Determining Amperage for a Plast-O-Matic Solenoid Valve

For AC valves:

Consult the catalogue page for the valve. In the solenoid section find the valve "VA" rating given in the table. VA is the volts multiplied by the amps. "VA" refers to AC (alternating current) products only. There are generally 2 values, one for inrush and one for holding. Inrush is the sudden surge of current (measured in Amperes or Amps) that occurs when an AC solenoid is first energized. Within 50 to 150 milliseconds the inrush current is reduced to "hold" current, a much lower value.

The electrician installing the valve will need to know both values so he can install the proper size fuse, and wiring.

To get the inrush current (Amps) divide the VA value by the voltage supplied to the coil. The answer is the current.

Example:

For a PS valve (model W11 coil) the VA inrush is 66.
For an input voltage of 120 VAC the current would be:

$$\frac{66}{120} = .55 \text{ amps}$$

For an input voltage of 24 VAC the current would be:

$$\frac{66}{24} = 2.75 \text{ amps}$$

Notice as the voltage goes down, the amperage goes up.

Do the same for the holding current. Divide the holding VA by the input voltage to get the holding amps.

AC and DC coils get hot as they remain energized. The VA (and thus the current) does not change significantly as an AC coil gets hot. Therefore the coil has the same strength hot as it has cold, because strength is highly dependent on the current drawn. A W20 coil has a watt rating of 20 watts whether it is hot or cold. This is not the case for DC coils discussed in the next section.

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For DC valves:

The amps drawn by a DC valve does not have an inrush condition. There is no inrush current. However, as the coil remains energized it will get hot. Unlike the AC coil discussed above as a DC coil heats up, the current (Amps) drops, and the coil gets weaker as it heats up.

Therefore DC coils actually have a higher wattage rating when cold. They are designed to be stronger when cold and just strong enough when hot. A cold W20 coil actually has a Watt rating of approximately 35 watts when cold, which drops to about 20 Watts when hot. Therefore it may mislead an electrician to give him the 20 Watt rating. The amps drawn is calculated by dividing watts by the voltage.

Example:

A 20 watt coil using 24 VDC will draw	20/24 = .83 amps.
When this coil is cold it will draw:	35/24 = 1.46 amps

Plast-O-Matic DC coils have the following Watt rating:

W20: 35 Watts cold, 20 Watts hot
W11: 23 Watts cold, 11 Watts hot