
# The Gold Standard

## For healthy hydronic system fluids

### DISCAL®

- High efficiency air separator with large, low-flow zone, coalescing element and automatic air vent to minimize corrosion.

### DIRTMAG®

- Magnetic technology and particle mesh, in a single dirt separator used to remove both ferrous and non-ferrous debris.
- Simple blowdown valve for fast dirt removal eliminates laborious and messy disassembly.
- Maximum protection for expensive heat exchangers and ECM circulators.

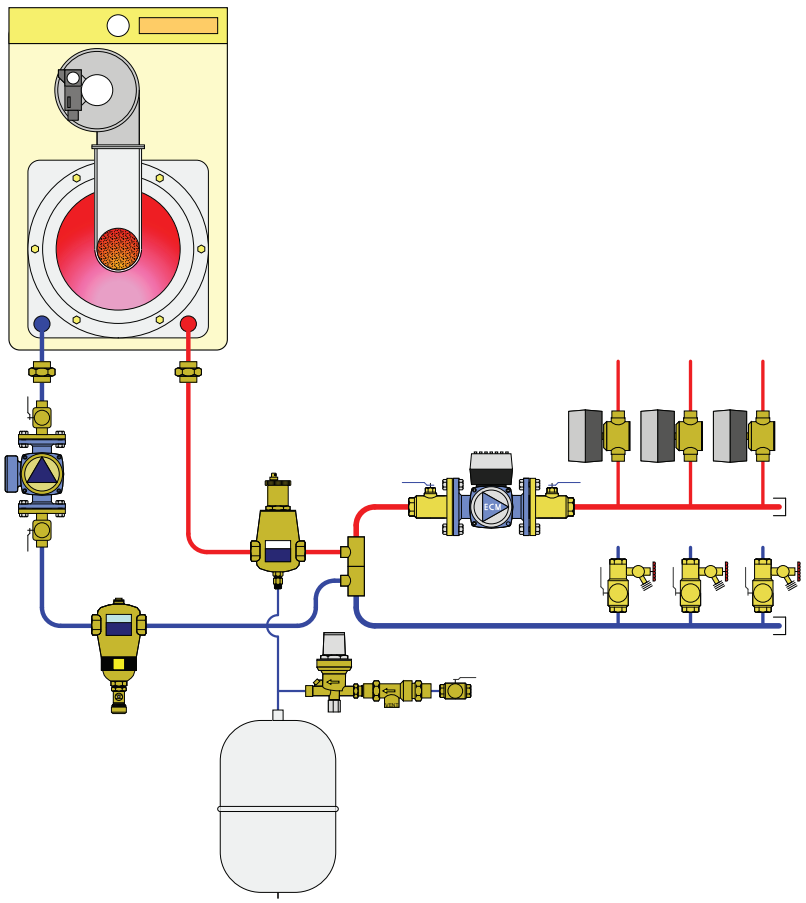
Heating & cooling

Components for today's modern hydronic systems

# AIR AND DIRT SEPARATION AND AIR VENTS

This diagram is for illustration purposes only





## PRODUCTS INCLUDED IN SECTION

- Automatic and manual air vents
- Air separators
- Dirt separators
- Air and dirt separators
- Dirt and magnetic dirt separators
- Magnetic dirt separators
- Accessories for air and dirt separators

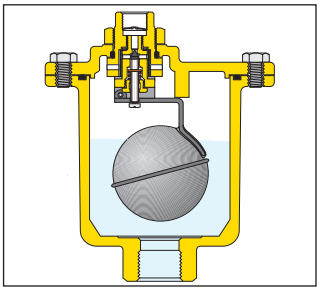
# AUTOMATIC AND MANUAL AIR VENTS

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

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

**MAXCAL™**

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



## 501 MAXCAL™

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

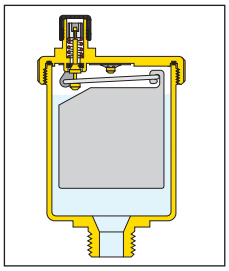
| Code | Description | Lbs |
|---|---|---|
| **501**502A | ¾" FNPT | 7 |

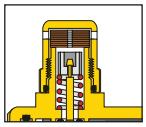
**MINICAL™ and VALCAL™**

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

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

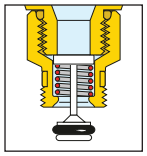
VALCAL™ is a high capacity larger size air vent that will discharge up to 2.5 SCFM.





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

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



## 5020 MINICAL™

Automatic air vent.
Brass body.
Max. working pressure: 150 psi.
Max. discharge pressure: 32 psi.
Max. discharge rate: 1.75 SCFM.
Max. working temperature: 250°F.

| Code | Description | Lbs |
|---|---|---|
| **5020**15A | ⅛" MNPT | 0.4 |
| **5020**40A | ½" MNPT | 0.4 |

## 5021 MINICAL™

Automatic air vent with service check valve
Brass body.
Max. working pressure: 150 psi.
Max. discharge pressure: 32 psi.
Max. discharge rate: 1.75 SCFM.
Max. working temperature: 230°F.

| Code | Description | Lbs |
|---|---|---|
| **5021**15A | ⅛" MNPT | 0.4 |
| **5021**13A | ⅛" MNPT, hygroscopic anti-drip cap | 0.4 |

## 5020 MINICAL™

Automatic air vent.
Brass body.
Hygroscopic safety air vent cap.
Max. working pressure: 150 psi.
Max discharge pressure: 32 psi.
Max. discharge rate: 1.75 SCFM.
Max. working temperature: 250°F.

| Code | Description | Lbs |
|---|---|---|
| **5020**43A | ½" MNPT | 0.6 |

## 5022 VALCAL™

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

| Code | Description | Lbs |
|---|---|---|
| **5022**43A | ½" MNPT | 0.5 |

## 5023 VALCAL™

High discharge vent with service check.
Brass body.
Max. working pressure: 150 psi.
Max. discharge pressure: 60 psi.
Max. discharge rate: 2.5 SCFM.
Max. working temperature: 230°F.

| Code | Description | Lbs |
|---|---|---|
| **5023**43A | ½" MNPT | 0.5 |

# AUTOMATIC AND MANUAL AIR VENTS

## 5026 ROBOCAL™

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

| Code | Description | Lbs |
|---|---|---|
| **5026**10A | ⅛" MNPT | 0.6 |
| **5026**20A | ¼" MNPT | 0.6 |
| **5026**30 | ⅜" straight thread | 1.0 |
| **5026**40 | ½" straight thread | 1.0 |

## 5027 ROBOCAL™

Automatic air vent with service check valve.
Brass body.
Max. working pressure: 150 psi.
Max. discharge pressure: 90 psi.
Max. discharge rate: 1.75 SCFM.
Max. working temperature: 230°F.

| Code | Description | Lbs |
|---|---|---|
| **5027**10A | ⅛" MNPT | 0.6 |
| **5027**20A | ¼" MNPT | 0.6 |
| **NA5027**40A | ½" MNPT, hygroscopic anti-drip cap | 0.6 |

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: 230°F.

| Code | Description | Lbs |
|---|---|---|
| **59474A** | ⅛" MNPT x FNPT | 0.1 |
| **59804A** | ¼" MNPT x FNPT | 0.1 |
| **561402A** | ½" MNPT x FNPT | 0.2 |


## 551 DISCALAIR®

High discharge automatic air vent.
Brass body.
Stainless steel float guide pin and linkage.
Max. working pressure: 150 psi.
Max. discharge pressure: 150 psi.
Max. discharge rate: 4.5 SCFM.
Max. working temperature: 230°F.

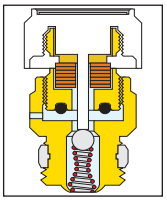
| Code | Description | Lbs |
|---|---|---|
| **551**004A | ½" FNPT | 0.8 |

## 5080 HYGROCAL™

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

| Code | Description | Lbs |
|---|---|---|
| **5080**13A | ⅛" MNPT | 0.1 |

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



## 5081

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

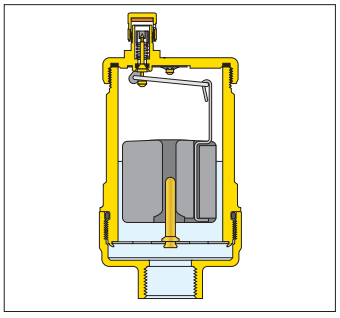
| Code | Description | Lbs |
|---|---|---|
| **5081**00A | Cartridge | 0.1 |

## 337

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

| Code | Description | Lbs |
|---|---|---|
| **337**221A | ¼" MNPT | 0.1 |

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



## AIR SEPARATORS

### 551 DISCAL® Sweat

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

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

### 551 DISCAL® Sweat

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

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

### 551 DISCAL® NPT

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

| Code | Description | Lbs |
|---|---|---|
| **551**005A | ¾" FNPT | 3.7 |
| **551**006A | 1" FNPT | 3.7 |
| **551**007A | 1¼" FNPT | 4.9 |
| **551**008A | 1½" FNPT | 4.9 |
| **551**009A | 2" FNPT | 5.5 |

### 551 DISCAL® NPT

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

| Code | Description | Lbs |
|---|---|---|
| **551**005AC | ¾" FNPT | 3.8 |
| **551**006AC | 1" FNPT | 3.8 |
| **551**007AC | 1¼" FNPT | 5.0 |
| **551**008AC | 1½" FNPT | 5.0 |
| **551**009AC | 2" FNPT | 5.6 |

### 551 DISCAL® Press

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

| Code | Description | Lbs |
|---|---|---|
| **551**066A | 1" integral press | 3.8 |
| **551**067A | 1¼" integral press | 5 |
| **551**068A | 1½" integral press | 5.1 |
| **551**069A | 2" integral press | 5.5 |

### 551 DISCAL® Press

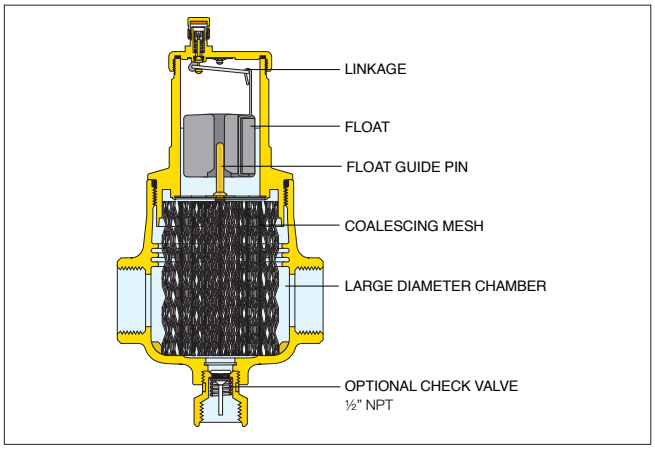
Air separator with automatic ½" check valve (code 561402A) to mount expansion tank on bottom thread.
Brass body.
Stainless steel float guide pin and linkage.
Glass reinforced nylon internal element.
Max. working pressure: 150 psi.
Working temperature range: 32—250°F.

| Code | Description | Lbs |
|---|---|---|
| **551**066AC | 1" integral press | 3.9 |
| **551**067AC | 1¼" integral press | 5.1 |
| **551**068AC | 1½" integral press | 5.2 |
| **551**069AC | 2" integral press | 5.6 |

# AIR SEPARATORS

### Construction details

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




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

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

## ACCESSORIES

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

| Code | Description | Lbs |
|---|---|---|
| **561402A** | ½" MNPT x ½" FNPT | 0.2 |

Insulation shell fits DISCAL® 551 series.

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

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

## 551 DISCAL® Compact

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

| Code | Description | Lbs |
|---|---|---|
| **551**003A | ¾" FNPT | 2.0 |
| **551**022A | ¾" sweat | 2.0 |

## 551 DISCAL® Compact

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

| Code | Description | Lbs |
|---|---|---|
| **551**003AC | ¾" FNPT | 2.1 |
| **551**022AC | ¾" sweat | 2.1 |

## 5517 DISCAL® Rotating collar

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

| Code | Description | Lbs |
|---|---|---|
| **5517**05A | 3/4" NPT male union | 4.9 |
| **5517**65A | 3/4" press union | 4.9 |
| **5517**95A | 3/4" sweat union | 4.9 |
| **5517**06A | 1" NPT male union | 4.9 |
| **5517**66A | 1" press union | 4.9 |
| **5517**96A | 1" sweat union | 4.9 |
| **5517**16* | body only, order unions separately | 4.4 |

*See fitting selection table in Section 8.

# AIR SEPARATORS

## 551 DISCAL®

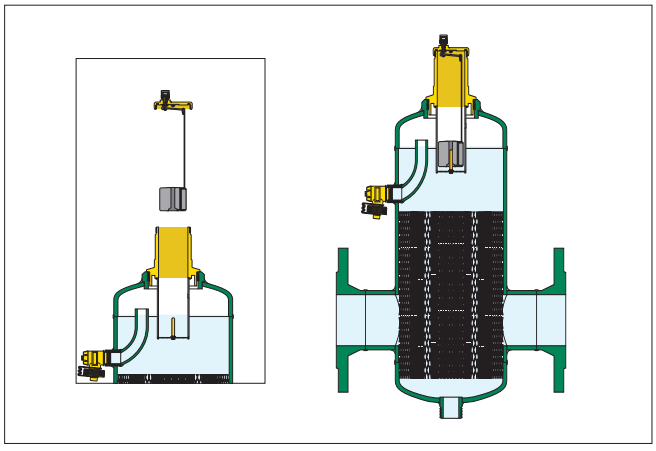
Air separator.
Epoxy resin coated steel body.
Stainless steel float guide pin and linkage.
Stainless steel mesh internal element.
ANSI 150 flange connections.
1" NPT male bottom drain connection.
Complete with male bottom drain valve (NA39753).
½" NPT male side drain connection.
Complete with side drain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

| Code | Description | Lbs |
|---|---|---|
| **551**050A | 2" ANSI flange | 34 |
| **551**050AT | 2" MNPT | 30 |
| **551**060A | 2½" ANSI flange | 35 |
| **551**060AT | 2½" MNPT | 31 |
| **551**080A | 3" ANSI flange | 62 |
| **551**100A | 4" ANSI flange | 67 |
| **551**120A | 5" ANSI flange | 106 |
| **551**150A | 6" ANSI flange | 117 |

### Air separator construction

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

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



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

## NA551 DISCAL® ASME/CRN

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

| Code | Description | Lbs |
|---|---|---|
| **NA551**050A | 2" ANSI flange ASME & CRN | 34 |
| **NA551**060A | 2½" ANSI flange ASME & CRN | 35 |
| **NA551**080A | 3" ANSI flange ASME & CRN | 62 |
| **NA551**100A | 4" ANSI flange ASME & CRN | 67 |
| **NA551**120A | 5" ANSI flange ASME & CRN | 106 |
| **NA551**150A | 6" ANSI flange ASME & CRN | 117 |

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

## NA551 DISCAL® ASME

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

| Code | Description | Lbs |
|---|---|---|
| **NA551**200A | 8" ANSI flange ASME & CRN | 371 |
| **NA551**250A | 10" ANSI flange ASME & CRN | 617 |
| **NA551**300A | 12" ANSI flange ASME & CRN | 871 |

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

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

| Code | Description | Lbs |
|---|---|---|
| **NA39**753 | 1" FNPT with lever | 0.7 |
| **NA59**600 | 2" FNPT with lever | 3.5 |

# DIRT SEPARATORS

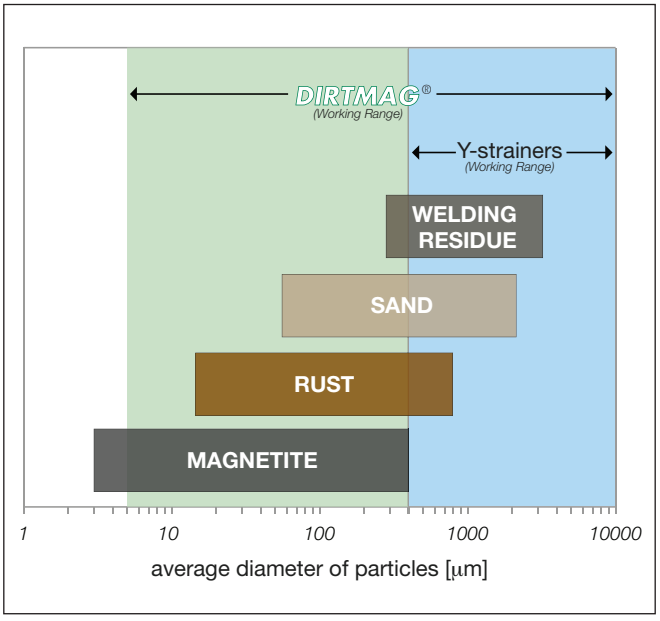
The dirt separating action performed by the DIRTCAL® is based on using the internal element with concentric diamond pattern mesh surfaces instead of a mechanical filter. The element offers little resistance to the medium flow while ensuring dirt separation. This occurs due to the particles colliding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

## 5465
### DIRTCAL®

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

| Code | Description | Lbs |
|---|---|---|
| **5465**50A | 2" ANSI flange | 29 |
| **5465**60A | 2½" ANSI flange | 38 |
| **5465**10A | 4" ANSI flange | 54 |

**Dirt separation comparison**




## NA5465
### DIRTCAL® ASME/CRN

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

| Code | Description | Lbs |
|---|---|---|
| **NA5465**50A | 2" ANSI flange ASME & CRN | 38 |
| **NA5465**60A | 2½" ANSI flange ASME & CRN | 38 |
| **NA5465**80A | 3" ANSI flange ASME & CRN | 55 |
| **NA5465**10A | 4" ANSI flange ASME & CRN | 55 |
| **NA5465**12A | 5" ANSI flange ASME & CRN | 138 |
| **NA5465**15A | 6" ANSI flange ASME & CRN | 148 |

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

## NA5465
### DIRTCAL® ASME/CRN

Dirt separator.
Epoxy resin coated steel body.
2" threaded NPT bottom drain connection.
Complete with drain valve (code NA59600).
¾" NPT male top thread with brass cap.
ANSI 150 flange connections.
Max. working pressure: 150 psi.
Vessel temperature range: 32—270°F.
Particle separation capacity: to 5 µm (0.2 mil).
ASME registered. CRN registered thru 12".
Consult factory for 14".

| Code | Description | Lbs |
|---|---|---|
| **NA5465**20A | 8" ANSI flange ASME & CRN | 335 |
| **NA5465**25A | 10" ANSI flange ASME & CRN | 620 |
| **NA5465**30A | 12" ANSI flange ASME & CRN | 870 |
| **NA5465**35A | 14" ANSI flange ASME | 1,000 |

ASME U-stamp tagged and registered with the National Board of Boiler and Pressure Vessel Inspectors registered. CRN registered, 8" and 10"; consult factory for 12" — 14".

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

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

# AIR AND DIRT SEPARATORS

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

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

## 546 DISCALDIRT®

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

| Code | Description | Lbs |
|---|---|---|
| **546**096A | 1" sweat | 8.3 |
| **546**016A | 1" MNPT | 8.3 |
| **546**097A | 1¼" sweat | 8.3 |

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

## 5461 DISCALDIRTMAG™

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

| Code | Description | Lbs |
|---|---|---|
| **5461**96A | 1" sweat | 8.5 |
| **5461**16A | 1" MNPT | 8.5 |
| **5461**97A | 1¼" sweat | 8.5 |

## 5461 - DISCALDIRTMAG™

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

| Code | Description | Lbs |
|---|---|---|
| **5461**98A | 1½" sweat union | 22 |
| **5461**08A | 1½" NPT female union | 22 |
| **5461**68A | 1½" press union | 22 |
| **5461**99A | 2" sweat union | 23 |
| **5461**09A | 2" NPT female union | 23 |
| **5461**69A | 2" press union | 23 |

Insulation shell for DISCALDIRT® & DISCALDIRTMAG™.

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

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

## 546 DISCALDIRT®

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

| Code | Description | Lbs |
|---|---|---|
| **546**050A | 2" ANSI flange | 40 |
| **546**060A | 2½" ANSI flange | 42 |
| **546**080A | 3" ANSI flange | 73 |
| **546**100A | 4" ANSI flange | 78 |
| **546**120A | 5" ANSI flange | 181 |
| **546**150A | 6" ANSI flange | 188 |

## AIR AND DIRT SEPARATORS

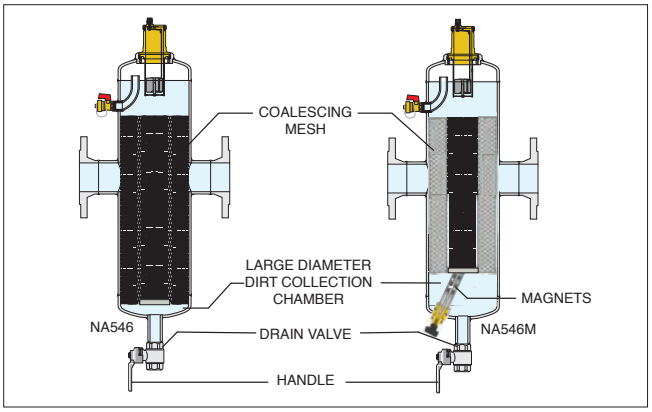
# NA546
# DISCALDIRT®
# ASME/CRN

Air & Dirt separator.
Epoxy resin coated steel body.
Stainless steel float guide pin and linkage.
Stainless steel mesh internal element.
1" (2—6" sizes) and 2" (8—14" sizes) threaded NPT bottom drain connection.
ANSI 150 flange connections.
Complete with drain valve NA39753 (2—6" sizes), NA59600 (8—14" sizes).
Max. working pressure: 150 psi.
Vessel temperature range: 32—270°F.
ASME registered. CRN registered thru 12".
Consult factory for 14".

| Code | Description | Lbs |
|---|---|---|
| **NA546**050T | 2" Threaded ASME & CRN | 28 |
| **NA546**060A | 2½" ANSI flange ASME & CRN | 42 |
| **NA546**080A | 3" ANSI flange ASME & CRN | 73 |
| **NA546**100A | 4" ANSI flange ASME & CRN | 78 |
| **NA546**120A | 5" ANSI flange ASME & CRN | 181 |
| **NA546**150A | 6" ANSI flange ASME & CRN | 188 |
| **NA546**200A | 8" ANSI flange ASME & CRN | 355 |
| **NA546**250A | 10" ANSI flange ASME & CRN | 555 |
| **NA546**300A | 12" ANSI flange ASME & CRN | 825 |
| **NA546**350A | 14" ANSI flange ASME | 950 |

ASME U-stamp tagged and registered with the National Board of Boiler and Pressure Vessel Inspectors; CRN registered, 2"— 12"; consult factory for 14".

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




# NA546M
# DISCALDIRTMAG™
# ASME/CRN

Air & Dirt separator with magnets.
Epoxy resin coated steel body.
Stainless steel float guide pin and linkage.
Stainless steel mesh internal element.
ANSI 150 flange connections.
1" (2—6" sizes) and 2" (8—14" sizes) threaded NPT bottom drain connection.
Complete with drain valve NA39753 (2—6" sizes), NA59600 (8—14" sizes).
Max. working pressure: 150 psi.
Vessel temperature range: 32—270°F.
Particle separation capacity: to 5 µm (0.2 mil).
Ferrous impurities separation efficiency: up to 100%.
ASME registered. CRN registered thru 12".
Consult factory for 14".

| Code | Description | Lbs |
|---|---|---|
| **NA546**050TM* | 2" Threaded ASME & CRN | 31 |
| **NA546**060AM* | 2½" ANSI flange ASME & CRN | 45 |
| **NA546**080AM* | 3" ANSI flange ASME & CRN | 76 |
| **NA546**100AM* | 4" ANSI flange ASME & CRN | 81 |
| **NA546**120AM* | 5" ANSI flange ASME & CRN | 184 |
| **NA546**150AM* | 6" ANSI flange ASME & CRN | 191 |
| **NA546**200AM** | 8" ANSI flange ASME & CRN | 365 |
| **NA546**250AM** | 10" ANSI flange ASME & CRN | 565 |
| **NA546**300AM** | 12" ANSI flange ASME & CRN | 835 |
| **NA546**350AM** | 14" ANSI flange ASME | 960 |

*with one magnet
**with three magnets
ASME U-stamp tagged and registered with the National Board of Boiler and Pressure Vessel Inspectors. CRN registered, 2" — 12"; consult factory for 14".

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

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

# DIRT & MAGNETIC DIRT SEPARATORS

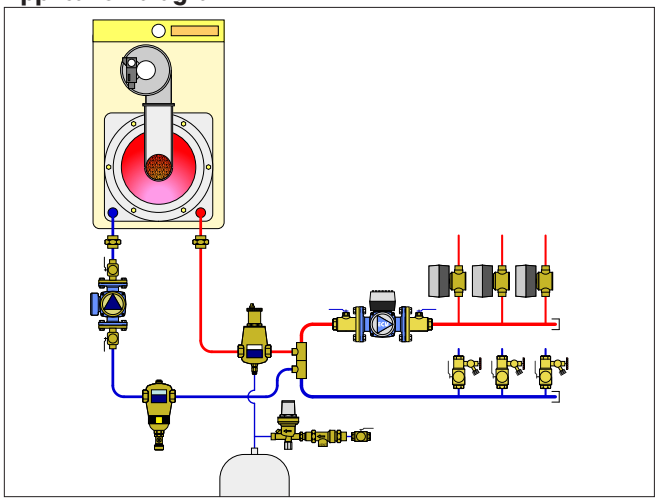
The dirt separating action performed by the DIRTCAL® is based on using the internal element with concentric diamond pattern mesh surfaces instead of a mechanical filter. The element offers little resistance to the medium flow while ensuring dirt separation. This occurs due to the particles colliding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

## 5463
### DIRTMAG®

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

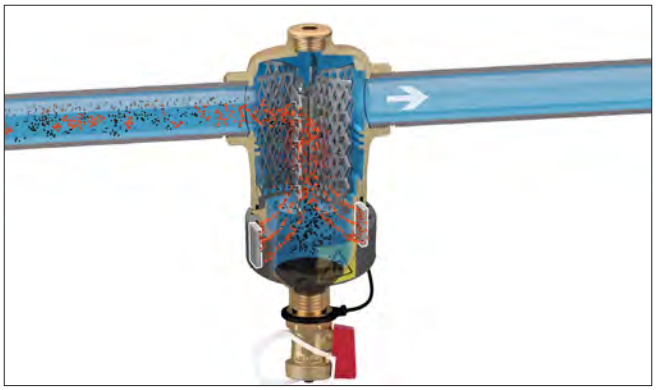
| Code | Description | | Lbs |
|---|---|---|---|
| **5463**05A | ¾" FNPT | NEW | 4.2 |
| **5463**28A | 1" sweat | | 4.2 |
| **5463**06A | 1" FNPT | | 4.2 |
| **5463**66A | 1" press | | 4.5 |
| **5463**35A | 1¼" sweat | | 4.2 |
| **5463**07A | 1¼" FNPT | | 5.3 |
| **5463**67A | 1¼" press | | 5.6 |
| **5463**41A | 1½" sweat | | 4.9 |
| **5463**08A | 1½" FNPT | | 6.2 |
| **5463**68A | 1½" press | | 6.5 |
| **5463**54A | 2" sweat | | 5.5 |
| **5463**09A | 2" FNPT | | 6.2 |
| **5463**69A | 2" press | | 6.5 |

### Application diagram



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

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



| | MAXIMUM FLOW RATE | | | | |
|---|---|---|---|---|---|
| Size | ¾" | 1" | 1¼" | 1½" | 2" |
| GPM | 6 | 9 | 15 | 24 | 36 |
| l/s | 0.4 | 0.57 | 1.0 | 1.5 | 2.3 |
| Cv | 19 | 32 | 56 | 73 | 81 |

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

| Code | Description | Lbs |
|---|---|---|
| **538**402 FD | ½" MNPT x ¾" GHT | 0.3 |

DIRTCAL® to DIRTMAG®
Retrofit kit for 3/4" to 2" 5462 brass Dirtcal.

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

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

| Code | Description | Lbs |
|---|---|---|
| **CBN546205** | Fits ¾" & 1" DIRTCAL®, DIRTMAG® | 0.1 |
| **CBN546207** | Fits 1¼" & 1½" DIRTCAL®, DIRTMAG® | 0.1 |
| **CBN546209** | Fits 2" DIRTCAL®, DIRTMAG® | 0.1 |

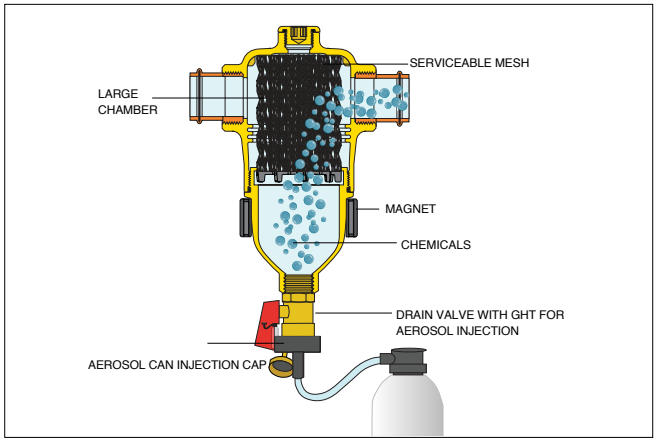
## MAGNETIC DIRT SEPARATORS

### NA5463
### DIRTMAG® Chemical kit

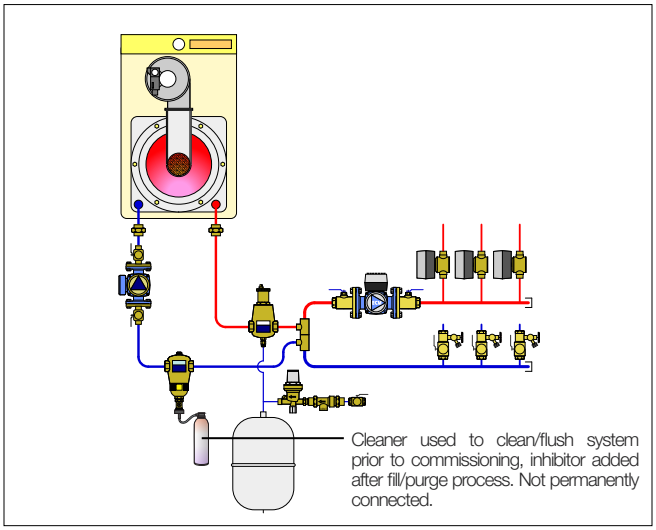
Magnetic Dirt separator plus Boiler Chemical Treatment Kit.
Brass body.
½" NPT top thread with plug.
Treats up to 30 gallons.
DIRTMAG® plus 1 can of Hydro-Solv™ cleaner and 1 can of Pro-Tek® treatment.
Aerosols are injected into the hydronic system through the GHT connection on the bottom of the DIRTMAG®.

| Code | Description | Lbs |
|---|---|---|
| **NA5463**28T | 1" sweat | 6.8 |
| **NA5463**06T | 1" FNPT | 6.8 |
| **NA5463**66T | 1" press | 7.1 |
| **NA5463**35T | 1¼" sweat | 6.8 |
| **NA5463**07T | 1¼" FNPT | 6.8 |
| **NA5463**67T | 1¼" press | 7.1 |

**Construction**




**Application**




### NA5453
### DIRTMAG®

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

| Code | Description | Lbs |
|---|---|---|
| **NA5453**05 | ¾" NPT male union | 4.5 |
| **NA5453**65 | ¾" press union | 4.5 |
| **NA5453**95 | ¾" sweat union | 4.5 |
| **NA5453**06 | 1" NPT male union | 4.5 |
| **NA5453**66 | 1" press union | 4.7 |
| **NA5453**96 | 1" sweat union | 4.5 |
| **NA5453**55 | ¾" NPT female union, isolation valves | 5.5 |
| **NA5453**56 | 1" NPT female union, isolation valves | 5.5 |
| **NA5453**76 | 1" press union, isolation valves | 5.5 |

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

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

# MAGNETIC DIRT SEPARATORS

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

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

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

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

## 5465M
### DIRTMAG®

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

| Code | Description | Lbs |
|---|---|---|
| **5465**50AM | 2" ANSI flange | 41 |
| **5465**60AM | 2½" ANSI flange | 41 |
| **5465**80AM | 3" ANSI flange | 58 |
| **5465**10AM | 4" ANSI flange | 58 |

## NA5465M
### DIRTMAG® ASME/CRN

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

| Code | Description | Lbs |
|---|---|---|
| **NA5465**50AM | 2" ANSI flange ASME & CRN | 41 |
| **NA5465**60AM | 2½" ANSI flange ASME & CRN | 41 |
| **NA5465**80AM | 3" ANSI flange ASME & CRN | 58 |
| **NA5465**10AM | 4" ANSI flange ASME & CRN | 58 |
| **NA5465**12AM | 5" ANSI flange ASME & CRN | 141 |
| **NA5465**15AM | 6" ANSI flange ASME & CRN | 151 |

## NA5465M
### DIRTMAG® ASME/CRN

Magnetic dirt separator with three magnets assembly.
Epoxy resin coated steel body.
Complete with drain valve (code NA59600).
¾" NPT male top thread with brass cap.
ANSI 150 flange connections.
Max. working pressure: 150 psi.
Vessel temperature range: 32—270°F.
Particle separation capacity: to 5 µm (0.2 mil).
Ferrous impurities separation efficiency: 100%.
ASME registered. CRN registered thru 12".
Consult factory for 14".

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