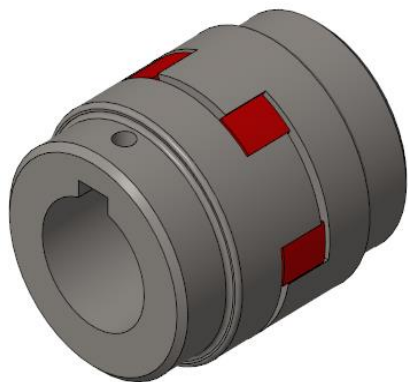


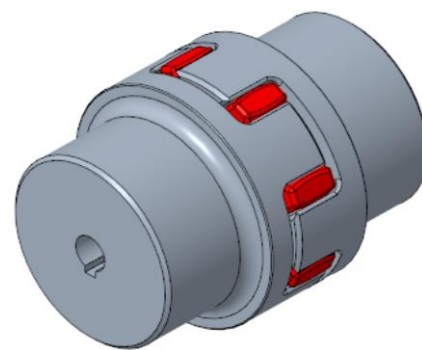
Installation & Operating Manual (IOM)
JAW-FLEX Coupling
Series : L,RFC,RRJ,SW,H,RRL,RRS,SWQ,HR,SWS



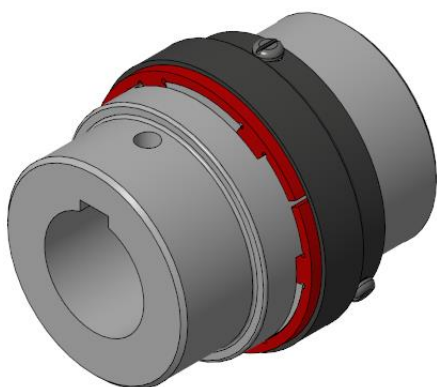
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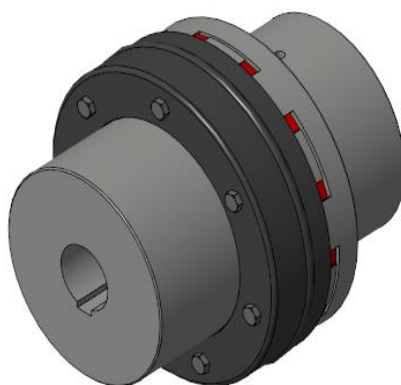
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RRJ



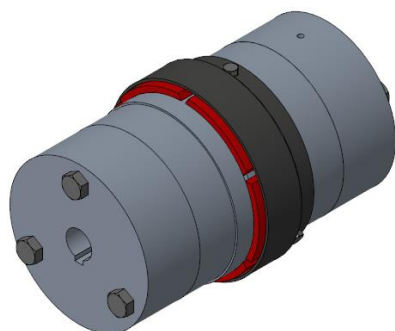
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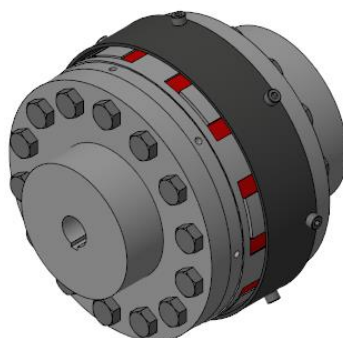
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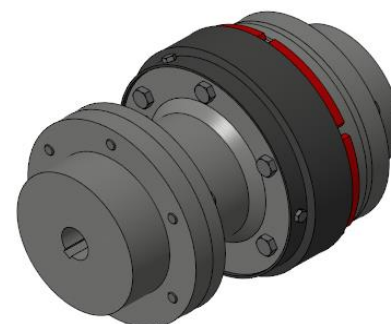
RRS



SWQ



HR



SWS


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1. Introduction & General Guidelines

- Jaw flex couplings 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 shocks & vibrations.
- This manual will help you to install and maintain Jaw flex couplings before installing/disassembling of coupling. It is advisable to read the manual carefully before starting the work.
- Symbol description :

 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. 1.1 & 1.2.
- Inspect coupling assembly for visible damage, if you found contact RATHI.
- Dismantle the coupling; remove protective coating/lubricants from coupling components.

RRS			H			SWQ		
Part No.	Component	Qty	Part No.	Component	Qty.	Part No.	Component	Qty.
1	Driving Hub	01	1	Driving Hub	01	1	Hex HD Bolt	06
2	Screw	01	2	Screw	01	2	Driving Hub	01
3	O/S Ring	01	3	O/S Ring	01	3	Spacer	02
4	Snap Wrap	14	4	Snap Wrap	14	4	T Cushion	06
5	Spacer	01	5	Spacer	01	5	O/S Ring	01
6	Driven Hub	01	6	Driven Hub	01	6	Screw	03
						7	Driven Hub	01

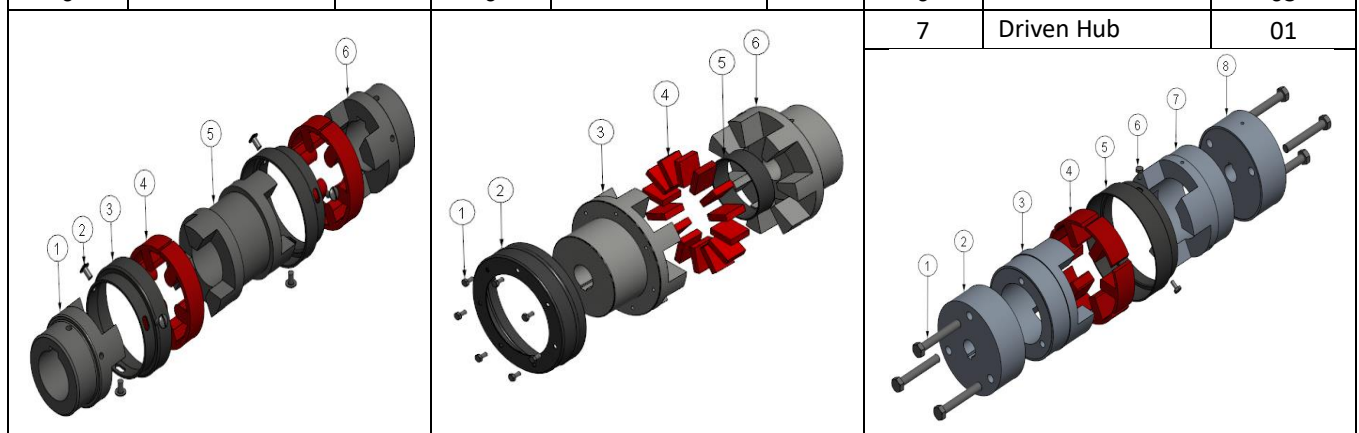
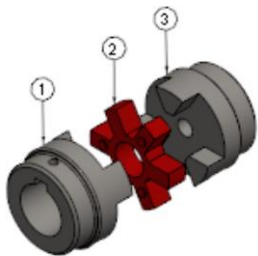
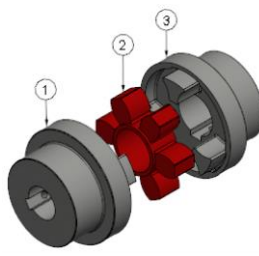
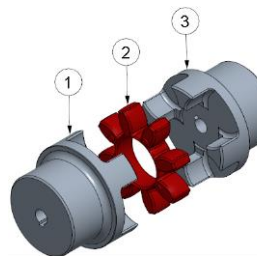


Fig 1.1

			L	RFC	RRJ
Part No.	Component	Qty.			
1	Driving Hub	01			
2	Spider	01			
3	Driven Hub	01			

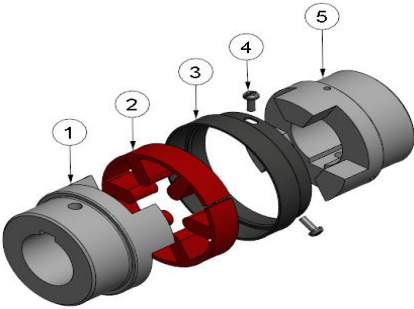
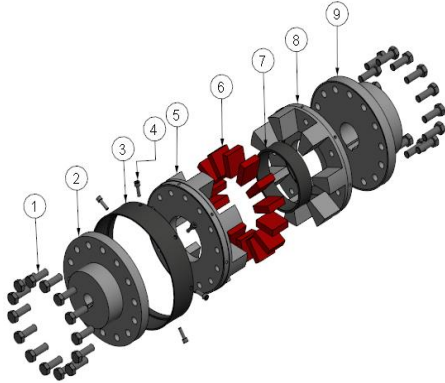
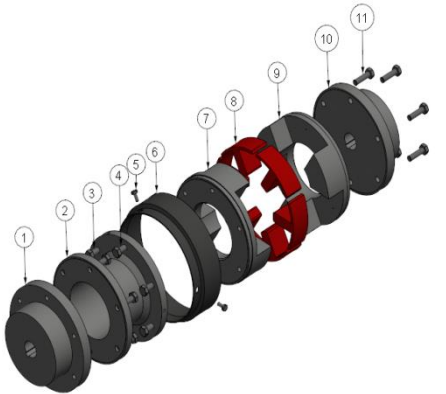
SW			HR			SWS		
Part No.	Component	Qty.	Part No.	Component	Qty.	Part No.	Component	Qty.
1	Driving Hub	01	1	Hex HD Bolt	44	1	Driving Hub	
2	Snap Wrap	01	2	Driving Hub	01	2	Spacer	
3	O/S Ring	01	3	O/S Ring	01	3	Hex HD Bolt	
4	Screw	03	4	Allen HD Bolt	11	4	Hex HD Bolt	
5	Driven Hub	01	5	Driving Adaptor	01	5	O/S Ring	
			6	Cushion	01	6	Jaw Body	
			7	I/S Ring	01	7	T Cushion	
			8	Driven Adaptor	01	8	Driven Hub	
			9	Driven Hub	01	9	Hex HD Bolt	
								

Fig 1.2

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. 2.1 & 2.2)

- Hub finish bores machined by customer with reference to flange outside diameter.
- Finish bore strictly done within specified limit (H7, Js9).
- Maintain face run-out and concentricity as per below table.



Outside diameter (mm)	Face run-out/Concentricity(mm)
10-180	0.04
180-400	0.08
400-630	0.1

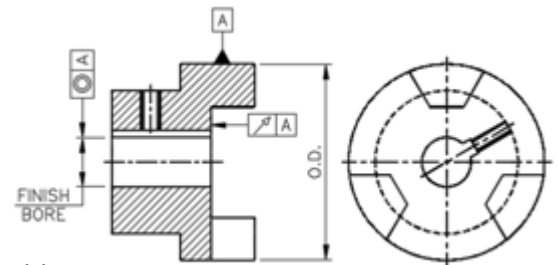


Fig. 2.1

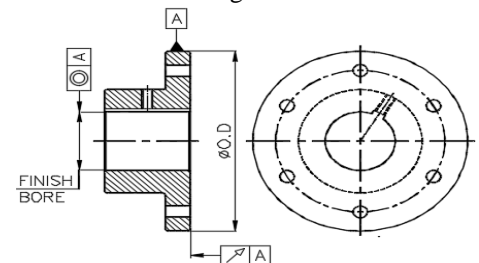


Fig.2.2

- Mark the keyway centre line such that keyway should come between two jaws (For L, SW, RRS, H, RFC, RRJ & RN hubs, refer Fig. 2.1) and between two holes (For SWQ, SWS & HR hubs, refer Fig. 2.2).
- Provide set screw at distance LTB /2. If it is not possible, suitable distance nearer to midpoint of the length through bore (LTB) is provided.

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 spider in one of the hub. Bring both the coupling hubs (along with equipments) closer so as to maintain gap 'G' as shown in fig. 3.1 and to maintain assembled length 'F' as shown in fig. 3.1. Dimensions 'G' & 'F' are given in table 2.1 & 2.2.

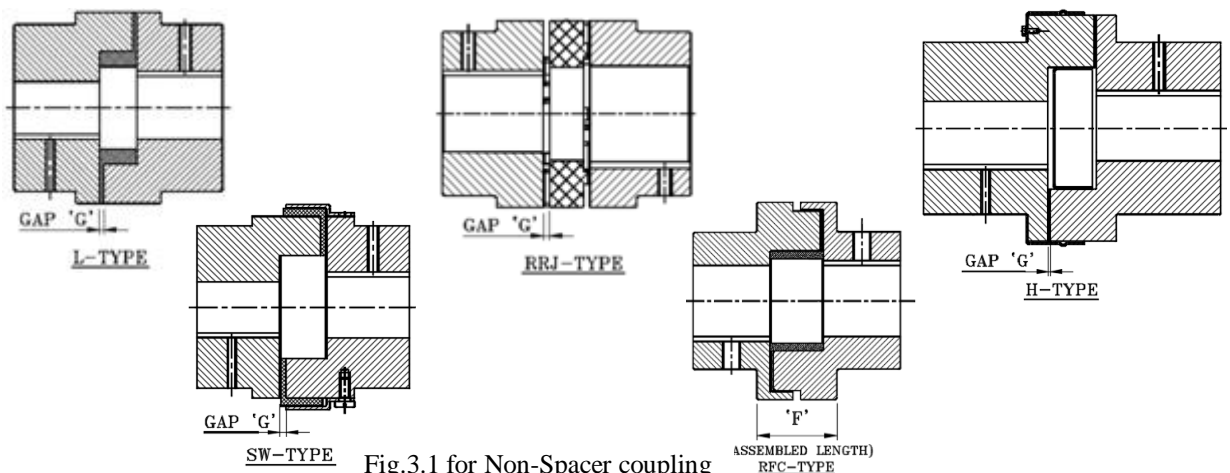


Fig.3.1 for Non-Spacer coupling

- In case of Non-spacer couplings the distance between shaft end (DBSE) is equal to the total length of the coupling less length through bore of both the hubs.
- In case of spacer type of couplings, the spacer length is normally equal to the distance between shaft ends of the equipments. Refer fig. 2.1 & 2.2.

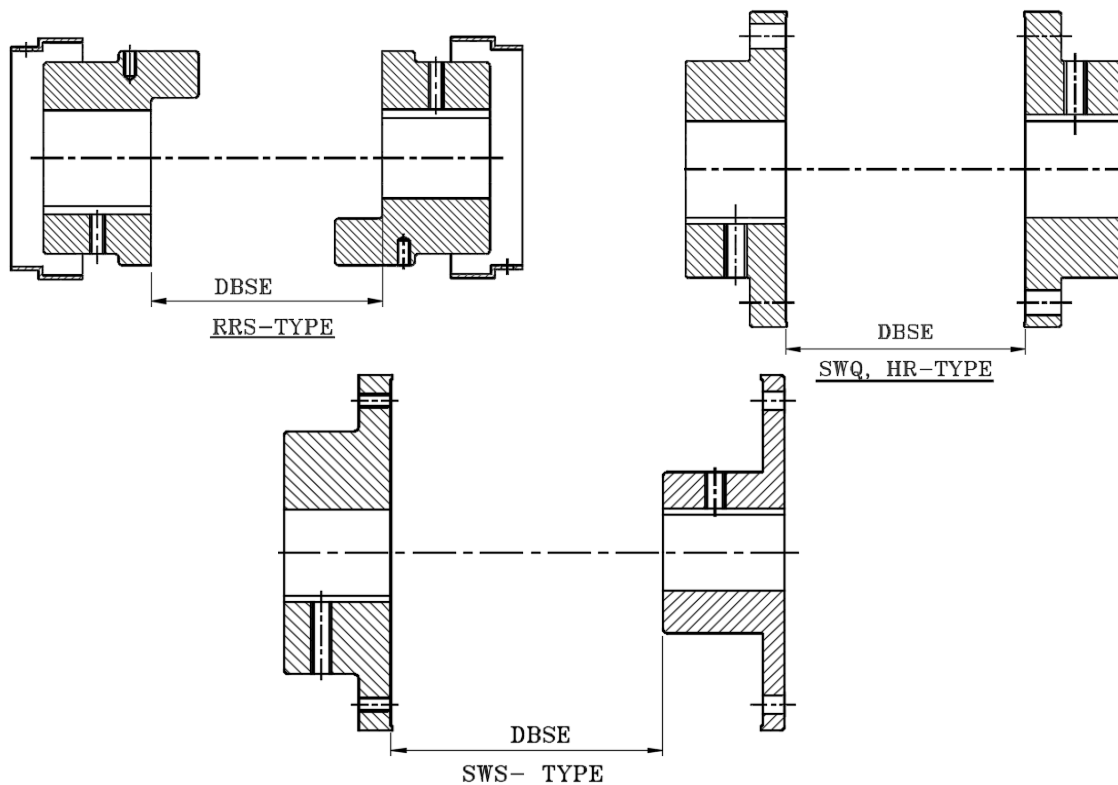


Fig.3.2 for Spacer-type coupling

- For normal applications the shaft ends should be flush with inner face of hub. They can protrude beyond the inner face of hub or remain inside if required, but sufficient gap should be allowed to take care of end float of both shafts (i.e. axial misalignment)
- For H & HR couplings Insert the inner ring before bringing the equipments to their final mounting positions.
- In case of couplings with outer ring (i.e. SW, SWS, RRS, SWQ, H & HR) mount the outer ring on one of the hub and slide it towards the nearest equipment.

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

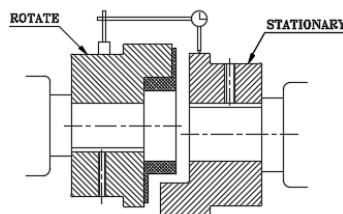
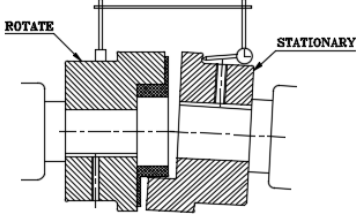
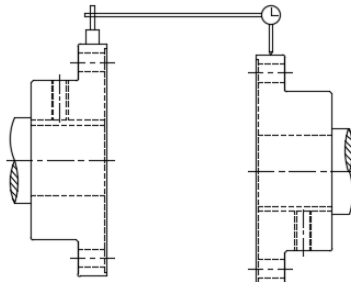
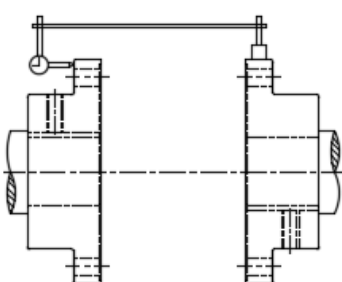
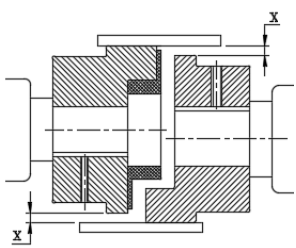
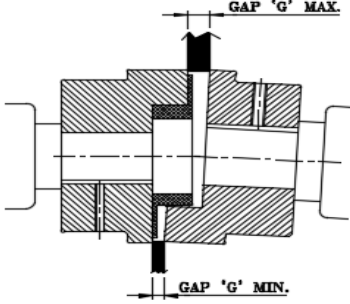
Method	Parallel/Radial	Angular
1	<p>Using dial gauge</p> 	<p>Using dial gauge</p> 
		
	<ul style="list-style-type: none"> • Clamp dial gauge on the hub of one of the half & set plunger on the OD of another half. • Note the reading at each quarter rotation of hub by rotating one end. • P or X is half the Total Indicated Reading (TIR) shown on dial gauge, which should not be more than value of allowable initial misalignment. 	
2	<p>Using straight edge</p> 	<p>Using filler gauge</p> 
	<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. • Note the reading of Gap 'G' at each quarter without rotating shafts. The difference in maximum & minimum gap will be the Total Indicated Reading (TIR) 	

Table 2.1 : PERMISSIBLE MAXIMUM MISALIGNMENTS/TIGHTENING TORQUE
(L,SW,SWQ,RRS,H,HR)

Coupling		Permissible Maximum Mis-alignment				* GAP 'G' (mm)	Tightening Torque (Nm)	
		Angular		Axial (mm) (±)	Parallel / Radial 'P' mm			
Type	Size	Degree (°)	Total Indicated Reading (TIR) mm					Size
L	035	1°	0.27	±0.5	0.4	1	-	-
	050	1°	0.40	±0.5	0.4	1	-	-
	070	1°	0.6	±1	0.4	2	-	-
	075	1°	0.7	±1	0.4	2	-	-
L, SW, RRS, SWQ- 226	095	1°	0.9	±1	0.4	2	M6	5
	099	1°	1.1	±1	0.4	2	M6	5
	100	1°	1.1	±1	0.4	2	M6	5
	110	1°	1.4	±1.5	0.4	3	M8	12.5
	150	1°	1.6	±1.5	0.4	3	M10	25
	190	1°	2.0	±1.5	0.4	3	M10	25
	225	1°	2.2	±1.5	0.4	3	M12	44
	226	1°	2.4	±1.5	0.4	3	M12	44
L, SW, SWQ, SWS	276	1°	2.7	±1.5	0.4	3	M12	44
	280	1°	3.3	±1.5	0.4	3	M14	70
	295	1°	4.1	±1.5	0.4	3	M16	107
	2955	1°	4.1	±1.5	0.4	3	M16	107
SW,SWQ SWS	300	1°	4.4	±1.5	0.4	3	M20	215
	350	1°	5.3	±1.5	0.4	3	M20	215
H,HR	307	1°	4.4	±1.5	0.4	3	M16	107
	357	1°	4.9	±1.5	0.4	3	M16	107
	367	1°	5.3	±1.5	0.4	3	M16	107
HR	407	1°	5.9	±1.5	0.4	3	M16	107
	457	1°	6.8	±1.5	0.4	3	M16	107
	509	1°	7.0	±3	0.4	6	M16	107
	609	1°	7.7	±3	0.4	6	M16	107
	709	1°	8.8	±3	0.4	6	M16	107
	809	1°	10.0	±3	0.4	6	M20	215
	911	1°	11.0	±3	0.4	6	M20	215
	# 1013	-	-	-	-	-	-	-
	# 1015	-	-	-	-	-	-	-
	# 1115	-	-	-	-	-	-	-
# 1117	-	-	-	-	-	-	-	

- In case of RRS couplings, double the values of axial & angular misalignment for corresponding size.
- For RRS (sizes from 095 to 226) Parallel misalignment = 0.005 mm per mm of DBSE
- For eg. If DBSE is 140mm then Parallel misalignment will be, 140X0.005=0.7mm.
- * Gap 'G' in the above table is when angular and axial misalignments are zero.
- # Products are under development, data will be updated later.

Table 2.2 : PERMISSIBLE MAXIMUM MISALIGNMENTS (RRJ & RFC)

Coupling		Permissible Maximum Mis-alignment				* GAP 'G' (mm)	Assemble Length 'F' (mm)
		Angular		Axial (mm) (\pm)	Parallel / Radial 'p' mm		
Type	Size	Degree ($^{\circ}$)	Total Indicated Reading (TIR) mm				
RRJ	19	0.8 $^{\circ}$	0.78	1.6	0.15	2	-
	24	0.8 $^{\circ}$	0.94	1.8	0.20	2	-
	28	0.8 $^{\circ}$	1.13	2	0.20	2.5	-
	38	0.9 $^{\circ}$	1.48	2.2	0.25	3	-
	42	0.9 $^{\circ}$	1.68	2.3	0.30	3	-
	48	1 $^{\circ}$	2.01	3	0.35	3.5	-
	55	1 $^{\circ}$	2.22	3	0.35	4	-
	65	1 $^{\circ}$	2.39	3.5	0.40	4.5	-
	75	1.1 $^{\circ}$	2.74	3.5	0.45	5	-
	90	1.1 $^{\circ}$	3.35	4.5	0.50	5.5	-
RFC	7	1 $^{\circ}$	2.2	± 0.2	0.3	-	28
	9	1 $^{\circ}$	2.4	± 0.5	0.3	-	34.5
	11	1 $^{\circ}$	2.7	± 0.6	0.3	-	45
	13	1 $^{\circ}$	3.3	± 0.8	0.4	-	54
	15	1 $^{\circ}$	4.1	± 0.9	0.4	-	60
	18	1 $^{\circ}$	4.1	± 1.1	0.4	-	73
	23	1 $^{\circ}$	4.4	± 1.3	0.5	-	84.5
	28/28A	1 $^{\circ}$	5.3	± 1.7	0.5	-	107.5

- Distance 'F' in above table is given when angular and axial misalignments are zero.

Note:

- Given tightening torques are for the bolts engaging with the spacer & driving/driven hubs.
- Consult M/s RATHI for #-marked sizes.

3.4 Final Assembly

- Ensure equipment is aligned properly.

3.4.1 L, RFC & RRJ

- As the spider has been already inserted in one of the hub while aligning the equipments, no separate procedure is required to be followed.

3.4.2 SW, H

- Wrap the snap wrap/cushions of required size in the space between the jaws. Then slide the outer ring over the snap wrap/cushions & fix it to the hub with the help of screws/bolts provided along with the washers.

3.4.3 SWQ & HR

- Take the spacer jaw body assembly with the inside ring (Only HR) & outside rings without elastomeric elements.
- Insert spacer assembly in the steps provided in the hubs.
- Tighten the bolts with the torque given in table 2.1 for tightening torque. Wrap the snap wrap/cushions of required size in the space between jaws.
- Slide the outer ring over the snap wrap/cushions accordingly & fix it to the hub with the help of screws/bolts along with the washers.

3.4.4 RRS

- Insert the spacer between RRS hubs as mentioned in clause 3.2
- Wrap/insert the snap wrap/'T' cushions in the space between jaws.
- Slide the outer ring over the snap wrap/T-cushions & fix it to the hub with the help of screws/bolts along with washers.

3.4.5 SWS

- Insert jaw body over the pump side hub.
- Assemble one half of the jaw body with the pump side hub with the help of bolts.
- Slide another jaw body over pump side hub. Insert the spacer along with outer ring between motor side hub & jaw body as shown in fig. 4.
- Locate the spacer in steps provided on motor side hub and jaw body and assemble each other with the help of bolts.
- insert the cushions between jaws of jaw bodies & fix the outer ring over the cushions.

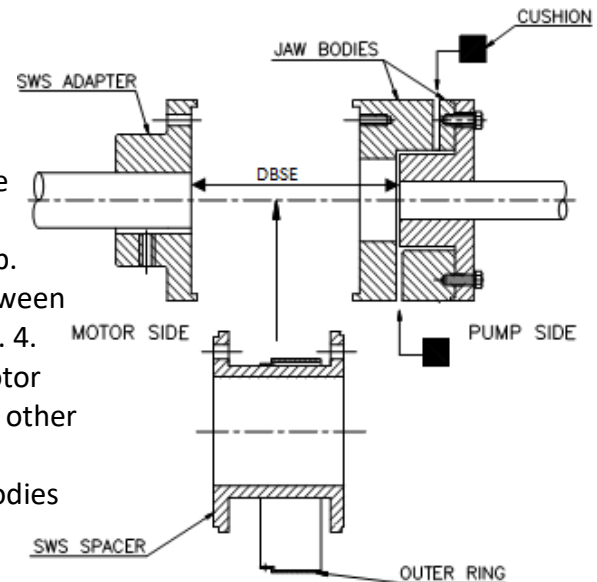


Fig 4. ASSEMBLY OF SWS COUPLING



- If the coupling is dynamically balanced, ensure that the match marks are in straight line & unidirectional before bolting the assembly.



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

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 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 displayed on switch.



- Immediate stop the drive unit if anything abnormality 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 comply with EMS standard ISO 14001:2015, any instruction which are impermissible according to standard are not followed.

5. Inspection & Periodic Maintenance

- Jaw-flex couplings 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.

6. Spare Management & Complaint Handling

6.1 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.
- Spare component list.(Fig.1.1 & 1.2)

Sr.No.	Part descriptions	Components/ part No.	Quantity
1	Rubber Element	Refer Fig. 1.1 & 1.2	1 set

- 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.

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.

Installation & Operating Manual /JAW-FLEX Coupling /L,RFC,RRJ,SW,H,RRL,RRS,SWQ,HR,SWS



[GO TO INDEX](#)

- 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			

PAGE 1 OF 2

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

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 cushions 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

8. Marking Details

- The ATEX marking for JAW coupling will be given on outer surface or front side (Fig. 5).
- **Example : RRS Coupling**

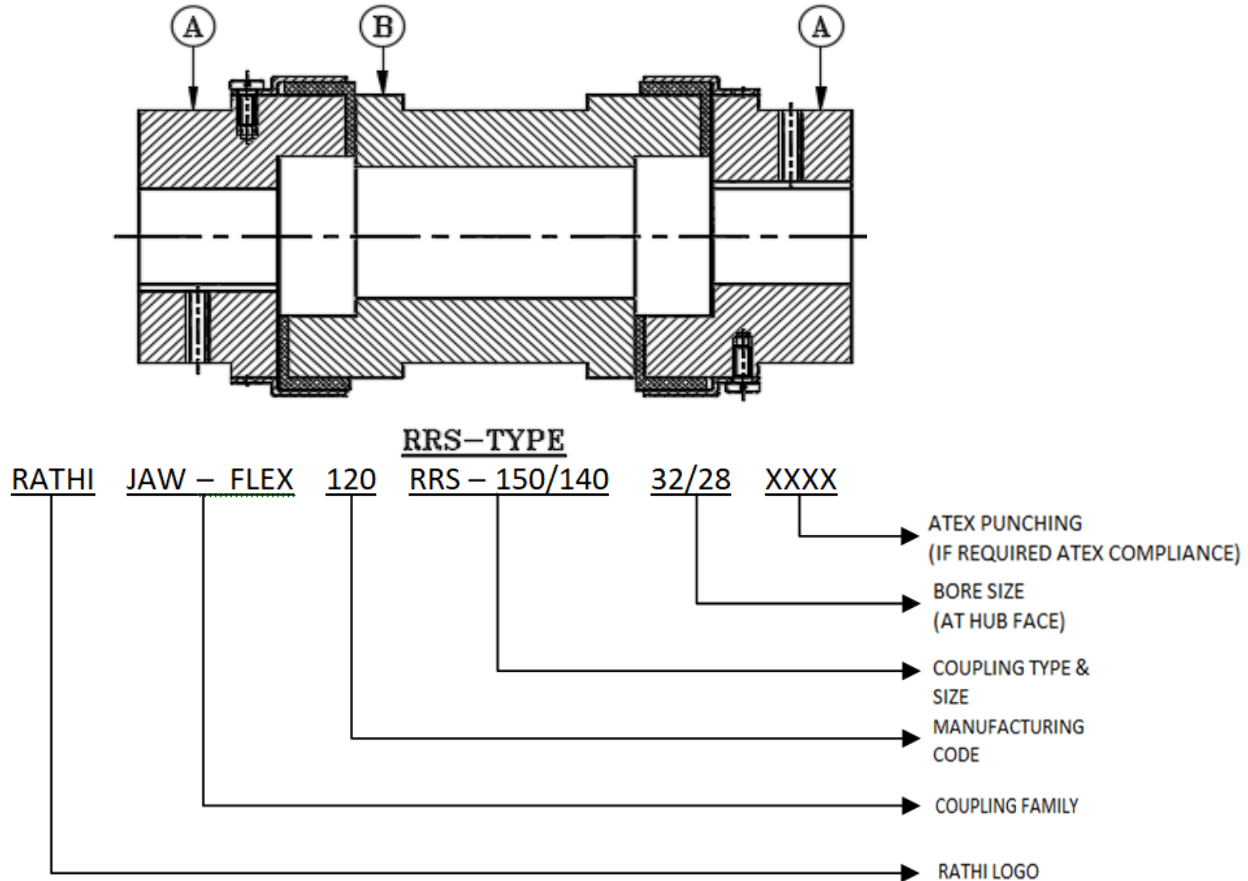


Fig. 5. Marking example

- **ATEX Punching sample**
 - A. RATHI JAW-FLEX 129 L/SW-150 32 CE Ex II 2GD -25°C +120°C
 - B. RATHI JAW-FLEX 129 RRS-150/140 CE Ex II 2GD -25°C +120°C
- Similarly for other JAW-FLEX coupling series the marking will be as per below,

For RFC couplings, RATHI JAW-FLEX [1] [2] [3] CE Ex II 2GD -25°C+120°C

For RRJ couplings, RATHI JAW-FLEX [1] [2] [3] CE Ex II 2GD -30°C+120°C

For RN couplings, RATHI JAW-FLEX [1] [2] [3] CE Ex II 2GD -25°C+120°C




- **Where,**

1. Manufacturing code e.g. 129 for December 2019
2. Product code e.g. RRS-150/140
3. Finish bore size code e.g. 32



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

9. Declaration of Conformity

	
<i>Declaration of Conformity</i>	
<i>2014/34/EU</i>	
Customer Name <input style="width: 100%;" type="text"/>	Certificate No. <input style="width: 100%;" type="text"/>
PO No. <input style="width: 100%;" type="text"/>	Date <input style="width: 100%;" type="text"/>
1) Declaration relating to :	
Type :	<input style="width: 100%;" type="text" value="Metallic (Non-Disc) Coupling"/>
Size :	<input style="width: 100%;" 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 style="width: 100%;" type="text"/>) Date : <input style="width: 100%;" type="text"/>	Quality Manager (<input style="width: 100%;" type="text"/>) Date : <input style="width: 100%;" 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)

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