

### 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

- Series 551 DISCAL air separator compact, sizes 3/4" Sweat; 3/4" NPT female - 1/2" female drain
- Series 551 DISCAL air separator with 1/2" female drain, sizes 3/4" - 1" - 1 1/4" - 1 1/2" - 2" NPT female
- Series 551 DISCAL air separator with 1/2" female drain, sizes 1" - 1 1/4" - 1 1/2" - 2" Sweat
- Series 551 DISCAL air separator with flanged connections, sizes 2" - 6" ANSI
- Series 551 DISCAL air separator with male thread connections, sizes 2" - 4" NPT

#### Technical specifications

##### Brass body air separators

- Connections: - Main: compact 3/4" sweat; 3/4" NPT female  
1" - 1 1/4" - 1 1/2" - 2" sweat  
3/4" - 1" - 1 1/4" - 1 1/2" - 2" NPT female
- Drain: 1/2" NPT female
- Materials: - body: brass
- int. element: stainless steel (compact version)  
PA66G30
- seal: EPDM
- 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)

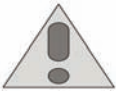
##### Steel body air separator

- Connections: - Flanged: 2"–6" ANSI 150 CLASS
- Threaded: 2" - 4" NPT male
- Drain: 1" NPT male
- Materials: - body: epoxy resin painted steel
- int. element: stainless steel
- seal: EPDM
- Suitable fluids: water, glycol solution
- Max working pressure: 150 psi (10 bar)
- Max percentage of glycol: 50%
- Temperature range: 32–250°F (0–120°C)

**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
NPT	-	150	250
SWEAT	95-5 Tin-Antimony	150	250
	50-50 tin-Lead	125	150
	60-40 tin-Lead	75	250

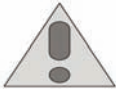
**SAFETY INSTRUCTION**



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 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.



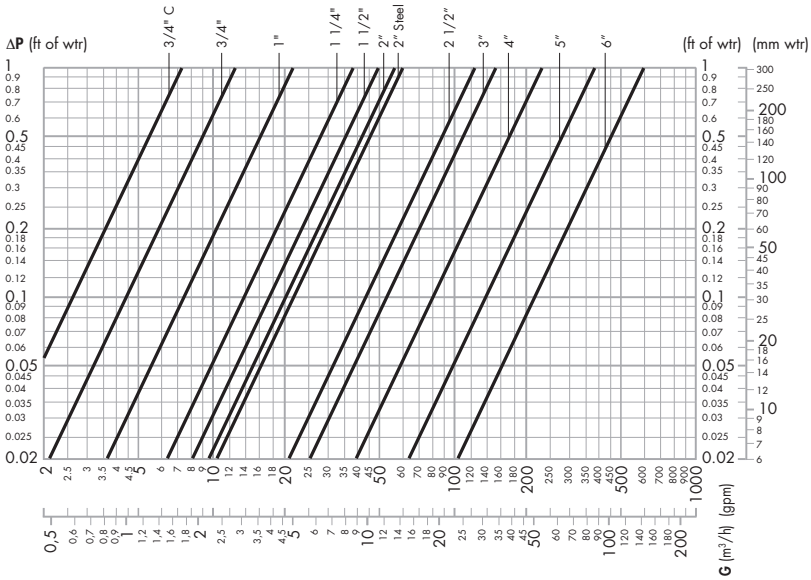
**CAUTION:** When making the water connections, make sure that the pipework connecting the DISCAL is not mechanically over-stressed. Over time this could cause breakages, with consequent water losses which, in turn, could cause harm to property and/or people.



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

**Leave this manual for the user.**

## Hydronic characteristics

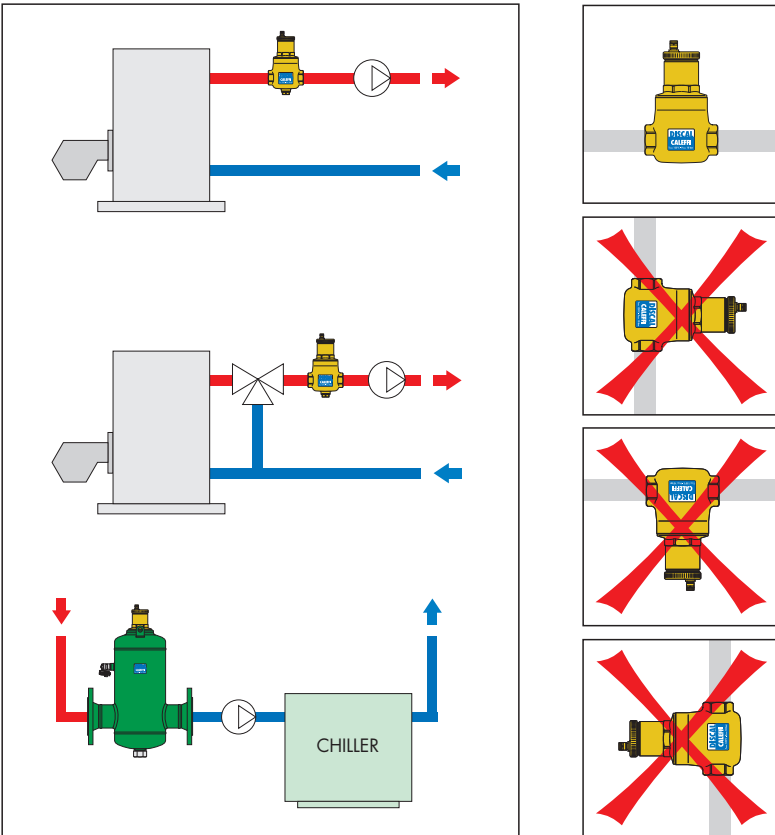


The fluid velocity at connections for Discal 551 series air separators is recommended to not exceed 10.0 f/s. Above this speed, heavy internal turbulence and noise can occur and air elimination efficiency begins to fall measurably. Optimal air elimination performance occurs at fluid velocities of 4.0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

		FLOW CAPACITY											
		BRASS						STEEL					
Size		3/4" C	3/4"	1"	1 1/4"	1 1/2"	2"	2"	2 1/2"	3"	4"	5"	6"
<b>Optimal (4.0 f/s)</b>	GPM	6.0	8.0	9.3	15.3	23.9	36.1	37.3	63.0	95	149	259	380
	m³/h	1.4	1.4	2.1	3.5	5.4	8.2	8.5	14.3	21.7	33.9	58.8	86.2
<b>Max. (10.0 f/s)</b>	GPM	14.3	19.0	22.1	36.4	56.8	86.0	88.8	150.1	227.4	355.3	616.4	903.6
	m³/h	3.2	4.3	5.0	8.3	12.9	19.5	20.2	34.1	51.6	80.7	140.0	205.2
	Cv	11.6	19.1	32.5	56.4	73.1	81	87	174	208	324	520	832

## Installation

DISCAL units may be used in both heating and 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 must be installed vertically. In installation conditions where inspection is not possible, it is recommended that the venting valve cap is replaced by a Caleffi part number R59681 hygroscopic safety cap.

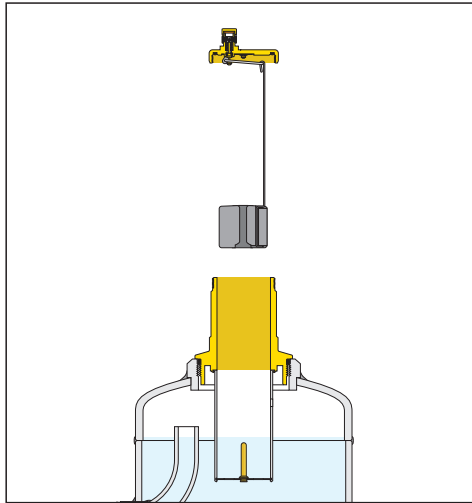
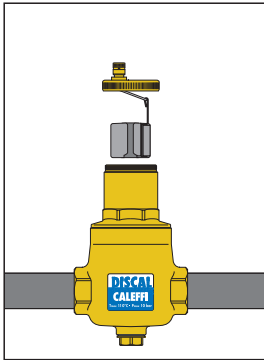


## Construction details

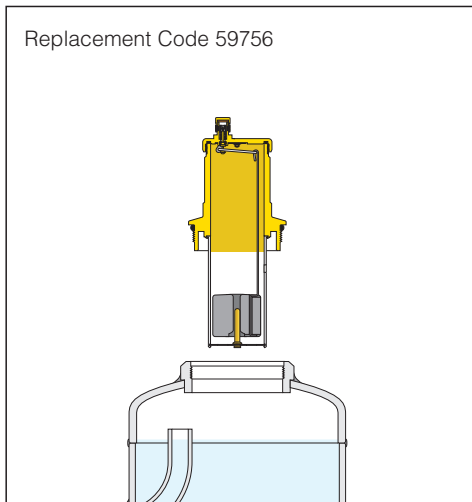
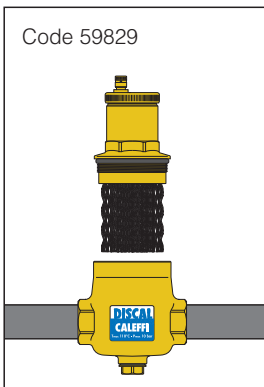
DISCAL devices are constructed in such a way as to allow maintenance and cleaning operations to be carried out without having to remove the valve body from the pipework. All valves are fitted with a bottom connection for installing a drain valve. All internal air release control components are fully accessible in all the models.

The automatic air release valve, 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.

- The moving parts that control the air venting are accessed simply by removing the upper cover.



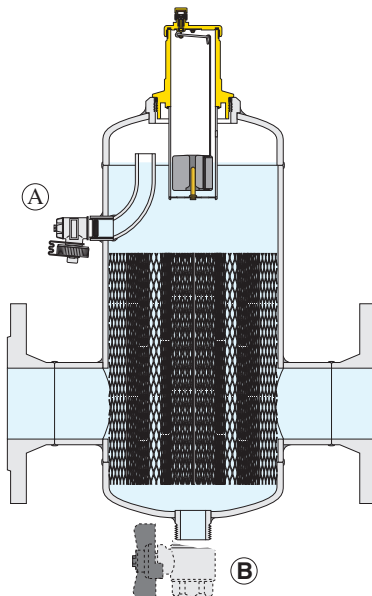
- When cleaning, simply unscrew the portion of the body containing the automatic air vent valve.



The air eliminators with flanged connections have an integral drain point (A), which has two functions:

1. To aid the removal of air while filling the system during the commissioning stage.
2. To aid the removal of any debris that may float within the air eliminator.

A 1/2" drain port fitted to the base of the device (B) provides the capability to remove any debris that has settled at the bottom of the air eliminator with drain valve part number 538402 FD.



## Accessories



Check valve code 561402A for expansion tanks. 1/2" NPT connections.



Hygroscopic safety vent cap code R59681.



Small anti-vacuum vent cap code 562100.



Replacement Discal air vent cap code 59119.



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