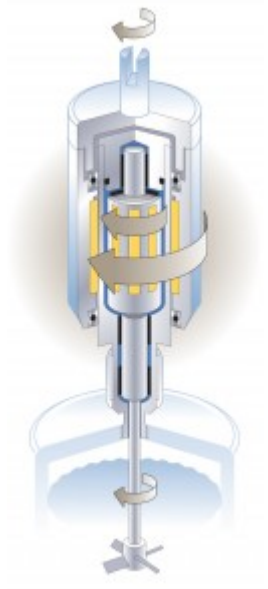
Parr Instrument Company

echo adrotate_group(4, 0, 0, 0);

Magnetic Drives

High Torque Magnetic Drives



Magnetic Drive Cutaway

All Parr stirred reactors are equipped with a magnetic drive to provide a trouble-free linkage to an internal stirrer, thereby avoiding the leakage problems which sometimes arise with a packed gland stirrer drive. With a Parr magnetic drive there are no rotating seals. The drive turns freely and the system remains gas-tight, permitting long, continuous runs at pressures up to 5000 psi (345 bar) with little or no attention to the seal and drive.

Parr drives are assembled with specially designed permanent magnets which have excellent temperature stability and can be depended upon to operate for long periods with little or no flux degradation. Magnets for the inner rotor to which the stirrer shaft is attached are enclosed in a stainless steel (or other alloy) housing, permanently sealed by laser welding and supported by graphite-filled, PTFE bushings to provide a long life, chemically inert stirring system. Magnets for the outer drive are also fully enclosed and supported by twin, high quality sealed ball bearings for smooth operation and long life. A water cooling sleeve attached to each drive protects the components from excessive heat arising from the reactor.

Significant progress was made in recent years in both magnetic materials and magnetic coupling design. Parr uses neodymium-iron-boron magnets with 25% more coupling force than samarium-cobalt magnets. With very few exceptions involving gear reduction drives, the magnetic stirrers fitted to reactors have higher coupling torques than the stall conditions of standard motors. Today magnetic drives are used with confidence for high viscosity polymerization reactions.

Parr magnetic drives are supported with three graphite-filled PTFE bushings and quality internal ball bearings. They routinely deliver 2000 hours of operation without service.

Four Sizes

Parr magnetic drives are made in four sizes, designed to match the full range of Parr reactor sizes and to provide alternate drives for high viscosity loads, higher stirring speeds and other special requirements. Each drive is assembled in a sealed housing which threads directly into the reactor head.

Mag Drive Family

The A1120HC and A1180HC models are the standard units normally furnished with the reactor sizes listed in the adjoining table. The A1750HC2 model is a special high torque drive intended primarily for heavy loads and high viscosity applications. When it is used to replace a standard drive, the standard motor and drive system may have to be modified to provide the higher torque which the A1750HC2 drive is capable of transmitting.

The Series 5500 Compact Reactors have a smaller magnetic drive that is used with a 1/17 hp motor. It is intended for low viscosity applications and has a torque rating of 2.5 in-lb.

Two Styles Available

Parr offers a choice of two styles of magnetic drives. The general purpose A1120HC, A1180HC and A1750HC2 operate with small diameter stirrer shafts which require a lower guide or ?foot? bearing to stabilize the stirrer shaft. These drives are intended for high speed stirring for applications involving liquid-liquid or gas-liquid mixing. The A2140HC, A2160HC and A2170HC footless magnetic drives employ a larger diameter stirrer shaft designed to operate without this lower guide or ?foot? bearing. They were originally designed for digesting ores where the abrasive solids would get caught in the PTFE foot bearing and wear away the stirrer shaft. They are also recommended for slower speed mixers such as the anchor, paddle, or spiral stirrers. It is also important to select the appropriate motor which can handle the increased drag associated with the larger diameter shafts.

Parr Magnetic Drive Series					
Magnetic Drive*	**Coupling Torque (in-lbs)****	**Shaft Diameter (inches)**	**Foot Bushing Required? (see text above)**	**Ordering Guide Abbreviation**	**Supplied as Standar Mag Drive on Reacto with these Volumes:**
General Purpose	16	3/16"	Yes	M	25mL to 2L
	16	3/8"	No — "Footless"	FMD1	
Heavy Duty	60	3/8"	Yes	HD	1gal to 5 gal
	60	5/8"	No — "Footless"	FMD2	
Extra Heavy Duty	120	3/8"	Yes	XHD	
	120	5/8"	No — "Footless"	FMD3	
Compact	2.5	3/16"	Yes	N/A	5500 Compact Reacto

**Please see the Parr Magnetic Drives Operating Instruction Manual 234M for additional information.*
***1 in-lb = 0.11N-m*

Magnetic Drive Maintenance Video

Parr Magnetic Drive Maintenance Video

A video supplement to aid users with performing routine maintenance on Parr Instrument Company's Magnetic Drives.

Alternate Packed Gland Drive

For rare circumstances where a direct mechanical drive is preferable to a magnetically coupled system, Parr can furnish a self-sealing packed gland which will maintain a reliable seal on the stirrer shaft at working pressures up to 2000 psig (138 bar). These glands are made to a Parr design which uses a combination of cones and O-rings in combination with pressure from within the vessel to maintain a positive seal on the rotating shaft.

Today, with the variety of magnetic drive styles and high coupling torques, virtually all reactors except special application systems are equipped with magnetic drives.

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