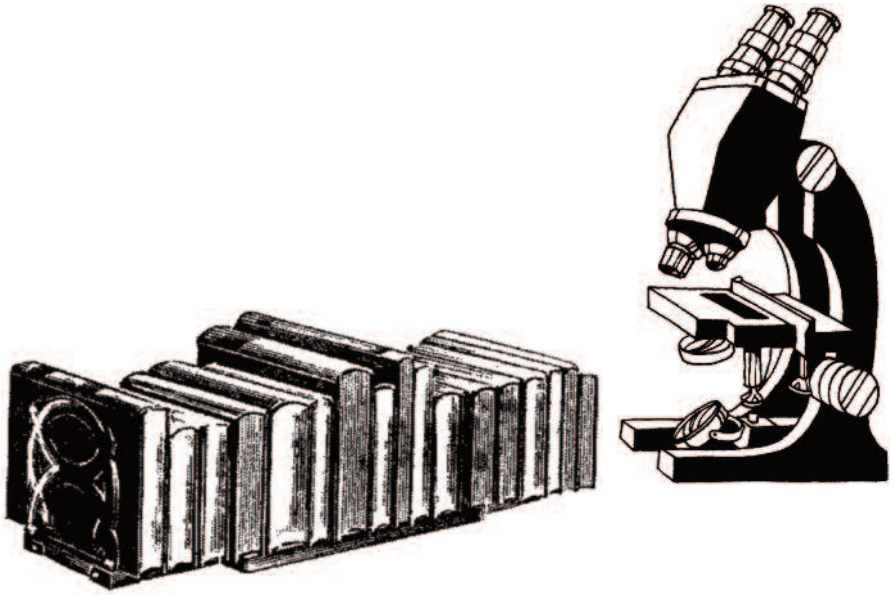
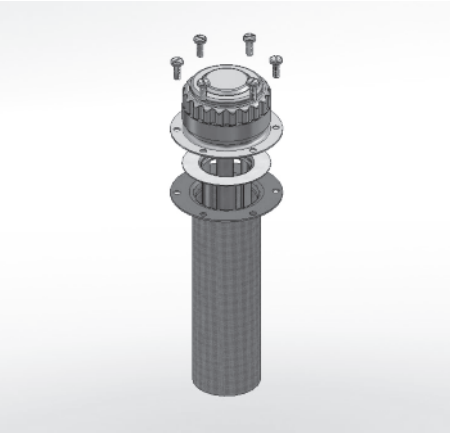
SECTION R

REFERENCE SECTION



NOTE: *Due to Magnaloy's policy of continuous improvement, specificaitons are subject to change without notice. Check with the factory or our Web Site at www.magnaloy.com for the latest information.*

What you should know about Filler Breathers!



Sizing is based on the reservoir air exchange requirements, NOT the pump output. Magnaloy Filler Breather Assemblies are sized for a maximum pressure drop of .45 inches Hg.

Hydraulic users rarely change the breather filter, which can contribute to pump cavitation. A routine of regularly changing or cleaning the air filter should be developed. A vacuum indictor can be very helpful in determining the cleanliness of the air filter.

The Filler Breather filtration rating should be equal to or better than the system filtration rating.

On systems with constant fluid level in the reservoir, a pressurized Filler Breather Cap increases pump inlet pressure. Generally, the more pressure a pump has at its inlet, the quieter it will run.

The NPFA standard call for TWO filler openings, each of which should pass a minimum of 5 GPM. They should be located on opposite sides or ends of the reservoir.

The maximum air filtration allowed is 40 micron. All of Magnaloy's Filler Breather Caps are 10 Micron nominal.

The filler screen should be at least 30 mesh and should have an internal metal guard to prevent the fill spout from puncturing the screen. All Magnaloy's Screen are 30 mesh and we offer a Screen Guard Option.

Filter Selection and Life!

Filter life is difficult to determine. It is affected by many factors, including the operation systems condition, flow rate, viscosity of the fluid, duty cycle, environment, initial differential pressure, and cleanliness practices.

Loading is the process of plugging the pore of the media with contaminants. As the pores continue to plug, the pressure increases to maintain the fluid flow. This pressure is known as the differential pressure. At the beginning of the filter life cycle this pressure is relatively low, but pressure across the element increases as the pores in the media become plugged. The size, shape, and pore arrangement of a filter determines why some filter elements last longer than other types. Cellulose media (paper) will load more quickly than the same given area of fiberglass media (synthetic) due to the reduced number of pores per unit area.

Filter element selection is based on many factors, including operating environment, safety concerns from system failure, and criticality of system operation. Always consult your equipment manufacturer's recommendation for fluid cleanliness level.

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Unistrut Par No.	Hycon Part No.	Hydro-carft Part No.	Hydra-Zorb Part No.	Magnaloy Part No.
		- TUBE SIZES -		
004T008	H004T008	WS-04	100025	MCC-008T
006T010	H006T010	WS-06	100037	MCC-012T
008T012	H008T012	WS-08	100050	MCC-016T
010T014	H010T014	WS-10	100062	MCC-020T
012T016	H012T016	WS-12	100075	MCC-024T
014T018	H014T018	WS-14	100087	MCC-028T
016T020	H016T020	WS-16	100100	MCC-100T
018T022	H018T022	WS-18	100112	MCC-104T
			100119	MCC-106T
020T024	H020T024	WS-20	100125	MCC-108T
022T026	H022T026	WS-22	100137	MCC-112T
024N028	H024N028	WS-24	100150	MCC-116T
026N030	H026N030	WS-26	100162	MCC-120T
028N032	H028N032	WS-28	100175	MCC-124T
030N034	H030N034	WS-30	100187	MCC-128T
032N036	H032N036	WS-32	100200	MCC-200T
034N040	H034N040	WS-34	100212	MCC-204T
		WS-36	100225	MCC-208T
038N044	H038N044	WS-38	100237	MCC-212T
040N046	H040N046	WS-40	100251	MCC-216T
042N048	H042N048	WS-42	100262	MCC-220T
046N052	H046N052	WS-46	100287	MCC-224T
		WS-48	100300	MCC-300T
050N056	H050N056	WS-50	100312	MCC-304T
058N064	H058N064	WS-58	100362	MCC-320T
066N074	H066N074	WS-66	100412	MCC-404T
		- PIPE SIZES -		
009N012	H009N012	WS-04P	200025	MCC-008P
011N014	H011N014	WS-06P	200037	MCC-012P
014N018	H014N018	WS-08P	200050	MCC-016P
017N022	H017N022	WS-12P	200075	MCC-024P
021N026	H021N026	WS-16P	200100	MCC-100P
027N032	H027N032	WS-20P	200125	MCC-108P
030N034	H030N034	WS-24P	200150	MCC-116P
038N044	H038N044	WS-32P	200200	MCC-200P
046N052	H046N052	WS-40P	200250	MCC-216P
056N062	H056N062	WS-48P	200300	MCC-300P
064N072	H064N072	WS-56P	200350	MCC-316P
072N080	H072N080	WS-64P	200400	MCC-400P
089N096	H089N096	WS-80P	200500	MCC-500P
106N114	H106N114	WS-96P	200600	MCC-600P

To Cross Reference a Hydra-Zorb part number to the equivalent Magnaloy part number, follow the flow chart below and substitute the Magnaloy Code for the correponding Hydra-Zorb Code. This Cross-Reference is for the most common Hyra-Zorb clamps, for other Tier arragnements or Cushion Series, contact the factory for assistance and availability.

Hydra Zorb Part Number

XXX YYY 00 ZZZZ

Tier Arrangement Codes
Single Tier
0111
1111
3211
8111
6111
Multi Tier
1112
0600
4111
1771

Cushion ID Size Codes
025
031
037
050
054
062
067
075
084
087
100
105
112
125
131
137
150
162
166
175
190
200
212
225
237

Cushion Series Codes
511
521
522
524
531
532
541
542
561

Magnaloy Part Number

MMC- XXX YYYY - ZZZZ

Tier Arrangement Codes
Single Tier
0111
1111
3211
8111
6111
Multi Tier
1112
0600
4111
1771

Cushion ID Size Codes
008T
010T
012T
016T
008P
020T
012P
024T
016P
028T
100T
024P
100A
108T
100P
108A
116T
116A
108P
124T
116P
200T
200A
208T
200P

Cushion Series Codes
511
521
522
524
531
532
541
542
561

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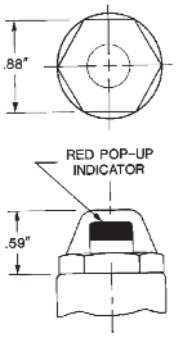
Differential Pressure ΔP Indicators

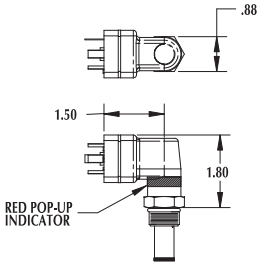
For use with Magnaloy SFH series Spin-On Filter Head

DP03 Series

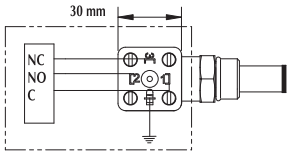


Low Pressure Visual Indicator
200 PSI max Operating Pressure
Temperature range up to 150⁰ F
Automatic Resetting
Factory Installed, Available as kit for field replacement
For use with SFH Series Head Only

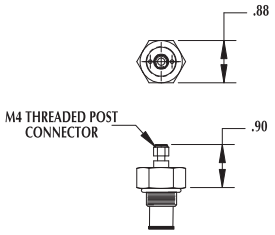
DP05 Series



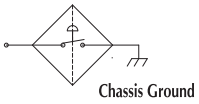
Cartridge Style Visual/Electrical Indicator
Hirschman (DIN 43650 Type AM Receptacle 11mm)
1NO, 1NC, & Common SPDT Switch (3 pole & ground)
5A; 125/250 VAC, 24 VDC (Resistive)
6000 psi max Operating Pressure
Temperatures up to 200F
Automatic Resetting
Factory Installed. Available as kit for field replacement.



DP06 Series



Cartridge Style Single Wire DC Indicator
200mA @ 36VDC
Momentary - Normally Open Circuit
6000 psi max Operating Pressure
Temperatures up to 200F
Automatic Resetting
Factory Installed. Available as kit for field replacement.
Ground Through Filter Head to Chassis. (In Oil)



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Filter Efficiency Standard

ISO 4572: 1981
ISO 16889: 1999

BETA Ratio Information

1. Beta Ratio means counting particles less than 40 Micron in size using a test dust as the test contaminant

2. Beta Ratio equals: $\frac{\text{Particle count* in oil up stream of filter}}{\text{Particle count* in oil down stream of filter}}$

   * The number of particles of a given size or greater per unit volume

3. Example: $\frac{\text{2,000 Particles 10um or greater in oil sample before filter}}{\text{500 Particles 10 um or greater in oil sample after filter}} = 4.0$

   -OR-

   $\frac{2{,}000}{500} = 4.0$ (Filter removed 75% of particles 10 um OR GREATER)

4. Terminology: $B_{10} = 4.0$ (Beta 10 Ratio equals 4.0)

5. Ratio Numbers and Equivalent Efficiencies:

$Beta_x$ =	2.0	Represents	50% Efficiency (Nominal Rating)
$Beta_x$ =	20.0	Represents	95% Efficiency
$Beta_x$ =	75.0	Represents	98.67% Efficiency (Absolute Rating)
$Beta_x$ =	200.0	Represents	99.5% Efficiency

Note: *Any Beta greater than 100 adds less than 1% to overall efficiency, and greatly increases pressure drop through the filter.*

Typical Stainless Steel Wire Cloth Media

Mesh Size	Degrees of Filtration
30	560 Micron
60	280 Micron
100	141 Micron
200	75 Micron
200 x 600	20 Micron
200 x 1400	10 Micron
325 x 1900	3 Micron

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Filter Selection Data

Fluid Viscosity & Flow Capacity

The single most critical variable in determining the flow capacity of a filter is the viscosity of the fluid passing through it. Pressure drop (ΔP) produced by flow through a filter assembly is directly proportional to the viscosity of the fluid being filtered. At any given flow rate, a lower viscosity fluid will produce less pressure drop (and greater flow capacity) than that of a higher viscosity fluid.

Fluid Viscosity & Temperature

A fluids viscosity is governed by its temperature. As a fluid's temperature increases, its viscosity decreases. Use a temperature versus viscosity chart to determine the viscosity of the fluid used in your system at its normal operating temperature.

Estimating Pressure Drop (ΔP)

All pressure drop data found in this catalog is based on 150 SUS oil. If the fluid to be filtered in your application has a viscosity of 150 SUS at the system's normal operating temperature, pressure drop values can be taken directly off the graphs. If the fluid's viscosity is not 150 SUS, use the formula below to estimate the pressure drop.

$$\text{Estimated Pressure Drop } (\Delta P) \text{ through filter assembly} = \text{Pressure Drop Value taken from graph} \times \frac{\text{Viscosity of Fluid at System Operating Temperature}}{150}$$

Filtration Application Guidelines

Suction Strainers:

Maximum pressure drop : 1" Hg
Maximum line velocity: 5 feet per second

Suction Line Filters:

Maximum pressure drop: No more than 50% of the Maximum allowable vacuum recommended by the pump manufacturer (at normal operating temperature with a clean filter element).
Maximum line velocity: 5 feet per second

Return Line Filters:

Maximum pressure drop: No more than 50% of the filter by-pass valve setting at normal operating temperature with a clean filter element.
Maximum line velocity: 15 feet per second
A By-Pass Valve should ALWAYS be included on a Return Filter

Pressure Filters:

Maximum pressure drop: No more than 50% of the filter by-pass valve setting at normal operating temperature with a clean filter element.
Maximum line velocity: 25 feet per second

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