PATRIOT FIRE PROTECTION, INC.

*Fire Sprinklers Save Lives!*

2707 70TH Avenue East
Tacoma, WA 98424

TEL: (253) 926.2290
FAX: (253) 922.6150

# Fire Protection
# Fire Pump Submittal

for

# PSE Operational Training Facility
# 325 Todd Road NW
# Puyallup, WA 98371

# Job #11-2418

HANFORD, WA OFFICE
TEL (509) 373.8895
FAX (509) 373.8919

VANCOUVER, WA OFFICE
TEL (360) 699.4403
PORTLAND (503) 222.6001
FAX (360) 699.4485

SPOKANE, WA OFFICE
TEL (509) 926.3428
FAX (509) 926.3708

TALCO FIRE SYSTEMS

RESIDENTIAL & COMMERCIAL FIRE PUMP SPECIALISTS
6040 NE 112TH AVE. PORTLAND, OREGON 97220
PHONE: 800-878-8055 WWW.TALCOFIRE.COM

**10-21-2024**

Prepared for: Patriot Fire Protection

## ELECTRIC FIRE PUMP COMPONETS

# -Submittal-

# PSE PUYALLUP

# 1000 GPM @ 90 PSI

**Prepared By: Chrissy Michaels**

TALCO FIRE SYSTEMS
RESIDENTIAL & COMMERCIAL FIRE PUMP SPECIALISTS
6040 NE 112TH AVE. PORTLAND, OREGON 97220
PHONE: 800-878-8055 WWW.TALCOFIRE.COM

# FIRE PUMP COMPONENT
# SUBMITTAL DATA SHEET ELECTRIC DRIVE

## Quote # 101724-K4 REV 1

## *PSE PUYALLUP*

| | |
|---|---|
| DATE: | 10-21-2024 |
| CONTRACTOR: | PATRIOT FIRE PROTECTION |
| PUMP LISTED CONDITIONS: | 1000 GPM @ 90 PSI BOOST |
| PUMP MODEL: | AURORA 5-481-11C<br>HORIZONTAL SPLIT CASE |
| ELECTRIC MOTOR: | 75HP, 460V, 3PH, 60HZ |
| FLANGES: | 125# / 125# |
| MAIN CONTROLLER: | EATON FT-90 75HP, 460V, 3PH<br>SOFT START W/ TRANSFER SWITCH<br>*NEMA 2 ENCLOSURE* |
| HOSE VALVE HEADER: | 6 X 4 W/ CAPS, VALVES & CHAINS |
| JOCKEY PUMP: | AURORA PVM1-13 1.5HP, 460V, 3PH |
| JOCKEY CONTROLLER: | EATON XTJL 1.5HP, 460V, 3PH |
| METER DATA: | N/A |
| DISCONNECT SWITCH: | TORNATECH OPD 75HP, 460V, 3PH |

Voltage to be confirmed

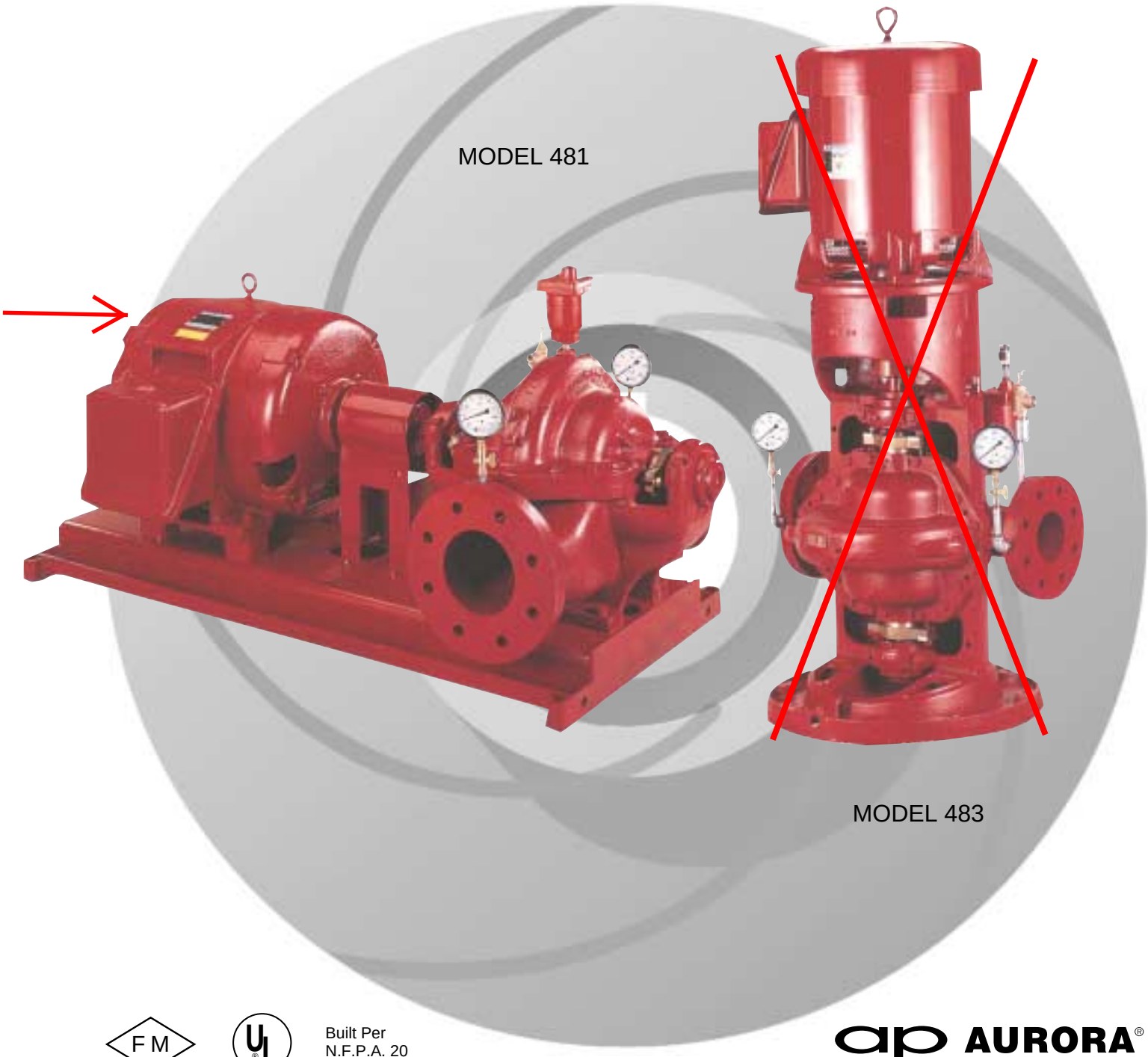
Voltage & Phase to be confirmed

"Optional"

QTY TBD

**Prepared By: Chrissy Michaels**

# 900 Series
# Split Case Fire Pump Systems




F M
Approved

UL
Listed

Built Per
N.F.P.A. 20

AURORA®
Pentair Water

## Types of Pumps

HORIZONTAL split case pumps are the most common type of Fire Pump. These pumps are specially tested for fire-service applications where reliability of performance is of vital importance. They are characterized by easy access to all working parts, rugged construction, liberal water passages, and efficient operation. They are specified when the source of water is located above the surface of the ground and will provide a positive suction pressure to the pump at any performance point. There are several capacity ratings of Aurora approved Fire Pumps available ranging from a minimum of 250 GPM. Single stage or multi-stage pumps are available dependent upon discharge pressure requirements.

AURORA COMPLIES WITH PERFORMANCE REQUIREMENTS FOR FIRE PUMP SERVICE WITH ITS STANDARD PRODUCTION PUMPS.

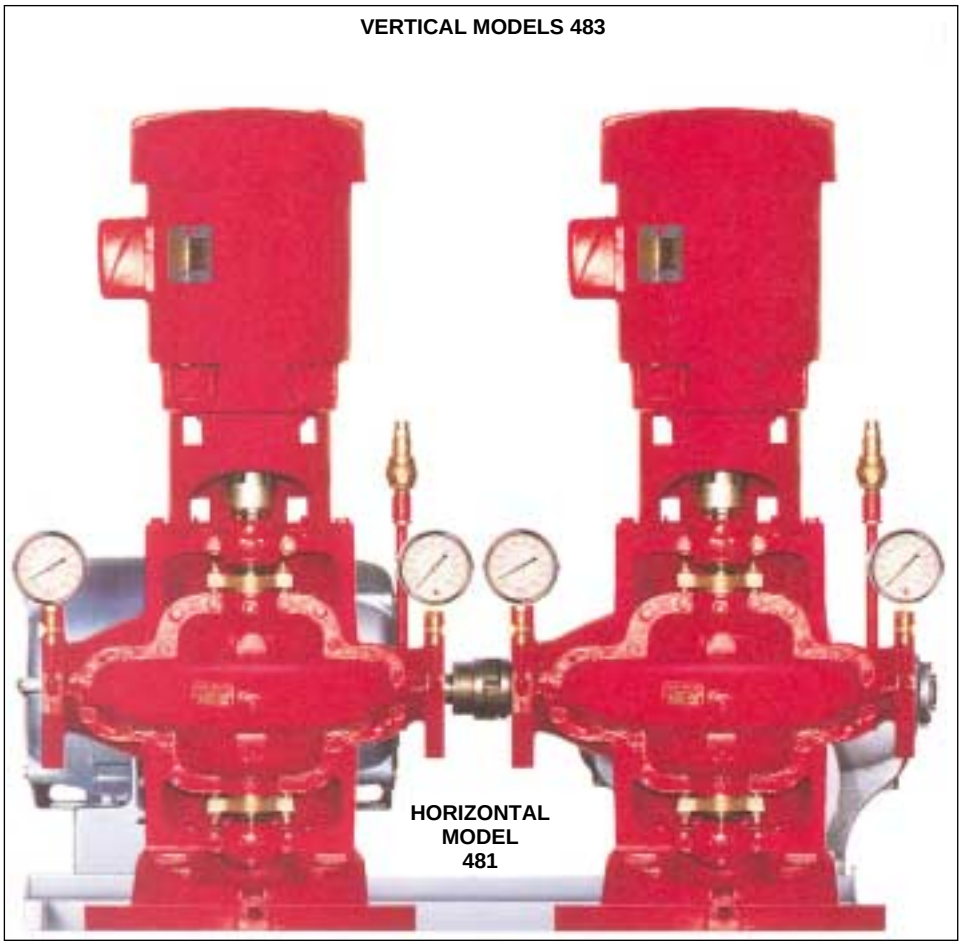
Therefore, to the Fire Pump user this feature means:

1. Lower initial cost.
2. Quicker delivery from stock.
3. Parts interchangeability with Aurora pumps specified elsewhere in your building reduces spare parts inventory and simplifies maintenance.

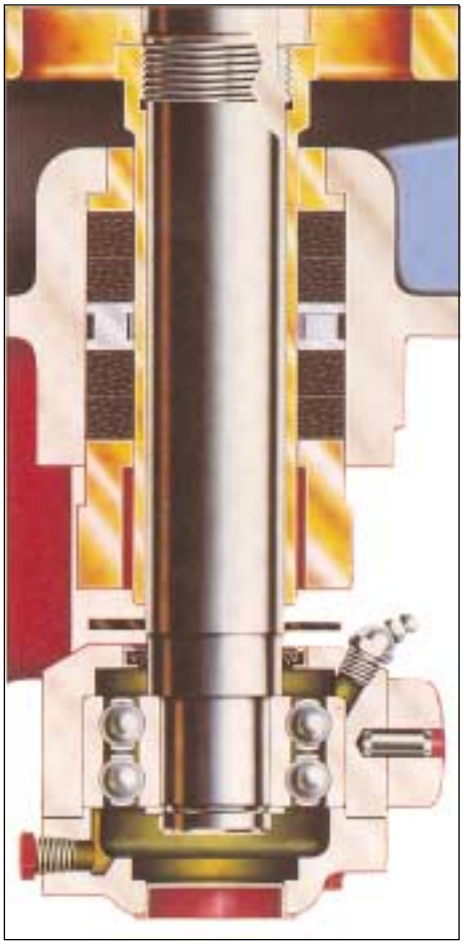
The fact that Aurora pumps meet the rigid requirements of Underwriters Laboratories and Factory Mutual Research is testimonial to the high quality of Aurora Pump products. Aurora Pump offers the only true line of VERTICAL SPLIT CASE Double Suction type pumps approved and listed for fire service. Vertical Fire Pumps provide distinct advantages over horizontal pump constructions.

1. Less floor space required.
2. Inline piping arrangement allows piping in any direction in most cases.
3. Elevated motor protects against potential flooding if the pump station is in a low area.
4. Components are register fitted to prevent misalignment.

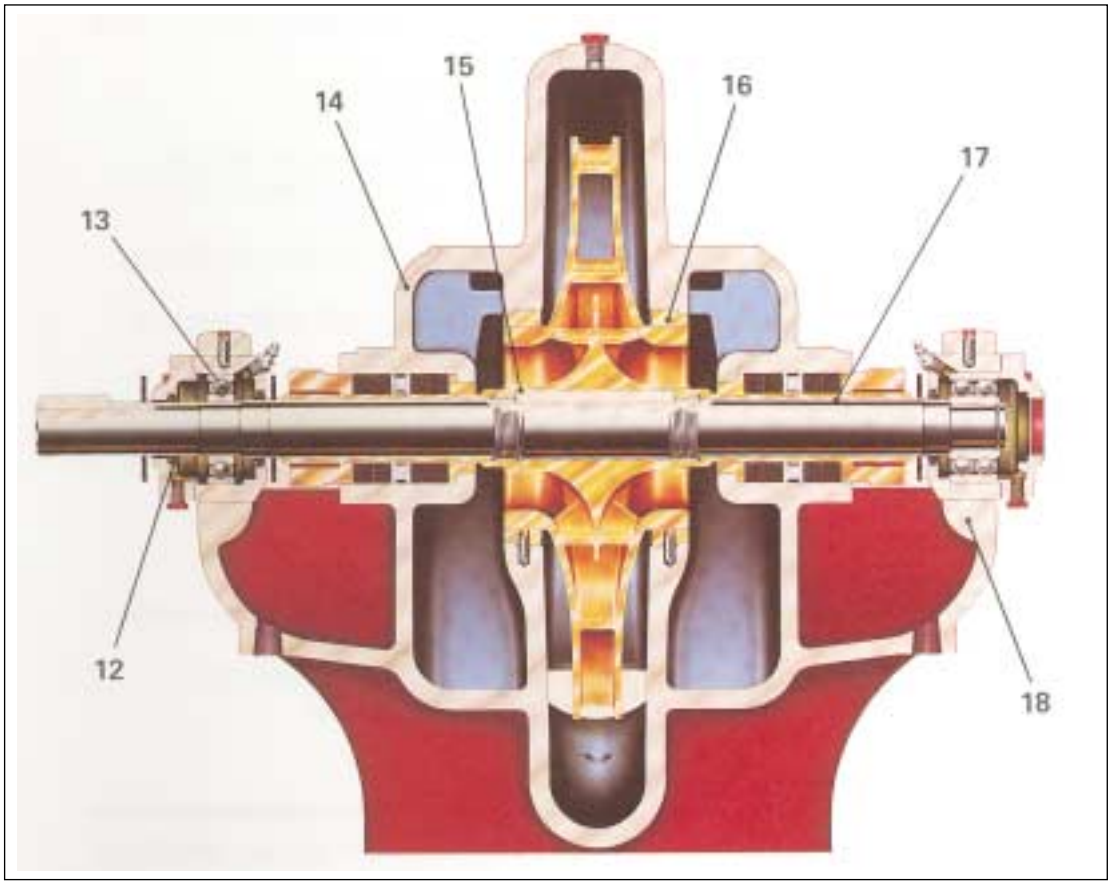
**VERTICAL MODELS 483**



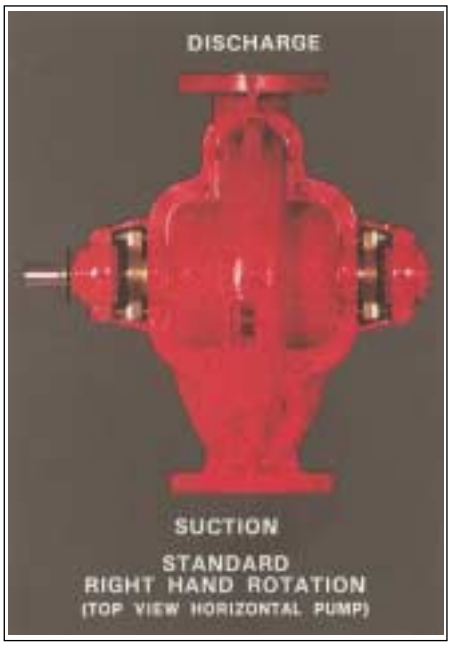
**HORIZONTAL MODEL 481**



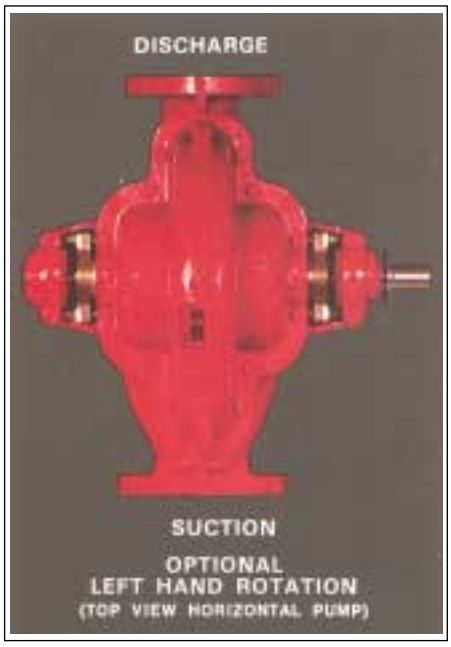
## Horizontal Split Case Pump Features




**MODEL 481 ILLUSTRATED**







## Fire Pump Feature Selector

STANDARD

Bronze fitted pump construction
Bronze shaft sleeves
Bronze case wearing rings
Dynamically balanced impellers
Stainless steel impeller key
Carbon steel shaft
Corrosion-resistant lantern rings*
Bronze stuffing box bushings
Bronze glands
Interwoven graphite-impregnated T.F.E. packing rings
Cast integral bearing arms
Regreasible ball bearings
Double row thrust bearing (outboard side)
Upper casing lifting lugs
Water slingers and grease seals
Hydrostatic and Certified Performance test**
Coupling guard on 481 & 485 models
Suction and discharge gauges with shut-off cocks
Automatic air release valve
Casing relief valve (electric driven units only)

OPTIONAL

Ductile iron casings (available in selected 481 & 485 sizes)
Right or left hand rotation
Impeller wearing rings
Double row ball bearings on inboard side
External by-pass line from casing to stuffing boxes
Formed steel drip-lip base (horizontal electric driven units only)
15' Suction lift test to verify performance at 150% of rated flow
N.P.S.H. test

* Furnished when suction pressure is below 40 PSI

** Test is performed with POSITIVE SUCTION PRESSURE

## Fire Pump Accessories

Various accessories are required for any fire pump installation. Specific needs vary depending upon the requirements of local insurance authorities as well as the individual installation. The current edition of the National Fire Protection Association (NFPA) pamphlet No. 20 specifies many of the accessories required.

Aurora Pump can provide approved Fire Pumps and a complete line of approved Fire Pump accessories.
Available accessories include: hose valves, hose valve header, main relief valve, waste cone, concentric tapered discharge increaser, eccentric tapered suction reducer and splash shields.

| Flow | Pressure | | Required Motor HP Rating | | Maximum | Pump Model |
|---|---|---|---|---|---|---|
| | PSI | Feet | Motor HP | Speed (RPM) | Shutoff (PSI)* | |
| 1000 GPM | 40 | 92 | 30 | 1770 | 55 | 6-481-11 |
| | 45 | 104 | 40 | 1770 | 60 | 6-481-11 |
| | 50 | 116 | 40 | 1770 | 61 | 5-481-15 |
| | | | 40 | 1770 | 65 | 6-481-11 |
| | 51 | 118 | 50 | 1770 | 65 | 5-491-14A |
| | 55 | 127 | 50 | 1770 | 65 | 5-481-15 |
| | | | 50 | 1770 | 70 | 5-491-14A |
| | 60 | 139 | 60 | 1770 | 70 | 5-481-15 |
| | | | 60 | 1770 | 75 | 5-491-14A |
| | 65 | 150 | 60 | 1770 | 75 | 5-481-15 |
| | | | 60 | 1770 | 80 | 5-491-14A |
| | 70 | 162 | 75 | 1770 | 79 | 5-481-15 |
| | | | 75 | 1770 | 85 | 5-491-14A |
| | 75 | 173 | 75 | 1770 | 85 | 5-481-15 |
| | | | 75 | 1770 | 88 | 5-491-14A |
| | 80 | 185 | 75 | 1770 | 89 | 5-481-15 |
| | | | 75 | 1770 | 93 | 5-491-14A |
| | 85 | 196 | 75 | 1770 | 95 | 5-481-15 |
| | | | 100 | 1770 | 98 | 5-491-14A |
| | | | 100 | 1770 | 97 | 5-491-18A |
| | 88 | 203 | 100 | 1770 | 103 | 5-491-14A |
| | | | 100 | 3560 | 100 | 6-481-11HH |
| | 90 | 208 | 100 | 1770 | 99 | 5-481-15 |
| | | | 100 | 1770 | 96 | 5-481-17 |
| | | | 100 | 1770 | 106 | 5-491-18A |
| | | | 75 | 3560 | 110 | 5-481-11C |
| | | | 100 | 3560 | 104 | 6-481-11HH |
| | 95 | 219 | 100 | 1770 | 101 | 5-481-17 |
| | | | 125 | 1770 | 110 | 5-491-18A |
| | | | 75 | 3560 | 116 | 5-481-11C |
| | | | 100 | 3560 | 108 | 6-481-11HH |
| | 100 | 231 | 100 | 1770 | 106 | 5-481-17 |
| | | | 125 | 1770 | 114 | 5-491-18A |
| | | | 100 | 3560 | 120 | 5-481-11C |
| | | | 125 | 3560 | 112 | 6-481-11HH |
| | 105 | 242 | 100 | 1770 | 111 | 5-481-17 |
| | | | 125 | 1770 | 119 | 5-491-18A |
| | | | 100 | 3560 | 125 | 5-481-11C |
| | | | 125 | 3560 | 116 | 6-481-11HH |
| | 110 | 254 | 125 | 1770 | 116 | 5-481-17 |
| | | | 125 | 1770 | 124 | 5-491-18A |
| | | | 100 | 3560 | 131 | 5-481-11C |
| | | | 125 | 3560 | 120 | 6-481-11HH |
| | 115 | 265 | 125 | 1770 | 121 | 5-481-17 |
| | | | 125 | 1770 | 129 | 5-491-18A |
| | | | 100 | 3560 | 135 | 5-481-11C |
| | | | 150 | 3560 | 125 | 6-481-11HH |
| | 120 | 277 | 125 | 1770 | 127 | 5-481-17 |
| | | | 150 | 1770 | 134 | 5-491-18A |
| | | | 100 | 3560 | 146 | 5-481-11B |
| | | | 125 | 3560 | 142 | 5-481-11C |
| | | | 150 | 3560 | 129 | 6-481-11HH |
| | 125 | 289 | 125 | 1770 | 133 | 5-481-17 |
| | | | 150 | 1770 | 137 | 5-491-18A |
| | | | 125 | 3560 | 150 | 5-481-11B |
| | | | 125 | 3560 | 146 | 5-481-11C |
| | | | 150 | 3560 | 134 | 6-481-11HH |
| | 130 | 300 | 150 | 1770 | 141 | 5-491-18A |
| | | | 125 | 1770 | 148 | 6-485-17A |
| | | | 125 | 3560 | 158 | 5-481-11B |
| | | | 125 | 3560 | 152 | 5-481-11C |
| | | | 200 | 3560 | 139 | 6-481-11HH |

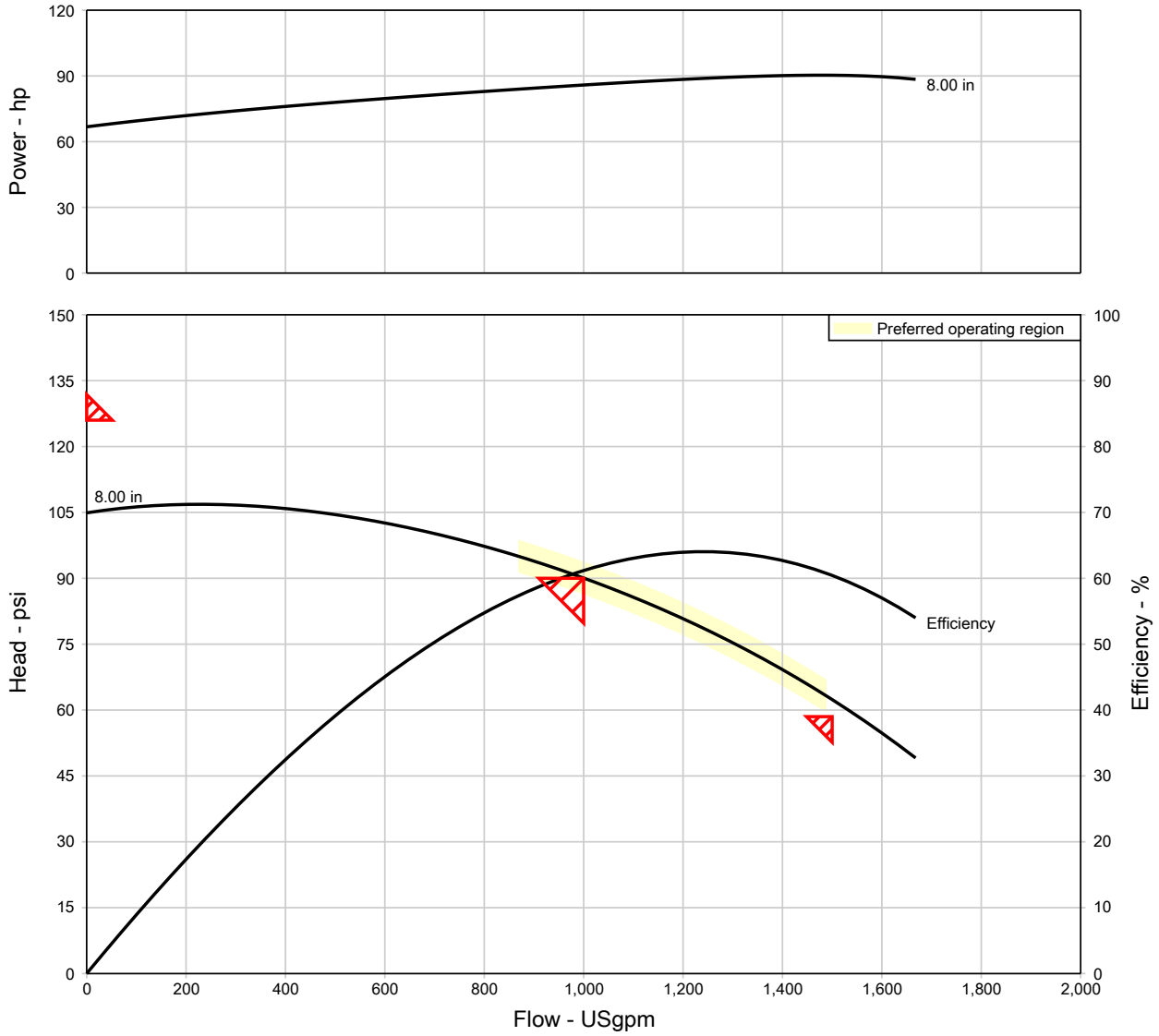
*Maximum shutoff includes Hydraulic Institute's tolerance of 6%. Value is used to determine flange rating for the pump.

Horsepower Increase
Horsepower Decrease

**Customer** : Patriot Fire
**Project name** : PSE

# Pump Performance Curve

Encompass 3.0 - 24.3.4

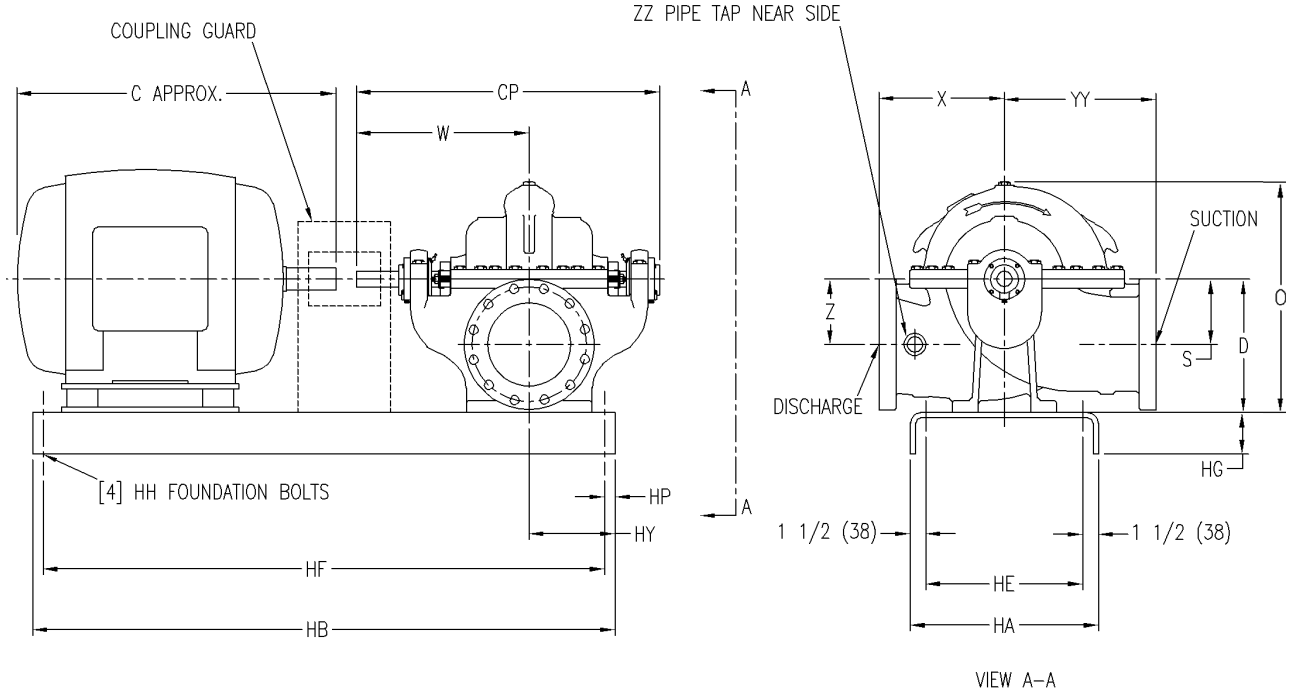



| | | | |
|---|---|---|---|
| Item Number / Tags | : 001 | Size | : 5-481-11C |
| Service | : | Stages | : 1 |
| Quantity | : 1 | Driver type | : Motor |
| Quote number | : 101724-K4 | Frequency | : 60 Hz |
| Date last saved | : 21 Oct 2024 5:03 PM | Speed, rated | : 3560 rpm |
| Flow, rated | : 1,000.0 USgpm | Based on curve number | : 184-5X6X11C-3560 |
| Differential head / pressure, rated | : 90.00 psi | Efficiency | : 61.18 % |
| Flange rating (suction / discharge) | : 125/125 | Max working pressure, allowable | : 175.0 psi.g |
| Secondary Point (150% of rated flow) | : 1,500.0 USgpm | Max Shutoff Head (Calculated) | : 110.0 psi |
| Secondary Point (65% of rated head) | : 58.50 psi | Max suction pressure, allowable | : 65.00 psi.g |
| Max Shutoff per NFPA | : 126.0 psi | Suction pressure, max (user specified) | : 45.00 psi.g |
| | | Pump shutoff w/ suction pressure | : 155.0 psi.g |
| | | Power driver, minimum | : 75.00 hp |

# General Arrangement

**WARNING**

DO NOT OPERATE THIS MACHINE WITHOUT PROTECTIVE GUARD IN PLACE. ANY OPERATION OF THIS MACHINE WITHOUT PROTECTIVE GUARD CAN RESULT IN SEVERE BODILY INJURY.




| CP | W | X | YY | D | Z | S | HY | ZZ |
|---|---|---|---|---|---|---|---|---|
| 28.50 | 16.00 | 11.25 | 13.25 | 11.00 | 5.50 | 5.50 | 6.00 | 1.25 |

| C | HA | HB | HE | HF | HG | HH | HP | O |
|---|---|---|---|---|---|---|---|---|
| 29.00 | 18.00 | 54.00 | 15.00 | 52.00 | 4.00 | 0.63 | 1.00 | 19.75 |

NOTES:

**Not for construction, installation, or application purposes unless certified.**

All dimensions are in inches

Dimensions may vary ± 1/2" (13mm) due to normal manufacturing tolerances.

Bases are designed to be completely filled with grout.

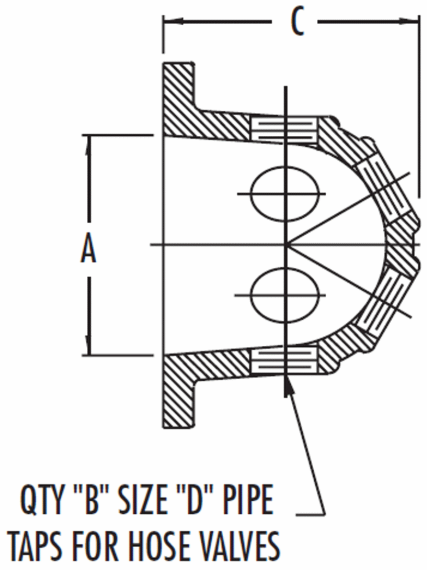
Coupling gap may vary 1/8" (3mm) through 2 1/16" (52mm)

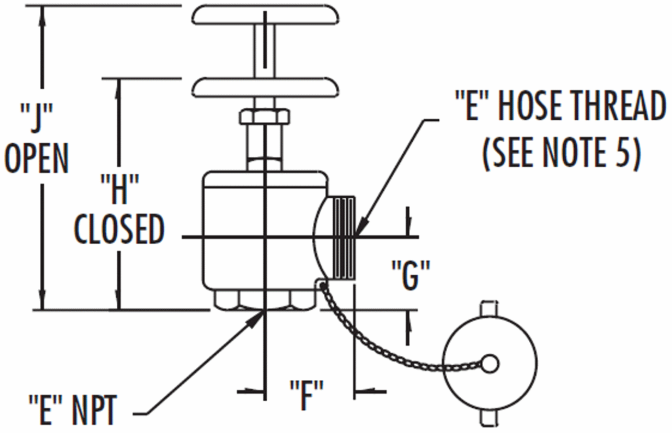
See configuration for estimated total weight.

| Pump Data | |
|---|---|
| Series | Horizontal Splitcase |
| Model | 5-481-11C |
| Size | 5x6x11C |
| Flow | 1,000.0 USgpm |
| Rated Pressure | 90.00 psi.g |
| RPM | 3560 rpm |
| Rotation | Left handed |
| Liquid Type | Water |
| Discharge Size | 5.00 in |
| Suction Size | 6.00 in |
| Impeller Diameter | 7.63 in |
| Connection Type | 125/125 |
| Base Type | Steel bent form base |
| - | - |
| **Pump Materials of Construction** | |
| Pump | Bronze fitted with Cast Iron casing |
| Shaft | Carbon Steel AISI C1045 |
| **Motor Data** | |
| Power | 75.00 hp |
| Phase | 3 |
| Frequency | 60 Hz |
| Volts | 230/460 V |
| RPM | 3600 |
| Frame | 364TS |
| Service Factor | 1.15 |
| Enclosure | ODP |
| Manufacturer | Weg |
| **Site Information** | |
| Elevation | 300.0 ft |
| Temperature | 77.00 deg F |
| **Estimated Weights** | |
| Pump | 630.0 lb |
| Driver | 600.0 lb |

| Quote Information | | | |
|---|---|---|---|
| Customer | Patriot Fire | | |
| Customer Quote | 2373253 | | |
| Job Name | PSE | | |
| Market | - | | |
| PENTAIR | | Quote Item | 001 |
| | | Quote Date | 17 Oct 2024 |

# General Arrangement




| A | B | C | D |
|---|---|---|---|
| 6.00 | 4.00 | 10.62 | 2.50 |

| E | F | G | H | J |
|---|---|---|---|---|
| 2.50 | 3.50 | 2.75 | 9.50 | 11.00 |

NOTES:

1. Dimensions are in inches (mm) and may vary ±1/4 (6).
2. Components shown are shipped loose for field installation and assembly.
3. Manifold supply size “A” and the number of hose valves (“B”) meets or exceeds the minimums specified by N.F.P.A. 20 for the pump ratings indicated.
4. Manifolds for 3000 through 5000 GPM ratings consist of multiple sections and may require support (by others).
5. 1-1/2” Hose valves furnished with 1-1/2” National Standard Fire Hose Thread: 1.9900 (50.55) O.D. (max.) , 6 threads per inch. 2-1/2” Hose valves are furnished with 2-1/2” National Standard Fire Hose Thread: 3.0686 (77.94) O.D. (max.), 7-1/2 threads per inch. Refer to factory for other thread conventions or adaptors.

| Quote Information | | | |
|---|---|---|---|
| Customer | Patriot Fire | | |
| Customer Quote | 2373253 | | |
| Job Name | PSE | | |
| Market | - | | |
| PENTAIR | | Quote Item | 001 |
| | | Quote Date | 17 Oct 2024 |

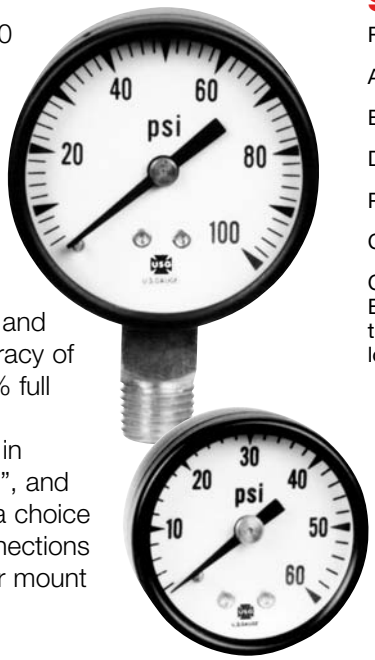
# General Purpose Gauges
# Series P-500

## DESCRIPTION

U.S. Gauge Series P-500 utility gauges provide economical, reliable service in a wide variety of applications including pumps, compressors, and other equipment.

Series P-500 utility gauges come in English and metric ranges with accuracy of either ±3-2-3% or ±1.6% full scale.

Gauges are available in 1-1/2", 2", 2-1/2", 3-1/2", and 4-1/2" steel cases with a choice of English or metric connections in center-back and lower mount configurations.




## SPECIFICATIONS

RANGES: 30" Hg VAC through 0-5000 psi

ACCURACY: ±3-2-3% (Grade B) or ±1.6% of span

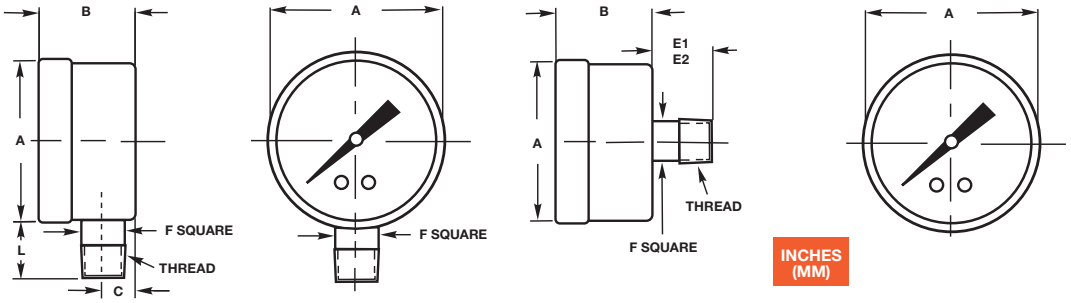
BOURDON TUBE: Phosphor bronze

DIAL: ABS (aluminum optional)

POINTER: Aluminum

CASE: Painted steel

CONNECTION:
Brass, 1/8-27 NPT for 1-1/2" and 2"; 1/4-18 NPT for 2" through 4-1/2"; G1/8B, G1/4B, R1/8, R1/4, center-back or lower mount




| MODEL NUMBER | DIAL SIZE | UNIT | A | B | C | E1 | E2 | F | L |
|---|---|---|---|---|---|---|---|---|---|
| P-500 | 1-1/2" | inches | 1.64 | .92 | .34 | .62 | – | .44 | .55 |
| | | mm | 41.66 | 23.37 | 8.66 | 15.75 | – | 11.18 | 13.97 |
| P-500 | 2" | inches | 2.16 | 1.15 | .40 | .84 | .90 | .55 | .87 |
| | | mm | 54.86 | 29.21 | 10.16 | 21.34 | 22.86 | 13.97 | 22.10 |
| P-505 | 2-1/2" LM | inches | 2.73 | 1.15 | .39 | .48 | .25 | .82 | – |
| | | mm | 69.34 | 29.21 | 9.91 | 12.19 | 6.35 | 20.83 | – |
| P-505 | 2-1/2" CBM | inches | 2.49 | 1.21 | 1.22 | – | .28 | .84 | – |
| | | mm | 63.25 | 30.73 | 30.99 | – | 7.11 | 21.34 | – |
| P-505 | 3-1/2" LM | inches | 3.53 | 1.17 | .40 | – | .24 | .83 | – |
| | | mm | 89.66 | 29.72 | 10.16 | – | 6.10 | 21.08 | – |
| P-505 | 4-1/2" LM | inches | 4.80 | 1.12 | .38 | – | .45 | 1.10 | – |
| | | mm | 121.92 | 28.45 | 9.65 | – | 11.43 | 27.94 | – |

* Length E1 refers to 1/8 NPT connections; E2 refers to 1/4 NPT connections
** The E dimension is the minimum length of the wrench square from the case bottom



AMETEK®

ISO 9001:2000 CERTIFIED

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Fax: (215) 354-1802
www.ametekusg.com
Customer Service Tel: (863) 534-1504
Customer Service Fax: (863) 533-7465

*For Electronic Products:*
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Fax: (215) 354-1800
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Largo, FL 33773 U.S.A.
Tel: (727) 536-7831
Fax: (727) 539-6882
www.ametek.com/tci


# General Purpose Gauges
# Series P-500

## SPEC NUMBER SELECTION GUIDE

### Series P-500

| Connection | Range* | 1-1/2" Spec No. | 2" Spec No. | 2-1/2" Spec No. | 3-1/2" Spec No. | 4-1/2" Spec No. |
|---|---|---|---|---|---|---|
| **1/8-27 LM** | 15 psi | 146000A | 052420A | – | – | – |
| | 30 psi | 166327 | 163931 | 059306A | – | – |
| | 60 psi | 146002A | 164005 | 058129A | – | – |
| | 100 psi | 166318 | 163271 | 049660A | – | – |
| | 160 psi | 146004A | 048302A | 048536A | – | – |
| | 200 psi | 166777 | 046645A | 050852A | – | – |
| | 300 psi | 146006A | 048363A | 046647A | – | – |
| | 600 psi | 146007A | – | – | – | – |
| | 1000 psi | 146008A | – | – | – | – |
| | 2000 psi | 146009A | – | – | – | – |
| **1/8-27 CBM** | 15 psi | 146010A | – | – | – | – |
| | 30 psi | 166320 | 163930 | – | – | – |
| | 60 psi | 166321 | 055155A | – | – | – |
| | 100 psi | 166322 | 046776A | – | – | – |
| | 160 psi | 166323 | 070791A | – | – | – |
| | 200 psi | 146015A | 102673A | – | – | – |
| | 300 psi | 146016A | 051805A | – | – | – |
| | 600 psi | 146017A | – | – | – | – |
| | 1000 psi | 146018A | – | – | – | – |
| | 2000 psi | 146019A | – | – | – | – |
| **1/4-18 LM** | 15 psi | – | 047615A | 047102A | 5502A | 5546A |
| | 30 psi | – | 163149 | 163278 | 168536 | 5804A |
| | 60 psi | – | 163269 | 163279 | 168537 | 5551A |
| | 100 psi | – | 162988 | 163280 | 168538 | 5554A |
| | 160 psi | – | 163270 | 163281 | 168539 | 5559A |
| DISCHARGE | 200 psi | – | 163147 | 163282 | 168540 | 5561A |
| | 300 psi | – | | | 168541 | |
| | 400 psi | – | 047492A | 049611A | 5515A | 12265A |
| | 600 psi | – | 047493A | 046648A | 5516A | 5337A |
| | 1000 psi | – | 047494A | 047496A | 5519A | 12266A |
| | 2000 psi* | – | – | 171398A | – | – |
| | 3000 psi* | – | – | 171400A | – | – |
| | 5000 psi* | – | – | 143072A | – | – |
| **1/4-18 CBM** | 15 psi | – | 046987A | 052827A | – | – |
| | 30 psi | – | 163949 | 165213 | – | – |
| | 60 psi | – | 163272 | 165214 | – | – |
| | 100 psi | – | 163273 | 163284 | – | – |
| | 160 psi | – | 163274 | 163285 | – | – |
| | 200 psi | – | 163275 | 163286 | – | – |
| | 300 psi | – | 163276 | 163287 | – | – |
| | 600 psi | – | 046991A | 050851A | – | – |
| | 1000 psi | – | – | 050870A | – | – |
| | 2000 psi* | – | – | 171399A | – | – |
| | 3000 psi* | – | – | 171401A | – | – |
| **1/8-27 LM** | 30" - 15 psi | – | 66662A | – | – | – |
| | 30" - 60 psi | – | 47925A | – | – | – |
| | 30" - 150 psi | – | 49609A | – | – | – |
| **1/4-18 LM** | 30" - 15 psi | – | 47000A | 47001A | 5493A | 63754A |
| | 30" - 30 psi | – | 167218 | 47105A | 5495A | 5549A |
| SUCTION | 30" - 60 psi | – | 57548A | 46646A | 5496A | 12290A |
| | 30" - 150 psi | – | | | 5499A | 12292A |
| | 30" - 300 psi | – | – | 58156A | 15936A | – |
| **1/8-27 LM** | 30" | 146020A | 47225A | – | – | – |
| **1/8-27 CBM** | 30" | 146021A | – | – | – | – |
| **1/4-18 LM** | 30" | – | 163712 | 171222A | 171223A | 5333A |

* Dual scale dials are available, please contact Customer Service at (863) 534-1504
U-clamp kit for 1-1/2" P-500, Spec #166732



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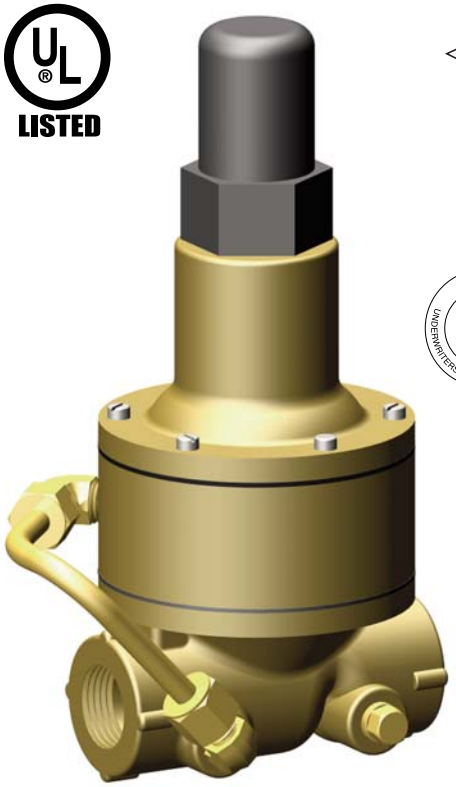
CLA-VAL™

— MODEL — **55L**

# Pressure Relief Valve



- **UL Listed**
- **Factory Mutual Approved**
- **Direct Acting - Precise Pressure Control**
- **Positive Dependable Opening**
- **Drip Tight Closure**
- **No Packing Glands or Stuffing Boxes**
- **Sensitive to Small Pressure Variations**

The Cla-Val Model 55L **(UL Listed FM approved)** Pressure Relief Valve is a direct-acting, spring loaded, diaphragm type relief valve. The valve may be installed in any position and will open and close within very close pressure limits.

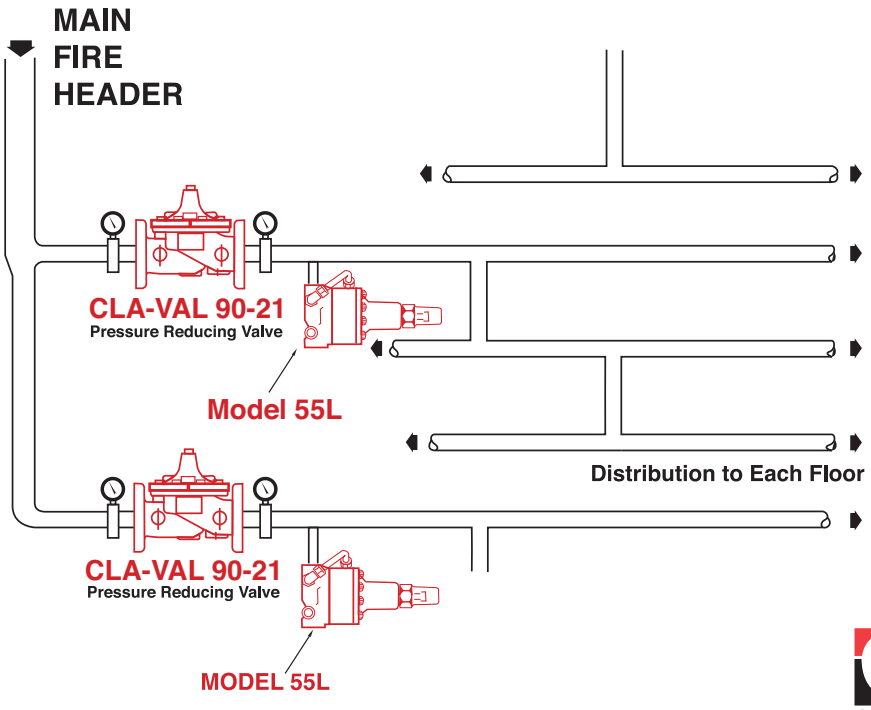
The Model 55L is normally held closed by the force of the compression spring above the diaphragm. When the controlling pressure applied under the diaphragm exceeds the spring setting, the disc is lifted off its seat, permitting flow through the control. When control pressure drops below the spring setting, the spring forces the control back to its normally closed position. The controlling pressure is applied to the chamber beneath the diaphragm through an external tube on the 55L.

Pressure adjustment is simply a matter of turning the adjusting screw to vary the spring load on the diaphragm. The 55L is available in three pressure ranges; 0 to 75 psi, 20 to 175 psi, 100 to 300 psi. To prevent tampering, the adjustment cap can be wire sealed by using the lock wire holes provided in the cap and cover.

Note: Also Available in Seawater Service Material

## Typical Applications

**Fire Protection System Service**
Using the **Model 55L** in a fire protection system or other closed type system, prevents pressure build-up whenever line pressure exceeds the setting of the spring. The valve will relieve excess pressure to atmosphere preventing damage to the distribution network.




CLA-VAL™

## Specifications

| | |
|---|---|
| **Size** | 1/2" & 3/4" Threaded |
| **Temperature Range** | Water, Air: to 180°F Max. |
| **Materials** | |
| Body & Cover: | Cast Bronze ASTM B62 |
| | Stainless Steel ASTM A743-CF-16Fa |
| Trim: | Brass & Stainless Steel 303 |
| Rubber: | Buna-N® Synthetic Rubber |

| **UL Listed** 55L Range psi | Approximate Increase for Each Clockwise Turn of Adjusting Screw |
|---|---|
| 20 to 175 | 28.0 psi |

| **FM Approved** 55L Range psi | Approximate Increase for Each Clockwise Turn of Adjusting Screw |
|---|---|
| 0 to 75 | 8.5 psi |
| 20 to 200 | 28.0 psi |
| 100 to 300 | 18.0 psi |

| | |
|---|---|
| **Pressure Ratings** | Cast Bronze 400 psi Max.<br>Stainless Steel 400 psi Max. |
| **Other Materials** | Available on special order |
| **Adjustment Ranges** | 0 to 75 psi<br>20 to 200 psi<br>100 to 300 psi |

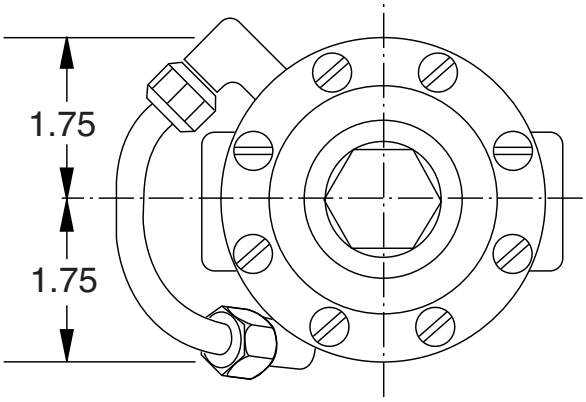
## Flow Loss Chart (Full Open Valve)

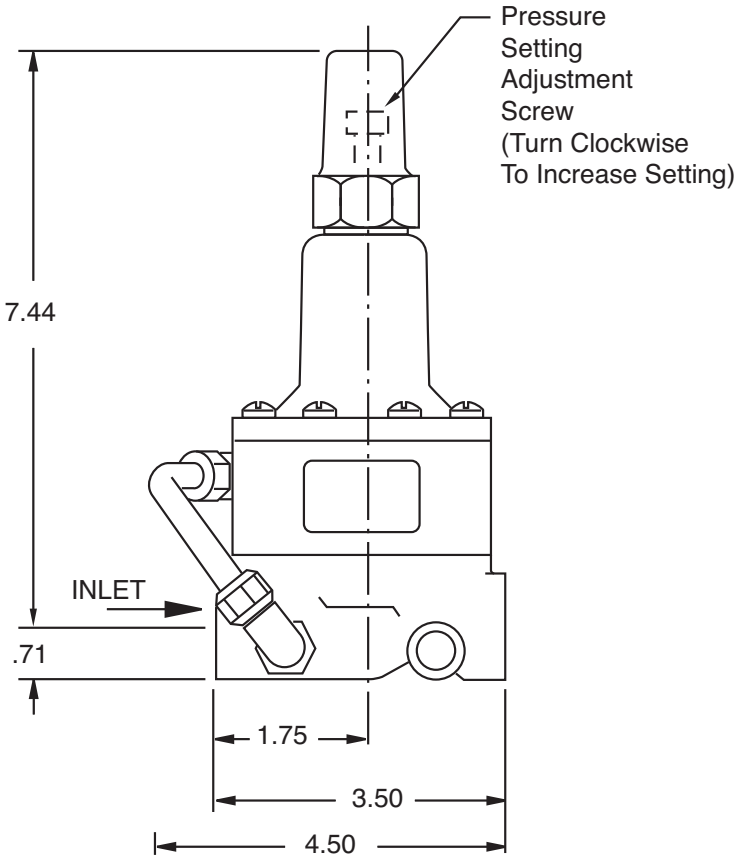
| Valve Size | $C_V$ Factor | Flow of Water - Gallons Per Minute | | | | |
|---|---|---|---|---|---|---|
| | | 5 | 10 | 16 | 20 | 30 |
| 1/2" | 6 | 0.7 | 2.7 | 6 | 11 | -- |
| 3/4" | 8.5 | 0.3 | 1.4 | 3.1 | 5.5 | 12.2 |

## When Ordering, Please Specify

1. Catalog No. 55L
2. Valve Size
3. Adjustment Range Desired
4. Optional Materials

## 55L Basic Valve Dimensions (In Inches)




**0 to 75 and 20 to175 psi design**


CLA-VAL

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Fax: 64-39644786
E-mail: gnuthall@cla-val.com


E-55L (R-9/2011)

FT90 Bid Submittal
BN124049EN

# Eaton EPCT Fire

## Touchscreen based electric fire pump controllers

Powering Business Worldwide

## Product Description

The EPCT Fire features an advanced, 7" color touchscreen that incorporates both the fire pump controller (FPC) and automatic transfer switch (ATS) functionality into one, intuitive display.

Designed solely with the consumer in mind, the EPCT Fire enables technicians to commission the fire pump controller faster; troubleshooting is made easier and is more effective through the use on-screen history filtering and diagnostic monitoring.

All full-service fire pump controllers can be offered in either full-voltage or reduced voltages starting methods:

- FD/FT20 - Limited service
- FD/FT30 - Across-the-line
- FD/FT40 - Part winding
- FD/FT50 - Primary resistor
- FD/FT60 - Autotransformer
- FD/FT70 - WYE-Delta (Star-Delta) open transition
- FD/FT80 - WYE-Delta (Star-Delta) closed transition
- FD/FT90 - Soft start

## Product Features

### Touchscreen Display

General

Speed of commissioning, configuration and troubleshooting are more critical to businesses today more than ever. Through the use of a 7" touchscreen, users can easily program all site specific setpoints through an intuitive menu structure, view all critical system information, and troubleshoot quickly and accurately via on-screen diagnostics.

Automatic Transfer Switch Integration

Going away from the multiple screen approach, the EPCT Fire touchscreen integrates both the Fire Pump Controller and Automatic Transfer Switch into one display enabling the user to effectively manage programming and operation from one source.

Commissioning Simplified

The Startup tab features all controller related commissioning tasks such as: Quick Setup, Setup Phase Reversal, Flow Test, Manual/Automatic Starts, and Test Alarms.

UL Type Rating

The touchscreen display has been tested in accordance with UL and achieves a type 4X rating.

### Programming Menu

Startup tab

This tab system enables the user to complete all controller related commissioning tasks. Each sub-menu within the Startup tab guides the user through step-by-step, intuitive screens to quickly and effectively complete the startup and commissioning process.

Panel Setup tab

All variables relating to the panel, such as language, date and time, nominal voltage, etc., are located in the Panel Setup tab. For all programming points within the Panel Setup tab, refer to the instruction manual: MN124016EN.

Help tab

The help tab provides end users service contact information from the company that commissioned the unit (if programmed), factory contact information, and a QR code to download the instruction manual onto a mobile device.

Pressure Settings tab

Contains a variety of pressure settings that may be programmed to suit site requirements. Some key settings include: Start Pressure, Stop Pressure, Low Pressure Alarm, High Pressure Alarm, Low Suction Shutdown, Low Foam Shutdown, Pressure Units, and the ability to calibrate the transducer.

Timer Values tab

This tab system contains the programming point for all fire pump controller related timers. These timers are: Minimum Run Time, Acceleration Time, Sequential Start Time, Fail to Start Time, Fail to Stop Time, and Weekly Motor Test Timer.

ATS Settings tab (if equipped)

The ATS Settings tab will only be enabled on units equipped with an automatic transfer switch. Programming points within this tab only pertain to the operation of the transfer switch.

Alarm Setpoints tab

There are seven (7) programmable alarm points within this tab system: Phase Reversal, Phase Failure Alarm Setpoint, Motor Overload Setpoint, Transducer Fail Pump Start, Abort Motor Test on Low Voltage, Voltage Alarm Settings, and Frequency Alarm Settings.

Inputs/Outputs tab

The I/O board is capable of accepting ten (10) custom inputs that can be programmed for seventeen (17) predefined conditions. The output relays can be programmed for sixty-one (61) separate conditions. Additional relays can be added through the use of a single or multiple optional relay boards.

History/Statistics/Diagnostics tab

This tab system allows the customer/technician to view historical data, controller statistics, controller diagnostics, and startup information. To assist, the controller can filter for specific events or between certain dates to speed up troubleshooting.

### I/O Board

Power Supply

The redesigned I/O board is equipped with a full voltage power supply capable of accepting voltage inputs between 200-600VAC three phase, or 240VAC single phase.

Customer Input Connections

Connection terminals are provided at the top of the I/O board for external customer connections that can be programmed through the touchscreen display.

Output Relays

The I/O board features four (4), 250VAC, 8A, 2 Form-C relays designated for the following: Common Alarm, Power/Phase Failure, Phase Reversal, and Pump Run. Each relay socket has a surface mount LED to indicate the relay's coil status.

Optional Boards

The controller can accept up to four (4) additional option boards: optional relay board, MODBUS communication board, secondary 4-20mA device board, and an alarm board. The controller has provisions to allow future optional boards to be added with plug-and-play functionality.

### Other Components

Drain Valve Solenoid

All full-service EPCT Fire controllers are equipped with a drain valve solenoid used for manual or automatic motor tests.

External USB Port

The USB port allows the user to download historical messages, statistics, diagnostic information, startup file, and current controller configuration to any USB device with FAT16 or FAT 32 formatting.

Enclosures

The EPCT Fire controllers come standard with UL type 2 (drip-proof) enclosures. Optional enclosures are available and include: type, 3, 3R, 4, 4X, and 12.

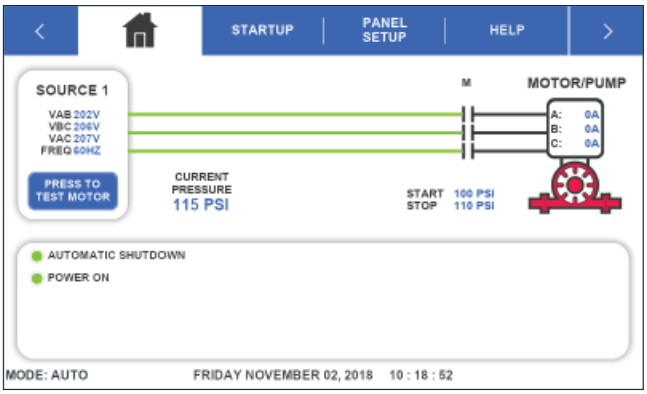
Emergency Start Operator

A mechanically operated emergency start handle (ESH) will mechanically activate the motor contactor(s) independently from any electrical control circuits.

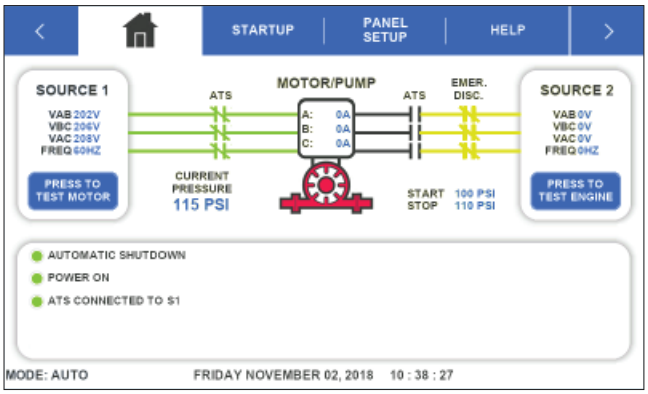
## Standards & Certifications

All EPCT Fire full-service, electric fire pump controllers meet or exceed the requirements of Underwriters Laboratories and Underwriters Laboratories Canada [UL218 and UL1008], Factory Mutual, the Canadian Standards Association, New York City building code, CE mark, U.B.C./C.B.C. seismic requirements, and are built to the latest edition of NFPA 20 standards. The EPCT Fire electric fire pump controllers are suitbale for use as service entrance equipment - does not meet CEC requirements for Canada.

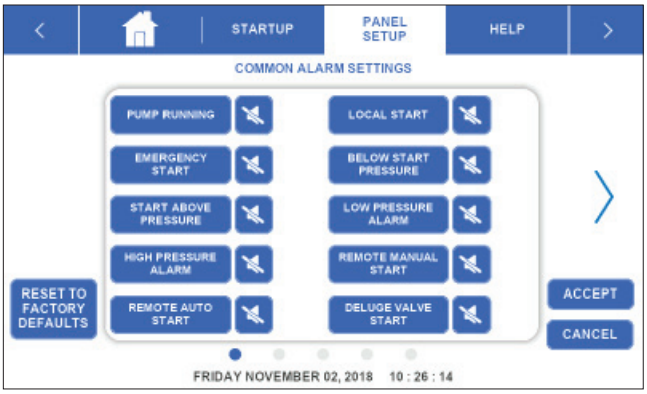
## Display Screens



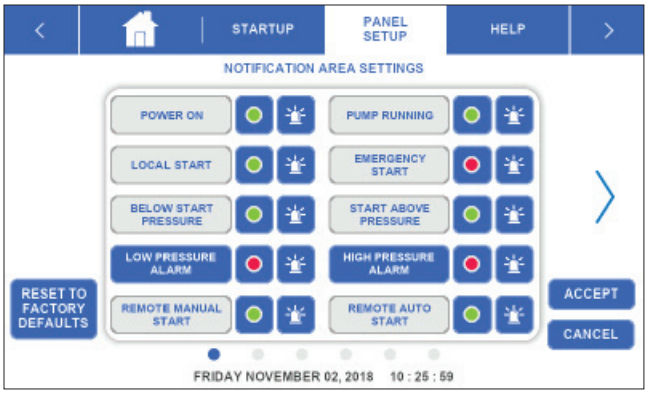

**Home tab - without ATS**




**Home tab - with ATS**




**Common Alarm Settings**




**Notification Area Settings**


**Message History**


**Customer Service Contact**

## Quick Specification Overview

| Starting Conditions | | | | | Withstand Ratings | | |
|---|---|---|---|---|---|---|---|
| **Starting Method** | **Starting Voltage** | **Starting Current** | **Staring Torque** | **Motor Connections** | **Voltage** | **HP** | **Short Circuit Withstand Rating** |
| FD/FT20 Limited Service | Full | 600% | 100% | 2 (SP) or 3 | 200-208V | 5-30 | 25,000 |
| | | | | | 220-240V | 5-30 | 25,000 |
| | | | | | 380-415V | 5-30 | 25,000 |
| | | | | | 440-480V | 5-30 | 25,000 |
| | | | | | 575-600V | 5-30 | 18,000 |
| | | | | | 240V (SP) | 5-15 | 10,000 |
| FD/FT30 Across-the-Line | Full | 600% | 100% | 3 | 200-208V | 5-150 | 100,000 |
| | | | | | 220-240V | 5-200 | 100,000 |
| | | | | | 380-415V | 5-300 | 100,000 |
| | | | | | 440-480V | 5-400 | 100,000 |
| | | | | | 575-600V | 5-500 | 25,000 |
| FD/FT40 Part Winding | Reduced | 65% | 50% | 6 | 200-208V | 5-250 | 100,000 |
| | | | | | 220-240V | 5-300 | 100,000 |
| | | | | | 380-415V | 5-500 | 100,000 |
| | | | | | 440-480V | 5-600 | 100,000 |
| | | | | | 575-600V | 5-700 | 25,000 |
| FD/FT50 Primary Resistor | Reduced | 50% | 42% | 3 | 200-208V | 5-150 | 100,000 |
| | | | | | 220-240V | 5-200 | 100,000 |
| | | | | | 380-415V | 5-300 | 100,000 |
| | | | | | 440-480V | 5-400 | 100,000 |
| | | | | | 575-600V | 5-500 | 25,000 |
| FD/FT60 Autotransformer | Reduced | 45% | 42% | 3 | 200-208V | 5-150 | 100,000 |
| | | | | | 220-240V | 5-200 | 100,000 |
| | | | | | 380-415V | 5-300 | 100,000 |
| | | | | | 440-480V | 5-400 | 100,000 |
| | | | | | 575-600V | 5-500 | 25,000 |
| FD/FT70 WYE-Delta (Star-Delta) Open Transition | Reduced | 33% | 33% | 6 | 200-208V | 5-250 | 100,000 |
| | | | | | 220-240V | 5-300 | 100,000 |
| | | | | | 380-415V | 5-500 | 100,000 |
| | | | | | 440-480V | 5-600 | 100,000 |
| | | | | | 575-600V | 5-700 | 25,000 |
| FD/FT80 WYE-Delta (Star-Delta) Closed Transition | Reduced | 33% | 33% | 6 | 200-208V | 5-250 | 100,000 |
| | | | | | 220-240V | 5-300 | 100,000 |
| | | | | | 380-415V | 5-500 | 100,000 |
| | | | | | 440-480V | 5-600 | 100,000 |
| | | | | | 575-600V | 5-700 | 25,000 |
| FD/FT90 Soft Start | Reduced | Adjustable | Adjustable | 3 | 200-208V | 5-150 | 100,000 |
| | | | | | 220-240V | 5-200 | 100,000 |
| | | | | | 380-415V | 5-300 | 100,000 |
| | | | | | 440-480V | 5-400 | 100,000 |
| | | | | | 575-600V | 5-500 | 25,000 |

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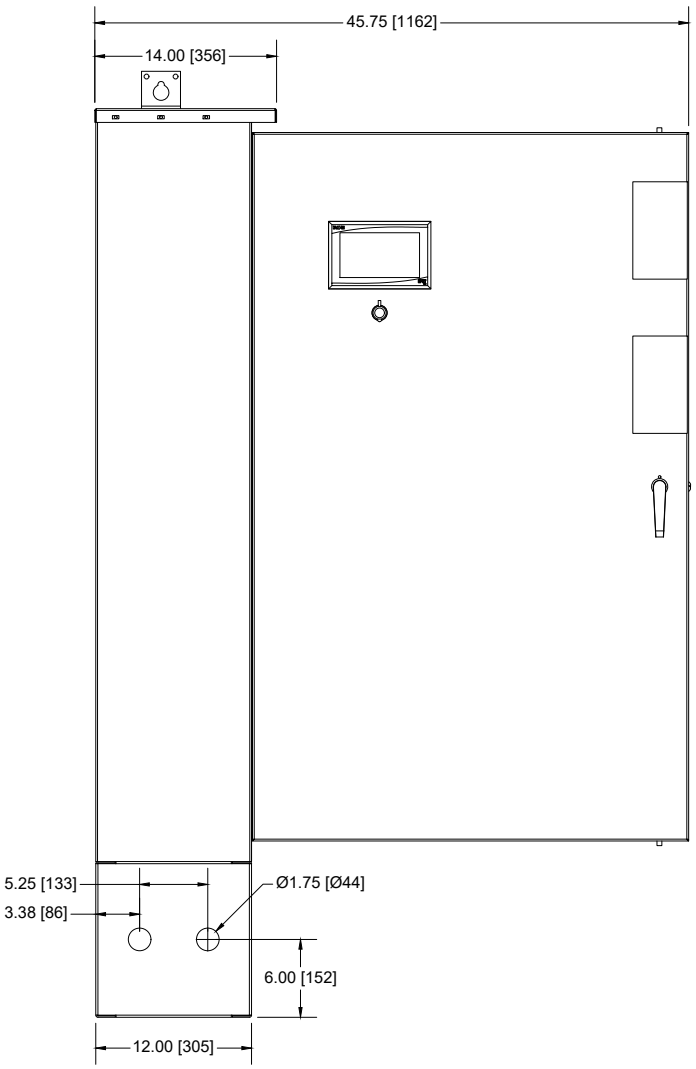
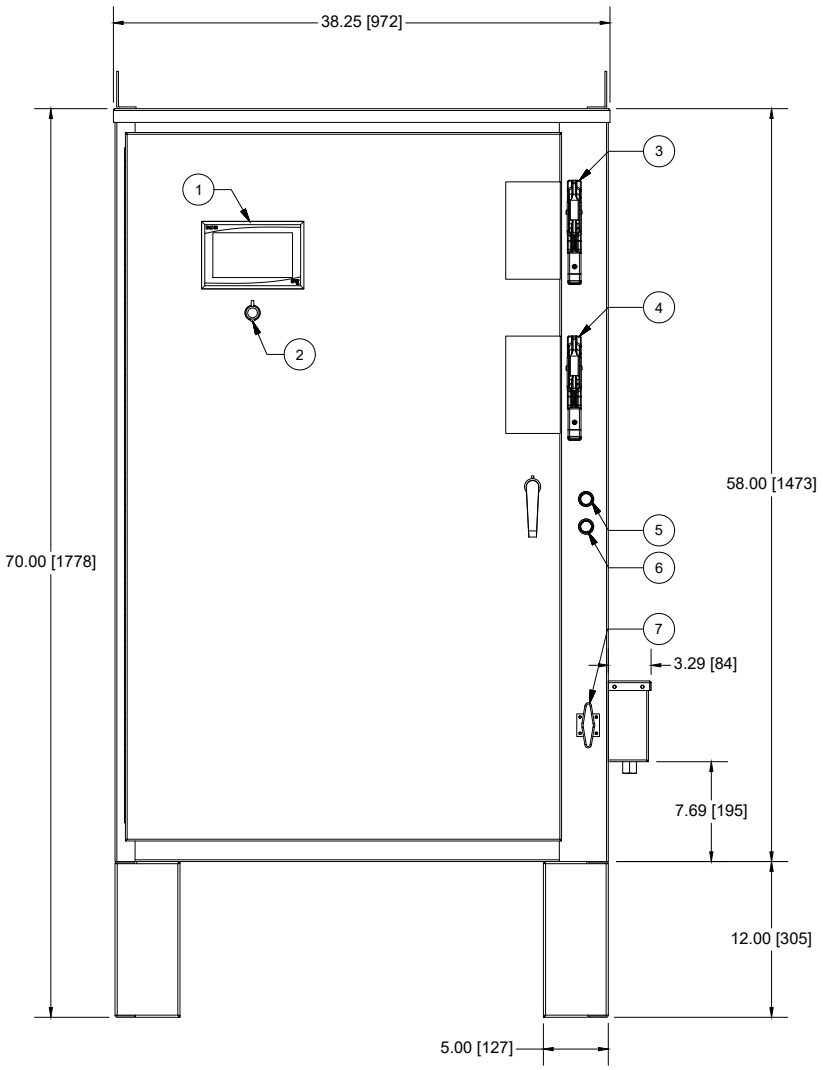
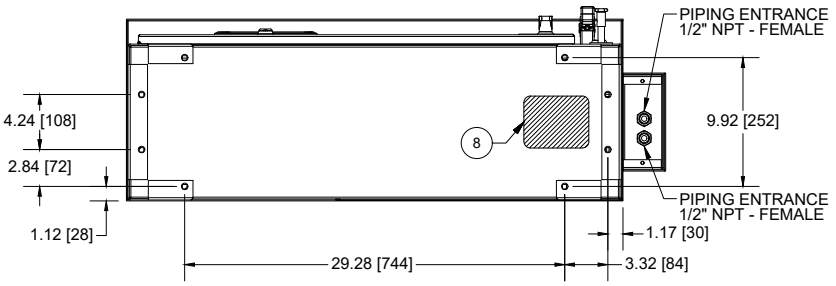
# EPCT FIRE - FT90 SMALL HP
# DIMENSIONAL DRAWING - TYPE 2, 3, 3R, 4, 4X, 12




1 - EPCT TOUCHSCREEN
2 - EXTERNAL USB PORT
3 - SOURCE 1 POWER SWITCH
4 - SOURCE 2 POWER SWITCH
5 - START PUSHBUTTON
6 - STOP PUSHBUTTON
7 - MSH (EMERGENCY START HANDLE)
8 - RECOMMENDED CABLE ACCESS (BOTTOM ONLY)

NOTES:
1 - DIMENSIONS: in [mm]
2 - ALL ENCLOSURES FINISHED IN RED
3 - STANDARD ENCLOSURE: TYPE (NEMA) 2

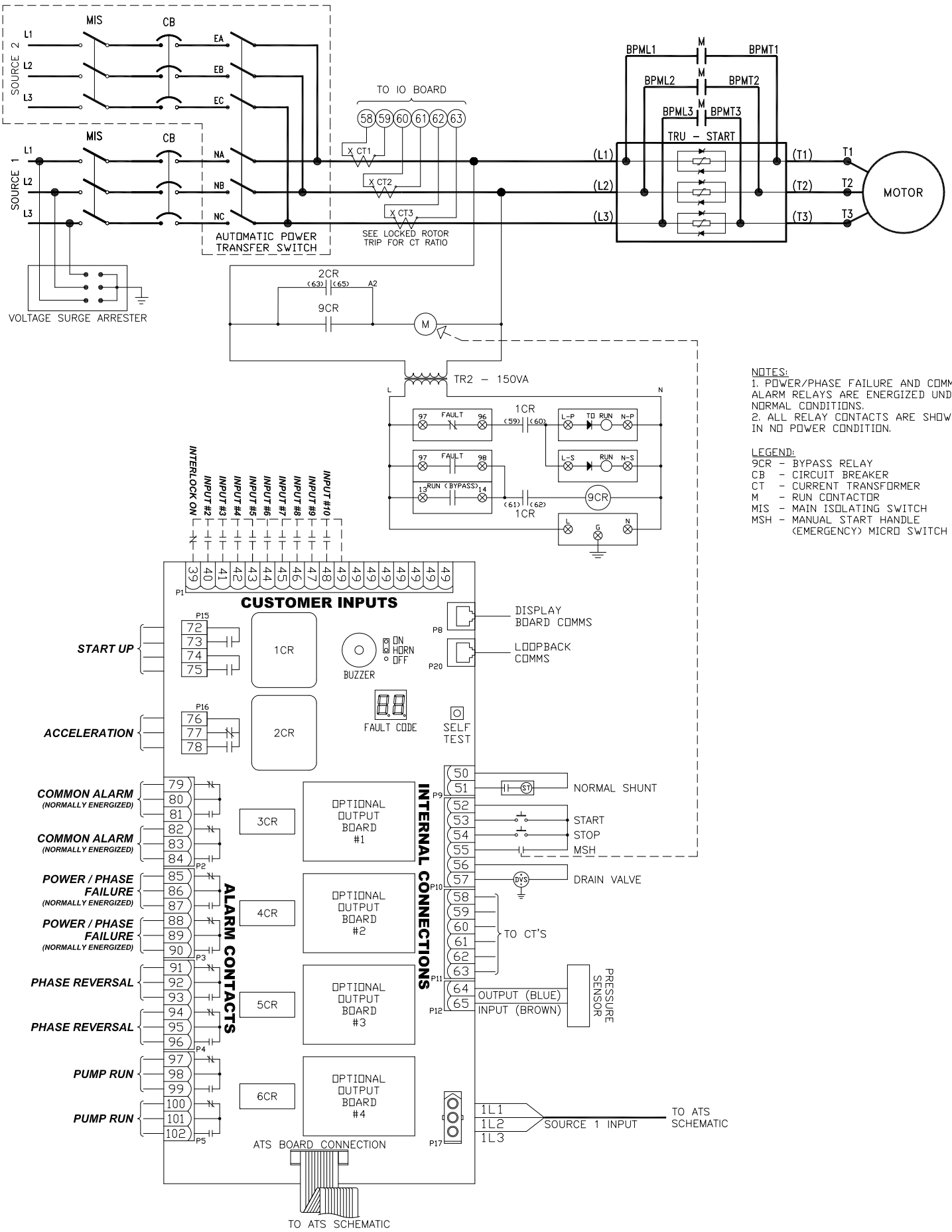



| Motor HP | Line voltage | Withstand rating | | | Approximate weight |
|---|---|---|---|---|---|
| | | Standard | Intermediate | High | Lbs. (Kg) |
| 5 - 40 | 200 - 208V | 100,000 | 150,000 | 200,000 | 405 (183) |
| 5 - 50 | 220 - 240V | | | | |
| 5 - 75 | 380 - 415V | | | | |
| 5 - 100 | 440 - 480V | | | | |
| 5 - 100 | 550 - 600V | 25,000 | 100,000 | | |



| REVISION | DATE | DRAWING NO. |
|---|---|---|
| 002 | 04/10/20 | CE16491H17 |

# EPCT FIRE - FT90 THREE PHASE WIRING SCHEMATIC



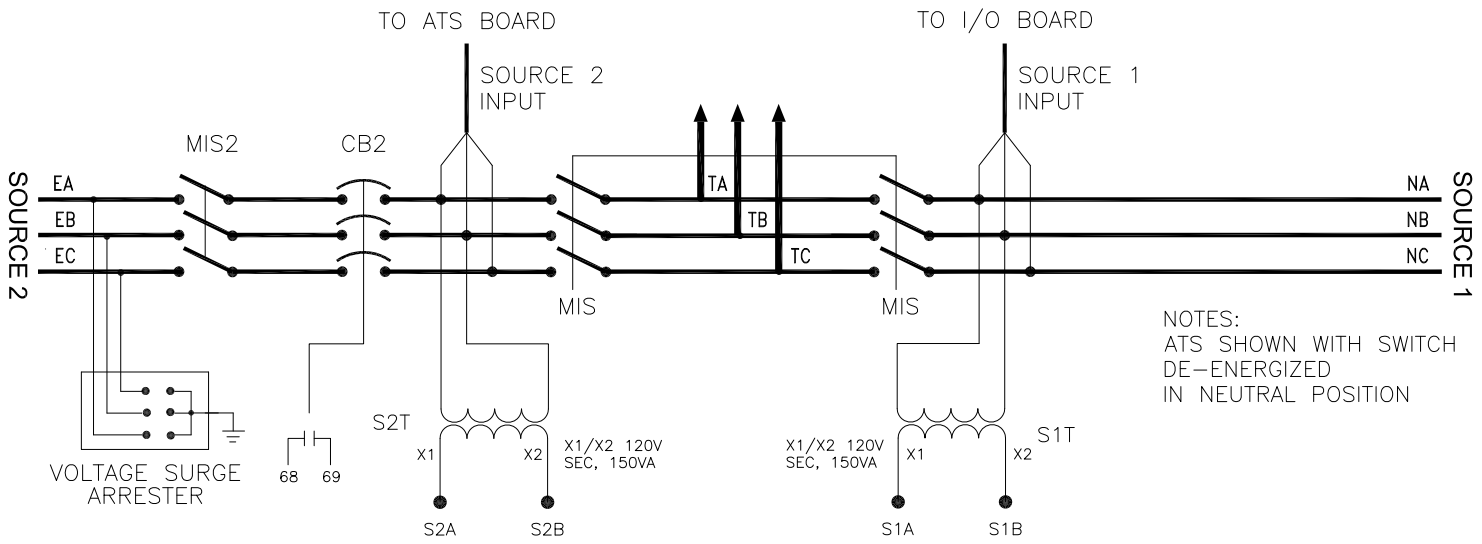

NOTES:
1. POWER/PHASE FAILURE AND COMMON ALARM RELAYS ARE ENERGIZED UNDER NORMAL CONDITIONS.
2. ALL RELAY CONTACTS ARE SHOWN IN NO POWER CONDITION.

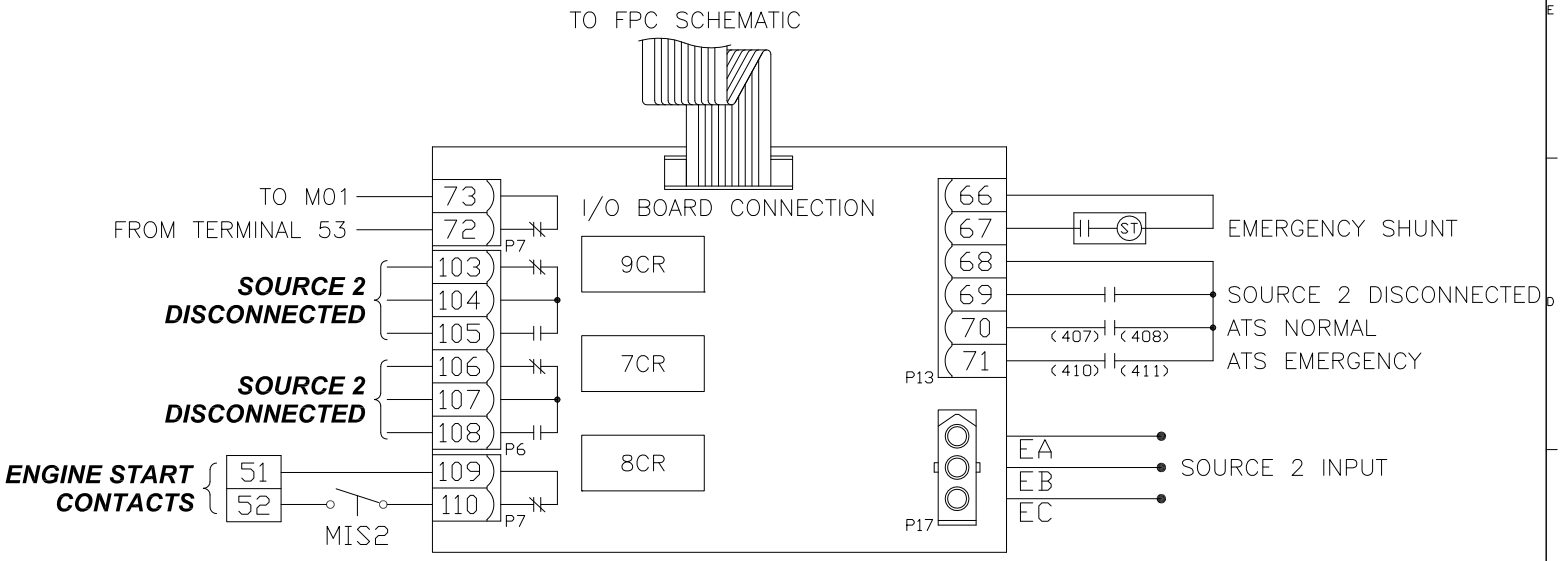
LEGEND:
9CR – BYPASS RELAY
CB – CIRCUIT BREAKER
CT – CURRENT TRANSFORMER
M – RUN CONTACTOR
MIS – MAIN ISOLATING SWITCH
MSH – MANUAL START HANDLE (EMERGENCY) MICRO SWITCH

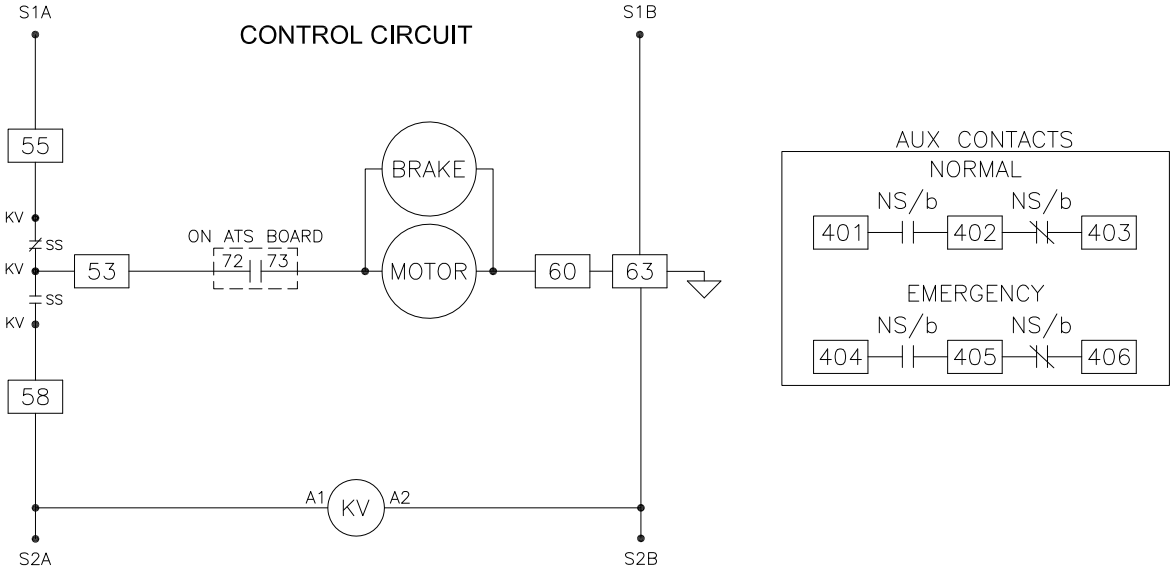


| REVISION | DATE | DRAWING NO. |
|---|---|---|
| 001 | 09/25/18 | CE16492H18 |

# EPCT FIRE - ATS THREE PHASE WIRING SCHEMATIC






| REVISION | DATE | DRAWING NO. |
|---|---|---|
| 001 | 09/25/18 | CE16492H19 |

# EPCT FIRE - FD/FT90 THREE PHASE FIELD CONNECTIONS

## Line Terminals Connections

| | Line Voltage | | | | | | |
|---|---|---|---|---|---|---|---|
| | 200-208 | 220-240 | 380-415 | 440-480 | 575-600 | Line Lugs (QTY.) & Cable Size per Ø | Service Ground Lugs (QTY.) & Cable Size per Ø |
| Max HP | 25 | 30 | 40 | 60 | 75 | (1) #14 - 1/0 (CU/AL) | (1) #14 - 2/0 (CU/AL) |
| | 40 | 50 | 75 | 100 | 100 | (1) #4 - 4/0 (CU) | (1) #4 - 350MCM (CU/AL) |
| | 75 | 75 | 150 | 200 | 200 | (1) #3 - 350MCM (CU/AL) | (1) #4 - 350MCM (CU/AL) |
| | 100 | 125 | 200 | 250 | 300 | (2) 3/0 - 250MCM (CU/AL) | (2) 1/0 - 750MCM (CU/AL) |
| | 150 | 200 | 300 | 400 | 500 | (2) 250 - 350MCM (CU/AL) | (2) 1/0 - 750MCM (CU/AL) |

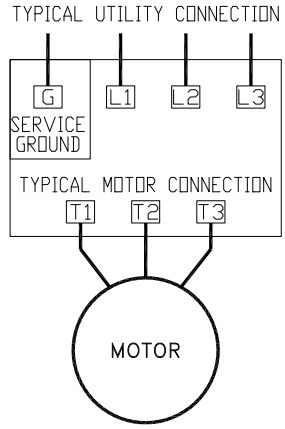
## Load Terminals Connections

| | Line Voltage | | | | | | |
|---|---|---|---|---|---|---|---|
| | 200-208 | 220-240 | 380-415 | 440-480 | 575-600 | Single Run Cable Sizes | Double Run Cable Sizes |
| Max HP | 10 | 10 | 15 | 20 | 25 | #14 - #8 (CU/AL) | - |
| | 20 | 25 | 30 | 50 | 60 | #14 - #1 (CU/AL) | - |
| | 40 | 60 | 75 | 125 | 100 | #8 - 3/0 (CU/AL) | - |
| | 75 | 100 | 150 | 200 | 200 | #2 - 750MCM (CU/AL) | 1/0 - 250MCM (CU/AL) |
| | 150 | 200 | 300 | 400 | 500 | 1/0 - 500MCM (CU/AL) | 1/0 - 500MCM (CU/AL) |

For ambient temperatures exceeding 30C (86F), the temperature rating of motor conductors is recommended to be a minimum of 90C (194F)

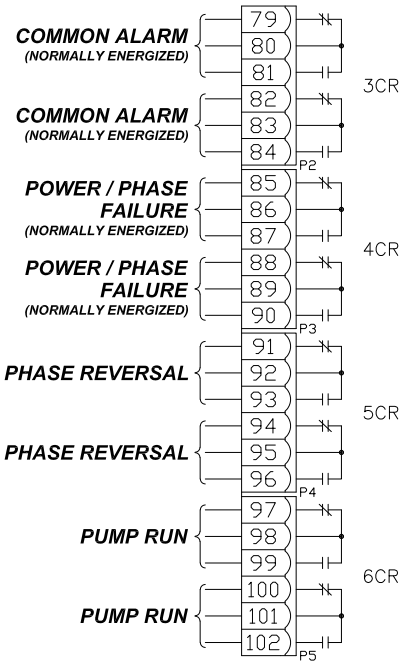
For proper cable size, refer to the National Electric Code (NEC - NFPA70)

## CONTROLLER CONNECTIONS

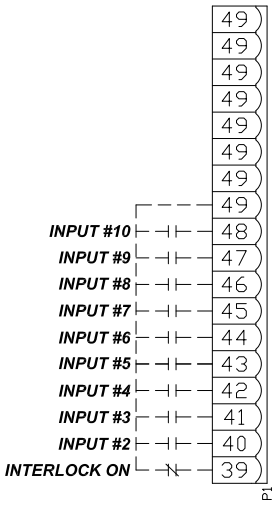



NOTES:
1. MOTOR CONNECTIONS VARY. REFER TO THE SPECIFIC MOTOR CONNECTION DIAGRAM.
2. OBSERVE PROPER PHASE ROTATION A-L1, B-L2, C-L3.
3. CABLE SIZE TO BE 125% OF FULL LOAD CURRENT. REFER TO NEC (NFPA 70)

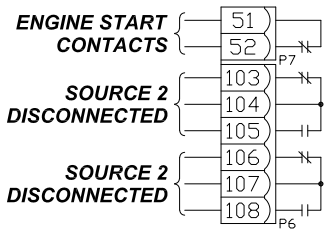
## ALARM CONTACTS

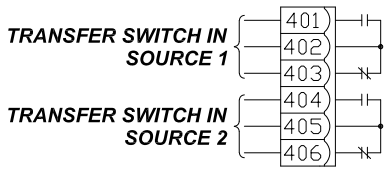



## CUSTOMER INPUTS




## TRANSFER SWTICH CONNECTIONS (IF EQUIPPED)




NOTES:
1. ENGINE START CONTACTS ARE TO BE CONNECTED TO THE REMOTE START CONTACTS ON THE GENERATOR/ENGINE.
2. CONTACTS SHOWN IN A DE-ENERGIZED, NEUTRAL POSITION



| REVISION | DATE | DRAWING NO. |
|---|---|---|
| 002 | 02/16/21 | CE16493H09 |

# EPCT Fire option selection matrix

FT 90 - 75 - F - L1 -

| Model |
|---|
| FD / FDF = Stand Alone Controller |
| FT / FTF = Controller c/w Transfer Switch |

| Starting Type | |
|---|---|
| 20 : | Limited Service |
| 30 : | Across the Line |
| 40 : | Part Winding |
| 50 : | Primary Resistor |
| 60 : | Autotransformer |
| 70 : | Wye Delta (Star-Delta) Open |
| 80 : | Wye Delta (Star-Delta) Closed |
| 90 : | Soft Start |

| Horsepower | | | | | | |
|---|---|---|---|---|---|---|
| 5 | 20 | 50 | 125 | 300 | 500 | 700 |
| 7.5 | 25 | 60 | 150 | 350 | 550 | |
| 10 | 30 | 75 | 200 | 400 | 600 | |
| 15 | 40 | 100 | 250 | 450 | 650 | |

* Higher Horsepowers not available on all models. Consult Factory for pricing.

| Voltage | |
|---|---|
| A = | 208V - 60HZ |
| B = | 240V - 60HZ |
| C = | 380V - 50HZ |
| D = | 480V - 60HZ |
| E = | 600V - 60HZ |
| F = | 415V - 50HZ |
| H = | 380V - 60HZ |
| J = | 400V - 50HZ |
| K = | 400V - 60HZ |
| G2 = | 240V 60 HZ Single Phase* |

* Only available on Limited Service Controllers

| Language | |
|---|---|
| L1 = | English |
| L2 = | French |
| L4 = | Italian |
| L5 = | Spanish |
| L6 = | Portuguese |
| L7 = | Chinese |
| L8 = | Polish |
| L9 = | Dutch |
| L11 = | Turkish |

| Options | |
|---|---|
| B - | Alarm Bell |
| C1 - | Extra Contacts "Pump Run" (Two Form-C) |
| C2 - | Extra Contacts "AC Power Failure" (Two Form-C) |
| C3 - | Extra Contacts "Phase Rev." (Two Form-C) |
| C4 - | Remote Contacts (2 Form C) Low Reservoir |
| C5 - | Remote Contacts (2 Form C) High Reservoir |
| E1 - | NEMA 3R - Raintight Enclosure |
| E2 - | NEMA 4 - Watertight Enclosure |
| E3 - | NEMA 12 - Industrial Dust Tight Enclosure |
| E4 - | NEMA 3 - Watertight Enclosure |
| E5 - | NEMA 4X - 304 Stainless Steel Enclosure |
| E8 - | Tropicalization |
| E9 - | NEMA 4X - Painted Steel |
| E10 - | NEMA 4X - 316 Stainless Steel Enclosure |
| EX - | Export Crating |
| F2 - | Floor Stand - 2 Inch Height** |
| H - | High Withstand Rating (refer to tables) |
| I - | Intermediate Withstand Rating (refer to tables) |
| OP1 - | Optional Relay Board |
| OP2 - | Optional MODBUS Board |
| OP3 - | Optional Secondary 4-20mA Device Card |
| OP4 - | Optional Alarm Board |
| P5 - | Proof Pressure Switch - ALCO 15-290 PSI |
| P7 - | Low Suction Pressure Switch |
| P8 - | Low Suction Shutdown (Requires P7) |
| P10 - | Pressure Transducer - Sea Water Rated |
| P13 - | Externally Mounted Pressure Transducer** |
| R1 - | Space Heater (120 / 220V) |
| R2 - | Space Heater c/w Thermostat |
| R3 - | Space Heater c/w Humidistat |
| R4 - | Low Pump Room Temperature Switch *** |
| R5 - | Space Heater (Internally powered - 120V) |
| R6 - | Space Heater c/w Thermostat (Internally powered - 120V / 240V) |
| R7 - | Space Heater c/w Humidistat (Internally powered - 120V / 240V) |
| TBE - | Terminal Block Enclosure** |

** Not available for NEMA 3, 4, or 4X enclosures.

*** When ordered with a NEMA 3, 4, or 4X enclosure, the temperature switch is shipped loose with 20 feet of wire.

Powering Business Worldwide

**Eaton**
Canadian Operations
5050 Mainway
Burlington, ON L7L 5Z1
P: 1-877-860-7955
E-mail: chcfirepump@eaton.com
Web: www.chfire.com


Printed in Canada
Publication No. PS124001EN / 001
Article No. XXXXXX
February 2019

# EPCT Fire electric fire pump controllers with ats

## Typical specifications

1. Approvals
   - A. The Fire Pump Controller and Transfer Switch combination shall meet the requirements of the latest edition of NFPA 20 and shall be listed by [Underwriters Laboratories (UL)] and approved by [Factory Mutual] (FM) **, [Canadian Standards Association (CSA)] and [New York Department of Buildings (NYSB)] for fire pump service.
   - B. The transfer switch shall meet UL 1008 and shall be regularly subjected to Endurance, Interrupting Capacity, and Dielectric Voltage-Withstand test as outlined by UL 489 standards.

2. Ratings
   - A. The transfer switch shall be suitable for the available short circuit current at the line terminals of the controller.
   - B. The transfer switch shall have an ampere rating not less than 115% of the motor full-load current.
   - C. The Controller shall have a withstand rating of 100,000 RMS symmetrical amperes @ [208V] [240V] [380V] [400V] [415V] [480V] [25,000 @ 600VAC].
   - D. Temperature:
     4 to +50 deg. C (39 to +122 deg. F)

3. Construction
   - A. The transfer switch shall be installed in a barriered compartment of the fire pump controller. The complete assembly, controller and transfer switch, shall be shipped as a single unit.
   - B. A single uni-gear motor shall electrically operate the transfer mechanism. It shall also be capable of being operated manually and shall have suitable provisions for readily disengaging the gear motor when necessary.
   - C. The transfer switch shall be mechanically and electrically interlocked so that it shall not be possible for the load circuits to be connected to normal and emergency sources simultaneously, regardless of whether the switch is electrically or mechanically operated. The switch shall have a manual neutral.
   - D. The alternate side shall be provided with an isolation switch sized to a minimum of 115% of the motor full-load current and a circuit breaker having a continuous current rating not less than 115% of the motor full load amps. The isolation switch shall have overcurrent sensing elements of the non-thermal type, and instantaneous short-circuit overcurrent protection. (This does not apply the FT20 Limited Service Transfer Switch Controllers.)
   - E. The isolating switch and circuit breaker shall be mechanically interlocked and operated by a single handle. (This does not apply to FT20 Limited Service Transfer Switch Controllers.)
   - F. The isolating switch shall be supervised to indicate when it is opened by audible and visual alarms.
   - G. An auxiliary contact shall be provided to prevent sending of the signal for starting of the alternate source generator when the transfer switch commands it, if the isolation switch on the alternate source side of the transfer switch is open.
   - H. The transfer switch shall be provided with locked rotor overcurrent protection. The locked rotor protector shall be calibrated and set to a minimum of 300% of the motor full-load current and have a tripping time between 8 and 20 seconds (this does not apply to FT20 Limited Service Transfer Switch controllers).

5. Enclosure
   - A. The controller shall be housed in a Type 2 (IEC IP11) drip-proof, powder baked finish, freestanding enclosure.
   - B. Optional enclosures:
     1. Type 3R (IEC IP14) rain-tight enclosure
     2. Type 3 (IEC IP55) water-resistant enclosure
     3. Type 4 (IEC IP66) watertight enclosure
     4. Type 4X (IEC IP66) watertight 304 stainless steel enclosure
     5. Type 4X (IEC IP66) watertight 316 stainless steel enclosure
     6. Type 4X (IEC IP66) watertight corrosion resistant enclosure
     7. Type 12 (IEC IP52) dust-tight enclosure

6. Microprocessor control
   - A. The controller shall come complete with a 7", 800x480, color touchscreen. The touchscreen shall be type 4X rated.
     1. Home tab capable of displaying system pressure, three phase voltage and amperage readings for both sources, system frequency, date, and time, configurable notifications in the notification area, displaying current start and stop set points, and visual representation of the transfer switch position, source 2 disconnect handle, and contactor.

2. Virtual buttons to manually test the pump motor and/or the backup power supply engine.
3. Controller statistics screen, including:
   - A. Total Powered Time
   - B. Total Motor Run Time
   - C. Last Motor Run Time
   - D. Calls to Start
   - E. Motor Starts
   - F. Maximum Starting Current A
   - G. Maximum Starting Current B
   - H. Maximum Starting Current C
   - I. Maximum Run Current A
   - J. Maximum Run Current B
   - K. Maximum Run Current C
   - L. Last LR Current A
   - M. Last LR Current B
   - N. Last LR Current C
   - O. Minimum System Pressure
   - P. Maximum System Pressure
   - Q. Minimum S1 Voltage AB
   - R. Minimum S1 Voltage BC
   - S. Minimum S1 Voltage CA
   - T. Maximum S1 Voltage AB
   - U. Maximum S1 Voltage BC
   - V. Maximum S1 Voltage CA
   - W. Minimum S2 Voltage AB
   - X. Minimum S2 Voltage BC
   - Y. Minimum S2 Voltage CA
   - Z. Maximum S2 Voltage AB
   - AA. Maximum S2 Voltage BC
   - AB. Maximum S2 Voltage CA
   - AC. Minimum S1 Frequency
   - AD. Maximum S1 Frequency
   - AE. Minimum S2 Frequency
   - AF. Maximum S2 Frequency
   - AG. Last System Startup
   - AH. Last Motor Start
   - AI. Last Low Pressure Start
   - AJ. Last Locked Rotor Trip
   - AK. Last S1 Phase Failure
   - AL. Last S2 Phase Failure
   - AM. Last S1 Phase Reversal
   - AN. Last S2 Phase Reversal
   - AO. Last S1 Undervoltage
   - AP. Last S1 Overvoltage
   - AQ. Last S2 Undervoltage
   - AR. Last S2 Overvoltage
   - AS. Last S1 Under Frequency
   - AT. Last S1 Over Frequency
   - AU. Last S2 Under Frequency
   - AV. Last S2 Over Frequency
   - AW. Last Generator Start
   - AX. Last Generator Stop
   - AY. Last transfer to S1
   - AZ. Last transfer to S2
   - BA. Last S2 Disconnect
4. Controller diagnostics screen, including:
   - A. Controller Serial Number
   - B. Logic Board Firmware Version
   - C. I/O Board Firmware Version
   - D. I/O Board Supply Voltage
   - E. I/O Board Communication
   - F. CT1 Secondary Amperage
   - G. CT2 Secondary Amperage
   - H. CT3 Secondary Amperage
   - I. Transducer Input Voltage
   - J. Transducer Output Current
   - K. Transducer Setpoint Current 2
   - L. Transducer Setpoint Current 1
   - M. All Input Status (Open or Closed) (Can be selected to override for one minute and manually change the state of the input)
   - N. All Output Relay Status (Energized or De-energized) (Can be selected to override for one minute and manually energize or de-energize the relay)
   - O. Test the display board's communication.
5. Archive message screen that will display up to 65,000 alarms/messages stored in the controllers' memory

B. The microprocessor logic board shall be available with a USB port for transference of message history, controller status, diagnostics, startup and statistic files and the ability to update firmware.

C. A Fail-to-Start alarm shall occur if the motor controller sees less than 20% of the motor full load amps after an adjustable time delay of 1-99 seconds.

D. Locked rotor protection shall be provided. After a trip condition and restoration of power, the display shall indicate the voltage, current, and date and time at the moment that the controller tripped.

E. A sequential start timer and weekly test timer shall be provided as standard.

F. A restart time delay of one (1) second shall be provided to allow the residual voltage of the motor to decay prior to re-starting the motor. In the event that the pump motor continues to run after a request to stop, then the controller must display a fail to stop message to indicate this condition.

G. Overvoltage (0-100%) and undervoltage (0-100%) sensing and alarming shall be provided as standard.

H. The controller shall be supplied with interlock and shutdown circuits as standard. A green LED in the notification area shall indicate an interlock on

condition.

I. Where shutdown of the pump(s) due to low suction pressure is required, it shall be accomplished without the addition of a separate panel or enclosure. The display shall indicate low suction shutdown. Resetting of the condition shall be automatic or manual as selected by the user.

7. Programming Menu
   A. The programming menu shall have the ability to enable an entry password.
   B. The controller shall have nine (9) languages as a standard: English, French, Spanish, Portuguese, Turkish, Italian, Dutch, Chinese, and Polish.
   C. The programming menu shall be grouped into ten (10) tabs as follows:
      1. Home
      2. Startup
      3. Panel Setup
      4. Help
      5. Pressure Settings
      6. Timer Values
      7. ATS Settings
      8. Alarm Setpoints
      9. Inputs/Outputs
      10. History/Statistics/Diagnostics
8. Pressure sensor
   A. A solid-state 4-20mA pressure sensor shall be provided. The pressure Start and Stop points shall be adjustable in increments of one (1) PSI

9. Custom inputs/outputs
   A. The controller shall come standard with ten (10) programmable inputs, four (4) programmed outputs with the ability to add up to another sixteen (16) outputs via optional relay boards.
   B. The user shall be able to program the inputs/outputs through the main programming menu.
   C. The inputs shall be selectable based on the following criteria:
      1. User selected message or seventeen (17) predetermined messages
      2. Link to a future relay and/or LED indicator
      3. Alarm latched until reset
      4. Normally open or closed input
      5. On and/or off-delay timer
   D. The future relays shall be selectable based on the following criteria:
      1. Output based on a minimum of sixty-one (61) predetermined alarms, controller status or a custom input
      2. Latched until reset
      3. Energized under normal conditions
      4. On and/or off delay timer on the output

10. Alarm relays
   A. All relays shall be soldered on the PCB. An LED on the relay panel shall indicate the energized state of the relay. All relay contacts shall be rated @ 8A, 277VAC/30VDC. Two (2) sets of Form-C contacts shall be provided for each of the following:
      1. Common Alarm
      2. Power/Phase Failure
      3. Phase Reversal
      4. Pump Run
   B. The Common Alarm and Power/Phase Failure relays shall be energized under normal conditions.
   C. 1 Form-C contact shall be provided for remote indication for source 1 connected or source 2 connected.
   D. 2 Form-C contacts shall be provided for remote indication for the alternate source-isolating switch open.

11. Audible alarm buzzer
   An audible alarm buzzer, capable of being heard while the motor is operating, shall operate if Fail to Start, Hardware Malfunction or any Common Alarm condition exists.

12. Manufacturer
   A. The manufacturer of the assembly shall be the manufacturer of major components and control modules installed within the assembly.
   B. The Transfer Switch Fire Pump Controller shall be of the EPCT Fire type as manufactured by Eaton Industries (Canada) Company.
   C. Models:
      1. FT20 Limited Service
      2. FT30 Across the Line
      3. FT40 Part Winding
      4. FT50 Primary Resistor
      5. FT60 Autotransformer
      6. FT70 Wye-Delta (Star Delta) Open Transition
      7. FT80 Wye-Delta (Star Delta) Closed Transition
      8. FT90 Soft Start

Powering Business Worldwide

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Web: www.chfire.com


Printed in Canada
Publication No. PA124005EN / 001
Article No. XXXXXX
February 2019

# JOCKEY PUMP DATA:

TALCO FIRE SYSTEMS

RESIDENTIAL & COMMERCIAL FIRE PUMP SPECIALISTS
6040 NE 112TH AVE. PORTLAND, OREGON 97220
PHONE: 800-878-8055 WWW.TALCOFIRE.COM

PENTAIR

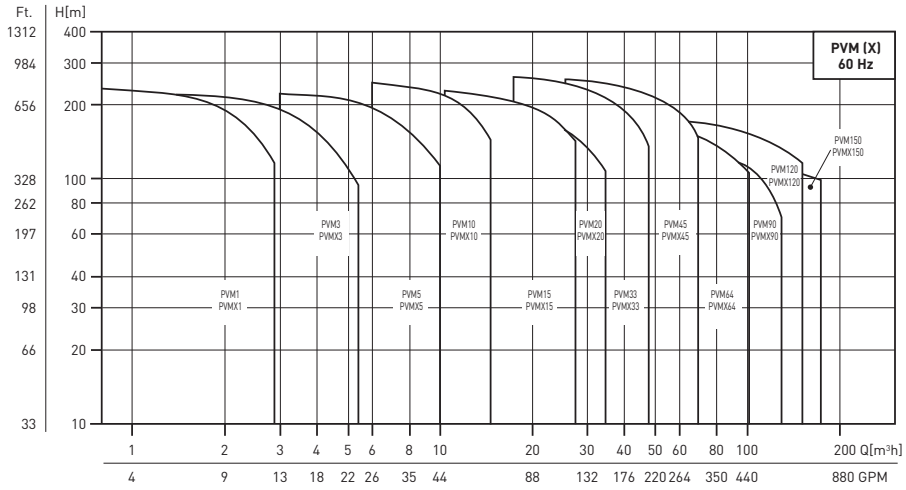
# AURORA®
# PVM(X) SERIES

VERTICAL MULTISTAGE

Certified to NSF/ANSI 61 & 372

PVMX1 through PVMX150 Only

PVM and PVMX pumps have different size and various numbers of stages to provide the flow and pressure required.




# VERTICAL MULTISTAGE PUMPS

## ADDED VALUES:

**TEFC Motors**
Increased protection against weather, dirt and moisture

**Cartridge mechanical seal**
It can be replaced easily without dismantling the pump

**Stainless Steel construction**
Impellers and diffusers in AISI 304 (PVM) or AISI 316 (PVMX)

**Multiple Connection Options**
Flanged, grooved or NPT connections

PENTAIR

**Aurora®** 800 Airport Road, North Aurora, Illinois • Tel. 630-859-7000
www.AuroraPump.com

## MADE TO SUPPLY WATER

The PVM and PVMX are vertical in-line multistage pumps with stainless steel stage construction. PVM models are available with flanged/NPT or grooved connections. PVMX models are available in flanged, grooved or NPT connections.

Premium efficiency motors are standard for 230/460V, EPACT efficiency for all other voltages.

Pump shafts are directly coupled to NEMA standard motors.

## PENTAIR PVM - TECHNICAL DATA

- Flow: up to 800 gpm
- Heads: up to 960 ft
- Liquid temp: 5°F to 248°F
- Flanges connection: ANSI Class 150 & Class 250
- Cartridge mechanical seal: SiC/SiC/EPDM or Viton®
- Motor: 50/60 Hz
- EPACT and premium efficient motors available
- 200 to 575 Volts
- TEFC enclosures standard for PVM(X)1 – PVM(X)33
- Up to 100 hp

## APPLICATION

- Water supply
- Pressure boosting systems
- Water treatment/ filtration
- Irrigation
- High pressure washes
- Liquid transfer
- Boiler feed
- Jockey pumps

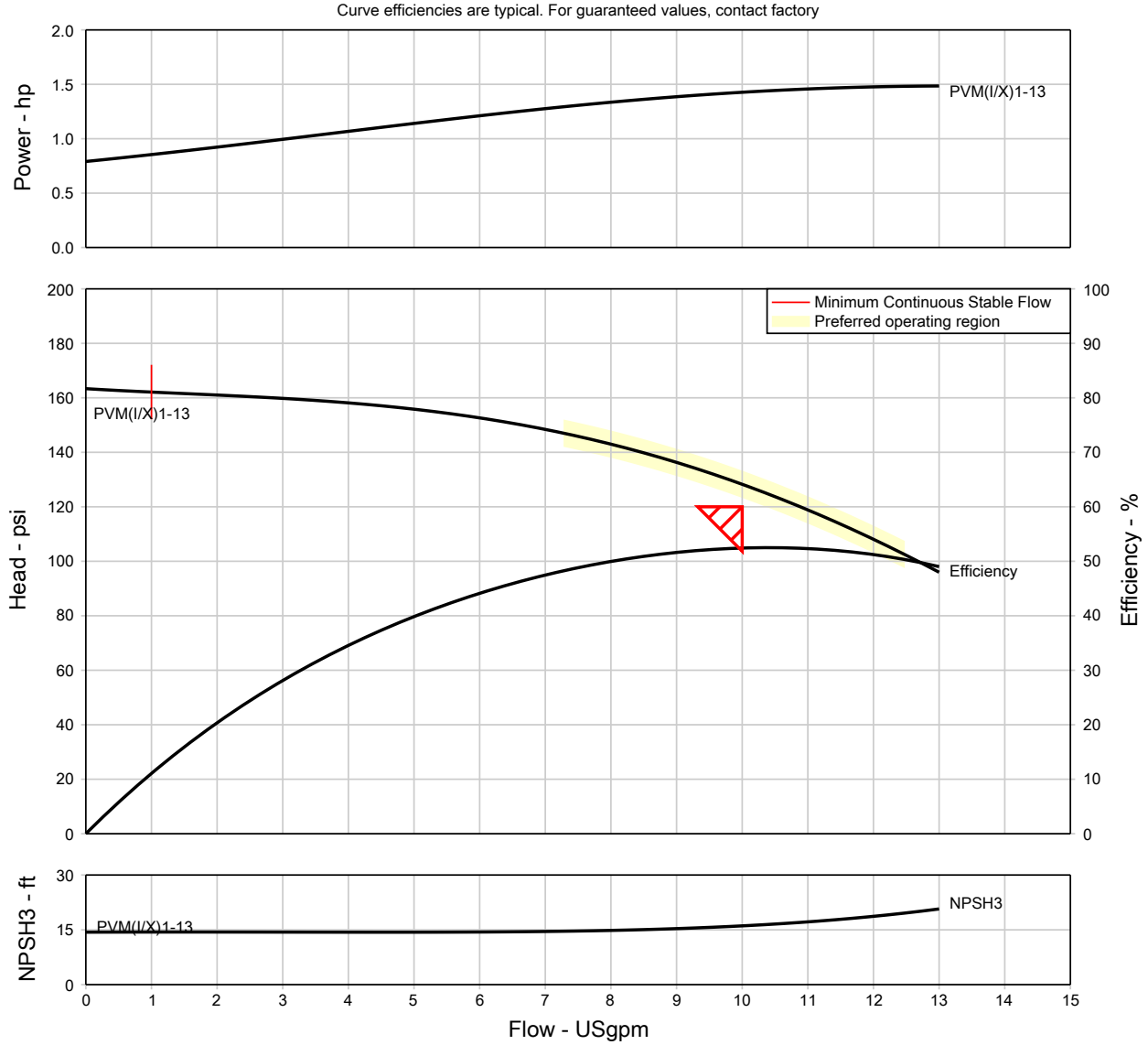
A-02-1064 (10/30/15)

**Customer** : Patriot Fire
**Project name** : PSE

# Jockey Pump Curve

Encompass 3.0 - 24.3.4

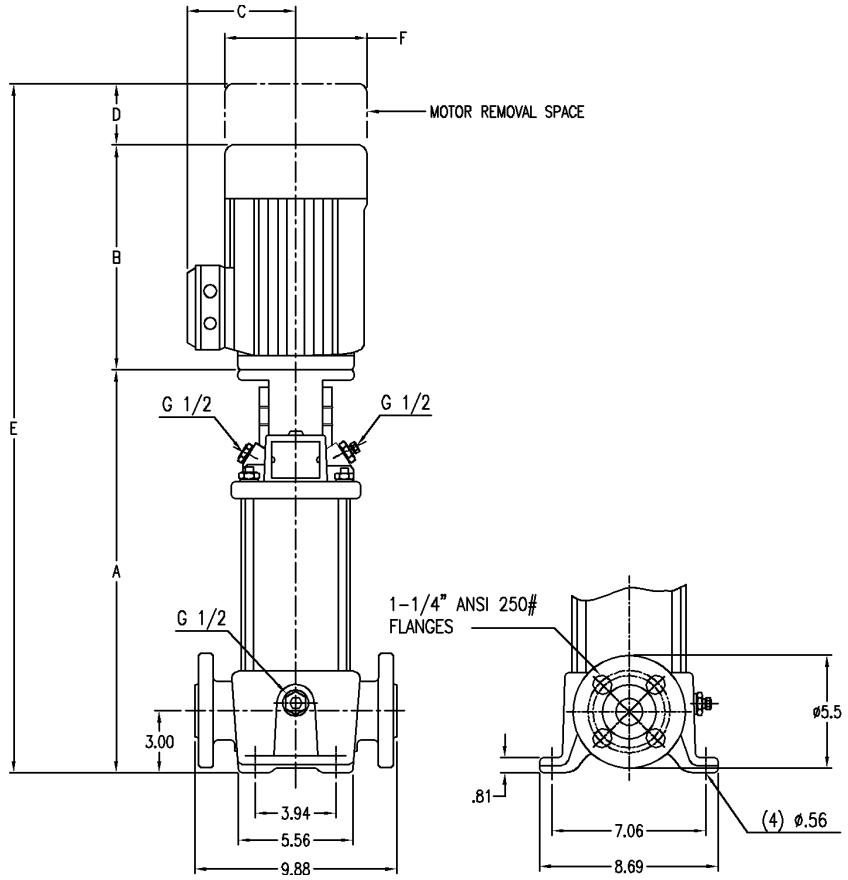
Curve efficiencies are typical. For guaranteed values, contact factory




| | | | |
|---|---|---|---|
| Item Number / Tags | : 001 | Size | : PVM(X)1-13 |
| Service | : | Stages | : 13 |
| Quantity | : 1 | Speed, rated | : 3500 rpm |
| Quote number | : 101724-K4 | Based on curve number | : PVM(X)1-13 |
| Date last saved | : 21 Oct 2024 5:03 PM | Efficiency | : 52.43 % |
| Flow, rated | : 10.00 USgpm | Power, rated | : 1.43 hp |
| Differential head / pressure, rated | : 120.0 psi | NPSH required | : 16.08 ft |
| | | Viscosity | : 1.00 cP |
| Fluid density, rated / max | : 8.329 / 8.329 lb/US.gal | Cq/Ch/Ce/Cn [ANSI/HI 1.1-1.5-1994] | : 1.00 / 1.00 / 1.00 / 1.00 |


TALCO INDUSTRIES, INC.
6040 NE 112TH AVE · PORTLAND, OR 97220
PHONE: 503-688-1231 · FAX:

# General Arrangement




| A | B | C | D | E | F |
|---|---|---|---|---|---|
| 18.30 | 11.20 | 7.20 | 2.10 | 31.50 | 7.20 |

NOTES:

All dimensions are in inches.

Dimensions may vary ± 1/4" (6mm) due to normal manufacturing tolerances

-

-

| Pump Data | |
|---|---|
| Model | PVM1-13 |
| Stages | 13 |
| Flow | 10.00 USgpm |
| Head | 120.0 psi |
| Rotation | Right Hand |
| Suc/Disch Size | 0.00 in |
| Connection Suc/Disch | 1.25" ANSI 250# flg w/ 1.25" NPT female |

| Motor Data | |
|---|---|
| Power | 1.50 hp |
| Phase | 3 |
| Frequency | 60 Hz |
| Voltage | 230/460 |
| Speed | 3500 |
| Frame Size | 56CZ |
| Efficiency | premium |
| Enclosure | TEFC |

| Pump Materials of Construction | |
|---|---|
| Pump Material | Cast Iron |
| Elastomer | - |

| Estimated Weights | |
|---|---|
| Pump | 94.00 lb |
| Motor | 0.00 lb |

**Additional Options**

| Quote Information | |
|---|---|
| Customer | Patriot Fire |
| Customer Quote | 2373253 |
| Job Name | PSE |
| Market | - |

| | | |
|---|---|---|
| PENTAIR | Quote Item | 001 |
| | Quote Date | 17 Oct 2024 |

# Jockey Pump Controllers

JOCKEY Touch™

## Microprocessor Based with Color Touchscreen

## Product Description

ACROSS THE LINE

JOCKEY PUMP CONTROLLERS

The JOCKEY Touch - Jockey Pump Controllers operate across-the-line. Full voltage is applied to the motor for starting by the use of a single motor starter. Starting inrush current is approximately 600% of rated full load amperes.

WYE-DELTA (Star-Delta)

JOCKEY PUMP CONTROLLERS

When six or twelve-lead delta connected jockey pump motors are started wye (star) connected, approximately 58% of line voltage is applied to each winding. The motor develops 33% of full-voltage starting torque and draws 33% of normal locked-rotor current from the line. After an adjustable time delay (during which the motor accelerates), it is reconnected for normal operation.

## Product Features

### Combination Motor Controllers

All JOCKEY Touch controllers are supplied with EATON combination motor controllers, which combine the circuit breaker and overload in one device.

### Sealed Rotary Handle Mechanism

The rotary handle mechanism can be padlocked in the OFF position.

### XT Power Controls

The JOCKEY Touch - Jockey Pump Controllers incorporate Eaton's XT Power Controls which are designed for the global marketplace. The XT controls carry global ratings, are small in size and are available in a wide variety of operating voltages. They are easy to install and maintain, due to their modular, plug-in design.

### Universal Supply Voltage

The controllers will auto-detect three phase voltage supply from 200VAC to 600VAC, 50/60Hz and single phase from 110VAC to 240VAC, 50/60Hz, without the use of a control transformer.

### NEMA 2 Enclosures

Enclosures have an oven baked powder paint finish and are supplied with NEMA 2 rating, unless otherwise ordered. Available options include: NEMA 3R, 4, 4X, 12.

### Programmable Functions

Inputs, Outputs, Timers and Virtual LED's are programmable via the touchscreen display.

### Starting Methods

There are four methods of starting the controller: Auto, Hand, Remote Start and Pump Start.

### Diagnostics / Statistics

Eight diagnostics and seven statistics parameters can be monitored.

### Alarm Setpoints

Four alarm setpoints can be programmed from the Alarm Setpoints sub-menu.

### Color Touchscreen Display

The JOCKEY Touch - Jockey Pump Controllers are supplied with a microprocessor based, color touchscreen. The touchscreen display allows the user to monitor and program functions and values.
Pressure input is provided by a 4-20mA pressure sensor.


## Technical Data

ACROSS-THE-LINE (Direct On Line)

JOCKEY PUMP CONTROLLERS

| Line Voltage | | | | | | |
|---|---|---|---|---|---|---|
| 200-208V | 220-240V | 380-415V | 440-480V | 550-600V | 120V-1Ph | 240V-1Ph |
| **Motor Horsepower** | | | | | | |
| 1/3-20Hp | 1/3-20Hp | 1/3-40Hp | 1/3-50Hp | 1/3-50Hp | 1/3-2Hp | 1/3-5Hp |

WYE-DELTA (Star-Delta)

JOCKEY PUMP CONTROLLERS

| Line Voltage | | | | |
|---|---|---|---|---|
| 200-208V | 220-240V | 380-415V | 440-480V | 550-600V |
| **Motor Horsepower** | | | | |
| 1/3-40Hp (0.74-29.42Kw) | 1/3-40Hp (0.74-29.42Kw) | 1/3-50Hp (0.74-36.78Kw) | 1/3-50Hp (0.74-36.78Kw) | 1/3-50Hp (0.74-36.78Kw) |

## Standards & Certification

The JOCKEY Touch - Jockey Pump Controllers meet the requirements of the latest edition of NFPA 20 as well as meeting CE mark requirements. They meet or exceed the requirements of UL 508 [Underwriters Laboratories (UL)] and are approved by [Canadian Standards Association (CSA)].

Powering Business Worldwide

JOCKEY Touch™

## Microprocessor - Color Touchscreen Display

### Supply Voltage

3 phase – 200VAC to 600VAC, 50/60Hz
1 phase – 110VAC to 240VAC, 50/60Hz
True RMS measurement of 3 phase voltage inputs

### Power Supply Output

Two 24VDC outputs

| | |
|---|---|
| 1 | Power the pressure sensor |
| 2 | Energize the contactor coil |

### Ratings

NEMA 4 / 4X

### Memory

Programmed settings saved in Non Volatile memory

### Battery Backup

Real Time Clock kept intact during power failures

### Ambient Temperature Rating

0C to 55C

### Languages *

English
French
Spanish
Portuguese
Turkish

* Other languages available - consult factory for details

### USB Port

Download Message History
Upload Firmware Updates

### Programmable Inputs (2)

Each input can be programmed for one of seven different functions.

| | |
|---|---|
| 1 | Interlock |
| 2 | Motor Overload |
| 3 | Fail to Start |
| 4 | Remote Start |
| 5 | Pump Start |
| 6 | Input = Output |
| 7 | Disabled |

### Programmable Outputs (2)

Each output can be programmed for one of twenty three different functions.

| | | | |
|---|---|---|---|
| 1 | Power On | 13 | Overvoltage |
| 2 | Pump Run | 14 | Transducer Failure |
| 3 | Hand Mode | 15 | Motor Overload |
| 4 | Off Mode | 16 | Common Alarm |
| 5 | Auto Mode | 17 | Acceleration Timer |
| 6 | Low Pressure Alarm | 18 | Remote Start |
| 7 | High Pressure Alarm | 19 | Pump Start |
| 8 | Below Start Point | 20 | Interlock On |
| 9 | Phase Reversal | 21 | Input #1 |
| 10 | Phase Failure | 22 | Input # 2 |
| 11 | Fail to Start | 23 | Disabled |
| 12 | Undervoltage | | |

### Timers (5)

Programmable Types

| | |
|---|---|
| 1 | Minimum Run Timer |
| 2 | Sequential Start Timer |
| 3 | Pump Run Restart Timer |
| 4 | Acceleration Timer |
| 5 | Fail to Start Timer |

### Virtual LED's (2)

Programmable Functions (22)

| | | | |
|---|---|---|---|
| 1 | Power On | 12 | Undervoltage |
| 2 | Pump Run | 13 | Overvoltage |
| 3 | Hand Mode | 14 | Transducer Failure |
| 4 | Off Mode | 15 | Motor Overload |
| 5 | Auto Mode | 16 | Common Alarm |
| 6 | Low Pressure Alarm | 17 | Remote Start |
| 7 | High Pressure Alarm | 18 | Pump Start |
| 8 | Below Start Point | 19 | Interlock On |
| 9 | Phase Reversal | 20 | Input #1 |
| 10 | Phase Failure | 21 | Input # 2 |
| 11 | Fail to Start | 22 | Disabled |

Programmable Indication (5)

| | |
|---|---|
| 1 | Red |
| 2 | Orange |
| 3 | Yellow |
| 4 | Green |
| 5 | Blue |

### Operation

Starting Methods (4)

| | |
|---|---|
| 1 | Auto |
| 2 | Hand |
| 3 | Remote Start |
| 4 | Pump Start |

Alarm Set Points (4)

| | |
|---|---|
| 1 | Phase Reversal |
| 2 | Phase Failure |
| 3 | Over Voltage Alarm |
| 4 | Under Voltage Alarm |

Message History (10K)

Messages time and date stamped

Diagnostics (8)

| | |
|---|---|
| 1 | Firmware Version |
| 2 | Transducer Output |
| 3 | Transducer Current 1 |
| 4 | Transducer Current 2 |
| 5 | Input #1 Status |
| 6 | Input #2 Status |
| 7 | Relay #1 Status |
| 8 | Relay #2 Status |
| 9 | 24VDC Output |

Statistics (7)

| | |
|---|---|
| 1 | Total Powered Time |
| 2 | Pump Run Total Time |
| 3 | Motor Starts |
| 4 | Minimum Voltage |
| 5 | Maximum Voltage |
| 6 | Minimum Pressure |
| 7 | Maximum Pressure |

EATON
Powering Business Worldwide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June 2015

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Canada
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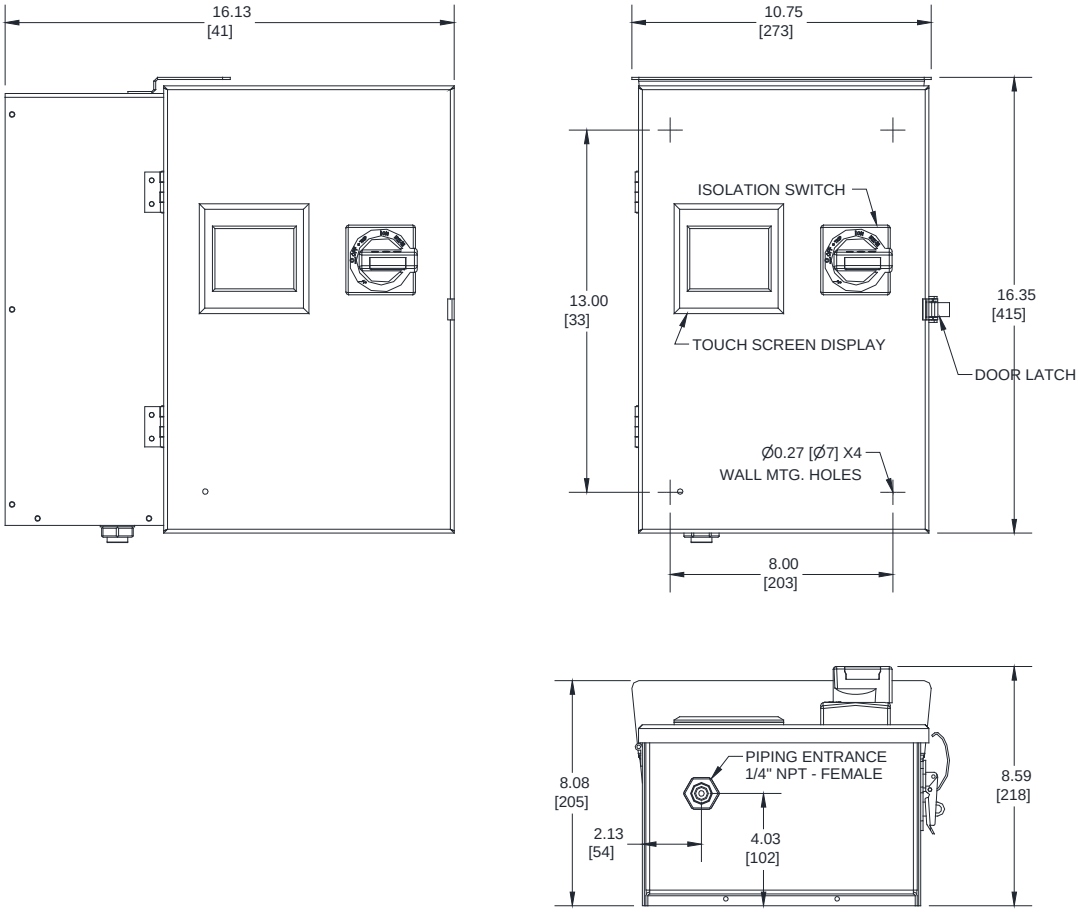
JOCKEY Touch™

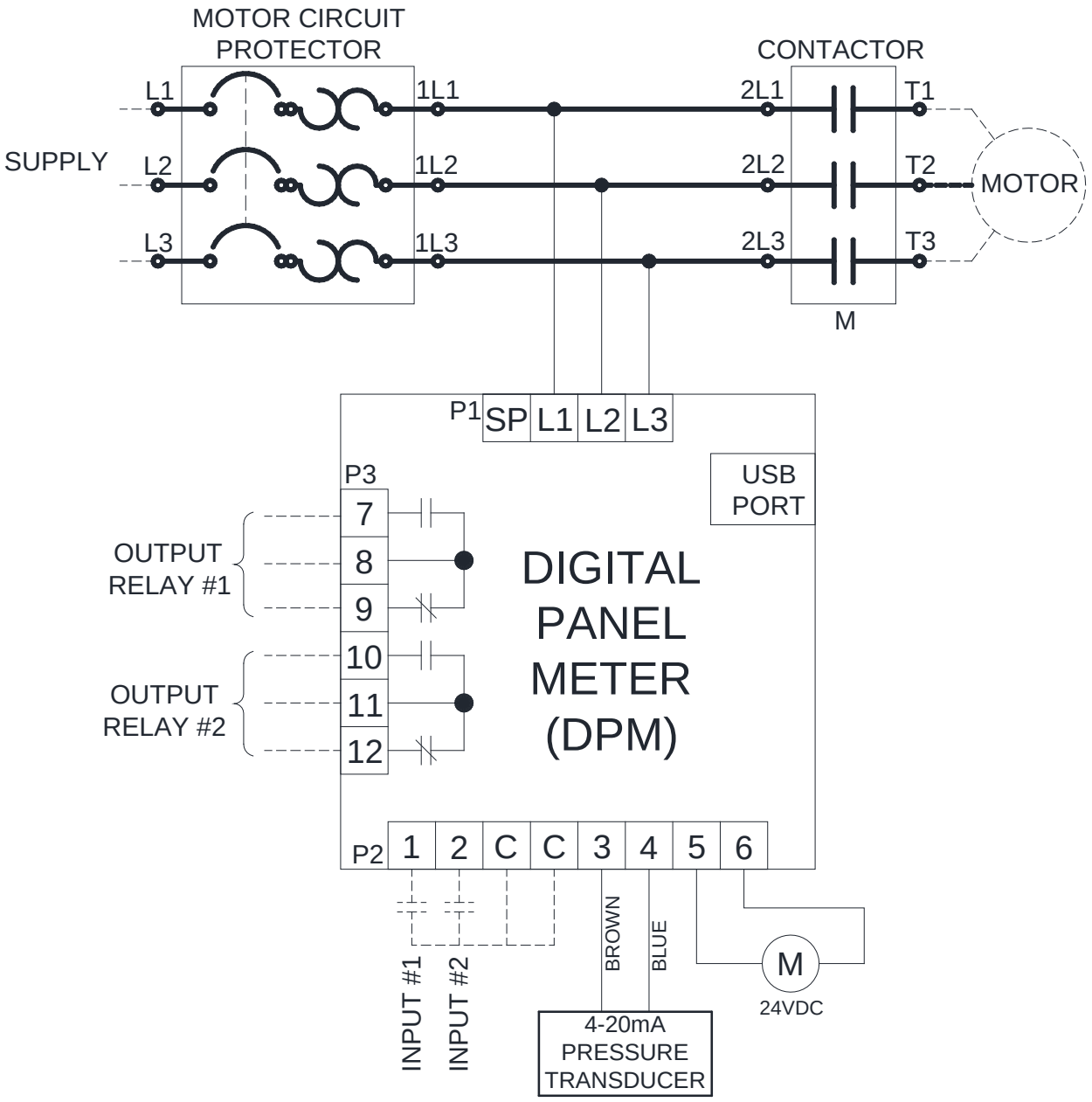



| 200-208V | | 220-240V | | 380-415V | | 440-480V | | 550-600V | |
|---|---|---|---|---|---|---|---|---|---|
| Motor Hp | Withstand Rating (kA) | Motor Hp | Withstand Rating (kA) | Motor Hp | Withstand Rating (kA) | Motor Hp | Withstand Rating (kA) | Motor Hp | Withstand Rating (kA) |
| 0.33 - 0.75 | 50 | 0.33 - 0.75 | 50 | 0.33 - 1.5 | 50 | 0.33 - 2 | 50 | 0.33 - 7.5 | 50 |
| 1 - 2 | 65 | 1 - 3 | 65 | 2 - 5 | 65 | 3 - 5 | 65 | 10 - 30 | 10 * |
| 3 - 4 | 42 | 4 - 5 | 42 | 7.5 | 42 | 7.5 - 10 | 42 | | |
| 5 - 10 | 18 | 7.5 - 10 | 18 | 10 - 15 | 18 | 15 - 20 | 18 | | |

| 120V 1ph | | 208V 1ph | | 240V 1ph | | Approx. Weight |
|---|---|---|---|---|---|---|
| Motor Hp | Withstand Rating (kA) | Motor Hp | Withstand Rating (kA) | Motor Hp | Withstand Rating (kA) | Lbs (Kg) |
| 0.33 - 0.5 | 65 | 0.33 - 1 | 65 | 0.33 | 50 | 18 (8) |
| 0.75 - 1 | 42 | 1.5 - 2 | 42 | 0.5 - 1.5 | 65 | |
| 1.5 - 2 | 18 | 3 - 4 | 18 | 2 | 42 | |
| | | | | 3 - 5 | 18 | |

NOTES:
1. * Upstream circuit breaker required to maintain kA rating.
2. All enclosures finished in FirePump red.
3. Cable Entrance either top or bottom.
4. Standard Enclosure type NEMA 2

JOCKEY Touch™



JOCKEY Touch™

# XTJP
# XTJY

NOTE: To select a proper part number - refer to the current Eaton Pricing Guidelines for available combinations.

## Amperage Range

### Three Phase

| | |
|---|---|
| G01 | 0.6-1.0 |
| G02 | 1.1-1.6 |
| G03 | 1.7-2.5 |
| G04 | 2.6-4.0 |
| G05 | 4.1-6.3 |
| G06 | 6.4-10.0 |
| G07 | 10.1-16.0 |
| G08 | 16.1-20.0 |
| G09 | 20.1-25.0 |
| G10 | 25.1-32.0 |
| G11 | 32.1-40.0 |
| G12 | 40.1-50.0 |
| G13 | 50.1-65.0 |

### Single Phase

| | |
|---|---|
| G14 | 2.6-4.0 |
| G15 | 4.1-6.3 |
| G16 | 6.4-10.0 |
| G17 | 10.1-16.0 |
| G18 | 16.1-20.0 |
| G19 | 20.1-25.0 |
| G20 | 25.1-32.0 |
| G21 | 32.1-40.0 |
| G22 | 40.1-50.0 |
| G23 | 50.1-65.0 |

## Horsepower (KW) *

| | |
|---|---|
| 15 | (11) |
| 20 | (15) |
| 25 | (18.6) |
| 30 | (22) |
| 40 | (30) |
| 50 | (37) |

## Options

| | |
|---|---|
| C1 | Extra Contacts "Pump Run" |
| C2 | Extra Contacts "AC Power Failure" |
| CX | Extra Contacts (One Form-C; Specify Function) |
| E1 | NEMA 3R - Raintight Enclosure |
| E2 | NEMA 4 - Watertight Enclosure |
| E3 | NEMA 12 - Industrial Dust Tight Enclosure |
| E5 | NEMA 4X - 304 Stainless Steel Enclosure |
| E8 | Tropicalization |
| E9 | NEMA 4X - Painted Steel |
| E10 | NEMA 4X - 316 Stainless Steel Enclosure |
| EX | Export Crating |
| FTS | Extra Contacts "Fail to Start" |
| LX | Virtual LED (Specify Description) |
| POL | "Power-On" Virtual LED |
| PRL | "Pump Run" Virtual LED |
| P7 | Low Suction Pressure Switch & Alarm Virtual LED |
| P8 | Low Suction Shutdown (Requires P7) |
| P10 | Pressure Transducer - Sea Water Rated |
| R1 | Space Heater (120 / 220V) - Externally Powered |
| R2 | Space Heater c/w Thermostat - Externally Powered |
| R3 | Space Heater c/w Humidistat - Externally Powered |
| USB | Externally Mounted USB Port |

## Languages

| | |
|---|---|
| L1 = | English |
| L2 = | French |
| L5 = | Spanish |
| L6 = | Portuguese |
| L11 = | Turkish |

Other Languages available. Consult factory for details.

## Voltage *

| | |
|---|---|
| A = | 208V - 60HZ |
| B = | 240V - 60HZ |
| C = | 380V - 50HZ |
| D = | 480V - 60HZ |
| E = | 600V - 60HZ |
| F = | 415V - 50HZ |
| H = | 380V - 60HZ |
| J = | 400V - 50HZ |
| K = | 400V - 60HZ |

* NOTE: Voltage letter designations are only used when a Horsepower (KW) is selected.

## XTJP / XTJY Jockey Pump Controllers

JOCKEY Touch™

### Typical Jockey Pump Controller Specifications

**Approvals**
The Jockey Pump Controller shall meet the requirements of the latest edition of NFPA 20 as well as meeting CE mark requirements. It shall meet or exceed the requirements of UL 508 [Underwriters Laboratories (UL)] standards and be approved by [Canadian Standards Association (CSA)].

**Starting Type**
The controller shall be Across-the-Line or Wye-Delta (Star Delta) type designed for full voltage starting.

**Ratings**
The Controller shall have a minimum withstand rating of 10,000 symmetrical amperes @ [208V] [240V] [380V] [400V] [415V] [480V] [600V] [120V Single Phase] [240V Single Phase].

The horsepower rating of the controller shall not exceed 50Hp for three (3) phase units or 10Hp on single phase units.

**Construction**
The controller shall include a combination Circuit Breaker / Overload Motor Protector.

The motor circuit protector shall be mechanically interlocked such that the enclosure door cannot be opened when the handle is in the on position except by a tool operated defeater mechanism.

The controller manufacturer shall manufacture the contactor, motor circuit protector, touchscreen display, and enclosure. Brand-labeled components will not be accepted.

**Supply Voltage**
The jockey pump controller shall auto-detect three phase voltage supply from 200VAC to 600VAC, 50/60Hz and single phase from 110VAC to 240VAC, 50/60Hz, without the use of a control transformer.

**Coil Voltages**
The jockey pump controller shall have the following available coil voltages
120VAC 50/60 Hz or 24VDC

**Enclosure**
The controller shall be housed in a NEMA Type 2 (IEC IP11) drip-proof, powder baked finish, freestanding enclosure.

**Optional Enclosures**
1. NEMA 3R (IEC IP14) rain-tight enclosure.
2. NEMA 4 (IEC IP66) watertight enclosure.
3. NEMA 4X (IEC IP66) watertight 304 stainless steel enclosure.
4. NEMA 4X (IEC IP66) watertight 316 stainless steel enclosure.
5. NEMA 4X (IEC IP66) watertight corrosion resistant enclosure.
6. NEMA 12 (IEC IP52) dust-tight enclosure.

**Languages**
The controller shall be available in a variety of languages including, but not limited to:
English, French, Spanish, Portuguese, Turkish.

**Touchscreen Display**
The controller shall be supplied with a color touchscreen display that shall indicate the following: Supply Voltage on all phases, Current Pressure, Start Pressure and Stop Pressure.

The touchscreen display shall be supplied with a solid-state 4-20mA pressure sensor. The pressure Start and Stop points shall be adjustable in increments of one (1) PSI or 0.1 BAR.

The touchscreen display shall be a door-mount type that permits exterior programming with the controller door secured.

**Options**
The jockey pump controller shall have provision to be supplied with the following options:

C1 Extra Contacts " Pump Run"
C2 Extra Contacts "AC Power Failure"
CX Extra Contacts (One Form-C; Specify Function)
E1 NEMA 3R – Raintight Enclosure
E2 NEMA 4 – Watertight Enclosure
E3 NEMA 12 – Industrial Dust Tight Enclosure
E5 NEMA 4X – 304 Stainless Steel Enclosure
E8 Tropicalization
E9 NEMA 4X - Painted Steel
E10 NEMA 4X - 316 Stainless Steel Enclosure
EX Export Crating
FTS Extra Contacts "Fail to Start"
LX Virtual LED (Specify Description)
POL "Power On" Virtual LED
PRL "Pump Run" Virtual LED
P7 Low Suction Pressure Switch and Alarm Virtual LED
P8 Low Suction Shutdown (Requires P7)
P10 Pressure Transducer – Sea Water
R1 Space Heater (120 / 220V)
R2 Space Heater c/w Thermostat
R3 Space Heater c/w Humidistat

**Manufacturer**
The controller shall be of the XTJP Across-the-Line or XTJY Wye Delta (Star-Delta) type as manufactured by EATON.

TALCO FIRE SYSTEMS

RESIDENTIAL & COMMERCIAL FIRE PUMP SPECIALISTS
6040 NE 112TH AVE. PORTLAND, OREGON 97220
PHONE: 800-878-8055 WWW.TALCOFIRE.COM

Service Disconnect / ARC Flash Disclosure Form

Date:

Project Name:
Address:
Fire Sprinkler Contractor:
Electrical Contractor:
Owner:

Be advised that the Electric Fire Pump Controller being supplied for this project is Service Entrance Rated. Installing this controller as a service entrance exposes the workers and technicians who install, service, and maintain it to unnecessary risk of maiming or death from possible arc flash events when they are forced to conduct work on the energized unit with the door open. In many instances ARC Flash protective equipment does not exist that will protect a worker from the potential hazard at the site.

In order to adequately protect the installers and service technicians and minimize the time required to service and commission the controller it is necessary to install a service rated disconnect ahead of this fire pump controller that meets the requirements of NEC 695.4 9(B)(3)(a)(2) and 695.3(F)(2)

Building Owner or Owners representative:

Please indicate which of the following protective measures you will undertake to protect the installers and technicians working on your project:

1) We accept and will install the OPD UL Listed Fire Pump Disconnecting means offered by the Fire Pump Vendor:

X_____ Date:_____

2) We will design and install our own Fire Pump Disconnecting means in accordance with NEC 695:

X_____ Date:_____

3) We choose to install the Fire Pump Controller as a Service Disconnect. We will provide our own service technicians at start up and for subsequent service visits to be directed in the completion of all necessary work on the energized controller by factory authorized representatives.

X_____ Date:_____

TORNATECH

**Project:** PSE PUYALLUP

**Customer:** Patriot Fire Protection

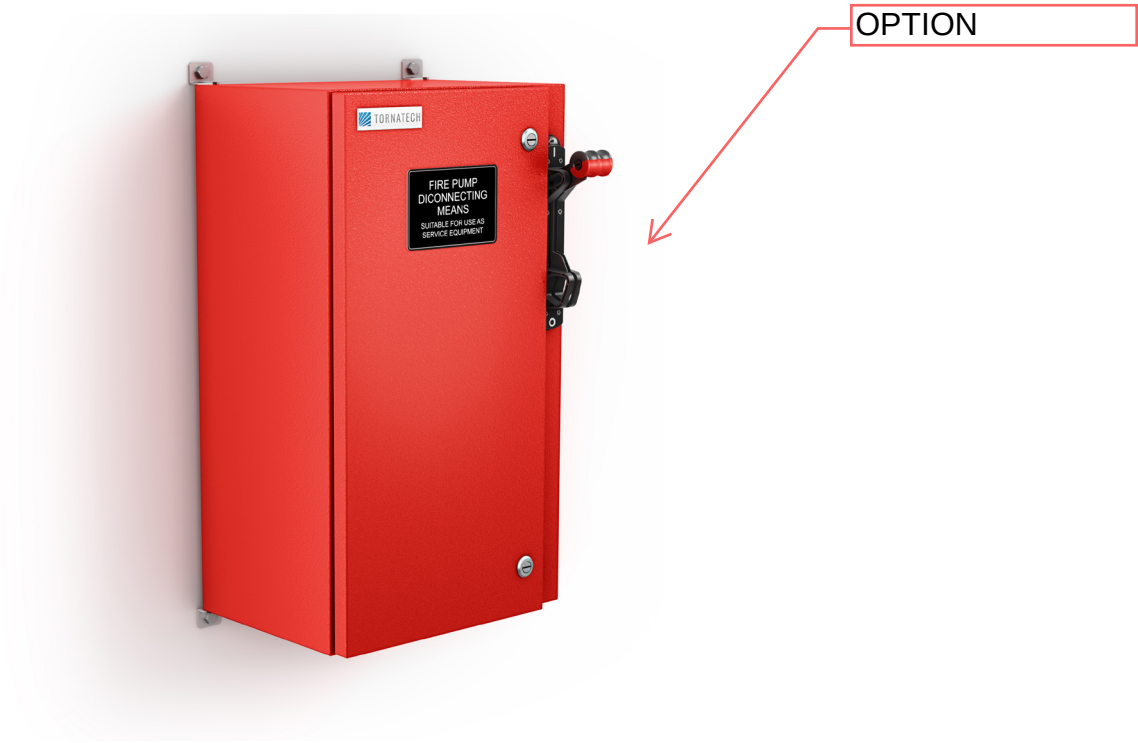
**Engineer:** _____

**Pump Manufacturer:** Aurora

## Technical Data
## Submittal Document

# Model OPD

Fire Pump Overcurrent Protection Device




**Contents:**

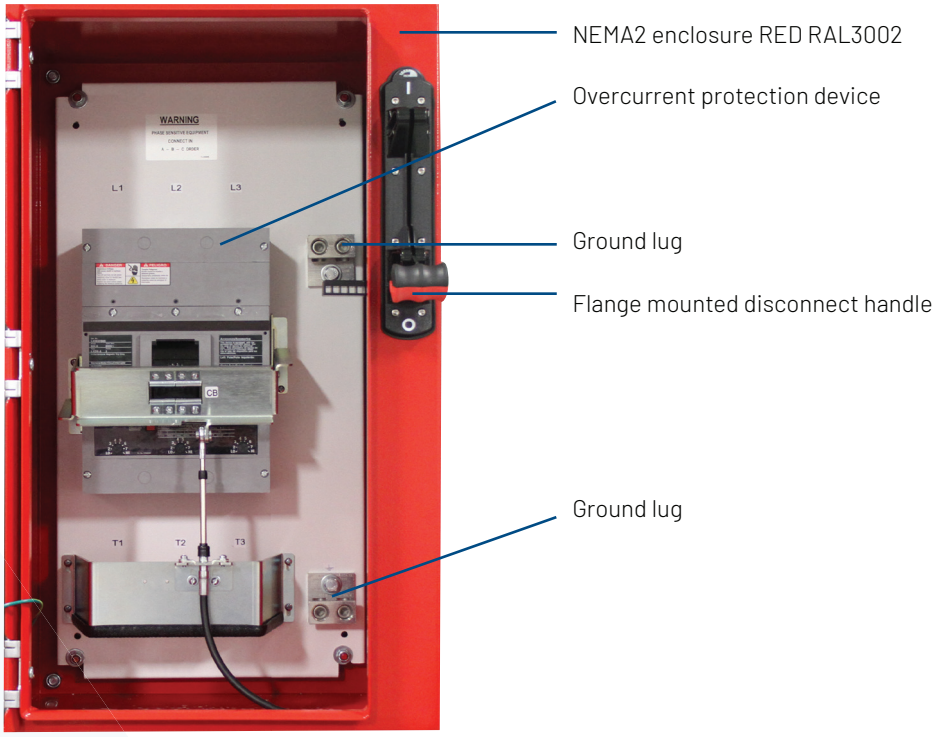
Data Sheets
Dimensional Data
Wiring Schematics
Field Connections

**Note: The drawings included in this package are for controllers covered under our standard offering. Actual AS BUILT drawings may differ from what is shown in this package.**

c UL US

August 2022

The Tornatech Model OPD electric fire pump disconnecting device provides a UL listed means of disconnecting and consequently isolating the fire pump controller from incoming power. It also assures complete overcurrent protection coordination upstream of the fire pump controller. The selection of the overcurrent protective device is based on the voltage and horsepower of the electric fire pump motor and the requirements of NFPA70 (NEC) 695.4 (B)(2)(a)(2), NFPA20 9.2.3.4.1 and as a recommended and acceptable alternative for CEC 32-206 (4) and (5).




## NFPA70 (NEC) 695.4 (B)(2)(a)(2)

Overcurrent protection shall be provided by an assembly listed for fire pump service and complying with the following:

a. The overcurrent protective device shall not open within 2 minutesat 600 percent of the full-load current of the fire pump motor(s).

b. The overcurrent protective device shall not open with a re-start transient of 24 times the full-load current of the fire pump motor(s).

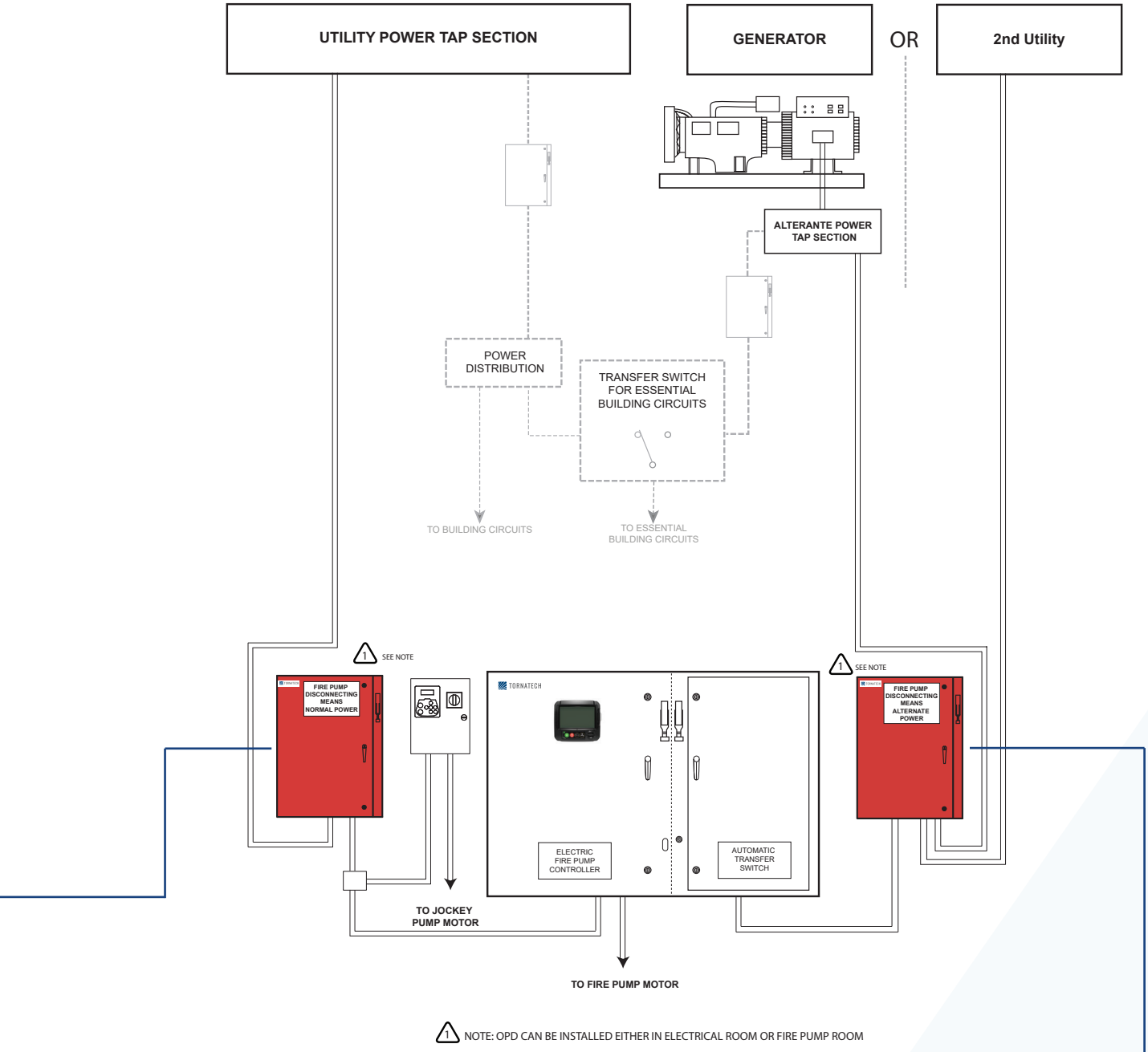
c. The overcurrent protective device shall not open within 10 minutes at 300 percent of the full-load current of the fire pump motor(s).

d. The trip point for circuit breakers shall not be field adjustable.

**OR**

Recommended and acceptable alternative to: **CEC 32-206 (5)** Where the circuit breaker conforming to this rule is installed in a normal supply circuit upstream of the fire pump controller, the rating or setting of the circuit breaker shall be not less than the overcurrent protection that is provided integral with the fire pump controller

National Fire protection Association. NFPA70 National Electrical Code. 2014 ed. Quincy, Massachusetts: One Batterymarch Park, 2013. 646-48. Print.
National Fire protection Association. NFPA20 Standard for the Installation of Stationary Pumps for Fire Protection. 2013 ed. Quincy, Massachusetts: One Batterymarch Park, 2013. 31. Print.
CSA Group. Canadian Electrical Code, Part 1. 2015 ed. 2015. Section 32.182-183. Print.




## NFPA70 (NEC) 695.3 (F) (2)

### Overcurrent Device Selection

An instantaneous trip circuit breaker shall be permitted in lieu of the overcurrent devices specified in **695.4 (B) (2) (a) (1)**, provided that it is part of a transfer switch assembly for a fire pump service that complies with **695.4 (B) (2) (a) (2).**

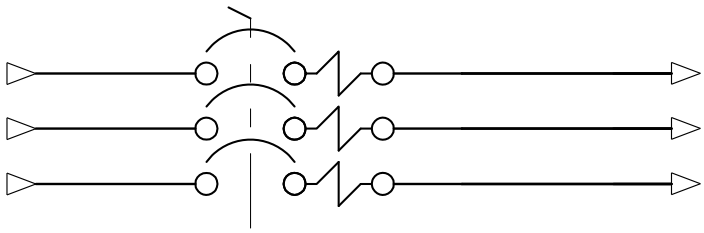
## OR

Recommended and acceptable alternative to: **CEC 32.206 (4)** Where the circuit breaker conforming to this Rule is installed in an emergency supply circuit between the emergency power source and the fire pump transfer switch, the rating or setting of the circuit breaker shall comply with Rule 28-200.

NFPA® MEMBER 2020 - 2021

c UL® US

From
☐ Normal Power
☐ Alternate Power



To Electric Fire Pump Controller

| HP | Voltage / Short Circuit Withstand Rating | | | | |
|---|---|---|---|---|---|
| | 200-208V | 220-240V | 380-415V | 440-480V | 600V |
| 5 | ☐ 100kA | ☐ 100kA | ☐ 65kA | ☐ 65kA | ☐ 20kA |
| 7.5 | ☐ 100kA | ☐ 100kA | ☐ 65kA | ☐ 65kA | ☐ 20kA |
| 10 | ☐ 100kA | ☐ 100kA | ☐ 65kA | ☐ 65kA | ☐ 20kA |
| 15 | ☐ 100kA | ☐ 100kA | ☐ 65kA | ☐ 65kA | ☐ 20kA |
| 20 | ☐ 100kA | ☐ 100kA | ☐ 65kA | ☐ 65kA | ☐ 20kA |
| 25 | ☐ 100kA | ☐ 100kA | ☐ 65kA | ☐ 65kA | ☐ 20kA |
| 30 | ☐ 100kA | ☐ 100kA | ☐ 65kA | ☐ 65kA | ☐ 20kA |
| 40 | ☐ 100kA | ☐ 100kA | ☐ 65kA | ☐ 65kA | ☐ 20kA |
| 50 | ☐ 100kA | ☐ 100kA | ☐ 65kA | ☐ 65kA | ☐ 20kA |
| 60 | ☐ 100kA | ☐ 100kA | ☐ 65kA | ☐ 65kA | ☐ 20kA |
| 75 | ☐ 100kA | ☐ 100kA | ☐ 65kA | ☑ 65kA | ☐ 20kA |
| 100 | ☐ 100kA | ☐ 100kA | ☐ 65kA | ☐ 65kA | ☐ 25kA |
| 125 | ☐ 100kA | ☐ 100kA | ☐ 65kA | ☐ 65kA | ☐ 25kA |
| 150 | ☐ 100kA | ☐ 100kA | ☐ 65kA | ☐ 65kA | ☐ 25kA |
| 200 | ☐ 100kA | ☐ 100kA | ☐ 65kA | ☐ 65kA | ☐ 30kA |
| 250 | ☐ N/A | ☐ N/A | ☐ 65kA | ☐ 65kA | ☐ 30kA |
| 300 | ☐ N/A | ☐ N/A | ☐ 65kA | ☐ 65kA | ☐ 30kA |
| 350 | ☐ N/A | ☐ N/A | ☐ N/A | ☐ 65kA | ☐ 42kA |
| 400 | ☐ N/A | ☐ N/A | ☐ N/A | ☐ 65kA | ☐ 42kA |
| 450 | ☐ N/A | ☐ N/A | ☐ N/A | ☐ N/A | ☐ 42kA |
| 500 | ☐ N/A | ☐ N/A | ☐ N/A | ☐ N/A | ☐ 42kA |

| | |
|---|---|
| **Standards and Listing** | Built to standards:<br>• NFPA70 (NEC): 695.4(B)(2)(a)(2) and NFPA70 (NEC): 695.3(F)(2)<br>• NFPA20 9.2.3.4.1 |
| | Listing:<br>• Underwriters Laboratory (UL) |
| **Overcurrent Protection Device** | • Motor circuit protector:<br>- Selective short circuit protection<br>- Magnectic only non-thermal<br>- Instantaneous trip setting (Factory set non field adjustable)<br>- No time delay element<br>- Selection based on:<br>▪ The overcurrent protective device shall not open within 2 minutes at 600 percent of the full-load current of the fire pump motor(s).<br>▪ The overcurrent protective device shall not open with a re-start transient of 24 times the full-load current of the fire pump motor(s).<br>▪ The overcurrent protective device shall not open within 10 minutes at 300 percent of the full-load current of the fire pump motor(s)<br>▪ The trip point for circuit breakers shall not be field adjustable |
| **Enclosure** | **Protection Rating**<br>NEMA 2 (IP31) |
| | **Paint Specifications**<br>• Red RAL 3002<br>• Powder coating<br>• Glossy textured finish |
| **External Operator** | Flange mounted disconnect handle lockable in the ON (closed) position as per 695.4(B)(3)(a)(2) |
| **Service Entrance Rating** | Suitable as service entrance equipment |
| **Markings** | Disconnect markings as per 695.4(B)(3)(c) |

| TORNATECH | | BY | DD/MM/YY |
|---|---|---|---|
| | DRAWN BY | FL | 08/12/21 |
| | FINAL APPROVAL | KZ | 09/12/21 |



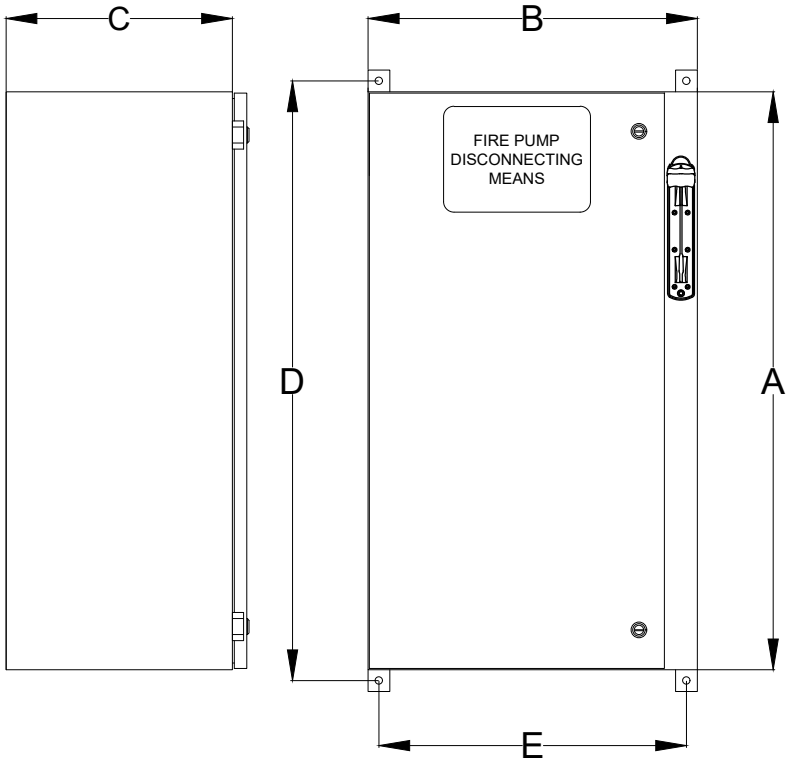
# UL LISTED DISCONNECTING MEANS FOR ELECTRIC FIRE PUMP APPLICATIONS

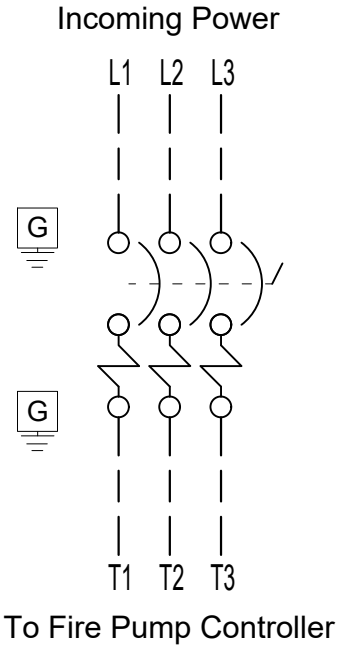
**MODEL: OPD**
BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70

THIRD ANGLE PROJECTION

DRAWING NUMBER OPD-WS600 /E
DWG REV. 0
SHEET 1 OF 1

## Dimensions, Field Connections & Wiring Information




## Notes:

- NEMA 2 Assembly
- Paint : Textured Red RAL 3002.
- All Dimensions are in Inches.
- Use Watertight Conduit and Connector Only.
- Protect Equipment Against Drilling Chips.

| Terminals (L1,L2,L3,T1,T2,T3) Maximum Motor Horsepower | | | | | | | | Wire (Lug) Size (Copper Only) | Torque | Ground (Lug) Size (Copper Only) | Dimensions | Bending Space |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 200V | 208V | 220V | 230V | 240V | 380-416V | 440-480V | 575-600V | | | | A x B x C x D x E | |
| 5-20HP | 5-20HP | 5-20HP | 5-20HP | 5-20HP | 5-30HP | 5-40HP | 5-60HP | 10-3/0 AWG | 5-14 Nm | 6 AWG | 22 x 12 x 11 x 23½ x 10½ | 7" |
| 25-30HP | 25-30HP | 25-30HP | 25-30HP | 25-30HP | 50-60HP | 50-75HP | 75HP | 4-4/0 AWG | 26 Nm | 4 AWG | 26 x 14 x 11 x 27½ x 12½ | 8" |
| 40-75HP | 40-75HP | 40-100HP | 40-100HP | 40-100HP | 75-150HP | 100-200HP | 100-250HP | 2x(2/0 AWG-250 MCM) | 50 Nm | 4 AWG | 30 x 16 x 11 x 31½ x 14½ | 8" |
| 100-150HP | 100-150HP | 125-200HP | 125-200HP | 125-200HP | 200-350HP | 250-400HP | 300-500HP | 3x(3/0 AWG-500 MCM) | 50 Nm | 3/0 AWG | 42 x 18 x 12½ x 43½ x 16½ | 12" |
| 200HP | 200HP | 250-400HP | 250-400HP | 250-400HP | 400-500HP | 450-500HP | - | TBD Consult Factory | TBD Consult Factory | TBD Consult Factory | TBD Consult Factory | TBD Consult Factory |

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Manufacturer reserves the right to modify this drawing without notice.
Contact manufacturer for "As Built" drawing.