

TALK THE TORQUE

Your guide to Howdon Torque Limiters and WedgegardTM

In this issue:

- What are torque limiters
- How to specify them
- Calculating your torque
- Which applications are best



Welcome to our guide.

Howdon Power Transmission has been involved in the design and manufacture of torque limiters for over 40 years. We invented the revolutionary Wedgegard Shearpin Torque Limiter in 1977 to address demand for a simple solution to torque overload protection.

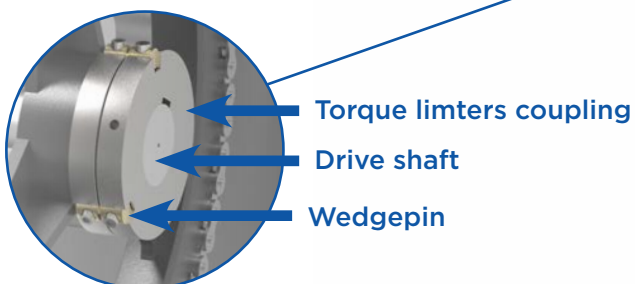
Today we continue to build on the success of the Wedgegard Shearpin Torque Limiter, developing robust, dependable torque limiters to avoid the mechanical drive overload problems that can occur under the increasing demands of the modern processing plant.

The basics

What is a Torque Limiter?

A torque limiter is a device that protects mechanical equipment, such as conveyors and pumps, from damage by jamming or overload.

A torque limiter may limit the torque by slipping (as in a friction plate slip-clutch), or uncouple the load entirely (as in a shearpin / wedgepin). Wedgepins are proven to be reliable for long term protection on slow running / high torque drives.



The main drive engine is protected at all times by the torque limiter attached to the drive shaft above

What are shearpins?

Overload clutches and torque sensors can be expensive and complicated to use. Howdon developed the wedge-shaped shearpin to overcome the problems associated with conventional round shearpins and give a simple reliable, high precision, solution to drive protection.

What you need to know:

- Wedgepin necks are standardised and coded, giving safe, tamper proof repeatability.
- All our wedgepins are manufactured in the UK giving us full traceability.
- Our wedgepins are precision made using high grade steel and brass.
- All our batches are coded and recorded for quality assurance.
- Every wedgepin batch is tested in-house for correct shear load.
- Howdon wedgepins are easily accessible and can be re-set in minutes with no special tools.



How do you choose the right torque limiter for your application?

Torque limiters, also known as overload clutches, provide machine protection and reduce down time after overload conditions. Howdon make a wide range of torque limiters that provide faster response times and better protection than typical automatic electronic methods, allowing machine and drives to coast to a stop without causing further machine damage.

Finding the answers to these questions will help you choose the right torque limiter:

1. At what torque level do I want the overload clutch to disengage?

The torque could be determined by the horsepower (HP) of the motor and the revolutions per minute (RPM) of the clutch. Remember that if the machines start inertia is significant, the start-up torque may exceed the rated HP for a short duration. Be sure to select the right limiter with a torque range that exceeds the estimated torque if the system inertia is significant.

Using this simple formula, calculate the theoretical driving torque for the position chosen:

Torque (lbf.ins) = H.P. multiplied by 63025 divided by r.p.m.

Torque (Nm) = kW multiplied by 9550 divided by r.p.m.

Also consider:

The torque could be determined by a weak link in the process equipment. If you have breaking on shafting, chains, belts or speed reducers due to occasional jams, the torque of the limiter should be set below the torque necessary to damage the component.

The torque could be set lower to eliminate product damage, e.g. when processing bottles, cans or boxes.

2. What level of accuracy do I need?

Howdon Torque Limiters with Wedgepins are designed to protect your drive system with an accuracy of less than 5% of the torque limit set, allowing for instant protection of your expensive machinery.

In the event of a jam or overload, Howdon's Wedgepins will shear, disconnecting the drive instantly. Automatic electronic protection typically falls into two main categories, sensors and controls, both of which are designed to slow the machine down with an accuracy of normally above 5% of torque limit set, but may not work instantly. Also slip-overload clutches can fail to work over time, unlike Howdon's manual torque limiters.

3. How much downtime can I live with?

This is determined by the required reset method after the clutch has disengaged from the drive. If you don't want operator intervention you will need a fully automatic reset method clutch, but these are highly technical and expensive. Howdon's manual torque limiter will "free wheel" after it trips out and will require operator intervention to reset. Due to the design of Howdon's Wedgepins and coupling, operators can reset their machine in a matter of seconds with just one Allen key.

4. Which application warrants Howdon torque limiters?

Howdon torque limiters have been used in a wide variety of industries, from general conveying to industrial pumps, since 1974. Applications include: Packaging Machines, Food Processing Machines, Production Conveyors, Vehicle Cargo Pumps, Furnace Conveyors, Foundry Conveyors, Smelter Plants, Steelworks Drives, Tilt Drives and many more.

Applications include:



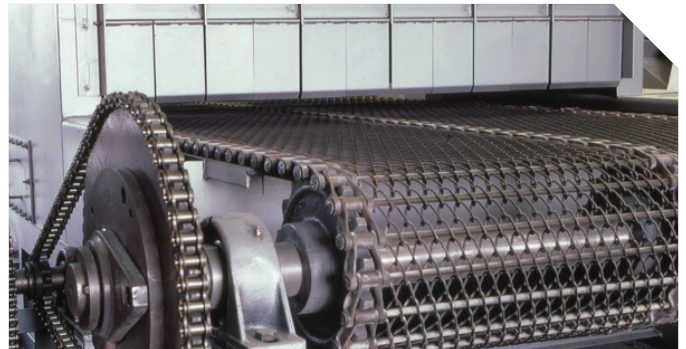
Steel Production



Industrial conveying



Food Production



Kilns and Crushers



Tanks and Pumps



Waste Water



Bin Dischargers



Agricultural machines

Type DIN Spacer

Universal Joint Shaft Couplings

- Fits standard DIN UJ (Universal Joint) companion flanges. Release torque is adjustable by Wedgepin ratings.
- The maximum release torque is based on maximum Wedgepin capacity and not UJ shaft capacity- Check your UJ shaft manufacturers max load rating.
- Adaptor Flange maybe required when fitting to PTO Gear Box Flange.
- Spigot diameters may change on higher rated UJ shafts.
- Sizes 150 and above are supplied with face keyways.
- When selecting high overloads always limit the release torque to 90% of UJ shaft manufacturers full load rating.
- Non Standard units can be made to order, call today for a quote.



All measurements in mm

| | | | | | | | | | | | | | |
|------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| UJ Shaft Size | 90 | 100 | 120 | 150 | 180 | 180 | 225 | 250 | 285 | 315 | 350 | 390 | 435 |
| Outside Diameter | 100 | 100 | 120 | 150 | 180 | 180 | 225 | 250 | 285 | 315 | 375 | 390 | 435 |

Torque range from 129Nm to 150,000Nm depending on wedgepins and coupling size

Call or email for more information.

Chain & Pulley Drives

(Type S HUB)

- Chain Type Wedgegard Couplings can be supplied bored and keywayed to customer requirements.
- Standard Units for release torques up to 122,000Nm. Torque is adjustable by Wedgepin ratings.
- Designs to suit special drive requirements are available.
- S Hub can be supplied complete with chain plate wheel, Vee or timing pulley.



All measurements in mm

| | | | | | | | | | | |
|------------------|------|------|------|------|------|------|-------|-------|-------|-------|
| Size | S250 | S350 | S500 | S700 | S800 | S950 | S1000 | S1200 | S1400 | S1600 |
| Outside Diameter | 80 | 100 | 115 | 150 | 175 | 230 | 280 | 320 | 350 | 425 |

Torque range from 25Nm to 122,000Nm depending on wedgepins and coupling size.

Call or email for more information.

Flexible Couplings

Type CFS Coupling

- Type CFS Wedgegard couplings combine a Centaflex half coupling with the Wedgegard torque limiter.
- Units can be supplied bored and keywayed to customer requirements.
- Standard Units for release torques up to 64,000 Nm. Torque is adjustable by Wedgepin ratings.
- CFS Couplings are designed for safe operation in a wide range of high torque applications.
- Compensates for axial, radial and angular misalignment, offering heavy duty performance and compact dimensioning.
- Standard finish - Natural.



All measurements in mm

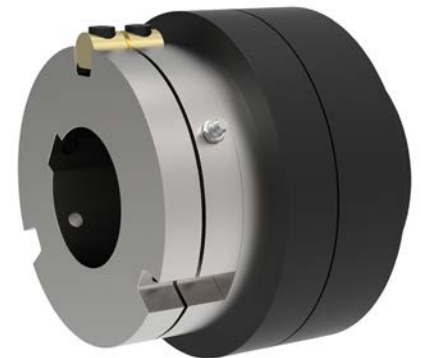
| Model | CFS 250-105 | CFS 350-135 | CFS 500-160 | CFS 500-198 | CFS 700-220 | CFS 700-275 | CFS 950-350 | CFS 1000-425 |
|------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|
| Outside Diameter | 105 | 135 | 160 | 198 | 220 | 275 | 350 | 425 |

Torque range from 45Nm to 64000Nm depending on wedgepins and coupling size

Call or email for more information.

Type NFS Coupling

- Type NFS Wedgegard Couplings can be supplied bored and keywayed to customer requirements.
- Standard Units for release torques up to 21,555Nm. Torque is adjustable by Wedgepin ratings.
- NFS Couplings accommodate parallel, angular and axial misalignments as well as absorbing torsional vibrations.
- NFS Couplings are suitable for 'Black Pullout Pumps' in which the impeller can be disassembled without disturbing the motor and pump from the base frame.
- Standard finish - Natural.



All measurements in mm

| Model | NFS 350-110 | NFS 500-125 | NFS 700-180 | NFS 700-225 | NFS 950-250 |
|------------------|-------------|-------------|-------------|-------------|-------------|
| Outside Diameter | 110 | 125 | 180 | 225 | 250 |

Torque range from 45Nm to 21,555Nm depending on wedgepins and coupling size

Call or email for more information.

Type PFS Coupling

- Type PFS Wedgegard coupling has been designed for use on machines where it is essential that no pre-loading of the bearings can be permitted.
- Particularly suitable for positive displacement pumps and metering pumps.
- Units can be supplied bored and keywayed to customer requirements.
- Standard finish - Natural.



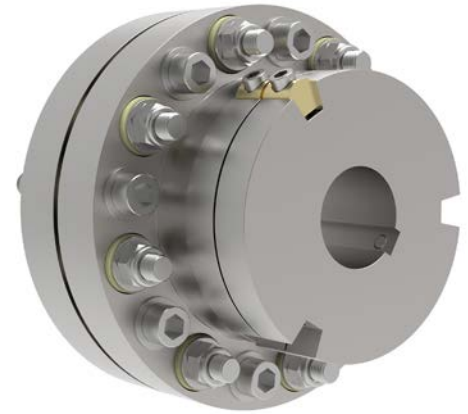
All measurements in mm

| Model | PFS |
|------------------|-----|
| Outside Diameter | 100 |

Torque range from 50Nm to 1000Nm depending on wedgepin fitted. Call or email for more information.

Type DFS Coupling

- Type DFS Wedgegard Couplings can be supplied bored and keywayed to customer requirements.
- Standard Units for release torques up to 122,000 Nm. Torque is adjustable by Wedgepin ratings.
- Urethane 95 shore hardness close fitting buffers.
- DFS Couplings are usually applied on equipment when misalignment does not exceed 3.1/2 degree.
- Standard finish - Natural.



All measurements in mm

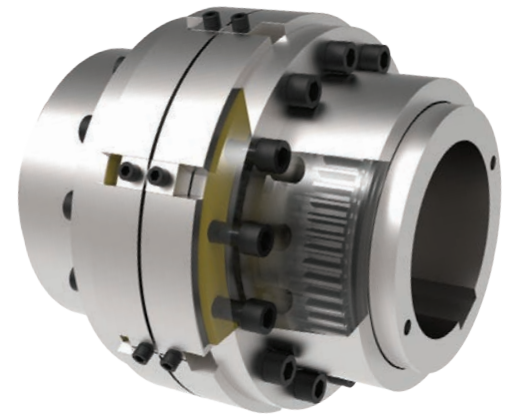
| Model | DFS 350-145 | DFS 500-195 | DFS 700-240 | DFS 950-320 | DFS 1200-510 | DFS 1400-560 | DFS 1600-630 |
|------------------|-------------|-------------|-------------|-------------|--------------|--------------|--------------|
| Outside Diameter | 145 | 195 | 240 | 320 | 510 | 560 | 630 |

Torque range from 45Nm to 122000Nm depending on wedgepins and coupling size

Call or email for more information.

Gear Type Couplings

- Gear Type Wedgegard Couplings can be supplied bored and keyed to customer requirements.
- All Couplings manufactured to AGMA standards.
- Standard Units for release torques up to 286,800 Nm. Torque is adjustable by Wedgepin ratings.
- Designs to suit special drive requirements are available. Maximum Speed 500 RPM.
- For speeds greater than 500 RPM units should be balanced.



All measurements in mm

| Size | 1 | 1 ½ | 2 | 2 ½ | 3 | 3 ½ | 4 | 4 ½ | 5 | 5 ½ | 6 | 7 |
|------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Outside Diameter | 125 | 160 | 185 | 220 | 250 | 290 | 325 | 355 | 400 | 450 | 470 | 540 |

Torque range from 57Nm to 286800Nm depending on wedgepins and coupling size

Call or email for more information.

Water Industry Couplings

- Easy access - drive reset in minutes.
- Wedge construction gives maximum rigidity with no backlash. Ideal for indexing or reversing drives.
- Clamping screws give positive axial location. Shear neck cannot be displaced from correct position between flanges.
- Equal load sharing with multiple pins on high torque drives. Very high capacity within compact dimensions.
- Shear necks are standardised and colour coded, giving safe, tamper proof repeatability and spares economy.
- "Fail-safe" under all conditions. Not affected by changes in temperature or humidity. Ability to release not dependent on mechanism lubrication.



Howdon can make any of it's standard units in 304SS or 316SS .

Call or email for more information.



Can't find the torque limiter you're looking for?

Howdon's offer a bespoke engineering design service.



UK-based Howdon holds thousands of products in its warehouse and can dispatch standard stock items in 24hrs. Call now +44 (0)1453 750814

Chain Couplings

- Chain Type Wedgegard Couplings can be supplied bored and keywayed to customer requirements.
- Standard Units for release torques up to 64,000 Nm. Torque is adjustable by Wedgepin ratings.
- Designs to suit special drive requirements are available. Standard finish of Xylan coating on Wedgegard unit.

All measurements in mm

| Model | S350 | S500 | S700 | S950 | S1000 |
|------------------|------|------|------|------|-------|
| Outside Diameter | 137 | 187 | 248 | 326 | 462 |



Torque range from 45Nm to 64,000Nm depending on wedgepins and coupling size
Call or email for more information.

Phasing Hub

- Phasing Hubs are manufactured to accept Taper Lock Bushing.
- Adjust timing sequence with clamp screw slackened, allowing plate wheel to rotate freely.
- Save time with threading chain through complex machine layouts. Hubs for B.S or A.S plate wheels.
- Suitable for timing pulleys, gears and cams.
- Designs to suit special drive requirements are available.
- Phasing Hubs can be supplied with Howdon "Wedgepin" overload protection.

All measurements in mm

| Unit Size | 252 | 352 | 502 |
|--|-------|-------|-------|
| Outside Diameter | 70 | 83 | 120 |
| Minimum Number of Plate Wheel Teeth 1/2" Pitch | 21 BS | 24 BS | N/A |
| Minimum Number of Plate Wheel Teeth 5/8" Pitch | 18 BS | 20 BS | 28 BS |
| Minimum Number of Plate Wheel Teeth 3/4" Pitch | N/A | 18 BS | 24 BS |
| Minimum Number of Plate Wheel Teeth 1" Pitch | N/A | N/A | 19 BS |



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