Wedgegard®

HOWDON™
TORQUE LIMITERS

Installation, Maintenance and Safety guidelines for Howdon torque limiters

Please read and observe these Operating Instructions carefully.
Possible malfunction, failure or damage of the Torque Limiter or your application may be caused by not observing them.

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Manufacturer's declaration.

An initial start-up is prohibited until you have ensured that all applicable machinery safety directives for the machine or system, into which this product has been incorporated/installed correspond to the relevant countries safety machinery guidelines and directives.

Safety notes/regulations.

The submitted installation maintenance and operating instructions is part of the Wedgegard shipment. Always Keep them accessible near the Wedgegard torque limiter(s).

Danger!

- If the Wedgegard Torque Limiters have been modified or incorrect or non-Howdon Wedgepins fitted.
- If "Lifting Aid" Wedgepins have not been removed - see page 4, section 3.
- If the relevant standards of the safety or installation conditions are not observed.

****Necessary protective measures must be undertaken by the customer or user****

- Cover all moving parts for protection against squeezing, seizing, dust deposit and hit of foreign objects.
- The Wedgegard torque limiter should be used with a limit switch (Rotation Sensor), unless otherwise agreed in writing by Howdon.

Only qualified and well-trained specialist personnel should work on the torque limiter and components to avoid any personal injury or damage to machinery, under observance of the valid standards and machinery guidelines and directives. The installation and operating instructions are to be read carefully before installation and operation.

These safety notes are customer/user hints only and no claim is made on completeness!

Attention: This product **is not** suitable for installation or operation in potential explosive or flammable areas without evaluation of the conformity for such purpose.

1.1 General safety instructions.

Read these installation/operating instructions carefully before putting the Wedgegard torque limiter into operation. Consider these instructions as well as the drawings provided with your enquiry or order, please contact Howdon for assistance if further detail is required.

All work with and on the Wedgegard torque limiter is to be carried out taking into account that **"safety is the top priority"**. Switch & Lock the drive unit off before carrying out any work on any Howdon torque limiter, (e.g. Torque Limiter, Wedgepin changes, Sprockets, Couplings, Brake Discs, V-belt pulley) these must be secured by the operator against unintentional handling or touching.

1.2 Special safety instructions.

Life-threatening danger!

When assembling, installing, operating, changing Wedgepins and maintaining the Torque Limiter it is critical that the entire drive train is secured against being switched on unintentionally. Any Moving parts can cause severe injury. Any Rotating parts (e.g. Torque Limiter, Sprockets, Chain, Couplings, Brake Discs, V-belt pulley etc) must be secured against the operator(s) unintentional handling or touching.

1.2 Special safety instructions.

Special care should be taken when changing Wedgepins - When the Wedgepins have sheared or no Wedgepins are fitted or have been removed, the torque limiter can freely rotate against each other.

This could have a potential for **trapping or severe injury to fingers and hands**, use adequate hand protection (**Cut Resistant Gloves**) and always use eye protection glasses or a face shield. Suitable safety Headwear and footwear is also a must when handling or interacting with the Wedgegard unit or Wedgepins.

When working on/with Wedgegard torque limiters **SAFETY** should always be your top priority.

Life-threatening danger!

When assembling, installing, operating, changing wedgepins and maintaining the Torque Limiter it is critical that the entire drive train is secured against being switched on unintentionally. Any Moving parts can cause severe injury. Any Rotating parts (e.g. Torque Limiter, Sprockets, Chain, Couplings, Brake Discs, V-belt pulley etc) must be secured against the operator(s) unintentional handling or touching.

Section 2:

2. Design and function / parts list - See drawings supplied relating to your order/application.

2.1 Function.

Howdon Wedgegard torque limiters are safety couplings that use a Wedge shaped shear pin (Mechanical Torque Fuse), these are called Wedgepins and are deployed wherever machines and drive units need to be protected against torque overload. If the load torque falls below the set limit torque (release/shear) of the Wedgepins, the built-in component and the hub rotate at the same speed and continues to drive. The limit torque (release/shear) is determined by the number of the Wedgepins in operation, see also the section 5.3 on start-up. In the event of an overload, i.e. when the load torque exceeds the set limit torque (release/shear) of the Wedgepins, the built-in component, for example a V-belt pulley, coupling or the Wedgegard hub will release as the Wedgepins shear and the built-in component or the Wedgegard hub will stop (depending on which is the driving or driven member) and no drive torque is transferred, only the driving hub or component will continue to rotate until you switch off the drivetrain, see also section 5.2 on limit switch. The limit torque is determined by the number of the Wedgepins in operation, and the shear load they have been set with, see also the section on start-up.

Caution!

Howdon advise that the drive on all Wedgegard units be shutdown ASAP after an overload has occurred, this will prolong bearing life.
If the Wedgegard unit is left free running for long periods of time, this will increase wear on the bearings, thus shortening bearing life significantly.

2.2 Identification.

These operating instructions apply for:

Howdon Wedgegard torque limiters and its Wedgepins.

With and without the built-in component (e.g. V-belt pulley, chain wheel, drive coupling etc.)

As well as these instructions, please also consider the data sheets for the Wedgegard torque limiters at www.howdon.co.uk and the drawings in these individual sections.

Section 3 - Supply condition.

The Wedgegard torque limiters are supplied assembled and provided with wedgepins rated for the customers requested release torque setting. Customer would have been provided with a torque table showing various standard torque settings available during the quotation and or enquiry process. A Bespoke torque table may have been provided during the design stages depending on the application. If in any doubt, please contact Howdon for assistance.

As standard the Wedgegard units will be supplied natural finish, unless specified by the customer in the purchase order and application specifications.

Most units will come fitted with Lifting Aids, these are wedgepins with no neck diameter, they will be marked on each end with **"Lifting Aid"**, these **MUST be removed immediately once the Wedgegard unit is lifted and fitted into your applications drivetrain**. **Once removed they should be placed into a suitable container and marked with "Lifting Aids Only - Not to be used as Shearpins"**. They should only be used when you remove the Wedgegard torque limiter from your drivetrain, then immediately removed once the torque limiter is reinstalled.

Unless otherwise specified in the customers order/application details, the hub(s) bore will be finished to H8 limits with standard B.S. parallel keyway. A setscrew tapping will be provided over the keyway.

Section 3.1 - Installation and Mounting.

The hub shaft(s) can be either the driving or driven member.

Always try to arrange an "inboard" mounting for the sprocket to minimise overhung loads. Make sure the mating sprocket or gear wheel is square and inline with drive. For easy handling at site, large chain, pulleys, couplings or gear wheels may not be mounted on the hub. Attachment screws must be properly tightened to their maximum torque (See Page 8, Section 7).

Section 3.2 - Assembly & disassembly.

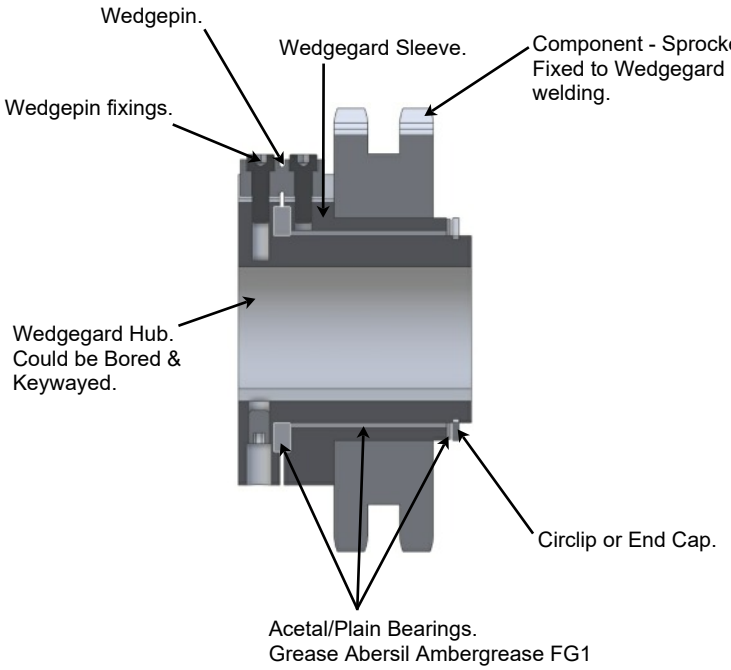
Assembly and disassembly of the Wedgegard torque limiter is only recommended in extreme circumstances i.e. when bearings or the component part needs replacing. Please contact Howdon for assistance.

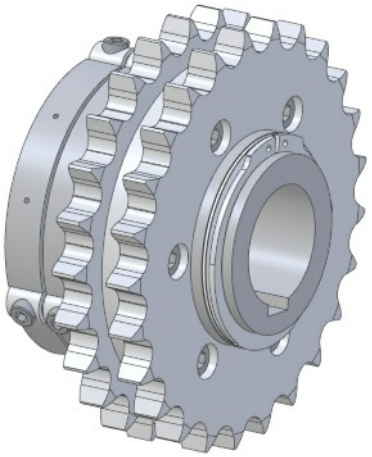
This process is reasonably straight forward for most Howdon torque limiters but special tooling might need to be manufactured to assist in the removal and or assembly of the bearings. Please contact Howdon for assistance.

When contacting Howdon please provide the serial number and drawing number for your product.
Serial numbers can be found marked on the periphery of Howdon torque limiters.

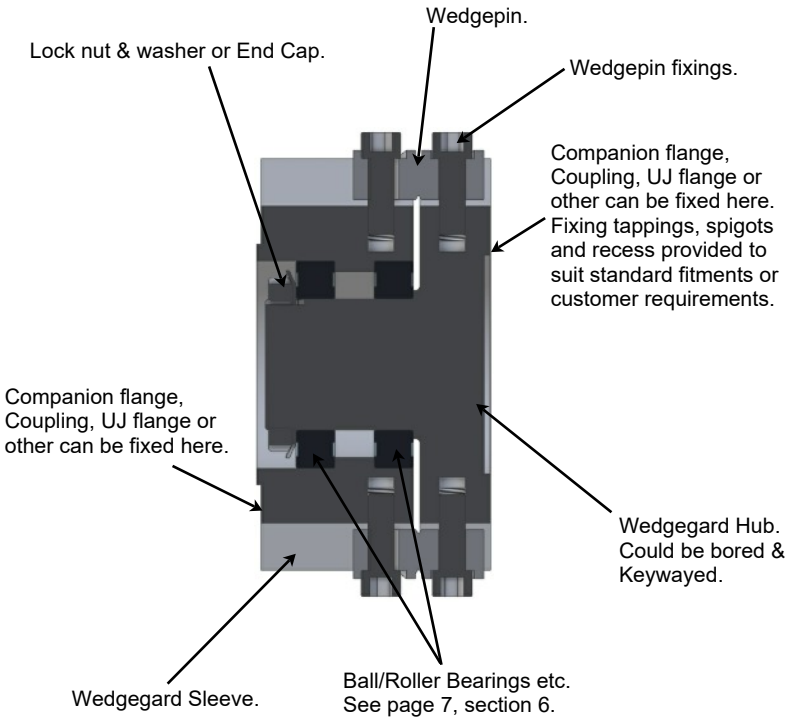
Life-threatening danger!

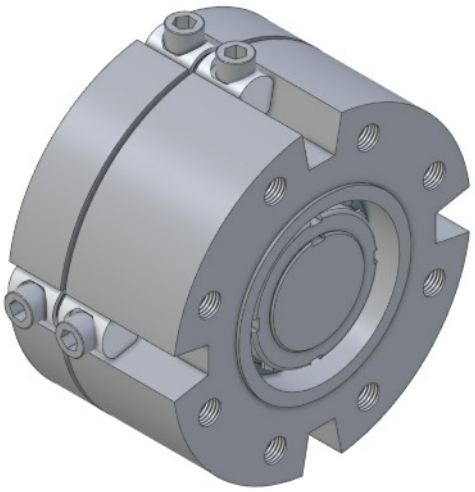
When assembling, installing, operating changing Wedgepins and maintaining the Torque Limiter it is critical that the entire drive train is secured against being switched on unintentionally. Any Moving parts can cause severe injury. Any Rotating parts (e.g. Torque Limiter, Sprockets, Chain, Couplings, Brake Discs, V-belt pulley etc) must be secured against the operator(s) unintentional handling or touching.





Always try to arrange an "inboard" mounting for the sprocket to minimise overhung loads. Make sure the mating sprocket or gear wheel is square and inline with drive. For easy handling at site, large chain, pulleys, couplings or gear wheels may not be mounted on the hub. Attachment screws must be properly tightened to their maximum torque (See Page 8, Section 7).





Danger!

Life-threatening danger!

When assembling, installing, operating, changing Wedgepins and maintaining the Torque Limiter it is critical that the entire drive train is secured against being switched on unintentionally. Any Moving parts can cause severe injury. Any Rotating parts (e.g. Torque Limiter, Sprockets, Chain, Couplings, Brake Discs, V-belt pulley etc) must be secured against the operator(s) unintentional handling or touching.

Section 5.1 - Shearpins - Wedgepins.

The principal type used in Howdon units is the Wedgepin. This has equal tapered portions either side of a circular shear neck which is correctly positioned when the two fixing screws are inserted.

TO CHANGE WEDGEPINS

1. Take out the two securing screws.
2. Remove sheared halves of broken Wedgepin(s). (If tapered pieces tend to **"stick"** use a suitable tool to lever out), or contact Howdon for assistance.
3. Realign unit flanges, matching up numbered alignment marks, if marked on your Howdon unit.
4. Fit new wedgepin(s), reinsert screws and tighten to correct torque. **(See Page 8, Section 7). Always use the same type/grade and length of screws that were provided for Wedgepin fixing.**

Most Howdon shear units have two, three, four or six Wedgeslots for Wedgepins.
One, two, three, four or six Wedgepins can be fitted depending upon the shear torque requirement.
Some units maybe marked with numbered alignment marks alongside wedgeslots. If these are on your unit, ensure they are matched correctly before fitting wedgepins for optimum wedgepin alignment.
Key/Keyway stresses should be calculated prior to fitting any overload device.

Caution!

Sometimes blocking screws or balance blocks may be fitted to inoperative wedgeslots. These must not be removed.

Danger!

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Section 5.2 - Limit Switch.

Howdon advise that the drive on all Wedgegard units be shutdown ASAP after an overload has occurred. A rotation sensor could be used above the driven part, on overload the sensor will check for rotation and as the wedgepins have sheared rotation should have stopped, the sensor should read this and signal the drive shutdown.

Caution!

Howdon advise that the drive on all Wedgegard units be shutdown ASAP after an overload has occurred, this will prolong bearing life.
If the Wedgegard unit is left free running for long periods of time, this will increase wear on the bearings, thus shortening bearing life significantly.

Section 5.3 - Starting Up.

Before running/startup:
Remove Wedgepins (leave any balance blocks in place) and check for free rotation.
Re-Fit Wedgepins.
Check ALL Wedgepins for correct seating, tighten ALL fasteners to MAXIMUM recommended torque with a torque wrench. (Page 8, Section 7).
If the shear torque required is unknown it is advisable to start up with Wedgepins of a lower strength and work up to the required value.

NOTE: The "running in" period of an installation often requires a higher shear torque figure than the calculated or eventual running figure.

Section 6.1 - Maintenance and Maintenance Intervals.

Life-threatening danger!

When assembling, installing, operating, changing Wedgepins and maintaining the Torque Limiter it is critical that the entire drive train is secured against being switched on unintentionally. Any Moving parts can cause severe injury. Any Rotating parts (e.g. Torque Limiter, Sprockets, Chain, Couplings, Brake Discs, V-belt pulley etc) must be secured against the operator(s) unintentional handling or touching.

Maintenance work, which should be carried out after approx:
1500 operating hours, after 50 Wedgepin overloads or at the latest 1 year, includes:

- Visual inspection - Any noticeable defects appearing.
- Functional inspection - Is the Wedgegard still performing as when first installed.
- Inspection of the shaft-hub-flange connections
- Inspection of the screw(s) and tightening torques - New screws recommended 12.9 grade socket head caps. **Please ensure you use the same type, grade and length of screws that were provided for Wedgepin fixing.** The specified tightening torques (page 8, section 7) should be used as a guide.
- Inspection of the Wedgepins - Fatigue bending and correct Limit Torque fitted.
- Wedgegard Torque Limiter release inspection - Free running after Wedgepin removal.
- Inspection of the bearings, checking for noise and signs of wear.
- Re-greasing of the transmission bearings.

Torque Limiter re-greasing must only be carried out by specially trained Personnel.
One or more grease nipples or holes at the bottom of the Sleeve Wedgeslots may be provided at the periphery of the unit which must be recharged (Minimum) every 6 months with AMBERSIL AMBERGREASE FG1 water repellent grease containing **PTFE *For Plain bearings only, i.e. Acetal Plastic, DU and DX.**

If sealed ball bearings are fitted these require no further lubrication**.
**If grease nipples are provided and bearings fitted then grease with a lithium based bearing grease as required by the bearing manufacturer.
For greasing unsealed Ball/Taper roller bearings, please use lithium based bearing grease recommended by the bearing manufacturer.

When re-installing the clutch, please secure all screws to the correct tightening torques.

If excessive amounts of dust or dirt are present or the application is in extreme ambient conditions, it may well be necessary to carry out inspections at shorter maintenance intervals.

Section 6.2 - Disposal/Recycling Advice.

Electronic components (Limit switch, if applicable).
Steel components, Steel scrap,
Non-ferrous metals, Aluminium components, copper, brass, bronze etc.
Seals, O-rings, V-seals, elastomers/plastics.
Packaging, cardboard, mesh netting etc.

Ensure that all waste is segregated and disposed of safely and in accordance with local statutory requirements, the use of a certified disposal/recycling Company is advised.
All Products should be disposed and recycled with the environment being given top priority.

Life-threatening danger!

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SUBJECT: TIGHTENING TORQUES FOR ISO METRIC SOCKET HEAD CAP SCREWS. (GRADE 12.9 SELF COLOUR & PLATED.)

THREAD SIZE	TREAD PITCH	MAX. TIGHTENING TORQUE Nm. SELF COLOUR	MAX. TIGHTENING TORQUE Nm PLATED
M3	0.50	2.0	1.6
M4	0.70	4.5	3.5
M5	0.80	9.5	7.1
M6	1.0	16.0	12.0
M8	1.25	39.0	29.0
M10	1.50	77.0	58.0
M12	1.75	135.0	101.0
M14	2	215.0	161.0
M16	2.0	330.0	248.0
M18	2.5	455.0	341.0
M20	2.5	650.0	488.0
M22	2,5	870	652.0
M24	3.0	1100.0	825.0

DO NOT OVER TIGHTEN SCREWS.
THESE FIGURES ARE FOR GRADE 12.9 SOCKET HEAD CAP SCREWS.
CHECK THE GRADE BEFORE TIGHTENING
CHECK IF THEY ARE SELF COLOUR OR PLATED.