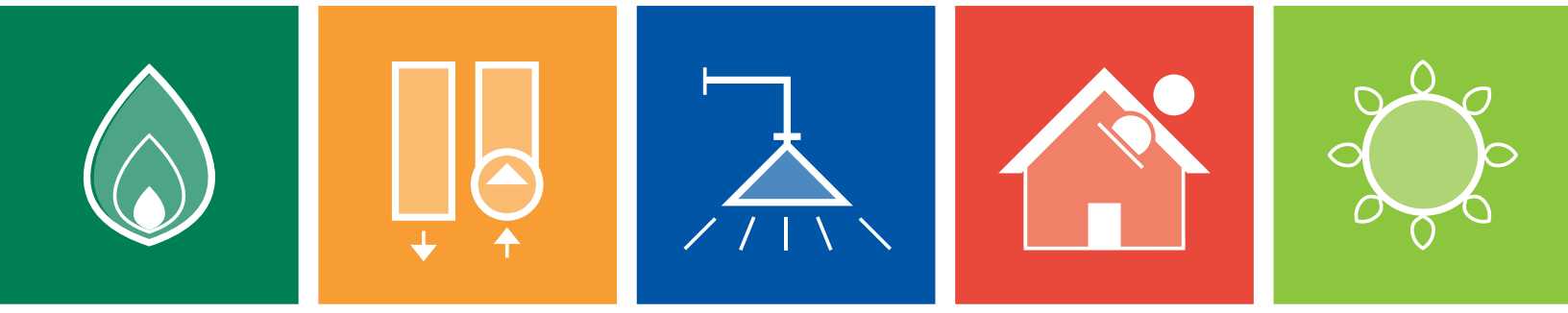
CALEFFI
Hydronic Solutions



# 2018 PLUMBING AND HYDRONICS CATALOG

# INNOVATIVE HYDRONIC AND PLUMBING COMPONENTS

Caleffi Hydronic Solutions, a leader in state-of-the-art engineered solutions, manufactures and supplies high-quality components for hydronic heating and cooling, plumbing, heat metering and renewable energy systems, for domestic, commercial and industrial buildings. Caleffi, an Italian based company, is a name recognized around the world for innovative solutions and superior performing products that help customers live comfortably and economically, while softening their impact on the environment.

# WHO WE ARE

Since 1961, Caleffi has been a leading Italian manufacturer of high-quality components for hydronic heating and cooling, plumbing, heat metering and renewable systems, for residential and commercial applications.

# PRODUCTION

Our three production sites are located in northern Italy. In 1 year, our techno polymer stamping facility delivers 120 million finished products and we machine 200 million pieces, handling over 13,000 tons of brass.

# LOGISTICS

A fully automated vertical warehouse (MAV) optimizes service to our export and domestic customers, avoiding human mistakes. We can store around 14,000 pallets in this facility.

# R&D

Our CUBOROSSO (Red Cube) is a state of art building completely dedicated to our team of engineers and specialized technicians where we analyze and compare product performances and develop new designs. All tests are conducted using alternative energy sources solar, biomass and geothermal.

- North American HQ facilities in Milwaukee, WI includes Customer Service, Tech Support, Administrative and Warehouse Distribution.
- 30+ independent sales offices throughout North America.
- 35,000 SQ FT. facility built in 2007 with room for future expansions.
- Entire facility has radiant heat with snow melt systems installed at entry doors.
- Light assembly and packaging of zone valves, manifolds, mixing valves, balancing valves and other components.
- R&D Lab for product evaluation and concept development.

**Caleffi North America, Inc.**
3883 W Milwaukee Rd, Milwaukee, WI 53208
Tel: 414-238-2360 / Fax: 414-238-2366
www.caleffi.com

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Introducing the

# Easy-access Installation Tip Videos

# Available Now on Caleffi Products

## Look for the Yellow QR Code To Make Your Job Easier!

Whether you're a contractor in the mechanical room looking for installation pointers or a wholesaler explaining a component at the counter, Caleffi's new Installation Tip videos just made your job easier!


The brief YouTube videos are accessed by a QR code, easily identified with a bright-yellow label placed on our product boxes. Simply scan the code with your mobile device to access the video.

# Coffee with CALEFFI™

## Technical Training Webinar

Our educational series, Coffee with Caleffi™, is an online technical training webinar intended for contractors, designers and wholesalers. The complimentary one-hour training sessions are conducted by Caleffi and industry expert guest speakers.

All Coffee with Caleffi™ webinars are complimentary, but registration is required for real-time attendance. After registering, you will be immediately forwarded a confirming email containing login details for attending the webinar. When training time comes, grab a coffee, tune in and learn more about Caleffi's innovative products and how they can add value to your work. A Certificate of Attendance is emailed to all attendees following the webinar.

Missed a webinar? No problem! Our webinars are available 24/7 on YouTube for your convenience.

**Visit www.caleffi.com to View Upcoming Schedule**

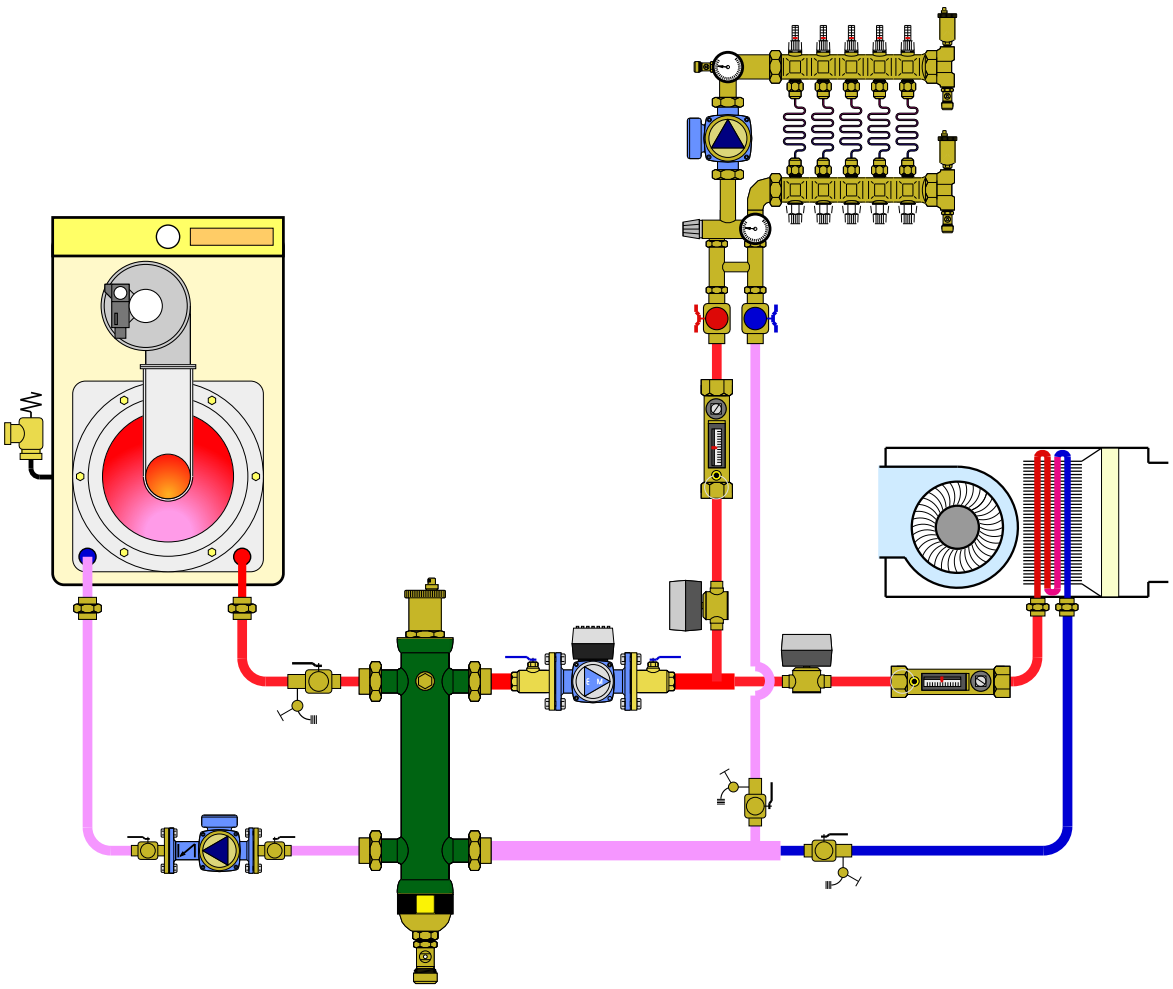

## A journal of design innovation for hydronic, plumbing and renewable energy professionals.

idronics™ is a complimentary educational journal series for hydronic, plumbing and renewable energy professionals to aid them in system design, component application and selection. The popular and frequently referenced publication is written by engineers and oriented towards innovative design techniques with a commitment to continuous education of North American professionals. Interested in receiving your own copy of our popular idronics journal? Visit www.caleffi.com/us to be added to the mailing list.

# HYDRAULIC SEPARATORS



This diagram is an example



## 4-in-1 hydraulic separators

## Hydraulic separators

## Hydraulic separators-manifolds

## Hydraulic separator accessories

## 4-IN-1 HYDRAULIC SEPARATORS

### 5495
### SEP4™

Combination 1. air, 2. hydraulic and 3. dirt separation, plus 4. magnetic separation.
Epoxy resin coated steel body.
HDPE internal coalescing element, removable for cleaning.
Pre-formed insulation.
Particle separation capacity: to 5 µm (0.2 mil).
Ferrous impurities separation efficiency: 100%.
Air separation efficiency: 100% to microbubble level.
Complete with union connections.
Thermowell tap: 1/2" straight female.
Max. working pressure: 150 psi.
Working temperature range: 32—210°F.
Working temp. w/o insulation: 32—230°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **5495**96A | 1" sweat union | 15 | **1,368.00** |
| **5495**06A | 1" NPT female union | 15 | **1,430.00** |
| **5495**66A | 1" press union | 15 | **1,513.00** |
| **5495**97A | 1 ¼" sweat union | 19 | **1,648.00** |
| **5495**07A | 1¼" NPT female union | 19 | **1,732.00** |
| **5495**67A | 1¼" press union | 19 | **1,906.00** |
| **5495**98A | 1½" sweat union | 27 | **2,163.00** |
| **5495**08A | 1½" NPT female union | 27 | **2,272.00** |
| **5495**68A | 1½" press union | 27 | **2,480.00** |
| **5495**99A | 2" sweat union | 29 | **2,522.00** |
| **5495**09A | 2" NPT female union | 29 | **2,647.00** |
| **5495**69A | 2" press union | 29 | **3,084.00** |

### NA549
### SEP4™
### ASME

Combination 1. air, 2. hydraulic and 3. dirt separation, plus 4. magnetic separation.
Epoxy resin coated steel body.
Stainless steel internal coalescing mesh.
Three neodymium magnets.
Complete with:
- automatic air vent (code 501502A).
- air vent shut-off valve (code NA39589).
- drain valve (code NA59600).

ANSI 150 flange connections.
Thermometer pockets (NPT):
½" inlet/outlet flanges, ¾" front center
Max. working pressure: 150 psi.
Vessel temperature range: 32—270°F.
Particle separation capacity: to 5 µm (0.2 mil).
ASME U-stamp tagged and registered with the National Board of Boiler and Pressure Vessel Inspectors; Consult factory for CRN sizes 10"—14".

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA549**200AM | 8" ANSI flange ASME & CRN | 530 | **27,974.00** |
| **NA549**250AM | 10" ANSI flange ASME | 740 | **37,901.00** |
| **NA549**300AM | 12" ANSI flange ASME | 1,110 | **49,878.00** |
| **NA549**350AM | 14" ANSI flange ASME | 1,550 | **58,803.00** |

### NA549
### SEP4™

Combination 1. air, 2. hydraulic, 3. dirt separation, plus 4. magnetic separation.
Epoxy resin coated steel body.
Stainless steel internal coalescing mesh.
Pre-formed insulation on 2"— 4" sizes.
One neodymium magnet.
Complete with:
- automatic air vent (code 501502A).
- air vent shut-off valve (code NA39589).
- 1" drain valve NA39753 (2"— 4" sizes)
- 1¼" drain valve NA39588 (5" — 6" sizes).

ANSI 150 flange connections.
Max. working pressure: 150 psi.
Vessel temperature range: 32—220°F.
Working temp. w/o insulation: 32—270°F.
Particle separation capacity: to 5 µm (0.2 mil).

| Code | Description | Lbs | USD |
|---|---|---|---|
| **549**552A | 2" ANSI flange | 76 | **5,963.00** |
| **549**562A | 2½" ANSI flange | 82 | **6,354.00** |
| **549**582A | 3" ANSI flange | 112 | **7,951.00** |
| **549**510A | 4" ANSI flange | 120 | **8,905.00** |

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA549**052AM | 2" ANSI flange ASME & CRN | 76 | **6,941.00** |
| **NA549**062AM | 2½" ANSI flange ASME & CRN | 82 | **7,451.00** |
| **NA549**082AM | 3" ANSI flange ASME & CRN | 112 | **9,223.00** |
| **NA549**102AM | 4" ANSI flange ASME & CRN | 120 | **9,726.00** |
| **NA549**120AM* | 5" ANSI flange ASME & CRN | 220 | **13,401.00** |
| **NA549**150AM* | 6" ANSI flange ASME & CRN | 235 | **16,162.00** |

* without insulation
NA prefix indicates ASME U-stamp tagged and registered with the National Board of Boiler and Pressure Vessel Inspectors; CRN registered.

In the SEP4™ hydraulic separators ferrous impurities are captured by a concentrated magnetic field created by a stack of neodymium rare-earth magnets positioned inside a brass dry-well which is below the flow stream. Non-magnetic dirt particles are separated by colliding with an internal element in the flow stream and settling to the bottom. The deep collection chamber keeps the dirt from re-entering the flow stream. The dirt and ferrous impurities are flushed out while the system is operating, by removing the magnets and opening the purge valve.

| | FLOW RATE - UNION CONNECTIONS | | | |
|---|---|---|---|---|
| Size | 1" | 1¼" | 1½" | 2" |
| GPM | 11 | 18 | 26 | 37 |
| Gallons | 0.5 | 0.7 | 1.3 | 3.5 |

| | FLOW RATE - FLANGED CONNECTIONS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Size | 2" | 2½" | 3" | 4" | 5" | 6" | 8" | 10" | 12" | 14" |
| GPM | 60 | 80 | 124 | 247 | 300 | 484 | 792 | 1330 | 1850 | 2500 |
| Gallons | 4.0 | 4.0 | 8.0 | 8.0 | 23 | 23 | 95 | 175 | 255 | 450 |

## HYDRAULIC SEPARATORS

### 548
### Hydro Separator

Hydraulic separator.
Epoxy resin coated steel body.
300 series stainless steel internal baffle.
Pre-formed insulation.
Complete with:
automatic air vent valve (code 502343A).
service check valve (code 561402A).
drain valve (code 538402 FD).
Union connections.
Thermowell tap: 1/2" straight female
Max. working pressure: 150 psi.
Working temperature range: 32—210°F.
Working temp. w/o insulation: 32—250°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **548**006A | 1" NPT female union | 13 | **1,020.00** |
| **548**066A | 1" press union | 13 | **1,101.00** |
| **548**096A | 1" sweat union | 13 | **971.00** |
| **548**007A | 1¼" NPT female union | 17 | **1,229.00** |
| **548**067A | 1¼" press union | 17 | **1,399.00** |
| **548**097A | 1¼" sweat union | 17 | **1,172.00** |
| **548**008A | 1½" NPT female union | 25 | **1,610.00** |
| **548**068A | 1½" press union | 25 | **1,812.00** |
| **548**098A | 1½" sweat union | 25 | **1,533.00** |
| **548**009A | 2" NPT female union | 27 | **1,879.00** |
| **548**069A | 2" press union | 27 | **2,303.00** |
| **548**099A | 2" sweat union | 27 | **1,790.00** |

### NA548
### Hydro Separator
### ASME

Hydraulic separator.
Epoxy resin coated steel body.
Without insulation.
Complete with:
automatic air vent (code 501502A).
shut-off valve (code NA39589).
drain valve (code NA59600).
ANSI 150 flange connections.
Thermometer pockets (NPT):
½" inlet/outlet flanges, ¾" front center
Max. working pressure: 150 psi.
Working temperature range: 32—270°F.
Baffle plates for all sizes: 304SST
ASME U-stamp tagged and registered with the National Board of Boiler and Pressure Vessel Inspectors; Consult factory for CRN sizes 10" — 14".

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA548**200A | 8" ANSI flange ASME & CRN | 520 | **18,754.00** |
| **NA548**250A | 10" ANSI flange ASME | 730 | **26,475.00** |
| **NA548**300A | 12" ANSI flange ASME | 1,100 | **32,043.00** |
| **NA548**350A | 14" ANSI flange ASME | 1,540 | **51,102.00** |

### NA548
### Hydro Separator

Hydraulic separator.
Epoxy resin coated steel body.
Pre-formed insulation on 2"— 4" sizes.
Complete with:
automatic air vent (code 501502A).
shut-off valve (code NA39589).
drain valve (code NA39588).
ANSI 150 flange connections.
Max. working pressure: 150 psi.
Vessel temperature range: 32—220°F.
Vessel temp. w/o insulation: 32—270°F.
Baffle plates for all sizes: 304SST

| Code | Description | Lbs | USD |
|---|---|---|---|
| **548**052A | 2" ANSI flange | 75 | **3,939.00** |
| **548**062A | 2½" ANSI flange | 82 | **4,197.00** |
| **548**082A | 3" ANSI flange | 112 | **5,250.00** |
| **548**102A | 4" ANSI flange | 117 | **5,876.00** |

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA548**052A | 2" ANSI flange ASME & CRN | 75 | **5,183.00** |
| **NA548**062A | 2½" ANSI flange ASME & CRN | 82 | **5,573.00** |
| **NA548**082A | 3" ANSI flange ASME & CRN | 112 | **6,743.00** |
| **NA548**102A | 4" ANSI flange ASME & CRN | 117 | **7,130.00** |
| **NA548**120A* | 5" ANSI flange ASME & CRN | 220 | **9,961.00** |
| **NA548**150A* | 6" ANSI flange ASME & CRN | 231 | **12,087.00** |

NA prefix indicates ASME U-stamp tagged and registered with the National Board of Boiler and Pressure Vessel Inspectors; CRN registered.
*Without insulation

### NA549
### HydroCal™

Combination 1. air, 2. hydraulic and 3. dirt separation.
Epoxy resin coated steel body.
Stainless steel internal coalescing mesh.
Pre-formed insulation on 2"— 4" sizes.
Complete with: automatic air vent, air vent shut-off valve, drain valve.
ANSI 150 flange connections.
Max. working pressure: 150 psi.
Vessel temperature range: 32—220°F.
Working temp. w/o insulation: 32—270°F.
Particle separation capacity: to 5 µm (0.2 mil).

| Code | Description | Lbs | USD |
|---|---|---|---|
| **549**052A | 2" ANSI flange | 73 | **4,872.00** |
| **NA549**052A | 2" ANSI flange ASME & CRN | 73 | **6,737.00** |
| **NA549**062A | 2½" ANSI flange ASME & CRN | 79 | **7,247.00** |
| **NA549**082A | 3" ANSI flange ASME & CRN | 108 | **8,764.00** |
| **NA549**102A | 4" ANSI flange ASME & CRN | 117 | **9,267.00** |
| **NA549**120A | 5" ANSI flange ASME & CRN | 190 | **13,401.00** |
| **NA549**150A* | 6" ANSI flange ASME & CRN | 231 | **16,162.00** |
| **NA549**200A* | 8" ANSI flange ASME & CRN | 520 | **27,974.00** |
| **NA549**250A* | 10" ANSI flange ASME | 730 | **37,901.00** |
| **NA549**300A* | 12" ANSI flange ASME | 1,100 | **49,878.00** |

*Without insulation

## HYDRAULIC SEPARATORS-MANIFOLDS

### 5599 HydroLink™

Hydraulic separator + distribution manifold. 2+0 with built-in mounting.
Steel body with pre-formed insulation.
Complete with automatic air vent (code 502043A) and drain valve (code 538402 FD).
Max. working pressure: 100 psi.
Working temperature range: 32—230°F.
Outlet center dimension: 125 mm.
Compatible with 165, 166, 167 series HydroMixer™.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **5599**20A | 1" FNPT primary, 1" MNPT secondary (2) | 16 | **1,274.00** |

### 5599 HydroLink™

Hydraulic separator + distribution manifold. 2+2 with angle mounting brackets.
Steel body with pre-formed insulation.
Complete with automatic air vent (code 502043A) and drain valve (code 538402 FD).
Max. working pressure: 100 psi.
Working temperature range: 32—230°F.
Outlet center dimension: 125 mm.
Compatible with 165, 166, 167 series HydroMixer™.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **5599**22A | 1" FNPT primary, 1" MNPT secondary (4) | 29 | **1,565.00** |

### 5599 HydroLink™

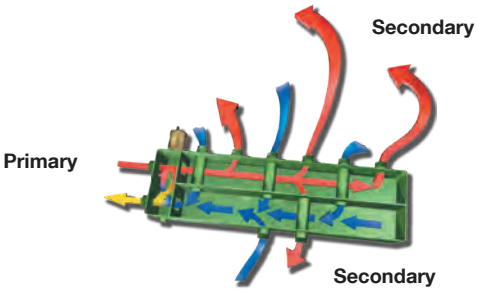
Hydraulic separator + distribution manifold. 2+1 with built-in mounting.
Steel body with pre-formed insulation.
Complete with automatic air vent (code 502043A) and drain valve (code 538402 FD).
Max. working pressure: 100 psi.
Working temperature range: 32—230°F.
Outlet center dimension: 125 mm.
Compatible with 165, 166, 167 series HydroMixer™.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **5599**21A | 1" FNPT primary, 1" MNPT secondary (3) | 16 | **1,310.00** |

### 5599 HydroLink™

Hydraulic separator + distribution manifold. 3+1 with angle mounting brackets.
Steel body with pre-formed insulation.
Complete with automatic air vent (code 502043A) and drain valve (code 538402 FD).
Max. working pressure: 100 psi.
Working temperature range: 32—230°F.
Outlet center dimension: 125 mm.
Compatible with 165, 166, 167 series HydroMixer™.

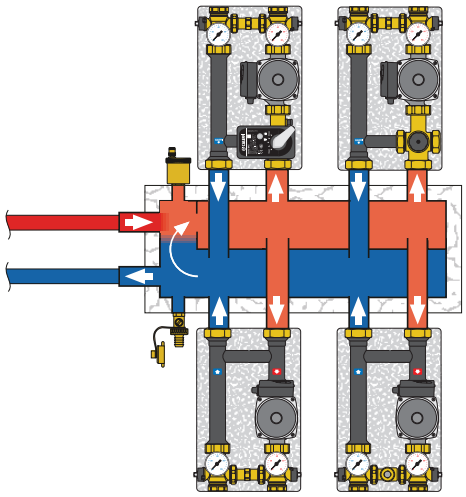
| Code | Description | Lbs | USD |
|---|---|---|---|
| **5599**31A | 1" FNPT primary, 1" MNPT secondary (4) | 39 | **1,881.00** |




**Maximum recommended flow rates at connections:**

| Branches | Primary | Secondary Total |
|---|---|---|
| 2+0 | 9 gpm | 22 gpm |
| 2+1 | 9 gpm | 22 gpm |
| 2+2 | 11 gpm | 26 gpm |
| 3+1 | 11 gpm | 26 gpm |

**Application diagram**



# HYDRAULIC SEPARATOR ACCESSORIES

## 501 MAXCAL™

Replacement air vent for Hydro Separator 548 and NA548 series and fits HydroCal™ 549 and NA549 series.
Brass body and cover, stainless steel internal components.
Extra high discharge capacity.
Max. working pressure: 230 psi.
Max. discharge pressure: 90 psi.
Max. working temperature: 250°F.
Discharge top thread: ⅜" female.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **501**502A | ¾" NPT female inlet | 7 | **431.00** |

## 5020 MINICAL™

Replacement high capacity air vent for 5599 HydroLink™.
Automatic air vents.
Brass body.
Hygroscopic safety air vent cap.
Max. working pressure: 150 psi.
Max discharge pressure: 60 psi.
Max. working temperature: 250°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **5020**43A | ½" NPT male | 0.6 | **34.00** |

## 5023 VALCAL™

Replacement high capacity air vent with service check valve fits Hydro Separator 548 series.
Brass body.
Max. working pressure: 150 psi.
Max. discharge pressure: 60 psi.
Max. working temperature: 250°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **5023**43A | ½" NPT male | 0.5 | **69.00** |

Replacement drain valve fits Hydro Separator 548 series and HydroLink™ 559 series.
Brass body.
¾" garden hose thread with cap.
Max. working pressure: 150 psi.
Max. working temperature: 250°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **538**402 FD | ½" NPT x ¾" GHT | 0.3 | **20.70** |

Drain ball valves fit HydroCal™, Hydro Separators, DISCAL™, DISCALDIRT® and DIRTCAL®.
Brass body.
Max. working pressure: 150 psi.
Max. working temperature: 365°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA39**589 | ¾" NPT female w/T-handle, air vent isolate | 0.8 | **42.60** |
| **NA39**753 | 1" NPT female w/Lever, drain | 0.7 | **58.10** |
| **NA39**588 | 1¼" NPT female w/Lever, drain | 1 | **96.80** |
| **NA59**600 | 2" NPT female w/Lever, drain | 4 | **208.00** |

Temperature pocket well fits 1", 1¼", 1½" & 2" 548 / 5495 Hydro Separators.
1 ¾" pocket length.
Inside thread: 20 x1.0 mm.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **694**045 | ½" straight thread | 0.2 | **26.20** |
| **F500**55 | Sealing washer | 0.1 | **2.20** |
| **NA104**26 | Sensor holding grommet | 0.1 | **6.00** |
| **NA104**25 | Kit containing above 3 items | 0.4 | **35.10** |

Double male nipple.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **R414**47 | ¾" NPT x ¾" NPT x 2" | 0.3 | **37.80** |

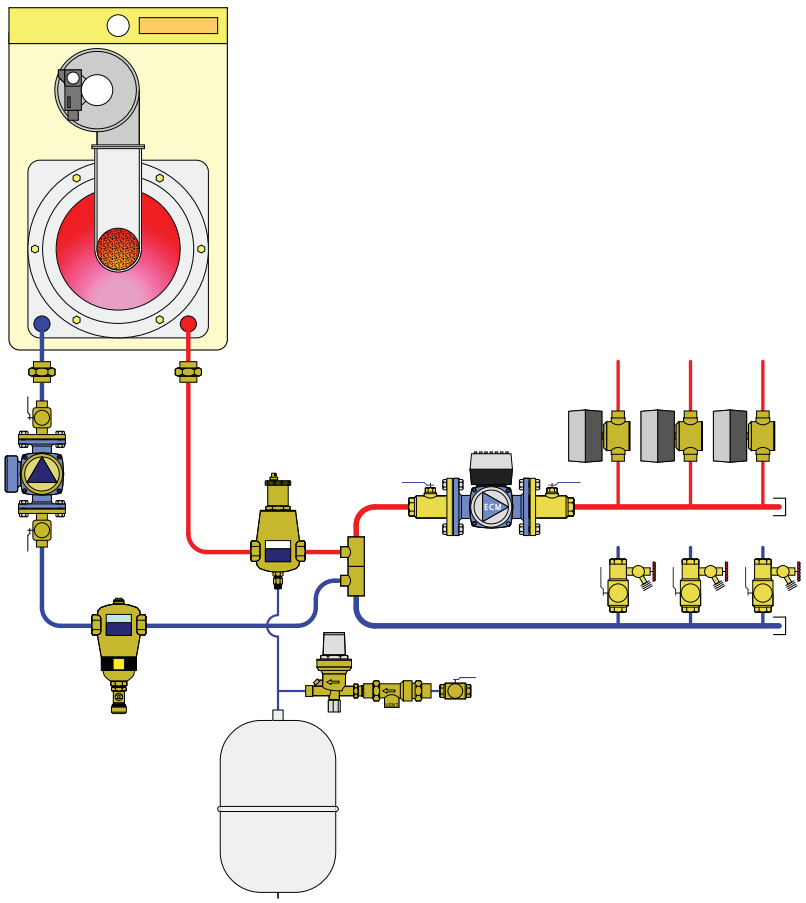
Magnetic/drywell assembly for SEP4™.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **F0000435** | Fits 2" and 2½" | 3 | **204.00** |
| **49684A** | Fits 3"— 6" | 3 | **459.00** |
| **F0000349** | Fits 8" to 14" | 3 | **867.00** |

# AIR AND DIRT SEPARATION AND AIR VENTS



This diagram is an example



## Automatic and manual air vents

## Air separators

## Air and dirt separators

## Dirt and magnetic dirt separators

## Magnetic dirt separators

## Dirt separators

## Accessories for air and dirt separators

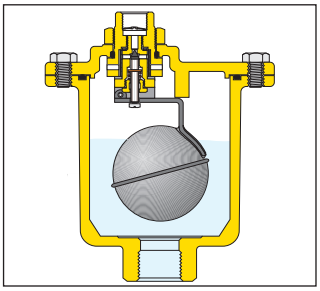
# AUTOMATIC AND MANUAL AIR VENTS

Automatic air vents are designed to remove the air that accumulates in heating and cooling systems without the need for manual intervention. This prevents harmful air that may compromise the life and the performance of the system which includes:
corrosion due to the oxygen;
pockets of air trapped in the heating emitters;
cavitation in the circulation pumps;
noise from air passing through the pipes.

The accumulation of air bubbles in the air vent body causes the float to drop and thus the vent valve to open. The air vent functions correctly, as long as the water pressure remains below the maximum discharge pressure.

**MAXCAL™**

Extra high capacity air vent is ideal for use in large piping systems and can also be installed in horizontal piping. The valve body and cover are made of forged brass while the filter, valve stem, float and spring are all made of stainless steel to prevent the formation of rust.



## 501 MAXCAL™

Automatic air vent for heating and air conditioning. Brass body and cover, stainless steel internal components.
Extra high discharge capacity.
Max. working pressure: 230 psi.
Max. discharge pressure: 90 psi.
Max. discharge rate: 9 SCFM.
Working temperature range: -4 – 250°F.
Discharge top thread: ⅜" female.

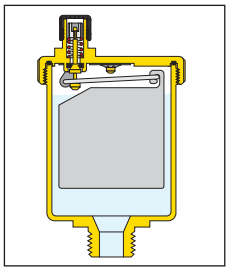
| Code | Description | Lbs | USD |
|---|---|---|---|
| **501**502A | ¾" NPT female | 7 | **431.00** |

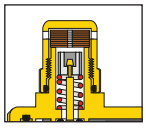
**MINICAL™ and VALCAL™**

These float type automatic air vents are designed to vent released air from the water while being heated. They are used on manifolds or pipes in sealed heating systems.

MINICAL™ is a standard size air vent that will discharge up to 1.75 SCFM.

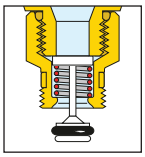
VALCAL™ is a high capacity larger size air vent that will discharge up to 2.5 SCFM.





Some MINICAL™ and VALCAL™ models are equipped with a hygroscopic safety cap. Cellulose fiber discs serve as the redundant vent seal which their volume increases by 50% when they become wet which cause the discharge vent to close.

Some MINICAL™ and VALCAL™ models are equipped with a service check valve which facilitates maintenance operations by shutting off the water flow when the air vent is removed and also allows an easy replacement of air vent without purging the system.



## 5020 MINICAL™

Automatic air vent.
Brass body.
Max. working pressure: 150 psi.
Max. discharge pressure: 40 psi.
Max. discharge rate: 1.75 SCFM.
Max. working temperature: 250°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **5020**15A | ⅛" NPT male | 0.4 | **24.10** |
| **5020**40A | ½" NPT male | 0.4 | **24.10** |

## 5021 MINICAL™

Automatic air vent with service check valve
Brass body.
Max. working pressure: 150 psi.
Max. discharge pressure: 40 psi.
Max. discharge rate: 1.75 SCFM.
Max. working temperature: 230°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **5021**15A | ⅛" NPT male | 0.4 | **32.50** |

## 5020 MINICAL™

Automatic air vents.
Brass body.
Hygroscopic safety air vent cap.
Max. working pressure: 150 psi.
Max discharge pressure: 60 psi.
Max. discharge rate: 1.75 SCFM.
Max. working temperature: 250°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **5020**43A | ½" NPT male | 0.6 | **34.00** |

## 5022 VALCAL™

High discharge automatic air vent.
Brass body.
Max. working pressure: 150 psi.
Max. discharge pressure: 60 psi.
Max. discharge rate: 2.5 SCFM.
Max. working temperature: 250°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **5022**43A | ½" NPT male | 0.5 | **58.40** |

## 5023 VALCAL™

High discharge vent with service check.
Brass body.
Max. working pressure: 150 psi.
Max. discharge pressure: 60 psi.
Max. discharge rate: 2.5 SCFM.
Max. working temperature: 250°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **5023**43A | ½" NPT male | 0.5 | **69.00** |

# AUTOMATIC AND MANUAL AIR VENTS

## 5026

Automatic air vent.
Brass body.
Max. working pressure: 150 psi.
Max. discharge pressure: 90 psi.
Max. discharge rate: 1.75 SCFM.
Max. working temperature: 240°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **5026**10A | ⅛" NPT male | 0.6 | **21.60** |
| **5026**20A | ¼" NPT male | 0.6 | **22.60** |
| **5026**30 | ⅜" straight thread | 1.0 | **30.10** |
| **5026**40 | ½" straight thread | 1.0 | **32.50** |

## 5027

Automatic air vent with service check valve.
Brass body.
Max. working pressure: 150 psi.
Max. discharge pressure: 90 psi.
Max. discharge rate: 1.75 SCFM.
Max. working temperature: 240°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **5027**10A | ⅛" NPT male | 0.6 | **30.00** |
| **5027**20A | ¼" NPT male | 0.6 | **31.60** |
| **NA5027**40A | ½" NPT male, hygro anti-drip cap 3rd QTR | 0.6 | **41.00** |

Service check valve for removal of air vent or expansion tank without purging system.
Fits automatic air vents 502 series.
Max. working pressure: 150 psi.
Max. working temperature: 250°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **59474A** | ⅛" NPT male | 0.1 | **16.80** |
| **59804A** | ¼" NPT male | 0.1 | **18.10** |
| **561402A** | ½" NPT male | 0.2 | **20.80** |


## 551 DISCALAIR®

High discharge automatic air vent.
Brass body.
Stainless steel float guide pin and linkage.
Max. working pressure: 150 psi.
Max. discharge pressure: 90 psi.
Max. discharge rate: 4.5 SCFM.
Max. working temperature: 250°F.

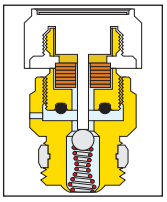
| Code | Description | Lbs | USD |
|---|---|---|---|
| **551**004A | ½" NPT female | 0.8 | **133.00** |

## 5080

Automatic hygroscopic air vent for hydronic heating system and low pressure steam.
Manual operation by rotating knob.
Chrome plated brass body.
Max. working pressure: 150 psi.
Max. working temperature: 212°F.
Low pressure steam: 15 psi.
(Priced each, sold in package of 25 each)

| Code | Description | Lbs | USD |
|---|---|---|---|
| **5080**13A | ⅛" NPT male | 0.1 | **11.80** |

Automatic radiator air vent valve is designed to remove any air trapped inside the heat emitters both during the filling of the system and in normal operation. The automatic air discharge happens when the hygroscopic cellulose fiber discs are dry. As air is vented and water contacts the hygroscopic discs, they increase their volume by 50% which cause the discharge vent to close.



## 5081

Replacement hygroscopic cartridge fits hygroscopic air vent 5080 series.
(Priced each, sold in package of 25 each)

| Code | Description | Lbs | USD |
|---|---|---|---|
| **5081**00A | Cartridge | 0.1 | **10.20** |

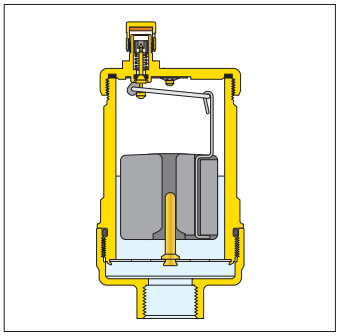
## 337

Manual air vent with metal seal and adjustable outlet.
Brass body.
Max. working pressure: 150 psi.
Max. working temperature: 212°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **337**221A | ¼" NPT male | 0.1 | **14.60** |

**Function**

DISCALAIR® automatic air vents release air that forms in the hydraulic circuits of heating and air conditioning systems, with pressures to 150 psi. The venting air discharge capacity is very high capable of expelling over 4 standard cubic feet per minute (SCFM). The circulation of fully de-aerated water or glycol-water mediums enables the equipment to operate under optimum conditions, free from noise, corrosion, localized overheating or mechanical damage.



## AIR SEPARATORS

### 551 DISCAL® Sweat

Air separator.
Brass body.
Stainless steel float guide pin and linkage.
Glass reinforced nylon internal element.
½" NPT female bottom thread.
Max. working pressure: 150 psi.
Working temperature range: 32—250°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **551**028A | 1" sweat | 3.7 | **293.00** |
| **551**035A | 1¼" sweat | 3.7 | **427.00** |
| **551**041A | 1½" sweat | 4.9 | **556.00** |
| **551**054A | 2" sweat | 5.5 | **679.00** |

### 551 DISCAL® Sweat

Air separator with ½" service check valve (code 561402A) to mount expansion tank on bottom thread.
Brass body.
Stainless steel float guide pin and linkage.
Glass reinforced nylon internal element.
Max. working pressure: 150 psi.
Working temperature range: 32—250°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **551**028AC | 1" sweat | 3.8 | **303.00** |
| **551**035AC | 1¼" sweat | 3.8 | **438.00** |
| **551**041AC | 1½" sweat | 5.0 | **567.00** |
| **551**054AC | 2" sweat | 5.6 | **689.00** |

### 551 DISCAL® NPT

Air separator.
Brass body.
Stainless steel float guide pin and linkage.
Glass reinforced nylon internal element.
½" NPT female bottom thread.
Max. working pressure: 150 psi.
Working temperature range: 32—250°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **551**005A | ¾" NPT female | 3.7 | **286.00** |
| **551**006A | 1" NPT female | 3.7 | **307.00** |
| **551**007A | 1¼" NPT female | 4.9 | **449.00** |
| **551**008A | 1½" NPT female | 4.9 | **584.00** |
| **551**009A | 2" NPT female | 5.5 | **713.00** |

### 551 DISCAL® NPT

Air separator with automatic ½" check valve (code 561402A) to mount expansion tank on bottom thread.
Brass body.
Stainless steel float guide pin and linkage.
Glass reinforced nylon internal element.
Max. working pressure: 150 psi.
Working temperature range: 32—250°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **551**005AC | ¾" NPT female | 3.8 | **297.00** |
| **551**006AC | 1" NPT female | 3.8 | **318.00** |
| **551**007AC | 1¼" NPT female | 5.0 | **459.00** |
| **551**008AC | 1½" NPT female | 5.0 | **595.00** |
| **551**009AC | 2" NPT female | 5.6 | **723.00** |

### 551 DISCAL® Press

Air separator.
Brass body.
Stainless steel float guide pin and linkage.
Glass reinforced nylon internal element.
Max. working pressure: 150 psi.
Working temperature range: 32—250°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **551**066A | 1" integral press | 3.8 | **350.00** |
| **551**067A | 1¼" integral press | 5 | **538.00** |
| **551**068A | 1-1/2" integral press NEW | 5.1 | **696.00** |
| **551**069A | 2" integral press NEW | 5.5 | **849.00** |

### 551 DISCAL® Press

Air separator with automatic ½" check valve (code 561402A) to mount expansion tank on bottom thread.
Brass body.
Stainless steel float guide pin and linkage.
Glass reinforced nylon internal element.
Max. working pressure: 150 psi.
Working temperature range: 32—250°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **551**066AC | 1" integral press | 3.9 | **360.00** |
| **551**067AC | 1¼" integral press | 5.1 | **549.00** |
| **551**068AC | 1-1/2" integral press NEW | 5.2 | **709.00** |
| **551**069AC | 2" integral press NEW | 5.6 | **862.00** |

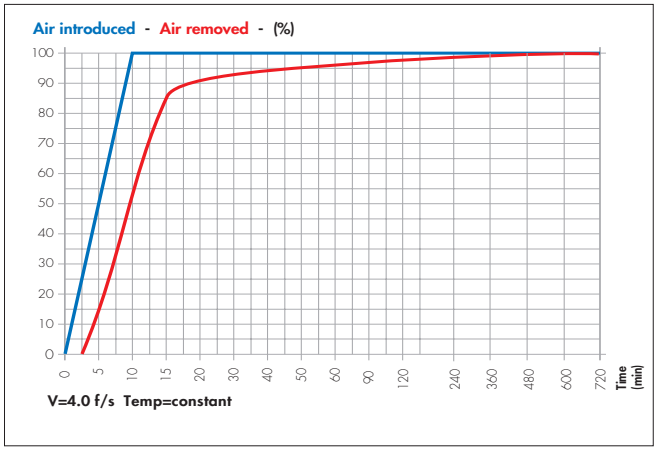
# AIR SEPARATORS

The DISCAL® air separator is used to continuously remove the air contained in hydronic circuits of heating and cooling systems. The air discharge capacity is very high. They automatically remove all the air present in the system down to micro-bubble level with low head loss due to the special internal shape of the separator body. Flow direction of the DISCAL® air separator is bidirectional; flow in either direction is permitted.

### Air separation efficiency

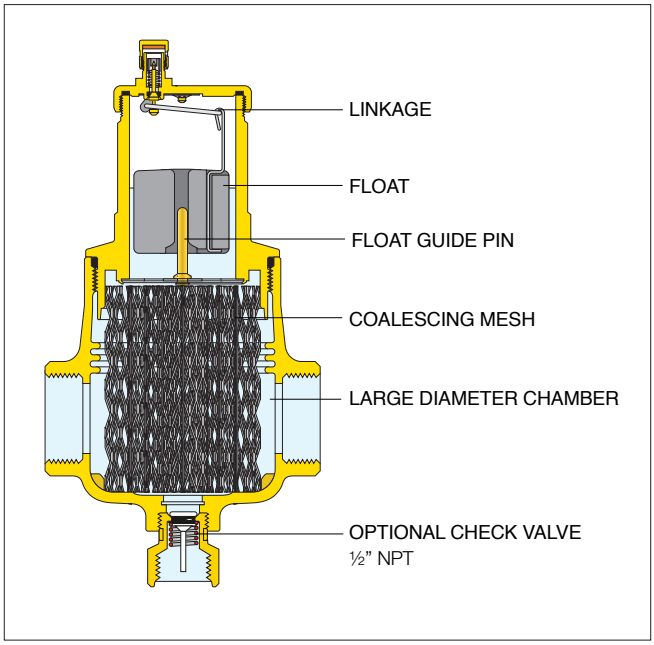
DISCAL® air separators continuously remove entrained air in hydronic systems with very high separation efficiency. The amount of air removed from a system varies depending on fluid velocity and temperature, As illustrated on the graph below, at the 4.0 feet per second fluid velocity, all the air artificially introduced into the circuit is eliminated by the DISCAL® air separator.

Any small amount which remains is then gradually eliminated during normal system operation. In conditions where the fluid velocity is slower or the temperature of the fluid is higher, the amount of air separated is even greater.




### Construction details

The air separator uses the combined action of several physical principles. The active part consists of an assembly of concentric mesh surfaces. These elements create the whirling movement required to facilitate the release of microbubbles and their adhesion to these surfaces. The bubbles, fusing with each other, increase in size until the hydrostatic thrust overcomes the adhesion force to the mesh. They rise towards the top of the unit from which they are released through a float-operated automatic air vent, with stainless steel float guide pin which keeps the float from binding.




| | MAXIMUM FLOW RATE | | | | |
|---|---|---|---|---|---|
| Size | ¾" | 1" | 1¼" | 1½" | 2" |
| GPM | 6 | 10 | 15 | 22 | 39 |
| Cv | 19 | 32 | 56 | 73 | 81 |

## ACCESORIES

Service check valve for easy replacement of expansion tank when connected to bottom of DISCAL®.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **561402A** | ½" NPT male x ½" NPT female | 0.2 | **20.80** |

Insulation shell fits DISCAL® 551 series.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **CBN551005** | Fits ¾"* and 1" 551 series | 0.1 | **78.30** |
| **CBN551007** | Fits 1¼" and 1½" 551 series | 0.1 | **83.90** |
| **CBN551009** | Fits 2" 551 series | 0.1 | **91.80** |

*Will not fit the ¾" compact DISCAL®; codes 551003A and 551022A.

## AIR SEPARATORS


### 551 DISCAL® Compact

Air separator.
Brass body.
Stainless steel float guide pin and linkage.
Stainless steel mesh internal element.
½" NPT bottom thread.
Max. working pressure: 150 psi.
Working temperature range: 32—250°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **551**003A | ¾" NPT female | 2.0 | **190.00** |
| **551**022A | ¾" sweat | 2.0 | **183.00** |


### 551 DISCAL® Compact

Air separator with ½" service check valve to mount expansion tank on bottom thread.
Brass body.
Stainless steel float guide pin and linkage.
Stainless steel mesh internal element.
Max. working pressure: 150 psi.
Working temperature range: 32—250°F.

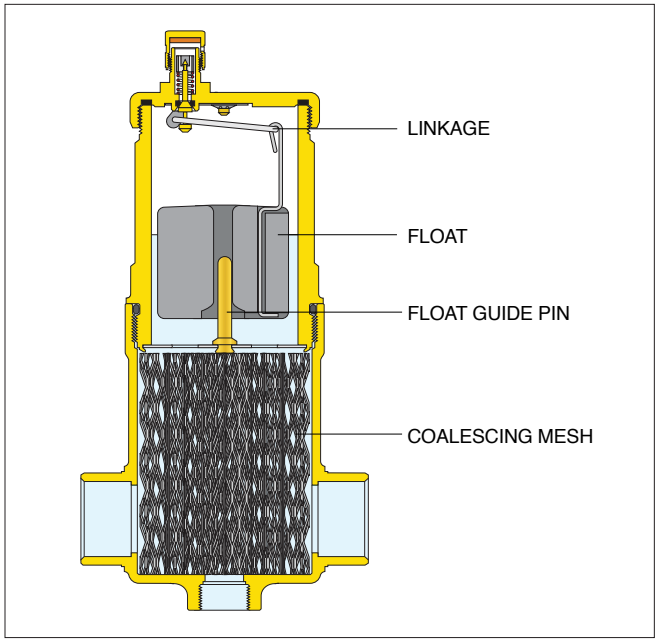
| Code | Description | Lbs | USD |
|---|---|---|---|
| **551**003AC | ¾" NPT female | 2.1 | **201.00** |
| **551**022AC | ¾" sweat | 2.1 | **195.00** |


### 551 DISCAL® Rotating collar

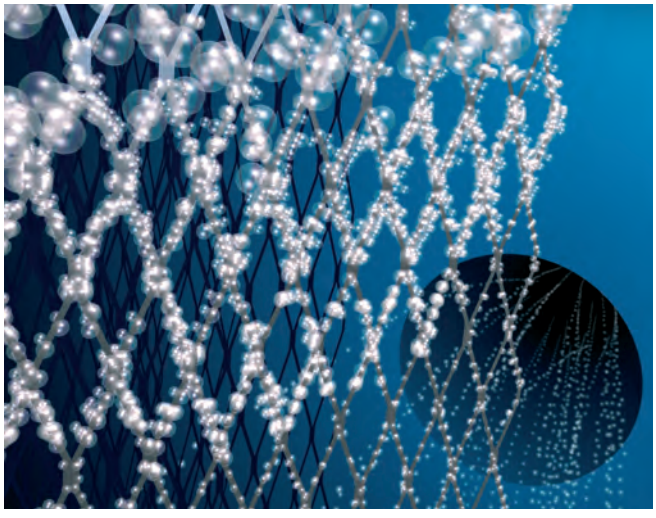
Air separator with rotating collar for horizontal or vertical pipes.
Brass body.
Stainless steel float guide pin and linkage.
Stainless steel mesh internal element.
Max. working pressure: 150 psi.
Working temperature range: 32—250°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **551**705A | 3/4" NPT male union | 4.9 | **363.00** |
| **551**765A | 3/4" press union | 4.9 | **381.00** |
| **551**795A | 3/4" sweat union | 4.9 | **358.00** |
| **551**706A | 1" NPT male union | 4.9 | **385.00** |
| **551**766A | 1" press union | 4.9 | **426.00** |
| **551**796A | 1" sweat union | 4.9 | **379.00** |
| **551**716 | body only, order unions separately | 4.4 | **331.00** |

**Construction**




Caleffi air separators use a coalescing element that consists of an element of concentric diamond pattern mesh surfaces. This element creates the whirling movement required to facilitate the release of micro-bubbles and their adhesion to these surfaces. The bubbles, fusing with each other, increase in volume until the bouyancy force overcomes the adhesion force to the surface. They rise to the top of the unit from where they are released through a float-operated automatic air release valve.



| | MAXIMUM FLOW RATE | | |
|---|---|---|---|
| Size | ¾" compact | ¾" vertical | 1" vertical |
| GPM | 6 | 6 | 10 |
| Cv | 12 | 19 | 19 |

## AIR SEPARATORS

# 551 DISCAL®

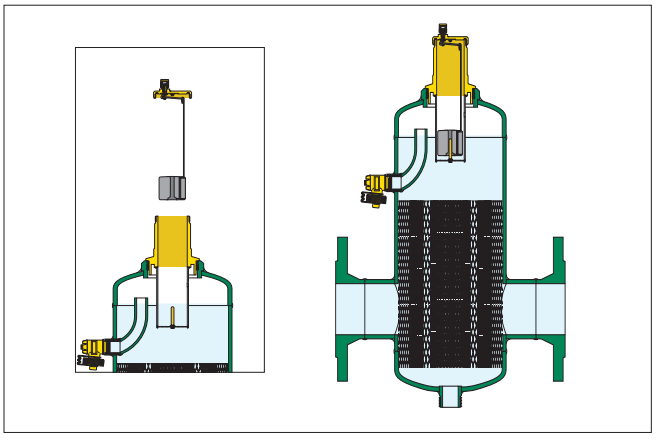
Air separator.
Epoxy resin coated steel body.
Stainless steel float guide pin and linkage.
Stainless steel mesh internal element.
ANSI 150 flange connections.
1" NPT male bottom drain connection.
Complete with male bottom drain valve (NA39753).
½" NPT male side drain connection.
Complete with side drain valve (538402FD).
Max. working pressure: 150 psi.
Vessel temperature range: 32—270°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **551**050A | 2" ANSI flange | 34 | **3,064.00** |
| **551**060A | 2½" ANSI flange | 35 | **3,276.00** |
| **551**080A | 3" ANSI flange | 62 | **4,337.00** |
| **551**100A | 4" ANSI flange | 67 | **4,852.00** |
| **551**120A | 5" ANSI flange | 106 | **7,061.00** |
| **551**150A | 6" ANSI flange | 117 | **9,098.00** |

### Air separator construction

DISCAL® air separators are constructed to allow maintenance and cleaning operations to be carried out without having to remove the separator body from the pipe work. All DISCAL® air separator have a bottom connection drain valve. All internal air release control components are fully accessible. The automatic air release valve, located at the top of the separator, has a long chamber for the movement of the float. This feature prevents any debris present in the water from reaching the sealing seat.

Flanged models include a side drain vent to release large amounts of air when filling the system and to remove any debris present above the water level.



| | MAXIMUM FLOW RATE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size | 2" | 2½" | 3" | 4" | 5" | 6" | 8" | 10" | 12" |
| GPM | 100 | 155 | 220 | 400 | 615 | 880 | 1,570 | 2,450 | 3,525 |
| Cv | 87 | 174 | 208 | 324 | 520 | 832 | 1,109 | 1,387 | 1,664 |

# NA551 DISCAL® ASME/CRN

Air separator.
Epoxy resin coated steel body.
Stainless steel float guide pin and linkage.
Stainless steel mesh internal element.
ANSI 150 flange connections.
1" NPT male bottom drain connection.
Complete with drain valve (NA39753).
½" NPT male side drain connection.
Complete with side drain valve (538402FD).
Max. working pressure: 150 psi.
Vessel temperature range: 32—270°F.
ASME and CRN registered.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA551**050A | 2" ANSI flange ASME & CRN | 34 | **3,672.00** |
| **NA551**060A | 2½" ANSI flange ASME & CRN | 35 | **3,926.00** |
| **NA551**080A | 3" ANSI flange ASME & CRN | 62 | **5,197.00** |
| **NA551**100A | 4" ANSI flange ASME & CRN | 67 | **5,814.00** |
| **NA551**120A | 5" ANSI flange ASME & CRN | 106 | **8,461.00** |
| **NA551**150A | 6" ANSI flange ASME & CRN | 117 | **10,902.00** |

NA prefix indicates ASME tagged and registered with the National Board of Boiler and Pressure Vessel Inspectors; CRN registered.

# NA551 DISCAL® ASME

Air separator.
Epoxy resin coated steel body.
Stainless steel float guide pin and linkage.
Stainless steel mesh internal element.
ANSI 150 flange connections.
2" NPT male bottom drain connection.
Complete with drain valve (NA59600).
½" NPT male side drain connection.
Complete with side drain valve (538402FD).
Max. working pressure: 150 psi.
Vessel temperature range: 32—270°F.
ASME registered.
Consult factory for CRN sizes 10" — 12".

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA551**200A | 8" ANSI flange ASME & CRN | 371 | **17,840.00** |
| **NA551**250A | 10" ANSI flange ASME | 617 | **26,761.00** |
| **NA551**300A | 12" ANSI flange ASME | 871 | **34,788.00** |

NA prefix indicates ASME tagged and registered with the National Board of Boiler and Pressure Vessel Inspectors.

Replacement drain ball valve.
Fits DISCAL® series.
Brass body.
Lever.
Max. working pressure: 150 psi.
Max. working temperature: 365°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA39**753 | 1" NPT female with lever | 0.7 | **58.10** |
| **NA59**600 | 2" NPT female with lever | 3.5 | **208.00** |

# AIR AND DIRT SEPARATORS

The **DISCALDIRT®** air and dirt separator uses a coalescing element that consists of an assembly of concentric diamond pattern mesh surfaces. This element creates the whirling movement required to facilitate the release of micro-bubbles and their adhesion to these surfaces. The bubbles, fusing with each other, increase in volume until the bouyancy force overcomes the adhesion force to the surface. They rise towards the top of the unit and are released through a float-operated automatic air release valve.

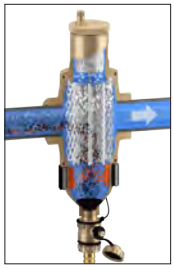
The dirt separating action performed by the same element offers little resistance to the medium flow while ensuring dirt separation. The particles collide with the concentric diamond pattern mesh surfaces and then settle to the bottom, and not by filtration unlike mesh strainers; which, over time, get progressively clogged. By contrast, the DISCALDIRT®'s low-velocity-zone dirt separator function efficiently removes the particles to as small as 5µm (0.2 mil) with very low head loss. The dirt can then be removed through the bottom drain port.

## 546 DISCALDIRT®

Air & Dirt separator.
Brass body.
Stainless steel float guide pin and linkage.
Glass reinforced nylon internal element.
Max. working pressure: 150 psi.
Working temperature range: 32—250°F.
Particle separation capacity: to 5 µm (0.2 mil).

| Code | Description | Lbs | USD |
|---|---|---|---|
| **546**096A | 1" sweat | 8.3 | **493.00** |
| **546**016A | 1" NPT male | 8.3 | **518.00** |
| **546**097A | 1¼" sweat | 8.3 | **588.00** |

The **DISCALDIRTMAG™** air and dirt separator with magnet uses an external magnet ring for separation of ferrous impurities. The external magnet allows greater effectiveness in the separation and collection of ferrous impurities. The impurities are retained in the body of the dirt separator by the strong magnetic field created by magnets in its external outer ring. The outer ring is removable from the body to allow the flushing of sludge, with the system still running. Since the magnetic ring is positioned outside the body of the dirt separator, it does not interfere with the flow through the device.



## 5461 DISCALDIRTMAG™

Air & Dirt separator with magnet.
Brass body.
Stainless steel float guide pin and linkage.
Glass reinforced nylon internal element.
Max. working pressure: 150 psi.
Working temperature range: 32—250°F.
Particle separation capacity: to 5 µm (0.2 mil).
Ferrous impurities separation efficiency: 100%.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **5461**95A | ¾" sweat | 8.5 | **534.00** |
| **5461**96A | 1" sweat | 8.5 | **608.00** |
| **5461**16A | 1" NPT male | 8.5 | **634.00** |
| **5461**97A | 1¼" sweat | 8.5 | **723.00** |

## 5461 - DISCALDIRTMAG™

Air & Dirt separator with magnet.
Epoxy resin coated steel body.
Stainless steel float guide pin and linkage.
Stainless steel mesh internal element.
Complete with union connections.
Max. working pressure: 150 psi.
Working temperature range: 32 — 230°F
Particle separation capacity: to 5 µm (0.2 mil).
Ferrous impurities separation efficiency: 100%.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **5461**98A | 1½" sweat union | 22 | **1,791.00** |
| **5461**08A | 1½" NPT female union | 22 | **1,844.00** |
| **5461**68A | 1½" press union | 22 | **2,046.00** |
| **5461**99A | 2" sweat union | 23 | **1,877.00** |
| **5461**09A | 2" NPT female union | 23 | **1,948.00** |
| **5461**69A | 2" press union | 23 | **2,281.00** |

Insulation shell for DISCALDIRT® & DISCALDIRTMAG™.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **CBN546002** | Fits ¾", 1", 1¼" brass 546 only | 0.1 | **123.00** |
| **CBN546118** | Fits 1½" steel 5461 only | 0.1 | **155.00** |
| **CBN546119** | Fits 2" steel 5461 only | 0.1 | **177.00** |

| | MAXIMUM FLOW RATE | | | | |
|---|---|---|---|---|---|
| Size | ¾" | 1" | 1¼" | 1½" | 2" |
| GPM | 6 | 10 | 15 | 22 | 39 |
| Cv | 19 | 32 | 40 | 50 | 79 |

## 546 DISCALDIRT®

Air & Dirt separator.
Epoxy resin coated steel body.
Stainless steel float guide pin and linkage.
Stainless steel mesh internal element.
1" NPT threaded bottom drain connection.
Complete with side drain valve (538402 FD).
ANSI 150 flange connections.
Complete with drain valve (NA39753)
Max. working pressure: 150 psi.
Vessel temperature range: 32—270°F.
Particle separation capacity: to 5 µm (0.2 mil).

| Code | Description | Lbs | USD |
|---|---|---|---|
| **546**050A | 2" ANSI flange | 40 | **3,891.00** |
| **546**060A | 2½" ANSI flange | 42 | **4,101.00** |
| **546**080A | 3" ANSI flange | 73 | **5,283.00** |
| **546**100A | 4" ANSI flange | 78 | **5,791.00** |
| **546**120A | 5" ANSI flange | 181 | **8,354.00** |
| **546**150A | 6" ANSI flange | 188 | **10,192.00** |

## AIR AND DIRT SEPARATORS

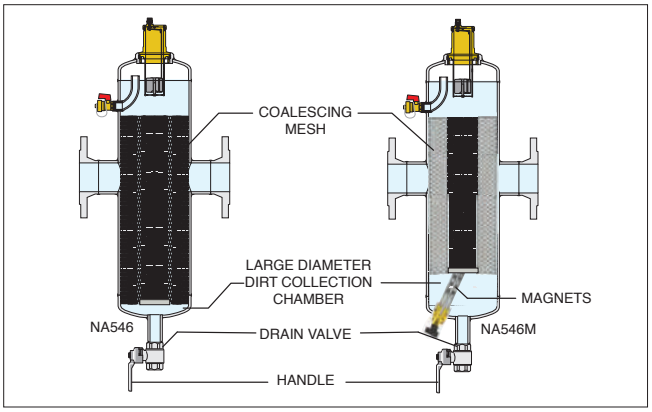
# NA546
# DISCALDIRT®
# ASME/CRN

Air & Dirt separator.
Epoxy resin coated steel body.
Stainless steel float guide pin and linkage.
Stainless steel mesh internal element.
1" (2—6" sizes) and 2" (8—14" sizes) threaded NPT bottom drain connection.
ANSI 150 flange connections.
Complete with drain valve NA39753 (2—6" sizes), NA59600 (8—14" sizes).
Max. working pressure: 150 psi.
Vessel temperature range: 32—270°F.
ASME and CRN registered.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA546**050T | 2" Threaded ASME & CRN | 28 | **3,726.00** |
| **NA546**060A | 2½" ANSI flange ASME & CRN | 42 | **5,013.00** |
| **NA546**080A | 3" ANSI flange ASME & CRN | 73 | **6,457.00** |
| **NA546**100A | 4" ANSI flange ASME & CRN | 78 | **7,078.00** |
| **NA546**120A | 5" ANSI flange ASME & CRN | 181 | **10,210.00** |
| **NA546**150A | 6" ANSI flange ASME & CRN | 188 | **12,457.00** |
| **NA546**200A | 8" ANSI flange ASME & CRN | 355 | **23,138.00** |
| **NA546**250A | 10" ANSI flange ASME | 555 | **35,576.00** |
| **NA546**300A | 12" ANSI flange ASME | 825 | **44,487.00** |
| **NA546**350A | 14" ANSI flange ASME | 950 | **56,253.00** |

ASME U-stamp tagged and registered with the National Board of Boiler and Pressure Vessel Inspectors; CRN registered, 2"— 8"; consult factory for 10" — 14".

Low head losses and high performance are maintained over time. The dirt separating action performed by the DISCALDIRT® air and dirt separator is based on using the internal element with concentric diamond pattern mesh surfaces instead of an ordinary filter. The element offers little resistance to the medium flow while ensuring dirt separation. This occurs due to the particles colliding with the concentric diamond pattern mesh surfaces and then settling to the bottom, and not by filtration; which, over time, gets progressively clogged. By contrast, the DISCALDIRT® low-velocity zone air and dirt separator efficiently removes the particles to as small as 5 µm (0.2 mil) with very low head loss. The dirt collection chamber at the bottom of the DISCALDIRT® is at the right distance from the inlet and outlet connections so that the collected dirt particles are not affected by the swirling flow through the bottom drain port, even with the system running, by opening the drain valve with the handle.




# NA546M
# DISCALDIRTMAG™
# ASME/CRN

Air & Dirt separator with magnets.
Epoxy resin coated steel body.
Stainless steel float guide pin and linkage.
Stainless steel mesh internal element.
ANSI 150 flange connections.
1" (2—6" sizes) and 2" (8—14" sizes) threaded NPT bottom drain connection.
Complete with drain valve NA39753 (2—6" sizes), NA59600 (8—14" sizes).
Max. working pressure: 150 psi.
Vessel temperature range: 32—270°F.
Particle separation capacity: to 5 µm (0.2 mil).
Ferrous impurities separation efficiency: 100%.
ASME and CRN registered.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA546**050TM* | 2" Threaded ASME & CRN | 31 | **4,308.00** |
| **NA546**060AM* | 2½" ANSI flange ASME & CRN | 45 | **5,633.00** |
| **NA546**080AM* | 3" ANSI flange ASME & CRN | 76 | **7,329.00** |
| **NA546**100AM* | 4" ANSI flange ASME & CRN | 81 | **7,968.00** |
| **NA546**120AM* | 5" ANSI flange ASME & CRN | 184 | **11,193.00** |
| **NA546**150AM* | 6" ANSI flange ASME & CRN | 191 | **13,506.00** |
| **NA546**200AM** | 8" ANSI flange ASME & CRN | 365 | **26,496.00** |
| **NA546**250AM** | 10" ANSI flange ASME | 565 | **38,254.00** |
| **NA546**300AM** | 12" ANSI flange ASME | 835 | **48,473.00** |
| **NA546**350AM** | 14" ANSI flange ASME | 960 | **60,585.00** |

*with one magnet
**with three magnets
ASME U-stamp tagged and registered with the National Board of Boiler and Pressure Vessel Inspectors. CRN registered, 2" — 8"; consult factory for 10" — 14".

In the DISCALDIRTMAG™ air and dirt separator with magnets ferrous impurities are captured by a concentrated magnetic field created by a stack of neodymium rare-earth magnets positioned inside a brass dry-well which is below the flow stream. Non-magnetic dirt particles are separated by colliding with an internal element in the flow stream and settling to the bottom. The deep collection chamber keeps the dirt from re-entering the flow stream. The dirt and ferrous impurities are flushed out while the system is operating, by removing the magnets and opening the purge valve.

| | MAXIMUM FLOW RATE | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Size | 2" | 2½" | 3" | 4" | 5" | 6" | 8" | 10" | 12" | 14" |
| GPM | 100 | 155 | 220 | 400 | 615 | 880 | 1,570 | 2,450 | 3,525 | 4,800 |
| Cv | 87 | 174 | 208 | 324 | 520 | 832 | 1,109 | 1,387 | 1,664 | 1,967 |

# DIRT & MAGNETIC DIRT SEPARATORS

The dirt separating action performed by the DIRTCAL® is based on using the internal element with concentric diamond pattern mesh surfaces instead of a mechanical filter. The element offers little resistance to the medium flow while ensuring dirt separation. This occurs due to the particles colliding with the concentric diamond pattern mesh surfaces and then settling to the bottom, and not by filtration; which, over time, gets continuously clogged. By contrast, the DIRTCAL® low-velocity-zone dirt separator requires a pressure drop 25% or less than that of a comparable Y-strainer depending on mesh size and amount of filtered debris. It efficiently removes the particles to as small as 5 µm (0.2 mil) with very low head loss. The dirt collection chamber at the bottom of the DIRTCAL® is at the optimal distance from the inlet and outlet connections to ensure that the collected dirt particles are not affected by the swirling flow through the mesh element. The dirt can then be removed through the bottom drain port even with the system running by opening the drain valve. Low head losses and performance are maintained over time.

The versatile DIRTMAG® magnetic dirt separator removes both magnetic and non-magnetic particles continuously. In addition to removing sand and rust impurities with a glass-reinforced nylon internal element in a low-velocity-zone chamber, the DIRTMAG® features a powerful removable external magnet around the body below the flow line for fast and effective capture of ferrous particles. The DIRTMAG® has the magnet positioned externally to maintain low pressure loss, and removes up to 100% of the ferrous impurities that can form in a hydronic system.

The DIRTMAG® can be fitted with optional insulated covers, code CBN5462xx series purchased separately, to minimize heat loss.

## 5462
### DIRTCAL®

Dirt separator.
Brass body.
½" NPT top thread with plug for optional air vent, code 502243A.
Max. working pressure: 150 psi.
Working temperature range: 32—250°F.
Particle separation capacity: to 5 µm (0.2 mil).

| Code | Description | Lbs | USD |
|---|---|---|---|
| **5462**05A | ¾" NPT female | 4.2 | **260.00** |
| **5462**28A | 1" sweat | 4.2 | **273.00** |
| **5462**06A | 1" NPT female | 4.2 | **287.00** |
| **5462**66A | 1" press | 4.5 | **330.00** |
| **5462**35A | 1¼" sweat | 4.2 | **398.00** |
| **5462**07A | 1¼" NPT female | 5.3 | **418.00** |
| **5462**67A | 1¼" press | 5.6 | **508.00** |
| **5462**41A | 1½" sweat | 4.9 | **516.00** |
| **5462**08A | 1½" NPT female | 6.2 | **542.00** |
| **5462**54A | 2" sweat | 5.5 | **634.00** |
| **5462**09A | 2" NPT female | 6.2 | **665.00** |

Insulation shell fits DIRTCAL® 5462 and DIRTMAG® 5463 series.
Labels included for field installation to externally identify product use.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **CBN546**205 | Fits ¾" & 1" DIRTCAL®, DIRTMAG® | 0.1 | **78.30** |
| **CBN546**207 | Fits 1¼" & 1½" DIRTCAL®, DIRTMAG® | 0.1 | **83.90** |
| **CBN546**209 | Fits 2" DIRTCAL®, DIRTMAG® | 0.1 | **91.80** |

DIRTCAL® to DIRTMAG®
Retrofit kit.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **F41661A** | Retrofit kit | 2.0 | **160.00** |

Replacement drain valve fits DIRTCAL® 5462 series, DIRTMAG® 5463 series, DISCALDIRT® 546 series and DISCALDIRTMAG® 5461 series.
Brass body.
Max. working pressure: 150 psi.
Max. working temperature: 250°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **538**402 FD | ½" NPT male x ¾" GHT | 0.3 | **20.70** |

## 5463
### DIRTMAG®

Dirt separator with magnet.
Brass body.
½" NPT top thread with plug.
Max. working pressure: 150 psi.
Working temperature range: 32—250°F.
Particle separation capacity: to 5 µm (0.2 mil).
Ferrous impurities separation efficiency: 100%.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **5463**28A | 1" sweat | 4.2 | **329.00** |
| **5463**06A | 1" NPT female | 4.2 | **345.00** |
| **5463**66A | 1" press | 4.5 | **375.00** |
| **5463**35A | 1¼" sweat | 4.2 | **480.00** |
| **5463**07A | 1¼" NPT female | 5.3 | **504.00** |
| **5463**67A | 1¼" press | 5.6 | **574.00** |
| **5463**41A | 1½" sweat | 4.9 | **626.00** |
| **5463**08A | 1½" NPT female | 6.2 | **657.00** |
| **5463**68A | 1½" press NEW | 6.5 | **751.00** |
| **5463**54A | 2" sweat | 5.5 | **763.00** |
| **5463**09A | 2" NPT female | 6.2 | **792.00** |
| **5463**69A | 2" press NEW | 6.5 | **916.00** |

## NA5463
### DIRTMAG® Chemical kit

Magnetic Dirt separator plus Boiler Chemical Treatment Kit.
Brass body.
½" NPT top thread with plug.
Treats up to 30 gallons.
DIRTMAG® plus 1 bottle of Rhomar Hydro-Solv™ cleaner and 1 bottle of Pro-Tek® treatment.
Aerosols are injected into the hydronic system through the GHT connection on the bottom of the DIRTMAG®.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA5463**28T | 1" sweat | 6.8 | **569.00** |
| **NA5463**06T | 1" NPT female | 6.8 | **585.00** |
| **NA5463**66T | 1" press | 7.1 | **615.00** |
| **NA5463**35T | 1¼" sweat | 6.8 | **720.00** |
| **NA5463**07T | 1¼" NPT female | 6.8 | **744.00** |
| **NA5463**67T | 1¼" press | 7.1 | **814.00** |

# MAGNETIC DIRT SEPARATORS

## NA5453
### DIRTMAG®

Dirt separator with magnet.
Brass mounting housing.
Composite PA66G30 body.
Max. working pressure: 45 psi.
Working temperature range: 32—195°F.
Particle separation capacity: to 5 µm (0.2 mil).
Ferrous impurities separation efficiency: 100%.
Union isolation ball valves.
Drain valve with hose connection.
Top dosing point port.
Dosing capacity: 12 fluid oz.
Manual screw air vent.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA5453**55 | ¾" NPT female isolation valves, unions | 5.5 | **340.00** |
| **NA5453**56 | 1" NPT female isolation valves, unions | 5.5 | **397.00** |
| **NA5453**76 | 1" press isolation valves, unions | 5.5 | **543.00** |

| | MAXIMUM FLOW RATE | |
|---|---|---|
| Size | ¾" | 1" |
| GPM | 10 | 10 |
| Cv w/ ball valve | 9 | 9 |
| Cv w/o ball valve | 12 | 12 |

This multifunction device can also be used as a dosing point to pour chemical additives into the circuit.

Use a screwdriver to undo the screw on the top plug in order to purge any air that has collected at the top of the body.


## NA5453
### DIRTMAG®

Dirt separator with magnet.
Brass mounting housing.
Composite PA66G30 body.
Max. working pressure: 45 psi.
Working temperature range: 32—195°F.
Particle separation capacity: to 5 µm (0.2 mil).
Ferrous impurities separation efficiency: 100%.
Drain valve with hose connection.
Top dosing point port.
Dosing capacity: 12 fluid oz.
Manual screw air vent.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA5453**05 | ¾" NPT male union | 4.5 | **284.00** |
| **NA5453**65 | ¾" press union | 4.5 | **308.00** |
| **NA5453**95 | ¾" sweat union | 4.5 | **282.00** |
| **NA5453**06 | 1" NPT male union | 4.5 | **327.00** |
| **NA5453**66 | 1" press union | 4.7 | **370.00** |
| **NA5453**96 | 1" sweat union | 4.5 | **312.00** |

The dirt separator with magnet combines the action of the internal element and magnet. The impurities in the water strike the internal element and are separated, dropping into the bottom of the body where they are collected.
Ferrous impurities are also trapped inside the dirt separator body by two strong magnets inserted into removable outer ring collar. The collected impurities are discharged by removing the external ring magnet and opening the drain valve, this procedure can even be performed while the system is in operation.

The special coupling between the locking nut and the mounting base allows the DIRTMAG® dirt separator to be rotated for installation to either vertical or horizontal pipes, while maintaining the same operating performance.

# DIRT SEPARATORS

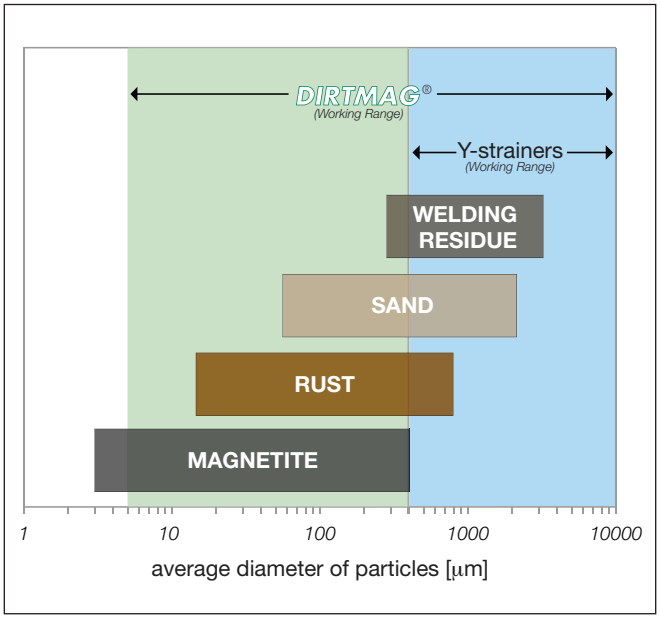
The dirt separating action performed by the DIRTCAL® is based on using the internal element with concentric diamond pattern mesh surfaces instead of a mechanical filter. The element offers little resistance to the medium flow while ensuring dirt separation. This occurs due to the particles colliding with the concentric diamond pattern mesh surfaces and then settling to the bottom, and not by filtration; which, over time, gets continuously clogged. By contrast, the DIRTCAL® low-velocity-zone dirt separator efficiently removes the particles to as small as 5 µm (0.2 mil) with very low head loss. The dirt collection chamber at the bottom of the DIRTCAL® is at the optimal distance from the inlet and outlet connections to ensure that the collected dirt particles are not affected by the swirling flow through the mesh element. The dirt can then be removed through the bottom drain port even with the system running, by opening the drain valve. Low head losses and performance are maintained over time.

## 5465
### DIRTCAL®

Dirt separator.
Epoxy resin coated steel body.
1"threaded NPT bottom drain connection
Complete with drain valve (code NA39753).
¾" NPT male top thread with brass cap.
ANSI 150 flange connections.
Max. working pressure: 150 psi.
Vessel temperature range: 32—270°F.
Particle separation capacity: to 5 µm (0.2 mil).

| Code | Description | Lbs | USD |
|---|---|---|---|
| **5465**60A | 2½" ANSI flange | 38 | **2,185.00** |
| **5465**10A | 4" ANSI flange | 55 | **3,269.00** |

**Dirt separation comparison**




## NA5465
### DIRTCAL® ASME/CRN

Dirt separator.
Epoxy resin coated steel body.
1"threaded NPT bottom drain connection
Complete with drain valve (code NA39753).
¾" NPT male top thread with brass cap.
ANSI 150 flange connections.
Max. working pressure: 150 psi.
Vessel temperature range: 32—270°F.
Particle separation capacity: to 5 µm (0.2 mil).
ASME and CRN registered.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA5465**50A | 2" ANSI flange ASME & CRN | 38 | **3,150.00** |
| **NA5465**60A | 2½" ANSI flange ASME & CRN | 38 | **3,351.00** |
| **NA5465**80A | 3" ANSI flange ASME & CRN | 55 | **4,364.00** |
| **NA5465**10A | 4" ANSI flange ASME & CRN | 55 | **4,776.00** |
| **NA5465**12A | 5" ANSI flange ASME & CRN | 138 | **6,886.00** |
| **NA5465**15A | 6" ANSI flange ASME & CRN | 148 | **8,832.00** |

ASME U-stamp tagged and registered with the National Board of Boiler and Pressure Vessel Inspectors registered.

## NA5465
### DIRTCAL® ASME

Dirt separator.
Epoxy resin coated steel body.
2" threaded NPT bottom drain connection.
Complete with drain valve (code NA59600).
¾" NPT male top thread with brass cap.
ANSI 150 flange connections.
Max. working pressure: 150 psi.
Vessel temperature range: 32—270°F.
Particle separation capacity: to 5 µm (0.2 mil).
ASME registered. For CRN consult factory.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA5465**20A | 8" ANSI flange ASME & CRN | 335 | **18,060.00** |
| **NA5465**25A | 10" ANSI flange ASME | 620 | **27,840.00** |
| **NA5465**30A | 12" ANSI flange ASME | 870 | **34,480.00** |
| **NA5465**35A | 14" ANSI flange ASME | 1,000 | **43,350.00** |

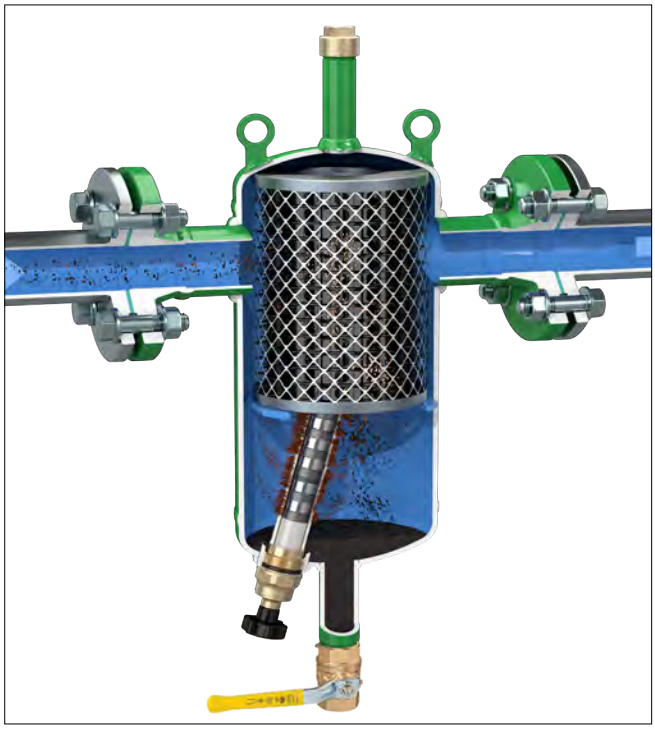
ASME U-stamp tagged and registered with the National Board of Boiler and Pressure Vessel Inspectors registered. CRN registered, 8"; consult factory for 10" — 14".

| | MAXIMUM FLOW RATE | | | | | |
|---|---|---|---|---|---|---|
| Size | 2" | 2½" | 3" | 4" | 5" | 6" |
| GPM | 89 | 150 | 227 | 355 | 816 | 904 |
| Cv | 88 | 176 | 211 | 328 | 520 | 842 |

| | MAXIMUM FLOW RATE | | | |
|---|---|---|---|---|
| Size | 8" | 10" | 12" | 14" |
| GPM | 1,570 | 2,450 | 3,525 | 4,800 |
| Cv | 1,055 | 1,400 | 1,755 | 2,075 |

# MAGNETIC DIRT SEPARATORS

Ferrous and non ferrous impurities in hydronic systems can deposit onto heat exchanger surfaces and accumulate in pump cavities causing reduced thermal efficiency and premature wear. The small and often microscopic magnetic particles, called magnetite, form when iron or steel corrodes. Highly abrasive, the extremely fine particles are difficult to remove by traditional means. DIRTMAG® separators offer highly efficient separation of typical dirt as well as magnetite. The magnetite is captured by a concentrated magnetic field created by a stack of neodymium rare-earth magnets positioned inside a brass dry-well which is below the flow stream. Non-magnetic dirt particles are separated by colliding with an internal element in the flow stream, settling to the bottom. The deep collection chamber keeps the dirt from re-entering the flow stream.



To purge the debris, the flexible magnetic stack is removed from the brass dry-well and, even while the system is still running, the drain valve is opened. Aided by the system pressure, the dirt and magnetite flushes out quickly and effectively. DIRTMAG® magnetic dirt separators accomplish 2½ times the ferrous impurities removal performance of standard dirt separators, delivering up to 100% elimination efficiency.

| | MAXIMUM FLOW RATE | | | | | |
|---|---|---|---|---|---|---|
| Size | 2" | 2½" | 3" | 4" | 5" | 6" |
| GPM | 89 | 150 | 227 | 355 | 816 | 904 |
| Cv | 88 | 176 | 211 | 328 | 520 | 842 |

| | MAXIMUM FLOW RATE | | | |
|---|---|---|---|---|
| Size | 8" | 10" | 12" | 14" |
| GPM | 1,570 | 2,450 | 3,525 | 4,800 |
| Cv | 1,055 | 1,400 | 1,755 | 2,075 |

## 5465M

### DIRTMAG®

Magnetic dirt separator.
Epoxy resin coated steel body.
Complete with drain valve (code NA39753).
¾" NPT male top thread with brass cap.
ANSI 150 flange connections.
Max. working pressure: 150 psi.
Vessel temperature range: 32—270°F.
Particle separation capacity: to 5 µm (0.2 mil).
Ferrous impurities separation efficiency: 100%.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **5465**50AM | 2" ANSI flange | 41 | **2,539.00** |
| **5465**60AM | 2½" ANSI flange | 41 | **2,732.00** |
| **5465**80AM | 3" ANSI flange | 58 | **3,694.00** |
| **5465**10AM | 4" ANSI flange | 58 | **4,086.00** |

## NA5465M

### DIRTMAG®

Magnetic dirt separator with one magnet assembly.
Epoxy resin coated steel body.
Complete with drain valve (code NA39753).
¾" NPT male top thread with brass cap.
ANSI 150 flange connections.
Max. working pressure: 150 psi.
Vessel temperature range: 32—270°F.
Particle separation capacity: to 5 µm (0.2 mil).
Ferrous impurities separation efficiency: 100%.
ASME registered. CRN registrated.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA5465**50AM | 2" ANSI flange ASME & CRN | 41 | **3,600.00** |
| **NA5465**60AM | 2½" ANSI flange ASME & CRN | 41 | **3,801.00** |
| **NA5465**80AM | 3" ANSI flange ASME & CRN | 58 | **5,014.00** |
| **NA5465**10AM | 4" ANSI flange ASME & CRN | 58 | **5,426.00** |
| **NA5465**12AM | 5" ANSI flange ASME & CRN | 141 | **7,536.00** |
| **NA5465**15AM | 6" ANSI flange ASME & CRN | 151 | **9,482.00** |

## NA5465M

### DIRTMAG®

Magnetic dirt separator with three magnets assembly.
Epoxy resin coated steel body.
Complete with drain valve (code NA59600).
¾" NPT male top thread with brass cap.
ANSI 150 flange connections.
Max. working pressure: 150 psi.
Vessel temperature range: 32—270°F.
Particle separation capacity: to 5 µm (0.2 mil).
Ferrous impurities separation efficiency: 100%.
ASME registered. CRN registered, 8".
Consult factory for 10" — 14".

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA5465**20AM | 8" ANSI flange ASME & CRN | 345 | **20,610.00** |
| **NA5465**25AM | 10" ANSI flange ASME | 630 | **30,390.00** |
| **NA5465**30AM | 12" ANSI flange ASME | 880 | **37,030.00** |
| **NA5465**35AM | 14" ANSI flange ASME | 1,010 | **45,900.00** |

# ACCESSORIES FOR AIR AND DIRT SEPARATORS

Hygroscopic air vent cap fits DISCAL® 551, and DISCALDIRT® 546 series, and MINICAL® 502 series.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **R59681** | Vent cap | 0.1 | **25.60** |

Anti-suction air vent cap fits DISCAL® 551, DISCALDIRT® 546 series and MINICAL® 502 series.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **562100** | Vent cap | 0.1 | **27.00** |

Replacement air vent cap fits DISCAL® 551 and DISCALDIRT® 546 series.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **R59119** | Vent cap | 0.1 | **17.00** |

Replacement plastic cap fits MINICAL® 5020 and 5021 series.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **R56214** | Vent cap | 0.1 | **2.80** |

Replacement plastic air vent cap fits 5026 and 5027 series.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **R56142** | Vent cap | 0.1 | **2.70** |

Magnetic/drywell assembly for DISCALDIRTMAG™ and DIRTMAG®

| Code | Description | Lbs | USD |
|---|---|---|---|
| **49684A** | Fit 2" and 2½" | 3.0 | **459.00** |
| **49685A** | Fit 3" to 6" | 3.0 | **663.00** |
| **F0000349** | Fit 8" to 14" | 3.0 | **867.00** |

Replacement air vent assembly fits DISCAL® brass 551 series (except Compact), brass 546, brass and steel 5461 series and SEP4™ 5495 series.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **59829** | Air Vent | 2.0 | **165.00** |

Replacement air vent assembly fits steel 551, NA551 steel DISCAL® and 546 steel series DISCAL DIRT® and DISCALDIRTMAG® .

| Code | Description | Lbs | USD |
|---|---|---|---|
| **59756** | Air vent | 3.0 | **194.00** |

Replacement cover and float fits DISCAL® brass 551 series and DISCALDIRT® brass 546 series.
Vent cap sold separately.

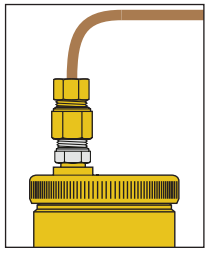
| Code | Description | Lbs | USD |
|---|---|---|---|
| **F39807** | Cover and float | 0.4 | **80.60** |

Drain ball valve.
Fits DIRTCAL® 5465 and NA5465 series.
Fits steel separators in section 2.
Brass body.
Lever.
Max. working pressure: 150 psi.
Max. working temperature: 365°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA39**753 | 1" NPT female with lever | 0.7 | **58.10** |
| **NA59**600 | 2" NPT female with lever | 3.5 | **208.00** |

Vent cap adapter fits all air separators and air vents except 5026 and 5027 series

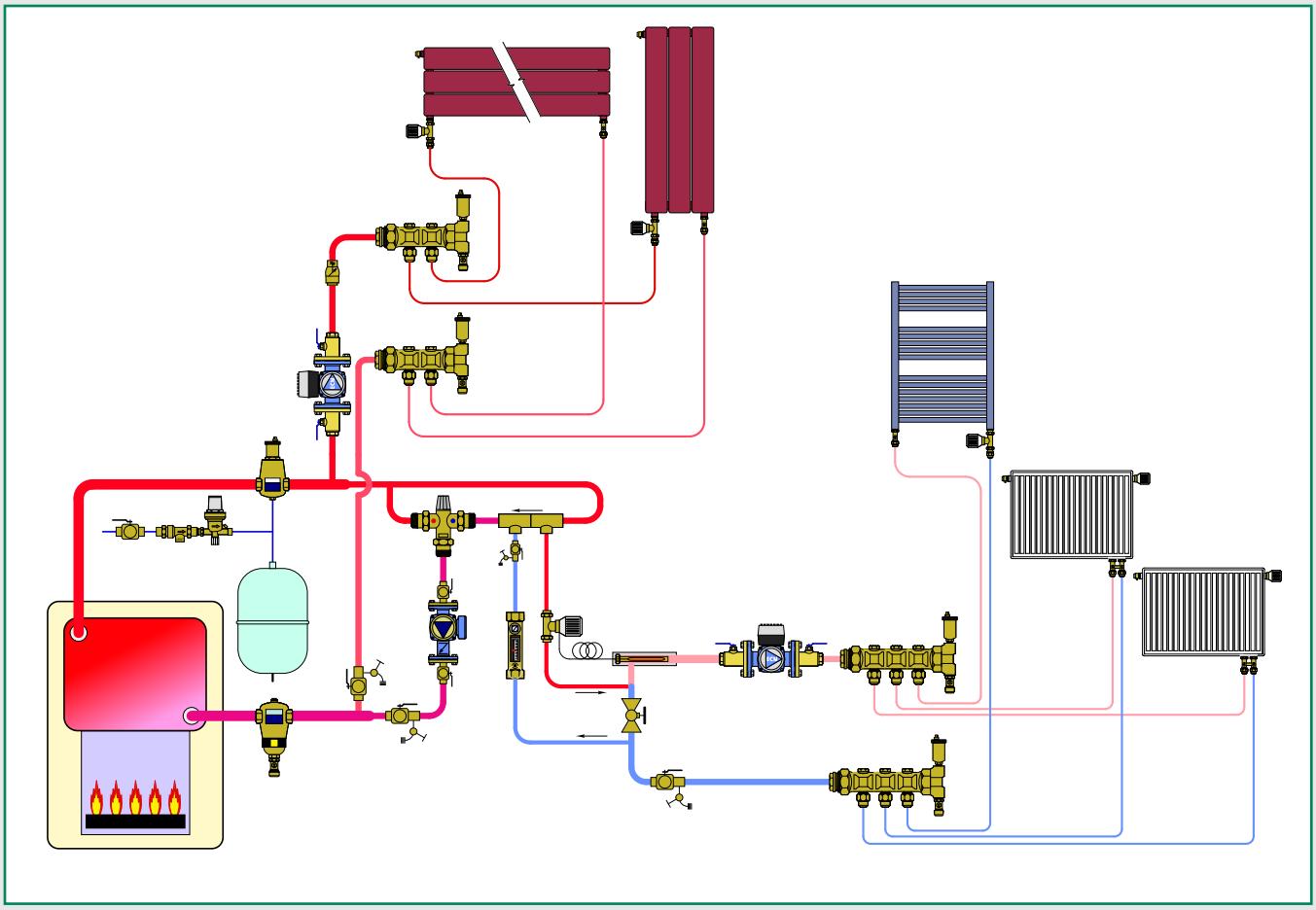
| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA102**04 | ¼" NPT male | 0.1 | **29.10** |



Vent cap adapter NA10204 replaces the air vent cap, provides a ¼" male NPT thread which can be used to connect a discharge tube with separate fittings.

# THERMOSTATIC RADIATOR VALVES

This diagram is an example



## THERMOSTATIC CONTROL HEADS

### 200

Thermostatic control head fits radiator valves.
Set point locking mechanism.
Range stop adjustment.
Built-in sensor with liquid-filled element.
Fits valve 220, 221, 338 and 339 series.
Graduated scale from * to 5 corresponding to a temperature scale adjustment range of 45—82ºF (7—28ºC).

| Code | Description | Lbs | USD |
|---|---|---|---|
| **200**000 | Built-in sensor | 0.5 | **81.20** |

### 472

Thermostatic control head with remote adjusting knob, liquid-filled element.
Fits valves 220, 221, 338, 339 & 676 series (direct coupling).
Temperature range: 43—82°F (6—28°C).
Capillary length: 78 in. (2 m.)

| Code | Description | Lbs | USD |
|---|---|---|---|
| **472**000 | Remote wall sensor | 1 | **277.00** |

### 201

Thermostatic control head fits radiator valves.
With remote sensor.
Fits valve 220, 221, 338 and 339 series.
Graduated scale from * to 5 corresponding to a temperature scale adjustment range of 45—82ºF (7—28ºC).
Capillary length: 78" (2 m).

| Code | Description | Lbs | USD |
|---|---|---|---|
| **201**000 | Remote sensor | 1 | **145.00** |

### 203

Thermostatic control head fits radiator valves; with contact probe.
Built-in sensor with liquid-filled element.
Fits valve 220, 221, 338 and 339 series.
The pre-set scale corresponds to adjustment temperature range of 68—122ºF (20—50ºC).
Capillary length: 78" (2 m).

| Code | Description | Lbs | USD |
|---|---|---|---|
| **203**502 | Remote sensor probe | 0.5 | **275.00** |

## ACCESSORIES

### 209

Tamper-proof cap for public installations.
Fits thermostatic control head 200 and 201 series.
To be used with special hex key code 209001.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **209**000 | Tamper proof cap | 0.1 | **28.10** |

### 4490

Manual knob for thermostatic radiator valves. Fits valves 220 and 221 series.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **4490**10 | Manual knob | 0.1 | **16.80** |

### 209

Special hex key fits tamper-proof cap.
To be used with tamper-proof caps 209 series.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **209**001 | Hex key | 0.1 | **11.20** |

### NA475

Pocket well fits 203502.
Length: 7 3/8" (187 mm).

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA475**002 | ¾" NPT male | 0.2 | **48.10** |

## THERMO-ELECTRIC ACTUATOR

### 6564

Thermo-electric actuator for electric control of radiator valves.
Fits valves 220, 221, 338 and 339 series.
Low current draw.
Power supply: 24 V AC/DC.
Initial current draw: ≤ 250 mA.
Power consumption: 3 W, 6 VA.
31.5" wire lead connection.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **6564**04 | 24 V AC/DC | 0.4 | **110.00** |
| **6564**14 | 24 V AC/DC with microswitch | 0.4 | **138.00** |

# NPT THERMOSTATIC RADIATOR VALVE BODIES

## 220

Angled radiator valve body. Order thermo-electric actuators or thermostatic control heads separately for field installation.
Chrome plated.
Max. working pressure: 150 psi (10 bar).
Temperature range: 40—212°F (5—100°C).

## 221

Straight radiator valve body.
Order thermo-electric actuators or thermostatic control heads separately for field installation.
Chrome plated.
Max. working pressure: 150 psi (10 bar).
Temperature range: 40—212°F (5—100°C).

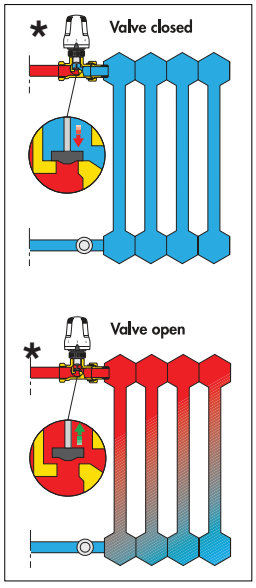
| Code | Description | Cv | Lbs | USD |
|---|---|---|---|---|
| **220**400A | ½" NPT | 2.7 | 0.3 | **79.60** |
| **220**500A | ¾" NPT | 3.7 | 0.3 | **87.30** |

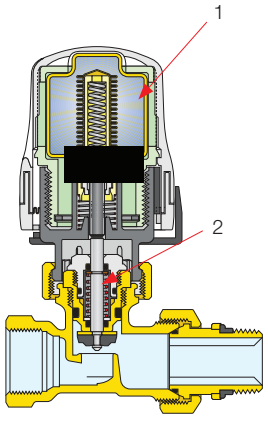
| Code | Description | Cv | Lbs | USD |
|---|---|---|---|---|
| **221**400A | ½" NPT | 1.7 | 0.3 | **79.60** |
| **221**500A | ¾" NPT | 2.5 | 0.3 | **87.30** |

### Function

The control mechanism of the thermostatic radiator valve is a proportional temperature controller, composed of a liquid filled bellows. With increasing temperature the liquid expands which, in turn, causes the bellows to expand. When the temperature decreases the opposite occurs; the bellows contracts allowing the spring to return it to the original position. By connection to the valve stem, these movements adjust the heat transfer medium to the radiator.

*Head shown vertical for illustration only, it should be installed horizontally.

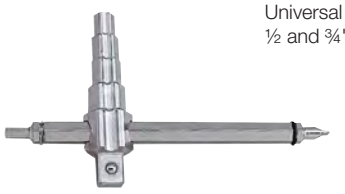



### Key features

The thermostatic control head is filled with a non compressible liquid bellows (1). Plus, the radiator valve body has an extra strong valve stem compression spring (2). The non compressible liquid provides the force required to compress the strong valve stem spring. When the temperature decreases, the liquid bellows contracts, which allows the valve stem spring to lift the valve plug from valve seat after long periods of non-movement. This ensures that after a long 'off-season', when the actuator operates for the first time, the spring reliably lifts the valve plug off the seat without sticking. In addition, the 200000 control head features an easy-to-use locking mechanism that prevents unauthorized temperature set point changes and a range stop adjustment that limits the maximum temperature setting to save energy and over-heating.

Replacement internal valve assembly fits radiator valves.



Universal radiator tool for installing ½ and ¾" tail pieces.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **F36073** | ½" and ¾" | 0.1 | **11.20** |

| Code | Description | Lbs | USD |
|---|---|---|---|
| **387127** | Radiator tool | 1.0 | **117.00** |

# EUROPEAN TOWEL WARMER RADIATOR VALVES

## 338

Angled radiator valve body.
Convertible from standard manual operation to automatic control with thermostatic control heads.
Chrome plated.
Fits copper, single and multilayer PEX pipes.
Max. working pressure: 150 psi (10 bar).
Temperature range: 40—212ºF (5—100ºC).

| Code | Radiator Connection | Pipe Connection | Cv | Lbs | USD |
|---|---|---|---|---|---|
| **338**452 | ½" straight | ¾" conical | 3.1 | 0.5 | **83.60** |

## 342

Angled isolation and balancing valve.
Chrome plated.
Fits copper, single and multilayer PEX pipes.
Max. working pressure: 150 psi (10 bar).
Temperature range: 40—212ºF (5—100ºC).

| Code | Radiator Connection | Pipe Connection | Cv | Lbs | USD |
|---|---|---|---|---|---|
| **342**452 | ½" straight | ¾" conical | 4.6 | 0.5 | **55.10** |

## 339

Straight radiator valve body.
Convertible from standard manual operation to automatic control with thermostatic control heads.
Chrome plated.
Fits copper, single and multilayer PEX pipes.
Max. working pressure: 150 psi (10 bar).
Temperature range: 40—212ºF (5—100ºC).

| Code | Radiator Connection | Pipe Connection | Cv | Lbs | USD |
|---|---|---|---|---|---|
| **339**452 | ½" straight | ¾" conical | 2.0 | 0.5 | **90.20** |

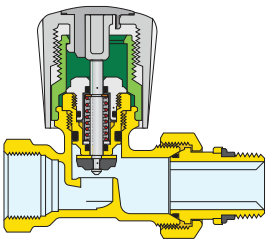
## 343

Straight isolation and balancing valve.
Chrome plated.
Fits copper, single and multilayer PEX pipes.
Max. working pressure: 150 psi (10 bar).
Temperature range: 40—212ºF (5—100ºC).

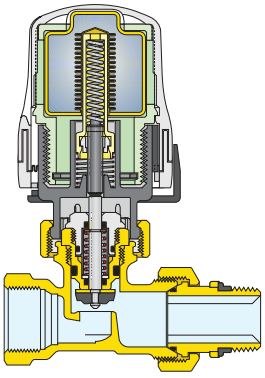
| Code | Radiator Connection | Pipe Connection | Cv | Lbs | USD |
|---|---|---|---|---|---|
| **343**452 | ½" straight | ¾" conical | 2.5 | 0.5 | **57.70** |

Intended for use in metric radiators such as European towel warmers and panel radiators.

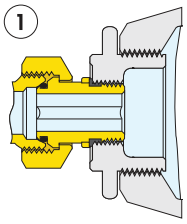
Metric radiator valve body with standard manual control

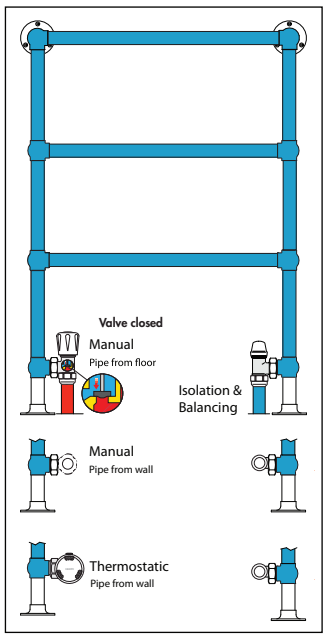


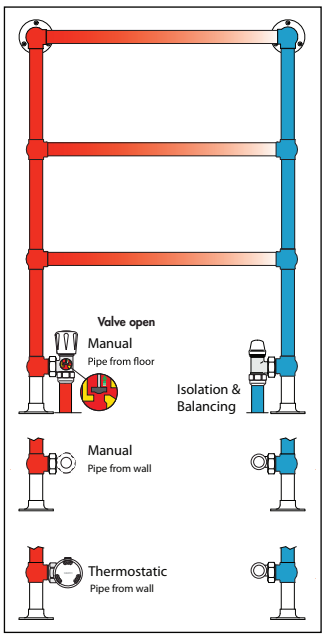
Metric radiator valve body with thermostatic control head



The radiator connection thread (½" straight) coupling union has a special shaped rubber ring (1), which ensures a tight seal requiring no PTFE tape.

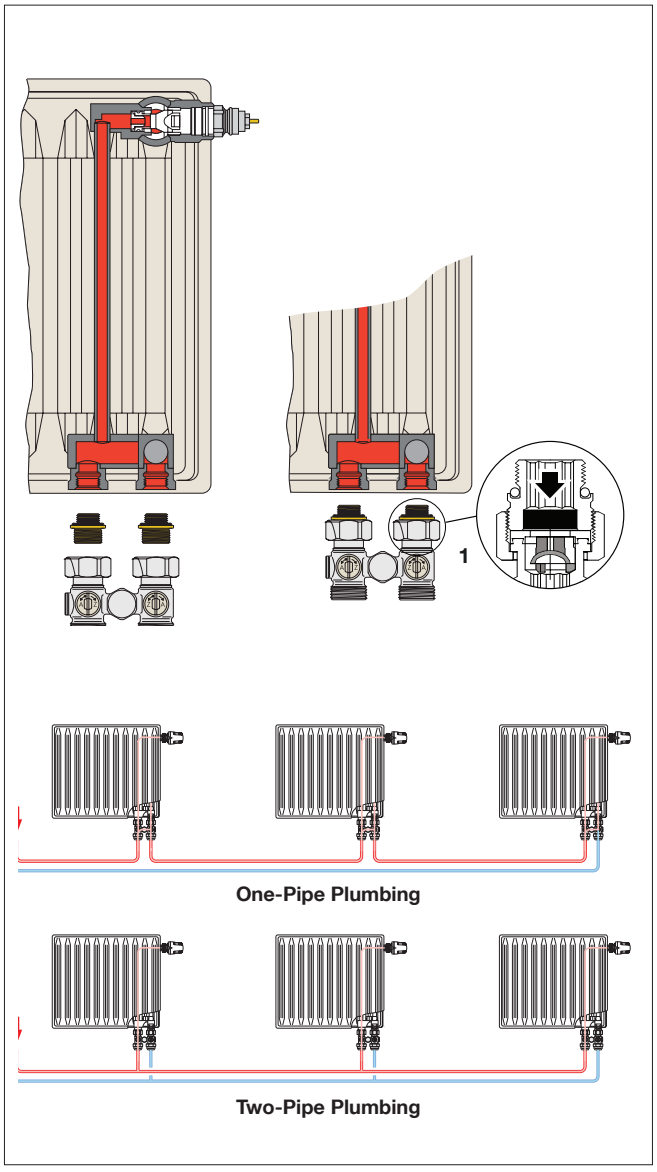


# CONNECTION VALVES FOR PANEL RADIATORS

Caleffi panel radiator valves are designed to be installed to the bottom of panel radiators. They come in two versions: for two-pipe and one-pipe systems. Both are available straight (pipes exiting the floor) and angled (pipes exiting the wall). The two-pipe version is equipped with two ball shut-off valves. The one-pipe, in addition to the shut-off valves, is equipped with an adjustable by-pass from 30% to 50% of the flow rate towards the radiator, and a flow check valve device (1) prevents thermo-syphoning upward into radiator from by-passing flow.




## 3010

Valve for panel radiators that have built-in thermostatic valve unit.
Two-pipe straight version (floor connections) fits ½" female radiator connections.
Max. working pressure: 150 psi (10 bar).
Max. working temperature: 212°F (100°C).

| Code | Radiator Connection | Pipe Connection | Lbs | USD |
|---|---|---|---|---|
| **3010**40 | ½" straight | ¾" conical | 1 | **67.10** |

## 3011

Valve for panel radiators that have built-in thermostatic valve unit.
Two-pipe valve angled version (wall connections) fits ½" female radiator connections.
Max. working pressure: 150 psi (10 bar).
Max. working temperature: 212°F (100°C).

| Code | Radiator Connection | Pipe Connection | Lbs | USD |
|---|---|---|---|---|
| **3011**40 | ½" straight | ¾" conical | 1 | **67.10** |

## 3012

Valve for panel radiators that have built-in thermostatic valve unit.
One-pipe straight version (floor connections) fits ½" female radiator connections.
With adjustable by-pass.
Balance knob.
Max. working pressure: 150 psi (10 bar).
Max. working temperature: 212°F (100°C).

| Code | Radiator Connection | Pipe Connection | Lbs | USD |
|---|---|---|---|---|
| **3012**41 | ½" straight | ¾" conical | 1 | **118.00** |

## 3013

Valve for panel radiators that have built-in thermostatic valve unit.
One-pipe angled version (wall connections) fits ½" female radiator connections.
With adjustable by-pass.
Balance knob.
Max. working pressure: 150 psi (10 bar).
Max. working temperature: 212°F (100°C).

| Code | Radiator Connection | Pipe Connection | Lbs | USD |
|---|---|---|---|---|
| **3013**41 | ½" straight | ¾" conical | 1 | **118.00** |

## 4497

Wall-covering plate.
Fits dual panel radiator valves 301.
With wall connections.
In white ABS.
Outlet center distance: 40—50 mm.

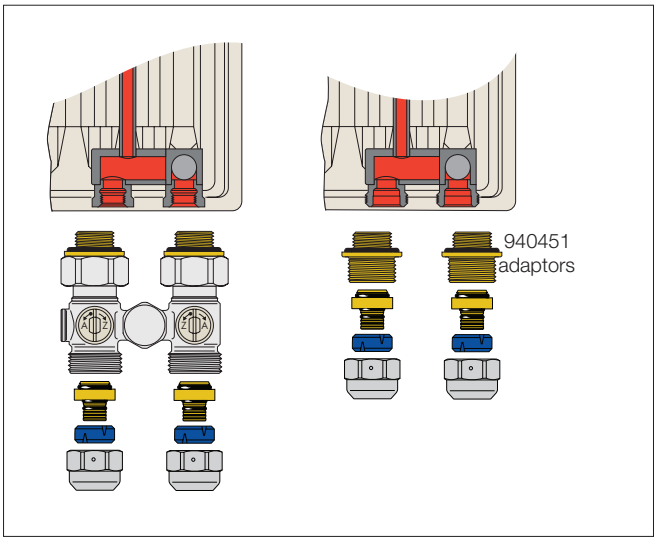
| Code | Description | Lbs | USD |
|---|---|---|---|
| **4497**40 | Plate | 0.1 | **5.80** |

## CONNECTION FITTINGS

### 681
### Universal PEX fittings

681 series fittings are compatible with any ASTM F876 single layer PEX.
Max. working pressure: 150 psi.
Working temperature for ASTM F876 PEX piping: 41—180°F.
Chrome plated nut.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **681**503A | ⅜" nominal PEX | 0.2 | **13.90** |
| **681**524 | ½" nominal PEX | 0.2 | **13.90** |
| **681**555 | ⅝" nominal PEX | 0.2 | **13.90** |




### 940

Radiator adapter for directly connecting a panel radiator with PEX, PEX-AL-PEX, sweat, NPT or compression fittings.
Package of 2 each, priced per package.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **940**451 | ½" M straight x ¾" M conical (2 ea.) | 0.1 | **25.20** |

Wrench for tightening PEX fitting to TRV.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **387100** | 26 mm x 30 mm | 1.5 | **63.30** |

### 682
### Universal PEX-AL-PEX fittings

682 series fittings are compatible with any ASTM F1281 multilayer PEX-AL-PEX pipe.
Max. working pressure: 150 psi.
Working temperature for ASTM F1281 PEX-AL-PEX piping: 41—200°F with tubing rated 200°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **682**540A | ½" PEX-AL-PEX | 0.2 | **13.70** |

### 437

Compression fitting, fits ½" hard copper.
With o-ring seal.
Max. working pressure: 150 psi.
Working temperature range: 41—250°F.
Chrome plated.
For connecting copper to valve 301, 338, 339, 342 and 343 series.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **437**516 | ½" compression (2-pack) | 0.1 | **11.40** |

### NA102

Sweat connection fitting fits ½" copper.
Max. working pressure: 150 psi.
Working temperature range: 41—250°F.
Chrome plated nut.
For connecting copper to valve 301, 338, 339, 342 and 343 series.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA102**62 | ½" sweat | 0.2 | **14.80** |

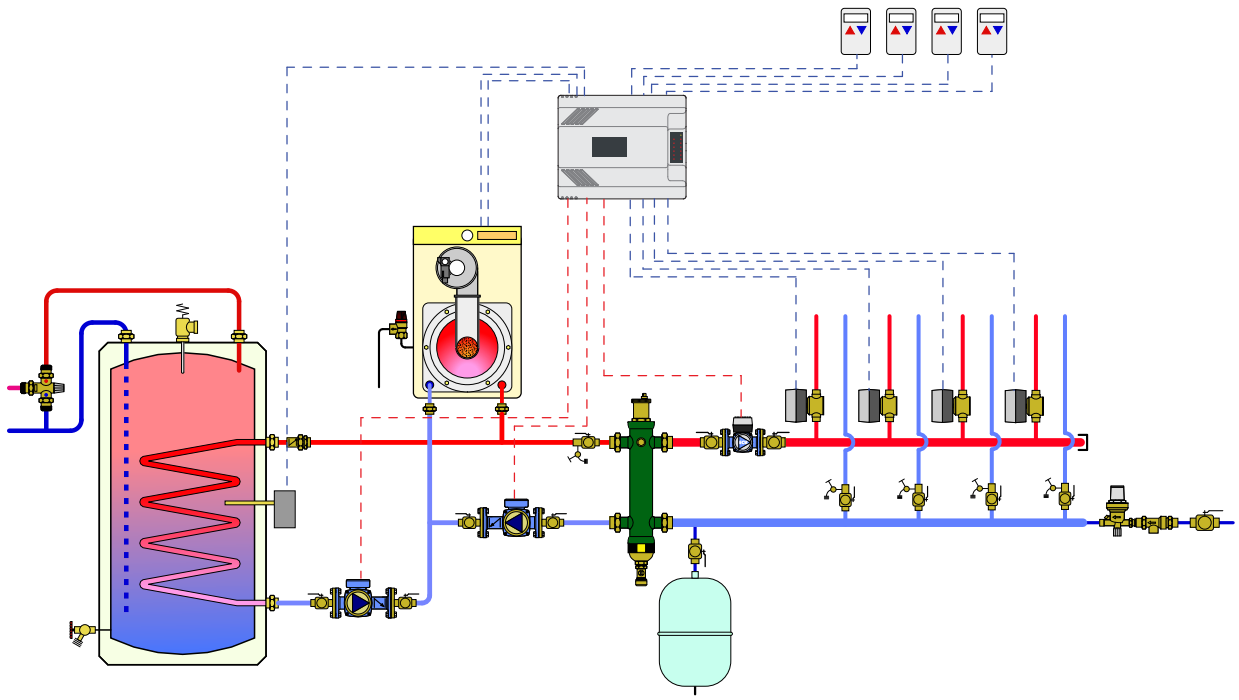
### NA103

NPT connection fitting.
Max. working pressure: 150 psi.
Working temperature range: 41—250°F.
Chrome plated nut.
For connecting copper to valve 301, 338, 339, 342 and 343 series.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA103**13 | ½" NPT male | 0.2 | **16.00** |

# ZONE VALVES AND ZONE CONTROLS

This diagram is an example





Thermo-electric zone valves

Thermo-electric actuators

Motorized zone valves

Pump zone controls

Valve zone controls

Motorized ball zone valves, high-flow, high-close off

## THERMO-ELECTRIC ZONE VALVES

### 6763

Two-way thermo-electric zone valve.
Complete with 656414 actuator.
Spring return. Normally closed.
Brass valve body and trim.
Max. body pressure: 150 psi.
Max. Temperature: 200°F.
Max: ΔP close-off pressure: 20 psi.
Power supply: 24 V AC/DC.
Initial current draw: ≤ 250 mA.
Power consumption:
holding: 3 W
inrush: 6 VA
Rating of micro-switch contacts: 5 A (24 V).
31.5" wire lead connection.

| Code | Description | Cv | Lbs | USD |
|---|---|---|---|---|
| **6763**56A | ¾" press union | 4 | 1.4 | **234.00** |
| **6763**59A | ¾" sweat union | 4 | 1.4 | **226.00** |
| **6763**66A | 1" press union | 4 | 1.4 | **274.00** |
| **6763**69A | 1" sweat union | 4 | 1.4 | **261.00** |

### 6762

Two-way thermo-electric zone valve.
Complete with TwisTop™ (code 656354) actuator. Spring return. Normally closed.
Brass valve body and trim.
Max. body pressure: 150 psi.
Max. Temperature: 200°F.
Max: ΔP close-off pressure: 20 psi.
Power supply: 24 V AC/DC.
Initial current draw: ≤ 250 mA.
Power consumption:
holding: 3 W
inrush: 6 VA
Rating of micro-switch contacts: 5 A (24 V).
31.5" wire lead connection.

| Code | Description | Cv | Lbs | USD |
|---|---|---|---|---|
| **6762**56A | ¾" press union | 4 | 1.4 | **271.00** |
| **6762**59A | ¾" sweat union | 4 | 1.4 | **262.00** |
| **6762**66A | 1" press union | 4 | 1.4 | **311.00** |
| **6762**69A | 1" sweat union | 4 | 1.4 | **298.00** |

### 6564

Thermo-electric actuator with micro-switch fits on 676 two-way zone valve bodies.
Low current draw.
Protection class (installed in all positions): NEMA 3 (IP54)
Power supply: 24 V AC/DC.
Initial current draw: ≤250 mA.
Power consumption:
holding: 3 W
inrush: 6 VA
Rating of micro-switch contacts: 5 A (24 V).
31.5" wire lead connection.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **6564**04 | 24 V AC/DC00 | 0.4 | **110.00** |
| **6564**14 | 24 V AC/DC with micro-switch | 0.4 | **138.00** |

### 6563 TwisTop™

TwisTop™ thermo-electric actuator with micro-switch fits on 676 two-way valve.
Twist the top to manually open and close micro-switch.
Power supply: 24 V AC/DC.
Initial current draw: ≤ 250 mA.
Power consumption:
holding: 3 W
inrush: 6 VA
Rating of micro-switch contacts: 5 A (24 V).
31.5" wire lead connection.
US Patent 7,617,989 B2.

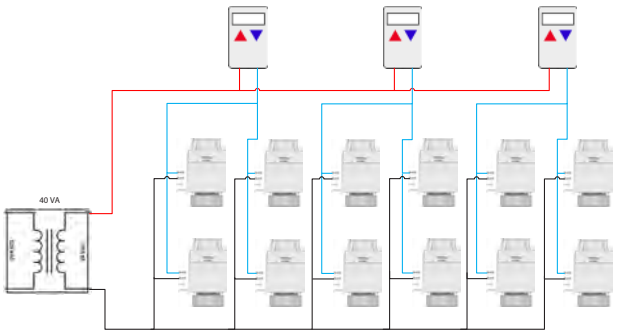
| Code | Description | Lbs | USD |
|---|---|---|---|
| **6563**44 | 24 V AC/DC | 0.4 | **147.00** |
| **6563**54 | 24 V AC/DC with micro-switch | 0.4 | **174.00** |

### 6760

Two-way zone valve body.
For field installation of thermo-electric actuators 656354 or 656414.
Brass body and trim.
Max. body pressure: 150 psi.
Max. temperature: 200°F.

| Code | Description | Cv | Lbs | USD |
|---|---|---|---|---|
| **6760**00A | no fittings | 4 | 0.5 | **37.30** |
| **6760**56A | ¾" press union | 4 | 1 | **90.10** |
| **6760**59A | ¾" sweat union | 4 | 1 | **77.10** |
| **6760**66A | 1" press union | 4 | 1 | **139.00** |
| **6760**69A | 1" sweat union | 4 | 1 | **92.00** |

**Up to 12 actuators per 40 VA transformer.**



# MOTORIZED ZONE VALVES

## Z4
## Z-one 2-way

Two-way zone valve. Spring return.
Normally closed actuator: Z111000.
Auxiliary micro-switch.
Max. body pressure: 300 psi.
Temperature range: 32°—240°F.
Suitable fluids: water, 50% max. glycol, 15 psi max steam.
Power supply: 24 V AC.
Power consumption: 5 W, 7 VA.
Rating of auxiliary micro-switch contacts: 0.0 A min, 0.4 A max 24 V (24 V only).
18" wire lead connection.
UL873, cULus Listed & CE.
UL 1995 sec. 18 air plenums and ducts.
US Patent 7,048,251.

c UL US LISTED E239721 86BP

| Code | Description | Cv | Δ P | Lbs | USD |
|---|---|---|---|---|---|
| **Z4**0 | Inverted flare | 3.5 | 30 psi | 2.2 | **220.00** |
| **Z4**0F | ¾" Inv flare* | 3.5 | 30 psi | 2.2 | **249.00** |
| **Z4**2 | ½" SAE flare | 3.5 | 30 psi | 2.2 | **240.00** |
| **Z4**4 | ½" sweat | 2.5 | 50 psi | 2.1 | **214.00** |
| **Z4**5 | ¾" sweat | 7.5 | 20 psi | 2.2 | **234.00** |
| **Z4**6 | 1" sweat | 7.5 | 20 psi | 2.3 | **291.00** |
| **Z4**7 | 1¼" sweat | 7.5 | 20 psi | 2.3 | **339.00** |

* Two ¾" sweat fittings (NA10006) included.

## Z-one 2-way Press

Two-way zone valve. Spring return.
Normally closed actuator.
Auxiliary micro-switch.
Max. body pressure: 300 psi.
Overall length: 5-⅝".
Temperature range: 32—240°F.
Suitable fluids: water, 50% max. glycol, 15 psi max steam.
Power supply: 24 V AC.
Power consumption: 5 W, 7 VA.
Rating of auxiliary micro-switch contacts: 0.0 A min, 0.4 A max 24 V (24 V only).
UL873, cULus Listed & CE.
UL 1995 sec. 18 air plenums and ducts.
US Patent 7,048,251.

c UL US LISTED E239721 86BP

| Code | Description | Cv | Δ P | Lbs | USD |
|---|---|---|---|---|---|
| **Z44P** | ½" press* | 3.5 | 30 psi | 2.2 | **296.00** |
| **Z54P** | ½" press** | 3.5 | 30 psi | 2.2 | **302.00** |
| **Z45P** | ¾" press* | 7.5 | 20 psi | 2.2 | **301.00** |
| **Z55P** | ¾" press** | 7.5 | 20 psi | 2.2 | **307.00** |
| **Z45PL** | ¾" press* | 7.5 | 20 psi | 2.3 | **330.00** |
| **Z55PL** | ¾" press** | 7.5 | 20 psi | 2.3 | **336.00** |
| **Z46P** | 1" press* | 7.5 | 20 psi | 2.4 | **341.00** |
| **Z56P** | 1" press** | 7.5 | 20 psi | 2.4 | **347.00** |

*18" wire lead connection.
**Screw terminal connection.
PL (1) extra long press fitting for retrofit
Includes press fittings.

## Z5
## Z-one 2-way

Two-way zone valve. Spring return.
Normally closed actuator: Z151000
Auxiliary micro-switch.
Max. body pressure: 300 psi.
Temperature range: 32°—240°F.
Suitable fluids: water, 50% max. glycol, 15 psi max steam.
Power supply: 24 V AC.
Power consumption: 5 W, 7 VA.
Rating of auxiliary micro-switch contacts: 0.0 A min, 0.4 A max 24 V (24 V only).
Screw terminal connection.
UL873, cULus Listed & CE.
UL 1995 sec. 18 air plenums and ducts.
US Patent 7,048,251.

c UL US LISTED E239721 86BP

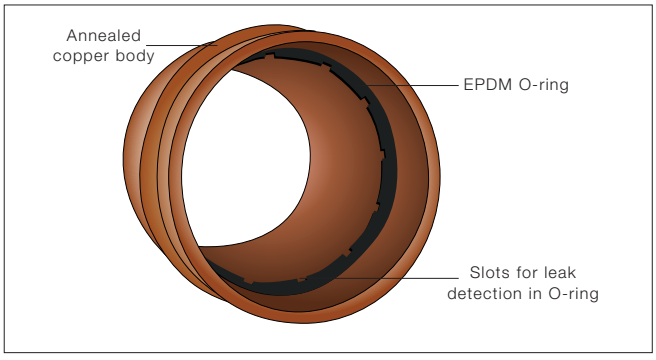
| Code | Description | Cv | Δ P | Lbs | USD |
|---|---|---|---|---|---|
| **Z5**0 | Inverted flare | 3.5 | 30 psi | 2.2 | **226.00** |
| **Z5**0F | ¾" Inv flare* | 3.5 | 30 psi | 2.2 | **255.00** |
| **Z5**4 | ½" sweat | 2.5 | 50 psi | 2.1 | **220.00** |
| **Z5**5 | ¾" sweat | 7.5 | 20 psi | 2.2 | **240.00** |
| **Z5**6 | 1" sweat | 7.5 | 20 psi | 2.3 | **297.00** |
| **Z5**7 | 1¼" sweat | 7.5 | 20 psi | 2.3 | **344.00** |

* Two ¾" sweat fittings (NA10006) included.

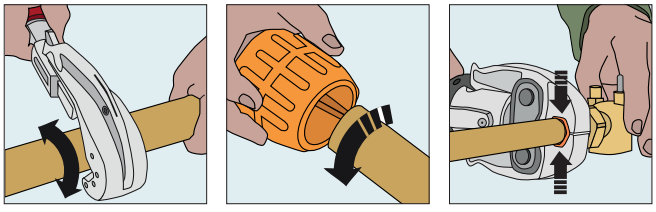
Inverted flare sweat adaptors fits Z40, Z50 and inverted flare valve body.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA10005** | ½" sweat | 0.3 | **11.50** |
| **NA10006** | ¾" sweat | 0.3 | **14.40** |
| **NA10007** | 1" sweat | 0.4 | **23.70** |
| **NA61241** | Retrofit extension kit | 0.2 | **11.60** |

**Press connection construction**




**Installation**



## MOTORIZED ZONE VALVES

E239721
US LISTED
86BP

# Z1
# Normally Closed

Z1 NC actuator fits on Z2 and Z3 series valve bodies with the push of a button.
Two position spring return normally closed.
7/8" knockout for 1/2" conduit connector.
Power: 24, 120, 208, 230 & 277 VAC.
Power consumption: 5 W, 7 VA.
Conduct connector size: ½".
Rating of auxiliary switch contacts:
24 VAC: 0.0 A min, 0.4 A max (24 V).
120-277 and Z111900 VAC: 0.25 A min, 5.0 A max (230 V).
UL873, cULus Listed & CE.
UL 1995 sec.18 air plenums and ducts.
US Patent 7,048,251.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **Z1**111000 | 24 V, micro-switch, 18" wires | 1.1 | **152.00** |
| **Z1**111900 | 24 V, high current switch, 18" wires | 1.1 | **142.00** |
| **Z1**116000 | 120 V, micro-switch, 6" wires | 1.1 | **152.00** |
| **Z1**113000 | 208 V, micro-switch, 6" wires | 1.1 | **182.00** |
| **Z1**114000 | 230 V, micro-switch, 6" wires | 1.1 | **182.00** |
| **Z1**115000 | 277 V, micro-switch, 6" wires | 1.1 | **182.00** |
| **Z1**51000 | 24 V, micro-switch, terminal blocks | 1.1 | **158.00** |
| **Z1**61000 | 24 V, terminal blocks | 1.1 | **145.00** |
| **Z1**21000 | 24 V, 18" wires | 1.1 | **141.00** |
| **Z1**26000 | 120 V, 6" wires | 1.1 | **141.00** |
| **Z1**23000 | 208 V, 6" wires | 1.1 | **171.00** |
| **Z1**24000 | 230 V, 6" wires | 1.1 | **171.00** |
| **Z1**25000 | 277 V, 6" wires | 1.1 | **171.00** |

E239721
US LISTED
86BP

# Z1
# Normally Open

Z1 NO actuator fits on Z2 series valve bodies with the push of a button.
Two position spring return normally opened.
7/8" knockout for 1/2" conduit connector.
Power: 24, 120, 208, 230 & 277 VAC.
Power consumption: 5 W, 7 VA.
Conduct connector size: ½".
Rating of auxiliary switch contacts:
24 VAC: 0.0 A min, 0.4 A max (24 V).
120-277 VAC: 0.25 A min, 5.0 A max (230 V).
UL873, cULus Listed & CE.
UL 1995 sec. 18 air plenums and ducts.
US Patent 7,048,251.

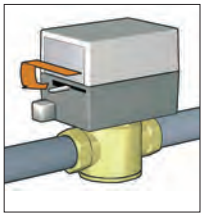
| Code | Description | Lbs | USD |
|---|---|---|---|
| **Z1**31000 | 24 V, micro-switch, 18" wires | 1.1 | **166.00** |
| **Z1**36000 | 120 V, micro-switch, 6" wires | 1.1 | **166.00** |
| **Z1**33000 | 208 V, micro-switch, 6" wires | 1.1 | **196.00** |
| **Z1**41000 | 24 V, 18" wires | 1.1 | **155.00** |
| **Z1**46000 | 120 V, 6" wires | 1.1 | **155.00** |
| **Z1**43000 | 208 V, 6" wires | 1.1 | **185.00** |
| **Z1**44000 | 230 V, 6" wires | 1.1 | **185.00** |
| **Z1**45000 | 277 V, 6" wires | 1.1 | **185.00** |

### Function

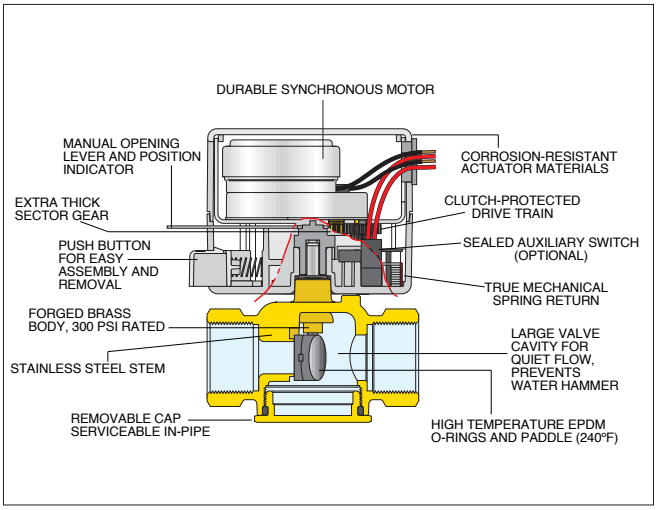
The Z-one™ valve is a truly universal zone valve that can be used in a wide range of commercial and residential applications; from fan coils to baseboard, radiant to high rise, the Z-one™ is the professional's valve of choice. The Z-one™ can be used in both chilled or hot water and low pressure steam applications. With Delta P close off pressures of up to 75 PSI, the Z-one™ outperforms all other zone valves. The Z-one™ is available in sizes from ½" to 1¼" sweat or NPT connections on valve body, with removable actuator available in 24 to 277 voltages.

Some models of Z-one™ actuators contain an auxiliary micro-switch to operate other devices. The 24 V actuators use a sealed reed switch, which has been produced specifically for use with relays, boiler contacts (TT) and DDC systems. It requires no minimum current load. The 120 V - 277 V actuators for applications requiring greater than 400 mA, use a conventional micro-switch with silver contacts. The auxiliary switch is activated when the valve is 60% open or when the actuator is manually opened.

**• Manual opening (Normally closed actuator only)** The valve can be opened manually by moving the lever for opening it. When the power is restored the manual control is automatically overridden. The auxiliary switch in 24 V actuators is tripped when the unit is put into manual open position. This helps during start up to check if the wiring is correct without firing the valve electrically with the thermostat.



### Construction




**• Easy push button**

A simple push of the button makes it easy to remove it from the body of the valve for maintenance or replacement operations. Warning: the actuator can only be used with valve bodies Z2-Z3 series.

**• Operation**

The actuator is fitted with a special mechanism for gradual movement of the valve paddle which provides smooth and quiet constant operation. Power-on full stroke run time is 60 seconds with 6 second power-off return time eliminating the effects of water hammer.

# MOTORIZED ZONE VALVES

## Z2
## 2-way

Two-way on/off two position valve.
Straight through flow pattern.
Brass body.
Stainless steel stem.
EPDM rubber seals and paddle.
Max. working pressure: 300 psi.
Max temperature: 240°F.

| Code | Description | Cv | Δ P | Lbs | USD |
|---|---|---|---|---|---|
| **Z2**00041 | Inverted flare | 1 | 75 psi | 1.1 | **67.90** |
| **Z2**00042 | Inverted flare | 2.5 | 50 psi | 1.1 | **67.90** |
| **Z2**00043 | Inverted flare | 3.5 | 30 psi | 1.1 | **67.90** |
| **Z2**00053 | ½" SAE Flare | 3.5 | 30 psi | 1.1 | **87.40** |
| **Z2**00411 | ½" NPT female | 1 | 75 psi | 1.1 | **67.90** |
| **Z2**07411 | ½" NPT female **LF** | 1 | 75 psi | 1.1 | **93.00** |
| **Z2**00412 | ½" NPT female | 2.5 | 50 psi | 1.1 | **67.90** |
| **Z2**00413 | ½" NPT female | 3.5 | 30 psi | 1.1 | **67.90** |
| **Z2**00431 | ½" sweat | 1 | 75 psi | 1 | **62.20** |
| **Z2**00432 | ½" sweat | 2.5 | 50 psi | 1 | **62.20** |
| **Z2**07433 | ½" sweat **LF** | 3.5 | 30 psi | 1 | **87.40** |
| **Z2**00512 | ¾" NPT female | 2.5 | 50 psi | 1.2 | **93.10** |
| **Z2**00513 | ¾" NPT female | 3.5 | 30 psi | 1.2 | **93.10** |
| **Z2**00515 | ¾" NPT female | 5 | 25 psi | 1.2 | **93.10** |
| **Z2**00517 | ¾" NPT female | 7.5 | 20 psi | 1.2 | **93.10** |
| **Z2**00532 | ¾" sweat | 2.5 | 50 psi | 1.1 | **82.00** |
| **Z2**07533* | ¾" sweat **LF** | 3.5 | 30 psi | 1.1 | **107.00** |
| **Z2**00535 | ¾" sweat | 5 | 25 psi | 1.1 | **82.00** |
| **Z2**00537 | ¾" sweat | 7.5 | 20 psi | 1.1 | **82.00** |
| **Z2**07537* | ¾" sweat **LF** | 7.5 | 20 psi | 1.1 | **107.00** |
| **Z2**00617 | 1" NPT female | 7.5 | 20 psi | 1.3 | **147.00** |
| **Z2**00635 | 1" sweat | 5 | 25 psi | 1.2 | **139.00** |
| **Z2**00637 | 1" sweat | 7.5 | 20 psi | 1.2 | **139.00** |
| **Z2**00737 | 1¼" sweat | 7.5 | 20 psi | 1.3 | **186.00** |

**LF** Low-lead brass body.

Two-way and three-way zone valve body repair kit. Includes valve stem paddle with O-rings, C clip and one bottom cap O-ring.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **F69293** | Fits all ½" & ¾" sweat Z2, Z3 valves | 0.4 | **23.40** |
| **F69294** | Fits all ¾" NPT and all 1" Z2, Z3 valves | 0.4 | **23.40** |

## Z3
## 3-way

Three-way on/off two position valve.
Diverting flow pattern.
Brass body.
Stainless steel stem.
EPDM rubber seals and paddle.
Max. working pressure: 300 psi.
Max temperature: 240°F.

| Code | Description | Cv | Δ P | Lbs | USD |
|---|---|---|---|---|---|
| **Z3**00043 | Inverted flare | 3.5 | 30 psi | 1.1 | **90.50** |
| **Z3**00053 | ½" SAE Flare | 3.5 | 30 psi | 1.1 | **109.00** |
| **Z3**00411 | ½" NPT female | 1 | 75 psi | 1.1 | **90.50** |
| **Z3**00412 | ½" NPT female | 2.5 | 50 psi | 1.1 | **90.50** |
| **Z3**00413 | ½" NPT female | 3.5 | 30 psi | 1.1 | **90.50** |
| **Z3**00431 | ½" sweat | 1 | 75 psi | 1 | **84.90** |
| **Z3**00432 | ½" sweat | 2.5 | 50 psi | 1 | **84.90** |
| **Z3**07433 | ½" sweat **LF** | 3.5 | 30 psi | 1 | **110.00** |
| **Z3**00512 | ¾" NPT female | 2.5 | 50 psi | 1.2 | **113.00** |
| **Z3**00513 | ¾" NPT female | 3.5 | 30 psi | 1.2 | **113.00** |
| **Z3**00515 | ¾" NPT female | 5 | 25 psi | 1.2 | **113.00** |
| **Z3**00517 | ¾" NPT female | 7.5 | 20 psi | 1.2 | **113.00** |
| **Z3**00532 | ¾" sweat | 2.5 | 50 psi | 1.1 | **105.00** |
| **Z3**00533 | ¾" sweat | 3.5 | 30 psi | 1.1 | **105.00** |
| **Z3**00535 | ¾" sweat **LF** | 5 | 25 psi | 1.1 | **105.00** |
| **Z3**07537* | ¾" sweat | 7.5 | 20 psi | 1.1 | **130.00** |
| **Z3**00617 | 1" NPT female | 7.5 | 20 psi | 1.3 | **170.00** |
| **Z3**00635 | 1" sweat | 5 | 25 psi | 1.2 | **158.00** |
| **Z3**00637 | 1" sweat | 7.5 | 20 psi | 1.2 | **158.00** |
| **Z3**00737 | 1¼" sweat | 7.5 | 20 psi | 1.3 | **192.00** |

***LF** Low-lead brass body.

2-way male union valve body.
Select fittings in Section 8 Table.

| Code | Description | Cv | Δ P | Lbs | USD |
|---|---|---|---|---|---|
| **Z2**00683 | 1" male union body | 3.5 | 30 psi | 1.1 | **93.10** |
| **Z2**00687 | 1" male union body | 7.5 | 20 psi | 1.1 | **93.10** |

3-way male union valve body.
Select fittings in Section 8 Table.

| Code | Description | Cv | Δ P | Lbs | USD |
|---|---|---|---|---|---|
| **Z3**00687 | 1" male union body | 7.5 | 20 psi | 1.2 | **118.00** |

# PUMP ZONE CONTROLS

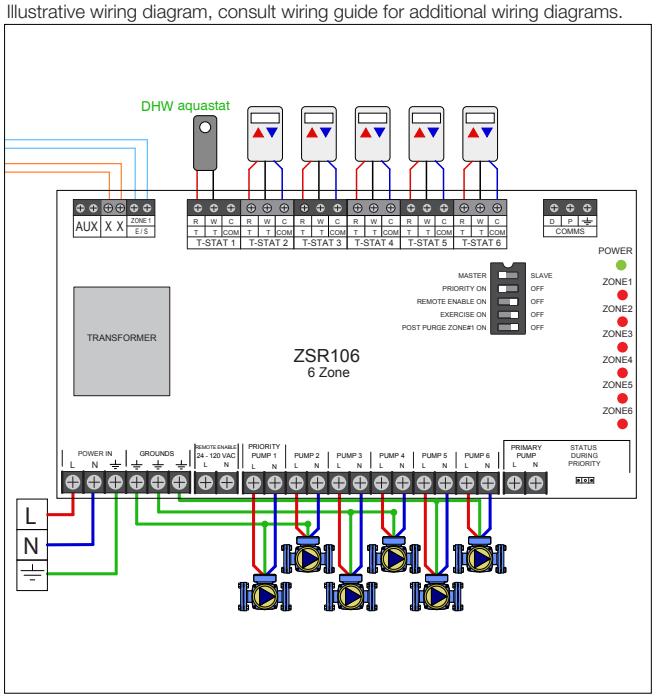

Intertek 4009064
Certified to CSA C22-2 No.24
Conforms to UL Standard 873

## ZSR
### Z-one Relay

The ZSR series is multi-zone pump and boiler operating control for multiple zone hydronic heating systems. The ZSR series interfaces with low voltage thermostats, or any other low voltage controllers having a switching action. The ZSR series controls up to 3, 4, 5 or 6 heating circulator pumps, depending on model selected, a primary pump and has LED indicators to provide functional status and easy system troubleshooting. In addition, a primary pump system circulator is switched on whenever any zone calls for heat.

Power supply: 120 VAC, 50/60 Hz
Transformer voltage: 24 VAC
Maximum transformer load: 12 VA (ZSR103/4), 20 VA (ZSR106)
Electrical switch rating: 20A max combined
Electrical switch rating pump output: 120 VAC, 5A each
Dry contact rating: AUX, XX, ZONE1 E/S: 120 VAC max, 2A each
Replaceable fuses: Type 2AG, 5A slow blow

Illustrative wiring diagram, consult wiring guide for additional wiring diagrams.




| Code | Description | Lbs | USD |
|---|---|---|---|
| **ZSR**103 | 3 zone pump control | 2.0 | **404.00** |
| **ZSR**104 | 4 zone pump control | 2.0 | **474.00** |
| **ZSR**106 | 6 zone pump control | 2.0 | **581.00** |

## ZSR101
### Z-one Relay


The ZSR101 single zone switching relay is operated by low voltage thermostats. The ZSR101 single zone switching relay incorporates Power In, Relay 1 and Relay 2 connection terminals.

Power Supply: 120 VAC, 50/60 Hz
Transformer Voltage: 24 VAC
Maximum transformer load: 12 VA
Switch Rating: 10A Max Combined
Replaceable Fuses: Type 2AG, 5A

Intertek 4009064
Certified to CSA C22-2 No.24
Conforms to UL Standard 873

# Z-ONE RELAY FUSES

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA103**42 | Spare fuse (package of 5) | 0.1 | **16.50** |

| Code | Description | Lbs | USD |
|---|---|---|---|
| **ZSR**101 | Single zone relay | 1.0 | **172.00** |

## VALVE ZONE CONTROLS


Intertek 4009064
Certified to CSA C22-2 No.24
Conforms to UL Standard 873

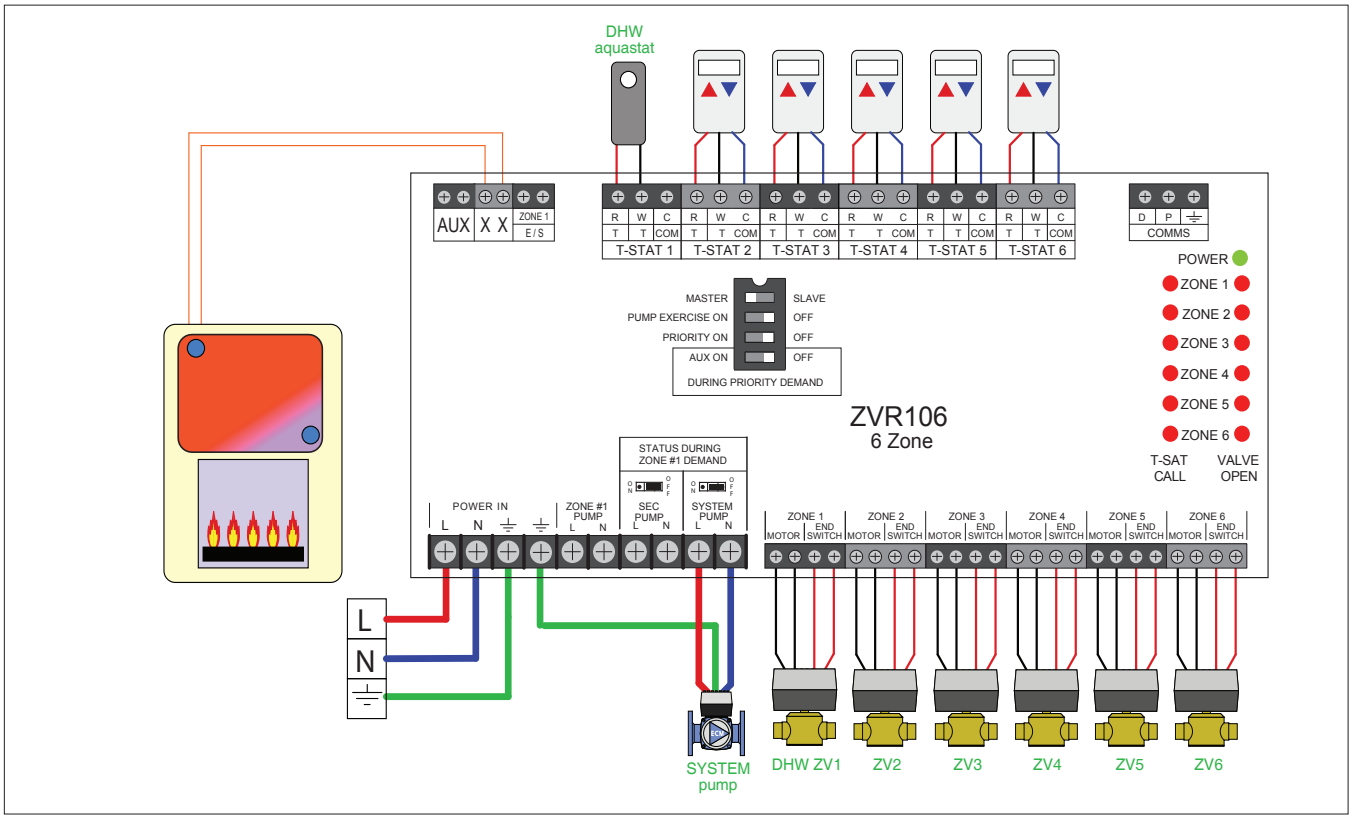
# ZVR
## Z-one Relay

The ZVR series is a multi-zone valve relay and boiler operating control for multiple zone hydronic heating systems. The ZVR series interfaces with low voltage thermostats, or any other low voltage controllers having a switching action. The ZVR series controls up to 3, 4, 5 or 6 zones, depending on model selected. In addition, a system circulator pump and secondary pump is turned on whenever any zone calls for heat. LED indicators provide functional status and easy system troubleshooting. The ZVR series is a perfect match with Caleffi's Z-one™ motorized zone valves.

Power supply: 120 VAC, 50/60 Hz
Transformer voltage: 24 VAC
Maximum transformer load: 40 VA (ZVR103/4), 80 VA (ZVR106)
Electrical switch rating: 20A Max Combined
Electrical switch rating pumps: 120 VAC, 5A each
Dry contact rating: AUX, XX, ZONE1 E/S:120 VAC, 2A each
Resettable Fuse: automatic
High Capacity 40 VA Transformer standard for 3 and 4 zone models-expandable to 80 VA, and 80 VA for the 6 zone model

| Code | Description | Lbs | USD |
|---|---|---|---|
| **ZVR**103 | 3 zone pump control | 2.0 | **307.00** |
| **ZVR**104 | 4 zone pump control | 2.0 | **366.00** |
| **ZVR**106 | 6 zone pump control | 2.0 | **474.00** |
| **NA103**43 | Expansion transformer | 0.1 | **98.80** |

Illustrative wiring diagram, consult wiring guide for additional wiring diagrams.



## MOTORIZED BALL ZONE VALVES HIGH-FLOW, HIGH CLOSE-OFF

# 6442
# 2-way Straight

Two-way motorized ball zone valve.
Straight.
Max. ΔP close-off pressure: 150 psi.
Temperature range: 20°—230°F.
Power supply: 24 VAC.
Power consumption: 4 VA.
Rating of micro-switch contacts: 5 A (24 V).
3-wire control.
36" wire lead connection.

| Code | Description | Cv | Lbs | USD |
|---|---|---|---|---|
| **6442**50A | ¾" NPT male union | 13 | 2.3 | **433.00** |
| **6442**56A | ¾" press union | 13 | 2.4 | **433.00** |
| **6442**59A | ¾" sweat union | 13 | 2.3 | **425.00** |
| **6442**60A | 1" NPT male union | 13 | 2.3 | **469.00** |
| **6442**66A | 1" press union | 13 | 2.4 | **473.00** |
| **6442**69A | 1" sweat union | 13 | 2.3 | **460.00** |
| **NA6442**00 | body, with no fittings | 13 | 1.0 | **377.00** |

# 6443..3BY
# 3-way By-pass

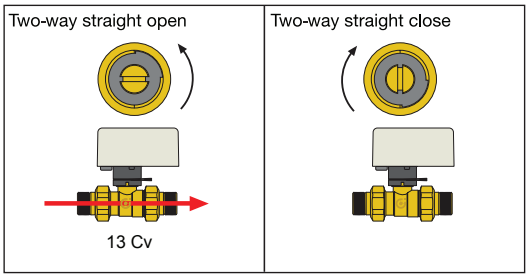
Three-way motorized ball zone valve.
By-pass.
Max. ΔP close-off pressure: 150 psi.
Temperature range: 20°—230°F.
Power supply: 24 VAC.
Power consumption: 4 VA.
Rating of micro-switch contacts: 5 A (24 V).
3-wire control.
2.1 Cv in by-pass mode.
36" wire lead connection.

| Code | Description | Cv | Lbs | USD |
|---|---|---|---|---|
| **6443**50A 3BY | ¾" NPT male union | 12 | 2.5 | **467.00** |
| **6443**56A 3BY | ¾" press union | 12 | 2.6 | **492.00** |
| **6443**59A 3BY | ¾" sweat union | 12 | 2.5 | **479.00** |
| **6443**60A 3BY | 1" NPT male union | 12 | 2.5 | **545.00** |
| **6443**66A 3BY | 1" press union | 12 | 2.6 | **552.00** |
| **6443**69A 3BY | 1" sweat union | 12 | 2.5 | **532.00** |
| **NA6443**00 3BY | body, no fittings | 12 | 1.2 | **408.00** |

# 6440
# 24 V 3-wire control

Actuator fits 6442 and 6443 series.
Power supply: 24 VAC.
Power consumption: 4 VA.
Rating of micro-switch contacts: 5 A (24 V).
Operating time: 40 s (90° rotation).
Length of supply cable: 36".

| Code | Description | Lbs | USD |
|---|---|---|---|
| **6440**04 | 24 VAC | 1.0 | **255.00** |



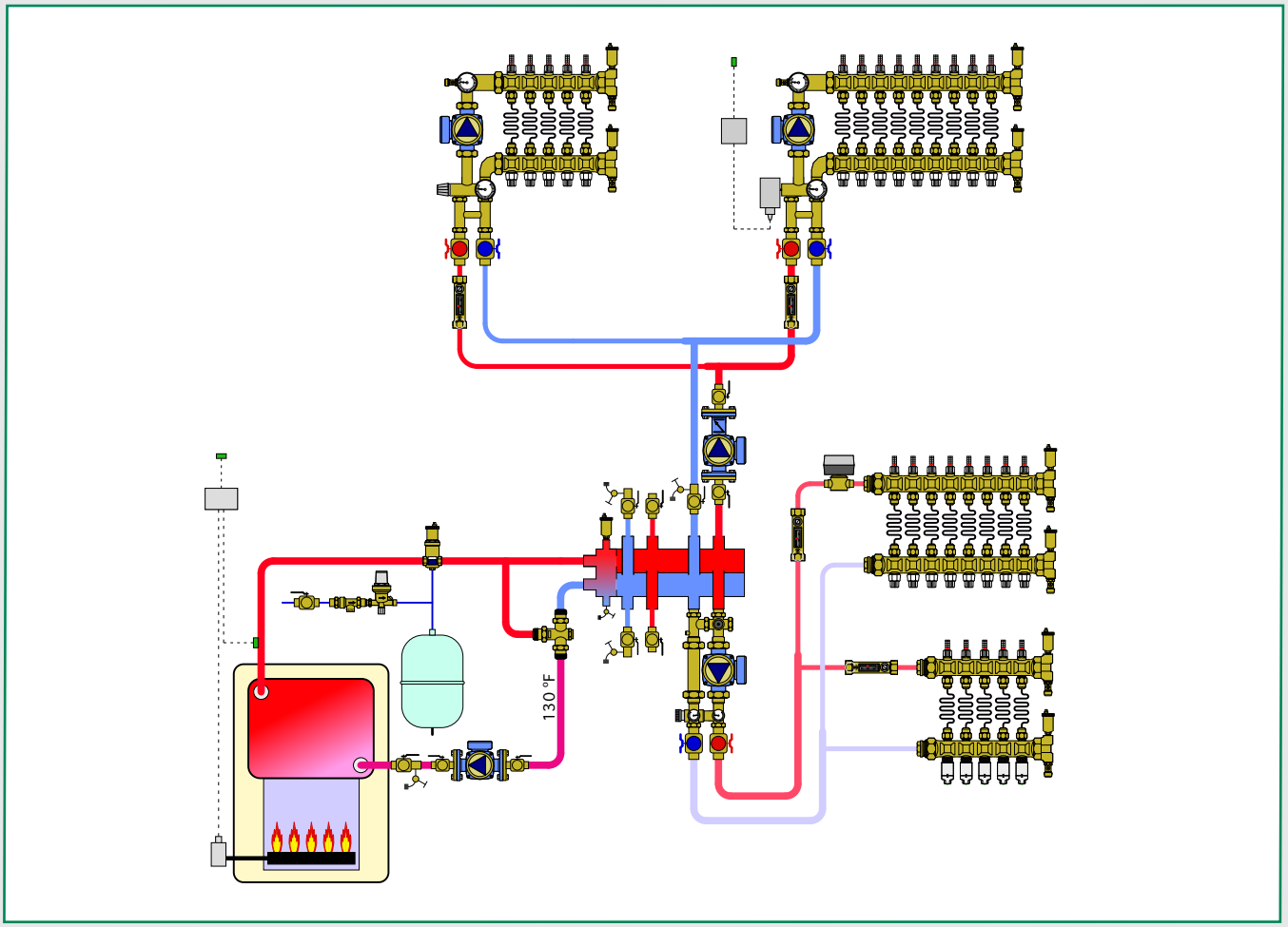

# 6443
# 3-way Diverting

Three-way motorized ball zone valve.
Diverting.
Max. ΔP close-off pressure: 150 psi.
Temperature range: 20°—230°F.
Power supply: 24 VAC.
Power consumption: 4 VA.
Rating of micro-switch contacts: 5 A (24 V).
3-wire control.
36" wire lead connection.

| Code | Description | Cv | Lbs | USD |
|---|---|---|---|---|
| **6443**50A | ¾" NPT male union | 4.5 | 2.5 | **467.00** |
| **6443**56A | ¾" press union | 4.5 | 2.6 | **492.00** |
| **6443**59A | ¾" sweat union | 4.5 | 2.5 | **479.00** |
| **6443**60A | 1" NPT male union | 4.5 | 2.5 | **545.00** |
| **6443**66A | 1" press union | 4.5 | 2.6 | **552.00** |
| **6443**69A | 1" sweat union | 4.5 | 2.5 | **532.00** |
| **NA6443**00 | body, no fittings | 4.5 | 1.2 | **408.00** |

# DISTRIBUTION MANIFOLDS AND TEMPERATURE MIXING STATIONS

This diagram is an example






Pump & valve temperature mixing units

Thermostatic manifold mixing stations

Manifold mixing stations

Brass distribution manifolds

Distribution manifolds

Boxes for distribution manifolds

Fittings for distribution manifolds and mixing stations

Brass distribution manifold accessories

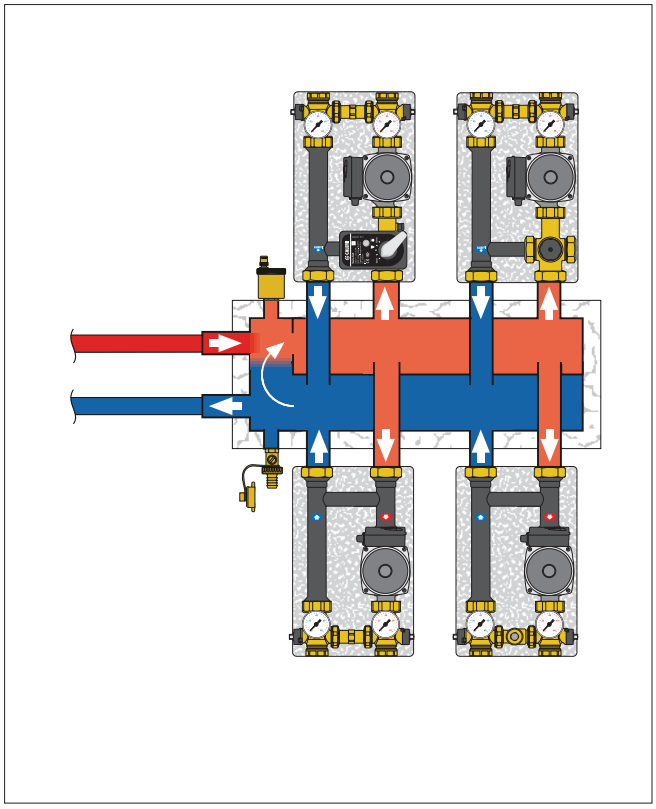
Accessories

## PUMP & VALVE TEMPERATURE MIXING UNITS

### 163 HydroMixer™

Thermostatic fixed temperature mixing unit with insulation. Includes Grundfos UPS 15-58 three speed pump.
Differential pressure by-pass valve adjustable from 1.5 to 8.5 psi.
Compatible with 5590 Hydrolink™ series.
Temperature gauges.
Shut-off ball valves.
1" NPT female union inlet fittings.
Max working pressure: 145 psi.
Adjustable range: 80—130°F.
Power supply: 115 V 50/60 Hz.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **163**600A | 1" NPT outlet for right side flow | 21 | **1,797.00** |
| **163**610A | 1" NPT outlet for left side flow | 21 | **1,797.00** |



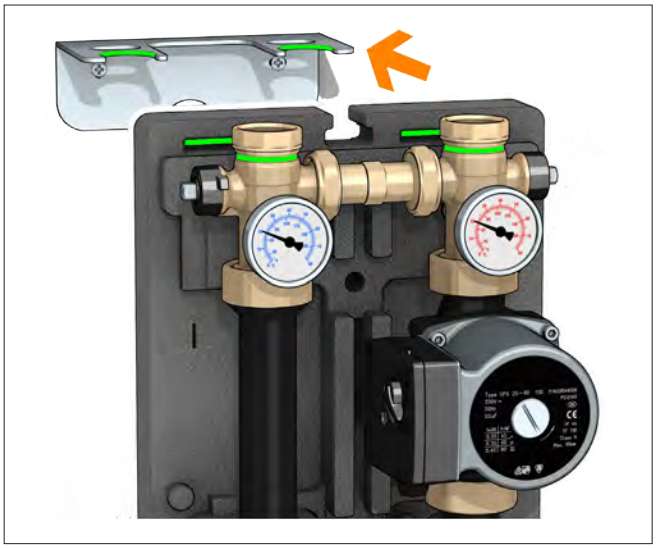
### 165 HydroMixer™

Injection pump mixing unit with insulation.
Grundfos UPS 15-58 three speed pump.
Grundfos Alpha 25-55U pump.
Temperature gauges.
Shut-off ball valves.
Compatible with 5599 Hydrolink™ series
Male union connections (select top and bottom fitting sets on page 35).
Max working pressure: 145 psi.
Max. working temperature: 212°F.
Power supply: 115 V 50/60 Hz.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **165**600A | Dual line with 15-58 pump on right | 21 | **1,514.00** |
| **165**610A | Dual line with 15-58 pump on left | 21 | **1,514.00** |
| **165**602A | Dual line with Alpha pump on right | 21 | **1,849.00** |
| **165**612A | Dual line with Alpha pump on left | 21 | **1,849.00** |

Wall bracket fits 165, 166 and 167 series.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **165**001 | Wall bracket | 0.1 | **84.50** |



## PUMP & VALVE TEMPERATURE MIXING UNITS

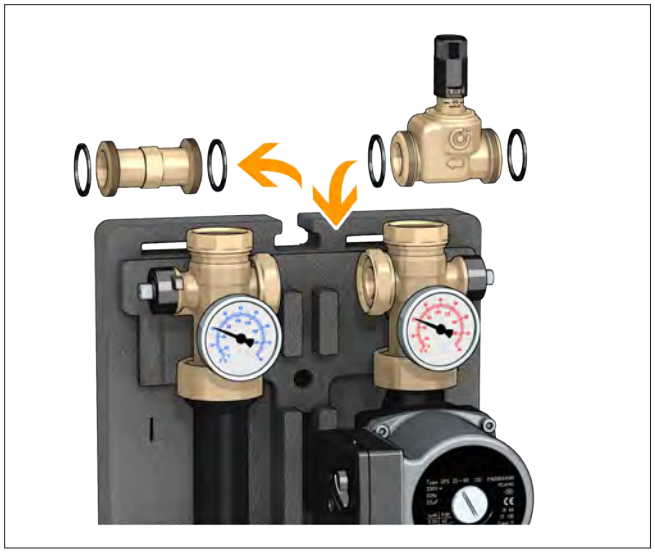
### 166 HydroMixer™

Thermostatic fixed temperature mixing unit with insulation.
Grundfos UPS 15-58 three speed pump.
Grundfos Alpha 25-55U pump.
Temperature gauges.
Shut-off ball valves.
Compatible with 5599 Hydrolink™ series
Male union connections (select top and bottom fitting sets below).
Max working pressure: 145 psi.
Adjustable range: 80—125°F.
Power supply: 115 V 50/60 Hz.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **166**600A | Dual line with 15-58 pump on right | 22 | **1,849.00** |
| **166**610A | Dual line with 15-58 pump on left | 22 | **1,849.00** |
| **166**602A | Dual line with Alpha pump on right | 22 | **2,185.00** |
| **166**612A | Dual line with Alpha pump on left | 22 | **2,185.00** |

Optional differential pressure by-pass valve fits 165, 166 and 167 series.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **519006** | Differential pressure by-pass valve | 1.0 | **95.20** |



### 167 HydroMixer™

Motorized temperature mixing unit with insulation. Three-point floating 24 VAC actuator for use with separately-sourced outdoor reset controller.
Grundfos UPS 15-58 three speed pump.
Grundfos Alpha 25-55U pump.
Temperature gauges.
Shut-off ball valves.
Compatible with 5599 Hydrolink™ series
Male union connections (select top and bottom fitting sets below).
Max working pressure: 145 psi.
Primary inlet temperature range: 40-212°F
Power supply: 115 V 50/60 Hz.
Valve actuator: 24 V AC

| Code | Description | Lbs | USD |
|---|---|---|---|
| **167**600A | Dual line with 15-58 pump on right | 23 | **2,185.00** |
| **167**610A | Dual line with 15-58 pump on left | 23 | **2,185.00** |
| **167**602A | Dual line with Alpha pump on right | 23 | **2,520.00** |
| **167**612A | Dual line with Alpha pump on left | 23 | **2,520.00** |

Top outlet fitting set fits 165, 166, 167 series. Includes (2) 1¼" union nuts, (2) tail pieces and (2) washers. Will not fit bottom inlet thread.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA16**069 | 1" sweat outlet union fittings | 1.0 | **86.90** |

Bottom Inlet fitting set fit 165, 166, 167 series. Includes (2) 1½" union nuts, (2) tail pieces and (2) washers. Will not fit top outlet thread.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA16**169 | 1" sweat outlet union fittings | 1.0 | **87.90** |

Top outlet fitting set fits 165, 166, 167 series. Includes (2) 1¼" union nuts, (2) tail pieces and (2) washers. Will not fit bottom inlet thread.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA16**060 | 1" NPT M outlet union fittings | 1.0 | **98.00** |

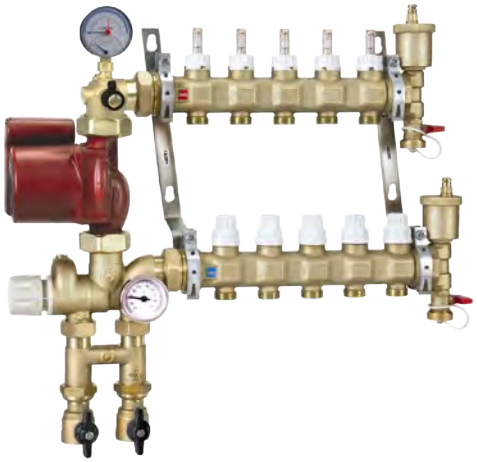
Bottom Inlet fitting set fit 165, 166, 167 series. Includes (2) 1½" union nuts, (2) tail pieces and (2) washers. Will not fit top outlet thread.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA16**160 | 1" NPT F inlet union fittings | 1.0 | **99.10** |

## THERMOSTATIC MANIFOLD MIXING STATIONS

# 172
# Manifold mixing station three speed pump

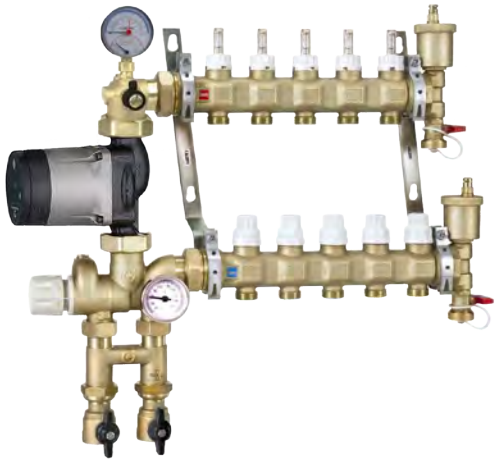
Pre-assembled thermostatic manifold mixing station consisting of a supply distribution manifold complete with built-in sight flow gauges, adjustable balancing valves. Return manifold with built-in shutoff valves is suitable for thermo-electric actuators. Complete with built-in sensor to keep flow temperature at constant set value.
Includes Grundfos UPS 15—58 three-speed pump.
¾" F NPT supply/return ball valves.
Max. working pressure: 150 psi.
Control temperature range: 80°—130°F
Primary inlet max. temperature: 195°F
Outlet center distance: 2 in.
**Models with "...IN" suffix are built inverted (tubing connections going upward).**



| Code | Description | UPS Pump | No. | Outlets | Lbs | USD |
|---|---|---|---|---|---|---|
| **172**5C1A | ¾" | 15-58 | 3 | ¾" M | 20 | **1,764.00** |
| **172**5C1A IN | ¾" | 15-58 | 3 | ¾" M | 20 | **1,764.00** |
| **172**5D1A | ¾" | 15-58 | 4 | ¾" M | 21 | **1,878.00** |
| **172**5D1A IN | ¾" | 15-58 | 4 | ¾" M | 21 | **1,878.00** |
| **172**5E1A | ¾" | 15-58 | 5 | ¾" M | 23 | **1,991.00** |
| **172**5E1A IN | ¾" | 15-58 | 5 | ¾" M | 23 | **1,991.00** |
| **172**5F1A | ¾" | 15-58 | 6 | ¾" M | 25 | **2,105.00** |
| **172**5F1A IN | ¾" | 15-58 | 6 | ¾" M | 25 | **2,105.00** |
| **172**5G1A | ¾" | 15-58 | 7 | ¾" M | 27 | **2,220.00** |
| **172**5G1A IN | ¾" | 15-58 | 7 | ¾" M | 27 | **2,220.00** |
| **172**5H1A | ¾" | 15-58 | 8 | ¾" M | 28 | **2,333.00** |
| **172**5H1A IN | ¾" | 15-58 | 8 | ¾" M | 28 | **2,333.00** |
| **172**5I1A | ¾" | 15-58 | 9 | ¾" M | 29 | **2,447.00** |
| **172**5I1A IN | ¾" | 15-58 | 9 | ¾" M | 29 | **2,447.00** |
| **172**5L1A | ¾" | 15-58 | 10 | ¾" M | 31 | **2,561.00** |
| **172**5L1A IN | ¾" | 15-58 | 10 | ¾" M | 31 | **2,561.00** |
| **172**5M1A | ¾" | 15-58 | 11 | ¾" M | 33 | **2,673.00** |
| **172**5M1A IN | ¾" | 15-58 | 11 | ¾" M | 33 | **2,673.00** |
| **172**5N1A | ¾" | 15-58 | 12 | ¾" M | 34 | **2,788.00** |
| **172**5N1A IN | ¾" | 15-58 | 12 | ¾" M | 34 | **2,788.00** |
| **172**5O1A | ¾" | 15-58 | 13 | ¾" M | 36 | **2,901.00** |
| **172**5O1A IN | ¾" | 15-58 | 13 | ¾" M | 36 | **2,901.00** |

# 172
# Manifold mixing station high efficiency pump

Pre-assembled thermostatic manifold mixing station consisting of a supply distribution manifold complete with built-in sight flow gauges, adjustable balancing valves. Return manifold with built-in shutoff valves is suitable for thermo-electric actuators. Complete with built-in sensor to keep flow temperature at constant set value.
Includes Grundfos Alpha 25-55U pump.
¾" F NPT supply/return ball valves.
Max. working pressure: 150 psi.
Control temperature range: 80°—130°F
Primary inlet max. temperature: 195°F
Outlet center distance: 2 in.
**Models with "...IN" suffix are built inverted (tubing connections going upward).**

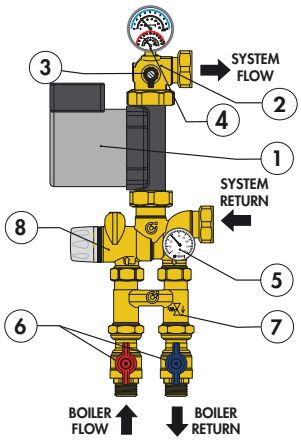


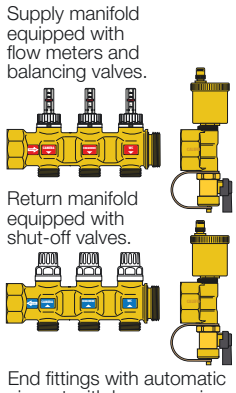
| Code | Description | Alpha Pump | No. | Outlets | Lbs | USD |
|---|---|---|---|---|---|---|
| **172**5C1AHE | ¾" | 25-55U | 3 | ¾" M | 20 | **2,117.00** |
| **172**5C1AHE IN | ¾" | 25-55U | 3 | ¾" M | 20 | **2,117.00** |
| **172**5D1AHE | ¾" | 25-55U | 4 | ¾" M | 21 | **2,231.00** |
| **172**5D1AHE IN | ¾" | 25-55U | 4 | ¾" M | 21 | **2,231.00** |
| **172**5E1AHE | ¾" | 25-55U | 5 | ¾" M | 23 | **2,344.00** |
| **172**5E1AHE IN | ¾" | 25-55U | 5 | ¾" M | 23 | **2,344.00** |
| **172**5F1AHE | ¾" | 25-55U | 6 | ¾" M | 25 | **2,458.00** |
| **172**5F1AHE IN | ¾" | 25-55U | 6 | ¾" M | 25 | **2,458.00** |
| **172**5G1AHE | ¾" | 25-55U | 7 | ¾" M | 27 | **2,571.00** |
| **172**5G1AHE IN | ¾" | 25-55U | 7 | ¾" M | 27 | **2,571.00** |
| **172**5H1AHE | ¾" | 25-55U | 8 | ¾" M | 28 | **2,685.00** |
| **172**5H1AHE IN | ¾" | 25-55U | 8 | ¾" M | 28 | **2,685.00** |
| **172**5I1AHE | ¾" | 25-55U | 9 | ¾" M | 29 | **2,799.00** |
| **172**5I1AHE IN | ¾" | 25-55U | 9 | ¾" M | 29 | **2,799.00** |
| **172**5L1AHE | ¾" | 25-55U | 10 | ¾" M | 31 | **2,913.00** |
| **172**5L1AHE IN | ¾" | 25-55U | 10 | ¾" M | 31 | **2,913.00** |
| **172**5M1AHE | ¾" | 25-55U | 11 | ¾" M | 33 | **3,026.00** |
| **172**5M1AHE IN | ¾" | 25-55U | 11 | ¾" M | 33 | **3,026.00** |
| **172**5N1AHE | ¾" | 25-55U | 12 | ¾" M | 34 | **3,141.00** |
| **172**5N1AHE IN | ¾" | 25-55U | 12 | ¾" M | 34 | **3,141.00** |
| **172**5O1AHE | ¾" | 25-55U | 13 | ¾" M | 36 | **3,254.00** |
| **172**5O1AHE IN | ¾" | 25-55U | 13 | ¾" M | 36 | **3,254.00** |

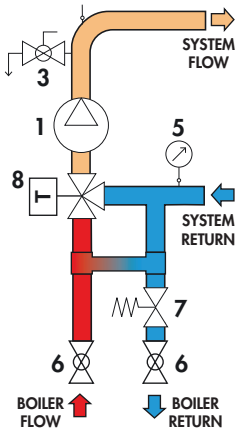
# THERMOSTATIC MANIFOLD MIXING STATIONS

### Characteristic components / hydraulic diagram

| Item | Description | Symbol |
|---|---|---|
| 1 | Circulation pump UPS 15-58 pictured | |
| 2 | Top elbow with supply temperature and pressure gauge | |
| 3 | Purge valve | |
| 4 | Supply temperature and pressure gauge | |
| 5 | Return temperature gauge | |
| 6 | Primary circuit shut-off valves | |
| 7 | Primary circuit hydraulic separator with check valve | |
| 8 | Thermostatic three-way mixing valve with built-in sensor | |



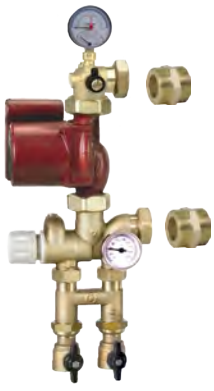




### Function

The 172 series manifold mixing station is designed for use in manifold-based hydronic distribution systems. The manifold mixing station incorporates a thermostatic actuator with built-in sensor which keeps the flow temperature at a constant set value for use in low temperature systems such as floor radiant panels. A removable primary circuit hydraulic separator with check valve is also supplied. The hydraulic separator is essential when there is a primary circuit circulation pump and when radiator circuits or fan coils are controlled by thermostatic or thermo-electric valves. When connecting to a Caleffi HYDROLINK™ or hydraulic separator without a primary pump, the hydraulic separator can be removed and the manifold mixing station can be connected directly. The 172 station, like the TWISTFLOW™ Series 668S1 distribution manifolds, can be configured with 3 to 13 circuit outlets offering similar benefits with built-in sight flow meters/adjustable balancing valves and optional TWISTOP™ thermo-electric zone actuators.

# MANIFOLD MIXING STATIONS

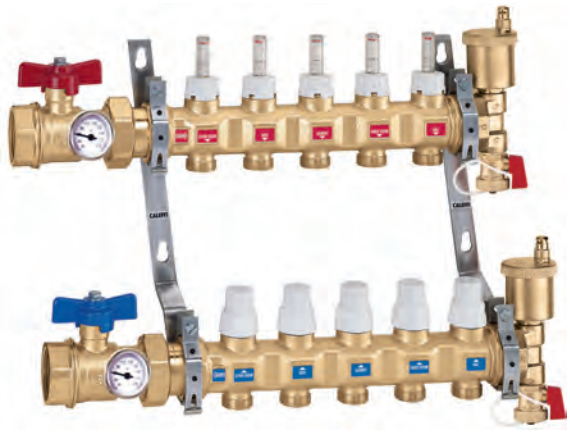


## Thermostatic mixing station kit

For field assembly to a Caleffi radiant manifold assembly.
Grundfos UPS 15—58 three-speed pump or Alpha 25-55U.
1" NPT male adapters included to connect to manifold.
¾" NPT female riser connections.
Includes built-in hydraulic separator.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA17256HE** | Thermostatic mixing, Alpha 25-55U | 4.1 | **1,634.00** |
| **NA17256** | Thermostatic mixing, UPS 15-58U | 4.1 | **1,281.00** |
| **NA16002** | Alpha 25-55U replacement pump | 2.3 | **701.00** |
| **NA10038** | UPS 15-58U replacement pump | 2.3 | **345.00** |
| **F19153** | Replacement mixing valve | 1.6 | **388.00** |

## BRASS DISTRIBUTION MANIFOLDS



# 668S1
# TwistFlow™ Assembly

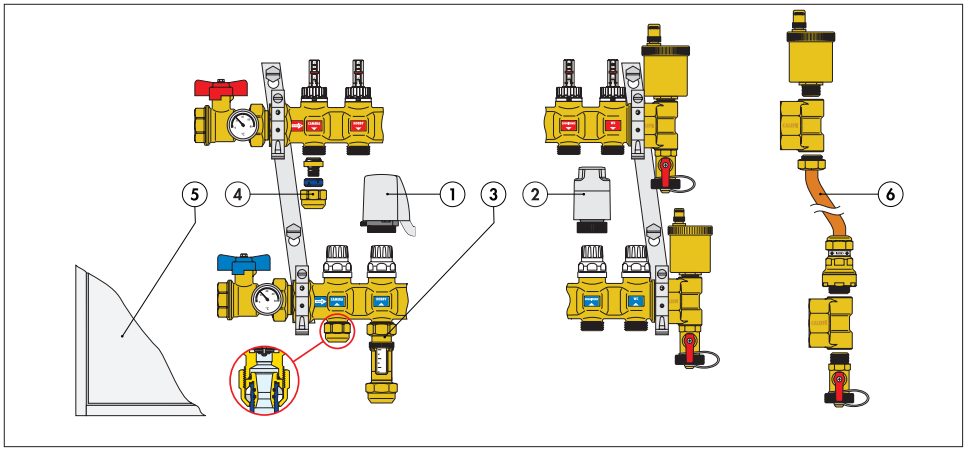
Pre-assembled radiant manifold consisting of return distribution manifold complete with built-in shut-off valves suitable for thermo-electric actuator and supply distribution manifold complete with built-in sight flow meters and balancing valves with 2" gauges 30—210°F scale.
1" or 1¼" NPT inlet ball valves.
Temperature gauges.
Max. working pressure: 150 psi.
Max. working temperature: 180°F.
Max: peak temperature: 200°F.
Loop Cv: 1.23 (combined supply & return ports).
Flow meter scale: ¼ — 2 gpm.
Outlet center distance: 2 in.

**Models with "...IN" suffix are built inverted (tubing connections going upward).**

| Code | Description | No. | Outlets | Lbs | USD |
|---|---|---|---|---|---|
| **668**6C5S1A | 1" | 3 | ¾" M | 17 | **814.00** |
| **668**6C5S1A IN | 1" | 3 | ¾" M | 17 | **814.00** |
| **668**6D5S1A | 1" | 4 | ¾" M | 18 | **933.00** |
| **668**6D5S1A IN | 1" | 4 | ¾" M | 18 | **933.00** |
| **668**6E5S1A | 1" | 5 | ¾" M | 19 | **1,051.00** |
| **668**6E5S1A IN | 1" | 5 | ¾" M | 19 | **1,051.00** |
| **668**6F5S1A | 1" | 6 | ¾" M | 21 | **1,169.00** |
| **668**6F5S1A IN | 1" | 6 | ¾" M | 21 | **1,169.00** |
| **668**6G5S1A | 1" | 7 | ¾" M | 23 | **1,287.00** |
| **668**6G5S1A IN | 1" | 7 | ¾" M | 23 | **1,287.00** |
| **668**6H5S1A | 1" | 8 | ¾" M | 24 | **1,406.00** |
| **668**6H5S1A IN | 1" | 8 | ¾" M | 24 | **1,406.00** |
| **668**6I5S1A | 1" | 9 | ¾" M | 26 | **1,524.00** |
| **668**6I5S1A IN | 1" | 9 | ¾" M | 26 | **1,524.00** |
| **668**6L5S1A | 1" | 10 | ¾" M | 28 | **1,642.00** |
| **668**6L5S1A IN | 1" | 10 | ¾" M | 28 | **1,642.00** |
| **668**6M5S1A | 1" | 11 | ¾" M | 29 | **1,761.00** |
| **668**6M5S1A IN | 1" | 11 | ¾" M | 29 | **1,761.00** |
| **668**6N5S1A | 1" | 12 | ¾" M | 31 | **1,879.00** |
| **668**6N5S1A IN | 1" | 12 | ¾" M | 31 | **1,879.00** |
| **668**6O5S1A | 1" | 13 | ¾" M | 33 | **1,998.00** |
| **668**6O5S1A IN | 1" | 13 | ¾" M | 33 | **1,998.00** |

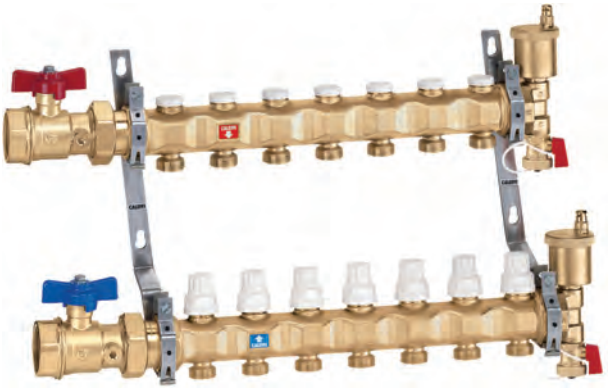
| Code | Description | No. | Outlets | Lbs | USD |
|---|---|---|---|---|---|
| **668**7C5S1A | 1¼" | 3 | ¾" M | 17 | **863.00** |
| **668**7C5S1A IN | 1¼" | 3 | ¾" M | 17 | **863.00** |
| **668**7D5S1A | 1¼" | 4 | ¾" M | 18 | **982.00** |
| **668**7D5S1A IN | 1¼" | 4 | ¾" M | 18 | **982.00** |
| **668**7E5S1A | 1¼" | 5 | ¾" M | 19 | **1,101.00** |
| **668**7E5S1A IN | 1¼" | 5 | ¾" M | 19 | **1,101.00** |
| **668**7F5S1A | 1¼" | 6 | ¾" M | 21 | **1,217.00** |
| **668**7F5S1A IN | 1¼" | 6 | ¾" M | 21 | **1,217.00** |
| **668**7G5S1A | 1¼" | 7 | ¾" M | 23 | **1,336.00** |
| **668**7G5S1A IN | 1¼" | 7 | ¾" M | 23 | **1,336.00** |
| **668**7H5S1A | 1¼" | 8 | ¾" M | 24 | **1,455.00** |
| **668**7H5S1A IN | 1¼" | 8 | ¾" M | 24 | **1,455.00** |
| **668**7I5S1A | 1¼" | 9 | ¾" M | 26 | **1,573.00** |
| **668**7I5S1A IN | 1¼" | 9 | ¾" M | 26 | **1,573.00** |
| **668**7L5S1A | 1¼" | 10 | ¾" M | 28 | **1,691.00** |
| **668**7L5S1A IN | 1¼" | 10 | ¾" M | 28 | **1,691.00** |
| **668**7M5S1A | 1¼" | 11 | ¾" M | 29 | **1,809.00** |
| **668**7M5S1A IN | 1¼" | 11 | ¾" M | 29 | **1,809.00** |
| **668**7N5S1A | 1¼" | 12 | ¾" M | 31 | **1,928.00** |
| **668**7N5S1A IN | 1¼" | 12 | ¾" M | 31 | **1,928.00** |
| **668**7O5S1A | 1¼" | 13 | ¾" M | 33 | **2,046.00** |
| **668**7O5S1A IN | 1¼" | 13 | ¾" M | 33 | **2,046.00** |

### Manifolds and accessories




1. Thermo-electric actuator 6564 series.
2. Thermo-electric actuator with manual open handle, 6563 series.
3. Flow meter, code NA669.
4. Self-adjusting Universal PEX fitting, 680, 682 series.
5. Inspection wall box, 659 series.
6. Differential by-pass kit, code 668000.

## DISTRIBUTION MANIFOLDS



# 663
# Pre-assembled distribution assembly

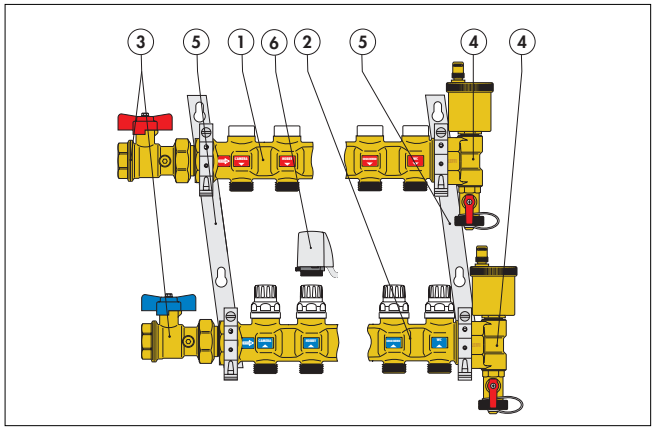
Pre-assembled distribution assembly consisting of return distribution manifold complete with built-in shut-off valves suitable for thermo-electric actuator and supply distribution manifold complete with manually-adjustable balancing valves.
1" or 1¼" NPT inlet ball valves.
Loop Cv: 2.3 (combined supply & return ports).
Max. working pressure: 150 psi.
Max: temperature: 210°F.
Outlet center distance: 2 in.

**Models with "...IN" suffix are built inverted (tubing connections going upward).**

| Code | Description | No. | Outlets | Lbs | USD |
|---|---|---|---|---|---|
| **663**6C5A | 1" | 3 | ¾" M | 17 | **666.00** |
| **663**6C5A IN | 1" | 3 | ¾" M | 17 | **666.00** |
| **663**6D5A | 1" | 4 | ¾" M | 18 | **770.00** |
| **663**6D5A IN | 1" | 4 | ¾" M | 18 | **770.00** |
| **663**6E5A | 1" | 5 | ¾" M | 19 | **873.00** |
| **663**6E5A IN | 1" | 5 | ¾" M | 19 | **873.00** |
| **663**6F5A | 1" | 6 | ¾" M | 21 | **976.00** |
| **663**6F5A IN | 1" | 6 | ¾" M | 21 | **976.00** |
| **663**6G5A | 1" | 7 | ¾" M | 23 | **1,080.00** |
| **663**6G5A IN | 1" | 7 | ¾" M | 23 | **1,080.00** |
| **663**6H5A | 1" | 8 | ¾" M | 24 | **1,184.00** |
| **663**6H5A IN | 1" | 8 | ¾" M | 24 | **1,184.00** |
| **663**6I5A | 1" | 9 | ¾" M | 26 | **1,287.00** |
| **663**6I5A IN | 1" | 9 | ¾" M | 26 | **1,287.00** |
| **663**6L5A | 1" | 10 | ¾" M | 28 | **1,391.00** |
| **663**6L5A IN | 1" | 10 | ¾" M | 28 | **1,391.00** |
| **663**6M5A | 1" | 11 | ¾" M | 29 | **1,494.00** |
| **663**6M5A IN | 1" | 11 | ¾" M | 29 | **1,494.00** |
| **663**6N5A | 1" | 12 | ¾" M | 31 | **1,597.00** |
| **663**6N5A IN | 1" | 12 | ¾" M | 31 | **1,597.00** |
| **663**6O5A | 1" | 13 | ¾" M | 33 | **1,701.00** |
| **663**6O5A IN | 1" | 13 | ¾" M | 33 | **1,701.00** |
| **663**6P5A | 1" | 14 | ¾" M | 35 | **1,998.00** |
| **663**6P5A IN | 1" | 14 | ¾" M | 35 | **1,998.00** |

| Code | Description | No. | Outlets | Lbs | USD |
|---|---|---|---|---|---|
| **663**7C5A | 1¼" | 3 | ¾" M | 17 | **710.00** |
| **663**7C5A IN | 1¼" | 3 | ¾" M | 17 | **710.00** |
| **663**7D5A | 1¼" | 4 | ¾" M | 18 | **812.00** |
| **663**7D5A IN | 1¼" | 4 | ¾" M | 18 | **812.00** |
| **663**7E5A | 1¼" | 5 | ¾" M | 19 | **916.00** |
| **663**7E5A IN | 1¼" | 5 | ¾" M | 19 | **916.00** |
| **663**7F5A | 1¼" | 6 | ¾" M | 21 | **1,020.00** |
| **663**7F5A IN | 1¼" | 6 | ¾" M | 21 | **1,020.00** |
| **663**7G5A | 1¼" | 7 | ¾" M | 23 | **1,123.00** |
| **663**7G5A IN | 1¼" | 7 | ¾" M | 23 | **1,123.00** |
| **663**7H5A | 1¼" | 8 | ¾" M | 24 | **1,227.00** |
| **663**7H5A IN | 1¼" | 8 | ¾" M | 24 | **1,227.00** |
| **663**7I5A | 1¼" | 9 | ¾" M | 26 | **1,330.00** |
| **663**7I5A IN | 1¼" | 9 | ¾" M | 26 | **1,330.00** |
| **663**7L5A | 1¼" | 10 | ¾" M | 28 | **1,434.00** |
| **663**7L5A IN | 1¼" | 10 | ¾" M | 28 | **1,434.00** |
| **663**7M5A | 1¼" | 11 | ¾" M | 29 | **1,537.00** |
| **663**7M5A IN | 1¼" | 11 | ¾" M | 29 | **1,537.00** |
| **663**7N5A | 1¼" | 12 | ¾" M | 31 | **1,641.00** |
| **663**7N5A IN | 1¼" | 12 | ¾" M | 31 | **1,641.00** |
| **663**7O5A | 1¼" | 13 | ¾" M | 33 | **1,745.00** |
| **663**7O5A IN | 1¼" | 13 | ¾" M | 33 | **1,745.00** |
| **663**6P5A | 1¼" | 14 | ¾" M | 35 | **2,050.00** |
| **663**6P5A IN | 1¼" | 14 | ¾" M | 35 | **2,050.00** |

### Construction




1. Supply manifold.
2. Return manifold complete with shut-off valves that can be used with thermo-electric actuators.
3. Pair of shut-off ball valves (complete with port for optional temperature gauge only for 1 1/4" version).
4. End fittings consisting of a 3-way end fitting, automatic air vent valve and drain cock.
5. Pair of mounting brackets for use with series 659 boxes or direct wall installation.
6. Thermo-electric actuator, series 6564.

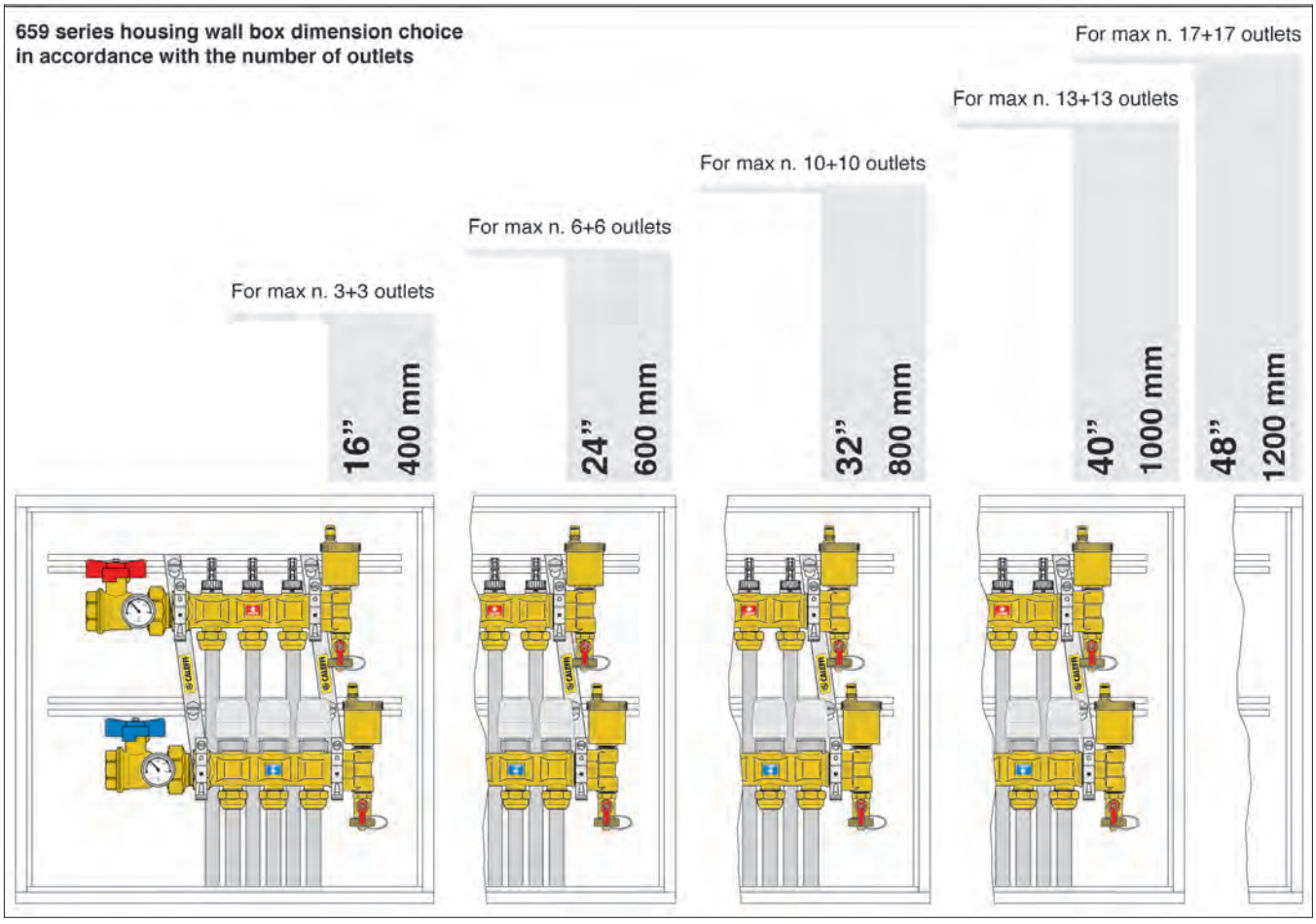
## BOXES FOR DISTRIBUTION MANIFOLDS

# 659
# Manifold cabinet

Housing wall box fits manifolds 663 and 668S1 series.
Adjustable depth: 4⅜"— 5½".
Power coated painted 18 gauge sheet metal.
With push-fit clamp.

| Code | Description | H | Max Outlets | Lbs | USD |
|---|---|---|---|---|---|
| **659**044 | 16" width | 20" | 3 | 17 | **430.00** |
| **659**064 | 24" width | 20" | 6 | 23 | **468.00** |
| **659**084 | 32" width | 20" | 10 | 30 | **551.00** |
| **659**104 | 40" width | 20" | 13 | 37 | **634.00** |
| **659**124 | 48" width" | 20" | 17 | 44 | **716.00** |

Rough opening dimensions



# FITTINGS FOR DISTRIBUTION MANIFOLDS AND MIXING STATIONS

(680504A shown)

## 680 Universal PEX fittings

680 series fittings are compatible with any ASTM F876 single layer PEX.
Max. working pressure: 150 psi.
Working temperature range for ASTM F876 PEX piping: 40—180°F.

| Code | Description | Compression ring | Lbs | USD |
|---|---|---|---|---|
| **680**507 | 5/16" nominal PEX | Blue | 0.2 | **13.30** |
| **680**503A | 3/8" nominal PEX | Black | 0.2 | **13.30** |
| **680**504A | ½" nominal PEX | Blue | 0.2 | **13.30** |
| **680**555A | 5/8" nominal PEX | Black | 0.2 | **13.30** |
| **680**505A | ¾" nominal PEX | Brass | 0.2 | **13.30** |

(682530A shown)

## 682 Universal PEX-AL-PEX fittings

682 series fittings are compatible with any ASTM F1281 multilayer PEX-AL-PEX pipe.
Max. working pressure: 150 psi.
Working temperature range for ASTM F1281 PEX-AL-PEX piping: 40—200°F with tubing rated 200°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **682**530A | 3/8" nominal PEX-AL-PEX | 0.2 | **13.70** |
| **682**540A | ½" nominal PEX-AL-PEX | 0.2 | **13.70** |
| **682**545A | 5/8" nominal PEX-AL-PEX | 0.2 | **14.70** |
| **682**550A | ¾" nominal PEX-AL-PEX | 0.2 | **26.00** |

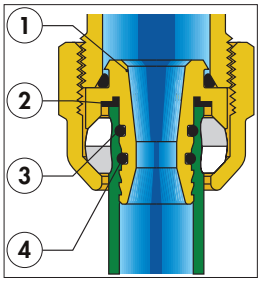
**Construction details**
There is a large variety of PEX and PEX-AL-PEX pipes available with a wide range of permissible tolerances. This fitting is designed to adapt to several pipe diameters tolerances. The innovative solution for mechanical fittings has been constructed so that the same fitting can be used for pipes with different external diameters tolerances and differences on internal diameters tolerances while maintaining the nominal dimensions.

**Resistance to pull out**
This fitting offers a high degree of resistance to pull out of pipe. Its special clamping system makes it suitable for every application and ensures a leak tight fit.

**Low pressure losses**
The internal profile of the adapter (1) is shaped to obtain a Venturi effect when the fluid passes through, reducing pressure losses by 20% compared to a similar diameter.

**Insulation ring**
The fitting is equipped with a rubber insulation element (2) to prevent contact between the aluminium in PEX-AL-PEX pipe and the brass fitting, thus preventing galvanic corrosion generated by the two different metals.

**Dual O-ring seal**
The adapter is equipped with two O-ring seals (3) and (4) in EPDM to prevent leaks even when operating at high pressure.




## NA102

Sweat connection fitting fits ½" copper.
Max. working pressure: 150 psi.
Working temperature range: 41—250°F.
Chrome plated nut.
Does not work with 668S1 and 172 series.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA102**62 | ½" sweat | 0.2 | **14.80** |

## NA103

NPT connection fitting.
Max. working pressure: 150 psi.
Working temperature range: 41—250°F.
Chrome plated nut.
Does not work with 668S1 and 172 series.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA103**13 | ½" NPT male | 0.2 | **16.00** |

## 386

Cap to plug unused manifold outlets on 592, 663 and 668S1 series.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **386**500 | ¾" straight thread | 0.2 | **13.30** |

Double nipple for coupling PEX fittings.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **942**550 | ¾" x ¾" thread | 0.1 | **16.50** |

Wrench for tightening PEX fitting to manifolds.

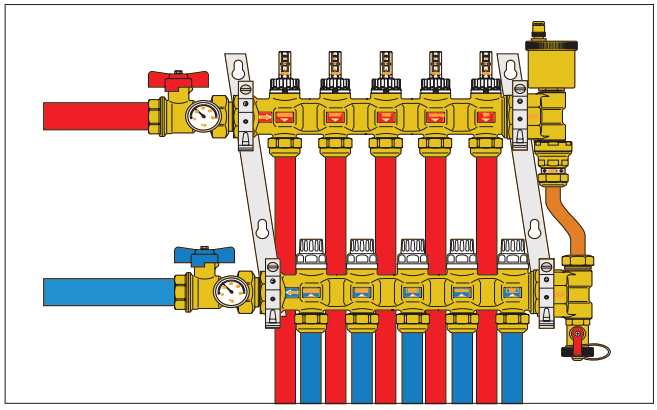
| Code | Description | Lbs | USD |
|---|---|---|---|
| **387100** | 26 mm x 30 mm | 1.5 | **63.30** |

## BRASS DISTRIBUTION MANIFOLD ACCESSORIES

### 668

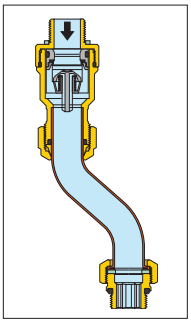
Off-center by-pass assembly with fixed crack setting of 3.6 psi differential pressure.
Max working pressure: 150 psi.
Working temperature range: 15—230°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **668**000 | ½" x ½" | 0.5 | **126.00** |

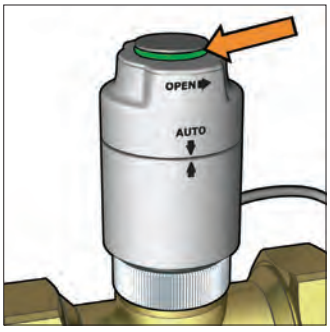


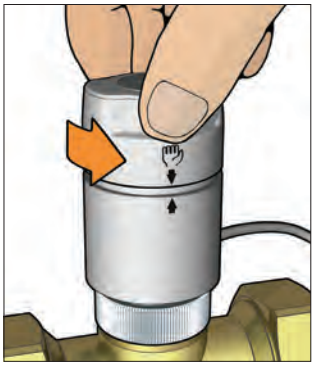
The by-bass valve contains a check valve connected to a contact spring. When the fixed setting pressure is reached, the valve disk gradually opens, recirculating the flow in proportion to the closing of the thermo-electric valves and maintaining a constant differential pressure in the manifold circuit.

The differential by-pass assembly features a fixed setting that cannot be changed. The small, compact size and offset connections makes this kit particularly easy to mount after installing thermo-electric valves on the manifold. It does not require a larger or deeper zone box than those used for normal manifolds.



**Simply twist to manually open actuator (and activate micro switch on 656354). When power is applied, it returns to Auto position.**



**Green ring indicates valve is open.**

### 6564

Low current draw thermo-electric actuator.
Hermetically sealed for upside down installation..
Pop-up feature
Power supply: 24 V AC/DC.
Initial current draw: ≤ 250 mA.
Power consumption: 3 W.
Rating of micro-switch contacts: 5 A (24 V).
31.5" wire lead connection.

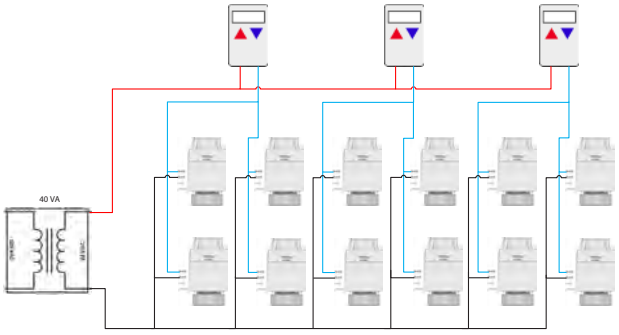
| Code | Description | Lbs | USD |
|---|---|---|---|
| **6564**04 | 24 V AC/DC | 0.4 | **110.00** |
| **6564**14 | 24 V AC/DC with micro-switch | 0.4 | **138.00** |

### 6563 TwisTop™

TwisTop™ thermo-electric actuator.
Twist the top to manually open.
Power supply: 24 V AC/DC.
Initial current draw: ≤ 250 mA.
Power consumption: 3 W.
Rating of micro-switch contacts: 5 A (24 V).
31.5" wire lead connection.
US Patent 7,617,989 B2.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **6563**44 | 24 V AC/DC | 0.4 | **147.00** |
| **6563**54 | 24 V AC/DC with micro-switch | 0.4 | **174.00** |
| **6563**54R | 24 V AC/DC with micro-switch Rehau | 0.4 | **190.00** |

**Up to 12 actuators per 40 VA transformer.**



# ACCESSORIES

Replacement balance/flow meter fits 668S1 series manifold.
Flow meter scale: ¼ — 2 gpm.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **F69600** | Fits 668S1 supply manifold | 0.2 | **38.70** |

Replacement shut-off valve fits 668 S1 series manifold.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **F69590** | Fits 668S1 return manifold | 0.3 | **30.90** |

Replacement balancing valve fits 668 series manifold.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **F69184** | Fits 668 supply manifold | 0.2 | **26.90** |

Replacement shut-off valve fits 668 & 663 series manifold.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **69122 CST** | Fits 668 & 663 return manifold | 0.3 | **17.20** |

Replacement balancing valve for 663 series manifold.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **R69176** | Fits 663 supply manifold | 0.3 | **26.40** |

## NA669

Flow meter fits manifolds.
Max: temperature: 180°F (669050).
Max: temperature: 210°F (NA669 series).
¾" straight male x ¾" straight female connections.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **669**050 | 1 — 4 LPM | 0.4 | **45.60** |
| **NA669**150 | ¼ — 1 GPM High Temp. | 0.3 | **45.60** |
| **NA669**250 | ½ — 2 GPM High Temp. | 0.3 | **45.60** |
| **NA669**450 | 1 — 4 GPM High Temp. | 0.3 | **43.50** |

White replacement knob fits 663 and 668S1 series manifolds.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **449000** | Knob | 0.5 | **13.40** |

## 5020

Replacement air vent fits radiant manifolds.
Brass body.
Hygroscopic safety air vent cap.
Max. working pressure: 150 psi
Max discharge pressure: 60 psi
Max. working temperature: 250ºF.

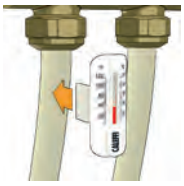
| Code | Description | Lbs | USD |
|---|---|---|---|
| **5020**43 CST | ½" straight thread | 0.6 | **34.00** |

Plastic replacement/test cap fits 5020 series.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **R562**14 | Vent cap | 0.1 | **2.80** |

## 675

Snap-on thermometer directly to PEX, PEX-AL-PEX and copper piping.
Box of 10 comes with 1 syringe of thermo conductive paste.



| Code | Description | Lbs | USD |
|---|---|---|---|
| **675**900A | ¾" & ⅝" PEX & ½" copper | 0.2 | **14.40** |
| **R694**13 | Syringe of thermo conductive paste | 0.1 | **10.10** |

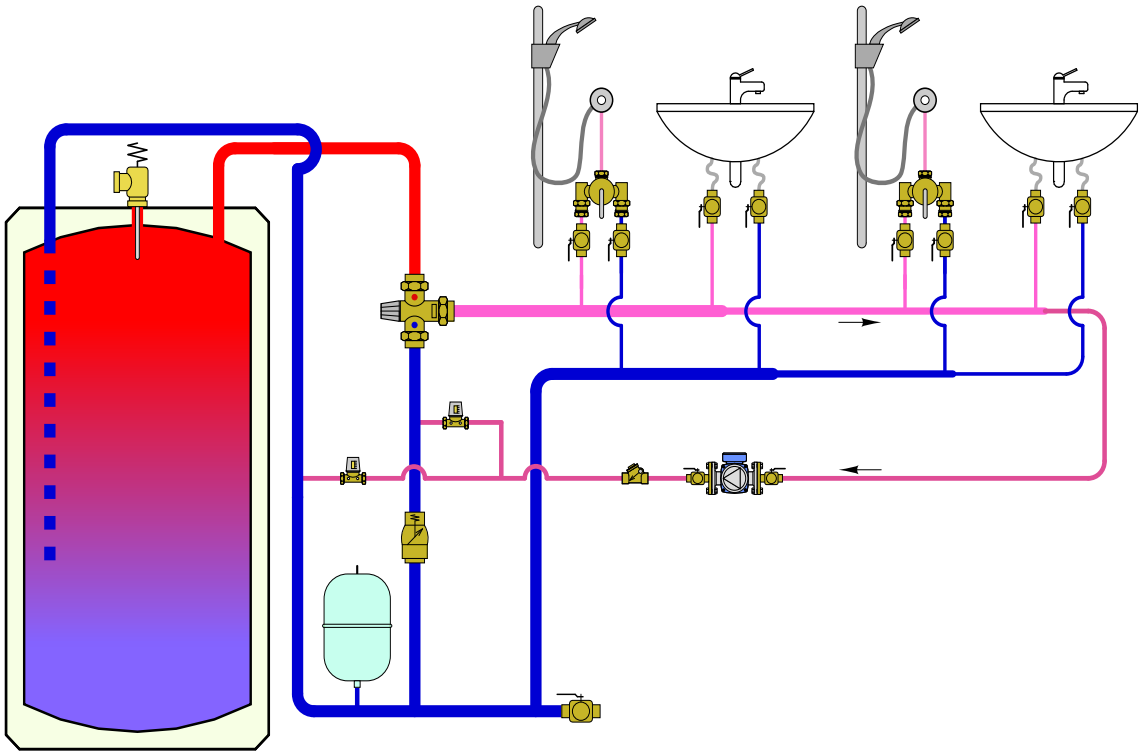
## 688

Temperature gauge with well pocket fitting for inserting into manifold ball valves.
Working Temperature range: 30—210º F.
Face dial diameter: 2".

| Code | Description | Lbs | USD |
|---|---|---|---|
| **R39591** | Replacement gauge NEW | 0.1 | **35.00** |
| **688**003A | Gauge with pocket well | 0.2 | **53.70** |
| **F113**44 | Replacement pocket well, low lead | 0.1 | **5.30** |
| **F670**37 | O-ring fits F11344 | 0.1 | **1.20** |

# MIXING VALVES FOR PLUMBING AND HYDRONICS

This diagram is an example





Thermostatic mixing valves for plumbing and hydronics

High flow thermostatic mixing valves for plumbing and hydronics

Scald protection thermostatic mixing valves for plumbing

Mixing valves for centralized hydronic systems

Electronic mixing valve for plumbing

High/low thermostatic mixing valve for plumbing

Thermostatic mixing valve kit for domestic water heaters

## THERMOSTATIC MIXING VALVES FOR PLUMBING AND HYDRONICS

### 521 MixCal™ Sweat

Adjustable thermostatic mixing valve for point of distribution in domestic water systems and radiant hydronic heating systems.
Low-lead brass body and fittings.
Locking set point knob.
Max. working pressure: 200 psi.
Max. inlet temperature: 200ºF.
Adjustable range: 85—150ºF.
Min. flow for optimum performance: 1.0 gpm.

ASSE 1017

| Code | Description | Cv | Lbs | USD |
|---|---|---|---|---|
| **521**409A | ½" sweat union | 3 | 2.4 | **264.00** |
| **521**409AC | ½" sweat union, check valves | 3 | 2.4 | **292.00** |
| **521**509A | ¾" sweat union | 3 | 2.4 | **276.00** |
| **521**509AC | ¾" sweat union, check valves | 3 | 2.4 | **316.00** |
| **521**609A | 1" sweat union | 3 | 2.4 | **329.00** |
| **521**609AC | 1" sweat union, check valves | 3 | 2.4 | **369.00** |

### 521 MixCal™ Sweat

Adjustable thermostatic mixing valve for point of distribution in domestic water systems and radiant hydronic heating systems.
Low-lead brass body.
Locking set point knob.
Max. working pressure: 200 psi.
Max. inlet temperature: 200ºF.
Adjustable range: 85—150ºF.
Min. flow for optimum performance: 1.0 gpm.
Gauge scale: 30—210ºF.
Gauge accuracy: ± 6ºF.
Gauge dial: 2" diameter.

ASSE 1017

| Code | Description | Cv | Lbs | USD |
|---|---|---|---|---|
| **521**419A | ½" sweat union | 3 | 2.9 | **314.00** |
| **521**419AC | ½" sweat union, check valves | 3 | 2.9 | **341.00** |
| **521**519A | ¾" sweat union | 3 | 2.9 | **326.00** |
| **521**519AC | ¾" sweat union, check valves | 3 | 2.9 | **365.00** |
| **521**619A | 1" sweat union | 3 | 2.9 | **379.00** |
| **521**619AC | 1" sweat union, check valves | 3 | 2.9 | **418.00** |

### 521 MixCal™ NPT

Adjustable thermostatic mixing valve for point of distribution in domestic water systems and radiant hydronic heating systems.
Locking set point knob.
Max. working pressure: 200 psi.
Max. inlet temperature: 200ºF.
Adjustable range: 85—150ºF.
Min. flow for optimum performance: 1.0 gpm.

ASSE 1017

| Code | Description | Cv | Lbs | USD |
|---|---|---|---|---|
| **521**400A | ½" NPT male union | 3 | 2.4 | **277.00** |
| **521**400AC | ½" NPT male union, check valves | 3 | 2.4 | **304.00** |
| **521**500A | ¾" NPT male union | 3 | 2.4 | **289.00** |
| **521**500AC | ¾" NPT male union, check valves | 3 | 2.4 | **328.00** |
| **521**600A | 1" NPT male union | 3 | 2.4 | **343.00** |
| **521**600AC | 1" NPT male union, check valves | 3 | 2.4 | **382.00** |

### 521 MixCal™ NPT

Adjustable thermostatic mixing valve for point of distribution in domestic water systems and radiant hydronic heating systems.
Low-lead brass body.
Locking set point knob.
Max. working pressure: 200 psi.
Max. inlet temperature: 200ºF.
Adjustable range: 85—150ºF.
Min. flow for optimum performance: 1.0 gpm.
Gauge scale: 30—210ºF.
Gauge accuracy: ± 6ºF.
Gauge dial: 2" diameter.

ASSE 1017

| Code | Description | Cv | Lbs | USD |
|---|---|---|---|---|
| **521**410A | ½" NPT male union | 3 | 2.9 | **326.00** |
| **521**410AC | ½" NPT male union, check valves | 3 | 2.9 | **353.00** |
| **521**510A | ¾" NPT male union | 3 | 2.9 | **338.00** |
| **521**510AC | ¾" NPT male union, check valves | 3 | 2.9 | **378.00** |
| **521**610A | 1" NPT male union | 3 | 2.9 | **392.00** |
| **521**610AC | 1" NPT male union, check valves | 3 | 2.9 | **432.00** |

Meets requirements of ANSI/NSF 372-2011. Certified to ASSE 1017, CSA B125.3, UPC, IPC, Low Lead Laws and listed by ICC-ES for use in accordance with the U.S. and Canadian plumbing codes.

Replacement check valves for 521 and 5213.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA104**05 | Repl. check for 521 PEX, press fittings | 0.1 | **3.20** |
| **R392**04 | Repl. check for 521 sweat, NPT fittings | 0.1 | **4.50** |
| **NA10479** | Replacement check for 521333A | 0.1 | **3.00** |

Conical inlet filter for 521 and 5213 mixing valves.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **F524**29 | Conical filter | 0.1 | **5.30** |

# THERMOSTATIC MIXING VALVES FOR PLUMBING AND HYDRONICS

## 521 MixCal™ Press

Adjustable thermostatic mixing valve for point of distribution in domestic water systems and radiant hydronic heating systems.
Low-lead brass body.
Locking set point knob.
Max. working pressure: 200 psi.
Max. inlet temperature: 200°F.
Adjustable range: 85—150°F.
Min. flow for optimum performance: 1.3 gpm.
Gauge scale: 30—210°F.
Gauge accuracy: ± 6°F.
Gauge dial: 2" diameter.

ASSE 1017

| Code | Description | Cv | Lbs | USD |
|---|---|---|---|---|
| **521**406A | ½" Press union | 3 | 2.4 | **282.00** |
| **521**416A | ½" Press union, gauge | 3 | 2.9 | **331.00** |
| **521**506A | ¾" Press union | 3 | 2.4 | **289.00** |
| **521**516A | ¾" Press union, gauge | 3 | 2.9 | **339.00** |
| **521**506AC | ¾" Press union, check valves | 3 | 2.5 | **357.00** |
| **521**516AC | ¾" Press union, gauge, checks | 3 | 3 | **406.00** |
| **521**606A | 1" Press union | 3 | 2.6 | **349.00** |
| **521**616A | 1" Press union, gauge | 3 | 3.1 | **399.00** |

## 521 MixCal™ Body

Replacement body.
See fitting selection table in Section 8.

ASSE 1017

| Code | Description | Cv | Lbs | USD |
|---|---|---|---|---|
| **521101A** | 1" male union thread | 3 | 1.9 | **205.00** |

Point of distribution mixed temperature gauge adaptor fits 1" male union thread mixing valves.
Removable gauge fits into pocket well.
Gauge scale: 30—210°F.
Gauge accuracy: ± 6°F.
Gauge dial: 2" diameter.
Certified: Low-lead brass.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA10328** | ½" sweat with gauge | 0.4 | **78.60** |
| **NA10056** | ¾" sweat with gauge | 0.4 | **86.40** |
| **NA10058** | 1" sweat with gauge | 0.4 | **94.90** |
| **NA10358** | 1" union thread with gauge | 0.4 | **49.30** |
| **688003A** | Replacement gauge with pocket well | 0.5 | **53.70** |
| **R39591** | Replacement gauge NEW | 0.1 | **35.00** |

## 521 MixCal™ PEX

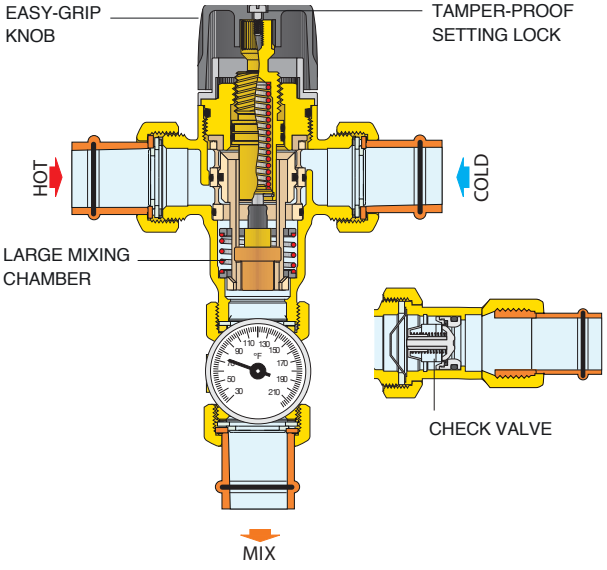
Adjustable thermostatic mixing valve for point of distribution in domestic water systems and radiant hydronic heating systems.
Low-lead brass body.
Locking set point knob.
Max. working pressure: 200 psi.
Max. inlet temperature: 200°F.
Adjustable range: 85—150°F.
Min. flow for optimum performance: 1.3 gpm.
Gauge scale: 30—210°F.
Gauge accuracy: ± 6°F.
Gauge dial: 2" diameter.

ASSE 1017

| Code | Description | Cv | Lbs | USD |
|---|---|---|---|---|
| **521**407A | ½" PEX crimp union | 3 | 2.4 | **264.00** |
| **521**417A | ½" PEX crimp union, gauge | 3 | 2.5 | **314.00** |
| **521**407AC | ½" PEX crimp union, check valves | 3 | 2.9 | **292.00** |
| **521**417AC | ½" PEX crimp, gauge, checks | 3 | 2.9 | **341.00** |
| **521**507A | ¾" PEX crimp union | 3 | 2.4 | **276.00** |
| **521**517A | ¾" PEX crimp union, gauge | 3 | 2.5 | **326.00** |
| **521**507AC | ¾" PEX crimp union, check valves | 3 | 2.9 | **316.00** |
| **521**517AC | ¾" PEX crimp, gauge, checks | 3 | 2.9 | **365.00** |
| **521**607A | 1" PEX crimp union | 3 | 2.4 | **329.00** |
| **521**617A | 1" PEX crimp union, gauge | 3 | 2.5 | **379.00** |
| **521**607AC | 1" PEX crimp union, check valves | 3 | 2.9 | **369.00** |
| **521**617AC | 1" PEX crimp, gauge, checks | 3 | 2.9 | **418.00** |

Meets requirements of ANSI/NSF 372-2011. Certified to ASSE 1017, CSA B125.3, UPC, IPC, Low Lead Laws and listed by ICC-ES for use in accordance with the U.S. and Canadian plumbing codes.

### Construction details



# HIGH FLOW THERMOSTATIC MIXING VALVES FOR PLUMBING AND HYDRONICS

Model 5231 series high flow thermostatic mixing valves for centralized systems are designed to be installed at the domestic water heater (point of distribution). For safety reasons, it is advisable to limit the maximum mixed water temperature to 120°F (when anti-scald valves are not installed at point-of-use). Series 5231 thermostatic mixing valves can also be used for regulating the flow temperature in radiant panel heating systems, to which it assures a constant and accurate control with ease of installation. Meets requirements of ANSI/NSF 372-2011. Certified to ASSE 1017, CSA B125.3, UPC, IPC, Low Lead Laws and listed by ICC-ES for use in accordance with the U.S. and Canadian plumbing codes.

## 5231 High Flow Sweat

Adjustable thermostatic mixing valve for domestic water systems and radiant hydronic systems.
DZR low lead brass body.
Max. working pressure: 200 psi.
Max. inlet temperature: 195ºF.
Adjustable range: 95—150ºF.

ASSE 1017

| Code | Description | Min Flow (gpm) | Cv | Lbs | USD |
|---|---|---|---|---|---|
| **5231**68A | 1" sweat union | 4.4 | 7.0 | 7.0 | **1,360.00** |
| **5231**78A | 1¼" sweat union | 4.4 | 7.6 | 7.0 | **1,593.00** |
| **5231**88A | 1½" sweat union | 8.8 | 13.0 | 17.0 | **2,241.00** |
| **5231**98A | 2" sweat union | 8.8 | 14.2 | 18.0 | **2,576.00** |

## 5231 High Flow NPT

Adjustable thermostatic mixing valve for domestic water systems and radiant hydronic systems.
DZR low lead brass body.
Max. working pressure: 200 psi.
Max. inlet temperature: 195ºF.
Adjustable range: 95—150ºF.

ASSE 1017

| Code | Description | Min Flow (gpm) | Cv | Lbs | USD |
|---|---|---|---|---|---|
| **5231**60A | 1" MNPT union | 4.4 | 7.0 | 7.0 | **1,463.00** |
| **5231**70A | 1¼" MNPT union | 4.4 | 7.6 | 7.0 | **1,674.00** |
| **5231**80A | 1½" MNPT union | 8.8 | 13.0 | 17.0 | **2,321.00** |
| **5231**90A | 2" MNPT union | 8.8 | 14.2 | 18.0 | **2,656.00** |

## 5231 High Flow Body

Replacement body.
Male union thread.
See fitting selection table in Section 8.

ASSE 1017

| Code | Description | Min Flow (gpm) | Cv | Lbs | USD |
|---|---|---|---|---|---|
| **5231**79A | 1½" male union | 4.4 | 7.6 | 5.0 | **1,349.00** |
| **5231**99A | 2½" male union | 8.8 | 14.2 | 14.2 | **2,063.00** |

## 5231 High Flow Sweat

Adjustable thermostatic mixing valve for domestic water systems and radiant hydronic systems.
DZR low lead brass body.
Max. working pressure: 200 psi.
Max. inlet temperature: 195ºF.
Adjustable range: 95—150ºF.
Gauge scale: 30—210ºF.
Gauge accuracy: ± 6ºF.
Gauge dial: 2" diameter.

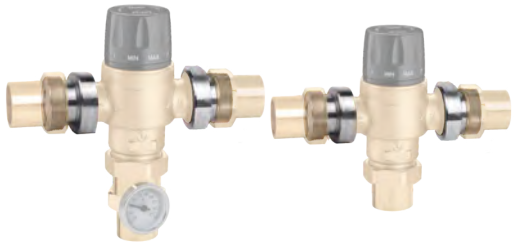
ASSE 1017

| Code | Description | Min Flow (gpm) | Cv | Lbs | USD |
|---|---|---|---|---|---|
| **5231**77A | 1¼" sweat union | 4.4 | 7.6 | 9.0 | **1,687.00** |

Point of distribution mixed temperature gauge adaptor fits High Flow 5231 series mixing valves.
Removable gauge fits into pocket well.
Gauge scale: 30—210ºF.
Gauge accuracy: ± 6ºF.
Gauge dial: 2" diameter.
Certified: Low-lead brass.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA10315** | 1¼" sweat | 0.5 | **191.00** |
| **NA10476** | 1" and 1¼" male x female union | 3.0 | **216.00** |
| **NA10461** | 1½" and 2" male x female union | 4.0 | **376.00** |
| **688003A** | Replacement gauge with pocket well | 0.2 | **53.70** |
| **R39591** | Replacement gauge NEW | 0.1 | **35.00** |

Inlet check valve assembly for installing on inlet union tail pieces of 5231 mixing valves. Stainless steel body. No Lead. Ordered separately, field installed. Assemblies examples shown below.



523177A shown with (2) NA10366 523178A shown with (2) NA10366

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA10366** | Check valve assembly 1" and 1¼" | 1.0 | **83.90** |
| **NA10367** | Check valve assembly 1½" & 2" | 1.5 | **207.00** |

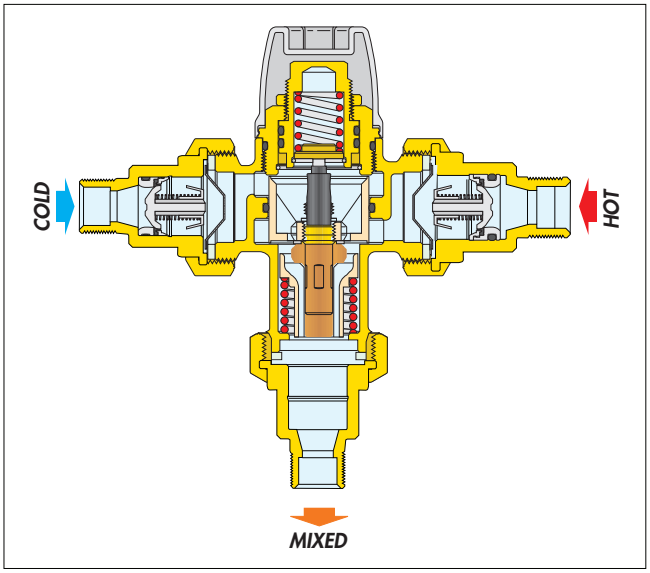
## SCALD PROTECTION THERMOSTATIC MIXING VALVES FOR PLUMBING

# 5213
# Scald Protection Point-of-Use

Adjustable thermostatic mixing valve for point of use where protected from scalding caused by hot water with locking set point. Complete with check valves on both hot and cold inlets.
Low-lead brass body.
Max. working pressure: 150 psi.
Max. inlet temperature: 185ºF.
Adjustable range: 85—120ºF.
Temperature control: ±3°F.
Min. flow for optimum performance: 0.5 gpm.
Meets requirements of ANSI/NSF 372-2011.
Certified to ASSE 1070, CSA B125.3, UPC, IPC, Low Lead Laws and listed by ICC-ES for use in accordance with the U.S. and Canadian plumbing codes.

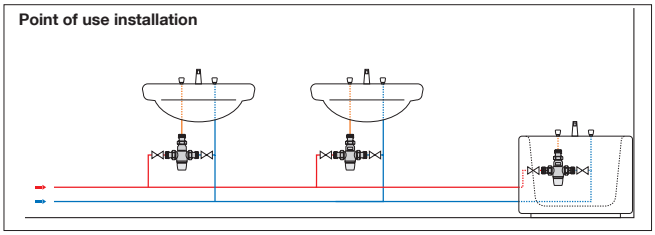
ASSE 1070

**Construction details**




| Code | Description | Cv | Lbs | USD |
|---|---|---|---|---|
| **5213**47A | ½" PEX crimp union | 2 | 2 | **276.00** |
| **5213**42A | ½" NPT male union | 2 | 2 | **289.00** |
| **5213**49A | ½" sweat union | 2 | 2 | **276.00** |
| **5213**57A | ¾" PEX crimp union | 2 | 2 | **289.00** |
| **5213**52A | ¾" NPT male union | 2 | 2 | **301.00** |
| **5213**59A | ¾" sweat union | 2 | 2 | **289.00** |
| **5213**67A | 1" PEX crimp union | 2 | 2 | **345.00** |
| **5213**62A | 1" NPT male union | 2 | 2 | **358.00** |
| **5213**69A | 1" sweat union | 2 | 2 | **345.00** |
| **5213**33A | 3/8" compression union NEW | 2 | 2 | **235.00** |

**Application Diagram**




## MIXING VALVES FOR CENTRALIZED HYDRONIC SYSTEMS

# NA164
# 3-way - 24 V AC motorized 3-wire control temperature mixing valve

Motorized mixing valve for hydronic systems or in radiant panel heating systems. Operates on a control signal from a separately-sourced outdoor reset controller. High flow rate. No swings due to sudden changes in thermal load.
Installation flexibility with reversible cold inlet port and straight through flow direction from hot inlet to mixed outlet.
Brass body.
Max. working pressure: 200 psi.
Temperature range: 40—210ºF.
Power supply: 24 V AC.
Power consumption: 8 W.
Rating of micro-switch contacts: 5 A (24 V).

| Code | Description | Cv | Lbs | USD |
|---|---|---|---|---|
| **NA164**69 | 1" sweat unions, floating | 7.7 | 5.8 | **1,109.00** |
| **F191**49 | Replacement actuator 3-wire floating | | 1.8 | **448.00** |

# NA163
# 3-way fixed temperature mixing valve

Adjustable thermostatic mixing valve for boiler protection and low temperature mixing. Installation flexibility with reversible cold inlet port and straight through flow direction from hot inlet to mixed outlet.
Brass body.
Max. working pressure: 200 psi.
Max. inlet temperature: 185ºF.
Adjustable range: 80—130ºF.

| Code | Description | Cv | Lbs | USD |
|---|---|---|---|---|
| **NA163**69 | 1" sweat unions | 3.9 | 4.8 | **874.00** |

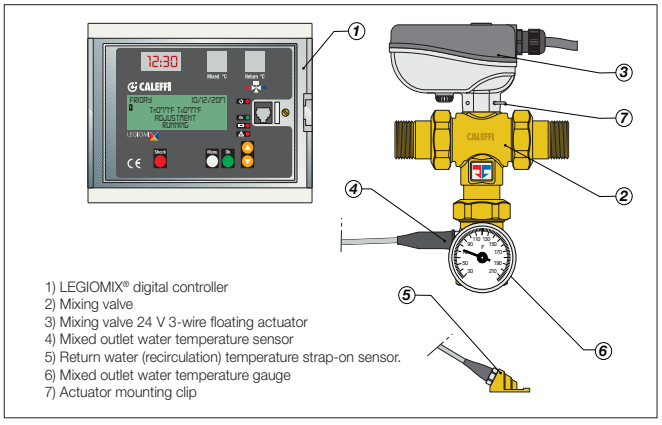
# ELECTRONIC MIXING VALVE FOR PLUMBING

NEW

| Code | Description | Cv | Lbs | USD |
|---|---|---|---|---|
| **6000**64A | 1" NPT male union | 21 | 7.3 | **3,760.00** |
| **6000**74A | 1-1/4" NPT male union | 24 | 8.2 | **4,318.00** |
| **6000**84A | 1-1/2" NPT male union | 34 | 21 | **4,567.00** |
| **6000**94A | 2" NPT male union | 47 | 22 | **5,039.00** |
| **6000**69A | 1" sweat union | 21 | 7.3 | **3,760.00** |
| **6000**79A | 1-1/4" sweat union | 24 | 8.2 | **4,318.00** |
| **6000**89A | 1-1/2" sweat union | 34 | 21 | **4,567.00** |
| **6000**99A | 2" sweat union | 47 | 22 | **5,039.00** |

**Function**

The electronic mixing valve is used in centralized systems that produce and distribute domestic hot water. It maintains the temperature of the domestic hot water delivered to the user when there are variations in the temperature and pressure of the hot and cold water at the inlet or in the draw-off flow rate. The LEGIOMIX® electronic mixing valve provides precise temperature control over very low and very high flow rate demand, minimal pressure drop with a ball valve control element, automatic self-cleaning to prevent scale formation and easy-to-use digital interface with data logging, alarming and status indication. The LEGIOMIX® electronic mixing valve is furnished with a controller with LCD user interface that provides a set of programs for circuit thermal disinfection to kill Legionella and is configurable via keypad, or local or remote computer. Depending on the type of system and habits of the user, temperature levels and operation times can be programmed as desired. In addition, it comes standard with monitoring and remote control connections.




1) LEGIOMIX® digital controller
2) Mixing valve
3) Mixing valve 24 V 3-wire floating actuator
4) Mixed outlet water temperature sensor
5) Return water (recirculation) temperature strap-on sensor.
6) Mixed outlet water temperature gauge
7) Actuator mounting clip

## 6000 LEGIOMIX®

Electronic mixing valve with optional selectable programs for thermal disinfection of hot water recirculation system to kill Legionella bacteria.
Code number includes:
three-way ball valve
3-wire floating control actuator
controller/user interface with DIN rail mounting bracket
mixed outlet temperature sensor/probe
return temperature sensor/probe
mixed outlet temperature gauge
optional Modbus-to-BACnet gateway for BAS integration

Power: 24 VAC - 50/60 Hz - 6 VA.
Adjustment temperature range: 70 — 185°F.
Disinfection temperature range: 100 — 185°F.
Max. working pressure: 230 psi
Max. inlet temperature: 212°F.
Protection class: IP 54 (controller)
Meets requirements of ANSI/NSF 372-2011 and certified to ASSE 1017, CSA B15.3, UPC, IPC, Low Lead Laws and listed by ICC-ES for use in accordance with the U.S. and Canadian plumbing codes.

ASSE 1017

NEW

Modbus-to-BACnet gateway
Converts LEGIOMIX® controller Modbus (RS-485 serial) output communication to BACnet IP (Ethernet) communication.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA10520** | Modbus-to-BACnet gateway | 1.2 | **3,812.00** |

| | Recommended Flow Rates (gpm) | | | |
|---|---|---|---|---|
| Size | 1" | 1¼" | 1½" | 2" |
| Minimum* | 3 | 4.4 | 6.6 | 8.8 |
| Maximum | 58 | 123 | 172 | 212 |
| Cv | 12.3 | 24.6 | 37.7 | 47.6 |

* Minimum flow = 0 GPM when recirculation pump flow rate is > valve minimum GPM rating

Inlet check valve assembly for installing on 6000 Series valve body (if required). Stainless steel body. No Lead. Ordered separately, field installed. 2 required per valve.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA10366** | Check valve assembly 1" and 1¼" | 1.0 | **83.90** |
| **NA10367** | Check valve assembly 1½" & 2" | 1.5 | **207.00** |

## HIGH/LOW THERMOSTATIC MIXING VALVE FOR PLUMBING

# NA523
# DELTA 2™

Adjustable thermostatic high low mixing valve for point of distribution in domestic water systems.
Low-lead brass valve bodies.
Locking set point knobs on thermostatic mixing valves.
Check valves on thermostatic mixing valve cold inlets.
Locking set point knob on pressure reducing valve.
Copper connecting tubing, all sweat construction.
Double union connection on all valves for ease of service.
Removable ½" NPT threaded outlet thermometer.
Pre-mounted to strut for easy mounting.

Max. working pressure: 200 psi.
Max. inlet temperature: 180ºF.
Adjustable range: 95—150ºF.
Flow range: 1 to 50 gpm.

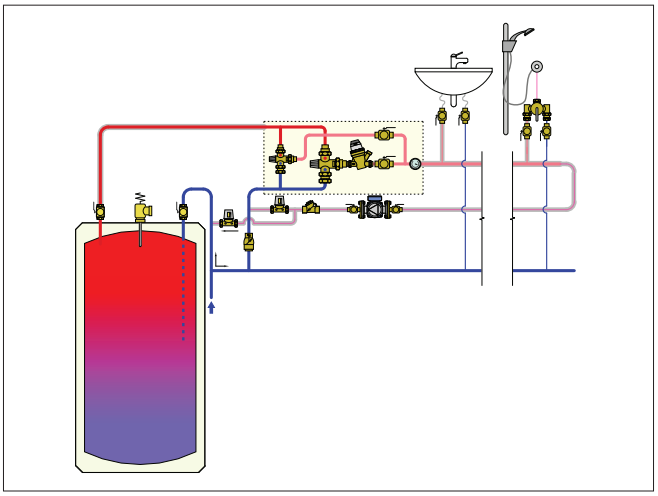
Thermostatic mixing valves meet requirements of ANSI/NSF 372-2011 and certified to ASSE 1017, CSA B125.3, UPC, IPC, Low Lead Laws and listed by ICC-ES for use in accordance with the U.S. and Canadian plumbing codes. Pressure reducing valve is certified to ASSE 1003, CSA B356, NSF61, NSF 372 Low Lead Laws and listed by ICC-ES. Meets codes IPC, IRC & UPC for use in accordance with the U.S. and Canadian plumbing codes.

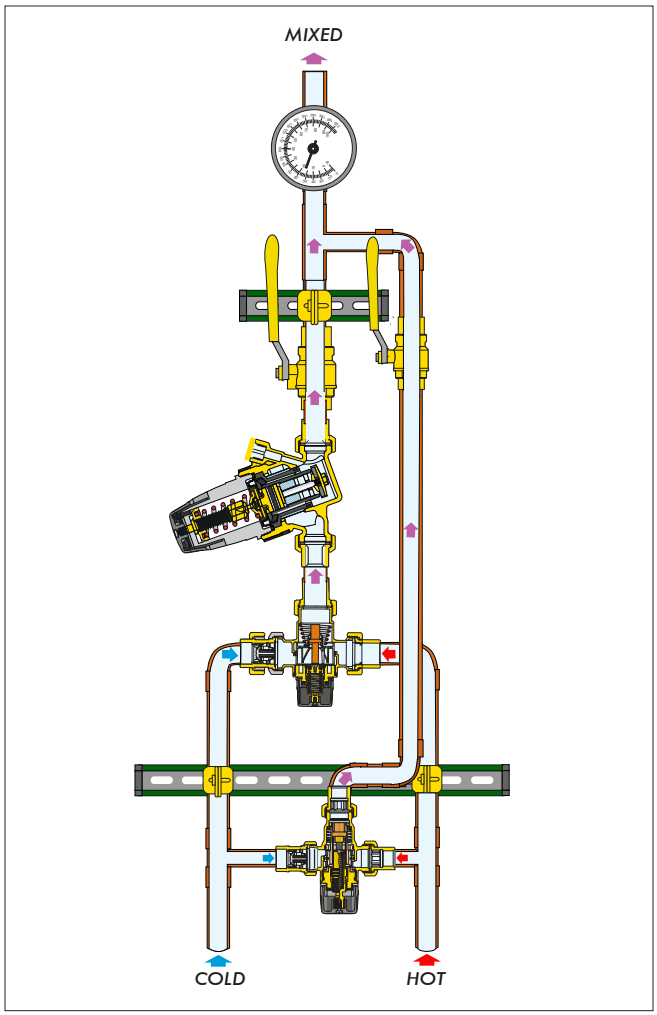
| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA523**67HL | 1" sweat inlets, 1¼" sweat outlet, copper | 25 | **4,284.00** |
| **NA105**12 | Ball valve stems extension kit NEW | 0.9 | **166.00** |

### Function

The NA523 two-stage high low mixing valve system delivers tempered water for a wide range of flows in a single assembly, applicable for Institutional and commercial applications such as hotels, nursing homes, hospitals, schools, and so on. The NA523 is furnished assembled and pressure tested with large and small mixing valves along with a pressure reducing valve, to function as one system in providing a broad flow range from 1 gpm to 50 gpm. This one-piece assembly also contains an outlet thermometer, cold water inlet check valves, and shut-off ball valves. The mixing valves are piped in parallel to the hot and cold inlet lines and the pressure reducing valve is piped on the outlet (mixed temperature) side of the larger thermostatic mixing valve. When demand is low, the small thermostatic mixing valve provides the needed water flow. When demand increases, indicated by increasing Delta P (differential pressure) in the system, the pressure reducing valve sees this fall off pressure and opens to allow flow through the larger thermostatic mixing valve.

### Application Diagram





# THERMOSTATIC MIXING VALVE KIT FOR DOMESTIC WATER HEATERS

## 520 TankMixer™

Adjustment temperature range: 95ºF - 150ºF.
Max. working pressure (static): 145 psi.
Max. working pressure (dynamic): 75 psi.
Max. inlet temperature: 195°F.
Minimum flow for optimum performance: 0.5 GPM (0 GPM with recirculation).
Tank: ¾" NPT female union connections.
System: ¾" NPT M, press or sweat union connections.

ASSE 1017

| Code | Description | Cv | Lbs | USD |
|---|---|---|---|---|
| **520**500AX | ¾" MNPT union outlet to system | 2 | 2.4 | **379.00** |
| **520**506AX | ¾" press union outlet to system | 2 | 2.4 | **434.00** |
| **520**509AX | ¾" sweat union outlet to system | 2 | 2.4 | **367.00** |

## 520 TankMixer™ Body

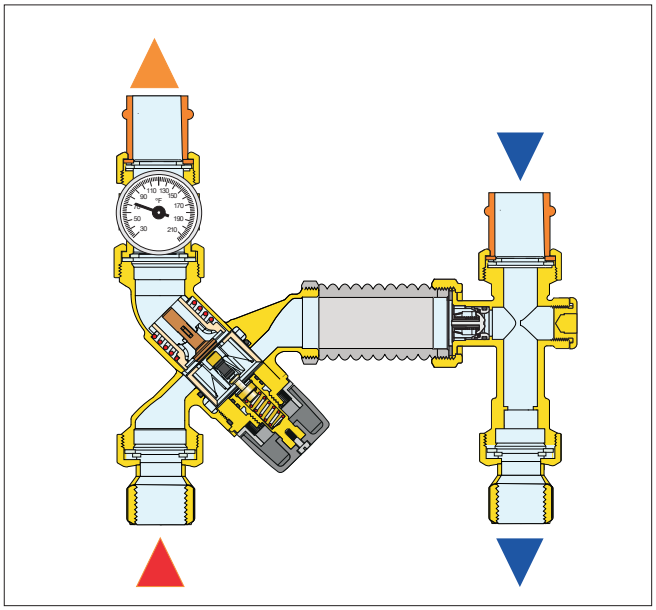
Replacement body.
Adjustment temperature range: 95ºF — 150ºF.
Max. working pressure (static): 145 psi.
Max. working pressure (dynamic): 75 psi.
Max. inlet temperature: 195°F.
Minimum flow for optimum performance: 0.5 GPM (0 GPM with recirculation).

See fitting section table in Section 8.

ASSE 1017

| Code | Description | Cv | Lbs | USD |
|---|---|---|---|---|
| **520**051A | 1" male union connection | 2 | 2.0 | **176.00** |

### Construction details



## 520 TankMixer™

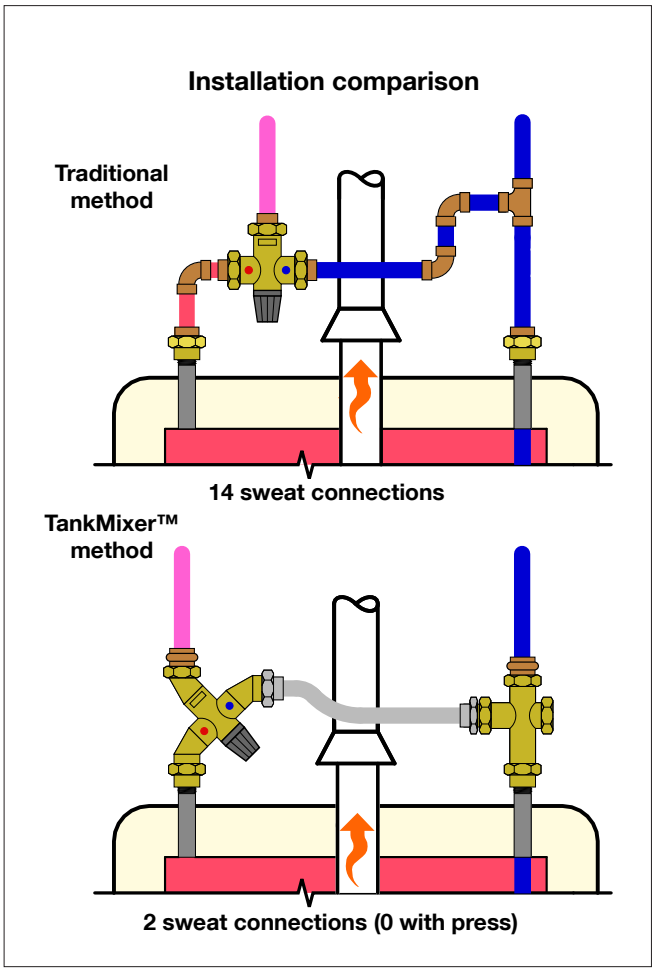
Adjustment temperature range: 95ºF - 150ºF.
Max. working pressure (static): 145 psi.
Max. working pressure (dynamic): 75 psi.
Max. inlet temperature: 195°F.
Gauge scale: 30—210ºF.
Gauge accuracy: ± 6ºF.
Gauge dial: 2" diameter.
Minimum flow for optimum performance: 0.5 GPM (0 GPM with recirculation).
Tank: ¾" NPT female union connections.
System: ¾" NPT M, press or sweat union connections.

ASSE 1017

| Code | Description | Cv | Lbs | USD |
|---|---|---|---|---|
| **520**510AX | ¾" MNPT union outlet to system | 2 | 2.9 | **434.00** |
| **520**516AX | ¾" press union outlet to system | 2 | 2.9 | **487.00** |
| **520**519AX | ¾" sweat union outlet to system | 2 | 2.9 | **420.00** |

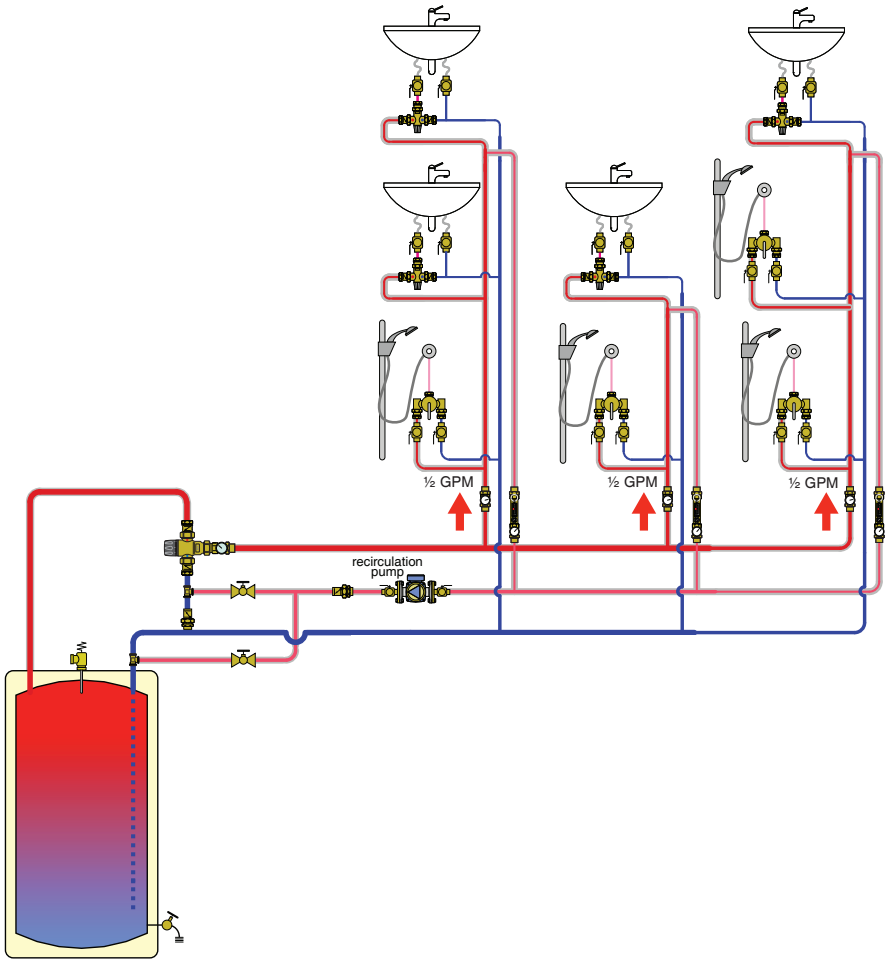
Meets requirements of ANSI/NSF 372-2011. Certified to ASSE 1017, CSA B125.3, UPC, IPC, Low Lead Laws and listed by ICC-ES for use in accordance with the U.S. and Canadian plumbing codes.

### Application diagram



# BALANCING VALVES FOR PLUMBING AND HYDRONICS

This diagram is an example






Static balancing valves with flowmeter for plumbing

Static balancing valves with flowmeter for hydronics

Dynamic balancing valves for plumbing and hydronics

Thermal balancing valves for plumbing

Y-strainer with ball valves for hydronics

Static balancing valves, fixed orifice, for plumbing and hydronics

Static balancing valves, variable orifice, for plumbing and hydronics

## STATIC BALANCING VALVES WITH FLOWMETER FOR PLUMBING

# 132 QuickSetter+™

Balancing valve with flow meter.
Direct reading of flow rate.
No sight gauge clouding or scaling.
DZR low-lead brass.
Rotatable stainless steel flow rate adjuster.
Inlet flow check valve.
Graduated scale flow meter with magnetic movement flow rate indicator.
2" diameter temperature gauge, optional.
Gauge scale: 30 – 210°F
Gauge accuracy: + or - 6°F
Meets requirements of ANSI/NSF 372-2011.
Certified to Low Lead Laws and listed by ICC-ES for use in accordance with the U.S. and Canadian plumbing codes.

| Code | Description | Flow scale (gpm) | Lbs | USD |
|---|---|---|---|---|
| **132**434AFC | ½" PEX crimp union | 0.5—1.75 | 1.8 | **351.00** |
| **132**439AFC | ½" sweat union | 0.5—1.75 | 2.0 | **351.00** |
| **132**534AFC | ¾" PEX crimp union | 0.5—1.75 | 2.0 | **365.00** |
| **132**536AFC | ¾" press union | 0.5—1.75 | 1.8 | **388.00** |
| **132**539AFC | ¾" sweat union | 0.5—1.75 | 1.8 | **365.00** |
| **132**634AFC | 1" PEX crimp union | 0.5—1.75 | 2.2 | **422.00** |
| **132**639AFC | 1" sweat union | 0.5—1.75 | 2.4 | **402.00** |
| **132**454AFC | ½" PEX crimp union | 2.0—7.0 | 1.8 | **351.00** |
| **132**459AFC | ½" sweat union | 2.0—7.0 | 2.0 | **351.00** |
| **132**554AFC | ¾" PEX crimp union | 2.0—7.0 | 2.0 | **365.00** |
| **132**556AFC | ¾" press union | 2.0—7.0 | 1.8 | **388.00** |
| **132**559AFC | ¾" sweat union | 2.0—7.0 | 1.8 | **365.00** |
| **132**654AFC | 1" PEX crimp union | 2.0—7.0 | 2.2 | **422.00** |
| **132**659AFC | 1" sweat union | 2.0—7.0 | 2.4 | **402.00** |

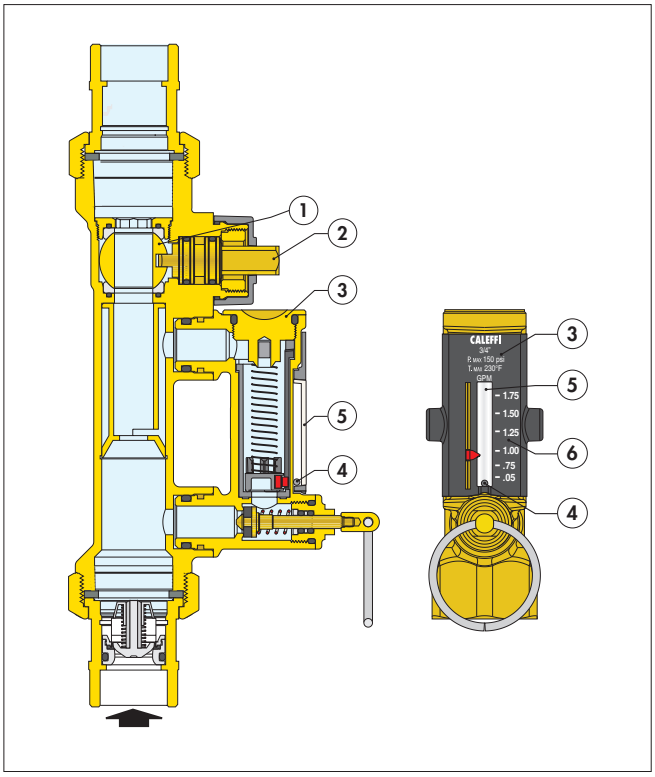
**With temperature gauge:**

| Code | Description | Flow scale (gpm) | Lbs | USD |
|---|---|---|---|---|
| **132**435AFC | ½" PEX crimp union | 0.5—1.75 | 2.2 | **401.00** |
| **132**537AFC | ¾" press union | 0.5—1.75 | 2.2 | **439.00** |
| **132**438AFC | ½" sweat union | 0.5—1.75 | 2.4 | **401.00** |
| **132**535AFC | ¾" PEX crimp union | 0.5—1.75 | 2.4 | **416.00** |
| **132**538AFC | ¾" sweat union | 0.5—1.75 | 2.2 | **416.00** |
| **132**635AFC | 1" PEX crimp union | 0.5—1.75 | 2.6 | **473.00** |
| **132**638AFC | 1" sweat union | 0.5—1.75 | 2.8 | **452.00** |
| **132**455AFC | ½" PEX crimp union | 2.0—7.0 | 2.2 | **401.00** |
| **132**458AFC | ½" sweat union | 2.0—7.0 | 2.4 | **401.00** |
| **132**555AFC | ¾" PEX crimp union | 2.0—7.0 | 2.4 | **416.00** |
| **132**557AFC | ¾" press union | 2.0—7.0 | 2.2 | **439.00** |
| **132**558AFC | ¾" sweat union | 2.0—7.0 | 2.2 | **416.00** |
| **132**655AFC | 1" PEX crimp union | 2.0—7.0 | 2.6 | **473.00** |
| **132**658AFC | 1" sweat union | 2.0—7.0 | 2.8 | **452.00** |
| **F19346** | Replacement by-pass valve stem* | | 0.1 | **56.20** |

*with operating ring

**Operating principle**

The control mechanism is a stainless ball stem valve (1), operated by a control stem (2). The flow rate is manually and properly set by use of the convenient onboard flow meter (3) housed in a bypass circuit on the valve body. This circuit is automatically shut off during normal operation. The flow rate is indicated by a metal ball (4)sliding inside a transparent channel (5) with an integral graduated scale (6).




**Balancing made fast, easy, and accurate with QuickSetter+™**

Features include:

- Three connection sizes: ½", ¾" and 1" sweat union
- Two flow range options: .5—1.75 gpm scale or 2—7 gpm scale
- Stainless steel flow adjuster
- Memory flow indicator
- Built-in flow check valve
- Temperature gauge (optional)

| Connection size | Flow rate (gpm) | Fully open Cv |
|---|---|---|
| 1/2" | 0.5 - 1.75 | 1.0 |
| 3/4" | 0.5 - 1.75 | 1.0 |
| 1" | 0.5 - 1.75 | 1.0 |
| 1/2" | 2.0 - 7.0 | 6.3 |
| 3/4" | 2.0 - 7.0 | 6.3 |
| 1" | 2.0 - 7.0 | 6.3 |

# STATIC BALANCING VALVES WITH FLOWMETER FOR HYDRONICS

## 132 QuickSetter™

Balancing valve with flow meter.
Direct reading of flow rate.
No sight gauge clouding or scaling.
Brass valve body and flow meter.
Rotatable valve for flow rate adjustment.
Graduated scale flow meter with magnetic movement flow rate indicator.

**With insulation.**
Max. working pressure: 150 psi.
Temperature range: 14—230°F.
Max. percentage of glycol: 50%.

| Code | Description | Flow scale (gpm) | Lbs | USD |
|---|---|---|---|---|
| **132**432A | ½" NPT female | 0.5—1.75 | 2.0 | **278.00** |
| **132**552A | ¾" NPT female | 2.0—7.0 | 1.8 | **299.00** |
| **132**662A | 1" NPT female | 3.0—10.0 | 2.4 | **349.00** |
| **132**772A | 1¼" NPT female | 5.0—19.0 | 2.8 | **463.00** |
| **132**882A | 1½" NPT female | 8.0—32.0 | 3.4 | **549.00** |
| **132**992A | 2" NPT female | 12.0—50.0 | 4.4 | **673.00** |
| **F19346** | Replacement by-pass valve stem* | | 0.1 | **56.20** |

*with operating ring

## 132 QuickSetter™

Balancing valve with flow meter.
Direct reading of flow rate.
Cast iron body.
Brass flow meter.
Characterized rotating valve
for smoother flow rate adjustment.
Graduated scale flow meter with
magnetic movement flow rate indicator.
ANSI 125 flange connections.

Max. working pressure: 150 psi.
Temperature range: 14—230°F.
Max. percentage of glycol: 50%.

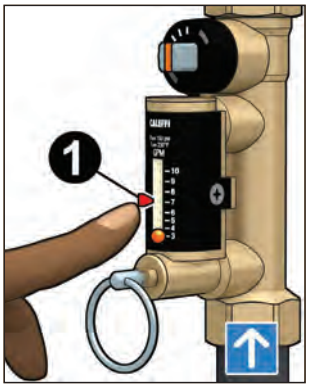
| Code | Description | Flow scale (gpm) | Lbs | USD |
|---|---|---|---|---|
| **132**060A | 2½" ANSI flange | 20—105 | 35 | **1,662.00** |
| **132**080A | 3" ANSI flange | 35—140 | 62 | **2,216.00** |
| **132**100A | 4" ANSI flange | 55—210 | 67 | **3,384.00** |

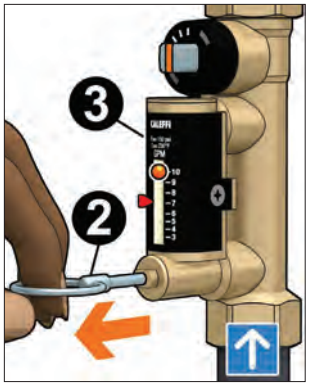
**Flow rate adjustment**

The flow rate is adjusted as follows:

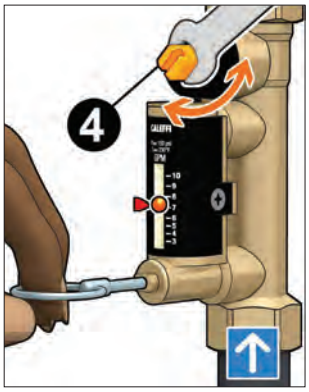
A. With the aid of the flow rate indicator (1), mark the desired flow rate.

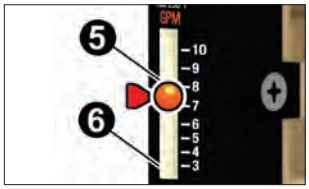
B. Use the operating ring (2) to open the by-pass valve slowly. This allows fluid to flow through the flow meter (3). The bypass valve is automatically closed under normal operating conditions.

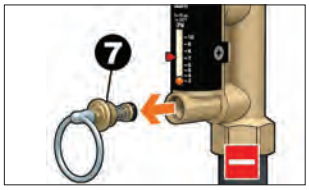



C. While holding the bypass valve open, use a wrench to turn the valve control stem (4) to adjust the flow rate slowly. The resulting flow rate is indicated by the metal ball (5) that slides up and down inside a transparent channel (6) marked by a graduated scale in gpm.



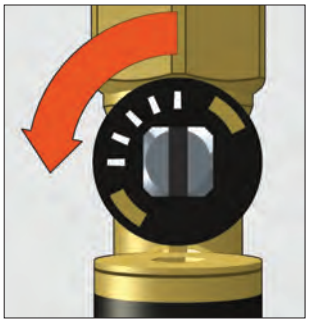




D. Once the flow rate is properly adjusted, release the operating ring (2) of the by-pass valve. The valve will automatically return to the closed position by means of an internal spring.

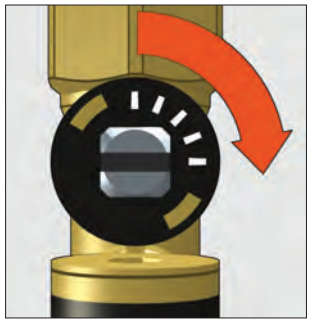
E. A replacement by-pass valve stem (7) with operating ring is available in event it is damaged and inoperable. Order code F19346.

**Complete opening and closing of the valve**

Full opening of the valve



Full closing of the valve



## DYNAMIC BALANCING VALVES FOR PLUMBING

### 127 FlowCal+™

Compact automatic flow balancing valve.
DZR low-lead brass body.
Patented anti-scale, low noise polymer FlowCal™ cartridge.
Inlet flow check valve.
Max. working pressure: 230 psi
Temperature range: 32—212°F.
Max. percentage of glycol: 50%
Differential pressure control ranges: 2–14, 2–32, 4–34, 5–35 psid.
Flow rate: 16 fixed flow rate settings ranging from 0.5—10 GPM.
Flow accuracy: ±10%.
Meets requirements of ANSI/NSF 372-2011.
Certified to Low Lead Laws and listed by ICC-ES for use in accordance with the U.S. and Canadian plumbing codes.
US Patent 7,246,635 B2.

| Code | Description | Flow rate (gpm) | Lbs | USD |
|---|---|---|---|---|
| **127**144AFC G50 | ½" PEX crimp union | .50 | 1.0 | **148.00** |
| **127**144AFC G75 | ½" PEX crimp union | .75 | 1.0 | **148.00** |
| **127**144AFC 1G0 | ½" PEX crimp union | 1.0 | 1.0 | **148.00** |
| **127**144AFC 1G5 | ½" PEX crimp union | 1.5 | 1.0 | **148.00** |
| **127**144AFC 2G0 | ½" PEX crimp union | 2.0 | 1.0 | **148.00** |
| **127**149AFC G50 | ½" sweat union | .50 | 1.0 | **148.00** |
| **127**149AFC G75 | ½" sweat union | .75 | 1.0 | **148.00** |
| **127**149AFC 1G0 | ½" sweat union | 1.0 | 1.0 | **148.00** |
| **127**149AFC 1G5 | ½" sweat union | 1.5 | 1.0 | **148.00** |
| **127**149AFC 2G0 | ½" sweat union | 2.0 | 1.0 | **148.00** |
| **127**154AFC G50 | ¾" PEX crimp union | .50 | 1.1 | **162.00** |
| **127**154AFC G75 | ¾" PEX crimp union | .75 | 1.1 | **162.00** |
| **127**154AFC 1G0 | ¾" PEX crimp union | 1.0 | 1.1 | **162.00** |
| **127**154AFC 1G5 | ¾" PEX crimp union | 1.5 | 1.1 | **162.00** |
| **127**154AFC 2G0 | ¾" PEX crimp union | 2.0 | 1.1 | **162.00** |
| **127**156AFC G50 | ¾" press union | .50 | 1.1 | **185.00** |
| **127**156AFC G75 | ¾" press union | .75 | 1.1 | **185.00** |
| **127**156AFC 1G0 | ¾" press union | 1.0 | 1.1 | **185.00** |
| **127**156AFC 1G5 | ¾" press union | 1.5 | 1.1 | **185.00** |
| **127**156AFC 2G0 | ¾" press union | 2.0 | 1.1 | **185.00** |
| **127**159AFC G50 | ¾" sweat union | .50 | 1.1 | **162.00** |
| **127**159AFC G75 | ¾" sweat union | .75 | 1.1 | **162.00** |
| **127**159AFC 1G0 | ¾" sweat union | 1.0 | 1.1 | **162.00** |
| **127**159AFC 1G5 | ¾" sweat union | 1.5 | 1.1 | **162.00** |
| **127**159AFC 2G0 | ¾" sweat union | 2.0 | 1.1 | **162.00** |
| **127**164AFC G50 | 1" PEX crimp union | .50 | 1.3 | **198.00** |
| **127**164AFC G75 | 1" PEX crimp union | .75 | 1.3 | **198.00** |
| **127**164AFC 1G0 | 1" PEX crimp union | 1.0 | 1.3 | **198.00** |
| **127**164AFC 1G5 | 1" PEX crimp union | 1.5 | 1.3 | **198.00** |
| **127**164AFC 2G0 | 1" PEX crimp union | 2.0 | 1.3 | **198.00** |
| **127**169AFC G50 | 1" sweat union | .50 | 1.3 | **198.00** |
| **127**169AFC G75 | 1" sweat union | .75 | 1.3 | **198.00** |
| **127**169AFC 1G0 | 1" sweat union | 1.0 | 1.3 | **198.00** |
| **127**169AFC 1G5 | 1" sweat union | 1.5 | 1.3 | **198.00** |
| **127**169AFC 2G0 | 1" sweat union | 2.0 | 1.3 | **198.00** |

### 127 FlowCal+™

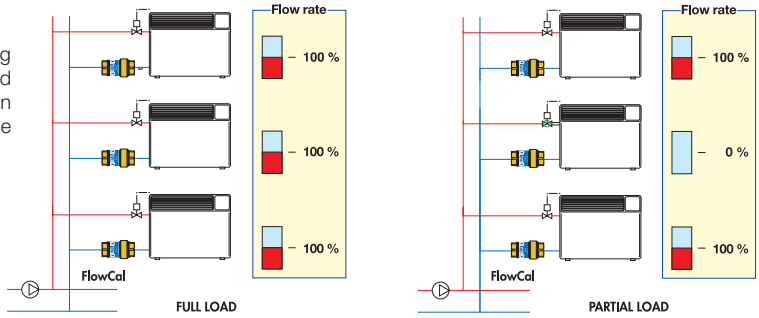
Compact automatic flow balancing valve.
DZR low-lead brass body.
Patented anti-scale, low noise polymer FlowCal™ cartridge.
Inlet flow check valve.
Max. working pressure: 230 psi.
Temperature range: 32—212°F.
Max. percentage of glycol: 50%
Differential pressure control ranges: 2–14, 2–32, 4–34, 5–35 psid.
Flow rate: 16 fixed flow rate settings ranging from 0.5—10 GPM.
Flow accuracy: ±10%.
2" gauge diameter temperature.
Gauge scale: 30— 210°F
Gauge accuracy: + or - 6°F
Meets requirements of ANSI/NSF 372-2011.
Certified to Low Lead Laws and listed by ICC-ES for use in accordance with the U.S. and Canadian plumbing codes.
US Patent 7,246,635 B2.

| Code | Description | Flow rate (gpm) | Lbs | USD |
|---|---|---|---|---|
| **127**145AFC G50 | ½" PEX crimp union | .50 | 1.4 | **197.00** |
| **127**145AFC G75 | ½" PEX crimp union | .75 | 1.4 | **197.00** |
| **127**145AFC 1G0 | ½" PEX crimp union | 1.0 | 1.4 | **197.00** |
| **127**145AFC 1G5 | ½" PEX crimp union | 1.5 | 1.4 | **197.00** |
| **127**145AFC 2G0 | ½" PEX crimp union | 2.0 | 1.4 | **197.00** |
| **127**148AFC G50 | ½" sweat union | .50 | 1.4 | **197.00** |
| **127**148AFC G75 | ½" sweat union | .75 | 1.4 | **197.00** |
| **127**148AFC 1G0 | ½" sweat union | 1.0 | 1.4 | **197.00** |
| **127**148AFC 1G5 | ½" sweat union | 1.5 | 1.4 | **197.00** |
| **127**148AFC 2G0 | ½" sweat union | 2.0 | 1.4 | **197.00** |
| **127**155AFC G50 | ¾" PEX crimp union | .50 | 1.5 | **212.00** |
| **127**155AFC G75 | ¾" PEX crimp union | .75 | 1.5 | **212.00** |
| **127**155AFC 1G0 | ¾" PEX crimp union | 1.0 | 1.5 | **212.00** |
| **127**155AFC 1G5 | ¾" PEX crimp union | 1.5 | 1.5 | **212.00** |
| **127**155AFC 2G0 | ¾" PEX crimp union | 2.0 | 1.5 | **212.00** |
| **127**157AFC G50 | ¾" press union | .50 | 1.5 | **234.00** |
| **127**157AFC G75 | ¾" press union | .75 | 1.5 | **234.00** |
| **127**157AFC 1G0 | ¾" press union | 1.0 | 1.5 | **234.00** |
| **127**157AFC 1G5 | ¾" press union | 1.5 | 1.5 | **234.00** |
| **127**157AFC 2G0 | ¾" press union | 2.0 | 1.5 | **234.00** |
| **127**158AFC G50 | ¾" sweat union | .50 | 1.5 | **212.00** |
| **127**158AFC G75 | ¾" sweat union | .75 | 1.5 | **212.00** |
| **127**158AFC 1G0 | ¾" sweat union | 1.0 | 1.5 | **212.00** |
| **127**158AFC 1G5 | ¾" sweat union | 1.5 | 1.5 | **212.00** |
| **127**158AFC 2G0 | ¾" sweat union | 2.0 | 1.5 | **212.00** |
| **127**165AFC G50 | 1" PEX crimp union | .50 | 1.7 | **247.00** |
| **127**165AFC G75 | 1" PEX crimp union | .75 | 1.7 | **247.00** |
| **127**165AFC 1G0 | 1" PEX crimp union | 1.0 | 1.7 | **247.00** |
| **127**165AFC 1G5 | 1" PEX crimp union | 1.5 | 1.7 | **247.00** |
| **127**165AFC 2G0 | 1" PEX crimp union | 2.0 | 1.7 | **247.00** |
| **127**168AFC G50 | 1" sweat union | .50 | 1.7 | **247.00** |
| **127**168AFC G75 | 1" sweat union | .75 | 1.7 | **247.00** |
| **127**168AFC 1G0 | 1" sweat union | 1.0 | 1.7 | **247.00** |
| **127**168AFC 1G5 | 1" sweat union | 1.5 | 1.7 | **247.00** |
| **127**168AFC 2G0 | 1" sweat union | 2.0 | 1.7 | **247.00** |

# DYNAMIC BALANCING—FlowCal™ DEVICES

## Circuits balanced with FlowCal™

FlowCal™ balances the hydraulic circuit by automatically controlling the design flow rate to each emitter. Even with some circuits closed by the control valves, the flow rates in the open circuits remain constant at the nominal value. The system always provides the greatest comfort and the highest energy savings.




# DYNAMIC BALANCING VALVES FOR PLUMBING AND HYDRONICS

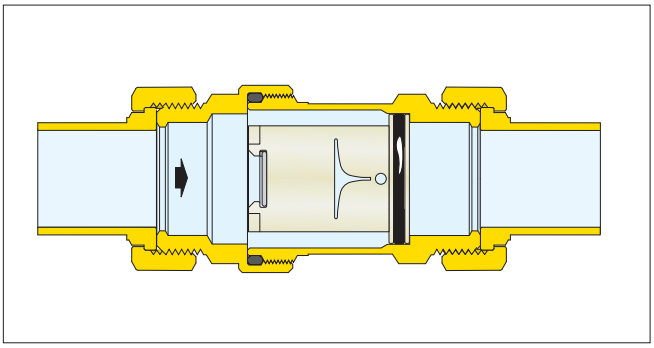
| Code | Description | Lbs | USD |
|---|---|---|---|
| **127**341AF ●●● | ½" NPT male union | 1.0 | **143.00** |
| **127**346AF ●●● | ½" press union | 1.0 | **158.00** |
| **127**347AF ●●● | ½" PEX crimp union | 1.0 | **134.00** |
| **127**349AF ●●● | ½" sweat union | 0.8 | **136.00** |
| **127**351AF ●●● | ¾" NPT male union | 1.0 | **149.00** |
| **127**356AF ●●● | ¾" press union | 1.0 | **173.00** |
| **127**357AF ●●● | ¾" PEX crimp union | 1.0 | **142.00** |
| **127**359AF ●●● | ¾" sweat union | 0.8 | **142.00** |
| **127**361AF ●●● | 1" NPT male union | 1.2 | **171.00** |
| **127**366AF ●●● | 1" press union | 1.3 | **214.00** |
| **127**367AF ●●● | 1" PEX crimp union | 1.3 | **178.00** |
| **127**369AF ●●● | 1" sweat union | 1.0 | **163.00** |

**Select desired flow rate to complete full part number.**

**No restrictions.**

## 127 FlowCal™

Compact automatic flow balancing valve.
DZR low-lead brass body.
Patented anti-scale, low noise polymer FlowCal™ cartridge.
Max. working pressure: 232 psi (16 bar).
Temperature range: 32—212°F (0—100°C).
Max. percentage of glycol: 50%
Differential pressure control ranges: 2–14, 2–32, 4–34, 5–35 psid.
Flow rate: 16 fixed flow rate settings ranging from 0.5—10 GPM.
Flow accuracy: ±10%.
Meets requirements of ANSI/NSF 372-2011. Certified to Low Lead Laws and listed by ICC-ES for use in accordance with the U.S. and Canadian plumbing codes.
US Patent 7,246,635 B2.



| GPM | Last 3 digits ... | Differential Pressure Control Ranges (psid) |
|---|---|---|
| 1/3 | G35 | 2—14 |
| ½ | G50 | |
| ¾ | G75 | |
| 1 | 1G0 | 2—32 |
| 1½ | 1G5 | |
| 2 | 2G0 | |
| 2½ | 2G5 | |
| 3 | 3G0 | |
| 3½ | 3G5 | |

Body and cartridge can be ordered separately, consult factory.

| GPM | Last 3 digits ... | Differential Pressure Control Ranges (psid) |
|---|---|---|
| 4 | 4G0 | 2—32 |
| 4½ | 4G5 | |
| 5 | 5G0 | |
| 6 | 6G0 | 4—34 |
| 7 | 7G0 | |
| 8 | 8G0 | |
| 9 | 9G0 | 5—35 |
| 10 | 10G | |

# THERMAL BALANCING VALVES FOR PLUMBING

## 116 ThermoSetter™

Adjustable thermal balancing valve for domestic hot water recirculation circuits.
Drywell for temperature gauge or probe.
DZR low-lead brass body.
Optional check valve.
Optional outlet temperature gauge.
Max. working pressure: 230 psi
Adjustment temperature range: 95°F —140°F
Cv max: 2.1; Cv min: 0.23;
Cv design: 0.52
Certified to Low Lead Laws and listed by ICC-ES for use in accordance with the U.S. and Canadian plumbing codes.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **116**140A | ½" NPT female union | 1.6 | **296.00** |
| **116**140AC | ½" NPT female union, check valve | 1.8 | **356.00** |
| **116**141A | ½" NPT female union, gauge | 1.7 | **316.00** |
| **116**141AC | ½" NPT female union, gauge, check valve | 1.9 | **376.00** |
| **116**150A | ¾" NPT female union | 1.5 | **318.00** |
| **116**150AC | ¾" NPT female union, check valve | 1.7 | **388.00** |
| **116**151A | ¾" NPT female union, gauge | 1.6 | **338.00** |
| **116**151AC | ¾" NPT female union, gauge, check valve | 1.8 | **408.00** |

## 116 ThermoSetter™

Adjustable thermal balancing valve for domestic hot water recirculation circuits.
With thermal by-pass cartridge for thermal disinfection.
Drywell for temperature gauge or probe.
DZR low-lead brass body.
Optional check valve.
Optional outlet temperature gauge.
Max. working pressure: 230 psi
Adjustment temperature range: 95°F —140°F
Cv max: 2.1; Cv min: 0.23
Cv disinfection: 1.2; Cv design: 0.52
Certified to Low Lead Laws and listed by ICC-ES for use in accordance with the U.S. and Canadian plumbing codes.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **116**240A | ½" NPT female union, gauge | 1.8 | **386.00** |
| **116**240AC | ½" NPT female union, gauge, check valve | 2 | **446.00** |
| **116**250A | ¾" NPT female union, gauge | 1.7 | **408.00** |
| **116**250AC | ¾" NPT female union, gauge, check valve | 1.9 | **478.00** |

Check valve fits 116 ThermoSetter™.
DZR low-lead brass.
Max. working pressure: 150 psi.
Max. working temperature: 250°F.

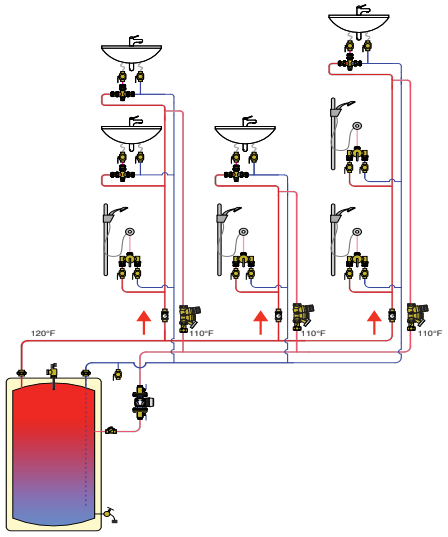
| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA104**69 | ½" NPT M x F inline check valve | 0.1 | **60.00** |
| **NA104**67 | ¾" NPT M x F inline check valve | 0.1 | **70.00** |

## 116 ThermoSetter™

Adjustable thermal balancing valve for domestic hot water recirculation circuits.
With by-pass valve for thermal disinfection with optional 656 actuator.
Drywell for temperature gauge.
DZR low-lead brass body.
Optional outlet check valve
Max. working pressure: 230 psi
Adjustment temperature range: 95°F —140°F
Cv max: 2.1; Cv min: 0.23
Cv disinfection: 1.2; Cv design: 0.52
Certified to Low Lead Laws and listed by ICC-ES for use in accordance with the U.S. and Canadian plumbing codes.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **116**340A | ½" NPT female union, gauge | 1.8 | **406.00** |
| **116**340AC | ½" NPT female union, gauge, check valve | 2.0 | **466.00** |
| **116**350A | ¾" NPT female union, gauge | 1.7 | **428.00** |
| **116**350AC | ¾" NPT female union, gauge, check valve | 1.9 | **498.00** |

**Hot water recirculation with thermal balancing valves**




## 6563 TwisTop™

TwisTop™ thermo-electric actuator for use with 1163xx Series.
Twist the top to manually open.
Power supply: 24 V AC/DC.
Initial current draw: ≤ 250 mA.
Power consumption: 3 W.
Rating of micro-switch contacts: 5 A (24 V).
31.5" wire lead connection.
US Patent 7,617,989 B2.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **656**344 | 24 V AC/DC | 0.4 | **147.00** |
| **656**354 | 24 V AC/DC with micro-switch | 0.4 | **174.00** |

# THERMAL BALANCING VALVES FOR PLUMBING

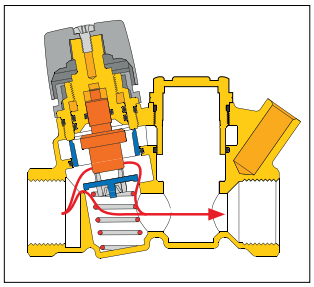
## Function

The ThermoSetter™ adjustable thermal balancing valve is used for automatic balancing of recirculation loops in domestic hot water systems, to speed hot water delivery, reduce water waste and save pumping energy. The internal thermostatic balancing cartridge automatically modulates flow to ensure a constant temperature in the recirculation piping system. The 116 series has an adjustment knob with 95°F to 140°F (35°C to 60°C) temperature scale indication. An integral dry-well holds a slide-in temperature gauge for local indication, or a sensor for remote temperature sensing. The optional check valve protects against circuit thermo-syphoning.

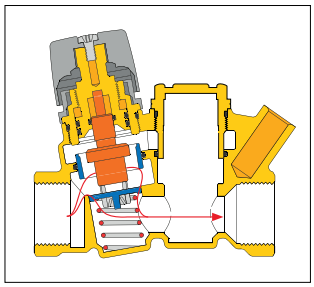
### Operating mode A - Temperature control (1161xx series)

At the set temperature, the valve plug, controlled by the thermostatic balancing cartridge, gradually closes the outlet. The outlet is never fully closed, always allowing a minimum flow for temperature sensing and to prevent recirculation pump dead-heading. If the temperature decreases, the outlet flow increases, causing flow and thus temperature to increase back to the set temperature. If temperature exceeds the set-point, the plug stays in the minimum closed position.

Thermostatic balancing control



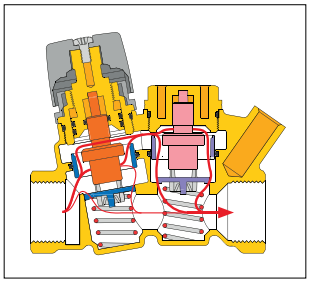
Minimum flow rate



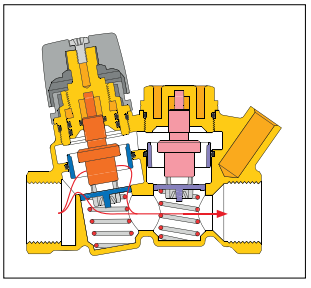
### Operating mode B - Automatic thermostatic disinfection (1162xx series)

When a temperature higher than about 155°F (68°C) is reached, a by-pass passage begins to open to activate the second thermostatic cartridge which controls the thermal disinfection process, allowing flow independent of the operation of the thermostatic balancing cartridge. This allows water flow through a special by-pass port, opening the flow path up until the temperature of 160°F (70°C). If the temperature continues rising beyond this point, the flow is reduced through the by-pass port to allow thermal balancing even during the disinfection process. When temperature reaches about 170°F (75°C), the cartridge closes the disinfection by-pass port to protect the system fixtures from the effects of excessive temperatures.

Thermostatic disinfection by-pass



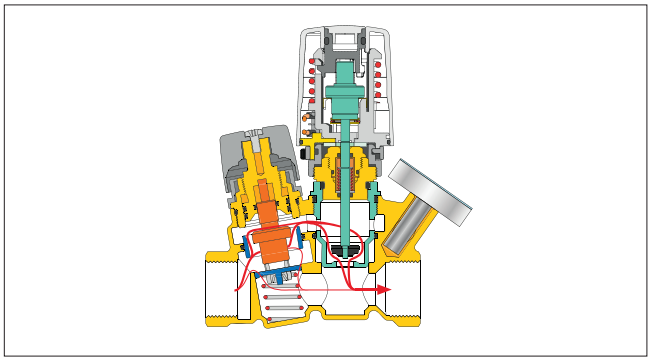
Thermal shut-off



### Operating mode C - Actuator-controlled disinfection (1163xx series)

When the disinfection operating temperature setting of the electronic disinfection system is reached, the thermo-electric actuator 656 series (which is controlled by a dedicated electronic control system), is energized to operate the by-pass valve to control the disinfection process, allowing flow independent of the operation of the thermostatic balancing cartridge. In this case, the minimum head loss is produced during this thermal disinfection process.

Electric controlled disinfection by-pass



Replacement actuator disinfection cartridge.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **116**000 | Replacement actuator cartridge | 0.1 | **90.00** |

Replacement thermal disinfection cartridge.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **F0000580** | Replacement thermal cartridge | 0.1 | **70.00** |

Insulation shell fits 116 series thermal balancing valve.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **CBN116140** | Insulation shell | 0.1 | **38.60** |

Temperature gauge fits 116 series.
Working temperature range: 30°F — 180°F

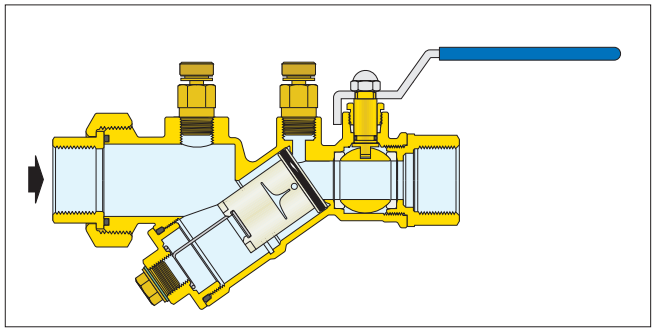
| Code | Description | Lbs | USD |
|---|---|---|---|
| **116**010 | 1½" dial temp. gauge | 0.1 | **20.00** |

## DYNAMIC BALANCING VALVES FOR HYDRONICS

# 121
# FlowCal™

Automatic flow balancing valve with integral ball valve.
Brass body.
Patented anti-scale, low noise polymer FlowCal™ cartridge.
Maximum working pressure: 400 psi (400 WOG).
Working temperature range: 32—212°F ( 0—100°C ).
Max. percentage of glycol: 50%.
Differential pressure control ranges: 2—14, 2—32, 4—34, 5—35 psid.
Flow rate: 27 fixed flow rate settings ranging from 0.5—21 GPM.
Flow accuracy: ±10%.
US Patent 7,246,635 B2.

Available with optional factory-installed pressure and temperature test ports (1213xxx series).



| Code | Description | Lbs | USD |
|---|---|---|---|
| **121**141A ●●● | ½" NPT female | 2.7 | **197.00** |
| **121**149A ●●● | ½" sweat | 2.7 | **188.00** |
| **121**151A ●●● | ¾" NPT female | 2.7 | **200.00** |
| **121**159A ●●● | ¾" sweat | 2.7 | **190.00** |
| **121**161A ●●● | 1" NPT female | 5.0 | **407.00** |
| **121**169A ●●● | 1" sweat | 5.0 | **388.00** |
| **121**171A ●●● | 1¼" NPT female | 5.0 | **457.00** |
| **121**179A ●●● | 1¼" sweat | 5.0 | **435.00** |
| **121**341A ●●● | ½" NPT female with PT test ports | 3.2 | **212.00** |
| **121**349A ●●● | ½" sweat with PT test ports | 3.2 | **202.00** |
| **121**351A ●●● | ¾" NPT female with PT test ports | 3.2 | **215.00** |
| **121**359A ●●● | ¾" sweat with PT test ports | 3.2 | **204.00** |
| **121**361A ●●● | 1" NPT female with PT test ports | 5.5 | **422.00** |
| **121**369A ●●● | 1" sweat with PT test ports | 5.5 | **402.00** |
| **121**371A ●●● | 1¼" NPT female with PT test ports | 5.5 | **471.00** |
| **121**379A ●●● | 1¼" sweat with PT test ports | 5.5 | **449.00** |

**Select desired flow rate to complete full part number.**

| Size | GPM | Last 3 digits ... | Differential Pressure Control Ranges (psid) |
|---|---|---|---|
| ½", ¾" | ½ | G50 | 2 — 14 |
| ½", ¾" | ¾ | G75 | |
| ½", ¾" | 1 | 1G0 | 2 — 32 |
| ½", ¾" | 1½ | 1G5 | |
| ½", ¾" | 2 | 2G0 | |
| ½", ¾", 1" | 2½ | 2G5 | |
| ½", ¾", 1" | 3 | 3G0 | |
| ½", ¾", 1" | 3½ | 3G5 | |
| ½", ¾", 1", 1¼" | 4 | 4G0 | |
| ½", ¾", 1", 1¼" | 4½ | 4G5 | |
| ½", ¾", 1", 1¼" | 5 | 5G0 | |
| ½", ¾", 1", 1¼" | 6 | 6G0 | 4 — 34 |
| ½", ¾", 1", 1¼" | 7 | 7G0 | |
| ½", ¾", 1", 1¼" | 8 | 8G0 | |

Replacement flow cartridge kits are available. Consult factory.

| Size | GPM | Last 3 digits ... | Differential Pressure Control Ranges (psid) |
|---|---|---|---|
| ½", ¾", 1", 1¼" | 9 | 9G0 | 5 — 35 |
| ½", ¾", 1", 1¼" | 10 | 10G | |
| 1", 1¼" | 11 | 11G | 3 — 32 |
| 1", 1¼" | 12 | 12G | |
| 1", 1¼" | 13 | 13G | |
| 1", 1¼" | 14 | 14G | 4 — 35 |
| 1", 1¼" | 15 | 15G | |
| 1", 1¼" | 16 | 16G | |
| 1", 1¼" | 17 | 17G | |
| 1", 1¼" | 18 | 18G | |
| 1", 1¼" | 19 | 19G | |
| 1", 1¼" | 20 | 20G | |
| 1", 1¼" | 21 | 21G | |

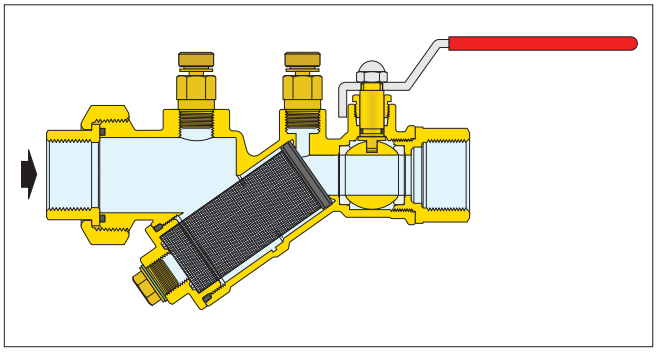
| Size | Flow Rates |
|---|---|
| ½" | ½—10 GPM |
| ¾" | ½—10 GPM |
| 1" | 2½—21 GPM |
| 1¼" | 4—21 GPM |

## Y-STRAINER WITH BALL VALVE FOR HYDRONICS

# 120
# Y-strainer

Y-strainer with integral ball valve. Brass body. Stainless steel strainer cartridge.
Maximum working pressure: 400 psi (400 WOG).
Working temperature range: 32—212°F.
Max. percentage glycol: 50%.
Strainer (20 mesh).
Connections:—body: F NPT union x F NPT, sweat union x sweat.
Pressure and temperature ports: ¼" NPT.
Drain port connection: ¼" for ½" & ¾" or ½" for 1" & 1¼".

| Code | Description | Cv | Lbs | USD |
|---|---|---|---|---|
| **120**141A 000 | ½" NPT female | 8.0 | 3.0 | **179.00** |
| **120**149A 000 | ½" sweat | 8.0 | 3.0 | **170.00** |
| **120**151A 000 | ¾" NPT female | 8.4 | 3.0 | **181.00** |
| **120**159A 000 | ¾" sweat | 8.4 | 3.0 | **173.00** |
| **120**161A 000 | 1" NPT female | 19 | 6.0 | **358.00** |
| **120**169A 000 | 1" sweat | 19 | 6.0 | **341.00** |
| **120**171A 000 | 1¼" NPT female | 20 | 6.0 | **407.00** |
| **120**179A 000 | 1¼" sweat | 20 | 6.0 | **388.00** |
| **120**341A 000 | ½" NPT female with PT | 8.0 | 3.5 | **194.00** |
| **120**349A 000 | ½" sweat with PT | 8.0 | 3.5 | **185.00** |
| **120**351A 000 | ¾" NPT female with PT | 8.4 | 3.5 | **196.00** |
| **120**359A 000 | ¾" sweat with PT | 8.4 | 3.5 | **187.00** |
| **120**361A 000 | 1" NPT female with PT | 19 | 6.5 | **373.00** |
| **120**369A 000 | 1" sweat with PT | 19 | 6.5 | **355.00** |
| **120**371A 000 | 1¼" NPT female with PT | 20 | 6.5 | **422.00** |
| **120**379A 000 | 1¼" sweat with PT | 20 | 6.5 | **402.00** |



## STATIC BALANCING WITH FLOW METER

# NA223

Direct in-line balancing / flow meter with brass body for hydronic applications only.
Max percentage of glycol: 50%.
Max working pressure: 150 psi.
Temperature range: 32—250°F.
Measuring accuracy: ±10%.
Cv: 6.0.
See fitting selection table in Section 9.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA223**529 | 2 to 8 gpm with 1" union thread | 0.9 | **192.00** |

Two union nuts, washers and tail pieces.
Low-lead brass.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA122**49 | ½" sweat with 1" union nuts | 0.2 | **39.40** |
| **NA122**59 | ¾" sweat with 1" union nuts | 0.2 | **47.30** |
| **NA122**69 | 1" sweat with 1" union nuts | 0.3 | **82.60** |

# 538

Drain valves for field installation in blow-down-port connection of the 120 series Y-strainer.
Brass body.
With ¾" garden hose connection.
Max. working pressure: 150 psi.
Max: working temperature: 250°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **538**202 FD | ¼" NPT fits ½—¾" 120 series | 0.3 | **20.30** |
| **538**402 FD | ½" NPT fits 1—1¼" 120 series | 0.3 | **20.70** |

# 100
# PT test ports

Fast-plug pressure/temperature test ports fits FlowCal™ automatic flow balancing valves and the 120 series Y-strainer. The double-sealing core insures long and trouble free service.
Low Lead brass body.
Nordel Core.
Connections: ¼" NPT male.
Cap thread: ⅜"-24 UNF
Working temperature range: 0—275°F.
Max. working pressure: 435 psi.
Pair (2 ports included)

| Code | Description | Lbs | USD |
|---|---|---|---|
| **100**001A | Standard size, 1½" length (pair) | 0.5 | **22.30** |

## STATIC BALANCING VALVES, FIXED ORIFICE, FOR PLUMBING AND HYDRONICS

# 130
# Fixed Orifice Balancing Valve

Fixed orifice.
Multi-turn adjustment range.
Memory stop feature.
Max. working pressure: 232 psi
Working temperature range: -4 to 250°F
Number of adjustment turns: 6
DZR Low-lead brass body.
Stainless steel valve plug.
Teflon® stem guide bearing.
Meets requirements of ANSI/NSF 372-2011.
Certified to Low Lead Laws and listed by ICC-ES for use in accordance with the U.S. and Canadian plumbing codes.

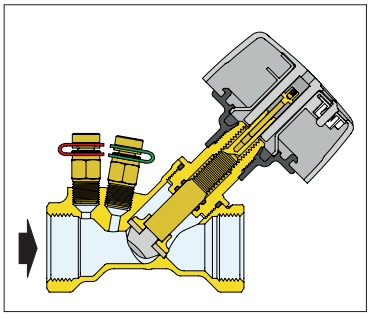
| Code | Description | Max Cv | Lbs | USD |
|---|---|---|---|---|
| **130**400A | ½" NPT female | 3.7 | 1.0 | **197.00** |
| **130**500A | ¾" NPT female | 5.1 | 1.2 | **213.00** |
| **130**600A | 1" NPT female | 8.8 | 1.5 | **256.00** |
| **130**700A | 1¼" NPT female | 14.0 | 2.0 | **320.00** |
| **130**800A | 1½" NPT female | 19.7 | 2.3 | **400.00** |
| **130**900A | 2" NPT female | 30.5 | 2.5 | **533.00** |

**Venturi flow rate measurement device**
The 130 series valves are equipped with a flow rate measurement device based on the Venturi effect. The device is incorporated in the body of the valve upstream of the valve plug.

Insulation shell fits 130 series balancing valves.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **CBN130400** | fits ½" NPT | 0.1 | **43.40** |
| **CBN130500** | fits ¾" NPT | 0.1 | **46.90** |
| **CBN130600** | fits 1" NPT | 0.1 | **56.30** |
| **CBN130700** | fits 1¼" NPT | 0.1 | **70.40** |
| **CBN130800** | fits 1½" NPT | 0.1 | **87.90** |
| **CBN130900** | fits 2" NPT | 0.1 | **117.00** |

**Operating Principal**
The 130 series balancing valve is a hydraulic device that controls the flow rate of a fluid. Turning the knob moves a plug within the fluid stream which varies the flow rate. The flow rate is determined according to the pressure drop value measured by a differential pressure meter connected to the pressure test ports.



## STATIC BALANCING VALVES, VARIABLE ORIFICE, FOR PLUMBING AND HYDRONICS

# 142
# Variable Orifice Balancing Valve

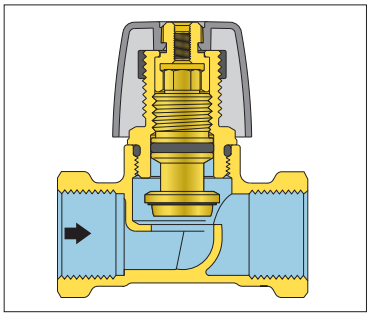
Memory stop feature
Characterized plug for smooth adjustment.
Maximum working pressure: 232 psi.
Working temperature range: 14—250°F.
DZR low-lead brass body.
Meets requirements of ANSI/NSF 372-2011.
Certified to Low Lead Laws and listed by ICC-ES for use in accordance with the U.S. and Canadian plumbing codes.

| Code | Description | Max Cv | Lbs | USD |
|---|---|---|---|---|
| **142**241A | ½" NPT female | 3.4 | 1.0 | **154.00** |
| **142**251A | ¾" NPT female | 5.0 | 1.2 | **164.00** |
| **142**261A | 1" NPT female | 7.5 | 1.5 | **223.00** |
| **142**271A | 1¼" NPT female | 12.9 | 2.3 | **318.00** |
| **142**281A | 1½" NPT female | 16.8 | 3.0 | **357.00** |
| **142**291A | 2" NPT female | 22.0 | 3.5 | **457.00** |

Insulation shell fits 142 series balancing valves.

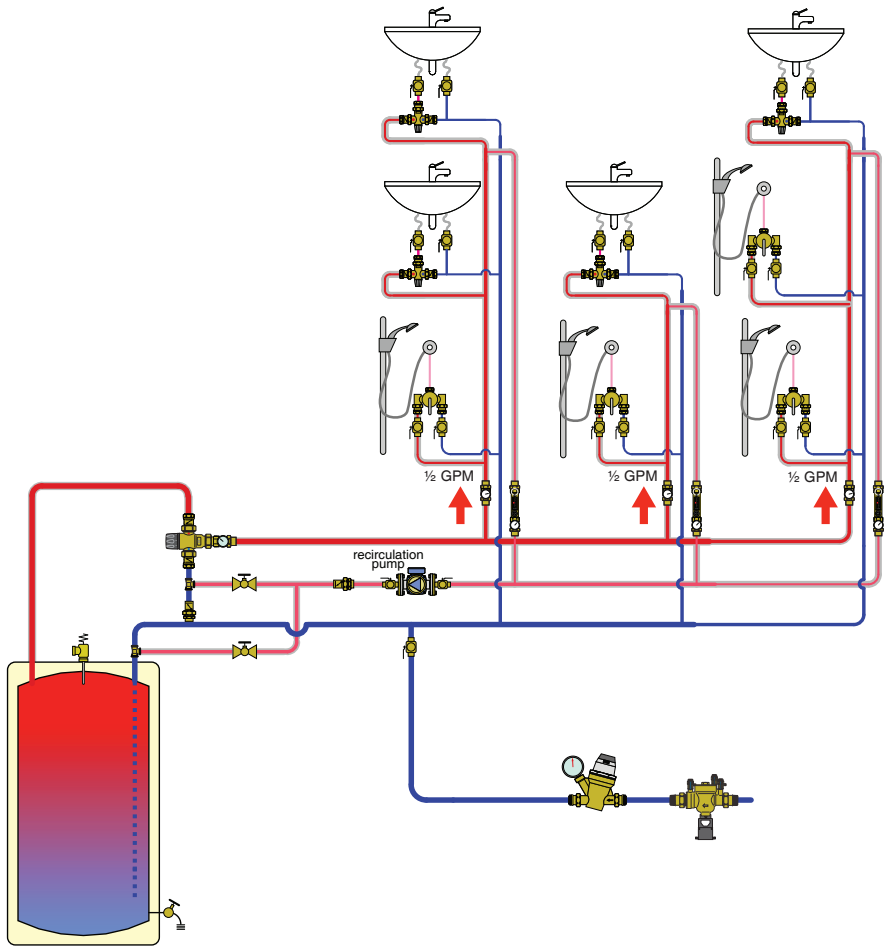
| Code | Description | Lbs | USD |
|---|---|---|---|
| **CBN142241A** | fits ½" NPT | 0.1 | **39.70** |
| **CBN142251A** | fits ¾" NPT | 0.1 | **42.20** |
| **CBN142261A** | fits 1" NPT | 0.1 | **57.50** |
| **CBN142271A** | fits 1¼" NPT | 0.1 | **81.90** |
| **CBN142281A** | fits 1½" NPT | 0.1 | **92.10** |

**Operating Principal**
The 142 series balancing valve is a hydraulic device that controls the flow rate of a fluid. Turning the knob moves a plug within the fluid stream which varies the flow rate. The flow rate is determined according to the pressure drop value measured by a differential pressure meter connected to the pressure test ports and the adjustment knob position.



# PRVS, BACKFLOW PREVENTERS AND AIR VENTS

This diagram is an example






**Pressure reducing valves for plumbing**

**Backflow preventers, dual check, for plumbing and hydronics**

**Backflow preventers, testable RPZ type, for plumbing and hydronics**

**Automatic air vent for plumbing**

## PRESSURE REDUCING VALVES FOR PLUMBING

# 535H

Pre-adjustable pressure reducing valve for residential and commercial applications. DZR low lead "Ecobrass" body. Unique noise reducing pressure balanced cartridge. Low friction anti-scale moving parts. High flow seat design. Dial indicator with direct readout. Replaceable cartridge. Integral stainless steel filter. Adjustment locking screw.
Max. working pressure: 300 psi.
Max. working temperature: 180°F.
Pressure setting range: 15 — 90 psi.
Factory setting: 45 psi.
Certified to: ASSE 1003, CSA B356, NSF61, NSF 372, Low Lead Laws and listed by ICC-ES. Meets codes IPC, IRC & UPC for use in accordance with the U.S. and Canadian plumbing codes.

ASSE 1003

| Code | Description | GPM | Lbs | USD |
|---|---|---|---|---|
| **535**940HA | ½" sweat union | 7.0 | 1.9 | **170.00** |
| **535**941HA | ½" sweat union, gauge | 7.0 | 2.0 | **189.00** |
| **535**340HA | ½" NPT female union | 7.0 | 2.0 | **186.00** |
| **535**341HA | ½" NPT female union, gauge | 7.0 | 2.1 | **204.00** |
| **535**950HA | ¾" sweat union | 12.3 | 2.2 | **185.00** |
| **535**951HA | ¾" sweat union, gauge | 12.3 | 2.3 | **203.00** |
| **535**350HA | ¾" NPT female union | 12.3 | 2.3 | **200.00** |
| **535**351HA | ¾" NPT female union, gauge | 12.3 | 2.4 | **218.00** |
| **535**650HA | ¾" press union | 12.3 | 2.3 | **193.00** |
| **535**651HA | ¾" press union, gauge | 12.3 | 2.4 | **212.00** |
| **535**750HA | ¾" PEX crimp union | 12.3 | 2.3 | **185.00** |
| **535**751HA | ¾" PEX crimp union, gauge | 12.3 | 2.4 | **203.00** |
| **535**960HA | 1" sweat union | 19.0 | 2.9 | **245.00** |
| **535**961HA | 1" sweat union, gauge | 19.0 | 3.0 | **263.00** |
| **535**360HA | 1" NPT female union | 19.0 | 3.0 | **261.00** |
| **535**361HA | 1" NPT female union, gauge | 19.0 | 3.1 | **279.00** |
| **535**660HA | 1" press union | 19.0 | 3.0 | **285.00** |
| **535**661HA | 1" press union, gauge | 19.0 | 3.1 | **304.00** |
| **535**760HA | 1" PEX crimp union | 19.0 | 3.0 | **245.00** |
| **535**761HA | 1" PEX crimp union, gauge | 19.0 | 3.1 | **263.00** |
| **535**970HA | 1¼" sweat union | 31.0 | 5.6 | **541.00** |
| **535**971HA | 1¼" sweat union, gauge | 31.0 | 5.7 | **559.00** |
| **535**370HA | 1¼" NPT female union | 31.0 | 5.7 | **555.00** |
| **535**371HA | 1¼" NPT female union, gauge | 31.0 | 5.8 | **573.00** |
| **535**980HA | 1½" sweat union | 42.0 | 7.3 | **758.00** |
| **535**981HA | 1½" sweat union, gauge | 42.0 | 7.4 | **776.00** |
| **535**380HA | 1½" NPT female union | 42.0 | 7.3 | **800.00** |
| **535**381HA | 1½" NPT female union, gauge | 42.0 | 7.4 | **818.00** |
| **535**990HA | 2" sweat union | 64.0 | 9.7 | **986.00** |
| **535**991HA | 2" sweat union, gauge | 64.0 | 9.8 | **1,005.00** |
| **535**390HA | 2" NPT female union | 64.0 | 9.7 | **982.00** |
| **535**391HA | 2" NPT female union, gauge | 64.0 | 9.8 | **1,001.00** |

GPM flowrate at 6 feet per second water velocity.

# 535H Body

Replacement valve body.
See fitting selection table in Section 8.

ASSE 1003

| Code | Description | Lbs | USD |
|---|---|---|---|
| **535**840HA | ½" body | 1.9 | **130.00** |
| **535**850HA | ¾" body | 2.2 | **137.00** |
| **535**860HA | 1" body | 2.9 | **180.00** |
| **535**870HA | 1¼" body | 6.1 | **395.00** |
| **535**880HA | 1½" body | 7.3 | **556.00** |
| **535**890HA | 2" body | 9.7 | **646.00** |

Replacement cartridge for 535H series pressure reducer.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **535**006HA | Fits 535HA ½", ¾" , 1" | 0.3 | **93.80** |
| **535**009HA | Fits 535HA 1¼", 1½", 2" | 0.5 | **288.00** |

Pressure gauge fits 535H series pressure reducers.
Dial size: 2".
Pressure range: 0—100 psi /0-7 bar.
Connection: ⅛" NPT.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA102**73 | ⅛" NPT male | 0.1 | **20.40** |

PVC jumper nipple with male union thread. The length of the jumper nipple matches the 535H series valve body face-to-face dimension (B'), allowing the piping to be completed prior to the installation of valve and permitting quick change out from the jumper to the valve.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA11304** | Jumper nipple for 535H ½" | 0.1 | **21.90** |
| **NA11305** | Jumper nipple for 535H ¾" | 0.1 | **24.20** |
| **NA11306** | Jumper nipple for 535H 1" | 0.2 | **26.00** |
| **NA11307** | Jumper nipple for 535H 1¼" | 0.3 | **28.10** |
| **NA11308** | Jumper nipple for 535H 1½" | 0.3 | **30.30** |
| **NA11309** | Jumper nipple for 535H 2" | 0.5 | **61.20** |

# PRESSURE REDUCING VALVES FOR PLUMBING

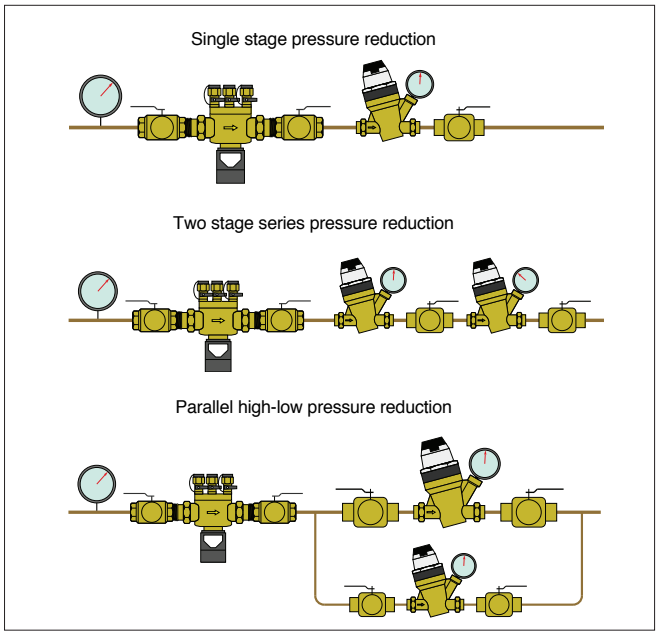
## Function

Pressure reducing valves are devices which reduce and stabilize the pressure of the water entering from the water supply main. This pressure, in general, may be too high and variable for domestic systems to operate correctly.

The 535H series pressure reducing valves, ideal for residential and commercial applications, feature a dial indicator with direct readout allowing easy pressure pre-adjustment. After installation, the system pressure will automatically adjust at the pre-adjusted pressure settings.

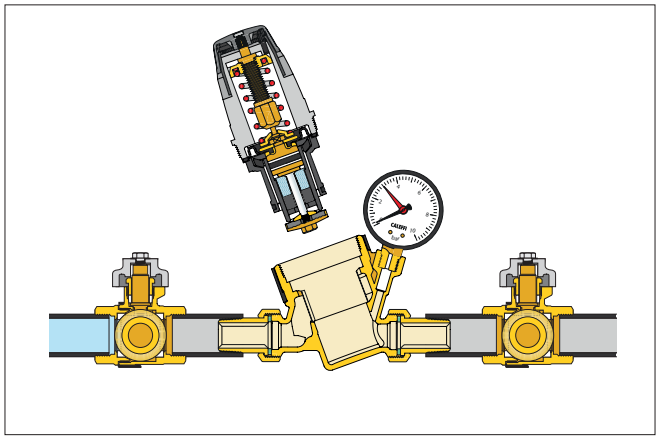
The valve is constructed of DZR low-lead forged brass and incorporates a unique noise reducing and high flow seat design, easy inline servicing with a replaceable cartridge, and an integral stainless steel filter (35 mesh), suitable for water systems that may contain sediment and debris.

## Application diagram (shown with backflow preventer and isolation valves)

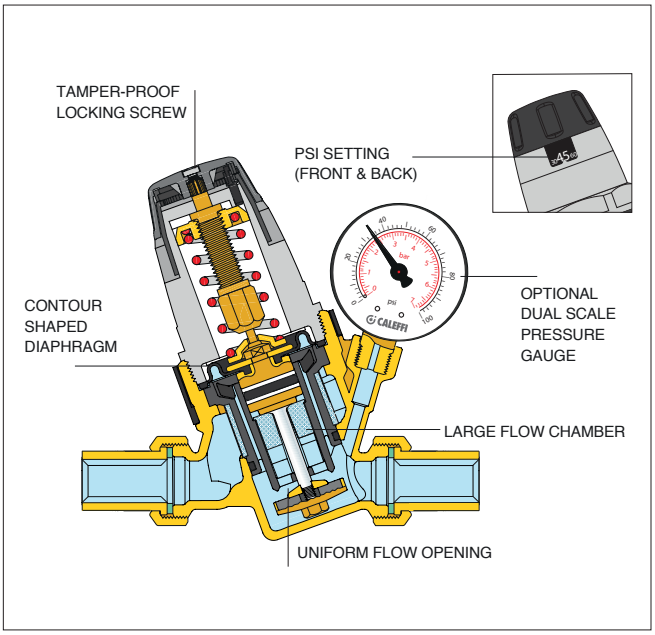



## Removable self-contained cartridge

The cartridge containing the diaphragm, filter, seat, shuttle and compensating piston is a pre-assembled self-contained unit with a cover, and can be removed to facilitate inspection and maintenance procedures. The special construction of the regulating element does not require any modification of the setting pressure value, which may be left unchanged.

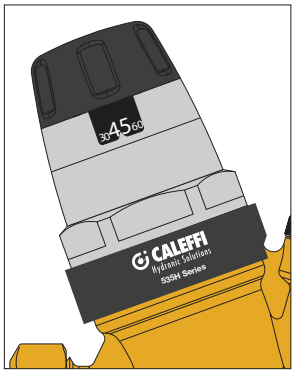


## Construction details




## Pre-adjustment

Caleffi 535H series pressure reducing valves have an operating knob and a pressure setting indicator which is visible on both sides. This pressure indicator features incremental step operation, where the pressure can be adjusted continuously with the value displayed at 15 psi increments. The pressure can be pre-set to the desired value, even before the pressure reducing valve is installed.

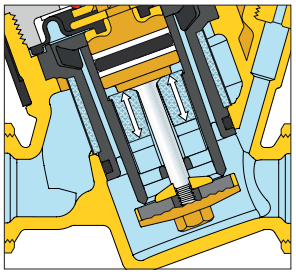



## Adjustment lock

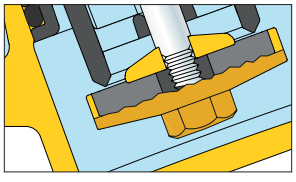
Tighten the screw in the top of the set point knob to prevent tampering.

## Pressure balanced seat

Caleffi 535H series pressure reducing valves are designed with pressure balanced seats. This means the setting pressure value remains constant, regardless of variations in the upstream pressure value. In the figure, the thrust towards the opening is counterbalanced by the force created by the closing pressure acting on the compensating piston. Since the piston has a surface area equal to that of the shuttle, the two forces cancel out each other.



The special cross-section of the flow path between the seat and shuttle seal stablizes upstream pressure fluctuations and high flow rates, reducing noise levels caused by the flowing water.



## Low head losses

The large cross-section flow chamber of the 535H series pressure reducing valve minimizes pressure drop within the valve which results in superior falloff pressure, enabling more flow capacity to fixtures.

## BACKFLOW PREVENTERS, DUAL CHECK, FOR PLUMBING AND HYDRONICS

### 573
### Backflow Preventer

Dual check continuous pressure backflow preventer with atmospheric vent.
DZR low Lead brass body.
Max. working pressure: 175 psi.
Working temperature range: 32—250°F.
Emergency backpressure temperature: 250°F
Certified to: ASSE 1012, CSA B64.3, NSF 372, Low Lead Laws and listed by ICC-ES. Meets codes IPC, IRC & UPC for use in accordance with the U.S. and Canadian plumbing codes.

ASSE 1012

| Code | Description | Lbs | USD |
|---|---|---|---|
| **573**403A | ½" NPT female unions | 1.7 | **129.00** |
| **573**406A | ½" press unions | 1.7 | **157.00** |
| **573**409A | ½" sweat unions | 1.7 | **123.00** |
| **573**493A | ½" sweat union inlet, ½" FNPT union outlet | 1.7 | **126.00** |
| **573**503A | ¾" NPT female unions | 1.7 | **136.00** |

## BACKFLOW PREVENTERS, TESTABLE RPZ TYPE, FOR PLUMBING AND HYDRONICS

### 574
### Backflow Preventer

Testable reduced pressure zone backflow preventer.
DZR low lead brass body.
Max. working pressure: 150 psi.
Max. working temperature: 150°F.
Certified to: ASSE 1013, CSA B64.4, NSF372, Low Lead Laws and listed by ICC-ES.
Meets codes IPC, IRC & UPC for use in accordance with the U.S. and Canadian plumbing codes.

ASSE 1013

| Code | Description | | Lbs | USD |
|---|---|---|---|---|
| **574**004A | ½" NPT female union | | 5.0 | **500.00** |
| **574**064A | ½" press | NEW | 5.1 | **530.00** |
| **59977** | Replacement upstream check valve | NEW | 0.1 | **31.10** |
| **59978** | Replacement discharge valve assembly | NEW | 0.2 | **55.60** |
| **59979** | Replacement downstream check valve | NEW | 0.1 | **35.90** |
| **59980** | Replacement discharge air gap | NEW | 0.1 | **13.50** |

### 574
### Backflow Preventer

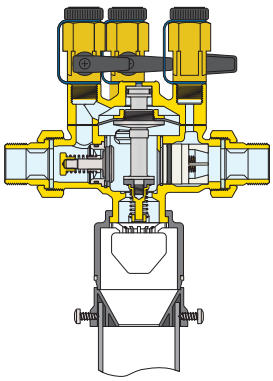
Testable reduced pressure zone backflow preventer.
DZR low lead brass body.
Max. working pressure: 150 psi.
Max. working temperature: 150°F.
Certified to: ASSE 1013, CSA B64.4, NSF372, Low Lead Laws and listed by ICC-ES.
Meets codes IPC, IRC & UPC for use in accordance with the U.S. and Canadian plumbing codes.

ASSE 1013

| Code | Description | | Lbs | USD |
|---|---|---|---|---|
| **574**050A | ¾" NPT female union | | 9.5 | **600.00** |
| **574**056A | ¾" press | NEW | 9.6 | **650.00** |
| **59469** | Replacement upstream check valve | NEW | 0.2 | **79.90** |
| **59470** | Replacement downstream check valve | NEW | 0.2 | **84.70** |
| **59471** | Replacement discharge valve assembly | NEW | 0.3 | **168.00** |
| **59472** | Replacement valve seat | NEW | 0.1 | **59.90** |
| **39623** | Replacement discharge air gap | NEW | 0.2 | **19.90** |

**Construction details**

The testable reduced pressure zone backflow preventer is composed of a body with a removable cover, upstream and downstream check valves and relief valve. The two check valves create three separate pressure zones: upstream or inlet zone; intermediate, also known as the reduced pressure zone; and a downstream, or outlet zone. Each has a test port to measure pressure. A relief valve is located in the lower part of the reduced pressure zone. The valve stem of the relief valve is connected to the diaphragm, and is forced upward by the spring. The diaphragm separates the water in the upstream zone of the operation chamber from the water in the reduced pressure zone (RPZ) chamber.



## AUTOMATIC AIR VENT FOR PLUMBING

3rd QTR

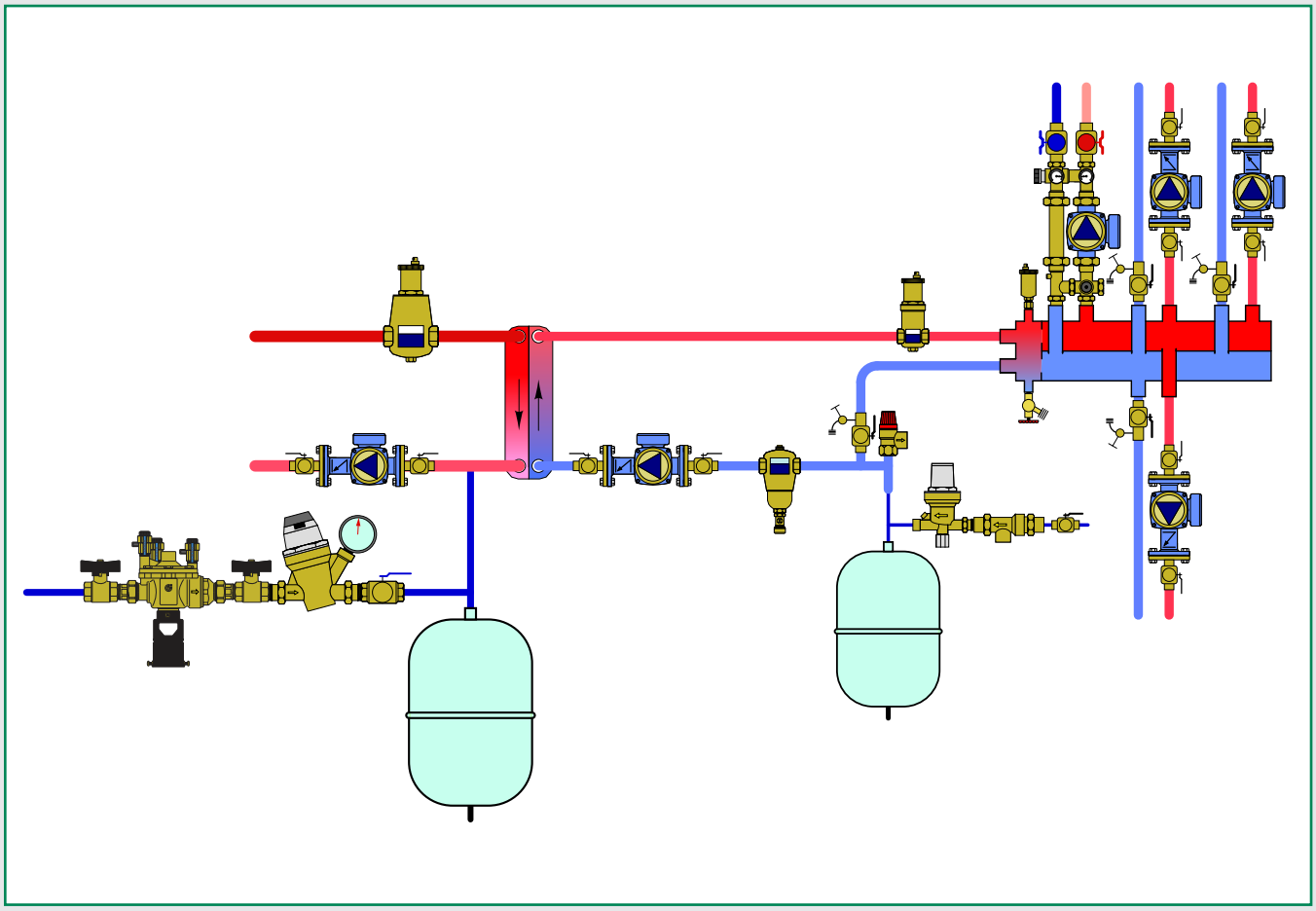
### NA5026
### PLUMBVENT™

Automatic air vent.
Compatible with plumbing systems.
Hygroscopic cap (anti-drip).
Low lead brass body.
Max. working pressure: 150 psi.
Max. discharge pressure: 90 psi.
Max. discharge rate: 1.75 SCFM.
Max working temperature: 240°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA5026**40A | ½" NPT male union | 0.6 | **70.00** |

# FILLING UNITS AND BOILER TRIM KITS

This diagram is an example



Water treatment filling units

Fill and flush cart

Automatic filling units

Boiler trim kits

# WATER TREATMENT FILLING UNITS

## NA570 HYDROFILL™

Portable water treatment filling unit, demineralizes site water through a mixed bed resin ion exchange with TDS indicator.
Complete including resin bags.
Composite PPHAGF50 body.
Max. inlet pressure: 120 psi.
Max. working temperature: 100°F.
Max. fill rate NA570912: 6 gpm.
Max. fill rate NA579024: 12 gpm.
TDS of water after treatment: < 30 ppm
Connections: ¾" GHT

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA570**912 | Two resin filter bag unit | 44 | **3,060.00** |
| **NA570**924 | Four resin filter bag unit with cart | 98 | **5,814.00** |

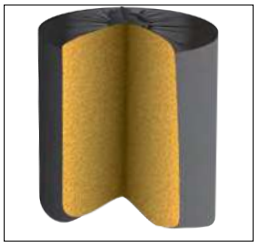
### Construction details

The large yellow lever enables quick and easy opening of the tank. The lever includes a pressure release valve. In one motion as the lid is turned to the full open position, the tank depressurizes and opens to the full diameter of the tank.



Highly accurate built-in TDS meter 0 - 999 ppm with resolution of 1 ppm due to its advanced microprocessor technology. Auto-Off function conserves battery power. The unit shuts off automatically after 10 minutes of non-use. Replaceable battery with a life of approximately 1000 hours of continuous use.

Pre-packed resin bags save time and simplify resin change process. No more time-consuming, inconvenient filling up of narrow tanks and no more spilled, wasted resin. Resin change process is simple as removing the used bags and inserting new ones. Each bag is made from a water permeable material and contains a pre-proportioned amount of high capacity premium grade virgin mixed bed resin.



Innovative flow distribution screen design evenly distributes the inlet water through the entire column of resin. Produces up to 30% more treated water from a single resin refill compared to other types of demineralization tanks. Reduced operational cost through less frequent resin replacement. Less waste, less time spent on changing resin.

### Function

HYDROFILL™ is a water treatment filling unit that produces from site sourced water, demineralized water of an ideal grade for use in closed hydronic heating and cooling systems. Salts and other soluble minerals are almost entirely eliminated so as to prevent premature equipment malfunction including reduced efficiency or component failure due to lime scale formation, a common affliction of heat exchangers. The treated water results in low electrical conductivity to minimize corrosion due to galvanic attack. Also, by eliminating the variability of site produced water having different mineral content values from location to location, using treated water makes for more reliable dosing when chemical additives are used – such as glycol.

Resin bags for HYDROFILL™ in reusable plastic pail.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA570**971 | Two resin bags for NA570912 | 22 | **667.00** |
| **NA570**974 | Four resin bags for NA570924 filter | 43 | **1,334.00** |

## NA575

Multi-parameter TDS, pH & temperature tester kit complete with carrying case plus pH and conductivity calibration packets.
Range TDS: 0 —999.9 ppm.
Range pH: 0 — 14.
Range temp: 32 — 122°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA575**002 | TDS, pH & temperature tester kit | 3.0 | **760.00** |

## NA573

Replenishment water treatment filling unit, demineralizes site water through a color changing (indicates when to change) demineralizing cartridge.
Max. inlet pressure: 125 psi.
Max. working temperature: 100°F.
Max. flow: 1 gpm.
TDS of water after treatment: < 30 ppm
Connections: ½" NPT

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA573**022* | ½" F NPT inlet x ½" F NPT outlet | 7.4 | **551.00** |
| **NA573**100** | Replacement filter housing assembly | 3.4 | **250.00** |
| **NA573**102 | Replacement color-changing filter | 1.0 | **128.00** |

*Complete including back flow preventer, isolation valves, filter housing with resin cartridge and AutoFill™.
**Filter housing only. Includes color changing demineralizing cartridge.

# FILL AND FLUSH CART

## NA255 HYDROFLUSH™

The fill and flush pump cart is portable, leak-tested for a safe, quick and clean way to fill and flush solar, geo thermal and hydronic systems.
Medium: water, glycol and cleaning fluids.
Tank: 10 gallon with dirt filter.
Max. tank medium temperature: 140°F.
Pump delivery flow: 1—13 gpm
Pump feet of head: 125
Max. pump pressure: 55 psi.
Pump power: ½ HP (120 V AC).
Isolating ball valves: ¾" garden hose thread.
Transfer hoses: 8' with ¾" GHT (2 ea).
Dimensions: 48"H × 20"W × 18"D.

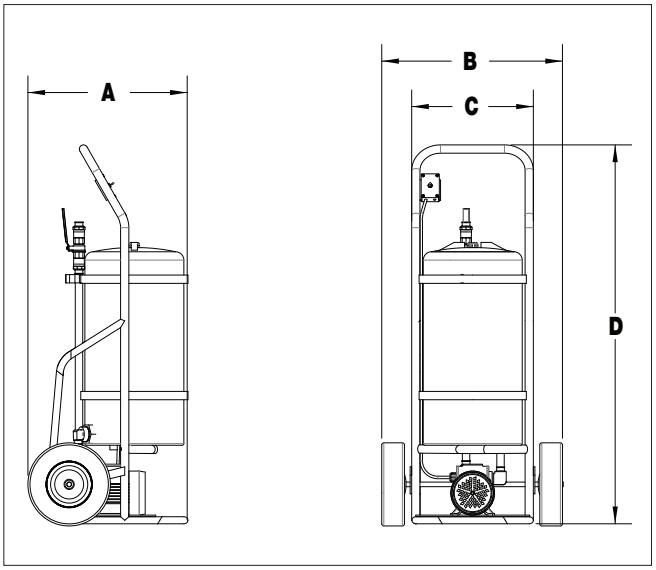
| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA255**10 | Clean, fill and flush cart | 60 | **3,507.00** |
| **NA11338** | Replacement hose, 3/4" ID, FxF GHT NEW | 3.0 | **86.00** |

### Function

The fill and flush pump cart is portable and leak-tested for a safe, quick and clean way to fill and flush solar, geothermal and hydronic systems. HYDROFLUSH™ with a leak test pressure gauge and pump cart makes it easy to test a system.

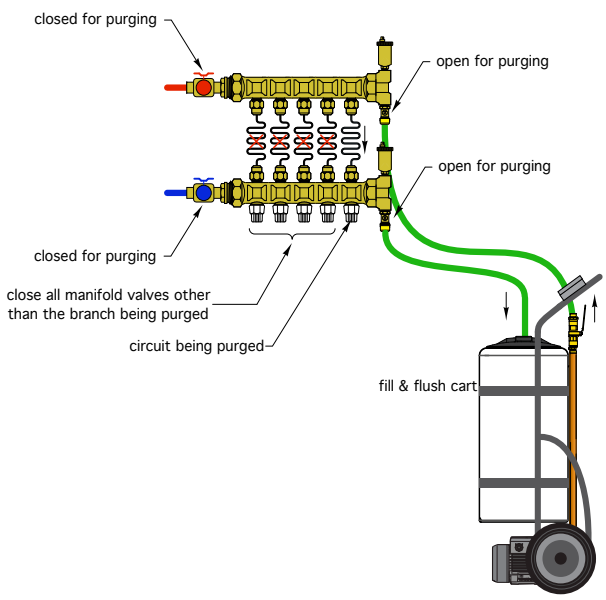
Connect the fill/purge valves to the fill and flush system, allow fluid to circulate and remove air and dirt in system. Pump system to desired pressure, use the liquid pressure gauge to observe system pressure. If the system holds its pressure, the system is leak free.

### Dimensions:

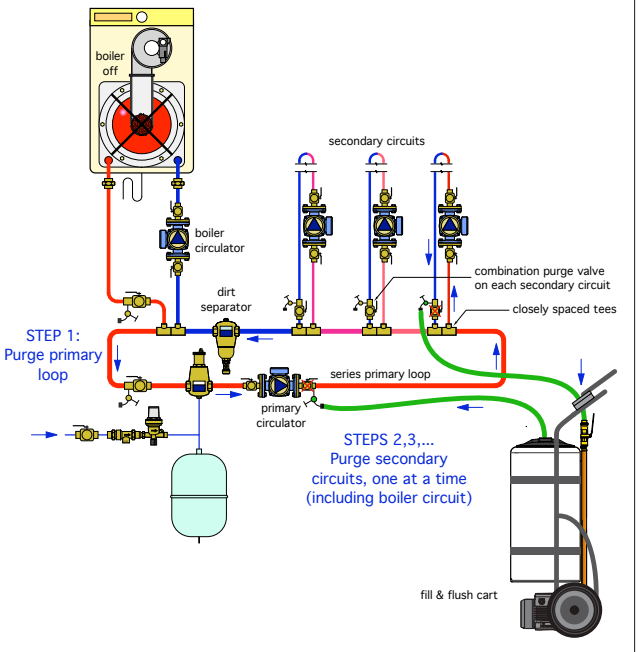



| Code | A | B | C | D | Weight | Capacity |
|---|---|---|---|---|---|---|
| NA25510 | 19 ½" | 20 " | 14" | 46 ¼" | 85 lbs. | 10 gallon |

### Radiant




### Hydronic




## NA256

Dual fill and flush valve.
See fitting selection table in Section 8

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA256**011 | 1" male union thread x ¾" GHT | 0.8 | **224.00** |

# AUTOMATIC FILLING UNITS

## 553 AutoFill™

Pre-adjustable automatic filling valve, anti-scale, visual system pressure indicator. Complete with manual shut-off valve, strainer and check valve.
Brass body.
Max. inlet pressure: 230 psi.
Max. working temperature: 150°F.
Setting pressure range: 3—60 psi.
Preset outlet pressure: 15 psi.
Pressure gauge scale: 0—60 psi / 0—4 bar.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **553**542A | ½" MNPT union in, ½" FNPT union out | 1.7 | **166.00** |
| **553**549A | ½" sweat union in, ½" FNPT union out | 1.7 | **158.00** |
| **553**642A* | ½" MNPT union in, ½" FNPTunion out | 1.7 | **187.00** |
| **553**649A* | ½" sweat union in, ½" FNPT union out | 1.7 | **179.00** |

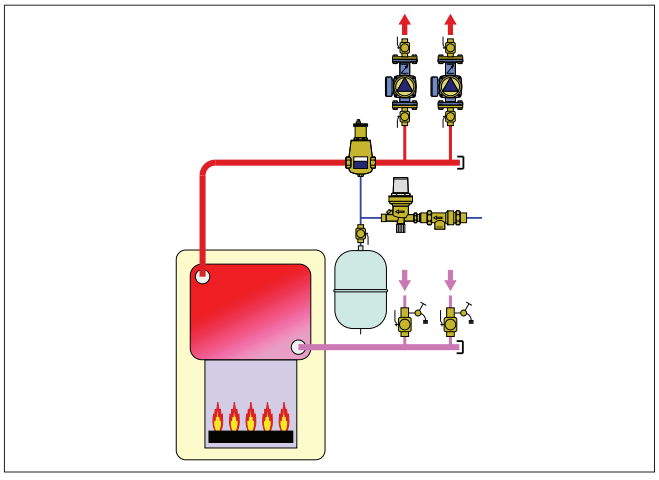
*With temperature gauge.

## 574 AutoFill™ Combo

Pre-adjustable automatic filling valve with testable reduced pressure zone backflow preventer.
Brass body.
Max. working pressure: 150 psi.
Max. working temperature: 150°F.
Setting pressure range: 3—60 psi.
Preset outlet pressure: 15 psi.
Pressure gauge scale: 0—60 psi / 0—4 bar.
ASSE 1013

| Code | Description | | Lbs | USD |
|---|---|---|---|---|
| **574**002A | ½" NPT female | | 9.4 | **656.00** |
| **574**012A | ½" NPT female, gauge | | 9.4 | **676.00** |
| **574**006A | ½" press | NEW | 9.4 | **686.00** |
| **574**016A | ½" press, gauge | NEW | 9.4 | **706.00** |
| **574**007A | ½" press in x NPT female out | NEW | 9.4 | **671.00** |
| **574**017A | ½" press in x NPT female out, gauge | NEW | 9.4 | **691.00** |

### Application Diagram



## 573 AutoFill™ Combo

Pre-adjustable automatic filling valve with backflow preventer.
Brass body.
Max. inlet pressure: 175 psi.
Max. working temperature: 150°F.
Setting pressure range: 3—60 psi.
Preset outlet pressure: 15 psi.
Pressure gauge scale: 0—60 psi / 0—4 bar.
ASSE 1012

| Code | Description | Lbs | USD |
|---|---|---|---|
| **573**002A | ½" FNPT union in, ½" FNPT out | 5.0 | **284.00** |
| **573**006A | ½" press unions | 5.0 | **315.00** |
| **573**007A | ½" press union in, ½" NPT female out | 5.0 | **300.00** |
| **573**009A | ½" sweat union in, ½" NPT female out | 5.0 | **271.00** |
| **573**012A* | ½" FNPT union in, ½" F NPT out | 5.0 | **306.00** |
| **573**016A* | ½" press unions | 5.0 | **340.00** |
| **573**017A* | ½" press union in, ½" NPT female out | 5.0 | **323.00** |
| **573**019A* | ½" sweat union in, ½" NPT female out | 5.0 | **292.00** |

*With temperature gauge.

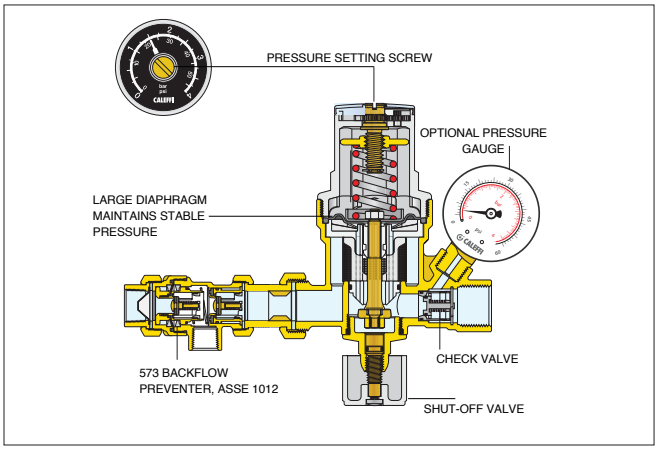
| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA103**63 | Gauge 0-60 psi/0-4 bar, ¼" NPT | 0.1 | **21.30** |

| Code | Description | Lbs | USD |
|---|---|---|---|
| **F596**50 | 553 AutoFill replacement cartridge | 0.2 | **49.00** |



| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA101**97 | AutoFill™ clear plastic disc cover | 0.1 | **2.20** |

### Construction



# COMMERCIAL AUTOMATIC FILLING UNITS

## 5350 AutoFill™

Automatic filling valve.
Brass body.
Complete with integral downstream pressure gauge and pressure setting adjustment knob.
Max. working pressure: 365 psi.
Max. working temperature: 140°F.
Pressure gauge scale: 0—100 psi /0—7 bar.
Pressure setting range: 6—90 psi.
Preset outlet pressure: 15 psi.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **5350**51A | ¾" NPT male union | 2.3 | **215.00** |
| **5350**56A | ¾" press union | 2.3 | **221.00** |
| **5350**57A | ¾" PEX crimp union | 2.3 | **212.00** |
| **5350**59A | ¾" sweat union | 2.3 | **212.00** |
| **5350**61A | 1" NPT male union NEW | 2.4 | **228.00** |
| **5350**66A | 1" press union | 2.4 | **239.00** |
| **5350**67A | 1" PEX crimp union | 2.4 | **230.00** |
| **5350**69A | 1" sweat union NEW | 2.4 | **226.00** |
| **5350**69A | 1" PEX crimp | 2.4 | **225.60** |

## 5350 AutoFill™ Body

Automatic filling valve.
Brass body.
Complete with integral downstream pressure gauge and pressure setting adjustment knob.
See fitting selection table in Section 8.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **535950A** | AutoFill™ body NEW | 2.0 | **160.40** |

### Function

The 5350 series AutoFill™ automatic filling valve is a pressure reducing valve which when installed on the water inlet piping in closed hydronic systems will maintain system pressure at a set value, automatically filling up with water as required. It fast fills the system to set pressure then automatically shuts off the water feed. This product is factory pre-set to 15 psi system pressure. To adjust the set pressure, simply turn the adjusment knob while observing the integral downstream pressure gauge. This product has the characteristic of being pre-adjustable, which means that it can be adjusted at the right pressure value before the system charging phase. After installation, the system pressure will automatically adjust itself to the set value and the water feed will stop when the set pressure is reached. The internal cartridge containing all the controlling components is pre-assembled as a self-contained unit, to facilitate inspection and maintenance procedures. Pressure compensated piston and seating means the set pressure remains constant despite variations in inlet pressure. Large internal fluid passages provide high flow filling rate with minimum pressure drop through the valve body. The internal cartridge contains low adherence coefficient plastic material reducing lime scale formation.

## 574 AutoFill™ Combo

Pre-adjustable automatic filling valve with testable reduced pressure zone backflow preventer.
Brass body.
Max. working pressure: 140 psi.
Max. working temperature: 140°F.
Pressure gauge scale: 0—100 psi /0—7 bar.
Pressure setting range: 6—90 psi.
Preset outlet pressure: 15 psi.
**ASSE 1013**

| Code | Description | Lbs | USD |
|---|---|---|---|
| **574**151A | ¾" NPT female x ¾" NPT male union | 9.4 | **801.00** |
| **574**156A | ¾" press union NEW | 9.4 | **851.00** |
| **574**157A | ¾" press x ¾" NPT male union NEW | 9.4 | **826.00** |

## NA102

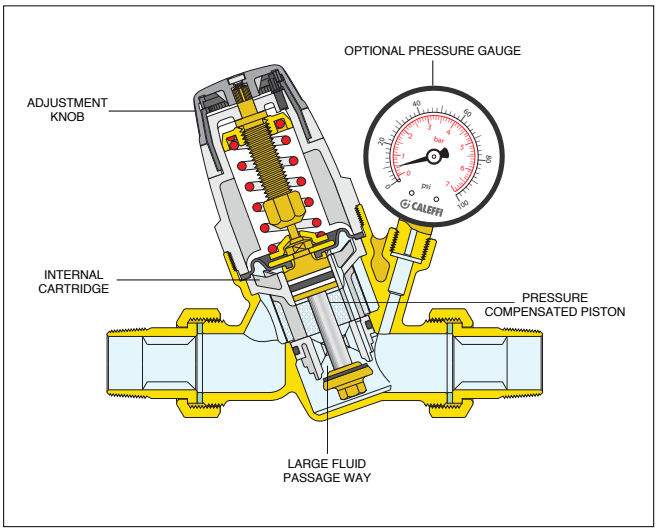
Pressure gauge fits 5350 series AutoFill™.
Dial size: 2".
Pressure range: 0—100 psi /0-7 bar.
Connection: ⅛" NPT.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA102**73 | ⅛" NPT male | 20.1 | **20.40** |

Replacement cartridge for 5350 series AutoFill™.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **535**004 | AutoFill™ 5350 series replacement cartridge | 0.1 | **78.30** |

### Construction



# BOILER TRIM KITS

## NA553

Boiler Trim Kits.
10 configurations combining 8 boiler installation components in one box.
This kit includes:
- (1) Caleffi DISCAL® air separator
- (1) Backflow preventer: ½" NPT or sweat union
- (1) AutoFill™
- (1) Expansion tank check valve
- (2) Brass nipples: 3"
- (1) NPT brass tee
- (1) Expansion tank

**NPT connections**

| Code | Description | Tank size (gal) | Lbs | USD |
|---|---|---|---|---|
| **NA553**252 | ¾" NPT | 2.2 | 13 | **649.00** |
| **NA553**362 | 1" NPT | 4.4 | 15 | **794.00** |
| **NA553**662 | 1" NPT | 7.6 | 20 | **922.00** |
| **NA553**372 | 1¼"NPT | 4.4 | 16 | **919.00** |
| **NA553**672 | 1¼"NPT | 7.6 | 21 | **1,049.00** |

**Press connections**

| Code | Description | Tank size (gal) | Lbs | USD |
|---|---|---|---|---|
| **NA553**366 | 1" press | 4.4 | 15 | **852.00** |
| **NA553**666 | 1" press | 7.6 | 20 | **980.00** |
| **NA553**376 | 1¼" press | 4.4 | 16 | **1,024.00** |
| **NA553**676 | 1¼" press | 7.6 | 21 | **1,154.00** |

**Sweat connections**

| Code | Description | Tank size (gal) | Lbs | USD |
|---|---|---|---|---|
| **NA553**259 | ¾" sweat | 2.2 | 13 | **637.00** |
| **NA553**369 | 1" sweat | 4.4 | 15 | **778.00** |
| **NA553**669 | 1" sweat | 7.6 | 20 | **904.00** |
| **NA553**379 | 1¼" sweat | 4.4 | 16 | **902.00** |
| **NA553**679 | 1¼" sweat | 7.6 | 21 | **1,028.00** |

**Sweat connections (without backflow preventer)**

| Code | Description | Tank size (gal) | Lbs | USD |
|---|---|---|---|---|
| **NA553**259-B | ¾" sweat | 2.2 | 12 | **491.00** |
| **NA553**369-B | 1" sweat | 4.4 | 13 | **631.00** |
| **NA553**669-B | 1" sweat | 7.6 | 18 | **759.00** |
| **NA553**379-B | 1¼" sweat | 4.4 | 15 | **757.00** |
| **NA553**679-B | 1¼" sweat | 7.6 | 20 | **881.00** |

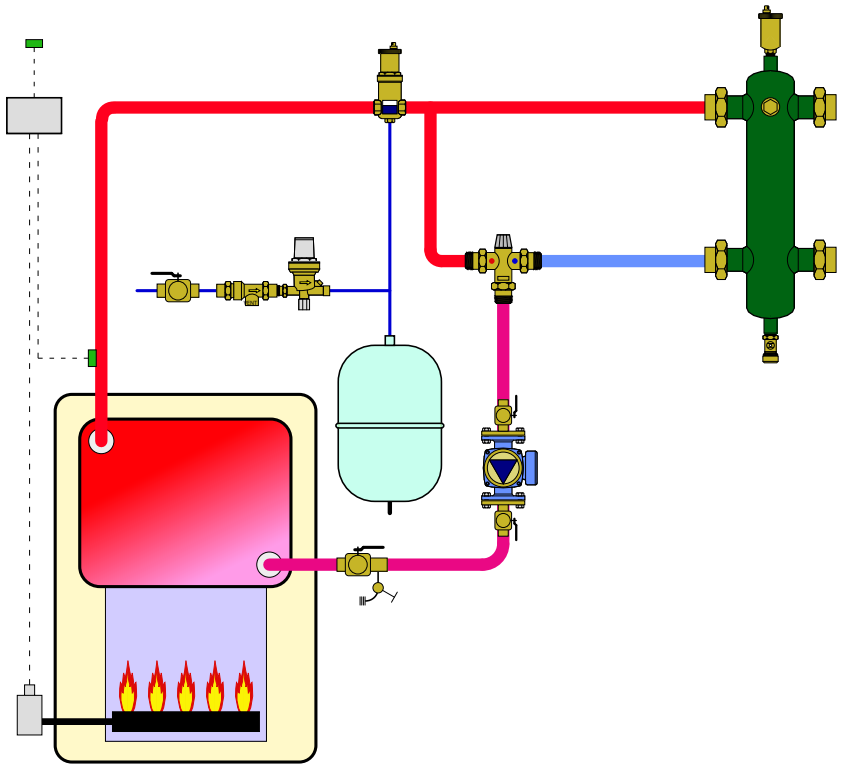
## NA553

Boiler Trim Kits.
Boiler installation components in one box.
This kit includes:
- (1) Air purger
- (1) MiniCal® air vent with service check
- (1) Backflow preventer: ½" sweat
- (1) AutoFill™
- (1) Expansion tank check valve
- (2) Brass nipples: 3"
- (1) Brass tee
- (1) Expansion tank

| Code | Description | Tank size (gal) | Lbs | USD |
|---|---|---|---|---|
| **NA553**362P | 1" NPT | 4.4 | 15 | **519.00** |
| **NA553**372P | 1¼" NPT | 4.4 | 16 | **519.00** |

# FITTINGS AND MISCELLANEOUS COMPONENTS

This diagram is an example



## FITTING CONFIGURATION TABLE

| Product series | Code | Description | Nut code | Tailpiece code | Washer code | USD |
|---|---|---|---|---|---|---|
| 535H PRV (½") | NA20543 | ½" FNPT, ¾" nut, washer | incl. w/tail | F49644 | incl. w/tail | 27.70 |
| | NA20540 | ½" MNPT, ¾" nut, washer | F41186 | F31868 | R50058 | 22.80 |
| 553 AutoFill | NA20549 | ½" sweat, ¾" nut, washer | F41186 | NA10001 | R50058 | 20.10 |
| | NA20640 | ½" MNPT, 1" nut, washer | F61008 | R31981 | F50055 | 23.80 |
| | NA20640C | ½" MNPT, 1" nut, washer, check | F61008 | 59893A | F50055 | 37.20 |
| 127 FlowCal | NA20649 | ½" sweat, 1" nut, washer | F61008 | NA10002 | F50055 | 19.70 |
| | NA20649C | ½" sweat, 1" nut, washer, check | F61008 | 59904A | F50055 | 33.30 |
| 127 FlowCal+ | NA20646 | ½" press, 1" nut, washer | incl. w/tail | NA16264 | F50055 | 25.50 |
| | NA20647 | ½" PEX crimp, 1" nut, washer | F61008 | F0000492 | F50055 | 19.70 |
| 132 QuickSetter+ | NA20647C | ½" PEX crimp, 1" nut, washer, check | F61008 | NA10484 | F50055 | 33.30 |
| | NA20653 | ¾" FNPT, 1" nut, washer | incl. w/tail | F49645 | incl. w/tail | 31.30 |
| 520 TankMixer | NA20650 | ¾" MNPT, 1" nut, washer | F61008 | 31901A | F50055 | 27.70 |
| | NA20650C | ¾" MNPT, 1" nut, washer, check | F61008 | 59840A | F50055 | 47.50 |
| 521 MixCal | NA20659 | ¾" sweat, 1" nut, washer | F61008 | NA10003 | F50055 | 23.70 |
| | NA20659C | ¾" sweat, 1" nut, washer, check | F61008 | 59905A | F50055 | 43.60 |
| 5350 AutoFill | NA20656 | ¾" press, 1" nut, washer | incl. w/tail | NA16265 | F50055 | 27.90 |
| | NA20656C | ¾" press, 1" nut, washer, check | F0000698 | NA10419 | F50055 | 61.70 |
| 535H PRV (¾") | NA20657 | ¾" PEX crimp, 1" nut, washer | F61008 | F0000520 | F50055 | 23.70 |
| | NA20657C | ¾" PEX crimp, 1" nut, washer, check | F61008 | NA10485 | F50055 | 43.60 |
| 5517 DISCAL | NA20660 | 1" MNPT, 1" nut, washer | incl. w/tail | 59817A | F50055 | 45.80 |
| | NA20660C | 1" MNPT, 1" nut, washer, check | incl. w/tail | 59894A | F50055 | 65.60 |
| 644 Ball Valve | NA20669 | 1" sweat, 1" nut, washer | incl. w/tail | 59834A | F50055 | 41.30 |
| | NA20669C | 1" sweat, 1" nut, washer, check | incl. w/tail | 59906A | F50055 | 61.20 |
| 676 Zone Valve | NA20666 | 1" press, 1" nut, washer | incl. w/tail | NA16266 | F50055 | 47.90 |
| | NA20667 | 1" PEX crimp, 1" nut, washer | F61008 | F0000521 | F50055 | 41.30 |
| Z2, Z3 Zone Valve | NA20667C | 1" PEX crimp, 1" nut, washer, check | F61008 | NA10486 | F50055 | 61.20 |
| | NA20763 | 1" FNPT, 1¼" nut, washer | incl. w/tail | F49646 | incl. w/tail | 44.20 |
| | NA20767 | 1" PEX crimp, 1¼" nut, washer | R31495 | NA10496 | R50056 | 42.10 |
| 535H PRV (1") | NA20766 | 1" press, 1¼" nut, washer | incl. w/tail | NA10497 | R50056 | 53.10 |
| | NA20769 | 1" sweat, 1¼" nut, washer | incl. w/tail | F49657 | incl. w/tail | 32.50 |
| 535H PRV (1¼") | NA20873 | 1¼" FNPT, 1½" nut, washer | incl. w/tail | F49647 | incl. w/tail | 80.10 |
| | NA20879 | 1¼" sweat, 1½" nut, washer | R31589 | 41787 CST | R50057 | 72.90 |
| 535H PRV (1½") | NA20983 | 1½" FNPT, 2" nut, washer | incl. w/tail | F0000493 | R50008 | 122.00 |
| | NA20989 | 1½" sweat, 2" nut, washer | incl. w/tail | F0000494 | R50008 | 101.00 |
| 535H PRV (2") | NA21193 | 2" FNPT, 2½" nut, washer | incl. w/tail | F0000495 | R50060 | 168.00 |
| | NA21199 | 2" sweat, 2½" nut, washer | incl. w/tail | F0000496 | R50060 | 170.00 |
| | NA20863 | 1" FNPT, 1½" nut, washer | R31589 | 31553 FD | R50005 | 49.40 |
| | NA20869 | 1" sweat, 1½" nut, washer | R31589 | 31554 FD | R50005 | 73.60 |
| | NA20866 | 1" press 1½" nut, washer | R31589 | NA10406 | R50005 | 87.50 |
| | NA20973 | 1¼" FNPT, 2" nut, washer | R53003 | 31401 FD | R50008 | 105.00 |
| 548, 5495 Union (1"- 2" Hydro Seps | NA20979 | 1¼" sweat, 2" nut, washer | R53003 | 31403 FD | R50008 | 140.00 |
| | NA20976 | 1¼" press 2" nut, washer | R53003 | NA10407 | R50008 | 144.00 |
| 5461 Union (1½", 2") DISCALDIRTMAG | NA21083 | 1½" FNPT, 2¼" nut, washer | R53004 | R41441 | R50047 | 114.00 |
| | NA21089 | 1½" sweat, 2¼" nut, washer | R53004 | 41882A | R50047 | 146.00 |
| | NA21086 | 1½" press 2¼" nut, washer | R53004 | NA10408 | R50047 | 192.00 |
| | NA21293 | 2" FNPT, 2¾" nut, washer | R53005 | 31426 FD | R50048 | 177.00 |
| | NA21299 | 2" sweat, 2¾" nut, washer | R53005 | 31428 FD | R50048 | 209.00 |
| | NA21296 | 2" press 2¾" nut, washer | R53005 | NA10409 | R50048 | 283.00 |
| | NA20860 | 1" MNPT 1½" nut, washer | R31589 | NA10009 | R50057 | 86.30 |
| 5231 HighFlow (1", 1¼") | NA20869 | 1" sweat, 1½" nut, washer | R31589 | 31554 FD | R50005 | 73.60 |
| | NA20870 | 1¼" MNPT 1½" nut, washer | R31589 | R41660 | R50057 | 95.00 |
| 6000 LEGIOMIX (1", 1¼") | NA20879 | 1¼" sweat, 1½" nut, washer | R31589 | 41787 CST | R50057 | 72.90 |
| | NA21180 | 1½" MNPT 2½" nut, washer | R51838 | 41371A | R50060 | 151.00 |
| 5231 HighFlow (1½", 2") | NA21189 | 1½" sweat 2½" nut, washer | R51838 | 41788 CST | R50060 | 148.00 |
| | NA21190 | 2" MNPT 2½" nut, washer | R51838 | 41372A | R50060 | 174.00 |
| 6000 LEGIOMIX (1½", 2") | NA21199 | 2" sweat 2½" nut, washer | incl. w/tail | F0000496 | R50060 | 170.00 |

# SMALL MIXING VALVE AND ZONE VALVE FITTINGS

Tail piece with check valve.
Low lead brass.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **598**93A | ½" NPT male fits 1" nut | 0.2 | **28.90** |
| **598**40A | ¾" NPT male for 1" nut | 0.3 | **39.20** |

Tail piece without check valve.
Low lead brass.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **R319**81 | ½" NPT male fits 1" nut | 0.4 | **15.40** |
| **319**01A | ¾" NPT male for 1" nut | 0.4 | **19.40** |

Tail piece.
Low lead brass. Requires sealing washer R50055, not included.

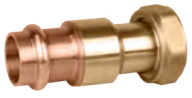
| Code | Description | Lbs | USD |
|---|---|---|---|
| **598**17A | 1" NPT male with 1" nut | 0.2 | **43.60** |
| **598**94A | 1" NPT male with 1" nut w/check valve | 0.4 | **63.30** |

Tail piece with check valve.
Low lead brass.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **599**04A | ½" NPT male fits 1" nut | 0.2 | **24.90** |
| **599**05A | ¾" NPT male for 1" nut | 0.3 | **35.20** |

Presscon™ copper press tail piece with 1" brass union nut. Low lead. Requires sealing washer, not included.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA16264** | ½" press with 1" union nut | 0.1 | **23.30** |
| **NA16265** | ¾" press with 1" union nut | 0.1 | **25.70** |
| **NA16266** | 1" press with 1" union nut | 0.1 | **45.70** |



Presscon™ long copper press tail piece with 1" brass union slip nut. Low lead. Requires sealing washer, not included.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA16265L** | ¾" long press with 1" union slip nut | 0.3 | **58.70** |
| **NA16265LC** | ¾" long press with 1" union nut/check valve | 0.3 | **74.40** |

Presscon™ copper press low lead tail piece, requires R11217 1" slip nut.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA10403** | ½" press fits 1" nut | 0.1 | **30.10** |
| **NA10419** | ¾" press long fits 1" slip nut R11217 | 0.3 | **51.00** |
| **NA10404** | 1" press fits 1" slip nut R11217 | 0.4 | **45.90** |

Tail piece.
Low lead brass.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA100**02 | ½" sweat fits 1" nut | 0.3 | **11.30** |
| **NA100**03 | ¾" sweat fits 1" nut | 0.4 | **15.30** |

Tail piece.
Low lead brass. Requires sealing washer R50055, not included.

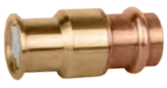
| Code | Description | Lbs | USD |
|---|---|---|---|
| **598**34A | 1" sweat with 1" nut | 0.4 | **39.10** |
| **599**06A | 1" sweat with 1" nut w/check valve | 0.5 | **59.00** |

Tail piece with high temperature check valve.
Low lead brass.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA101**64 | ½" sweat fits 1" nut | 0.2 | **34.60** |
| **NA101**65 | ¾" sweat fits 1" nut | 0.3 | **40.70** |

Tail piece with high temperature check valve.
Low lead brass. Requires sealing washer R50055, not included.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA101**66 | 1" sweat with 1" nut w/check valve | 0.4 | **66.60** |



Presscon™ copper press low lead tail piece with check valve, requires R11217 1" slip nut.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA10419C** | ¾" press long fits 1" slip nut w/check | 0.3 | **59.40** |

PEX crimp tailpiece for 1" union nut, requires sealing washer and nut, not included.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **F0000492** | ½" PEX crimp tailpiece for 1" union nut | 0.1 | **11.30** |
| **F0000520** | ¾" PEX crimp tailpiece for 1" union nut | 0.1 | **15.30** |
| **F0000521** | 1" PEX crimp tailpiece for 1" union nut | 0.1 | **32.90** |

PEX crimp tailpiece for 1" union nut with check valve, requires sealing washer and nut, not included.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA10484** | ½" PEX crimp tailpiece for 1" union nut | 0.1 | **24.90** |
| **NA10485** | ¾" PEX crimp tailpiece for 1" union nut | 0.1 | **35.20** |
| **NA10486** | 1" PEX crimp tailpiece for 1" union nut | 0.1 | **52.80** |

## SMALL MIXING AND ZONE VALVE FITTINGS

Union nut fits 1" union thread.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **F61008** | 1" brass nut | 0.2 | **6.10** |
| **F61008/C** | 1" chrome-plated nut | 0.2 | **7.20** |
| **F0000698** | 1" brass slip nut | 0.2 | **8.50** |

Washer fits 1" union thread.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **F50055** | 1" union washer | 0.1 | **2.20** |

Washer fits 1" union thread.
High temperature silicone rubber.
Working temperature: -40—350°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA10302** | 1" union washer high temp silicone | 0.1 | **3.40** |

Two union nuts, washers and tail pieces fits 1" union thread. Low-lead brass.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA122**49 | ½" sweat with 1" union nuts | 0.2 | **39.40** |
| **NA122**59 | ¾" sweat with 1" union nuts | 0.2 | **47.30** |
| **NA122**69 | 1" sweat with 1" union nuts | 0.3 | **82.60** |


Compression fitting

| Code | Description | Lbs | USD |
|---|---|---|---|
| **F0000718** | 3/8" compression tailpiece for 1" nut | 0.1 | **22.60** |

## 5231 SERIES MIXING VALVE FITTINGS

Tail piece
Low lead brass.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **31554 FD** | 1" sweat, fits 523168A | 0.3 | **48.10** |
| **41787 CST** | 1¼" sweat, fits 523177 & 523178A | 0.3 | **47.40** |
| **41788 CST** | 1½" sweat, fits 523188A | 0.3 | **75.10** |
| **41789 CST** | 2" sweat, fits 523198A | 0.5 | **97.40** |

Tail piece
Low lead brass.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA100**09 | 1" NPT male, fits 523160A | 0.2 | **60.80** |
| **R41660** | 1¼" NPT male, fits 523170A | 0.3 | **69.50** |
| **413**71A | 1½" NPT male, fits 523180A | 0.2 | **78.30** |
| **413**72A | 2" NPT male, fits 523190A | 0.2 | **101.00** |

Washer

| Code | Description | Lbs | USD |
|---|---|---|---|
| **R50057*** | 1½" union washer | 0.1 | **4.70** |
| **R50060**** | 2½" union washer | 0.1 | **22.40** |

*fits 523160A, 68A,70A, 77A, 78A.
**fits 523180A, 88A, 90A, 98A.

Union nut

| Code | Description | Lbs | USD |
|---|---|---|---|
| **R31589*** | 1½" union nut | 0.4 | **20.80** |
| **R51838**** | 2½" union nut | 0.5 | **50.40** |

*fits 523160A, 68A,70A, 77A, 78A.
**fits 523180A, 88A, 90A, 98A.

## AUTOFILL™ FITTINGS

AutoFill™ union nut.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **F41186** | ¾" union nut | 0.1 | **4.80** |

AutoFill™ tail piece.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA10001** | ½" sweat | 0.3 | **13.40** |

AutoFill™ tail piece.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **F31868** | ½" NPT male | 0.1 | **16.10** |

AutoFill™ washer.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **R50058** | ¾" union washer | 0.1 | **1.90** |

## BACKFLOW PREVENTER FITTINGS

Tail piece with screen fits 573 backflow preventer.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **31970A** | ½" NPT female | 0.1 | **19.20** |

Tail piece with screen fits 573 backflow preventer.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **41380A** | ½" sweat | 0.1 | **19.20** |

Washer union fits 573 backflow preventer.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **R50065** | Union washer | 0.1 | **4.60** |

## HYDRO SEPARATOR FITTINGS

Tail piece.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **31553 FD** | 1" NPT female, fits 548006A, 549506A | 0.3 | **24.00** |
| **31401 FD** | 1¼" NPT female, fits 548007A, 549507A | 0.3 | **54.30** |
| **R41441** | 1½" NPT female, fits 548008A, 549508A | 0.3 | **52.40** |
| **31426 FD** | 2" NPT female, fits 548009A, 549509A | 0.4 | **107.00** |

Tail piece.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **31554 FD** | 1" sweat, fits 548096A, 549596A | 0.3 | **48.10** |
| **31403 FD** | 1¼" sweat, fits 548097A, 549597A | 0.3 | **89.60** |
| **41882A** | 1½" sweat, fits 54898A, 549598A | 0.3 | **84.70** |
| **31428 FD** | 2" sweat, fits 548099A, 549599A | 0.4 | **139.00** |

Presscon™ press tail piece.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA10406** | 1" press, fits 548066A, 549566A | 0.6 | **62.10** |
| **NA10407** | 1¼" press, fits 548067A, 549567A | 0.7 | **93.20** |
| **NA10408** | 1½" press, fits 548068A, 549568A | 0.9 | **131.00** |
| **NA10409** | 2" press, fits 548069A, 549569A | 1.0 | **213.00** |

Union nut.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **R31589** | Fits 548006A and 548096A, 5495x6A | 0.4 | **20.80** |
| **R53003** | Fits 548007A and 548097A, 5495x7A | 0.4 | **41.10** |
| **R53004** | Fits 548008A and 548098A, 5495x8A | 0.4 | **41.10** |
| **R53005** | Fits 548009A and 548099A, 5495x9A | 0.4 | **47.00** |

Union washer.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **R50005** | Fits 1" 548006A and 549096A, 5495x6A | 0.2 | **4.60** |
| **R50008** | Fits 1¼" 548007A and 548097A, 5495x7A | 0.2 | **9.60** |
| **R50047** | Fits 1½" 548008A and 548098A, 5495x8A | 0.2 | **19.10** |
| **R50048** | Fits 2" 548009A and 548099A, 5495x9A | 0.2 | **23.30** |

## FITTINGS WITH ¾" THREADS

Double nipple.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA121**22 | ¾" x ¾" male | 0.3 | **29.10** |

Double nipple.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA121**72 | ¾" NPT x ¾" NPT | 0.3 | **29.10** |

Union nut.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **F41186** | ¾" union nut | 0.1 | **4.80** |

Sweat adapter.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA101**18 | ¾" sweat x ¾" male thread | 0.3 | **29.10** |

Nipple.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA121**52 | ¾" male w/ O-ring x ¾"male thread | 0.3 | **31.10** |

## FITTINGS WITH 1" THREADS

Double nipple.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA121**23 | 1" x 1" male thread | 0.4 | **36.30** |

Double nipple.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA121**73 | 1" NPT x 1" NPT | 0.4 | **36.30** |

Bushing.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA100**60 | ¾" NPT female w/ 1" male thread | 0.3 | **29.10** |

Sweat adapter.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA100**61 | ¾" sweat adaptor w/ 1 " male thd. | 0.2 | **30.40** |

Sweat adapter.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA100**62 | 1" sweat adaptor w/ 1" male thd. | 0.1 | **31.40** |

Double union connector
high temperature silicone O-ring
pre-installed inside union.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA102**72 | 1" female thread union | 0.5 | **56.00** |

High temperature silicone O-ring,
replacement for NA10272.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA102**71 | Red silicone o-ring | 0.1 | **4.50** |

## FITTINGS WITH 1" THREADS

Nipple.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA100**64 | 1" NPT w/ 1" male thread | 0.2 | **32.70** |

Nipple.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA121**62 | ¾" male w/ O-ring x 1" male thread | 0.2 | **33.70** |

Bushing.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA100**89 | ¾" female thread x 1" male thread | 0.1 | **24.20** |

Plug.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA100**83 | 1" male threaded plug | 0.2 | **18.20** |

Disk.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA101**04 | 1" disk | 0.1 | **4.80** |

Cap.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **586**600 | 1" female thread cap | 0.2 | **16.40** |

High temperature silicone flat 1" washer.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA103**02 | 1" flat silicone gasket | 0.1 | **3.40** |

## FITTINGS WITH 1¼" THREADS

Double nipple.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA121**24 | 1¼" x 1¼" thread | 0.4 | **58.20** |

Sweat adapter.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA101**19 | 1" sweat adapter x 1¼" union thread | 0.4 | **40.00** |

Bushing.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA100**87 | 1" female x 1¼" male thd. bushing | 0.4 | **29.30** |

Bushing.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **612**15A | 1" NPT F x 1¼" M thd. bushing | 0.8 | **29.10** |

Nipple.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **R31706** | 1" male x 1¼" male nipple | 0.3 | **36.30** |

Plug.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA102**36 | 1¼" male threaded plug | 0.1 | **22.80** |

Disk.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **R11059** | 1¼" female disk | 0.1 | **6.10** |

## MISCELLANEOUS SYSTEM COMPONENTS

### 626

Universal flow switch.
Suitable for 1" to 8" pipe size.
Working pressure: 150 psi.
Working temperature range: -20 – 250°F.
Minimum flow: 5.7 gpm.
Switch contacts: NO or NC
Switch rating: 15 A
CE, cUL, NEMA Type 5, IP 54.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **626**600A | 1" NPT male thread | 2.3 | **347.00** |
| **626**009 | Replacement paddle assembly* | 0.1 | **32.50** |

* stainless steel

### 519

Differential pressure by-pass valve.
Adjustable from 2 to 10 psi.
Brass body.
Max. working pressure: 150 psi.
Working temperature range: 32 – 230°F.
¾" flow up to 9 gpm.
1" flow up to 40 gpm.
1¼" flow up to 45 gpm.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **519**502A | ¾" FNPT union in x ¾" MNPT union out | 1.0 | **179.00** |
| **519**566A | ¾" press union | 1.0 | **203.00** |
| **519**599A | ¾" sweat union | 1. | **177.00** |
| **519**600A | 1" NPT female in x 1" MNPT union out | 1.4 | **278.00** |
| **519**609A | 1" FNPT union in 1" sweat union out | 1.4 | **278.00** |
| **519**700A | 1¼" FNPT union in x 1¼" MNPT union out | 1.5 | **334.00** |
| **519**709A | 1¼" FNPT union in x 1¼" sweat union out | 1.5 | **334.00** |

### 538

Drain valve. Brass body.
¾" garden hose thread with cap.
Max. working pressure: 150 psi.
Max. working temperature: 250°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **538**202 FD | ¼" NPT male x ¾" GHT | 0.3 | **20.30** |
| **538**402 FD | ½" NPT male x ¾" GHT | 0.3 | **20.70** |

### NA503

Tridicator dual pressure / temperature gauge for boilers. Dial size: 3 1/8".
Pressure range: 0—75 PSI.
Temperature range: 60—320 F.
¼" NPT rear probe.
For direct fluid stream submersion.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA503**040 | ¼" NPT male center back | 0.2 | **47.50** |

### 688

Temperature gauge with well pocket fitting for inserting into manifold ball valves.
Working temperature range: 30 – 210° F.
Face dial diameter: 2".

| Code | Description | Lbs | USD |
|---|---|---|---|
| **688**003A | Gauge with pocket well | 0.2 | **53.70** |
| **F11344** | Replacement pocket well, low-lead | 0.1 | **5.30** |
| **F67037** | O-ring fits F11344 | 0.1 | **1.20** |

### NA102

Union with temperature gauge.
Brass body and fittings.
Max. working pressure: 150 psi.
Face dial diameter: 2".
Dial scale: 30—210° F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA102**95 | ½" sweat union | 2.2 | **117.00** |
| **NA102**96 | 1" sweat union | 2.2 | **126.00** |

### NA101

Ball valve. Brass body.
Max. working pressure: 600 psi.
Max. working temperature: 365°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA101**67 | ½" sweat x ½" sweat | 0.5 | **25.00** |

### NA510

In-line union flow check valve.
Brass body and fittings.
Max. percentage of glycol: 50%.
Max. working pressure: 150 psi.
Temperature range: 32—250°F.
Open pressure: 0.29 psi.

| Code | Description | Cv | Lbs | USD |
|---|---|---|---|---|
| **NA510**59 | ¾" sweat union | 12 | 0.7 | **79.30** |
| **NA510**69 | 1" sweat union | 17 | 1.0 | **101.00** |

### NA121

Sweat union with union thread nut.
Max. working pressure: 150 psi.
Max. working temperature: 250°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA121**53 | ¾" sweat union, 1" union thread nut | 0.7 | **54.10** |
| **NA121**54 | 1" sweat union, 1" union thread nut | 0.9 | **59.50** |
| **NA121**55 | 1" sweat union, 1¼" union thread nut | 1.0 | **84.70** |

# CUSTOM FITTINGS

(NAL6263 shown)

Brass fittings, elbows.
Male (M) straight thread.
Female (F) straight thread.
Female (F) union nut.
22mm female compression.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NAL**5263 | ¾" M thread x 1" F union nut | 0.4 | **74.40** |
| **NAL**5736 | ¾" F thread x 22mm comp. | 0.4 | **56.50** |
| **NAL**6262 | 1" M thread x 1" M thread | 0.4 | **42.10** |
| **NAL**6263 | 1" M thread x 1" F union nut | 0.4 | **55.10** |
| **NAL**6273 | 1" M thread x 1¼" F union nut | 0.4 | **89.90** |
| **NAL**6363 | 1" F union nut x 1" F union nut | 0.4 | **68.00** |
| **NAL**7262 | 1¼" M thread x 1" M thread | 0.4 | **71.40** |
| **NAL**7263 | 1¼" M thread x 1" F union nut | 0.4 | **84.50** |
| **NAL**7273 | 1¼" M thread x 1¼" F union nut | 0.4 | **119.00** |

(NAT634162 shown)

Brass fittings, Tees.
Male (M) straight thread (thd).
Female (F) straight thread (thd).
Female (F) union nut.
NPT (F) Female.
22mm female compression.
Sweat (F)

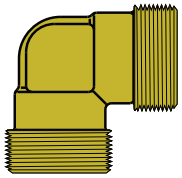
| Code | Description | Lbs | USD |
|---|---|---|---|
| **NAT**417272 | ½" NPT F x 1¼" M thd x 1¼" M thd | 0.6 | **119.00** |
| **NAT**523641 | ¾" M thd x 22mm comp. x ½" NPT F | 0.6 | **96.50** |
| **NAT**524136 | ¾" M thd x ½" NPT F x 22mm comp. | 0.6 | **96.50** |
| **NAT**545641 | ¾" Sweat x ¾" comp. x ½" NPT F | 0.6 | **82.10** |
| **NAT**574136 | ¾" F thd x ½" NPT F x 22mm comp. | 0.6 | **65.40** |
| **NAT**623641 | 1" M thd x 22mm comp. x ½ NPT F | 0.6 | **75.20** |
| **NAT**624136 | 1" M thd x ½" NPT F x 22mm comp | 0.6 | **75.20** |
| **NAT**624162 | 1" M thd x ½" NPT F x 1" M thd | 0.6 | **51.00** |
| **NAT**626241 | 1" M thd x 1" M thd x ½" NPT F | 0.6 | **51.00** |
| **NAT**626262 | 1" M thd x 1" M thd x 1" M thd | 0.6 | **52.10** |
| **NAT**626341 | 1" M thd x 1" F union nut x ½" NPT F | 0.6 | **64.00** |
| **NAT**626362 | 1" M thd x 1" F union nut x 1" M thd | 0.6 | **65.10** |
| **NAT**6263TT | 1" M thd x 1" F union nut x Temp well | 0.6 | **106.00** |
| **NAT**62TT63 | 1" M thd x Temp well x 1" F union nut | 0.6 | **106.00** |
| **NAT**634162 | 1" F union nut x ½" NPT F x 1" M thd | 0.6 | **64.00** |
| **NAT**636262 | 1" F union nut x 1" M thd x 1" M thd | 0.6 | **65.10** |
| **NAT**6362TT | 1" F union nut x 1" M thd x Temp well | 0.6 | **106.00** |
| **NAT**724162 | 1¼" M thd x ½" NPT F x 1" M thd | 0.6 | **80.30** |

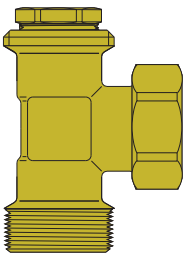
(NAC6TT26341 shown)

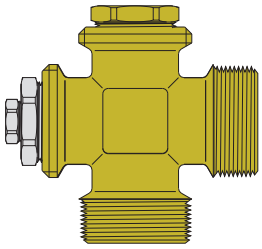
Brass fittings, cross.
Male (M) straight thread (thd).
Female (F) straight thread (thd).
Female (F) union nut.
NPT (F) Female.
22mm female compression.
Sweat (F).

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NAC**41TT5454 | ½" NPT F x T. well x ¾" Sweat x ¾" Swt | 2.0 | **188.00** |
| **NAC**623641TT | 1" M x 22mm x ½" NPT F x T. well | 2.0 | **176.00** |
| **NAC**6262TT41 | 1" M x 1" M x T. well x ½ NPT F | 2.0 | **152.00** |
| **NAC**6263TT41 | 1" M x 1" F nut x T. well x ½" NPT F | 2.0 | **165.00** |
| **NAC**62TT6241 | 1" M x T. well 1" M x ½" NPT F | 2.0 | **152.00** |
| **NAC**62TT6341 | 1" M x T. well x 1" F nut x ½" NPT F | 2.0 | **165.00** |
| **NAC**72TT6241 | 1¼" M x T. well x 1" M x ½" NPT F | 2.0 | **181.00** |
| **NAC**72TT7241 | 1¼" M x T. well x 1¼" M x ½" NPT F | 2.0 | **211.00** |

# SPECIAL CONFIGURED FITTINGS







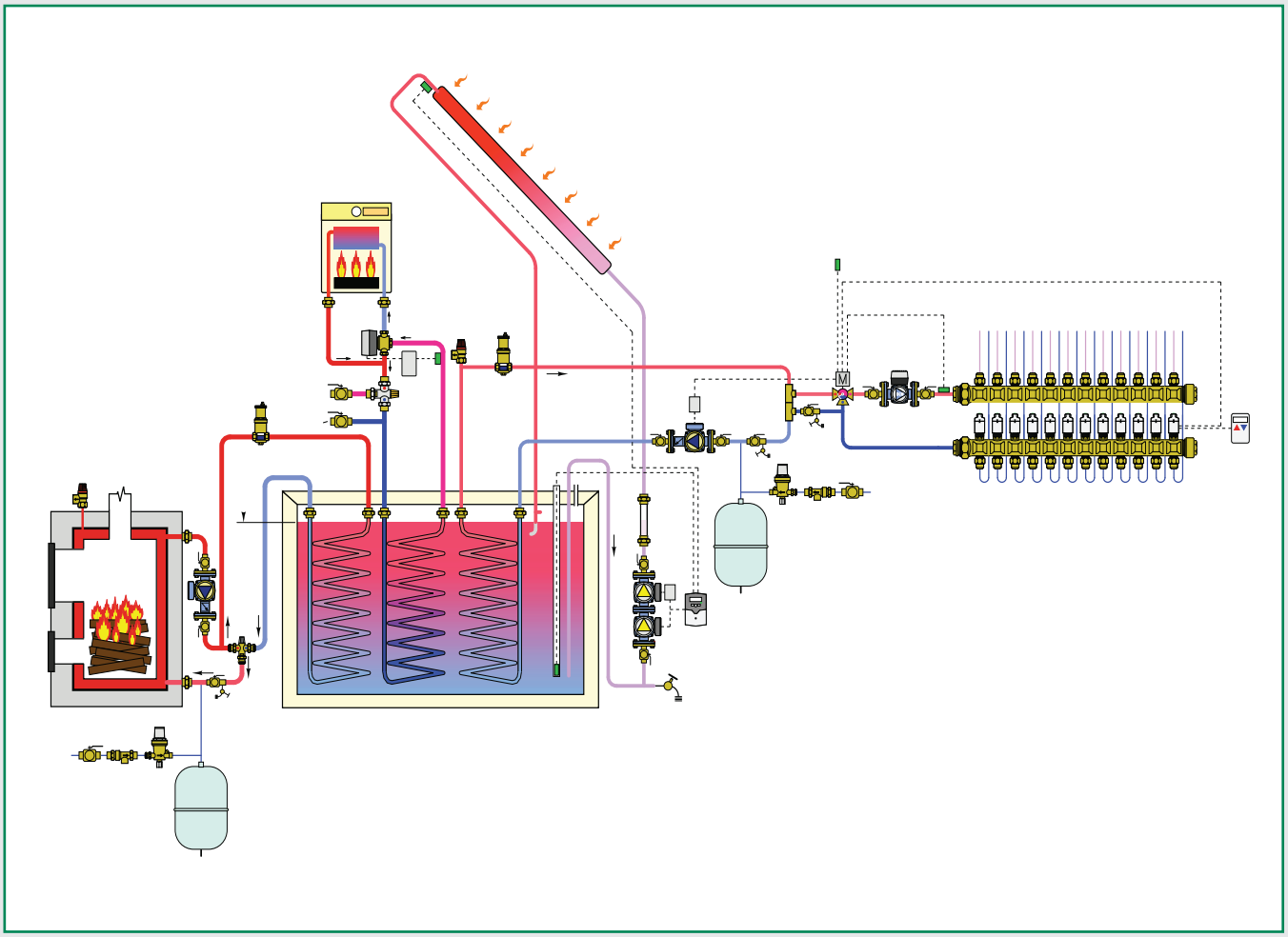
Brass fittings are configured by starting at 12:00 position and moving clockwise to 3:00 position followed by clockwise to 6:00 position ending with 9:00 position on cross. Special order any configuration of fitting by specifying connections type and size plus clock position.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NAL**XXXX | Special configured elbow | 0.4 | **CF*** |
| **NAT**XXXXXX | Special configured tee | 0.6 | **CF*** |
| **NAC**XXXXXXXX | Special configured cross | 2.0 | **CF*** |

*Consult factory.

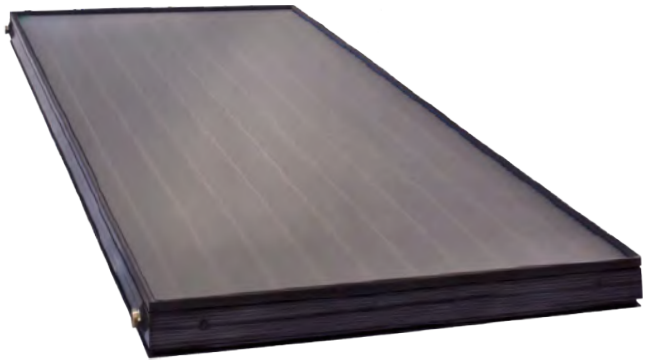
# RENEWABLES, SOLAR, GEOTHERMAL AND BIOMASS DEVICES

This diagram is an example



- Solar collectors
- Complete solar water heater systems
- Storage tank and accessories
- Pump stations and fittings
- Diverting valve kit
- Air vents and air separators
- Mixing valves
- Differential temperature controllers
- Flow Meters
- VBus data interface
- Boiler protection high-flow thermostatic mixing valve
- Boiler protection recirculation and distribution unit
- Boiler protection valve accessories
- Dataloggers
- Stainless steel piping
- Flex fittings with threads
- Geothermal manifolds and fittings
- Geothermal accessories
- PE pipe connection

## SOLAR COLLECTORS



# NAS144
# StarMax 4™

Star Max 4™ flat plate collectors heat fluid from solar energy for solar water heater and space heating systems.
Fluids: water, glycol solutions.
Maximum percentage of glycol: 60%.
Working pressure: 90 psi.
Max. test pressure: 150 psi.
Working temperature: -40—350ºF.
Typical transfer flow rate: 0.5—1.8 gpm.
Wind load rating: 180 mph.
Connection: 1¼" male union thread
SRCC Category C: 40 kBtu/day.
Approvals: SRCC OG-100.

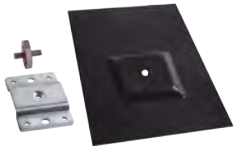
| Code | Description | Lbs | USD |
|---|---|---|---|
| **NAS144**08 | 4' x 8', Category C 32 kBtu/day | 113 | **3,296.00** |
| **NAS144**10 | 4' x 10', Category C 40 kBtu/day | 153 | **3,671.00** |
| **NA101**26 | Crating for NAS14408 / NAS14410 (1—6) | net | **112.00** |

Flat plate collector mounting brackets and wide strut mount.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NAS100**01 | Universal foot mount, 4 each | 5.0 | **299.00** |
| **NAS100**04 | Wide strut mount, 4 each | 1.0 | **179.00** |

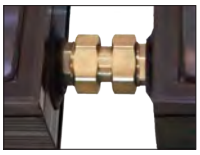
Aluminum 6005-T5 square tube extension for tilting flat plate collectors. Connects with tilt mounting U brackets.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NAS100**02 | 1" square tube x 6' | 2.0 | **150.00** |
| **NAS100**05 | 1" square tube x 12' | 4.0 | **269.00** |

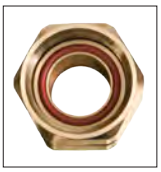


Flashing kit with ⅜" stud for attaching U mounts and other brackets using the supplied ⅜" stainless steel nut & washer. Black painted aluminum 6061 T6 flashing 14¾"L x 9½"W x 0.6"H ,galvanized steel base plate with six mounting holes and double stud.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NAS100**30 | Flashing kit | 1.5 | **83.90** |



The 1¼" male union threads on the StarMax 4 collector have a flat sealing surface The NAS10478 double union allows the collectors to be joined close together, but still allows for a collector to be removed from an array without moving the adjoining collectors. The double union has pre-installed high temperature silicone O-rings which seal against the coupling flat surface and will not fallout during coupling. This provides fast torch free connections.



Double union nut coupler
high temperature silicone O-ring pre-installed inside union.
order 2 for 2-panel array, 4 for 3-panel array, 6 for 4-panel array

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA10478** | 1¼" double union nut coupler | 0.4 | **101.00** |

Components required to cap unused 1¼" male union outlets on StarMax 4 collector.
1¼" brass nut (1), 1¼" brass disk (1) and 1¼" silicon sealing washer (1).
Cap kit includes 2 sets, order one cap kit per array.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **R31495** | 1¼" union nut | 0.2 | **9.70** |
| **R11059** | 1¼" brass disk | 0.1 | **6.10** |
| **R67032** | 1¼" high temp silicon washer | 0.1 | **3.00** |
| **NA10513** | 1-1/4" cap kit (2 x above 3 items) NEW | 0.4 | **37.60** |

## COMPLETE SOLAR WATER HEATER SYSTEMS


# NAS300

The prepackaged, specially engineered solar water heating system includes all of the components needed for a standard installation — from the solar collectors, to the pump station and controller, to pre-insulated piping, to the storage tank, and all of the necessary hardware and components.
System collector code numbers:
4' x 8' flat plate (NAS14408)
4' x 10' flat plate (NAS14410).
Approvals: SRCC OG-300 certified.

**50 gal. single coil with electric element (NAS20053)**

| Code | Description | Collector | Lbs | USD |
|---|---|---|---|---|
| **NAS300**20-P | no collector | | 490 | **9,163.00** |
| **NAS300**20P8 | 4' x 8' collector | 1 | 615 | **13,526.00** |
| **NAS300**201P8 | 4' x 8' collector | 2 | 730 | **17,036.00** |
| **NAS300**20P10 | 4' x 10' collector | 1 | 655 | **13,992.00** |
| **NAS300**201P10 | 4' x 10' collector | 2 | 810 | **17,968.00** |

**80 gal. single coil with electric element (NAS20083)**

| Code | Description | Collector | Lbs | USD |
|---|---|---|---|---|
| **NAS300**40-P | no collector | | 660 | **10,560.00** |
| **NAS300**40P8 | 4' x 8' collector | 2 | 785 | **18,490.00** |
| **NAS300**401P8 | 4' x 8' collector | 3 | 900 | **22,075.00** |
| **NAS300**40P10 | 4' x 10' collector | 2 | 825 | **19,421.00** |
| **NAS300**401P10 | 4' x 10' collector | 3 | 980 | **23,471.00** |

**80 gal. dual coil without electric element (NAS20082)**

| Code | Description | Collector | Lbs | USD |
|---|---|---|---|---|
| **NAS300**42-P | no collector | | 610 | **11,141.00** |
| **NAS300**42P8 | 4' x 8' collector | 2 | 835 | **19,071.00** |
| **NAS300**421P8 | 4' x 8' collector | 3 | 950 | **22,657.00** |
| **NAS300**42P10 | 4' x 10' collector | 2 | 875 | **20,002.00** |
| **NAS300**421P10 | 4' x 10' collector | 3 | 980 | **24,053.00** |

**120 gal. single coil with electric element (NAS20123)**

| Code | Description | Collector | Lbs | USD |
|---|---|---|---|---|
| **NAS300**60-P | no collector | | 670 | **11,490.00** |
| **NAS300**60P8 | 4' x 8' collector | 3 | 995 | **23,005.00** |
| **NAS300**601P8 | 4' x 8' collector | 4 | 1110 | **26,693.00** |
| **NAS300**60P10 | 4' x 10' collector | 3 | 1035 | **24,402.00** |
| **NAS300**601P10 | 4' x 10' collector | 4 | 1190 | **28,795.00** |

**120 gal. dual coil without electric element (NAS20122)**

| Code | Description | Collector | Lbs | USD |
|---|---|---|---|---|
| **NAS300**62-P | no collector | | 700 | **12,073.00** |
| **NAS300**62P8 | 4' x 8' collector | 3 | 1025 | **23,588.00** |
| **NAS300**621P8 | 4' x 8' collector | 4 | 1140 | **27,276.00** |
| **NAS300**62P10 | 4' x 10' collector | 3 | 1065 | **24,985.00** |
| **NAS300**621P10 | 4' x 10' collector | 4 | 1220 | **29,376.00** |


| Key | Code | Description | |
|---|---|---|---|
| 1 | 255060A | Dual-line solar pump station with ¾" SolarFlex™ fittings | |
| 2 | 255007 | Expansion tank mounting kit with double-check valve | |
| 3* | 259012 | 3 gallon | Tank size is system dependent |
| | 259018 | 5 gallon | |
| | 259025 | 7 gallon | |
| | 259033 | 9 gallon | |
| 4 | NA267003 | Bracket to mount solar pump station to storage tank | |
| 5 | 257260A | *iSolar*™ Plus differential temperature controller | |
| 6 | NA10092 | 18" SJ round cord connects pump to controller | |
| 7 | NA3540-15 | SolarFlex™ ¾" x 50 ft. coil piping with fittings | |
| 8 | NA12133 | Hangers fits ¾" SolarFlex™ (4 pcs) | |
| 9 | NA3140-02 | Two ¾" flex pipes with insulation, 6' long | |
| 10 | NA10093 | Two 90-degree brass elbows 1" male union half | |
| 11 | 250041A | Automatic solar air vent, ½" NPT male | |
| 12 | NA29284 | Solar air vent shut-off valve, ½" NPT MxF | |
| 13 | NAT624162 | Tee 1" M union x ½" NPT F x 1" union nut | |
| 14 | NA35001 | EPDM insulation black tape, ⅛" x 2" x 25' roll | |
| 15 | NA35002 | UV-resistant black film tape, 2" x 30' roll | |
| 16* | NA10478 | Double union nut coupler 1¼" | |
| | R31495 | Union nut 1¼" | |
| | R11059 | Disk 1¼" | |
| | R67032 | Sealing washer 1¼" | |
| 17* | NAS10001 | Universal foot mounts fits solar collectors | |
| 18* | NA10103 | 5-15 gallons glycol. NSF listed (amount model specific) | |

*these items are not provided in the "-P" kits (kit without collectors)

## STORAGE TANKS


# NAS200
# ThermoCon™ and SolarCon™

Storage tanks are available as either a SolarCon™ domestic hot water tank or a ThermoCon™ thermal buffering tank with porcelain glass coated steel lining. Powder-coated steel external cover. Drain port/valve.
Max. working pressure: 150 psi.
Working temperature: -40—190ºF.
Recommended max. delivery water temperature: 120ºF.
Testing pressure: 300 psi.
Tank insulation: 2" non-CFC foam.
Insulation thermal conductivity: R16.
Temperature & pressure relief valve: 210ºF/150 psi. (HX models)
Electric element: 4.5 Kw. UL listed.
Connections: 25 gal. no HX (6) 1½" NPT F top & side, (2) ¾" NPT F top & side.
Non HX (7) 2" NPT female side, (3) ¾" NPT female top.
50 gal. HX (2) 1" NPT male side, (2) ¾" NPT male on top.
80-119 gal. (1) HX (3) 1" NPT male side, (1) 1" NPT male top.
80-119 gal. (2) HX (5) 1" NPT male side, (1) 1" NPT male top.

*Reduction of Lead in Drinking Water Act Compliant: 0.25% max. weighted average lead content. Certified through Underwriters Laboratory (UL) in accordance with NSF/ANSI 372. Meets CSA C309.

**Function**

**No HX (ThermoCon™ ):**

Typical applications include where system design requires use of an external heat exchanger, an open solar thermal system, or when buffering storage capacity is required. The ThermoCon™ tanks do not have anode rods.

**One HX (SolarCon™ ):**

A coil type solar loop HX is located in the lower portion of the tank. An electrical heating element provides boost heat for a one tank system, or is unused for a two tank pre-heat system. The SolarCon™ tanks have anode rods.

**Two HX (SolarCon™ ):**

Coil type HX's are located in the lower and upper portions of the tank. Common applications include using the upper HX for boost heat when connected to a back-up heat source, using the top HX for supplemental space heat, or connecting both HX's to the solar loop for layer loading. The SolarCon™ tanks have anode rods.

**Two HX with electrical element (SolarCon™ ):**

Typical application is for a one tank domestic hot water system with electric element boost, and utilizing upper HX for supplemental space heat. The SolarCon™ tanks have anode rods.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NAS200**25 | ThermoCon™ 25 gal. no HX | 100 | **2,888.00** |
| **NAS200**50 | ThermoCon™ 50 gal. no HX | 200 | **3,452.00** |
| **NAS200**53 | SolarCon™ 50 gal. HX, electric element | 231 | **4,394.00** |
| **NAS200**80 | ThermoCon™ 80 gal. no HX | 250 | **4,080.00** |
| **NAS200**83 | SolarCon™ 80 gal. 1 HX, electric element | 297 | **5,962.00** |
| **NAS200**82 | SolarCon™ 80 gal. 2 HX | 327 | **6,590.00** |
| **NAS201**20 | ThermoCon™ 119 gal. no HX | 350 | **5,399.00** |
| **NAS201**23 | SolarCon™ 119 gal. 1 HX, electric element | 397 | **7,093.00** |
| **NAS201**22 | SolarCon™ 119 gal. 2 HX | 427 | **7,782.00** |
| **NAS201**24 | SolarCon™ 119 gal. 2 HX, electric element | 429 | **8,034.00** |

## STORAGE TANK ACCESSORIES

Reducer bushing fits tanks without HX for installing temperature probe.
Low lead brass
1 5/8" hex head.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA102**34 | 2" NPT male x ¾" NPT female | 0.4 | **85.10** |

Male plug 1 1/4" square head.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA103**39 | 2" NPT male x ¾" NPT female | 0.2 | **46.30** |

Brass reducing bushing. 1 ⅛" hex head.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA100**82 | ¾" NPT male x ½" NPT female | 0.3 | **8.60** |

Magnesium anode rod.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA102**29 | ¾" NPT x 36" anode rod fits 50 gal. | 8.0 | **68.30** |
| **NA102**30 | ¾" NPT x 40" anode fits 80 &100 gal. | 9.0 | **95.30** |

90º brass elbow to connect ¾" SolarFlex™ to heat exchanger in SolarCon tank.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA100**93 | 1" NPT female x 1" male | 0.5 | **68.90** |

Insulated 6' SolarFlex™ for connecting solar pump station to SolarCon™ HX.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA314**0-02 | ¾" SolarFlex with 1" union nuts | 1.0 | **207.00** |

## EXPANSION TANK

### 259

Solar system expansion tanks with ¾" straight thread.
System temp. range: 15—250°F.
Maximum diaphragm temp : 160°F.
Maximum working pressure: 150 psi.
Pre-charge pressure: 35 psi.
Maximum percentage of glycol: 50%.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **259**012 | 3 gallon, ¾" male straight thread | 14 | **183.00** |
| **259**018 | 5 gallon, ¾" male straight thread | 17 | **228.00** |
| **259**025 | 7 gallon, ¾" male straight thread | 21 | **295.00** |
| **259**033 | 9 gallon, ¾" male straight thread | 24 | **503.00** |
| **259**050 | 13 gallon, ¾" male straight thread | 28 | **634.00** |

## ACCESSORIES

### 255

Expansion tank connection kit.
Includes ¾" connection, wall bracket, hardware and double check valve.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **255**007 | S.S. flexible tank connection kit | 3.0 | **213.00** |

Pipe nipple for attaching air vent to top of storage tank with reducing bushing.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA101**60 | ½" NPT male x ½" male NPT x 3" | 0.1 | **13.80** |

Sensor well, ¼" Ø I.D. Insertion length: 1¾".

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA150**29 | Sensor well, ¾" NPT male thread | 0.5 | **59.40** |

Cap for plugging tank connection on pump station while leak testing. Requires (R50058) washer.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **R21180** | ¾" female cap | 0.1 | **6.70** |

## ACCESSORIES

### NA255

6' flexible stainless steel extension for connecting expansion tank to pumping station.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA255**002 | ¾" union nuts | 1.0 | **118.00** |

### NA267

Kit for mounting solar pumping station onto storage tank and connecting expansion tank to pumping station. Includes bracket, hardware and 6' extension for expansion tank.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA267**002 | ¾" union nuts | 2.0 | **140.00** |

### NA267

Kit for mounting solar pumping station onto storage tank. Includes bracket and hardware.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA267**003 | Kit to mount solar station | 2.0 | **25.80** |

### 255

Hand pump attaches to solar pump station for pressurizing system.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **255**010A | Manual hand pump | 3.0 | **358.00** |

### NA256

Two solar station connection kits.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA256**012 | ¾" F x ¾" M thread and cap | 1.0 | **336.00** |

Expansion tank fitting connections. ¾" union nut connects to the expansion tank.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA255**40 | ½" NPT union connection set | 0.1 | **31.40** |
| **NA255**49 | ½" sweat union connection set | 0.1 | **29.00** |

## SOLAR PUMP STATIONS

### 278 & 279

Solar pump stations are pre-assembled and leak-tested. Safety relief valve. Ball valves with built-in flow checks in return (and flow for dual-line models). Temperature gauges in return (and flow for dual-line models). Pressure gauge. Manual air vent (dual-line models only). Expansion tank connection. Connections for flushing and filling. Foam insulation.
Balance/flow meter: 1— 8 gpm scale.
Pump: three speed
Pump performance: 19 ft head/8 gpm.
Safety relief valve: 90 psi.
Max. working pressure: 145 psi.
Max. working temp: 350ºF.
Connections: ¾" female thread.

(Select adaptors to the right)

| Code | Description | Lbs | USD |
|---|---|---|---|
| **279**051A | Dual-line solar pump station | 17 | **1,399.00** |
| **279**051 | Dual-line solar station w/o pump | 12 | **1,119.00** |
| **278**751A | Single-line solar pump station | 14 | **1,221.00** |
| **278**751 | Single-line solar station w/o pump | 10 | **940.00** |
| **278**011 | Controller housing | 0.5 | **68.20** |

Replacement pumps fit current solar pump stations 278 & 279, plus discontinued 255 & 256 stations.
3 speed 115 V
1" male union thread.
Agency approval: cULus.

(install in-line with NA122 union fittings on page 84)

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA10481** | Grundfos 15-58U, 21' head / 18 gpm | 5 | **362.00** |

Temperature gauges fit 278 & 279 solar stations.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **F29759** | 1½" red dial temp. gauge | 0.1 | **53.90** |
| **F29758** | 1½" blue dial temp. gauge | 0.1 | **53.90** |

## PUMP STATION FITTINGS

½" SolarFlex™ directly to top or bottom. 2 each.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA266**40 | ¾" male thread x ¾ male thread | 0.6 | **62.20** |

½" SolarFlex™ directly to top and bottom. 4 each.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA267**40 | ¾" male thread x ¾ male thread | 1.0 | **125.00** |

¾" SolarFlex™ directly to top or bottom. 2 each.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA266**50 | ¾" male thread x 1" male thread | 0.6 | **67.30** |

¾" SolarFlex™ directly to top and bottom. 4 each.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA267**50 | ¾" male thread x 1" male thread | 1.0 | **135.00** |

1" SolarFlex™ directly to top or bottom. 2 each.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA266**60 | ¾" male thread x 1¼" male thread | 0.6 | **130.00** |

1" SolarFlex™ directly to top and bottom. 4 each.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA267**60 | ¾" male thread x 1¼" male thread | 1.0 | **261.00** |

## PUMP STATION FITTINGS

½" sweat fittings to top or bottom.
2 each.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA266**49 | ¾" male thread x ½" sweat fitting | 0.6 | **102.00** |

½" sweat fittings to top and bottom. 4 each.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA267**49 | ¾" male thread x ½" sweat fitting | 1.0 | **205.00** |

¾" sweat fittings to top or bottom.
2 each.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA266**59 | ¾" male thread x ¾" sweat fitting | 0.6 | **115.00** |

¾" sweat fittings to top and bottom. 4 each.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA267**59 | ¾" male thread x ¾" sweat fitting | 1.0 | **230.00** |

1" sweat fittings to top or bottom.
2 each.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA266**69 | ¾" male thread x 1" sweat fitting | 0.6 | **126.00** |

1" sweat fittings to top and bottom. 4 each.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA267**69 | ¾" male thread x 1" sweat fitting | 1.0 | **251.00** |

## DRAINBACK PUMP STATION

### 278

Drainback solar pump stations designed with a high head and steep pump curve which are pre-assembled and leak-tested.
Safety relief valve, ball valve, temperature gauge, pressure gauge, air fill valve.
Connections for flushing and filling with foam insulation.
Balance/flow meter: 2—8 gpm scale.
Pump: Grundfos UP15-100.
Performance: 36 feet head / 8 gpm.
Safety relief valve: 90 psi.
Max. working pressure: 145 psi.
Max. working temp: 350ºF.
Connections: ¾" female thread.
(Select adaptors to the left)

| Code | Description | Lbs | USD |
|---|---|---|---|
| **278**951A | Drainback solar pump station | 14 | **1,304.00** |

### NA121

Replacement single speed 120 V,
1" male union thread.
Flow 36 feet head / 8 gpm.
Agency approval: cULus.
(install in-line with NA122 union fittings on page 84)

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA121**71 | Grundfos Solar 15-100 | 6.0 | **448.00** |

## DC SOLAR PUMP

### NA267

8 to 34 VDC, DC Strong solar pump for mounting in solar stations.
15 feet head / 7 gpm at 24 VDC.
8 feet head / 4 gpm at 12 VDC.
Power consumption: 30—45 W.
Max. working pressure: 150 psi.
Max. temperature: -10—230°F.

(install in-line with NA122 union fittings on page 84)

Shown mounted in 279051 or can be mounted inside 278751.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA267**11 | 1" male union thread | 3.0 | **730.00** |

## COMMERCIAL SOLAR PUMP STATION

### NA255

The Solar pump station is pre-assembled and leak-tested unit without fittings for transferring heat from the collector to the storage tank. The pump station contains the following:
Ball valves in flow and return in combination with flow check valves.
Foam insulation shell.
Ports for filling and flushing.
Manual air vents.
Balance/flow meter.
Temperature gauges in flow and return.
Pressure gauge.
Safety relief valve: 90 psi.
Pump: Star S 30 U25 three-speed.
Connection: 1" male straight thread.
Max. working pressure: 150 psi.
Max. working temp: 360°F.
Adjustable flow: ½ to 10 gpm.
Agency approval: cULus.

(Select fittings to the right)

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA255**160 | 1" male union thread | 25 | **2,324.00** |

Replacement pump fits solar pump station NA255. 120 VAC / 1.3 A.
30 feet head / 30 gpm. 1½" male union thread.

(install in-line with NA122 union fittings on page 84)

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA121**69 | Wilo Star S 30 replacement pump | 6.0 | **576.00** |

Replacement solar pump station pressure gauge.
Pressure range: 0—90 psi.
Dial size: 1 ½"

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA121**56 | ¼" male center back mount | 0.1 | **52.00** |

## PUMP STATION FITTINGS

### NA155

NA255160 Solar pump stations fitting kits. (mix & match for top & bottom)

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA155**50 | ¾" NPT male union kit | 1.0 | **185.00** |

NA255160 Solar pump stations fitting kits. (mix & match for top & bottom)

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA155**59 | ¾" sweat union kit | 1.0 | **150.00** |

NA255160 Solar pump stations fitting kits. (mix & match for top & bottom)

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA155**60 | 1" NPT male union kit | 1.1 | **185.00** |

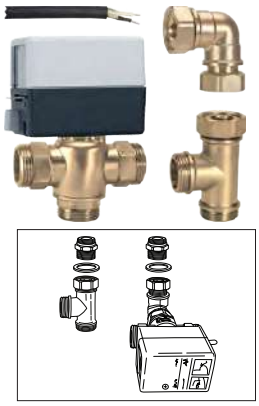
NA255160 Solar pump stations fitting kits. (mix & match for top & bottom)

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA155**69 | 1" sweat union kit | 1.1 | **152.00** |

NA255160 Solar pump stations fitting kits. (mix & match for top & bottom)

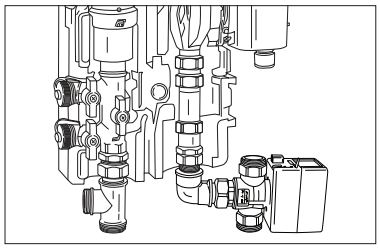
| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA155**70 | 1¼" male, 1" SolarFlex™ | 0.9 | **63.10** |

## DIVERTING VALVE KIT



### NA267

Diverting three-way valve for solar pump station mounting kit. Used for diverting solar fluid to another storage tank, swimming pool heat exchanger or heat dissipating device. (Select fittings below)



Kit Contents

| Code | Description | Quantity |
|---|---|---|
| Z126000 | Actuator 120 VAC | 1 |
| Z300687 | Three-way valve with 1" male union threads | 1 |
| NAL6363 | Elbow with 1" union threads | 1 |
| NAT636262 | Tee with 1" union threads | 1 |
| NA10092 | Power cord | 1 |

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA267**10 | Diverting three-way valve kit | 6.0 | **358.00** |

Select two fitting sets, NA122 series, from page 84, mix and match sets for a total of four union fittings.

## SOLAR GLYCOL

### NA101 SolarHD™

Pre-mixed 50% high temperature non toxic glycol, FDA reference: 21 CRF 182.1666, Gosselin TOXICITY INDEX 1, Generally recognized as safe for use as direct food additives. NSF listed, Category Code: HT1, HT2, NSF Registration No. 144912. Compatable with other propylene glycols.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA101**03 | 5 gallon bucket | 45 | **277.00** |

## FILL AND FLUSH CART

### NA255 HYDROFLUSH™

The fill and flush pump cart is portable, leak-tested for a safe, quick and clean way to fill and flush solar and hydronic systems.
Medium: water, glycol and cleaning fluids.
Tank: 13 gallon with dirt filter.
Max. tank medium temperature: 150°F.
Pump delivery flow: 1—13 gpm
Pump feet of head: 220
Max. pump pressure: 100 psi.
Pump power: ½ HP (120 V AC).
Isolating ball valves: ¾" garden hose thread.
Transfer hoses: 6' with ¾" GHT (2 ea).
Pressure gauge: 2" dial, 0—100 psi.
Dimensions: 48"H × 20"W × 18"D.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA255**10 | Wash, fill and flush cart | 60 | **3,507.00** |

## LOW LEAD MIXING VALVES

### 2521

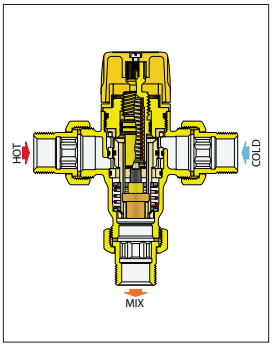
Adjustable thermostatic three-way mixing valve for solar systems with built-in inlet check valves.
Setting range: 80—150ºF.
Max. working pressure: 200 psi.
Max. inlet temperature: 210ºF.
Connection: ½", ¾", 1" sweat.
Certified to ASSE 1017, CSA B125.3, UPC, IPC, Low Lead Laws and listed by ICC-ES for use in accordance with the U.S. and Canadian plumbing codes.

ASSE 1017

| Code | Description | Lbs | USD |
|---|---|---|---|
| **2521**49A | ½" sweat with inlet check valves | 1.2 | **270.00** |
| **2521**59A | ¾" sweat with inlet check valves | 1.2 | **284.00** |
| **2521**69A | 1" sweat with inlet check valves | 1.2 | **329.00** |

**Operating principle**

The controlling element of the solar thermostatic mixing valve is a temperature sensor that is fully immersed in the mixed water outlet passage. As it expands or contracts, the sensor continuously establishes the correct proportion of hot and cold water entering the valve. The flow is regulated by a piston sliding in a cylinder between the hot and cold water passages. Even when there are pressure drops due to the drawing off of hot or cold water for other uses or variations in the incoming temperature, the mixer automatically regulates the water flow to obtain the required temperature.




### 2521

Adjustable thermostatic three-way mixing valve with temperature gauge for solar systems with built-in inlet check valves.
Setting range: 80—150ºF.
Max. working pressure: 200 psi.
Max. inlet temperature: 210ºF.
Connection: ¾", 1" sweat.
Certified to ASSE 1017, CSA B125.3, UPC, IPC, Low Lead Laws and listed by ICC-ES for use in accordance with the U.S. and Canadian plumbing codes.

ASSE 1017

| Code | Description | Lbs | USD |
|---|---|---|---|
| **2521**58A | ¾" sweat with inlet check valves | 1.2 | **349.00** |
| **2521**68A | 1" sweat with inlet check valves | 1.2 | **397.00** |

Check valve for use in 2521 mixing valve.
Max. inlet temperature: 210ºF.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **R29326** | Check valve insert | 0.1 | **10.00** |

## AIR SEPARATOR

### 251 DISCAL®

Air separator for solar heating systems.
Working temperature range: -20—320ºF.
Max. working pressure: 150 psi.
Max. discharge pressure: 150 psi.
Connections: Main, ¾" NPT, female
Bottom, ½" NPT, female

| Code | Description | Lbs | USD |
|---|---|---|---|
| **251**003A | ¾" NPT female | 2.0 | **223.00** |

### 253

Safety relief valves for solar systems.
Working temperature range: -20—360ºF.
Normal pressure: 150 psi.
Opening over pressure: 10%.
Closing differential: 20%.
Discharge capacity: 171,000 Btu.
Connections: Inlet, ½" female.
Discharge, ¾" female.
TÜV certified to TRD-721-SV100 7.7.
Meets ANSI Z21.22 standard.

TÜV Rheinland is an approved U.S. Nationally Recognized Testing Laboratory (NRTL) Certification Body for Pressure Equipment. Meets ANSI Z21.22 "Relief Valves for Hot Water Supply Systems."

| Code | Description | Lbs | USD |
|---|---|---|---|
| **253**042 | Factory set to 35 psi | 0.3 | **83.60** |
| **253**043 | Factory set to 45 psi | 0.3 | **83.60** |
| **253**044 | Factory set to 60 psi | 0.3 | **83.60** |
| **253**046 | Factory set to 90 psi | 0.3 | **83.60** |
| **253**048 | Factory set to 120 psi | 0.3 | **83.60** |
| **253**040 | Factory set to 150 psi | 0.3 | **83.60** |

# AUTOMATIC AIR VENT

## 250

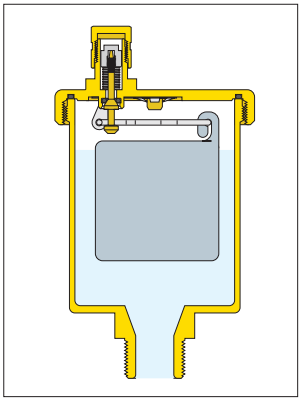
Automatic air vent for solar systems.
Working temperature range: -20—360°F.
Max. working pressure: 150 psi.
Max. discharge pressure: 75 psi.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **250**041A | ½" NPT male | 0.3 | **83.90** |

**Function**

Automatic air vents are used in the closed circuits of solar heating systems. They allow air contained in the fluid to be released automatically during the filling process, through a valve operated by a float in contact with fluid in the system.

The shut-off valves are used in combination with the automatic air vents to isolate them after filling the circuit of solar heating systems. These series of products have been specially made to work at high temperatures with a glycol medium.



## NA292

Shut-off fits automatic air vent.
Working temperature range: -20—360°F.
Max. working pressure: 150 psi.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA292**84 | ½" NPT female x ½" NPT male | 0.2 | **68.30** |

## 251 DISCALAIR®

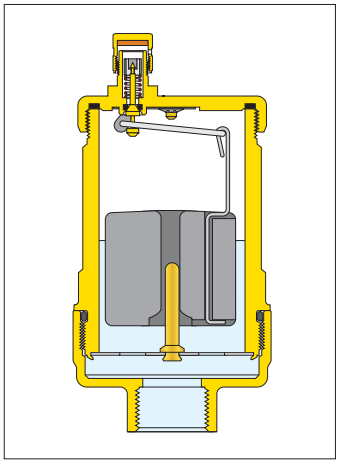
High-performance automatic air vent for solar heating systems.
Working temperature range: -20—320°F.
Max. working pressure: 150 psi.
Max. discharge pressure: 150 psi.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **251**004A | ½" NPT female | 0.8 | **168.00** |

**Function**

DISCALAIR® solar devices are used in hydronic systems or in the filling and start-up phase of solar heating systems to discharge even large quantities of air that have formed in the circuits. This function is performed even when there is considerable pressure due to the special geometry of the discharge mechanism, which is identical to the mechanism on DISCAL® Solar 251 series air separators.

This particular series of automatic air vent valves have been specifically designed to work at high temperature with a glycol medium, which is typical of solar heating systems.



## NA102

Vent cap adapter to connect discharge tube. Fits all air vents and air separators except 5026 and 5027 series.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA102**04 | ¼" NPT male | 0.1 | **29.10** |

## DIFFERENTIAL TEMPERATURE CONTROLLERS


| Code | Description | Lbs | USD |
|---|---|---|---|
| **257**220A | iSolar™ 2, 1 relay | 2.0 | **533.00** |
| **257**260A | iSolar™ Plus, 2 relays | 2.0 | **810.00** |

| Model Comparison | *iSolar* 2 | *iSolar* Plus | *iSolar* BX | *iSolar* MX-LTE |
|---|---|---|---|---|
| Pre configured arrangements | 1 | 10 | 26 | 20 |
| Speed control triac output (30–100%) | 1 | 2 | 3 | 4 |
| Standard relay output | 0 | 0 | 1 | 0 |
| Dry contact relay | 0 | 0 | 0 | 1 |
| Sensor inputs (temperature) | 4 | 4 | 5 | 8 |
| Pt-1000 temp. sensors included | 3 | 4 | 4 | 5 |
| Max. solar collector arrays | 1 | 2 | 2 | 2 |
| Max. solar storage tanks | 1 | 2 | 2 | 4 |
| Two tank priority logic | | • | • | • |
| Second delta T-function | | • | • | • |
| Drain-back pump speed control | • | • | • | • |
| Drain-back booster pump | | • | • | • |
| Time controlled thermostat function | | • | • | • |
| Backup heat function | | • | • | • |
| Heat dump function | | • | • | • |
| Real time clock (timer function) | | • | • | • |
| Collector freeze protection | • | • | • | • |
| Evacuated tube collector function | | • | • | • |
| Min. collector temperature | • | • | • | • |
| Collector cooling functions | • | • | • | • |
| Tank (night time) cooling | • | • | • | • |
| Emergency shutdown functions | • | • | • | • |
| Pump operating hours counter | • | • | • | • |
| Energy metering - flow calculated | • | | | |
| Energy metering - flow meter input | | • | • | • |
| Vbus data communication | • | • | • | • |
| Onboard data logging | | | • | • |

# 257
# *iSolar*™

The *iSolar*™ 257 series are multi-functional temperature differential controllers that provide complete control of the solar thermal system.
Inputs: (4) Pt1000 temperature sensors.
Triac relays capacities: 1A / 100—240 V AC.
Standard relay capacity: 1A / 100—240 V AC.
Power supply: 100—240 V AC- 50/60 Hz.
Data interface: V-Bus.
ΔT adjustment range: 2—40ºF Δ.
Min. temperature differential 2ºF Δ.
Hysteresis: 2ºFΔ, ± 1ºFΔ.
Max. tank temperature range: 35—205°F.
Max. collector temperature range: 210—375°F.
Emergency shut down of the collector: 230—395°F.
Min. collector temperature range: 50—195ºF.
Antifreeze temperature option: 15—50°F.
kWh (BTU) calculation flow input: 0—5 gpm.

### Function

The *iSolar*™ series are multi—functional temperature differential controllers that provide complete control of the solar thermal system for safe and long-lasting operation. The microprocessor based controller monitors and controls thermal solar systems by means of a collector sensor and a storage tank sensor. The controllers also perform important system monitoring and safety functions. The system parameters and measured values can be changed and viewed on the large LCD display. The controller is equipped for up to four temperature sensor inputs and one or two 120 VAC outputs (some models) for activating the solar circuit pump and second 120 VAC output for activating a valve or second pump. The controller is additionally equipped with VBus® for two-way communication between modules, PC's or data loggers.

Replacement fuse T4A.
(priced per package of 10).

| Code | Description | Lbs | USD |
|---|---|---|---|
| **257**208 | Fuses | 0.1 | **33.60** |

# NA101

Steel electrical mounting box with cover for *iSolar*™ controllers.
UL listed

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA101**20 | 1⅝" D x 8⅝" H x 4½" W | 3.0 | **78.30** |

## VBUS DATA INTERFACE

### SD3

Smart display SD3 connected to VBus data interface is used for displaying data from *iSolar*™ controller; collector temperature, storage temperature and total energy heat produced. An additional power supply is not required. Bright LED displays.
Power supply: via VBus.
Mounting: wall.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA150**08 | Smart display | 2.0 | **804.00** |

### WALL

Wall transformer.
Input voltage: 120 V AC.
Output voltage: 24 V AC.
Power output: 40 VA.
Agency approval: cULus.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA605**010 | 24 V AC wall transformer | 1.0 | **49.70** |

### USB

USB to VBus data interface to connect *iSolar*™ controller to PC for transmission of system data for processing, visualizing and archiving.
Full version of Service Center software included on CD-ROM. USB 2.0 full speed with mini-USB port and cable.
Power supply: via VBus.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA150**20 | USB to VBus data interface | 0.3 | **283.00** |

### PWM

PWM or 0—10 V DC to VBus data interface is used for speed control of a pump.
Information from the iSolar™ controller is converted into a PWM or 0—10 V DC output control signal which is connected to input control signal of a pump.
Display: LED display.
Wall power: 100-240 V AC / 50-60 Hz.
Adapter input voltage: 12 V DC.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA150**21 | PWM or 0—10 V DC to VBus interface | 0.3 | **378.00** |

### LAN

LAN socket to VBus data interface to connect controller to PC network or router for transmission of system data for processing, visualizing and archiving over a local network. Full version of Service Center software included.
Wall power: 100-240 V AC / 50-60 Hz.
Adapter input voltage: 12 V DC.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA150**22 | LAN socket to VBus data interface | 0.3 | **470.00** |

## DATA LOGGERS

### 257 *iSolar*™ DL2

*iSolar*™ DL2 intelligent web enabled datalogger connects to VBus data terminals on one *iSolar*™ controller.
VBus input terminals: 1.
Ethernet connection: RJ45 socket.
Integrated SD slot: 1.
Ambient temperature: 32—100°F.
Input voltage: 5 VDC ±5%.
Power voltage adapter: 100—240 V.
Max. current: 350 mA.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **257**201A | Datalogger | 2.0 | **1,126.00** |

### 257 *iSolar*™ DL3

*iSolar*™ DL3 intelligent web enabled datalogger / BACnet IP gateway connects to VBus data terminals on six *iSolar*™ controllers.
VBus input terminals: 6.
Pt1000 sensor inputs: 3.
Current loop input: 4—20 mA.
Ambient temperature: 32—100°F.
Input voltage: 12 VDC ±5%.
Power voltage adapter: 100—240 V.
Max. current: 1 A.
Ethernet connection: RJ45 socket.
USB connection: 1.
Integrated SD card: 1 slot.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **257**204A | Datalogger with BACnet IP | 2.0 | **2,015.00** |

## DIFFERENTIAL TEMPERATURE CONTROLLERS

# 257
# *iSolar*™ BX

Inputs: (5) Pt1000 temperature sensors, 2 analog Grundfos Direct Sensors™, impulse flow meter.
Outputs: (3) triac and (1) standard relays.
Triac relays capacities: 1A / 115 V.
Standard relay capacity: 2A / 115 V.
Power supply: 100—240 V - 50/60 Hz.
Data interface: V-Bus, SD card slot.
ΔT adjustment range: 2—40ºFΔ.
Min. temperature differential 2ºFΔ.
Hysteresis: 2ºFΔ, ± 1ºFΔ.
Max. tank temperature range: 35—205°F.
Max. collector temperature range: 210—375°F.
Emergency shut down of the collector: 230—395°F.
Min. collector temperature range: 50—195ºF.
Antifreeze temperature option: 15—50°F.
kWh (BTU) flow input: 0—26 gpm.

Tested and Approved by TÜV Rheinland as an approved U.S. Nationally Recognized Testing Laboratory (NRTL)
Exceeds or is equivalent to:
UL 60730-1A
CAN/CSA E60730-1

| Code | Description | Lbs | USD |
|---|---|---|---|
| **257**270A | iSolar™ BX | 3.0 | **1,092.00** |

### Function

The *iSolar*™ BX is a multi-functional temperature differential controller with add-on system functions for use in a wide variety of solar thermal heating applications. *iSolar*™ BX is equipped with four relay outputs; three triac pump speed control relays and one standard relay. The controller is equipped with five Pt1000 sensor inputs, two analog Grundfos sensor inputs, and one impulse flow meter input. Twenty-six system configuration options are predefined for control of a standard solar water heating system, drainback systems, supplemental space heating, multiple storage tanks, heat dump and storage tank booster heating. Unique features include built-in SD memory card slot, built-in clock and calendar, integrated energy heat measurement inputs, parallel relay operation and drain back control.

# NA100

18" SJ round cord, stripped and pre-tinned for connecting pump or valve to *iSolar* controller.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA100**92 | 18" SJ round cord | 0.3 | **10.10** |

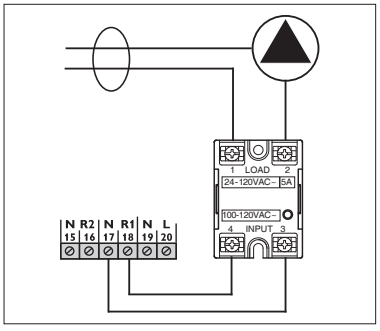
# NA150

Cable for connecting Grundfos VFS & RPS with molded plug to BX controller with molded plug.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA150**28 | VFS & RPS molded plug cable, 10' | 0.2 | **28.10** |

# NA150

SSRs (Solid State Relays) is an isolation speed control relay which will speed control up to a 5 Amp solar pump based on the output speed control voltage of the iSolar solar controllers.




# NA150

Steel electrical mounting box with cover fits *iSolar*™ BX controller.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA150**27 | Electrical box | 5.0 | **89.60** |

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA150**12 | 120 VAC / 5A | 0.1 | **179.00** |

# FLOW METERS

RPS Grundfos analog pressure/ temperature sensor. Requires NA15028 cable.
Pressure measuring range: 0—150 psi.
Temperature measurement range: 32—210ºF.
Max. fluid temperature: 250ºF
Maximum glycol: 50%.
Connection: ½" male NPT.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA150**10 | RPS 0—10, 0—150 psi | 0.3 | **212.00** |

VFS Grundfos analog flow / temperature sensor. Requires NA15028 cable.
Temperature measurement range: 32—210ºF.
Max. fluid temperature: 250ºF.
Flow measurement accuracy: 1.5%.
Flow response time: < 1 sec.
Brass or stainless in-line body.
Maximum glycol: 50%.
Connection: 1" male union thread.
Flow measurement accuracy: 1.5%
Flow response time: <1 sec.
Select fittings below or in Section 8.

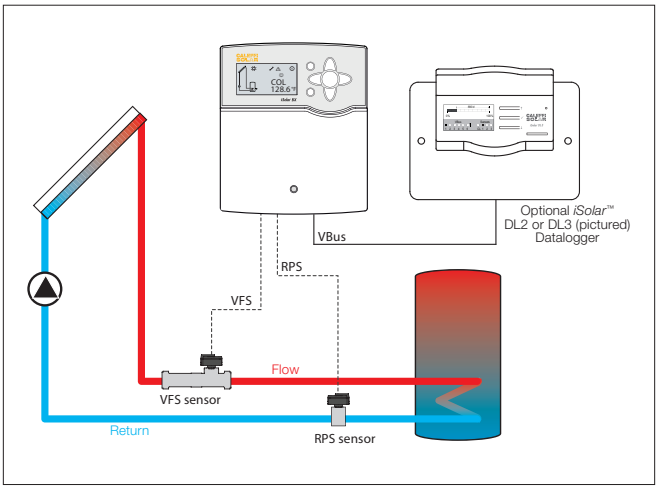
| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA150**15 | VFS 1-12, ¼—3 gpm | 0.6 | **357.00** |
| **NA150**16 | VFS 2-40, ½—10 gpm | 0.6 | **393.00** |
| **NA150**17 | VFS 5-100, 1½—15 gpm | 1.6 | **683.00** |

Two union nuts, washers and tail pieces.
Low-lead brass.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA122**49 | ½" sweat with 1" union nuts | 0.2 | **39.40** |
| **NA122**59 | ¾" sweat with 1" union nuts | 0.2 | **47.30** |
| **NA122**69 | 1" sweat with 1" union nuts | 0.3 | **82.60** |

VFS Grundfos analog flow / temperature sensor. Requires NA15028 cable.
Temperature measurement range: 32—210ºF.
Max. fluid temperature: 250ºF.
Flow measurement accuracy: 1.5%
Flow response time: < 1 sec.
Composite in—line body.
Sweat unions included.
Maximum glycol: 50%.
Flow measurement accuracy: 1.5%.
Flow response time: <1 sec.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA150**18 | VFS 10-200, 2½—20 gpm, 1" sweat | 1.7 | **967.00** |
| **NA150**19 | VFS 20-400, 2½—50 gpm, 1¼" sweat | 1.9 | **1,450.00** |




Cable for connecting Grundfos VFS & RPS with molded plug to BX controller with molded plug.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA150**28 | VFS & RPS cable, 10' length | 0.2 | **28.10** |

## DIFFERENTIAL TEMPERATURE CONTROLLERS


# 257
# *iSolar*™ MX LTE

Inputs: (8) Pt1000 temperature sensors.
(1) V40 rotary impulse meter.
(1) CS10 irradiation sensor.
Outputs: (4) triac relays, (1) dry contact relay and (1) PWM / 0—10 V DC.
Triac relays capacities: 1A / 120 V.
Dry contact relay capacity: 2A / 24 V.
Power supply: 100—240 V - 50/60 Hz.
Data interface: V-Bus, SD card slot.
ΔT adjustment range: 2—40ºFΔ.
Min. temperature differential 2ºFΔ.
Hysteresis: 2ºFΔ, ± 1ºFΔ.
Max. tank temperature range: 35—205°F.
Max. collector temperature range: 210—375°F.
Emergency shut down of the collector: 230—395°F.
Min. collector temperature range: 50—195ºF.
Antifreeze temperature option: 15—50°F.
kWh (BTU) flow input: 0—99 gpm.
Note: Do not attach Grundfos analog sensors.

### Function

The i*Solar*™ MX LTE is a multi-functional temperature differential controller with add-on system functions for use in a wide variety of solar thermal heating applications. *iSolar*™ MX LTE is equipped with four triac pump speed control relays and one dry contact relay. The controller is equipped with eight Pt1000 sensor inputs, one V40 impulse flow meter input and one CS10 irradiation sensor input. Several system configuration options are predefined for control of a standard solar water heating system, drainback systems, supplemental space heating, multiple storage tanks, heat dump and storage tank booster heating. Unique features include built-in SD memory card slot, built-in clock and calendar, integrated energy heat measurement inputs, parallel relay operation and drain back control.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **257**280A LTE | iSolar™ MX LTE | 3.0 | **1,343.00** |

# NA150

Steel electrical mounting box with cover fits *iSolar*™ MX LTE controller.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA150**27 | Electrical box | 5.0 | **89.60** |

# FAP13

The FAP13 is used for measuring the outdoor temperature with a PT1000 (platinum measuring element), 1000 Ohm. The FAP13 is placed in a weather resistant housing designed for mounting outdoors.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA150**23 | Outdoor air temperature sensor | 0.3 | **168.00** |


# CS10

The solar cell is used for measuring the irradiation intensity. The short-circuit current rises with increasing irradiation intensity. Depending on the controller, the sensor can also be used for additional indirect or direct control. The connecting two wire cable can be extended to 300 ft.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA257**102 | Solar irradiation sensor | 0.1 | **280.00** |

# NA100

18" SJ round cord, stripped and pre-tinned for connecting pump or valve to *iSolar* controller.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA100**92 | 18" SJ round cord | 0.3 | **10.10** |

# FLOW METERS

## V40

Single jet rotary pulse flow meter measures liquid flow for energy heat metering production or consumption. Accurate to International Standards OIML R75, EN1434 and MID.
Brass body.
Sweat connections included.
Working temperature range: -40°—210°F.
Max. fluid temperature: 265°F.
Max. working pressure: 235 psi.
Maximum glycol: 50%.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA797**01 | ¼—10 gpm, ¾" sweat | 3.0 | **730.00** |

## V40

Multi-jet rotary pulse flow meter measures liquid flow for energy heat metering production or consumption. Accurate to International Standards OIML R75, EN1434 and MID.
Brass body.
Sweat connections included.
Working temperature range: -40°—210°F.
Max. fluid temperature: 265°F.
Max. working pressure: 235 psi.
Maximum glycol: 50%.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA797**02 | ½—15 gpm, 1" sweat | 5.0 | **1,289.00** |
| **NA797**03 | ½—25 gpm, 1¼" sweat | 8.0 | **1,514.00** |
| **NA797**04 | 1—45 gpm, 1½" sweat | 14 | **1,849.00** |
| **NA797**05 | 1½—65 gpm, 2" sweat | 17 | **2,665.00** |

RPD Grundfos digital pressure/ temperature sensor for use with iSolar™ MX LTE controller.
Requires NA15028 cable.
Pressure measuring range: 0—150 psi.
Temperature measurement range: 32—210°F.
Max. fluid temperature: 250°F.
Maximum glycol: 50%.
Connection: ½" male NPT.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA150**10D | RPD 0—10, 0—150 psi | 0.3 | **213.00** |

VFD Grundfos digital flow / temperature sensor for use with iSolar™ MX LTE controller.
Requires NA15028 cable.
Temperature measurement range: 32—210°F.
Max. fluid temperature: 250°F
Flow measurement accuracy: 1.5%
Flow response time: < 1 sec.
Brass or stainless in-line body.
Maximum glycol: 50%.
Connection: 1" male union thread.
Select union fittings on the right.
Flow measurement accuracy: 1.5%.
Flow response time: <1 sec.
Select fitting below or in Section 8.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA150**15D | VFD 1-12, ¼—3 gpm | 0.6 | **405.00** |
| **NA150**16D | VFD 2-40, ½—10 gpm | 0.6 | **426.00** |

Two union nuts, washers and tail pieces.
Low-lead brass.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA122**49 | ½" sweat with 1" union nuts | 0.2 | **39.40** |
| **NA122**59 | ¾" sweat with 1" union nuts | 0.2 | **47.30** |
| **NA122**69 | 1" sweat with 1" union nuts | 0.3 | **82.60** |

# REPLACEMENT TEMPERATURE SENSORS FOR ISOLAR™

FKP6 collector Pt1000 sensor with 5' black UV cable, Platinum RTD type, 1000 Ohm, -58—355°F, ¼" Ø O.D.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **257**205 | Black collector sensor | 0.2 | **66.10** |

FRP6 storage tank Pt1000 sensor with 8' gray cable, Platinum RTD type, 1000 Ohm, 15—200°F, ¼" Ø O.D.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **257**206 | Gray storage sensor | 0.2 | **65.70** |

FKP9 collector screw mount Pt1000 sensor with 5' black cable, Platinum RTD type, 1000 Ohm, -58—355°F, ¼" Ø O.D.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **257**207 | Black collector sensor | 0.2 | **99.70** |

Sensor well, ¼" Ø I.D. fits Pt1000 temperature sensors 257205 and 257206.
Insertion length: 1¾".

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA100**90 | Sensor well, ½" NPT male thread | 0.5 | **38.80** |
| **NA150**29 | Sensor well, ¾" NPT male thread | 0.5 | **59.40** |

## STAINLESS STEEL PIPING

# NA35 SolarFlex™

SolarFlex™ stainless steel piping with EPDM insulation. Used to connect solar collector with storage tank. Integrated sensor cable saves time and reduces cost. Packaged in a 50 foot continuous coil ensures a leak-free installation.
Max. working pressure: 150 psi.
Max. fluid temperature: 350ºF.
Min. surface temperature: -60ºF.
Min. bend radius: 5".
Flammability: Class VO.
Flame spread/smoke density: 25/50.
Agency approvals: ASTM D 635
ASTM C 177
Includes fitting kit.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA352**0-15 | ½" Pipe, 50' coil | 28 | **1,679.00** |
| **NA354**0-15 | ¾" Pipe, 50' coil | 33 | **1,902.00** |
| **NA356**0-15 | 1" Pipe, 50' coil | 40 | **2,574.00** |
| **NA354**0-50 | ¾" Pipe, 165' spool* | 115 | **5,268.00** |

* without fitting kit, order NA12103 below.

# NA121

SolarFlex™ extra connection kits.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA121**02 | ½" SolarFlex™, ¾" nuts and washers | 1.0 | **42.50** |
| **NA121**03 | ¾" SolarFlex™, 1" nuts and washers | 1.1 | **57.30** |
| **NA121**04 | 1" SolarFlex™, 1¼" nuts and washers | 1.3 | **91.80** |

# NA121

SolarFlex™ pipe hangers with hardware. (4 per pack)

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA121**32 | ½" SolarFlex™ hangers | 1.2 | **51.40** |
| **NA121**33 | ¾" SolarFlex™ hangers | 1.3 | **54.10** |
| **NA121**34 | 1" SolarFlex™ hangers | 1.0 | **60.90** |

# NA350

EPDM foam UV resistant insulating tape to wrap fitting connections.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA350**01 | 2" x 1/8" x 25' roll | 1.3 | **99.20** |

Black film UV resistant film tape to wrap foam tape.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA350**02 | 2" x 30' roll | 0.5 | **21.10** |

4' lengths black braid sleeve (UV & vermin resistant) (2) to protect outdoors piping with black film tape.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA350**07 | 4' Sleeve with 2" x 30' film tape | 1.0 | **84.20** |

# NA350

SolarFlex™ sliding piston flattening tool. Three sizes of jaws to match SolarFlex™ pipe sizes.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA350**03 | Sliding piston tool | 5.0 | **336.00** |
| **NA350**04 | ½" Fixed jaw | 3.0 | **632.00** |
| **NA350**05 | ¾" Fixed jaw | 3.0 | **632.00** |
| **NA350**06 | 1" Fixed jaw | 3.0 | **632.00** |


3/4" SolarFlex connection kit. Includes 2 sets nut/tailpiece/washer; order 1 kit/array.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA10514** | 3/4" SolarFlex connection kit | 1.3 | **123.00** |

## ½" FLEX FITTINGS WITH ¾" THREADS

Double nipple.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA121**22 | ¾" male x ¾" male | 0.3 | **29.10** |

Double nipple.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA121**72 | ¾" NPT x ¾" NPT | 0.3 | **29.10** |

Union nut.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **R41298/C** | ¾" union nut | 0.1 | **4.90** |

C-clip.
(Priced each, sold in package of 10 each)

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA121**12 | ½" flex "C" clip | 0.1 | **4.00** |

Union washer.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **R50058** | ¾" union washer | 0.1 | **1.90** |

Sweat tail piece.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA100**01 | ½" sweat fits ¾" union nut | 0.3 | **13.40** |

Sweat adapter.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA101**18 | ¾" sweat x ¾" male thread | 0.3 | **29.10** |

Double nipple with O-ring.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA121**52 | ¾" male w/ O-ring x ¾" male thread | 0.3 | **31.10** |

NPT tail piece.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **F3186**8 | ½" NPT fits ¾" union nut | 0.1 | **16.10** |

Compression adaptor.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **254**452 | 22mm comp. w/ ¾" male thread | 0.2 | **33.90** |

## ¾" FLEX FITTINGS WITH 1" THREADS

Double nipple.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA121**23 | 1" x 1" male thread | 0.4 | **36.30** |

Double nipple.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA121**73 | 1" NPT x 1" NPT | 0.4 | **36.30** |

Union nut. Low-lead brass.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **F61008** | 1" brass nut | 0.2 | **6.10** |
| **F61008/C** | 1" chrome-plated nut | 0.2 | **7.20** |

C-clip.
(Priced each, sold in package of 10 each)

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA121**13 | ¾" flex "C" clip | 0.1 | **6.10** |

Union washer.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **F50055** | 1" union washer | 0.1 | **2.20** |

## ¾" FLEX FITTINGS WITH 1" THREADS

Union washer.
High temperature silicone rubber.
Working temperature: -40—350°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA103**02 | 1" union washer high temp silicone | 0.1 | **3.40** |

Sweat tail piece.
Low lead brass.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA100**02 | ½" sweat fits 1" union nut | 0.3 | **11.30** |

Sweat tail piece.
Low lead brass.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA100**03 | ¾" sweat fits 1" union nut | 0.4 | **15.30** |

NPT tail piece.
Low lead brass.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **319**01A | ¾" NPT fits 1" union nut | 0.4 | **19.40** |

Sweat tail piece with nut.
Low lead brass.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **598**34A | 1" sweat w/ 1" union nut | 0.5 | **39.10** |

Bushing adaptor.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA100**60 | ¾" NPT female w/ 1" male thread | 0.3 | **29.10** |

Sweat adaptor.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA100**62 | 1" sweat adaptor w/ 1" male thd. | 0.2 | **31.40** |

Nipple adaptor.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA100**64 | 1" NPT w/ 1" male thread | 0.2 | **32.70** |

Nipple adaptor with O-ring.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA121**62 | ¾" male w/ O-ring x 1" male thread | 0.2 | **33.70** |

Bushing.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA100**89 | ¾" female thread x 1" male thread | 0.1 | **24.20** |

Sweat adaptor.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA100**61 | ¾" sweat adaptor w/ 1 " male thread | 0.2 | **30.40** |

# 1" FLEX FITTINGS WITH 1¼" THREADS

Double nipple.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA121**24 | 1¼" x 1¼" thread | 0.4 | **58.20** |

Union nut.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **R31495** | 1¼" union nut | 0.2 | **9.70** |

C-clip.
(Priced each, sold in package of 5 each)

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA121**14 | 1' flex "C" clip | 0.1 | **9.70** |

Union washer.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **R50056** | 1¼" union washer | 0.1 | **3.50** |

Gasket-black.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **R67032** | 1¼" high temp silicon | 0.1 | **3.00** |

Sweat tail piece.
Low lead brass.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA101**14 | ¾" sweat fits 1¼" union nut | 0.2 | **30.80** |

Sweat tail piece.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA100**42 | 1" sweat fits 1¼" union nut | 0.3 | **31.40** |

NPT tail piece.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA101**16 | 1" NPT male fits 1¼" union nut | 0.3 | **47.70** |

Sweat adaptor.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA101**19 | 1" sweat adapter x 1¼" union thread | 0.4 | **40.00** |

Bushing.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA100**87 | 1" female x 1 ¼" male bushing | 0.4 | **29.30** |

Bushing.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **612**15A | 1" NPT female x 1¼" male bushing | 0.8 | **29.10** |

Nipple adaptor.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **R31706** | 1" male x 1¼" male nipple | 0.3 | **36.30** |

## MANIFOLDS

### 110 GeoCal™

GeoCal™ left hand distribution manifold assemblies with temperature gauges, air vents and drain valves.
1¼" F NPT brass inlet/outlet ports.
Max. working pressure: 90 psi.
Max. system test pressure: 150 psi.
Working temperature range for: water, glycol & saline solutions: 15—140ºF.
Ethanol & methanol solutions: 15—90ºF.
Ambient temp. range: -5—140ºF.
Max. flow rate: 24 gpm total all circuits.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **110**7B5LA | Left side connections, 2 circuits | 16 | **1,285.00** |
| **110**7C5LA | Left side connections, 3 circuits | 18 | **1,418.00** |
| **110**7D5LA | Left side connections, 4 circuits | 20 | **1,561.00** |
| **110**7E5LA | Left side connections, 5 circuits | 22 | **1,693.00** |
| **110**7F5LA | Left side connections, 6 circuits | 23 | **1,826.00** |
| **110**7G5LA | Left side connections, 7 circuits | 25 | **1,989.00** |
| **110**7H5LA | Left side connections, 8 circuits | 26 | **2,122.00** |

GeoCal™ right hand distribution manifold assemblies with temperature gauges, air vents and drain valves.
1¼" F NPT brass inlet/outlet ports.
Max. working pressure: 90 psi.
Max. system test pressure: 150 psi.
Working temperature range for: water, glycol & saline solutions: 15—140ºF.
Ethanol & methanol solutions: 15—90ºF.
Ambient temp. range: -5—140ºF.
Max. flow rate: 24 gpm total all circuits.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **110**7B5RA | Right side connections, 2 circuits | 17 | **1,285.00** |
| **110**7C5RA | Right side connections, 3 circuits | 18 | **1,418.00** |
| **110**7D5RA | Right side connections, 4 circuits | 20 | **1,561.00** |
| **110**7E5RA | Right side connections, 5 circuits | 22 | **1,693.00** |
| **110**7F5RA | Right side connections, 6 circuits | 23 | **1,826.00** |
| **110**7G5RA | Right side connections, 7 circuits | 25 | **1,989.00** |
| **110**7H5RA | Right side connections, 8 circuits | 26 | **2,122.00** |

## FITTINGS

### 110

GeoCal™ manifold outlet fitting, includes union nut and gasket.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **110**050A | ¾" male NPT tail piece | 0.4 | **41.80** |
| **110**060A | 1" male NPT tail piece | 0.6 | **45.90** |

### 861

GeoGrip™ polyethylene pipe fittings.
For joining polyethylene pipe to 132 series QuickSetter™ or NA139 ball valves.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **861**527A CST | ¾" M NPT x ¾" PE pipe compression | 0.2 | **25.50** |
| **861**634A CST | 1" M NPT x 1" PE pipe compression | 0.6 | **40.80** |
| **NA102**88 | ¾" M NPT x 1" PE pipe compression | 0.2 | **56.80** |

### NA39

Brass ball valves.
Brass body.
Max. working pressure: 150 psi.
Max. working temperature: 365°F.

| Code | Description | Cv | Lbs | USD |
|---|---|---|---|---|
| **NA39**589 | ¾" NPT female w/T-handle | 35 | 0.6 | **42.60** |
| **NA39**753 | 1" NPT female w/Lever | 50 | 0.7 | **58.10** |
| **NA39**588 | 1¼" NPT female w/Lever | 104 | 1.0 | **96.80** |

### 111

Insulation sleeve for item valve and fitting on each end.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **111**001 | Insulation sleeve fits NA39589 | 0.1 | **52.20** |

## GEOTHERMAL ACCESSORIES

### 132

QuickSetter™ balancing valve with flow meter. Direct reading of flow rate.
Brass valve body and flow meter.
Graduated scale flow meter with magnetic movement flow rate indicator.
Max. working pressure: 150 psi.
Temperature range: 14—230°F.
Max. percentage of glycol: 50%.

| Code | Description | Flow scale (gpm) | Lbs | USD |
|---|---|---|---|---|
| **132**552A | ¾" NPT | 2.0—7.0 | 1.8 | **299.00** |
| **132**662A | 1" NPT | 3.0—10.0 | 2.4 | **349.00** |
| **132**772A | 1¼" NPT | 5.0—19.0 | 2.8 | **463.00** |
| **132**882A | 1½" NPT | 8.0—32.0 | 3.4 | **549.00** |
| **132**992A | 2" NPT | 12.0—50.0 | 4.4 | **673.00** |
| **F19346** | Replacement by-pass valve stem* | | 0.1 | **56.20** |

* With operating ring

### 112

QuickSetter™ Insulation sleeve for valve and fitting on each end.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **112**001 | Insulation sleeve fits 132552A | 0.1 | **55.40** |
| **112**003 | Insulation sleeve fits 132662A | 0.1 | **57.50** |

### NA102

Double Nipple fits 1 ¼" QuickSetter™ or Ball Valve for GeoCal™ main inlet.
Connecting 110 Series Manifold to 132772A valve or NA39588 ball valve.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA102**63 | 1¼" NPT x 1¼" NPT, brass | 0.4 | **28.80** |

## PE PIPE CONNECTIONS

### NA102

GeoGrip™ manifold outlet connector for joining manifold to polyethylene pipe. (Includes union nut and gasket)

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA102**46 | ¾" PE pipe compression | 0.8 | **55.10** |
| **NA102**47 | 1" PE pipe compression | 1.0 | **68.30** |

### 863

GeoGrip™ brass sleeve coupling for joining two polyethylene pipes.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **863**027 | ¾" x ¾" PE pipe compression | 0.8 | **30.60** |
| **863**034 | 1" PE pipe compression | 1.0 | **44.90** |

### NA102

Vent cap adapter to connect discharge tube. (Ethanol and methanol systems).
Fits onto air vent.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA102**04 | ¼" NPT male x female | 0.1 | **29.10** |

## REPLACEMENT PARTS

### 5020

Automatic air vents fits manifolds.
Brass body.
Hygroscopic safety air vent cap.
Max. working pressure: 150 psi.
Max discharge pressure: 60 psi.
Max. working temperature: 250°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **5020**43 CST | ½" male thread | 0.5 | **34.00** |

### 687

Manifold temperature gauge with drywell.
-20—120ºF.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **687**000 | 2½" diameter | 0.2 | **28.30** |

Replacement drain valve fits GeoCal™ 110 series manifolds.
Brass body.
¾" garden hose thread with cap.
Max. working pressure: 150 psi.
Max. working temperature: 250°F.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **538**402 FD | ½" NPT x ¾" GHT | 0.3 | **20.70** |

## BOILER PROTECTION HIGH-FLOW THERMOSTATIC MIXING VALVE

### 280 ThermoProtec™ NPT

Boiler protection high-flow thermostatic mixing valve.
Changeable thermostatic sensor cartridge.
Brass body and lower plug.
Max. working pressure: 150 psi.
Working temperature range: 40—212°F.
Thermostatic sensor cartridge:
130°F & 140°F Tset standard selections, see below.
115°F, 160°F Tset optional (field replaceable).
Sensor cartridge accuracy: ±4°F.
By-pass from boiler complete closing temperature: Tset +18°F (ex. 130°+18°=148°F).

| Code | Description | Cv | Lbs | USD |
|---|---|---|---|---|
| **280**165A | 1" NPT 130°F Tset | 10 | 3.6 | **450.00** |
| **280**166A | 1" NPT 140°F Tset | 10 | 3.6 | **450.00** |
| **280**175A | 1¼" NPT 130°F Tset | 14 | 4.5 | **517.00** |
| **280**176A | 1¼" NPT 140°F Tset | 14 | 4.5 | **517.00** |

### 280 ThermoProtec™ Sweat

Boiler protection high-flow thermostatic mixing valve.
Changeable thermostatic sensor cartridge.
Brass body and lower plug.
Max. working pressure: 150 psi.
Working temperature range: 40—212°F.
Thermostatic sensor cartridge:
130°F & 140°F Tset standard selections, see below.
115°F, 160°F Tset optional (field replaceable).
Sensor cartridge accuracy: ±4°F.
By-pass from boiler complete closing temperature: Tset +18°F (ex. 130°+18°=148°F).

| Code | Description | Cv | Lbs | USD |
|---|---|---|---|---|
| **280**965A | 1" sweat 130°F Tset | 10 | 3.6 | **421.00** |
| **280**966A | 1" sweat 140°F Tset | 10 | 3.6 | **421.00** |
| **280**975A | 1¼" sweat 130°F Tset | 14 | 4.5 | **496.00** |
| **280**976A | 1¼" sweat 140°F Tset | 14 | 4.5 | **496.00** |

## BOILER PROTECTION RECIRCULATION AND DISTRIBUTION UNIT

### 281 ThermoBloc™ NPT

ThermoBloc™ boiler protection recirculation and distribution unit.
Suitable fluids: water, up to 50% glycol solutions.
Max. working pressure: 150 psi.
Working temperature range: 40—210°F.
Maximum pumping capacity: 10 gpm.
Temperature gauge scale: 30—250°F.
Thermostatic sensor:
130°F & 140°F Tset standard selections, see below.
115°F, 160°F Tset optional models*.
Sensor cartridge accuracy: ±4°F.
By-pass from boiler complete closing temperature: Tset +18°F (ex. 130°+18°=148°F).
* Consult factory

| Code | Description | Lbs | USD |
|---|---|---|---|
| **281**165A | 1" NPT 130°F Tset | 11 | **1,386.00** |
| **281**166A | 1" NPT 140°F Tset | 11 | **1,386.00** |
| **281**175A | 1¼" NPT 130°F Tset | 11 | **1,593.00** |
| **281**176A | 1¼" NPT 140°F Tset | 11 | **1,593.00** |

### 281 ThermoBloc™ Sweat

ThermoBloc™ boiler protection recirculation and distribution unit.
Suitable fluids: water, up to 50% glycol solutions.
Max. working pressure: 150 psi.
Working temperature range: 40—210°F.
Maximum pumping capacity: 10 gpm.
Temperature gauge scale: 30—250°F.
Thermostatic sensor:
130°F & 140°F Tset standard selections, see below.
115°F, 160°F Tset optional models*.
Sensor cartridge accuracy: ±4°F.
By-pass from boiler complete closing temperature: Tset +18°F (ex. 130°+18°=148°F).
* Consult factory

| Code | Description | Lbs | USD |
|---|---|---|---|
| **281**965A | 1" sweat 130°F Tset | 11 | **1,295.00** |
| **281**966A | 1" sweat 140°F Tset | 11 | **1,295.00** |
| **281**975A | 1¼" sweat 130°F Tset | 11 | **1,524.00** |
| **281**976A | 1¼" sweat 140°F Tset | 11 | **1,524.00** |
| **F19379** | Replacement Pump | 5 | **549.00** |

## ACCESSORIES

### F296

Replacement thermostatic sensor cartridges.
Sensor cartridge accuracy: ±4°F.
By-pass from boiler complete closing temperature: Tset +18°F (130°+18°=148°F).

Fits 280 and 281 series boiler protection valves. Easy replacement to change the 280 valve set temperature without removing the valve body from the piping.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **F296**33 | 115°F Tset | 0.2 | **42.60** |
| **F296**34 | 130°F Tset | 0.2 | **42.60** |
| **F296**35 | 140°F Tset | 0.2 | **42.60** |
| **F296**36 | 160°F Tset | 0.2 | **42.60** |

Selection note: thermostatic sensor cartridge will completely close at Tset value +18°F. Example: (130°F Tset +18°F=148°F completely closed) ±4°F.

## ACCESSORIES

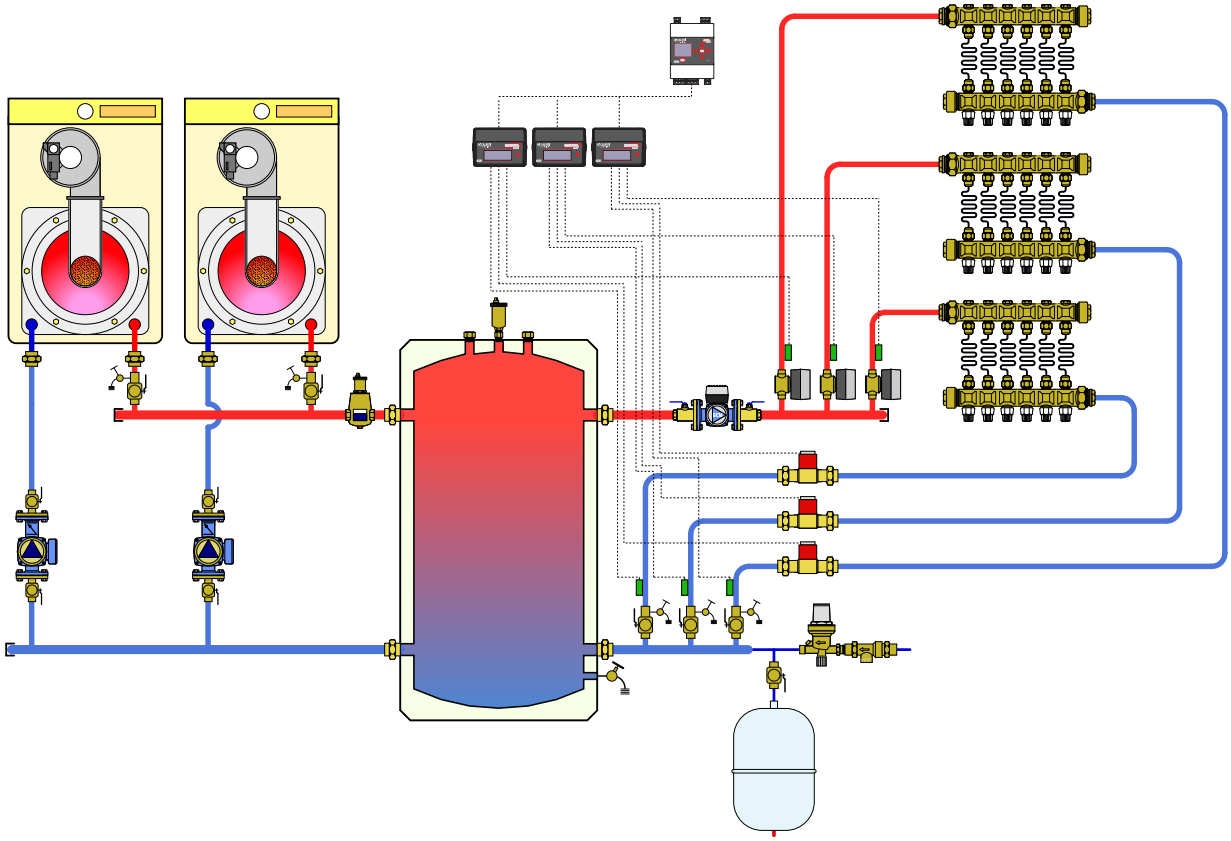
### F295

Dual scale temperature gauge 280 and 281 series boiler protection valves.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **F295**71 | 32—250°F | 0.2 | **36.20** |

# HEAT METERS

This diagram is an example



## Heat meters

## HEAT METERS

2nd QTR

# 7504
# CONTECA™ Heat meter

CONTECA™ is a direct heat meter designed to measure instantaneous and recorded history of thermal energy usage in residential and commercial buildings.

**Micro processor:**
Power supply: 24 VAC, 50/60 Hz, 1W.
Data transmission: 2-wire RS485; selectable Modbus or M-bus (for use with Datalogger).
Ambient temperature: 40 — 113°F (4— 45°C)
Environmental rating: NEMA 3S (IP 54).
Pulse inputs: Class 1B per EN 1434-2.

**Temperature sensors:**
Cable length: 6.3 ft. (1.9 m).
Sensor type: NTC matched.
Temperature range: heating mode: 50—195°F (10— 90°C).
cooling mode: 35— 77°F (2— 25°C).
Temperature sensitivity: < 0.1°F.

**Flow meters:**
Body material: Brass.
Body threads: ISO 228 male straight.
Piping connections: Dual unions, tailpieces NPT, sweat, press.
Nominal pressure: 150 psi (PN 10).

CE

| Code | Description | Lbs | USD |
|---|---|---|---|
| **7504**49A | Heat Meter, 0.25 to 10 GPM, 1/2" sweat | 6.2 | **1,580.00** |
| **7504**40A | Heat Meter, 0.25 to 10 GPM, 1/2" MNPT | 6.2 | **1,640.00** |
| **7504**46A | Heat Meter, 0.25 to 10 GPM, 1/2" press | 6.2 | **1,720.00** |
| **7504**59A | Heat Meter, 0.25 to 10 GPM, 3/4" sweat | 7.1 | **1,600.00** |
| **7504**50A | Heat Meter, 0.25 to 10 GPM, 3/4" MNPT | 7.1 | **1,660.00** |
| **7504**56A | Heat Meter, 0.25 to 10 GPM, 3/4" press | 7.1 | **1,740.00** |
| **7504**69A | Heat Meter, 0.25 to 10 GPM, 1" sweat | 7.9 | **1,680.00** |
| **7504**60A | Heat Meter, 0.25 to 10 GPM, 1" MNPT | 7.9 | **1,740.00** |
| **7504**66A | Heat Meter, 0.25 to 10 GPM, 1" press | 7.9 | **1,820.00** |
| **7504**05A | Heat Meter, 0.25 to 10 GPM, no fittings | 6 | **1,500.00** |
| **7504**63A | Heat Meter, 0.3 to 15 GPM, 1" FNPT | 11.5 | **2,340.00** |
| **7504**73A | Heat Meter, 0.5 to 25 GPM, 1-1/4" FNPT | 12.1 | **2,500.00** |
| **7504**83A | Heat Meter, 1 to 45 GPM, 1-1/2" FNPT | 18.7 | **2,900.00** |

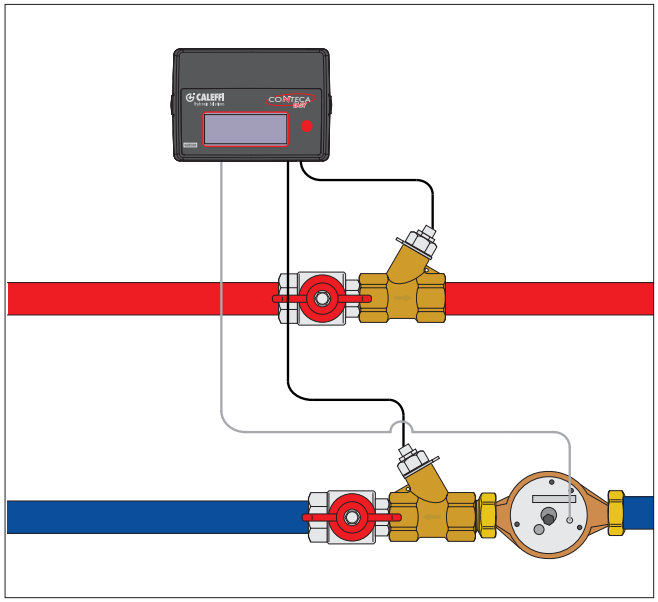
**Function**

The CONTECA™ meter features an 8-digit liquid crystal display that enables easy reading of BTU consumed as well as a range of technical data indicating equipment operating status and data logging.

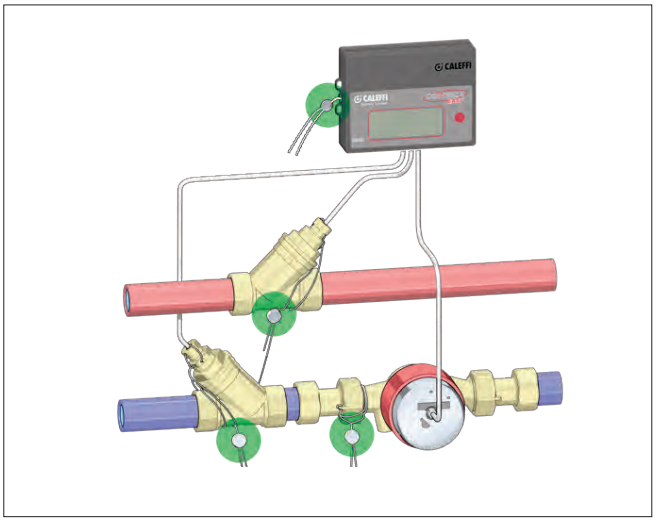
Each CONTECA™ includes an electronic calculator/user interface, two temperature sensors, fittings included. The flow meter comes with the CONTECA™ meter kit. In addition to the two temperature inputs and flow meter input, 4 additional pulse inputs, for optional equipment monitoring and data logging. The CONTECA™ is easy to install and commission, and complies with ASTM E44.25 Heat Metering and European directive 2014/32/UE EN 1434 (MI 004).

The meter has integral RS485 Modbus protocol 2-wire communication (default) for remote access and configuration when BAS is Modbus. The RS485 protocol must be changed to M-bus when using the Datalogger. Up to 250 CONTECA™ meters can connect to one CONTECA® data logger.

**Standard installation**



**Lead seals (included with each kit) to prevent tampering**



# HEAT METERS

### Function

The CONTECA™ datalogger allows logging of BTU usage from CONTECA™ heat meters via Modbus communication. The integrated browser provides logged and instantaneous data, and report generation. The CONTECA™ datalogger can be set up locally via web interface by connecting a PC to one ethernet port with switch functionality. The SMART function allows the automatic detection of the heat meters connected to the network. Data can be obtained with the automatic report generation, making the system user friendly and reduces the number of operations to run.

2nd QTR

## 7504 CONTECA™ Datalogger

Power supply: 24 V (dc) ±10%, 24 V (ac) - 3 W.
2 Ethernet ports: ETH1 (PoE), ETH2.
Ambient temperature range: 32—122°F.
Mounting: on a 35 mm DIN rail (EN 60715).
Daily data logging: 10 years.
Reports: In XLS or CSV format.

CE

| Code | Description | Lbs | USD |
|---|---|---|---|
| **7504**50 | Conteca Datalogger | 2.0 | **3,520.00** |

NEW

Modbus-to-BACnet gateway.
Converts CONTECA™ controller Modbus (RS-485 serial) output communication to BACnet IP (Ethernet) communication.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA10520** | Modbus-to-BACnet gateway | 1.0 | **3,812.00** |

## V40 Replacement

Single jet rotary pulse flow meter measures liquid flow for energy heat metering production or consumption. Accurate to International Standards OIML R75, EN1434 and MID.
Brass body.
Sweat connections included.
Working temperature range: -40—210°F.
Max. fluid temperature: 265°F
Max. working pressure: 235 psi.
Maximum glycol: 50%.

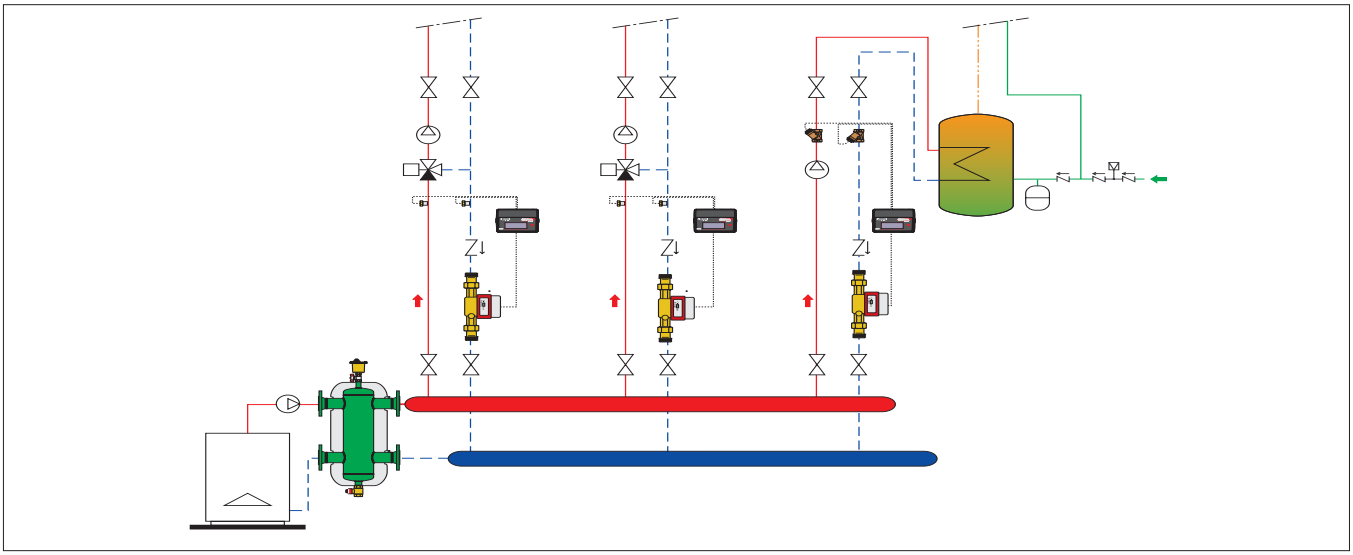
| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA797**01 | ¼—10 gpm, ¾" sweat | 3.0 | **730.00** |

## V40 Replacement

Multi-jet rotary pulse flow meter measures liquid flow for energy heat metering production or consumption.
Accurate to International Standards OIML R75, EN1434 and MID.
Brass body.
Sweat connections included.
Working temperature range: -40—210°F.
Max. fluid temperature: 265°F.
Max. working pressure: 235 psi.
Maximum glycol: 50%.

| Code | Description | Lbs | USD |
|---|---|---|---|
| **NA797**02 | 750406A, ½—15 gpm, 1" sweat | 5.0 | **1,289.00** |
| **NA797**03 | 750407A, ½—25 gpm, 1¼" sweat | 8.0 | **1,514.00** |
| **NA797**04 | 750408A, 1—45 gpm, 1½" sweat | 14 | **1,849.00** |

### Diagram



| Code | USD | Page(s) |
|---|---|---|
| 100001A | 22.30 | 71 |
| 110050A | 41.80 | 114 |
| 110060A | 45.90 | 114 |
| 1107B5LA | 1,285.00 | 114 |
| 1107B5RA | 1,285.00 | 114 |
| 1107C5LA | 1,418.00 | 114 |
| 1107C5RA | 1,418.00 | 114 |
| 1107D5LA | 1,561.00 | 114 |
| 1107D5RA | 1,561.00 | 114 |
| 1107E5LA | 1,693.00 | 114 |
| 1107E5RA | 1,693.00 | 114 |
| 1107F5LA | 1,826.00 | 114 |
| 1107F5RA | 1,826.00 | 114 |
| 1107G5LA | 1,989.00 | 114 |
| 1107G5RA | 1,989.00 | 114 |
| 1107H5LA | 2,122.00 | 114 |
| 1107H5RA | 2,122.00 | 114 |
| 111001 | 52.20 | 114 |
| 112001 | 55.40 | 115 |
| 112003 | 57.50 | 115 |
| 116000 | 90.00 | 69 |
| 116010 | 20.00 | 69 |
| 116140A | 296.00 | 68 |
| 116140AC | 356.00 | 68 |
| 116141A | 316.00 | 68 |
| 116141AC | 376.00 | 68 |
| 116150A | 318.00 | 68 |
| 116150AC | 388.00 | 68 |
| 116151A | 338.00 | 68 |
| 116151AC | 408.00 | 68 |
| 116240A | 386.00 | 68 |
| 116240AC | 446.00 | 68 |
| 116250A | 408.00 | 68 |
| 116250AC | 478.00 | 68 |
| 116340A | 406.00 | 68 |
| 116340AC | 466.00 | 68 |
| 116350A | 428.00 | 68 |
| 116350AC | 498.00 | 68 |
| 120141A 000 | 179.00 | 71 |
| 120149A 000 | 170.00 | 71 |
| 120151A 000 | 181.00 | 71 |
| 120159A 000 | 173.00 | 71 |
| 120161A 000 | 358.00 | 71 |
| 120169A 000 | 341.00 | 71 |
| 120171A 000 | 407.00 | 71 |
| 120179A 000 | 388.00 | 71 |
| 120341A 000 | 194.00 | 71 |
| 120349A 000 | 185.00 | 71 |
| 120351A 000 | 196.00 | 71 |
| 120359A 000 | 187.00 | 71 |
| 120361A 000 | 373.00 | 71 |
| 120369A 000 | 355.00 | 71 |
| 120371A 000 | 422.00 | 71 |
| 120379A 000 | 402.00 | 71 |
| 121141A | 197.00 | 70 |
| 121149A | 188.00 | 70 |
| 121151A | 200.00 | 70 |
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| 121161A | 407.00 | 70 |
| 121169A | 388.00 | 70 |
| 121171A | 457.00 | 70 |
| 121179A | 435.00 | 70 |
| 121341A | 212.00 | 70 |
| 121349A | 202.00 | 70 |
| 121351A | 215.00 | 70 |
| 121359A | 204.00 | 70 |
| 121361A | 422.00 | 70 |
| 121369A | 402.00 | 70 |
| 121371A | 471.00 | 70 |
| 121379A | 449.00 | 70 |
| 127144AFC | 148.00 | 66 |
| 127145AFC | 197.00 | 66 |
| 127148AFC | 197.00 | 66 |
| 127149AFC | 148.00 | 66 |
| 127154AFC | 162.00 | 66 |
| 127155AFC | 212.00 | 66 |
| 127156AFC | 185.00 | 66 |
| 127157AFC | 234.00 | 66 |
| 127158AFC | 212.00 | 66 |
| 127159AFC | 162.00 | 66 |
| 127164AFC | 198.00 | 66 |
| 127165AFC | 247.00 | 66 |
| 127168AFC | 247.00 | 66 |
| 127169AFC | 198.00 | 66 |
| 127341AF | 143.00 | 67 |
| 127346AF | 158.00 | 67 |
| 127347AF | 134.00 | 67 |
| 127349AF | 136.00 | 67 |
| 127351AF | 149.00 | 67 |
| 127356AF | 173.00 | 67 |
| 127357AF | 142.00 | 67 |
| 127359AF | 142.00 | 67 |
| 127361AF | 171.00 | 67 |
| 127366AF | 214.00 | 67 |
| 127367AF | 178.00 | 67 |
| 127369AF | 163.00 | 67 |
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| 130500A | 213.00 | 72 |
| 130600A | 256.00 | 72 |
| 130700A | 320.00 | 72 |
| 130800A | 400.00 | 72 |
| 130900A | 533.00 | 72 |
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| 132080A | 2,216.00 | 65 |
| 132100A | 3,384.00 | 65 |
| 132432A | 278.00 | 65 |
| 132434AFC | 351.00 | 64 |
| 132435AFC | 401.00 | 64 |
| 132438AFC | 401.00 | 64 |
| 132439AFC | 351.00 | 64 |
| 132454AFC | 351.00 | 64 |
| 132455AFC | 401.00 | 64 |
| 132458AFC | 401.00 | 64 |
| 132459AFC | 351.00 | 64 |
| 132534AFC | 365.00 | 64 |
| 132535AFC | 416.00 | 64 |
| 132536AFC | 388.00 | 64 |
| 132537AFC | 439.00 | 64 |
| 132538AFC | 416.00 | 64 |
| 132539AFC | 365.00 | 64 |
| 132552A | 299.00 | 65,115 |
| 132554AFC | 365.00 | 64 |
| 132555AFC | 416.00 | 64 |
| 132556AFC | 388.00 | 64 |
| 132557AFC | 439.00 | 64 |
| 132558AFC | 416.00 | 64 |
| 132559AFC | 365.00 | 64 |
| 132634AFC | 422.00 | 64 |
| 132635AFC | 473.00 | 64 |
| 132638AFC | 452.00 | 64 |
| 132639AFC | 402.00 | 64 |
| 132654AFC | 422.00 | 64 |
| 132655AFC | 473.00 | 64 |
| 132658AFC | 452.00 | 64 |
| 132659AFC | 402.00 | 64 |
| 132662A | 349.00 | 65,115 |
| 132772A | 463.00 | 65,115 |
| 132882A | 549.00 | 65,115 |
| 132992A | 673.00 | 65,115 |
| 142241A | 154.00 | 72 |
| 142251A | 164.00 | 72 |
| 142261A | 223.00 | 72 |
| 142271A | 318.00 | 72 |
| 142281A | 357.00 | 72 |
| 142291A | 457.00 | 72 |
| 165001 | 84.50 | 44 |
| 163600A | 1,797.00 | 44 |
| 163610A | 1,797.00 | 44 |
| 165600A | 1,514.00 | 44 |
| 165602A | 1,849.00 | 44 |
| 165610A | 1,514.00 | 44 |
| 165612A | 1,849.00 | 44 |
| 166600A | 1,849.00 | 45 |
| 166602A | 2,185.00 | 45 |
| 166610A | 1,849.00 | 45 |
| 166612A | 2,185.00 | 45 |
| 167600A | 2,185.00 | 45 |
| 167602A | 2,520.00 | 45 |
| 167610A | 2,185.00 | 45 |
| 167612A | 2,520.00 | 45 |
| 1725C1A | 1,764.00 | 46 |
| 1725C1A IN | 1,764.00 | 46 |
| 1725C1AHE | 2,117.00 | 46 |
| 1725C1AHE IN | 2,117.00 | 46 |
| 1725D1A | 1,878.00 | 46 |
| 1725D1A IN | 1,878.00 | 46 |
| 1725D1AHE | 2,231.00 | 46 |
| 1725D1AHE IN | 2,231.00 | 46 |
| 1725E1A | 1,991.00 | 46 |
| 1725E1A IN | 1,991.00 | 46 |
| 1725E1AHE | 2,344.00 | 46 |
| 1725E1AHE IN | 2,344.00 | 46 |
| 1725F1A | 2,105.00 | 46 |
| 1725F1A IN | 2,105.00 | 46 |
| 1725F1AHE | 2,458.00 | 46 |
| 1725F1AHE IN | 2,458.00 | 46 |
| 1725G1A | 2,220.00 | 46 |
| 1725G1A IN | 2,220.00 | 46 |
| 1725G1AHE | 2,571.00 | 46 |
| 1725G1AHE IN | 2,571.00 | 46 |
| 1725H1A | 2,333.00 | 46 |
| 1725H1A IN | 2,333.00 | 46 |
| 1725H1AHE | 2,685.00 | 46 |
| 1725H1AHE IN | 2,685.00 | 46 |
| 1725I1A | 2,447.00 | 46 |
| 1725I1A IN | 2,447.00 | 46 |
| 1725I1AHE | 2,799.00 | 46 |
| 1725I1AHE IN | 2,799.00 | 46 |
| 1725L1A | 2,561.00 | 46 |
| 1725L1A IN | 2,561.00 | 46 |
| 1725L1AHE | 2,913.00 | 46 |
| 1725L1AHE IN | 2,913.00 | 46 |
| 1725M1A | 2,673.00 | 46 |
| 1725M1A IN | 2,673.00 | 46 |
| 1725M1AHE | 3,026.00 | 46 |
| 1725M1AHE IN | 3,026.00 | 46 |
| 1725N1A | 2,788.00 | 46 |
| 1725N1A IN | 2,788.00 | 46 |
| 1725N1AHE | 3,141.00 | 46 |
| 1725N1AHE IN | 3,141.00 | 46 |
| 1725O1A | 2,901.00 | 46 |
| 1725O1A IN | 2,901.00 | 46 |
| 1725O1AHE | 3,254.00 | 46 |
| 1725O1AHE IN | 3,254.00 | 46 |
| 200000 | 81.20 | 30 |
| 201000 | 145.00 | 30 |
| 203502 | 275.00 | 30 |
| 209000 | 28.10 | 30 |
| 209001 | 11.20 | 30 |
| 220400A | 79.60 | 31 |
| 220500A | 87.30 | 31 |
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| 681555 | 13.90 | 34 |
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| F19153 | 388.00 | 47 |
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| Z125000 | 171.00 | 38 |
| Z126000 | 141.00 | 38 |
| Z131000 | 166.00 | 38 |
| Z133000 | 196.00 | 38 |
| Z136000 | 166.00 | 38 |
| Z141000 | 155.00 | 38 |
| Z143000 | 185.00 | 38 |
| Z144000 | 185.00 | 38 |
| Z145000 | 185.00 | 38 |
| Z146000 | 155.00 | 38 |
| Z151000 | 158.00 | 38 |
| Z161000 | 145.00 | 38 |
| Z200041 | 67.90 | 39 |
| Z200042 | 67.90 | 39 |
| Z200043 | 67.90 | 39 |
| Z200053 | 87.40 | 39 |
| Z200411 | 67.90 | 39 |
| Z200412 | 67.90 | 39 |
| Z200413 | 67.90 | 39 |
| Z200431 | 62.20 | 39 |
| Z200432 | 62.20 | 39 |
| Z200512 | 93.10 | 39 |
| Z200513 | 93.10 | 39 |
| Z200515 | 93.10 | 39 |
| Z200517 | 93.10 | 39 |
| Z200532 | 82.00 | 39 |
| Z200535 | 82.00 | 39 |
| Z200537 | 82.00 | 39 |
| Z200617 | 147.00 | 39 |
| Z200635 | 139.00 | 39 |
| Z200637 | 139.00 | 39 |
| Z200683 | 93.10 | 39 |
| Z200687 | 93.10 | 39 |
| Z200737 | 186.00 | 39 |
| Z207411 | 93.00 | 39 |
| Z207433 | 87.40 | 39 |
| Z207533* | 107.00 | 39 |
| Z207537* | 107.00 | 39 |
| Z300043 | 90.50 | 39 |
| Z300053 | 109.00 | 39 |
| Z300411 | 90.50 | 39 |
| Z300412 | 90.50 | 39 |
| Z300413 | 90.50 | 39 |
| Z300431 | 84.90 | 39 |
| Z300432 | 84.90 | 39 |
| Z300512 | 113.00 | 39 |
| Z300513 | 113.00 | 39 |
| Z300515 | 113.00 | 39 |
| Z300517 | 113.00 | 39 |
| Z300532 | 105.00 | 39 |
| Z300533 | 105.00 | 39 |
| Z300535 | 105.00 | 39 |
| Z300617 | 170.00 | 39 |
| Z300635 | 158.00 | 39 |
| Z300637 | 158.00 | 39 |
| Z300687 | 118.00 | 39 |
| Z300737 | 192.00 | 39 |
| Z307433 | 110.00 | 39 |
| Z307537* | 130.00 | 39 |
| Z40 | 220.00 | 37 |
| Z40F | 249.00 | 37 |
| Z42 | 240.00 | 37 |
| Z44 | 214.00 | 37 |
| Z44P | 296.00 | 37 |
| Z45 | 234.00 | 37 |
| Z45P | 301.00 | 37 |
| Z45PL | 330.00 | 37 |
| Z46 | 291.00 | 37 |
| Z46P | 341.00 | 37 |
| Z47 | 339.00 | 37 |
| Z50 | 226.00 | 37 |
| Z50F | 255.00 | 37 |
| Z54 | 220.00 | 37 |
| Z54P | 302.00 | 37 |
| Z55 | 240.00 | 37 |
| Z55P | 307.00 | 37 |
| Z55PL | 336.00 | 37 |
| Z56 | 297.00 | 37 |
| Z56P | 347.00 | 37 |
| Z57 | 344.00 | 37 |
| ZSR101 | 172.00 | 40 |
| ZSR103 | 404.00 | 40 |
| ZSR104 | 474.00 | 40 |
| ZSR106 | 581.00 | 40 |
| ZVR103 | 307.00 | 41 |
| ZVR104 | 366.00 | 41 |
| ZVR106 | 474.00 | 41 |

# LIMITED WARRANTY

## Limited Warranty:

Caleffi North America (Caleffi) warrants that all its products sold in accordance with these warranty provisions shall be free from defects in material and workmanship, or other malfunction or failure to perform, under normal use and services. This warranty extends only to persons or organizations that purchase Caleffi products for resale. This warranty is valid for the time listed below from the date of manufacture by product classification listed below:

| | |
|---|---|
| **Standard Components** | **2 years** |
| **Switching Zone Relays** | **3 years** |
| **Switching Relay & Valve*** | **5 years** |
| **Storage Tank and SolarFlex™** | **6 years** |
| **Solar Collectors** | **10 years** |

*(Z-one™ ZVR series relay and Z-one™ zone valve installed together)

Caleffi's sole obligation hereunder shall be, at its option, to issue credit, repair or replace any component which is proved to be defective. This limited warranty does not cover the cost of transportation or labor charges, including installation and removal, unless such charges are authorized in writing in advance by Caleffi. The solar heat transfer fluid, and maintenance schedule, must be per Caleffi specification. Specifically excluded from this warranty are glass breakage and the effects of frost or acts of God (force majeure) responsible for system or component malfunction. Caleffi is not responsible for malfunction resulting from any unauthorized alterations made to any Caleffi system components. Caleffi assumes no responsibility for damage to any system component caused by neglect, abuse, faulty installation, misuse, handling or cause not in Caleffi control or not an inherent defect. Caleffi is not liable for consequential damage or expenses, the total liability shall be limited to replacement and repair as stated above.

## Disclaimer of Warranties:

Caleffi North America (Caleffi) disclaims any warranty not provided herein including the implied warranty of merchantability and implied warranty of fitness for a particular purpose. It is expressly understood that Caleffi is not responsible for any consequential or other damages that may arise from using Caleffi system components. Damage resulting from water freezing does not constitute a defect in material or workmanship, and shall not be covered by this warranty. Caleffi disclaims any statutory or implied warranty of habitability. Caleffi further disclaims any responsibility for losses, expenses, inconveniences, special, indirect, secondary, incidental, or consequential damages arising from ownership or use of the articles sold hereunder. There are no warranties which extend beyond the face hereof.

## Low Lead Notice:

Products identified as "Low Lead" comply with the "Reduction of Lead in Drinking Water Act" an amendment to the "Safe Drinking Water Act" (SDWA) Section 1417. Products not specifically identified as "Low Lead" do not comply with SDWA Section 141, are intended for hydronic heating & cooling applications, and not intended for plumbing systems.

Suggested List Price
Effective March 1, 2018
Canceling All Prior Issues
specifications and prices are subject to change without notice

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