

Stirrer Motors and Drives

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Torque vs. Stirring Speed

The standard, open-type, variable speed motor installed on each Parr reactor will produce stirring speeds from zero to between 600 and 800 rpm with a torque adequate to drive the installed impellers in average viscosity mixtures. Higher horsepower motors and special stirrers can be provided for higher viscosities, and drive pulleys can be changed to produce higher stirring speeds, but several basic rules must be considered when changing any of these components.

The highest torque from any motor is obtained at lower stirring speeds. Increasing the stirring speed reduces the torque in inverse proportion to the speed. For operations involving high viscosity mixtures, the motor size, the type of impeller and the stirring speed must be matched to provide an effective mixing system.

As a general rule, the magnetic coupling installed on each Parr reactor will have a torque rating considerably higher than the torque obtainable from any of the motors offered for use with that apparatus, thus the magnetic drive should be able to handle any of the optional motor/stirrer combinations.

Explosion Proof Motors

Explosion proof motors designed for Class I, Groups C and D and Class II, Groups F and G with variable speed control can be furnished for any Parr reactor.

Air Motors

Air-driven motors can be installed on most reactors. The horsepower rating, torque, and available speed are all dependent upon the pressure and available volume of the driving air source. Maximum torques are delivered at relatively slow speeds and maximum horsepower is delivered at high speed.

Geared, Direct Drive Motors

A geared, direct drive motor can be installed on most fixed head floor stand reactors. This is an attractive arrangement for handling heavy stirring loads. Any 1/4 hp or larger, variable-speed standard or explosion-proof motor can be used. Gear box drives are available with ratios of 3:1, 5:1 and 10:1. The 1800 rpm maximum speed will be reduced in an amount determined by the reduction ratio of the gear box, and the associated torque values from the table will be increased in the same ratio.

Stirrer Drive Motors

Motor Designation	HP Rating	Explosion Proof	Variable Speed	Standard Pulley		Optional Pulley	
				Max Speed RPM	Max Torque in- lb	Max Speed RPM	Max Torque in- lb
-VS.12	1/8	No	Yes	700	11	1800	4
-XP.25	1/4	Yes	Yes	700	22	1800	9
-AM.25	1/4	Yes	Yes	1000	10	2500	15
-VS.25	1/4	No	Yes	700	22	1800	9
-VS.50	1/2	No	Yes	700	45	1800	18
-XP.50	1/2	Yes	Yes	700	45	1800	18
-AM.50	1/2	Yes	Yes	1000	40	2500	30
-VS.75	3/4	No	Yes	700	68	1800	27
-XP.75	3/4	Yes	Yes	700	68	1800	27

Note: Some motor combinations may deliver more torque than a specific magnetic drive can transmit. Check for match.

VS = variable speed

XP = explosion proof

AM = air motor

1 in-lb = 0.11 Nm

1 hp = 0.75 Kw



Geared Drive Motor with
Cover Removed



5 Gallon Reactor with
Direct Drive, Variable
Speed Motor

Gear Box Torques

Gear Box Torques						
	3:1 Gear Box		5:1 Gear Box		10:1 Gear Box	
Motor HP Rating	Max. Speed RPM	Max. Torque in-lb	Max. Speed RPM	Max. Torque in-lb	Max. Speed RPM	Max. Torque in-lb
1/4	600	27	360	45	180	90
1/2	600	54	360	90	180	180
3/4	600	81	360	135	Not Recommended	