ELKHART BRASS

Fire Fighting Equipment

Industrial Electric Monitor Motor Control Panel P/N's 81471068

Hardwired Monitor Motor Control Panel P/N's 81471074

And similar panels

For use with Model 8394053 SPIT-FIRE® Monitor

Installation, Operation, and Maintenance Instructions

98386000 REV. C

1302 West Beardsley Avenue • P.O. Box 1127 • Elkhart IN 46515 • (574) 295-8330 • Fax (574) 293-9914

PRODUCT SAFETY

Important: Before installing and operating this equipment, read & study this manual thoroughly. Proper installation is essential to safe operation. In addition, the following points should be adhered to in order to ensure the safety of equipment and personnel:

- All personnel who may be expected to operate this equipment must be thoroughly trained in its safe and proper use.
- Before flowing water from this device, check that all personnel (fire service and civilian) are clear of the stream path. Also confirm stream direction will not cause avoidable property damage.
- Become thoroughly familiar with the hydraulic characteristics of this equipment, and the pumping system used to supply it. To produce effective fire streams, operating personnel must be properly trained.
- Whenever possible, this equipment should be operated from a remote location to avoid exposing personnel to dangerous fire conditions.
- Always open and close valves supplying this equipment slowly, so that the piping fills with water slowly, thus preventing the possible occurrence of water hammer.
- After each use, and on a scheduled basis, inspect equipment per instructions in the maintenance section.
- Disconnect power prior to servicing controls.
- Any modifications to the electrical enclosure will destroy the NEMA 4 rating and void warranty coverage of the enclosure and all components within.
- All equipment must be installed in accordance with local codes (NFPA 70 or EN/IEC 60079-14) as appropriate and in areas where equipment classification is suitable.

WARNING: Do not attempt to disconnect or work on any electrical equipment in this system unless power is removed or the area is known to be non-hazardous.

SYSTEM INFORMATION:

SERIAL NUMBER: _____
DETAILS:
_____
_____
_____

TABLE OF CONTENTS

*For the most up-to-date documentation and specifications, please visit our website at www.elkhartbrass.com

I OVERVIEW

The primary function of the Monitor Motor Control Panel (MMCP) is to control the monitor and nozzle in a controlled environment or from a remote location. This is accomplished by receiving an electric signal from an Operator Control Panel – OCP, and then engaging the associated relay for the connected monitor which then executes the required function. If a Hardwired Monitor Motor Control Panel (HMMCP) has been purchased, it acts as an MMCP and OCP in one panel.

This panel can be wired to accept different input voltages. The standard panel has a default wiring configuration of 220 VAC 60 Hz unless special ordered differently. See section II.C for details. If the input voltage configuration is changed, there are labels that need to be placed over the voltage configuration (P/N 44724000). The change can be accomplished in the field or the panel can be ordered from Elkhart Brass for the desired input voltage.

Electric Monitor Control Panel Features:

- **Construction** – Stainless Steel enclosure rated for Hazardous Location (Class 1, Division 2)
- **Compliance –** (NFPA 70) NEC: 2008, Article 501 – Class I, Groups "B, C, & D," Division 2 & Article 505 – Class I, Zone 2, AEx nA IIC T3 requirements; UL Labeled
- **Control Power** – On/Off 2-Position selector switch
- **Pilot Light –** Shows panel control power on
- **Internal Power –** 24 VDC Power Supply for controls
- **Control Relays –** 24 VDC, 37mA relay inputs for: Monitor directions (UP, DOWN, LEFT, and RIGHT), Nozzle (STRAIGHT STREAM and FOG), and Water Valve open and close and Auxiliary Device on and off.
- **Water Valve and Auxiliary Device Options –** Fused external 24VDC or 120VAC power for operation of valve or device per system requirements.
- **Water Valve Position Feedback and Auxiliary Device Feedback Options –** Terminal block relays are supplied for 24VDC or 120VAC voltage systems to provide feedback of the device being operated.
- **Conduit Knockouts and Hubs –** None, all supplied by others.

WARNING: Do not disassemble or take cover off any Monitor Motors. If cover is/has been removed, the warranty is void and the service life of the motor is significantly reduced.

II INSTALLATION INSTRUCTIONS

A. Component Mounting

Monitor Motor Control Panel (MMCP) Installation

1. This recommended distance the enclosure should be located from the Monitor Junction Box is 100 feet (30.48m). For other distances and wire sizes refer to chart in Figure 4.
2. Install the Panel approximately 3-4 feet (.91 to 1.22m) above grade and in the vertical position, on a rigid structure. Installation is normally at the base of the monitor riser.
3. The enclosure has four (4) mounting pads with .44" (11.18mm) diameter holes. Mounting hole centers are 18" (457.20mm) horizontal by 31.25" (793.75mm) vertical. Please refer to Figure 6 on page 10 for dimensional drawing.
4. Use hubs and glands appropriate for the area classification they will be used in. Also, adhere to local code requirements for all electrical connections.

B. Interconnecting and Wiring Control System – Wiring Connection Details Are Inside Panel Door

Main Power to MMCP

1. Install conduit from the main power distribution breaker box to Monitor Motor Control Panel. MMCPs are not provided with conduit hubs unless special ordered.
2. Wiring for any voltage requires a minimum of three conductors. If using 480 VAC, only one phase is required or two legs. The third leg need not be run but can be terminated on the blank spare terminal. Always remember to run a ground and terminate with all cable runs. Wire to be sized to accommodate a minimum of 500 VA.
3. For wiring information and sizing see MMCP Fuse and Wiring Section - Figure 1.

   NOTE: Attachable labels, showing the separate wiring configurations, have been provided with the panel to document the configured panel and part number per the end user's requirements. Once changed cut out the correct label and peel off the backing and place over the old configuration.

MMCP to Monitor Junction Box

1. Install conduit between MMCP and Junction Box, located at flanged base of monitor.
2. To connect these boxes ten (10) conductors are required with conductor size to be determined by distance run. (For wiring information and sizing see MMCP Fuse and Wiring - Figure 4)

Operator Control Panel to MMCP (NOT APPLICABLE FOR HMMCP)

1. Install conduit between MMCP and Operator Control Panel.
2. A minimum of fourteen (14) conductors plus spares are required PER MONITOR. (For wiring information and sizing see MMCP Fuse and Wiring Section - Figure 3)

MMCP to optional Water Valve or Auxiliary Device

1. Install conduit between MMCP and valve.
2. The number of conductors will be determined by the device that is going to be controlled. Provisions have been designed in to the panel to accommodate various scenarios. As this is a generic manual the number of conductors cannot be accurately given this will be determined by the end user. (For wiring information and sizing see MMCP Fuse and Wiring Section – Figure 3 and Figure 5)

Isolated Normally Open Dry Contacts

1. Each MMCP has been supplied with a set of normally open dry contacts that can be used per customer requirements. They are rated for 600VAC, 5 Amps and are closed when the water valve or auxiliary device relays are energized.

WARNING: Make sure panels are grounded according to area classification and company policy to assure panel code compliance.

C. MMCP/HMMCP Fuse and Wiring

FUSE REQUIREMENTS			
FUSE NO.	DESCRIPTION	PART NUMBER	ELKHART BRASS PART NUMBER
F1,F2	FUSE, CLASS CC, TIME DELAY, CURRENT LIMITING 600 VAC	FNQ-R-5	59079130
F3,F4	FUSE, CLASS CC, FAST ACTING, 600 VAC, 1 AMP	KTK-R-1	32233050
F5,F6, F7,F8	FUSE, CLASS CC, FAST ACTING, 600 VAC, 1 1/2 AMP	KTK-R-1-1/2	32233040
F9	FUSE, CLASS CC, FAST ACTING, 600 VAC, 5 AMP	KTK-R-5	32233160
F10	FUSE, CLASS CC, FAST ACTING, 600 VAC, 3 AMP	KTK-R-3	32233130
F11	FUSE, CLASS CC, TIME DELAY, CURRENT LIMITING, 600 VAC, 6.25 AMP	FNQ-R-6-1/4	IN000068

Figure 1: MMCP Fuse and Jumper Diagram

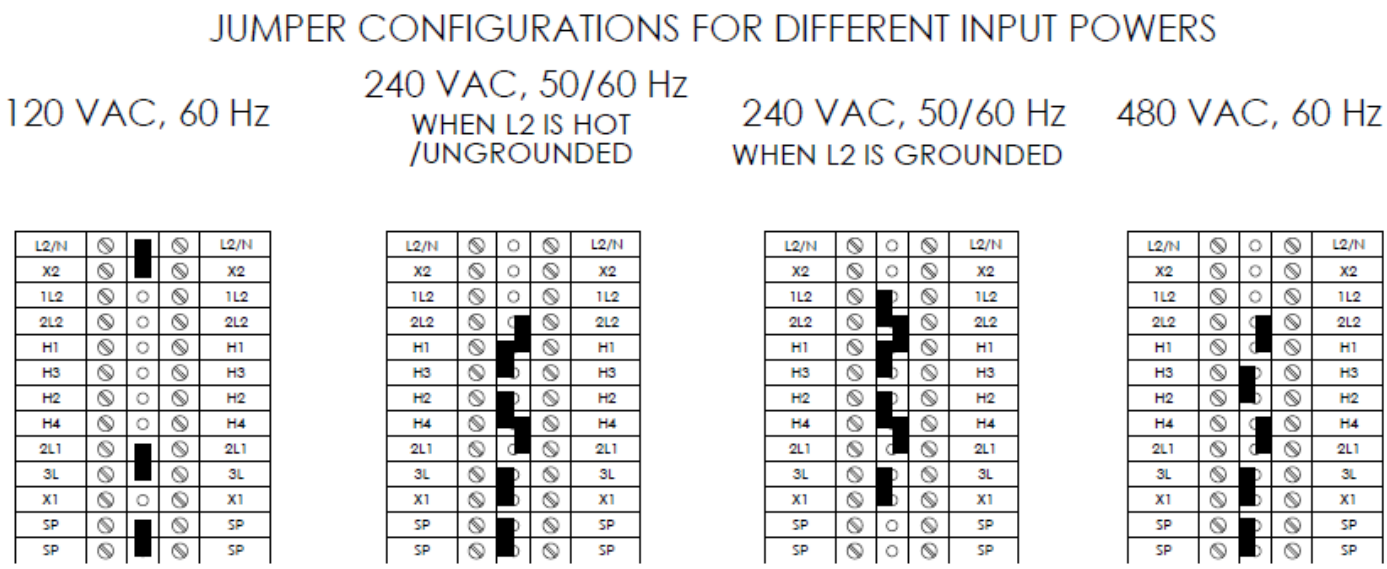


Figure 2: Typical MMCP Fuse and Jumper Diagram

WIRE SIZE FOR CONDUCTORS BETWEEN MONITOR MOTOR CONTROL PANEL AND OPERATOR CONTROL PANEL OR VALVES	
CONDUCTOR LENGTH	**WIRE SIZE**
UP TO 750 FEET (228 m)	18 AWG (0.75 mm^2)
750 TO 1500 FEET (457 m)	16 AWG (1.0 mm^2)
1500 TO 2500 FEET (762 m)	14 AWG (2.5 mm^2)
2500 TO 3500 FEET (1066 m)	12 AWG (4.0 mm^2)

WIRE SIZE FOR CONDUCTORS BETWEEN MONITOR MOTOR CONTROL PANEL AND MONITOR JUNCTION BOX	
CONDUCTOR LENGTH	**WIRE SIZE**
UP TO 75 FEET (22 m)	18 AWG (0.75 mm^2)
75 TO 100 FEET (30 m)	16 AWG (1.0 mm^2)
100 TO 200 FEET (60 m)	14 AWG (2.5 mm^2)
200 TO 400 FEET (121 m)	12 AWG (4.0 mm^2)

Figure 3: MMCP – Monitor Junction Box Wiring Chart

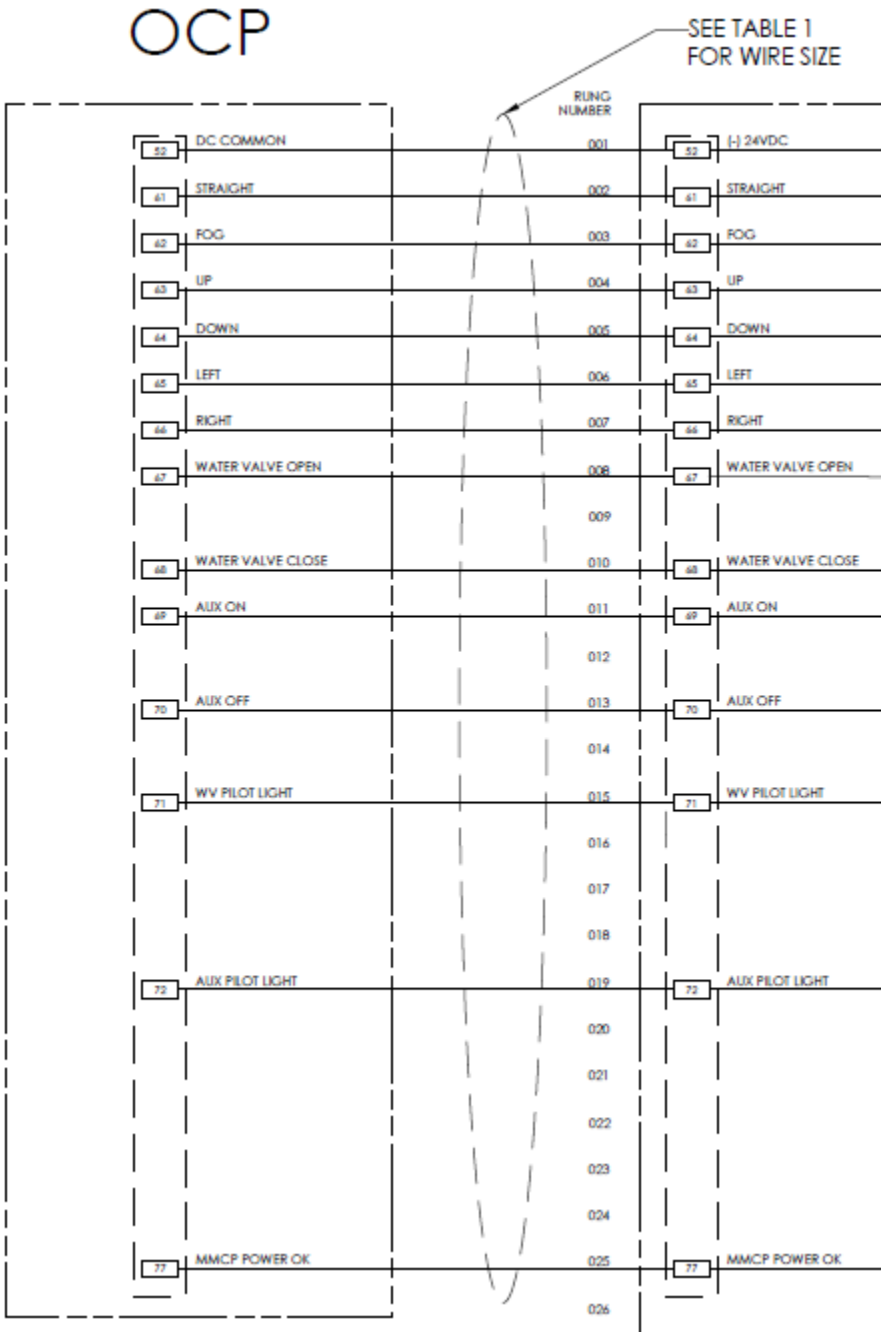


Figure 4: MMCP Incoming Interconnect Wires From OCP (Not Applicable For HMMCP)

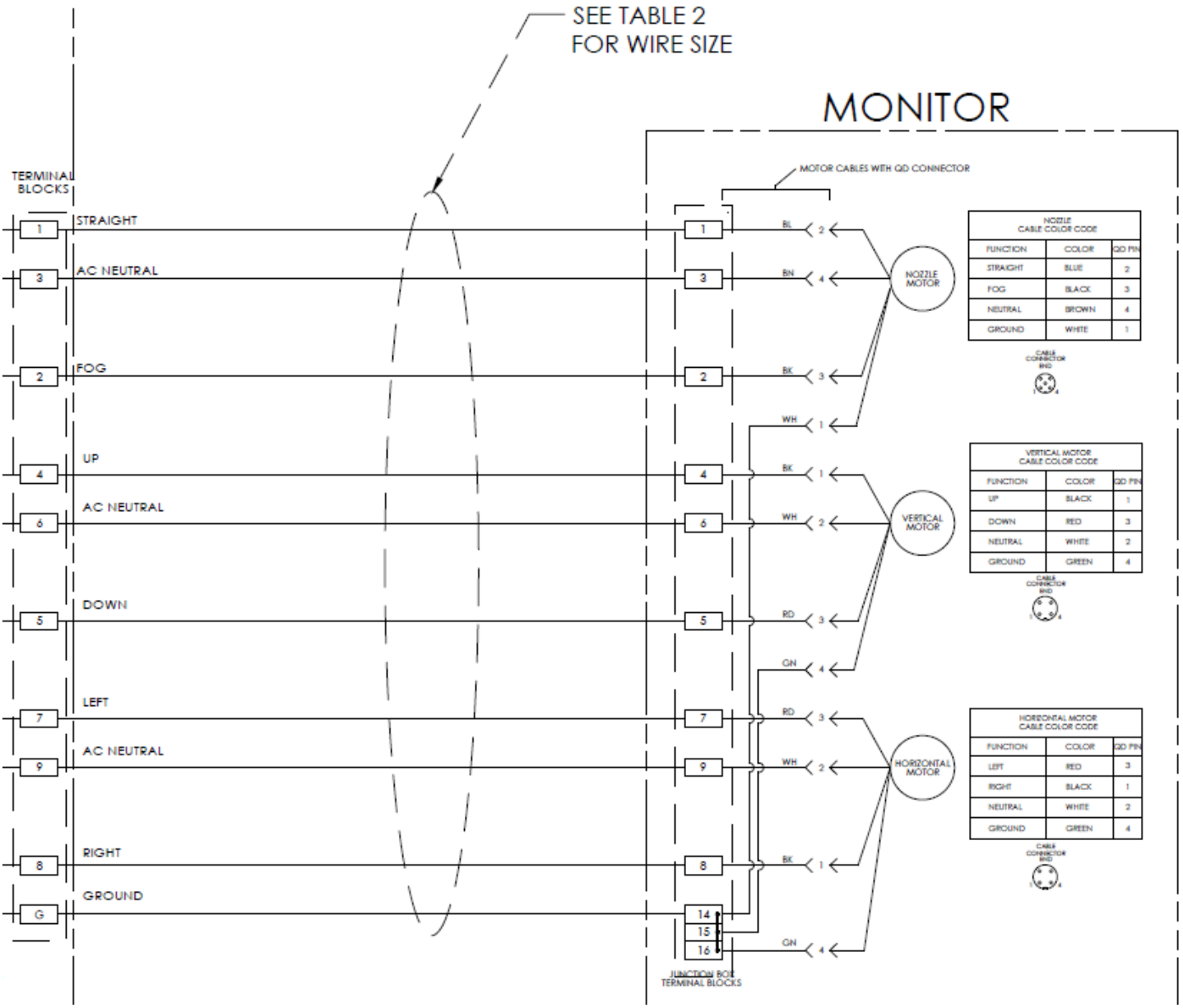


Figure 5: MMCP/HMMCP Interconnect Wiring To Monitor

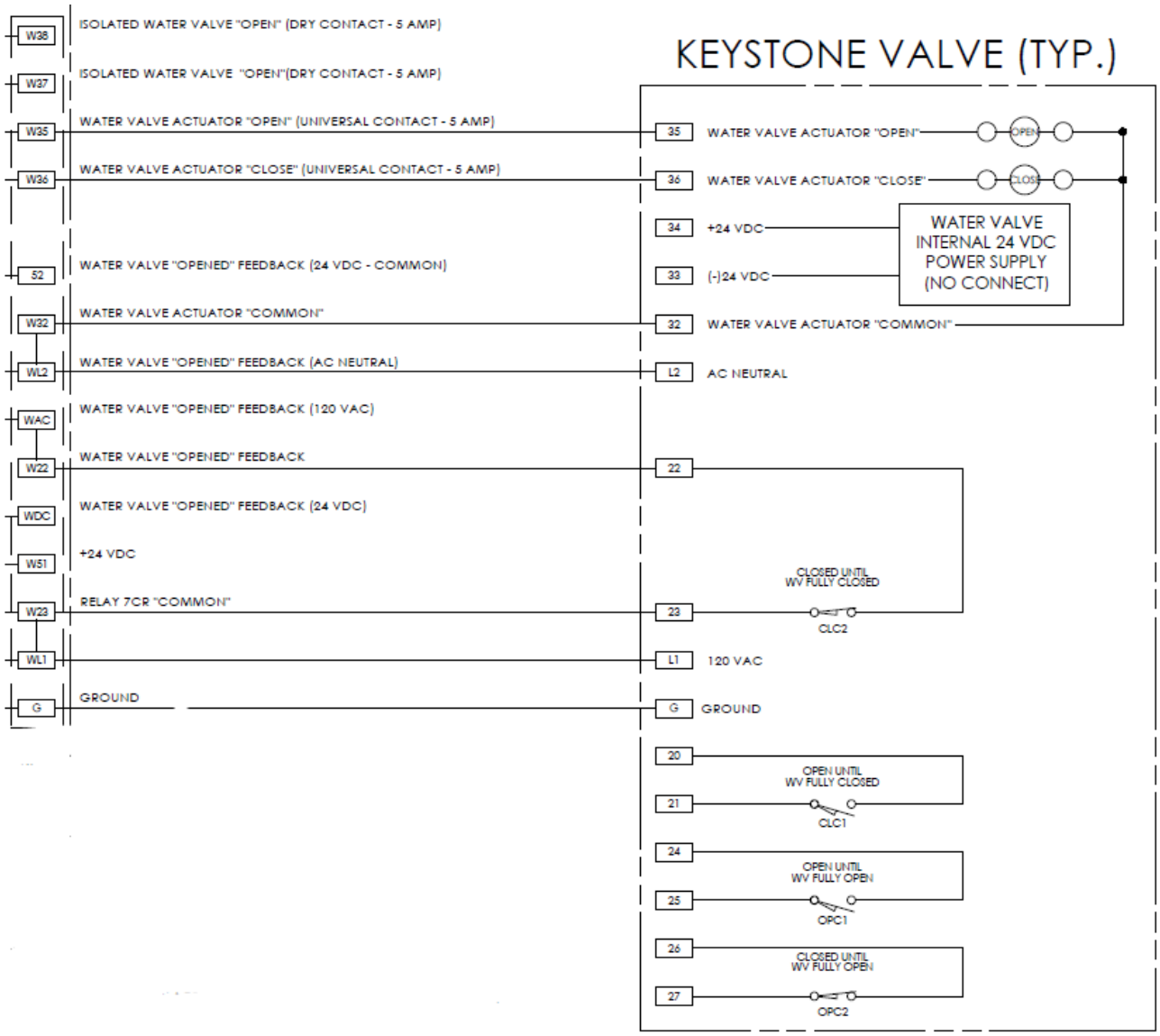


Figure 6: MMCP/HMMCP Interconnect Wiring To Valve

III SPECIFICATIONS

General Specs

- Input Power — 120/240 VAC (50/60Hz.)
440/480 VAC (50/60 Hz.)
500 VA max. Power
- Electrical Load — 5 AMPS MAX at 120/240 VAC
1 AMP MAX at 440/480 VAC
- Fused Output Power — 24 VDC – 5 AMPS MAX
120 VAC – 3 AMPS MAX
- Panel Dimensions — 24" X 30" (610 mm x 762 mm)
- Panel Weight — Approx. 100 lbs. (45 kg)
- Operating Temperature Range — +14°F to +158°F (-10°C to +70°C)

UL and ATEX Product Marking (if ordered)

- UL Inspected and Labeled (Class 1, Division 2)
- CE ATEX certification available upon advanced request

IV OPERATING INSTRUCTIONS

This control panel has one ON/OFF 2-position selector switch. Move it to the ON position so the pilot light illuminates, showing the panel is now powered up, and ready for associated monitor operation.

V MAINTENANCE

Monthly Inspection and Maintenance

1. Check the indicator light and replace bulb if it's not operable.
2. Confirm that all terminal blocks and connections are properly taut to 4.5 – 7.1 in-lbs. (0.508 – 0.802 Nm).
3. Check for proper operation of the system overall, if there are problems with the system please refer to the Troubleshooting section for help.

VI TROUBLESHOOTING

A. If Panel will not power up:
   1. Check the incoming supply power, and if it's the proper power requirement for the system.
   2. Check to make sure the main power transformer is wired correctly.
   3. Check fuses in panel to confirm they are good. If fuses are blown, replace them with same or equivalent fuse.
      a. Check for causes in the interconnect wiring and connections.
      b. Verify that the OCP is not trying to activate the monitor motor functions
      c. If nothing is found consult with your Elkhart Brass representative.
   4. Check panel power switch to make sure it is in the "Power On" position.
   5. Check power supply to confirm there is 120 VAC running to it.

B. If Pilot Light is not on when panel has power:
   1. Check the light bulb and replace if it is burnt out.

C. Function not working correctly:
   1. Check to see if there is a loose connection at the terminal blocks or contact blocks. Make sure all screw terminations are properly tightened to 4.5 – 7.1 in-lbs. (0.508 – 0.802 Nm)
   2. Check relay for actuation. If bad, replace relay with new working relay.

Any problems that cannot be fixed/solved with this troubleshooting guide should be taken to your Elkhart Brass Representative to get further information.

WARNING: Do not attempt to disconnect or work on any electrical equipment in this system unless power is removed or the area is known to be non-hazardous.

VII MOUNTING DIMENSIONS

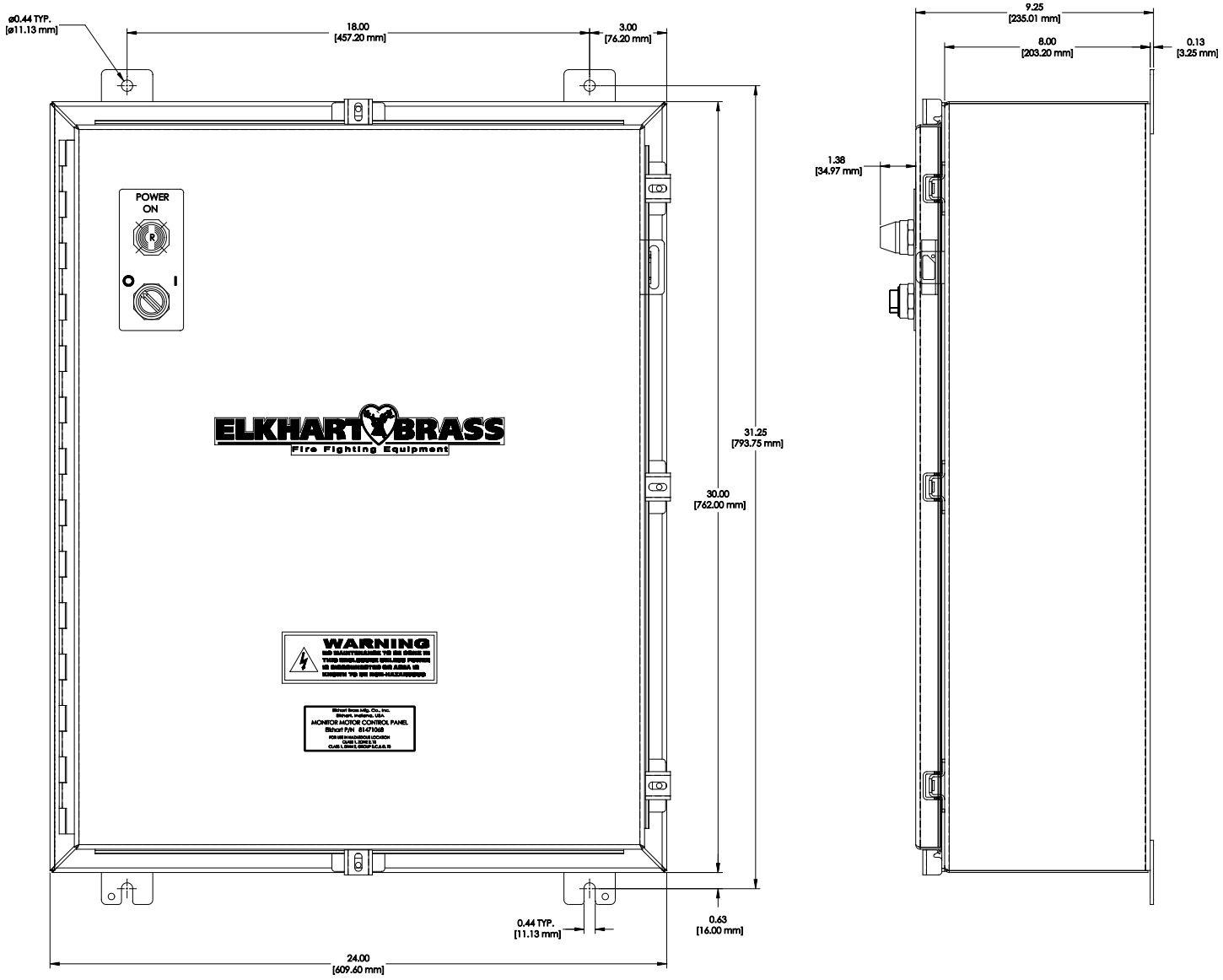


Figure 6: MMCP Mounting Dimensions

VIII MOUNTING DIMENSIONS

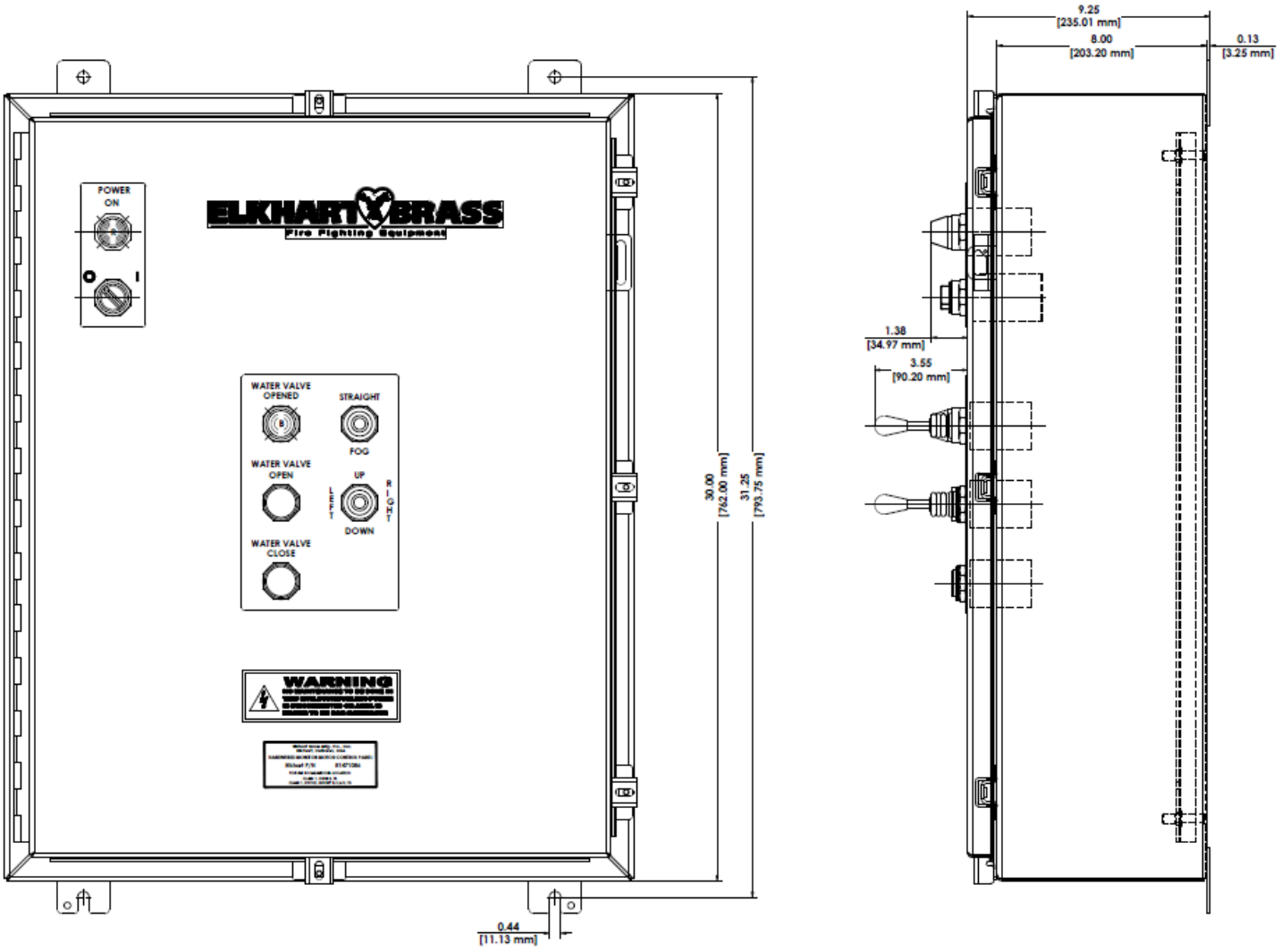


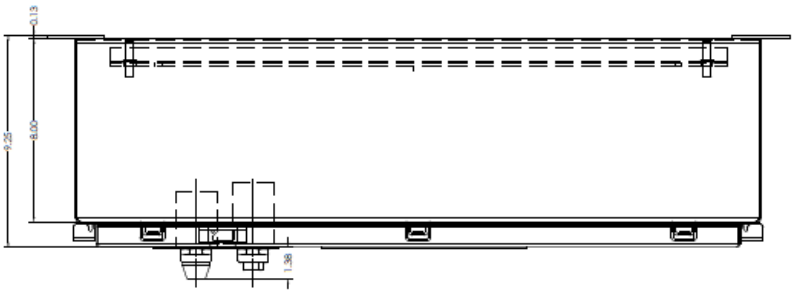
Figure 7: HMMCP Mounting Dimensions

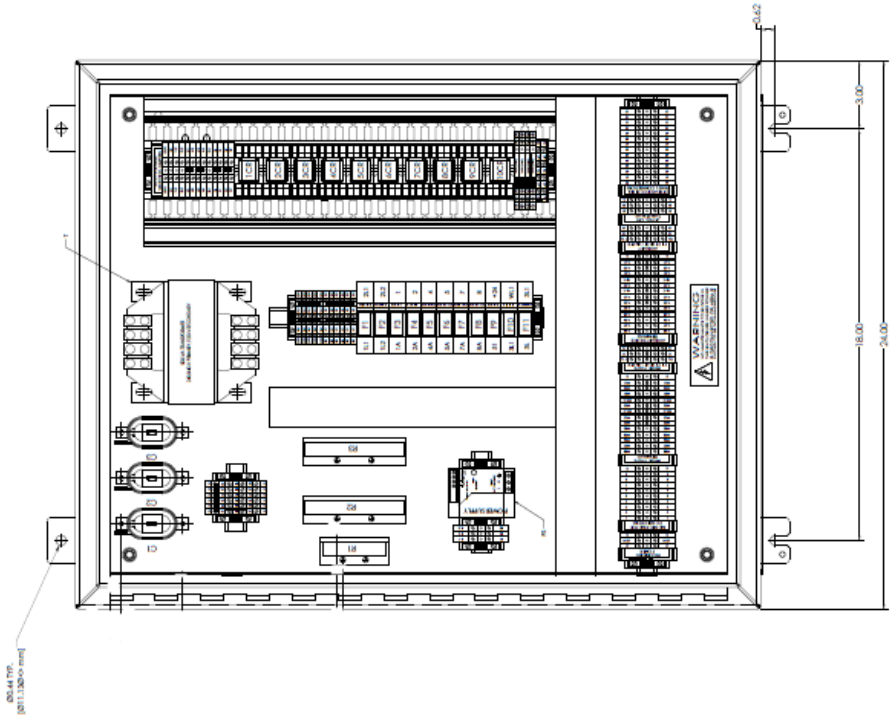
IX Spare Parts List/Diagram

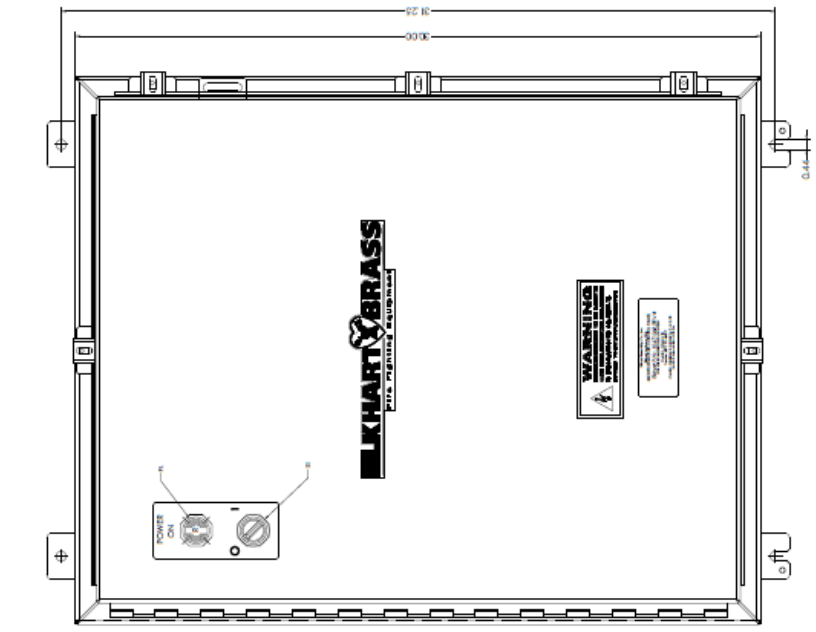
Refer to diagrams on the following pages for part locations.

	Part No.	Description
C1	28244000	Capacitor - Nozzle Motor (3.0 Mfd)
C2	28247000	Capacitor - Monitor Vertical Motor (12.5 Mfd)
C3	28245000	Capacitor - Monitor Horizontal Motor (10.0 Mfd)
F1,F2	59079130	Fuse - Class CC (5-Amp Time-Delay) Rejection Type
F3,F4	32233050	Fuse - Class CC (1A Fast Acting) Rejection Type
F5,F6, F7,F8	32233040	Fuse - Class CC (1.5A Fast Acting) Rejection Type
F9	32233160	Fuse - Class CC (5A Fast Acting) Rejection Type
F10	32233130	Fuse - Class CC (3A Fast Acting) Rejection Type
F11	IN000068	Fuse, Class CC (6.25 A Time Delay)
PL	18455000	Pilot Light Bulb, White LED, Universal
1CR-10CR	59078000	Relay - 4PDT (4 FORM C) 24-VDC
13CR	67296000	Relay - Terminal Block, 24VDC
14CR	67297000	Relay - Terminal Block, 120VAC
R2,R3	IN000088	Resistor - Monitor (100-Ohm, 114-Watt)
R1	IN000086	Resistor - Monitor (300-Ohm, 50-Watt)
1CR-10CR	65887000	Suppressor - 24VDC Relay
D1, D2	67298000	Terminal Block, Dioded, Reverse Bias
PS	52955000	Power Supply 24VDC - 4.2 Amps (Single Phase Input)
PL	IN000002	Pilot Light with Red Lens, NEMA 4X, Class 1, Division 2, 12-130 V DC/AC
S1	IN000065	2-Position ON/OFF Selector Switch w/ 2 N.O., 2 N.C. Sealed Contacts, NEMA 4X, Class 1, Division 2
T	52908000	500 VA Transformer, 220/440 VAC, 50 Hz. OR 240/480, 60 Hz. PRIMARY - 110 VAC 50 Hz. OR 120 VAC, 60 Hz. SECONDARY
	44435000	Pilot Light Lens, Red
	44435040	Pilot Light Lens, Blue (HMMCP's Only)

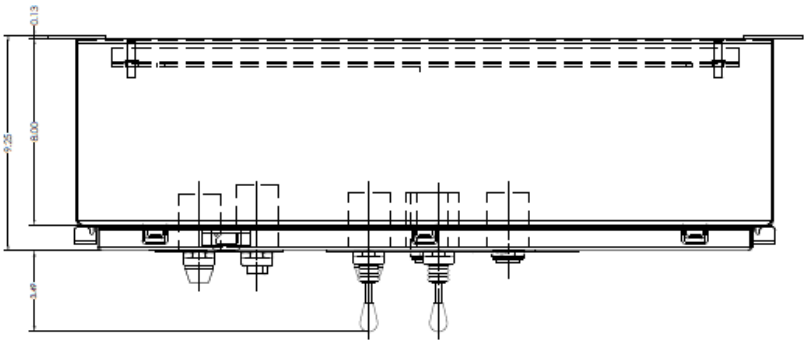
MMCP Spare Parts Diagram and Internal View

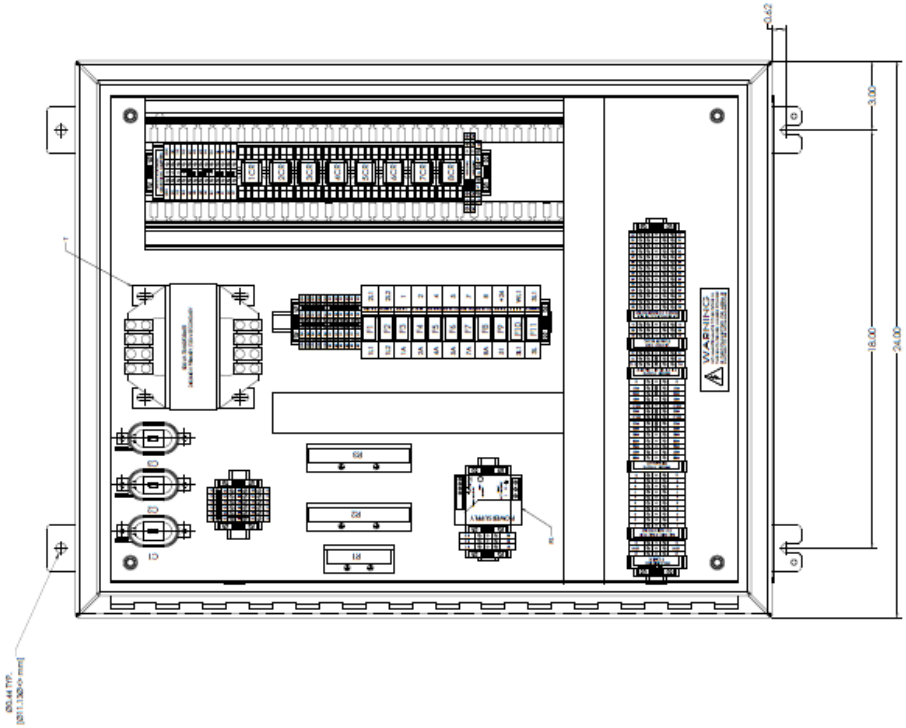


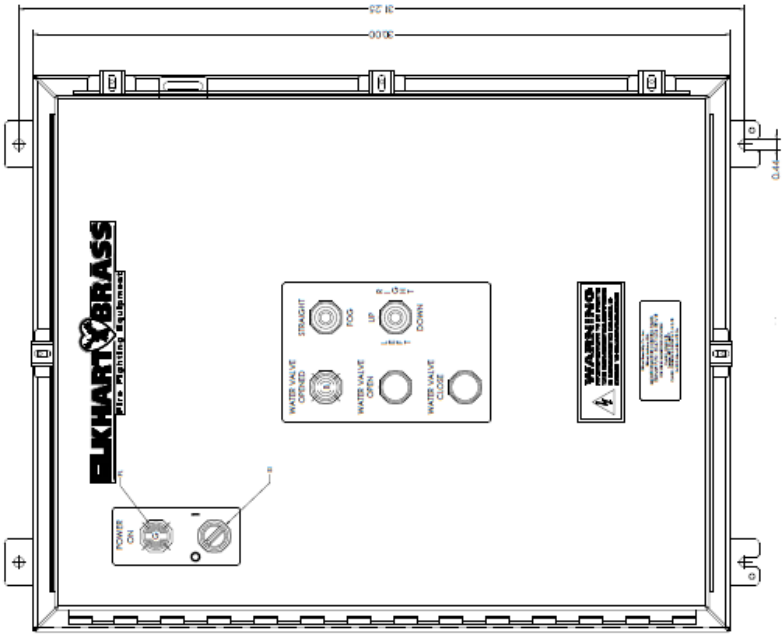




HMMCP Spare Parts Diagram and Internal View







NOTES:

X. ENGINEERING CHANGE REVSION EXPLANATIONS

Revision A – ECN 150211

a. Section I
    i. Removed part number 81471071 from list
b. Section II
    i. Removed note about junction box provided with 1 ½" NPT conduit hub
    ii. Revised Main Power Panel table
    iii. Updated wiring diagram, Figure 5
c. Section VII
    i. Update drawing of MMCP

Revision B – ECN 160806

- Title Page
    - Added MMCP and HMMCP Part Numbers
- Section I
    - Added HMMCP to Overview.
    - Added information about special order part numbers for different voltages.
- Section IX
    - Added Spare Parts Diagrams and List for MMCP's and HMMCP's

Revision C – ECN 190214

- Spare Parts, Interconnect Wiring, Fuse and Jumper requirements
    - Updated to match new generation of MMCP/HMMCP