

## DISCAL® air separator

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**551- NA551 - NA519 Series**

### Installation, commissioning and servicing instructions



#### Function

Air separators are used to continuously remove the air contained in the hydronic circuits of heating and cooling systems. The air discharge capacity of these devices is very high. They are capable of removing automatically all the air present in the system down to micro-bubble level.

The circulation of fully de-aerated water enables the equipment to operate under optimum conditions, free from any noise, corrosion, localized overheating or mechanical damage. Micro-bubbles, fusing with each other, increase in volume (get larger) until they become large enough to rise to the top where they are automatically released.

#### Product range

- 551 series      DISCAL® air separator for horizontal pipes, in brass compact with drain  
 Sizes ¾" sweat; ¾" NPT female (A without service check valve, AC with service check)
  
- 551 series      DISCAL® air separator for horizontal pipes, in brass with drain  
 Sizes ¾" - 1" - 1 ¼" - 1 ½" - 2" NPT female; 1" - 1 ¼" - 1 ½" - 2" sweat  
 (A without service check valve, AC with service check)
  
- 551 series      DISCAL® air separator for horizontal pipes, in brass with drain  
 Sizes 1" - 1 ¼" press (A without service check valve, AC with service check)
  
- 551 series      DISCAL® air separator for horizontal pipes, in steel with flanged connections with drain  
 Sizes 2" - 6" ANSI
  
- NA551 series    DISCAL® air separator for horizontal pipes, in steel with flanged connections with drain  
 designed and built in accordance with Section VIII, Division 1 of the ASME Boiler and  
 Pressure Vessel Code and tagged and registered with the National Board of Boiler  
 and Pressure Vessel Inspector  
 Sizes 2" - 12" ANSI
  
- NA5519 series   DISCAL® air separator for vertical pipes, in brass compact with drain  
 Sizes ¾" and 1" sweat

## Technical specifications

### Brass air separator

<b>Materials</b>	- body:	brass
	- internal element (compact & vertical versions):	304 stainless steel
	- internal element:	glass reinforced nylon PA66GF30
	- seal:	EPDM
	- air vent float linkages:	stainless steel
	- air vent float guide pin:	stainless steel

### Performance

Suitable fluids:	water, glycol solution
Max. percentage of glycol:	50%
Max. working pressure:	150 psi (10 bar)
Temperature range:	32–250°F (0–120°C)
Air separation efficiency:	100% to micro-bubble level

### Connections

- main:	
compact series:	3/4" sweat; 3/4" NPT female
horizontal:	3/4", 1", 1-1/4", 1-1/2" and 2" NPT female
	1", 1-1/4", 1-1/2" and 2" sweat
- lay length (press connection):	size 1 inch: 4 3/4" size 1 1/4 inch: 5 1/8"
vertical:	3/4" and 1" sweat
- drain valve:	1/2" NPT female

### Steel air separator

<b>Materials</b>	- body:	epoxy resin painted steel
	- internal element:	304 stainless steel
	- seal:	EPDM
	- air vent float linkages:	stainless steel
	- air vent float guide pin:	stainless steel

### Performance

Suitable fluids:	water, glycol solution
Max. percentage of glycol:	50%
Max. working pressure:	150 psi (10 bar)
Temperature range:	32–250°F (0–120°C)
Air separation efficiency:	100% to micro-bubble level

### Connections

- flanged:	2"–12" ANSI B16.5 150 CLASS RF
- drain pipe:	sizes 2 - 6 inch: 1" NPT male sizes 8 - 12 inch: 2" NPT male

### Agency Approval

NA551 series is designed and built in accordance with Section VIII, Division 1 of the ASME Boiler and Pressure Vessel Code and tagged and registered with the National Board of Boiler and Pressure Vessel Inspector, and CRN registered.

**Working Pressure & Temperature Limits**  
(Solder Type Limits Per ASTM Std. B16.18-1979)

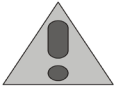
FLOW-CONTROL STYLE	TYPE OF SOLDER	MAXIMUM LIMITATIONS	
		PRESSURE PSI	TEMPERATURE °F
SWEAT	95-5 Tin-Antimony	150	250
	50-50 tin-Lead	125	150
	60-40 tin-Lead	75	250

**SAFETY INSTRUCTION**



This safety alert symbol will be used in this manual to draw attention to safety related instructions. When used, the safety alert symbol means.

**ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED! FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN A SAFETY HAZARD.**



**CAUTION:** All work must be performed by qualified personnel trained in the proper application, installation, and maintenance of systems in accordance with all applicable codes and ordinances.



**CAUTION:** If the DISCAL<sup>®</sup> valve is not installed, commissioned and maintained properly, according to the instructions contained in this manual, it may not operate correctly and may endanger the user.



**CAUTION:** Make sure that all the connecting pipework is water tight.



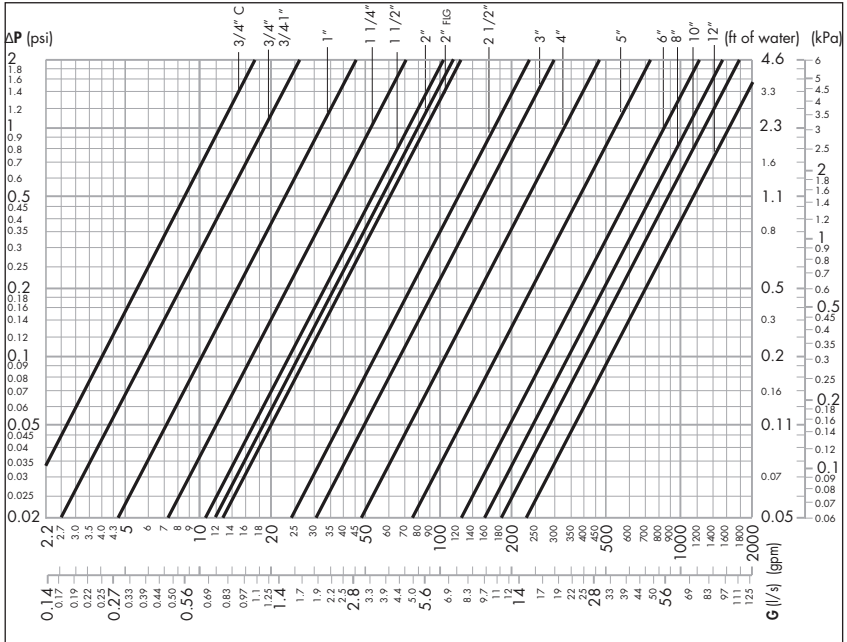
**CAUTION:** When making the water connections, make sure that the pipework connecting the DISCAL<sup>®</sup> is not mechanically over-stressed. Over time this could cause breakages, with consequent water losses which, in turn, could cause harm to property and/or people.



**CAUTION:** Water temperatures higher than 100°F (38°C) can be dangerous. During the installation, commissioning and maintenance of the DISCAL<sup>®</sup> valve, take the necessary precautions to ensure that such temperatures do not endanger people.

**Leave this manual for the user**

## Hydraulic characteristics

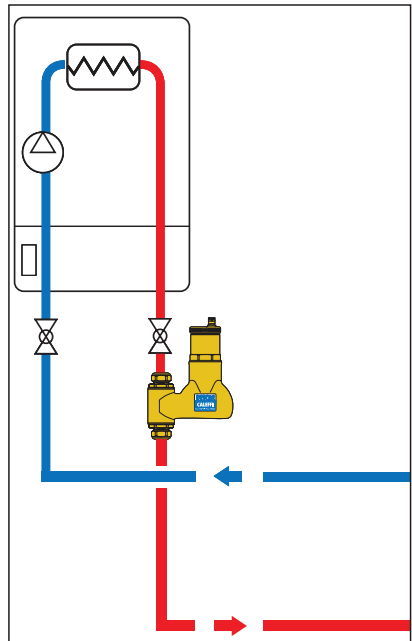
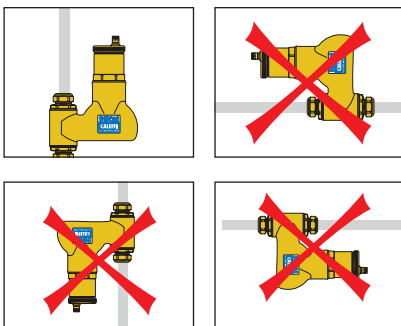
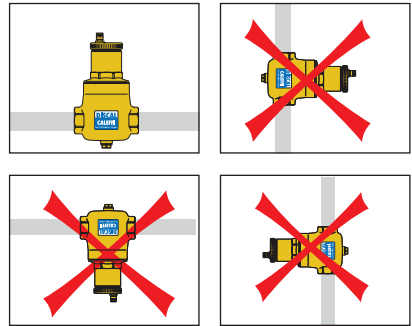
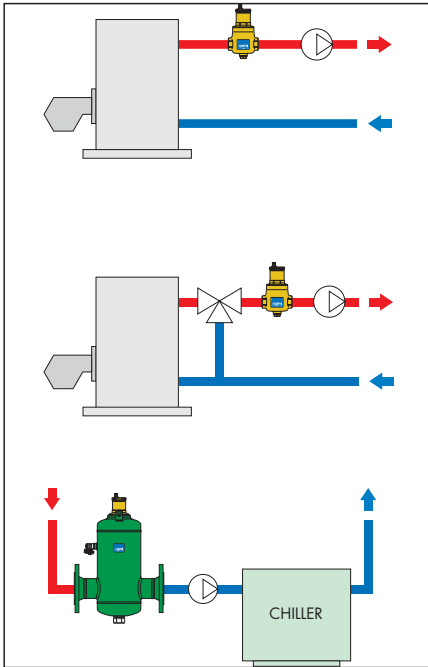


		Flow capacity – brass						
Fluid Velocity	Size	3/4" C	3/4"	3/4"-1"	1"	1 1/4"	1 1/2"	2"
4.0 f/s	GPM	6	8	9	9	15	24	36
	l/s	0.4	0.5	0.57	0.6	1.0	1.5	2.3
10.0 f/s	GPM	14	19	20	22	36	57	66
	l/s	0.9	1.2	1.26	1.4	2.3	3.6	4.1
	Cv	12	19	19	32	56	73	81

		Flow capacity – steel								
Fluid Velocity	Size	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"
4.0 f/s	GPM	37	63	96	149	259	380	625	980	1410
	l/s	2.4	4.0	6.0	9.4	16.3	24.0	39.4	61.8	89.0
10.0 f/s	GPM	89	150	227	355	816	904	1,570	2,450	3,530
	l/s	5.6	9.5	14.3	22.4	51.0	57.0	99.0	155.0	223.0
	Cv	87	174	208	324	520	832	1,109	1,387	1,664

## Installation

DISCAL® units may be used in heating or cooling systems to ensure the progressive removal of air which is continuously formed. The units should preferably be installed after the boiler and on the pump suction side, as these are the points where the formation of micro-bubbles is greatest. DISCAL® air separators for horizontal pipes must be installed vertically. Flow direction of the DISCAL® air separator is bidirectional: flow in either direction is permitted. In installation conditions where inspection is not possible, it is recommended that the venting valve cap is replaced by a Caleffi Code R59681 hygroscopic safety vent. The standard replacement cap code is 59119.



### Construction details

DISCAL® air separators are designed to allow maintenance and cleaning without having to remove the valve body from the pipework. All DISCAL® air separators (except vertical versions) come standard with a bottom connection for installing a drain valve. All internal air release control components are fully accessible in all the models.

The automatic air vent, located at the top of the units, has a long chamber for the movement of the float. This feature prevents any debris present in the water from reaching the sealing seat. A stainless steel float guide pin (3) prevents the float from sticking due to accumulating

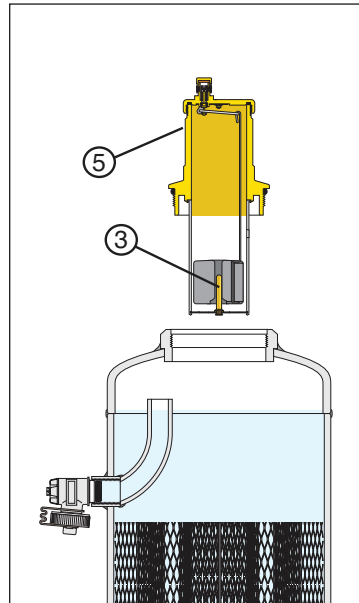
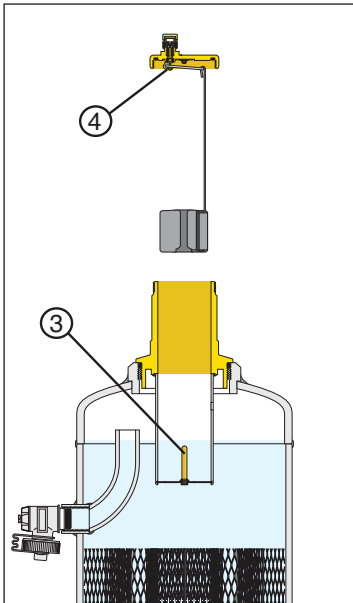


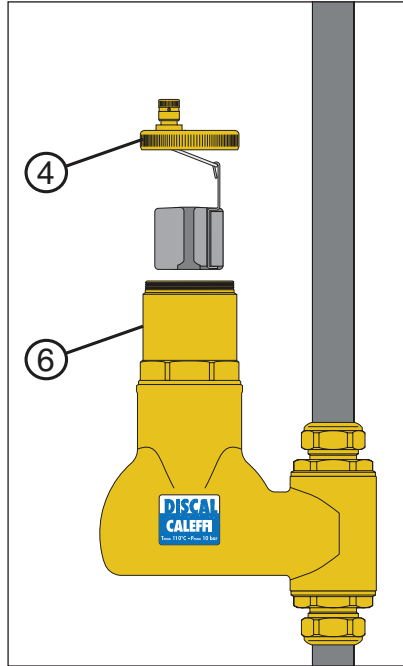
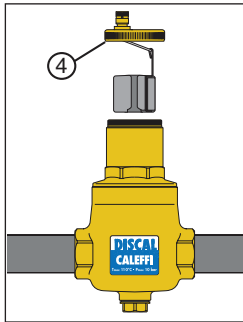
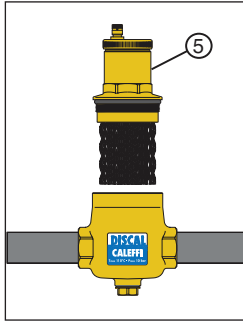
residue in the flowing fluids, even when the DISCAL® air separator is not installed perfectly vertical.

A replacement air vent assembly for the DISCAL® brass 551 series (except vertical and compact) is code 59829; for the DISCAL® steel 551 and NA551 series is code 59756. The moving parts that control air venting are accessed simply by removing the upper cover (4). Replacement cap and float assembly for all versions of the brass DISCAL® 551 and NA551 series is code F39807.







When cleaning, simply unscrew the portion of the body containing the automatic air vent (5). For the vertical and compact models without a drain, the element can be removed by removing the upper cover (4). There is no need to remove the air vent body for these models.





## Accessories

Item	Code	Description
	561402A	Check valve for expansion tanks. 1/2" NPT connections.
	R59681	Hydroscopic safety vent cap.
	562100	Small anti-vacuum vent cap.
	59119	Replacement DISCAL® air vent cap.



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