GP & GR Series Flexible Disc Couplings

Installation Instructions

P-5026-TBW

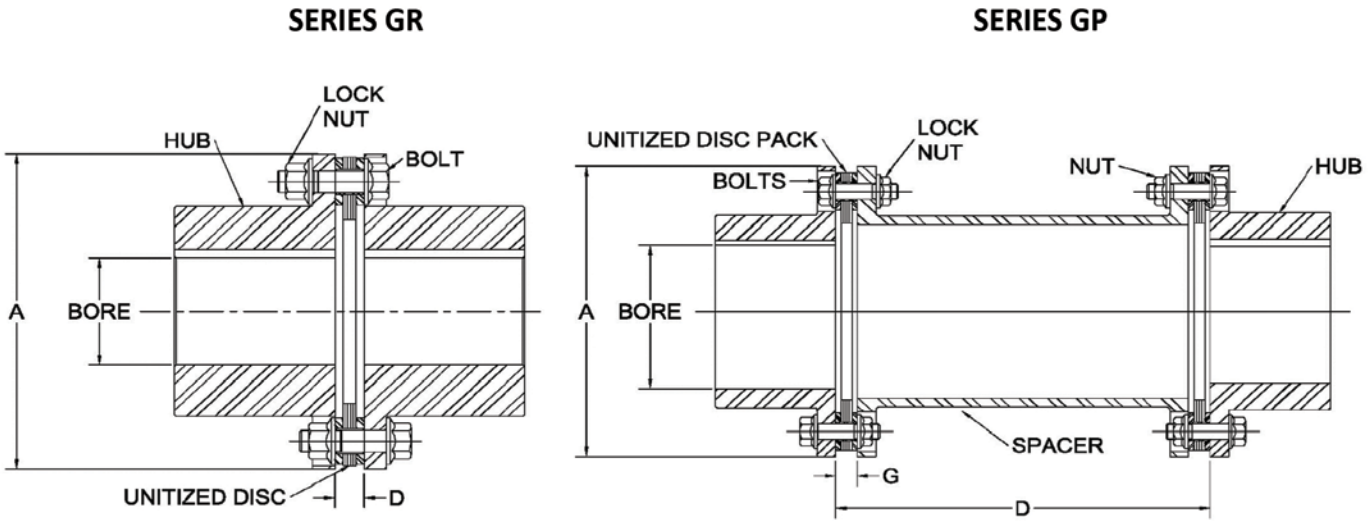

Fig. 1: Coupling Nomenclature

A) Unitized disc packs are designed for a specific thickness. Blades may not be added or removed.

⚠ **WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov**

Assembly & Alignment

1. Clean and inspect hub bore(s) and shaft ends. Remove any nicks or burrs with a stone. For tapered shafts, check contact with machinists' bluing. For straight shafts, measure shaft and bore diameters to confirm proper fit.
2. Fit key(s) to hub and shaft if applicable. Installed keys must fit snugly on the sides and have a small clearance over the top.
3. Arrange an axial stop bar or collar to stop the hub at the desired position.
4. Heat hub uniformly to required temperature to allow installation on shaft. Use of open flame is not recommended, to avoid localized overheating and damage to hubs. If a torch must be used, use a large rosebud tip and be careful to maintain even heat distribution. See graph on page 4.

   CAUTION: Do not exceed 550º F. to avoid damage to hub.
5. Quickly slide the expanded hub into position against the prearranged axial stop, and allow to cool.
6. Move the equipment into place, axially set shafts to their desired thrust positions and/or motor rotors to magnetic center.
7. The distance 'D' between shaft ends and/or flange faces, see Fig 1, should match the target dimension within +/- 25% of the coupling's axial capacity as given in Table 1. Generally speaking the axial error at installation should not be visible to the naked eye - see Fig. 2. Reference the coupling drawing for configurations not similar to Fig 1.
8. Bring the spacer into position. Throughout the installation process, keep the spacer supported until both disc packs are in place and all bolts and nuts are at least snug fit. Letting the unsupported end of the spacer sag may overstrain and damage the disc pack.
9. Install disc packs, bolts, and nuts at each end of the coupling. See Fig 1 for proper bolt and washer orientation. Coat all bolt threads and nut faces as specified in Table 2 and tighten all to a light snug fit only. Read the following sections before tightening bolts.

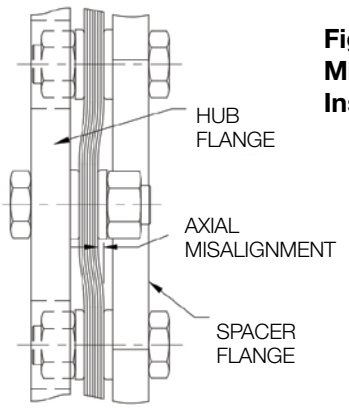

Fig. 2: Excessive Axial Misalignment at Installation

Table 1 - Dimensions & Capacities

Coupling Size		'A' Dia. (Inches)	'D' for GR 'G' for GP Gap (Inches)	Coupling Axial Capacity (Inches)	Installation Misalignment Limit (Inches T.I.R.)
GP & GR	Legacy Designation				
311	BP38U	5.88	.40	± 0.028	.005
321	BH41U	6.38	.55	± 0.029	.006
332	BH47U	7.20	.61	± 0.030	.007
346	BH54U	8.20	.62	± 0.050	.008
380	N/A	9.36	.89	± 0.080	.014
412	GC120	11.00	.75	± 0.080	.009
419	GC190	12.50	.98	± 0.100	.008
424	GC240	15.00	.98	± 0.100	.013
444	N/A	16.38	1.09	± 0.110	.012
456	GC560	18.00	1.32	± 0.120	.016
483	N/A	19.44	1.39	± 0.130	.014
511	GC1100	22.00	1.56	± 0.140	.019
520	GC2000	24.88	1.89	±0.180	.022
525	GC2500	26.75	1.95	±0.200	.022
530	GC3000	28.00	2.14	±0.200	.024
540	N/A	33.50	2.58	±0.240	.024

10. To improve the coupling installation and performance, it is recommended, If possible at this stage, to rotate the assembly a few times while repeatedly rapping the spacer flange OD with a soft dead blow hammer to relieve any binding in the disc packs.
11. The average gap dimension 'G' ('D' for GR Series) as shown in Fig 1, at each disc pack, should be within the value given in Table 1 +/-12.5% of the coupling's axial capacity.
12. Regardless of how misalignment is measured, either by a dial indicator, laser, or any other method, it should be measured from flange face to opposing flange face across a single disc pack.
13. Rotate the assembly through 360° to determine the max face Total Indicator Runnout (T.I.R.). The readings should not exceed the Installation Misalignment Limits given in Table 1 which are recommended setup limits that are less than the max coupling alignment ratings.
14. Repeat the process on the other end of the coupling.

A Word About Bolt Tightening

Proper bolt tightening is crucial to obtain the pre-loads needed for proper coupling performance.

a) Lubricate threads and nut faces as specified in Table 2 before assembly.
b) In general, rotating the nut while holding the bolt is preferred but in some cases the reverse may be necessary.
c) If space constraints limit the use of a standard socket on a torque wrench, a "crow's foot" extension can be used (a box end type is preferred and remember to adjust the torque setting as appropriate).
d) Methods of obtaining proper bolt preload, listed in order of accuracy:
   - Measure actual bolt stretch (when clearance permits using a micrometer, Table 2 lists the target stretch in inches).
   - Use Supernuts (see page 4).
   - Torque wrench (see Table 2 for required wrench sizes).
   - Turn of the Nut
e) Bolt and nut orientation is typically not critical and these items can be installed in whatever direction makes coupling assembly easiest.

15. Tighten all bolts and nuts to ~15% of the required torque value given in Table 2.
16. If possible, repeat step 10.
17. Tighten all bolts and nuts to 100% of the required torque value given in Table 2.

Maintenance

1. A common problem experienced with disc coupling installations is the presence of what is called "oil canning". This is a condition where the discs of the pack, for whatever reason, have slipped, buckled, or become distorted from their "neutral" position and are captured in that state by the bolt clamp load. The condition causes the coupling hubs to push or pull on the connected equipment and/or it may cause the spacer to toggle axially in one direction or another but not rest in a position equidistant from the two hubs. To correct this, the first thing to try is to loosen the bolts of the disc pack and retighten per the preceding process starting at step 13. If that doesn't work, then there may be axial alignment issues. Repeat the setup process starting at step 6.

Table 2 - Disc Bolt Tightening Data

Coupling Size		Bolt Thread Size (Inches)	Socket Wrench Size (Inches)	Bolt Stretch (Inches)	Nut Tightening Torque (ft-lb)	Lubrication
GP & GR	Legacy Designation					
311	BP38U	5/16-24	1/2	0.002	22	Lightly Oiled
321	BH41U	7/16-20	5/8	0.003	55	
332	BH47U	9/16-18	13/16	0.007	120	
346	BH54U	9/16-18	13/16		120	
380	N/A	3/4-16	1 1/8	0.007	288	Commercially Available Anti-Seize
412	GC120	3/4-16	1 1/4	0.005	250	
419	GC190	1-14	1 5/8	0.006	450	
424	GC240	1-14	1 5/8	0.006	450	
444	N/A	1 1/8-12	1 13/16	0.008	650	
456	GC560	1 1/4-12	2	0.009	830	
483	N/A	1 3/8-12	2 3/16	0.010	1,000	
511	GC1100	1 1/2-12	2 3/8	0.012	1,400	
520	GC2000	1 7/8-12	3	0.017	See Table 3	
525	GC2500	2-12	3 1/4	0.018	See Table 3	
530	GC3000	2 1/8-12	3 3/8	0.019	See Table 3	
540	N/A	2 1/4-12	3 3/4		See Table 3	

2. Periodic inspection of the coupling, including bolt and nut connection torques, is recommended. An inspection frequency cannot be recommended here as it will depend upon the individual circumstances of each application and must be determined by the end user based on observation and consideration of the operating conditions.

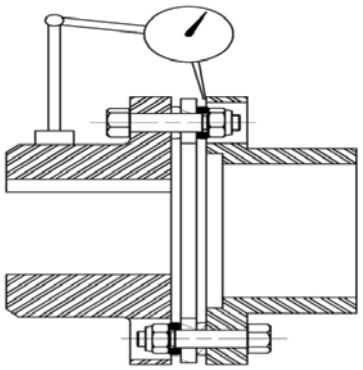

Fig 3: Dial Indicator Mounting for Face Readings

Table 3: Superbolt Torquenut Tightening
Superbolt Torquenuts are an available option which greatly eases the task of obtaining proper preload in large fasteners. They must be installed with the included hardened washer, and the jackbolts MUST be properly lubricated on their threads and tips using their special grease. Values shown apply when using standard Superbolt® "JL-G" grease.

Disc Bolt Thread Size	"CY" Series Superbolt Torquenut Jackbolts		
	Thread Size	Wrench Size (Inches)	Tightening Torque (ft-lb)
1 7/8 –12	1/2	7/16	108
2-12			124
2 1/8 –12	5/16	9/16	141
2 1/4—12			196

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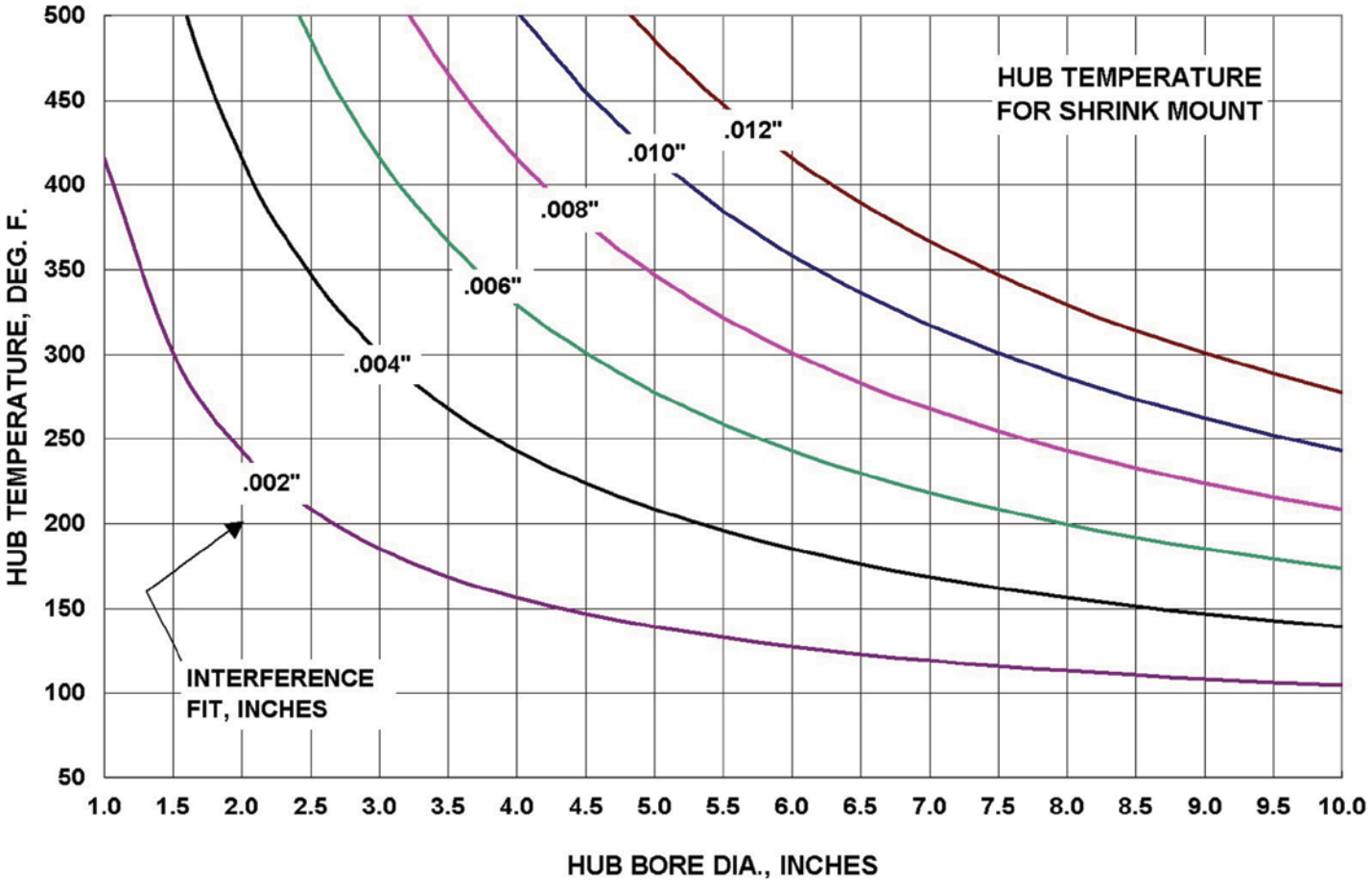
Hub Shrink Fit Temperatures

DATA SUPPLIED IS FOR REFERENCE ONLY! Installer must ensure that proper procedures and values are used.

Graph assumes steel hub material and 70º F. ambient temperature, and includes a 10% safety margin. For example, for 6" bore and .008" interference, heating the hub from 70º to 300º will expand the hub by .0088". DO NOT EXCEED 550º F.

Verify hub bores as specified on the assembly drawing to avoid overstressing the hub.



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