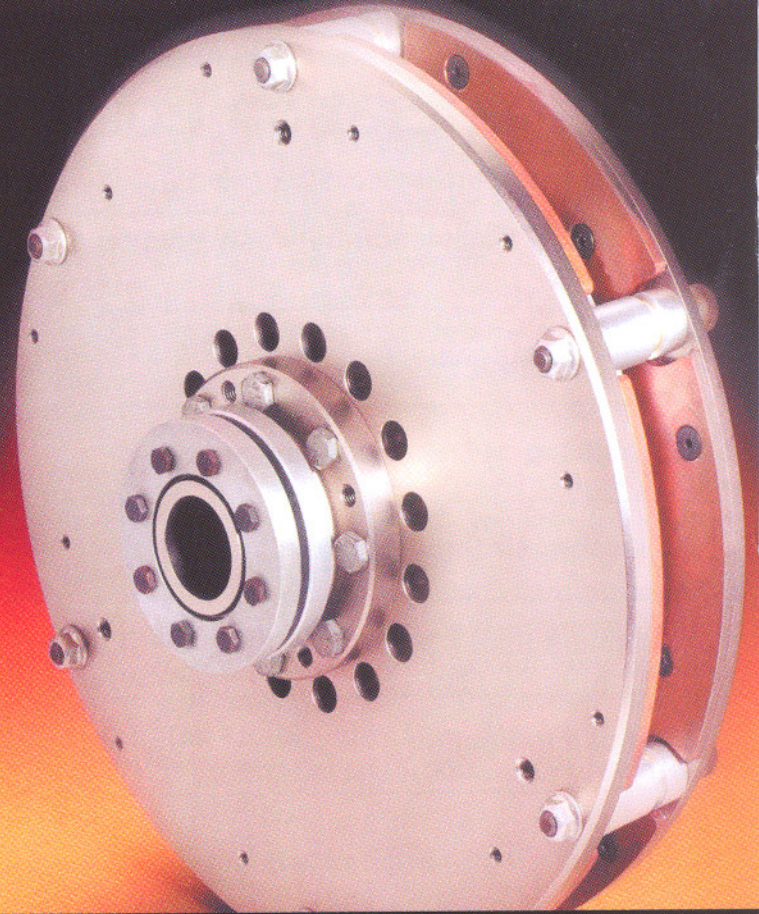


MagnaDrive™

RELIABILITY
THROUGH
INNOVATION



3 to 5,000 Hp - Up to 7,000 RPM

MagnaGuard *FGC*

Benefits:

- ✓ Lowest Total Cost of Ownership
- ✓ Accepts Greater Misalignment
- ✓ Eliminates Vibration Transfer Between Motor and Load
- ✓ Low Maintenance
- ✓ Increases Seal and Bearing Life
- ✓ Simple Installation
- ✓ Efficient Torque Transfer
- ✓ Permits Shock Loading

Ideal for Applications Subject to:

- Vibration
- Periodic Load Seizure
- Pulsating Loads
- Thermal Expansion
- Shock Loading
- Tight Space Constraints

Features & Benefits

First Generation Coupling (FGC)

Features

No Physical Connection Between Motor and Load

Accepts Misalignment

No Wearing or Flexing Parts

Adjustable Air Gap Spacers

Cushioned Start / Stop

Overload Protection

Permanent Rare Earth Magnet Technology

Lowest Total Cost of Ownership

Benefits

Extend life of connected equipment by preventing the transfer of system vibrations.

Reduced installation time. No specialized alignment equipment needed.

Save replacement parts expense that occurs with all other coupling designs. Lengthen MTBF.

Optimize operating characteristics.

Reduce maintenance and operating expenses. Eliminate mechanical shock. Increase bearing life.

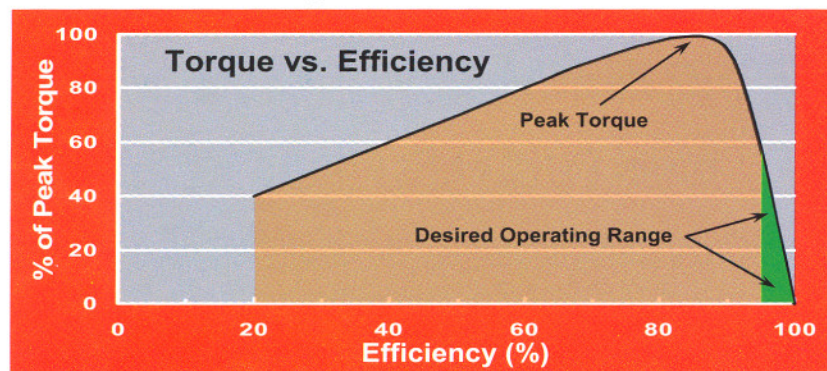
Eliminate downtime and expense caused by system lockup. Enhanced operational safety.

Specialized MagnaDrive compounds provide higher strength than other magnets available. Long-lasting (over 2,000 year half-life) without any external energy source required.

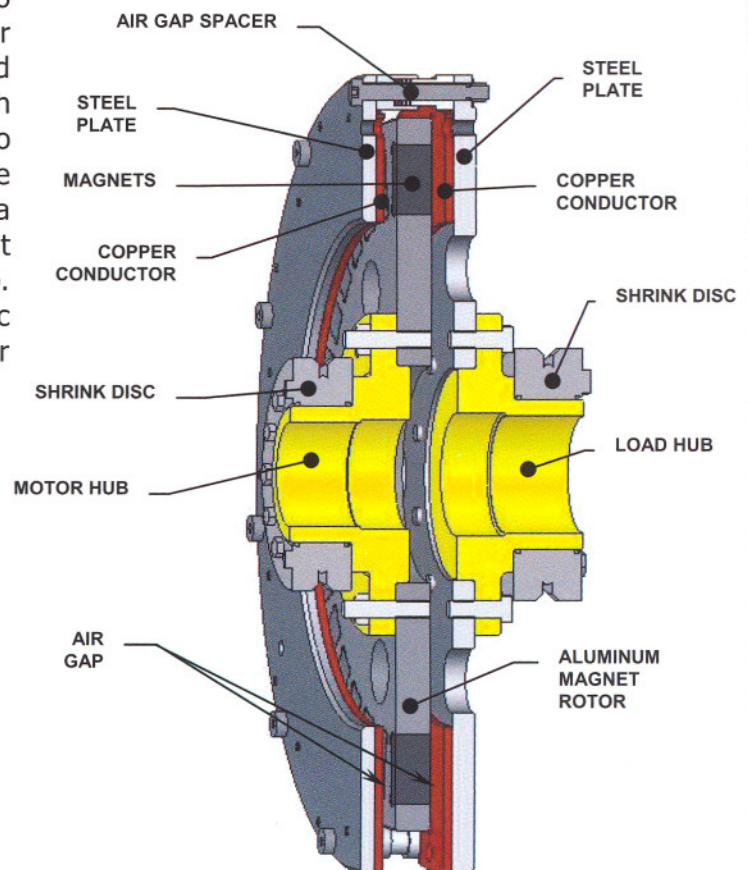
More efficient operation through reduced system maintenance. Increased system reliability and integrity.

How Does it Work?

An FGC consists of two separate components that have no physical contact. A precision machined aluminum rotor containing powerful permanent rare earth magnets is mounted on one shaft. A conductor consisting of a steel housing with copper rings mounts on the other shaft. The coupling's ability to transmit torque is created by the relative motion between the copper conductor and the magnets. This motion creates a magnetic field in the copper that interacts with the permanent magnets, thus transmitting torque across the air gap. MagnaDrive products are designed to minimize Electro Magnetic Interference (EMI). The flux level from each coupling is lower than the EMI emitted by the associated motor.

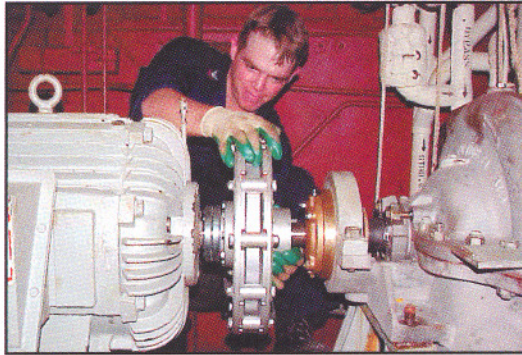
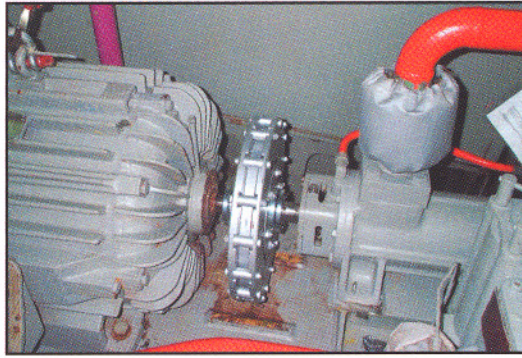


Note: The above torque curve is a generalization of various sizes of magnetic couplings. Coupling selection is based on each application's speed, horsepower, and desired efficiency. Please consult MagnaDrive for proper selection based on your application's requirements



US Navy FGC Program

The United States Naval Sea Systems Command (a.k.a. NAVSEA) develops showcase engineering improvements for the United States Navy. Under this program, the Navy is purchasing MagnaDrive couplings for a variety of critical pump applications. MagnaDrive's FGC's have passed the Navy's rigorous 9-G Shock Test and are currently placed on guided missile cruisers, destroyers and aircraft carriers, with plans to install these couplings on pumps and other rotating equipment fleet wide, on all ship classes.



Many of MagnaDrive's couplings are placed on pumping equipment where reliability is critical to ship operations:

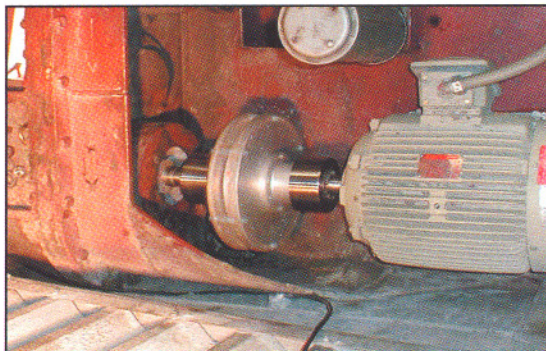
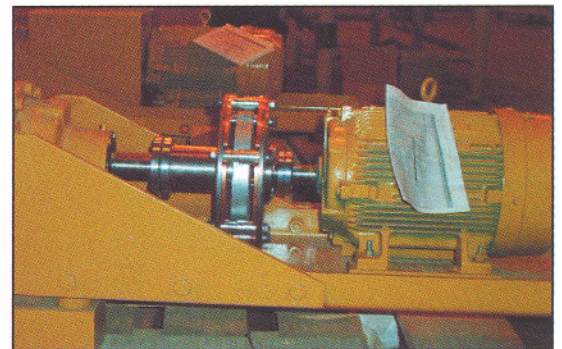
- JP5 Fueling
- Catapult Water
- Fire Water
- Hydraulic Elevator
- Chilled & Sea Water Circulation

The Navy spends 29 sailor-days per year per pump repairing and replacing seals, couplings and bearings on existing equipment. These repairs are nearly eliminated with MagnaDrive Technology. The Navy calculates that using MagnaDrive Technology will reduce their annual staffing needs by over 1,700 sailors. They currently operate more than 500 of these couplings. The Navy estimates that each aircraft carrier has nearly 5,000 uses of MagnaDrive Technology.

Wide Range of Applications

The following industries have benefited from MagnaDrive Magnetic Technology:

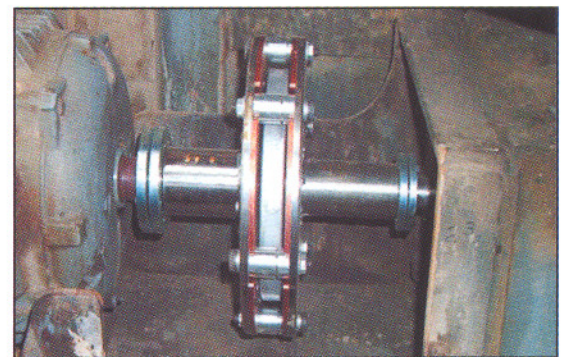
- Steel
- Mining
- Cement
- Oil & Gas
- HVAC
- Power Generation
- Forest Products, Pulp & Paper
- Water / Wastewater Treatment
- Chemical Processing
- General Manufacturing



Application Ranges

Horsepower:
3 to 5,000 HP

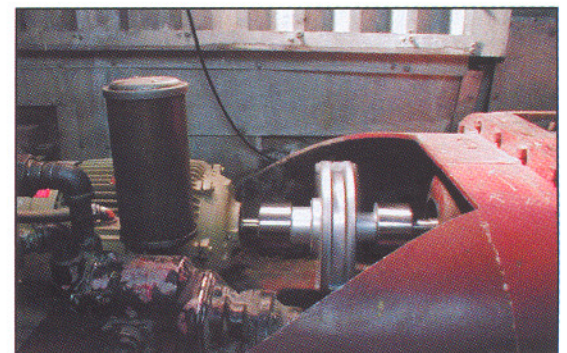
RPM:
Up to 7,000 rpm



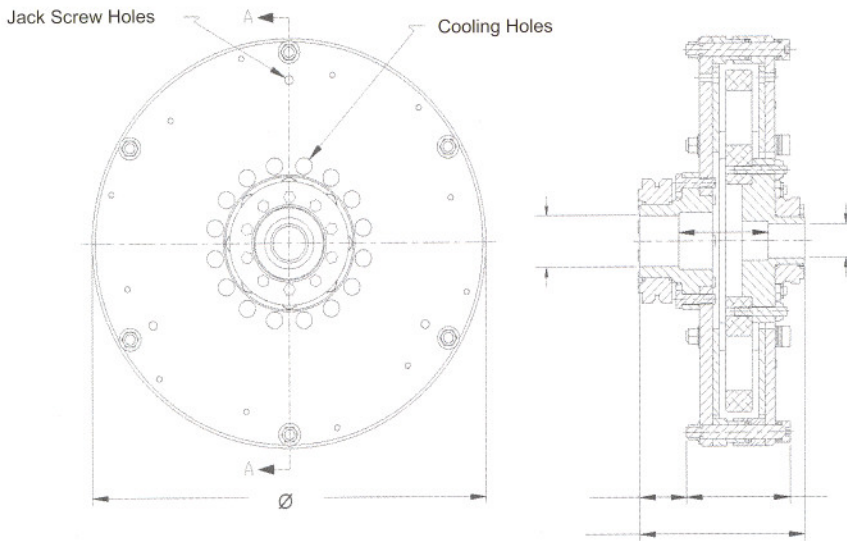
FGC's are used in the following torque transfer functions:

- Pumps
- Fans
- Air Pre-heaters
- Crushers
- Blowers
- Clinker Grinders
- Re-Pulpers
- Conveyors
- Bucketwheels
- Centrifuges
- Compressors
- Bucket Elevators

And many more...



MagnaGuard FGC Coupling



Coupling Specification Data

Size ^A	Conductor Side Assembly						Magnet Side Assembly				Coupling				
	Ø	Width	A	Weight	Distance to CG ^B (min. shaft engagement)		Weight	Distance to CG ^B (min. shaft engagement)		DBSE ^B (min shaft engagement)	OAL ^B	Angular Misalignment Capacity (at min air gap ^B)	Power Rating ^C Hp per 100 RPM	Peak Torque (at min air gap ^B) In-Lbs	
					inch	lb		inch	WR ² lbf*inch ²						inch
Small Magnet Series															
4.5S	6.00	2.91	0.76	9	0.75	35	5	0.61	10	2.63	5.16	2.39	0.22	215	
6.5S	8.00	2.91	0.76	15	0.75	330	7	0.61	58	1.91	4.61	1.65	0.50	484	
8.5S	11.00	3.81	1.07	36	1.40	550	12	0.91	85	3.20	5.97	1.68	1.39	1,377	
10.5S	13.00	3.69	1.44	55	1.38	1,165	19	0.90	195	3.23	6.29	1.36	2.78	2,667	
12.5S	15.00	3.94	1.51	70	1.75	2,025	26	0.73	379	3.28	6.17	1.15	4.17	4,130	
14.5S	17.00	3.69	2.19	93	1.16	3,340	36	0.60	725	2.79	6.52	0.99	5.56	6,309	
16.5S	19.00	3.69	2.19	108	1.65	5,025	54	0.46	1,310	3.35	7.05	0.87	8.33	8,947	
18.5S	21.00	3.94	1.77	136	1.44	7,990	66	1.30	1,900	4.36	8.00	0.77	11.11	12,045	
20.5S	23.00	3.94	2.01	158	1.38	11,140	61	0.59	2,590	3.04	6.50	0.87	13.89	13,931	
22.5S	25.00	3.94	3.09	201	1.55	15,650	101	0.64	4,130	4.44	9.49	0.80	16.67	17,517	
24.5S	27.00	3.94	2.40	209	1.32	20,380	92	1.14	5,250	3.87	8.14	0.73	22.22	21,512	
26.5S	29.00	3.94	2.40	300	1.32	28,500	160	1.14	8,480	3.87	8.14	0.81	25.00	22,918	
28.5S	31.00	3.94	2.40	309	1.32	37,890	150	1.14	10,130	3.87	8.14	0.75	27.78	27,175	
Large Magnet Series															
17.0S	20.75	6.38	2.25	214	2.51	10,830	91	2.12	2,590	6.00	10.38	0.84	13.89	14,353	
19.0S	22.75	6.38	2.24	255	2.55	15,840	110	2.51	4,030	6.32	10.17	0.75	19.44	20,184	
21.0S	24.75	6.38	2.24	313	2.55	23,000	170	2.51	6,050	6.32	10.17	0.85	22.22	23,579	
25.0S	28.75	6.38	3.28	425	3.19	41,860	254	2.79	13,700	8.38	13.30	0.72	44.44	42,667	
29.0S	32.75	6.38	3.37	521	3.03	69,340	284	2.05	22,560	7.37	12.88	0.74	55.56	57,757	
33.0S	36.75	6.38	3.34	639	2.69	108,000	368	1.40	38,060	6.17	11.83	0.65	83.33	81,910	
37.0S	40.75	6.38	3.97	844	2.44	170,610	555	1.98	67,060	7.39	14.05	0.58	111.11	110,264	

^A - Single magnet rotor models only. Call MagnaDrive for double magnet rotor models with higher torque and hp capability

^B - These dimensions may vary per application

^C - Service Factor = 1.2

MagnaDrive offers a family of products to accomplish a broad range of operating objectives:

Speed Control, Torque Management, Cushioned Start, Reliability,
Vibration Control and Misalignment Tolerance.

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