TECHNOFLEX[®] The Power to Perform

MAGNETIC COUPLING, M SERIE



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PERMANENT MAGNETIC SYSTEMS

THINK GREEN

MAGNETIC COUPLING, M SERIE





Magnetic Couplings - Design and Function

Magnetic couplings consist of an outer and an inner hub. The two hub do not touch each other – the coupling works via the non-contact transfer of power, which means that the magnetic solution – in contrast to traditional solutions – does not experience any wear. The magnetic coupling is thus maintenance-free.

Between the two rotating units it is possible to place a can such that two different media can be kept separate. With the hermetic enclosure of the coupling in a stainless steel housing, corrosion is avoided and the coupling can operate directly as a wet runner in different liquids and aggressive environments.

The outer drive is normally connected to the drive unit and the inner hub is, for example, connected to a pump. If a can is placed between the two contact-free rotating units, a standard air-cooled norm motor can for example be connected to a pump without the use of gaskets and seals. Magnetic couplings are also called torque couplings because they can transfer a certain maximum mechanical torque through the air. If the torque exceeds this maximum value, the coupling will "slip", which means that the rotational speed between the two coupled units is no longer the same. This prevents wear and tear and the magnetic coupling provides a built-in safety feature that protects against damage.





M-Serie® - Magnetic Couplings

Technoflex is a specialist in the production of permanent magnetic couplings in corrosion-resistant materials. We focus on being able to provide maintenance-free solutions.

Technoflex® Magnetic couplings are high-quality products with an extremely long service time, no maintenance and high torque transfer. They are primarily used in three different ways: Firstly, to transfer mechanical work to a sealed container; secondly, to reduce the load on connected bearing systems; and thirdly, as a torque limiter coupling.



Unlike traditional solutions, magnetic couplings can accommodate considerable differences in eccentricity between the shafts. This results in greater flexibility in the alignment of the system – both radially and axially – and the load on the bearing system is reduced.



MAGNETIC TORQUE LIMITER AND INSULATING COUPLING Product qualities

Permanent magnetic coupling. No-contact torque transfer.

- The magnetic coupling can be adapted and designed according to your needs.
- Connection shaft to shaft, coupling flange to shaft, coupling flange to coupling flange or as per requirements.
- Bore according to ISO (H7), conical or spline. Can be adjusted as per requirements.
- Keyway acc. DIN 6885 can be adjusted according to your needs.
- Material: steel or stainless, bell house is always stainless or synthetic material and peek.
- Torque interval from 0,15 Nm to 95 Nm, and interlock system from 100 Nm to 4500 Nm made as per customer specifications.

PRODUCT DESIGN

Below is shown how the design looks on the larger magnet couplings. In co-operation with Technoflex the customer may have the required connection custom made. It is also possible to have a complete coupling dimensioned in close co-operation with Technoflex.





Last but not least Technoflex also develop magnetic couplings as per customer applications in our own test lab – this of course requires that the customer sends the application to Technoflex.







* D1, D2 and L can be adjusted

	Static	Outer Rotor				Our all over dimensions			Inner Rotor				Sealing house		
Size Work Nomen Nm @ 20°C		Material		Max working temperat ure tmax (°C)	Bore Min./Max	D1mm	D2mm	Lmm	Material		Max working temperat ure tmax (°C)	Bore Min./Max.	Max. pressureB ar.	Max RPM (1/min.)	Material
TFM1-001	1	ub material. S355J2G3/ST52/STANLESS STEEL.	VdFe (neodymium) work temperature 150°C to 250°C (on sst) and Sm2C017, Samarium cobalt to 350°C	Minus 45°C to 350°C	5/14mm	62	54	46			Minus 45°C to 350°C	5/12mm	e.	ıaterial; st.	e PEEK and from TFM3 and up I in case of high RPM and low
TFM1-002	2				5/19mm	62	54	46	ub material. S355J2G3/ST52/STANLESS STEEL.	VdFe (neodymium) work temperature 150°C to 250°C (on sst) and Sm2C017, Samarium cobalt to 350°C		5/16mm			
TFM2-004	4				5/22mm	69.5	75	55				12/22mm			
TFM2-006	6				9/28mm	69.5	75	65				12/22mm	case	et m jue:	
TFM2-008	8				9/28mm	69.5	75	75				12/22mm 12/25mm 12/25mm 12/25mm 12/25mm 12/28mm 12/28mm 12/28mm 12/28mm 12/28mm 12/28mm 12/28mm 12/25mm 12/25mm 20/70mm 20/70mm	d in each single (material and magne be balanced on rec	
TFM3-007	7				9/38mm	89.5	94	71							
TFM3-010	10				9/38mm	89.5	94	71							
TFM3-022	22				9/38mm	89.5	94	91							
TFM4-040	40				9/38mm	118	110	102							
TFM4-010	10				10/45mm	118	110	102					ate		
TFM4-020	20				10/45mm	118	110	102					cul	sel	6 OI
TFM4-030	30				14/45mm	118	110	102					ax. pressure has to be cal	g on the used sealing hou higher; all rotating parts	VI3 stainless steel 304 /31 PEEK, PEEK is especially u woid extensive power loss
TFM4-060	60				14/45mm	118	110	101							
TFM5-022	22				14/65mm	153	145	113							
TFM5-050	50				14/65mm	153	145	113							
TFM5-080	80				14/65mm	153	145	113							
TFM5-100	100				14/65mm	153	145	113							
TFM6-085	85				14/75mm	178	170	136							
TFM6-100	100				14/75mm	178	170	136							
Torque over 100Nm on request		Outer h	Magnet material. I reque						Outer /	Magnet material. I reque			Normally 16Bar; the n	36001/min., dependir on request, we can go	From size TFM1 to TFI stainless steel 316 ore pressure, in order to a

Magnets are made from NdFeB. Hubs are in St52. Bell housing in Stainless 1.4571 and peek. This may also be made in another alloy or in synthetic material. Coating in NiCuNi, Nickel coating, with a work temperature of Max 150 °C. Technoflex can per request produce up to 240 °C and with SmCo17 up to 350 °C.

Coating

The magnet has passed the 1000 hours corrosion salt spray test ISO9227 under neutral conditions and the cross hatch adhesion test ISO2409.

Magnetic Couplings - Applications

TECHNOFLEX® magnetic couplings are used within, for example, the pump industry, the pharmaceutical industry, the chemical industry, the biotech industry and the food industry.

Typical applications:

- Submersible pumps
- Circulation pumps
- Household pumps
- Wastewater pumps
- Industrial pumps
- Liquid systems
- Mixers & agitators
- Hydraulic & process technology



Sketch of M-Serie® outer and inner drive in a permanent magnetic coupling system:

Technoflex Magnetic Couplings



Magnetic couplings - Case Story Hermetically sealed magnetic system...

The development of a hermetically sealed magnetic coupling has optimised the final system solution for one of Technoflex' customers in the pump industry. The magnetic coupling replaces a previous solution with a standard mechanical shaft seal.

The new magnetic coupling is completely impermeable such that liquid cannot escape. It is optimised in order to ensure minimal eddy current losses in the can yet at the same time maintain the corrosion resistance and stability of the can in thin stainless steel.

The final solution has this also benefitted the customer in terms of cost.





BALANCING CENTER

Technoflex do static and dynamic balancing of shafts, hubs and flanges including certificate.

We balance the threads in 1 level, up to ø120 mm with maximum weight of 40 kg. 2-plane balancing up to ø800 mm, maximum weight 40 kg and the maximum length of 1000 mm bearings.

TECHNOFLEX do static and dynamic testing of the slipping of the magnetic coupling incl. We measure also the temperature when the magnetic coupling slips. That we do measure the axial and redial forces with strain gauges. We test the couplings for 0,001 Nm up to 250 Nm.



Statisk afbalancering

M-SERIE DEMENSION AND TECHNICAL DATA







Test center





Strain gauges







M-serie© couplinger



Containment shrod





Dynamisk afbalancering