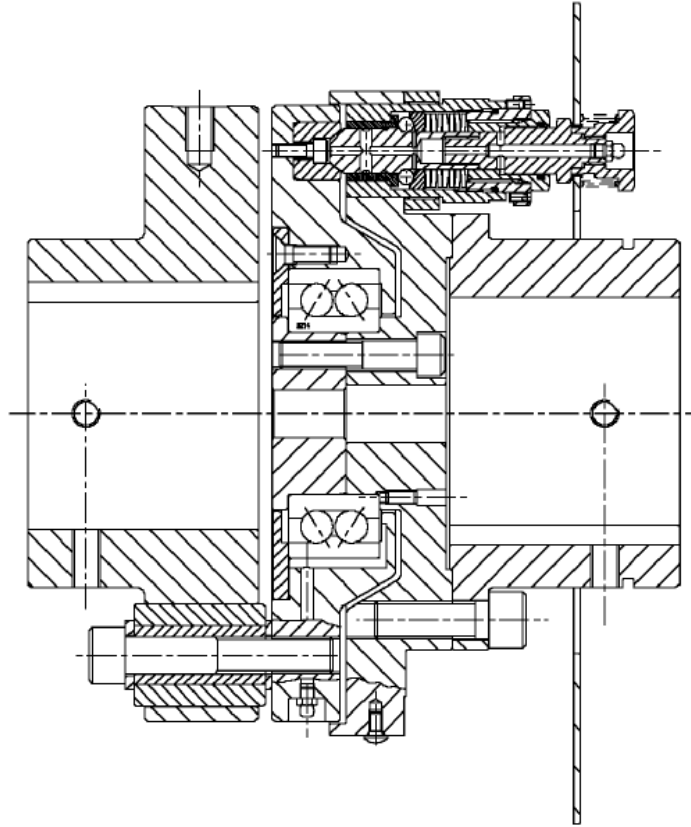


AUTOGARD 820 SERIES TORQUE LIMITER INSTALLATION AND MAINTENANCE



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1. GENERAL NOTES & TIGHTENING TORQUES

- 1.1. This manual applies to Autogard 820 modular torque limiters types 1,2 and 3, and also special units derived from these types.
- 1.2. This manual is to be used in conjunction with the specific assembly drawing for the unit. Unless otherwise specified, all screwed fasteners should be secured with Loctite 243 and torque tightened to the values given in Table 1.

Table 1

| Thread Size | Tightening Torque (Nm) | Tightening Torque (lbf.ft) |
|------------------|------------------------|----------------------------|
| M3 | 1.5 | 1.1 |
| M4 | 3.3 | 2.4 |
| M5 | 6.7 | 4.9 |
| M6 | 11 | 8 |
| M8 | 28 | 20 |
| M10 | 55 | 40 |
| M12 | 95 | 70 |
| M16 | 236 | 174 |
| M20 | 461 | 340 |
| M24 | 797 | 588 |
| 1/4" UNF | 13 | 10 |
| 5/16" UNF | 27 | 20 |
| 3/8" UNF | 49 | 36 |
| 1/2" UNF | 117 | 86 |
| 5/8" UNF | 233 | 172 |
| 3/4" UNF | 407 | 300 |

- 1.3. Selection verification – The user is responsible to ensure that the unit ordered will in fact meet the duty requirements, and that the duty has not changed from the time that the coupling was originally selected. Autogard can supply details of the duty under which the unit was originally selected.

2. PRINCIPLE OF OPERATION

The 820 series modular torque limiters include hardened seats in one half of the unit and module sub-assemblies in the other half such that torque is transmitted between the plunger and seat (see figs 1 and 2). This produces an end thrust in the plunger in proportion to the applied torque. This force is resisted by a ring of segments trapped between a flat surface and a conical washer loaded by disc springs. When the axial force reaches a level greater than the reaction through the spring mechanism, the plunger will retract forcing the segments up the plunger slope and allowing it to disengage from the seat. The segments are then located on the larger diameter of the plunger and all forces are balanced internally allowing the torque limiter to run free and unloaded (except for the auto-reset version, which maintains some axial force on the plunger at all times).

The trip torque is externally adjustable and resetting may be manual or automatic, depending on the application. Some 820 series units incorporate a limit switch plate, which moves on trip and can operate a switch to stop the drive.

A complete 820 series torque limiter may be supplied, in which case the modules will be already fitted, or loose modules may be supplied as components to be incorporated into the customer's own design of torque limiter.

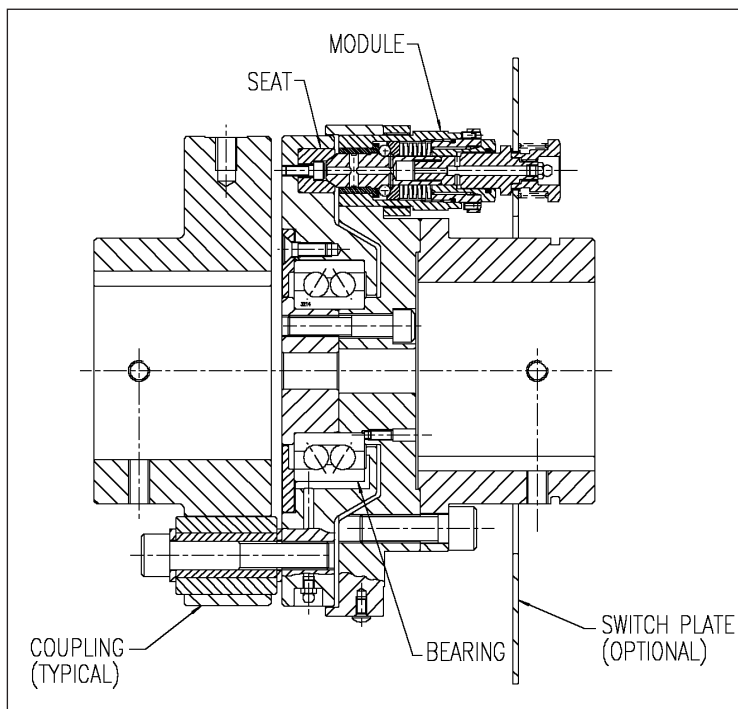


Figure 1 — Typical 820 Series Torque Limiter

3. INSTALLATION — 820 SERIES TORQUE LIMITER

3.1 All Types

- 3.1.1. Unpack the unit and examine for any signs of transit damage. Ensure that the bores are free from burrs. Verify that all parts have been properly supplied as per the order.
- 3.1.2. Before installation, ensure that the rotating equipment is isolated so that the installation can be carried out in a safe manner.
- 3.1.3. There are a number of different arrangements depending on the application. Refer to the specific assembly drawing for the unit. Unless stated otherwise the following will generally apply:
- 3.1.4. On large units tapped holes are provided to allow the use of lifting eyes for safe handling. The threads are M12, M16, ½" UNC or 5/8" UNC, depending on application.
- 3.1.5. For keyed hubs the standard clearance-fit bore should permit the hub to be pushed, pressed or lightly tapped in place on the shaft. Do not strike heavy hammer blows on the hub as this could cause damage. Always use a soft-faced hammer.
- 3.1.6. If interference-fit hubs have been specified, the hubs alone should be heated to 150°C (302°F) in an oil bath or an oven prior to fitting. Do not use spot heat or exceed 300°C (572°C) as this may cause distortion.
- 3.1.7. The hubs should be positioned such that the end of the shaft is flush with the end face of the hub. Most units have two cup point set screws to lock each hub in position on the shaft. When the hub is correctly positioned on the shaft and the key is fitted, apply Loctite 243 or equivalent to the set screws and tighten.
- 3.1.8. On manual reset versions ensure there is sufficient clearance at the end of the modules to allow the use of a mallet to strike the reset pin (see fig. 2). Also note the reset pins extend on trip by the dimensions shown in table 2. Check for adequate clearance in the tripped condition.
- 3.1.9. For ease of maintenance, it is also recommended to allow sufficient clearance to withdraw the modules with the unit installed. The required clearance is shown on the assembly drawing. This will allow the modules and seats to be replaced more easily. Also, if the modules can be withdrawn, the unit can be disconnected from the hubs and removed without the need to move the shafts or hubs.

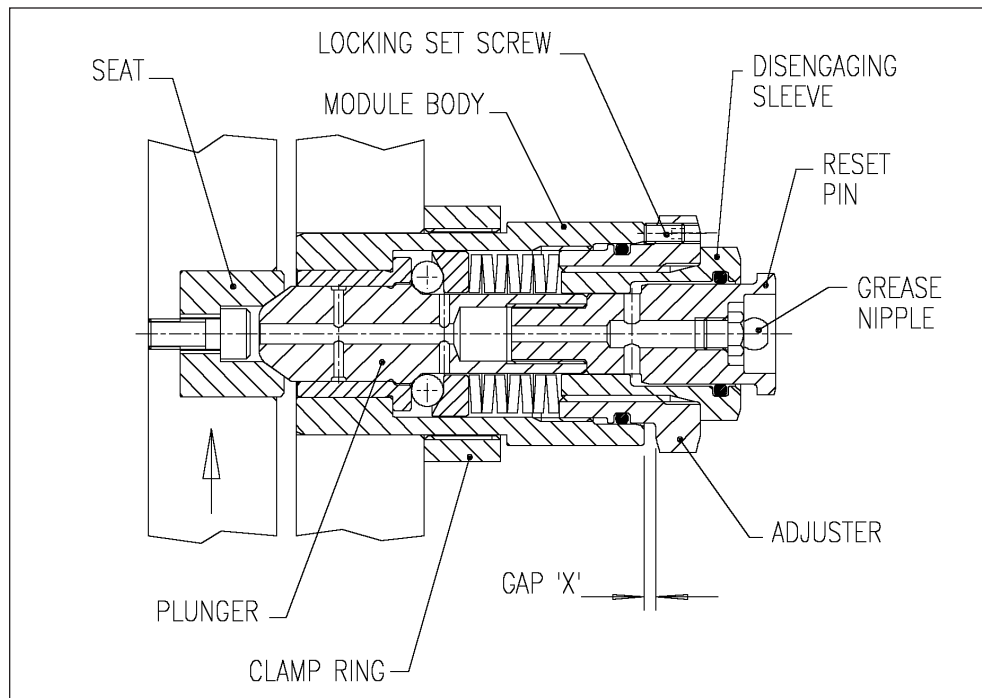


Figure 2 — Typical Module Sub-assembly

Table 2

| Unit | Module Sub-Assembly Size | Reset Pin/Switch Plate Movement on Trip |
|-----------------------------------|--------------------------|---|
| 820-1 Types 1,2,3 | 1 | 3.7mm (0.145 in) |
| 820-2 & -3 Types 1,2,3 | 2 | 5.0mm (0.197 in) |
| 820-4 Types 1,2,3 | 3 | 6.0mm (0.236 in) |
| 820-5 Types 1,2,3 | 4 | 8.0mm (0.315 in) |

- 3.1.10. On all versions ensure that access to the grease nipples in the end of the modules is possible (see fig. 2).
- 3.1.11. Threaded fasteners on flanges etc. should be secured with Loctite 243 or equivalent and torque tightened to the values given in table 1, unless otherwise specified on the specific assembly drawing for the unit.
- 3.1.12. If the unit was supplied to a set torque this will be stated on the label. Otherwise see section 4 'Torque Adjustment'.
- 3.1.13. Some units are fitted with a limit switch plate, which moves axially on trip and can be used to operate a switch to stop the drive. The movement on trip is shown in table 2.
- 3.1.14. With auto-reset units the drive should be stopped within a few seconds after trip, to minimise wear of the plungers and seats (use limit switch, speed sensors or other methods). For manual reset versions the drive may continue to run after trip.
- 3.1.15. 820 series units may be supplied with some unused module ports, which are fitted with blanking plates. This is often the case when the torque requirement is uncertain, as it allows the torque capacity to be increased by adding extra modules. Additional modules should be positioned such that they will not cause out-of-balance forces (eg. Add 2 off modules diametrically opposite each other).
- 3.1.16. General Safety: In common with all mechanical devices, the user must ensure safe application and use of the product with respect to local conditions, e.g. lifting applications, explosive environments etc. As a rotating component, adequate guarding must be provided, in accordance with current codes of practice.

3.2 820 Type 1 and 2

- 3.2.1. Fit the S1 hub to its shaft and secure the locking set screws with Loctite 243.
- 3.2.2. If applicable, place the switch plate over the hub, ensuring the wide flanges of the plastic bushes are on the correct side (see assembly drawing and fig.7)
- 3.2.3. Attach the module unit to the S1 hub, observing match marking if present (balanced units only). Apply Loctite 243 to the fixing screws and torque tighten (see table 1).
- 3.2.4. Attach the switch plate (if applicable) as described in section 10
- 3.2.5. Fit the S2 hub to its shaft and secure the locking set screws with Loctite 243.

3.3 820 Type 1 only

- 3.3.1. Assemble the flexible elements, sleeves and washers to the seat plate as shown on the assembly drawing, using Loctite 243 on the screws and torque tighten to the value specified on the assembly drawing.
- 3.3.2. Bring the shafts together, engaging the flexible elements in the holes in the S2 hub. Align the shafts to ensure that the gap between the S2 hub and the module plate is correct (refer to assembly drawing) and angular, parallel and axial misalignment are within the limits stated on the assembly drawing. Fix the shafts in the correct position.

3.4 820 Type 2 only

- 3.4.1. Place the Samiflex ring over the S2 hub.
- 3.4.2. Bring the shafts together. Align the shafts to ensure that the gap between the coupling halves is correct (refer to assembly drawing) and angular, parallel and axial misalignment are within the limits stated on the assembly drawing. Fix the shafts in the correct position.
- 3.4.3. Rotate one half of the coupling to align the teeth, and fit the flexible element.
- 3.4.4. To fit the Samiflex ring, align the pins on the inside of the ring with the slots which run the full width of the elastic insert. Tap the ring into position with a soft-faced hammer until the pins locate in the central holes in the elastic insert.
- 3.4.5. The ring is retained by two set screws which engage with holes in the elastic insert. Apply Loctite 243 and fit the screws flush with the outside diameter of the ring.

3.5 820 Type 3 only

- 3.5.1. Position the shafts at the correct distance between shaft ends (see assembly drawing) and ensure angular, parallel and axial misalignment are within the limits stated on the assembly drawing. Fix the shafts in this position.
- 3.5.2. Fit the S1 hub to its shaft and secure the locking set screws with Loctite 243.
- 3.5.3. If applicable, place the switch plate over the hub, ensuring the wide flanges of the plastic bushes are on the correct side (see assembly drawing and fig.7)
- 3.5.4. Attach the module unit to the S1 hub, observing match marking if present (balanced units only). Apply Loctite 243 to the fixing screws and torque tighten (see table 1).
- 3.5.5. Attach the switch plate (if applicable) as described in section 10.
- 3.5.6. The coupling will be supplied as a spacer/adaptor sub assembly including one flexring pack, with the S2 hub and its flexring pack and fixings supplied separately.
- 3.5.7. Fit the S2 hub to its shaft, check the dimension from the hub face to the torque limiter face is correct to the assembly drawing, and secure the hub locking set screws with Loctite 243.
- 3.5.8. Mount the spacer/adaptor sub-assembly on the spigot of the torque limiter as shown on the assembly drawing, observing match marking if present (balanced units only). Apply Loctite 243 to the fixing screws and torque tighten as per table 1. Support the spacer.
- 3.5.9. Rotate the S2 shaft to align the small holes of the S2 hub with the large holes of the coupling spacer.
- 3.5.10. Install three of the drive bolts through the small holes in the hub and then through the membrane pack and overload collar as shown in fig.3. Note the correct orientation of the membrane pack - the integral thin washers should be adjacent to the overload collars. Hand tighten the drive nuts.

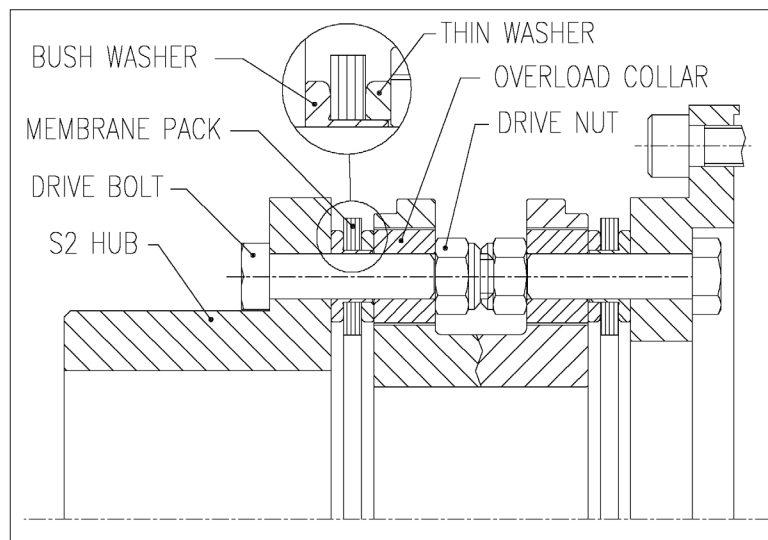


Figure 3 — Installation of First Three Drive Bolts

3.5.11. Install the three remaining drive bolts through the overload collar, the large holes in the hub, the membrane pack and the small holes in the spacer as shown in fig.4 Hand tighten the drive nuts.

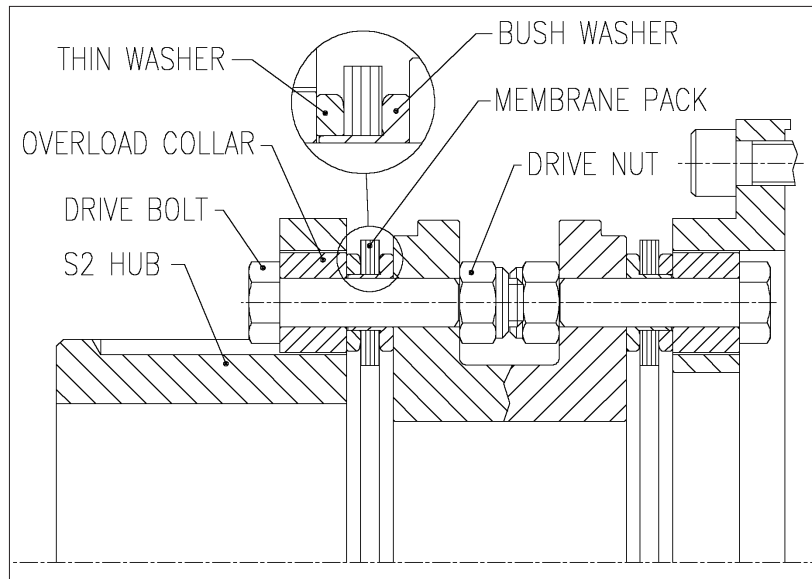


Figure 4 — Installation of Final Three Drive Bolts

3.5.12. Remove the spacer support and tighten all drive nuts to the torque shown in table 3. The drive nuts are self-locking and should be assembled dry - Loctite is not required.

Table 3

| Drive Nut Thread | Drive Nut A/F | Nut Tightening Torque (dry) Nm | Nut Tightening Torque (dry) lb.ft |
|------------------|---------------|--------------------------------|-----------------------------------|
| M12 | 19mm | 50 | 37 |
| M14 | 22mm | 76 | 56 |
| M16 | 24mm | 118 | 87 |
| M18 | 27mm | 160 | 118 |
| M20 | 30mm | 220 | 162 |
| M22 | 32mm | 300 | 221 |
| M24 | 36mm | 350 | 258 |
| M27 | 41mm | 600 | 443 |

4. TORQUE ADJUSTMENT

- 4.1. The torque limiter trip torque should be set high enough so that tripping does not occur under normal start-up and running conditions, (noting that the start-up torque is often greater than the running torque), but not so high as to reduce the level of protection against overload.
This may be achieved by trial and adjustment on site, or, if the required trip torque is known, by reference to the calibration curve supplied with the unit. Some units are supplied factory-set to a specific trip torque (+/- 10%), which will be stated on the label. (Factory-set units can be adjusted on-site if necessary).
- 4.2. The trip torque can be adjusted by turning the adjuster (see fig. 2), clockwise to increase torque and vice versa. If the required trip torque is known then the gap 'X' can be obtained from the calibration curve supplied with the unit. Alternatively the setting can be determined on site, starting with a low setting, and progressively increasing it until the unit starts and runs without tripping under normal load. In some applications it may be more convenient to reverse this, starting with a high setting and progressively reducing it until tripping occurs on start-up or running, then increasing it until the unit starts and runs without tripping.

Proceed as follows;

- 4.2.1. Ensure the torque limiter is engaged before adjusting the torque (see section 6).
- 4.2.2. Unscrew the three unpainted set screws which lock the adjuster hexagon on each module. Do not disturb the three set screws which are sealed with red paint. Do not disturb the single clamp screw which is sealed with red paint. On some units access to the set screws will be easier if the switch plate is removed (see section 10).
- 4.2.3. Adjust the gap 'X' by turning the adjuster on each module (ensure the module body does not turn) to give the required torque as indicated by the calibration curve. Alternatively, if setting by trial, change the setting in increments of ¼ turn of the adjusters.
- 4.2.4. When the correct setting has been achieved apply Loctite 243 or equivalent to the locking set screws and re-fit. (Note for size 1 module sub-assemblies only, fit the longest set screws which will fit without protruding from their holes when tightened against the module body. Use 3 off M3 cup point set screws, length 6mm, 8mm or 10mm).
- 4.2.5. If the switch plate was removed re-fit it (see section 10).

5. MANUAL DISENGAGEMENT (NOT APPLICABLE TO AUTO-RESET VERSIONS)

To manually disengage the torque limiter rotate the disengaging sleeve (smaller of the two hexagons – see fig. 2) on each module in a **clockwise** direction through several turns until it reaches its stop (note this is a left-hand thread).

6. RESETTING

- 6.1. Manual Reset versions: Ensure that the disengaging sleeve (smaller hexagon) is tightened **anti-clockwise** against the adjuster (larger hexagon) on each module. Rotate either the input or output member of the torque limiter until the markers on the periphery of both members are in alignment. Tap the reset pins with a soft-faced mallet until they spring back to the engaged position.
- 6.2. Auto-Reset versions: The torque limiter will reset automatically with a loud 'click' each time the modules are aligned with their corresponding seats.

7. REMOVING MODULES

- 7.1. Reset the torque limiter before removing the modules (see section 6). Do not attempt to remove a module which has not been reset. The energy stored in the spring when the module is tripped could cause injury or damage to the module.
- 7.2. If the modules are to be re-used, mark them to identify which port they fit into.
- 7.3. If a switch plate is fitted, remove it, referring to section 10.
- 7.4. Remove the four fixing screws from each module clamp ring, but do not disturb the single clamp screw (sealed with red paint) which locks the clamp ring to the module body.
- 7.5. Withdraw the module, complete with clamp ring, from the unit. If it is tight, use levers under the chamfered edges of the clamp ring.
- 7.6. Do not attempt to trip or reset a module which is not fitted into a torque limiter. The energy stored in the spring when the module is tripped could cause injury or damage to the module.

8. RE-FITTING OF EXISTING MODULES INTO A TORQUE LIMITER

- 8.1. If existing modules are to be re-fitted into their original ports with the original module seats, and the module clamp screws have not been disturbed, proceed as follows; (otherwise proceed as for new modules – see section 9).
- 8.2. Rotate either the input or output member of the torque limiter until the module ports are aligned with the seats. Apply grease to the seats (see section 12 for suitable grease).
- 8.3. Fit the first module, complete with clamp ring, into its original port. Apply Loctite 243 or equivalent to the mounting ring fixing screws and tighten progressively to the torque shown in table 1.
- 8.4. Fit the remaining modules in a diametrically opposite sequence to reduce unbalanced loading of the bearing.
- 8.5. If a switch plate was fitted, re-fit it, referring to section 10.
- 8.6. Lubricate the modules as described in section 12.1.2.

9. FITTING NEW MODULES TO A TORQUE LIMITER

- 9.1. Do not attempt to trip or reset a module which is not fitted into a torque limiter. The energy stored in the spring when the module is tripped could cause injury or damage to the module.
- 9.2. Rotate either the input or output member of the torque limiter until the module ports are aligned with the seats. Apply grease to the seats (see section 12.1.2 for suitable grease).
- 9.3. The axial position of the module bodies in relation to the main unit is important, to obtain the correct preload of the plungers. Proceed as follows for each module:
- 9.4. Ensure that the manual disengage sleeve (see fig. 2) is tightened (left hand thread) against the adjuster. If the modules are not pre-set for a specific torque, it is important to ensure that there is some preload in the module. To achieve this, back off the adjuster locking set screws, then turn the adjuster clockwise until resistance is felt, plus one further turn.
- 9.5. Take the module and place under a hand press, supported on the adjuster, with the plunger uppermost (see fig. 5).

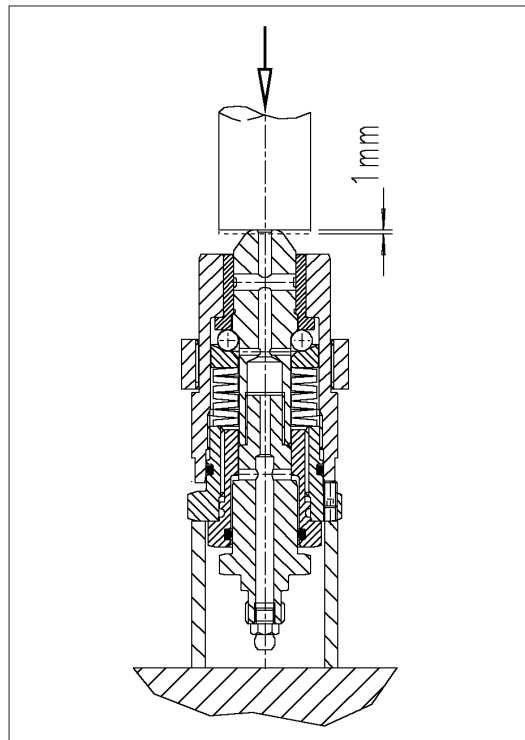


Figure 5 — Preparing a Module for Fitting

- 9.6. Press on the plunger so that it moves approximately 1mm and then slowly release the force so the plunger springs back. This ensures the segments inside the module are in contact with the cone of the plunger.
- 9.7. Screw the clamp ring onto the module as far as it will go by hand, with the chamfers towards the plunger end of the module. Fit the clamp screw without Loctite, tighten, then loosen slightly so the module can just rotate in the clamp ring.
- 9.8. Fit the module into its port, and tap on the end of the adjuster hexagon (not the reset pin) with a mallet to make sure the module is fully seated (see fig. 6).

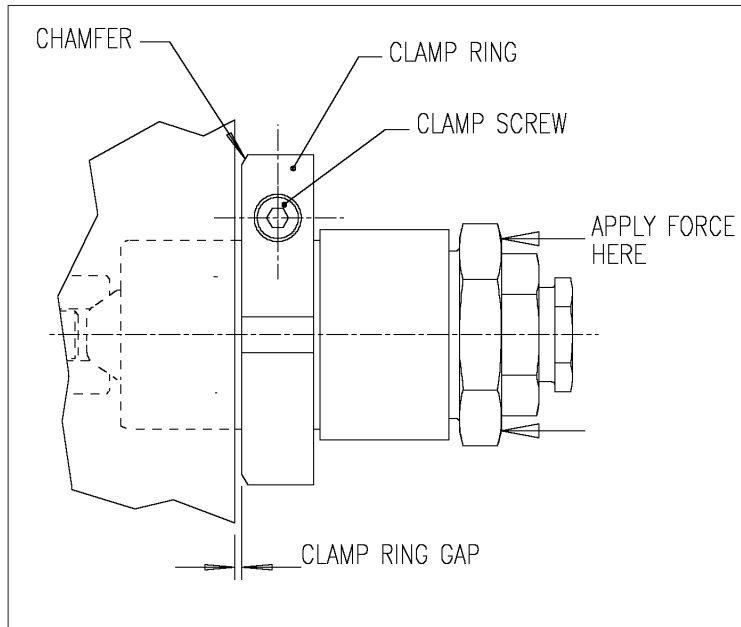


Figure 6 — Fitting a New Module

- 9.9. Rotate the clamp ring or module body and use feeler gauges to obtain the specified gap between the ring and the main unit (see table 4), whilst maintaining hand pressure on the adjuster or module body to keep the module seated.

Table 4

| Unit | Module Sub-Assy Size | Clamp Ring Gap (except Auto-Reset) | Clamp Ring Gap Auto-Reset | Clamp Screw Torque |
|------------------------|----------------------|------------------------------------|---------------------------|-----------------------|
| 820-1 Types 1,2,3 | 1 | 0.20mm (0.008") | 0.25mm (0.010") | 3.3 Nm (2.4 lbf.ft) |
| 820-2 & -3 Types 1,2,3 | 2 | 0.25mm (0.010") | 0.38mm (0.015") | 6.7 Nm (4.9 lbf.ft) |
| 820-4 Types 1,2,3 | 3 | 0.38mm (0.015") | 0.51mm (0.020") | 28.0 Nm (20.6 lbf.ft) |
| 820-5 Types 1,2,3 | 4 | 0.51mm (0.020") | 0.76mm (0.030") | 55.0 Nm (40.6 lbf.ft) |

- 9.10. Mark the position of the module body in the clamp ring. Remove the clamp screw, apply Loctite 243 or equivalent and refit, tightening to the torque specified in table 4, without rotating the clamp ring relative to the module body.
- 9.11. Repeat stages 9.4 to 9.10 for each module.
- 9.12. For each module, align the four holes in the clamp ring with those in the main unit, apply Loctite 243 or equivalent to the four screws and tighten progressively to the torque specified in table 1.
Repeat in a diametrically opposite sequence for the remaining modules.
- 9.13. If a switch plate was fitted, re-fit it, referring to section 10.
- 9.14. Lubricate the modules as described in section 12.1.2.
- 9.15. Adjust the torque setting of the modules if necessary (see section 4).

10. SWITCH PLATE REMOVAL AND REFITTING

- 10.1. Some units are fitted with a limit switch plate. A typical arrangement is shown in fig.7. Refer to the specific assembly drawing for further detail. To remove the switch plate, use a spanner on the reset pin flats (behind the switch plate) to prevent rotation, and remove the retaining nuts, taking care to retain the springs and plastic bushes.

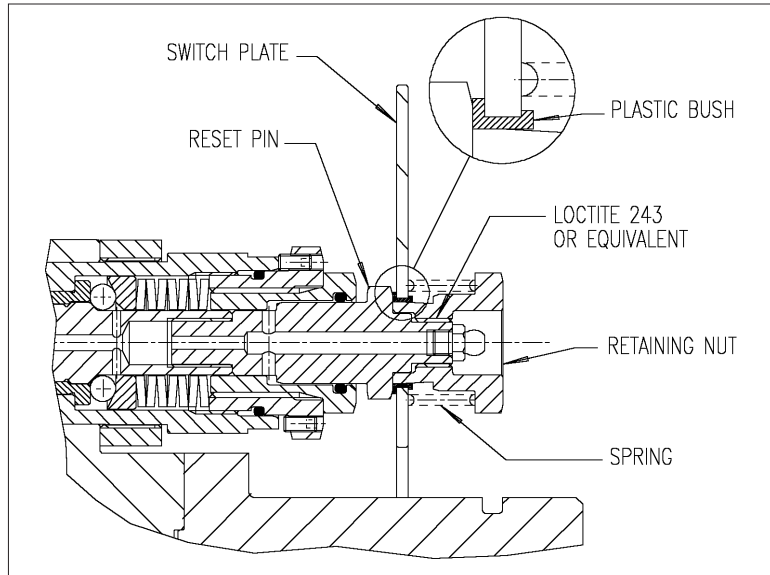


Figure 7 — Typical Switch Plate Mounting

- 10.2. On re-assembly, ensure that the parts are fitted in the correct positions. Apply Loctite 243 or equivalent to the switch plate retaining nuts. Hold the reset pin hexagon with a spanner to prevent rotation, and ensure that the retaining nuts are pushed through the plastic bushes as they are tightened, to avoid trapping the plastic bush between the retaining nut and reset pin. Check thread size and torque tighten to the following value;

| Thread Size | Tightening Torque (Nm) |
|-------------|------------------------|
| M12 | 10 |
| M16 | 30 |

11. SEAT REPLACEMENT

- 11.1. Remove the modules as described in section 7.
- 11.2. Remove the screw from the centre of the seat. Remove the seat using an extractor screwed into the tapped hole in the centre of the seat (see table 5 for thread size). The force from the extractor should be reacted by the metal surrounding the seat, so that the torque limiter bearing is not loaded. A suitable arrangement is shown in fig. 8.

Table 5

| Unit | Module Sub-Assembly Size | Thread Size in Seat |
|------------------------|--------------------------|---------------------|
| 820-1 Types 1,2,3 | 1 | M6 |
| 820-2 & -3 Types 1,2,3 | 2 | M8 |
| 820-4 Types 1,2,3 | 3 | M12 |
| 820-5 Types 1,2,3 | 4 | M16 |

- 11.3. To fit the new seat first ensure that the hole is free from old adhesive. Degrease the hole and the new seat, and apply Loctite 641 or equivalent to the outside diameter of the seat. Push the new seat fully home and fit the seat retaining screw, using Loctite 243 or equivalent on the thread, and torque tighten to the value given in table 1. Remove any excess adhesive.
- 11.4. Lubricate the seats and fit the modules, referring to sections 8 or 9 as appropriate.

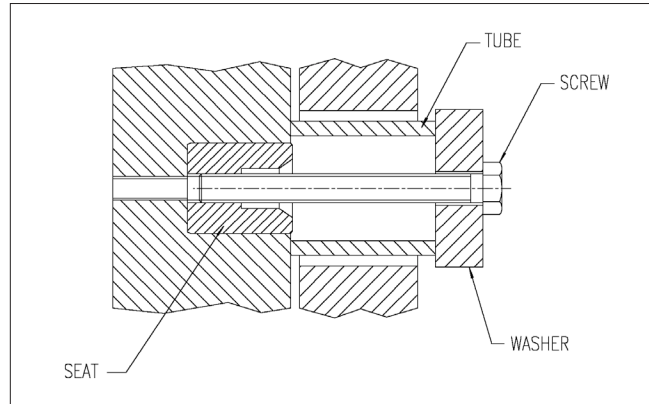


Figure 8 — Method of Removing Seat

12. ROUTINE MAINTENANCE

12.1 All Types

- 12.1.1. The frequency of maintenance will depend on the operating environment and number of trips, but once every three months should be adequate in most applications. Proceed as follows:
- 12.1.2. A grease nipple is located in the end of each module, and some units have additional grease nipples for the bearings and the module seats. Apply a good quality lithium grease such as Shell Alvania R3 or BP Energrease LS3 to all grease points. A general inspection of the unit should also be performed at this time, checking that all fasteners are tight etc.
- 12.1.3. For manual disengage versions each module should be manually disengaged then reset as part of the maintenance procedure (refer to sections 5 and 6).
- 12.1.4. For unusual conditions such as high ambient temperatures, high vibration or dirty environment, special maintenance may be required. Please consult Autogard.

12.2 820 Type 1 only

- 12.2.1. Periodic inspection of the flexible elements is recommended. Remove each element sub-assembly by removing the fixing screw, and withdrawing the element, washers and sleeve. The element sub-assembly should be replaced when the wall thickness of the elastomeric part reaches the minimum value shown in table 6. All elements in the unit should be replaced at the same time.

Table 6

| Unit | Minimum Wall Thickness |
|--------------|------------------------|
| 820-1 Type 1 | 3.3mm (0.130 in) |
| 820-2 Type 1 | 4.7mm (0.185 in) |
| 820-3 Type 1 | 5.0mm (0.197 in) |
| 820-4 Type 1 | 5.0mm (0.197 in) |
| 820-5 Type 1 | 5.0mm (0.197 in) |

- 12.2.2. Re-assemble as described in section 3.3.1.

12.3 820 Type 2 only

The condition of the elastic insert should be checked after the first 3000 hours, and at convenient intervals thereafter. The life of the insert under average conditions will be approximately 25000 hours. Proceed as follows:

12.3.1. Remove the two locking set screws from the Samiflex ring.

12.3.2. Move the ring over the S2 hub.

12.3.3. Remove the elastic insert and inspect for wear, referring to fig. 9 and table 7. Discard the insert if it is worn beyond the limit shown.

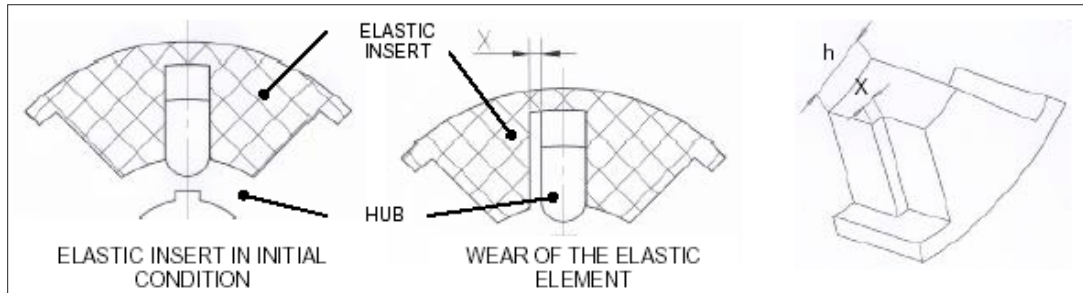


Figure9 — Inspecting the Elastic Insert for Wear

Table 7

| Unit | Dimension 'h' Minimum | Dimension 'X' Maximum |
|--------------|-----------------------|-----------------------|
| 820-1 Type 2 | 28.0 mm (1.102 in) | 6.0 mm (0.236 in) |
| 820-2 Type 2 | 36.0 mm (1.417 in) | 7.5 mm (0.295 in) |
| 820-3 Type 2 | 37.5 mm (1.476 in) | 7.5 mm (0.295 in) |
| 820-4 Type 2 | 42.0 mm (1.654 in) | 8.5 mm (0.335 in) |
| 820-5 Type 2 | 60.0 mm (2.362 in) | 10.0 mm (0.394 in) |

12.3.4. Re-assemble using either the existing insert or a new insert, as appropriate, referring to sections 3.4.3 to 3.4.5.

13. FAULT-FINDING

See table 8. If in doubt consult Autogard. For contact details see www.rexnord.com/autogard

14. SPARE PARTS

For spare module sub-assemblies or other parts, consult Autogard, quoting the part number and serial number from the label on the torque limiter body. For contact details see www.rexnord.com/autogard

If the modules are being replaced because they are worn it is also advisable to replace the seats.

**Table 8 — Fault-Finding**

| Fault | Possible Cause | Action |
|------------------------------------|---|---|
| Frequent Tripping | Fault in driven machine | Rectify |
| | Torque setting too low | Adjust trip torque |
| | All modules not reset (manual reset) | Reset all modules |
| | Module not resetting (auto-reset) (possible lack of lubrication) | Lubricate or replace module |
| | Worn module plungers or seats | Replace worn parts |
| Failure to Trip on Overload | Torque setting too high | Adjust trip torque |
| | Module seized (possible lack of lubrication) | Manually disengage (not auto-reset) lubricate or replace module |
| | Torque limiter bearing seized | Replace bearing |
| Excessive Backlash | Modules loose or incorrectly fitted | Follow installation procedure |
| | Worn module plungers or seats | Replace worn parts |
| | Worn torque limiter bearing | Replace bearing |
| | Worn coupling or loose fasteners | Replace worn parts, tighten fasteners |