Backflow Prevention Products

watts.com
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Note: Watts product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact Watts Technical Service. Watts reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on Watts products previously or subsequently sold.

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Noryl® is a registered trademark of SABIC Innovative Plastics Holding BV.
General Information

Backflow is defined as the reverse flow of contaminated or undesirable substance into the potable water supply. Installing a backflow preventer can protect the water supply from this very serious type of situation. This product guide includes information on Watts’ complete line of backflow prevention devices.

Code Requirements

All major plumbing code bodies address protection against backflow. All potential or existing cross-connections must be protected from backflow by installing a proper backflow prevention device. Consult your national and local plumbing code authorities for more specific information on your code requirements.

Backflow Definitions

**Backpressure:** Pressure, higher than the supply pressure, caused by a pump, elevated tank, boiler, or other means that can cause backflow.

**Backsiphonage:** Backflow caused by negative or reduced pressure in the supply piping.

**Cross-connection:** A connection or potential connection between any part of the potable water system and another environment where undesirable substances could enter the potable water system. Contaminated or undesirable substances can include gases, liquids, or solids, such as chemicals, waste products, steam, water from other sources (potable or non-potable), or any other matter that can change the color of or add odor to the water. Bypass arrangements, jumper connections, removable sections, swivel or changeover assemblies, or any other temporary or permanent connecting arrangement where backflow can occur are considered cross-connections.

**Health hazard:** A cross-connection or potential cross-connection where any substance that could cause death, illness, or spread disease, or have a high probability of causing such effects, could be introduced into the potable water supply.

**Non-health hazard:** A cross-connection or potential cross-connection where any substance introduced into the potable water supply would generally not be considered a health hazard, but would constitute a nuisance or be aesthetically objectionable.

Backflow Applications

<table>
<thead>
<tr>
<th>TYPE &amp; PURPOSE</th>
<th>DESCRIPTION</th>
<th>INSTALLED AT</th>
<th>EXAMPLES OF INSTALLATION</th>
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</thead>
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<tr>
<td><strong>REDUCED PRESSURE ZONE ASSEMBLIES</strong></td>
<td>Two independent check valves with intermediate relief valve. Supplied with shut-off valves and ball type test cocks.</td>
<td>All cross-connections subject to backpressure or backsiphonage where there is a potential health hazard.</td>
<td>Main supply lines Commercial boilers Hospital equipment Laboratory equipment Waste digesters Car washes</td>
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<tr>
<td><strong>REDUCED PRESSURE DETECTOR ASSEMBLIES</strong></td>
<td>RPZ backflow preventers with a water meter and RPZ in the bypass line.</td>
<td>Fire protection system supply main. Detects leaks and unauthorized use of water.</td>
<td>Fire sprinkler lines where additives or foaming agents are used.</td>
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<tr>
<td><strong>DOUBLE CHECK VALVE ASSEMBLIES</strong></td>
<td>Two independent check valves. Checks are replaceable for repair &amp; testing.</td>
<td>All cross-connections subject to backpressure or backsiphonage where there is a non-health hazard.</td>
<td>Main supply lines Food cookers Tanks and vats Lawn sprinklers Fire sprinkler lines Commercial pools</td>
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<tr>
<td><strong>DOUBLE CHECK DETECTOR ASSEMBLIES</strong></td>
<td>Double check valve backflow preventers with water meter and double check in the bypass line.</td>
<td>Fire protection system supply main. Detects leaks and unauthorized use of water.</td>
<td>Fire sprinkler lines</td>
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<tr>
<td>TYPE &amp; PURPOSE</td>
<td>DESCRIPTION</td>
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<tr>
<td>DUAL CHECK VALVE BACKFLOW PREVENTERS</td>
<td>Two independent check valves. Checks are replaceable for repair and testing.</td>
<td>Cross-connection where there is a non-health hazard.</td>
<td>Residential supply lines (at the meter) Residential fire sprinkler systems Post-mix beverage machines, tea and coffee machines</td>
</tr>
<tr>
<td>SPECIALTY BACKFLOW PREVENTERS with INTERMEDIATE ATMOSPHERIC VENT</td>
<td>Two independent check valves with intermediate vacuum breaker and relief vent.</td>
<td>Cross-connection subject to backpressure or backsiphonage where there is a non-health hazard. Continuous pressure.</td>
<td>Boilers (small) Dairy equipment</td>
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<tr>
<td>LABORATORY FAUCET DUAL CHECK VALVE with INTERMEDIATE VACUUM BREAKER</td>
<td>Two independent check valves with intermediate vacuum breaker and relief vent.</td>
<td>Cross-connection subject to backpressure or backsiphonage where there is a health hazard.</td>
<td>Laboratory faucets, pipe lines, barber shop and beauty parlor sinks</td>
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<tr>
<td>ATMOSPHERIC VACUUM BREAKERS</td>
<td>Single float and disc with atmospheric port.</td>
<td>Cross-connection not subject to backpressure or continuous pressure. Install at least 6&quot; above fixture rim. Protection against back siphonage only.</td>
<td>Process tanks Dishwashers Soap dispensers Washing machines Lawn sprinklers</td>
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<tr>
<td>PRESSURE VACUUM BREAKERS</td>
<td>Spring-loaded float and disc with independent check. Supplied with shutoff valves and ball type test cocks.</td>
<td>Valve is designed for installation in a continuous pressure system 12&quot; above the overflow level of the system being supplied. Protection against backsiphonage only.</td>
<td>Laboratory equipment Cooling towers Commercial laundry machines Swimming pools Chemical planting tanks Lawn sprinklers</td>
</tr>
<tr>
<td>ANTI-SIPHON, SPILL-RESISTANT VACUUM BREAKERS</td>
<td>Spill-resistant vacuum breaker with modular check and float assembly of thermoplastic. Housing bronze body.</td>
<td>Indoor point of use cross-connections.</td>
<td>Chemical dispenser Commercial dishwasher Sterilizers</td>
</tr>
<tr>
<td>HOSE CONNECTION VACUUM BREAKERS</td>
<td>Single check with atmospheric vacuum breaker vent.</td>
<td>Install directly on hose bibbs, service sinks and wall hydrants. Not for continuous pressure.</td>
<td>Hose bibbs Service sinks Hydrants</td>
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<tr>
<td>ENCLOSURES</td>
<td>Aluminum or fiberglass structures used to protect meters, valves, and backflow preventers from vandalism and freeze damage.</td>
<td>Backflow preventer location.</td>
<td>Irrigation systems and domestic service line connections.</td>
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Series 757, 757N
Double Check Valve Assemblies

Sizes: 2½" – 10" (65 – 250mm)

Features
- Extremely compact design
- 70% Lighter than traditional designs
- 304 (Schedule 40) Stainless steel housing & sleeve
- Groove fittings allow integral pipeline adjustment
- Patented tri-link check provides lowest pressure loss
- Unmatched ease of serviceability
- Available with grooved butterfly valve shutoffs
- Available for horizontal, vertical or N pattern installations
- Replaceable check disc rubber
- Sizes 2½", 3" and 4" (65, 80 and 100mm) available with quarter-turn ball valve shutoffs

Pressure-Temperature
Temperature Range: 33°F – 140°F
(0.5°C – 60°C)
Maximum Working Pressure: 175psi
(12.1 bar)

757, 757N
Series 757, 757N Double Check Valve Assemblies are used to prevent backflow of non-health hazard pollutants that are objectionable but not toxic, from entering the potable water supply system. Series 757, 757N may be installed under continuous pressure service and may be subjected to backpressure and backspiponation. Series 757, 757N consists of two independently operating check valves, two shutoff valves, and four test cocks.

Materials
- Housing & Sleeve: 304 (Schedule 40) Stainless Steel
- Elastomers: EPDM, Silicone and Buna-N
- Tri-link Checks: Noryl®, Stainless Steel
- Check Discs: Reversible Silicone or EPDM
- Test Cocks: Bronze Body Nickel Plated
- Pins & Fasteners: 300 Series Stainless Steel
- Springs: Stainless Steel

Models
Suffix:
NRS – non-rising stem resilient seated gate valves
OSY – UL/FM outside stem and yoke, resilient seated gate valves
BFG – UL/FM grooved gear operated butterfly valves with tamper switch
QT – 2½", 3" and 4" (65, 80 and 100mm) quarter-turn ball valves
**OSY FxG – Flanged inlet gate connection and grooved outlet gate connection
**OSY GxF – Grooved inlet gate connection and flanged outlet gate connection
**OSY GxG – Grooved inlet gate connection and grooved outlet gate connection
Available with grooved NRS gate valves
- consult factory**
Post indicator plate and operating nut available - consult factory**
**Consult factory for dimensions

Approvals

*The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.
## Double Check Valve Assemblies

### Dimensions — Weights

#### 757, 757N

<table>
<thead>
<tr>
<th>SIZE</th>
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<th>D</th>
<th>G</th>
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<td>622</td>
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</table>
Series LF709
Double Check Valve Assemblies
Sizes: 2½" – 10" (65 – 250mm)

Features
• Replaceable stainless steel seats
• Maximum flow at low pressure drop
• Design simplicity for easy maintenance
• No special tools required for servicing
• Captured spring assemblies for safety
• Approved for vertical flow up installation

Pressure-Temperature
Temperatures Range: 33°F – 110°F
(0.5°C – 43°C) continuous,
140°F (60°C) intermittent
Maximum Working Pressure: 175psi
(12.1 bar)

Materials
• Check Valve Bodies: Epoxy coated cast iron
• Seats: Stainless Steel

Models
Suffix:
NRS – non-rising stem resilient seated gate valves
OSY – UL/FM outside stem and yoke resilient seated gate valves
S-FDA – FDA epoxy coated strainer
QT-FDA – FDA epoxy coated ball valve shutoffs
LF – without shutoff valves

Approvals
Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California. Sizes 4" – 10" approved horizontal and vertical "flow up". Size 2½" and 3" approved horizontal only. Factory Mutual approved 4" – 10" vertical "flow up" with OSY gate valves only.

Note: Model "S-FDA" not listed

*The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.

For additional information, request literature ES-709
See Flow Charts on p. 77–78
### Dimensions — Weights

#### LF709

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†Dimension required for screen removal. ††Quarter-turn (QT) valve dimensions.
††Service clearance for check assembly from center.
Series LF007 / 007
Double Check Valve Assemblies
Sizes: ½" – 3" (15 – 80mm)

Features
- Ease of maintenance — only one cover
- Top entry
- Replaceable seats and seat discs
- Modular construction
- Compact design
- Fused epoxy coated cast iron body — 2½” – 3” (65 – 80mm)
- Low pressure drop
- No special tools required for servicing
- ½” – 1” (15 – 25mm) have tee handles

Pressure-Temperature
½" – 2" (15 – 50mm)
Temperature Range: 33°F – 180°F (0.5°C – 82°C).
Maximum Working Pressure: 175psi (12.1 bar).

2½” – 3” (65 – 80mm)
Temperature Range: 33°F – 110°F (0.5°C – 43°C) continuous, 140°F (60°C) intermittent.
Maximum Working Pressure: 175psi (12.1 bar).

LF007
LEAD FREE Series LF007 Double Check Valve Assemblies shall be installed at referenced cross-connections to prevent the backflow of polluted water into the potable water supply. Only those cross-connections identified by local inspection authorities as non-health hazard shall be allowed the use of an approved double check valve assembly. The LF007 features Lead Free* construction to comply with Lead Free* installation requirements.

Check with local authority having jurisdiction regarding vertical orientation, frequency of testing or other installation requirements.

The valve shall meet the requirements of ASSE Std. 1015 and AWWA Std. C510. Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California.

Materials
Sizes: ½" – 2" (15 – 50mm)
- Lead Free* cast copper silicon alloy body construction
- Top mounted Lead Free* ball valve test cocks
Sizes: 2½” – 3” (65 – 80mm)
- Fused epoxy coated cast iron body

Models
Sizes: ½” – 2" (15 – 50mm)
Suffix:
S – copper silicon alloy strainer
LF – without shutoff valves
Prefix:
U – Union connections
Sizes: 2½” – 3” (65 – 80mm)
Suffix:
NRS – non-rising stem resilient seated gate valves
OSY – UL/FM outside stem and yoke resilient seated gate valves
LF – without shutoff valves
QT-FDA – FDA epoxy coated quarter-turn ball valves

Approvals
† ASSE, AWWA, IAPMO, CSA, UPC
▲ Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California.
- Models with suffix LF and S are not listed.
- UL Classified (without shutoff valves only) ¾” – 2” (except 007M3LF)
- UL Classified with OSY gate valves (2½" and 3" horizontal only.)
▼ ½" - 2" models Lead Free* with strainer
Horizontal and vertical "flow up" approval on all sizes

*The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.

For additional information, request literature ES-LF007 and ES-007.
See Flow Charts on p. 73
Double Check Valve Assemblies

For Use in Non-Potable Applications

Series 007 are designed to protect drinking water supplies from dangerous cross-connections in accordance with national plumbing codes and water authority requirements for non-potable service applications such as irrigation, fireline, or industrial processing.

Materials

- Cast bronze body construction – ½” – 2” (15 – 50mm)
- Top mounted ball valve test cocks

Models

Sizes: ½” – 2” (15 – 50mm)
Suffix:
  - S – bronze strainer
  - LF – without shutoff valves
  - SH – stainless steel ball valve handles
  - HC – 2½” inlet/outlet fire hydrant fittings (2” valve)
Prefix:
  - U – Union connections

Sizes: 2½” – 3” (65 – 80mm)
Suffix:
  - NRS – non-rising stem resilient seated gate valves
  - OSY – UL/FM outside stem and yoke resilient seated gate valves
  - LF – without shutoff valves
  - QT-FDA – FDA epoxy coated quarter-turn ball valves

Approvals

† ASSE, AWWA, IAPMO, CSA, UPC

▲ Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California.

- Models LF and S are not listed.
- UL Classified (LF models only) ¾” – 2” (except 007M3LF)
- UL Classified with OSY gate valves (2½” and 3” horizontal only.)

Horizontal and vertical ”flow up” approval on all sizes

Dimensions – Weights

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<th>MODEL</th>
<th>SIZE</th>
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<th>C</th>
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Subscript ‘S’ = strainer model

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**Note:** All weights are approximate and subject to change. For precise information, refer to the manufacturer’s specifications.
### Double Check Valve Assemblies

For additional information, request literature ES-LF007 and ES-007.

See Flow Charts on p. 73

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**Dimensions – Weights continued**

Sizes: 2½” – 3” (65 – 80mm)

= LF007

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<td>LF007-OSY</td>
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Sizes: ¾” – 2” (15 – 50mm)

= LFU007 / U007

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<td>24½ in. 622 mm</td>
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Series 774 Double Check Valve Assemblies

Sizes: 2½" – 12" (65 – 300mm)

Features
- Torsion spring check valve provides low head loss
- Short lay length is ideally suited for retrofit installations
- Stainless steel body is half the weight of competitive designs reducing installation and shipping cost
- Stainless steel construction provides long term corrosion protection and maximum strength
- Single top access cover with two-bolt grooved style coupling for ease of maintenance
- Thermoplastic and stainless steel check valves for trouble-free operation
- No special tools required for servicing
- Compact construction allows for smaller vaults and enclosures
- May be installed in horizontal or vertical "flow up" position

Pressure-Temperature
Temperature Range: 33ºF – 110ºF (0.5ºC – 43ºC) continuous
Maximum Working Pressure: 175psi (12.1 bar)

Materials
- All internal metal parts: 300 Series stainless steel
- Main valve body: 300 Series stainless steel
- Check assembly: Noryl
- Flange dimension in accordance with AWWA Class D

Models
Suffix:
- NRS – non-rising stem resilient seated gate valves
- OSY – UL/FM resilient seated outside stem & yoke gate valves
- LF – without shutter valves
- S – cast iron strainer
**OSY FxG – Flanged inlet gate connection and grooved outlet gate connection
**OSY GxF – Grooved inlet gate connection and flanged outlet gate connection
**OSY GxG – Grooved inlet gate connection and grooved outlet gate connection

Available with grooved NRS gate valves - consult factory**
Post indicator plate and operating nut available - consult factory**
**Consult factory for dimensions

For additional information, request literature ES-774.

See Flow Charts on p. 82

For additional information, request literature ES-774.
Series LF719 / 719
Double Check Valve Assemblies
Sizes: ½” – 2” (15 – 50mm)

Features
- Separate access, top entry check valve design
- Reversible seat disc rubber, extends check valve life
- Chloramine resistant elastomers
- Replaceable seats and seat discs
- Compact design
- Top mounted screwdriver slotted ball valve test cocks
- Low pressure drop
- ½” – 1” have Tee handles
- No special tools required for servicing
- Plastic on plastic check guiding reduces potential binding due to mineral deposits

Pressure-Temperature
Temperature Range: 33˚F – 180˚F (0.5˚C – 82˚C)
Maximum Working Pressure: 175psi (12.1 bar)

Materials
- Body: Lead Free* cast copper silicon alloy
- Elastomers: Chloramine resistant silicone and EPDM
- Check seats: PPO
- Disc Holder: PPO

Models
Suffix:
S – bronze strainer
QT – quarter-turn ball valves

LF719
LEAD FREE* Series LF719 Double Check Valve Assemblies are designed to protect drinking water supplies from dangerous cross connections in accordance with national plumbing codes and water authority requirements.

This series may be used in only those cross-connections identified by local inspection authorities as non-health hazard applications. Check with local authority having jurisdiction regarding vertical orientation, frequency of testing or other installation requirements. The LF719 features Lead Free* construction to comply with Lead Free* installation requirements. Series LF719 meets the requirements of ASSE Std. 1015 and AWWA Std. C510.

Materials
- Body: Lead Free* cast copper silicon alloy
- Elastomers: Chloramine resistant silicone and EPDM
- Check seats: PPO
- Disc Holder: PPO

Models
Suffix:
S – bronze strainer
QT – quarter-turn ball valves

LF719QT/719QT

Series LF719QT/719QT Double Check Valve Assemblies are designed to protect drinking water supplies from dangerous cross connections in accordance with national plumbing codes and water authority requirements.

For Use in Non-Potable Applications
Series 719 Double Check Valve Assemblies are designed to protect drinking water supplies from dangerous cross-connections in accordance with national plumbing codes and water authority requirements for non-potable service applications such as irrigation, fireline, or industrial processing.

Materials
- Body: Bronze
- Elastomers: Chloramine resistant silicone and EPDM
- Check seats: Engineered Plastic
- Disc Holder: Engineered Plastic

Models
Suffix:
S – bronze strainer
LF – without shutoff valves
SH – stainless steel ball valve handles
HC – 2½” inlet/outlet fire hydrant fittings (2” valve)
QT – quarter-turn ball valves

719
For Use in Non-Potable Applications
Series 719 Double Check Valve Assemblies are designed to protect drinking water supplies from dangerous cross-connections in accordance with national plumbing codes and water authority requirements for non-potable service applications such as irrigation, fireline, or industrial processing.

Materials
- Body: Bronze
- Elastomers: Chloramine resistant silicone and EPDM
- Check seats: Engineered Plastic
- Disc Holder: Engineered Plastic

Models
Suffix:
S – bronze strainer
LF – without shutoff valves
SH – stainless steel ball valve handles
HC – 2½” inlet/outlet fire hydrant fittings (2” valve)
QT – quarter-turn ball valves

Approvals
Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California

Approvals
Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California

C&T – testcock caps and tethers
AQT – street elbows with quarter-turn ball valves

Prefix:
U – union connections

For additional information, request literature ES-LF719 and ES-719.
See Flow Charts on p. 78
Double Check Valve Assemblies

**Dimensions – Weights**

### LF719QT, LF719QT-S / 719QT, 719QT-S

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Double Check Detector Assemblies

Features
- Extremely compact design
- 70% lighter than traditional designs
- 304 (Schedule 40) stainless steel housing & sleeve
- Groove fittings allow integral pipeline adjustment
- Unmatched ease of serviceability
- Available with grooved butterfly valve shutoffs
- May be used for horizontal, vertical or N pattern installations
- Replaceable check disc rubber

Pressure-Temperature
Temperature Range: 33°F – 140°F (0.5°C – 60°C)
Maximum Working Pressure: 175psi (12.1 bar)

Models
Suffix:
OSY – UL/FM outside stem and yoke resilient seated gate valves
BFG – UL/FM grooved gear operated butterfly valves with tamper switch
**OSY FxG – Flanged inlet gate connection and grooved outlet gate connection
**OSY GxF – Grooved inlet gate connection and flanged outlet gate connection
**OSY GxG – Grooved inlet gate connection and grooved outlet gate connection

LF757DCDA / LFN757DCDA
LEAD FREE
Series LF757DCDA Double Check Detector Assemblies are used to prevent backflow of non-health hazard pollutants that are objectionable but not toxic, from entering the potable water supply system. The LF757DCDA may be installed under continuous pressure service and may be subjected to backpressure and backsiphonage. Series LF757DCDA is used primarily on fire line sprinkler systems when it is necessary to monitor unauthorized use of water.

Materials
- Housing & Sleeve: 304 (Schedule 40) Stainless Steel
- Elastomers: EPDM, Silicone and Buna-N
- Tri-link Checks: Noryl®, Stainless Steel
- Check Discs: Reversible Silicone or EPDM
- Test Cocks: Bronze Body Nickel Plated
- Pins & Fasteners: 300 Series Stainless Steel
- Springs: Stainless Steel

Approvals

**757DCDA/757NDCDA**
For Use in Non-Potable Applications
Series 757DCDA, 757NDCDA Double Check Detector Assemblies are designed to prevent backflow on non-health hazard pollutants that are objectionable but not toxic to protect drinking water supplies from dangerous cross-connections in accordance with national plumbing codes and water authority requirements for non-potable service applications such as irrigation, fireline, or industrial processing.

Materials
- Housing & Sleeve: 304 (Schedule 40) Stainless Steel
- Elastomers: EPDM, Silicone and Buna-N
- Tri-link Checks: Noryl®, Stainless Steel
- Check Discs: Reversible Silicone or EPDM
- Test Cocks: Bronze Body Nickel Plated
- Pins & Fasteners: 300 Series Stainless Steel
- Springs: Stainless Steel

Approvals

*The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.*
### Dimensions – Weights

**LF757DCDA, LF757NDCDA / 757DCDA, 757NDCDA**

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**LF757DCDABFG, LF757NDCDABFG / 757DCDABFG, 757NDCDABFG**

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**Series 774DCDA**
Double Check Detector Assemblies

Sizes: 2½" – 12" (65 – 300mm)

### Features
- Torsion spring check valve provides low head loss
- Short lay length is ideally suited for retrofit installations
- Stainless steel body is half the weight of competitive designs reducing installation and shipping cost
- Stainless steel construction provides long term corrosion protection and maximum strength
- Single top access cover with two-bolt grooved style coupling for ease of maintenance
- Thermoplastic and stainless steel check valves for trouble-free operation
- No special tools required for servicing
- Compact construction allows for smaller vaults and enclosures
- Furnished with ¾" x ¾" bronze meter (gpm or cfm)
- Detects underground leaks and unauthorized water use
- May be installed horizontal or vertical “flow up” position

### Pressure-Temperature
Temperature Range: 33°F – 110°F (0.5°C – 43°C) continuous
Pressure Range: 175psi (12.1 bar)

### 774DCDA
Series 774DCDA Double Check Detector Assemblies are designed to protect drinking water supplies from non-health hazard dangerous cross-connections in accordance with national plumbing codes and water authority requirements for non-potable service applications such as irrigation, fireline, or industrial processing.

### Materials
- All internal metal parts: 300 Series stainless steel
- Main valve body: 300 Series stainless steel
- Check assembly: Noryl® Flange dimensions in accordance with AWWA Class D.

### Approvals

- | Certification |
<table>
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<td>1048 (OSY only)</td>
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### Models

**Suffix:**
- LF – without shutoff valves
- OSY – UL/FM outside stem and yoke resilient seated gate valves
- *OSY FxG – flanged inlet gate connection and grooved outlet gate connection*
- *OSY GxF – grooved inlet gate connection and flanged outlet gate connection*
- *OSY GxG – grooved inlet gate connection and grooved outlet gate connection*

**CFM – cubic feet per minute meter**
**GPM – gallons per minute meter**

Available with grooved NRS gate valves - consult factory*
Post indicator plate and operating nut available - consult factory*

*Consult factory for dimensions*
### Double Check Detector Assemblies

#### Dimensions — Weights

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<thead>
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Series 709DCDA
Double Check Detector Assemblies

Sizes: 3" – 10" (80 – 250mm)

Features
- Body construction fused epoxy coated cast iron
- Replaceable bronze seats
- Maximum flow at low pressure drop
- Compact for economy combined with performance
- Design simplicity for easy maintenance
- Furnished with 5/8 x 3/4" bronze meter
- No special tools required for servicing

Pressure-Temperature
Temperature Range: 33°F – 110°F (0.5°C – 43°C) continuous
Maximum Working Pressure: 175psi (12.1 bar)

709DCDA
Series 709DCDA Double Check Detector Assemblies are designed to protect drinking water supplies from dangerous cross-connections in accordance with national plumbing codes and water authority requirements for non-potable service applications such as irrigation, fireline, or industrial processing.

Benefits:
- Detects leaks with emphasis on the cost of unaccountable water; incorporates a meter which allows the water utility to:
  - detect leaks underground that historically create great annual cost due to waste.
  - provide a detection point for unauthorized use. It can help locate illegal taps.
- Modular check design concept facilitates maintenance and assembly access. All sizes are standardly equipped with resilient seated OSY shutoff valves, 5/8 x 3/4" meter and ball type test cocks.

Materials
- Body: Epoxy coated cast iron
- Seat: Bronze
- Disc Holder: Bronze
- Trim: Stainless steel
- Check Valve Discs: Rubber
- Test Cocks: Bronze

Models
Suffix:
OSY - UL/FM outside stem and yoke resilient seated gate valves
CFM - cubic feet per minute meter
GPM - gallons per minute meter
LF - 4" – 10" without shutoff valves

Approvals
Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California. Sizes 4" – 10" approved for horizontal and vertical “flow up”. Size 3" approved for horizontal only.
Factory Mutual approved 4" – 10" vertical “flow up”.

For additional information, request literature ES-709DCDA.
See Flow Charts on p.77-78.
Series 007DCDA
Double Check Detector Assemblies
Sizes: 2½" – 3" (65 – 80mm)

Features
• Fused epoxy coated cast iron unibody 2½" – 3"
• Replaceable seats
• Maximum flow at low pressure drop
• Compact for ease of installation
• Design simplicity for easy maintenance
• No special tools required for servicing
• Bronze body ball valve test cocks
• Modular spring loaded checks
• Furnished with bronze ⅝" x ⅜" meter

Pressure-Temperature
Temperature Range: 33°F – 110°F (0.5°C – 43°C) continuous
Maximum Working Pressure: 175psi (12.1 bar)

007DCDA
Series 007DCDA Double Check Detector Assemblies are designed exclusively for use in accordance with water utility authority on non-health hazard containment requirements. It is mandatory to prevent the reverse flow of fire protection system substances, i.e., glycerin wetting agents, stagnant water and water of non-potable quality from being pumped or siphoned into the potable water line.

Benefits: Detects leaks with emphasis on the cost of unaccountable water; incorporates a meter which allows the water utility to:
• detect underground leaks that historically create great annual cost due to waste.
• provide a detection point for unauthorized use. It can help locate illegal taps.
Modular check design concept facilitates maintenance and assembly access. All sizes are standardly equipped with resilient seated OSY shutoff valves, ⅝" x ⅜" meter.

Materials
• Body: Epoxy coated cast iron
• Seats: Bronze or Stainless steel
• Discs: Silicone
• Springs: Stainless steel
• Meter: Bronze

Models
Suffix:
CFM - cubic feet per minute meter
GPM - gallons per minute meter

Approvals
Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California. 2½" 007DCDA approved for horizontal and vertical upward flow position. 3" 007DCDA approved for horizontal only.

Dimensions — Weights

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Series 007M1DCDA
Residential Fire Sprinkler
Double Check Detector Backflow Prevention Assembly

Sizes: 2" (50mm)

Features
Main Valve
• Compact Design for Ease of Installation
• Inline Serviceable Assembly
• No Special Tools Required for Servicing
• Captured Modular Spring Loaded Checks
• Field Replaceable Seats & Discs
• Field Replaceable Auxiliary Bypass Line & Components

Auxiliary Bypass
• Compact Bypass Design; Remains within Main Valve Assembly Profile
• Inline Serviceable 1⁄2" Backflow Assembly
• No Special Tools Required for Servicing
• Captured Modular Spring Loaded Checks
• Field Replaceable Seats & Discs
• Detect Potential Underground Water Leaks
• Detect Unauthorized Water Usage

Pressure Specification
• Max. Working Pressure: 175psi
• Min. Working Pressure: 10psi
• Hydrostatic Test Pressure: 350psi
• Hydrostatic Safety Pressure Rating: 700psi

Temperature Specifications
• Continuous Operating Range: 33°F-110°F (0.5°C-43°C)
• Intermittent Operating Range up to 140°F (60°C)
  Must not exceed 12 hour duration

Materials
• Body: Cast Bronze ASTM B584
• Elastomers: Silicone
• O-Rings: EPDM
• Check Modules: Engineered Plastics

Configurable Options
(Prefix – Suffix)

Suffix
OSY – UL/FM Approved OS&Y Gate Valves (ANSI/AWWA C515 Compliant)
CFM – Cubic Feet per Minute ¾"x¾" Water Meter (ANSI/AWWA C700 Compliant)
GPM – Gallon per Minute ¾"x¾" Water Meter (ANSI/AWWA C700 Compliant)
LF – Less Shutoff valves; This is NOT an APPROVED ASSEMBLY

Approvals

Approved by the Foundation for Cross-Connection Control and Hydraulic Research at The University of Southern California (FCCCHR-USC)
ASSE 1048 Listed
UL Classified (US & Canada)
FM Approved
IAPMO/cUPC
AWWA Standard C510 Compliant
NFPA 13, 14, 15, 16, 20, 22 & 24 Compliant
End Connections OS&Y Gate Valves – Compliant to ASME B16.1 Class 125 & AWWA Class D Flange

For additional information, request literature ES-007M1DCDA.
See Flow Charts on p. 73.
### 007M1DCDA

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Series 957 / 957N / 957Z
Reduced Pressure Zone Assemblies

Sizes: 2½" – 10" (65 – 250mm)

Features
• 2½", 3" and 4" sizes available with quarter-turn ball valve shutoffs
• Replaceable check disc rubber
• Extremely compact design
• 70% Lighter than traditional designs
• 304 (Schedule 40) stainless steel housing & sleeve
• Groove fittings allow integral pipeline adjustment
• Patented torsion spring checks provide lowest pressure loss
• Unmatched ease of serviceability
• Bottom mounted cast stainless steel relief valve
• Available with grooved butterfly valve shutoffs

Pressure-Temperature
Temperature Range: 33°F – 140°F
(0.5°C – 60°C)
Maximum Working Pressure: 175psi
(12.1 bar)

Materials
• Housing & Sleeve: 304 (Schedule 40) Stainless Steel
• Elastomers: EPDM, Silicone and Buna-N
• Torsion Spring Checks: Noryl®, Stainless Steel
• Check Discs: Reversible Silicone or EPDM
• Test Cocks: Bronze Body Nickel Plated
• Pins & Fasteners: 300 Series Stainless Steel
• Springs: Stainless Steel

Available Models
Suffix:
NRS – non-rising stem, resilient seated gate valves
OSY – UL/FM outside stem and yoke resilient seated gate valves
BFG – UL/FM grooved gear operated butterfly valves with tamper switch
QT – 2½" - 4" (65 - 100mm) quarter-turn ball valves
**OSY FxG – Flanged inlet gate connection and grooved outlet gate connection

Approvals
Series 957, 957N, 957Z Reduced Pressure Zone Assemblies provide protection to the potable water system from contamination in accordance with national plumbing codes. Series 957, 957N, 957Z are normally used in health hazard applications for protection against backsiphonage or backpressure.

LEAD FREE
Available Models
**OSY GxF – Grooved inlet gate connection and flanged outlet gate connection
**OSY GxG – Grooved inlet gate connection and grooved outlet gate connection
Available with grooved NRS gate valves - consult factory**
Post indicator plate and operating nut available - consult factory**
**Consult factory for dimensions

For additional information, request literature ES-957-957N-957Z.
### Reduced Pressure Zone Assemblies

#### Dimensions — Weights

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**957QT**

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Series 994
Reduced Pressure Zone Assemblies
Sizes: 2½" – 10" (65 – 250mm)

Features
• Stainless steel construction provides long term corrosion resistance and maximum strength
• Stainless steel body is half the weight of competitive designs reducing installation & shipping costs
• Short end-to-end dimensions makes retrofit easy
• Bottom mounted relief valve reduces clearance requirements when installed against an outside wall
• Torsion spring check valves provides maximum flow at low pressure drop
• Thermoplastic & stainless steel check valves for trouble-free operation
• No special tools required for servicing
• Compact construction allows for smaller enclosures
• Stainless steel relief valve features a balanced rolling diaphragm to eliminate sliding seals and lower maintenance costs

Pressure-Temperature
Temperature Range: 33°F – 110°F (0.5°C – 43°C)
Maximum Working Pressure: 175psi (12.1 bar)

Materials
• All internal metal parts: 300 Series stainless steel
• Main valve body: 300 Series stainless steel
• Check assembly: Noryl®
• Flange dimension in accordance with AWWA Class D

Available Models
Suffix:
NRS – non-rising stem, resilient seated gate valves
OSY – UL/FM outside stem and yoke resilient seated gate valves
**OSY FxG – Flanged inlet gate connection and grooved outlet gate connection
**OSY GxF – Grooved inlet gate connection and flanged outlet gate connection
**OSY GxG – Grooved inlet gate connection and grooved outlet gate connection
LF – without shutoff valves
S – cast iron strainer
Available with grooved NRS gate valves - consult factory**
Post indicator plate and operating nut available - consult factory**
**Consult factory for dimensions

Approvals
Approved by the Foundation for Cross Connection Control & Hydraulic Research at the University of Southern California Sizes 2½" – 6"

*The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.

For additional information, request literature ES-994.
### Dimensions — Weights

**994**

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**Air Gap Assembly**

- **2 1/2" (50mm) Pipe Thread**
- **Model 994 AGK-P**

**Dimensions**

- **G**
- **N**
- **M**
- **A**
- **C (open)**

**Horizontal Air Gap Fitting 2 1/2" – 10"**
Series LF909
Reduced Pressure Zone Assemblies

LF909 Sizes: ¾", 1" (20, 22mm) / LF909M1 Sizes: 1¼", 1½", 2" (32, 40, 50mm)

Features
- Modular design
- Replaceable seats
- Compact for installation ease
- Horizontal or vertical (up or down) installation
- No special tools required for servicing

Pressure-Temperature
Temperature Range: 33°F – 140°F (0.5°C – 60°C) continuous
180°F (82°C) intermittent
Maximum Working Pressure: 175psi (12.1 bar)

Series LF909HW
Temperature Range: 33°F – 210°F (0.5°C – 99°C)
Maximum Working Pressure: 175psi (12.1 bar)

Materials
- Body: Lead Free® Cast Copper Silicon Alloy
- Check Seats: 909 Celcon®
- Relief Valve Seats: Stainless Steel 909HW
- Test Cocks: Lead Free® Cast Copper Silicon Alloy

Approvals
Listed by IAPMO
Listed by SBCCI
‡Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California.

For additional information, request literature ES-LF909 and ES-909.

Reduced Pressure Zone Assemblies

Series LF909 Reduced Pressure Zone Assemblies are designed to provide superior cross-connection control protection of the potable water supply in accordance with national plumbing codes and containment control for water authority requirements. This series can be utilized in a variety of installations, including health hazard cross-connections in plumbing systems or for containment at the service line entrance. The LF909 features Lead Free® construction to comply with Lead Free® installation requirements. Model LF909QT, standardly furnished with full port, resilient seated and Lead Free® cast copper silicon alloy ball valve shutoffs. Sizes ¾" and 1" shutoffs have tee handles.

Models
Suffix:
- QT — Quarter-turn ball valves
- S – Bronze strainer
- HW –Stainless steel check modules for hot and harsh water conditions

*The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.
### Dimensions — Weights

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<td>165</td>
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Subscript ‘S’ = strainer model
Series LF909
Reduced Pressure Zone Assemblies
Sizes: 2½” – 10” (65 – 250mm)

Features
• Replaceable seats
• Stainless steel internal parts
• No special tools required for servicing
• Captured spring check assemblies
• Fused epoxy coated & lined checks
• Industrial strength sensing hose
• Field reversible relief valve
• Air-in/water-out relief valve design provides maximum capacity during emergency conditions

Pressure-Temperature
Temperature Range: 33°F – 110°F (0.5°C – 43°C) continuous
140°F (60°C) intermittent
Maximum Working Pressure: 175psi (12.1 bar)

Materials
• Check Valve Bodies: FDA epoxy coated cast iron
• Seats: Stainless steel
• Trim: Stainless steel
• Relief Valve Body: 2½"-3" Lead Free* cast copper silicon alloy
• Test Cocks: Lead Free* copper silicon alloy

Models
Suffix:
LF – without shutoff valves
NRS – non-rising stem resilient seated gate valves
OSY - UL/FM outside stem & yoke resilient seated gate valves
QT-FDA – FDA epoxy coated quarter-turn ball valves
S-FDA – FDA epoxy coated strainer

Note: The installation of a drain line is recommended. When installing a drain line, an air gap is necessary.

*The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.

For additional information, request literature ES-LF909 and ES-909.

See Flow Charts on p. 84.
Reduced Pressure Zone Assemblies

Dimensions — Weights

Note: Relief valve section is reversible, therefore, can be on either side and is furnished standardly as shown.

**LF909**

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*UL, FM approved backflow preventers must include UL/FM approved OSY gate valves.

**Strainer Dimensions**

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† — Dimension required for screen removal
Series LF009 / 009
Reduced Pressure Zone Assemblies
Sizes: \(\frac{1}{4}" - 3"\) (8 – 80mm)

### Features
- Single access cover and modular check construction for ease of maintenance
- Top entry - all internals immediately accessible
- Captured springs for safe maintenance
- Internal relief valve for reduced installation clearances
- Replaceable seats for economical repair
- Lead Free* cast copper silicon alloy body construction for durability \(\frac{1}{4}" – 2"\)
- Fused epoxy coated cast iron body \(2 \frac{1}{2}"\) and 3"
- Ball valve test cocks — screwdriver slotted \(\frac{1}{4}" – 2"\)
- Large body passages provides low pressure drop
- Compact, space saving design
- No special tools required for servicing

### Pressure-Temperature
**Series LF009: \(\frac{1}{4}" - 2"\) (8 – 50mm)**
Suitable for supply pressure up to 175psi (12 bar). Water temperature: 33°F – 180°F (0.5° – 75°C).

**Series 009: \(\frac{1}{4}" - 2"\) (8 – 50mm)**
Suitable for supply pressure up to 175psi (12 bar). Water temperature: 33°F – 180°F (0.5° – 75°C).

**Sizes: \(2 \frac{1}{2}" and 3" (65 – 80mm)**
are suitable for supply pressures up to 175psi (12.1 bar) and water temperature at 110°F (43°C) continuous, 140°F (60°C) intermittent.

### Materials
**\(\frac{1}{4}" - 2"\) (8 – 50mm)**
- Standardly furnished with NPT body connections.
- Model LF009QT furnished with quarter-turn, full port, resilient seated, Lead Free* cast copper silicon alloy body ball valve shutoffs.

**\(2 \frac{1}{2}" and 3" (65 – 80mm)**
- FDA approved) Epoxy coated cast iron unibody with plastic seats
- Relief valve with stainless steel seat and trim
- Lead Free cast copper silicon alloy body ball valve test cocks

### Approvals
- ASSE, AWWA, CSA, IAPMO
- Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California.
- Approval models QT, PC, NRS, OSY.
- UL Classified \(2 \frac{1}{2}" and 3" with OSY gate valves.
- \(\frac{1}{4}" - 2" without shutoff valves (-LF) (except LF009M3LF)

### Models
**Sizes: \(\frac{1}{4}" - 2"\) (8 – 50mm)**
**Suffix:**
- QT – quarter-turn ball valves
- S – strainer
- LF – without shutoff valves
- PC – internal polymer coating

**Prefix:**
- U – union connections

**Sizes: \(2 \frac{1}{2}" – 3" (65 – 80mm)**
**Suffix:**
- NRS – non-rising stem resilient seated gate valves
- OSY – UL/FM outside stem and yoke resilient seated gate valves
- S-FDA – FDA epoxy coated strainer
- QT-FDA – FDA epoxy coated quarter-turn ball valves
- LF – without shutoff valves

For additional information, request literature ES-LF009 and ES-009.
For Use in Non-Potable Applications

Series 009 Reduced Pressure Zone Assemblies are designed to protect drinking water supplies from dangerous cross-connections in accordance with national plumbing codes and water authority requirements for non-potable service applications such as irrigation, fireline, or industrial processing.

This series features two in-line, independent check valves, captured springs and replaceable check seats with an intermediate relief valve. Its compact modular design facilitates easy maintenance and assembly access. Sizes ¼” – 1” shutoffs have tee handles.

Materials

Size: ¼” – 2” (8 – 50mm)
- Bronze body construction, silicone rubber disc material in the first and second check plus the relief valve. Replaceable polymer check seats for first and second checks. Removable stainless steel relief valve seat. Stainless steel cover bolts.
- Standardly furnished with NPT body connections. For optional bronze union inlet and outlet connections, specify prefix U (¼” – 2”). Series 009QT furnished with quarter turn, full port, resilient seated, bronze ball valve shutoffs.

Approvals

ASSE, AWWA, CSA, IAPMO
Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California.
UL Classified ¾” – 2”
(LF models only except 009M3LF)

Models

Size: ¼” – 2” (8 – 50mm)
Suffix:
QT – quarter-turn ball valves
S – bronze strainer
LF – without shutoff valves
AQT – elbow fittings for 360° rotation
¾” – 2” only
PC – internal Polymer Coating
SH – stainless steel ball valve handles
HC – 2½” inlet/outlet fire hydrant fitting (2” valve)

Prefix:
C – clean and check strainer ¾” – 1” only
U – union connections

Dimensions and Weights

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cont.
## Series LF009 / 009

Reduced Pressure Zone Assemblies

### Dimensions and Weight cont.

#### STRAINER SIZE

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†Clearance for servicing

### LF009 2½” and 3” (65 – 80mm)

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For additional information, request literature ES-LF009 and ES-009.
Series 994BLT, 994HMB
Hydrant Meter Backflow Preventers
Sizes: 994BLT 2½" FNPT x 3" MNPT / 994HMB 2½" – 7NST x 3"

Features
• Built-in support leg is adjustable in the field, no matter the installation. Eliminates assembly from sitting directly in field or from being stacked on wood bracing.
• Dual thread connections, inside 2½” FNPT and outside 3” MNPT threaded on each inlet and outlet, allows the user a variety of connection alternatives.
• Large flow capacity-rated at over 500 gpm with less than 14psi (96.5Kpa) loss per ASSE, USC and AWWA standards for Reduced Pressure Zone Assemblies.
• No field assembly required, eliminates leaks, fouls, and improper assembly.
• Factory assembled and tested.
• Variety of end connection accessories are available to fit on-site requirements.
• Corrosion resistant 304 stainless steel body for long life field dependability.

Portable-lightweight design makes device easily transportable between job sites.

Pressure-Temperature
Temperature Range: 33°F – 110°F (0.5°C – 43°C)
Maximum Working Pressure: 175psi (12.1 bar)

Model 994BLT, 994HMB Portable Hydrant Backflow Preventers are designed to protect drinking water supplies from dangerous cross-connections in accordance with national plumbing codes and water authority requirements for non-potable service applications such as irrigation, fireline, or industrial processing.

For use in protection of water from a fire hydrant or other nonpermanent installation where flow is in one direction only and the possibility of a cross-connection exists. This model can be used where approved by the local authority having jurisdiction on health hazard cross-connections.

Ideal for use with client’s existing hydrant meter hookup.

Materials
• Body and Cover: Stainless Steel
• Check Assemblies: Engineered Plastic and Stainless Steel
• Relief Valve Assembly: Engineered Plastic and Stainless Steel
• Lid Coupler: Di/CI

Options
Inlet modules
• 3” female hydrant thread
• 3” male hydrant thread
• 2½” female hydrant thread
• 2½” male hydrant thread
• 2½” male NPT thread
• Customer specified

Outlet modules
• 3” gate w/female hose thread
• 3” gate w/male hose thread
• 2½” gate w/female hose thread
• 2½” gate w/male hose thread
• 3” gate valve only, 3” INPT thread
• 2½” gate valve only, 2½” FNPT thread
• Customer specified

Foot modules
• Uneven surface saddle (supplied STD with unit)
• Flat surface adapter
• Customer Specified

Approvals
Models 994BLT, 994HMB Portable Hydrant Backflow Preventers meet the design requirements of most national standards. Due to the portability of the unit, there are no national approvals available. Contact the factory for specific approvals on the reduced pressure backflow preventer.

Dimensions — Weights

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<thead>
<tr>
<th>MODEL</th>
<th>WEIGHT</th>
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<tbody>
<tr>
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<tr>
<td>994HMB-GPM</td>
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<tr>
<td>994HMB-CFM</td>
<td>66</td>
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</table>

See Flow Charts on p. 87.
Series LF919 / 919
Reduced Pressure Zone Assemblies

LF919 Sizes: 3⁄4” – 2” (20 – 50mm) / 919 Sizes: ¼” – 2” (8 – 50mm)

Features
- Separate access covers for the check valves and relief valve for ease of maintenance
- Top entry-all check internals easily accessible
- Chloramine resistant rubber elastomers
- Check valve poppet assemblies are fully guided by innovative plastic seat guide
- Replaceable push-in check valve and relief valve seats eliminates threads from the water way
- EZ twist relief valve cover quarter-turn locking joint captures the spring load during repair to facilitate disassembly
- Innovative check valve plastic cover bushing provides trouble free guiding of the check valve poppet
- Bottom mounted relief valve provides reduced installation clearances
- Compact, space saving design
- No special tools required for servicing
- Top mounted test cocks for ease in testing and reduced installation clearances
- Standardly furnished with NPT body connections

Pressure-Temperature
Temperature Range: 33°F – 180°F (0.5°C – 82°C)
Maximum Working Pressure: 175psi (12.1 bar)

LF919
**LEAD FREE**
Series LF919 Reduced Pressure Zone Backflow Assemblies are designed to protect potable water supplies in accordance with national plumbing codes and water authority requirements. This series can be used in a variety of installations, including the prevention of health hazard cross-connections or for containment at the service line entrance.

This series features two poppet style check valves, replaceable check seats, with an intermediate relief valve. Its compact modular design facilitates easy maintenance and assembly access. Sizes ¾” – 1” (6 – 25mm) shutoffs have tee handles. The LF919 features Lead Free construction to comply with Lead Free installation requirements.

Materials
- Body: Lead Free Cast Copper Silicon Alloy
- Discs: Silicone rubber
- Check Seats: Replaceable polymer
- Cover Bolts: Stainless steel

Models
- Suffix: QT – quarter-turn ball valves
- S – bronze strainer

Approvals
Approved by the Foundation for Cross-Connection Control and Research at The University of Southern California.

*The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.

919
For Use in Non-Potable Applications
Series 919 Reduced Pressure Zone Backflow Assemblies are designed to protect drinking water supplies from dangerous cross-connections in accordance with national plumbing codes and water authority requirements for non-potable service applications such as irrigation, fireline, or industrial processing. Sizes ¼” – 1” shutoffs have tee handles.

Materials
- Body: Bronze
- Discs: Silicone rubber
- Check Seats: Replaceable polymer
- Cover Bolts: Stainless steel

Models
- Suffix: QT – quarter-turn ball valves
- S – bronze strainer
- LF – without shutoff valves
- AQT – elbow fitting for 360° rotation
- ZQT – inlet & outlet flow up

Approvals
Approved by the Foundation for Cross-Connection Control and Research at The University of Southern California (for sizes ¾” - 2”)

Prefix:
- U – union connections

For additional information, request literature ES-LF919 and ES-919.

See Flow Charts on p. 85.
### Dimensions and Weights

#### LF919QT, LF919QT-S / 919QT, 919QT-S

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#### U919QT, U919QT-S

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#### 919AQT, 919ZQT

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Series LF957RPDA, LF957NRPDA, LF957ZRPDA / 957RPDA, 957NRPDA, 957ZRPDA
Reduced Pressure Detector Assemblies

Sizes: 2½" – 10" (65 – 250mm)

Features
- Extremely compact design
- 70% lighter than traditional designs
- 304 (Schedule 40) stainless steel housing & sleeve
- Groove fittings allow integral pipeline adjustment
- Patented torsion spring check provides lowest pressure loss
- Unmatched ease of serviceability
- Replaceable check disc rubber
- Available with grooved butterfly valve shut-offs
- Bottom mounted cast stainless steel relief valve
- Metered bypass to detect leakage or theft of water from the fire sprinkler system

Pressure-Temperature
Temperature Range: 33°F – 110°F
(0.5°C – 43°C)
Maximum Working Pressure: 175psi
(12.1 bar)

Models
Suffix:
OSY – UL/FM outside stem and yoke, resilient seated gate valves
BFG – UL/FM grooved gear operated butterfly valves with tamper switch
*OSY FxG – Flanged inlet gate connection and grooved outlet gate connection
*OSY GxF – Grooved inlet gate connection and flanged outlet gate connection
*OSY GxG – Grooved inlet gate connection and grooved outlet gate connection

Available with grooved NRS gate valves - consult factory
Post indicator plate and operating nut available - consult factory* 
*Consult factory for dimensions

Materials
- Housing & Sleeve: 304 (Schedule 40) Stainless Steel
- Elastomers: EPDM, Silicone and Buna ‘N’
- Torsion Spring Checks: Noryl®, Stainless Steel
- Check Discs: Reversible Silicone or EPDM
- Test Cocks: Bronze Body Nickel Plated
- Pins & Fasteners: 300 Series Stainless Steel
- Springs: Stainless Steel
- Bypass: Lead Free* materials

Approvals

957RPDA, 957NRPDA, 957ZRPDA
For Use in Non-Potable Applications
Series 957RPDA, 957NRPDA, 957ZRPDA Reduced Pressure Detector Assemblies are designed to protect drinking water supplies from dangerous cross-connections in accordance with national plumbing codes and water authority requirements for non-potable service applications such as irrigation, fireline, or industrial processing. The 957RPDA, 957NRPDA, 957ZRPDA are normally used in health hazard applications to protect against back-siphonage and backpressure. The Watts 957RPDA, 957NRPDA, 957ZRPDA are used to monitor unauthorized use of water from the fire protection system.

Materials
- Housing & Sleeve: 304 (Schedule 40) Stainless Steel
- Elastomers: EPDM, Silicone and Buna ‘N’
- Torsion Spring Checks: Noryl®, Stainless Steel
- Check Discs: Reversible Silicone or EPDM
- Test Cocks: Bronze Body Nickel Plated
- Pins & Fasteners: 300 Series Stainless Steel
- Springs: Stainless Steel

Approvals

*The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.
## Reduced Pressure Detector Assemblies

### A-D (open) C

### Dimensions and Weights

**LF957RPDAOSY / 957RPDAOSY**

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**LF957RPDABFG / 957RPDABFG**

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<td>G</td>
<td>H</td>
</tr>
<tr>
<td>in.</td>
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<td>in.</td>
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<td>6</td>
<td>46½</td>
<td>1181</td>
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</table>
Series 994RPDA
Reduced Pressure Detector Assemblies

Sizes: 2½" – 6" (65 – 150mm)

Features
- Stainless steel construction provides long term corrosion resistance and maximum strength
- Stainless steel body is half the weight of competitive designs reducing installation and shipping costs
- Short end to end dimensions makes retrofit easy
- Bottom mounted relief valve reduces clearance requirements when installed against an outside wall
- Torsion spring check valves provides maximum flow at low pressure drop
- Thermoplastic & stainless steel check valves for trouble-free operation
- No special tools required for servicing
- Compact construction allows for smaller enclosures
- Stainless steel relief valve features a balanced rolling diaphragm to eliminate sliding seals and lower maintenance costs
- Detects underground leaks and unauthorized water use.
- GPM or CFM meter available

Pressure-Temperature
Temperature Range: 33°F – 110°F (0.5°C – 43°C)
Maximum Working Pressure: 175psi (12.1 bar)

Materials
- All internal metal parts: 300 Series stainless steel
- Main valve body: 300 Series stainless steel
- Check assembly: Noryl®
- Flange dimension in accordance with AWWA Class D

994RPDA
Series 994RPDA Reduced Pressure Detector Assemblies are designed to protect drinking water supplies from dangerous cross-connections in accordance with national plumbing codes and water authority requirements for non-potable service applications such as irrigation, fireline, or industrial processing. This series is usually used in health hazard applications in accordance with local governing water utility code.

Models
Suffix:
LF – without shutoff valves
OSY – UL/FM outside stem and yoke resilient seated gate valves
*OSY FxG – flanged inlet gate connection and grooved outlet gate connection
*OSY GxF – grooved inlet gate connection and flanged outlet gate connection
*OSY GxG – grooved inlet gate connection and grooved outlet gate connection
CFM – cubic feet per minute meter
GPM – gallons per minute meter

Approvals
Available with grooved NRS gate valves - consult factory*
Post indicator plate and operating nut available - consult factory*
*Consult factory for dimensions
Note: The installation of a drain line is recommended. When installing a drain line, an air gap is necessary.

<table>
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<th>L</th>
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<td>11½</td>
<td>292</td>
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</table>

For additional information, request literature ES-994RPDA.

See Flow Charts on p. 87.
Series 909RPDA Reduced Pressure Detector Assemblies

Sizes: 2½" – 10" (65 – 250mm)

Features
- Body construction fused epoxy coated cast iron
- Replaceable bronze seats
- Maximum flow at low pressure drop
- Compact for economy combined with performance
- Design simplicity for easy maintenance
- Furnished with ½” x ¾” (16 x 19mm) meter
- Air-in/Water-out relief valve design provides maximum capacity during emergency conditions.
- No special tools required

Pressure-Temperature
Temperature Range: 33°F – 140°F (0.5°C – 60°C)
Maximum Working Pressure: 175psi (12.1 bar)

Materials
- Discs: Rubber
- Body: Epoxy coated cast iron
- Seat and Disc Holder: Bronze
- Trim: Stainless steel
- Test Cocks: Bronze

Notes:
- Piping for 3” 909 will start from #1 gate valve and connect at #2 check valve.

Models
Suffix:
- OSY – UL/FM outside stem and yoke resilient seated gate valves
- CFM – cubic feet per minute meter
- GPM – gallons per minute meter
- LF – less shutoff valves

Approvals
Approved by the foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California.

Note: Piping for 3” 909 will start from #1 gate valve and connect at #2 check valve.

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<th>D1</th>
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For additional information, request literature ES-909RPDA.
Series LFN9
Dual Check Vacuum Breakers
Sizes: ¼" – ⅜" (6 – 10mm)

Features
• Exclusive "Non-removable" design eliminates the need for break-away set screw
• Center-guided check valves for repeatable seating
• In-line field testable - no special gauges required
• Manually drainable for freeze protection
• Durable brass body with stainless steel checks for corrosion resistance
• Streamlined design for low pressure drop
• Can be installed vertically or horizontally
• Positive backsiphonage protection

Pressure-Temperature
Temperature Range: 33°F – 180°F
(0.5°C – 82°C)
Maximum Working Pressure: 150psi (8.6 bar)

LFN9
Series LFN9 Dual Check Vacuum Breakers are used for continuous pressure, non-health hazard, applications. These valves have NPT female inlet and outlet connection and Lead Free* brass body construction. The LFN9 features Lead Free* construction to comply with Lead Free* installation requirements.

Models
LFN9C – chrome body

*The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.

Dimensions and Weights

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<thead>
<tr>
<th>MODEL</th>
<th>SIZE</th>
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<th>B</th>
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<td>60</td>
<td>½</td>
<td>1</td>
</tr>
<tr>
<td>LFN9</td>
<td>¼</td>
<td>2½</td>
<td>60</td>
<td>⅛</td>
<td>1</td>
</tr>
<tr>
<td>LFN9</td>
<td>⅜</td>
<td>2½</td>
<td>60</td>
<td>⅛</td>
<td>1</td>
</tr>
</tbody>
</table>

For additional information, request literature ES-LF9.

See Flow Charts on p. 76.
Series 9BD
Backflow Preventer for Vending Machine Water Supply Lines
Sizes: ¼” – ¾” (6 – 10mm)

Features
- Available in Flare or NPTM end connections
- Stainless steel body and parts
- Instant check valve response
- Minimum pressure drop
- Triple check protection of the water supply

Pressure-Temperature
Temperature Range: 33°F – 140°F
(0.5°C – 60°C)
Maximum Working Pressure: 150psi
(10.34 bar)
All stainless steel body and heavy duty rubber parts assure the longest and most dependable operating life. All rubber compounds comply with FDA food additive regulations.

9BD
LEAD FREE
Model 9BD backflow preventer for vending machine water supply lines prevents backflow of carbon dioxide gas and carbonated water into the water supply system to vending machines, thus eliminating the hazardous reaction of carbon dioxide with copper tubing.

Approvals
Approved by independent testing, completing over 2,000,000 successful pump cycles with positive backflow protection and trouble-free performance. All rubber compounds comply with FDA food additive regulations.

*The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.

Dimensions and Weights

<table>
<thead>
<tr>
<th>SIZE</th>
<th>DIMENSIONS</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in.</td>
<td>in.</td>
</tr>
<tr>
<td>¼</td>
<td>2½</td>
<td>70</td>
</tr>
<tr>
<td>¾</td>
<td>2½</td>
<td>70</td>
</tr>
</tbody>
</table>

For additional information, request literature ES-9BD.

See Flow Charts on p. 75.
Series LFN9-CD
Dual Check Vacuum Breakers
Sizes: ¼" (20mm)

Features
- Exclusive “Non-removable” design eliminates the need for break-away set screw
- Center-guided check valves for repeatable seating
- In-line field testable - no special gauges required
- Manually drainable for freeze protection
- Durable brass body with stainless steel checks for corrosion resistance
- Streamlined design for low pressure drop
- Can be installed vertically or horizontally
- Positive backsiphonage protection

Pressure-Temperature
Maximum Pressure: 125psi (8.6 bars)
Maximum Temperature: 180°F (82°C)

LFN9-CD
LEAD FREE The LFN9-CD is designed to prevent high hazard backsiphonage backflow and low-head backpressure (10ft. or less) from contaminating the potable water supply. The LFN9-CD is ideally suited to prevent backflow associated with hose connections and may be screwed directly to the sill cock, yard hydrant or wall hydrant. Typical installations include service sinks, chemical dispensers, sill cocks and frost proof hydrants. Watts LFN9-CD features include two independently operating rubber and stainless steel check valves with an atmospheric vent located between the check valves. In the event of fouling of the downstream check valve, leakage would be vented to atmosphere, thereby, providing a visual indication of failure. The integrity of the check valves can also be verified by performing the field test procedure included with the LFN9-CD. The LFN9-CD features Lead Free construction to comply with the Lead Free installation requirements.

Models
Inlet Connection: ¼" (20mm) standard female hose thread
Outlet Connection: ½" (20mm) standard male hose thread

Approvals

Dimensions and Weights
Weight = .56 lbs. (.25 kg.)
Series 9D
Dual Check Valve with Intermediate Atmospheric Vent

Sizes: ½" M3 (15mm), ¾" M2 (20mm)

Features
- True line-sized construction allows the check modules to open further allowing dirt and debris to pass more freely reducing check fouling
- Stainless steel internal parts
- Maximum flow at low pressure drop
- Furnished with union connections to facilitate removal and replacement for maintenance
- Compact for economy combined with performance
- Design simplicity for easy maintenance
- Can be installed vertically or horizontally

Pressure-Temperature
Temperature Range: 33°F – 250°F (0.5°C – 121°C)
Maximum Working Pressure: 175 psi (12.1 bar)
Maximum Required Pressure: 25 psi (172 kPa)

Materials
- Forged brass body construction
- Stainless steel internal parts
- Durable, tight seating rubber check valve assemblies

Options
Suffix:
S – for ½" (15mm) union end solder connections
SC – for satin chrome finish
LU – less union

9D
Series 9D is designed to protect drinking water supplies from dangerous cross-connections in accordance with national plumbing codes and water authority requirements for non-potable service applications for smaller supply lines such as laboratory equipment, processing tanks, sterilizers, and dairy equipment. It is ideally suited for boiler feed lines to prevent backflow when supply pressure falls below system pressure.

Series 9D is suitable for use on hot or cold water and can be used under continuous pressure. It features a primary check valve utilizing a rubber disc seating against a mating rubber part to ensure tight closing. A secondary check valve utilizes a rubber disc-to-metal seating. In the event of fouling of the downstream check valve, leakage would be vented to atmosphere through the vent port thereby safeguarding the potable water system.

Construction is brass body with stainless steel working parts, integral strainer and durable rubber discs. Female union inlet and outlet connections. Sizes ½" (15mm) and ¾" (20mm). Drain is ½" (15mm) thread connection.

Materials
- Forged brass body construction
- Stainless steel internal parts
- Durable, tight seating rubber check valve assemblies

Options
Suffix:
S – for ½" (15mm) union end solder connections
SC – for satin chrome finish
LU – less union

Approvals
N.Y.C. BSA 104-75-SM
Tested and approved Conformance with Standard 1012 of the American Society of Sanitary Engineers and by all principal cities, states and areas having these requirements.

IMPORTANT
This valve should only be used and properly installed so that spillage of water could not cause damage. To avoid water damage due to valve operation, a drain pipe must be installed. It should terminate approximate 12" (305mm) above a floor drain or through an air gap piped to a floor drain, or other suitable place of disposal. Under no circumstances, should the vent opening or drain line be plugged.

<table>
<thead>
<tr>
<th>MODEL</th>
<th>SIZE</th>
<th>A</th>
<th>B</th>
<th>E</th>
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<th>WEIGHT</th>
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<tr>
<td></td>
<td></td>
<td>in.</td>
<td>in.</td>
<td>in.</td>
<td>in.</td>
<td>lbs.</td>
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<tr>
<td>9DM3</td>
<td>½</td>
<td>4</td>
<td>½</td>
<td>125</td>
<td>2</td>
<td>65</td>
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<tr>
<td>9DM3-S</td>
<td>½</td>
<td>4</td>
<td>¾</td>
<td>111</td>
<td>2</td>
<td>65</td>
</tr>
<tr>
<td>9DM2</td>
<td>¾</td>
<td>4</td>
<td>½</td>
<td>114</td>
<td>2</td>
<td>65</td>
</tr>
<tr>
<td>9DM2</td>
<td>¾</td>
<td>4</td>
<td>1½</td>
<td>122</td>
<td>2</td>
<td>65</td>
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</tbody>
</table>

For additional information, request literature ES-9D.

See Flow Charts on p. 76.
Series 912HP
High Pressure Hose Drop Backflow Preventers
Sizes: 3⁄4", 1" (20, 25mm)

Features
• All bronze ball valve and brass backflow preventer
• Designed for maximum working pressure of 400psi (28 bars)
• Female national pipe thread inlet connection and male national pipe thread outlet connection
• Ball valve design includes reinforced/enhanced PTFE seats and electroless nickel plated brass ball, blow-out proof pressure retaining stem, and low profile oval handle.
• In the event of fouling of the downstream check valve, leakage would be vented to atmosphere thereby providing a visual indication of failure of the check assembly.
• Can be installed vertically (flow up or flow down) or horizontally.
• Integral stainless steel screen protects the check assemblies from fouling due to dirt and debris.

Pressure-Temperature
Suitable for supply pressures up to 400psi (27.5 bars) and temperatures up to 180°F (82°C). May also be used at temperatures up to 200°F (93°C) and water supply pressures up to 250psi (17 bars).

Materials
• Body: Brass
• Internal Metal Parts: Stainless Steel

912HP
Series 912HP High Pressure Hose Drop Backflow Preventers are specifically made for isolation protection on high pressure plumbing supply lines, such as high pressure hose drops which are used for the washdown of equipment and facilities. Ideally suited for food processing plants. Series 912HP are designed to protect drinking water supplies from dangerous cross-connections in accordance with National plumbing codes and water authority requirements for non-potable service applications.

Dimensions and Weights

912HP

<table>
<thead>
<tr>
<th>SIZE</th>
<th>A</th>
<th>A1</th>
<th>C</th>
<th>D</th>
<th>D1</th>
<th>WEIGHT</th>
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</thead>
<tbody>
<tr>
<td>in.</td>
<td>in.</td>
<td>mm</td>
<td>in.</td>
<td>mm</td>
<td>in.</td>
<td>lbs.</td>
</tr>
<tr>
<td>3⁄4</td>
<td>91⁄4</td>
<td>233</td>
<td>81⁄4</td>
<td>211</td>
<td>1</td>
<td>25</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>25</td>
<td>17⁄8</td>
<td>38</td>
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<td>1</td>
<td>10</td>
<td>254</td>
<td>91⁄8</td>
<td>236</td>
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<td>25</td>
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<td></td>
<td>1</td>
<td>25</td>
<td>17⁄8</td>
<td>38</td>
</tr>
</tbody>
</table>

For additional information, request literature ES-912HP.
Series SD2 / SD3
Dual Check Valves
Sizes: ¼", ⅜" (6 and 10mm)

Features
• Certified to ANSI/NSF Standard 18, Manual Food and Beverage Dispensing Equipment
• ASSE 1032 Approved Dual Check Valve
• 316 stainless steel body for corrosion resistance
• All rubber compounds comply with FDA food additive regulations
• Streamlined body design minimizes pressure loss and cavitation
• A wide variety of custom end connections are available
• Endurance tested for more than 500,000 pumping cycle
• Shock tested for more than 100,000 pumping cycle

Pressure-Temperature
SD2
Maximum Working Pressure: 200psi (13.8 bar)
Maximum Required Temp.: 110°F (43°C)
SD3
Maximum Working Pressure: 150psi (10 bar)
Maximum Required Temp.: 130°F (54°C)

SD2
The Watts SD2 is a dual check designed for the protection of the water supply from carbon dioxide gas and carbonated water. These substances can flow from post-mix beverage systems and are very acidic. If the acidic water comes in contact with copper tubing or copper pipe, it will cause the leaching of copper salts into the water supply. The dissolved copper if ingested can cause nausea, abdominal pain, and in some cases vomiting. The SD-2 prevents the reverse flow of potentially contaminated water into the potable water supply due to back pressure backflow and is used for continuous or intermittent pressure conditions. The Watts SD-2 is recommended for use on Post-Mix Carbonated Beverage Equipment and dispensing equipment for tea and coffee.

Models
¼" SD2-MN: Male NPT
½" SD2-MN: Male NPT
¼" SD2-FN: Female NPT
½" SD2-FN: Female NPT
¼" SD2-MF: SAE Male Flare
½" SD2-MF: SAE Male Flare
¼" SD2-FF: SAE Female Flare
½" SD2-FF: SAE Female Flare

SD3
Series SD3 is a dual check with atmospheric port designed for the protection of the water supply from carbon dioxide gas and carbonated water. These substances can flow from post-mix beverage systems and are very acidic. If the acidic water comes in contact with copper tubing or copper pipe, it will cause the leaching of copper salts into the water supply. The dissolved copper if ingested can cause nausea, abdominal pain, and in some cases vomiting. The SD3 prevents the reverse flow of potentially contaminated water into the potable water supply due to back pressure backflow and is used for continuous or intermittent pressure conditions. The SD3 atmospheric vent provides a visual indication of failure in the event that the downstream check fails and system backpressure exceeds the supply pressure.

The Watts SD3 is recommended for use on Post-Mix Carbonated Beverage Equipment and dispensing equipment for tea and coffee.

Materials
• Wye pattern strainer model for water supply installations

SD3
Notes: The above connections are available as outlet connections only. Strainer inlet connection is always Female NPT.

Models
¼" SD3-MN: Male NPT
½" SD3-MN: Male NPT
¼" SD3-FN: Female NPT
½" SD3-FN: Female NPT
¼" SD3-MF: SAE Male Flare
½" SD3-MF: SAE Male Flare, less strainer

Approvals
*The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.
## Dimensions and Weights

### SD2

<table>
<thead>
<tr>
<th>Valve Size</th>
<th>Assembly</th>
<th>Dimensions</th>
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<tbody>
<tr>
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<td>A</td>
</tr>
<tr>
<td>in</td>
<td>Part #</td>
<td>Order#</td>
</tr>
<tr>
<td>¼&quot;</td>
<td>SD2-MN</td>
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</tr>
<tr>
<td>¼&quot;</td>
<td>SD2-MF</td>
<td>0061651</td>
</tr>
<tr>
<td>⅜&quot;</td>
<td>SD2-MN</td>
<td>0061654</td>
</tr>
<tr>
<td>⅜&quot;</td>
<td>SD2-MF</td>
<td>0061655</td>
</tr>
<tr>
<td>¼&quot;</td>
<td>SD2-FN</td>
<td>0061662</td>
</tr>
<tr>
<td>¼&quot;</td>
<td>SD2-FF</td>
<td>0061660</td>
</tr>
<tr>
<td>⅜&quot;</td>
<td>SD2-FN</td>
<td>0061663</td>
</tr>
<tr>
<td>⅜&quot;</td>
<td>SD2-FF</td>
<td>0061661</td>
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</tbody>
</table>

†For use on post pumping installations only.

### SD3

<table>
<thead>
<tr>
<th>SIZE</th>
<th>PART # ASSEMBLY</th>
<th>ORDER CODE</th>
<th>Dimensions</th>
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</thead>
<tbody>
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<td></td>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>in</td>
<td></td>
<td>in. mm</td>
<td>in. mm</td>
</tr>
<tr>
<td>¼&quot;</td>
<td>SD3-MN</td>
<td>0061652</td>
<td>4 1/2</td>
</tr>
<tr>
<td>¼&quot;</td>
<td>SD3-MF</td>
<td>0061653</td>
<td>4 1/2</td>
</tr>
<tr>
<td>⅜&quot;</td>
<td>SD3-MN</td>
<td>0061656</td>
<td>4 1/2</td>
</tr>
<tr>
<td>⅜&quot;</td>
<td>SD3-MF</td>
<td>0061657</td>
<td>4 1/2</td>
</tr>
<tr>
<td>¼&quot;</td>
<td>SD3-FN</td>
<td>0061666</td>
<td>4 1/2</td>
</tr>
<tr>
<td>⅜&quot;</td>
<td>SD3-FN</td>
<td>0061667</td>
<td>4 1/2</td>
</tr>
<tr>
<td>7/8&quot;</td>
<td>SD3-MF-LS</td>
<td>0061671</td>
<td>2 3/16</td>
</tr>
</tbody>
</table>

†For use on post pumping installations only.

For additional information, request literature ES-SD2 and ES-SD3.

See Flow Charts on p. 88.
Series LF7
Dual Check Valves
Sizes: ¼", 1¼" (10, 32mm)

Features
• Can be installed vertically or horizontally
• Available with combination of inlet/outlet sizes, types or thread and end connection including retrofit compression fittings and hose connections
• Can be installed in many piping configurations and with a wide range of meter horns, copper setters and meter boxes

Pressure-Temperature
Temperature Range: 33°F – 180°F (0.5°C – 82°C) continuous
Maximum Working Pressure: 150psi (10.3 bar)

LF7
Series LF7 Dual Check Valves are designed for non-health hazard residential water system containment and continuous pressure applications, such as the drinking water supply service entrance or individual outlets. Series LF7 uses two compact replaceable check modules and is installed immediately downstream of the residential water meter. The LF7 features Lead Free* construction to comply with Lead Free* installation requirements.

Materials
• Body: LF7 Lead Free* cast copper silicon alloy
  LF7C chrome-nickel plated Lead Free* cast copper silicon alloy
• Check Modules: Durable plastic
• Discs: Silicone
• Seals: Buna-N
• Springs: Stainless steel

Approvals
*The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.

Series 7: Inlet/Outlet Connections – Types available, ordering code, sizes available.

<table>
<thead>
<tr>
<th>CONNECTION TYPE</th>
<th>CONNECTION CODE</th>
<th>SIZES AVAILABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Pipe Thread Female</td>
<td>2</td>
<td>¼, 1¼, 10, 32</td>
</tr>
<tr>
<td>National Pipe Thread Male</td>
<td>3</td>
<td>1¼, 32</td>
</tr>
<tr>
<td>Meter Thread Female*</td>
<td>4</td>
<td>1¼, 32</td>
</tr>
<tr>
<td>Female Meter Thread (Swivel)</td>
<td>10</td>
<td>1¼, 32</td>
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</table>

Dimensions and Weights

<table>
<thead>
<tr>
<th>MODEL</th>
<th>SIZE</th>
<th>DIMENSIONS</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in.</td>
<td>in.</td>
<td>in.</td>
</tr>
<tr>
<td>LF7</td>
<td>¼</td>
<td>2¼</td>
<td>1¼</td>
</tr>
<tr>
<td>LF7C</td>
<td>¼</td>
<td>2¼</td>
<td>1¼</td>
</tr>
<tr>
<td>LF7 10-U2</td>
<td>1¼</td>
<td>4½/16</td>
<td>1⅝</td>
</tr>
<tr>
<td>LF7 10-U3</td>
<td>1¼</td>
<td>5¼</td>
<td>2⅝</td>
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<tr>
<td>LF7 4-U2</td>
<td>1¼</td>
<td>4½/16</td>
<td>2⅝</td>
</tr>
</tbody>
</table>

For additional information, request literature ES-LF7.
Series LF7R
Dual Check Valves
Sizes: ½" – 1" (15 – 25mm)

Features
- Can be installed vertically or horizontally
- Available with combination of inlet/outlet sizes, types or thread and end connection

Pressure-Temperature
Temperature Range: 33°F – 180°F (0.5°C – 82°C) continuous
Maximum Working Pressure: 175psi (12.1 bar)

LF7R

LEAD FREE* Series LF7R Dual Check Valves are designed for non-health hazard residential water system containment and continuous pressure applications, such as the drinking water supply service entrance or individual outlets. Series LF7R uses two compact replaceable check modules and is installed immediately downstream of the residential water meter. The LF7R features Lead Free* construction to comply with Lead Free* installation requirements.

Materials
- Body: Lead Free* copper silicon alloy
- Check Modules: Engineered plastic
- Discs: Santoprene
- Seals: EPDM
- Springs: Stainless steel

Approvals
*The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.

Series LF7R: Inlet/Outlet Connections – Types available, ordering code, sizes available.

<table>
<thead>
<tr>
<th>CONNECTION TYPE</th>
<th>CONNECTION CODE</th>
<th>SIZES AVAILABLE</th>
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</thead>
<tbody>
<tr>
<td>National Pipe Thread Female</td>
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<td>½, ¾, 1, 15, 20, 25</td>
</tr>
<tr>
<td>National Pipe Thread Male</td>
<td>3</td>
<td>½, ¾, 1, 15, 20, 25</td>
</tr>
<tr>
<td>Female Meter Thread (Swivel)</td>
<td>10</td>
<td>¾, 1, 20, 25</td>
</tr>
</tbody>
</table>

Union (U) Connections available on all inlet/outlet types and sizes.

Dimensions and Weights

<table>
<thead>
<tr>
<th>MODEL</th>
<th>SIZE</th>
<th>DIMENSIONS</th>
<th>WEIGHT</th>
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<tr>
<td></td>
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<td>mm</td>
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<tr>
<td>LF7RU2-U2-U2</td>
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<td>½ ½</td>
<td>2 48</td>
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</tr>
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<tr>
<td>LF7RU10-U3</td>
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<td>1 1</td>
<td>122 48</td>
</tr>
</tbody>
</table>
**Series LF07S**
Dual Check Valves
Sizes: 1" – 2" (25 – 50mm)

**Pressure-Temperature**
1½" & 2"
Max. Working Pressure: 175psi (12.1 bar)
160psi (11.03 bar)
1" & 1¼"
Min. Working Pressure: 10psi (0.69 bar)
Hydrostatic Test Press: 700psi (48.3 bar)
1½" & 2"
Temperature Range: 33°C to 140°F (0.5°C to 60°C)
1¼" & 2"
33°F to 180°F (0.5°C to 82°C)

**LF07S**
The Watts Model LF07S Residential Fire Sprinkler Dual Check Backflow Preventer is designed for non-health hazard [i.e., pollutant] application on potable fire sprinkler service connections to protect against possible backsiphonage conditions that could inadvertently drain the fire sprinkler system.

**Materials**
- Body: Lead Free* Brass
- Elastomers: Silicone
- O-Rings: EPDM or Buna N
- Check Modules: Engineered Plastics
- Springs: Stainless Steel

**Approvals**
Please consult Local Governing Code for proper installation and agency code requirements,

Sizes Applicable: 1" Only

Sizes Applicable: 1", 1½" & 2" Only

All Sizes Applicable

ANSI/NFPA 13, 14, 15, 20, 22, and 24 Compliant - All Sizes Applicable

End Connections – National Pipe Thread Taper ANSI B1.20.1

*The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.

**Dimensions and Weights**

<table>
<thead>
<tr>
<th>SIZE</th>
<th>DIMENSIONS</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>in.</td>
</tr>
<tr>
<td>1</td>
<td>6¼</td>
<td>171</td>
</tr>
<tr>
<td>1¼</td>
<td>6¾</td>
<td>171</td>
</tr>
<tr>
<td>1½</td>
<td>6¼</td>
<td>171</td>
</tr>
<tr>
<td>2</td>
<td>6\½</td>
<td>176</td>
</tr>
</tbody>
</table>

For additional information, request literature ES-LF07S.
Series LF8 / 8
Hose Connection Vacuum Breakers

Sizes: ¾”

Features
- Brass body (all models except 8P)
- Stainless steel working parts for longevity
- Durable rubber diaphragm and disc for consistent positive seating

Pressure-Temperature
Maximum Working Pressure: 125psi (8.6 bar)
Maximum Temperature: 180°F (82°C)

Materials
- Copper silicon alloy body (all models except 8P, which is plastic)

Models
 LF8A – Furnished with exclusive “Non-Removable” feature and standardly equipped to allow sill cock to be drained.
Note: Device should only be installed on approved sill cocks containing at least four full threads. Non-removable once installed.
 LF8 – Similar to the 8A except it is furnished without the “Non-Removable” or draining feature. Secured with Allen head set screw.
 LF8B – Furnished with break-away set screw to provide a tamper-resistant installation. Standardly equipped to allow sill cock to be drained.
 LFNF8 – Especially made for wall and yard hydrants. Permits manual draining for freezing conditions.
 8P – Furnished with exclusive patented “Non-Removable” feature. Standardly equipped to allow sill cock to be drained. Constructed of durable, corrosion-resistant, reinforced thermoplastic. Tamper-proof feature.
 LF8AC, LF8C, or LF8C – Same as above but furnished with chrome finish.
 LF8FR – With freeze relief feature.

LF8
Series LF8 is a line of unique vacuum breakers specially made to permit the attachment of portable hoses to hose thread faucets. Designed to prevent the flow of contaminated water back into the potable water supply, these devices require no plumbing changes and screw directly onto sill cocks. The Series LF8 features Lead Free construction to comply with Lead Free installation requirements. Series LF8 can be used on a wide variety of installations, such as service sinks, swimming pools, photo developing tanks, laundry tubs, wash racks, dairy barns, marinas and general outside gardening uses.

Materials
- Copper silicon alloy body (all models except 8P, which is plastic)

Approvals
- 1011 B64.2
Series LF8, LF8A, LF8B, 8P, LF8FR and LFNF8 are listed by IAPMO.

*The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.
Series 8 is a line of unique vacuum breakers specially made to permit the attachment of portable hoses to hose thread faucets. Designed to prevent the flow of contaminated water back into the potable water supply, these devices require no plumbing changes, and screw directly onto a sill cock.

For Use in Non-Potable Applications

Series 8 is designed to protect drinking water supplies from dangerous cross-connections in accordance with national plumbing codes and water authority requirements for non-potable service applications such as service sinks, swimming pools, photo developing tanks, laundry tubs, wash racks, dairy barns, marinas and general outside gardening uses.

Models

8A – Furnished with exclusive “Non-Removable” feature and standardly equipped to allow sill cock to be drained.

Note: Device should only be installed on approved sill cocks containing at least four full threads. Non-removable once installed.

8 – Similar to the 8A except it is furnished without the “Non-Removable” or draining feature. Secured with Allen head set screw.

8B – Furnished with break-away set screw to provide a tamper-resistant installation. Standardly equipped to allow sill cock to be drained.

NF8 – Especially made for wall and yard hydrants. Permits manual draining for freezing conditions.

8AC, 8C, 8BC or NF8C – Same as above but furnished with chrome finish.

8FR – With freeze relief feature. Protects the 8FR from freeze damage.

Approvals

Series 8, 8A, 8B, 8FR and NF8 are listed by IAPMO.

Dimensions and Weights

<table>
<thead>
<tr>
<th>MODEL</th>
<th>SIZE</th>
<th>DIMENSIONS</th>
<th>WEIGHT</th>
</tr>
</thead>
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<td>LF8, LF8C, LF8B, LF8BC</td>
<td>8, 8C, 8B, 8BC</td>
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<td>4.0 113.4</td>
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<tr>
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<td>8A, 8AC</td>
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<td>¾ HT</td>
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<td>¾ HT 1¼ 38 1¼ 38</td>
<td>7.0 200.0</td>
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</table>
Series LF800M4QT / 800M4QT
Pressure Vacuum Breakers
Sizes: ½” – 2” (15 – 50mm)

Features
• Replaceable plastic seat
• Easy maintenance of internal parts
• Acetal bonnet acts as “freeze plug” to prevent body damage
• O-ring bonnet seal for less possibility of fouling
• Silicone seat disc for durability
• Test cocks positioned for easy testing and winterization
• Compact space saving design
• Standardly equipped with tee handle quarter turn ball valve shutoffs ½” – 1”. The 1¼” - 2” feature lever handles.
• No special tools required for servicing

Pressure-Temperature
Temperature Range: 33°F – 140°F
(0.5°C – 60°C)
Maximum Working Pressure: 150psi (10.3 bar)

LF800M4QT
LEAD FREE Series LF800M4QT is designed to prevent backsiphonage of contaminated water into a potable water supply. The valve is ideally suitable for irrigation systems, industrial process water systems and other continuous pressure piping system applications where the water enters the equipment at or below its flood rim. The disc float and check valve are suitable for temperatures up to 140°F. The resilient sealing float o-ring and seal check disc are silicone rubber which is resistant to heat, shock and chemical attack. The LF800M4QT features Lead Free construction to comply with Lead Free installation requirements.

Materials
• Springs: Stainless Steel
• Bonnet: Celcon®
• Vent Disc: Silicone Rubber
• Disc Holder Float: Polypropylene
• Check Valve Disc: Silicone Rubber
• Check Valve Seat: Noryl® Plastic
• Body: Lead Free* Cast Copper Silicon Alloy

Approvals
Approved by the foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California. (½” – 2” LF800M4QT only)
CSA (½” – 2” LF800M4QT only)

*The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.

800M4QT
For Use in Non-Potable Applications
Series 800M4QT are designed to protect drinking water supplies from dangerous cross-connections in accordance with national plumbing codes and water authority requirements for non-potable service applications such as irrigation, fireline, or industrial processing. The disc float and check valve are suitable for temperatures up to 140°F. The resilient sealing float o-ring and seal check disc are silicone rubber which is resistant to heat, shock and chemical attack.

Materials
• Springs: Stainless Steel
• Bonnet: Celcon®
• Vent Disc: Silicone Rubber
• Disc Holder Float: Polypropylene
• Check Valve Disc: Silicone Rubber
• Check Valve Seat: Noryl® Plastic
• Body: Bronze

Approvals
Approved by the foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California. (½” – 2” 800M4QT only)
CSA (½” – 2” 800M4QT only)

Models
Prefix
U – union connections (½” - 1” only)

Suffix
QC – Quick-Connect Adapters
SH – Stainless Steel Ball Valve Handles

For additional information, request literature ES-LF800M4QT and ES-800M4QT.
See Flow Charts on p. 83.
## Dimensions and Weights

### LF800M4QT / 800M4QT / 800M4QT

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<th>B (in.)</th>
<th>C (in.)</th>
<th>D (in.)</th>
<th>E (in.)</th>
<th>G (lbs.)</th>
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<td>191</td>
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<td>8½</td>
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<td>9</td>
<td>229</td>
<td>3¼</td>
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<td>9¼</td>
<td>235</td>
<td>9¼</td>
<td>241</td>
<td>3¼</td>
<td>83</td>
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<tr>
<td></td>
<td>2</td>
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<td>270</td>
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<td>203</td>
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<td>¾</td>
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<td>216</td>
<td>2½</td>
<td>71</td>
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<td>241</td>
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<td>241</td>
<td>2½</td>
<td>71</td>
</tr>
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</table>

**QC models have quick-connect adapters which attach separately to the approved 800M4QT.**
Series LF800M4FR / 800M4FR
Freeze-Resistant Pressure Vacuum Breakers
Sizes: ½" – 2" (15 – 50mm)

Features
• Unique built-in relief valve relieves pressure caused by ice formation
• Replaceable plastic seat
• Easy maintenance of internal parts
• O-ring bonnet seal for less possibility of fouling
• Silicone seat disc for durability
• Test cocks positioned for easy testing and winterization
• Standardly equipped with tee handle quarter turn ball valveshutoffs ¼" – 1".
• No special tools required for servicing

Pressure-Temperature
Temperature Range: 33°F – 140°F (0.5°C – 60°C)
Maximum Working Pressure: 150psi (10.3 bar)

LF800M4FR
Series LF800M4FR is designed to prevent backspionage of contaminated water under continuous pressure into the potable water supply. Its superior design protects the valve body and internal components during sudden freeze conditions. Water inside the PVB freezes from the outside-inward.

As the ice forms and expands, causing a buildup of pressure, the LF800M4FR relieves the pressure through a unique relief valve built into the plastic float.

Test cocks are positioned at the lowest point of the valve for winterization draining. The LF800M4FR is reusable with the relief valve designed to automatically re-seat. It will not discharge through the relief valve during normal operation. (The built-in relief valve is not designed to provide freeze protection for the entire irrigation system.) The LF800M4FR features Lead Free* construction to comply with Lead Free* installation requirements.

Materials
• Springs: Stainless Steel
• Bonnet: Celcon®
• Vent Disc: Silicone Rubber
• Disc Holder Float: Polypropylene
• Check Valve Disc: Silicone Rubber
• Check Valve Seat: Noryl® Plastic
• Body: Lead Free* Cast Copper Silicon Alloy

Approvals
IAMPO
Approved by the foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California, Manual Section 10.

*The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.

800M4FR
For Use in Non-Potable Applications
Series 800M4FR is designed to protect drinking water supplies from dangerous cross-connections in accordance with national plumbing codes and water authority requirements for non-potable service applications such as irrigation, fireline, or industrial processing. Its superior design protects the valve body and internal components during sudden freeze conditions. Water inside the PVB freezes from the outside-inward.

Materials
• Springs: Stainless Steel
• Bonnet: Celcon®
• Vent Disc: Silicone Rubber
• Disc Holder Float: Polypropylene
• Check Valve Disc: Silicone Rubber
• Check Valve Seat: Noryl® Plastic
• Body: Bronze

Approvals
IAMPO
Approved by the foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California, Manual Section 10. QC models are not ASSE 1020 approved.

Models
Prefix
U – union connections (½" – 1" only)

For additional information, request literature ES-LF800M4FR and ES-800M4FR.
### Dimensions and Weights

**LF800M4FR / 800M4FR / U800M4FRQC**

<table>
<thead>
<tr>
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<td>A</td>
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<td>LF800M4FR</td>
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<td>6 1/8 159</td>
<td>B</td>
</tr>
<tr>
<td>LF800M4FR</td>
<td>1</td>
<td>7 5/8 191</td>
<td>C</td>
</tr>
<tr>
<td>LF800M4FR</td>
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<td>8 7/8 225</td>
<td>D</td>
</tr>
<tr>
<td>LF800M4FR</td>
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<td>9 5/8 235</td>
<td>E</td>
</tr>
<tr>
<td>LF800M4FR</td>
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<td></td>
</tr>
<tr>
<td>LF800M4FR</td>
<td>3/4</td>
<td>6 3/4 163</td>
<td></td>
</tr>
<tr>
<td>LF800M4FR</td>
<td>1</td>
<td>8 1/4 211</td>
<td></td>
</tr>
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<td>U800M4FR</td>
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<td>1 1/4</td>
<td>8 7/8 225</td>
<td>D</td>
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<tr>
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<tr>
<td>800M4FRQC</td>
<td>1 1/2</td>
<td>9 5/8 235</td>
<td>E</td>
</tr>
</tbody>
</table>

**Vacuum Breakers**

- **6**
- **55**
- **Dimensions and Weights**
Series LF008PCQT
Health Hazard, Anti-Siphon, Spill-Resistant Backflow Preventer

Sizes: ⅜" — 1" (10 – 25mm)

Features
• Standardly supplied with internal polymer coating
• Standardly supplied with Tee handles
• Available less Tee handle with stem wrench flats. For use where space is limited
• Available in left-handed or right-handed outlet
• Spill-resistant design for indoor use
• Affordable design
• Modular cartridge for ease of service
• Vent uses an O-ring for reliable operation
• Compact space saving design
• Satin chrome finish available

Pressure-Temperature
Temperature Range: 33°F – 180°F (0.5°C – 83°C)
Maximum Working Pressure: 150psi (10.3 bar)

LF008PCQT
Series LF008PCQT is designed for indoor point-of-use applications to prevent backsiphonage of contaminated water back into the potable water supply. Separation of the water supply from the air inlet is accomplished by means of a diaphragm seal. This feature protects against any spillage during start-up or operation. The LF008PCQT features Lead Free* construction to comply with Lead Free* installation requirements.

Materials
• Springs: Stainless steel
• Bonnet: PPO
• Vent Disc: EPDM
• Disc Holder: PPO
• Check Disc: Silicone rubber
• Body: Lead Free* cast copper silicon alloy

Approvals

*The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.
## Dimensions and Weights

**LF008PCQT**

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<th>B (mm)</th>
<th>D (in.)</th>
<th>D (mm)</th>
<th>E (in.)</th>
<th>E (mm)</th>
<th>WEIGHT</th>
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<td>3(\frac{3}{16})</td>
<td>100</td>
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<td>4.8 lbs, 2.18 kgs</td>
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</tbody>
</table>
Series LF288A, LF289, LFN388 and 188A
Anti-Siphon Vacuum Breakers

Sizes: ¼" – 3" (6 – 80mm)

Features
- Spring loaded vent for continuous pressure use
- Patented design
- Spill-resistant diaphragm design for indoor use
- Affordable design
- Modular cartridge for ease of service
- Vent uses an O-ring for reliable operation
- Compact space saving design
- Meets ASSE 1001 (3⁴⁄₈" and 1⁄₂" only)
- Optional satin chrome finish
- Lightweight disc assembly prevents spilling under all rates of flow

Pressure-Temperature

LF288A
Temperature Range: 180°F (82°C)
Maximum Working Pressure: 125psi (8.6 bar)

LF289
Temperature Range: 33°F - 180°F (0.5°C - 82°C)
Maximum Pressure: 150psi (10.3 bar)

LFN388 and 188A
Maximum Temperature: 180°F (82°C)
Maximum Working Pressure: 125psi (8.6 bar)

LF288A, LF289, and LFN388

LEAD FREE Series LF288A, LF289, and LFN388 represent a complete line of vacuum breakers designed to prevent backsiphonage of contaminated water into a potable water supply.

They feature a lightweight, durable “disc float” suitable for temperatures up to 180°F (82°C) which closes the atmospheric vent to prevent spilling under all rates of flow. Therefore, they are ideally recommended for low flow installations such as laboratory equipment which use such a small amount of water. They also contain a durable silicone disc which has high heat and water hammer shock resistance and assures tight seating with the lightest of seating contact. The LF288A, LF289, and LFN388 feature Lead Free* construction to comply with Lead Free* installation requirements.

188A

For Use in Non-Potable Applications
Series 188A is designed to protect drinking water supplies from dangerous cross-connections in accordance with national plumbing codes and water authority requirements for non-potable service applications such as irrigation, fireline, or industrial processing. Features a lightweight, durable “disc float” suitable for temperatures up to 180°F (82°C) which closes the atmospheric vent to prevent spilling under all rates of flow.

Materials

LF288A ¼" - 3" (6 – 80mm)
- Body: Lead Free* cast silicon copper alloy
- Disc: Silicone
- Springs: Stainless Steel
- Bonnet: PPO
- Vent Disc: EPDM
- Disc Holder: PPO
- Check Disc: Silicone Rubber
- Body: Lead Free* Bronze cast silicon copper alloy
- Diaphragm: EPDM
- LFN388 ¼" - ¾" (6 – 10mm)
- Body: Lead Free* cast copper silicon alloy
- Disc: Silicone
- Internal Trim: Bronze
- Seat Disc: Silicone
- Disc Float: Plastic

Approvals

Model LF288A
Certified thru 1" CSA

Model LF289

Model LFN388

Model 188A
Approved by the city of Los Angeles

For additional information, request literature ES-LF288A, LF289, LFN388 and 188A. See Flow Charts on p.76-77.
## Dimensions and Weights

### LF288A

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<td>mm</td>
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<td>44</td>
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<tr>
<td>⅝</td>
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### 188A

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Series WB
WattsBox Insulated Enclosures

Features
• Designed to eliminate valve vault entry requirements of OSHA confined Space Ruling 29CFR 1910.146.
• Single source Watts Regulator warranty of the enclosure, the backflow preventer, and the heat source.
• Allows for the installation of the backflow preventer “at the service connection” in accordance with AWWA Standards.
• Is specifically designed to meet NFPA guidelines.
• The enclosure provides freeze protection to maintain the water supply to the property’s fire protection system. (NFPA 3-3.1.8 and 3.6.1.3.2).
• Strategically placed doors provide access to the backflow prevention assembly for testing and repair without removal of the entire unit.
• An economical alternative to expensive retrofit installations.
• Eliminates potential drainage constraints in existing equipment rooms.
• Saves valuable floor space.
• Standardly furnished with thermostatically controlled heat source for freeze protection down to -30°F.
• Contains no structural wood or particle board for long life.
• Easy installation aluminum enclosures feature interlocking panels which eliminate the use of screws during assembly.
• Can be temporarily removed for replacement of the backflow preventer without the need for replacement of freeze protection services.
• ASSE 1060 Certified (Consult factory for approved models)

Backflow prevention assemblies subjected to potential freezing conditions shall be protected with the WattsBox enclosure as shown.

The enclosure shall be of reinforced aluminum construction, providing access through doors for testing/certification purposes. It must also be totally removable for maintenance purposes. The enclosure shall be structurally lined with a unicellular, non-wicking insulation consisting of a sandwich laminate or applied by spray. It shall contain a thermostatically controlled heat source mounted to the interior wall or on the backflow preventer to provide protection to -30°F. No wood or “particle board” shall be allowed in assembly. Insulation mounted with glue will be cause for rejection. Power source will be protected with a ground fault circuit interrupting receptacle, UL Standard 943, NEMA 3R, installed by others, inside the box.

The enclosure shall contain drain openings sized to accommodate the maximum discharge of the reduced pressure zone assembly. Drain openings shall open to discharge under the most severe conditions. These openings are protected against intrusion of either wind, debris or animal. The enclosure is provided with means of permanent anchor and “lockable” access doors and/or lid to prohibit theft or vandalism.

All “wet” portions of the backflow prevention assembly shall be protected within the enclosure. Fire department hose connections and OSY indicating valve handles shall be maintained outside the enclosure.

The enclosure shall be factory assembled and delivered to the site ready to install with no drilling, screwing or riveting of enclosure required on site. The enclosure and the backflow preventer shall be covered by a single warranty policy. Enclosure shall be a Watts Series WattsBox.
Series TWS
Key Operated Wall Hydrants for irrigation system winterization
Sizes: ¾” – 1” (20 – 25mm)

Features
• Eliminates delays and multiple visits to gain interior access to irrigation equipment
• Standardizes location of supply shutoff valve and drain connection
• Access available anytime for winterizing
• Durable bronze valve body and shaft
• One piece valve plunger
• Tamper resistant key operated hydrant
• Exterior chrome finish
• Resilient seated shutoff
• Union connection for ease of installation of backflow preventer
• Manual drain port

Pressure-Temperature
Temperature Range: 33°F – 140°F (0.5°C – 60°C) continuous, 180°F (82°C) intermittent
Maximum Working Pressure: 175psi (12.1 bar)

Materials
• Chrome plated bronze valve head.
• Brass shaft with threaded end.
• Resilient seated shutoff.

Dimensions and Weights

<table>
<thead>
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<th>MODEL</th>
<th>DISTANCE (DM)</th>
<th>PIPE LENGTH</th>
<th>STEM LENGTH</th>
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TWS
Series TWS Key Operated Wall Hydrants have been specifically designed to provide outside access to a building water supply for start-up, winterizing, and servicing of irrigation sprinkler systems (non-potable service applications). The TWS is located outside of the home reducing the time spent on service calls. There is no need to locate the inside shutoff valve or the drain connection. Deploying the TWS wall hydrant enables the irrigation contractor to winterize an irrigation system at anytime thereby protecting the contractors’ warranty and the homeowners’ investment.

For additional information, request literature ES-TWS.
Series SS07F
Stainless Steel Single Detector Check Valves
Sizes: 4" – 10" (100 – 250mm)

Features
- Lightest weight in the industry – reduces shipping and handling costs
- Non-corrosive stainless steel construction – eliminates pin holes and voids associated with epoxy coated valves
- Can be installed in horizontal/vertical positions
- Optional meter bypass assembly (specify GPM or CFM). Required to detect leakage or theft of water
- Optional sized bypass tappings available

Pressure-Temperature
Temperature Range: 33°F – 110°F
(0.5°C – 43°C)
Maximum Working Pressure: 175psi
(12.1 bar)

Materials
- Body: 300 Series stainless steel
- Linkage Parts: stainless steel

SS07F
For Use in Non-Potable Applications
Series SS07F Stainless Steel Single Detector Check Valves are designed to protect drinking water supplies from dangerous cross-connections in accordance with national plumbing codes and water authority requirements for non-potable service applications such as irrigation, fireline, or industrial processing. They are designed to detect any leakage or unauthorized use of water from fire sprinkler systems. During times of minimal water flow, the valve clapper remains closed so that the water flows through a bypass meter (optional). When fire flow is required, the increased demand will open the clapper to allow full flow.

Approvals
- UL Listed
- FM Approved
(8" & 10" sizes only)

Flange bolt pattern and hole diameter in accordance with ANSI B16.5 Class 125/ AWWA C207 Class D.
Body nameplate provides nominal size, direction of flow, psi rating, year of manufacture and approval marks.

Dimensions and Weights

<table>
<thead>
<tr>
<th>SIZE</th>
<th>B</th>
<th>D</th>
<th>E</th>
<th>K (NPT)</th>
<th>L</th>
<th>R</th>
<th>S</th>
<th>T</th>
<th>less Bypass</th>
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<tr>
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For additional information, request literature ES-SS07F.
Test Kits

Model TK-7

- Water column sight tube for testing dual check and double check valves.
- Tests individual check modules of the Watts Model 7, 709, LF709, 007 and LF007.

For additional information, request literature IS-TK7 or PG-TK.

Model TK-9A

- ± 2% accuracy full scale
- Test kit easily connects to any testable backflow preventer assembly.
- Designed for testing all testable backflow preventers.

Maximum pressure 175psi (12.1 bar).
Maximum temperature 210°F (98.9°C).

For additional information, request literature IS-TK9A or PG-TK.

Model TK-99D

- Features 0.25% full scale accuracy.
- Compact, hand held, digital backflow preventer test kit.
- LCD display with oversized differential characters and separate supply pressure readout gauge, high impact casing.
- Tests RPZ’s, Double checks or PVB’s.

For additional information, request literature IS-TK99D or PG-TK.

Model TK-99E

- ± 1% accuracy full scale.
- Compact test kit with color coded valves, hoses and top mounted bleed valves.
- Designed for testing all testable backflow preventers.

For additional information, request literature IS-TK99E or PG-TK.

Model TK-DL

With Digital Print-Out and Computer Download Capability

- ± 0.2% accuracy full scale.
- An advanced piece of test equipment designed to make pressure and differential gauges obsolete in the testing of backflow preventers.
- Accuracy, portability, versatility and documentation.
- Contains hoses, adapters, digital print-out unit and a rugged case.
Test Cocks

LFTC
For use with backflow preventers, isolation valve for gauges, isolation valves for small equipment lines.

Features
• Full port ball valve design
• Screwdriver slot to open and close
• Available 1/8” M x 1/4” F or 1/4” M x 1/4” F

LFSAE-TC

Features
• Full port ball valve design
• Screwdriver slot operation
• Available 1/8” M x SAE

SAE-TC Adapter

Features
• 1/4” female SAE x 7/16” FPT
• Adapts to SAE-TC for use with pressure gauge and/or site tube

SilverEagle LFTC

Features
• 1/2” TC for 21/2” – 4” (65 – 100mm) series 757 and 957
• 3/4” TC for 6” – 10” (150 – 250mm) series 757 and 957
• Full port ball valve design

SilverEagle No. 3 LFTC with O-Ring

Features
• for 21/2” – 4” (65 – 100mm) series 757 and 957
• for 6” – 10” (150 – 250mm) series 757 and 957

Cap & Tether

Plastic Cap & Tether
(four required per backflow preventer)
• Fits 1/4” Female test cocks
• Plastic dust cap and rubber tether

Brass Cap & Plastic Tether
(four required per backflow preventer)
• Fits 1/8” M x SAE test cocks
• Brass dust cap with O-ring seal and rubber tether

SAE-TC Brass Cap
• Protects SAE-TC from dirt and debris
**Air Gaps and Elbows**
for Reduced Pressure Zone Assemblies

Sizes: ¼" – 10" (6 — 250mm)

**Features**

**Horizontal Air Gaps**
- Remove two of the relief valve capscrews 180° apart.
- Remove the relief valve hose from fitting below inlet ball valve.
- From the top of the air gap, thread the relief valve hose down and out the slot.
- Use ¼" - 20 UNC x 1" long stainless steel screws.
- Reconnect relief valve hose to the fitting below the inlet ball valve.

**Vertical Air Gaps**
- Detach the sensing line from the inlet ball valve and the elbow on the relief valve.
- Remove the elbows from the relief valve base.
- Hang the Air Gap Drain on the body of the relief valve.
- Reinstall the elbow into the base of the relief valve to hold the Air Gap drain in place.
- Install the rigid fitting end of the sensing line to the elbow on the base of the relief valve and the swivel end to the fitting on the ball valve.

**Air Gaps**

An air gap provides the unobstructed, physical separation between the discharge end of a potable water supply line and an open receiving vessel. The installation of an air gap and drain line are recommended.

**Vent Elbows**

Used with Watts air gaps for vertical installation of Reduced Pressure Zone Assemblies.

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**Air Gap**

**909QT**

**9090SY**

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**Features**

**Air Gaps**

An air gap provides the unobstructed, physical separation between the discharge end of a potable water supply line and an open receiving vessel. The installation of an air gap and drain line are recommended.

**Vent Elbows**

Used with Watts air gaps for vertical installation of Reduced Pressure Zone Assemblies.

---

**Model Ordering Code**

**Series/ Sizes**

<table>
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<tr>
<th>Model</th>
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**Model Ordering Code**

**Series/ Sizes**

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For additional information, request literature ES-AG/EL/TC.
Spools and Flanges
for Retrofitting Backflow Preventers
Sizes: 2½" – 10" (65 – 250mm)

Spools
Watts offers created “Make up” Spools for use when retrofitting a backflow preventer into the longer lay length of an existing assembly. Watts spools are available in lightweight 300 series stainless steel or epoxy coated carbon steel and come standard with AWWA 150# class “D” carbon steel flanges. 150# class “D” stainless steel flanges available upon special request.

Flanges
Watts offers created “Make up” Flanges for use in piping applications where there is a need for additional fitting lay length. Watts flanges are available in three styles:
• AWWA 150# modified class “D” Zinc plated carbon steel with standard bolt pattern
• AWWA 150# modified class “D” Zinc plated carbon steel flanges with standard pattern slotted
• AWWA 150# modified class “D” stainless steel flanges with standard bolt pattern

The W-SPL and W-FLG feature Lead Free* construction to comply with Lead Free* installation requirements.

Series WVS
Valve Setters – Used with Watts Silver Eagle™ N-Shape Assemblies
Sizes: 3" – 10" (80 – 250mm)

Features
• Corrosion resistant fusion epoxy coated.
• Eliminates the need for thrust blocks or other restraints at the point of installation.
• Flanges: ANSI B16.1 Class 125 (Standard) ANSI AWWA C153 A21.53-88

Pressure-Temperature
Temperature Range: 33°F – 110°F (0.5°C – 43°C)
Maximum Working Pressure: 175psi (12.1 bar)

Materials
• Body: Ductile iron A536 GR 65-45-12
• Coating: Fusion epoxy coated internal and external AWWA C550
• Bolts & Nuts: Stainless steel

Note: Mechanical joint accessories, flange bolts and gaskets are not included (except for center joints).

WVS
The Watts Series WVS valve setters are designed to augment the installation of the "N" series backflow prevention valves. The Series WVS are available in three connection options, Flange by Flange, Mechanical Joint by Flange, and Mechanical Joint by Mechanical Joint. They are constructed of fusion epoxy coated ductile iron. Integral ductile iron support between elbows transfers thrust downstream, thus eliminating thrust block requirements between elbows. Mechanical joint restraint devices may be used at the pipe connections, depending on local conditions.

Models
FLxFL - Flange by Flange
MJxFL - Mechanical Joint by Flange
MJxMJ - Mechanical Joint by Mechanical Joint

*The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.
Series TR
Transition Risers
Sizes: 4” – 10” (100-250mm)

Features
• Cost savings
• Corrosion resistant stainless steel construction, type 304
• Ease of installation and lightweight allow one person to position and handle the riser
• Minimal site preparation; joint restraint one-piece construction reduces time and labor; no missing parts, no leaks; easily identifiable for approvals
• Includes Test Cap and Coupler
• UL and FM approved
• Sizes: available in 4” – 10” (100-250mm) with various lengths to meet all local requirements
• Designed to meet NFPA 24-2007 Section 10.6.5
• AWWA C900 Inlet/DIP
• AWWA C606 Outlet

TR
LEAD FREE* Series TR Transition Risers are used to connect the main fire supply to the building overhead fire system. The fitting passes under the foundation without joints and extends up through the floor. Provided with installation tabs, the unit has a CIPS (Cast Iron Pipe Size) coupler for easy connection to the underground supply (AWWA C900 PVC and Ductile Iron Pipe) and industry standard grooved-end connection (AWWA C606) on the building side for easy connection to the overhead fire sprinkler system.

Approvals
Fittings UL HKQA (4”-10”)

Dimensions and Weights

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<td>6 (183)</td>
<td>202 (92)</td>
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</table>

Consult factory for custom leg dimensions.
Series PVS-1000
Pre-engineered Valve Stations

Features

- Maximum flow performance with low pressure drops
- Wide flow control ranges meet standard and emergency peak flow requirements
- Standard flow design to >10,000 gpm
- Integral backflow prevention devices, strainers, headers, shutoff valves, and instrumentation as needed to suit specific applications
- UL/FM, ASSE, IAPMO, USC certified or listed components as required for service
- Single point of connection for fire protection, potable water and irrigation services (where approved by local codes)
- Standard vault, vertical, and horizontal mounting configurations
- Integral slip and alignment flanges correct for site variations and relieve pipe stress
- Field proven in over 100 installations and years of history
- Expansion capability
- Built-in protection for system upsets (i.e. seismic shocks)

PVS-1000

Series PVS-1000 Pre-Engineered Valve Stations are custom configured water flow control systems that are assembled from proven, reliable Watts components to meet exacting project application requirements. Watts pre-engineered valve stations are factory pre-assembled, tested and optionally certified by independent agencies to ensure flow performance for critical building demands.

Benefits

Watts pre-engineered valve stations provide the following benefits:

- Reduction of installation time from days to hours, minimizing installations costs
- Redundant flow paths provide uninterrupted water flow while device is being tested or maintained, reducing overtime labor costs
- Operates below OSHA mandated maximum noise levels
- Corrosion resistant design reduces component maintenance costs
- Optional pre-installation performance certification ensures conformance to design criteria at site
- Reduction in the number of overall components needed through Watts’ innovative design program
- One supplier of components, one source of responsibility, Watts, a leader in valve technology for over 130 years

Applications

Watts pre-engineered valve stations are custom fit to your specifications and are ideal for a wide variety of flow control applications including:

- Hospitals
- Schools
- Multi-Family Dwellings
- Restaurants
- Industrial Facilities
- Other similar buildings
Series BIC-1000
Backflow Irrigation Control Stations

Features
• Preload Pilot. The entire irrigation pressure piping system is maintained with a preload stand-by, field adjustable, low pressure control valve. This in combination with a higher set point on the regulator and master valve creates a buffer when turned on.
• High-Pressure Lockout Switch. When high pressure is detected, the switch will lock out the 24V circuit; making the system inoperable until the problem is addressed. This prevents high pressure shock and water hammer when the system is allowed to turn on.
• All components are flanged type, nut and bolt modular design for easy replacement.
• 24-hour monitoring system of the outlet pressure for excessive buildup above set operating pressure.
• Water is conserved by reducing or eliminating potential line breaks caused by high pressure. The master valve/regulator is installed at the backflow assembly which provides a shut-off and pressure control of the entire system.

BIC-1000
Series BIC-1000 Backflow Irrigation Control Stations combine the master valve, regulator valve, backflow preventer, preload valve and high-pressure lockout switch all in one easily located component. Constructed using best practice design principles, these systems maximize operating performance and reduce pipe breaks and leakage within the irrigation system. Watts BIC-1000 station minimizes system-operating pressure during both the system operation as well as when there is no flow to the system to reduce water line breaks, has a single warranty policy and is pre-tested to ensure reliable operation “out of the crate”.

System Attributes
• All components are above ground level on a stainless steel station
• Combines the Master Valve, Regulator Valve, and Backflow Assembly in one easily located component

For additional information, request literature F-BIC-1000.
Series FR 500
Thermostatic Freeze Relief Kits

Sizes: ¼", ½", 21⁄4" and 5⁄8" (3 – 20mm)

Features
- Compact
- Easy to Install
- Low Maintenance
- Controlled by Water Temperature vs. Air Temperature
- IAPMO Approved

Pressure-Temperature
Temperature Range: 35°F (1.6°C)
Maximum Pressure: 175psi (12.1 bar)

Materials
- Body: Bronze
- Springs: Stainless Steel
- Internals: DZR Brass

Approvals
- IAPMO

Dimensions

FR 500
Series FR 500 Thermostatic Freeze Relief Kits are designed to keep water from freezing in the backflow preventer, while avoiding discharges based on the air temperature dropping below freezing. Series FR 500 thermostatically measures the water temperature and opens at 35°F (1.6°C) and closes at 40°F (4.4°C).

For additional information, request literature ES-FR500.
Guide to Options

Hydrant Connections – HC
The hydrant connection option is designed to prevent backflow of contaminants from tank and truck filling operations. A fire hydrant should be considered an open conduit to the water supply system and as such should be protected from actual or potential cross-connections that can occur. While fire hydrants are normally considered to be safety devices for fire fighting purposes, the growing use of them to supply water for construction sites, roadwork, street cleaning equipment and hydroseeding, can lead to the possible contamination of the water supply.

Available on series: 2" 007, 009

Internal Polymer Coating – PC
The internal polymer coating option provides extended corrosion protection on sensitive sealing areas and machined surfaces. The coating ensures the smooth operation of the sliding and moving parts and common problems such as pitting, mineral build ups and galling are negligible even after lengthy periods in extremely corrosive water conditions.

Available on series: 007, LF008, 009

Elbow Fittings for 360° Rotation – AQT
The AQT elbow fittings for 360° rotation option allows the installer to pivot the valve’s inlet and outlet in the direction of the piping since often times they do not align exactly. This option provides great flexibility to the installer and saves space, time, materials and money.

Available on series: 009, 919
**Shutoff Valve Options**

Watts offers a variety of different shutoff valve options and combinations to meet most any installation requirements. Shutoff valve options include: grooved and flanged OSY & NRS gate valves, valves with 2" operating nut and post indicator plate and grooved butterfly valves.

**Available on series:** 757, 774, 774X, LF757DCDA, 757DCDA, 774DCDA, 774XDCDA, 957, 994, LF957RPDA, 957RPDA, 994RPDA
Flow Charts

Typical maximum system flow rate (7.5 feet/sec.)
**Flow Charts**

*Typical maximum system flow rate (7.5 feet/sec.)*

- **3/4" LF008PCQT / 008PCQT**
- **1/2" LF008PCQT / 008PCQT**
- **3/4" LF009QT / 009QT**
- **1" LF009M3QT / 009M3QT**
- **1 1/4" LF009M2QT / 009M2QT**

### Flow Chart Details

- **kPa psi**
- **ΔP**
- **FLOW**
- **gpm**
- **lpm**
- **fps**
- **mps**

### Chart Descriptions

- **Flow Charts**
- **Typical maximum system flow rate (7.5 feet/sec.)**
Flow Charts

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<table>
<thead>
<tr>
<th>Diameter</th>
<th>Flow Chart</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4&quot; LF289 / 289</td>
<td><img src="image1" alt="Flow Chart" /></td>
</tr>
<tr>
<td>1&quot; LF289 / 289</td>
<td><img src="image2" alt="Flow Chart" /></td>
</tr>
<tr>
<td>1/4&quot; LFN388 / N388</td>
<td><img src="image3" alt="Flow Chart" /></td>
</tr>
<tr>
<td>3/8&quot; LFN388 / N388</td>
<td><img src="image4" alt="Flow Chart" /></td>
</tr>
<tr>
<td>21/2&quot; LF709</td>
<td><img src="image5" alt="Flow Chart" /></td>
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<tr>
<td>3&quot; LF709</td>
<td><img src="image6" alt="Flow Chart" /></td>
</tr>
<tr>
<td>4&quot; LF709</td>
<td><img src="image7" alt="Flow Chart" /></td>
</tr>
<tr>
<td>3&quot; 709DCDA</td>
<td><img src="image8" alt="Flow Chart" /></td>
</tr>
<tr>
<td>4&quot; 709DCDA</td>
<td><img src="image9" alt="Flow Chart" /></td>
</tr>
</tbody>
</table>
Flow Charts

Typical maximum system flow rate (7.5 feet/sec.)

6" 709DCDA

8" 709DCDA

10" 709DCDA

1½" LF719 / 719

1¼" LF719 / 719

1½" LF719 / 719

2½" LF719 / 719

3½" LF719 / 719
*Typical maximum system flow rate (7.5 feet/sec.)

** = UL Rated flow

* = Rated flow

Flow Charts
Flow Charts

*Typical maximum system flow rate (7.5 feet/sec.)

2 1/2" LF757DCDA/LF757NDCDA / 757DCDA/757NDCDA

3" LF757DCDA/LF757NDCDA / 757DCDA/757NDCDA

4" LF757DCDA/LF757NDCDA / 757DCDA/757NDCDA

6" LF757DCDA/LF757NDCDA / 757DCDA/757NDCDA

8" LF757DCDA/LF757NDCDA / 757DCDA/757NDCDA

10" LF757DCDA/LF757NDCDA / 757DCDA/757NDCDA
Flow Charts

*Typical maximum system flow rate (7.5 feet/sec.)
Flow Charts

*Typical maximum system flow rate (7.5 feet/sec.)

- 10\" 774
- 12\" 774
- 2\½\" 774DCDA
- 3\" 774DCDA
- 4\" 774DCDA
- 6\" 774DCDA
- 8\" 774DCDA
- 10\" 774DCDA
- 12\" 774DCDA
Flow Charts

Typical maximum system flow rate (7.5 feet/sec.)
Flow Charts

*Typical maximum system flow rate (7.5 feet/sec.)

Flow Chart for 2¼" LF909

Flow Chart for 2¼" 909RPDA

Flow Chart for 3" LF909

Flow Chart for 3" 909RPDA

Flow Chart for 4" LF909

Flow Chart for 4" 909RPDA

Flow Chart for 6" LF909

Flow Chart for 6" 909RPDA

Flow Chart for 8" LF909M1

Flow Chart for 8" 909RPDA

Flow Chart for 10" LF909M1

Flow Chart for 10" 909RPDA
**Flow Charts**

*Typical maximum system flow rate (7.5 feet/sec.)*

**LF919QT/919QT**  
**U919QT**  
**919AQT**  
**919ZQT**

**H**  
**V**  
**Z**

* = Rated flow  ** = UL Rated flow

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**Flow Chart: 3/4" LF919 / 919**

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**Flow Chart: 1" LF919 / 919**

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**Flow Chart: 1 1/4" LF919 / 919**

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**Flow Chart: 1 1/2" LF919 / 919**

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**Flow Chart: 2" LF919 / 919**

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**Flow Chart: 2 1/2" LF919 / 919**

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**Flow Chart: 3" 957/957N/957Z**

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**Flow Chart: 4" 957/957N/957Z**

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**Flow Chart: 6" 957/957N/957Z**

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Flow Charts

Typical maximum system flow rate (7.5 feet/sec.)
**Flow Charts**

*Typical maximum system flow rate (7.5 feet/sec.)*
Flow Charts

*Typical maximum system flow rate (7.5 feet/sec.)

- 1/4" SD-2, SD-3
- 5/8" SD-2, SD-3
- 7" SS07F
- 4" SS07F
- 6" SS07F
- 8" SS07F
- 10" SS07F

Graphs showing pressure drop (ΔP) vs. flow rate for different diameters and types of connections.
For Technical and Ordering Assistance, please call us at 978-688-1811. To locate your nearest Watts representative, please click on our *find a sales rep* locator on watts.com.