

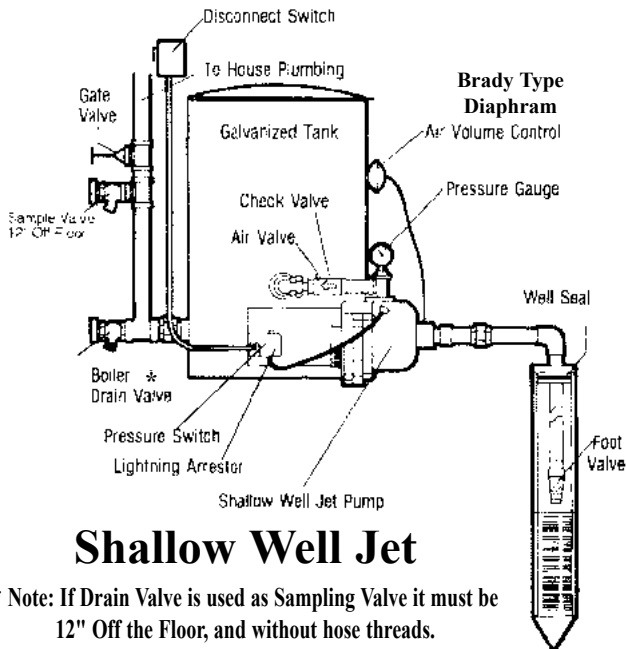
**DEEP WELL 2 WIRE SUBMERSIBLE \*\***

\*\*  
A 3 Wire Installation Has The Power Run From The Disconnect Switch, To The Pressure Switch, To The 3 Wire Pump Control Box, Then To The Pump In The Well.

- Torque Arrestor
- Hose Clamps
- Ground Wire From Motor or Motor Stud Bolt
- Male Adapter
- 2 Wire Submersible
- Safety Rope

**Grounding of Submersible Pumps in Wis. According to the 1990 NEC Code**

On Replacement Jobs where the offset cable is not replaced, a Green or Bare Ground Wire the same gauge of the sub cable is attached to the motor and run to the top of the well casing & taped off. Do not ground this wire. On New jobs this Ground Wire from the Motor is attached to the casing and run to the service panel ground. See Page 22 for Approved Seals for casing ground.



**Shallow Well Jet**

\* Note: If Drain Valve is used as Sampling Valve it must be 12" Off the Floor, and without hose threads.

**SUB PUMP INSTALLATION QUOTE SHEET**

DATE \_\_\_\_\_ The Job Is Not Done, 'Til The BILL Is Collected

CUSTOMER \_\_\_\_\_

ADDRESS \_\_\_\_\_

Well Capacity \_\_\_\_\_ GPH Dia. \_\_\_\_\_" Depth \_\_\_\_\_ Ft

Water Level-Static \_\_\_\_\_ Ft Pumping Level \_\_\_\_\_ Ft

Location / Permit # \_\_\_\_\_

SUBMERSIBLE			
Item	Qty.	Unit Price	Total Price
Pump Model No.			
Ext. Warranty			
Control Box			
TANK	<input type="checkbox"/> Captive Air		
	<input type="checkbox"/> Tank Cross		
	<input type="checkbox"/> Conventional Galv Tank		
	Air Charger		
	Line Check Valve		
	<input type="checkbox"/> Air Guard Tank		
Schrader Valve			
Lightning Arrestor			
Electrical Cable (Size)			
Pipe (Size) _____ (Length) _____			
Safety Rope			
Torque Arrestor			
Pitless Adapter/Well Seal			
Ground Wire			
Well Cap			
Male Insert Adapters (Brass)			
Conduit & Connectors			
Hose Clamps			
Pressure Switch			
Pressure Gauge			
Boiler Drain - Sampling Valve*			
Relief Valve			
Electrical Tape			
Disconnect Switch			
Unions and Pipe Fittings			
Gate Valve			
Misc. Trenching			
Welding			
Water Sampling			
Labor for Installation - Clean-up			
Sales Tax			
<b>TOTAL</b>			



WEIL McLAIN BOILER REPAIR PARTS

Part Name	GV-Series 3	CGS	CGA-SPD	CGA-PID	CGI Series 2	CGX	GV Series 1-2	VHE HIS
Burner Tube	****	512-200-076	512-200-077	512-200-077	512-200-076	550-320-152	****	512-200-075
Control Module	382-200-448	511-330-087	****	511-330-079	511-330-087	511-330-095	382-200-448	511-330-129
Gas Valve	382-200-410	381-356-532 (N) 381-356-533 (P)	511-044-360 (N) 511-044-258 (P)	511-044-381	511-044-381 (N) 511-044-354 (P)	511-044-381	382-200-410	510-811-655 (N) 510-811-656 (P)
Inducer Fan	382-200-340	381-356-499	****	****	381-356-499	****	382-200-340	510-312-317
Pilot Burner	****	511-330-080 (N) 511-330-081 (P)	510-811-644 (N) 510-811-646 (P)	511-330-218	511-330-080 (N) 511-330-081 (P)	511-330-218	****	****
Press/Temp Gauge	380-000-000	380-000-000	380-000-000	380-000-000	380-000-000	380-000-000	380-000-000	380-000-000
Pressure Switch	511-624-520	511-624-401 (3) 511-624-402 (4) 511-624-403 (5) 511-624-404 (6)	**** **** **** ****	**** **** **** ****	511-624-401 (3) 511-624-302 (4) 511-624-303 (5) 511-624-304 (6)	**** **** **** ****	511-624-520	511-624-514
Limit Control	510-312-021	510-312-250	510-312-250	510-312-250	510-312-250	510-312-250	510-312-019	510-312-010
Transformer	511-842-370	511-842-370	WHR90-112	WHR90-112	511-842-370	WHR90-112	511-842-370	WHR90-112
TFE - Rollout Thermal Fuse Element	****	****	512-050-230	512-050-230	****	512-050-230	****	512-050-230
Blower Motor	382-200-345	****	****	****	****	****	382-200-345	****
Burner Cone Kit	382-200-320 (3) 382-200-325 (4) 382-200-330 (5) 382-200-335 (6)	**** **** **** ****	**** **** **** ****	**** **** **** ****	**** **** **** ****	**** **** **** ****	382-200-320 (3) 382-200-325 (4) 382-200-330 (5) 382-200-335 (6)	**** **** **** ****
Ignitor	511-330-148	****	****	****	****	****	511-330-148	511-330-184

VENTING ARRANGEMENTS FOR WEIL-McLAIN BOILERS

Boiler Type	NFPA Category	Horizontal Breech Connection	Masonry or Metal Chimney		Side-Wall & Thru-the-Roof Venting	Type of Draft	Comments
			Inside	Outside			
CGa EG EGH PFG	I	B-Vent or Single Wall Vent Pipe	Chimney lined with either: - Single Wall Vent Pipe, or - B-Vent, or - Vitreous Tile Lining, or - Fireclay or Clay	Chimney lined with "AL29-4C"	N.A.	Natural Draft	Vent according to NFPA 54 (National Fuel Gas Code) vent tables and guidelines. These products may or may not be equipped with an Automatic Vent Damper.
CGI	I	B-Vent or Single Wall Vent Pipe	Chimney lined with either: - Single Wall Vent Pipe, or - B-Vent, or - Vitreous Tile Lining, or - Fireclay or Clay	Chimney lined with "AL29-4C"	N.A.	Natural Draft	Vent according to NFPA 54 (National Fuel Gas Code) vent tables and guidelines. Must increase vent size immediately at the boiler to insure negative draft in the breech.
CGI CGs 4, 5, & 6	III	"AL29-4C" (Must be 3" diameter)	Chimney used as a raceway for "AL29-4C" Thru-roof kit uses B-Vent for combustion air and "AL29-4C" for flue gases		"AL29-4C"	Induced Draft	Non-direct vent only; combustion air is taken from the vicinity of the boiler. The "AL29-4C" used must be UL listed. Vent according to vent material manufacturer's instructions.
AHE	III	N.A.	N.A.	N.A.	"AL29-4C"	Induced Draft	Direct vent only; combustion air is taken outside ("sealed combustion"). Sidewall vent only. Vent according to manufacturer's instructions.
GV CGs-3	IV	"AL29-4C"	N.A.	N.A.	"AL29-4C"	Forced Draft	Either Non-direct vent (combustion air is from the vicinity of boiler) or Direct vent (combustion air is from outside) is acceptable. The "AL29-4C" used must be UL listed. Vent according to vent material manufacturer's instructions.
Ultra	IV	PVC, CPVC, or ABS Pipe	N.A.	N.A.	PVC, CPVC, or ABS Pipe	Forced Draft	Direct vent only; combustion air is taken outside ("sealed combustion"). Vent according to manufacturer's instructions.
WGO WTGO SGO	N.A.	Single Wall Vent Pipe or Double Wall Vent Pipe	Lined Masonry Chimney or other venting system allowed by local code		N.A.	Balanced Draft	Vent according to NFPA 54 (National Fuel Gas Code) and NFPA 211 (Chimneys). Barometric Damper is required to maintain over-fired pressure in the firebox.
LGB	I	Single Wall Vent Pipe or B-Vent	One of the following: - B-Vent - Single Wall Vent Pipe - Lined Masonry Chimney		N.A.	Natural Draft	Vent according to NFPA 54 (National Fuel Gas Code) vent tables and guidelines.
80 88 94	N.A.	Gas-Tight Breeching Welded or Pressure Sealing Type	One of the following: - Lined Masonry Chimney - Welded Chimney - Pressure Sealing Type Chimney		N.A.	Forced Draft or Balanced Draft	Vent according to NFPA 31, NFPA 211 (oil-fired boilers), or NFPA 54 (gas-fired boilers) and/or local codes. In some balanced draft applications, a barometric damper may be required to balance the draft. Set breeching at positive 1" W.C. per mfr's instructions.

NFPA 54 Vent Category	Vent Static Pressure	Vent Gas Temperature
I	Non-Positive	Avoids Excessive Condensation
II	Non-Positive	May Cause Excessive Condensation
III	Positive	Avoids Excessive Condensation
IV	Positive	May Cause Excessive Condensation

**Natural Draft:** Chimney draft is developed by the difference in temperature of hot flue gases and outside air.

**Forced Draft:** Draft developed by a fan that creates positive pressure in the firebox.

**Induced Draft:** Draft developed by a fan that creates negative pressure in the firebox.

**Mechanical Draft:** General term that refers to a draft is developed by a fan, either forced or induced.

**Balanced Draft:** Fan produces positive pressure just sufficient enough to push flue gases to the flue outlet, gases are then moved to the outside by natural draft.



Oshkosh  
800-242-0357

Green Bay  
800-236-7867

Watertown  
800-236-5966



**WEIL McLAIN BOILER REPAIR PARTS**

<u>HE-VHE Spark</u>	<u>HE II</u>	<u>CGI Series 1</u>	<u>CG-SPD</u>	<u>ULTRA</u>	<u>Part Name</u>	<u>Key</u>
512-200-075	512-200-075	512-200-060	512-200-075		<b>Burner Tube</b>	<p><b>All Weil-McLain repair part numbers are nine digits, with the exception of White Rodgers which have a 'WHR' prefix.</b></p> <p><b>Descriptive numbers and letters in parentheses refer to gas type, boiler model or boiler size (ie. Number of sections).</b></p> <p><b>Examples:</b></p> <p>(N) Natural Gas (P) LP - Propane (5) 5 Section Boiler, etc. (HE) HE Model Boiler, etc.</p> <p><b>NOTE:</b> The new number for WHR S84A-85 is WHR90-112. Both work in our computer - WHR90-112 prints on invoice.</p>
****	382-200-448	511-330-099	****	383-500-190 (80/105/155/230) 511-330-258 (310)	<b>Control Module</b>	
511-044-288 (N) 511-044-289 (P)	510-811-655 (N) 510-811-656 (P)	511-044-381 (N) 511-044-354 (P)	511-044-360 (N) 511-044-258 (P)	383-501-029 (80) 383-501-030 (105) 383-500-025 (155) 383-500-030 (230)	<b>Gas Valve</b>	
510-312-317 (VHE) 510-312-312 (HE)	510-312-312	381-354-580	****	383-501-027 (80/105) 383-500-035 (155) 383-500-040 (230)	<b>Inducer Fan</b>	
WHRE50-106	****	510-811-221 (N) 510-811-222 (P)	**** ****		<b>Pilot Burner</b>	
380-000-000	380-000-000	380-000-000	380-000-000	383-500-210 (All)	<b>Press/Temp Gauge</b>	
511-624-510 (HE-3,4,5) 511-624-511 (HE-6) 511-624-514 (VHE)	511-624-510 (3,4,5) 511-624-511 (6)	511-624-450 (3,4) 511-624-451 (5) 511-624-452 (6) 511-624-453 (7)	**** **** **** ****		<b>Pressure Switch</b>	
510-312-010	510-312-010	510-312-254	510-312-250		<b>Limit Control</b>	
WHR90-112	511-842-370	WHR90-112	WHR90-112	383-500-195 (All)	<b>Transformer</b>	
512-050-230	512-050-230	512-050-230	512-050-230		<b>TFE - Rollout Thermal Fuse Element</b>	
****	****	****	****	****	<b>Blower Motor</b>	
****	****	****	****		<b>Burner Cone Kit</b>	
****	****	****	****			
****	****	****	****			
****	511-330-148	****	****	383-500-045 (All)	<b>Ignitor</b>	

**HOT SURFACE IGNITOR TROUBLESHOOTING**

Hairline cracks in the ignitor element can cause the ignitor to light the boiler erratically. The ignitor glows, but does not get hot enough to light the flame. There are two ways of testing the ignitor: Resistance and current draw. Listed below are the proper OHM and AMP values for the different ignitors used on WEIL-McLAIN Boilers:

GV/HEII	Norton 271 WML 511-330-148	45 - 75 OHMS 4.25 - 4.75 AMPS
VHE/HE	Norton 201N WML 382-930-216	125 - 250 OHMS 3.5 - 4.0 AMPS
VHE/HE	Norton 201 WML 511-330-184	45 - 400 OHMS 4.25 - 4.75 AMPS

To get a true OHM reading the ignitor must be at room temperature. This can take time to let it cool, so a faster way is to check amperage. This is done with a clamp-on amp meter on one of the 115 Volt wires leading to the ignitor.

*These tips and many others are also found in the control supplements that are shipped with every WEIL-McLAIN boiler. If you have any questions on service or installation of WEIL-McLAIN boilers you may also call the A.I. McDermott Co. at the phone numbers listed on the cover of this catalog.*



## For 'Serious' Iron Removal & Water Softening the Best Choice is the



MODEL		PESAS1-1064MP	PESAS1-1304MP	PESAS2-1064MP	PESAS2-1304MP
Capacity (GPM/100 GPD)	Maximum	22,000 @ 15.8	30,900 @ 21.2	34,800 @ 15.8	50,300 @ 20.6
	Medium	30,700 @ 12.4	33,600 @ 18.9	32,000 @ 12.4	48,300 @ 16.9
	Minimum	18,400 @ 6.1	28,300 @ 9.5	32,900 @ 6.1	28,200 @ 9.5
Amount of Media (Cu Ft)		1.5	2.6	1.5	2.6
Maximum Water Velocity (GPM)		30	40	30	40
Maximum Iron and Manganese (PPM)		10.0	15.0	10.0	15.0
Minimum pH Rating		6.0	6.0	7.0	7.0
Total pH Adjusted Water of Continuous Flow		300	400	NA	NA
Break Flow Rate (GPM @ PPM)		17.9 @ 10.1	19.8 @ 10.7	17.9 @ 11.4	16.7 @ 11.6
Continuous Flow Rate (CFM @ PPM)		9.3 @ 3.4	9.2 @ 2.8	9.3 @ 4.2	9.2 @ 3.3
Water Pressure Rating (PSI)		25-100	25-100	25-100	25-100
Water Temp. (°F)		33-100	33-100	33-100	33-100
Electrical Requirements (Voltage)		115/60/50	115/60/50	115/60/50	115/60/50
Pipe Size		1"	1"	1"	1"
Total Dimensions	Media Tank	10"W x 42"H	13"W x 42"H	10"W x 42"H	13"W x 42"H
	Street Unit	18"W x 25"H	18"W x 30"H	18"W x 25"H	18"W x 30"H

All McDermott Sanitizer Plus, AquaSoft Pro & Pro Plus units use the proven Autotrol 255 or 268 Control Valve with the digital LOGIX Controller. More information including Consumer Literature & Specification Sheets are available at [www.mcdermottpumps.com](http://www.mcdermottpumps.com)

- All Sanitizer Plus water conditioners are pre-factory set at medium salting. Note: influent waters must be at least 3 GPG hardness and 80 TDS. A calcite or corosex unit may be needed for correct operation.
- Combined iron and manganese removal varies depending on the form of iron, manganese, pH and other local conditions. On waters that are pre-chlorinated or where other pre-oxidation occurs, precipitated metal oxides may form that are too fine to be filtered.
- The pH listed is the minimum for the influent water.
- Optimum pH adjustment occurs at 3.0 gpm or less at maximum salt settings. Higher flow rates will produce less pH adjusted water.
- Unit not tested for capacity at these flow rates. Water quality may vary.

## For Water Softening & Small Amounts of Iron use the AquaSoft Pro OR

## AquaSoft Pro Plus

MODEL		PES16M255	PES32M255	PES48M255	PES75M255CAB
Capacity (GPM/100 GPD)	Maximum	14,000 @ 9.5	25,000 @ 15.0	44,400 @ 20.5	52,500 @ 17.5
	Medium	22,000 @ 6.0	34,000 @ 9.0	33,000 @ 6.0	48,000 @ 7.0
	Minimum	9,500 @ 3.0	19,000 @ 5.0	24,000 @ 7.0	14,500 @ 3.0
Amount of Media (Cu Ft)		5.0	1.5	1.5	7.0
Maximum Iron (PPM)		3.0	3.0	3.0	3.0
Maximum Manganese (PPM)		1.5	0.5	1.5	1.5
Continuous Flow Rate (CFM @ PPM)		7.0 @ 13.5	10.5 @ 14.5	9.5 @ 14.5	8.0 @ 14.5
Water Pressure Rating (PSI)		25-100	25-100	25-100	25-100
Water Temp. (°F)		33-100	33-100	33-100	33-100
Electrical Requirements (Voltage)		115/60/50	115/60/50	115/60/50	115/60/50
Pipe Size		1"	1"	1"	1"
Total Dimensions	Media Tank	7"W x 25"H	9"W x 40"H	12"W x 50"H	10"W x 30.0" x 40"H
	Street Unit	18"W x 25"H	18"W x 30"H	18"W x 35"H	

MODEL		PES32M268	PES48M268
Capacity (GPM/100 GPD)	Maximum	17,000 @ 11.0	25,000 @ 20.0
	Medium	28,000 @ 9.0	48,000 @ 12.5
	Minimum	14,000 @ 3.0	25,000 @ 3.0
Amount of Media (Cu Ft)		1.0	1.5
Maximum Iron (PPM)		3.0	3.0
Maximum Manganese (PPM)		1.5	1.5
Continuous Flow Rate (CFM @ PPM)		10.2 @ 14.5	12.8 @ 15.0
Water Pressure Rating (PSI)		25-100	25-100
Water Temp. (°F)		33-100	33-100
Electrical Requirements (Voltage)		115/60/50	115/60/50
Pipe Size		1"	1"
Total Dimensions	Media Tank	9"W x 40"H	12"W x 50"H
	Street Unit	18"W x 25"H	18"W x 35"H

- All AquaSoft Pro and Pro Plus water conditioners are pre-factory set at medium salting.
- Combined iron and manganese removal varies depending on the form of iron, manganese, pH and other local conditions. These units will not eliminate or treat an iron bacteria problem.

## What's the difference between Capacitor Start, Capacitor Run (CS/CR) Control Boxes and Capacitor Start, Induction Run (CS/IR) Control Boxes?

CS/CR and CS/IR controls both start a motor the same way - with a "start capacitor" that shifts the motor's electrical phase slightly, creating starting torque. As the motor approaches running speed (in about 1/3 second), a relay in the control opens, removing the start capacitor from the circuit. Here's where the controls differ.

The CS/IR control box deenergizes the motor's start windings, which then do no more work until the next time the motor starts. The CS/CR Submersible Motor control divides the capacitance in the control between the start capacitor and a "run capacitor", wired in series with the start capacitor. The relay removes the start capacitor from the circuit, but not the run capacitor, which continues to energize the motor's start windings.

This works because:

- The run capacitor is designed to run indefinitely, while the start capacitor is designed for a finite number of starts (like a light bulb - it's considered replaceable) and
- Less capacitance is needed at running speed, so the run capacitor can take over the load.

The run capacitor in the CS/CR Control Box increases the motor's efficiency, increases pump output, reduces current draw, smooths out operation, and reduces noise and vibration.

McDermott's refers to the Pentek CS/CR Control Box as the "Deluxe Box". For "sure fire" quiet operation, use the CS/CR Control Box from Pentek. See Page 11 for Pentek's CS/CR Deluxe Control Boxes

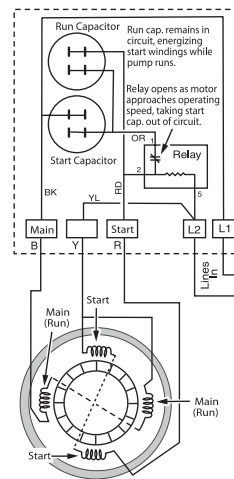


Figure 1: CSCR Submersible Motor Control schematic wiring diagram.

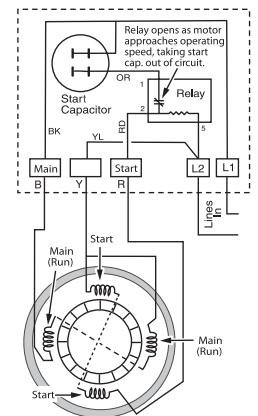


Figure 2: CSIR control box schematic wiring diagram.




Oshkosh  
800-242-0357

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800-236-7867

Watertown  
800-236-5966

# PUMP SWITCH OVERVIEW

Wide-angle pump switches directly control pumps up to 3HP at 250 VAC. Each switch features an adjustable pumping range. **UL Recognized, CSA Certified.** \*Denotes passed **NSF Standard 61** protocol for approved Water Quality Association lab for use in potable water.

	Pump Switch	Type of Activation	Pump Control	Max Pump Run Current	Max Pump Start Current	Pumping Range
	* SJE PumpMaster® <i>ELE15PMD1WP or 2WP</i>	Mechanically Activated	1/2 HP, 120V 1HP, 230V	13A, 120V 13A, 230V	85A, 120V 85A, 230V	7 - 36 in. (18 - 91 cm)
	* SJE PumpMaster®Plus <i>ELE15PMPD1WP or 2WP</i>	Mechanically Activated	3/4HP, 120V 2HP, 230V	15A, 120V 15A, 230V	85A, 120V 85A, 230V	7 - 36 in. (18 - 91 cm)
	* SJE PumpMaster®SPDT (Single Pole, Double Throw)	Mechanically Activated	1/2HP, 120V 1HP, 203V	13A, 120V 13A, 230V	85A, 120V 85A, 230V	7 - 36 in. (18 - 91 cm)
	SJE AmpMaster®	Mechanically Activated	1-1/2HP, 125V 3HP, 250V	20A, 125V 20A, 250V	120A, 125V 120A, 250V	9 - 24 in. (23 - 61 cm)
	Double Float® Master <i>ELE15DPMMD1WP or 2WP</i>	Mechanically Activated	13 FLA, 78RLA 120 or 240V	13A, 120V 13A, 240V	78A, 120V 78A, 240V	3 - 48 in. (7.6 - 122 cm)
	SJE VerticalMaster® <i>ELE15VM1WP</i> (For Limited Space Applications)	Mechanically Activated	1/2HP, 120V 1HP, 230V	13A, 120V 12A, 230V	60A, 120V 60A, 230V	.75 - 6.5 in. (2 - 17 cm)
	*SJE MicroMaster® AC/DC	Mechanically Activated	Use pump run and start current	10A, 12VDC 10A, 125VDC 8A, 250VAC	100A, 12VDC 60A, 125V 60A, 250V	8 - 36 in. (20 - 91 cm)
	*MicroMaster® Plus WS	Mechanically Activated	Use pump run and start current	13A, 125V 13A, 250V	78A, 125V 78A, 250V	8 - 36 in. (20 - 91 cm)



Pump Switch	Type of Activation	Pump Control	Max Pump Run Current	Max Pump Start Current	Pumping Range
* SJE PumpMaster® Short Throw <i>ELE15PMR501WP</i>	Mechanically Activated	1/2 HP, 120V	13A, 120V	85A, 120V	4 - 27 in.

Short Throw Pumping Range in Inches

Tether Length Pumping Range	3.5"	6"	10"	14"	18"	22"	24"
	4"	6"	10"	14"	18"	22"	27"

# CONTROL SWITCH OVERVIEW

Narrow-angle control switches accurately monitor high (normally open) or low (normally closed) liquid level conditions in water and sewage applications to activate control panels or alarms. Select models have colored caps for easy identification. **UL Recognized, CSA Certified.** \*Denotes passed **NSF Standard 61** protocol for approved Water Quality Association lab for use in potable water.

Control Switch	Type of Activation	Control Differential	Electrical Rating	Mounting Options
* SJE SignalMaster® (Yellow Cap = Normally Open)	Mechanically Activated	Approx. 1.5 in (4 cm) above or below horizontal	5 amp 125V or 250V	Mounting clamp or cable weight
* SJE SignalMaster® (White Cap = Normally Closed)	Mechanically Activated	Approx. 1.5 in (4 cm) above or below horizontal	5 amp 125V or 250V	Mounting clamp or cable weight
* SJE SignalMaster®SPDT (Green Cap = Single Pole, Double Throw)	Mechanically Activated	Approx. 1.5 in (4 cm) above or below horizontal	5 amp 125V or 250V	Mounting clamp or cable weight
SJE MilliAmpMaster® (Blue Cap = Narrow or Wide Anlge)	Mechanically Activated	Narrow 1.5 in (4 cm) Wide 4 in (10 cm) above or below horizontal	0.160 - 100mA 5V - 125V	Mounting clamp or cable weight

GO TO: [www.mcdermottpumps.com](http://www.mcdermottpumps.com) for On-Line Ordering - Closeouts - Information - Links - FAQ's!