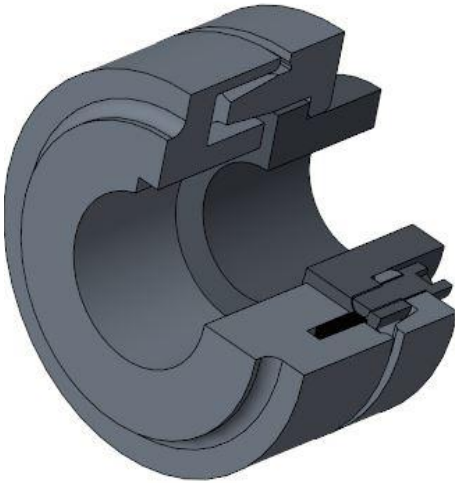
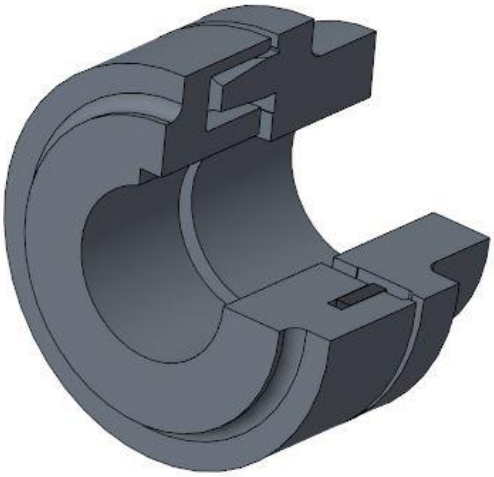
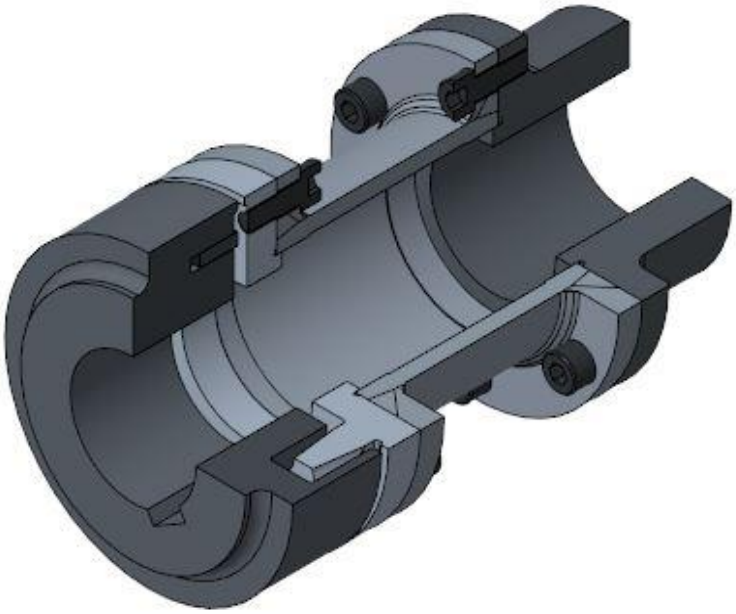
Installation & Operating Manual (IOM)
N-FLEX Coupling
RN/RNS Series



RN (A)



RN (B)



RNS

RATHI TRANSPOWER PVT.LTD.
R-II-D-03/02-09/20 Gaia Apex,S No 33/2D,Viman Nagar
Pune, 411014

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1. Introduction & General Guidelines

- RN type pin bush coupling are designed to transmit torque between drive and driven shaft using rubber element, which compensate radial, angular and axial misalignment and reduce the effect of socks & vibrations.
- This manual will help you to install and maintain RN 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 :

STOP Caution person may get injured

Damage the product

Pay attention

Potentially explosive warning

2. Before installation information

- RN couplings are delivered by RTPL as assembled condition which consists components as shown in fig. 1.

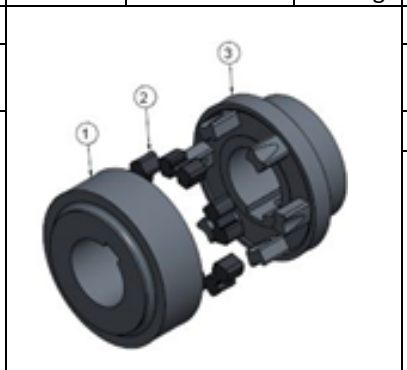
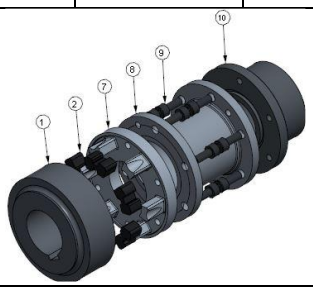
RN (A)			RN (B)			RNS		
Part No.	Component	Qty.	Part No.	Component	Qty.	Part No.	Component	Qty.
1	RN PART 1	1	1	RN PART 1	1	1	RN PART 1	1
2	RUBBER ELEMENT	Refer GA Drg.	2	RUBBER ELEMENT	1	2	RUBBER ELEMENT	Refer GA Drg
4	RN PART 3	1	3	RN PART 4	Refer GA Drg	7	RN PART 7	1
5	RN PART 2	1				8	RN SPACER	1
6	COUPLING BOLT	Refer GA Drg				9	COUPLING BOLT	Refer GA Drg
						10	RN PART 5	1
								

Fig. 1 Part List

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

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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 cavities & lugs.
- Provide set screw at distance L (L = LTB /2)

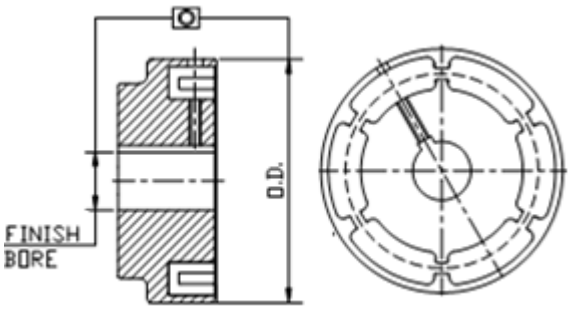

Fig.2 Finish Bore

3.2 Hub Mounting.

- Mount hubs/adapters on their respective shafts with keys such that the shaft ends are flush with inner face of the adapter & tighten the set screw over the keys.
- Insert the rubber element in slots provided in the part no. 1 (Hub).
- Bring both the hubs closer to maintain gap `G'(Table 2) as shown in fig. 3.1.
- In case of spacer type of couplings, mount the hubs by maintaining DBSE. Refer fig.3.2.
- For normal applications the shaft ends should be flush with inner face of hub/adapter, they can protrude beyond the inner face of hub/adapter or remain inside if required but sufficient gap should be allowed to take care of end float of both shafts (i.e. axial misalignment)

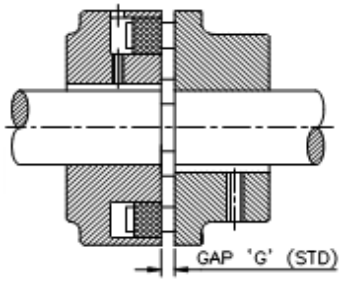

Fig.3.1

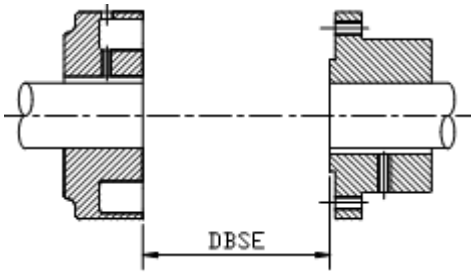

Fig.3.2

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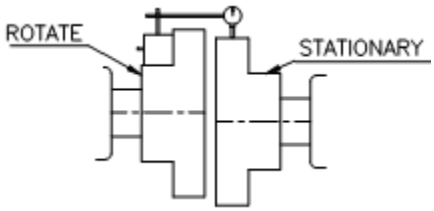
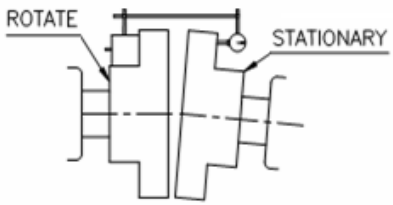
3.3 Shaft Alignment.

- 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

<table>
<tr><th>Method</th><th>Parallel/Radial</th><th>Angular</th></tr>
<tr><td rowspan="3">1</td><td>Using dial gauge
 
</td><td>Using dial gauge
 
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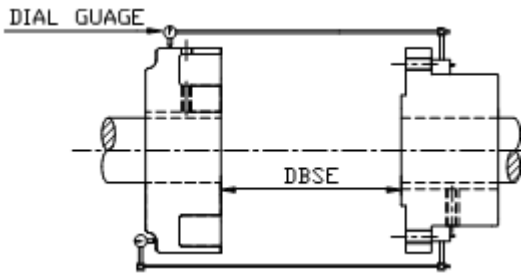
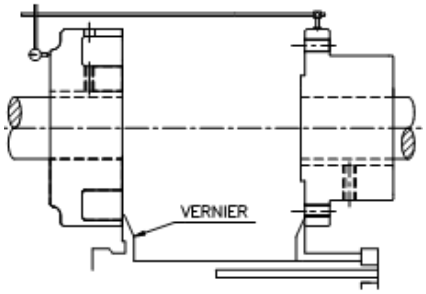
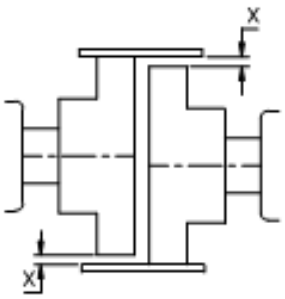
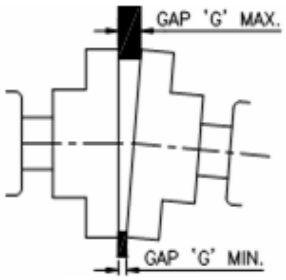
<tr><td> 
</td><td> 
</td></tr>
<tr><td colspan="2">• Clamp dial gauge on the hub of one of the half & set plunger on the OD of another half.
• Note the reading at each quarter rotation of hub by rotating one end.
• P or X is half the Total Indicated Reading (TIR) shown on dial gauge, which should not be more than value of initial misalignment.</td></tr>
<tr><td rowspan="2">2</td><td>Using straight edge
 
</td><td>Using filler gauge
 
</td></tr>
<tr><td colspan="2">• 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.
• Note the reading og Gap ‘G’ at each quarter without rotating shafts. The difference in maximum & minimum gap will be the Total Indicated Reading (TIR)</td></tr>
</table>

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Table 2 : PERMISSIBLE MAXIMUM MISALIGNMENTS

SR NO	COUPLING SIZE	Permissible Maximum Mis-alignment				* GAP 'G' (mm)		
		Angular		Axial (mm) (±)	Parallel / Radial 'P' mm		Size	Tightening Torque (Nm)
		Degree (°)	Total Indicated Reading (TIR) mm					
1	68	1°	1.2	± 1.5	±0.4	2-4	-	-
2	80	1°	1.4	± 1.5	±0.4	2-4	M6	12.8
3	95	1°	1.66	± 1.5	±0.4	2-4	M6	12.8
4	110	1°	1.92	± 1.5	±0.4	2-4	M8	31.2
5	125	1°	2.18	± 1.5	±0.4	2-4	M8	31.2
6	140	1°	2.44	± 1.5	±0.4	2-4	M10	61.6
7	160	1°	2.79	± 1.5	±0.4	2-6	M10	61.6
8	180	1°	3.14	± 1.5	±0.4	2-6	M10	61.6

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

3.4 Final Assembly

- Ensure equipment is aligned properly.
- Insert rubber elements in the hub slot and assemble Jaw body (part 7) and spacer as shown in fig. 4.
- Assemble the spacer with Adapter & tighten all Allen Head bolts as shown in fig. 4 at specified tightening torque (refer Table 2).
- Maintain gap 'G' (refer table 2) during assembly.

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

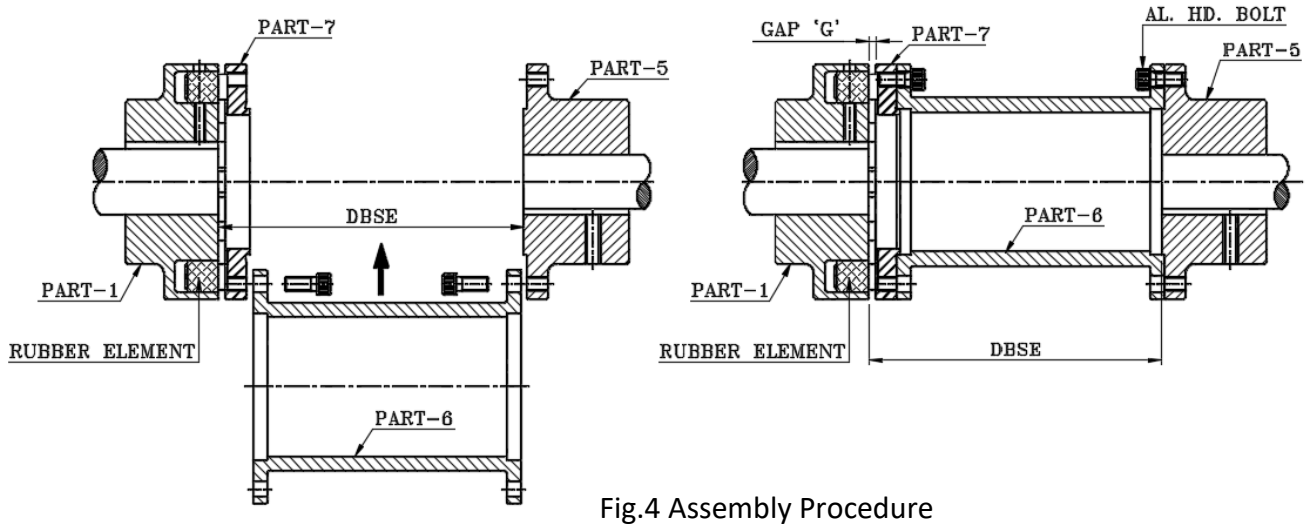

Fig.4 Assembly Procedure

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4. Safety General Hazard & Environment

4.1 Safety General Hazard

- 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 qulified 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.

4.2 Environment

- Our products are comply with EMS standard ISO 14001:2015, any instruction which are impermissible according to standard are not followed.

5. Inspection & Periodic Maintenance

- The N-flex 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 loosening.
  - Flexible elements for wear, cracks, swelling or deep impression.
  - Replace bushes immediately if they observed any of the above defects.

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6. Spare Management & Complaint Handling

6.1 Spare management

- We recommend to store spare items as given below, in order to have continuos operation and to reduce down time due to failures.
- Spare component list.(Fig.1)

Sr.No.	Part descriptions	Components/ part No.	Quantity
1	Part 5 Set	Part 5 (10) Bolt (9) Washer	1 set
2	Rubber Element	02	1 set
3	PART Set	Part 1 (1) Rubber Element (2)	1 set
4	Part 7 Set	Part 7 (7) Bolt (9) Washer	1 set
5	PART 7/5 BOLT KIT	Bolt (9)	1 set

6.2 Complaint Handling

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

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- Product Performance datasheet(PPDS)

RATHI GROUP INDIA	**ANNEXURE** **Product Performance Data Sheet (PPDS)**	Ref.: Date:	Lovejoy

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	

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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)	

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7. Breakdown & Trouble Shooting

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

(*) - Consult M/s RATHI if required

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8. Marking Details

- The ATEX marking for RGD coupling will be given on outer surface or front side (Fig. 7).
- **Example :**

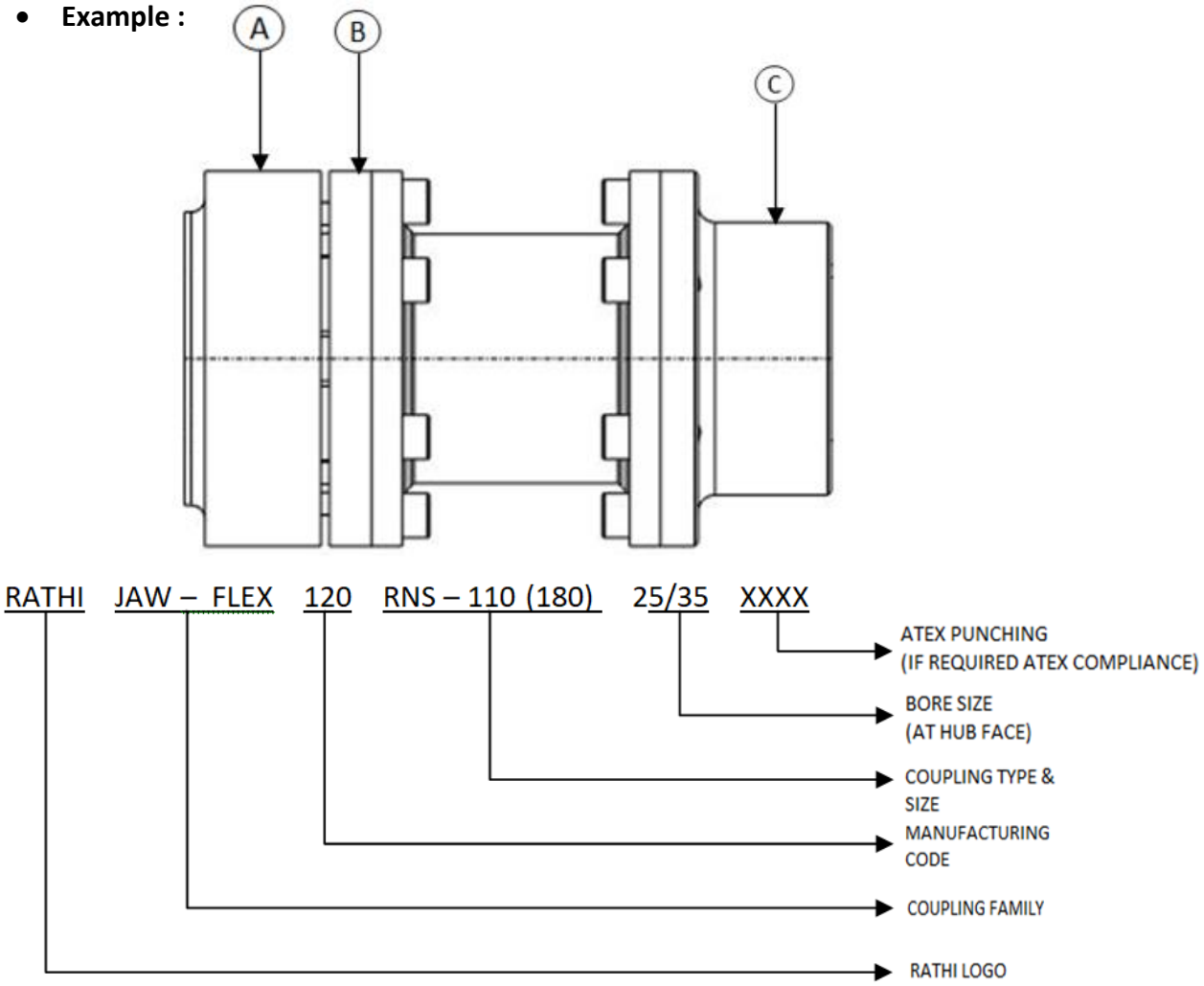

Fig.7 Marking Details

- **ATEX Punching sample**

  RATHI JAW-FLEX 120 RNS-110 (180) 25 CE Ex) -20°C +120ºC

  - **Where,**

    1. Manufacturing code e.g. 120 for December 2020
    2. Product code e.g. RNS - 110
    3. Finish bore size code e.g. 25

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

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9. Declaration of Conformity

ATEX

Declaration of Conformity

2014/34/EU

Customer Name		**Certificate No.**	
PO No.		**Date**	

1) Declaration relating to :

Type : Metallic (Non-Disc) Coupling

Size :

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 Ⓔx 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 ( ) Quality Manager ( )

Date : Date :

Format No : 3QA-F-33 Rev 1

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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