

## HYDROCLEAN® CS Condensate Separators

CSF15, CSF30 & CSF55 Replacement Filter Modules are available separately.

HYDROCLEAN® Model CS150 shown with 15 gallon CSF15 Filter Module



CSF55  
55 Gallon Capacity for CS550



CSF30  
30 Gallon Capacity for CS300



CSF15  
15 Gallon Capacity for CS150



## HYDROCLEAN® CSC Condensate Separator Converter

HYDROCLEAN® Model CSC050 thru CSC550 are designed to be added to any Gravity System to **CONVERT** it to a Condensate Separator. Add the CSC Converter Unit with Filter Module and turn these OWS models **or a competitive gravity system** into a HYDROCLEAN® Condensate Separator.



HYDROCLEAN® Model CSC150 with 15 gallon CSF15 Filter Module



HYDROCLEAN® Model OWS150 15 gallon Gravity System

HYDROCLEAN® Model OWS600 60 gallon Gravity System

## HYDROCLEAN® OWS Oil Water Separators

HYDROCLEAN® Model OWS300 30 gallon Gravity System

# *Flair HYDROCLEAN® Condensate Separator*

## *Why Use a Condensate Separator?*

By using a condensate separator your waste removal costs can be dramatically reduced. When utilizing the technology of the Hydroclean CS and CSC, the contaminants that would be sent for disposal are minimal compared to the gallons of contaminated condensate that a single compressor can produce. Consider, a typical 100HP air compressor can produce as much as 6.9 gallons of condensate per hour at 90°F ambient and 90% RH. With the unique design of the Hydroclean Filter Module, 98% of the condensate is water and is drained off safely. We recommend testing the discharge fluid before sending it to local sewers to ensure compliance to local codes. The 2% remaining contaminant is entrained in the filter for proper disposal.

Traditional gravity type separators do very well in separating oils that have good separation characteristics. However, many compressor oils do not fully separate. These types of oils, known as emulsions, tend to foul-up the carbon filters as well as the pre-adsorption and coalescing medias that are commonly installed in front of the carbon filters. Those filters have to be replaced before their capacity is fully used. The Hydroclean CS and CSC were designed to address the shortcomings of traditional gravity separators.

## *What the HYDROCLEAN® CS & CSC Units Do*

The Hydroclean CS was designed to effectively separate emulsified compressor condensate to levels of 15 PPM or less without premature element failure and backup spillages. To do this, the Hydroclean CS uses two very unique features.

**First**, the delivery system has a pneumatically operated pump that is used to feed the filter module. The use of pressure assures the filter will not clog.

**Second**, the Filter Module contains a specially formulated zeolite adsorbent. The substrate is coated with a hydrophobic compound. This combination gives the media an ability to hold up to four times the amount of oil that standard activated carbon can hold.

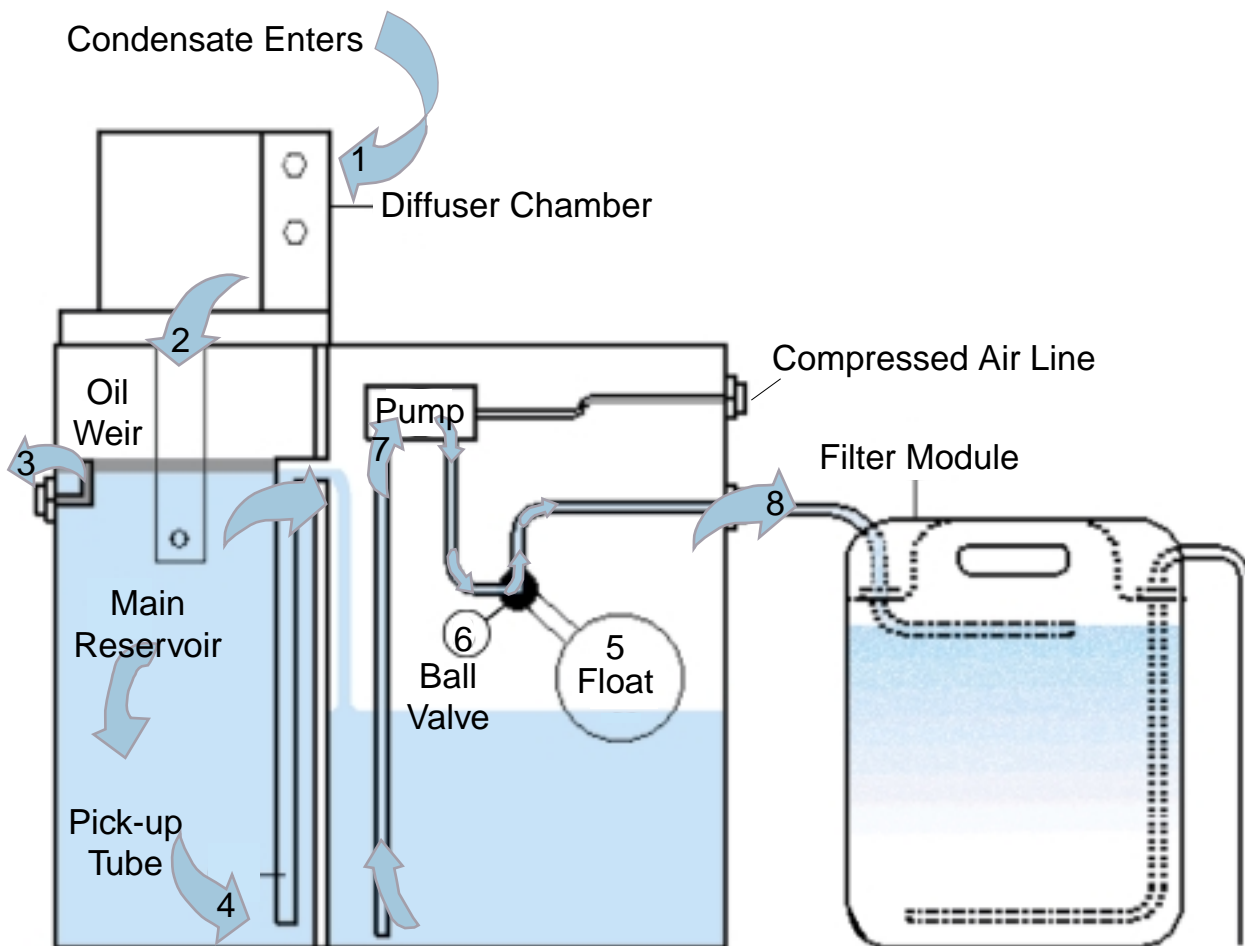
The system only requires compressed air to operate the diaphragm pump and is only used when the level of condensate rises enough to operate the pump. The system is reliable because there are only two moving parts.

The filter modules are available in three different sizes. The same delivery system is used for each filter module. Thus, an expanded air system may only require a larger filter module. Once spent, there are no messy bags to dispose of. The containers are totally self-contained and easily transported by use of a fork lift handle located on the container.

A CSC unit converts a gravity separator into a condensate separator. When attached to the outlet of a gravity system the CSC unit can serve two purposes. If your compressor system has switched lubricants and your gravity system no longer works, the CSC unit will convert it to accommodate the new lubricant. In addition to conversion the CSC unit also allows multiple lubricants to be processed. In the case of multiple compressors the condensate generated could be a wide range of specific gravities. The CSC unit bridges the gap by working in conjunction with a gravity system. The condensate entering the gravity system with a specific gravity less than water will separate off, while condensate with a specific gravity greater than water will continue to the CSC unit and Filter Module to be processed.

## Flair HYDROCLEAN® CS Operation

The condensate enters the (1) **Diffuser Chamber** where it is depressurized. The oily condensate then enters a (2) **Main Reservoir** where sedimentation occurs. Any oil that floats to the surface can be skimmed off through an adjustable (3) **Oil Weir**. The condensate then moves to a separate chamber through a (4) **Pick-Up Tube**. As the condensate accumulates in the next chamber, a (5) **Float** rises with the level of condensate. The float is connected to a (6) **Ball Valve** by a lever arm. The increased level of condensate causes the float to rise and open the ball valve. As the valve opens, the air-operated (7) **Pump** is allowed to push the condensate out to the (8) **Filter Module**. If the level of condensate continues to rise, the float also rises and further opening the ball valve. This results in additional condensate being pushed to the filter module. Thus, the system will self adjust to the quantity of condensate entering the system. This system assures maximum contact time for the filter module.



# *Flair HYDROCLEAN® Oil Water Separator*

## *Why Use an Oil Water Separator?*

The benefit of using an oil water separator starts at lowering your waste removal costs. The OWS performs best on lubricants that have good separation characteristics, this is based on information from the lubricant manufacture. By knowing what type of lubricant your compressor systems use our factory trained personnel can recommend the best method of separation. We use the terms of a specific gravity greater than or less than that of water and soluble or insoluble. In general this will be accurate there are some exceptions (please consult the factory for application and sizing).

## *What the HYDROCLEAN® OWS Does*

The Hydroclean OWS provides an environment where the small percentage of an insoluble lubricant can rise to the surface to be skimmed off. Water that is displaced by fresh incoming condensate slowly sinks to the bottom, then rises to pass through our unique polar pre-absorber before finally being purified by activated carbon. From there, the clean water can be safely discharged to your sanitary sewer system.

Generally, lubricants that possess a specific gravity less than that of water tend to be ideal candidates for this type of system. Conversely, soluble lubricants such as ATF, detergent based Motor Oils and Polyglycol based coolants and some diesters do not separate well from water. When employed on these problematic lubricants, the filters do all of the work and have to be replaced frequently. Therefore, we do not recommend using the OWS product on insoluble applications. The Hydroclean CS Condensate Separator is especially designed for insoluble applications.

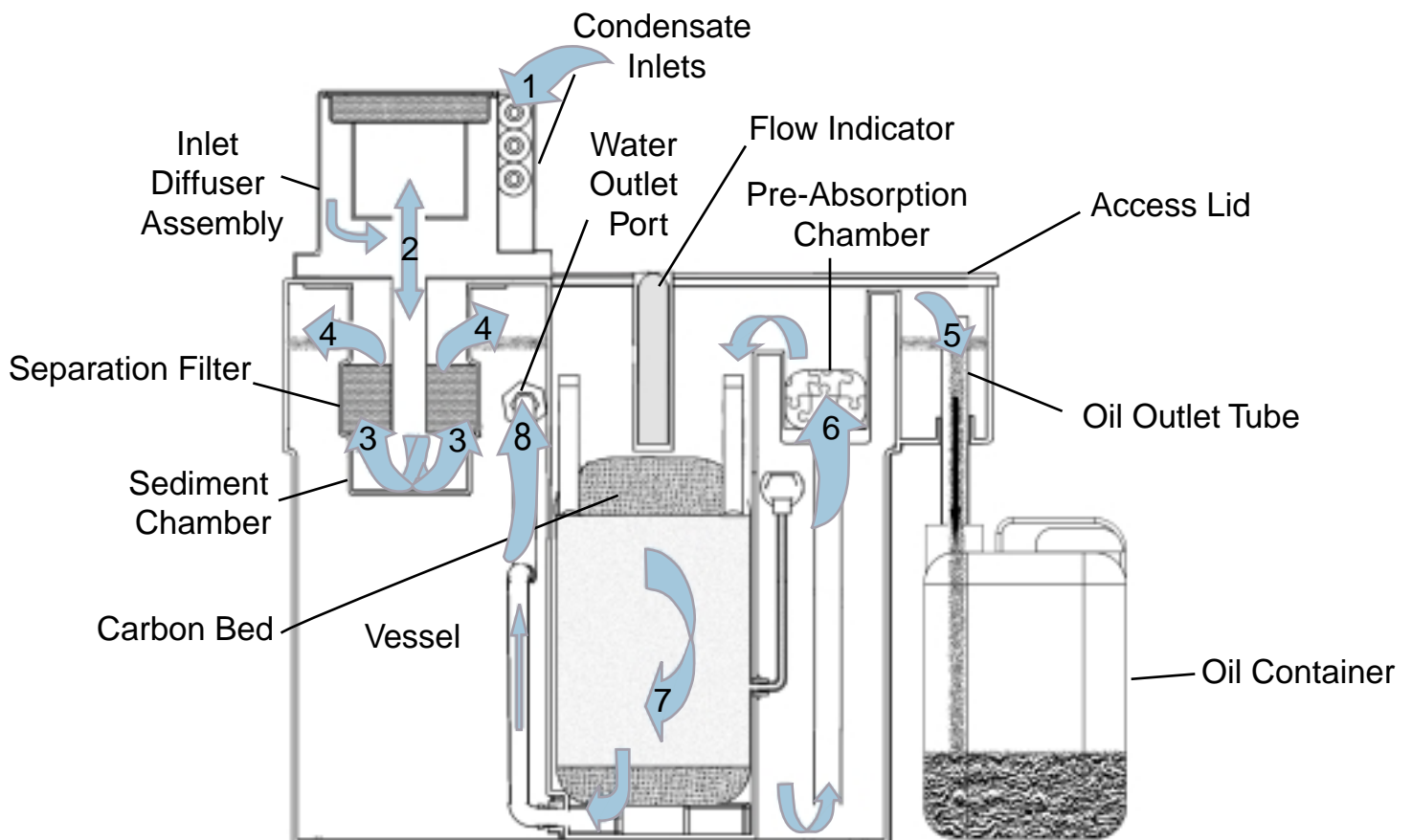
The Hydroclean CSC Condensate Separator Converter was especially designed to be added to a gravity system to help aide in the versatility of conventional gravity systems. If your compressor equipment has one or more of these problematic fluids or air borne contaminants, you may benefit from the technology found in our CS or CSC products. If you have multiple types of lubricants, using our OWS and adding the CSC unit can address the needs of multiple lubricants with different specific gravities. The combined condensate is first passed through the OWS and then through the CSC unit effectively removing a range of contaminants.

The Flair Hydroclean OWS is designed for 24 hour continuous, summer time operation. Our ratings are based on 90°F @ 90% RH. Even in summers hot, hazy and humid weather that can bring 238% more condensate than you get at 70°F/70% RH, the Hydroclean OWS will perform. Properly applied, installed and maintained, our OWS can separate the oil and discharge the water with less than 15 ppm of oil remaining. The following table shows how much condensate a typical 100 HP (500 cfm) air compressor (with a refrigerated dryer) can send to the OWS - every hour.

Degrees Fahrenheit / Relative Humidity	Gallons Per Hour
90°F / 90% RH	6.90
70°F / 70% RH	2.90

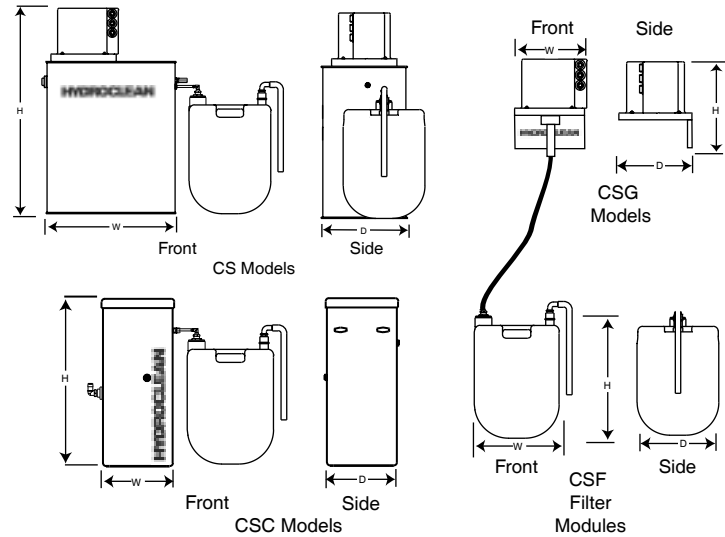
## Flair HYDROCLEAN® OWS Operation

Condensate is depressurized as it enters the Hydroclean OWS through the (1) **Condensate Inlets** in the **Inlet Diffuser Assembly**. Air is exhausted to atmosphere through the filter located in the top. Gravity draws the new condensate into the (2) **Sediment Chamber** and pushes the old condensate through the (3) **Separation Filter**. The separation filter causes fine oil droplets to coalesce which speeds up the separation process. It also prevents the dirt, rust and scale from leaving the sediment chamber. Both the oil and water enter the (4) **Vessel** through exit holes in the Sediment Chamber. Oil will float to the surface and then be removed via the (5) **Oil Outlet Tube** to the **Oil Container**. The water slowly sinks to the bottom of the Vessel. It rises through a tube and enters the (6) **Pre-Absorption Chamber** where our specially formulated filtration material breaks the emulsion to allow the condensate to be pre-cleaned before it flows down through the (7) **Carbon Bed** for final polishing. From there it exits the OWS via the (8) **Water Outlet Port** located conveniently at the back of the vessel. The translucent Oil Container is provided so you can easily see just how much oil has collected for disposal. The optional Level Minder offers you a remote Alarm System to warn you that the oil container is full and needs to be changed. The exclusive **Flow Indicator** pops-up and then stays up, to provide you with a visual indication that a reduced flow condition has occurred during operation. This provides you with time to respond and the easily removable **Access Lid** makes Carbon Bed removal quick and easy.



## Dimensional Specifications

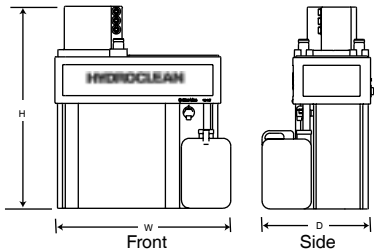
Models	H Inches	W Inches	D Inches	Weight
CS	38	24	16	50
CSC	27 1/2	11 1/2	11 1/2	15
CSG	16 1/2	12 Æ	13 Å	10
CSF05	15	12	10	32
CSF15	20	15	15	90
CSF30	29	19	19	200
CSF55	33	23	23	400



## Capacity Specifications

Condensate Separator Model Numbers	With Filter Module	Max. <sup>a</sup> CFM	Max. HP	Max. Oil Capacity Gal.	CFM @ 20 PSI	Air Inlet NPT	Condensate Inlet	Oil Outlet	Water Outlet	Total Weight
CSG050	CSF05	60	15	1 1/2	N/A	N/A	(3) 1/2"	N/A	Æ"	42
CSG150	CSF15	125	30	5	N/A	N/A	(3) 1/2"	N/A	Æ"	100
CS150	CSF15	250	50	5	< 0.35	Å"	(3) 1/2"	Æ"	Æ"	140
CS300	CSF30	560	100	12	< 0.35	Å"	(3) 1/2"	Æ"	Æ"	250
CS550	CSF55	1125	200	24	< 0.35	Å"	(3) 1/2"	Æ"	Æ"	450
CSC050	CSF05	60	15	1 1/2	< 0.35	Å"	Æ"	N/A	Æ"	47
CSC150	CSF15	250	50	5	< 0.35	Å"	Æ"	N/A	Æ"	105
CSC300	CSF30	560	100	12	< 0.35	Å"	Æ"	N/A	Æ"	215
CSC550	CSF55	1125	200	24	< 0.35	Å"	Æ"	N/A	Æ"	415

<sup>a</sup> Sizing is based on rotary screw type air compressor standards of 2-3 ppm carryover. Consult factory for proper sizing.



Model Number	Max. CFM Capacity <sup>a</sup>		H Inches	W Inches	D Inches	Inlet (3) NPT	Water Outlet	Oil <sup>b</sup> Gal.	Weight Lbs.
	90°F/90%RH	70°F/70%RH							
OWS150	150	357	30	26 1/2	19	1/2"	Æ"	2 1/2	53
OWS300	300	714	39	34	21	1/2"	Æ"	5	77
OWS600	600	1428	39	35	31	1/2"	1"	5	120
OWS1200	1200	2856	39	72	31	1/2"	(2) <sup>c</sup> 1"	(2) 5	240
OWS1800	1800	4284	39	109	31	1/2"	(3) <sup>c</sup> 1"	(3) 5	360
OWS2400	2400	5712	39	146	31	1/2"	(4) <sup>c</sup> 1"	(4) 5	480

<sup>a</sup> Sizing is based on rotary screw type air compressor standards of 2-3 ppm carry over.

<sup>b</sup> Waste oil container capacity

<sup>c</sup> Multiple OWS600's in line with equalizer



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