

Magnetic Drive

Couplings, Stirrers & Agitators



Leak Tight Solutions

Magnetic Drive Coupling

Introduction

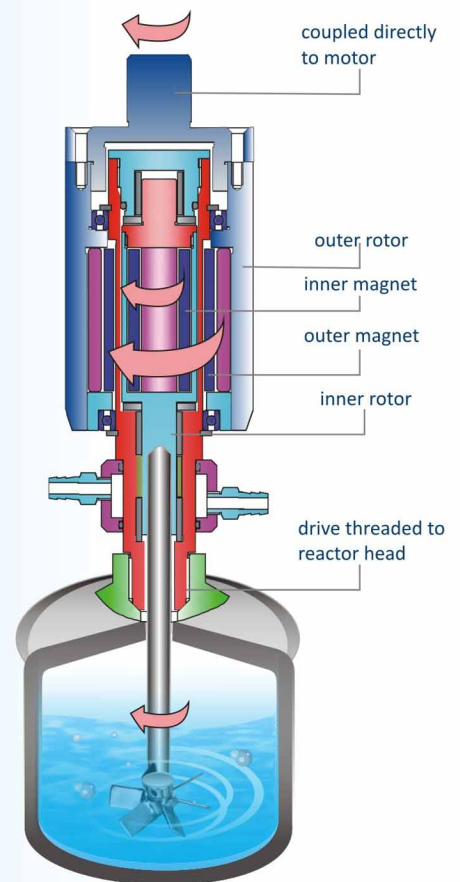
AMAR Equipments are pioneers, largest manufacturer & exporters of high pressure reactors & magnetic drive coupling in India. These couplings are extremely useful for high pressure or high vacuum applications where leakages are not permitted for continuous running through shaft. They have replaced the gland & mechanical sealing.

Construction & Working

It is a zero leakage maintenance free coupling directly driven by the motor. It consists of external magnet rotor, which is driven by the motor. A stationary shell is threaded / bolted to reactor head & completely isolates the external rotor from the inner rotor. As the external rotor rotates, the internal also rotates in synchronism. The reactor's shaft is threaded / bolted to the inner rotor. High energy permanent (rare earth) magnets are fixed inside the inner & outer rotors. A water cooling jacket protects the magnets & other components from excessive temperature arising from the reactor.

Salient Features

- The gland/mechanical sealing need replacement after every 200-1000 hrs of working depending on application & have limitation of maximum pressure where as magnetic drive can run virtually life long without leakage & can be designed for pressures upto 689 bar (10,000 psi)
- Very useful for long or round the clock reactions as in gland/mechanical sealing if there is any leakage midway, the whole batch may go waste
- Zero leakage hence zero maintenance & breakdown for years
- Suitable for full vacuum to 689 bar (10,000 psi) pressure
- Magnetic drive couplings & agitators available for 50 ml - 10,000 ltrs. reactors
- Magnetic drive / stirrers with taper end connections for glass reactors
- Compact inline motor & magnetic couplings for 50 ml - 25 ltrs. reactors
- MOC of SS316, Hastelloy C, inconel, monel, titanium, PEEK etc. for resistance to various chemicals
- Noiseless, vibration free & flexible hence overload results in coupling slippage safe guarding the motor
- Safe for toxic / hazardous & expensive chemicals
- No friction losses hence lower power consumption
- Suitable for glass/metal reactors / autoclaves / fermentors etc.
- Retrofitting existing gland / mechanical seal with magnetic coupling for reactors of any make & size with little modifications
- Reactor mounting end connections & shaft connections customizable



Cross-Sectional view of Magnetic drive connected to reactor vessel.



500 ltr. reactor with magnetic coupling



Magnetic drive coupled to 2 Ltr. glass vessel

Magnetically Coupled Lab. Stirrer

- This comes with compact inline motor and magnetic drive coupling with speed indicator & regulator
- For 50 ml - 25 ltrs. metal / glass reactors
- No external rotation, rotation inside housing
- No separate motor / stand / stirrer required
- Light weight & economical
- Full vacuum to 689 bar (10,000 psi) pressure
- MOC of SS316, Hastelloy C, inconel, monel, titanium, PEEK etc.



Agitators with Magnetic Coupling

- All the magnetic drive models for metal / glass can be provided with suitable agitator
- Agitator assembly consists of motor, variable frequency motor speed regulator, magnetic drive coupling, suitable drive mounting, shaft and different types of impellers viz pitch blade turbine, anchor, hollow shaft with gas induction impeller, ruston turbine, propeller, helical impeller etc.
- Full vacuum to 689 bar (10,000 psi) pressures
- For reactor from 50 ml - 10,000 ltrs.
- Magnetic drive & stirrer wetted parts of SS316, Hastelloy C, inconel, monel, titanium, etc.



Chemically Inert PEEK Magnetic Drive Coupling / Stirrers

- Complete magnetic drive wetted parts of PEEK for superior corrosion resistance to most chemicals where metal is not permitted
- Available for high vacuum or pressures upto 6 bar
- Available for glass / PTFE / PEEK autoclave-reactors for 50 ml - 5 ltrs. volume
- Inline motor & magnetic drive coupling stirrer available in PEEK MOC



Models - Magnetic Drive

- M-Series : Magnetic drives for metal autoclaves / reactors
- MG-Series : Magnetic drives for glass autoclaves / reactors
- MM-Series : Inline motor & magnetic drive for metal autoclaves / reactors
- MMG-Series : Inline motor & magnetic drive for glass autoclaves / reactors

Note: The number after the series indicates the static torque capacity in Kg-cm



Various Models as per Torque Capacity

Sr. No.	Model No.	Static Torque Capacity			Drive End Connections	Shaft End Connections	Can be used For Reactor sizes
		Kg-cm.	N-m.	N-cm.			
(a)	M08/MM08	8	0.785	78.5	1/4"BSPP (M) / 3/8"BSPP (M)	1/4"BSF (F) / 5/16"BSF (F)	50 ml - 250 ml
(b)	M20/MM20	20	1.96	196	3/8"BSPP (M) / 1/2"BSPP (M)	1/4"BSF (F) / 5/16"BSF (F)	50 ml - 250 ml / 400 ml - 2 ltr.
(c)	M40/MM40	40	3.92	392	1/2"BSPP (M)	5/16"BSF (F)	400 ml - 5 ltr.
(d)	M80/MM80	80	7.85	785	1/2"BSPP (M)	5/16"BSF (F)	5 - 25 ltr.
(e)	M200/MM200	200	19.6	1960	1"BSPP (M) / 1 1/4"BSPP (M) / 2 1/2" N.B. ASA 600# S.O.R.F.	1/2" / 3/4"BSF(F) / 25 mm Ø with Keyway	10 - 100 ltr. / 10 - 25 ltr.
(f)	M400	400	39.2	3920	1 1/4"BSPP (M) / 2 1/2" N.B. ASA 600# S.O.R.F.	3/4"BSF(F) / 25mm Ø with Keyway	100 - 500 ltr.
(g)	M600	600	58.8	5880	4"N.B. ASA 600# S.O.R.F.	50 mm Ø with Keyway	500 - 1000 ltr.
(h)	M1200	1200	117.6	11760	4"N.B. ASA 600# S.O.R.F.	50 mm Ø with Keyway	1000 - 2000 ltr.
(i)	M1800	1800	177	17700	4"N.B. ASA 600# S.O.R.F.	50 mm Ø with Keyway	2000 - 3000 ltr.
(j)	M2400	2400	235.2	23520	4"N.B. ASA 600# S.O.R.F.	50 mm Ø with Keyway	3000 - 5000 ltr.
(K)	M3000	3000	294	29400	4"N.B. ASA 600# S.O.R.F.	50 mm Ø with Keyway	5000 - 10,000 ltr.
(l)	MG08/MMG08	8	0.785	78.5	NS 29/32, NS 45/40, B34	8 mm I/D & M8 (F)	50 ml - 5 ltr. (Glass vessel)
(m)	MG20/MMG20	20	1.96	196	NS 29/32, NS 45/40, B34	8 mm I/D & M8 (F)	5 ltr. - 25 ltr. (Glass vessel)
(n)	MG40/MMG40	40	3.92	392	NS 29/32, NS 45/40, B34	8 mm I/D & M8 (F)	10 ltr. - 25 ltr. (Glass vessel)
(o)	MG80/MMG80	80	7.85	785	NS 29/32, NS 45/40, B34	8 mm I/D & M8 (F)	10 ltr. - 25 ltr. (Glass vessel)

Since development is a continuous process, the above specs can change without prior notice.

- Note:**
- For inquiry specify the model no., M.O.C, pressure & end connections for shaft & drive if different from standard.
 - Drive & shaft end connections can be custom built to NPT, flanged, taper joints as per requirement.
 - Generally magnetic drive coupling or stirrers are not supplied with shaft & impellers however the same can be offered on special request.
 - Magnetic drives of higher torque capacity for reactors of any make can be designed on request. Higher torque drives (than recommended) can be used for particular reactor size for viscous liquids.

Technical Specifications

Description	Standard	Optional
M.O.C wetted parts	SS-316	Hastelloy C, Monel, Inconel, Zirconium, Titanium, PEEK* etc.
Design pressure	Full Vacuum to 200 bar for (a) to (d), 100bar for (e) & (f), 50 bar for (g) to (k), full vacuum for (l) to (o)	Upto 689 bar for (a) to (d), upto 350 bar for (e) & (f) 100 bar for (g) to (k)
Max. Working Temperature	200°C & upto 500°C if cooling jacket provided, glass vessel magnetic drives (i.e. MG Series) are without cooling jacket.	- -
Maximum RPM	1450 for (a) to (d) & (l) to (o) 750 for (e) & (f) 500 for (g) to (k)	Upto 3000rpm for (a) to (d) & (l) to (o)

*for PEEK MOC, design pressure upto 6 bar for M & MM series in model (b) & (c) only & full vacuum for MG & MMG series in model (m) & (n) only

Our motto, customer's delight & not mere satisfaction



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- Microreactors • Heating & Cooling Baths • Sparkler & Leaf Filters