



**Donaldson**  
FILTRATION SOLUTIONS

**DS**

**OIL/WATER SEPARATORS**

Process Filtration



# LEADING THE WAY IN AIR PURIFICATION

As one of the world's leading manufacturers of compressed air purification equipment in the world, Donaldson® has built a comprehensive engineering, manufacturing, and customer support network to meet the most demanding applications. With over 30 years of expertise in compressed air filtration and separation technologies, Donaldson manufactures a complete line of oil/water separators to effectively and efficiently separate oil from compressed air condensate.

**The need for condensate management** occurs when liquid condensate is generating at several points throughout a compressed air system, including the outlet of the compressors itself, within accumulator tanks, cyclone separators, coalescing filters and refrigerated air dryers. Whenever condensate forms, it must be removed from the compressed air system and discharged in a manner that is both environmentally sound and economical.

The amount of condensate generated within a compressed air system can be surprising. As an example, a 500 scfm system operating in ambient conditions of 60°F and 65% relative condensate per hour. That condensate, however, will be generated at a number of points within the system. All of this condensate must be removed from the compressed air system. This is accomplished with the use of drain valves.\*

When oil is present, as with oil lubricated compressors, the condensate must be purified to legal levels of residual oil content before it can be discharged to public water treatment systems. Typically, the condensate level disposal depends on local ordinances.

**Donaldson DS oil/water separators** utilize gravity to separate oil/water mixtures and purify the condensate to a residual oil content of 20 ppm or lower. It is designed to meet or exceed those discharge levels as efficiently and economically as possible. The DS oil/water separator is available in seven models ranging from 70 to 4,240 scfm.



**DS oil/water separators**

\* For more information on the Donaldson condensate drain valves, please refer to respective brochure.

## FEATURES & BENEFITS

### REMOVABLE PRE-SEDIMENTATION TANK

Before liquid condensate enters the large settling tank, where oil separation will take place, it first passes through a removable pre-sedimentation tank. This allows solids to separate out before they can foul the larger tank. The pre-sedimentation tank is small enough to be removed easily for cleaning.



### TAPERED CARBON BAG CHAMBERS

DS oil/water separators utilize integrated carbon adsorbers to further purify condensate as it exits the settling tank. The chambers that hold these carbon bags are tapered for easier removal of the bags from the unit.



### PRE-ADSORBER PROTECTS CARBON ADSORBERS

To lengthen the life of the integral carbon adsorbers, DS oil/water separators are equipped with pre-adsorbers that protect the carbon adsorbers from liquid oil and other contaminants. This prefiltration greatly enhances the life of the adsorbers.

### MULTIPLE CONDENSATE CONNECTION PORTS

Each DS oil/water separator allows for up to four condensate sources to be connected.

### UNIQUE KNOB-ADJUSTABLE OIL DRAIN TRAY

Because oil content of condensate is not consistent from one plant to the next, DS oil/water separators incorporate an adjustable oil drain tray so that each unit can be fine-tuned to the needs of the specific facility where it is in operation. The unique design of this oil drain tray assures that the operator's hands do not come into contact with condensate while adjusting the unit.



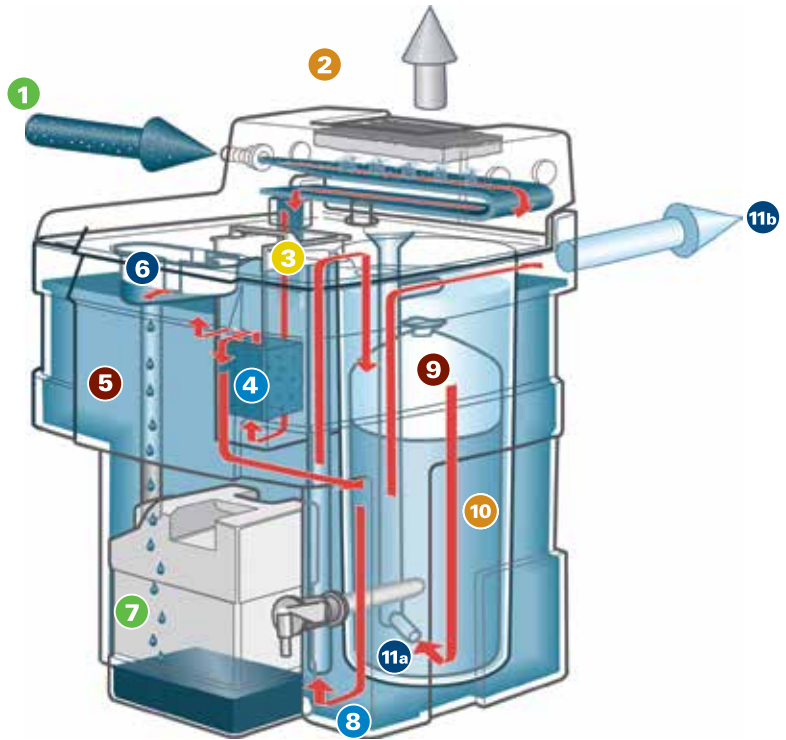
### WATER PURITY SAMPLE PORT AND TEST KIT

A sample port built into DS oil/water separators allows operators to draw a small sample of purified condensate into a clear jar for comparison against an etched reference glass, all of which are included with each unit.



# HOW THE DS OIL/WATER SEPARATOR WORKS

- 1 Liquid condensate and compressed air enter the pressure relief chamber at the top of the unit.
- 2 A foam coalescing pad captures condensate droplets that are entrained in the expanding and exhausted air stream, which exits the top of the unit.
- 3 Liquid condensate enters a removable pre-sedimentation chamber where solid particles are separated and captured.
- 4 Condensate exits the pre-sedimentation chamber by passing through a coalescing foam block which begins the process of oil-water separation.
- 5 Condensate flows into and fills the primary settling chamber where gravity separation of liquid oil and water takes place.
- 6 Separated oil is skimmed from the surface of the settling chamber through an adjustable oil drain tray.
- 7 Oil is captured in a removable container and held for proper disposal.
- 8 Separated water is drawn from the bottom of the settling chamber for final purification.
- 9 Separated water flows downward through a pre-adsorber that captures additional oil and protects the carbon bag(s) that follow.
- 10 Activated carbon removes oil to a residual level of 20 ppm or lower. Depending on the size of the unit, one or two carbon adsorption chambers will be present.
- 11a Purified water is drawn from the bottom of the carbon adsorption chamber and then either exits the unit 11b or passes into the second carbon adsorption chamber if present.



## SIZING

Consider these factors when sizing an oil/water separator:

- The capacity of the compressed air system
- The type of compressor in use
- The type of lubricant used by the compressor
- Whether or not a refrigerated air dryer is in use
- Ambient temperature
- Relative humidity

## DIMENSIONS AND SPECIFICATIONS

| Model Number | Compressor Capacity Nominal (scfm) | Volume (gal.) |              |                  |               | Dimensions (inches) |     |    | Weight (lbs) |
|--------------|------------------------------------|---------------|--------------|------------------|---------------|---------------------|-----|----|--------------|
|              |                                    | Vessel        | Pre-Adsorber | Activated Carbon | Oil Container | H                   | W   | D  |              |
| DS0070       | 70                                 | 6.6           | 0.2          | 0.8              | 0.7           | 22                  | 14  | 13 | 19           |
| DS0145       | 145                                | 13.2          | 0.9          | 2.1              | 1.3           | 26                  | 18  | 17 | 43           |
| DS0265       | 265                                | 19.8          | 1            | 3.2              | 2.6           | 29                  | 20  | 18 | 52           |
| DS0530       | 530                                | 39.6          | 1.3          | 2 x 2.9          | 5.3           | 33                  | 27  | 20 | 77           |
| DS1060       | 1,060                              | 79.2          | 1.5          | 2 x 4            | 5.3           | 39                  | 31  | 26 | 148          |
| DS2120       | 2,120                              | 159           | 2 x 1.5      | 4 x 4            | 2 x 5.3       | 39                  | 70  | 26 | 300          |
| DS4240       | 4,240                              | 317           | 4 x 1.5      | 8 x 4            | 4 x 5.3       | 39                  | 148 | 26 | 600          |

## MODEL SELECTION TABLE

| Maximum Compressor Capacity (cfm) for Moderate Climates* |  |               |                    |               |
|--|--|---------------|--------------------|---------------|
| Model  | Screw & Rotary Vane Compressors with Oil Injection Cooling |               | Piston Compressors |               |
|  | Mineral Oil  | Synthetic Oil | Mineral Oil        | Synthetic Oil |
| DS0070   | 71   | 71            | 71                 | 71            |
| DS0145   | 147  | 147           | 147                | 106           |
| DS0265   | 282  | 212           | 212                | 177           |
| DS0530   | 565  | 424           | 424                | 353           |
| DS1060   | 1131   | 848           | 848                | 707           |
| DS2120   | 2262   | 1696          | 1696               | 1413          |
| DS4240   | 4523   | 3392          | 3392               | 2827          |

\* Moderate climate (68°F, 70° RH). For tropical climate (100°F, 90° RH), reduce capacity by 1/3.

### NOTES

- Only for compressed air condensate.
- Donaldson guarantees a residual oil content of less than 20 ppm in accordance to EN ISO 9377-2 with DS oil/water separators.
- The warranty only applies to:
  - Proper use with an oil/water mixture.
  - Use of original replacement and spare parts.
  - Proper installation and commissioning according to the manual.

## OPTIONAL ACCESSORIES

### Thermostat Controlled Heater

If the DS oil/water separator is installed in an area where the ambient temperature might go below 34°F, use the optional thermostat-controlled heating unit to prevent freezing of the condensate.

### Condensate Distribution Manifolds

Often more than one separator will be required to meet the needs of a given operation. In those instances, distribution manifolds are available to assure that condensate is evenly distributed among the connected oil/water separators.

# SUPERIOR FILTRATION. MAXIMUM PROTECTION.

## Extensive Product Portfolio

- Process air, steam and liquid filtration products
- Performance engineered to sanitary guidelines
- Wide range of filtration media for any application
- Housings, elements, and parts in-stock, ready to ship

## Advanced Technology

- Optimized filtration performance and efficiency
- Extensive research and development capabilities
- Advanced design and testing capabilities
- Over 1,000 engineers and scientists worldwide

## Unrivalled Support and Expertise

- Expert technical specialists available as resource
- Comprehensive pre- and post-sale support
- Extensive filter analysis and trouble-shooting
- 100 years of successful global manufacturing



Registered



Standard No. 10-04\*



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### Important Notice

Many factors beyond the control of Donaldson can affect the use and performance of Donaldson products in a particular application, including the conditions under which the product is used. Since these factors are uniquely within the user's knowledge and control, it is essential the user evaluate the products to determine whether the product is fit for the particular purpose and suitable for the user's application. All products, specifications, availability and data are subject to change without notice, and may vary by region or country.



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