
INSTRUCTION MANUAL

Model No. : MP300-60-480C

Serial No. : MA-05N19170-11



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MANUAL FOR MODEL MP300 to MP700 ELECTRIC MOTOR DRIVEN FIRE PUMP CONTROLLERS

Starting Serial No. "MA"

This manual provides General Information, Installation, Operation, Maintenance and System Set-Up Information for METRON Model Model MP300 through MP700 Electric Motor Driven Fire Pump Controllers.

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PART I: GENERAL INFORMATION

The basic function of the model MP Fire Pump Controller for electric motor driven fire pumps is to automatically start the fire pump electric motor upon a drop in pressure in the water main, or from a number of other demand signals. This controller provides alarm and/or alarm shutdown protection for various motor and power failures. Stopping of the motor after the demand period is over may be either manual or automatic. This controller also includes an automatic weekly test starting feature.

PART II: FUNCTIONS

Equipment is provided in the Controller to provide the following functions:

- A. Automatic Starting From:
 - a. Drop in water line pressure
 - b. Operation of optional remote start switches, such as remote start switch, deluge valve switch, fire alarm switch, etc.
 - c. Weekly test timer
- B. OID – Operator Interface Device - Provided for display of alarm functions, system pressure, 3 phase AC volts, 3 phase motor current and alarm conditions, etc. Includes buttons for Auto, Test, Manual and Off. Also features a 4 line by 20 character LCD for display
- C. Alarms and Signal Lights - Twelve (12) Standard lights are provided to give visual signals for; **"Power On"**, **"System Fault"**, **"Phase Failure"**, **"Phase Reversal"**, **"Pump Running"**, **"Pump Failed to Start"**, **"Motor Overload"**, **"Low Pressure"**, **"Motor Lockout"**, **"Local Start"**, **"Remote Start"** and **"Deluge Start"**. When a transfer switch is supplied, additional lights are provided for **"Transfer Switch in Normal"**, **"Transfer Switch in Emergency"** and **"Emergency Iso Sw Open"**. In addition the mode buttons have LED's on the button indicating **"Auto"**, **"Manual"**, **"Test"**, or **"Off"** mode. 12 additional lights (9 when a transfer switch is supplied), configurable by the factory, are provided for **"Pump Room Alarms"**. An audible alarm horn is mounted on the front of the cubicle for sounding in the event of failure. Terminals are provided for remote failure indication of the following:
 - "Power Available"**
 - "Phase Reversal"**
 - "Pump Running"**
 - "Controller Not in Auto"**
- D. A data logger is provided as standard to record system pressure along with numerous alarm conditions and system events. The data can be displayed on the OID or can be downloaded to a PC through the RS232, RS485 or USB port provided on the main system board or printed to the internal printer (if supplied).
- E. A weekly test timer is supplied to automatically start the pump any set day of the week, at a set time of day, and a preset run time. See System Config Screen 106.
- F. **"Start"** Push button – A green push button is provided on the exterior of the cabinet to manually start the pump. When this button is pressed, the motor will continue to run until it is stopped using the Stop push button.
- G. **"Stop"** Push button - A red pushbutton is provided on the exterior of the cabinet to stop the pump in Automatic only after starting causes have returned to normal. This returns the controller to the automatic position. In the Manual mode this will also stop the pump after starting via the Start push button.
- H. Cabinet - A heavy gauge steel cubicle encloses the controller.

- G. **Series MP420 Part-Winding Start:** There are two contactors for part-winding start. The start contactor will close immediately on demand and the other will close after a preset transition time delay (See Screen #314). Full voltage will be present at the output of both contactors.
- H. **Series MP430 Wye-Delta Open Transition:** There are three contactors for wye-delta starting. The start contactor and the shorting contactor will close immediately on demand. This connects the motor leads in the wye configuration. After the transition time delay the shorting contactor opens and the run contactor closes, thus connecting the motor windings in the delta configuration. The motor will now run at full speed and deliver rated horsepower to the load.
- I. **Series MP435 Wye-Delta Closed Transition:** The operation of the Series MP435 is almost the same as the Series MP430. There is an additional resistor contactor and a set of transition resistors which provides power to the motor windings during transition from the wye connection to the delta connection. After the transition time delay this contactor closes, which connects the resistors to the motor windings. After the resistor contactor closes the shorting contactor opens, which in turn allows the run contactor to close, thus connecting the motor windings in the delta configuration. The motor will now run at full speed and deliver rated horsepower to the load.
- J. **Series MP450 Autotransformer Start:** There are three contactors for autotransformer starting. The start (autotransformer) contactor and the autotransformer neutral contactor will close immediately on demand. This connects the motor leads through the autotransformer to reduce the voltage to the motor. After the transition time delay the run contactor closes and then the start contactor and autotransformer neutral contactor open, thus connecting the motor to full voltage. The motor will now run at full speed and deliver rated horsepower to the load.
- K. **Series MP700 Solid State Soft Start:** There are two contactors for solid state soft starting. The solid state starter line contactor will close immediately on demand and ramp the motor up to speed depending on the solid state starter configuration parameters. After the transition time delay the run contactor closes and bypasses the solid state starter, thus connecting the motor to full voltage. The motor will now run at full speed and deliver rated horsepower to the load. When the stop command is received and the controller is set up for the ramp stop option (Screen #106) the motor will ramp down in speed over a fixed time delay (Screen #107) until it stops.

PART IV: INSTALLATION AND TEST PROCEDURE

A. INSTALLATION

The Fire Pump Controller has been assembled and wired at the factory in accordance with the highest workmanship standards. All circuits and functions have been thoroughly tested to assure correct operation when properly installed. The installer should be completely familiar with the external hookup of the pump junction box to the terminal bar in the Controller. All local electric codes should be used for proper installation, wiring and grounding of the controller prior to startup.

A weekly test drain solenoid valve may be provided to relieve water pressure to the pressure transducer thus initiating the start sequence. This test simulates an actual start demand. Since the Controller operates the drain valve only momentarily, a small amount of water is drained off. The water pressure sensing line to the Controller from the pump must be thoroughly flushed before connection to the Controller in order to remove chips, particles, or other matter, that could enter the plumbing components in the Controller.

Controllers configured with "Automatic Stop" enabled may be changed to "Manual" stop by disabling this feature in System Config Screen 104. If deluge valve switches are to be used for starting, enable the Deluge Valve Option in Config Screen 121 and connect the remote normally closed switch to terminals 74 and 111.

B. TEST PROCEDURE

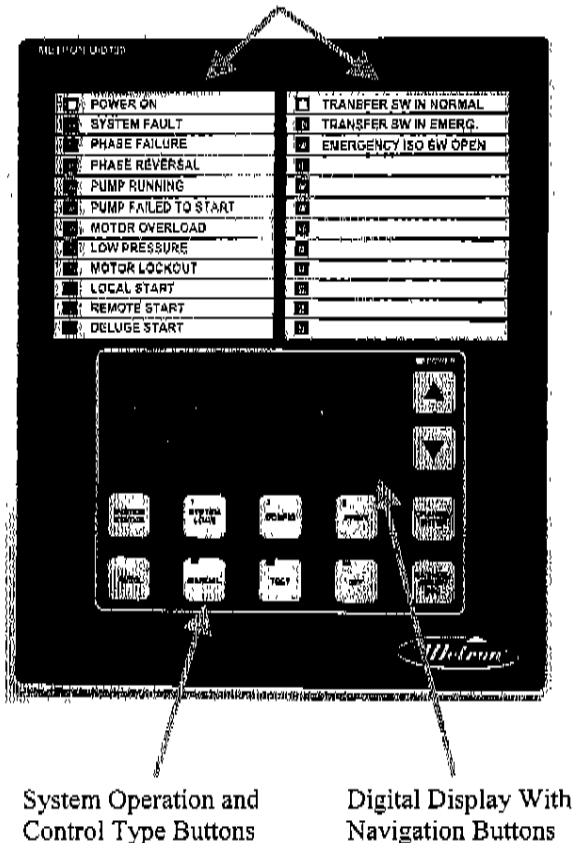
All of the following tests should be made on each unit after installation. If each test is satisfactory, the operator may place the control switch in "Auto" mode and depend upon the panel operating properly when required. Also, any one or all of these tests may be carried out at any time after installation, if so desired. **NOTE: If the Supervisory Power Failure Start Option has been Enabled (Screen #116) and 115 Volts A.C. is not connected to Controller, the "System Fault" light will illuminate and the controller will start automatically after a time delay. The 115VAC must be turned on to prevent the pump from starting.**

- g. **AN ADJUSTABLE SEQUENTIAL START TIMER IS SUPPLIED FOR MULTIPLE PUMP INSTALLATION:** Normally, the leading pump Controller will not have a delay timer and will commence starting of the pump immediately upon operation of a demand signal (other than Power Failure which is time delayed). The subsequent Controllers will have a time delay which is adjustable from 0 to 999 seconds. Each time delay should be set with progressively longer times on each subsequent pump. The recommended time interval is ten (10) to fifteen (15) seconds. This may be extended or shortened as required by the local authorities having jurisdiction.
- h. **PUMP ROOM ALARMS:** Field terminals may be provided for various inputs from pump room alarms. These alarms include: Low Pump Room Temperature, Reservoir Low, Reservoir Empty, Low Suction Pressure, Relief Valve Discharge and/or Flow Meter On etc. A maximum of twelve (12) (or nine (9) if a transfer switch is supplied), pump room alarms is available. Each auxiliary alarm is configurable so that the alarm horn may or may not sound and the light will come on when the alarm sensor contacts close. These pump room alarms can be silenced with the "Silence" push button on the OID if they have been configured as silenceable.

PART V: OPERATOR INTERFACE DEVICE (OID) USE AND NAVIGATION

The Operator Interface Device (OID) provides visual indication of the alarms, status of system parameters, and an interface to change set points to configure the controller to operate appropriately for various installation requirements.

Labeled LED
Annunciator



System Operation and
Control Type Buttons

Digital Display With
Navigation Buttons

Common Tasks Performed Using The OID

Silencing Horn: If a horn is sounding and the alarm is silenceable, a quick press of the [SILENCE/RESET/ESC] will silence the horn (less than 1 second press).

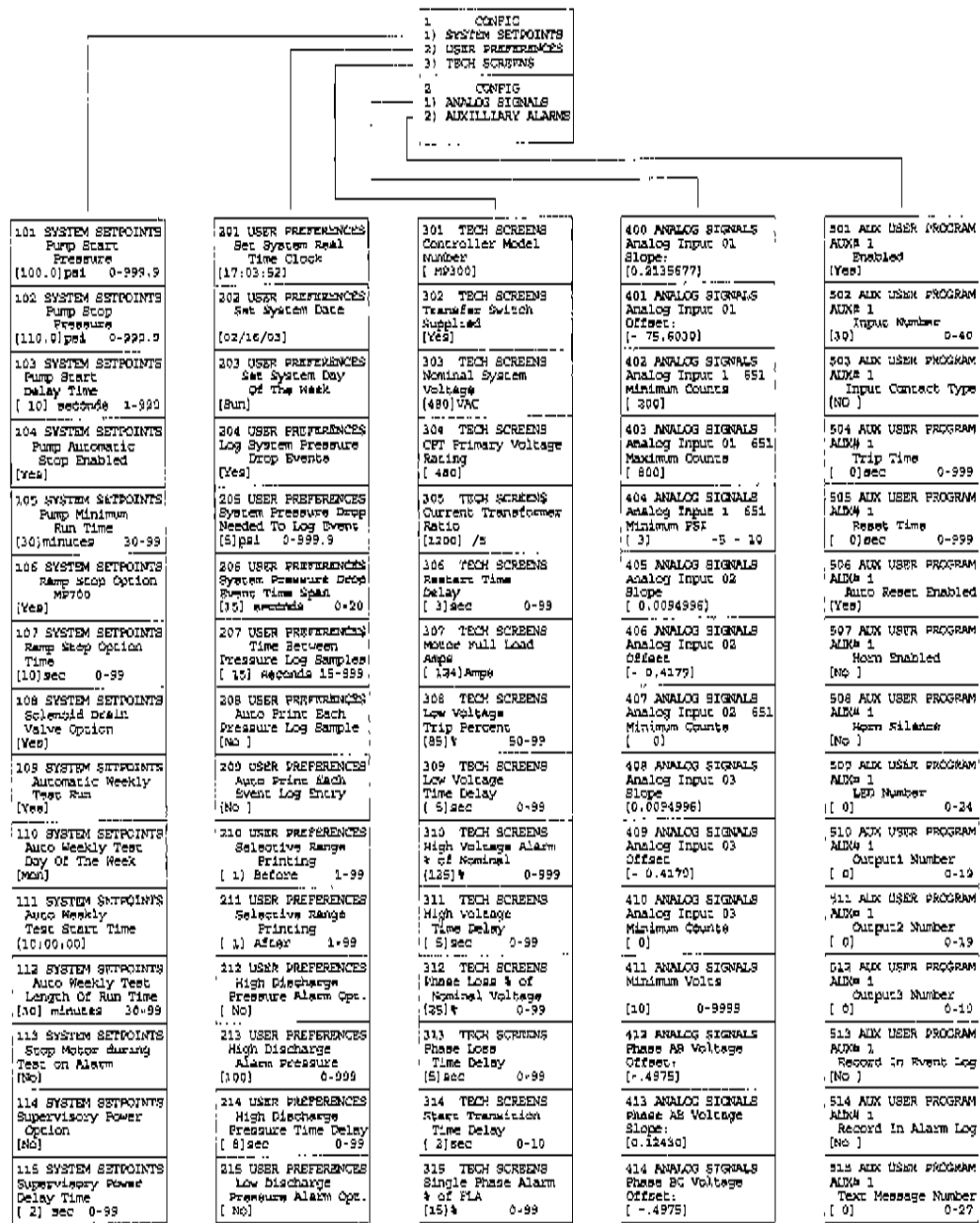
Resetting Alarms: If the alarm condition has cleared, press and hold the [SILENCE/RESET/ESC] button 2 to 5 seconds to reset alarms.

Operating Mode Change: The operational mode that the controller is in can be changed by pressing the [AUTO] [MANUAL] or [OFF] buttons. An LED will illuminate on the appropriate button indicating the mode of operation the controller is in.

Test Mode: When controller is in Auto Mode, pressing and holding the [TEST] button for two or more seconds will open the pressure drain solenoid thus dropping the pressure, which causes the controller to start the pump. Pressing and releasing the [TEST] button in Manual Mode directly controls the opening and closing of the drain solenoid. The pump will not automatically start when in Manual Mode.

Lamp Test: To illuminate and check all the OID LED's and the horn, press and hold the [SILENCE/RESET/ESC] button 5 or more seconds or until all the lights turn on.

OID Screen Map (continued)



CONFIGURATION: The [CONFIG] button displays the Config menu which groups the different types of set points that configure the system to operate in the desired manner. Use the [UP] and [DOWN] buttons to scroll between the two menu screens. Buttons with numbers on them can be used to enter the selected configuration screen group. See the System Setpoint Definitions section for descriptions on the functionality of each set point.

<p>1 SYSTEM STATUS B1 PRES STRT AB 460V 110 100 EC 461V psi psi AC 460V</p>	<p>SYSTEM LOGS 1) Alarm Log 2) Event Log 3) Pressure Log</p>	<p>1 CONFIG 1) SYSTEM SETPOINTS 2) USER PREFERENCES 3) TECH SCREENS</p>
<p>2 SYSTEM STATUS Phase A 125 Amps Phase B 124 Amps Phase C 125 Amps</p>	<p># 1 ALARM LOG Pump Failed To Start Alarm Occurred 20/16/04 07:32:15</p>	<p>2 CONFIG 1) ANALOG SIGNALS 2) AUXILLIARY ALARMS 3) COMM PORTS</p>
<p>3 SYSTEM STATUS Pump Countdown Tmr 0sec Until Start 0min Until Stop</p>	<p># 1 EVENT LOG System in Off Mode Occurred 10/16/04 13:15:15</p>	<p>101 SYSTEM SETPOINTS Pump Start Pressure [100.0]psi 0-999.9</p>
<p>4 SYSTEM STATUS Pump Run Hrs: 5.3 # Of Starts: 8 Mon 10/17/04 17:53:26</p>	<p>PRESSURE LOG 10/16/04 17:52:45 112 psi Skip Rate: [EACH]</p>	<p>201 USER PREFERENCES Set System Real Time Clock [17:03:52]</p>
<p>5 SYSTEM STATUS Controller Power On Time 10.5 Hrs 10/15/04 17:53:26</p>	<p>See the following page for an example of scrolling through the Alarm, Event, and Pressure Logs</p>	<p>301 TECH SCREENS Controller Model Number [MP300]</p>
<p>6 SYSTEM STATUS Firmware Ver SV 1.1 Commissioned Date: 11/15/02</p>		<p>401 ANALOG SIGNALS Analog Input 01 Slope: [0.21346771]</p>
		<p>501 AUX USER PROGRAMS AUX# 1 Enabled [Yes]</p>

Printing System Log Data: The following applies if a printer has been installed or a PC is connected to the RS232, RS485 or USB com ports using the appropriate cable. When the [PRINT] button is pressed when looking at data in one of the three logs, a menu for what is to be printed is displayed. Pressing [1] prints just the alarm/event/pressure reading currently being displayed. Pressing [2] prints a range of data before and after the currently displayed alarm/event/pressure reading currently displayed. The range can be changed in the User Preferences setpoints 210 and 211.

```
#1  EVENT LOG
Superv Power Failure
Alarm Occurred On
10/16/04 07:32:15
```

```
PRINT OPTIONS
1) PRINT THIS EVENT
2) PRINT EVENT RANGE
10 BEFORE,10 AFTER
```

Typical Event/Alarm Log Message Printout

```
#1  EVENT LOG
AC Power Restored
Occurred On
11/16/02 07:32:15
#2  EVENT LOG
AC Power Restored
Occurred On
11/16/02 07:32:15
```

```
#1  EVENT LOG
Superv Power Failure
Alarm Occurred On
10/16/04 07:32:15
```

```
#1  EVENT DETAILS
Superv Power Failure
Alarm Occurred On
10/16/04 07:32:15
```

```
#1  EVENT DETAILS
AB V 460      A  32
BC V 461      B  32
AC V 460      C  33
```

```
# 1  EVENT DETAILS
Pump Running: Yes
Pressure: 118 psi
```

```
PRINT OPTIONS
1) PRINT THIS EVENT
2) PRINT EVENT RANGE
10 BEFORE,10 AFTER
```

Typical Event/Alarm Log Details Printout

```
#1  EVENT DETAILS
AC Power Restored
Occurred On
11/16/02 07:32:15
AB V 460      A  32
BC V 461      B  32
AC V 460      C  33
Pump Running:Yes
Pressure: 118 psi
#2  EVENT DETAILS
AC Power Restored
Occurred On
11/16/02 07:32:15
AB V 460      A  32
BC V 461      B  32
AC V 460      C  33
Pump Running:Yes
Pressure: 118psi
```

```
PRESSURE LOG
01/01/03 17:52:45
600 psi
Skip Rate: [EACH ]
```

```
PRESSURE LOG
01/01/03 17:52:30
599 psi
Skip Rate: [EACH 1
```

```
PRINT OPTIONS
1) PRINT THIS ENTRY
2) PRINT ENTRY RANGE
10 BEFORE,10 AFTER
```

Typical Pressure Log Printout

```
PRESSURE LOG
01/01/03 17:52:45
600 psi
01/01/03 17:52:30
599 psi
01/01/03 17:52:15
599 psi
01/01/03 17:52:00
601 psi
```

Printing Configuration Setpoints: The following applies if a printer has been installed or a PC is connected to the RS232 com port using a null modem cable. When the [PRINT] button is pressed while looking at a configuration setpoint screen, a menu for what is to be printed is displayed. Pressing [1] prints just the set point screen currently being displayed. Pressing [2] prints all the set points in the section of set points currently displayed. Pressing [3] prints all the set point screens of all five set point sections.

NOTE: when printing all set points, only Aux#01 User Programs 501 through 515 will be printed. To print any of the remaining eleven aux alarm settings, press [PRINT] when inside the appropriate Aux alarm and select [2] for "2) PRINT 500 SETPTS." The 501 through 515 Aux User Programs for that aux alarm will be printed.

```
101 SYSTEM SETPOINTS
    Pump Start
    Pressure
[ 60] psi      0-999
```



```
PRINT OPTIONS
1) PRINT THIS SETPT
2) PRINT 100 SETPTS
3) PRINT ALL SETPTS
```

Typical Configuration Setpoint Printout

```
101 SYSTEM SETPOINTS
    Pump Start
    Pressure
[ 60] psi      0-999

102 SYSTEM SETPOINTS
    Pump Stop
    Pressure
[ 90] psi      0-999

103 SYSTEM SETPOINTS
    Pump Start Delay
    Time
[ 10] seconds  0-999
    "          "
    "          "
    "          "

509 AUX USER PROGRAMS
Aux Alarm #01
2nd Control Output
[ 0]          12-25

510 AUX USER PROGRAMS
Aux Alarm #01
3rd Control Output
[ 0]          12-25
```

<p>112 SYSTEM SETPOINTS Auto Weekly Test Length of Run Time [10] minutes 0-99</p>	<p>The length of time the pump will run when started on automatic weekly test. Must be set for a minimum of 10 minutes per NFPA 20..</p>
<p>113 SYSTEM SETPOINTS Stop Motor Duing Test on Alarm. [Yes]</p>	<p>When this feature is enabled, the controller will stop the pump during the automatically weekly test or the manual test mode should any alarm occur, such as motor overload.</p>
<p>114 SYSTEM SETPOINTS Supervisory Power Option [Yes]</p>	<p>When this option is enabled, the controller will monitor a separate 120VAC power source for availability and alarm on it's failure.</p>
<p>115 SYSTEM SETPOINTS Supervisory Power Delay Time [15] seconds 0-999</p>	<p>The amount of time the controller will wait until sounding the alarm on loss of the 120VAC Supervisory power source. This is used to override momentary outages.</p>
<p>116 SYSTEM SETPOINTS Supervisory Power Failure Startup [No]</p>	<p>When this option is enabled along with the Supvisory Power Option in screen 114, the controller will start the pump on loss of the Supervisory Power after the delays set in screen 117.</p>
<p>117 SYSTEM SETPOINTS Supervisory Power Start Time Delay [1]minutes 0-999</p>	<p>The amount of time the controller will delay starting of the pump on loss of the 120VAC Supervisory power source.</p>
<p>118 SYSTEM SETPOINTS Pressure Transducer Failure Pump Start [Yes]</p>	<p>If enabled, the controller will start the pump if a failure of the pressure transducer is detected.</p>
<p>119 SYSTEM SETPOINTS Shutdown on Low Intake Pressure/Lvl [No]</p>	<p>If enabled, the controller will stop the pump when a normally closed contact closes indicating low suction pressure or low reservoir/tank level.</p>
<p>120 SYSTEM SETPOINTS Shutdown on Low Intake Trip Time [5]seconds 0-99</p>	<p>The time delay that the Low Intake condition must be active before pump will stop on the condition.</p>
<p>121 SYSTEM SETPOINTS Low Intake Shutdown Auto Reset [No]</p>	<p>If enabled, the pump will restart if there is a demand, after the Low Intake condition is cleared. If set to No, the Reset button must be pressed before the pump will restart.</p>
<p>122 SYSTEM SETPOINTS Low Intake Shutdown Auto Reset Time [5]seconds 0-99</p>	<p>The time delay that the Low Intake condition must be cleared before the pump will be allowed to be restarted automatically. This prevents cycling of the pump on and off.</p>
<p>123 SYSTEM SETPOINTS Pressure Switch Pump Start [No]</p>	<p>When this is set to Yes and a mechanical pressure switch is connected to the field terminals, the pump will start when this switch closes.</p>

Configure User Preferences 201 USER PREFERENCES Set System Real Time Clock [17:03:52]	Set the current controller clock (24 hour clock).
202 USER PREFERENCES Set System Date [12/31/99]	Set the current controller date.
203 USER PREFERENCES Set System Day Of The Week [Monday]	Set the local day of the week.
204 USER PREFERENCES Log System Pressure Drop Events [Yes]	When this feature is enabled, the controller will log the current system pressure in the event log when system pressure has dropped below the set pressure value. Typically set to "No" as not to needlessly fill up the event log.
205 USER PREFERENCES System Pressure Drop Needed to Log Event [60.0]psi 0-999	The desired pressure setting that will cause a log of system pressure in addition to the normal periodic logging of system pressure.
206 USER PREFERENCES System Pressure Drop Event Time Span [5] seconds 0-20	The amount of time the pressure must be above the pressure setting in screen 205 before the Pressure Drop Event is logged as being cleared.
207 USER PREFERENCES Time Between Pressure Log Samples [15] seconds 15-999	The frequency at which system pressure is automatically logged. Normally set to 15 seconds. Lower values will increase the number of logged pressures and fill up the memory in a shorter period of time.
208 USER PREFERENCES Auto Print Each Pressure Log Sample [No]	When set to Yes, each pressure log entry will be printed as it occurs. This should be set to No to save printer paper and wear on the printer.
209 USER PREFERENCES Auto Print Each Event Log Entry [No]	When set to Yes, each event log entry will be printed as it occurs. This should be set to No to save printer paper and wear on the printer.
210 USER PREFERENCES Selective Range Printing [1] Before 1-99	This setting will determine the start point of print range of the pressure, alarm, or event log based on which log entry is currently being viewed.
211 USER PREFERENCES Selective Range Printing [1] After 1-99	This setting will determine the stop point of print range of the pressure, alarm, or event log based on which log entry is currently being viewed.
212 USER PREFERENCES High Discharge Pressure Alarm Option [No]	This setting is used to monitor the system pressure and sound an alarm if it rises above a preset pressure.

PART VIII: ALARM AND EVENT LOG MESSAGES

The following is a sample of the possible messages that could be recorded within either the alarm or event logs.

Phase Failure Alarm Occurred/ Alarm Cleared	Phase Failure declared when all three phases of the incoming power is present not within the limits set in the configuration screens.
Pump Failed to Start Alarm Occurred Start Alarm Cleared	Controller attempted to start pump in Auto mode but the pump failed to start (ie a pump run signal was never received). Controller must be put in OFF mode to reset this alarm.
Pressure Transducer Alarm Occurred/ Alarm Cleared	The pressure signal from the pressure transducer has fallen outside normal operating range potentially indicating a problem with the transducer or its wiring.
Stop pushbutton Pressed in	An operator pressed the Stop pushbutton.
Pump Started / running Stopped	Pump was started or stopped in either Auto or Manual mode.
Motor Lockout Sig Occurred Cleared	A remote motor lockout signal was received or cleared.
Remote Start Sig Occurred Cleared	A remote start signal was received or cleared.
System in Auto Mode Occurred	System was placed in Auto mode.
System in Off Mode Occurred	System was placed in Off mode.
System in Manual Mode Occurred	System was placed in Manual mode.
Auto Test Start Occurred	An automatic pump test sequence was started while in Auto mode by either the weekly program clock function or a user pressing the [TEST] button for 2 or more seconds.
Alarm Reset Button Occurred	A user did an alarm reset by pressing and holding the [SILENCE/RESET/ESC] button for 2 to 5 seconds.
Low Pressure Start Occurred Cleared	A low pressure start was attempted because of a low pressure reading from the transducer or optional pressure switch while in Auto mode.
Low Press Condition Occurred Cleared	System pressure dropped below the start pressure or the optional pressure switch indicates a low pressure condition. This can be logged in all modes of operation.
Deluge Start Occurred Cleared	A deluge start signal was received while in Auto mode.
Controller Reboot Occurred	Power was restored to the microprocessor.
Pressure Drop Occurred Cleared	If setpoint #204 is set to yes, this event gets recorded when the system pressure drops below the setting in setpoint #205.
Low Intake Pressure Shutdown Occurred Shutdown Cleared	If the low intake shutdown option is enabled in setpoint #119, a low suction signal will stop the pump.
Auxiliary Alarm Occurred Cleared	Indicates one of the aux alarms occurred as programmed in the user programs and was set to record in the event or alarm log but the text message assigned was 0. See Aux Alarm Text List Messages below for possible auxiliary alarm messages.

APPENDIX 1 - PRINTER OPERATION

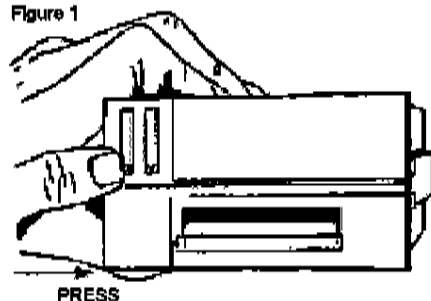
Operator Information

There are two buttons on the front panel of the printer. One button operates the front door latch, the other controls the paper feed.

Door Latch:

With the printer mounted in data mode attitude (paper emerging downwards) so that the two control buttons are at upper left, to open the front door of the printer, press the door latch (the outermost of the two buttons) sideways towards the other button, using thumb or forefinger (see Figure 1). This will release the latch and the door can be swung outwards to expose the paper roll.

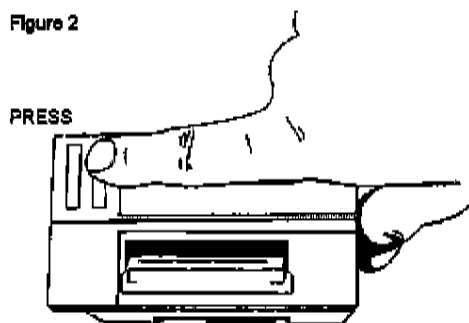
Figure 1



Paper Feed Button.

With the printer in data mode attitude press the top part of the innermost button to activate paper feed (see Figure 2). This will continue for as long as the button is held down.

Figure 2

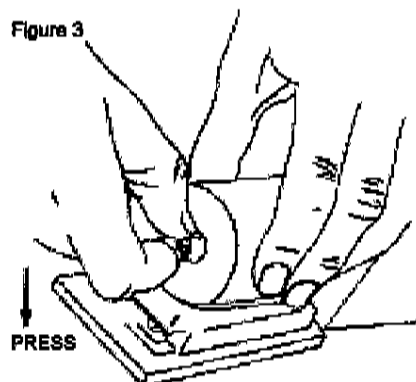


Paper Roll Replacement:

Open the printer door as described above and swing the door open to expose the paper roll. If any paper remains in the printer, tear the end off against the paper tear bar and carefully pull the remaining paper backwards, from the rear of the mechanism mounting chassis, until the free end emerges. Press the paper roll retaining button inwards using the thumb and forefinger (see figure 3) and remove the empty roll. Take a new roll of paper, and separate the end from the

rest of the roll. Remove any damaged or gummed part of the paper, and cut the free end squarely with a pair of scissors or a knife, leaving a clean straight edge to present to the printer mechanism.

Figure 3



Thread the new roll past the retention button onto the spindle with the paper unspooling in an anticlockwise direction when viewed from the open end. (See Figure 4). Press the paper feed actuator arm (at upper left in data mode) until the mechanism grips the paper and pulls it through to the front of the printer. (See Figure 5).

Turn the paper roll so that any loose turns are

Figure 4

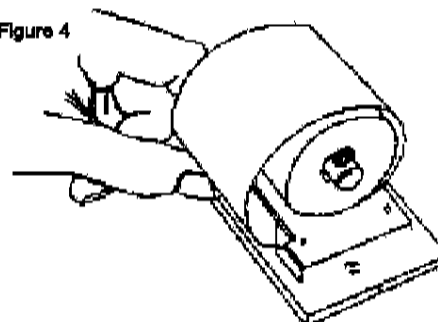
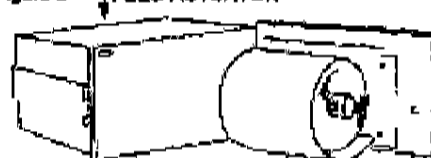


Figure 5 FEED ACTUATOR

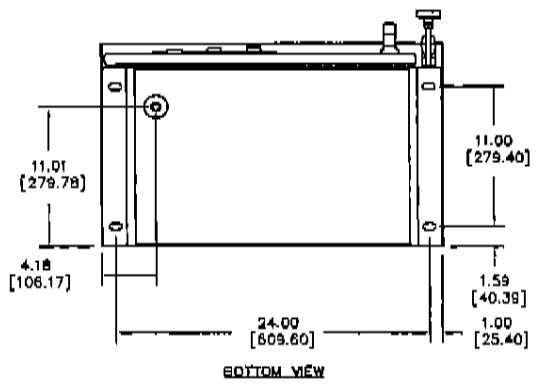
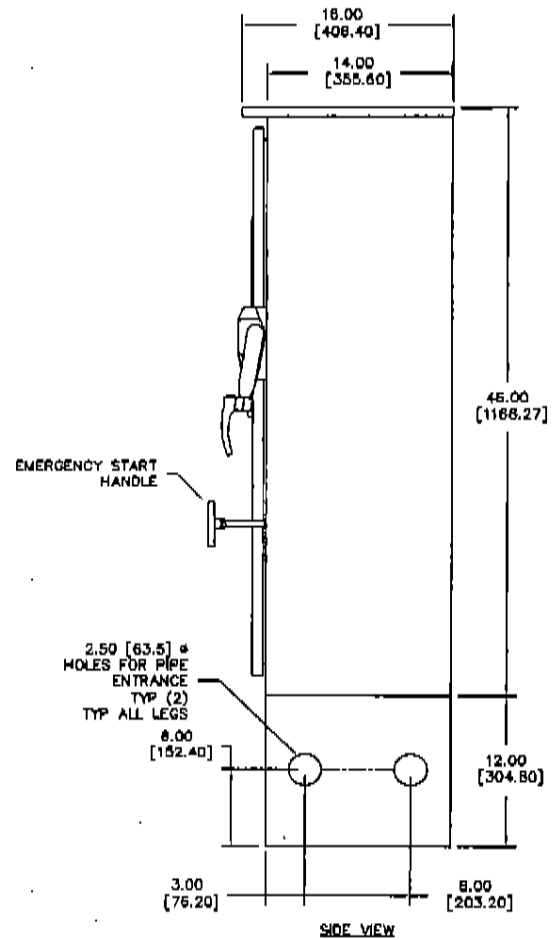
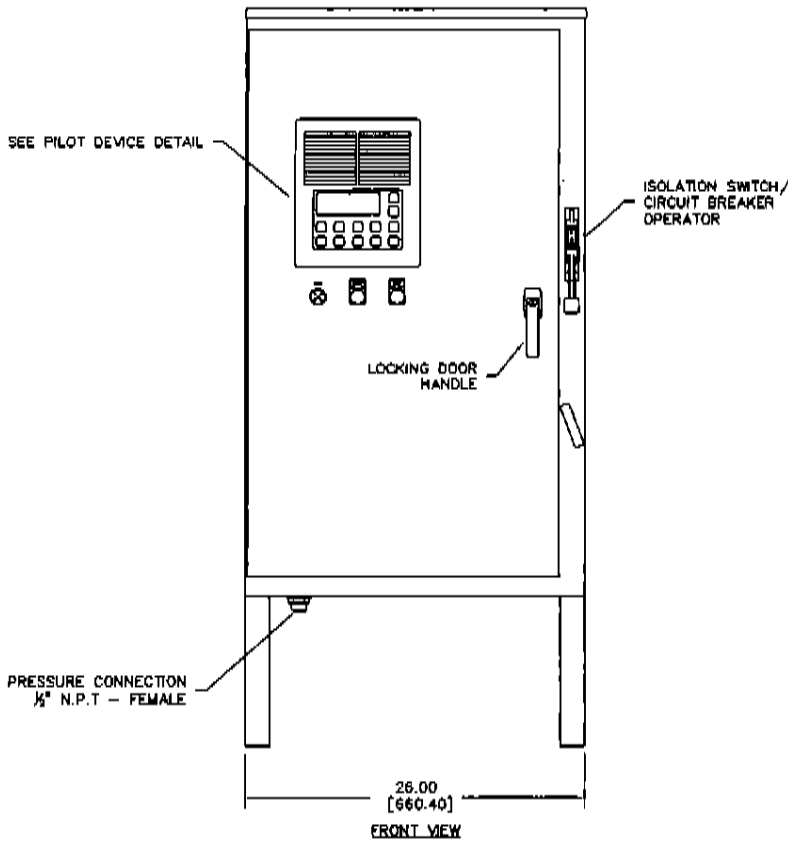


wound snugly against the roll. Close the printer door.

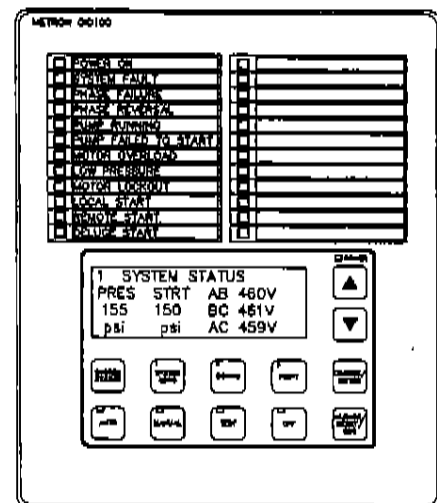
More paper may now be fed through by pressing the paper feed button on the front panel. (See Figure 2).

Ribbon Cartridge Replacement:

Tear off any paper emerging from the printer.



PILOT DEVICE DETAIL

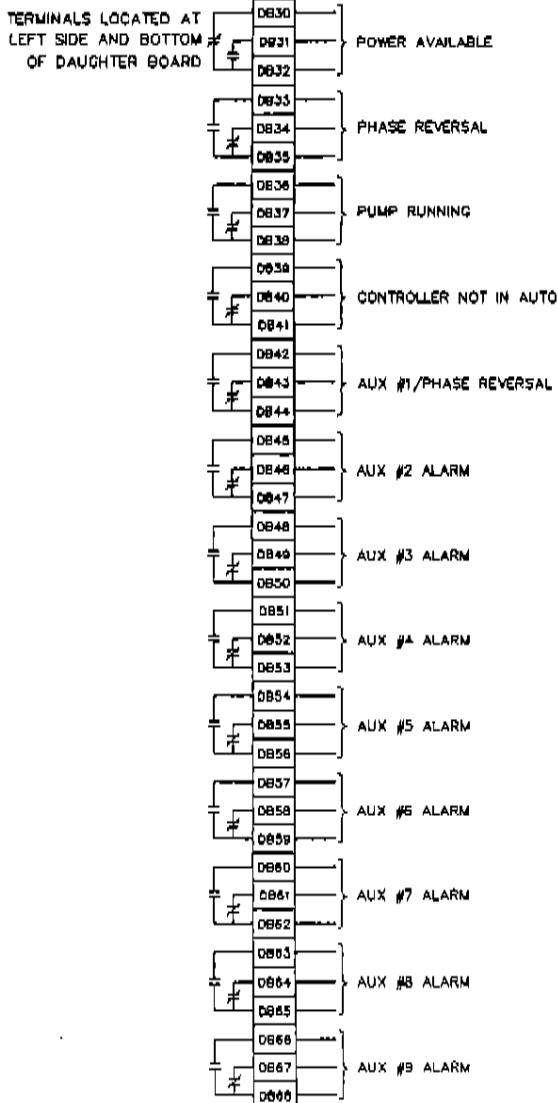
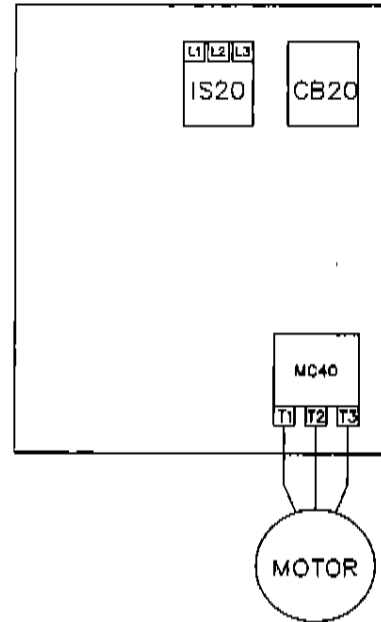
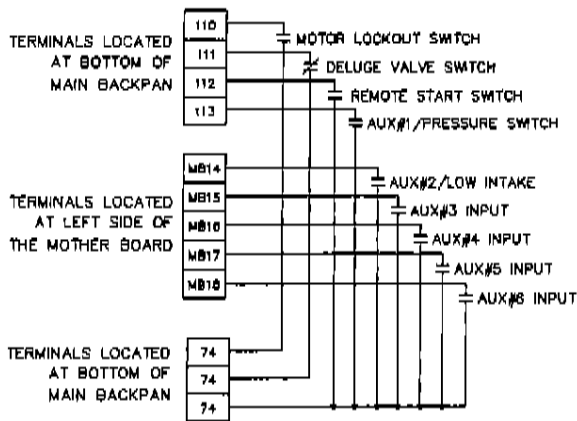


VOLTAGE	HORSEPOWER
200V	15-60 HP.
208V	15-75 HP.
230V	15-75 HP.
380V	15-125 HP.
460V	15-150 HP.

NOTES:
1. ALL DIMENSIONS IN INCHES AND MILLIMETERS ([]).

NEMA 2 ENCLOSURE.

ENCLOSURE DIMENSIONS MODEL MP300 26"x48" CABINET ELECTRIC FIRE PUMP CONTROLLER	DRAWN	M.E.	3-20-05	
	CHECK	AA	3-25-05	
	APPD.	JD	3-25-05	
				OPTIONS:
				CD33982-N19170-01
				SCALE
				SHEET

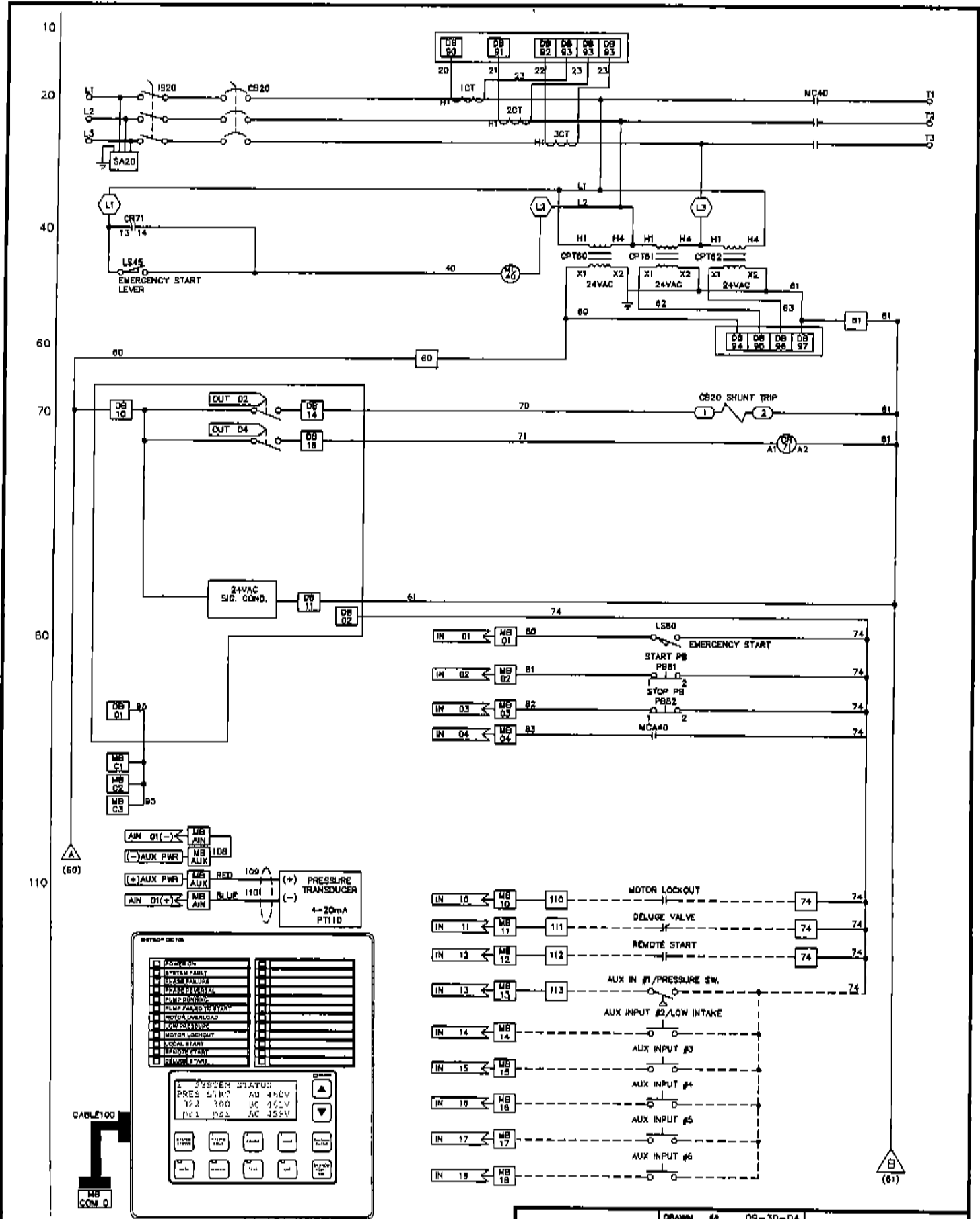


NOTES:

1. MOTOR TERMINATIONS VARY WIDELY BETWEEN MANUFACTURERS. PLEASE REFER TO MOTOR CONNECTION DIAGRAM ON THE MOTOR FOR VERIFICATION.
2. PROPER PHASE SEQUENCE MUST BE OBSERVED. A,B,C = L1,L2,L3 AS CONTROLLER IS PHASE SEQUENCE SENSITIVE
3. INCOMING CABLE SIZE TO BE 125% OF MOTOR FULL LOAD CURRENT, REFER TO WIRE SIZE TABLES IN NFPA 70.

MAXIMUM MOTOR HORSEPOWER	VOLTS AC					PRIMARY WIRE SIZE	
	200V	208V	220V - 240V	380V - 415V	440V - 480V	LINE TERMINAL WIRE SIZE PER PHASE	SERVICE ENTRANCE GROUND LUG WIRE SIZE
25 HP	25 HP	30 HP	50 HP	60 HP	#14-1/0 AWG	(2) #10-1/0 AWG	
40 HP	40 HP	50 HP	75 HP	100 HP	#4-3/0 AWG	(2) #10-1/0 AWG	
60 HP	75 HP	75 HP	125 HP	150 HP	#3/0-350 MCM	(2) #10-1/0 AWG	
100 HP	125 HP	125 HP	200 HP	250 HP	#2-600 MCM	(2) #10-1/0 AWG	
150 HP	150 HP	200 HP	300 HP	400 HP	(2) #2/0-350 MCM	(2) #6-250 MCM	

DRAWN	82	08-30-04	METRON, INC. DENVER, CO.
CHECK	5B	11-05-04	
APPRO	77.36	11-05-04	
EXTERNAL HOOKUP DIAGRAM MODEL MP300 ELECTRIC FIRE PUMP CONTROLLER			CH33692-N19170-01
SCALE N.T.S.			SHEET 1 OF 1



LEGEND:
 MB ## - MB = MB100 MOTHERBOARD I/O TERMINAL
 DB ## - DB = DB200 DAUGHTERBOARD I/O TERMINAL
 () - WIRES OR TERMINALS LOCATED ON CIRCUIT BREAKER

DRAWN	SA	09-30-04	METRON, INC. DENVER, CO.
CHECK	SB	11-05-04	
APPD	ML JC	11-05-04	
SCHEMATIC, MODEL MP300 COMBINED MANUAL-AUTOMATIC, ACROSS THE LINE ELECTRIC FIRE PUMP CONTROLLER			OPTIONS: CS33654A-N19170-01 SCALE NTS SHEET 1 OF 2

200

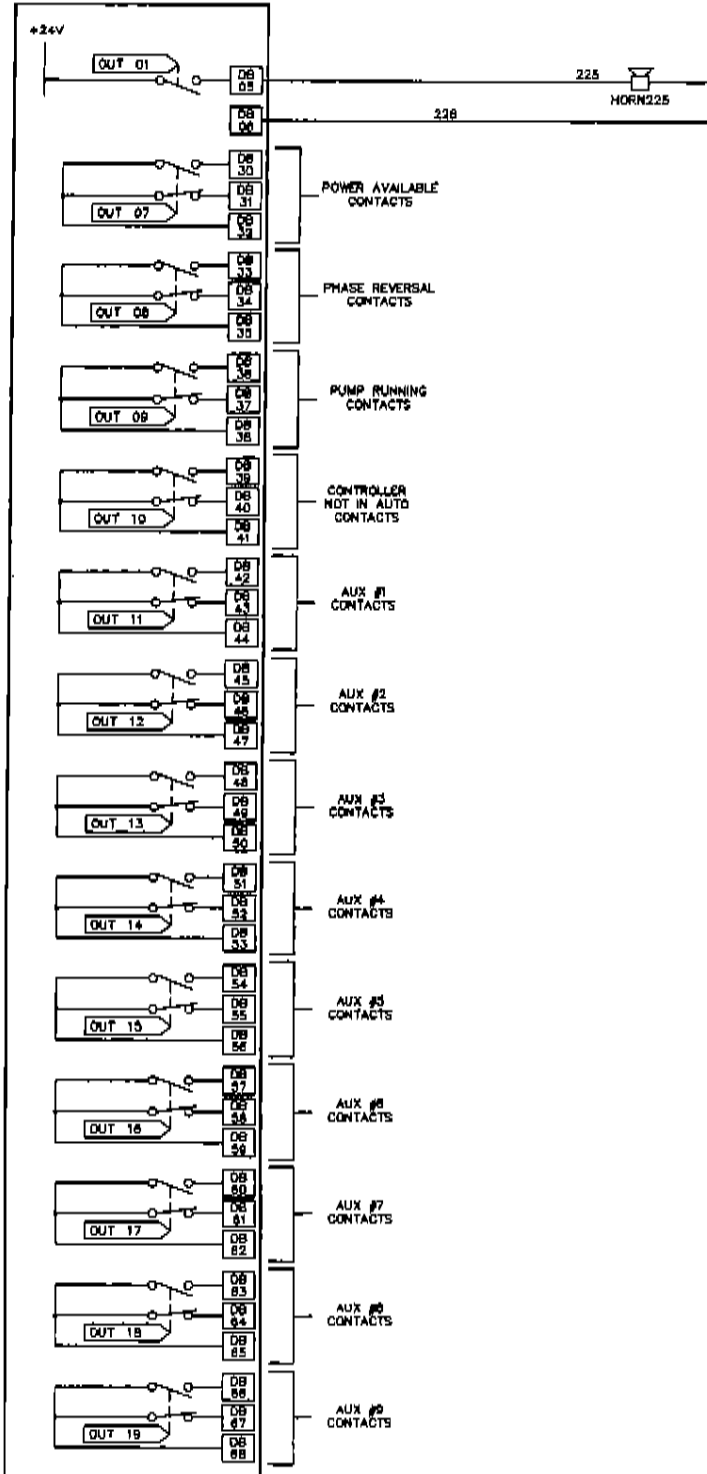
230


240

250

260

270



	DRAWN <i>EL</i>	09-30-04	 METRON, INC. DENVER, CO.
	CHECK <i>SL</i>	11-05-04	
	APPD <i>77.3C</i>	11-05-04	
SCHEMATIC, MODEL MP300 COMBINED MANUAL-AUTOMATIC, ACROSS THE LINE ELECTRIC FIRE PUMP CONTROLLER			OPTIONS: CS33654 -N19170-01
SCALE NTS			SHEET 2 OF 2

METRON INC.
ELECTRIC FIRE PUMP/LIMITED SERVICE FINAL TEST RECORD

ELECTRIC FIRE PUMP/LIMITED SERVICE TEST RECORD				
JOB NUMBER:	# <u>N19170</u>	MODEL NUMBER	# <u>MP300-60-480C</u>	
VAC: <u>480</u>	PHASE: <u>3</u>	SERIAL NUMBER:	# <u>MA-05N19170-11</u>	
SCHEMATIC NUMBER:	# <u>C533654A-N19170-01</u>	HIPOTED BY QC:	<u>SC</u>	Hz: <u>60</u>
BREAKER F.L.M.C.	<u>77A./400:5/1100</u>	PRESS. SWITCH	HIGH: <u>90</u>	LOW: <u>60</u>
PRESSURE SYSTEM CHECKED FOR LEAKS:	<u>SC</u>	(1 TR) SET TIME:	<u>-</u>	
RESISTOR/AUTOTRANSFORMER/SOFT START SIZE:	<u>-</u>	(2 TR) SET TIME:	<u>-</u>	
Electric Final QC			Verify = Initial	
Verify nameplate agrees with work order			<u>SC</u>	
Verify all work order requirements are met			<u>SC</u>	
Door mechanism works correctly			<u>SC</u>	
Gasketing neat and thorough seal			<u>SC</u>	
External bolts, screws, accessories tight			<u>SC</u>	
Pilot lights proper orientation, labeled, and correct voltage			<u>SC</u>	
Check wiring on top of 3T, pilot lights, pressure switch for tightness and labeled correctly			<u>SC</u>	
Check primary wire for proper size and type			<u>SC</u>	
Verify primary wire has been striped and terminated correctly			<u>SC</u>	
Check back panel mounting bolts for tightness (mark three center bolts)			<u>SC</u>	
Adjust emergency start mechanism			<u>SC</u>	
Adjust Isolation switch/circuit breaker operator and pin the handle			<u>SC</u>	
Verify mechanical interlock function			<u>N/A</u>	
OPERATIONAL CHECK:		OPERATES PROPERLY (N/A OR INITIAL=PASS):		
#1	EMERGENCY START:	<u>SC</u>		
	MANUAL STOP:	<u>SC</u>		
#2	MANUAL START:	<u>SC</u>		
	MANUAL STOP:	<u>SC</u>		
#3	REMOTE START:	<u>SC</u>		
	MANUAL STOP:	<u>SC</u>		
#4	PRESSURE SW. START:	<u>SC</u>		
	AUTO STOP:	<u>SC</u>		
#5	PRESSURE SW. START:	<u>SC</u>		
	MANUAL STOP:	<u>SC</u>		
#6	POWER AVAILABLE CONTACTS:	(N/O): <u>SC</u>	(N/C):	<u>SC</u>
#7	PUMP RUNNING CONTACTS:	(N/O): <u>SC</u>	(N/C):	<u>SC</u>
#8	PHASE REVERSAL CONTACTS:	(N/O): <u>SC</u>	(N/C):	<u>SC</u>
#9	RUN CONTACTOR DELAY (IF APPLICABLE):	SEC:		
#10	(OPTION A1) BUILT IN ALARM PANEL:			
#11	(OPTION A2) ADDITIONAL (A1's):			

Metron, Inc.	Date: <u>2/14/95</u>	Approved: <u>SHB</u>	DOC#: <u>450</u>
Revision: <u>C</u>	Date: <u>2/01/01</u>	Approved: _____	Page: <u>1of2</u>

OPERATIONAL CHECK		OPERATES PROPERLY (N/A OR INITIAL=PASS):	
#12	(OPTION C) PUMP FAILED TO START:	LIGHT:	
		CONTACTS:	
		TIMER SETTING:	
#13	(OPTION D) DELUGED START:		
#14	(OPTION E) ENGINE LOCKOUT:		
#15	(OPTION F) AMMETER:		
#16	(OPTION G) PRESS. SWITCH AUX CONTACTS:	(N/O):	(N/C):
#17	(OPTION H) HEATER:		
#18	(OPTION J) LOSS OF CONTROL POWER:		
#19	(OPTION K) PUMP ROOM TEMP. ALARM		
#20	(OPTION I) LOCAL PUMP RUNNING:	LIGHT:	
		CONTACTS:	
#21	(OPTION M) MOTOR LOCKOUT:		
#22	(OPTION O) OVERLOAD RELAY:		
#23	(OPTION P) POWER FAILURE START:		
#24	(OPTION Q) LOSS OF SUPERVISORY POWER:		
#25	(OPTION R) AUDIBLE ALARM:		
#26	(OPTION S) SEQUENTIAL START TIME DELAY:	SEC:	
#27	(OPTION T) WEEKLY TEST START:		
#28	(OPTION U) MOTOR STOPPED LIGHT:		
#29	(OPTION V) VOLTMETER:		
#30	(OPTION X) LATCHED SEQUENTIAL START:		
#31	(OTHER): <i>MP Ver. 1.6</i>		<i>SC</i>
#32	(OTHER):		
#33	(OTHER):		
#34	(OTHER):		
#35	(OTHER):		
DATE: <i>6-10-05</i>		TESTED BY: <i>J30007</i>	

NON-CONFORMANCE NUMBER (IF APPLICABLE): _____ CORRECTIVE ACTION NUMBER (IF APPLICABLE): _____