



OPERATION MANUAL

IMPORTANT

1. Read these instructions thoroughly prior to proceeding with installation.
2. Ensure that the installation conforms to all applicable local and national codes.
3. These instructions contain important information for the proper maintenance and repair of this equipment. Retain these instructions for future use.

SAFETY CONSIDERATIONS

Improper installation, adjustment, alteration, service, maintenance, or use can cause explosion, fire, electric shock, or other occurrences, which may injure you or damage your property. The qualified installer or agency must use only factory-authorized kits or accessories when modifying this product.

- Follow all safety codes.
- Wear safety glasses and work gloves.

Be sure all power to equipment is shut off before performing maintenance or service. More than one disconnect may be present.

Refer to appropriate dimension sheets for locations of electrical inlets, inlet and outlet piping connections, drain connections and required clearances before setting unit in place.

CONSTRUCTION

The OMNITROL 400 consists of a printed circuit board housed in a corrosion resistant enclosure, with attached preset and pre-wired Differential Pressure (DP) Switch LED indicator light, reset button and interconnecting wiring.

The OMNITROL 400 is a powerful controller, which allows the user flexibility in controlling an ORIVAL filter while maintaining simplicity and reliability at low cost.

OPERATING FEATURES

Rinse Cycle Activation – Rinse cycles can be activated by any of the following methods:

- By differential pressure only
- By timer only
- By timer with differential pressure override
- Manually

The OMNITROL 400 is capable of accepting input voltages of 110 or 220 VAC, 50-60Hz single phase. The unit is supplied with a factory installed and wired Differential Pressure Switch. The switch has been factory preset for proper operation – **NEVER ADJUST!** The unit provides a 24Vac (powered by an internal control transformer) signal for operation of a solenoid valve for rinse cycle control.

Adjustable parameters include:

- Duration of rinse cycle
- Timer interval to activate automatic rinse cycles

A LED is installed on the controller housing to indicate filter mode and assists in troubleshooting filter operation.

INSTALLATION PROCEDURES

Mounting - The controller must be mounted in an upright vertical position, allowing access for service and troubleshooting. The reset button and LED indicator should be visible and accessible. For best results, install the controller as near as possible to the filter it is to control to minimize tubing runs to the Differential Pressure Switch.

Power Source Connections – The system operates on either 110 VAC, single phase, 50/60 Hz or 220 Vac, single phase, 50/60 Hz power. Jumper terminals (labeled 1, 2, 3 & 4) on the printed circuit board are used to configure the board for the proper supply voltage. See schematic for proper connections of jumpers and power source.

NOTE: The controller is shipped prepared for 110VAC operation. UNDER NO CIRCUMSTANCES SHOULD ANY POWER SUPPLY OTHER THAN 110/220 VAC BE CONNECTED TO THE CIRCUIT BOARD. Failure to follow these guidelines will result in system overload and may damage the controller.

Input Connections – The OMNITROL 400 has a single input, which is normally used for connection of a Differential Pressure Switch. In most cases, this switch is factory mounted and wired, and is factory preset to 7 psi. **NEVER ADJUST!** The switch is connected across DP terminals IN and G.

If the system is to be rinsed based on timer only (no differential pressure activation), then these terminals can be used for activation of rinse cycles by an external source. Note that these are not dry contacts – power is present in these terminals.

Output Connections – The OMNITROL 400 provides for connection of a single output, normally used for a solenoid valve for rinse cycle activation.

The terminals are labeled SOLEN and provide 24Vac power via an internal control transformer.

ADJUSTING PARAMETERS

NOTE: The DP Switch has been preset. **Do not adjust prior to start-up.**

Rinse Cycle Duration – The rinse cycle duration is controlled by the set of dip switches labeled “S1”. To set the rinse cycle time, set the dip switch for S1 according to Table 1. Note that the ON position is up on the dip switch. Refer to the Operation and Maintenance Manual supplied with your filter to determine the proper timer setting.

Timed Interval Between Rinse Cycles – The time interval between rinse cycles is controlled by the set of dip switches labeled “S2”. The setting for the switch is given in Table 2. For initial operation, it is recommended to set S2 for DP only until sufficient experience has been gained in operation of the filter.

**Table 1 – Dip Switch S1 Setting
Rinse Cycle Duration**

Switch Setting 1 2 3 4	Timer Setting
0 0 0 0	5 seconds
1 0 0 0	8 seconds
0 1 0 0	10 seconds
1 1 0 0	12 seconds
0 0 1 0	16 seconds
1 0 1 0	20 seconds
0 1 1 0	25 seconds
1 1 1 0	30 seconds
0 0 0 1	45 seconds
1 0 0 1	1 minute
0 1 0 1	1 minute, 30 seconds
1 1 0 1	2 minutes
0 0 1 1	3 minutes
1 0 1 1	4 minutes
0 1 1 1	6 minutes
1 1 1 1	10 minutes

**Table 2 – Dip Switch S2 Setting
Timed Interval Between Rinse Cycles**

Switch Setting 1 2 3 4	Timer Setting
0 0 0 0	DP Only
1 0 0 0	5 minutes
0 1 0 0	10 minutes
1 1 0 0	15 minutes
0 0 1 0	20 minutes
1 0 1 0	30 minutes
0 1 1 0	45 minutes
1 1 1 0	1 hour
0 0 0 1	2 hours
1 0 0 1	4 hours
0 1 0 1	8 hours
1 1 0 1	12 hours
0 0 1 1	18 hours
1 0 1 1	24 hours
0 1 1 1	72 hours
1 1 1 1	120 hours

SYSTEM OPERATION

NOTE: Prior to applying power to the controller, verify that the jumpers have been set properly and that the dip switches S1 & S2 have been adjusted to the proper values.

With power applied to the controller, depressing the RESET button on the side of the controller will activate a rinse cycle.

Upon completion of this initial rinse cycle, the controller will begin monitoring the DP terminals for closure (indicating a high DP). On closure of these terminals, a 3 second delay is imposed prior to energizing the solenoid.

If a time interval has been selected on switch S2, then the filter will rinse when the time elapsed since the last rinse cycle matches the time interval setting. If the DP switch senses a high differential pressure during this interval, the controller will override the timer and a rinse cycle will be activated. Following the rinse cycle, the timer will automatically reset.

A manual rinse cycle can be activated at any time by depressing the RESET button on the side of the controller.

If the filter experiences seven (7) consecutive rinse cycles based on high differential pressure, the controller will prevent further rinse cycles and will enter fault mode, requiring manual intervention.

TROUBLESHOOTING

The controller is equipped with an LED indicator on the side of the enclosure to facilitate in troubleshooting. Table 3 shows the possible LED status and system condition.

If the LED is OFF, indicating a problem, first verify that power is present at the controller, then depress the RESET button, activating a manual rinse cycle. Note that the factory supplied solenoid coil has a light to indicate that the coil is energized, and the controller LED will blink during the rinse cycle. If after performing the single rinse cycle, the controller activates additional DP rinses, then a problem exists either with the DP switch or the filter. Check to see if the filter has an excessive differential pressure (greater than 7 psi). If so, refer to the filter Operation and Maintenance Manual for service procedures. If the differential is not excessive, check the DP switch and replace as necessary.

Table 3 - Troubleshooting

LED Status	Meaning	Action to be Taken
OFF	Possible problem with controller or power supply	Check to ensure that power is available at control box, then press RESET button
Blinking Once per Second	Solenoid energized – filter is in rinse mode	None
Double Blinking	Confirmation of change of setting of S1 or S2	None
ON	Normal mode – controller is waiting for activation of rinse cycle	None

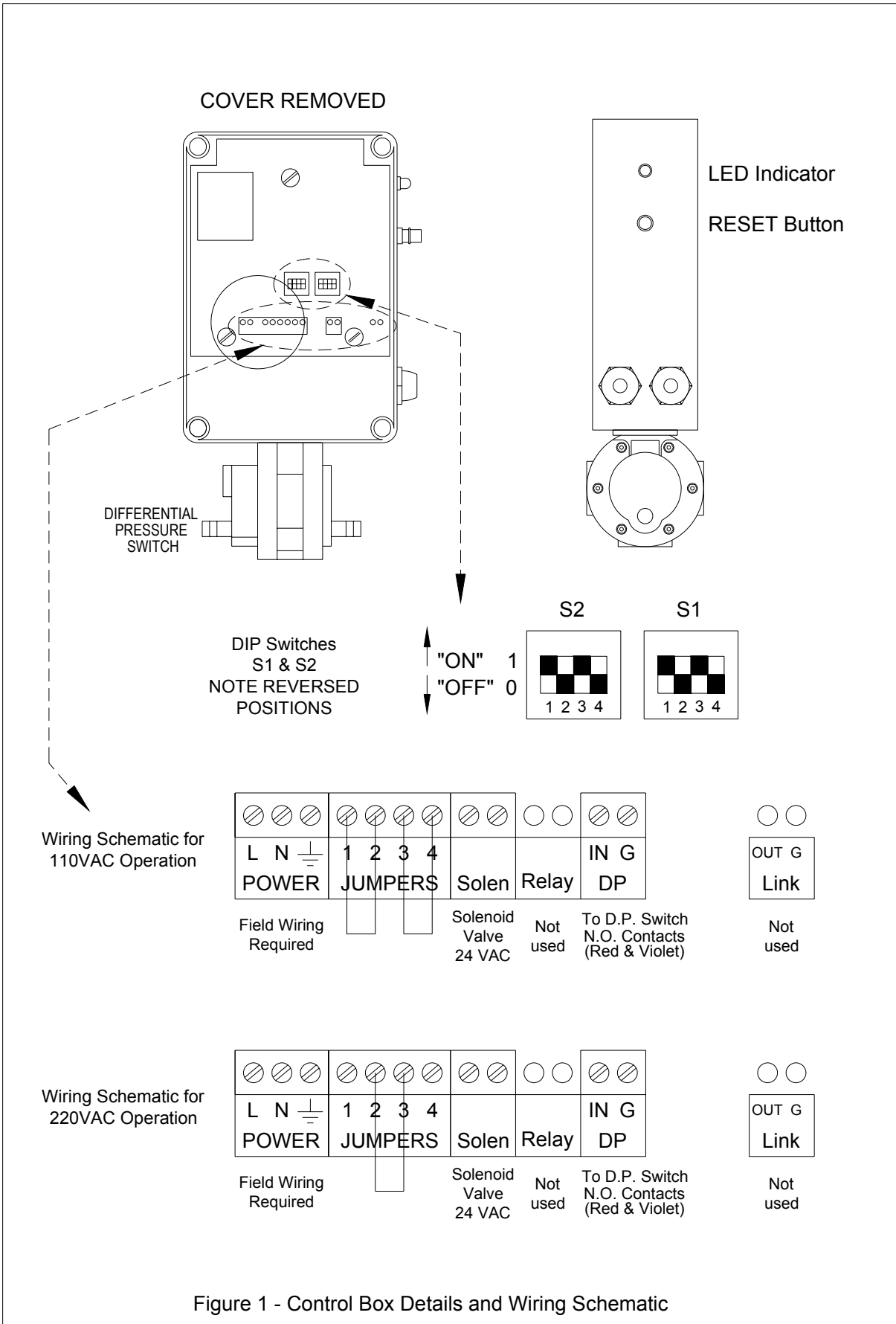


Figure 1 - Control Box Details and Wiring Schematic