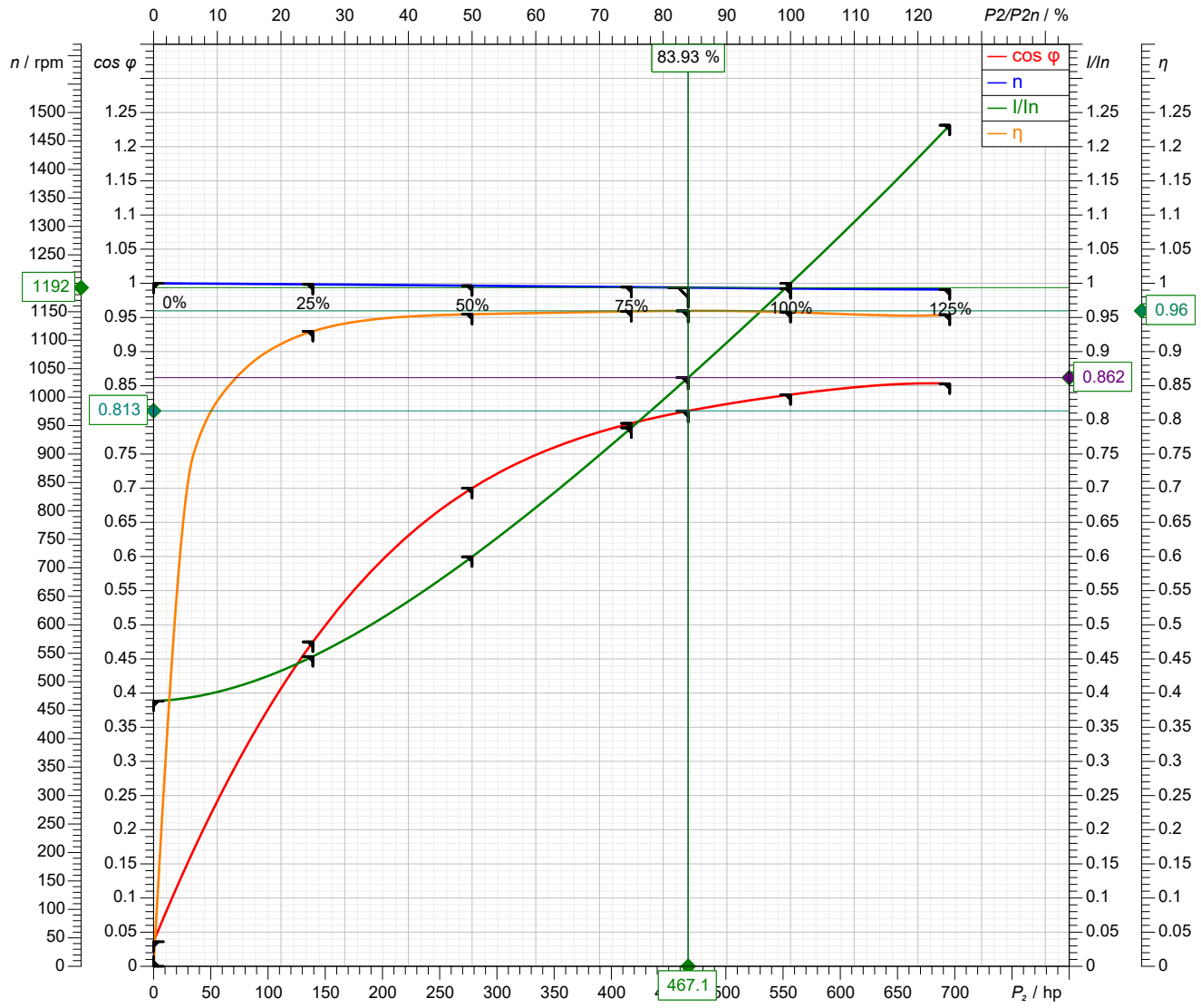
Frequency	PE7C
60 Hz	

Motor performance curve

PE4150/6

SULZER

Rated power	Service factor	Nominal Speed	Number of poles	Rated voltage	Date
557 hp	1	1190 rpm	6	460 V	2022-08-23



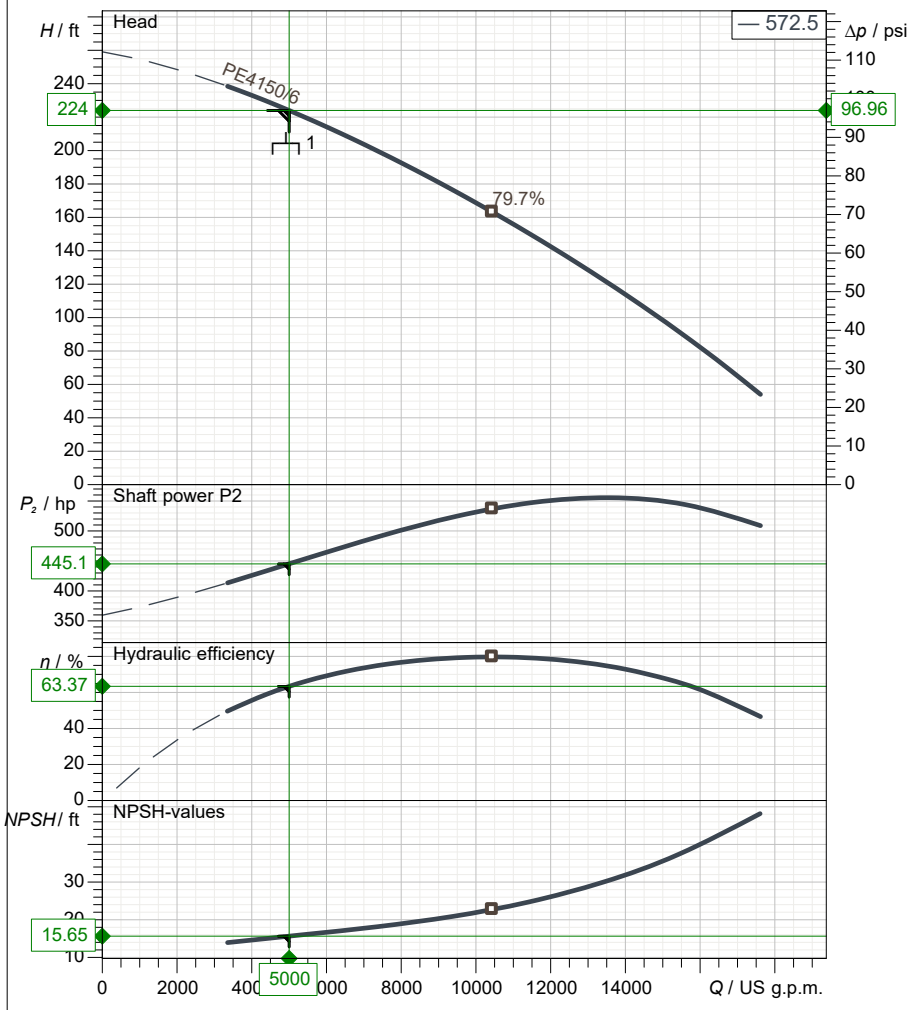
Symbol	No load	25 %	50 %	75 %	100 %	125 %
P2/ hp	0	139.1	278.3	417.4	556.5	695.7
P1/ hp	9.709	149.6	291.5	435.3	581.2	729.4
n / rpm	1200	1198	1196	1193	1191	1189
cos φ	0.036	0.475	0.7	0.795	0.837	0.853
I / A	252.4	294.8	389.7	512.4	649.9	800.4
s / %	0.001984	0.1567	0.3532	0.5635	0.7599	0.9147
M / lbf ft	0	609.9	1222	1837	2455	3073
η / %	0	92.98	95.47	95.89	95.76	95.37

Tolerance according to VDE 0530 T1 12.84 for rated power

Starting current	Starting torque	Moment of inertia	No. starts per hour
5390 A	7610 lbf ft	394 lb ft²	15

Spaix® 5-2022.2 - 2022/08/09 (Build 471), 64 bi
Data version June 22.1

XFP 400T-CH3 60 HZ



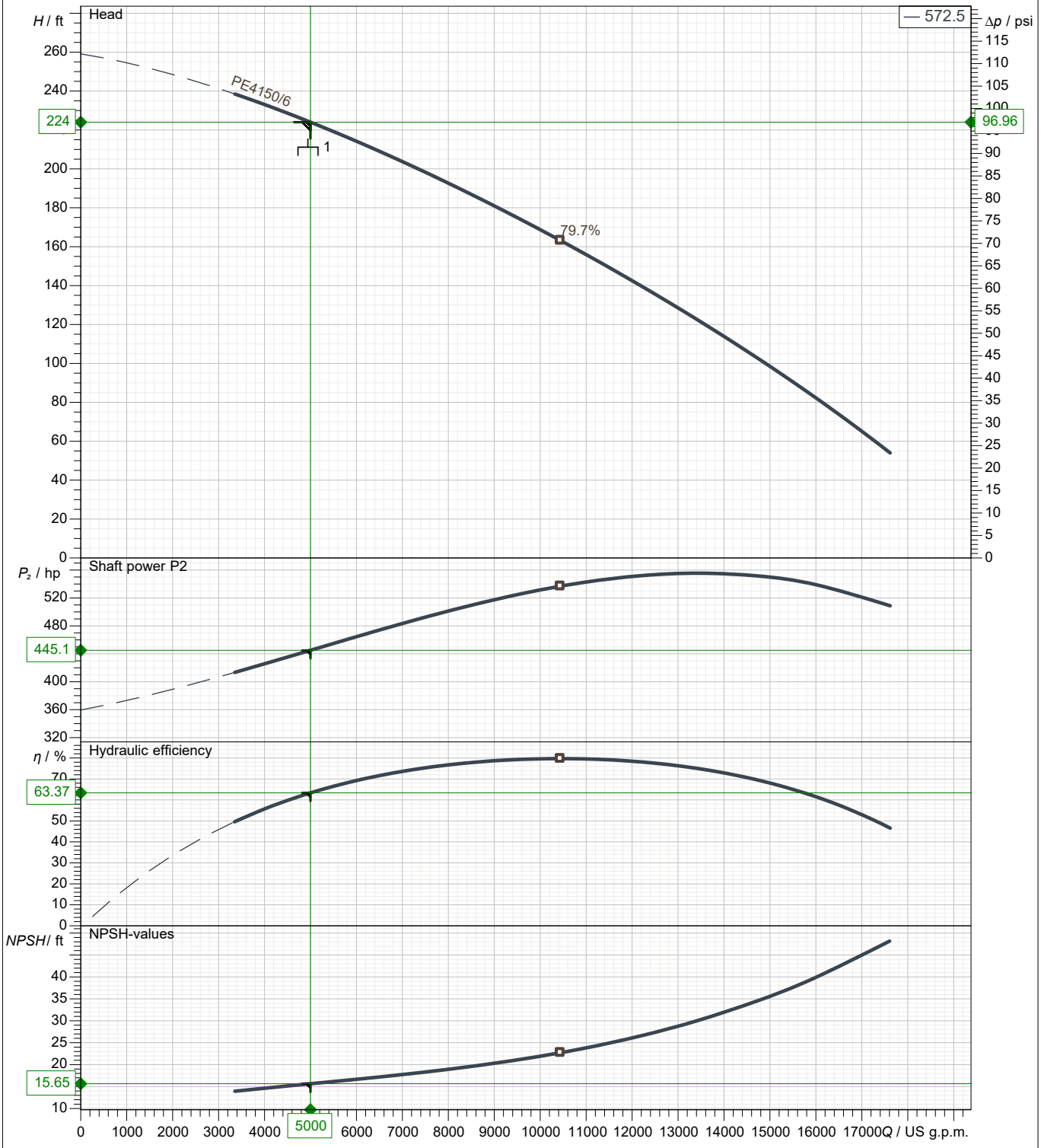
Test Standard
ISO 9906, HI 11.6/14.6 Gr 2B

2022-08-23

Operating data specification			
Flow	5000 US g.p.m.	Power input	464 hp
Efficiency	63.4 %	Head	224 ft
NPSH	15.6 ft	Shaft power	445 hp
Temperature	68 °F	Fluid	Water
No. of pumps	4	Nature of system	Single pumps as parallel circuit
Pump data			
Type	XFP 400T-CH3 60 HZ	Make	SULZER
Series	XFP PE4-PE7	Impeller	3-vane channel impeller
N° of vanes	3	Impeller size	572.5 mm
Free passage	100 mm	Suction flange	DN400
Discharge flange	DN400	Type of installation	Dry well vertical installation
Moment of inertia	30.1 lb ft²		
Motor data			
Rated voltage	460 V	Frequency	60 Hz
Rated power P2	557 hp	Nominal Speed	1190 rpm
Number of poles	6	Efficiency	95.8 %
Power factor	0.837	Rated current	650 A
Starting current	5390 A	Rated torque	2450 lbf ft
Starting torque	7610 lbf ft	Degree of protection	IP 68
Insulation class	F	No. starts per hour	15

Curve number	Pump performance curves	SULZER
Reference curve XFP 400T-CH3 60 Hz	XFP 400T-CH3 60 HZ	

					Discharge	Frequency
					DN400	60 Hz
Density	Viscosity	Test Standard			Rated speed	Date
62.31 lb/ft³	1.077E-5 ft²/s	ISO 9906, HI 11.6/14.6 Gr 2B			1193 rpm	2022-08-23
Flow	Head	Shaft power	Power input	Rated power P2	Hyd. efficiency	NPSH
5000 US g.p.m.	224 ft	445 hp	464 hp	557 hp	63.4 %	15.6 ft

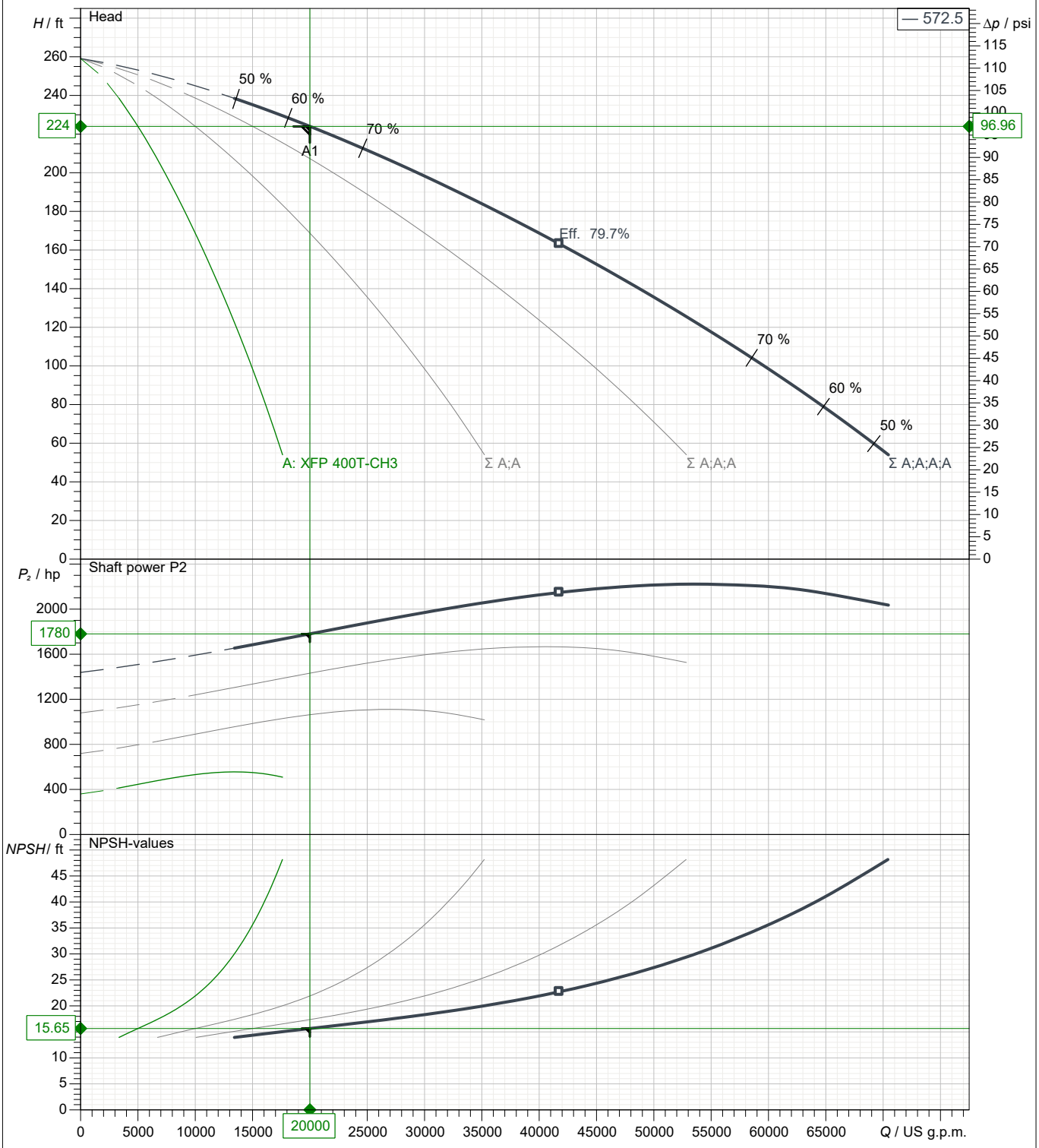


Dry well vertical installation

Impeller size	N° of vanes	Impeller	Solid size	Revision
572.5 mm	3	3-vane channel impeller	100 mm	

Curve number	Pump performance curves	SULZER
Reference curve XFP 400T-CH3 60 Hz	XFP 400T-CH3 60 HZ	

					Discharge	Frequency
					DN400	60 Hz
Density	Viscosity	Test Standard			Rated speed	Date
62.31 lb/ft³	1.077E-5 ft²/s	ISO 9906, HI 11.6/14.6 Gr 2B			1193 rpm	2022-08-23
Flow	Head	Shaft power	Power input	Rated power P2	Hyd. efficiency	NPSH
20000 US g.p.m	224 ft	445 hp	464 hp	557 hp	63.4 %	15.6 ft



Dry well vertical installation

Impeller size	N° of vanes	Impeller	Solid size	Revision
572.5 mm	3	3-vane channel impeller	100 mm	

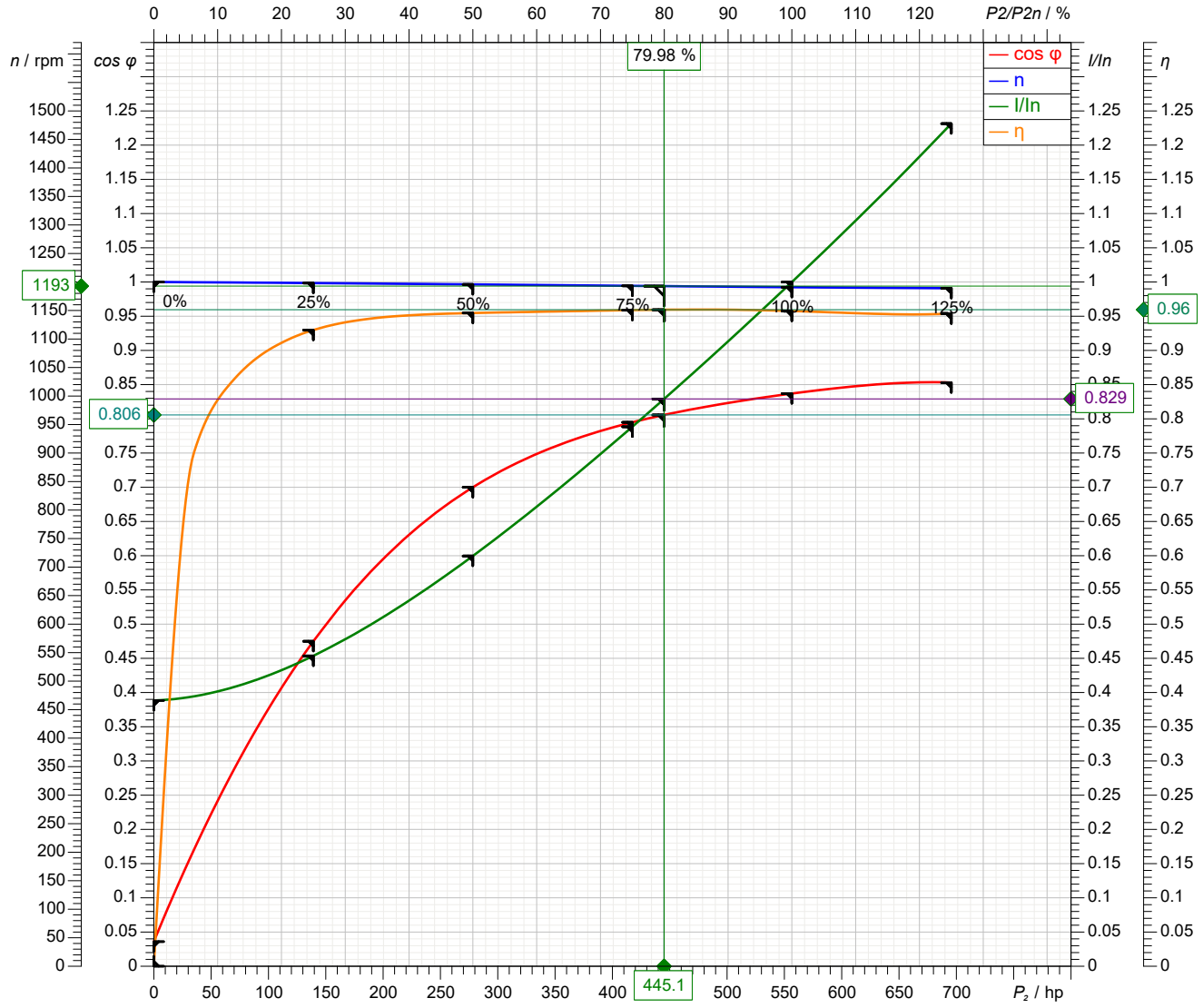
Frequency	PE7C
60 Hz	

Motor performance curve

PE4150/6

SULZER

Rated power	Service factor	Nominal Speed	Number of poles	Rated voltage	Date
557 hp	1	1190 rpm	6	460 V	2022-08-23



Symbol	No load	25 %	50 %	75 %	100 %	125 %
P2/ hp	0	139.1	278.3	417.4	556.5	695.7
P1/ hp	9.709	149.6	291.5	435.3	581.2	729.4
n / rpm	1200	1198	1196	1193	1191	1189
cos φ	0.036	0.475	0.7	0.795	0.837	0.853
I / A	252.4	294.8	389.7	512.4	649.9	800.4
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M / lbf ft	0	609.9	1222	1837	2455	3073
η / %	0	92.98	95.47	95.89	95.76	95.37

Tolerance according to VDE 0530 T1 12.84 for rated power

Starting current	Starting torque	Moment of inertia	No. starts per hour
5390 A	7610 lbf ft	394 lb ft²	15

No: M-02.2920 - 04	**XFP 400T-CH3**
Dat/Nam.: 13.10.2017 / K. Srb	Dimension sheet PE7 DRY WELL Installation
Cad Code: M_022920	Maßblatt PE7 Trockeninstallation
Technical changes reserved Änderungen vorbehalten Sous réserve de modifications	Plan d'encombrement PE7 installation fosse sèche

SULZER

Type Typ Type 50Hz	Type Typ Type 60Hz	Weight Gewicht Poids		H		Size
		(~kg)	(~lb)	(mm)	(inch)	
PE 2500/6-T		3770	8313	2815	110.8	B
PE 3000/6-T	PE 3500/6-60-T	3935	8677	3005	118.3	C
PE 3500/6-T	PE 4150/6-60-T	4020	8864			
PE 4000/6-T	PE 4680/6-60-T	4970	10959	3208	126.3	E
PE 4500/6-T	PE 5000/6-60-T	5030	11091			
PE 5000/6-T	PE 5600/6-60-T	5420	11951	3328	131.0	F
PE 5500/6-T	PE 6200/6-60-T	5515	12161			

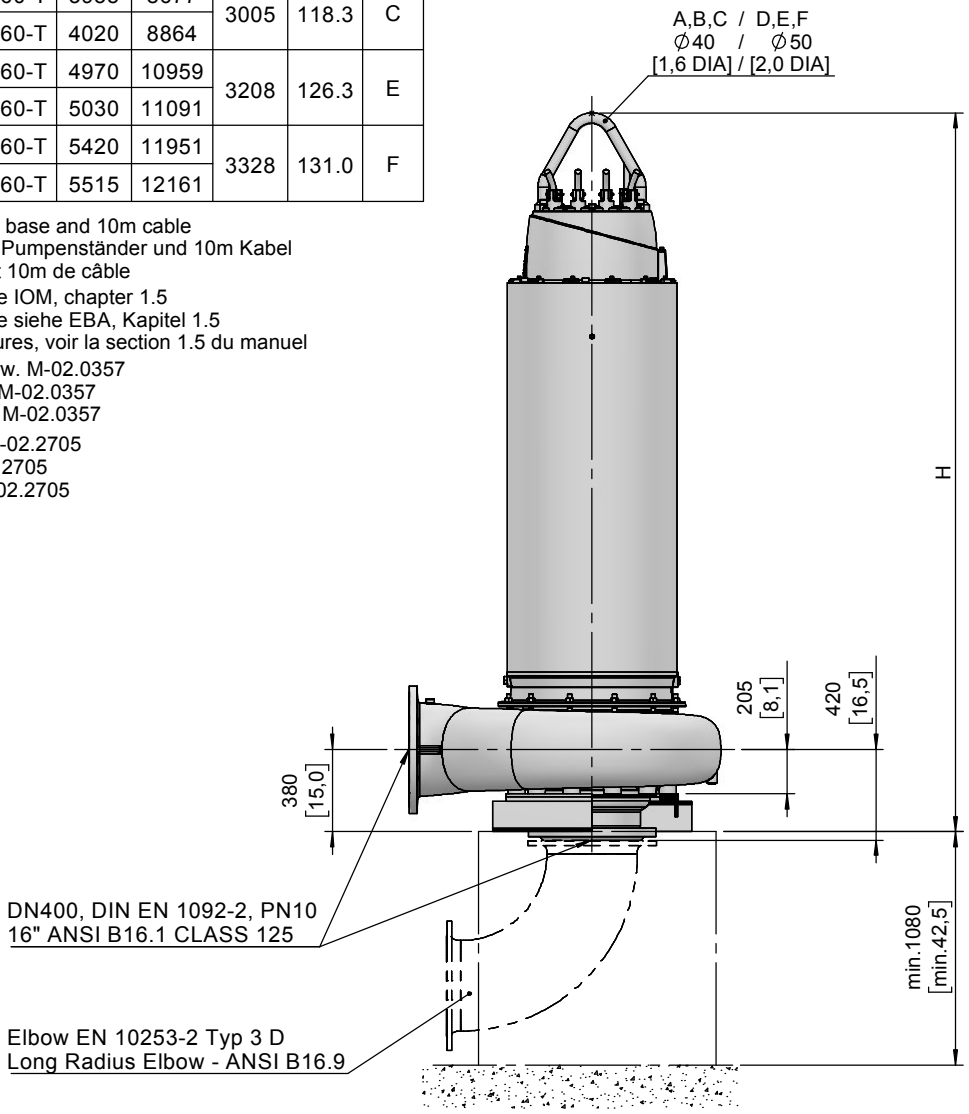
Size D-F is not available in Ex/FM/CSA

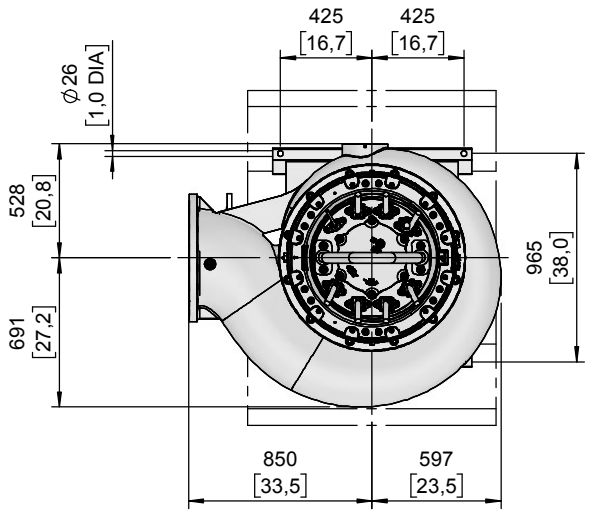
Weight: Includes pump, skirt base and 10m cable
Gewicht: Beinhaltet Pumpe, Pumpenständer und 10m Kabel
Poids: Pompe, coulisseau et 10m de câble

For different cable length see IOM, chapter 1.5
Für abweichende Kabellänge siehe EBA, Kapitel 1.5
Pour des longueurs supérieures, voir la section 1.5 du manuel

Connection details acc. to drw. M-02.0357
Anschlussdetails nach Blatt M-02.0357
Détails des brides cf. dessin M-02.0357

Foundation in acc. to drw. M-02.2705
Fundament nach Plan M-02.2705
Fondation selon schéma M-02.2705





[mm [inch]]