

⚠ WARNING

- Read and follow all instructions carefully.
- Disconnect and lock-out power before installation and maintenance. Working on or near energized equipment can result in severe injury or death.
- Do not operate equipment without guards in place. Exposed equipment can result in severe injury or death.

⚠ CAUTION

- Periodic inspections should be performed. Failure to perform proper maintenance can result in premature product failure and personal injury.

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1 General Information

The IXILFLEX® coupling comprises RUBBER LINKS, a flexible element consisting of two rubber hinge joints mounted on a lightweight aluminium link. These links are connected to one flange by one of their ends and to another flange by the other. Their purpose is to absorb misalignments.

The hinge joints that make up the links are obtained through vulcanisation of the rubber parts to the metal parts, providing them with high pre-compression to enhance performance.

The link and hence, the coupling, are able to operate in a bidirectional direction without any need to invert their positions.

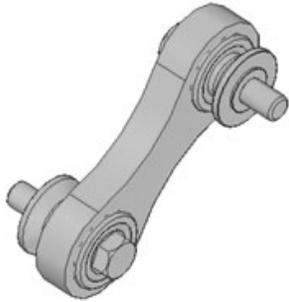


Fig 2.1

2 Technical Data

This instruction is valid for IU and IX Ixilflex® Flexible couplings.

In case the drawing of the coupling that you are working with indicates a different instruction than IMO001165, then pay attention only to that instruction on the drawing.

Notice: Make sure that this is the latest version of instruction, by checking it at our manufacturer's website www.jaure.com.

3 Safety Instructions

The mounting of the couplings has to be carried out by qualified personnel only, to ensure the correct handling of the parts, as well as the correct understanding and fulfilling of the concepts explained in this document.

Before proceeding with the mounting process, please ensure all bore holes for fitted bolts are clean and free of rust, paint or any rust preventive product.

To ensure safety of personnel involved in the mounting process, please verify that the following safety rules can be followed before starting to work:

- Use protection glasses and gloves.
- Inspect all the equipment to make sure it is in proper condition
- Make sure that machines cannot be started up accidentally
- Working area must be free of obstruction objects
- Do not stay behind the components during lifting and installation process
- Handle the components always by lifting through their COG.
- The lifting and hoisting equipment of the working area must be carefully analyzed before moving any heavy component. Considering the length of some components, special arrangements may be necessary to avoid any risk of the personnel

CAUTION: Couplings are potentially dangerous rotating parts. Always use proper guards to prevent accidents and comply with existing safety regulations.

CAUTION: Before installing the couplings and when handling them, always avoid any damage to the coupling and especially to the links.

4 Transport, Storage & Packaging

The volume of the supply is indicated in the dispatch documentation. The condition of the goods supplied should be checked at the time of receipt. If there are any damages due to transportation or parts that are missing, these should be notified.

The coupling is packed differently depending on the transportation route and the size. Unless agreed upon otherwise in the contract, the packaging shall be the standard packaging of Jaure.

The pictograms affixed to the packaging should be kept in mind during handling.

CAUTION: Ensure the use of a suitable elevation device.

The coupling is supplied duly prepared with storage products and can be stored for 6 months in a dry, dust-free place, suitable for the same. If storage for a longer period is planned, or the crate is opened, please refer to the maintenance instructions for corrosion protection section 7 of this manual, and the following points extracted from standard DIN 7716:

- Normal temperature between -5 °C and 27 °C
- Humidity < 65% without any water condensation
- Avoid direct sun rays
- There should be a light ventilation to protect again ozone
- Keep away from inflammable products and chemical products that can damage the rubber.
- Do not store parts under any load
- Avoid contaminated and dusty environments.

5 Assembly & Disassembly

5.1 Mounting instructions for IU Ixilflex couplings

Read all the instructions before proceeding to installation.

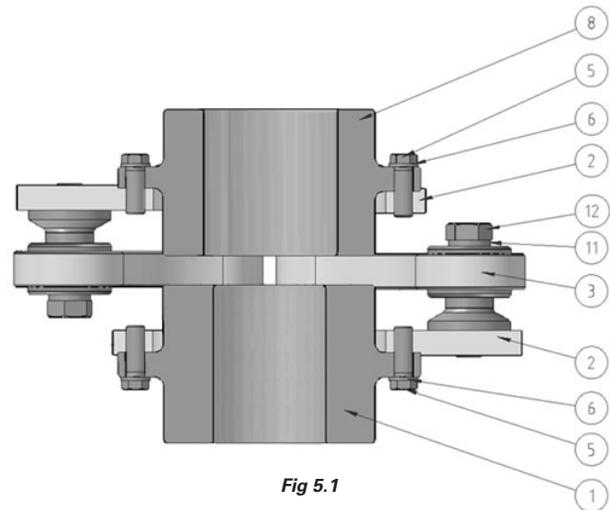


Fig 5.1

5.1.1 Mounting

The coupling is supplied assembled. Proceed as follows:

- Loosen bolts and washers (11, 12) and remove the links (3)
- Loosen bolts and washers (5, 6) and remove flanges (2)
- Clean the shaft & hub surface

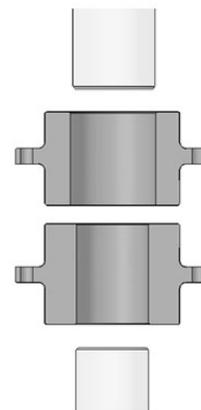


Fig 5.2

- Insert each hub (1, 8) into its corresponding shaft. (See fig. 5.2)

For Keyway Type B01 to B04 connection follow instruction IMO000060

For Conical shaft Type F01 & Conical sleeve type F02 connection follow instruction IMO000918

For Cylindrical shaft Type E01 & E02 follow instruction IMO000917

For Conical Ring Type AC connection follow instruction IMO000849

** For other type of connections please consult our manufacturer
Tel: +34 943 69 00 54 Fax: +34 943 69 02 95

- Insert flanges (2) and mount them by tightening bolts and washers (5, 6) (See fig. 5.3)

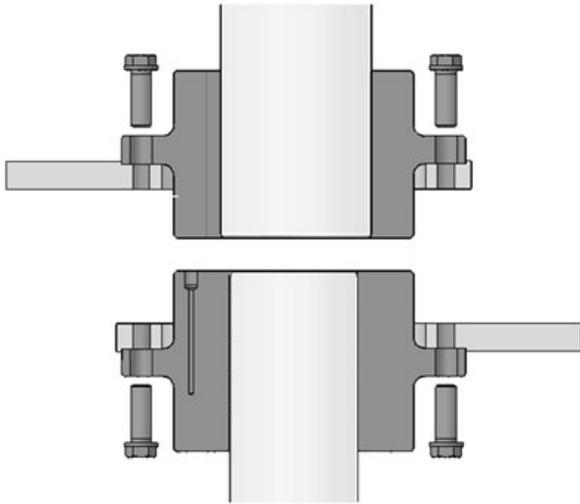


Fig 5.3

- Once both hubs and flanges have been mounted it is necessary to align both hubs properly. Please follow instructions in section '5.3. Alignment'.
- The last step would be the mounting of the links against the corresponding hub or flange, using the corresponding bolts and washers.(11, 12) (See fig 5.4) Tighten the bolts progressively according to values shown in drawing.

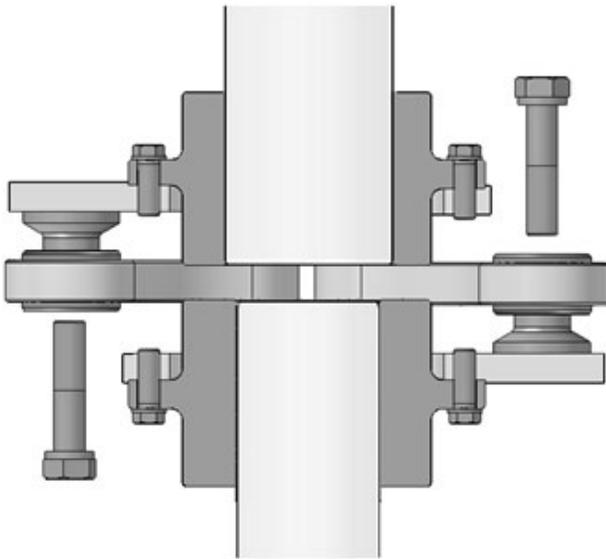


Fig 5.4

For oiled threads, reduce the tightening torque values by 20%. Do not use molybdenum disulfide (MoS2) greases in the threads.

It is really important tightening the bolts of a coupling with proper sockets and according to specification.

Bolts shall be tightened one after the other by a torque wrench only in clockwise or anticlockwise direction of the circumference with a stepwise increasing torque. Start with 20% of the tightening torque specified in the drawing until all bolts are tightened with 20%. This procedure shall be repeated with 40%, etc. The tightening procedure is completed when all bolts reach the tightening torque specified in the corresponding drawing.

5.1.1 Dismounting

- Remove links (3) by loosening bolts and washers (11, 12)
- Remove flanges by loosening bolts and washers (5, 6)
- Dismount hubs according to specific instruction corresponding to its connection type

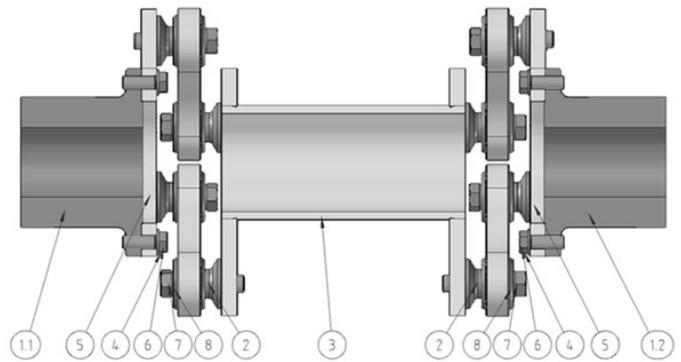


Fig 5.5

The coupling is supplied assembled. Proceed as follows:

- Loosen bolts and washers (4, 6) and remove hubs (1.1, 1.2)
- Clean the shaft & hub surface
- Mount hubs (1.1, 1.2) on the corresponding shafts, by following specific instructions for each type of connection. (See fig 5.6)

For Keyway Type B01 to B04 connection follow instruction IMO000060

For Conical shaft Type F01 & Conical sleeve type F02 connection follow instruction IMO000918

For Cylindrical shaft Type E01 & E02 follow instruction IMO000917

For Conical Ring Type AC connection follow instruction IMO000849

*For other type of connections please consult JAURE

- Loosen bolts and washers (4, 6) and remove hubs (1.1, 1.2)

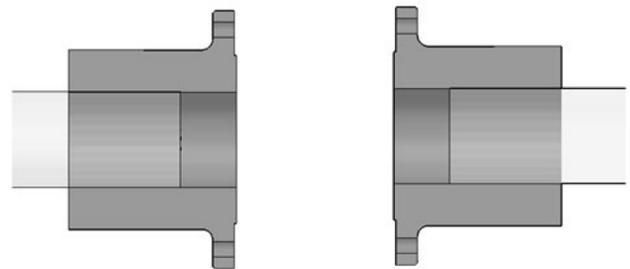


Fig 5.6

- Once both hubs have been mounted on the corresponding shafts, it is necessary to align both hubs properly according to instructions in section '5.3. Alignment'.
- Insert the assembly flange (5) links (2) and spacer (3) into its corresponding position by compressing the flange (2) + link pack the necessary to save the pilot diameter. (see Fig 5.7). Once in place, mount it by using the corresponding bolts and washers (4, 6)

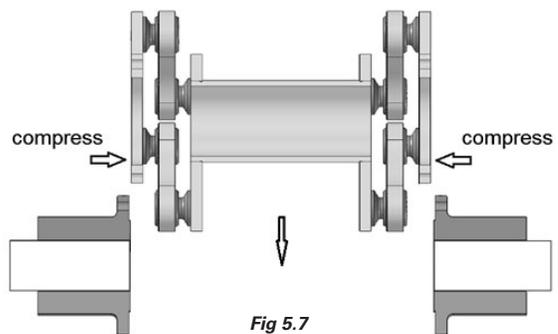


Fig 5.7

- In case it is not possible to compress the flange + link pack assembly, dismount flanges (5) and mount them separately to the hubs (1.1, 1.2) by means of screws and washers (4, 6) (See fig 5.8)

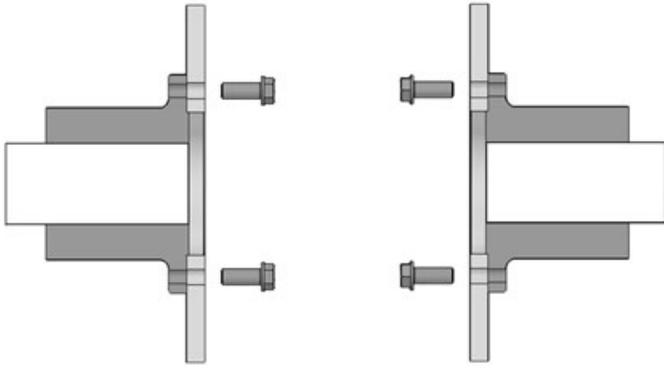


Fig 5.8

- Once flanges are installed, insert the spacer (3) + links (2) assembly and mount it to its correct position by compressing each link individually and placing into its corresponding hole. (See fig 5.9). Once in place, mount the links using the corresponding screws and washers (7, 8). (See fig 5.10)
- Tighten the bolts progressively according to values shown in drawing.

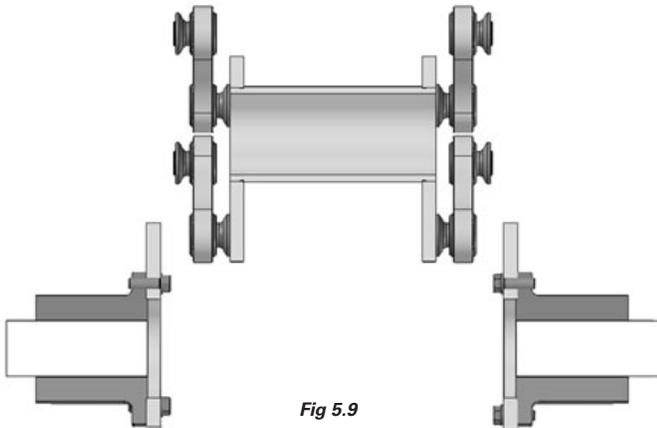


Fig 5.9

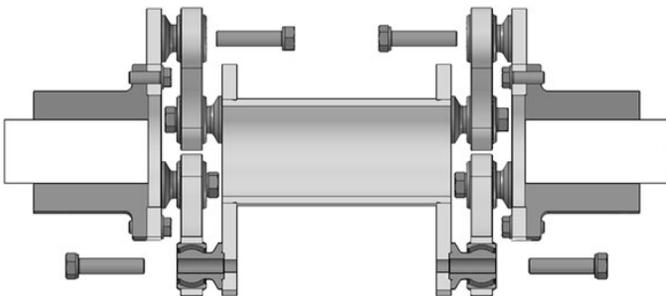


Fig 5.10

5.3 Alignment

5.3.1 Alignment for IU models

5.3.1.1 Radial Alignment:

The radial alignment can be done by using a laser alignment or a dial indicator on the shaft, previous to the assembly.

As shown in figure 5.11, place the clock magnetic base on the flange of one shaft with the indicator on the flange of the other shaft. Turn the dial indicator by 360° and subtract the smallest reading from the largest one. The lower this value, the longer the coupling life.

Note: TIR is the Total Indicator Reading, which is twice the shaft offset.

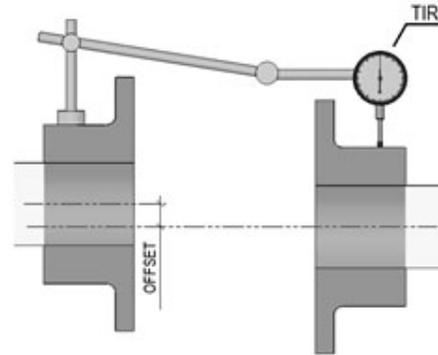


Fig 5.11

Note: For IU models, TIR should not exceed

- o 0,025mm in sizes up to 510 included (Offset < 0,012)
- o 0,05mm in sizes from 510 and on (Offset < 0,025)

5.3.1.2 Axial Alignment:

During installation, the distance between flange faces (DBFF) in a IU model should be within the tolerances in Table 5.1. For a long life, it is recommended that the links are as close as possible to be flat. Therefore, the movements of the shafts caused by thermal expansion should be carefully considered. For instance, if the DBFF changes by -2 mm (the shafts or flanges are coming closer to each other) from cold to hot machines, the DBFF with cold machines should intentionally be made larger by 2 mm when the coupling is installed.

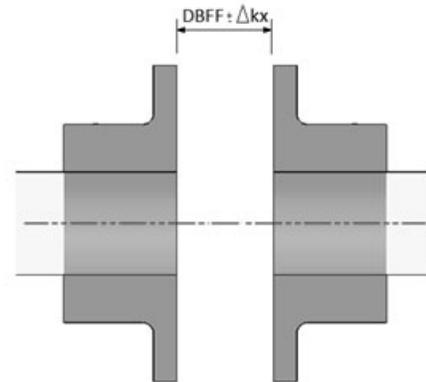


Fig 5.12 DBFF

However, it should be understood that the useful life of any Ixiflex® coupling is directly influenced by the operating misalignment: the better the alignment, the longer the coupling life.

Coupling SIZE	$\pm \Delta Kx$
390	$\pm 0,31$ mm
480	
510	
495	$\pm 0,62$ mm
545	
634	
740	
750	
800	
810	
850	
1006	
1020	
1096	
1300	

Table 5.1 Allowable mounting axial misalignment for IU models
*For higher sizes please consult Regal

Once the coupling is in place, the Angular Alignment has to be checked.

5.3.1.3 Angular Alignment for IU models:

Angular misalignment can be measured either with a laser alignment device, or with a dial indicator by measuring distance between the flanges and subtracting them (Y-Z) (See fig 5.13)

Following table shows permissible angular misalignment for one link pack models.

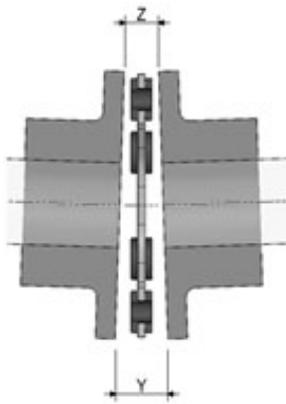


Fig 5.13

Coupling SIZE	Max. Angular in (°) and expressed in(Y-Z)
390	0,2 ° 0,35 mm/100mm
480	
510	
495	0,12 ° 0,22 mm / 100 mm
545	
634	
740	
750	
800	
810	
850	
1006	
1020	
1096	
1300	

Table 5.2 Allowable angular misalignment values for IU models
*For higher sizes please consult Regal

5.3.2 Alignment for IX models

5.3.2.1 Radial Alignment:

The radial alignment can be done by using a laser alignment or a dial indicator on the shaft, previous to the assembly.

As shown in figure 5.14, place the clock magnetic base on the flange of one shaft with the indicator on the flange of the other shaft. Turn the dial indicator by 360° and subtract the smallest reading from the largest one. The minimum the best for the coupling life.

Note: TIR is the Total Indicator Reading, which is twice the shaft offset

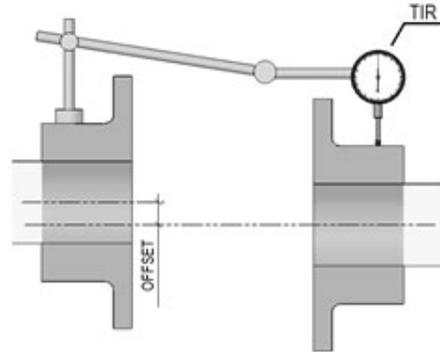


Fig 5.14

5.3.2.1 Radial Alignment:

During installation, the distance between flange faces (DBFF) in a IX model should be within the tolerances in Table 5.3. For a long life it is recommended that the links are as close as possible to be flat. Therefore, the movements of the shafts caused by thermal expansion should be carefully considered. For instance, if the DBFF changes by -2 mm (the shafts or flanges are coming closer to each other) from cold to hot machines, the DBFF with cold machines should be intentionally be made larger by 2 mm when the coupling is installed.

However, it should be understood that the useful life of any Ixiflex® coupling is

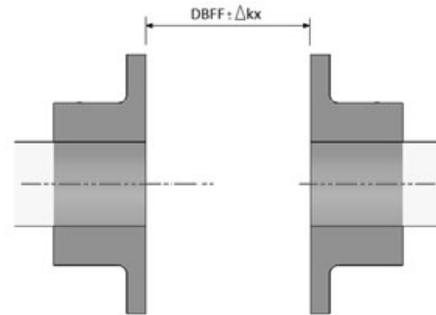


Fig 5.15 DBFF

directly influenced by the operating misalignment: the better the alignment, the longer the coupling life.

Coupling SIZE	$\pm \Delta Kx$
390	$\pm 0,6$ mm
480	
510	
495	$\pm 1,25$ mm
545	
634	
740	
750	
800	
810	
850	
1006	
1020	
1096	
1300	

Table 5.3 Allowable mounting axial misalignment for IX models
*For higher sizes please consult Regal

Once the coupling is in place, the Total Alignment has to be checked.

5.3.2.3 Total Alignment for IX models:

Total misalignment can be divided into misalignment caused by offset and angular misalignment. The sum of them has to be less than the **Maximum Accepted Misalignment During Assembly (MAMDA)**

$$\left[\left(\frac{X}{DCL} \right) + \left(\frac{1}{2} x \frac{(Y-Z)}{D} \right) \right] x \left(\frac{180}{PI} \right) \leq \text{MAMDA}^\circ$$

- Misalignment caused by Offset $\left[\left(\frac{X}{DCL} \right) \right] x \left(\frac{180}{PI} \right)$

X= Offset (half of the TIR measurement) (Fig 5.14), in mm

DCL= Distance between Centre of Links packs (Fig 5.16), in mm

PI= 3,1416

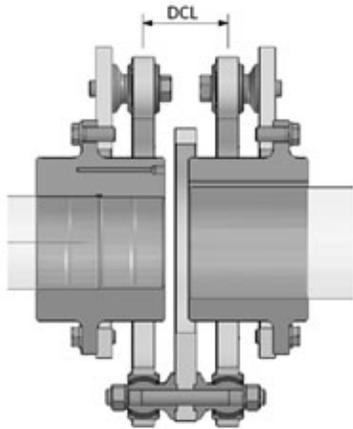


Fig 5.16

- Angular Misalignment, expressed in or in Degrees as $\frac{1}{2} * (^\circ)$ $\left[\left(\frac{1}{2} x \frac{(Y-Z)}{D} \right) \right] x \left(\frac{180}{PI} \right)$

Y-Z= See Fig. 5.17, in mm

D= Diameter at which (Y-Z) is measured, in mm

PI= 3,1416

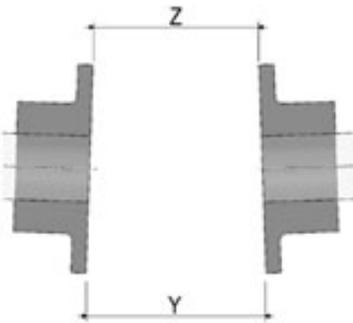


Fig 5.17

Following Table 5.4 shows allowed MAMDA values for IX models:

Coupling SIZE	MAMDA in (°)
390	0,2 °
480	
510	
495	0,12 °
545	
634	
740	
750	
800	
810	
850	
1006	
1020	
1096	
1300	

Table 5.4 Allowable Total misalignment values for IX models

*For higher sizes please consult Regal

Practical Example We have an Ixiflex coupling size 510 with a DCL = 1200 mm. When aligning, if we measure OFFSET value of 1,5 mm, then:

$$\left[\left(\frac{X}{DCL} \right) \right] x \left(\frac{180}{PI} \right) \rightarrow \left[\left(\frac{1,5}{1200} \right) \right] x \left(\frac{180}{PI} \right) \rightarrow \text{Misalignment by Offset} = 0,07^\circ$$

Also, we measure an ANGULAR MISSALIGNMENT value of 0,25 °

From Table 5.4 we know that total allowable misalignment must be 0,2 °

Therefore: 0,07 ° + ½*0,25 ° = 0,19 ° ≤ 0,2 ° so alignment is correct.

6 Start-up & Operation

Before start-up please take into account the following points:

- Ensure any item used for packaging or transportation has been removed
- Ensure the alignment has been correctly done, and coupling is according to dimensions specified in drawings
- Check all bolts are with their correct tightening torque specified in drawing.

Also, we recommend to install a guard over the coupling, to protect from anyone touching a rotating part. Guards can be of many types, such as plastic or metal, expanded metal or solid metal. We recommend the use of guards made of expanded metal or perforated metal. These guards allow the maintenance personnel to observe the coupling while it is running, and stop the machine in case they observe anything unusual.

In case the guards are made of solid metal, we recommend that such guards be provided with an opening with a hinged cover, so that the couplings can be viewed when desired.

It is recommended that sufficient space be allowed between the coupling and the guard, so that foreign objects cannot become jammed there.

7 Maintenance & Inspection

7.1 Protection against corrosion and sun light

We supply the coupling with a corrosion protection applied. However, this protection is not a long term protection, and is not valid for certain severe environments. We recommend applying additional protection according to the environment and time that coupling is to be stored before mounting.

Once the coupling is mounted, we strongly recommends applying a corrosion protection product over the metal parts, suitable for the environment.

Also, rubber parts should be protected from sun light, which causes rubber aging.

7.2 Inspection

- Periodically, at least once a year, check the tightness of the screws.
- Periodically inspect visually the areas subjected to high stress concentration, such as radiuses or sharp surfaces.
- Inspect the hinge joints according to the criteria detailed in following Table 7.1

Inspection Criteria	At delivery	Inspection Frequency			
		3 months (1)	1 year (1)	5 years (1)	8 years (2)
Cleaning		X	X	X	X
Defects and Wear	X	X	X	X	X
Verification of the flexibility (curve force/displacement) acc/ standard EN 13913				X (2) If difference is below 15%: part can be reused	Replace

(1) Without the need to dismount the joint

(2) Dismounting the joint – Dismounting, cleaning and complete inspection

Table 7.1 Inspection criteria

As shown in Table 7.1, it is advisable to replace the “Elastic Kit” after 8 years in operation. This kit comprises the links and their screw-work

7.3 General recommendations concerning marks on the rubber surface of the hinge joints.

- Marks over the entire perimeter (360°) may be caused by torsional or axial loads.
- Marks on one quarter part of the perimeter and on one quarter part at the front could be the result of conical or radial loads.

NOTICE: If none of the cracks has a depth exceeding 3 mm, the defect will not affect the functional reliability of the joint and it can continue in service until the next inspection.

CAUTION: If one or more cracks have depths between 3 and 8 mm, the joint must be replaced as soon as possible.

CAUTION: If one or more cracks have depths of 8 mm or more, the joint must be replaced immediately.

8 Spare Parts

In case any failure occurs, in order to have a quick replacement we recommend to have as a spare part kit for every 4 flexible elements supplied. The link pack kit is composed by corresponding link units and their respective hardware. Please consult us for spare part kits.

