TORNATECH

LISTEN DEVELOP LEAD

INSTALLATION AND MAINTENANCE MANUAL FOR JOCKEY PUMP CONTROLLERS MODELS JPLT, JPLTB, JPY, DJP, JPD AND DJPD

V2026.10 r0

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IMPORTANT SAFETY INFORMATION

DANGER

RISK OF ELECTROCUTION

PERSONAL INJURY OR DEATH COULD OCCUR.
ENSURE ALL POWER IS DISCONNECTED BEFORE INSTALLING OR SERVICING THIS EQUIPMENT.

DANGER

Do not attempt to install or perform maintenance on equipment while it is energized. Contact with energized equipment may result in death, serious personal injury, or substantial property damage.

Before proceeding, always verify that no voltage is present and follow all applicable safety procedures. De-energize the power supply to the controller.

The controller must be completely disconnected from all power sources, and the disconnect switch must be in the "OFF" position before opening the enclosure door.

If any person chooses to install, inspect, service, or perform maintenance on the equipment while it is energized, they do so entirely at their own risk and assume full responsibility and liability for any resulting death, injury, loss, or property damage, to the fullest extent permitted by law.

Tornatech shall not be liable for any misapplication, improper installation, unauthorized energized work, or failure to follow these instructions and applicable safety procedures.

Warning:

This product can expose you to chemicals including DINP, which is known to the State of California to cause cancer, and DIDP which is known to the State of California to cause birth defects or other reproductive harm.

Warning:

This product can expose you to chemicals including lead and lead compounds, which are know to the State of California to cause cancer and birth defects or other reproductive harm.

For more information go to: www.P65Warnings.ca.gov

INTRODUCTION

Tornatech Jockey Pump Controllers are designed to automatically maintain pressure in fire protection systems by controlling the operation of a jockey pump. The controller monitors system pressure and automatically starts the jockey pump when pressure drops below the configured cut-in setting and stops it when pressure reaches the configured cut-out setting, maintaining system pressure and preventing unnecessary cycling of the main fire pump.

They are listed by Underwriters' Laboratories, Inc., in accordance with UL508A, Standard for Industrial Controllers. They are built to meet or exceed the requirements of the approving authorities as well as NEMA and the latest edition NFPA 70 National Electrical Code.

They also comply with the requirements of the Electromagnetic Compatibility (EMC) Directive 2014/30/EU, the Low Voltage Directive (LVD) 2014/35/EU, the Electromagnetic Compatibility Regulations (2016 No. 1091) and The Electrical Equipment (Safety) Regulations (2016 No. 1101).

These instructions are intended to assist in the understanding of the installation and operation of these controllers. Read the instructions thoroughly prior to connecting or operating the controller. If there are any unanswered questions, please contact the local Tornatech representative or the factory service department.

TECHNICAL DATA

Rating	Value
Rated Operational Current Ie	According to the Motor (HP/kW)
Rated Insulation Voltage Ui	690, 600 (IEC)
Rated Operational Voltage Ue	According to the controller rating label
Rated Impulse Withstand Voltage Uimp	6000V
Rated Operational Frequency	50/60Hz
Standard environmental temperature	4°C - 40°C
Altitude	≤ 2000m
Relative humidity	5% to 80%
Pollution degree	3
Short Circuit Current Rating Icc (SCCR) (A)	According to the controller rating label
Rated Peak Withstand Current Ipk	According to IEC 61439-1:2020 Table 7
Standard degree of protection	NEMA Type 2
Standby power consumption	5 W

INSTALLATION

STORAGE

If the controller is not installed and energized immediately, Tornatech recommends following the instructions in chapter 3 of NEMA ICS 15.

SEISMIC

Jockey Pump controllers are optionally seismic approved and has been tested in accordance with the ICC-ES AC156, IBC 2015 & CBC 2013 standards. Proper installation, anchoring and mounting is required to validate this compliance report. Refer to this manual and drawings to determine the seismic mounting requirements and location of the center of gravity (you may need to contact factory). The equipment manufacturer is not responsible for the specification and performance of anchorage systems. The structural engineer of record on the project shall be responsible for anchorage details. The equipment installation contractor shall be responsible for ensuring the requirements specified by the structural engineer of record are satisfied. If detailed seismic installation calculations are required, please contact the manufacturer for the performance of this work.

ENVIRONMENT

Jockey Pump controllers are intended to be installed in locations where ambient temperatures are within 4°C - 40°C and the relative humidity is controlled between 5% and 80%. Optionally, the controller can have an extended temperature of up to 55 °C and as low as -5°C, provided that the controller and the pressure water pipes are heated to prevent water freezing and damaging the electronics and the piping system.

They are intended for pollution degree 3 and shall be installed at an altitude of no more than 2000 meters. For abnormal installation environment, consult factory.

ELECTROMAGNETIC COMPATIBILITY (EMC)

Jockey Pump controllers have been tested for the most stringent conditions for emissions (Environment B) and immunity (Environment A), hence controllers can be installed in either environment. All controllers variants share the same electronics and comply to those criteria without requiring additional measures.

HANDLING

The weight of each Jockey Pump controller is indicated on the packing label. Lightweight controllers do not require special handling instructions, while heavy controllers are equipped with lifting means and should be handled following the guidelines specified in Tornatech's document "Large Enclosure Safe Handling Requirements_PN12162021".

LOCATION

Consult the appropriate job plans to determine the controller mounting location.

The controller shall be located as close as practical to the engine or motor it controls and shall be within sight of the engine or motor. The controller shall be located or protected such that it will not be

damaged by water escaping from pump or pump connections. Current carrying parts of the controller shall be not less than 12 in. (305 mm) above the floor level.

Working clearances around controller shall comply with NFPA 70, National Electrical Code, Article 110 or C22.1, Canadian Electrical Code, Article 26.302 or any applicable local codes.

The standard controller enclosure is rated NEMA Type 2. It is the installer's responsibility to insure that either the standard enclosure meets the ambient conditions or that an enclosure with an appropriate rating has been provided. Controllers must be installed inside a building and they are not designed for outside environment. The paint color may change if the controller is exposed to ultraviolet rays for a long period of time.

MOUNTING

WALL MOUNTING

Refer to the controller dimension drawing for necessary mounting dimensions.

The controller is wall mounted by using at least four (4) wall anchors, 2 anchors for the top mounting brackets and 2 anchors for the bottom mounting brackets. The brackets are dimensionally on the same centerline for ease in mounting. There should be a clearance of at least 6 inches (152mm) around the controller to allow proper air circulation around the equipment.

1. Using either the dimension print or by measuring the distance between the center lines of the lower bracket slots, transcribe this dimension on to the wall. Note: The bottom edge of the enclosure should be a minimum of 12" (305mm.) from the floor in case flooding of the pump room occurs.
2. Drill and put anchors into the wall for the lower mounting brackets.
3. Mark on the wall, the location of the holes in the upper mounting brackets.
4. Drill and put anchors into wall for the upper mounting brackets.
5. Install bolts and washers in lower anchors.
6. Align holes in upper mounting brackets and install bolts and washers in anchors.
7. Shim anchors as necessary to ensure rear of enclosure is vertical level and enclosure is not stressed.
8. Tighten all anchor bolts.
9. Check to be sure enclosure door open and closes freely and that enclosure is level.

MAKING SYSTEM PRESSURE CONNECTIONS

The controller requires one (1) "System Pressure" connection from the system piping to the enclosure. The connection fitting, 1/2" NPT male port, is provided on the bottom, external side of the enclosure for this purpose. Refer to NFPA 20 for correct field piping procedure of the sensing line between the pumping system and the controller.

MAKING ELECTRICAL CONNECTIONS

IMPORTANT PRECAUTIONS

A licensed electrician must supervise the electrical connections. The dimension drawings show the area suitable for incoming power and motor connections. No other location shall be used. Only watertight hub fittings shall be used when entering the cabinet to preserve the NEMA or IP rating of the cabinet.

The installer is responsible for adequate protection of the Jockey Pump controller components against metallic debris or drilling chips. Failure to do so may cause Death, serious personal injury, damage the controller and subsequently void warranty.

Prior to making any field connections

1. Open door of enclosure and inspect internal components and wiring for any signs of frayed or loose wires or other visible damage.
2. Verify that the controller information is what is required on the project:
    1. Tornatech catalog number
3. Project's electrical contractor must supply all necessary wiring for field connections in accordance with the National Electrical Code, local electrical code and any other authority having jurisdiction.
4. Refer to the appropriate field connection drawing for wiring information.

PROCEDURE

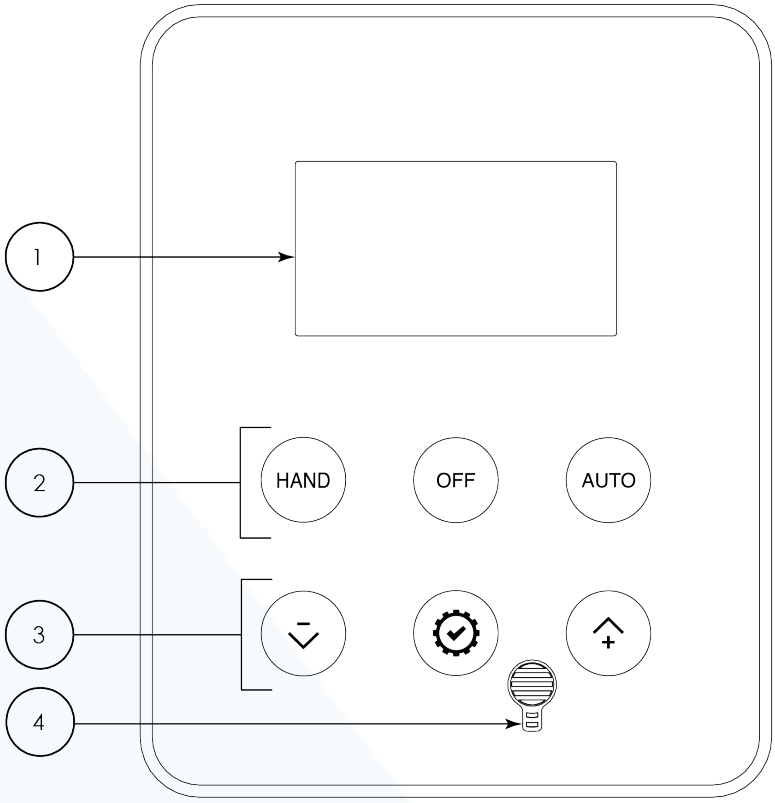
All field connections, remote alarm functions and AC wiring are brought into the enclosure through conduit entrances as indicated on the dimensional drawing. For feet or wall-mounted enclosures, properly grounded metallic conduits shall be used.

Do not place conduit entrances on the sides of the enclosure unless a gland plate is provided.

1. Protect all components against any metallic debris or drilling chips.
2. Using a hole (conduit) punch, create a hole in the enclosure for the size conduit being used.
3. Install necessary watertight conduit.
4. Pull all wires necessary for field connections, remote alarm functions, AC power and all other optional features. Bring enough wire inside the enclosure to make up connections to the appropriate line, load and control terminal block points. Be sure to consult the appropriate field connection diagram for connection points and acceptable wire size. For proper wire sizing, refer to the National Electrical Code, NFPA 70.
5. Make all field connections to the remote alarm functions and any other optional features.
6. Connect motor to controller load terminals.
7. Find nameplate on Jockey Pump motor and make note of its full load amp rating. Verify the overload within the controller is set for that number of amps.
8. Verify AC line voltage, phase and frequency with the controller data plate on the enclosure door prior to connecting.

9. Connect AC power.
10. Check to see that all connections are both correctly wired (in accordance with the field connection diagram) and tight.
11. Close the enclosure door.

OPERATOR INTERFACE



1. LCD screen
2. Hand-Off-Auto selector
3. Menu navigation buttons.
    1. Down / decrease value
    2. Enter configuration / enter
    3. Up / increase value
4. Integrated alarm buzzer

HOW TO CONFIGURE THE CONTROLLER

To enter the configuration, press the enter configuration button. Use the up and down buttons to select the value to edit, then press enter. Use the increase or decrease value button to edit the value. Holding those buttons will change the value with an increased speed. Once satisfied with the value, press the enter button.

Edited items are not directly applied to the controller and are marked on the screen with an asterisk. Once satisfied with your new values, exit the menu by selecting the first menu line and pressing enter. A

confirmation popup will appear asking you to apply the new values to the controller, select "yes" then press enter. You may alternatively discard all changes made by selecting "no".

METHODS OF STARTING/STOPPING

AUTOMATIC MODE

When the mode selector is in automatic, the controller will start automatically on low pressure detection by the pressure sensor (below the cut-in threshold).

The motor is automatically stopped after the restoration of the pressure (above the cut-out threshold), after a programmable run period timer.

MANUAL MODE

When the mode selector is in manual, the controller will run the motor continuously.

OFF MODE

When the mode selector is in off, the motor cannot be started and will be stopped if it was previously running.

BUMP FOR ROTATION

Successively applying manual mode and off mode to the controller can be used to bump for the motor and check rotation. If the rotation is incorrect, turn OFF power with the door mounted disconnect. Swap any two existing motor lead wires that are on the motor contactor in the controller

COMMISSIONING

1. Verify, and adjust if necessary, the motor overload setting.
2. For three-phase motors, verify the motor rotation by bumping the motor. In case of incorrect rotation, **power off the controller** and swap two wires at the contactor load side.
3. Enter the configuration menu and input the appropriate values for
    1. Pressure unit if required, in the Advanced sub menu;
    2. Cut-out[1];
    3. Cut-in;
    4. Timer on;
    5. Timer off.
4. Exit the configuration menu and save changes.
5. Place the hand-off-auto selector in auto.

[1]Cut-out is required to be at least 10 PSI more than cut-in value and should be edited first.

PREVENTIVE MAINTENANCE PROGRAM

Pursuant to NFPA 25, Standard for the Inspection, Testing, and Maintenance of Water-based Fire Protection Systems, 2023 edition, a preventive maintenance program must be established according to the manufacturer's recommendations for all components of the pump assembly. The program must begin after the pump assembly has passed all acceptance tests (See NFPA 25 Section 8.5.1 – 8.5.3 and Table 8.1.1.2 – *Maintenance*). Failure to comply could result in loss of life and/or property. The warranty may also be deemed null and void.

The following information outlines the parts and intervals for preventive maintenance recommended by Tornatech to ensure the fire pump controller and associated components are in optimum condition. The program should be used in conjunction with the general requirements for inspecting and testing outlined in NFPA 25.

FACTORY RECOMMENDATIONS

The factory also recommends the following tasks be performed on an annual basis for all controller types:

INTERNAL VERIFICATIONS

- Check for corrosion on components or circuit boards.
- Check for breakdown/fraying of conductor insulation.
- Check for any signs of water leakage into controller.
- Remove all objects placed inside the panel not associated with the fire pump.

EXTERNAL VERIFICATIONS

- Check for signs of water leakage on the system pressure sensing lines.
- Clean the outside of the controller to remove any dust or other substances that may have accumulated.
- Remove all objects placed on top of the panel not associated with the fire pump.

END-OF-LIFE, DISMANTLING AND RECYCLING INFORMATION

This product contains electrical and electronic components, including but not limited to printed circuit boards, cables, relays, user interface modules, I/O boards, surge protection devices, pressure transducers, and other control components. Some of these components may contain materials that are recoverable through specialized recycling processes.

At the end of its service life, this product and its replaced components should not be disposed of with unsorted municipal waste. They should be collected, handled and treated through an appropriate waste electrical and electronic equipment (WEEE) or authorized recycling channel, in accordance with applicable local regulations.

Before any dismantling, disposal or recycling activity, the product must be disconnected from all power sources and placed in a safe condition by qualified personnel. Dismantling should be performed only by qualified personnel using appropriate safety procedures.

For products integrated into a larger pump assembly or fire protection system, the system owner, installer, integrator or end user is responsible for coordinating proper end-of-life handling of the complete system and its components.

Tornatech can provide additional information on product components upon request to support maintenance, replacement, recycling or end-of-life treatment activities.

REPLACEMENT INTERVALS

2 years

- Pressure Transducer

5 years

- Complete Controller

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