

## **EXPRESS SERIES® ASME Code Design Housings on Demand!**

- ◆ **Advanced Design and Manufacturing Technologies Allow for Fabrication of Custom Units within the Standard Production Cycle**
- ◆ **Offering Superior Quality, Safety, Flexibility, and Economy!**



# Express Series® Filter Housings

## Engineered For Safety, Flexibility, and Economy!

The result of CUNO's unique *Rapid Manufacturing System* (RMS), a combination of advanced computer aided design and computer assisted manufacturing tools, the Express Series™ filter housing delivers what you want, when you want it! The Express Series (ES) industrial housings are high quality ASME Code design housings available with various cartridge diaphragms to accommodate double open end (DOE), single open end (SOE), and Zeta Plus style filter cartridges. The filter housing, with outside diameters from 8 to 36 inches, can contain from 3 to 120 DOE or SOE cartridges of various heights, or up to 12 Zeta Plus cartridges, depending on the diaphragm chosen. The vessel includes ASME Code stamp and National Board certification to assure the customer that all materials and fabrication procedures meet the most stringent requirements.

The standard housing is offered with 150 or 300 psi designs and can be easily configured for specific system requirements. Options such as outlet and cover lifting device location (not available on model ES08), radiography, and surface finish can be added onto the base model to create one of the most versatile filter vessels in the industry.

### Features

- ◆ ASME Code design with stamp to ensure safety
- ◆ Available in 150 or 300 psi units
- ◆ Manufactured from 304L, 316L, or carbon steel to meet application requirements; special materials upon request
- ◆ User-friendly cover lifting device for easy cartridge changeouts
- ◆ DOE, SOE, and Zeta Plus Cartridge styles available for maximum filter cartridge applicability
- ◆ Available for cartridge lengths from 20" - 40"
- ◆ Nitrile, EPR, Viton or PTFE encapsulated Viton gasket materials
- ◆ Up and downstream gauge ports and drains

### Options

- ◆ Corrosion allowance available, consult factory
- ◆ Side outlet and cover lifting device location can be 90, 180 or 270° from the inlet.
- ◆ Standard swing bolt or Fast-Hex® bolt cover fasteners
- ◆ Full or spot radiography
- ◆ Choice of inlet/outlet flange size.



### Applicable CUNO Filter Cartridges

| Filter Product   | Literature | Filter Product | Literature  |
|------------------|------------|----------------|-------------|
| Betapure®        | LITCBP001  | PolyNet®       | LITCPPK001  |
| Beta-Klean®      | LITCBK001  | PolyPro®       | LITPPC01    |
| Petro-Klean®     | LITCPK001  | PolyPro®XL     | LITPXLEL    |
| Betafine®-D      | LITBFD001  | PolyKLEAN™     | LITCPOLYKLN |
| Micro-Klean® III | LITCMK001  | Microfluor® II | LITMRFA3    |
| Micro-Wynd®II    | LITCMW001  | BevASSURE® II  | LITZRBA2    |
| MPF              | LITMPF001  | Zeta Plus®     | LITZPU02    |

Please note that double open-end cartridges require spring and seal assemblies. CUNO replacement media can include the integral spring end treatment, which eliminates the need for spring and seal assemblies.

# Express Series® Filter Housing Specifications

## General Information

The Express Series™ filter housing has the broadest range of configurations available in a standard filter housing line. The user can select from a wide variety of size, materials, pressure ratings, and many other features. Table 1 lists the Express Series housing general specifications.

| TABLE 1. - GENERAL HOUSING SPECIFICATIONS     |  |                                  |  |
|---|--|----------------------------------|--|
| Base Model                                    | Material   | Standard Flange (Inches)         | Aqueous Flow* @ 2 psid Housing Pressure Drop (gpm/lpm) |
| ES08  | Carbon Steel,<br>304L Stainless Steel,<br>Or<br>316L Stainless Steel | 2                                | 92 / 348   |
| ES12  |  | 3                                | 196 / 742  |
| ES14  |  | 4                                | 317 / 1200   |
| ES16  |  | 4                                | 362 / 1370   |
| ES20  |  | 6                                | 669 / 2532   |
| ES24  |  | 6                                | 805 / 3047   |
| ES30  |  | 8                                | 1369 / 5182  |
| ES36  |  | 10                               | 2045 / 7740  |
| Applies to ALL Express Series Filter Housings |  |                                  |  |
| Housing Material                              |  | Pressure @ Temperature           |  |
| Carbon Steel                                  |  | 150 psi @ 450°F (10 bar @ 232°C) |  |
|   |  | 300 psi @ 450°F (20 bar @ 232°C) |  |
| Stainless Steel                               |  | 150 psi @ 250°F (10 bar @ 121°C) |  |
|   |  | 300 psi @ 250°F (20 bar @ 121°C) |  |
| Drains  |  | 1 ½" NPT Female                  |  |
| Gauge Connections                             |  | ¼" NPT Female                    |  |
| Vent  |  | 1" NPT Female                    |  |

\* Flow rate for DOE Standard housings without filters installed. The actual flow rate will be dictated by the filter media and cartridge style used. The total filter pressure drop is the sum of the housing drop and the cartridge drop.

## Housing Dimensions

The Express Series filter housing is designed and manufactured using state-of-the-art techniques. By engineering flexibility in design and exploiting advances in metal fabrication, CUNO is able to offer a “custom” design in a “standard” product line - in the same production cycle time as “off-the-shelf” product. Use Figure 1 in conjunction with Table 2 to determine general dimensions for a specific housing style. These measurements can be used to determine over-all space requirements. For all other uses, request a certified drawing.

| TABLE 2. - GENERAL HOUSING DIMENSIONS     |        |        |        |    |    |    |    |
|---|--------|--------|--------|----|----|----|----|
| Base Model                                | A      |        |        | B  | C  | D  | E  |
|   | 2 High | 3 High | 4 High |    |    |    |    |
| All Dimensions = Inches                   |        |        |        |    |    |    |    |
| ES08                                      | 52     | 62     | 72     | 18 | 21 | 8  | 39 |
| ES12                                      | 62     | 72     | 82     | 18 | 21 | 10 | 39 |
| ES14                                      | 65     | 75     | 85     | 22 | 23 | 11 | 45 |
| ES16                                      | 65     | 75     | 85     | 22 | 23 | 12 | 45 |
| ES20                                      | 69     | 79     | 89     | 23 | 26 | 15 | 49 |
| ES24                                      | 69     | 79     | 89     | 23 | 26 | 17 | 49 |
| ES30                                      | 76     | 86     | 96     | 24 | 32 | 20 | 56 |
| ES36                                      | 76     | 86     | 96     | 24 | 32 | 23 | 56 |
| Bottom Outlet Housing Dimensions (Inches) |        |        |        |    |    |    |    |
| ES08                                      | 52     | 62     | 72     | 27 | 11 | 8  | 38 |
| ES12                                      | 61     | 71     | 81     | 27 | 11 | 10 | 38 |
| ES14                                      | 64     | 74     | 84     | 30 | 13 | 11 | 43 |
| ES16                                      | 64     | 74     | 84     | 30 | 13 | 12 | 43 |
| ES20                                      | 70     | 80     | 90     | 33 | 17 | 15 | 50 |
| ES24                                      | 70     | 80     | 90     | 33 | 17 | 17 | 50 |
| ES30                                      | 80     | 90     | 100    | 36 | 24 | 20 | 60 |
| ES36                                      | 80     | 90     | 100    | 36 | 24 | 23 | 60 |

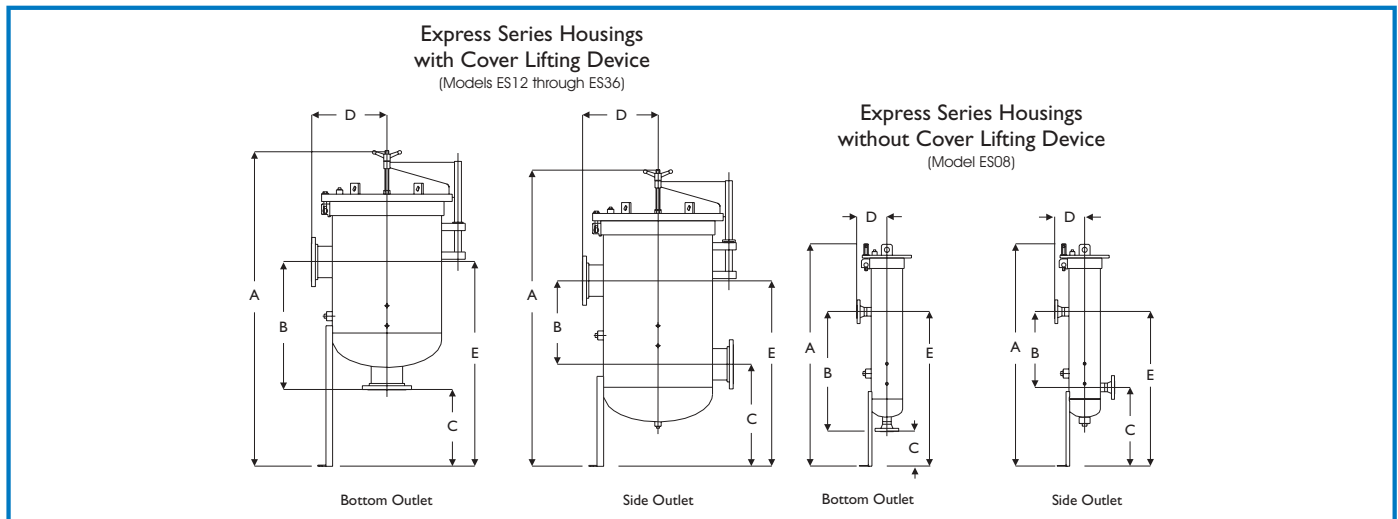


FIGURE 1. - DIMENSIONS OF THE EXPRESS SERIES FILTER HOUSING

# EXPRESS SERIES® Filter Housing...

The Only ASME Code Design Housing  
That Combines Flexibility and Economy!



## Featuring



**Cover Lifting Device**  
Express Series models ES12 through ES36 come equipped with cover lifting device for easy and rapid filter cartridge change-out.

**Swing Bolts & Machined O-Ring Groove**  
Express Series models come with easy-to-use swing bolts and a machined o-ring groove to provide a leak-free positive seal.

**Inlet/Outlet Connections**  
Express Series models are available with raised face flange connections that can be positioned with side or bottom outlet. Side outlets can be located 90, 180 or 270° from the inlet.

**Materials**  
ASME Code design Express Series models are available in carbon steel, 304L, and 316L stainless steel with pressure ratings of 150 or 300 psi.

**Gauge Ports**  
Express Series models come standard with upstream and downstream gauge ports for easy connection.

**Drains**  
Express Series models come standard with upstream and downstream drains (side outlet only) for easy operation and cleaning.

\* Note: Housing configuration is dependent on cartridge style. Cartridge styles are not interchangeable.

## Filter Cartridge Styles\*

### Double-Open-End Configurations



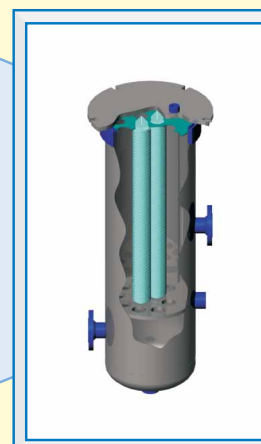
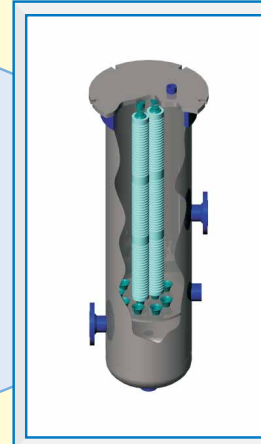
### Single-Open-End Configurations



### Zeta Plus® Filter Cartridges



## Filter Housing Styles



### Double-Open-End Cartridge Capacity Number of Cartridges/Total Equivalent Single Length Elements (10" nominal)

| Cartridge Style D = Double Open End (2.625" Max. Diameter)        |                  |       |       |       |        |        |        |         |
|---|------------------|-------|-------|-------|--------|--------|--------|---------|
| Housing Height  | Housing Diameter |       |       |       |        |        |        |         |
|   | 08               | 12    | 14    | 16    | 20     | 24     | 30     | 36      |
| Two High  | 6/12             | 12/24 | 18/36 | 24/48 | 36/72  | 52/104 | 85/170 | 120/240 |
| Three High  | 6/18             | 12/36 | 18/54 | 24/72 | 36/108 | 52/156 | 85/255 | 120/360 |
| Four High   | 6/24             | 12/48 | 18/72 | 24/96 | 36/144 | 52/208 | 85/340 | 120/480 |
| Cartridge Style P = Double Open End (3" Max. Diameter x 36" Long) |                  |       |       |       |        |        |        |         |
| Petro-Klean Only  | 3                | 9     | 12    | 17    | 27     | 39     | 63     | 91      |

### Single-Open-End Cartridge Capacity Number of Cartridges/Total Equivalent Single Length Elements (10" nominal)

| Cartridge Style T = 222 Double O-ring (2.813" Max. Diameter) |                  |       |       |       |        |        |        |        |
|--|------------------|-------|-------|-------|--------|--------|--------|--------|
| Housing Height   | Housing Diameter |       |       |       |        |        |        |        |
|  | 08               | 12    | 14    | 16    | 20     | 24     | 30     | 36     |
| Two High   | 4/8              | 12/24 | 14/28 | 19/38 | 28/56  | 44/88  | 71/142 | 99/198 |
| Three High   | 4/12             | 12/36 | 14/42 | 19/57 | 28/84  | 44/132 | 71/213 | 99/297 |
| Four High  | 4/16             | 12/48 | 14/56 | 19/76 | 28/112 | 44/176 | 71/284 | 99/396 |
| Cartridge Styles S = 226 Bayonet Lock (2.813" Max. Diameter) |                  |       |       |       |        |        |        |        |
| Two High   | 4/8              | 8/16  | 12/24 | 17/34 | 25/50  | 38/76  | 67/134 | 77/154 |
| Three High   | 4/12             | 8/24  | 12/36 | 17/51 | 25/75  | 38/114 | 67/201 | 77/231 |
| Four High  | 4/16             | 8/32  | 12/48 | 17/68 | 25/100 | 38/152 | 67/268 | 77/308 |

### Zeta Plus Cartridge Capacity

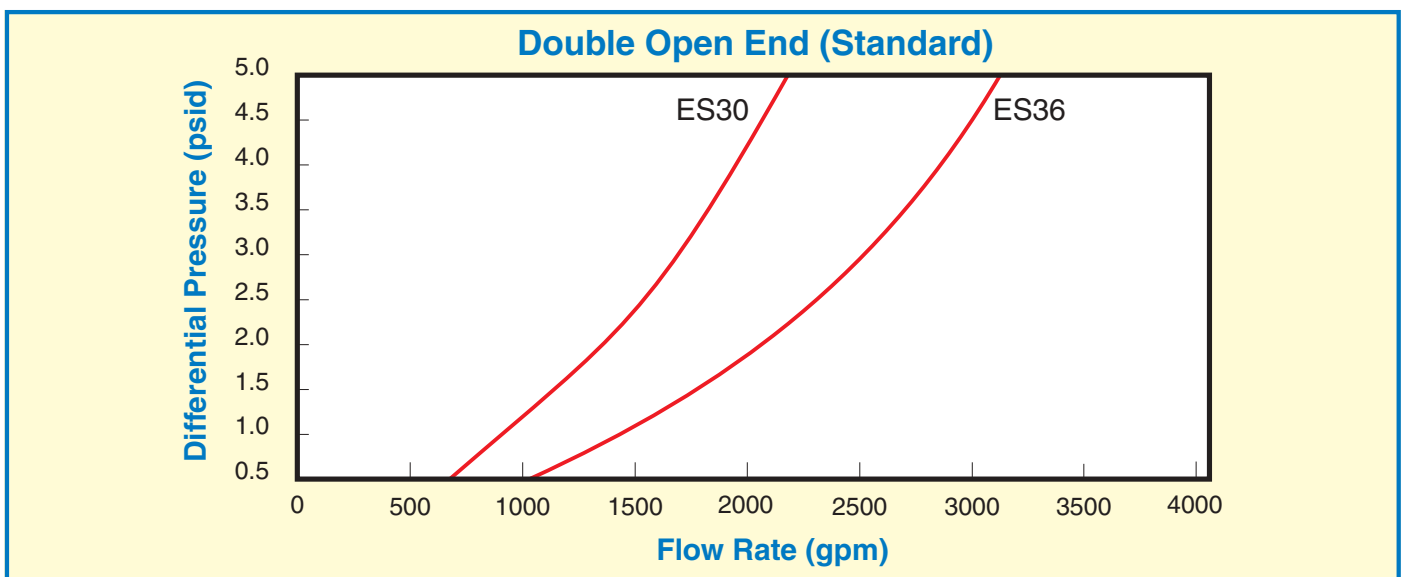
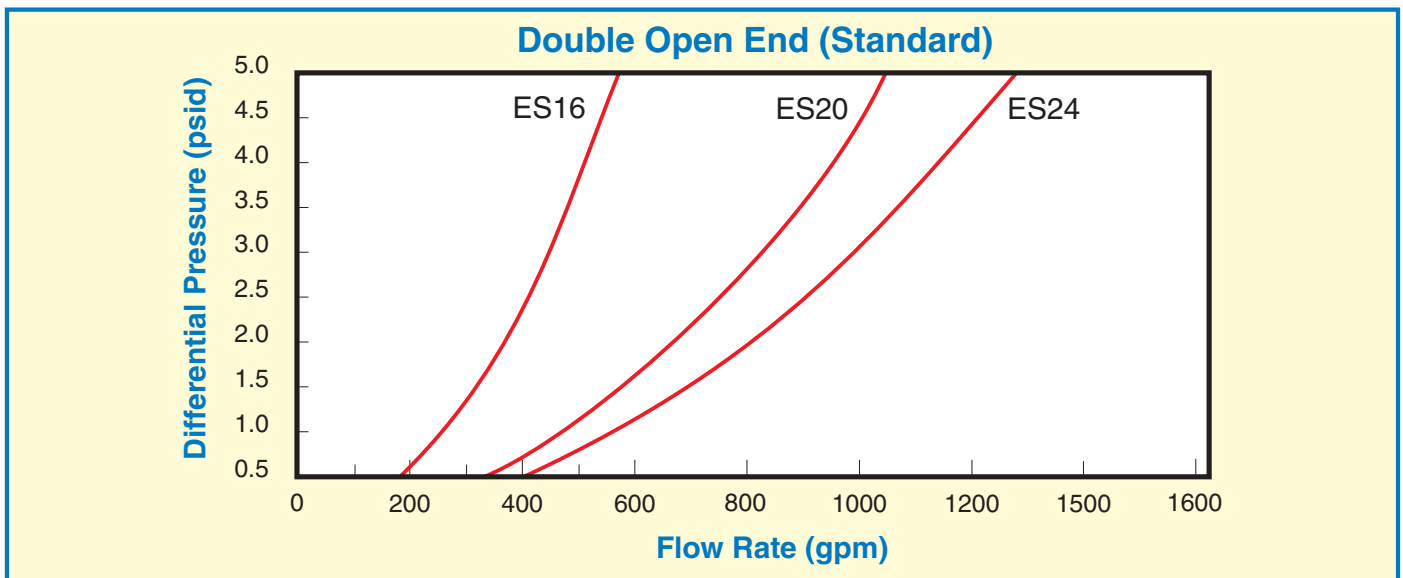
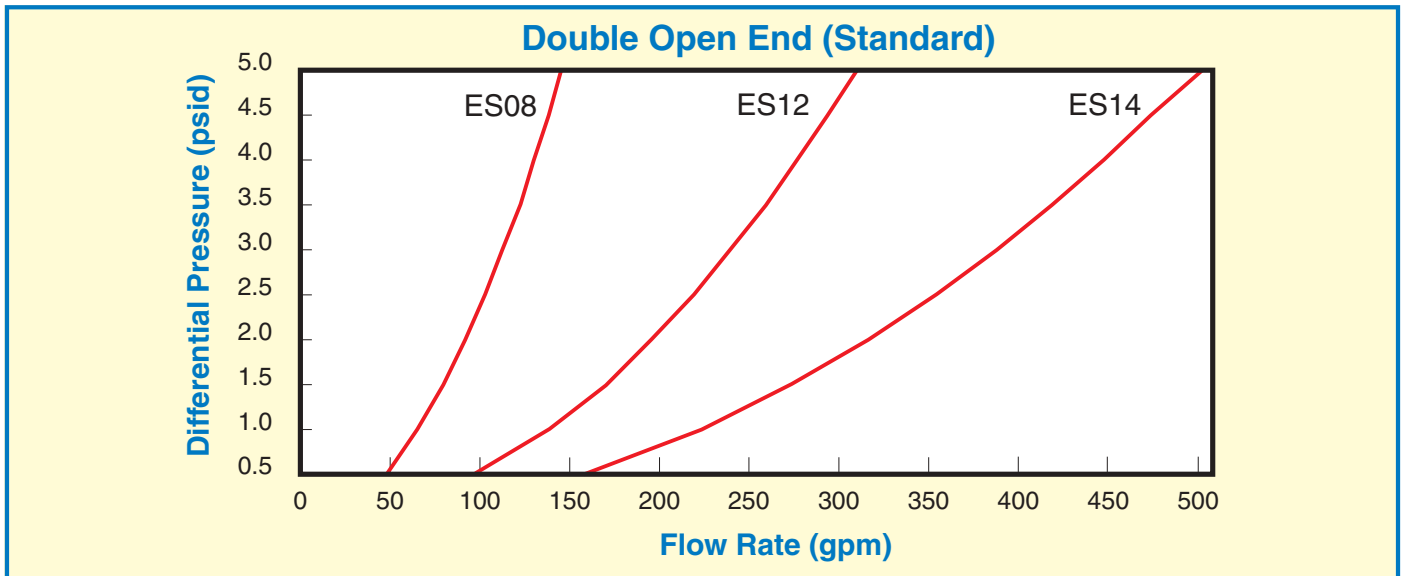
| Cartridge Style Z = 12" & 16" Nom. Diameter |                    |                    |                     |
|---|--------------------|--------------------|---------------------|
| Housing Height                              | Housing Diameter   |                    |                     |
|   | 16                 | 20                 | 30                  |
| Three High                                  | 3 - 12" Cartridges | 3 - 16" Cartridges | 12 - 12" Cartridges |



Fluid Purification

# Express Series® Filter Housing

## Typical Flow Rate vs. Pressure Drop



For Flow Rate vs Differential Pressure information for all other Express series configurations, consult your local CUNO Distributor and ask for LITTDSEFL0.0498.

## Express Series® Filter Housing Ordering Guide

Advanced computer aided design and computer integrated manufacturing technologies ensure compliance with design standards while allowing production of custom configurations in the standard manufacturing process. Each housing is identified by a general model and unique serial number to allow use of both standard replacement parts, where possible, and specials where required.

Please note that the housing configuration is dependent on cartridge style and that cartridge styles are not interchangeable. System flow rates and pressure drops are dictated by the filter medium used. For assistance in system sizing, contact your local CUNO Master Distributor or call CUNO Technical Sales.

The following is an example of an Express Series housing model designation. Use this as a guide when ordering.

| Housing Model | Housing Diameter | Number of Cartridges | Cartridge Style | Cartridge Height | Material         | Pressure Rating | Gasket Material | Outlet Location | Cover Bolt Style |
|---------------|------------------|----------------------|-----------------|------------------|------------------|-----------------|-----------------|-----------------|------------------|
| ES            | 08               | 006                  | D = DOE         | 2 = 2 High       | A = Carbon Steel | 1 = 150 psi     | GA = Nitrile    | E1 = Bottom     | BB = Bolt        |

The resulting model is ES08006D2A1GAE1BB. Other options, such as cover lifting device location, are added after bolt style.

## Express Series (Double-Open-End Cartridge) Filter Housing Ordering Guide

### Double Open End (10" EQSL) Cartridge Style

| Housing Model | Housing Diameter | Number of Cartridges | Cartridge Style | Cartridge Height | Material   | Pressure Rating | Gasket Material   | Outlet Location* | Cover Bolt Style           |
|---------------|------------------|----------------------|-----------------|------------------|--|-----------------|---|------------------|----------------------------|
| ES            | 08               | 006                  | D = DOE         | 2 = 2 High       | A = Carbon Steel<br>B = 304L S.S.<br>C = 316L S.S. | 1 = 150 psi     | GA = Nitrile<br>GB = EPR<br>GC = Viton<br>GD = PTFE<br>Encapsulated Viton | E1 = Bottom      | BB = Bolt<br>BF = Fast Hex |
|               | 12               | 012                  |                 | 3 = 3 High       |  | 2 = 300 psi     |   | E2 = Side 90°    |                            |
|               | 14               | 018                  |                 | 4 = 4 High       |  |                 |   | E3 = Side 180°   |                            |
|               | 16               | 024                  |                 |                  |  | E4 = Side 270°  |   |                  |                            |
|               | 20               | 036                  |                 |                  |  |                 |   |                  |                            |
|               | 24               | 052                  |                 |                  |  |                 |   |                  |                            |
|               | 30               | 085                  |                 |                  |  |                 |   |                  |                            |
| 36            | 120              |                      |                 |                  |  |                 |   |                  |                            |

### Double Open End (Petro-Klean - 36" long) Cartridge Style

| Housing Model | Housing Diameter | Number of Cartridges | Cartridge Style | Cartridge Height | Material   | Pressure Rating | Gasket Material   | Outlet Location* | Cover Bolt Style           |
|---------------|------------------|----------------------|-----------------|------------------|--|-----------------|---|------------------|----------------------------|
| ES            | 08               | 003                  | P = Petro-Klean | 3 = 3 High       | A = Carbon Steel<br>B = 304L S.S.<br>C = 316L S.S. | 1 = 150 psi     | GA = Nitrile<br>GB = EPR<br>GC = Viton<br>GD = PTFE<br>Encapsulated Viton | E1 = Bottom      | BB = Bolt<br>BF = Fast Hex |
|               | 12               | 009                  |                 |                  |  | 2 = 300 psi     |   | E2 = Side 90°    |                            |
|               | 14               | 012                  |                 |                  |  |                 |   | E3 = Side 180°   |                            |
|               | 16               | 017                  |                 |                  |  | E4 = Side 270°  |   |                  |                            |
|               | 20               | 027                  |                 |                  |  |                 |   |                  |                            |
|               | 24               | 039                  |                 |                  |  |                 |   |                  |                            |
|               | 30               | 063                  |                 |                  |  |                 |   |                  |                            |
| 36            | 091              |                      |                 |                  |  |                 |   |                  |                            |

\* Outlet location is from housing top-view clockwise from inlet centerline.

## Express Series Filter Housings for use with Plug-In Style Filter Cartridges

### Single Open End (222 O-ring) Cartridge Style

| Housing Model | Housing Diameter | Number of Cartridges | Cartridge Style           | Cartridge Height | Material   | Pressure Rating | Gasket Material   | Outlet Location* | Cover Bolt Style           |
|---------------|------------------|----------------------|---------------------------|------------------|--|-----------------|---|------------------|----------------------------|
| ES            | 08               | 004                  | T = 222 O-ring<br>& Spear | 2 = 2 High       | A = Carbon Steel<br>B = 304L S.S.<br>C = 316L S.S. | 1 = 150 psi     | GA = Nitrile<br>GB = EPR<br>GC = Viton<br>GD = PTFE<br>Encapsulated Viton | E1 = Bottom      | BB = Bolt<br>BF = Fast Hex |
|               | 12               | 012                  |                           | 3 = 3 High       |  | 2 = 300 psi     |   | E2 = Side 90°    |                            |
|               | 14               | 014                  |                           | 4 = 4 High       |  |                 |   | E3 = Side 180°   |                            |
|               | 16               | 019                  |                           |                  |  | E4 = Side 270°  |   |                  |                            |
|               | 20               | 028                  |                           |                  |  |                 |   |                  |                            |
|               | 24               | 044                  |                           |                  |  |                 |   |                  |                            |
|               | 30               | 071                  |                           |                  |  |                 |   |                  |                            |
| 36            | 099              |                      |                           |                  |  |                 |   |                  |                            |

# Express Series® Filter Housings for use with Plug-In Style Filter Cartridges (cont.)

## Single Open End (226 Bayonet Lock) Cartridge Style

| Housing Model | Housing Diameter | Number of Cartridges | Cartridge Style        | Cartridge Height | Material   | Pressure Rating            | Gasket Material   | Outlet Location*   | Cover Bolt Style           |
|---------------|------------------|----------------------|------------------------|------------------|--|----------------------------|---|--|----------------------------|
| ES            | 08               | 004                  | S = 226 O-ring & Spear | 2 = 2 High       | A = Carbon Steel<br>B = 304L S.S.<br>C = 316L S.S. | 1 = 150 psi<br>2 = 300 psi | GA = Nitrile<br>GB = EPR<br>GC = Viton<br>GD = PTFE<br>Encapsulated Viton | E1 = Bottom<br>E2 = Side 90°<br>E3 = Side 180°<br>E4 = Side 270° | BB = Bolt<br>BF = Fast Hex |
|               | 12               | 008                  |                        | 3 = 3 High       |  |                            |   |  |                            |
|               | 14               | 012                  |                        | 4 = 4 High       |  |                            |   |  |                            |
|               | 16               | 017                  |                        |                  |  |                            |   |  |                            |
|               | 20               | 025                  |                        |                  |  |                            |   |  |                            |
|               | 24               | 038                  |                        |                  |  |                            |   |  |                            |
|               | 30               | 067                  |                        |                  |  |                            |   |  |                            |
| 36            | 077              |                      |                        |                  |  |                            |   |  |                            |

## Express Series Zeta Plus® Filter Housings Ordering Guide - 12" & 16" Diameter Cartridges

| Housing Model | Housing Diameter | Number of Cartridges | Cartridge Style | Cartridge Height | Material   | Pressure Rating            | Gasket Material   | Outlet Location*   | Cover Bolt Style           |
|---------------|------------------|----------------------|-----------------|------------------|--|----------------------------|---|--|----------------------------|
| ES            | 16               | 001 - 12" Ctg        | Z = Zeta Plus   | 3 = 3 High       | A = Carbon Steel<br>B = 304L S.S.<br>C = 316L S.S. | 1 = 150 psi<br>2 = 300 psi | GA = Nitrile<br>GB = EPR<br>GC = Viton<br>GD = PTFE<br>Encapsulated Viton | E1 = Bottom<br>E2 = Side 90°<br>E3 = Side 180°<br>E4 = Side 270° | BB = Bolt<br>BF = Fast Hex |
|               | 20               | 001 - 16" Ctg        |                 |                  |  |                            |   |  |                            |
|               | 30               | 004 - 12" Ctg        |                 |                  |  |                            |   |  |                            |

## Express Series Filter Housings Option Ordering Guide

| Cover Lifting Device Location                               | Radiography                         | Inlet/Outlet Connection Size (see table to right)               | Inlet/Outlet Connection Size (Inches)   |      |      |      |      |      |      |      |      |
|---|-------------------------------------|---|---|------|------|------|------|------|------|------|------|
| A1 = Side 90°<br>A2 = Side 180° (default)<br>A3 = Side 270° | R1 = None<br>R2 = Spot<br>R3 = Full | N1 = Default<br>N2 = Next Size Smaller<br>N3 = Next Size Bigger | Model                                   | ES08 | ES12 | ES14 | ES16 | ES20 | ES24 | ES30 | ES36 |
|   |                                     |   | Next Size Smaller                       | NA   | 2    | 3    | 3    | 4    | 4    | 6    | 8    |
|   |                                     |   | Next Size Larger                        | NA   | 4    | 6    | 6    | 8    | 8    | 10   | 12   |
|   |                                     |   | Surface Finish                          |      |      |      |      |      |      |      |      |
|   |                                     |   | Y1 = Default<br>Y2 = Pickle & Passivate |      |      |      |      |      |      |      |      |

\* Outlet location is from housing top-view clockwise from inlet centerline.

### WARRANTY

Seller warrants its equipment against defects in workmanship and material for a period of 12 months from date of shipment from the factory under normal use and service and otherwise when such equipment is used in accordance with instructions furnished by Seller and for purposes disclosed in writing at the time of purchase, if any. Any unauthorized alteration of modification of the equipment by Buyer will void this warranty. Seller's liability under this warranty shall be limited to the replacement or repair, F.O.B., point of manufacture, of any defective equipment or part which, having been returned to the factory, transportation charges prepaid, has been inspected and determined by Seller to be defective. THIS

WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, EITHER EXPRESSED OR IMPLIED, AS TO DESCRIPTION, QUALITY, MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE OR USE, OR ANY OTHER MATTER. Under no circumstances shall Seller be liable to Buyer or any third party for any loss of profits or other direct or indirect costs, expenses, losses or consequential damages arising out of or as a result of any defects in or failure of its products or any part or parts thereof or arising out of or as a result of parts or components incorporated in Seller's equipment but not supplied by the Seller.



a 3M company

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