INSTRUCTION MANUAL

Dura**Quench**™

MODEL JPC JOCKEY PUMP CONTROLLER

P/N 06-791-6 (Rev. 0 / July, 2015)

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REVISION HISTORY

ORIGINAL RELEASE DATE: ..... July, 2015

REVISION / DESCRIPTION OF CHANGE	REVISION DATE

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1. GENERAL

The Model JPC is a fusible combination motor starter with a built in pressure switch for use with pump motors such as make-up pumps, booster pump, or `jockey' pumps which are used with automatic sprinkler systems. Some units are supplied with a circuit breaker in lieu of the fusible disconnect (switch and fuse block).

2. INSTALLATION INSTRUCTIONS

2.1. Mounting

The JPC enclosure must be mounted in the vertical position, and in an area free from dripping and spraying water.

2.2. Safety Precaution

Before any electrical work is done on the JPC make sure the disconnect switch and the control switch are in the off position.

2.3. Power Supply

Use branch circuit protection on the incoming line (mains). Check the motor and JPC nameplates to verify they match the incoming line voltage, frequency and current requirements.

2.4. Wiring

All motor circuit conductors should be sized according to the National Electric Code article 430, part B. Insulation for these conductors should be chosen so it will not be affected by the surrounding environment. The input power wiring is connected to the fusible disconnect, and the output motor wiring is connected to the motor starter. Protect internal components from drilling chips and debris.

2.5. Plumbing

The brass pressure sense line should be connected to the 1/4"-18 NPT female pressure connection provided on the bottom of the cabinet.

NOTE For fire pump systems, the sense line runs from between the system side of the make-up pump check valve and the pump side of the control valve to the pressure connection on the JPC. See NFPA standard for Fire Pumps (NFPA-20 fig. A-7-5.2.1 for details).

2.6. Protection

Fuses are furnished according to the National Electric Code (NFPA-70) table 430-148 (Single Phase) and 430-152 (Three Phase) which is based on the full load motor current. If not specified, the full load current is taken from a standard motor current table for Design "B", 1.15 service factor, 40% rise, 60 Hz (50 HZ for 380 Vac or 220 Vac Controllers), A.C. Squirrel Cage Induction 2 Pole or 4 Pole motors. The table is applied to the voltage and horsepower applicable.

The Overload Relay is furnished and set according to the motor Service Factor Amps which is based on the full load motor current times its maximum

2.7. Service Factor

Both fuse sizes and overload (Trip) settings are shown on M.C.S. drawing SK-0844, included in standard units, or separate label for others.

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3. Start-up

After the mounting, wiring, and plumbing are completed, and the system is ready to be pressurized, initiate the following:

1. Adjust the pressure switch to the desired turn-on and turn-off settings.
2. Close and latch the door (Operation of the disconnect switch is interlocked with the door).
3. Set the disconnect switch to the "on" position.
4. Momentarily turn the selector switch to manual position while watching the direction of the motor rotation. If correction is necessary, open (turn off) the disconnect switch and interchange two of the motor leads. Repeat the last two steps.
5. Turn the selector switch to the "auto" position to put the pump in service.

4. SEQUENCE OF OPERATION

4.1. General

The JPC controls a make-up pump-motor combination to maintain the pressure in a system within a selected range. This is accomplished with an adjustable pressure switch which has independently adjustable turn-on and turn-off setting. Refer to the wiring or schematic diagram for details.

4.2. Power Wiring

The input lines (mains) connect to the top of the Disconnect Switch DS. Power flows through the short circuit protection motor Line (Mains) Fuses LF, and then to the Motor Starter, which is horsepower rated. The Motor Starter consists of Motor Contactor MC and Overload Relay OLR. When the Motor Contactor Coil M is energized, Motor Contactor contacts close to feed power through the Overload Relay to its output terminals where the motor is connected.

4.3. Overload Relay

The Overload Relay furnished in the motor starter provide protection from excessive currents. The overload relay has been sized and set to trip open when the motor exceeds 125% of the Full Load Current (FLA) multiplied by the rated Service Factor (SF). Trip times vary depending on the magnitude of the current overload, the number of previous starts, the ambient temperature of the controller, and the size of the overload element. Briefly, the Overload Relay is sized to allow initial starting currents while protecting the motor from excessive long starting currents or excessive running currents. (See Installation Instructions - Protection for proper sizing).

4.4. Manual Control

Control power wiring is tapped off the incoming power on the load (down-stream) side of the Line Fuses or Circuit Breaker. It is routed to the three position (Auto-Off-Manual) selector switch.

In the OFF position, the Motor Contactor coil is de-energized to prevent the motor from running.

In the manual position, the Pressure Switch contacts are bypassed so the contactor coil is continuously energized by the selector switch. The Overload

Relay contacts also override the manual position to again protect the motor.

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CAUTION Use care when using the MANUAL (MAN) position of the control switch to avoid causing system Over Pressure. Use extra caution with positive displacement, regenerative or other pumps capable of generating high output pressures until or unless the presents and status of a pressure relief valve is determined.

4.5. Automatic (Pressure) Control

In the AUTO position, control power is routed to the Pressure Switch PS. The Pressure Switch is normally closed (closes on falling pressure). When the pressure is below the Turn-On setting of the Pressure Switch, its contacts close to energize the Motor Contactor coil to start the motor.

In the event of excessive motor current or sustained locked rotor contacts, the thermal element of the Overload Relay will open pilot Contacts OLC to de-energize the Motor Contactor Coil to open the Motor Contactor contacts and de-energize the motor. After the motor and Overload Relay cool down, the Overload Relay is manually reset to re-enable the controller and motor.

Option "1" - Control Transformer: When Option "1" is supplied, control power is supplied by a Control Power Transformer (CPT). Its primary is supplied by two control line fuses F2 and F3. The secondary output of the transformer is protected by secondary fuse F1. When used, control power is 115 Vac (110 - 120 Vac) rather than line voltage. The motor contactor coil and any other relay coils are rated at 110 Vac to 120 Vac in this case.

Option "2" - Minimum Run Timer: This option is used to prevent excessively frequent pump starting. The option consists of the Minimum Run Time Delay Relay TM. It is equipped with a Timer head TMD as well as instantaneous contacts TMA. The timer head is equipped with an adjustment dial. The standard range of adjustment is zero to 180 seconds. The Minimum Run Timer does not operate with the selector switch in the MANUAL position.

Option "3" - Line (Mains) Fuses: Three extra line fuses are furnished to provide protection from short circuit or high current faults. (See Installation Instructions - Protection, for proper sizing).

5. REPLACEMENT PARTS LIST

Symbol	Part No.	Description	Notes
DS	304472	Disconnect Switch, 600 Vac, 30/40 Amp (Internal Switch only)	
	401864	Disconnect Switch Handle Operator only, (30 thru 100 Amp)	
	401990	Auto-Off-Manual Selector Switch	
	401992	Auto-Off-Manual Selector Switch Contact	
PS	305410	Pressure Switch (Mercoid No. DA-31-1-R.9) 10-300 P.S.I.	
TM	613056	Minimum Run Time Delay Relay/Timer Head Ass'y, 120 Vac (Opt. 2)	
TM	613050	Minimum Run Time Delay Relay/Timer Head Ass'y, 208 Vac "	(1)
TM	613051	Minimum Run Time Delay Relay/Timer Head Ass'y, 230 Vac "	(1)
TM	613052	Minimum Run Time Delay Relay/Timer Head Ass'y, 380 Vac "	(1)
TM	613053	Minimum Run Time Delay Relay/Timer Head Ass'y, 460 Vac "	(1)
	305040	Control Power Transformer, 50 VA, 208/240/460 Vac (Opt. 1)	
	305041	Control Power Transformer, 50 VA, 380/575 Vac (Opt. 1)	
LF	303475	Fuse Holder, 3 Pole, 600 Volt, 30 Amp	
F1	900611	Fuse Holder, 1 pole, 250 Vac, 30 Amp (Opt.1)	
F2,F3	303471	Fuse Holder, 2 pole, 250 Vac, 30 Amp (Opt.1)	

Notes:

1) Line voltage Motor Contactor coils are used only when Option "1" is Not provided.
2) One or more renewal parts such as fuses, heaters, contacts, and etc. may be obtained from local electrical distributor(s).

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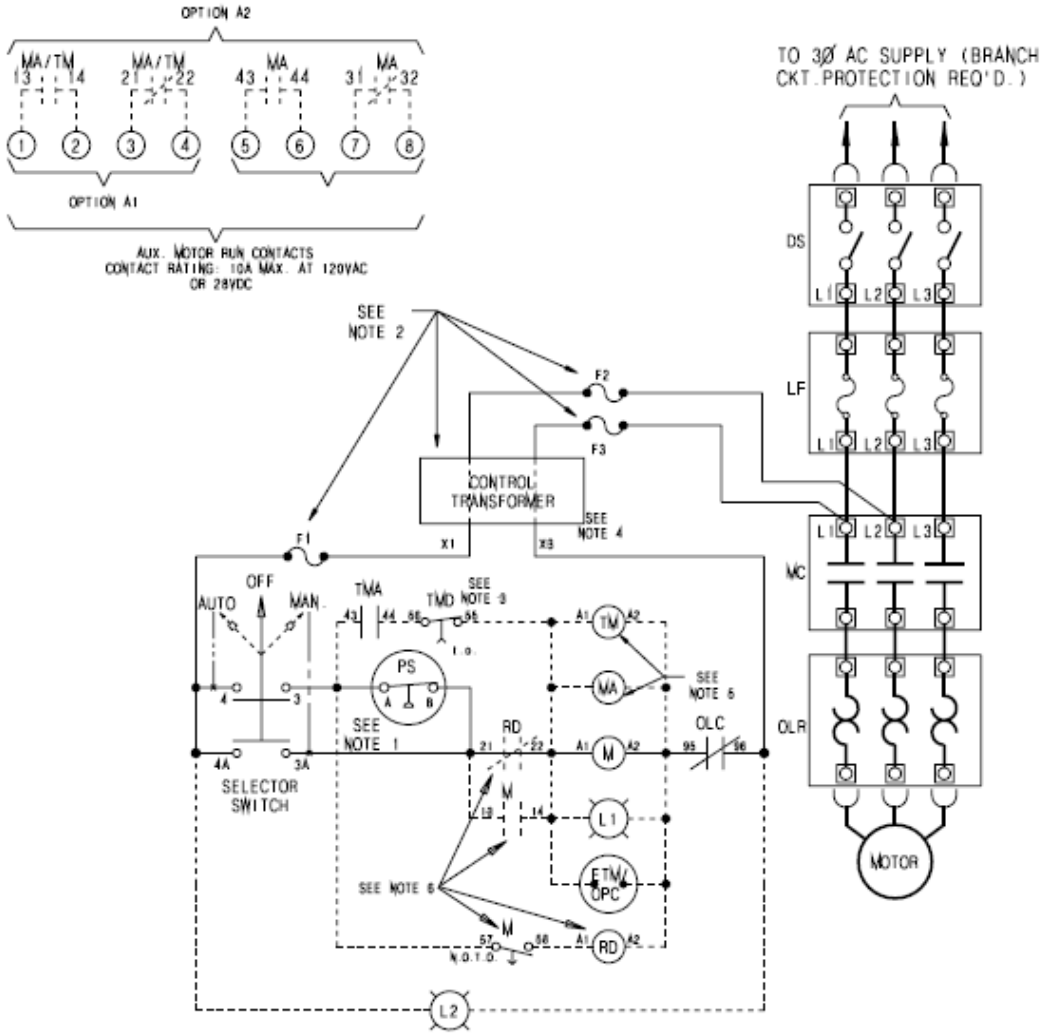
Model JPC Pump Motor Controller

MASTER



SYMBOL	DESCRIPTION
DS	DISCONNECT SWITCH
LF	LINE FUSES
MC	MOTOR CONTACTOR CONTACTS
OLR	OVERLOAD RELAY
PS	PRESSURE SWITCH
M	MOTOR CONTACTOR COIL
MA	AUX. MOTOR RUN RELAY
TM	MINIMUM RUN TIMER
RD	RESTART DELAY
OLC	OVERLOAD CONTACTS
TMA	MIN.RUN TIMER INST.CONTACT
TMD	MIN.RUN TIMER TIME CONTACT
F1	SECONDARY CONTROL CKT.FUSE
F2,3	PRIMARY CONTROL CKT.FUSE
L1	PUMP RUNNING LIGHT
L2	POWER AVAILABLE LIGHT
ETM/ OPC	ELAPSED TIME METER -OR- OPERATIONS COUNTER
-----	OPTIONAL EQUIPMENT
⌒	FIELD WIRING

NOTES:

1. PRESSURE SWITCH CLOSES ON FALLING PRESSURE.
2. SUPPLIED WITH OPT.1-CONTROL POWER XFMR.
3. SUPPLIED WITH OPT.2-MINIMUM RUN TIMER CONTACT OPENS WHEN TIMER TIMES OUT.SET TIMER TO 1 MIN.FOR EACH 10 HP OR FRACTION THERE OF.MAX.SETTING-3 MIN.(180 SEC.)
4. FOR XFMR.PRIMARY.SEE LABEL ON WINDING.
5. MA SUPPLIED WITH OPTION A2 OR OPTION A1 WHEN OPTION 2 IS NOT PROVIDED.
6. RD AND ADDITIONAL M CONTACTS SUPPLIED WITH OPT.4-RESTART DELAY(0-30 SEC).

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Master Control Systems Inc. LAKE BLUFF, ILLINOIS U.S.A.	Model JPC Pump Motor Controller Schematic Diagram	Date	28 April 2014
		Drawing	7851 Issue 5

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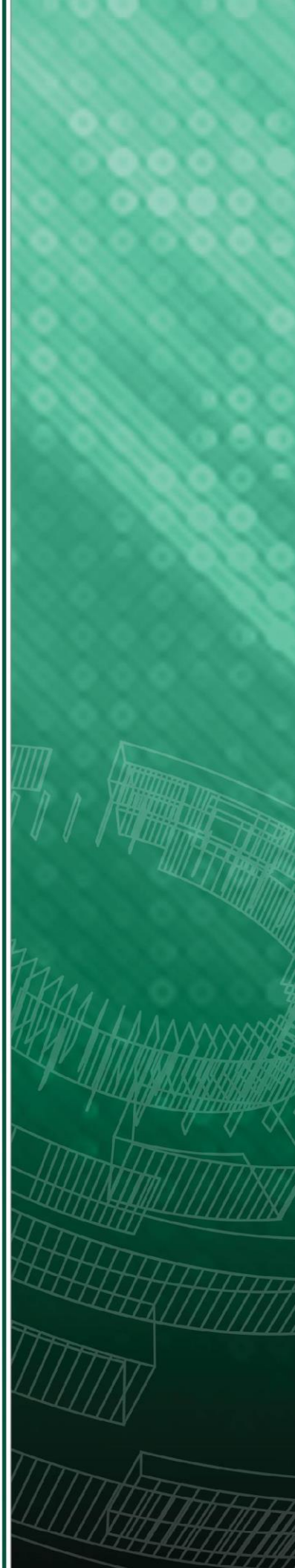

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