

INSTALLATION, OPERATION, AND MAINTENANCE

GENERAL

Duplex strainers are used in continuous flow applications where the process can not be shut down for cleaning. Examples: lubrication systems, industrial or marine oil burners, chemical plants, cooling lines in power plants, compressors, condensers, and ink supply lines to printing presses. Duplex strainers are also specified for water lines to cooling towers and pumping stations where water is taken from lakes or rivers. The primary benefit of a duplex basket strainer is to provide uninterrupted downtime for maintenance and cleaning.

The filter consists of a diverter valve and two chambers containing the filter baskets; one on-line collecting debris and the other on stand-by. As the on-line basket becomes increasingly blocked with debris - the flow can be diverted, without interruption, to the stand-by (clean) basket by turning the handle through 180°. For safety reasons the handle always covers the on-line (pressurized) chamber. Basket cleaning is a quick and simple tool-free operation.

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 Keckley duplex strainers are hydrostatically pressure tested prior to delivery.

Fit the duplex 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 liquids 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.

OPERATION

During normal operation the handle should be positioned over one chamber/side of the filter (see schematic diagram on page D-IOM5).

Intermediary positions of the handle are not recommended.

OPERATION (continued)

Flow is diverted from one chamber/side of the filter to the other by turning the handle through 180°.

The flow passes through the chamber/side that is covered by the handle.

The pressure drop across the basket(s) should not exceed 20 psi.

The basket(s) may incur damage if subjected to a pressure drop exceeding 30 psi.

If an optional Differential Pressure Indicator (DPI) with standard spring is fitted to monitor the pressure drop, the pointer moves from 'clean' (green) to 'dirty' (red) when the pressure drop is 10 psi.

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

- Equalize the pressure by opening the pressure equalizing valve (if fitted).
 - Divert the flow to the off-line chamber by turning the handle through 180° until it is hard against the stop.
 - Close the pressure equalizing valve (if fitted).
 - Carefully relieve the pressure in the chamber to be cleaned.
 - Once the pressure has been relieved – remove the drain plug and fiber washer and then slacken the cover nuts (hexagonal nuts on the 6" & 8" units) to drain the chamber of fluid (care should be taken with hazardous fluids).
 - Swing the cover(s) open (remove the cover on the 6" & 8" units) to access the basket(s).
 - Remove the basket(s) and carefully clean – inspect for damage and replace as necessary.
 - Paper and other disposable elements cannot be cleaned and therefore should be replaced.
 - Ensure that the 'O' seal sealing areas are clean.
 - Refit the basket(s), cover(s) (ensuring that the 'O' seal is not damaged) and hand-tighten the cover nuts (hexagonal nuts on large sizes require a spanner) evenly to ensure the cover(s) seal.
- Refit the drain plug and fiber washer.
 - Bleed air from the off-duty chamber by releasing the bleed screw in the cover(s) until all air is eliminated – then tighten the bleed screw.
 - The flow can now be diverted back through the filter chamber as required.

Notes

1. If the filter is fitted with a pressure equalizing valve – the valve must be opened before turning the handle and closed immediately after the handle has reached it's limit of motion.
2. Under normal operation – the standard design (not the positive seal option), allows a small amount of fluid to bypass between the on-line and the stand-by chambers. This is a design feature that eliminates the requirement of a pressure equalizing system on smaller filters.
3. The positive seal option utilizes a special seal set into the cocks (valves). This reduces any fluid bypass to a negligible level. After cleaning the basket it is important to bleed air from the stand-by chamber by opening the pressure equalizing valve and releasing the bleed screw in the cover(s). Once all air has been eliminated – tighten the bleed screw and close the pressure equalizing valve.
4. Keckley recommends the fitting of valves to the drain connections for ease of use and increased operator safety.

MAINTENANCE

The duplex strainer requires very little routine maintenance.

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

Regularly check the condition of the baskets (particularly the fine mesh if appropriate) for damage and replace as necessary.

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

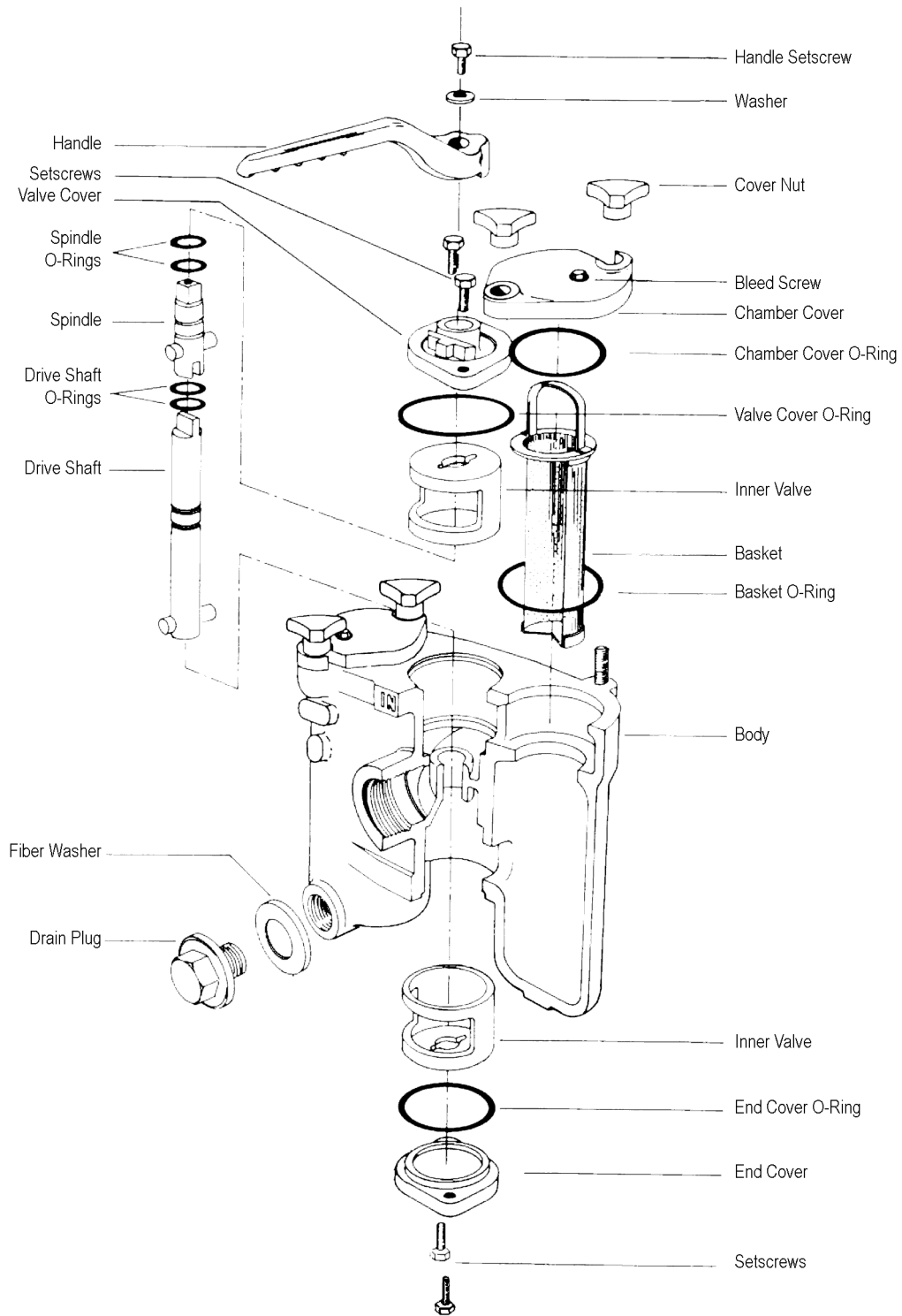
We recommend that the changeover handle is operated back and forth a minimum of once per day (to prevent seizure). Frequency of basket cleaning remains process dependent.

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, Spindle, Upper & Lower inner valves	Year	General Purpose Grease

HAZARDOUS FLUIDS & PRESSURES

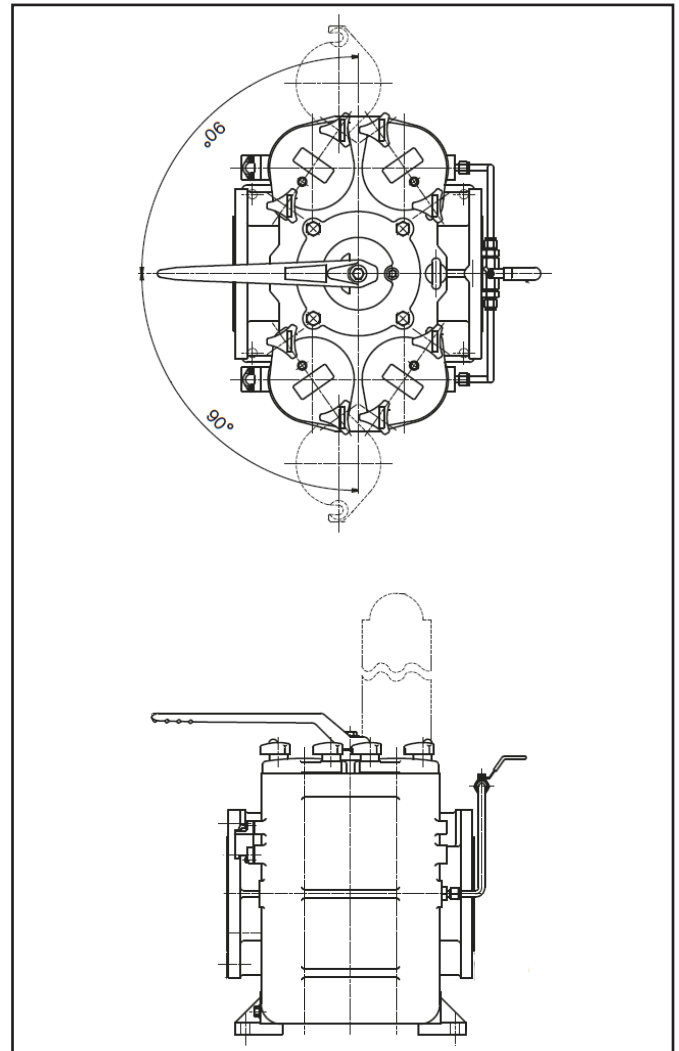
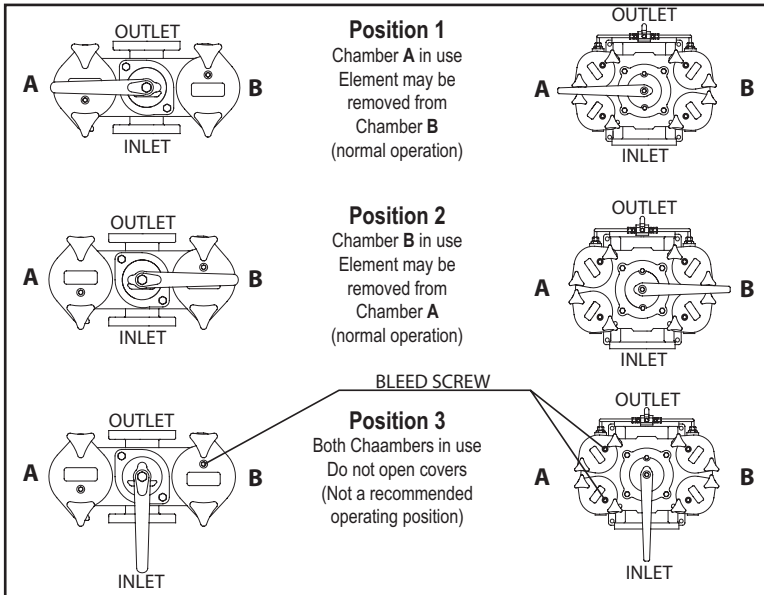
- The filters, when shipped from Keckley, do not contain substances specifically hazardous to health, but may have a thin coating of oil based corrosion preventative on all internal surfaces.
- If the fluid to be filtered is in any way hazardous, the operator and the environment should be suitably protected. 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 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.

Exploded View - Main Components



5" & 6" Size - Four basket design not shown.
8" Size - Bolted cover.

SEAL KIT INCLUDES:
Chamber Cover O-Ring, Basket O-Ring, Valve Cover O-Ring, End Cover O-Ring, Spindle & Drive Shaft O-Ring, Plug Fiber Washer.



Notes

1. All filters have 1/2" drain plugs.
2. Filters with threaded inlet/outlet ports are NPT.
3. The drain port is threaded NPT.
4. When ordering spares, please define (as appropriate):
 - Filter size and body material.
 - Seal kit material (i.e. Viton® or EPDM).
 - Basket mesh size.

A Differential Pressure Indicator (DPI) may be fitted to indicate when the basket needs cleaning.

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

TERMS AND CONDITIONS OF SALE

PRICE QUOTATION

Written quotations are firm for a period of 30 days unless Seller indicates on the quotation a longer period. All orders placed by the Buyer from a published price list, written quotation or verbal quotation are subject to acceptance by the Keckley Company.

Contracts or orders having penalty clauses for failure to meet shipment are not acceptable unless specifically approved in writing by an authorized individual in our office. All delivery dates are subject to prior sale.

DELIVERY

Delivery promises are based on conditions at the time of quoting and are subject to change for causes beyond the seller's control. Under no circumstance will the seller be liable for consequential damages due to failure to fulfill a delivery promise.

CANCELLATION

Any order or part thereof may be canceled by the purchaser upon written notice to the Seller prior to 45 days before completion. Upon receipt of a cancellation notice, all work on the order or part thereof being canceled will be stopped as promptly and as reasonably as possible, and the purchaser will be liable for a cancellation charge. This charge is calculated on the basis of established or quoted prices for all completed items and for the full cost incurred by the Seller up to the time of work stoppage plus 15% on incomplete items. In addition, there will be supplementary costs for packing and storing those items.

Nonstandard, special, and fabricated orders cannot be canceled after acceptance by Seller, unless agreed upon in writing by the Seller. The Buyer shall be liable for up to the full purchase price in any stage of completion.

WARRANTY

Seller warrants all parts and assemblies are warranted to be free from defects in materials and workmanship for a period of one year from date of shipment from the Seller's plant. The Seller reserves the right to examine all parts or assemblies claimed to be defective to determine whether they are defective in material or workmanship. All parts or assemblies which are determined to be defective in either material or workmanship may, upon express authority of the Seller, be returned to the Seller's plant prepaid and will be repaired or replaced or credit allowed at the Seller's option. In no event shall the Seller be liable for consequential costs or damages. This warranty is expressly in lieu of all other warranties, expressed or implied and whether of merchantability or fitness. This warranty does not apply to parts or assemblies which have been subject to misuse, negligence or accident. Also, it does not apply if repairs, modifications or reconditioning work is undertaken without prior written approval of the Seller. The customer is required to examine all parts and assemblies immediately upon receipt of shipment and promptly notify the Seller of any defects or alleged defects of the parts and assemblies.

PACKAGING

Unless Buyer specifies in writing, material will be packed as Seller deems necessary for proper protection. Export shipments will be subject to an additional charge for special overseas shipping. Additional charges may also be imposed if packaging instructions/specifications are other than standard.

SHIPMENT

Routing and manner of shipment will be at Seller's discretion and may be insured at Buyer's expense, value to be stated at order price. The Seller does not accept standing general or blanket shipping instructions. Full shipping instructions must accompany each individual order. No claim for shortages will be allowed unless made in writing within (10) days of receipt of shipment. Claims for material damaged or lost in transit should be made to the carrier, as Seller's responsibility ceases on delivery to the carrier.

RETURNS

Returns must not be made without our written consent. Goods must in all cases be carefully handled, properly packed and shipped prepaid. A copy of the Seller's authorization for return must be attached to the returned material. Goods authorized for return are subject to a restocking charge. Restocking charges will be based upon our inspection which may include any charges for retesting, reconditioning or repainting as required. Seller reserves the right to refuse credit for unwanted fabricated items. Goods returned for repair will be subject to our evaluation and charges will be based upon replacement of parts and labor.

NOTE

We reserve the right to correct obvious clerical errors in quotations, invoice and other contracts.

TERMS

Net 30 days from date of invoice, unless otherwise agreed upon by both the Seller and Buyer. Past due accounts are subject to a 1.5% service charge per month (18% per annum).

MINIMUM CHARGE

\$50.00 (Net)

FREIGHT

All shipments are F.O.B. Skokie, IL.