

Low Water Cut-Offs – Electronic For Hot Water and Steam Boilers

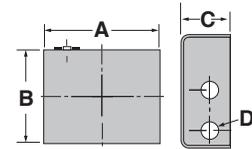
Series 750



- For commercial or industrial applications
- Primary or secondary control on hot water boilers
- Secondary control (manual reset models only) on steam boilers
- Manual reset models meet the requirements of **ASME Standard CSD-1**. If the control is in a low water condition when there is an interruption of power, the control will remain in a low water condition when power is restored. The reset button will need to be pressed when the water level is restored to a level above the probe to allow the burner to fire.



Series 750 Control Unit



Standard Features

- Green power in on indicating LED
- Red low water indicating LED
- Test button
- No lock out with loss of power if probe is in water
- 20,000 ohms sensitivity

Control Unit

Temperature Ratings:

Temperature:

Storage: -40°F to 120°F (-40°C to 49°C)

Ambient: 32°F to 120°F (0°C to 49°C)

Humidity: 85% (non-condensing)

Electrical Enclosure Rating: NEMA 1 General Purpose

Hz: 50/60

Control Power Consumption: 3 VA (max.)

Model 750-HW-MT-120

The 750-HW-MT-120 control provides continuous protection against a **HIGH WATER** condition in steam boilers and other water level applications. The manual reset function will require the unit be reset after water has risen above the level of the probe.

Electrical Ratings

Model	Control Voltage	Switch Contact Rating (Pilot Duty)
750-T-24	24VAC	50VA@24VAC Or
750-MT-24		
750-T-120	120VAC	125VA@120VAC
750-MT-120		
750-HW-MT-120		

Ordering Information

Model Number	Part Number	Description	Weight lbs. (kg)
750-T-24	176294	LWCO - 24V Auto Reset	2 (.9)
750-MT-24	176293	LWCO - 24V Manual Reset	2 (.9)
750-T-120	176206	LWCO - 120V Auto Reset	2 (.9)
750-MT-120	176207	LWCO - 120V Manual Reset	2 (.9)
750-HW-MT-120	176236	HWCO - 120V Manual Reset	2 (.9)

(Remote sensor and probe rod must be ordered separately, see page 70-72)

Dimensions, in. (mm)

A	B	C	D
6 ³ / ₈ (162)	5 ¹ / ₈ (130)	2 ⁹ / ₁₆ (65)	1 ⁹ / ₁₆ (40)

Low Water Cut-Offs – Electronic For Hot Water and Steam Boilers

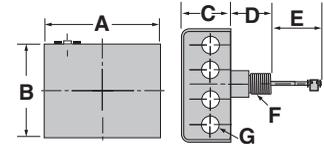
Series 751P/752P



- For commercial or industrial applications
- Primary or secondary control on hot water boilers
- Secondary control (manual reset models only) on steam boilers
- Manual reset models meet the requirements of **ASME Standard CSD-1**. If the control is in a low water condition when there is an interruption of power, the control will remain in a low water condition when power is restored. The reset button will need to be pressed when the water level is restored to a level above the probe to allow the burner to fire.



Series 751P/752P



Standard Features

- Green power in on indicating LED
- Red low water indicating LED
- Test button
- No lock out with loss of power if probe is in water
- 20,000 ohms sensitivity

Probe Specifications

Maximum Steam Pressure: 15 psi (1.0 kg/cm²)
Maximum Water Pressure: 160 psi (11.2 kg/cm²)
Maximum Water Temperature: 250°F (121°C)
Probe Sensitivity: 20,000 ohm

Control Unit

Temperature Ratings:

Temperature:

Storage: -40°F to 120°F (-40°C to 49°C)

Ambient: 32°F to 120°F (0°C to 49°C)

Humidity: 85% (non-condensing)

Electrical Enclosure Rating: NEMA 1 General Purpose

Hz: 50/60

Control Power Consumption: 3 VA (max.)

Electrical Ratings

Model	Control Voltage	Switch Contact Rating (Pilot Duty)
750-MT-24	24VAC	50VA@24VAC Or 125VA@120VAC
752P-MT-U-24		
752P-MT-SP-24		
751P-MT-120	120VAC	
751P-MT-U-120		
751P-MT-SP-120		

Ordering Information

(Remote sensor must be ordered separately (see page 72-74))

Model Number	Part Number	Description	Weight lbs. (kg)
752P-MT-24	176296	LWCO - 24V w/standard probe	2.5 (1.1)
752P-MT-U-24	176298	LWCO - 24V w/ext. barrel probe ('U')	2.5 (1.1)
752P-MT-SP-24	176297	LWCO - 24V w/short probe ('SP')	2.5 (1.1)
751P-MT-120	176234	LWCO - 120V w/standard probe	2.5 (1.1)
751P-MT-U-120	176214	LWCO - 120V w/ext. barrel probe ('U')	2.5 (1.1)
751P-MT-SP-120	176295	LWCO - 120V w/short probe ('SP')	2.5 (1.1)

Dimensions, in. (mm)

A	B	C	D			E			F	G
			Std.	SP	U	Std.	SP	U		
6 ⁵ / ₈ (168)	5 ⁵ / ₁₆ (135)	2 ³ / ₄ (70)	1 ⁹ / ₁₆ (40)	3 ¹ / ₁₆ (78)	1 ⁹ / ₁₆ (40)	2 ¹ / ₈ (54)	1 ⁵ / ₁₆ (33)	1 ⁹ / ₁₆ (40)	3/4	7/8 (22)

Low Water Cut-Offs – Electronic For Steam Boilers

Series PSE-800

For commercial steam boiler applications

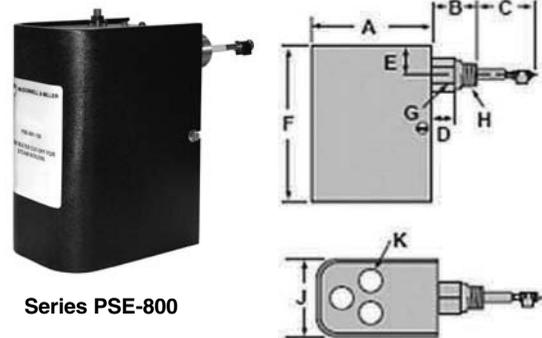
The Series PSE-800 probe type LWCO uses patented technology to monitor changes in water conductivity. When defined parameters are exceeded the new PSE-800 makes a decision to shut the burner off based on the volatility/variability of the resistance settings. This new patented technology provides the best protection possible without turning off the boiler unless a low water condition exists. As an added measure of safety, the control will turn off the boiler if it recognizes an out-of-water condition when the sensitivity threshold is exceeded.

Standard Features

- Green power in on indicating LED
- Red low water indicating LED
- 30 second DOM
- Test button
- Self-Cleaning probe
- No lock out with loss of power if probe is in water
- Provisions to add water feeder or alarm

Models available with:

- 120 VAC
- 24 VAC (meets ANSIZ21. 13a specification)
- 'U' probe (extended barrel)
- 'RX2' probe (remote)



Series PSE-800

Boiler Controls

Electrical Ratings

Model	Voltage	Switch Rating (Amperes)		Pilot Duty
		Full Load	Locked Rotor	
24 VAC	24 VAC	—	—	50 VA at 24 VAC
120 VAC	120 VAC	7.5	43.2	125 VA at 120 or 240 VAC
	240 VAC	3.75	21.6	50 or 60 Hz

Specifications

Probe Sensitivity: 7,000 ohm

Power Consumption: 1.7 VA @ 24VAC
3.6 VA @ 120VAC

Enclosure Rating: NEMA 1 General Purpose

Maximum Ambient Temperature: 120°F (49°C)

Maximum Steam Pressure: 15psi (1 kg/cm²)

Ordering Information

Model Number	Part Number	Description	Weight lbs. (kg)
PSE-801-120	153827	LWCO - 120V	2.7 (1.2)
PSE-801-U-120	153828	PSE-801-120 w/ext. barrel ('U' probe)	2.7 (1.2)
PSE-802-24	153927	LWCO - 24V	2.7 (1.2)
PSE-802-U-24	153928	PSE-801-24 w/ext barrel ('U' probe)	2.7 (1.2)
PSE-802-RX2-24	153929	PSE-802-24 w/remote sensor ('RX2' probe)	2.7 (1.2)

Dimensions, in. (mm)

A	B		C			D		E	F	G	H		J	K
	All	U	Std	RX2	U	All	U				All	RX		
4¼ (108)	1⅞ (40)	3⅞ (78)	2½ (54)	2⅝ (54)	1⅞ (40)	½ (13)	¾ (20)	1 (25)	6 (153)	1⅞ (35)	¾ NPT	½ NPT	3 (76)	⅞ (22)

Low Water Cut-Offs – Electronic For Steam Boilers

PSE-800-M Manual Reset LWCO

- Primary or Secondary control on hot water boilers
- Secondary control on steam boilers
- Manual reset models meet requirements of ASME Standard CSD-1. If the control is in a low water condition when there is an interruption of power, the control will remain in a low water condition when power is restored. The reset button will need to be pressed when the water level is restored to a level above the probe to allow the burner to fire.

Standard Features

- Green power in on indicating LED
- Red low water indicating LED
- 60-second delay before lockout.
- Test button
- Self-Cleaning probe
- No lock out with loss of power if probe is in water

Electrical Ratings

Model	Voltage	Switch Rating (Amperes)		Pilot Duty
		Full Load	Locked Rotor	
24 VAC	24 VAC	—	—	50 VA at 24 VAC
120 VAC	120 VAC	7.5	43.2	125 VA at 120 or 240 VAC 50 or 60 Hz
	240 VAC	3.75	21.6	

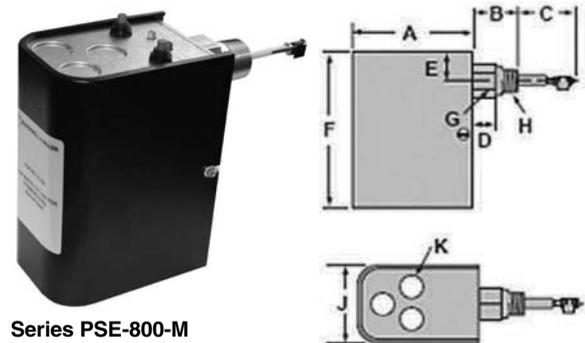
- Probe Sensitivity: 7,000 ohms
- Probe Consumption: 1.7 VA @ 24 VAC
3.6 VA @ 124 VAC
- Enclosure Rating: NEMA 1 General Purpose

Ordering Information

Model Number	Part Number	Description	Weight lbs. (kg)
PSE-801-M-120	153601	120V Manual Reset w/standard probe	2.7 (1.2)
PSE-801-M-U-120	153603	120V Manual Reset w/ext. barrel probe ('U')	2.7 (1.2)
PSE-802-M-24	153602	24V Manual Reset w/standard probe	2.7 (1.2)
PSE-802-M-U-24	153604	24V Manual Reset w/ext. barrel probe ('U')	2.7 (1.2)

Dimensions, in. (mm)

A	B		C			D		E	F	G	H	J	K
	All	U	Std	RX2	U	Std	U						
4¼ (108)	1¼ (40)	3¼ (78)	2½ (54)	2½ (54)	1¼ (40)	½ (13)	¾ (20)	1 (25)	6 (153)	1¼ (35)	¾ NPT	3 (76)	¾ (22)



Probe Specifications

- **Maximum Steam Pressure:** 15 psi (1.0 kg/cm²)
- **Maximum Water Pressure:** 160 psi (11.2 kg/cm²)
- **Maximum Water Temperature:** 250°F (121°C)
- **Probe Sensitivity:** 7,000 ohm

Control Unit

Temperature:

Storage: -40°F to 120°F (-40°C to 49°C)

Ambient: 32°F to 120°F (0°C to 49°C)

Humidity: 85% (non-condensing)



Do not use "manual reset" models with electric automatic water feeders. Failure to follow this caution can cause flooding and property damage.

Low Water Cut-Offs – Electronic



RB-24E

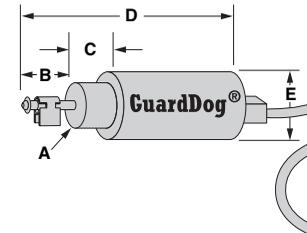
Low Water Cut-Offs



- Brass threads enable a secure and trouble-free installation
- Test button to confirm proper operation
- Universal wiring harness fits 100% of today's gas boilers
- -S, -A and -L models provide “plug & play” installation with most residential boilers
- Compact size
- Easy to install and wire
- Automatic reset feature resumes operations after a power outage when water is on probe
- Green LED indicating power is on
- Red LED indicating low water condition
- Solid state operation
- 15,000 ohms probe sensitivity
- Maximum ambient temperature 120°F (49°C)
- Maximum water temperature 250°F (121°C)
- Maximum water pressure of 160 psi (3.5 kg/cm3)



RB-24E



Boiler Controls

Electrical Ratings

Voltage	Power Consumption	Load Switching
24 VAC	2.5 VA	2 A at 24 VAC

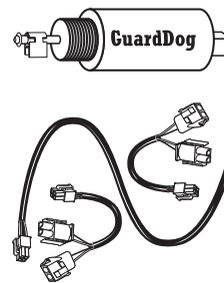
Note: A 15 mA minimum current draw is required.

Dimensions, in. (mm)

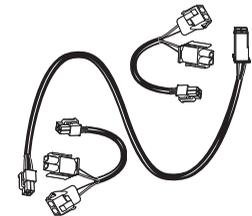
A	B	C	D	E
NPT				
3/4	1 1/16 (30.2)	1 3/16 (30.2)	5 3/4 (180)	1 7/8 (47.6)

Ordering Information

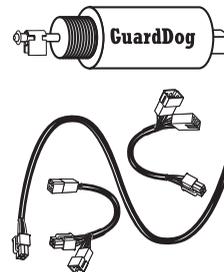
Model Number	Part Number	Description
RB-24E	144692	Residential LWCO
RB-24E-A	144694	Residential LWCO w/vent damper harness
RB-24E-S	144693	Residential LWCO w/control board harness
RB-24E-L	144690	Residential LWCO w/burner control harness
UWH-RB-24A	144681	Replacement cable for RB-24E-A
UWH-RB-24S	144682	Replacement cable for RB-24E-S
UWH-RB-24L	144691	Replacement cable for RB-24E-L



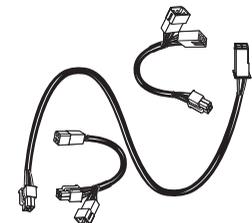
RB-24E-S



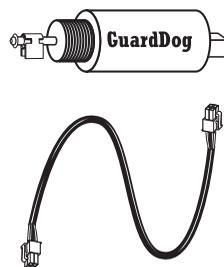
UWH-RB-24S



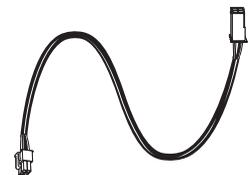
RB-24E-A



UWH-RB-24A



RB-24E-L



UWH-RB-24L

Low Water Cut-Offs – Electronic For Hot Water Boilers

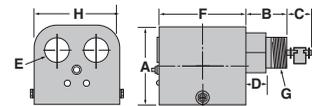
RB-122-E Low Water Cut-Offs



- For residential applications
- Electronic operation
- Easy to install and wire
- Red low water indicating LED
- Green power indicating LED
- Now with test button
- Automatic reset
- No blow down required
- 20,000 ohms probe sensitivity
- Maximum ambient temperature 120°F (49°C)
- Maximum water temperature 250°F (121°C)
- Maximum water pressure 160 psi (11.2 kg/cm²)



RB-122-E



Electrical Ratings

Voltage	Power Consumption	Load Switching
120 VAC	3.1 VA	5.8 A at 120 VAC

Dimensions, in. (mm)

A	B	C	D	E	F	G NPT	H
2 ³ / ₄ (70)	1 ⁵ / ₈ (51)	1 ³ / ₈ (35)	3 ⁴ / ₄ (20)	7 ⁸ / ₈ (22)	3 ¹³ / ₁₆ (99)	3 ⁴ / ₄	3 ³ / ₁₆ (81)

Ordering Information

Model Number	Part Number	Description	Weight lbs. (kg)
RB-122-E	144676	Low water cut-off	1.7 (.78)

RBT-3000 Low Water Cut-off Fuel Economizer

The RBT-3000 is a combination Low-Water Safety Cut-Off and Fuel-Saving controller for residential heating systems. The Low Water Cut-Off is specifically designed to provide burner cut-off if there is an unsafe water loss, which can result in a broken or leaking radiator or pipe, or a cracked section in the boiler. The energy saving feature reduces: fuel consumption, wear on boiler parts and burner emissions, by actively managing the burner cycling, in conjunction with the boiler operating-control to the to properly match boiler-output to the required load. This controller indicates actual savings on burner cycle by cycle basis and also indicates the averages of these cycles. All programmable parameters are stored in non-volatile memory.

Features:

- For hot water boilers up to 400,000 BTU input
- Reduces fuel consumption an average of 10% to 20%
- Reduces maintenance and extends boiler life
- Increased savings without replacing existing controls
- Illuminated LCD Display
- Fail-safe operation
- Pre-programming for most installations
- Easily installed plug-in sensors
- LWCo test button
- 20,000 ohms probe sensitivity
- Self-cleaning probe

Ordering Information

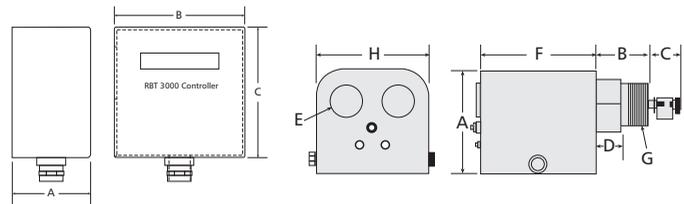
Model Number	Part Number	Description
RBT-3000	153605	LWCO & Fuel Economizer
RBT-TS	354084	Temperature Sensor - DHW
RBT_EC	354085	Junction Box

Control Box - Dimensions, in. (mm)

A	B	C
2½ (63)	4 (101)	4 (101)

Remote Sensor - Dimensions, in. (mm)

A	B	C	D	E	F	G NPT	H
2¾ (70)	1⅝ (51)	1⅜ (35)	¾ (20)	⅞ (22)	3⅜ (99)	¾	3⅜ (81)



Control Box

Remote Sensor

Electric Ratings

Power Input: 24, 115 VAC + 10%/-15%,
3 Watts maximum, 50/60Hz

Control circuit Input:
24, 115 VAC ± 10%, 0.1A maximum Burden

Relay Contact:
Form C, 7.4A @ 120 VAC

Low-Water Cut-Off probe

LWCO Probe:
Low Voltage (24 VAC) Conductance Type
Maximum Water Pressure: 160 psi (11kg/cm²)
Maximum Water Temperature: 250°F, (121°C)

Environmental Conditions

For Indoor Use

Rated Ambient Temperature
32° - 120°F (0° - 49°)
Maximum Rh 85% non-condensing

Low Water Cut-Offs – Mechanical For Steam Boilers

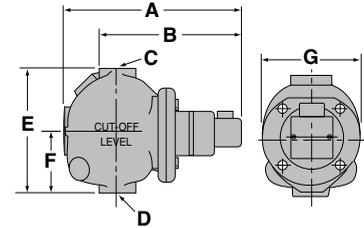
Series 61 Low Water Cut-Offs



- For residential and commercial low pressure steam boiler applications
- For boilers of any steaming capacity
- Adjustable BX outlet for easy installation
- Dual precision switches for dependable operation of the low water cut-off and alarm or electric water feeder
- Packless bellows
- 1" NPT equalizing pipes and blow down valve required
- Maximum steam pressure 20 psi (1.4 kg/cm²)



Series 61



Boiler Controls

Electrical Ratings

Voltage	Motor Switch Rating (Amperes) 120 VDC .3 Amp, 240 VDC .15 Amp		Pilot Duty
	Full Load	Locked Rotor	
120 VAC	7.4	44.4	125 VA at 120 or 240 VAC
240 VAC	3.7	22.2	

Dimensions, in. (mm)

A	B	C NPT	D NPT	E	F	G
9 ¹⁵ / ₁₆ (252)	7 ⁷ / ₁₆ (189)	1	1	6 ¹ / ₂ (165)	3 ¹ / ₈ (79)	5 ¹ / ₈ (130)

Ordering Information

Model Number	Part Number	Description	Weight lbs. (kg)
61	140100	Low water cut-off	13.5 (6.1)

Low Water Cut-Offs – Mechanical For Steam and Hot Water Boilers

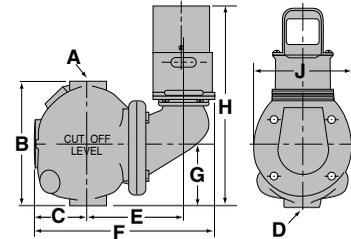
Series 63 Low Water Cut-Offs



- For residential, commercial, and industrial applications
- Heavy duty
- Includes No. 2 switch
- Optional manual reset available
- Maximum boiler pressure 50 psi (3.5 kg/cm²)
- Use with TC-4 on hot water systems



Series 63



Electrical Ratings

Voltage	Motor Switch Rating (Amperes) 120 VDC .5 Amp		Pilot Duty
	Full Load	Locked Rotor	
120 VAC	10.2	61.2	125 VA at 120 or 240 VAC 60 Hz
240 VAC	5.1	30.6	

Dimensions, in. (mm)

A NPT	B	C	D NPT	E	F	G	H	J
1	6½ (165)	2 ⁹ / ₁₆ (65)	1	5 ⁵ / ₃₂ (131)	9 ³ / ₈ (238)	3 ¹ / ₈ (79)	10½ (267)	5 ¹ / ₈ (130)

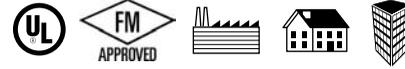
Ordering Information

Model Number	Part Number	Description	Weight lbs. (kg)
63	142400	Low water cut-off	13.5 (6.1)
63-B	142700	63 w/ float block	15.0 (6.8)
63-BM	143300	63 w/float block & manual reset	15.0 (6.8)
63-M	143100	63 w/manual reset	14.0 (6.4)

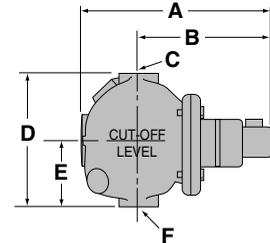
Low Water Cut-Offs – Mechanical For Steam and Hot Water Boilers

Series 64 Low Water Cut-Offs

- For residential, commercial, and industrial boiler applications of any steaming capacity
- Heavy Duty
- Adjustable BX outlet for easy installation
- Dual precision switches for dependable operation of the low water cut-off and alarm or electric water feeder
- Packless bellows
- Optional manual reset available
- 1" (25mm) NPT equalizing pipes required
- Maximum boiler pressure 50 psi (3.5 kg/cm²)
- Use with TC-4 on hot water systems



SERIES 64



Dimensions, in. (mm)

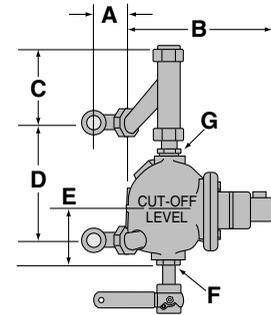
A	B	C NPT	D	E	F NPT
9 ¹⁵ / ₁₆ (252)	7 ⁷ / ₁₆ (65)	1	6 ¹ / ₂ (165)	3 ¹ / ₈ (79)	1

Model 64-A Low Water Cut-Offs

- Quick hook-up fittings provided for installation directly into gauge glass tappings



Model 64-A



Dimensions, in. (mm)

A	B	C	D		E	F NPT	G NPT
			min.	max.			
2 ⁵ / ₈ (66)	9 ¹⁵ / ₁₆ (252)	4 ¹ / ₂ (113)	6 ⁷ / ₈ (172)	13 ³ / ₈ (339)	3 ¹ / ₈ (79)	1	1

Ordering Information

Model Number	Part Number	Description	Weight lbs. (kg)
64	143600	Low water cut-off	11.3 (5.1)
64-A	143700	64 w/quick hook-up fittings	18.3 (8.3)
64-B	143800	64 w/float block	11.5 (5.2)
64-M	144250	64 w/manual reset	12.5 (5.7)

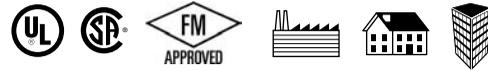
Electrical Ratings

Voltage	Motor Switch Rating (Amperes)		Pilot Duty
	Full Load	Locked Rotor	
120 VAC	7.4	44.4	125 VA at 120 or 240 VAC
240 VAC	3.7	22.2	

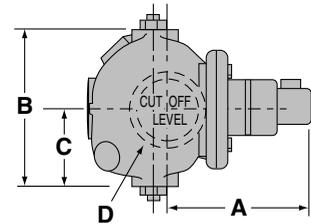
Low Water Cut-Offs – Mechanical For Steam and Hot Water Boilers

Series 764 Low Water Cut-Offs

- For residential, commercial, and industrial boiler applications of any steaming capacity
- Heavy duty
- Adjustable BX outlet for easy installation
- Dual precision switches for dependable operation of the low water cut-off and alarm or electric water feeder
- Packless bellows
- 2½" NPT side tapping provided for installation with close nipple
- Maximum boiler pressure 50 psi (3.5 kg/cm²)



Series 764



Electrical Ratings

Voltage	Motor Switch Rating (Amperes)		Pilot Duty
	Full Load	Locked Rotor	
120 VAC	7.4	44.4	125 VA at 120 or 240 VAC
240 VAC	3.7	22.2	

Dimensions, in. (mm)

A	B	C	D NPT
6¾ (175)	6½ (165)	3⅞ (79)	2½

Ordering Information

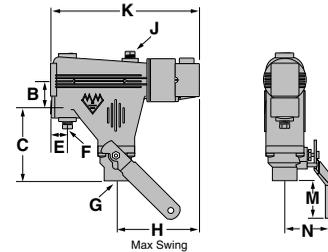
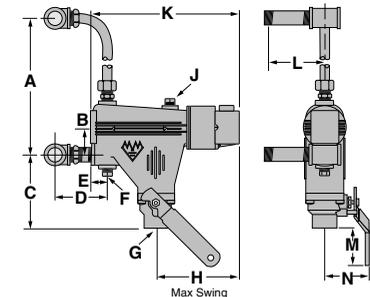
Model Number	Part Number	Description	Weight lbs. (kg)
764	144500	Low water cut-off	12.5 (5.7)

Low Water Cut-Offs – Mechanical For Steam Boilers

Series 67 Low Water Cut-Offs



- For residential and commercial applications
- For boilers of any steaming capacity
- Quick hook-up fittings provided
- Lever-operated, full port ball valve for easy blow down
- Adjustable BX outlet for easy installation
- Dual precision switches for dependable operation of the low water cut-off and alarm or electric water feeder
- Optional features
 - Low voltage switches for self-generating millivolt circuits
 - Manual reset switch
- Large float chamber
- Maximum steam pressure 20 psi (1.4 kg/cm²)



Electrical Ratings

Voltage	Motor Switch Rating (Amperes)		Pilot Duty
	Full Load	Locked Rotor	
120 VAC	7.4	44.4	125 VA at 120 or 240 VAC
240 VAC	3.7	22.2	

Dimensions, in. (mm)

A		B	C	D	E	F	G	H	J	K	L	M	N
min.	max.					NPT	NPT		NPT				
6½ (165)	14 (356)	1¾ (45)	4¾ (121)	3¾ (86)	1⅛ (29)	¾	¾	5½ (140)	¼	9 ²³ / ₃₂ (247)	3 ⁹ / ₁₆ (90)	2½ (64)	2 ¹³ / ₁₆ (71)

Ordering Information

Model Number	Part Number	Description	Weight lbs. (kg)
67	149400	Low water cut-off	10 (4.5)
67-G	149600	67 for millivolt service	10 (4.5)
67-LQHU	149500	67 without quick hook-up fittings	8 (3.6)
67-M	149700	67 w/manual reset	10 (4.5)

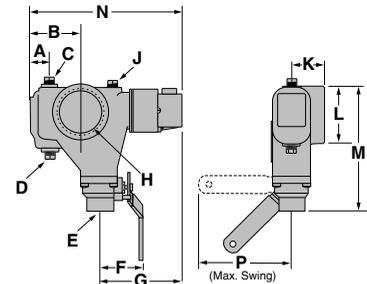
Low Water Cut-Offs – Mechanical For Steam Boilers

Series 767 Low Water Cut-Offs

- For residential and commercial low pressure boiler applications
- For boilers of any steaming capacity
- 2½" NPT body tapping for side mounting on boilers
- Lever-operated, full port ball valve for easy blow down
- Adjustable BX outlet for easy installation
- Dual precision switches for dependable operation of the low water cut-off and alarm or electric water feeder
- Large float chamber
- Maximum steam pressure 20 psi (1.4 kg/cm²)



Series 767



Boiler Controls

Electrical Ratings

Voltage	Motor Switch Rating (Amperes)		Pilot Duty
	Full Load	Locked Rotor	
120 VAC	7.4	44.4	125 VA at 120 or 240 VAC
240 VAC	3.7	22.2	

Dimensions, in. (mm)

A	B	C NPT	D NPT	E NPT	F	G	H NPT	J NPT	K	L	M	N	P
1½ ₂ (29.3)	3 ¹³ / ₂ (186.5)	¾	¾	¾	2 ¹³ / ₁₆ (71)	5¾ (137)	2½	¼	2¾ ₆₄ (51.9)	3¾ (92)	8¾ ₂ (207)	9 ¹ / ₁₆ (246.6)	5½ (140)

Ordering Information

Model Number	Part Number	Description	Weight lbs. (kg)
767	153700	Low water cut-off	8.5 (3.9)

Low Water Cut-Offs – Mechanical For Steam Boilers

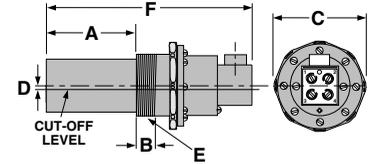
Series 69

Built-in Low Water Cut-Offs

- For residential and commercial low pressure steam boiler applications
- For boilers of any steaming capacity
- For mounting in 2½" NPT boiler side tapplings
- Insertion lengths available in 1⅜" - 4⅛" (30-105mm)
- Packless bellows
- Adjustable BX outlet for easy installation
- Dual precision switches for dependable operation of the low water cut-off and an alarm or electric water feeder
- Optional low voltage switches for self-generating millivolt circuits
- Maximum steam pressure 20 psi (1.4 kg/cm²)



Series 69



Boiler Controls

Electrical Ratings

Voltage	Motor Switch Rating (Amperes)		Pilot Duty
	Full Load	Locked Rotor	
120 VAC	7.4	44.4	125 VA at 120 or 240 VAC
240 VAC	3.7	22.2	

Dimensions, in. (mm)

A		B	C	D	E	F
Model	Insertion Length					
69	4⅛ (105)	1 (25)	4⅛ (105)	⅛ (3)	2½	9½ (241)
169	3⅜ (79)					
269	2¼ (57)					
369	1¾ (45)					
469, 569	1⅜ (30)					

Ordering Information

Model Number	Part Number	Description	Weight lbs. (kg)
69	153900	Low water cut-off w/4⅛" (105mm) insertion length	3.7 (1.7)
69-MV-P	155000	69 w/millivolt switch	4.0 (1.8)
169	155100	69 w/3⅜" (79mm) insertion length	4.0 (1.8)
269	155200	69 w/2¼" (57mm) insertion length	4.0 (1.8)
369	155300	69 w/1¾" (45mm) insertion length	4.0 (1.8)
369-MV	155400	369 w/millivolt switch	4.0 (1.8)
469	155500	69 w/1⅜" (30mm) insertion length	4.0 (1.8)
569	155700	469 w/1⅜" (30mm) insertion length w/¼" NPT tapping	4.0 (1.8)

Low Water Cut-Offs Combination Low Water Cut-Off/Pump Controllers for Steam Boilers

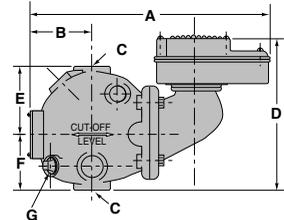
Series 42S Low Water Cut-Off/Pump Controllers



- For residential, commercial, and industrial low and medium pressure steam boilers with a separate water column
- For boilers of any steaming capacity
- Monel bellows provides corrosion resistance
- Single pole, single throw snap action switches
- Enclosed junction box protects switches
- Optional features
 - Quick hook-up fittings
 - Gauge glass connector
- Maximum pressure 50 psi (3.5 kg/cm²)



SERIES 42S



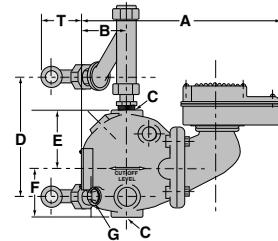
Electrical Ratings

Voltage	Pump Circuit Rating (Amperes)		Pilot Duty
	Full Load	Locked Rotor	
120 VAC	7.4	44.4	345 VA at 120 or 240 VAC
240 VAC	3.7	22.2	

Alarm Circuit Rating (Amperes)	
Voltage	Amps
120 VAC	1
240 VAC	1/2



MODEL 42S-A

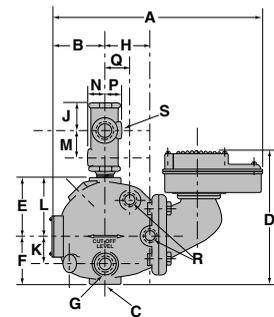


Ordering Information

Model Number	Part Number	Description	Weight lbs. (kg)
42S	129302	Combination low water cut-off/pump controller	15.5 (7.0)
42S-A	129702	42S w/quick hook-up fittings	21.3 (9.7)
42S-N	129802	42S w/glass connector	21.3 (9.7)



MODEL 42S-N



Dimensions, in. (mm)

Model	A	B	C NPT	D	E	F	G NPT
42S	12 ¹ / ₄ (311)	2 ⁹ / ₁₆ (65)	1	8 ⁷ / ₈ (225)	3 ¹¹ / ₁₆ (94)	3 ¹ / ₈ (79)	1/2
42S-A	12 ¹ / ₄ (311)	2 ⁹ / ₁₆ (65)	1	7 ¹ / ₄ -16 ¹¹ / ₁₆ (184-347)	2 ³ / ₄ (45)	3 ¹ / ₈ (79)	1/2
42S-N	12 ¹ / ₄ (311)	2 ⁹ / ₁₆ (65)	1	8 ⁷ / ₈ (225)	3 ¹¹ / ₁₆ (94)	3 ¹ / ₈ (79)	1/2

Model	H	J	K	L	M	N	P	Q	R NPT	S NPT	T
42S-N	2 ⁹ / ₁₆ (65)	2 ⁹ / ₁₆ (65)	1 ³ / ₄ (45)	3 ¹¹ / ₁₆ (94)	1 ¹³ / ₁₆ (46)	1 ¹ / ₁₆ (27)	1 ¹ / ₁₆ (27)	1 ¹ / ₂ (38)	3/8	1/4	2 ⁵ / ₈ (67)

Low Water Cut-Offs – Mechanical For Steam Boilers

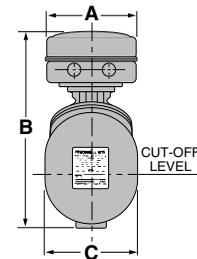
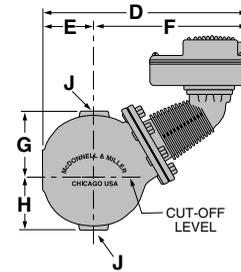
Series 150S Low Water Cut-Off/Pump Controllers



- For commercial and industrial low or high pressure boiler applications
- For boilers of any steaming capacity
- Monel bellows provides corrosion resistance
- Snap action switches for high temperature service
 - 1 Single pole, single throw switch for pump control
 - 1 Single pole, double throw switch for low water cut-off and alarm actuation
- Optional features
 - Manual reset
 - 2 Single pole, single throw switches
 - 2 Single pole, double throw switches
 - Float block
 - BSPT threads
- Maximum pressure 150 psi (10.5 kg/cm²)



Series 150S



Model 150S-MD

Maximum differential operation

- Prevents nuisance burner shutdowns in **low pressure** applications operating less than 50 psi (3.5 kg/cm²)
- For additional information see page 46

Electrical Ratings

Voltage	Pump Circuit Rating (Amperes)		Pilot Duty
	Full Load	Locked Rotor	
120 VAC	7.4	44.4	345 VA at
240 VAC	3.7	22.2	120 or 240 VAC

Alarm Circuit Rating (Amperes)	
Voltage	Amps
120 VAC	1
240 VAC	1/2

Ordering Information

Model Number	Part Number	Description	Weight lbs. (kg)
150S	171702	Combination low water cut-off/pump controller	24.7 (11.2)
150S-B	171903	150S w/float block	24.7 (11.2)
150S-B-M	172104	150S-B w/manual reset	24.7 (11.2)
150S-BMD	172002	150S w/float block and max. dif.	24.7 (11.2)
150S-BM-MD	172201	150S-BMD w/manual reset	24.7 (11.2)
150S-MD	171802	150S w/maximum differential	24.7 (11.2)
150S-M	172702	150S w/manual reset	24.7 (11.2)
150S-M-MD	172802	150S-M w/maximum differential	24.7 (11.2)
158S	178402	150S w/2 SPDT switches	26.3 (11.9)
158S-M	178502	158S w/manual reset	27.3 (12.4)
159S	178802	150S w/2 SPST switches	26.0 (11.8)

Dimensions, in. (mm)

A	B	C	D
5 ⁷ / ₈ (149)	12 ⁷ / ₁₆ (316)	6 (152)	13 ¹ / ₄ (337)

E	F	G	H	J
3 ⁵ / ₁₆ (84)	9 ¹⁵ / ₁₆ (252)	4 ¹ / ₈ (105)	3 ⁷ / ₁₆ (87)	1 NPT

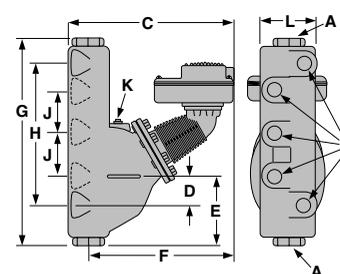
Low Water Cut-Offs – Mechanical For Steam Boilers

Series 157S Low Water Cut-Off/Pump Controllers

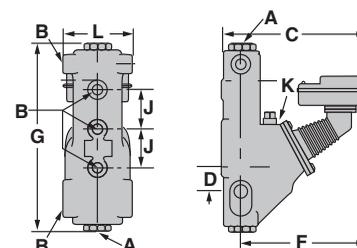
- For residential, commercial and industrial low or high pressure boiler applications
- For boilers of any steaming capacity
- Monel bellows provides corrosion resistance
- Float chamber with integral water column provided
- Snap action for high temperature service
 - 1 Single pole, single throw switch for pump control
 - 1 Single pole, double throw switch for low water cut-off and alarm actuation
- Optional features
 - Manual reset
 - Integral conductance probes for additional levels and greater operating differential-Model 157S-RBP-MD
 - 1" or 1¼" NPT equalizing tappings
 - ½" or ¾" NPT tappings for gauge glass/tri-cock installations
 - BSPT threads
- Maximum pressure 150 psi (10.5 kg/cm²)



Series 157S



Model 157S-MD



Model 157S-MD

Maximum differential operation

- Prevents nuisance burner shutdowns in **low pressure** applications operating less than 50 psi (3.5 kg/cm²)
- For additional information see page 46

Electrical Ratings

Voltage	Cut-off and Pump Circuits Rating (Amperes)		Pilot Duty
	Full Load	Locked Rotor	
120 VAC	7.4	44.4	345 VA at 120 or 240 VAC
240 VAC	3.7	22.2	

Alarm Circuit Rating (Amperes)	
Voltage	Amps
120 VAC	1
240 VAC	1/2

Dimensions, in. (mm)

Model	A NPT	B NPT	C	D	E	F	G	H	J	K NPT	L
157S	1	½	13 ³ / ₈ (339)	2 ⁵ / ₁₆ (59)	4 ¹⁵ / ₁₆ (125)	11 ³ / ₄ (298)	16 (406)	11½ (292)	3½ (89)	¾	5 ⁷ / ₈ (149)
157S-A	1¼	¾	13 ³ / ₈ (339)	2 ⁵ / ₁₆ (59)	4 ¹⁵ / ₁₆ (125)	11 ³ / ₄ (298)	16 (406)	11½ (292)	3½ (89)	¾	5 ⁷ / ₈ (149)
157S-R	1	½	13 ³ / ₈ (339)	2¼ (57)	5 ⁷ / ₈ (149)	11 ³ / ₄ (298)	17 (432)	11½ (292)	3½ (89)	¾	6¼ (159)
157S-RL	1¼	½	13 ⁹ / ₁₆ (345)	3½ (89)	5 ⁷ / ₈ (149)	11 ³ / ₄ (298)	17 (432)	12¾ (324)	3½ (89)	¾	6¼ (159)

Ordering Information

Model Number	Part Number	Description	Weight lbs. (kg)
157S	173502	150S low water cut-off w/water column	39.7 (18.0)
157S-MD	173603	157S w/maximum differential	39.7 (18.0)
157S-A	173702	157S w/alternate tappings	39.5 (17.9)
157S-A-M	173802	157S-A w/manual reset	39.5 (17.9)
157S-M	175402	157S w/manual reset	39.7 (18.0)
157S-M-MD	175412	157S-M w/maximum differential	39.7 (18.0)
157S-R	176220	157S w/alternate tappings	42.0 (19.0)
157S-R-M	177306	157S-R w/manual reset	42.0 (19.0)
157S-RBP-MD	176503	157S w/2 integral conductance probes	51.0 (23.1)
157S-RL	176902	157S w/alternate tappings	42.0 (19.0)
157S-RL-M	177006	157S-RL w/manual reset	42.0 (19.0)

MD Model Setpoints

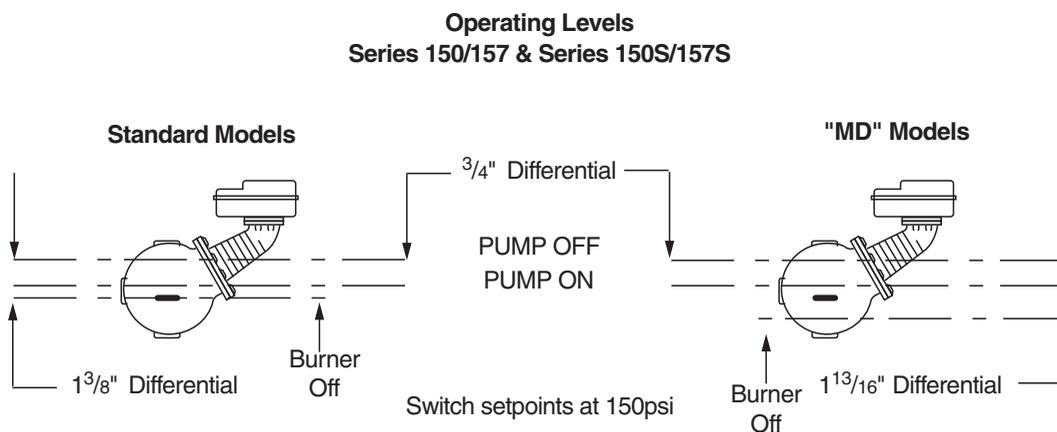
The bellows on the 150 units are sensitive to pressure. At higher pressures the bellows is stiffer requiring more force to move it. At lower pressures the bellows is more pliable (less stiff) requiring less force to move it. Consequently, the on/off points tend to narrow at lower pressures. (Less distance between on and off).

Early versions of the 150 units with mercury bulb switches were able to be adjusted. These units had knurled adjustment screws that could be used to raise, lower or widen the setpoints. Although the available adjustment was small (usually $\frac{1}{16}$ " to $\frac{1}{8}$ " total), it was enough to compensate in the field for lower pressure systems.

Later versions of the 150 with mercury bulb switches and all snap switch units are not adjustable in the field. The 'MD' models were created to provide a 150 control with factory settings to compensate for the narrowing of setpoints on new and existing installations.

On 'MD' models the distance between pump off and burner off is increased by approximately $\frac{7}{16}$ ". Note that the pump on/off differential on both standard and 'MD' models is set at $\frac{3}{4}$ ".

This larger differential is accomplished by lowering the burner off setpoint $\frac{3}{8}$ " below the casting line on 'MD' models when setting the burner on/off points at 150 psi. This compensates for the narrowing of the setpoints at lower operating pressures because the burner off point will move upward (closer to the casting line) at lower pressures.



Low Water Cut-Offs – Mechanical For Steam Boilers

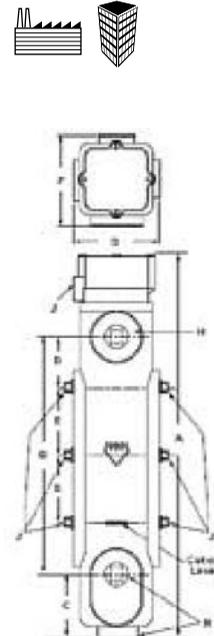
Series 1575

Low Water Cut-Off/Pump Controllers

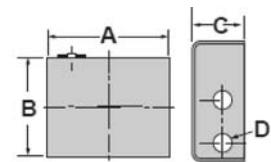
- Primary low water fuel cut-off protection and pump control for commercial and industrial steam boilers
- Motorized valve controller, low water cut-off and alarm actuator for boilers, vessels and tanks
- Set points and differential remain constant throughout pressure range
- Diagnostic features incorporated in the control include:
 - High ambient temperature protection
 - Internal LEDs that indicate water position and condition
 - External LEDs that indicate control activity
- Adjustable pump differentials by cutting probes to desired set points
- Control unit mounted remotely from probe chamber for maximum flexibility
- Adjustable 60-second burner-off time delay
- 1 HP burner and pump relays
- Solid state operation
- Redundant low-water and pump-off circuitry
- 60,000 ohms probe sensitivity
- Test button to quickly confirm proper operation
- Probe chamber with 3 probes and gauge glass tapings
- 4th probe can be added for high water control
- NEMA1 electrical control unit enclosure
- NEMA4X probe chamber enclosure
- Maximum ambient temperature 135°F (57°C)
- Maximum water temperature 406°F (208°C) at probes
- Maximum water pressure of 250 psi (17.3 kg/cm)



Probe Chamber
(with 3 probes standard)



Electrical Control Unit
(for remote mounting)



Dimensions, in. (mm)

Probe Chamber

A	B	C	D	E	F	G	H NPT	J NPT
18 ³ / ₈ (473)	11 ¹ / ₂ (292)	3 ¹ / ₈ (79)	2 ¹ / ₂ (64)	3 ¹ / ₄ (82)	4 ³ / ₈ (111)	4 ³ / ₁₆ (106)	1	1

Electrical Control Unit

A	B	C	D
6 ¹ / ₂ (159)	5 ³ / ₁₆ (132)	2 ³ / ₄ (70)	3 ⁴ / ₄ (20)

Electrical Rating and Switch Ratings

Supply Voltage	Probe Voltage	Full load (Amps) NO (NC), (VAC)	Locked Rotor (Amps) NO (NC), (VAC)	Pilot Duty (VA) NO (NC), (VAC)	Motor (HP) NO (NC), (VAC)
120 VAC 50/60Hz	5 VAC	16 (5.8), 120	96 (34.8), 120	470 (290), 120	1 (1/4), 120
	Maximum	8 (4.9), 240	48 (17.4), 240	470 (290), 240	2 (1/2), 240

Ordering Information

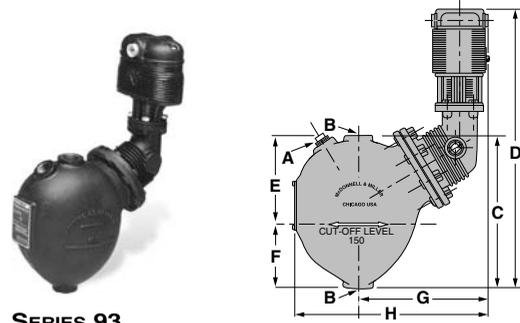
Model Number	Part Number	Description
1575	171907	Combination LWCO/pump controller

Low Water Cut-Offs – Mechanical Combination Low Water Cut-Off/Pump Controllers for Steam Boilers

Series 93 Low Water Cut-Off/Pump Controllers



- For commercial and industrial low or high pressure steam boilers
- Maintains consistent water level regardless of pressure
- For boilers of any steaming capacity
- No. 5 Switch included
- Magnetic repulsion eliminates need for bellows
- Optional features
 - Manual reset
- 7B switch (135ohm proportional control signal) to maintain constant boiler water level
- 1" NPT connections
- Maximum pressure 150 psi (10.5 kg/cm²)



SERIES 93

Boiler Controls

Electrical Ratings

345 VA at 120 or 240 VAC

Dimensions, in. (mm)

A NPT	B NPT	C	D	E	F	G	H
3/4	1	10 1/16 (256)	18 5/8 (473)	5 19/32 (142)	4 15/32 (113.5)	8 7/8 (225)	12 7/8 (327)

Ordering Information

Model Number	Part Number	Description	Weight lbs. (kg)
93	162300	Combination low water cut-off/pump controller w/No. 5 switch	35.0 (15.9)
93-M	162500	93 w/manual reset	35.0 (15.9)
93-7B	163000	93 w/No. 7B switch	35.5 (16.0)
93-7B-M	163100	93-7B W/manual reset	35.5 (16.0)

Low Water Cut-Offs – Mechanical Combination Low Water Cut-Off/Pump Controllers for Steam Boilers

Series 193 Low Water Cut-Off/Pump Controllers

- For commercial and industrial low or high pressure steam boilers
- Maintains consistent water level regardless of pressure
- Water column with integral tapplings for gauge glass and tri-cock installations
- For boilers of any steaming capacity
- No. 5 Switch included
- Magnetic repulsion eliminates need for bellows
- Optional features
 - Manual reset
- 7B switch (135ohm proportional control signal) to maintain constant boiler water level
- 1" NPT connections
- Maximum pressure 150 psi (10.5 kg/cm²)

Electrical Ratings

345 VA at 120 or 240 VAC

Dimensions, in. (mm)

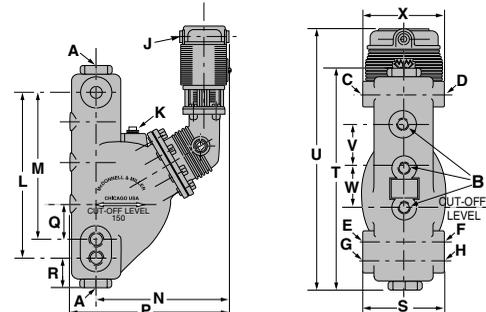
Model	A NPT	B NPT	C NPT	D NPT	E NPT	F NPT	G NPT	H NPT	J NPT	K NPT
193	1	1/2	1/2	1/2	–	–	1/2	1/2	1/2	3/4
193-A	1	1/2	1/2	1/2	1/2	1/2	–	–	1/2	3/4
193-B	1 1/4	3/4	3/4	3/4	–	–	3/4	3/4	1/2	3/4
193-D	1	1/2	1	1/2	1	1/2	–	–	1/2	3/4
193-G	1	1/2	–	1/2	1	1/2	–	–	1/2	3/4

Model	L	M	N	P	Q	R
193	12 3/4 (324)	–	10 13/16 (274)	13 (330)	–	2 7/8 (73)
193-A	–	11 1/2 (292)	10 13/16 (274)	13 (330)	2 1/4 (57)	–
193-B	12 3/4 (324)	–	10 13/16 (274)	13 (330)	–	2 7/8 (73)
193-D	–	11 1/2 (292)	10 13/16 (274)	13 (330)	2 1/4 (57)	–
193-G	–	11 1/2 (292)	10 13/16 (274)	13 (330)	2 1/4 (57)	–

Model	S	T	U	V	W	X
193	6 3/4 (171.4)	17 1/2 (445)	20 1/2 (521)	3 1/2 (89)	3 1/2 (89)	6 (152)
193-A	6 3/4 (171.4)	17 1/2 (445)	20 1/2 (521)	3 1/2 (89)	3 1/2 (89)	6 (152)
193-B	6 3/4 (171.4)	17 1/2 (445)	20 1/2 (521)	3 1/2 (89)	3 1/2 (89)	6 (152)
193-D	6 3/4 (171.4)	17 1/2 (445)	20 1/2 (521)	3 1/2 (89)	3 1/2 (89)	6 (152)
193-G	6 3/4 (171.4)	17 1/2 (445)	20 1/2 (521)	3 1/2 (89)	3 1/2 (89)	6 (152)



SERIES 193



Ordering Information

Model Number	Part Number	Description	Weight lbs. (kg)
193	163400	Combination low water cut-off/pump controller w/No. 5 switch	52.5 (23.8)
193-A	163500	193 w/alternate tapplings	52.5 (23.8)
193-A-7B	164500	193-A w/No. 7B switch	52.5 (23.8)
193-A-7BM	164600	193-A-7B w/manual reset	52.5 (23.8)
193-A-M	164200	193-A w/manual reset	52.5 (23.8)
193-B	163600	193 w/alternate tapplings	52.5 (23.8)
193-B-M	164300	193-B w/manual reset	52.5 (23.8)
193-B-7B	164700	193-B w/No. 7B switch	52.5 (23.8)
193-D	163900	193 w/alternate tapplings	52.5 (23.8)
193-D-7B	163903	193-D w/No. 7B switch	52.5 (23.8)
193-M	164100	193 w/manual reset	52.5 (23.8)
193-7B	164400	193 w/No. 7B switch	52.5 (23.8)
193-7BM	164525	193-7B w/manual reset	52.5 (23.8)
193-D-M	163902	193-D w/manual reset	52.5 (23.8)
193-G	164760	193 w/alternate tapplings	52.5 (23.8)

Boiler Controls

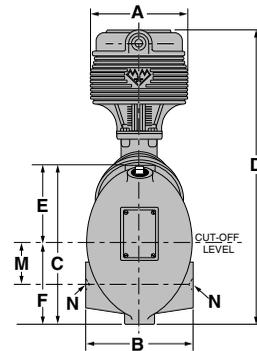
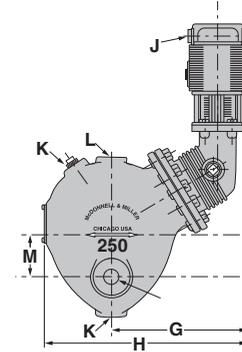
Low Water Cut-Offs – Mechanical Combination Low Water Cut-Off/Pump Controllers for Steam Boilers

Series 94 Low Water Cut-Off/Pump Controllers

- For commercial and industrial low or high pressure steam boilers
- Maintains consistent water level regardless of pressure
- For boilers of any steaming capacity
- No. 5 Switch included
- Magnetic repulsion eliminates need for bellows
- Optional features
 - Manual reset
- 7B switch (135ohm proportional control signal) to maintain constant boiler water level
 - BSPT threads
- 1 1/4" NPT connections
- Maximum pressure 250 psi (17.6 kg/cm²)
- Ten bolt flange



SERIES 94



Electrical Ratings

345 VA at 120 or 240 VAC

Ordering Information

Model Number	Part Number	Description	Weight lbs. (kg)
94	165200	Combination low water cut-off/pump controller w/No. 5 switch	52.5 (23.8)
94-A	165500	94 w/alternate tapings	50.3 (22.8)
94-AM	165800	94-A w/manual reset	50.3 (22.8)
94-A-7B	165700	94-AM w/No. 7B switch	52.5 (23.8)
94-M	165900	94 w/manual reset	52.5 (23.8)
94-7B	166300	94 w/No. 7B switch	52.0 (23.6)

Dimensions, in. (mm)

Model	A	B	C	D
94	6 (152)	7 (178)	10 ⁹ / ₁₆ (268)	18 ¹³ / ₁₆ (478)
94-A	6 (152)	7 (178)	10 ⁹ / ₁₆ (268)	18 ¹³ / ₁₆ (478)

Model	E	F	G	H
94	5 ⁷ / ₈ (149)	4 ¹¹ / ₁₆ (119)	8 ³ / ₄ (222)	12 ¹⁵ / ₁₆ (328.6)
94-A	5 ⁷ / ₈ (149)	4 ¹¹ / ₁₆ (119)	8 ³ / ₄ (222)	12 ¹⁵ / ₁₆ (328.6)

Model	J	K NPT	L NPT	M	N
94	1/2 (15)	1 1/4	1 1/4	–	–
94-A	1/2 (15)	1 1/4	1 1/4	2 1/16 (52)	1 1/4 (32)

Low Water Cut-Offs – Mechanical Combination Low Water Cut-Off/Pump Controllers for Steam Boilers

Series 194

Low Water Cut-Off/Pump Controllers

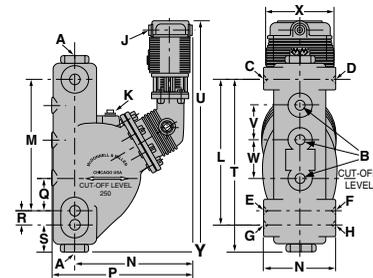
- For commercial, and industrial low or high pressure steam boilers
- Maintains consistent water level regardless of pressure
- For boilers of any steaming capacity
- Water column with integral tapplings for gauge glass and tri-cock installations
- No. 5 Switch included
- Magnetic repulsion eliminates need for bellows
- Optional features
 - Manual reset
 - 7B switch proportional 0-135 ohm control to maintain constant boiler water level
- 1 1/4" NPT connections
- Maximum pressure 250 psi (17.6 kg/cm²)
- Ten bolt flange

Electrical Ratings

345 VA at 120 or 240 VAC



SERIES 194



Ordering Information

Model Number	Part Number	Description	Weight lbs. (kg)
194	166600	Combination low water cut-off/pump controller w/series 5 switch	72.0 (32.7)
194-A	166700	194 w/alternate tapplings	72.0 (32.7)
194-A-7B	167100	194-A w/series 7B switch	72.0 (32.7)
194-M	166900	194 w/manual reset	72.0 (32.7)
194-7B	167200	194 w/series 7B switch	72.0 (32.7)
194-7BM	167300	194-7B w/manual reset	72.0 (32.7)
194-B	166701	194 w/alternate tapplings	72.0 (32.7)

Dimensions, in. (mm)

Model	A NPT	B NPT	C NPT	D NPT	E NPT	F NPT	G NPT	H NPT	J NPT	K NPT
194	1 1/4	1/2	1/2	1/2	1/2	1/2	–	–	1/2	3/4
194-A	1 1/4	1/2	1/2	1/2	–	–	1/2	1/2	1/2	3/4
194-B	1 1/4	3/4	3/4	3/4	–	–	3/4	3/4	1/2	3/4

Model	L	M	N	P	Q	R	S
194	–	11 5/8 (295)	6 3/4 (171.4)	13 1/16 (332)	2 13/16 (71)	1 1/4 (32)	2 3/8 (60)
194-A	12 7/8 (327)	–	6 3/4 (171.4)	13 1/16 (332)	2 13/16 (71)	1 1/4 (32)	2 3/8 (60)
194-B	12 7/8 (327)	–	6 3/4 (171.4)	13 1/16 (332)	2 13/16 (71)	1 1/4 (32)	2 3/8 (60)

Model	T	U	V	W	X	Y
194	17 1/4 (438)	20 1/2 (521)	3 (76)	3 (76)	6 (152)	10 13/16 (274)
194-A	17 1/4 (438)	20 1/2 (521)	3 (76)	3 (76)	6 (152)	10 13/16 (274)
194-B	17 1/4 (438)	20 1/2 (521)	3 (76)	3 (76)	6 (152)	10 13/16 (274)

Boiler Controls