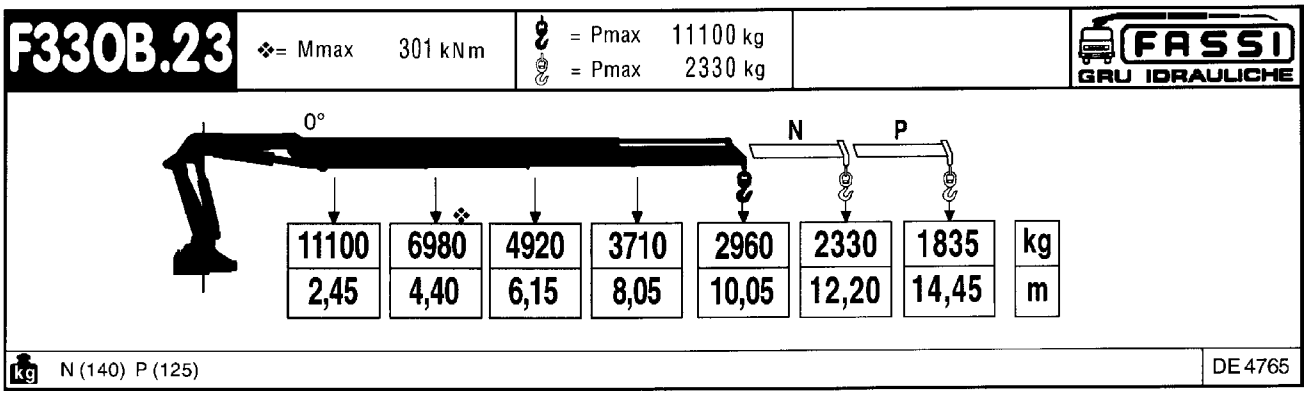
F 330B.23

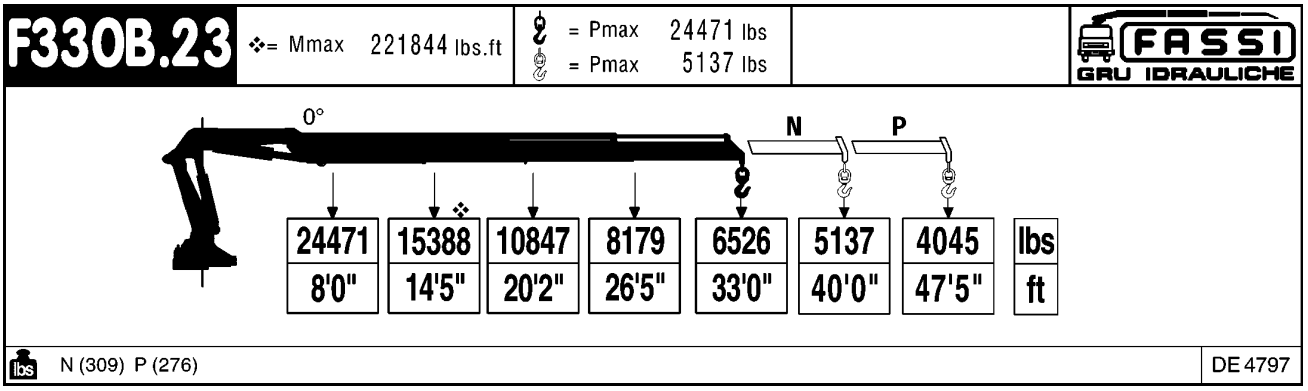
use and maintenance

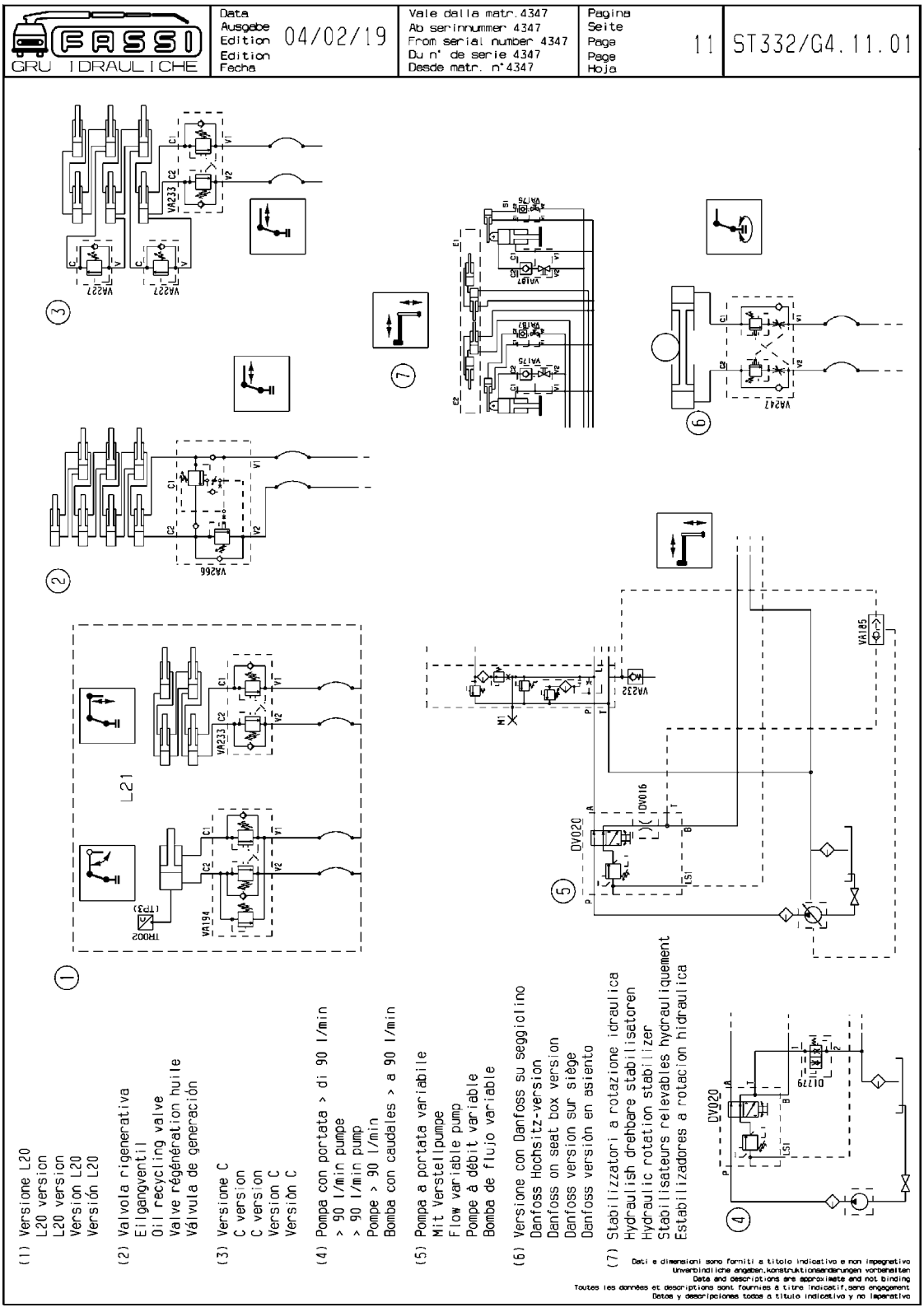
FROM SERIAL NUMBER *4001*

INDEX

3.1-2 Capacity plates with load limiting device







CODE	DESCRIPTION
DI779	COMPENSATED FLOW CONTROL VALVE
DV020	DEVIATOR
DV016	FLOW REGULATOR VALVE
VA102	DOUBLE EFFECT BLOCK VALVE
VA185	SELECTOR VALVE
VA194	DOUBLE EFFECT BLOCK VALVE
VA227	SEQUENCE VALVE
VA232	NON RETURN VALVE
VA247	OIL FLOW REGULATOR VALVE FOR ROTATION CYLINDER
VA266	REGENERATIVE VALVE

7 WARNING AND INSTRUCTIONS

7.1 Generality

The use of the crane is reserved to authorized personnel, instructed in advance, who has to conform to the safety norms and instructions contained in the use manual supplied with the crane. (See norms ISO 9926-1)

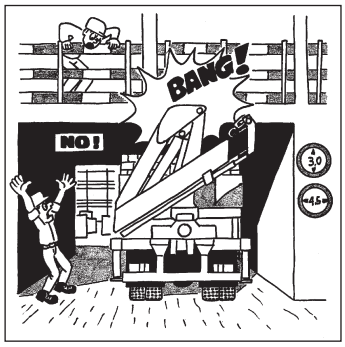
It is absolutely prohibited to walk or stop under a suspended load

It is prohibited for unauthorized persons to be within the working area.

Under no circumstances interfere with the safety and protection devices.

Warning plates, as well as instruction and operation plates must be replaced when no longer readable or missing. See Paragraph 25 Instruction and warning plates.

Do not use the outriggers to raise the vehicle.



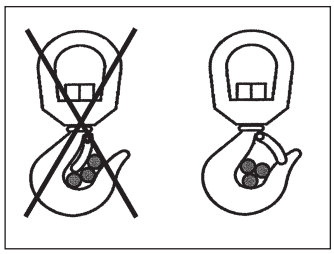
To avoid hitting bridges or tunnels check and record the overall height of your crane in the folded position or in laid position in the body or on the load. Always respect and pay proper attention to road signs placed in proximity of such obstacles.

7.2 Before operating

(!) ATTENTION (!)

Check that protections are in their place and that all safety devices are fitted and active. (See norms ISO 9927-1)

Keep the ladder and the control station on the top seat, clean; normally, the seat can tilt forward.

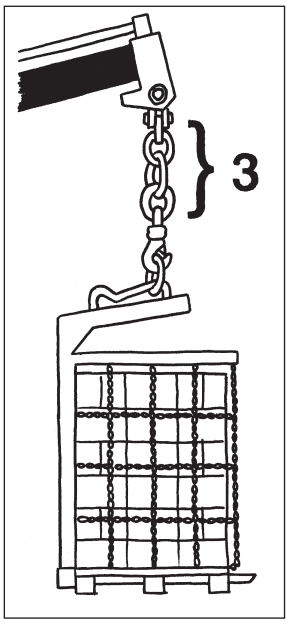


Make sure that control stations are properly lit so as to ensure safety while operating and allow instruction plates to be visible.

Check that the working area is adequate and properly lighted for your crane.

Make sure that the hook is always free to rotate on its pin and that nothing obstructs its vertical positioning.

Check the efficiency of the hook safety catch.



Carefully inspect the condition of ropes or chains (if present)

Make sure that the pallet fork (if present) is connected to the crane hook by means of a chain having at least **three (3)** rings.

7.3 During operation

Take the vehicle fumes away from the working area by fitting an extension tube of a suitable diameter and a right length to the exhaust system.
Do not run the engine in a indoor area without first making sure there is adequate ventilation.

When using the ladder to reach the control station on the top seat, avoid knocking into the controls while going up or down the ladder.
The control station on the top seat is provided with side safety guards; stay within these guards.

Make sure that no one is within the working area of the crane.

11 SUPPLEMENTARY BEAMS

11.1 Generality

Supplementary beams are used in conjunction with the crane outriggers to ensure the vehicle stability during load handling.

Code	outrigger ram stroke mm	outrigger interaxis mm	extension type	Weight kg
52185	550	2132	Fixed	115
42049	550	3098	Manual	220
56681	550	3558	Manual	250
115B073	450	3098	Manual	190
115B076	450	3098	Manual-Rotating-“H”	190
145B068	650	4142	Hydraulic-“H” variable	340
145B070	340	4142	Hydraulic-“H” variable	310
330B054	520	4984	Hydraulic-“H” variable	520
330B055	340	4984	Hydraulic-“H” variable	490

11.2 Identification of the supplementary beams

Identification data of the supplementary beam is punched on the beam (fig. 8) in the following sequence:

Ex. ***145B070*0001**
- serial no.
- identification code

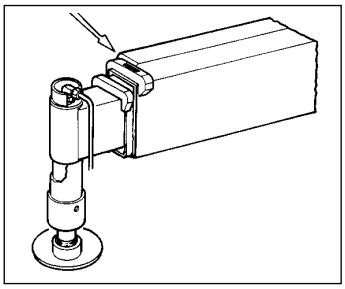


fig. 8

12 TILTABLE OUTRIGGER RAMS

12.1 Manually tiltable outrigger rams

Outrigger rams are allowed to be stored in an inclined position, when obstructions on the vehicle chassis prevent their vertical stowability. These hinged supports are placed between the outrigger supports and the rams; the fixed part is screwed to the supports while the mobile part is screwed to the rams. (fig. 9-9a)

To place the rams in a working condition. (fig. 9)
- Supporting the ram, remove the check pin and the locking pin from their positions.
- Position, carefully, the ram in working condition, insert the locking pin in its new position and secure it with the check pin (fig. 9a)

To re-position the rams to the folded position.
- Remove the check pin and the locking pin.
- Position, the ram in a upward direction and supporting the ram, insert
- the locking pin in its new position and secure it with the check pin

(!) The locking pin is constructed from special material - do not replace it with a non original part - your security depends on it

VERSION 1

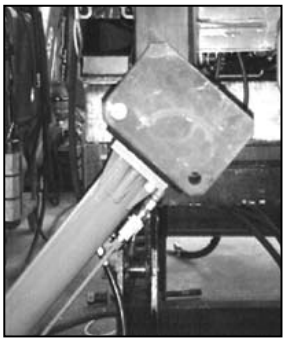


fig. 9

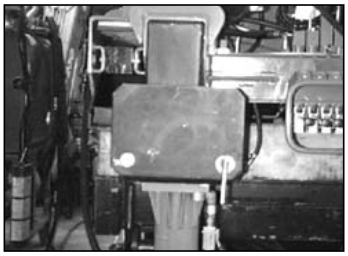


fig. 9a

VERSION 2

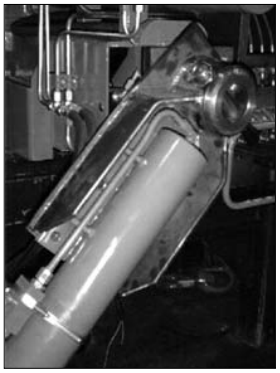


fig. 9

fig. 9a

14 CONTROLS TO OPERATE THE CRANE

14.1 Generality

(!) WARNING (!)

Before operating the crane it is compulsory to set the outriggers. (Plate DE2327 fig. 14)

The crane and hydraulic implements can be manually operated with:
- ground controls on both sides or, on request
  ground controls on both sides and
  top seat controls by hand-cables;
- top seat controls.

The plates reported over each lever define their function in relation to their movement.

fig. 14

16 MANOEUVRES OF THE CRANE LOADS (version with lifting moment limiting device)

16.1 Generality

(!) Before manoeuvering the load, verify that the working area is suitable for your crane.

The lifting curves of the capacity plate indicate the maximum load that the crane can lift at a certain radius and at a certain height. To utilize the maximum capacity of the crane, it is necessary to position the inner boom as indicated on the capacity plate. During load handling, do not exceed the reach limits given, or the load indicated on the above mentioned charts. If the limits are exceeded, the limiting device, allowing all manoeuvres, which reduce the lifted load within the permitted reach limits and forbid all other manoeuvres, will be immediately activated.

Lifting moment limiting device
A characteristic which permits the classification of cranes is their lifting capacity or maximum lifting moment. The moment is defined by the value obtained from the weight of the load to be lifted (**kg**) by its distance (**meters**) from the centerline of the crane rotation.
The device called “lifting moment limiting device” preserves the crane structure from overloads, as it prevents any movement which increases the value of the moment up to the maximum established value.

16.7.2 Temporary OVERIDE-REACTIVATION for the crane functions with standard distributor

- In case of an electrical failure or of the appearance of the signal “ALARM” on the display **B** of the control panel of the lifting moment limiting device:

Firstly remove the protection guard. Then unscrew the fixing screws (13 mm hexagonal spanner).

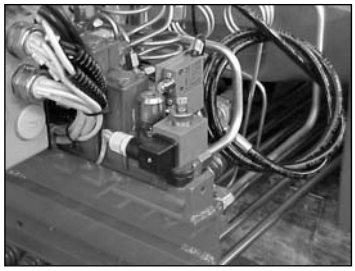


fig. 22

On the distributor it has been installed an electro-valve with a manual locking function (fig. 22) which allows to reactivate all the crane functions in case of absence of the electric power. Only in these conditions it is permitted to remove the lead seal which protects the device. Push the button and turn it into the clockwise sense (fig. 22a pos. 1-2); the button stays in stable and closed position.

(!) When the electric power is restablished, remember to put the button in its original position, turning it into the anti-clockwise sense. (fig. 22a pos. 3-4)

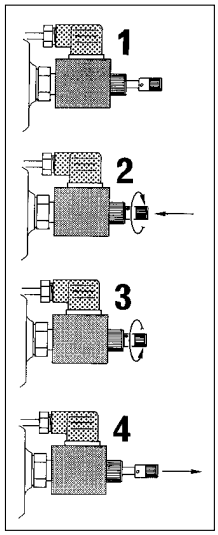


fig. 22a

(!) ATTENTION (!)
Activation of the reactivation button.

This activation prevents the operation of the lifting moment limiting device, consequently, the operation under such conditions can involve an overload condition. In such an emergency condition (where the lifting moment limiting device has been disabled), the operator, who is responsible for the machine safety, must:
- **carefully consider the manoeuvres required to return to normal working conditions: it is however compulsory to effect the re-entry of the extension booms at first,**
- **calmly and carefully assess the type and scale of the hazards arising from these manoeuvres and the possible reaction of the crane (tipping over, frame overload, uncontrolled fall of the load due to a hydraulic system overload etc.);**
- **make all movements as slowly as possible to reduce the dynamic overload to the minimum.**

After such emergency operations and prior to re-use of the crane, you must immediately go to **FASSI authorised Center** for testing the structure and re-sealing of the device.

16.7.3 OVERIDE - REACTIVATION lever for the crane functions (with Danfoss distributor)

- In case of an electrical failure or of the appearance of the signal “ALARM” on the display **B** of the control panel of the lifting moment limiting device:

Firstly remove the protection guard. Then unscrew the fixing screws (13 mm hexagonal spanner).

fig. 23

On the distributor it has been installed an emergency tap lever (fig. 23) to be used in the event of a black-out, electrical or hydraulic malfunctions.
Only In these situations it is permitted to remove the lead seal placed on the tap lever and place it in the closed position.

(!) When the electric power is restablished, remember to put the button in the opened position.

10. Message “LOAD OK” (fig. 10)

This message confirms that the load does not exceed the lifting limits of the crane and of the manual extension selected.

fig. 10

fig. 10

CLOSING OF THE PROCEDURE

All the crane functions will still be kept disabled. To start operating press the “INDEX” key (control panel fig. 10, or radio-remote control fig. D always with the selector in position “A” fig. C).

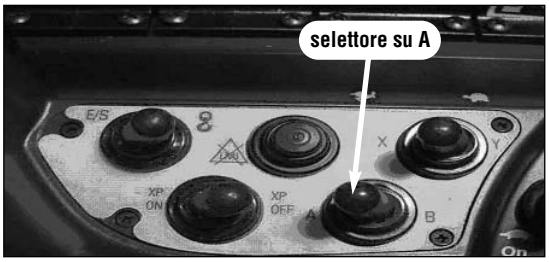


Figure C

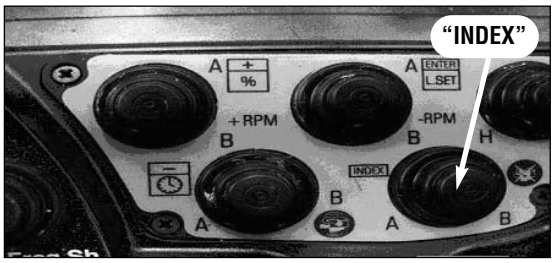


Figure D

For an overall view of the procedure, we attach the diagrams showing all the passages and messages that can be displayed during the procedure according to the various situations that may take place.

The script "EXIT" in the block diagram allows to exit the procedure.

FURTHER MESSAGES

After releasing the lever in neutral position you can find the following messages

If you keep pressed the "F2" key “F2” on the control panel or “LMI” on the push-button panel, it is possible to have an indicative evaluation of the weight applied on the hook (fig. 11).

fig. 11

fig. 11

a. “PRESSURE ERROR” (see fig. 12)

It warns you that the system found an error in the pressures of the lifting booms. The whole procedure must be restarted.

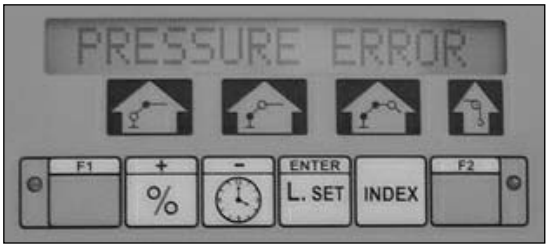


fig. 12

fig. 12

20.10 Crane with lifting moment limiting device and "pro link" (if fitted)

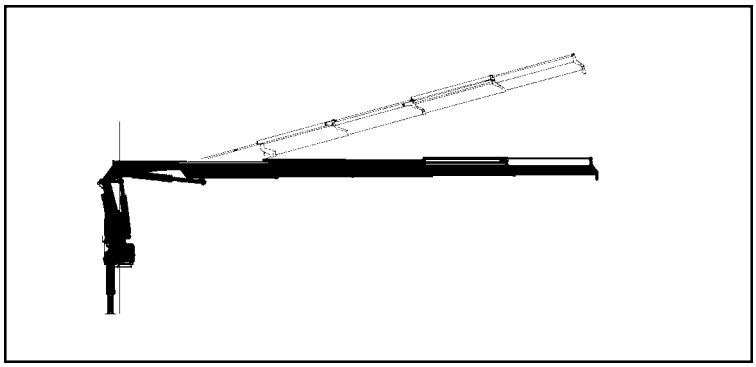
The cranes fitted with **"pro link"** can operate the outer boom and the hydraulic jib with an increased angle of about 15 degrees. In order to prevent the booms from exceeding the maximum angle over the horizontal line (generally 80 degrees) the crane is fitted with a suitable safety device.

Safety device for "pro link"
The safety device receives the signals about the inclination of the outer boom of the crane and of the hydraulic jib and transmits them to the limiting system that controls the manoeuvres; the significant values are the first and the second angle limit (**alfa1** and **alfa2** respectively about 70 and 80 degrees from the horizontal line).

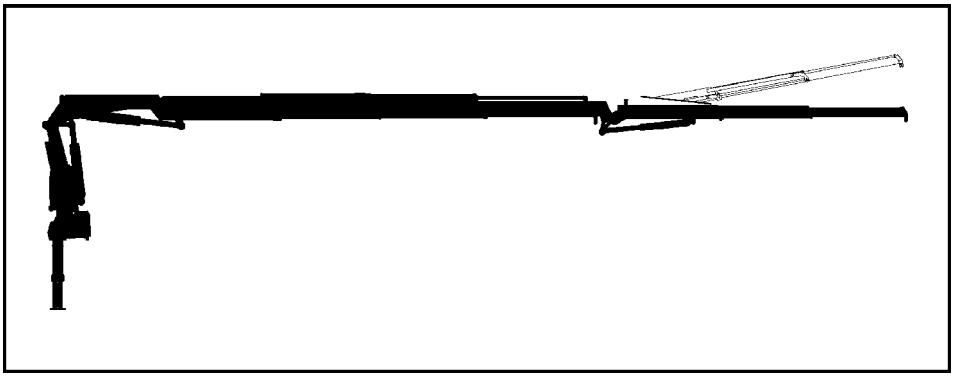
Function of the safety device controlling the articulation "pro link"
When the first angle limit **alfa1** is reached, the safety device temporarily stops all movements and activates the flashing red light; "**Warning angle**" is displayed on the screen. In order to reactivate all the crane functions (**except for the lifting of the inner boom that in this case is definitely disabled**) just put the all the levers in neutral position. Press the LMI button to remove the message "**Warning angle**" (it will disappear when the temporary block angle **alfa1** is no longer exceeded).

When the second angle limit **alfa2** is reached, the safety device definitively stops all lifting movements and activates the fixed red light; "**Max angle crane**" or "**Max Angle jib**" are displayed according to which boom has reached the limit.

The outer booms of the crane and of the hydraulic jib can reach both the **alfa1** (temporary block) and **alfa2** (definitive block) limits, independently from the position of the other booms.
But if one of these two booms reaches the second limit **alfa2**, this condition evidently stops any other lifting.
Only if neither the crane outer boom nor the hydraulic jib reach the first angle limit **alfa1**, the inner boom can attain its max limit **alfa2**, that is its mechanic stroke end.



Folding the crane
When you fold the crane, the outer boom is positioned with an angle that generally exceeds the second limit **alfa2**; this is because the safety device **"pro link" never disables the descent of the inner and outer booms**.
At this point the inner boom lifting is not permitted. To unfold the crane just turn off the system; when you turn it on the message **"Crane Folded"** is displayed. At this point the only manoeuvre allowed is the folding of the outer boom (we recommend to perform this manoeuvre on all the cranes in order to ensure a correct and safe crane unfolding); if you activate it for some seconds, the message **"Crane Folded"** will disappear and **all the manoeuvres will be reactivated.**



WITH SLEW RING

- of the slew gear screws (bolts M20 Class 12.9: Thightening torque = 620 Nm)

WITH RACK

- of the securing bolts for the ram pins and of all the other bolts and screws, where the tightening torque is not expressly indicated, consult the following table in order to find it's value according to the bolt diameter and class.

Table of the bolts tightening torque, in general, with average friction value (0,15) and average-good tightening accuracy (C).

From ... "ELEMENTS DE FIXATION - ASSEMBLAGES VISSES" (AFNOR E 25-030 1984)

Diameter Bolt = D	Class 8.8 Torque = Nm	Class 10.9 Torque = Nm	Class 12.9 Torque = Nm
3	1,06	1,56	1,83
4	2,44	3,58	4,19
5	4,83	7,10	8,30
6	8,30	12,30	14,30
8	20	29	35
10	40	59	69
12	69	102	119
14	111	163	191
16	173	255	298
18	239	352	412
20	339	499	584
22	466	685	802
24	584	858	1004
27	865	1271	1487
30	1173	1723	2016
33	1594	2342	2740
36	2046	3006	3517
39	2658	3905	4570

WITH SLEW RING

Check the rotation control motoreducer oil level. Fig. 34

- Remove the bleed plug (**1**) using a 22 mm Allen wrench.
- Remove the plug (**2**) using an 8 mm Allen wrench and the O-ring.
- Top up, if necessary, with the same type of oil as indicated in the table at Paragraph 23 via the mouth (bleed plug).
- The correct level is reached when oil starts to escape from the threaded hole in plug (**2**).
- Check the state of wear of the O-rings (replace if necessary) and then return the plugs. The lubrication oil can be drained completely by removing plug (**3**) using an 8 mm Allen wrench.

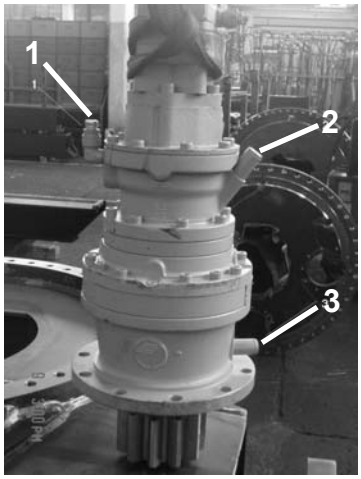


fig. 34

Check the guide shoe wear as it affects the sliding section tolerances; if the clearances are considerable, damage to the rams and the structure may occur.

Clean the air filter placed in the top of the oil tank filter cap.

Completely replace the hydraulic oil and the filter cartridges.

(!) The waste oil and the filter cartridges MUST be disposed of by authorized persons.

(!) CAUTION DANGER (!)

On the outer boom there is a mercury capsule (mercury level switch) duly protected and provided with the following warning stickers.

MERCURY IS EXTREMELY TOXIC. IN CASE OF REPLACEMENT AND/OR SCRAPPING, DISPOSE OF OR RECYCLE THE CAPSULE CONTAINING MERCURY WITH MAXIMUM CARE, AND IN ACCORDANCE WITH THE NATIONAL REGULATIONS IN FORCE.