

Installation & Operating Manual (IOM) B-FLEX Coupling RB Series



INDEX

	Page No
1. Introduction & General Guidelines	02
2. Before installation information	02
3. Installation Information	03
3.1 Finish Bore Instruction	03
3.2 Hub Mounting	03
3.3 Shaft Alignment	04
3.4 Final Assembly	06
4. Disassembly/ Replacement	06
5. Safety,General Hazard & Environment	07
6. Inspection & Periodic Maintenance	08
7. Spares Management & Complaint Handling	08
8. Breakdown & Trouble-shoot	11
9. Marking Details	12
10. Declaration of Conformity	13

1. Introduction & General Guidelines

- RB type pin bush coupling are designed to transmit torque between drive and driven shaft using barrel shaped bushes, which compensate radial, angular and axial misalignment and reduce the effect of socks & vibrations.
- This manual will help you to install and maintain pin bush coupling before installing/disassembling of coupling. It is advisable to read the manual carefully before starting the work. These special designs are always provided with general assembly drawing which provides detail information of the design and connected equipments.
- Symbol description :



Caution person may get injured



Damage the product



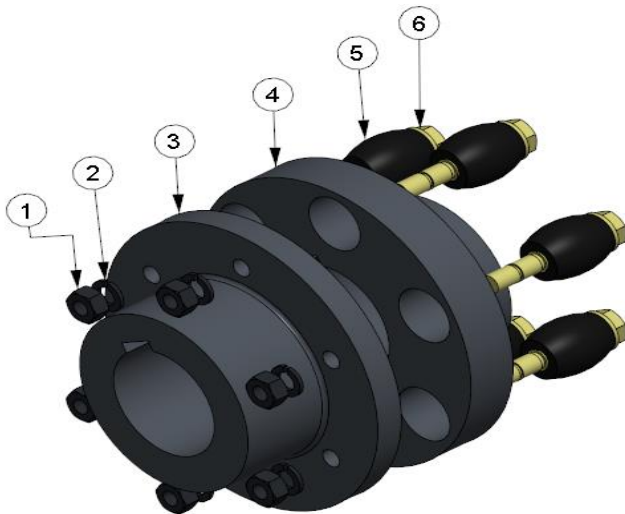
Pay attention



Potentially explosive warning

2. Before installation information

- RB couplings are delivered by RTPL with PIN and bush as assembled condition which consists components 5 & 6 as shown in fig. 1, it is recommended not to disassemble it.



Part.No	Component	Qty.
1	HEX NUT	Refer GA Drg.
2	SPRING WASHER	Refer GA Drg.
3	PIN HUB	01
4	BUSH HUB	01
5	BUSH	Refer GA Drg.
6	PIN	Refer GA Drg.

Fig. 1 PART LIST


- 2.1 Inspect coupling assembly for visible damage, if you found contact RATHI.
- 2.2 Dismantle the coupling; remove protective coating/lubricants from coupling components.

3. Installation Information



Ensure the system is disconnected from electrical connection and other possible energy transmission before starting the work.

3.1 Finish Bore Instruction (Fig. 2)

- Hub finish bores machined by customer with reference to flange outside diameter.
-  Finish bore strictly done within specified limit (H7, Js9).
- Keyway must be done between two adjacent holes.
- Provide set screw at distance L ($L = LTB / 2$)

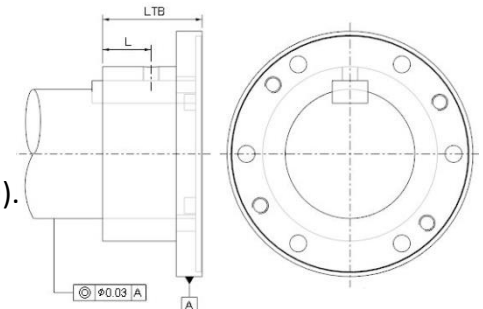


Fig. 2 Finish bore

3.2 Hub Mounting.

3.2.1 Straight Bore (Fig.3)

- Mount the Pin & Bush hub on respective shafts such that shaft end are flush with inner face with the key.
- Tighten the set screw over the keys.
- Bring both hubs close along with equipment, maintain gap "S"(Refer table 2, fig.2).



- Gap "S" must be maintain between hubs even though shafts ends protrude beyond inner face of hub.

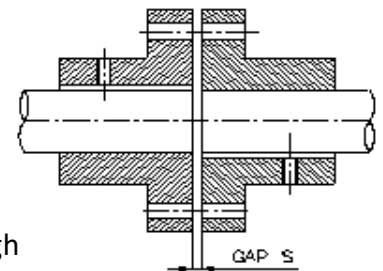


Fig. 3 Hub Mounting

3.2.2 Taper Bore (fig.4)

- Slid the hub over the shaft without inserting key up to DBSE as required.
- Mark the hub position onto the shaft, or mount the dial indicator by keeping in contact with hub flange.
- Remove the hub and insert key(s) in the shaft.
- Heat the hub in oil bath up to temperature $150^{\circ}C$ to make bore bigger than shaft.
- Immediately slide expanded hub over the shaft up to marked position.
- Tighten the set screw over the keys.

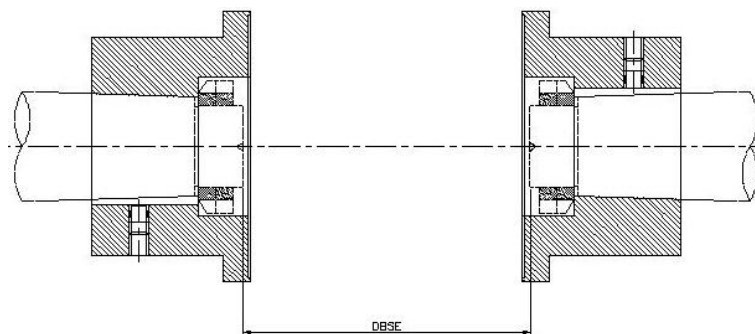


Fig. 4 Taper bore

3.3 Shaft Alignment


- In order to achieve optimum service life of the coupling, shafts must be aligned.
- 
 - Initial misalignment should not be more than 25 % of maximum misalignment (Refer Table 2).

Table 1 : Method of misalignment

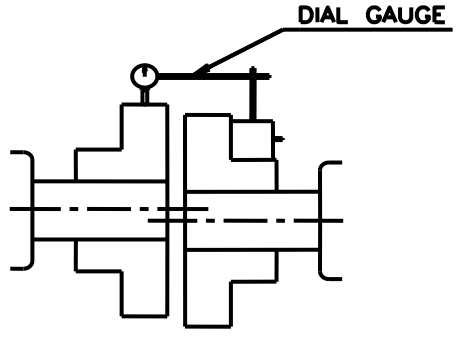
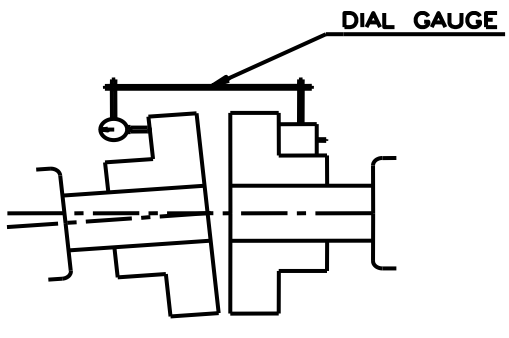
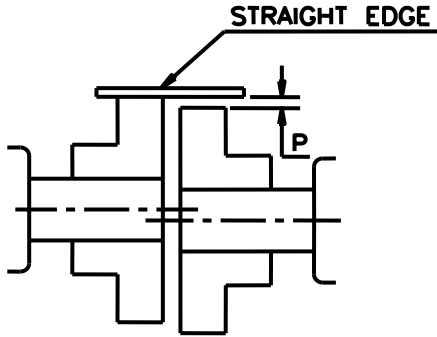
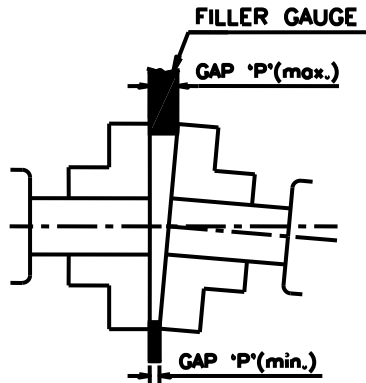
Method	Parallel/Radial	Angular
1	Using dial gauge 	Using dial gauge 
	<ul style="list-style-type: none"> • Clamp dial gauge on hub • Note the reading at each quarter rotation of hub by rotating one end. • P or X is half the Total Indicated Reading (TIR) shown on dial gauge 	
2	Using straight edge 	Using filler gauge 
	<ul style="list-style-type: none"> • If the field constraints do not permit to use dial gauge then alternatively use straight edge & filler gauge to measure parallel and angular alignment respectively. 	

Table 2 : PERMISSIBLE MAXIMUM MISALIGNMENTS

SR NO	COUPLING SIZE	Permissible Maximum Mis-alignment				* GAP 'S' (mm)	PIN (6)	
		Angular		Axial (mm) (\pm)	Parallel / Radial 'P' mm		Size	Tightening Torque (Nm)
		Degree ($^{\circ}$)	Total Indicated Reading (TIR) mm					
1	RB-105	1 $^{\circ}$	1.833	2	0.3	2-6	M8	12
2	RB-116	1 $^{\circ}$	2.025	2	0.3	2-6		
3	RB-125	1 $^{\circ}$	2.182	2	0.4	2-6		
4	RB-144	1 $^{\circ}$	2.514	2	0.4	2-6		
5	RB-162	1 $^{\circ}$	2.828	2	0.4	2-6	M10	24
6	RB-178	1 $^{\circ}$	3.107	2	0.5	2-6		
7	RB-198	1 $^{\circ}$	3.456	2	0.5	2-6	M14	66
8	RB-228	1 $^{\circ}$	3.980	3	0.6	4-10		
9	RB-252	1 $^{\circ}$	4.399	3	0.6	4-10	M16	99
10	RB-285	1 $^{\circ}$	4.975	3	0.7	4-10		
11	RB-320	1 $^{\circ}$	5.586	3	0.7	4-10	M20	193
12	RB-360	1 $^{\circ}$	6.284	4	0.9	4-12		
13	RB-400	1 $^{\circ}$	7.157	4	1.1	4-12		
14	RB-450	0.5 $^{\circ}$	3.927	4	1.1	4-12		
15	RB-500	0.4 $^{\circ}$	3.491	4	1.1	4-12	M36	1128
16	RB-560	0.3 $^{\circ}$	2.932	2	1.5	4-8		
17	RB-630	0.3 $^{\circ}$	3.299	2	1.5	4-8	M42	1791
18	RB-710	0.3 $^{\circ}$	3.718	2	1.8	5-9		
19	RB-800	0.3 $^{\circ}$	4.189	2	1.8	5-9		
20	RB-900	0.3 $^{\circ}$	4.712	2	1.8	5-9	-	-
21	RB-1000	0.1 $^{\circ}$	1.75	2	2	5-10		
22	RB-1120	0.1 $^{\circ}$	1.95	2	2.2	6-11		
23	RB-1250	0.1 $^{\circ}$	2.18	2	2.4	6-11		
24	RB-1400	0.1 $^{\circ}$	2.44	2	2.7	6-12		
25	RB-1600	0.1 $^{\circ}$	2.79	2	3	6-12		
26	RB-1800	0.1 $^{\circ}$	3.14	2	3.4	8-16		
27	RB-2000	0.1 $^{\circ}$	3.49	2	3.8	8-16		

* Gap 'S' in the above table is given when angular & axial misalignments are zero.

3.4 Final Assembly

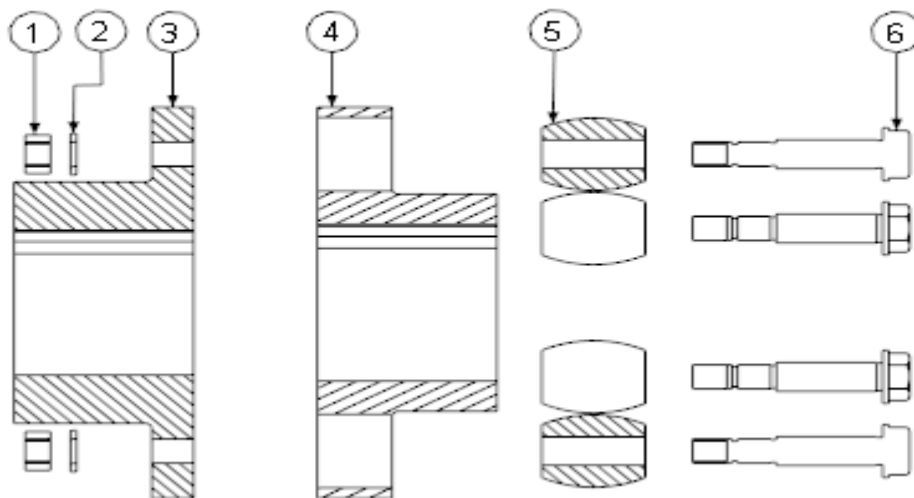
- Ensuring equipment is aligned properly.
- Insert pins with bushes from bush half side & fasten nuts on other side (Pin half).
- Tighten the nuts evenly so as to achieve the rated tightening torque as shown in Table 2
- Ensure hubs have been mounted as shown in fig.4, to maintain correct DBSE .
- Use loctite to prevent loosening of threads, if required.






- Customer must provide required safety guards, RTPL does not supply safety guards or shields.

4. Disassembly / Replacement


- Untighten nut (1) and remove pin bush assembly unit.
- If required hubs can be removed from shaft by means of puller.



5. Safety General Hazard & Environment

- Proper care and safety must be taken care before work started.
- The relevant safety and environmental regulations must be complied during installation, commissioning, operation, assembly, disassembly and maintenance.
-  • Coupling must be maintained and/or repaired in the presence of skilled or qualified persons for particular work.
-  • During installation or maintenance ensure the drive unit is cut off from the power supply and caution notice should be display on switch.
-  • Immediate stop the drive unit if anything abnormalities observed on coupling (e.g. cracks, chips, wear, or deformation)
- Check all the bolts are tightened as per torque specified in the manual or as specified in the GA drawing.
- The supplied coupling may have to rotate at high speed, it is most important to guard the area in compliance to ATEX and various other local applicable standards.
- This coupling is certified as per ATEX requirement. Please check the suitability of hazardous environment at the time of selection of the coupling or during installation of the coupling.
- All spare parts are to be purchased from manufacturer only.

6. Inspection & Periodic Maintenance

- The pin bush coupling can be monitored under running condition as well as under idle condition.
-  • Inspect the coupling once in 6 months in idle condition or whenever it is taken for periodic maintenance.
- During running condition, it is recommended to check the vibration and noise on either side of the equipments to be under specified limits.
- Visual inspection is recommended to check below defects,
 - Axial, Angular & Parallel misalignments.
 - Bolt lessening
 - Bushes for wear, cracks, swelling or deep impression.
 - Replace bushes immediately if they observed any of the above defects.

7. Spare Management & Complaint Handling

7.1 Spare management

- We recommend to store spare items as given below, in order to have continuous operation and to reduce down time due to failures.



Sr.No.	Part descriptions	Components/ part No.	Quantity
1	Pin Bush set	Bush (5) Pin(6)	Refer GA Drg.

- Spare bushes storage condition should be maintain as below,
 - Away from direct sunlight.
 - Temperature shall be in the range of 20 °C - 30 °C.
 - Environment shall be free of extraordinary gases, vapours & chemical contacts, including oils, grease etc.
 - no stress on bond in case of rubber to metal bonded products.

7.2 Complaint Handling

- In case of any failure, for proper root cause, fill up Product Performance Datasheet (PPDS) and provide us along with images/videos.

- Product Performance datasheet (PPDS)

		ANNEXURE Product Performance Data Sheet (PPDS)		Ref.:	
				Date:	
Contact Details	Distributor				
	ZR				
	Customer Details:Name				
	Contact Person				
	Cell No				
	Email ID				
Supply details	Product				
	PO No and Date				
	Invoice No & Date				
	Ref Drawing No				
	Coupling Serial No.				
	Logo: RATHI/Lovejoy/RTFL/OTHER				
	Qty purchased				
	Qty Failed				
Service Details	Application Details: Driver/Driven				
	Equipment Name				
	Installation Date				
	Failure Date				
	Approx service life				
Installation details	Finish bore/Keyway machining by : RTPL / Customer				
	Hub Fitment: Slide fit / Interference / Press fit				
	Method of Hub fitment: Mallet / Jacking / Heating / Hydraulic				
	Fastener Tightening Method: Torque Wrench / Spanners				
	Tightening Torque values				
	Power Rating: KW/RPM/Torque				
	Start/stop frequency				
	Temperature: °C				
	Duty: Hrs / Day				
	Alignment Initial: Axial/Angular/Parallel				
	Alignment after failure: Axial/Angular/Parallel				
	Rathi Installation Instruction: Followed/Not followed				
	Installation skills: Average/Good/Excellent				

Failure details	Lubrication condition, if applicable	
	Breaking of components: Yes/No	
	Possible Sequence of Component Failure	
	Damage of components: Yes/No	
	Loosening of fasteners: Yes/No	
	Overload/Sudden Peak: Yes/No	
	Loosening of foundation bolts:	
	Loosening of attached piping / ducting: Yes/No	
	Replacement Status : If replaced whether Coupling or Spares	
	Customer analysis of the Failure causes (Attach separate sheet, if required)	
Evidence / Requirement	Failed product photos : Attached / Not attached	
	Failed product being returned to RTPL : Yes / No	
	RTPL visit required: Yes/No	
	Replacement required: Yes/No	
	ZR / Distributor Remarks if any	
Other info	Details of any other Coupling previously in use	
	Failure history	
	Bearing condition of Driver & Driven units (Smooth/Noisy/Vibrations)	
R/002		PAGE 2 OF 2

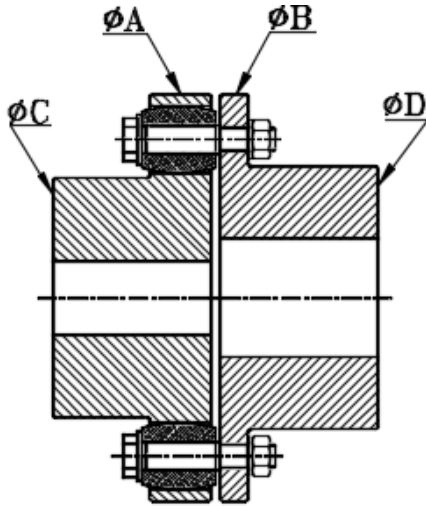
8. Breakdown & Trouble Shooting

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

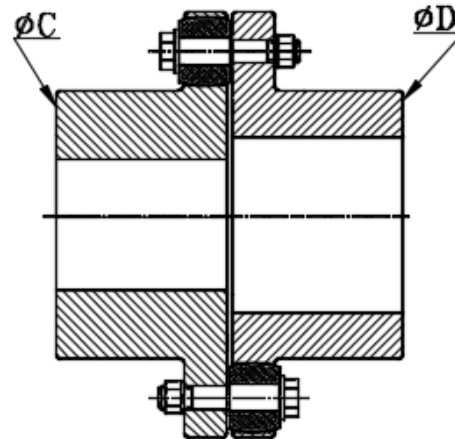
(*) - Consult M/s RATHI if required

9. Marking Details

- Pin Bush Coupling will be marked as per Fig. 7.



UPTO SIZE RB-360




FROM SIZE RB-400 ONWARDS


- ATEX Punching sample

A. UPTO SIZE RB-360.

e.g. (ATEX Punching on **Pin Half on ØD**)


RATHI B FLEX 120 RB-360/1 140 C €  II 2GD -45°C+70°C

e.g. (ATEX Punching on **Bush Half on ØC**)

RATHI B FLEX 129 RB-360/2 95 C €  II 2GD -45°C+70°C

B. SIZES RB-400 ONWARDS.

e.g. (ATEX Punching on **ØC & ØD**)

RATHI B FLEX 129 RB-400 95 C €  II 2GD -45°C+70°C

Note :-

- I. Sizes RB-105 to RB-198 marking is on Flange OD (**ØA & ØB**)
- II. Sizes from RB-228 & above marking is on Hub Face (**ØC & ØD**)




- Where,

- Manufacturing code e.g. 129 for December 2019
- Product code e.g. RB 360
- Finish bore size code e.g. 140



- Please note that, operating temperature in the marking will differ as per type of elastomers for respective coupling series.

10. Declaration of Conformity

	
<i>Declaration of Conformity</i> <i>2014/34/EU</i>	
Customer Name <input type="text"/>	Certificate No. <input type="text"/>
PO No. <input type="text"/>	Date <input type="text"/>
1) Declaration relating to :	
Type :	<input type="text" value="Metallic (Non-Disc) Coupling"/>
Size :	<input type="text"/>
2) Manufactured and assessed by	
Rathi Transpower Pvt.Ltd., Gaia Apex, S. No. 33/2D, Viman Nagar, Pune 411 014 (INDIA).	
3) Notified by :	
4) This product fulfills all the requirements for Group 2 Category 2 GD equipment in accordance with directive 2014/34/EU (ATEX)	
The design complies with ISO 80079-36 AND ISO 80079-37 and is fully documented in Technical File No. RG 003/20	
5) The product is incapable of producing arcs, sparks or hot surface which may cause ignition and is designed to be used in accordance with ISO 80079-36 AND ISO 80079-37.	
6) The required marking of the product is specified in Technical File No. RG 003/20 and includes the distinctive community marks.	
7) Coupling without the  marking must not be used in potential Explosive Atmosphere.	
8) Manufacturing is controlled by an ISO 9001 registered system.	
9) Approved signatories for and on behalf of Rathi Transpower Pvt.Ltd.	
Quality Inspector (<input type="text"/>) Date : <input type="text"/>	Quality Manager (<input type="text"/>) Date : <input type="text"/>

Format No : 3QA-F-33 Rev 1



ATEX

Declaration of Incorporation ***E.C. Machinery Directive (2006/42/EC)***

Section 1.0 - Machinery Description:
Flexible Power Transmission Couplings
Types: Metallic (Non-Disc) Coupling

Series:

Section 2.0 - Applicable Harmonized Standards
ISO13709(API 610)for centrifugal pumps
ISO14691 couplings for-General-purpose applications
ISO10441(API 671)(opt)couplings for-Special-purpose applications

Section 3.0 - Declaration:
We, Rathi Transpower Pvt. Ltd. declare that under our sole responsibility for the supply of the machinery defined in Section 1.0 above, the said machinery parts are intended to be incorporated into other machinery or assembled with other machinery to constitute machinery as covered by this Directive.

The machinery parts, covered by this declaration must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the provisions of the Directive.

Signed

Date :

(Quality Manager)

Format No : 3QA-F-33 Rev 1