Instructions for the installation and maintenance of

BIBBY TRANSMISSIONS' PRODUCTS

INDEX

BIBBY Transmissions

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1. It is essential that all the instructions contained within this publication are carried out by a competent person. Should problems be anticipated or encountered, Bibby Transmissions personnel are available for site visits or, alternatively, repairs and overhauls can be undertaken in our works.
2. Prior to performing any maintenance work (including inspections) it is essential that the power supply is isolated and that no movement of any rotating machinery is allowed.
3. This product is designed for a specific purpose. It is vital that it is not used for any purpose other than that for which it was designed and supplied, and that the limits of its capacities, as detailed here, in the catalogue and in any other document, are not exceeded.
4. No liability will be accepted and any warranty, either expressed or implied, will be null and void should any component of whatever kind, including nuts, bolts and washers, be used in the assembly, or modifications made to all or part of the product, which are not supplied, specified or agreed by Bibby Transmissions.

Do's

1. The following instructions should be read and understood prior to starting any assembly or maintenance work.
2. Prior to replacing any component, care should be taken to ensure that it is clean and free from any dirt.
3. When tightening any bolts or screws, this should be done evenly, cylinder head fashion, to 50% torque then to 100% torque in the same sequence. Where specified it is essential that torque tightening figures are not exceeded nor should it be allowed for them to be below specification.
4. Do ensure that where hub/shaft connections require a standard interference fit the hubs may be heated in oil at 135° Celsius and rapidly positioned on the shaft. It is essential that this heating is evenly applied over the whole hub and that spot heating is avoided.
5. Do ensure that adequate axial restraint between the hub and the shaft is provided.

Don'ts

1. Do not use any component that is not supplied or approved by Bibby Transmissions in the assembly of this product.
2. Do not attempt to lift a coupling without the use of lifting equipment where the weight is excessive.

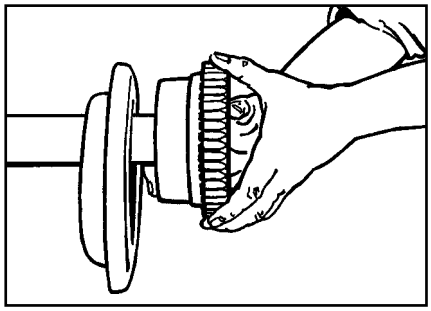
General notes on the installation and maintenance of Bibby Transmission Products

SHAFT COUPLINGS

Resilient Grid, Gear, Eflex, Powerpin

GENERAL GUIDANCE for the installation of Series 2000 and other Bibby resilient grid couplings

The diagrams and instructions on this page refer to the installation of Bibby Series 2000 and, in general, to all other types of Bibby resilient grid couplings, which are supplied with various types of grid covers according to requirement. They should be used in conjunction with the tables on page 2 and notes regarding specific coupling types on subsequent pages. NOTE: covers that are NOT axially split MUST be placed over shaft before fitting hubs



1. MOUNT SEALS AND HUBS

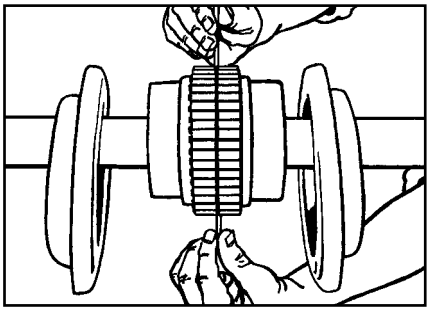
2000H (horizontally split cover). Lightly smear seals with grease and place on shafts before mounting hubs.

2000V (vertically split cover). Check half covers have been placed correctly on shafts.

Mount hubs, usually with the hub face flush with shaft end. Where supplied, tighten set screws.

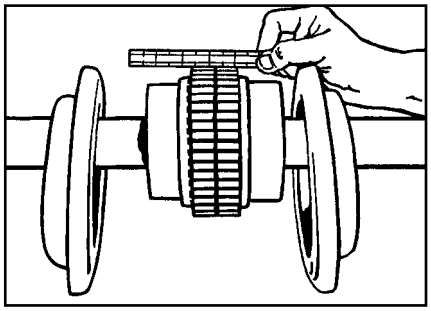
2. ALIGNMENT

Satisfactory alignment can be achieved with the use of a straight edge and feeler gauge, although a dial indicator would generally improve accuracy independent of component and shaft geometric errors.



3. GAP AND ANGULAR ALIGNMENT

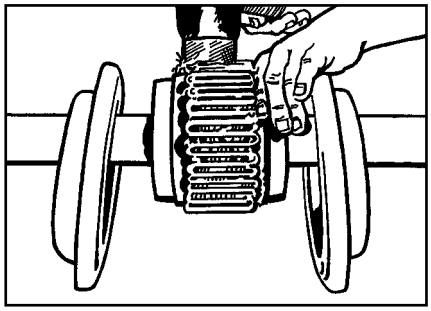
Set gap using a spacer bar equal in thickness to the nominal gap specified in the table on page 2. With the spacer bar inserted to the same depth, measure clearance between bar and hub face at 90° intervals using feelers. The difference between maximum and minimum measurements should not exceed the angular limit given in the table on page 2.



4. PARALLEL OFFSET ALIGNMENT

Use a straight edge and feelers, or dial indicator, over the tops of the coupling teeth, taking measurements at 90° intervals. Error should not exceed offset limit specified in the table on page 2.

5. TIGHTEN ALL FOUNDATION BOLTS. REPEAT STEPS 3 & 4 AND IF NECESSARY RE-ALIGN.

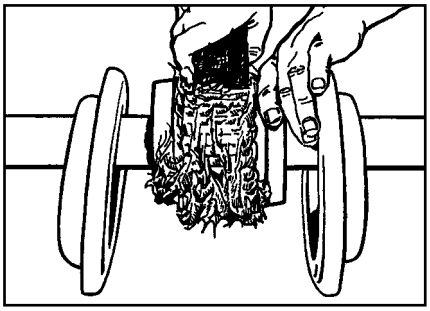


6. GRID ASSEMBLY

2000V (vertically split cover), insert gasket through the gap and support on either hub or shaft.

Before inserting the grid segments, thoroughly pack the grooves with the specified lubricant. **Bibby ECL grease** will extend the life of the coupling by three to four years depending on site conditions, and is recommended.

When grids are supplied in two or more segments assemble so the cut ends at a segment joint extend in the same direction. Spread the grid slightly so that it will pass over the coupling teeth, and tap all the rungs into the respective slots with a soft mallet.



7. COVER ASSEMBLY

Pack the spaces around the grid with lubricant and wipe off the excess flush with top of grid.

2000H (horizontally split cover). Position seals on hubs so that they line up with grooves on cover. Position gaskets on lower cover half and assemble covers so that match marks are on the same side. If using the coupling in any position other than horizontal, assemble cover halves with the lug and match mark up, or on the high side. Fasten the cover halves to the torque specified in the table on page 2.

Series 2000V (vertically split cover). Remove lube plugs to ease cover assembly. Slide cover halves, complete with seal, onto hubs. Position lube holes at 180° apart. Align cover and gasket bolt holes and fasten flanges together using the bolts provided, tightening to the torque specified in the table on page 2.

We strongly recommend the use of Bibby ECL grease, which is specially formulated for use with all types of flexible couplings as defined by AGMA CG-1/CG-2/CG-3 specifications. It is a high base oil viscosity grease and offers three to four years extended coupling life, subject to site conditions.

MAINTENANCE

Check coupling misalignment every year and adjust if required. Excessive misalignment, high ambient temperatures and/or frequent rapid reversing may necessitate more frequent inspections.

If quantity of lubricant appears low, check for leaks and change seals if necessary, replenish lubricant.

Clean coupling of all old lubricant and replace every two years. Bibby ECL grease will extend the life of the coupling by three to four years depending on site conditions, and is recommended.

SHAFT COUPLINGS – Installation Data

Types A, C, F, FX, W, WX, H

NOTES: Bolt tightening torques for sizes 432 & 478 are for Cover Through Bolts. For Fixed Cover (Spigot) Setscrews tightening torques are as follows:- Type 432: 145Nm, size M16. Type 478: 325Nm, size M20.

Coupling Size	Gap (mm) ±20%	Max Alignment Limits		Bolt Tightening Torques														Approx Grease Capacity Kg
				Type A		Type C		Type F		Type FX		Type W		Type WX		Type H		
		Angular (mm)	Parallel (mm)	Torque Nm	Size	Torque Nm	Size	Torque Nm	Size	Torque Nm	Size	Torque Nm	Size	Torque Nm	Size	Torque Nm	Size	
102				8	M6													
110	0.8	0.12	0.10	8	M6													0.03
120	0.8	0.12	0.10	8	M6	10	M8	18	M8			18	M8					0.03
124	0.8	0.12	0.10	8	M6	10	M8	18	M8	10	M8	18	M8	10	M8			0.06
126	0.8	0.12	0.10					18	M8	10	M8	18	M8	10	M8			0.08
130	0.8	0.12	0.12	18	M8	19	M10	18	M8			18	M8					0.12
136	0.8	0.12	0.12	18	M8	19	M10	18	M8	19	M10	18	M8	19	M10			0.12
152	0.8	0.20	0.15	18	M8	19	M10	38	M10	19	M10	38	M10	19	M10			0.15
158	0.8	0.20	0.15	38	M10	19	M10	38	M10	19	M10	38	M10	19	M10			0.20
168	0.8	0.20	0.15	38	M10	34	M12	38	M10	19	M10	38	M10	19	M10			0.25
212	1.5	0.25	0.20	38	M10	34	M12	62	M12	34	M12	62	M12	34	M12			0.50
218	1.5	0.25	0.20					62	M12	34	M12	62	M12					0.50
236	1.5	0.30	0.20	38	M10	34	M12	62	M12	34	M12	62	M12	34	M12			0.75
266	1.5	0.30	0.20	38	M10	34	M12	62	M12	34	M12	62	M12	34	M12			0.75
290	1.5	0.30	0.20	38	M10	84	M16	62	M12	84	M16	62	M12	84	M16			1.25
318	1.5	0.35	0.25	62	M12	84	M16	62	M12	84	M16	62	M12	84	M16			1.25
366	1.5	0.35	0.25					62	M12	84	M16	62	M12	84	M16			2.00
422	3.2	0.35	0.25					62	M12	84	M16	62	M12	84	M16			3.75
432	3.2	0.35	0.25			84	M16	62	M12	84	M16	62	M12	84	M16	145	M16	2.75
478	3.2	0.35	0.25			84	M16	145	M16	84	M16	145	M16	84	M16	145	M16	3.50
482								145	M16			145	M16					
556	3.2	0.35	0.25													145	M16	5.00
600	3.2	0.35	0.25													145	M16	5.75
634	6.3	0.50	0.25													325	M20	7.75
666	6.3	0.50	0.25													325	M20	10.00
706	6.3	0.50	0.35													325	M20	17.00
722	6.3	0.50	0.35													325	M20	23.00
734	6.3	0.50	0.35													325	M20	30.00
762	6.3	0.50	0.35													565	M24	37.00
788	6.3	0.50	0.35													325	M20	43.00

Series 54

Coupling Size		Max Alignment Limits		Bolt Tightening Torque		Grease Capacity (litres)
	Gap (mm) ±20%	Angular (mm)	Parallel (mm)	Torque Nm	Size	
5411	1.0	0.008	0.10	4	M5	0.03
5413	1.0	0.12	0.10	4	M5	0.04
5415	1.0	0.12	0.10	4	M5	0.06
5417	1.0	0.20	0.15	8	M6	0.16
5419	1.0	0.20	0.15	8	M6	0.19
5421	1.0	0.25	0.15	8	M6	0.22
5423	1.5	0.25	0.20	18	M8	0.66
5425	1.5	0.30	0.20	18	M8	0.77
5427	1.5	0.30	0.20	18	M8	1.10
5429	2.5	0.35	0.25	18	M8	2.20
5430	2.5	0.35	0.25	18	M8	2.20
5431	3.0	0.35	0.25	62	M12	2.90
5433	3.0	0.35	0.25	62	M12	4.50
5435	3.0	0.35	0.25	62	M12	5.90
5437	3.0	0.35	0.25	62	M12	6.50
5439	3.0	0.35	0.25	145	M16	8.60
5441	6.0	0.50	0.35	145	M16	13.00
5443	6.0	0.50	0.35	145	M16	18.00

Series S54 Rigid Hubs for use with Series 54 Spacer Couplings

Coupling Size		Bolt Tightening Torque	
	Gap (mm) ±20%	Torque Nm	Size
S5411-10	1.0	12	1/4 UNC
S5413-10	1.0	12	1/4 UNC
S5415-15	1.0	42	3/8 UNC
S5417-15	1.0	42	3/8 UNC
S5419-20	1.0	100	1/2 UNC
S5421-25	1.0	200	5/8 UNC
S5423-25	1.5	200	5/8 UNC
S5425-30	1.5	200	5/8 UNC
S5427-40	1.5	340	3/4 UNC
S5429-50	2.5	340	7/8 UNC
S5430-50	2.5	340	7/8 UNC

Series 2000 H & V

Coupling Size	Gap (mm) ±10%	Installation Alignment Limits		Cover Bolt Tightening Torques				Maximum Operating Alignment		Max Speed RPM		Grease Capacity Kg
		Max Offset (mm)	Max Angularity (mm)	2000H		2000V		Max Offset (mm)	Max Angularity (mm)	2000H	2000V	
				Torque Nm	Size	Torque Nm	Size					
2020	3.2	0.15	0.08	11	M6	8	M6	0.30	0.25	4500	6000	0.03
2030	3.2	0.15	0.08	11	M6	8	M6	0.30	0.30	4500	6000	0.03
2040	3.2	0.15	0.08	11	M6	8	M6	0.30	0.33	4500	6000	0.05
2050	3.2	0.20	0.10	22	M8	8	M6	0.40	0.40	4500	6000	0.05
2060	3.2	0.20	0.12	22	M8	8	M6	0.40	0.45	4350	6000	0.09
2070	3.2	0.20	0.12	22	M8	18	M8	0.40	0.50	4125	5500	0.11
2080	3.2	0.20	0.15	22	M8	18	M8	0.40	0.60	3600	4750	0.17
2090	3.2	0.20	0.18	22	M8	18	M8	0.40	0.70	3600	4000	0.25
2100	4.8	0.25	0.20	38	M10	18	M8	0.50	0.80	2440	3250	0.43
2110	4.8	0.25	0.23	38	M10	38	M10	0.50	0.90	2250	3000	0.51
2120	6.4	0.28	0.25	62	M12	38	M10	0.55	1.00	2025	2700	0.73
2130	6.4	0.28	0.30	62	M12	62	M12	0.55	1.20	1800	2400	0.91
2140	6.4	0.28	0.33	62	M12	62	M12	0.55	1.35	1650	2200	1.13

Maximum angularity (i.e. difference across gap in mm) is based on a misalignment angle of 1/4° between shafts.

SHAFT COUPLINGS – Installation Notes

Whilst following the general guidance notes for the installation of Bibby resilient grid couplings, the following notes should also be observed.

Types A, C, H, HX, FK, WK, WX. (Including mill and ingot motor types)

1. In the case of a brake drum/disc type coupling, ensure that the brake drum or disc is mounted on the shaft with the greatest flywheel effect.
2. Grids are either supplied as full circles or segments of a circle. They must be assembled to form a single or multi-gridspring layer, depending on the size of the coupling. In the case of a multi-layered gridspring, take care to ensure that the outer layer segment end rung is positioned near or at a point equidistant from the end of the inner grid segment.
3. Pack the spaces around the grids with lubricant and scrape or wipe off excess flush with top of grids. **We strongly recommend the use of Bibby ECL high base oil viscosity grease.**

   Installation is completed by sliding the cover over the grid member and securing the flange joints using the relevant fasteners, ensuring that each of the fasteners is fitted with its locking device and tightened to the torque value specified in the table on page 2.

   To improve circumferential grease distribution, 'A' type covers should be positioned such that the grease nipples are ideally at 90° to each other, although their actual position will vary with the coupling size.

   In the case of axially split 'FX', 'CX' and 'HX' type covers, the cover halves are manufactured as a set and therefore it is important to maintain their original (as manufactured) relationship when positioning over the grid member. Each half must be secured with the fitted bolts and locknuts are to be torque tightened to the value quoted in the table on page 2.

   Covers are supplied with pre-assembled grease nipples, through which lubricant should now be injected until excess appears at the lip of the cover. Wipe off excess and ensure that all grease nipples are securely fitted prior to operating equipment.

   Approximate grease capacities are given in the table on page 2.

Series 54 and S54 resilient grid couplings.

1. Place fixed and free covers over appropriate shafts, or in the case of types incorporating seals, smear with grease, fit seals in cover and place covers over shafts. We strongly recommend the use of **Bibby ECL grease,** a high base oil viscosity grease which can extend coupling life by 3 to 4 years, subject to site conditions.
2. Check half covers have been placed correctly on shafts then fit hubs, usually with hub face flush with shaft ends.
3. **S54 type only:** bolt rigid hub of spacer assembly to rigid hub fitted to shaft. See table on page 2 for correct tightening torques.
4. For grid couplings up to size 5430 slip gasket over hub before fitting grid.
5. **Gridmember assembly.** Before inserting the grid segments thoroughly pack the grooves with **Bibby ECL coupling grease.** When grids are supplied in an even number of segments, assemble so that the cut ends at a segment joint extend in the same direction. In gridmembers with an odd number of segments, e.g. 5430, the cut ends will not assemble or extend in the same direction. When grids are supplied in two layers assemble the inner layer of segments by spreading the gridmembers slightly, such that it will pass over the coupling teeth. This can be accomplished by ensuring that all the rings are partially engaged in their respective grooves prior to tapping the grid into place at the bottom of the slot, so as to allow room for the outer layer.

   The outer layer segments should now be assembled as previously described for the inner layer, taking care to ensure the outer layer segment end rung is positioned near or at a point equidistant from the end of the inner grid segment.

   Sizes up to 5421: insert single layer of gridmembers.

   Sizes 5423 to 5429: insert double layer of identical gridmembers.

   Sizes 5430 upwards: insert the layer of gridmembers marked 'I' (colour: blue) before the gridmembers marked 'O' (colour: yellow).
6. **Cover assembly.** Pack the spaces around the grids with lubricant and wipe off excess flush with top of grids.

   Sizes up to 5430: place gasket between half covers, position covers so that grease nipples are ideally at 90° to each other although their position will vary with coupling size, then fasten together with bolts provided, using the torque tightening value quoted in the table on page 2.

   Sizes 5431 upwards: attach fixed cover to fixed hub. Position free cover so that all lube holes are ideally at 90° to each other although their actual position will vary with coupling size, then fasten flanges together with bolts provided, using the torque tightening value quoted in the table on page 2.
7. Couplings up to 5430: remove one grease nipple to vent, then inject further grease through other nipples until excess appears at vent hole. Replace grease nipple.

   Size 5431 upwards: remove all lube plugs, inject lubricant into first hole until excess appears at an open hole or at lip of free cover, replace plug. Continue procedure until all plugs have been replaced.

We strongly recommend the use of Bibby ECL grease, which has been formulated specifically for use with couplings. This high base oil viscosity grease will extend coupling life by 3 to 4 years subject to site conditions.

Couplings type 432 & 478 'B'.

1. Before inserting the grid segments, thoroughly pack the grooves with the specified lubricant. Assemble the segment of each layer such that the cut ends at a segment joint extend in the same direction. Spread the inner grid member slightly so that all the rungs are partially engaged in their respective grooves, prior to tapping the grid into place at the bottom of the slot, so as to allow room for the outer layer.

   The outer layer should now be assembled as previously described for the inner layer, taking care to ensure that the outer layer segment end rung is positioned near or at a point equidistant from the end of the inner grid segment.
2. Pack the spaces around the grids with lubricant and wipe off excess flush with top of grids. We strongly recommend the use of **Bibby ECL high base oil viscosity grease.**

   Slide the spigot cover over the grid member, ensuring location with the hub register diameter and relevant orientation to suit securing holes.

   Place spring washers over hexagon setscrews and secure the spigot cover to the hub by torque tightening to the value quoted in the table on page 2.

   Align the large clearance holes in the free hub with the bolt location holes in the fixed hub from the free hub side, insert the cover 'through' bolts into the fixed hub location holes and secure the locknuts and plain washers. Torque tighten to the value quoted in the table on page 2.

   Slide the socket cover over the grid member until the socket locates on the spigot of the fixed cover and the through bolts locate in the cover flange holes. The cover must now be secured by firstly placing plain washers on the ends of the cover through bolts followed by torque tightening the locknuts to the value quoted in the table on page 2.
3. Covers are supplied with pre-assembled grease nipples through which lubricant should now be injected until excess appears at the lip of the cover. Wipe off excess and ensure that all grease nipples are securely fitted prior to operating equipment.

Bibby GEAR COUPLINGS – Installation and Maintenance

BIBBYGEAR SERIES II gear type couplings have been subjected to the most intensive technical scrutiny and design development in order to satisfy our commitment to product integrity and reliability. It is for this reason that when installing the product, all the instructions contained in this document must be adhered to, and that variations are not allowed beyond those which may be given by Bibby Transmissions.

The General Notes on the inside front cover apply to all types of gear coupling products.

ALIGNMENT METHOD

Each company has its own methods for aligning machines and the various alternatives are well documented. It is not our intention, therefore, to describe methods of setting machines.

IMPORTANT NOTE:

All Bibby gear couplings will accept substantial amounts of misalignment as detailed in the catalogue. However, it must be appreciated that the figures specified are the MAXIMUM PERMITTED VALUES FOR NORMAL USE. To allow for movement of machines and shafts during operation IT IS IMPORTANT TO LIMIT THE LEVELS OF PERMITTED MISALIGNMENT AT INITIAL INSTALLATION to make allowance for maximum movement (and minimum resultant load) during actual use. All the following information is intended as a guide to maximum recommended accuracy of the initial setup values. It should be remembered that the greater the degree of accuracy of initial alignment, the greater the length of trouble free life the coupling is likely to enjoy.

AXIAL ALIGNMENT

The axial distance between hubs of gear couplings will vary depending on the type of coupling and the requirements of the customer. The tables on page 6 indicate the recommended distance which should then be within the limits specified.

In the case of full rigid couplings there is an axial distance but no tolerance is allowed. Should there be any misalignment prior to final tightening of the connecting bolts then this will force the shafts to move and affect loading on associated machinery.

ANGULAR ALIGNMENT

The maximum angular misalignment of the coupling is a function of the design of the product. The assembly limits are as specified in the tables overleaf. These should be considered to be maximums and every effort needs to be made to reduce these to a minimum. The tolerance is the maximum variation in distance between opposing hub faces.

PARALLEL OFFSET

Parallel offset is not available with the single engagement or rigid versions. When supplied as a double engagement version then the offset is a function of the allowable angular misalignment and the distance between the gear meshes. For standard couplings this information is given in the tables overleaf. Offset should be kept to an absolute minimum to ensure longer life of the coupling. This tolerance is the maximum variation in the centre-line of the connecting shafts.

Bibby GEAR COUPLINGS – Installing other versions from the range

Cardan Shaft Arrangement

Type FSC

This assembly comprises two single engagement couplings, type FS, which are connected to a shaft. The installation data for each individual coupling is as given in this leaflet. Parallel offset is available with the type FSC and is a function of the overall distance across the gear mesh.

Refer to Bibby Transmissions if in doubt.

Spacer Couplings

Type FDT

This assembly is as the type FD double engagement coupling and installation details can be taken from the appropriate tabulation. The exception to this is the parallel offset, which is a function of the overall distance across the gear mesh.

Refer to Bibby Transmissions if in doubt.

Rigid Couplings

Type FR

The rigid coupling type FR has no ability to accept any misalignment either during installation or when operating. Bolt sizes and torque tightening values can be taken from the tabulation for type FD.

Version A, B & C Telescopic

Type FD

Installation data for the telescopic versions can be taken from the same size of FD coupling, the exception being parallel offset. This is a function of the overall distance across the gear mesh and because with this version there is likely to be a lesser gear mesh distance than with the type FD, together with the required slide effect, then a greater accuracy will be required.

Vertical Mounted

The vertically mounted couplings depicted in our catalogue are a variation of the type FD and installation data can be taken from that range. Please note the slightly different assembly of the extra components required with this modified coupling.

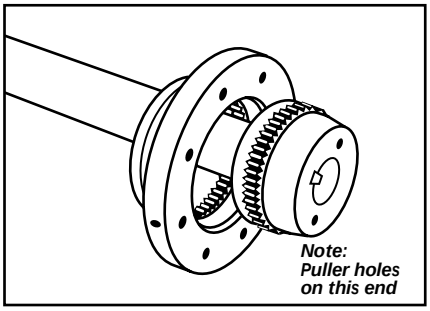
HORIZONTAL COUPLING – Installation

1. CAUTION

Clean all parts. Heat hubs in an oil bath or an oven to a maximum of 135°C. DO NOT rest gear teeth on the bottom of the container or apply a flame directly to the gear teeth.

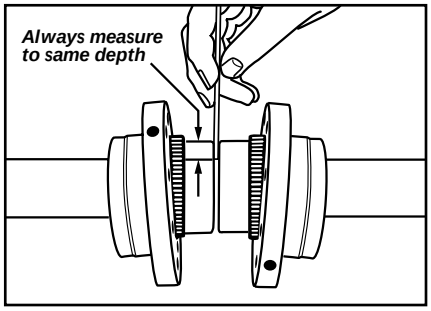
Use Bibby ECL grease, or a lubricant that meets the specifications given. Pack sleeve teeth with grease and lightly coat seals with grease BEFORE assembly.

Keep 'O' Rings clear of heated hubs.



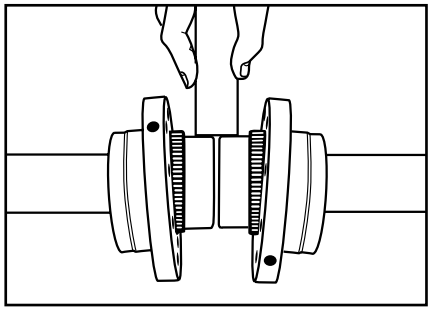
2. MOUNT FLANGED SLEEVES, SEALS AND HUBS

Standard couplings: Place the flanged sleeves and 'O' rings on the shafts BEFORE mounting the hubs. Mount hubs on their respective shafts so that each hub face is flush with the end of its shaft.
Position driving and driven equipment in approximate alignment with gap as specified in the Tables.



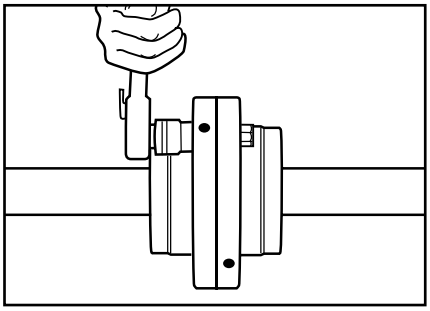
3. GAP AND ANGULAR ALIGNMENT

Use a spacer bar equal in thickness to gap specified in the Tables. Insert bar, as shown above, to same depth at 90° intervals and measure clearance between bar and hub face with feelers. The difference in minimum and maximum measurements should not exceed the ANGULAR limit specified in the Tables.



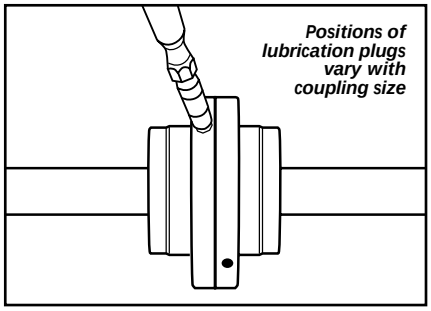
4. OFFSET ALIGNMENT

Align so that a straight edge rests squarely (or within the limits specified) on both hubs as shown above and also at 90° intervals. Check with feelers. The clearance should not exceed the OFFSET limit specified. Tighten all foundation bolts and repeat Steps 3 and 4. Realign coupling if necessary. Grease the hub teeth.



5. INSERT GASKET AND JOIN FLANGED SLEEVES

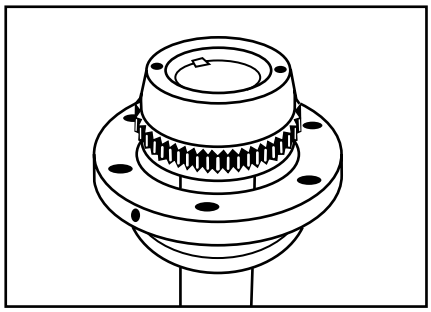
Insert gasket between flanges. Position flanged covers with lube holes at about 90° and draw flanged covers into position. Use bolts and nuts furnished with the coupling.
IMPORTANT: Tighten flange bolts to torque specified in the Tables.



6. LUBRICATE

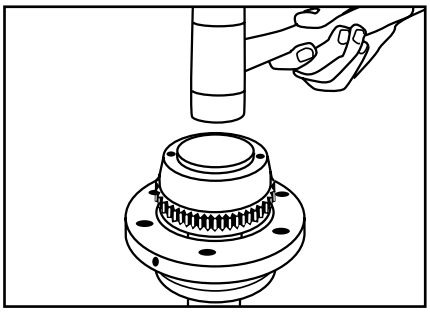
Remove all lubrication plugs. Fill with **Bibby ECL** or other recommended grease until an excess appears at an open hole, then insert plug. Continue procedure until all plugs have been inserted. For vertical couplings, fill BOTH top and bottom sleeves as outlined above. IN ADDITION, vent TOP flanged sleeve by inserting a 0.25mm thick SMOOTH feeler gauge between seal and hub. Fill until excess appears at feeler. Repeat at 90° intervals. CAUTION. Make certain all plugs are inserted after lubricating.

VERTICAL COUPLING – Installation



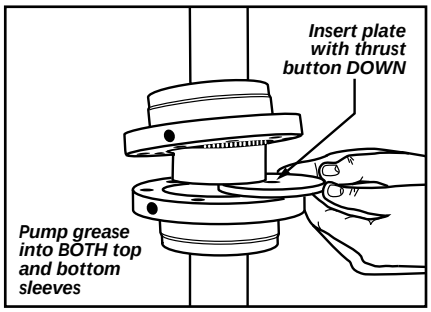
7. MOUNT FLANGED SLEEVES, SEALS AND HUBS

Refer to Step 1 above.
Standard Couplings: Place the flanged sleeves and 'O' rings on the shaft BEFORE mounting the hubs. Mount hubs on their respective shafts so that the counterbore face is flush with the end of the shaft.



8. INSTALL THRUST PLATE (when supplied) IN LOWER HUB

Tap the thrust plate into the counterbore until it is fully seated. Position equipment. Refer to Steps 3 and 4 above.
IMPORTANT: When coupling is aligned, pack the lower flanged sleeve with Bibby ECL or other recommended grease and correctly position the sleeve and gasket.

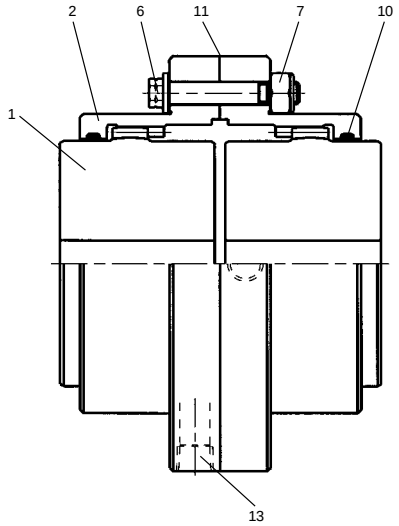


9. INSERT PLATE WITH THRUST BUTTON DOWN

Insert the centre plate with the THRUST BUTTON DOWN. Centre the plate in the counterbore of the lower flanged sleeve.
IMPORTANT: Pack the upper hub teeth with grease and then complete the assembly as in Steps 5 and 6 above. We strongly recommend the use of **Bibby ECL Coupling Grease.**

Bibbygear® Type FD Sizes 10-70

Double Engagement Couplings



COMPONENT PARTS

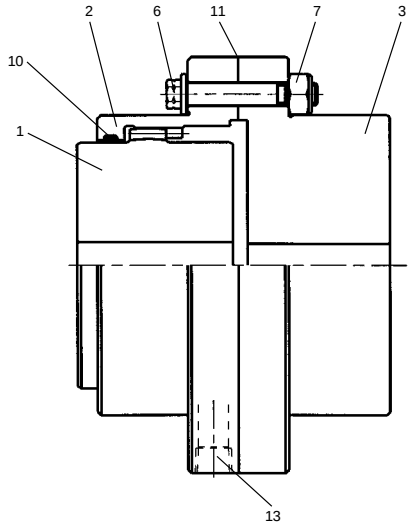
1. HUB
2. SLEEVES
6. BOLTS
7. NUTS
10. 'O' RING SEAL
11. GASKET
13. PLUG

TECHNICAL DETAILS REQUIRED FOR ASSEMBLY						
Size	Gap (mm) ±0.25	Max. Angular Tolerance (mm)	Max. Parallel Offset (mm)	Bolt Head A/F (mm)	Bolt Torque Tightening Nm	Grease Quantity Kgs
10	3	0.15	0.05	7.00	12	0.03
15	3	0.19	0.07	8.00	42	0.06
20	3	0.23	0.08	13.00	100	0.17
25	5	0.28	0.11	17.00	200	0.23
30	5	0.33	0.13	17.00	200	0.34
35	6	0.39	0.15	19.00	340	0.45
40	6	0.46	0.18	19.00	340	0.79
45	8	0.51	0.20	19.00	340	1.08
50	8	0.55	0.23	23.80	340	1.59
55	8	0.61	0.26	23.80	340	1.93
60	8	0.67	0.28	23.80	340	3.46
70	10	0.78	0.33	27.00	340	6.35

The above figures also apply to vertically mounted couplings and telescopic, although the latter needs more accurate alignment due to the different relative positions of gear meshes.

Bibbygear® Type FS Sizes 10-70

Single Engagement Couplings



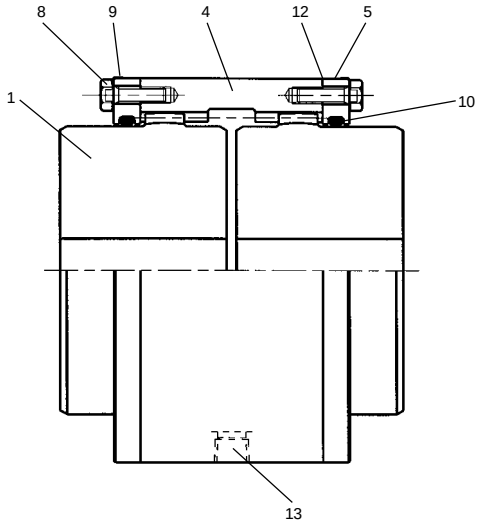
COMPONENT PARTS

1. HUB
2. SLEEVES
3. RIGID HUB
6. BOLTS
7. NUTS
10. 'O' RING SEAL
11. GASKET
13. PLUG

TECHNICAL DETAILS REQUIRED FOR ASSEMBLY						
Size	Gap (mm) ±0.25	Max. Angular Tolerance (mm)	Max. Parallel Offset (mm)	Bolt Head A/F (mm)	Bolt Torque Tightening Nm	Grease Quantity Kgs
10	4	0.08	N/A	7.00	12	0.015
15	4	0.10	N/A	8.00	42	0.03
20	4	0.12	N/A	13.00	100	0.09
25	5	0.14	N/A	17.00	200	0.12
30	5	0.17	N/A	17.00	200	0.17
35	6	0.20	N/A	19.00	340	0.23
40	8	0.23	N/A	19.00	340	0.40
45	8	0.25	N/A	19.00	340	0.54
50	9	0.28	N/A	23.80	340	0.80
55	9	0.30	N/A	23.80	340	0.97
60	10.5	0.33	N/A	23.80	340	1.73
70	13	0.39	N/A	27.00	340	3.18

Bibbygear® Type CD Sizes 10-40

Double Engagement Couplings



COMPONENT PARTS

1. HUB
4. CONT. SLEEVE
5. ENDCOVER
8. SETSCREWS
9. TAB WASHERS
10. 'O' RING SEAL
12. GASKET
13. PLUG

TECHNICAL DETAILS REQUIRED FOR ASSEMBLY						
Size	Gap (mm) ±0.25	Max. Angular Tolerance (mm)	Max. Parallel Offset (mm)	Setscrew Size (mm)	Setscrew Torque Tightening Nm	Grease Quantity Kgs
10	3	0.15	0.05	M5	6	0.03
15	3	0.19	0.04	M5	6	0.05
20	3	0.23	0.06	M5	6	0.13
25	5	0.28	0.07	M5	6	0.17
30	5	0.33	0.08	M6	11	0.25
35	6	0.39	0.09	M6	11	0.34
40	6	0.46	0.10	M6	11	0.55

EFLEX & POWERPIN COUPLINGS – Installation and Maintenance

1. MOUNT HUBS

1.1 Eflex Hubs

Coupling hubs are generally supplied with an H7 bore tolerance. Therefore axial restraint of the hub should be provided by set screws when transition fits are specified.

When interference fits are specified it will be necessary to apply heat to the hubs, preferably in an oil bath or oven to a maximum temperature of 135˚C.

Mount the hubs on their respective shafts, normally with the face of each hub flush with the end of its shaft and tighten setscrews onto the key, when supplied.

Notes concerning brakedrum and brakedisc couplings.

1. Brakedrum and brakedisc hubs should be mounted on the shaft with the greatest flywheel effect.
2. When the brakedisc is supplied as a loose component ensure that the brakedisc is loosely positioned over the coupling hub boss before positioning the driving and driven machines.

1.2 Powerpin Hubs

Hubs are manufactured to suit Taper Lock Bushes, therefore, ensure that the protective coating is removed from the bush and that all parts are thoroughly cleaned especially the mating tapered surfaces.

Insert bush into the hub so that the holes line up.

Sparingly oil the thread and grub screw points, or when appropriate, the thread and under head of capscrews. Place screws loosely in holes threaded in hub, shown thus ⊙ in diagram.

Clean shaft and fit hub to shaft as one unit and locate in desired position remembering that the bush will nip the shaft first and then the hub will be slightly drawn on to the bush.

Using a hexagon torque wrench tighten screws gradually and alternately to torque shown in the table opposite.

Hammer against large end of bush, using a block or sleeve to prevent damage. (This will ensure that the bush is seated squarely in the bore). Screws will now turn a little more. Repeat this alternate hammering and tightening once or twice to achieve maximum grip on the shaft.

Installation Data

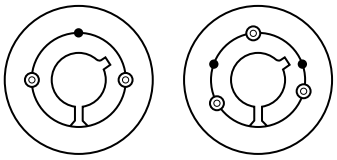
Coupling Size	Gap Tolerance (mm)	Installation Max. Alignment Limits (Note)		Bolt Tightening Torques	
		Parallel (mm)	Angular (mm)	Bolt Size	Torque Nm
72	1.0 – 3.0	0.10	0.08	M5	5
90	1.5 – 4.5	0.10	0.10	M6	10
125	1.5 – 4.5	0.15	0.14	M8	17
145	2.5 – 7.0	0.15	0.16	M10	25
165	2.5 – 7.0	0.15	0.18	M10	25
195	2.5 – 7.0	0.20	0.20	M12	58
240	2.5 – 7.0	0.20	0.25	M16	98
290	3.0 – 9.0	0.20	0.25	M20	175
320	3.0 – 9.0	0.25	0.28	M20	175
350	3.0 – 9.0	0.25	0.28	M24	330
380	3.0 – 9.0	0.25	0.30	M24	330
470	3.0 – 9.0	0.35	0.32	M24	330
510	3.0 – 9.0	0.35	0.35	M30	560
560	5.0 – 15	0.35	0.35	M30	560
630	5.0 – 15	0.35	0.38	M36	1155
710	5.0 – 15	0.50	0.40	M42	1410
760	5.0 – 15	0.50	0.42	M42	1410

NOTES:

1. Further misalignment due to foundation settlement, differential expansion, driving and driven machine movement etc., will be accommodated by the coupling throughout the life of the machine.

If a key is to be fitted, place it in the shaft keyway before fitting the bush. It is essential that it is a parallel key and side fitting only and has TOP CLEARANCE.

Fill empty holes with Bibby ECL grease to exclude dirt.



Bush sizes and screw tightening torques

Coupling Size	Bush Size	Screw Tightening Torque Nm	Screw Quantity	Details Size (BSW)
900	1008	5.7	2	1/4"
1250	1215	20	2	3/8"
1450	1615	20	2	3/8"
1650	2017	31	2	7/16"
1950	2525	49	2	1/2"
2400	3030	92	2	5/8"
2900	3535	115	3	1/2"
3200	4040	172	3	5/8"
3500	4545	195	3	3/4"
3800	5050	275	3	7/8"

2. ALIGNMENT

Note - satisfactory alignment can be achieved with the use of a straight edge and feeler gauge, although a dial indicator would generally improve accuracy, independent of geometric component errors.

2.1 Gap & Angular Alignment

Set gap using spacer bar equal in thickness to the nominal gap specified in the table opposite. With the spacer bar inserted to the same depth, measure clearance between bar and hub face at 90˚ intervals using feelers. The difference between maximum and minimum measurements should not exceed the angular limits stated in the table.

2.2 Parallel Offset Alignment

Use a straight edge and feelers, or dial indicator over the coupling outside diameter taking measurements at 90˚ intervals. Error should not exceed offset limit specified in the table.

Tighten all foundation bolts and repeat steps 2.1 and 2.2, if necessary, re-align.

Fit the coupling pins and flexible elements ensuring that the capscrew has one washer under its head and one washer under the nut. (When a third washer is supplied it should be positioned between the buffer bush and the flange face of the hub). Ideally the capscrew should be fitted with its head adjacent to the flange. Where less than full number of pins and flexible elements are fitted, these should be placed equidistant from each other, filling one flange before fitting the remainder in the opposite flange.

After fitting the pins and flexible elements tighten the locknuts to the recommended tightening torques, preferably in pairs at 180˚ to each other.

3. BRAKEDISC COUPLINGS

The brakedisc can now be secured to the coupling hub by tightening the fasteners to the appropriate torque.

i.e. M16 - 215 Nm M20 - 420 Nm

4. MAINTENANCE INSTRUCTIONS

Periodically check alignment, check fasteners torques and check flexible elements for wear to determine if replacements are required.

Excessive misalignment, high ambient temperatures and/or frequent rapid reversing may necessitate more frequent inspection.

1. It is essential that all the instructions contained within this publication are carried out by a competent person. Should problems be anticipated or encountered, Bibby Transmissions personnel are available for site visits or, alternatively, repairs and overhauls can be undertaken in our works.
2. Prior to performing any maintenance work (including inspections) it is essential that the power supply is isolated and that no movement of any rotating machinery is allowed.
3. This product is designed for a specific purpose. It is vital that it is not used for any purpose other than that for which it was designed and supplied, and that the limits of its capacities, as detailed here, in the catalogue and in any other document, are not exceeded.
4. No liability will be accepted and any warranty, either expressed or implied, will be null and void should any component of whatever kind, including nuts, bolts and washers, be used in the assembly, or modifications made to all or part of the product, which are not supplied, specified or agreed by Bibby Transmissions.

Do's

1. The following instructions should be read and understood prior to starting any assembly or maintenance work.
2. Prior to replacing any component, care should be taken to ensure that it is clean and free from any dirt.
3. When tightening any bolts or screws, this should be done evenly, cylinder head fashion, to 50% torque then to 100% torque in the same sequence. Where specified it is essential that torque tightening figures are not exceeded nor should it be allowed for them to be below specification.
4. Do ensure that the hub is a transition fit on the shaft and axially secured on the shaft by a grub screw over the parallel key.

Don'ts

1. Do not use any component that is not supplied or approved by Bibby Transmissions in the assembly of this product.
2. Do not attempt to lift the product without the use of lifting equipment where the weight is excessive.

General notes on the installation and maintenance of Bibby Transmission Products

TORQUE LIMITING UNITS

All A, B, C, and FV Types

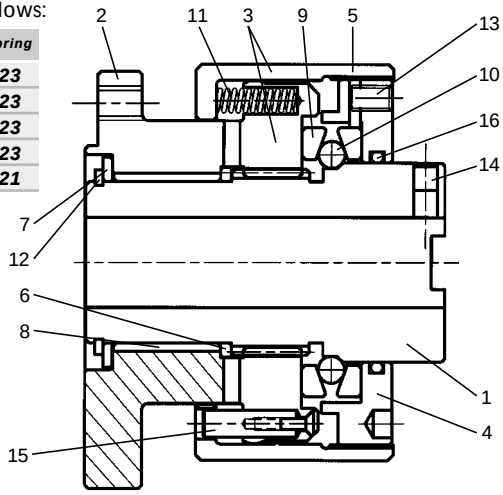
BIBBIGARD TORQUE LIMITING UNITS – Installation Instructions

Types AB, AR, AF, AS & AP

PARTS LIST		
Part No.	Description	Qty.
1	Hub	1
2	Rotating Jaw Ring	1
2a	Rotating Jaw Ring for pin coupling	1
3	Sliding Jaw Ring	1
4	Torque Adjusting Ring	1
5	Cover Nut	1
6	Inner Spacer	1
7	Thrust Ring	1
8	Bearing Bush	1
9	Ball Thrust Ring	2
10	Ball	see note
11	Spring	see note
12	Circlip	1
13	Screw (Torque Control Ring)	1
14	Screw (for Hub Locking)	1
15	Dowel Pin	1
16	'O' Ring	1
17	Seal (optional extra)	1

NOTE: Ball (10) and Spring (11) quantities as follows:

Size.	Ball	Spring
100	24	23
500	32	23
1000	33	23
2000	43	23
4000	48	21



FINISH BORING & KEYWAYING

This operation can be accomplished without having to dismantle the unit by following the procedure detailed below. Details are also given for machining the flange, if supplied blank.

Care should be taken to ensure that the hub of the torque limiter is a good push-fit on the mating shaft - an interference fit is not acceptable. Taper keys must not be used.

PREPARATION OF THE UNIT FOR MACHINING

1. Adjust the release torque to a high value (sufficient for machining flange spigot).
2. Wrap masking tape around joint of flange & cover nut (to prevent ingress of swarf).

Stage 1 MACHINING HUB BORE

1. Chuck in true soft jaws on hub dia. & clock rotating jaw ring spigot true.
2. Bore hub to required dia. (use carbide tooling dry).

Stage 2 MACHINING HUB KEYWAY

1. Locate on hub diameter.
2. Broach or slot keyway in line with grub screw hole in hub. (No coolant).

When fixing pulleys or sprockets which have a smaller diameter than rotating jaw ring (2) an adaptor plate will be required.

Details of this can be supplied on request, providing full details of sprocket or pulley are given.

METHOD OF ASSEMBLY

1. Clean all components, spray working surfaces with a suitable anti seize compound.
2. Place hub (1) vertical on bench, fit sliding jaw ring (3) onto hub splines (ensure easy sliding position).
3. Grease and fit sufficient springs (11) for required max. torque into holes in sliding jaw ring.
4. Grease and fit cover nut (5) locating hole on dowel (15).
5. Holding this assembly turn upside down on to a suitable spacing ring which will support cover nut (5). Fit ball thrust ring (7) and correct quantity of ball bearings all suitably greased.
6. Screw torque adjusting ring (4) into cover nut (5).
7. Reverse this sub-assembly grease and fit, inner spacer (6), rotating jaw ring (2), thrust ring (7) and circlip (12).
8. Test unit for jaw engagement and release action.

REFERENCES TO GREASE:-
USE 3% MOLYBDENUM DISULPHIDE

GENERAL MAINTENANCE

Units should be stripped, inspected & re-assembled at least once every two years, more frequently in dusty or wet conditions, or where frequent tripping occurs.

SETTING RELEASE TORQUE

1. Adjustment is achieved by adjusting the ring (4) with the aid of a suitable pin wrench.

   The release torque is increased by turning the ring clockwise, or reduced by turning anti-clockwise. Once correct adjustment is made, tighten locking grub screw (13) in face of adjusting ring.

2. **For installations where the release torque is unknown**

   Set the control ring to zero (flush with outer rim) start up the machine and apply the normal running loads which should then release the unit. Proceed to adjust the ring by increments until the unit drives the desired load continuously without releasing. Any increase of torque in excess of this final setting will immediately cause disengagement of the drive.

3. **For installations where the release torque is known**

   From the test performance graph, when supplied, read off the required adjustment setting and adjust ring (4) accordingly. If possible overload drive to cause release thus confirming the setting.

   NOTE: After adjustment has been made the first release torque may be higher than setting warrants, owing to the settlement of springs, balls & ball thrust races. It is therefore advisable to actuate the unit at least once after final adjustment.

CHECKING RELEASE TORQUE SETTING

Clamp jaw ring (2) in lathe chuck (locked) and apply torque to hub either, for finished bored hub with a dummy shaft & key or for a pilot bored hub, using the milled slot on the outer hub face.

Torque can be applied by:- torque wrench, bar with spring balance or bar with weights (make sure weights are restrained on release).

POSSIBLE FAULTS

1. Continual releasing, further adjustment making no difference. Balls (10) are not located between races (9) probably caused by ring (4) being unscrewed beyond zero removing spring pressure leaving balls free to drop. Re-assemble in accordance with method above.
2. Unable to screw in adjusting ring (4), although locking grub screw (13) has been released. Dowel pin (15) not located in hole in cover nut (5).
3. Unable to reset. Jaws in parts 2 & 3 not aligned. Check reference marks on parts 2 (rotating jaw ring) and 5 (cover nut).

BIBBIGARD TORQUE LIMITING UNITS – Installation Instructions

Types B, BF, BR, BP & BS

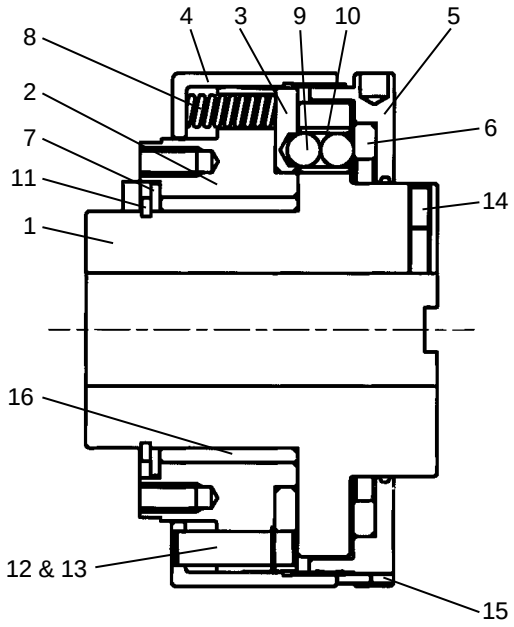
PARTS LIST		
Part No.	Description	Qty.
1	Flanged Hub	1
2	Drive Flange	1
3*	Ball Detent Ring	1
4	Cover Nut	1
5	Torque Adjusting Ring	1
6*	Ball Thrust Ring	1
7	Spacer	1
8*	Springs	see note
9*	Detent Balls	see note
10	Bushes	6
11	Circlip	1
12	Dowel (Long)	1
13	Dowel (Short)	1
14	Setscrew (Clamping)	1
15	Setscrew (Locking)	3
16	Bearing Bush	1

NOTE: Items marked * are recommended spares.

Optional Extras are Switch Plate and Drive Flange Adaptor Plate.

NOTE: Ball (9) and Spring (8) quantities as follows:

Size.	Ball	Spring
550	12	28
1000	20	20



FINISH BORING & KEYWAYING

This operation can be accomplished without having to dismantle the unit by following the procedure detailed below.

Care should be taken to ensure that the Hub of the Torque Limiter is a good push-fit on the mating shaft, an interference fit is not acceptable.

PREPARATION OF THE UNIT FOR MACHINING

Wrap masking tape around the joint of Flange & Cover Nut (to prevent ingress of swarf).

MACHINING HUB BORE AND KEYWAY

1. Chuck in true soft jaws on hub dia., clock drive flange spigot true.
2. Bore hub to required diameter (use carbide tooling dry).
3. Broach or slot keyway in line with grub screw in hub. (No coolant).

METHOD OF ASSEMBLY

1. Clean all components, spray working surfaces with a suitable anti-seize compound.
2. Assemble ball detent ring (3) and drive flange (2) with dowels (12) and (13) with longer dowel (12) fitted in the hole marked with a centre dot, all Loctited into position with I.S. 12 Loctite.
3. Fit flanged hub (1) into drive flange (2), liberally greasing mating faces of detent ring and bearing bush (16).
4. Fit springs (8) and grease liberally.
5. Grease inside of cover nut (4) and fit, by holding assembly with springs upwards and placing cover nut over springs, ensuring that the long dowel (12) locates in the hole in the cover nut.
6. Invert the assembly and rest cover nut (4) on a suitable support to prevent the cover nut from dropping down and allowing the springs to come out of position.
7. Align the holes in the hub (1) with the holes in detent ring, grease and fit detent balls (9), (2 per hole).
8. Loctite ball thrust ring (6) into torque adjusting ring (5), grease (including threads) and screw together with cover nut, adjust until gap between the inside flange of the torque adjusting nut and cover nut is approximately 4.57mm (0.180”), this will give the minimum torque setting.
9. Turn assembly over and fit spacer (7) and circlip (11). Ensure that the spacer will turn freely with circlip fitted.
10. Test unit for correct operation by clamping drive flange (2) in soft jaws and rotate hub (1) via the slot in its end using a suitable lever.

RECOMMENDED GREASE = 3% MOLYBDENUM DISULPHIDE

GENERAL MAINTENANCE

Units should be stripped, inspected & re-assembled at least once every twelve months. More frequently in dusty or wet conditions or where frequent tripping occurs.

SETTING RELEASE TORQUE

Slacken 3 off locking set screws (15), adjust torque adjusting ring with the aid of a suitable tommy bar.

The release torque is increased by turning the ring clockwise, or reduced by turning anti-clockwise. Once correct adjustment is made, re-tighten the locking set screws.

For installations where the release torque is unknown

Set the torque adjusting ring to zero (approximately 0.180” from cover nut). Start up the machine and apply the normal running loads, which should then release the unit. Proceed to adjust the torque adjusting ring (5) by increments until the unit drives the desired load continuously without releasing. Any increase of torque in excess of this final setting will immediately cause disengagement of the drive.

For installations where the release torque is known

From the test performance graph, when supplied, read off the required adjustment setting and adjust the torque adjusting ring accordingly. If possible overload the drive to cause release, thus confirming the setting.

NOTE: After adjustment has been made, the first release torque may be higher than setting warrants, owing to the settlement of the springs and balls. It is therefore advisable to actuate the unit at least once after final adjustment.

BIBBIGARD TORQUE LIMITING UNITS – Installation Instructions

Types CB, CR, CS, CP & CF

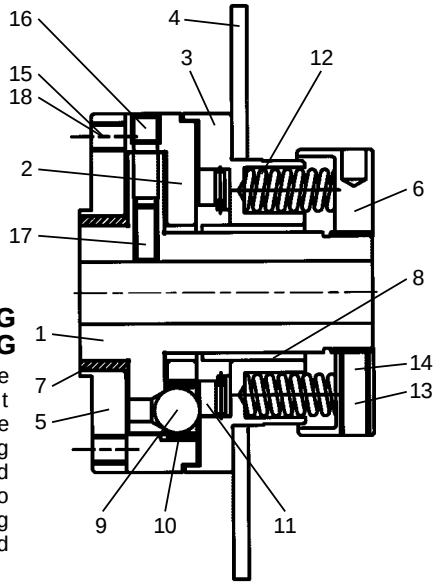
PARTS LIST

Part No.	Description	Qty.
1	Hub	1
2	Ball Cage Plate	1
3	Spring Flange	1
4	Switch Plate (Optional extra)	1
5	Drive Flange	1
6	Torque Adjusting Nut	1
7	Bearing Bush	1
8	Bearing Bushes	2
9	Driving Balls	6
10	Drill Bushes	6
11	Thrust Race	1
12	Springs	see note
13	Locking Screw	1
14	Nylon Plug	1
15	Cap Screws	3
16	Blanking Plug	1
17	Locking Set Screw	1
18	Spring Dowel Pins	3

NOTE: Item (12) Quantities as follows:

Size.	No. off
20	12
150	20 Large
	20 Small

On some CS or CP models item 5 is replaced by sprocket or pulley.



FINISH BORING & KEYWAYING

This operation can be accomplished without having to dismantle the unit by following the procedure detailed below. Details are also given for machining the flange, if supplied blank.

PREPARATION OF THE UNIT FOR MACHINING

1. Lock unit to prevent release:- Remove adjusting nut (6), remove 3 springs (12) & replace with dowel spacer pins. Replace adjusting nut & tighten.
2. Wrap masking tape around clutch to prevent ingress of swarf.

Stage 1 MACHINING HUB BORE

1. Chuck in true soft jaws on drive flange diameter.
2. Bore hub to required diameter. (use carbide tooling dry).

Stage 2 MACHINING HUB KEYWAY

1. Locate on hub end and flange diameter.
2. Broach or slot keyway in line with grub screw hole in hub. (No coolant).

NOTE: Grub screw over keyway is located in hub flange.

After machining, remove dowel pins re-fitting springs and adjuster.

When fitting sprockets or pulleys these can replace drive flange (5) but for smaller diameters an adaptor plate will be required.

Details can be supplied on request providing full details of sprocket or pulley are given.

METHOD OF ASSEMBLY

1. Clean all components, spray working surfaces with a suitable anti-seize compound.
2. Assemble ball cage plate (2) & drive flange (5) on hub (1). Fit dowels (18) and tighten screws (15) using 'Loctite'. Grease during assembly.

   NOTE: If replacing standard drive flange (5) with an alternative sprocket etc., the dowel holes are transfer drilled from the ball cage plate (2).
3. Fit balls into bushed holes in item (2), ensure sliding fit and locate into pockets in the hub flange (1).
4. Assemble thrust bearing (11) in spring flange (3) (thin washer first). Grease.
5. Fit spring flange (3) on hub and fit springs. Grease.
6. Screw nut (6) on hub and tighten locking screw (13).
7. Test unit for correct operation.

RECOMMENDED GREASE = 3% MOLYBDENUM DISULPHIDE

GENERAL MAINTENANCE

All units should be stripped, inspected & re-assembled at least once every two years. More frequently in dusty or wet conditions, or where frequent tripping occurs.

SETTING RELEASE TORQUE

1. Adjustment is achieved by turning the nut (6) with the aid of a suitable tommy bar. The release torque is increased by turning the nut clockwise or reduced by turning anti-clockwise.

2. **For installations where the release torque is unknown**

   Set the adjusting nut at zero (flush with end of hub). Start up the machine and apply normal running loads which should then release the unit. Proceed to adjust the nut by increments until the unit drives the desired load continuously without releasing. Any increase of torque in excess of this final setting will immediately cause disengagement of the drive.

3. **For installations where the release torque is known**

   From the test performance graph, when supplied, read off the required adjustment setting and adjust nut (6) accordingly. If possible, overload drive to cause release thus confirming the setting.

   NOTE: After adjustment has been made the first release torque may be higher than the setting warrants, owing to the settlement of springs and balls. It is therefore advisable to activate the unit at least once before final adjustments.

CHECKING RELEASE TORQUE SETTING

Clamp drive flange (5) in locked lathe chuck and using a dummy shaft & key with bar attached apply torque using a spring balance or weights (make sure weights are restrained on release).

INSTALLATION

In addition to the grub screw over keyway, the hub should be located against a shaft abutment or be retained by a shaft end fixing to resist resetting spring force.

POSSIBLE FAULTS

1. Disengagement suddenly occurs at normal running torque. Torque adjusting nut (6) unscrewed. Re-adjust ensuring that locking grub screw (13) is tight.
2. Unit moves axially on shaft.
   Remove blanking plug (16) and tighten locking screw (17).

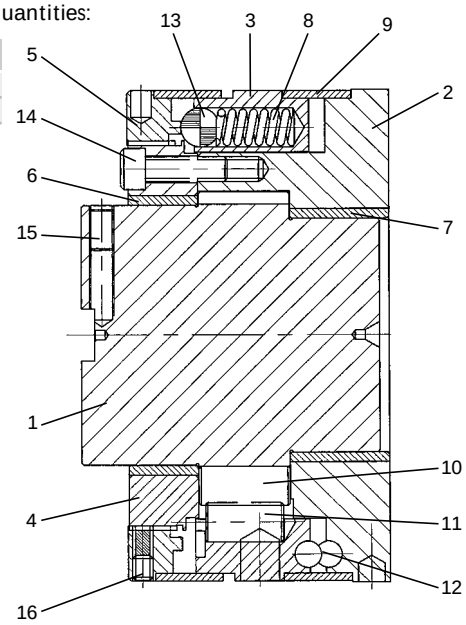
BIBBIGARD TORQUE LIMITING UNITS – Installation Instructions

Type FV

PARTS LIST		
Part No.	Description	Qty.
1	Hub	1
2	Flange	1
3	Locking Ring	1
4	Retaining Ring	1
5	Adjusting Nut	1
6	Retaining Ring Bush	1
7	Flange Bush	1
8	Spring	see note
9	Seal	2
10	Roll Inner	6
11	Roll Outer	6
12	Ball Detent	12
13	Spring Ball	16
14	Cap Screw	3
15	Set Screw	1
16	Set Screw & Nylon Plug	1
17	Grease Valve	1

NOTE: Spring (8) quantities:

Size.	No. off
360	16
560	20



FINISH BORING & KEYWAYING

This operation can be accomplished without having to dismantle the unit by following the procedure detailed below. Details are also given for machining the flange, if supplied blank.

PREPARATION OF UNIT FOR MACHINING

1. Adjust release torque to a high value sufficient for machining flange spigot.

Stage 1 MACHINING HUB BORE & FLANGE SPIGOT

1. Chuck in true soft jaws on hub diameter & clock flange true.
2. Bore hub to required diameter (use carbide tooling dry).
3. Machine flange spigot to required size.

Stage 2 MACHINING HUB KEYWAY

1. Locate on hub diameter.
2. Broach or slot keyway in line with grub screw in hub. (No coolant).

Stage 3 MACHINING FLANGE HOLES

1. Load in a drill jig locating on flange spigot.
2. Drill & tap holes to requirements.

Alternatively chuck true on hub diameter & 'Index' drill & tap flange holes.

NOTE: Ensure drilling positions do not foul the detent balls inside the unit. Holes must not break through flange.

METHOD OF ASSEMBLY

1. Clean all components, spray working surfaces with a suitable anti-seize compound.
2. Assemble hub (1) into flange (2), grease, fit inner rolls (10) into flange slots aligning with hub grooves.
3. Fit detent balls (12) into flange and locking ring (3). Grease.
4. Assemble outer rolls (11) into locking ring and peen to retain, grease. Fit locking ring onto flange & hub sub assembly with the outer rolls on the clockwise side of the inner rolls, positioning the tommy bar hole in the locking ring in line with the radial hole in the flange rim.
5. Fit springs (8) into holes in locking ring and fit spring balls (13). Grease.
6. Fit retaining ring (4) on hub and tighten cap screws (14) using 'Loctite'.
7. Screw adjusting nut (5) on to retaining ring (4) and tighten lock screw (16).
8. Fit seals (9) into grooves on nut, locking ring and flange.
9. Fit grease nipple (17) into locking ring (3).
10. Finally test unit and reset with the protruding screw (14) in line with hub locking screw (15).

RECOMMENDED GREASE = 3% MOLYBDENUM DISULPHIDE

GENERAL MAINTENANCE

Units should be charged with grease at every service interval or every 6 months, whichever is the shortest. Ensure rubber seals are sound and firmly located in grooves.

SETTING RELEASE TORQUE

1. Adjustment is achieved by turning nut (5) with the aid of a suitable tommy bar. Release torque is increased by turning nut clockwise or reduced by turning anti-clockwise.

2. **For installations where the release torque is unknown**

   Set the adjusting nut at zero (flush with item 4), start up the drive and apply normal running loads which should then release the unit. Proceed to adjust the nut by increments until the unit drives the desired load continuously without releasing. Any increase of torque in excess of this final setting will immediately cause disengagement of the drive.

3. **For installations where the release torque is known**

   From the test performance graph, when supplied, read off the required adjustments setting and adjust nut (5) accordingly. If possible overload drive to cause release, thus confirming setting.

   NOTE: After final adjustment has been made the first release torque may be higher than setting warrants owing to the settlement of springs, balls & rollers. It is therefore advisable to actuate the unit at least once before final adjustment.

RESETTING

When the clutch operates and disengages the drive, first locate and clear the cause of the overload. To reset, line up protruding socket head screw with grub screw in hub. Hold universal joint shaft to prevent rotation, insert ⅜" diameter tommy bar in hole in locking ring and jerk in direction of arrow. Unit will reset with an audible 'click'.

POSSIBLE FAULTS

1. Unit will not reset – check alignment of grub screw (15) and cap screw (14). **Note:** when resetting locking ring (3) moves approximately 0.25".
2. Adjusting nut slackens – Set screw (16) not tightened. Re-adjust and lock in place with set screw.

1. It is essential that all the instructions contained within this publication are carried out by a competent person. Should problems be anticipated or encountered, Bibby Transmissions personnel are available for site visits or, alternatively, repairs and overhauls can be undertaken in our works.
2. Prior to performing any maintenance work (including inspections) it is essential that the power supply is isolated and that no movement of any rotating machinery is allowed.
3. This product is designed for a specific purpose. It is vital that it is not used for any purpose other than that for which it was designed and supplied, and that the limits of its capacities, as detailed here, in the catalogue and in any other document, are not exceeded.
4. No liability will be accepted and any warranty, either expressed or implied, will be null and void should any component of whatever kind, including nuts, bolts and washers, be used in the assembly, or modifications made to all or part of the product, which are not supplied, specified or agreed by Bibby Transmissions.

Do's

1. The following instructions should be read and understood prior to starting any assembly or maintenance work.
2. Prior to replacing any component, care should be taken to ensure that it is clean and free from any dirt.
3. When tightening any bolts or screws, this should be done evenly, cylinder head fashion, to 50% torque then to 100% torque in the same sequence. Where specified it is essential that torque tightening figures are not exceeded nor should it be allowed for them to be below specification.
4. Do ensure that any other product that is used in conjunction with the Torque Limiting Safety Elements is installed in accordance with the relevant Installation Instructions.

Don'ts

1. Do not use any component that is not supplied or approved by Bibby Transmissions in the assembly of this product.
2. Do not attempt to lift the product without the use of lifting equipment where the weight is excessive.

TORQUE LIMITING MODULES – Installation Instructions

Types SE5, SE10, SE20 & SE30, Series BA, BL

GENERAL

- Component parts within the Torque Limiter Modules are factory lubricated with **Kluber ALTEMP Q NB50**.

IMPORTANT

It is essential that this specification is maintained throughout the life of the unit.

- The free space within the assembly is filled with Bibby ECL grease. Re-lubrication points are provided for this purpose. Any other lubricant specifications may adversely react with the Altemp Q NB50 and reduce its effectiveness.
- Familiarise yourself with the relevant assembly drawing and component identification contained within this document.

ADJUSTMENT FROM INITIAL SETTING

- When specified on the contract, Torque Limiter Modules are pre-set and validated at the factory and therefore no further adjustment is envisaged at this time.
- Should it be found necessary, at a later date, to adjust the torque setting of a unit, proceed as follows:-

1. Remove each of the modules individually from the mounting flange, ensuring that any loose components, such as the detent drive ball (6) and any pre-load shim (17) that are used with blind hole detent pockets (15) are safely retained for reuse.
2. Loosen the setscrew (5) in the module housing (1) and hold the flange of this component in soft jaws in a bench vice.
3. Adjust the load adjusting nut (3) to obtain the required setting. Note, a special adjusting tool should be available to successfully complete this task. **Load adjustment from the modules initial setting, which is stamped on the housing, should only be made after reference to the relevant setting chart. Charts for Series BA are printed in this document.** When looking on the adjusting nut (3), clockwise rotation by the fractional number of turns indicated on the setting chart will give a corresponding increase in spring deflection and increase in load.
4. The change in spring deflection can be accurately determined by measuring the initial and final depth position of the adjusting nut (3) from the flange face of the housing (1), using depth micrometers. The actual spring deflection can then be calculated by subtracting the initial depth from the final depth.
5. Re-tighten the setscrew (5) in the module housing (1) to lock the adjusting nut (3).

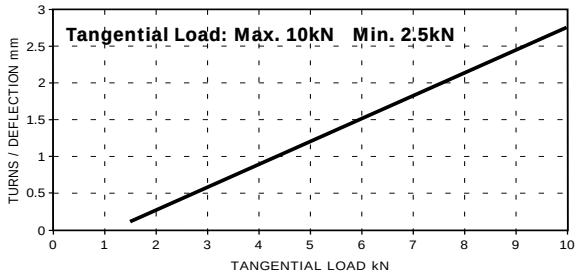
REMOUNTING THE MODULE

- Smear all location diameters and detent drive ball (6) with **Kluber ALTEMP Q NB50** and re-assemble the module into the mounting flange, ensuring that all loose components are replaced, that the pre-load is introduced according to the appropriate procedure detailed below and that securing screws (7) are correctly torque tightened to the following values before proceeding to repeat the procedure on the next module.

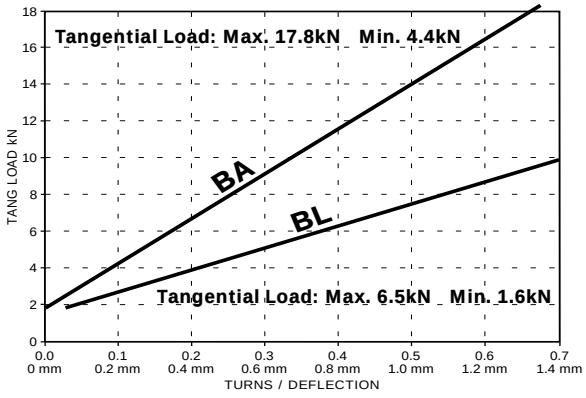
SE5	**8 Nm**
SE10	**13 Nm**
SE20	**30 Nm**
SE30	**60 Nm**

- Pre-load the module using the appropriate 'A' or 'B' Method.

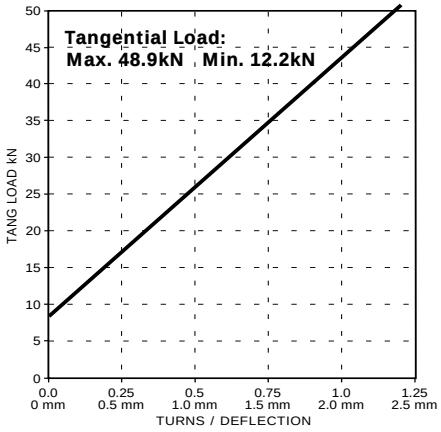
SETTING CHART SE5 – BA



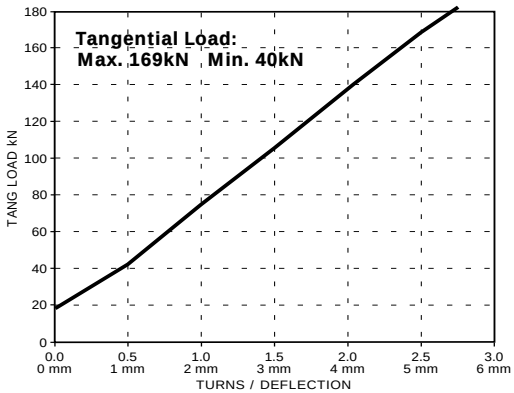
SETTING CHART SE10



SETTING CHART SE20 – BA



SETTING CHART SE30 – BA



TORQUE LIMITING SAFETY ELEMENTS – General Maintenance

Types SE5, SE10, SE20 & SE30, Series BA, BL

GENERAL MAINTENANCE

When Torque Limiting Modules are provided with re-lubrication facilities in the plunger (2) and in some cases through the detent pocket (15), we would recommend that **Bibby ECL grease** is injected through the grease fittings at specified intervals, or at least every six months.

The detent pocket (15), flanged bush (13), 'O' Ring (14) and detent ball (6) should be removed, stripped and inspected annually and more frequently where regular disengagement has occurred or where the application is subjected to heavy vibratory torques, remembering to smear all contact surfaces on the components with **Kluber ALTEMP Q NB50** prior to re-assembly.

Blind Hole detent pockets are provided with a metric threaded hole (M8/M12) to facilitate withdrawal, through which the capscrew (16) shall be inserted, secured with Loctite 241 on re-assembly and torque tightened to the following values:-

SE5 **4Nm** • SE10 **12Nm** • SE20 **60Nm** • SE30 **60Nm**

RESETTING FOLLOWING OVERLOAD

Disengagement will occur on overload allowing rotation of the driving machine to continue until brought to rest.

- With the drive at rest (power off) identify the cause of the overload and take corrective action.
- Align the two reset indicators and firmly strike the head of each plunger (2) with a soft mallet. The plunger will move back into the module housing (1) signifying that the unit is re-engaged. The drive can be restarted when all modules are re-engaged.

TROUBLE SHOOTING

- ***Continual releasing, further adjustment making no difference.***

1. Detent pocket worn. Remove detent pocket and replace with a new component, alternatively, in certain cases it may be acceptable to rotate the detent pocket through 90°.
2. Additional torque capacity required. Consult Bibby Transmissions.
3. Internal components of module are worn. Replace with new modules and return to factory for refurbishment.

- ***Unable to screw adjusting nut (3) further into the housing (1).***

1. Loosen setscrew (5) and make sure that the threads on the adjusting nut (3) have not been damaged. If so, de-burr and clean threads until useable or alternatively replace with new component.
2. You have reached the maximum capacity of the module.

- ***Unable to reset.***

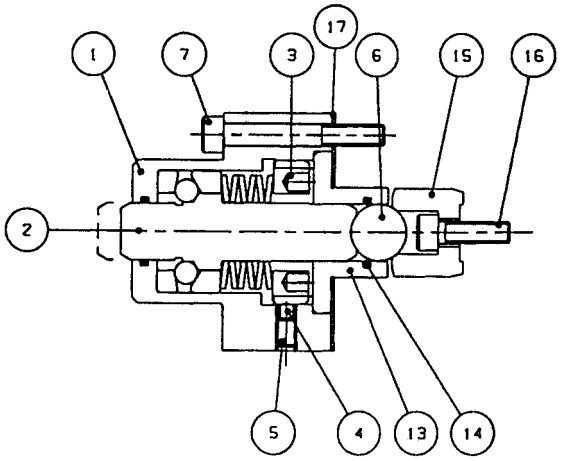
1. Reset indicators are not aligned. Check alignment of indicators and make the necessary adjustments.

TORQUE LIMITING MODULES – Installation & Parts List

METHOD 'A' BLIND HOLE FIXING

MODULE		
Part No.	Description	Qty.
1	Housing	1
2	Plunger	1
3	Adjusting Nut	1
4	Locking Pellet	1
5	Setscrew	1
6	Detent Ball	1
7	Capscrew	4

BLIND HOLE FIXING		
Part No.	Description	Qty.
13	Bush	1
14	'O' Ring	1
15	Detent Pocket	1
16	Capscrew	1
17	Shim Pack	1



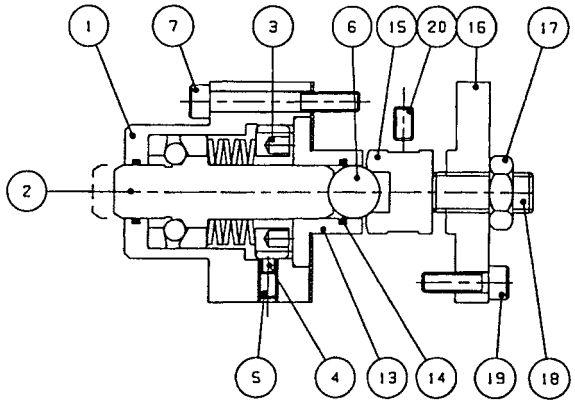
If the modules were supplied with blind hole fixing, the pre-load is re-introduced as follows:-

1. Lightly fix the module in position, without the shim pack (17), such that the detent ball (6) is in contact with the plunger (2) and detent pocket (15).
2. Using feelers, measure the gap between housing (1) and the flange face.
3. The thickness of the shim pack (17) that is required should be 0.1/0.15mm less than the measured gap.
4. Verify that the shim pack (17) that was originally removed is within tolerance and re-introduce the pre-load by reinserting the shim pack (17) in position and tightening the securing screws (7) to the torque specified above.

METHOD 'B' THROUGH HOLE FIXING

MODULE		
Part No.	Description	Qty.
1	Housing	1
2	Plunger	1
3	Adjusting Nut	1
4	Locking Pellet	1
5	Setscrew	1
6	Detent Ball	1
7	Capscrew	4

THROUGH HOLE FIXING		
Part No.	Description	Qty.
13	Bush	1
14	'O' Ring	1
15	Detent Pocket	1
16	Flange Plate	1
17	Nut Hex. Locknut	1
18	Setscrew	1
19	Capscrew	1
20	Setscrew	1



If the modules were supplied with through hole adjustment, ensure that the detent pocket (15), flange plate (16) and associated parts are attached to the mounting flange. Pre-load should then be introduced into the assembly as described in the following procedure.

1. Position dial indicator in contact with the end of plunger (2).
2. Ensure locknut (17) and radial setscrew (20) are loose.
3. Adjust the detent pocket adjusting screw (18) until initial clearances are eliminated and set the dial indicator to zero. Rotate the adjusting screw (18) in the forward and then reverse direction until zero position is repeated, making adjustments to the clock if necessary. Repeat this procedure on diametrically opposed modules, until the full complement of modules has been adjusted.
4. Re-introduce pre-load by rotating adjusting screw (18) on each diametrically opposed Module until 0.1/0.15mm movement is detected on the dial indicator. Lock in position by tightening the locknut (17) and radial setscrew (20).

TORQUE LIMITING MODULES – Installation Instructions

Types SE5, SE10, Series EA

GENERAL

- Component parts within the Torque Limiting Modules are smeared with **Kluber ALTEMP Q NB50**.

IMPORTANT

It is essential that this specification is maintained throughout the life of the unit.

- The free space within the assembly is filled with Bibby ECL grease. Re-lubrication points are provided through the plunger (2) or housing (1) for this purpose. Any other lubricant specification may adversely react with the Altemp Q NB50 and reduce its effectiveness.
- Familiarise yourself with the relevant assembly drawing and component identification contained within this document.

ADJUSTMENT FROM INITIAL SETTING

- When specified on the contract, Torque Limiting Modules are pre-set and validated at the factory and therefore no further adjustment is envisaged at this time.
- Load adjustment from the module initial setting, which is stamped on the housing, should only be made after reference to the relevant setting chart. Charts for Series EA are printed in this document.
- Should it be found necessary, at a later date, to adjust the torque setting of a unit, proceed as follows:

1. Slacken the security screw (9) using special tool and remove the security cover (8) from disengaging-type modules.
2. Slacken security screw (5) in the module housing (1) using special tool.
3. Turn adjusting nut (3) anti-clockwise using a spanner until spring force is removed and the adjusting nut is free to turn by hand. Now turn the adjusting nut by hand clockwise and determine the point at which resistance is first felt as the springs become engaged. This is the 'zero point'. The number of setting marks required from the setting chart must be counted from the zero point.
4. Using a spanner, turn adjusting nut (3) until the required number of setting marks from zero is obtained.
5. Re-tighten the security screw (5) in the module housing (1) to lock the adjustment nut (3).
6. Replace the security cover (8) for disengaging-type modules and relocate the security screw (9).
7. Repeat steps 1 through 6 for each safety element.

REPLACING MODULES

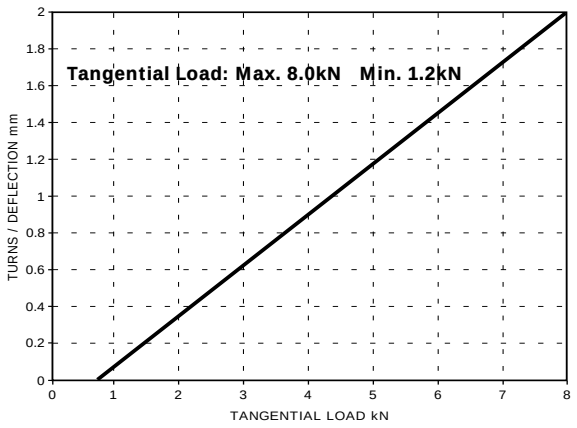
New or replacement modules are fitted as follows:

- Smear all location diameters and detent drive ball (6) with **Kluber ALTEMP Q NB50** and re-assemble the module into the mounting flange. Ensure that all loose components are replaced, that the pre-load is introduced according to the appropriate procedure detailed below and that securing screws (7) are correctly torque tightened to the following values before proceeding to repeat the procedure on the next module.

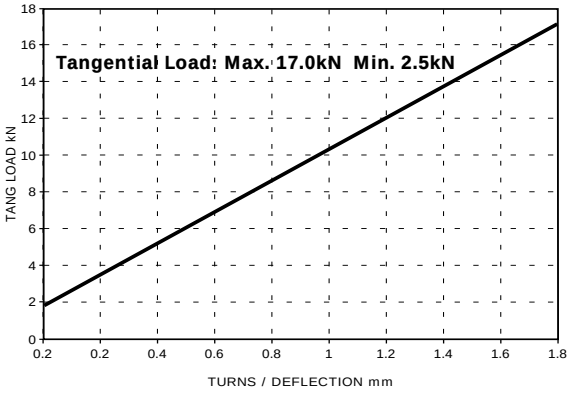
SE5	**8 Nm**
SE10	**13 Nm**

- Pre-load the module using the appropriate 'A' or 'B' method.

SETTING CHART SE5 – EA



SETTING CHART SE10EA



TORQUE LIMITING MODULES – General Maintenance

Types SE5, SE10, Series EA

GENERAL MAINTENANCE

When Torque Limiting Modules are provided with re-lubrication facilities in the plunger (2) or housing (1), we recommend that **Bibby ECL grease** is injected through the grease fittings at specified intervals, or at least every six months. Prior to re-lubricating disengaging-type modules, proceed as follows:

a) Slacken the security screw (9) using special tool and remove the security cover (8).
b) Turn the jacking screw (10) anti-clockwise until a mechanical stop is reached.
c) Re-lubricate.
d) Turn the jacking screw (10) clockwise until a mechanical stop is reached.
e) Relocate the security cover (8) and tighten the security screw (9).
f) Using a soft mallet, re-engage the plunger (2) to its working position.

The detent pocket (15), flanged bush (13), 'O'-ring (14) and detent ball (6) should be removed, stripped and inspected annually and more frequently where regular disengagement has occurred or where the application is subject to heavy vibratory torques. Remember to smear all contact surfaces with **Kluber ALTEMP Q NB50** prior to re-assembly.

Blind hole detent pockets are provided with a metric threaded hole (M5, M8, M12) to facilitate withdrawal, through which the capscrew (16) shall be inserted, secured with Loctite 241 on re-assembly and torque tightened to the following values:-

SE5 **4Nm** • SE10 **12Nm**

RESETTING FOLLOWING OVERLOAD

Disengagement will occur on overload, allowing rotation of the driving machine to continue until brought to rest.

- With the drive at rest (power off) identify the cause of the overload and take corrective action.
- Align the two reset indicators and firmly strike the head of each plunger (2) with a soft mallet. The plunger will move back into the module housing (1) signifying that the unit is re-engaged. The drive can be restarted when all modules are re-engaged.

TROUBLE SHOOTING

- ***Continual releasing, further adjustment making no difference.***

1. Detent pocket worn. Remove detent pocket and replace with a new component. Alternatively, in certain cases, it may be acceptable to rotate the detent pocket through 90%.
2. Additional torque capacity required? Consult Bibby Transmissions.
3. Internal components of module are worn. Replace with new modules and return to Bibby Transmissions for refurbishment.

- ***Unable to screw adjusting nut (3) further into the housing (1).***

1. Loosen the security screw (5) and make sure that the threads on the adjusting nut (3) have not been damaged. If so, de-burr and clean threads until usable or replace with new component.
2. You have reached the maximum capacity of the module.

- ***Unable to reset.***

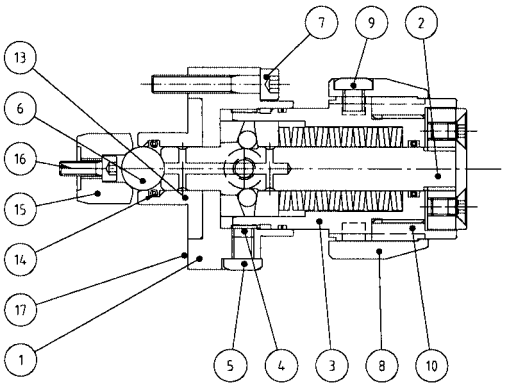
1. Reset indicators are not aligned. Check alignment of indicators and make the necessary adjustments.

TORQUE LIMITING MODULES – Installation & Parts List

METHOD 'A' BLIND HOLE FIXING

MODULE		
Part No.	Description	Qty.
1	Housing	1
2	Plunger	1
3	Adjusting Nut	1
4	Locking Pellet	1
5	Security Screw	1
6	Detent Ball	1
7	Capscrew	4
8	Security Cover	1
9	Security Screw	1
10	Jacking Screw	1

BLIND HOLE FIXING		
Part No.	Description	Qty.
13	Bush	1
14	'O' Ring	1
15	Detent Pocket	1
16	Capscrew	1
17	Shim Pack	1



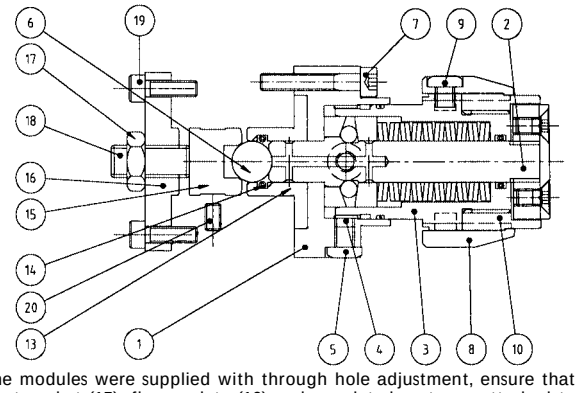
If the modules were supplied with blind hole fixing, the pre-load is re-introduced as follows:-

1. Lightly fix the module in position, without the shim pack (17), such that the detent ball (6) is in contact with the plunger (2) and detent pocket (15).
2. Using feelers, measure the gap between housing (1) and detent pocket (15).
3. The thickness of the shim pack (17) that is required should be 0.1/0.15mm less than the measured gap.
4. Verify that the shim pack (17) that was originally removed is within tolerance and re-introduce the pre-load by reinserting the shim pack (17) in position and tightening the capscrews (7) to the torque specified above.

METHOD 'B' THROUGH HOLE FIXING

MODULE		
Part No.	Description	Qty.
1	Housing	1
2	Plunger	1
3	Adjusting Nut	1
4	Locking Pellet	1
5	Security Screw	1
6	Detent Ball	1
7	Capscrew	4
8	Security Cover	1
9	Security Screw	1
10	Jacking Screw	1

THROUGH HOLE FIXING		
Part No.	Description	Qty.
13	Bush	1
14	'O' Ring	1
15	Detent Pocket	1
16	Flange Plate	1
17	Nut Hex. Locknut	1
18	Setscrew	1
19	Capscrew	1
20	Setscrew	1



If the modules were supplied with through hole adjustment, ensure that the detent pocket (15), flange plate (16) and associated parts are attached to the mounting flange. Pre-load should then be introduced into the assembly as described in the following procedure.

1. Position dial indicator in contact with the end of plunger (2).
2. Ensure locknut (17) and radial setscrew (20) are loose.
3. Adjust the detent pocket adjusting screw (18) until initial clearances are eliminated and set the dial indicator to zero. Rotate the adjusting screw (18) in the forward and then reverse direction until zero position is repeated, making adjustments to the clock if necessary. Repeat this procedure on diametrically opposed modules, until the full complement of modules has been adjusted.
4. Re-introduce pre-load by rotating adjusting screw (18) on each diametrically opposed module until 0.1/0.15mm movement is detected on the dial indicator. Lock in position by tightening the locknut (17) and radial setscrew (20).

1. It is essential that all the instructions contained within this publication are carried out by a competent person. Should problems be anticipated or encountered, Bibby Turboflex personnel are available for site visits or, alternatively, repairs and overhauls can be undertaken in our works.
2. Prior to performing any maintenance work (including inspections) it is essential that the power supply is isolated and that no movement of any rotating machinery is allowed.
3. This product is designed for a specific purpose. It is vital that it is not used for any purpose other than that for which it was designed and supplied, and that the limits of its capacities, as detailed here, in the catalogue and in any other document, are not exceeded.
4. No liability will be accepted and any warranty, either expressed or implied, will be null and void should any component of whatever kind, including nuts, bolts and washers, be used in the assembly, or modifications made to all or part of the product, which are not supplied, specified or agreed by Bibby Turboflex.

Do's

1. The following instructions should be read and understood prior to starting any assembly or maintenance work on the disc couplings.
2. Prior to replacing any component, care should be taken to ensure that it is clean and free from any dirt.
3. When tightening any bolts or screws, this should be done evenly, cylinder head fashion, to 50% torque then to 100% torque in the same sequence. Where specified it is essential that torque tightening figures are not exceeded nor should it be allowed for them to be below specification.
4. Whilst installing and removing the transmission unit, the unit should be supported to ensure that the weight is not imposed on one side only.
5. Record the Bibby Turboflex order number, coupling type and size, and any relevant information for future references.
6. Contact Bibby Turboflex for refurbishment works and spare components.

Don'ts

1. Do not use any component that is not supplied or approved by Bibby Turboflex in the assembly of this product.
2. Do not attempt to lift a coupling without the use of lifting equipment where the weight is excessive.
3. The inherent balance of these couplings could be disturbed if they are knocked, either by striking or rolling. Care should be taken when transporting and fitting to avoid such knocks. This is particularly relevant when a coupling has been specifically balanced.

General notes on the installation and maintenance of Bibby Turboflex

GENERAL PURPOSE DISC COUPLINGS

BIBBY Turboflex Disc Couplings

Bibby Turboflex Disc Couplings offer numerous advantages, particularly in high speed, heavy duty, hazardous or environmentally sensitive applications or where accurate transmittal of rotary motion must be maintained. The most prominent characteristics are:

- No maintenance
  – no wearing parts, no lubrication.
- No environmental limitation
  – good resistance to atmospheric conditions.
- High operating speeds.
- Precise synchronisation – no backlash, no torsional winding.
- Long life – excellent fatigue properties.

Bibby Turboflex General Purpose Disc Couplings are surface protected using phosphating techniques for corrosion resistance.

Bibby Turboflex products have been subjected to the most intensive technical scrutiny and design development in order to satisfy Bibby Turboflex's commitment to product integrity and reliability. It is for this reason that, when installing the product, all the instructions contained in this document must be adhered to, and variations are not allowed beyond those which may be given by Bibby Turboflex.

Technical advice

Bibby Turboflex can offer technical advice and assistance to help users select the right coupling from our extensive range. This service can be extended to installation, maintenance and refurbishments. A technical consultancy service is available to assist with all manner of power transmission problems.

Alignment method

Generally, the better the initial alignment of the driver and driven machinery, the smoother the driveline will run. Each company has its own methods for aligning machines and the various alternatives are well documented. It is, therefore, not our intention to describe methods of setting machines.

Important note: All Bibby Turboflex Disc Couplings will accept substantial amounts of misalignment, the configuration and design of each individual unit defining the actual acceptance levels. However, it must be appreciated that the various installation allowances shown are the *maximum permitted values for normal use.* To allow for movement of machines and shafts during operation, it is important to limit the levels of permitted misalignment at initial installation to make allowance for maximum movement (and minimum resultant loads) during actual use. All the following information is intended as a guide to maximum recommended accuracy of the initial set-up values. It should be remembered that the greater the degree of accuracy of initial alignment, the greater the length of trouble-free life the coupling is likely to enjoy.

Having correctly aligned the coupling, ensure that all bolts or attachment screws are correctly tightened to the torque figures given for the particular coupling. If possible, check tightness again after a few hours running.

Axial alignment

The axial distance between flange faces of disc coupling hubs will vary depending on the type of coupling and the requirements of the customer. In general, the fewer the bolts used in the coupling drive the greater the allowance which can be made for initial set-up. In all instances of double element design where there is a pre-determined distance between shaft ends (DBSE), the coupling will be manufactured such that, on assembly, the shafts on which the hubs are to be fitted must be to that dimension, within the following tolerances:

No. of bolts	Tolerance on DBSE
4	± 0.40 mm
6	± 0.30 mm
8	± 0.25 mm
10	± 0.20 mm

In the case of single element couplings (Type DS) this tolerance must be halved and applied to the catalogue DBSE. The flange faces are checked to ensure that they are parallel within 0.25mm across the diameter.

If this axial distance is allowed to vary from that specified above and in the product sections that follow, damage to the coupling will result. There will also be excessive axial loads imposed upon connected equipment.

Angular alignment

The maximum angular alignment allowed for disc couplings is dependent on the number of bolts connected to the blades. The assembly limits are as shown in the product sections that follow, but these should be considered to be maximums and every effort should be made to reduce them to an absolute minimum.

Parallel offset

Parallel offset is not available with single element disc couplings (Type DS). Where the coupling has two elements the offset is a function of the allowable angular misalignment and the distance between the centres of the element assemblies. The offsets on assembly should be kept to an absolute minimum. For details, see the product sections which follow.

Note: As angular misalignment and parallel offset result in the same angular disposition of opposing flanges, these should be measured together. The product sections show two sets of figures. The angular misalignment is illustrated as 'mm of gap variation per mm of flange diameter' and an actual gap variation in mm at the periphery of the flange. Either method will measure the misalignment successfully. Where more than one element assembly is present, as applies to all except DS types, these instructions apply to each element.

Handling and storage

The coupling is normally despatched with standard commercial packing and the case should contain a copy of the required documentation. **During transport, the installation (or compression) screws will be in position to ensure that the elements are not in free state.** The coupling should be stored in this condition. On receipt and also immediately before assembly, all the items should be checked to ensure that they are all in good condition and free of damage. The coupling should be stored horizontally. It should be protected against corrosion if stored for long periods or outdoors.

General procedure for alignment and installation

No liability will be accepted and any warranty, either expressed or implied, will be null and void should any components of whatsoever kind, including nuts, bolts and washers, be used in the assembly or any modifications be made to all or part of the unit which are not supplied, specified or agreed by Bibby Turboflex.

When tightening any bolts or screws this should be done evenly, i.e. cylinder head fashion, to 50% torque then to 100% torque in the same sequence. Threads should be lubricated with molybdenum sulphide grease or equivalent. Bibby Turboflex document TIS 5-262 carries more detailed instructions on torque tightening.

The following procedure is a general recommended guideline for installation of the coupling.

Installation procedure

1. Reference any applicable drawings for sizes and dimensions. Ensure that all the required tools and equipment are available.
2. Inspect the coupling for any indication of deviation from specification to ensure that it conforms to requirements.
3. For balanced couplings, note any match markings, which must be aligned when the coupling is installed.
4. Fit the appropriate hubs to the driver and driven shafts ensuring that the shaft ends are flush with the flange faces of the hubs. For interference fits the hubs can be heated up to 180°C in oil bath or oven. (Avoid spot heating and do not exceed the recommended temperature).
5. Check the shafts (hubs) misalignments and DBSE (distance between shaft ends) are within the allowable limits. (See tables on the following pages).
6. **For D-Type couplings:-**
   a. Assemble the centre section of the coupling (spacer and element assemblies).
   b. Tighten coupling bolts and nuts using the correct procedure.
7. **For DJ-Type couplings:-**
   a. The transmission unit (TU) should be factory assembled and need not be disturbed.
   b. Undo the installation screws and measure the length in 'free state', which should be the same as the measured distance between the flange faces of the hubs.
   c. Re-install the installation screws and compress each element assembly to the following figures by tightening the screws to enable the unit to be inserted between the hubs.

Coupling Size	Element Gap	Free State Compressed
DJ62	6.5	4.7
DJ102	9.6	7.6
DJ122	10.7	8.7
DJ142	12.2	9.7
DJ162	16.4	13.9
DJ192	19.7	16.7
DJ232	18.6	15.6
DJ272	20.5	17.5
DJ312	23.2	19.7

Coupling Size	Element Gap	Free State Compressed
DJ82	7.1	5.3
DJ103	10.7	8.7
DJ123	12.2	10.2
DJ143	14.5	12.0
DJ163	19.1	16.6
DJ193	23.1	20.1
DJ233	22.8	19.8
DJ273	25.4	22.4
DJ313	28.2	24.7

   d. Position the TU between the hubs ensuring all the relevant match marks and attachment screw holes are aligned. The unit should be supported to ensure that the weight is not imposed on the joint during assembly.
   e. Insert attachment screws in position and release the installation screws carefully and evenly, making sure that the pilots and recesses are properly seated. ***Note: do not torque tighten the attachment screws before removing the installation screws.*** Store the tooling for future use.
   f. Torque tighten the attachment screws using the correct procedure.
8. Inspect the installed coupling to ensure that all the fasteners are fully tightened and all the components are free from damage or deformities before starting the machines. Slight bowing or 'S' like distortion of the laminations is not detrimental to the operation of the unit.

Maintenance

On the whole, Bibby Turboflex couplings do not require any maintenance. However, it is recommended that the following checks be carried out annually.

1. Axial and parallel misalignment to ensure that these are still within the acceptable limits of the coupling and that no major machinery movement has occurred.
2. All bolts, nuts and screws to ensure they are still correctly tightened.
3. Flexible elements, by visual inspection, for signs of fatigue cracking local to the washer anchor points, or general signs of fretting corrosion. Slight bowing or 'S' like distortion of the laminations is not detrimental to the operation of the unit.

Balanced couplings

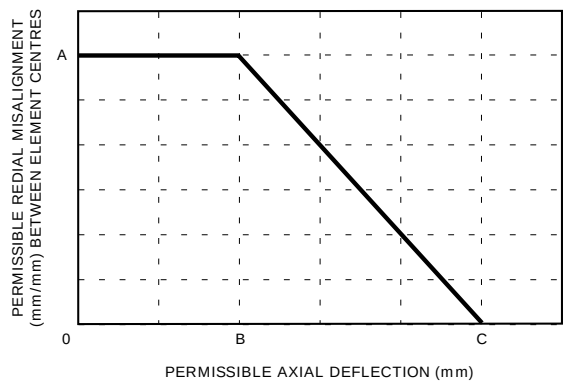
The fasteners supplied with the balanced couplings are matched sets and must not be mixed or substituted. Balanced couplings are match marked (normally on major flanges) and must be assembled with mating match marks aligned. **When refurbishing the fasteners of a balanced coupling, the whole set must be replaced by balance-weighed parts.**

As an aid to on-site balancing (a procedure which is always recommended), tapped holes are provided in the hub flanges for the addition of balance weights.

Installation and operating misalignment limits

The following curve shows the general allowable running misalignment limits, which should be read in conjunction with the specific details for the relevant couplings shown in the table opposite. Point 'A' is the maximum permissible radial misalignment of the coupling at *zero* axial deflection and Point 'C' represents the maximum allowable axial displacement value when *no* radial misalignment exists.

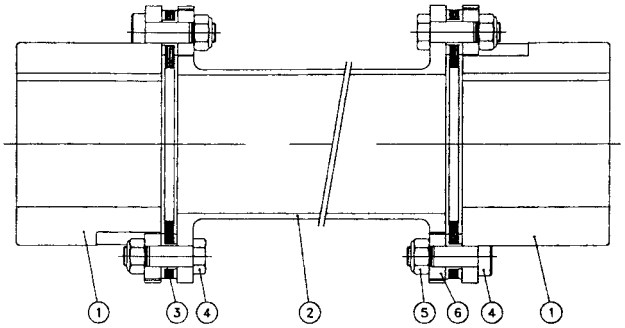
ANGULAR MISALIGNMENT vs AXIAL DEFLECTION



The coupling shall operate within this envelope (below the allowable misalignment curve) and, provided these limits are not exceeded at any time, the coupling should enjoy a trouble free life.

Type D

Double Element Couplings with Spacers



COMPONENT PARTS

1. *HUBS*
2. *SPACER*
3. *ELEMENT ASSEMBLY*
4. *COUPLING BOLTS*
5. *NUTS*
6. *OVERLOAD WASHERS*

Initial Installation Allowances

Size	Tightening Torques[1] Nm	Axial Tolerance (mm)	Radial/Parallel Tolerance[2] (mm/mm)	Size	Tightening Torques[1] Nm	Axial Tolerance (mm)	Radial/Parallel Tolerance[2] (mm/mm)
D52	4	±0.4	0.004				
D62	7	±0.3	0.003	D82	7	±0.3	0.003
D102	18	±0.3	0.003	D103	25	±0.3	0.003
D122	35	±0.3	0.003	D123	50	±0.3	0.003
D142	60	±0.3	0.003	D143	95	±0.3	0.003
D162	95	±0.3	0.003	D163	150	±0.3	0.003
D192	210	±0.3	0.003	D193	320	±0.3	0.003
D232	400	±0.3	0.003	D233	630	±0.3	0.003
D272	510	±0.3	0.003	D273	760	±0.3	0.003
D312	750	±0.3	0.002	D313	1150	±0.3	0.002

1. *Tightening Torques figures are for the coupling bolts, Components (4), lubricated with molybdenum disulphide grease.*
2. *The given figures are for element to element centres. To achieve the allowable figure, multiply the given tolerance with the coupling DBFF (distance between flange faces).*

Maximum Operating Allowances
(see graph opposite)

Size	Speed (max) rpm	A (mm/mm)	B (mm)	C (mm)	Size	Speed (max) rpm	A (mm/mm)	B (mm)	C (mm)
D52	19000	0.017	0.5	1.8					
D62	14500	0.012	0.3	1.5	D82	12000	0.012	0.7	2.2
D102	12000	0.012	0.9	2.8	D103	12000	0.012	0.9	2.8
D122	10000	0.012	1.3	3.5	D123	10000	0.012	1.3	3.5
D142	8600	0.012	1.6	4.2	D143	8600	0.012	1.6	4.2
D162	7500	0.012	1.9	5.0	D163	7500	0.012	1.9	5.0
D192	6000	0.012	2.0	5.5	D193	6000	0.012	2.0	5.5
D232	5000	0.012	2.2	6.5	D233	5000	0.012	2.2	6.5
D272	4200	0.012	3.0	8.0	D273	4200	0.012	3.0	8.0
D312	3600	0.0085	2.0	6.2	D313	3600	0.0085	2.0	6.2

Type DCC

Double Element Couplings with Spacers

Bibby Turboflex 'DCC' type couplings are as 'D' type couplings except that they have one hub reversed. The technical details remain the same.

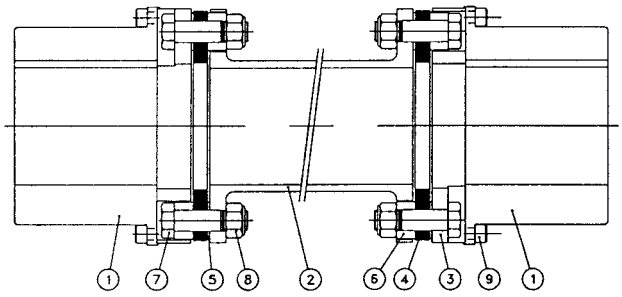
Type DCT

Double Element Couplings with Spacers

Bibby Turboflex 'DCT' type couplings are as 'D' type couplings except that they employ a fabricated spacer. The technical details remain the same.

Type DJ

Double Element 'Plug-In' Couplings



COMPONENT PARTS

1. HUBS
2. SPACER
3. ADAPTOR
4. ELEMENT BLADES
5. ELEMENT WASHERS
6. OVERLOAD WASHERS
7. COUPLING BOLTS
8. NUTS
9. ATTACHMENT SCREWS

Initial Installation Allowances

Size	Tightening Torques[1] Nm	Axial Tolerance (mm)	Radial/Parallel Tolerance[2] (mm/mm)	Size	Tightening Torques[1] Nm	Axial Tolerance (mm)	Radial/Parallel Tolerance[2] (mm/mm)
DJ62	3.5	±0.3	0.002	DJ82	7	±0.3	0.002
DJ102	12	±0.3	0.002	DJ103	12	±0.3	0.002
DJ122	30	±0.3	0.002	DJ123	30	±0.3	0.002
DJ142	30	±0.3	0.002	DJ143	30	±0.3	0.002
DJ162	60	±0.3	0.002	DJ163	60	±0.3	0.002
DJ192	100	±0.3	0.002	DJ193	100	±0.3	0.002
DJ232	160	±0.3	0.002	DJ233	160	±0.3	0.002
DJ272	250	±0.3	0.002	DJ273	250	±0.3	0.002
DJ312	340	±0.3	0.002	DJ313	340	±0.3	0.002

1. Tightening Torques figures are for the Attachment screws, Components (9), lubricated with molybdenum disulphide grease.
2. The given figures are for element to element centres. To achieve the allowable figure, multiply the given tolerance with the coupling DBFF (distance between flange faces).

In the case of plug-in type 'DJ' units, locations between the hubs and adaptors are by registers. To install or remove, the central section of the coupling must be compressed sufficiently to clear the length of the register.

The 'DJ' coupling will be supplied with the installation screws (not shown) to 'crush' or 'compress' the flexible elements sufficiently for this purpose. **These screws must be removed completely before the operation of the unit.**

Coupling Bolts (Component No.7) will already have been correctly tightened and under no circumstances should the assembly be broken down or disturbed in any way.

Maximum Operating Allowances
(see graph on previous page)

Size	Speed (max) rpm	A (mm/mm)	B (mm)	C (mm)	Size	Speed (max) rpm	A (mm/mm)	B (mm)	C (mm)
DJ62	14500	0.012	0.3	1.5	DJ82	12000	0.012	0.7	2.2
DJ102	12000	0.012	0.8	2.7	DJ103	12000	0.012	0.8	2.7
DJ122	10000	0.012	1.3	3.5	DJ123	10000	0.012	1.3	3.5
DJ142	8500	0.012	1.6	4.0	DJ143	8500	0.012	1.6	4.0
DJ162	7500	0.012	1.9	5.0	DJ163	7500	0.012	1.9	5.0
DJ192	6000	0.012	2.0	5.5	DJ193	6000	0.012	2.0	5.5
DJ232	5000	0.012	2.2	6.5	DJ233	5000	0.012	2.2	6.5
DJ272	4000	0.012	3.0	8.0	DJ273	4000	0.012	3.0	8.0
DJ312	3600	0.0085	2.0	6.2	DJ313	3600	0.0085	2.0	6.2

Transmission Units (TU's) are supplied as complete assemblies (part 2 to 9 inclusively), and are fitted between hubs that are already mounted on to shafts which are aligned correctly. Should this not be the case, reference should be to other relevant sections of this document. The technical details remain the same as 'DJ's'.

Type DJ-CT

Double Element 'Plug-In' Couplings

Bibby Turboflex 'DJ-CT' type couplings are as 'DJ' type couplings except that they employ a fabricated spacer. The technical details remain the same.

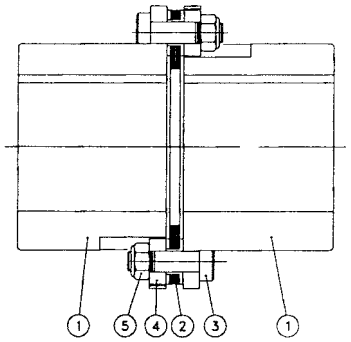
Type DJ-CFT

Double Element 'Plug-In' Couplings

Bibby Turboflex 'DJ-CFT' type couplings are as 'DJ' type couplings except that they employ a Carbon Fibre spacer. The technical details remain the same. Extra care should be taken when handling Carbon Fibre spacers to avoid knocks etc.

Type DS

Single Element Couplings



COMPONENT PARTS

1. HUBS
2. ELEMENT ASSEMBLY
3. COUPLING BOLTS
4. OVERLOAD WASHERS
5. NUTS

Initial Installation Allowances

Size	Tightening Torques[1] Nm	Axial Tolerance (mm)	Angular Tolerance[2]	Size	Tightening Torques[1] Nm	Axial Tolerance (mm)	Radial Tolerance[2]
DS52	4	±0.4	0.25°				
DS62	7	±0.3	0.20°	DS82	7	±0.3	0.20°
DS102	18	±0.3	0.20°	DS103	25	±0.3	0.20°
DS122	35	±0.3	0.20°	DS123	50	±0.3	0.20°
DS142	60	±0.3	0.20°	DS143	95	±0.3	0.20°
DS162	95	±0.3	0.20°	DS163	150	±0.3	0.20°
DS192	210	±0.3	0.20°	DS193	320	±0.3	0.20°
DS232	400	±0.3	0.20°	DS233	630	±0.3	0.20°
DS272	510	±0.3	0.20°	DS273	760	±0.3	0.20°
DS312	750	±0.3	0.15°	DS313	1150	±0.3	0.15°

1. Tightening Torques figures are for the nuts, Components (5), lubricated with molybdenum disulphide grease.
2. 'DS' type couplings will not accept parallel offset.

Maximum Operating Allowances
(see graph on previous page)

Size	Speed (max) rpm	A degrees	B (mm)	C (mm)	Size	Speed (max) rpm	A degrees	B (mm)	C (mm)
DS52	19000	1.00	0.2	0.9					
DS62	14500	0.75	0.1	0.8	DS82	12000	0.75	0.3	1.1
DS102	12000	0.75	0.4	1.4	DS103	12000	0.75	0.4	1.4
DS122	10000	0.75	0.6	1.7	DS123	10000	0.75	0.6	1.7
DS142	8600	0.75	0.8	2.1	DS143	8600	0.75	0.8	2.1
DS162	7500	0.75	0.9	2.5	DS163	7500	0.75	0.9	2.5
DS192	6000	0.75	1.0	2.6	DS193	6000	0.75	1.0	2.6
DS232	5000	0.75	1.1	3.2	DS233	5000	0.75	1.1	3.2
DS272	4200	0.75	1.5	4.0	DS273	4200	0.75	1.5	4.0
DS312	3600	0.50	1.0	3.1	DS313	3600	0.50	1.0	3.1

BIBBY ECL COUPLING GREASE – HIGH PERFORMANCE

BIBBY ECL Coupling Grease is formulated to avoid the oil separation that most greases experience at high centrifugal speeds as found in couplings. Due to its extra adhesive qualities **BIBBY ECL Coupling Grease** remains on the coupling teeth, thus preventing wear even under high speed and high load conditions.

Application

BIBBY ECL Coupling Grease is an NLGI '1' grade lithium grease containing a special high viscosity base oil. Its superior resistance to oil separation makes it suitable for all types of flexible couplings as defined by AGMA **Coupling Grease** specifications CG1, CG2 and CG3. Common grease lubricated couplings include:

- Geared couplings that have internal and external spur gears (teeth) that mesh within a common rotating hub connecting the hubs.
- Steel Grid resilient couplings, which have a convoluted band of flexible spring steel that physically links the hubs together.
- Flexible chain couplings that have a roller chain that meshes with a sprocket machined in each hub.

Benefits

Resistance to centrifugal separation – extends relubrication frequency.

High load carrying capacity – resistance to water washing.

Stays in place at high speeds – provides corrosion and rust protection.

Minimises coupling wear – reduces downtime and maintenance costs.

Usable at temperatures up to 162°C – one grease for all coupling types.

Typical Data

Appearance		Dark brown / tacky
Lithium soap/polymer, wt%		10%
Penetration	worked	350
	worked, 10,000 strokes	+10
Dropping point, °C		180
Oil: kinematic viscosity	mm^2 at 40°C	918
	mm^2 at 100°C	32.5
Four ball wear, mm		0.38
Load wear index, kgf		68
Timken OK Load, lbs.		40+
Centrifugal oil separation, vol. %		nil
Water spray-off, wt %		less than 3%
Rust protection		pass
Guide to usable temperature continuous service °C max		120
	short exposure °C max	162
	minimum °C min	0

Caution

- Do not use **BIBBY ECL Coupling Grease** for low speed applications where an NLGI 0 General Purpose Grease would normally be specified. (Generally below 180 m/min at the pitch diameter of the gear teeth).
- Do not use **BIBBY ECL Coupling Grease** in a coupling that is operating in the **Food Processing Industry** or for the lubrication of **Bearings.**

Health and Safety

BIBBY ECL Coupling Grease, which is manufactured for Bibby Transmissions Ltd by Texaco Lubricants Company, has been formulated to the highest safety standards and is unlikely to present any significant health and safety hazards when used properly in the recommended application and when good standards of industrial and personal hygiene are maintained. However, should eye contact occur, flush for a minimum of 15 minutes with clean water. A comprehensive Materials Safety Data Sheet is available on request and is supplied as a matter of course to purchasers of this product.

BIBBY RESILIENT AND GEAR COUPLING LUBRICATION

GENERAL PURPOSE LUBRICANTS

There are numerous mineral oil based multi-purpose lithium soap extreme pressure greases available from various lubricant manufacturers, which have proved satisfactory for many industrial applications. The user is therefore advised to ensure that the lubricant properties comply with the following minimum requirements:

Timken OK Load > 18Kg

Base oil viscosity 150 Cst at 40°C

Dropping point > 150°C

Temperature range -10°C to +110°C

Additives – extreme pressure with rust and oxidation inhibitors that do not corrode steel or swell or deteriorate nitrile seals

Product specific requirements are as follows:

LUBRICANT CONSISTENCY

Gear Couplings

NGLI '1' for speeds greater than 180m/minute at the diameter over the teeth.

NGLI '0' or '00' for speeds below 180m/minute for increased penetration at low speeds when centrifugal forces are minimal.

Resilient Couplings

NGLI '2' for catalogue speed range.

It is important to realise that the above lubricant specification was originally developed for bearing applications and therefore has lower base oil viscosity and higher bleed rates than are desirable for the unique conditions of high centrifugal forces and sliding contact that exist within a flexible coupling.