

PROJECT:	TPE3 READY TO SHIP	UNIT TAG:	_____	QUANTITY:	1
REPRESENTATIVE:	Hurley Engineering	TYPE OF SERVICE:	_____	DATE:	2/10/2020
ENGINEER:	_____	SUBMITTED BY:	Devin Carle	DATE:	_____
CONTRACTOR:	To Be Determined	APPROVED BY:	_____	DATE:	_____
		ORDER NO.:	_____	DATE:	_____

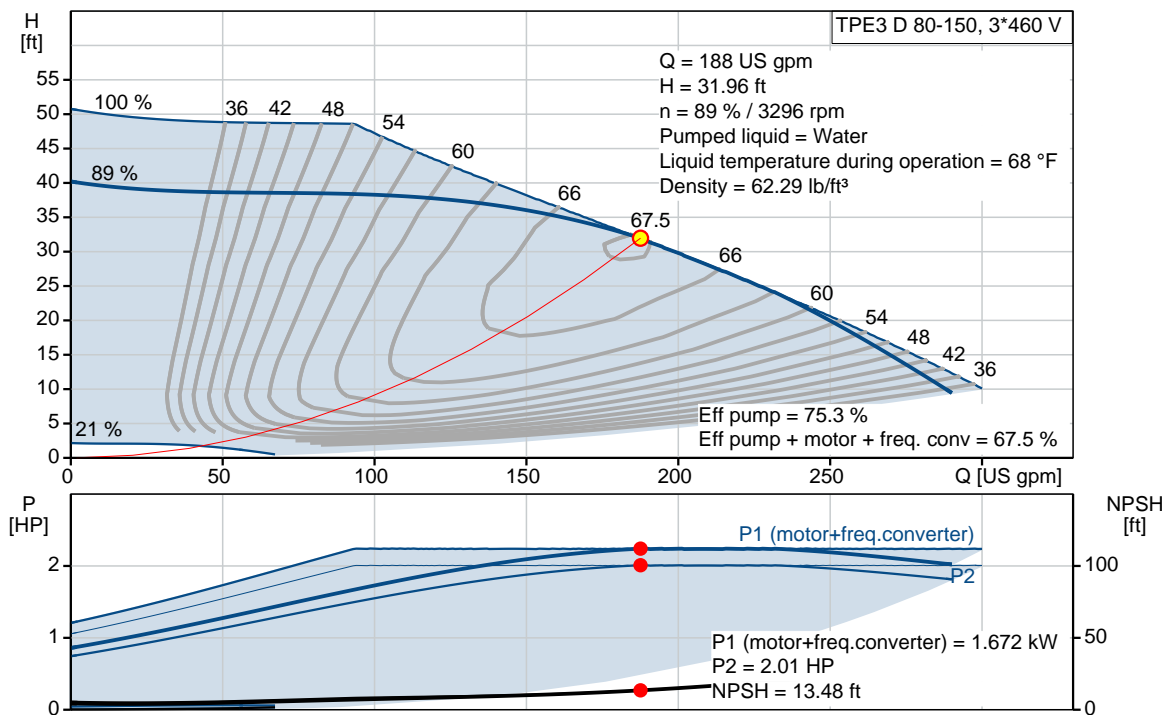


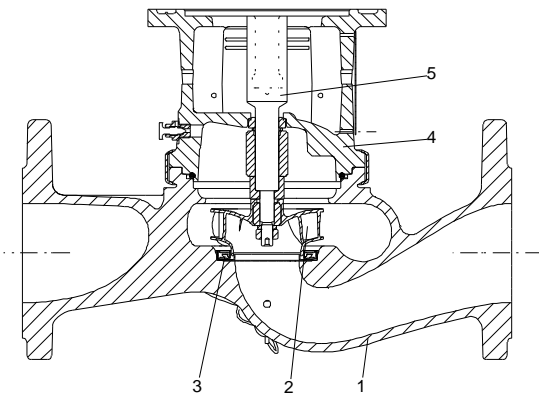
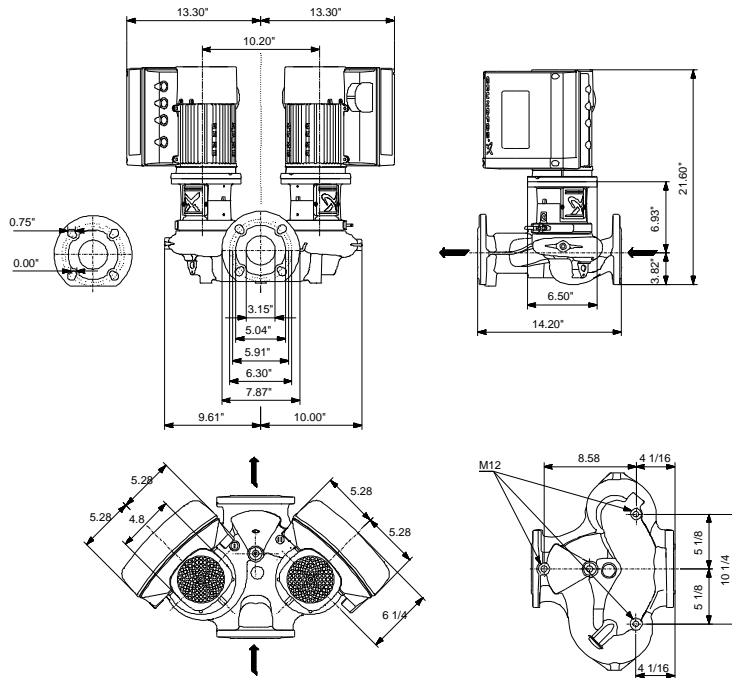
Product photo could vary from the actual product

### TPE3 D 80-150 S-A-G-A-BQQE-HCB

Twin-head single-stage in-line pumps with frequency converters


Conditions of Service	Pump Data	Motor Data
Flow: 188 US gpm	Max pressure at stated temperature: 232 psi / 250 °F	Rated power - P2: 2 HP
Head: 31.96 ft	Liquid temperature range: -13 .. 248 °F	Rated voltage: 440-480 V
Efficiency: 67.5 %	Maximum ambient temperature: 122 °F	Main frequency: 60 Hz
Liquid: Water	Shaft seal: BQQE	Enclosure class: IP55
Temperature: 68 °F	Pipe connection: DN 80	Insulation class: F
NPSH required: 13.48 ft	Product number: 98819854	Motor protection: YES
Viscosity: _____		Motor type: 90C
Specific Gravity: 1.000		Motor_efficiency: 89.4 %

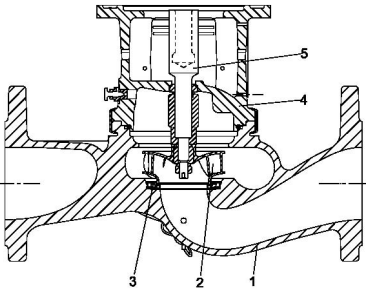


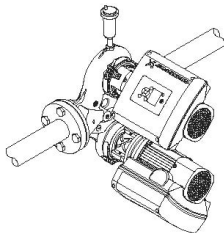


**Materials:**

- Pump housing: Cast iron  
ASTM A48-40 B
- Impeller: Composite PES/PP 30%  
GF
- Material code: A

Count	Description
1	<p data-bbox="288 405 718 443"><b>TPE3 D 80-150 S-A-G-A-BQQE-HCB</b></p> <div data-bbox="422 504 550 672" style="text-align: center;">  </div> <p data-bbox="288 728 566 761">Product No.: <a href="#">98819854</a></p> <p data-bbox="288 795 1396 896">Single-stage, close-coupled, volute twin-head pump with in-line suction and discharge ports of identical diameter. The twin-head pump is designed with two parallel power-heads. The pump is of the top-pull-out design, i.e. the power head (motor, pump head and impeller) can be removed for maintenance or service while the pump housing remains in the pipework.</p> <p data-bbox="288 907 1396 963">Each power head is fitted with an unbalanced rubber bellows seal. The shaft seal is according to EN 12756. Pipework connection is via PN 16 ANSI flanges.</p> <p data-bbox="288 974 829 996">Pipework connection is via PN 16 ANSI flanges.</p> <p data-bbox="288 996 1396 1052">Each power head is fitted with a fan-cooled, permanent-magnet synchronous motor of identical size. The motor efficiency is classified as IE5 in accordance with IEC 60034-30-2.</p> <p data-bbox="288 1052 1396 1131">The motor includes a frequency converter and PI controller in the motor terminal box. This enables continuously variable control of the motor speed, which again enables adaptation of the performance to a given requirement.</p> <p data-bbox="288 1131 1197 1164">The pump is fitted with a combined temperature- and differential-pressure sensor.</p> <p data-bbox="288 1198 622 1232"><b>Further product details</b></p> <p data-bbox="288 1232 1396 1288">The pump is suitable for applications requiring pressure or temperature control and offers following control modes:</p> <ul data-bbox="335 1288 1396 1747" style="list-style-type: none"> <li>- AUTOADAPT. This function continuously adjusts the proportional-pressure curve and automatically sets a more efficient curve without compromising comfort demands.</li> <li>- FLOWADAPT. This control mode combines AUTOADAPT with a flow-limiting function. The pump continuously monitors the flow rate to ensure the desired maximum flow is not exceeded. This will save the cost of a separate pump-throttling valve.</li> <li>- Constant differential pressure. The pump head is kept constant, independent of the flow in the system.</li> <li>- Proportional pressure. The head of the pump will increase proportionally to the flow in the system to compensate for the large pressure losses in the distribution pipes.</li> <li>- Constant temperature. The return-pipe temperature is kept constant. Note: If the pump is installed in the flow pipe, an external temperature sensor must be installed in the return pipe of the system.</li> <li>- Constant differential temperature. The differential temperature can be measured by a differential-temperature sensor or two separate temperature sensors.</li> <li>- Constant curve. The pump can be set to run at a constant speed in the range of 25 to 100 % of the maximum speed.</li> </ul> <p data-bbox="288 1758 1396 1814">Wireless communication between the two power heads is quickly and easily obtained. The pump heads can be set to cascade mode, alternating mode or duty/standby.</p> <p data-bbox="288 1870 1396 1926">The operating panel on the motor terminal box features a four-inch TFT display, push-buttons and the Grundfos Eye indicator.</p>

Count	Description
	<p>The display gives an intuitive and user-friendly interface to all functions. The push-buttons are used to navigate through the menu structure to access pump and performance data on site and enable setting of required setpoint as well as setting of pump to "Min." or "Max." operation or to "Stop".</p> <p>Communication with the pump is also possible by means of Grundfos GO Remote (accessory). The remote control enables further settings as well as reading out of a number of parameters such as "Actual value", "Speed", "Power input" and total "Power consumption".</p> <p>The Grundfos Eye indicator on the operating panel provides visual indication of pump status:</p> <ul style="list-style-type: none"> <li>• "Power on": Motor is running (rotating green indicator lights) or not running (permanently green indicator lights)</li> <li>• "Warning": Motor is still running (rotating yellow indicator lights) or has stopped (permanently yellow indicator lights)</li> <li>• "Alarm": Motor has stopped (flashing red indicator lights).</li> </ul> <p><b>Pump</b></p> <p>Pump housing and pump head are electrocoated to improve the corrosion resistance. Electrocoating includes:</p> <ol style="list-style-type: none"> <li>1) Alkaline-based cleaning.</li> <li>2) Pretreatment with zinc phosphate coating.</li> <li>3) Cathodic electrocoating (epoxy).</li> <li>4) Curing of paint film at 200-250 °C.</li> </ol>  <p>1: Pump housing                  2: Impeller                  3: Neck ring                  4: Pump head/motor stool                  5: Stub shaft</p> <p>The twin-head pump is designed with two parallel power-heads. A flap valve in the common discharge port is opened by the flow of the pumped liquid and prevents backflow of liquid into the idle pump head.</p> <p>The pump housing is provided with a replaceable stainless steel/PTFE neck ring to reduce the amount of liquid running from the discharge side of the impeller to the suction side. The impeller is secured to the shaft with a nut.</p> <p>The pump is fitted with an unbalanced rubber bellows seal with torque transmission across the spring and around the bellows. Due to the bellows, the seal does not wear the shaft, and the axial movement is not prevented by deposits on the shaft.</p> <p>Primary seal:</p> <ul style="list-style-type: none"> <li>• Rotating seal ring material: silicon carbide (SiC)</li> <li>• Stationary seat material: silicon carbide (SiC)</li> </ul> <p>This material pairing is used where higher corrosion resistance is required. The high hardness of this material pairing offers good resistance against abrasive particles.</p>

Count	Description
	<p>Secondary seal material: EPDM (ethylene-propylene rubber)                      EPDM has excellent resistance to hot water. EPDM is not suitable for mineral oils.</p> <p>A circulation of liquid through the duct of the air vent screw ensures lubrication and cooling of the shaft seal.</p> <p>Twin-head pumps installed in horizontal pipes must be fitted with an automatic air vent in the upper part of the pump housing. The automatic air vent is not supplied with the pump.</p>  <p>The motor stool forms connection between the pump housing and the motor, and is equipped with a manual air vent screw for venting of the pump housing and the shaft seal chamber. The sealing between motor stool and pump housing is an O-ring.</p> <p>The central part of the motor stool is provided with guards for protection against the shaft and coupling. Motor and pump shaft are connected via a rigid sleeve coupling.</p> <p><b>Motor</b></p> <p>The motor is a totally enclosed, fan-cooled motor with principal dimensions to IEC and DIN standards. Electrical tolerances comply with IEC 60034.</p> <p>The motor efficiency is classified as IE5 in accordance with IEC 60034-30-2.                      The motor requires no external motor protection. The motor control unit incorporates protection against slow- and quick-rising temperatures, e.g. constant overload and stalled conditions.</p> <p>The terminal box holds terminals for these connections:</p> <ul style="list-style-type: none"> <li>- one dedicated digital input</li> <li>- two analog inputs, 0(4)-20 mA, 0-10 V</li> <li>- one configurable digital input or open-collector output</li> <li>- Grundfos combined temperature and differential pressure sensor (separate connected)</li> <li>- 24 V voltage supply for sensors</li> <li>- two signal relay outputs (potential-free contacts)</li> <li>- the two power heads communicate via wireless GENIair or wired GENI connection</li> <li>- interface for Grundfos CIM fieldbus module.</li> </ul> <p><b>Technical data</b></p> <p>Controls:                      Frequency converter: Built-in</p> <p><b>Liquid:</b>                      Pumped liquid: Water                      Liquid temperature range: -13 .. 248 °F                      Selected liquid temperature: 68 °F                      Density: 62.29 lb/ft³</p> <p><b>Technical:</b></p>



Company name: Hurley Engineering  
Created by:  
Phone:

Date: 2/28/2020

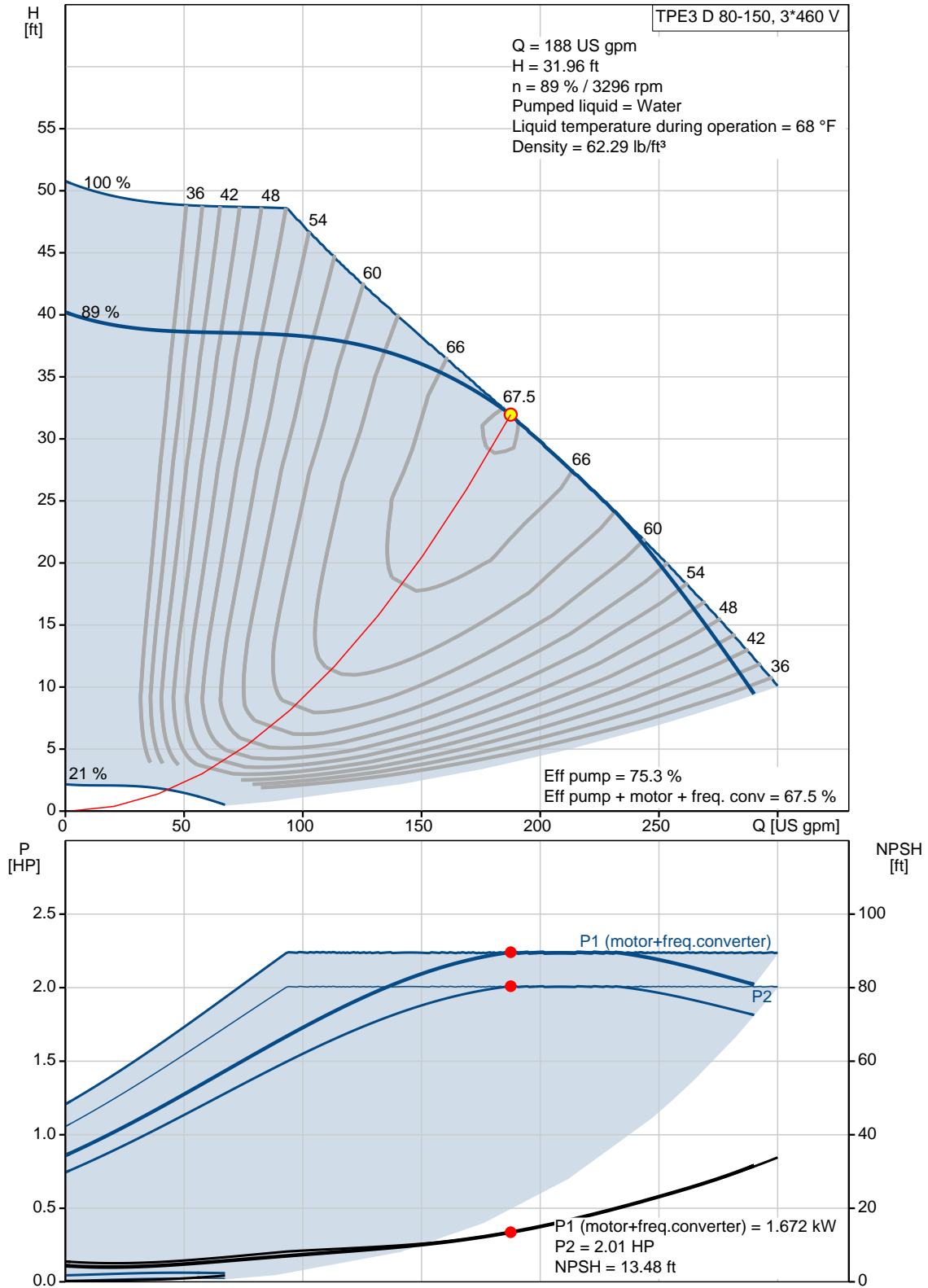
Count	Description
	<p>Pump speed on which pump data is based: 3400 rpm Actual calculated flow: 188 US gpm Resulting head of the pump: 31.96 ft Actual impeller diameter: 3.54 in Code for shaft seal: BQQE Curve tolerance: ISO9906:2012 3B2</p> <p><b>Materials:</b> Pump housing: Cast iron ASTM A48-40 B EN 1561 EN-GJL-250 Impeller: Composite PES/PP 30% GF</p> <p><b>Installation:</b> Range of ambient temperature: -4 .. 122 °F Maximum operating pressure: PN 16 bar Max pressure at stated temperature: 232 psi / 250 °F Type of connection: ANSI Pipe connection: DN 80 Pressure rating for pipe connection: PN 16 Port-to-port length: 14 3/16 in Flange size for motor: 56C</p> <p><b>Electrical data:</b> Motor type: 90C IE Efficiency class: IE5 Rated power - P2: 2 x 2 HP Main frequency: 60 Hz Rated voltage: 3 x 440-480 V Rated current: 2.65 A Cos phi - power factor: 0.87 Rated speed: 360-4000 rpm IE efficiency: 89.4% Motor efficiency at full load: 89.4 % Enclosure class (IEC 34-5): IP55 Insulation class (IEC 85): F Motor Number: 99630348</p> <p><b>Others:</b> DOE Pump Energy Index VL: 0.42 ErP status: EuP Standalone/Prod. Net weight: 152 lb Gross weight: 181 lb Shipping volume: 8.83 ft<sup>3</sup> Country of origin: HU Custom tariff no.: 8413.70.2022</p>



Company name: Hurley Engineering  
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Phone:

Date: 2/28/2020

### 98819854 TPE3 D 80-150 S-A-G-A-BQQE-HCB 60 Hz



Description	Value
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**General information:**

Product name:	TPE3 D 80-150 S-A-G-A-BQQE-HCB
Product No.:	98819854
EAN:	5712601848046 5712601848046

**Technical:**

Pump speed on which pump data is based:	3400 rpm
Actual calculated flow:	188 US gpm
Resulting head of the pump:	31.96 ft
Head max:	49.22 ft
Actual impeller diameter:	3.54 in
Code for shaft seal:	BQQE
Curve tolerance:	ISO9906:2012 3B2
Pump version:	A
Model:	A

**Materials:**

Pump housing:	Cast iron ASTM A48-40 B EN 1561 EN-GJL-250
Impeller:	Composite PES/PP 30% GF

**Installation:**

Range of ambient temperature:	-4 .. 122 °F
Maximum operating pressure:	PN 16 bar

Max pressure at stated temperature:	232 psi / 250 °F
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Type of connection:	ANSI
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Pipe connection:	DN 80
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Pressure rating for pipe connection:	PN 16
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Port-to-port length:	14 3/16 in
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Flange size for motor:	56C
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Connect code:	G
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**Liquid:**

Pumped liquid:	Water
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Liquid temperature range:	-13 .. 248 °F
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Selected liquid temperature:	68 °F
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Density:	62.29 lb/ft³
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**Electrical data:**

Motor type:	90C
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IE Efficiency class:	IE5
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Rated power - P2:	2 x 2 HP
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Main frequency:	60 Hz
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Rated voltage:	3 x 440-480 V
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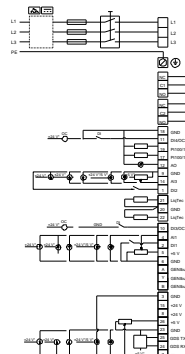
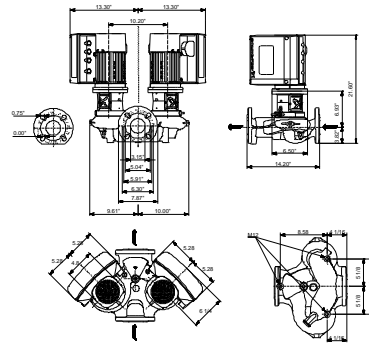
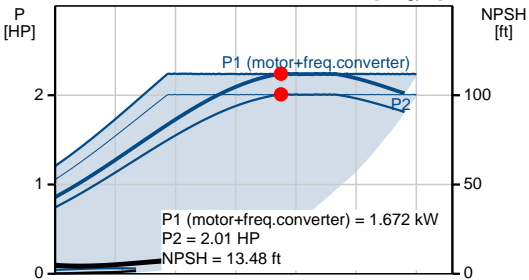
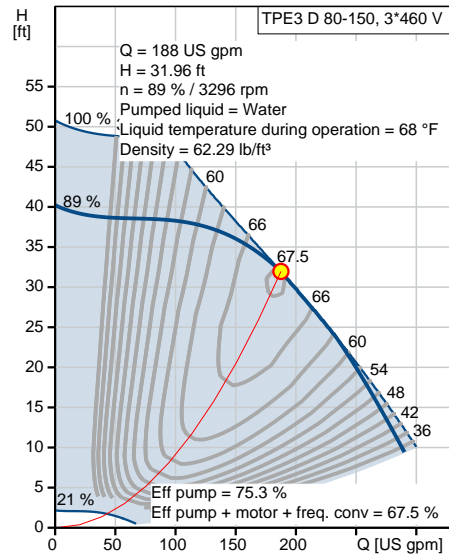
Rated current:	2.65 A
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Cos phi - power factor:	0.87
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Rated speed:	360-4000 rpm
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IE efficiency:	89.4%
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Motor efficiency at full load:	89.4 %
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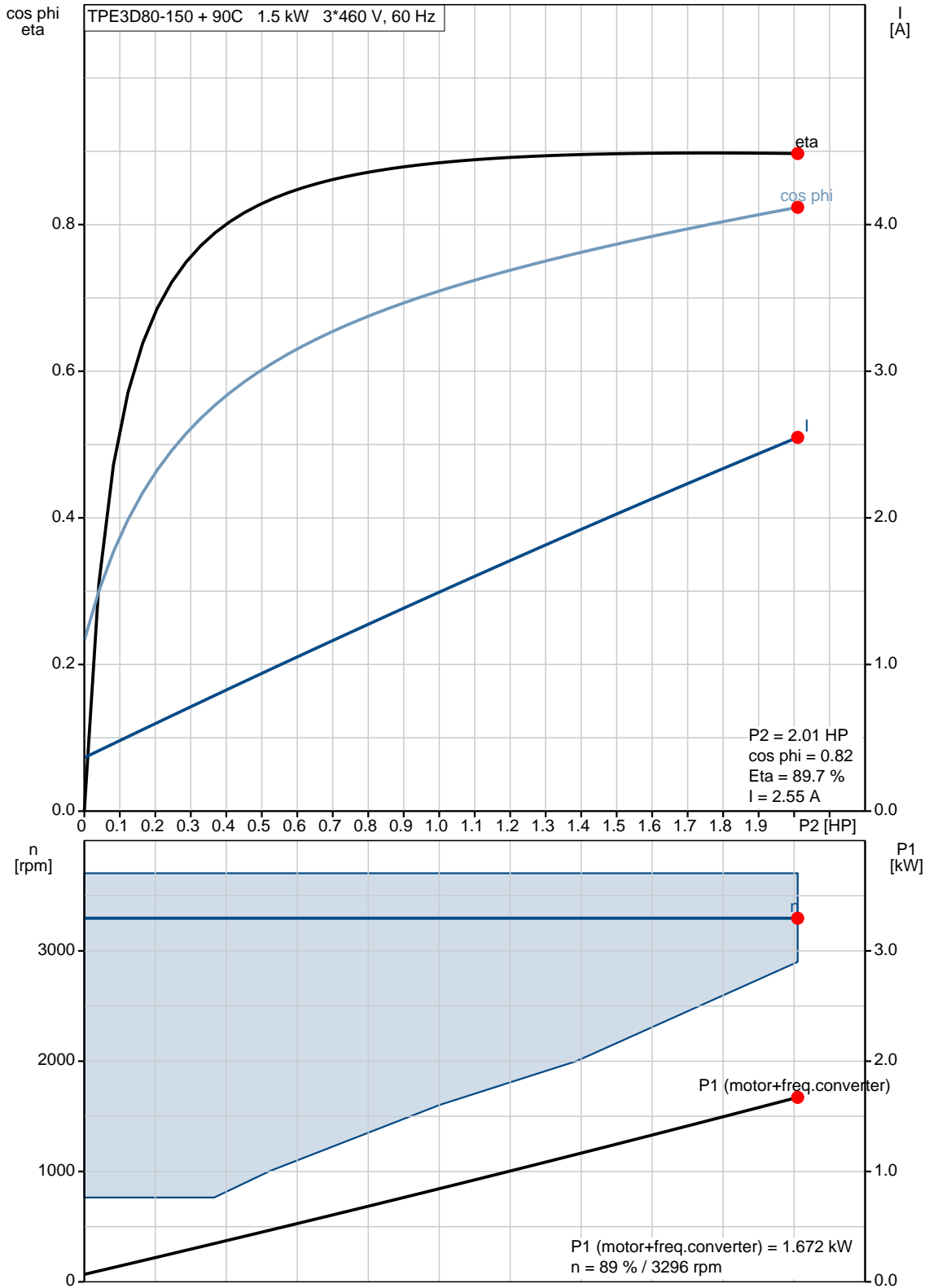


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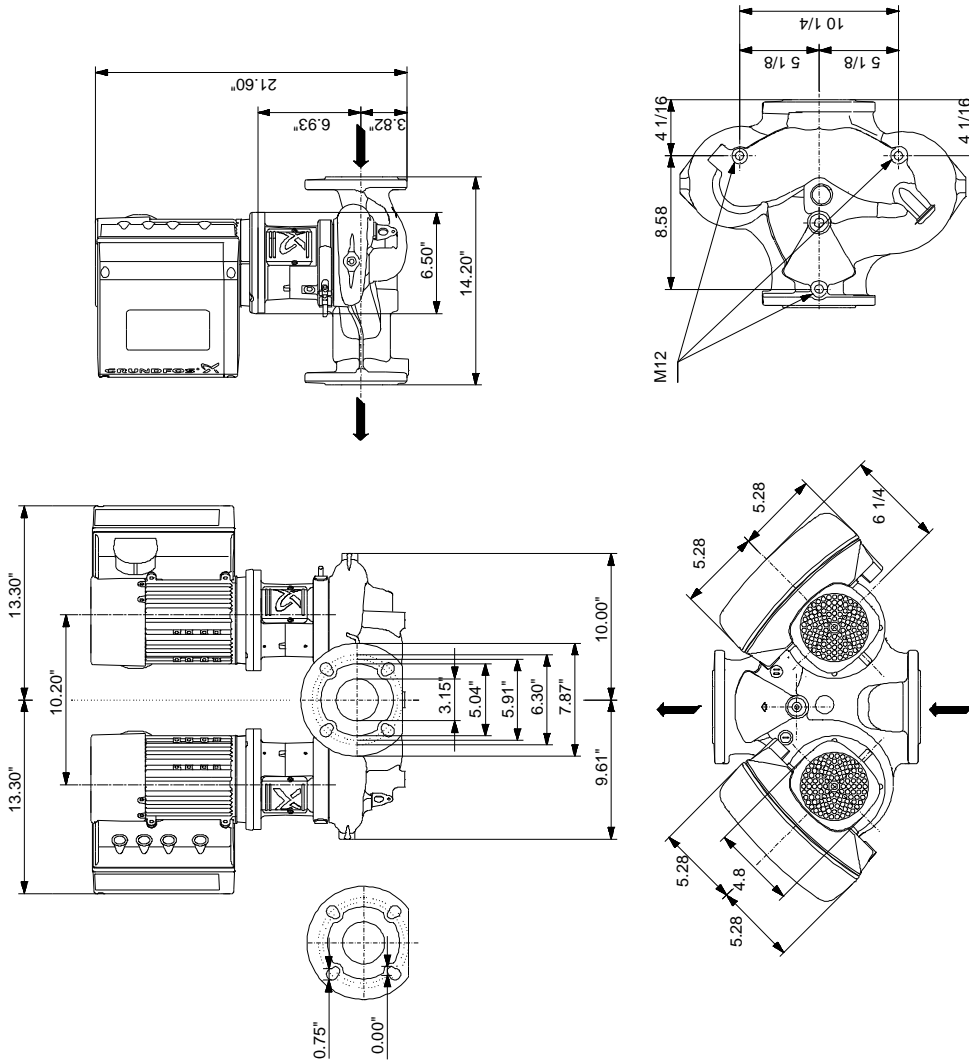
Date: 2/28/2020

Description	Value
Enclosure class (IEC 34-5):	IP55
Insulation class (IEC 85):	F
Motor protection:	YES
Motor Number:	99630348
<b>Controls:</b>	
Control panel:	HMI300 - Graphical
Function Module:	FM300 - Advanced
Frequency converter:	Built-in
<b>Others:</b>	
DOE Pump Energy Index VL:	0.42
ErP status:	EuP Standalone/Prod.
Net weight:	152 lb
Gross weight:	181 lb
Shipping volume:	8.83 ft <sup>3</sup>
Config. file no:	98484875
Country of origin:	HU
Custom tariff no.:	8413.70.2022

**98819854 TPE3 D 80-150 S-A-G-A-BQQE-HCB 60 Hz**

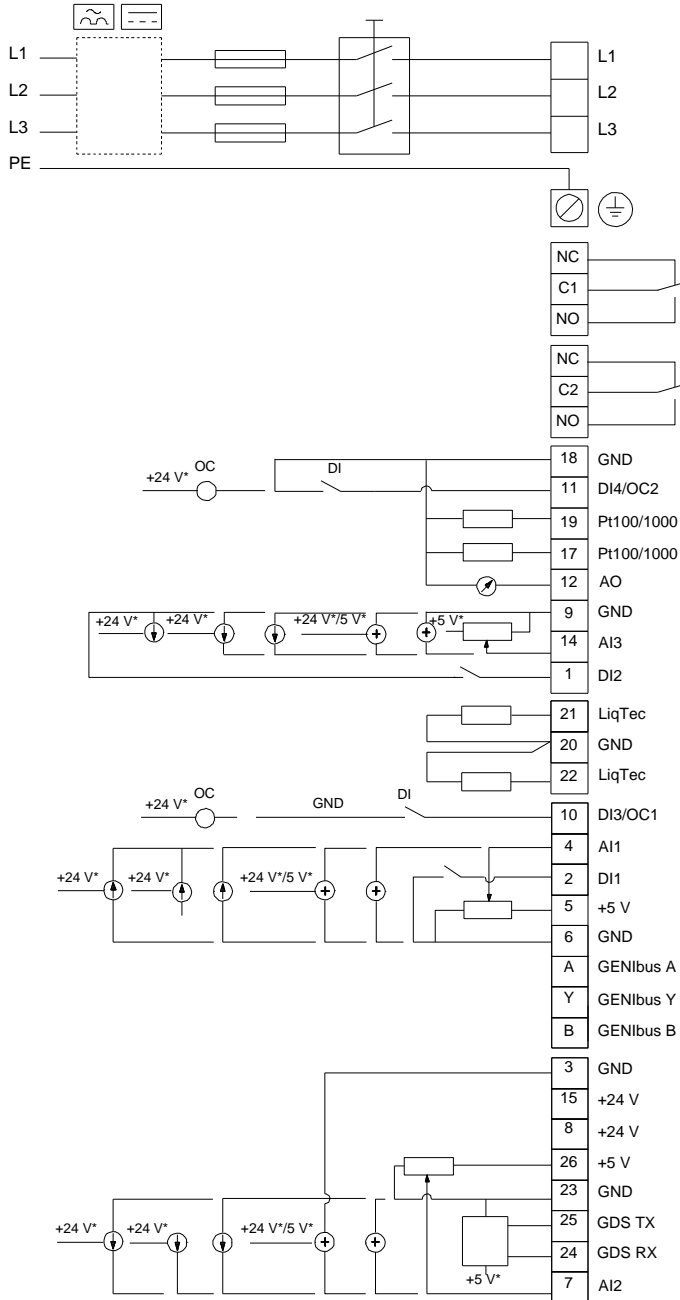


**98819854 TPE3 D 80-150 S-A-G-A-BQQE-HCB 60 Hz**



Note! All units are in [in] unless otherwise stated.  
 Disclaimer: This simplified dimensional drawing does not show all details.

## 98819854 TPE3 D 80-150 S-A-G-A-BQQE-HCB 60 Hz



All units are [in] unless otherwise presented.



**Company name:** Hurley Engineering  
**Created by:**  
**Phone:**

**Date:** 2/28/2020

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**Order Data:**

Product name: TPE3 D 80-150 S-A-G-A-BQQE-HCB  
Amount: 1  
Product No.: 98819854

Total: Price on request

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