

Form Flex BPU

Installation & Maintenance Manual

P-5072-TBW
Form 1354



⚠ WARNING: Rotating equipment must be properly guarded. It is the responsibility of the user to properly guard all rotating equipment to comply with OSHA or any applicable regulations. Failure to properly guard may contribute to severe injury should someone come in contact with the rotating parts or should the rotating part fail.

⚠ WARNING: DO NOT use TB Wood's products on any primary aircraft drive or any other drive which could endanger human life should a drive component fail.

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

Proper care with installation and alignment of couplings and equipment will permit a coupling to operate to full capacity, compensate for angular misalignment, and provide long service life.

Shafts may become misaligned as a result of many natural and unavoidable causes. Heat, vibration, bearing wear, settling of foundations, etc., all tend to alter initial alignment. To ensure long life, recheck alignment after a short period of actual equipment running time.

Flexible couplings are intended to accommodate misalignment between connected equipment while minimizing loads that affect bearing and seal life and overall performance of that equipment. All couplings exert reaction forces on the connected equipment when they are misaligned. While these forces are small, they can be minimized by holding the alignment TIR at or near zero. If significant thermal growth or other movements can be measured under operating conditions, we recommend that the coupling alignment be done so that these growths move the equipment toward a zero operating misalignment.

ITEM	DESCRIPTION	QTY.
1	FLANGE LOCKNUT	12
2	FLANGE HD BOLT	12
3	UNITIZED FLEX DISC	2
4	SET SCREW	4
5	KEY (NOT INCLUDED)	1
6	SPACER	1
7	HUB	2

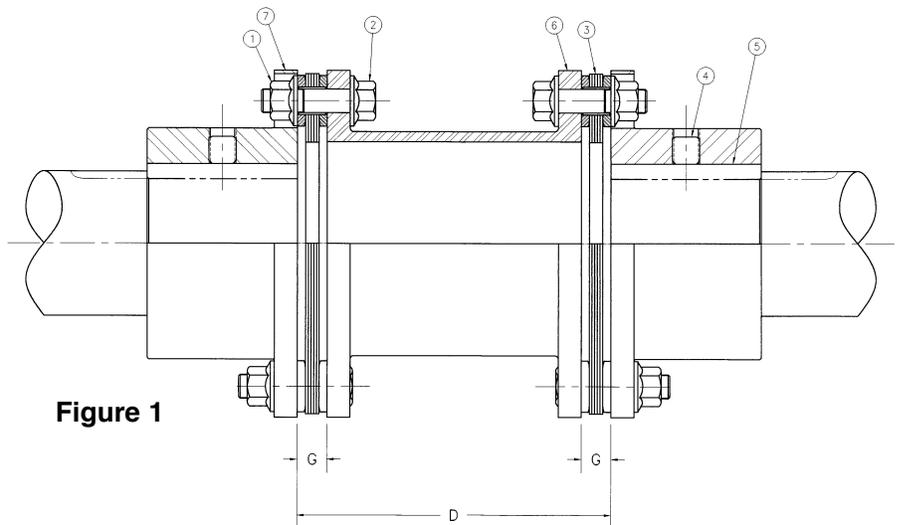


Figure 1

INSTALLATION

Preparation

Check that the coupling bores and the shaft separation are correct. Inspect the shafts and hubs making sure they are clean and free from burrs. If the bore is straight, measure the bore and shaft to ensure a proper fit. Check for proper fit of the keys to the shafts and hubs. If the bore is tapered, check for a good contact pattern.

Hubs

BPU coupling hubs are normally bored for an interference fit according to ANSI/AGMA 9002-A86, unless otherwise specified.

Straight Bored Hubs

If the hub was specified with a clearance fit and set screws are used, install the coupling hubs so that they are in the correct position and tighten the set screw(s). If the hub is bored for an interference fit, the hub should be heated to expand the bore until it is sufficiently larger than the shaft. A hub temperature of approximately 300° F is sufficient for most interference fits. **DO NOT EXCEED 600° F. DO NOT SPOT HEAT THE HUB AS IT MAY CAUSE DISTORTION.** After the hub has been heated a sufficient amount, quickly position the hub onto the shaft to the desired axial location. Hold the hub in place as it cools.

Taper Bored Hubs

Carefully mount the hub on the shaft without key(s), O-ring and back-up rings (if applicable), and tap lightly with a soft mallet to establish a metal to metal fit. This is the initial position for starting the hub advance. Measure this position, shaft end to hub flange face, with a depth gauge and record this value. Hub draw must be monitored during installation. This may be done using a dial indicator or by use of a shaft stop ring. The method of monitoring the hub draw must be established prior to removing the hub after the initial starting position has been determined. The amount of hub draw is dependent upon the desired interference and taper angle. Heat the hub to expand the bore until it is sufficiently larger than the shaft. **DO NOT EXCEED 600 DEG. F. DO NOT SPOT HEAT THE HUB AS IT MAY CAUSE DISTORTION.** Place the hub on the shaft the required distance to achieve the level of interference desired. Use a dial indicator or shaft stop as a guide only to determine the axial location of the hub. Hold the hub in place as it cools. Check the final results of the hub advance with a depth gauge, and install the shaft-retaining device provided with the shaft to hold the hub in place.

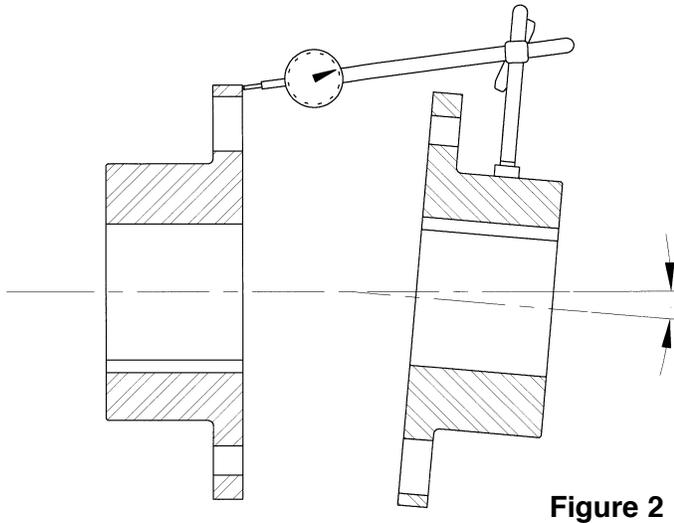


Figure 2

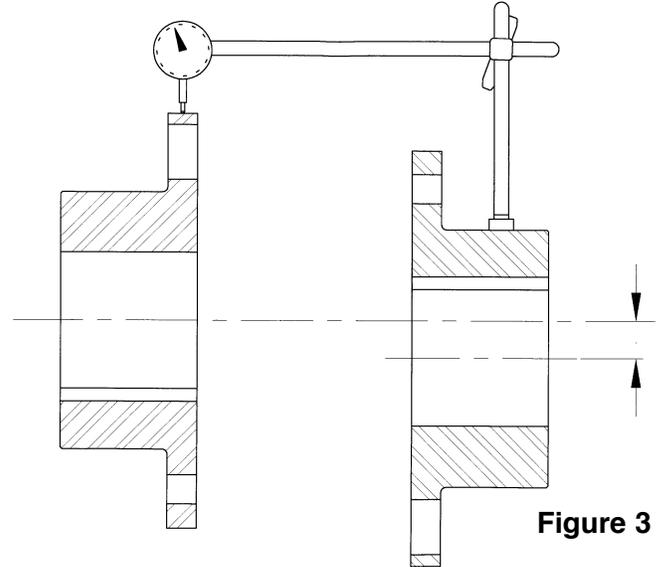


Figure 3

ALIGNMENT

Axial Spacing

The equipment must sit flat on its base. Any soft foot must be corrected now. Bring the equipment into approximate position. Measure the length of the spacer and the thickness of the two unitized flex discs from washer face to washer face to determine the “D” dimension shown in Figure 1. Measure the separation between the hub flanges and adjust the equipment until the axial hub separation equals the sum of the spacer length and the thickness of the two flex discs.

Angular Alignment

Rigidly mount a dial indicator to one of the hubs (or shaft) and place the pointer on the flange face of the opposite hub, as shown in Figure 2. Rotate both shafts at the same time making sure the axial spacing remains constant. Adjust the equipment by shimming and/or moving so that the indicator reading is within 0.001 inch per inch of coupling flange diameter. See Table 1.

Parallel Offset

Rigidly mount a dial indicator to one of the hubs (or shaft) and place the pointer on the flange diameter of the opposite hub, as shown in Figure 3. Compensate for indicator set-up sag. Rotate both shafts at the same time. Adjust the equipment by shimming and/or moving so that the indicator reading is within 0.001 inch per inch of the axial spacing between flex discs. See Table 1.

Coupling Size	Total Indicator Reading (T.I.R.)	
	Angular	Parallel
BP38U	0.005	0.001 Inch per Inch of “D” dim.
BP41U	0.006	
BP47U	0.007	
BP54U	0.008	
BP56U	0.009	

Table 1

After securely tightening the foundation bolts, the hub separation and alignment should be re-checked and adjusted if necessary.

NOTE: If the driver or driven equipment alignment specification calls for closer tolerances than these recommendations, then those manufacturer’s specifications should be used. In addition verify any thermal growth, which may occur during normal equipment operation, and compensate for differences.

ASSEMBLY

With the hubs mounted and the axial spacing set, proceed to place the spacer between the two hub flanges. Care should be taken when handling the spacer. Be sure the spacer is fully supported at this time. **Damage to the unitized flex discs may result after they have been installed if the spacer is not fully supported.**

Once the spacer is in place between the two hubs, rotate the hub or spacer so that the bolt holes in the spacer line up with the clearance holes in the hub. Install the unitized flex disc at this time. Start a bolt through a bolt hole in the spacer. Put the unitized flex disc between the hub and spacer until a bushing hole in the unitized flex disc lines up with the bolt. Slide the bolt through the bushing hole in the unitized flex disc. Install the locknut until it is snug. Make sure that all bolt threads are clean and lightly oiled. Do not torque any locknuts at this time. Now pivot the unitized flex disc until the other bushing holes in the flex disc are in line with the bolt holes in the spacer. Install the rest of the spacer bolts at this time. The remaining bolts for this end of the coupling can be installed through the hub bolt holes and flex disc bushing holes.

Install the unitized flex disc in the other end of the coupling using the method as described in paragraph 2. The unitized flex disc as installed should look flat and parallel with the mating hub and spacer flanges. For reference, the flange to flange distance, dimension “G” in Figure 1, for each coupling size can be found in Table 2.

Tighten all of the locknuts evenly and in an alternating fashion to the values shown in Table 2.

Coupling Size	Locknut Size	Tightening Torque (as supplied)		“G”
		FT-LBS	Nm	
BP38U	5/16-24	22	30	.40
BP41U	7/16-20	55	75	.55
BP47U	9/16-18	120	163	.62
BP54U	9/16-18	120	163	.62
BP56U	9/16-18	120	163	.62

Table 2

IMPORTANT: To ensure long life, recheck alignment after a short period (one to two hours) of actual equipment running time. It is recommended that all locknuts be retightened at this time to the values shown in Table 2.

UNITIZED FLEX DISC REPLACEMENT

If it becomes necessary to replace the unitized flex disc, it can be done as follows:

At one end of the coupling remove all of the locknuts. Ensure that the spacer is supported at this time. Back out and remove all but one of the bolts. Pivot the unitized flex disc out. Remove the last bolt and slide the unitized flex disc out supporting the spacer at this end of the coupling.

Disassemble the other end of the coupling per the above paragraph, being sure to support the spacer when taking out the last bolt. Remove the spacer.

Replace parts as necessary. Recheck alignment and reassemble per the previous pages.

Repair Kits

Replacement parts are available from TB Wood's Incorporated through your local distributor.

Coupling Size	Repair Kits
BP38U	B038URKA
BP41U	B041URKA
BP47U	B047URKA
BP54U	B054URKA
BP56U	B056URKA

TB Wood's Facilities

North America

USA

440 North Fifth Avenue
Chambersburg, PA 17201 - USA
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1-888-829-6637 (Press #7)

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San Marcos, TX 78666 - USA
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Canada

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1-800-829-6631

1073 Rue Bégin
Saint-Laurent, QC H4R 1V8 - Canada
+1 514-332-4812

Mexico

Comisión Federal de Electricidad 850,
Industrial San Luis,
San Luis, S.L.P., 78395 - Mexico
+52 444 137 1500

Europe

Merchant Drive, Hertford
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Wichita Clutch
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Gearing & Specialty Components

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Boston Gear
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Delevan
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Delroyd Worm Gear
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www.tbwoods.com

2000 Clovis Barker Road
San Marcos, TX 78666
512-353-4000