

Installation and Maintenance Manual

Disc Coupling

PWE

(Mounting on keyed cylindrical shaft)



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1. Introduction

1.1. Company Information

Lamiflex Couplings® is a manufacturer of flexible disc couplings, elastomeric modules, gears, transmission shafts, bearing guards and coupling guards. The company was founded in 1999 under the name Powerflex Transmission, but after restructuring it became Lamiflex do Brasil Equipamentos Industriais Ltda.

In July 2012, Lamiflex do Brasil Equipamentos Industriais Ltda merged with the group **Altra Industrial Motion SA**. This acquisition enabled Lamiflex to provide the market with a wide range of products related to the power transmission segment.

➤ Registration data

Company name	Altra Industrial Motion do Brasil Equipamentos Industriais Ltda.
Tel.	+55 (11) 4615-6300 / Fax: +55 (11) 4625-6300
Address	Avenida João Paulo Ablas, 2970, Jardim da Glória, Cotia – São Paulo ZIP CODE: 06711-250 - Brazil
CNPJ:	03.324.310/0001-50
State registration	278.236.973.114
Municipal registration	6.010.387
Website	www.altrabrasil.com www.lamiflexcouplings.com www.altramotion.com

1.2. Presentation

The PWE couplings line was developed to provide general applications in power transmission with a low weight ratio. In their constructional form, the torque transmission components are made up of discs that do not require lubrication, therefore complying with the criteria of the API610 standard.

They are exempt from the need to readjust, clean and replace parts during operation, except when such intervention is required because of fatigue or system overload.

PWE couplings achieve high speeds with a high level of inherent balance because of their dimensional accuracy, and this can be increased when necessary within the parameters of ISO 1940 and API671, when requested.

The couplings of the PWE line are supplied with stainless steel discs, high-tension carbon steel bolts and bushings and other components made of carbon steel with anti-corrosion treatment. Inconel® discs can be applied as an option for extremely corrosive environments.

1.3. Safety

1.3.1. Notes and Symbols

In accordance with the safety standards, we use indications and symbols in some points of this manual that define the relevant points to be applied in the procedures, in order to guarantee the safety of the equipment and the people involved.



DANGER!

This symbol refers to people's safety. It indicates situations that can lead to death or serious injuries.



WARNING!

This symbol refers to the use of equipment. It indicates situations that can cause damage or destroy equipment.



NOTE!

This symbol refers to information that can facilitate the installation and use of the equipment



HOT!

Indicates hot surfaces and/or components that may cause bodily injury to persons involved in the operations referred to in this manual.



ELECTRICITY!

Indicates the risk of electric shock. The necessary safety actions must be implemented in order to prevent injuries.



WARNING!

Risk of crushing or cutting of limbs, or parts of them.



WARNING!

Indicates rotational movement of the whole component. It must be enclosed for protection to prevent accidents to people in its vicinity.



POLLUTION!

This symbol refers to materials which when discarded can cause pollution or have a negative impact on the natural environment. Their disposal must be performed in accordance with current environmental laws.

1.3.2. Personal Protective Equipment and Safety

The entire mechanical installation of the transmission unit must be performed by a trained and qualified professional, in compliance with safety standards. During installation and maintenance, the service engineer responsible for carrying out work must be properly equipped with the PPE that is suitable for the tasks carried out:

- Safety shoes and gloves to prevent injuries;
- Eye protection: protection to prevent contact with any particles that can harm the eyes and cause injuries and/or accidents;
- Face mask: if there are particles in the environment and/or in the performance of the work, the professional must use a mask;
- Protective helmet: to prevent injuries that may occur during installation or maintenance;
- Hearing protectors (or mufflers) if the environment is subject to noise exceeding the limit allowed by the standard (85dB);
- If you are using cleaning products (solvents, degreasers, etc.), make sure you follow the manufacturer's instructions before use;
- Disposable protective gloves: to prevent contact with skin if you are using cleaning products (solvents, degreasers, etc.).



POLLUTION!

Disposable gloves: gloves and their waste must be disposed of in a suitable place, in compliance with environmental laws.

Cleaning products: must be used in a way that does not have a negative impact on the environment, according to the manufacturer's instructions for use.



DANGER!

Cleaning products: before use, read the instructions for use and safety in order to prevent the occurrence of serious injuries. Make sure there are no reactions in the event of contact with other chemicals, as they may emit toxic gases.

1.3.3. Important notes

Do not start installation/maintenance tasks without first reading and taking note of the content included in the following pages, as they are intended to provide safety guidelines for those involved and to prevent damage to equipment.

This product line was developed to be assembled in a torque transmission system, that is, rotating equipment. In view of this, it is important to note the following:

Heavy equipment



Be careful when lifting the coupling, as it is heavy equipment and should not be lifted by hand. Use suitable equipment to prevent injuries. NOTE: ensure that lifting accessories comply with safety standards.

During lifting, ensure that there are no people below the equipment.

Watch your hands and fingers

**WARNING!**

Never place your fingers between the coupling and hubs during assembly, as there is a risk of crushing.

- Always use original spare parts in order to maintain the design conditions and ensure operation.
- Consult Altra Brasil before using tools or any other equipment not recommended/specified in this manual.
- The customer/user is responsible for ensuring that the transmission unit is installed according to the information included in this manual.
- Always ensure that at least one copy of this manual is provided to the service engineers who carry out maintenance/inspection tasks.
- The area in which the coupling is installed must be designed/constructed to ensure adequate lighting and safe access for carrying out installation and maintenance tasks.
- The service engineers must be trained and able to carry out the necessary tasks (mechanics, alignment, electrical, etc.) in complete safety.

Coupling:

- When installing the coupling, the drive must be completely non-operational and adequately locked to guarantee safety.
- Make sure that the power supply has been disconnected and blocked in accordance with safety regulations.
- The drive cannot start operating without being properly adjusted according to the installation and alignment procedures described in this manual.

- Never change the size, quantity or type of the disc packs in the flexible units, as they have a direct impact on torque transmission.
- As the equipment is rotating equipment, it must be enclosed in order to prevent the occurrence of injuries or accidents during operation.

1.3.4. Disclaimers

Lamiflex Couplings® reserves the right to revise this document without prior notice. These documents were revised in order to enhance accuracy and correct faults, although technical and typographical divergences may still occur.

This document is regularly updated and any changes will be published in future editions. Improvements and/or changes to the products described or to the manual may be implemented at any time, without notice.

Under no circumstances will **Lamiflex Couplings®** be responsible for any special, incidental, consequential or punitive damages. This includes but is not limited to: damage to third-party property or the Installation and Maintenance Manual, inconvenience, loss of profits or revenue, loss of use of this product or any associated equipment, cost of replacement of equipment, downtime costs, or claims from any party whose damage is caused by any misspelling or inaccurate information in this user guide.

This document or parts thereof may under no circumstances be copied, reproduced, altered or translated, without the explicit written permission of **Lamiflex Couplings®**.

2. Hibernation

2.1. Shipping

Couplings are supplied correctly packaged and locked so that the assembly will not be damaged during movement.

For couplings with dynamic balancing or a long shaft, the set will have the mechanical locking implement (used for balancing and transportation) and must only be removed when the coupling is mounted.

2.2. Receipt

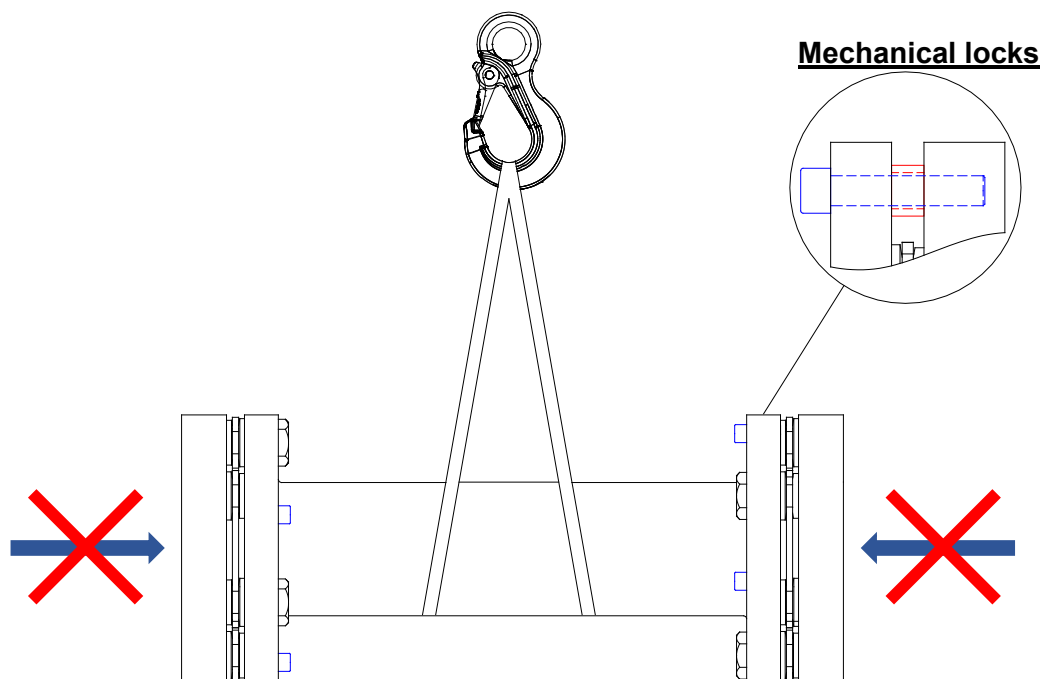
Upon receipt of the coupling, inspect it carefully to ensure that no damage has been caused during shipping. Upon receipt, the following procedures should be followed:

- Make sure that the packaging has not been tampered with during shipping.
- Compare the volume described on the invoice to the physical volume.
- Inspect the entire product to verify that no damage has been caused during shipping.

Record any damage in writing (with photos) with the shipping agent and immediately inform the insurance company and **Lamiflex Couplings®**. Failure to notify the relevant entities that damage has occurred may result in the cancellation of the warranty.

2.3. Handling

Exertion in the axial direction should be avoided to prevent any damage to the flexible units. If the coupling locks mechanically (bolt and sleeve), during shipping, handling and storage, it must be fixed in its position until installation.



WARNING!

Ensure the correct handling and transportation of the coupling, as axial force must not be applied, as it can cause deformation to the assembly and loss of warranty.

2.4. Storage

- Store the coupling in a horizontal direction (resting on the flanges). It should not be kept on one end (balanced) for a long time when handling.
- Preferably keep the equipment in the box with its cover for protection, if it is stored for long periods until its installation.
- Avoid shocks of any kind during handling.
- Protect against corrosion when stored for long periods.
- The storage place must be sheltered and clean, with relative humidity of up to 65%.
- Ensure that there is no possibility of falling objects, forklift passage or similar.

NOTE: for the disposal of packaging waste, consult the topic 6.1 Disposal of Components).

3. Installation

3.1.1. Technical data

Model	Rating (HP/1,000 RPM)	Rotation Maximum (Balanced) RPM	Weight (kg)		Inertia kg*m ²		Maximum misalignment (mm)	
			Min DBSE	Per extra meter**	Min DBSE	Per extra meter**	Axial (±)	Parallel (with 1/2° ang.) *
PWE-18	18	25,000	2.331	3.157	0.00180	0.00082	1.1	0.40
PWE-45	45	25,000	4.508	5.327	0.00523	0.00177	1.2	0.45
PWE-100	100	20,000	8.891	6.825	0.01819	0.00649	1.4	0.50
PWE-180	180	18,000	14.897	8.994	0.04313	0.01509	1.8	0.60
PWE-310	310	14,000	23.040	13.089	0.09400	0.03057	2.3	0.65
PWE-480	480	10,000	33.063	12.465	0.18132	0.03957	2.8	0.65
PWE-680	680	9,000	42.549	15.660	0.29077	0.06324	3.5	0.65
PWE-1000	1,000	8,000	59.593	19.735	0.50390	0.10460	3.8	0.70
PWE-1200	1,200	7,000	73.849	23.379	0.76731	0.14612	4.2	0.75
PWE-2000	2,000	6,000	102.696	31.351	1.27845	0.22562	5.0	0.80



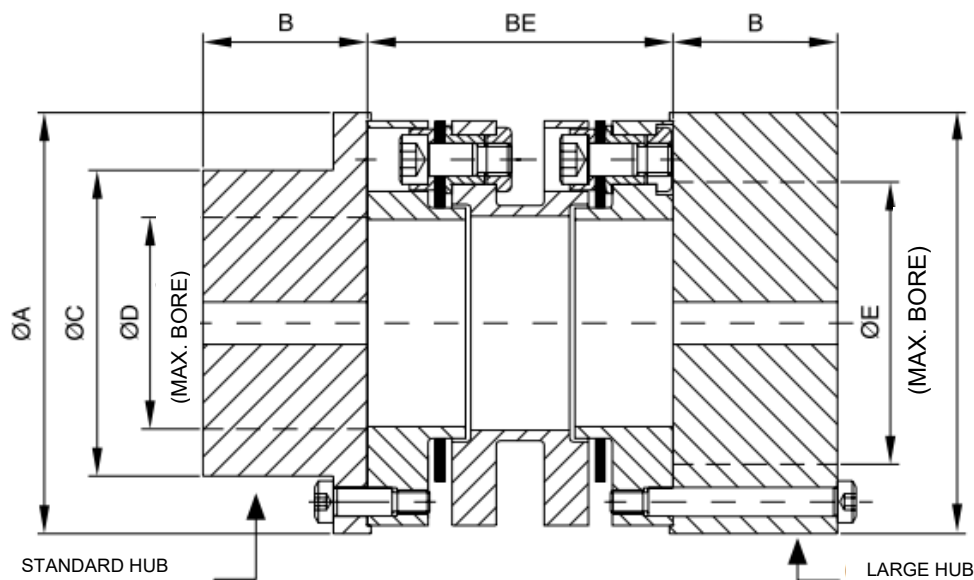
NOTE!

* Maximum angular misalignment per flexible unit: <3600 RPM = 1/2°; 3,600-7,500 RPM = 1/3°; > 7500 = 1/4°.

** Weight and inertia of couplings with maximum bore, standard hubs and minimum DBSE.

For special projects, consult the design sets.

3.1.2. Dimensions (mm)



Model	A	B	C	Max. bore (*)		DBSE Minimum	BE - Standard			
				ØD	ØE					
PWE-18	86	40	53	36	52	70	100	140	180	250
PWE-45	105	45	68	48	72	80	100	140	180	250
PWE-100	130	55	88	65	90	100	-	140	180	250
PWE-180	152	63	110	80	100	125	-	140	180	250
PWE-310	179	70	130	90	120	130	-	140	180	250
PWE-480	197	90	163	116	-	135	-	140	180	250
PWE-680	222	97	180	130	-	135	-	140	180	250
PWE-1000	247	110	205	140	-	140	-	140	180	250
PWE-1200	272	115	222	158	-	150	-	-	180	250
PWE-2000	297	130	248	175	-	175	-	-	180	250

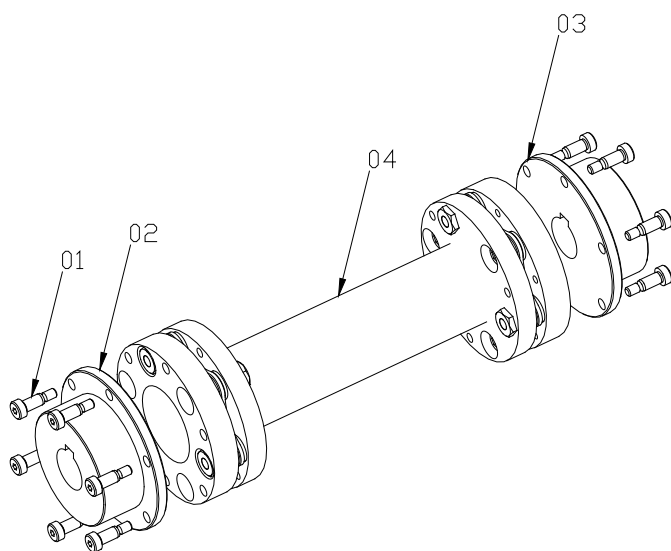


NOTE!

* The maximum bores shown are based on cylindrical bores and DIN or AGMA standard rectangular keys. For special projects, consult the design sets.

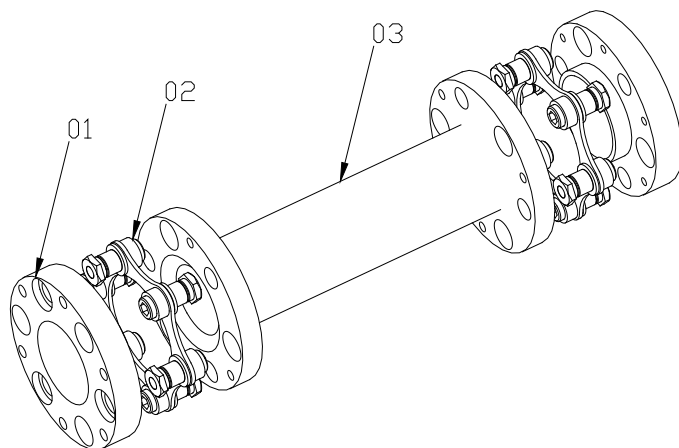
3.2. Component identification

3.2.1. Complete drive



Item	Description
01	hub fitting kit
02	Engine side hub
03	Side moved hub
04	Transmission unit

3.2.2. Transmission unit (UT)



Item	Qty	Description
01	2	Guard ring
02	2	Flexible unit
03	1	Spacer

3.3. Hubs

**WARNING!**

Hubs must be manufactured in compliance with the project's dimensional and geometric tolerances. Non-compliance may cause possible failures during the operation.

**NOTE!**

Hub design: Before starting assembly of the hubs, confirm that they were manufactured in compliance with the project's dimensions, tolerances and interference.

Coupling design: check the coupling length (free space between the “DBSE” hubs) before mounting the hubs.

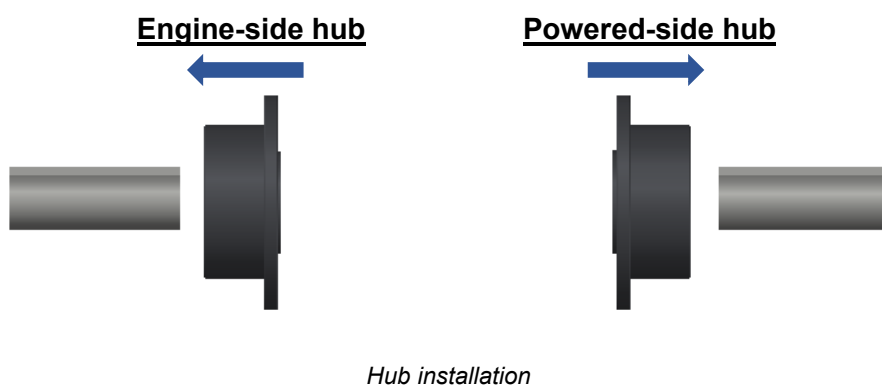
➤ **Step 1: installation of the hubs on a cylindrical keyed shaft**

**HOT!**

When handling components during assembly, take the necessary precautions to prevent accidents/burns.

This type of assembly is performed with little interference between hubs/axes.

- Clean the axles and hub bores, removing any existing particles.
- Heat the hubs to facilitate assembly, avoiding the use of localized heating so as not to cause deformations, using the following methods:
 - Inductive heater (do not exceed 175°C)
 - Oil bath (do not exceed 175°C)
- Assemble the hubs following the “DBSE” distance noted for the project.



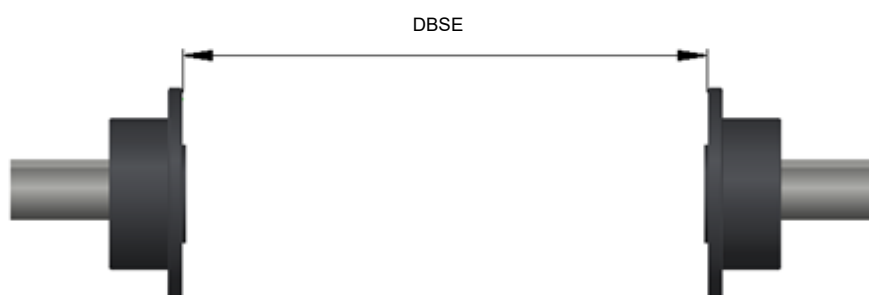
➤ **Step 2: distance between faces**



WARNING!

DBSE distance: must comply with the project, obeying the informed tolerances so that there are no deformations to the flexible units and consequently a reduction in their useful life.

Take into account any axial movement that may occur during operation.



DBSE distance is the distance between the hub faces

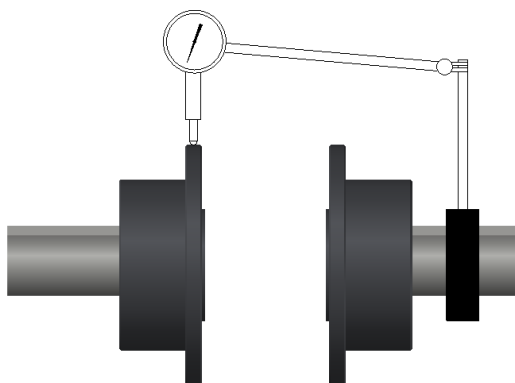
➤ **Step 3: check alignments**

Take the measurements below before installing the transmission unit against the project's stipulated limits. If the values found in the installation are outside the design limits, the necessary corrections must be made.

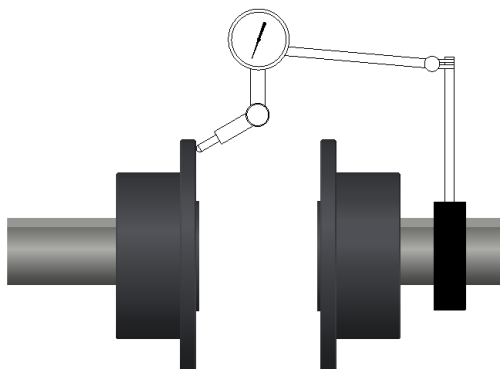


WARNING!

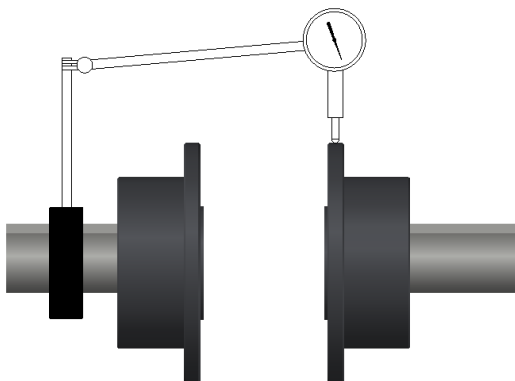
To ensure the service life of the transmission unit, the values for axial, radial and angular misalignment must be strictly adhered to.



Check the concentricity with the dial gauge mounted on the drive-side hub



Check the parallelism on one face with the dial gauge mounted on the drive-side hub.



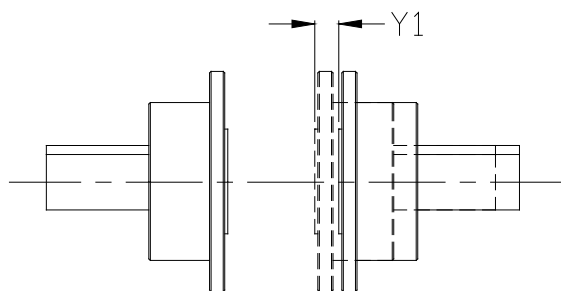
Check the concentricity with the dial gauge mounted on the drive-side hub axis.

If necessary, our **Powershim** calibrated shims can be purchased for necessary system corrections; please contact us.

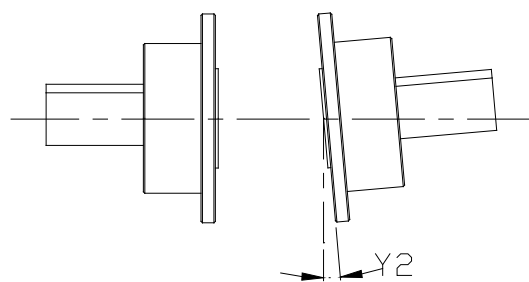


NOTE!

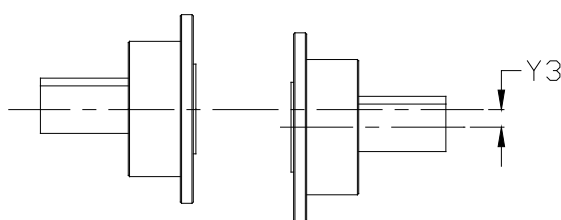
Possible types of misalignment that may be encountered during installation.



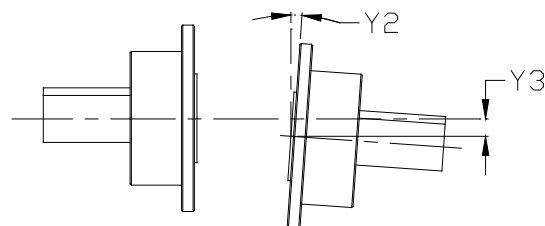
Axial



Angular



Radial



Combined

NOTE: in combined misalignment, other combinations may be found that must be carefully analyzed and the necessary corrective actions must be taken.

The reported misalignments (catalogs, manuals or drawings) permit variations according to the service conditions.

Therefore, in order to improve the performance of the transmission unit, we recommend that the discovered misalignments do not exceed 10% of the values reported for the project.



NOTE!

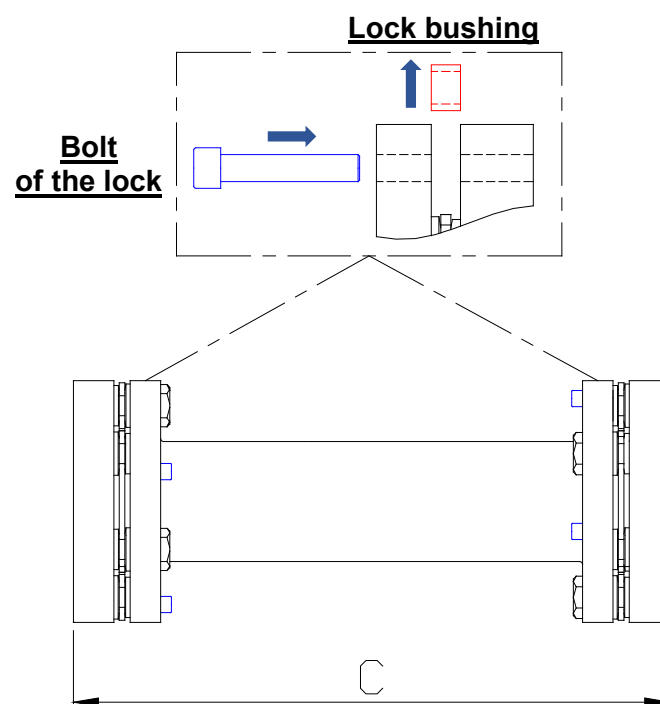
Misalignments: for good alignment, possible movements that occur during the operation must be taken into account (for example, thermal expansion).

3.4. Transmission unit

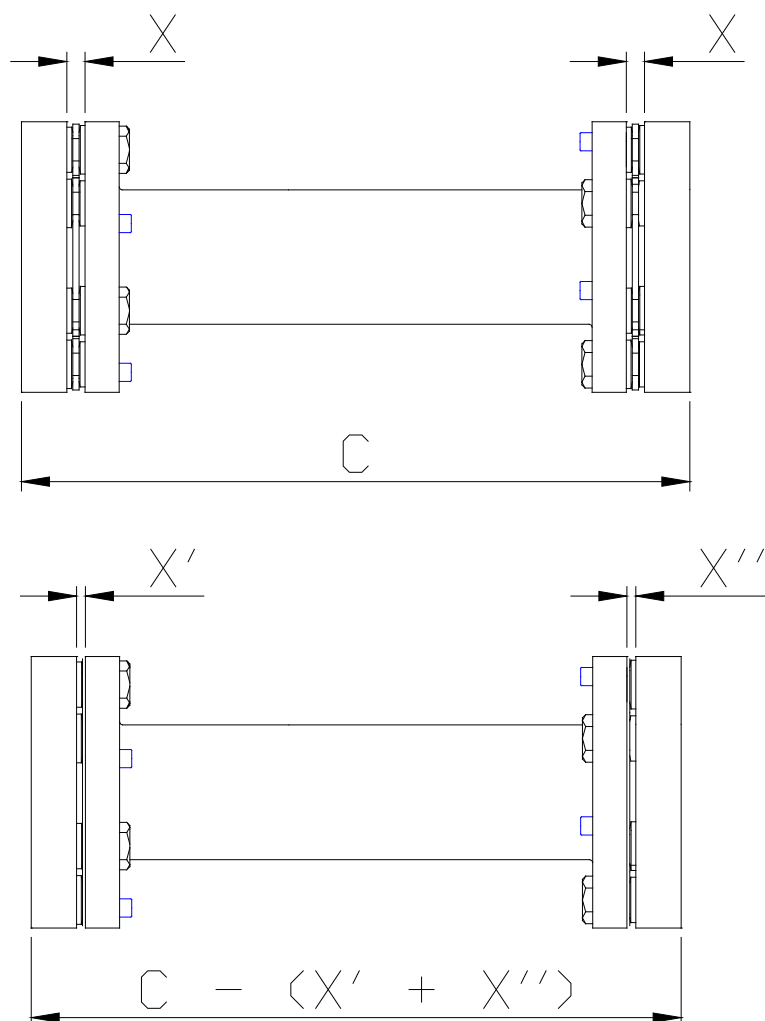
3.4.1. Mounting

➤ **Step 1: compress the discs**

Remove the spacer bushings from the mechanical locks and, using the lock bolts, compress the discs by changing the spaces between the protective rings and the spacer (measurements “X”) as necessary, so that measurement “C” is less than the DBSE level of the hubs that are already installed.



Remove the locking devices and compress the discs only using the bolts



The DBSE distance existing in the hubs must be greater than the measurement C



NOTE!

With the flexible units compressed, measure “C” and compare with the DBSE distance (discounting the hub pilots) to ensure that the discs are compressed enough so that the coupling can be positioned between the hollow spaces.

➤ **Step 2: position the coupling between the hubs**

Carefully position the coupling in the space between the already-installed hubs, following safety regulations.

Decompress the flexible unit discs by loosening the bolts until the protective rings touch the inner face of the hubs.

Completely remove the bolts used in the disc compression, and save them for future needs.



DANGER!

When lifting, take due care, as there is a risk of serious injury.



WARNING!

When lifting, use suitable, safe equipment in order to prevent the coupling from falling.



WARNING!

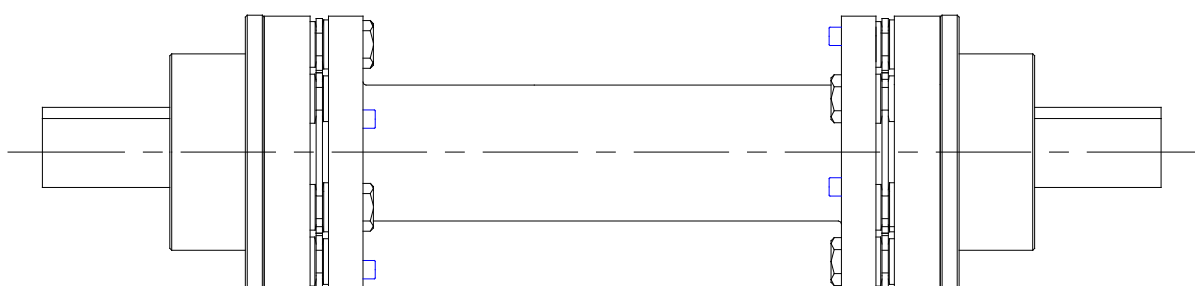
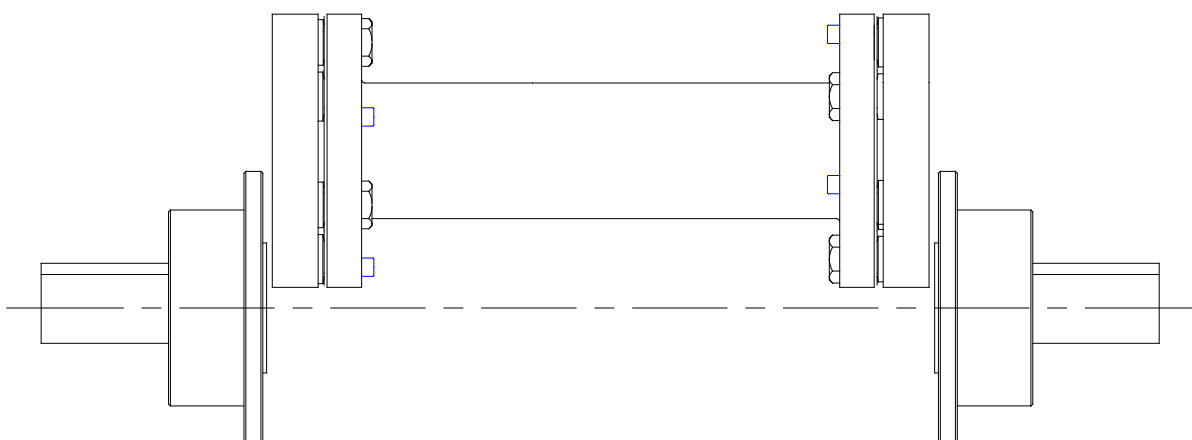
Take the necessary precautions so that there are no injuries at the time of installation, as crushing of the hands can occur.



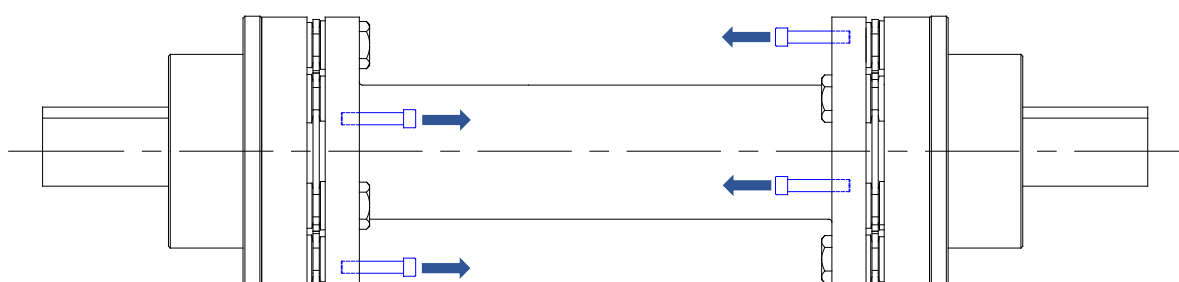
WARNING!

Mechanical lock: the bolts and bushings of the mechanical locks must be kept for removal, movement and shipping.

For any movement of the coupling, it must be properly locked. If it is not locked, damage to the flexible units may occur.



Loosen the bolts until the protective rings touch the inner faces of the hubs



Remove the bolts used to compress the discs

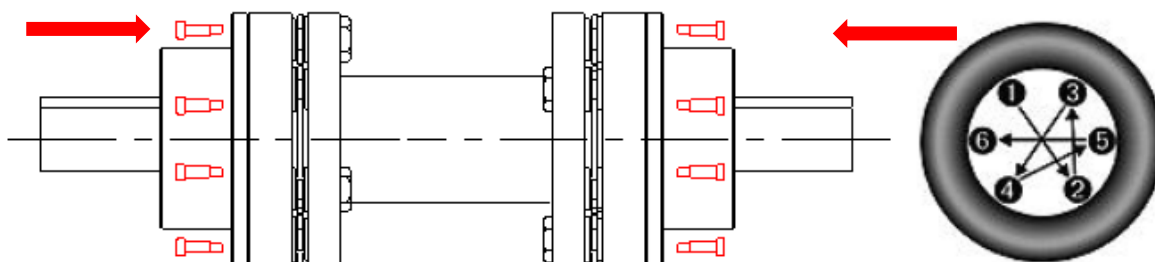
➤ **Step 3: Install the hub fitting kit**

Insert the nuts and bolts (if applied) by torquing (crosswise) according to the respective values reported in the table below or in the design set:

Coupling size	Hub bolt (Nm)
18	12
45	25
100	25
180	25
310	50
480	25
680	50
1,000	50
1,200	86
2,000	86

Follow the sequence below for torquing the bolts:

- Start: 50% of the rated torque
- End: 100% of the rated torque



Insert the bolts and perform cross torquing

4. Operation

Before operating equipment, the following points must be checked:



DANGER!

Follow the instructions below, ensuring that the steps are followed in order to prevent personal injury.



WARNING!

Failure to follow the instructions below may result in damage to the equipment or the entire system.

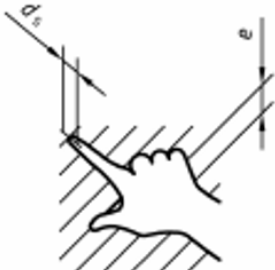
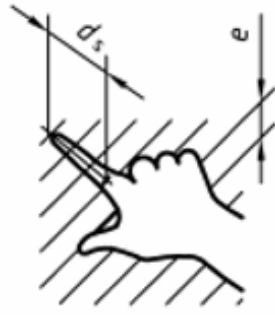
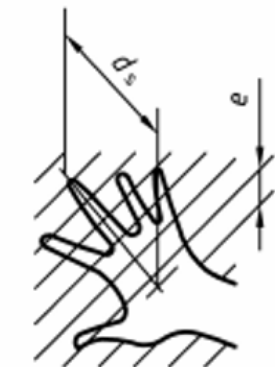
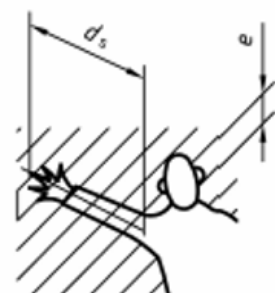
- The compression bolts (of the mechanical locks) must be completely removed.
- Ensure that the alignment and dimensions comply with the design data.
- Check that the hub fitting bolts have the correct torque.

As this is rotating equipment, a physical barrier must be installed to protect limbs in accordance with NR12.



DANGER!

Beware of rotating parts or equipment as they can cause serious injuries.

Parts of the body	Illustration	Opening and (mm)	Safe Distance s_d (mm)		
			Slit	Square	Circular
Fingertip		$e \leq 4$	≥ 2	≥ 2	≥ 2
		$4 < e \leq 6$	≥ 10	≥ 5	≥ 5
Finger to hand joint		$6 < e \leq 8$	≥ 20	≥ 15	≥ 15
		$8 < e \leq 10$	≥ 80	≥ 25	≥ 20
		$10 < e \leq 12$	≥ 100	≥ 80	≥ 80
		$12 < e \leq 20$	≥ 120	≥ 120	≥ 120
		$20 < e \leq 30$	$\geq 850^*$	≥ 120	≥ 120
Arm to shoulder joint		$30 < e \leq 40$	≥ 850	≥ 200	≥ 120
		$40 < e \leq 120$	≥ 850	≥ 850	≥ 850

Safety distances, to prevent upper limb access to danger zones.

If the length between the guard and the rotating component is 65 mm or less, the thumb will act as a limiter and the safety distance can be reduced.

Various types of construction and material can be used for the protective components. However, we recommend that the following points be observed for construction:

- Perforated steel material: to improve viewing by the maintenance team during inspections.
- Hinges for opening, if there is a need for reworking (alignment, maintenance, etc.).
- Locks (padlocks) that make it impossible to open when the equipment is operating.
- Sufficient space between the guard and the coupling along the entire the circular perimeter.

Our coupling guards can be purchased if necessary. **Coupguard** meets the NR12 standard providing safety for the installation. Please contact us to find out more.

When operating the coupling, observe the points below:

- Strange noises that may occur.
- Excessive vibration.



WARNING!

If anomalies are found when in operation, immediately stop the operation. Find out the cause of the anomaly and correct it, making sure that no damage has occurred to the coupling.

5. Maintenance

5.1. Visual inspection



WARNING!

Failure to follow the instructions below may result in damage to the system and/or premature equipment failure.



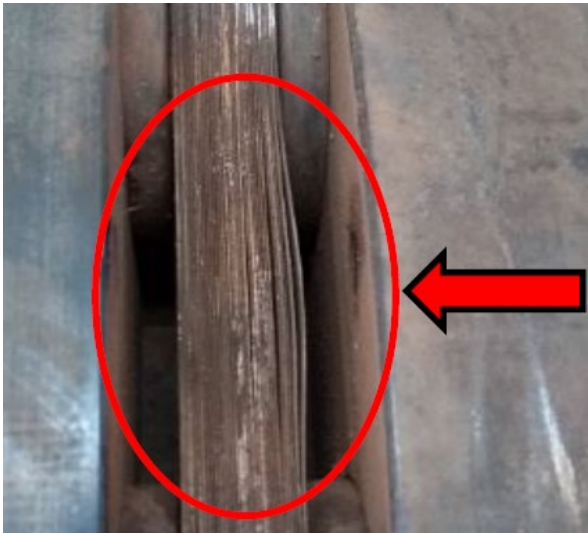

DANGER!

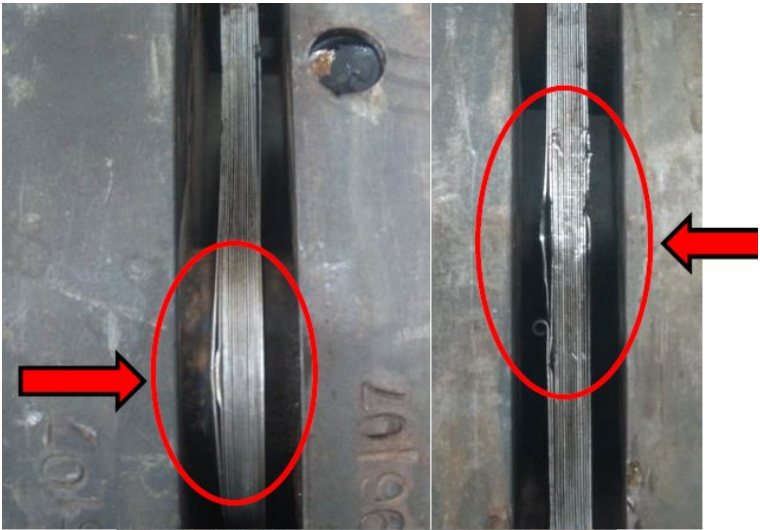

Beware of rotating parts or equipment as they can cause serious injuries.

Although the line of disc couplings does not require periodic maintenance, inspections must be performed regularly by the team to ensure sound operating performance. The following points should be checked when carrying out inspections:

- The presence of corrosion in the transmission unit, hub fitting bolts;
- Flexible unit failures;
- Change in the transmission system vibration compared to at the start of the installation. Always monitor the system's vibration history.

For more information on faults, see topic 5.2 Troubleshooting.

Fault	Figure
Misalignment	
Corrosion in the spacer	

Fault	Figure
Broken discs	
Corrosion of flexible unit components	

➤ **Inspection frequency**

Below we suggest an inspection schedule for the maintenance team's inspection routines in order to ensure the performance of the system's operation.



NOTE!

The purpose of the inspection schedule is to report the minimum items that must be observed in the team's inspection routine. It can then be adapted to the tasks that are performed.

Points to check	Complement	Commissioning and initial installation	After commissioning
Corrosion	-----	1st week	Monthly
Flexible units	-----	1st week	Monthly
Hub fitting kit	Tightening torque	1st week	Yearly
System vibration	Monitoring vibration history	1st week	Weekly
Misalignment	Record history	1st week	Yearly

5.2. Troubleshooting

➤ **Corrosion**

As standard, the couplings and their components are provided with surface treatment according to our standard design. However, other treatments may be applied according to the scope of the project.

Although the couplings receive surface treatments, that protection is not applied in the long term and cannot be applied in harsh environments. Therefore, if it total (or partial) oxidation, the necessary actions must be taken to avoid compromising the transmission unit's structural integrity.

➤ **Misalignments**

It is possible that misalignments may gradually worsen over time and/or that the flexible unit discs have deformities.

Therefore, it is possible to check their condition using a strobe light during inspection, without stopping the equipment. Using this tool, check for any deformations in the flexible units.

➤ **Flexible units faults**

The flexible unit discs are pressed during the assembly and any faults will occur from the outside to the inside.

The coupling was developed to operate even with a few faulty discs. However, if appropriate action is not taken, overloading of the other discs may occur and may compromise other parts of the coupling.

This fault can be observed during operation by using a strobe light.

➤ **Fault list**

Fault	Possible cause	Verification
Excessive noise during operation System vibration	Misalignment	<ul style="list-style-type: none"> • Stop the operation • Find the cause of the misalignment • Correct the misalignment source
	Hub fitting kit is improperly torqued	<ul style="list-style-type: none"> • Stop the operation • Ensure the alignment is within the design parameters • Analyze the bolts and check for wear • Reinstall the bolts by torquing them according to the design data

Fault	Possible cause	Verification
Flexible unit disc breakage	Overtorque	<ul style="list-style-type: none"> • Stop the operation • Remove the coupling and analyze the reason for the overtorque in the operation history • Analyze the components that have been damaged in the coupling and replace them • Reinstall the coupling and monitor the operation
	Misalignment	<ul style="list-style-type: none"> • Stop the operation • Find out what caused the misalignment and what types of misalignments exist and then correct them • Ensure the alignment is within the design parameters • Analyze the components that have been damaged in the coupling and replace them • Reinstall the coupling and monitor the operation

Fault	Possible cause	Verification
Cracks/breaks of discs and/or bolts	Vibration	<ul style="list-style-type: none"> • Stop the operation • Remove the coupling • Analyze the development of system vibrations in the operation history • Analyze the components that have been damaged in the coupling and replace them • Reinstall the coupling and monitor the operation

5.3. General maintenance

One of the advantages of disc couplings is that they do not require periodic maintenance if properly installed, according to the information mentioned in this manual. This maintenance can be applied whenever there is downtime for routine maintenance (at least once a year) and it is recommended that the following items be checked:

- Flexible units
- Hub fitting kit
- Hubs
- Shafts (if the hubs are removed)



WARNING!

Failure to follow the instructions below may result in damage to the system and/or premature equipment failure.

➤ **Flexible units:**

- There should be no spaces between the flexible unit discs' springs.
- Check for broken, cracked or compromised discs.
- If larger than normal spacing, cracks, broken discs are found, the complete flexible unit must be replaced.
- Nuts and bolts must be in good condition and free from corrosion. If they are not, the flexible units must be replaced.

➤ **Hub fitting kits:**

- If they have been removed, analyze their integrity - thread, possible deformation, cracks - if these are found, the kit must be entirely replaced.
- Tightening torque according to the project.
- We suggest using nuts and bolts no more than twice. If they are used more than twice, deformation can occur and can cause locking problems, so they must be replaced.

➤ **Hubs:**

- Evaluate the structural condition, visually checking that there are no cracks or corrosion.
- The pilot must not be worn.
- Check for possible hub fitting hole deformation.
- Hole status and keyway (for hubs, for interference).

- **Shafts:**

- Evaluate the circular perimeter, ensure there is no wear and check the condition of the keyway (for hubs, for interference).



WARNING!

To guarantee the system's operational safety, only **Lamiflex Couplings®** original parts should be used.

➤ **Maintenance frequency**

As mentioned earlier, couplings do not require periodic maintenance. However, we suggest some relevant items to be applied during yearly downtime:

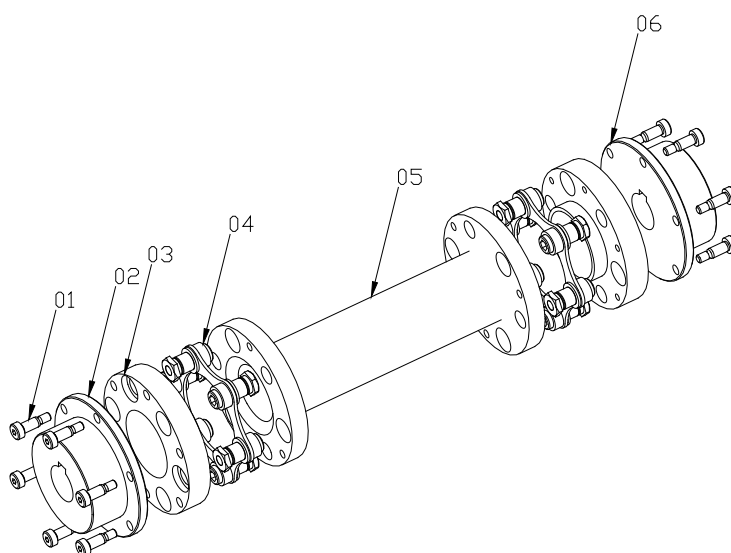
Maintenance	Maintenance/services required	Supplier
1 year	Surface treatment	Lamiflex couplings
	Hub fitting kit replacement	Lamiflex couplings
	Transmission unit balancing	Lamiflex couplings
	Alignment check	Customer
	Comparison of the vibration history	Customer
3 years	Surface treatment	Lamiflex couplings
	Hub fitting kit replacement	Lamiflex couplings
	Transmission unit balancing	Lamiflex couplings
	Flexible unit replacement	Lamiflex couplings
	Alignment check	Customer
	Comparison of the vibration history	Customer

5.4. Spare parts

5.4.1. General information

The availability of replacement parts in stock for replacement when necessary will ensure reduced downtime and the operation-readiness of the coupling.

We recommend keeping the following spare parts in stock, with their respective quantities:



Item	Description	Quantity to keep in stock
01	Hub fitting kit	02
02	Hub A	N.A.
03	Guard ring	N.A.
04	Flexible unit	02
05	Spacer	N.A.
06	Hub B	N.A.

5.4.2. Storage

To store spare parts correctly, some precautions must be taken to ensure that there is no damage to the assemblies:

- Preferably keep the items packaged and, if possible, with the original packaging, until installation.
- Avoid shocks of any kind during handling.
- Protect against corrosion when stored for long periods.
- The storage place must be sheltered and clean, with relative humidity of up to 65%.
- Ensure there is no possibility of falling objects (especially for flexible units) or something similar.

NOTE: for the disposal of packaging waste, consult the topic 6.1 Disposal of components.

5.4.3. Replacement of flexible units



WARNING!

To guarantee the system's operational safety, only **Lamiflex Couplings®** original parts should be used.

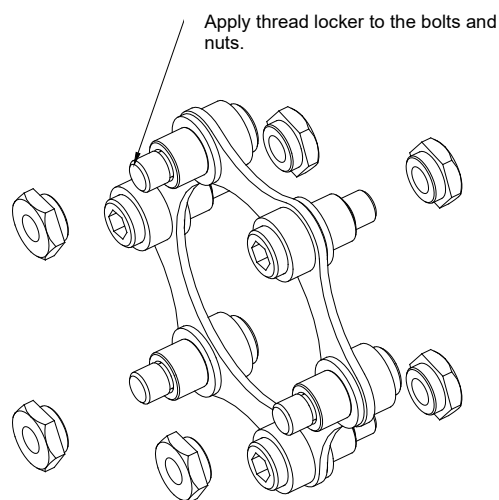


NOTE!

Ensure that the flexible units in stock are the same model as the existing coupling.

- Remove the transmission unit from the drive system.
- Dismantle the damaged flexible units and dispose of them according to the guidelines mentioned in item 6.1 Disposal of components.
- Perform the installation of new flexible units between the protective rings and spacer.
- Apply chemical lock (Tekbond 128 or similar) to the nuts and bolts.
- Observe with the following sequence for torquing the bolts (crosswise):
 - Start: 50% of the rated torque
 - End: 100% of the rated torque

Coupling size	Flexible unit bolt (Nm)
18	11
45	23
100	47
180	75
310	130
480	150
680	205
1,000	285
1,200	380
2,000	490



NOTE: if it is necessary to replace the flexible units, we recommend rebalancing the transmission unit according to the design data.

6. General information

6.1. Disposal of components



POLLUTION!

In compliance with current laws concerning environmental issues, it is necessary to respect the environment when disposing waste.

Waste must be collected by an authorized company for proper disposal with no negative environmental impact.

Materials used for the packaging and composition of the equipment that must be considered when disposing are shown below.

➤ **Transmission unit packaging**

Upon receipt, the couplings are packed and comprise the following materials:

Smaller couplings	Cardboard box
	Plastic (smooth or bubble-wrap)
	Metal clamps
Larger couplings	Wooden box
	Plastic (smooth or bubble-wrap)
	Metal latches

➤ **Spare part packaging**

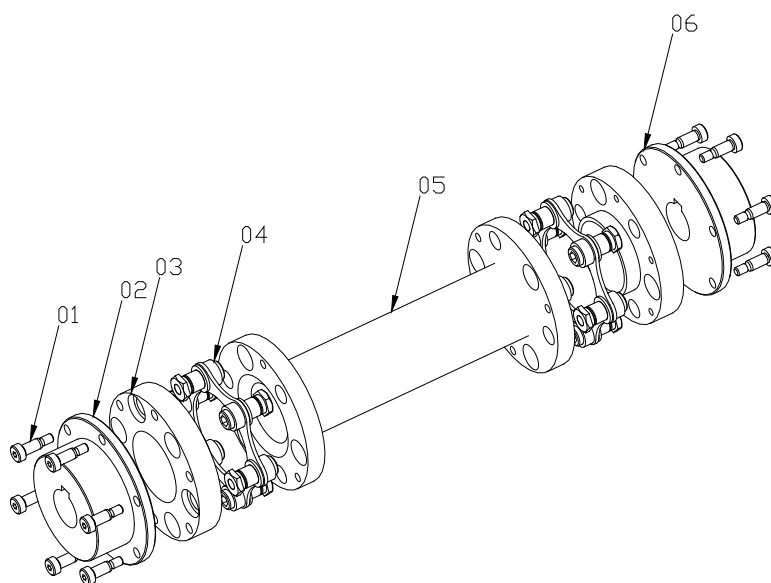
Upon receipt, spare parts are packed and can be made of the following materials:

Flexible units (spare part)	Cardboard box
	Plastic (smooth or bubble-wrap)
	Metal clamps
Hub fitting kit	Cardboard box
	Plastic (smooth or bubble-wrap)
	Metal clamps

➤ **Transmission unit**

To dispose of the transmission unit, it is necessary to:

- Clean all parts;
- Disassemble the equipment and destroy it so can no longer be used.



Item	Description	Material
01	Hub fitting kit	Metal
02	Hub A	Metal
03	Guard ring	Metal
04	Flexible unit	Metal
05	Spacer	Metal
06	Hub B	Metal

REMARK: Both the hubs and the fitting kits are made of metal and follow the guidelines for metal.

6.2. Additional information

This manual was developed based on the standard conditions of the product catalog. In the case of special projects, the information included in the technical documentation for the project or in the special drawings made available by Altra will prevail.