



# Drawbar coupling E 57

Installation, operating and  
maintenance instructions

GB



**V. ORLANDI**  
SISTEMI DI TRAINO

## Installation and maintenance registration

Vehicle data: Type:..... Number plate:.....

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

Date:..... Stamp:..... Signature:.....

Intervention made: .....

.....

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Km/Miles: .....

Date:..... Stamp:..... Signature:.....

Intervention made: .....

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## 0 INTRODUCTION

### 0.1 GUARANTEE

V. Orlandi S.p.A. is not liable for any damage caused by misuse, changes or tampering.

The use of non-original V. Orlandi S.p.A. parts will void the guarantee and invalidate any homologation.

V. Orlandi S.p.A. reserves the right to make changes at any time.

### 0.2 STORAGE OF THE MANUAL

This manual is an integral part of the coupling system. It must accompany the system each time it is moved, resold or returned under guarantee and must be within reach of every operator for quick reference whenever necessary.

It is the responsibility of the user to keep it intact and in good conditions of use.

This manual must be replaced with an identical copy if wear or other damage makes it impossible to read it.

NB: THIS MANUAL HAS 32 PAGES

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Reprint: .....

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### 0.3 HOW TO READ AND USE THE MANUAL

Apart from the title of each chapter, we adopted signals to highlight what to do when carrying out each operation, therefore:



Requires attention and caution.



Caution! Risk of limb crushing.



Implies absolute prohibition.



Wear heavy shoes.



Wear protection gloves.



Read carefully the following paragraph/sentence/chapter.



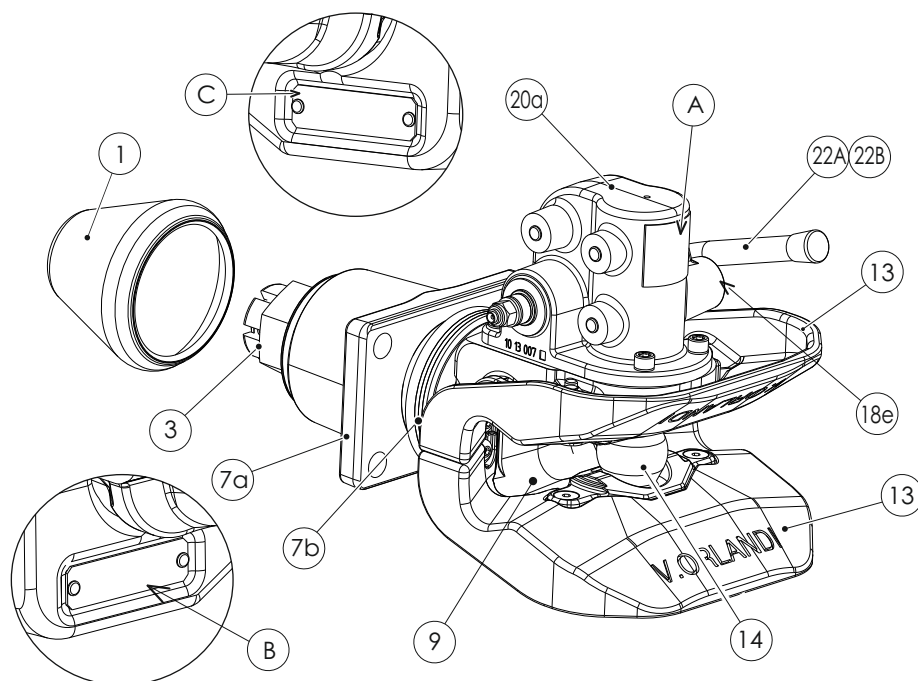
Requires attention and caution. Precedes technical suggestions useful for facilitating certain operations.

## 1 GENERAL INFORMATION

### 1.1 DESCRIPTION OF THE DRAWBAR COUPLING



Set out below are the essential parts of the drawbar coupling most referenced in the text to allow proper interpretation of the operations described below.



1	Nut protecting cover	18e	Check pin
3	Castellated nut	20a	Mechanism unit
7a	Coupling flange	22A	High opening lever
7b	Coupling flange thickness	22B	Opening lever
9	Tie rod	A	Warning plate
13	Coupling jaw	B	Homologation plate
14	Coupling pin	C	Serial number plate

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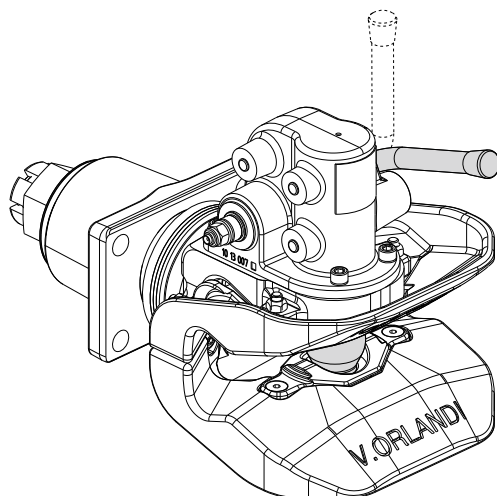
## 1.2 UNPACKING

Before starting any type of operation, read the following carefully:

Make sure the operating handle (22A-22B) is as shown in the figure and the coupling pin (14) is visible.



Caution! Risk of limb crushing.



## 1.3 RESTRICTIONS OF USE

The E 57 series drawbar couplings are designed to be used both with rigid drawbar central-axle trailers and with turntable steer trailers equipped with towing eye of 57.5 mm SWEDISH STD. In accordance with Directive 94/20/EC, Regulation ECE R55-01 and SWEDISH STD

### 1.3.1 INSTALLATION INSTRUCTIONS

The E 57 series drawbar couplings can be mounted on towbars with different holes according to the regulations of Directive 94/20/EC, the ISO 3584 standard and regulation ECE R55/01. The type of coupling to be chosen depends on the type of towbar according to what is indicated in the product technical card.



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## 2 ASSEMBLY



When reading this chapter, each reference must be identified in the figures from page 09/32 to page 11/32. Prior to installation, read the following instructions carefully:



The assembly operation must be carried out exclusively by qualified personnel.



Wear heavy shoes and protection gloves.

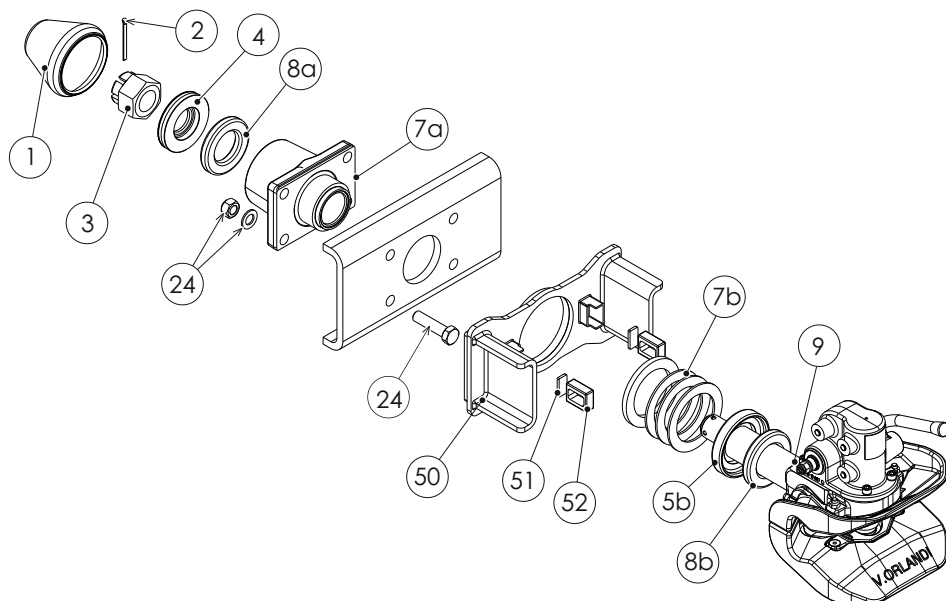


Position the drawbar coupling on a very solid and steady surface. Remove the castellated nut (3), the rear flange (4), the shock absorbing pad (8a), the coupling flange (7a).

➤ Slip off the spacers (7b).



The E575 drawbar coupling can mount the anti-jack-knife support (50) with its pads (51, 52) to further improve driving comfort.



Mount the drawbar coupling on the towbar:

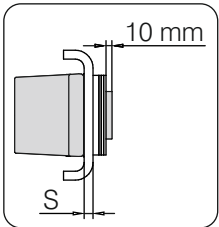
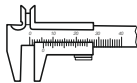
- 1) Insert the coupling flange (7a) from inside the towbar by using four bolts (24) following the instructions of the table set below:



Type of coupling	type of bolt	class	torque wrench setting
E 57	M 20	8.8	330-370 Nm



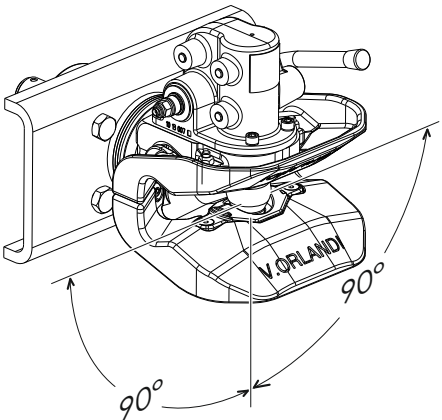
**WARNING:** Use only self-locking nuts.

- Insert before the towbar (on the protruding part of the coupling flange) thicknesses (7b) following the instructions of the table set below:



S		
16	x3	x1
20	x2	x1
22	x4	
28		x1
30	x2	

- 2) Insert the tie rod (9) with the front flange (5b) and the shock absorbing pad (8b) in the hole of the coupling flange (7a) previously positioned inside the towbar;
- 3) Insert the shock absorbing pad (8a) and the rear flange (4);
- 4) Lubricate the thread of the tie rod (9), manually tighten the castellated nut (3) and align the drawbar coupling to the road surface;



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- 5) Close the castellated nut (3) by means of a dynamometric wrench at the following torque wrench setting:

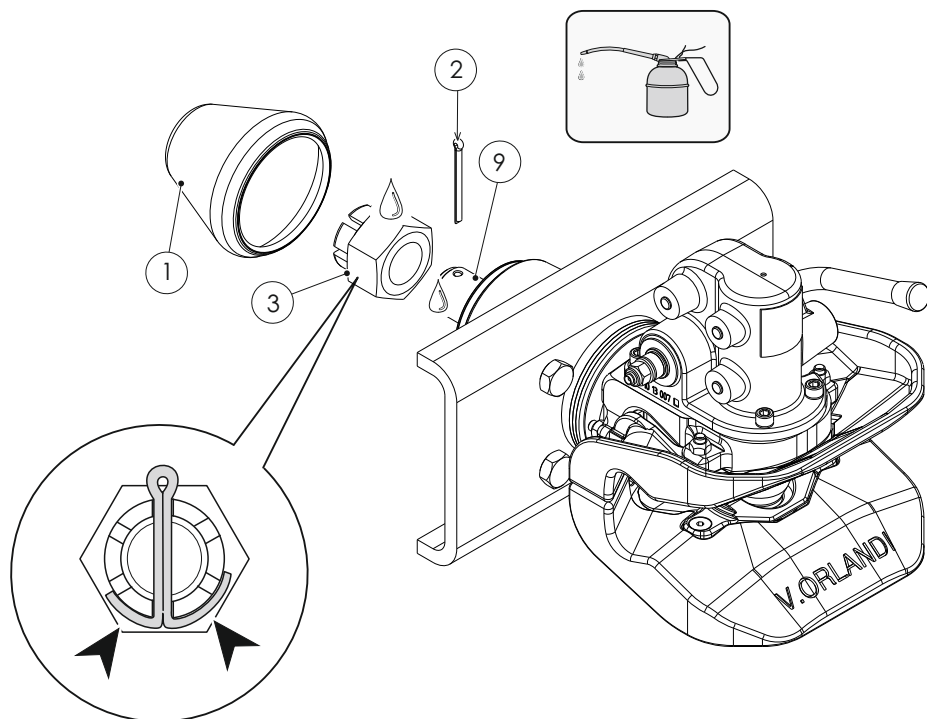
Type of coupling	torque wrench setting
E 57	M=1800 - 2000 Nm

- 6) ) Insert the split pin (2) into the hole on the thread of the tie rod (9) turning both ends until they are snug to the nut;



If the hole of the tie rod is not aligned with the split of the castellated nut, do not loosen the nut under any circumstances, but tighten further until full alignment between the hole and split.

- 7) Fit the nut protecting cover (1).



## 3 USE

### 3.1 COUPLING



When reading this chapter, each reference must be identified in the figures from page 12/32 to page 15/32.

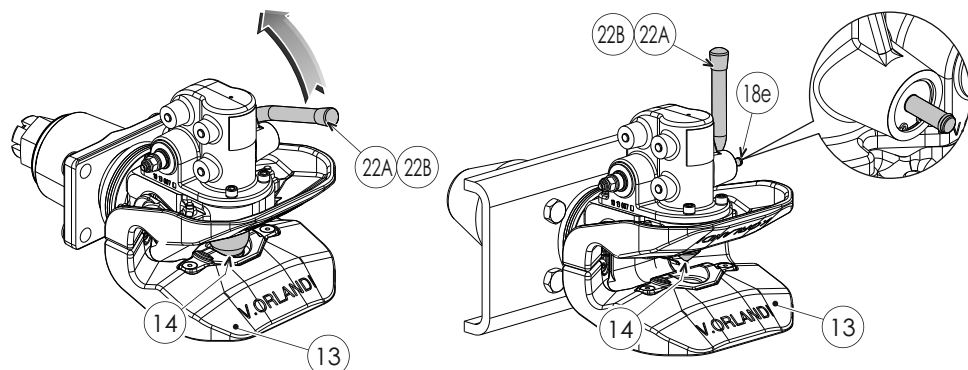


Before carrying out the operations, read the following instructions carefully:



Wear protection gloves.

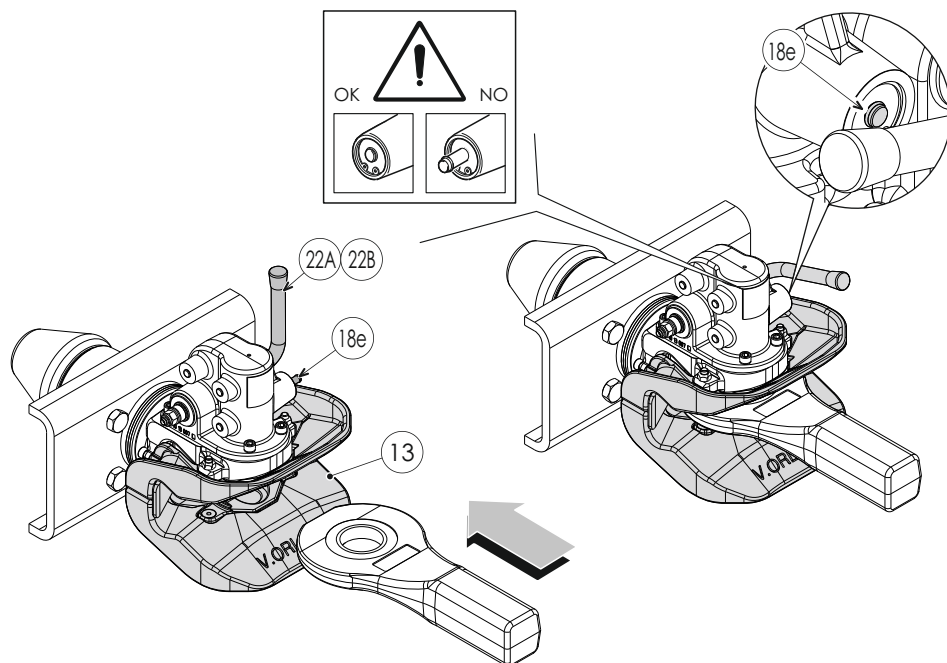
**WARNING:** before coupling the trailer, make sure that it is braked and, in case of a traditional trailer, that the front axle can freely rotate. Check that the towing eye is at the same height of the drawbar coupling or slightly lower, so as to be driven for coupling by the lower bushing. In case of a rigid drawbar central-axle trailer, make sure that the rear lifts, if provided, are not touching the ground.



Caution! Risk of limb crushing.

- 1) Move the opening lever (22A-22B) by pushing it slightly upwards and then lock it (N.B. min. force required 200Nm ). The coupling pin (14) is lifted and the check pin (18e) protrudes from its seat.

- 2) Recede slowly with the tractor, the towing eye of the drawbar must fully enter into the coupling jaw (13). The impact of this manoeuvre against the visible part of the coupling pin (14) causes its immediate lowering and the automatic retraction of the check pins (18e).



**WARNING:** check that the coupling is correctly done; make sure that the opening lever (22A-22B) is lowered and that the check pins (18e) are perfectly back in position to safely lock the coupling pin (14).



**WARNING:** if the coupling is not perfectly closed, try to move the tractor of approximately 50 cm. forward and backward so as to allow the towing eye to move to the correct position and to the coupling to close regularly.



If the coupling does not close perfectly, you are not allowed to travel under any circumstances. Contact your nearest workshop for the measures to be taken.

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## 3.2 UNCOUPLING



Make sure the trailer is braked. In case of a rigid drawbar central-axle trailer, lower the lift of the drawbar until it touches the ground. Do not lift the towing eye from the coupling in that it could interfere with the coupling pin and prevent it from coming out.

- 1) Move the opening lever (22A-22B) in position and then lock it (see point 1 chap. 3.1 COUPLING page 12/32).



Do not use levers or extensions to increase the arm of the opening lever; if the coupling pin (14) does not open, check that all the conditions described are met.



If the opening lever is hard to operate, slightly move the tractor to remove the pressure exerted by the towing eye on the coupling drawbar pin.



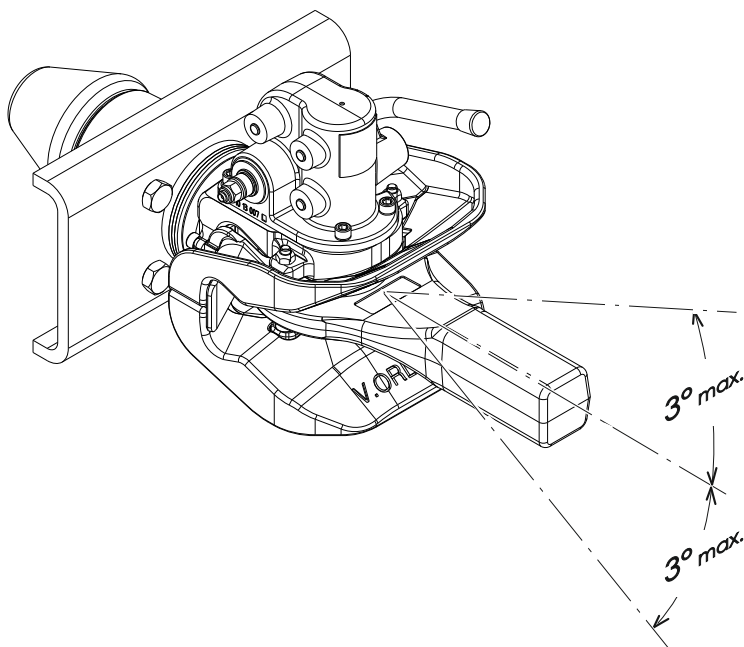
The drawbar couplings of the new series E 57 can be opened in any position of the towing eye. It is however advisable to carry out the uncoupling in the orientation shown in the figure

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- 2) Move forward with the tractor: when the towing eye of the trailer exits from the coupling jaw (13), it closes the coupling pin automatically (14).



**WARNING:** for a safe and proper operation of the drawbar coupling, during the "COUPLING" and "UNCOUPLING" phases, the drawbar of the trailer must not differ by more than  $\pm 3^\circ$  compared to the horizontal longitudinal axis of the coupling.



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## 4 MAINTENANCE



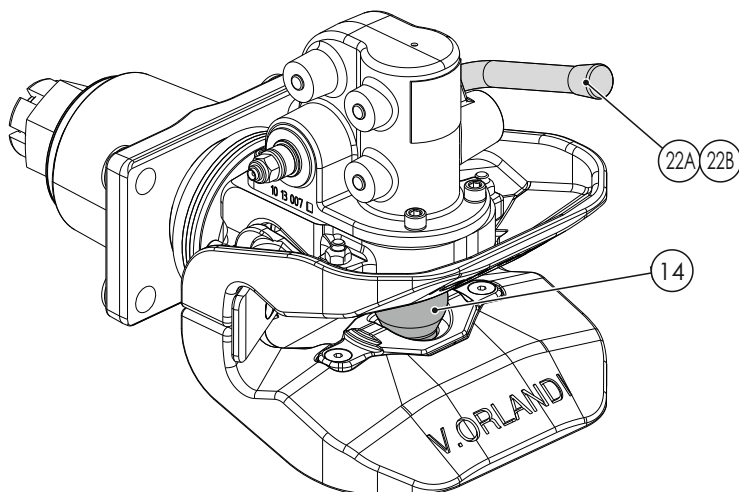
When reading this chapter, each reference must be identified in the figures from page 16/32 to page 20/32. Before carrying out the operations, read the following instructions carefully:



Wear protection gloves.



**WARNING:** during maintenance operations, the drawbar coupling must be closed, i.e. the coupling pin (14) and the opening lever (22A-22B) must be lowered.



The moving parts of the drawbar coupling are subject to normal wear. This wear will be more or less accentuated depending on the use and maintenance conditions.

Therefore, the maintenance and the regular lubrication may contribute to a long and safe service life.



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After 500 km from installation:

Make sure that the torque wrench setting of the bolts (24) of the coupling flange ranges within the limits indicated under point 1 of chapter 2 ASSEMBLY on page 10/32

After 3,000 km from installation:

- 1) Make sure that the torque wrench setting of the bolts (24) of the coupling flange ranges within the limits indicated under point 1 of chapter 2 ASSEMBLY on page 10/32;
- 2) Make sure that the torque wrench setting of the castellated nut (3) ranges within the limits indicated under point 5 of chapter 2 ASSEMBLY on page 11/32;

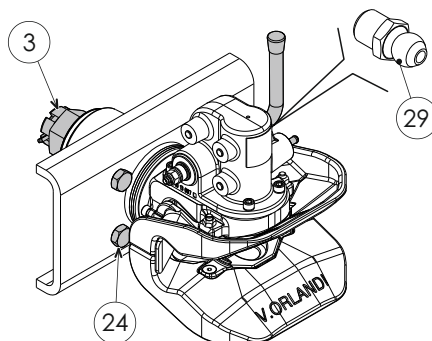
Every 15,000 Km:

- 1) Make sure that the torque wrench setting of the bolts (24) of the coupling flange ranges within the limits indicated under point 1 of chapter 2 ASSEMBLY on page 10/32;
- 2) Make sure that the torque wrench setting of the castellated nut (3) ranges within the limits indicated under point 5 of chapter 2 ASSEMBLY on page 11/32;
- 3) Lubricate the mechanism unit with the grease nipple (29). Carry out this operation with the coupling pin (14) lifted (see point 1 chap. 3.1 COUPLING page 12/32) to avoid excessive grease measuring.



An excessive quantity of grease may compromise the proper operation of the mechanism;

- 4) Open the drawbar coupling and check its proper operation according to what is described in chap. 3.1 COUPLING page 12/32;



Caution! Risk of limb crushing.

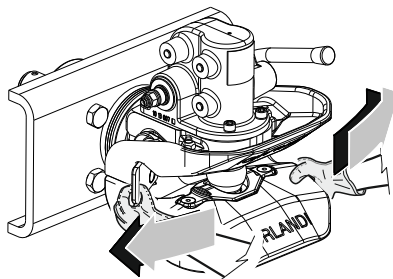
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- 6) Also check that the jaw is perfectly locked in its central position.

If components worn out beyond the limits set



by the dimensions of the drawings on page 19/32 are found during the checks, replace them immediately.



#### 4.1 PERIODICAL CHECKS



Refer also to the figure on page 21/32.



In compliance with the utilisation, and in any case once a year, the qualified personnel must check the wear and tear of the drawbar coupling.

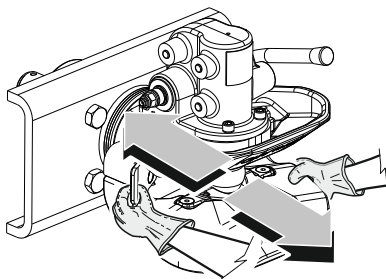
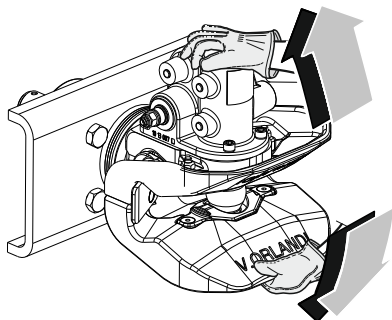
The following checks must be carried out:



- 1) Checking the shock absorbing system:

Take the drawbar coupling in your hands and make sure, by strongly shaking, that there is no play

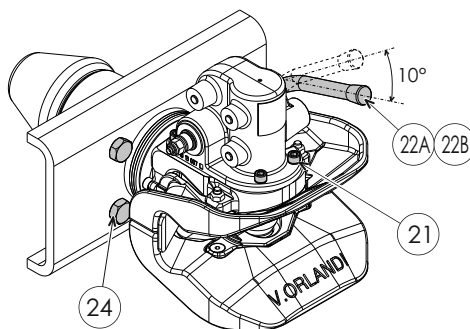
If the vertical play exceeds 1 mm, replace the bush (7c); in case of a lengthwise play, replace the shock absorbing pads (8a, 8b) see chap. 5.1 REPLACING THE SHOCK ABSORBING PADS AND THE INTERNAL BUSH OF THE FLANGE page 21/32.





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- 4) Checking the vertical play of the pin: Make sure that the play of the pin (14) does not exceed 4 mm, size of the thrust "S" on the edge of the pin when the opening lever 22A-22B is lowered (see fig. Page 19/32). Otherwise, replace the lift lever (15) (see chap. 5.3 REPLACING THE LEFT AND RIGHT LIFT LEVER SPRINGS page 23/32);
- 5) Checking the play of the opening lever: Make sure that the idle stroke of the opening lever (22A / 22B) is not greater than 10° (degrees) as shown in the figure. Otherwise, replace the opening lever (22A-22B) and lift lever (15) (see chap. 5.3 REPLACING THE LEFT AND RIGHT LIFT LEVER SPRINGS page 23/32);



- 6) Checking the torque wrench setting of the screws: Make sure that the torque wrench setting of the screws (21) is  $M=50\text{ Nm}$  and that the torque wrench setting of the fastening bolts (24) is as prescribed in point 1 of chap. 2 ASSEMBLY on page 10/32;
- 7) Lubrication: Lubricate the mechanism unit (20a) with the grease nipple (29) placed on the right side of the box (see fig. of page 17/32). Carry out this operation with the coupling pin (14) lifted (see point 1 chap. 3.1 COUPLING page 12/32) to avoid excessive grease measuring



An excessive quantity of grease may compromise the proper operation of the mechanism.  
Lubricate the movable parts of the drawbar coupling.

## 5 REPAIR



When reading this chapter, each reference must be identified in the figures from page 21/32 to page 28/32 and to the annexed catalogue of spare parts.



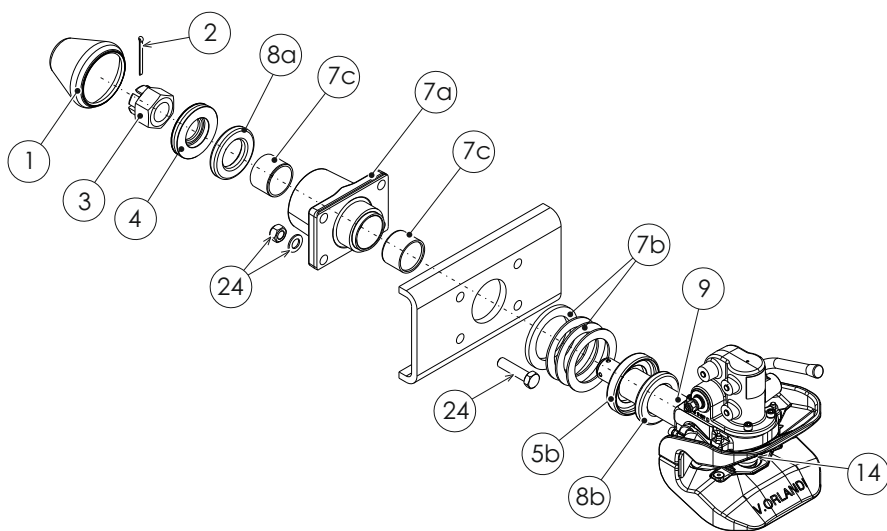
Before carrying out the operations, read the following instructions carefully:



Wear heavy shoes and protection gloves.

### 5.1 REPLACING THE SHOCK ABSORBING PADS AND THE INTERNAL BUSH OF THE FLANGE

- 1) Remove the nut protecting cover (1), slip off the split pin (2), disassemble the castellated nut (3);
- 2) Slip off the rear flange (4), the shock absorbing pad (8a);
- 3) Slip off the tie-rod (9) from the coupling flange (7a), remove the spacers (7b), the front flange (5b) and the shock absorbing pad (8b).
- 4) Remove the four bolts (24) and disassemble the coupling flange (7a) from the vehicle towbar;





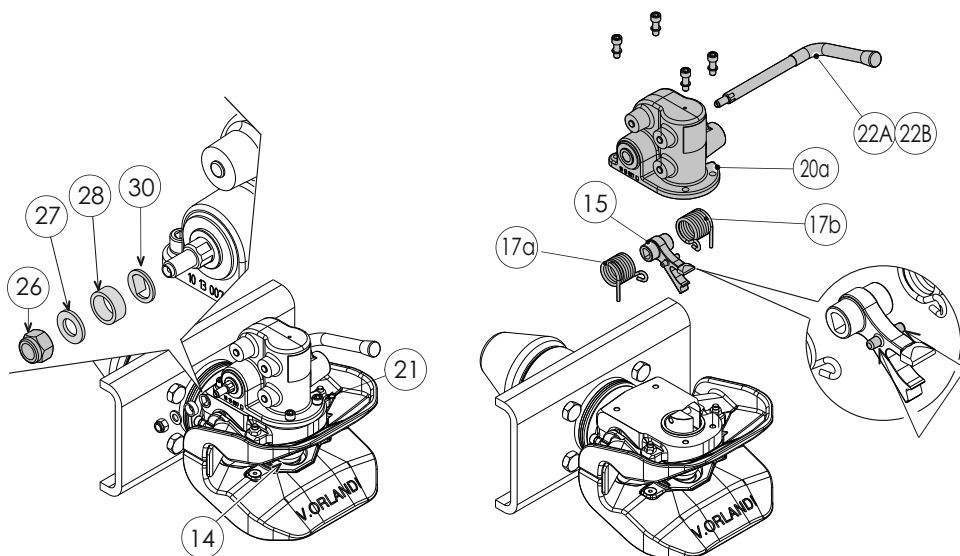
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### 5.3 REPLACING THE LEFT AND RIGHT LIFT LEVER SPRINGS



**WARNING:** Make sure that the drawbar coupling is closed, i.e. that the coupling pin (14) is lowered.

- 1) Loosen the 4 screws (21) and set the washers aside, remove the mechanism unit (20a);
- 2) Unscrew the self-locking nut (26), remove the washer (27), the spacer (28), the tight seal washer (30) and slip off the mechanism unit (20a), the opening lever (22A-22B) setting the springs (17a - 17b) aside, (see chap. 7 DISPOSAL page 30/32) and the lift lever (15);
- 3) Insert the lift lever (15) in the mechanism unit (20a) making sure that the loops of the new springs (17a - 17b) are properly inserted in the pegs of the lift lever (15);
- 4) Reassemble the opening lever (22A-22B), insert the tight seal washer (30), the spacer (28), the washer (27) and tighten with the self-locking nut (26);
- 5) Assemble the mechanism unit (20a) (see point 3 chap. 5.2 REPLACING THE MECHANISM UNIT AND THE COUPLING PIN page 22/32).

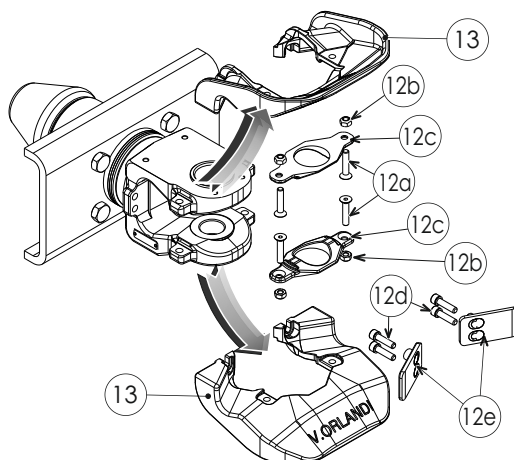
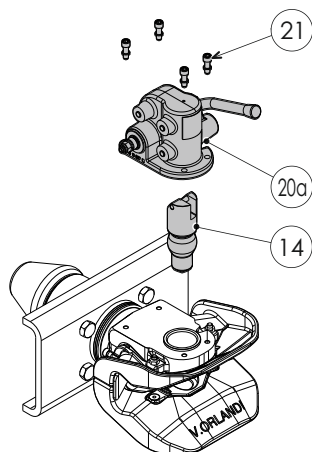


## 5.4 REPLACING THE COUPLING JAW.



**WARNING:** Make sure that the drawbar coupling is closed, i.e. that the coupling pin (14) is lowered.

- 1) Loosen the 4 screws (21) and set the washers aside, remove the mechanism unit (20a) and the coupling pin (14).
- 2) Loosen the 2 screws (12a), the nuts (12b) and remove the two jaw inserts (12c). Loosen the screws (12d) and set the washers aside, remove the jaw stops (12e).
- 3) Remove the two half coupling jaw (13) and extract it from the seat. (see chapter 7 DISPOSAL page 30/32);
- 4) Insert the new two half coupling jaws (13), disassemble the jaw stops (12e) and tighten the screws (12d), the two jaw inserts (12c) and tighten the screws (12a) and the nuts (12b);
- 5) Tighten the screws (12a and 12d) with torque wrench setting  $M=50\text{ Nm}$
- 6) Assemble the coupling pin (14) and the mechanism unit (20a) (see point 3 chap. 5.2 REPLACING THE MECHANISM UNIT AND THE COUPLING PIN page 22/32).





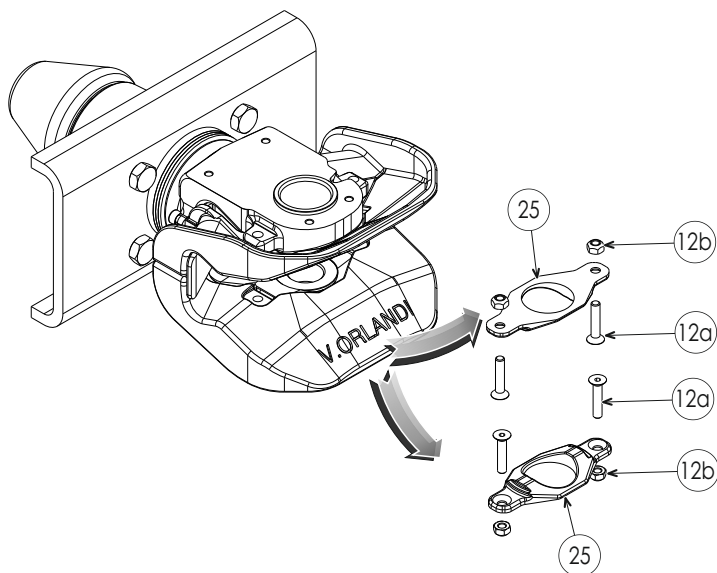
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## 5.5 REPLACING THE LOWER BUSH INSERT



**WARNING:** Make sure that the drawbar coupling is closed, i.e. that the coupling pin (14) is lowered.

- 1) Loosen the 4 screws (21) and set the washers aside, remove the mechanism unit (20a) and the coupling pin (14). (see point 3 chap. 5.2 REPLACING THE MECHANISM UNIT AND THE COUPLING PIN page 22/32).
- 2) Loosen the 2 screws and the nuts (12a-12b) of the worn out insert (25), remove it and replace it (see chap. 7 DISPOSAL page 30/32);
- 3) Be careful to the proper insertion of the new insert (25), if necessary replace also the screws; insert the screws and nuts (12a- 12b) and tighten with torque wrench setting  $M=50 \text{ Nm}$
- 4) Assemble the coupling pin (14) and the mechanism unit (20a) (see point 3 chap. 5.2 REPLACING THE MECHANISM UNIT AND THE COUPLING PIN page 22/32).



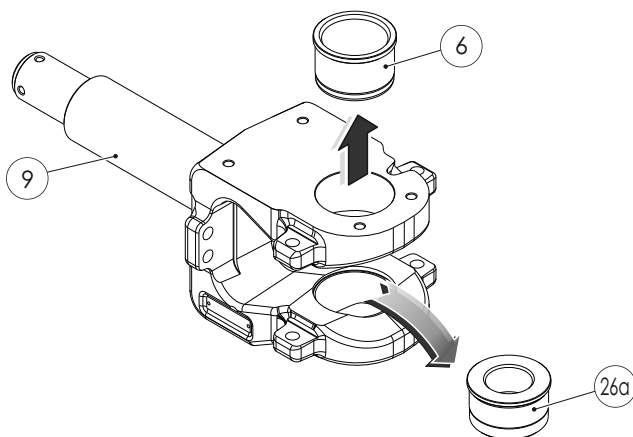
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## 5.6 REPLACING THE BUSHES



**WARNING:** Make sure that the drawbar coupling is closed, i.e. that the coupling pin (14) is lowered.

- 1) Disassemble the drawbar coupling from the vehicle (see chap. 5.1 REPLACING THE SHOCK ABSORBING PADS AND THE INTERNAL BUSH OF THE FLANGE page 21/32);
- 2) Disassemble the mechanism unit (see chap. 5.2 REPLACING THE MECHANISM UNIT AND THE COUPLING PIN page 22/32);
- 3) Disassemble the coupling jaw (see chap. 5.4 REPLACING THE COUPLING JAW page 24/32);
- 4) Slip off the bushes (6), (26a) by using a press, and replace them. (see chap. 7 DISPOSAL page 30/32), (see also the disassembly of the insert (25) chap. 5.5 REPLACING THE LOWER BUSH INSERT page 25/32).
- 5) Reassemble all the parts as described in chap. 5.1 REPLACING THE SHOCK ABSORBING PADS AND THE INTERNAL BUSH OF THE FLANGE page 21/32, 5.2 REPLACING THE MECHANISM UNIT AND THE COUPLING PIN page 22/32, 5.4 REPLACING THE COUPLING JAW page 24/32.

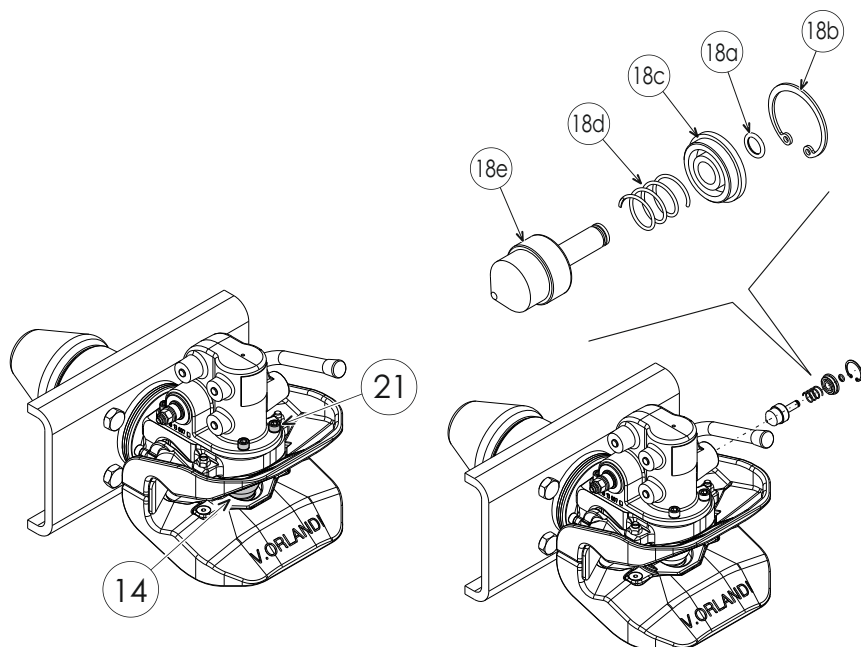


## 5.7 REPLACING THE SAFETY MECHANISMS



**WARNING:** Make sure that the drawbar coupling is closed, i.e. that the coupling pin (14) is lowered.

- 1) Remove the snap ring (18b), slip off the "O" ring (18a), the supporting washer (18c), the safety spring release (18d), the check pin (18e) (see chap. 7 DISPOSAL page 30/32).
- 2) Lubricate the sliding area of the check pin (18e) with a thin layer of grease;
- 3) Replace all the parts.  
Assemble the check pin (18e), the safety spring release (18d), the supporting washer (18c), the "O" ring (18a), the snap ring (18b).



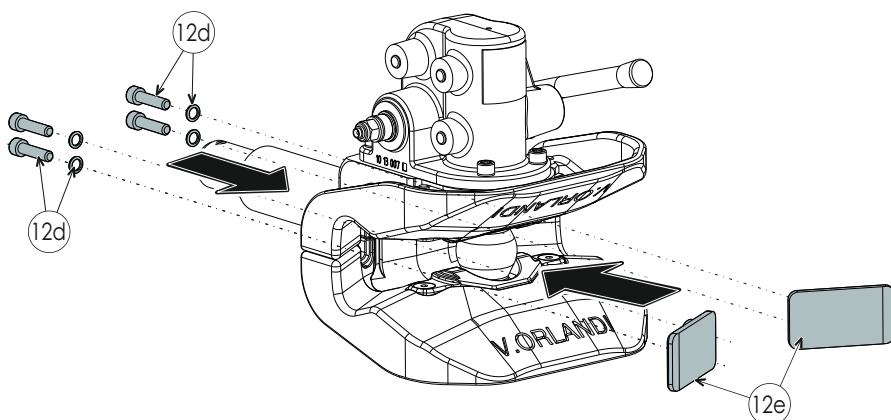
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## 5.8 REPLACING THE JAW INSERTS



**WARNING:** Make sure that the drawbar coupling is closed, i.e. that the coupling pin (14) is lowered.

- 1) Loosen the 4 screws (21) and set the washers aside, remove the mechanism unit (20a) and the coupling pin (14). (see point 3 chap. 5.2 REPLACING THE MECHANISM UNIT AND THE COUPLING PIN page 22/32)
- 2) Remove the 2 screws (12e) and set the washers aside. Remove the worn out insert (12e) and replace it (see chap. 7 DISPOSAL page 30/32);
- 3) Be careful to the proper insertion of the new insert (25), if necessary replace also the screws; insert the screws and nuts (12a- 12b) and tighten with torque wrench setting  $M=50 \text{ Nm}$ ;
- 4) Assemble the coupling pin (14) and the mechanism unit (20a) (see point 3 chap. 5.2 REPLACING THE MECHANISM UNIT AND THE COUPLING PIN page 22/32).

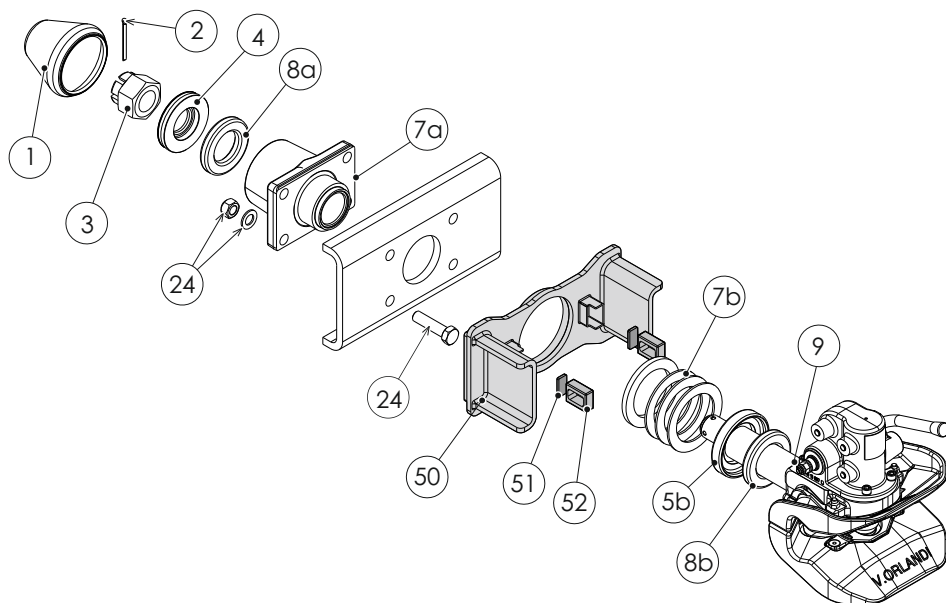


## 5.9 REPLACING THE ANTI-JACK-KNIFE SUPPORT



**WARNING:** Make sure that the drawbar coupling is closed, i.e. that the coupling pin (14) is lowered.

- 1) Disassemble the drawbar coupling from the vehicle (see chap. 5.1 REPLACING THE SHOCK ABSORBING PADS AND THE INTERNAL BUSH OF THE FLANGE page 21/32);
- 2) Remove the anti-jack-knife support (50) and the old pads (51, 52) (see chapter 7 DISPOSAL page 30/32); insert the new support with the new pads;
- 3) Reassemble the drawbar coupling by following the assembly instructions (see points 2, 3, 4, 5, 6, chap. 2 ASSEMBLY pages 10-11/32).



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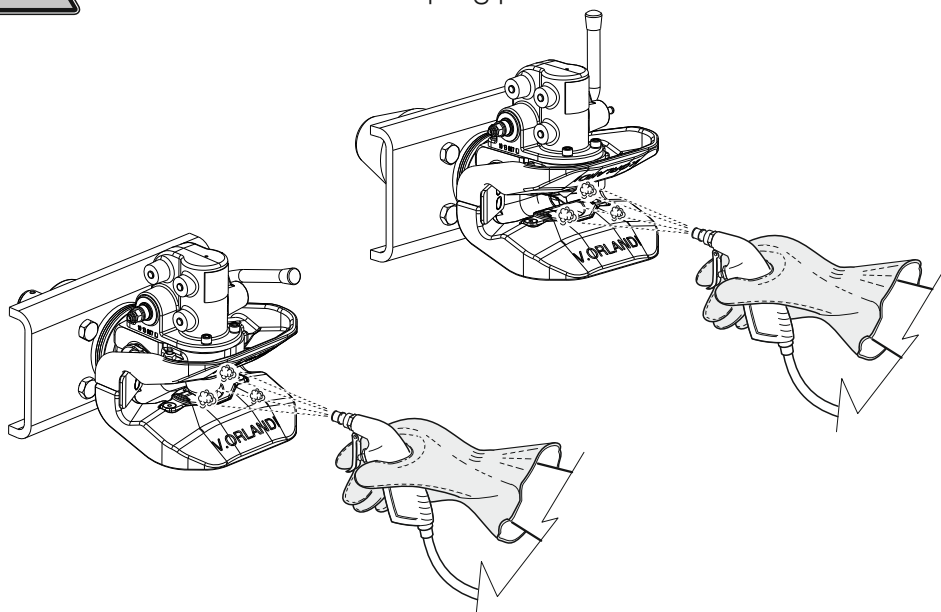
## 6 CLEANING



- 1) The drawbar coupling must be cleaned at the end of every travel carried out with or without a trailer coupled and after each repair and/or maintenance;
- 2) Cleaning should also be done before use after a long period of disuse;
- 3) Keep the opening lever clean, free from oily or greasy substances to avoid danger during opening;
- 4) Clean with a jet of air directed towards the coupling pin and around it.



Open the drawbar coupling, (see point 1 chap. 3.1 COUPLING page 12/32 and direct the air jet towards the lower bush of the coupling pin.



Hydrocleaners can be used only in the area of the coupling pin and coupling jaw.

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## 7 DISPOSAL



Read the following instructions carefully:

The parts of the drawbar coupling must be disposed of properly in the environment.

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

For rules to be followed and the means to be adopted, reference should be made to the requirements of applicable law on the dismantling date.

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## 8 HOW TO DISABLE



All references are to be identified in the figure of page 21/32.



- 1) Remove the nut protecting cover (1), slip off the split pin (2), disassemble the castellated nut (3);



- 2) Slip off the rear flange (4), the shock absorbing pad (8a);
- 3) Slip off the tie-rod (9) from the coupling flange (7a), remove the front flange (5b) and the shock absorbing pad (8b);
- 4) Remove the bolts (24) and the coupling flange (7a) ;
- 5) Cover the metallic parts with a thin layer of grease and store in a strong container.

