

F 95A.22

use and maintenance

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FASSI CRANE

F 95A.22

use and maintenance

This instruction manual describes the FASSI CRANE F95A.22.

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.

To operate the crane it is necessary to fully understand its working, safety and warranty norms.

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)

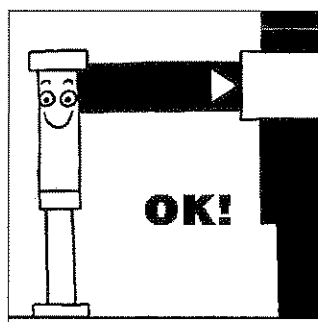
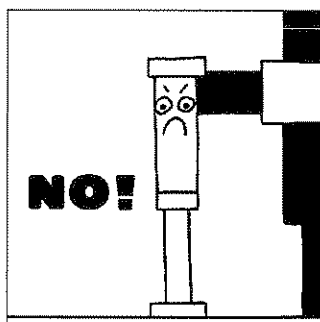
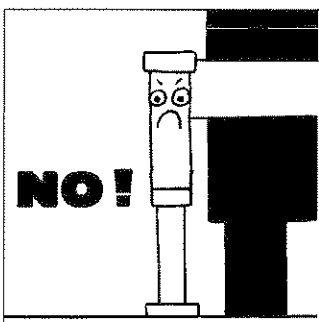
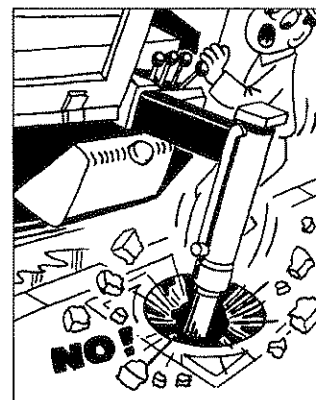
Do not run the engine in a indoor area without first making sure there is adequate ventilation. Fit a suitable extension tube to the vehicle exhaust pipe to take the fumes away from the working area.

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)

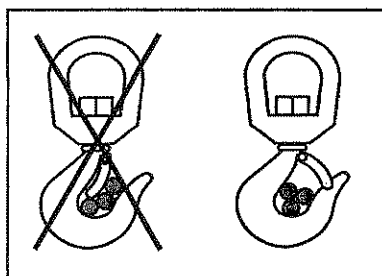
Level the crane so as it is always operated on a horizontal plane.

Check that the taps of the outrigger rams safety check valves are closed (when fitted). 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.

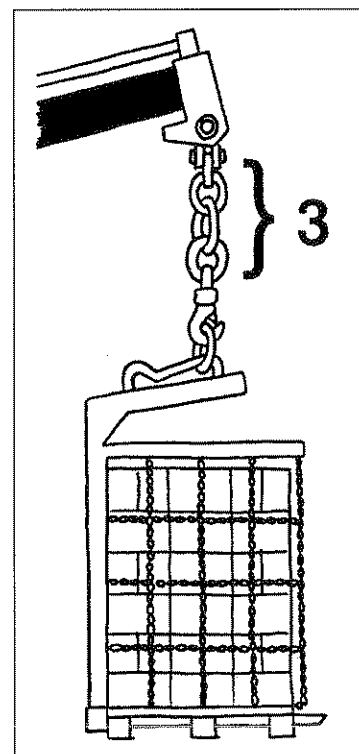
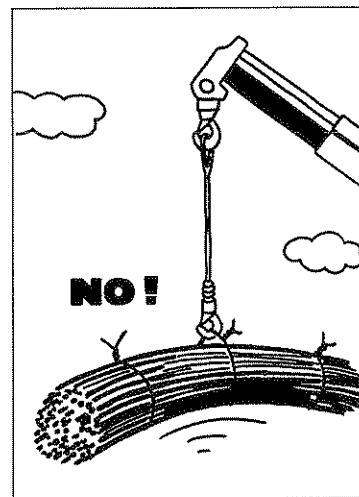
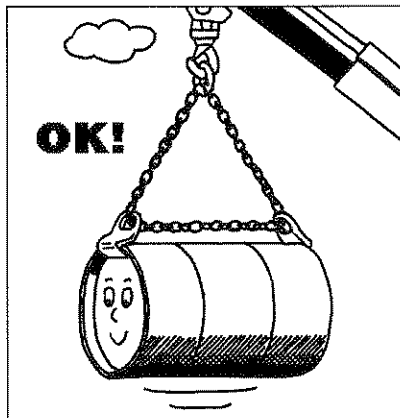
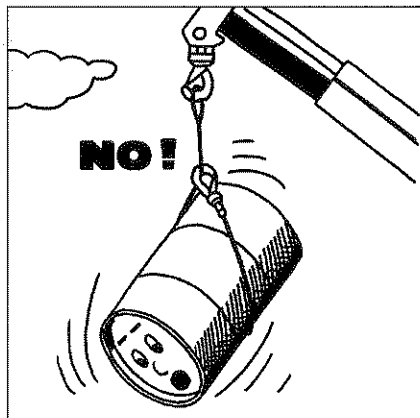


Before manoeuvring a load check that the working area is adequate and properly lighted for your crane.

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

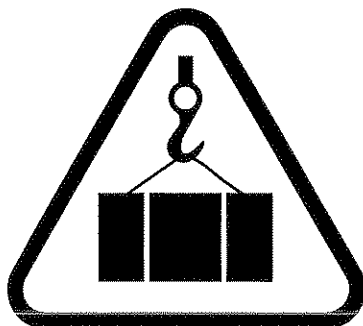
Check the efficiency of the hook safety catch.

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



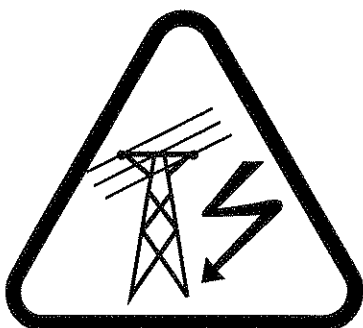
The pallet fork must be connected to the crane hook by means of a chain having at least **three (3)** rings.

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.

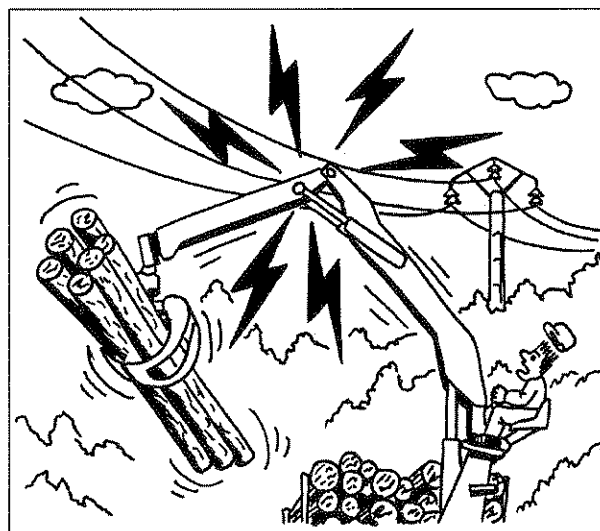


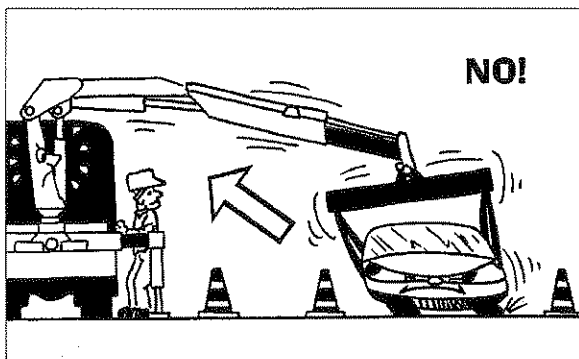
It is absolutely prohibited to load or unload under or in proximity of electric lines.

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

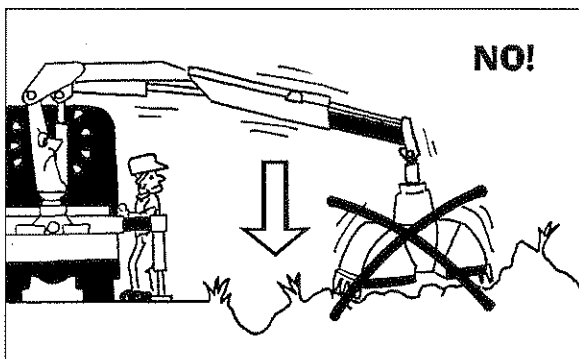
For cranes with top seat controls, it is necessary to use a ladder to reach the control station.

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.

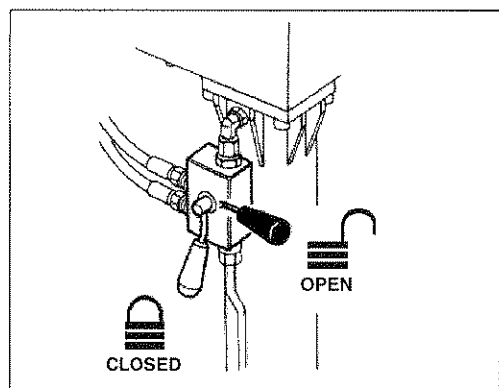
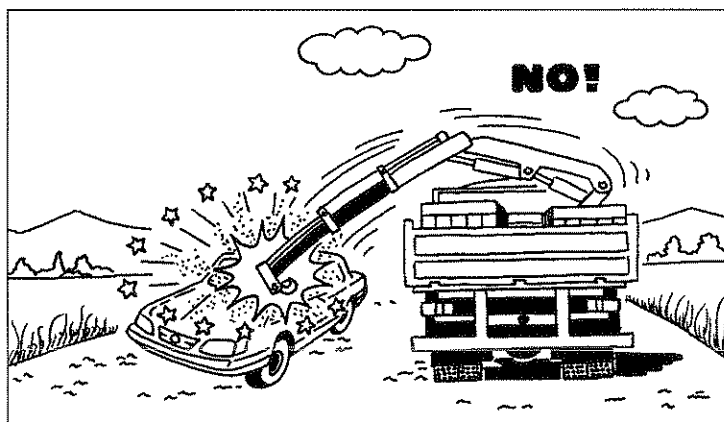
Do not utilize the crane for pushpull, lateral or sideways operations.

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.

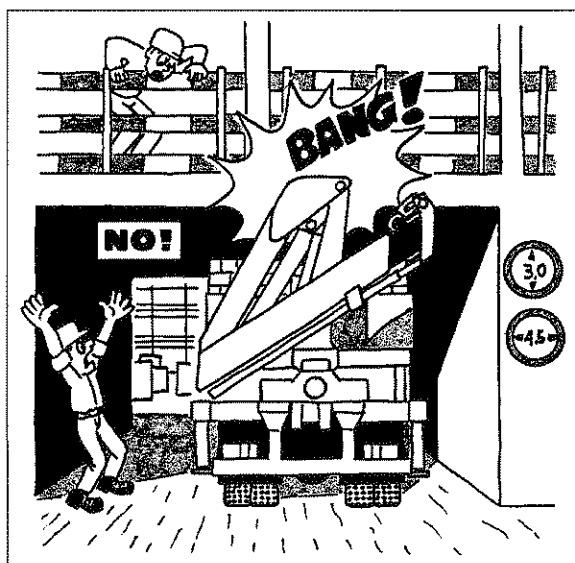
At the end of the job and prior to driving the vehicle the crane must be folded. If the booms are to be laid on the body or on the load, they must be blocked to prevent possible sideways movements. Outrigger rams must be lifted and re-entered within the overall width of the truck and safety devices locked.

Check that the taps of the outrigger rams safety check valves are closed (when fitted).



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, when installed, are closed.
- 6 — Use the crane in accordance with the use and maintenance manual, making sure that:
 - 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 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 IDRAULICHE SpA 24021 ALBINO (BG) ITALIA - Via dei Carmelitani, 2 Tel. + 39 35 77.40.00 - Fax + 39 35 75.50.20	INSTRUCTIONS FOR SAFE USE OF THE CRANE	DE1771A
<p>1 Only authorized persons are permitted to operate the crane.</p> <p>2 The crane must be used on firm, level ground.</p> <p>3 Check that the vehicle hand brake is on and that the wheels are chocked.</p> <p>4 Before operation make sure that:</p> <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. <p>5 Stabilize the vehicle with the outriggers, making sure that:</p> <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, when installed, are closed. 	<p>6 Use the crane in accordance with the use and maintenance manual, making sure that:</p> <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. <p>7 When using implements protect the working area with a barrier.</p> <p>8 The vehicle/crane are not left unless the power take off is disengaged and the load is on the ground.</p> <p>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.</p>		

THESE INSTRUCTIONS FOR THE USE OF THE CRANE COINCIDE WITH THOSE OF THE PLATE DE1771A (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. 1)

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

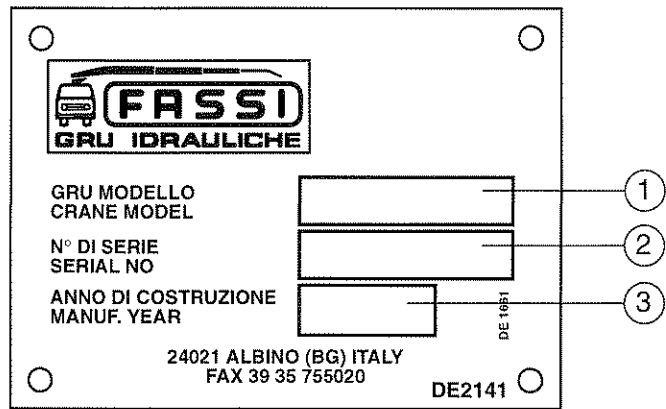
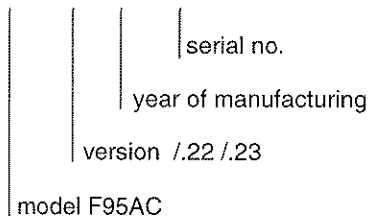


fig. 1

The model, the version of the crane, the year of manufacturing and the serial number are stamped on the base (fig. 2) in the following sequence:

F95A.21*08*0100



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

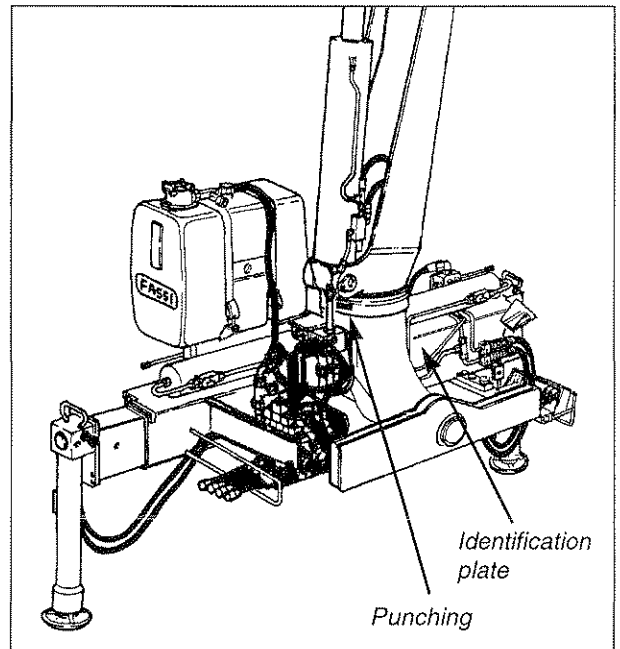


fig. 2

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.

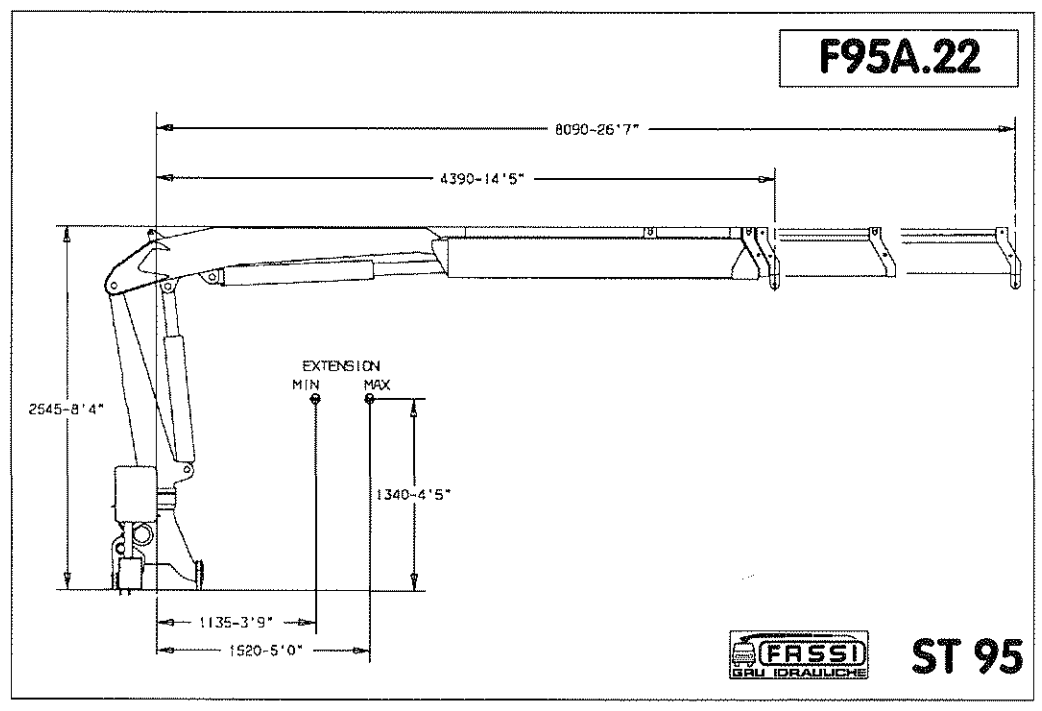
TECHNICAL DATA

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.

F 95A.22

Lifting capacity	Standard reach	Hydraulic extension	Rotation arc	Rotation torque	Working pressure	Pump capacity	Oil tank capacity	Crane weight
tm 8,8	m 8,10	m 3,70	390°	kNm 14,68	MPa 29,0	l/min 25	l 60	kg 1215



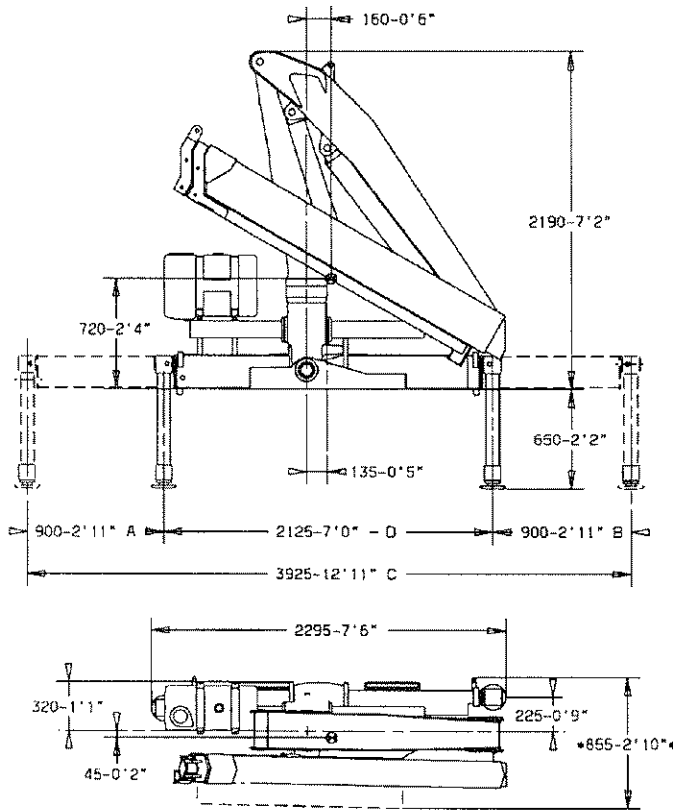
F95A.22

EXTRA

A	1.255	4'	1"
B	1.255	4'	1"
C	4.635	15'	2"

SUPEREXTRA

A	1.640	5'	5"
B	1.500	4'	11"
C	5.465	17'	11"
D	2.325	7'	8"



- MEZZERIA TIRANTI
 - FIXING ROD CENTER DISTANCE
 - LIGNE MEDIANE TIRANTS
 - ABMESSUNG DER BEFESTIGUNGSBRIDEN
- M22 x 1,5**

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

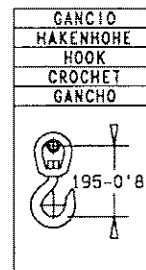
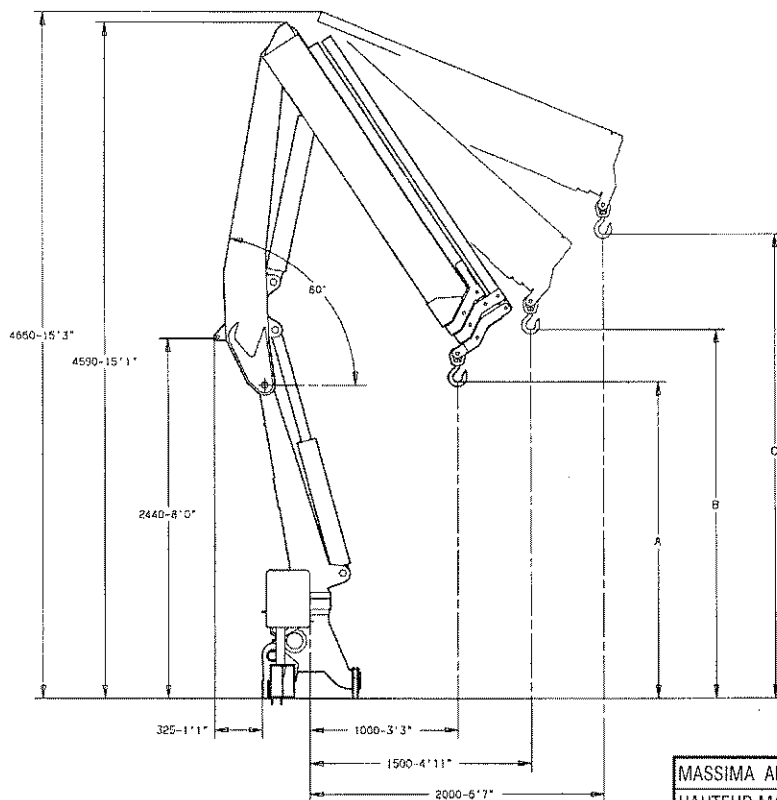
- PESI, DIMENSIONI E POSIZIONE BARGENTRO.
- POIDS, DIMENSIONS ET POSITION DU BARYCENTRE.
- WEIGHT, DIMENSIONS AND BARYCENTRE POSITION
- GEWICHTE, ABMESSUNG UND POSITION DES KRANSCHWERPUNKTS.

PESO GRU CON SERBATOIO NON RIFORNITO, STABILIZZATORI STANDARD	kg	1.215
WEIGHT OF THE CRANE WITH EMPTY TANK, STANDARD STABILIZATION	lbs	2.678
POIDS DE LA GRUE AVEC RESERVOIR VIDE, STABILISATION STANDARD		
KRANGEWICHT MIT LEEREM TANK UND STANDARDABSTUETZUNG		

ST 95



F95A



	A	B	C
F95A.21	2325	7'8"	2720 8'11"
F95A.22	2235	7'4"	2610 8'7"
F95A.23	2145	7'0"	2505 8'3"

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



ST 95



CRANE NOMENCLATURE

Note: The crane can be supplied (on request), in relation only to the crane controls (and eventual hydraulic implements), with Danfoss distributors.

- Version with ground controls for crane and outriggers (fig. 3)
- Version with top seat controls (fig. 3a) for crane by hand cables; optional and only with standard distributor.
Not supplied on crane with Danfoss distributor.

Pos.	Description
1	- Outrigger rams
2	- Outrigger supports
3	- Base
4	- Rotation cylinders
5	- Deviator crane - outriggers
6	- Outrigger distributor
7	- Outrigger double control
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	- Extension boom sections
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 (distributor) (fig. 4)

Pos.	Description
1	- Outrigger rams
2	- Outrigger supports
3	- Base
4	- Rotation cylinders
5	- Deviator crane - outriggers
6	- Outrigger distributor
7	- Outrigger double control
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)

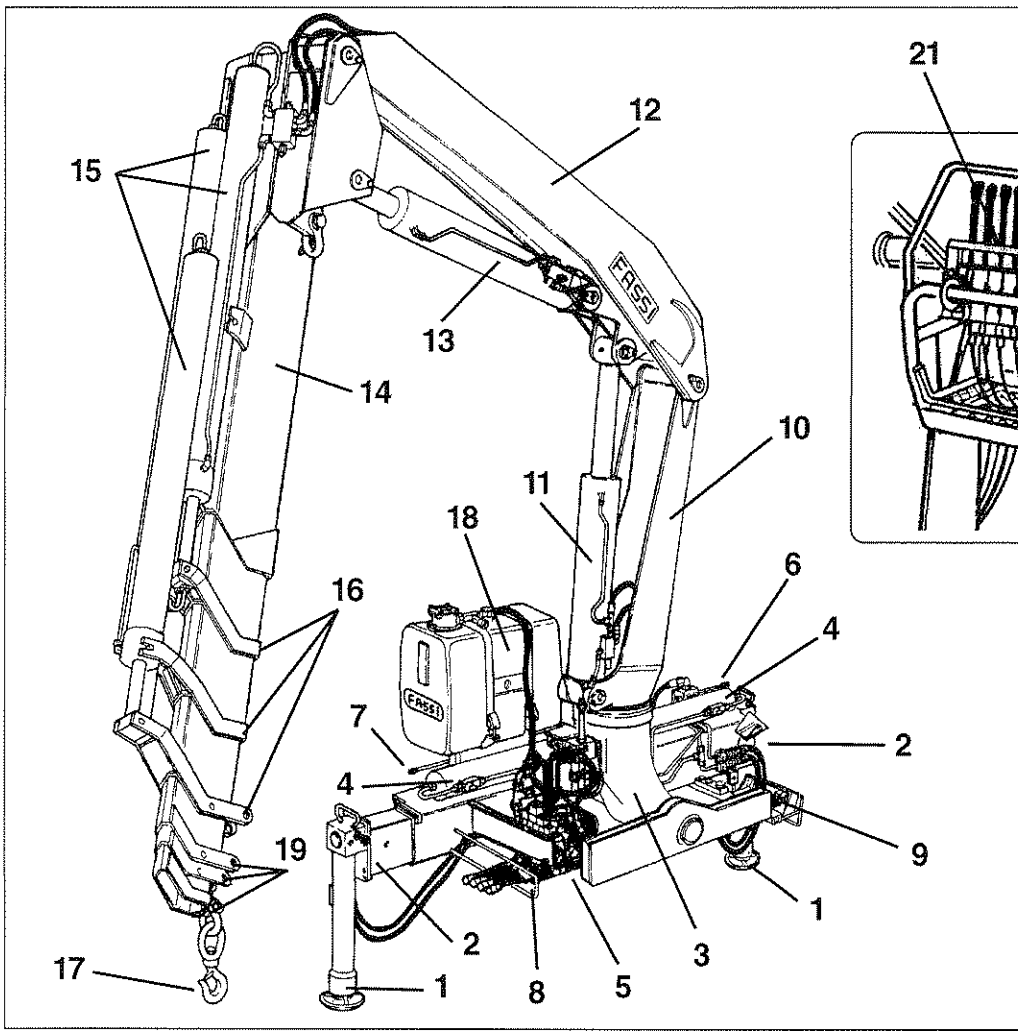


fig. 3

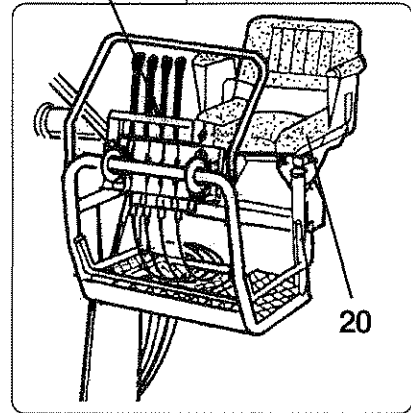


fig. 3a

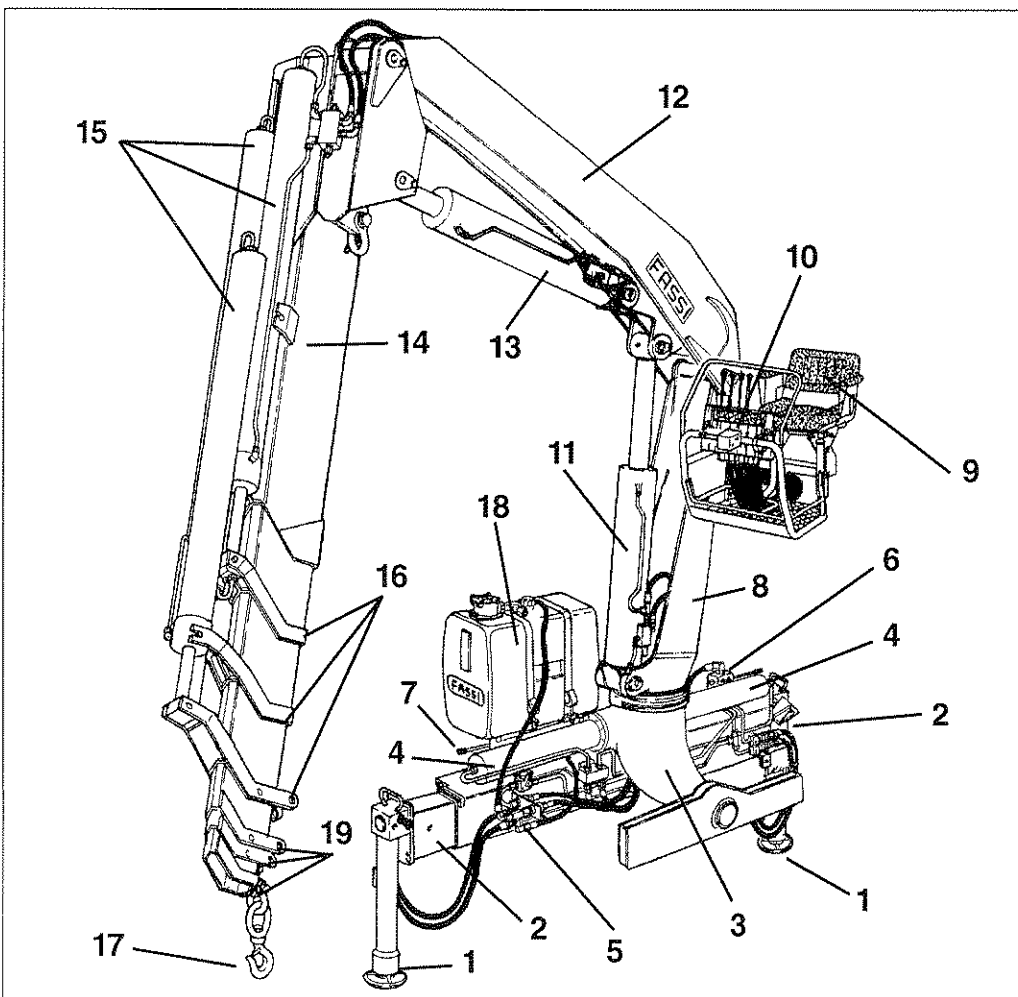


fig. 4

SAFETY AND PROTECTION DEVICES

Note: The crane can be supplied (on request), in relation only to the crane controls (and eventual hydraulic implements), with Danfoss distributors.

- Version with ground controls for crane and outriggers (fig. 5)
- Top seat controls (fig. 5a) for crane by hand-cables; optional and only with standard distributor.
Not supplied on crane with Danfoss distributor.

Pos.	Description
1	- Tap and check valves 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)
7	- Main pressure valve (crane)
8	- Auxiliary valves (crane)
9	- Levers guard
10	- Safety device for outriggers supports
11	- Hook safety device
12	- Lifting moment limiting device assembly (optional)
13	- Parachute valves (when the lifting moment limiting device is fitted)

- Version with ground controls for outriggers and top seat controls for crane (distributor) (fig. 6)

Pos.	Description
1	- Tap and check valves 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)
7	- Main pressure valve (crane)
8	- Auxiliary valves (crane)
9	- Levers guard
10	- Safety device for outriggers supports
11	- Hook safety device
12	- Lifting moment limiting device assembly (optional)
13	- Parachute valves (when 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.

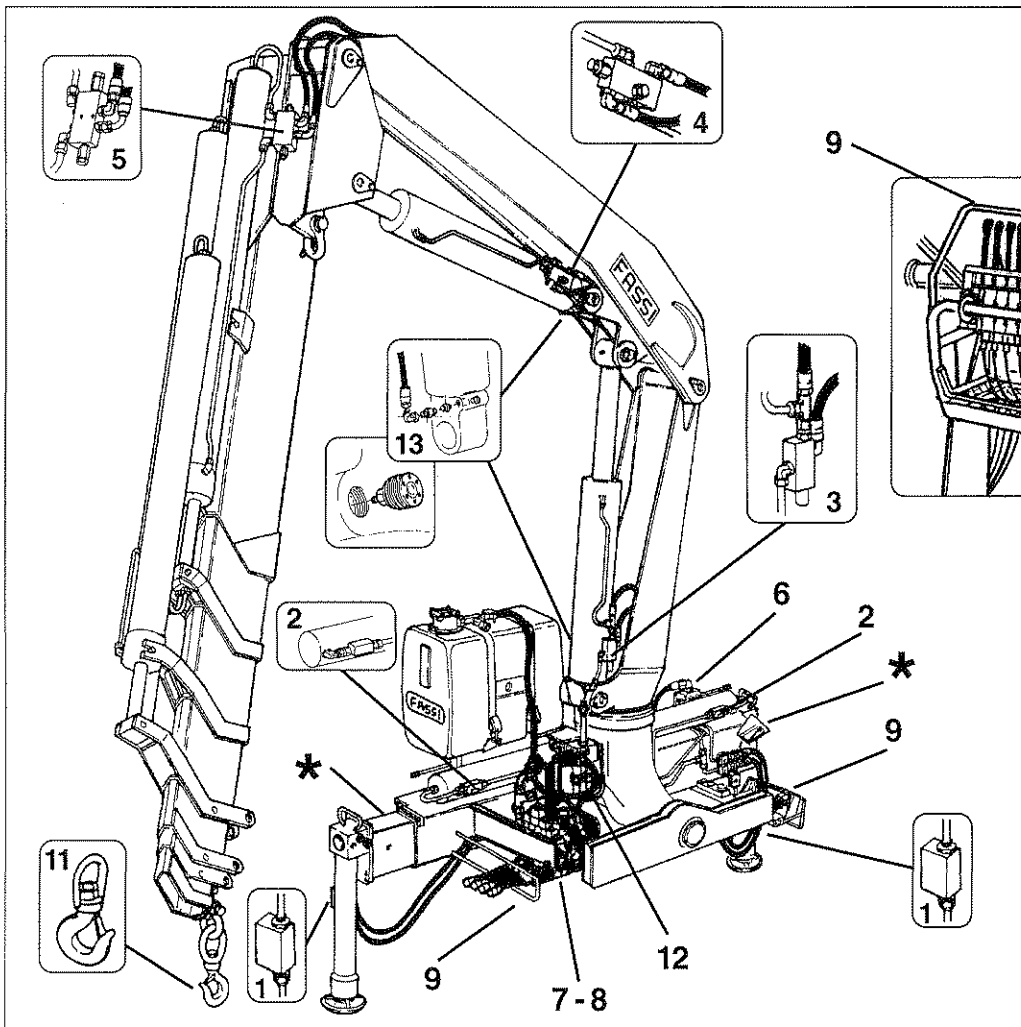


fig. 5a

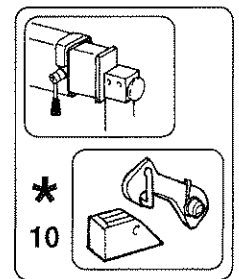


fig. 5

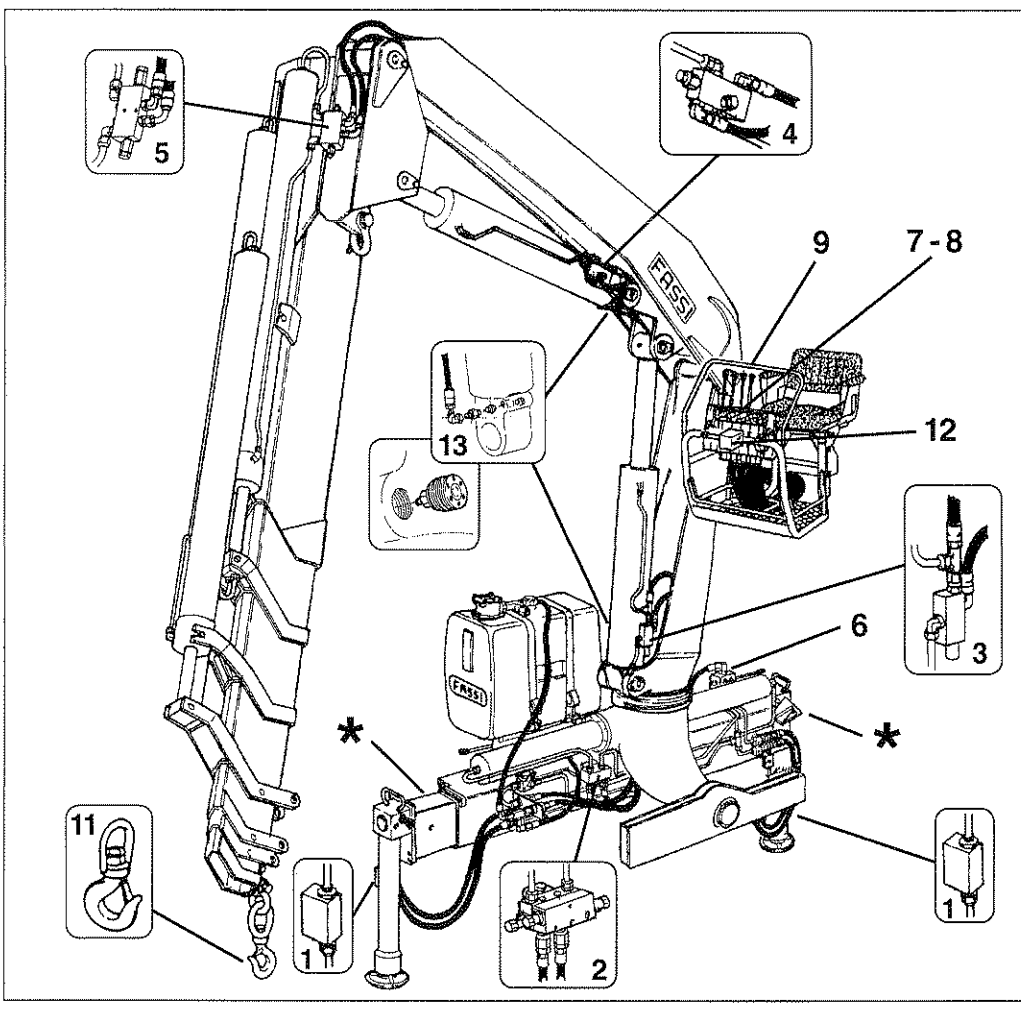
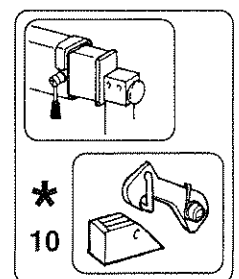


fig. 6



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) and carrying out a manoeuvre which will reduce the moment on the column axis.

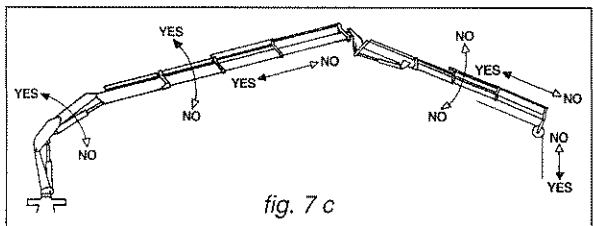
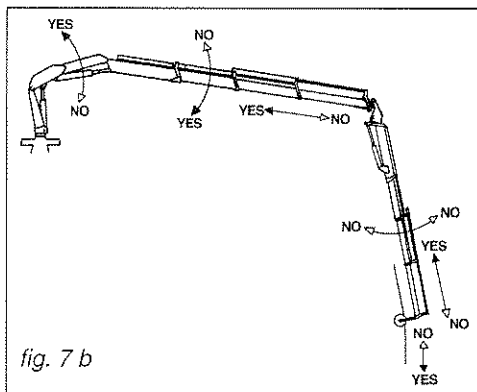
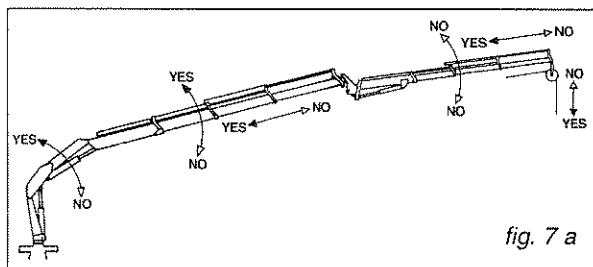
(!) This operation must be carried out within and not over **five (5)** seconds from the beginning of the load descent.

(!) 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

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.



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 crane configurations (fig. 7a-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.

Lifting moment limiting device "INTELLIGENT TYPE"

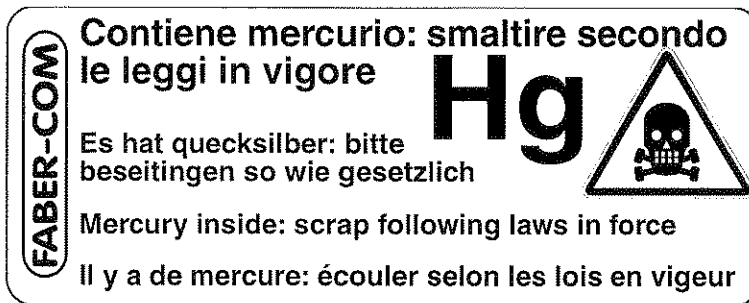
This device is fitted close to the distributor, whose specific functions it uses. It utilizes an electrohydraulic technology, preventing any movement which causes an increase in the pressure induced by the load in the inner and outer rams of the crane (and in the outer ram for the hydraulic extension 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.

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.

(!) 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.

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. 8-8a) 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 (fig. 8b pos. 1-2); the button stays in stable and closed position.

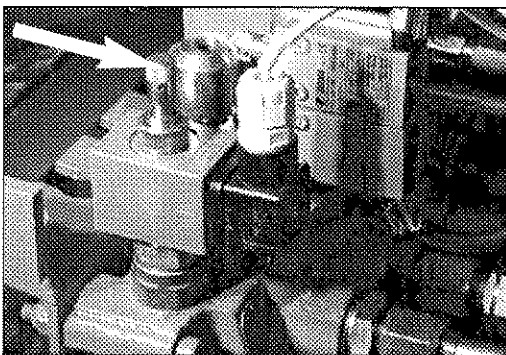


fig. 8

Crane with top seat control

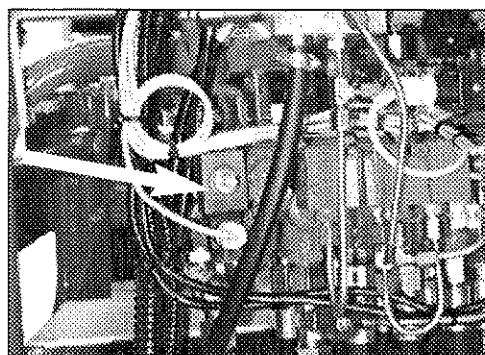


fig. 8a

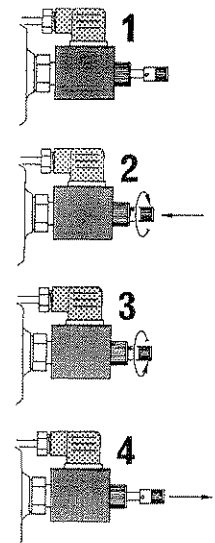


fig. 8b

- (!) When the electric power is reestablished, remember to put the button in its original position, turning it into the anti-clockwise sense. (fig. 8b pos. 3-4)

EMERGENCY exclusion tap of the lifting moment limiting device

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. 9-10 (14 mm hexagonal spanner), completely screw in the tap (5 mm allen key) and re-tighten the lock nut.

Crane with ground controls

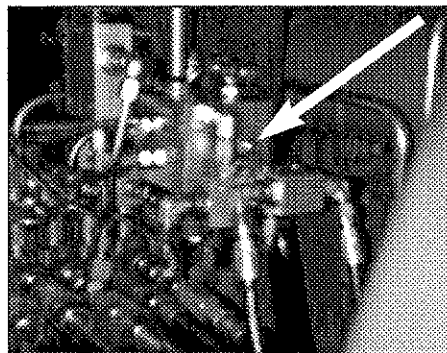


fig. 9

Crane with top seat control

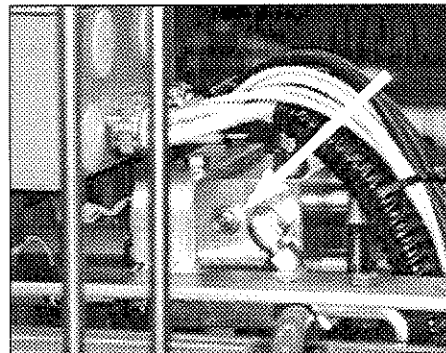


fig. 10

(!) 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.

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.

LIFTING MOMENT LIMITING DEVICE (for **DANFOSS** Distributor, available on request)

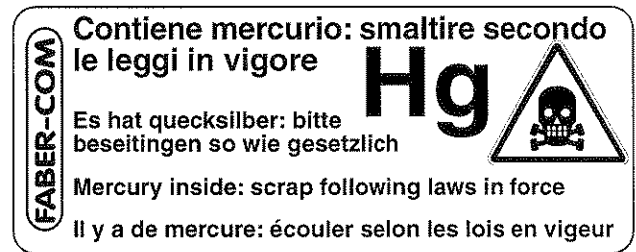
This device is fitted close to the distributor, whose specific functions it uses. It utilises an electrohydraulic technology, preventing any movement which causes an increase in the pressure induced by the load in the inner and outer rams of the crane (and in the outer ram for the hydraulic extension 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. The condition of intervention is operated by the position of the outer boom on which the electronic signal position (mercury level switch) is read by a special electrovalve. This determines the deactivation or the activation of the controls concerned.

(!) 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.



When the moment is reduced, it resets automatically (the manoeuvres blocked by the device are released).

N.B.: There is a delay of 4 seconds after the moment reduction before the reset can occur in order to safeguard the stability of the device.

EMERGENCY tap lever fig. 11

Each device is fitted with an emergency tap lever to be used in the event of a black-out, electrical or hydraulic malfunctions or whenever the lifting moment limiting device makes it impossible to use any controls when handling a load (this may occur when the extension booms are fully folded and the load is particularly heavy and bulky).

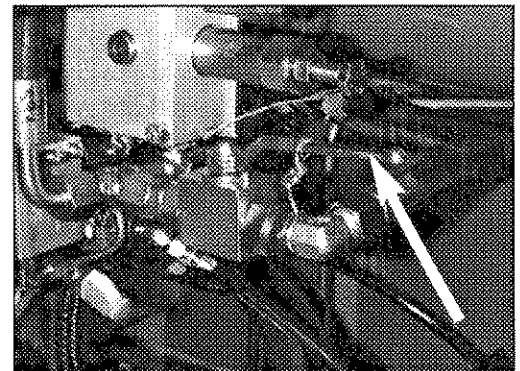


fig. 11

(!) 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.

Only In these situations it is permitted to remove the lead seals placed on the tap lever and place it in the closed position.

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.

(!) ATTENTION (!)

Do not walk on the lever guards of the lifting moment limiting device positioned on the distributors or electric control panels. (plate DE1679)

Do not use water to extinguish fire! (plate DE1680)



DE 1679



DE 1680



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

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

Supplementary beam code	outrigger ram stroke	extension max. interaxis
52185	550 mm	2132 mm Fixed
42049	550 mm	3098 mm manual extension

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

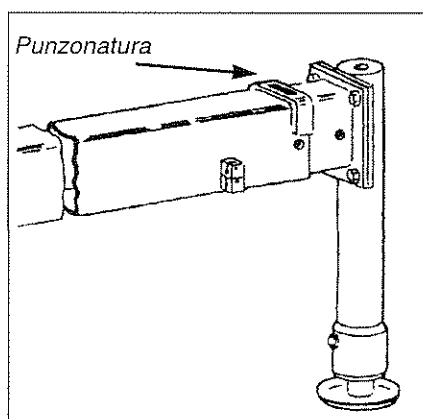


fig. 12

Example

***42049*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 (if fitted).

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 plate pressure of the rams is:

29,0 daN/cm² on a plate which diameter is 170 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 manual side extension and tiltable outrigger rams, which can be placed in vertical (at 180°) or inclined position (at 33°) to avoid obstacles on the truck frame. (Available on request are extra extendable manual outrigger supports or hydraulic extension of outrigger supports or extra extendable hydraulic outrigger supports).

Outriggers extension	extension max. interaxis	supply
manual	mm 3925	standard
extra manual	mm 4635	on request
hydraulic	mm 3925	on request
extra hydraulic	mm 4635	on request
super extra manual	mm 5465	on request

(!) The extension supports are kept in position by safety devices; so as to assure the impossibility of accidental movements.

Manoeuvres for the extension of the outrigger supports

(!) ATTENTION (!)

To manoeuvre the supports hands must only grab the handles placed on the outrigger rams.

- Disengage the locking device of the outrigger support by putting the lever **A** from the position of the fig. 13 to the one of the fig. 14
- Position the lever **B** of the locking device (fig. 13), placed on the base, upwards; the spring loaded security pin of the device will be released from it's position.
- Pull, extending from the base the outrigger support.
- Position the lever **B** downwards; the locking loaded security device remains released. (Fig. 15)
- Pull, extending the outrigger support till the coupling of the pin.
- By the same sequence, repeat the operations described to extend the other support.

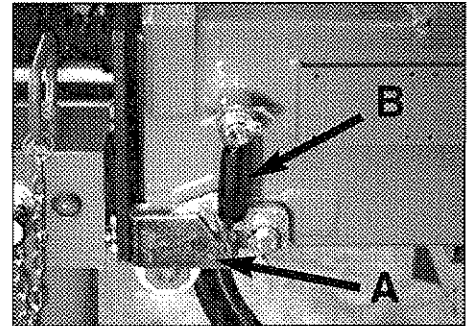


fig. 13

(!) ATTENTION (!)

The complete extension of the outrigger support is visually indicated by the yellow triangle which is found at the end of the beam (fig. 16)

Always check that the outriggers supports, once in their rest position, are locked in their seat by the locking devices (spring loaded security pin); this will ensure complete extension of the outrigger support (essential for the stability of the complete crane vehicle unit) and the impossibility of accidental movement.

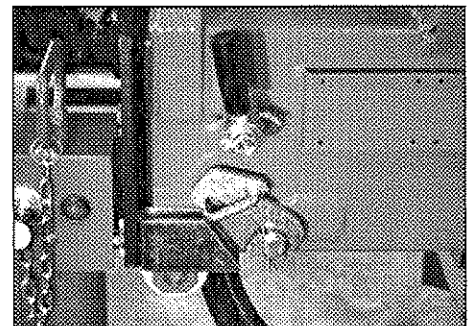


fig. 14

Manoeuvres for the re-entry of the outrigger supports

- Position the lever **B** upwards; the spring loaded security pin will be released from it's position.
- Re-enter the outrigger support halfway.
- Position the lever **B** downwards; the spring loaded security pin remains released.
- Push, by re-entering, the outrigger support till the coupling of the locking devices and stops.
- By the same sequence, repeat the operations described to re-enter the other support.

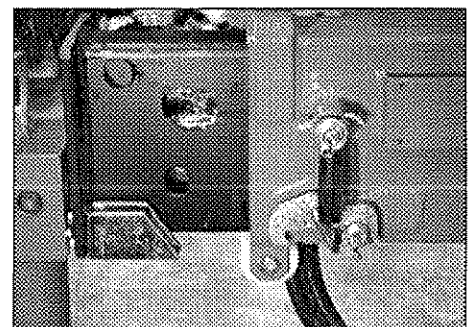


fig. 15

(!) WARNING (!)

Keep hands clear of automatic stop device (lever A from the position of the fig. 15 to the one of the fig. 13).

Always check that the outriggers supports, once in their rest position, are locked in their seat by the locking devices, so as to assure the impossibility of accidental movement.

Tiltable outrigger rams

They are outrigger rams, which can be placed in a vertical (at 180°) or inclined position (at 33°) to avoid obstacles on the truck frame.

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



fig. 16

- Supporting the ram, remove the check pin and the locking pin from their positions (fig. 17); when the ram is in the vertical position, a stop prevents it permits from overturning.
- Position, carefully, the ram in working condition, insert the locking pin in its new position (fig. 18) and secure it with the check pin.

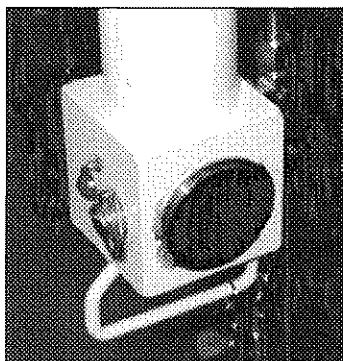


fig. 17

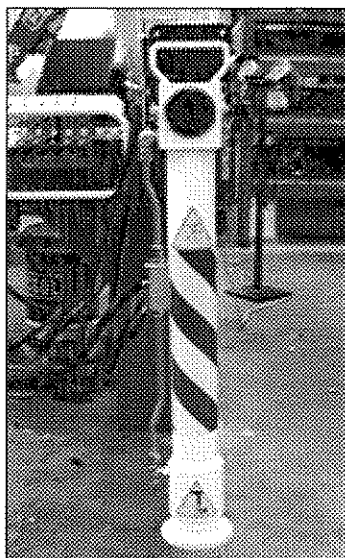


fig. 18

To re-position the rams to the folded position.

- Remove the check pin and the locking pin from their position.
- Carefully position, the ram in a upward direction and support the ram, insert the locking pin in its new position and secure it with the check pin; if the ram is placed in a vertical position, a rotation stop prevents overturning.

- (!) **The locking pin is held to the base structure by a chain in order to prevent its loss.**
- (!) **The locking pin is constructed from special material**
 - do not replace it with a non original part
 - your security depends on it

Description of the controls to stabilize the vehicle

Crane with outriggers manual extension and without supplementary outriggers.

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 rams only from the side where he can visually check the operation.

Lever function **D** and **C**

- Lever **D** Deviator crane - outriggers (⚙ - **S**) fig. 19-19a-19b
- Levers **C** Outriggers control distributor fig. 20-22

The symbols (plates) reported at side of the levers (deviators, distributors and double controls) indicate the operating levers in relation to their movement. The outrigger ram descent indicated on the plate (fig. 21) coincides with what indicated on the plates **DE2316** placed on the base, next to the control stations.

- Position lever **D** of oil diverter crane-outriggers (⚙ - **S**) on **S** (fig. 19 plate **DE2347**).
- Manually extend the outrigger supports and position the outrigger rams in a working position as indicated on page 19.
- Open the taps (when fitted) on the valves (fig. 23) placed on the outrigger rams.
- Operate lever **C** to control the outrigger ram descent.
- Repeat the operations described from the opposite side of the vehicle.

(!) ATTENTION (!)

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

(!) ATTENTION (!)

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.

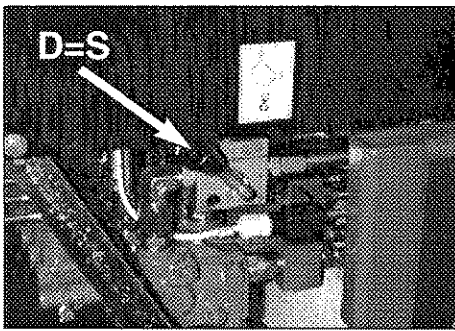


fig. 19

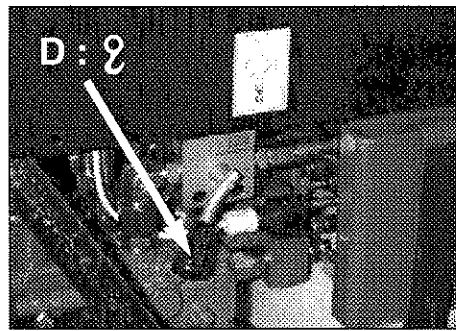


fig. 19a

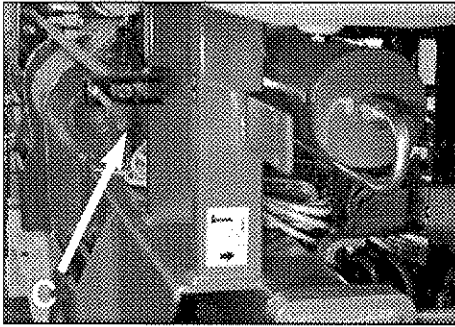


fig. 20

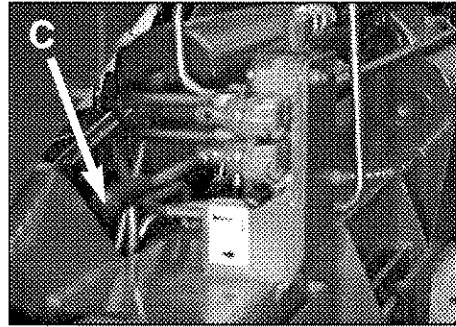


fig. 22

fig. 23

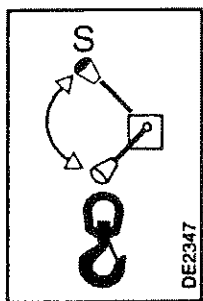


fig. 19b

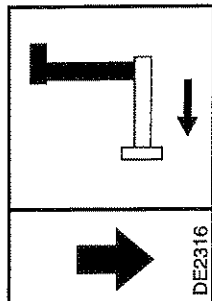
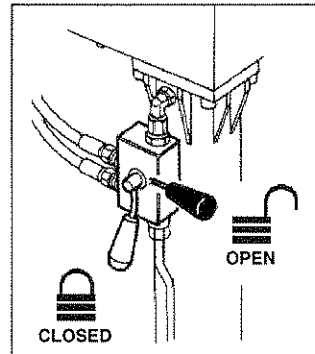


fig. 21



To operate the crane, after having completed the descent and stabilisation manoeuvres,

- close the taps (when fitted) on the valves placed on the outrigger rams. Fig. 23
- Position lever **D** of oil diverter crane-outriggers (**S** - **S**) on **S**. (Fig. 19a plate **DE2347**).

After crane use

- Position lever **D** of oil diverter crane-outriggers (**S** - **S**) on **S**. (Fig. 19).
- close the taps (when fitted) on the valves placed on the outrigger rams.
- Operate lever **C** to control the re-entry of the outrigger ram.
- Repeat the operations described from the opposite side of the vehicle.
- Stow the tiltable outrigger rams and the outrigger supports as indicated on page 19 and 20.

Crane with outriggers manual extension and supplementary outriggers fixed or with manual extension

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 rams only from the side where he can visually check the operation.

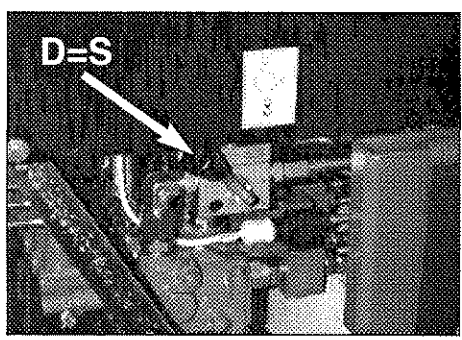


fig. 19

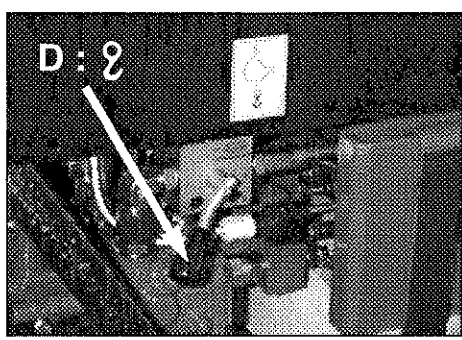


fig. 19a

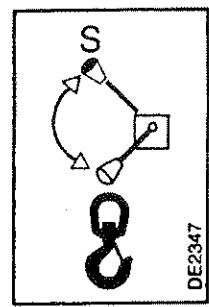


fig. 19b

Lever function D - C - CD

- Lever **D** Deviator crane-outriggers (- **S**) fig. 19-19a-19b
- Levers **C** Outrigger rams control distributor for the crane and for the supplementary outriggers. (Fig. 24-25)
- Levers **CD** Deviator for selecting the outrigger supports and rams; internal device facilitates the position and assures the selection is positive. (Fig. 24-25)

DISTRIBUTOR SIDE

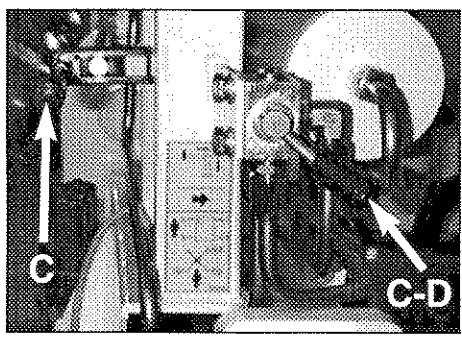


fig. 24

The controls of the outrigger rams, indicated in the fig. 24a-25a coincide with the plates **DE2738** and **DE2736** placed on the base, next to the control stations. The symbols and the graphics indicate the operating levers **C** and **CD** in relation to their movement.

- Position lever **D** of oil diverter crane-outriggers (-**S**) on **S**. fig. 19
- Manually extend the outrigger supports of the crane and of the manual supplementary outriggers (if fitted) (see page 19)
- Position the tiltable outrigger rams of the crane in a working position (see page 20)
- Open the taps (when fitted) on the valves placed on the outrigger rams. fig. 23

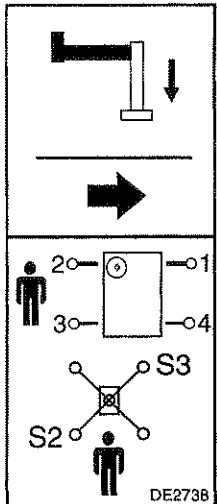


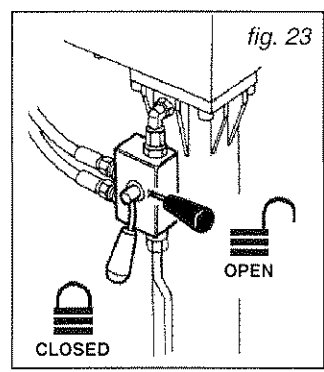
fig. 24a

Controls workable from the distributor side DE2738 fig. 24

- Outrigger ram descent **S2**; position lever **CD** of oil-diverter on **S2** and operate on distributor lever **C**.
- Outrigger ram descent **S3**; position lever **CD** on **S3** and operate on distributor lever **C**.

Controls workable from the double control side DE2736 fig. 25

- Outrigger ram descent **S1**; position lever **CD** on **S1** and operate on distributor lever **C**.
- Outrigger ram descent **S4**; position lever **CD** on **S4** and operate on distributor lever **C**.



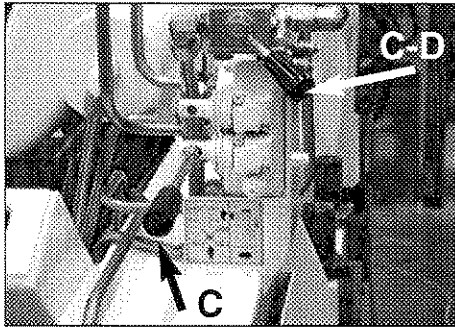


fig. 25

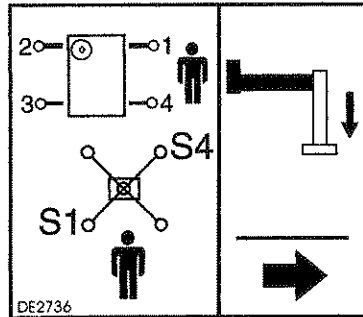


fig. 25a



(!) ATTENTION (!)

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


(!) ATTENTION (!)

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

To operate the crane, after having completed the descent and stabilisation manoeuvres,

- close the taps (when fitted) on the valves placed on the outrigger rams.
- Position lever **D** of oil diverter crane-outriggers ( - **S**) on  .

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 ( - **S**) on **S**.
- Open the taps (when fitted) on the valves placed on the outrigger rams.

Controls workable from the distributor side **DE2738** fig. 24

- Re-entry of the outrigger ram **S2**; position the lever **CD** of the deviator on **S2** and operate on the lever **C** of the distributor.
- Re-entry of the outrigger ram **S3**; position the lever **CD** on **S3** and operate on the lever **C**.

Controls workable from the double control side **DE2736** fig. 25

- Re-entry of the outrigger ram **S1**; position the lever **CD** on **S1** and operate on the lever **C**.
- Re-entry of the outrigger ram **S4**; position the lever **CD** on **S4** and operate on the lever **C**.

Stow the tiltable outrigger rams and the outrigger supports (see pages 19-20).

(!) WARNING (!)

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 movement. (Fig. 13)



fig. 13

It is compulsory to close the outriggers rams valves taps (when fitted) before moving the truck.

Crane with hydraulic extension and supplementary outriggers fixed or with manual extension

The controls to stabilize the vehicle conform 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.

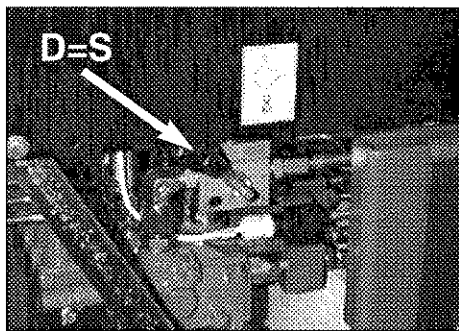


fig. 19

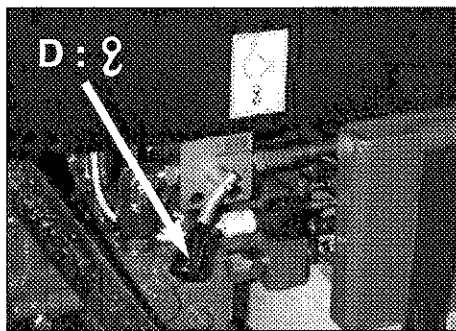


fig. 19a

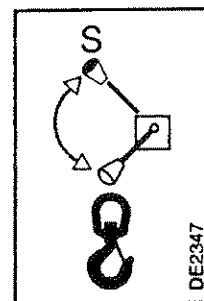


fig. 19b

Lever function **D - C - CD**

- Lever **D** Deviator crane-outriggers (S - S) fig. 19-19a-19b
- Levers **C** Outrigger rams control distributor for the crane and for the supplementary outriggers. (fig. 26-27)
- Levers **CD** Deviator for selecting the outrigger supports and rams; internal device facilitates the position and assures the selection is positive. (fig. 26-27)

DISTRIBUTOR SIDE

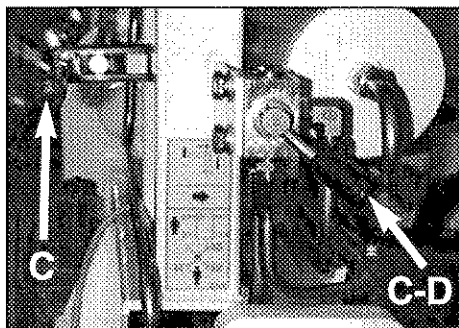


fig. 26

The controls of the outrigger supports and rams, indicated in the fig. 26a-27a coincide with the plates **DE2506** and **DE2507** placed on the base, next to the control stations.

The symbols and the graphics indicate the operating levers **D**, **C** and **CD** in relation to their movement.

- Position lever **D** of oil diverter crane-outriggers (S - S) on **S**.
- Disengage the locking devices of the outrigger supports by putting the levers **A** from the position of the fig. 28 to the one of the fig. 28a
- Manually extend the outrigger supports of the supplementary outriggers.
- Open the taps (when fitted) on the valves placed on the outrigger rams.

Controls workable from the distributor side **DE2506** fig. 26

- Exit of the outrigger support **E2**; position the lever **CD** of the deviator on **E2** and operate on the lever **C** of the distributor.
- Outrigger ram descent **S2**; position the outrigger ram in a working position (see pages 19-20), position the lever **CD** on **S2** and operate on the lever **C**.
- Outrigger ram descent **S3**; position the lever **CD** on **S3** and operate on the lever **C**.

Controls workable from the double control side **DE2507** fig. 27

- Exit of the outrigger support **E1**; position the lever **CD** on **E1** and operate on the lever **C**.
- Outrigger ram descent **S1**; position the outrigger ram in a working position, position the lever **CD** on **S1** and operate on the lever **C**.
- Outrigger ram descent **S4**; position the lever **CD** on **S4** and operate on the lever **C**.

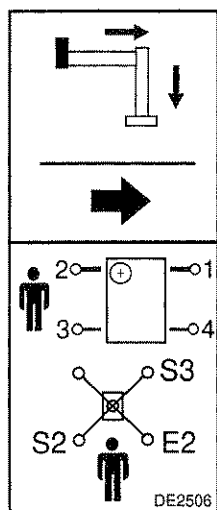


fig. 26a

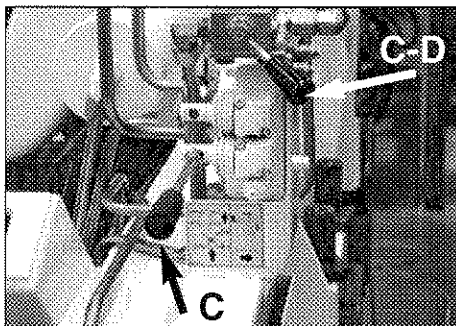


fig. 27

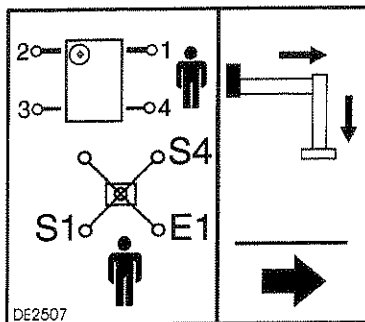


fig. 27a

(!) ATTENTION (!)



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

The complete extension of the outrigger supports is visually indicated by the yellow triangles which are found at the end of the beam. Fig. 29


(!) ATTENTION (!)

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

To operate the crane, after having completed the descent and stabilisation manoeuvres,

- close the taps (when fitted) on the valves placed on the outrigger rams.
- Position lever **D** of oil diverter crane-outriggers ( - **S**) on  .

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 ( - **S**) on **S**.
- Open the taps (when fitted) on the valves placed on the outrigger rams.

(!) WARNING (!)

Keep hands clear of automatic stop device (lever **A** from the position of the fig. 28a to the one of the fig. 28).

Controls workable from the distributor side **DE2506** fig. 26

- Re-entry of the outrigger ram **S3**; position the lever **CD** of the deviator on **S3** and operate on the lever **C** of the distributor.
- Re-entry of the outrigger ram **S2**; position the lever **CD** of the deviator on **S2** and operate on the lever **C**, position the ram in the rest position (see pages 19-20).
- Re-entry of the outrigger support **E2**; position the lever **CD** on **E2** and operate on the lever **C**.

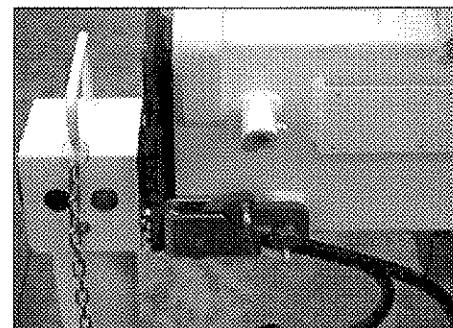


fig. 28

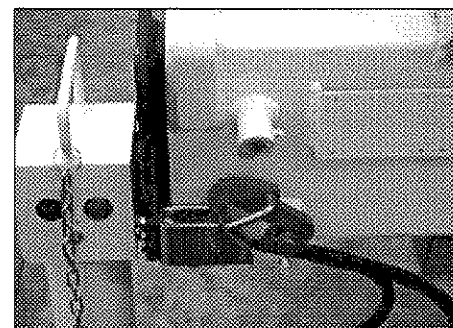


fig. 28a



fig. 29

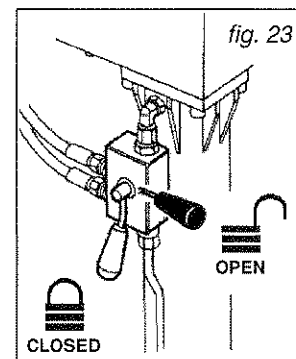


fig. 23

Controls workable from the double control side **DE2507** fig. 27

- Re-entry of the outrigger ram **S4**; position the lever **CD** of the deviator on **S4** and operate on the lever **C** of the distributor.
- Re-entry of the outrigger ram **S1**; position the lever **CD** of the deviator on **S1** and operate on the lever **C**, position the ram in the rest position.
- Re-entry of the outrigger support **E1**; position the lever **CD** on **E1** and operate on the lever **C**.

Re-enter the outrigger supports of the supplementary outriggers.

(!) WARNING (!)

Always check that the outriggers supports, once in their rest position, are locked in their seat by the locking devices, so as to assure the impossibility of accidental movement. (Fig. 28).

It is compulsory to close the outrigger rams valves taps (when fitted) before moving the truck.

CONTROLS TO OPERATE THE CRANE

(!) WARNING (!)

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

This coincides with that indicated on the plate **DE319A** placed on the outriggers. (fig. 30)

- (!) **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 and the graphics reported over each lever define their function in relation to their movement.

Note: The crane can be supplied (on request), in relation only to the crane controls (and eventual hydraulic implements), with Danfoss distributors.

The crane and hydraulic implements can be operated with:

- manual controls (distributor and double control) placed in dual side position on the base
- manual controls (distributor) placed on the top seat;
- manual controls (distributor and double control) placed in dual side position on the base and manual controls (hand-cable controls) placed on the top seat (optional and only with standard distributor; they are not possible with Danfoss distributor)

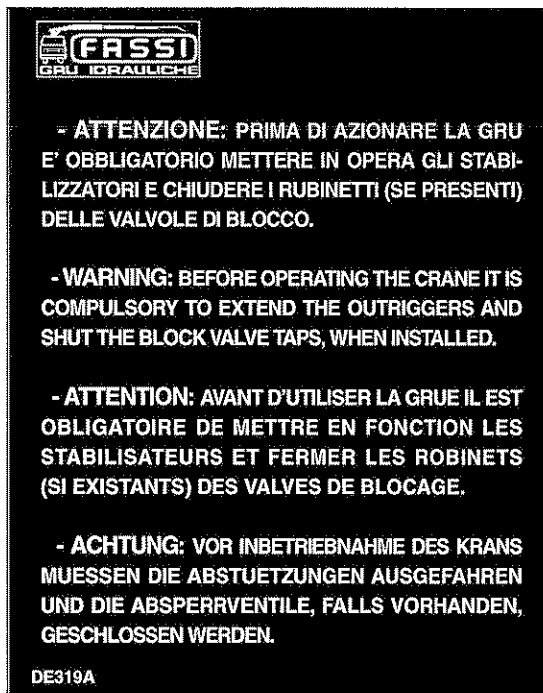


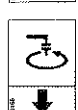
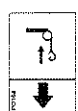
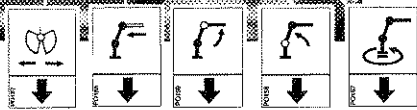
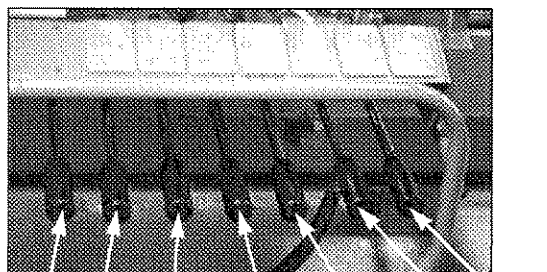
fig. 30



Crane controls - Lever function F-G-H-I (fig. 31-31a-31b)

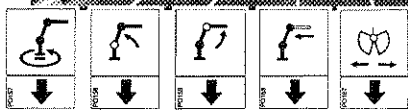
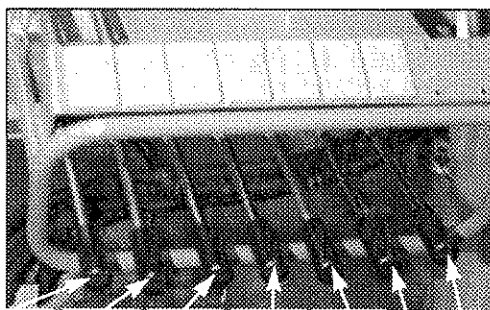
- F — Rotation control
- G — Inner ram control
- H — Outer ram control
- I — Outer booms section rams control

Distributor side fig. 33



N M L

Double control side fig. 31a

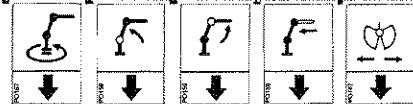
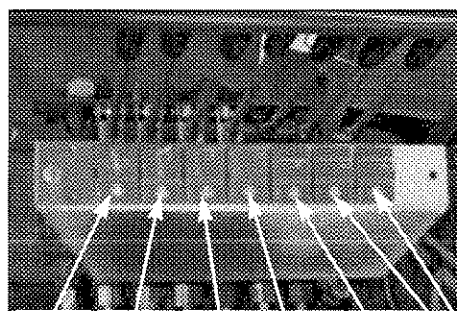


F G H I

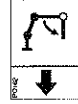


L M N

From top seat fig. 31b



F G H I



L M N

Hydraulic implements controls - Lever function L-M-N (fig. 31-31a-31b)

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

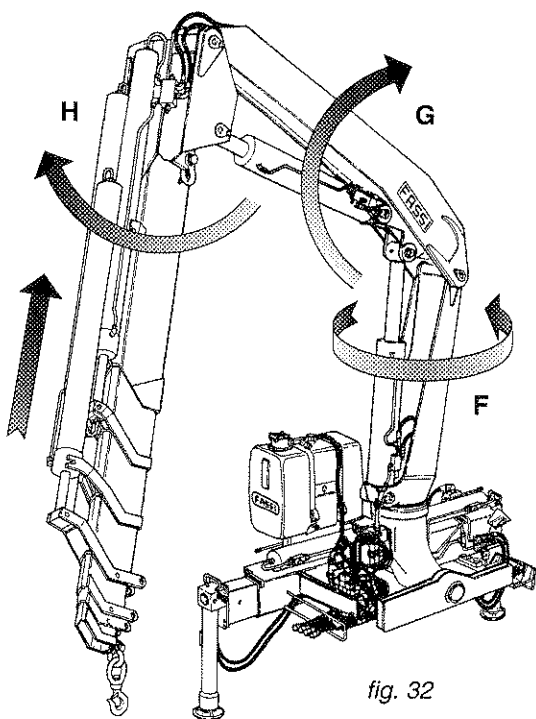


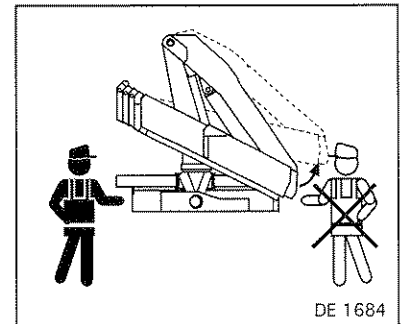
fig. 32

Manoeuvres to unfold the crane into a working condition (fig. 32)

- Engage the power take off.
- Stabilize the vehicle as described on Chapter IX.

(!) 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. 33) (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).



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. 33) (in case of operation from the double control side).
- Lift and re-enter the outriggers to within the overall vehicle width as described on Chapter IX.

Load manoeuvres (Crane version with load limiting device)

- (!) **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 of the jib when fitted) and carrying out a manoeuvre which will 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.**

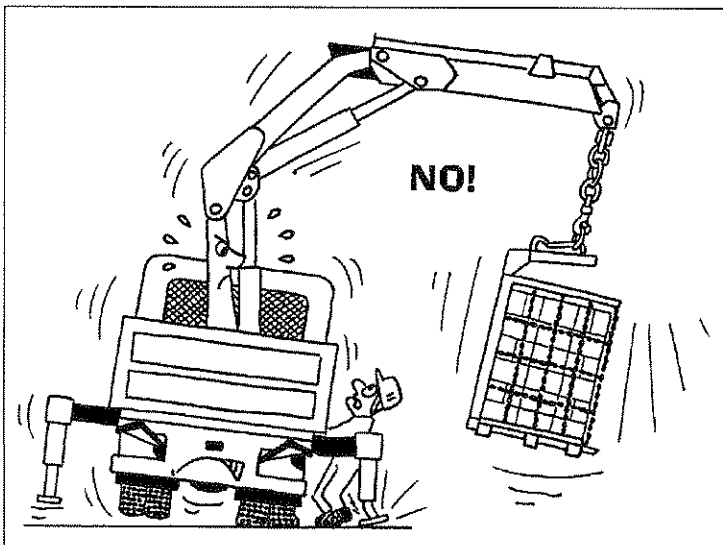
- (!) **The presence of the load limiting device does not release the user from the obligation to respect what is indicated on capacity plates and lifting curves.**

(!) 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.

Load manoeuvres (Crane version with lifting moment limiting device - optional)

- (!) **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, 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 observance of the capacity plates and lifting curves.**

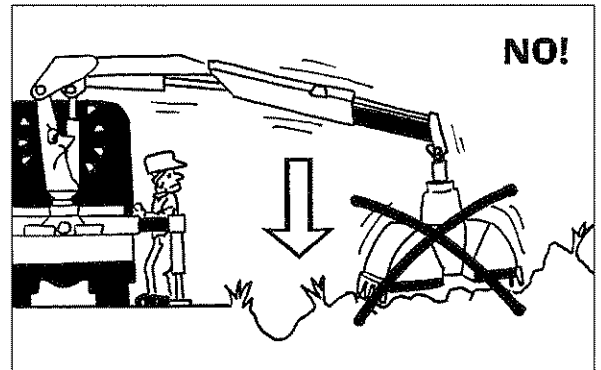
The crane can be provided with implements such as:

- Manual extensions
- Winches
- Hydraulic extensions
- Personnel baskets
- Clam 'shell buckets

(!) 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.

(!) **The crane can operate, intermittently and not continuously, with lifting devices other than the hook, only on loose and light materials (not on scrap iron).**
The dimensions and the capacity of the implements must be proportioned with crane performances.



! WARNING !

CRUSHING OR PUSH MANOEUVRES ARE NOT PERMITTED.

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 load limiting device (or by the lifting moment limiting device, supplied on request).

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.

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

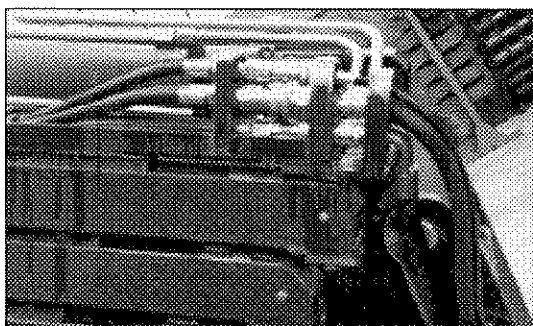


fig. 34

(!) 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.

Winch

The winch (fig. 35) is made of a drum (1) that can rotate by means of a hydraulic engine (2), on a structure (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 (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 (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).

The winch is identified by a plate (fig. 35a) 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 ...

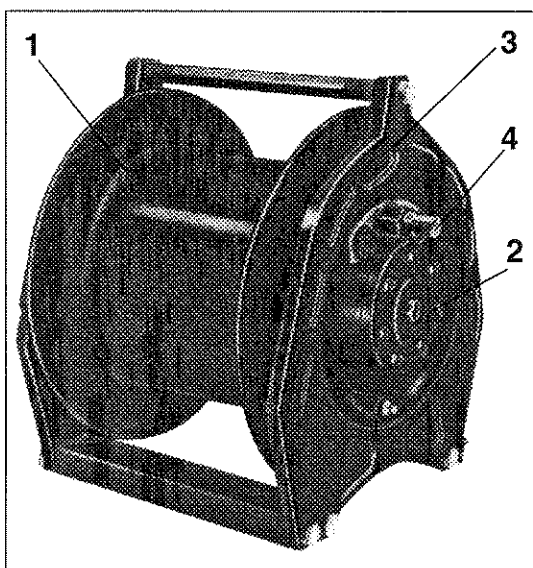


fig. 35

(!) 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.

The presser-cable always keeps the cable in tension easing the regular rewinding and without overlappings on the drum.

(!) WARNING (!)

On winches not equipped with presser-cable, 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, otherwise the cable could be damaged, to avoid 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 (3) turns must be wound at least**), causing the controls quiescing.

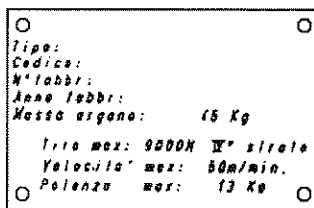
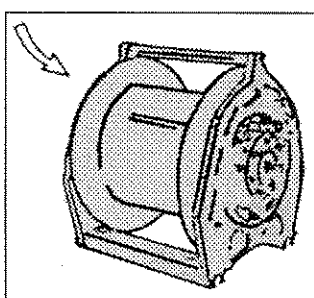


fig. 35a

The hydraulic jibs, foldable behind the cab, are additional booms, with articulation and double hydraulic extension (jib L102) to be fitted to the outer boom of the crane.

Hydraulic jibs / crane combinations:

- L102 for the cranes F95A.22 and F95A.23

Hydraulic jibs for the cranes F95A.22 and F95A.23

The jibs L102 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.

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

On request the manual extension ML10 can be installed on the outer boom of the jib.

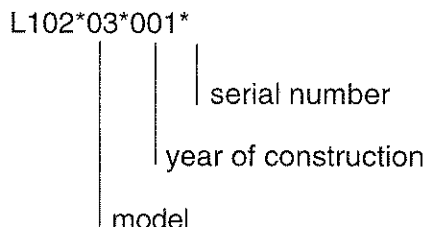
(!) Warnings and norms for crane utilisation apply also for hydraulic jibs use.

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

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. A)

L102 for
CRANE VERSION
".22/.23"

fig. A



NOMENCLATURE OF THE HYDRAULIC JIB

Pos. Description

- 1 - Connecting boom
- 2 - Locking pins
- 3 - Jib outer ram
- 4 - Jib outer boom
- 5 - Boom extension rams
- 6 - Extension booms
- 7 - Manual extension (on request)

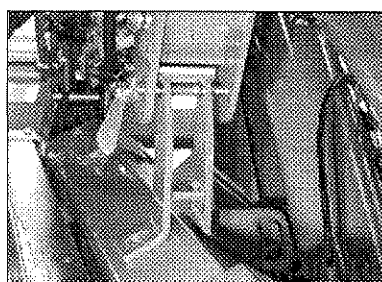
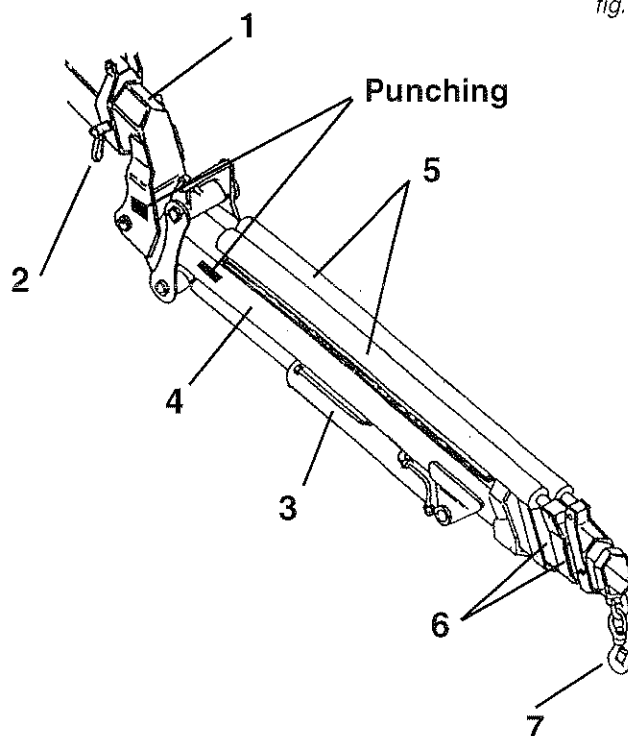


fig. B



fig. C

Manoeuvres to unfold the jib in working condition

- Operate as described to put the crane in working condition (Chapter X).
- Remove the locking pins. (fig. B-C).
- 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 **L**), insert the lock pin (fig. C-B) and secure it with the check pin. A rest bracket with bumper assures the correct 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

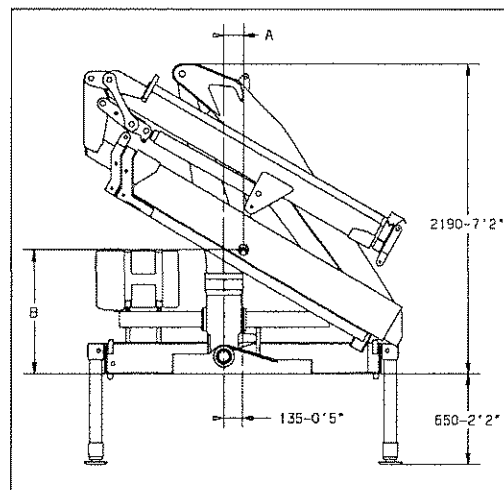
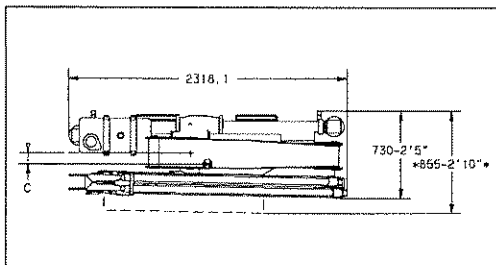
- Re-enter the jib outer booms sliding sections to their stroke end.
- Extend the crane outer ram to its stroke end.
- Extend (of at least 1 - 1,5 m) the crane outer booms sliding sections.
- Re-enter the outer ram of the jib and the inner ram of the crane to obtain the two rest brackets of the jib, 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.

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

⊕	L102	
A	145	0'6"
B	880	2'11"
C	90	0'4"

	Peso - Weight - Poids - Gewicht - Peso	
	kg	lbs
L102	315	694
ML*	20	44

*
Prolunghe meccaniche telescopiche
Telescopic manual extension
Rallonges manuelles telescopiques
Teleskopische manuelle
Verlängerungen
Prolongas manuales telescópicas



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.

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

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

- (!) 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).

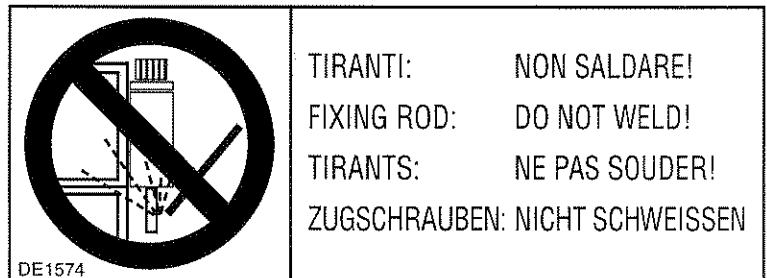
Do not place limbs, fingers or any other parts of anatomy into areas of the crane, which present possibilities of shearing, without having blocked such parts of the crane.

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

fig. 36

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.



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.

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

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

At the end of every working day

Check that all safety devices are efficient.

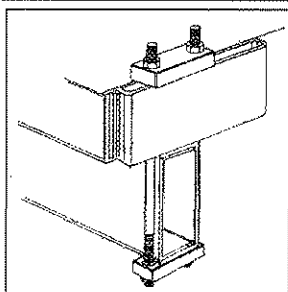
Check the level of the hydraulic oil in the tank.

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 control levers of the crane (distributors/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



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

Tightening torque for the rods is $M 22 \times 1,5 = 300 \text{ Nm}$

fig. 37

After every working week

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.

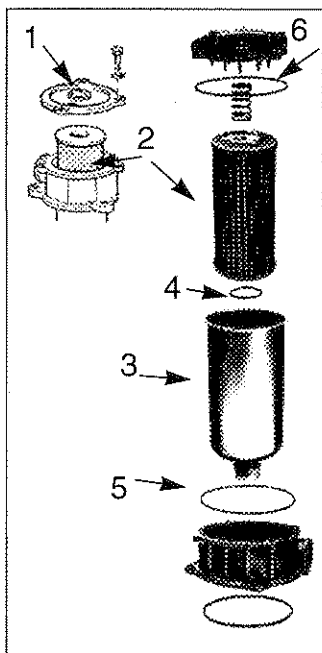


fig. 38

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.

Cleaning of the filter on the delivery line (before the distributor) supplied on crane with Danfoss distributor fig 38a.

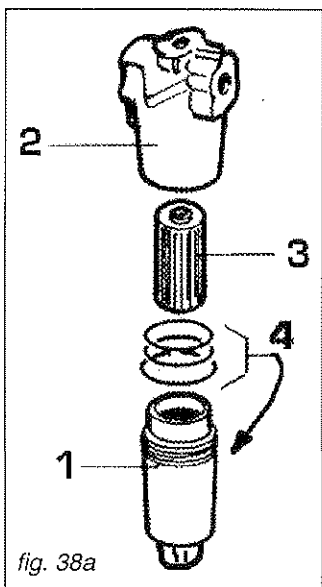


fig. 38a

- Unscrew with an hexagonal spanner (30 mm) the body filter pos. 1 from the head pos. 2
- Remove the cartridge pos. 3 and clean it as previously indicated.
- Check if the cartridge has crumbled up; in case, replace it!
- Re-assemble checking the seal pos. 4 on the filter body.
- Screw the filter body into the head.
- 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 45.

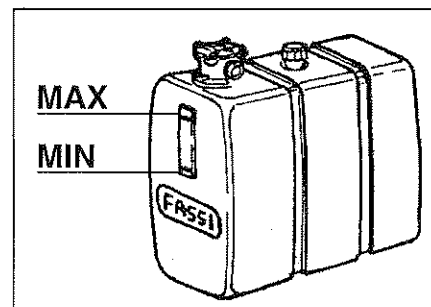


fig. 39

Periodically grease the points indicated on the crane (fig. 40) paying particular attention to the points not easily detected, like the pin articulation column/inner boom and inner boom/outer boom, placed respectively on the column and inner boom.

- fig. 40a shows the guide shoe lubricator for the column rotation, placed in the back of the base on the column support.
- fig. 40b and 40c show the lubricators of the column symmetrically positioned on the column support.
- fig. 40d shows the lubricator of the pendulum beam.
- fig. 40e shows the lubricator of the outrigger support lock placed on the dual side position of the guide supplementary outriggers.

For the sliding sections of the extension booms of the crane 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.

For the sliding sections of the outrigger supports guide shoes and rollers have been fitted and lubricators are placed on the top of the outrigger rams for the rotation (orientation to stow the outrigger rams).

Use a grease with the same characteristics indicated in the table on page 45.

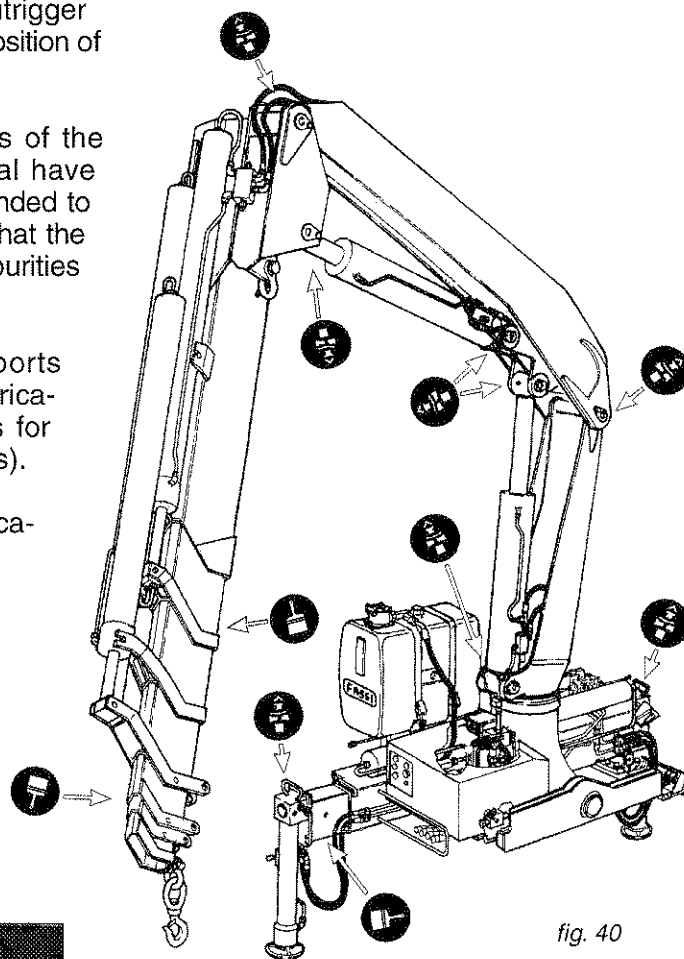


fig. 40

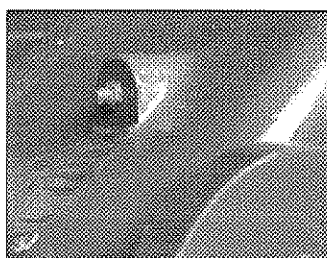


fig. 40a

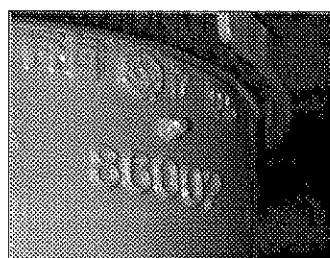


fig. 40b

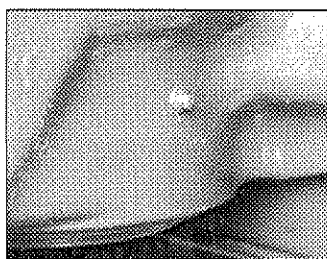


fig. 40c

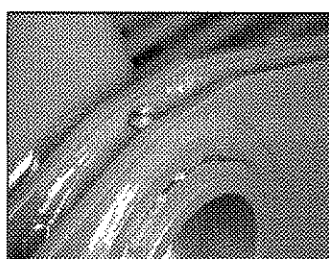


fig. 40d

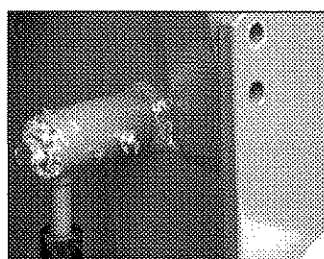


fig. 40e

After 500 working hours

Check the tightening torque

- of the fixing rods of the crane

Tightening torque for fixing rods M 22 x 1,5 = 300 Nm

- 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 with average friction value (0,15) and average-good tightening accuracy (C).

Bolt Diameter = 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

Bolt Diameter = D	Class 8.8 Torque = Nm	Class 10.9 Torque = Nm	Class 12.9 Torque = Nm
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

From "ELEMENTS DE FIXATION ASSEMBLAGE VISES"
E 25-030 AGOSTO 1984

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.

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

Replace the oil filter cartridge.

(!) The cartridge 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.

FABER-COM


Contiene mercurio: smaltire secondo le leggi in vigore

Hg

Es hat quecksilber: bitte beseitigen so wie gesetzlich

Mercury inside: scrap following laws in force

Il y a de mercure: écouler selon les lois en vigueur



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 Lack of lubrication</i>	Stabilize the vehicle Grease the bushes and the rotation guide shoe
The extension booms do not completely extend or work jerkily	<i>Lack of lubrication of the guide shoes</i>	Grease the guide shoes
Crane controls are not active	<i>Lack of electric energy</i>	Check the fuse, the battery and electric circuit See Chapter VIII
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

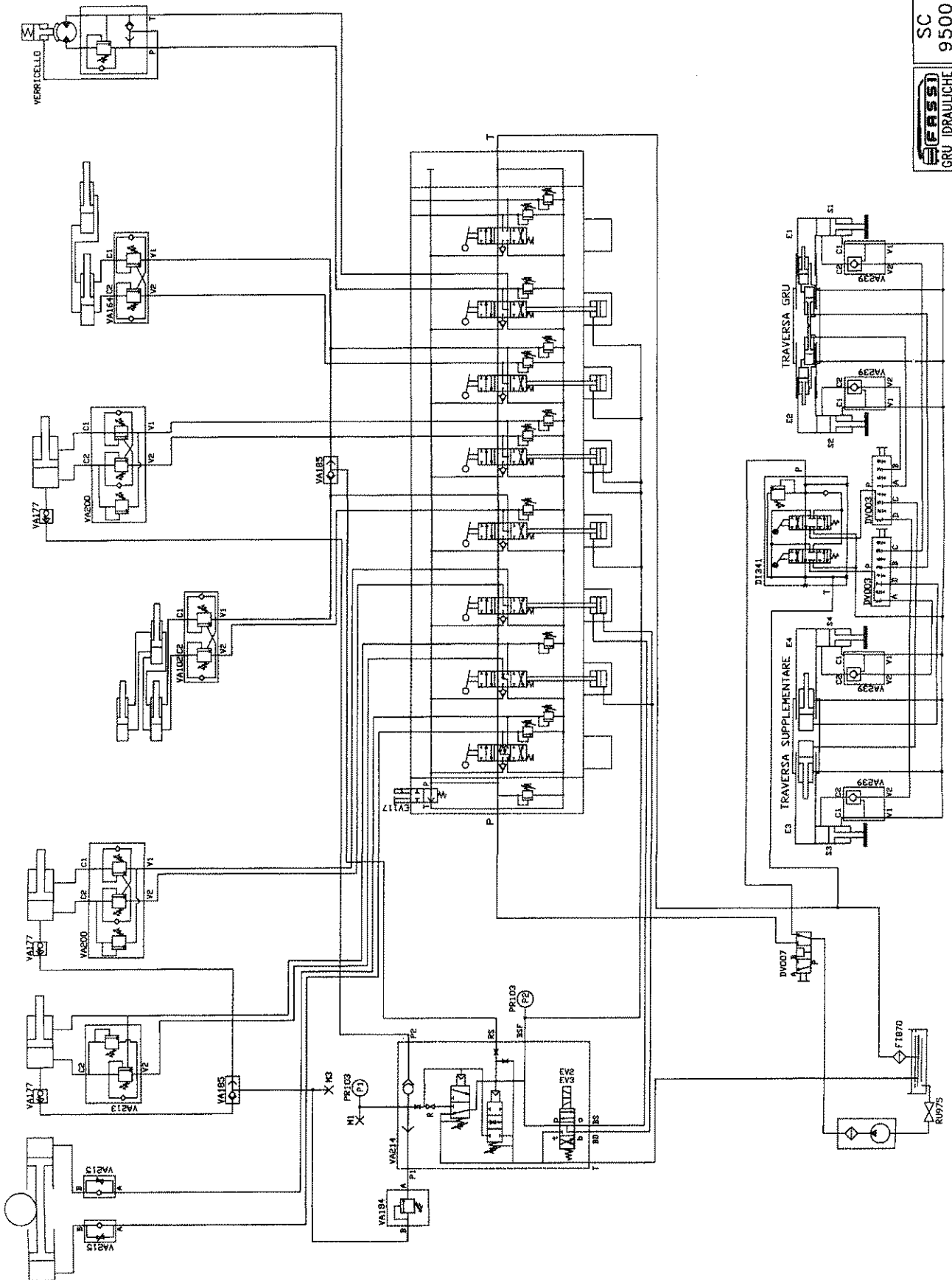
Operations to be carried out by a service center.

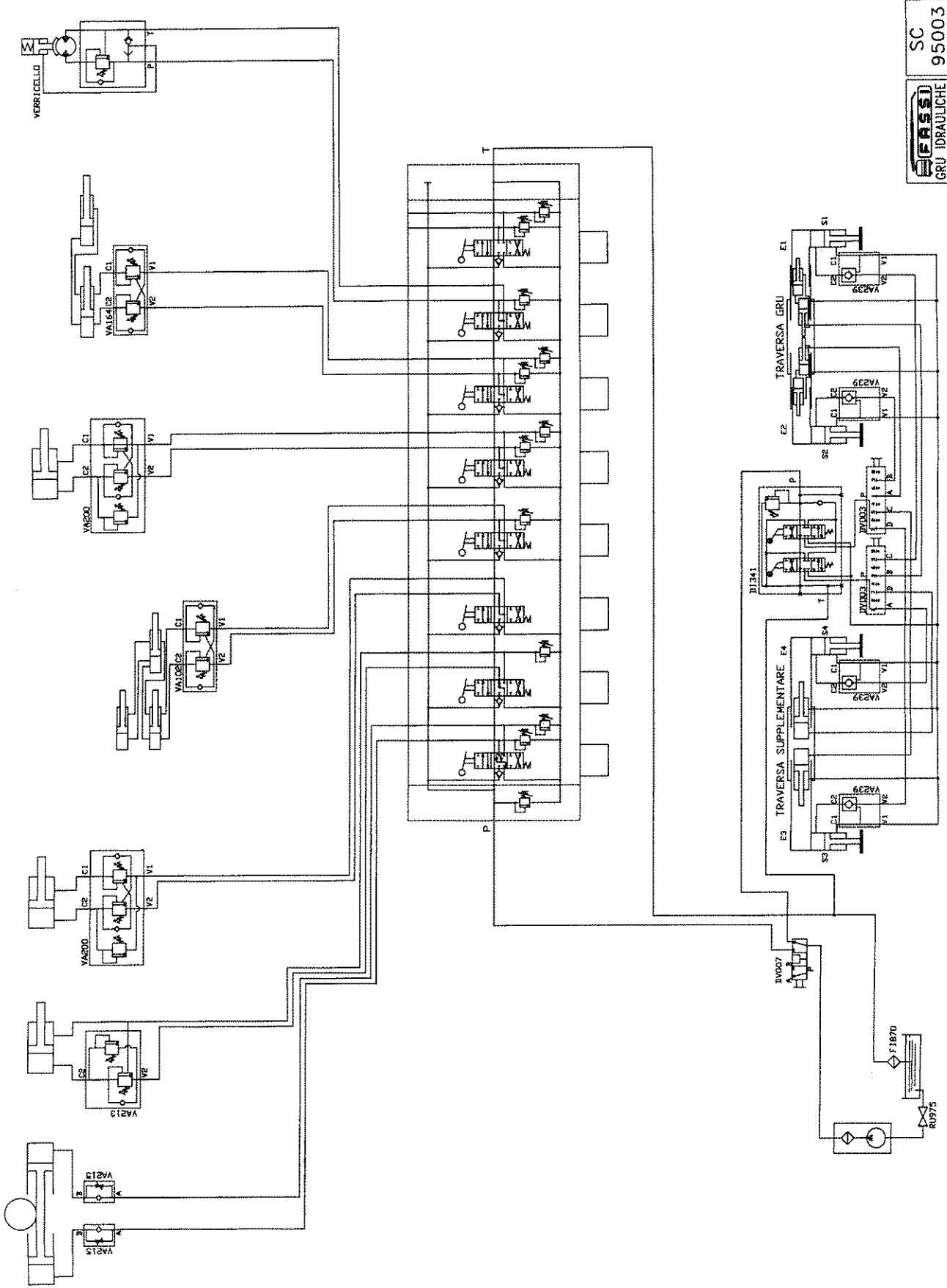
Faults	Cause	Remedies
The crane does not lift the loads indicated on the capacity plate	<i>Non efficiency of the pump Main pressure valve not properly adjusted, blocked or out of service</i>	Replace the pump Check the pressure, adjust the valve
	<i>Ram seals are not properly fitted</i>	Replace the seals
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>Wear of rotation guide shoe</i>	Register the guide shoe
	<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 AND ELECTRIC SCHEMATICS

Hydraulic schematic for crane with L102 - HCD4 distributor - ground controls - lifting moment limiting device "intelligent type" - number of functions for outrigger: from 4 to 8

FASSI
 GRU IDRAULICHE
 SC 95001



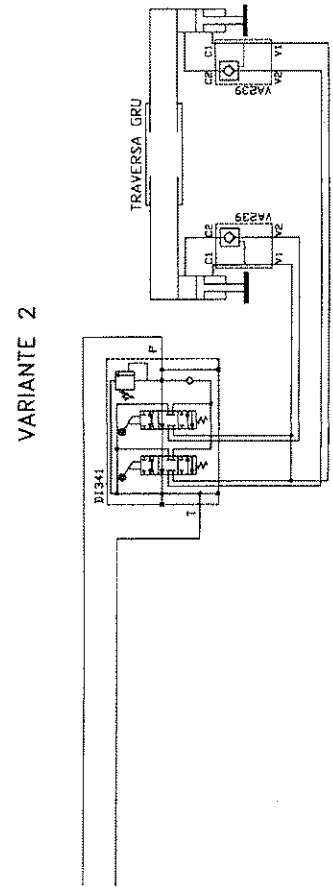
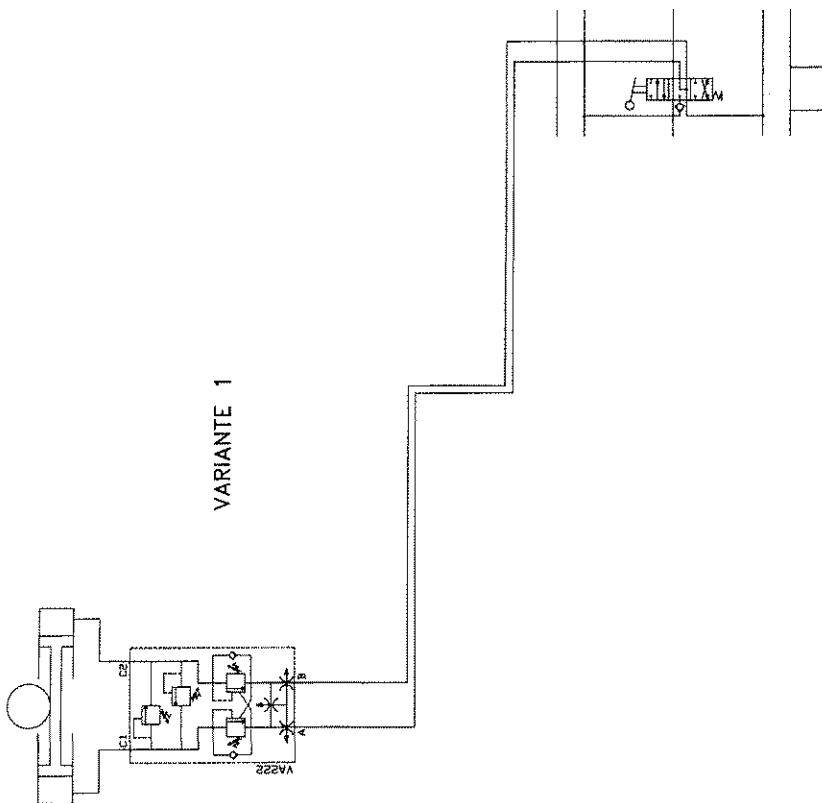


FASSI
GRU IDRAULICHE

SC
95003

Hydraulic schematic for crane - versions: 1) top seat controls with HCD4
 2) number of functions for outrigger: 2

FASSI
 GRU IDRAULICHE
 SC
 95004



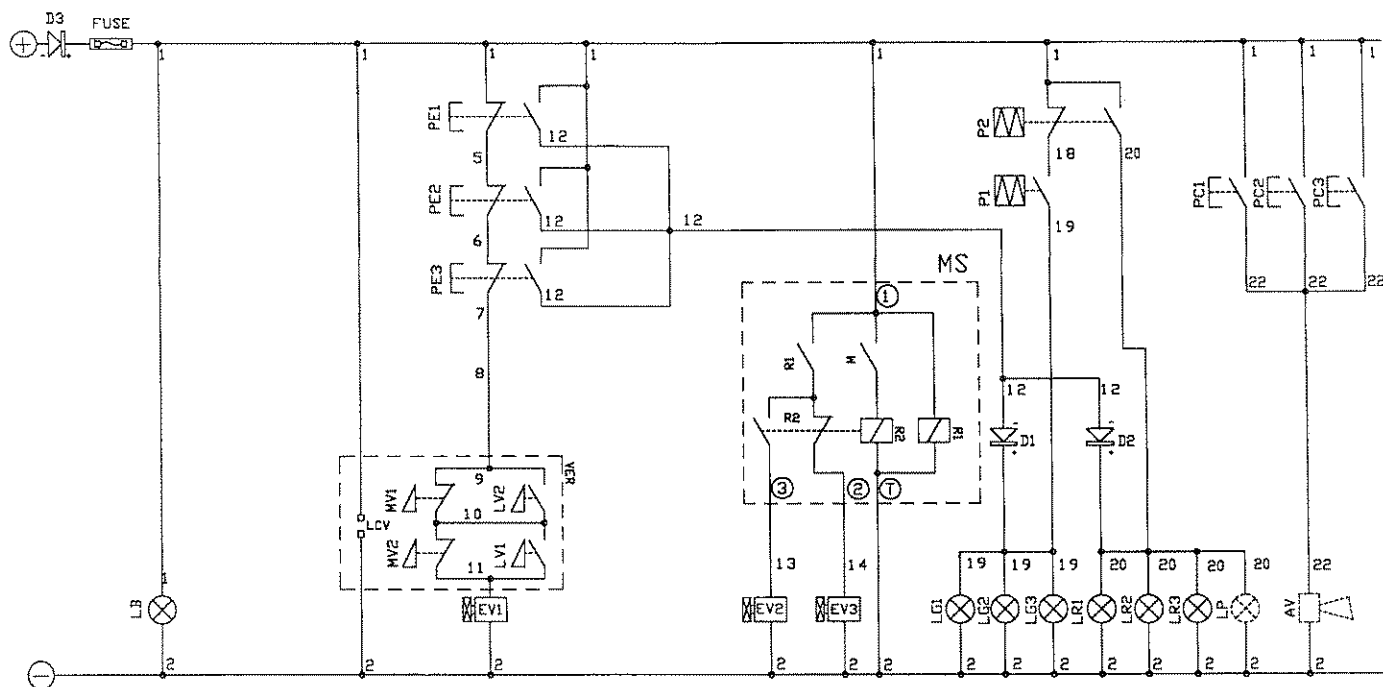


fig. 41

CODE DESCRIPTION

CODE	DESCRIPTION
ALIM	FEED MAIN CONTROL PANEL.
AV	ACOUSTIC ALARM
LP	ADDITIONAL FLASHING
FUSE	PROTECTION FUSE 10 A.
D1-D2	LAMPS TEST DIODES
D3	POLARITY PROTECTION DIODE
EV1	EMERGENCY ELECTROVALVE
EV2	ELECTROVALVE FOR CRANE LIFTING BLOCK
EV3	ELECTROVALVE FOR CRANE DESCENTS BLOCK
MS	MERCURY SLOPE SENSOR ON OUTER BOOM
P1	LOAD PRESSURE 90% DETECTOR
P2	BLOCK PRESSURE DETECTOR
LB	WHITE WARNING LIGHT
LG1	YELLOW WARNING LIGHT FOR MAIN CONTROL PANEL 90% LOAD REACHING
LG2	YELLOW WARNING LIGHT FOR DOUBLE CONTROL SATELLITE 90% LOAD REACHING
LG3	YELLOW WARNING LIGHT FOR ADDITIONAL SATELLITE 90% LOAD REACHING
LR1	RED WARNING LIGHT FOR MAIN CONTROL PANEL BLOCK
LR2	RED WARNING LIGHT FOR DOUBLE CONTROL SATELLITE BLOCK
LR3	RED WARNING LIGHT FOR ADDITIONAL SATELLITE BLOCK
PE1	MAIN CONTROL PANEL EMERGENCY BUTTON
PE2	DOUBLE CONTROL SATELLITE EMERGENCY BUTTON
PE3	ADDITIONAL SATELLITE EMERGENCY BUTTON
PC1	ACOUSTIC WARNING BUTTON FOR MAIN CONTROL PANEL
PC2	ACOUSTIC WARNING BUTTON FOR DOUBLE CONTROL SATELLITE
PC3	ACOUSTIC WARNING BUTTON FOR ADDITIONAL SATELLITE
SAT2	DOUBLE CONTROL SIDE SATELLITE
SAT3	ADDITIONAL SATELLITE
AR1	CRANE WINDING
AR2	EXTENSION WINDING
LCV	WINCH LOAD LIMITING DEVICE
MV1	PULLEY MICRO WINCH
MV2	DRUM MICRO WINCH
LV1	MICRO LEVER FOR CABLE WINDING REACTIVATION
LV2	MICRO LEVER FOR CABLE UNWINDING REACTIVATION

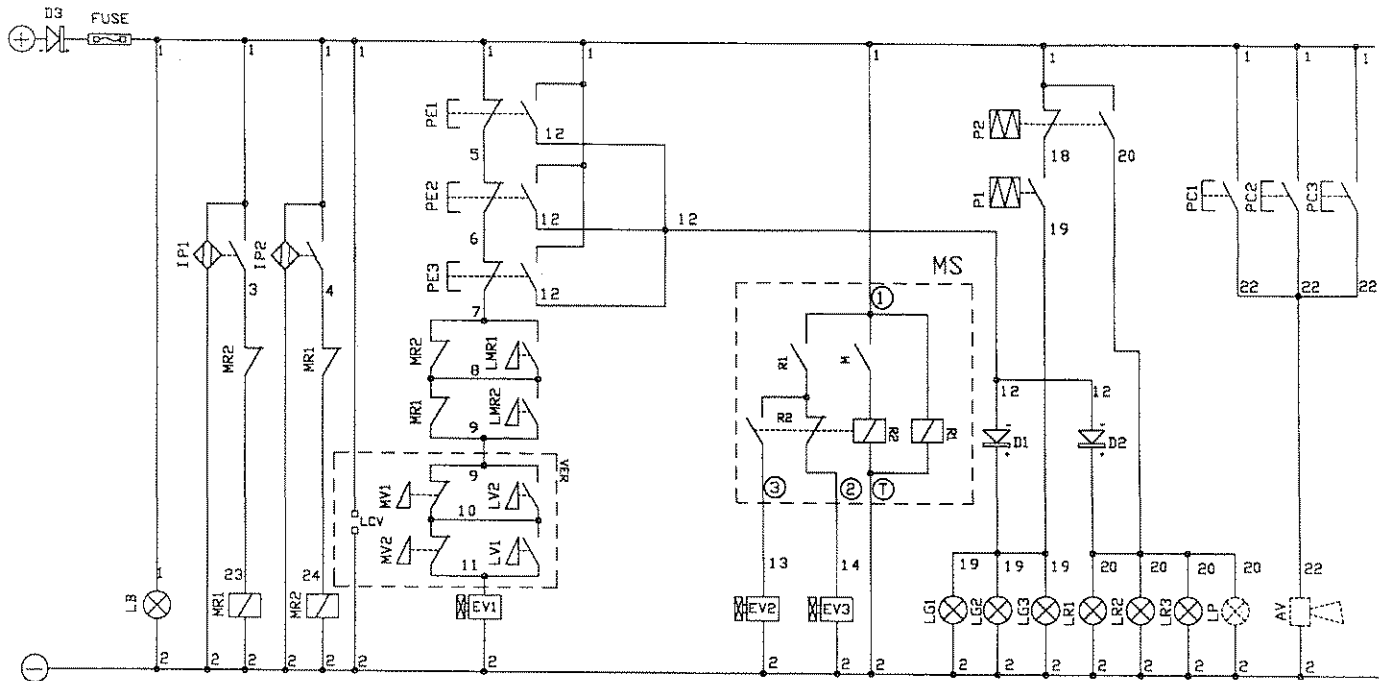


fig. 42

CODE DESCRIPTION

ALIM	FEED MAIN CONTROL PANEL.	LG3	YELLOW WARNING LIGHT FOR ADDITIONAL SATELLITE 90% LOAD REACHING
AV	ACOUSTIC ALARM	LR1	RED WARNING LIGHT FOR MAIN CONTROL PANEL BLOCK
LP	ADDITIONAL FLASHING	LR2	RED WARNING LIGHT FOR DOUBLE CONTROL SATELLITE BLOCK
FUSE	PROTECTION FUSE 10 A.	LR3	RED WARNING LIGHT FOR ADDITIONAL SATELLITE BLOCK
D1-D2	LAMPS TEST DIODES	PE1	MAIN CONTROL PANEL EMERGENCY BUTTON
D3	POLARITY PROTECTION DIODE	PE2	DOUBLE CONTROL SATELLITE EMERGENCY BUTTON
EV1	EMERGENCY ELECTROVALVE	PE3	ADDITIONAL SATELLITE EMERGENCY BUTTON
EV2	ELECTROVALVE FOR CRANE LIFTING BLOCK	PC1	ACOUSTIC WARNING BUTTON FOR MAIN CONTROL PANEL
EV3	ELECTROVALVE FOR CRANE DESCENTS BLOCK	PC2	ACOUSTIC WARNING BUTTON FOR DOUBLE CONTROL SATELLITE
IP1	CLOCKWISE ROTATION PROXIMITY	PC3	ACOUSTIC WARNING BUTTON FOR ADDITIONAL SATELLITE
IP2	ANTICLOCKWISE ROTATION PROXIMITY	SAT2	DOUBLE CONTROL SIDE SATELLITE
SDP	SEAT PROXIMITY SHUNT BOX	SAT3	ADDITIONAL SATELLITE
MR1	CLOCKWISE ROTATION RELAY	AR1	CRANE WINDING
MR2	ANTICLOCKWISE ROTATION RELAY	AR2	EXTENSION WINDING
LMR1	CLOCKWISE ROTATION MICRO REACTIVATION	LCV	WINCH LOAD LIMITING DEVICE
LMR2	ANTICLOCKWISE ROTATION MICRO REACTIVATION	MV1	PULLEY MICRO WINCH
MS	MERCURY SLOPE SENSOR ON OUTER BOOM	MV2	DRUM MICRO WINCH
P1	LOAD PRESSURE 90% DETECTOR	LV1	MICRO LEVER FOR CABLE WINDING REACTIVATION
P2	BLOCK PRESSURE DETECTOR	LV2	MICRO LEVER FOR CABLE UNWINDING REACTIVATION
LB	WHITE WARNING LIGHT		
LG1	YELLOW WARNING LIGHT FOR MAIN CONTROL PANEL 90% LOAD REACHING		
LG2	YELLOW WARNING LIGHT FOR DOUBLE CONTROL SATELLITE 90% LOAD REACHING		

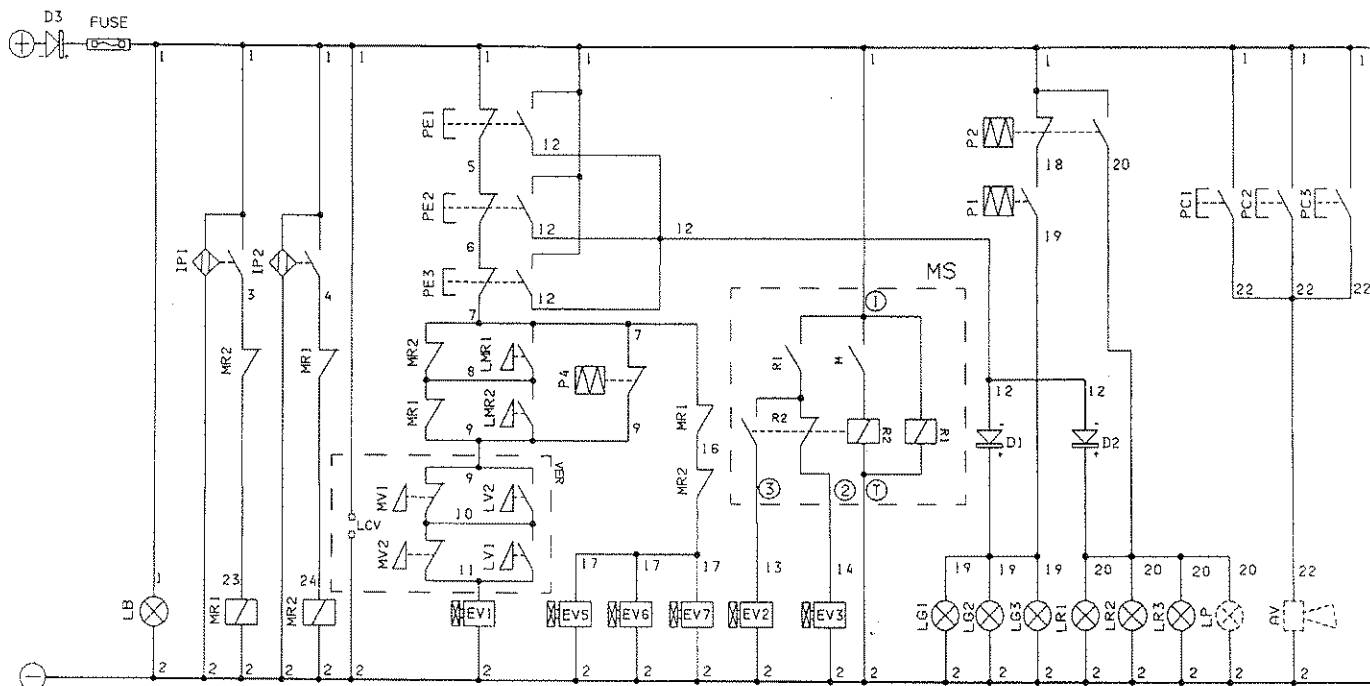


fig. 43

CODE DESCRIPTION

ALIM	FEED MAIN CONTROL PANEL.	LG2	YELLOW WARNING LIGHT FOR DOUBLE CONTROL SATELLITE 90% LOAD REACHING
AV	ACOUSTIC ALARM	LG3	YELLOW WARNING LIGHT FOR ADDITIONAL SATELLITE 90% LOAD REACHING
LP	ADDITIONAL FLASHING	LR1	RED WARNING LIGHT FOR MAIN CONTROL PANEL BLOCK
FUSE	PROTECTION FUSE 10 A.	LR2	RED WARNING LIGHT FOR DOUBLE CONTROL SATELLITE BLOCK
D1-D2	LAMPS TEST DIODES	LR3	RED WARNING LIGHT FOR ADDITIONAL SATELLITE BLOCK
D3	POLARITY PROTECTION DIODE	PE1	MAIN CONTROL PANEL EMERGENCY BUTTON
EV1	EMERGENCY ELECTROVALVE	PE2	DOUBLE CONTROL SATELLITE EMERGENCY BUTTON
EV2	ELECTROVALVE FOR CRANE LIFTING BLOCK	PE3	ADDITIONAL SATELLITE EMERGENCY BUTTON
EV3	ELECTROVALVE FOR CRANE DESCENTS BLOCK	PC1	ACOUSTIC WARNING BUTTON FOR MAIN CONTROL PANEL
EV6	ELECTROVALVE FOR CRANE LIFTING MOMENT LIMITING DEVICE OF THE TWO WORKING ZONES	PC2	ACOUSTIC WARNING BUTTON FOR DOUBLE CONTROL SATELLITE
EV7	ELECTROVALVE FOR LIMITING GENERAL PRESSION	PC3	ACOUSTIC WARNING BUTTON FOR ADDITIONAL SATELLITE
IP1	CLOCKWISE ROTATION PROXIMITY	SAT2	DOUBLE CONTROL SIDE SATELLITE
IP2	ANTICLOCKWISE ROTATION PROXIMITY	SAT3	ADDITIONAL SATELLITE
SDP	SEAT PROXIMITY SHUNT BOX	AR1	CRANE WINDING
MR1	CLOCKWISE ROTATION RELAY	AR2	EXTENSION WINDING
MR2	ANTICLOCKWISE ROTATION RELAY	LCV	WINCH LOAD LIMITING DEVICE
LMR1	CLOCKWISE ROTATION MICRO REACTIVATION	MV1	PULLEY MICRO WINCH
LMR2	ANTICLOCKWISE ROTATION MICRO REACTIVATION	MV2	DRUM MICRO WINCH
MS	MERCURY SLOPE SENSOR ON OUTER BOOM	LV1	MICRO LEVER FOR CABLE WINDING REACTIVATION
P1	LOAD PRESSURE 90% DETECTOR	LV2	MICRO LEVER FOR CABLE UNWINDING REACTIVATION
P2	BLOCK PRESSURE DETECTOR		
P4	ROTATION CONTROL PRESSURE DETECTOR		
LB	WHITE WARNING LIGHT		
LG1	YELLOW WARNING LIGHT FOR MAIN CONTROL PANEL 90% LOAD REACHING		

control panel cover

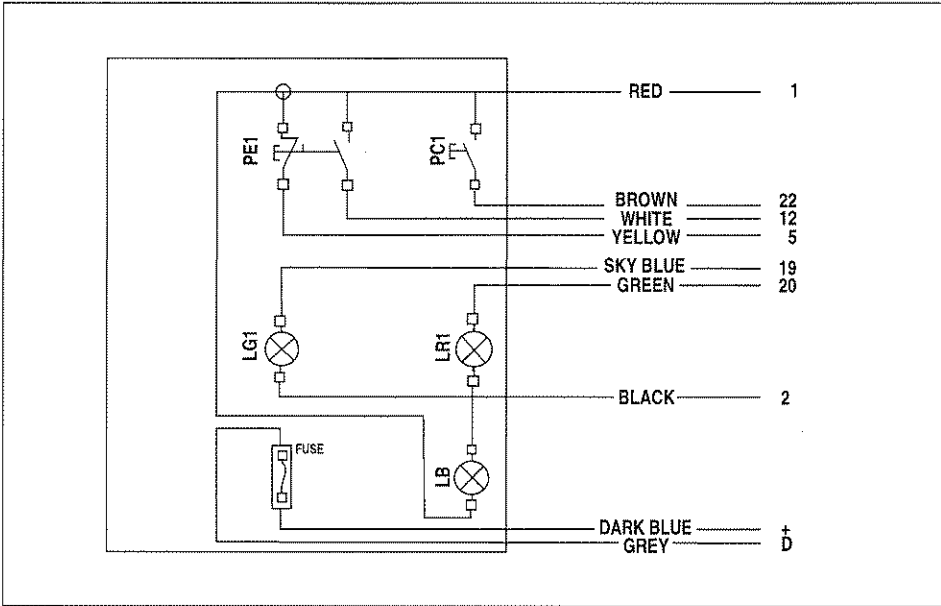


fig. 44

top seat satellite

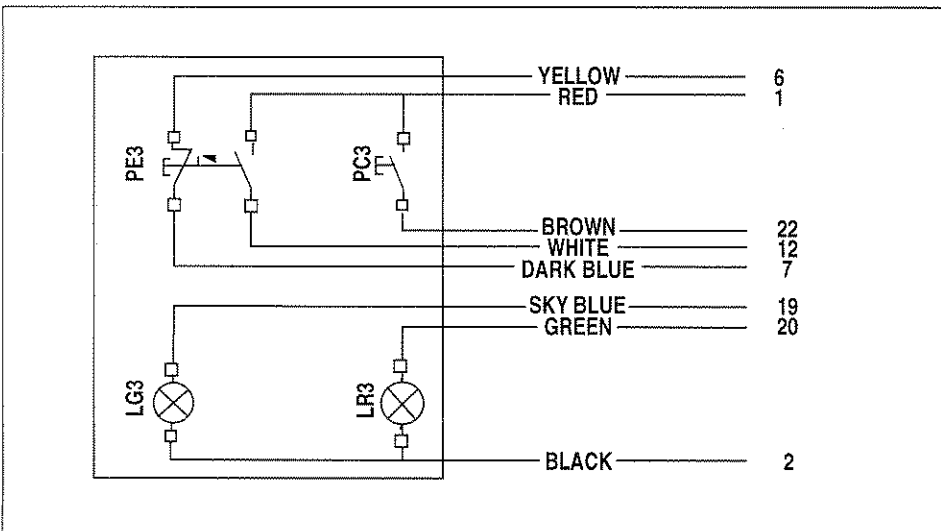


fig. 45

double control satellite

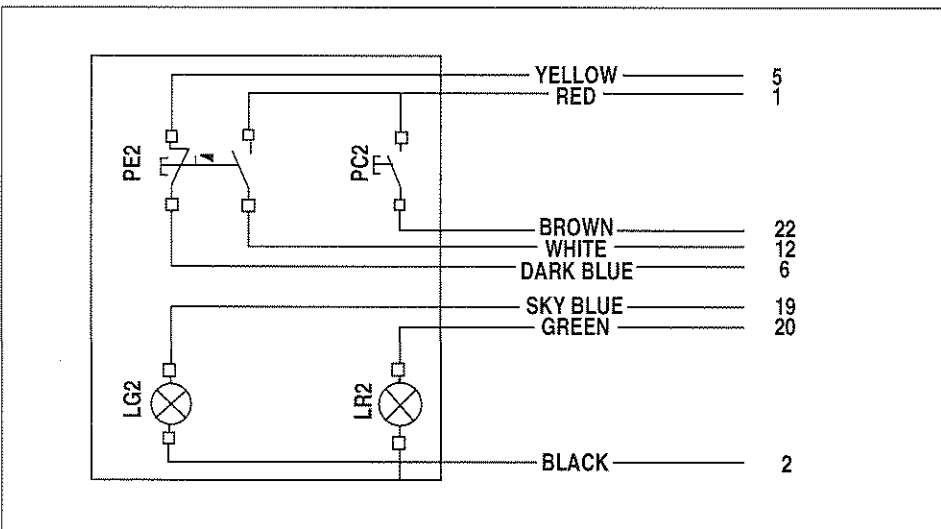


fig. 46

TABLE OF HYDRAULIC OIL AND LUBRICANTS CHARACTERISTICS

HYDRAULIC OIL WITH HIGH VISCOSITY: ISO-L-HV

Minimal external temperature :	maximal oil temperature:	Gradation
-35°C	+45°C	ISO VG 32
-20°C	+75°C	ISO VG 46

HYDRAULIC OIL WEAR RESISTANT: ISO-L-HM

Minimal external temperature :	maximal oil temperature:	Gradation
-10°C	+60°C	ISO VG 32
+ 0°C	+75°C	ISO VG 46
+ 5°C	+85°C	ISO VG 68
+10°C	+90°C	ISO VG 100

GREASE

Consistency: NLGI EP 2 - EP 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.

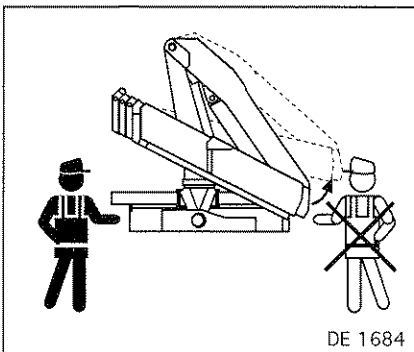
BRILUBE 50 (BRITISH ROPES - BRINDON)

	<p>FASSI GRU IDRAULICHE SpA 24021 ALBINO (BG) ITALIA - Via del Carmeliano, 2 Tel. + 39 35 77.40.00 - Fax + 39 35 75.50.20</p>	<p>INSTRUCTIONS FOR SAFE USE OF THE CRANE</p>	<p>DE1771A</p>
<p>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: - 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: - 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, when installed, are closed. 6 Use the crane in accordance with the use and maintenance manual, making sure that: - 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.</p>			

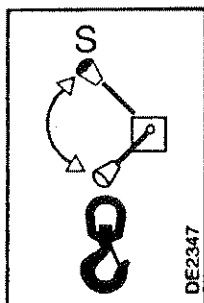
DE 1771A Instruction plate and safety norms


<p>- ATTENZIONE: PRIMA DI AZIONARE LA GRU E' OBBLIGATORIO METTERE IN OPERA GLI STABILIZZATORI E CHIUDERE I RUBINETTI (SE PRESENTI) DELLE VALVOLE DI BLOCCO.</p>
<p>- WARNING: BEFORE OPERATING THE CRANE IT IS COMPULSORY TO EXTEND THE OUTRIGGERS AND SHUT THE BLOCK VALVE TAPS, WHEN INSTALLED.</p>
<p>- ATTENTION: AVANT D'UTILISER LA GRUE IL EST OBLIGATOIRE DE METTRE EN FONCTION LES STABILISATEURS ET FERMER LES ROBINETS (SI EXISTANTS) DES VALVES DE BLOCAGE.</p>
<p>- ACHTUNG: VOR INBETRIEBNAHME DES KRANS MUESSEN DIE ABSTUETZUNGEN AUSGEFAHREN UND DIE ABSPERRVENTILE, FALLS VORHANDEN, GESCHLOSSEN WERDEN.</p>
<p>DE319A</p>

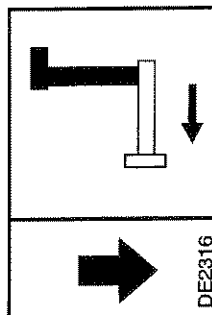
DE 319A Warning plate to stabilize the vehicle before using the crane



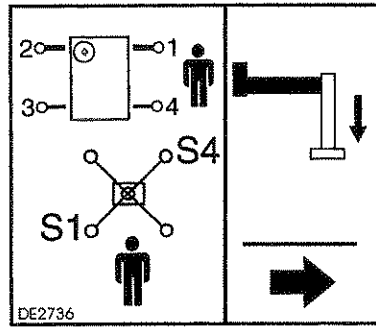
DE 1684 Do not operate from the double control side to unfold or fold the crane.



DE 2347
Oil-diverter control plate

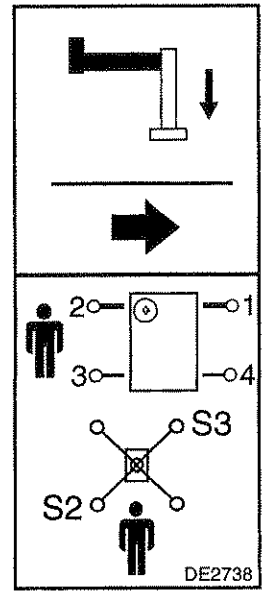


DE 2316
Outrigger control plate

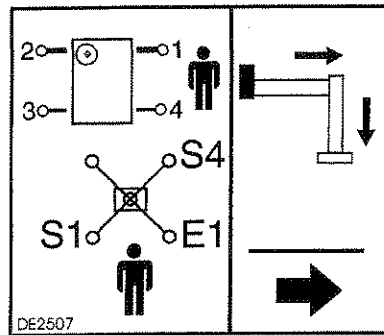


DE 2736

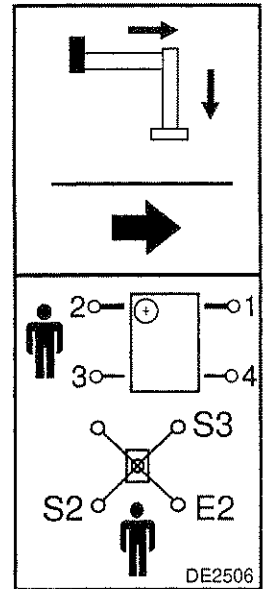
Instruction plates to stabilize the vehicle



DE 2738



DE 2507



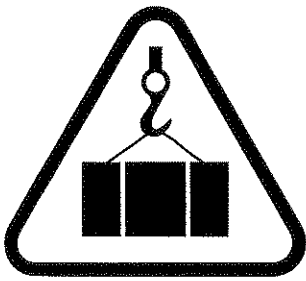
DE 2508



DE 1681
Greasing points with brush

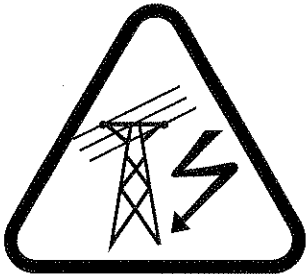


DE 1682
Greasing points at pressure



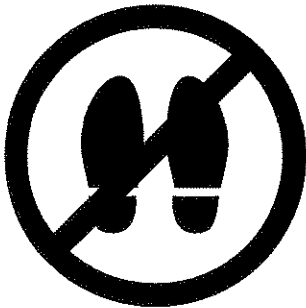
DE 1686

Do not walk or stop under a suspended load



DE 1683

Do not operate in proximity of electric high-tension lines



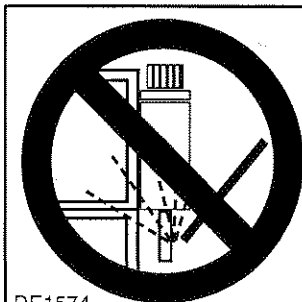
DE 1679

Do not walk on...



DE 1680

Do not use water to extinguish fire



DE1574

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.

