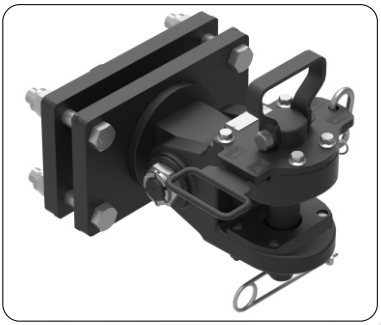


Drawbar Coupling HD50-70

Installation, operating and maintenance instructions

E

V.ORLANDI

SISTEMI DI TRAINO

GENERAL MAINTENANCE

Visually inspect the coupling equipment regularly at least once a week or in case where the vehicle has experienced over loading or unusual stress to ensure this has not had an effect on the equipment. Ensure no deformation, cracks or corrosion are visible. Deformation pr cracks can arise in situation like jack-knifing, hitting or other forces from outside. If signs or damage is found the trailer must be disconnected and the deformed patrs be replaced. No welding or straightening of the components is allowed.

1. The components used to connect a vehicle and trailer are exposed, even during normal use, to very high tensions. Regular services and maintenance are essentials for the products to function perfectly during the entire lifespan. Clean and lubrificate the coupling every week. Retighten at 5,000 km after installation.

2. The length of the service intervals depend on the type of trailer, loads, climatic conditions ect.... Servicing can be ideally carried out in conjunction with other inspection of the vehicle. We recommend to follow cycles of maintenance (page 30) and inspection (page 16), as shown in ˝INSPECTION AND MAINTENANCE˝ section.

3. At length once every year the coupling should be dismantled and examined for wear, corrosion, crack or deformation. Damaged or worn parts must be replaced.

4. If daily inspection pr safety checks show that any of the wear limits have been exceeded, or that the function of the product has been impaired, servicing must be carried out immediately

5. If any of the product's wear limits have been exceeded, this is an indication that other parts also require servicing.

6. check that all warning and information labels are legible and have not been painted over, wascher off, or otherwise damaged. Illegible labels must be replaced and can be ordered fron V.ORLANDI AUSTRALIA

INDEX

0 PRELIMINARY REMARKS

0.1 WARRANTY

V.Orlandi S.p.A. shall take no responsibility for any damage howsoever caused and including improper or incorrect use, modifications, alterations or abuse.

Use of not original spare parts of V.Orlandi S.p.A. annulls any warranty and invalidates any homologation.
V.Orlandi S.p.A. reserves the right to make modifications any time.

0.2 CARE OF THE MANUAL

This manual is an integral part of the drawbar coupling and has to follow it wherever and always, in resale or restitution under warranty. It has to be available for all operators for quick consultation any time it is necessary.
The end-user is responsable for keeping it in good condition.
The manual has to be replaced with an identical one if wear or other damage makes the reading impossible.

Note: this manual has 44 pages.

First edition: May 2017
Reprint: May 2019 (English version)

0.3 HOW TO READ AND USE THE MANUAL

As well as the descriptive title of each chapter, the following signs have been used to indicate which measures are required during the different procedures.

Attention and caution

Attention! Risk of a limb injury

Absolute prohibition

Wear heavy working shoes

Wear working gloves

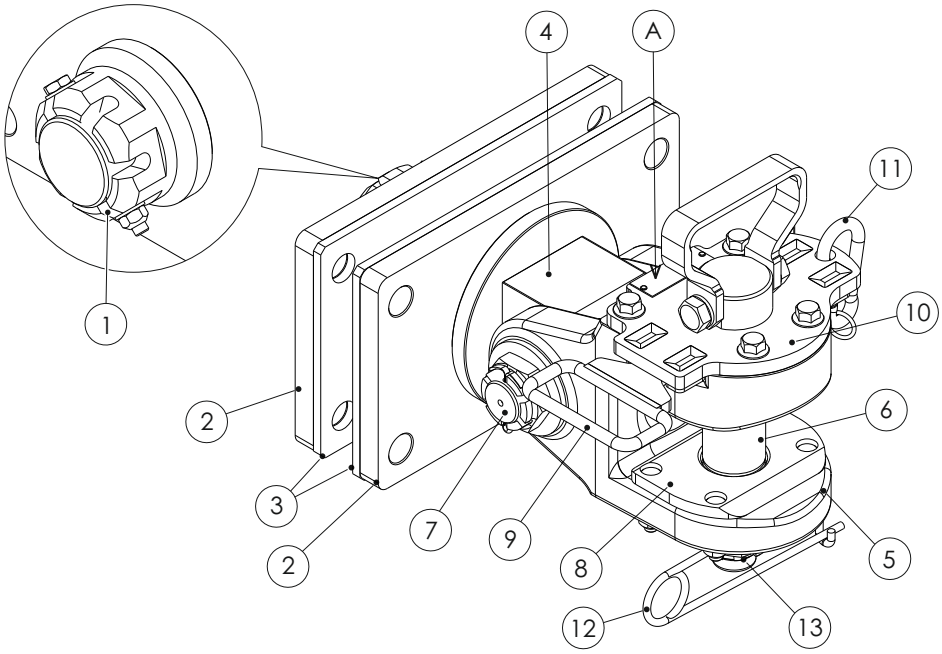
Read carefully the following paragraph/sentence/chapter

Denotes attention and caution, precedes the technical indications for the different procedures.

1 GENERAL INFORMATION

1.1 DESCRIPTION OF THE DRAWBAR COUPLING

The main parts of the drawbar coupling are listed below in order to allow the correct interpretation of the manual and the operations described.



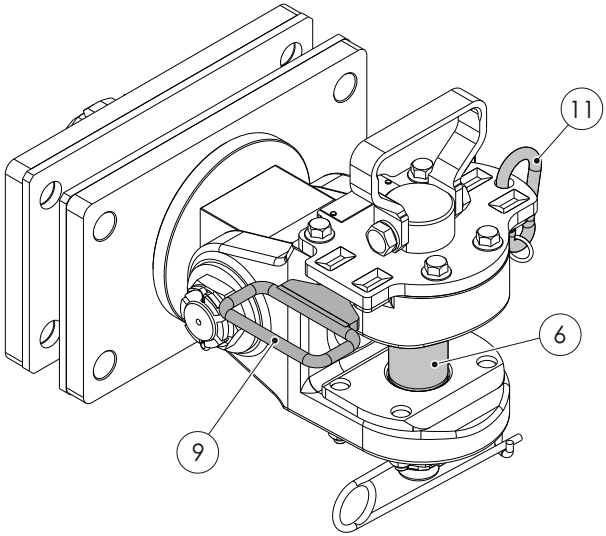
1	Castellated Nut	8	Wear Pad
2	Flanges	9	Opening Lever
3	Plastic Flanges	10	Top Blocking Plate
4	Tie-rod	11	Safety Locking Karabiner
5	Bell-Mount	12	Safety Pin
6	Tow Pin	13	Tow Pin Castellated Nut
7	Articulation Pin	A	Homologation Plate

1.2 UNPACKAGING

Before starting any operation read carefully the following information :

Ensure that the position of the opening lever (9) and the safety karabiner (11) is as shown in the picture below and that the coupling tow pin (6) is fully visible.

WARNING! Limbs crusching tisk.



1.3 OPERATING LIMITATIONS

The HD50/70 drawbar coupling series are suitable only for steering axles trailers equipped with heavy duty 50mm drawbar eyes (for the HD50) and heavy duty 70mm drawbar eyes (for the HD70) according to CUNA standards (NC 438-55)

1.3.1 INSTALLATIONS PRESCRIPTIONS

The HD50/70 drawbar coupling series can be installed on the drawbeams with 240x140mm hole pattern according to CUNA standards (NC 138-03). The choice of the coupling must be compatible with the drawbeam and based on the specifications sheet of the product.

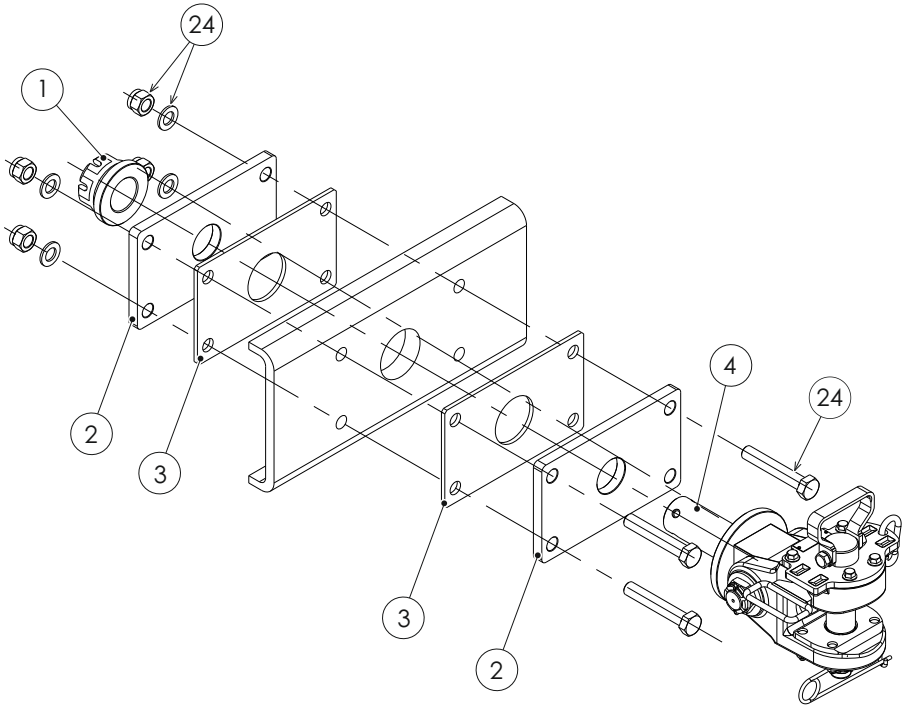
2 INSTALLATION

While reading this chapter refer to the figures from page 08/32 to page 10/32. Before carrying out the installation read carefully the following information:

NOTE The installation has to be carried out by qualified staff

The installation has to be carried out by qualified staff

Position the drawbar coupling on a solid and stable surface.
Remove the castellated nut (1), the flange (2) and the plastic flanges (3).



Now proceed installing the drawbar coupling on the drawbeam:

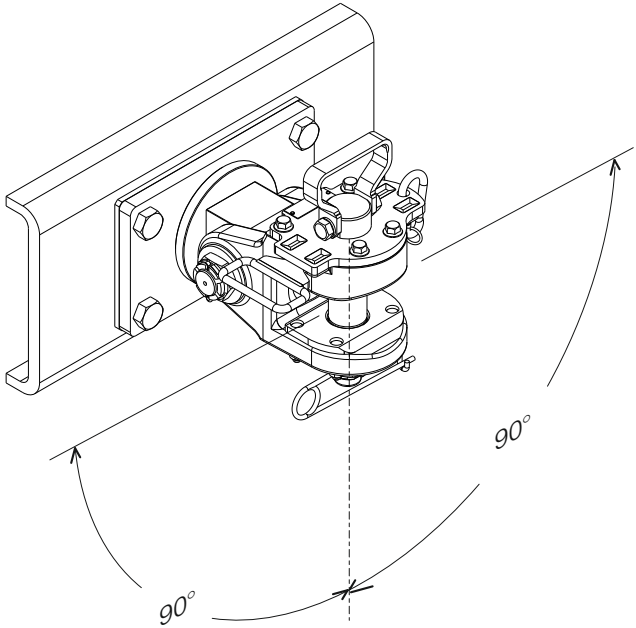
1) Mount the plastic flanges (3) and the flanges (2) one the rear and the other on the front of the drawbeam using the four bolts (24). Follow the instructions in the below tab:

Coupling Type	Bolt Size	Bolt Strength	Torqueing (M)
HD50 - HD70	M 24x2	8.8	730-750 Nm

ATTENTION : use only self-locking nuts.

2) Insert the tie-rod (4) into the flanges hole (3) already positioned on the drawbeam;

3) Lubricate the tie-rod threads (4) and manually tighten the castellated nut (1)taking care to ensure the coupling is levelled hhorizontally (as shown in the picture)



4) Using a torque wrench tighten the castellated nut (1) as follow:

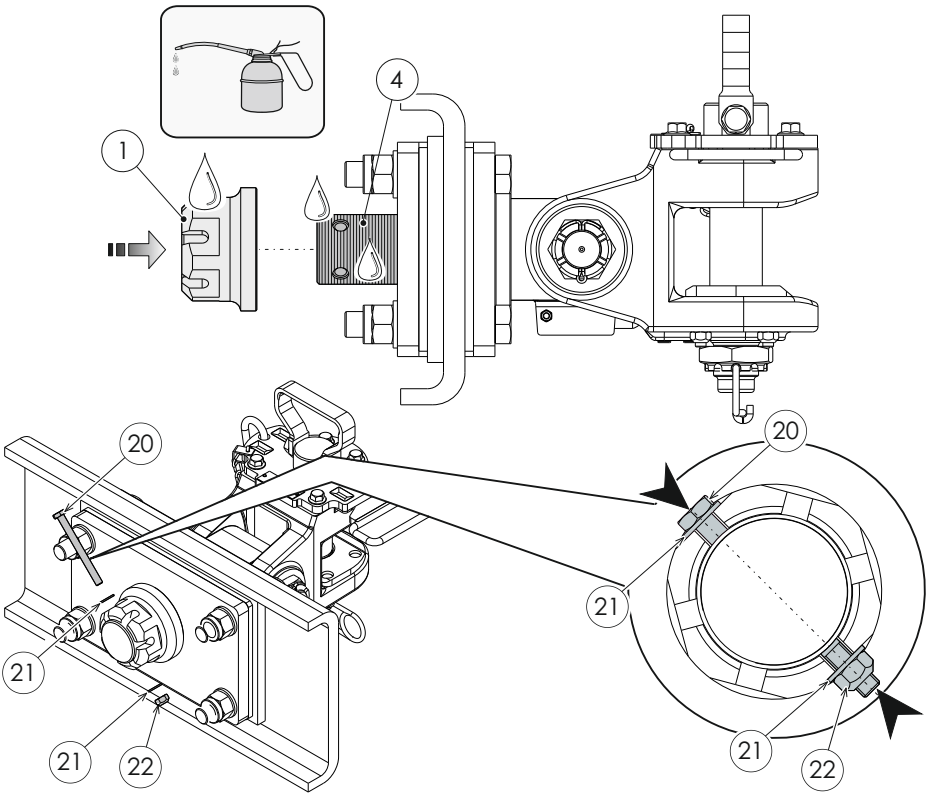
Coupling Type	Torqueing (M)
HD50 - HD70	M=1100 - 1500 Nm

5) Insert the bolt (20) in the tie-rod hole (9) and block it with the washers (21) and the nut (22). Tighten the nut as follow:

Coupling Type	Torqueing (M)
HD50 - HD70	70-80 Nm

NOTE

Never slacken the castellated nut back to allow the bolt (20) to be inserted. If necessary, tighten the castellated nut further until one of the holes on the tie-rod is aligned with one of the holes on the castellated nut.



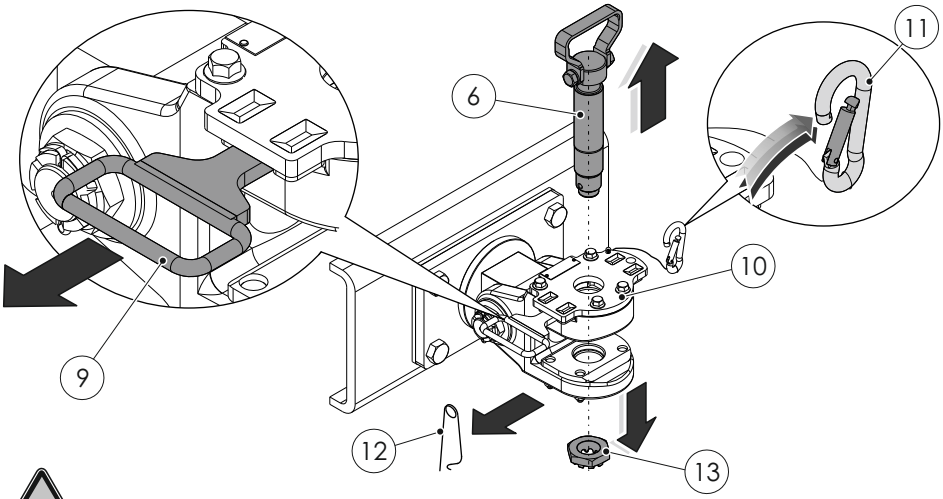
3 OPERATING INSTRUCTIONS

3.1 CONNECTING OPERATION

While reading this chapter refer to the figures from page 11/32 to page 14/32. Before carrying out the installation read carefully the following information:

WEAR WORK GLOVES

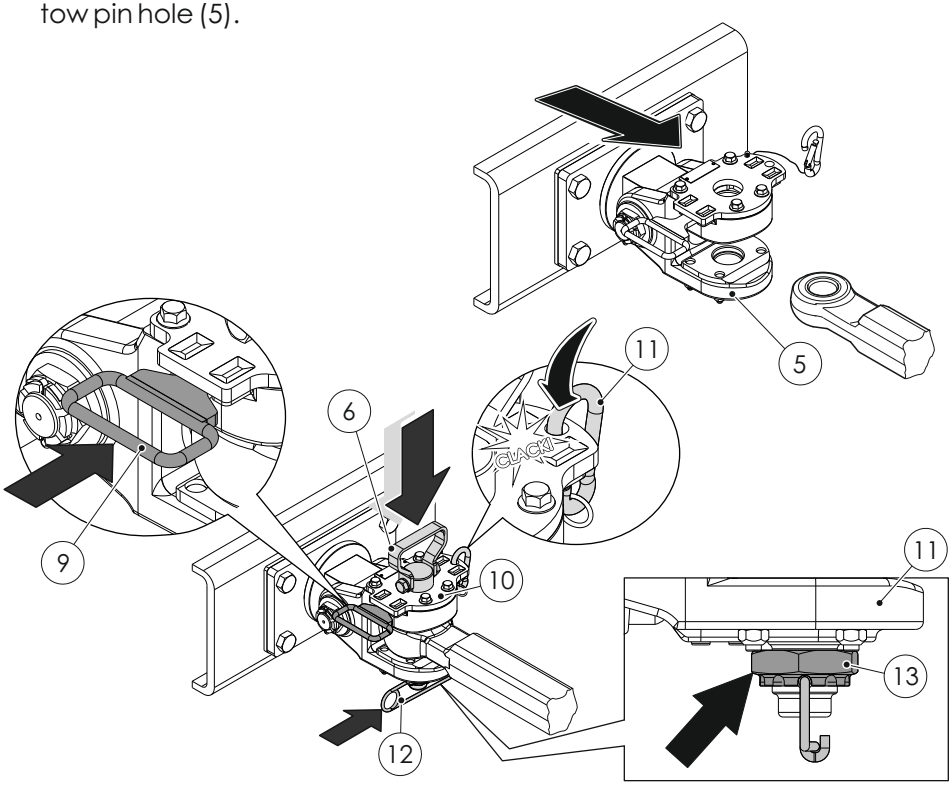
ATTENTION: before starting the connection check that the trailer brakes are on and that, in case of a steering axle trailer, that the front axle is free to rotate. Make sure that the drawbar eye and the coupling are at the same level or that the drawbar eye is slightly lower so that it can be led by the lower bush insert.



WARNING!! Limbs crushing risk

1) Open the security pin (12) and slide it out from the hole on the tow pin (6). Unscrew the nut (13) from the pin (6) and remove the safety karabiner (11) from the opening lever (9). Grip the opening lever and pull until it blocks. Grab the wowing pin (6) and lift it to pull it out from the bell-mouth.

2) Reverse the truck slowly, the drawbar eye has to enter the coupling bellmouth (13) until the drawbar eye hole is aligned with the bell-mouth tow pin hole (5).



3) Insert the tow pin (6) until it blocks in the top plate (10) on the upper side of the bell-mouth. Close the opening lever (9) until it blocks and insert the karabiner (11) in the hole on the upper side of the bell-mouth and in the hole on the opening lever (9). Tighten the nut (13) to the bottom of the tow pin (6) until the hole is visible then insert the security pin (12).

ATTENTION: check that the coupling operation has been done properly, control the locking of the opening lever (9), the locking of the karabiner (11), check the presence of the tow pin nut (13) and the correct insertion of the security pin (12)

If the coupling will not close perfectly it is absolutely forbidden to travel. Contact the closest workshop for solution.

3.2 UNCOUPLING OPERATION

ATTENTION: before starting the connection check that the trailer brakes are on and that, in case of a steering axle trailer, that the front axle is free to rotate. Make sure that the drawbar eye and the coupling are at the same level or that the drawbar eye is slightly lower so that it can be led by the lower bush insert.

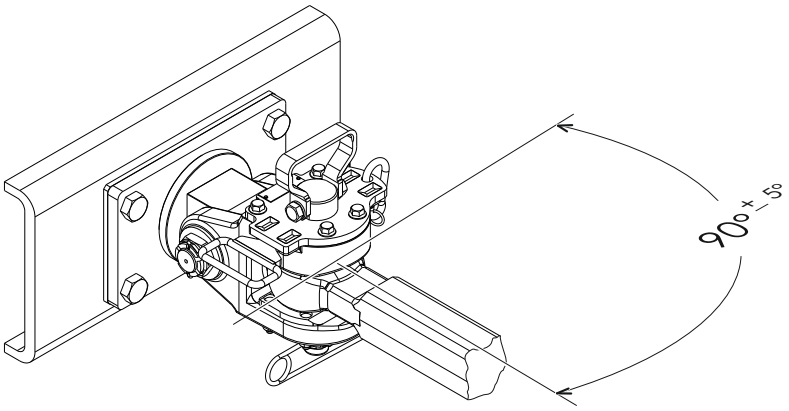
1) 1) Open the drawbar coupling as shown in Point 1 Chapter 3.1 "CONNECTING OPERATION" (Page 11/32)

Do not use any extensions or levers to increase the lever arm to open the coupling; if the tow pin (6) can't be opened check that all the described conditions are respected.

ATTENTION: if the opening lever is hard to open slightly move the truck to reduce the pressure exerted by the drawbar eye on the coupling tow pin.

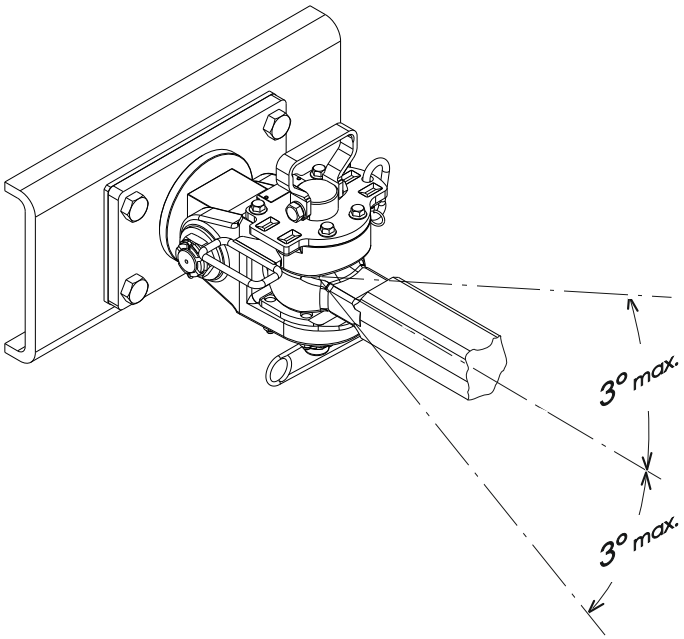
NOTE

The new HD50/70 coupling series could be opened with the drawbar eye in any positions.



2) Move the truck forward until the drawbar eye is out from the drawbar eye bell-mouth (5). Insert the tow pin as shown at Point 3 Chapter 3.1 "CONNECTING OPERATION" (Page 11/32)

ATTENTION: to ensure satisfactory function of the coupling during coupling and uncoupling operation to the trailer, make sure that the drawbar doesn't deviate more than +/-3° from the horizontallongitudinal axil of the drawbar coupling (as shown in the picture).

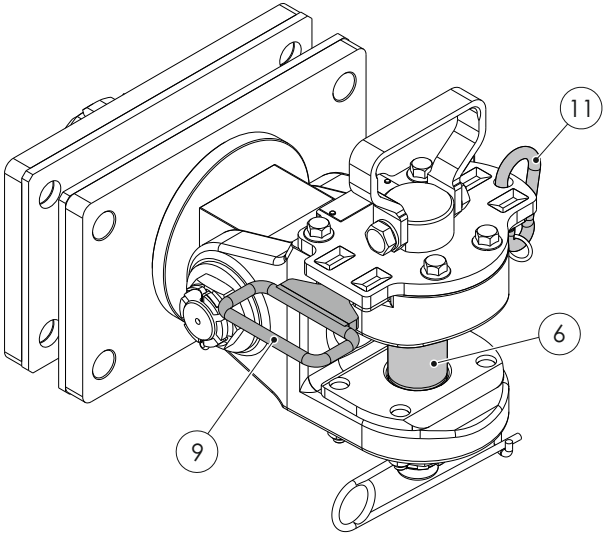


4 INSPECTION AND MAINTENANCE

While reading this chapter refer to the figures from page 15/32 to page 21/32. Before carrying out the installation read carefully the following information:

WEAR WORK GLOVES

ATTENTION: Ensure that the position of the opening lever (9) and the safety karabiner (11) is as shown in the picture below and that the coupling tow pin (6) is fully visible.



NOTE

All moving parts of the coupling are subject to wear caused by normal use. Extent of wear depends on working conditions and maintenance operations carried out.

Therefore regular lubrication and maintenance will contribute to a long lasting coupling lifespan and safety.

4.1 ASSEMBLY AND MAINTENANCE DECLARATION

This section has to be filled by the body builder or who is carrying out the first installation operation.

A) FLEET CUSTOMER DETAILS

Name _____ Phone _____

Address _____

City _____ Postal Code _____

B) TRUCK AND TRAILER DETAILS

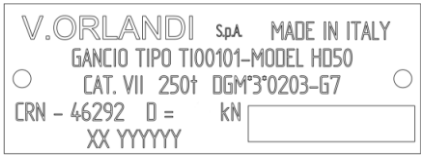
Truck Make _____ Trailer Make _____

Truck VIN N° _____ Trailer VIN N° _____

Max Truck Weight _____ Max Trailer Weight _____

C) DRAWBAR COUPLIN

Model and Version _____



Serial Number _____

D) ASSEMBLY DETAILS

Date _____ Starting Km _____

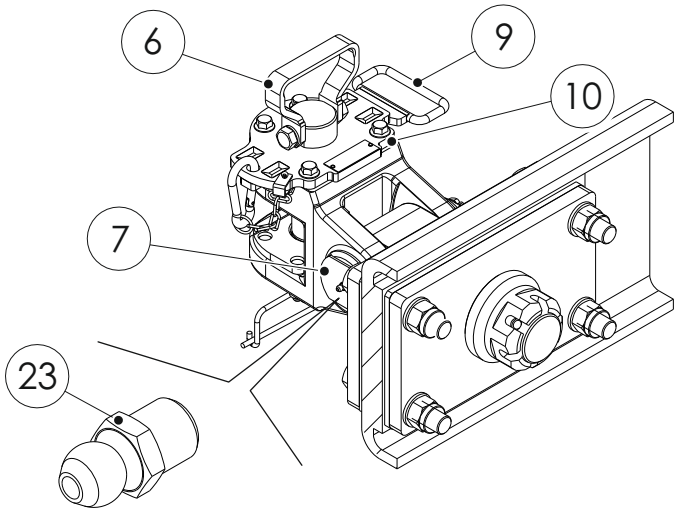
Date, Name and Signature
(and print) _____

AFTER THE FIRST 500 Km AFTER INSTALLATION

- [ ] Using a torque wrench check the tightness of the flange bolts (24) is between the limits (M=730-750 Nm) (see Point 1 Chapter 2 "INSTALLATION" Page 08/32).
- [ ] Lubricate the articulation pin (7) and articulation bush through the greasing nipple (23) located on the head of the articulation pin.
- [ ] Using a torque wrench check the tightness of the castellated nut (1) is between the limits (M=1100-1500 Nm) (see Point 4 Chapter 2 "INSTALLATION" Page 10/32).

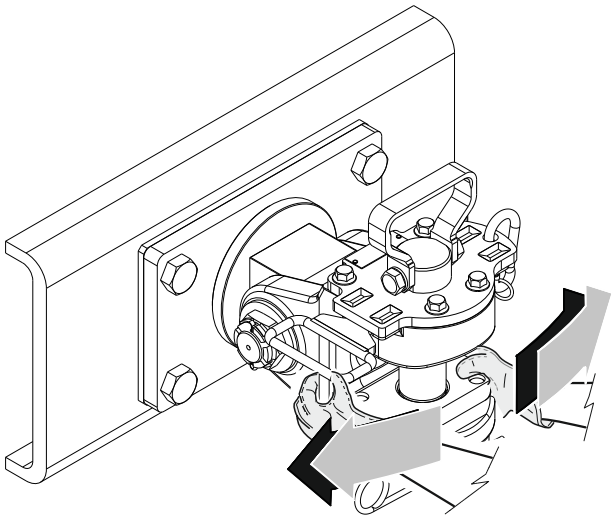
AFTER THE FIRST 3000 Km AFTER INSTALLATION

- [ ] Using a torque wrench check the tightness of the flange bolts (24) is between the limits (M=730-750 Nm) (see Point 1 Chapter 2 "INSTALLATION" Page 08/32).
- [ ] Lubricate the articulation pin (7) and articulation bush through the greasing nipple (23) located on the head of the articulation pin.
- [ ] Using a torque wrench check the tightness of the castellated nut (1) is between the limits (M=1100-1500 Nm) (see Point 4 Chapter 2 "INSTALLATION" Page 10/32).



AFTER THE FIRST 500 Km AFTER INSTALLATION

- [ ] Using a torque wrench check the tightness of the flange bolts (24) is between the limits (M=730-750 Nm) (see Point 1 Chapter 2 "INSTALLATION" Page 08/32).
- [ ] Lubricate the articulation pin (7) and articulation bush through the greasing nipple (23) located on the head of the articulation pin.
- [ ] Using a torque wrench check the tightness of the castellated nut (1) is between the limits (M=1100-1500 Nm) (see Point 4 Chapter 2 "INSTALLATION" Page 10/32).
- [ ] Lubricate the mechanism group (9-10) and the tow pin (6)
- [ ] Open the coupling and check the functionality as described in Chapter 3.1 "CONNECTING OPERATION" Page 11/32)
- [ ] Check the wear limits of the articulation pin (7), tie-rod bush (4a), tow pin (6), wear pad (8), bell-mouth upper and lower bushes (5a-5b) and bellmouth articulation bushes (5c) as shown in the picture at page 21/32.
- [ ] Check the bell-mouth is perfectly locked in its central position.



4.2 PERIODIC CHECKS

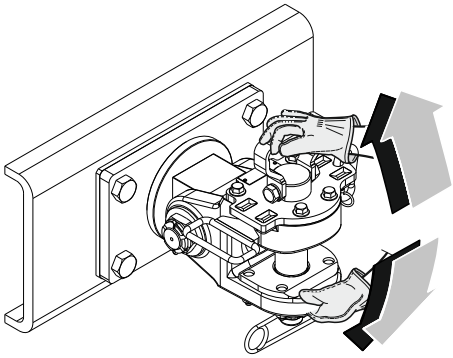
Refer even to the picture at Page 21/32.

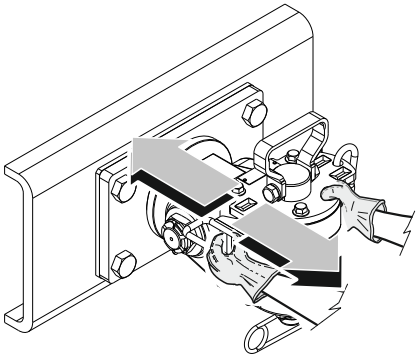
NOTE

Based on the use/application and at least one time per year, it's necessary to check the drawbar coupling general wear. Only qualified operators can carry out the maintenance operations. It's recommended to perform the following checks:

1) Check the absorption system:

Grab on hands the drawbar coupling and shake it strongly, check that there is no vertical or longitudinal play. If there is, proceed to substitute the plastic flanges, see Chapter 5.1 "SUBSTITUTION OF THE PLASTIC FLANGES" Page 22/32





1) Check the threads on the castellated nut and on the tie-rod: Remove the castellated nut (c), the washers (b) and the bolt (b). Untighten the castellated nut (1), check the wear of the threads on the castellated nut (1) and on the tie-rod (4). If there is any play or seizure of the components replace them immediately.

2) Check wear limits:
Check the wear limits of the tow pin (6) (see Chapter 5.2 "SUBSTITUTION OF THE TOW PIN" Page 23/32), the upper (5a) and lower (5b) bushes, the articulation bell-mouth bushes (5c) (see Chapter 5.5 "SUBSTITUTION OF THE BELL-MOUTH BUSHES" Page 26/32), the tie-rod bush (4a) (see Chapter 5.4 "SUBSTITUTION OF THE TIE-ROD HORIZONTAL BUSH AND O-RING" Page 25/32), the articulation pin (7) (see Chapter 5.3 "SUBSTITUTION OF THE ARTICULATION PIN" Page 24/32) and wear pad (8) (see Chapter 5.6 "SUBSTITUTION OF THE WEAR PAD" Page 28/32).

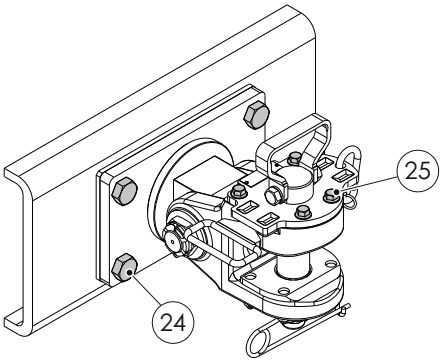
3) Lubricate the mechanism unit (9-10) and tow pin (6).

4) Lubricate the articulation pin (7) and the tie-rod bush through the greasing nipple (23) located on the head of the articulation pin.

5) Check the tightness of the flange bolts (24) (see Point 1 Chapter 2 "INSTALLATION" Page 09/32)

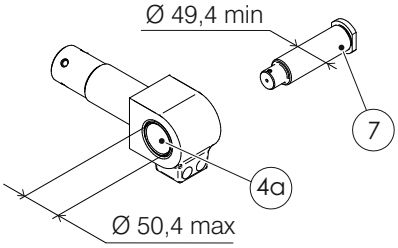
6) Check the tightness of the bolts (25) of the upper bell-mouth plate M=90- 100 Nm.

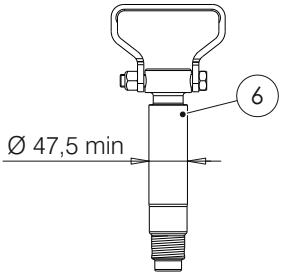
7) Check the tightness of the castellated nut (1) M=1100-1500 Nm. After torqueing and split pin installed mark the castellated nut (1) and the tie-rod (9) with marking pen.

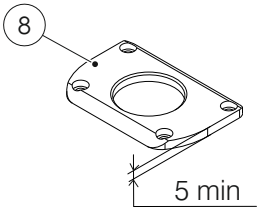


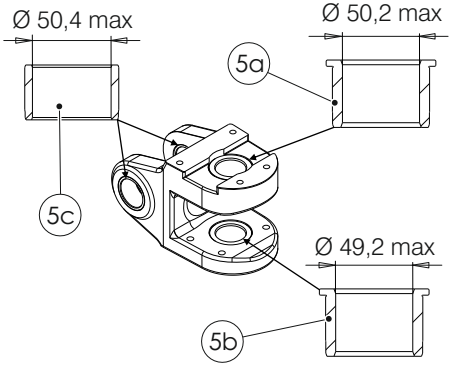
WEAR LIMITS

HD50

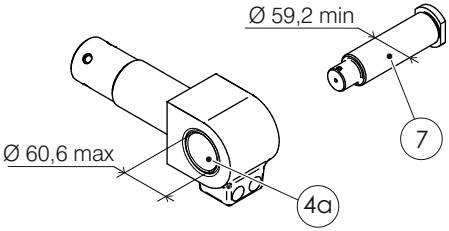


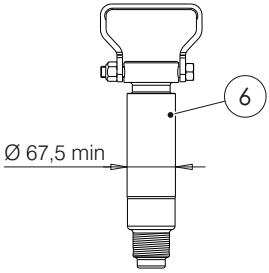


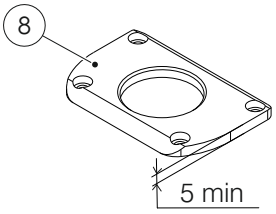


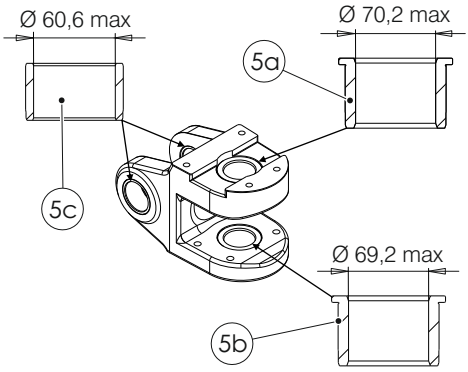


HD70









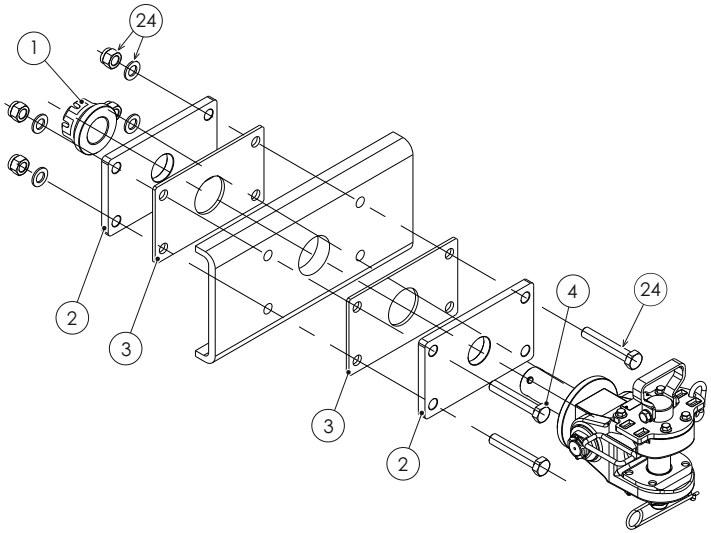
5 REPAIRING

While reading this chapter refer to the figures from page 22/32 to page 29/32. Before carrying out the installation read carefully the following information:

Wear working gloves and heavy work shoes

5.1 SUBSTITUTION OF THE PLASTIC FLANGES

1) Take off the nut (c), the washers (b) and the bolt (a). Untighten the castellated nut (1).
2) Remove the tie-rod (4) from the flanges (2).
3) Unscrew the four bolts (24) and remove the flanges (2) with the plastic flanges (3) from the vehicle drawbeam
4) Substitute the worn plastic flanges (3) (see Chapter 7 "DISPOSAL" Page 31/32)
5) Reassemble the drawbar coupling following the installation instructions (see Point 2, 3, 4, 5, Chapter 2 "INSTALLATION" Page 09-10/32)



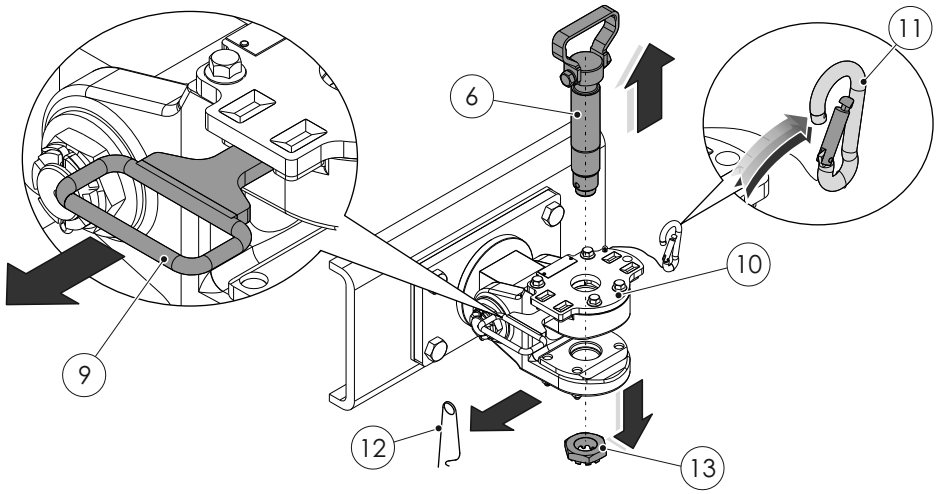
5.2 SUBSTITUTION OF THE TOW PIN

ATTENTION: make ensure that the drawbar coupling is closed, i.e. the coupling pin is down.

1) Open the safety pin (12) and remove it from the toe pin hole (6); unscrew the nut (13) from the tow pin (6) and remove the safety karabiner (11) from the opening lever (9). Hold the opening lever (9) and pull it until it blocks. Hold the tow pin (6) and lift it until it's pulled out from the bell-mouth (see Chapter 7 "DISPOSAL" Page 31/32)

2) Proceed to lubricate the new tow pin (6).

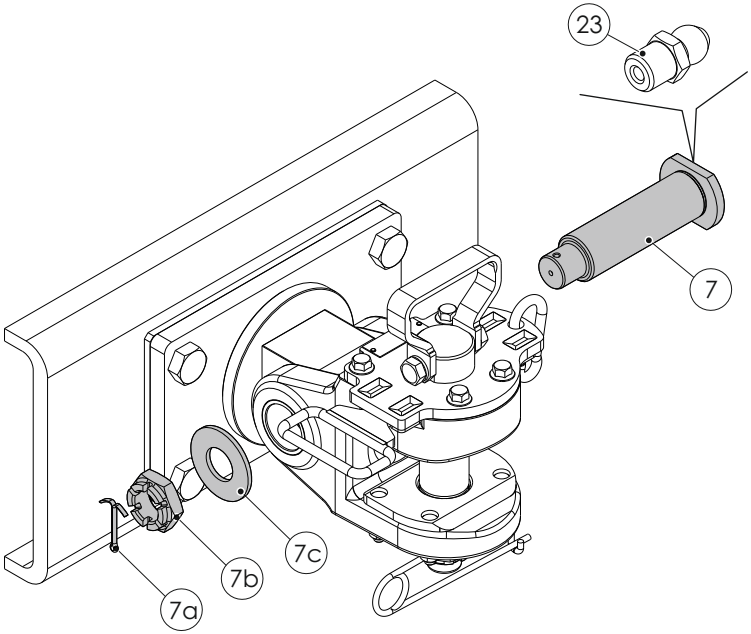
3) IInsert the tow pin (6) until it blocks on the upper bell-mouth plate (10), close the opening lever (9) until it blocks and insert the karabiner (11) in the hole in the top bell-mouth plate (10) and on the hole in the opening lever. Screw the nut (13) on the tow pin (6) until you can see the hole and insert the safety pin (12).



5.3 SUBSTITUTION OF THE ARTICULATION PIN

ATTENTION: make ensure that the drawbar coupling is closed, i.e. the coupling pin is down.

1) Remove the split pin (7a), the castellated nut (7b) and the washer (7c) and remove the articulation pin (7) (see Chapter 7 "DISPOSAL" Page 31/32)
2) Proceed to lubricate the new articulation tow pin (7).
3) Insert the articulation pin (7), the washer (7c) and screw the castellated nut (7b) with a torque M=250-280 Nm. Insert a new split pin (7a) and spread the edges.
4) Lubricate the substituted part through the greasing nipple (23)



5.4 SUBSTITUTION OF THE TIE-ROD HORIZONTAL BUSH AND O-RING

ATTENTION: make ensure that the drawbar coupling is closed, i.e. the coupling pin is down.

1) Remove the coupling from the truck drawbeam (see Points 1, 2, 3, 4 Chapter 5.1 "SUBSTITUTION OF THE PLASTIC FLANGES Page 22/32).

2) Remove the split pin (7a), the castellated nut (7b) and the washer (7c) then slide out the articulation pin (7).

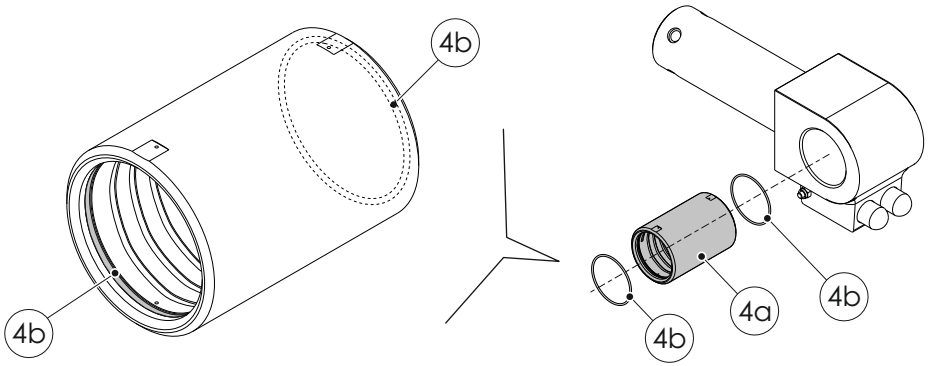
3) Remove the tie-rod (4) from the bell-mouth (5) (see Chapter 7 "DISPOSAL" Page 31/32).

4) Using a press, pull out the horizontal bush (4a) and the O-rings (4b) from the tie-rod (4) (see Chapter 7 "DISPOSAL" Page 31/32)

5) Insert the new bush (4a) in the tie-rod (7) using a press and the O-rings (4b) (one each side) making sure they adhere the whole length profile.

6) Mount the tie-rod (4) on the bell-mouth (5) using the articulation pin (7), the washer (7c) and block them with the castellated nut (7b) with a tightening force M=250-280 Nm; then insert the split pin (7a).

7) Reassemble the coupling following the installation instructions (see Points 2, 3, 4, 5 Chapter 2 "INSTALLATION" Page 09-10/32)



5.5 SUBSTITUTION OF THE BELL-MOUTH BUSHES

ATTENTION: make ensure that the drawbar coupling is closed, i.e. the coupling pin is down.

1) Remove the articulation pin (7) (see Chapter 5.3 "SUBSTITUTION OF THE ARTICULATION PIN" Page 24/32).

2) Remove the tow pin (6) (see Chapter 5.2 "SUBSTITUTION OF THE TOW PIN" Page 23/32).

3) Unscrew the bolts (10a) and set aside the upper plate (10) and the opening lever (9) (see the picture at page 27/32).

4) Unscrew the nuts (8a) and set aside the wear pad (8).

5) Using a press pull out the upper bush (5a), the lower bush (5b) and the horizontal bushes (5c) from the bell-mouth (see Chapter 7 "DISPOSAL" Page 31/32).

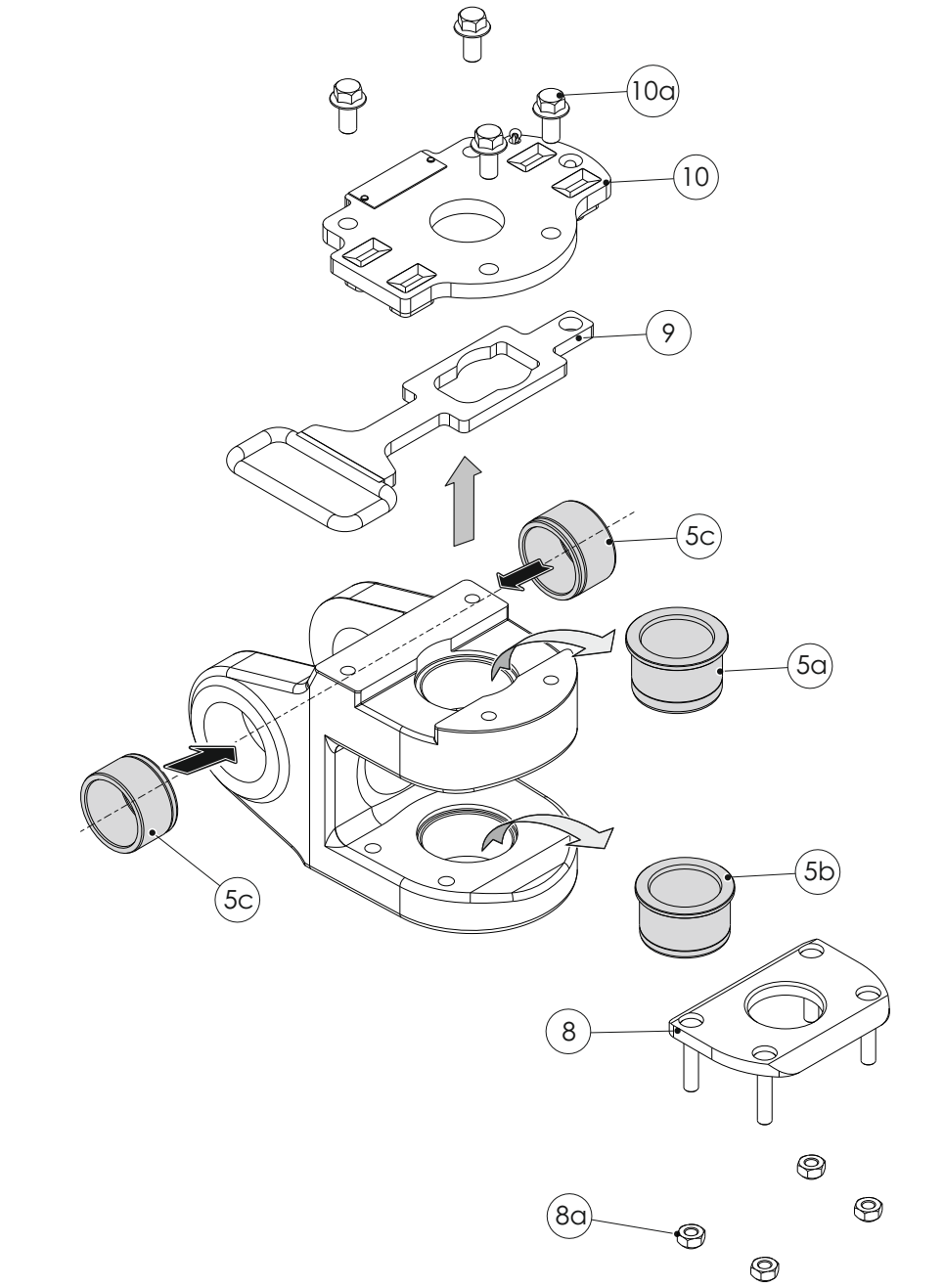
6) Using a press, pull in the bell-mouth the new upper bush (5a), the new lower bush (5b) and the new horizontal bushes (5c). Slightly lubricate the inner part of the bushes.

7) Reassemble the bell-mouth wear pad (8) locking the nuts (8a) with a tightening force M=50-60 Nm.

8) Reassemble the opening lever (9) in the gap of the bell-mouth and block it with the upper plate (10). Lock the upper plate (10) tightening the bolts (10a) with a torque M-90-100 Nm.

9) Reinstall the bell-mouth (5) on the tie-rod (4) and lock it with the articulation pin (7) (see Chapter 5.3 "SUBSTITUTION OF THE ARTICULATION PIN" Page 24/32)

10) Reinstall the coupling following the installation instructions (see Points 2, 3, 4, 5 Chapter 2 "INSTALLATION" Page 09-10/32)


10a
10
9
5c
5a
5c
5b
8
8a

5.6 SUBSTITUTION OF THE WEAR PAD

ATTENTION: make ensure that the drawbar coupling is closed, i.e. the coupling pin is down.

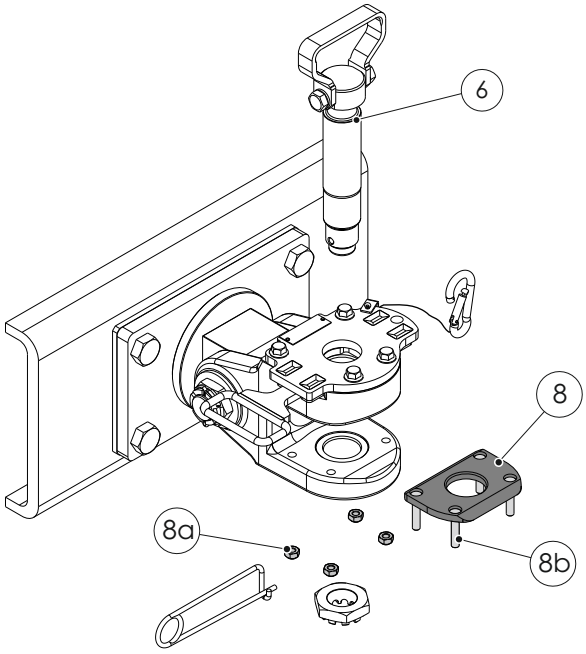
1) Remove the tow pin (6) (see Chapter 5.2 "SUBSTITUTION OF THE TOW PIN" Page 23/32)

2) Unscrew the nuts (8a) and remove the wear pad (8) from the bell-mouth (5) (see Chapter 7 "DISPOSAL" Page 31/32).

3) Insert the pins (8b) in the holes located on the new wear pad until they block (as show in the picture below).

4) Insert the wear pad (8) with the pins (8b) in the holes located on the lower part of the bell-mouth (5). Block the wear pad (8) tightening the nuts (8a) with a torque M=50-60 Nm.

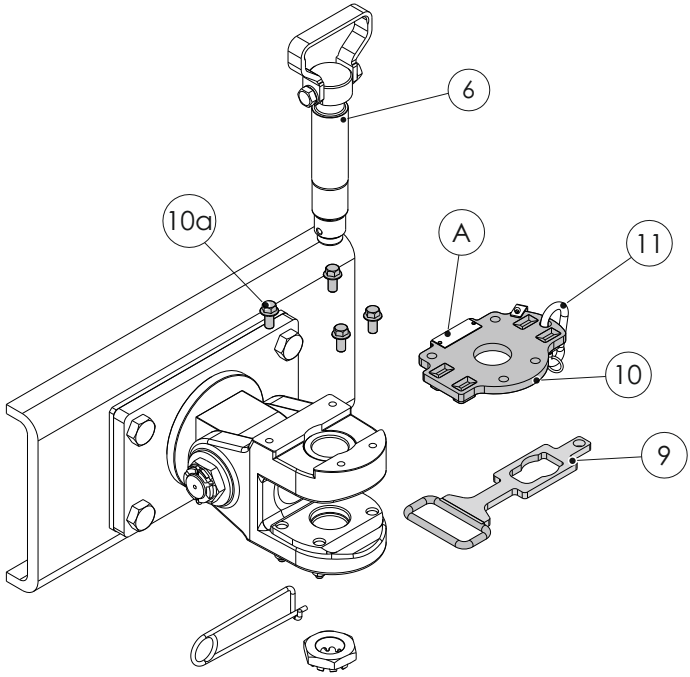
5) Reinstall the tow pin (6) (see Chapter 5.2 "SUBSTITUTION OF THE TOW PIN" Page 23/32).



5.7 SUBSTITUTION OF THE OPENING LEVER

ATTENTION: make ensure that the drawbar coupling is closed, i.e. the coupling pin is down.

1) Remove the tow pin (6) (see Chapter 5.2 "SUBSTITUTION OF THE TOW PIN" Page 23/32).
2) Unscrew the bolts (10a) and remove the upper plate (10) and the opening lever (9). Set aside the homologation plate (A) and the safety karabiner (11).
3) Reassemble the opening lever (9) placing it in the gap on the bell-mouth and lock it with the upper plate (10). Block the upper plate (10) with the bolts (10a) using a tightening force M=90-100 Nm.
4) Reassemble the upper plate (10), the homologation tag (A) and the karabiner (11).
5) Reassemble the tow pin (6) (see Chapter 5.2 "SUBSTITUTION OF THE TOW PIN" Page 23/32)



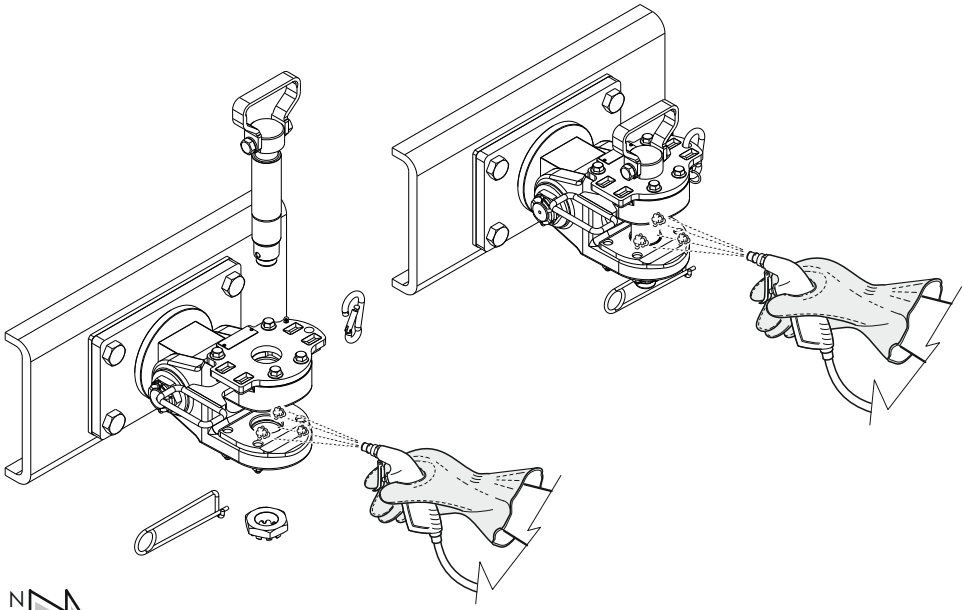
6 CLEANING

1) The drawbar coupling shall be cleaned after every service with or without the trailer connected and after every repairing or maintenance operation.

2) The coupling shall be cleaned also after a long period of inactivity before the use.

3) Keep the opening lever clean and free from oily and greasy substances in order to avoid any risks when opening the drawbar coupling.

4) Carry out the cleaning operation with air blast (high pressure air jet) in the direction of the tow pin and in the surrounding area. Open the drawbar coupling (see Point 1 Chapter 3.1 "CONNECTING OPERATION" Page 11/32) and direct the air blast to the tow pin lower bush.



NOTE

High pressure water cleaning is not recommended other than around the coupling pin and the coupling bell-mouth.

7 DISPOSAL

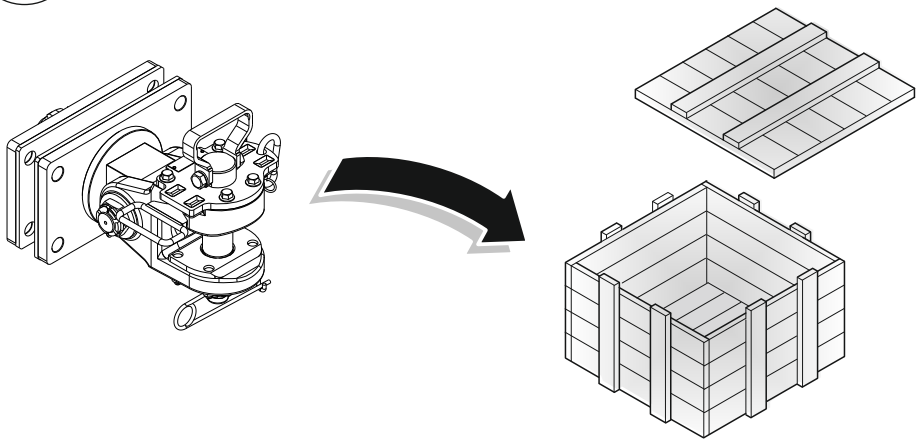
Read carefully the following instructions

1) NO PART of the drawbar coupling has to be scattered into the environment.
2) EVERY PART, COMPONENT or ASSEMBLY must be grouped according to material type.
3) What concerns the actions and measures to adopt for the disposal, refer to the LAWS IN FORCE at the dismantling time.

8 HOW TO TALE THE COUPLING OUT OF SERVICE

This chapter refers to the figure on Page 22/32.

1) Remove the nut (c), the washer (b) and pull out the bolt (a), unscrew the castellated nut (1).
2) Slide out the tie-rod (6) from the flanges (2).
3) Remove the bolts (24), the flanges (2) and the plastic flanges (3).
4) Cover up the metal parts with a thin layer of oil and keep the product in a case strong enough.



The company V.Orlandi thanks the customers for choosing this product.
Visit our internet site for information of the official distributors or of the nearest workshop:

www.orlandi.it

PRODUCT IDENTIFICATION DATA

Via Quinzano, 3
25020 Flero -BS- Italy
tel. +39-0303582722
fax +39-0303582262
e-mail: orlandi@orlandi.it
http: www.orlandi.it

V.ORLANDI
SISTEMI DI TRAINO

Subject to technical changes without prior notice codice: 1990722-A