

## Plenty Duplex Filter Spares Identification Drawing

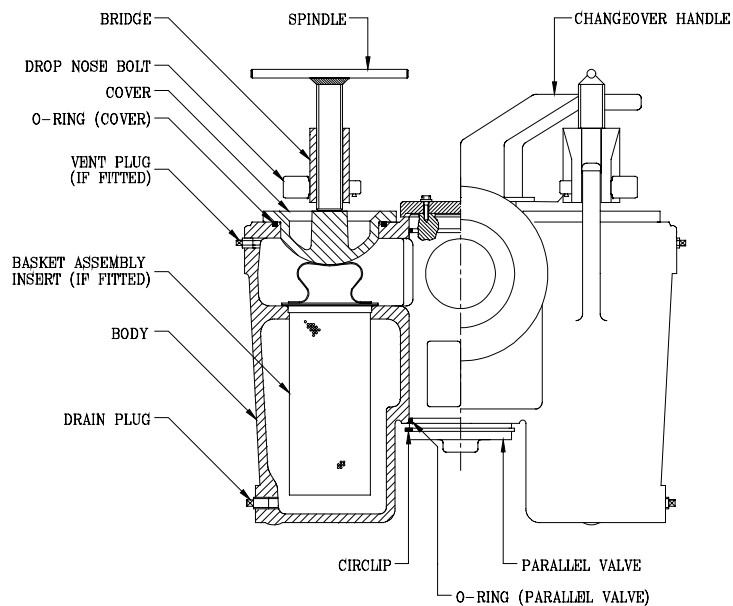
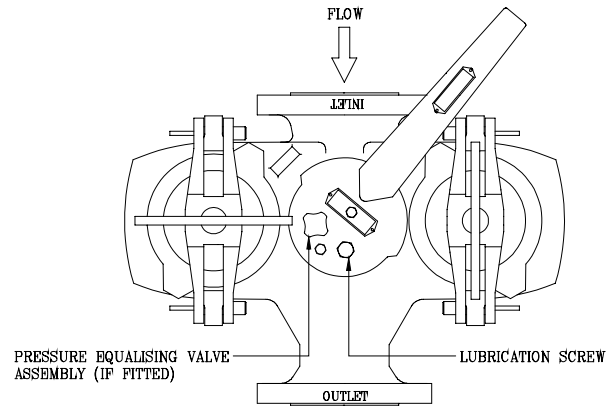
**Plenty**  
*filters*

### Installation, Operation and Maintenance Procedures **Duplex Filters** (DN25 – DN100)



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- NOTES: 1) Filters with threaded inlet/outlet ports can be either NPT or BSP threads.  
2) The drain port can be threaded NPT or BSP.  
3) When ordering spares please define (as appropriate):  
~ Filter size and body material.  
~ Seal material (e.g. Viton®, Nitrile or EPDM).  
~ Basket mesh size.  
~ Filter job/serial number.  
~ Type of grease installed.

The illustrations shown are not binding. The right to change specification without notice is reserved.

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**ISO 9001**  
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## Installation

Installation and maintenance should be undertaken by a competent person. National and Local Codes of Practice, Environmental Regulations and Health and Safety Directives must be adhered to and take precedence over any stated or implied practices in this document. All Plenty filters are hydrostatically pressure tested prior to delivery.

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.<sup>†</sup>
- The filter is being operated within its temperature/pressure performance envelope and within the flange drilling pressure/temperature limits.<sup>†</sup>
- The filter is clean, including (if appropriate) the removal of corrosion preventative liquids applied during manufacture.
- The cover, drain plug and any other attachments are secure.
- Ensure that the changeover handle is turned hard against the stop.
- Ensure that the sealing grease is compatible with the process fluid.

Fill the filter, vent air from the unit, and check for leaks.

For added safety and ease of use - Plenty recommend the use of valves fitted to the vent and drain connections.

## Operation (DN25 – DN40 Units)

The pressure drop across the basket should not exceed 1 bar (15 psi).

To clean or inspect the basket in the on-line chamber:

Divert the flow to the off-line chamber by turning the Changeover Handle hard against the opposite stop – this may result in a small amount of trapped air being flushed downstream from the filter.

Recharge the grease by removing the Lubrication Screw and inserting a stick of the appropriate specification grease then replacing the Lubrication Screw and screwing right down.

Carefully relieve the pressure to the now off-line chamber by means of the Drain Plug (caution should be used) – a vent connection is optional.

Once the pressure has been relieved – remove the Drain Plug and slacken the Spindle in the Bridge to drain the chamber (there may be a surge of fluid once the cover seal has been broken).

## Sealing Grease

The Plenty Duplex Filters (DN25 – DN100) utilise grease as the sealing media for the parallel valve.

The grease specification is dependant on the application and should be chemically compatible and operate within the temperature limits specified.

The end user should satisfy themselves that the grease installed is suitable for the intended application.

Sealant	TempRange		Recommended For Use On	Not To Be Used For
	Min (°C)	Max (°C)		
731	-15	230	Most chemical plant services water, aqueous solutions dilute acids, alkaline solutions compressed air tars and bitumens	Strong acid solutions  Petroleum products
733	0	250	Most hydrocarbons, butane, propane, gasoline, kerosene oils, fuel oils, natural gas manufactured gas (including gas with carbon dioxide, hydrogen sulphide, water and condensate), LPG, glycols	Strong alkalies  High aromatic solvents

## Warning

Use of other types of grease than those supplied by Plenty may result in failure and possible injury.

## Note

As Plenty has no control over the use or operating conditions we cannot be held responsible for any damage to/by the filter, or any subsequent costs incurred. It is essential that the user satisfy themselves of the suitability of the equipment for the intended application.

Divert the flow to the off-line chamber by turning the Changeover Handle hard against the opposite stop.

Close the Pressure Equalising Valve by turning it clockwise until it is hard against its seating.

Recharge the grease by removing the Lubrication Screw and inserting a stick of the appropriate specification grease then replacing the Lubrication Screw and screwing right down.

Carefully relieve the pressure to the now off-line chamber by means of the Vent Plug (caution should be used).

Once the pressure has been relieved – remove the Drain Plug and slacken the Spindle in the Bridge to drain the chamber (there may be a surge of fluid once the cover seal has been broken).

Remove one Drop Nose Bolt, hinge back the Bridge and remove the Cover by inserting the flat end of the Drop Nose Bolt under the lug on the Cover.

Remove the Basket assembly and carefully clean. Replace damaged components as necessary.

Refit the Basket, Cover (ensure O-Ring sealing areas are clean), Bridge, Drop Nose Bolt, Drain Plug and Vent Plug then tighten the Spindle.

The flow can now be diverted back through the filter chamber as required.

### **Mesh Basket Insert Assembly**

The Plenty filter baskets have replaceable mesh inserts dependant on the degree of filtration required.

This design offers greater flexibility as the filtration rating can be altered at minimal cost.

To change the mesh insert:

- Remove the nuts from the basket clamping pins.
- Remove the basket handle.
- Carefully withdraw and remove the old mesh insert.
- Carefully insert the new mesh lining and gently 'bounce' the basket to encourage the mesh to settle into position.
- Refit the basket handle.
- Fit and tighten the nuts on the basket clamping pins.

Should any 'backflow' occur due to system configuration – Plenty recommend fitting Inner Support Baskets to protect the mesh inserts.

### **Maintenance**

The Parallel Valve between the filter chambers utilises grease as the sealing medium, which also acts as a lubricant.

The type of grease fitted is dependent on the particular application.

The type of grease used is indicated on a label attached to the Changeover Handle.

To maintain the integrity of the seal on the Parallel Valve and prevent sticking – the filter should be charged with grease and the changeover valve operated on a regular basis. For water or similar applications the changeover valve should be operated every 2 days, for oil applications once per week.

To charge the filter with grease:

- Ensure that the Changeover Handle is at the extent of its travel and hard against the stop.
- Remove the Lubrication Screw.
- Insert a stick of grease (ensure it is to the correct specification) into the grease hole.
- Replace the Lubrication Screw and screw it right down.
- Turn the Changeover Handle until it reaches the opposite stop.
- Remove the Lubrication Screw.
- Insert a stick of grease.
- Replace the Lubrication Screw and screw it right down.

Should there be significant leakage past the Parallel Valve that cannot be resolved by normal charging with grease then the unit may require dismantling and the grease replenishing – contact Plenty for advice.

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

### **Hazardous Fluids & Pressures**

- The filters, when despatched from Plenty, do not contain substances specifically hazardous to health, but may have a thin coating of oil based corrosion preventative on all 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 pressurised.
- 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.

### **Pressure/Temperature Ratings**

The filter should be used within the flange drilling pressure/temperature limits and the filter body limits.†

All pressures are non-shock.

Cast Iron filters should be used with extreme caution below 0°C and above 100°C. Carbon Steel should be used with caution below -20°C (unless low temperature steel has been specifically ordered). All filters, and in particular Cast Iron filters, should be protected from excessive thermal, hydraulic and mechanical shock loading.

### **'O' Ring Seal Temperature Limits**

Viton®: -20°C to +200°C. PTFE encapsulated Viton®: -20°C to +200°C.

Nitrile: -30°C to +120°C. Ethylene Propylene (EPDM) -50°C to +150°C.

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

† See Plenty Technical Specifications TS 000 00 024 Plenty Filter Chemical Compatibility Chart and TS 000 00 031 Pressure – Temperature Limits for Plenty Cast Duplex Filters (DN25 – DN100)

Alternatively Plenty will offer advice as necessary.

### **European Pressure Equipment Directive (97/23/EC)**

All Plenty Cast Duplex Filters (DN25 – DN100) comply with the Directive.

Cast Iron Filters are restricted to the SEP category only.

Remove one Drop Nose Bolt, hinge back the Bridge and remove the Cover by inserting the flat end of the Drop Nose Bolt under the lug on the Cover.

Remove the Basket assembly and carefully clean. Replace damaged components as necessary.

Refit the Basket, Cover (ensure O-Ring sealing areas are clean), Bridge, Drop Nose Bolt and Drain Plug then tighten the Spindle.

The flow can now be diverted back through the filter chamber as required.

### **Operation (DN50 Units)**

The pressure drop across the basket should not exceed 1 bar (15 psi).

To clean or inspect the basket in the on-line chamber:

Equalise the pressure in the chambers by opening the Pressure Equalising Valve one full turn (anti-clockwise).

Divert the flow to the off-line chamber by turning the Changeover Handle hard against the opposite stop.

Close the Pressure Equalising Valve by turning it clockwise until it is hard against its seating.

Recharge the grease by removing the Lubrication Screw and inserting a stick of the appropriate specification grease then replacing the Lubrication Screw and screwing right down.

Carefully relieve the pressure to the now off-line chamber by means of the Drain Plug (caution should be used) – a vent connection is optional.

Once the pressure has been relieved – remove the Drain Plug and slacken the Spindle in the Bridge to drain the chamber (there may be a surge of fluid once the cover seal has been broken).

Remove one Drop Nose Bolt, hinge back the Bridge and remove the Cover by inserting the flat end of the Drop Nose Bolt under the lug on the Cover.

Remove the Basket assembly and carefully clean. Replace damaged components as necessary.

Refit the Basket, Cover (ensure O-Ring sealing areas are clean), Bridge, Drop Nose Bolt and Drain Plug then tighten the Spindle.

The flow can now be diverted back through the filter chamber as required.

### **Operation (DN80 – DN100 Units)**

The pressure drop across the basket should not exceed 1 bar (15 psi).

To clean or inspect the basket in the on-line chamber:

Equalise the pressure in the chambers by opening the Pressure Equalising Valve one full turn (anti-clockwise).