Torque Limiter Selection Checklist

Photocopy this page and complete the following check list to ensure the correct torque limiter selection is achieved, then fax it to: (940) 723-7888 or download this page at: www.brunelcorp.com/checklist and e-mail to sales@brunelcorp.com

Customer:

Project:

Prime mover:
(see page 42)

Service factor:

Driven equipment:
(see page 43)

Service factor:

Continuous power:

Maximum power:

Operating speed:

Overspeed:

Driving shaft diameter:

Driven shaft diameter:

Driving shaft length:

Driven shaft length:

Continuous misalignment:

Transient misalignment:

Diameter constraints:

Length constraints:

Distance between shaft ends:

If indirect drive:
sprocket size/pulley size etc:

If you require help with torque limiter selections contact Brunel Corporation:
Phone: (940) 723-7800 Fax: (940) 723-7888
E-mail: sales@brunelcorp.com

Selection Procedure

· From the continuous Power **(Hp)** and operating Speed **(Rpm)** calculate the Application Torque T_{NORM} from the formula:

$$T_{NORM} = 63{,}025 \times (Hp/Rpm)\ lb\text{-}in$$

· Select Prime Mover Service Factor **(Fp)** from table.

· Select Driven Equipment Service Factor **(Fm)** from table.

· Calculate T_{MAX} from the formula:

$$T_{MAX} = T_{NORM}\ (Fp + Fm)$$

· Select Torque Limiter such that T_{MAX} < Torque Limiter Maximum Setting.

· Check **Rpm** < Torque Limiter Maximum Speed (from catalog data).

· Check Torque Limiter Bore Capacity such that **dmin** < **d** < **dmax**.

· Consult the factory for alternatives if catalog limits are exceeded.

T_{NORM} = Application Torque (lb-in)
T_{MAX} = Peak Application Torque (lb-in)
Hp = Continuous Power to be transmitted by torque limiter (hp)
Rpm = Speed of torque limiter application (rpm)
Fp = Prime Mover Service Factor
Fm = Driven Equipment Service Factor
dmax = Torque limiter maximum bore (in)
dmin = Torque limiter minimum bore (in)

Prime Mover Service Factors

Prime Mover Factors		Fp
Diesel Engine	1 Cylinder	*
	2 Cylinder	*
	3 Cylinder	2.5
	4 Cylinder	2.0
	5 Cylinder	1.8
	6 Cylinder	1.7
More than	6 Cylinder	1.5
Vee Engine		1.5
Gasoline Engine		1.5
Turbine		0
Electric Motor		0
Induction Motor		0
Synchronous Motor		1.5
Variable Speed*		
Synchronous Converter (LCI)	- 6 pulse	1.0
	- 12 pulse	0.5
PWM/Quasi Square		0.5
Cyclo Converter		0.5
Cascade Recovery (Kramer, Scherbius)		1.5

*The application of these drive types is highly specialized and it is recommended that Brunel Corporation be consulted for further advice. The final selection should be made by Brunel Corporation.

For confirmation of torque limiter selection complete the check list on page 41 and fax to Brunel Corporation:
Fax: (940) 723-7888

Selection Examples:

Waste Water Torque Limiter

Application: Torque Limiter applied between reducer output shaft and drive sprocket
Prime mover: 1/2 Hp 4 pole induction motor 1750 Rpm
Driven equipment: chain & flight sludge conveyor system
Reducer: 925:1 ratio gear box
Reducer output speed = 1750 Rpm/925 ratio = 1.891 Rpm

T_{NORM} = 63,025 X (Hp / Rpm) lb-in
= 63,025 X (.5 / 1.891)
= 16,664 lb-in
T_{MAX} = T_{NORM} (Fp + Fm)
16,664 (0 + 1.5)
T_{MAX} = 24,996 lb-in

Choose: **JSE1-0402EA**
Torque Limiter Max Torque = 30,000 lb-in
Max Bore = 3.75"
Min Sprocket: H78 11 Tooth

Extruder Torque Limiter

Application: Torque Limiter applied between motor shaft and reducer input shaft
Prime mover: 400 Hp DC drive 1750 max Rpm
Driven equipment: twin screw extruder
Motor shaft = 3 3/4"
GB shaft = 70mm

T_{NORM} = 63,025 X (Hp / Rpm) lb-in
= 63,025 X (400 / 1750)
= 14,405 lb-in
T_{MAX} = T_{NORM} (Fp + Fm)
= 14,405 (0 + 1.15)
T_{MAX} = 16,565 lb-in

Choose: **JSE1-0128A**
Torque Limiter Max Torque = 30,530 lb-in
Motor Rigid Hub Max Bore = 4.125"
Gearbox Flexible Hub Max Bore = 90mm

WARNING

It is the responsibility of the system designer to ensure that the application of the torque limiter does not endanger the other constituent components in the system. Service factors given are an initial selection guide.