Hot Water Boilers

McDonnell & Miller Low Water cut-offs are specially designed to protect hot water boilers from the hazards of a low water condition. In operation they will interrupt the electrical current to the firing device, if the water in the system drops below the boiler manufacturer's minimum safe water level.

Our low water cut-offs also provide an additional circuit for a low water alarm, should you desire to install one, for additional protection.

How to Select Low Water Cut-Offs for Hot Water Boilers

Boiler pressure and the method of mounting are the primary factors to consider when selecting a low water cut-off.

Product Series	Size NPT	Maximum Boiler Pressure psi (kg/cm²)	Method of Installation		Blow Down Valve	
			Directly into Boiler Tappings OR on the Boiler Supply Riser*	To Piping Above the Boiler with 1" (25mm) Equalizing Piping	Required	Provided with Low Water Cut-Off
RB-24E	¾	50 (3.5)	X		No	N/A
63	1			X	Yes	No
64	1			X	Yes	No
64-A	½		X		Yes	Yes
764	2½		X		Yes	No
751P/752P	¾	160 (11)	X		No	N/A
RB-122E	¾		X		No	N/A
750	¾ - 1	160 - 250 (11-18)	X		No	N/A

* Use the tapping designated by the boiler manufacturer for low water cut-off installation.

Steam Boilers

McDonnell & Miller Low Water Cut-offs are specially designed to protect steam boilers from the hazards of a low water condition. In operation they will interrupt the electrical current to the firing device, if the water in the system drops below the boiler manufacturers' minimum safe water level.

Our low water cut-offs also provide an additional circuit for a water feeder or a low water alarm, should you desire to install one, for additional protection.

We recommend that secondary (redundant) Low Water Cut-Off controls be installed on all steam boilers with heat input greater than 400,000 BTU/hour or operating above 15 psi of steam pressure. At least two controls should be connected in series with the burner control circuit to provide safety redundancy protection should the boiler experience a low water condition. Moreover, at each annual outage, the low water cut-offs should be dismantled, inspected, cleaned, and checked for proper calibration and performance.

How to Select Low Water Cut-Offs for Steam Boilers

Boiler pressure and the method of installation are the primary factors to consider when selecting a low water cut-off.

Product Series	Size NPT	Maximum Boiler Pressure psi (kg/cm²)	Method of Installation		Blow Down Valve	
			Directly into Boiler Tappings*	Connect to the Boiler with 1" Equalizing Piping	Required	Provided with Low Water Cut-Off
PSE-800	¾	15 (1)	X		No	N/A
750	¾		X		No	N/A
61	1	20 (1.4)		X	Yes	No
67	½		X		Yes	Yes
767	2½		X		Yes	Yes
69	2½		X		No	N/A
42S	1	50 (3.5)		X	Yes	No
42S-A	½		X		Yes	Yes
63	1			X	Yes	No
64	1			X	Yes	No
64-A	½		X		Yes	Yes
764	2½		X		Yes	No
93/193	1	150 (10.5)		X	Yes	No
150S	1			X	Yes	No
157S	1			X	Yes	No
94/194	1¼	250 (18)		1¼	Yes	No
750B-C3/C4	1			X	Yes	No

* Use the tapping designated by the boiler manufacturer for low water cut-off installation.

How to Select Controls

STEAM BOILERS

Steam Heating Boilers are classified as boilers in closed heating systems where all condensate is returned to the boiler. Best recommendation for all automatically fired boilers is a feeder cut-off combination. It adds water as needed to maintain a safe operating level, and stands by to interrupt circuit to burner if water level drops into emergency zone.

Steam Process Boilers are classified as boilers in systems where not all the condensate is returned, and some make-up water is needed. A separate feeder and separate cut-off are recommended, so operating levels can be set for the wider differential required in such service.

Selection of the correct feeder cut-off combination, or feeder depends upon:

1. Maximum boiler pressure.
2. Differential between water supply pressure and the pressure setting of the steam safety valve.
3. Boiler size

HOT WATER BOILERS

Best recommendation for all automatically fired boilers is a feeder cut-off combination. It adds water if needed to match the discharge capacity of the relief valve, and stands by to interrupt circuit to burner if water level drops into emergency zone.

Selection of the correct feeder cut-off combination, or feeder depends upon:

1. Maximum boiler pressure.
2. Differential between water supply pressure and the pressure setting of the safety relief valve.
3. Boiler size

Boiler Rating			
BTU	**HP**	**EDR**	**Cond. Lb./Hr**
33,475	1	140	34.5
66,950	2	280	69
167,375	5	700	173
251,063	7.5	1,050	259
334,750	10	1,400	345
418,438	12.5	1,750	431
502,125	15	2,100	518
585,813	17.5	2,450	604
669,500	20	2,800	690
836,875	25	3,500	863
1,004,250	30	4,200	1,035
1,171,625	35	4,900	1,208
1,339,000	40	5,600	1,380
1,506,375	45	6,300	1,553
1,673,750	50	7,000	1,725

Conversion Factors

$$\text{Boiler Horsepower (BHP)} = \frac{\text{EDR}}{139}$$

$$\text{Gallons of Water} = \frac{\text{Lbs. of Water}}{8.33}$$

$$\text{BTUH} = \text{EDR} \times 240$$

$$\text{EDR} = \frac{\text{BTUH}}{240}$$

$$\text{BTUH} = \text{BHP} \times 33{,}479$$

Boiler Steaming Rate (Gallons Per Minute)

$$\text{GPM} = \frac{\text{EDR}}{2000}$$

$$\text{GPM} = (\text{BHP}) \times 0.069$$

$$\text{GPM} = \frac{\text{BTU}}{480{,}000}$$

$$\text{GPM} = \text{EDR} \times 0.000496$$

$$\text{Pounds of condensate per hour} = \frac{\text{EDR}}{4}$$

Water Feeders and Combination Water Feeders/Low Water Cut-Offs

McDonnell & Miller Boiler Water Feeders and Feeder Cut-Off Combinations are used to provide automatic operation, and to safeguard steam and hot water boilers against the hazards of a low water condition.

A feeder cut-off combination mechanically adds water as needed to maintain the required minimum water level, and electrically stops the firing device in case of an emergency.

How to Select Water Feeders (continued)

Steam Boilers

Series	Characteristics	Maximum Boiler Pressure psi (kg/cm²)	Boiler Size (Mfr. Gross Rating Sq. Ft. of EDR) *Differential Pressure psi (kg/cm²)						
			10 (.7)	20 (1.4)	30 (2.1)	40 (2.8)	50 (3.5)	60 (4.2)	70 (4.9)
Uni-Match®	For Automatic Fired Heating Boilers	15 (1.0)	All Boilers up to 5,000 sq. ft.						
101A	For Automatic Fired Heating Boilers	25 (1.8)	All Boilers up to 5,000 sq. ft.						
47	For Heating or Process Boilers	25 (1.8)	All Boilers up to 5,000 sq. ft.						
47-2	For Automatic Fired Heating Boilers	25 (1.8)	All Boilers up to 5,000 sq. ft.						
247	For Heating or Process Boilers	30 (2.1)	All Boilers up to 5,000 sq. ft.						
247-2	For Automatic Fired Heating Boilers	30 (2.1)	All Boilers up to 5,000 sq. ft.						
51	For Heating or Process Boilers	35 (2.5)	8,600	12,000	15,000	17,600	20,000	21,800	23,400
51-2	For Automatic Fired Heating Boilers	35 (2.5)	8,600	12,000	15,000	17,600	20,000	21,800	23,400
51S	For Heating or Process Boilers	35 (2.5)	10,500	17,500	22,400	26,500	30,000	32,600	35,000
51S-2	For Automatic Fired Heating Boilers	35 (2.5)	10,500	17,500	22,400	26,500	30,000	32,600	35,000
53	For Heating or Process Boilers	75 (5.3)	8,600	11,600	14,600	17,000	18,800	20,600	22,100
53-2	For Automatic Fired Heating Boilers	75 (5.3)	8,600	11,600	14,600	17,000	18,800	20,600	22,100

*Differential pressure should be based on water supply pressure at boiler, minus pressure setting of steam safety valve

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

Series 750

GUARDDOG®

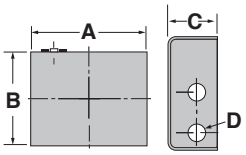
c UL us LISTED

- 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.

Standard Features

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

Series 750 Control Unit



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	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 VAC 50 or 60 Hz

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
6⅜ (162)	5⅛ (130)	2⁹⁄₁₆ (65)	1⁹⁄₁₆ (40)

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

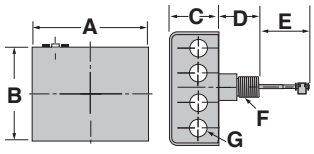
Series 751P/752P

GUARDDOG®

- 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.

Standard Features

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



Series 751P/752P

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 VAC 50 or 60 Hz

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.)

Ordering Information

(Remote sensor must be ordered separately (see page 70-74)

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)

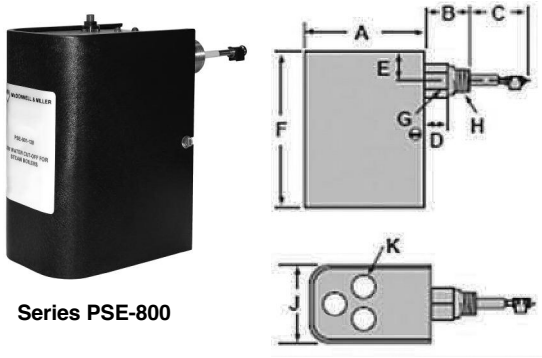
A	B	C	D			E			F	G
			Std.	SP	U	Std.	SP	U	NPT	
6⅝ (168)	5⅝ (135)	2¾ (70)	1⁹⁄₁₆ (40)	3⅛ (78)	1⁹⁄₁₆ (40)	2⅛ (54)	1⅝ (33)	1⁹⁄₁₆ (40)	¾	⅞ (22)

Low Water Cut-Offs – Electronic For Steam Boilers

Series PSE-800

For commercial steam boiler applications

The Series PSE-800 probe type LWCO uses pantented 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 sensivity threshold is exceeded.



Series PSE-800

Standard Features
- Green LED indicating power is on
- Red LED indicating low water condition
- 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 of alarm

Models available with:
- 120 VAC
- 24 VAC
- 'U' probe (extended barrel)
- 'RX2' probe (remote)

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 VAC 50 or 60 Hz

Probe Specifications

Maximum Steam Pressure: 15 psi (1.0 kg/cm^2)
Maximum Water Pressure: 160 psi (11.2 kg/cm^2)
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)

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-802-24 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)

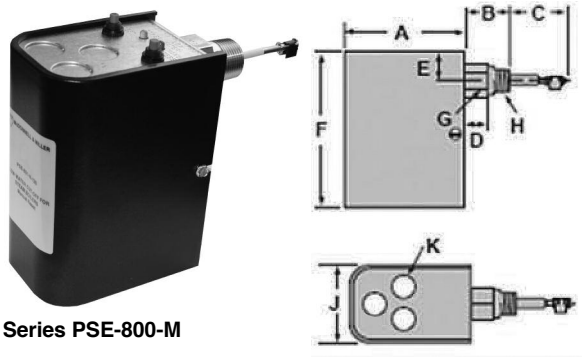
A	B		C				D	E	F	G	H		J	K
	All	U	Std	SP	RX2	U					All	RX		
4¼ (108)	1 9/16 (40)	3 1/16 (78)	2⅛ (54)	1⅜ (35)	2⅛ (54)	1 9/16 (40)	¾ (20)	13/16 (21)	5 13/16 (148)	1⅜ (35)	¾ (20)	½ (25)	2⅞ (73)	⅞ (22)

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



Series PSE-800-M

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 VAC 50 or 60 Hz

- Probe Sensitivity: 7,000 ohms
- Probe Consumption: 1.7 VA @ 24 VAC
  3.6 VA @ 120 VAC
- Enclosure Rating: NEMA 1 General Purpose

Probe Specifications

Maximum Steam Pressure: 15 psi (1.0 kg/cm^2)
Maximum Water Pressure: 160 psi (11.2 kg/cm^2)
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)

⚠ CAUTION

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

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)

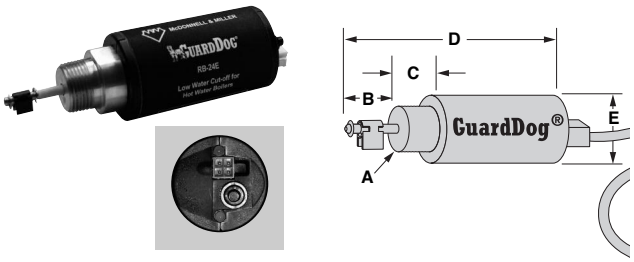
Dimensions, in. (mm)

A	B		C		D	E	F	G	H	J	K
	All	U	Std	U							
4¼ (108)	1 1/16 (40)	3 1/16 (78)	2⅛ (54)	1 1/16 (40)	1¾ (20)	13/15 (21)	5 13/16 (148)	1⅜ (35)	¾ (20)	2⅞ (73)	⅞ (22)

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, -B 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 (11.2 kg/cm²)



RB-24E

Electrical Ratings

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

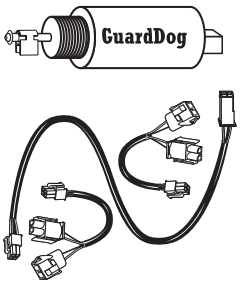
Note: A 15 mA minimum current draw is required.

Dimensions, in. (mm)

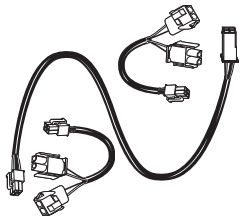
A NPT	B	C	D	E
¾	1 3/16 (30.2)	1 3/16 (30.2)	5¾ (180)	1 7/8 (47.6)

Ordering Information

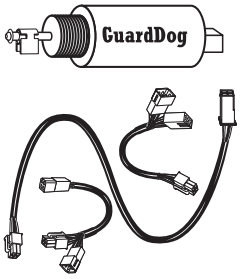
Model Number	Part Number	Description
RB-24E	144692	Residential LWCO
RB-24E-A	144694	Residential LWCO w/vent damper harness
RB-24E-B	144696	Residential LWCO w/burner control harness
RB-24E-S	144693	Residential LWCO w/control board harness
RB-24E-L	144690	Residential LWCO w/burner control harness
UWH-RB-24A	144681	Replacement cable for RB-24E-A
UWH-RB-24B	144695	Replacement cable for RB-24E-B
UWH-RB-24S	144682	Replacement cable for RB-24E-S
UWH-RB-24L	144691	Replacement cable for RB-24E-L



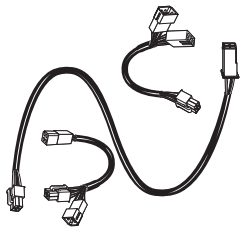
RB-24E-S



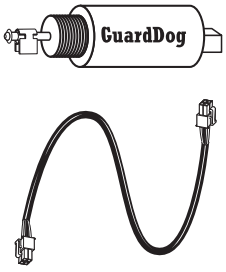
UWH-RB-24S



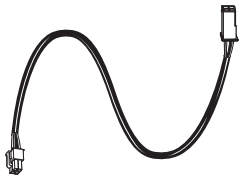
RB-24E-A



UWH-RB-24A



RB-24E-B
RB-24E-L



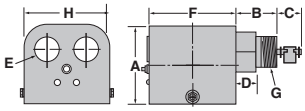
UWH-RB-24B
UWH-RB-24L

Low Water Cut-Offs – Electronic For Hot Water Boilers

RB-122-E
Low Water Cut-Offs GUARDDOG®

- For residential and commercial applications
- Electronic operation
- Easy to install and wire
- Red LED indicating low water condition
- Green LED indicating power is on
- 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
2¾ (70)	1⅝ (51)	1⅜ (35)	¾ (20)	⅞ (22)	3 13/16 (99)	¾	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)

Notes

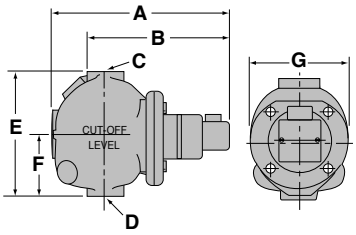
Notes

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



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	F	G
9 15/16 (252)	7 7/16 (189)	1	1	6½ (165)	3⅛ (79)	5⅛ (130)

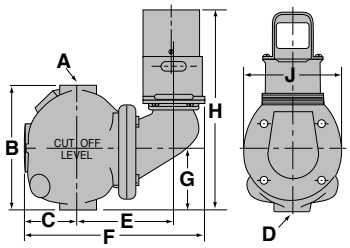
Ordering Information

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)		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

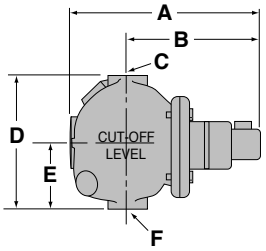
Model Number	Part Number	Description	Weight lbs. (kg)
63	142400	Low water cut-off	13.5 (6.1)
63-B	142700	63 w/ float block	15.0 (6.8)
63-BM	143300	63 w/float block & manual reset	15.0 (6.8)
63-M	143100	63 w/manual reset	14.0 (6.4)

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 (manual reset switch must be ordered separately)
- 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



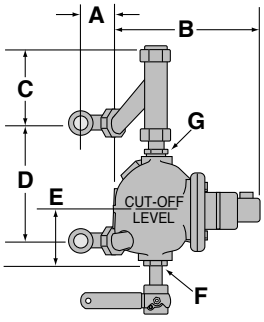
Dimensions, in. (mm)

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)

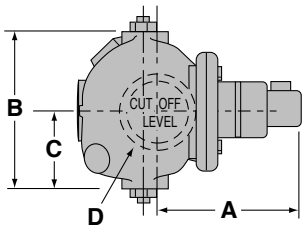
Electrical Ratings

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
6⅞ (175)	6½ (165)	3⅛ (79)	2½

Ordering Information

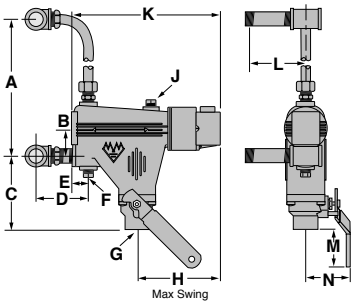
Model Number	Part Number	Description	Weight lbs. (kg)
764	144500	Low water cut-off	12.5 (5.7)

Low Water Cut-Offs – Mechanical For Steam Boilers

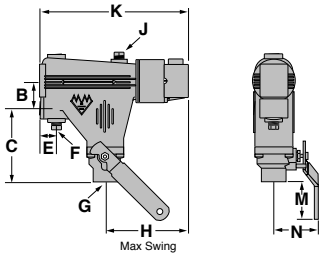
Series 67
Low Water Cut-Offs

- 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 (manual reset switch must be ordered separately)
- Large float chamber
- Maximum steam pressure 20 psi (1.4 kg/cm^2)

Series 67



Model 67-LQHU (without quick hook-up fittings)



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)	3⅜ (86)	1⅛ (29)	⅜	¾	5½ (140)	¼	9 23/32 (247)	3 9/16 (90)	2½ (64)	2 13/16 (71)

Ordering Information

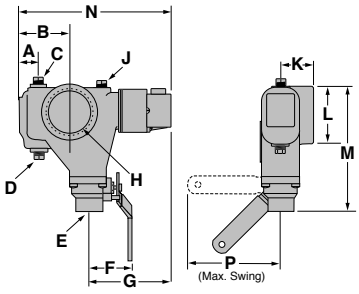
Model Number	Part Number	Description	Weight lbs. (kg)
67	149400	Low water cut-off	10 (4.5)
67-G	149600	67 for millivolt service	10 (4.5)
67-LQHU	149500	67 without quick hook-up fittings	8 (3.6)

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



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
1 5/32 (29.3)	3 13/32 (186.5)	3/8	3/8	3/4	2 13/16 (71)	5 3/8 (137)	2 1/2	1/4	2 3/64 (51.9)	3 5/8 (92)	8 5/32 (207)	9 11/16 (246.6)	5 1/2 (140)

Ordering Information

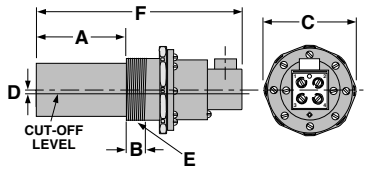
Model Number	Part Number	Description	Weight lbs. (kg)
767	153700	Low water cut-off	8.5 (3.9)

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 tappings
- Insertion lengths available in 1 3/16 - 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

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				NPT	
69	4⅛ (105)	1 (25)	4⅛ (105)	⅛ (3)	2½	9½ (241)
169	3⅛ (79)					
269	2¼ (57)					
369	1¾ (45)					
469, 569	1 3/16 (30)					

Ordering Information

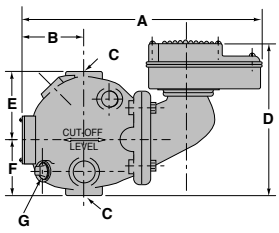
Model Number	Part Number	Description	Weight lbs. (kg)
69	153900	Low water cut-off w/4⅛" (105mm) insertion length	3.7 (1.7)
69-MV-P	155000	69 w/millivolt switch	4.0 (1.8)
169	155100	69 w/3⅛" (79mm) insertion length	4.0 (1.8)
269	155200	69 w/2¼" (57mm) insertion length	4.0 (1.8)
369	155300	69 w/1¾" (45mm) insertion length	4.0 (1.8)
369-MV	155400	369 w/millivolt switch	4.0 (1.8)
469	155500	69 w/1 3/16" (30mm) insertion length	4.0 (1.8)
569	155700	469 w/1 3/16" (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

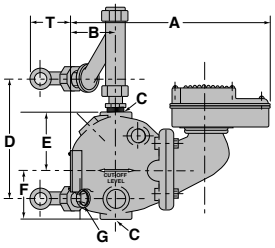


Electrical Ratings

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

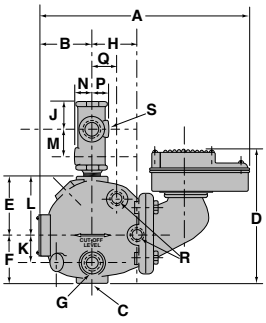
MODEL 42S-A



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	12¼ (311)	2⁹⁄₁₆ (65)	1	8⅞ (225)	3¹¹⁄₁₆ (94)	3⅛ (79)	½
42S-A	12¼ (311)	2⁹⁄₁₆ (65)	1	7¼-16¹¹⁄₁₆ (184-347)	2¾ (45)	3⅛ (79)	½
42S-N	12¼ (311)	2⁹⁄₁₆ (65)	1	8⅞ (225)	3¹¹⁄₁₆ (94)	3⅛ (79)	½

Model	H	J	K	L	M	N	P	Q	R NPT	S NPT	T
42S-N	2⁹⁄₁₆ (65)	2⁹⁄₁₆ (65)	1¾ (45)	3¹¹⁄₁₆ (94)	1¹³⁄₁₆ (46)	1¹⁄₁₆ (27)	1¹⁄₁₆ (27)	1½ (38)	⅜	¼	2⅝ (67)

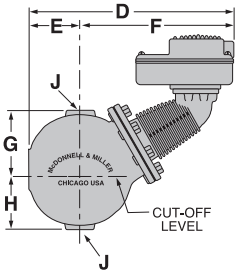
Low Water Cut-Offs – Mechanical For Steam Boilers

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

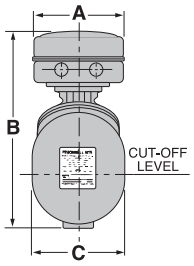


Model 150S-MD

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 120 or 240 VAC
240 VAC	3.7	22.2	

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	172803	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	172805	150S-BMD w/manual reset	24.7 (11.2)
150S-MD	**171802**	**150S w/maximum differential**	**24.7 (11.2)**
150S-M	172806	150S w/manual reset	24.7 (11.2)
150S-M-MD	**172807**	**150S-M w/maximum differential**	**24.7 (11.2)**
158S	178402	150S w/2 SPDT switches	26.3 (11.9)
158S-M	172819	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
5⅞ (149)	12⁷⁄₁₆ (316)	6 (152)	13¼ (337)

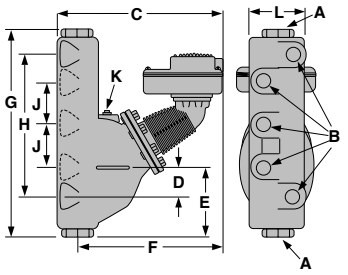
E	F	G	H	J
3⁵⁄₁₆ (84)	9¹⁵⁄₁₆ (252)	4⅛ (107.5)	3⁷⁄₁₆ (91.5)	1 NPT

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)

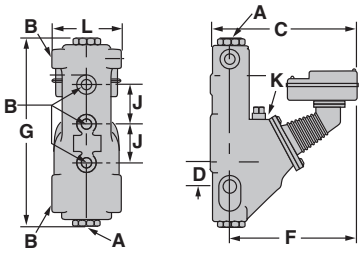


Series 157S

Model 157S-MD

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



Model 157S-R

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

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	172811	157S-A w/manual reset	39.5 (17.9)
157S-M	172812	157S w/manual reset	39.7 (18.0)
157S-M-MD	**172813**	**157S-M w/maximum differential**	**39.7 (18.0)**
157S-R	176220	157S w/alternate tappings	42.0 (19.0)
157S-R-M	172817	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	172815	157S-RL w/manual reset	42.0 (19.0)

Dimensions, in. (mm)

Model	A NPT	B NPT	C	D	E	F	G	H	J	K NPT	L
157S	1	½	13⅜ (339)	2⁵⁄₁₆ (59)	4¹⁵⁄₁₆ (125)	11¾ (298)	16 (406)	11½ (292)	3½ (89)	¾	5⅞ (149)
157S-A	1¼	¾	13⅜ (339)	2⁵⁄₁₆ (59)	4¹⁵⁄₁₆ (125)	11¾ (298)	16 (406)	11½ (292)	3½ (89)	¾	5⅞ (149)
157S-R	1	½	13⅜ (339)	2¼ (57)	5⅞ (149)	11¾ (298)	17 (432)	11½ (292)	3½ (89)	¾	6¼ (159)
157S-RL	1¼	½	13⁹⁄₁₆ (345)	3½ (89)	5⅞ (149)	11¾ (298)	17 (432)	12¾ (324)	3½ (89)	¾	6¼ (159)

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).

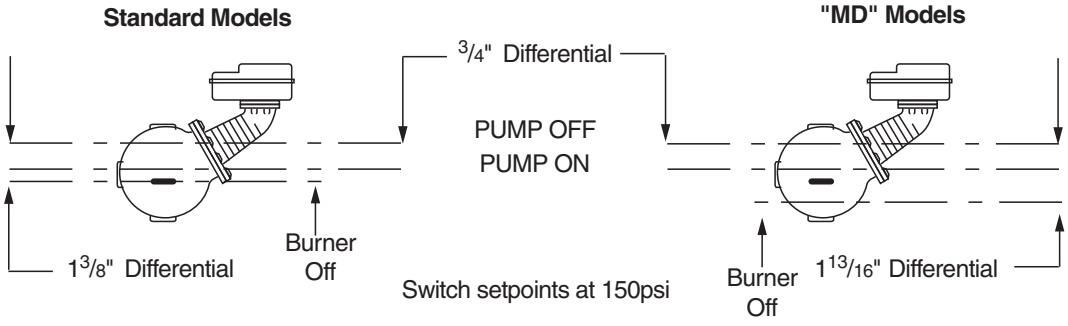
Early versions of the 150 units with mercury bulb switches were able to be adjusted. These units had knurled adjustment screws that could be used to raise, lower or widen the setpoints. Although the available adjustment was small (usually 1/16" to 1/8" total), it was enough to compensate in the field 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 7/16". Note that the pump on/off differential on both standard and 'MD' models is set at 3/4"

This larger differential is accomplished by lowering the burner off setpoint 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.

Operating Levels
Series 150/157 & Series 150S/157S

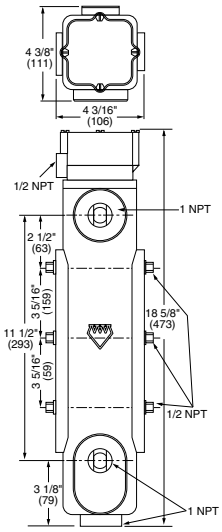


Low Water Cut-Offs – Mechanical For Steam Boilers

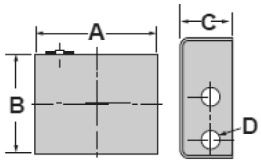
Series 1575

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 tappings
- 4th probe can be added for high water control
- NEMA1 electrical control unit enclosure
- NEMA4X probe chamber enclosure
- Maximum ambient temperature 135ºF (57ºC)
- Maximum water temperature 406ºF (208ºC) at probes
- Maximum water pressure of 250 psi (17.6 kg/cm²)



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
18⅝ (473)	11½ (292)	3⅛ (79)	2½ (64)	3¼ (82)	4⅜ (111)	4 3/16 (106)	1	1

Electrical Control Unit

A	B	C	D
6½ (159)	5 3/16 (132)	2¾ (70)	¾ (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 Maximum	16 (5.8), 120	96 (34.8), 120	470 (290), 120	1 (1/4), 120
		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

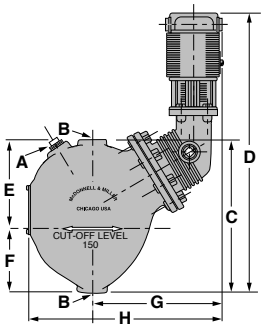
Series 93
Low Water Cut-Off/Pump Controllers

- 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



Electrical Ratings

345 VA at 120 or 240 VAC

Dimensions, in. (mm)

A NPT	B NPT	C	D	E	F	G	H
¾	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

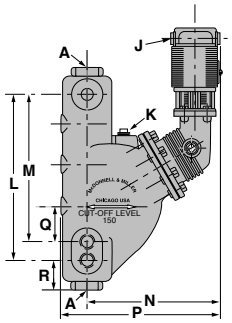
Model Number	Part Number	Description	Weight lbs. (kg)
93	162300	Combination low water cut-off/ pump controller w/No. 5 switch	35.0 (15.9)
93-M	162500	93 w/manual reset	35.0 (15.9)
93-7B	163000	93 w/No. 7B switch	35.5 (16.0)
93-7B-M	163100	93-7B W/manual reset	35.5 (16.0)

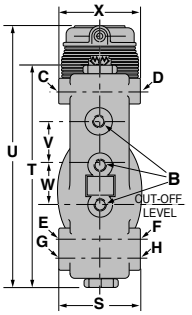
Low Water Cut-Offs – Mechanical
Combination Low Water Cut-Off/Pump Controllers for Steam Boilers

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 tappings 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)

SERIES 193





Electrical Ratings

345 VA at 120 or 240 VAC

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 tappings	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 tappings	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 tappings	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 tappings	52.5 (23.8)

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	½	½	½	–	–	½	½	½	¾
193-A	1	½	½	½	½	½	–	–	½	¾
193-B	1¼	¾	¾	¾	–	–	¾	¾	½	¾
193-D	1	½	1	½	1	½	–	–	½	¾
193-G	1	½	–	½	1	½	–	–	½	¾

Model	L	M	N	P	Q	R
193	12¾ (324)	–	10 13⁄16 (274)	13 (330)	–	2 7⁄8 (73)
193-A	–	11½ (292)	10 13⁄16 (274)	13 (330)	2¼ (57)	–
193-B	12¾ (324)	–	10 13⁄16 (274)	13 (330)	–	2 7⁄8 (73)
193-D	–	11½ (292)	10 13⁄16 (274)	13 (330)	2¼ (57)	–
193-G	–	11½ (292)	10 13⁄16 (274)	13 (330)	2¼ (57)	–

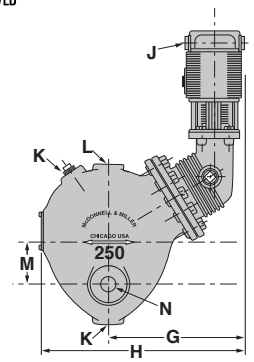
Model	S	T	U	V	W	X
193	6¾ (171.4)	17½ (445)	20½ (521)	3½ (89)	3½ (89)	6 (152)
193-A	6¾ (171.4)	17½ (445)	20½ (521)	3½ (89)	3½ (89)	6 (152)
193-B	6¾ (171.4)	17½ (445)	20½ (521)	3½ (89)	3½ (89)	6 (152)
193-D	6¾ (171.4)	17½ (445)	20½ (521)	3½ (89)	3½ (89)	6 (152)
193-G	6¾ (171.4)	17½ (445)	20½ (521)	3½ (89)	3½ (89)	6 (152)

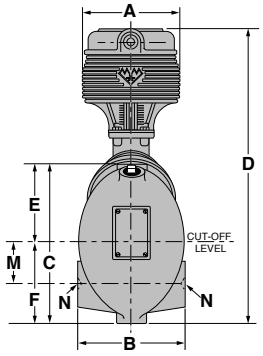
Low Water Cut-Offs – Mechanical
Combination Low Water Cut-Off/Pump Controllers for Steam Boilers

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
- 1¼" 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 tappings	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)

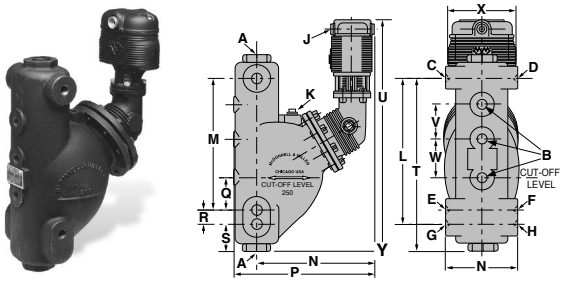
Model	E	F	G	H
94	5 7⁄8 (149)	4 11⁄16 (119)	8¾ (222)	12 15⁄16 (328.6)
94-A	5 7⁄8 (149)	4 11⁄16 (119)	8¾ (222)	12 15⁄16 (328.6)

Model	J	K NPT	L NPT	M	N
94	½ (15)	1¼	1¼	–	–
94-A	½ (15)	1¼	1¼	2 1⁄16 (52)	1¼ (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 tappings for gauge glass and tri-cock installations
- No. 5 Switch included
- Magnetic repulsion eliminates need for bellows
- Optional features
  – Manual reset
- 7B switch (135 ohm proportional signal) control to maintain constant boiler water level
- 1¼" NPT connections
- Maximum pressure 250 psi (17.6 kg/cm²)
- Ten bolt flange



SERIES 194

Electrical Ratings
345 VA at 120 or 240 VAC

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 tappings	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 tappings	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	1¼	½	½	½	½	½	–	–	½	¾
194-A	1¼	½	½	½	–	–	½	½	½	¾
194-B	1¼	¾	¾	¾	–	–	¾	¾	½	¾

Model	L	M	N	P	Q	R	S
194	–	11⅝ (295)	6¾ (171.4)	13¹⁄₁₆ (332)	2¹³⁄₁₆ (71)	1¼ (32)	2⅜ (60)
194-A	12⅞ (327)	–	6¾ (171.4)	13¹⁄₁₆ (332)	2¹³⁄₁₆ (71)	1¼ (32)	2⅜ (60)
194-B	12⅞ (327)	–	6¾ (171.4)	13¹⁄₁₆ (332)	2¹³⁄₁₆ (71)	1¼ (32)	2⅜ (60)

Model	T	U	V	W	X	Y
194	17¼ (438)	20½ (521)	3 (76)	3 (76)	6 (152)	10¹³⁄₁₆ (274)
194-A	17¼ (438)	20½ (521)	3 (76)	3 (76)	6 (152)	10¹³⁄₁₆ (274)
194-B	17¼ (438)	20½ (521)	3 (76)	3 (76)	6 (152)	10¹³⁄₁₆ (274)