

M.R. BASED SEMI-ACTIVE SUSPENSIONS/CLUTCHES

ROTARY/LINEAR

MMRSPN-Series

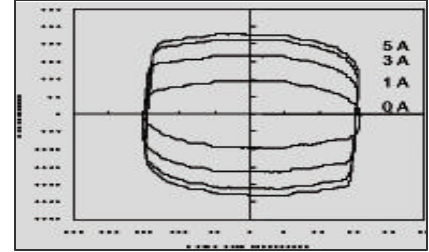
Introduction:

MMRSPN series of M.R. semi-active suspensions/clutches/suspensions/clutches/brakes are available in more than 25 different models, virtually offering solutions to various applications like hoist, cranes, vibration control, excavation, off-shore petrochemical, automobile, railway, surface transport vehicles, non conventional energy management, intelligent machine tools, aerospace, nuclear, defense, physiotherapy/sport machines and many other research & development applications. M.R. controllers are cascade type feed back control system and controls the force of M.R. suspensions/clutches/suspensions/clutches/brakes with high degree of stability and resolution. These M.R. suspensions/clutches/suspensions/clutches/brakes are compact and energy efficient, dynamically balanced & vibration-less motion, inherent self-braking action and thus less hunting with maximum force/volume.

Operating Principle:

In MR based brake/clutch, the restraining force generates on account controllable shear yield stress and other related magneto-rheological properties of M.R.fluid 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/restraining force under specified operating range as under....

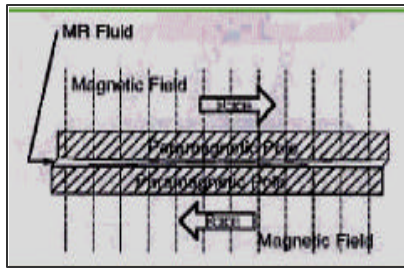
$$P = 0.438I_c^2 Xf^{1.4} \text{ and } T = 0.438I_c^2 xf^{0.4}$$



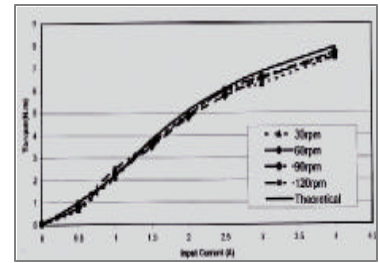
Force/displacement (variable current)



MMRSPNL-100



MMRSPNR-020



Force Vs Current characteristic

SPECIFICATIONS OF M.R. SUSPENSIONS/CLUTCHES/SUSPENSIONS/CLUTCHES/BRAKES.

Power range < 100.0 K.Watts

Model	Power-range Watts x10 ³	Velocity m.m./sec	force n.m.x10	Model	Power-range Watts	R.P.M. X100	Torque N.m.
MMRSPNL-001	1000.0	30/15	3.1/6..2	MMRSPNR-001	1000.0	30/15	3.1/6..2
MMRSPNL-003	3000.0	30/15	9.3/4..6	MMRSPNR-003	3000.0	30/15	9.3/4..6
MMRSPNL-005	5000.0	15/09	31.8/53.0	MMRSPNR-005	5000.0	15/09	31.8/53.0
MMRSPNL-010	10000.0	15/09	63.6/106.0	MMRSPNR-010	10000.0	15/09	63.6/106.0
MMRSPNL-020	20000.0	09/03	127.2/381.6	MMRSPNR-020	20000.0	09/03	127.2/381.6
MMRSPNL-030	30000.0	09/03	190.8/574.4	MMRSPNR-030	30000.0	09/03	190.8/574.4
MMRSPNL-050	50000.0	09/03	318.0/954.0	MMRSPNR-050	50000.0	09/03	318.0/954.0
MMRSPNL-100	100000.0	09/03	1075.2/3225.7	MMRSPNR-100	100000.0	09/03	1075.2/3225.7
MMRSPNL-200	200000.0	09/03	2123.1/6369.4	MMRSPNR-200	200000.0	09/03	2123.1/6369.4
MMRSPNL-500	500000.0	09/03	5307.8/15923.5	MMRSPNR-500	500000.0	09/03	5307.8/15923.5

M.R. SUSPENSIONS CONTROLLER SPECIFICATION:

- Operating voltage 220 volts/110/48 volts A.C.
- Chopping frequency 50/400/1000 Hz (option)
- Excitation current 0.0- 200.0 amps(max)
- Regulation better than 0.5 % of set speed
- Accuracy 99.5% of set point
- Repeatability 100 percent
- Response time 0.05 –10.0 sec with soft start
- Interface Signal 0.0-12.0 volts D.C. (proportional to force)
- Step down ratio 1:50(1:100)
- Control option constant force/Power mode with tripping
Set force/power/r.p.m.

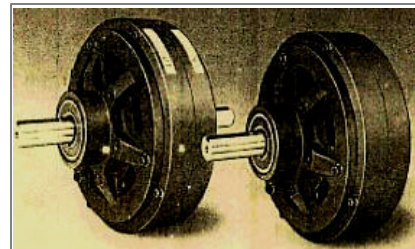
- Display velocity/Force/power in 3½ digit red glow LED
- Protection over/under voltage & r.p.m.

M.R. suspensions/clutches/suspensions/clutches/brakes controllers

Dimension (inches):

MMRSPN001	08X06X06	MMRSPN050	14X12X12
MMRSPN003	10X06X06	MMRSPN100	16X14X14
MMRSPN005	12X08X08	MMRSPN200	18X16X16
MMRSPN010	12X10X10	MMRSPN300	20X18X18
MMRSPN020	12X10X10	MMRSPN500	20X18X18
MMRSPN030	12X10X10	MMRSPN-750	20X18X18

Three numerals x 100 0 after MECD indicates power of M.R.linear current controlled current /current 1. controlled. 2.Electronic controllers with tailor made specifications are also offered.



MMRSPNR-500



MMRSPNL-010

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