Packaged Pumping System

GRUNDFOS **HYDRO MPC CME**

The Grundfos Hydro MPC CME is a compact, reliable, and energy efficient packaged pumping system ideal for pressure boosting and HVAC applications in apartments, large homes, and multistory buildings.

The advanced Grundfos controls and MLE motor, in combination with variable speed multistage pumps, deliver unsurpassed system efficiency. This plug-and-pump system is easy to specify, install and will provide energy efficient and reliable operation for years.

KEY FEATURES AND BENEFITS

- **Single source responsibility** ensures one point of contact for all questions and service
- **Affordable packaged system** with the most advanced controller; offered in 2–3 pump configurations
- **Compact design** fits into tight spaces — through a 36" standard door — making it ideal for retrofits
- **Drinking water approvals** from UL Listed Packaged Pumping System and NSF 61/372 drinking water certified; plus ASHRAE 90.1 compliant

CU 352 CONTROLLER

- **Pump cascade control,** using efficiency-based sequencing, delivers the most efficient operation and protects pumps from running outside their duty range
- **SCADA communication capable** via Ethernet and all industry standard BUS protocols utilizing CIM expansion cards, with BACnet MSTP as standard
- **100kA SCCR fault current** rated panel
- **Built-in logging capability** records operational data such as system built-in performance, flow estimation and energy consumption for troubleshooting and energy analysis
- **Proportional pressure control** makes possible to simulate remote mounted sensor for simplified installation
- **Secondary (fallback) sensor** allows for system control from local sensor, with corresponding setpoint, if remote sensor fails
- **Check valve failure notification** warns or alarms, based on check valve leak rate
- **HVAC controls** includes differential pressure control from the two integrated sensors and multizone control for up to six zones

CME PUMP

- **Horizontal multistage pump** that is a compact, reliable and quiet solution
- **Materials of Construction:** cast iron (ASTM A48), stainless steel (AISI 304 and AISI 316)

MLE MOTOR

- **Grundfos Permanent Magnet MLE motors'** offer significant energy savings over NEMA Premium motors with conventional VFD's
- **Built-in protection** against power supply interruptions, along with environment and motor load
- **Innovative design mitigates** against bearing currents

MANIFOLDS

- **316 stainless steel manifolds** are engineered to reduce pressure loss and protect against corrosion

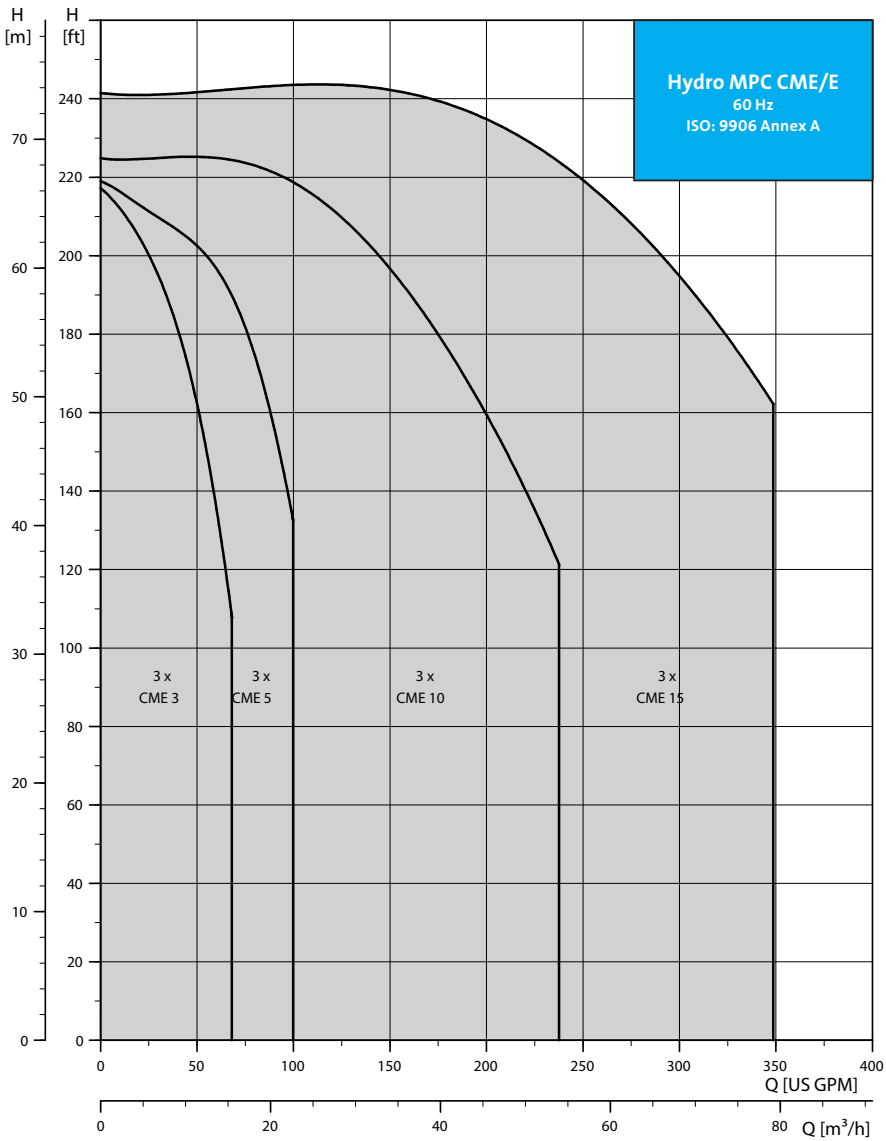
APPLICATIONS

- Pressure Boosting
- Hydronic Heating and Cooling

TECHNICAL DATA

HYDRO MPC CME	
FLOW, Q (2–3 PUMPS):	max. 345 gpm (78.36 m³/h)
HEAD, H:	max. 230 ft (70 m)
WORKING PRESSURE:	max. 145 psi (10 bar)
LIQUID TEMPERATURE:	• CME3-5: 32° F to 140° F (0° C to 60 °C) • CME10-15: 32° F to 180° F (0° C to 82 °C)
APPROVALS:	• System NSF 61/372 Certified • UL Listed Packaged Pumping System

PERFORMANCE DATA



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L-BPQ-SL-06 08-19

Pump Performance Datasheet

Customer	:	Quote Number / ID	: 1561369
Customer ref. / PO	:	Model	: Hydro MPC 2CME 15-1 3x230V 60Hz
Tag Number	: Hydro MPC 2CME 15-1 3x230V 60Hz	Part Number	: 99659071
Service	:	Stages	: 1
Quantity	: 1	Based on curve number	: 99381512
Quantity of pumps	: 2 active + 0 standby	Date last saved	: 12/29/2021 2:39 PM

Operating Conditions

System flowrate	: 184.1 USgpm
Flowrate per pump	: 92.03 USgpm
Differential head / pressure, rated (requested)	: 69.63 ft
Differential head / pressure, rated (actual)	: 69.63 ft
Suction pressure, min / max	: 0.00 / 0.00 psi.g
NPSH available, rated	: Ample
Site Supply Frequency	: 60 Hz
Power Supply	: 3ph 230V

Performance

Speed, rated	: 3599 rpm
Speed, maximum	: 3599 rpm
Speed, minimum	: 600 rpm
Pump efficiency	: 68.67 %
NPSH required / margin required	: 20.70 / 0.00 ft
nq (imp. eye flow) / S (imp. eye flow)	: 26 / 70 Metric units
Head maximum, rated speed	: 88.13 ft
Head rise to shutoff	: 26.57 %
Flow, best eff. point	: 88.96 USgpm
Flow ratio, rated / BEP	: 103.45 %
Speed ratio (rated / max)	: 100.00 %
Head ratio (rated speed / max speed)	: 100.00 %
Cq/Ch/Ce/Cn [ANSI/HI 9.6.7-2010]	: 1.00 / 1.00 / 1.00 / 1.00
Selection status	: Acceptable

Liquid

Liquid type	: Cold Water
Additional liquid description	:
Temperature, max	: 68.00 deg F
Fluid density, rated / max	: 1.000 / 1.000 SG
Viscosity, rated	: 1.00 cP
Vapor pressure, rated	: 0.34 psi.a

Material

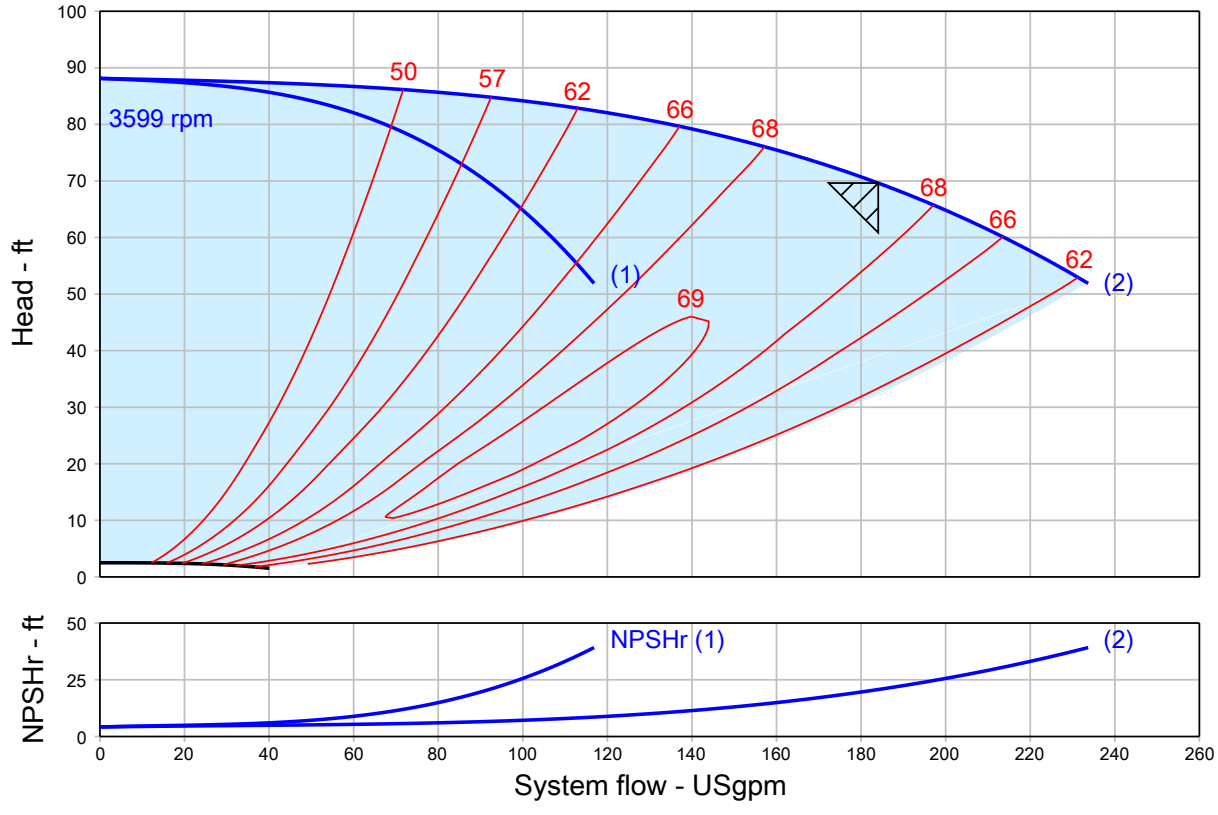
Material selected	: Standard - Cast Iron / 304 Stainless Steel

Pressure Data

Pump shut off pressure	: 38.14 psi.g
Maximum allowable suction pressure	: 109.0 psi.g

Driver & Power Data (@Max density)

Motor sizing specification	: Max power (non-overloading)
Margin over specification	: 0.00 %
Service factor	: 1.15
Rated power (based on duty point)	: 2 x 2.36 hp
Max power (non-overloading)	: 2 x 2.50 hp
Motor rating	: 2 x 3.00 hp / 2.24 kW (Fixed)



GRUNDFOS

SUBMITTAL

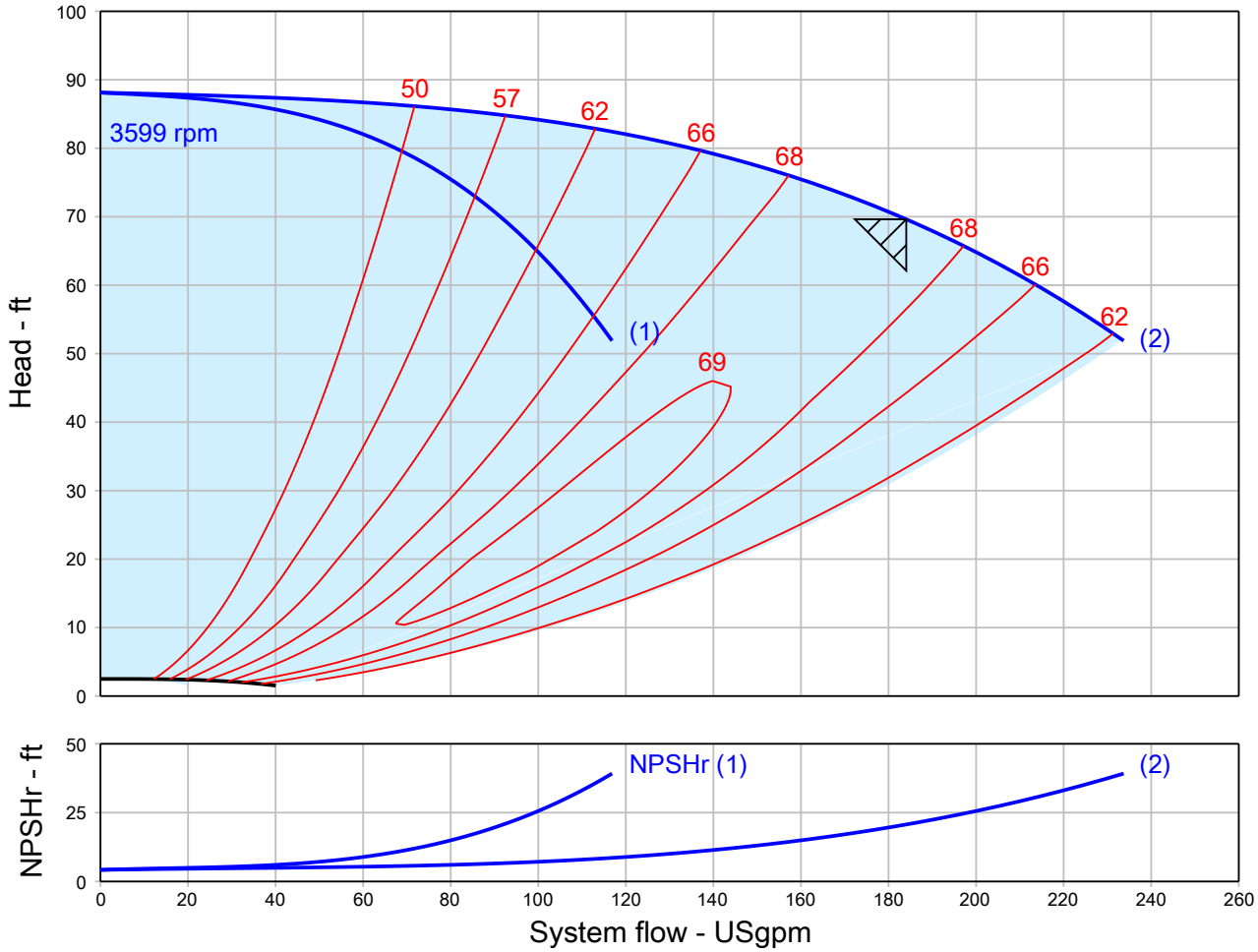
Hydro MPC E with CME pumps

QUOTE NUMBER / ID 1561369	**UNIT TAG Hydro MPC 2CME 15-1 3x230V 60Hz**	**QUANTITY 1**
REPRESENTATIVE	**SERVICE**	**DATE**
ENGINEER	**SUBMITTED BY**	**DATE**
CONTRACTOR	**APPROVED BY**	**DATE**
	ORDER #	

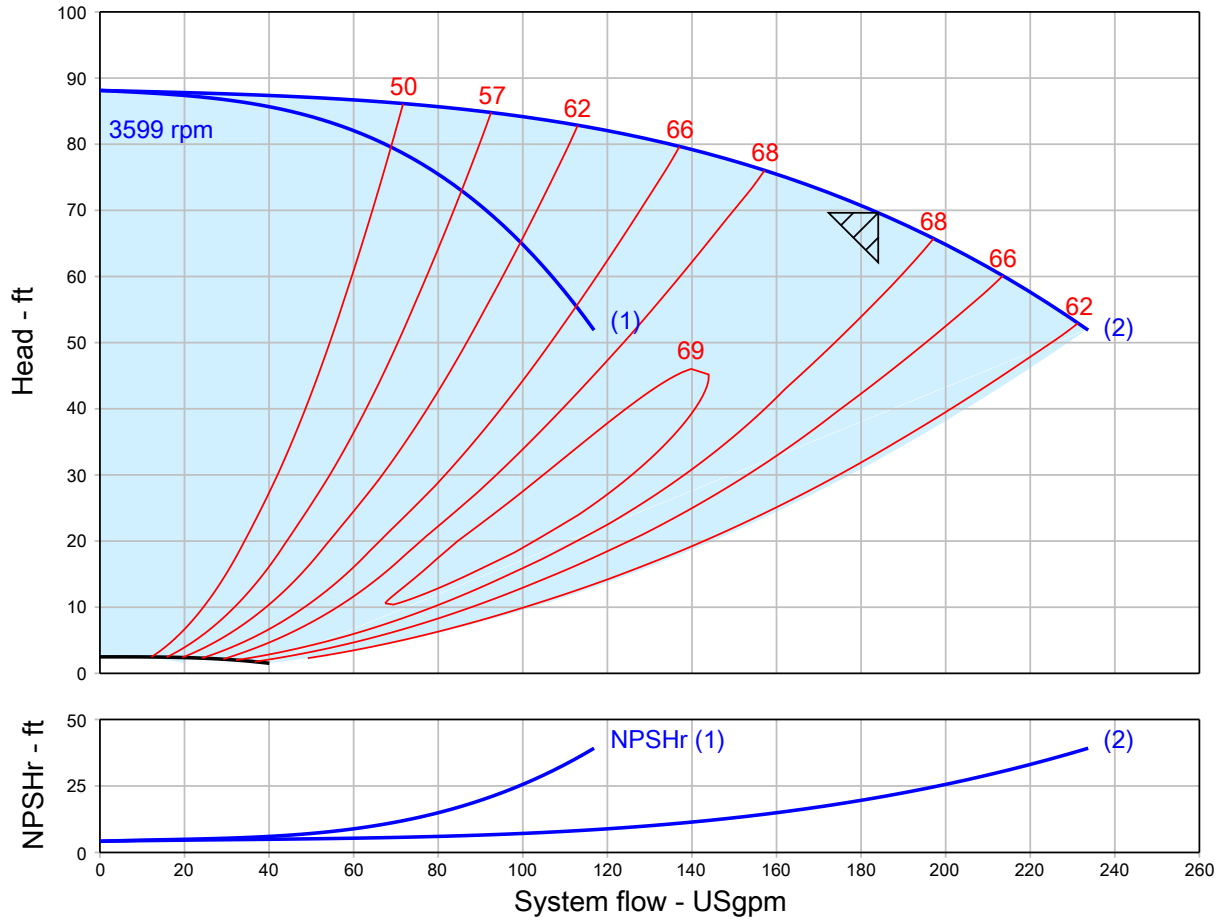
Hydro MPC 2CME 15-1 3x230V 60Hz 3480 rpm

Part Number 99659071

Conditions of Service		Pump Data		Motor Data	
Flow	92.03 USgpm	Material	Standard - Cast Iron / 304 Stainless Steel	Motor HP	3 HP
Head	69.63 ft			BHP	2.36 HP
Liquid	Cold Water			Enclosure	TEFC
Temperature	68.00 deg F	Pump shut off pressure	38.14 psi.g	Voltage	200-240 V
NPSHr	20.70 ft	Max Allowable Suction Pressure	109.0 psi.g	Phase	3 Phase
Viscosity	1.00 cP				
Specific Gravity	1.000 SG	Efficiency	68.67 %		



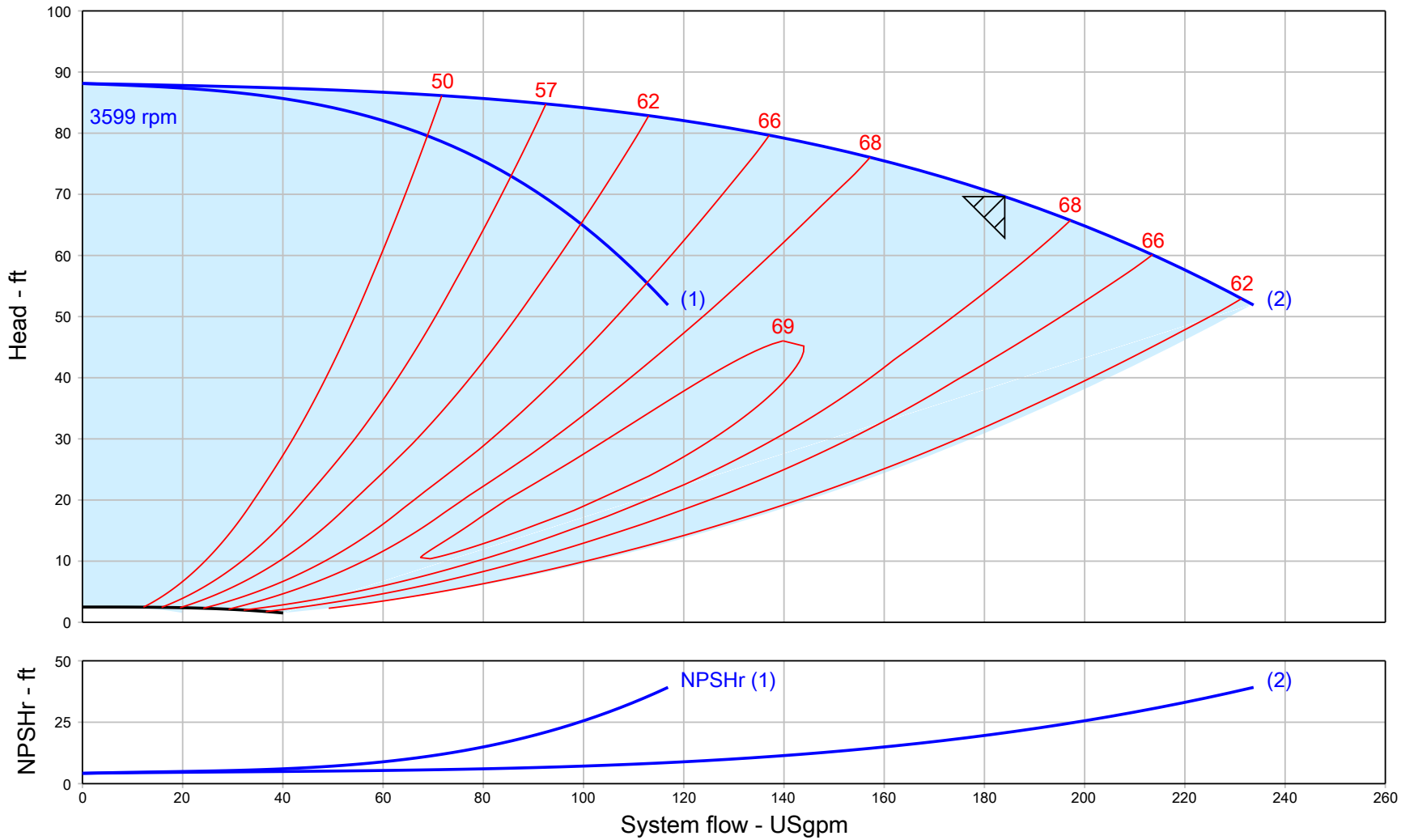
Pump Performance Curve



Customer	:
Customer ref. / PO	:
Tag Number	: Hydro MPC 2CME 15-1 3x230V 60Hz
Service	:
Quantity	: 1
Quote Number / ID	: 1561369
Date last saved	: 12/29/2021 2:39 PM
System flowrate	: 184.1 USgpm
Flowrate per pump	: 92.03 USgpm
Differential head / pressure, rated	: 69.63 ft
Pressure control curve	: None

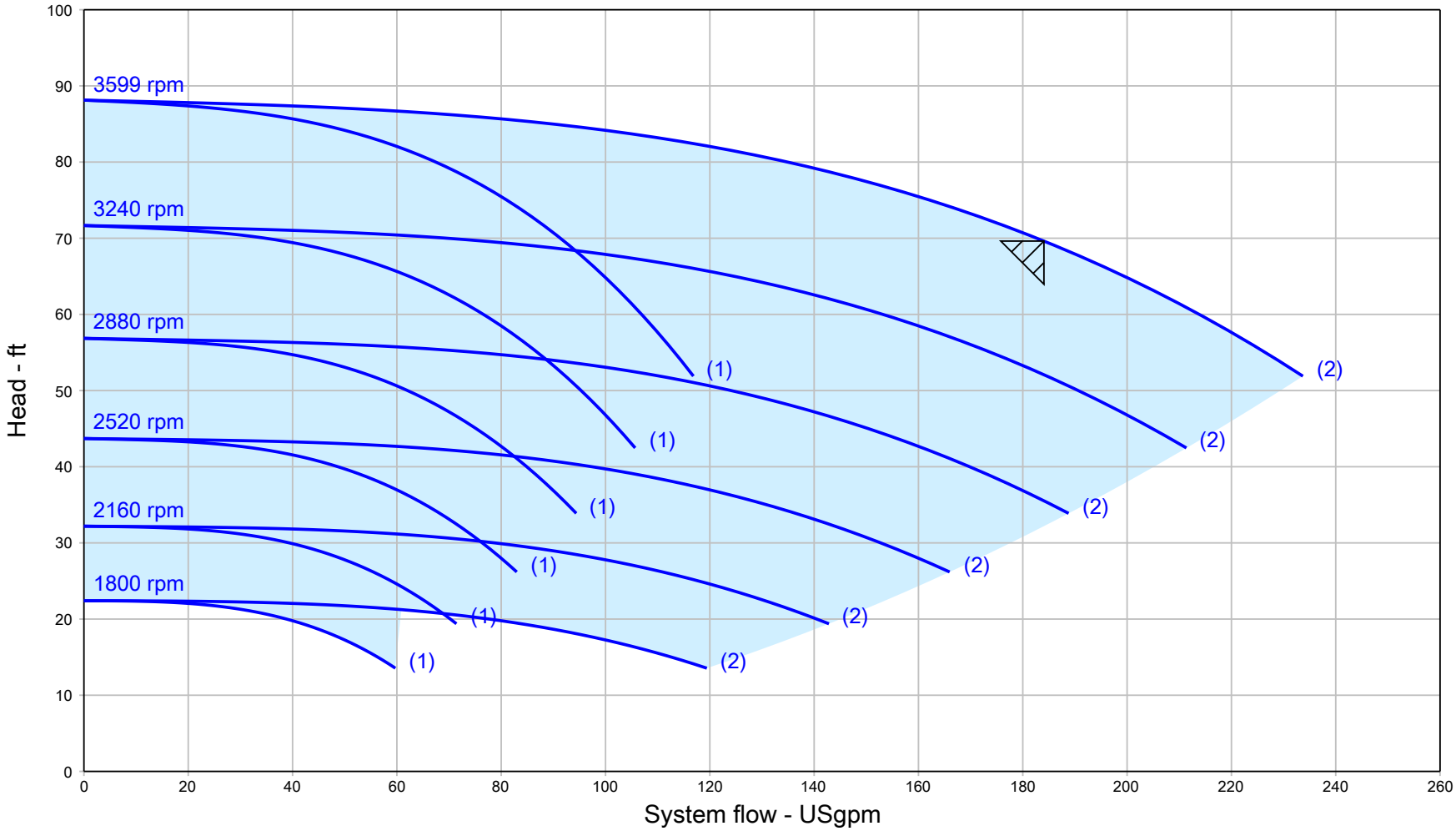
Model	: Hydro MPC 2CME 15-1 3x230V 60Hz
Stages	: 1
Speed, rated	: 3599 rpm
Based on curve number	: 99381512
Pump efficiency	: 68.67 %
Rated power (based on duty point)	: 2 x 2.36 hp
NPSH required	: 20.70 ft
Fluid density, rated / max	: 1.000 / 1.000 SG
Viscosity	: 1.00 cP

Pump Performance Curve



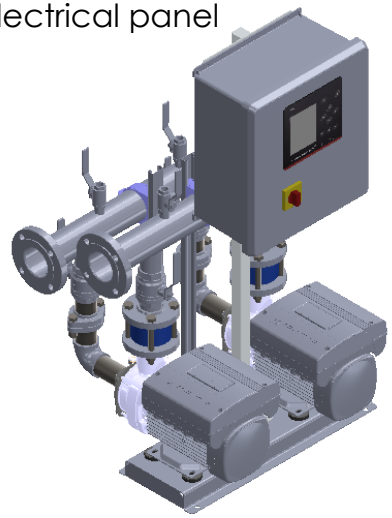
Project name	: gogrundfos.com	Tag Number	: Hydro MPC 2CME 15-1 3x230V 60Hz	Speed, rated	: 3599 rpm
Consulting engineer	:			System flowrate	: 184.1 USgpm
Customer	:	Service	:	Flowrate per pump	: 92.03 USgpm
Customer ref. / PO	:	Model	: Hydro MPC 2CME 15-1 3x230V 60Hz	Differential head / pressure, rated	: 69.63 ft
Quote Number / ID	: 1561369			Rated power (based on duty point)	: 2 x 2.36 hp
Date last saved	: 12/29/2021 2:39 PM	Quantity	: 1	Max power (non-overloading)	: 2 x 2.50 hp
Pressure control curve	: None	Quoted By (Sales Office)	: HURLEY ENGINEERING COMPANY	Pump efficiency	: 68.67 %
				Based on curve number	: 99381512
		Quoted By (Sales Engineer)	: Devin Carle		

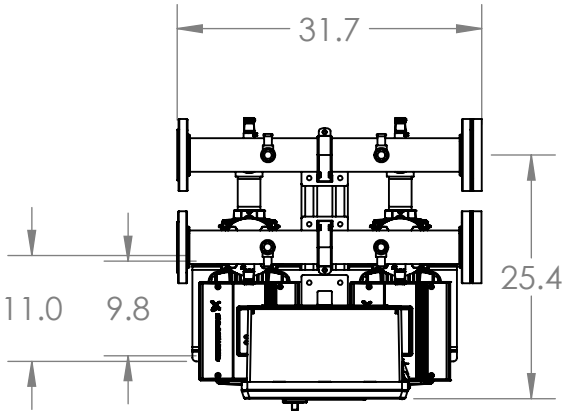
Multi-Speed Performance Curve

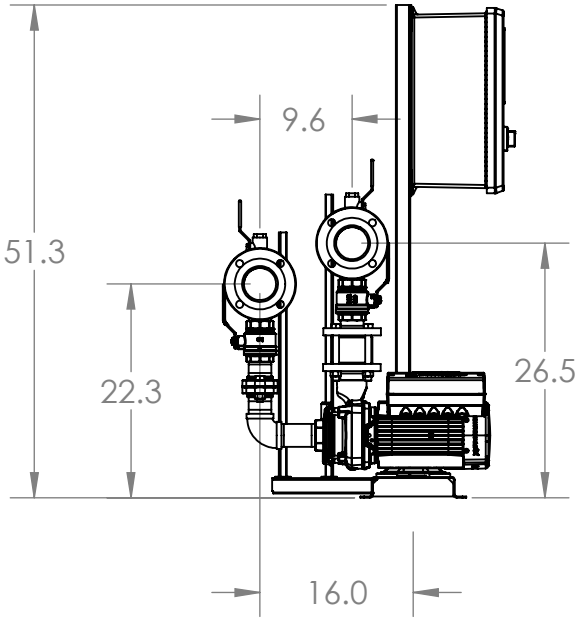


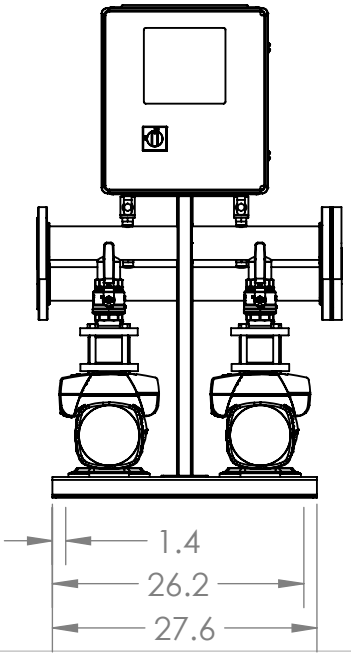
Project name	: gogrundfos.com	Tag Number	: Hydro MPC 2CME 15-1 3x230V 60Hz	Speed, rated	: 3599 rpm
Consulting engineer	:			System flowrate	: 184.1 USgpm
Customer	:	Service	:	Flowrate per pump	: 92.03 USgpm
Customer ref. / PO	:	Model	: Hydro MPC 2CME 15-1 3x230V 60Hz	Differential head / pressure, rated	: 69.63 ft
Quote Number / ID	: 1561369	Quantity	: 1	Fluid density, rated / max	: 1.000 / 1.000 SG
Date last saved	: 12/29/2021 2:39 PM	Quoted By (Sales Office)	: HURLEY ENGINEERING COMPANY	Viscosity	: 1.00 cP
Pressure control curve	: None	Quoted By (Sales Engineer)	: Devin Carle	Based on curve number	: 99381512

1. Manifolds 3" ANSI Class 150 AISI 316SS Schedule 10s ASTM A312 or ∅88.9mm x2mm
2. Base/Frame AISI 304SS
3. Full port ball valve ASTM
4. UL Type 3R/12 rated electrical panel









GRUNDFOS

FRESNO, CALIFORNIA 93727 USA

Note:
All dimensions are ±0.5"
Not for Construction
All dimensions subject to changewithout notice.

BoosterpaQ Model:	HYDRO MPC E 2CME15-1				
Power:	3x230	60HZ	2x3HP		
Job:				Scale:	1:20
Dwg No:	Rev: 0	Date: 6/19/2019	Drawer 71999	Page:	1 of 1

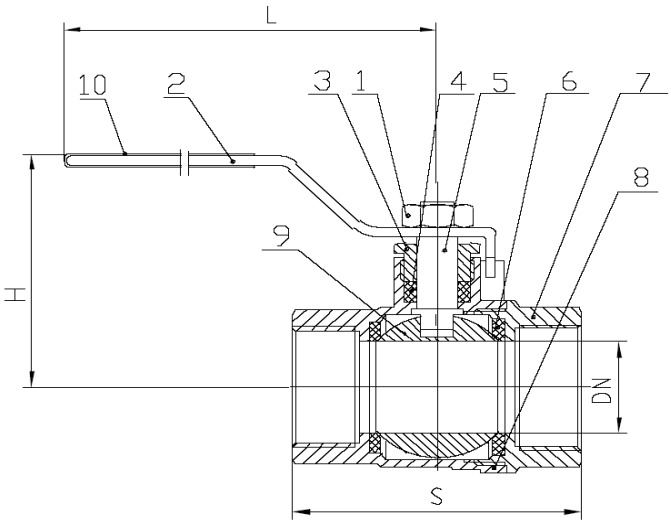
Ball Valves

General

- Threaded Ends
- Blow Out Proof Stem
- 600 WOG
- 2-Piece Body
- Teflon Seats
- Teflon Packing

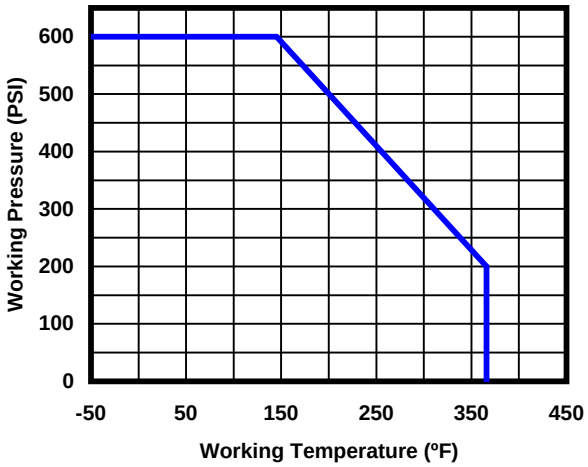
Dimensions & Weights

Size	DN (in)	S (in)	H (in)	L (in)	WT. (lb)
1/4"	0.39	1.76	1.75	3.54	0.35
3/4"	0.75	2.50	2.18	3.94	0.79
1-1/4"	1.26	3.42	2.87	4.80	1.75
1-1/2"	1.57	3.76	3.48	5.91	2.47
2"	1.97	4.25	3.82	5.91	3.46



MATERIAL SPECIFICATIONS

NO.	PART	MATERIAL (ASTM)
1	NUT	ZINC PLATED STEEL
2	HANDLE	ZINC PLATED STEEL
3	BONNET	BRASS (C37000)
4	PACKING	TEFLON
5	STEM	BRASS (C37000)
6	BALL SEAT	TEFLON
7	END PIECE	LOW LEAD BRASS (LTN60-6)
8	BODY	LOW LEAD BRASS (LTN60-6)
9	BALL	LOW LEAD BRASS (LTN60-6)
10	SLEEVE	PVC



APPROVALS

- NSF 61, IAPMO - N4359
- AB1953, IAPMO - 5653

1. Non-return valves, type GNVP

TM04 9408 4110

Fig. 1 GNVP valves

GNVP non-return valves are designed for installation in pipe systems between two DIN flanges. Thanks to their compact design, the GNVP valves are easy to install. All composite parts have a wide range of drinking water approvals, maintained at regular test intervals. According to the DIN EN 13959 standard, all GNVP non-return valves incorporate two test/drainage plugs for user-friendly usage.

Applications

The GNVP non-return valves are designed exclusively for installation in Grundfos booster systems where a one-way water flow is required.

Maximum operating pressure: 16 bar (PN 16).
Liquid temperature: 0 °C to +60 °C.

Drinking water approvals

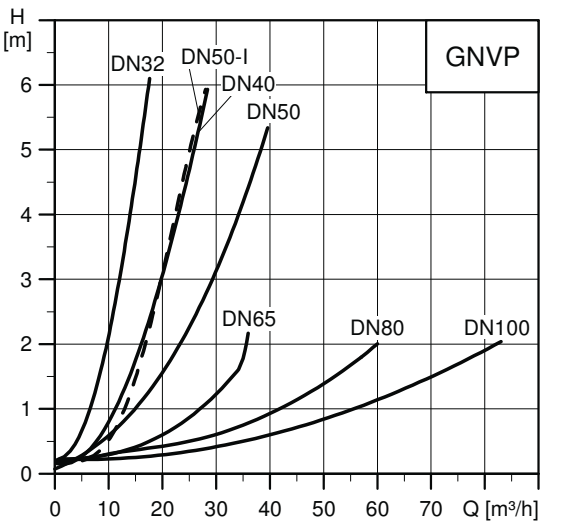
KIWA no.: 26819 (Netherlands)
WRAS no.: 1710375 (Great Britain)
DVGW no.: NW-6312AT2526 (Germany)
ACS no.: 17 ACC NY 338 (France)
BELGAQUA no.: 10/16a/EA (Belgium)

Construction

The polyoxymethylene (POM) valve housing is equipped with one or several insert valve cartridges, depending on the size. GNVP DN 32, DN 40 and DN 50-I are equipped with one valve cartridge. GNVP DN 50, DN 65, DN 80 and DN 100 are equipped with several valve cartridges. The DN 50-I is a special version with a smaller seal diameter.

The valve cartridge components are made of POM, the seals are made of NBR, and the spring is made of stainless steel, for optimum functionality and reliability.

Head loss



TM04 9386 44170

Fig. 2 Head loss curves for non-return valves, type GNVP

Dimensions

Type	Outer diameter [mm]	Width [mm]	Size of O-ring seal [mm]	Product numbers
GNVP DN 32 (1 1/4")	70	60	∅45 x 3	91040183
GNVP DN 40 (1 1/2")	90	60	∅56 x 3	91040184
GNVP DN 50-I (2")	108	60	∅76 x 3	96155179
GNVP DN 50 (2")	108	60	∅83 x 3	98595908
GNVP DN 65 (2 1/2")	125	60	∅94 x 3	91040186
GNVP DN 80 (3")	143	60	∅110 x 3	91069032
GNVP DN 100 (4")	160	60	∅130 x 3	91040187

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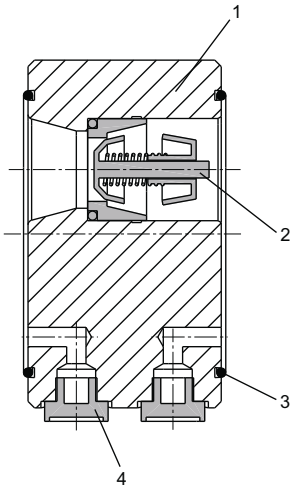
Valves.book Page 4 Monday, December 25, 2017 2:29 AM

Materials

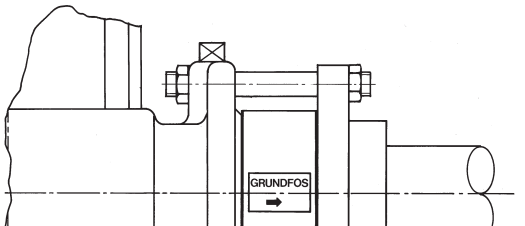


TM04 9403 4417

Fig. 3 Components of a GNVP, DN 50 valve

Installation

Pos.	Valve components	Materials
1	Housing	POM - Ultrafom H4320
2	Cartridge	POM - Hostaform/NBR
3	O-ring	EPDM
4	Plug	POM - Ultraform H4320
	O-ring	EPDM



TM00 0551 3292

Fig. 4 Installation example, GNVP

The GNVP non-return valve is fitted between two DIN flanges, such as pump flange and counter flange, by means of bolts and nuts. The valve can be fitted in any position required. The arrow on the nameplate indicates the direction of the water flow.

Note: The GNVP valves have factory-fitted O-rings on both mating surfaces for optimum sealing against the flanges. As a result, no additional gaskets are required.

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D80 Series

Dry or Liquid Filled • Stainless Steel Case

UTILITY GAUGES

D82LFB shown

- **1 1/2", 2", 2 1/2", 4" Dial Sizes**
- **±1.6% Accuracy (1% Optional)**
- **Stainless Steel Case**
- **Glycerine Fill Standard**

The Trerice **D80 Series** Industrial Gauge is designed for rugged performance requirements at an economical cost. This liquid filled gauge is furnished with a stainless steel case and crimped ring. Wetted parts are either bronze tube with Lead-Free (PBF) brass socket or stainless steel.

- **Optional features and case style variations available: Please consult the Options & Accessories Section for details.**
- **For correct use and application of all pressure gauges, please refer to: Pressure Gauge Standard ASME B40.100.**

Standard

Optional

Specifications

Models		Wetted Parts
D82B **D82LFB**	(dry) (liquid filled)	Bronze tube, brass socket Lead-Free (PBF) Meets NSF/ANSI Standards 372 and 61
D83SS **D83LFSS**	(dry) (liquid filled)	316 Stainless steel tube & socket

Dial Sizes	1 1/2", 2", 2 1/2", 4"
Fill	Glycerine, other fills available See Optional Features Section
Movement	**D82**: Brass **D83**: 316 Stainless steel
Connection	Lower male or center back male, (Lower back male 4" Dial only)
Case	304 stainless steel, stem-mounted flangeless
Ring	Crimped 304 stainless steel
Window	Acrylic
Pointer	Plain, black finished
Dial Face	Aluminum, white background with black graduations and markings
Accuracy	±1.6% Full Scale (1% available as an option)
Maximum Temperature	**150°F (65°C)**
Approximate Shipping Weight	1 1/2" Dial Size: 0.4 lbs [0.18 kg] 2" Dial Size: 0.4 lbs [0.18 kg] 2 1/2" Dial Size: 0.5 lbs [0.23 kg] 4" Dial Size: 1.0 lbs [0.45 kg]

HOW TO ORDER

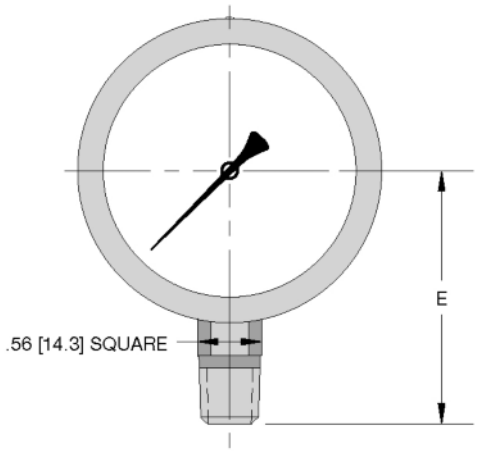
Sample Order Number: **D82LFB 25 02 L A 110**

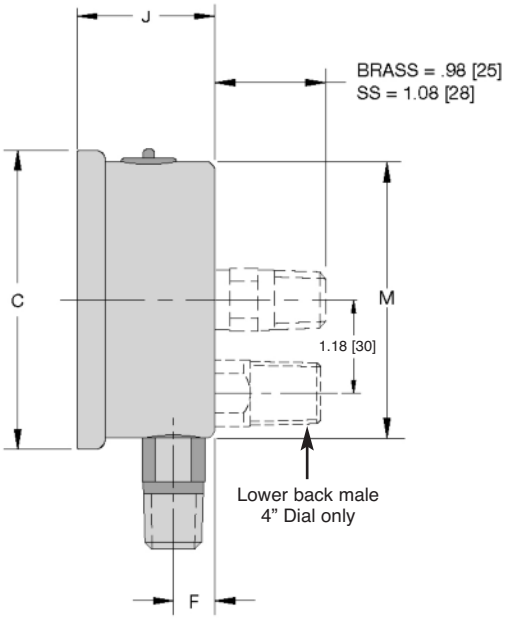
Model	Dial Size	Connection Size	Connection Location	Units of Measure	Range Code
D82LFB	**15** 1 1/2	**01** 1/8 NPT*	**L** Lower	**A** psi	See Standard Ranges
D83LFSS	**20** 2"	**02** 1/4 NPT**	**B** Back	**D** psi/kPa	
D82B	**25** 2 1/2"	**04** 1/2 NPT***			
D83SS	**40** 4"				

* 1/8 NPT connection size not available with 4" dial size.
** 1/4 NPT connection size not available with 1 1/2" dial size.
*** 1/2 NPT connection size only available with 4" dial size.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

All dimensions are nominal. Dimensions in [ ] are in millimeters.





Standard Ranges

psi Ranges (A)		D82		D83	
Range Code	Specific Range (psi)	Figure Intervals	Minor Divisions	Figure Intervals	Minor Divisions
010	30" Hg to 0	5	0.5	5	0.5
020	30" Hg to 15 psi	10/5	1/0.5	10/5	1/0.5
030	30" Hg to 30 psi	10/5	1/1	10/5	1/1
040	30" Hg to 60 psi	10/10	2/1	10/10	2/1
050	30" Hg to 100 psi	30/20	2/2	30/20	2/2
060	30" Hg to 150 psi	30/30	5/2	30/30	5/2
070	30" Hg to 300 psi	30/50	5/5	30/50	5/5
080	0 to 15 psi	3	0.2	3	0.2
090	0 to 30 psi	5	0.5	5	0.5
100	0 to 60 psi	10	1	10	1
110	0 to 100 psi	10	1	10	1
120	0 to 160 psi	20	2	20	2
130	0 to 200 psi	20	2	20	2
140	0 to 300 psi	50	5	50	5
150	0 to 400 psi	50	5	50	5
160	0 to 600 psi	100	10	100	10
180	0 to 1000 psi	100	20	100	20
190	0 to 1500 psi	300	20	300	20
200	0 to 2000 psi	200	20	200	20
210	0 to 3000 psi	500	50	500	50
220	0 to 5000 psi	1000	100	1000	100

Ranges over 5000 PSI are not available on D82LFB.

230	0 to 10000 psi	N/A	N/A	2000	200
240	0 to 15000 psi	N/A	N/A	3000	200

*For dual scale ranges specify the appropriate **Units of Measure: D** (psi/kPa) followed by the corresponding **A** (psi) **Range Code***

Dial Size	C	E	F	J	M
1½" D82	1.85 [47]	1.50 [38]	0.32 [8]	1.06 [27]	1.61 [41]
1½" D83	1.85 [47]	1.50 [38]	0.32 [8]	1.06 [27]	1.61 [41]
2" D82	2.28 [58]	1.89 [48]	0.39 [10]	1.14 [29]	2.05 [52]
2" D83	2.28 [58]	2.05 [52]	0.35 [9]	1.18 [30]	2.05 [52]
2½" D82	2.68 [68]	2.24 [57]	0.39 [10]	1.18 [30]	2.44 [62]
2½" D83	2.68 [68]	2.32 [59]	0.51 [13]	1.38 [35]	2.44 [62]
4" D82	4.29 [109]	3.07 [78]	0.47 [12]	1.42 [36]	3.90 [99]
4" D83	4.29 [109]	3.94 [100]	0.75 [19]	1.93 [49]	3.94 [100]

Data sheet MBS 3000 pressure transmitter for industrial applications

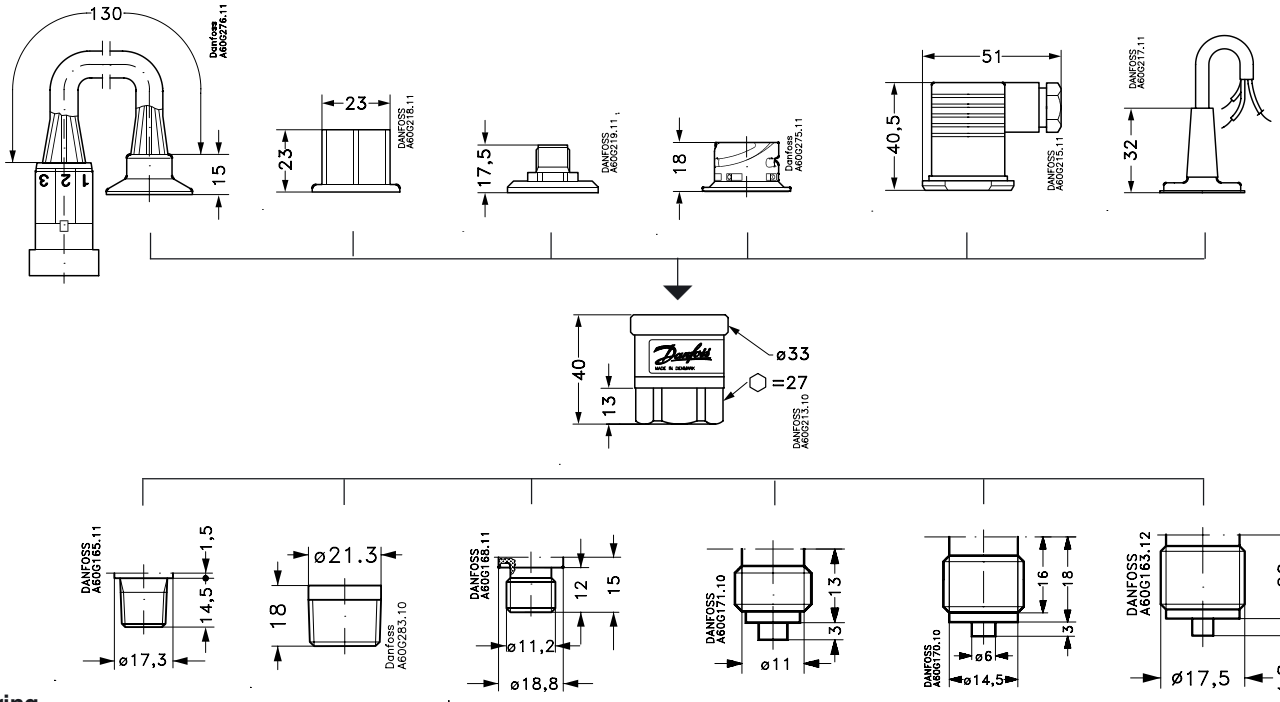
Introduction

- Designed for use in severe industrial environments
- Enslosure and wetted parts of acid-resistant stainless steel (AISI 316L)
- All standard output signals: 4-20 mA, 0-5 V, 1-5 V, 1-6 V, 0-10 V
- A wide range of pressure and electrical connections
- Temperature compensated and laser calibrated
- Typical applications:
  - Pumps
  - Compressors
  - Pneumatics
  - Water treatment

Dimensions

Ordering

Type code Page 4	8	2	5	7	1	3
	AMP Superseal 1.5 series (male)	AMP Econoseal J series (male)	IEC 947-5-2 M12×1, 4-pin	ISO 15170-A1-3.2-Sn (Bayonet plug)	DIN 43650, Pg 9	2 m screened cable



Ordering

	1/4 - 18 NPT	½ - 14 NPT	DIN 3852-E-G1/4 Gasket: DIN 3869-14	G 1/4 A (EN 837)	G 3/8A (EN 837)	G ½A (EN 837)
Type code page 4	AC04	AC08	GB04	AB04	AB06	AB08

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Technical data

Main specifications

Pressure connections		see page 1
Measuring ranges	[bar]	0-1 0-1.6 0-2.5 0-4 0-6 0-10 0-16 0-25 0-40 0-60 0-100 0-160 0-250 0-400 0-600
Output signals		4-20 mA 0-5 V 1-5 V 1-6 V 0-10 V
Electrical connections		see page 3

Performance (IEC 770)

Accuracy	±0.5% FS (typ.) ±1% FS (max.)
Non-linearity (best fit straight line)	≤ ±0.5% FS
Hysteresis and repeatability	≤ ±0.1% FS
Thermal zero point shift	≤ ±0.1% FS/10K (typ.) ≤ ±0.2% FS/10K (max.)
Thermal sensitivity (span) shift	≤ ±0.1% FS/10K (typ.) ≤ ±0.2% FS/10K (max.)
Response time	< 4 ms
Overload pressure	6 × FS (max. 1500 bar)
Burst pressure	6 × FS (max. 2000 bar)
Durability, P: 10-90% FS	>10×10^6 cycles

Electrical specifications

	Nom. output signal (short-circuit protected)		
	4 – 20 mA	0-5, 1-5, 1-6 V d.c.	0-10 V d.c.
Supply voltage [U_B], polarity protected	9 → 32 V d.c.	9 → 30 V d.c.	15 → 30 V d.c.
Supply - current consumption	-	≤ 5 mA	≤ 8 mA
Supply voltage dependency	≤ ±0.05% FS/10 V		
Current limitation (linear output up to 1.5x nom. range)	34 mA (typ.)	-	
Output impedance	-	≤ 25Ω	
Load [R_L] (load connected to 0V)	$R_L \leq (U_B\text{-}9V)/0.02$	$R_L \geq 10$ kΩ	$R_L \geq 15$ kΩ

Environmental conditions

Medium temperature range				–40 → +85°C
Ambient temperature range (depending on electrical connection)				see page 3
Compensated temperature range				0 → +80°C
Transport temperature range				–50 → +85°C
EMC - Emission				EN 61000-6-3
EMC - Immunity	Electrostatic discharge		Air mode 8 kV	EN 61000-6-2
			Contact mode 4 kV	EN 61000-6-2
	RF	field	10 V/m, 26 MHz - 1 GHz	EN 61000-6-2
		conducted	10 V_{rms}, 150 kHz - 30 MHz	EN 61000-6-2
	Transient	burst	4 kV (CM),Clamp	EN 61000-6-2
		surge	1 kV (CM,DM), Rg = 42Ω	EN 61000-6-2
Insulation resistance				> 100 MΩ at 100 V d.c.
Mains frequency test			500 V, 50 Hz	SEN 361503
Vibration stability	Sinusoidal		15.9 mm-pp, 5Hz-25Hz	IEC 60068-2-6
			20 g, 25 Hz - 2 kHz	
	Random		7.5 g_{rms}, 5 Hz - 1 kHz	IEC 60068-2-34, IEC 60068-2-36
Shock resistance	Shock		500 g / 1 ms	IEC 60068-2-27
	Free fall			IEC 60068-2-32
Enclosure (depending on electrical connection)				see page 3

Mechanical characteristics

Materials	Wetted parts	DIN 17440-1.4404 (AISI 316 L)
	Enclosure	DIN 17440-1.4404 (AISI 316 L)
	Electrical connections	see page 3
Weight (depending on pressure connection and electrical connection)		0.2-0.3 kg

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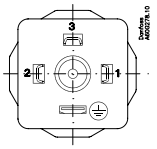
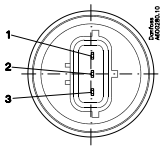
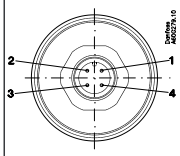
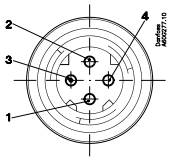
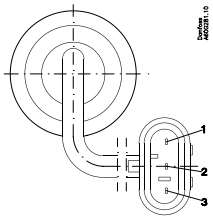
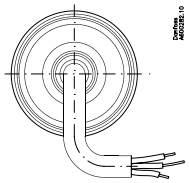
Electrical connections

Type code, page 4

1	2	5	7	8	3
DIN 43650, Pg 9	AMP Econoseal J series (male)	IEC 947-5-2 M12×1	ISO 15170-A1-3.2-Sn (Bayonet plug)	AMP Superseal 1.5 series (male)	2 m screened cable
					
Ambient temperature					
-40 → + 85 °C	-40 → + 85 °C	-25 → +85 °C	-40 → +85 °C	-40 → +85 °C	-30 → +85 °C
Enclosure					
IP 65	IP 67	IP 67	IP 67 / IP 69K	IP 67	IP67
Materials					
Glass filled polyamid, PA 6.6	Glass filled polyamid, PA 6.6[1)]	Nickel plated brass, CuZn/Ni	Glass filled polyester, PBT	Glass filled polyamid, PA 6.6[2)]	Polyolifin cable with PE shrinkage tubing
Electrical connection, 4-20 mA output (2 wire)					
Pin 1: +supply Pin 2: ÷supply Pin 3: Not used Earth: Connected to MBS housing	Pin 1: +supply Pin 2: ÷supply Pin 3: Not used	Pin 1: +supply Pin 2: Not used Pin 3: Not used Pin 4: ÷supply	Pin 1: +supply Pin 2: ÷supply Pin 3: Ventilation Pin 4: Not used	Pin 1: +supply Pin 2: ÷supply Pin 3: Not used	Brown wire: +supply Black wire: ÷supply Red wire: Not used Orange: Not used Screen: Not connected to MBS housing
Electrical connection, 0-5V, 1-5V, 1-6V, 0-10V output					
Pin 1: +supply Pin 2: ÷supply Pin 3: Output Earth: Connected to MBS housing	Pin 1: +supply Pin 2: ÷supply Pin 3: Output	Pin 1: +supply Pin 2: not used Pin 3: Output Pin 4: ÷supply	Pin 1: +supply Pin 2: Output Pin 3: Ventilation Pin 4: ÷supply	Pin 1: +supply Pin 2: ÷supply Pin 3: Output	Brown wire: Output Black wire: ÷supply Red wire: + supply Orange: Not used Screen: Not connected to MBS housing

[1)] Female plug: Glass filled polyester, PBT

[2)] Wire: PETFE (teflon)
Protection sleeve: PBT mesh (polyester)

Ordering of standard MBS 3000 with DIN 43650 plug Pg 9

Pressure connection	Pressure range Pe	Type	Code no.
G ¼ A (EN 837)	0 - 1 bar	MBS 3000 1011-1 AB04	060G1113
	0 - 1.6 bar	MBS 3000 1211-1 AB04	060G1429
	0 - 2.5 bar	MBS 3000 1411-1 AB04	060G1122
	0 - 4 bar	MBS 3000 1611-1 AB04	060G1123
	0 - 6 bar	MBS 3000 1811-1 AB04	060G1124
	0 - 10 bar	MBS 3000 2011-1 AB04	060G1125
	0 - 16 bar	MBS 3000 2211-1 AB04	060G1133
	0 - 25 bar	MBS 3000 2411-1 AB04	060G1430
	0 - 40 bar	MBS 3000 2611-1 AB04	060G1105
	0 - 60 bar	MBS 3000 2811-1 AB04	060G1106
	0 - 100 bar	MBS 3000 3011-1 AB04	060G1107
	0 - 160 bar	MBS 3000 3211-1 AB04	060G1112
	0 - 250 bar	MBS 3000 3411-1 AB04	060G1111
	0 - 400 bar	MBS 3000 3611-1 AB04	060G1109
	0 - 600 bar	MBS 3000 3811-1 AB04	060G1110

Ordering of special versions

MBS 3000 [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]

Measuring range
0 - 1 bar 1 0
0 - 1.6 bar 1 2
0 - 2.5 bar 1 4
0 - 4 bar 1 6
0 - 6 bar 1 8
0 - 10 bar 2 0
0 - 16 bar 2 2
0 - 25 bar 2 4
0 - 40 bar 2 6
0 - 60 bar 2 8
0 - 100 bar 3 0
0 - 160 bar 3 2
0 - 250 bar 3 4
0 - 400 bar 3 6
0 - 600 bar 3 8

Pressure reference
Gauge (relativ) 1
Absolute 2

Pressure connection (see page 1)
A B 0 4 ... G ¼ A (EN 837)
A B 0 6 ... G ⅜ A (EN 837)
A B 0 8 ... G ½ A (EN 837)
A C 0 4 ... ¼ -18 NPT
A C 0 8 ... ½-14 NPT
G B 0 4 ... DIN 3852-E-G¼, Gasket: DIN 3869-14 NBR

Electrical connection (see pages 1 and 3)
1 ..... Plug, DIN 43650, Pg 9
2 ..... *)Plug, AMP Econoseal, J series, male, excl. female plug
3 ..... Screened cable, 2 m
5 ..... *)Plug, IEC 947-5-2, M12 × 1, male, excl. female plug
7 ..... Plug ISO 15170-A1-3.2-Sn, male, excl. female plug
8 ..... *) Plug, AMP Superseal 1.5 series male, excl. female plug

*) Gauge versions only available as sealed gauge versions

Output signal
1 ..... 4 - 20 mA
2 ..... 0 - 5 V
3 ..... 1 - 5 V
4 ..... 1 - 6 V
5 ..... 0 - 10 V

[1]

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DK-6430 Nordborg
Denmark

Panel Part Number:
99651210

Description

Control MPC E

2 X 3HP

3 X 208/240V

Selected Options: System Fault Light, Audible Alarm, Surge Protection, Pump Run Light, Normal/Emergency Switch

ECM/Rev	Date
0	6/18/2019
1	8/6/2019
2	8/16/2019

Control MPC E
2 X 3HP
3 X 208/240V

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PROJECT: 99651210

EDW-WD-GPC-1301

Panel Part Number: 99651210

Feeder Circuit Protection:

Feeder circuit protection to be provided by others. Type and size to be based on local, state and national electrical codes

SCCR Rating: 100 kA RMS Symmetric, 240V

UL Type Rating: 3R

Largest Motor FLA and Panel Maximum FLA:

Motor Horsepower	3HP
Motor FLA	7.9FLA
Panel Max. FLA	16.8FLA

Wire Type	Color	Abbr.
+12/24VDC Power/PLC Input(s)	Blue	BU
-12/24VDC Power/PLC Input(s)	Blue w/White Stripe	BUWH
115VAC Primary Line Power	Black	BK
115VAC Neutral	White	WH
Ground/PE	Green/Yellow Stripe	GNYE
Analog Inputs	Orange	OG
Analog Outputs	Orange	OG
Digital Inputs (CU Components)	Violet	VT
Ground for Digital Inputs (CU Components)	Violet w/White Stripe	VTWH
Digital Outputs	Yellow	YE
Power L1	Black	BK
Power L2	Orange	OG
Power L3	Red	RD
Power Neutral	White	WH
All Other Wiring	Brown	BN

Cross Reference Definition

(##-##)
Sheet-Row

Wire Types

Internal Panel Wire
External Wire

Safety / Application Notes:

** Please Reference the "BOOSTERPAQ - HYDRO MPC" Installation and Operation Instructions "BEFORE" Applying power to Panel.

** Power supply wires in front of main disconnect switch have dangerous voltage even though the main disconnect switch is off.

** Control panel must be connected professionally to the earth / ground.

** GRUNDFOS MLE motors have an integrated variable frequency drive (VFD) which provides motor overload protection. If a system utilizes MLE motors, the motor overload protection is provided by the VFD and does not require any additional motor overload protection.

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Control MPC E
2 X 3HP
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PROJECT: 99651210

EDW-WD-GPC-1301

GRUNDFOS

Panel Part Number: 99651210

1-Table of Contents

Drawing	Revision	Date	Created by	Description
01	1	8/6/2019	kharen	Cover Page 01
02	1	8/6/2019	kharen	Cover Page 02
03	1	8/6/2019	kharen	Drawings list
04	1	8/6/2019	kharen	Power 01
05	1	8/6/2019	kharen	Control 01
06	1	8/6/2019	kharen	Control 02
07	1	8/6/2019	kharen	Panel Layout
08	1	8/6/2019	kharen	Panel Views
09	1	8/6/2019	kharen	Bill Of Materials grouped by manufacturer Rev1.0 (Components)
10	1	8/6/2019	kharen	Bill Of Materials grouped by manufacturer Rev1.0 (Components)
11	1	8/6/2019	kharen	MPC Multi B Hybrid 3pumps

ECM/Rev	Date
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	8/6/2019
	8/16/2019

Control MPC E
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PROJECT: 99651210

EDW-WD-GPC-1301

GRUNDFOS

Panel Part Number: 99651210

208/240V, 3-Phase, 60 Hz

T1 T2 T3

MDS1

F22 F23 F24

L1 L2 L3

L1-0 12AWG-BK D1 L1-1 12AWG-BK

L2-0 12AWG-OG D2 L2-1 12AWG-OG

L3-0 12AWG-RD D3 L3-1 12AWG-RD

20A Fuse Class CC

GL0

FB1

F4 F5 F6

15A Fuse Class CC

SA1

1 2 3 gnd

8 12AWG-GNYE

GL21

FB2

F7 F8 F9

15A Fuse Class CC

05-2 05-2

NE1

2 16AWG-BN 3 Norm Emer 4 3 16AWG-BN

PRL1

4 16AWG-BK X1 G X2

12 16AWG-WH 05-17 04-17

13 16AWG-BK 05-15 04-20

X1 1 9 NO C

GL1

FACTORY JUMPER START/STOP INPUT

L1 L2 L3 PE DI3-10 DI1-2 GND-6 GND-3 NO NC COM

MLE VFD

Pump1

3 X 208/240V
3HP ▬ 7.9FLA

A Y B

06-26 06-27 06-28

04-28 04-29 04-30

NE2

5 16AWG-BN 3 Norm Emer 4 6 16AWG-BN

PRL2

7 16AWG-BK X1 G X2

12 16AWG-WH 04-4

13 16AWG-BK 04-7

X2 1 9 NO C

GL2

FACTORY JUMPER START/STOP INPUT

L1 L2 L3 PE DI3-10 DI1-2 GND-6 GND-3 NO NC COM

MLE VFD

Pump2

3 X 208/240V
3HP ▬ 7.9FLA

A Y B

04-14 04-15 04-16

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Control MPC E
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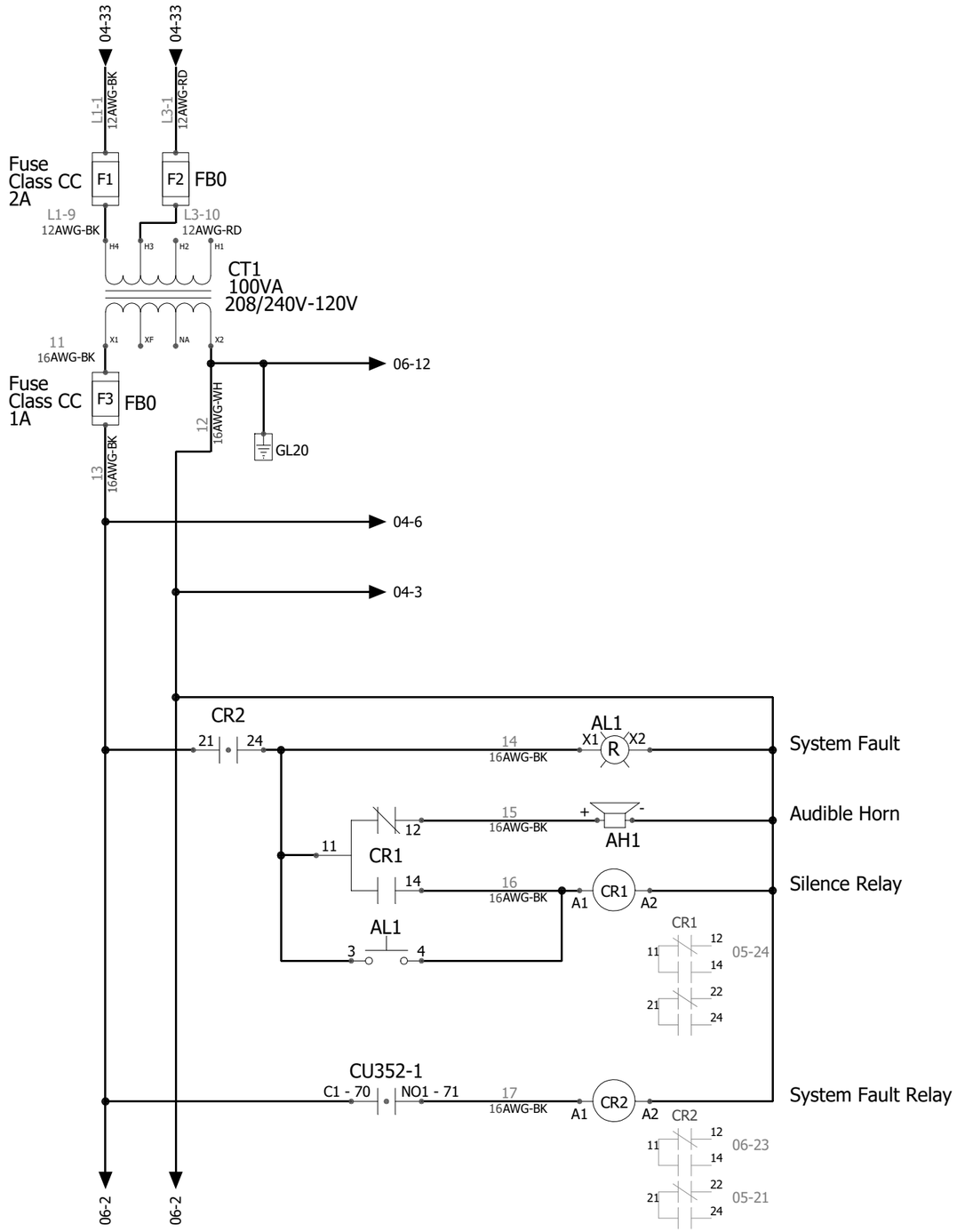
Panel Part Number: 99651210



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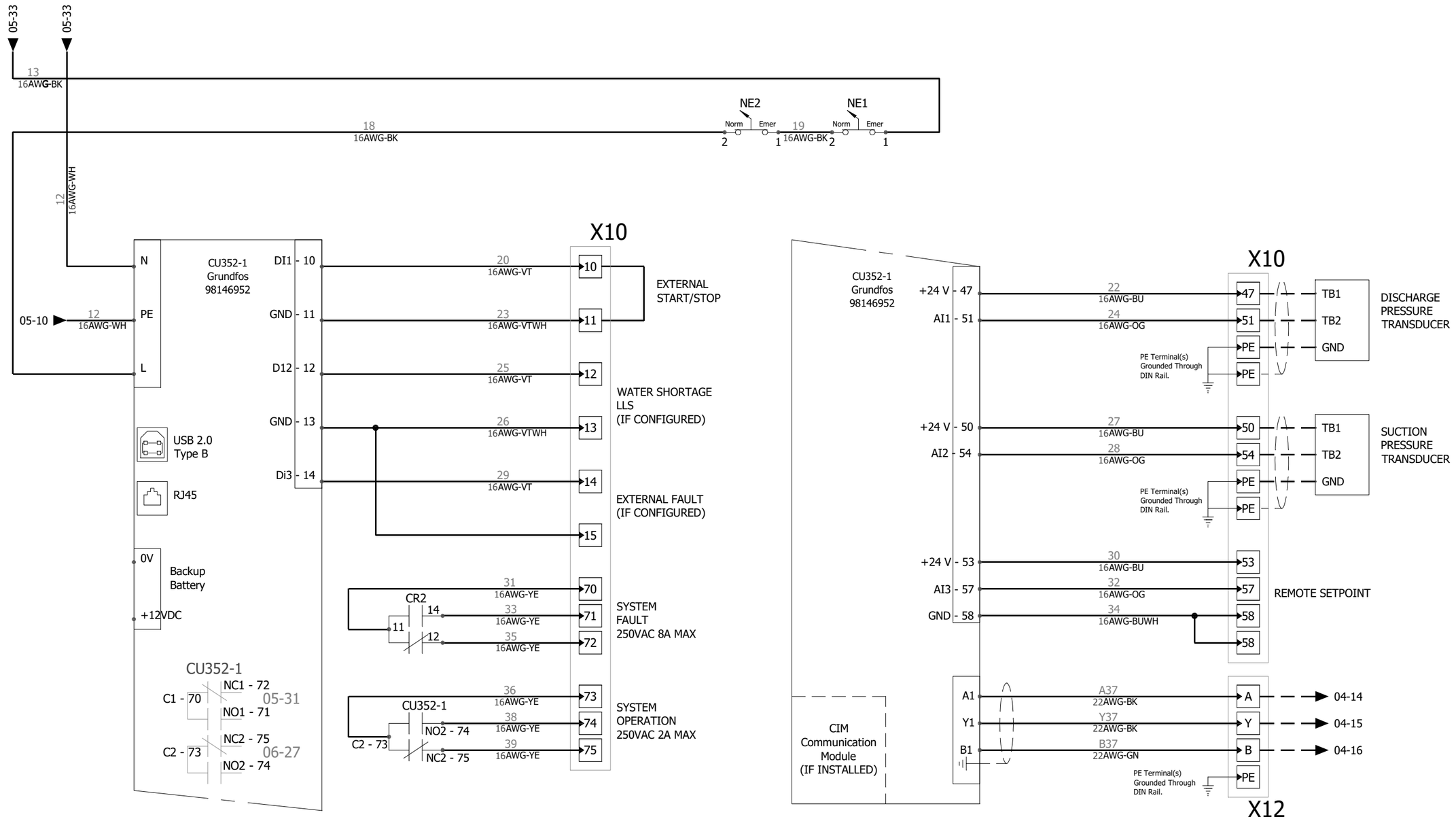

CIM COMMUNICATION MODULE TERMINATIONS

CIM		Terminal 1	Terminal 2	Terminal 3	Terminal 4
CIM 110	LON	LON terminal A	LON terminal B	LON terminal for cable screen	N/A
CIM 150	PROFIBUS DP	PROFIBUS terminal B	PROFIBUS terminal A	PROFIBUS terminal DGND	+5VDC
CIM 200	Modbus RTU	Modbus terminal D1	Modbus terminal D0	Modbus terminal common/GND	N/A
CIM 300	BACnet MS/TP	BACnet Plus terminal	BACnet Minus terminal	BACnet Ground terminal	N/A
CIM 500	BACnet IP, Modbus TCP, PROFINET IO	RJ45	RJ45		

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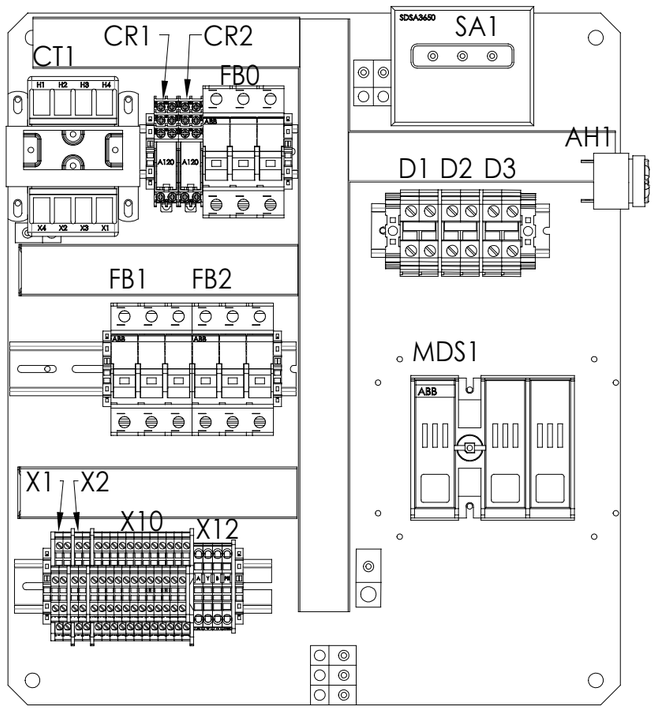
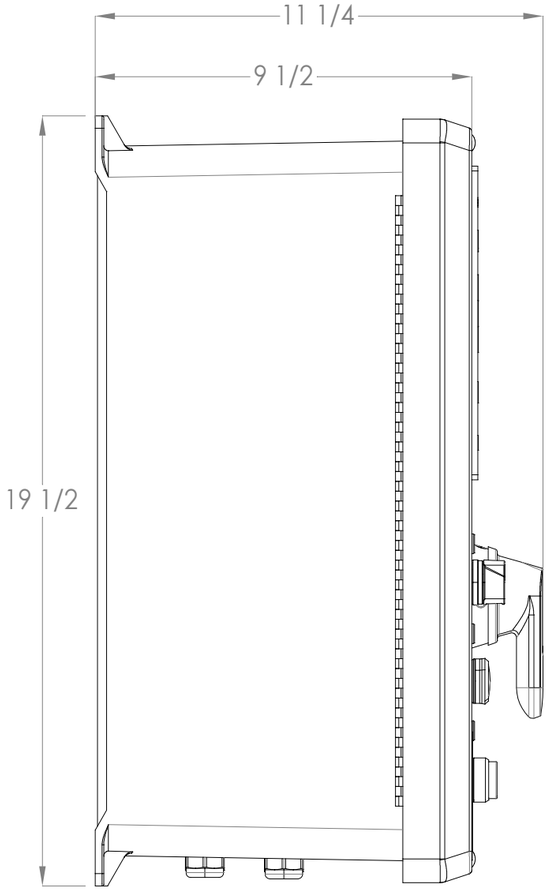
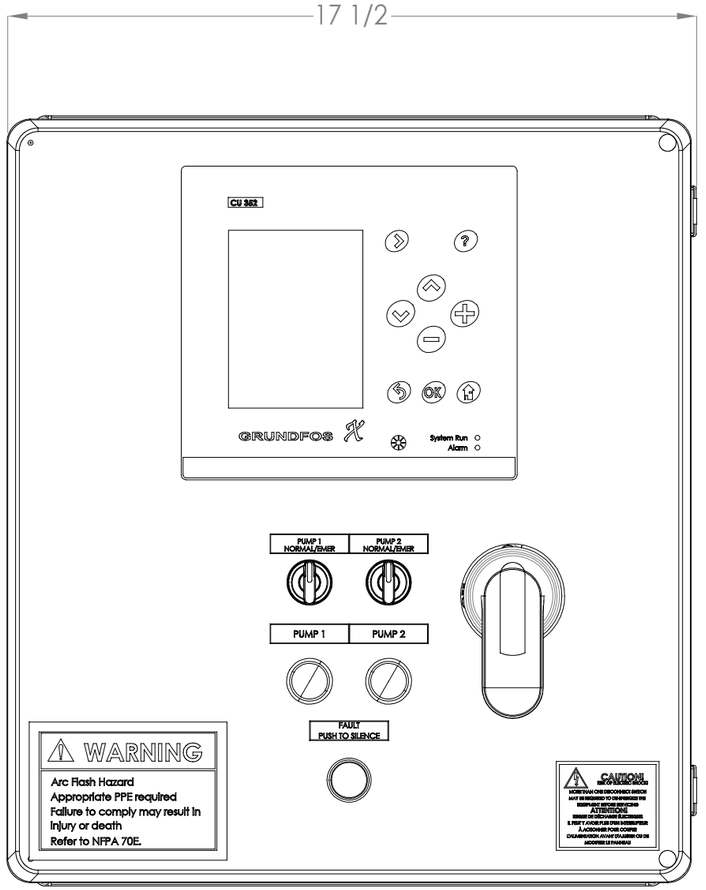
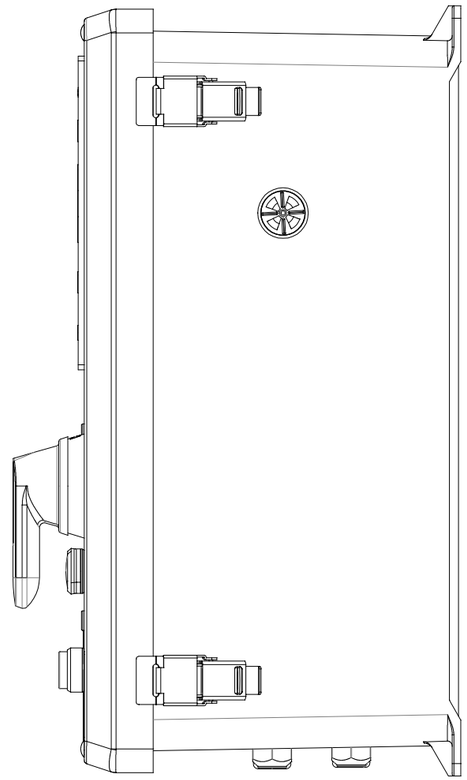


0	6/18/2019	Control MPC E 2 X 3HP 3 X 208/240V	This drawing and its content is the property of GRUNDFOS. It may not be copied for third third parties or competitors. Changes are only to be made by GRUNDFOS.	PROJECT: 99651210	GRUNDFOS
1	8/6/2019				
2	8/16/2019			EDW-WD-GPC-1301	Panel Part Number: 99651210
					SHEET: 7/10
ECM/Rev	Date				







CLEARENCE FROM FRONT OF ENCLOSURE MUST BE 36"

ECM/Rev	Date
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1	8/6/2019
2	8/16/2019

Control MPC E
2 X 3HP
3 X 208/240V

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PROJECT: 99651210

EDW-WD-GPC-1301

GRUNDFOS

Panel Part Number: 99651210

SHEET: 8/10

Article Number	Mark	Manufacturer	Reference	Description	Quantity	Component Type
13-16-26-1241	FB0 , FB1 , FB2	ABB	E9330CCS	Fuse Block; 3P, 30 A, Class CC, Indicator, Padlockable	3	Fuse Block 3-pole
13-16-66-1615	MDS1	ABB	OHY80L6	Disconnect Handle; Red/Yellow, 30/60/100/250A, Type 4, 4X, 3R, 12	1	Main Disconnect
13-16-66-1506	MDS1	ABB	OHZX10	Alignment Ring; Use on all Pistol Grip Handles	1	Main Disconnect
13-16-66-1431	MDS1	ABB	OS30FACC12	Disconnect Switch; 30A, Fuseable, 600V, 3-Pole, UL98, Class CC, Center Shaft	1	Main Disconnect
13-16-66-1610	MDS1	ABB	OXP6X500	Disconnect Shaft; 19.7", 6x500	1	Main Disconnect
13-16-81-1463	CT1	Acme	TB100A005C	Transformer; 100VA, P/208/230/460V, S/115V	1	Controls Transformer
13-16-26-1060	F3	F.Shaw	ATQR1	Fuse; 1A, 600V, 13/32" x 1 1/2", Class CC	1	Fuse
13-16-26-1061	F1 , F2	F.Shaw	ATQR2	Fuse; 2A, 600V, 13/32" x 1 1/2", Class CC	2	Fuse
13-16-26-1068	F4 , F5 , F6 , F7 , F8 , F9	F.Shaw	ATQR15	Fuse; 15A, 600V, 13/32" x 1 1/2", Class CC	6	Fuse
13-16-26-1078	F22 , F23 , F24	F.Shaw	ATQR20	Fuse; 20A, 600V, 13/32" x 1 1/2", Class CC	3	Fuse
13-16-56-1029	AH1	Floyd Bell	SP-1081	Alarm; 120V, 95db, Reduced Sensitivity, Extra Fast Warble, Panel Mount	1	Audible Horn
13-16-39-1093	CU352-1	Grundfos	98146952	(CM) Logic Module; Grundfos MPC Controller (CU352)	1	CU352
13-16-86-1034	L1	Heyco	Hey-M3231 UL Listed	Cord Grip, 1/2" NPT Black Liquid tight Nema 6x Rated	2	Main electrical closet
13-16-86-1035	L1	Heyco	Hey-M4518	Cord Grip, 1/2 NPT Black-No Nut	5	Main electrical closet
13-16-46-1073	CR1 , CR2	Idec	RJ2S-CL-A120	Relay; 120V, DPDT, 8A, Indicator	2	Silence Relay , System Fault Relay
13-16-46-1283	CR1 , CR2	Idec	SJ2S-07LW	Socket; 8 Pin, DIN/Pnl Mt, for RJ Relays	2	Silence Relay , System Fault Relay
13-66-11-1130	SAB1	OSI	13-66-11-1130	Bracket; Surge Arrestor	1	SA Bracket
65-BP-1816-MPC-CME	L1	OSI	65-BP-1816-MPC-CME	Backplate; MPC-CME-Hybrid-1816	1	Main electrical closet
65-ENCL-1816-2P-MPC-CME	L1	OSI	65-ENCL-1816-2P-MPC-CME	Enclosure; 18X16 MPC-CME 2pump	1	Main electrical closet
65-LIGHT-1R-032	AL1	OSI	65-light-1R-032	Push Button Light; Fault, Push to Silence	1	System Fault
65-SWITCH-2-12	NE1 , NE2	OSI	65-SWITCH-2-12	Switch; Two Position, 1-NO, 1-NC	2	Normal/Emergency Switch
65-TB-CU352-DB	X10 1	OSI	65-TB-CU352-DB	Terminal Blocks; Double Stack, X10 CU352 Terminals	1	CU352 Terminal Blocks

Article Number	Mark	Manufacturer	Reference	Description	Quantity	Component Type
65-TB-GENI	X12 1	OSI	65-TB-GENI	Terminal Blocks; X12 Geni Bus Terminals	1	Geni Bus Terminal Blocks
65-TB-SINGLE-PUMP-DB	X1 1 , X2 1	OSI	65-TB-SINGLE-PUMP-DB	Terminal Blocks; MLE Pump Control	2	Pump Control Terminal Blocks
13-16-71-1516	D1 , D2 , D3	Phoenix	3005950 (FBS 2-12)	Terminal Link; for UT 16 terminal blocks, 2 pole, red, 85 Amp, 600 V, 16-4 AWG	3	Distribution Terminals
13-16-71-1455	D1 , D2 , D3	Phoenix	3044199 (UT-16)	Terminal Block; 16/4AWG, 85A, 1P, 600V, 12mm	6	Distribution Terminals
13-16-86-1680	GL0 , GL1 , GL2 , GL20 , GL21	Raco	TA2-Bulk	Ground Lug; 2AWG, Burndy	5	Ground Lug
13-16-61-1010	SA1	Schneider	SDSA 3650	Surge Arrestor; 3 Phase, 600V, WYE	1	Surge Arrestor
13-16-36-1421	PRL1 , PRL2	Siemens	3SU11036AA401AA0	Pilot Light; Green, 110 VAC Complete	2	Pump 1 Run Light , Pump 2 Run Light

ECM/Rev	Date
	6/18/2019
	8/6/2019
	8/16/2019

Control MPC E
2 X 3HP
3 X 208/240V

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PROJECT: 99651210

EDW-WD-GPC-1301

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Panel Part Number: 99651210