

RINGFEDER POWER TRANSMISSION**Installation and Operating Manual
RLB series****RINGFEDER®**

Pin & Bush Coupling



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1 Legal Information

This operating manual contains instructions that must be followed to ensure your personal safety and to prevent injury or damage to property.

Only qualified personnel are permitted to use the product or system to which this documentation applies. Please read and observe all related documents, especially the safety instructions and warnings.

2 Liability of the RINGFEDER POWER TRANSMISSION GMBH

All contents of this document, including texts, graphics, and figures, are protected by copyright. Unless otherwise stated, the copyright is held by **RINGFEDER POWER TRANSMISSION GMBH** (hereinafter referred to as RPT). This document may not be copied, reproduced, shortened, or expanded, either in whole or in part, without prior consent from the manufacturer.

RPT reserves the right to modify these instructions as part of ongoing development and considering new findings.



- RINGFEDER® couplings must be used in accordance with the intended functionality described in the technical paper and this assembly and operating manual.
- Third-party products or external components may only be used with prior approval from RPT.
- Proper transport, storage, positioning, assembly, installation, commissioning, operation, and maintenance are essential prerequisites for the fault-free and safe functioning of the products.
- The permissible environmental conditions must be observed.
- The design and dimensioning of the shaft-hub-connections are the responsibility of the user.
- For future development of the product, we reserve the right to make technical modifications.

3 Safety Instructions

This installation and operation manual describes the coupling and provides guidance on its use from assembly to disposal. Retain this manual for future reference. Read the instructions carefully before using the coupling and follow all guidelines provided. Always observe the safety instructions.

3.1 Legend

Table 1 displays all symbols used in this manual.

Table 1: Legend for warning symbols

Warning	Symbol	Warning message
General Mandatory Sign		Instructions marked with this symbol must be followed with particular care to ensure the correct operation of the coupling and consequently of the machine or system.
Warning of Personal Injury		This symbol indicates warnings that, if ignored, may result in serious or fatal injuries.
Warning of Product Damage		This symbol indicates warnings that, if ignored, may result in damage to the coupling or the system.
Warning of Suspended Load		This symbol warns of the risk of injury from falling loads being transported, e.g., by crane.
Warning of Crushing Hazard		This symbol indicates work steps where there is an increased risk of crushing injuries.
Warning for Hot Surface		This symbol warns of hot surfaces that may cause burns, avoid contact to prevent injury.
Torque Specification Notice		Refer to the table for the tightening torques before installation.
Heating or Cooling Required		This symbol indicates that a heating or cooling process is required for assembly and/or disassembly

Cleaning		This symbol indicates that the surface and/or object must be cleaned of all contaminants that could hinder assembly and/or operation.
Recycling / Disposal		Any item to be recycled or disposed of must be handled in an environmentally friendly manner.

3.2 General Safety Instructions

Safe and trouble-free operation of the coupling is only ensured through familiarity with this manual. Failure to follow the instructions may result in damage to the product, property, and/or personal injury. RPT assumes no liability for damages or operational disruptions resulting from non-compliance with the manual.



During assembly, operation, and maintenance of the coupling, it must be ensured that the entire drive train is secured against unintentional activation. Rotating parts can cause serious injuries. Therefore, be sure to read and follow the instructions below:

- All work on and with the equipment must be carried out in accordance with safety regulations.
- In accordance with accident prevention regulations, all freely rotating parts must be protected against unintentional contact and falling objects by fixed protective devices.
- In case of a special coupling, the coupling design takes precedence.
- Unauthorized modifications to the coupling are not admissible. We decline any warranty due to consequent damage.
- Only use original spare parts from RPT.
- Visibly damaged parts must not be installed or put into operation.
- Note that improperly tightened screws can lead to serious personal injury and property damage.

3.3 EC Machinery Directive 2006/42/EC

The equipment supplied by RPT is component and not machine or incomplete machine within the meaning of the EC Machinery Directive 2006/42/EC. Accordingly, RPT is not required to issue a separate installation declaration.

4 Transportation, Delivery, and Storage

4.1 Transportation



Always use suitable transport equipment and lifting devices during transport to avoid injuries caused by falling components or crushing, as well as any kind of damage.

4.2 Scope of Delivery



Upon delivery, check for the presence of all items listed in the enclosed shipping documents. Any damage or missing parts must be reported to the supplier immediately in writing.

4.3 Delivery Conditions

The coupling is delivered pre-assembled, and the surfaces are lightly oiled to protect against corrosion.

4.4 Storage

Store the product in its original packaging. Under ideal conditions, the storage duration is unlimited.



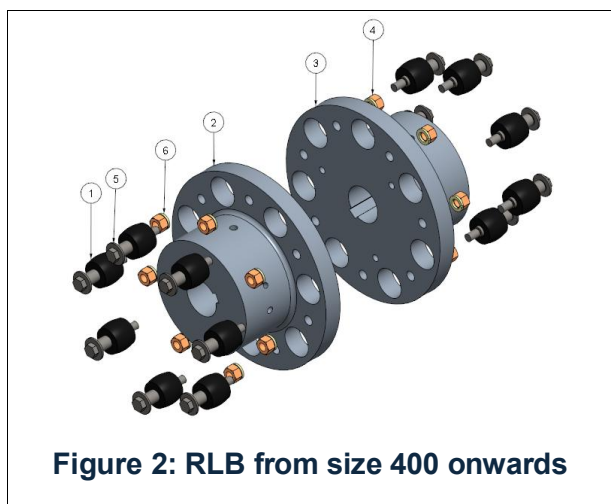
- The coupling must not come into contact with aggressive substances, extreme temperatures, or moisture.
- The coupling must not be stored together with acids, alkalis, or other corrosive chemicals.
- The storage location should be dry and dust-free. Humidity should not exceed 65%, and condensation must be avoided.
- All rubber materials must be stored away from heat-producing equipment and/or heating devices.
- Spare bushings must be stored at temperatures between 20°C and 30°C. Their storage environment must be free from unusual gases, vapors, and chemical substances such as oils or greases.

5 Technical Description

The RLB series is a pin and bush coupling designed to transmit torque between the drive shaft and the driven shaft using barrel shaped bushings. The elements absorb shocks, reduce peak forces, and compensate for angular, parallel, and axial misalignments between shafts. For stationary applications additional equipment like brake drums, torque limiters, etc. can be added to the coupling and will not change the intended use.



Number	Component	Qty.
1	Hex nuts	acc. to size
2	Spring washers	acc. to size
3	Pin hub	1
4	Bush hub	1
5	Bushings	acc. to size
6	Pins	acc. to size



Number	Component	Qty.
1	Bushings	acc. to size
2	Hub 2	1
3	Hub 1	1
4	Hex nuts	acc. to size
5	Pins	acc. to size
6	Spring washer	acc. to size

6 Technical Data

6.1 Dimensions for Couplings Without Spacer

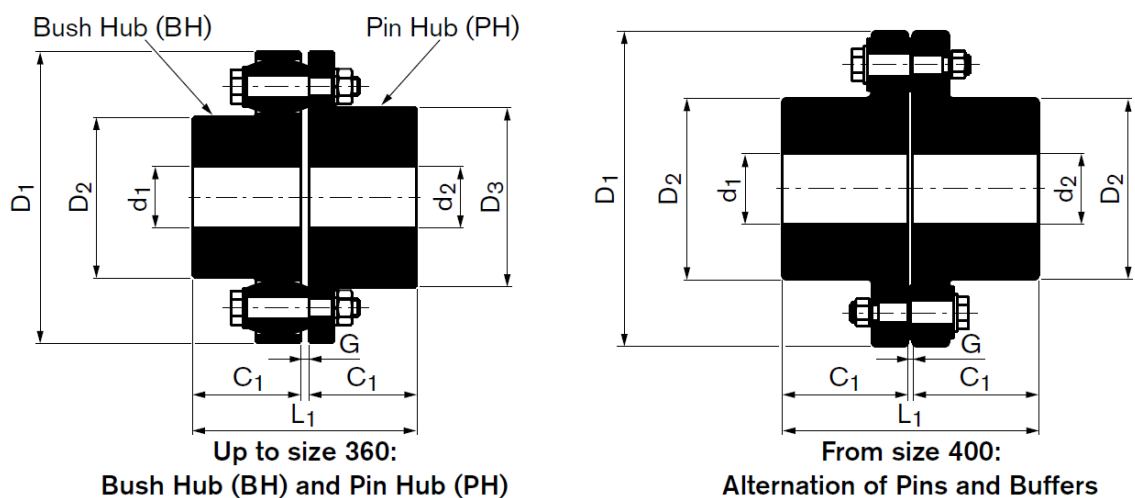


Table 2: Basic dimensions without spacer

Size	Nom. Transmissible torque TKN [Nm]			n_{max} [1/min]	Bore diameter [mm]		
					Min.	Max.	
	RUB	PU	HTR		d_1/d_2	d_1	d_2
105	95	143	239	7200	11	30	32
116	143	215	358	6100	12	39	42
125	162	244	406	5500	14	45	50
144	315	473	788	4900	18	50	60
162	525	788	1313	4500	22	60	65
178	640	960	1600	3800	24	70	75
198	1241	1862	3104	3400	28	80	90
228	2005	3008	5013	3000	28	90	100
252	3056	4584	7639	2700	38	105	115
285	4584	6875	11459	2400	48	115	125
320	6112	9167	15279	2100	55	125	135
360	8881	13321	22202	1900	65	135	150
400	12032	18048	30080	1700	75	160	160
450	18621	27932	46553	1500	85	180	180
500	25783	38675	64458	1350	95	200	200

Size	Nom. Transmissible torque TKN [Nm]			n _{max} [1/min]	Bore diameter [mm]		
					Min.	Max.	
	RUB	PU	HTR		d ₁ /d ₂	d ₁	d ₂
560	31035	46553	77588	1200	95	225	225
630	42017	63025	105042	1050	100	250	250
710	74962	112443	187405	950	100	260	260
800	99981	149972	249953	850	100	280	280
900	154985	232478	387463	750	100	305	305
1000	194997	292495	487492	680	125	320	320
1120	269959	-	-	600	135	350	350
1250	345016	-	-	550	150	380	380
1400	529986	-	-	490	175	440	440
1600	750002	-	-	430	200	480	480
1800	974983	-	-	380	225	540	540
2000	1300041	-	-	340	250	600	600
For other dimensions, please refer to the technical data sheet available at www.ringfeder.com For future development of the product, we reserve the right to make technical modifications.							

6.2 Dimensions for Couplings with Spacer

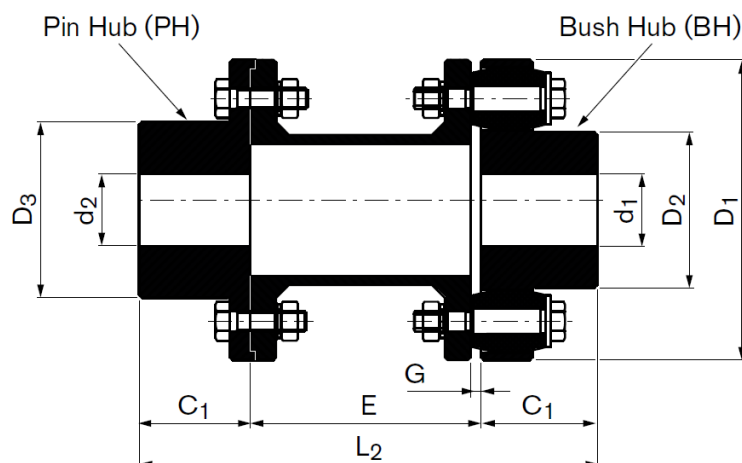


Table 3: Basic dimensions with spacer

Size	TKN [Nm]	n_{max} [1/min]	Bore diameter [mm]		
			Min.	Max.	
			d_1/d_2	d_1	d_2
105	95.6	7200	11	30	32
116	146.4	6100	12	42	39
144	318.3	4900	18	60	50
162	525.2	4500	22	65	60
198	1247.8	3400	28	90	80
228	2049.9	3000	28	100	90
252	3068.5	2700	38	115	105
285	4551.8	2400	48	125	125
320	6098.8	2100	55	135	135
360	8899.9	1900	65	135	135

For other dimensions, please refer to the technical data sheet available at www.ringfeder.com
For future development of the product, we reserve the right to make technical modifications.

6.3 Shaft Alignment



In order to achieve the optimum service life of the coupling, shafts must be aligned, and the initial misalignment should not be more than 25 % of the maximum misalignment.

Table 4: Alignment method

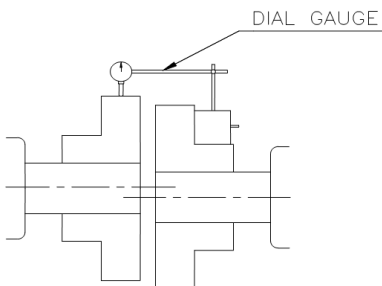
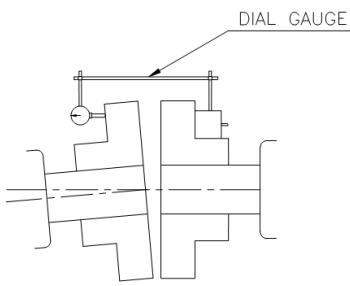
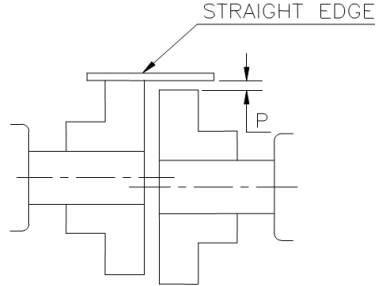
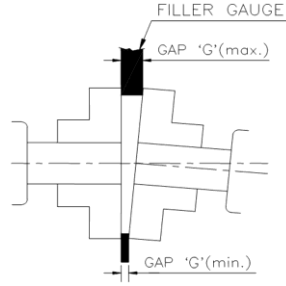
Method	Parallel/Radial	Angular
1	Using a dial gauge 	Using a dial gauge 
	Using a dial gauge: Fix the dial gauge on one of the hub outer diameters and set the plunger on the flange outer diameter of the other hub. Rotate the coupling slowly to one complete revolution by taking dial gauge reading at 4 spots 90° apart. The parallel misalignment is half the Total Indicated Reading (TIR) shown on the dial gauge which is equal to values P. Check maximum allowed values in Table 5 for installation process and Table 6 for operation process.	
Method	Parallel/Radial	Angular
2	Using a straight edge 	Using a filler gauge 
	Using a feeler gauge: Measure gap G at 4 spots 90° apart without rotating shafts. The difference in maximum and minimum gap will be the Total Indicated Reading (TIR), which will be the angular misalignment present. The values for the deviation in the standard clearance, i.e. the angular misalignment, must be within the permitted limits. Check maximum allowed values in Table 5 for installation process and Table 6 for operation process.	

Table 5: Maximum permissible misalignment for installation process

Size	Angular misalignment		Axial [mm]	Parallel / Radial (P) [mm]	GAP (G) [mm]
	Degree [°]	TIR [mm]			
105	0.250	0.458	±0.5	±0.075	2-6
116	0.250	0.506	±0.5	±0.075	2-6
125	0.250	0.546	±0.5	±0.100	2-6
144	0.250	0.629	±0.5	±0.100	2-6
162	0.250	0.707	±0.5	±0.100	2-6
178	0.250	0.777	±0.5	±0.125	2-6
198	0.250	0.864	±0.5	±0.125	2-6
228	0.250	0.995	±0.8	±0.150	4-10
252	0.250	1.100	±0.8	±0.150	4-10
285	0.250	1.244	±0.8	±0.175	4-10
320	0.250	1.397	±0.8	±0.175	4-10
360	0.250	1.571	±1.0	±0.225	4-12
400	0.250	1.789	±1.0	±0.275	4-12
450	0.125	0.982	±1.0	±0.275	4-12
500	0.100	0.873	±1.0	±0.275	4-12
560	0.075	0.733	±0.5	±0.375	4-8
630	0.075	0.825	±0.5	±0.375	4-8
710	0.075	0.930	±0.5	±0.450	5-9
800	0.075	1.047	±0.5	±0.450	5-9
900	0.075	1.178	±0.5	±0.450	5-9
1000	0.025	0.438	±0.5	±0.500	5-10
1120	0.025	0.488	±0.5	±0.550	6-11
1250	0.025	0.545	±0.5	±0.600	6-11
1400	0.025	0.610	±0.5	±0.675	6-12
1600	0.025	0.698	±0.5	±0.750	6-12
1800	0.025	0.785	±0.5	±0.850	8-16
2000	0.025	0.873	±0.5	±0.950	8-16

Table 6: Maximum permissible misalignment for operation process

Size	Angular misalignment		Axial [mm]	Parallel / Radial (P) [mm]	GAP (G) [mm]
	Degree [°]	TIR [mm]			
105	1.0	1.833	±2.0	±0.3	2-6
116	1.0	2.025	±2.0	±0.3	2-6
125	1.0	2.182	±2.0	±0.4	2-6
144	1.0	2.514	±2.0	±0.4	2-6
162	1.0	2.828	±2.0	±0.4	2-6
178	1.0	3.107	±2.0	±0.5	2-6
198	1.0	3.456	±2.0	±0.5	2-6
228	1.0	3.980	±3.0	±0.6	4-10
252	1.0	4.399	±3.0	±0.6	4-10
285	1.0	4.975	±3.0	±0.7	4-10
320	1.0	5.586	±3.0	±0.7	4-10
360	1.0	6.284	±4.0	±0.9	4-12
400	1.0	7.157	±4.0	±1.1	4-12
450	0.5	3.927	±4.0	±1.1	4-12
500	0.4	3.491	±4.0	±1.1	4-12
560	0.3	2.932	±2.0	±1.5	4-8
630	0.3	3.299	±2.0	±1.5	4-8
710	0.3	3.718	±2.0	±1.8	5-9
800	0.3	4.189	±2.0	±1.8	5-9
900	0.3	4.712	±2.0	±1.8	5-9
1000	0.1	1.750	±2.0	±2.0	5-10
1120	0.1	1.950	±2.0	±2.2	6-11
1250	0.1	2.180	±2.0	±2.4	6-11
1400	0.1	2.440	±2.0	±2.7	6-12
1600	0.1	2.790	±2.0	±3.0	6-12
1800	0.1	3.140	±2.0	±3.4	8-16
2000	0.1	3.490	±2.0	±3.8	8-16

7 Assembly

7.1 Before Installation



Check the coupling assembly for visible damage. If you find any damage, please contact RPT immediately.



Use suitable transport equipment and lifting devices for installation to prevent injuries caused by falling components or crashes, as well as any type of damage.

Ensure that the system is disconnected from the power supply and other possible energy sources before starting work!



Remove all protective coatings/lubricants from the individual components.

7.2 Instructions for the Pilot Bore

If the coupling was supplied with a pilot bore, the customer needs to take care with:

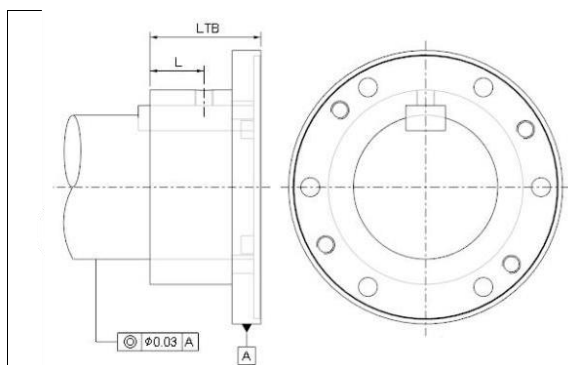


Figure 3: Pilot bore

- The bore must be made in relation to the external diameter of the hub and the finish must be within the H7 tolerance limits.
- The key must be made between two adjacent holes within the JS9 tolerance limits.
- Provide a set screw at distance L.

7.3 Straight Bore Hub Mounting

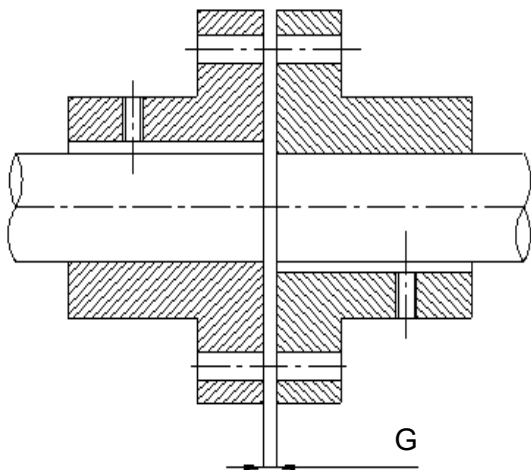


Figure 4: Straight bore

- Mount both hubs on their respective shafts such that the shaft ends are flush with the inner faces.
- Tighten the set screws over the keys.
- Move the two hubs (together with the equipment) closer together to maintain the clearance G (Table 6) between the two ends of the shaft.
- Ensuring that the equipment is aligned properly.
- Insert all pins with their bushings, check the correct position of the pin and bush according to Figure 1 and Figure 2.
- Tighten the nuts evenly to achieve the nominal tightening torque, as shown in Table 7.



- For normal applications the shaft ends should be flushed with the inner face of hubs. In some special cases, the shaft ends may protrude beyond the inner face of hubs or may remain inside if required, but the gap G (Table 6) should be maintained as specified in drawing or catalogue.
- The necessity for shields and/or guards varies with individual installations. The owner or user must provide the required safety guards.
- Safety guards or shields are not furnished by RPT with this equipment
- When heating the hub, remember to follow the safety procedures and use appropriate equipment to avoid any type of risk or injury.



Table 7: Recommended tightening torques (T_A)

Coupling size	Screw size	T_A [Nm]
From 105 to 144	M8	12
From 162 to 198	M10	24
From 228 to 252	M14	66
From 285 to 320	M16	99
From 360 to 500	M20	193
From 560 to 630	M36	1128
From 710 to 1000	M42	1791
For larger sizes, the recommended tightening torque will be indicated in the drawing.		

8 Start-up and Operation



- Before start-up check the pins and bushings for correct seating, i.e., the bushings must sit flush with the end face of the hub, and the set screws for tightness. Check and if necessary, adjust the alignment and the gap dimension.
- Bolt tightening torques for the coupling and tightening torques for the foundation bolts of the coupled machine must be checked before startup. Enclosures (coupling protection, contact guard) must be fitted.!
- Overload conditions during startup cannot be excluded. If the coupling breaks through overload, metal parts may fly off and cause personal injury and/or material damage.
- The coupling must run with little noise and without vibration. Irregular behavior must be treated as a fault requiring immediate remedy.
- If any irregularities are noticed during operation, switch the drive assembly off at once and determine the causes of the fault.
- If the cause cannot be identified or the unit is repaired with the facilities available, we recommend that you contact RPT.

9 Inspection and Periodic Maintenance

Under normal operating conditions, the RLB coupling does not require maintenance. Inspect the coupling once in 6 months in idle condition or whenever it is taken for periodic maintenance.

Periodic maintenance of coupling consists of the following check points during normal machinery maintenance schedules.

- Ensure that axial, angular and parallel misalignments are still within the acceptable limits and no major movements have occurred. It is recommended that a record of misalignment readings is maintained.
- For all couplings, ensure that all bolts are tightened correctly.
- Check the rubber bushings by visual inspection for any signs of failure. It is recommended to replace the rubber bushings if signs of wear are observed. Any deep impressions, cracks or swelling are also required to be checked.

The following operating conditions can affect the life of rubber bushings, so we request the customer to check the following,

- Numbers of starts & stops
- Working environment (either in an open environment or in plant)
- Load variation
- Misalignments



Any requirement for spare parts should be made quoting the original purchaser, original purchase order number and the coupling drawing number.

10 Spare Parts

We recommend storing spare items as given below, to have continuous operation and to reduce downtime due to failures.

Component	Quantity
Pins	1 set acc. to size
Bushings	1 set acc. to size

Table 8: List of quantity used per coupling

Size	Number of pins and bushings	Pins part number	Bushing part number
105	3	RB/P-2	RB/B-2
116	4	RB/P-2	RB/B-2
125	4	RB/P-2	RB/B-2
144	6	RB/P-2	RB/B-2
162	6	RB/P-3	RB/B-3
178	6	RB/P-3	RB/B-3
198	10	RB/P-3	RB/B-3
228	11	RB/P-4	RB/B-4
252	12	RB/P-4	RB/B-4
285	11	RB/P-5	RB/B-5
320	12	RB/P-5	RB/B-5
360	11	RB/P-6	RB/B-6
400	10	RB/P-7	RB/B-7
450	12	RB/P-7	RB/B-7
500	14	RB/P-7	RB/B-7
560	10	RB/P-8	RB/B-8
630	12	RB/P-8	RB/B-8
710	12	RB/P-9	RB/B-9
800	14	RB/P-9	RB/B-9
900	16	RB/P-9	RB/B-9
1000	18	RB/P-9	RB/B-9

11 Malfunctions and their Possible Causes

Table 9: Malfunctions and their possible causes

No.	FAILURE MODE	PROBABLE CAUSES	CORRECTIVE ACTIONS
1	- Worn out bushings - Premature shaft bearing failure	- Excessive shaft misalignments	- Replace bushings and realign the coupling
2	- Fatigue of bushings - Overheated bushings	- Torsional vibration - Excessive starts and stops - High peak load	- Perform torsional analysis - Redo coupling selection
3	- Swollen or cracked bushings	- Chemical attack	- Use more chemically resistant bushings (*)
4	- Distorted or deteriorated bushings	- Excessive heat	- Use more heat-resistant bushings (*)
5	- Shattered bushings	- Low temperature	- Use special low temperature bushings (*)
6	- Loose hubs on shaft with sheared keys	- Torsional shock overload	- Check sizing and service factors of coupling
7	- Severe hub corrosion	- Chemical attack	- Coat hub with anticorrosive coating (*)

(*) Consultation with RPT is required.

12 Disposal

When disposing of coupling parts, observe the locally applicable legal regulations.

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