TALCO FIRE SYSTEMS

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

13-ULV150-R

150GPM Fire Pump Package

Submittal Packet

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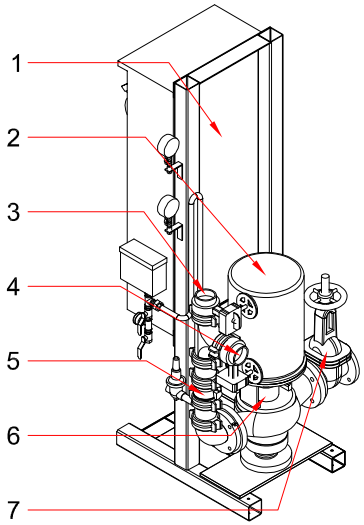
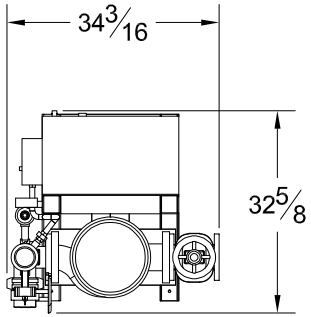
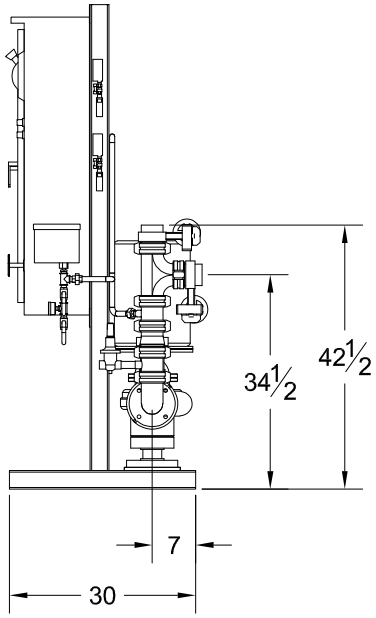
NFPA13R Packaged Fire Pump System
UL/FM Fire Pump

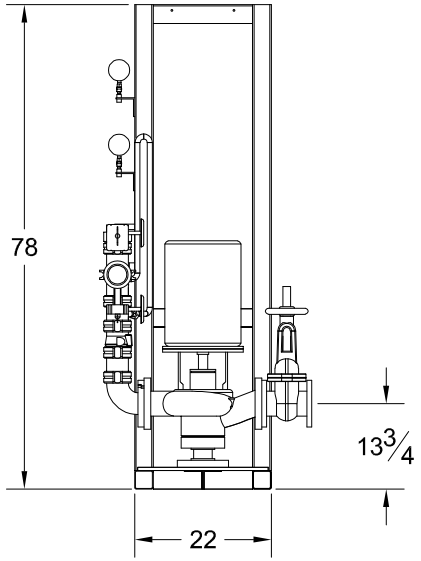
13-ULV150-R

Compact Residential Package
Design Condition: 150GPM @ 60PSI









System Specifications:

Motor
-10 Horsepower Electric
-230 Volt, 46 Amp
-Single Phase
-3450 RPM

Pump
-UL/FM Vertical Inline Fire Pump
-3" Suction (Flanged)
-3" Discharge (Grooved)
-175 PSI max working pressure

System Components (UL Listed by Manufacturer)
-1- Limited Service Fire Pump Controller
-2- Electric Motor
-3- Discharge Monitored Ball Valve
-4- Test Connection Monitored Ball Valve
-5- Check Valve
-6- Vertical Inline Fire Pump
-7- Suction OS&Y

Dimensions (Approximate)
-33" Depth
-78" Height
-35" Width

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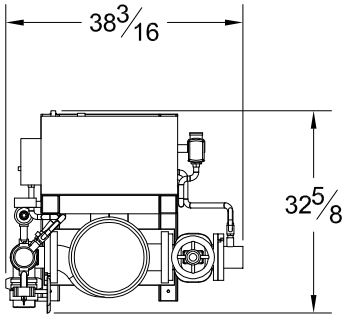
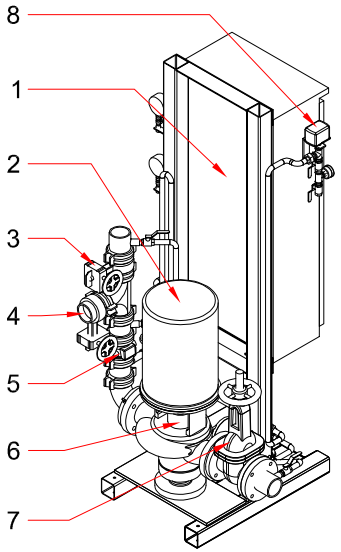
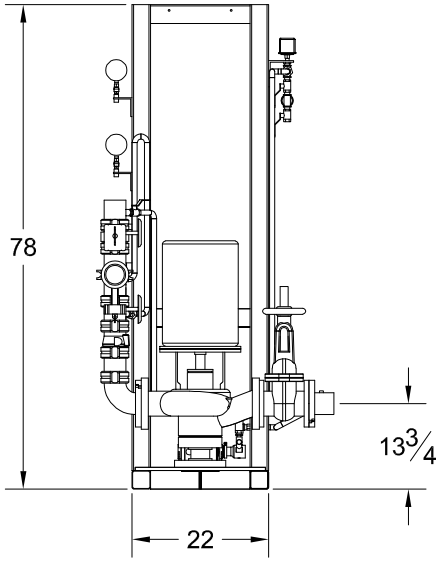
NFPA13R Packaged Fire Pump System
UL/FM Fire Pump
with Jockey Pump

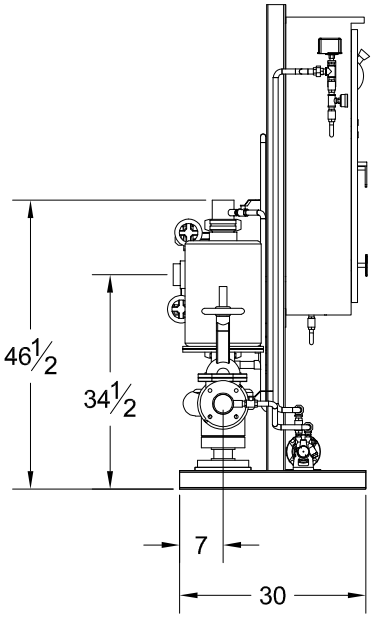
13-ULV150-R

Compact Residential Package
Design Condition: 150GPM @ 60PSI









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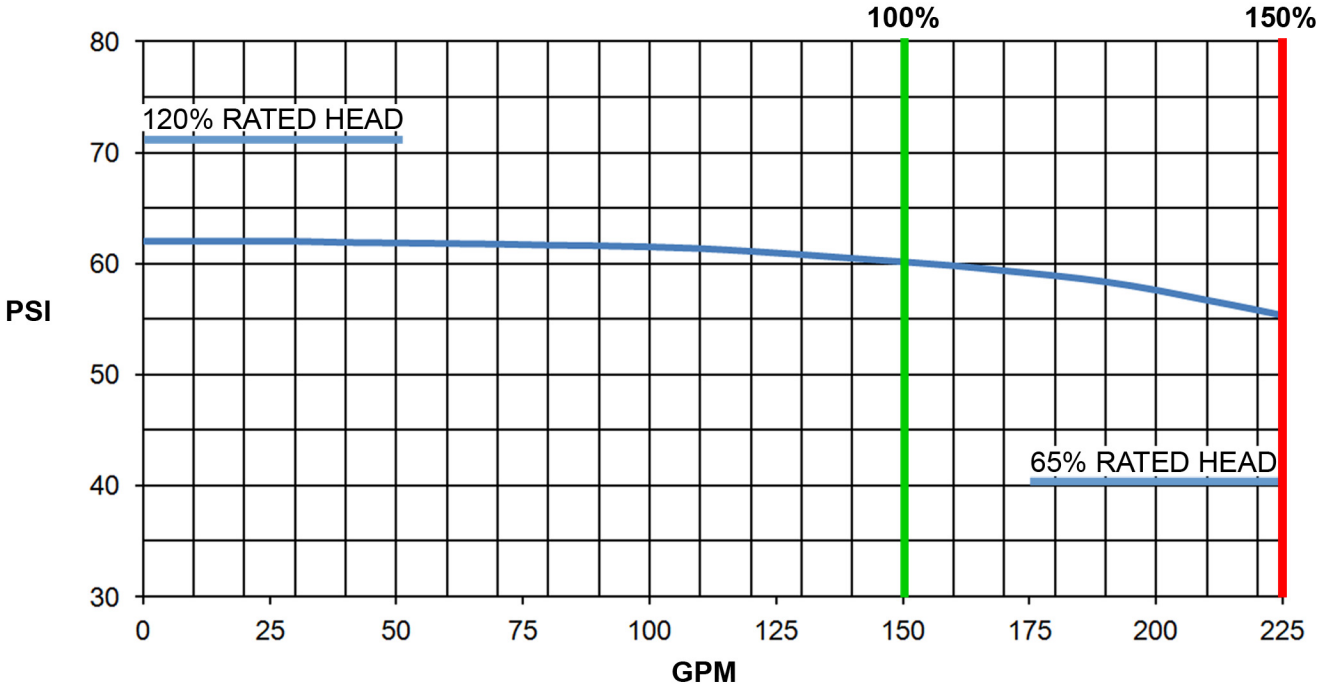
System Components (UL Listed by Manufacturer)
-1- Limited Service Fire Pump Controller
-2- Electric Motor
-3- Discharge Monitored Ball Valve
-4- Test Connection Monitored Ball Valve
-5- Check Valve
-6- Vertical Inline Fire Pump
-7- Suction OS&Y
-8- Pressure Switch (Jockey Control)

Dimensions (Approximate)
-33" Depth
-78" Height
-39" Width

13-ULV150 150GPM @ 60PSI 10HP UL/FM VERTICAL INLINE FIRE PUMP



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Fire Pump Controller

FD20 Bid Submittal
BN124013EN

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.

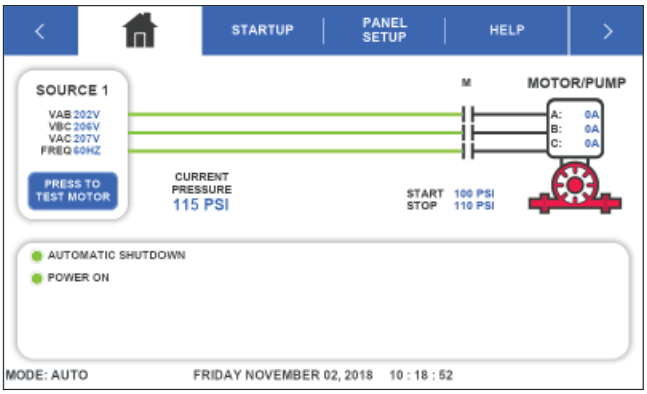
Emergency Start Operator

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

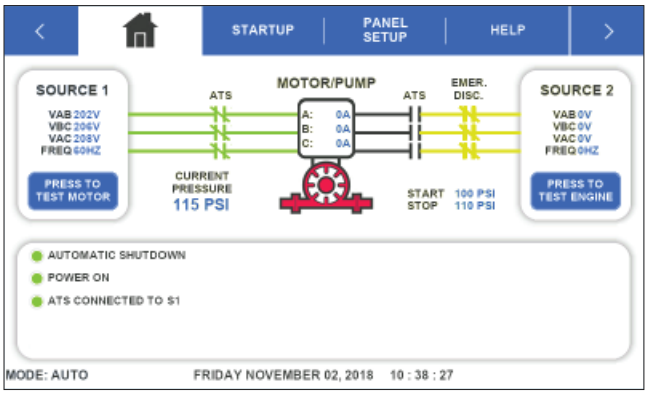
Standards & Certifications

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.

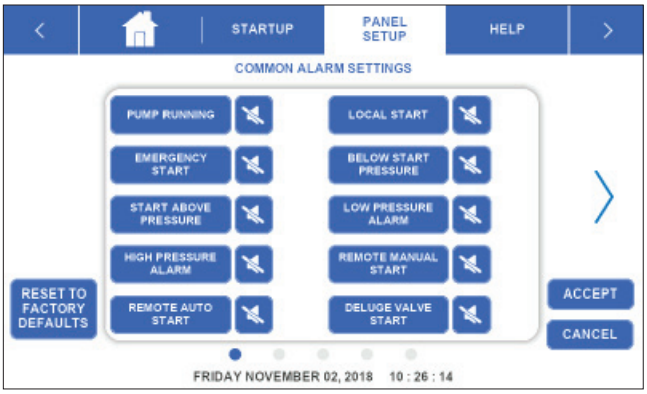
Display Screens



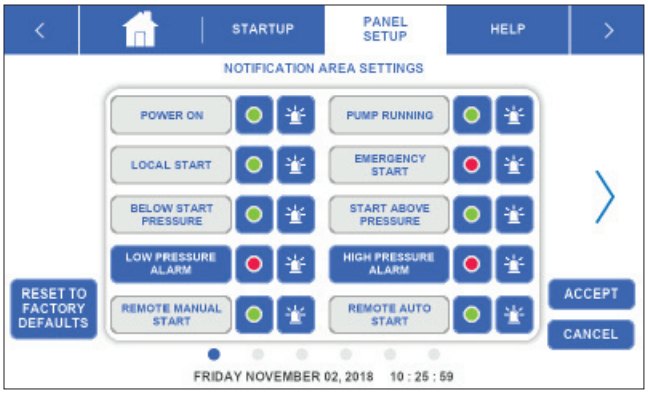
Home tab - without ATS



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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Burlington, ON L7L 5Z1
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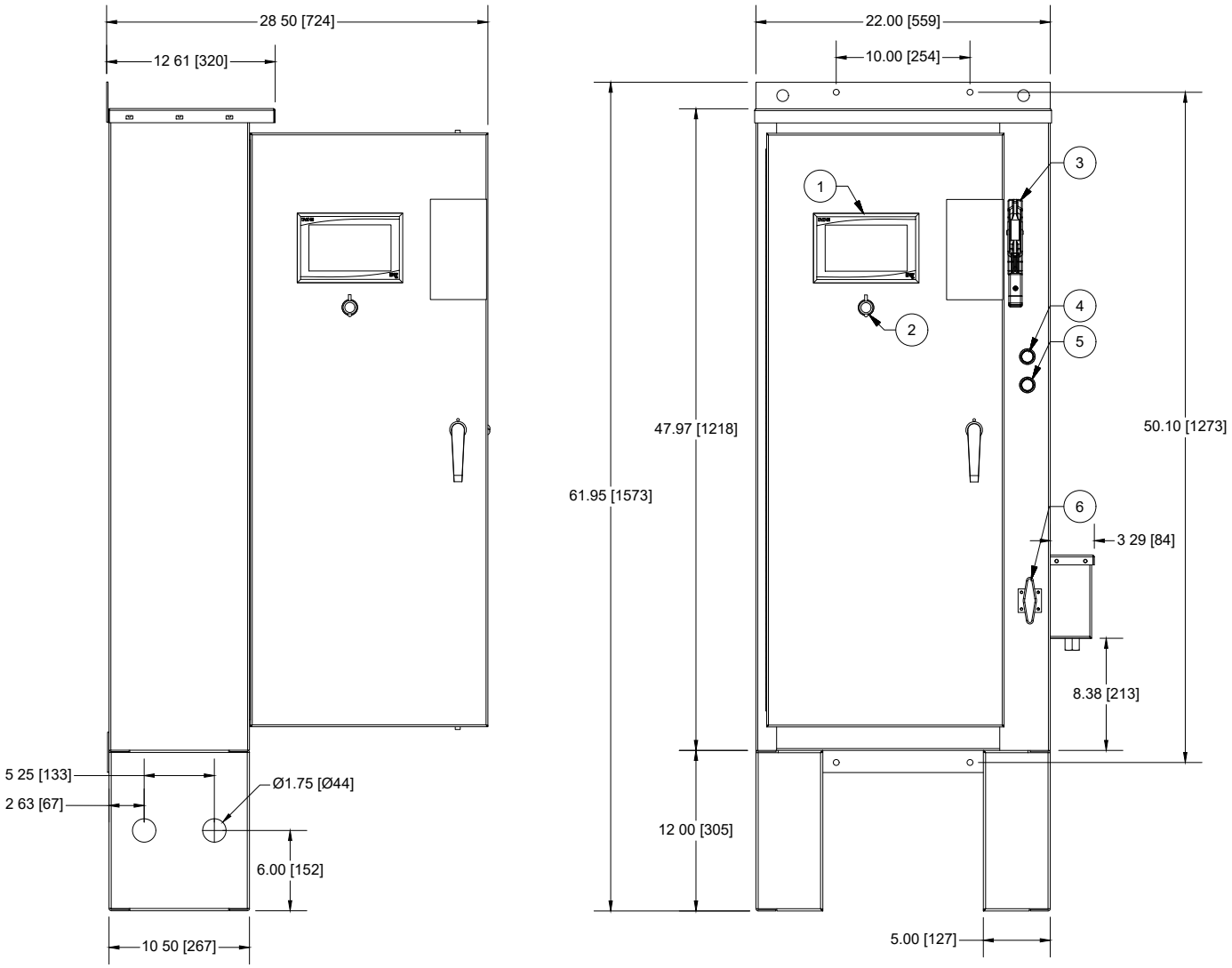
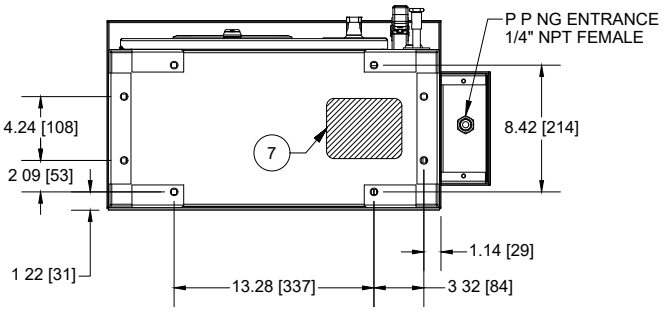
EPCT FIRE - FD20
DIMENSIONAL DRAWINGS - TYPE 2, 3, 3R, 4, 4X, 12



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

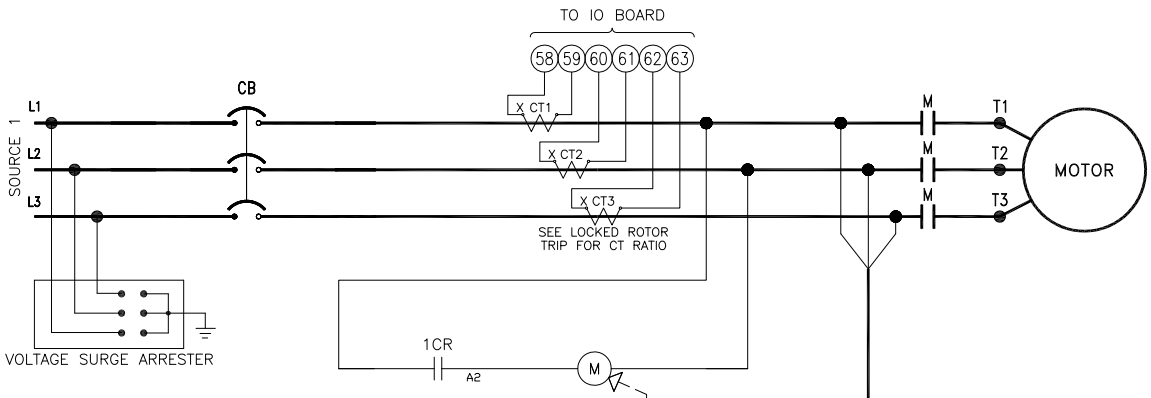
NOTES:
1 - DIMENSIONS: in [mm]
2 - ALL ENCLOSURES FINISHED IN RED
3 - STANDARD ENCLOSURE: TYPE (NEMA) 2



Motor HP	Line voltage	Withstand rating		Approximate weight
		Standard	Intermediate	Lbs. (Kg)
5 - 30	200 - 208V	25,000	65,000	180 (81)
5 - 30	220 - 240V			
5 - 30	380 - 415V *			
5 - 30	440 - 480V			
5 - 30	550 - 600V	18,000	25,000	
5 - 15	240V - S/P	10,000	65,000	

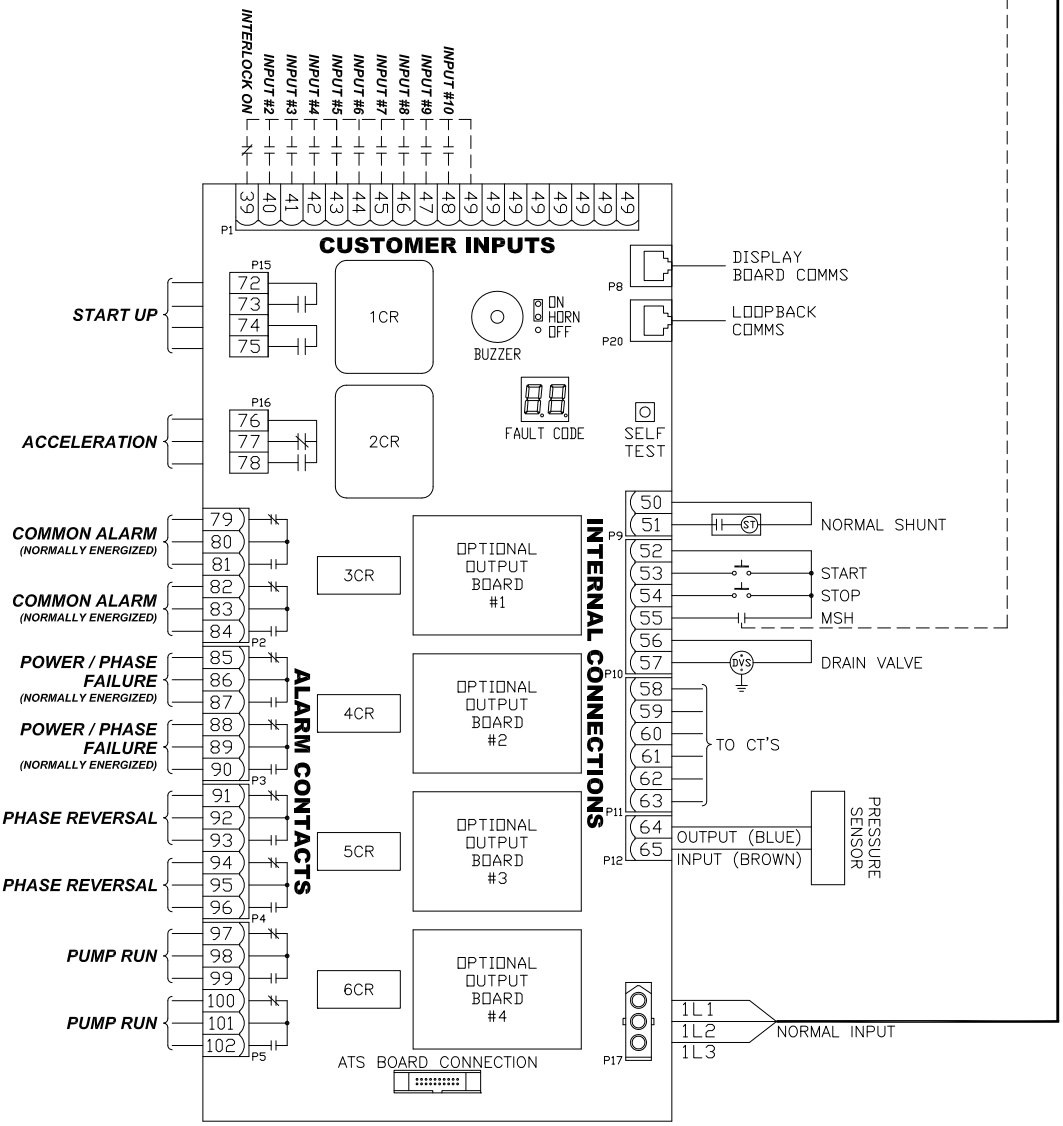
REVISION	DATE	DRAWING NO.
002	09/06/18	CE16490H01

EPCT FIRE - FD20 THREE PHASE WIRING SCHEMATIC



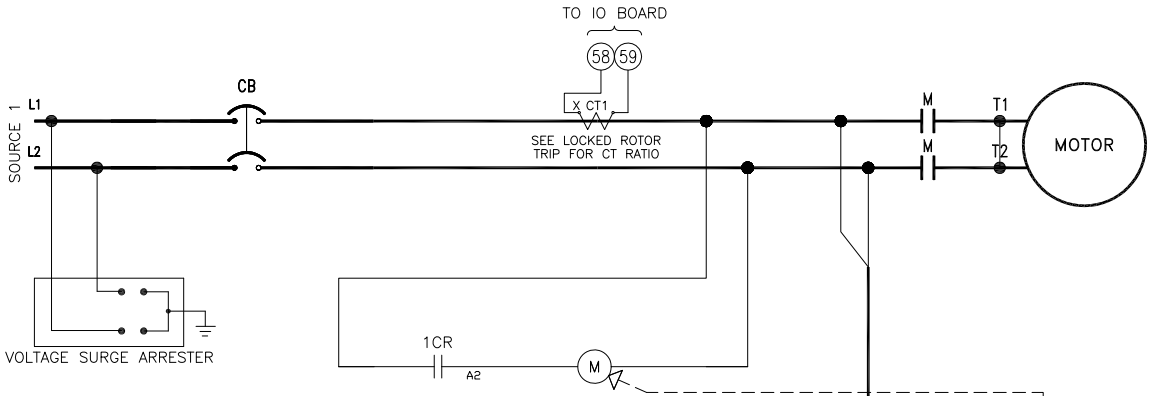
NOTES:
1. POWER/PHASE FAILURE AND COMMON ALARM RELAYS ARE ENERGIZED UNDER NORMAL CONDITIONS.
2. ALL RELAY CONTACTS ARE SHOWN IN NO POWER CONDITION.

LEGEND:
CB - CIRCUIT BREAKER
CT - CURRENT TRANSFORMER
M - RUN CONTACTOR
MSH - MANUAL START HANDLE (EMERGENCY) MICRO SWITCH



REVISION	DATE	DRAWING NO.
001	09/25/18	CE16492H01

EPCT FIRE - FD20 SINGLE PHASE WIRING SCHEMATIC



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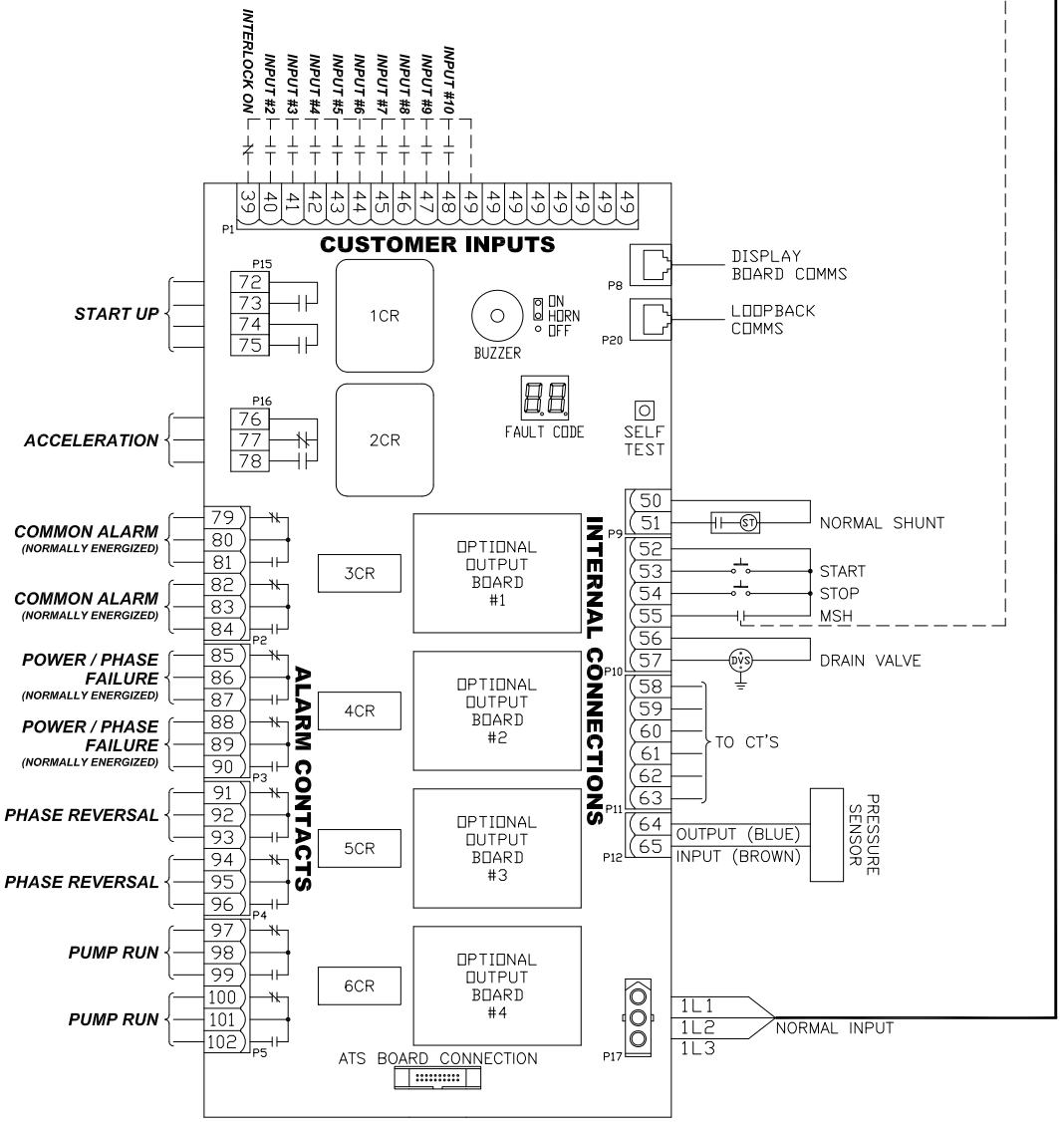
2. ALL RELAY CONTACTS ARE SHOWN IN NO POWER CONDITION.

LEGEND:
CB - CIRCUIT BREAKER
CT - CURRENT TRANSFORMER
M - RUN CONTACTOR
MSH - MANUAL START HANDLE (EMERGENCY) MICRO SWITCH



REVISION	DATE	DRAWING NO.
001	09/25/18	CE16492H02

EPCT FIRE - FD/FT20 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	30	30	30	(1) #14 - 1/0 (CU/AL)	(1) #14 - 2/0 (CU/AL)
	30	-	-	-	-	(1) #4 - 4/0 (CU)	(1) #14 - 2/0 (CU/AL)

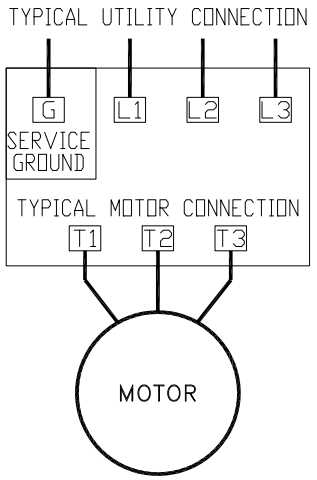
Load Terminals Connections

	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)	#14 - #8 (CU/AL)
	20	25	30	30	30	#14 - #1 (CU/AL)	#14 - #2 (CU/AL)
	30	30	-	-	-	#8 - 3/0 (CU/AL)	#8 - 2/0 (CU/AL)

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

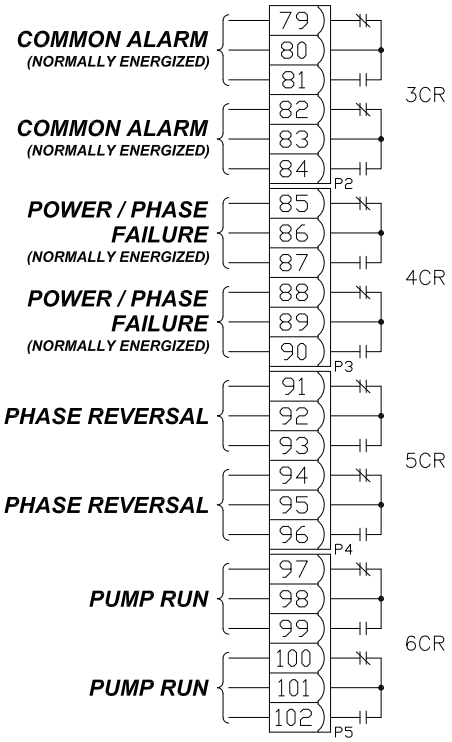
For proper cable size, refer to the National Electric Code (NEC - NFPA70)

CONTROLLER CONNECTIONS

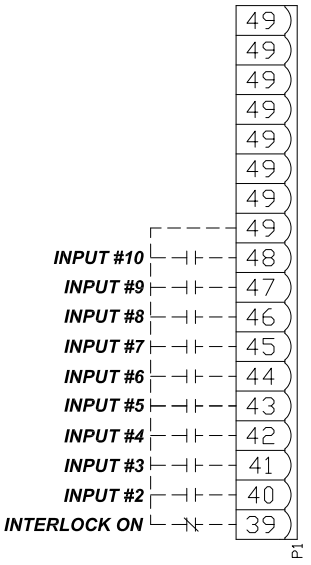


NOTES:
1. MOTOR CONNECTIONS VARY. REFER TO THE SPECIFIC MOTOR CONNECTION DIAGRAM.
2. OBSERVE PROPER PHASE ROTATION A-L1, B-L2, C-L3.
3. CABLE SIZE TO BE 125% OF FULL LOAD CURRENT. REFER TO NEC (NFPA 70)

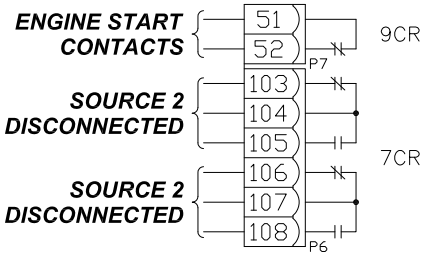
ALARM CONTACTS

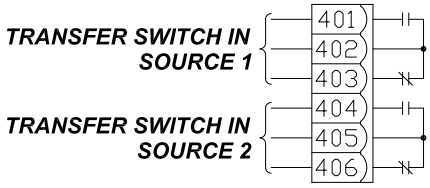


CUSTOMER INPUTS



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.
001	09/25/18	CE16493H01

EPCT FIRE - FD/FT20 SINGLE 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	-	10	-	-	-	(1) #14 - 1/0 (CU/AL)	(1) #14 - 2/0 (CU/AL)
	-	15	-	-	-	(1) #4 - 4/0 (CU)	(1) #14 - 2/0 (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	-	5	-	-	-	#14 - #8 (CU/AL)	#14 - #8 (CU/AL)
	-	15	-	-	-	#14 - #1 (CU/AL)	#14 - #2 (CU/AL)

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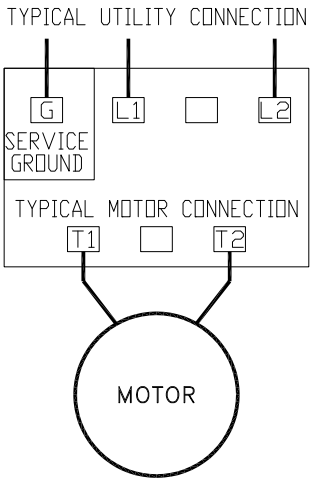
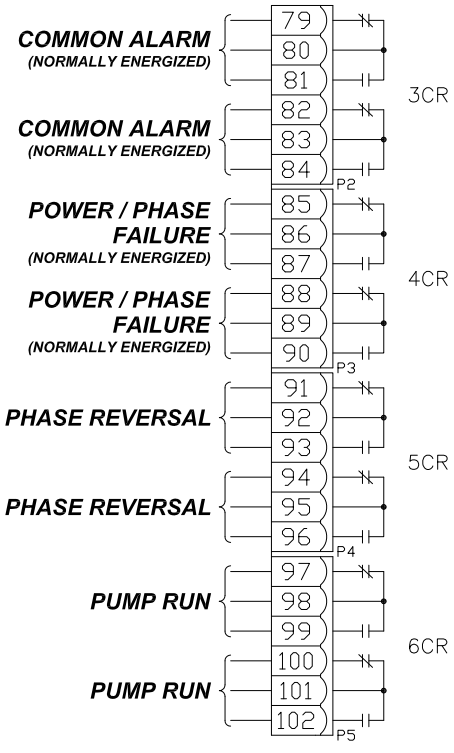
For proper cable size, refer to the National Electric Code (NEC - NFPA70)

CONTROLLER CONNECTIONS

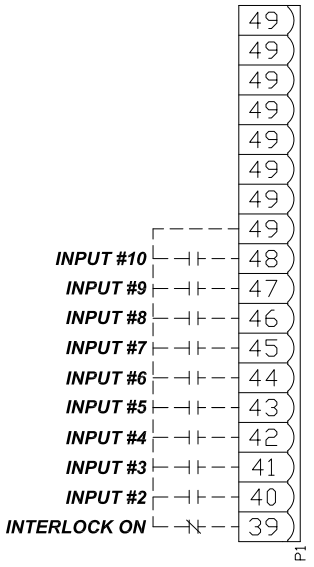


NOTES:
1. MOTOR CONNECTIONS VARY. REFER TO THE SPECIFIC MOTOR CONNECTION DIAGRAM.
2. CABLE SIZE TO BE 125% OF FULL LOAD CURRENT. REFER TO NEC (NFPA 70)

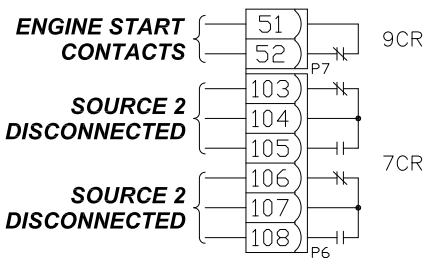
ALARM CONTACTS

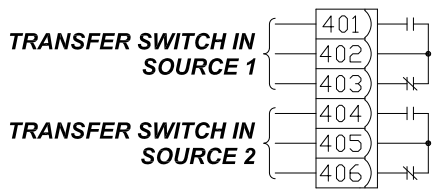


CUSTOMER INPUTS



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.
001	09/25/18	CE16493H02

EPCT Fire option selection matrix

- - - -

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*

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

* Only available on Limited Service Controllers

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

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

EPCT Fire electric fire pump controllers

Typical specifications

1. Approvals
   - A. The Fire Pump Controller shall meet the requirements of the latest edition of NFPA 20 and shall be listed by [Underwriters Laboratories (UL)] and approved by [Factory Mutual Research (FM)] [Canadian Standards Association (CSA)] [New York Department of Buildings (NYSB)] and carry the CE marking for fire pump service.

2. Starting type
   - A. The controller shall be of the combined manual and automatic type designed for [Full Voltage Starting] [Part Winding Starting] [Primary Resistor Starting] [Autotransformer Starting] [Wye-Delta (Star-Delta) Open Transition Starting] [Wye-Delta (Star-Delta) Closed Transition Starting] [Solid State Soft Start Starting]

3. Ratings
   - A. The Controller shall have a withstand rating of 100,000 RMS symmetrical amperes @ [208V] [240V] [380V] [400V] [415V] [480V] [25,000 @ 600VAC].
   - B. Temperature:
     4 to +50 deg. C (39 to +122 deg. F)

4. Construction
   - A. The controller shall include a motor rated combination isolating switch and circuit breaker, mechanically interlocked and operated with a single externally mounted handle.
   - B. The isolating switch shall be rated to disconnect the motor load.
   - C. The isolating switch/circuit breaker combination 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.
   - D. The controller manufacturer shall manufacture the contactor, isolating switch, circuit breaker, pushbuttons, and enclosures. Brand-labeled components will not be accepted.

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.

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 controller shall be of the EPCT Fire type as manufactured by Eaton Corporation.

Powering Business Worldwide

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Article No. XXXXXX
February 2019

TALCO FIRE SYSTEMS

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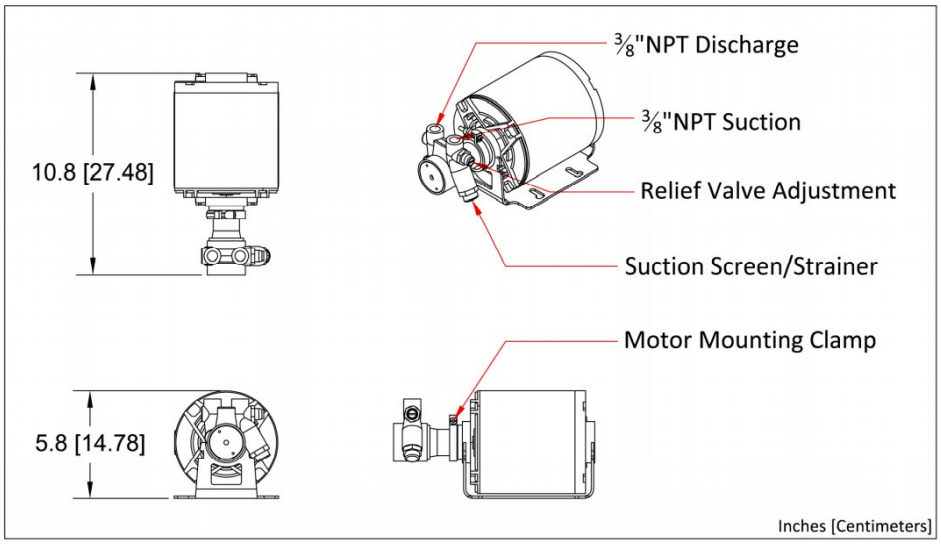
Jockey Pump

(Optional Equipment)

INNOVATIVE PUMP SOLUTIONS

Talco ULV Jockey Pump

- High Quality Rotary Vane Pump
  - 1.8GPM @ 240PSI
- 1/3HP* 200V-240V Electric Motor
  - Resilient Mounted
  - Permanently Lubricated
- Integrated Recirculation Relief Valve
  - Factory Set to 170PSI
  - No External Discharge
- Removable Mesh Suction Strainer
  - Cleanable & Reusable



Dimensions are approximate.
*Motor HP subject to change without notice based on availability.

503-688-1231 www.talcofire.com 6040 NE 112th Ave, Portland OR

TALCO FIRE SYSTEMS

Commercial Pressure Switches

Electromechanical Square D Brand 9013
For power circuits, FRG, FHG, and G

Environmental characteristics

Pressure switch type		FRG	FHG	G
Conformity to standards		UL 508, NEC Article 430-84, ANSI /NSF Standard 61, FDA 21CFR.2600		
Product Certifications		UL File E12158 CCN NKPZ , CSA File LR 25490 Class 321106		
Protective treatment		N/A		
Ambient air temperature	°C	For operation, 0 °C (32 °F) min to 125 °C (257 °F) max For storage, -30 °C (-22 °F) min to 70 °C (158 °F) max		
Fluids controlled		Fresh water, or sea water (with Form Q)		
Materials		Cover: polypropylene, Noryl® thermoplastic resin or equivalent for Type 3R, Component material in contact with fluid: flange, zinc plated or equivalent (fluid entry), nitrile or equivalent rubber (diaphragm)		
Operating position		NEMA Type 1, and Type IP20 in any position, NEMA Type 3R in the vertical position only		
Vibration resistance		—		
Shock resistance		—		
Electric shock protection		—		
Degree of protection		NEMA Type 1, IP20 and NEMA Type 3R (some references) must be mounted in vertical position to maintain enclosure rating		
Operating rate	cycles/m	10		
Repeat accuracy		+/- 3 % of the range		
Fluid connection		1/8" NPSF internal, 1/4" NPSF internal, 1/2"NPT External, 1/4" Bayonet (barbed), 90 deg. Elbow 1/4" Bayonet, Four Way Flange, 3/8" NPSF (Internal), 1/4" Flare, other specials		
Electrical connection		2 open side entries, 3/4" diameter, with two flats		3 Conduit 1/2" Knockouts

Contact block characteristics

Type of contacts		One 2 pole, 2 N/C (4 terminal) contacts, snap action
Resistance across terminals	m Ω	< 25
Terminal referencing		N/A
Short-circuit protection	A	5,000
Connection		Screw clamp terminals. Clamping capacity up to #10 AWG (5.261 mm^2)
Electrical durability	cycles	100,000
Mechanical durability	cycles	300,000

Electrical Ratings

1 Pole

Power ratings of controlled motors

Note:
Type FRG and G are all Form H

▲ Includes
FHG 2, 3, 4, 9, 12, 13, 14, 19, 42, 44, 49

Voltage		FRG ~ 1-phase	FRG ~ 3-phase	FRG ⎓	FHG ▲■ ~ 1-phase	FHG ▲■ ~ 3-phase	FHG ▲■ ⎓	G ~ 1-phase	G ~ 3-phase	G ⎓
32 V		—	—	—	—	—	—	—	—	—
115 V		0.75 kW (1 HP)	—	0.18 kW (.25 HP)	1.1 kW (1.5 HP)	1.5 kW (2 HP)	0.18 kW (.25 HP)	0.75 kW (1 HP)	—	0.37 kW (.50 HP)
230 V		0.75 kW (1 HP)	—	0.18 kW (.25 HP)	1.5 kW (2 HP)	2.2 kW (3 HP)	0.18 kW (.25 HP)	1.5 kW (2 HP)	—	0.37 kW (.50 HP)
460 / 575 V		—	—	—	—	0.75 kW (1 HP)	—	1.5 kW (2 HP)	—	—

2 Pole

Power ratings of controlled motors

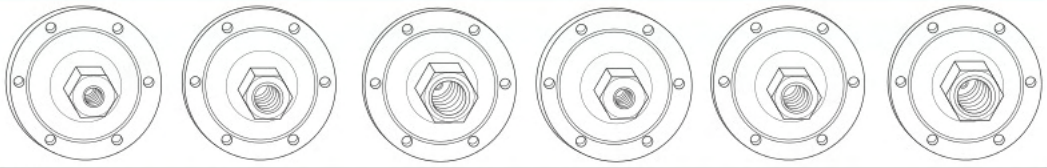
■ Includes
FHG 22, 24, 29, 32, 33, 34, 39, 52, 54, 59

Voltage		FRG ~ 1-phase	FRG ~ 3-phase	FRG ⎓	FHG ▲■ ~ 1-phase	FHG ▲■ ~ 3-phase	FHG ▲■ ⎓	G ~ 1-phase	G ~ 3-phase	G ⎓
32 V		—	—	0.18 kW (.25 HP)	—	—	—	—	—	—
115 V		0.75 kW (1 HP)	0.75 kW (1 HP)	0.18 kW (.25 HP)	1.5 kW (2 HP)	2.2 kW (3 HP)	0.37 kW (.50 HP)	1.5 kW (2 HP)	2.2 kW (3 HP)	0.75 kW (1 HP)
230 V		0.75 kW (1 HP)	0.75 kW (1 HP)	0.18 kW (.25 HP)	2.2 kW (3 HP)	3.7 kW 5 HP)	0.37 kW (.50 HP)	2.2 kW (3 HP)	3.7 kW 5 HP)	0.75 kW (1 HP)
460 / 575 V		—	—	—	—	0.75 kW (1 HP)	—	3.7 kW (5 HP)	3.7 kW (5 HP)	—

Commercial Pressure Switches

Electromechanical Square D Brand 9013
For power circuits G
2-pole 2 N/C contacts
Degree of protection IP20, NEMA Type 1, 7 & 9

Flange Style



Adjustable range of switching point
Contacts open on rising pressure
2 Pole

Fluid connections	1/8" NPSF internal	1/4" NPSF internal	3/8" NPSF internal	1/8" NPSF internal	1/4" NPSF internal	3/8" NPSF internal
References						
NEMA Type 1, IP20	9013GHG1	9013GHG2	9013GHG3			
NEMA Type 7, NEMA Type 9				9013GHR1	9013GHR2	9013GHR3
Fluids / Pressure controlled	Water or Air	Water or Air	Water or Air	Water or Air	Water or Air	Water or Air
Pressure range						
Cut-0ut PSIG (bar)	60-200	60-200	60-200	65-200	65-200	65-200
Cut-In PSIG (bar)	40-170	40-170	40-170	35-150	35-150	35-150
Weight lbs (kg)	2 lbs (0.91)	2 lbs (0.91)	2 lbs (0.91)	8 lbs (3.62)	8 lbs (3.62)	8 lbs (3.62)
Complementary characteristics not shown under general characteristics						
Differential PSIG (bar)	20-40 (1.4-2.8)	20-40 (1.4-2.8)	20-40 (1.4-2.8)	30-50 (2.1-3.5)	30-50 (2.1-3.5)	30-50 (2.1-3.5)
Maximum permissible pressure PSIG (bar)	80 (5.5)	80 (5.5)	80 (5.5)	80 (5.5)	80 (5.5)	200 (13.8)
Mechanical life	300, 000 operating cycles					
Cable entry	3 Conduit 1/2" Knockouts	3 Conduit 1/2" Knockouts	3 Conduit 1/2" Knockouts	2 3/4"-14 NPT	2 3/4"-14 NPT	2 3/4"-14 NPT
Pressure switch type	Diaphragm					

Ordering Information

1 *Specify Class 9013 Type G.*
2 *Select pressure code and add code designation to end of type number. Be sure that pressure code falls within the limits of the device as shown in the device listings.*
3 *If special features are desired, add the appropriate Form letter to the Class and Type. Arrange Form letters in alphabetical sequence when ordering more than one special feature.*
4 *Place packaging code at end of sequence with other forms when ordering.* If no packaging code is indicated, devices will be shipped individually packaged.
For standard pack of 10 devices per box C10
Available on GHB, GHG, GSB, and GSG

See page 25 for Form C10.

Pressure Codes

Below is the pressure code table.
Existence of a code does not imply that the code is available for any or all devices.

Settings	**Code**
20-40 PSI	J20
30-50 PSI	J21
40-20 PSI	J23
40-60 PSI	J24
60-80 PSI	J25
70-90 PSI	J26
70-100 PSI	J28
75-100 PSI	J29
80-100 PSI	J30
90-120 PSI	J31
100-80 PSI	J51
100-125 PSI	J53
110-125 PSI	J54
110-150 PSI	J56
120-150 PSI	J57
125-150 PSI	J58
125-175 PSI	J60
130-175 PSI	J61
140-170 PSI	J66
140-175 PSI	J62
145-175 PSI	J63
150-120 PSI	J64
150-175 PSI	J67
215-250 PSI	J65
Specify pressure settings	J99

TALCO FIRE SYSTEMS

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Valves & Fittings

KENNEDY VALVE

2 1/2”-12” Resilient Seated Gate Valve
Model KSRW-HP, Figure 5000 (350psi)
Model KSFW-HP, Figure 5000 (350psi)

Non- rising stem (NRS) applicaitons come standard with 304 stainless steel fastener system and all OS&Y applications are manufactured with plated steel fasteners. Other fastener materials are available for most NRS and OS&Y configurations upon request.

All OS&Y valves are manufactured with pre-grooved stems to accommodate tamper switches furnished by others.

Based upon specific configuration, valves can be compliant with AIS, Buy America or Buy American.

4”- 12” valves conform to AWWA C515 cast in ductile iron
2 1/2” - 3” valves conform to AWWA C509 cast in ductile

Notes: *Flanged Ends: ASME Class 125 (standard)*
Grooved Ends: IPS grooves per ANSI/AWWA C606
Stems:
NRS - ASTM B584 Cast Bronze (standard)
OS&Y - ASTM A479 304 stainless steel (standard)
Optional stem materials available upon request
Valve Body Taps:
KSRW valves can be tapped at up to four locations - A, B, E, F.

END CONNECTIONS	STEM TYPE	SIZE RANGE	FIGURE NO.	w/ POST PLATE	Page
Flanged Ends	Non-Rising	2 1/2”- 12”	5561ASS	5701ASS (3”-12”)	6
Mechanical Joint	Non-Rising	3”- 12”	5571SS	5071SS	7
Flange x Mechanical Joint	Non-Rising	3”- 12”	5572SS	5702SS	8
Flanged Ends	OS&Y	2 1/2”- 12”	5068A	N/A	9
Groove x Flange Ends	OS&Y	2 1/2”- 8”	5092ABF	N/A	10
Grooved Ends	OS&Y	2 1/2”- 12”	5093ABF*	N/A	11

Other end conditions available upon request

** 10-12” ONLY, UL LISTING PENDING*

SIZE RANGE	RATED WORKING PRESSURE PSI	HYDROSTATIC	
		SEAT TEST PSI	SHELL TEST PSI
AWWA 2”-12”	350	350	700
ULFM 2 1/2”-12”	350	525	700

ACCESSORIES

Indicator Posts	Floorstands (Non-Rising Stem)
“T” Handles”	Handwheels
Stem Guides	Extension Stems
2” Sq. Operating Nuts	Chain Wheels

POTTER
The Symbol of Protection

OSYSU Series

Outside Screw and Yoke Valve Supervisory Switch

Features

- NEMA 4X* (IP 65) and 6P (IP 67)

  **Enclosure is 4X. For additional corrosion protection of mounting hardware, use model OSYSU-2 CRH*
- -40º to 140º (-40ºC to 60ºC) operating temperature range
- Visual switch indicators
- Two conduit entrances
- Adjustable length trip rod
- Accomodates up to 12AWG wire
- Three position switch detects tampering and valve closure
- Knurled mounting bracket prevents slipping
- Fine adjustment feature for fast, easy installation
- RoHS compliant
- One or two SPDT contact models (-1,-2)

NOTICE

Before any work is done on the fire sprinkler or fire alarm system, the building owner or their authorized representative shall be notified. Before opening any closed valve, ensure that opening the valve will not cause any damage from water flow due to open or missing sprinklers, piping, etc.

Important: This document contains important information on the installation and operation of OS&Y valve supervisory switches. Please read all instructions carefully before beginning installation. A copy of this document is required by NFPA 72 to be maintained on site.

Description

The OSYSU is used to monitor the open position of an OS&Y (outside screw and yoke) type gate valve. This device is available in two models; the OSYSU-1, containing one set of SPDT (Form C) contacts and the OSYSU-2, containing two sets of SPDT (Form C) contacts. These switches mount conveniently to most OS&Y valves ranging in size from 2" to 12" (50mm to 300mm). They will mount on some valves as small as ½" (12,5mm).
The cover is held in place by two tamper resistant screws that require a special tool to remove. The tool is furnished with each device.

Testing

The operation of the OSYSU and its associated protective monitoring system shall be inspected, tested, and maintained in accordance with all applicable local and national codes and standards and/or the Authority Having Jurisdiction (manufacturer recommends quarterly or more frequently). A minimum test shall consist of turning the valve wheel towards the closed position. The OSYSU shall operate within the first two revolutions of the wheel. Fully close the valve and ensure that the OSYSU does not restore. Fully open the valve and ensure that the OSYSU restores to normal only when the valve is fully opened.

⚠ CAUTION

Close the valve fully to determine that the stem threads do not activate the switch. The switch being activated by the stem threads could result in a ***false valve open*** indication.

Technical Specifications

Dimensions	See Fig 8
Weight	1.6 lbs (0,73 kg)
Enclosure	Cover: Die Cast Finish: Red Powder Coat Base: Die Cast Finish: Black Powder Coat All parts have corrosion resistant finishes
Cover Tamper	Tamper Resistant Screws Optional Cover Tamper Switch Available
Contact Ratings	OSYSU-1: One Set of SPDT (Form C) OSYSU-2: Two Sets of SPDT (Form C) 10.0 Amps at 125/250 VAC 2.0 Amps at 30VDC Resistive 10 mAmps minimum at 24 VDC
Environmental Limitations	-40º F to 140ºF (-40ºC to 60ºC) NEMA 4X (IP 65) and NEMA 6P (IP 67) Enclosure (Use suitably rated conduit and connector) Indoor or Outdoor Use (See OSYSU-EX Bulletin 5400705 for Hazardous locations)
Conduit Entrances	Two Knockouts for 1/2" conduit provided (See Notice on Page 6 and Fig. 9 on Page 5)
Service Use	NFPA 13, 13D, 13R, 72

Specifications subject to change without notice

Reliable®

Model BFG-300 Supervised Butterfly Valve Grooved

cULus Listed, FM Approved

Product Description

The Reliable Model BFG-300 Supervised Butterfly valves are cULus Listed and FM Approved for fire protection systems. Reliable Supervised Butterfly Valves valves have AWWA C606 grooved end connections. They are available in 2-1/2" (65mm), 3" (80mm), 4" (100mm), 6" (150mm), and 8" (200mm) nominal sizes. The valves are listed for 300 psi (20.7 bar) working pressure. The maximum working temperature for the valves is 250°F (120°C).

Maintenance

The owner is responsible for maintaining the fire protection system in proper operating condition. Any system maintenance or testing that involves placing a control valve out of service will eliminate the fire protection that is provided by the fire protection system.

The Reliable Supervised Closed Butterfly valves and associated equipment shall periodically be given a thorough inspection and test. NFPA 25, "Inspection, Testing and Maintenance of Water Based Fire Protection Systems," provides minimum maintenance requirements.

Guarantee

For Reliable Automatic Sprinkler Co., Inc. guarantee, terms, and conditions, visit www.reliablesprinkler.com.

Supervised Grooved Butterfly Valve - Supervised Open

Supervised Grooved Butterfly Valve - Supervised Closed

Ordering Information

Specify the following when ordering:

Model BFG-300 Butterfly Valve

Supervision

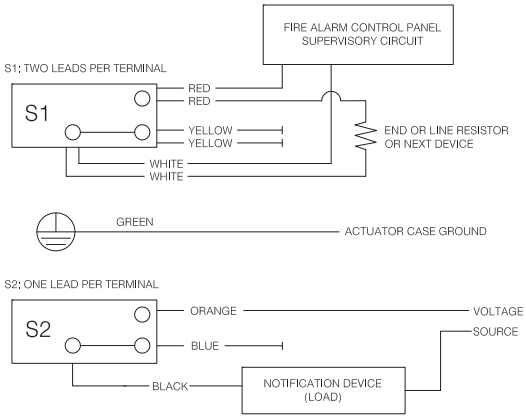
- Valve Supervised Open (yellow indicator)
- Valve Supervised Closed (white indicator)

Valve Size

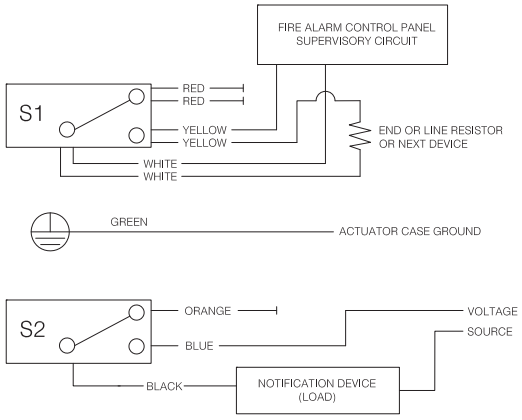
- 2-1/2" (65mm)
- 3" (80mm)
- 4" (100mm)
- 6" (150mm)
- 8" (200mm)

Reliable Supervised Butterfly Valve Wiring Diagram - Valve in Supervised Position **Figure 1**

Supervised Normally Open Valve



Supervised Normally Closed Valve



Notes: Rated: 5A-1/6HP-125/250VAC
0.5A - 125VDC
0.25A - 250DC

Check Valves

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LISTED VALVE NOW AVAILABLE IN 1½" SIZE

- Brass Body* (C38000) for superior corrosion resistance
- Listed valves available in the following sizes: 1 ½"**, 2", 2 ½", 3" and 4"
- Available Grooved, Threaded, or Thread by Groove reducing the need for additional fittings and minimizing installation time.
- Pressure rated to up to 300 PSI
- Tapped and plugged for easy use of accessories such as ball drips or gauges

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*Contains lead. Not for use in water systems intended for human consumption.
**1 ½" size is UL/ULc listed only

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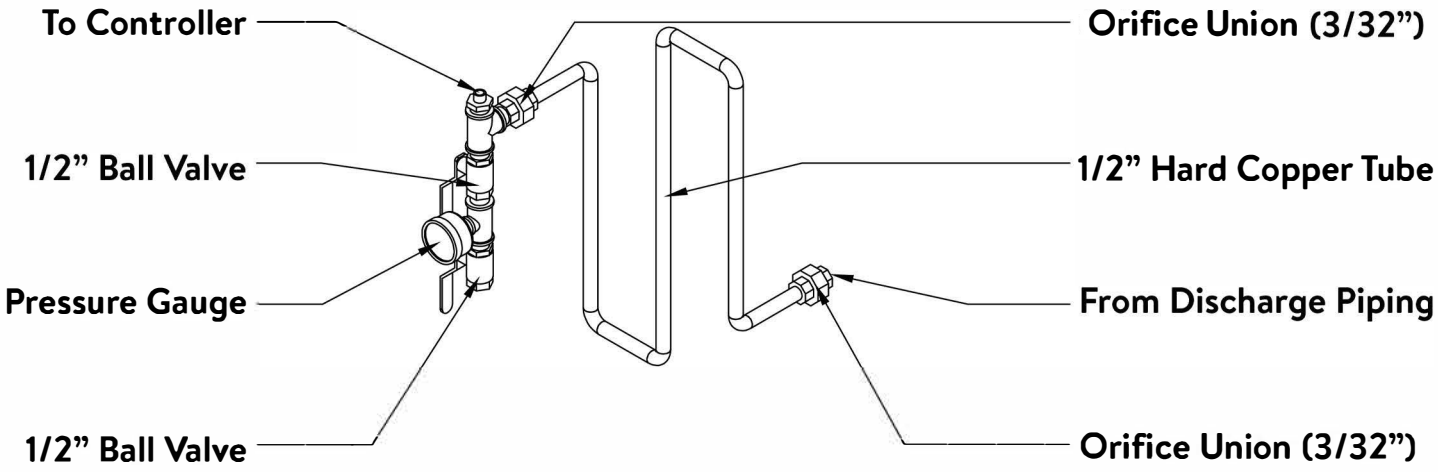
PHONE: 800-878-8055 WWW.TALCOFIRE.COM

NFPA20 Sensing Line Detail



Pressure Sensing Lines constructed in accordance with NFPA 20: All brass or copper components, orifice unions at connections to both discharge piping & controller valve assembly, minimum 60" hard copper tubing between unions.