



FR Series Clutch Selection Procedure

When selecting an FR Series Clutch based on torque, the following steps should be followed to ensure a correct selection.

- Calculation of required torque to be transmitted through the clutch:

$$\text{Torque (lb. ft.)} = \text{HP} \times 5250 \times \text{SERVICE FACTOR} \div \text{RPM}$$

$$\text{Torque (Nm.)} = \text{kW} \times 9550 \times \text{SERVICE FACTOR} \div \text{RPM}$$
- Apply the appropriate service factor based on the characteristics of the application. See chart D (below) for recommendations.
- Establish required bore dimensions.
- Determine the RPM of the overrunning race and the driving RPM.
 - Same direction rotation: overrunning speed is equal to the difference in the speed between the inner and outer race.
 - Opposite direction in rotation: the sum of the speeds.
- Determine from the application the correct model of FR Freewheel.
 - FRS**
 - RINGSPANN FRS is recommended for general purpose applications, suitable for backstopping, overrunning, and indexing applications.
 - The drive and overrunning RPM should not exceed the maximum speed listed in Chart A, pg.2.
 - Consult factory for applications that require torque or RPM greater than those listed.
 - FRZ**
 - RINGSPANN FRZ Clutches are used in applications requiring high speed overrunning outer race and low driving speeds.
 - The drive RPM should not exceed the maximum speed listed in Chart B, pg.2.
 - Overrunning speed must be greater than or equal to the lift off speed.
 - Torque requirements should be within the allowable limits.
 - FRX**
 - For optimal results, the RINGSPANN FRX can be used for applications requiring low driving speeds and a high speed overrunning inner race, typically used as a backstop.
 - The drive RPM should not exceed the maximum speed listed in Chart C, pg.3.
 - Overrunning speed must be greater than or equal to the lift off speed.
 - Torque requirements should be within the allowable limits.
- Determine method of lubrication. Many RINGSPANN clutches are available as oil lubricated, grease filled, or non-lubricated. See pg. 6 for FR Series options and pg.7 for accessories.

Recommended Service Factors

Chart D

LOAD	TYPE OF EQUIPMENT	AC MOTOR	DC MOTOR	GAS ENGINE
Constant Torque Gradually applied loads	Centrifugal pumps, uniform-loaded conveyors, fan blowers, mixers and generators	1.25	1.25	1.75
Moderate Torque Light shock loads	Centrifugal pumps, cooling towers, boiler-feed pumps, machine tools, textile machinery, oscillating pumps	1.5	1.5	1.75
Medium Loads Medium shock loads	Rotary kilns, rotary and screw pumps, paper-converting machinery, punch presses, shears	1.5	1.75	Consult factory
Heavy Torques Heavy shock loads	Drilling rigs, rubber mixers, papermaking machinery, pulverizing mills, steel slitters	2.5	3	Consult factory

- Consult factory for diesel engines.