MP15 Jockey Pump Controller

This manual provides general information, installation, operation, maintenance, and system setup information for Metron Model MP15 Jockey Pump Controllers.

Introduction

Metron MP15 Jockey Pump Controllers are microprocessor based controllers intended for use with the main fire pump system. The jockey pump's purpose is to help maintain normal water pressure and prevent unnecessary cycling of the main fire pump(s).

Approvals

Metron MP15 controllers are listed by Underwriter's Laboratories, Inc., in accordance with UL508A, Standard for Industrial Controls; and CSA, Standard for Industrial Control Equipment (cUL).

NOTICE	Read these instructions thoroughly before installing and operating the controller. If there are still questions, contact your Metron factory representative for assistance.

Installation

The controller has been assembled and wired at the factory with the highest workmanship standards. All wiring and functions have been thoroughly tested to ensure correct operation when properly installed.

Receiving, Handling, and Storage

1. Immediately upon receipt, carefully unpack and inspect the controller for damage that may have occurred in shipment. If damage or rough handling is evident, file a damage claim with the transportation carrier immediately.
2. If the controller must be stored, cover it and then place it in a clean, dry location. Avoid unheated locations, where condensation can result in damage to the insulation or corrosion of metal parts.

Precautions

CAUTION	To avoid risk of **SERIOUS INJURY or DEATH**, and to avoid damage to the controller, READ THIS SECTION CAREFULLY. If questions or concerns still exist, contact the Metron factory for further clarification.

If work must be carried out on the motor or controller, ensure the controller is ISOLATED AND LOCKED OFF from the AC mains supply before work commences. Lockout/Tag out procedures should be followed in accordance with OSHA standard and any local standards that may apply.

During installation and maintenance, to prevent automatic starting of the motor ensure the controller HOA Switch is in the Off position.

To avoid risk of serious electric shock, **never** energize the controller with the access door open unless absolutely necessary.

If the access door to the interior of the panel has to be opened when the panel is energized, take caution that high voltage is present.

Installation Instructions

Mounting
The controller should be mounted using appropriate fixing methods:

A. If the controller is mounted directly to the pump skid, anti-vibration mounts should be used.
B. If the controller is mounted to a wall, it should use the four (4) external mounting holes of the controller cabinet. Suitable fixings to the wall should be used taking into consideration the weight of the controller. It is recommended that the controller be mounted at least 12 inches (300mm) above floor level.

Electrical Connections

DANGER

Electric shock may result in **SERIOUS INJURY OR DEATH.** Electrical connections should be made by a qualified electrical engineer only.

SHOCK HAZARD

Refer to Field Connection drawing supplied with the controller.

- The installer is responsible for ensuring no metallic foreign objects (such as drilling chips, etc.) fall inside the controller onto the electrical circuit. Failure to observe this could result in damage to the controller and will void the controller warranty.
- The cabinet should be properly grounded per the requirements of NFPA 70.
- NOTE: It is highly recommended, although not essential, that the following recommendations are considered:
  - o All signal wiring should be separated from power feeds and supplies. Where the two must be in close proximity, it is advisable that they are located at right angles to each other.
  - o Signal wiring will be less prone to disturbances if contained within grounded conductive conduit or trunking. Avoid passing signal cables in close proximity of known interference sources, or high power electrical equipment where possible.
  - o Refer to the Field Connection diagram for wiring sizes.

Operation of the Controller

General Information

The primary function of a Jockey Pump Controller is to maintain normal system pressure which may fluctuate slightly due to small leaks in the system. The use of this small pump will eliminate frequent starting of the main pump. The Jockey Pump Controller automatically starts the Jockey Pump Motor when the system pressure drops below a user configured level.
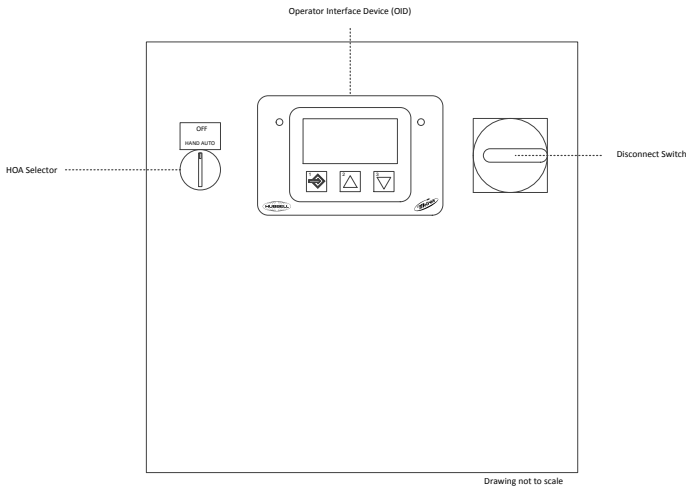
Operator Interface Device (OID)

HOA Selector

Disconnect Switch

Drawing not to scale

Figure 1: Typical front view of MP15

Functions

- Disconnect switch - Controls jockey pump main power. Can be padlocked in the "OFF" position.
- Operator Interface Device (OID) — Provides visual indication of system pressure, alarms, events, and system messages.
- Hand-Off-Auto (HOA) Selector switch.
    - o   Hand - Manually starts the jockey pump.
    - o   Off - Manually stops the jockey pump.
    - o   Auto - Jockey pump starts and stops automatically.
- USB port for recording alarm and event data log records to a USB memory stick.

Sequence of Operation

The explanation of the Sequence of Operation will start with the assumption that the controller has been properly installed, all external connections have been made, and the Motor Starter Protector is ***closed***.

Manual Operation
To manually start the jockey pump motor, turn the HOA Selector to the Hand position. This will cause the Motor Contactor contact to ***close***, thus starting the motor.

To manually stop the motor, turn the HOA Selector to the Off position, thus causing the Motor Contactor contact to ***open***.

Automatic Operation
For automatic operation of the jockey pump motor, turn the HOA Selector to the Auto position. When the system pressure drops below the user configured *Start Pressure*, the Motor Contactor contact will ***close***, thus starting the motor.

The controller will automatically ***open*** the Motor Contactor contact once the system pressure rises to or above the user configured *Stop Pressure*, and the *Minimum Run Timer* is either disabled or expired.

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 for adjusting set points to configure the MP15.

Power Available LED — Pump Running LED

Enter Button — Down Button

HUBBELL   Metron

Drawing not to scale

Up Button
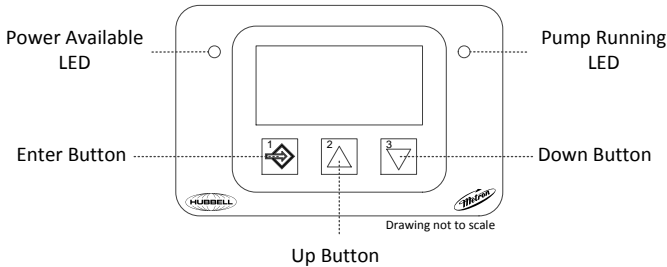
Figure 2: Operator Interface Device (OID)

Using the OID Controls

There are three types of windows displayed on screen:

- Informational, such as the home window.
- Menus, which navigate to a sub-list of windows. They are denoted onscreen with an arrow to the right of the text.
- Set Points, which display the set point name and its current value.

Use the ENTER, UP, and DOWN buttons to navigate through onscreen menus, change set points, and view system information.

To	Do this
Go to the next window	Press the DOWN button.
Go to the previous window	Press the UP button.
Choose a menu item	Press the ENTER button.
Go back to the previous menu	Press the UP and DOWN buttons simultaneously.

To	Do this
Edit a set point value	Press the ENTER button. Use the UP and DOWN buttons to change the value for the current step. Press the ENTER button to confirm the current step.
Cancel editing a set point value	Press the UP and DOWN buttons simultaneously.
Return to the Home window	Press and hold the UP and DOWN buttons simultaneously for two seconds.

Home Window

The Home window is the default window displayed onscreen. It provides information about current system pressure, HOA switch position, and status of the pump.

If there is no user activity on the OID after five minutes, the onscreen window will automatically return to the Home window.

Alarms and Events

When there are active alarms or events, the Home window will page through information about the pump, alarms, and events at three second intervals.

To manually page to the next alarm or event:

- Press and release the ENTER key.

To freeze the current page:

- Press and hold the ENTER key.
- Release the ENTER key to unfreeze.

Lamp Test

A lamp test will toggle the *Power Available* and *Pump Running* LEDs on and off.

To perform a lamp test, from the Home window:

- Press and hold the UP and DOWN buttons simultaneously.
- Release the UP and DOWN buttons to end the test.

User Log In

Navigating and viewing set point configurations is allowed at all times; however, changing any set point configuration requires the user password. The user password is shown below. This password is also on a label affixed to the cabinet door on the inside.

When prompted for the user password, enter the following button sequence:

ENTER — UP — DOWN — DOWN — DOWN
(1)   (2)   (3)   (3)   (3)

Logging Out

If there is no user activity on the OID after five minutes, the login state is automatically logged out.

To manually log out:

- From the Home window, choose *Log Out*.

Note: The *Log Out* menu item will not be displayed if the current user login status is not logged in.

Configuring System Set Points

WARNING	To configure the system set points, place the HOA Selector in the Off position.

WARNING	Adjustments should be performed by qualified personnel only.

Configuring a set point value consists of one or more steps, depending on the set point. Use the UP and DOWN buttons to change the value of the current step. Press the ENTER button to confirm the value of the current step. Once the last step has been complete, the set point value will be saved.

For example, the *Start Pressure* set point has three steps. The first step adjusts the hundredths column, the second step adjusts the tenths column, and the third step adjusts the ones column.

Another example, the *Pressure Unit* set point has one step. Use the UP and DOWN button to choose either PSI or BAR. Press the ENTER button to confirm the step and save the value.

Quick Start

The quick start feature is used to sequentially configure the primary system set points without having the navigate through the onscreen menu. The following set points are configured: *Pressure Unit*, *Start Pressure*, *Stop Pressure*, *Start Delay*, and *Min Run Time*.

To perform a quick start:

1. From the home window, choose *Quick Start*.
2. Configure each set point one at a time:
   a. Use the UP and DOWN buttons to change the value of the current step.
   b. Use the ENTER button to confirm with current step.
3. When the current set point configuration is complete, the next set point will be displayed until all Quick Start set points are configured.

Calibrate Pressure Sensor

To calibrate the pressure sensor:

1. From the home window, choose *Tech Screen → Calibrate Pressure Sensor*.
2. Follow the onscreen instructions, which are:
   a. Confirm that you want to begin the calibration process. Press the ENTER button to continue.
   b. Lower system pressure to zero and then press the ENTER button.
   c. Raise system pressure to the desired nominal system pressure. Press the ENTER button.
   d. Use the UP and DOWN buttons to set the value of the expected pressure sensor reading. Press the ENTER button.
   e. Calibration is complete.

Set Point Navigation Tree

```
┌──────────────┐
│    Home      │
│   Window     │
└──────┬───────┘
       │
┌──────▼───────┐
│    Quick     │
│    Start     │
└──────┬───────┘
       │
┌──────▼───────┐                                      ┌──────────────┐
│   System     │─────────────────────────────────────│    Start     │
│  Set Points  │                                      │   Pressure   │
└──────┬───────┘                                      └──────┬───────┘
       │                                                     │
┌──────▼───────┐          ┌──────────────┐            ┌──────▼───────┐
│    User      │──────────│   Language   │            │     Stop     │
│ Preferences  │          │              │            │   Pressure   │
└──────┬───────┘          └──────┬───────┘            └──────┬───────┘
       │                         │                           │
┌──────▼───────┐  ┌───────────┐  ┌──────▼───────┐     ┌──────▼───────┐
│    Tech      │──│ Calibrate │  │   Pressure   │     │    Start     │
│   Screen     │  │ Pressure  │  │     Unit     │     │    Delay     │
└──────┬───────┘  │  Sensor   │  └──────┬───────┘     └──────┬───────┘
       │          └───────────┘         │                    │
┌──────▼───────┐                 ┌──────▼───────┐     ┌──────▼───────┐
│    USB       │                 │    Screen    │     │   Min Run    │
│ Memory Stick │                 │  Brightness  │     │     Time     │
└──────┬───────┘                 └──────────────┘     └──────┬───────┘
       │                                                     │
┌──────▼───────┐                                      ┌──────▼───────┐
│    About     │                                      │ Short Cycle  │
│   Window     │                                      │     Time     │
└──────────────┘                                      └──────┬───────┘
                                                             │
                                                      ┌──────▼───────┐
                                                      │ Short Cycle  │
                                                      │ Reoccurrence │
                                                      └──────────────┘
```
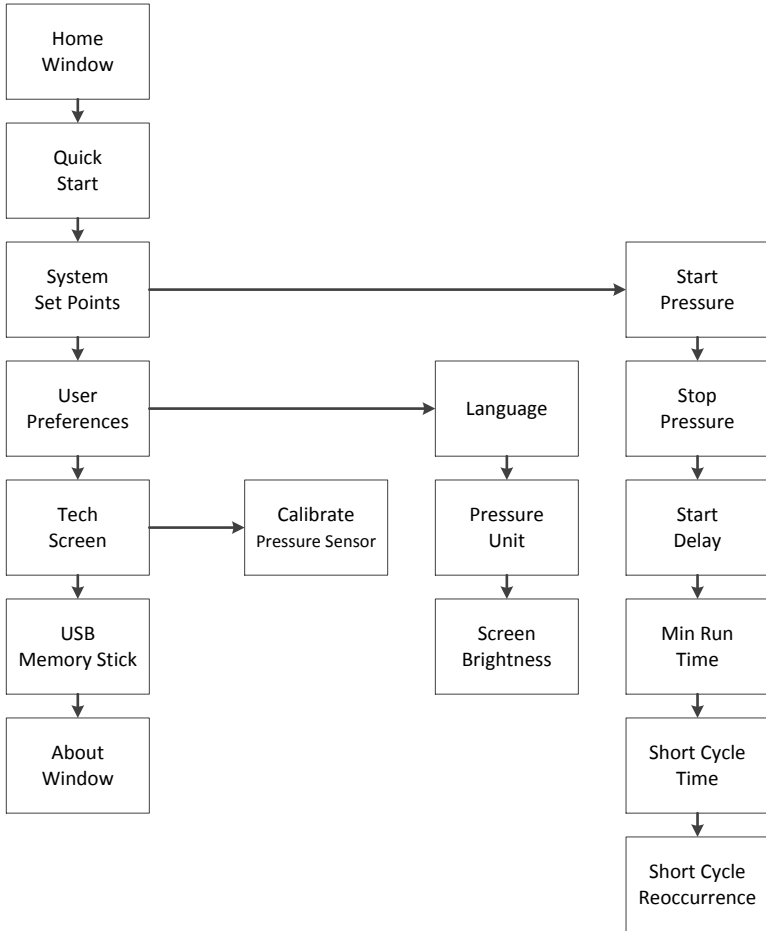
System Set Point Definitions

Set Point	Definition
Start Pressure	If the system pressure is at or below this setting, and the HOA switch is in the Auto position, then the controller will start the pump. **Range:** `0 – 600 PSI` `0 – 41.3 BAR`
Stop Pressure	When a low system pressure start occurs, the start condition will stay active until the system pressure rises to the stop pressure. **Range:** `1 – 600 PSI` `0.1 – 41.3 BAR`
Start Delay	This time setting delays the automatic start of the pump when a low system pressure condition occurs. Range: `0 – 999 Seconds`
Minimum Run Time	The minimum time that the pump must run before an automatic stop. **Range:** `0 – 999 Seconds`
Short Cycle Time	Activates an alarm if an automatic start occurs within the configured time span since the last automatic stop. This setting is used to determine if the *Start Pressure* and *Stop Pressure* set points need adjustments. Set to zero seconds to disable. **Range:** `0 – 999 Seconds`
Short Cycle Reoccurrence	The number of consecutive short cycles that must occur before the short cycle alarm is activated. When the short cycle time span elapses, this counter is reset. This setting is used to prevent nuisance alarms.

Set Point	Definition
Language	Selects the onscreen language.
Pressure Unit	Selects the system pressure unit: PSI or BAR.
Screen Brightness	Adjusts the brightness of the screen backlight.
Calibrate Pressure Sensor	Adjusts the pressure sensor reading.

Test Procedures

Before beginning each test, verify system pressure is above the *Start Pressure* setting. Turn the HOA switch to the Off position to clear all alarms.

Manual Start

1. Turn the HOA switch to the Hand position.
2. The pump should start immediately and the Pump Running LED should turn on.
3. Turn the HOA switch to the Off position.
4. The pump should stop immediately and the Pump Running LED should turn off.

Automatic Pressure Start

1. Turn the HOA switch to the Auto position.
2. Lower the system pressure below the configured *Start Pressure*.
3. The automatic start process will begin. Once the pump begins running, it will continue to run until:
   a. The HOA switch is set to the Off position, or
   b. The system pressure rises above the configured *Stop Pressure* and the *Minimum Run Timer* expires.

Alarm and Event Log Messages

The following lists all the possible messages that can be recorded within the data log.

Message	Description
Pump Running	The pump has started running — manual or automatic.
Pump Stopped	The pump has stopped running — manual or automatic.
Pressure Sensor Fault	A pressure sensor fault alarm has occurred.
HOA Switch Fault	An HOA Switch fault alarm has occurred.
Short Cycle Alarm	A short cycle alarm has occurred.
Off Mode	The HOA switch has been placed in the Off position.
Auto Mode	The HOA switch has been placed in the Auto position.
Hand Mode	The HOA switch has been placed in the Hand position.

Disposal

Metron Eledyne is a member of a compliance scheme under the Waste Electrical and Electronic Equipment regulations which is applicable in all EC countries. At the end of the service life of the equipment the company offers to collect and dispose of this equipment in accordance with regulations in force under the Registration Number WEE/CF0105WV. (Equipment must be suitably packed for collection by courier if outside the UK).

Contact:

> Tel: +44 (0) 1476 516120

> Fax: +44 (0) 1476 516121

Replacement Parts

For replacement parts, contact your local Metron sales office or the Metron factory at:

United States	Telephone: +1 (336) 434-2800 FAX: +1 (336) 434-2809 Email: salesmail@metroninc.com
Europe	Telephone: +44 (0) 1476 516130 Email: jmcivor@metroninc.com

Technical Support

United States	**For 24-hour technical support:** Telephone: +1 (336) 434-2800 ext. 183 Email: fpctechsupport@metroninc.com
Europe	**Service & Commissioning** Telephone: +44 (0) 1476 516129 Email: wrichardson@metroninc.com **Emergency Contact:** Telephone: +44 (0) 7730 050100