

High Performance, Corrosive Handling Filtration Equipment

WARCO high performance, absolute rated filtration systems set the standard for demanding corrosive chemical process filters. WARCO highly engineered, glass-free thermoplastic filter designs withstand the harshest chemistries for providing many years of reliable service life.

WARCO SOLID thermoplastic filters are powered by equally robust seal-less magnetic pumps for a completely non-metallic filtration system, free of linings or coatings. The comprehensive filter program encompasses cartridge, disc, bag, pleated and carbon configurations provide corrosion proof, leak-free, absolute rated filtration from 0.02 to 120 microns.



Absolute Rated Corrosion Proof Filters™
Zero Corrosion – Zero Leakage – Zero By-Pass™



WARCO FILTERS™



Chemical Processing

Electroplating

PCB & Electronics

Water Treatment

Series-GF

**High performance
filter systems**

Warco Filters

WARCO FILTRATION TECHNOLOGY

Why fusion welded thermoplastics? Why do major plating line and chemical process OEM manufacturers around the world use fabricated polypropylene or PVDF?

- Pure engineered thermoplastics provide optimal chemical resistance and purity containing no glass fillers, pigments or metallic stabilizers
- Fusion welded thermoplastics are free of inconsistent PVC glue welds or plastic bead welding
- Fusion welding provides an integral design with uniform thickness for handling extreme process conditions
- Rugged SOLID PP or PVDF systems resist internal or external corrosion
- WARCO polypropylene filters aesthetically match plating line and OEM systems

WARCO pumps and filtration equipment feature the corrosion resistance and durability of SOLID Simona™ Polypropylene or PVDF construction with simplified change-out and maintenance procedures. For over 20 years, CHEMAG™ filtration systems have been the benchmark for corrosion proof, fabricated thermoplastics providing years of trouble-free performance. Today, CHEMAG™ filter vessels are backed by a five-year guarantee against degradation for approved applications. Rugged, leak-proof filtration systems would not be complete without the most comprehensive range of seal-less mag-drive pumps in the industry.



CHEMAG™ filters are equipped with CHEMTREX™ advanced filter elements and media. Accessory equipment includes vertical in-tank and sump pumps, drum and container pumps, flow meters and power monitoring equipment.

Features:

- Solid Simona polypropylene construction, free of coated or lined metal parts
- Solid Simona polypropylene support base, protects pump & motor
- Tilt lid with swing bolts for quick filter change-outs
- Bottom inlet & outlet for easy access
- Bottom mounted cartridges or stacked disc assemblies

Applications:

- Plating electrolytes (including copper sulfate, nickel, tin-lead, black oxide, zinc chloride, gold, etc.)
- High purity solutions, cleaners, etchants
- Chemical processing
- Caustic, HCL, sodium hypochlorite
- Waste treatment



	System Model	Rated Flow (GPH)	Pump (H.P.)	# of Cartridges	# of Discs	Surface Area (Sq. Ft.)	Solids Capacity (Cu. Ft.)	Inlet Port	Outlet Port
NEUTRAL CARTRIDGE FILTER (specify alternative pump)	01.) GFN 0310 C	900	Neutral	3 x 10"		10.5		1"	3/4"
	02.) GFN 0320 C	1,800	Neutral	3 x 20"		21.0		1"	1"
	03.) GFN 0330 C	2,700	Neutral	3 x 20"		31.5		1 1/4"	1 1/4"
	04.) GFN 0710 C	2,100	Neutral	7 x 10"		24.5		1 1/4"	1 1/4"
	05.) GFN 0720 C	4,200	Neutral	7 x 20"		49.0		1 1/4"	1 1/4"
	06.) GFN 0730 C	6,300	Neutral	7 x 30"		73.5		1 1/2"	1 1/2"
	07.) GFN 1210 C	3,600	Neutral	12 x 10"		42.0		1 1/4"	1 1/4"
	08.) GFN 1220 C	7,200	Neutral	12 x 20"		84.0		2"	1 1/2"
	09.) GFN 1230 BC (+)	7,000	Neutral	12 x 30"		126.0		1 1/2"	1 1/2"
	10.) GFN 1230 C	10,800	Neutral	12 x 30"		126.0		1 1/2"	1 1/2"
	11.) GFN 1520 C	9,200	Neutral	15 x 20"		105.0		2"	1 1/2"
	12.) GFN 1530 C	13,500	Neutral	15 x 30"		157.5		2"	2"
	13.) GFN 3620 C	21,600	Neutral	36 x 20"		252.0		3"	2"
	14.) GFN 3630 C	32,400	Neutral	36 x 30"		378.0		3"	3"
NEUTRAL DISC FILTER (specify alternative pump)	15.) GFN 3505 D	800	Neutral		35 x 5"	4.76	.05	1"	3/4"
	16.) GFN 3508 D	1,200	Neutral		35 x 8"	11.9	.13	1 1/4"	1 1/4"
	17.) GFN 6608 D	3,000	Neutral		66 x 8"	22.44	.244	1 1/4"	1 1/4"
	18.) GFN 3310 D	4,000	Neutral		33 x 10"	16.83	.25	1 1/4"	1 1/4"
	19.) GFN 6610 D	7,000	Neutral		66 x 10"	33.66	.50	2"	1 1/2"
	20.) GFN 3312 D	7,000	Neutral		33 x 12"	23.1	.27	1 1/2"	1 1/4"
	21.) GFN 6612 D	8,500	Neutral		66 x 12"	46.2	.54	2"	1 1/2"
	22.) GFN 4018 D	10,000	Neutral		40 x 18"	68	1.24	3"	2"
	23.) GFN 6018 D	20,000	Neutral		60 x 18"	102	1.86	3"	3"
	24.) GFN 8018 D	30,000	Neutral		80 x 18"	136	2.48	3"	3"
	25.) GFN ST 3508 D	1,200	Neutral		35 x 8"	11.9	.13	1 1/4"	1 1/4"
	26.) GFN ST 6608 D	3,000	Neutral		66 x 8"	22.44	.244	1 1/4"	1 1/4"
	27.) GFN ST 3310 D	4,000	Neutral		33 x 10"	16.83	.25	1 1/4"	1 1/4"
	28.) GFN ST 6610 D	7,000	Neutral		66 x 10"	33.66	.50	2"	1 1/2"
	29.) GFN ST 6612 D	8,500	Neutral		66 x 12"	46.2	.54	2"	1 1/2"
	30.) GFN ST 4018 D	10,000	Neutral		40 x 18"	68	1.24	3"	2"
	31.) GFN ST 6018 D	20,000	Neutral		60 x 18"	102	1.86	3"	3"
	32.) GFN ST 8018 D	30,000	Neutral		80 x 18"	136	2.48	3"	3"
	33.) GFN 6612 BD (+)	7,000	Neutral		66 x 12"	46.2	.54	2"	1 1/2"
34.) GFN 6018 BD	20,000	Neutral		60 x 18"	102	1.86	3"	3"	
COMPLETE CARTRIDGE FILTER SYSTEM	35.) GFT 0310 C	780	1.0	3 x 10"		10.5		1"	3/4"
	36.) GFT 0320 C	1,200	1.5	3 x 20"		21.0		1"	1"
	37.) GFC 0330 C	3,000	1.0	3 x 30"		31.5		1 1/4"	1 1/4"
	38.) GFC 0710 C	3,000	1.0	7 x 10"		24.5		1 1/4"	1 1/4"
	39.) GFC 0720 C	4,500	2.0	7 x 20"		49.0		1 1/4"	1 1/4"
	40.) GFC 0730 C	7,200	3.0	7 x 30"		73.5		1 1/2"	1 1/2"
	41.) GFC 1210 C	4,500	2.0	12 x 10"		42.0		1 1/4"	1 1/4"
	42.) GFC 1220 C	7,200	3.0	12 x 20"		84.0		2"	1 1/2"
	43.) GFC 1230 BC (+)	7,200	3.0	12 x 30"		126.0		1 1/2"	1 1/2"
	44.) GFC 1230 C	12,000	7.5	12 x 30"		126.0		1 1/2"	1 1/2"
	45.) GFC 1520 C	7,200	3.0	15 x 20"		105.0		2"	1 1/2"
	46.) GFC 1530 C	12,000	7.5	15 x 30"		157.5		2"	2"
	47.) GFC 3620 C	21,000	15.0	36 x 20"		252.0		3"	2"
	48.) GFC 3630 C	30,000	20.0	36 x 30"		378.0		3"	3"
COMPLETE DISC FILTER SYSTEM	49.) GFT 3505 D	780	1.0		35 x 5"	4.76	.05	1"	3/4"
	50.) GFT 3508 D	1,200	1.5		35 x 8"	11.9	.13	1 1/4"	1 1/4"
	51.) GFC 6608 D	3,000	1.0		66 x 8"	22.44	.244	1 1/4"	1 1/4"
	52.) GFC 6608 D	4,500	2.0		33 x 10"	16.83	.25	1 1/4"	1 1/4"
	53.) GFC 3310 D	7,200	3.0		66 x 10"	33.66	.50	2"	1 1/2"
	54.) GFC 3312 D	7,200	3.0		33 x 12"	23.1	.27	1 1/2"	1 1/4"
	55.) GFC 6612 D	12,000	7.5		66 x 12"	46.2	.54	2"	1 1/2"
	56.) GFC 4018 D	12,000	7.5		40 x 18"	68	1.24	3"	2"
	57.) GFC 6018 D	21,000	15.0		60 x 18"	102	1.86	3"	3"
	58.) GFC 8018 D	30,000	20.0		80 x 18"	136	2.48	3"	3"
	59.) GFT ST 3508 D	1,200	1.5		35 x 8"	11.9	.13	1 1/4"	1 1/4"
	60.) GFC ST 6608 D	3,000	1.0		66 x 8"	22.44	.244	1 1/4"	1 1/4"
	61.) GFC ST 3310 D	4,500	2.0		33 x 10"	16.83	.25	1 1/4"	1 1/4"
	62.) GFC ST 6610 D	7,200	3.0		66 x 10"	33.66	.50	2"	1 1/2"
	63.) GFC ST 6612 D	12,000	7.5		66 x 12"	46.2	.54	2"	1 1/2"
	64.) GFC ST 4018 D	12,000	7.5		40 x 18"	68	1.24	3"	2"
	65.) GFC ST 6018 D	21,000	15.0		60 x 18"	102	1.86	3"	3"
	66.) GFC ST 8018 D	30,000	20.0		80 x 18"	136	2.48	3"	3"
	67.) GFC 6612 BD (+)	7,200	3.0		66 x 12"	46.2	.54	2"	1 1/2"
	68.) GFC 6018 BD	21,000	15.0		60 x 18"	102	1.86	3"	3"

Chamber Technology



CHEMAG™ Thermoplastic Cartridge Filtration Systems

Series GF & GFK Standard DOE Cartridge Systems Constructed in Glass-Free Polypropylene

CHEMAG™ Series GF & GFK filtration systems feature versatile field interchangeability, fitted with either cartridge or horizontal disc assemblies including easy access tilt lids. Robust, glass-free polypropylene or pure PVDF thermoplastic construction withstands the most corrosive applications. CHEMAG™ is the benchmark for SOLID thermoplastic construction, absent of metallic parts, rubber lining or glue welding. All systems are equipped with heavy duty thermoplastic seal-less magnetic pumps.

System Design Features

- Rugged SOLID polypropylene or PVDF resists internal or external corrosion containing no glass fillers, pigments or metallic stabilizers, PVC glue or plastic bead welding
- Fusion welding provides a one-piece integral design with uniform thickness for extreme process conditions
- Complete systems equipped with PP or PVDF sealless mag-drive pumps
- Field interchangeable disc assemblies & granular carbon canisters (20" & 30" lengths)

Series GFK (Kit Base) & GF (Fabricated Base) Performance Range

- Capacities up to 40,000 GPH
- Chambers Sizes Available: 3 x 10"/20"/30"/40", 7 x 10"/20"/30"/40", 12 x 20"/30"/40", 15 x 20"/30"/40" and 36 x 20"/30"/40"



CHEMAG™ Thermoplastic Disc Filtration Systems

Series GF Rugged Thermoplastic Disc Filtration Systems Constructed in Glass-Free Polypropylene

CHEMAG™ Series GF horizontal disc filtration systems feature all pure polypropylene construction with simplified maintenance features. SOLID, fusion welded, glass-free polypropylene thermoplastic construction withstands the most corrosive applications. CHEMAG™ is the benchmark for SOLID thermoplastic construction, absent of metallic parts, rubber lining or glue welding. All systems are equipped with heavy duty thermoplastic sealless magnetic pumps.

Series GF horizontal disc systems are available in 5", 8" 10", 12" and 18" diameter sizes. Slurry tank designs are available for continuous or intermittent carbon treatment. Corrosion proof, polypropylene filter vessels offer years of trouble-free service without costly relining of metallic housings. All systems are equipped with polypropylene or PVDF seal-less mag-drive pumps for ensuring a leak-free process.

System Design Features

- Field interchangeability between horizontal discs or conventional cartridges.
- Slurry tank designs are available for continuous or intermittent carbon treatment.
- Rugged SOLID polypropylene resists internal or external corrosion
- Complete systems w/ polypropylene or PVDF mag-drive pumps

Performance Range

- Capacities up to 20,000 GPH
- Disc systems are available in 5", 8" 10", 12" and 18" diameter sizes.
- Powder Carbon Capacity: up to 1.85 cubic feet (per vessel)

Filter

Technology

Chemtrex™ string wound depth cartridges are available in conventional and pre-washed media types depending upon process requirements. Depth cartridges are suitable for coarser filtration requirements with high solids loading, typically preferred in the 30-150 micron range.

Specifications

Micron Ratings:

1 to 120 Microns Nominal

Materials available:

Polypropylene (acid washed)
Cotton
Glass fiber media,
Cartridges with encapsulated powdered carbon

Dimensions:

2.5" to 2.75" diameter x 10", 20", 30" & 40" lengths



CHEMTREX™ melt blown cartridges are available in nominal or high efficiency ratings with particle retention ratings from 1 to 30 micron. Melt blown cartridges, with finer media fibers than string wound designs, are suitable for mid-range micron ratings typically preferred in the 10-30 nominal micron range.

Specifications

Micron Ratings:

1 to 30 Microns Nominal

Materials available:

Pure Polypropylene

Dimensions:

2.5" diameter x 10", 20" & 30" lengths



Chemtrex™ disc media is available a wide range of sizes and materials including pure polypropylene, polypropylene felt, PVDF, cellulose, D.E. impregnated cellulose, polyester and carbon impregnated, nominal or absolute rated.

Specifications

Media Materials Include:

- ◆ Nominal Cellulose Paper
- ◆ Absolute D.E. Impregnated Cellulose Paper
- ◆ Pure Polypropylene
- ◆ Absolute PVDF Micro-fiber
- ◆ Polyester
- ◆ Carbon Impregnated

Disc Diameter Sizes Include: 5", 8", 10", 12" & 18"

Chemtrex™ retrofit disc elements are designed to specification.

(1) Polypropylene or Polyester Disc Media

(2) Cellulose Paper Disc Media

(3) Carbon Impregnated Disc Media

(1)

(2)

(3)



Pump

Technology

Please consult with your WARCO sales representative for standard seal-less magnetic pump selections to be mounted on corresponding neutral filtration systems. Certain system conditions may require increased filtration capacity with reduced flow (i.e., smaller pump) and in other cases maximum flow may be preferred with a higher capacity pump.

Pump Model	Rated Flow		MAX Temp.	Ports	Material	HP	Volts (60 Hz)
	(GPM)	(GPH)	(°F)				
MT 2003 P1H1	6	360	140	1/2 x 1/2	PP	.05	230/460
MT 2003 F1H1	6	360	180	1/2 x 1/2	PP/PVDF	.05	230/460
MT 2003 P1H2	6	360	140	1/2 x 1/2	PP	.05	115/230
MT 2003 F1H2	6	360	180	1/2 x 1/2	PP/PVDF	.05	115/230
MT 3003 P1H1	13	780	140	3/4 x 3/4	PP	1.0	230/460
MT 3003 F1H1	13	780	180	3/4 x 3/4	PP/PVDF	1.0	230/460
MT 3003 P1H2	13	780	140	3/4 x 3/4	PP	1.0	115/230
MT 3003 F1H2	13	780	180	3/4 x 3/4	PP/PVDF	1.0	115/230
MT 5002 P2H1	20	1200	140	1 x 1	PP	1.5	230/460
MT 5002 F2H1	20	1200	180	1 x 1	PP/PVDF	1.5	230/460
MT 5002 P2H2	20	1200	140	1 x 1	PP	1.5	115/230
MT 5002 F2H2	20	1200	180	1 x 1	PP/PVDF	1.5	115/230
MT 7002 P2H1	30	1800	140	1 x 1	PP	3.0	230/460
MT 7002 F2H1	30	1800	180	1 x 1	PP/PVDF	3.0	230/460
MT 7002 P2H2	30	1800	140	1 x 1	PP	3.0	115/230
MT 7002 F2H2	30	1800	180	1 x 1	PP/PVDF	3.0	115/230
MCH 11001 P2H1	50	3000	140	1-1/4 x 1	PP	1.0	230/460
MCH 11001 F2H1	50	3000	180	1-1/4 x 1	PP/PVDF	1.0	230/460
MCH 11001 P2H2	50	3000	140	1-1/4 x 1	PP	1.0	115/230
MCH 11001 F2H2	50	3000	180	1-1/4 x 1	PP/PVDF	1.0	115/230
MCH 16001 P2H1	75	4500	140	1-1/2 x 1-1/4	PP	2.0	230/460
MCH 16001 F2H1	75	4500	180	1-1/2 x 1-1/4	PP/PVDF	2.0	230/460
MCH 16001 P2H2	75	4500	140	1-1/2 x 1-1/4	PP	2.0	115/230
MCH 16001 F2H2	75	4500	180	1-1/2 x 1-1/4	PP/PVDF	2.0	115/230
MCH 28001 P2F1	120	7200	140	2 x 1-1/2	PP	3.0	230/460
MCH 28001 F2F1	120	7200	180	2 x 1-1/2	PP/PVDF	3.0	230/460
MCH 51001 P2F1	200	12000	140	3 x 2	PP	7.5	230/460
MCH 51001 F2F1	200	12000	180	3 x 2	PP/PVDF	7.5	230/460
MCH 81003 P2F1	350	21000	140	4 x 3	PP	15	230/460
MCH 81003 F2F1	350	21000	180	4 x 3	PP/PVDF	15	230/460
MCH 91003 P2F1	500	30000	140	4 x 3	PP	20	230/460
MCH 91003 F2H1	500	30000	180	4 x 3	PP/PVDF	20	230/460

Performance:

- Rated Flow for MT turbine pumps based upon 20' TDH
- Rated flow for MCH11001, mch16001 & MCH28001 centrifugal pumps based up on 50' TDH
- Rated flow for MCH51001, MCH81003 & MCH91003 centrifugal pumps based upon 70' TDH

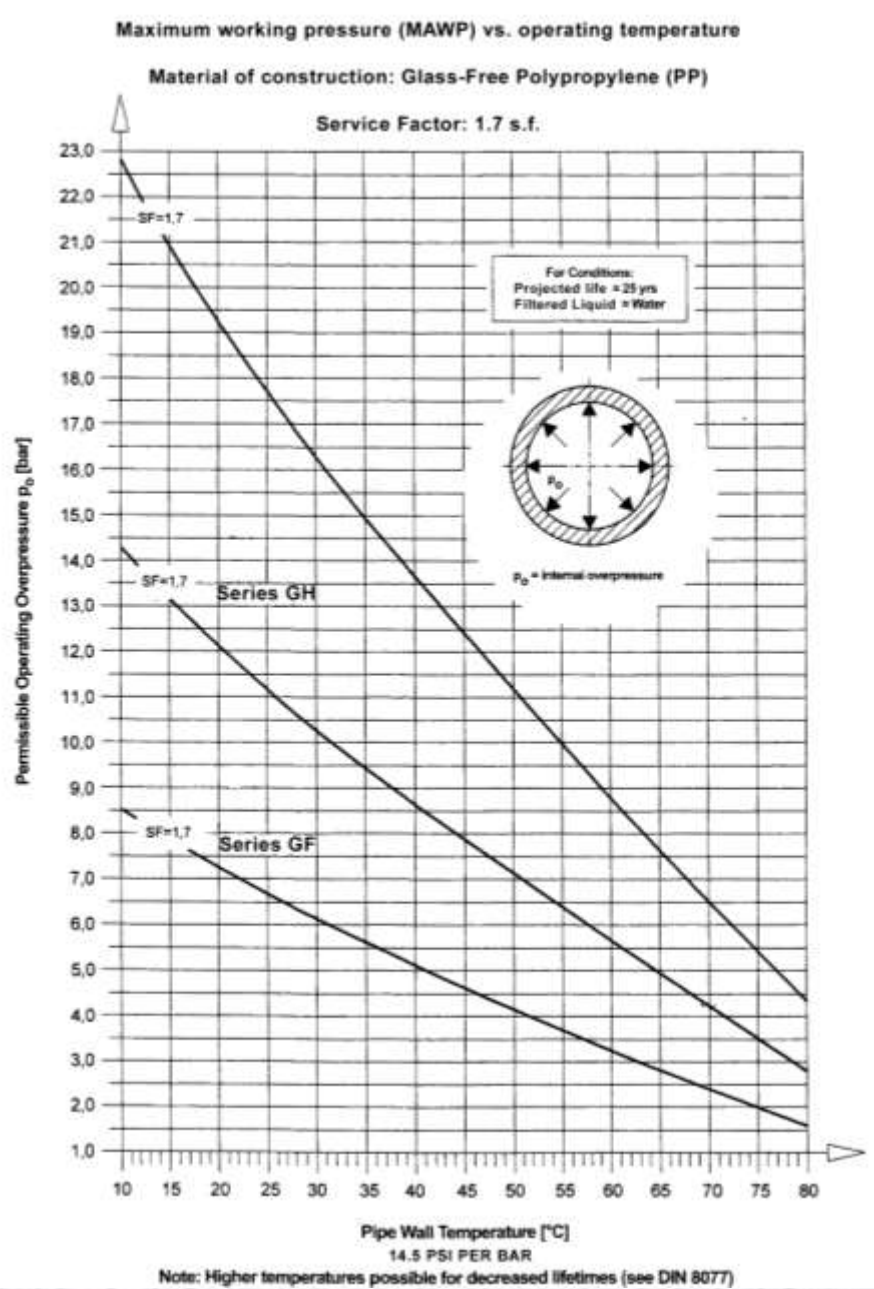
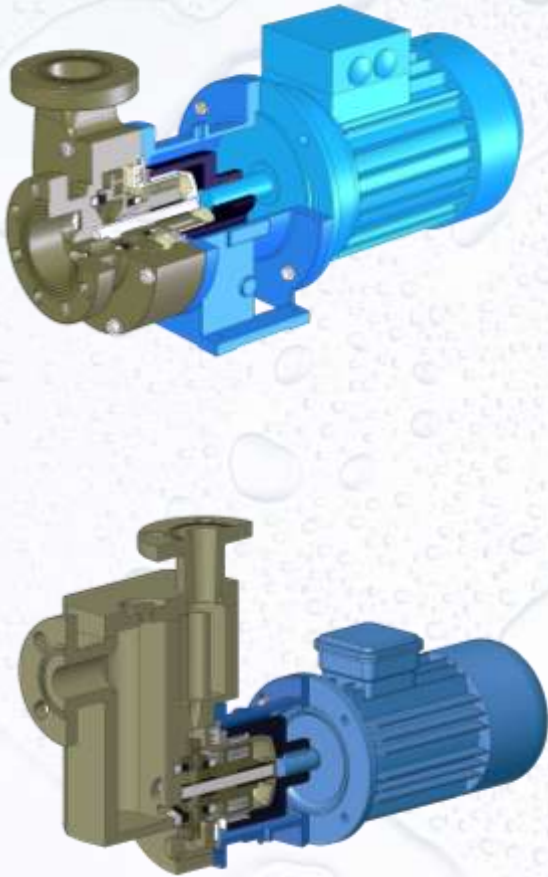
Port Configurations

- MT2003 thru MCH 16001 are equipped with fused hose barb connections
- MCH28001 and larger units are equipped with integral 150 lb. ANSI flanges

Materials of Pump Construction

- PP: Polypropylene (PP), PTFE-C, EPDM & high purity ceramic
- PP/PVDF: Polypropylene (PP), PVDF, PTFE-C, EPDM & high purity ceramic

- Series "MCH" robust machined centrifugal mag-drive pumps are built for heavy duty services and available in 1 to 20 HP sizes in either PP or PVDF, standard end suction or the self-priming Series "MCSP".
- Series "MT" robust machined turbine mag-drive pumps can deliver low flows with high discharge heads and available in either PP or PVDF, standard design or the self-priming Series "MTSP".



LINEMAN™ Pump Power Monitors

Advanced LINEMAN™ Power Monitors sense the motor power output of the pump with the ability of detecting every conceivable process upset, adverse conditions and predetermined minimum and maximum flow or pressure limits- prior to sustaining pump damage.

The high load trip sensor will detect:

- Excessive Flow or Run-out
- Cavitation
- Vortexing
- Obstructed suction line

The low load trip sensor will detect:

- Throttled or Closed Discharge Valve
- Dry-run
- Dirty Filter Elements

EXAKT™ Thermoplastic Flowmeters

EXAKT™ All Thermoplastic Rotameters provide an accurate direct reading flow capacity independent of pressure variations within the process. Pressure gauges are most accurate at start-up but can fluctuate over time due to potential damage, corrosion, tampering of hydraulic fluid or seal break.

Options include:

- Wide Range of Union Connections including PVC, CPVC, PP or PVDF (socket or threaded)
- Magnetic Read Switch for detecting minimum and maximum flow settings



LM-3



LM-6



LM-7



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Authorized Distributor

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