

Municipal Water System Level Control

1644

Well Control

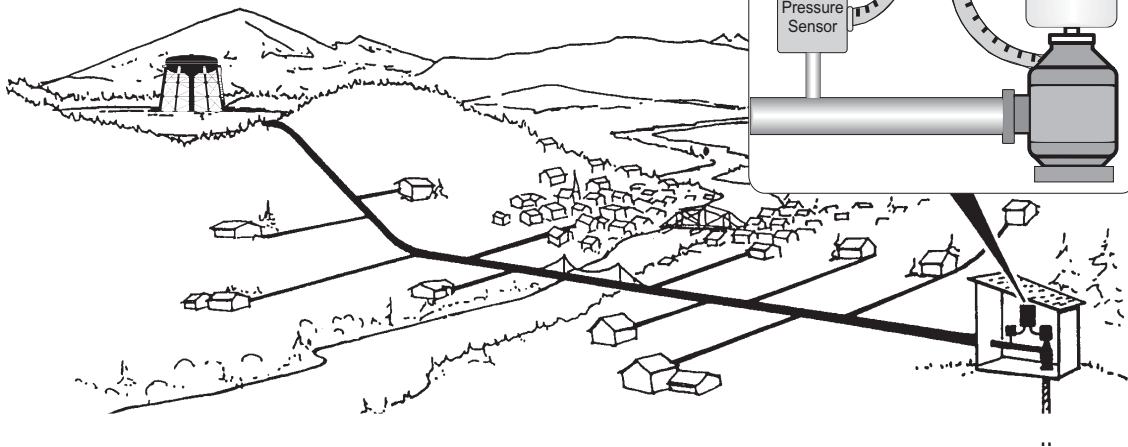
No remote sensors

No telephone lines

No radio links

No buried cables

Precise control of tank and
reservoir water levels
from the pump location.



Municipal Water System Level Control

The Herrin Design Model 1644 Well Control is designed to provide a cost effective means of controlling water system reservoir levels. Through precise monitoring, the Well Control is able to reliably sense reservoir water levels by measuring water pressure at the well head. By monitoring reservoir levels at the well head, it is possible to mount the water system controls in one location, eliminating the costly communications link--leased lines or buried cables--between reservoir level sensors and the pumps. Typically, mechanical sensors at the reservoir deteriorate or are broken frequently due to weather; and communications lines are a large, continued expense.

The Well Control tolerates temporary variations in water pressure due to surges and usage. The pump will not start until there is a constant low pressure level for 2-3 (variable) minutes (OFF TIME). This insures the pumps are activated only when necessary. Once the pump is turned on, it remains on for a preset period of time--up to 24 hours (ON TIME). During the pump cycle, the control does not rely on water pressure measurements to indicate if the reservoir is full. This feature eliminates sporadic pumping due to pressure variations created during the pumping cycle.

This combination of exacting pressure sensors and precise timing provides a very economical means of controlling community water system reservoir levels.

SYSTEM COMPONENTS

- 1 WELL CONTROL
- 1 PRESSURE SWITCH

STANDARD FEATURES

- * Fuse protected circuitry
- * Adjustable "on time" and "off time" settings
- * Adjustable pressure sensors: 10-100 PSI and 30-300 PSI
- * Operates on standard 110 VAC power
- * Solid state electronic circuitry

SPECIFICATIONS

POWER REQUIREMENTS	110VAC
CASE DIMENSIONS	
Well Control	8" x 6 1/2" x 4"
Pressure Switch	4" x 4" x 3"
CONTROL OUTPUT	Relay closure to energize pump contactor (10A, 240 VAC max)
CONTROL INPUT	Pressure switch

WARRANTY
The Herrin Design 1644 Well Control is a quality product. If proven to be defective in workmanship or materials within 2 years from the date of purchase, it will be repaired or replaced at the manufacturer's option at the factory. Warranty service on your Herrin Design equipment may be performed only by an authorized Herrin Dealer Representative. Unauthorized service procedures or parts will void and cancel your warranty. This warranty is given in lieu of all other warranties, either expressed or implied, and neither seller nor manufacturer shall be liable for any direct, incidental or consequential loss or damage arising out of the failure of the product to operate.

Control and communications equipment
designers and manufacturers
since 1974

HD Model
1644 Well
Control

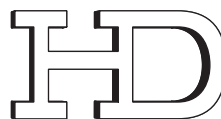
Pump
Contactor

Flexible
Conduit

Pressure
Switch

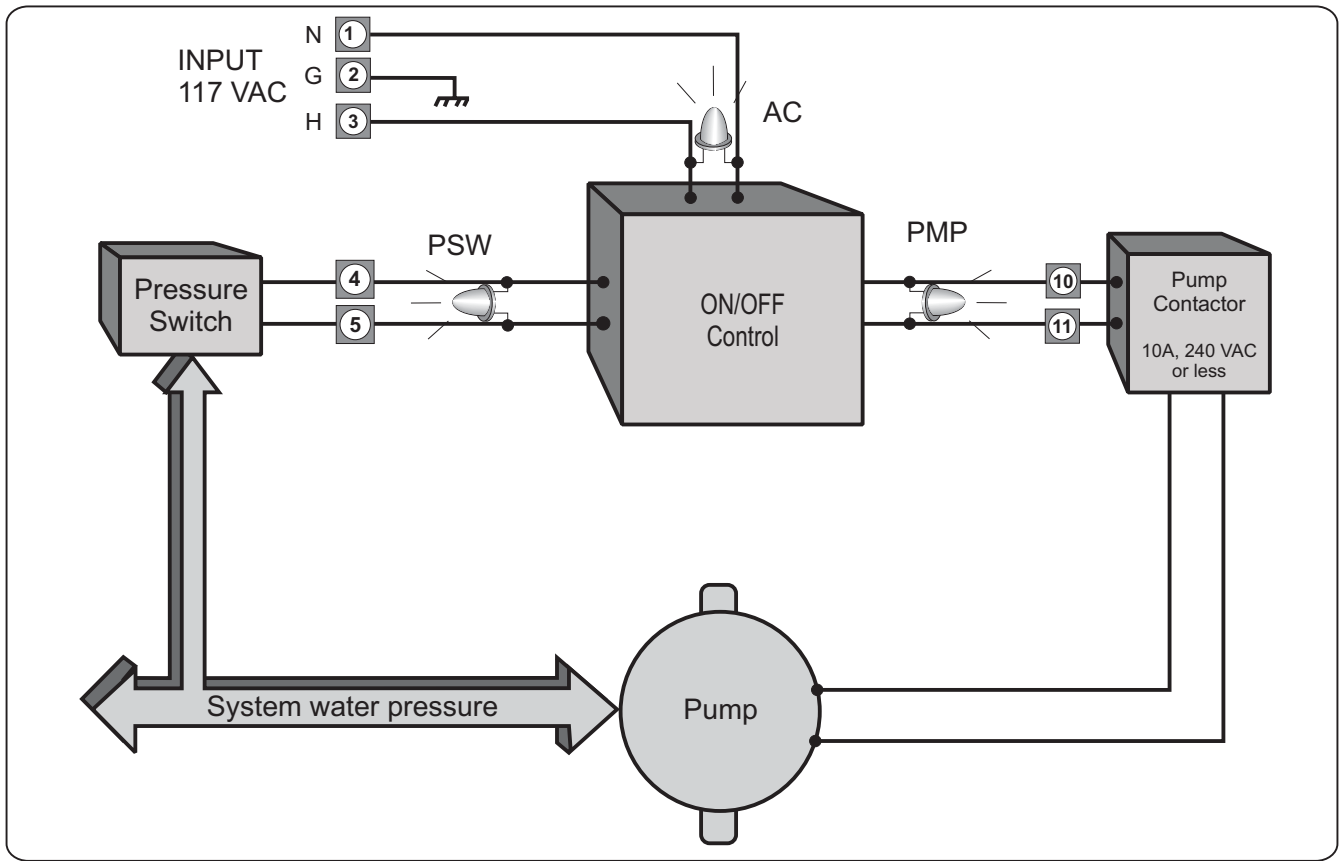


This typical installation of the Model 1644 Well Control was done by Olympic Services of Camano Island, WA.



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Herrin Design & Manufacturing Co.



Block diagram illustrating the simple installation and operation of Herrin Design's Model 1644 Well Control

FOR MORE INFORMATION ABOUT THIS
 EASY, ACCURATE WAY
 TO MAINTAIN STORAGE TANK
 WATER LEVELS CALL
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MODEL 1644 WATER SYSTEM LEVEL CONTROL

Installing and maintaining a tank or reservoir water level sensing device can be expensive for small community systems. The cost of maintaining underground wiring, leasing telephone lines or maintaining radio links can accumulate to significant cost levels in just a few years. The Model 1644 provides the means to reliably sense tank water level by measuring the water pressure at the well head. This gives the advantage of having all the controls for the water system in one place, eliminating the communication link between the reservoir and the pumps. With very little loss in accuracy, The Model 1644 Control uses accurate pressure sensing in combination with precise timing to provide a reliable, economical alternative for small community water systems.

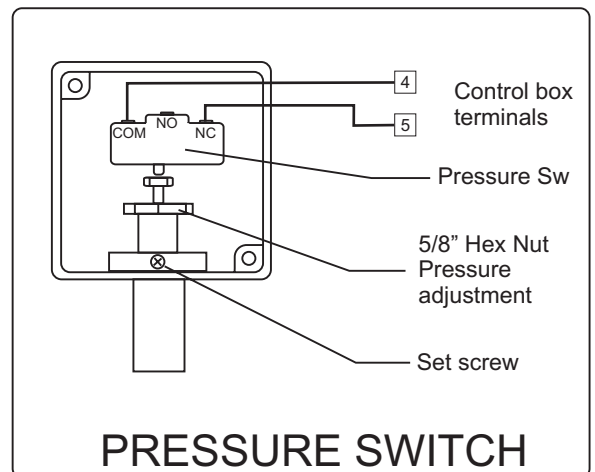
OPERATION

The 1644 control monitors system water pressure using a high quality, tight deadband pressure switch. Variations in pressure resulting from usage and pumping surges are filtered out by an adjustable time delay that allows the 1644 to ignore these relatively short pressure variations. This time delay (**OFF TIME**) is typically set for three or four minutes but the setting will vary with system characteristics. When the system pressure drops below a preset limit the pressure switch alerts the 1644 control. The PSW indicator turns on. The control will start the pump when this low pressure alert exceeds the **OFF TIME**. The PMP indicator turns on for the duration of the pumping cycle.

The duration of the pumping cycle is determined by the 1644 control **ON TIME** adjustment. The **ON TIME** is either a calculated time, using tank size and pump capacity, or a time derived from observation or both. See the **TIMER ADJUSTMENT** section for more detailed instructions. During the **ON TIME**, the pressure switch is ignored so that the higher line pressure does not interfere and cause on/off cycling. Only the timer or a power loss can turn the pump off during the **ON TIME**. When the **ON TIME** ends, the pump is turned off and the pressure switch again actively monitors the system pressure.

PRESSURE SWITCH

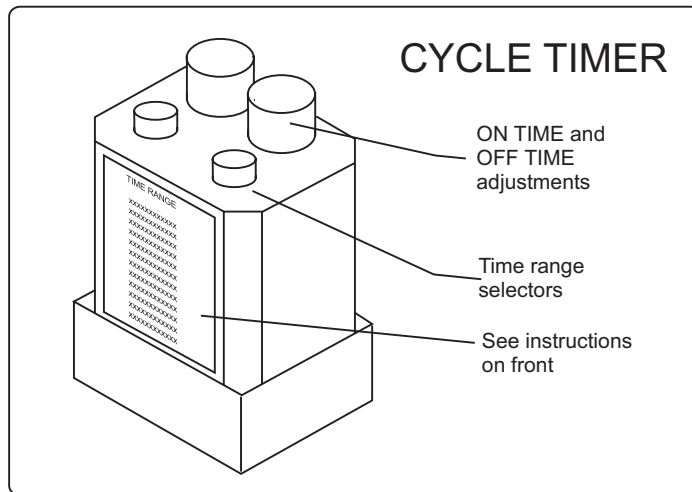
Connect the NC and C terminals of the Pressure Switch to terminals 4 and 5 of the 1644 Control Box (non-polarized). Adjust the pressure by first pumping the reservoir full. At the full point the pressure adjustment is set so the pressure switch plunger is just depressed and the PSW indicator is off. To adjust this threshold point loosen the set screw below the 5/8" hex nut, then adjust the 5/8" hex nut slowly so that the switch is OFF(plunger depressed, PSW indicator on). There is some slack in the adjustment between ON and OFF. Set the adjustment for 1/2 the difference between ON and OFF. At this threshold point the indicator will flash on and off due to usage but it should be predominately off.



TIMER ADJUSTMENT

OFF TIME

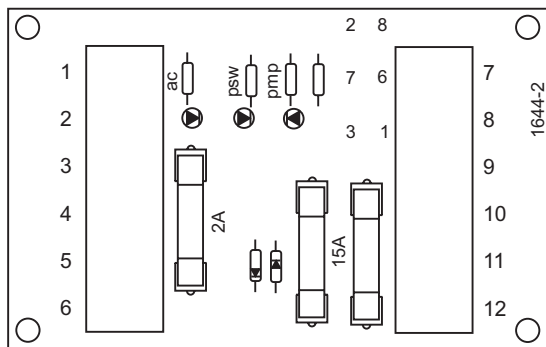
During normal operation the pressure switch will click on and off due to pressure changes in the water system. The **OFF TIME** is a method of ignoring these normal oscillations. As the reservoir water level lowers, the pressure switch will stay on longer. Eventually, the pressure switch will stay on long enough to match the **OFF TIME** setting on the timer. At that point, the pump will be turned on.



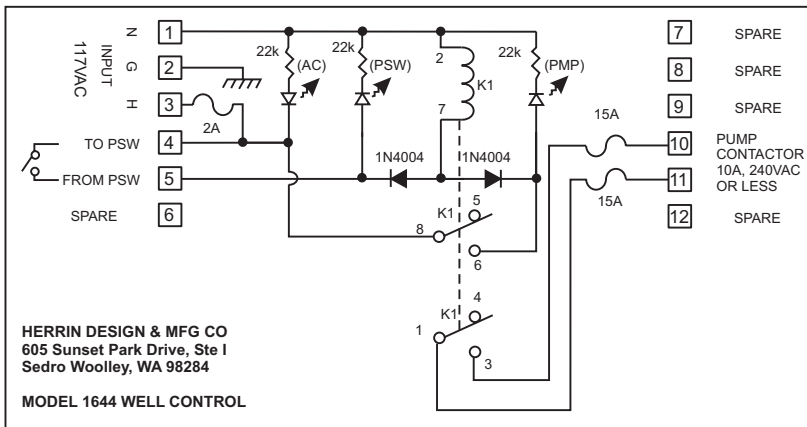
If the **OFF TIME** is set too short, then the pump may turn on too early which will lead to overflow. If the time is too long the reservoir may drop below desired levels. A typical **OFF TIME** seems to be two to four minutes. You should be able to watch the system's pressure gauge whenever the pump turns off and observe the time it takes for the system to stabilize.

ON TIME

The **ON TIME** is the time that the pump runs. Knowing the pump GPM and the dimensions of the reservoir you can calculate the time it would take to fill the tank from the turn on point established in the PRESSURE SWITCH section. Or set this time by allowing the tank to drop enough to turn the pump on and measure the time it takes to fill the reservoir. This is the **ON TIME**. If over fill is a critical problem, establish this pumping time based on a low usage or no usage time (usually early morning hours).



ac = AC power on
psw = Pressure switch on
pmp = Pump on



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MODEL 1644 WELL CONTROL

PARTS LIST

RELAY, REPEAT CYCLE TIMER	MACROMATIC TR-63122
RELAY SOCKET, 8 PIN OCTAL WITH TERMINAL STRIP	P&B 27E122
PRESSURE SWITCH, NARROW DEAD BAND 03 - 100 PSI 15 - 200 PSI 20 - 300 PSI	UNITED ELECTRIC H100-702-05 H100-358-05 H100-361-05
PRESSURE SNUBBER	OMEGA PS-4E
FUSE 2A FUSE (2) SLOW BLOW	GC 2 AMP MDL 15 AMP
ENCLOSURE	CARLON NM864
ENCLOSURE ASSEMBLY	ROTH 1644-1
PRINTED CIRCUIT ASSY	ROTH 1644-2
BASE PLATE	ROTH 1644-1-1
RELAY L BRACKET	ROTH 1644-1-2
HINGE	ROTH 1644-1-3
SOCKET PLATE	ROTH 1644-1-4