



***OPERATION AND MAINTENANCE MANUAL***  
***OMNITROL 500 CONTROL SYSTEM SUPPLEMENT***

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## I. Introduction

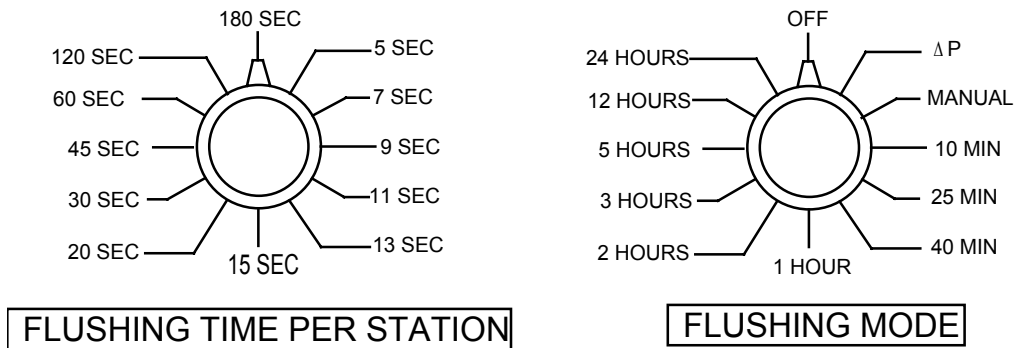
The **OMNITROL 500** is a powerful controller that allows the user flexibility in controlling an ORIVAL filter while maintaining simplicity, reliability, and low cost.

### Features

- Rinse cycle activated by differential pressure only
- Rinse cycle activated by timer with differential pressure override
- Rinse cycle activated manually
- Rinse cycle activated remotely (closure of dry contacts using DP switch terminals – no DP switch installed or connected)
- Powered by either 110 or 220 Vac, 50/60 Hz – customer selectable  
(A DC version is also available, and requires a 12 VDC, 6AH source)
- Input:
  - Factory preset differential pressure (DP) switch
- Outputs included:
  - Connection for up to 2 filters in a parallel configuration  
*Optional: Connections for up to 4 or 6 filters, available upon request.*
  - Connection for Controlled Outlet Valve. (C.O.V.)
- Adjustable parameters include:
  - Duration of rinse cycle (per filter).
  - Duration of delay between successive filters (Dwell Time).
  - Differential Pressure (DP) switch delay.
  - Number of consecutive rinse cycles to activate an internal alarm.
  - Timer interval to activate automatic rinse cycles.

## II. Using the Rotary Switches

The **OMNITROL 500** is equipped with two rotary switches as shown below:



- The **FLUSHING TIME PER STATION / FILTER** switch must be set before the system is switched on. The time can be obtained from the following table:

Model	Duration	Model	Duration
ORI-02-PE	5-7 seconds	ORI-08-xS	7-9 seconds
ORI-03-xS	5-7 seconds	ORI-08-xE	13-15 sec
ORI-03-xE	7-9 seconds	ORI-10-xS	7-9 seconds
ORI-04-xS	7-9 seconds	ORI-12-xS	13-15 sec
ORI-04-xE	7-9 seconds	ORI-14-xS	13-15 sec
ORI-06-xE	7-9 seconds	ORI-16-xS	13-15 sec

For ORL Series filters, set the time to 20 seconds.

For ORC Series filters, set the time to 15 seconds.

- When the **FLUSHING MODE** switch points to the **OFF** position the controller is switched off and no rinse will take place. If the **FLUSHING MODE** switch points to any other position, the internal buzzer will sound every 4 seconds.
- When the **FLUSHING MODE** switch is set to the **DP** position the controller will start a rinse cycle only when the Differential Pressure increases to the preset value (7 psi).
- When the **FLUSHING MODE** switch is set to the **MANUAL** position the controller will activate a single rinse cycle. At the completion of a manual rinse cycle, another position must be selected to continue controller operation.
- All other settings of the **FLUSHING MODE** switch will perform a rinse cycle according to the selected time or upon detection of a high DP signal. Note that this timer resets after every rinse (high DP, timer or manual).
- Changing the setting of each of the switches will sound the buzzer. The **FLUSHING MODE** switch will make a longer beep at the **OFF** position. The **FLUSHING TIME PER STATION** switch will make a longer beep at the **5 SEC** position. The longer beep helps to adjust the knobs.

### III. Connection of Inputs, Outputs and Power

The control system recognizes one input:

DP: Terminals **In** and **G**: Used for the connection of a differential pressure switch to activate the automatic rinse cycles based on differential pressure. (If the system is to be rinsed based only on timer, i.e., no DP switch is present, 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.)

The outputs to be used are determined by the number of filters and/or the presence of a controlled outlet valve (COV). The order of connections is always as follows:

- Filter Solenoid Valves (1 through x, where x is the number of filters)
  - (C.O.V.) Solenoid Valve
    - Connect the C.O.V. as the last available output (see page 5)
- NOTE: The C.O.V. option has a built in delay of 16 seconds**

#### Power Source Connections:

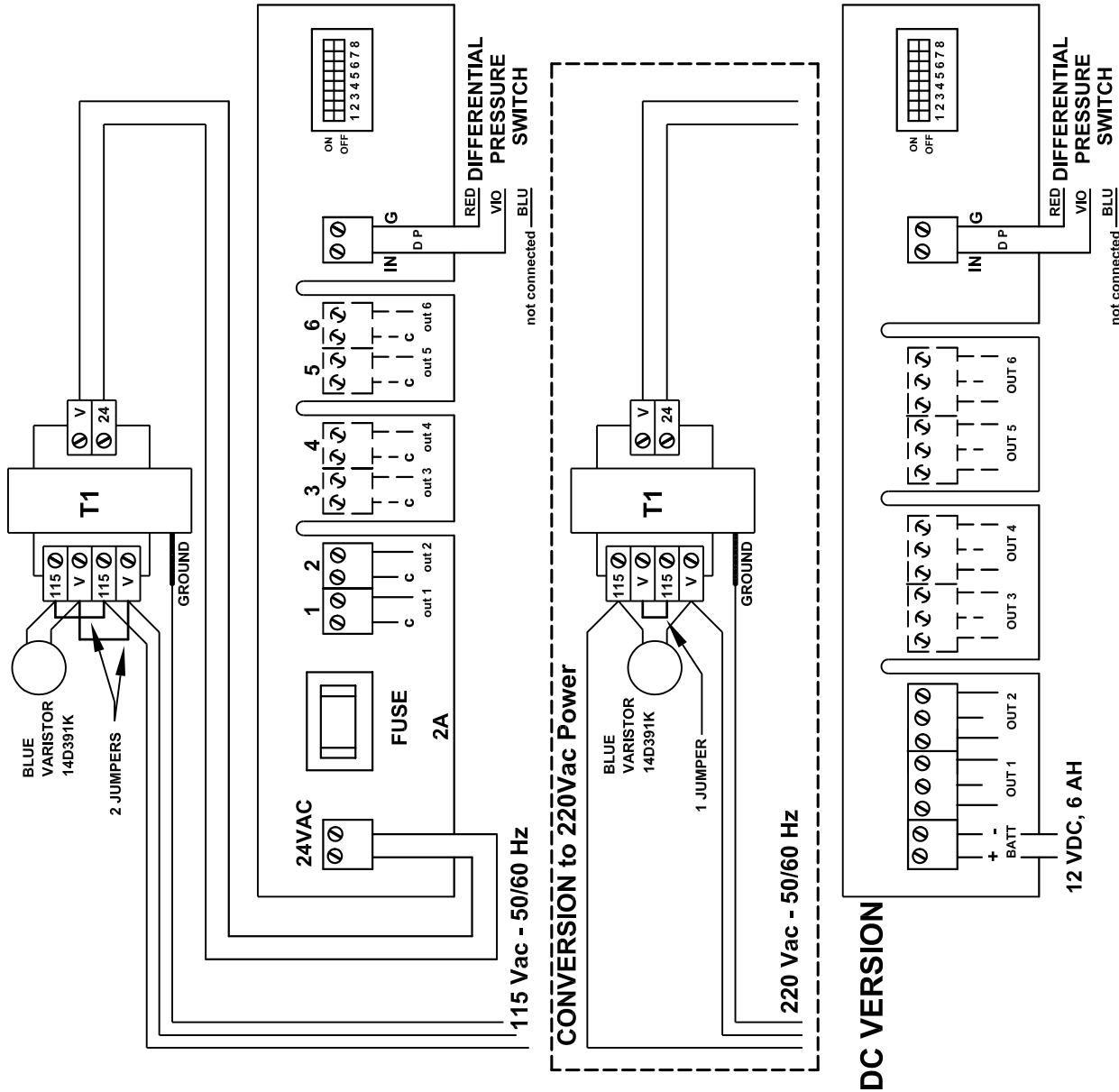
##### AC VERSION

The AC controller is supplied pre-configured for 110-120 VAC, single phase, 50/60 Hz operation, but can be converted by the customer for use with 220v AC, single phase, 50/60 Hz power by changing jumpers and a varistor terminations (see the schematic on page 4 for details). The system is supplied with a transformer to step the supply voltage down to 24 VAC for the printed circuit board. **UNDER NO CIRCUMSTANCES SHOULD ANY POWER SUPPLY OTHER THAN 24 VAC BE CONNECTED TO THE PRINTED CIRCUIT BOARD.** Failure to follow these guidelines will result in system overload and may short circuit the board.

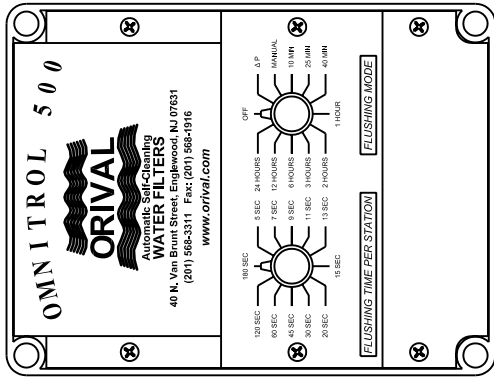
##### DC VERSION

The DC controller requires a 12 VDC power source rated at 6AH or greater. See page 4 for schematic, and page 5 for connection details.

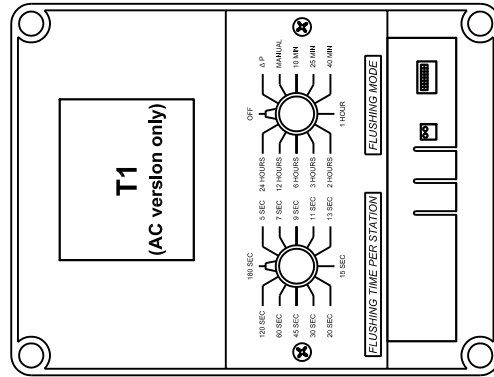
**NOTE: CONTROLLER SUPPLIED FOR 115 Vac Power - 220 Vac Conversion also Shown**



## PANEL LAYOUT



DP LOW (FILTER OUTLET) DP HIGH (FILTER INLET)



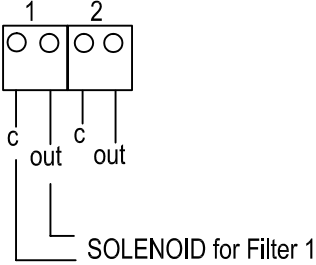
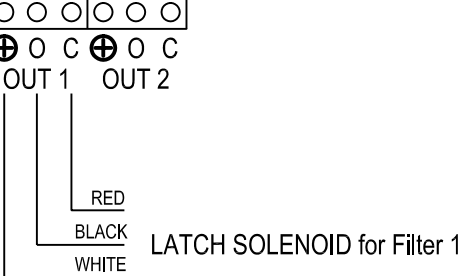
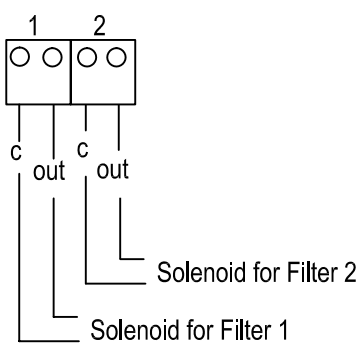
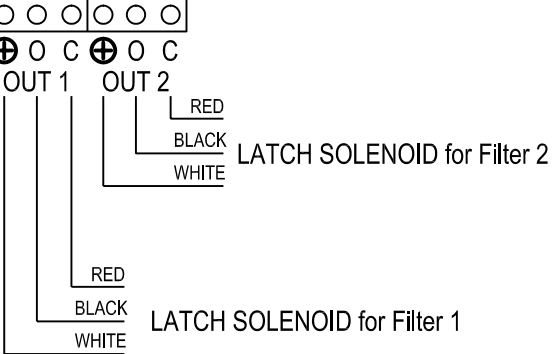
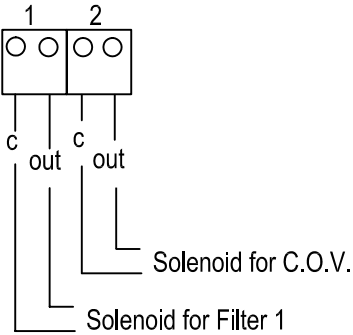
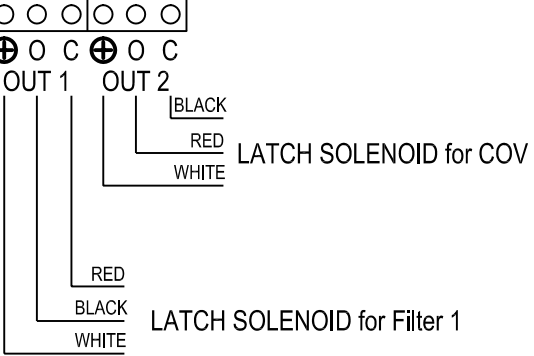
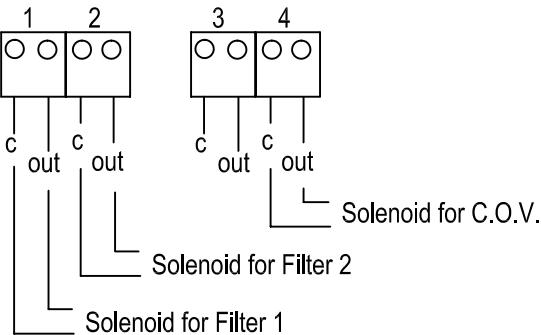
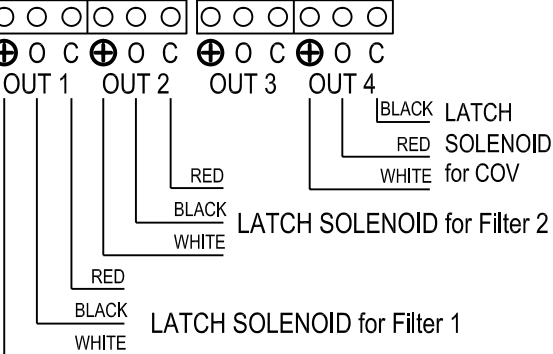
**COMPONENT LAYOUT (PANEL COVERS REMOVED)**

PROJECT:	OMNITROL 500 - GENERAL WIRING SCHEMATIC		
DRAWING NO.	SCHEM-OMNI 500 -- AC / DC		
SHEET:	1 of 1		
DRAWN BY:	G. KALINOWSKI		
APPROVED BY:	R. SCHWARTZ		
DATE:	03/15/06		
SCALE:	NONE		
REVISION	DESCRIPTION	DATE	APPROVED

# Output Connections

## AC VERSIONS

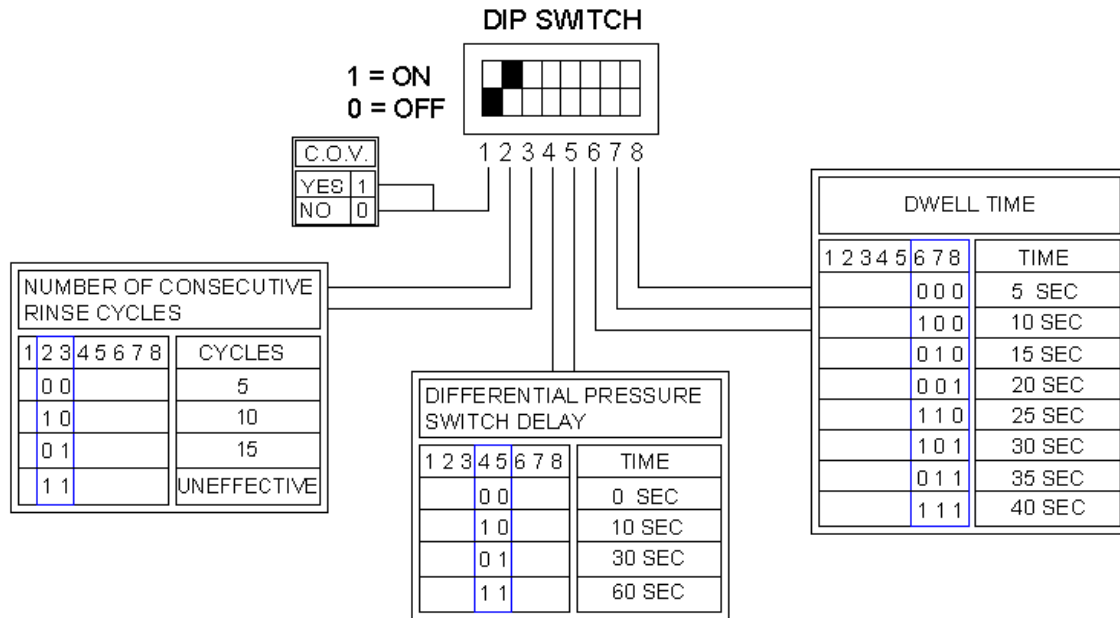
## DC VERSIONS

<p>1 Filter</p>	 <p>SOLENOID for Filter 1</p>	 <p>LATCH SOLENOID for Filter 1</p>
<p>2 Filter</p>	 <p>Solenoid for Filter 2 Solenoid for Filter 1</p>	 <p>LATCH SOLENOID for Filter 2 LATCH SOLENOID for Filter 1</p>
<p>1 Filter with C.O.V.</p>	 <p>Solenoid for C.O.V. Solenoid for Filter 1</p>	 <p>LATCH SOLENOID for COV LATCH SOLENOID for Filter 1</p>
<p>2 Filters with C.O.V.</p>	 <p>Solenoid for Filter 1 Solenoid for Filter 2 Solenoid for C.O.V.</p>	 <p>LATCH SOLENOID for Filter 1 LATCH SOLENOID for Filter 2 LATCH SOLENOID for COV</p>

NOTE: FILTER SOLENOIDS ARE CONNECTED AS Normally Closed & A COV SOLENOID IS CONNECTED AS Normally Open

## IV. Adjusting Parameters

Four constant parameters can be set by the printed circuit board's 8-position DIP Switch. The following chart describes which switch positions are responsible for each parameter and what are the options. The DIP Switch is located at the bottom right corner of the printed circuit board. To find the DIP Switch, remove the lower panel of the **OMNITROL 500** controller. To operate the DIP Switch, move designated switches to desired configuration. (see diagram below).



**COV Presence:** Position 1 of the DIP Switch tells the controller if a Controlled Outlet Valve (COV) is present. The up position (ON) indicates that a COV is present and the valve's solenoid is connected to the last available output. At the start of a rinse cycle, the COV output is energized first, then after a fixed 16 second delay, the filter's solenoid is energized. The COV output stays energized until the filter(s) rinse cycle is complete.

**Consecutive Rinse Cycles:** Positions 2 & 3 of the Dip Switch determine the number of consecutive rinse cycles allowed before the controller stops rinsing. The recommended value is **5** cycles. If the DP switches normally open contacts remain closed, the filter will perform consecutive rinse cycles. If the preset number of consecutive rinse cycles is reached, the internal alarm will sound and the DP switch and timer will be deactivated. To reactivate the DP switch and timer, the FLUSHING MODE rotary switch must be turned to the OFF position, then back on.



**Differential Pressure Switch Delay:** Positions 4 & 5 of the DIP switch are used to select the DP switch delay between 0 and 60 seconds. This delay prevents the activation of false rinse cycles due to pressure fluctuations not representative of dirty screen conditions. The minimum recommended delay time is **10** seconds.

**Dwell Time:** When the *OMNITROL 500* is used to control multiple filters, positions 6,7 & 8 of the DIP switch sets the dwell time and is defined as the delay between the individual filters rinse cycles. The recommended Dwell Time is **5** or **10** seconds.