

Series 101-A

Electric Water Feeder with QUICK CHANGE Cartridge

<https://qr.xylemsales.com/mm-246761>



1 General information

1.1 General Safety



WARNING:



Before using this product read and understand instructions.
Save these instructions for future reference.



WARNING:

All work must be performed by qualified personnel trained in the proper application, installation, and maintenance of plumbing, steam, and electrical equipment and/or systems in accordance with all applicable codes and ordinances.



WARNING:

Boiler manufacturer schematics should always be followed. In the event that the boiler manufacturer's schematic does not exist, or is not available from the boiler manufacturer, refer to the schematics provided in this document.



WARNING:

To prevent water damage check to make sure there is adequate floor drainage capacity. Check all components in the system to insure they will not leak in the event of an overfeed condition.



WARNING:



To prevent electrical shock, turn off the electrical power before making electrical connections.



WARNING:

California Proposition 65 warning! This product can expose you to chemicals including Lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to: www.P65Warnings.ca.gov.



WARNING:

Previous controls should never be installed on a new system. Always install new controls on a new boiler or system. Failure to follow this warning could cause property damage, personal injury or death.



CAUTION:

A more frequent replacement interval may be necessary based on the condition of the unit at time of inspection. McDonnell & Miller's warranty is one (1) year from date of installation or two (2) years from the date of manufacture, whichever shall occur first, unless a longer period is specified in the product documentation (the "Warranty"). See Commercial warranty.

1.2 Agency Listings



2 Operation

2.1 Applications

For use on low pressure boilers with cold water feed.

The Series 101-A can be used with mechanical or electronic low water cut-off controls.



WARNING:

Do not use automatic water feeders with manual reset LWCO's. Failure to follow this warning could cause flooding, property damage, personal injury or death.

2.2 Specification

- **Maximum water pressure:** 150 psi (10.5 kg/cm²)
- **Maximum boiler pressure:** 25 psi (1.76 kg/cm²)
- **Maximum boiler size:** 5000 sq. ft. EDR; 2,350,000 BTU/HR Output Capacity

Table 1: Electrical ratings

Model	Voltage	Full load
101A-120	120 V	40 VA
101A-24	24 V	40 VA

Note: 101A-24 includes a transformer with 120 Volt primary and 24 Volt/50VA secondary.

Table 2: Flow data

Pressure Differential psi (kg/cm ²)	Flow Rate gpm (lpm)
5 (.4)	1.4 (5.3)
10 (.7)	1.7 (6.4)
20 (1.4)	2.1 (7.9)
40 (2.8)	2.9 (11.0)
60 (4.2)	3.4 (12.9)
80 (5.6)	4.0 (15.1)

3 Installation

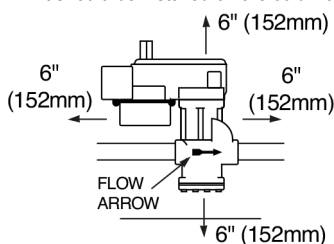
3.1 Determine Where to Install the Water Feeder


WARNING:

Boiler manufacturer schematics should always be followed. In the event that the boiler manufacturer's schematic does not exist, or is not available from the boiler manufacturer, refer to the schematics provided in this document.

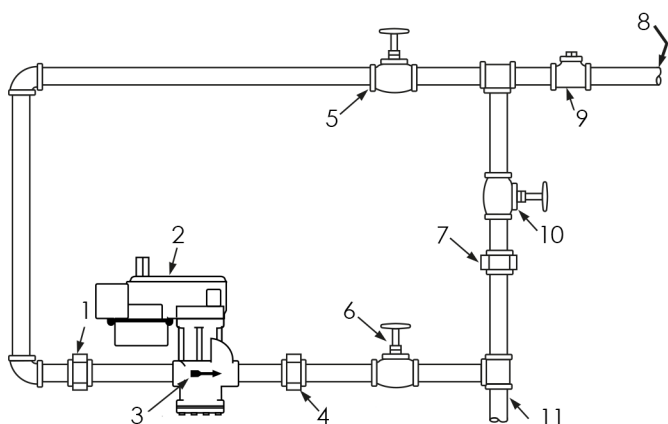
Determine where to install the water feeder based on the following requirements:

1. It must be installed within eyesight of the boiler.
2. A minimum 6" (152 mm) clearance should be allowed on all sides for servicing.
3. It must be installed in a horizontal pipe in the upright position.
4. It should be installed on the cold water line.



3.2 Installation Diagram and requirements

1. Piping must be 1/2" (15 mm) NPT minimum.
2. Full port/full flow valves rated for the pressure /temperature of the system and piping they are to be installed on.
3. Arrow on feeder casting must point in direction of flow into the boiler.
4. Install isolation valves and unions on the inlet and outlet piping of the feeder for easier trouble-shooting and repair/replacement.
5. Install manual fill valve and bypass line to allow for removal of the valve while the boiler is in service.



1. Union
2. Water feeder
3. Flow arrow
4. Union
5. Inlet valve
6. Outlet valve
7. Union
8. City water supply

9. Check valve or back flow preventer (may be required by local code or ordinances)
10. Bypass valve
11. Connect to return header on boiler (Note: Do not connect directly to boiler shell)

3.3 Electrical installation


WARNING:

Boiler manufacturer schematics should always be followed. In the event that the boiler manufacturer's schematic does not exist, or is not available from the boiler manufacturer, refer to the schematics provided in this document.

NOTICE:

Before connecting water feeder, operate boiler and check all safety devices.

NOTICE:

Unless otherwise noted, water feeder voltage should be the same as the LWCO and burner circuit voltage.


WARNING:

All work must be performed by qualified personnel trained in the proper application, installation, and maintenance of plumbing, steam, and electrical equipment and/or systems in accordance with all applicable codes and ordinances.

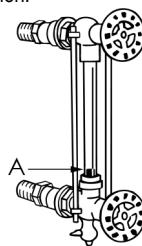

WARNING:


To prevent electrical shock, turn off the electrical power before making electrical connections.

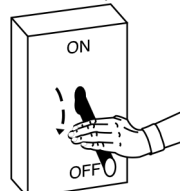

WARNING:

To prevent an electrical fire or equipment damage, electrical wiring insulation must have a rating of 167 °F (75 °C) if the liquid's temperature exceeds 180 °F (82 °C).

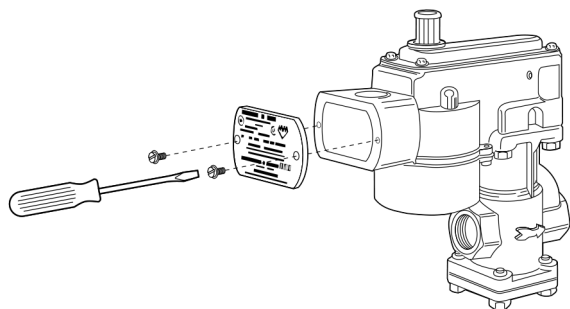
1. Test the Low Water Cut-Off on the boiler.
2. Mark location of water level on sight glass where Low Water Cut-Off turns off burner (A). This will be used as reference to test the water feeder's operation.



3. Turn off all power to boiler and boiler controls.



4. Using a flathead screwdriver, remove electrical cover plate.



5. Connect electric conduit to the water feeder's electrical enclosure.
6. Based on the water feeder and low water cut-off combination you are installing, select proper wiring diagram and proceed to that page.

Water Feeder Model	Low Water Cut-Off Model	Diagram number
101A-120	67 with 120 V burner circuit	3.4
101A-120	67 with 24V burner circuit	3.5
101A-24	67 with 24V burner circuit	3.6
101A-24	67 with 120V burner circuit	3.7
101A-24	FPC-1000	3.10
101A-120	FPC-1000	3.11

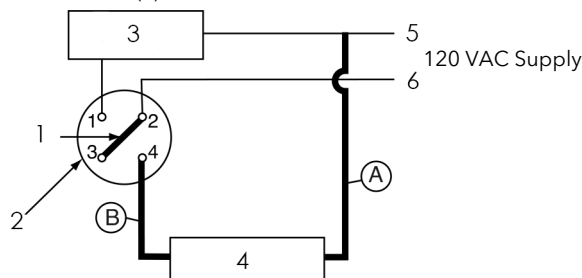
Wiring Diagram Legends

1. Bold lines indicate action to be taken in Step shown. ▬
2. Regular black lines indicate existing wiring. —

3.4 Model 101A-120 /120 Volt

For McDonnell & Miller Model 101A-120 Water Feeder and Series 67 Low Water Cut-Off with 120 Volt burner circuit

1. Connect wire (A) from water feeder to burner circuit Neutral wire.
2. Install jumper between terminals 2 and 3 of the low water cut-off.
3. Install wire (B) from water feeder to terminal 4 of the low water cut-off.

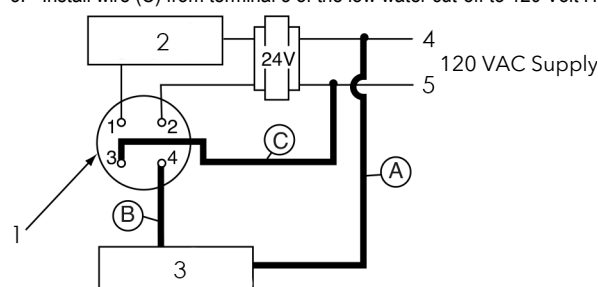


1. Jumper
2. 67 Low water cut-off
3. Burner circuit
4. 101A Water Feeder
5. Neutral
6. Hot

3.5 Model 101A-120 /24 Volt

For McDonnell & Miller Model 101A-120 Feeder and Series 67 Low Water Cut-Off with 24 Volt burner circuit

1. Install wire (A) from water feeder to 120 Volt Neutral wire.
2. Install wire (B) from water feeder to terminal 4 of the low water cut-off.
3. Install wire (C) from terminal 3 of the low water cut-off to 120 Volt Hot wire.



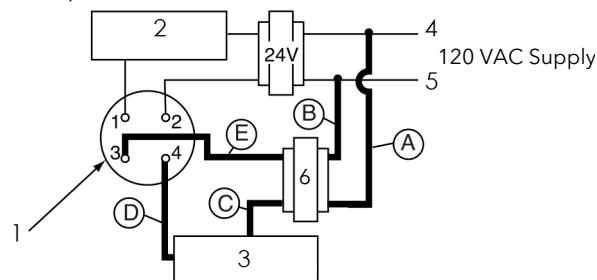
1. 67 Low water cut-off
2. Burner circuit

3. 101A Water Feeder
4. Neutral
5. Hot

3.6 Model 101A-24/24 Volt

For Model 101A-24 Water Feeder and Series 67 Low Water Cut-Off with 24 Volt burner circuit

1. Install wire (A) from burner circuit Neutral wire to the transformer input Neutral terminal.
2. Install wire (B) from burner circuit Hot wire to the transformer input Hot terminal.
3. Install wire (C) from transformer output Neutral terminal to the water feeder.
4. Install wire (D) from the water feeder to terminal 4 on the low water cut-off.
5. Install wire (E) from terminal 3 on the low water cut-off to the transformer output Hot terminal.



1. 67 Low water cut-off
2. Burner circuit
3. 101A Water Feeder
4. Neutral
5. Hot
6. 24 V transformer (101-24 V-48)

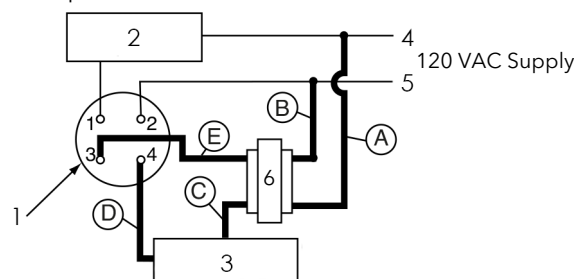
NOTICE:

IMPORTANT: To prevent damage to the water feeder, a McDonnell & Miller transformer Model 101-24V-48 must be used.

3.7 Model 101A-24/120 Volt

For Model 101A-24 Water Feeder and Series 67 Low Water Cut-Off with 120 Volt burner circuit

1. Install wire (A) from burner circuit Neutral wire to the transformer input Neutral terminal.
2. Install wire (B) from burner circuit Hot wire to the transformer input Hot terminal.
3. Install wire (C) from transformer output Neutral terminal to the water feeder.
4. Install wire (D) from the water feeder to terminal 4 on the low water cut-off.
5. Install wire (E) from terminal 3 on the low water cut-off to the transformer output Hot terminal.



1. 67 Low water cut-off
2. Burner circuit
3. 101A Water Feeder
4. Neutral
5. Hot
6. 24 V transformer (101-24 V-48)

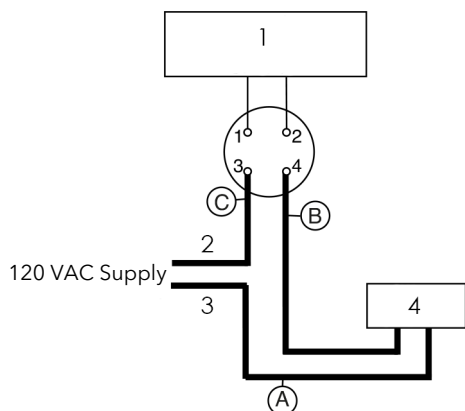
NOTICE:

IMPORTANT: To prevent damage to the water feeder, a McDonnell & Miller transformer Model 101-24V-48 must be used.

3.8 Model 101A-120 /Minivolt burner circuit

For Model 101A-120 Feeder and Model 67G with millivolt burner circuit

1. Install wire (A) from water feeder to 120 Volt Neutral wire.
2. Install wire (B) from water feeder to terminal 4 of the low water cut-off.
3. Install wire (C) from terminal 3 of the low water cut-off to 120 Volt Hot wire.

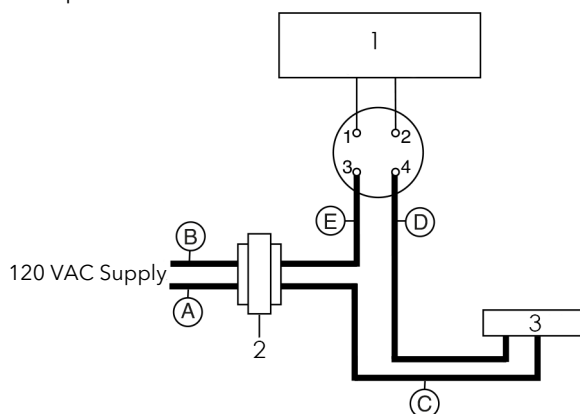


1. Minivolt burner circuit
2. Hot
3. Neutral
4. 101A Water Feeder

3.9 Model 101A-24 /Minivolt burner circuit

For Model 101A-24 Feeder and Model 67G with millivolt burner circuit

1. Install wire (A) from 120 Volt circuit Neutral wire to the transformer input Neutral terminal.
2. Install wire (B) from 120 Volt circuit Hot wire to the transformer input Hot terminal.
3. Install wire (C) from transformer output Neutral terminal to the water feeder.
4. Install wire (D) from the water feeder to terminal 4 on the low water cut-off.
5. Install wire (E) from terminal 3 on the low water cut-off to the transformer output Hot terminal.



1. Minivolt burner circuit
2. 24 V Transformer (101A-24V-48)
3. 101A-24

NOTICE:

IMPORTANT: To prevent damage to the water feeder, a McDonnell & Miller transformer Model 101-24V-48 must be used.

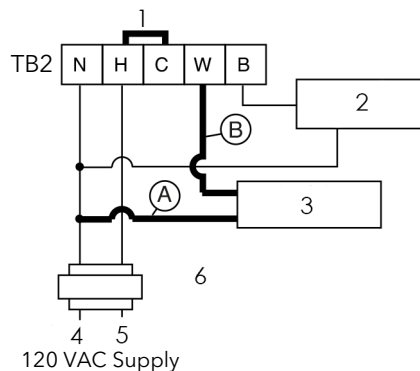
3.10 Model 101A-24 and FPC-1000

For Model 101A-24 Water Feeder and FPC-1000 Low Water Cut-Off

Replace existing 24 Volt transformer on boiler with the McDonnell and Miller transformer Model 101-24 V-48 included with the Model 101A-24 water feeder.

1. Install wire (A) from the water feeder to TB2 24VAC, terminal N on the low water cut-off.
2. Install wire (B) from the water feeder to TB2 24VAC, terminal W on the low water cut-off.
3. Install jumper bar or wire for TB2 24VAC, terminal H to terminal C on the low water cut-off.

NOTE: Any jumper bar or wire connected from terminal H to terminal C in "Terminal Block 1" TB1 120VAC must be removed.



1. Jumper bar
2. Burner
3. 101A Water Feeder
4. Neutral
5. Hot
6. 24V Transformer (101-24 V-48)

NOTE: Check for correct voltage terminals

NOTICE:

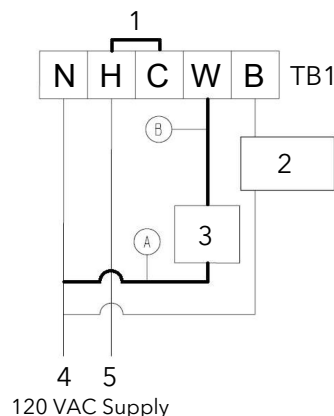
IMPORTANT: To prevent damage to the water feeder, a McDonnell & Miller transformer Model 101-24V-48 must be used.

3.11 Model 101A-120 and FPC-1000

For Model 101A-120 Water Feeder and Model FPC-1000 Low Water Cut-Off

1. Install wire (A) from the water feeder to TB1 120VAC, terminal N on the low water cut-off.
2. Install wire (B) from the water feeder to TB1 120VAC, terminal W on the low water cut-off.
3. Install jumper bar or wire for TB1 120VAC, terminal H to terminal C on the low water cut-off.

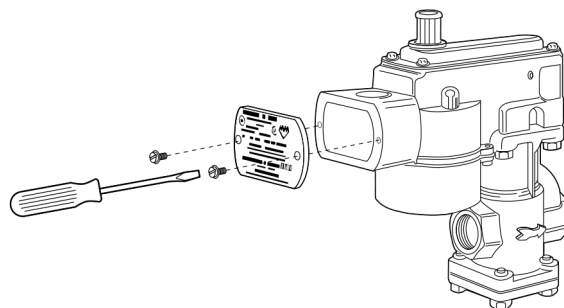
NOTE: Any jumper bar or wire connected from terminal H to terminal C in "Terminal Block 2" TB2 24VAC must be removed.



1. Jumper Bar
2. Burner circuit
3. 101A Water Feeder
4. Neutral
5. Hot

NOTE: Check for correct voltage terminals

3.12 Reinstall electrical cover plate



NOTICE:

The water feeder will only restore the boiler water level to approximately ½" to 1" (13-25mm) above the burner cut-off level of the water cut-off.

4 Testing

4.1 Burner Off (Cold) Test

1. Manually fill boiler until the water level in the sight glass is more than half filled.
2. With the room thermostat set at the lowest setting, turn on the power to the boiler and water feeder.
3. Using the sight glass as a reference, slowly drain water from boiler by opening the low water cut-off blow down valve or the boiler drain until the Low Water Cut-Off activates the water feeder.
IMPORTANT: If the water feeder does not activate before the water level reaches the bottom of the sight glass, immediately close any open drain or blow down valve and check controls and piping for proper installation. Correct any problems.
4. Using the sight glass as a reference, see that the water feeder activates and fills to approximately ½" to 1" (13–15 mm) above the burner cut-off level of the low water cut-off.
IMPORTANT: If the water feeder does not turn off once the water level has surpassed the halfway point of the sight glass. Immediately turn off the power to the boiler installation. Correct any problems.
5. Repeat test 2 or 3 times. Restore boiler and controls to normal settings.

4.2 Burner On (Hot) Test

1. Manually fill boiler to the boiler manufacturer's recommended operating level.
2. Turn on the power to the boiler and water feeder. Activate the burner by raising the thermostat set point.
3. As steam is generated, the boiler water level will decrease. Slowly open the low water cut-off blow down valve or the boiler drain to lower the water level to the proper level, necessary to activate water feeder.
IMPORTANT: If the water feeder does not activate before the water level reaches the bottom of the sight glass, immediately close any open drain or blow down valve and check controls and piping for proper installation. Correct any problems.
4. Using the sight glass as a reference, see that the water feeder activates and fills to approximately ½" to 1" (13–15 mm) above the burner cut-off level of the low water cut-off.
IMPORTANT: If the water feeder does not turn off once the water level has surpassed the halfway point of the sight glass. Immediately turn off the power to the boiler installation. Correct any problems.
5. Repeat test 2 or 3 times. Restore boiler and controls to normal settings.

5 Maintenance

5.1 Annual maintenance

- Disassemble and inspect/clean strainer screen. Replace if screen is torn or not able to be cleaned.
- Remove and inspect/clean cartridge. Replace if poppet does not move freely or debris cannot be removed.
- Check all wires for brittle or worn insulation. More frequent cleaning or replacement may be required if used in locations where water treatment is required or in applications with high make-up water requirements.

NOTICE:

Use clean water to rinse components and surfaces. DO NOT use sharp objects to scrape off any accumulations of sediment or debris.

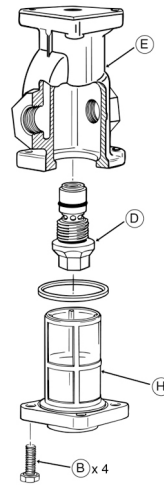
NOTICE:

- Replace entire unit including equalizing piping every 10 years.
- Replace control if it has been subjected to water from a broken pipe or flooding.

5.2 Removal of cartridge and strainer for inspection and cleaning

1. Using ½" socket wrench, unscrew the four (4) hex-head bolts (B) that secure the strainer basket (H) to the valve assembly (E).
2. Using a 13/16" socket wrench, unscrew the cartridge (D) and remove.

3. Clean any debris (scale, rust, etc.) from strainer and cartridge. Poppet inside cartridge must move freely. Replace if debris cannot be removed or poppet does not move freely.
4. Lubricate cartridge o-rings using silicone type lubricant and re-install.
5. While depressing the manual feed (red) button, re-install the cartridge and tighten 2 ft-lbs (2.6 Nm). Do not over-tighten.
6. Re-install strainer basket. Tighten (4) bolts 8 ft-lbs (11 Nm).

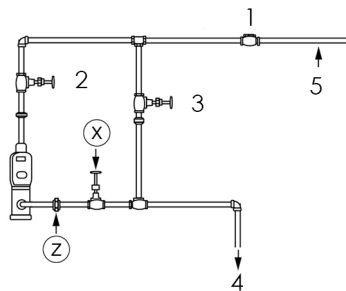


5.3 Broken union test

Make sure that the water level in the boiler is above the closing level of the feeder.

Close valve 'X' and slowly open union 'Z' to determine if valve is leaking.

- If water is leaking from the union, the valve needs to be serviced.
- If no water leaks from the union, the feeder operation is not the cause of the flooding.



1. Check Valve
2. Feed Valve
3. By-Pass Valve
4. TO BOILER
5. WATER SUPPLY

6 Troubleshooting

EN

Problem	Solution
Pipes rattle when valve is operating.	1. Secure all piping 2. Install an air chamber on water feeder inlet pipe.
Water feeder doesn't activate.	1. Check wiring and connections to make sure they are correct and secure. 2. Make sure that the low water cut-off is operating properly.
Water feeder activates, but does not feed water to the boiler.	1. Make sure all valves are open. 2. Remove and clean strainer. 3. Remove and clean cartridge valve assembly. 4. Make sure the water feeder is properly piped to the boiler. 5. Make sure the piping is not restricted or clogged.
Water feeder does not shut off.	1. Check wiring and connections to make sure they are correct and secure. 2. Make sure that the low water cut-off is operating properly. 3. Make sure manual feed button operates freely.

7 Warranty

7.1 Commercial warranty

Warranty. For goods sold to commercial buyers, Seller warrants the goods sold to Buyer hereunder (with the exception of membranes, seals, gaskets, elastomer materials, coatings and other "wear parts" or consumables all of which are not warranted except as otherwise provided in the quotation or sales form) will be (i) be built in accordance with the specifications referred to in the quotation or sales form, if such specifications are expressly made a part of this Agreement, and (ii) free from defects in material and workmanship for a period of one (1) year from the date of installation or two (2) years from the date of manufacture, whichever shall occur first, unless a longer period is specified in the product documentation (the "Warranty").

Except as otherwise required by law, Seller shall, at its option and at no cost to Buyer, either repair or replace any product which fails to conform with the Warranty provided Buyer gives written notice to Seller of any defects in material or workmanship within ten (10) days of the date when any defects or non-conformance are first manifest. Under either repair or replacement option, Seller shall not be obligated to remove or pay for the removal of the defective product or install or pay for the installation of the replaced or repaired product and Buyer shall be responsible for all other costs, including, but not limited to, service costs, shipping fees and expenses. Seller shall have sole discretion as to the method or means of repair or replacement. Buyer's failure to comply with Seller's repair or replacement directions shall terminate Seller's obligations under this Warranty and render the Warranty void. Any parts repaired or replaced under the Warranty are warranted only for the balance of the warranty period on the parts that were repaired or replaced. Seller shall have no warranty obligations to Buyer with respect to any product or parts of a product that have been: (a) repaired by third parties other than Seller or without Seller's written approval; (b) subject to misuse, misapplication, neglect, alteration, accident, or physical damage; (c) used in a manner contrary to Seller's instructions for installation, operation and maintenance; (d) damaged from ordinary wear and tear, corrosion, or chemical attack; (e) damaged due to abnormal conditions, vibration, failure to properly prime, or operation without flow; (f) damaged due to a defective power supply or improper electrical protection; or (g) damaged resulting from the use of accessory equipment not sold or approved by Seller. In any case of products not manufactured by Seller, there is no warranty from Seller; however, Seller will extend to Buyer any warranty received from Seller's supplier of such products.

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7.2 Limited consumer warranty

Warranty. For goods sold for personal, family or household purposes, Seller warrants the goods purchased hereunder (with the exception of membranes, seals, gaskets, elastomer materials, coatings and other "wear parts" or consumables all of which are not warranted except as otherwise provided in the quotation or sales form) will be free from defects in material and workmanship for a period of one (1) year from the date of installation or two (2) years from the product date code, whichever shall occur first, unless a longer period is provided by law or is specified in the product documentation (the "Warranty").

Except as otherwise required by law, Seller shall, at its option and at no cost to Buyer, either repair or replace any product which fails to conform with the Warranty provided Buyer gives written notice to Seller of any defects in material or workmanship within ten (10) days of the date when any defects or non-conformance are first manifest. Under either repair or replacement option, Seller shall not be obligated to remove or pay for the removal of the defective product or install or pay for the installation of the replaced or repaired product and Buyer shall be responsible for all other costs, including, but not limited to, service costs, shipping fees and expenses. Seller shall have sole discretion as to the method or means of repair or replacement. Buyer's failure to comply with Seller's repair or replacement directions shall terminate Seller's obligations under this Warranty and render this Warranty void. Any parts repaired or replaced under the Warranty are warranted only for the balance of the warranty period on the parts that were repaired or replaced.

Seller shall have no warranty obligations to Buyer with respect to any product or parts of a product that have been: (a) repaired by third parties other than Seller or without Seller's written approval; (b) subject to misuse, misapplication, neglect, alteration, accident, or physical damage; (c) used in a manner contrary to Seller's instructions for installation, operation and maintenance; (d) damaged from ordinary wear and tear, corrosion, or chemical attack; (e) damaged due to abnormal conditions, vibration, failure to properly prime, or operation without flow; (f) damaged due to a defective power supply or improper electrical protection; or (g) damaged resulting from the use of accessory equipment not sold or approved by Seller. In any case of products not manufactured by Seller, there is no warranty from Seller; however, Seller will extend to Buyer any warranty received from Seller's supplier of such products.

THE FOREGOING WARRANTY IS PROVIDED IN PLACE OF ALL OTHER EXPRESS WARRANTIES. ALL IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO ONE(1) YEAR FROM THE DATE OF INSTALLATION OR TWO (2) YEARS FROM THE PRODUCT DATE CODE, WHICHEVER SHALL OCCUR FIRST. EXCEPT AS OTHERWISE REQUIRED BY LAW, BUYER'S EXCLUSIVE REMEDY AND SELLER'S AGGREGATE LIABILITY FOR BREACH OF ANY OF THE FOREGOING WARRANTIES ARE LIMITED TO REPAIRING OR REPLACING THE PRODUCT AND SHALL IN ALL CASES BE LIMITED TO THE AMOUNT PAID BY THE BUYER FOR THE DEFECTIVE PRODUCT. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY OTHER FORM OF DAMAGES, WHETHER DIRECT, INDIRECT, LIQUIDATED, INCIDENTAL, CONSEQUENTIAL, PUNITIVE, EXEMPLARY OR SPECIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOSS OF PROFIT, LOSS OF ANTICIPATED SAVINGS OR REVENUE, LOSS OF INCOME, LOSS OF BUSINESS, LOSS OF PRODUCTION, LOSS OF OPPORTUNITY OR LOSS OF REPUTATION.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which may vary from state to state.

To make a warranty claim, check first with the dealer from whom you purchased the product or call +1-847-966-3700 for the name and location of the nearest dealer providing warranty service.

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www.xylem.com/mcdonnellmiller

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