

Temp Limit / LWCO Controls • Low Water Cut-Offs • Water Feeders • Liquid Level Controls • Flow Switches

**HYDROLEVEL
COMPANY**

**СОВЬИМ
НАДКОТЕЛЕТ**

The HYDROLEVEL Story

Disaster Invokes Change

On October 3, 1962, a boiler explosion that claimed the lives of 21 people occurred at a New York Telephone building in Manhattan. This disaster, caused by an undetected low water condition, forever changed the way all steam boilers would be manufactured and installed. Not long after this tragic event, New York Telephone began investigating better ways of protecting their employees and property from such hazards as low water conditions.



mechanism was incorporated which allowed the probe to be used in the violent water of a steam boiler without short cycling the burner.

Hydrolevel is Born

Michael took his idea to New York Telephone. They quickly recognized the advantages of his design. In 1965 his electronic control was specified for all New York Telephone buildings – and Hydrolevel Company was born.

As with many inventors, Michael overcame early opposition to his new device and soon other government agencies, utilities and manufacturers began specifying probe type cut-offs for both commercial and residential boilers. It was Michael, along with partner Russ Rymer and son Dominick's staunch defense of the time delay feature, that paved the way for electronic cut-offs used today.

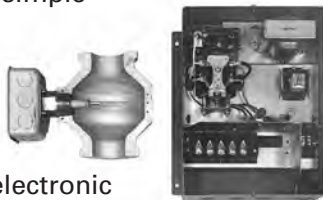
A Man with Ingenuity



At that time, Michael DeLeonardis of Farmingdale, New York, was experimenting with a new electronic water level device for steam boilers. He had developed his idea in Italy, where he trained as a steam engineer in the years before World War II. After immigrating to America, Michael further refined his ideas working on shipboard steam boilers with the Brooklyn Navy Yard.

The Probe Principle

Michael's idea was simple but effective. Using water as an electrical conductor, he designed a control utilizing a "probe" sensor. The electronic control monitored the level of the boiler water without the use of moving parts that can wear and stick. A revolutionary *time delay*



Hydrolevel Today







Forty years later, Michael's inventive spirit lives on. Today, Hydrolevel, located in New Haven, Connecticut, offers a full line of innovative products for boiler protection and liquid level control. The new generation Hydrolevel controls include **CycleGard** foam compensating low water cut-offs, **VXT** programmable water feeders, **Safgard** low water cut-offs and multi-purpose liquid level controls and **HydroStat** which combines multiple functions, including temperature limit, low water cut-off and fuel-saving boiler reset functionality into a single control. Hydrolevel continues to employ the latest technology to combine superior features with performance and durability.






**HYDROLEVEL
COMPANY**

Contents



Water Boiler Controls 2-8

	Universal Temperature Limit, Boiler Reset and Low Water Cut-Off – Residential [HydroStat Model 3200 and 3250]	2, 3
	Universal Temperature Limit and Low Water Cut-Off – Residential [HydroStat Model 3150]	4
	Universal High Temperature Limit, Boiler Reset and Low Water Cut-Off – Residential [HydroStat Model 3000]	5
	HydroStat Accessories and Electro-Wells™	6
 	Low Water Cut-Offs – Residential/Commercial [1100 Series, 24 and 170 Series]	7
	Low Water Cut-Offs – Commercial [500 Series, 600 Series, 700 Series]	8

Steam Boiler Controls 9-15

 	Low Water Cut-Offs – Residential/Commercial [400 Series, 711 and 724 Series, CG400 Series]	9, 10
 	Pump Controller/ LWCO – Commercial/Industrial [250 Series, Model 270SV]	11
 	Secondary Low Water Cut-Offs – Commercial/Industrial [500 and 700 Series]	12
  	Flow Switches – Residential/Commercial/Industrial [Model FS200 and FS204]	13
	Water Feeder – Residential [Model VXT-24, VXT-120]	14
 	Water Feeder – Commercial/Industrial [Model VXTC, WM-1 Water Meter]	15

Other Controls 16

 	Multi-Purpose Liquid Level Control – Commercial/Industrial [Model 727 and 787]	16
---	--	----

Reference 17 (inside back cover)

Probe Options/Specifications	17
Manifold Fittings	17

Removable CROSS REFERENCE GUIDE is located facing page 16.



RESIDENTIAL



COMMERCIAL



INDUSTRIAL

Universal Temperature Limit, Low Water Cut-Off and Boiler Reset – Residential



Model 3200-Plus

for gas-fired boiler

Model 3250-Plus

for oil-fired boilers

Three Function Control

- **Universal Temp Limit**
- **Low Water Cut-Off***
- **Fuel-Saving Boiler Reset**
 - Indoor Reset Through On-Board Thermal Targeting Technology
 - Outdoor Reset and Warm Weather Shut-Down Ready**

*When installed on Hydrolevel Electro-Well™

**Requires purchase of Hydrolevel OS-100 Outdoor Sensor Kit



- **Replaces Cold Start and Triple-Action Aquastats†**
 - Install HydroStat on existing immersion well – for full temperature and boiler reset functionality, *or*
 - Install HydroStat on an Electro-Well™ – to add low water cut-off protection

- **Easy Dial Type Set-Up**
 - Simply dial in the Temperature Limit and Economy settings



- **Dynamic Temperature Display**
 - Clearly displays boiler temperature
 - Instantly changes to show setting whenever any dial is adjusted



- **LED Status Lights**
 - Displays which functions are active and which function is not allowing the burner to fire



- **Test/Settings Button**
 - Tests the low water cut-off and displays all control settings

- **Easy to Wire**
 - Uses the same terminal designations as common Aquastat® models

- **Smart DHW Priority**
 - Closely monitors boiler temperature to prioritize domestic hot water calls when needed

Patent No. 7,891,572; others pending †Aquastat is a registered trademark of Honeywell International, Inc.

• Program Mode Options

- Manual Reset LWCO Option – Quickly set the LWCO in Manual Reset mode for commercial jobs
- Circulator Activation Options – Set TT, ZC/ZR or both to activate the circulator
- Thermal Pre-Purge Option – Enhance fuel efficiency by purging standing heat from the boiler to the zone requiring heat prior to energizing the burner
- Enhanced Condensing Protection Option – Reduce flue gas condensation by holding off the circulator allowing the boiler to heat up more rapidly to a non-condensing temperature range
- Degrees Celsius Option – Change display and settings from degrees F to degrees C

Fuel Savings through Boiler Reset

Boiler Reset is the decades-old principle of governing boiler temperature in accordance with the heating demand. A boiler is sized to heat a home during the coldest days of the year. During all other times, the heating system is larger than it needs to be. Boiler Reset saves fuel by reducing the boiler temperature during periods of non-peak demand. The FuelSmart HydroStat offers two cost effective ways to provide this fuel saving technology:

Thermal Targeting™ – This on-board microprocessor based algorithm monitors thermostat activity and continually evaluates how much heat the house requires. When it is very cold outside, the demand for heat is high and the Fuel Smart HydroStat raises the boiler’s Target Temperature to provide needed heat to the house. When the outside temperature is milder, the demand for heat is lower. During these periods, the Fuel Smart HydroStat lowers the boiler’s Target Temperature – saving fuel – while continuing to provide comfort to the house.

Outdoor Reset – For those who prefer the more traditional outdoor reset approach, Hydrolevel offers a low cost OS-100 Outdoor Sensor Kit (sold separately, see page 6). When the sensor is plugged into the control, the boiler reset methodology changes instantly from Thermal Targeting to Outdoor Reset, where the boiler temperature is governed by the temperature outside. The addition of this sensor also allows the Warm Weather Shutdown feature to be activated. This feature prevents the boiler from supplying space heating when the outside temperature exceeds a selected level.

Specifications	Model 3200-Plus	Model 3250-Plus
Burner Contacts	30 VA@24 VAC	7.4 FLA, 44.4 LRA@120 VAC
Circulator Contacts	5.8 FLA, 34.8 LRA@120 VAC	5.8 FLA, 34.8 LRA@120 VAC
Operating Range – Low Limit	Off or 110°F - 200°F	Off or 110°F - 200°F
Operating Range – High Limit	100°F - 220°F	100°F - 220°F
Operating Range – Differential	Automatic – will vary between 10° and 20° subtractive based on control settings and boiler temperature	Automatic – will vary between 10° and 20° subtractive based on control settings and boiler temperature

MODEL	VOLTAGE	DESCRIPTION/OPERATION
3200-Plus	120 VAC (24 VAC output)	Universal replacement Aquastat with adjustable high and low temperature limits for cold start or tankless coil boilers. Features built in low water cut-off (when used with Hydrolevel Electro-Well™) and fuel saving boiler reset technology. Outdoor Reset and Warm Weather Shut-Down capability can be added with purchase of OS-100 Sensor Kit.
3250-Plus	120 VAC	

Universal Temperature Limit and Low Water Cut-Off – Residential



Model 3150

for oil-fired boilers

Two Function Control

- **Universal Temp Limit**
- **Low Water Cut-Off***

*When installed on Hydrolevel Electro-Well™

- Replaces Cold Start and Triple-Action Aquastats*

- Install HydroStat on existing immersion well – for full temperature functionality, *or*
- Install HydroStat on an Electro-Well™ – to add low water cut-off protection

- Simple Dial-Type Temperature and Differential Settings



- Dynamic Temperature Display



- Clearly displays boiler temperature
- Instantly changes to show setting whenever any dial is adjusted

- LED Status Lights

- Displays which functions are active and which function is not allowing the burner to fire

- Test/Settings Button

- Tests the low water cut-off and displays all control settings

- Program Mode Options

- Manual Reset LWCO Option – Quickly set the LWCO in Manual Reset mode for commercial jobs
- Circulator Activation Options – Set TT, ZC/ZR or both to activate the circulator
- Thermal Pre-Purge Option – Enhance fuel efficiency by purging standing heat from the boiler to the zone requiring heat prior to energizing the burner
- Degrees Celsius Option – Change display and settings from degrees F to degrees C



Specifications	Model 3150
Burner Contacts	7.4 FLA, 44.4 LRA@120 VAC
Circulator Contacts	5.8 FLA, 34.8 LRA@120 VAC
Operating Range – Low Limit	Off or 110°F - 200°F
Operating Range – High Limit	100°F - 220°F
Operating Range – Differential	10°F - 30°F

MODEL	VOLTAGE	DESCRIPTION/OPERATION
3150	120 VAC	Universal replacement Aquastat with adjustable high and low temperature limits and differentials for cold start or tankless coil oil boilers. Features built in low water cut-off (when used with Hydrolevel Electro-Well™).

Patent No. 7,891,572; others pending *Aquastat is a registered trademark of Honeywell International, Inc.

Universal Temperature Limit, Boiler Reset and Low Water Cut-Off – Residential



Model 3000

for gas-fired boilers

Three Function Control

- **Universal High Temp Limit**
- **Fuel-Saving Boiler Reset**
- **Low Water Cut-Off***

*When installed on Hydrolevel Electro-Well™



- **Saves Fuel**
 - On-Board Thermal Targeting™ technology reduces boiler temperature without sacrificing comfort (see Thermal Targeting on page 3)
- **Easy Dial-Type Set-Up**
 - Simply dial in the Temperature Limit and Economy Settings
- **LED Status Lights**
 - Displays which functions are active and which function is not allowing the burner to fire
- **LWCO Test Button**
 - Allows for easy testing without draining water or removing the sensor
- **Optional Thermal Pre-Purge**
 - Enhances fuel efficiency by purging standing heat from the boiler to the zone requiring heat prior to energizing the burner
- **Easy to Wire**
 - Includes wire harnesses for connecting to common transformer-style Control Centers or Integrated Boiler Control Modules
- **Replaces Common High Limit Aquastats***
 - Install HydroStat on existing immersion well – for temperature limit and boiler reset functionality, *or*
 - Install HydroStat on an Electro-Well™ – to add low water cut-off protection

Specifications	Model 3000	Model 3000-190
Input Voltage	24 VAC, 60 HZ	24 VAC, 60 HZ
Burner Contacts	50 VA@24 VAC Pilot Duty	50 VA@24 VAC Pilot Duty
Operating Range – High Limit	100°F (38°C) - 220°F (104°C)	100°F (38°C) - 190°F (88°C)

MODEL	VOLTAGE	DESCRIPTION/OPERATION
3000	24 VAC	Universal replacement high limit control with adjustable high limit for cold start gas boilers. Replaces smaller, single-function Aquastat* models. Features built in low water cut-off (when used with Hydrolevel Electro-Well™) and fuel saving boiler temperature reset technology. (Max temp 220°F for Model 3000. Max temp 190°F for Model 3000-190)
3000-190	24 VAC	

Patent No. 7,891,572; others pending *Aquastat is a registered trademark of Honeywell International, Inc.

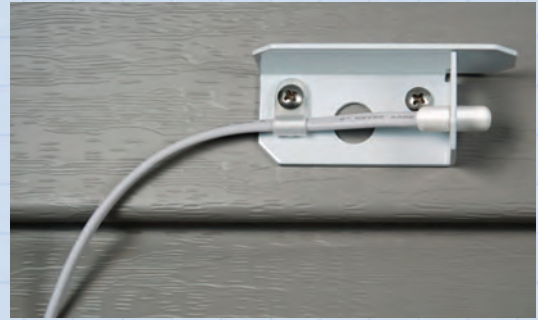
Accessories for HydroStat Controls

Outdoor Sensor Kit OS-100

Provides outdoor reset functionality.

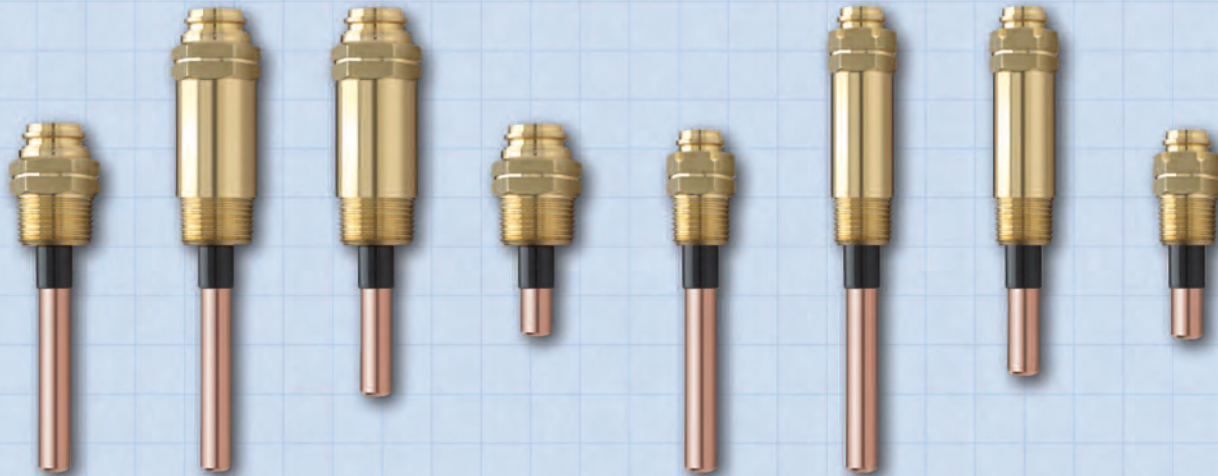
For HydroStat Models 3200-Plus and 3250-Plus only

48-140 Kit includes: outdoor sensor with 9' cable (additional wire to be added in field as needed), sensor mounting bracket with 2 screws and 1 wire clip, two spade connectors, knockout wire bushing.



Electro-Well™ Models

To enable HydroStat's low water cut-off function.



48-201
Standard
3/4" NPT

48-202
Extended
3/4" NPT

48-204
Extended
3/4" NPT
Short
Insertion

48-205
Standard
3/4" NPT
Extra Short
Insertion

48-221
Standard
1/2" NPT

48-222
Extended
1/2" NPT

48-224
Extended
1/2" NPT
Short
Insertion

48-225
Standard
1/2" NPT
Extra Short
Insertion

Remote Mounting Options

For all HydroStat Models except 3000 Series



Wall/Jacket Mounting Kit

Kit includes: 2 mounting brackets, remote sensor, plastic grommet, rubber well cap, 4 #8x1/2" self-tapping screws.



Pipe Mounting Kit

Kit includes: mounting bracket for 1" to 2" pipe, remote sensor, plastic grommet, rubber well cap.

- 48-101** HydroStat Wall/Jacket Mounting Kit with 2' sensor
- 48-102** HydroStat Wall/Jacket Mounting Kit with 4' sensor
- 48-103** HydroStat Wall/Jacket Mounting Kit with 10' sensor
- 48-104** HydroStat Wall/Jacket Mounting Kit with 20' sensor

- 48-121** HydroStat Pipe Mounting Kit with 4' sensor

Low Water Cut-Offs – Residential/Commercial

Safgard™ 1100 Series

- Compact Design
- Automatic Reset
- Burner Circuit Test Button
- Power and Low Water LED Indicators

Specifications	Model 1100	Model 1150
Power Consumption	1 VA	4 VA
Switching Capacity	125 VA	125 VA
Switch Contacts	SPST	SPST
Max. Pressure	160 PSI	160 PSI
Max. Water Temperature	250° F	250° F



MODEL	VOLTAGE	DESCRIPTION/OPERATION
1100	24 VAC	Interrupts power immediately in a low water condition. Automatically restarts burner on return of water level. Features test button, onboard indicating lights and easy to follow installation instructions. Model 1100 includes plug-in wire harness with labeled quick-connect terminals. Model 1100 is available with additional wiring harnesses for popular boilers.
1150	120 VAC	

Safgard™ 24 and 170 Series

- Heavy Duty Design
- Automatic Reset

Specifications	Model 24	Model 170
Power Consumption	8 VA	7 VA
Switching Capacity	50 VA	5.8 FLA, 34.8 LRA
Switch Contacts	SPDT	SPDT
Max. Pressure	160 PSI	160 PSI



MODEL	VOLTAGE	DESCRIPTION/OPERATION
24	24 VAC	Interrupts power immediately in a low water condition. Heavy duty construction. Automatically restarts burner on return of normal water level. Provides contacts for optional low-water alarm.
170	120 VAC	

Low Water Cut-Offs – Commercial

Safgard™ 500 Series

- Manual Reset
- Burner Circuit Test Button
- LED Indicating Lights
- Meets ASME CSD-1 Requirements for Commercial Water Boilers

Specifications	Model 500	Model 550
Power Consumption	2 VA	4 VA
Switching Capacity	50 VA	5.8 FLA, 34.8 LRA
Switch Contacts	SPDT	SPDT
Max. Pressure	160 PSI	160 PSI



MODEL	VOLTAGE	DESCRIPTION/OPERATION
500	24 VAC	Interrupts power immediately in a low water condition. Burner circuit locks-out if water remains below probe for 30 seconds. Manual reset will not trip due to power failures. Test button checks burner circuit to ensure proper control operation and lock-out function without lowering the water level. <i>Note: Can also be used as a secondary cut-off on steam boilers (see page 12)</i>
550	120 VAC	

Safgard™ 600 Series

- Automatic Reset
- Burner Circuit Test Button
- LED Indicating Lights



Specifications	Model 600	Model 650
Power Consumption	2 VA	4 VA
Switching Capacity	50 VA	5.8 FLA, 34.8 LRA
Switch Contacts	SPDT	SPDT
Max. Pressure	160 PSI	160 PSI

MODEL	VOLTAGE	DESCRIPTION/OPERATION
600	24 VAC	Interrupts power immediately in a low water condition. Automatically restarts burner on return of water level. Test button checks burner circuit to ensure proper control operation without lowering the water level.
650	120 VAC	

Safgard™ 700 Series

- Manual Reset
- LED Indicating Lights



Specifications	Model 700	Model 750
Power Consumption	2 VA	4 VA
Switching Capacity	50 VA	5.8 FLA, 34.8 LRA
Switch Contacts	SPDT	SPDT
Max. Pressure	160 PSI	160 PSI

MODEL	VOLTAGE	DESCRIPTION/OPERATION
700	24 VAC	Interrupts power immediately in a low water condition. Burner circuit locks-out if water remains below probe for 30 seconds. Manual reset will not trip due to power failures. <i>Note: Can also be used as a secondary cut-off on steam boilers (see page 12)</i>
750	120 VAC	

Low Water Cut-Offs – Residential/Commercial

Safgard™ 400 Series

- 15 Second Burner Off Delay
- 30 Second Burner On Delay
- Automatic Reset
- Low Water Indicating Light
- Direct Boiler Mounting – Eliminates Blowdowns

Specifications	Model 400	Model 450
Power Consumption	2 VA	4 VA
Switching Capacity	50 VA	5.8 FLA, 34.8 LRA
Switch Contacts	SPDT	SPDT
Max. Steam Pressure	15 PSI	15 PSI



MODEL	VOLTAGE	DESCRIPTION/OPERATION
400	24 VAC	Burner circuit contacts open after 15 second delay in a low water condition. Delay prevents short cycling caused by momentary fluctuations in the boiler water level. Automatically reactivates burner circuit 30 seconds after water reaches the probe, allowing optional water feeder to raise water level above the probe. See page 14 for information on VXT Water Feeder.
450	120 VAC	

Safgard™ 711 and 724 Series

- Low Water Cut-Off for Sight-Glass Attachment
- Two Probe Design
- Automatic Reset
- Includes Quick Hook-Up Fittings for 8" to 14" Sight Glasses

Specifications	711 Series	724 Series
Power Consumption	8 VA	7 VA
Switching Capacity	50 VA	5.8 FLA, 34.8 LRA
Switch Contacts	SPDT	SPDT
Max. Steam Pressure	35 PSI	35 PSI



MODEL	VOLTAGE	DESCRIPTION/OPERATION
724CF	24 VAC	Mounts to sight glass tapplings. Maintains water level between two probes. Includes 711C manifold, two model EL1214 probes and quick hook-up fittings. <i>Note: The 711 & 724 Series is recommended for use on older boilers that do not have tapplings suitable for Safgard 400 and CycleGard 400 Series cut-offs.</i>
711CF	120 VAC	
724WF	24 VAC	Same as CF models (described above), includes water feed valve assembly.
711WF	120 VAC	

Low Water Cut-Offs – Residential/Commercial

CycleGard® CG400 Series

- Intermittent Level Test – Maximum Protection for Foaming Boilers
- 15 Second Burner Off Delay
- 30 Second Burner On Delay
- Automatic Reset
- Low Water Indicating Light
- Direct Boiler Mounting – Eliminates Blowdowns

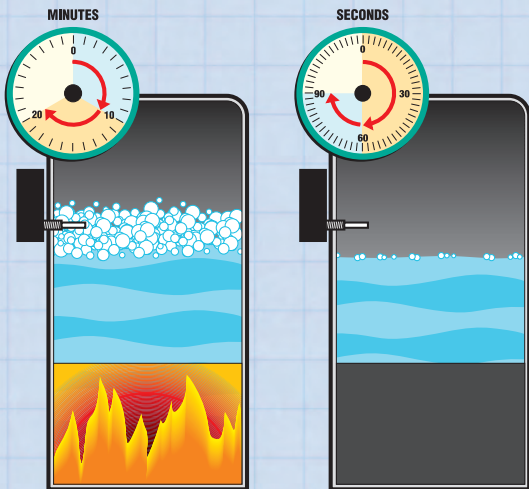


Specifications	Model CG400	Models CG450 and CGT450
Power Consumption	2.1 VA	4.2 VA
Switching Capacity	50 VA	5.8 FLA, 34.8 LRA
Switch Contacts	SPDT	SPDT
Max. Steam Pressure	15 PSI	15 PSI



MODEL	VOLTAGE	DESCRIPTION/OPERATION
CG400-1090	24 VAC	Burner circuit contacts open after 15 second delay in a low water condition. Delay prevents short cycling caused by momentary fluctuations in the boiler water level. Automatically reactivates burner circuit 30 seconds after water reaches the probe, allowing optional water feeder to raise water level above the probe. Intermittent Level Test (ILT) feature provides maximum boiler protection by removing power from the burner circuit at set intervals. <ul style="list-style-type: none"> ▶ Models ending in "1090" perform the ILT every 10 minutes for 90 seconds. ▶ Models ending in "1560" perform the ILT every 15 minutes for 60 seconds. ▶ Models ending in "2060" perform the ILT every 20 minutes for 60 seconds. ▶ Models ending in "2090" perform the ILT every 20 minutes for 90 seconds.
CG400-2090	24 VAC	
CG450-1090	120 VAC	
CG450-1560	120 VAC	
CG450-2060	120 VAC	
CGT450-2060	120 VAC	Same as CG450-2060 (described above) with added feature for boilers equipped with tankless coils. The CGT450-2060 suspends operation of the Intermittent Level Test when the boiler is receiving a call for domestic hot water. This feature ensures continued burner operation during a demand for hot water.

U.S. Patent No. 5,739,504; 6,390,027



CycleGard®

Maximum boiler protection – Even in SURGING and FOAMING boilers.

CycleGard continually monitors the boiler water level like other probe type cut-offs. But, unlike any other cut-off, CycleGard uses **Intermittent Level Test (ILT)** technology to provide protection against false signals created by foaming and volatile water conditions in the boiler. CycleGard's **ILT** periodically removes power from the burner circuit. During this test, foam dissipates and the water level stabilizes – allowing CycleGard to monitor the *true* water level in the boiler. Since 1996, the superior protection of CycleGard has made it the standard low water cut-off for many of the industry's leading boiler manufacturers.

▶ See CycleGard video at www.hydrolevel.com

Pump Controller/LWCO – Commercial/Industrial

Safgard™ 250 Series

- No Moving Parts in Boiler Water
- Controls Boiler Feed Pump
- Maintains Recommended Water Level in Boiler
- Available with Water Column Body or for Boilers with Separate Water Columns
- Accommodates Boilers to 250 PSI

Specifications	250 Series
Primary Relay	10 FLA, 60 LRA
Pump Relay	20 FLA, 120 LRA
Switch Contacts	DPST
Power Consumption	13 VA
Max. Steam Pressure	250 PSI



MODEL	VOLTAGE	MANIFOLD	DESCRIPTION/OPERATION
250	120 VAC	250C	Operates boiler feed pump to maintain water level between middle and upper probes. Burner circuit contacts open if water drops below bottom probe. Automatically restarts burner on return of normal water level. Control box and (3) EL1214 probes included.
250WC	120 VAC	1214C-1	

High Water Limit – Residential/Commercial/Industrial

Safgard™ Model 270SV

- Automatically Interrupts Pump or Feeder when Water Contacts Probe
- Provides Contacts for Optional Alarm
- Ideal for Boilers, Receiver Tanks and Process Applications

Specifications	Model 270SV
Power Consumption	7 VA
Switching Capacity	.25hp @ 120 VAC
Resistive Load	20 A
Switch Contacts	SPDT
Max. Steam Pressure	250 PSI



MODEL	VOLTAGE	DESCRIPTION/OPERATION
270SV	120 VAC	Interrupts power to pump or water feeder in high water condition. Provides contacts for optional alarm. Includes EL1214-SV probe suitable for mounting in standard black tee.

Secondary Low Water Cut-Offs – Commercial/Industrial

Safgard™ 500 and 700 Series

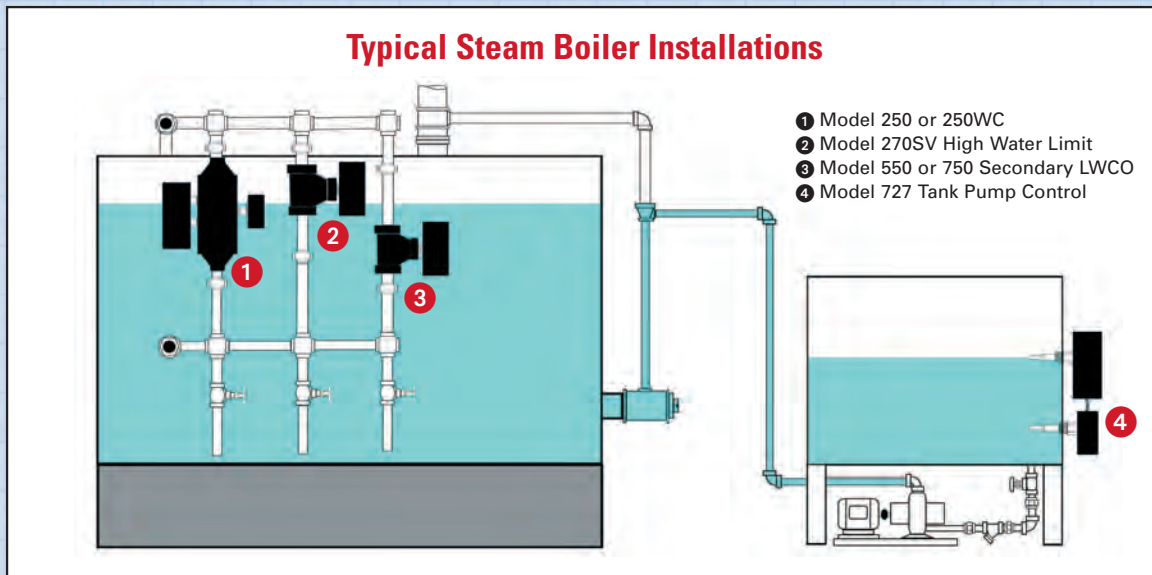
- Manual Reset with 30 Second Delay and Power Outage Protection
- Burner Circuit Test Button (500 Series only)
- LED Indicating Lights
- Meets ASME CSD-1 Requirements for Secondary Cut-Offs on Commercial Steam Boilers



Specifications	Models 500 and 700	Models 550 and 750
Power Consumption	2 VA	4 VA
Switching Capacity	50 VA	5.8 FLA, 34.8 LRA
Switch Contacts	SPDT	SPDT
Max. Steam Pressure	250 PSI	250 PSI



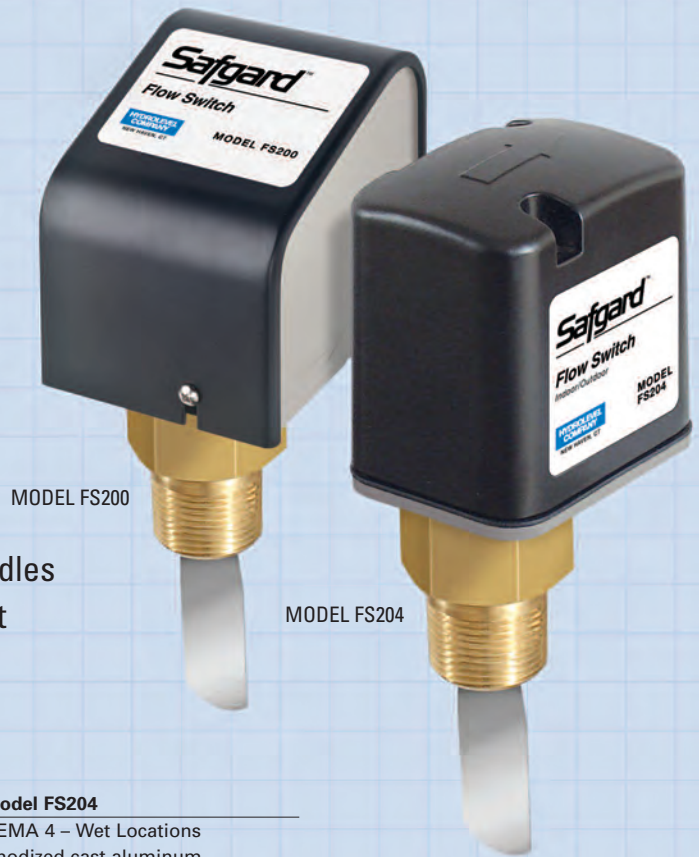
MODEL	VOLTAGE	DESCRIPTION/OPERATION
500	24 VAC	Interrupts power in a low water condition. Burner circuit locks-out if water remains below probe for 30 seconds. Manual reset will not trip due to power failures. Test button checks burner circuit to ensure proper control operation and lock-out function without lowering the water level. <i>Note: Can also be used as a primary cut-off on hot water boilers (see page 8).</i>
550	120 VAC	
700	24 VAC	Same as 500 Series above without test button feature.
750	120 VAC	



For Accurate Monitoring of Liquid Flow in Pipelines

Safgard™ Model FS200 and FS204

- EPDM Seal for Superior Performance over Mechanical Bellows
- Universal Design – Replaces Flow Switches by McDonnell Miller, Penn, Taco, Potter, Watts and others
- Single Pole Double Throw Switch for Operating Signal Devices, Motors, Alarms, Metering Devices and Heating Units
- Includes Four Heavy Duty Stainless Steel Paddles
- Two 7/8" Electrical Knock-Outs for 1/2" Conduit
- For Use on 1" to 6" Diameter Pipe
- 1" NPT Pipe Connection



Specifications	Model FS200	Model FS204
Enclosure	NEMA 1 – General Purpose	NEMA 4 – Wet Locations
Control Chassis Material	13 gauge galvanized steel	Anodized cast aluminum
Control Cover Material	16 gauge powder coated steel	Powder coated cast aluminum
Maximum Fluid Temperature	250°F (121°C)	250°F (121°C)
Minimum Fluid Temperature	32°F (0°C)	32°F (0°C)
Contacts	SPDT switch 7.4 FLA, 44.4 LRA @120VAC Motor Duty	SPDT switch 7.4 FLA, 44.4 LRA @120VAC Motor Duty
Pilot Duty Rating	125VA@120/240VAC	125VA@120/240VAC
Maximum Service Pressure	160 psi	160 psi
Usage	1" to 6" pipe sizes (see Flow Chart)	1" to 6" pipe sizes (see Flow Chart)



FLOW SPECIFICATIONS IN GPM										
Pipe Size ▶		1"	1¼"	1½"	2"	2½"	3"	4"	5"	6"
Minimum Adjustment	Flow Activates	4.5	8.1	11.8	16.5	25	33	51	85	120
	Flow Deactivates	2.2	6.8	7.6	9.3	19	22	38	75	100
Maximum Adjustment	Flow Activates	14.8	22.1	25.7	32.3	75	90	110	170	240
	Flow Deactivates	13.8	20.1	23.7	30.5	72	85	100	155	220

MODEL	DESCRIPTION
FS200	Activates or deactivates electrical equipment upon the start or stop of liquid flow. NEMA 1.
FS204	Activates or deactivates electrical equipment upon the start or stop of liquid flow. NEMA 4.

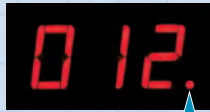
Water Feeder – Residential



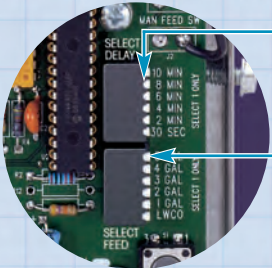
Model VXT-24 and VXT-120



- **Universal Compatibility**
 - Works with all major probe and float-type low water cut-offs.
- **Digital Feed Counter**
 - Continually tracks and displays the amount of make-up water fed into the boiler – essential for diagnosing system leaks that can severely shorten the life of the boiler.



- **Call-For-Feed Indicator**
 - Illuminates during feed signal from the LWCO



- **Programmable Feed Delay Settings (30 Sec. to 10 Min)**
 - Helps prevent flooded boilers. Allows time for condensate to return to boiler before initiating feed cycle – ensuring that additional water is needed.
- **Programmable Feed Amount Settings (LWCO and 1-5 Gal)**
 - With the LWCO setting selected, the VXT raises the water level to low water cut-off. The 1 to 5 Gallon settings can be selected to fine-tune the VXT to restore the normal operating water level above the low water cut-off.

- **Manual Feed Button**
 - Allows for manual feeds with the touch of a button.
- **Underfeed Protection**
 - If one feed cycle is not sufficient to restore boiler operation, the VXT will delay and feed one additional cycle.
- **Lock-Out Flood Protection**
 - Locks-out after two consecutive feed cycles to prevent flooding.

Specifications	VXT-24	VXT-120
Power Consumption	10 VA	15 VA
Max. Fluid Temperature	150° F	150° F
Flow Rate	1 GPM	1 GPM
Fittings	1/2" Sweat	1/2" Sweat

MODEL	VOLTAGE	DESCRIPTION/OPERATION
VXT-24	24 VAC	Upon a feed signal from low water cut-off, the VXT feeder delays (from 30 seconds to 10 minutes) to allow condensate to return to boiler. If make-up water is required after the delay period, the VXT will initiate a feed cycle. The VXT can be set to feed to the level of the low water cut-off or can be set from 1 to 5 gallons to raise the water level above the cut-off to the normal operating level. The digital feed counter tracks all water fed into the boiler including water added using the Manual Feed Button.
VXT-120	120 VAC	

U.S. Patent No. 6,688,329

▶ See VXT video at www.hydrolevel.com

Water Feeder – Commercial/Industrial



- **Programmable Feed Delay Settings (0 to 10 Min)**
 - Prevents over-filling by allowing time for condensate to return to boiler before initiating feed cycle. A “NO DELAY” delay setting is available for process steam applications.
- **Programmable Feed Amount Settings (LWCO to LWCO+120 Sec)**
 - Includes one setting to raise the water level to the boiler control and five additional settings to raise the water level above the boiler control.
- **LED Status Indicator**
 - Displays current mode of operation. Also provides timer for convenient set-up of programmable feed amount setting.
- **Manual Feed Button**
 - Allows for manual feeds with the touch of a button.
- **Lock-Out Flood Protection**
 - Locks out after sustained 10 minute feed cycle to prevent flooding.
- **Water Meter**
 - Heavy duty meter tracks make-up water added to system.
- **Fittings**
 - Includes fittings for easy attachment to 3/4" water line.



Specifications	VXTC
Max. Feed Water Temperature	100° F
Flow Rate (@ 40 PSI)	10 GPM
Electrical	120 VAC, 60 HZ
Fittings	3/4" NPT

MODEL	VOLTAGE	DESCRIPTION/OPERATION
VXTC	120 VAC	Designed to operate with all major low water cut-offs and pump controllers. Upon a low water signal from the boiler control, the VXTC delays (from 0 to 10 minutes) to allow condensate to return to the system. If make-up water is required following the delay period, the VXTC initiates a feed cycle. The VXTC can be set to feed to the level of the boiler control or to varying levels above. The heavy-duty water meter tracks all water fed into the system. The VXTC includes water feeder, strainer, flow restrictor and water meter with 3/4" NPT fittings.
VXTC-WF	120 VAC	Water Feeder as above without water meter. Includes water feeder, strainer and flow restrictor.
WM-1	n/a	Water Meter as described above without water feeder. Includes water meter and 3/4" NPT fittings.

Multi-Purpose Liquid Level Controls

Safgard™ Model 727 and 787 Tank Pump Control

- Controls Pump to Maintain Desired Liquid Level
- Can be Mounted Directly in Tank or in External Equalizing Line
- Remote Probe Mounts Any Distance from Control to Accomodate Virtually Any Application

Specifications	Models 727 and 787
Max. Pressure	250 PSI
Power Consumption	7 VA
Switch Contacts	SPST
Switch Ratings	10 A @ 240 VAC 1/3 hp @ 120 VAC 1/2 hp @ 240-600 VAC



MODEL	VOLTAGE	DESCRIPTION/OPERATION
727	120 VAC	LOW LEVEL CONTROL Maintains level between probes. Energizes pump to refill tank when liquid level falls below bottom probe. De-energizes pump when liquid level reaches upper probe. Includes (1) EL1214-SV and (1) EL1214-RSV probes.
787	120 VAC	HIGH LEVEL CONTROL Maintains level between probes. Energizes pump to remove liquid from tank when the level reaches the upper probe. De-energizes pump when liquid level falls below bottom probe. Includes (1) EL1214-SV and (1) EL1214-RSV probes.

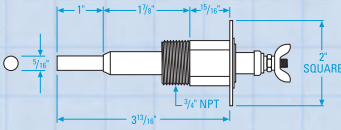
Probe Options/Specifications

Add letters in the chart below to the base model number to specify other probe options. (Example: CG450P)

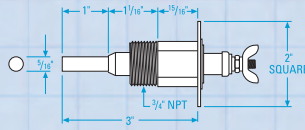
MODEL SUFFIX	PROBE MODEL DESIGNATED	PROBE DESCRIPTION
SV	EL1214-SV	3/4" NPT. Short Inside Dimension. Designed for installation in standard reducing tee and short clearance installations.
SVA	EL1220-SV	1/2" NPT. Short Inside Dimension. Designed for installation in standard reducing tee and short clearance installations.
P	EL1214-P	3/4" NPT. Long nut for thicker boiler jackets.
A	EL1220	1/2" NPT. Same dimensions as standard EL1214.
R	EL1214-R	3/4" NPT. Remote mount probe mounted to j-box (standard dimensions).
RA	EL1220-R	1/2" NPT. Remote mount probe mounted to j-box (standard dimensions).

Test pressure 1000 PSI, all models.

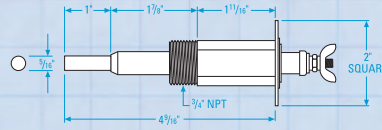
Note: All controls include one EL1214 probe unless otherwise specified.



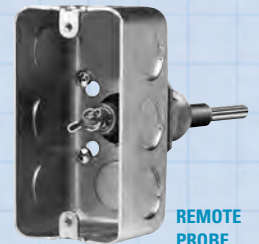
EL1214 STANDARD 3/4" NPT
EL1220 1/2" NPT



EL1214-SV 3/4" NPT
EL1220-SV 1/2" NPT



EL1214-P 3/4" NPT



REMOTE PROBE
EL1214-R
EL1220-R

Manifold Fittings



1214C-1



711C



250C



1" H.P. TEE



1214C-2



FOEM

MODEL	MAX. PSI	DESCRIPTION
1214C-1	250	1" x 1" x (3) 3/4". Three-probe manifold with tri cock and gauge glass tappings. Supplied with control models LCFT 967, 250WC, 250MWC.
711C	35	Two-probe manifold. Supplied with control models 711 and 724.
250C	250	1" x 1" x (3) 3/4". Three-probe manifold. Supplied with control models 250 and 250M.
1" H.P. TEE	250	1" x 1" x 3/4". High Pressure Tee for use with EL1214-SV probe .
1214C-2	250	1" x 1" x 3/4". One-probe manifold.
FOEM-1	160	One-probe manifolds.
FOEM-2	160	FOEM-1 is 1/2" x 1/2" x 3/4"; FOEM-2 is 1" x 1" x 3/4"; FOEM-3 is 1/4" x 1/4" x 3/4".
FOEM-3	160	

Cross Reference Guide

Honeywell Model #	McDonnell & Miller Model #	Description	Replace with Hydrolevel Model #	Obsolete Hydrolevel Model #
L7124A L7148A L7224C L7248A L8124A L8148A	L7124C L7224A L7224U L7248C L8124C L8148C	Universal Temperature Limit – 120 VAC	3150 3250 3250-Plus	
LA8148E LA8124E		Universal Temperature Limit – 24 VAC	3100 3200	
RW700A1007	900 900C	Automatic Reset & Test Button/Light – 120 VAC Automatic Reset & Test Button/Light – 120 VAC	650 650	OEM 170 C
RW700B1039	900M 901	Manual Reset & Test Button/Light – 120 VAC Automatic Reset – 120 VAC	550 170	OEM 170MC OEM 170
RW700B1021	901M 902M PS-850-120 PS-850-24 PS-850-M-120 PSE-801-M-120 PS-850-M-24 PSE-802-M-24 PS-851-120 PS-851M-120 PS-851-M-SP-120	Manual Reset – 120 VAC Manual Reset & Test Button/Light – 120 VAC Automatic Reset & Test Button/Light – 120 VAC Automatic Reset & Test Button/Light – 24 VAC Manual Reset & Test Button/Light – 120 VAC Manual Reset & Test Button/Light – 24 VAC Automatic Reset & Test Button/Light – 120 VAC Manual Reset & Test Button/Light – 120 VAC Manual Reset & Test Button/Light / short probe – 120 VAC	750 550 650 600 550 500 650 550 550SV	OEM 170M OEM 24C OEM 24MC
RW700A1098	PS-852-24 PS-852-SP-24 PS-852-M-SP-24 RB-120 RB-122 RB-24, RB-24E	Automatic Reset & Test Button/Light – 24 VAC Automatic Reset & Test Button/Light / short probe – 24 VAC Manual Reset & Test Button/Light / short probe – 24 VAC Automatic Reset / heavy duty contacts – 120 VAC Automatic Reset / compact size – 120 VAC Automatic Reset / compact size – with wiring harness – 24 VAC	600 600SV 500SV 170SV 1150 1100	
RW700A1080	PS-801-120 PSE-801-120 PS-802-24 PSE-802-24 PS-800-120 PS-800-24	Automatic Reset with delay / steam primary – 120 VAC Automatic Reset with delay / steam primary – 24 VAC Automatic Reset with delay / steam primary – 120 VAC Automatic Reset with delay / steam primary – 24 VAC	CG-450 CG-400 CG-450 CG-400	OEM 170TD OEM 24TD
VW400A1004	WF-2-120	Water Feeder M&M 2 gallon – Hydrolevel Adjustable – 120 VAC	VXT-120	V-120-1&2
VW800A1004	WF-2-24 WF2-U-120V WFE-120V WF2-U-24V WFE-24V FS-251 FS-4-3 FS-8W FS-254	Water Feeder M&M 2 gallon – Hydrolevel Adjustable – 24 VAC Water Feeder M&M "Unimatch" – Hydrolevel Adjustable – 120 VAC Water Feeder M&M "Unimatch" – Hydrolevel Adjustable – 24 VAC Flow Switch, general purpose, NEMA 1 enclosure Flow Switch, general purpose, NEMA 1 enclosure Flow Switch, general purpose, NEMA 4 enclosure Flow Switch, general purpose, NEMA 4 enclosure	VXT-24 VXT-120 VXT-24 FS200 FS200 FS204 FS204	V-24-1&2 44-100

**HYDROLEVEL
COMPANY**

Hydrolevel Company
83 Water Street
New Haven, Connecticut 06511
Telephone 203-776-0473
Fax 203-773-1019
www.hydrolevel.com

MEMBER OF
AHRI
**Air-Conditioning, Heating,
and Refrigeration Institute**