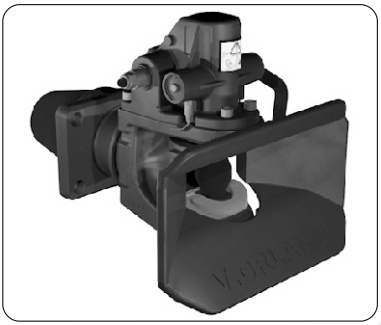

Drawbar coupling E 550

Installation,operating and maintenance instructions

E

V.ORLANDI

SISTEMI DI TRAINO

Registration of the installation and the maintenance operations

Vehicle data: Type: ..... Registration .....

Date of the installation of the ..... Km/miles: .....

Data: ..... Stamp: Signature: .....

Maintenance operations carried .....

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..... Km/Miles: .....

Data: ..... Stamp: Signature .....

Maintenance operations carried .....

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Maintenance operations carried .....

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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 32 pages.

First edition: December 2016
Reprint: .....

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

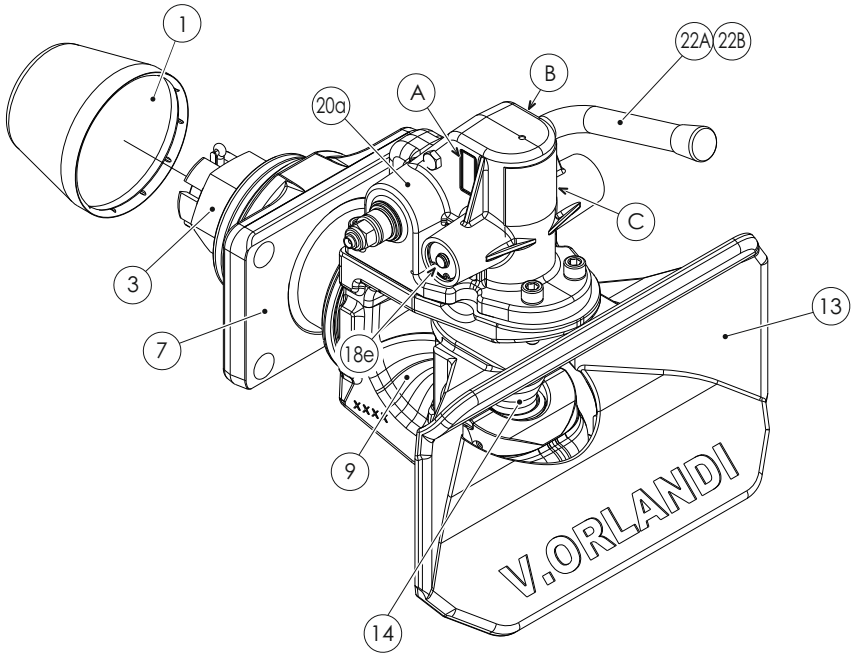
Read carefully the following paragraph/sentence/chapter

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

1 GENERAL INFORMATION

1.1 DESCRIPTION OF THE DRAWBAR COUPLING

The principal parts of the drawbar coupling are listed below in order to allow the correct interpretation of the manual which refers mainly to these parts:



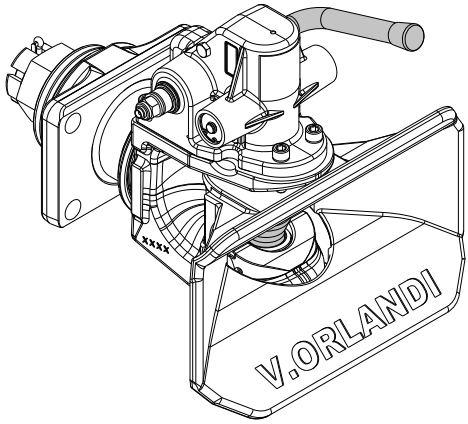
1	Nut cover	20a	Mechanism unit
3	Castellated nut	22A	Operating handle, upwards
7	Coupling flange	22B	Operating handle, downwards
9	Tie rod		
13	Coupling jaw	A	Serial number plate
14	Coupling pin	B	Homologation plate
18e	Security pins	C	Warning plate

1.2 UNPACKING

Read the following instructions carefully before any operation:

Ensure that the position of the operating handle (22A 22B) is as shown in the illustration and that the coupling pin (14) is fully visible.

Attention! Risk of a limb injury



1.3 OPERATING LIMITATIONS

The drawbar couplings of the series E50 are suitable for central axle trailers and steering axle trailers equipped with 50 mm drawbar eyes according to the class D50 of the Directive 94/20/EC, ISO 1102 and Regulation ECE R55-01

1.3.1 INSTALLATION PRESCRIPTION

The drawbar couplings of the series E50 can be installed on the drawbeams of different hole patterns according to the Directive 94/20/EC, ISO 3584 and Regulation ECE R55-01. The choice of the coupling must be compatible with the drawbeam and based on the specification sheet of the product.

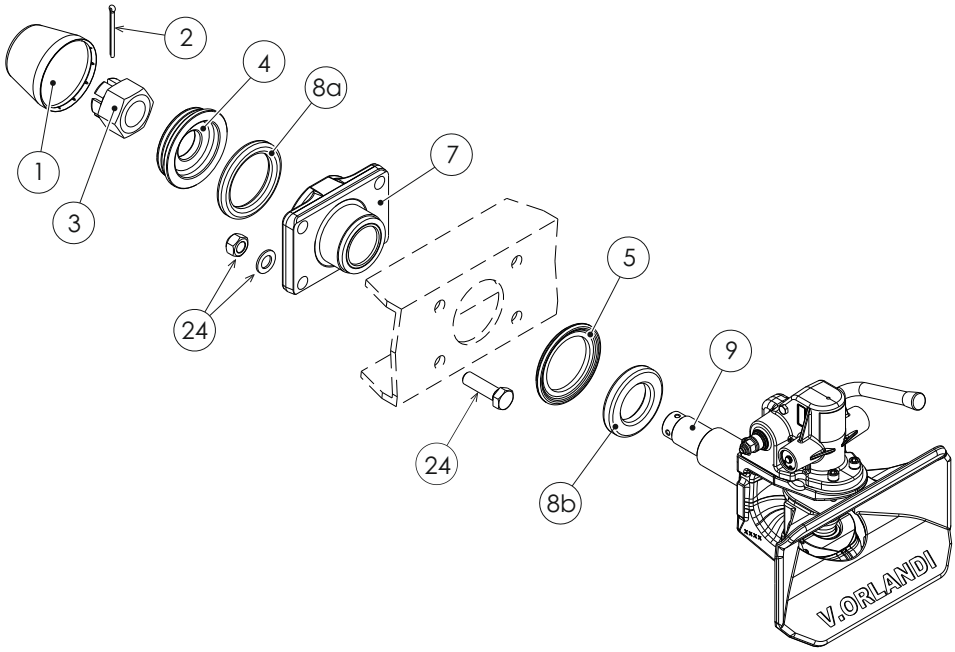
2 INSTALLATION

This chapter refers to the figures on pages 09-11/32 .
Read the following instructions carefully before any operation:

NOTE Installation has to be carried out by skilled personnel

Put on heavy working shoes and working gloves.

Lay the coupling on a solid and stable surface.
Remove the castellated nut (3), rear flange (4), rubber buffer (8a) and the coupling flange (7).



Now proceed with installing the drawbar coupling to the chassis drawbeam:

1) Fit the coupling flange (7) in to the central hole of the chassis drawbeam from the inner side;

➢ Fix it with the four bolts (24). Tighten the bolts as follows:

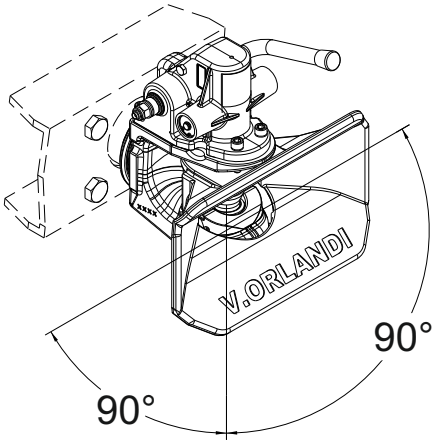
Coupling type	Bolt size	Bolt strength	Torque (M)
E 550	M 20	8.8	330-370 Nm

ATTENTION: Use only self-locking nuts

2) Insert the tie rod (9) with the front flange (5) and the rubber buffer (8b) through the coupling flange (7) which is already bolted on the drawbeam;

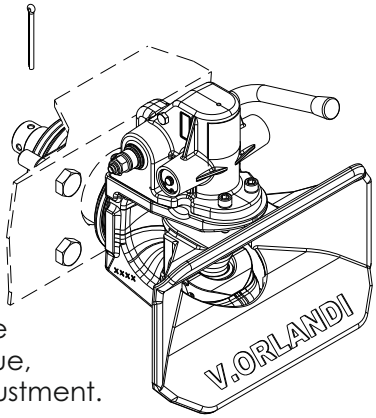
3) Insert the rubber buffer (8a) and the rear flange (4);

4) Lubricate the threads of the tie rod (9), tighten the castellated nut (3) by hand in the first instance taking care to ensure the coupling is level horizontally;



5) Tighten the castellated nut (3) with a torque wrench as follows:

Coupling	Torque
E 550	M=600 - 750 Nm

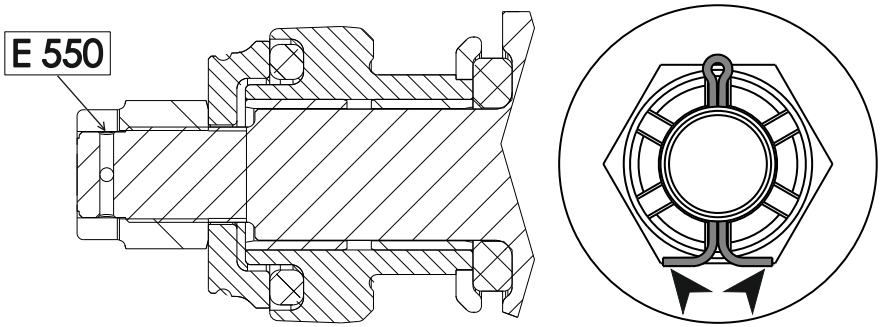


NOTE To prevent overtorque do not set the torque wrench to the maximum value, keep margin for castellated nut adjustment.

6) Insert the split pin (2) through the castellated nut and the hole on the thread of the tie rod (9). Open the two halves of the split pin and press them back against the castellated nut;

NOTE Never slacken the castellated nut back to allow the split pin to be inserted. If necessary, tighten the castellated nut further until one of the holes in the shaft aligne with one of the castellations in the nut.

7) Fit the nut cover (1).



3 OPERATING INSTRUCTIONS

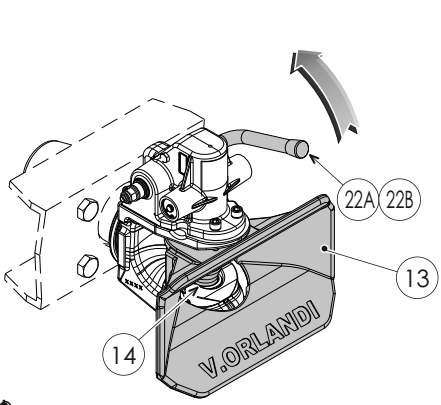
3.1 COUPLING UP

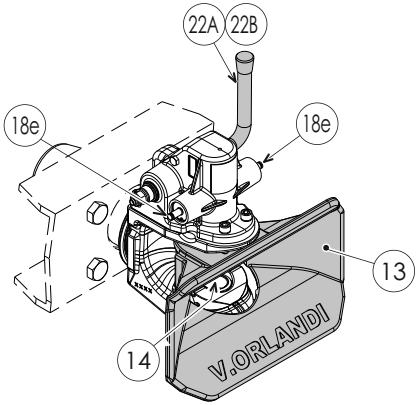
This chapter refers to the figures on pages 12-15/32.

Read the following instructions carefully before any operation:

Wear working gloves

ATTENTION: Before coupling operation check that the brake of the trailer is on and that in case of a steering axle trailer the front axle is free to steer. Make sure that the drawbar eye and the coupling are level or that the eye is slightly lower so that it runs up the lower jaw. If coupling a central axle trailer, ensure that the rear support jacks, if fitted, are clear of the ground first.

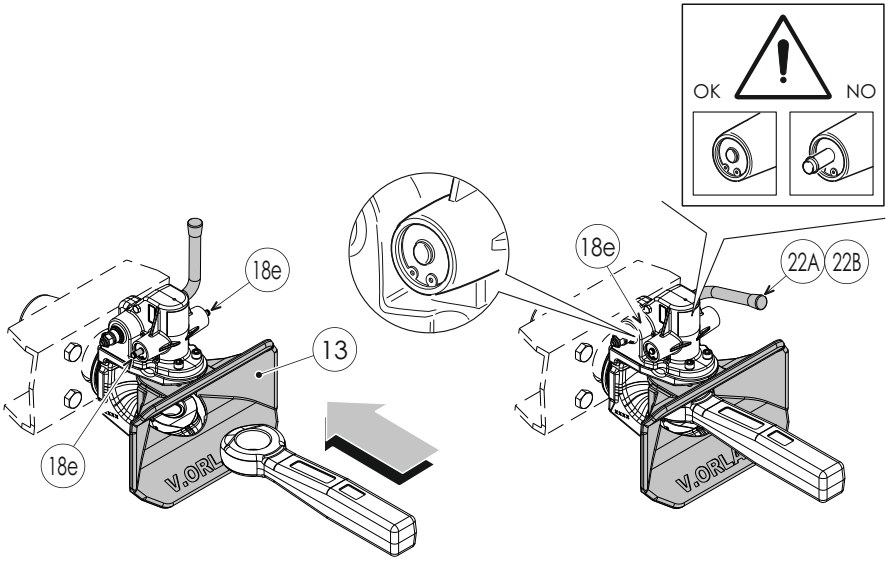




Attention! Risk of a limb injury

1) Lift the operating handle (22A-22B) upwards as far as it will go (note: minimum force needed is 200 Nm).
The coupling pin (14) is now raised. Check that the coupling jaw (13) has locked, ie. cannot swing from side to side.
The security pins (18e) will now be protruding from their seats;

2) Reverse slowly the truck, the drawbar eye has to enter the coupling jaw (13) properly. The push of the drawbar eye against the visible part of the coupling pin makes the pin (14) fall down immediately and the security pins (18e) are seated automatically.



ATTENTION: Always ensure that the coupling operation is carried out properly; check that the operation handle (22A/22B) is down and that the security pins (18e) are fully seated in order to guarantee a secure blocking down of the coupling pin (14).

ATTENTION: In case the coupling would not close perfectly move the truck back and forth about 50 cm to assist the drawbar eye to find the right position and make the coupling close.

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

3.2 UNCOUPLING

Make sure that the brake of the trailer is on. If uncoupling from a central axle trailer, lower the drawbar support leg to the ground so that it is just starting to take weight. Do not try to push the drawbar eye high in the coupling, otherwise the eye will interfere with the pin preventing the uncoupling.

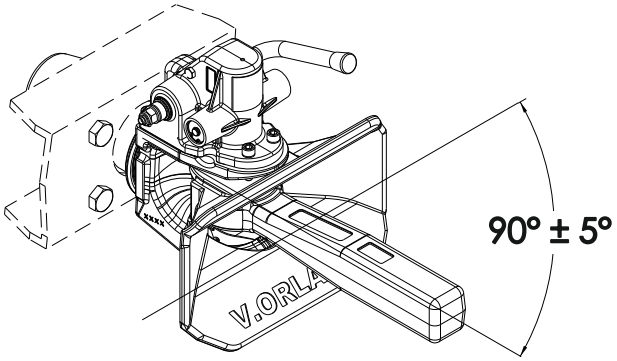
1) Lift the operating handle (22A-22B) upwards as far as it will go (see point 1 in chapter 3.1 COUPLING UP on page 12/32).

Do not use any shafts or levers to extend the operating handle.
If the coupling pin (14) does not rise check that all the described conditions are respected.

If the operating handle is hard to lift, move the truck slightly in order to release the pressure of the drawbar eye against the coupling pin.

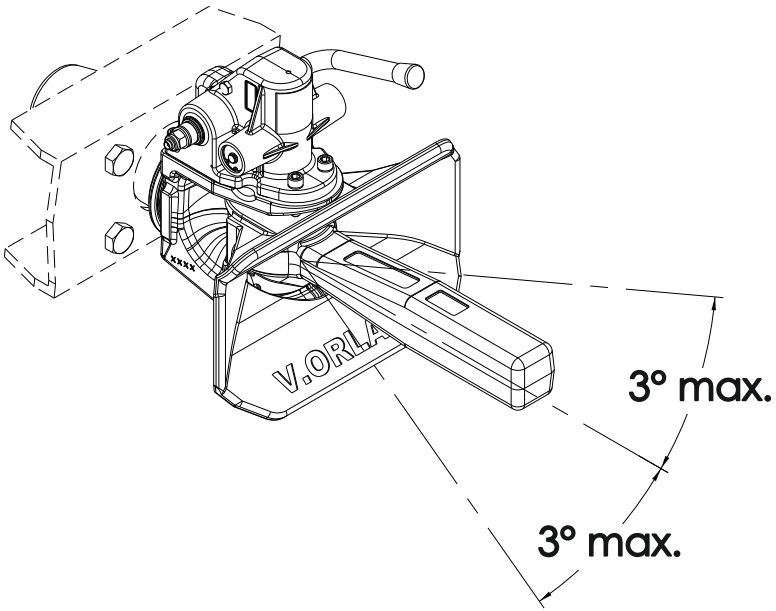
NOTE

The trailer couplings of the new series E550 can be opened with the coupling jaw (13) in any position.



2) Move the truck forward; The coupling will automatically close as the truck pulls away from the trailer.

ATTENTION: To ensure satisfactory function of the coupling during coupling and uncoupling the trailer, make sure that the drawbar eye is within ± 3° of the longitudinal horizontal axis of the coupling.



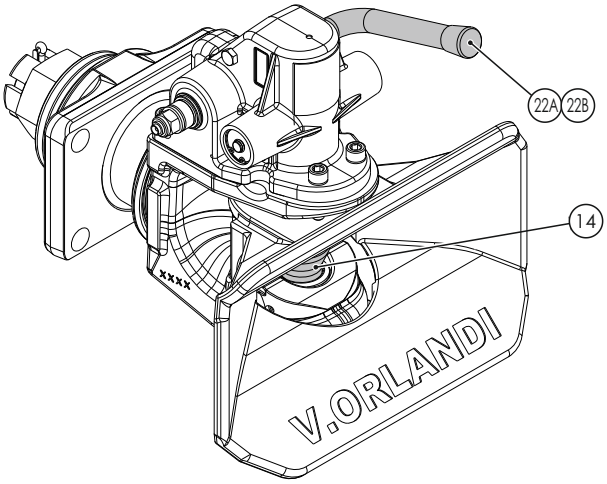
4 MAINTENANCE

This chapter refers to the figures on pages 16-20/32.

Read the following instructions carefully before any operation:

Wear working gloves

ATTENTION: make sure that the coupling is closed ie the coupling pin (14) and the operating handle (22A-22B) are down during all maintenance operations.



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 help prolong the life and safety of the coupling.

After the first 500 Km of use:

Check that the torque of the bolts (24) of the coupling flange is within the torque indicated in point 1 in chapter 2 INSTALLATION, page 10/32.

After the first 3000 Km of use:

1) Check that the torque of the bolts (24) of the coupling flange is within the torque indicated in point 1 in chapter 2 INSTALLATION, page 10/32;

2) Check that the tightness of the castellated nut (3) is within the torque indicated in point 5 in chapter 2 INSTALLATION on page 11/32;

Every 15000 Km:

1) Check that the torque of the bolts (24) of the coupling flange is within the torque indicated in point 1 in chapter 2 INSTALLATION, page 10/32;

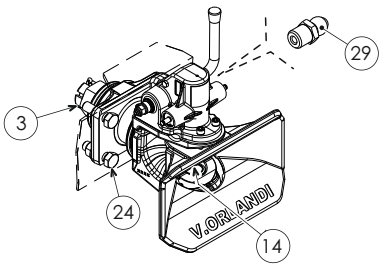
2) Check that the torque of the castellated nut (3) is within the torque indicated in point 5 in chapter 2 INSTALLATION, page 11/32;

3) Grease the mechanism through the grease nipple (29). Always grease the mechanism with the coupling pin (14) raised (see point 1 in chapter 3.1. COUPLING UP on page 12/32). Do not over grease. Too much grease can hinder good functioning of the mechanism;

4) Check, when the coupling is closed, that the coupling jaw is free to move;

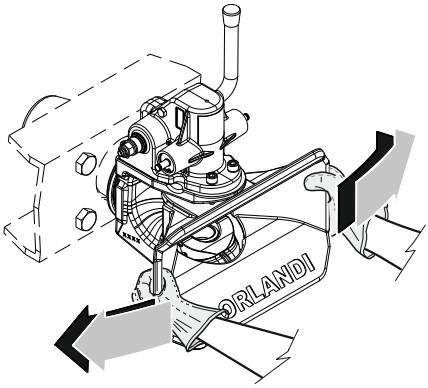
5) Open the coupling and check that it works correctly following the instructions in chapter 3.1 COUPLING UP on page 12/32.

Attention! Risk of a limb injury.



6) Check that the coupling jaw is properly locked in the central position.

If during the various checks, any component wear has exceeded the limits shown on page 18/30, those parts shall be replaced with new ones immediately.



4.1 PERIODICAL MAINTENANCE

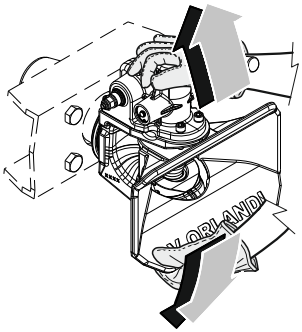
This chapter refers also to the figure on page 21/32.

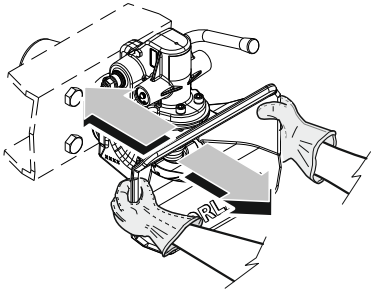
NOTE

Depending on the use and at least annually the coupling shall be checked for wear.
The following checks and controls are recommended:

1) Checking the rubber buffers
Take hold of the coupling and check it, by shaking it forcefully. There should be no play.

If vertical play exceeds 1 mm the inner bush (7c) must be replaced. If there is any longitudinal play, the rubber buffers (8a,8b) must be replaced - see chapter 5.1 REPLACEMENT OF RUBBER BUFFERS AND INNER BUSH, page 21/32.



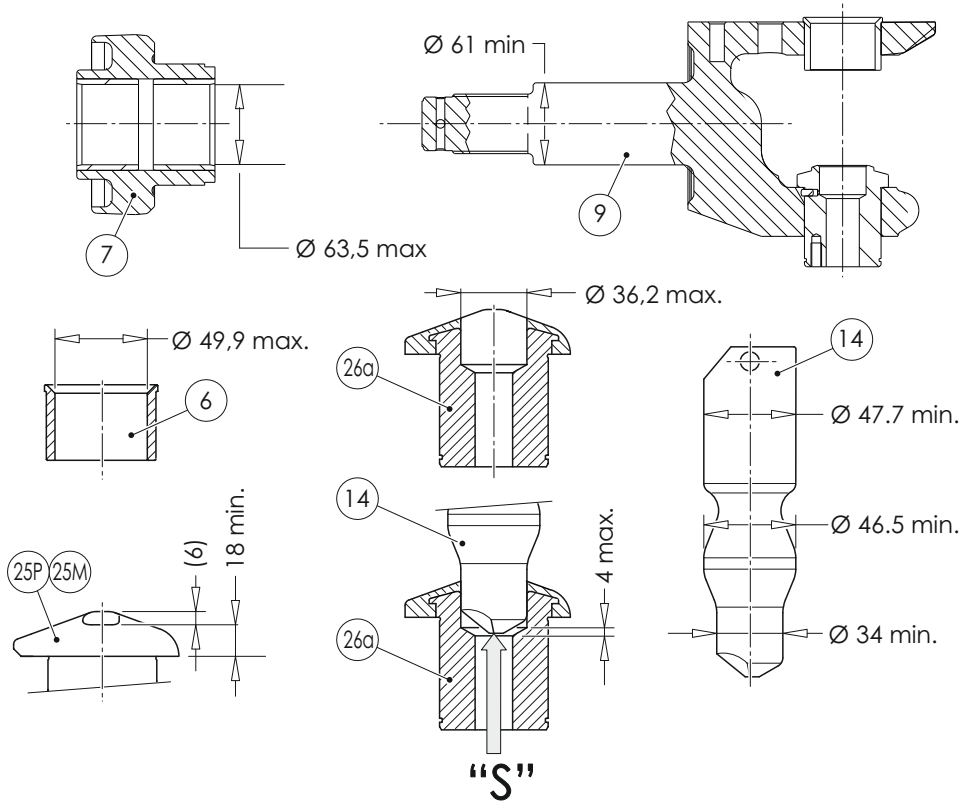


2) Checking the threads of the castellated nut and of the tie-rod:
Remove the nut cover (1), split-pin (2) and the castellated nut (3). Check the condition of the threads of the nut (3) and of the tie-rod (9). In case there are any signs of play or seizure the parts must be replaced immediately;

3) Wear check:
Check that the wear of the coupling pin (14) (see chapter 5.2 REPLACEMENT OF THE MECHANISM UNIT AND THE COUPLING PIN, page 22/32) and of the upper bush (6) and of the lower bush (26a) (see chapter 5.6 REPLACEMENT OF THE UPPER AND LOWER BUSHES, page 26/32) are within the recommended limits shown in the figure;

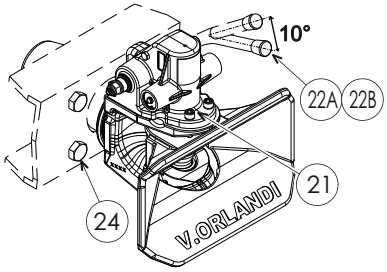
NOTE

The wear data below is specified according to the technical specification ISO TS 20825



4) Checking the vertical play of the coupling pin:
Check that the vertical play of the coupling pin (14) is no more than 4 mm. The play "S" is to be measured by pushing the tip of the pin upwards when the operating handle (22A-22B) is down (see figure on page 19/32).
In case the play exceeds the limit replace the lift lever (15) (see chapter 5.3 REPLACEMENT OF THE LIFT LEVER SPRINGS, page 23/32);

5) Checking for play in the operating handle:
Check that the free movement of the operating handle (22A-22B) is less than 10° (degrees) as shown in the figure. In case the limit is exceeded replace the operating handle (22A-22B) and the lift lever (15) (see chapter 5.3 REPLACEMENT OF THE LIFT LEVER SPRINGS, page 23/32);



6) Checking the torque of the screws and bolts:
Check that the torque of the screws (21) is M = 50 Nm and that the torque of the fixing bolts (24) is as given in point 1 in chapter 2 INSTALLATION on page 10/32;

7) Lubrication:
Grease the mechanism unit (20a) through the grease nipple (29) on the right side of the mechanism box (see the figure on page 17/32).
Always grease the mechanism with the coupling pin (14) raised (see point 1 in chapter 3.1. COUPLING UP on page 12/32). Do not over grease.

NOTE

Too much grease can hinder good functioning of the mechanism.
Oil the moving parts of the trailer coupling.

5 REPAIRING

This chapter refers to the figures on pages 21-28/32 and to the spare part list enclosed.

Read the following instructions carefully before any operation:

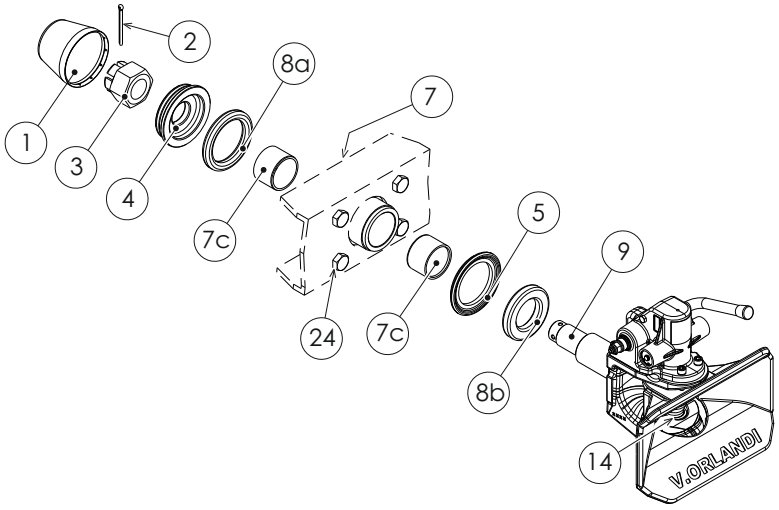
Wear working gloves and heavy working shoes

5.1 REPLACEMENT OF THE RUBBER BUFFERS AND THE INNER BUSH

1) Remove the nut cover (1), split pin (2) and the castellated nut (3);

2) Remove the rear flange (4) and the rubber buffer (8a);

3) Remove the tie rod (9) from the coupling flange (7), remove the front flange (5) and the rubber buffer (8b);



4) Replace the worn rubber buffers (8a, 8b) and the inner bush (7c) with new ones (see chapter 7 DISPOSAL on page 30/32);

5) Reinstall the drawbar coupling following the instructions (see points 2,3,4,5,6 in chapter 2 INSTALLATION on page 10-11/32).

ATTENTION: Every time that the castellated nut (3) is removed, always replace the split pin (2) with new one.

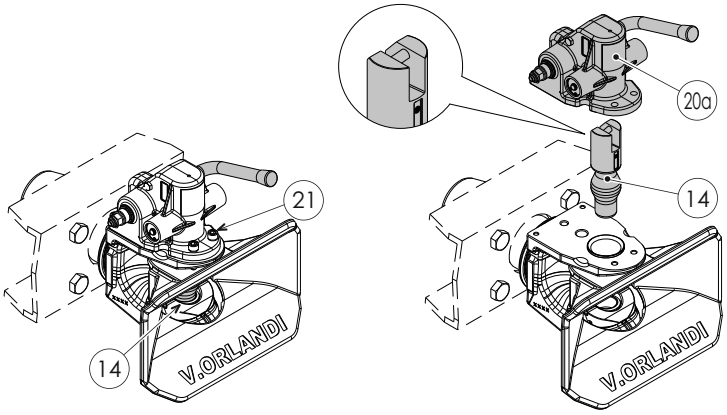
5.2 REPLACEMENT OF THE MECHANISM UNIT AND THE COUPLING PIN

ATTENTION: Make sure that the coupling is closed, ie. the coupling pin (14) is down.

1) Remove the 4 screws (21) keeping the washers, remove the mechanism unit (20a). Remove the coupling pin (14) (see chapter 7 DISPOSAL on page 30/32);

2) Lubricate the new coupling pin (14) and place it in its seat;

3) Fit the new mechanism unit (20a) and tighten the screws with washers (21) to torque M = 50 Nm using Loctite 243.



5.3 REPLACEMENT OF THE LIFT LEVER SPRINGS

ATTENTION: Make sure that the coupling is closed, ie. the coupling pin (14) is down.

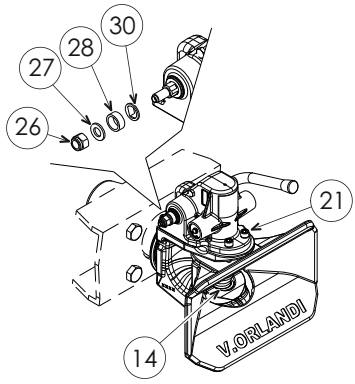
1) Remove the 4 screws (21) keeping the washers, remove the mechanism unit (20a);

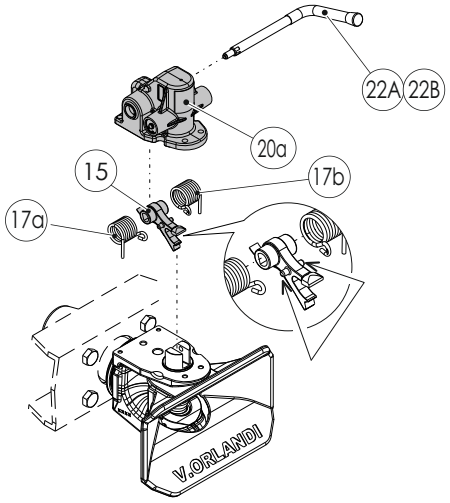
2) Remove the self-locking nut (26), the washer (27), the spacer (28) and the sealing washer (30). Remove from the mechanism unit (20a) the operating handle (22A-22B) keeping the springs (17a 17b) (see chapter 7 DISPOSAL, page 30/32) and the lift lever (15);

3) Fit the lift lever (15) in the mechanism unit (20a) making sure that the eyelets of the new springs (17a-17b) engage with the pins on each side of the lift lever (15);

4) Refit the operating handle (22A-22B). Mount the sealing washer (30), spacer (28), washer (27) and tighten the self-locking nut (26);

5) Replace the mechanism unit (20a) (see point 3 in chapter 5.2 REPLACEMENT OF THE MECHANISM UNIT AND OF THE COUPLING PIN, page 22/32).





5.4 REPLACEMENT OF THE COUPLING JAW

ATTENTION: Make sure that the coupling is closed, ie. the coupling pin (14) is down.

1) Remove the 4 screws (21) keeping the washers, remove the mechanism unit (20a) and the coupling pin (14);

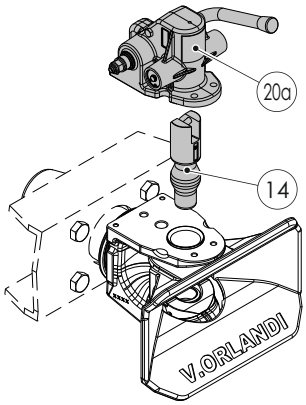
2) Remove the 3 screws (12d), plate (12c), spring (12b) and circlip (26b);

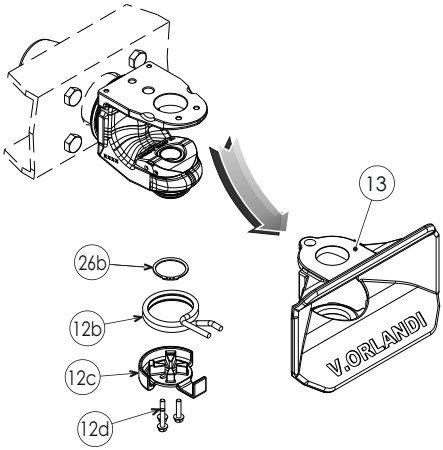
3) Move the jaw (13) downwards and remove it (see chapter 7 DISPOSAL, page 30/32);

4) Place the new jaw (13) in to position, fit the circlip (26b), spring (12b) and plate (12c);

5) Tighten the screws (12d) to torque M = 50 Nm using Loctite 243;

6) Fit the coupling pin (14) and the mechanism unit (20a) (see point 3 in chapter 5.2 REPLACEMENT OF THE MECHANISM UNIT AND THE COUPLING PIN, page 22/32).





5.5 REPLACEMENT OF THE WEAR PAD OF THE LOWER BUSH

ATTENTION: Make sure that the coupling is closed, ie. the coupling pin (14) is down.

1) Remove the 4 screws (21) keeping the washers, remove the mechanism unit (20a) and the coupling pin (14);

2) Loosen the 4 (four) screws of the worn wear pad (25M-25P) (see chapter 7 DISPOSAL, page 30/32), remove and replace it;

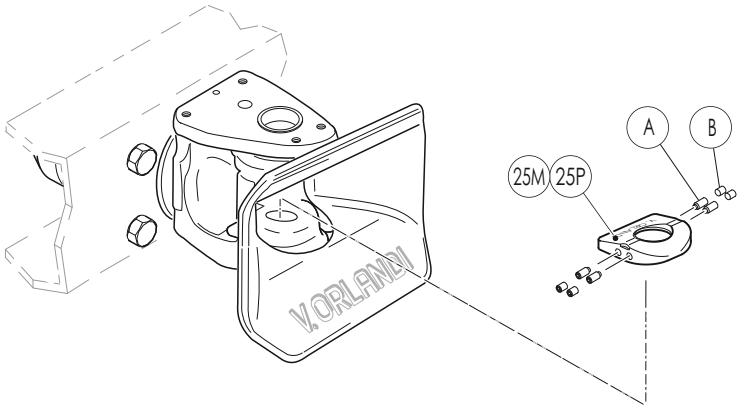
3) Take care to position the new wear pad (25M-25P) correctly, if necessary replace also the screws;

NOTE

Torque for the screws of the wear pad 25M — screw A 8-10Nm and screw B 10-12 Nm, using threadlock (loctite 243).

Torque for the screws of the wear pad 25P — 5,5-7 Nm

4) Fit the coupling pin (14) and the mechanism unit (20a) (see point 3 in chapter 5.2 REPLACEMENT OF THE MECHANISM UNIT AND THE COUPLING PIN, page 22/32).



5.6 REPLACEMENT OF THE UPPER AND LOWER BUSHES

ATTENTION: Make sure that the drawbar coupling is closed, ie. the coupling pin (14) is down.

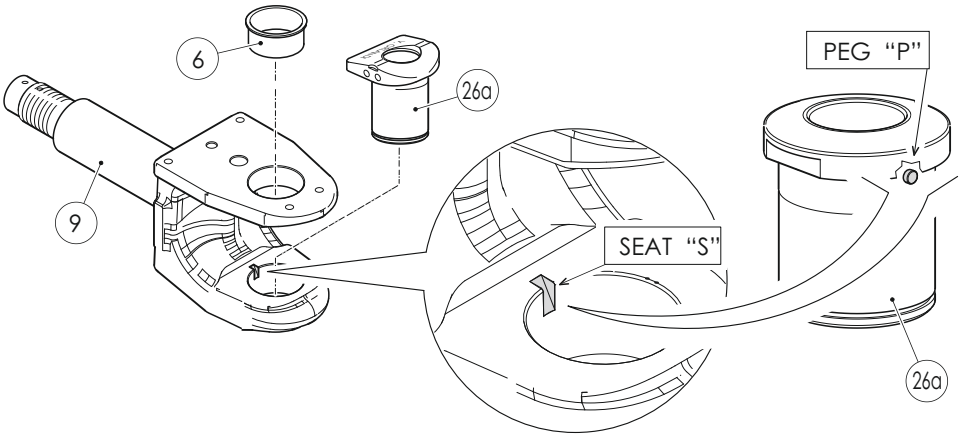
1) Remove the coupling from the truck (see chapter 5.1 REPLACEMENT OF THE RUBBER BUFFERS AND THE INNER BUSH, page 21/32);

2) Remove the mechanism unit (see chapter 5.2 REPLACEMENT OF THE MECHANISM UNIT AND THE COUPLING PIN, page 22/32);

3) Remove the coupling jaw
(see chapter 5.4 REPLACEMENT OF THE COUPLING JAW, page 24/32);

4) Remove the bushes (6, 26a) and replace them (see chapter 7 DISPOSAL on page 30/32), (see also the removal of the wear pad 25M-25P chapter 5.5 REPLACEMENT OF THE WEAR PAD OF THE LOWER BUSH, page 25/32).
When fitting the lower bush (26a) take care to position the peg "P" into its seat "S";

5) Refit all the parts as described in chapters 5.1 REPLACEMENT OF THE RUBBER BUFFERS AND THE INNER BUSH, page 21/32, 5.2 REPLACEMENT OF THE MECHANISM UNIT AND THE COUPLING PIN, page 22/32, 5.4 REPLACEMENT OF THE COUPLING JAW, page 24/32.



5.7 REPLACEMENT OF THE SECURITY PINS

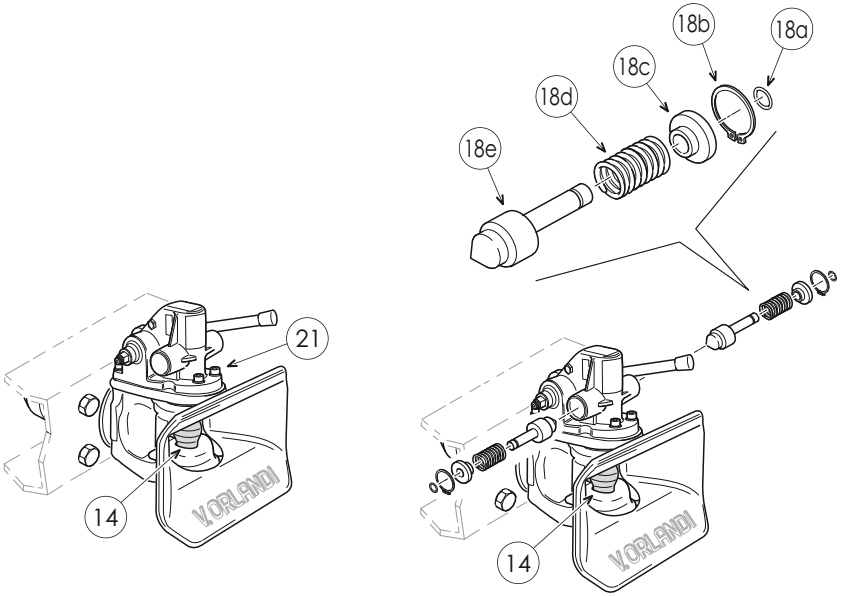
ATTENTION: Make sure that the drawbar coupling is closed, ie. the coupling pin (14) is down.

1) Remove the circlip (18b), 'o'-ring (18a), support washer (18c), spring (18d) and the security pin (18e) (see chapter 7 DISPOSAL on page 30/32);

2) Lubricate the sliding surface of the security pin (18e) with a thin layer of grease;

3) Replace all the parts.
Reassemble the security pin (18e), spring (18d), support washer (18c), 'O'-ring (18a) and the circlip (18b);

4) Replace also the other security pin .



5.8 REPLACEMENT OF THE JAW LOCK PIN

ATTENTION: Make sure that the drawbar coupling is closed, ie. the coupling pin (14) is down.

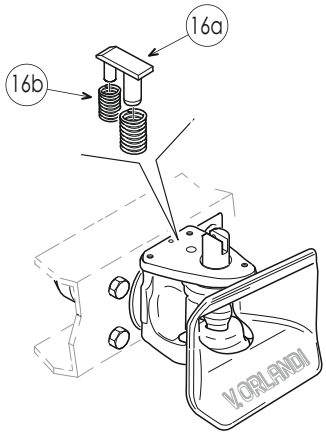
1) Remove the 4 screws (21) keeping the washers, remove the mechanism unit (20a);

2) Remove the jaw lock pin (16a), the 2 springs (16b) (see chapter 7 DISPOSAL, page 30/32);

3) Lubricate the sliding surface of the jaw lock pin (16a) with a thin layer of grease;

4) Replace the lock pin (16a) and the springs (16b);

5) Fit the mechanism unit (20a) (see point 3 in chapter 5.2 REPLACEMENT OF THE MECHANISM UNIT AND THE COUPLING PIN, page 22/32).



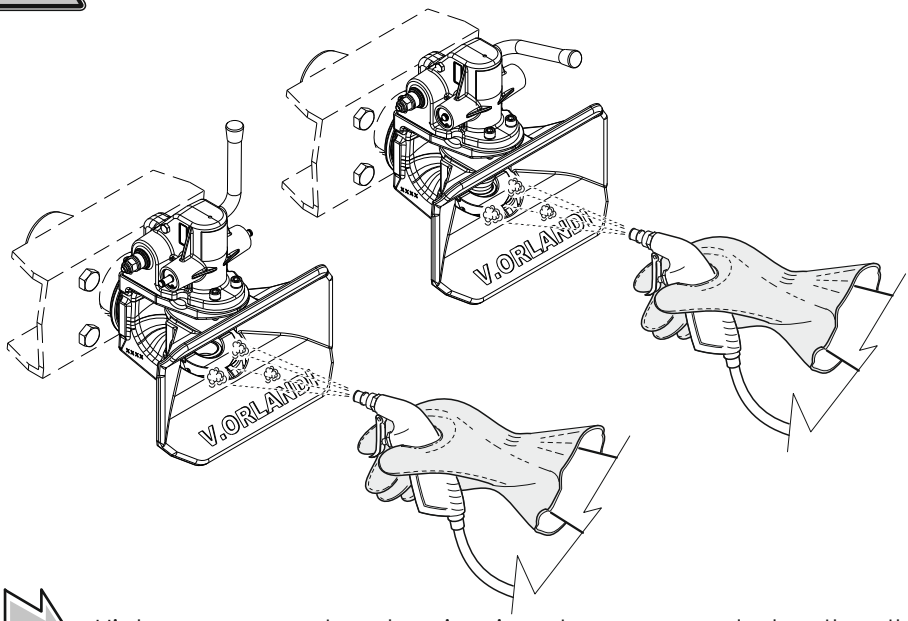
6 CLEANING

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

2) The coupling shall be cleaned also before use after a long period out of use;

3) Keep the operating handle clean, free from oily or greasy substances in order to avoid risks when opening the coupling;

4) Clean the coupling with high pressure air jet directed on - to and around - the coupling pin. Open the coupling (see point 1 in chapter 3.1. COUPLING UP, page 12/32) and blow the lower bush clean with the air jet.



NOTE

High pressure water cleaning is not recommended other than around the coupling pin and the coupling jaw.

7 DISPOSAL

Read carefully the the following instructions:

No part of the drawbar coupling shall be disposed of in the environment.

Every part, component or assembly of components must be grouped according to material type.

What concerns the actions and the measures to adopt the local regulations governing at the time of dismantling shall be observed.

8 HOW TO TAKE THE COUPLING OUT OF SERVICE

This chapter refers to the figure on page 21/32.

1) Remove the nut cover (1), split pin (2) and the castellated nut (3);

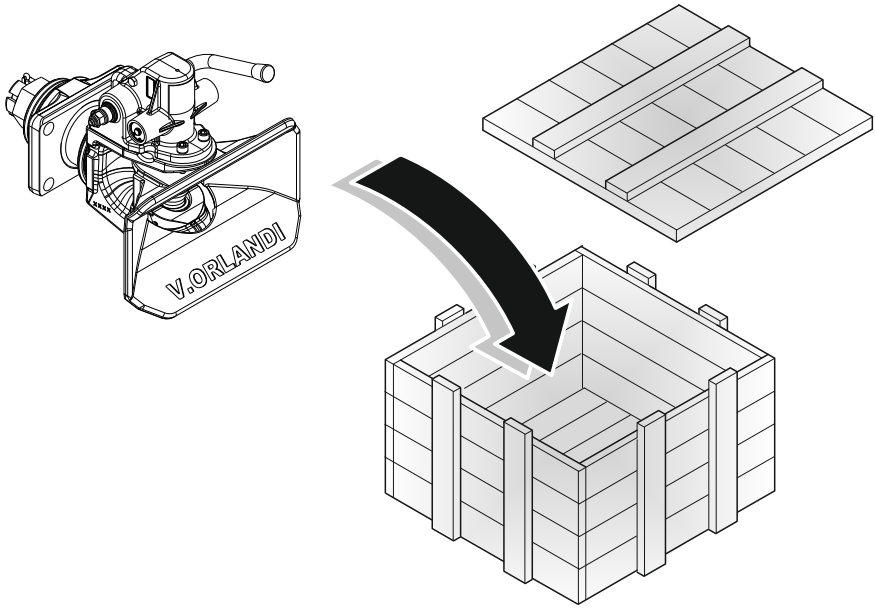
2) Remove the rear flange (4) and the rubber buffer (8a);

3) Remove the tie rod (9) from the coupling flange (7), remove the front flange (5) and the rubber buffer (8b);

4) Remove the bolts (24) and the coupling flange (7);

NOTE

5) Lubricate the metallic parts with a thin layer of oil and keep the coupling in a case strong enough.



NOTES:

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DATI IDENTIFICAZIONE PRODOTTO

PRODUCT IDENTIFICATION DATA

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