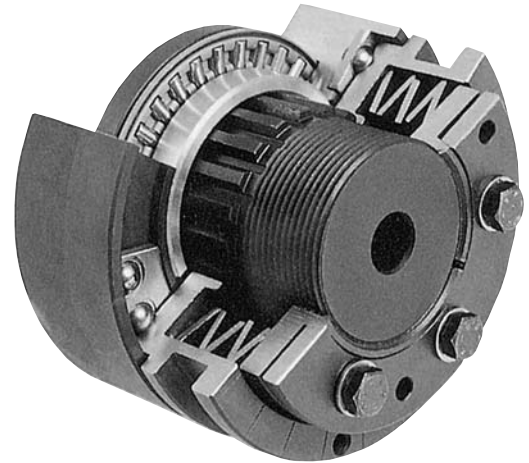


Cross Safeguard Overload Clutches



The Safeguard CS series Overload Clutches were developed to provide overload protection for the transmission of high torques within a compact unit. Directly interchangeable with other units in the market, this series offers low cost protection with a minimum of maintenance and long reliable service life. Safeguard CS series are offered in two basic types, the standard type, available in 6 sizes for bores up to 65mm, with torque range of 2.5 to 1800Nm, see pages 24/25, provide optimum speed and torque capabilities; and the Mini type, available in 4 sizes for bores up to 45mm, with torque range 2.5 to 400Nm, see pages 26/27, for a lower cost option for slower speed drives. Both types are available as basic clutch, and also as shaft couplings. The basic clutch is offered in three basic designs to enable alternate methods for connecting driven components. Four modes of drive operation are available, to suit the requirements of different applications, as outlined below, the principles of operation of each being detailed opposite.



The Safeguard CSF Clutch uses a large number of equally spaced balls to provide the drive, and the clutch ratchets from one drive position to the next in the event of an overload. The design allows for high operating speeds, and the possibility to recapture drive in the event of an inertia created overload during starting, but do not provide any synchronisation between input and output.

The Synchron CSY Clutch uses 7 rollers unequally spaced to provide the drive, ensuring that there is only one position of engagement of the drive, enabling full synchronisation between driver and driven shafts.

The Safe Lift CSL Clutch has a retaining ring to prevent disengagement of the drive, but allowing sufficient movement to actuate a limit switch. This clutch is ideal on applications where components cross one another's path, as synchronisation is maintained even when clutch has overloaded. The clutch also controls forward inertia drives.

The Contact-Free CSZ Clutch totally disengages in the event of an overload, and requires an outside force to be re-engaged. This enables the clutch to be operated at higher speeds, and also to be used on applications where it is undesirable to stop the motor quickly. The requirement of an external force to re-engage ensures the machine can be checked prior to a restart.

Safeguard Series Clutches offer the following operating advantages:

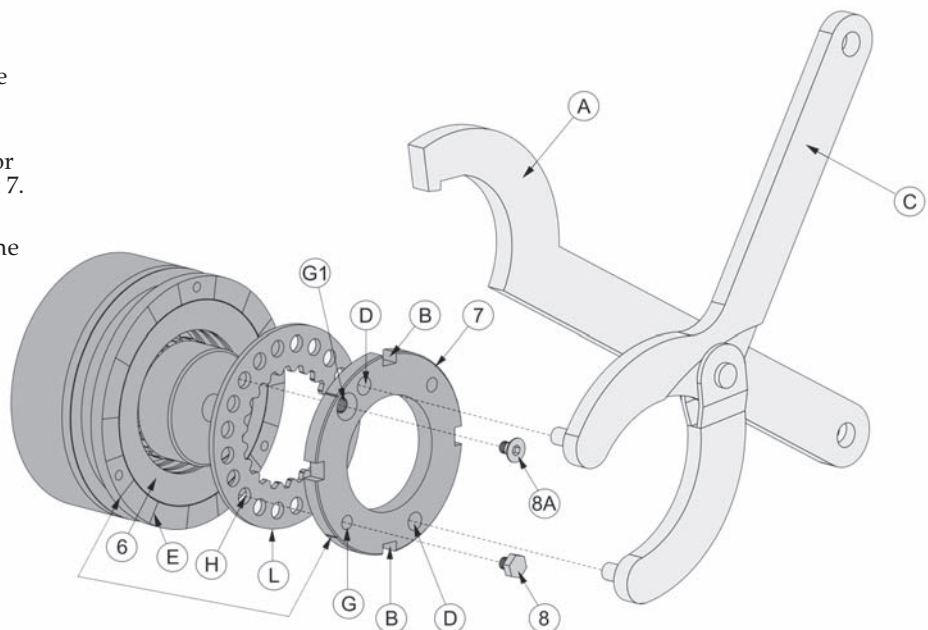
- Long Service Life
- Cater for Frequent Overloads
- No Maintenance required
- Standardised Sizes
- Continued Operating Reliability
- Maintained Torque Accuracy
- Rapid Drive Disengagement
- Very Fine Torque Adjustment

Method of Torque Adjustment

Torque Adjustment on Safeguard series Clutches is relatively simple process by the following procedure.

Refer to diagram below, to adjust the Torque on a Clutch first remove screws 8 or 8A to permit free rotation of adjusting nut 7.

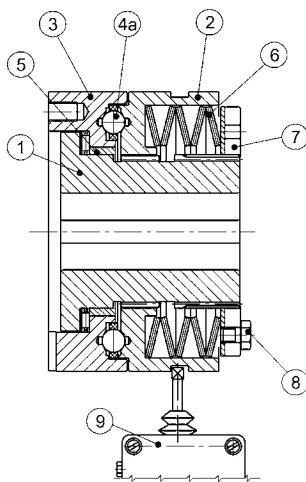
If first adjustment manually tighten the adjusting nut 7 until it is in contact with the springs. Insert a C spanner 'A' into slots D, or a face wrench 'C' into holes D and tighten the nut clockwise to achieve desired Torque as indicated by the number of indents E moved. Replace screw 8 or 8A in thread hole G or G1 with adjusting nut positioned so this lines up with one of the holes H in the locking washer L.



Cross Safegard CS Clutch Types



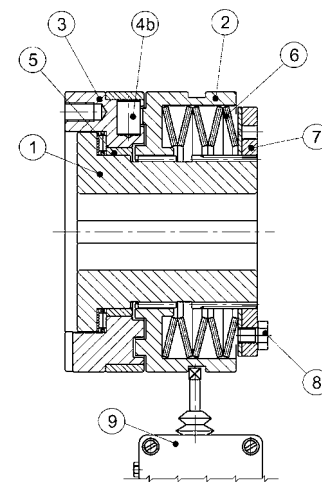
Safegard CSF



During normal operation the drive is transmitted by the sliding hub 2, which is connected by a spline to the main hub 1, and via a ring of balls 4a to the output flange 3. Drive is maintained by the springs 6 exerting pressure on flange 2, so keeping the balls in their respective indents in flange 2 & 3.

When an overload occurs the balls ride up the indents pushing flange 2 back which will actuate limit switch 9. During overload conditions plain bearing 5 maintains concentricity and ensures free running. The balls will re-engage in the nearest indents when the overload is removed. Torque adjustment is by rotation of nut 7.

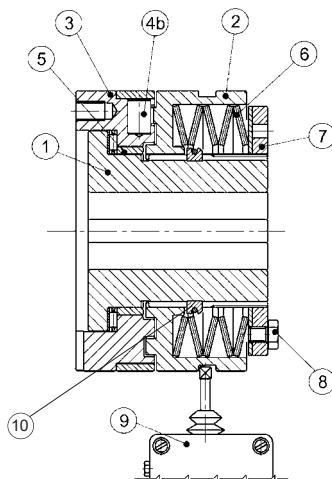
Synchron CSY



The Synchron clutch functions in much the same way as the Safegard, and has similar construction in except the balls 4a are replaced by seven rollers 4b. The rollers are unequally spaced so the clutch will only engage drive in one angular position, providing full synchronisation of the drive.

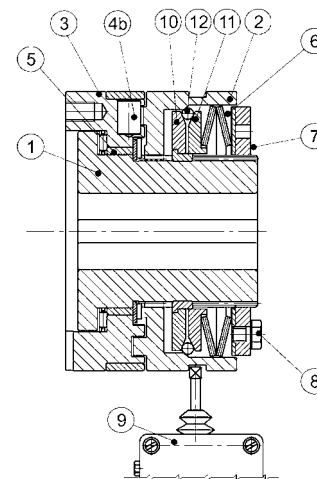
When an overload occurs the rollers ride up the indents pushing flange 2 back which will actuate limit switch 9. During overload conditions plain bearing 5 maintains concentricity and ensures free running. The rollers will re-engage in the nearest indents when the overload is removed. Torque adjustment is by rotation of nut 7.

Safe Lift CSL



The Safelift clutch is of identical design and operation to the Synchron clutch with the addition of a restricting ring 10 which prevents full disengagement of the clutch in the event of an overload; thus maintaining drive at all times. An overload still causes the rollers to ride up the detents sufficient to activate the limit switch 9, but they are prevented from totally disengaging. On these units it is essential that a limit switch is used to turn off the drive. These units are ideal when high inertia loads are involved to prevent on running of the driven equipment, also they can be electrically isolated during starting to ignore tripping at that time. Torque adjustment is by rotation of nut 7.

Contact Free CSZ



The Contact-free clutch is based on the Synchron clutch with modification to the outer flange 2, and the addition of locking assembly parts 10/11/12. In normal drive mode the pressure from the spring is conveyed to the flange 2 via the pressure plate 11 and locking ball race 12. In the event of an overload the flange 2 is still pushed back, but this action also forces the locking balls inwards forcing the pressure plate 11 to move back from the locking ring 10. In the tripped condition the locking balls 12 apply no axial load to the outer flange 2 and thus the clutch will not re-engage, but instead runs totally free. To re-engage drive the outer flange 2 and output flange 3 must be correctly aligned, and then a light axial load applied to the outer flange to move it back into engagement.

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