FSL Filter Unit

Flow rate up to 22 gpm (82 lpm)

Dedicated filtration skids for gearbox and side-loop reservoir conditioning.

Ideal for high viscosity Lube and hydraulic oils (ISOVG22~ISOVG460)

Filter new fluids during transfer and replenishment (top-off)

Remove particulate and water contamination.

Large element yields extended life.

See Coal Mill Success Brochure for Gearbox & Oil Cost Benefit Analysis

Materials of Construction

Assembly Frame: Painted Steel
Drip Pan: Painted Steel
Filter Assembly: Epoxy coated steel
25 or 50 psid bypass available
True differential pressure indicator

Operating Temperature

Nitrile (Buna)	-40f to 150f
	-40c to 66c
Fluorocarbon (Viton)*	-15f to 200f
	-26c to 93c

*High temperature / phosphate ester design

Fluid Compatibility

Petroleum and mineral based fluids (standard). For polyol ester, phosphate ester, and other specified synthetics use Viton seal option or contact factory.

Weight

FSL1 (36 length): 260 Lbs (117 kg) approximate
FSL2 (36 length): 273 Lbs (124 kg) approximate
FSL3 (36 length): 292 Lbs (133 kg) approximate

Explosion Proof Option

Class 1, Div 2, Group C/D explosion optional.

Electrical Service

115VAC 60Hz 1P standard
(see options table for other selections)

Electric Motor Specifications

TEFC or ODP, 56C frame
FSL1: 1 HP, 115VAC, 60Hz, 1P, 1750 RPM
FSL2: 1 HP, 115VAC, 60Hz, 1P, 1750 RPM
1 HP, 230VAC, 60Hz, 1P, 1750 RPM
or 440VAC, 60Hz, 3P, 1750 RPM
FSL3: 3HP, 230VAC, 60Hz, 1P, 1750 RPM
or 440VAC, 60Hz, 3P, 1750 RPM

Recommended Viscosity Range*

FSL1*: 28 SSU ~ 6000 SSU, 6 cSt ~ 1200 cSt
FSL2*: 28 SSU ~ 5000 SSU, 6 cSt ~ 1000 cSt
FSL3*: 28 SSU ~ 3000 SSU, 6 cSt ~ 600 cSt

*Please check maximum viscosity of oil in coldest condition and normal operating condition for sizing and selection. Do not rely solely on ISO VG viscosity rating of the fluid.

Pump Specifications

Gear pump
Internal relief full flow @ 100 psi standard.

Cleaner Fluid, Greater Reliability

When establishing a target ISO cleanliness code first identify the most sensitive component. New oil added should be cleaner than the target ISO code for the system.

Figure 1 details the improvements in component life as the ISO cleanliness is improved for roller contact bearings. Improving and stabilizing fluid cleanliness codes can increase hydraulic component and bearing life exponentially.

Lab and field tests prove time and again that Hy-Pro filters deliver lower ISO cleanliness codes, and do it with greater consistency.

Figure 1

Current ISO Code	Target ISO Code	Target ISO Code	Target ISO Code	Target ISO Code
Start	**2 x Life**	**3 x Life**	**4 x Life**	**5 x Life**
28/26/23	25/22/19	22/20/17	20/18/15	19/17/14
27/25/22	23/21/18	21/19/16	19/17/14	18/16/13
26/24/21	22/20/17	20/18/15	19/17/14	17/15/12
25/23/20	21/19/16	19/17/14	17/15/12	16/14/11
25/22/19	20/18/15	18/16/13	16/14/11	15/13/10
23/21/18	19/17/14	17/15/12	15/13/10	14/12/9
22/20/17	18/16/13	16/14/11	15/13/10	13/11/8
21/19/16	17/15/12	15/13/10	13/11/8	-
20/18/15	16/14/11	14/12/9	-	-
19/17/14	15/13/10	13/11/8	-	-
18/16/13	14/12/9	-	-	-

Coreless Filter Element Technology

Hy-Pro coreless elements are featured in the FSL series (see figure 4). The elements are oversized to yield extended element life and handle a wide variety of high viscosity oils. Hy-Pro coreless elements utilize wire mesh pleat support which ensures that the pleats won't collapse or lose Integrity.

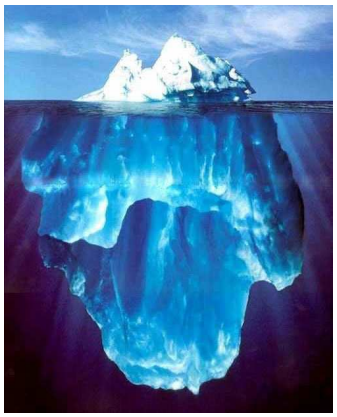
True Differential Pressure Gauges & Switches

Differential pressure gauges with green to red display ensures proper monitoring of filter element condition. DIN connector switch can be added to any pressure gauge (see figure 5).

Cost of Contamination Control - The Tip of the Iceberg

Filtration as a visible cost is less than 3% of the total costs associated with contamination and contamination related failures. Poorly managed fluid contamination can result in the following costly situations:

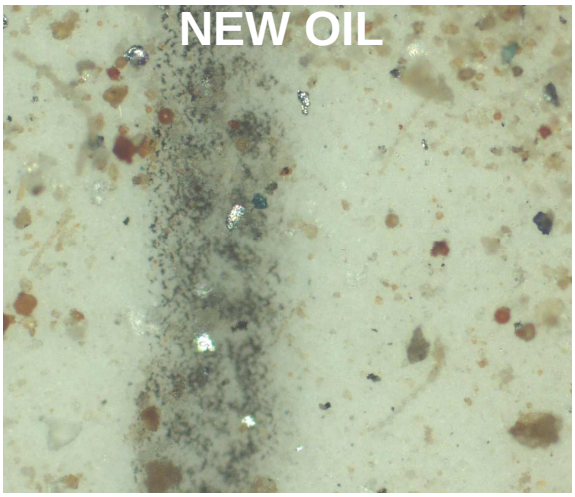
- **Lost production (downtime)**
- **Component repair, replacement**
- **Higher maintenance labor costs**
- **Unreliable machine performance**
- **Reduced fluid life**
- **Wasted time and energy**



FSL1, FSL2, FSL3 FILTER CART APPLICATION INFO

Filtering New Oil - Remove Particulate and Water

New oil is typically not clean oil, and not suitable for use in hydraulic and lube systems. During the production and transportation process new oil collects high levels of solid contaminant and water. A common ISO code for new oil is 24/22/19. New oil is one of the worst sources of particulate contaminant system ingression.



The FSL features a three-way valve on the inlet and may be used to draw new oil from a tote and pre-filter the new oil. Hy-Pro High efficiency media is your last line of defense against harmful particulate and water contamination. Free and dissolved water in hydraulic and lube systems leads to accelerated abrasive wear, corrosion of metal surfaces, increased electrical conductivity, viscosity variance, loss of lubricity, fluid additive breakdown, bearing fatigue, and more. The FSL features a wide range of options to tackle any challenge whether you are removing solid particles only or water and particles. The “A” media adsorbs water while controlling particles with absolute efficiency (beta ratio of $\beta X_{[c]} > 1000$).

Dynamic Filter Efficiency (DFE) Testing

Revolutionary test methods assure that DFE rated elements perform true to rating even under demanding variable flow and vibration conditions. Today's industrial and mobile hydraulic circuits require elements that deliver specified cleanliness under ALL circumstances. Wire mesh supports the media to ensure against cyclical flow fatigue, temperature, and chemical resistance failures possible in filter elements with synthetic support mesh. Contact your distributor or Hy-Pro for more information and published articles on DFE testing.

Media Options

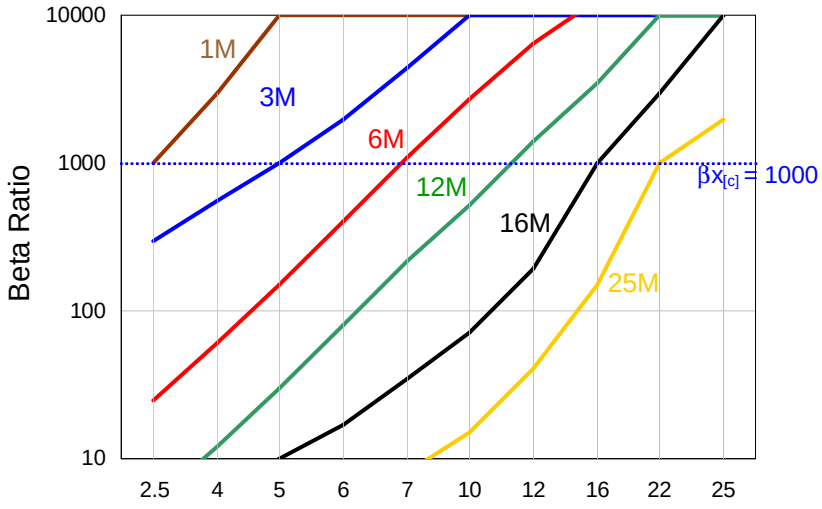
Through extensive testing we have developed media choices to handle any application. Options include G7 Dualglass, Dynafuzz (stainless fiber), and Wire mesh (stainless).

Fluid Compatibility

Petroleum based fluids, water glycol, polyol ester, phosphate ester, high water based fluids and many other synthetics. Contact us for seal material selection assistance.

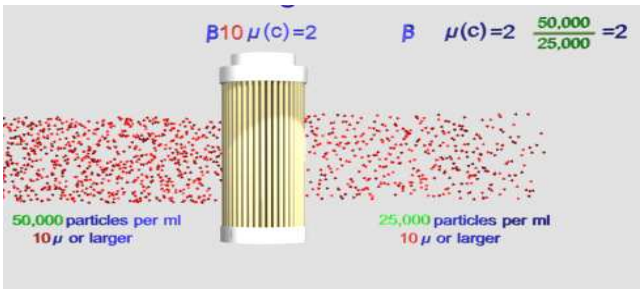
FILTER MEDIA SPECIFICATIONS

Glass Media Code Filtration Efficiency (Beta Ratio) vs Micron Size



media code	media description
A	G7 Dualglass high performance media combined with water removal scrim. $\beta x_{[c]} = 1000$ ($\beta x = 200$)
M	G7 Dualglass our latest generation of DFE rated, high performance glass media for all hydraulic & lubrication fluids. $\beta x_{[c]} = 1000$ ($\beta x = 200$)
W	Stainless steel wire mesh media $\beta x_{[c]} = 2$ ($\beta x = 2$) nominally rated

Typical cellulose media performance



Hy-Pro G7 Dualglass media performance