

# MAGNETIC RHEOLOGICAL FLUIDS

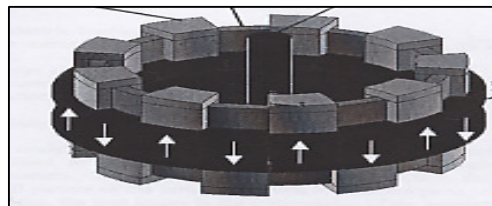
## Applications:

- Seismic, automobile, vibration control, braking, control engineering, avionics
- Pilot/industrial plant for medicinal/environmental/toxicology/polymers
- Paints/nuclear/power plant/process control & chemical engineering, packaging
- Clutch, damper, valve, special performance sensor actuators for linear/rotary motion control

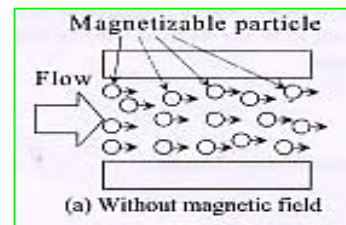
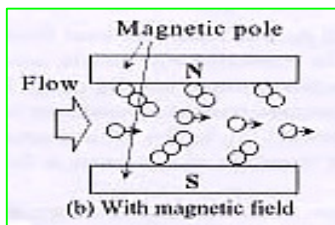
**Introduction & Operation Principle:** MMRF series of magnetic responding fluids are colloidal of organic/inorganic fluids and fine matrix of ferromagnetic/ferromagnetic alloys in some composition. These exhibits controllable shear yield stress and other related magneto-rheological properties under influence of magnetic field by re-aligning its matrix structure, which causes change to its rheological properties like viscosity, density, static/dynamic friction in some repeatable and reproducible fashion, thereby dynamically and optimally regulates/dissipate motion energy under specified operating range. These fluids are available in more than 25 grade with different specifications virtually meeting all industrial/research-development specifications. These fluids are available for some critical physical conditions like cryogenic/high temperature range meeting other related corrosion/environmental/tribological/chemical and thermodynamical aspects. Tailor-made ferro rheological solutions are always encouraged.

## Benefits:

- High flash temperature / Better temperature operating range.
- High dynamic yield stress/high performance to hard setting.
- Easy re-mixing / low off state viscosity.
- Non abrasive/ chemically compatible.
- High energy density/ repeatable torque Vs current relation.
- Fast response time/negligible hysteresis/black-lash/time delay.
- Stable rheological parameters over specified working ranging.



Controlled orientation of MR-fluid under influence of magnetic field



Rheological properties of MR- Fluid under influence of magnetic field

## Mechanical/Electrical Specifications:

Properties	Technical Specifications				
Product code	MMFC -O200	MMFC -O180	MMFC -O160	MMFC -O130	MMFC -O130
Base fluids	SILICON	SILICON	SILICON	ORGANICS	ORGANICS
Operating temperature °C	200	180	160	130	110
Density kg/cm <sup>3</sup>	3.7	3.5	3.1	3.09	3.00
CTE unit volume/°C x10 <sup>-3</sup>	0.60	0.59	0.65	0.555- 0.67	0.542- 0.62
Specific Heat J/g°C	0.70	0.65	0.82	0.65	0.65
Thermal Conductivity W/m°C	0.25 to 1.88	0.20 - 1.88	0.20 - 1.88	0.20 - 1.88	0.20 - 1.88
Viscosity pa-s@10 s <sup>-1</sup> shear rate	8.8	8.5	8.5	0.09	0.09
Color	grey	grey	grey	grey	grey
Magnetic permeability	6500	6700	7200	8500	8790
T.C. Permeability per °Cx10 <sup>-5</sup>	5.2	5.5	6.5	7.4	7.5
Electrical conductivity ohm.cm	300	400	500	600	800
Peak magnetic saturation Tesla	1.2	1.3	1.3	1.5	1.5
Retentivity Tesla	negligible	negligible	negligible	negligible	negligible
Dynamic magnetic energy/cc <sup>3</sup>	<500	<500	<500	<500	<500
Antisettling time	<b>5%/100 hrs</b>	<b>5%/100 hrs</b>	<b>5%/100 hrs</b>	<b>5%/100 hrs</b>	<b>5%/100 hrs</b>

Data is calculated with and without magnetic field applied and may vary from lot to lot.

## Application notes:

Keep the magnetic fluid in cool.

Minimum ordering quantity is 5.0 kilo grams.

All the surfaces must be clean and preconditioned before its use.

Magnetic fluids may cause irritation in some sensitive persons, use gloves/ goggles.

Company makes no warranty expressed or implied. concerning the use of this product and users shall assumes all risk of use or handling whether or not in accordance with directions suggestion, or used singly or in combination with other product.

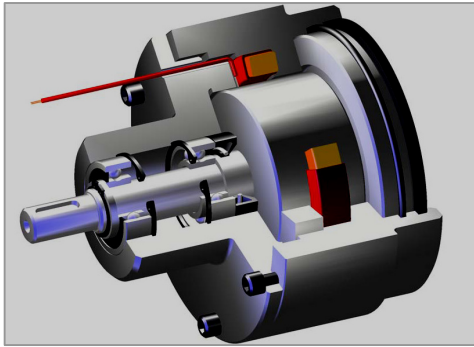
## MOTORON SEMICONDUCTORS CORPORATION

33, Shri nagar colony, shakti nagar extension, DELHI-110052. Tel:011-23644180/23655454

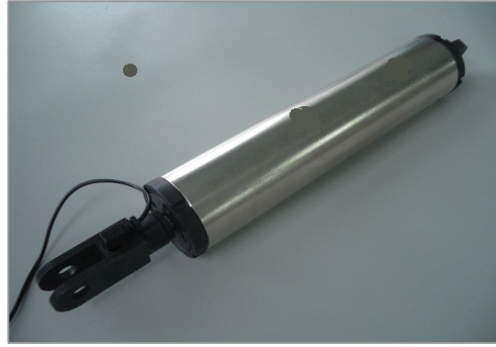
e.mail: motoron@hotmail.com

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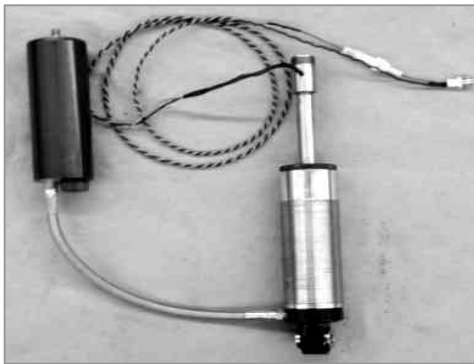
(APPLICATIONS)



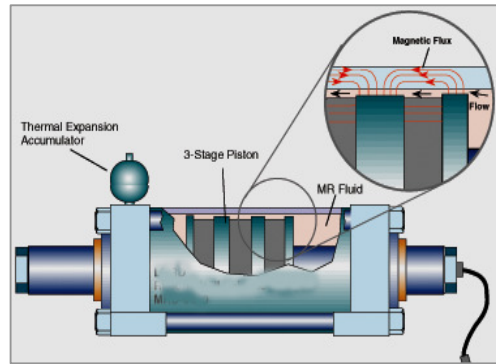
Rotary Damper  
MMRD-10200



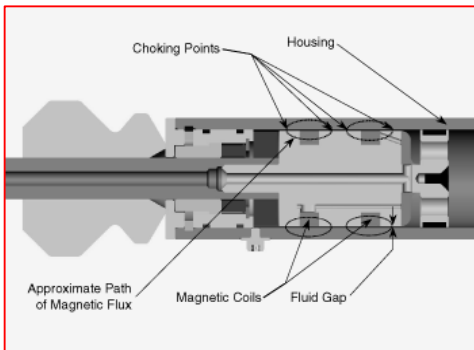
Linear m.r. Damper  
MMRD-10200



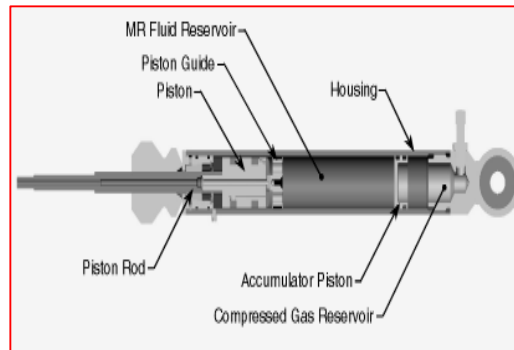
Sectional View  
Rlinear Damper



Sectional View  
Rlinear Damper



MMRD-600005



MMLD-40020

