



▲ Pump Commander II shown

The OCV Pump Commanders are factory wired control panels that interface with any of the OCV Series 125/126 Pump Control Valves. All models are easily installed and minimize wiring between the pump control valve and pump. Each model provides the basic commands for starting/stopping of the pump and for opening/closing the pump control valve. Varying degrees of pump protection and visual indication of system status are available, with the level of sophistication dependent upon the model used.

## SERIES FEATURES

- ▶ Commands pump and pump control valve.
- ▶ Indicator lights to show system status.
- ▶ Rugged NEMA 4X rated enclosure (weather tight and corrosion resistant).
- ▶ Clear, easy to understand wiring connections.
- ▶ Booster pump and deep well applications.
- ▶ Factory tested before shipment.

## PUMP COMMANDER MODELS/FEATURES

The following are the most common Pump Commanders. Others are available to meet your specific needs, consult factory.

FEATURE	Pump Commander II	Pump Commander III	Pump Commander IV
Front Panel H-O-A Switch	Yes	No	Yes
Front Panel Reset	Yes	Yes	Yes
Pump Run Light	Yes - Blue	Yes - Green	Yes - Green
Valve Open Indication	Yes - Green	No	No
Emergency Off Indication			
If valve fails to open	Yes - Flashing Red & Green	Yes - Red	Yes - Red
If pump fails to maintain pressure	Yes - Flashing Red & Blue	No	No
Delayed Automatic Restart (Prevents pump from restarting for predetermined time after power failure. Can be manually overridden)	Yes - Amber	No	No
Control accomplished via:	PLC	Relays	Relays
Pressure switch included	Yes	No	No
Enclosure Type	NEMA 4X	NEMA 4X	NEMA 4X
Enclosure Size (H x W x D)	16" x 12.5" x 8.5"	10" x 6.5" x 6"	10" x 6.5" x 6"

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## VALVE OPERATION

### Pump Commander II

#### A. NORMAL STARTUP

1. Startup is initiated by placing the HAND-OFF-AUTO switch in HAND, or by placing it in AUTO and closing the REMOTE START switch.
2. The pump will start and the BLUE light will flash. Also, the FIRST time delay interval (T1) will be initiated.
3. As the pump comes up to pressure, the PRESSURE SWITCH contacts will close. The BLUE light will now burn steady. The SECOND time delay interval (T2) will be initiated.
4. At the conclusion of the SECOND time delay interval, the SOLENOID PILOT will be energized so the valve can begin opening. The GREEN light will start to flash, and the THIRD time delay interval (T3) will be initiated.
5. After the valve opens a small distance, the LIMIT SWITCH contacts will close and the GREEN light will now burn steady. The valve will continue to its full open position.
6. Normal pumping cycle is indicated by an open valve and steady BLUE and GREEN lights.

#### B. NORMAL SHUTDOWN

1. Shutdown is initiated by turning the HAND-OFF-AUTO switch to OFF, or, if in AUTO, by opening of the REMOTE START switch.
2. The SOLENOID PILOT is deenergized, and the valve starts slowly closed.
3. When the valve is virtually closed, the LIMIT SWITCH opens, the GREEN light turns off and the pump stops.
4. As pressure subsides, the BLUE light turns off.

#### C. ABNORMAL CONDITIONS

In the event of an abnormal pumping condition, the Pump Commander II will react by immediately shutting down the pump and deenergizing the SOLENOID PILOT. The valve will then close quickly. The indications will be a flashing red light accompanied by either a flashing blue or flashing green, as described below, plus the audible alarm circuit will be activated. This condition will continue, and the pump cannot be restarted until the HAND-OFF-AUTO switch is momentarily turned to OFF (RESET).

The above sequence will occur if any of the following happens:

1. If the pump fails to develop adequate discharge pressure before the FIRST (T1) time delay interval expires (flashing red plus flashing blue).
2. If the valve fails to open before the THIRD (T3) time delay interval expires (flashing red plus flashing green).
3. If the pump discharge pressure should fall below the preset minimum during a run (flashing red plus flashing blue).
4. If the valve should close prematurely during a run (flashing red plus flashing green).

#### POWER FAILURE

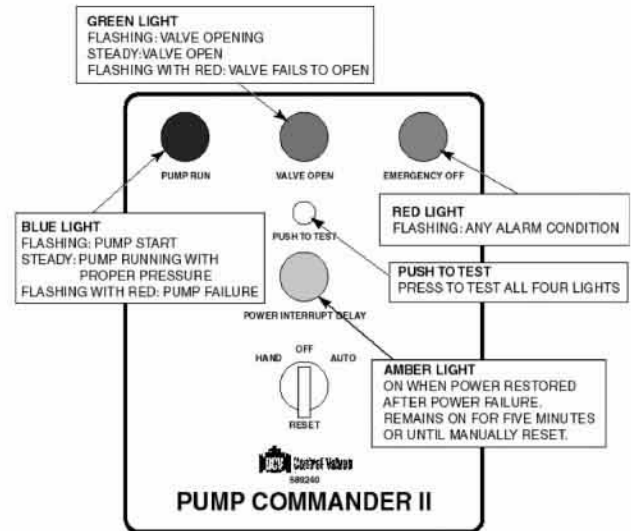
If electrical power failure should occur during a run, the pump will, of course, shut down, and the valve will close quickly in the emergency mode described above. Then, when power is restored, the AMBER power interrupt delay light will be illuminated. This light will remain lit, and the pump cannot be restarted until five minutes (time delay VRO) has elapsed or the HAND-OFF-AUTO switch is momentarily turned to OFF (RESET).

#### TIME DELAY SETTINGS

There are four time delay controls in the Pump Commander II, contained in a single timer unit located on the left side of the PLC. Each is adjustable by turning the adjustment dial clockwise to increase the time setting.

The four timers are designated and programmed as follows:

- Timer VRO:** Sets the time delay (T0) for automatic restart when power is restored after a power failure. Adjustable for 0 - 15 minutes (approximately 90 seconds per graduation), it is factory-set at 5 minutes. For maximum protection of the pump and system, it is recommended that this setting not be decreased.
- Timer VR1:** Sets the FIRST time delay interval (T1); i.e., the time delay waiting for the pump to come up to pressure. If minimum pressure has not been attained at the end of this interval, the pump will be shut down. It is adjustable from 0 to 255 seconds (approximately 25 seconds per graduation) and is factory set at 10 seconds. This should be adequate for most installations. On well pumps, where a considerable length of time is spent exhausting the air column, a longer delay period may be necessary.
- Timer VR2:** Sets the SECOND time delay interval (T2), which delays the valve from opening once the pump has come to pressure. It is adjustable from 0 to 306 seconds (approximately 30 seconds per graduation) and is factory set at 3 seconds.
- Timer VR3:** Sets the THIRD time delay interval (T3); i.e., the time delay waiting for the valve to open. If the valve has not started open by the end of this interval, the pump will be shut down. It is adjustable from 0 to 306 seconds (approximately 30 seconds per graduation) and is factory set at 15 seconds. Again, this should be adequate in most instances, unless the valve has been set to open extremely slowly, in which case a longer delay may be necessary.



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