

F 240.24

use and maintenance

EXTRA CE version 20.04.98

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FASSI CRANE

F 240.24 use and maintenance

This instruction manual describes the FASSI CRANE F240.24.

The fitment must be carried out in accordance with the instructions given by the Manufacturer in the manual for hydraulic crane fitting.

The Manufacturer declines all responsibility and guarantee if the fitting is entrusted to workshops without sufficient technical capability to carry out the work in conformity.

As well as the principal safety norms, this manual contains a description of the crane and the instructions for use and maintenance.

The crane must only be operated by responsible persons, previously instructed and authorized.

THANK YOU FOR SELECTING ONE OF OUR CRANES.

(!) This symbol draws your attention on the points concerning safety.
It means: **WARNING! BE CAREFUL!**
IT CONCERNS YOUR SAFETY!

!ATTENTION!

READ THIS MANUAL CAREFULLY prior to use of the crane or any maintenance.
A few minutes spent now could save time and labour later.
Be sure that the unit has been installed, inspected and tested in accordance with the local legal requirements.

Check that protections are in their place and that all safety devices are fitted and active.

Warning plates, as well as instruction and operation plates must be replaced when no longer readable or missing. (See chapters A - B)

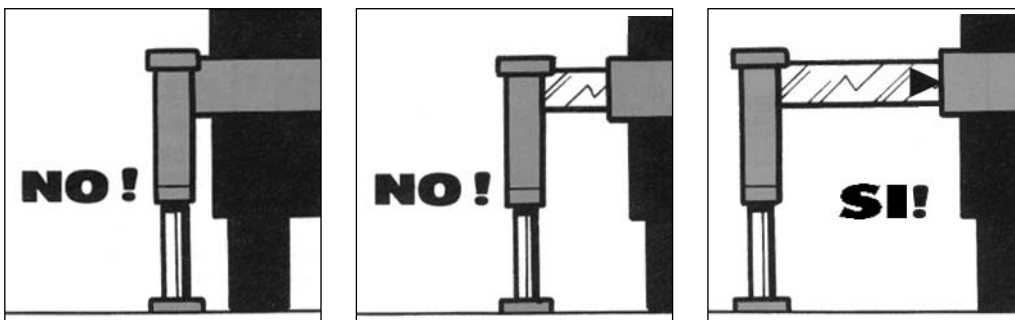
Do not run the engine in a indoor area without first making sure there is adequate ventilation. Fit a suitable extension tube to the vehicle exhaust pipe to take the fumes away from the working area.

Stabilize the vehicle by means of the outrigger rams, checking that they rest on a solid base; if in doubt use special larger outrigger base plates (available on request). (See chapter IX)

Level the crane so as it is always operated on a horizontal plane.

Check that the taps of the outrigger rams safety check valves are closed.
Never operate the outriggers when the crane is loaded.

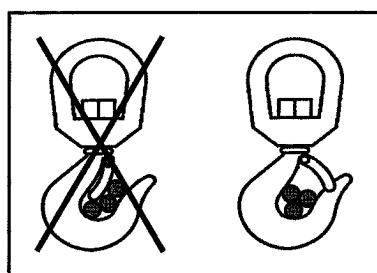
Remember that the stability of the unit (crane-vehicle) is only guaranteed by the maximum lateral extension of the outriggers.



Should visibility be insufficient, make sure that control stations are properly lighted so as to ensure safety while operating control functions and allow reading of the plates.

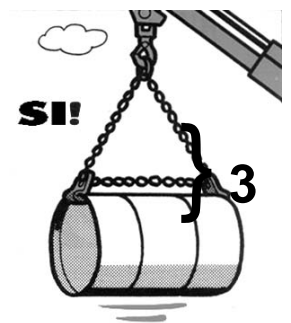
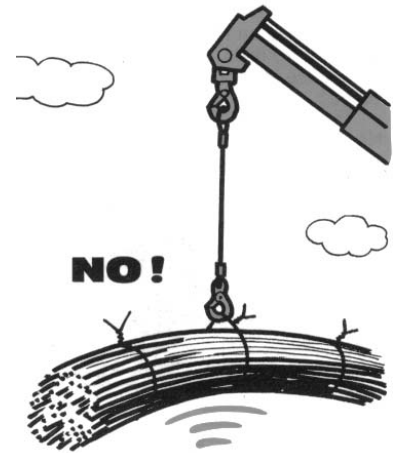
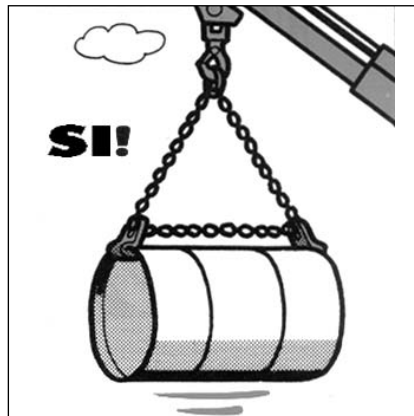
Before manoeuvring a load check that the working area is adequate and properly lighted for your crane.

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 load rigging and the condition of ropes or chains.
Make sure that the lifted load is balanced.

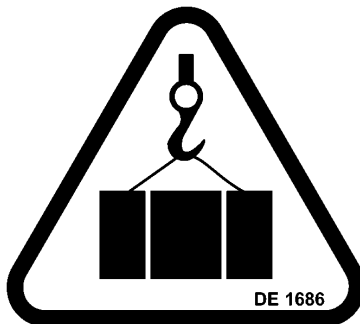


The pallet fork must be connected to the crane hook by means of a chain having at least 3 rings.

Hook up the load, checking that it does not exceed the capacity indicated on the lifting diagram specific to each load configuration.

It is absolutely prohibited to walk or stop under a suspended load and for unauthorized persons to be within the working area.

Avoid swinging the load above the control station; in cases where the load is too close, the crane must be operated from the opposite side.

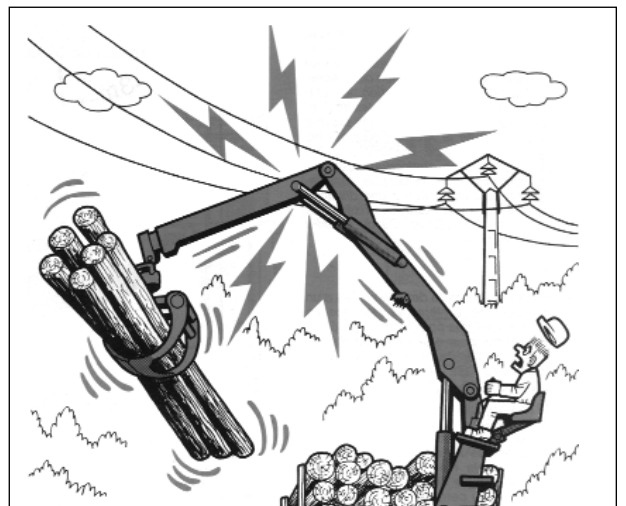


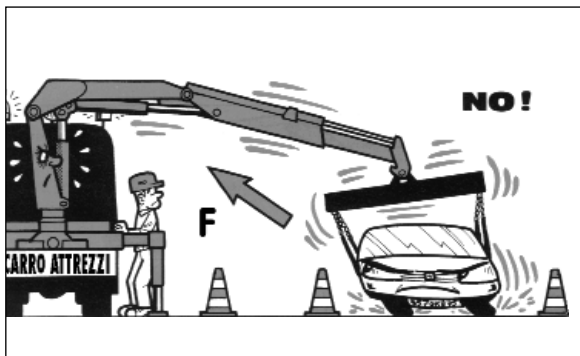
It is absolutely prohibited to load or unload under or in proximity of electric lines.

(!) The minimum distance from electric lines is, according to CEN norms, **5 meters**, except for otherwise prescribed by national norms.

For cranes with top seat controls, it is necessary to use a ladder to reach the control station.

When operating from the top seat, stay within its side safety guards.

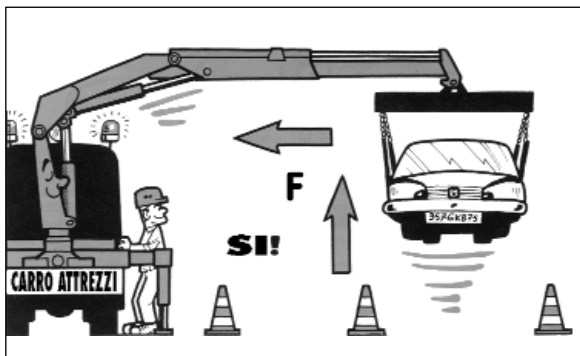




Do not rotate the crane before the load is lifted, do not operate with sudden movements, activate the controls with slow and progressive movements.

Rotate slowly and with care paying attention to the stability of the vehicle.

With vertical lift, on hydraulic and mechanical extension, rotate slowly in order to avoid side-skidding.



Do not move the vehicle if a load is suspended on the crane.

Do not utilize the crane for pushpull, lateral or sideways operations.

Under no circumstances interfere with the safety and protection devices.

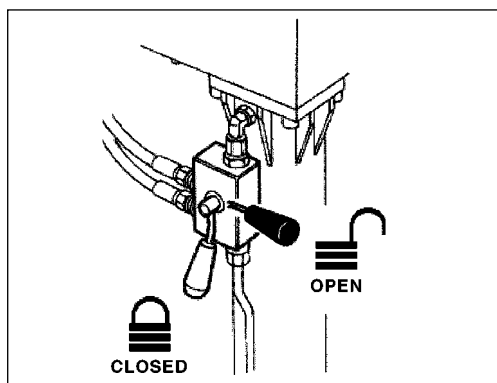
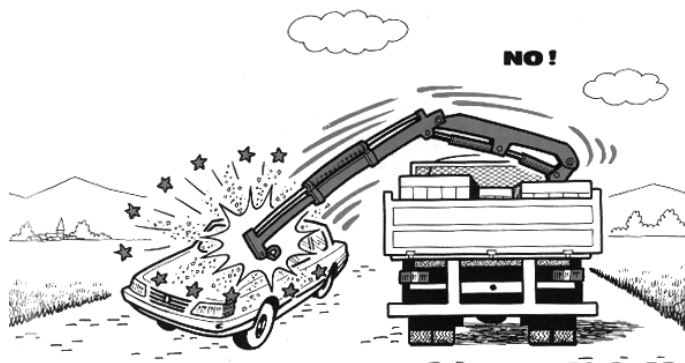
The vehicle/crane are not left unless the power take off is disengaged and the load is on the ground.

At the end of the job and prior to driving the vehicle the crane must be folded.

If the booms are to be laid on the body or on the load, they must be blocked to prevent possible sideways movements.

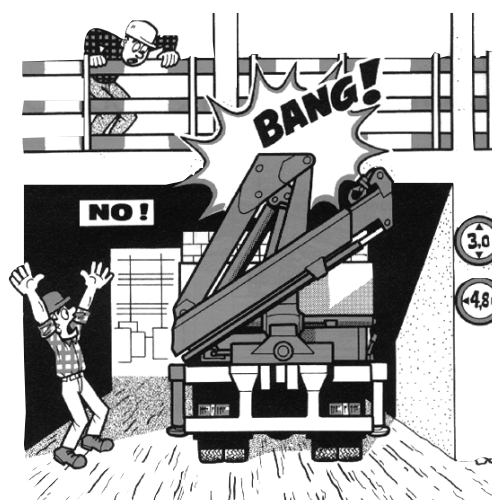
Outrigger rams must be lifted and re-entered within the overall width of the truck and safety devices locked.

Check that the taps of the outrigger rams safety check valves are closed.



Disengage the power take off.

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.




INSTRUCTIONS FOR CRANE USE

The use of the crane is reserved to authorized personnel, instructed in advance, who has to strictly conform to the safety norms and instructions contained in the instruction manual supplied with the crane.

- 1 — Only authorized persons are allowed to operate the crane.
- 2 — The crane must be used on firm, level ground.
- 3 — Check that the vehicle hand brake is on and that the wheels are chocked.
- 4 — Before every operation make sure that:
 - no-one is within the working area of the crane
 - the safety devices are in place and operative
 - the minimum safe working distances from power lines are observed.
 - the load is correctly slung and hooked.
- 5 — Stabilize the vehicle by the outrigger rams, making sure that:
 - the lateral supports are fully extended
 - the wheels are in contact with the ground and the suspension is not completely unloaded
 - the outriggers safety taps are closed.
- 6 — Use the crane in accordance with the use and maintenance manual, making sure that:
 - the load and radii are within the maximum limits shown on the crane capacity plate
 - the crane is used progressively avoiding sudden load movements
 - swinging or dragging of the load is avoided
 - the load is lifted before rotating.
- 7 — When using implements protect the crane working area with a barrier.
- 8 — The vehicle/crane are not left unless the power take off is disengaged and the load is on the ground.
- 9 — Before driving the vehicle make sure that the outriggers are fully retracted and re-entered, the safety taps closed and the crane is in folded position.

fig. 1

	FASSI GRU S.p.A. Via Roma, 110 24021 ALBINO (BG) - ITALIA Tel. +39 35 77.64.00 - Fax +39 35 75.50.20	INSTRUCTIONS FOR SAFE USE OF THE CRANE	DE1771A
<ol style="list-style-type: none"> 1 Only authorized persons are permitted to operate the crane. 2 The crane must be used on firm, level ground. 3 Check that the vehicle hand brake is on and that the wheels are chocked. 4 Before operation make sure that: <ul style="list-style-type: none"> - no one is within the working area of the crane; - the safety devices are in place and operative; - the minimum safe working distances from power lines are observed; - the load is correctly slung and hooked. 5 Stabilize the vehicle with the outriggers, making sure that: <ul style="list-style-type: none"> - the lateral supports are fully extended; - the wheels are in contact with the ground and the suspension is not completely unloaded; - the outriggers safety taps, if present, are closed; 	<ol style="list-style-type: none"> 6 Use the crane in accordance with the use and maintenance manual, making sure that: <ul style="list-style-type: none"> - the load and radius are within the maximum limits shown on the crane capacity plate; - the crane is used progressively avoiding sudden load movements; - swinging or dragging of the load is avoided; - the load is lifted before rotating. 7 When using implements protect the working area with a barrier. 8 The vehicle/crane are not left unless the power take off is disengaged and the load is on the ground. 9 Before driving the vehicle ensure that the outriggers are fully retracted and re-entered, the safety taps closed and the crane is in the folded position. 		

THESE INSTRUCTIONS FOR THE USE OF THE CRANE COINCIDE WITH THOSE OF THE PLATE DE1771 (FIG. 1) PLACED NEXT TO THE CRANE.

IDENTIFICATION OF THE CRANE MODEL

Essential data for the identification of the crane are given on the plate DE2141, fixed to the base. (Fig. 2)

- 1—Crane model
- 2—Serial Number
- 3—Year of manufacturing

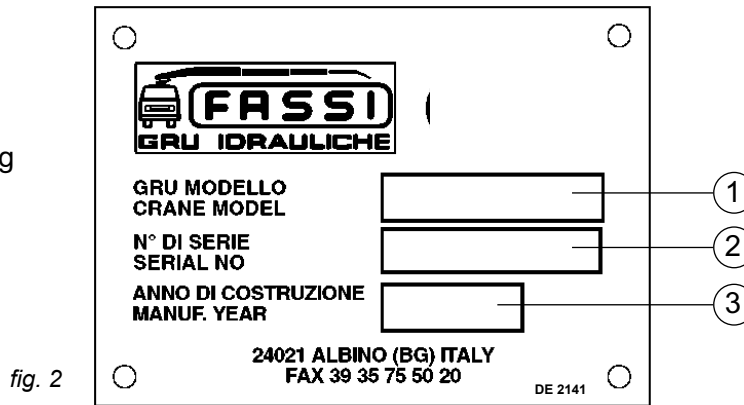


fig. 2

The model, the version of the crane, the year of manufacturing and the serial number are stamped on the base (fig. 3) in the following sequence:

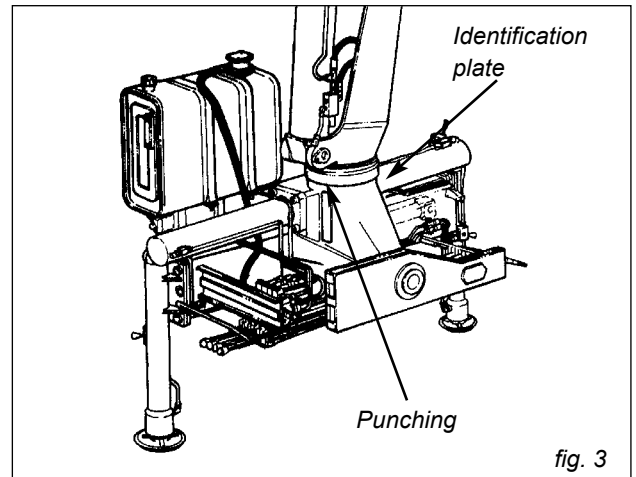
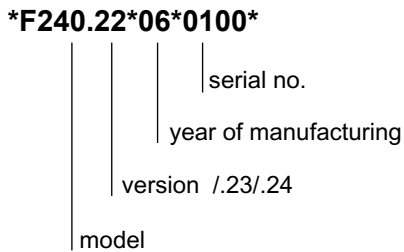


fig. 3

(!) UNDER NO CIRCUMSTANCES SHOULD THE DATA MARKED ON THE PLATE AND PUNCHED ON THE BASE BE ALTERED.

It is essential to give the correct **crane model** and **serial number**, when you contact the Service and Parts Department.

The exact **crane model**, **serial number** and description of **implements** will enable FASSI Service Department to give a rapid and efficient response.

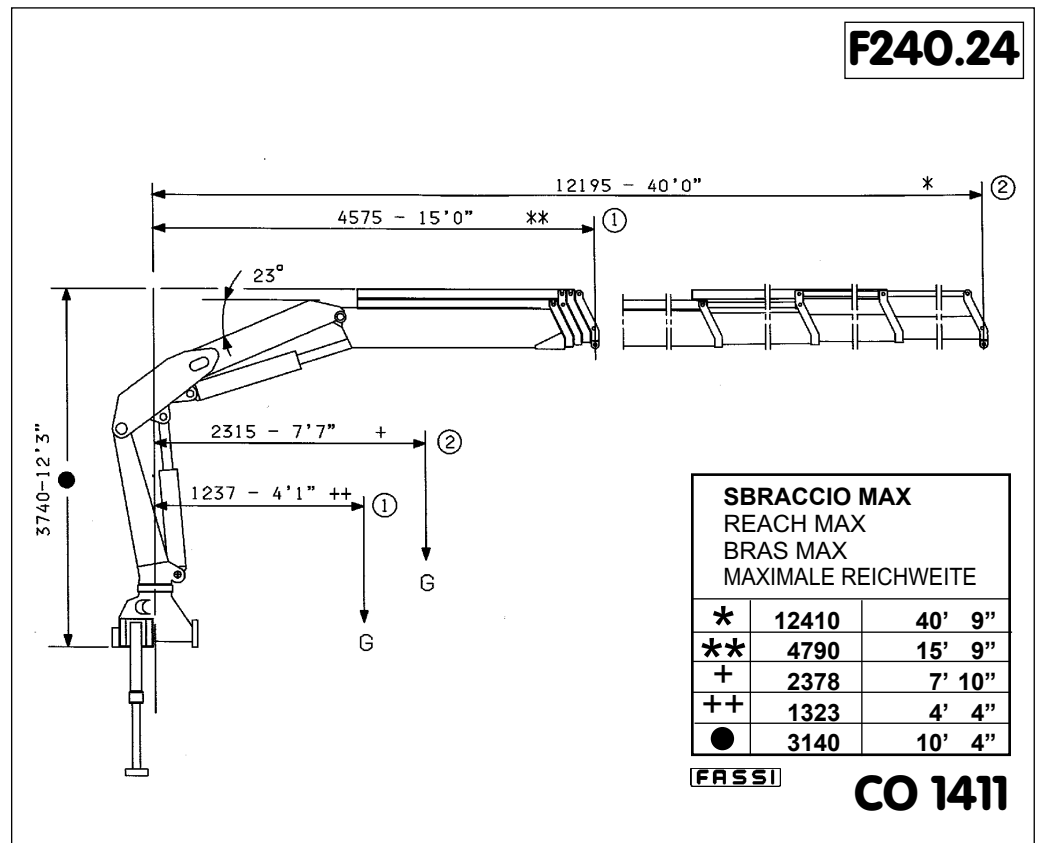
TECHNICAL DATA

The design of this crane has been carried out in respect of DIN 15018 norms, fatigue test classification **H1B3**.

The crane can operate, intermittently, with lifting devices other than the hook. The dimensions and the capacity of the implements must be proportioned with crane performances.

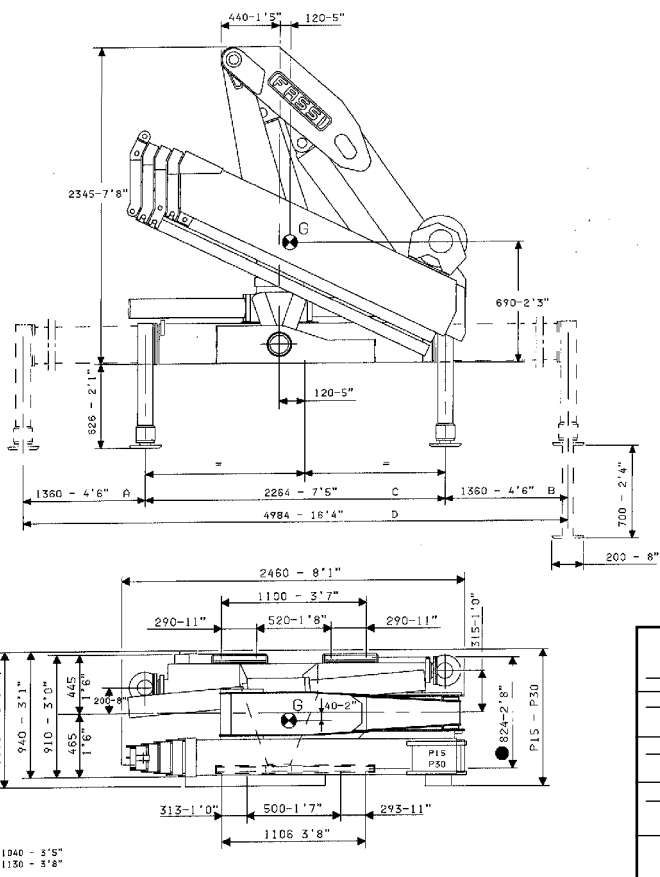
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Lifting capacity	Standard reach	Hydraulic extension	Rotation arc	Rotation torque	Working pressure	Pump capacity	Oil tank capacity	Crane weight
tm 22,0	m 12,40	m 7,60	400°	kNm 41,00	MPa 29,0	l/min 40	l 120	kg 3200



F240.24

EXTRA			
A	1848	6'	1"
B	1848	6'	1"
C	2264	7'	5"
D	5960	19'	7"



●	— MEZZERIA TIRANTI
●	— FIXING ROD CENTER DISTANCE
●	— LIGNE MEDIANE TIRANTS
●	— ABMESSUNG DER BEFESTIGUNGSBRIDEN
	M33 x 2

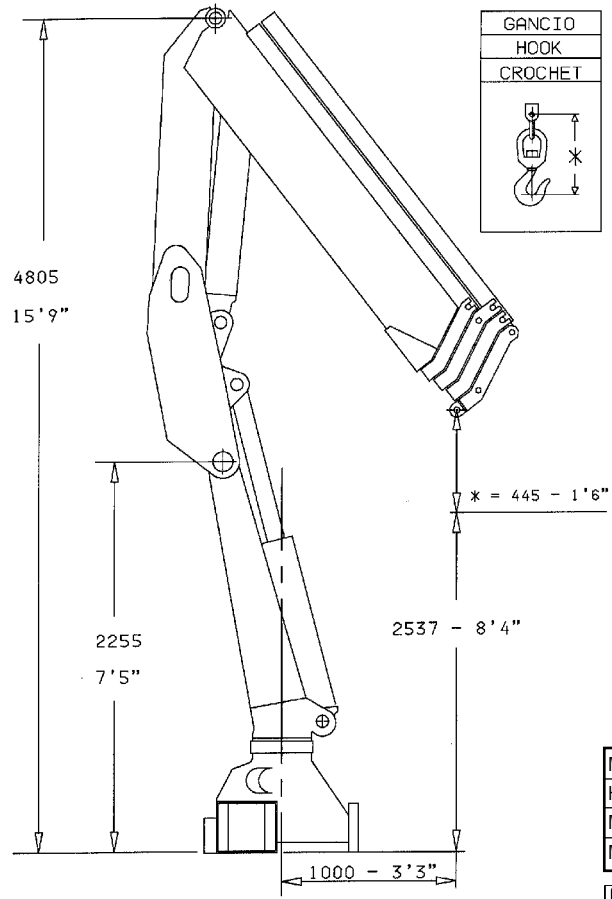
- ★ CON TUBAZIONI SUPPLEMENTARI
- ★ WITH SUPPLEMENTARY HOSES
- ★ AVEC TUYAUTERIE SUPPLEMENTAIRE
- ★ MIT ZUSAETZLICHEN SCHLAEUCHEN

PESI, DIMENSIONI E POSIZIONE BARICENTRO.
 POIDS, DIMENSIONS ET POSITION DU BARYCENTRE.
 WEIGHT, DIMENSIONS AND BARYCENTRE POSITION
 GEWICHTE, ABMESSUNG UND POSITION DES KRANSCHWERPUNKTE.

PESO GRU CON SERBATOIO NON RIFORNITO, STABILIZZATORI STANDARD	kg	3200
WEIGHT OF THE CRANE WITH EMPTY TANK, STANDARD STABILIZATION	lbs	7055
POIDS DE LA GRUE AVEC RESERVOIR VIDE, STABILISATION STANDARD		
KRANGEWICHT MIT LEEREM TANK UND STANDARDABSTUTZUNG		

CO 1408 **FASSI**

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●	MASSIMA ALTEZZA SOTTOGANCIO.
●	HAUTEUR MAXIMUM SOUS CROCHET.
●	MAXIMUM HOOKING POSITION.
●	MAXIMALHOEHE BIS KRANHAKEN.

FASSI **CO 1414**

FASSI

CRANE NOMENCLATURE

- **Version with ground controls for crane and outriggers**
- **Version with top seat controls (fig. 4a) for crane by hand cables (optional) (fig. 4)**

Pos. Description

- 1 — Outrigger rams
- 2 — Outrigger supports
- 3 — Base
- 4 — Rotation cylinders
- 5 — Deviator outriggers - crane
- 6 — Outrigger multifunction deviator
- 7 — Outrigger multifunction transmission
- 8 — Distributor bank
- 9 — Double control
- 10 — Column
- 11 — Inner ram
- 12 — Inner boom
- 13 — Outer ram
- 14 — Outer boom
- 15 — Booms extension rams
- 16 — Booms extension rams
- 17 — Lifting hook
- 18 — Oil tank
- 19 — Manual extensions (optional)
- 20 — Seat (optional)
- 21 — Hand-cables for crane (optional)

- **Version with ground controls for outriggers and top seat controls for crane (fig. 5)**

Pos. Description

- 1 — Outrigger rams
- 2 — Outrigger supports
- 3 — Base
- 4 — Rotation cylinders
- 5 — Deviator outriggers - crane
- 6 — Outrigger multifunction deviator
- 7 — Outrigger multifunction transmission
- 8 — Column
- 9 — Seat
- 10 — Distributor bank
- 11 — Inner ram
- 12 — Inner boom
- 13 — Outer ram
- 14 — Outer boom
- 15 — Booms extension rams
- 16 — Extension boom sections
- 17 — Lifting hook
- 18 — Oil tank
- 19 — Manual extensions (optional)

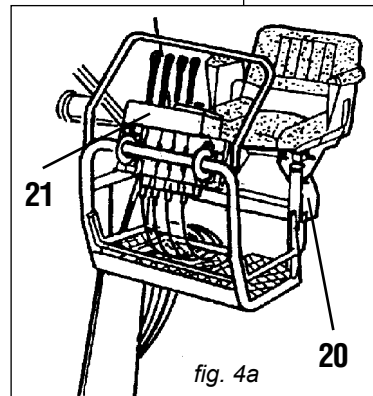
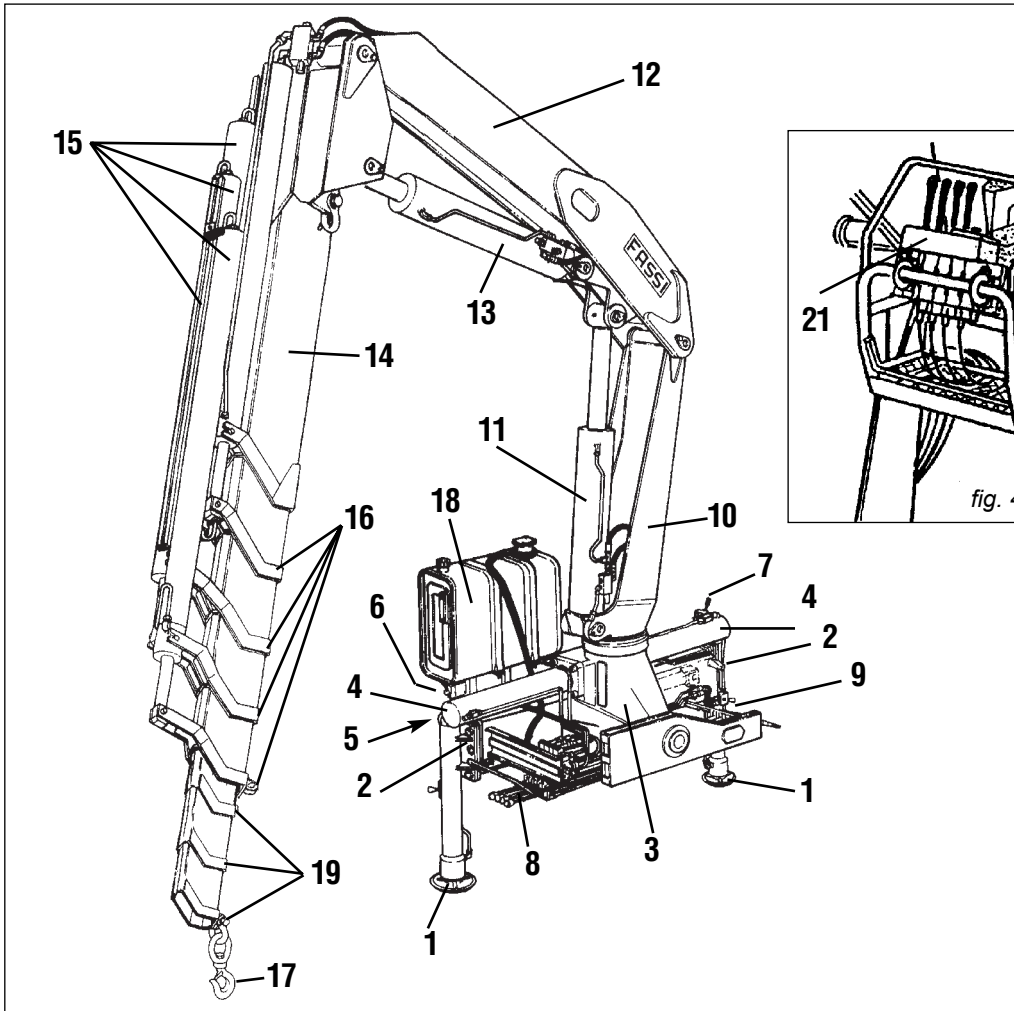
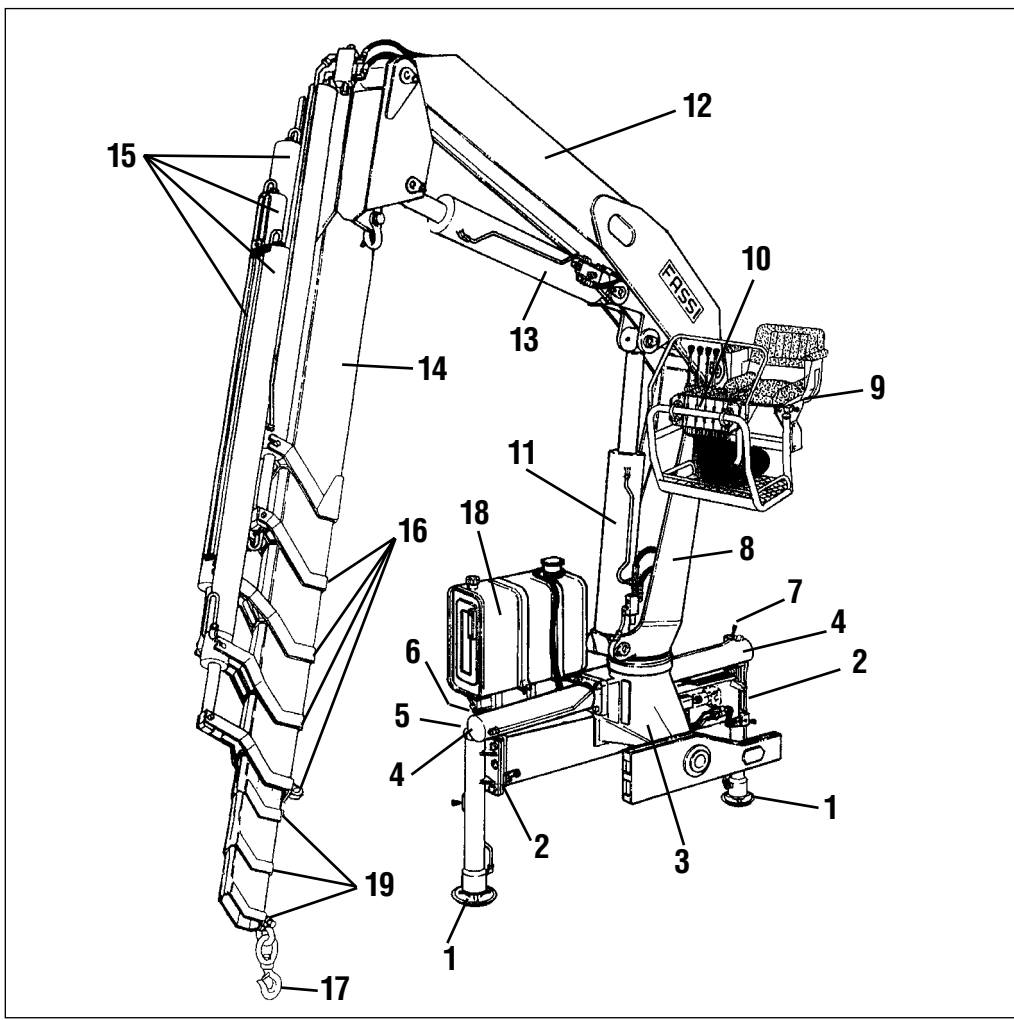


fig. 4

fig. 5



SAFETY AND PROTECTION DEVICES

- **Version with ground controls for crane and outriggers**
- **Top seat controls (fig. 6a) for crane by hand-cables (optional) (fig. 6)**

Pos. Description

- 1 — Tap and check valve for outrigger rams
- 2 — Check valves for rotation control (flow regulators)
- 3 — Check valve for inner ram
- 4 — Check valve for outer ram
- 5 — Check valve for booms extension rams
- 6 — Main pressure valve (outriggers - crane)
- 7 — Main pressure valve (crane)
- 8 — Auxiliary valves (crane)
- 9 — Levers guard
- 10 — Hook safety device
- 11 — Safety device for outriggers supports
- 12 — Lifting moment limiting device assembly (optional)
- 13 — Parachute valves (if the lifting moment limiting device is fitted)

- **Version with ground controls for outriggers and top seat controls for crane (fig. 7)**

Pos. Description

- 1 — Tap and check valve for outrigger rams
- 2 — Check valve for rotation control
- 3 — Check valve for inner ram
- 4 — Check valve for outer ram
- 5 — Check valve for booms extension rams
- 6 — Main pressure valve (outriggers - crane)
- 7 — Main pressure valve (crane)
- 8 — Auxiliary valves (crane)
- 9 — Levers guard
- 10 — Hook safety device
- 11 — Safety device for outriggers supports
- 12 — Lifting moment limiting device assembly (optional)
- 13 — Parachute valves (if the lifting moment limiting device is fitted)

(!) Before crane use check that safety and protection devices are fitted and active.

(!) Under no circumstances interfere with the safety and protection devices.

(!) Interference with the check valves and removal of the lead seals remove the Manufacturer and invalidate the warranty.

(!) Use the ladder for the access to the top seat.

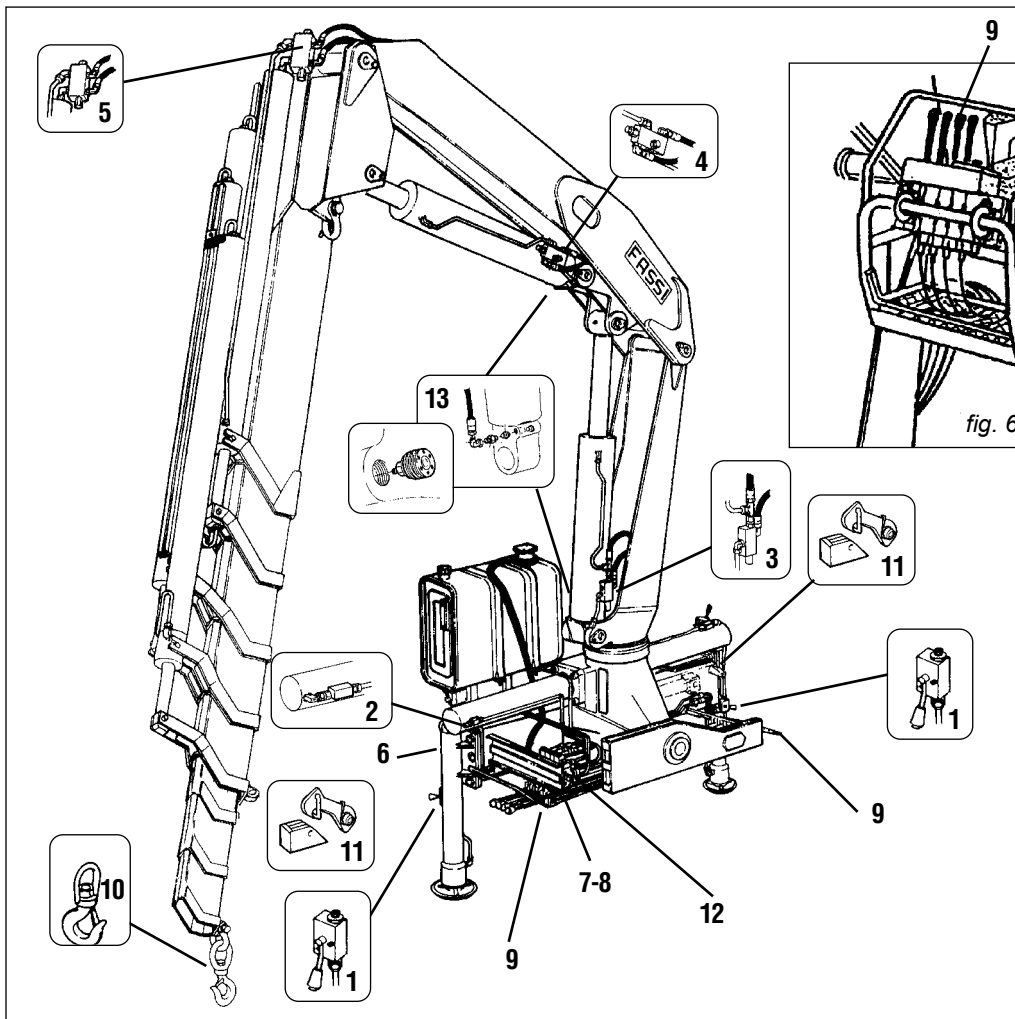


fig. 6

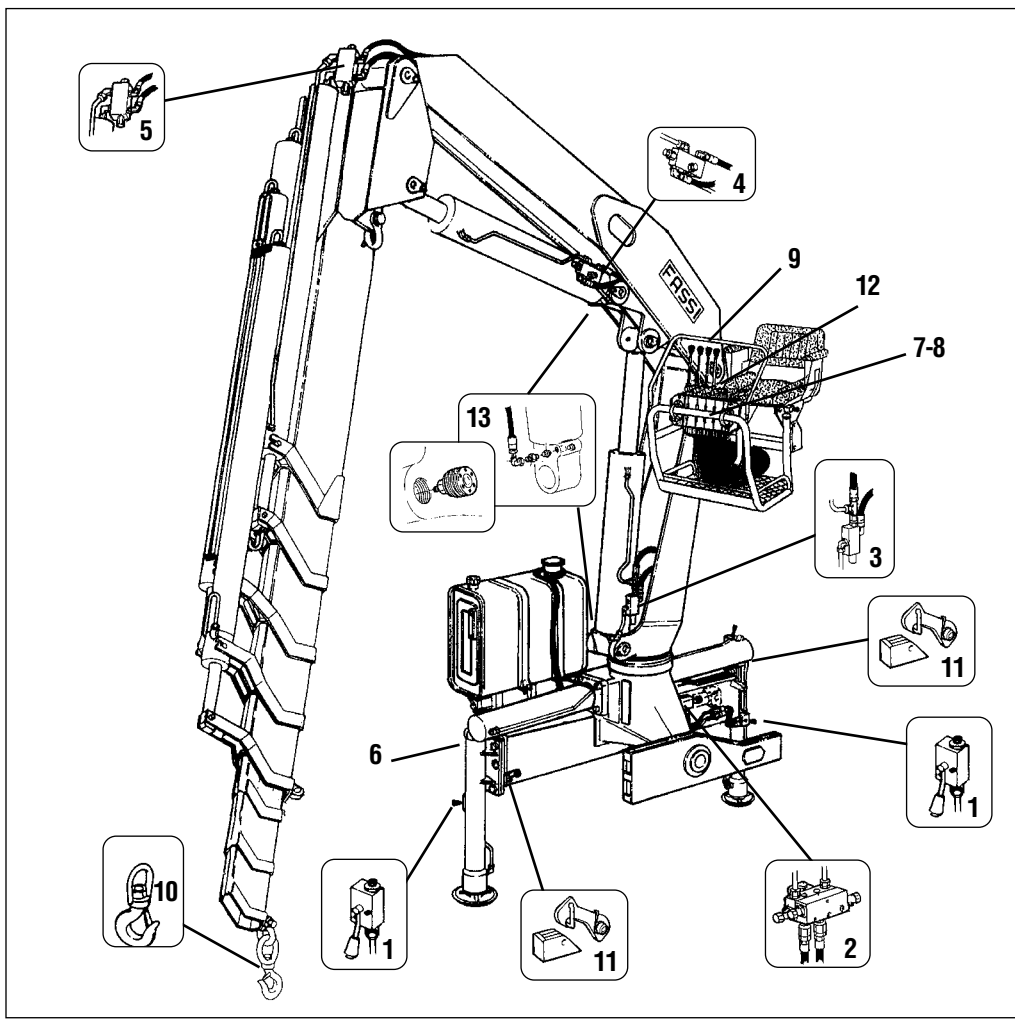


fig. 7

**LOAD LIMITING DEVICE - LIFTING MOMENT LIMITING
DEVICE "INTELLIGENT TYPE" (optional)**

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 product of the load to be lifted (in kg) by its distance (in meters) from the centerline of the crane rotation.

LOAD LIMITING DEVICE

The device called "load limiting device" utilizes a small main pressure valve inserted on the safety check valves of the crane inner and outer rams and of the jib outer ram. When the intervention values are reached, these valves are activated, permitting the slow descent of one of the two, or both, lifting rams (or of the jib outer ram, when fitted) and preventing use of the crane in an overloaded condition. To stop the load descent, it is compulsory to reduce the load radius towards the column, operating the control lever to re-enter the boom extension rams of the crane (or of the extension when fitted) or with an alternative manoeuvre which reduce the moment on the column axis.

(!) This operation must be carried out within and not over 5 seconds from the beginning of the load descent.

(!) ATTENTION (!)

The presence of the lifting moment limiting device does not release the user from the obligation to respect what is indicated on capacity plates and lifting curves.

LIFTING MOMENT LIMITING DEVICE "INTELLIGENT TYPE" (optional)

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. This device is fitted close to the distributor, whose specific functions it uses. It utilizes an electrohydraulic technology, preventing any movement which causes an increase in the pressure induced by the load in the inner and outer rams of the crane (and in the outer ram for the hydraulic extension if fitted), up to the "critical values" which have been established in the structural test. These values, which are non-exceedable, determine the intervention levels and provide the data for setting the device.

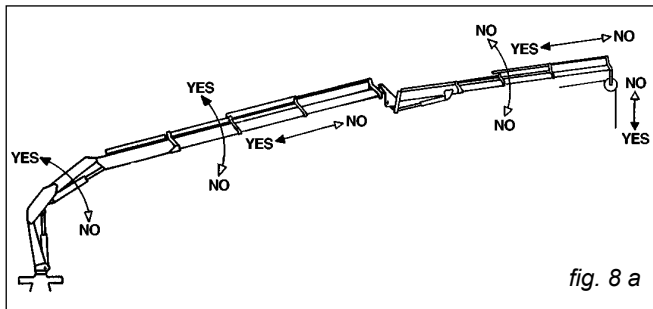


fig. 8 a

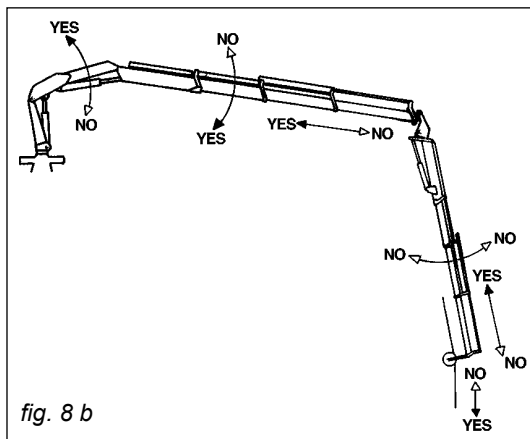


fig. 8 b

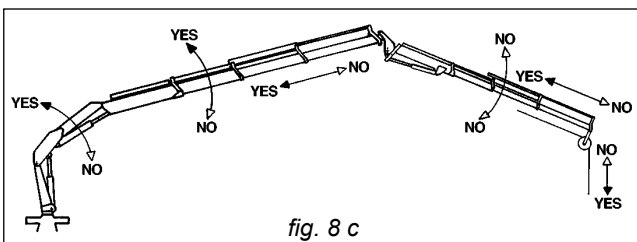


fig. 8 c

The lifting moment limiting device concerns the following manoeuvres:

- Inner boom descent; the inner boom lift is controlled by the general main pressure valve of the distributor.
- Outer boom lift.
- Outer boom descent.
- Extension of extension boom sections.
- Winch rope lift (if fitted).
- If hydraulic extension is fitted: extension outer boom lift.
- Extension outer boom descent.
- Extension of the jib extension booms section.

The device is based on hydraulic controls which are activated when the intervention value is reached and block the movements of the relevant distributor levers in one or both directions. Please remember that the device will return the lever of the element being used to neutral position. The condition of intervention is operated by the position of the outer boom (or, if hydraulic extension is fitted, the position of the extension outer boom), on which the electronic signal position (mercury level switch) is read by a special electrovalve. This determines the controls of the locking or unlocking (resetting) of the controls concerned.

The crane configurations (fig. 8a-b-c) (and the eventual hydraulic extension) indicate the manoeuvres which are allowed and not allowed by the device, in connection with the horizontal position of the crane and extension outer booms.

REACTIVATION button of crane functions in the absence of the electric power.

(!) On the distributor it has been installed an electro-valve with a manual locking function (fig. 9-9a) 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 seals which protects the device. Push the button and turn it into the clockwise sense; the button stays in stable and closed position.

(!) **When the electric power is reestablished, remember to put the button in its original position, turning it into the anti-clockwise sense.** (Fig. 9b pos.3-4)

Rubinetto esclusore di EMERGENZA del limitatore

Every electrovalve is installed with a screwed tap (emergency exclusion tap), which must only be used in case of emergency, testing or other abnormal situations when it is not possible to carry out any of the movements allowed by the device. (Such a probability generally occurs when the extension booms are completely re-entered or the loads are considerable and voluminous.) Only In these situations it is permitted to remove the lead seals which protect the device. Slacken the lock nut of the screwed tap fig. 10-11 (14 mm hexagonal spanner), completely screw in the tap (5 mm allen key) and re-tighten the lock nut.

(!) ATTENTION (!)

When the operator uses this device, it means that he wishes to override the lifting moment limiting device in order to make some manoeuvres (which would be impossible with the device active) that bring the moment to within the level, but involve an overload condition. In such an emergency condition (where the lifting moment limiting device has been disabled), the operator must be:

- carefully consider the manoeuvres required to return to normal working conditions;
- 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.

Crane with ground controls

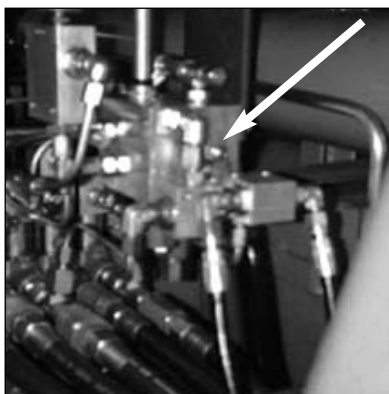


fig. 10

Crane with top seat control

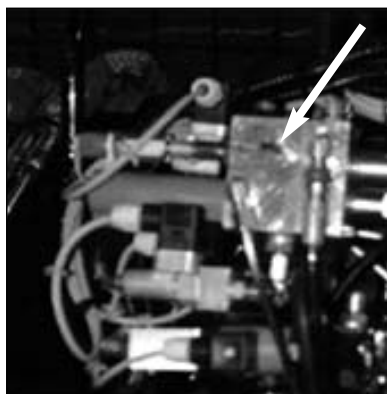


fig. 11

Crane with ground controls

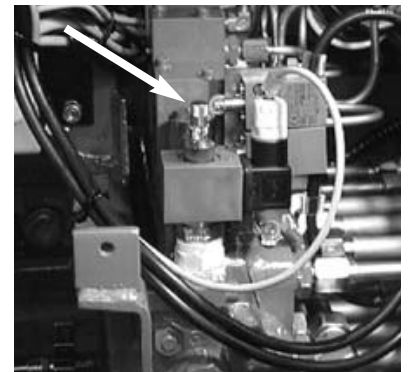


fig. 9

Crane with top seat control

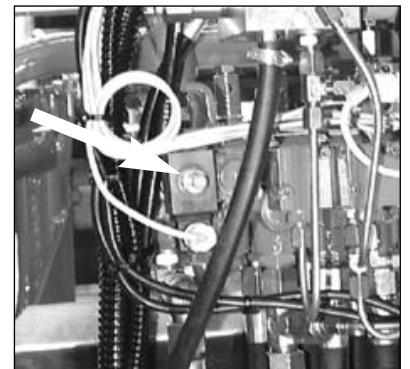


fig. 9a

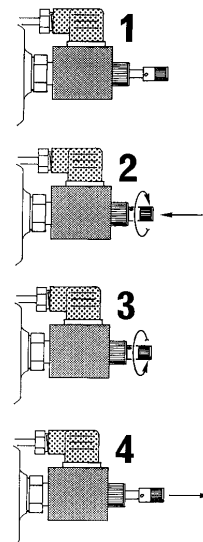


fig. 9b

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.

(!) Interferences with the valves or removal of the lead seals release the Manufacturer from any responsibility and invalidate the warranty.

(!) ATTENTION (!)

The presence of the lifting moment limiting device does not release the user from the obligation to respect what is indicated on capacity plates and lifting curves.



CONTROLS TO STABILIZE THE VEHICLE

The outriggers rams prevent harmful stresses both to the frame and to the vehicle suspensions on which the crane is mounted and assure the stability of the unit during load handling.

Supplementary beams (optional)

Supplementary beams (supplementary outriggers) are used in conjunction with the crane outriggers to ensure the vehicle stability during load handling. They are hydraulically extendable.

Supplementary beam code	outrigger ram stroke	extension max. interaxis
190B070	340 mm	4142 mm hydraulic extension
190B072	550 mm	4142 mm hydraulic extension

Identification data of the supplementary beam are punched on the beam (fig. 12) in the following sequence:

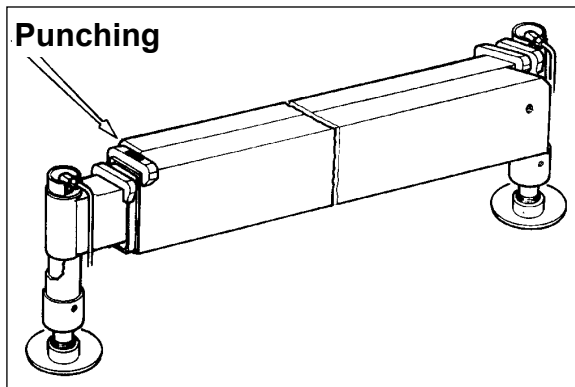


fig. 12

Example

*190B070*0001*

serial no.

identification code

! ATTENTION !

(!) The crane stability is only guaranteed by the maximum lateral extension of the outrigger supports of the crane and supplementary outriggers

Be very careful during vehicle stabilization operation; make sure that no one is or transits in close proximity of the working area of the outriggers.

Check that they are applied on a solid base; the maximum plate pressure of the rams is:

25,1 daN/cm² on a plate which diameter is 230 mm

If needed use the special base plates (on request).

When stabilization is complete the wheels of the vehicle must still be in contact with the ground and the suspensions must not be fully unloaded.

Level the crane so as to operate on a horizontal plane.

The crane is supplied with outrigger supports having hydraulic side extension. (On request hydraulic extra extendable supports).

The controls to stabilize the vehicle are activated only on ground level and on both sides of the crane base.

- (!) The controls to stabilize the vehicle are in conformity with the safety directives and enable the operator to activate the lateral extension of the outriggers (outrigger supports and rams) only from the side where he can visually check the operation.

The special construction concept of the outrigger control group which combines the functions of an 8 positions deviator with those of a distributor segment, allows to use the control lever for selecting and operating the supports and the outrigger rams.

- The selection (support or ram) is effected, like on a deviator, by positioning the lever on the corresponding position indicated by the function schematic (plates DE2298 and DE2297) placed on the controls.
- The control is effected by operating the lever like on a distributor; the stability of the selected position is guaranteed by an internal device.

Distributor side

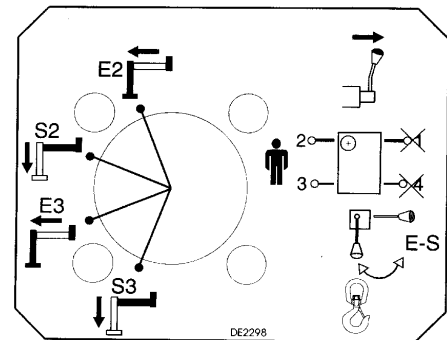


fig. 13

The extension and re-entering of the support and outrigger rams indicated on the fig. 13-14 coincide with what indicated on the plates DE2298 and DE2297 placed in dual side position on the base.

The symbols reported at side of each lever indicate the operating levers in relation to their movement.

Lever function D - C

- Lever **D** Deviator crane - outriggers (? - E/S). Fig. 15a - 15b
- Lever **C** Multifunction deviator for selecting and operating the supports and the outrigger rams of the crane as well as the supplementary outriggers. Fig. 15-16

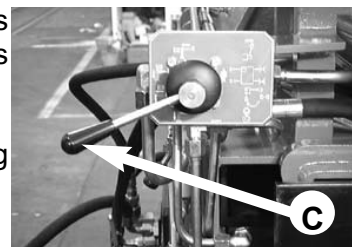


fig. 15

Control for outrigger support extension for the crane and the supplementary outriggers.

- Position lever **D** of oil diverter crane-outriggers (? - E/S) on **E/S**. Fig. 15b
- Open all the taps of the valves placed on the outrigger rams fig. 17.
- Disengage the locking devices of the outrigger supports by putting the levers **A** from the position of the fig. 18 to the one of the fig. 18a.

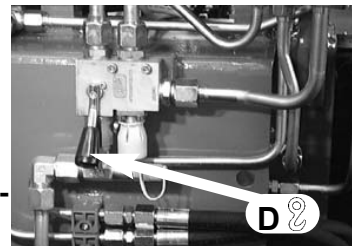


fig. 15a

Crane distributor side **DE2298** fig. 15.

- Select the outrigger support **E2** positioning the lever **C** of the multifunction deviator on **E2**.
- Operate the lever to extend the support **E2**.
- Select the outrigger ram **S2** positioning the lever **C** on **S2**.
- Operate the lever to control the ram descent **S2**.
- Select the support **E3** positioning the lever **C** on **E3**.
- Operate the lever to extend the support **E3**.
- Select the ram **S3** positioning the lever **C** on **S3**.
- Operate the lever to control the ram descent **S3**.

Double control side

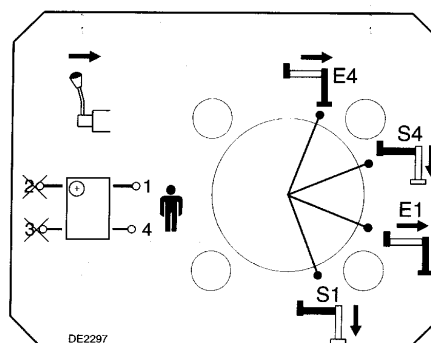


fig. 14

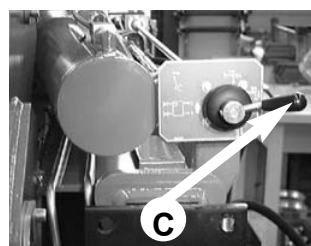


fig. 16

N.B. The lever, if in other positions, does not allow any operations as a security device keeps it in free position.

Crane double control side **DE2297** fig.14-16

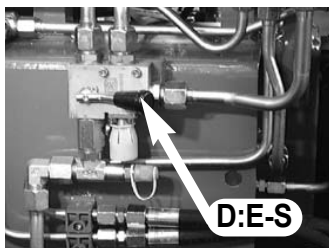


fig. 15b

- Select the support **E1** positioning the lever **C** on **E1**.
- Operate the lever to extend the support **E1**.
- Select the ram **S1** positioning the lever **C** on **S1**.
- Operate the lever to control the ram descent **S1**.
- Select the support **E4** positioning the lever **C** on **E4**.
- Operate the lever to extend the support **E4**.
- Select the ram **S4** positioning the lever **C** on **S4**.
- Operate the lever to control the ram descent **S4**.

N.B. The lever, if in other positions, does not allow any operations as a security device keeps it in free position.

(!) ATTENTION (!)

During the stabilisation operations, for each outrigger ram, it is recommended to **DESCENT** the outrigger as last manoeuvre.

(!) ATTENTION (!)

The complete extension of the outrigger supports is visually indicated by the yellow triangle which is found at the end of the beam. (Fig. 18b)

The stabilization has to be carried out with care and gradually keeping the vehicle in horizontal levelled condition to prevent springs overloads and chassis torsions.

After having completed the descent and stabilisation manoeuvres, close the taps of the valves placed on the outrigger rams.

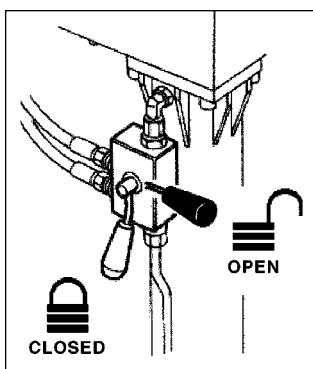


fig. 17

Manoeuvres for re-entry of the crane outriggers and supplementary outriggers within the overall vehicle width after crane use.

- Position lever **D** of oil diverter crane-outriggers (🌀 - **E/S**) on **E/S**. Fig. 15b
- Open all the taps of the valves placed on the outrigger rams (fig. 17).

(!) WARNING (!)

Under no circumstances put the hands on the locking devices of the outrigger supports; the device re-hook (lever **A** from position of fig. 18b to fig. 18) is automatic.

Crane distributor side

- Select the outrigger ram **S2** positioning the lever **C** on **S2**.
- Operate the lever to control the re-entry of the ram **S2**.
- Select the outrigger support **E2** positioning the lever **C** on **E2**.
- Operate the lever to control the re-entry of the support **E2**.
- Select the ram **S3** positioning the lever **C** on **S3**.
- Operate the lever to control the re-entry of the ram **S3**.
- Select the support **E3** positioning the lever **C** on **E3**.
- Operate the lever to control the re-entry of the support **E3**.

NB The lever, if in other positions, cannot be operated as a safety device keeps it in neutral position.

Double control side

- Select the ram **S1** positioning the lever **C** on **S1**.
- Operate the lever to control the re-entry of the ram **S1**.
- Select the support **E1** positioning the lever **C** on **E1**.
- Operate the lever to control the re-entry of the support **E1**.
- Select the ram **S4** positioning the lever **C** on **S4**.
- Operate the lever to control the re-entry of the ram **S4**.
- Select the support **E4** positioning the lever **C** on **E4**.
- Operate the lever to control the re-entry of the support **E4**.

NB The lever, if in other positions, cannot be operated as a safety device keeps it in neutral position.

(!) Always check that the outriggers supports, once in their rest position, are locked in their seat by the safety devices, so as to assure the impossibility of accidental movements. (Fig. 18)

(!) It is compulsory to close the outriggers rams valves taps before moving the truck. (Fig. 17)

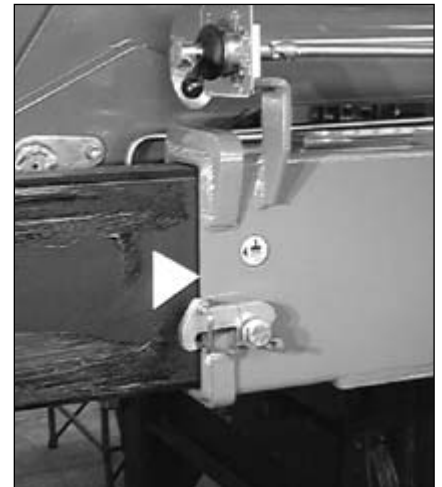


fig. 18b

Tiltable outrigger rams (on request) fig. 19 - 19a

Outrigger rams which allow to be rested in an inclined position, when obstructions on the vehicle chassis prevent their vertical stowability. They are supports with articulation to be put between the outrigger supports and rams; the fixed part is screwed to the outrigger supports and the mobile one to the outrigger rams.

After the extension of the lateral outrigger supports, place the outrigger ram in a working condition as follows:

- Remove the check pin and the locking pin from their position (fig. 19), hand carrying the ram.
- Carefully position the ram, insert the locking pin in its new seat and secure it with the check pin (Fig. 19a)

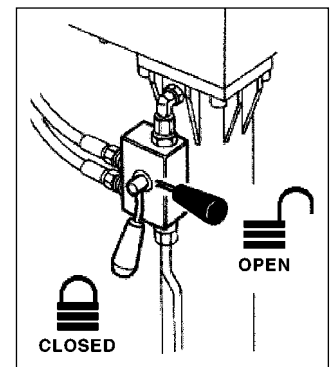


fig. 17

To re-position the rams in folded condition:

- Remove the check pin and the locking pin from their position.
- Carefully rotate the ram in a upward direction, insert the locking pin in its new seat 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

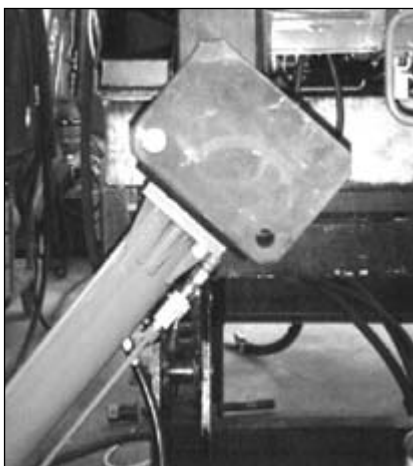


fig. 19



fig. 19a

VERSION WITH BOTH SIDES CONTROLS 01 - 09 (optional)

The controls to stabilize the vehicle are activated only at ground level and are on both sides of the crane base.

The control of the stabilizers is operated by a special "8 functions" oil-diverter. With the same lever, of the oil-diverter, it is possible to select the function and to control the outrigger supports or the outrigger rams.

- To select a function (outrigger support or ram) operate as on a oil-diverter positioning the lever as indicated in the plate **DE2455** and **DE2456** placed on the controls.
- To control a lever operate it as on a distributor; an internal device of the oil-diverter assure the positioning and the selecting stability.

The extension and re-entry of the outrigger supports and rams indicated on the plates of the fig. 20-23 coincide with what reported on the plates (**DE2455** distributor side and **DE2456** double control side) placed on the controls on both sides of the base.

The symbols placed on the plates define the function in relation with their movement.

Lever function D - C

- Lever **D** Oil diverter crane-outriggers (Ⓢ - E/S). Fig. 22 - 22a
- Lever **C** Multifunction oil diverter to select and control the outrigger support and ram application for crane and supplementary beam. Fig. 21 - 24

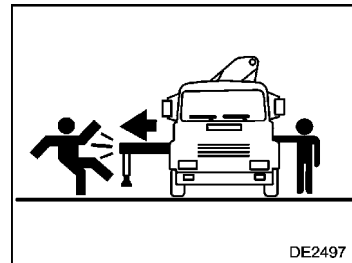
**DISTRIBUTOR
SIDE**

fig. 20a

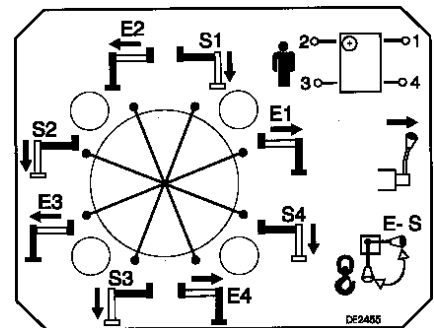


fig. 20

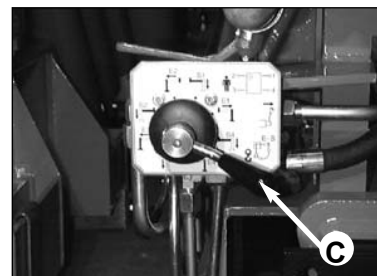


fig. 21

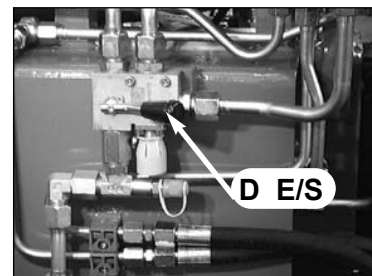


fig. 22

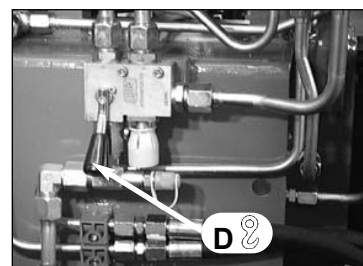


fig. 22a

Controls to unfold in working conditions the outriggers of the crane and the supplementary beam.

- Position lever **D** of the oil diverter crane-outriggers (⚠ - E/S) on E/S. (Fig. 22)
- Open all the valve taps placed on the outrigger rams fig. 17
- Release the locking device lever of the outrigger supports operating the levers **A** bringing them from the position indicated on fig. 25 to the one indicated on fig. 25a

Control on both sides of the outriggers (from crane distributor side **DE2455** fig. 20-21 or crane double control side **DE2456** fig. 23-24)

(!) ATTENTION (!)

In case controlling from the opposite side of the vehicle (it is not possible visually check the operation) it is compulsory make sure that no one is or transits in close proximity of the outriggers. (Fig. 20a plate **DE2497** and fig. 23a plate **DE2498**)

- Select the outrigger support **E1** positioning lever **C** of the multifunction oil-diverter on **E1**.
- Operate the lever to obtain the extension of the support **E1**.
- Select the outrigger ram **S1** positioning lever **C** on **S1**.
- Operate the lever to control the descent of the ram **S1**.
- Select the support **E2** positioning lever **C** on **E2**.
- Operate the lever to obtain the extension of the support **E2**.
- Select the ram **S2** positioning lever **C** on **S2**.
- Operate the lever to control the descent of the ram **S2**.
- Select the support **E3** positioning lever **C** on **E3**.
- Operate the lever to obtain the extension of the support **E3**.
- Select the ram **S3** positioning lever **C** on **S3**.
- Operate the lever to control the descent of the ram **S3**.
- Select the support **E4** positioning lever **C** on **E4**.
- Operate the lever to obtain the extension of the support **E4**.
- Selezionare il martinetto **S4** positioning lever **C** on **S4**.
- Operate the lever to control the descent of the ram **S4**.

(!) WARNING (!)

During the stabilisation operations, for each outrigger ram, it is recommended to DESCENT the outrigger as last manoeuvre.

(!) ATTENTION (!)

The fully extension of the outrigger supports is signed from the point of the yellow triangle which is in correspondence with the beam edge. (Fig. 25b)

Stabilize carefully paying attention to maintain levelled the vehicle to avoid torsions to the chassis.

After descent and stabilization manoeuvre, close all the valve taps placed on the outrigger rams (fig. 17) and position lever **D** of the oil-diverter crane-outriggers (⚠ - E/S) on ⚠ (fig. 22a) to operate crane controls.

DOUBLE CONTROL SIDE

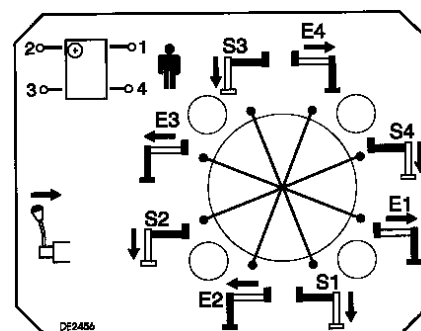


fig. 23

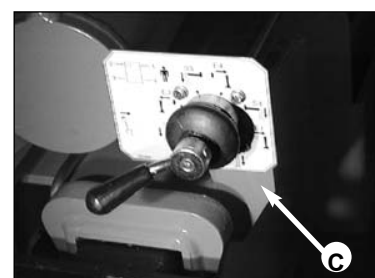
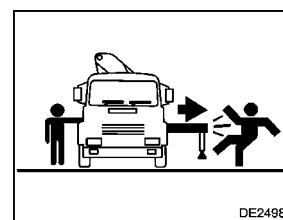


fig. 24



DE2498

fig. 23a



fig. 25

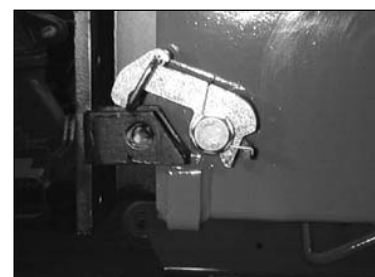
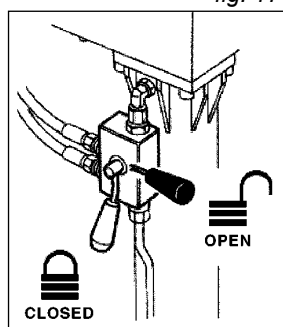



fig. 25a

fig. 17

fig. 25b



Controls for re-entry of the outriggers for crane and supplementary beam to within the overall vehicle width, after crane use

- Position lever **D** of the oil-diverter crane-outriggers ( - **E/S**) on **E/S**.
Fig. 22.
- Open all the valve taps placed on the outrigger rams (fig. 17).

(!) WARNING (!)

Never put your hands on the locking devices of the outrigger supports; the re-hooking of the device (lever **A** from the pos. indicated on fig. 25b to the one indicated on fig. 25) is automatic.



fig. 25b

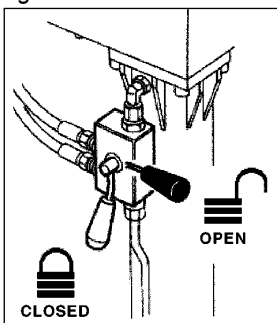
- Select the outrigger ram **S1** positioning lever **C** on **S1**.
- Operate the lever to control the re-entry of the ram **S1**.
- Select the outrigger support **E1** positioning lever **C** on **E1**.
- Operate the lever to obtain the re-entry of the support **E1**.
- Select the ram **S2** positioning lever **C** on **S2**.
- Operate the lever to control the re-entry of the ram **S2**.
- Select the support **E2** positioning lever **C** on **E2**.
- Operate the lever to obtain the re-entry of the support **E2**.
- Select the ram **S3** positioning lever **C** on **S3**.
- Operate the lever to control the re-entry of the ram **S3**.
- Select the support **E3** positioning lever **C** on **E3**.
- Operate the lever to obtain the re-entry of the support **E3**.
- Select the ram **S4** positioning lever **C** on **S4**.
- Operate the lever to control the re-entry of the ram **S4**.
- Select the support **E4** positioning lever **C** on **E4**.
- Operate the lever to obtain the re-entry of the support **E4**.



fig. 25

(!) Always check that the outrigger supports, once in their rest position, are locked in their seat by the safety devices, so as to assure the impossibility of accidental movements (Fig. 25).

fig. 17



(!) It is compulsory to close the outrigger ram valve taps before moving the truck (fig. 17).

(!) WARNING (!)

Before operating the crane it is compulsory to set the outriggers and to shut the safety check valve taps.

This coincides with that indicated on the plate DE319 placed on the outriggers (Fig. 26)

- (!) **Operate the levers smoothly and gradually.**
When carrying out simultaneous movements of two or more functions, also related to pump flow and lever travel, it is possible that on reaching the stroke end of a particular function, an increase in speed of the other functions will occur.

The symbols placed over each lever define their function in relation to their movement.

The crane and hydraulic implements can be operated with:

- manual controls (distributor and double control) placed on the base;
- manual controls (distributor) placed on the top seat;
- manual controls (distributor and double control) placed on the base and hand-cable controls placed on the top seat.



fig. 26

Crane controls - Lever function F - G - H - I (fig. 27-28-29)

- F — Rotation control
- G — Inner ram control
- H — Outer ram control
- I — Outer booms section rams control

Hydraulic implements controls

Lever function L - M - N

(fig. 27-28-29)

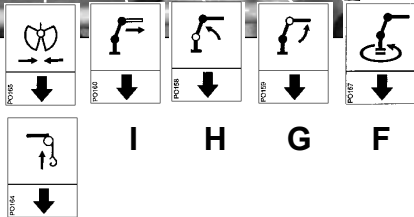
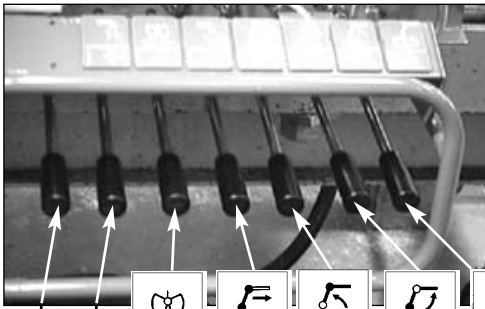
L — First hydraulic implement control.

M — Second hydraulic implement control.

N — Third hydraulic implement control.

Distributor side

fig. 27

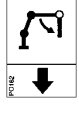
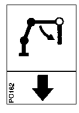
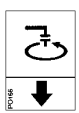


I

H

G

F



N

M

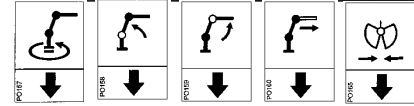
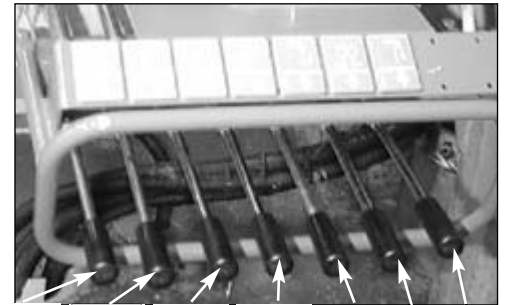
L

Always remember that the number of levers for hydraulic implements controls changes upon the type of fittings, as follows:

- 1 lever Winch or bucket control
- 2 levers Rotator - bucket or jib outer ram - jib extension rams control
- 3 levers Jib outer ram - jib extension rams - winch control

Double control side

fig. 28



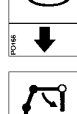
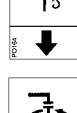
F

G

H

I

N

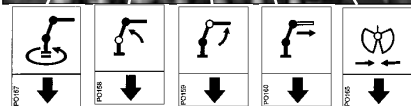
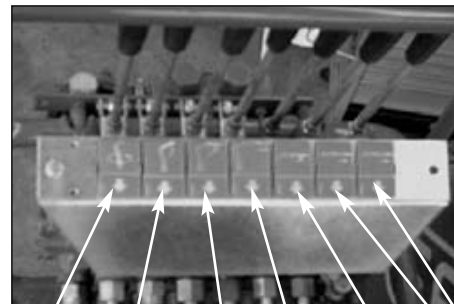


L

M

N

From top seat



F

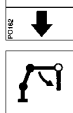
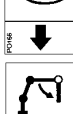
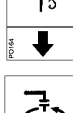
G

H

I

N

fig. 29



L

M

N

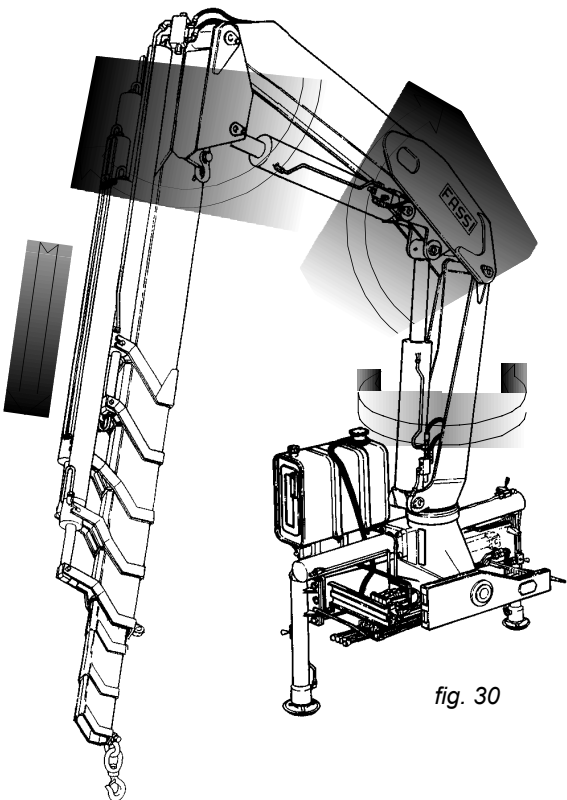


fig. 30

Manoeuvres to unfold the crane into a working condition (fig. 30)

- Engage the power take off.
- Stabilize the vehicle as described on page 00.

(!) Operate from ground control distributor side (!)

- Operate the lever **I** (re-entry) to ensure that the extension booms are re-entered.
- Before lifting the inner boom, be sure that the outer ram is closed (operate the lever **H** re-entry function).
- Lift the inner boom over the horizontal line, by operating lever **G** whilst paying attention to the position of the booms (fig. 30a) (in case of operation from the double control side).
- Open the outer boom to the “horizontal” position by operating lever **H**.
- (Eventually) extend the booms of the crane by operating lever **I**.
- Position the hook on the vertical line above the load, operating lever **F** (rotation).

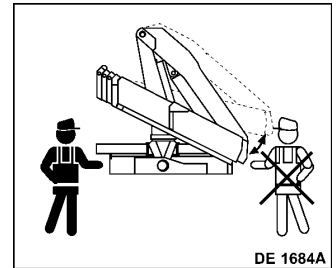


fig. 30a

Manoeuvres to fold the crane into the rest condition

(!) Operate from ground control distributor side (!)

- Fold the extension booms to their stroke end.
- Lift the inner boom to its stroke end.
- Fold the outer boom to its stroke end.
- Operate the rotation control until the arrows placed on the base and on the column (dust cover) coincide.
- Fold the inner boom to its stroke end, paying attention that the rest locating pin lines up with its seat and to the boom movements (fig. 30a) (in case of operation from the double control side).
- Lift and re-enter the outriggers to within the overall vehicle width as described at page 20.

Load manoeuvres

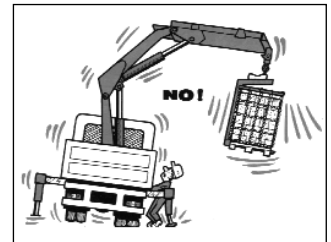
- (!) Before manoeuvring the load, verify that the working area is suitable for your crane.

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; the coloured symbols on the inner boom and column must coincide.

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 load limiting device, permitting the slow descent of one of the two, or both, lifting rams (or if the jib is fitted: the jib outer ram) will be immediately activated.



To stop the load descent, it is compulsory to reduce the load radius towards the column, operating the control lever to re-enter the boom extension rams of the crane (or jib extension rams) or with an alternative manoeuvre which reduce the moment on the column axis.

- (!) **This operation must be carried out within and not over 5 seconds from the beginning of the load descent.**
- (!) **The presence of the load limiting device does not release the user from the obligation to respect what is indicated on capacity plates and lifting curves.**

(!) ATTENTION (!)

Carefully check the stability of the vehicle within all the working area paying particular attention to the area immediately in front of the driver's cabin which is usually less stable.

Crane version with lifting moment limiting device (optional)

During load handling, do not exceed the reach limits given, or the load indicated on the capacity plates and lifting curves. If the limits are exceeded, the lifting moment limiting device, allowing all manoeuvres, which reduce the lifted load within the permitted reach limits and forbid all other manoeuvres, will be immediately activated.

- (!) **The presence of the lifting moment limiting device does not release the user from the obligation to respect what is indicated on capacity plates and lifting curves.**

USE OF IMPLEMENTS

The crane can be provided with implements such as:

- Manual extensions
- Winches
- Hydraulic extensions
- Personnel baskets.

- (!) When using an implement it is always necessary to check that its weight, dimension and capacity is matched to the crane performances.

Warning and norms for crane use also apply for hydraulic implement use.

- (!) Before using a personnel basket it is necessary to provide the crane with the safety devices requested by the local norms in force. Prior to use of the crane it has to be tested and inspected in accordance with the local legal requirements.

Manual extensions

Manual extensions are additional boom sections, which are placed in the crane outer booms and secured by pins and check pins; they have a maximum capacity, indicated on the plate, independent from the crane configuration.

(!) WARNING (!)

Manual extensions are not protected by the lifting moment limiting device. Before lifting the load make sure that its weight does not exceed the capacity indicated on the plate.

Manual extensions can be extracted from the rest position and be operative, once the security pins have been removed, with the outer boom in sliding position.

(!) Verify that the area is suitable for this operation and there are no unauthorized persons in the working area.

Do not permit the extension to slide out at speed as this will damage the stroke end stops.

Do not try to align the holes (slots) for the locking pins with your fingers; always use a suitable tool.

Always remember that when operating with implements, their tare weight must be deducted from the capacity of the crane.

When manual extensions are in place, fit the locking pins and secure them with the check pins to prevent accidental escape.

Winch (fig. 31)

The winch is made of a drum (pos.1) that can rotate by means of a hydraulic engine (pos. 2), on a structure (pos.3) fixed on the crane (i.e. under the outer boom). The rotation of the drum on which the cable winds is achieved by a hydraulic motor (pos. 2) connected to the circuit by means of hoses; in case of fittings or hoses brake the stop of the rotation is guaranteed by a safety check valve (pos. 4). A parking brake integrated to the motoreducer group prevents the rotation on the drum (held of the winch load in position), when the control function is not activated (distributor lever in neutral position).

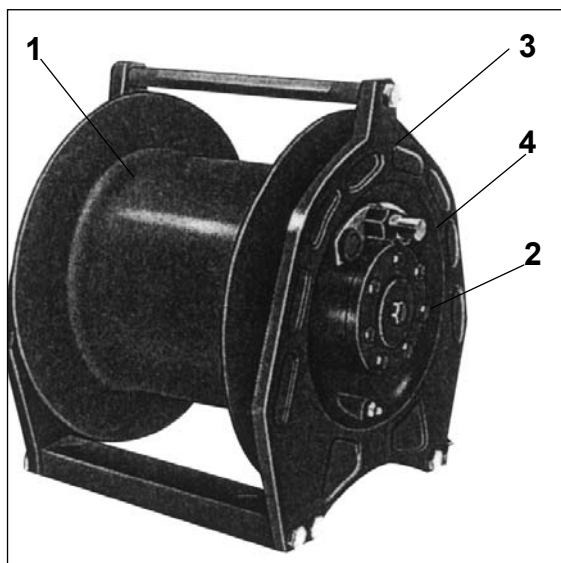


fig. 31

The winch is identified by a plate (fig. 31a) indicating the essential data and fixed by the manufacturer:

Manufacturer mark ...
Winch type ...
Serial number ...
Maximum line in N at the 4th layer...
Maximum speed in m/min ...

(!) See operator winch manual supplied by the winches' manufacturer.

The winch has a maximum capacity, indicated by a plate, not related to the crane capacities which can also be lower.

Consequently avoid to lift, with the winch, heavier loads than those allowed by the crane capacity plate.

Do not rotate the crane before the load is lifted, rotate slowly and with care the suspended load checking the stability of the vehicle.

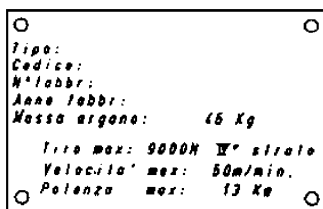


fig. 31a

(!) WARNING (!)

On winches not equipped with pressafune, check the rewinding of the cable on winch drum proceeds regularly and without overlapping: it is suggested not to rewind the cable if it is not sufficiently taut.

(!) ATTENTION (!)

It is necessary to avoid, otherwise the cable could be damaged, that:

- in the lifting with the winch or in the booms extension rams exit (crane or hydraulic extension) the cable hook (or the block) takes contact with the pulley structure;
- in the unwinding the cable is completely wound from the winch drum (three turns must be wound at least), causing the controls quiescing.

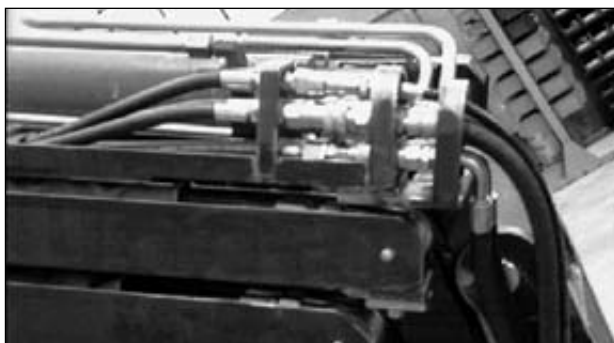
Hydraulic connections between implements and hoses fitted on extension booms section. (Fig. 32)

fig. 32

- (!) In case of hoses connection to implements through coupling unions it is necessary to verify that there is no trace of soil, curt etc. on the unions and inside the seats so as to avoid the oil contamination and consequently wear the tightening surface of unions.

(!) WARNING (!)

To ensure that the control corresponds to the implement movement, hydraulic connections are symmetrically fitted with coupling unions. Never invert such positions: movements inversion as well as operating difficulties could occur.

Hydraulic jibs

The hydraulic jibs, foldable behind the cab, are additional booms, with articulation and double hydraulic extension (jib **L202**) or triple hydraulic extension (jib **L303**) to be fitted outer boom of the crane.

On request and according to the version, the manual extensions ML20, NL20, PL20 can be installed on the outer boom of the jib.

Hydraulic jibs / crane combinations:

- **L202** for the cranes **F240.22** and **F240.23**
- **L203** for the cranes **F240.23** and **F240.24**

For the crane version “.22” and “.23”

The jibs **L202** and **L203** are fitted by means of the insertion of the extension connecting boom into the crane extension boom; the fixing to the crane is obtained through locking pins.

For the crane version “.24”

The jibs **L203** are fitted astride the extension connecting boom on the crane extension boom; the fixing is obtained through pins, ring nuts and locking pins. Due to their different connecting system, the predisposition of the (fourth) crane extension boom for the hydraulic jib is compulsory.

The hydraulic connection to the supplementary functions of the crane, is through quick couplings.

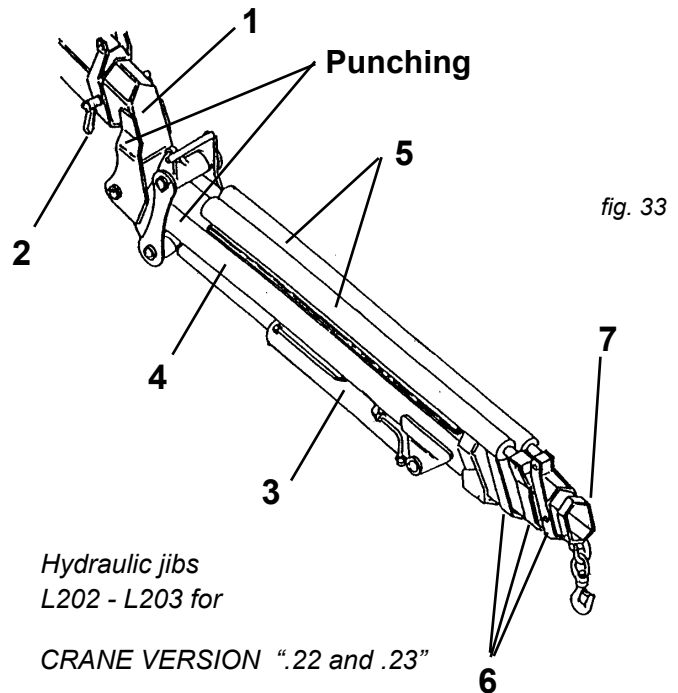
(!) Warnings and norms for crane utilisation apply also for hydraulic jibs use.

(!) Warnings and norms for manual extensions are indicated at page 00.

The model, the version of the crane, the year of construction and the serial number are stamped on the hydraulic jib in the following sequence (fig. 33-34)

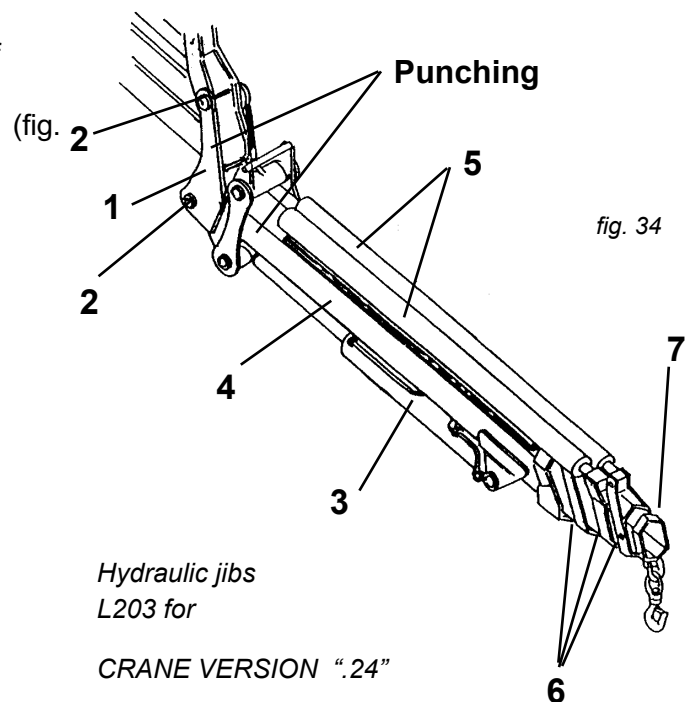
Example ***L202*3*001***

L202	3	001	
model and version / L203		year of construction	serial number



Hydraulic jibs
 L202 - L203 for

CRANE VERSION “.22 and .23”



Hydraulic jibs
 L203 for

CRANE VERSION “.24”

NOMENCLATURE OF THE HYDRAULIC JIB

- | Pos. | Description |
|------|---|
| 1 | - Connecting boom |
| 2 | - Locking pins (for cranes “.22” and “.23”) |
| 2 | - Fixing pins (for cranes “.24”) |
| 3 | - Jib outer ram |
| 4 | - Jib outer boom |
| 5 | - Boom extension ram |
| 6 | - Extension booms |
| 7 | - Manual extensions (on request) |

Manoeuvres to unfold the jib in working condition

- Operate as described to put the crane in working condition (Chapter ..)
- Operate lever **L** to open the outer boom of the jib.
- Operate (in case) lever **M** to extend the jib outer boom sliding sections.
- Position the hook on the centerline of the load.

Manoeuvres to fold the jib in rest condition

- Re-enter the hydraulic sections of the jib (lever **M**) and of the crane (lever **I**).
- Lift the inner boom to its stroke end.
- Re-enter the outer boom of the jib (lever; a rest bracket with bumper (fig. 35) assures the positioning.
- Re-enter the outer boom of the crane to its stroke end.
- Operate, as described, to fold the crane in rest position.

Operations to remove the hydraulic jib from the crane

Cranes version “.22 ” and “.23 ”

- Re-enter the jib outer booms sliding sections to their stroke end.
- Extend the crane outer ram to its stroke end.
- Extend (of at least 1 - 1,5 m) the crane outer booms sliding sections.
- Re-enter the outer ram of the jib and the inner ram of the crane to obtain the two rest brackets of the jib, either lay on the ground, or on the truck body or, if possible, on a specific rest trestle.
- Remove screwing the locking pins.
- Disconnect the jib from the hydraulic circuit of the crane operating on the quick couplings.
- Re-enter the outer booms sliding sections of the crane to free the first boom of the crane jib.

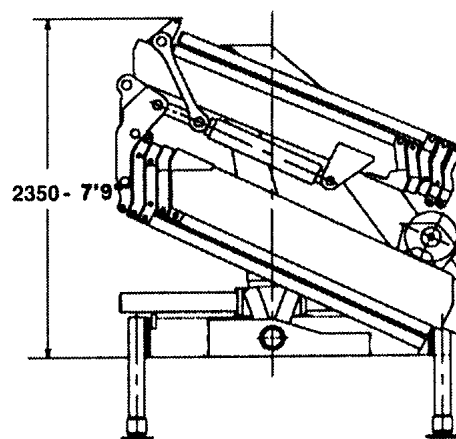
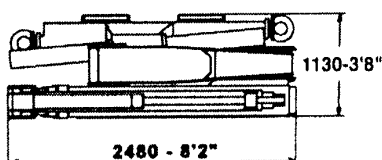
Crane version “.24 ”

- Re-enter the jib outer booms sliding sections to their stroke end.
- Extend the crane outer ram to its stroke end.
- Extend (of at least 0,5 m) the crane outer booms sliding sections.
- Re-enter the outer ram of the jib and the inner ram of the crane to obtain the two rest brackets of the jib, either lay on the ground, or on the truck body or, if possible, on a specific rest trestle.
- Remove the locking pins, ring nuts and stop pin.
- Disconnect the jib from the hydraulic circuit of the crane operating on the quick couplings.
- Re-enter the outer booms sliding sections of the crane to free the first boom of the crane jib.

(!) Assure that the hydraulic jib is adequately stripped to avoid side turnover.

*
PROLUNGHE MECCANICHE TELESCOPICHE
TELESCOPIC MANUAL EXTENSIONS
RALLONGES MANUELLES TELESCOPIQUES
TELESKOPIISCHE MANUELLE VERLÄNGERUNGEN
PROLONGAS MANUALES TELESCÓPICAS

Peso - Weight - Poids - Gewicht - Peso					
	kg	lbs		kg	lbs
L202	480	1058	L203	550	1212
ML*	35	77			
NL*	27	60	NL*	27	60
PL*	18	40	PL*	18	40



MAINTENANCE INSTRUCTIONS

To assure a long life to the crane, it is necessary to meticulously follow the instructions.

General lubrication and small repairs can be carried out by the user; repairs of a more complicated nature must be carried out by authorized service personnel.

Spare parts must be original.

At least once a year you must take the crane to a Fassi Service Center for a check.

Good maintenance and proper use are imperative to maintain efficient use and guarantee the safety of the crane.

- (!) Before disconnecting any hydraulic hoses, ensure that there is no pressure in the hydraulic circuit. After removing hoses always mark them and their respective ports on the crane. Faulty replacement can cause damage to the rams and to the hydraulic circuit.

Respect the information supplied for maintenance and technical assistance.

Any maintenance operation must be carried out with the crane power source turned off. (in case of fixed mounting with hydraulic power pack, the electric motor has to be turned off).

Do not place limbs, fingers or any other parts of anatomy into areas of the crane, which present possibilities of shearing, without having blocked such parts of the crane.

Do not weld, drill or grind any part of the crane without the Manufacturer's authorisation.

Do not weld the fixing rods of the crane (see plate DE1574 fig. 36).

When repairs to, or checks of, the hydraulic circuit and of the rams are carried out, it is very important not to use, or be in the proximity of, materials which can damage the circuit or contaminate the hydraulic oil eg. metal shavings, sand or dust.

Never use detergents, petrolsol or inflammable liquids, always use non flammable or non toxic liquids.

Do not use the high pressure washing on the controls (deviators, distributors, double controls, hand cable controls...), on the electronic components (boxes, control panels...), on the tanks.

To avoid down time, it is recommended to periodically carry out the following checks.

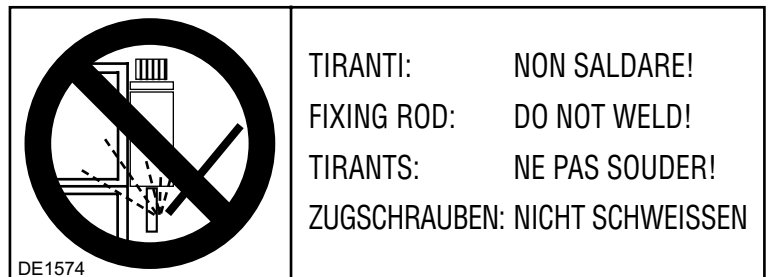


fig. 36

At the end of every working day

Check that all safety devices are efficient.

Check the level of the hydraulic oil in the tank.

Check the hoses fittings and all the components of the hydraulic circuit for possible leaks.

Check that the oil diverter levers can easily be positioned and that the multifunction control levers of the crane operate freely and return to neutral position.

Check that the control levers of the crane can easily be positioned (distributor, double controls and hand-cables) operate freely and return to neutral position.

Check the condition of shackles, hooks, wire ropes and any other lifting equipment.

After the first 40 hours use

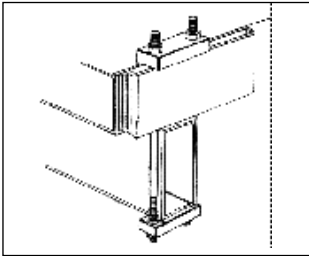


fig. 37

Check the tightening torque of the fixing rods of the crane. (Fig. 37)

Tightening torque for the rods M 33x2 = 1200 Nm

After every working week

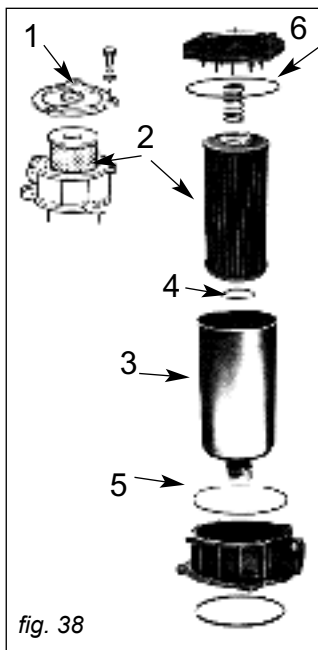


fig. 38

Clean the oil filter placed in the oil tank of the crane and if any, on the pump section and pressure hoses.

If the hydraulic circuit of the crane is connected to a tipper a remote oil tank may be fitted, in this case the filter will be found in this tank.

Cleaning of the filter on the tank (oil return from the distributor) fig. 38

- Remove the filter cover, pos. 1, by unscrewing the three security bolts. Remove the spring and extract the filter cartridge pos. 2: during this operation take care that no contaminated material passes into the tank.
- Clean the cartridge by flushing with a non flammable and non toxic solvent. Thoroughly dry the filter inside and out with compressed air.
- Remove the filter holder from the filter body pos. 3 (a hose is attached to its base); clean and reassemble checking the sealing 'O' rings pos. 4-5 (internal seal between cartridge and holder and external seal between holder and body).
- Re-assemble the filter cartridge into its holder, re-assemble the spring and the filter cover pos. 6 (check the sealing of the 'O' ring under the filter cover).
- Re-fit the three security bolts.
- Check for leaks when the pump is activated.

Check the oil level in the tank with the crane in the folded position and with the outriggers (crane and supplementary) fully re-entered. The oil level must not exceed the maximum or be lower than the minimum. (Fig. 39).

Top up using hydraulic oil with the same characteristics as those indicated in the table on page 37.

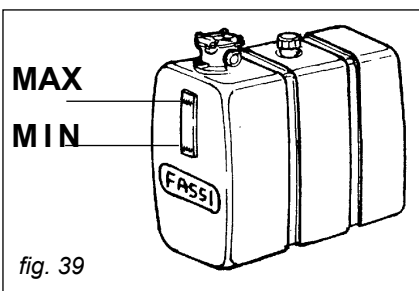


fig. 39

Periodically grease the points indicated on the crane (fig. 40) (and on the hydraulic jib, when fitted, fig. 41a) paying particular attention to the points not easily detected.

- Fig. 42 shows the guide shoe lubricator for the column rotation.
- Fig. 43-43a show the lubricators of the column symmetrically positioned on the column support.

- Fig. 44 shows the lubricator of the pendulum beam.

fig. 42



FASSI

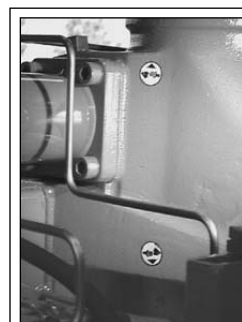


fig. 43

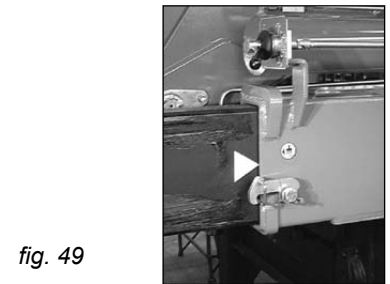
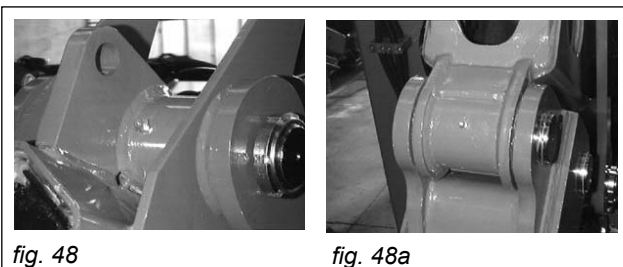
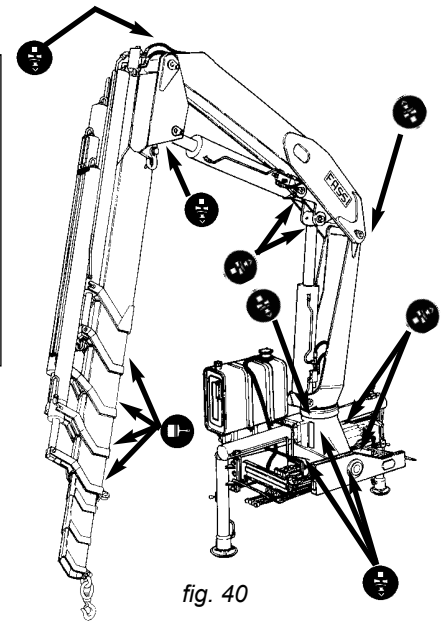
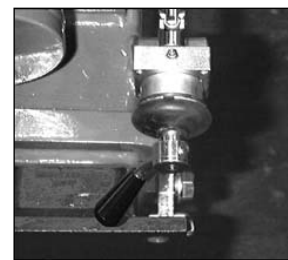
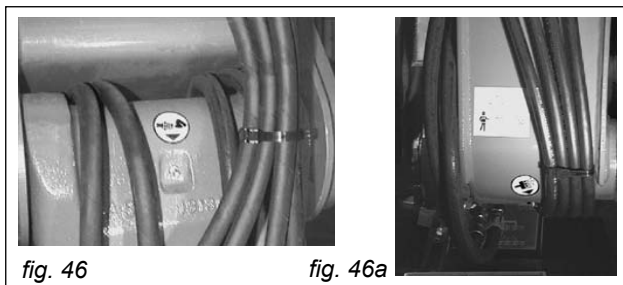
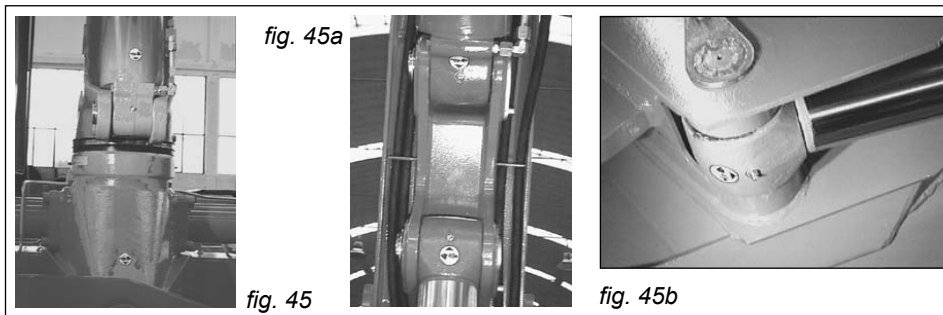
fig. 43a



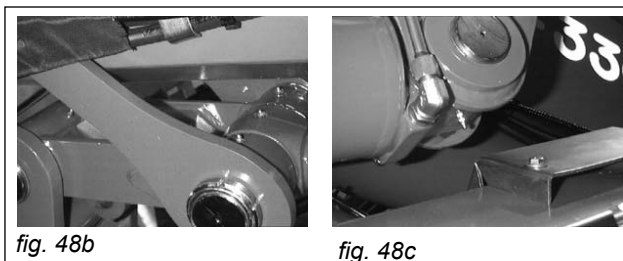
fig. 44



- Fig. 45-45a-45b show the lubricators of the inner and outer rams.
- Fig. 46-46a show the lubricators of the pin articulation column - inner boom and inner boom - outer boom.
- Fig. 47 shows the lubricator of the multifunction return deviator.



- Fig. 48-48a show the lubri-



- Fig. 48b-48c show the lubricators of the jib outer boom and of the fork.



For the sliding sections of the extension booms of the crane (fig. 49) and of the hydraulic jib (fig. 49b) and of the outrigger supports (fig. 49a) guide shoes made from a special material have been fitted: to ease their movement it is recommended to smear a light film of grease on them, taking care that the surfaces of the extension booms are free from impurities such as sand etc.

Use a grease with the same characteristics indicated in the table on page 37.

After every 500 working hours

- Check the tightening torque of the tie rods fixing the crane to the vehicle frame.
- Check the tightening torque of the securing bolts for the ram pins.
- 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.
- Replace the oil filter cartridges.
- Clean the air filter placed in the top of the oil tank filter cap.
- Completely replace the hydraulic oil.

(!) The waste oil must be disposed of by authorized persons.

POSSIBLE FAULTS

Many years experience of our product has allowed us to identify and classify the most common faults which occur. In most cases it requires accurate hydraulic and electric troubleshooting and simple rectification. In the following table we report the most frequent inconveniences and our suggested remedies.

(!) Checking and adjustment of oil pressures of valve settings must be carried out by an authorized service agent, under penalty of warranty forfeiture.

Operations which can be carried out by the user.

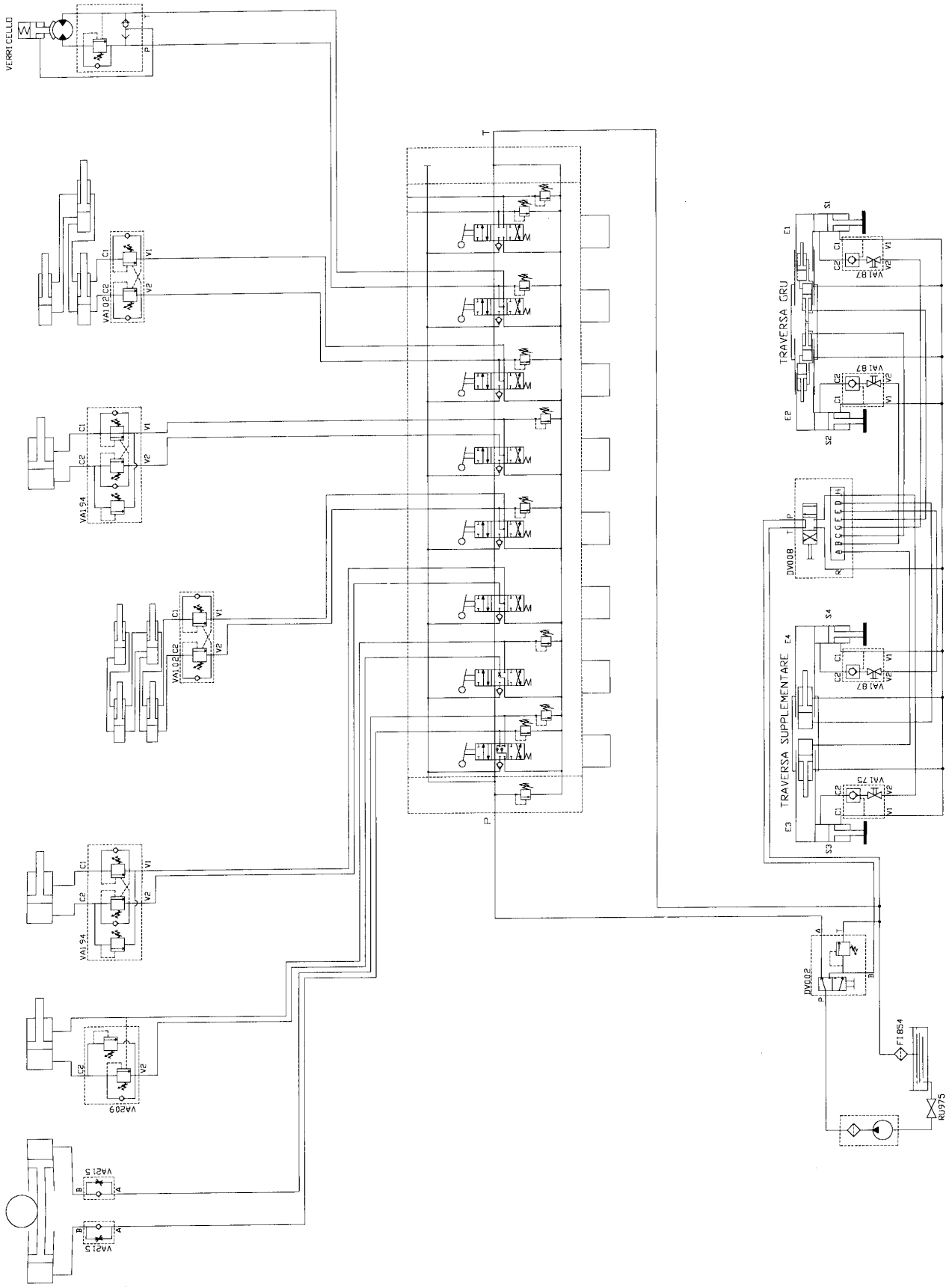
Faults	Cause	Remedies
The crane does not rotate properly	<i>Vehicle non in level position</i>	Stabilize the vehicle
	<i>Lack of lubrication</i>	Grease the bushes
The extension booms do not completely extend or work jerkily	<i>Lack of lubrication of the guide shoes</i>	Grease the guide shoes
Vibrations in crane operations	<i>Shortage of oil</i>	Check the level and top up if necessary
	<i>Obstructed filters</i>	Clean or replace the filter cartridge
Noteable decrease in movement speed	<i>Obstructed filters</i>	Clean or replace the filter cartridge

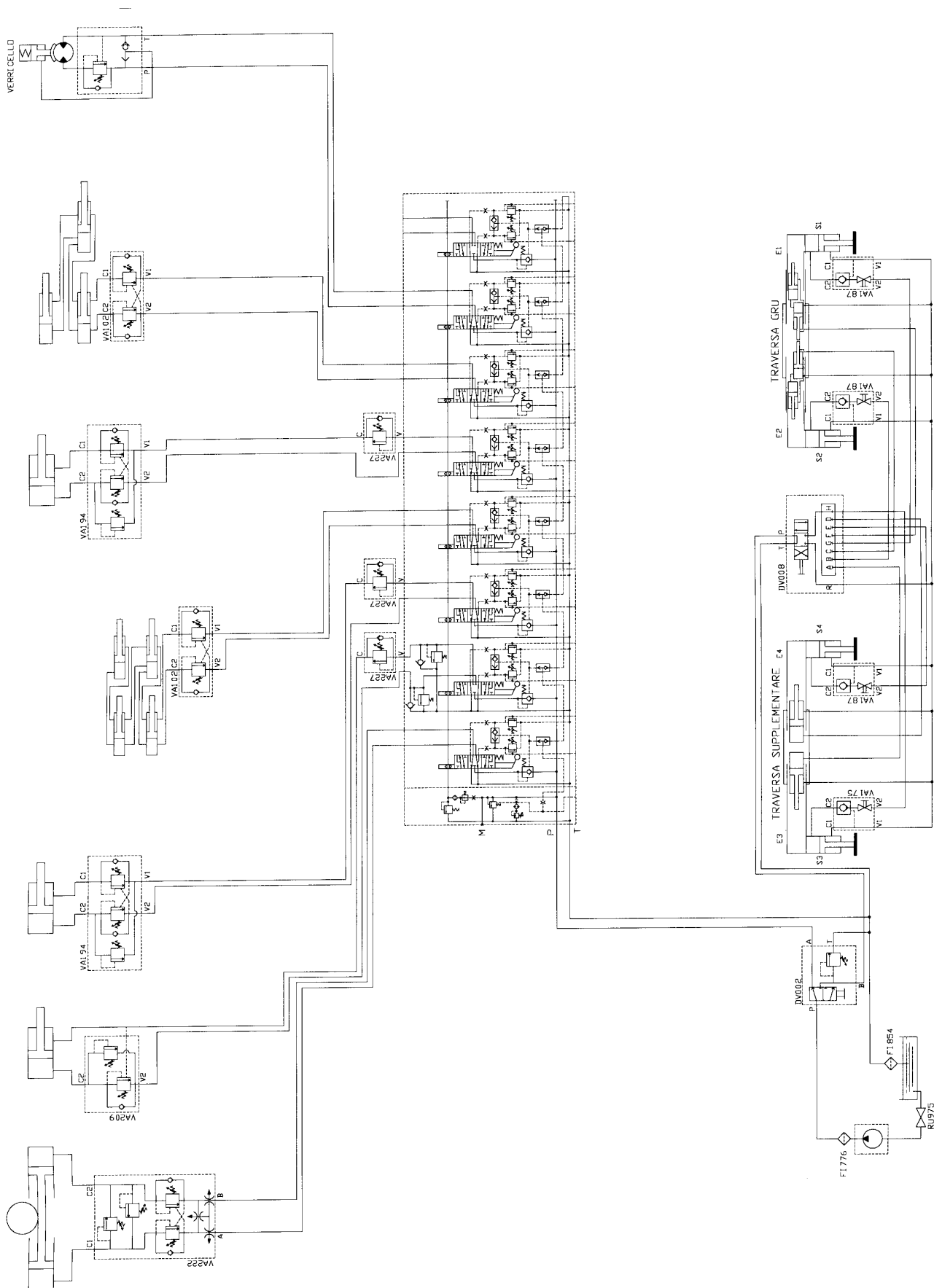
Operations to be carried out by a service center.

Faults	Cause	Remedies
The crane does not lift the loads indicated on the capacity plate	<i>Non efficiency of the pump</i>	Replace the pump
	<i>Main pressure valve not properly adjusted, blocked or out of service</i>	Check the pressure, adjust the valve
	<i>Ram seals are not properly fitted</i>	Replace the seals
A boom of the crane does not hold up the load and visually lowers	<i>The safety check valve of the ram is open</i>	Replace the valve
	<i>Oil leaks inside the ram</i>	Defective seals, replace them
The crane does not rotate properly	<i>Valves controlling the rotation not adjusted</i>	Adjust the valves
	<i>Relief valves of the distributor not adjusted</i>	Adjust the valves
	<i>Wear of the seals of the rotation cylinder</i>	Replace the seals
The extension booms do not completely extend or work jerkily	<i>Wear of guide shoes</i>	Check the guide shoes wear, replace if necessary
Vibrations in crane operations	<i>Non efficient pump</i>	Check the pump
Noteable decrease in movement speed	<i>Non efficient pump</i>	Check the pump

HYDRAULIC SCHEMATICS

Hydraulic schematics for crane - HCD4 distributor - ground controls
 - load limiting device





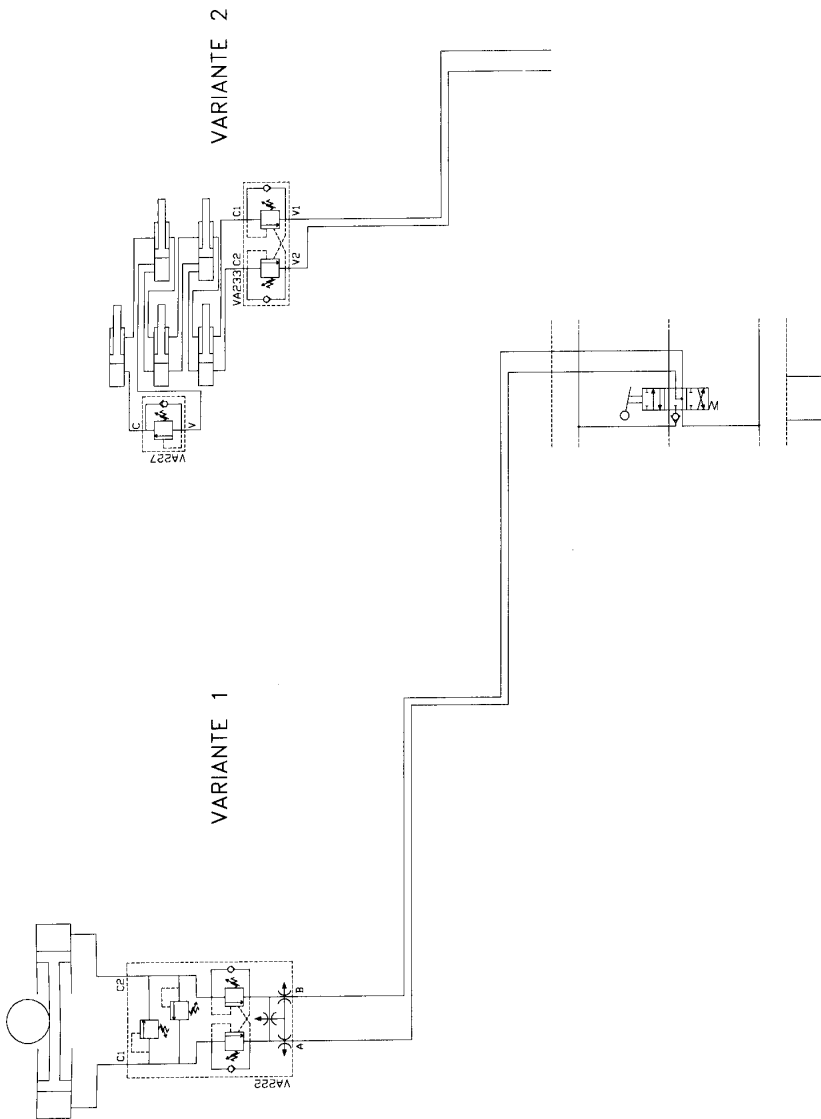


TABLE OF HYDRAULIC OIL AND LUBRICANTS CHARACTERISTICS**HYDRAULIC OIL WITH HIGH VISCOSITY: ISO-L-HV**Minimal external
temperature:maximal oil
temperature:

– 35 C

+45 C

Gradation

ISO VG 32

– 20 C

+75 C

Gradation

ISO VG 46

HYDRAULIC OIL WEAR RESISTANT: ISO-L-HMMinimal external
temperature:maximal oil
temperature:

-10 C

+ 60 C

Gradation

ISO VG 32

+ 0 C

+ 75 C

Gradation

ISO VG 46

+ 5 C

+ 85 C

Gradation

ISO VG 68

+10 C

+ 90 C

Gradation

ISO VG 100

GREASE

Consistency: NLGI BEACON EP 2 - BEACON 3

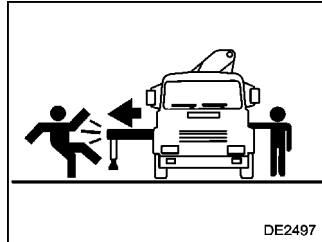
(!) WARNING (!)

Don't use greases with solid particles as "Bisulphide of Molybdenum".

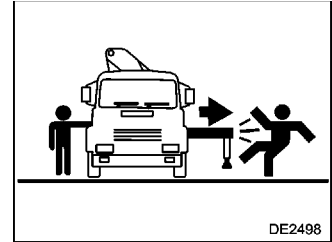
LUBRICATING OIL (for winch cable)

The most suitable here is a general-purpose lubricating oil with about SAE 30 viscosity. A lubricating oil containing non-stick additives is recommended if the cables are expected to move quickly through the pulleys.

BRILUBE 50 (BRITISH ROPES - BRINDON)



DE 2498



DE 2497

Warning plates to make sure that no one is or transits in close proximity of the outriggers



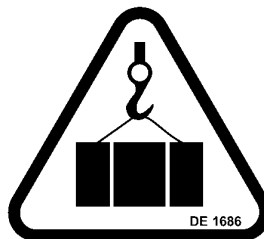
DE 1681

Greasing points with brush



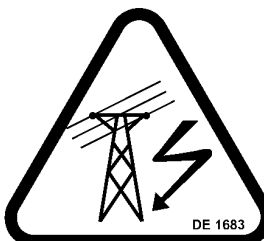
DE 1682

Greasing points at pressure



DE 1686

Do not walk or stop under a suspended load



DE 1683

Do not operate in proximity of electric high-tension lines



TIRANTI: NON SALDARE!
FIXING ROD: DO NOT WELD!
TIRANTS: NE PAS SOUDER!
ZUGSCHRAUBEN: NICHT SCHWEISSEN!

DE 1574

Do not weld the fixing rods

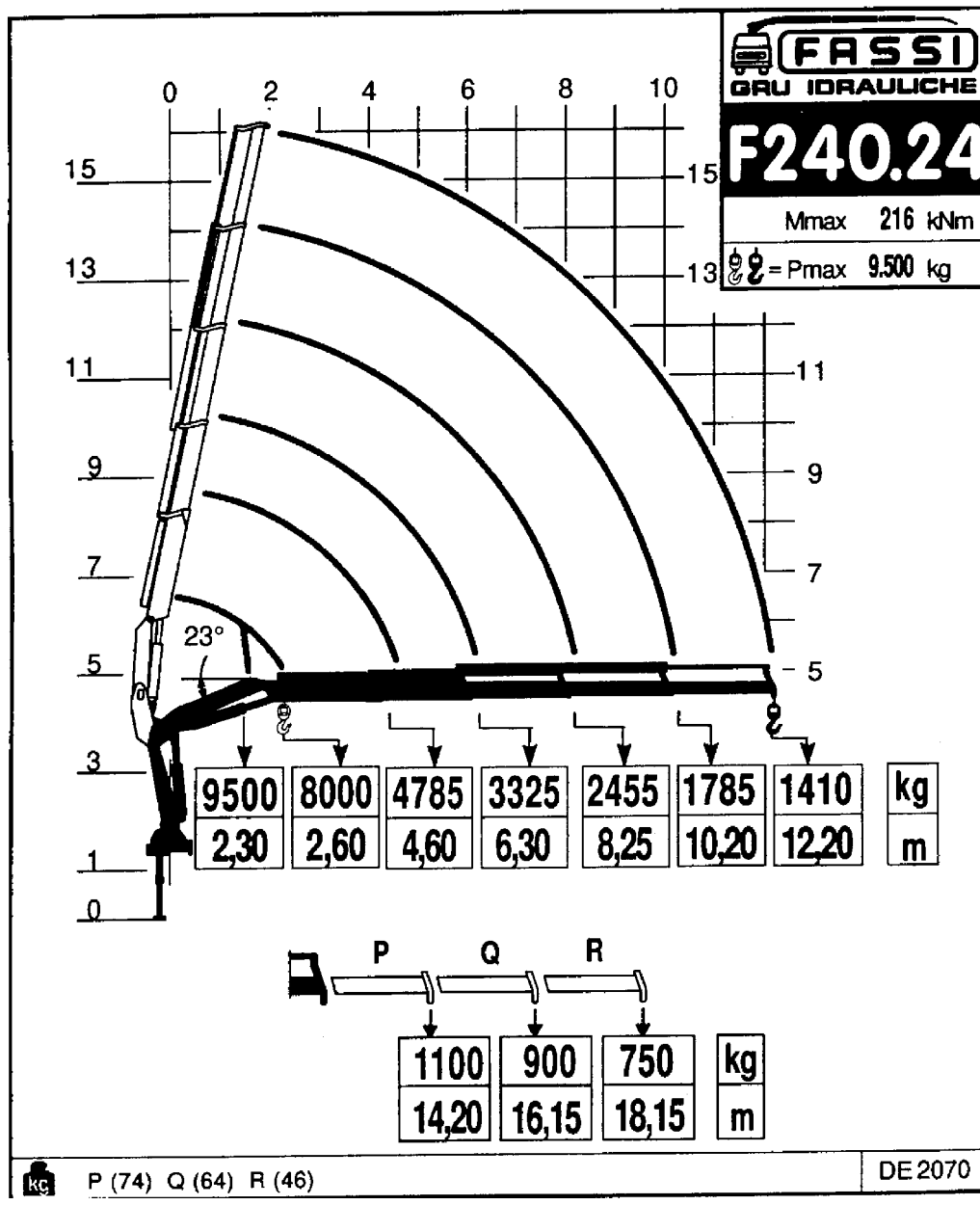
CAPACITY PLATES

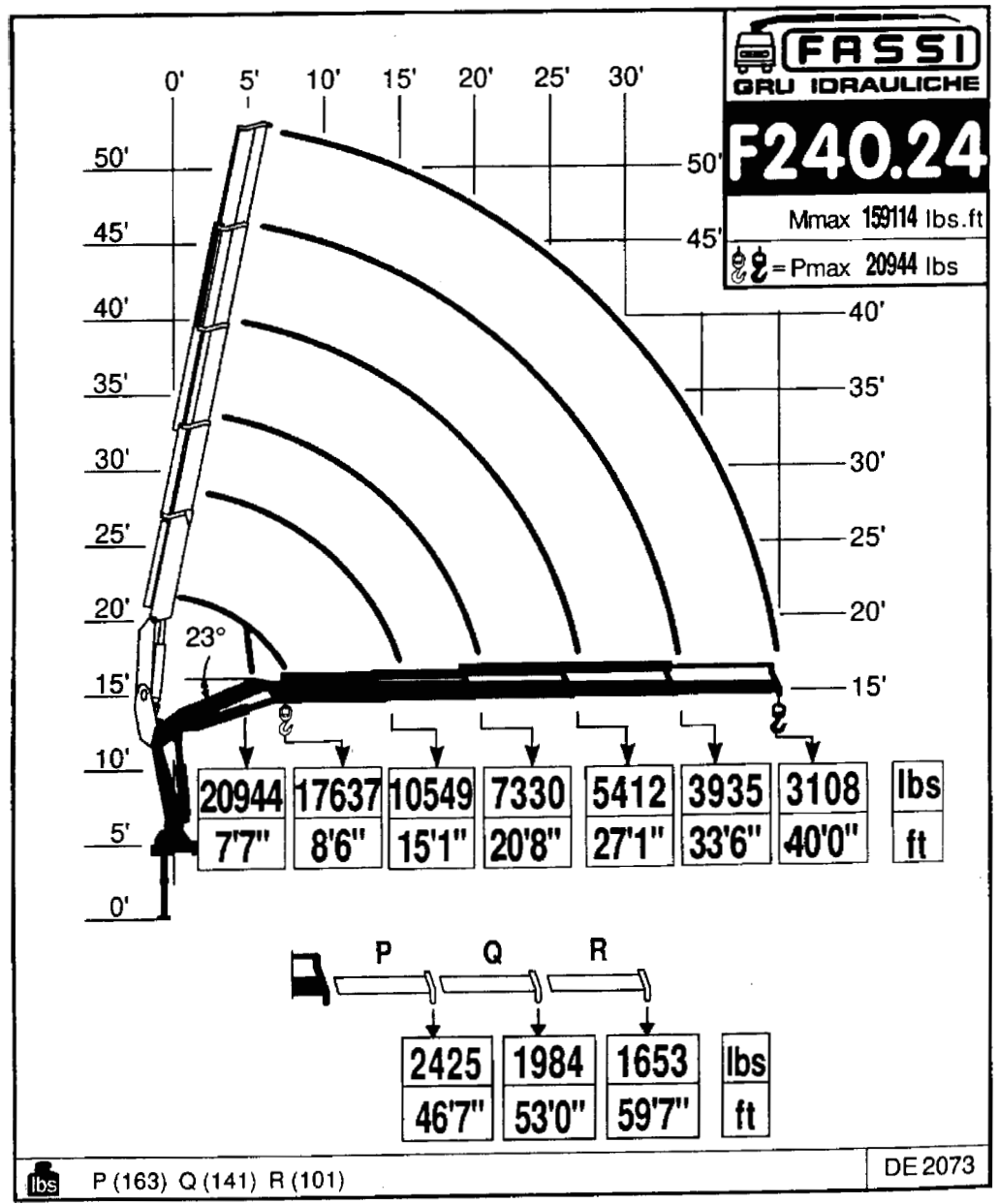
For cranes and manual extensions.

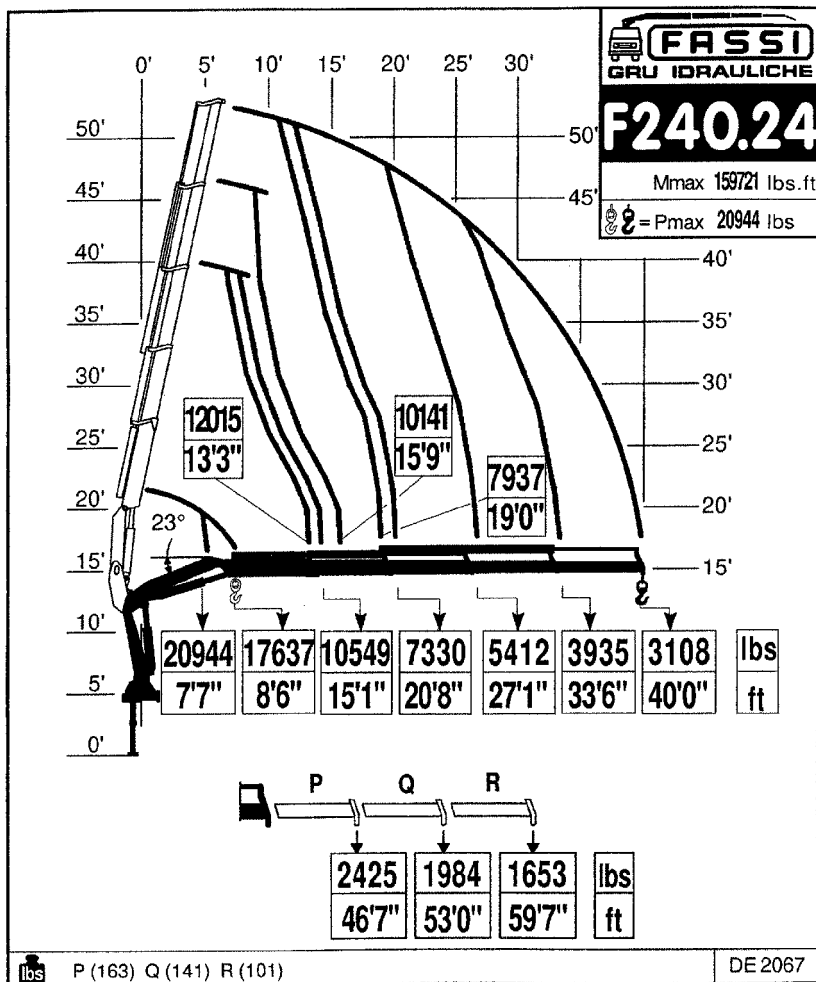
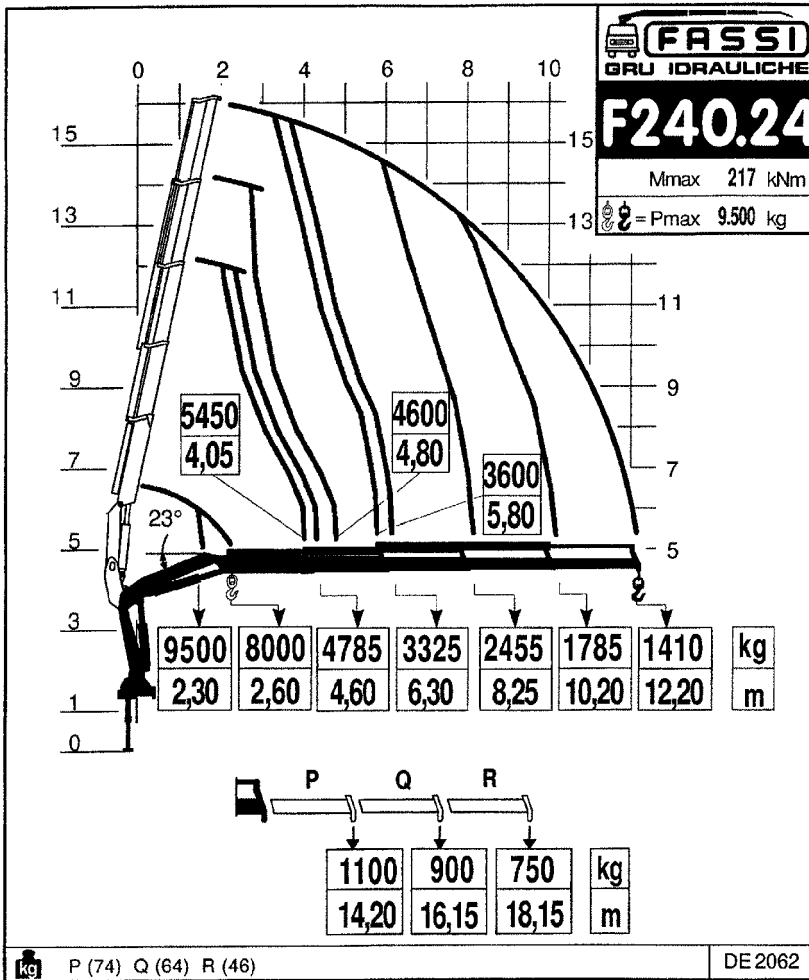
The represented plates refer to the nominal design capacities.

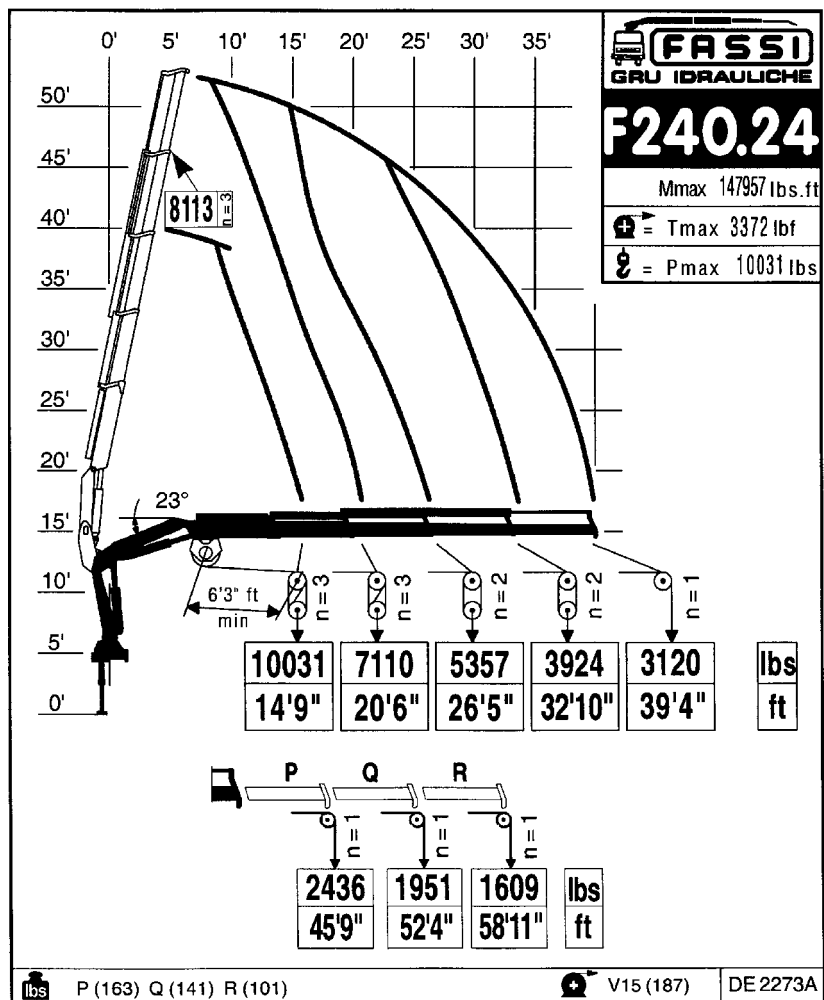
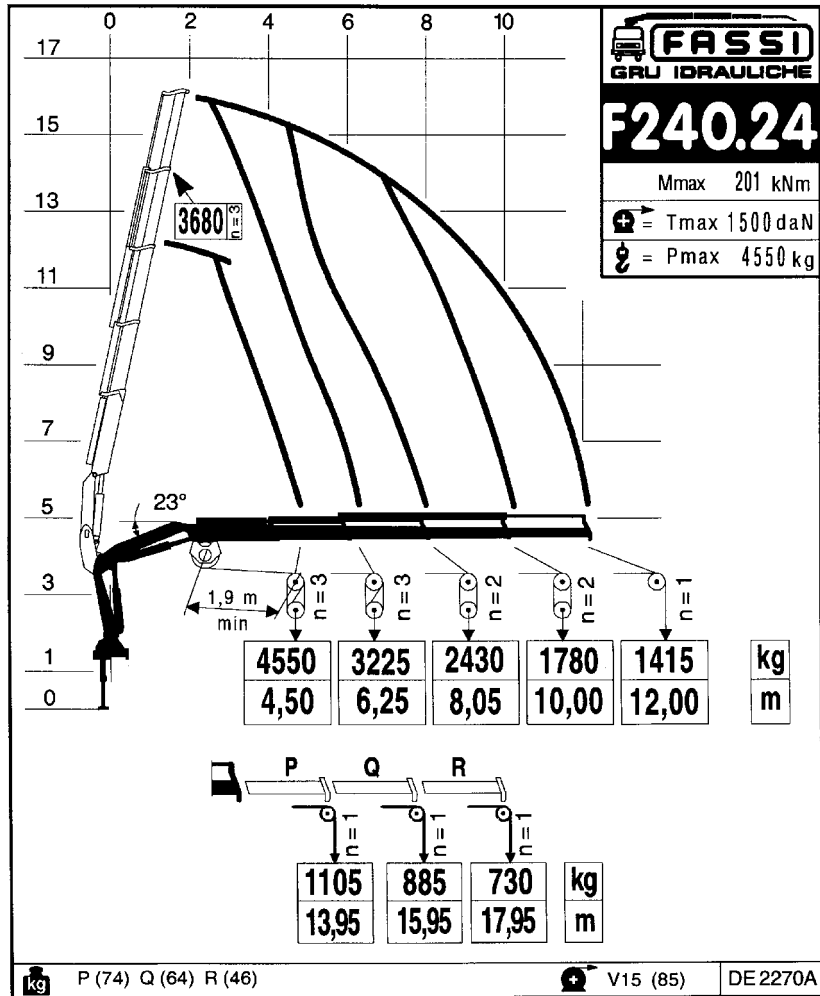
! WARNING !

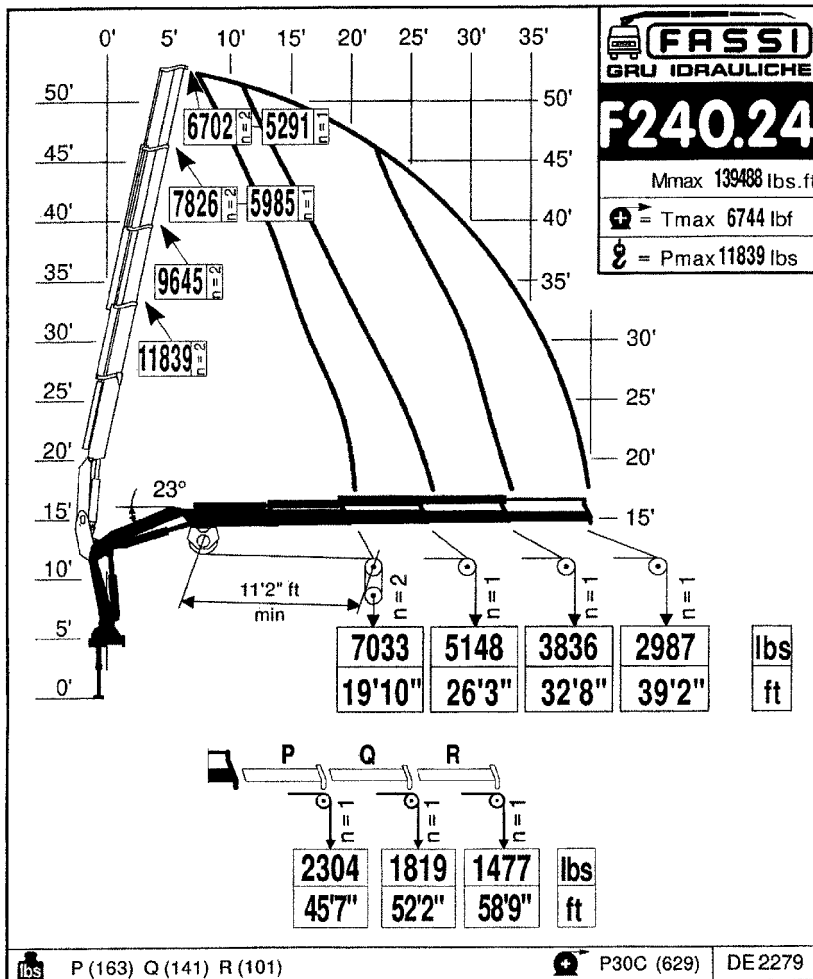
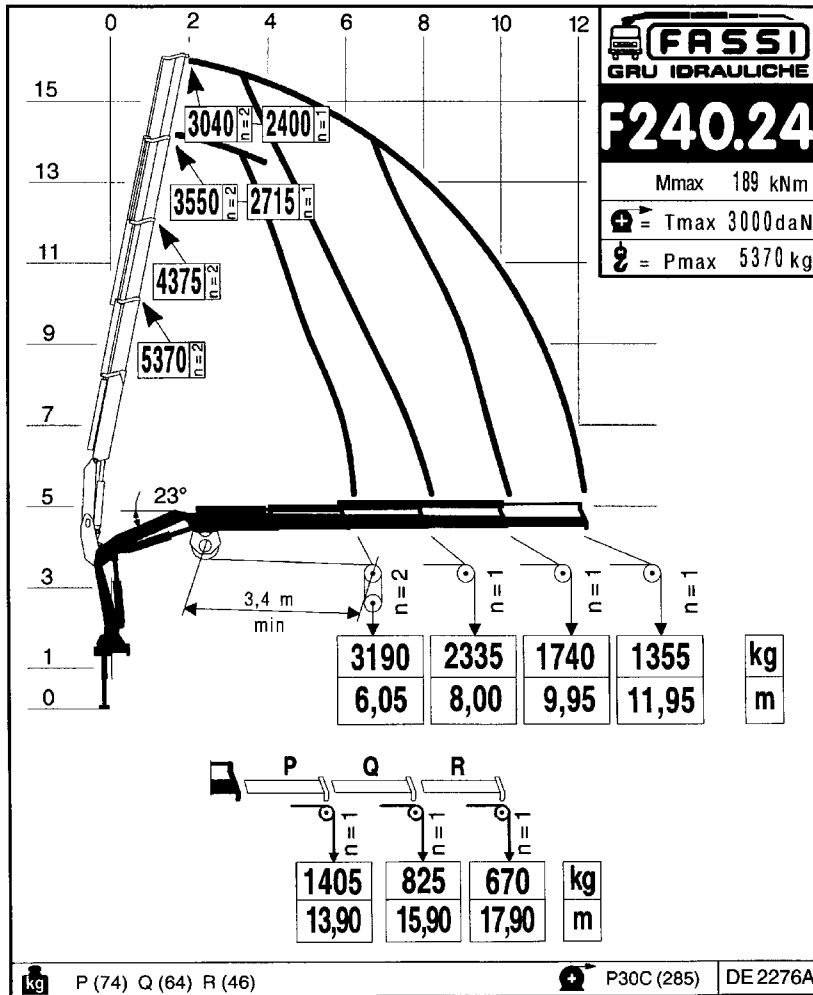
If the capacities are downgraded or partially reduced (e.g. sector in front of vehicle cab) capacity plates must be applied in line with the final test figures.



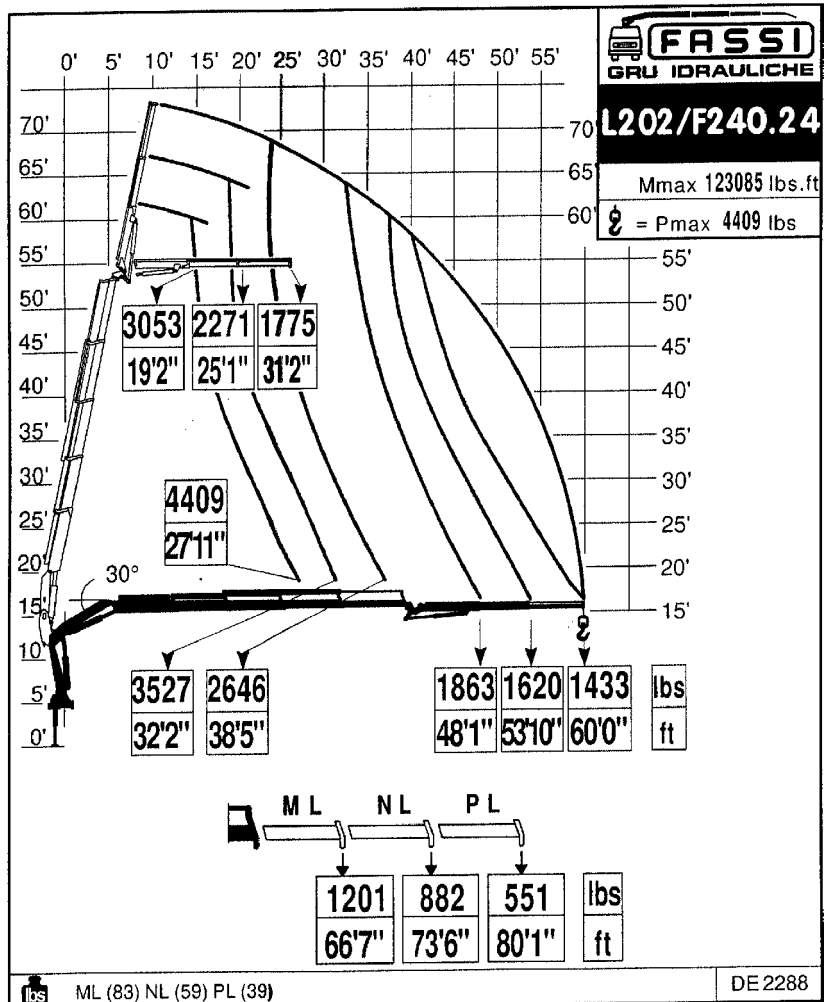
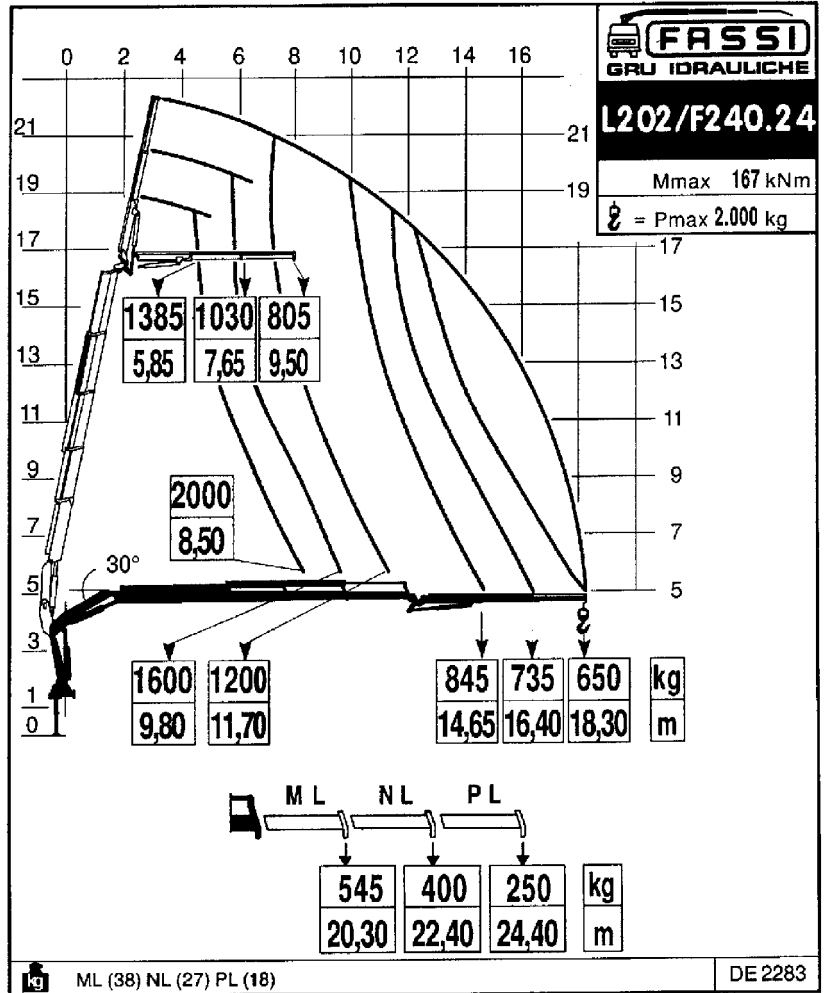


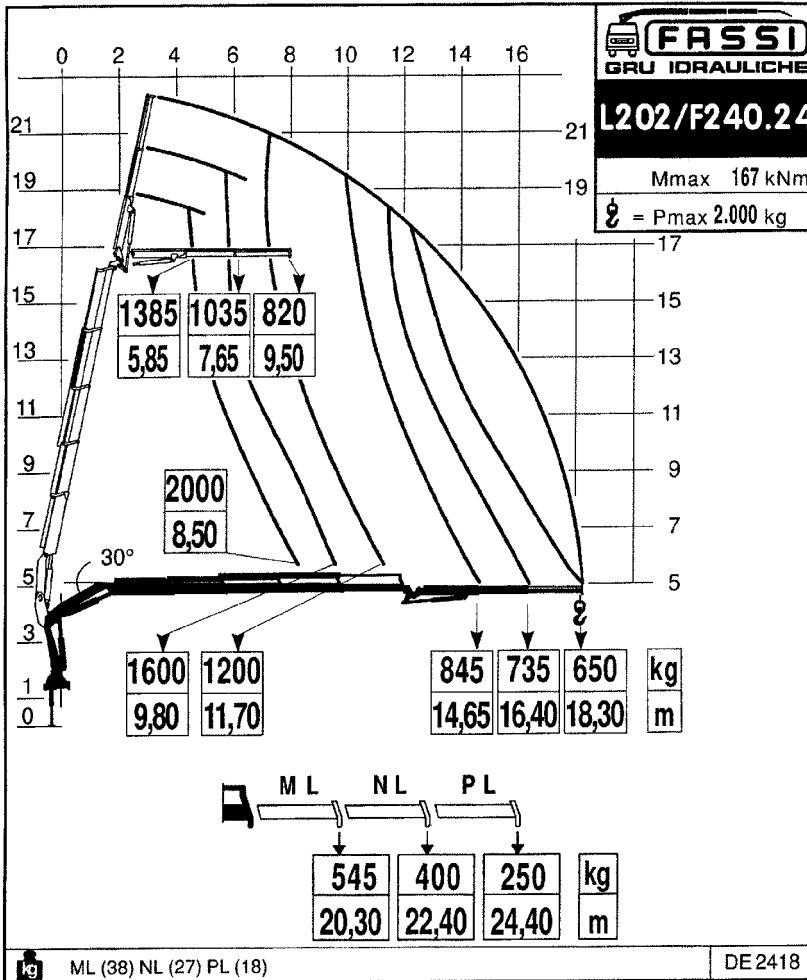




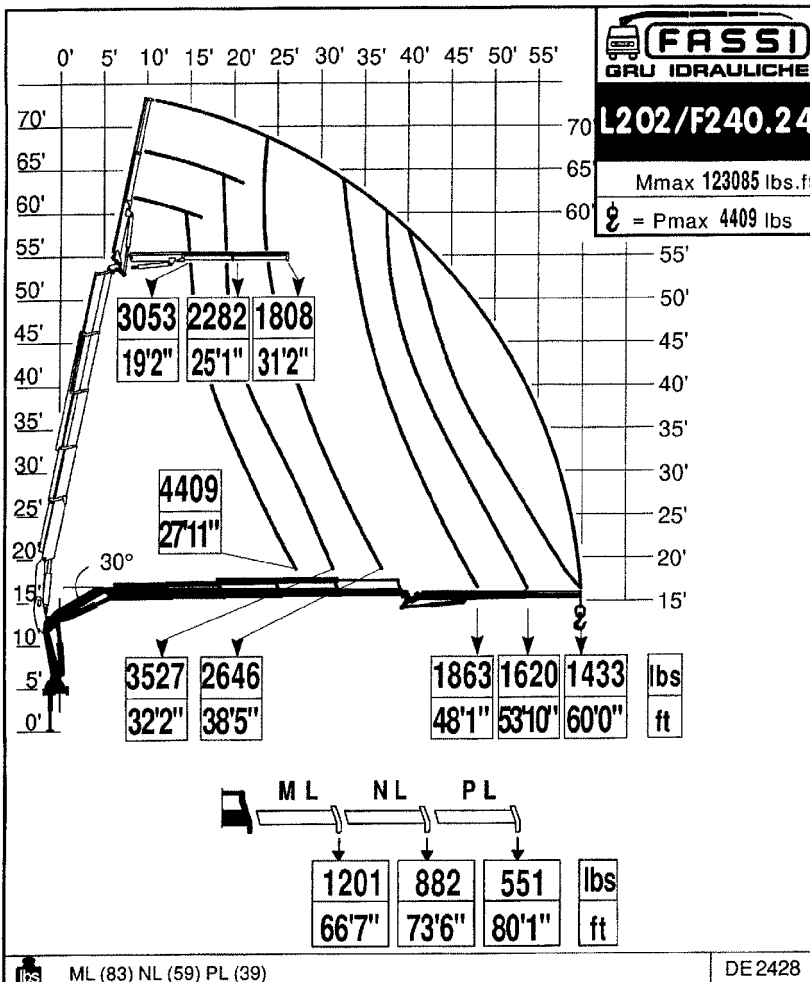


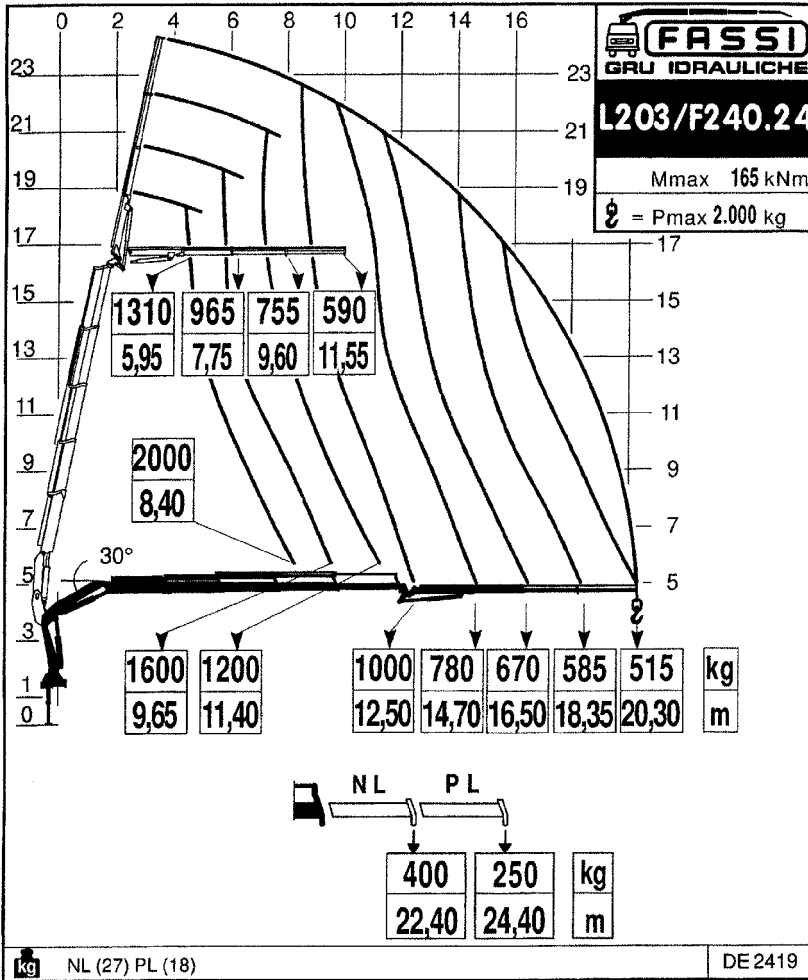
Valid up to serial number *0043*
of hydraulic extension L202



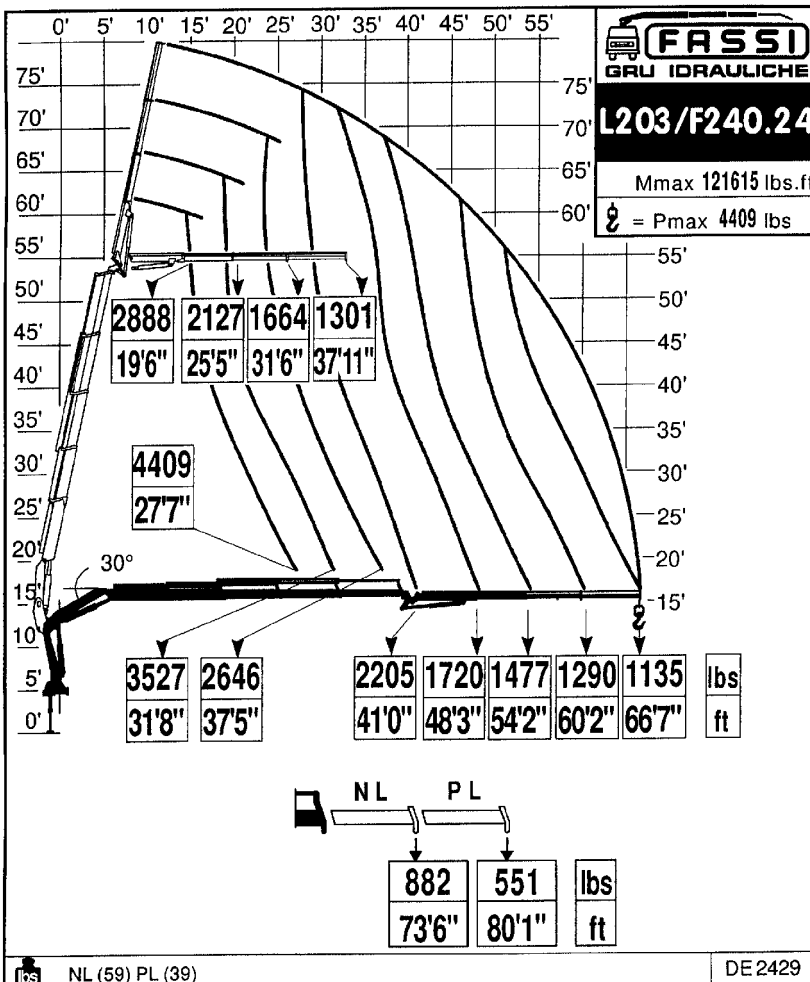


Valid from serial number
 0044
 of hydraulic extension L202

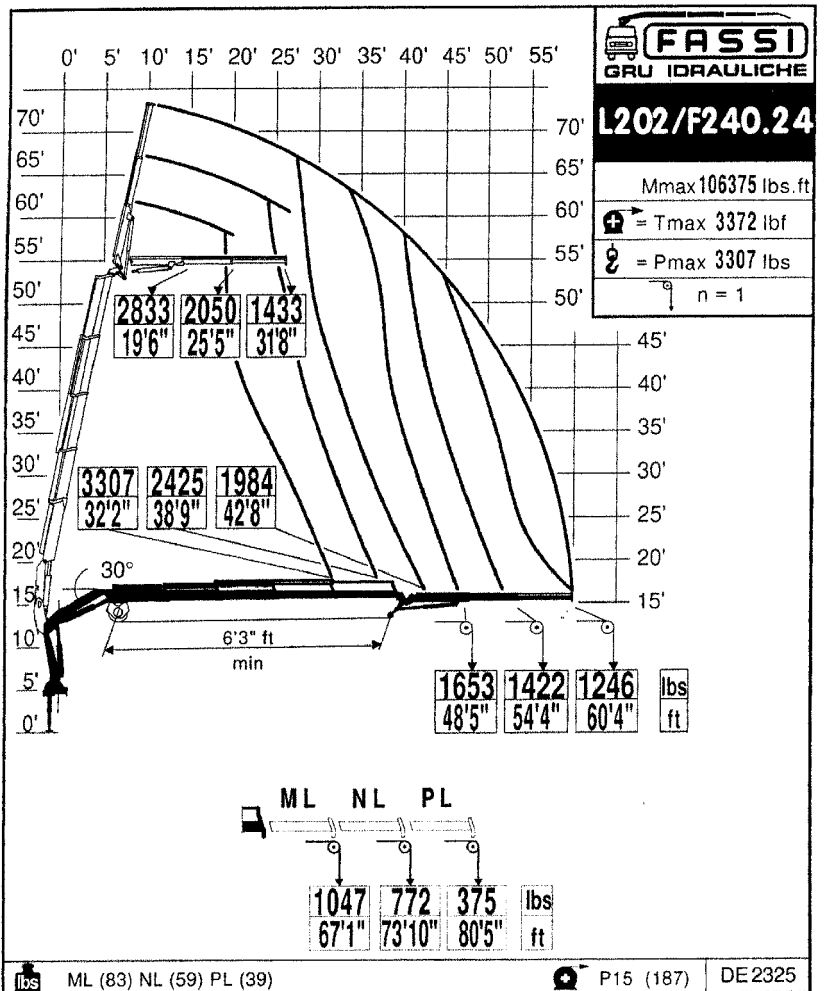
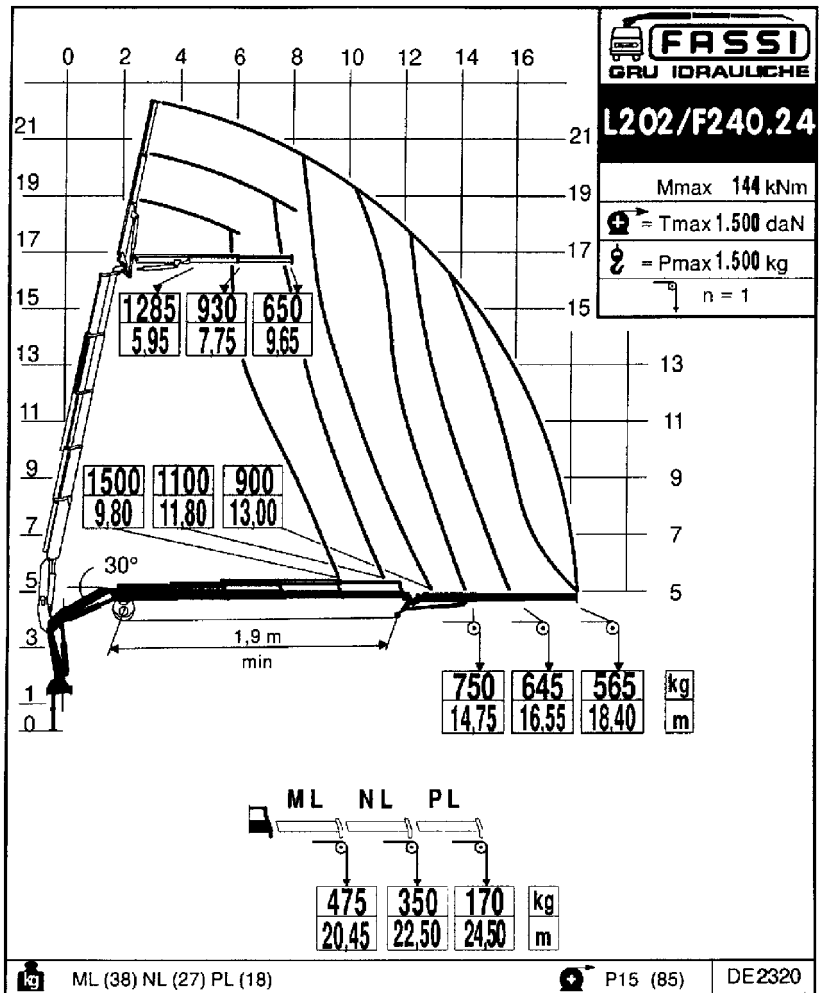


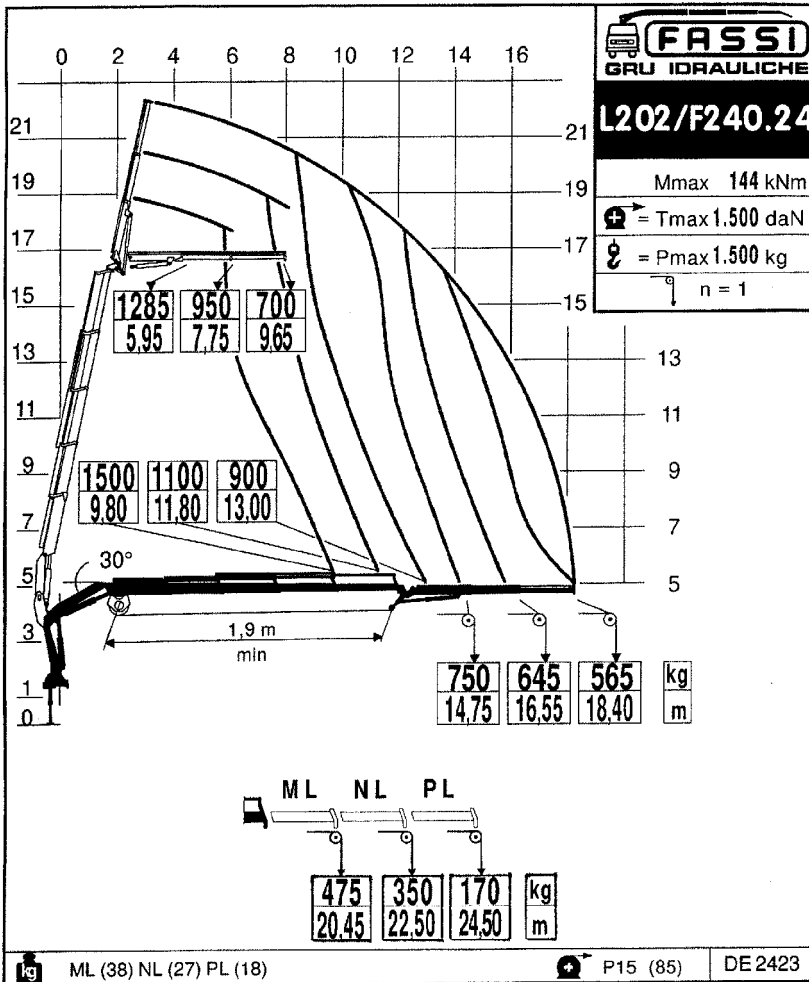


Valid from serial number
0044
of hydraulic extension L202

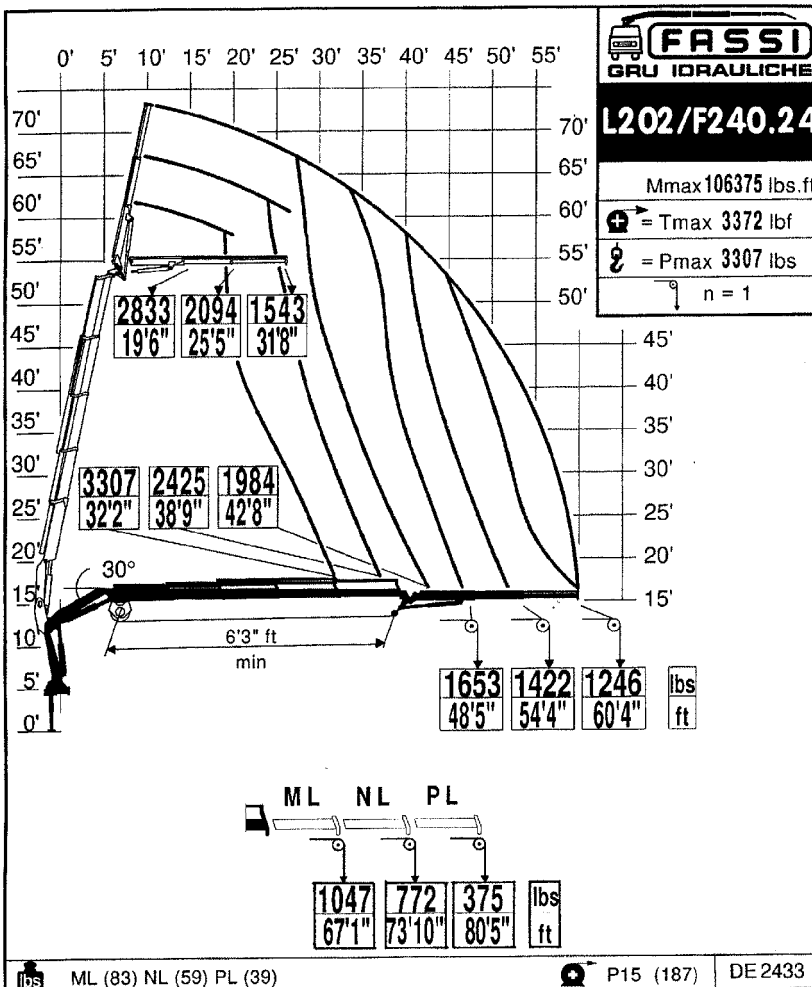


Valid up to serial number *0043*
of hydraulic extension L202

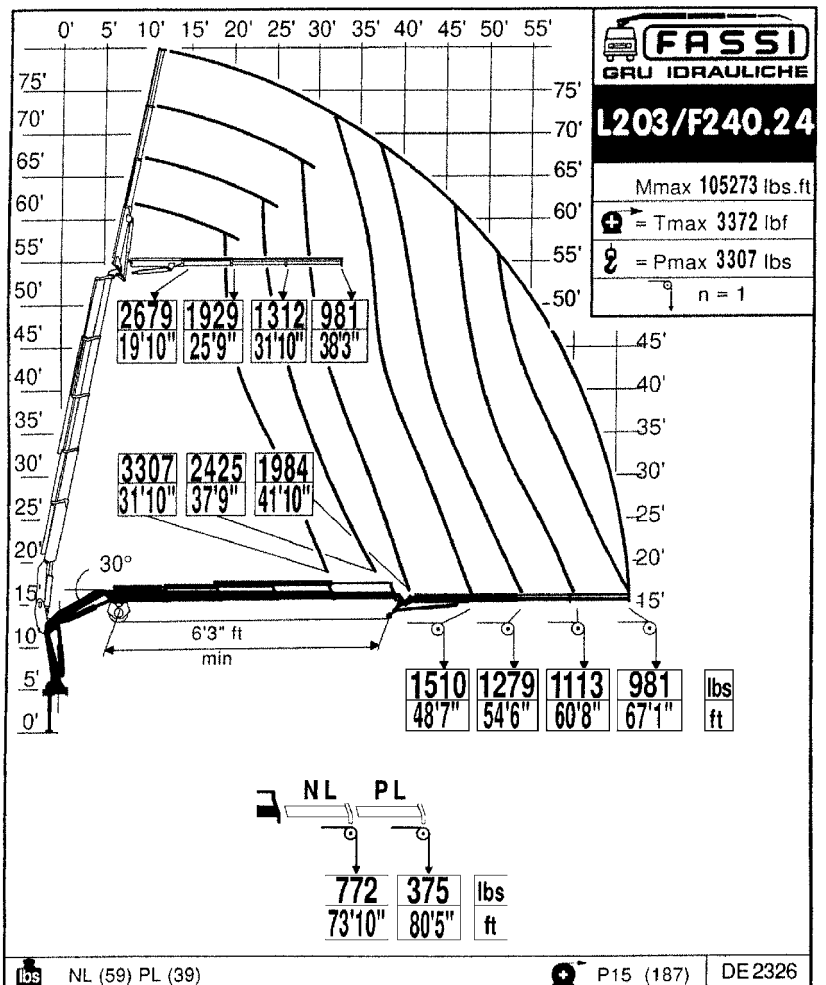
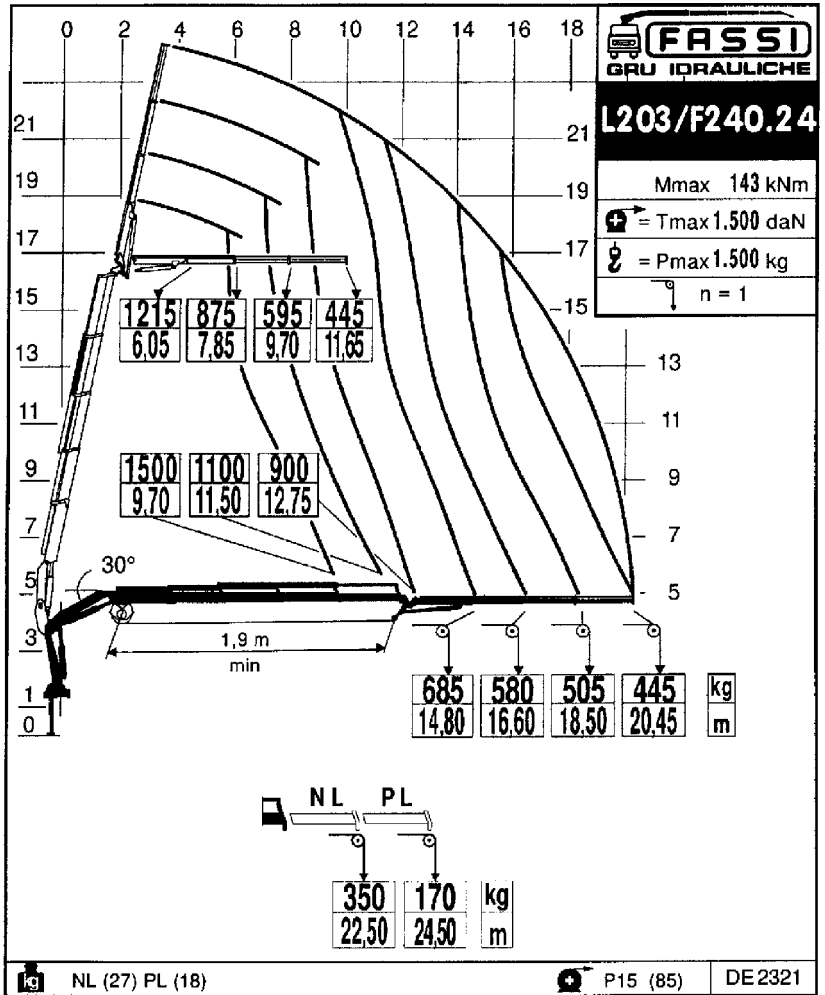


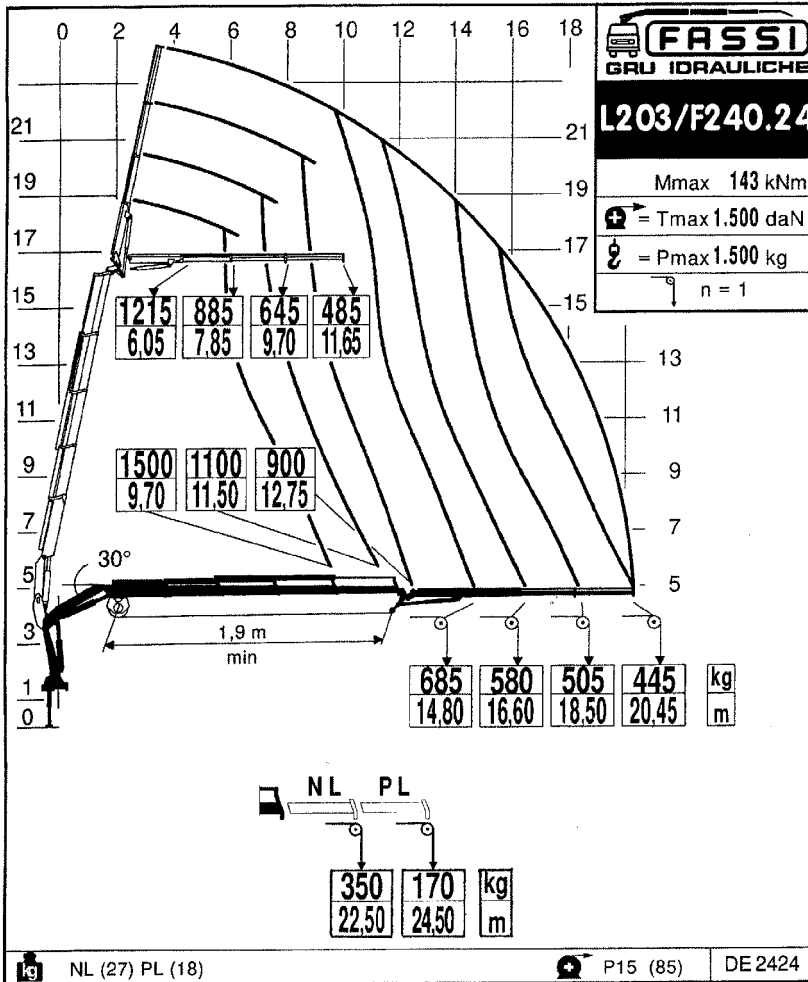


Valid from serial number
 0044
 of hydraulic extension L202



Valid up to serial number *0043* of hydraulic extension L203





Valid from serial number *0044* of hydraulic extension L203

