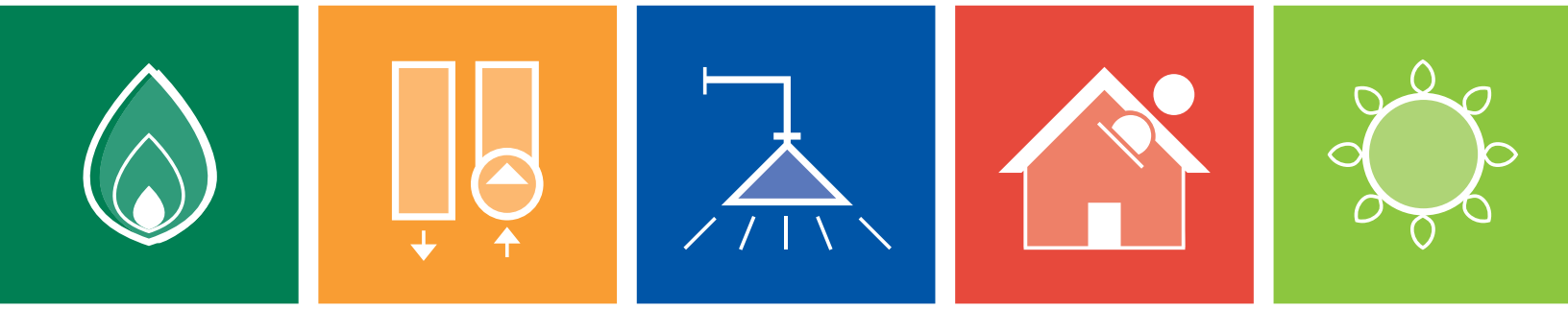
CALEFFI

Hydronic Solutions



LIST PRICE CATALOG FEBRUARY 2014

US Patent pending

FITTING FOR YOUR APPLICATIONS

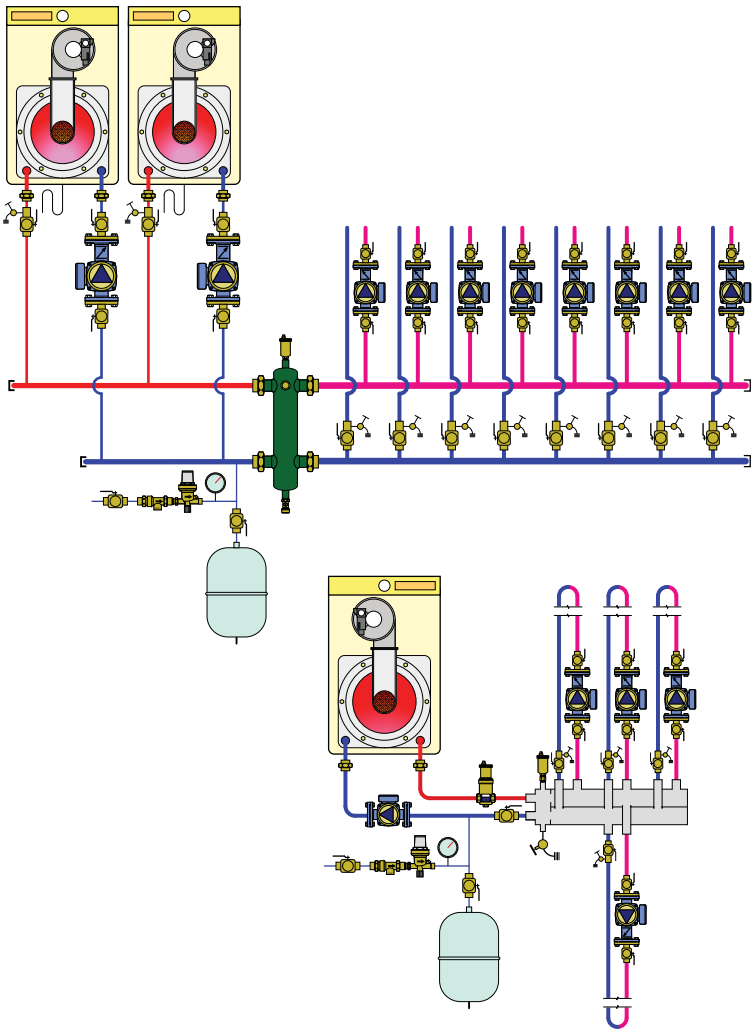
Look for this Presscon™ logo in this 2014 catalog to find products featuring press fittings!

Presscon™ Tailpiece C x F union tailpiece with leak detection O-ring allows you to quickly identify unpressed connections during system testing.

- Presscon™ copper tail-piece with union nut makes installation and maintenance of Caleffi components fast, easy and efficient.
- Presscon™ copper tail-piece union is available in size ¾" C X 1" Female union nut which fits many components with 1" male union (straight) thread.
- Special slots in EPDM O-ring allows fluid to leak during system testing if unpressed and the perfect leak proof seal when completely pressed.
- Temperature range of 0°F—250°F with pressure rating to 200 psi, meets 2014 low lead law requirements.

GENERAL INDEX

This diagram is an example



3-IN-1 HYDRAULIC SEPARATORS

549 HydroCal™

tech. broch. 01178

Combination 1. air, 2. hydraulic and 3. dirt separation.
Epoxy resin coated steel body.
Pre-formed insulation on 2"— 4" sizes.
Complete with:
automatic air vent (code 501502A).
air vent shut-off valve (code NA39589).
drain valve (code NA39588).
ANSI 150 flange connections.
Max. working pressure: 150 psi.
Working temperature range: 32—220°F.
Working temp. w/o insulation: 32—250°F.
Particle separation capacity: to 5 µm (0.2 mil).

Code	Description	Pk	Lbs	USD
549052A	2" ANSI flange	1	73	**4,440.00**
549062A	2½" ANSI flange	1	79	**4,730.00**
549082A	3" ANSI flange	1	108	**5,920.00**
549102A	4" ANSI flange	1	117	**6,630.00**

Code	Description	Pk	Lbs	USD
NA549052A	2" ANSI flange ASME & CRN	1	73	**6,020.00**
NA549062A	2½" ANSI flange ASME & CRN	1	79	**6,475.00**
NA549082A	3" ANSI flange ASME & CRN	1	108	**7,830.00**
NA549102A	4" ANSI flange ASME & CRN	1	117	**8,280.00**
NA549150A	6" ANSI flange ASME & CRN*	1	231	**14,030.00**

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

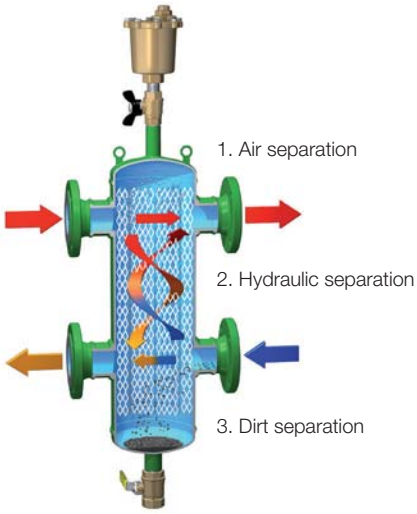
549 HydroCal™ ASME/CRN

tech. broch. 01178

Combination 1. air, 2. hydraulic and 3. dirt separation.
Epoxy resin coated steel body.
Without insulation.
Complete with:
automatic air vent (code 501502A).
air vent shut-off valve (code NA39589).
drain valve (code NA59600).
ANSI 150 flange connections.
Thermometer pockets:
½" inlet/outlet flanges, ¾" front center
Max. working pressure: 150 psi.
Working temperature range: 32—250°F.
Particle separation capacity: to 5 µm (0.2 mil).
ASME tagged and registered with the National Board of Boiler and Pressure Vessel Inspectors; CRN Registered.

Code	Description	Pk	Lbs	USD
NA549200A	8" ANSI flange ASME & CRN	1	520	**23,000.00**
NA549250A	10" ANSI flange ASME & CRN	1	730	**32,000.00**
NA549300A	12" ANSI flange ASME & CRN	1	1,100	**42,000.00**

Larger sizes available, consult with factory.



Maximum recommended flow rates in GPM and volume capacity in gallons.

	FLOW CAPACITY—FLANGED CONNECTIONS							
Size	2"	2½"	3"	4"	6"	8"	10"	12"
GPM	37	63	96	149	380	625	1030	1650
Gallons	4.0	4.0	8.0	8.0	23.2	95	175	255

4-IN-1 HYDRAULIC SEPARATORS

5495 SEP4™

tech. broch. 01249

Combination 1. air, 2. hydraulic and 3. dirt separation, plus 4. magnetic separation
Epoxy resin coated steel body.
Pre-formed insulation.
Complete with union connections.
Thermowell tap: 1/2" female
Max. working pressure: 150 psi.
Working temperature range: 32—210°F.
Working temp. w/o insulation: 32—230°F.
(see page 5 for flow capacity information).

Code	Description	Pk	Lbs	USD
549596A	1" sweat union	1	15	**1,250.00**
549506A	1" NPT F union	1	15	**1,310.00**
549597A	1¼" sweat union	1	19	**1,510.00**
549507A	1¼" NPT F union	1	19	**1,585.00**
549598A	1½" sweat union	1	27	**1,980.00**
549508A	1½" NPT F union	1	27	**2,080.00**
549599A	2" sweat union	1	29	**2,310.00**
549509A	2" NPT F union	1	29	**2,425.00**

HYDRAULIC SEPARATORS

548 Hydro Separator

tech. broch. 01076

Hydraulic separator.
Epoxy resin coated steel body.
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" female
Max. working pressure: 150 psi.
Working temperature range: 32—210°F.
Working temp. w/o insulation: 32—250°F.

Code	Description	Pk	Lbs	USD
548006A	1" NPT union	1	13	**1,012.00**
548096A	1" sweat union	1	13	**963.90**
548007A	1¼" NPT union	1	17	**1,220.00**
548097A	1¼" sweat union	1	17	**1,162.80**
548008A	1½" NPT union	1	25	**1,598.00**
548098A	1½" sweat union	1	25	**1,521.90**
548009A	2" NPT union	1	27	**1,865.00**
548099A	2" sweat union	1	27	**1,776.60**

548 Hydro Separator

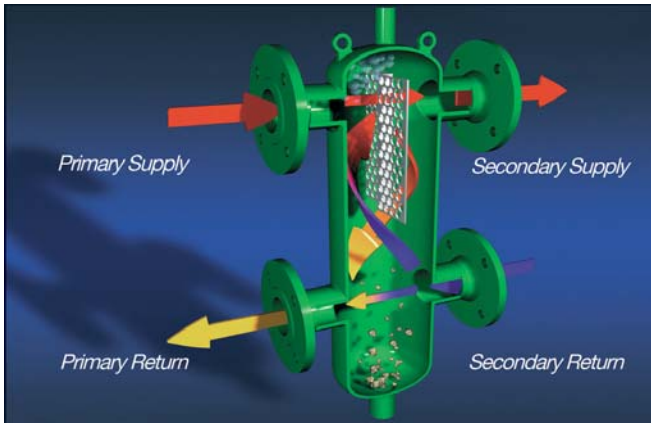
tech. broch. 01076

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.
Working temperature range: 32—220°F.
Working temp. w/o insulation: 32—250°F.

Code	Description	Pk	Lbs	USD
548052A	2" ANSI flange	1	75	**3,520.00**
548062A	2½" ANSI flange	1	82	**3,750.00**
548082A	3" ANSI flange	1	112	**4,690.00**
548102A	4" ANSI flange	1	117	**5,250.00**

Code	Description	Pk	Lbs	USD
NA548052A	2" ANSI flange ASME & CRN	1	75	**4,630.00**
NA548062A	2½" ANSI flange ASME & CRN	1	82	**4,980.00**
NA548082A	3" ANSI flange ASME & CRN	1	112	**6,025.00**
NA548102A	4" ANSI flange ASME & CRN	1	117	**6,370.00**
NA548120A	5" ANSI flange ASME & CRN	1	220	**8,900.00**
NA548150A	6" ANSI flange ASME & CRN	1	231	**10,800.00**

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



The hydraulic separator creates a zone with a low pressure loss, which enables the primary and secondary circuits connected to it to be hydraulically independent of each other; the flow in one circuit does not interfere with flow in the other.

Maximum recommended flow rates in GPM and volume capacity in gallons for 548 and 5495 series separators.

	FLOW CAPACITY—UNION CONNECTIONS			
Size	1"	1¼"	1½"	2"
GPM	11	18	26	37
Gallons	0.5	0.7	1.3	3.5

	FLOW CAPACITY—FLANGED CONNECTIONS								
Size	2"	2½"	3"	4"	5"	6"	8"	10"	12"
GPM	40	80	124	247	300	484	792	1330	1850
Gallons	4.0	4.0	8.0	8.0	22.5	23.2	95	175	255

548 Hydro Separator ASME/CRN

tech. broch. 01076

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:
½" inlet/outlet flanges, ¾" front center
Max. working pressure: 150 psi.
Working temperature range: 32—250°F.
ASME tagged and registered with the National Board of Boiler and Pressure Vessel Inspectors; CRN Registered.

Code	Description	Pk	Lbs	USD
NA548200A	8" ANSI flange ASME & CRN	1	520	**17,000.00**
NA548250A	10" ANSI flange ASME & CRN	1	725	**24,000.00**
NA548300A	12" ANSI flange ASME & CRN	1	1,100	**28,000.00**

Larger sizes available, consult with factory.

HYDRAULIC SEPARATORS-MANIFOLDS

559 HydroLink™

tech. broch. 01084

Hydraulic separator + distribution manifold. 2+1 with built-in mounting.
Steel body with pre-formed insulation.
Complete with automatic air vent (code 502243A) and drain valve (code 538402 FD).
Max. working pressure: 100 psi.
Working temperature range: 32—230°F.
Outlet center dimension: 90 mm

Code	Description	Pk	Lbs	USD
559021A	1" NPT + 1" NPT male branches	1	16	**991.70**

559 HydroLink™

tech. broch. 01084

Hydraulic separator + distribution manifold. 2+2 with angle mounting brackets.
Steel body with pre-formed insulation.
Complete with automatic air vent (code 502243A) and drain valve (code 538402 FD).
Max. working pressure: 100 psi.
Working temperature range: 32—230°F.
Outlet center dimension: 90 mm

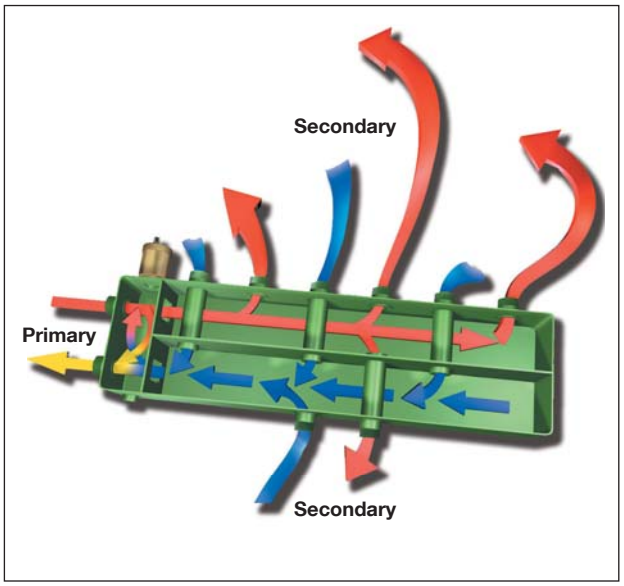
Code	Description	Pk	Lbs	USD
559022A	1¼" NPT + 1" NPT male branches	1	29	**1,248.10**

559 HydroLink™

tech. broch. 01084

Hydraulic separator + distribution manifold. 3+1 with angle mounting brackets.
Steel body with pre-formed insulation.
Complete with automatic air vent (code 502243A) and drain valve (code 538402 FD).
Max. working pressure: 100 psi.
Working temperature range: 32—230°F.
Outlet center dimension: 90 mm

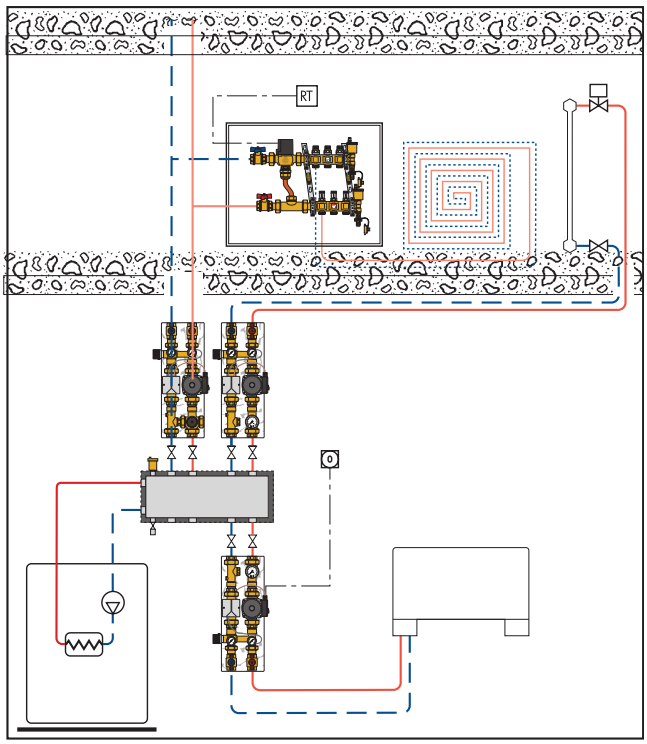
Code	Description	Pk	Lbs	USD
559031A	1¼" NPT + 1" NPT male branches	1	39	**1,500.50**



Maximum recommended flow rates at connections:

Branches	Primary	Secondary
2+1	9 gpm	22 gpm
2+2	11 gpm	26 gpm
3+1	11 gpm	26 gpm

Typical application diagram of HydroLink™ 2+2 with HydroMixer™ 163 series



HYDRAULIC SEPARATORS-MANIFOLDS

559 HydroLink™

tech. broch. 01084

Hydraulic separator + distribution manifold. 2+0 with built-in mounting.
Steel body with pre-formed insulation.
Complete with automatic air vent (code 502243A) and drain valve (code 538402 FD).
Max. working pressure: 100 psi.
Working temperature range: 32—230°F.
Outlet center dimension: 125 mm.
Compatable with 165, 166, 167 series Hydromixers™.

JUNE 2014

Code	Description	Pk	Lbs	USD
559920A	1" NPT + 1" NPT male branches	1	20	**1,137.80**

559 HydroLink™

tech. broch. 01084

Hydraulic separator + distribution manifold. 2+2 with angle mounting brackets.
Steel body with pre-formed insulation.
Complete with automatic air vent (code 502243A) and drain valve (code 538402 FD).
Max. working pressure: 100 psi.
Working temperature range: 32—230°F.
Outlet center dimension: 125 mm.
Compatable with 165, 166, 167 series Hydromixers™.

JUNE 2014

Code	Description	Pk	Lbs	USD
559922A	1¼" NPT + 1" NPT male branches	1	29	**1.397.90**

559 HydroLink™

tech. broch. 01084

Hydraulic separator + distribution manifold. 2+1 with built-in mounting.
Steel body with pre-formed insulation.
Complete with automatic air vent (code 502243A) and drain valve (code 538402 FD).
Max. working pressure: 100 psi.
Working temperature range: 32—230°F.
Outlet center dimension: 125 mm.
Compatable with 165, 166, 167 series Hydromixers™.

JUNE 2014

Code	Description	Pk	Lbs	USD
559921A	1" NPT + 1" NPT male branches	1	16	**1,170.30**

559 HydroLink™

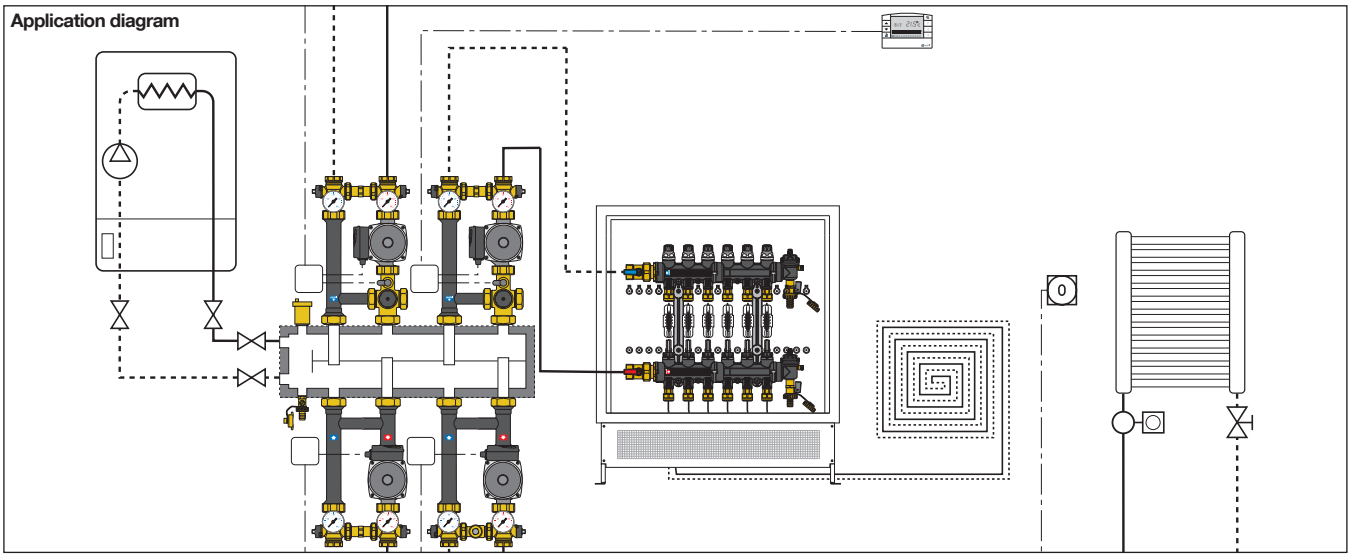
tech. broch. 01084

Hydraulic separator + distribution manifold. 3+1 with angle mounting brackets.
Steel body with pre-formed insulation.
Complete with automatic air vent (code 502243A) and drain valve (code 538402 FD).
Max. working pressure: 100 psi.
Working temperature range: 32—230°F.
Outlet center dimension: 125 mm.
Compatable with 165, 166, 167 series Hydromixers™.

JUNE 2014

Code	Description	Pk	Lbs	USD
559931A	1¼" NPT + 1" NPT male branches	1	39	**1,680.60**

Application diagram



HYDRAULIC SEPARATOR ACCESSORIES

501

tech. broch. 01090

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.

Code	Description	Pk	Lbs	USD
501502A	¾" NPT female	1	7	**385.00**

5022

tech. broch. 01090

Replacement high capacity air vent fits HydroLink™.
Brass body.
Max. working pressure: 150 psi.
Max. discharge pressure: 60 psi.
Max. working temperature: 250°F.

Code	Description	Pk	Lbs	USD
502243A	½" NPT male	10	5.3	**52.20**

5023

tech. broch. 01090

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	Pk	Lbs	USD
502343A	½" NPT male	10	5.3	**61.60**

538

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	Pk	Lbs	USD
538402 FD	½" NPT x ¾" GHT	1	0.3	**18.50**

tech. broch. 01076

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	Cv	Pk	Lbs	USD
NA39589	¾" NPT female w/T-handle	35	1	0.6	**38.10**
NA39753	1" NPT female w/T-handle	50	1	0.7	**51.90**
NA39588	1¼" NPT female w/Lever	104	1	1.0	**86.50**
NA59600	2" NPT female w/Lever	309	1	3.5	**186.20**

Temperature pocket well fits 1", 1¼" and 1½" Hydro Separator.
1 ¾" pocket length.

Code	Description	Pk	Lbs	USD
694045	½" straight thread	1	0.2	**23.40**
R50055	Sealing washer	1	0.1	**2.00**

Double male nipple.

Code	Description	Pk	Lbs	USD
R41447	¾" NPT x ¾" NPT x 2"	1	0.3	**33.80**

MISCELLANEOUS SYSTEM COMPONENTS

626

tech. broch. 01052

Universal flow switch for heating and air conditioning systems.
Suitable for 1" to 8" pipe size.
Working pressure: 150 psi.
Working temperature range: -20 – 250°F.
Minimum flow: 5.7 gpm.
Rating of switch contacts: 5A.
CE, cUL, NEMA Type 5, IP 54.

c UL us
30V9

Code	Description	Pk	Lbs	USD
626600A	1" NPT male thread	1	2.3	**309.90**
626009	Replacement paddle assembly*	1	0.1	**29.00**

***** stainless steel

519

tech. broch. 01007

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	Pk	Lbs	USD
519502A	¾" NPT inlet x ¾" NPT outlet	1	1.0	**160.30**
519566A	¾" press x ¾" press	1	1.0	**169.70**
519599A	¾" sweat inlet x ¾" sweat outlet	1	1.0	**158.10**
519600A	1" NPT inlet x 1" NPT outlet	1	1.4	**248.70**
519609A	1" NPT inlet x 1" sweat outlet	1	1.4	**248.70**
519700A	1¼" NPT inlet x 1¼" NPT outlet	1	1.5	**298.50**
519709A	1¼" NPT inlet x 1¼" sweat outlet	1	1.5	**298.50**

538

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

Code	Description	Pk	Lbs	USD
538202 FD	¼" NPT male x ¾" GHT	1	0.3	**18.10**
538402 FD	½" NPT male x ¾" GHT	1	0.3	**18.50**

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	Pk	Lbs	USD
688003A	Gauge with pocket well	1	0.2	**47.90**
R31627	Replacement pocket well	1	0.1	**4.40**
R67037	O-ring fits R31627	1	0.1	**1.10**

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	Pk	Lbs	USD
NA10295	¾" sweat union	1	2.2	**104.30**
NA10296	1" sweat union	1	2.2	**112.90**

NA510

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

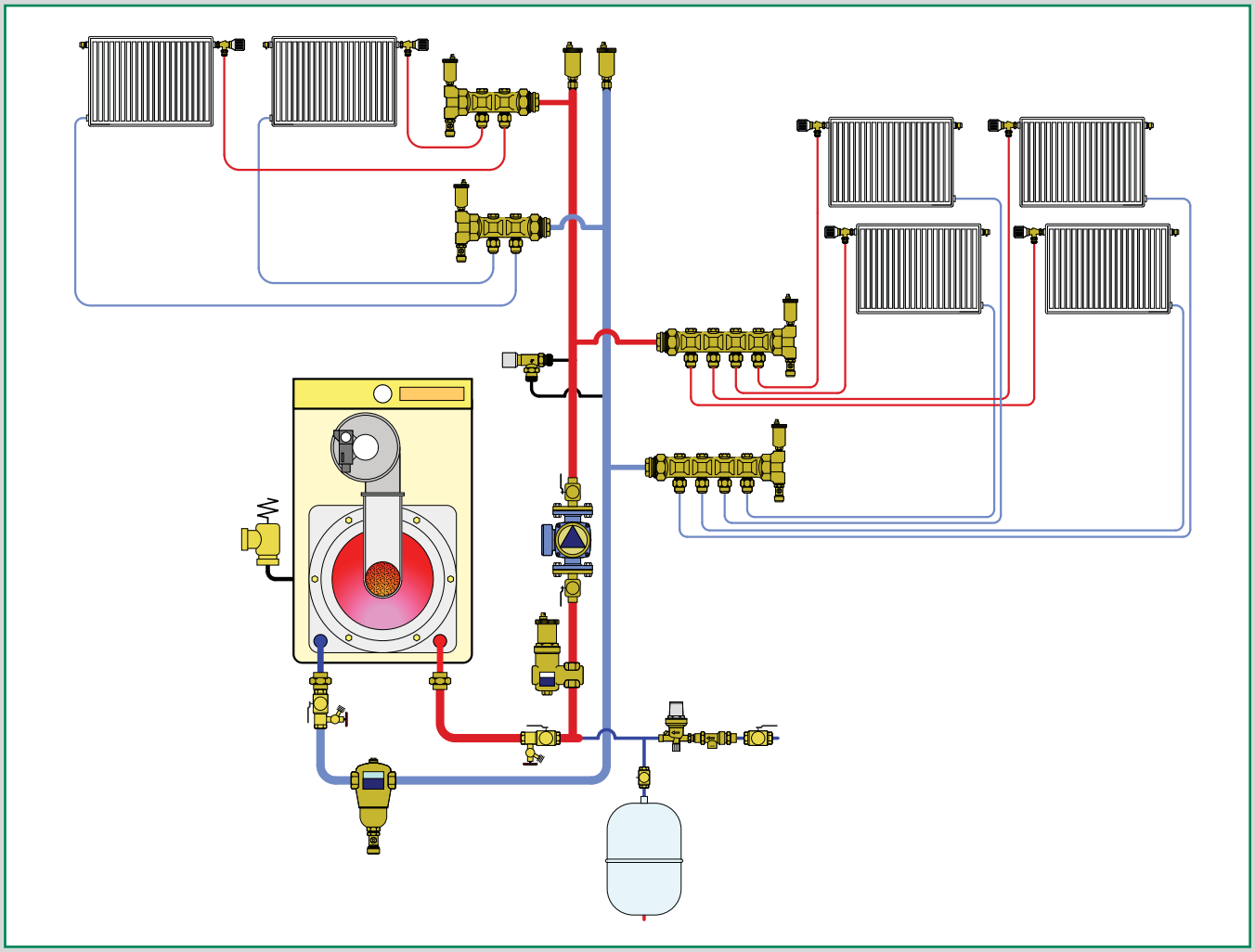
Code	Description	Cv	Pk	Lbs	USD
NA51059	¾" sweat union	12	1	0.7	**70.90**
NA51069	1" sweat union	17	1	1.0	**90.50**

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.

Code	Description	Pk	Lbs	USD
NA503040	¼" NPT	1	0.2	**42.50**

This diagram is an example



Automatic air vents, MINICAL™

Manual air vents

Dirt separators, DIRTCAL™

Magnetic dirt separators, DIRTMAG®

Dirt separators for commercial applications, DIRTCAL®

High discharge automatic air vent, DISCALAIR®

Air separators, DISCAL™

Air separators for commercial applications, DISCAL™

Air and dirt separators, DISCALDIRT®

Air and magnetic dirt separators, DISCAL DIRTMAG®

Accessories for air and dirt separators

AUTOMATIC AND MANUAL AIR VENTS

501

tech. broch. 01090

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.
Working temperature range: -4 – 250°F.

Code	Description	Pk	Lbs	USD
501502A	¾" NPT female	1	7	**385.00**

5020 MINICAL®

tech. broch. 01054

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	Pk	Lbs	USD
502043A	½" NPT male	60	35	**30.40**

5020 MINICAL®

tech. broch. 01054

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

Code	Description	Pk	Lbs	USD
502015A	⅛" NPT male	60	23	**21.50**

5021 MINICAL®

tech. broch. 01054

Automatic air vent with service check valve (code 59474A).
Brass body.
Max. working pressure: 150 psi.
Max. discharge pressure: 40 psi.
Max. working temperature: 230°F.

Code	Description	Pk	Lbs	USD
502115A	⅛" NPT male	60	25	**29.00**

5022

tech. broch. 01090

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

Code	Description	Pk	Lbs	USD
502243A	½" NPT male	10	5.3	**52.20**

5023

tech. broch. 01090

High discharge automatic air vent with service check valve (code 561402A).
Brass body.
Max. working pressure: 150 psi.
Max. discharge pressure: 60 psi.
Max. working temperature: 250°F.

Code	Description	Pk	Lbs	USD
502343A	½" NPT male	10	5.3	**61.60**

5026

tech. broch. 01090

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

Code	Description	Pk	Lbs	USD
502610A	⅛" NPT male	60	36	**19.30**
502620A	¼" NPT male	60	36	**20.20**
502640	½" straight thread	1	1.0	**29.00**

5027

tech. broch. 01090

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

Code	Description	Pk	Lbs	USD
502710A	⅛" NPT male	60	37	**26.80**
502720A	¼" NPT male	60	37	**28.30**

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	Pk	Lbs	USD
59474A	⅛" NPT male	10	1.2	**15.00**
59804A	¼" NPT male	10	1.2	**16.10**
561402A	½" NPT male	10	2.4	**18.60**

5080

tech. broch. 01090

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.
(Priced each, sold in package of 25 each)

Code	Description	Pk	Lbs	USD
508013A	⅛" NPT male	25	0.5	**10.60**

5081

tech. broch. 01090

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

Code	Description	Pk	Lbs	USD
508100A	Cartridge	25	0.4	**9.10**

337

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

Code	Description	Pk	Lbs	USD
337221A	¼" NPT male	25	2.5	**13.05**

DIRT SEPARATORS

5462 DIRTCAL® NPT

tech. broch. 01137

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	Pk	Lbs	USD
546205A	¾" NPT	1	4.2	**231.90**
546206A	1" NPT	1	4.2	**256.40**
546207A	1¼" NPT	1	5.3	**373.50**
546208A	1½" NPT	1	6.2	**483.60**
546209A	2" NPT	1	6.2	**594.60**

5462 DIRTCAL® Sweat

tech. broch. 01137

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	Pk	Lbs	USD
546228A	1" sweat	1	4.2	**244.20**
546235A	1¼" sweat	1	4.2	**355.70**
546241A	1½" sweat	1	4.9	**460.60**
546254A	2" sweat	1	5.5	**566.30**

538

Replacement drain valve fits DIRTCAL® 5462 series.
Brass body.
Max. working pressure: 150 psi.
Max. working temperature: 250°F.

Code	Description	Pk	Lbs	USD
538402 FD	½" NPT male x ¾" GHT	1	0.3	**18.50**

Low head losses and performance are maintained over time

The dirt separating action performed by the dirt separator 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 right distance from the inlet and outlet connections 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 cock with the handle.

* Vertical models.

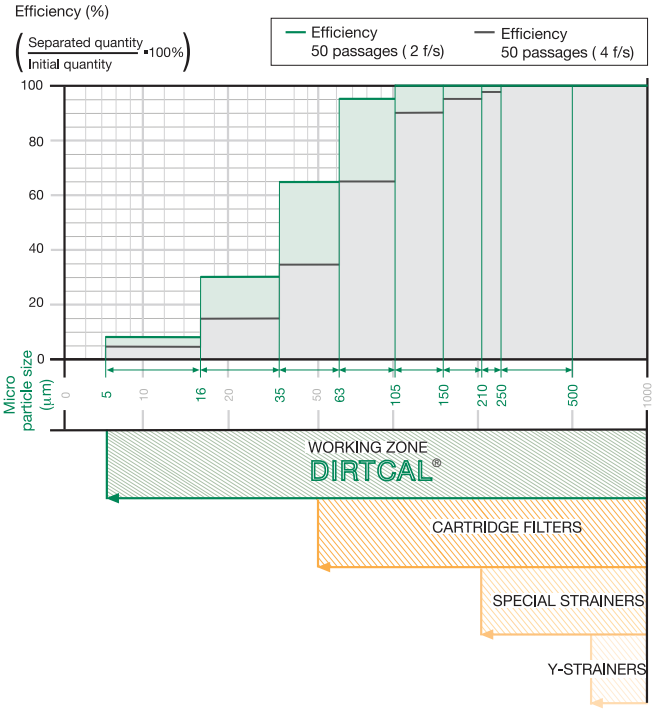
	FLOW CAPACITY AT 4 fps					
Size	¾"	* ¾-1"	1"	1¼"	1½"	2"
GPM	6	9	9	15	24	36
Cv	19	20	33	57	73	81

Geometric structure and large dirt collection chamber

The geometrical structure of DIRTCAL® means that, inside it, the velocity is reduced to help separate dirt particles. The dirt collection chamber has the following features:

- It is located at the bottom of the device at such a distance from the connections that the collected dirt is not affected by the swirl of the flow through the mesh element.
- It has enough capacity to increase the amount of dirt stored and therefore decreases the frequency of emptying it compared to filters that need to be cleaned frequently.
- It is easily inspected by unscrewing it from the valve body for servicing the internal mesh element when large debris are trapped in it.

Particle separation capacity - Dirt separator efficiency



DIRT SEPARATORS

The vertical DIRTCAL® dirt separator efficiently removes small dirt particles with significantly less clogging of the internal mesh element compared to normal Y-strainers. Additionally, the large dirt collection chamber requires less frequent cleaning, which can be done by simply opening the drain cock to discharge the accumulated dirt particles, even with the system running. The special internal shape of the separator body is designed to maximize fluid flow rate with low head loss. Flow direction of the DIRTCAL® dirt separator is bi-directional; flow in either direction is permitted.

NA5469 DIRTCAL®

tech. broch. 01137

Dirt separator for vertical pipes.
Brass body.
Max. working pressure: 150 psi.
Working temperature range: 32—250°F.

Code	Description	Pk	Lbs	USD
NA546995	¾" sweat	1	4.3	**238.00**
NA546996	1" sweat	1	4.3	**263.00**

MAGNETIC DIRT SEPARATORS

5463 DIRTMAG®

tech. broch. 01137

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).

PCT INTERNATIONAL APPLICATION PENDING

Code	Description	Pk	Lbs	USD
546306A	1" NPT female	1	4.2	**296.70**
546328A	1" sweat	1	4.2	**282.60**
546307A	1¼" NPT female	1	5.3	**433.20**
546335A	1¼" sweat	1	4.2	**412.60**
546308A	1½" NPT female	1	6.2	**563.50**
546341A	1½" sweat	1	4.9	**536.70**
546309A	2" NPT female	1	6.2	**680.00**
546354A	2" sweat	1	5.5	**655.30**

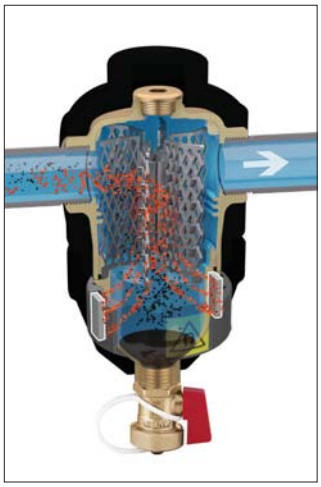
Insulation shell fits DIRTCAL® 5462 and DIRTMAG® 5463 series.
Labels included for field installation to externally identify product use.

Code	Description	Pk	Lbs	USD
CBN546205	Fits ¾" & 1" DIRTCAL®, DIRTMAG®	1	0.1	**70.00**
CBN546207	Fits 1¼" & 1½" DIRTCAL®, DIRTMAG®	1	0.1	**75.00**
CBN546209	Fits 2" DIRTCAL®, DIRTMAG®	1	0.1	**82.00**

Function

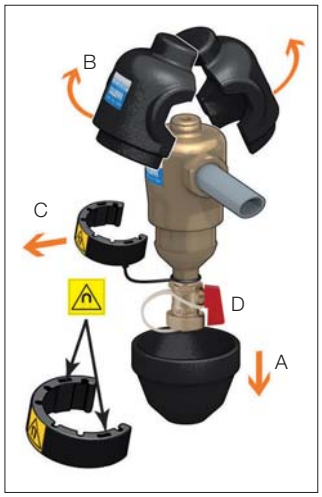
The versatile DIRTMAG® magnetic dirt separator removes both magnetic and non-magnetic particles continuously. In addition to removing sand and rust impurities with a glass-reinforced nylon internal element in a low-velocity-zone chamber, the DIRTMAG® features a powerful removable external magnet around 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 95% of the ferrous oxide particles that can form in a hydronic system.

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



Removing insulation and draining impurities

1. Remove the insulation by taking off the bottom casing (A) of the collection chamber first, and if necessary, the top insulation casing later (B).
2. Remove the magnetic ring (C) containing the two magnets, that during operation attracted the ferrous particles.
3. Flush out the ferrous and nonferrous debris by turning the handle to open the drain valve (D).
4. When finished, replace the insulation shells.



MAGNETIC DIRT SEPARATORS

NA5453 tech. broch. 01240

DIRTMAG®

Dirt separator with magnet.
Brass mounting housing.
Composite PA66G30 body.
Max. working pressure: 45 psi.
Working temperature range: 32—195°F.

PCT INTERNATIONAL APPLICATION PENDING

Code	Description	Pk	Lbs	USD
NA545305	¾" union NPT	1	4.5	**296.20**
NA545365	¾" press	1	4.5	**305.60**
NA545395	¾" union sweat	1	4.5	**294.00**
NA545306	1" union NPT	1	4.5	**341.00**
NA545396	1" union sweat	1	4.5	**324.80**

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 cock, 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 FOR COMMERCIAL APPLICATIONS

5465 tech. broch. 01137

DIRTCAL®

Dirt separator.
Epoxy resin coated steel body.
Complete with drain valve (code NA39753).
ANSI 150 flange connections.
Max. working pressure: 150 psi.
Working temperature range: 32—250°F.
Particle separation capacity: to 5 µm (0.2 mil).

Code	Description	Pk	Lbs	USD
546550A	2" ANSI flange	1	29	**2,226.00**
546560A	2½" ANSI flange	1	32	**2,420.00**
546580A	3" ANSI flange	1	51	**3,245.00**
546510A	4" ANSI flange	1	54	**3,596.00**

Drain ball valve.
Fits DIRTCAL® 5465 and NA5465 series.
Brass body.
Tee handle.
Max. working pressure: 150 psi.
Max. working temperature: 365°F.

Code	Description	Cv	Pk	Lbs	USD
NA39753	1" NPT female T handle	50	1	0.7	**51.90**

NA5465 tech. broch. 01137

DIRTCAL® **ASME/CRN**

Dirt separator.
Epoxy resin coated steel body.
Complete with drain valve (code NA39753).
ANSI 150 flange connections.
Max. working pressure: 150 psi.
Working temperature range: 32—250°F.
ASME and CRN Registered.
Particle separation capacity: to 5 µm (0.2 mil).

Code	Description	Pk	Lbs	USD
NA546550A	2" ANSI flange ASME & CRN	1	38	**3,659.00**
NA546560A	2½" ANSI flange ASME & CRN	1	38	**3,728.00**
NA546580A	3" ANSI flange ASME & CRN	1	55	**4,170.00**
NA546510A	4" ANSI flange ASME & CRN	1	55	**4,365.00**
NA546512A	5" ANSI flange ASME & CRN	1	138	**6,300.00**
NA546515A	6" ANSI flange ASME & CRN	1	148	**8,085.00**

The recommended fluid velocity at the unit connections for the steel DIRTCAL® is ~ 4 feet per second. The following table shows the flow rates to comply with this condition.

	FLOW CAPACITY AT 4 fps					
Size	2"	2.5"	3"	4"	5"	6"
GPM	37	63	96	149	259	380
Cv	88	176	211	328	520	842

HIGH DISCHARGE AUTOMATIC AIR VENT

551 DISCALAIR®

tech. broch. 01124

High discharge automatic air vent.
Brass body.
Stainless steel float guide pin and linkage.
Max. working pressure: 150 psi.
Working temperature range: 32—250°F.

Code	Description	Pk	Lbs	USD
551004A	½" NPT female	10	13.6	**118.70**

AIR SEPARATORS FOR SMALL APPLICATIONS

551 DISCAL® Compact

tech. broch. 01060

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	Pk	Lbs	USD
551003A	¾" NPT female	12	24	**150.40**
551022A	¾" sweat	12	24	**145.10**

551 DISCAL® Compact

tech. broch. 01060

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	Pk	Lbs	USD
551003AC	¾" NPT female	12	25	**159.50**
551022AC	¾" sweat	12	25	**154.20**

AIR SEPARATORS

551 DISCAL® Sweat

tech. broch. 01060

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	Pk	Lbs	USD
551028A	1" sweat	1	3.7	**261.60**
551035A	1¼" sweat	1	3.7	**381.90**
551041A	1½" sweat	1	4.9	**496.80**
551054A	2" sweat	1	5.5	**606.50**

The fluid velocity at connections for DISCAL® 551 series air separators is recommended to not exceed 10.0 f/s (feet per second). Above this speed, heavy internal turbulence and noise can occur and air elimination efficiency begins to fall significantly. Optimal air elimination performance occurs at fluid velocities of 4.0 f/s or less. See the flow capacity chart.

551 DISCAL® Sweat

tech. broch. 01060

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	Pk	Lbs	USD
551028AC	1" sweat	1	3.8	**270.90**
551035AC	1¼" sweat	1	3.8	**391.30**
551041AC	1½" sweat	1	5.0	**506.10**
551054AC	2" sweat	1	5.6	**615.80**

tech. broch. 01060

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

Code	Description	Pk	Lbs	USD
561402A	½" NPT male x ½" NPT female	10	2.4	**18.60**

551 DISCAL® NPT

tech. broch. 01060

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	Pk	Lbs	USD
551005A	¾" NPT female	1	3.7	**248.60**
551006A	1" NPT female	1	3.7	**274.60**
551007A	1¼" NPT female	1	4.9	**401.00**
551008A	1½" NPT female	1	4.9	**521.60**
551009A	2" NPT female	1	5.5	**636.80**

		FLOW CAPACITY					
	Size	¾"C	¾"	1"	1¼"	1½"	2"
Optimal 4.0 f/s	GPM	6	6	9	15	24	36
Max 10.0 f/s	GPM	14	19	22	36	57	86
	Cv	12	19	32	56	73	81

551 DISCAL® NPT

tech. broch. 01060

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	Pk	Lbs	USD
551005AC	¾" NPT female	1	3.8	**257.90**
551006AC	1" NPT female	1	3.8	**283.90**
551007AC	1¼" NPT female	1	5.0	**410.30**
551008AC	1½" NPT female	1	5.0	**530.90**
551009AC	2" NPT female	1	5.6	**646.10**

Insulation shell fits DISCAL® 551 series.

Code	Description	Pk	Lbs	USD
CBN551005	Fits ¾"* and 1" 551 series	1	0.1	**70.00**
CBN551007	Fits 1¼", 1½" 551 series	1	0.1	**75.00**
CBN551009	Fits 2" 551 series	1	0.1	**82.00**

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

AIR SEPARATORS

551 DISCAL®

tech. broch. 01060

Air separator for 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	Pk	Lbs	USD
NA551995	¾" sweat	1	4.5	**306.60**
NA551996	1" sweat	1	4.5	**338.70**

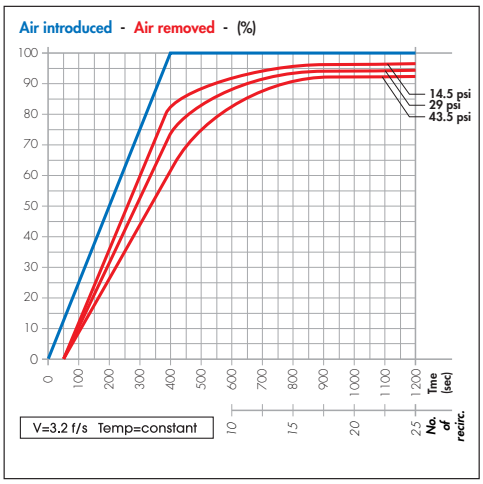
The DISCAL® air separator is used to continuously remove the air contained in hydronic circuits of heating and cooling systems. The air discharge capacity is very high. They are capable of removing automatically all the air present in the system down to micro-bubble level with low head loss due to the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

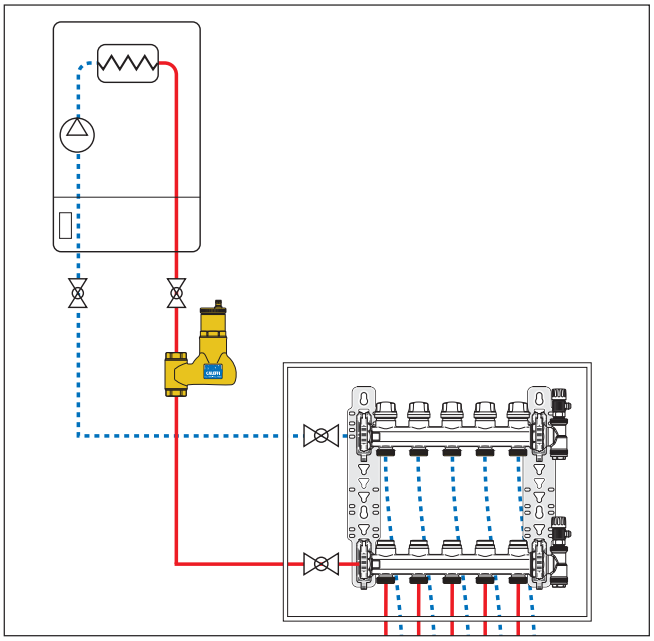
		FLOW CAPACITY	
	Size	¾" sweat	1" sweat
Optimal 4.0 f/s	GPM	9	9
Max 10.0 f/s	GPM	20	20
	Cv	19	19

Air separation efficiency

DISCAL® air separators continuously remove entrapped air in hydronic systems with very high separation efficiency. The amount of air removed from a system varies depending on fluid velocity and system pressures, As illustrated on the graph below, after just 25 recirculations at the 3.2 feet per second fluid velocity, almost all the air artificially introduced into the circuit is eliminated by the DISCAL® air separator, with percent removed varying based on system pressure and fluid temperature.

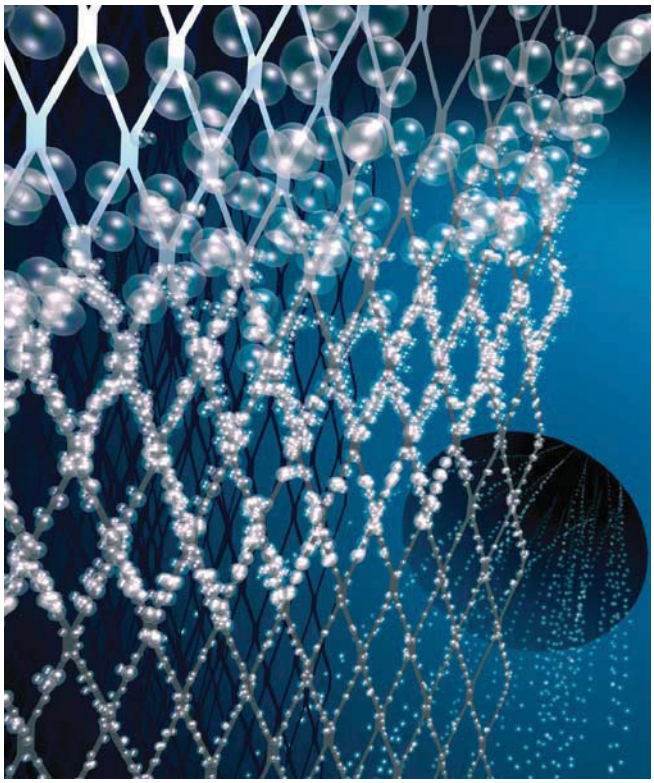
The small amount which remains is then gradually eliminated during normal system operation. In conditions where the fluid velocity is slower or the temperature of the medium is higher, the amount of air separated is even greater.





AIR SEPARATORS FOR COMMERCIAL APPLICATIONS

The DISCAL® air 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 hydrostatic thrust overcomes the adhesion force to the structure. They rise to the top of the unit from where they are released through a float-operated automatic air release valve.



551 DISCAL®

tech. broch. 01060

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 drain thread.
Max. working pressure: 150 psi.
Working temperature range: 32—250°F.

Code	Description	Pk	Lbs	USD
551050A	2" ANSI flange	1	34	**2,730.00**
551060A	2½" ANSI flange	1	35	**2,970.00**
551080A	3" ANSI flange	1	62	**3,970.00**
551100A	4" ANSI flange	1	67	**4,410.00**
551120A	5" ANSI flange	1	106	**6,615.00**
551150A	6" ANSI flange	1	117	**8,610.00**

NA551 DISCAL® ASME/CRN

tech. broch. 01060

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 drain connection.
Max. working pressure: 150 psi.
Working temperature range: 32—250°F.
ASME and CRN Registered.

Code	Description	Pk	Lbs	USD
NA551050A	2" ANSI flange ASME & CRN	1	34	**3,810.00**
NA551060A	2½" ANSI flange ASME & CRN	1	35	**4,180.00**
NA551080A	3" ANSI flange ASME & CRN	1	62	**5,110.00**
NA551100A	4" ANSI flange ASME & CRN	1	67	**5,350.00**
NA551120A	5" ANSI flange ASME & CRN	1	106	**7,610.00**
NA551150A	6" ANSI flange ASME & CRN	1	117	**9,920.00**

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

The fluid velocity at connections for DISCAL® 551 series air separators is recommended to not exceed 10.0 f/s (feet per second). Above this speed, heavy internal turbulence and noise can occur and air elimination efficiency begins to fall significantly. Optimal air elimination performance occurs at fluid velocities of 4.0 f/s or less. See the flow capacity chart.

		FLOW CAPACITY					
	Size	2"	2½"	3"	4"	5"	6"
Optimal 4.0 f/s	GPM	37	63	96	149	259	380
Max 10.0 f/s	GPM	89	150	227	355	616	904
	Cv	87	174	208	324	520	832

Optional drain ball valve.
Fits DISCAL® series.
Brass body.
Tee or lever handle.
Max. working pressure: 150 psi.
Max. working temperature: 365°F.

Code	Description	Cv	Pk	Lbs	USD
NA39753	1" NPT female T handle	50	1	0.7	**51.90**
NA59600	2" NPT female w/Lever	309	1	3.5	**186.20**

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 hydrostatic thrust overcomes the adhesion force to the structure. They rise towards the top of the unit from which they are released through a float-operated automatic air release valve.

The dirt separating action performed by the 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®'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 collection chamber at the bottom of the DISCALDIRT® is at the right distance from the inlet and outlet connections 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.

		FLOW CAPACITY											
		BRASS			STEEL								
	Size	¾"	1"	1¼"	2"	2½"	3"	4"	5"	6"	8"	10"	12"
Optimal 4.0 f/s	GPM	8	9	10	37	63	95	149	259	380	625	980	1,410
Max. 10.0 f/s	GPM	--	--	--	89	150	227	355	816	904	1,570	2,450	3,530
	Cv	19	33	40	87	174	208	324	520	832	1,109	1,387	1,664

The fluid velocity at connections for DISCALDIRT® 546 and NA546 series air and dirt separators is recommended to not exceed 10.0 f/s (feet per second). Above this speed, heavy internal turbulence and noise can occur and air and dirt separation efficiency begins to fall significantly. Optimal air and dirt separation performance occurs at fluid velocities of 4.0 f/s or less. See the flow capacity chart above.

NA546 DISCAL DIRT® ASME/CRN

tech. broch. 01123

Air & Dirt separator.
Epoxy resin coated steel body.
Stainless steel float guide pin and linkage.
Stainless steel mesh internal element.
2" and 2½" threaded connection.
ANSI 150 flange connections.
1" NPT male drain thread.
Max. working pressure: 150 psi.
Working temperature range: 32—250°F.
Max flow: 10 feet per second.
Particle separation capacity: to 5 µm (0.2 mil).
ASME and CRN Registered.

Code	Description	Pk	Lbs	USD
NA546050T	2" Threaded ASME & CRN	1	28	**4,310.00**
NA546060T	2½" Threaded ASME & CRN	1	30	**4,890.00**
NA546060A	2½" ANSI flange ASME & CRN	1	42	**5,075.00**
NA546080A	3" ANSI flange ASME & CRN	1	73	**6,135.00**
NA546100A	4" ANSI flange ASME & CRN	1	78	**6,490.00**
NA546120A	5" ANSI flange ASME & CRN	1	181	**9,075.00**
NA546150A	6" ANSI flange ASME & CRN	1	188	**11,010.00**

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

546 DISCAL DIRT®

tech. broch. 01123

Air & Dirt 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 drain thread.
Max. working pressure: 150 psi.
Working temperature range: 32—250°F.
Max flow: 10 feet per second.
Particle separation capacity: to 5 µm (0.2 mil).

Code	Description	Pk	Lbs	USD
546050A	2" ANSI flange	1	40	**3,580.00**
546060A	2½" ANSI flange	1	42	**3,820.00**
546080A	3" ANSI flange	1	73	**4,770.00**
546100A	4" ANSI flange	1	78	**5,350.00**
546120A	5" ANSI flange	1	181	**7,880.00**
546150A	6" ANSI flange	1	188	**9,550.00**

NA546 DISCAL DIRT® ASME/CRN

tech. broch. 01123

Air & Dirt 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 drain thread.
Max. working pressure: 150 psi.
Working temperature range: 32—250°F.
Max flow: 10 feet per second.
Particle separation capacity: to 5 µm (0.2 mil).
ASME and CRN Registered.

Code	Description	Pk	Lbs	USD
NA546200A	8" ANSI flange ASME & CRN	1	355	**22,000.00**
NA546250A	10" ANSI flange ASME & CRN	1	555	**33,000.00**
NA546300A	12" ANSI flange ASME (CRN pending)	1	825	**42,000.00**

Larger sizes available, consult factory.

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

AIR AND DIRT SEPARATORS

546 DISCAL DIRT®

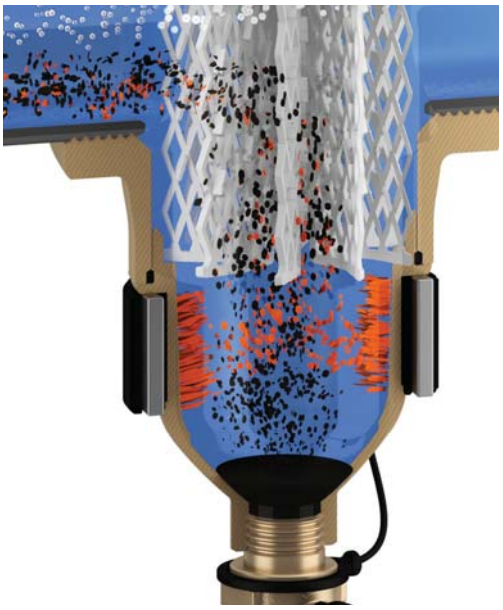
tech. broch. 01123

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.
Max. flow: 4 feet per second.
Particle separation capacity: to 5 µm (0.2 mil).

Code	Description	Pk	Lbs	USD
546095A	¾" sweat	1	8.3	**387.70**
546096A	1" sweat	1	8.3	**428.20**
546016A	1" NPT male	1	8.3	**449.80**
546097A	1¼" sweat	1	8.3	**510.00**

Insulation shell fits brass DISCALDIRT® 546 and 5461 DISCALDIRTMAG™ series.

Code	Description	Pk	Lbs	USD
CBN546002	Fits ¾", 1", 1¼"	1	0.1	**110.00**



5461 DISCAL DIRTMAG™

tech. broch. 01123

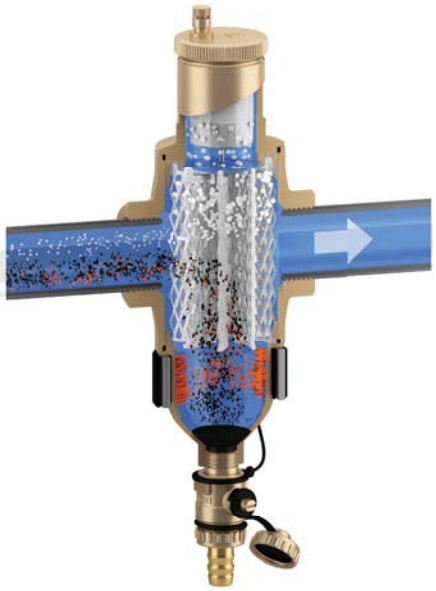
Air & Dirt separator with magnet.
Brass body.
Stainless steel float guide pin and linkage.
Glass reinforced nylon internal element.
Max. working pressure: 150 psi.
Working temperature range: 32—250°F.
Max. flow: 4 feet per second.
Particle separation capacity: to 5 µm (0.2 mil).

PCT INTERNATIONAL APPLICATION PENDING

Code	Description	Pk	Lbs	USD
546195A	¾" sweat	1	8.5	**449.80**
546196A	1" sweat	1	8.5	**497.00**
546116A	1" NPT male	1	8.5	**518.40**
546197A	1¼" sweat	1	8.5	**591.60**

Function

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.



ACCESSORIES FOR AIR AND DIRT SEPARATORS

tech. broch. 01054

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

Code	Description	Pk	Lbs	USD
R59681	Vent cap	10	0.7	**22.90**

tech. broch. 01054

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

Code	Description	Pk	Lbs	USD
562100	Vent cap	10	0.7	**24.20**

tech. broch. 01060

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

Code	Description	Pk	Lbs	USD
R59119	Vent cap	10	0.7	**15.20**

Replacement plastic air vent cap fits 5026 and 5027 series.

Code	Description	Pk	Lbs	USD
R56142	Vent cap	10	0.2	**2.40**

Replacement plastic cap fits MINICAL® 5020 and 5021 series.

Code	Description	Pk	Lbs	USD
R56214	Vent cap	10	0.2	**2.50**

tech. broch. 01133

Vent cap adapter is used to connect discharge tube. Fits all air vents except 5026 and 5027 series, and air separators.

Code	Description	Pk	Lbs	USD
NA10204	¼" NPT male	1	0.1	**26.00**

tech. broch. 01060

Replacement air vent assembly fits DISCAL® brass 551 series (except Compact).

Code	Description	Pk	Lbs	USD
59829	Air vent	1	2.0	**147.10**

tech. broch. 01060

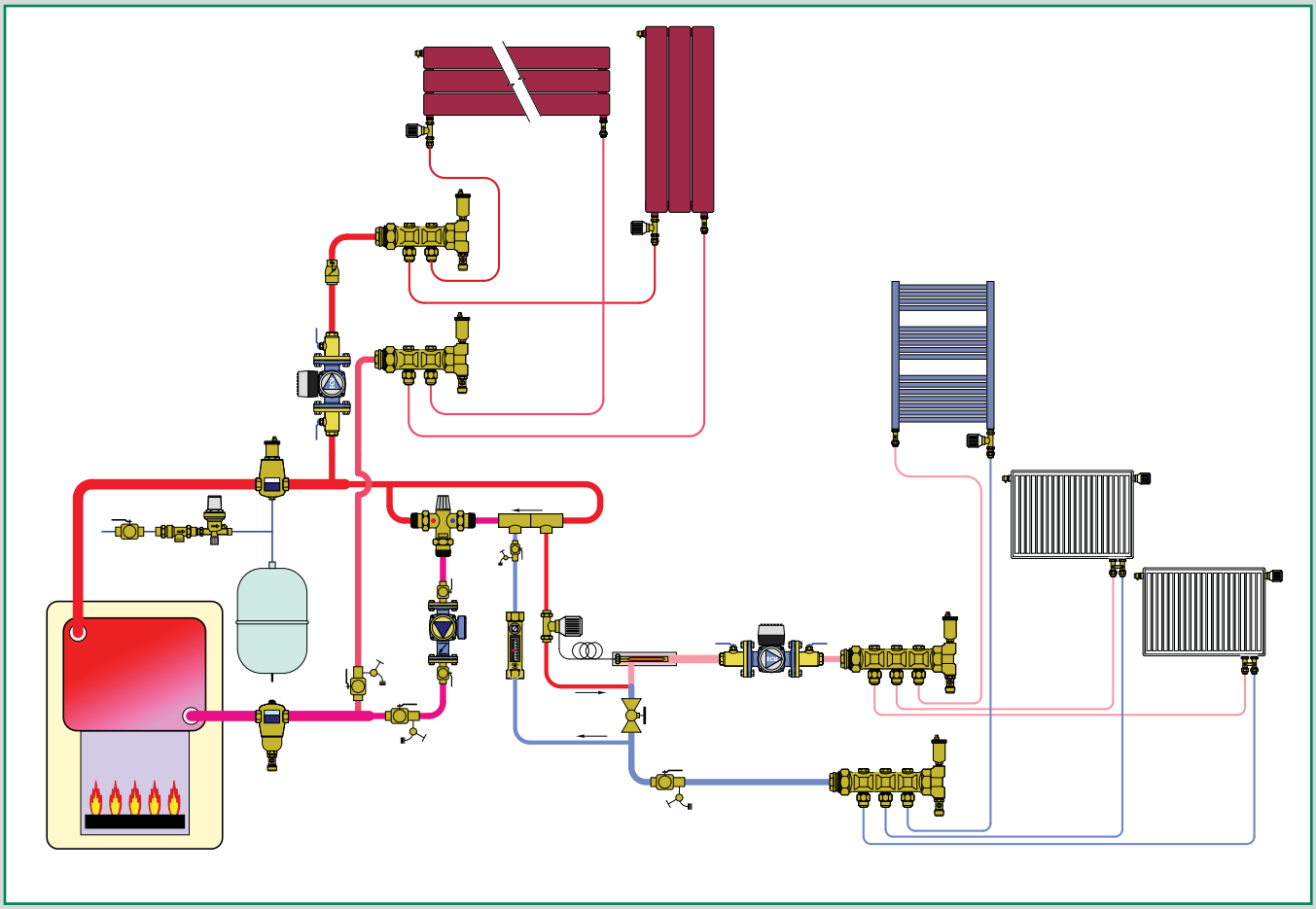
Replacement air vent assembly fits 551, NA551 and 546 steel series DISCAL®.

Code	Description	Pk	Lbs	USD
59756	Air vent	1	3.0	**190.30**

Replacement cover and float assembly fits DISCAL® brass 551, NA551 series and DISCALDIRT® brass 546 series.
Vent cap sold separately.

Code	Description	Pk	Lbs	USD
F39807	Cover and float	1	0.4	**72.00**

This diagram is an example



Thermostatic control heads

Accessories for thermostatic control heads

Thermostatic radiator valve bodies

Towel warmer radiator valves

Connection valves for panel style radiators

Connection fittings

THERMOSTATIC CONTROL HEADS

200

tech. broch. 01034

Thermostatic control head fits radiator valves.
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—82°F (7—28°C).

028

Code	Description	Pk	Lbs	USD
200000	Built-in sensor	1	0.5	**72.60**

201

tech. broch. 01034

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—82°F (7—28°C).
Capillary length: 78" (2 m).

028

Code	Description	Pk	Lbs	USD
201000	Remote sensor	1	1	**130.00**

472

tech. broch. 01034

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	Pk	Lbs	USD
472000	Remote wall sensor	1	1	**236.00**

203

tech. broch. 01034

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—122°F (20—50°C).
Capillary length: 78" (2 m).

Code	Description	Pk	Lbs	USD
203502	Remote sensor probe	1	0.5	**246.00**

ACCESSORIES

209

tech. broch. 01034

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	Pk	Lbs	USD
209000	Tamper proof cap	1	0.1	**25.00**

209

tech. broch. 01034

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

Code	Description	Pk	Lbs	USD
209001	Hex key	1	0.1	**10.00**

NA475

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

Code	Description	Pk	Lbs	USD
NA475002	¾" NPT male	1	0.2	**43.00**

THERMO-ELECTRIC ACTUATOR

6564

tech. broch. 01170

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	Pk	Lbs	USD
656404	24 V AC/DC	10	4.0	**98.40**
656414	24 V AC/DC with microswitch	10	4.0	**123.00**

4490

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

Code	Description	Pk	Lbs	USD
449010	Manual knob	1	0.1	**15.00**

NPT THERMOSTATIC RADIATOR VALVE BODIES

220

tech. broch. 01034

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).

028

Code	Description	Cv	Pk	Lbs	USD
220400A	½" NPT	2.7	1	0.3	**71.00**
220500A	¾" NPT	3.7	1	0.3	**78.00**

221

tech. broch. 01034

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).

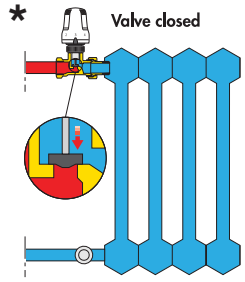
028

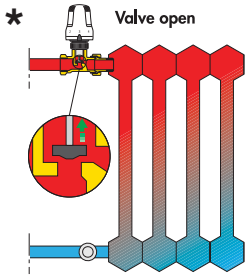
Code	Description	Cv	Pk	Lbs	USD
221400A	½" NPT	1.7	1	0.3	**71.00**
221500A	¾" NPT	2.5	1	0.3	**78.00**

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.**

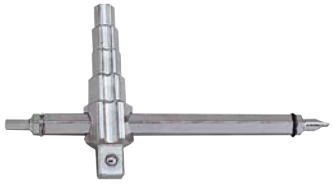




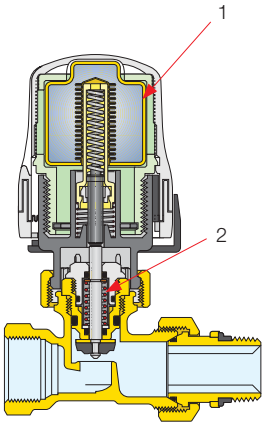
Replacement internal valve assembly fits radiator valves.

Code	Description	Pk	Lbs	USD
F36073	½" and ¾"	1	0.1	**10.00**

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



Code	Description	Pk	Lbs	USD
387127	Radiator tool	1	1.0	**142.80**



Key feature

The thermostatic control actuator is filled with a non compressible liquid bellows (1). Plus, the radiator valve body has 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.

The Caleffi thermostatic control heads 200000 and 201000, and the radiator valve bodies 220 and 221 series in combination with control heads 200 and 201 are approved to EN 215 (KEYMARK) and Thermostatic Efficiency Label (TELL): Level A, Reg. 10428/9-20110527. Under EN 215 these devices are certified to meet manufacturer quality assurance requirements with reference to temperature setting and adjustment, nominal flow rate, hysteresis, and leak tightness of the body assembly and stem seal. The European TELL certification promotes responsible energy usage and provides information to customers when selecting products. The control heads 200 and 201 are "A" rated for efficiency. Additional information available on request.

EUROPEAN TOWEL WARMER RADIATOR VALVES

338

tech. broch. 01009

Angled radiator valve body.
Convertible from standard manual operation to automatic control with thermo-electric actuators or 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	Pk	Lbs	USD
338452	½" straight	¾" conical	3.1	1	0.5	**74.80**

342

tech. broch. 01009

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	Pk	Lbs	USD
342452	½" straight	¾" conical	4.6	1	0.5	**49.20**

339

tech. broch. 01009

Straight radiator valve body.
Convertible from standard manual operation to automatic control with thermo-electric actuators or 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	Pk	Lbs	USD
339452	½" straight	¾" conical	2.0	1	0.5	**80.60**

343

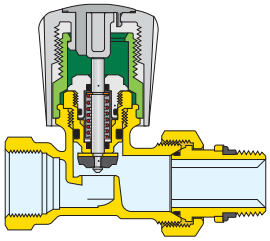
tech. broch. 01009

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).

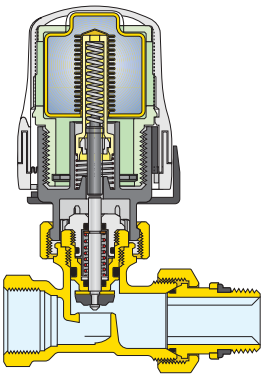
Code	Radiator Connection	Pipe Connection	Cv	Pk	Lbs	USD
343452	½" straight	¾" conical	2.5	1	0.5	**51.60**

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

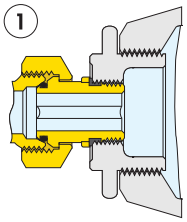
Metric radiator valve body with standard manual control

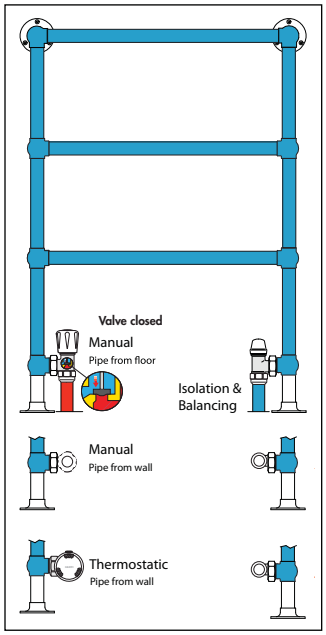


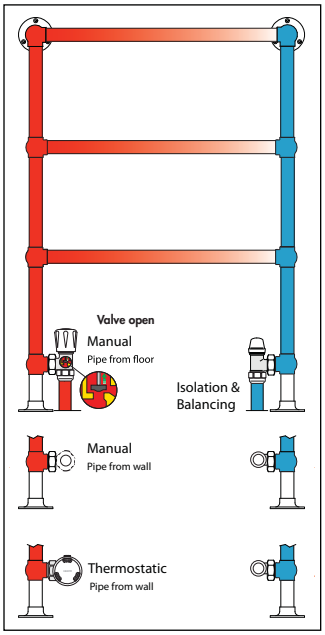
Metric radiator valve body with thermostatic control head



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



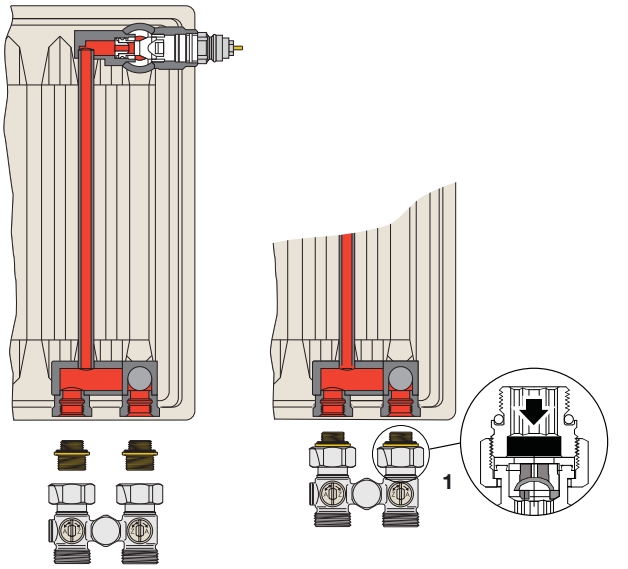


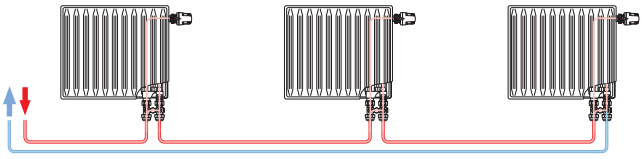


CONNECTION VALVES FOR PANEL RADIATORS

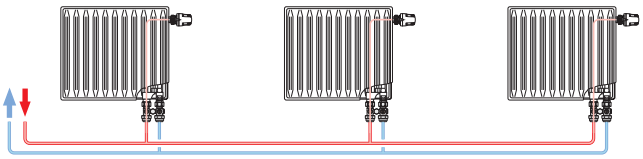
Caleffi panel radiator valves are designed to be installed on panel radiators featuring connections both on the bottom and an externally invisible inner pipe, which feeds the flowing medium to the upper valve.

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.





One-Pipe Plumbing



Two-Pipe Plumbing

3010

tech. broch. 01036

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	Pk	Lbs	USD
301040	½" straight	¾" conical	1	1	**60.00**

3011

tech. broch. 01036

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	Pk	Lbs	USD
301140	½" straight	¾" conical	1	1	**60.00**

3012

tech. broch. 01036

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	Pk	Lbs	USD
301241	½" straight	¾" conical	1	1	**105.00**

3013

tech. broch. 01036

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	Pk	Lbs	USD
301341	½" straight	¾" conical	1	1	**105.00**

4497

tech. broch. 01036

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

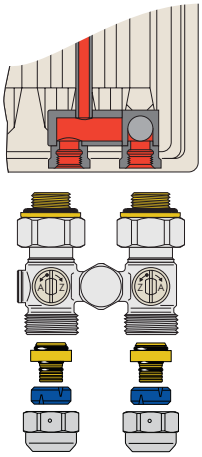
Code	Description	Pk	Lbs	USD
449740	Plate	1	0.1	**5.20**

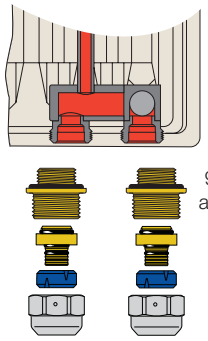
CONNECTION FITTINGS

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	Pk	Lbs	USD
681503A	⅜" nominal PEX	10	2.0	**12.35**
681524	½" nominal PEX	10	2.0	**12.35**
681555	¾" nominal PEX	10	2.0	**12.35**





940451 adaptors

940

tech. broch. 01036

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	Pk	Lbs	USD
940451	½" M straight x ¾" M conical (2 ea.)	1	0.4	**22.45**

682 Universal PEX-AL-PEX fittings

tech. broch. 1170

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	Pk	Lbs	USD
682540A	½" PEX-AL-PEX	10	2.0	**12.15**

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	Pk	Lbs	USD
437516	½" compression	10	1.0	**10.20**

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.

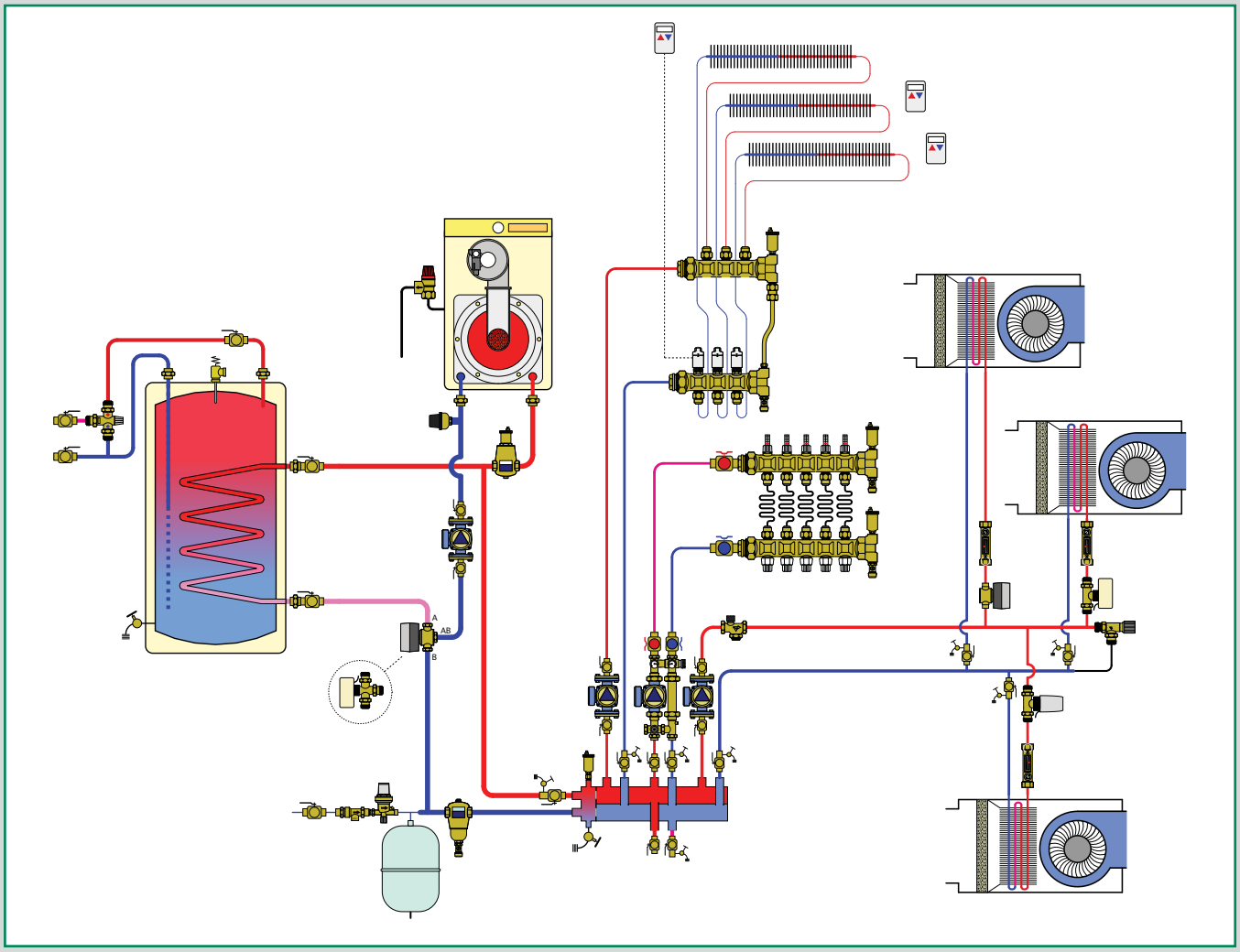
Code	Description	Pk	Lbs	USD
NA10262	½" sweat	10	2.0	**13.25**

NA103

NPT onnection 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	Pk	Lbs	USD
NA10313	½" NPT male	10	2.0	**14.30**

This diagram is an example



Thermo-electric zone valves

Thermo-electric actuators, including TwisTop™

Motorized zone valves, Z-one™

Z-one Relay controls, Z-one™ Relay

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

THERMO-ELECTRIC ZONE VALVES

6763

tech. broch. 01072

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	Pk	Lbs	USD
676349A	½" sweat union	4.0	5	9.3	**178.40**
676356A	¾" press	4.0	5	9.3	**203.50**
676359A	¾" sweat union	4.0	5	9.3	**191.90**
676369A	1" sweat union	4.0	5	9.3	**205.20**

6762

tech. broch. 01072

Two-way thermo-electric zone valve.
Complete with TwisTop™ (code 656314) 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: 800 mA.
Power consumption:
holding: 3 W
inrush: 19 VA
Rating of micro-switch contacts: 5 A (24 V).
31.5" wire lead connection.

Code	Description	Cv	Pk	Lbs	USD
676249A	½" sweat union	4.0	5	9.3	**210.80**
676256A	¾" press	4.0	5	9.3	**236.00**
676259A	¾" sweat union	4.0	5	9.3	**224.40**
676269A	1" sweat union	4.0	5	9.3	**237.80**

6564

tech. broch. 01198

Thermo-electric actuator with micro-switch fits on 676 two-way zone valve bodies.
Low current draw.
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	Pk	Lbs	USD
656414	24 V AC/DC with micro-switch	10	4.0	**123.00**

6563 TwisTop™

tech. broch. 01170

TwisTop™ thermo-electric actuator with micro-switch fits on 676 two-way zone valve bodies.
Twist the top to manually open and close micro-switch.
Power supply: 24 V AC/DC.
Initial current draw: 800 mA.
Power consumption:
holding: 3 W
inrush: 19 VA
Rating of micro-switch contacts: 5 A (24 V).
31.5" wire lead connection.

Code	Description	Pk	Lbs	USD
656314	24 V AC/DC with micro-switch	10	4.0	**155.60**

6760

tech. broch. 01072

Two-way zone valve body.
For field installation of thermo-electric actuators 656114, 656314 or 656414.
Brass body and trim.
Max. body pressure: 150 psi.
Max. temperature: 200°F.

Code	Description	Cv	Pk	Lbs	USD
676049A	½" sweat union	4.0	5	5.3	**55.40**
676056A	¾" press	4.0	5	5.3	**80.50**
676059A	¾" sweat union	4.0	5	5.3	**68.90**
676069A	1" sweat union	4.0	5	5.3	**82.20**

NA605

Wall transformer.
Input voltage: 120 V AC
Output voltage: 24 V AC.
Power output: 40 VA.
Agency approval: cULus

Code	Description	Pk	Lbs	USD
NA605010	24 VAC wall transformer	1	1.0	**44.40**

MOTORIZED ZONE VALVES

Z4 Z-one 2-way

tech. broch. 01115

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, cUL Listed & CE.
UL 1995 sec. 18 air plenums and ducts.
US Patent 7,048,251.

c UL E239721 US LISTED 86BP

Code	Description	Cv	Δ P	Pk	Lbs	USD
Z40	Inverted flare	3.5	30 psi	10	22	**209.80**
Z40F*	¾" Inv. flare	3.5	30 psi	10	22	**225.10**
Z42	½" SAE flare	3.5	30 psi	10	22	**216.75**
Z44	½" sweat	2.5	50 psl	10	21	**194.30**
Z45	¾" sweat	7.5	20 psi	10	22	**211.90**
Z46	1" sweat	7.5	20 psi	10	23	**262.45**
Z47	1¼" sweat	7.5	20 psi	10	23	**305.30**

* Two ¾" sweat fittings (NA10006) included.

Z5 Z-one 2-way

tech. broch. 01115

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, cUL Listed & CE.
UL 1995 sec. 18 air plenums and ducts.
US Patent 7,048,251.

c UL E239721 US LISTED 86BP

Code	Description	Cv	Δ P	Pk	Lbs	USD
Z50	Inverted flare	3.5	30 psi	10	22	**215.00**
Z50F*	¾" Inv. flare	3.5	30 psi	10	22	**230.30**
Z54	½" sweat	2.5	50 ps	10	21	**199.50**
Z55	¾" sweat	7.5	20 psi	10	22	**217.10**
Z56	1" sweat	7.5	20 psi	10	23	**267.65**
Z57	1¼" sweat	7.5	20 psi	10	23	**310.50**

* Two ¾" sweat fittings (NA10006) included.

tech. broch. 01115

Z-one 2-way

Two-way zone valve. Spring return.
Normally closed actuator.
Auxiliary micro-switch.
Max. body pressure: 300 psi.
Overall length: 5-⅝"
Lay length: 3-¾"
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, cUL Listed & CE.
UL 1995 sec. 18 air plenums and ducts.
US Patent 7,048,251.

c UL E239721 US LISTED 86BP

NEW

Code	Description		Cv	Δ P	Pk	Lbs	USD
Z45P	¾" press*	●	7.5	20 psi	10	22	**271.90**
Z55P	¾" press**	●	7.5	20 psi	10	22	**277.10**

Two ¾" Presscon™ fittings (NA16265) included.

*18" wire lead connection.
**Screw terminal connection.

tech. broch. 01115

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

Code	Description	Pk	Lbs	USD
NA10005	½" sweat	10	2.8	**10.30**
NA10006	¾" sweat	100	30	**12.85**
NA10007	1" sweat	10	4.0	**21.10**
NA61241	Retrofit extension kit	10	1.9	**10.40**

Two ¾" Presscon™ copper press tail pieces with 1" brass union nuts and washers for use with 2-way 1" male union valve body (Z200687).

NEW

Code	Description		Pk	Lbs	USD
NA12256	¾" press with 1" union nut	●	1	4.0	**50.00**

Three ¾" Presscon™ copper press tail pieces with 1" brass union nuts and washers for use with 3-way 1" male union valve body (Z300687).

NEW

Code	Description		Pk	Lbs	USD
NA12356	¾" press with 1" union nut	●	1	4.0	**75.00**

MOTORIZED ZONE VALVES

Z1 Normally Closed

tech. broch. 01115

E239721 US LISTED 86BP

Z1 NC actuator fits on Z2 and Z3 series valve bodies with the push of a button.
Two position spring return normally closed.
Power: 24, 120, 208, 230 & 277 VAC.
Power consumption: 5 W, 7 VA.
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 (250 V).
UL873, cUL Listed & CE.
UL 1995 sec.18 air plenums and ducts.
US Patent 7,048,251.

Code	Description	Pk	Lbs	USD
Z111000	24V with micro-switch 18" wire	10	11	**138.70**
Z116000	120V with micro-switch 6" wire	10	11	**138.70**
Z113000	208V with micro-switch 6" wire	10	11	**166.00**
Z114000	230V with micro-switch 6" wire	10	11	**166.00**
Z115000	277V with micro-switch 6" wire	10	11	**166.00**
Z151000	24V w/micro-switch terminal block	10	11	**143.90**
Z121000	24V without micro-switch 18" wire	10	11	**128.50**
Z126000	120V without micro-switch 6" wire	10	11	**128.50**
Z123000	208V without micro-switch 6" wire	10	11	**155.90**
Z124000	230V without micro-switch 6" wire	10	11	**155.90**
Z125000	277V without micro-switch 6" wire	10	11	**155.90**

Z1 Normally Opened

tech. broch. 01115

E239721 US LISTED 86BP

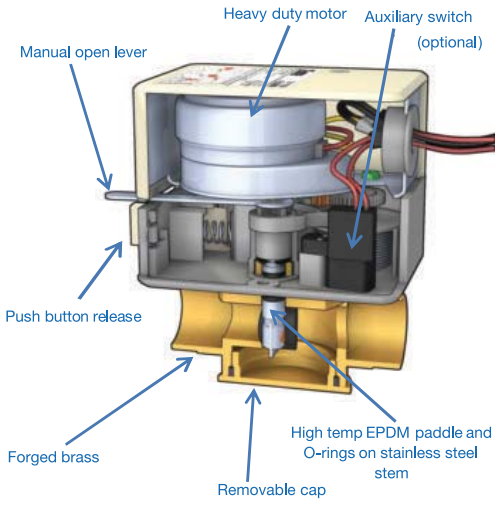
Z1 NO actuator fits on Z2 series valve bodies with the push of a button.
Two position spring return normally opened.
Power: 24, 120, 208, 230 & 277 VAC.
Power consumption: 5 W, 7 VA.
Rating of auxiliary switch contacts:
24 VAC: 0.0 A min, 0.4 A max (24 V).
120-277 VAC: 0.25 A min, 5.0 A max (250 V).
UL873, cUL Listed & CE.
UL 1995 sec. 18 air plenums and ducts.
US Patent 7,048,251.

Code	Description	Pk	Lbs	USD
Z131000	24V with micro-switch 18" wire	10	11	**151.60**
Z136000	120V with micro-switch 6" wire	10	11	**151.60**
Z133000	208V with micro-switch 6" wire	10	11	**178.90**
Z134000	230V with micro-switch 6" wire	10	11	**178.90**
Z135000	277V with micro-switch 6" wire	10	11	**178.90**
Z141000	24V without micro-switch 18" wire	10	11	**141.40**
Z146000	120V without micro-switch 6" wire	10	11	**141.40**
Z143000	208V without micro-switch 6" wire	10	11	**168.70**
Z144000	230V without micro-switch 6" wire	10	11	**168.70**
Z145000	277V without micro-switch 6" wire	10	11	**168.70**

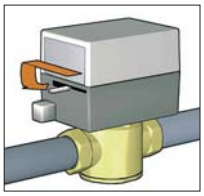
Function

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 1 ¼" 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, patent pending, 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, and actuator model number Z111000 HCS 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.



• 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 Straight

tech. broch. 01115

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.

*Reduction of Lead in Drinking Water Act Compliant: 0.25% Max. weighted average lead content. Reduction of Lead in Drinking Water Act Certified by IAPMO R&T

Code	Description		Cv	Δ P	Pk	Lbs	USD
Z200041	Inverted Flare		1.0	75 psi	10	11	**60.70**
Z200042	Inverted Flare		2.5	50 psi	10	11	**60.70**
Z200043	Inverted Flare		3.5	30 psi	10	11	**60.70**
Z200053	SAE Flare		3.5	30 psi	10	11	**78.10**
Z200411	½" NPT		1.0	75 psi	10	11	**60.70**
Z200412	½" NPT		2.5	50 psi	10	11	**60.70**
Z200413	½" NPT		3.5	30 psi	10	11	**60.70**
Z200431	½" sweat		1.0	75 psi	10	10	**55.60**
Z200432	½" sweat		2.5	50 psi	10	10	**55.60**
Z207433*	½" sweat	**LF**	3.5	30 psi	10	10	**78.10**
Z200512	¾" NPT		2.5	50 psi	10	12	**83.20**
Z200513	¾" NPT		3.5	30 psi	10	12	**83.20**
Z200515	¾" NPT		5.0	25 psi	10	12	**83.20**
Z200517	¾" NPT		7.5	20 psi	10	12	**83.20**
Z200532	¾" sweat		2.5	50 psi	10	11	**73.20**
Z200533	¾" sweat		3.5	30 psi	10	11	**73.20**
Z207533*	¾" sweat	**LF**	3.5	30 psi	10	11	**95.70**
Z200535	¾" sweat		5.0	25 psi	10	11	**73.20**
Z200537	¾" sweat		7.5	20 psi	10	11	**73.20**
Z207537*	¾" sweat	**LF**	7.5	20 ps	10	11	**95.70**
Z200617	1" NPT		7.5	20 psi	10	13	**131.30**
Z200635	1" sweat		5.0	25 psi	10	12	**123.80**
Z200637	1" sweat		7.5	20 psi	10	12	**123.80**
Z200737	1¼" sweat		7.5	20 psi	10	13	**166.60**
Z200687	1" male union		7.5	20 psi	10	11	**83.20**

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

Z3
3-way Diverting

tech. broch. 01115

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.

*Reduction of Lead in Drinking Water Act Compliant: 0.25% Max. weighted average lead content. Reduction of Lead in Drinking Water Act Certified by IAPMO R&T

Code	Description		Cv	Δ P	Pk	Lbs	USD
Z300041	Inverted Flare		1.0	75 psi	10	11	**80.90**
Z300042	Inverted Flare		2.5	50 psi	10	11	**80.90**
Z300043	Inverted Flare		3.5	30 psi	10	11	**80.90**
Z300053	SAE Flare		3.5	30 psi	10	11	**97.10**
Z300411	½" NPT		1.0	75 psi	10	11	**80.90**
Z300412	½" NPT		2.5	50 psi	10	11	**80.90**
Z300413	½" NPT		3.5	30 psi	10	11	**80.90**
Z300431	½" sweat		1.0	75 psi	10	10	**75.80**
Z300432	½" sweat		2.5	50 psi	10	10	**75.80**
Z307433*	½" sweat	**LF**	3.5	30 psi	10	10	**98.40**
Z300512	¾" NPT		2.5	50 psi	10	12	**101.00**
Z300513	¾" NPT		3.5	30 psi	10	12	**101.00**
Z300515	¾" NPT		5.0	25 psi	10	12	**101.00**
Z300517	¾" NPT		7.5	20 psi	10	12	**101.00**
Z300532	¾" sweat		2.5	50 psi	10	11	**93.70**
Z300533	¾" sweat		3.5	30 psi	10	11	**93.70**
Z300535	¾" sweat		5.0	25 psi	10	11	**93.70**
Z300537	¾" sweat		7.5	20 psi	10	11	**93.70**
Z307537*	¾" sweat	**LF**	7.5	20 psi	10	11	**116.10**
Z300617	1" NPT		7.5	20 psi	10	13	**151.60**
Z300635	1" sweat		5.0	25 psi	10	12	**141.30**
Z300637	1" sweat		7.5	20 psi	10	12	**141.30**
Z300737	1¼" sweat		7.5	20 psi	10	13	**171.60**
Z300687	1" male union		7.5	20 psi	10	11	**105.70**

***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. Fits all Z2 and Z3 valve bodies.

Code	Description	Pk	Lbs	USD
69293A	2-way and 3-way repair kit	1	0.4	**20.90**

NA605

Wall transformer.
Input voltage: 120 V AC
Output voltage: 24 V AC.
Power output: 40 VA.
Agency approval: cULus

Code	Description	Pk	Lbs	USD
NA605010	24 VAC wall transformer	1	1.0	**44.40**

ZONE SWITCHING RELAY

Intertek 4009064 Conforms to UL 873

MAR. 2014

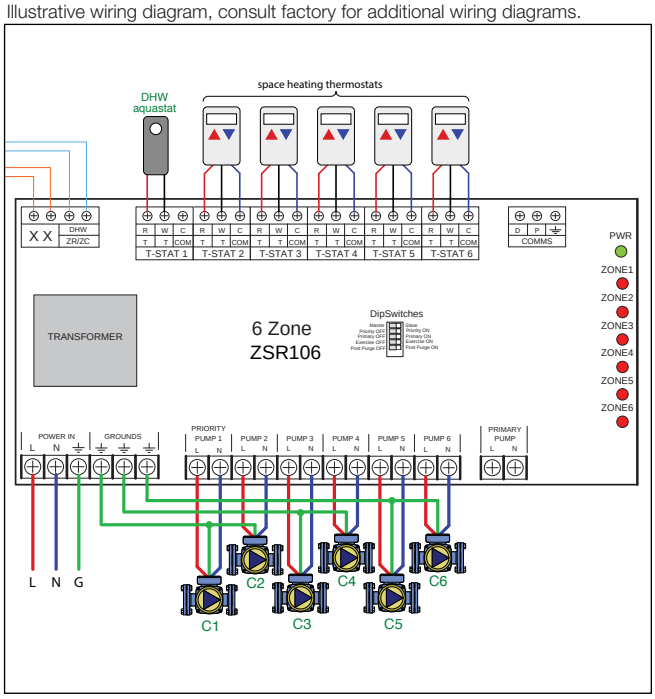
ZSR Z-one Relay

tech. broch. 01285

The ZSR series is multi-zone pump and boiler operating control for multiple zone hydronic heating or cooling 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, ZR/ZC, DHW, XX: 120 VAC max, 2A each
Replaceable fuses: Type 2AG, 5A slow blow

Illustrative wiring diagram, consult factory for additional wiring diagrams.



Code	Description	Pk	Lbs	USD
ZSR103	3 zone pump control	1	3.2	**375.00**
ZSR104	4 zone pump control	1	3.2	**440.00**
ZSR106	6 zone pump control	1	3.2	**540.00**

ZSR101 Z-one Relay

tech. broch. 01285

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 Conforms to UL 873

MAR. 2014

Z-ONE RELAY FUSES

Code	Description	Pk	Lbs	USD
NA10342	Spare fuse (package of 5)	5	0.1	**15.00**

Code	Description	Pk	Lbs	USD
ZSR101	Single zone relay	1	1.1	**160.00**

ZONE SWITCHING RELAY

Intertek 4009064 Conforms to UL 873

MAR. 2014

ZVR Z-one™ Relay

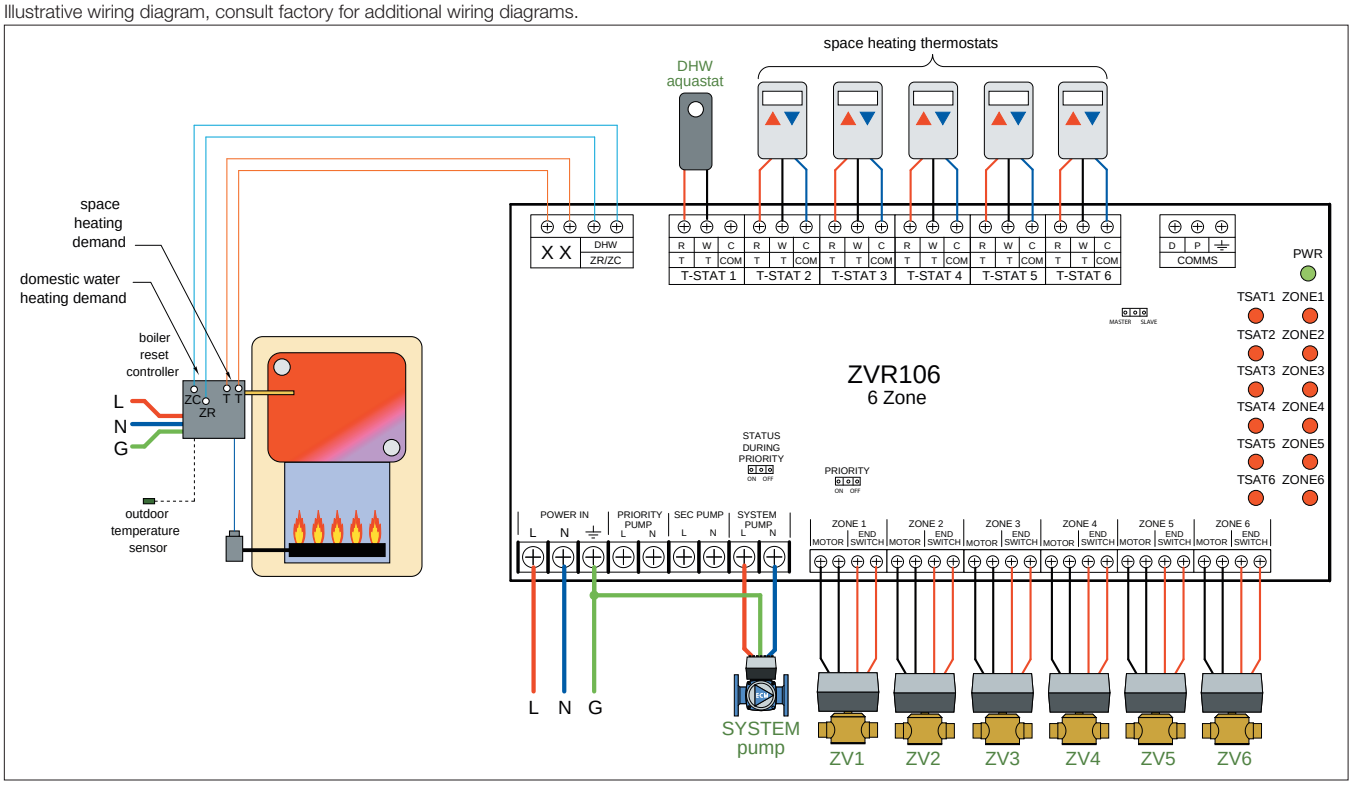
tech. broch. 01286

The ZVR series is a multi-zone valve relay and boiler operating control ior multiple zone hydronic heating or cooling 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, ZR/ZC, DHW, XX: 120 VAC, 2A each
Electrical switch rating pumps: 120 VAC, 5A 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	Pk	Lbs	USD
ZVR103	3 zone valve control	1	3.2	**285.00**
ZVR104	4 zone valve control	1	3.2	**340.00**
ZVR106	6 zone valve control	1	3.2	**440.00**
NA10343	Expansion transformer	1	0.1	**90.00**

Illustrative wiring diagram, consult factory for additional wiring diagrams.



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

6442 2-way Straight

tech. broch. 01131

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	Pk	Lbs	USD
644249A	½" sweat		13	1	2.3	**391.90**
644256A	¾" press	●	13	1	2.3	**442.70**
644259A	¾" sweat		13	1	2.3	**404.90**
644269A	1" sweat		13	1	2.3	**431.10**
644240A	½" NPT		13	1	2.3	**398.40**
644250A	¾" NPT		13	1	2.3	**411.50**
644260A	1" NPT		13	1	2.3	**437.60**

6443..3BY 3-way By-pass

tech. broch. 01131

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.

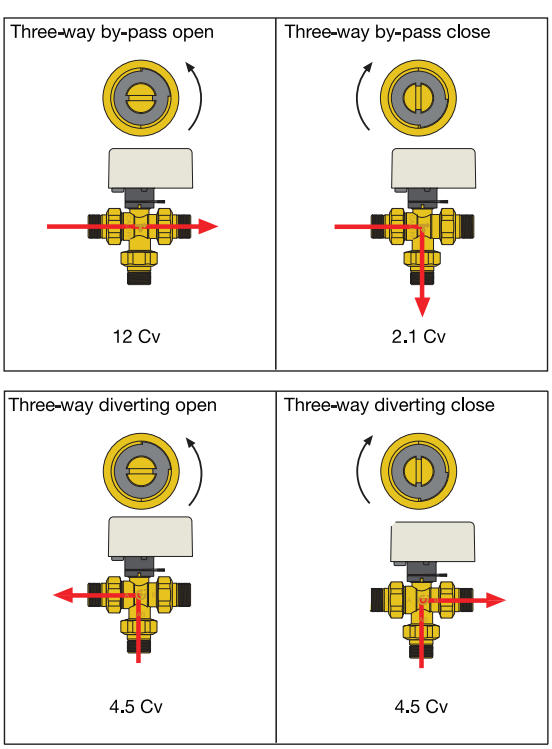
Code	Description		Cv	Pk	Lbs	USD
644349A 3BY	½" sweat		12	1	2.5	**424.50**
644356A 3BY	¾" press	●	12	1	2.5	**455.00**
644359A 3BY	¾" sweat		12	1	2.5	**437.60**
644369A 3BY	1" sweat		12	1	2.5	**463.80**
644340A 3BY	½" NPT		12	1	2.5	**431.10**
644350A 3BY	¾" NPT		12	1	2.5	**444.10**
644360A 3BY	1" NPT		12	1	2.5	**470.20**

6440 24 V 3-wire control

tech. broch. 01131

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	Pk	Lbs	USD
644004	24 VAC	1	1.0	**313.60**



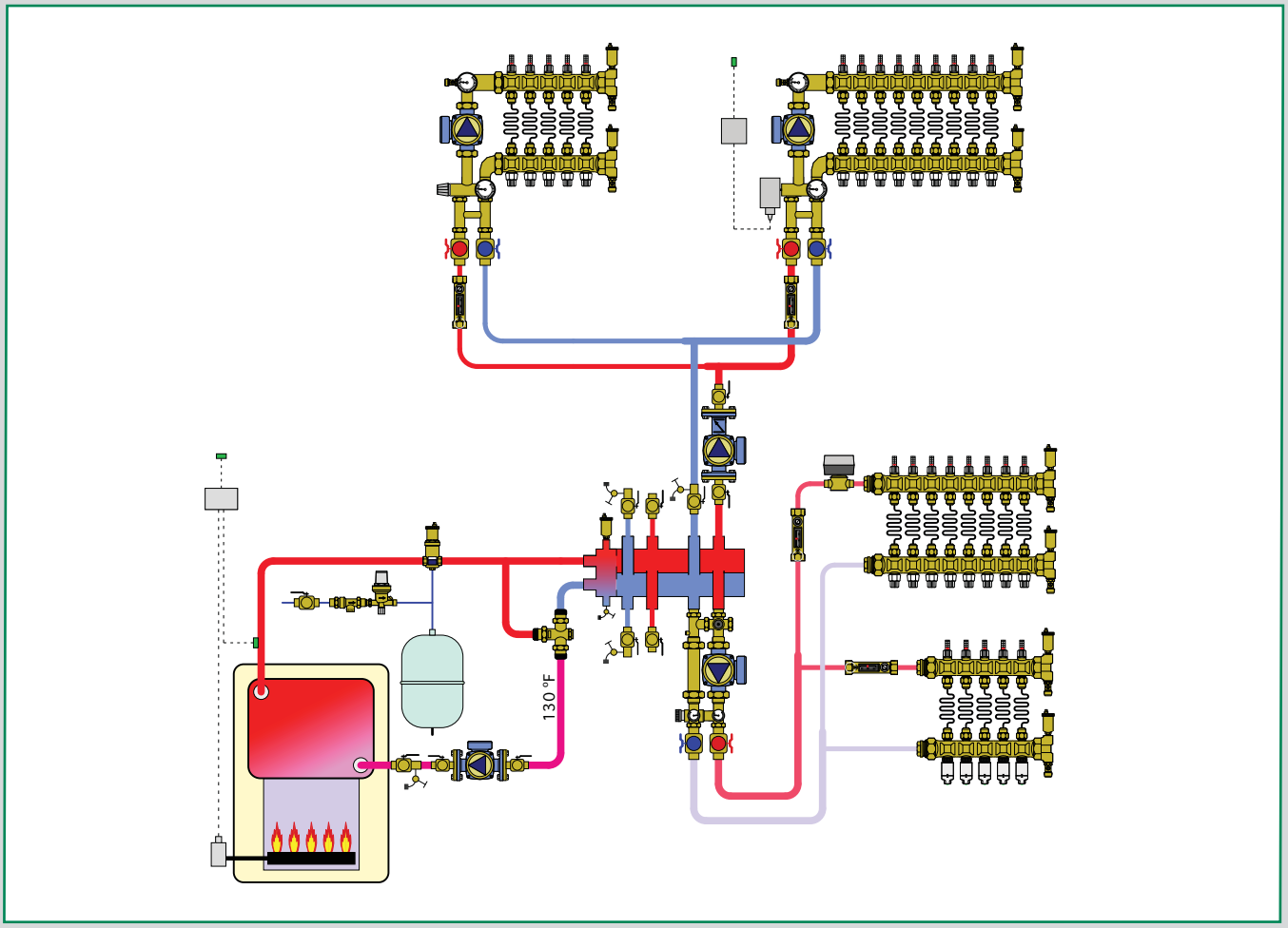
6443 3-way Diverting

tech. broch. 01131

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		Pk	Lbs	USD
644349A	½" sweat	4.5		1	2.5	**424.50**
644356A	¾" press	4.5	●	1	2.5	**455.00**
644359A	¾" sweat	4.5		1	2.5	**437.60**
644369A	1" sweat	4.5		1	2.5	**463.80**
644340A	½" NPT	4.5		1	2.5	**431.10**
644350A	¾" NPT	4.5		1	2.5	**444.10**
644360A	1" NPT	4.5		1	2.5	**470.20**

This diagram is an example



PUMP & VALVE TEMPERATURE MIXING UNITS

163 HydroMixer™

tech. broch. 01121

Thermostatic fixed temperature mixing unit with insulation. Compatible with 559 HydroLink™ series. Includes Grundfos UPS 15-58 three speed pump.
Differential pressure by-pass valve adjustable from 1.5 to 8.5 psi.
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.

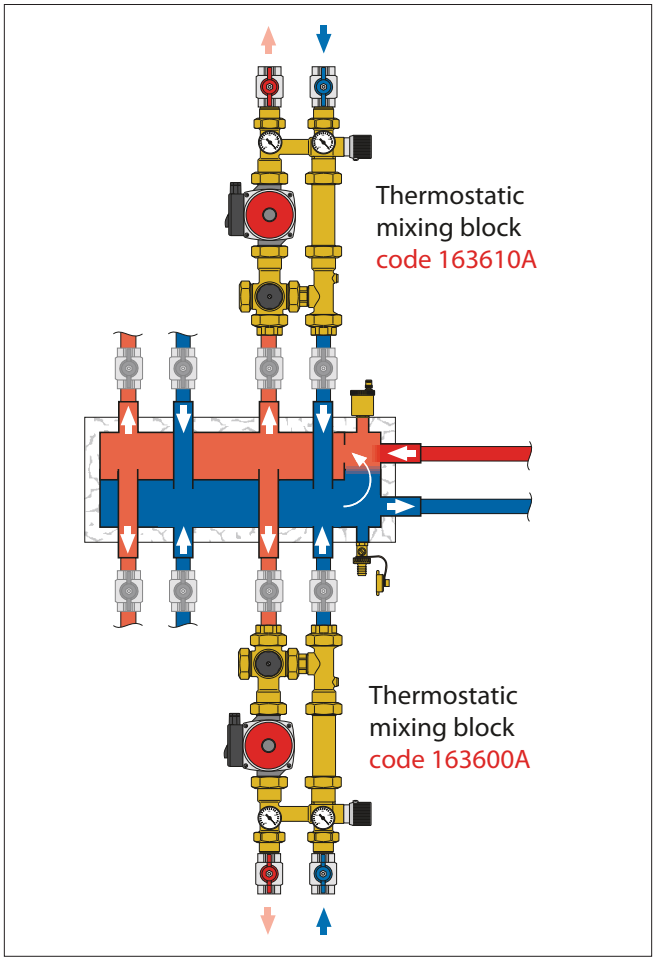
165 HydroMixer™

tech. broch. 01237

Injection pump mixing unit with insulation.
Grundfos UPS 15-58 three speed pump.
Grundfos Alpha 25-55U pump.
Temperature gauges.
Shut-off ball valves.
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.

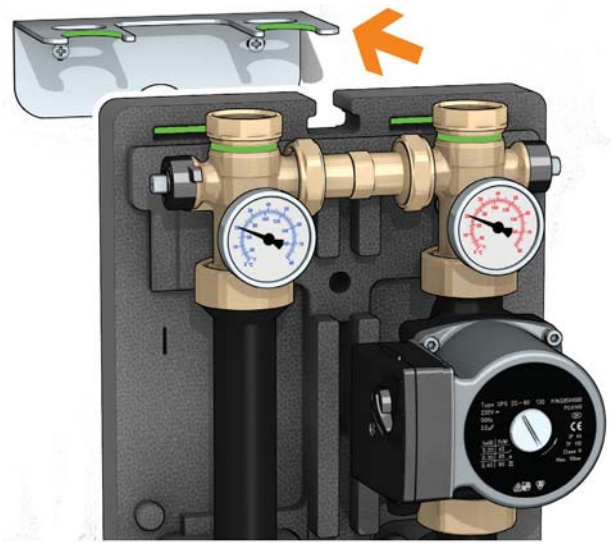
Code	Description	Pk	Lbs	USD
163600A	1" NPT outlet for right side flow	1	21	**1,800.00**
163610A	1" NPT outlet for left side flow	1	21	**1,800.00**

Code	Description	Pk	Lbs	USD
165600A	Dual line with 15-58 pump on right	1	21	**1,350.00**
165610A	Dual line with 15-58 pump on left	1	21	**1,350.00**
165602A	Dual line with Alpha pump on right	1	21	**1,650.00**
165612A	Dual line with Alpha pump on left	1	21	**1,650.00**



Wall bracket fits 165, 166 and 167 series.

Code	Description	Pk	Lbs	USD
165001	Wall bracket	1	1.0	**63.00**



PUMP & VALVE TEMPERATURE MIXING UNITS

166 HydroMixer™

tech. broch. 01238

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.
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.

167 HydroMixer™

tech. broch. 01239

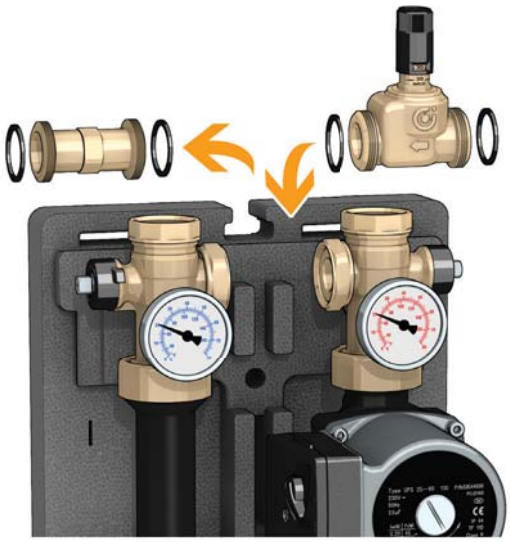
Motorized temperature mixing unit with insulation. Three-point floating 24 VAC actuator for use with separately-sourced outdoor reset controller.
Grundfos UPS 15-58 three speed pump.
Grundfos Alpha 25-55U pump.
Temperature gauges.
Shut-off ball valves.
Male union connections (select top and bottom fitting 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	Pk	Lbs	USD
166600A	Dual line with 15-58 pump on right	1	22	**1,650.00**
166610A	Dual line with 15-58 pump on left	1	22	**1,650.00**
166602A	Dual line with Alpha pump on right	1	22	**1,950.00**
166612A	Dual line with Alpha pump on left	1	22	**1,950.00**

Code	Description	Pk	Lbs	USD
167600A	Dual line with 15-58 pump on right	1	23	**1,950.00**
167610A	Dual line with 15-58 pump on left	1	23	**1,950.00**
167602A	Dual line with Alpha pump on right	1	23	**2,250.00**
167612A	Dual line with Alpha pump on left	1	23	**2,250.00**

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

Code	Description	Pk	Lbs	USD
519006	Differential pressure by-pass valve	1	1.0	**85.00**



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	Pk	Lbs	USD
NA16069	1" sweat outlet union fittings	1	1.0	**77.60**

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	Pk	Lbs	USD
NA16169	1" sweat outlet union fittings	1	1.0	**78.60**

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	Pk	Lbs	USD
NA16060	1" NPT M outlet union fitting	1	1.0	**87.60**

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.

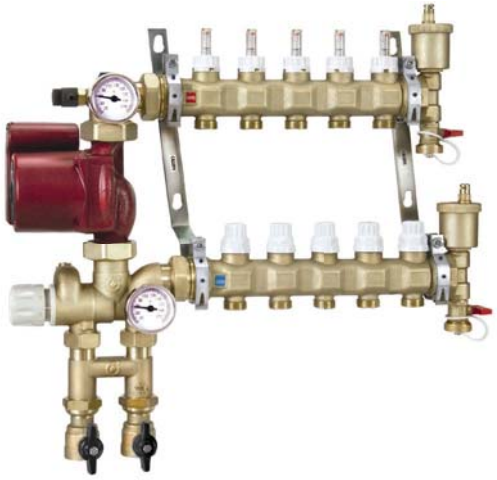
Code	Description	Pk	Lbs	USD
NA16160	1" NPT F inlet union fitting	1	1.0	**88.60**

FIXED POINT TEMPERATURE MIXING MANIFOLDS

172
Manifold mixing station, thermostatic fixed point mixing

tech. broch. 01155

Pre-assembled 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.



Code	Description	UPS Pump	No.	Outlets	Pk	Lbs	USD
1725C1A	¾"	15-58	3	¾" M	1	20	**1,501.00**
1725D1A	¾"	15-58	4	¾" M	1	21	**1,597.80**
1725E1A	¾"	15-58	5	¾" M	1	23	**1,694.60**
1725F1A	¾"	15-58	6	¾" M	1	25	**1,791.40**
1725G1A	¾"	15-58	7	¾" M	1	27	**1,888.20**
1725H1A	¾"	15-58	8	¾" M	1	28	**1,985.00**
1725I1A	¾"	15-58	9	¾" M	1	29	**2,081.80**
1725L1A	¾"	15-58	10	¾" M	1	31	**2,178.60**
1725M1A	¾"	15-58	11	¾" M	1	33	**2,275.40**
1725N1A	¾"	15-58	12	¾" M	1	34	**2,372.20**
1725O1A	¾"	15-58	13	¾" M	1	36	**2,469.00**

172
Manifold mixing station, thermostatic fixed point mixing with High Efficiency Pump

tech. broch. 01155

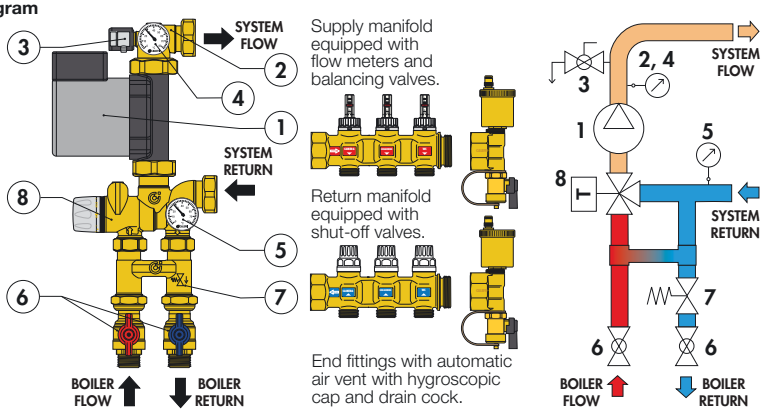
Pre-assembled manifold mixing station consisting of a supply distribution manifold complete with built-in sight flow gauges, adjustable balancing valves. Return manifold with built-in shutoff valves is suitable for thermo-electric actuators. Complete with built-in sensor to keep flow temperature at constant 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.

Code	Description	Alpha Pump	No.	Outlets	Pk	Lbs	USD
1725C1AHE	¾"	25-55U	3	¾" M	1	20	**1,801.00**
1725D1AHE	¾"	25-55U	4	¾" M	1	21	**1,897.80**
1725E1AHE	¾"	25-55U	5	¾" M	1	23	**1,994.60**
1725F1AHE	¾"	25-55U	6	¾" M	1	25	**2,091.40**
1725G1AHE	¾"	25-55U	7	¾" M	1	27	**2,188.20**
1725H1AHE	¾"	25-55U	8	¾" M	1	28	**2,285.00**
1725I1AHE	¾"	25-55U	9	¾" M	1	29	**2,381.80**
1725L1AHE	¾"	25-55U	10	¾" M	1	31	**2,478.60**
1725M1AHE	¾"	25-55U	11	¾" M	1	33	**2,575.40**
1725N1AHE	¾"	25-55U	12	¾" M	1	34	**2,672.20**
1725O1AHE	¾"	25-55U	13	¾" M	1	36	**2,769.00**

FIXED POINT TEMPERATURE MIXING STATION

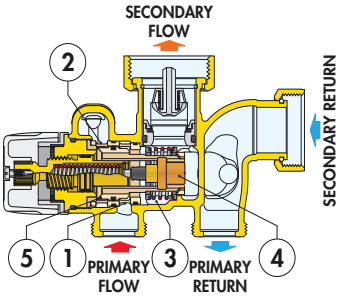
Characteristic components / hydraulic diagram

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



OPERATING PRINCIPLE

The fluid temperature is controlled by a thermostatic three-way mixing valve regulated by a thermostatic sensor (4) located in the mixed water outlet chamber (3) of the valve. By expanding and contracting, it continuously ensures a correct proportioning of hot water coming from the boiler, and water returning from the manifold circuit. The water intake is regulated by an internal cartidge, consisting of a piston (5) that slides inside a cylinder, located between the hot water flow (1) and the water returning from the circuit (2). Even if the secondary circuit thermal load or the inlet temperature from the boiler changes, the mixing valve automatically adjusts the flow rate until it obtains the set secondary flow temperature.



CONSTRUCTION DETAILS

Three-way mixing valve unit
The three-way mixing valve unit, containing the piston, is constructed of a single casting with connections to the primary and secondary circuits. Internal channels carry the system return fluid from the primary return port to the mixing chamber, allowing for the unit to be small and easy to connect.

Reduced head losses
The three-way mixing valve is equipped with a specially designed shutter with calibrated water orifices. This ensures a high flow rate and a reduced size, while maintaining accurate temperature control with no swings due to sudden changes in thermal load.

Removable/replaceable cartridge
The three-way mixing valve is designed so that all fluid regulating components are contained in a removable internal cartridge. This allows for easy inspection, cleaning or replacement if required, without he need to disconnect any piping to the valve body.

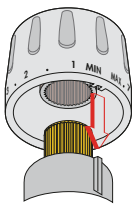
Adjustment locking
Turn the knob to the required number. Unscrew the upper screw and remove the knob. Place the knob back on so that the internal slot mates with the key on the valve body. Reinstall the upper screw.

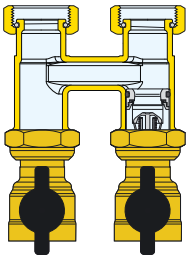
Hydraulic separator with check valve
The hydraulic separator permits hydraulic separation between the primary and secondary circuits, preventing flow in one circuit from interfering with flow in the other. It can be removed if connecting directly to a HydroLink™ or hydraulic separator without a primary pump.

Non-sticking materials
The materials used in constructing the mixing valve eliminate potential sticking due to scale. All functional parts are constructed using a low friction coefficient material, which ensures performance over time.

Low inertia thermostat sensor
The temperature-sensitive element, the “engine” of the thermostatic three-way valve has low thermal inertia. Therefore, it can quickly react to changes in the conditions of inlet pressure and temperature, shortening the valve response time as the thermal load changes.

Temperature adjustment and locking
The control knob is used to adjust temperature in a full turn (360°) between min. and max. It also has tamper protection for locking the temperature at the set value.





BRASS DISTRIBUTION MANIFOLDS

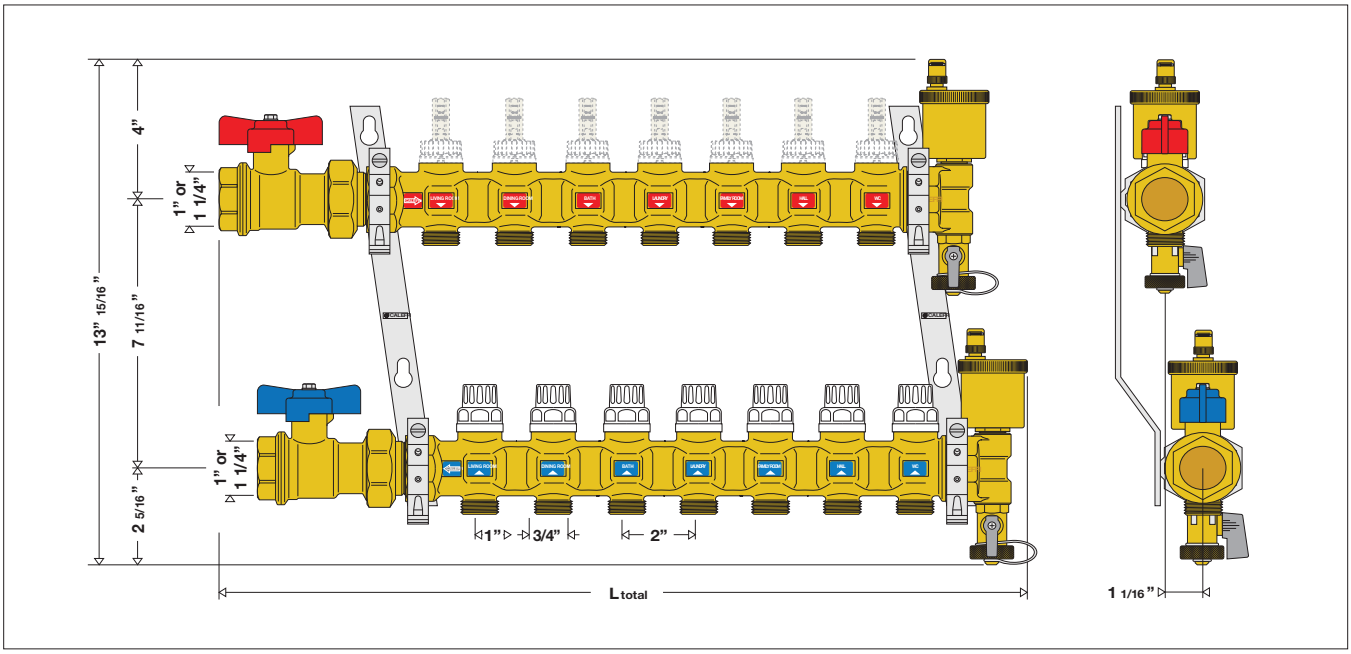
668S1
TwistFlow™ Assembly

tech. broch. 01170

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 gauges and balancing valves.
1" or 1¼" NPT inlet ball valves.
Max. working pressure: 150 psi.
Max. working temperature: 180°F.
Max: peak temperature: 200°F.
Loop Cv: 1.23 (combined supply & return ports).
Outlet center distance: 2 in.

Code	Description	No.	Outlets	Pk	Lbs	USD
6686C5S1A	1"	3	¾" M	1	17	**700.20**
6686D5S1A	1"	4	¾" M	1	18	**809.10**
6686E5S1A	1"	5	¾" M	1	19	**917.90**
6686F5S1A	1"	6	¾" M	1	21	**1,026.70**
6686G5S1A	1"	7	¾" M	1	23	**1,135.60**
6686H5S1A	1"	8	¾" M	1	24	**1,244.50**
6686I5S1A	1"	9	¾" M	1	26	**1,353.30**
6686L5S1A	1"	10	¾" M	1	28	**1,462.20**
6686M5S1A	1"	11	¾" M	1	29	**1,570.90**
6686N5S1A	1"	12	¾" M	1	31	**1,679.80**
6686O5S1A	1"	13	¾" M	1	33	**1,788.80**
6687C5S1A	1¼"	3	¾" M	1	17	**745.20**
6687D5S1A	1¼"	4	¾" M	1	18	**854.10**
6687E5S1A	1¼"	5	¾" M	1	19	**963.90**
6687F5S1A	1¼"	6	¾" M	1	21	**1,071.00**
6687G5S1A	1¼"	7	¾" M	1	23	**1,180.60**
6687H5S1A	1¼"	8	¾" M	1	24	**1,289.50**
6687I5S1A	1¼"	9	¾" M	1	26	**1,398.30**
6687L5S1A	1¼"	10	¾" M	1	28	**1,507.20**
6687M5S1A	1¼"	11	¾" M	1	29	**1,615.90**
6687N5S1A	1¼"	12	¾" M	1	31	**1,724.80**
6687O5S1A	1¼"	13	¾" M	1	33	**1,833.80**

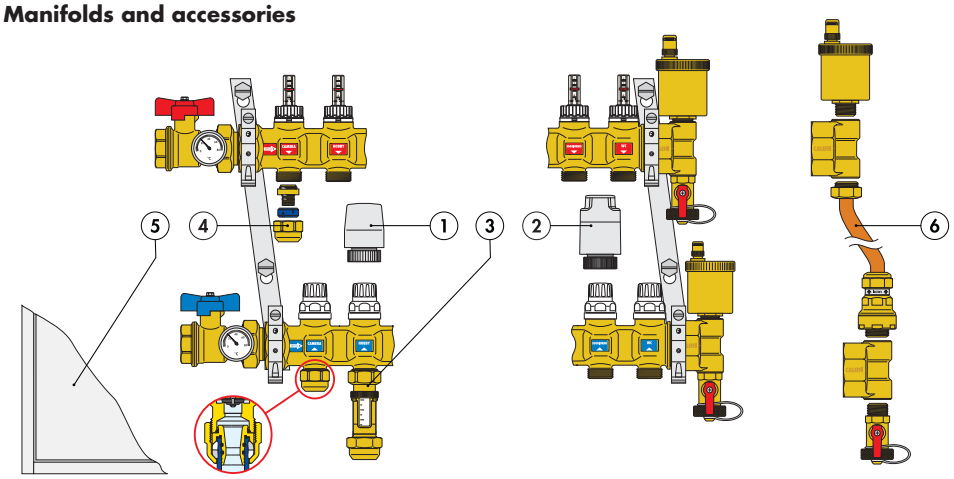
Consult factory for inverted assembly options.



Code (1")	**668**6C5S1A	**668**6D5S1A	**668**6E5S1A	**668**6F5S1A	**668**6G5S1A	**668**6H5S1A	**668**6I5S1A	**668**6L5S1A	**668**6M5S1A	**668**6N5S1A	**668**6O5S1A
Code (1¼")	**668**7C5S1A	**668**7D5S1A	**668**7E5S1A	**668**7F5S1A	**668**7G5S1A	**668**7H5S1A	**668**7I5S1A	**668**7L5S1A	**668**7M5S1A	**668**7N5S1A	**668**7O5S1A
No. outlets	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
Total length	15 3/16"	171/8"	19"	21"	23"	25"	28 1/8"	30 1/8"	32 1/16 "	34 1/16"	36"

BRASS DISTRIBUTION MANIFOLDS

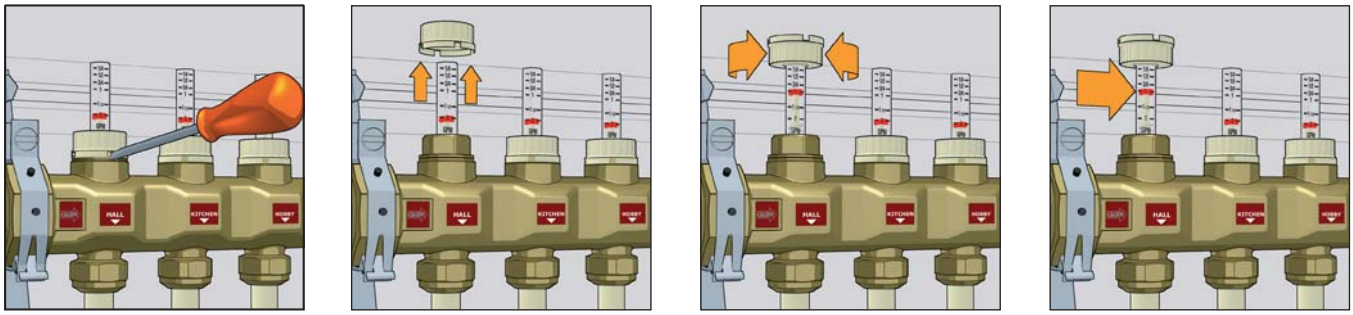
Manifolds and accessories



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

Flow rate adjustment and reading

Raise the block cover with the aid of a screwdriver and turn it over onto the flow meter. Adjust the flow rate of the single panels by turning the flow meter body acting on the built-in balancing valve.
The flow rate must be read off the graduated scale, expressed in gpm, printed on the flow meter.
After making all the adjustments, reposition and lock all the knobs in their seat to prevent tampering.



FIXED POINT TEMPERATURE MIXING STATION

Thermostatic pump station

tech. broch. 01170

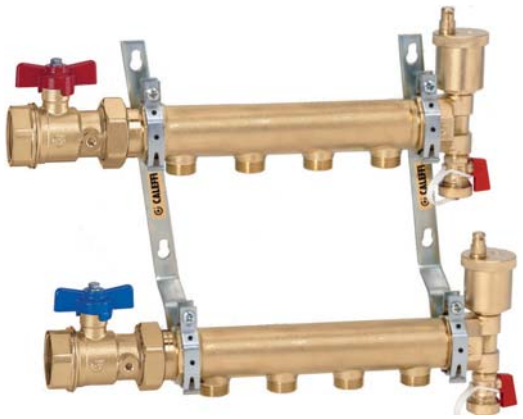
For field assembly to a Caleffi radiant manifold assembly. Manifold pump station.
Grundfos UPS 15—58 three-speed pump or Alpha 25-55U.
1" NPT male adapters included to connect to manifold.
¾" NPT male riser connections.
Includes built-in hydraulic separator.

Code	Description	Pk	Lbs	USD
NA17256HE	Thermostatic fixed point, Alpha 25-55U	1	4.1	**1,390.00**
NA17256	Thermostatic fixed point, UPS 15-58	1	4.1	**1,090.00**

DISTRIBUTION MANIFOLDS

592
Hi-Flow distribution assembly
(No shut-off or balancing valves)

Pre-assembled distribution assembly consisting of return distribution manifold and supply distribution manifold.
1¼" NPT inlet ball valves.
Max. working pressure: 150 psi.
Max. working temperature: 210°F.
Loop Cv: 5.0
Outlet center distance: 2⅜ in.



Code	Description	No.	Outlets	Pk	Lbs	USD
5927B5A	1¼"	2	¾" M	1	16	**486.10**
5927C5A	1¼"	3	¾" M	1	17	**521.20**
5927D5A	1¼"	4	¾" M	1	18	**545.00**
5927E5A	1¼"	5	¾" M	1	19	**615.10**
5927F5A	1¼"	6	¾" M	1	21	**650.20**
5927G5A	1¼"	7	¾" M	1	23	**703.50**
5927H5A	1¼"	8	¾" M	1	24	**765.50**

Consult factory for inverted assembly options.

663
Pre-assembled distribution assembly

tech. broch. 01170

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.

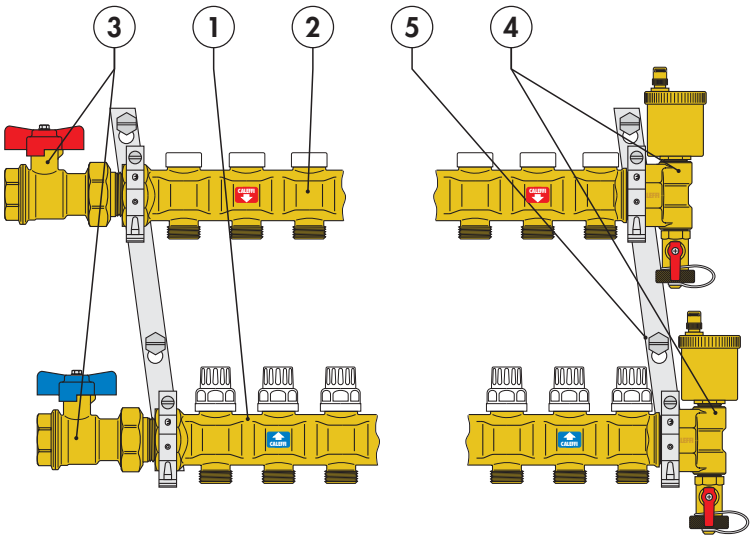
Code	Description	No.	Outlets	Pk	Lbs	USD
6636C5A	1"	3	¾" M	1	17	**595.20**
6636D5A	1"	4	¾" M	1	18	**687.60**
6636E5A	1"	5	¾" M	1	19	**780.20**
6636F5A	1"	6	¾" M	1	21	**872.60**
6636G5A	1"	7	¾" M	1	23	**965.20**
6636H5A	1"	8	¾" M	1	24	**1,057.90**
6636I5A	1"	9	¾" M	1	26	**1,150.30**
6636L5A	1"	10	¾" M	1	28	**1,242.80**
6636M5A	1"	11	¾" M	1	29	**1,335.30**
6636N5A	1"	12	¾" M	1	31	**1,427.90**
6636O5A	1"	13	¾" M	1	33	**1,520.40**
6636P5A	1"	14	¾" M	1	35	**1,786.00**

Consult factory for inverted assembly options.

Code	Description	No.	Outlets	Pk	Lbs	USD
6637C5A	1¼"	3	¾" M	1	17	**634.40**
6637D5A	1¼"	4	¾" M	1	18	**725.90**
6637E5A	1¼"	5	¾" M	1	19	**818.50**
6637F5A	1¼"	6	¾" M	1	21	**911.00**
6637G5A	1¼"	7	¾" M	1	23	**1,003.60**
6637H5A	1¼"	8	¾" M	1	24	**1,096.00**
6637I5A	1¼"	9	¾" M	1	26	**1,188.50**
6637L5A	1¼"	10	¾" M	1	28	**1,281.10**
6637M5A	1¼"	11	¾" M	1	29	**1,373.50**
6637N5A	1¼"	12	¾" M	1	31	**1,466.30**
6637O5A	1¼"	13	¾" M	1	33	**1,558.70**
6637P5A	1¼"	14	¾" M	1	35	**1,831.90**

Consult factory for inverted assembly options.

DISTRIBUTION MANIFOLDS



663 manifold components

1 Supply manifold (complete with manually adjustable balancing valves only for 663 series).

2 Return manifold complete with shut-off valves that can be used with thermoelectric actuators.

3 Shut-off ball valves

4 End fittings consisting of a 3-way end fitting, automatic air vent valve and drain valve.

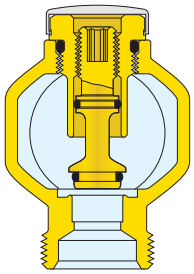
5 Pair of mounting brackets for use with series 659 boxes or direct wall installation.

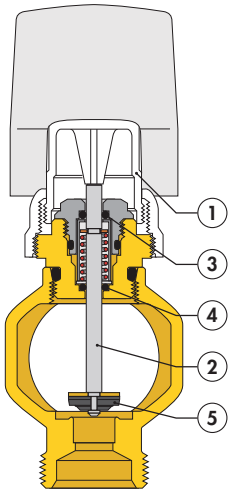
663 series supply manifold

Supply manifold has manual balancing valves for regulating flow delivered to system circuits. The balancing is accomplished by turning an hex wrench into the balancing valve in each supply outlet. The chart below shows the number of turns for reaching the desired value of flow and Δp.

Adjustment turns	Cv
1.5	0.25
2	0.55
2.5	1.0
3	1.7
3.5	2.5
4	3.0
Totally Open	3.2

Cv = flow in gal/min for a pressure loss of 1 psi





663 series return manifold

The return manifold is equipped with manual shut-off valves (1) which are used to shut off the flow to individual circuits.

They can also be used with a thermo-electric actuator which, when used with an ambient thermostat, maintains the ambient temperature at the set limits when thermal load varies. The stem (2) is made of polished stainless steel to minimize friction and prevent harmful encrustation from forming.

The control device upper part features a double EPDM O-ring seal (3) — (4) on the sliding stem.

The valve (5) is made of EPDM and is molded to optimize the hydronic characteristics of the valve and reduce noise to a minimum as the fluid passes through and as it gradually opens and closes when operating with a thermo-electric actuator.

FIXED POINT TEMPERATURE MIXING STATION

Thermostatic pump station

tech. broch. 01170

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

Code	Description	Pk	Lbs	USD
NA17256HE	Thermostatic fixed point, Alpha 25-55U	1	4.1	**1,390.00**
NA17256	Thermostatic fixed point, UPS 15-58	1	4.1	**1,090.00**

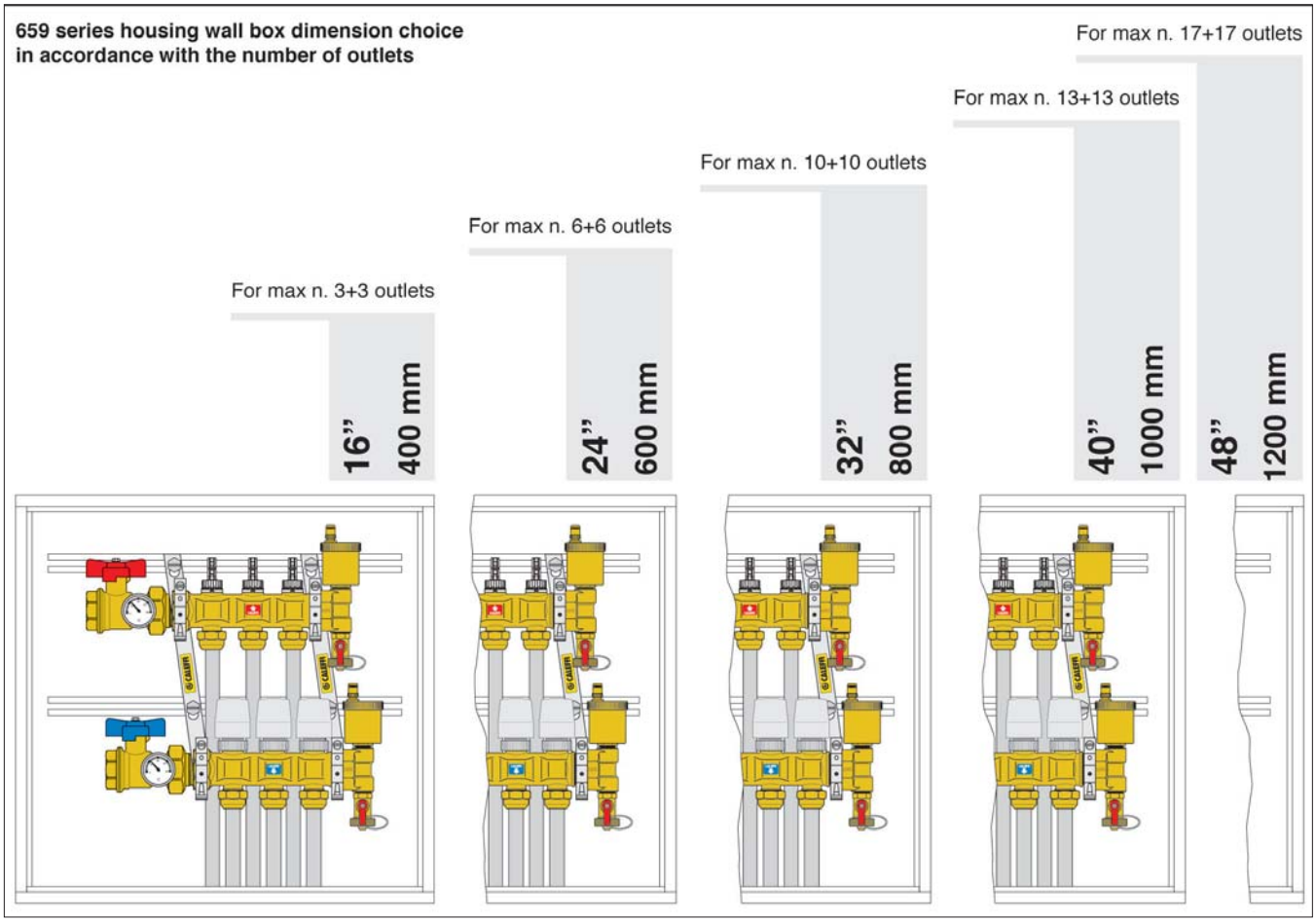
BOXES FOR DISTRIBUTION MANIFOLDS

659
Manifold cabinet

tech. broch. 01170

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	Pk	Lbs	USD
659044	16" width	20"	3	1	17	**384.10**
659064	24" width	20"	6	1	23	**417.90**
659084	32" width	20"	10	1	29	**492.10**
659104	40" width	20"	13	1	36	**566.20**
659124	48" width	20"	17	1	43	**640.30**



FITTINGS FOR DISTRIBUTION MANIFOLDS AND MIXING STATIONS

(680504A shown)

680 Universal PEX fittings

tech. broch. 01170

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	Pk	Lbs	USD
680507	5/16" nominal PEX	Blue	10	2.0	**11.85**
680503A	3/8" nominal PEX	Black	10	2.0	**11.85**
680504A	1/2" nominal PEX	Blue	10	2.0	**11.85**
680555A	5/8" nominal PEX	Black	10	2.0	**11.85**
680505A	3/4" nominal PEX	Brass	10	2.0	**11.85**

(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	Pk	Lbs	USD
682530A	3/8" nominal PEX-AL-PEX	10	2.0	**12.15**
682540A	1/2" nominal PEX-AL-PEX	10	2.0	**12.15**
682545A	5/8" nominal PEX-AL-PEX	10	2.0	**13.15**
682550A	3/4" nominal PEX-AL-PEX	10	2.0	**23.25**

NA102

Sweat connection fitting fits 1/2" copper.
Max. working pressure: 150 psi.
Working temperature range: 41—250°F.
Chrome plated nut.

Code	Description	Pk	Lbs	USD
NA10262	1/2" sweat	10	2.0	**13.25**

NA103

NPT connection fitting.
Max. working pressure: 150 psi.
Working temperature range: 41—250°F.
Chrome plated nut.

Code	Description	Pk	Lbs	USD
NA10313	1/2" NPT male	10	2.0	**14.30**

386

tech. broch.01170

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

Code	Description	Pk	Lbs	USD
386500	3/4" straight thread	10	2.0	**11.85**

Double nipple for coupling PEX fittings.

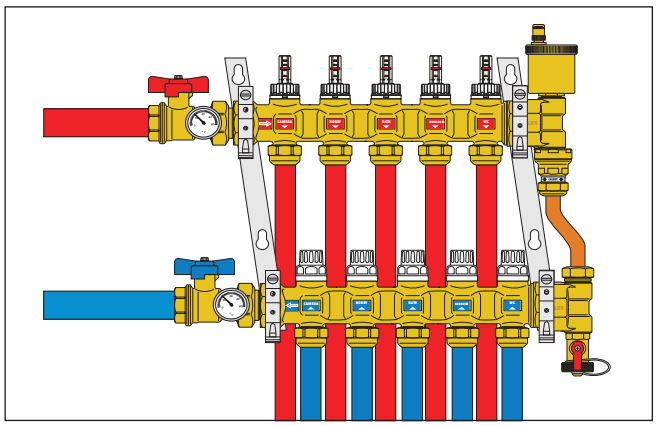
Code	Description	Pk	Lbs	USD
942550	3/4" x 3/4" thread	1	0.4	**14.80**

668

tech. broch. 01170

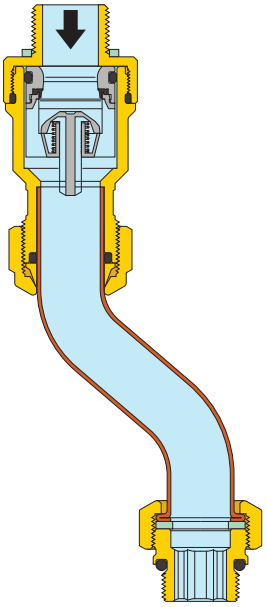
Off-center by-pass assembly with fixed crack setting of 3.6 psi differential pressure.
Max working pressure: 150 psi.
Working temperature range: 15—230°F.

Code	Description	Pk	Lbs	USD
668000	½" x ½"	1	0.5	**112.20**



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.



6564

tech. broch. 01198

Low current draw thermo-electric actuator for use with 663 and 668S1 series distribution manifolds.
Power supply: 24 V AC/DC.
Initial current draw: ≤ 250 mA.
Power consumption: 3 W.
Rating of micro-switch contacts: 5 A (24V).
31.5" wire lead connection.

Code	Description	Pk	Lbs	USD
656404	24 V AC/DC	10	4.0	**98.40**
656414	24 V AC/DC with micro-switch	10	4.0	**123.00**

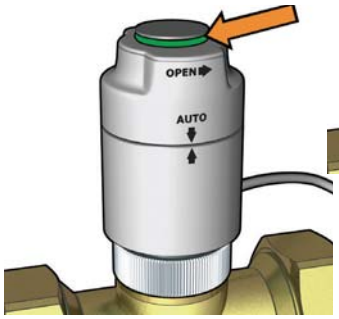
6563 TwisTop™

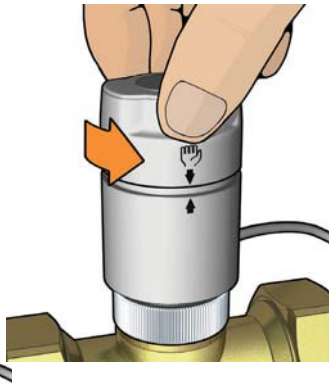
tech. broch. 01170

TwisTop™ thermo-electric actuator for use with return manifolds.
Twist the top to manually open.
Power supply: 24 V AC/DC.
Initial current draw: 800 mA.
Power consumption: 3 W.
Rating of micro-switch contacts: 5 A (24 V).
31.5" wire lead connection.

Code	Description	Pk	Lbs	USD
656304	24 V AC/DC	10	4.0	**131.10**
656314	24 V AC/DC with micro-switch	10	4.0	**155.60**

**Simply twist to manually open actuator (and activate auxiliary switch on 656314).
When power is applied, it returns to Auto position.**





Green ring indicates valve is open.

ACCESSORIES

Wrench for tightening PEX fitting to manifolds.

Code	Description	Pk	Lbs	USD
387100	26 mm x 30 mm	1	1.5	**84.10**

Replacement balance/flow meter fits 668S1 series manifold.

Code	Description	Pk	Lbs	USD
F69600	Fits 668S1 manifolds	1	0.2	**34.60**

Replacement shut-off valve fits 668 S1 series manifold.

Code	Description	Pk	Lbs	USD
F69590	Fits 668 S1 manifolds	1	0.3	**15.40**

Replacement balancing valve fits 668 series manifold.

Code	Description	Pk	Lbs	USD
69184	Fits 668 manifolds	1	0.3	**24.10**

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

Code	Description	Pk	Lbs	USD
69122 CST	Fits 663 and 668 manifolds	1	0.3	**15.40**

669

tech. broch. 01170

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	Pk	Lbs	USD
669050	1 To 4 LPM	10	3.7	**40.80**
NA669150	¼ To 1 GPM High Temp.	12	4.0	**40.80**
NA669250	½ To 2 GPM High Temp.	12	4.0	**40.80**
NA669450	1 To 4 GPM High Temp.	12	4.0	**40.80**

White replacement knob fits 663 and 668S1 series manifolds.

Code	Description	Pk	Lbs	USD
449000	Knob	1	1.5	**11.95**

5020

tech. broch. 01090

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	Pk	Lbs	USD
502043 CST	½" straight thread	60	35	**30.40**

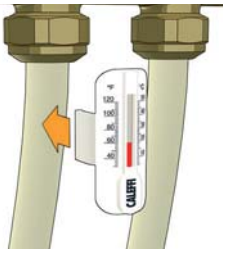
Plastic replacement/test cap fits 5020 series.

Code	Description	Pk	Lbs	USD
R56214	Vent cap	10	0.2	**2.50**

675

tech. broch.01170

Snap-on thermometer directly to PEX or PEX-AL-PEX piping.



Code	Description	Pk	Lbs	USD
675900A	⅜", ½" & ⅝" PEX piping	10	2.0	**12.85**

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	Pk	Lbs	USD
688003A	Gauge with pocket well	1	0.2	**47.90**
R31627	Replacement pocket well	1	0.1	**4.40**
R67037	O-ring fits R31627	1	0.1	**1.10**

FILL AND FLUSH CART

NA25510 tech. broch. 01280
Fill and flush cart

The fill and flush pump cart is portable, pre-assembled and leak-tested for a safe, quick and clean way to fill and flush solar and hydronic heating 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.

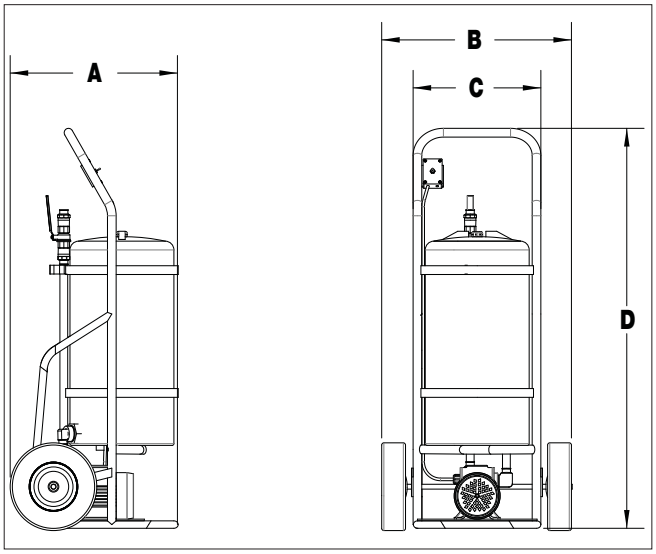
Code	Description	Pk	Lbs	USD
NA25510	Fill and flush cart	1	60	**2,400.00**

Operating principles

The fill and flush pump cart is portable, pre-assembled and leak-tested for a safe, quick and clean way to fill and flush solar, geothermal and hydronic heating systems. Preassembled with a leak test pressure gauge, the Fill and Flush cart makes it easy to test a system.

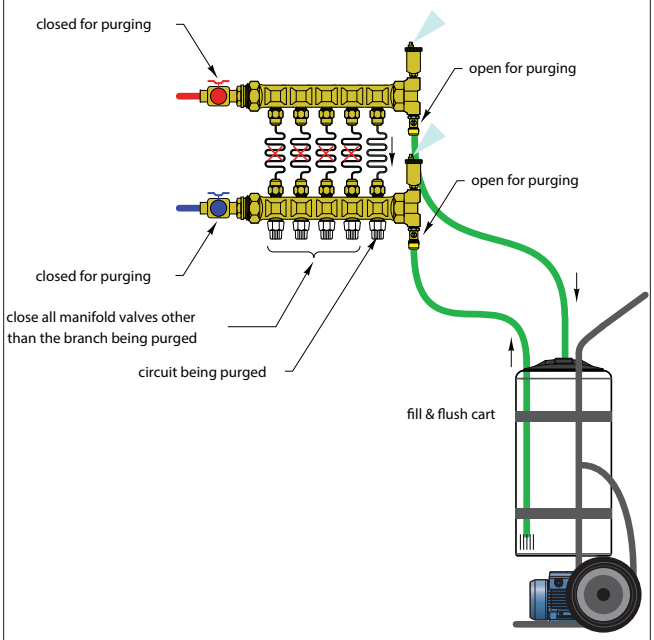
Connect the fill/purge valves to the fill and flush system, allow fluid to circulate and remove air and dirt in system. Pump system to desired pressure, use the liquid pressure gauge to observe system pressure. If the system holds its pressure, the system is leak free.

Dimensions:

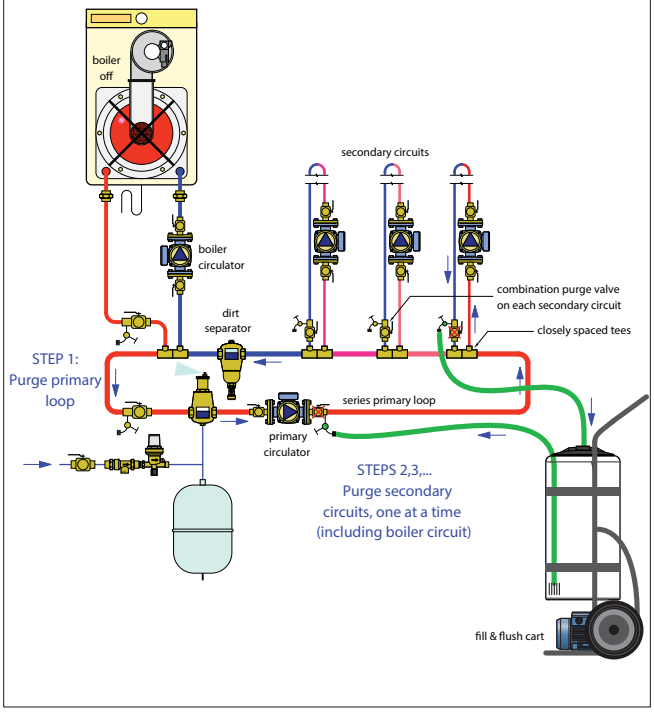


Code	A	B	C	D	Weight	Capacity
NA25510	20 ½"	20 ¼"	13 ¾"	46 ¾"	65 lbs.	13 gallon

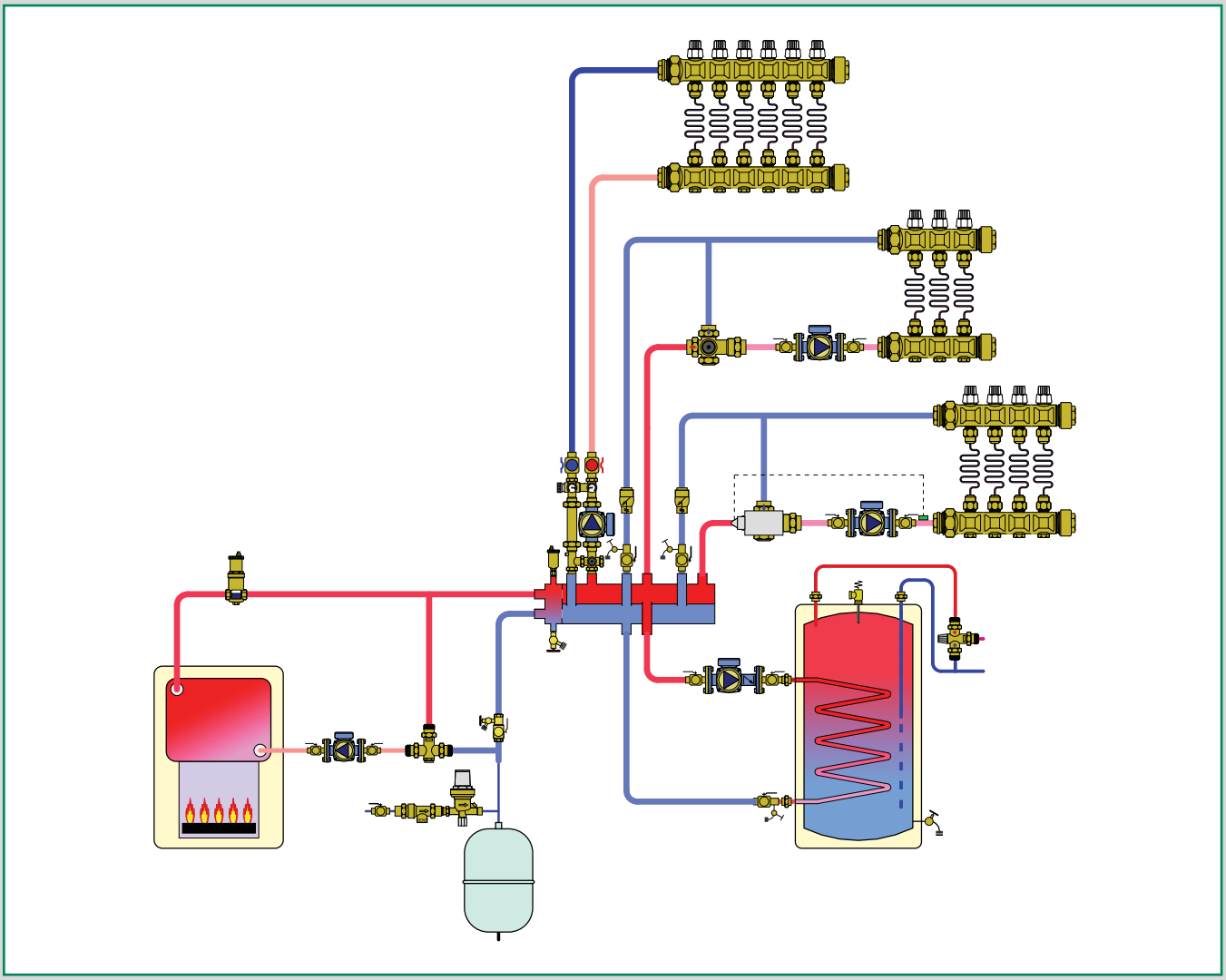
Radiant



Hydronic



This diagram is an example



Low lead thermostatic mixing valves, MixCal™

Low lead scald protection thermostatic mixing valves

Low lead high flow thermostatic mixing valves

Boiler protection valves, ThermoMix™

LOW LEAD THERMOSTATIC MIXING VALVES

521 MixCal™ Sweat

tech. broch. 01050

Adjustable thermostatic and pressure balanced mixing valve for point of distribution in domestic water systems and radiant hydronic heating systems.
Low-lead brass body.
Internal anti-scale materials.
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.
Certified to: cUPC listed to ASSE 1017/ CSA B125.3
Reduction of Lead in Drinking Water Act Compliant: 0.25% Max. weighted average lead content. Reduction of Lead in Drinking Water Act Certified by IAPMO R&T

ASSE 1017

Code	Description	Cv	Pk	Lbs	USD
521409A	½" sweat	3	5	12	**236.40**
521409AC	½" sweat inlet check valves	3	5	12	**260.60**
521509A	¾" sweat	3	5	12	**247.10**
521509AC	¾" sweat inlet check valves	3	5	12	**282.50**
521609A	1" sweat	3	5	12	**294.40**
521609AC	1" sweat inlet check valves	3	5	12	**329.70**
521101A	1" male union thread*	3	5	12	**183.50**

*Includes no sweat fittings or union nuts.

521 MixCal™ NPT

tech. broch. 01050

Adjustable thermostatic and pressure balanced mixing valve for point of distribution in domestic water systems and radiant hydronic heating systems.
Internal anti-scale materials.
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.
Certified to: cUPC listed to ASSE 1017/ CSA B125.3
Reduction of Lead in Drinking Water Act Compliant: 0.25% Max. weighted average lead content. Reduction of Lead in Drinking Water Act Certified by IAPMO R&T

ASSE 1017

Code	Description	Cv	Pk	Lbs	USD
521400A	½" NPT male	3	5	12	**247.10**
521400AC	½" NPT male inlet check valves	3	5	12	**271.30**
521500A	¾" NPT male	3	5	12	**257.90**
521500AC	¾" NPT male inlet check valves	3	5	12	**293.20**
521600A	1" NPT male	3	5	12	**306.30**
521600AC	1" NPT male inlet check valves	3	5	12	**341.60**
521101A	1" male union thread*	3	5	12	**183.50**

*Includes no NPT fittings or union nuts.

521 MixCal™ Sweat

tech. broch. 01050

Adjustable thermostatic and pressure balanced mixing valve for point of distribution in domestic water systems and radiant hydronic heating systems.
Low-lead brass body.
Internal anti-scale materials.
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.
Certified to: cUPC listed to ASSE 1017/ CSA B125.3
Reduction of Lead in Drinking Water Act Compliant: 0.25% Max. weighted average lead content. Reduction of Lead in Drinking Water Act Certified by IAPMO R&T

ASSE 1017

Code	Description	Cv	Pk	Lbs	USD
521419A	½" sweat NEW	3	5	14	**280.40**
521419AC	½" sweat inlet check valves	3	5	14	**304.60**
521519A	¾" sweat	3	5	14	**291.10**
521519AC	¾" sweat inlet check valves	3	5	14	**326.30**
521619A	1" sweat	3	5	14	**335.20**
521619AC	1" sweat inlet check valves	3	5	14	**370.40**

Point of distribution mixed temperature gauge adaptor fits MixCal™ 521 series mixing valves. Threaded union mounting replaces existing mixed outlet with ¾" or 1" sweat pipe connection. Removable gauge fits into temperature well. Gauge dial is 2" diameter and scale from 30—210°F.
Low-lead brass body.
Do not use with point of use mixing valves where scald protection is required.

Code	Description	Pk	Lbs	USD
NA10328	½" sweat with gauge NEW	1	0.4	**70.30**
NA10056	¾" sweat with gauge	1	0.4	**77.20**
NA10058	1" sweat with gauge	1	0.5	**84.80**
688003A	Replacement gauge	1	0.2	**47.90**

Conical inlet filter and check valve for use in 521, 5213 and 2521 mixing valves.
(Priced each, sold in package of 10)

Code	Description	Pk	Lbs	USD
R52429	Conical filter	10	0.2	**4.80**
R39204	Check valve insert	10	0.1	**4.00**

LOW LEAD SCALD PROTECTION THERMOSTATIC MIXING VALVES

ASSE 1070 LOW-LEAD cUPC

NEW

5213 Sweat tech. broch. 01092
Scald Protection Point-of-Use

Adjustable thermostatic and pressure balanced mixing valve for point of use where the user must be protected from the danger of 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: 185°F.
Adjustable range: 85—120°F.
Temperature control: ±3°F.
Min. flow for optimum performance: 0.5 gpm.
Certified to: cUPC listed to ASSE 1070/ CSA B125.3 for single and multiple function applications.
Reduction of Lead in Drinking Water Act Compliant: (0.25% Max. weighted average lead content. Reduction of Lead in Drinking Water Act Certified by IAPMO R&T

ASSE 1070 LOW-LEAD cUPC

NEW

5213 NPT tech. broch. 01092
Scald Protection Point-of-Use

Adjustable thermostatic and pressure balanced mixing valve for point of use where the user must be protected from the danger of 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: 185°F.
Adjustable range: 85—120°F.
Temperature control: ±3°F.
Min. flow for optimum performance: 0.5 gpm.
Certified to: cUPC listed to ASSE 1070/ CSA B125.3 for single and multiple function applications.
Reduction of Lead in Drinking Water Act Compliant: (0.25% Max. weighted average lead content. Reduction of Lead in Drinking Water Act Certified by IAPMO R&T

Code	Description	Cv	Pk	Lbs	USD
521349A	½" sweat	2	10	20	**246.90**
521359A	¾" sweat	2	10	20	**258.10**
521369A	1" sweat	2	10	20	**308.40**

Code	Description	Cv	Pk	Lbs	USD
521342A	½" NPT male	2	10	20	**258.10**
521352A	¾" NPT male	2	10	20	**269.30**
521362A	1" NPT male	2	10	20	**319.80**

Flow rate-use

The Caleffi 5213 series is a thermostatic mixing valve suitable for **point of use application**. For this reason, the flow rate through the valve is the same as that of the final outlet, e.g. mixer or tap for washbasin, shower or bath. In order to ensure the set temperature, the thermostatic mixing valve must have a minimum flow rate of .5 gpm (1 l/min).

The system must be sized taking into account the local requirements with regard to the nominal flow rate of each outlet.

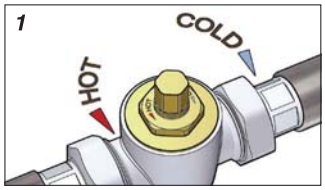
Temperature adjustment

Temperature setting can be adjusted by removing the cap from the valve body and reversing the cap onto the temperature adjustment spindle.

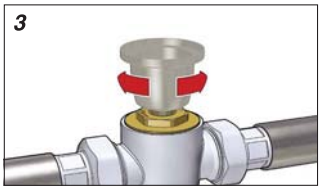
In accordance with the anti-scald requirements, mixed water at the outlet of the sanitary fixtures is suggested to not exceed the following values:

120°F (49°C) for domestic or normal buildings
110°F (43.3°C) for hospitals or special buildings
100°F (38°C) for children

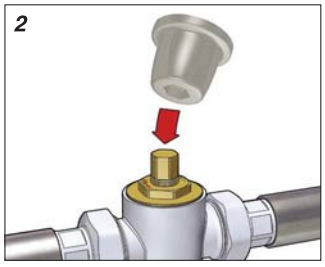
Temperature setting can then be locked at the desired value using the locking nut.



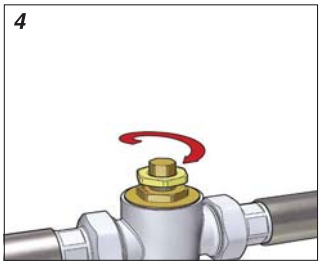
View of temperature adjustment



Temperature adjustment cap in place

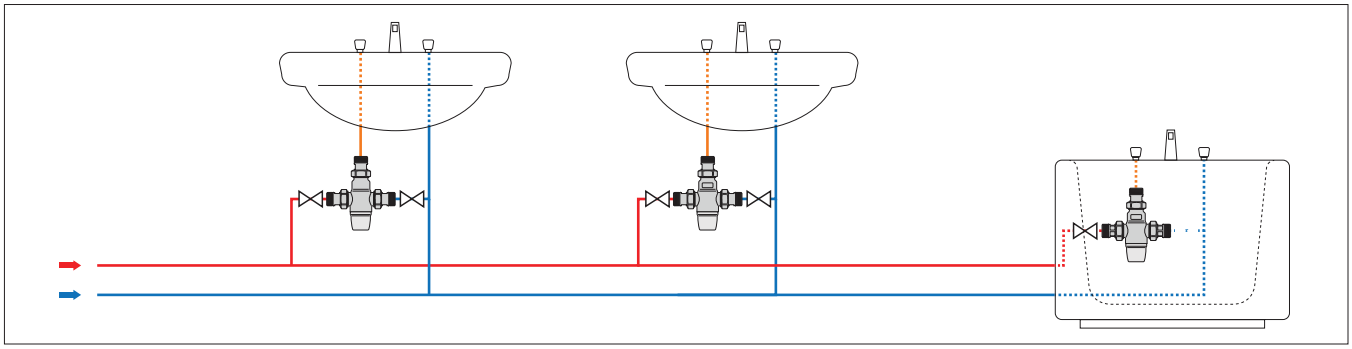


Fitting temperature adjustment cap



Locking adjustment spindle with locking nut

Point of use installation



LOW LEAD HIGH FLOW THERMOSTATIC MIXING VALVES

ASSE 1017 model 5231 series high flow thermostatic mixing valves for centralized systems are designed to be installed at the hot water heater (point of distribution) and cannot be used for tempering water temperature at fixtures as a point-of-use valve. They are not designed to provide scald protection and should not be used where ASSE 1070 devices are required. Wherever a scald protection feature is required, ASSE 1070 model mixing valves must be installed. For safety reasons, it is advisable to limit the maximum mixed water temperature to 120°F. 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.

5231 High Flow

tech. broch. 01256

Adjustable thermostatic mixing valve for radiant hydronic heating systems and domestic water systems. Low lead brass body with internal anti-scale materials.
Max. working pressure: 200 psi.
Max. inlet temperature: 195°F.
Adjustable range: 90—150°F.
Certified to: *cUPC listed to ASSE 1017/ CSA B125.3
Reduction of Lead in Drinking Water Act Compliant: 0.25% Max. weighted average lead content. Reduction of Lead in Drinking Water Act Certified by IAPMO R&T

Code	Description	Min. Flow (gpm)	Cv	Pk	Lbs	USD
523168A	1" sweat	4.4	7.0	1	7.0	**1,215.60**
523178A	1¼" sweat	4.4	7.6	1	7.1	**1,424.00**
523188A	1½" sweat	8.8	13.0	1	17	**2,002.20**
523198A	2" sweat	8.8	14.2	1	18	**2,300.90**

*Listing pending for the 1" and 1¼" sizes.

5231 High Flow

tech. broch. 01256

Adjustable thermostatic mixing valve for radiant hydronic heating systems and domestic water systems. Low lead brass body with internal anti-scale materials.
Max. working pressure: 200 psi.
Max. inlet temperature: 195°F.
Adjustable range: 90—150°F.
Certified to: *cUPC listed to ASSE 1017/ CSA B125.3
Reduction of Lead in Drinking Water Act Compliant: 0.25% Max. weighted average lead content. Reduction of Lead in Drinking Water Act Certified by IAPMO R&T

Code	Description	Min. Flow (gpm)	Cv	Pk	Lbs	USD
523160A	1" NPT male	4.4	7.0	1	7.0	**1,306.60**
523170A	1¼" NPT male	4.4	7.6	1	7.1	**1,494.90**
523180A	1½" NPT male	8.8	13.0	1	17	**2,073.00**
523190A	2" NPT male	8.8	14.2	1	18	**2,372.90**

*Listing pending for the 1" and 1¼" sizes.

5231 High Flow

tech. broch. 01256

Adjustable thermostatic mixing valve for radiant hydronic heating systems and domestic water systems with outlet temperature gauge. Low lead brass body.
Max. working pressure: 200 psi.
Max. inlet temperature: 195°F.
Adjustable range: 90—150°F.
Gauge scale: 30—210°F.
Gauge accuracy: ± 6°F.
Gauge dial: 2" diameter.
Certified to: *cUPC listed to ASSE 1017/ CSA B125.3
Reduction of Lead in Drinking Water Act Compliant: 0.25% Max. weighted average lead content. Reduction of Lead in Drinking Water Act Certified by IAPMO R&T

Code	Description	Min. Flow (gpm)	Cv	Pk	Lbs	USD
523177A	1¼" sweat	4.4	7.6	1	8.5	**1,507.50**

*Listing pending

Point of distribution mixed temperature gauge adaptor fits High Flow 5231 series mixing valves. Threaded union mounting replaces existing mixed outlet with 1¼" sweat pipe connection. Removable gauge fits into temperature well. Gauge dial is 2" diameter and scale from 30—210°F.
Low-lead brass body.
Do not use with point of use mixing valves where scald protection is required.

Code	Description	Pk	Lbs	USD
NA10315	1¼" sweat with gauge	1	0.5	**170.40**
688003A	Replacement gauge	1	0.2	**47.90**

MIXING VALVE FOR CENTRALIZED SYSTEMS

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

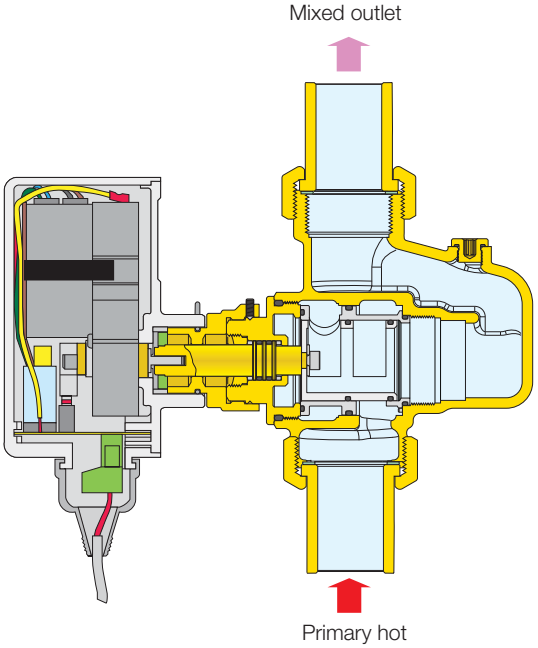
Motorized mixing valve for hydronic systems or in radiant panel heating systems. Operates on a control signal from a separately-sourced outdoor reset controller. High flow rate. No swings due to sudden changes in thermal load.
Installation flexibility with reversible cold inlet port and straight through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

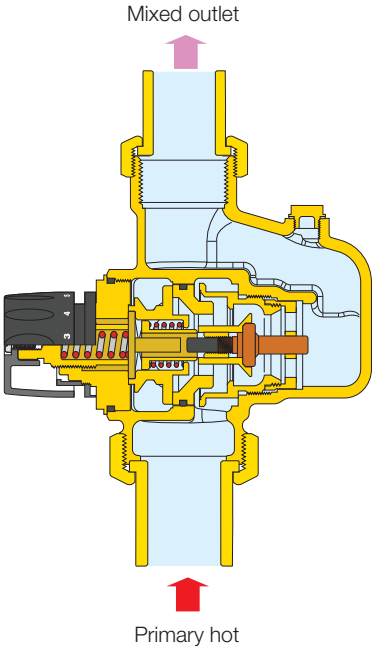
Code	Description	Cv	Pk	Lbs	USD
NA16469	1" sweat unions, floating	7.7	1	5.8	**990.00**

NA163
3-way fixed temperature mixing valve

Adjustable thermostatic mixing valve for boiler protection, low temperature mixing or in radiant panel heating systems.
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: 185°F.
Adjustable range: 80—130°F.

Code	Description	Cv	Pk	Lbs	USD
NA16369	1" sweat unions	3.9	1	4.8	**781.00**





BOILER PROTECTION VALVES

280 ThermoMix™ 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).

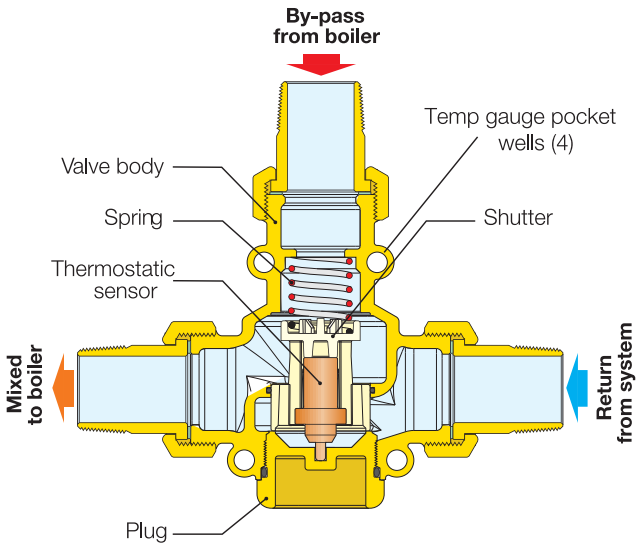
Code	Description	Cv	Pk	Lbs	USD
280165A	1" NPT 130ºF Tset	10	1	3.6	**422.00**
280166A	1" NPT 140ºF Tset	10	1	3.6	**422.00**
280175A	1¼" NPT 130ºF Tset	14	1	4.5	**485.00**
280176A	1¼" NPT 140ºF Tset	14	1	4.5	**485.00**

280 ThermoMix™ 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	Pk	Lbs	USD
280965A	1" sweat 130ºF Tset	10	1	3.6	**395.00**
280966A	1" sweat 140ºF Tset	10	1	3.6	**395.00**
280975A	1¼" sweat 130ºF Tset	14	1	4.5	**465.00**
280975A	1¼" sweat 140ºF Tset	14	1	4.5	**465.00**

Characteristic components



FUNCTION

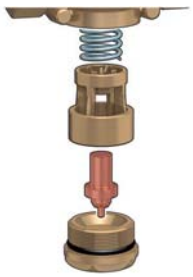
The ThermoMix™ boiler protection high-flow thermostatic mixing valve is used in hydronic heating systems with non-condensing boilers, including solid fuel, biomass, gas, LP or oil-fired. It can be installed with steel, cast iron and copper tube style boilers, automatically controlling the return water temperature, preventing condensation of the water vapor contained in the flue gas.

The 280 series ThermoMix™ valve mixes by-pass flow from the boiler with return flow from the system, sending a fixed temperature flow to the boiler which protects against corrosion from condensation occurring when a minimum flue gas temperature is not otherwise maintained.

Changeable thermostatic sensor cartridges modifies valve temperature setting. The thermostatic sensor cartridge can easily be removed for maintenance or to change the valve set temperature, with out removing the valve body from the piping.

Thermostatic sensor replacement to modify setting

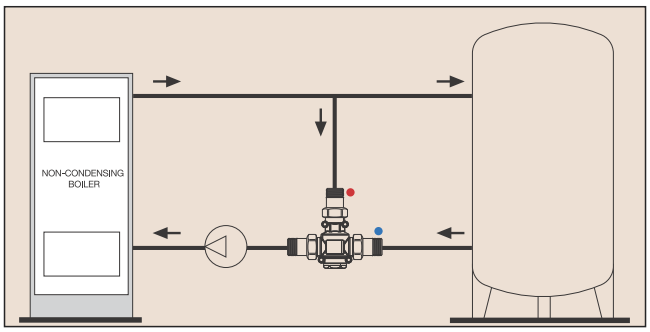
The thermostatic sensor can easily be removed for maintenance or to change the setting, with no need to remove the valve body from the piping.



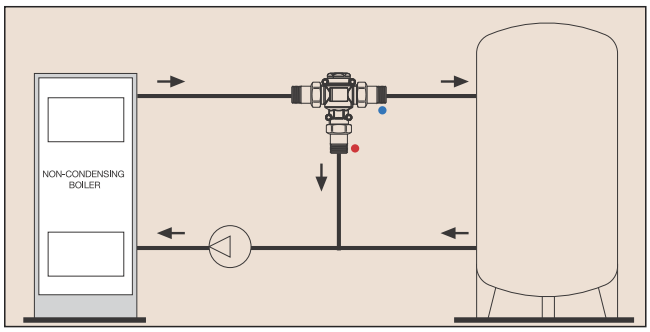
Installation

The valve can be installed on both sides of the boiler in any position, vertical or horizontal. Installation is recommended on the return to the boiler in mixing mode; it can also be installed on the flow from the boiler in diverting mode.

Installation in mixing mode (boiler protection)



Installation in diverter mode (system control)



BOILER PROTECTION VALVES

F296

Replacement thermostatic sensor cartridges.
Sensor cartridge accuracy: ±4ºF.
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	Pk	Lbs	USD
F29633	115ºF Tset	1	0.2	**40.00**
F29634	130ºF Tset	1	0.2	**40.00**
F29635	140ºF Tset	1	0.2	**40.00**
F29636	160ºF Tset	1	0.2	**40.00**

Selection note: thermostatic sensor cartridge will completely close at Tset value +18°F. Example: (130°F Tset +18°F=148°F completely closed) ±4ºF.

F295

Dual scale temperature gauge fits ThermoMix™ 280 & 281 series boiler protection valves.

Code	Description	Pk	Lbs	USD
F29571	32—250ºF	1	0.2	**34.00**

REPLACEMENT CARTRIDGE FOR 5230 VALVE

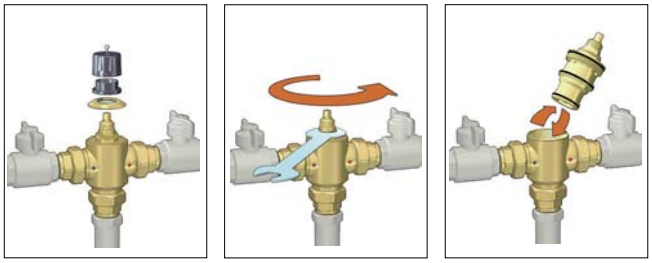
Replacement cartridge for 5230 series thermostatic mixing valves.

Code	Fits 5230…	Cv.	Pk	Lbs	USD
523005	58A,66A	4.8	1	1.9	**652.70**
523006	60A,68A,70A,78A	8—10	1	2.5	**920.20**
523008	80A,90A	17—22	1	4.6	**1,578.30**

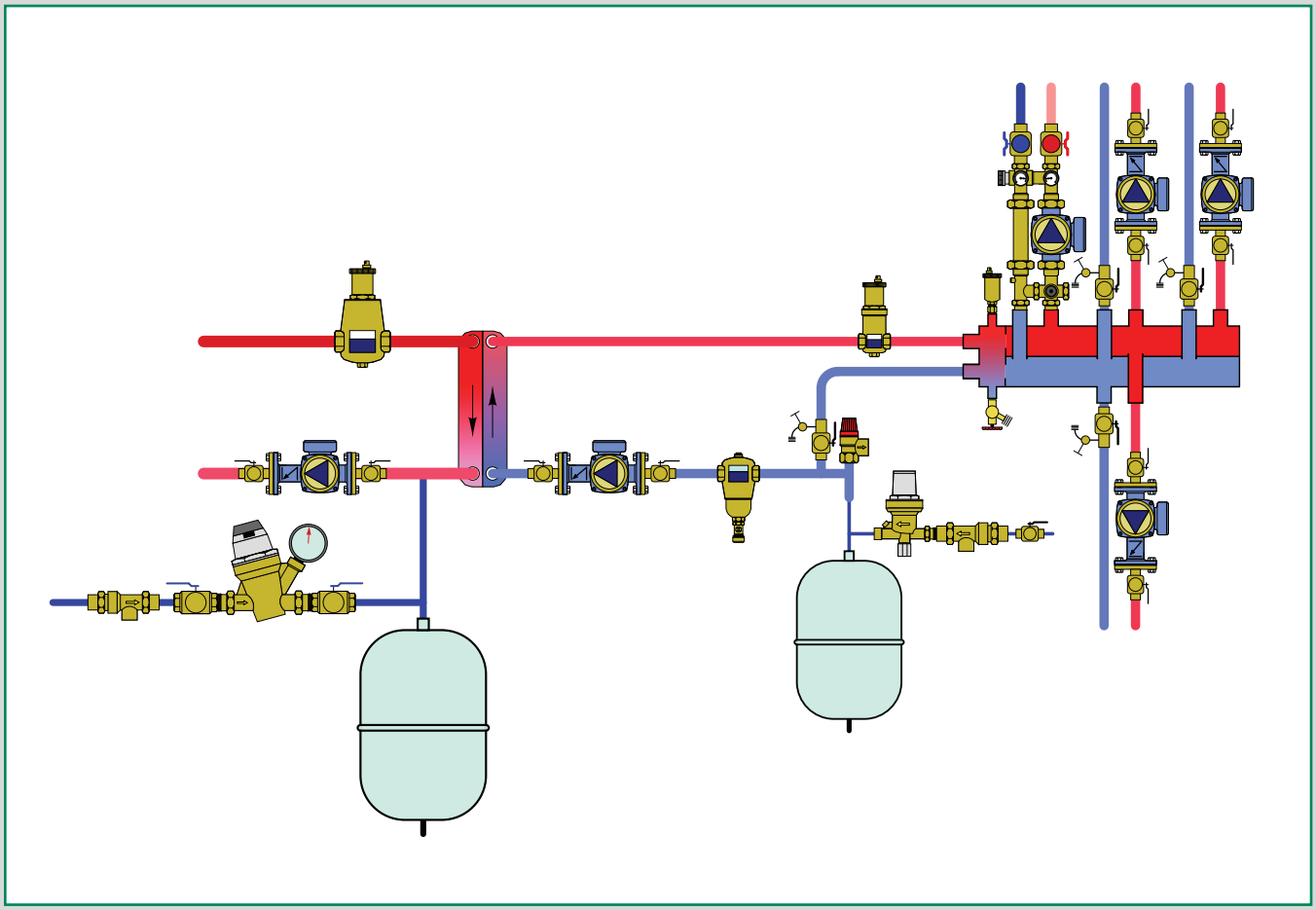
Replacing the cartridge

The internal cartridge, containing all the regulating components, can be inspected and, if necessary, replaced, without the need to remove the valve body from the pipe.

1) Close the shut-off valves on the hot and cold inlets. Set the knob to the maximum value.
2) Remove the temperature regulating knob after unscrewing the lock screw at the top. Dismantle the plastic knob frame. Unscrew the brass plated protective cover by means of the hexagon (1"—1 ¼").
3) Remove the internal cartridge for inspection or replacement, using a suitably sized spanner.
4) Refit the protective brass plated cover. Refit the plastic frame in such a way that the position indicator is visible.
5) The spare cartridge is supplied pre-set to the maximum value. Position the regulating knob in such a way that the letters MAX align with the position indicator. By rotating the knob clockwise, it should be possible to adjust the value from maximum to minimum. Fix the knob with the top lock screw.
6) Reopen the shut-off valves and adjust the thermostatic mixing valve to the required temperature value.



This diagram is an example



Automatic filling units, AutoFill™

Backflow preventers

Boiler trim kits

AUTOMATIC FILLING UNITS

Function

The AutoFill™ Combo is a pre-assembled unit consisting of an AutoFill™ and backflow preventer.

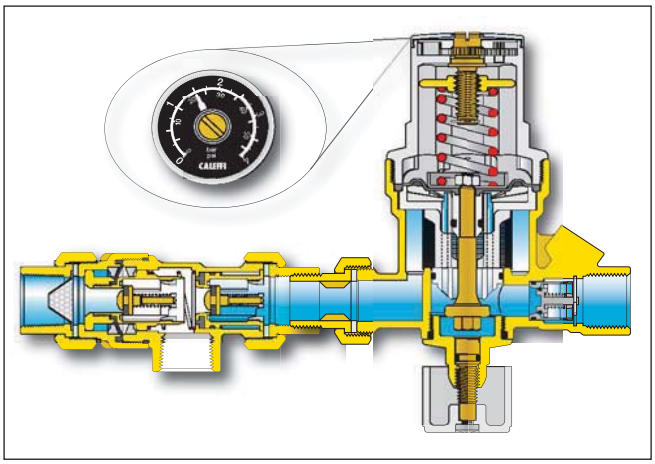
The AutoFill™ automatic filling valve is a pressure reducing valve with a compensating seat, an inlet filter, a shut-off valve and a check valve. It is installed on the water inlet piping in sealed heating systems, and its main function is to maintain the pressure of the system to a preset value, automatically filling up with water as required. This valve has been designed as pre-adjustable, which means it can be adjusted at the required pressure value before charging the system. After installation, during the filling or topping-off phase, the water feed will stop automatically when the set pressure is reached. There are no levers to flip or valve to close. Pre-assembled with the backflow preventer, it features an atmospheric vent which is designed to protect drinking water systems from return flow, caused by back-siphoning or back pressure, of contaminated fluids. The 573 series has been specifically certified to standards CSA B64.3 and ASSE 1012.

553 AutoFill™

tech. broch. 01061

Pre-adjustable automatic filling valve, anti-scale, visual system pressure setting 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.

Code	Description	Pk	Lbs	USD
553542A	½" M NPT inlet x ½" F NPT outlet	10	17	**151.00**
553549A	½" sweat inlet x ½" F NPT outlet	10	17	**143.90**



573 AutoFill™ Combo

tech. broch. 01061

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.

Code	Description	Pk	Lbs	USD
573002A	½" F NPT inlet x ½" F NPT outlet	1	5.0	**254.20**
573009A	½" sweat inlet x ½" F NPT outlet	1	5.0	**242.10**

Code	Description	Pk	Lbs	USD
F59650	AutoFill™ 553 series replacement cartridge	1	0.2	**43.70**

Code	Description	Pk	Lbs	USD
NA10197	AutoFill™ clear plastic disc cover	1	0.1	**1.97**

BACKFLOW PREVENTERS

573

tech. broch. 01061

Dual check continuous pressure backflow preventer with atmospheric vent.
Brass body.
Max. working pressure: 175 psi.
Working temperature range: 32—210°F.
Emergency backpressure temperature: 250°F
ASSE 1012 listed and CSA B64.3 certified.

Code	Description	Pk	Lbs	USD
573403A	½" NPT female inlet/outlet	20	34	**117.80**
573409A	½" sweat inlet/outlet	20	34	**112.20**
573493A	½" sweat inlet x ½" F NPT outlet	20	34	**115.10**
573503A	¾" NPT female inlet/outlet	20	34	**123.70**

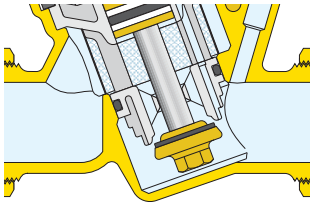
COMMERCIAL AUTOMATIC FILLING UNITS

5350 AutoFill™

tech. broch. 01085

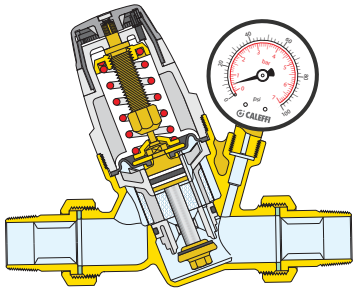
Automatic filling valve.
Brass body.
Complete with integral downstream pressure gauge and pressure setting adjustment knob.
Max. working pressure: 365 psi.
Max. working temperature: 140°F.
Pressure gauge scale: 0—100 psi.
Pressure setting range: 6—90 psi.
Preset outlet pressure: 15 psi.

Code	Description	Pk	Lbs	USD
535051A	¾" NPT male union	1	2.3	**234.20**
535056A	¾" press	1	2.3	**243.60**
535059A	¾" sweat union	1	2.3	**232.00**

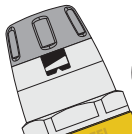


High flow fast filling feature
AutoFill™ automatic filling valve 5350 series has large internal fluid passages allowing high flow filling with minimum pressure drop through the valve body. The table below shows flow rates with the corresponding pressure drop at different flow velocities.

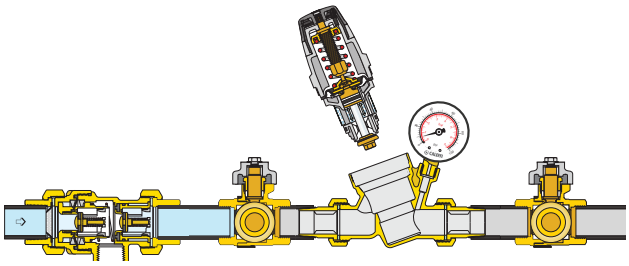
Velocity **(f/s)**	4	6	8	10
Flow **(gpm)**	8	14	20	24
Pressure drop **(psi)**	8	13	17	21



System pressure setting
AutoFill™ automatic filling valves in the 5350 series are fitted with an operating adjustment knob and an integral downstream outlet pressure gauge. This adjustment knob features continuous rotational operation, the pressure can be adjusted continuously, resulting in 7 psi per revolution, with the value displayed on the outlet gauge.



Removable self-contained cartridge
The cartridge, containing the diaphragm, strainer, seat, valve port and compensating piston, is pre-assembled as a "self-contained unit" with a cover and can be easily removed for inspection and maintenance procedures.



NA102

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

Code	Description	Pk	Lbs	USD
NA10273	⅛" NPT	1	0.1	**15.40**

Code	Description	Pk	Lbs	USD
535004	Autofill™ 5350 series replacement cartridge	1	0.1	**70.00**

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
- 1 AutoFill™
- 1 Expansion Tank Check Valve
- 2 Brass Nipples
- 1 Brass Tee
- 1 Expansion Tank

NA553-B kits do not include backflow preventer

Sweat Connections

Code Number	NA553259	NA553369	NA553669	NA553379	NA553679
DISCAL®	551022A ¾" sweat	551028A 1" sweat	551028A 1" sweat	551035A 1¼" sweat	551035A 1¼" sweat
AutoFill™/Backflow Preventer Combination	573009A ½" sweat	573009A ½" sweat	573009A ½" sweat	573009A ½" sweat	573009A ½" sweat
Check Valve	561402A	561402A	561402A	561402A	561402A
Tank	2.2 gal	4.4 gal	7.6 gal	4.4 gal	7.6 gal
Nipples	3" Brass	3" Brass	3" Brass	3" Brass	3" Brass
Tee	NPT Brass	NPT Brass	NPT Brass	NPT Brass	NPT Brass
Weight (lbs)	13	15	20	16	21
USD	**$ 552.40**	**$ 674.90**	**$ 784.10**	**$ 781.80**	**$ 892.10**

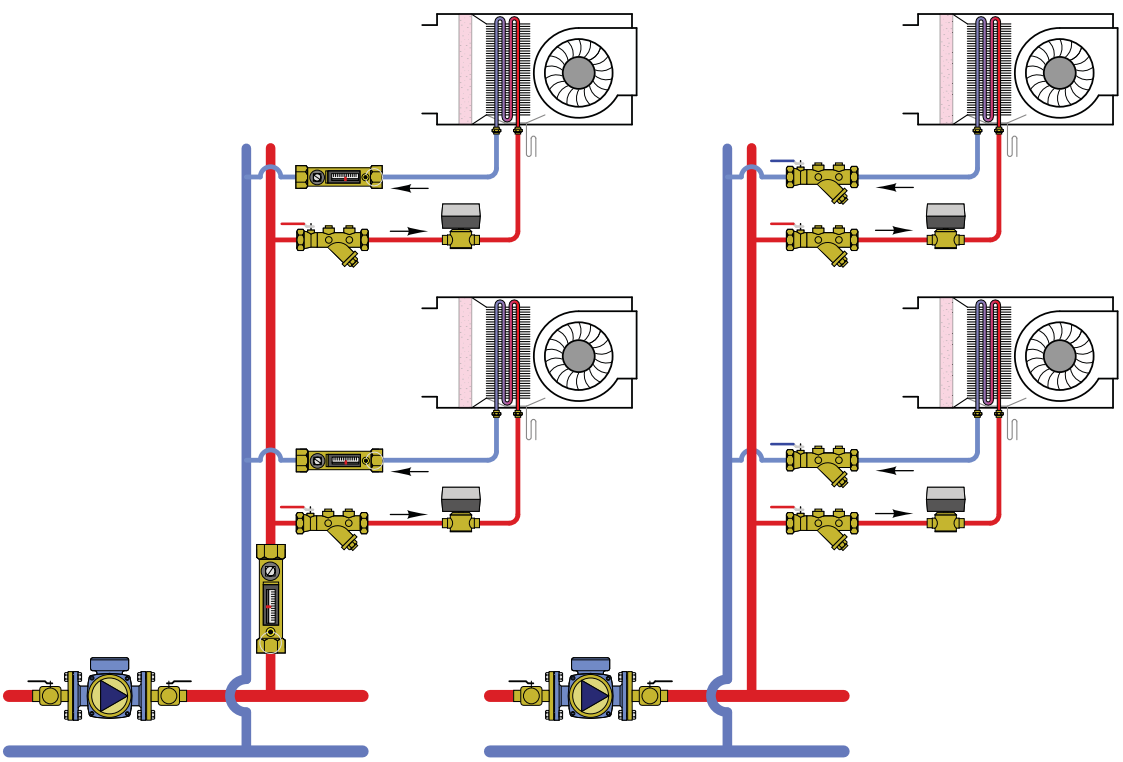
NPT Connections

Code Number	NA553252	NA553362	NA553662	NA553372	NA553672
DISCAL®	551003A ¾" NPT	551006A 1" NPT	551006A 1" NPT	551007A 1¼"NPT	551007A 1¼"NPT
AutoFill™/Backflow Preventer Combination	573002A ½" NPT	573002A ½" NPT	573002A ½" NPT	573002A ½" NPT	573002A ½" NPT
Check Valve	561402A	561402A	561402A	561402A	561402A
Tank	2.2 gal	4.4 gal	7.6 gal	4.4 gal	7.6 gal
Nipples	3" Brass	3" Brass	3" Brass	3" Brass	3" Brass
Tee	NPT Brass	NPT Brass	NPT Brass	NPT Brass	NPT Brass
Weight (lbs)	13	15	20	16	21
USD	**$ 563.30**	**$ 688.40**	**$ 799.80**	**$ 797.40**	**$ 909.90**

Sweat Connections

Code Number	NA553259-B	NA553369-B	NA553669-B	NA553379-B	NA553679-B
DISCAL®	551022A ¾" sweat	551028A 1" sweat	551028A 1" sweat	551035A 1¼" sweat	551035A 1¼" sweat
AutoFill™	553549A ½" sweat	553549A ½" sweat	553549A ½" sweat	553549A ½" sweat	553549A ½" sweat
Check Valve	561402A	561402A	561402A	561402A	561402A
Tank	2.2 gal	4.4 gal	7.6 gal	4.4 gal	7.6 gal
Nipples	3" Brass	3" Brass	3" Brass	3" Brass	3" Brass
Tee	NPT Brass	NPT Brass	NPT Brass	NPT Brass	NPT Brass
Weight (lbs)	12	13	18	15	20
USD	**$ 426.40**	**$ 547.80**	**$ 658.10**	**$ 655.90**	**$ 764.90**

This diagram is an example



Dynamic balancing—FlowCal™ devices

Low lead compact automatic flow balancing valve, FlowCal™

Automatic flow balancing valve, FlowCal™

Y-Strainer

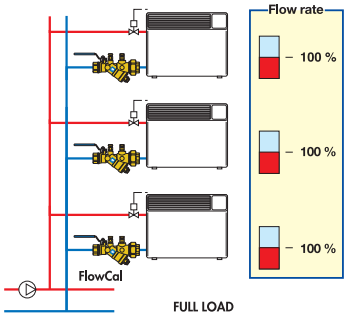
Balancing valve with flow meter, QuickSetter™ and Low lead QuickSetter+™

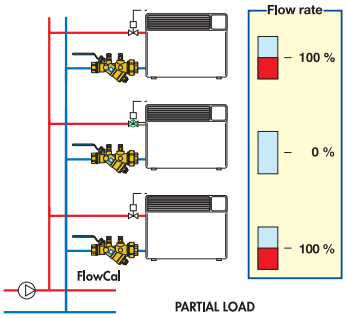
Low lead fixed venturi balancing valves

PRESSURE INDEPENDENT BALANCING—FlowCal™ DEVICES

Circuits balanced with FlowCal™

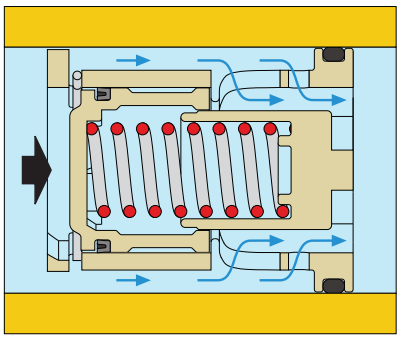
FlowCal™ balances the hydraulic circuit by automatically controlling the design flow rate to each emitter. Even with some circuits closed by the control valves, the flow rates in the open circuits remain constant at the nominal value. The system always provides the greatest comfort and the highest energy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



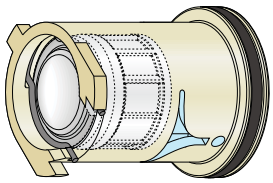


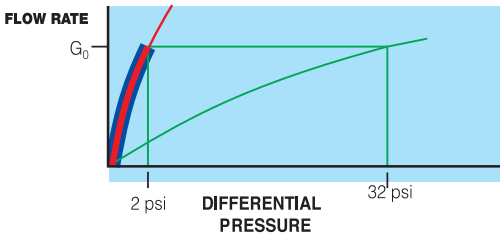
Operation

Below the differential pressure control range (< 2 psid)*



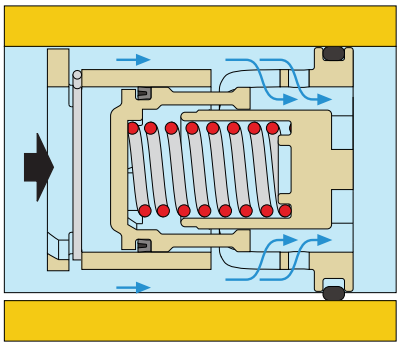
In this case, the spring-loaded regulating piston remains in equilibrium without compressing the spring and gives the fluid the maximum free flow area. When below the differential pressure control range the piston acts as a fixed orifice and thus the flow rate through the FlowCal™ depends only on the differential pressure.



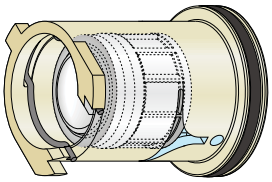


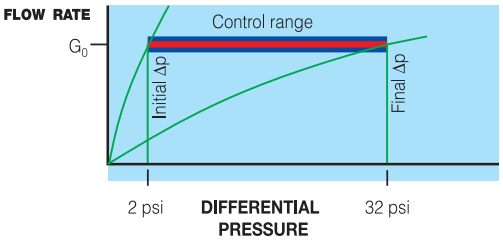
Range Δp 2–32 psi *where G_0 = nominal flow rate*

Within the differential pressure control range (2—32 psid)*

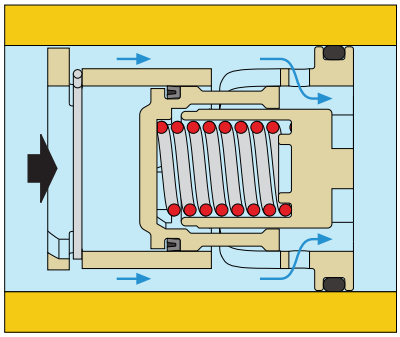


If the differential pressure is within the control range, the spring-loaded piston is positioned to give the fluid a free flow area permitting regular flow at the **nominal rate** for which the FlowCal™ is set up.

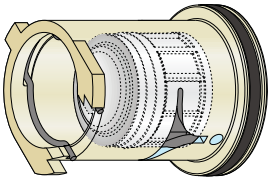


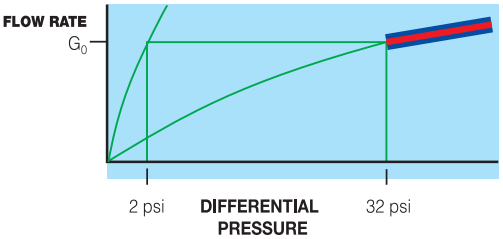


Above the differential pressure control range (> 32 psid)*



In this case, the spring-loaded piston fully compresses a spring and leaves only the fixed orifice for the fluid to pass through. The flow rate through the FlowCal™ depends only on the differential pressure.





Range Δp 2–32 psi *where G_0 = nominal flow rate*

* These values are for this example. The same logic applies to the other Differential Pressure Control Ranges for FlowCal™ series 127 and 121.

LOW LEAD COMPACT PRESSURE INDEPENDENT BALANCING VALVE

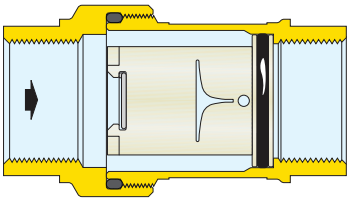
127
FlowCal™

tech. broch. 01166

Compact automatic flow balancing valve.
Low-lead brass body (<0.25% lead content).
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%.
Reduction of Lead in Drinking Water Act Compliant: 0.25% Max. weighted average lead content. Reduction of Lead in Drinking Water Act Certified by IAPMO R&T.

LOW-LEAD IAPMO R&T

Code	Description	Pk	Lbs	USD
127341AF ●●●	½" NPT male	1	1.0	**127.40**
127349AF ●●●	½" sweat	1	0.8	**121.30**
127351AF ●●●	¾" NPT male	1	1.0	**133.20**
127359AF ●●●	¾" sweat	1	0.8	**126.80**
127361AF ●●●	1" NPT male	1	1.2	**152.80**
127369AF ●●●	1" sweat	1	1.0	**145.50**



Select desired flow rate to complete full part number.
No restrictions.

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

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	

Replacement flow cartridge kits are available. Consult factory.

PRESSURE INDEPENDENT BALANCING VALVE

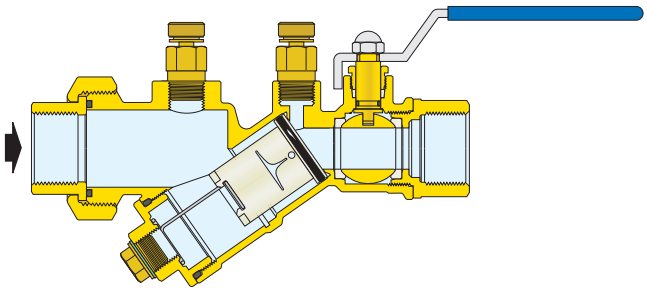
121
FlowCal™

tech. broch. 01141

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%.

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

Code	Description	Pk	Lbs	USD
121141A ●●●	½" NPT female	1	2.7	**176.40**
121149A ●●●	½" sweat	1	2.7	**168.00**
121151A ●●●	¾" NPT female	1	2.7	**178.50**
121159A ●●●	¾" sweat	1	2.7	**170.00**
121161A ●●●	1" NPT female	1	5.0	**363.80**
121169A ●●●	1" sweat	1	5.0	**346.50**
121171A ●●●	1¼" NPT female	1	5.0	**408.00**
121179A ●●●	1¼" sweat	1	5.0	**388.50**
121341A ●●●	½" NPT female with PT test ports	1	3.2	**189.00**
121349A ●●●	½" sweat with PT test ports	1	3.2	**180.60**
121351A ●●●	¾" NPT female with PT test ports	1	3.2	**191.70**
121359A ●●●	¾" sweat with PT test ports	1	3.2	**182.60**
121361A ●●●	1" NPT female with PT test ports	1	5.5	**377.00**
121369A ●●●	1" sweat with PT test ports	1	5.5	**359.10**
121371A ●●●	1¼" NPT female with PT test ports	1	5.5	**421.20**
121379A ●●●	1¼" sweat with PT test ports	1	5.5	**401.10**



Select desired flow rate to complete full part number.

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

GPM	Last 3 digits ...	Differential Pressure Control Ranges (psid)
9	9G0	5—35
10	10G	
11	11G	3—32
12	12G	
13	13G	
14	14G	4—35
15	15G	
16	16G	
17	17G	
18	18G	
19	19G	
20	20G	
21	21G	

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

Replacement flow cartridge kits are available. Consult factory.

Y-STRAINER WITH BALL VALVE

tech. broch. 01141

120 Y-strainer

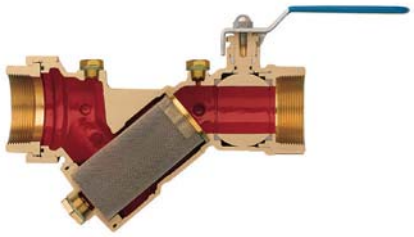
Y-strainer with integral ball valve.
Brass body.
Stainless steel filter cartridge.
Maximum working pressure: 400 psi (400 WOG).
Working temperature range: 32—212°F (0—100°C).
Max. percentage glycol: 50%.
Strainer mesh diameter: 0.87 mm (20 mesh).
Connections: —body: ½", ¾", 1", 1¼" F NPT union x F NPT.
½", ¾", 1", 1¼" sweat union x sweat.
Pressure and temperature ports: ¼" NPT.
Drain port connection: ¼" for ½" & ¾" body.
½" for 1" & 1¼" body.

Code	Description	Cv	Pk	Lbs	USD
120141A 000	½" NPT female	8.0	1	3.0	**159.90**
120149A 000	½" sweat	8.0	1	3.0	**152.30**
120151A 000	¾" NPT female	8.4	1	3.0	**162.00**
120159A 000	¾" sweat	8.4	1	3.0	**154.30**
120161A 000	1" NPT female	19	1	6.0	**319.80**
120169A 000	1" sweat	19	1	6.0	**304.50**
120171A 000	1¼" NPT female	20	1	6.0	**363.80**
120179A 000	1¼" sweat	20	1	6.0	**346.50**
120341A 000	½" NPT female with PT	8.0	1	3.5	**173.10**
120349A 000	½" sweat with PT	8.0	1	3.5	**164.90**
120351A 000	¾" NPT female with PT	8.4	1	3.5	**175.20**
120359A 000	¾" sweat with PT	8.4	1	3.5	**166.90**
120361A 000	1" NPT female with PT	19	1	6.5	**333.00**
120369A 000	1" sweat with PT	19	1	6.5	**317.10**
120371A 000	1¼" NPT female with PT	20	1	6.5	**377.10**
120379A 000	1¼" sweat with PT	20	1	6.5	**359.10**

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	Pk	Lbs	USD
538202 FD	¼" NPT fits ½—¾" 120 series	1	0.3	**18.10**
538402 FD	½" NPT fits 1—1¼" 120 series	1	0.3	**18.50**



NA1023
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.
Brass body.
Nordel Core.
Connections: ¼" NPT male.
Cap thread: ⅜"-24 UNF
Working temperature range: 0—275°F.
Max. working pressure: 1000 psi.

Code	Description	Pk	Lbs	USD
NA10233	Standard size, 1½" length	1	0.5	**10.00**
NA10235	Extended size, 2¼" length	1	0.5	**20.00**

BALANCING VALVE WITH FLOW METER

132 QuickSetter™

tech. broch. 01149

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.

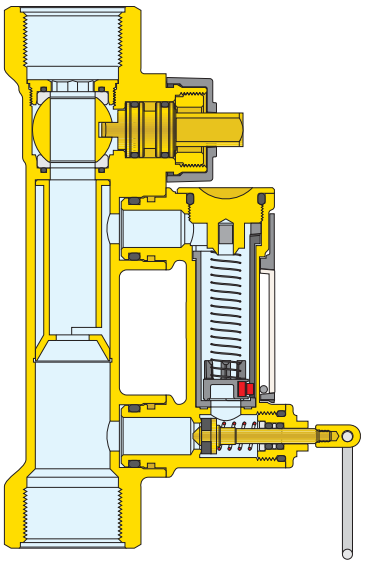
With insulation.
Max. working pressure: 150 psi.
Temperature range: 14—230°F.
Max. percentage of glycol: 50%.

Code	Description	Flow scale (gpm)	Pk	Lbs	USD
132432A	½" NPT	0.5—1.75	1	2.0	**241.00**
132552A	¾" NPT	2.0—7.0	1	1.8	**259.60**
132662A	1" NPT	3.0—10.0	1	2.4	**302.80**
132772A	1¼" NPT	5.0—19.0	1	2.8	**401.60**
132882A	1½" NPT	8.0—32.0	1	3.4	**475.80**
132992A	2" NPT	12.0—50.0	1	4.4	**584.20**
F19346	Replacement by-pass valve stem*		1	0.1	**48.80**

***** With operating ring.

Construction details

In the QuickSetter™ series the flow rate (gpm) is displayed directly by a flow meter housed in a by-pass circuit on the valve body, which automatically is shut-off during normal operation.



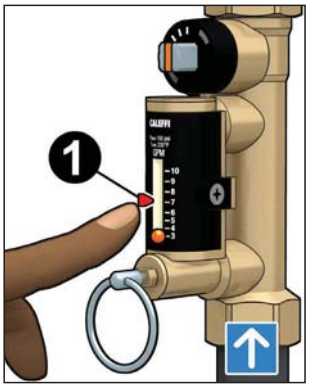
The flow meter permits fast and easy circuit balancing without need for differential pressure gauges and reference charts.

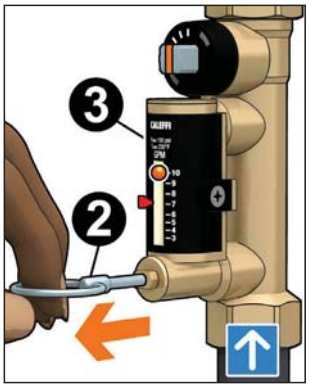
Flow rate adjustment

The flow rate is adjusted as follows:

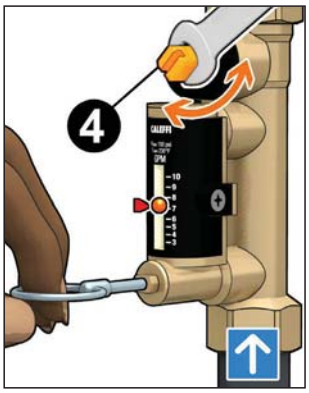
A. With the aid of the flow rate indicator (1), mark the desired flow rate.

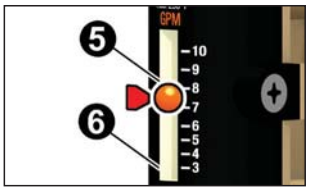
B. Use the operating ring (2) to open the by-pass valve slowly. This allows fluid to flow through the flow meter (3). The bypass valve is automatically closed under normal operating conditions.

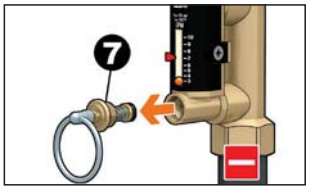




C. While holding the bypass valve open, use a wrench to turn the valve control stem (4) to adjust the flow rate slowly. The resulting flow rate is indicated by the metal ball (5) that slides up and down inside a transparent channel (6) marked by a graduated scale in gpm.





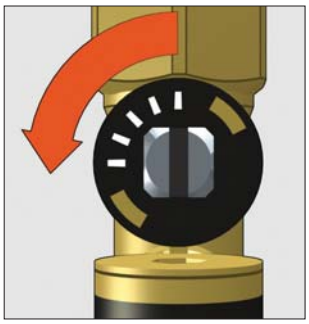


D. Once the flow rate is properly adjusted, release the operating ring (2) of the by-pass valve. The valve will automatically return to the closed position by means of an internal spring.

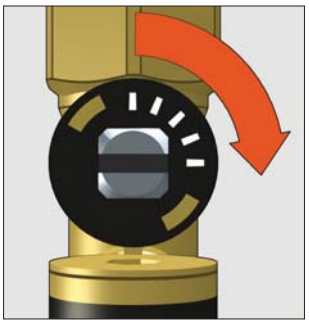
E. A replacement by-pass valve stem (7) with operating ring is available in event it is damaged and inoperable. Order code F19346.

Complete opening and closing of the valve

Full opening of the valve



Full closing of the valve



LOW-LEAD BALANCING VALVE WITH FLOW METER

LOW-LEAD IAPMO R&T

NEW

132 QuickSetter+™

tech. broch. 01283

Balancing valve with flow meter.
Direct reading of flow rate.
No sight gauge clouding or scaling.
Low-lead brass valve body and flow meter.
Rotatable stainless steel flow rate adjuster.
Inlet flow check valve.
Graduated scale flow meter with magnetic movement flow rate indicator.
Reduction of Lead in Drinking Water Act Compliant: 0.25% Max. weighted average lead content. Reduction of Lead in Drinking Water Act Certified by IAPMO R&T

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

Code	Description	Flow scale (gpm)	Pk	Lbs	USD
132439AFC	½" Sweat	0.5—1.75	1	2.0	**288.00**
132539AFC	¾" Sweat	0.5—1.75	1	1.8	**310.00**
132639AFC	1" Sweat	0.5—1.75	1	2.4	**357.00**
132459AFC	½" Sweat	2.0—7.0	1	2.0	**288.00**
132559AFC	¾" Sweat	2.0—7.0	1	1.8	**310.00**
132659AFC	1" Sweat	2.0—7.0	1	2.4	**357.00**

With temperature gauge:

Code	Description	Flow scale (gpm)	Pk	Lbs	USD
132438AFC	½" Sweat	0.5—1.75	1	2.4	**338.00**
132538AFC	¾" Sweat	0.5—1.75	1	2.2	**360.00**
132638AFC	1" Sweat	0.5—1.75	1	2.8	**407.00**
132458AFC	½" Sweat	2.0—7.0	1	2.4	**338.00**
132558AFC	¾" Sweat	2.0—7.0	1	2.2	**360.00**
132658AFC	1" Sweat	2.0—7.0	1	2.8	**407.00**
F19346	Replacement by-pass valve stem*	1	0.1	**48.80**

*with operating ring

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

Hot water recirculation systems are designed to minimize wait time for hot water to arrive when a fixture is opened. Systems left unbalanced or improperly balanced result in wasted water down the drain – a costly and environmentally unfriendly situation. Not to mention the undesired annoyance placed on building occupants.

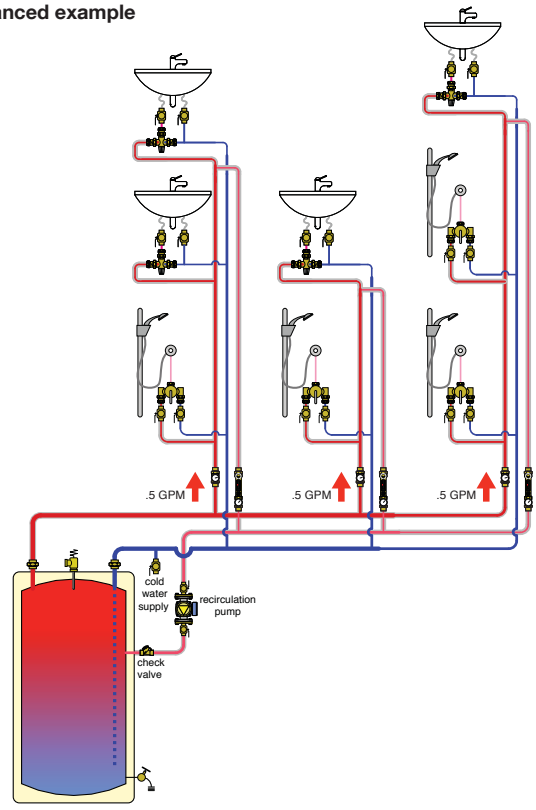
Caleffi's popular QuickSetter+™ takes guess work and labor out of balancing. With the valve's exclusively designed venturi mechanism, the installer simply:

1. pulls the flow indicator by-pass pin
2. adjusts the flow to the desired gpm while viewing the built-in sight gauge
3. releases the pin

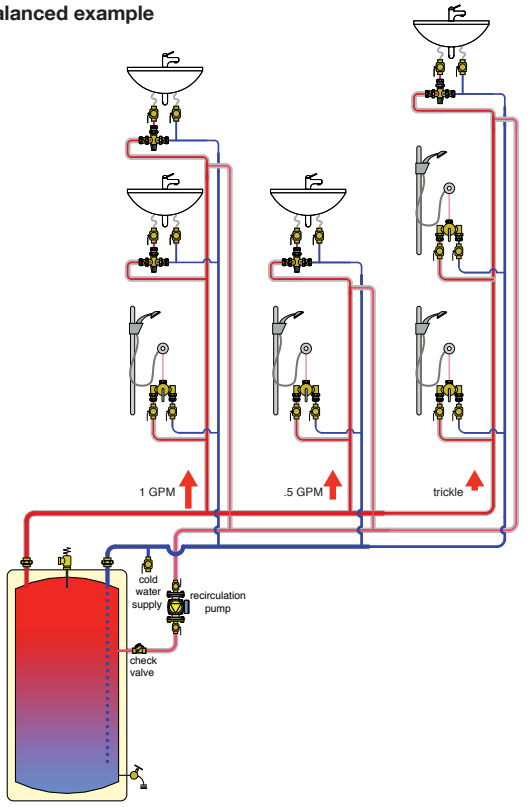
Easy, accurate balancing in seconds. No instruments or reference graphs needed.

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
- IAPMO certified low-lead

Balanced example



Unbalanced example



LOW LEAD FIXED VENTURI BALANCING VALVES

130 Fixed Venturi Balancing Valve

tech. broch. 01283

Fixed venturi.
Multi-turn adjustment range.
Memory stop feature.
Max. working pressure: 232 psi
Working temperature range: -4 to 230°F
Number of adjustment turns: 5
Low-lead brass body.
Reduction of Lead in Drinking Water Act Compliant: 0.25% Max. weighted average lead content.

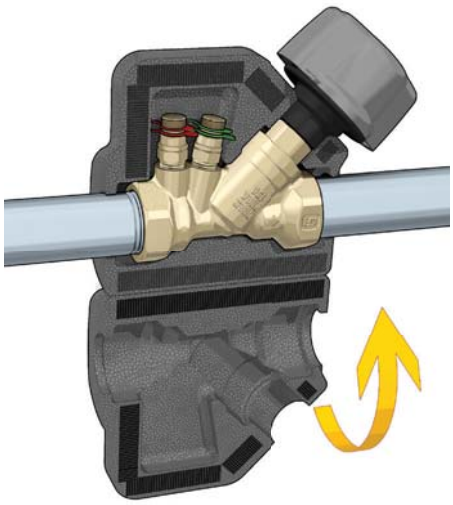
NEW

Code	Description	Max. valve Cv	Pk	Lbs	USD
130400A	½" NPT	3.7	1	1.0	**197.00**
130500A	¾" NPT	5.1	1	1.2	**211.60**
130600A	1" NPT	8.8	1	1.5	**245.00**
130700A	1¼" NPT	14.0	1	2.0	**325.30**
130800A	1 ½" NPT	19.7	1	2.3	**385.40**
130900A	2" NPT	30.5	1	2.5	**473.20**

Insulation shell fits 130 series balancing valves.

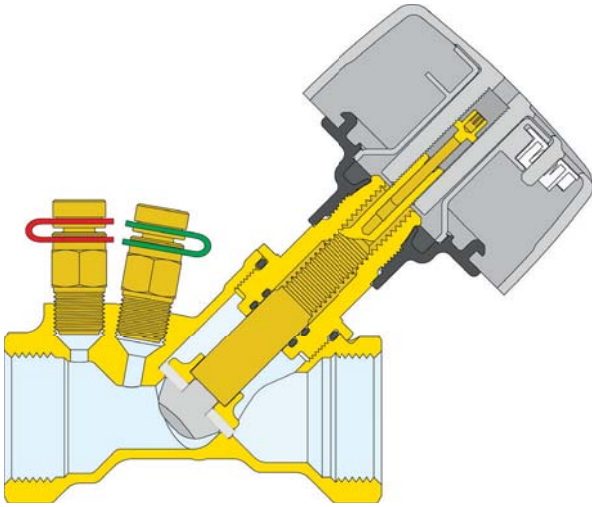
NEW

Code	Description	Pk	Lbs	USD
CBN130400A	fits ½" NPT	1	0.1	**43.20**
CBN130500A	fits ¾" NPT	1	0.1	**46.80**
CBN130600A	fits 1" NPT	1	0.1	**50.70**
CBN130700A	fits 1¼" NPT	1	0.1	**71.60**
CBN130800A	fits 1 ½" NPT	1	0.1	**84.80**
CBN130900A	fits 2" NPT	1	0.1	**104.10**



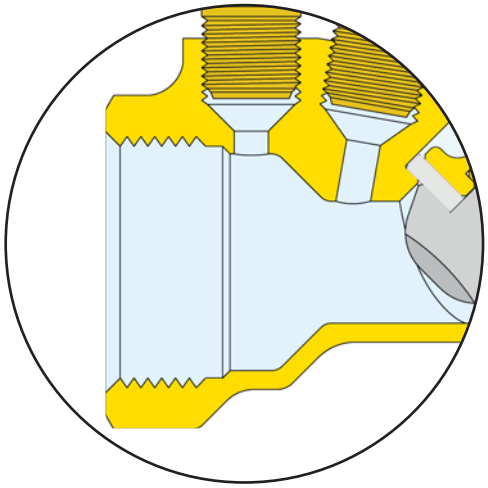
Operating principle

A balancing valve is a hydraulic device that regulates the flow rate of the fluid passing through it. The flow rate is regulated by means of a knob that controls the movement of a plug that allows the passage of the fluid. The flow rate is determined according to the Δp value measured by two pressure connectors located on the valve.

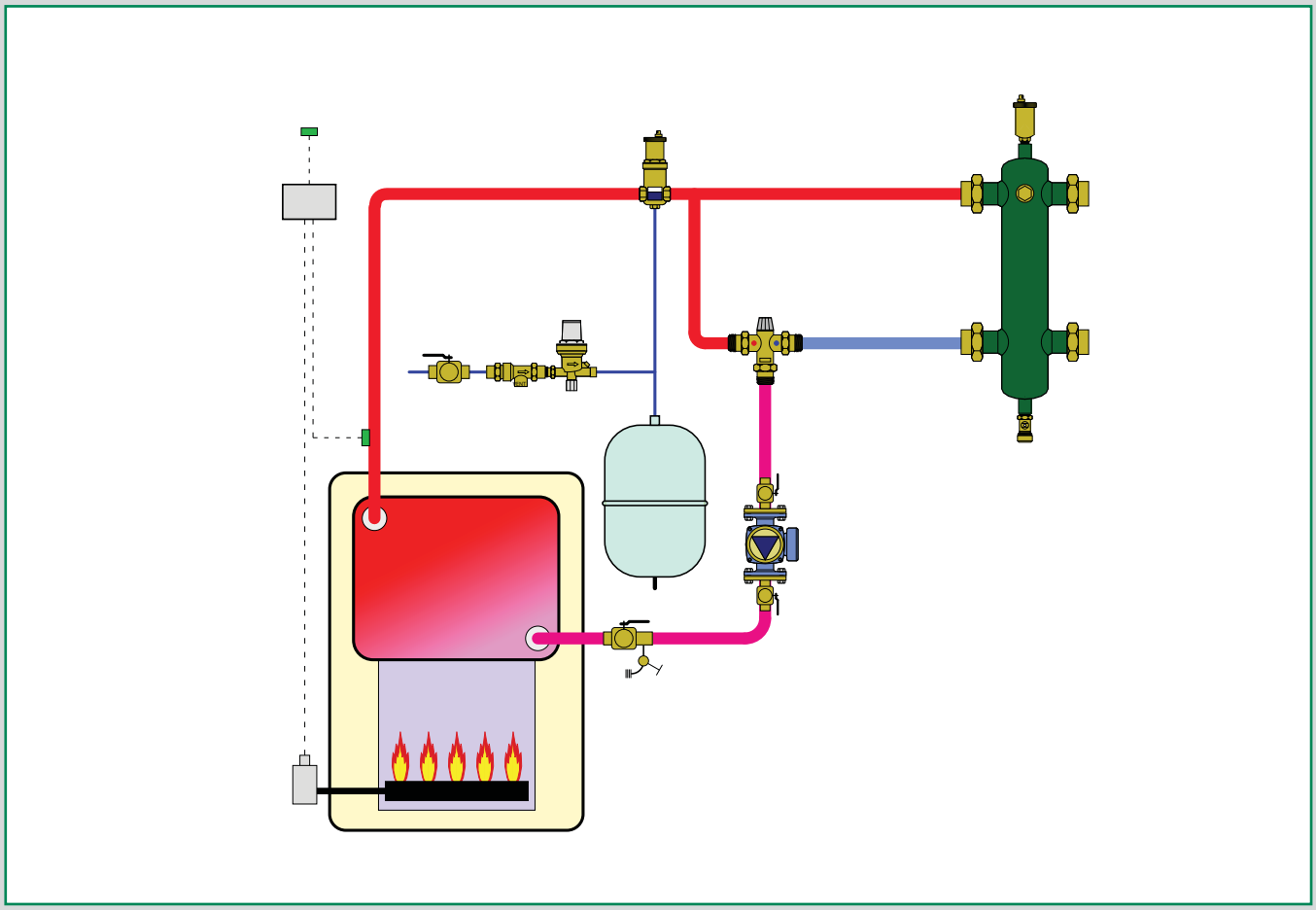


Venturi flow rate measurement device

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, as shown in the figure below.



This diagram is an example



FITTING KITS

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

Code	Description	Pk	Lbs	USD
NA12240	½" NPT with 1" union nuts	1	0.2	**40.80**
NA12249	½" sweat with 1" union nuts	1	0.2	**38.60**

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

Code	Description	Pk	Lbs	USD
NA12250	¾" NPT with 1" union nuts	1	0.2	**44.60**
NA12259	¾" sweat with 1" union nuts	1	0.2	**42.40**

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

Code	Description	Pk	Lbs	USD
NA12260	1" NPT with 1" union nuts	1	0.3	**54.20**
NA12269	1" sweat with 1" union nuts	1	0.3	**52.00**

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

Code	Description	Pk	Lbs	USD
NA12340	½" NPT with 1" union nuts	1	0.3	**61.20**
NA12349	½" sweat with 1" union nuts	1	0.3	**57.90**

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

Code	Description	Pk	Lbs	USD
NA12350	¾" NPT with 1" union nuts	1	0.3	**66.90**
NA12359	¾" sweat with 1" union nuts	1	0.3	**63.60**

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

Code	Description	Pk	Lbs	USD
NA12360	1" NPT with 1" union nuts	1	0.4	**81.30**
NA12369	1" sweat with 1" union nuts	1	0.4	**78.00**

Presscon™ FITTING KITS

Two ¾" Presscon™ copper press tail pieces with 1" brass union nuts and washers. Low-lead.

NEW

Code	Description		Pk	Lbs	USD
NA12256	¾" press with 1" union nut	●	1	4.0	**50.00**

Three ¾" Presscon™ copper press tail pieces with 1" brass union nuts and washers. Low-lead.

NEW

Code	Description		Pk	Lbs	USD
NA12356	¾" press with 1" union nut	●	1	4.0	**75.00**

SWEAT UNIONS

Sweat union with 1" union thread nut.

Code	Description	Pk	Lbs	USD
NA12153	¾" sweat union	1	0.7	**48.30**

Sweat union with 1" union thread nut.

Code	Description	Pk	Lbs	USD
NA12154	1" sweat union	1	0.9	**53.10**

Sweat union with 1¼" union thread nut.

Code	Description	Pk	Lbs	USD
NA12155	1" sweat union	1	1.0	**75.60**

IN-LINE FLOW CHECK VALVES

In-line union sweat flow check valve.
Max percentage of glycol: 50%.
Max working pressure: 150 psi.
Temperature range: 32—250°F.

Code	Description	Cv	Pk	Lbs	USD
NA51059	¾" sweat union	12	1	0.7	**70.90**

In-line union sweat flow check valve.
Max percentage of glycol: 50%.
Max working pressure: 150 psi.
Temperature range: 32—250°F.

Code	Description	Cv	Pk	Lbs	USD
NA51069	1" sweat union	17	1	1.0	**90.50**

SMALL MIXING VALVE AND ZONE VALVE FITTINGS

Tail piece with check valve.
Low lead brass.

Code	Description	Pk	Lbs	USD
59893A	½" NPT male fits 1" nut	1	0.2	**33.10**
59840A	¾" NPT male for 1" nut	1	0.3	**37.60**

Tail piece without check valve.
Low lead brass.

Code	Description	Pk	Lbs	USD
R31981	½" NPT male fits 1" nut	1	0.4	**13.20**
31901A	¾" NPT male fits 1" nut	1	0.4	**14.90**

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

Code	Description	Pk	Lbs	USD
59817A	1" NPT male with 1" nut	1	0.2	**25.60**
59894A	1" NPT male with 1" nut w/check valve	1	0.4	**61.70**

Tail piece with check valve.
Low lead brass.

Code	Description	Pk	Lbs	USD
59904A	½" sweat fits 1" nut	1	0.2	**30.90**
59905A	¾" sweat fits 1" nut	1	0.3	**36.40**

¾" Presscon™ copper press tail piece with 1" brass union nut. Requires sealing washer R50055, not included.

NEW

Code	Description	Pk	Lbs	USD
NA16265	¾" press with 1" union nut	10	4.0	**25.00**

Tail piece.
Low lead brass.

Code	Description	Pk	Lbs	USD
NA10002	½" sweat fits 1" nut	1	0.3	**11.90**
NA10003	¾" sweat fits 1" nut	1	0.4	**13.80**

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

Code	Description	Pk	Lbs	USD
59834A	1" sweat with 1" nut	1	0.4	**24.00**
59906A	1" sweat with 1" nut w/check valve	1	0.4	**59.50**

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

Code	Description	Pk	Lbs	USD
NA10164	½" sweat fits 1" nut	1	0.2	**30.90**
NA10165	¾" sweat fits 1" nut	1	0.3	**36.40**

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

Code	Description	Pk	Lbs	USD
NA10166	1" sweat with 1" nut w/check valve	1	0.4	**59.50**

Union nut fits 5213, 521 & 2521 series.

Code	Description	Pk	Lbs	USD
R61008	1" union nut	1	0.2	**5.40**

Washer fits 5213, 521 & 2521 series.
(Priced each, sold in package of 10 each)

Code	Description	Pk	Lbs	USD
R50055	1" union washer	10	0.1	**2.00**

Washer fits 5213, 521 & 2521 series.
High temperature silicone rubber.
Working temperature: -40—350°F
(Priced each, sold in package of 10 each)

Code	Description	Pk	Lbs	USD
NA10302	1" union washer high temp silicone	10	0.1	**3.00**

Point of distribution mixed temperature gauge adaptor fits MixCal™ 521 series mixing valves. Threaded union mounting replaces existing mixed outlet with ¾" or 1" sweat pipe connection. Removable gauge fits into temperature well. Gauge dial is 2" diameter and scale from 30—210°F.
Low-lead brass body.
Do not use with point of use mixing valves where scald protection is required.

Code	Description	Pk	Lbs	USD
NA10328	½" sweat with gauge NEW	1	0.4	**70.30**
NA10056	¾" sweat with gauge	1	0.4	**77.20**
NA10058	1" sweat with gauge	1	0.5	**84.80**
NA10315	1¼" sweat with gauge	1	0.5	**170.40**
688003A	Replacement gauge	1	0.2	**47.90**

5231 SERIES MIXING VALVE FITTINGS

Tail piece, all connections.
Low lead brass.

Code	Description	Pk	Lbs	USD
31554 FD	1" sweat, fits 523168A	1	0.2	**43.00**
41787 CST	1¼" sweat, fits 523177 & 523178A	1	0.3	**50.00**
41788 CST	1½" sweat, fits 523188A	1	0.3	**67.00**
41789 CST	2" sweat, fits 523198A	1	0.5	**87.00**

Tail piece, all connections.
Low lead brass.

Code	Description	Pk	Lbs	USD
41371A	1½" NPT male, fits 523180A	1	0.2	**70.00**
41372A	2" NPT male, fits 523190A	1	0.2	**90.00**

Tail piece, all connections.
Low lead brass.

Code	Description	Pk	Lbs	USD
NA10009	1" NPT male, fits 523160A	1	0.2	**54.30**
R41660	1¼" NPT male, fits 523170A	1	0.3	**62.10**

Washer fits 523160A, 68A,70A, 77A, 78A.

Code	Description	Pk	Lbs	USD
R50057	1½" union washer	1	0.1	**4.20**

Union nut fits 523160A, 68A,70A, 77A, 78A.

Code	Description	Pk	Lbs	USD
R31589	1½" union nut	1	0.4	**18.60**

Union nut fits 523180A, 88A, 90A, 98A.

Code	Description	Pk	Lbs	USD
R51838	2½" union nut	1	0.5	**45.00**

Washer fits 523180A, 88A, 90A, 98A.

Code	Description	Pk	Lbs	USD
R50060	2½" union washer	1	0.1	**20.10**

AUTOFILL™ FITTINGS

AutoFill™ union nut.

Code	Description	Pk	Lbs	USD
R41186	¾" union nut	1	0.1	**4.30**

AutoFill™ tail piece.

Code	Description	Pk	Lbs	USD
NA10001	½" sweat	1	0.1	**11.90**

AutoFill™ tail piece.

Code	Description	Pk	Lbs	USD
R31868	½" NPT M	1	0.1	**14.40**

AutoFill™ washer.
(Priced each, sold in package of 10 each)

Code	Description	Pk	Lbs	USD
R50058	¾" union washer	10	0.1	**1.70**

BACKFLOW PREVENTER FITTINGS

Tail piece with screen fits 573 backflow preventer.

Code	Description	Pk	Lbs	USD
31970A	½" NPT female	1	0.1	**17.10**

Tail piece with screen fits 573 backflow preventer.

Code	Description	Pk	Lbs	USD
41380A	½" sweat female	1	0.1	**17.10**

Washer union fits 573 backflow preventer.

Code	Description	Pk	Lbs	USD
R50065	Union washer	1	0.1	**4.10**

HYDRO SEPARATOR FITTINGS

Tail piece.

Code	Description	Pk	Lbs	USD
31553 FD	1" NPT female, fits 548006A	1	0.3	**21.40**
31401 FD	1¼" NPT female, fits 548007A	1	0.3	**48.50**
R41441	1½" NPT female, fits 548008A	1	0.3	**46.90**
31426 FD	2" NPT female, fits 548009A	1	0.4	**95.80**

Tail piece.

Code	Description	Pk	Lbs	USD
31554 FD	1" sweat, fits 548096A	1	0.3	**43.00**
31403 FD	1¼" sweat, fits 548097A	1	0.3	**80.00**
NA10226	1½" sweat, fits 54898A	1	0.3	**75.60**
NA10227	2" sweat, fits 548099A	1	0.4	**123.90**

Union nut.

Code	Description	Pk	Lbs	USD
R31589	1" fits 548006A and 548096A	1	0.4	**18.60**
R53003	1¼" fits 548007A and 548097A	1	0.4	**36.80**
R53004	1½" fits 548008A and 548098A	1	0.4	**36.80**
R53005	2" fits 548009A and 548099A	1	0.4	**42.00**

Union washer.

Code	Description	Pk	Lbs	USD
R50005	Fits 1" 548006A and 549096A	1	0.2	**4.10**
R50008	Fits 1¼" 548007A and 548097A	1	0.2	**8.60**
R50047	Fits 1½" 548008A and 548098A	1	0.3	**17.00**
R50048	Fits 2" 548009A and 548099A	1	0.4	**20.80**

FITTINGS WITH ¾" THREADS

Double nipple.

Code	Description	Pk	Lbs	USD
NA12122	¾" x ¾" male	1	0.3	**26.00**

Double nipple.

Code	Description	Pk	Lbs	USD
NA12172	¾" NPT x ¾" NPT	1	0.3	**26.00**

Union nut.

Code	Description	Pk	Lbs	USD
R41186	¾" union nut	1	0.1	**4.30**

Sweat adapter.

Code	Description	Pk	Lbs	USD
NA10118	¾" sweat x ¾" male thread	1	0.3	**26.00**

Nipple.

Code	Description	Pk	Lbs	USD
NA12152	¾" male w/ O-ring x ¾"male thread	1	0.3	**27.80**

FITTINGS WITH 1" THREADS

Double nipple.

Code	Description	Pk	Lbs	USD
NA12123	1" x 1" male thread	1	0.4	**32.50**

Double nipple.

Code	Description	Pk	Lbs	USD
NA12173	1" NPT x 1" NPT	1	0.4	**32.50**

Bushing.

Code	Description	Pk	Lbs	USD
NA10060	¾" NPT female w/ 1" male thread	1	0.1	**26.00**

Sweat adapter.

Code	Description	Pk	Lbs	USD
NA10061	¾" sweat adaptor w/ 1 " male thd.	1	0.2	**27.10**

Sweat adapter.

Code	Description	Pk	Lbs	USD
NA10062	1" sweat adaptor w/ 1" male thd.	1	0.1	**28.10**

FITTINGS WITH 1" THREADS

Nipple.

Code	Description	Pk	Lbs	USD
NA10064	1" NPT w/ 1" male thread	1	0.2	**29.20**

Nipple.

Code	Description	Pk	Lbs	USD
NA12162	¾" male w/ O-ring x 1" male thread	1	0.2	**30.10**

Bushing.

Code	Description	Pk	Lbs	USD
NA10089	¾" female thread x 1" male thread	1	0.1	**21.60**

Cap.

Code	Description	Pk	Lbs	USD
NA10083	1" male threaded plug	1	0.2	**16.20**

Disk.

Code	Description	Pk	Lbs	USD
NA10104	1" disk	1	0.1	**4.30**

FITTINGS WITH 1¼" THREADS

Double nipple.

Code	Description	Pk	Lbs	USD
NA12124	1¼" x 1¼" thread	1	0.4	**52.00**

Sweat adapter.

Code	Description	Pk	Lbs	USD
NA10119	1" sweat adapter x 1¼" union thread	1	0.4	**35.70**

Bushing.

Code	Description	Pk	Lbs	USD
NA10087	1" female x 1¼" male thd. bushing	1	0.4	**26.20**

Bushing.

Code	Description	Pk	Lbs	USD
61215A	1" NPT F x 1¼“ M thd. bushing	1	0.8	**26.00**

Nipple.

Code	Description	Pk	Lbs	USD
R31706	1" male x 1¼" male nipple	1	0.3	**32.50**

Cap.

Code	Description	Pk	Lbs	USD
NA10236	1¼" male threaded plug	1	0.2	**20.40**

Disk.

Code	Description	Pk	Lbs	USD
R11059	1¼" female disk	1	0.1	**5.40**

FITTINGS

(NAL6263 shown)

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

Code	Description	Pk	Lbs	USD
NAL5263	¾" M thread x 1" F union nut	1	0.4	**66.50**
NAL5736	¾" F thread x 22mm comp.	1	0.4	**50.50**
NAL6262	1" M thread x 1" M thread	1	0.4	**37.60**
NAL6263	1" M thread x 1" F union nut	1	0.4	**49.20**
NAL6273	1" M thread x 1¼" F union nut	1	0.4	**80.30**
NAL6363	1" F union nut x 1" F union nut	1	0.4	**60.80**
NAL7262	1¼" M thread x 1" M thread	1	0.4	**63.80**
NAL7263	1¼" M thread x 1" F union nut	1	0.4	**75.40**
NAL7273	1¼" M thread x 1¼" F union nut	1	0.4	**106.50**

(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).

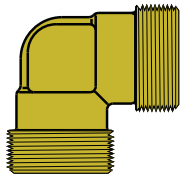
Code	Description	Pk	Lbs	USD
NAC41TT5454	½" NPT F x T. well x ¾" Sweat x ¾" Swt	1	2.0	**168.10**
NAC41626236	½" NPT F x 1" M x 1" M x 22mm comp.	1	2.0	**120.50**
NAC623641TT	1" M x 22mm x ½" NPT F x T. well	1	2.0	**157.30**
NAC6262TT41	1" M x 1" M x T. well x ½ NPT F	1	2.0	**135.70**
NAC6263TT41	1" M x 1" F nut x T. well x ½" NPT F	1	2.0	**147.30**
NAC62TT6241	1" M x T. well 1" M x ½" NPT F	1	2.0	**135.70**
NAC62TT6341	1" M x T. well x 1" F nut x ½" NPT F	1	2.0	**147.30**
NAC72TT6241	1¼" M x T. well x 1" M x ½" NPT F	1	2.0	**161.90**
NAC72TT7241	1¼" M x T. well x 1¼" M x ½" NPT F	1	2.0	**188.10**

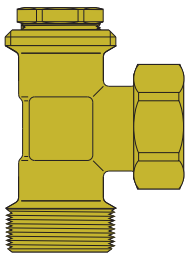
(NAT634162 shown)

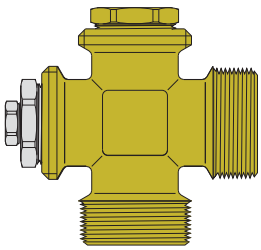
Brass fittings, Tees.
Male (M) straight thread (thd).
Female (F) straight thread (thd).
Female (F) union nut.
NPT (F) Female.
22mm female compression.
Sweat (F)

Code	Description	Pk	Lbs	USD
NAT417272	½" NPT F x 1¼" M thd x 1¼" M thd	1	0.6	**105.90**
NAT523641	¾" M thd x 22mm comp. x ½" NPT F	1	0.6	**86.20**
NAT524136	¾" M thd x ½" NPT F x 22mm comp.	1	0.6	**86.20**
NAT545641	¾" Sweat x ¾" comp. x ½" NPT F	1	0.6	**73.30**
NAT574136	¾" F thd x ½" NPT F x 22mm comp.	1	0.6	**58.40**
NAT623641	1" M thd x 22mm comp. x ½ NPT F	1	0.6	**67.10**
NAT624136	1" M thd x ½" NPT F x 22mm comp	1	0.6	**67.10**
NAT624162	1" M thd x ½" NPT F x 1" M thd	1	0.6	**45.50**
NAT626241	1" M thd x 1" M thd x ½" NPT F	1	0.6	**45.50**
NAT626262	1" M thd x 1" M thd x 1" M thd	1	0.6	**46.60**
NAT626341	1" M thd x 1" F union nut x ½" NPT F	1	0.6	**57.10**
NAT626362	1" M thd x 1" F union nut x 1" M thd	1	0.6	**58.20**
NAT6263TT	1" M thd x 1" F union nut x Temp well	1	0.6	**95.00**
NAT62TT63	1" M thd x Temp well x 1" F union nut	1	0.6	**95.00**
NAT634162	1" F union nut x ½" NPT F x 1" M thd	1	0.6	**57.10**
NAT636262	1" F union nut x 1" M thd x 1" M thd	1	0.6	**58.20**
NAT6362TT	1" F union nut x 1" M thd x Temp well	1	0.6	**95.00**
NAT724162	1¼" M thd x ½" NPT F x 1" M thd	1	0.6	**71.70**
NAT724164	1¼" M thd x ½" NPT F x 1" Sweat	1	0.6	**101.50**
NAT417264	½" NPT F x 1¼" M thd x 1" Sweat	1	0.6	**101.50**
NAT724172	1¼" M thd x ½" NPT F x 1¼" M thd	1	0.6	**105.90**
NAT72TT72	1¼" M thd x Temp well x 1¼" M thd	1	0.6	**151.40**

SPECIAL CONFIGURED FITTINGS





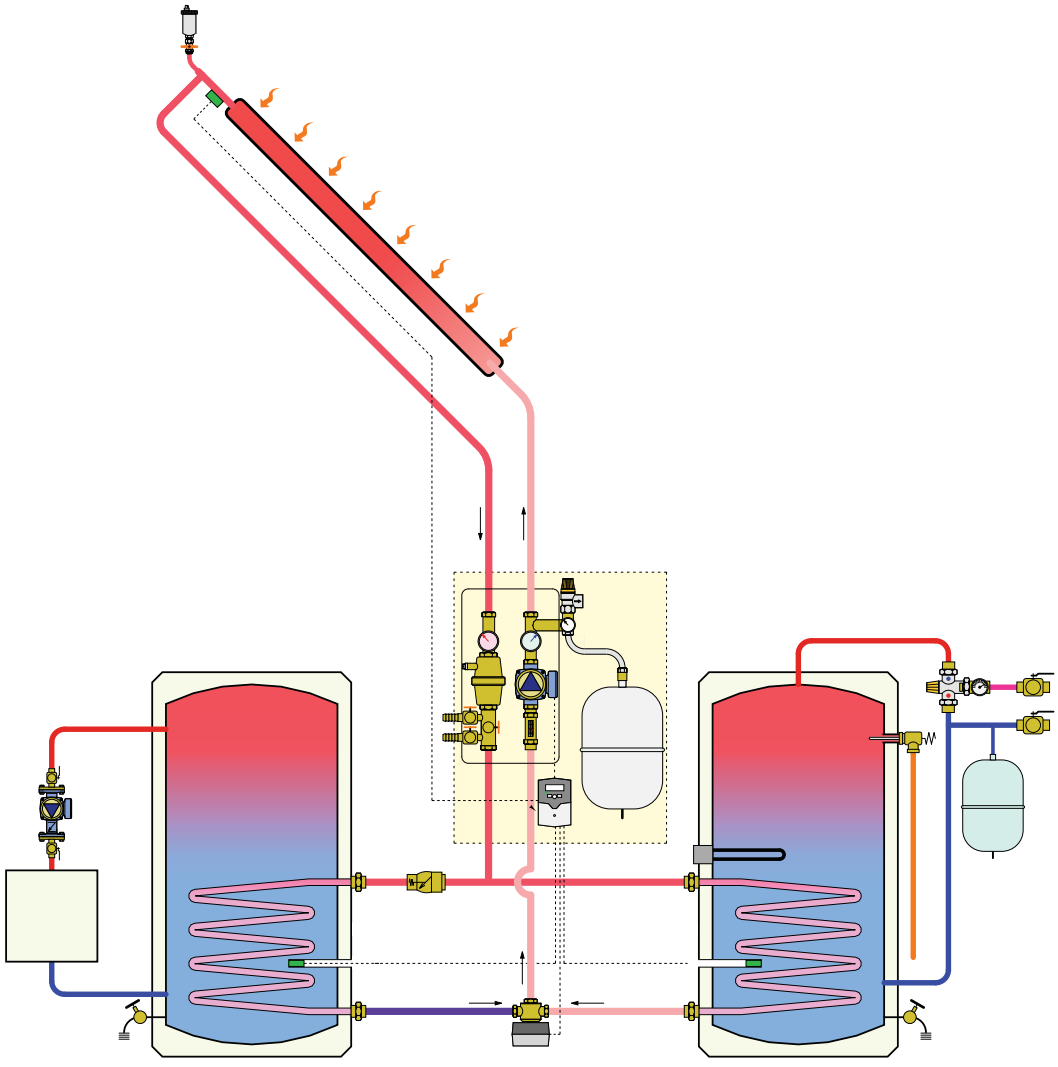


Brass fittings are configured by starting at 12:00 position and moving clockwise to 3:00 position followed by clockwise to 6:00 position ending with 9:00 position on cross. Special order any configuration of fitting by specifying connections type and size plus clock position.

Code	Description	Pk	Lbs	USD
NALXXXX	Special configured elbow	1	0.4	**CF***
NATXXXXXX	Special configured tee	1	0.6	**CF***
NACXXXXXXXX	Special configured cross	1	2.0	**CF***

*Consult factory.

This diagram is an example



10A

- Solar collectors, StarMax V™
- Storage tanks, SolarCon™
- Expansion tanks
- Solar pump stations
- Drainback pump station
- DC solar pump
- In-line flow meter / balancing valves
- In-line check valves
- High temperature glycol
- Solar air vents and air separators
- Low lead mixing valves
- SolarFlex™ piping
- *iSolar*™ differential temperature controllers
- Flow meters
- *iSolar*™ data loggers
- Complete solar water heaters

SOLAR COLLECTORS

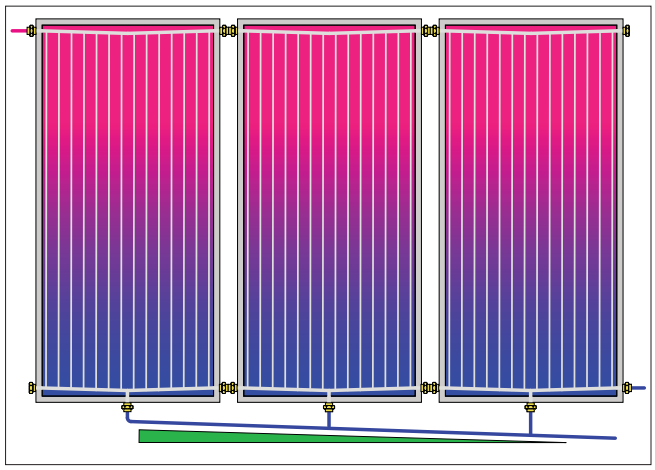
NAS154
StarMax V™

tech. broch. 01271

Star Max V™ 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—1.2 gpm.
Wind load rating: 180 mph.
Connections: (5) 1" male union thread.
SRCC Category C: 40 kBtu/day.
Approvals: SRCC OG-100.
Patented.

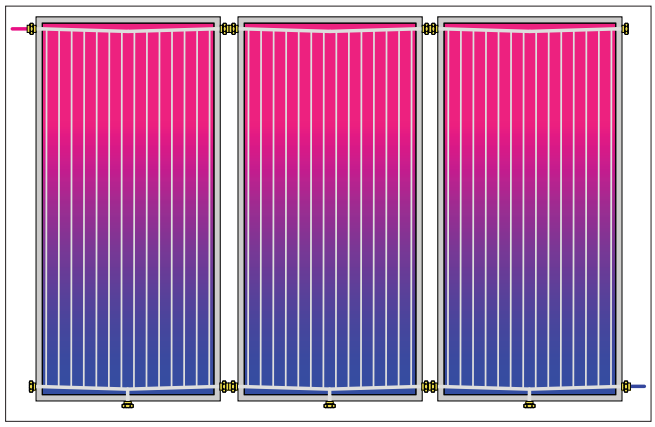
Code	Description	Pk	Lbs	USD
NAS15406	StarMax V™ 4' x 6', five outlets	1	90	**1,900.00**
NAS15408	StarMax V™ 4' x 8', five outlets	1	113	**2,500.00**
NAS15410	StarMax V™ 4' x 10', five outlets	1	153	**3,000.00**
NA10126	Crating for NAS15410 (1—6 collectors)		**net**	**100.00**

Drainback installation



External manifold is connected to the bottom outlet of each collector and is sloped ¼" per foot for proper flow in drainback installation. Collector top and bottom headers are connected together with code NA10272 collector union and opposite outlets are capped with code 586600 cap.

Standard Pressurized installation

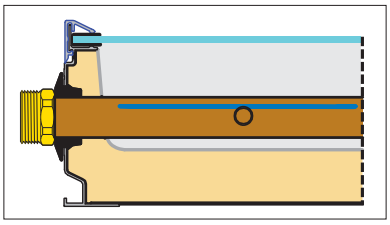


Bottom outlets of each collector remained capped for standard installation. Collector top and bottom headers are connected together with code NA10272 collector union and opposite outlets are capped with code 586600.

Function

The StarMax V™ patent pending flat plate collector is designed with two internal headers which are sloped to the center by ½" from each side. In the center of bottom sloped header is a fifth outlet which allows for filling and draining of fluid from the collector. This unique sloped internal headers allow the collector array to be mounted perfectly horizontal, rather then sloped in drainback installation. The bottom outlets are connected to an external sloped manifold on or under the roof. When used in a standard pressured glycol installation, the bottom center outlet is capped and the array is connected the same way as a standard four outlet collector.

Construction details



Header - riser tubes: copper.
Absorber fin: copper.
Fin coating: blue selective.
Connection: 1" union thread.
Outlet grommets: silicone
Frame: extruded aluminum.
Frame: powdered coated.
Frame: welded corners.
Back sheet: embossed PVC
Insulation liner: foil
Insulation: injected molded polyurethane Insulation
Glass: tempered low iron prismatic.
Glass thickness: 4 mm.

Features

Temperature sensor well weather tight grommet is attached direct to absorber fin for accurate collector temperature measurement in drainback installations. Fully welded frame keeps collector frame ridged and weather tight.

Bottom center outlet is protected with a 586600 factory installed cap. Removable bottom outlet access cover allows for easy absorber removal. Baked on powered coating protects collector frame from harsh salt spray environments.

SOLAR COLLECTORS

Brass collector union cap for both standard and drainback installation. Use NA10302 silicone union gasket.

Code	Description	Pk	Lbs	USD
586600	1" female thread cap	1	0.2	**12.80**

High temperature silicone flat 1" gasket for drainback connections. Use with 586600 cap and sweat tail piece connections.

Code	Description	Pk	Lbs	USD
NA10302	1" flat silicone gasket	1	0.1	**3.00**

Brass collector union for multiple collector header installations. Excellent dry high temperature sealing with silicone O-ring pre-installed inside union.

Code	Description	Pk	Lbs	USD
NA10272	1" female thread union	1	0.5	**50.00**

Red silicone o-ring, replacement for NA10272.

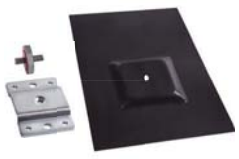
Code	Description	Pk	Lbs	USD
NA10271	Red silicone o-ring	1	0.1	**4.00**

Tilt mounting brackets and hardware allows tilt mounting of collectors.

Code	Description	Pk	Lbs	USD
NAS10006	Tilt mounting kit	1	5	**220.00**

Collector clip secures collectors directly to 2 inch four slot rail with (4) stainless steel ⅜"-16 x 1" bolts, nuts & washers.

Code	Description	Pk	Lbs	USD
NAS10007	Collector clip kit	1	2	**36.00**



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	Pk	Lbs	USD
NAS10030	Flashing kit	1	1	**75.00**

Galvanized steel base plate with ⅜"-16 center thread and six mounting holes, can be used under a truss or rafter.

Code	Description	Pk	Lbs	USD
NAS10032	Steel base plate	1	0.5	**28.00**

2 inch four slot rail has four 9/16" slots which accept standard stainless steel ⅜" bolt and nut for mounting collector clips and U mounts to flashing. Aluminum 6005-T5 2 inch four slot rail can span 7 ft. in moderate wind and snow loads applications.

Code	Description	Pk	Lbs	USD
NAS10040-1	2 inch four slot rail rail 58" for one collector	1	6	**95.70**
NAS10040-2	2 inch four slot rail rail 108" for two collector	1	10	**178.20**
NAS10040-20	2 inch four slot rail rail 240" for cutting	1	22	**396.00**

Mounts directly on top of NAS10030 roof flashing with ⅜" standard stainless steel nut. Attaches into the side slots of 2 inch four slot rail using NAS10042 stainless steel ⅜"-16 x 1" bolts, nuts & washers.

Code	Description	Pk	Lbs	USD
NAS10041	Four slot rail 2" U mount	1	0.5	**16.00**

Two stainless steel ⅜" -16 x 1" bolts, nuts & washers, ASTM F593C.

Code	Description	Pk	Lbs	USD
NAS10042	Bolt, nut & washer kit	1	0.2	**10.00**

Aluminum splice bars joins 2 inch four slot rail sections together. Includes stainless steel ⅜" bolts & washers. Requires two bars for each splice.

Code	Description	Pk	Lbs	USD
NAS10023	2 inch four slot rail splice bar	1	0.2	**15.00**

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

Code	Description	Pk	Lbs	USD
NAS10002	1" square tube x 6'	1	2	**134.00**
NAS10005	1" square tube x 12'	1	4	**240.00**

NAS104

StarMax™ standard four connection harp flat plate collector with parallel headers.
Working pressure: 90 psi.
Max. test pressure: 150 psi.
Working temperature: -40—350°F.
Typical transfer flow rate: 0.5—1.2 gpm.
Wind load rating: 180 mph.
Header - riser tubes: copper.
Copper fin coating: blue selective.
Connection: (4) 1" male union thread.
Welded frame: powdered coated.
Insulation: molded polyurethane Insulation.
SRCC Category C: 40 kBtu/day.
Approvals: SRCC OG-100.

Code	Description	Pk	Lbs	USD
NAS10410A	StarMax™ 4' x 10', 4 connection	1	153	**2,900.00**
NA10126	Crating for NAS10410A (1—6 collectors)		**net**	**100.00**

STORAGE TANKS

NAS200 SolarCon™

tech. broch. 01175

Storage tanks can serve as either a domestic hot water tank or a 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.

Code	Description	Pk	Lbs	USD
NAS20025	25 gal. no HX	1	100	**2,530.00**
NAS20050	50 gal. no HX	1	200	**3,025.00**
NAS20053	50 gal. 1 HX , electric element	1	231	**3,850.00**
NAS20080	80 gal. no HX	1	250	**3,575.00**
NAS20083	80 gal. 1 HX, electric element	1	297	**5,225.00**
NAS20082	80 gal. 2 HX	1	327	**5,775.00**
NAS20120	119 gal. no HX	1	350	**4,730.00**
NAS20123	119 gal. 1 HX, electric element	1	397	**6,215.00**
NAS20122	119 gal. 2 HX	1	427	**6,820.00**
NAS20124	119 gal. 2 HX, electric element	1	429	**7,040.00**

Function

No HX:

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.

One HX:

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.

Two HX:

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.

Two HX with electrical element:

Typical application is for a one tank domestic hot water system with electric element boost, and utilizing upper HX for supplemental space heat.

STORAGE TANK ACCESSORIES

Stainless steel bushing fits tanks without HX for installing temperature probe.

Code	Description	Pk	Lbs	USD
NA10234	2" NPT male x ¾" NPT female	1	0.4	**47.40**

NEW

Code	Description	Pk	Lbs	USD
NA10339	2" NPT male plug, 304 stainless steel	1	0.2	**41.30**

Brass reducer bushing.

Code	Description	Pk	Lbs	USD
NA10082	¾" NPT male x ½" NPT female	1	0.3	**7.60**

Magnesium anode rod.

Code	Description	Pk	Lbs	USD
NA10229	¾" NPT x 36" anode rod fits 50 gal.	1	8.0	**61.00**
NA10230	¾" NPT x 40" anode fits 80 &120 gal.	1	9.0	**68.00**

90º brass elbow to connect ¾" SolarFlex™ to heat exchanger in SolarCon tank.

Code	Description	Pk	Lbs	USD
NA10093	1" NPT female x 1" male	1	0.5	**61.50**

Insulated 6' SolarFlex™ for connecting solar pump station to SolarCon™ HX.

Code	Description	Pk	Lbs	USD
NA3140-02	¾" SolarFlex with 1" union nuts	1	1	**185.00**

EXPANSION TANK

259

tech. broch. 01136

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	Pk	Lbs	USD
259012	3 gallon, ¾" male straight thread	1	14	**163.70**
259018	5 gallon, ¾" male straight thread	1	17	**203.30**
259025	7 gallon, ¾" male straight thread	1	21	**263.20**
259033	9 gallon, ¾" male straight thread	1	24	**449.40**
259050	13 gallon, ¾" male straight thread	1	28	**567.10**

ACCESSORIES

255

tech. broch. 01136

Expansion tank connection kit.
Includes ¾" connection, wall bracket, hardware and double check valve.

Code	Description	Pk	Lbs	USD
255007	S.S. flexible tank connection kit	1	3.0	**190.50**

Expansion tank fitting connections. ¾" union nut connects to the expansion tank.

Code	Description	Pk	Lbs	USD
NA25540	½" NPT union connection set	1	0.1	**19.00**
NA25549	½" sweat union connection set	1	0.1	**17.90**

Cap for plugging tank connection on pump station while leak testing. Requires (R50058) washer.

Code	Description	Pk	Lbs	USD
R21180	¾" female cap	1	0.1	**6.00**

ACCESSORIES

NA255

6' flexible stainless steel extension for connecting expansion tank to pumping station.

Code	Description	Pk	Lbs	USD
NA255002	¾" union nuts	1	1	**105.00**

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	Pk	Lbs	USD
NA267002	¾" union nuts	1	2	**125.00**

NA267

Kit for mounting solar pumping station onto storage tank. Includes bracket and hardware.

Code	Description	Pk	Lbs	USD
NA267003	Kit to mount solar station	1	2	**23.00**

NA256

Dual fill and flush valve.

Code	Description	Pk	Lbs	USD
NA256011	1" male union thread x ¾" GHT	1	0.8	**210.00**

255

Hand pump attaches to solar pump station for pressurizing system.

Code	Description	Pk	Lbs	USD
255010A	Manual hand pump	1	3.0	**320.00**

NA256

Two solar station connection kits.

Code	Description	Pk	Lbs	USD
NA256012	¾" F x ¾" M thread and cap	1	1.0	**300.00**

SOLAR PUMP STATIONS

255 & 256

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: ½—5 gpm scale.
Pump: three speed
Pump performance: 13-15 ft head/5 gpm.
Safety relief valve: 90 psi.
Max. working pressure: 150 psi.
Max. working temp: 360ºF.
Connections: ¾" female thread.
Agency approval: cULus.

(Select adaptors to the right)

Code	Description	Pk	Lbs	USD
255050A	Dual-line solar pump station	1	17	**1,250.00**
255056A	Dual-line solar station w/o pump	1	12	**1,000.00**
256050A	Single-line solar pump station	1	14	**1,090.00**
256056A	Single-line solar station w/o pump	1	10	**840.00**

Optional pumps fits solar pump stations 255 & 256. 3 speed 120 V, 1" male union thread.

Code	Description	Pk	Lbs	USD
NA12170	Wilo Star S-16, 13' head / 5 gpm	1	5.0	**325.00**
NA12168	Wilo Star S-21, 19' head / 5 gpm	1	5.0	**325.00**
NA12175	Grundfos 15-68, 15' head / 5 gpm	1	5.0	**325.00**

Temperature gauges fits 255 & 256 solar stations.

Code	Description	Pk	Lbs	USD
NA255003	1½" red dial temp. gauge	1	0.1	**48.10**
NA255004	1½" blue dial temp. gauge	1	0.1	**48.10**

PUMP STATION FITTINGS

½" SolarFlex™ directly to top or bottom. 2 each.

Code	Description	Pk	Lbs	USD
NA26640	¾" male thread x ¾ male thread	1	0.6	**55.60**

½" SolarFlex™ directly to top and bottom. 4 each.

Code	Description	Pk	Lbs	USD
NA26740	¾" male thread x ¾" male thread	1	1.0	**111.20**

¾" SolarFlex™ directly to top or bottom. 2 each.

Code	Description	Pk	Lbs	USD
NA26650	¾" male thread x 1" male thread	1	0.6	**60.20**

¾" SolarFlex™ directly to top and bottom. 4 each.

Code	Description	Pk	Lbs	USD
NA26750	¾" male thread x 1" male thread	1	1.0	**120.40**

1" SolarFlex™ directly to top or bottom. 2 each.

Code	Description	Pk	Lbs	USD
NA26660	¾" male thread x 1¼" male thread	1	0.6	**116.60**

1" SolarFlex™ directly to top and bottom. 4 each.

Code	Description	Pk	Lbs	USD
NA26760	¾" male thread x 1¼" male thread	1	1.0	**233.20**

PUMP STATION FITTINGS

½" sweat fittings to top or bottom.
2 each.

Code	Description	Pk	Lbs	USD
NA26649	¾" male thread x ½" sweat fitting	1	0.6	**91.40**

½" sweat fittings to top and bottom. 4 each.

Code	Description	Pk	Lbs	USD
NA26749	¾" male thread x ½" sweat fitting	1	1.0	**182.80**

¾" sweat fittings to top or bottom.
2 each.

Code	Description	Pk	Lbs	USD
NA26659	¾" male thread x ¾" sweat fitting	1	0.6	**102.60**

¾" sweat fittings to top and bottom. 4 each.

Code	Description	Pk	Lbs	USD
NA26759	¾" male thread x ¾" sweat fitting	1	1.0	**205.20**

1" sweat fittings to top or bottom.
2 each.

Code	Description	Pk	Lbs	USD
NA26669	¾" male thread x 1" sweat fitting	1	0.6	**112.20**

1" sweat fittings to top and bottom. 4 each.

Code	Description	Pk	Lbs	USD
NA26769	¾" male thread x 1" sweat fitting	1	1.0	**224.40**

DRAINBACK PUMP STATION

256

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: ½—5 gpm scale.
Pump: Grundfos UP15-100
Performance: 36 feet head / 8 gpm.
Safety relief valve: 90 psi.
Max. working pressure: 150 psi.
Max. working temp: 360°F.
Connections: ¾" female thread.
Agency approval: cULus.

(Select adaptors to the left)

Code	Description	Pk	Lbs	USD
256059A	Drainback solar pump station	1	14	**1,165.00**

NA121

Replacement single speed 120 V, 1" male union thread with 36 feet head / 8 gpm.

(Select union fitting on page 83)

Code	Description	Pk	Lbs	USD
NA12171	Grundfos UP 15-100	1	6.0	**400.00**

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.

Shown mounted in 255056A or can be mounted inside 256056A.

(Select union fitting on page 83)

Code	Description	Pk	Lbs	USD
NA26711	1" male union thread	1	3.0	**650.00**

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	Pk	Lbs	USD
NA255160	1" male union thread	1	25	**2,075.00**

Replacement pump fits solar pump station NA255. 120 VAC / 1.3 A. 30 feet head / 30 gpm. 1 ½" male thread.

Code	Description	Pk	Lbs	USD
NA12169	Wilo Star S 30	1	6.0	**515.00**

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	Pk	Lbs	USD
NA10103	5 gallon bucket	1	45.0	**240.80**

PUMP STATION FITTINGS

NA155

NA255160 Solar pump stations fitting kits. (mix & match for top & bottom)

Code	Description	Pk	Lbs	USD
NA15550	¾" NPT male union kit	1	1.0	**165.40**

NA255160 Solar pump stations fitting kits. (mix & match for top & bottom)

Code	Description	Pk	Lbs	USD
NA15559	¾" sweat union kit	1	1.0	**134.20**

NA255160 Solar pump stations fitting kits. (mix & match for top & bottom)

Code	Description	Pk	Lbs	USD
NA15560	1" NPT male union kit	1	1.1	**165.40**

NA255160 Solar pump stations fitting kits. (mix & match for top & bottom)

Code	Description	Pk	Lbs	USD
NA15569	1" sweat union kit	1	1.1	**136.20**

NA255160 Solar pump stations fitting kits. (mix & match for top & bottom)

Code	Description	Pk	Lbs	USD
NA15570	1¼" male, 1" SolarFlex™	1	0.9	**56.40**

Replacement solar pump station pressure gauge.
Pressure range: 0—90 psi.
Dial size: 1 ½"

Code	Description	Pk	Lbs	USD
NA12156	¼" male rear connection thread	1	0.1	**46.50**

FLOW METER

NA255

Direct in-line flow meter with brass body.
Max percentage of glycol: 50%.
Max working pressure: 150 psi.
Temperature range: 32—250°F.
Measuring accuracy: ±10%.
Cv:10.

(Select fitting to the right)

Code	Description	Pk	Lbs	USD
NA255110	½ to 5 gpm with 1" union thread	1	2.9	**138.00**
NA255112	1 to 10 gpm with 1" union thread	1	2.9	**158.00**

NA255

Direct in-line balancing and flow meter with brass body.
Max percentage of glycol: 50%.
Max working pressure: 150 psi.
Temperature range: 32—250°F.
Measuring accuracy: ±10%.
Cv: 8.

(Select fitting to the right)

Code	Description	Pk	Lbs	USD
NA255111	½ to 5 gpm with 1" union thread	1	3.0	**160.00**
NA255113	1 to 10 gpm with 1" union thread	1	3.0	**180.00**

FILL AND FLUSH CART

NA25510 tech. broch. 01280
Fill and Flush Cart

The fill and flush pump cart is portable, pre-assembled and leak-tested for a safe, quick and clean way to fill and flush solar and hydronic heating 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	Pk	Lbs	USD
NA25510	Fill and flush cart	1	60	**2,400.00**

FITTING KITS

NA122

Union connection set fits 1" male threads.

Code	Description	Pk	Lbs	USD
NA12240	½" NPT with 1" union nuts	1	0.2	**40.80**
NA12249	½" sweat with 1" union nuts	1	0.2	**38.60**

NA122

Union connection set fits 1" male threads.

Code	Description	Pk	Lbs	USD
NA12250	¾" NPT with 1" union nuts	1	0.2	**44.60**
NA12259	¾" sweat with 1" union nuts	1	0.2	**42.40**

NA122

Union connection set fits 1" male threads.

Code	Description	Pk	Lbs	USD
NA12260	1" NPT with 1" union nuts	1	0.3	**54.20**
NA12269	1" sweat with 1" union nuts	1	0.3	**52.00**

IN-LINE CHECK VALVE

NA510

In-line union sweat solar flow check valve.
Max percentage of glycol: 50%.
Max working pressure: 150 psi.
Temperature range: 32—250°F.

Code	Description	Cv	Pk	Lbs	USD
NA51059	¾" sweat union	12	1	0.7	**70.90**

NA510

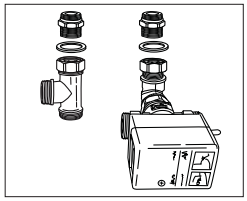
In-line union sweat solar flow check valve.
Max percentage of glycol: 50%.
Max working pressure: 150 psi.
Temperature range: 32—250°F.

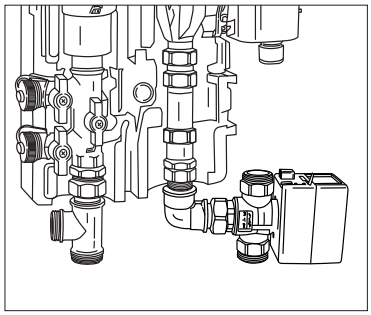
Code	Description	Cv	Pk	Lbs	USD
NA51069	1" sweat union	17	1	1.0	**90.50**

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	Pk	Lbs	USD
NA26710	Diverting three-way valve kit	1	6.0	**320.00**

Select two fitting sets below, mix and match sets for a total of four union fittings.

NA122

Two union nuts, washers and tail pieces.
Union connection set fits 1" male threads.

Code	Description	Pk	Lbs	USD
NA12240	½" NPT with 1" union nuts	1	0.2	**40.80**
NA12249	½" sweat with 1" union nuts	1	0.2	**38.60**

Two union nuts, washers and tail pieces.
Union connection set fits 1" male threads.

Code	Description	Pk	Lbs	USD
NA12250	¾" NPT with 1" union nuts	1	0.2	**44.60**
NA12259	¾" sweat with 1" union nuts	1	0.2	**42.40**

Two union nuts, washers and tail pieces.
Union connection set fits 1" male threads.

Code	Description	Pk	Lbs	USD
NA12260	1" NPT with 1" union nuts	1	0.3	**54.20**
NA12269	1" sweat with 1" union nuts	1	0.3	**52.00**

AUTOMATIC AIR VENT

250

tech. broch. 01133

Automatic air vent for solar systems.
Working temperature range: -20—360°F.
Max. working pressure: 150 psi.
Max. discharge pressure: 75 psi.

Code	Description	Pk	Lbs	USD
250041A	½" NPT male	1	0.3	**75.00**

NA292

tech. broch. 01133

Shut-off fits automatic air vent.
Working temperature range: -20—360°F.
Max. working pressure: 150 psi.

Code	Description	Pk	Lbs	USD
NA29284	½" NPT female x ½" NPT male	1	0.2	**61.00**

NA102

Vent cap adapter to connect discharge tube. Fits all air vents and air separators.

Code	Description	Pk	Lbs	USD
NA10204	¼" NPT male	1	0.1	**26.00**

251 DISCALAIR®

tech. broch. 01135

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	Pk	Lbs	USD
251004A	½" NPT female	1	0.8	**149.80**

AIR SEPARATOR

251 DISCAL™

tech. broch. 01134

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
Drain, ½" NPT, female

Code	Description	Pk	Lbs	USD
251003A	¾" NPT female	1	2.0	**198.90**

253

tech. broch. 01089

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.
Approval: according to TÜV SV 07 2009.
Rating: TÜV • SOL • 50 • p / ANSI Z21.22.

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	Pk	Lbs	USD
253042	Factory set to 35 psi	1	0.3	**74.75**
253043	Factory set to 45 psi	1	0.3	**74.75**
253044	Factory set to 60 psi	1	0.3	**74.75**
253046	Factory set to 90 psi	1	0.3	**74.75**
253048	Factory set to 120 psi	1	0.3	**74.75**
253040	Factory set to 150 psi	1	0.3	**74.75**

LOW LEAD MIXING VALVES

2521

tech. broch. 01127

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: cUPC listed to ASSE 1017/ CSA B125.3
Reduction of Lead in Drinking Water Act Compliant: 0.25% Max. weighted average lead content. Reduction of Lead in Drinking Water Act Certified by IAPMO R&T

ASSE 1017

Code	Description	Pk	Lbs	USD
252149A	½" sweat with inlet check valves	1	1.0	**240.90**
252159A	¾" sweat with inlet check valves	1	1.0	**253.80**
252169A	1" sweat with inlet check valves	1	1.0	**294.00**

2521

tech. broch. 01127

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: cUPC listed to ASSE 1017/ CSA B125.3
Reduction of Lead in Drinking Water Act Compliant: 0.25% Max. weighted average lead content. Reduction of Lead in Drinking Water Act Certified by IAPMO R&T

ASSE 1017

Code	Description	Pk	Lbs	USD
252158A	¾" sweat with inlet check valves	1	1.0	**311.80**
252168A	1" sweat with inlet check valves	1	1.0	**354.80**

STAINLESS STEEL PIPING

NA35 SolarFlex™

tech. broch. 01172

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	Pk	Lbs	USD
NA3520-15	½" Pipe, 50' coil	1	24	**1,500.00**
NA3540-15	¾" Pipe, 50' coil	1	27	**1,700.00**
NA3560-15	1" Pipe, 50' coil	1	40	**2,300.00**
NA3540-B*	¾" Pipe, 165' spool (order per ft)	1	0.5	**28.60**

* NAS3540-B is cut lengths (up to 165' per spool) price per foot (minimum 10' lenght), without fitting kit, order NA12103 below.

NA121

tech. broch. 01172

SolarFlex™ extra connection kits.

Code	Description	Pk	Lbs	USD
NA12102	½" SolarFlex™, ¾" nuts and washers	1	1.0	**38.00**
NA12103	¾" SolarFlex, 1" nuts and washers	1	1.1	**51.20**
NA12104	1" SolarFlex, 1¼" nuts and washers	1	1.3	**82.00**

NA121

tech. broch. 01172

SolarFlex™ pipe hangers with hardware. (4 per pack)

Code	Description	Pk	Lbs	USD
NA12132	½" SolarFlex™ hangers	1	1.2	**45.90**
NA12133	¾" SolarFlex™ hangers	1	1.3	**48.30**
NA12134	1" SolarFlex™ hangers	1	1.0	**54.35**

NA350

tech. broch. 01172

EPDM foam UV resistant insulating tape to wrap fitting connections.

Code	Description	Pk	Lbs	USD
NA35001	2" x 1/8" x 25' roll	1	1.3	**88.70**

Black film UV resistant film tape to wrap foam tape.

Code	Description	Pk	Lbs	USD
NA35002	2" x 30' roll	1	0.5	**18.90**

4' lengths black braid sleeve (UV & vermin resistant) (2) to protect outdoors piping with black flim tape.

Code	Description	Pk	Lbs	USD
NA35007	4' Sleeve with 2" x 30' flim tape	1	1.4	**75.10**

NA350

tech. broch. 01172

SolarFlex™ sliding piston flattening tool. Three sizes of jaws to match SolarFlex™ pipe sizes.

Code	Description	Pk	Lbs	USD
NA35003	Sliding piston tool	1	5.0	**300.00**
NA35004	½" Fixed jaw	1	3.0	**565.00**
NA35005	¾" Fixed jaw	1	3.0	**565.00**
NA35006	1" Fixed jaw	1	3.0	**565.00**

½" FLEX FITTINGS WITH ¾" THREADS

Double nipple.

Code	Description	Pk	Lbs	USD
NA12122	¾" male x ¾" male	1	0.3	**26.00**

Double nipple.

Code	Description	Pk	Lbs	USD
NA12172	¾" NPT x ¾" NPT	1	0.3	**26.00**

Union nut.

Code	Description	Pk	Lbs	USD
R41298/C	¾" union nut	1	0.1	**4.40**

C-clip.
(Priced each, sold in package of 10 each

Code	Description	Pk	Lbs	USD
NA12112	½" flex "C" clip	10	0.1	**3.50**

Union washer
(Priced each, sold in package of 10 each)

Code	Description	Pk	Lbs	USD
R50058	¾" union washer	10	0.1	**1.70**

Sweat tail piece.

Code	Description	Pk	Lbs	USD
NA10001	½" sweat fits ¾" union nut	1	0.3	**11.90**

Sweat adapter.

Code	Description	Pk	Lbs	USD
NA10118	¾" sweat x ¾" male thread	1	0.3	**26.00**

Double nipple with O-ring.

Code	Description	Pk	Lbs	USD
NA12152	¾" male w/ O-ring x ¾"male thread	1	0.3	**27.00**

NPT tail piece.

Code	Description	Pk	Lbs	USD
R31868	½" NPT fits ¾" union nut	1	0.1	**14.40**

Compression adaptor.

Code	Description	Pk	Lbs	USD
254452	22mm comp. w/ ¾" male thread	1	0.2	**30.30**

Compression elbow adaptor.

Code	Description	Pk	Lbs	USD
254752	22mm comp. elbow w/ ¾" male thd.	1	0.2	**34.60**

¾" FLEX FITTINGS WITH 1" THREADS

Double nipple.

Code	Description	Pk	Lbs	USD
NA12123	1" x 1" male thread	1	0.4	**32.50**

Double nipple.

Code	Description	Pk	Lbs	USD
NA12173	1" NPT x 1" NPT	1	0.4	**32.50**

Union nut.

Code	Description	Pk	Lbs	USD
R61008	1" union nut	1	0.2	**5.40**

C-clip.
(Priced each, sold in package of 10 each

Code	Description	Pk	Lbs	USD
NA12113	¾" flex "C" clip	10	0.1	**5.40**

Union washer.
(Priced each, sold in package of 10 each)

Code	Description	Pk	Lbs	USD
R50055	1" union washer	10	0.1	**2.00**

¾" FLEX FITTINGS WITH 1" THREADS

Union washer.
High temperature silicone rubber.
Working temperature: -40—350°F.
(Priced each, sold in package of 10 each)

Code	Description	Pk	Lbs	USD
NA10302	1" union washer high temp silicone	10	0.1	**3.00**

Sweat tail piece.
Low lead brass.

Code	Description	Pk	Lbs	USD
NA10002	½" sweat fits 1" union nut	1	0.3	**11.90**

Sweat tail piece.
Low lead brass.

Code	Description	Pk	Lbs	USD
NA10003	¾" sweat fits 1" union nut	1	0.4	**13.80**

NPT tail piece.
Low lead brass.

Code	Description	Pk	Lbs	USD
31901A	¾" NPT fits 1" union nut	1	0.1	**14.90**

Sweat tail piece with nut.
Low lead brass.

Code	Description	Pk	Lbs	USD
59834A	1" sweat w/ 1" union nut	1	0.5	**24.00**

Bushing adaptor.

Code	Description	Pk	Lbs	USD
NA10060	¾" NPT female w/ 1" male thread	1	0.1	**26.00**

Sweat adaptor.

Code	Description	Pk	Lbs	USD
NA10061	¾" sweat adaptor w/ 1 " male thd.	1	0.2	**27.10**

Sweat adaptor.

Code	Description	Pk	Lbs	USD
NA10062	1" sweat adaptor w/ 1" male thd.	1	0.1	**28.10**

Nipple adaptor.

Code	Description	Pk	Lbs	USD
NA10064	1" NPT w/ 1" male thread	1	0.2	**29.20**

Nipple adaptor with O-ring.

Code	Description	Pk	Lbs	USD
NA12162	¾" male w/ O -ring x 1" male thread	1	0.2	**30.10**

Bushing.

Code	Description	Pk	Lbs	USD
NA10089	¾" female thread x 1" male thread	1	0.1	**21.60**

Smooth pipe adaptor.

Code	Description	Pk	Lbs	USD
NA10085	22mm pipe w/ 1" male thread	1	0.2	**24.90**

Compression elbow adaptor.

Code	Description	Pk	Lbs	USD
NA254712	22mm comp. elbow w/ 1" male thd.	1	0.4	**41.10**

1" FLEX FITTINGS WITH 1¼" THREADS

Double nipple.

Code	Description	Pk	Lbs	USD
NA12124	1¼" x 1¼" thread	1	0.4	**52.00**

NPT tail piece.

Code	Description	Pk	Lbs	USD
NA10116	1" NPT male fits 1¼" union nut	1	0.2	**42.70**

Union nut.

Code	Description	Pk	Lbs	USD
R31495	1¼" union nut	1	0.2	**8.70**

Sweat adaptor.

Code	Description	Pk	Lbs	USD
NA10119	1" sweat adapter x 1¼" union thread	1	0.4	**35.70**

C-clip.
(Priced each, sold in package of 5 each)

Code	Description	Pk	Lbs	USD
NA12114	1' flex "C" clip	5	0.1	**8.70**

Bushing.

Code	Description	Pk	Lbs	USD
NA10087	1" female x 1 ¼" male bushing	1	0.4	**26.20**

Union washer.
(Priced each, sold in package of 5 each)

Code	Description	Pk	Lbs	USD
R50056	1 ¼" union washer	5	0.1	**3.10**

Bushing.

Code	Description	Pk	Lbs	USD
61215A	1" NPT female x 1¼" male bushing	1	0.8	**26.00**

Sweat tail piece.

Code	Description	Pk	Lbs	USD
31390 FD	¾" sweat fits 1¼" union nut	1	0.2	**27.50**

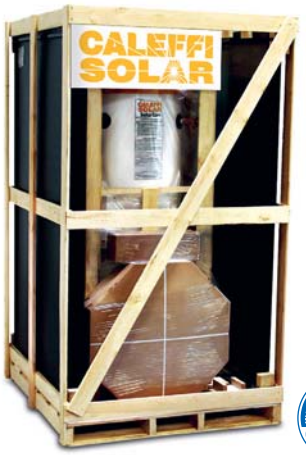
Nipple adaptor.

Code	Description	Pk	Lbs	USD
R31706	1" male x 1¼" male nipple	1	0.3	**32.50**

Sweat tail piece.

Code	Description	Pk	Lbs	USD
NA10042	1" sweat fits 1¼" union nut	1	0.3	**28.10**

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 storage tanks code numbers:
50 gal. single coil with electric element (NAS20053).
80 gal. single coil with electric element (NAS20083).
80 gal. dual coil without electric element (NAS20082).
120 gal. single coil with electric element (NAS20123).
120 gal. dual coil without electric element (NAS20122).
System collector code numbers:
4' x 6.5' flat plate (NAS10406).
4' x 8' flat plate (NAS10408)
4' x 10' flat plate (NAS10410).
System approvals: SRCC OG-300 certified.
Energy Star Rated.

* System components shown on page 95.

50 Gal. Single Coil Tank Systems

Code	Description	Collectors	Energy Star Solar Fraction	Lbs.	USD
NAS30020-P	no collector			490	**8,186.90**
NAS30020	4' x 6.5' collector	1		590	**11,688.60**
NAS300201	4' x 6.5' collector	2	0.63	680	**14,334.40**
NAS30020P8	4' x 8' collector	1		615	**12,085.80**
NAS300201P8	4' x 8' collector	2	0.72	730	**15,222.20**
NAS30020P10	4' x 10' collector	1	0.50	655	**12,501.80**
NAS300201P10	4' x 10' collector	2	0.82	810	**16,054.20**

80 Gal. Single Coil Tank Systems

Code	Description	Collectors	Energy Star Solar Fraction	Lbs.	USD
NAS30040-P	no collector			660	**9,434.90**
NAS30040	4' x 6.5' collector	2	0.63	760	**15,604.20**
NAS300401	4' x 6.5' collector	3	0.82	850	**18,386.20**
NAS30040P8	4' x 8' collector	2	0.74	785	**16,520.10**
NAS300401P8	4' x 8' collector	3	0.94	900	**19,723.50**
NAS300 40P10	4' x 10' collector	2	0.83	825	**17,352.10**
NAS300401P10	4' x 10' collector	3	0.95	980	**20,971.50**

80 Gal. Dual Coil Tank Systems

Code	Description	Collectors	Energy Star Solar Fraction	Lbs.	USD
NAS30042-P	no collector			610	**9,954.90**
NAS30042	4' x 6.5' collector	2	0.73	810	**16,056.60**
NAS300421	4' x 6.5' collector	3	0.88	900	**18,906.20**
NAS30042P8	4' x 8' collector	2	0.80	835	**17,040.10**
NAS300421P8	4' x 8' collector	3	0.96	950	**20,243.50**
NAS30042P10	4' x 10' collector	2	0.88	875	**17,872.10**
NAS300421P10	4' x 10' collector	3	0.97	1030	**21,491.50**

120 Gal. Single Coil Tank Systems

Code	Description	Collectors	Energy Star Solar Fraction	Lbs.	USD
NAS30060-P	no collector			670	**10,266.90**
NAS30060	4' x 6.5' collector	3	0.75	970	**19,130.80**
NAS300601	4' x 6.5' collector	4	0.92	1060	**21,972.10**
NAS30060P8	4' x 8' collector	3	0.87	995	**20,555.50**
NAS300601P8	4' x 8' collector	4	0.95	1110	**23,850.10**
NAS30060P10	4' x 10' collector	3	0.95	1035	**21,803.50**
NAS300601P10	4' x 10' collector	4	0.95	1190	**25,727.30**

120 Gal. Dual Coil Tank Systems

Code	Description	Collectors	Energy Star Solar Fraction	Lbs.	USD
NAS30062-P	no collector			700	**10,786.90**
NAS30062	4' x 6.5' collector	3	0.82	1000	**19,583.20**
NAS300621	4' x 6.5' collector	4	0.93	1090	**22,492.10**
NAS30062P8	4' x 8' collector	3	0.91	1025	**21,075.50**
NAS300621P8	4' x 8' collector	4	0.97	1140	**24,370.10**
NAS30062P10	4' x 10' collector	3	0.97	1065	**22,323.50**
NAS300621P10	4' x 10' collector	4	0.97	1220	**26,247.30**

WATER HEATER COMPONENTS

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	NA15006	Lightning protector	
7	NA10092	18" SJ round cord connects pump to controller	
8	NA3540-15	SolarFlex™ ¾" x 50 ft. coil piping with fittings	
9	NA12133	Hangers fits ¾" SolarFlex™ (4 pcs)	
10	NA3140-02	Two ¾" flex pipes with insulation, 6' long	
11	NA10093	Two 90-degree brass elbows 1" male union half	
12	250041A	Automatic solar air vent, ½" NPT male	
13	NA29284	Solar air vent shut-off valve, ½" NPT MxF	
14	NAT624162	Tee 1" M union x ½" NPT F x 1" union nut	
15	NA35001	EPDM insulation black tape, ⅛" x 2" x 25' roll	
16	NA35002	UV-resistant black film tape, 2" x 30' roll	
17*	NA12145	Connection kit fits 6.5' collectors	
	NA12146	Connection kit fits even 8' and 10' collectors	
	NA12147	Connection kit fits odd 8' and 10' collectors	
18*	NAS10001	Universal foot mounts fits solar collectors	
19*	NA10103	5-15 gallons glycol. NSF listed (amount model specific)	

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

WATER HEATER COLLECTORS

NAS104

tech. broch. 01173

Solar flat plate collectors for capturing solar energy for solar heating systems.
Working pressure: 90 psi.
Max. test pressure: 150 psi.
Working temperature: -40—350°F.
Absorber material: copper.
Absorber coating: selective crystal.
Conn: 1"union NAS10406,
1 ¼" union NAS10408, NAS10410
Frame: extruded aluminum.
Frame construction: fastened corners.
Glass: tempered low iron.
Typical transfer rate: 0.5—1.8 gpm.
Wind load rating: 181 mph.
Approval: SRCC OG-100 certified.

Code	Description	Pk	Lbs	USD
NAS10406	4' x 6.5', Category C 25 kBtu/day	1	90	**2,625.00**
NA10100	Crating charge for NAS10406 (1—10)		net	**100.00**
NAS10408	4' x 8', Category C 32 kBtu/day	1	113	**3,100.00**
NAS10410	4' x 10', Category C 40 kBtu/day	1	153	**3,625.00**
NA10126	Crating for NAS10408 / NAS10410 (1—6)	net		**100.00**

NAS100

Flat plate collector mounting brackets and tilt extensions.

Code	Description	Pk	Lbs	USD
NAS10001	Universal foot mount, 4 each	1	5	**267.00**
NAS10002	6' extension, 1" square tube	1	2	**134.00**

NA121

Includes washer (2), nut (2), disk (2) and plug (1).
For connecting odd or even number of 6.5' collectors.

Code	Description	Pk	Lbs	USD
NA12145	6.5' collector, odd or even number	1	2	**39.60**

Includes washer (3), washer (1), nut (2), disk (2), plug (1) and nipple (1).
For connecting even numbers of 8' and 10' collectors.

Code	Description	Pk	Lbs	USD
NA12146	8' & 10' collector, even number	1	3	**98.20**

Includes washer (3), nut (2), disk (2), plug (2) and thread, male (1).
For connecting odd numbers of 8' and 10' collectors.

Code	Description	Pk	Lbs	USD
NA12147	8' & 10' collector, odd number	1	3	**134.60**

DIFFERENTIAL TEMPERATURE CONTROLLERS

Code	Description	Pk	Lbs	USD
257220A	*iSolar*™ 2, 1 relay	1	2.0	**475.00**
257240A	*iSolar*™ 4, 2 relays	1	2.0	**550.00**
257260A	*iSolar*™ Plus, 2 relays	1	2.0	**725.00**
257260A PV1	*iSolar*™ Plus, 2 relays, 12 V DC	1	2.0	**725.00**
257260A PV2	*iSolar*™ Plus, 2 relays, 24 V DC	1	2.0	**725.00**

Model Comparison	***iSolar* 2**	***iSolar* 4**	***iSolar* Plus**	***iSolar* BX**	***iSolar* MXLTE**
Pre configured arrangements	1	1	10	26	20
Speed control triac output (30–100%)	1	1	2	3	4
Standard relay output	0	1	0	1	0
Dry contact relay	0	0	0	0	1
Sensor inputs (temperature)	4	4	4	5	8
Pt1000 temp. sensors included	3	3	4	4	5
Max. solar collector arrays	1	1	2	2	2
Max. solar storage tanks	1	1	2	2	4
Two tank priority logic			•	•	•
Second deltaT-function			•	•	•
Drainback pump speed control	•	•	•	•	•
Drainback 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	•	•	•	•	•
Operating hours counter	•	•	•	•	•
Energy metering measurement	•	•	•	•	•
Vbus data communication	•	•	•	•	•
Onboard data logging				•	•

257
iSolar™

tech. broch. 01174

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.
Power supply: PV1 -12 V DC, PV2 - 24V DC
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.

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

Function

The *iSolar*™ 257 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	Pk	Lbs	USD
257208	Fuses	1	0.1	**30.00**

NA101

Steel electrical mounting box with cover for *iSolar*™ controllers.
UL listed

Code	Description	Pk	Lbs	USD
NA10120	1⅝" D x 8⅝" H x 4½" W	1	3.0	**70.00**

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	Pk	Lbs	USD
NA15008	Smart display	1	2.0	**650.00**

AM1

Alarm module AM1 to VBus data interface is used to signal sensor failures to a red flash-LED optical signal and a dry contact output relay, which can be connected to an additional signaling device or to a building management system. Sensor failure signal by LED. Supply and control via VBus.
Ambient temperature: -13—158°F.
Display: 1 LED.
Mounting: wall.
Output: 1 dry contact relay.
Alarm switching capacity: 1 A, 24 V AC/DC.

Code	Description	Pk	Lbs	USD
NA15009	Alarm module	1	0.2	**220.00**

SP10

The lightning protector SP10 device is used to protect the collector temperature sensor and controller against external over-voltages such as those caused by lighting strikes.

Code	Description	Pk	Lbs	USD
NA15006	Lightning protector	1	0.2	**70.00**

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	Pk	Lbs	USD
NA15020	USB to VBus data interface	1	0.3	**230.00**

PWM

PWM or 0—10 VDC 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 VDC output control signal which is connected to input control signal of a pump.
Display: LED display.
Wall power: 100-240 VAC / 50-60 Hz.
Adapter input voltage: 12 VDC.

Code	Description	Pk	Lbs	USD
NA15021	PWM or 0—10 vdc to VBus interface	1	0.3	**260.00**

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 VAC / 50-60 Hz.
Adapter input voltage: 12 VDC.

Code	Description	Pk	Lbs	USD
NA15022	LAN socket to VBus data interface	1	0.3	**300.00**

WALL

Wall transformer.
Input voltage: 120 V AC
Output voltage: 24 V AC.
Power output: 40 VA.
Agency approval: cULus

Code	Description	Pk	Lbs	USD
NA605010	24 VAC wall transformer	1	1.0	**44.40**

DIFFERENTIAL TEMPERATURE CONTROLLERS

Function

The i*Solar*™ 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.

257
iSolar™ BX

tech. broch. 01273

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	Pk	Lbs	USD
257270A	*iSolar*™ BX	1	3.0	**975.00**

NA100

18" SJ round cord, stripped and pre-tinned for connecting pump or valve to *iSolar* controller.

Code	Description	Pk	Lbs	USD
NA10092	18" SJ round cord	1	0.3	**9.00**

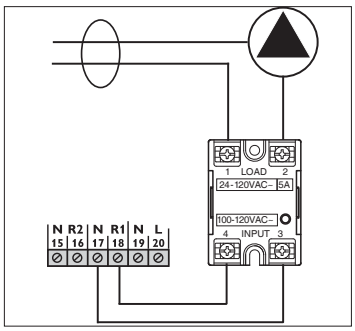
NA150

Cable for connecting Grundfos VFS & RPS with molded plug to BX controller with molded plug.

Code	Description	Pk	Lbs	USD
NA15028	VFS & RPS molded plug cable, 10'	1	0.2	**25.00**

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	Pk	Lbs	USD
NA15027	Electrical box	1	5.0	**80.00**

Code	Description	Pk	Lbs	USD
NA15012	120 VAC / 5A	1	0.1	**160.00**

FLOW METERS

Cable for connecting Grundfos VFS & RPS with molded plug to BX controller with molded plug.

Code	Description	Pk	Lbs	USD
NA15028	VFS & RPS cable, 10' length	1	0.2	**25.00**

RPS Grundfos analog pressure/ temperature sensor. Requires NA15030 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	Pk	Lbs	USD
NA15010	RPS 0—10, 0—150 psi	1	0.3	**189.00**

RPS Grundfos analog pressure / temperature sensor. In-line body. Requires NA15030 cable.
Pressure measuring range: 0—150 psi.
Temperature measurement range: 32—210ºF.
Max. fluid temperature: 250ºF
Maximum Glycol: 50%.
Connection: 1" male union thread.
Select union fittings on page 68.

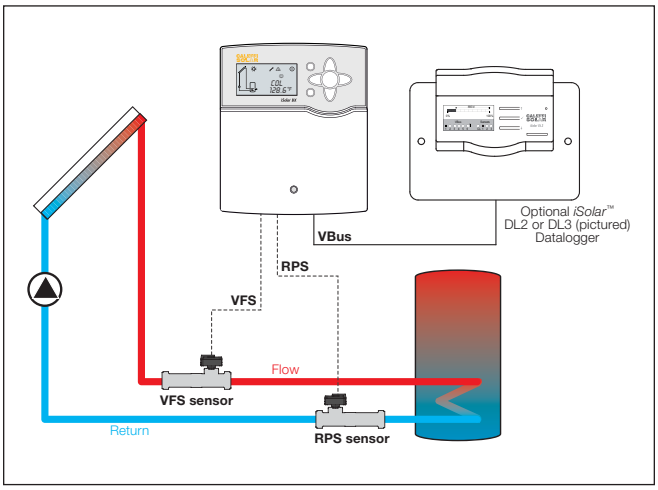
Code	Description	Pk	Lbs	USD
NA15014	RPS 0—10, 0—150 psi	1	0.6	**232.20**

VFS Grundfos analog flow / temperature sensor. Requires NA15030 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.
Select union fittings on page 68.
Flow measurement accuracy: 1.5%
Flow response time: <1 sec.

Code	Description	Pk	Lbs	USD
NA15015	VFS 1-12, ¼—3 gpm	1	0.6	**318.60**
NA15016	VFS 2-40, ½—10 gpm	1	0.6	**351.00**
NA15017	VFS 5-100, 1½—15 gpm	1	1.6	**610.20**

VFS Grundfos analog flow / temperature sensor. Requires NA15030 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	Pk	Lbs	USD
NA15018	VFS 10-200, 2½—20 gpm, 1" sweat	1	1.7	**864.00**
NA15019	VFS 20-400, 5—45 gpm, 1¼" sweat	1	3.8	**1,296.00**



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

Code	Description	Pk	Lbs	USD
NA12240	½" NPT with 1" union nuts	1	0.2	**40.80**
NA12249	½" sweat with 1" union nuts	1	0.2	**38.60**

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

Code	Description	Pk	Lbs	USD
NA12250	¾" NPT with 1" union nuts	1	0.2	**44.60**
NA12259	¾" sweat with 1" union nuts	1	0.2	**42.40**

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

Code	Description	Pk	Lbs	USD
NA12260	1" NPT with 1" union nuts	1	0.3	**54.20**
NA12269	1" sweat with 1" union nuts	1	0.3	**52.00**

DIFFERENTIAL TEMPERATURE CONTROLLERS

257
iSolar™ MX LTE

tech. broch. 01274

Inputs: (8) Pt1000 temperature sensors.
(1) V40 rotary inplus meter.
(1) CS10 irradiation sensor.
Outputs: (4) triac relays, (1) dry contact relay and (1) PWM / 0-10V 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.

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	Pk	Lbs	USD
257280A LTE	*iSolar*™ MX LTE	1	3.0	**1,200.00**

NA150

Steel electrical mounting box with cover fits *iSolar*™ MX LTE controller.

Code	Description	Pk	Lbs	USD
NA15027	Electrical box	1	5.0	**80.00**

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	Pk	Lbs	USD
NA15023	Outdoor air temperature sensor	1	0.3	**150.00**

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	Pk	Lbs	USD
NA257102	Solar irradiation sensor	1	0.2	**250.00**

NA100

18" SJ round cord, stripped and pre-tinned for connecting pump or valve to *iSolar* controller.

Code	Description	Pk	Lbs	USD
NA10092	18" SJ round cord	1	0.3	**9.00**

FLOW METERS

V40

tech. broch. 01275

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 incuded.
Working temperature range: -40°—210°F.
Max. fluid temperature: 265°F
Max. working pressure: 235 psi.
Maximum glycol: 50%.

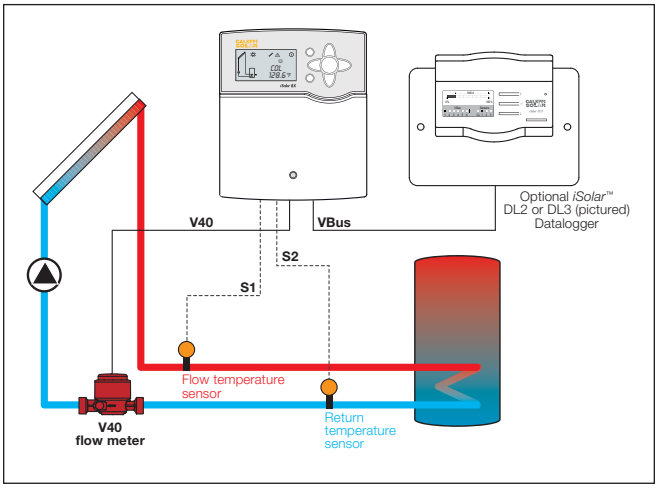
Code	Description	Pk	Lbs	USD
NA79701	¼—10 gpm, ¾" sweat	1	3.0	**650.00**

V40

tech. broch. 01275

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 incuded.
Working temperature range: -40°—210°F.
Max. fluid temperature: 265°F
Max. working pressure: 235 psi.
Maximum glycol: 50%.

Code	Description	Pk	Lbs	USD
NA79702	½—15 gpm, 1" sweat	1	5	**1,150.00**
NA79703	½—25 gpm, 1¼" sweat	1	8	**1,350.00**
NA79704	1—45 gpm, 1½" sweat	1	14	**1,650.00**
NA79705	1½—65 gpm, 2" sweat	1	17	**2,380.00**



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	Pk	Lbs	USD
257205	Black collector sensor	1	0.2	**59.00**

FRP6 storage tank Pt1000 sensor with 8' gray cable, Platinum RTD type, 1000 Ohm, 15—200°F, ¼" Ø O.D.

Code	Description	Pk	Lbs	USD
257206	Gray storage sensor	1	0.2	**55.00**

FKP9 collector screw mount Pt1000 sensor with 5' black cable, Platinum RTD type, 1000 Ohm, -58—355°F, ¼" Ø O.D.

Code	Description	Pk	Lbs	USD
257207	Black collector sensor	1	0.2	**89.00**

Sensor well, ¼" Ø I.D. fits Pt1000 temperature sensors 257205 and 257206

Code	Description	Pk	Lbs	USD
NA10090	Sensor well, ½" NPT male thread	1	0.5	**34.65**
NA15029	Sensor well, ¾" NPT male thread	1	0.5	**53.00**

DATA LOGGERS

257
iSolar™ DL2

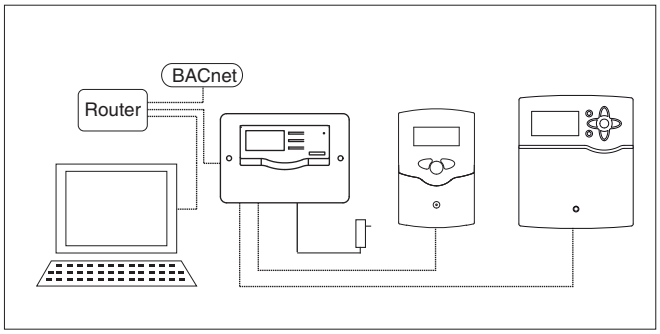
iSolar™ DL2 intelligent web enabled datalogger connects to VBus data terminals on one *iSolar*™ controller.
VBus input terminals: 1.
Ethernet connection: RJ45 socket.
Integrated SD slot: 1.
Ambient temperature: 32—100ºF.
Input voltage: 5 VDC ±5%.
Power voltage adapter: 100—240 V.
Max. current: 350 mA.

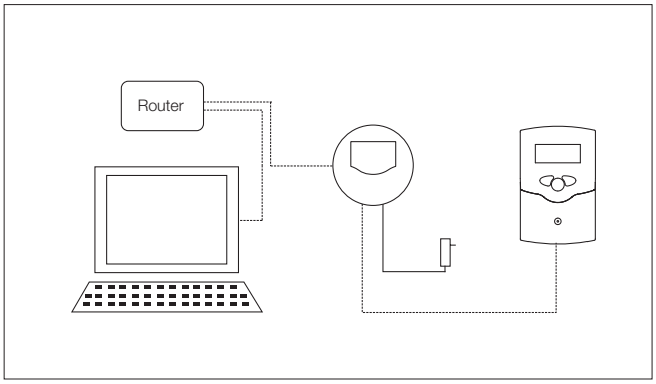
Code	Description	Pk	Lbs	USD
257201A	Datalogger	1	2.0	**975.00**

Function

The DL2 datalogger enables the acquisition and storage of large amounts of data such as energy heat metering and recorded values of the solar system over a long period of time when connected to an *iSolar*™ series controller. The datalogger, when connected to a network through the integrated Ethernet socket, can be configured and viewed with any standard internet browser via its integrated web interface, without additional software. Download data through the web interface or an SD memory card for further data processing in spreadsheet programs.

System layout





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—100ºF.
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.

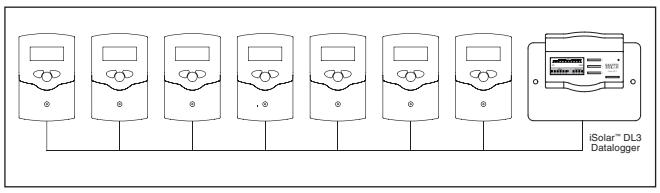
Code	Description	Pk	Lbs	USD
257204A	Datalogger with BACnet IP	1	2.0	**1,800.00**

Function

The DL3 datalogger / BACnet/IP gateway provides communication translation between iSolar™ controllers and DDC system which are capable of BACnet/IP communications. Conforms with BACnet PICS, Up to six *iSolar*™ controllers can be connected to DL3 with two conductor wire (bell wire) at least 20 AWG up to a distance of 150 feet. The DL3 has three additional inputs for Pt1000 temperature sensors and one 4—20 mA Current Loop analog input. A configurable IP address and password protection allows for access from any PC with an internet connection. Download data through the web interface, an SD memory card or USB cable for further data processing in spreadsheet programs.

VBus.net

VBus.net is a service portal that offers access to solar thermal system data from all over the world. No DSL router configuration is required. To use VBus.net service, the system must be equipped with a Caleffi iSolar™DL2 or DL3 Data Logger. After signing on at www.VBus.net, the Data Logger can be registered with the system. VBus.net enables users to access their solar thermal system data from all over the world, just by using a regular web browser. No additional software or app is required, only a registered account for the VBus.net service, a web browser and internet connection. Many mobile devices are supported as well.

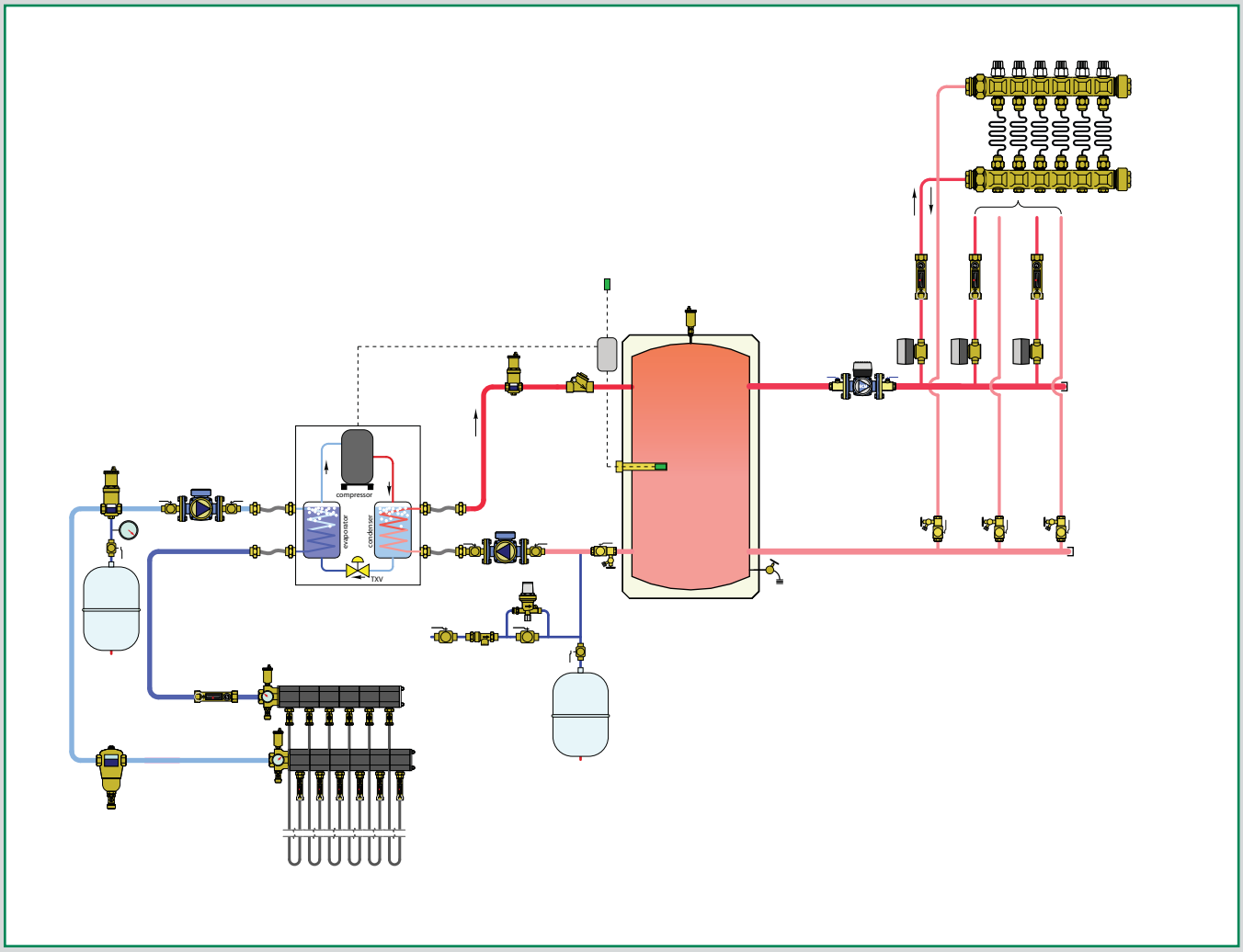


Multinode network

Multiple WMZ or WMZ-G1 energy heat meters can be cascaded together on the VBus connection. One WMZ is configured as the master and additional WMZ meters are configured as slaves. Up to 16 meters can be cascaded together with two conductor wire (bell wire) at least 20 AWG and up to 150 feet for transmission of data values to a connected PC, DL2 or DL3 Datalogger.

The connection sequence is arbitrary, up to 16 can be cascaded together.

This diagram is an example



Geothermal manifolds, GeoCal™

PE pipe connections, GeoGrip™

Balancing valves, QuickSetter™

Storage tanks, ThermoCon™

Wall penetration seals, GeoSeal™

Automatic air vents, DISCALAIR®

MANIFOLDS

110 GeoCal™

tech. broch. 03175

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	Pk	Lbs	USD
1107B5LA	Left side connections, 2 circuits	1	16	**1,260.00**
1107C5LA	Left side connections, 3 circuits	1	18	**1,390.00**
1107D5LA	Left side connections, 4 circuits	1	20	**1,530.00**
1107E5LA	Left side connections, 5 circuits	1	22	**1,660.00**
1107F5LA	Left side connections, 6 circuits	1	23	**1,790.00**
1107G5LA	Left side connections, 7 circuits	1	25	**1,950.00**
1107H5LA	Left side connections, 8 circuits	1	26	**2,080.00**

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.

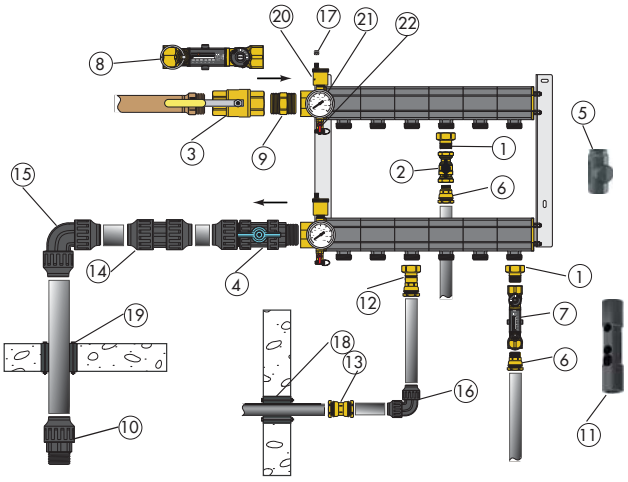
Code	Description	Pk	Lbs	USD
1107B5RA	Right side connections, 2 circuits	1	17	**1,260.00**
1107C5RA	Right side connections, 3 circuits	1	18	**1,390.00**
1107D5RA	Right side connections, 4 circuits	1	20	**1,530.00**
1107E5RA	Right side connections, 5 circuits	1	22	**1,660.00**
1107F5RA	Right side connections, 6 circuits	1	23	**1,790.00**
1107G5RA	Right side connections, 7 circuits	1	25	**1,950.00**
1107H5RA	Right side connections, 8 circuits	1	26	**2,080.00**

Function

The GeoCal™ pre-assembled manifold for ground-source geothermal loops offers an alternative method of piping parallel earth loops, bringing all circuits to a common manifold station without labor-intensive fusion welding. GeoCal™ allows easy individual circuit balancing. Shut-off ball valves installed on the return manifold allows for easy individual circuit purging and requiring a smaller purge/fill pump then traditionally used.

Manifold assemblies include supply and return manifolds, automatic air vents, dual-scale temperature gauges, fill/drain valves, brass end caps with insulation, wall brackets with mounting hardware and labels.

GeoCal™ manifold assemblies can be installed indoors, or in an outdoor vault.



1. Manifold outlet fitting 110050A/60A*
2. Ball valve NA39589/NA39753*
3. Ball valve NA39588
4. GeoGrip™ ball valve NA10268
5. Optional insulation shells for Isolation valves with inlet/outlet fittings 111001/003*
6. GeoGrip™ pipe coupling 861527A/634A*
7. QuickSetter™ 132552A/662A*
8. QuickSetter™ 132772A
9. Double nipple NA10263
10. GeoGrip™ male adapter NA10269
11. Insulation sleeve, 132552A and fittings 110050A and 861527A Insulation sleeve, 132662A and fittings 110060A and 861634A
12. GeoGrip™ manifold to earthloop pipe connector NA10246/247*
13. GeoGrip™ sleeve coupling 863027/034*
14. GeoGrip™ poly sleeve coupling for joining 1¼" x 1¼" PE piping NA863042
15. GeoGrip™ elbow NA866042, 1¼" x 1¼"
16. GeoGrip™ elbow NA866027/034*
17. Vent cap adapter NA10204
18. GeoSeal™ wall penetration seal NA10248/NA10249*
19. GeoSeal™ wall penetration seal NA10265
20. Air vent for manifolds 502043 CST
21. Manifold temperature gauge 687000
22. Drain valve 538402 FD

* Part numbers fits ¾" and 1" sizes

FITTINGS

110

GeoCal™ manifold outlet fitting, includes union nut and gasket.

Code	Description	Pk	Lbs	USD
110050A	¾" male NPT tail piece	1	0.4	**41.00**
110060A	1" male NPT tail piece	1	0.6	**45.00**

861

GeoGrip™ polyethylene pipe fittings.
For joining polyethylene pipe to 132 series QuickSetter™ or NA139 ball valves.

Code	Description	Pk	Lbs	USD
861527A CST	¾" M NPT x ¾" PE pipe compression	1	0.2	**25.00**
861634A CST	1" M NPT x 1" PE pipe compression	1	0.6	**40.00**
NA10288	¾" M NPT x 1" PE pipe compression	1	0.2	**53.30**

NA39

Brass ball valves
Brass body.
Max. working pressure: 150 psi.
Max. working temperature: 365°F.

Code	Description	Cv	Pk	Lbs	USD
NA39589	¾" NPT female w/T-handle	35	1	0.6	**38.10**
NA39753	1" NPT female w/T-handle	50	1	0.7	**51.90**
NA39588	1¼" NPT female w/Lever	104	1	1.0	**86.50**

111

Insulation sleeve for item valve and fitting on each end.

Code	Description	Pk	Lbs	USD
111001	Insulation sleeve fits NA39589	1	0.1	**49.00**
111003	Insulation sleeve fits NA39753	1	0.1	**51.00**

BALANCING VALVE

132

tech. broch. 01149

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)	Pk	Lbs	USD
132552A	¾" NPT	2.0—7.0	1	1.8	**259.60**
132662A	1" NPT	3.0—10.0	1	2.4	**302.80**
132772A	1¼" NPT	5.0—19.0	1	2.8	**401.60**
132882A	1½" NPT	8.0—32.0	1	3.4	**475.80**
132992A	2" NPT	12.0—50.0	1	4.4	**584.20**
F19346	Replacement by-pass valve stem*		1	0.1	**48.80**

* With operating ring

112

QuickSetter™ Insulation sleeve for valve and fitting on each end.

Code	Description	Pk	Lbs	USD
112001	Insulation sleeve fits 132552A	1	0.1	**52.00**
112003	Insulation sleeve fits 132662A	1	0.1	**54.00**

NA102

GeoGrip™ ball valve with T—handle.
For connecting to 110 series manifold and polyethylene pipe.

Code	Description	Pk	Lbs	USD
NA10268	1¼" NPT x 1¼" PE pipe compression	1	1.0	**205.00**

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	Pk	Lbs	USD
NA10263	1¼" NPT x 1¼" NPT, brass	1	0.4	**27.00**

NA102

GeoGrip™ male adapter.

Code	Description	Pk	Lbs	USD
NA10269	1¼" M NPT x 1¼" PE pipe comp.	1	0.2	**32.00**

PE PIPE CONNECTIONS

NA102

GeoGrip™ manifold outlet connector for joining manifold to polyethylene pipe. (Includes union nut and gasket)

Code	Description	Pk	Lbs	USD
NA10246	¾" PE pipe compression	1	0.8	**54.00**
NA10247	1" PE pipe compression	1	1.0	**67.00**

863

GeoGrip™ brass sleeve coupling for joining two polyethylene pipes.

Code	Description	Pk	Lbs	USD
863027	¾" x ¾" PE pipe compression	1	0.8	**30.00**
863034	1" x 1" PE pipe compression	1	1.0	**44.00**

NA863

GeoGrip™ sleeve coupling for joining two polyethylene pipes.

Code	Description	Pk	Lbs	USD
NA863042	1¼" x 1¼" PE pipe compression	1	1.0	**52.00**

NA866

GeoGrip™ elbow coupling for joining two polyethylene pipes.

Code	Description	Pk	Lbs	USD
NA866027	¾" x ¾" PE pipe compression	1	0.1	**26.00**
NA866034	1" x 1" PE pipe compression	1	0.4	**37.00**
NA866042	1¼" x 1¼" PE pipe compression	1	0.4	**57.00**

NA102

Metal wrench for tightening 1¼" nuts on GeoGrip™ items NA863042, NA866042, NA10268 and NA10269.

Code	Description	Pk	Lbs	USD
NA10264	Tightening wrench	1	0.2	**360.00**

NA102

Vent cap adapter to connect discharge tube. (Ethanol and methanol systems). Fits onto air vent.

Code	Description	Pk	Lbs	USD
NA10204	¼" NPT male x female	1	0.1	**26.00**

WALL SEALS

NA102

GeoSeal™ wall penetration seals. EPDM w/316 stainless steel hardware. (Priced per pair)

Code	Description	Pk	Lbs	USD
NA10248	¾", PE pipe thru 2.5" ID hole	2	0.5	**100.00**
NA10249	1", PE pipe thru 2.5" ID hole	2	0.4	**70.00**
NA10265	1¼", PE pipe thru 3" ID hole	2	0.7	**140.00**

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	Pk	Lbs	USD
502043 CST	½" male thread	1	0.5	**30.40**

687

Manifold temperature gauges.
-20—120ºF.

Code	Description	Pk	Lbs	USD
687000	2½" diameter	1	0.2	**26.50**

Fill/drain valve with ¾" garden hose connection.

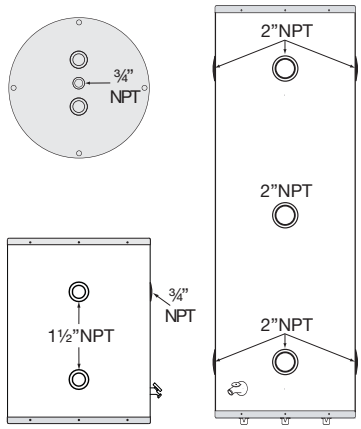
Code	Description	Pk	Lbs	USD
538402 FD	½" NPT x ¾" GHT	1	0.3	**18.50**

STORAGE TANKS

NAS200 ThermoCon™

tech. broch. 01179

Storage tanks can serve as a 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.
Connections: 25 gal. side: (4) 1½" & (1) ¾" NPT female
25 gal. top: (2) 1½" & (1) ¾" NPT female
50, 80, 120 gal. side: (7) 2" NPT female
50, 80, 120 gal. top: (3) ¾" NPT female



Code	Description	Pk	Lbs	USD
NAS20025	25 gal. tank, no HX	1	100	**2,530.00**
NAS20050	50 gal. tank, no HX	1	200	**3,025.00**
NAS20080	80 gal. tank, no HX	1	250	**3,575.00**
NAS20120	119 gal. tank, no HX	1	350	**4,730.00**

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

STORAGE TANK ACCESSORIES

551 DISCALAIR®

tech. broch. 01124

High discharge automatic air vent.
Brass body.
Max. working pressure: 150 psi.
Working temperature range: 30—250ºF.

Code	Description	Pk	Lbs	USD
551004A	½" NPT female	1	8.2	**118.70**

Pipe nipple for attaching air vent to top of storage tank with reducing bushing.

Code	Description	Pk	Lbs	USD
NA10160	½" NPT male x ½" male NPT x 3"	1	0.1	**12.30**

Reducer bushing for inserting into top of storage tank to attach pipe nipple to air vent.

Code	Description	Pk	Lbs	USD
NA10082	¾" M NPT x ½" F NPT, brass	1	0.3	**7.60**

Magnesium anode rod.

Code	Description	Pk	Lbs	USD
NA10229	¾" NPT x 36" anode rod fits 50 gal.	1	8.0	**61.00**
NA10230	¾" NPT x 40" anode fits 80 &120 gal.	1	9.0	**68.00**

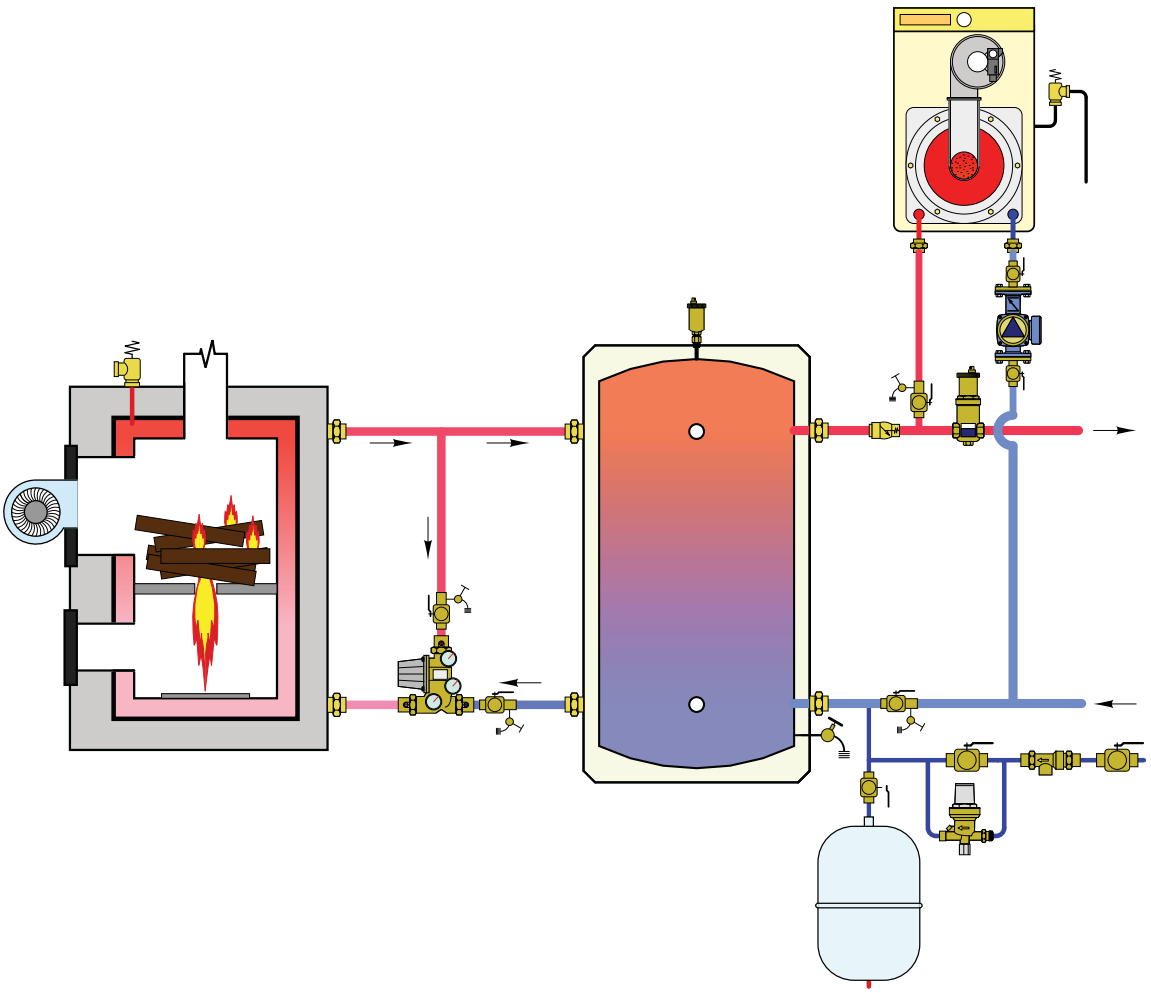
Reducer bushing for installing into 2" NPT female connection in storage tank providing an ¾ NPT female thread.

Code	Description	Pk	Lbs	USD
NA10234	2" M NPT x ¾" F NPT, stainless steel	1	0.2	**47.40**

NEW

Code	Description	Pk	Lbs	USD
NA10339	2" NPT male plug, 304 stainless steel	1	0.2	**41.30**

This diagram is an example



Boiler protection valves, ThermoMix™

Boiler protection recirculation and distribution unit, ThermoBloc™

BOILER PROTECTION HIGH-FLOW THERMOSTATIC MIXING VALVE

280 ThermoMix™ 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).

PCT INTERNATIONAL APPLICATION PENDING

Code	Description	Cv	Pk	Lbs	USD
280165A	1" NPT 130°F Tset	10	1	3.6	**422.00**
280166A	1" NPT 140°F Tset	10	1	3.6	**422.00**
280175A	1¼" NPT 130°F Tset	14	1	4.5	**485.00**
280176A	1¼" NPT 140°F Tset	14	1	4.5	**485.00**

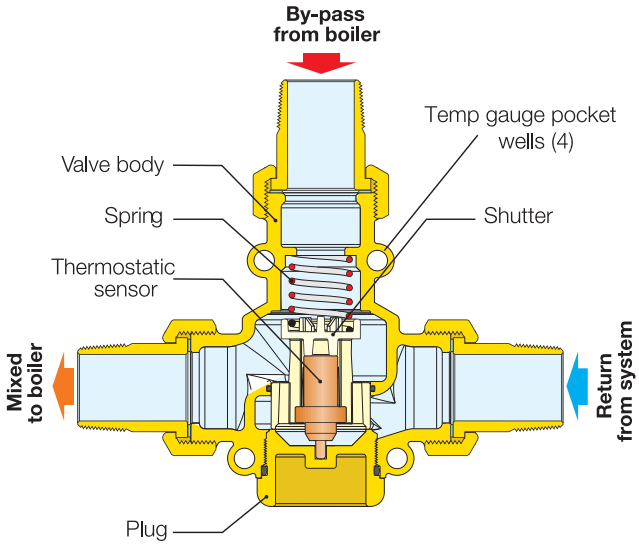
280 ThermoMix™ Sweat

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).

PCT INTERNATIONAL APPLICATION PENDING

Code	Description	Cv	Pk	Lbs	USD
280965A	1" sweat 130°F Tset	10	1	3.6	**395.00**
280966A	1" sweat 140°F Tset	10	1	3.6	**395.00**
280975A	1¼" sweat 130°F Tset	14	1	4.5	**465.00**
280975A	1¼" sweat 140°F Tset	14	1	4.5	**465.00**

Characteristic components



FUNCTION

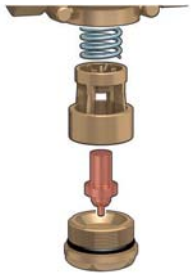
The ThermoMix™ boiler protection high-flow thermostatic mixing valve is used in hydronic heating systems with non-condensing boilers, including solid fuel, biomass, gas, LP or oil-fired. It can be installed with steel, cast iron and copper tube style boilers, automatically controlling the return water temperature, preventing condensation of the water vapor contained in the flue gas.

The 280 series ThermoMix™ valve mixes by-pass flow from the boiler with return flow from the system, sending a fixed temperature flow to the boiler which protects against corrosion from condensation occurring when a minimum flue gas temperature is not otherwise maintained.

Changeable thermostatic sensor cartridges modifies valve temperature setting. The thermostatic sensor cartridge can easily be removed for maintenance or to change the valve set temperature, with out removing the valve body from the piping.

Thermostatic sensor replacement to modify setting

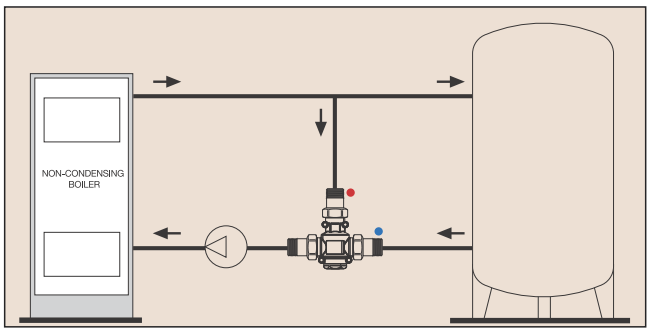
The thermostatic sensor can easily be removed for maintenance or to change the setting, with no need to remove the valve body from the piping.



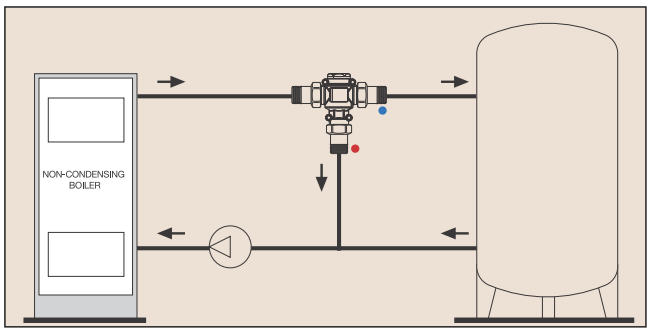
Installation

The valve can be installed on both sides of the boiler in any position, vertical or horizontal. Installation is recommended on the return to the boiler in mixing mode; it can also be installed on the flow from the boiler in diverting mode.

Installation in mixing mode (boiler protection)



Installation in diverter mode (system control)



BOILER PROTECTION RECIRCULATION AND DISTRIBUTION UNIT

281 ThermoBloc™ NPT

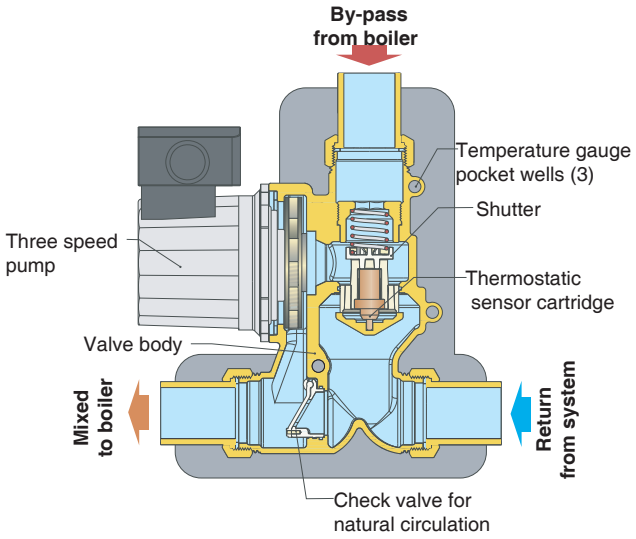
ThermoBloc™ boiler protection recirculation and distribution unit.
Suitable fluids: water, up to 50% glycol solutions.
Max. working pressure: 150 psi.
Working temperature range: 40—210°F.
Maximum pumping capacity: 10 gpm.
Temperature gauge scale: 30—250°F
Thermostatic sensor:
130°F & 140°F Tset standard 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

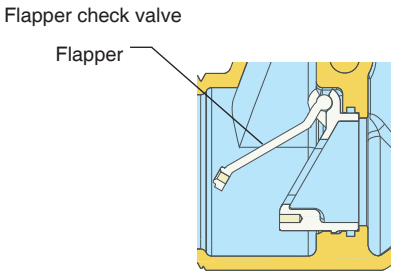
Code	Description	Pk	Lbs	USD
281165A	1" NPT 130°F Tset	1	11	**1,300.00**
281166A	1" NPT 140°F Tset	1	11	**1,300.00**
281175A	1¼" NPT 130°F Tset	1	11	**1,495.00**
281176A	1¼" NPT 140°F Tset	1	11	**1,495.00**

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	Pk	Lbs	USD
281965A	1" sweat 130°F Tset	1	11	**1,215.00**
281966A	1" sweat 140°F Tset	1	11	**1,215.00**
281975A	1¼" sweat 130°F Tset	1	11	**1,430.00**
281976A	1¼" sweat 140°F Tset	1	11	**1,430.00**





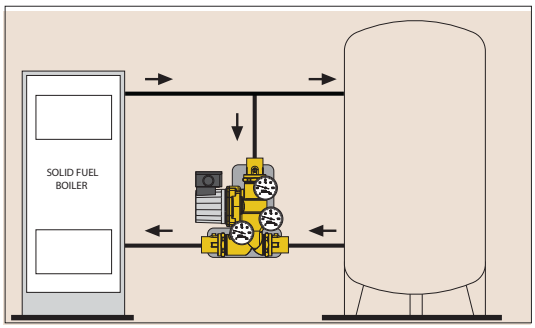
Function

The flapper check valve allows the natural thermosyphon circulation of the system heat transfer fluid when the pump stops running due to power failure. When the pump is running under normal conditions the thrust of the flowing medium keeps the flapper closed, forcing flow past the thermostatic sensor. When the pump stops running and the fluid in the boiler is at high temperature, natural circulation begins, by-passing the thermostatic sensor, preventing over heating in the boiler.

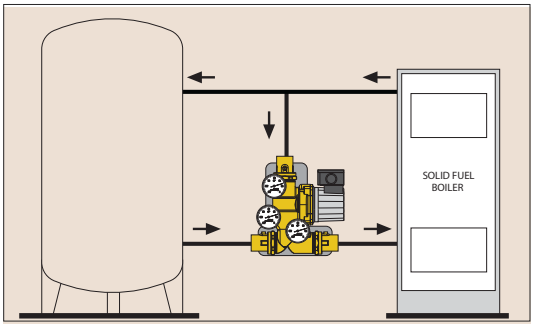
Function

The ThermoBloc™ boiler protection recirculation and distribution unit is used in hydronic heating systems with non-condensing boilers, including solid fuel, biomass, gas LP or oil-fired. It can be installed with steel, cast iron and copper tube style boilers, automatically controlling the return water temperature, protection against corrosion from condensation occurring when a minimum flue gas temperature is not otherwise maintained.
The ThermoBloc™ unit is compact for easy installation, reducing required space and fittings. It combines the functionality of a boiler protection valve with a circulation pump and a unique flapper check valve allowing for thermosyphon flow between the boiler and distribution system during a power outage. The ThermoBloc™ includes three temperature gauges and is encased in an insulation shell.

Installation on right side of boiler



Installation on left side of boiler



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	Pk	Lbs	USD
F29633	115°F Tset	1	0.2	**40.00**
F29634	130°F Tset	1	0.2	**40.00**
F29635	140°F Tset	1	0.2	**40.00**
F29636	160°F Tset	1	0.2	**40.00**

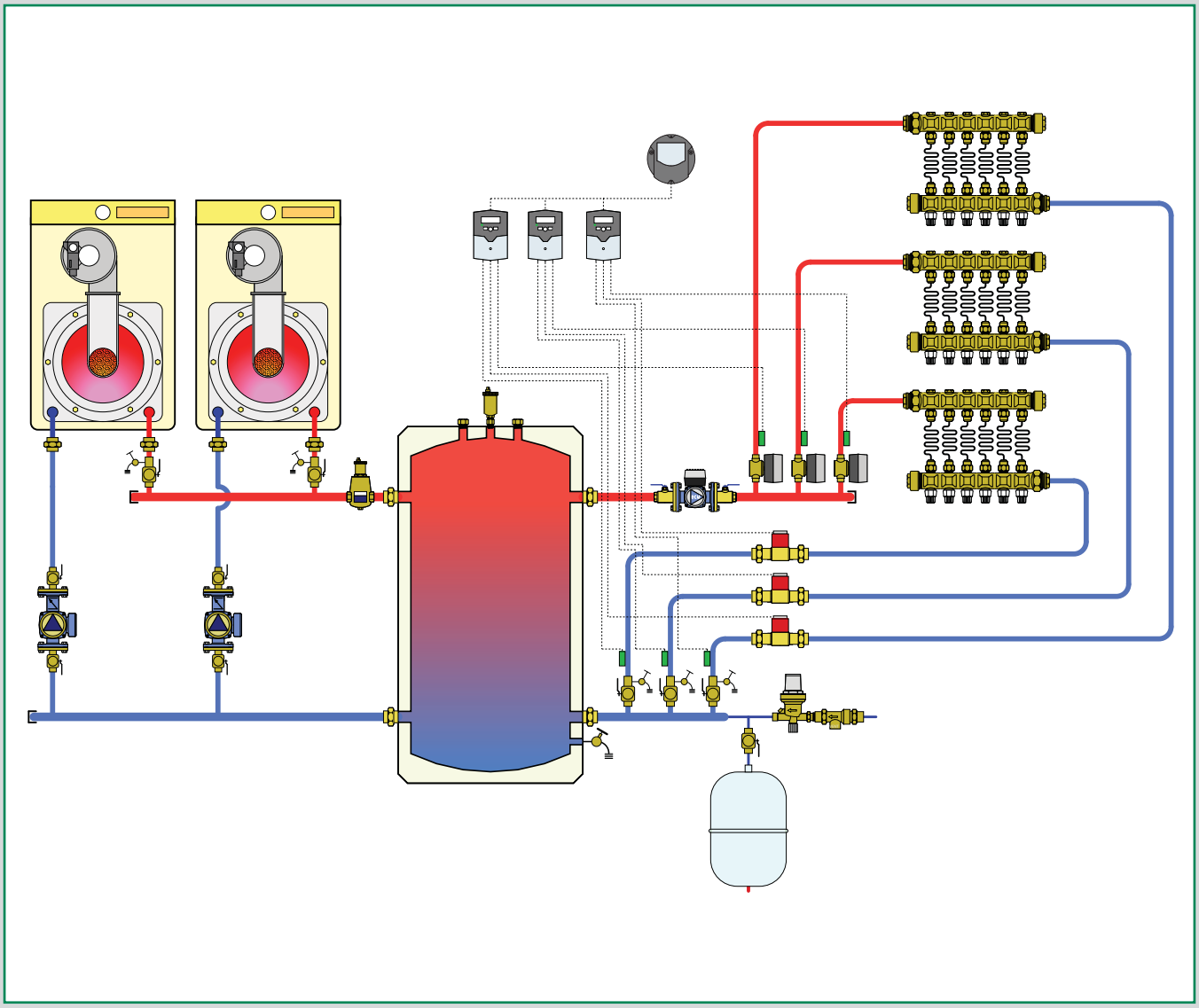
Selection note: thermostatic sensor cartridge will completely close at Tset value +18°F. Example: (130°F Tset +18°F=148°F completely closed) ±4°F.

F295

Dual scale temperature gauge 280 and 281 series boiler protection valves.

Code	Description	Pk	Lbs	USD
F29571	32—250°F	1	0.2	**34.00**

This diagram is an example



Heat Metering

ENERGY HEAT METERS

257 WMZ

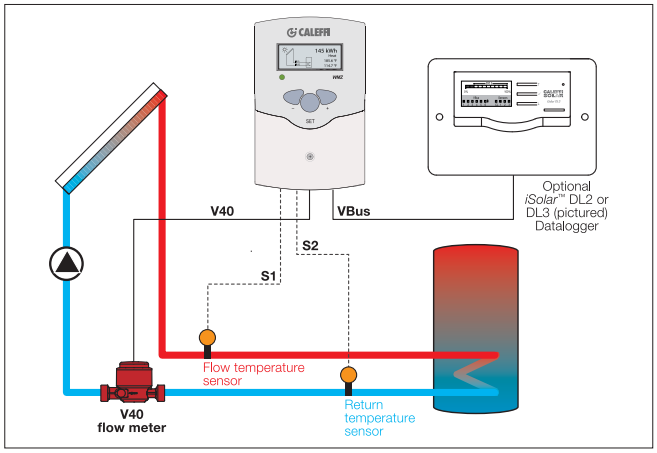
tech. broch. 01275

WMZ intelligent kWh energy heat meter with data connection.
Inputs: rotary pulse flow meter and two Pt1000 supply and return temperature sensors purchased separately.
Temp. measurement range: -20°—300°F.
Adj. temp. sensor offset: ± 0.9°F (0.5°K).
Measuring precision: ± 0.5°F (0.3°K).
Volume concentration of glycol: 0—70%.
Pulse rate volumetric flow rate: 1—99 l/imp.
Interface: VBus.
Power supply: 24 V AC/DC

Code	Description	Pk	Lbs	USD
257202A	Energy heat meter	1	2.0	**595.00**

Function

The WMZ is a heat meter for solar thermal systems and conventional heating (or cooling) systems. The WMZ calculates heat by integrating flow rate from a rotary pulse flow meter and temperature difference in the supply and return piping using two Pt1000 temperature sensors for convenient metering of energy generated or consumed. The calculated heat energy value is displayed in kWh (kilowatt hours) and stored. Memory protection guarantees that the adjusted system settings and the calculated heat energy quantity are maintained in the case of power loss.



Multi node network

Additional WMZ energy meters can be cascaded together on the VBus connection. One WMZ is configured as the master and additional WMZ meters are configured as slaves. Up to 16 meters can be cascaded together with two conductor wire (bell wire) at least 20 AWG and up to 150 feet for transmission of data values to a connected PC or DL datalogger.

Sensor well, ¼" Ø I.D. fits Pt1000 temperature sensors 257205 and 257206

Code	Description	Pk	Lbs	USD
NA10090	Sensor well, ½" NPT male thread	1	0.5	**34.65**
NA15029	Sensor well, ¾" NPT male thread	1	0.5	**53.00**

V40

tech. broch. 01275

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 incuded.
Working temperature range: -40°—210°F.
Max. fluid temperature: 265°F
Max. working pressure: 235 psi.
Maximum glycol: 50%.

Code	Description	Pk	Lbs	USD
NA79701	¼—10 gpm, ¾" sweat	1	3.0	**650.00**

V40

tech. broch. 01275

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 incuded.
Working temperature range: -40°—210°F.
Max. fluid temperature: 265°F
Max. working pressure: 235 psi.
Maximum glycol: 50%.

Code	Description	Pk	Lbs	USD
NA79702	½—15 gpm, 1" sweat	1	5	**1,150.00**
NA79703	½—25 gpm, 1¼" sweat	1	8	**1,350.00**
NA79704	1—45 gpm, 1½" sweat	1	14	**1,650.00**
NA79705	1½—65 gpm, 2" sweat	1	17	**2,380.00**

FKP6 collector Pt1000 sensor with 5' black UV cable, Platinum RTD type, 1000 Ohm, -58—355°F, ¼" Ø O.D.

Code	Description	Pk	Lbs	USD
257205	Black collector sensor	1	0.2	**59.00**

FRP6 storage tank Pt1000 sensor with 8' gray cable, Platinum RTD type, 1000 Ohm, 15—200°F, ¼" Ø O.D.

Code	Description	Pk	Lbs	USD
257206	Gray storage sensor	1	0.2	**55.00**

FKP9 collector screw mount Pt1000 sensor with 5' black cable, Platinum RTD type, 1000 Ohm, -58—355°F, ¼" Ø O.D.

Code	Description	Pk	Lbs	USD
257207	Black collector sensor	1	0.2	**89.00**

ENERGY HEAT METERS

257 WMZ-G1

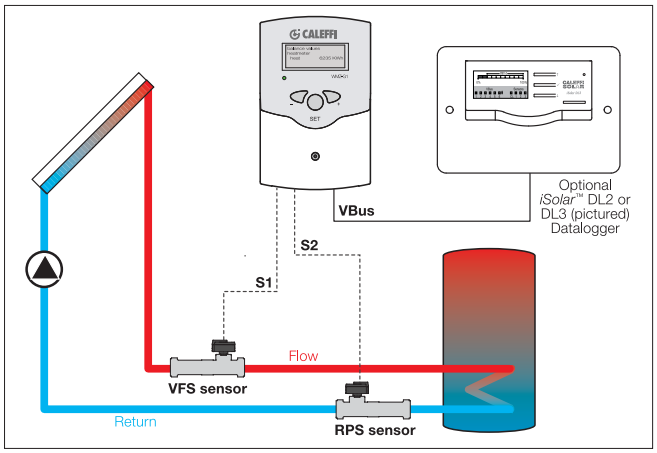
tech. broch. 01272

WMZ-G1 intelligent kWh energy heat meter with VBus data connection. Requires VFS and RPS sensors purchased separately.
Temperature measurement range: 32—210°F.
Pressure measuring range: 0—150 psi.
Inputs: 2 Grundfos Direct analog sensors.
Alarm relay capacities: 1 A 24 V AC/DC
Interface: VBus data connection.
Power supply: 24 V AC/DC.

Code	Description	Pk	Lbs	USD
257202A G1	Energy heat meter	1	2.0	**595.00**

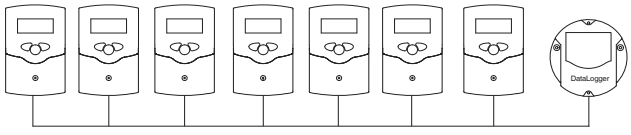
Function

The WMZ-G1 is a energy heat meter for solar thermal systems and conventional heating or cooling systems. The WMZ-G1 calculates heat by integrating flow rate from a Grundfos Vortex Flow Sensor (VFS) and temperature difference in the supply and return piping using either Grundfos Relative Pressure Sensor (RPS) or VFS sensors. The calculated heat energy value is displayed in kWh (kilowatt hours) and stored. Memory protection guarantees that the adjusted system settings and the calculated heat energy quantity are maintained in the case of power loss.



Multi node network

Additional WMZ-G1 energy meters can be cascaded together on the VBus connection. One WMZ-G1 is configured as the master and additional WMZ-G1 meters are configured as slaves. Up to 16 meters can be cascaded together with two conductor wire (bell wire) at least 20 AWG and up to 150 feet for transmission of data values to a connected PC or DL datalogger.



The connection sequence is arbitrary, up to 16 can be cascaded together.

NA150

tech. broch. 01272

Cable for connecting Grundfos VFS & RPS (molded plug) to WMZ-G1 terminal block (4 wire pins).

Code	Description	Pk	Lbs	USD
NA15030	VFS & RPS cable, 10' length	1	0.1	**25.00**

RPS Grundfos analog pressure/ temperature sensor. Reguires NA15030 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	Pk	Lbs	USD
NA15010	RPS 0—10, 0—150 psi	1	0.3	**189.00**

RPS Grundfos analog pressure / temperature sensor. In-line body. Reguires NA15030 cable.
Pressure measuring range: 0—150 psi.
Temperature measurement range: 32—210°F.
Max. fluid temperature: 250°F
Maximum Glycol: 50%.
Connection: 1" male union thread.
Select union fittings on page 68.

Code	Description	Pk	Lbs	USD
NA15014	RPS 0—10, 0—150 psi	1	0.6	**232.20**

VFS Grundfos analog flow / temperature sensor. Reguires NA15030 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 page 68.
Flow measurement accuracy: 1.5%
Flow response time: <1 sec.

Code	Description	Pk	Lbs	USD
NA15015	VFS 1-12, ¼—3 gpm	1	0.6	**318.60**
NA15016	VFS 2-40, ½—10 gpm	1	0.6	**351.00**
NA15017	VFS 5-100, 1½—15 gpm	1	1.6	**610.20**

VFS Grundfos analog flow / temperature sensor. Reguires NA15030 cable.
Temperature measurement range: 32—210°F.
Max. fluid temperature: 250°F
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	Pk	Lbs	USD
NA15018	VFS 10-200, 2½—20 gpm, 1" sweat	1	1.7	**864.00**
NA15019	VFS 20-400, 5—45 gpm, 1¼" sweat	1	3.8	**1,296.00**

Code	USD	Page(s)
110050A	41.00	105
110060A	45.00	105
1107B5LA	1,260.00	104
1107B5RA	1,260.00	104
1107C5LA	1,390.00	104
1107C5RA	1,390.00	104
1107D5LA	1,530.00	104
1107D5RA	1,530.00	104
1107E5LA	1,660.00	104
1107E5RA	1,660.00	104
1107F5LA	1,790.00	104
1107F5RA	1,790.00	104
1107G5LA	1,950.00	104
1107G5RA	1,950.00	104
1107H5LA	2,080.00	104
1107H5RA	2,080.00	104
111001	49.00	105
111003	51.00	105
112001	52.00	105
112003	54.00	105
120141A 000	159.90	67
120149A 000	152.30	67
120151A 000	162.00	67
120159A 000	154.30	67
120161A 000	319.80	67
120169A 000	304.50	67
120171A 000	363.80	67
120179A 000	346.50	67
120341A 000	173.10	67
120349A 000	164.90	67
120351A 000	175.20	67
120359A 000	166.90	67
120361A 000	333.00	67
120369A 000	317.10	67
120371A 000	377.10	67
120379A 000	359.10	67
121141A ···	176.40	66
121149A ···	168.00	66
121151A ···	178.50	66
121159A ···	170.00	66
121161A ···	363.50	66
121169A ···	346.50	66
121171A ···	408.00	66
121179A ···	388.50	66
121341A ···	189.00	66
121349A ···	180.60	66
121351A ···	191.70	66
121359A ···	182.60	66
121361A ···	377.00	66
121369A ···	359.10	66
121371A ···	421.20	66
121379A ···	401.10	66
127341AF ···	127.40	65
127349AF ···	121.30	65
127351AF ···	133.20	65
127359AF ···	126.80	65
127361AF ···	152.80	65
127369AF ···	145.50	65
130400A	197.00	70
130500A	211.60	70
130600A	245.00	70
130700A	325.30	70
130800A	385.40	70
130900A	473.20	70
132432A	241.00	68
132552A	259.60	68,105
132662A	302.80	68,105
132772A	401.60	68,105
132882A	475.80	68,105
132992A	584.20	68,105
132438AFC	338.00	69
132439AFC	288.00	69
132458AFC	338.00	69
132459AFC	288.00	69
132538AFC	360.00	69
132539AFC	310.00	69
132558AFC	360.00	69
132559AFC	310.00	69
132638AFC	407.00	69
132639AFC	357.00	69
132658AFC	407.00	69
132659AFC	357.00	69
163600A	1,800.00	38
163610A	1,800.00	38
165001	63.00	38
165600A	1,350.00	38
165602A	1,650.00	38
165610A	1,350.00	38
165612A	1,650.00	38
166600A	1,650.00	39
166602A	1,950.00	39
166610A	1,650.00	39
166612A	1,950.00	39
167600A	1,950.00	39
167602A	2,250.00	39
167610A	1,950.00	39
167612A	2,250.00	39
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1725D1A	1,597.80	40
1725E1A	1,694.60	40
1725F1A	1,791.40	40
1725G1A	1,888.20	40
1725H1A	1,985.00	40
1725I1A	2,081.80	40
1725L1A	2,178.60	40
1725M1A	2,275.40	40
1725N1A	2,372.20	40
1725O1A	2,469.00	40
1725C1AHE	1,801.00	40
1725D1AHE	1,897.80	40
1725E1AHE	1,994.60	40
1725F1AHE	2,091.40	40
1725G1AHE	2,188.20	40
1725H1AHE	2,285.00	40
1725I1AHE	2,381.80	40
1725L1AHE	2,478.60	40
1725M1AHE	2,575.40	40
1725N1AHE	2,672.20	40
1725O1AHE	2,769.00	40
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201000	130.00	24
203502	246.00	24
209000	25.00	24
209001	10.00	24
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220500A	78.00	25
221400A	71.00	25
221500A	78.00	25
250041A	75.00	88
251003A	198.90	89
251004A	149.80	88
252149A	240.90	89
252158A	311.80	89
252159A	253.80	89
252168A	354.80	89
252169A	294.00	89
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253042	74.75	89
253043	74.75	89
253044	74.75	89
253046	74.75	89
253048	74.75	89
254452	30.30	91
254752	34.60	91
255007	190.50	83
255010A	320.00	83
255050A	1,250.00	84
255056A	1,000.00	84
256050A	1,090.00	84
256056A	840.00	84
256059A	1,165.00	85
257205	59.00	101,114
257206	55.00	101,114
257207	89.00	101,114
257208	30.00	96
257201A	975.00	102
257202A	595.00	114
257202A G1	595.00	115
257204A	1,800.00	102
257220A	475.00	96
257240A	550.00	96
257260A	725.00	96
257260A PV1	725.00	96
257260A PV2	725.00	96
257270A	975.00	98
257280A LTE	1,200.00	100
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259018	203.30	83
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259033	449.40	83
259050	567.10	83
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280166A	422.00	56,110
280175A	485.00	56,110
280176A	485.00	56,110
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280975A	465.00	56,110
280976A	465.00	56,110
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281966A	1,215.00	111
281975A	1,430.00	111
281976A	1,430.00	111
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301140	60.00	27
301241	105.00	27
301341	105.00	27
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31401 FD	48.50	75
31403 FD	80.00	75
31426 FD	95.80	75
31553 FD	21.40	75
31554 FD	43.00	74,75
31901A	14.90	73,92
31970A	17.10	75
337221A	13.05	12
338452	74.80	26
339452	80.60	26
342452	49.20	26
343452	51.60	26
386500	11.85	47
387100	84.10	49
387127	142.80	25
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41372A	90.00	74
41380A	17.10	75
41787 CST	50.00	74
41788 CST	67.00	74
41789 CST	87.00	74
437516	10.20	28
449000	11.95	49
449010	15.00	24
449740	5.20	27
472000	236.00	24
501502A	385.00	8,12

Code	USD	Page(s)
502640	29.00	12
502015A	21.50	12
502043 CST	30.40	49,106
502043A	30.40	12
502115A	29.00	12
502243A	52.20	8,12
502343A	61.60	8,12
502610A	19.30	12
502620A	20.20	12
502710A	26.80	12
502720A	28.30	12
508013A	10.60	12
508100A	9.10	12
519600	85.00	39
519502A	160.30	9
519566A	169.70	9
519599A	158.10	9
519600A	248.70	9
519609A	248.70	9
519700A	298.50	9
519709A	298.50	9
521101A	183.50	52
521342A	258.10	53
521349A	246.90	53
521352A	269.30	53
521359A	258.10	53
521362A	319.80	53
521369A	308.40	53
521400A	247.10	52
521400AC	271.30	52
521409A	236.40	52
521409AC	260.60	52
521419A	280.40	52
521419AC	304.60	52
521500A	257.90	52
521500AC	293.20	52
521509A	247.10	52
521509AC	282.50	52
521519A	291.10	52
521519AC	326.30	52
521600A	306.30	52
521600AC	341.60	52
521609A	294.40	52
521609AC	329.70	52
521619A	335.20	52
521619AC	370.40	52
523005	652.70	57
523006	920.20	57
523008	1,578.30	57
523160A	1,306.60	54
523168A	1,215.60	54
523170A	1,494.90	54
523177A	1,507.50	54
523178A	1,424.00	54
523180A	2,073.00	54
523188A	2,002.20	54
523190A	2,372.90	54
523198A	2,300.90	54
535004	70.00	61
535051A	234.20	61
535056A	243.60	61
535059A	232.00	61
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538402 FD	18.50	8,9,13 67,106
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546060A	3,820.00	20
546080A	4,770.00	20
546095A	387.70	21
546096A	428.20	21
546097A	510.00	21
546100A	5,350.00	20
546116A	518.40	21
546120A	7,880.00	20
546150A	9,550.00	20
546195A	449.80	21
546196A	497.00	21
546197A	591.60	21
546205A	231.90	13
546206A	256.40	13
546207A	373.50	13
546208A	483.60	13
546209A	594.60	13
546228A	244.20	13
546235A	355.70	13
546241A	460.60	13
546254A	566.30	13
546306A	296.70	14
546307A	433.20	14
546308A	563.50	14
546309A	680.00	14
546328A	282.60	14
546335A	412.60	14
546341A	536.70	14
546354A	655.30	14
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546550A	2,226.00	15
546560A	2,420.00	15
546580A	3,245.00	15
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548007A	1,220.00	5
548008A	1,598.00	5
548009A	1,865.00	5
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548062A	3,750.00	5
548082A	4,690.00	5
548096A	963.90	5
548097A	1,162.80	5
548098A	1,521.90	5
548099A	1,776.60	5
548102A	5,250.00	5
549052A	4,440.00	4
549062A	4,730.00	4
549082A	5,920.00	4
549102A	6,630.00	4
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549507A	1,585.00	4
549508A	2,080.00	4
549509A	2,425.00	4
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549597A	1,510.00	4
549598A	1,980.00	4
549599A	2,310.00	4
551003A	150.40	16
551003AC	159.50	16
551004A	118.70	16,107
551005A	248.60	17
551005AC	257.90	17
551006A	274.60	17
551006AC	283.90	17
551007A	401.00	17
551007AC	410.30	17
551008A	521.60	17
551008AC	530.90	17
551009A	636.80	17
551009AC	646.10	17
551022A	145.10	16
551022AC	154.20	16
551028A	261.60	17
551028AC	270.90	17
551035A	381.90	17
551035AC	391.30	17
551041A	496.80	17
551041AC	506.10	17
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551054A	606.50	17
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551080A	3,970.00	19
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551120A	6,615.00	19
551150A	8,610.00	19
553542A	151.00	60
553549A	143.90	60
559021A	991.70	6
559022A	1,248.10	6
559031A	1,500.50	6
559920A	1,137.80	7
559921A	1,170.30	7
559922A	1,397.90	7
559931A	1,680.60	7
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573009A	242.10	60
573403A	117.80	60
573409A	112.20	60
573493A	115.10	60
573503A	123.70	60
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5927B5A	486.10	44
5927C5A	521.20	44
5927D5A	545.00	44
5927E5A	615.10	44
5927F5A	650.20	44
5927G5A	703.50	44
5927H5A	765.50	44
59474A	15.00	12
59756	190.30	22
59829	147.10	22
59804A	16.10	12
59817A	25.60	73
59834A	24.00	73,92
59840A	37.60	73
59893A	33.10	73
59894A	61.70	73
59904A	30.90	73
59905A	36.40	73
59906A	59.50	73
61215A	26.00	77,93
626009	29.00	9
626600A	309.90	9
644004	313.60	36
644240A	398.40	36
644249A	391.90	36
644250A	411.50	36
644256A	442.70	36
644259A	404.90	36
644260A	437.60	36
644269A	431.10	36
644340A	431.10	36
644340A 3BY	431.10	36
644349A	424.50	36
644349A 3BY	424.50	36
644350A	444.10	36
644350A 3BY	444.10	36
644356A	455.00	36
644356A 3BY	455.00	36
644359A	437.60	36
644359A 3BY	437.60	36
644360A	470.20	36
644360A 3BY	470.20	36
644369A	463.80	36
644369A 3BY	463.80	36
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656314	155.60	30,48
656404	98.40	24,48
656414	123.00	24,30,48

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659064	417.90	46
659084	492.10	46
659104	566.20	46
659124	640.30	46
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6636D5A	687.60	44
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6636H5A	1,057.90	44
6636I5A	1,150.30	44
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6636M5A	1,335.30	44
6636N5A	1,427.90	44
6636O5A	1,520.40	44
6636P5A	1,786.00	44
6637C5A	634.40	44
6637D5A	725.90	44
6637E5A	818.50	44
6637F5A	911.00	44
6637G5A	1,003.60	44
6637H5A	1,096.00	44
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6637M5A	1,373.50	44
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6637P5A	1,831.90	44
668000	112.20	48
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6686D5S1A	809.10	42
6686E5S1A	917.90	42
6686F5S1A	1,026.70	42
6686G5S1A	1,135.60	42
6686H5S1A	1,244.50	42
6686I5S1A	1,353.30	42
6686L5S1A	1,462.20	42
6686M5S1A	1,570.90	42
6686N5S1A	1,679.80	42
6686O5S1A	1,788.80	42
6687C5S1A	745.20	42
6687D5S1A	854.10	42
6687E5S1A	963.90	42
6687F5S1A	1,071.00	42
6687G5S1A	1,180.60	42
6687H5S1A	1,289.50	42
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6687L5S1A	1,507.20	42
6687M5S1A	1,615.90	42
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669050	40.80	49
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676059A	68.90	30
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676256A	236.00	30
676259A	224.40	30
676269A	237.80	30
676349A	178.40	30
676356A	203.50	30
676359A	191.90	30
676369A	205.20	30
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680503A	11.85	47
680504A	11.85	47
680505A	11.85	47
680555A	11.85	47
681503A	12.35	28
681524	12.35	28
681555	12.35	28
682530A	12.15	47
682540A	12.15	28,47
682545A	13.15	47
682550A	23.25	47
687000	26.50	106
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69184	24.10	49
69293A	20.90	33
694045	23.40	8
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861634A CST	40.00	105
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863034	44.00	106
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F29633	40.00	57,112
F29634	40.00	57,112
F29635	40.00	57,112
F29636	40.00	57,112
F36073	10.00	25
F39807	72.00	22
F59650	43.70	60
F69590	15.40	49
F69600	34.60	49
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NA10002	11.90	73,92
NA10003	13.80	73,92
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NA10006	12.85	31
NA10007	21.10	31
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NA10058	84.80	52,73
NA10060	26.00	76,92
NA10061	27.10	76,92
NA10062	28.10	76,92
NA10064	29.20	77,92
NA10082	7.60	82,107
NA10083	16.20	77
NA10085	24.90	92
NA10087	26.20	77,93
NA10089	21.60	77,92
NA10090	34.65	101,114
NA10092	9.00	98,100
NA10093	61.50	82
NA10103	240.80	86
NA10104	4.30	77
NA10116	42.70	93
NA10118	26.00	76,91
NA10119	35.70	77,93
NA10120	70.00	96
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NA10164	30.90	73
NA10165	36.40	73
NA10166	59.50	73
NA10197	1.97	60
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NA10227	123.90	75
NA10229	61.00	82,107
NA10230	68.00	82,107
NA10233	10.00	67
NA10234	47.40	82,107
NA10235	20.00	67
NA10236	20.40	77
NA10246	54.00	106
NA10247	67.00	106
NA10248	100.00	106
NA10249	70.00	106
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NA10263	27.00	105
NA10264	360.00	106
NA10265	140.00	106
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NA12114	8.70	93
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NA12145	39.60	95
NA12146	98.20	95
NA12147	134.60	95
NA12152	27.80	76,91
NA12153	48.30	72
NA12154	53.10	72
NA12155	75.60	72
NA12156	46.50	86
NA12162	30.10	77,92
NA12168	325.00	84
NA12169	515.00	86
NA12170	325.00	84
NA12171	400.00	85
NA12172	26.00	76,91
NA12173	32.50	76,91
NA12175	325.00	84
NA12240	40.80	72,87 88,99
NA12249	38.60	72,87 88,99,100
NA12250	44.60	72,87 88,99,101
NA12256	50.00	31,72
NA12259	42.40	72,87 88,99,101
NA12260	54.20	72,87 88,99,101

Code	USD	Page(s)
NA12269	52.00	72,87 88,99,101
NA12340	61.20	72
NA12349	57.90	72
NA12350	66.90	72
NA12356	75.00	31,72
NA12359	63.60	72
NA12360	81.30	72
NA12369	78.00	72
NA15006	70.00	97
NA15008	650.00	97
NA15009	220.00	97
NA15010	189.00	99,115
NA15012	160.00	98
NA15014	232.20	99,115
NA15015	318.60	99,115
NA15016	351.00	99,115
NA15017	610.20	99,115
NA15018	864.00	99,115
NA15019	1,296.00	99,115
NA15020	230.00	97
NA15021	260.00	97
NA15022	300.00	97
NA15023	150.00	100
NA15027	80.00	98,100
NA15028	25.00	98,99
NA15029	53.00	101,114
NA15030	25.00	115
NA15550	165.40	86
NA15559	134.20	86
NA15560	165.40	86
NA15569	136.20	86
NA15570	56.40	86
NA16060	87.60	39
NA16069	77.60	39
NA16160	88.60	39
NA16169	78.60	39
NA16265	25.00	73
NA16369	781.00	55
NA16469	990.00	55
NA17256	1,090.00	43,45
NA17256HE	1,390.00	43,45
NA254712	41.10	92
NA255002	105.00	83
NA255003	48.10	84
NA255004	48.10	84
NA25510	2,400.00	50,87
NA255110	138.00	87
NA255111	160.00	87
NA255112	158.00	87
NA255113	180.00	87
NA255160	2,075.00	86
NA25540	19.00	83
NA25549	17.90	83
NA256011	210.00	83
NA256012	300.00	83
NA257102	250.00	100
NA26640	55.60	84
NA26649	91.40	85
NA26650	60.20	84
NA26659	102.60	85
NA26660	116.60	84
NA26669	112.20	85
NA267002	125.00	83
NA267003	23.00	83
NA26710	320.00	88
NA26711	650.00	85
NA26740	111.20	84
NA26749	182.80	85
NA26750	120.40	84
NA26759	205.20	85
NA26760	233.20	84
NA26769	224.40	85

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NA29284	61.00	88
NA3140-02	185.00	82
NA35001	88.70	90
NA35002	18.90	90
NA35003	300.00	90
NA35004	565.00	90
NA35005	565.00	90
NA35006	565.00	90
NA35007	75.10	90
NA3520-15	1,500.00	90
NA3540-15	1,700.00	90
NA3540-B	28.60	90
NA3560-15	2,300.00	90
NA39588	86.50	8,105
NA39589	38.10	8,105
NA39753	51.90	8,15,19,105
NA475002	43.00	24
NA503040	42.50	9
NA51059	70.90	9,72,87
NA51069	90.50	9,72,87
NA545305	296.20	15
NA545306	341.00	15
NA545365	305.60	15
NA545395	294.00	15
NA545396	324.80	15
NA546050T	4,310.00	20
NA546060A	5,075.00	20
NA546060T	4,890.00	20
NA546080A	6,135.00	20
NA546100A	6,490.00	20
NA546120A	9,075.00	20
NA546150A	11,010.00	20
NA546200A	22,000.00	20
NA546250A	33,000.00	20
NA546300A	42,000.00	20
NA546510A	4,365.00	15
NA546512A	6,300.00	15
NA546515A	8,085.00	15
NA546550A	3,659.00	15
NA546560A	3,728.00	15
NA546580A	4,170.00	15
NA546995	238.00	14
NA546996	263.00	14
NA548052A	4,630.00	5
NA548062A	4,980.00	5
NA548082A	6,025.00	5
NA548102A	6,370.00	5
NA548120A	8,900.00	5
NA548150A	10,800.00	5
NA548200A	17,000.00	5
NA548250A	24,000.00	5
NA548300A	28,000.00	5
NA549052A	6,020.00	4
NA549062A	6,475.00	4
NA549082A	7,830.00	4
NA549102A	8,280.00	4
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NA549200A	23,000.00	4
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NA549300A	42,000.00	4
NA551050A	3,810.00	19
NA551060A	4,180.00	19
NA551080A	5,110.00	19
NA551100A	5,350.00	19
NA551120A	7,610.00	19
NA551150A	9,920.00	19
NA551995	306.60	18
NA551996	338.70	18
NA553252	563.30	62
NA553259	552.40	62
NA553259-B	426.40	62
NA553362	688.40	62
NA553369	674.90	62

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NA553369-B	547.80	62
NA553372	797.40	62
NA553379	781.80	62
NA553379-B	655.90	62
NA553662	799.80	62
NA553669	784.10	62
NA553669-B	658.10	62
NA553672	909.90	62
NA553679	892.10	62
NA553679-B	764.90	62
NA59600	186.20	8,19
NA605010	44.40	30,33,97
NA61241	10.40	31
NA669150	40.80	49
NA669250	40.80	49
NA669450	40.80	49
NA79701	650.00	101,114
NA79702	1,150.00	101,114
NA79703	1,350.00	101,114
NA79704	1,650.00	101,114
NA79705	2,380.00	101,114
NA863042	52.00	106
NA866027	26.00	106
NA866034	37.00	106
NA866042	57.00	106
NAC41TT5454	168.10	78
NAC41626236	120.50	78
NAC623641TT	157.30	78
NAC6262TT41	135.70	78
NAC6263TT41	147.30	78
NAC62TT6241	135.70	78
NAC62TT6341	147.30	78
NAC72TT6241	161.90	78
NAC72TT7241	188.10	78
NAL5263	66.50	78
NAL5736	50.50	78
NAL6262	37.60	78
NAL6263	49.20	78
NAL6273	80.30	78
NAL6363	60.80	78
NAL7262	63.80	78
NAL7263	75.40	78
NAL7273	106.50	78
NAS10001	267.00	95
NAS10002	134.00	81,95
NAS10005	240.00	81
NAS10006	220.00	81
NAS10007	36.00	81
NAS10040-1	95.70	81
NAS10040-2	178.20	81
NAS10040-20	396.00	81
NAS10023	15.00	81
NAS10030	75.00	81
NAS10032	28.00	81
NAS10041	16.00	81
NAS10042	10.00	81
NAS10406	2,625.00	95
NAS10408	3,100.00	95
NAS10410	3,625.00	95
NAS10410A	2,900.00	81
NAS15406	1,900.00	80
NAS15408	2,500.00	80
NAS15410	3,000.00	80
NAS20025	2,530.00	82,107
NAS20050	3,025.00	82,107
NAS20053	3,850.00	82
NAS20080	3,575.00	82,107
NAS20082	5,775.00	82
NAS20083	5,225.00	82
NAS20120	4,730.00	82,107
NAS20122	6,820.00	82
NAS20123	6,215.00	82
NAS20124	7,040.00	82

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NAS30020	11,688.60	94
NAS300201	14,334.40	94
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NAS300201P8	15,222.20	94
NAS30020-P	8,186.90	94
NAS30020P10	12,501.80	94
NAS30020P8	12,085.80	94
NAS30040	15,604.20	94
NAS300401	18,386.20	94
NAS300401P10	20,971.50	94
NAS300401P8	19,723.50	94
NAS30040-P	9,434.90	94
NAS30040P10	17,352.10	94
NAS30040P8	16,520.10	94
NAS30042	16,056.60	94
NAS300421	18,906.20	94
NAS300421P10	21,491.50	94
NAS300421P8	20,243.50	94
NAS30042-P	9,954.90	94
NAS30042P10	17,872.10	94
NAS30042P8	17,040.10	94
NAS30060	19,130.80	94
NAS300601	21,972.10	94
NAS300601P10	25,727.30	94
NAS300601P8	23,850.10	94
NAS30060-P	10,266.90	94
NAS30060P10	21,803.50	94
NAS30060P8	20,555.50	94
NAS30062	19,583.20	94
NAS300621	22,492.10	94
NAS300621P10	26,247.30	94
NAS300621P8	24,370.10	94
NAS30062-P	10,786.90	94
NAS30062P10	22,323.50	94
NAS30062P8	21,075.50	94
NAT417272	105.90	78
NAT523641	86.20	78
NAT524136	86.20	78
NAT545641	73.30	78
NAT574136	58.40	78
NAT623641	67.10	78
NAT624136	67.10	78
NAT624162	45.50	78
NAT626241	45.50	78
NAT626262	46.60	78
NAT626341	57.10	78
NAT626362	58.20	78
NAT6263TT	95.00	78
NAT62TT63	95.00	78
NAT634162	57.10	78
NAT636262	58.20	78
NAT6362TT	95.00	78
NAT724162	71.70	78
NAT724164	101.50	78
NAT417264	101.50	78
NAT724172	105.90	78
NAT72TT72	151.40	78
R11059	5.40	77
R21180	6.00	83
R31495	8.70	93
R31589	18.60	74,75
R31627	4.40	9,49
R31706	32.50	77,93
R31868	14.40	75,91
R31981	13.20	73
R39204	4.00	52
R41186	4.30	75,76
R41298/C	4.40	91
R41441	46.90	75
R41447	33.80	8
R41660	62.10	74
R50005	4.10	75
R50008	8.60	75
R50047	17.00	75
R50048	20.80	75
R50055	2.00	8,73,91
R50056	3.10	93
R50057	4.20	75
R50058	1.70	75,91
R50060	20.10	74
R50065	4.10	75
R51838	45.00	74
R52429	4.80	52
R53003	36.80	75
R53004	36.80	75
R53005	42.00	75
R56142	2.40	22
R56214	2.50	22,49
R59119	15.20	22
R59681	22.90	22
R61008	5.40	73,91
R67037	1.10	9,49
Z111000	138.70	32
Z113000	166.00	32
Z114000	166.00	32
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Z144000	168.70	32
Z145000	168.70	32
Z146000	143.90	32
Z151000	143.90	32
Z200041	60.70	33
Z200042	60.70	33
Z200043	60.70	33
Z200053	78.10	33
Z200411	60.70	33
Z200412	60.70	33
Z200413	60.70	33
Z200431	55.60	33
Z200432	55.60	33
Z200512	83.20	33
Z200513	83.20	33
Z200515	83.20	33
Z200517	83.20	33
Z200532	73.20	33
Z200533	73.20	33
Z200535	73.20	33
Z200537	73.20	33
Z200617	131.30	33
Z200635	123.80	33
Z200637	123.80	33
Z200687	83.20	33
Z200737	166.60	33
Z207433	78.10	33
Z207533	95.70	33
Z207537	95.70	33
Z300041	80.90	33
Z300042	80.90	33
Z300043	80.90	33
Z300053	97.10	33
Z300411	80.90	33
Z300412	80.90	33
Z300413	80.90	33
Z300431	75.80	33
Z300432	75.80	33
Z300512	101.00	33
Z300513	101.00	33
Z300515	101.00	33
Z300517	101.00	33
Z300532	93.70	33
Z300533	93.70	33
Z300535	93.70	33
Z300537	93.70	33
Z300617	151.60	33
Z300635	141.30	33
Z300637	141.30	33
Z300687	105.70	33
Z300737	171.60	33
Z307433	98.40	33
Z307537	116.10	33
Z40	209.80	31
Z40F	225.10	31
Z42	216.75	31
Z44	194.30	31
Z45	211.90	31
Z45P	271.90	31
Z46	262.45	31
Z47	305.30	31
Z50	215.00	31
Z50F	230.30	31
Z54	199.50	31
Z55	217.10	31
Z55P	277.10	31
Z56	267.65	31
Z57	310.50	31
ZSR101	160.00	34
ZSR103	375.00	34
ZSR104	440.00	34
ZSR106	540.00	34
ZVR103	285.00	35
ZVR104	340.00	35
ZVR106	440.00	35

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
Storage Tank and SolarFlex™:	6 years
Solar Collectors:	10 years

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 IN THE TUBING 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" in this catalog comply with the federal "Reduction of Lead in Drinking Water Act" which became effective Jan. 4, 2014. These products can be used in potable water services such as drinking water, hand washing, food service and dish washing.
Products not specifically identified as "Low Lead" are intended for hydronic heating and cooling applications and do not comply with the new federal law; they cannot legally be installed in new potable water services.

Form No. 20102/14
Suggested List Price
Effective February 1, 2014
Canceling All Prior Issues
specifications and prices are subject to change without notice

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