Rexnord® Addax® Composite Cooling Tower Coupling

Coupling Tower Coupling Solutions

Rexnord Industries, LLC, pioneered and introduced the first advanced composite couplings to the cooling tower industry in 1987. With over 50,000 Rexnord® Addax® composite couplings installed on every continent around the world over the past 20 years, Rexnord has the most experience of any composite cooling tower manufacturer.

The Rexnord® Addax® Composite Cooling Tower Coupling delivers "Best-In-Class Value" for the cooling tower industry by providing excellent features such as:

- Corrosion resistance
- High misalignment capacity
- Excellent fatigue resistance
- Low Weight
- Ease of installation

Choose a Rexnord® Addax® Composite Coupling as YOUR cooling tower coupling if you are currently using a steel coupling or an alternative composite coupling.

Service & Support

Rexnord is the largest coupling manufacturer in the world and has the most comprehensive global sales and customer service team in the industry. Rexnord associates are experts in cooling tower coupling applications and are available to assist you 24/7 if an emergency arises.

Lead Time

Virtually every cooling tower coupling installation has unique coupling dimension, therefore all Rexnord® Addax coupling assemblies are "made to order" per customer supplied dimensions. Even though each Rexnord® Addax coupling is made to your specifications, Rexnord provides the absolute *BEST standard lead time* in the cooling tower industry — 2 weeks after receipt of order. As an added benefit, Rexnord offers an exclusive emergency expediting option that includes:

- Same Day shipment
- 3-Day shipments
- 5-Day shipments

Quality

Our associates are continually improving our products by applying *Lean Manufacturing and Six Sigma methodology* to add increased value to our products. Upon request, a certificate of material, certificate of balance, and certificate of conformity can be provided for every Rexnord® Addax® coupling.

Price

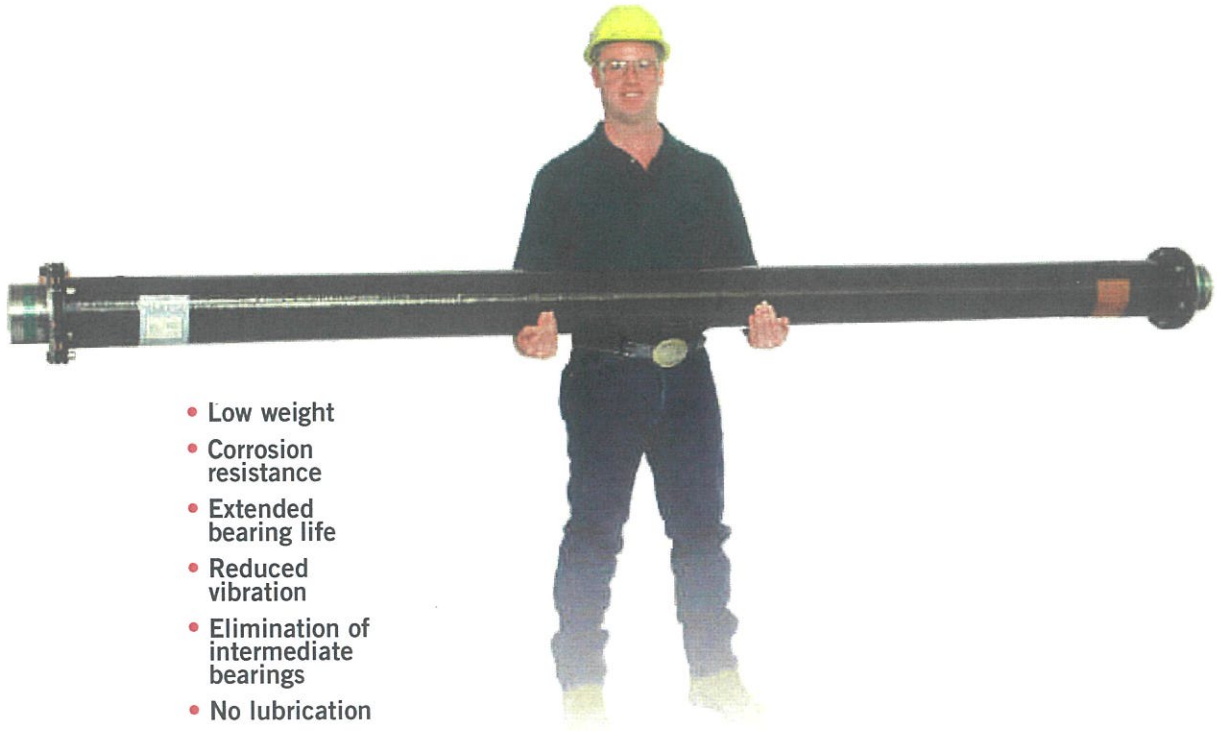
The Rexnord® Addax® Composite Cooling Tower Coupling is the most inexpensive product of its kind, while providing the most comprehensive list of product features and benefits. Combine the price and product features with Rexnord's dedicated associates who provide an unprecedented level of service and support, and you will agree that the Rexnord® Addax® Coupling delivers the *Best* value!

Why choose a Rexnord® Addax® Composite Cooling Tower over the alternatives?

Features, Functions, Benefits of Rexnord® Addax® Cooling Tower Coupling

Features	Functions	Benefits
Low Weight	Reduced Mass Reduce Bearing Loads Reduce Inertia	Simplified Installation Increase Bearing Life Reduce Vibration
Corrosion Resistance	Resist Chemical Attack	Extend Service Life Reduce Maintenance Increase Safety Low Cost of Ownership
Low Coefficient of Thermal Expansion	Dimensional Stability	Reduce Vibration Reduce Stresses Increase Operating Range
Continuous Fiber Composite Spacer Flange	Infinite Fatigue Life	Low Cost of Ownership
Unitized Flex Element	Eliminate Fretting Infinite Fatigue Life Simplified Installation	Low Cost of Ownership Longer Service Life Reduced Maintenance Increased Safety
High Misalignment Capacity	Reduced Equipment Stress Increase Life	Easier Installation Reduced Ownership Costs
High Strength to Weight Ratio	Increase Stiffness Higher Critical Speed	Eliminate Harmonics Eliminate Steady Bearings

Rexnord® Addax® Composite Center Section



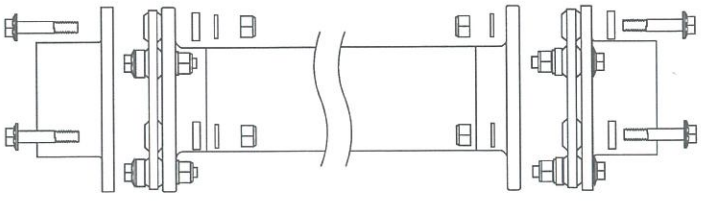
- **Low weight**
- **Corrosion resistance**
- **Extended bearing life**
- **Reduced vibration**
- **Elimination of intermediate bearings**
- **No lubrication**

The advanced composite full floating center section weighs less than 25% of a comparable steel spacer. But don't be fooled by the lighter weight. Rexnord® Addax® advanced composites are heavyweights when it comes to performance, due to their rugged, corrosion-resistant design. With almost twice the critical speed of metals, and up to an 80% reduction in overhung bearing loads, Rexnord® Addax® composite couplings reduce vibration and extend bearing life. Installation is made easier because there is no need for a crane to install most Rexnord® Addax® advanced composite coupling systems. Most cooling tower coupling assemblies weigh less than 100 pounds, so maintenance personnel can easily handle them.

The specific modulus of the composite material is 3.5 to 5 times that of steel alloys. This allows the composite spacers to span almost twice the distance of a comparable metal spacer without the need for intermediate bearings. The lower density and higher specific stiffness of composite materials make it practical to use larger cylinder diameters than would be feasible with steel.

A single length, 20-foot long composite drive shaft from a Rexnord® Addax® coupling may weigh 100 pounds while the steel counterpart would weigh about 500 pounds and be in two sections! Elimination of steady bearings means drastically reduced maintenance requirements, at lower cost of ownership and increased reliability.

Standard corrosion resistance exceeds that of 216ss; or Rexnord® Addax® associates can formulate corrosion resistance for specific conditions. Additional ultra-violet light protection is provided by a carbon black additive.



Rexnord® Addax® Patented Composite Flexible Element

This patented Rexnord® Addax® flexible element was developed to withstand harsh conditions and high-misalignment problems found in cooling towers. This flexible element is a unitized disc constructed of advanced composite material and stainless steel bushings. All flex elements are encapsulated in urethane for ease of handling, appearance, and to prevent fretting and corrosion.

- **High-strength composite**
- **Designed for severe conditions**
- **One-degree misalignment per flexible element**
- **Exceptional service life**
- **No fretting and corrosion effects**

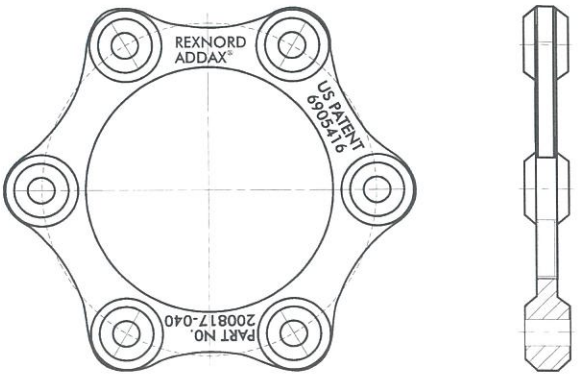
The exceptional physical and mechanical properties of continuous fiber provides high misalignment capacity and long service life.

Rexnord® Addax® flexible elements provide infinite fatigue life and simplified installation.

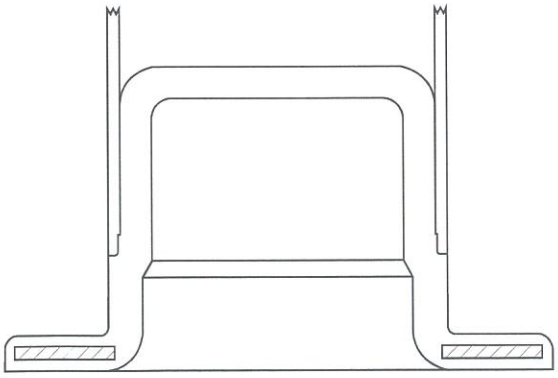
Fretting and stress crack corrosion — the leading contributors to metal disc pack failure — are completely eliminated along with the multitude of parts required for assembly. Maintenance costs are dramatically reduced and installation is greatly simplified. Rexnord® Addax® flexible elements provide years of trouble-free operation, even under the most demanding conditions.

Rexnord® Addax® elements are offered in a number of sizes with different torque ratings. Each torque rating is based on static and dynamic tests to provide an infinite fatigue life at rated torque and misalignment.

The flexible element is the only component of the coupling system that experiences alternating loading in which fatigue becomes a factor. The strength of graphite/epoxy remains well over 100,000 psi through infinite cycles. Therefore, the Rexnord® Addax® flexible element has theoretical infinite fatigue life under rated operating conditions.



Rexnord® Addax® Patented Continuous Fiber Composite Flange



Patent No. 5724715.

The Rexnord® Addax® coupling flange is an integral component of the Rexnord® Addax® coupling. This patented component transfers torque from the flexible element to the long span composite tube. It is a low-mass, all composite structure fabricated from continuous fiber material. There is no metal in it at all. The fiber angle path has been optimized for carrying torque and minimizing stress through the flange. This design offers supreme fatigue strength for cooling tower operation. It also offers extraordinary corrosion resistance in a chlorine rich cooling tower environment.

One of the design features is a high fiber volume composite reinforcing ring (cross hatched area) designed integral into the flange area. This ring provides additional strength and stiffness in the bolt joint area. This strength in the flange provides the highest integrity for the bolt circle attaching and centering the flexible element.

Other manufacturers fabricate this flange from random fiber glass and do not have the fatigue strength of the Addax coupling flange. A random fiber flange does not have the reinforcing ring and is prone to fatigue failure in the grueling cooling tower duty applications. The Rexnord® Addax® coupling flange is continuous fiber and fatigue tested to demonstrate superior strength.

Rexnord® Addax® Coupling Catalog

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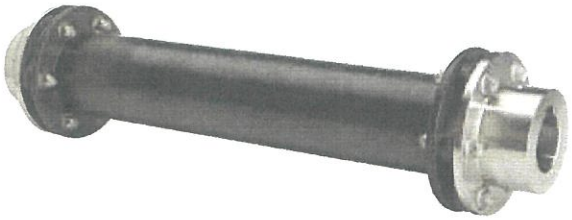
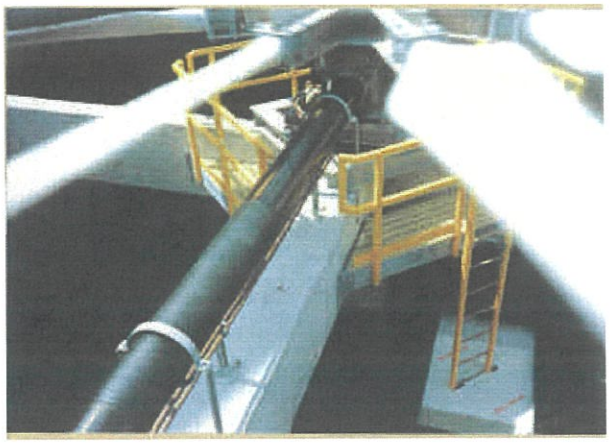


Rexnord® Addax® Coupling

Standard construction consists of a flanged composite spacer, patented composite flexible elements, 316 Stainless Steel hubs and 316 Stainless Steel hardware. K-500 Monel hardware are available upon request to suit corrosive environments.

Standard Balance

All couplings are dynamically balanced to meet ANSI/AGMA 9000-C90 (R96), Class 9 specifications.



WARRANTY

Seller warrants that its products (i) conform to Seller's published specifications, and (ii) are free from defects in material or workmanship for one year from the date of shipment. Specific products may have a warranty period greater than one year. Please refer to the appropriate document and to Seller's website for the specific warranty. If Buyer discovers a failure of any product to conform to these warranties within this period, it must promptly notify Seller in writing. Seller will attempt to repair such non-conforming product at no charge to the Buyer. If Seller in unable to repair the product to conform to these warranties after a reasonable number of attempts, or if Seller determines at any time that repair is impracticable, it will provide, at its own discretion, one of the following: (i) replacement product, or (ii) a full refund of that portion of the purchase price allocable to the non-conforming product. These remedies are the exclusive remedies for breach of warranty.

WHAT IS NOT COVERED BY THIS WARRANTY

No representative of Seller has any authority to waive, alter, vary, or add to the terms hereof of without prior approval in writing, signed by an officer of our company. It is expressly agreed that the entire warranty given to the Purchaser is embodied in this writing. Company does not warrant any defects in, damage to, or failure of products caused by: (i) dynamic vibrations imposed by the drive system in which such products are installed unless the nature of such vibrations has been defined and accepted in writing by Company as a condition of operation, (ii) failure to provide suitable installation environment, (iii) use for purposes other than those for which designed, or other abuse or misuse, (iv) unauthorized attachments, modifications or disassembly, or (v) mishandling during shipping. Buyer's care in selection, adequate testing at time of installation and proper installation, proper operation and maintenance of all Products are required for adequate performance.

DISCLAIMER OF WARRANTY:

THE FORGOING WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL COMPANY BE LIABLE IN TORT OR CONTRACT OR UNDER ANY OTHER LEGAL OR EQUITABLE THEORY OF LAW FOR ANY INCIDENTAL, SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES.

General and Engineering Dimensions★

MODEL SERIES	Spacer & Flange Material *	Max DBSE @ 1780 rpm @ 1.15 SF	Max DBSE @ 1480 rpm @ 1.15 SF	Max Bore Standard	Max Bore Oversized	A	B Standard	B Oversized	C Standard	C Oversized	D	Min DBSE	Min Bore
350.275	F A R	95 / 2413 107 / 2718 114 / 2896	106 / 2692 119 / 3023 126 / 3200	2.13 / 55	2.38 / 65	5.25 133	3.06 / 78	4.00 /102	1.81 / 46	2.6 / 66	2.75 / 70	5.4 137	
375.275	F A R	95 / 2413 107 / 2718 114 / 2896	106 / 2692 119 / 3023 126 / 3200	2.13 / 55	2.38 / 65	5.25 133	3.06 / 78	4.00 /102	1.81 / 46	2.6 / 66	2.75 / 70	5.4 137	
450.275	F A R X	95 / 2413 107 / 2718 114 / 2896 128 / 3251	106 / 2692 119 / 3023 126 / 3200 141 / 3581	2.13 / 55	2.88 / 75	5.25 133	3.15 / 46	4.00 / 102	1.81/ 46	2.63 / 67	2.75 / 70	5.4 137	0.63 16
485.338	F A R	100 / 2540 116 / 2946 127 / 3226	113 / 2870 127 / 3226 140 / 3556								3.38 / 86	8.0 203	
485.425	R X	141 / 3581 154 / 3912	154 / 3912 169 / 4293	2.63 / 70	3.38 / 85	6.00 152	3.72 / 94	4.75 / 121	2.75 / 70	2.75 / 70	4.25 /108	8.0 203	
485.625	R	170 / 4318	189 / 4800								6.25 / 159	9.5 / 241	
650.425	A R X	133 / 3378 141 / 3581 154 / 3912	148 / 3759 154 / 3912 169 / 4293								4.25 / 108	6 152	
650.625	R X	170 / 4318 186 / 4725	189 / 4800 208 / 5283	3.00 / 80	3.88 / 100	6.75 171	5.25 / 133	6.75 / 171	2.56 / 65	2.75 / 70	6.25/160	9.5 241	
650.825	R X	193 / 4902 209 / 5309	215 / 5461 232 / 5893								8.25/210		1.00 25
850.625	A R X	157 / 3988 170 / 4318 186 / 4725	172 / 4369 189 / 4800 208 / 5283								6.25 / 160		
850.825	R X	193 / 4902 209 / 5309	215 / 5461 232 / 5893	4.13 / 105	5.06 / 130	9.0 229	5.8 / 147	7.5 / 191	3.31 / 84.1	3.5 / 89	8.25 / 210	14.2 361	
850.1025	X	229 / 5817	253 / 6426								10.25 / 260		
850.1275	X	245 / 6223	275 / 6985								12.75 / 324		
Units of Measure	US	in	in	in	in	in	in	in	in	in	in	in	in
	SI	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm

MODEL SERIES	Spacer & Flange Material *	Weight @ Min DBSE	WR² @ Min DBSE •	Weight Change per Length	WR² Change per Length •	Continuous Torque @ 1.0 SF	Continuous Torque @ 2.0 SF	Peak Overload Torque
350.275	F A R	13.8 / 6.2	32 / 0.0093	0.07 / 1.5 0.06 / 1.2 0.06 / 1.1	0.13 / 0.0015 0.11 / 0.0013 0.10 / 0.0012	3,617 408	1,808 204	5,425 613
375.275	F A R	13.8 / 6.2	32 / 0.0093	0.07 / 1.5 0.06 / 1.2 0.06 / 1.1	0.13 / 0.0015 0.11 / 0.0013 0.10 / 0.0012	5,311 600	2,660 300	7,967 900
450.275	F A R X	12.9 / 5.9	32 / 0.0092	0.07 / 1.5 0.06 / 1.2 0.06 / 1.1 0.06 / 1.2	0.13 / 0.0015 0.11 / 0.0013 0.10 / 0.0012 0.10 / 0.0012	7,250 820	3,625 410	10,875 1229
485.338	F A R	23.4 / 10.6	47 / 0.014	0.09 / 1.8 0.08 / 1.5 0.07 / 1.4	0.24 / 0.0029 0.21 / 0.0024 0.19 / 0.22			
485.425	R X	24.0 /10.9	74 / .022	0.09 / 1.7 0.09 / 1.8	0.38 / 0.0044 0.39 / 0.0045	11,000 1243	5,500 621	16,500 1864
485.625	R	26.5 /12.0	92 / 0.027	0.13 / 2.6	1.2 / 0.015			
650.425	A R X	31.5 / 14.3	122 / 0.036	0.10 / 1.9 0.089 / 1.7 0.092 / 1.8	0.42 / 0.0049 0.38 / 0.0044 0.39 / 0.005			
650.625	R X	34.4 / 15.6	141 / 0.041	0.13 / 2.6 0.14 / 2.7	1.2 / 0.014 1.3 / 0.015	18,100 2045	9,050 1022	27,150 3067
650.825	R X	37.9 / 17.2	194 / 0.056	0.18 / 3.4 0.18 / 3.6	2.9 / 0.033 3.0 / 0.035			
850.625	A R X	63.6 / 28.8	440 / 0.130	0.15 / 2.9 0.13 / 2.6 0.14 / 2.7	1.4 / 0.016 1.2 / 0.014 1.3 / 0.015			
850.825	R X	68.5 / 31.0	512 / 0.15	0.18 / 3.4 0.18 / 3.6	2.9 / 0.033 3.0 / 0.035	36,200 4090	18,100 2045	54,300 6135
850.1025	X	74.8 / 33.9	657 / 0.19	0.23 / 4.4	5.8 / 0.067			
850.1275	X	78.4 / 35.6	768 / 0.22	0.28 / 5.5	11.3 / 0.13			
Units of Measure	US	lb	lb-in²	lb/in	lb-in²/in	in-lb	in-lb	in-lb
	SI	kg	kg-m²	kg/m	kg-m²/m	Nm	Nm	Nm

★ All dimensional values are subject to change without notice.

* F=Fiberglass; A=Amalgamation; R=Standard Carbon Fiber; X=Special Carbon Fiber.

• The standard weight and WR² values are at minimum DBSE and standard minimum bore for a complete assembly. To determine the total weight or inertia, subtract the minimum DBSE from the total DBSE required and multiply that value times the WT and/or WR² change per length then add that calculated WT or WR² to the minimum DBSE values. Values may vary slightly depending on the actual bore and key size.

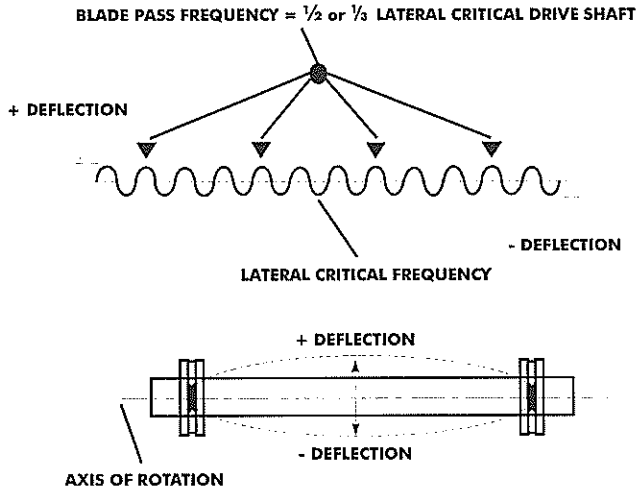
Engineering Data

Drive Shaft Vibration Caused by Blade Pass Frequency (BPF)

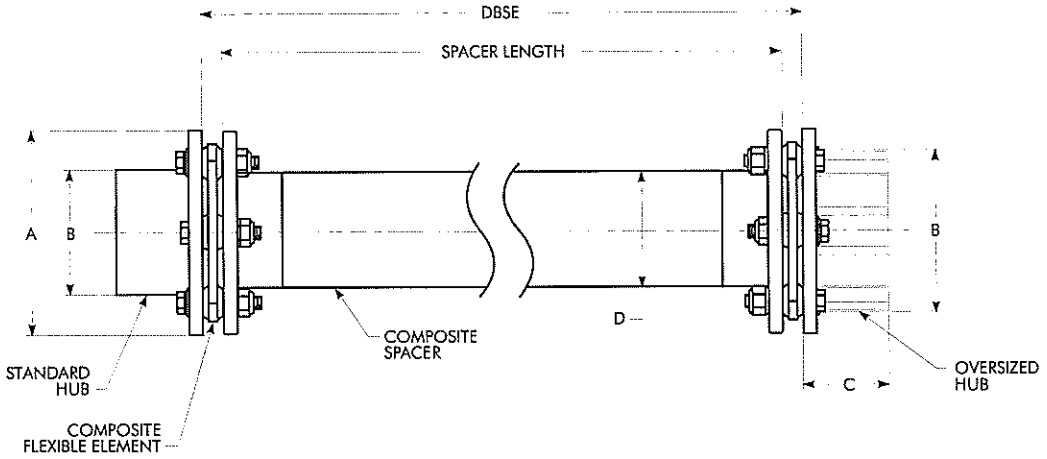
Lateral Natural Frequency (LNF) relates to beam stiffness and mass of the composite coupling. All beams have a natural frequency. The Rexnord® Addax® driveshaft is a long slender beam that has a LNF commonly referred to as critical speed. Critical speed of the shaft is calculated in SelectC 2007 and is supplied to our customers. Blade pass frequency (BPF) is the number of blades multiplied by the fan speed. Fan blades in a cooling tower induce a forcing frequency caused by pressure pulsations on adjacent components including the drive shaft.

Blade pass vibration is caused by pressure pulsations on the drive shaft when the shaft's natural frequency is coincident with the fan blade pass frequency. When the drive shaft is experiencing a blade pass harmonic, sometimes it can be seen bouncing out of plane. This shaft vibration usually manifests itself in the motor and gearbox. Shaft natural frequency and blade pass frequency must be designed 8% away to have assurance there is no overlap. Rexnord® Addax® shafts exhibit minimal vibration contributing to the overall spectrum. Additionally, gear mesh frequency can be heard resonating from the drive shaft, however this is typically at a much higher frequency magnitude than blade pass frequency.

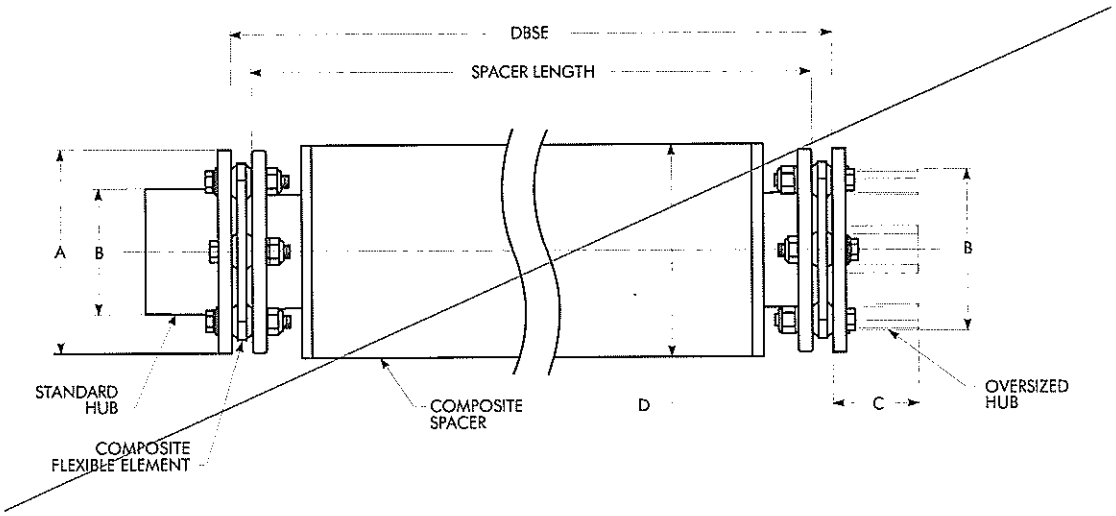
The Cooling Technology Institute (CTI) recommends a 1.3 factor - critical speed over operating speed. The 1.3 factor was established prior to composite shafts when only steel drive shafts were used. Steel shafting is massive, deflects from thermal growth, less predictable and potentially dangerous when approaching critical speed. Composite shafts are less than 1/3 the mass of a steel and dimensionally stable. As composite shafts offer 1/3 less mass the deflection magnitude is significantly less than steel and safe when approaching critical speed. Rigorous testing has proven that a 1.3 margin is not required for composite shafting and a 1.15 margin is adequate. Each Rexnord® Addax® shaft size and material was tested and manufacturing variability accounts for less than ±3% of the variability in the shaft's LNF. It is not recommended to use a 1.15 safety factor when purchasing shafts from other manufacturers because they may have excessive mfg variability. Manufacturing variability of the Rexnord® Addax® shaft accounts for less than ±3% of the variability in the shaft's LNF. These facts demonstrate that a 15% safety margin over operating speed is adequate for safe drive shaft service.



Rexnord® Addax® Composite Couplings

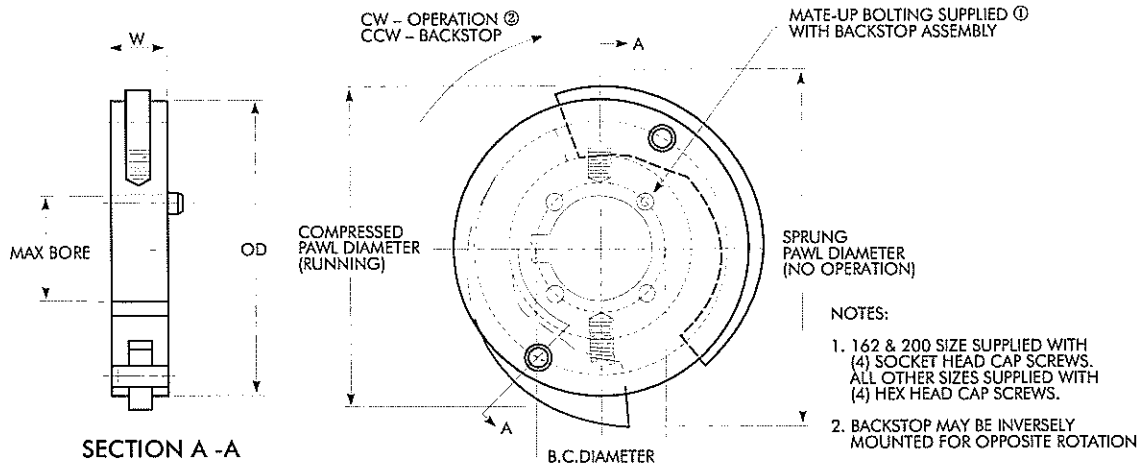


Models: 350.275, 375.275, 450.275, 485.338, 650.425, 850.625



Models: 485.425, 650.625, 650.825, 850.825, 850.1025, 850.1275

Rexnord® Cooling Tower Backstop



Bolt-On Backstop Tabulation

MODEL	Mating Hub Backstop Bolting Information			OD	W (Ref)	Pawl Diameter (Ref)		Compressed Speed (rpm Ref)
	B. C. Diameter	Hole Diameter	Tightening Torque			Compressed	Sprung	
350/375/450	3.500	.3125	40 in-lb	9 1/16	1 1/8	9 3/16	10 9/16	400 rpm Ref
485	4.063	.3125	142 in-lb					
650	4.625	.3750	225 in-lb					
850	4.875	.5000	350 in-lb					

Addax® INSTALLATION INSTRUCTIONS

"ATEX: In order for this coupling to meet the ATEX requirements it is mandatory to follow, to the letter, these installation instructions along with the attached supplement. This supplement outlines the ATEX requirements. If the operator does not adhere to these instructions, conformity is immediately invalidated."

WARNING

- Because of the possible danger to person(s) or property from accidents which may result from improper use or installation of products, it is extremely important to follow the proper selection, installation, maintenance and operational procedures.
- All rotating power transmission products are potentially dangerous and can cause serious injury. They must be properly guarded in compliance with OSHA, A.N.S.I. and any other local standards for the speeds and applications in which they are used. It is the responsibility of the user to provide proper guarding.
- For ATEX requirements, the guard must have a minimum of 1 inch (25mm) radial clearance to the couplings major diameter and be of the open mesh design.

These installation instructions include the following:
350, 375 (four bolt design)
Series 450, 485, 650, 750/850 (six bolt design)

NOTE: An *Addax® Product Drawing* is furnished with the coupling. If this print is not available at the time of installation, please call the factory to obtain a copy before proceeding. If further assistance is required, contact Customer Service at **402-325-6000**.

HANDLING CONSIDERATIONS

1. The Addax® Composite Coupling is very durable and will provide years of service if handled properly. Minor scuffs and surface abrasions on the spacer will not affect the performance of the coupling.
2. Soft spots caused by heavy impact, cuts or gouges are areas of concern. Any time a soft spot is seen; the coupling should be removed from service and replaced.
3. The flexible element should be inspected periodically, or after a high torque or misalignment event. If there are protrusions (bumps) on the surface of the flex element, it should be removed from service.

TOOLS REQUIRED

- Tape measure
- Allen wrenches
- Ratchet with 1/2",9/16", 5/8" and 3/4" sockets
- Combination wrenches of 1/2",9/16", 5/8" and 3/4"
- Torque wrench with up to 80 ft. lb. capacity
- Dial indicator with attaching device or Rexnord alignment tool.
- Dial calipers

HUB BORING

All Addax® hubs are bored concentric to the bolt hole pattern. Chucking onto the barrel or the flange is not an accurate method of machining the bore concentric to the bolt pattern. Reboring a hub requires a tool fixture that attaches to the bolt circle. Any hub not machined to Rexnord specifications will void the warranty.

REXNORD

400/450 CONVERSION

The 450 series flex element is .270 inch (6.9 mm) thinner in cross section than the 400 series flex element it replaces. In order to use 450 flex elements as direct part replacements for 400 series (without making any spacer length changes), each hub must be moved .270 inch (6.9 mm) out over the shaft ends. (I.e. shaft ends to be recessed inside hub bores by .27 inch). If making a complete change out of spacer, flex elements and hardware, then hubs do not have to be moved.

INSTALLATION INSTRUCTIONS

STEP 1

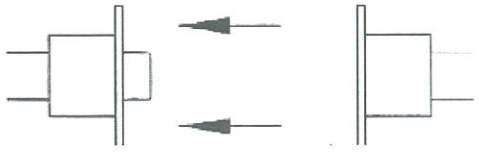
1. The Addax® assembled from the factory. Remove the bolts at each end that connect the composite spacer shaft to the flexible elements. This leaves the flexible elements still attached to the two hubs. It is not necessary to remove the flexible elements from the hubs.

NOTE: ***The bolts and nuts are not to be reused more than 4 times.***

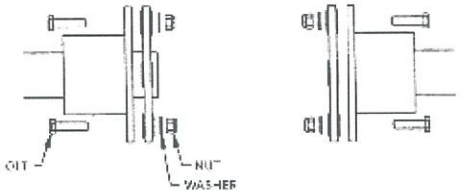
2. Addax® coupling systems are designed to use a slight slip fit between the hubs and connected equipment shafts. Press fits are neither required nor recommended and may cause difficulty during installation and future maintenance procedures. Hubs should be snug but slide freely on connected equipment shafts. Verify proper fit between hubs and equipment shafts before proceeding further.
3. Match marking is not necessary to maintain dynamic balance. **Do not** dimple or scar the spacer flanges to match mark. **Do not** use a punch or chisel. Use a paint pen or other non-destructive marking method to indicate reference point for alignment purposes.
4. Verify that there are no burrs on the two shaft ends or inside the hub bores or in the key slots. Also, verify that the keys fit the hubs and shafts properly before installation.
5. Measure the shaft end separation DBSE and verify that it is the same as shown on the Addax Product Drawing.

STEP 2

1. Slide the hubs onto the shaft ends with at least 1 inch of shaft exposed to provide clearance for the spacer installation.
2. Move one hub into position so the flange face is flush with the shaft end.

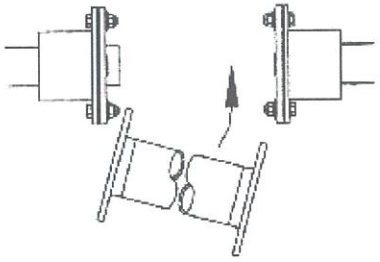


3. Tighten the set screws on one hub only and lock in place. Using a torque wrench, tighten to the values shown in CHART 2. Each hub has two set screws, one over the key and one offset.



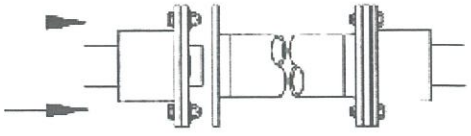
STEP 3

1. Position the spacer between the hubs as shown in the figure.
2. Align the small holes in the spacer with the holes in the flexible element.



STEP 4

1. Slide the other hub into position.



2. Temporarily tighten the set screws and lock in place. This hub may need to be repositioned during alignment.

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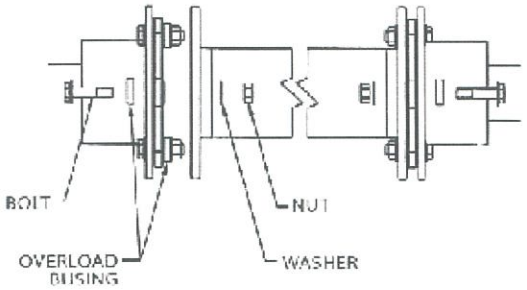
1. Insert the bolts through the over-load bushing, clearance holes in the hubs, flexing elements and the composite spacer flange.

2. Install washer first then the lock nut



NOTE: ***The 350 model does not have over-load bushings.***

3. Insert the bolts through the clearance holes in the hub. Install the bolt and flat washers as shown in the above figure.

4. Torque all the lock nuts to the values shown in CHART 1. A torque wrench should be used while holding the head of the bolt to keep it from turning.

5. Torque all set screws to the values shown in CHART 2.

6. After assembly is completed, check alignment in accordance with procedure.

CHART 1

LOCK NUT TIGHTENING TORQUE

Coupling Model Number	Torque Values		
	inch pounds	foot pounds	Newton meters
LR_350	400	33	45
LR_375	400	33	45
LR_450	145	12	16
LR_485	240	20	27
LR_650	400	33	45
LR_750/850	540	45	60

CHART 2

SET SCREW TIGHTENING TORQUE

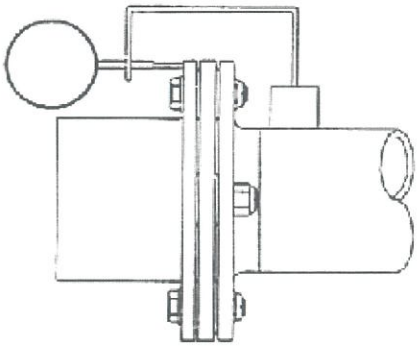
Set Screw Thread Size	Torque Values		
	inch pounds	foot pounds	Newton meters
1/4 - 20	66	6	7
5/16 - 18	132	11	15
3/8 - 16	240	20	27
1/2 - 13	480	40	55
5/8 - 11	660	55	75
3/4 - 10	960	80	105

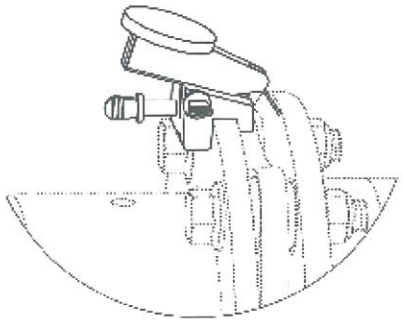
ALIGNMENT

NOTE: **Both the angular and axial alignment must be within the specified limits at both ends of the Addax® coupling before putting it into operation.**

SOFT FOOT: Before starting the alignment process, the soft foot problem, if it exists, should be corrected. The driver and driven pieces of the equipment must sit flat on their respective bases.

1. Either method shown below can be used to check angular alignment.





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ANGULAR ALIGNMENT

1. Use a sturdy means to squarely attach a dial indicator to the composite spacer shaft. Obtain reading off the outside face of the coupling hub flange as illustrated in the figure above. This can also be done by mounting the indicator on the coupling hub taking readings off the composite spacer shaft flange.

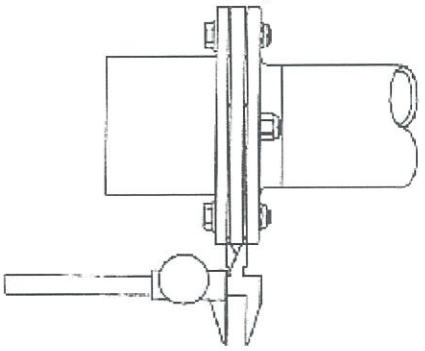
2. With dial indicator set at zero, check the angular alignment by rotating the shaft around 360° recording the maximum and minimum readings on the dial indicator.

3. If the range between maximum and minimum is greater than what is shown in the chart below for your coupling model, then the connecting equipment should be realigned to attain these limits.

AXIAL ALIGNMENT

1. The axial misalignment must also be checked. Measure the gap between the spacer flange and the hub flange on both ends. Use a dial caliper and take 4 readings around the perimeter at 90° intervals. Do this without rotating the coupling.

2. The average of the 4 readings should be within the gap range shown in the chart below or the hubs must be repositioned. This procedure should be performed at both ends of the coupling.



ANGULAR ALIGNMENT LIMITS

Coupling Model Number	Angular Alignment Limits	
	inch	MM
LR_350	0.010	.25
LR_375	0.010	.25
LR_450	0.010	.25
LR_485	0.010	.25
LR_650	0.020	.51
LR_750	0.020	.51
LR_850	0.020	.51

AXIAL ALIGNMENT GAP LIMITS

Coupling Model Number	Nominal Gap		Gap Range	
	inch	MM	inch	MM
LR_350	0.430	10.9	0.42 - 0.44	10.7 - 11.2
LR_375	0.540	13.7	0.53 - 0.55	13.5 - 14.0
LR_450	0.430	10.9	0.42 - 0.44	10.7 - 11.2
LR_485	0.600	15.2	0.58 - 0.62	14.9 - 15.9
LR_650	0.750	19.0	0.73 - 0.77	18.5 - 19.6
LR_750	0.875	22.0	0.85 - 0.89	21.5 - 22.6
LR_850	0.750	19.0	0.73 - 0.77	18.5 - 19.6

FLEXIBLE ELEMENT REPLACEMENT

If it becomes necessary to replace the flexible element, this can be done without moving the hubs on the shafts. Rexnord recommends that the flex elements and hardware be replaced every 5 years on a preventative maintenance schedule.

1. Start at one end. Support the composite spacer shaft at that end. Take all the bolts, locknuts, bushings and washers off. This leaves the flexible element loose to slide out.
2. Repeat step 1 for the other end.
3. If the flexible elements need to be replaced it is good practice to also replace the hardware at the same time.

Rexnord Industries LLC
6040 Fletcher Ave.
Lincoln, NE 68507 USA

PH: (402) 325-6000 FAX: (402) 325-6406 www.rexnord.com

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PRECISION. POWER. PERFORMANCE.

Addax® Couplings
6040 Fletcher Ave., Lincoln, NE 68507 (402)325-6000 Fax (402)325-6404

Cooling Tower Coupling Specification Sheet

Reference no:	10-105	User Name:	EBURRU POWER
Selected By:	BWH	User Location:	KENYA, AFRICA
Remarks:			

Input Data

Motor Data :	Motor RPM	1480	RPM
	Motor HP	30	kW
	Motor Hub Bore	53.980	mm
Fan Data	Fan Speed	196	RPM
	Blade Pass Frequency	1176	RPM
	No of Fan Blades	6	
	Gear Hub Bore	1.874	mm
Distance Between Shaft Ends (DBSE)		2616.00	mm
Required Minimum Service Factor		2.5	

Motor Torque Data

Motor Full Load torque	191	N-m
Motor Peak Torque	462	N-m
Standard NEMA MG1 Design B Motor		
Motor Full Load Torque X Service Factor	477	N-m

Coupling Engineering Data

Model Selected by SelectC	LRF375.275SS	
Rated Continuous Torque	600	N-m
Rated Peak Overload Torque	900	N-m
Actual Service Factor based on Motor HP	3.1	
Total Coupling Weight	9	kg
Moment of Inertia (WR^2)	0.013	kg-m^2
Maximum DBSE Allowed @ 1480 RPM	2692	mm
Critical Speed	1783	RPM
Critical Speed Safety Factor	1.20	
Maximum Bore This Model	65.024	mm
Spacer OD	70.36	mm
Max Coupling Diameter	133.35	mm
Max. Angular Misalignment (Per End)	1	Deg
End Float (Continuous)	0.8	mm

Dynamically Balanced Per VDI 2060 Class Q6.3

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No warnings or cautions.