

DRAWBAR EYE

Installation, operating and
maintenance instructions



V. ORLANDI
S I S T E M I D I T R A I N O

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	INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS	INDEX REV. D

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0 INTRODUCTORY NOTES

0.1 WARRANTY

V.Orlandi Spa shall not be liable for any damage whatsoever and howsoever caused, including improper or incorrect use, modifications, alterations or abuse.

Use of not original spare parts of V.Orlandi Spa cancels any warranty rights and invalidates any homologation.

V.Orlandi Spa reserves the right to make modifications any time.

0.2 CARE OF THE MANUAL

This manual is an integral part of the fifth wheel and must be kept together with it at all times and under any circumstance, in resale or restitution under warranty. It has to be available for quick consultation by all operators whenever necessary.

The end-user is responsible for keeping it in good condition.

The manual has to be replaced with an identical one if wear or other damage makes it impossible to consult.

NOTE: THIS MANUAL HAS 24/24 PAGES.

Prima edizione: Gennaio 2007

Ristampa:

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.



Carefully read the following paragraph/sentence/chapter



Attention and caution



Warning! Limb injury hazards!



Strict prohibition



Wear safety shoes!



Wear safety glasses!



Wear safety mask!



Wear safety gloves!















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

1 GENERAL INFORMATION

1.1 INSTALLATION PROVISIONS

V.Orlandi drawbar eyes are designed and suitable for use on drawbars of steering axle trailers or central axle trailer according to the following schema (suggested applications):

			
40mm	 Weldable drawbar eyes	✓	
	 Removable drawbar eyes	✓	✓
	 Flanged drawbar eyes	✓	✓
45mm	 Removable drawbar eyes	✓	
	 Weldable drawbar eyes	✓	
50mm	 Removable drawbar eyes	✓	
	 Flanged drawbar eyes	✓	✓
	 Special drawbar eyes	✓	✓
	 Weldable drawbar eyes	✓	✓
57,5mm	 Removable drawbar eyes	✓	✓
	 Flanged drawbar eyes	✓	✓
	 Weldable drawbar eyes	✓	
Torici	 Removable drawbar eyes	✓	

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2 WELDING of DRAWBAR EYES, SOCKETS and WELD-ON PLATES



This chapter refers to the figures on pages from 10/24 to pag. 20/24.



Read the following instruction carefully before any operation.



Wear safety shoes!



Wear safety glasses!



Wear safety mask!



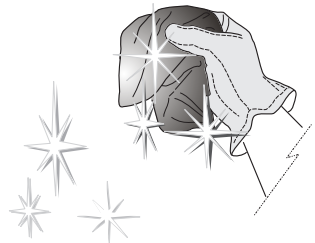
Wear safety gloves!



ATTENTION: Following operations has to be carried out by skilled personnel.



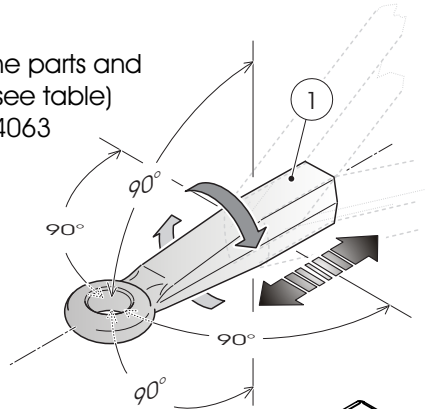
Keep constantly clean the work table avoiding that welding slag or other dirt make the materials unstable.



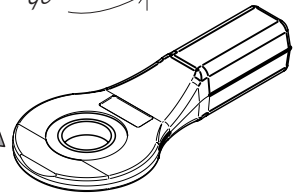


2.1 WELDING – WELD-IN DRAWBAR EYES

- 1) Make sure that the drawbar eyes (1) and drawbar side-members to be welded are perfectly clean;
- 2) Position the drawbar eye (1) perfectly within the axis of the drawbar and make small welded spots along the perimeter of the parts in order to prevent them from moving later;
- 3) Double check the perfect alignment of the parts and proceed with the welding on four points (see table) conform to the sizes and regulations ISO 4063 And UNI EN 22553, by utilising filler metal ISO E51 5 B 120 20 H;
- 4) Wait until reaching room temperature before utilising the product.

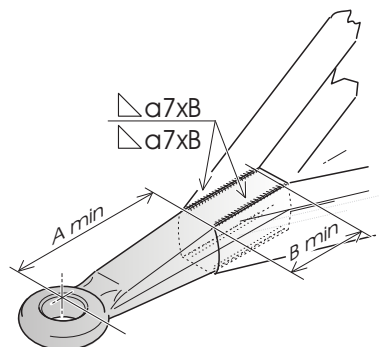


Pay attention in positioning the OC57W type of drawbar eye! Turn the bevel upward



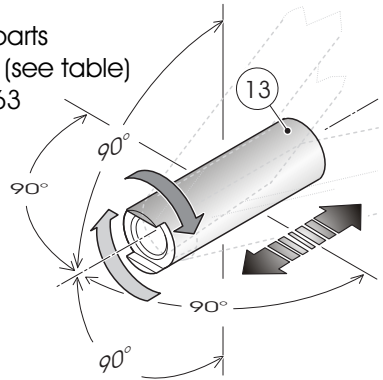
Dimensions to abide-by for the welding:

DRAWBAR EYE TYPE	A min (mm)	B min (mm)
OC40W	200	120
OC40W/P	200	120
OC50W/L	200	160
OC50W	200	320
OC50W-HD	200	180
TITANOVI	200	320
TITANOVII	200	350
57W	175	120
76W01	175	120



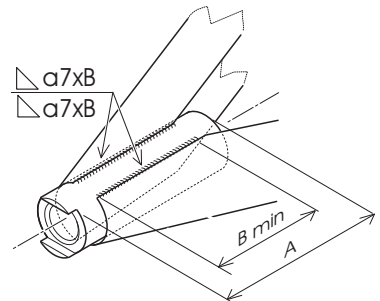
2.2 WELDING COUPLING SOCKETS

- 1) Make sure that the coupling socket (13) and drawbar side-members parts to be welded are perfectly clean;
- 2) Position the coupling socket (13) perfectly within axis with the drawbar and make small welded spots along the perimeter of the parts to join in order to prevent them from moving later;
- 3) Double check the perfect alignment of the parts and proceed with the welding on four points (see table) conform to the sizes and regulations ISO 4063 and UNI EN 22553, by utilising filler metal ISO E51 5 B 120 20 H;
- 4) Wait until reaching room temperature before utilising the product.



Make four weld beads as shown on the table

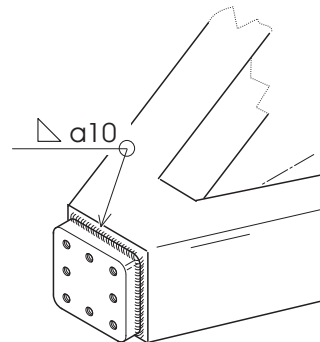
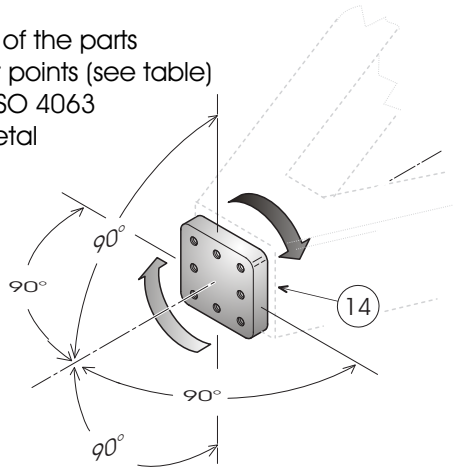
SOCKET TYPE	A (mm)	B min (mm)
RO00001 ○	210	190
RO00014 ○	258	240
RO00036 ○	245	220
RO00038 □	245	220
RO00039 ○	165	140
RO00041 □	173	150





2.3 WELDING –WELD-IN PLATE

- 1) Make sure that the parts to be welded are perfectly clean;
- 2) Position the plate to be welded (14) perfectly within axis with the drawbar and make some weld spots along the perimeter of the parts to be joined in order to prevent their movement later;
- 3) Double check the perfect alignment of the parts and proceed with the welding on four points (see table) conform to the sizes and regulations ISO 4063 and UNI EN 22553, by utilising filler metal ISO E51 5 B 120 20 H;
- 4) Wait until reaching room Temperature before utilising the product.

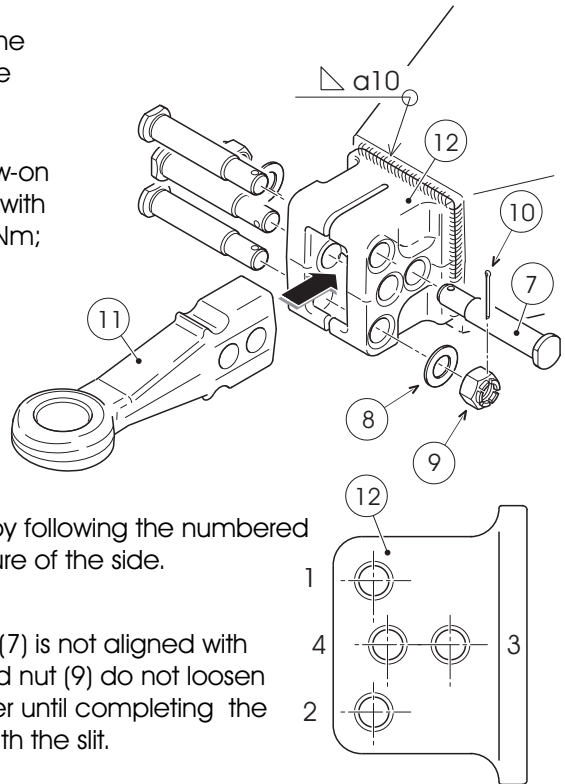


Weld all along the entire perimeter of the plate

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2.4 WELDING PLATE AND ASSEMBLING THE SPECIAL FLANGED DRAWBAR EYE

- 1) Disassemble from the support all the drawbar eye components;
- 2) Make sure that the parts to be welded are perfectly clean;
- 3) Proceed to welding the support (12) complying with points 2, 3, 4 of chapter 2.3 WELDING – WELD-IN PLATE on page 09/24;
- 4) Insert the drawbar eye (11) in the support (12) and fasten with the special pins (7);
- 5) Insert the washers (8) and screw-on the castellated nut (9); tighten with the torque wrench at 750-850Nm;



Execute the tightening by following the numbered sequences as in the figure of the side.



If the hole on the screw (7) is not aligned with the slit on the castellated nut (9) do not loosen the nut but tighten further until completing the alignment of the hole with the slit.

- 6) Insert the split pin (10) in the hole on the screw thread (7) and open the ends flat against the nut crown (9).

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3 INSTALLATION



All the item references cited in this chapter can be consulted on the figures at pages 10/24 to 20/24 herein.



Prior to proceeding with any operation whatsoever, read the following instructions very carefully:



Warning! Limb injury hazards!



Wear safety shoes!



Wear safety gloves!



ATTENTION: Following operations has to be carried out by skilled personnel.



Keep constantly clean the work table avoiding that welding slag or other dirt make the materials unstable.

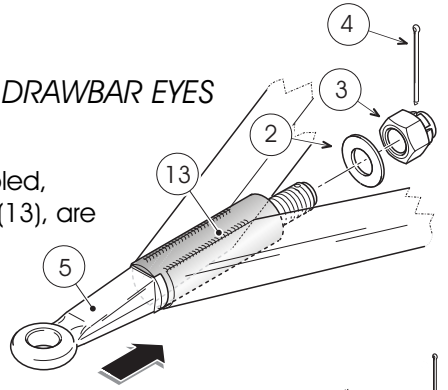


Lightly grease every part that will be connected to other parts during the installation operation.



3.1 ASSEMBLING REMOVABLE DRAWBAR EYES

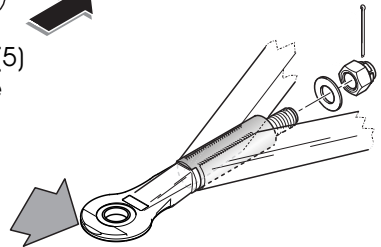
- 1) Make sure that the parts to be assembled, drawbar eye (5) and coupling sleeve (13), are perfectly clean;
- 2) insert the drawbar eye (5) in the coupling socket (13) and make sure they settle snug in their place;
- 3) Spread a lot of grease on the drawbar eye (5) threaded part, position the washer (2) (where present), and screw the castellated nut (3):



NOTE



Pay attention in positioning the OC57R type of drawbar eye! Turn the bevel upward



- 4) Tighten with the torque wrench complying with the tightening torque shown on the figure on the side;

NOTE



If the hole on the drawbar eye (5) is not aligned with the slit on the castellated nut (3) do not loosen the nut but tighten further until completing the alignment of the hole with the slit.

- 5) Insert the split pin (4) in the hole on the drawbar eye thread (5) and open the ends flat against the nut crown (3).

NOTE

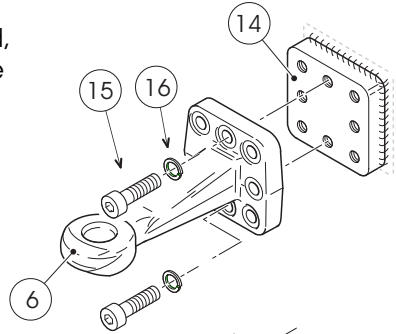


For a correct preservation we suggest to protect the parts properly, in order to prevent rust and corrosion

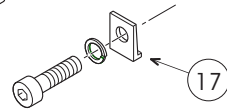
DRAWBAR EYE	TORQUE WRENCH (Nm)
OC40R02	410-480
OC45R01	480-550
OC45R02	410-480
OC45R03	410-480
OC45R04	418-480
OC45R07	450-650
OC45T01	410-480
OC50R01	410-480
OC50R02	480-550
OC50R03	410-480
OC50R04	410-480
OC50R05	410-480
OC50R09	460-650
OC50R10	500-600
OC57R10	500-600
OC76R10	500-600
OC76T02	480-550

3.2 ASSEMBLING FLANGED DRAWBAR EYE

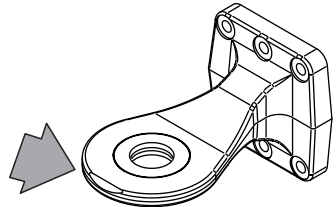
- 1) Make sure that the parts to be assembled, flanged drawbar eye (6) and weld-in plate (14), are perfectly clean;
- 2) Position the flanged drawbar eye (6) within axis with the flanged plate (14);
- 3) Screw-on the six/eight screws (15) with their washers (16) without tightening them;



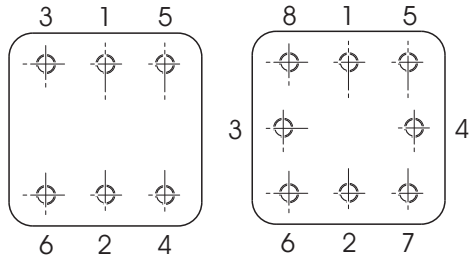
The plates (17) present on the drawbar eye type 51F8 are in production until 2005




Pay attention in positioning the OC57F type of drawbar eye! Turn the bevel upward



- 4) Check and make sure that there is a perfect alignment between the drawbar eye (6) and weld-in plate (14), then tighten with the torque wrench by following the sequences and tightening torque shown on the table;



DRAWBAR EYE TYPE	WASHER TYPE	SCREW TYPE	Initial tightening torque (Nm)	Final tightening torque (Nm)
OC40F6	DIN 127 B16	M16x50 10.9	90-110	220-260
OC50F6	DIN 127 B16	M16x50 10.9	90-110	220-260
OC50F8	DIN 127 B16	M16x50 10.9	90-110	220-260
OC51F8	DIN 127 B16	M16x50 10.9	90-110	220-260
OC52F8	DIN 127 B20	M20x80 10.9	90-110	400-500
OC57F60	DIN 127 B16	M16x50 10.9	90-110	220-260

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4 MAINTENANCE



All the item references cited in this chapter can be consulted on the figures at pages 10/24 to 20/24 herein.



The drawbar eye is subject to wear and tear due to standard use. The extent of the drawbar eye wear is however dependant on careful coupling use and maintenance conditions.



Conduction of regular maintenance checks and lubricating will therefore definitely contribute to increased coupling life and improved safety conditions.

4.1 PERIODICAL CHECKS

After the first 3,000 Km from installation date:

- 1) Check that the tightening torque of the castellated nut (3) matches the value indicated on the table in chapter 3.1 - ASSEMBLING REMOVABLE DRAWBAR EYES on page 11/24;



ATTENTION: every time the castellated nut is removed, it is necessary to replace the split pin.

- 2) Make sure that the tightening torque of the six/eight screws (15) match the value indicated on the table in chapter 3.2 - ASSEMBLING FLANGED DRAWBAR EYES on page 12/24;




If such tightening torque value is not possible to achieve, proceed in replacing screws and washers (see charter 5.2 – REPLACEMENT OF SCREWS FOR FLANGED DRAWBAR EYES – page 19/24);



For the drawbar eye 50FS0 and 50FS1 type, make sure that the tightening torque of the four screws (7) match the value indicated on point 5 of chapter 2.4 - WELDING PLATE AND ASSEMBLING THE SPECIAL FLANGED DRAWBAR EYE on page 10/24;



If such tightening torque value is not possible to achieve, proceed in replacing the screws kit (see charter 5.3 – REPLACING SCREWS AND SPECIAL FLANGED DRAWBAR EYE on page 20/24);

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- 3) Check the welding status;
- 4) Lubricate the contact area between the drawbar eye and drawbar coupling.

Every 15,000 Km:

- 1) Check that the tightening torque of the castellated nut (3) matches the value indicated on the table in chapter 3.1 - ASSEMBLING REMOVABLE DRAWBAR EYES on page 12/24;



ATTENTION: every time the castellated nut is removed, it is necessary to replace the split pin.

- 2) Make sure that the tightening torque of the six/eight screws (15) match the value indicated on the table in chapter 3.2 - ASSEMBLING FLANGED DRAWBAR EYES on page 13/24;

➤ If such tightening torque value is not possible to achieve, proceed in replacing the screws kit (see chapter 5.2 – REPLACEMENT OF SCREWS FOR FLANGED DRAWBAR EYES – page 19/24);



For the drawbar eye 50FS0 and 50FS1 type, make sure that the tightening torque of the four screws (7) match the value indicated on point 5 of chapter 2.4 - WELDING PLATE AND ASSEMBLING THE SPECIAL FLANGED DRAWBAR EYE on page 10/24;

➤ If such tightening torque value is not possible to achieve, proceed in replacing the screws kit (see chapter 5.3 – REPLACING SCREWS AND SPECIAL FLANGED DRAWBAR EYE on page 20/24);

- 3) Check the welding status;
- 4) Lubricate the contact area between the drawbar eye and drawbar coupling.



Based on the use and anyway at least once a year, it is necessary to have the wear and tear conditions of the drawbar eye checked by qualified personnel. For that purpose, we suggest proceeding to the following inspections and checks:

Checking the drawbar eye thread:

Remove the split pin (4), remove the castellated nut (3), check the thread status of the drawbar eye (5) and of the castellated nut (3). In case you notice play or grippage in the components, provide immediately to their replacement (see chapter 7 – DISPOSAL PAGE 22/24);



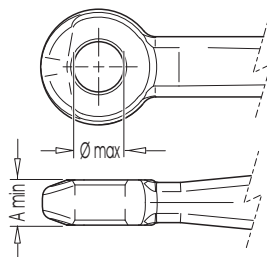
ATTENTION: every time the castellated nut (3) is removed, it is necessary to replace the split pin (4).

2.2 CHECKING FOR WEARS AND TEARS

Checking wear and tear: Check that the drawbar eye wear and tear (1, 5, 6, 11) is within the limits shown on the figure; **The wear and tear data reported below, refer to the technical specification ISO TS 20825.**

Cylindrical drawbar eyes

NOMINAL SIZE (mm)	∅ int max (mm)	A min (mm)
40	41.5	28
45	46.5	67
50	51.5	41.5
57.5	59.5	19



NOTE

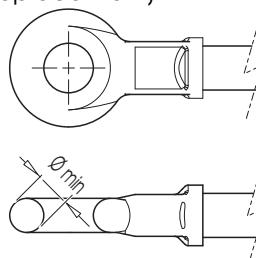
Check the diameter inside the bush (15) and make sure it is within the allowed limit: if not, proceed to its replacement (see replacement).

NOTE

Make sure that the drawbar eye thickness is within the allowed limits (1, 5, 6, 11): if not, proceed to its replacement (see replacement).

Toroidal drawbar eyes

DRAWBAR EYE	∅ min (mm)
45T	32
76T	37



5 REPAIRS



All the item references cited in this chapter can be consulted on the figures at pages 10/24 to 20/24 herein and in the attached spare part list

Prior to proceeding with any operation whatsoever, read the following instructions very carefully:



Attention! Risk of a limb injury.



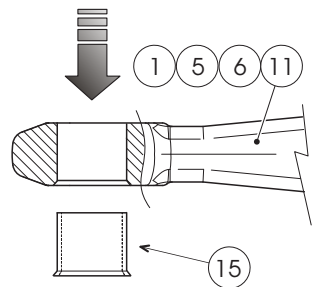
Wear appropriate accident prevention shoes and safety work gloves.

5.1 REPLACING THE BUSH



Operations feasible with drawbar eyes with an inner bush original \varnothing of 40, 45, 50,

- 1) Utilising an appropriate tool, disassemble the drawbar eye (1, 5, 6, 11), (in case of welded eye disassemble the drawbar) and after turning it upside down and positioned it horizontally, proceed in expelling the bush (15) (see chapter 7 – DISPOSAL page 22/24);
- 2) Replace with new bush and by utilising appropriate tools reassemble everything.





Operation feasible with drawbar eyes with $\varnothing 57.5$

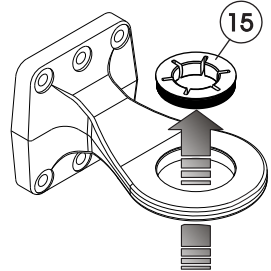
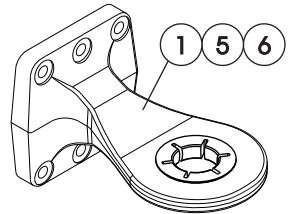


Wear eye protection



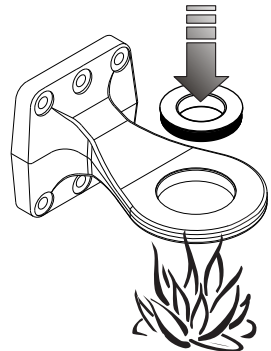
Wear spray-rated mask.

- 1) Disassemble the drawbar eye (1, 5, 6) (in case of welded eye disassemble the drawbar), turn it upside down and position it horizontally;
- 2) By utilising a proper cutting torch, make 4-5 cuts at the centre of the bush (15) in a radial direction in order to free-up the existing pressure;
- 3) Then beat on the bush (15) from the down side in order to prevent damaging its seat in the drawbar eye;



Attention! Do not hit violently in order not to cause any spraying of residual metal fragments from the previous Operation.

- 4) Heat the drawbar eye around its bush seat, up to about 400°C;
- 5) Insert the new bush (15).



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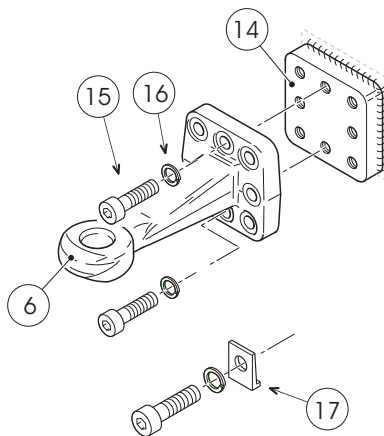
5.2 REPLACING THE SCREWS FOR THE FLANGED DRAWBAR EYES

- 1) Position the drawbar on a solid and secure surface and block it;
- 2) Remove from the drawbar eye (6) the six/eight screws and save the washers (see chapter 7 – DISPOSAL page 22/24);
- 3) Clean thoroughly all contact parts and proceed in mounting the drawbar eye by screwing the six/eight screws (15) with their washers (16, 17);



The plates (17) present on the drawbar eye type 51F8 are in production until 2005

- 4) Tighten with the torque wrench by following the tightening torque values indicated in the table and sequences reported on page 13/24.



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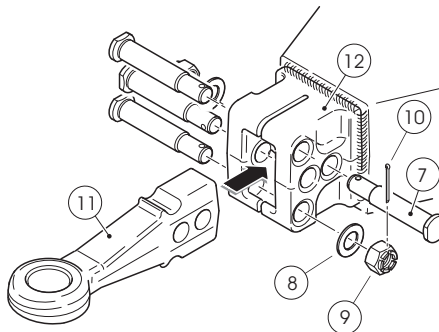
5.3 REPLACING THE SCREWS FOR THE SPECIAL FLANGED DRAWBAR EYES

- 1) Position the drawbar on a solid and secure surface and block it;
- 2) Remove the split pins (10), loosen the castellated nuts (9) and remove the screws (7) (see chapter 7 – DISPOSAL page 22/24);
- 3) Remove the drawbar eye (11) (see chapter 7 – DISPOSAL – page 22/24);
- 4) Clean thoroughly all contact parts and proceed in mounting the new drawbar eye (11), insert the screws (7) and tightening with the castellated nuts (9);
- 5) Tighten with the torque wrench by complying with the tightening torque values indicated in point 6 of chapter 2.4 - WELDING PLATE AND ASSEMBLING THE SPECIAL FLANGED DRAWBAR EYE page 10/24;



If the hole on the drawbar eye (11) is not aligned with the slit on the castellated nut (9) do not loosen the nut, but tighten further until completing the alignment of the hole with the slit.

- 6) Insert the split pin (10) in the hole on the screw thread (7) and open the ends flat against the nut crown (9).



6 CLEANING



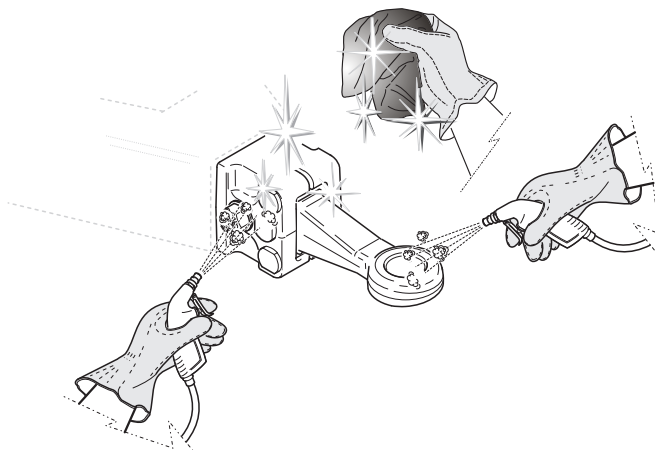
- 1) Clean the drawbar eye after each journey or trip, possibly by carrying out an accurate cleaning session.



- 2) The drawbar eye must also be cleaned prior to use after a long period of disuse;;



- 3) Sganciare l'occhione di traino dal gancio di traino della motrice e pulire prima con uno straccio indirizzando poi il getto d'aria verso il foro della boccola e intorno all'occhione di traino.



Use of high pressure water jet machines is allowed.

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7 DISPOSAL



Read the following instructions carefully:

No part of the drawbar eye 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.

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

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