

The PALMER range of separators are designed to automatically remove air and dirt from heating cooling and process systems, ensuring optimum performance of your equipment at all times. These should be installed in all new buildings and can be retro-fitted into existing systems, to provide economic and environmental benefits.

Separators should be installed in any sizable open or closed loop system, including chilled water systems, condenser water systems, and process water systems.

We offer six different standard configurations to ensure we can provide the best solution for your application.

1) Air and Dirt Separator: Combined units used in pipelines to efficiently remove air, micro bubbles and particles.

2) Air and Dirt Separator with removable element: Removable flange to facilitate easy cleaning and maintenance.

3) Dirt Separator: Used in pipelines to remove impurities and particles.

4) Dirt Separator with removable element: Removable flange to facilitate easy cleaning and maintenance.

5) Air Separator: Used in pipelines to remove air and micro bubbles.

6) Balancing Tank with Air and Dirt Separator: A combination of the above units, plus facilitating proper mixing to keep the flow in the boiler and distribution circuits the same, providing optimum hydraulic balance.

- All units are designed and manufactured in accordance with Pressure Equipment Directive 97/23/EC, 1997.
- Larger units up to DN600 are available to order.



Separator Specification	
Body	Carbon Steel - ST17
Connections	Standard: Flanged PN16 Other versions available to order
Max. Working Temperature	110°C
Max Working Pressure	10 Bar
Internal Element	AISI 304 Stainless Steel

Air Vent Specification	
Body	Brass
Connections	Screwed
Max. Working Temperature	110°C
Max Working Pressure	10 Bar
Float	Polypropylene



air and dirt separator

CODE	SIZE	WEIGHT
ADS2F	DN50	17 kg
ADS212F	DN65	18 kg
ADS3F	DN80	38 kg
ADS4F	DN100	40 kg
ADS5F	DN125	62 kg
ADS6F	DN150	67 kg
ADS8F	DN200	150 kg
ADS10F	DN250	300 kg
ADS12F	DN300	545 kg



air and dirt separator de-mountable

CODE	SIZE	WEIGHT
ADSM2F	DN50	37 kg
ADSM212F	DN65	38 kg
ADSM3F	DN80	61 kg
ADSM4F	DN100	63 kg
ADSM5F	DN125	102 kg
ADSM6F	DN150	107 kg
ADSM8F	DN200	207 kg
ADSM10F	DN250	373 kg
ADSM12F	DN300	624 kg



dirt separator

CODE	SIZE	WEIGHT
DS2F	DN50	15 kg
DS212F	DN65	16 kg
DS3F	DN80	28 kg
DS4F	DN100	30 kg
DS5F	DN125	62 kg
DS6F	DN150	65 kg
DS8F	DN200	120 kg
DS10F	DN250	230 kg
DS12F	DN300	400 kg



dirt separator de-mountable

CODE	SIZE	WEIGHT
DSDM2F	DN50	35 kg
DSDM212F	DN65	36 kg
DSDM3F	DN80	51 kg
DSDM4F	DN100	53 kg
DSDM5F	DN125	102 kg
DSDM6F	DN150	105 kg
DSDM8F	DN200	177 kg
DSDM10F	DN250	303 kg
DSDM12F	DN300	479 kg



air separator

CODE	SIZE	WEIGHT
AS2F	DN50	15 kg
AS212F	DN65	16 kg
AS3F	DN80	28 kg
AS4F	DN100	30 kg
AS5F	DN125	62 kg
AS6F	DN150	65 kg
AS8F	DN200	120 kg
AS10F	DN250	230 kg
AS12F	DN300	400 kg



Hydraulic balance with air and dirt separator

CODE	SIZE	WEIGHT
ADS2F	DN50	17 kg
ADS212F	DN65	18 kg
ADS3F	DN80	38 kg
ADS4F	DN100	40 kg
ADS5F	DN125	62 kg
ADS6F	DN150	67 kg
ADS8F	DN200	150 kg
ADS10F	DN250	300 kg
ADS12F	DN300	545 kg



air vent valve

The automatic air vent is included with the separators and is also available as a separate unit. The high flow vent will efficiently and quickly remove large amounts of air that would otherwise get trapped in the high points or dead ends of pipework.

CODE	SIZE	WEIGHT
AVV12	½" BSPF	1 kg



During fabrication and installation of a new system there will be a build-up of dirt and once the system is in operation there will be an accumulation of scale and particles from corrosion caused by entrained air.

BENEFITS OF INSTALLING A DIRT SEPARATOR:

- More cost effective systems
- Longer life-span of pumps and other equipment
- Save time and money on commissioning and bleeding the system
- Reduce water losses from flushing
- Energy savings
- Reduce emissions
- Reduce carbon footprint
- Reduce wastage of chemicals (removing dirt makes the chemicals more effective)
- Reduce system noise
- Lower maintenance costs
- Dirt can be discharged while the system is in operation
- No shut off valves or bypass are required
- Cleaning only takes seconds



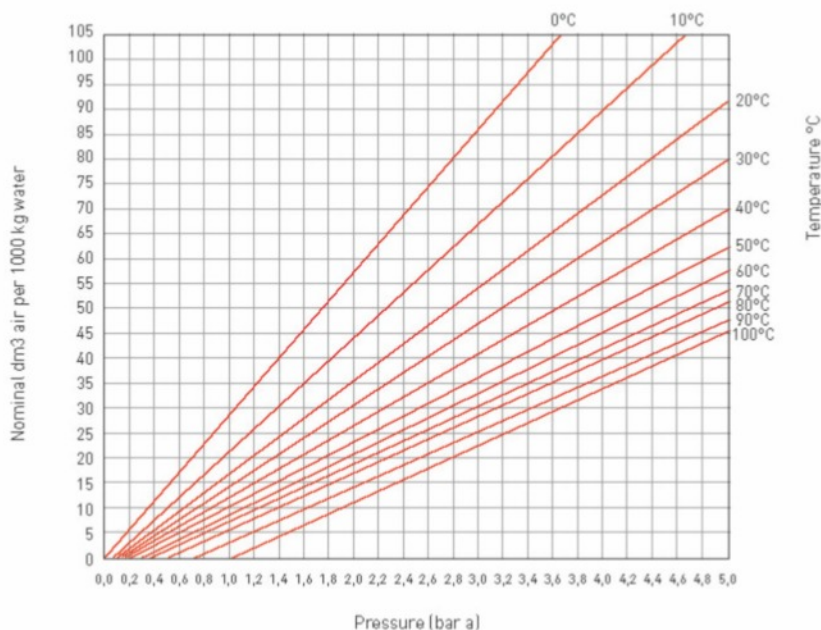
Air is always present before filling a system. When the system gets filled this air then gets trapped within it. Unless this air is removed, this will result in inefficient system operation and causes high maintenance costs.

SOME OF THE MANY BENEFITS INCLUDE:

- Reduced noise in radiators, heat exchangers, pipework and pumps
- Decreased wear and tear of heat exchangers, controllers, shut-off valves and pumps
- Greater heat emissions or cooling efficiency
- Energy savings
- Greatly reduces manual venting times
- Lower maintenance costs
- Less system corrosion



Figure 1



AIR IN HEATING SYSTEMS

The amount of air which is dissolved in water is dependent on both temperature and pressure within the system. As temperature rises or pressure falls, air that is dissolved in the water is released (Figure1).

During boiler operation micro bubbles are released continuously. When high temperatures occur at the combustion chamber wall of the boiler, micro bubbles are released in the water. Micro bubbles should be removed immediately upon leaving the boiler to experience the benefits listed above.

AIR IN COOLING SYSTEMS

In a cooling system it is a reduction in system pressure that mostly causes the formation of air bubbles. Also, when the temperature of the water in the coil is reduced, some of the air bubbles will dissolve into the water. To prevent cavitation damage to the pump these air bubbles should be released from the system as early in the system as possible.



Air & dirt separators should be used in both heating and cooling systems. For optimum results, the flow velocity should be less than 1.5 metres / second. If the flow velocity is above 1.5m/s, the separators' efficiency will be reduced.

The following two installation examples may help in selecting the correct size unit (Figure 1):

1. If the separator is installed in a low pressure, high temperature situation, the velocity should be 1.5m/s.

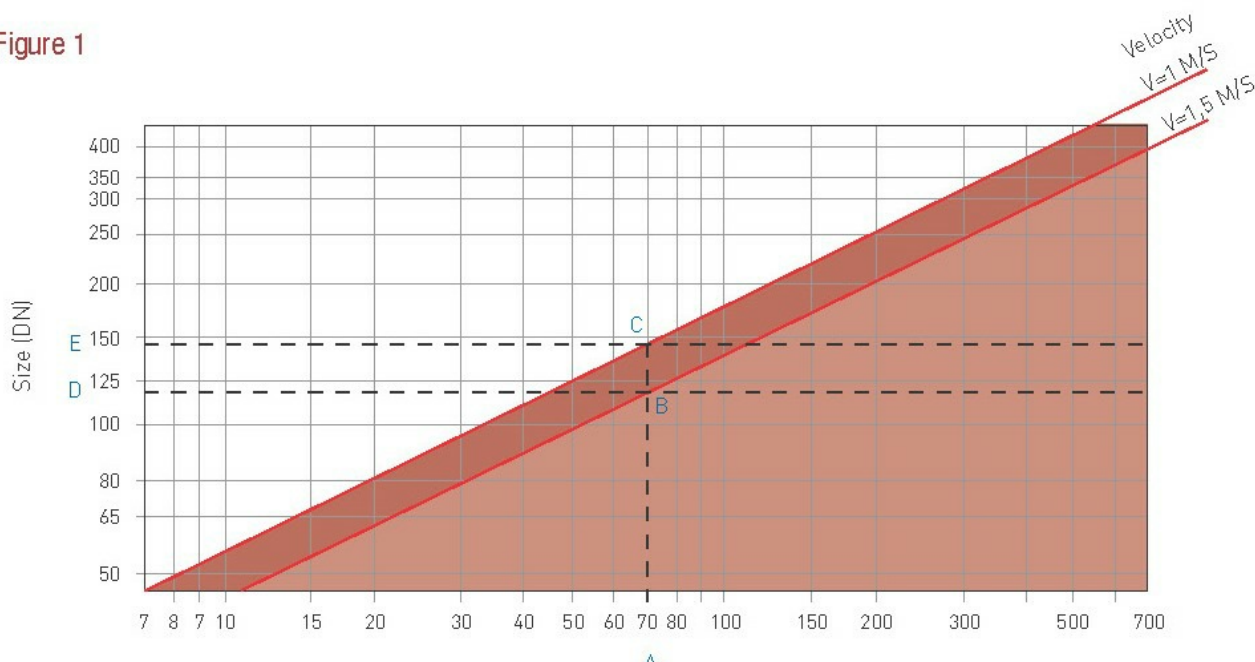
- On the 'Flow' axis at point A (70m³/hr), move vertically to point B on the 1.5m/s water velocity curve.
- Move left from point B to point D on the 'Dimensions' axis.
- Choose the nearest dimension that is higher than point D. In this example you would select DN125.

2. If the separator is installed in a high pressure, high temperature situation, for example in a basement, the velocity should be 1m/s.

- On the 'Flow' axis at point A (70m³/hr), move vertically to point B on the 1m/s water velocity curve.
- Move left from point C to point E on the 'Dimensions' axis.
- Choose the nearest dimension that is higher than point D. In this example you would select DN150.



Figure 1



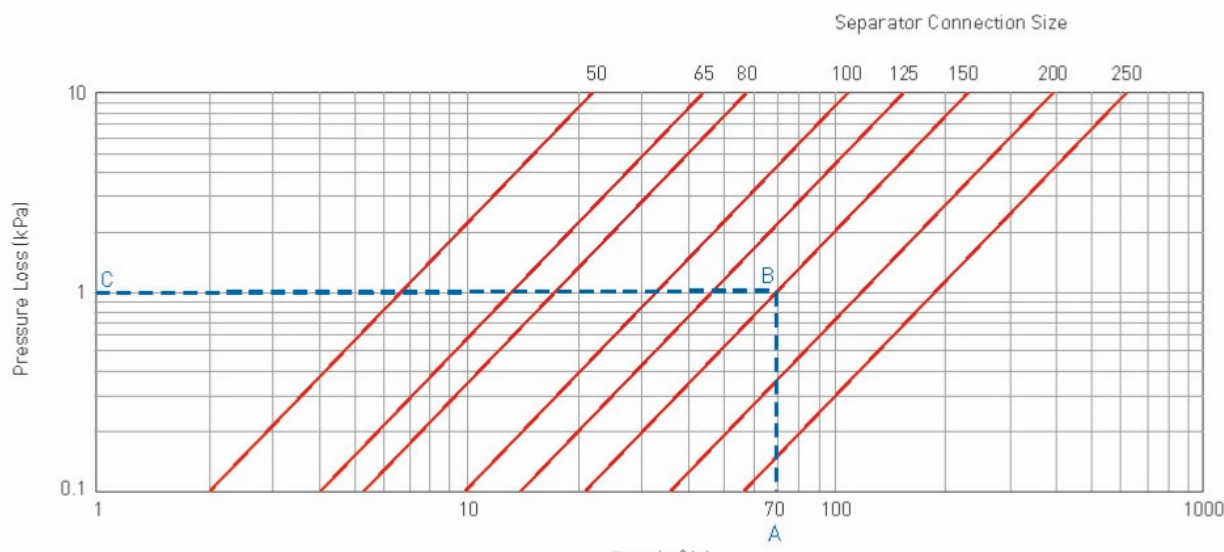
Use the chart below to determine the pressure across your chosen separator:

Pressure loss example:

When the water flow is 70m³/hr, the pressure loss for the DN150 dirt and air separator is 1kPa.

- On the 'Flow' axis at point A (70m³/hr), move vertically to point B on the DN150 line.
- Move left from point B to point C on the 'pressure loss' axis. In this example the pressure loss would be 1kPa.

Figure 2





ADS

ADS

Combined air and dirt separators can be used instead of individual deaerators and dirt separators. These combined units are very efficient and extremely cost effective, becoming the preferred standard option throughout the industry. In heating systems, the units should be installed in the flow loop, situated immediately after the boiler and prior to the pump. In a chilled water system the unit must be located in the return loop close to the chiller.

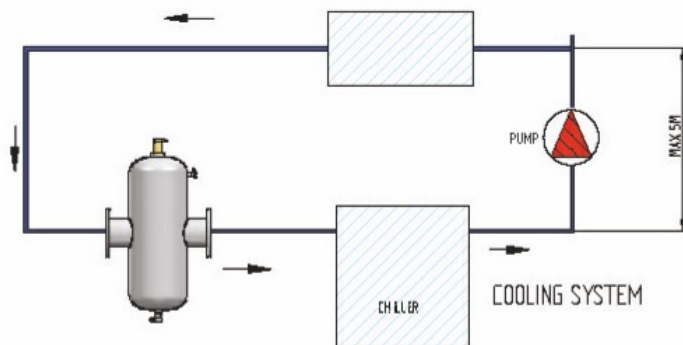
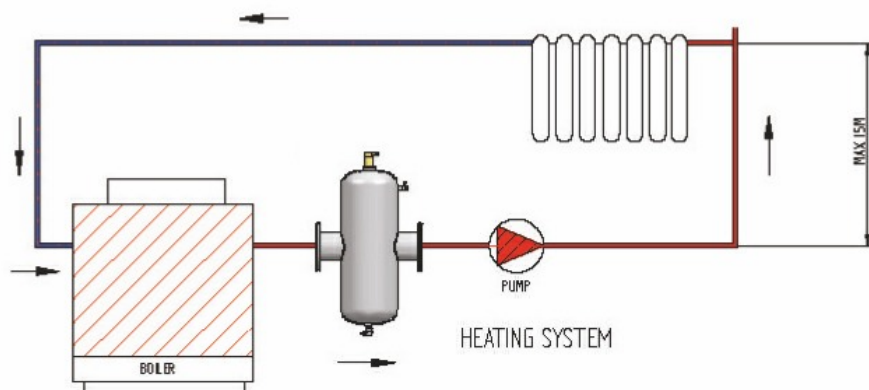
ASDSDM

The static head must not exceed 15 metres for a heating system and 5 metres for a cooling system. The efficiency of the unit will be reduced if:

- System static head exceeds 15 metres.
- System flow velocity exceeds 1.5m/second.



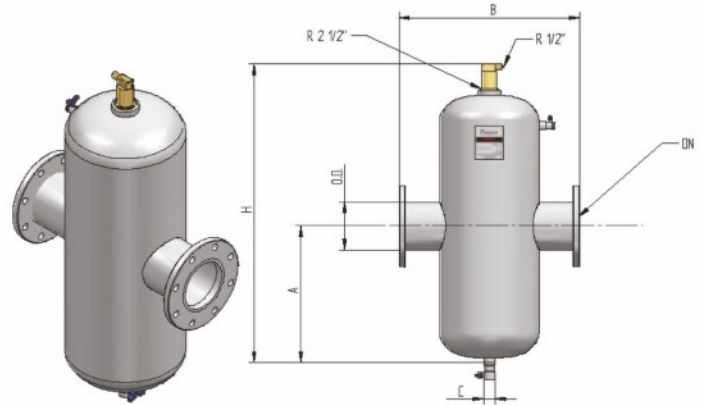
ASDSDM De-mountable



ADS air & dirt separator

Pipework connection PN16. Other special order versions available on request. □

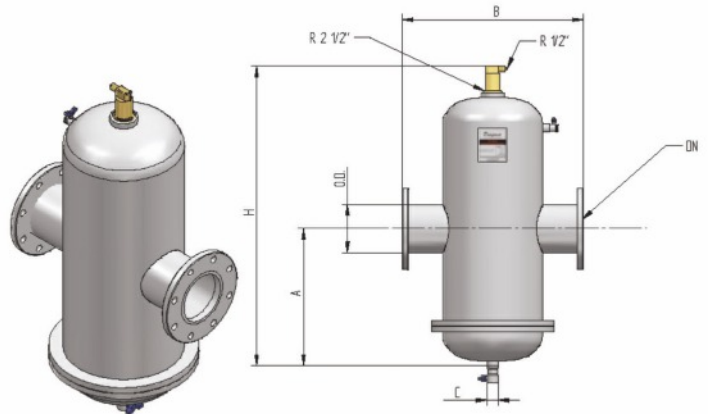
MODEL	DN (mm)	OD (mm)	A (mm)	B (mm)	C (inch)	H (mm)	FLOW (m ³ /h @ 1m/sV)	VOL. (Litres)	WEIGHT (Kg)
ADS2	50	60	265	350	1"	630	8	7	17
ADS212	65	76	265	350	1"	630	15	7	18
ADS3	80	88	345	470	1"	790	20	25	38
ADS4	100	114	345	475	1"	790	30	25	40
ADS5	125	139	480	635	1"	1050	50	75	62
ADS6	150	168	480	635	1"	1050	75	75	67
ADS8	200	219	615	775	1"	1320	125	150	150
ADS10	250	273	815	890	2"	1720	200	300	300
ADS12	300	323	970	1005	2"	2020	275	500	545



ASDSDM air & dirt separator de-mountable

Pipework connection PN16. Other special order versions available on request. □

MODEL	DD (mm)	OD (mm)	A (mm)	B (mm)	C (inch)	H (mm)	FLOW (m ³ /h @ 1m/sV)	VOL. (Litres)	WEIGHT (Kg)
ASDSDM2	50	60	265	350	1"	630	8	7	17
ASDSDM212	65	76	265	350	1"	630	15	7	18
ASDSDM3	80	88	345	470	1"	790	20	25	38
ASDSDM4	100	114	345	475	1"	790	30	25	40
ASDSDM5	125	139	480	635	1"	1050	50	75	62
ASDSDM6	150	168	480	635	1"	1050	75	75	67
ASDSDM8	200	219	615	775	1"	1320	125	150	150
ASDSDM10	250	273	815	890	2"	1720	200	300	300
ASDSDM12	300	323	970	1005	2"	2020	275	500	545





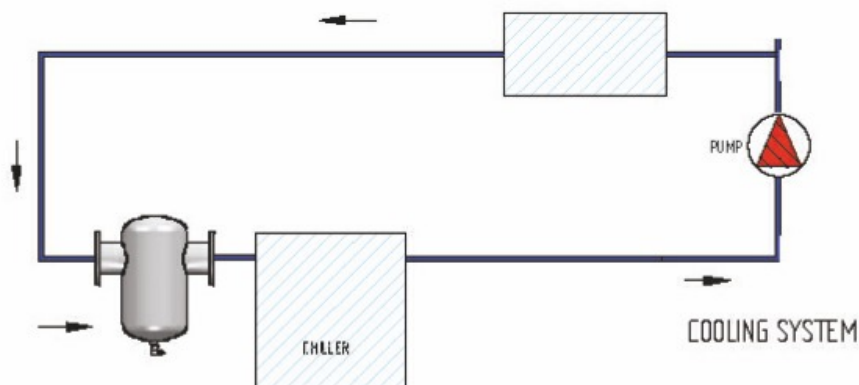
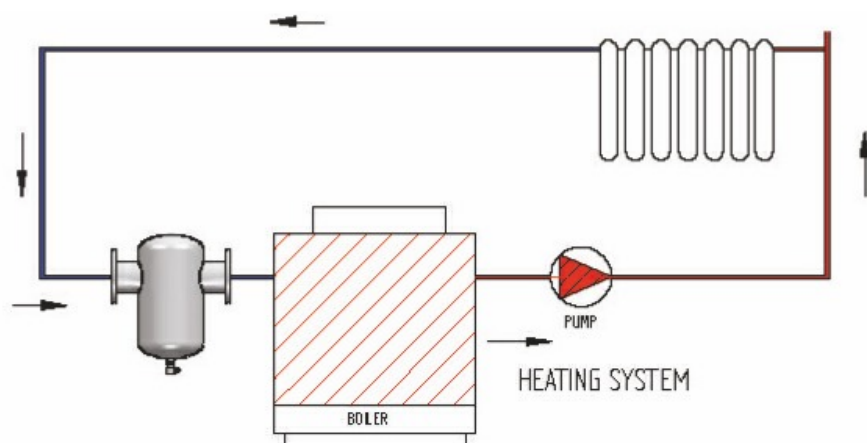
Dirt separators are designed to remove impurities and particles. These units should always be installed in systems before equipment that requires protection from dirt and sludge, such as boilers, chillers, control valves and pumps. In heating systems this should be in the return loop close to the boiler. In a chilled water system the unit should be located in the return loop close to the chiller. Periodic draining of the CXP unit will keep the system free of impurities, prolonging the life of other installed equipment.

The static head must not exceed 15 metres for a heating system and 5 metres for a cooling system. The efficiency of the unit will be reduced if:

- System static head exceeds 15 metres.
- System flow velocity exceeds 1.5m/second.



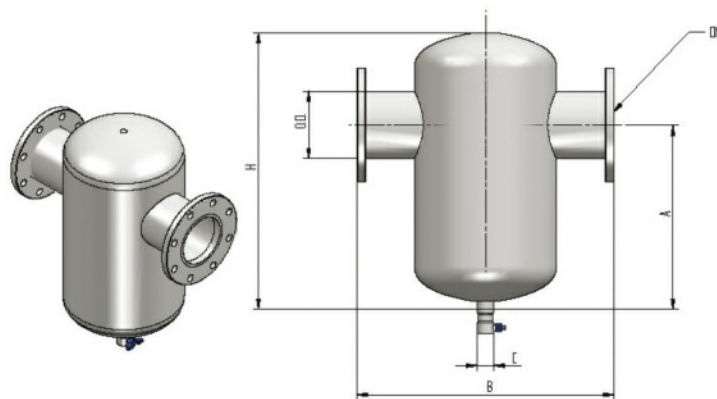
De-mountable



DS MODEL dirt separator

Pipework connection PN16. □

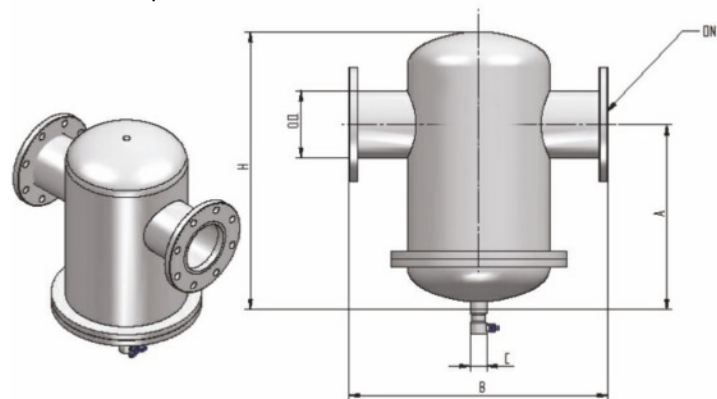
MODEL	DD (mm)	OD (mm)	A (mm)	B (mm)	C (inch)	H (mm)	FLOW (m ³ /h @ 1m/sV)	VOL. (Litres)	WEIGHT (Kg)
DS2	50	60	270	350	1"	395	8	5	15
DS212	65	76	260	350	1"	395	15	5	16
DS3	80	88	355	470	1"	515	20	17	28
DS4	100	114	345	475	1"	515	30	17	30
DS5	125	139	475	635	1"	690	50	50	62
DS6	150	168	460	635	1"	690	75	50	65
DS8	200	219	615	775	1"	900	125	100	120
DS10	250	273	800	890	2"	1145	200	200	230
DS12	300	323	955	1005	2"	1360	275	363	400



DS MODEL dirt separator de-mountable

Pipework connection PN16. Other special order versions available on request. □

MODEL	DD (mm)	OD (mm)	A (mm)	B (mm)	C (inch)	H (mm)	FLOW (m ³ /h @ 1m/sV)	VOL. (Litres)	WEIGHT (Kg)
DSDM2	50	60	270	350	1"	395	8	5	35
DSDM212	65	76	260	350	1"	395	15	5	36
DSDM3	80	88	355	470	1"	515	20	17	51
DSDM4	100	114	345	475	1"	515	30	17	53
DSDM5	125	139	475	635	1"	690	50	50	102
DSDM6	150	168	460	635	1"	690	75	50	105
DSDM8	200	219	615	775	1"	900	125	100	177
DSDM10	250	273	800	890	2"	1145	200	200	303
DSDM12	300	323	955	1005	2"	1360	275	363	479

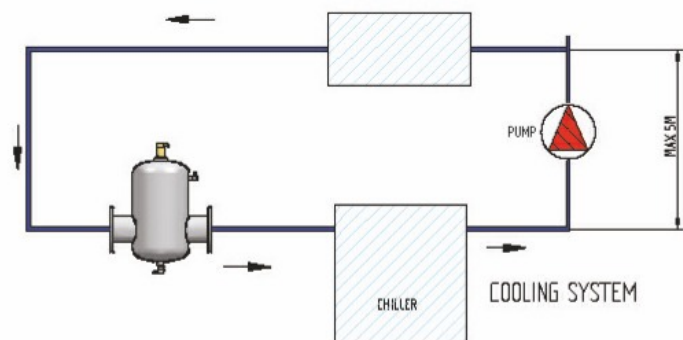
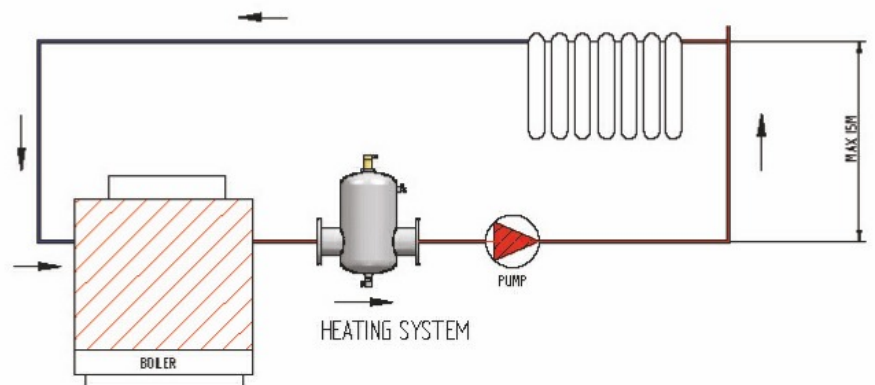


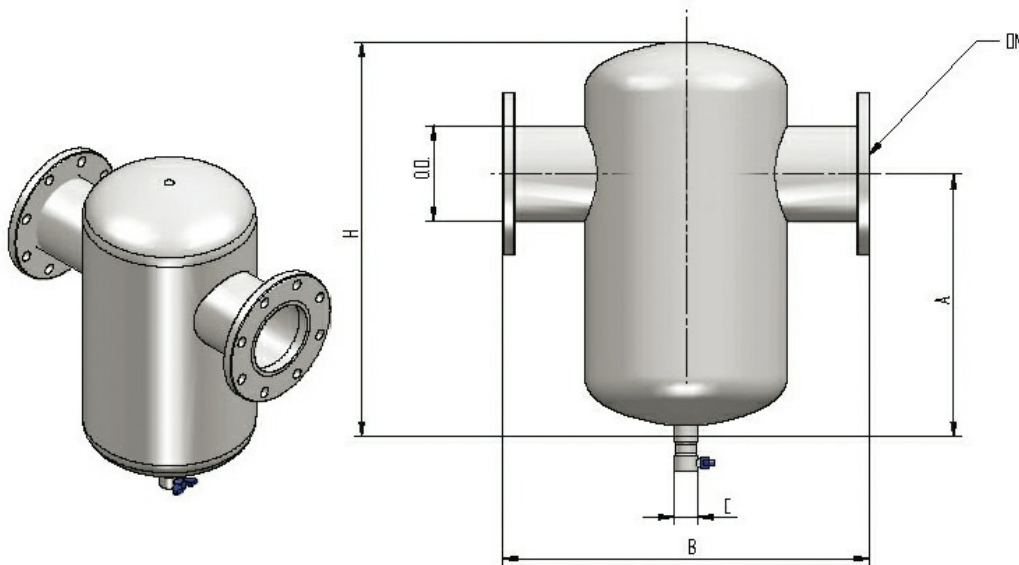


Palmer air separator units are installed to efficiently remove air and micro bubbles from the system. In heating systems, an air separator should be installed in the flow loop where the system experiences the highest temperature (next to the heat source) and lowest pressure. Air separators should ideally be installed immediately after the boiler and prior to the pump suction port as this is where the formation of micro bubbles is greatest. In a chilled water system the unit must be located in the return loop just prior to the chiller.

The static head must not exceed 15 metres for a heating system and 5 metres for a cooling system. The efficiency of the unit will be reduced if:

- System static head exceeds 15 metres.
- System flow velocity exceeds 1.5m/second.





AAS MODEL air separator

Pipework connections PN16. □

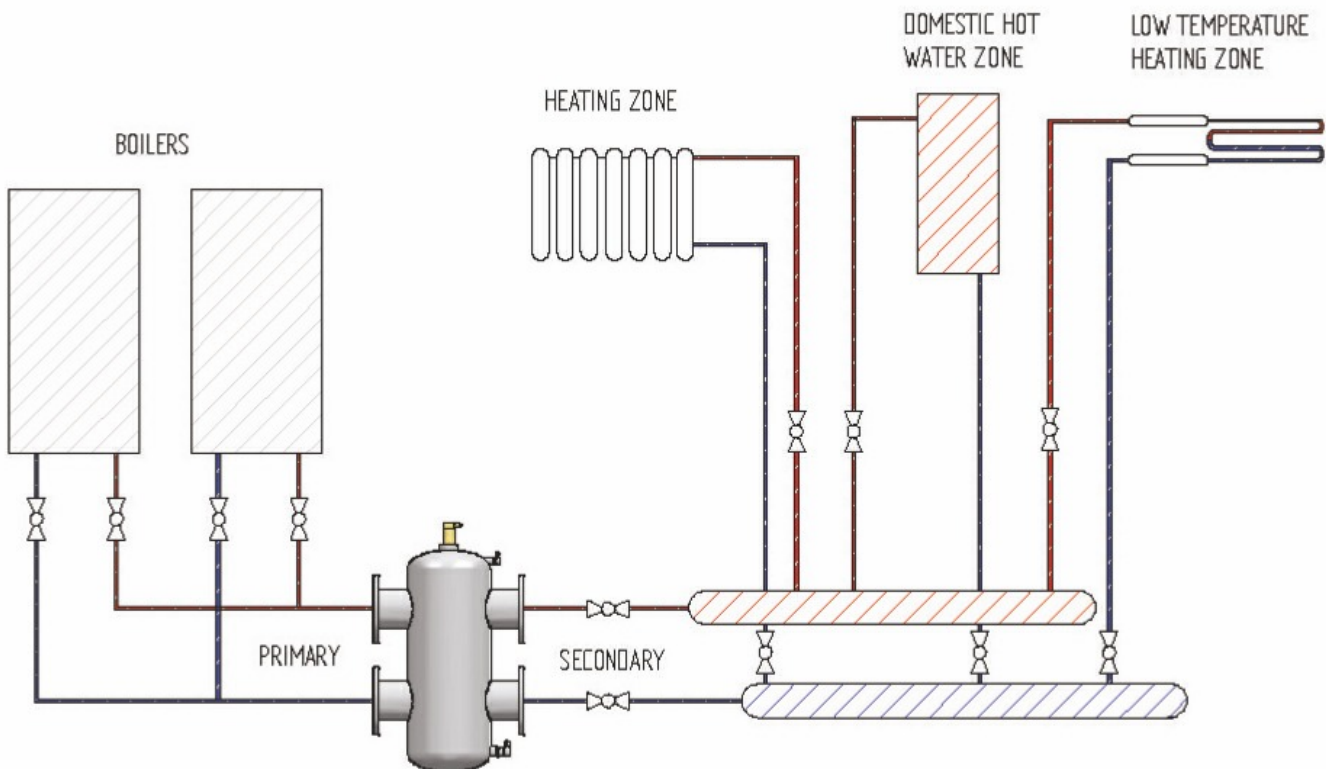
MODEL	DD (mm)	OD (mm)	A (mm)	B (mm)	C (inch)	H (mm)	FLOW (m ³ /h @ 1m/sV)	VOL. (Litres)	WEIGHT (Kg)
AAS2	50	60	115	350	½"	470	8	5	15
AAS212	65	76	125	350	½"	470	15	5	16
AAS3	80	88	150	470	½"	590	20	17	28
AAS4	100	114	160	475	½"	590	30	17	30
AAS5	125	139	205	635	½"	760	50	50	62
AAS6	150	168	220	635	½"	760	75	50	65
AAS8	200	219	275	775	1"	1220	125	100	120
AAS10	250	273	330	890	1"	1220	200	210	230
AAS12	300	323	385	1005	1"	1420	275	360	400

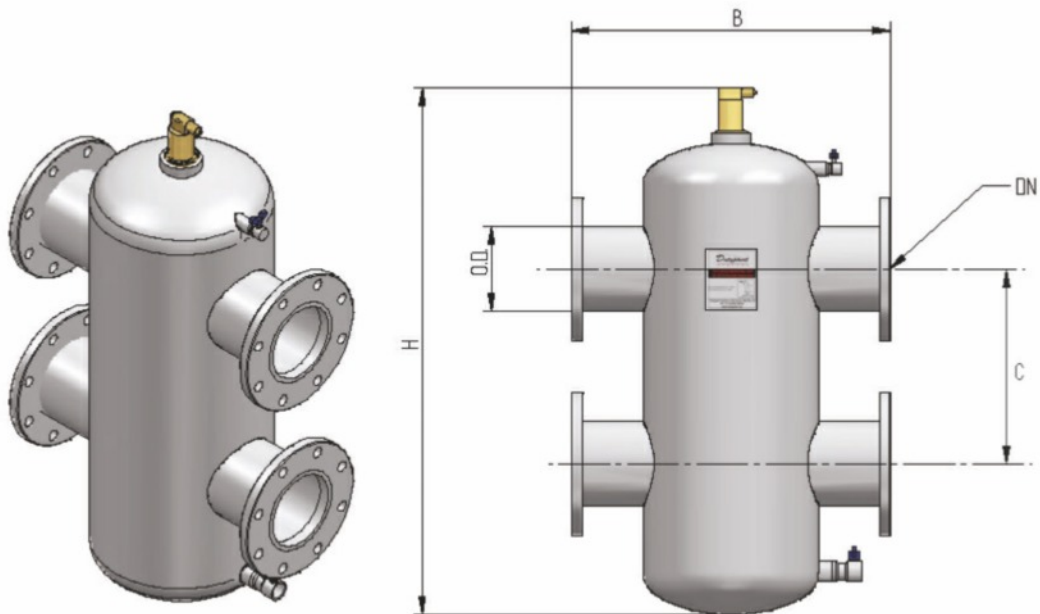




This unit combines the benefits of a deaerator, a dirt separator and a hydraulic balancing tank in one unit. This can be used instead of an individual deaerator and dirt separator, incorporating the added advantage of creating a perfect hydraulic balance between the primary and secondary circuits.

The importance of having a well-balanced system cannot be over-emphasised, as this greatly reduces energy consumption and increases boiler or chiller efficiency. It is vastly more cost effective to purchase this combined unit rather than individual items - saving both initial cost and time on installation.





HBAD MODEL hydraulic balancing with air and dirt separator
Pipework connections PN16. □

MODEL	DD (mm)	OD (mm)	B (mm)	C (mm)	H (mm)	FLOW (m ³ /h @ 1m/sV)	VOL. (Litres)	WEIGHT (Kg)
HBAD2	50	60	350	240	630	8	7	17
HBAD12	65	76	350	305	630	15	7	18
HBAD3	80	88	470	360	790	20	25	38
HBAD4	100	114	475	460	790	30	25	40
HBAD5	125	139	635	560	1050	50	75	62
HBAD6	150	168	635	670	1050	75	75	67
HBAD8	200	219	775	870	1320	125	150	150
HBAD10	250	273	890	1100	1720	200	300	300
HBAD12	300	323	1005	1300	2020	275	500	545