

# OV SINGLE FILTERS

INSTALLATION, OPERATION  
AND MAINTENANCE MANUAL

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AIRPEL®

READ AND UNDERSTAND THIS MANUAL PRIOR  
TO OPERATING OR SERVICING THIS PRODUCT.



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## 1.0 General

OV Single Filters provide a cost-effective method of protecting pipeline equipment, cleaning liquids, or salvaging valuable solids. Incorporated are a number of special features and optional extras. The filters are of cast construction and are supplied with high quality stainless steel cylindrical baskets. They are used in liquid handling installations where the flow can be shut off for short periods to allow the removal of the basket for cleaning.

The equipment must be installed, started up, operated, and maintained and if necessary, repaired only by authorized, properly trained and qualified personnel.

It is the responsibility of the owner / operator to ensure full compliance with all relevant safety and environmental regulations during movement of, installation, operation, maintenance, assembly, and disassembly of the equipment. All international, national, and local codes of practice shall be observed and shall take precedence over any stated or implied practice in this document.

It is the responsibility of the owner / operator to ensure that the equipment is only used for the duties for which equipment has been supplied, and that all operations are within the design and operating parameters stated on the equipment data sheets and/or general arrangement drawings.

Keep these instructions in a readily accessible place.

It is the responsibility of the equipment owner or operator to ensure that anyone installing, operating, or maintaining the equipment has read and fully understood these instructions and complies with them at all times.

Carry out work on the equipment only when:

- Equipment has been fully isolated from the process line and valves have been locked off and secured against accidental opening.
- Where necessary the equipment has been depressurised.
- Where required the equipment has been suitably flushed and purged of harmful gases, vapours, or liquids.
- Any electrical supply has been disconnected and secured against accidental energising either by locks, key switches, or removal of supply line fuses.
- A notice has been attached to locked out process valves or electrical switchgear clearly stating that work on equipment is in progress.
- Any lifting equipment or tackle is in good order and certified for intended use.
- The persons carrying out work on the equipment have been provided with suitable tools for the task to be conducted and have the necessary protective clothing and safety equipment and are suitably trained in their use.

## 2.0 Installation

Fit the filter assembly into the pipeline ensuring:

- There is no undue stress on the unit – support large filters appropriately.
- The unit is installed using suitable flange bolting materials and gaskets.
- The flow direction is correct.
- The unit is vertical with the cover at the top and the basket (element) is fitted.
- The unit is protected by suitable safety devices (pressure relief valves, earthing straps etc.) as appropriate within the system that it is installed.
- There is enough space available for maintenance operations.
- The fluid is compatible with the materials of construction.
- The filter is being operated within its pressure/temperature performance envelope and within the flange drilling pressure/temperature limits.
- The filter is clean, including (if appropriate) the removal of corrosion preventative coatings applied during manufacture.
- The cover(s), drain plug and any other attachments are secure.
- Fill the filter with fluid, bleed air from the unit via the bleed screw(s) and check for leaks.

## 3.0 Operation

The Filter needs very little attention during normal operation. The need to clean/replace the filter basket(s) is indicated by the pressure drop across the filter. The frequency with which this is required is governed by the debris loading. A Differential Pressure Indicator (DPI) may be fitted as an optional extra to indicate when the basket needs cleaning. If not purchased as part of the filter itself, a differential pressure gauge, transmitter or switch suitable to measure the operating differential pressure between inlet and outlet sides of the filter must be installed on the adjacent piping.

The Differential Pressure ( $\Delta P$ ) should be monitored. If the optional Differential Pressure Indicator (DPI) with standard spring is fitted to monitor the  $\Delta P$ , the pointer moves from 'clean' (green) to 'dirty' (red) when the  $\Delta P$  is 0.7 bar (10 psi). The filter should be isolated, and the basket removed for cleaning/replacement when the  $\Delta P$  reaches this point (see below).

The  $\Delta P$  should not be allowed to exceed the maximum (burst) Dirty pressure of 1.4 bar (20 psi) at any time. When the  $\Delta P$  reaches this pressure, the basket **must** be removed and cleaned or replaced with new.

**Warning: Max.  $\Delta P$  = 1.4 bar**

**Failure to clean or replace the basket(s) when this  $\Delta P$  has been reached may result in loss of downstream pressure and upset desired downstream process conditions. Failure to act promptly can cause damage to the filtration membrane and result in debris passing into the line downstream of the filter.**

**Note:** Filters and baskets which are capable of operating outside standard parameters can be designed to order.

To clean or inspect the basket(s):

- Stop the fluid flow and isolate the filter. Safe working procedures compliant with all local regulations shall be followed at all times.

**Warning:**

**Before opening the filter cover to allow access to the internal basket, it is the responsibility of the owner/operator to ensure that the filter body is:**

- Fully Isolated.
- Depressurised.
- Evacuated of hazardous / harmful products and / or gasses.

- Release the pressure using the bleed screw in the filter cover and remove the drain plug to drain the filter chamber.
- Slacken the cover nuts and rotate the cover(s) to expose the basket(s).
- Lift out the basket(s) and clean thoroughly. Inspect for damage and replace with new where necessary.
- When cleaning baskets with fine mesh linings care should be taken not to damage the lining using sharp objects or high-pressure wash jets. Paper/fiberglass and other disposable elements cannot be successfully cleaned. They should be replaced with new clean elements.
- Ensure there is no debris below the basket register (as this is the clean side of the filter). Flush any dirt/debris out through the drain connection. Ensure the basket register surfaces are clean.
- Inspect and clean the drain plug sealing surfaces, fit a new sealing washer and replace the drain plug.
- Refit the basket(s) (and basket O-ring, if fitted) ensuring they are correctly located on the register.
- **Note:** When refitting the baskets in DN 200 (8") and DN 250 (10") multi-basket filters ensure that the baskets marked 'A' are on the inlet side of the filter and baskets marked 'B' are on the outlet side.
- Inspect and clean the cover sealing surfaces. Inspect the O-Rings for damage or permanent deformation. Replace with new if necessary.
- Lift and swing the cover(s) into position ensuring that the cover O-ring is not damaged. Progressively and evenly hand tighten the nuts to clamp the cover.
- Bleed the air from the filter via the bleed screw(s) in the cover and check for leaks. The filter is now ready for use.

Periodically inspect the filter assembly for corrosion and other deterioration that may affect the integrity of the vessel.

## 4.0 Maintenance

The OV Filter requires very little routine maintenance.

Regularly check the condition of 'O' seals and sealing surfaces – replace and / or clean as necessary.

Regularly check the condition of the baskets (particularly the fine mesh, where fitted) for damage and replace, as necessary.

Periodically inspect the filter assembly for corrosion and other deterioration that may affect the integrity of the vessel.

Description	Interval (every)	Remarks
Visual inspection, external	Week	
Inspection of Filter/internals for damage	6-9 Months	Each time Filter is opened
Clean and Lubricate: Cover Nuts & Studs, Cock spindle, Upper & Lower Cock	Year	General Purpose Grease

**Re:** General Purpose Grease: Use a good general purpose grease such as Castrol Spheerol LMM or BP Energrease Universal.

## 5.0 Specifications

Model	OV	OV/S	OV/SA300	OV/GM	OV/SS	OV/SSA300
Body & Cover Material	Cast Iron EN1561 EN-JL 1030	Cast Steel EN10213-2 1.0625	Cast Steel EN10213-2 1.0625	Gunmetal (Bronze) BS1400 LG4C	Stainless Steel BS1504 316 C16	Stainless Steel BS1504 316 C16
Maximum Non-Shock Working Pressure	17 barg(2) at 50°C	22 barg(2) at 50°C	50 barg at 50°C	22 barg(1) at 50°C	22 barg(2) at 50°C	48 barg at 50°C
Baskets	Type 316 Stainless Steel					
Drain Plug	Brass	Stainless Steel	Stainless Steel	Gunmetal (Bronze)	Stainless Steel	Stainless Steel
Vent	Stainless Steel	Stainless Steel	Stainless Steel	Phosphor Bronze	Stainless Steel	Stainless Steel
Standard Seals	Viton®	Viton®	Viton®	Viton®	Viton®	Viton®
Body Colour	Blue	Silver	Silver	Natural	Natural	Natural

1. Gunmetal (bronze) DN 20, 25, 40, 200 & 250 filters are rated at 13.8 bar at 50°C.
2. Iron, Steel & Stainless Steel DN 200 & DN 250 filters are rated at 13.8 bar at 50°C (Standard Range).

*Viton is a registered trademark of DuPont Performance Elastomers.*

The OV range of filters is available in a number of formats to suit most applications. The table shows the standard formats available and lists the materials of construction, maximum working pressure and the relevant colour code.

Other body, cover, seal and basket materials are available on request.

The table should be considered as guidance only. The pressures stated (at 50°C) are accurate, but any variance in operating temperature results in a corresponding change to the maximum operating pressure. Extra caution is required for filters to be operated below 0°C or above 100°C.

Consult your Celeros FT Sales/Applications Engineer for guidance on specific applications.

## 6.0 Hazardous Fluids & Pressures

The filters, when dispatched from Celeros FT, do not contain substances specifically hazardous to health, but may have a thin coating of oil-based corrosion preventative on machined & internal surfaces.

If the fluid to be filtered is in any way hazardous, the operator and the environment should be suitably protected. Care should be exercised if the fluid at atmospheric conditions is above its boiling point.

Relieve the pressure in the filter before opening the filter cover.

Do not make any adjustments whilst the filter is pressurized.

If a filter is to be stored or transported, ensure that the filter is clean, suitably protected (including corrosion protection if appropriate) and does not contain substances that could be hazardous to health.

## 7.0 'O' Seal Temperature Limits

In addition to the Pressure/Temperature limits stated in section 5.0, the operating temperature of the filter is limited by the elastomer seals fitted. Each should be considered entirely separately when considering the suitability of the filter for a given application.

Viton®	-20°C to +200°C
Ethylene Propylene	-50°C to +150°C
PTFE Encapsulated Viton	-20°C to +200°C
PTFE Encapsulated Silicone	-55°C to +260°C

The above values are guidelines based upon absolute compatibility with the process fluid and are not binding due to unknown factors that may be detrimental to the performance of the 'O' seals.

## 8.0 Legislative Conformity

All cast OV filters marketed within the European Union comply with the European Pressure Equipment Directive (2014/68/EU).

All cast OV filters marketed within the United Kingdom comply with the Pressure Equipment (Safety) Regulations 2016.

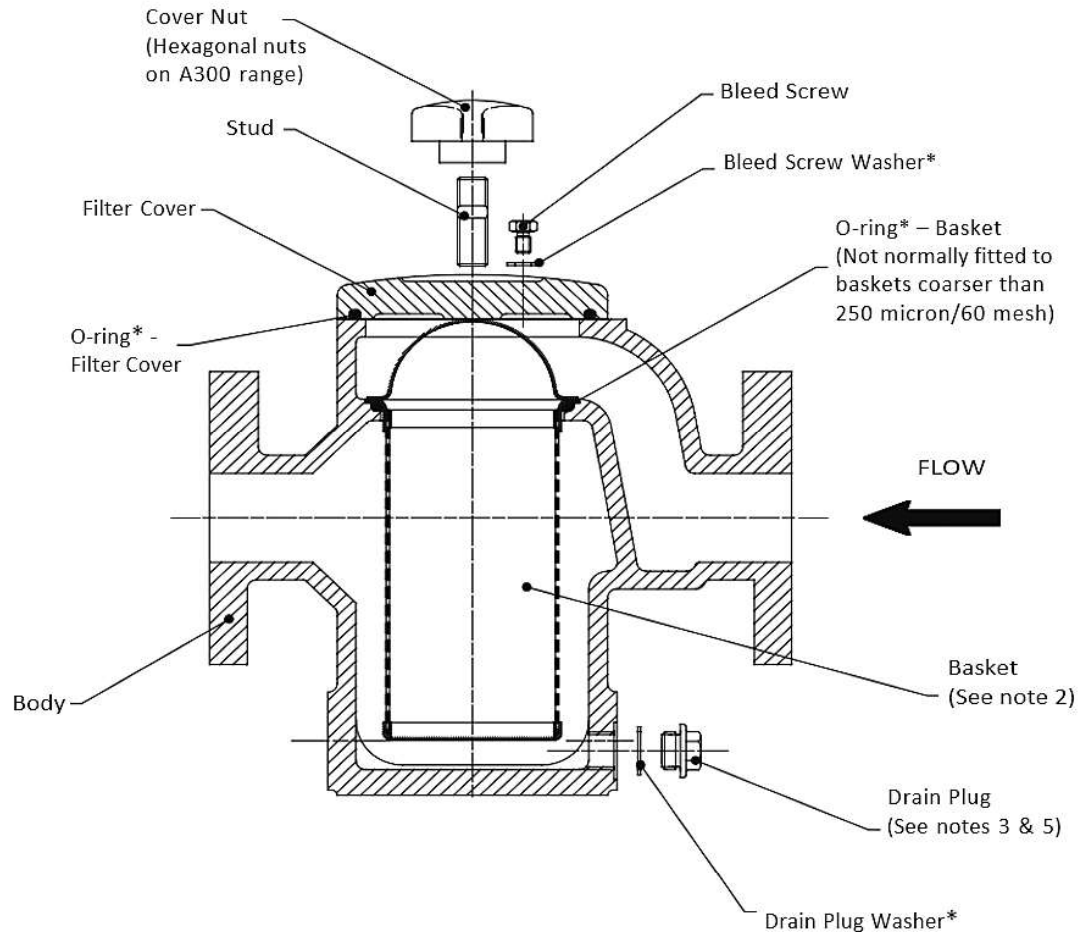
Where applicable, cast iron OV filters are to be restricted to Sound Engineering Practice applications only.

Designs to alternative international codes and standards are available for some models.

Consult your Celeros FT Sales/Applications Engineer to discuss your specific requirements.



## 9.0 Spares Identification Drawing



### Notes:

1. Items marked \* are only available as part of a 'seal kit'.
2. DN 200 and DN 250 (8" and 10" NB) filters are multi-basket filters and have 4 baskets and 5 baskets respectively. Baskets marked 'A' are fitted towards the 'inlet' side of the filter, whilst baskets marked 'B' are fitted towards the 'outlet' side of the filter.
3. All filters have ½" drain plugs with the exception of DN 200 and DN 250 (8" and 10" NB) filters which have 1" drain plugs.
4. Filters with threaded inlet/outlet ports can be either NPT or BSP threads.
5. The drain port can be threaded NPT or BSP.
6. When ordering spares please define (as appropriate):
7. Filter size and body material.
8. Seal kit material (e.g. Viton® or Ethylene Propylene).
9. Basket mesh size.
10. A Differential Pressure Indicator (DPI) may be fitted to indicate when the basket needs cleaning.
11. The illustrations shown are not binding. The right to change specification without notice is reserved.



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| **EXCELLENCE**  
| **PARTNERSHIP**

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*Celeros Flow Technology reserves the right to incorporate our latest design and material changes without notice or obligation. Design features, materials of construction and dimensional data, as described in this bulletin, are provided for your information only and should not be relied upon unless confirmed in writing.*

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