

FASSI CRANE

F 280SE.22 G.C. use and maintenance

INDEX

A0	INTRODUCTION
B0	SAFETY NORMS
C0	WARNING AND INSTRUCTIONS
D0	CLASSIFICATION OF THE CRANE MODEL
D0.1	Technical data
D1	IDENTIFICATION OF THE CRANE MODEL
E0	CRANE NOMENCLATURE
F0	NOMENCLATURE OF THE SAFETY AND PROTECTION DEVICES
G2	MANOEUVRES AND CONTROLS TO STABILIZE THE VEHICLE
G2.1	Functions of control levers for stabilization
G2.2	Controls to stabilize the vehicle
H0	CONTROLS TO OPERATE THE CRANE
H0.1	Manoeuvres to unfold the crane into a working condition
H0.2	Manoeuvres to fold the crane into the rest condition
H1	MANOEUVRES OF THE CRANE LOADS
H1.1	Lifting moment limiting device "ELECTRONIC"
H1.2	Control panel
H1.3	Lifting moment limiting device for two working sectors (optional)
H1.4	Rotation limiting device
H1.5	OVERIDE - Reactivation button for the crane functions with 2 DANFOSS distributors in case of an electrical failure or of the appearance of the signal "ALARM" on the display B
L0	USE OF IMPLEMENTS
M0	MAINTENANCE INSTRUCTIONS
M0.0	Timer
M0.1	After every 8 working hours or at the end of every working day
M0.2	After every 40 working hours or after every working week
M0.4	After every 500 working hours
M0.5	After every 1000 working hours or after every working year
M0.6	Complete overhaul of the crane is required when 10.000 working hours or 10 years' life are reached
N0	TABLE OF HYDRAULIC OIL AND LUBRICANTS CHARACTERISTICS
P0	POSSIBLE FAULTS
P0.1	Operations which can be carried out by the user
P0.2	Operations to be carried out by a service center
R0	INSTRUCTION AND WARNING PLATES
S0	HYDRAULIC SCHEMATICS
T0	ELECTRIC SCHEMATICS
V0	CAPACITY PLATES

FASSI CRANE

F 280SE.22 G.C. use and maintenance

This instruction manual describes the FASSI CRANE F280SE.22 G.C...

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.

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;
- 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, and the crane is in folded position.

fig. 1

	FASSI GRU IDRAULICHE SpA 24021 ALBINO (BG) ITALY - Via dei Carmelitani, 2 Tel. + 39 35 77.64.00 - Fax + 39 35 75.50.20	INSTRUCTIONS FOR SAFE USE OF THE CRANE	DE2676
<ol style="list-style-type: none"> 1 Only authorized persons are permitted to operate the crane. 2 The crane must be used on firm, level ground. 3 Check that the vehicle hand brake is on and that the wheels are chocked. 4 Before operation make sure that: <ul style="list-style-type: none"> - no-one is within the working area of the crane; - the safety devices are in place and operative; - the minimum safe working distances from power lines are observed; - the load is correctly slung and hooked. 5 Stabilize the vehicle with the outriggers, making sure that: <ul style="list-style-type: none"> - the lateral supports are fully extended; - the wheels are in contact with the ground and the suspension is not completely unloaded; 		<ol style="list-style-type: none"> 6 Use the crane in accordance with the use and maintenance manual, making sure that: <ul style="list-style-type: none"> - the load and radius are within the maximum limits shown on the crane capacity plate; - the crane is used progressively avoiding sudden load movements; - swinging or dragging of the load is avoided; - the load is lifted before rotating. 7 When using implements protect the working area with a barrier. 8 The vehicle/crane are not left unless the power take off is disengaged and the load is on the ground. 9 Before driving the vehicle ensure that the outriggers are fully retracted and re-entered and the crane is in the folded position. 	

THESE INSTRUCTIONS FOR THE USE OF THE CRANE COINCIDE WITH THOSE OF THE PLATE DE2676 (FIG. 1) PLACED NEXT TO THE CRANE.

C0 WARNING AND INSTRUCTIONS

- (!) 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.

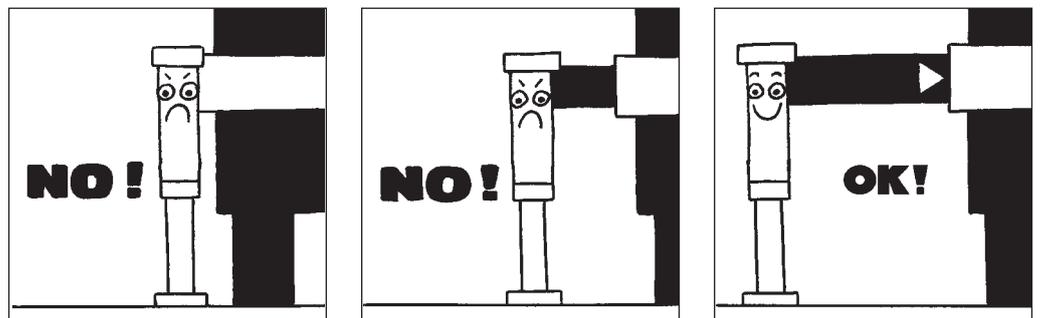
To operate the crane it is necessary to fully understand its working, safety and warranty norms.

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 checking that they rest on a solid base; if necessary use larger outrigger base plates (available on request) to avoid sinking. If you adopt other means, make sure that they are suitably sized for the load they must bear.



Stabilize the vehicle on a horizontal plane with a maximum tolerance of 1,5 degrees.



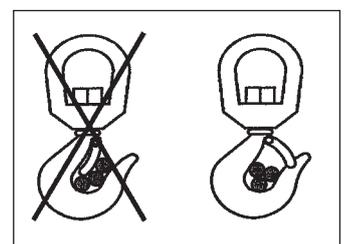
Never operate the outriggers when the crane is loaded.

Remember that the stability of the unit (crane-vehicle) is only guaranteed by the fully 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.

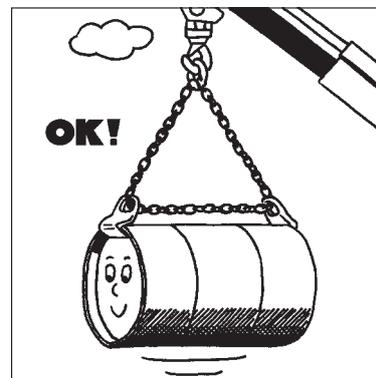
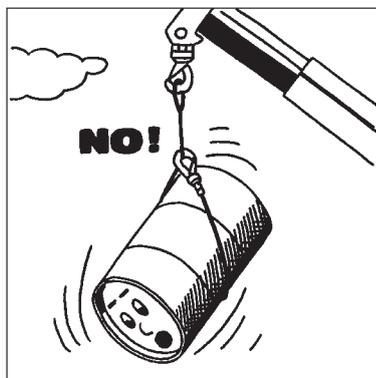
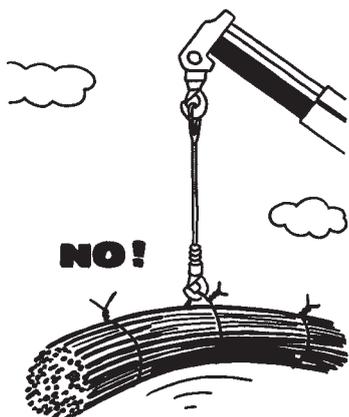
Make sure that the hook is always free to rotate on its pin and that nothing obstructs its vertical positioning.



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.

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

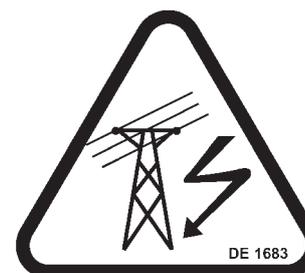


It is absolutely prohibited to walk or stop under a suspended load and for unauthorized persons to be within the working area.
Avoid swinging the load above the control station; any hidden danger situation must be audibly alarmed.

Avoid all those situations which may result in crushing during crane stabilization, movement and load handling.
The table reports the minimum safe working distances to avoid crushing parts of the body.



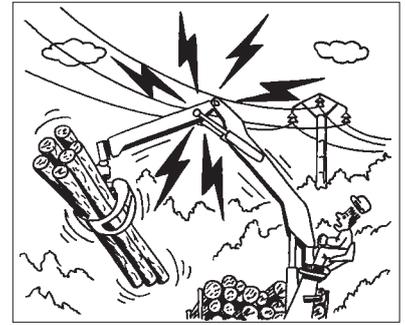
Parts of the Body	Minimum safe working distance mm	Figure	Parts of the Body	Minimum safe working distance mm	Figure
Body	500		Head	300	
Leg	180		Foot	120	
Toes	50		Arm	120	
Hand Wrist Fist	100		Finger	25	



In conformity with "EN 349" Standard the minimum safe working distances to avoid crushing parts of the body.

NOTE: Failure to respect the minimum safe distances may result in a deadly risk for the operator and his assistants.

Maintain safe clearances from electrical lines and apparatus. You must allow for boom sway, rock or sag and electrical line and loadline swaying. This lifting device does not provide protection from contact with or proximity to an electrically charged conductor. You must maintain a clearance of at least 10 feet between any part of the crane, loadline or load and any electrical line or apparatus carrying up to 50.000 volts. One foot additional clearance is required for every additional 30.000 volts or less.



NOTE: Failure to respect the minimum safe distances may result in electrical hazards for the operator and his assistants.

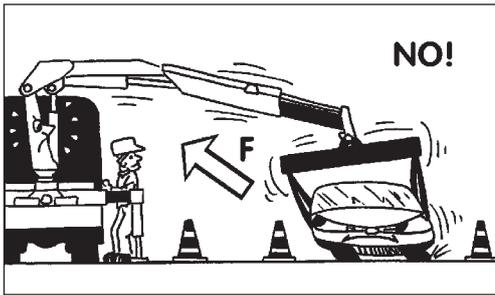
Do not utilize the crane with stormy weather or with wind speed exceeding 12,5 m/s (value 6 of the Beaufort scale).

Indications about wind speed

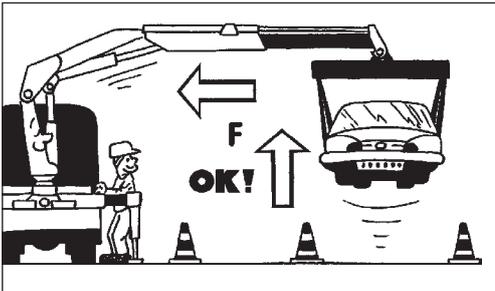
Force of the wind Beaufort scale	Wind speed m/s	Classification	Characteristics
0	0,0 - 0,2	Calm	Calm wind, smoke goes up quite vertically
1 2	0,3 - 1,5 1,6 - 3,3	Light breeze	Smoke reveals the direction of the wind, one can feel the wind blowing, leaves start fluttering.
3 4	3,4 - 5,4 5,5 - 7,9	Moderate breeze	Leaves and branches are in constant motion, small branches start fluttering. Dust and papers dance on the ground.
5	8,0 - 10,7	Fresh breeze	Small green branches bend, the surface of waterways and lakes are wavy.
6	10,8 - 13,8	Near gale	Big branches bend, wind whistles through high-tension cables, it's difficult to walk keeping the umbrella open.
7	13,9 - 17,1	Moderate gale	Trees sway, it's hard to walk.
8	17,2 - 20,7	Storm wind	Branches get broken, it's hard to walk.
9	20,8 - 24,4	Storm	It damages houses (antennas and roof tiles fall down)

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

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

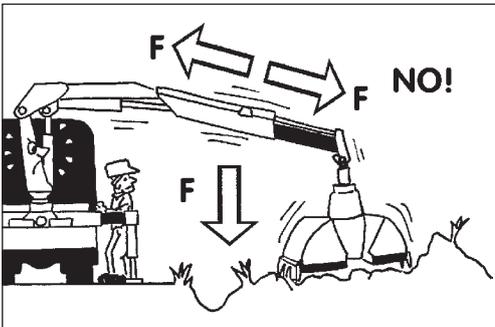


Do not rotate the crane before the load is lifted, do not operate with sudden movements, activate the controls with slow and progressive movements. Rotate slowly and with care paying attention to the stability of the vehicle. With vertical lift, on hydraulic and mechanical extension, rotate slowly in order to avoid side-skidding.



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

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



Under no circumstances interfere with the safety and protection devices.

The vehicle\crane must not be left unless the load is on the ground, the booms of the crane are folded and laid on a solid base and the power take-off is disengaged.

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.

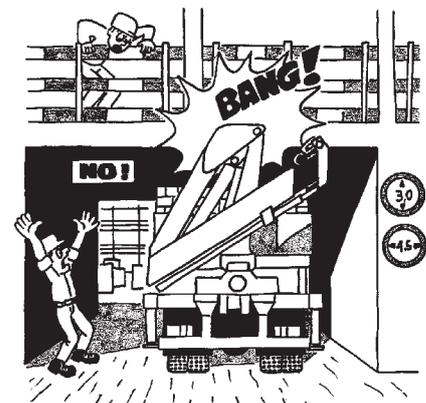
NOTE Implements can be left mounted on the booms of the crane only if the overall dimensions are respected.

THE FORK MUST BE TIED DOWN AT ALL TIMES DURING TRANSPORT

Make sure that the outrigger rams are lifted and the supports re-entred within the overall width of the truck.

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.



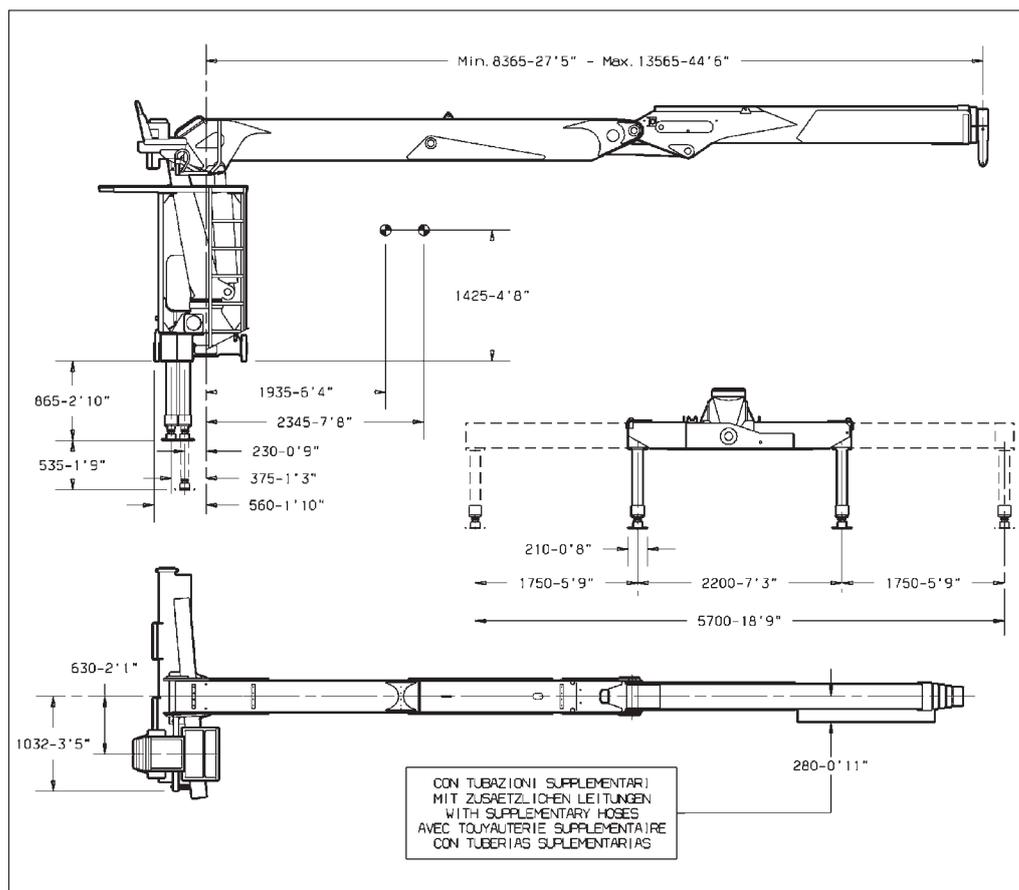
D0 CLASSIFICATION OF THE CRANE MODEL

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.

D0.1 Technical data**F 280SE.22**

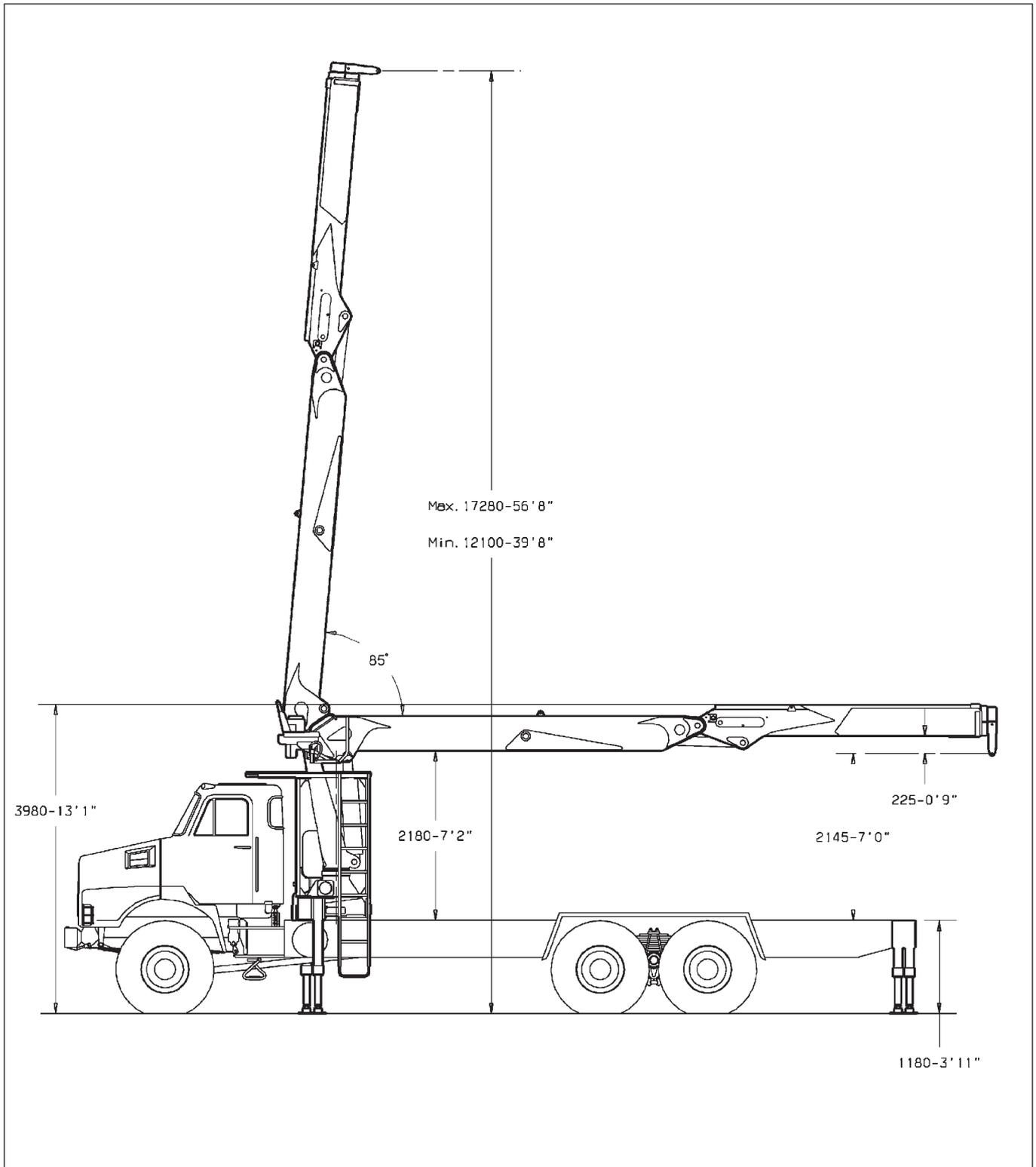
Lifting capacity	Standard reach	Hydraulic extension	Rotation arc	Rotation torque	Working pressure	Pump capacity	Oil tank capacity	Crane weight	Max. working pressure on the outrigger
25,8 tm 253,0 kNm	13,56 m	5,20 m	400°	5,37 tm 63,8 kNm	25,0 MPa	60 l/min	240 l	4680 kg	36,2 daN/cm² (Φ 230)



PESO GRU CON SERBATOIO NON RIFORNITO, STABILIZZATORI STANDARD	kg	4.680
WEIGHT OF THE CRANE WITH EMPTY TANK, STANDARD STABILIZATION		
POIDS DE LA GRUE AVEC RESERVOIR VIDE, STABILISATION STANDARD	lbs	10.320
KRANGEWICHT MIT LEEREM TANK UND STANDARDABSTUETZUNG		

F 280SE.22**FASSI ST 280**

F 280SE
ST 280 **FASSI**



D0

CLASSIFICATION OF
THE CRANE MODEL
F 280SE.22

F 280SE

7210-23' 8"

3615-11' 10"

2260-7' 5"

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

FASSI **ST 280**

1000-3' 3"

D1 IDENTIFICATION OF THE CRANE MODEL

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

Identification data of the crane are marked on the plate DE2141 and fixed on the base.

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

GRU IDRAULICHE

GRU MODELLO / CRANE MODEL

MATRICOLA N°
SERIAL NUMBER

ANNO DI COSTRUZIONE
MANUF. YEAR

200.

24021 - ALBINO - (BG) - ITALY DE2141

(!) **UNDER NO CIRCUMSTANCES SHOULD THE DATA MARKED ON THE PLATE BE ALTERED.**

E0 CRANE NOMENCLATURE (fig. 2)

Pos.		Description
1	-	Outrigger rams
2	-	Outrigger supports
3	-	Base
4	-	Rotation cylinders
5	-	Column
6	-	Inner ram
7	-	Inner boom
8	-	Outer ram
9	-	Outer boom
10	-	Booms extension rams
11	-	Extension boom sections
12	-	Deviator crane - outriggers
13	-	Distributor for outriggers
14	-	Dual control for deviator crane - outriggers
15	-	Outrigger multifunctions transmission
16	-	Supplementary hoses (hydraulic implements)
17	-	Oil tank
18	-	Distributors for crane
19	-	Double control for crane distributors

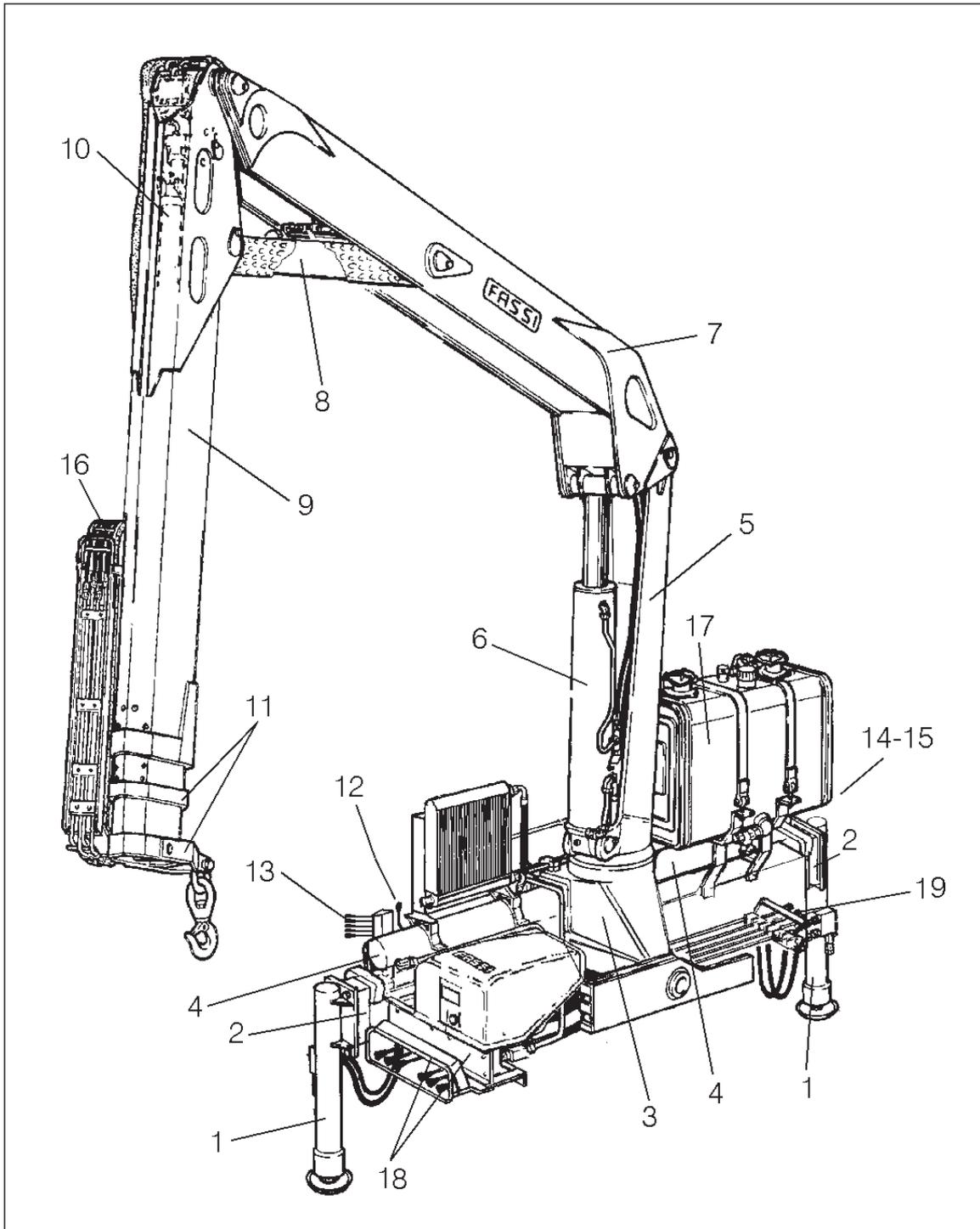


fig. 2

**F0 NOMENCLATURE OF THE SAFETY AND
PROTECTION DEVICES (fig. 3)**

Pos.	Description
1	- Check valves for outrigger rams
2	- Check valve for rotation control
3	- Check valve for inner ram
4	- Check valve for outer ram
5	- Check valve for booms extension rams
6	- Lifting moment limiting device assembly
7	- Parachute valves (lifting moment limiting device)
8	- Main pressure valve (outrigger distributor)
9	- Main pressure and auxiliary valves (crane distributors)
10	- Carter for outer ram
11	- Carter for hose protection devices
12	- Carter for booms extensions ram check valve
13	- Levers guard
14	- Emergency tap (lifting moment limiting device)
15	- Heat exchanger

- (!) 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.**

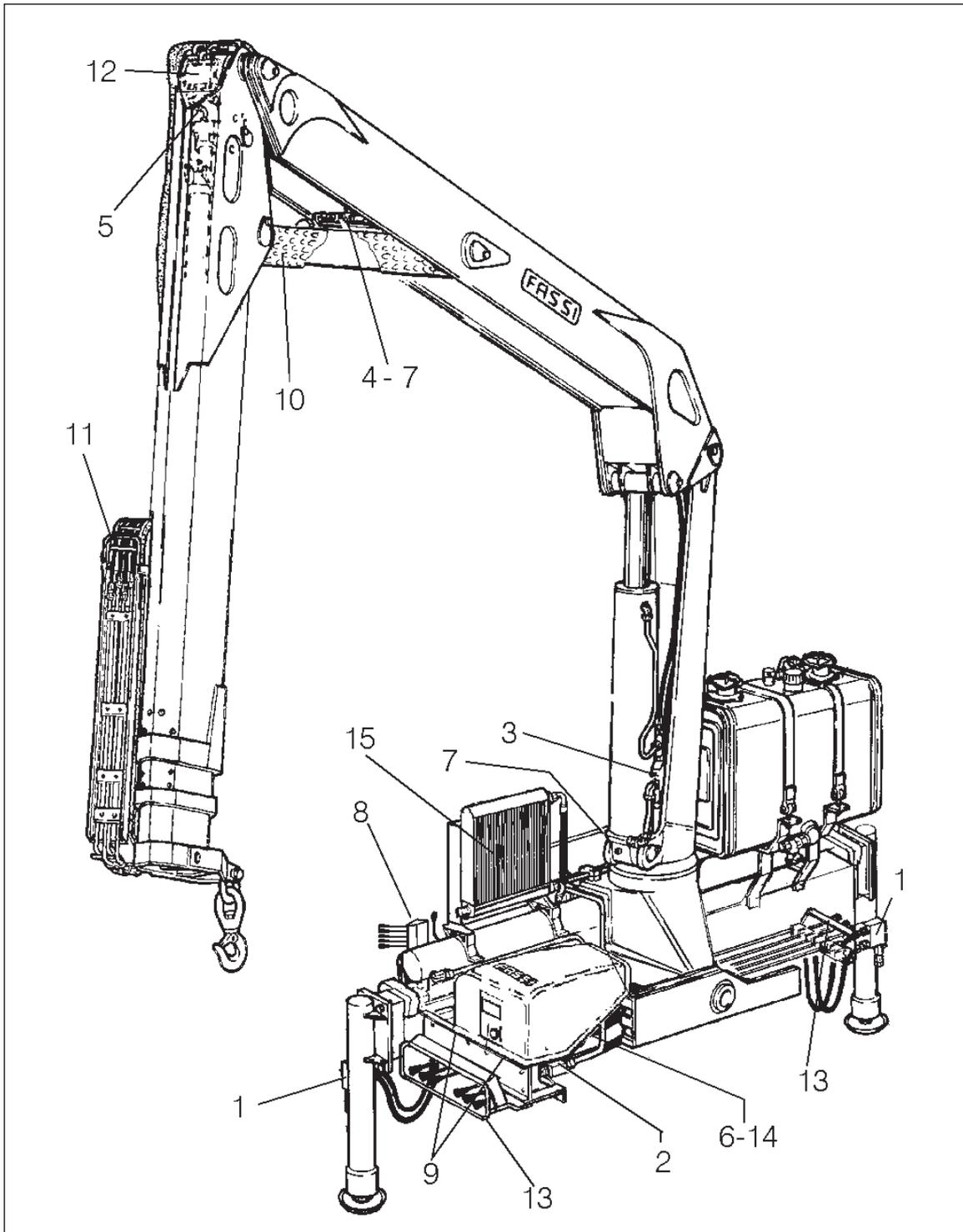


fig. 3

G2 MANOEUVRES AND 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.

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 specially in the case that the outrigger controls is executed from the opposite side of the vehicle (it is not possible visually check the operation).

(!) ATTENTION (!)

The crane stability is maintained by the maximum extension of the outrigger supports, by the solidity of the base underneath the plates of the outrigger rams and by the observance of the capacity plates. To check the maximum working pressure see Paragraph D0.1 Technical data.

Check that the outrigger rams are applied on a solid base; if necessary use larger outrigger base plates (available on request) to avoid sinking.

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.

Stabilize the crane so as to operate on a horizontal plane with a maximum tolerance of 1,5 degrees.

While loading, it may be necessary to vertically adjust the outrigger rams to prevent an overload on the outriggers, then stabilize again.

While unloading, the outrigger rams may not be perfectly in contact with the ground because of a rise in the suspension; it is therefore recommended to stabilize the vehicle during operation to avoid an overturn.

G2.1 Functions of control levers for stabilization

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

NOTE

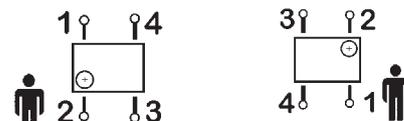
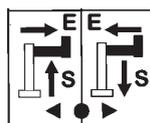
The graphic symbols illustrated hereunder are marked on the plates (DE4486-DE4487-DE4485-DE4497-DE4488-DE4489) affixed next to the control stations and indicate with the following symbolism.

They indicate the position of the operator in relation to the vehicle and the crane.

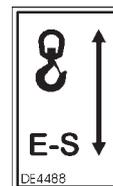
Lever CD for selecting outrigger ram or outrigger support



Lever C to control outrigger support or outrigger ram



Lever D Deviator -E/S



See Paragraph R0 Instruction and warning plates.

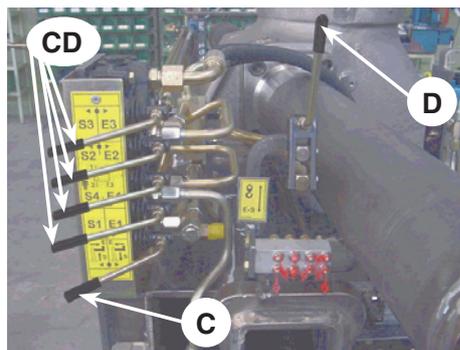
Lever function D - CD - C

- Lever **D** Control for deviator crane-outriggers (- E/S).
- Lever **CD** Control for selecting the supports or the outrigger rams.
- Lever **C** Control for the support or the outrigger ram selected

The "multifunction" control group adopted allows to select and manoeuvre the outrigger support or the ram, through simultaneous operation of the selecting lever **CD** and the control lever **C**.

Example

- To select the support **E2** or the outrigger ram **S2**
- Position the lever **CD** (corresponding to outrigger support **E2** and to outrigger ram **S2**) on **E2** or **S2** and keep it in position.
- To carry out the operation
- Operate lever **C** to activate the exit/re-entry of outrigger support **E2** or the descent/lift of outrigger ram **S2**.



Special base plates (detachable)

The outrigger rams of the crane and of the supplementary outriggers they are supplied with base plates which can be fastened to the ram stems through jaw securing devices.

Fastening of the base plate

- Place the base plate underneath the ram, remove the check pin and open the anchor jaws. (fig.10-10a)
- Operate the corresponding lever **S** to control the descent of the ram until the ball joint touches the seat cut in the base plate; close the jaws and secure them in their seat with the check pin. (fig. 10b-10c)

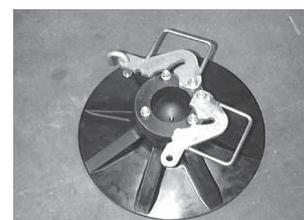
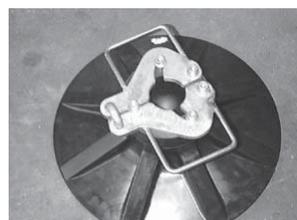


fig. 10

fig. 10a

Removal of the base plate

- Release the check pin and open the anchor jaws.
- Operate the corresponding lever **S** to control the re-entry of the ram.
- Close the jaws, secure them with the check pin and remove the base plate.



fig. 10b

fig. 10c

(!) For the safety and for the encumbrances we recommend to remove the plates before putting the rams to the rest position; special handles are featured for the plates handling and the opening and closing of the securing device (jaws).

(!) WARNING (!)

Keep clean the ball joint heads of the outrigger rams and the seats cut in the base plates to avoid their deterioration.

G2.2 Controls to stabilize the vehicle

Controls for positioning the outriggers of the crane and the supplementary beam.

(!) WARNING (!)

Due to the special construction of the hydraulic circuit (double circuit with two pumps) the distributor placed on the right of the operator (rotator control, outer ram and crane rotation) is alimanted by one pump also with the lever **D** of oil-diverter crane-outriggers (E/S) on **E/S**.

The controls are activated on both sides, on crane distributors side (DE4485 fig. 12) or on crane double controls side (DE4497 fig. 13)

(!) ATTENTION (!)

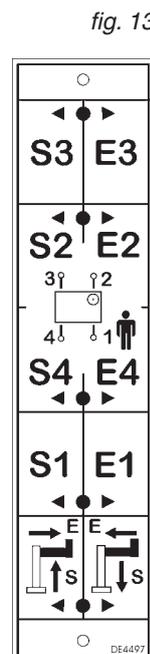
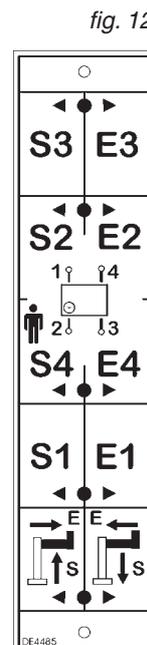
When controlling the outriggers from the opposite side of the vehicle (it is not possible visually check the operation) make sure that no one is or transits in close proximity of the working area of the outriggers. (Fig. 11 plate DE2497 and fig. 12 plate DE2498)



fig. 11



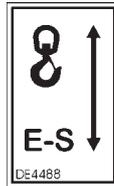
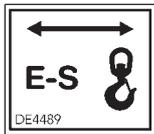
fig. 12



**(!) ATTENTION (!)**

Operation of the crane outrigger supports must be from the control station on that side; it is not allowed to operate outriggers on the opposite side of the vehicle due to unseen dangers. DE4491

See Paragraph "Special base plates" for details of the fastening of the base plates on the outrigger rams.



Position lever **D** of oil diverter (☺ - E/S) on **E/S**. DE4488

How to exit the outrigger support **E2** (crane)

- Operate the corresponding lever **CD** towards right (**E2**) and keep it in position.
- Operate the lever **C** towards right to exit the outrigger support.

How to descent the outrigger ram **S2** (crane)

- Operate the corresponding lever **CD** towards left (**S2**) and keep it in position.
- Operate the lever **C** towards right to descent the outrigger ram.

How to exit the outrigger support **E3** (supplementary outriggers)

- Operate the corresponding lever **CD** towards right (**E3**) and keep it in position.
- Operate the lever **C** towards right to exit the outrigger support.

How to descent the outrigger ram **S3** (supplementary outriggers)

- Operate the corresponding lever **CD** towards left (**S3**) and keep it in position.
- Operate the lever **C** to descent the outrigger ram.

How to exit the outrigger support **E1** (crane)

- Operate the corresponding lever **CD** towards right (**E1**) and keep it in position.
- Operate the lever **C** towards right to exit the outrigger support.

How to descent the outrigger ram **S1** (crane)

- Operate the corresponding lever **CD** towards left (**S1**) and keep it in position.
- Operate the lever **C** towards right to lift the outrigger ram.

How to exit the outrigger support **E4** (supplementary outriggers)

- Operate the corresponding lever **CD** towards right (**E4**) and keep it in position.
- Operate the lever **C** to exit the outrigger support.

How to descent the outrigger ram **S4** (supplementary outriggers)

- Operate the corresponding lever **CD** towards left (**S4**) and keep it in position.
- Operate the lever **C** to descent the outrigger ram.

(!) ATTENTION (!)

The complete extension of the outrigger supports is visually indicated by the yellow triangles which are found at the end of the beam (and of the support if it's supplied with extra double extension beams).

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.

(!) ATTENTION (!)

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

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

- Position lever **D** of oil diverter (☺ - E/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 (☺ - E/S) on **E/S**.

See Paragraph "Special base plates" for details of the removal of the base plates from the outrigger rams.

How to lift the outrigger ram **S**

- Operate the corresponding lever **CD** towards left (**S**) and keep it in position.
- Operate the lever **C** towards left to lift the outrigger ram.

How to re-enter the outrigger support **E**

- Operate the corresponding lever **CD** towards right (**E**) and keep it in position.
- Operate the lever **C** towards left to re-enter the support.

(!) WARNING (!)

Assure that the outrigger supports and rams are completely re-entered before moving the vehicle.

H0 CONTROLS TO OPERATE THE CRANE

(!) WARNING (!)

Before operating the crane it is compulsory to set the outriggers.

This coincides with that indicated on the plate **DE2327** placed on the outriggers.
Fig. 13

(!) Operate the levers smoothly and gradually.

Hydraulic implements and crane controls

The control stations are on base-plate; the crane and the hydraulic implements controls are bilateral, manual and sequential type.

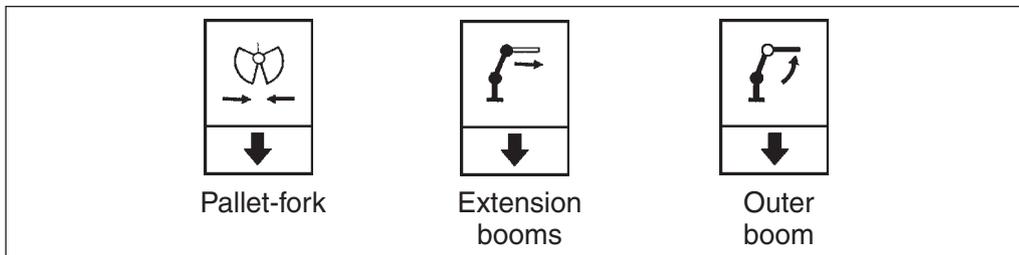
The crane adopts Danfoss distributors manual control with electric modulars for remote controls and emergency electro-valve manual block.

(!) WARNING (!)

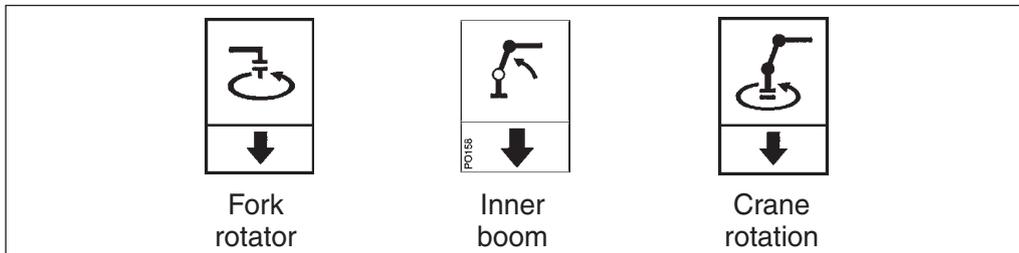
In the absence of electric power all crane functions will be deactivated.

Distributor side

The left distributor, respect to the operator, control three functions (left to right):

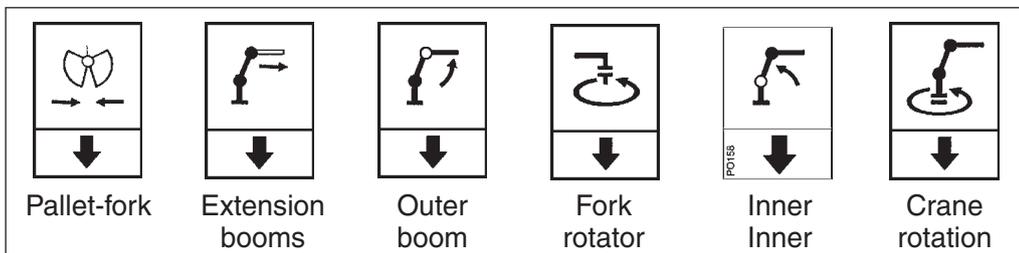


The right distributor, respect to the operator, control three functions (left to right):



Double control side

The levers control (left to right, respect to the operator)



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

(!) **First read the instructions given in the User's Manual supplied by the Manufacturer before using the remote control to avoid improper use.**

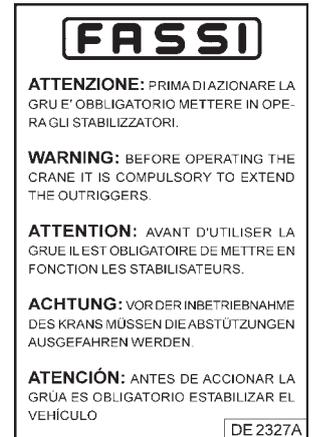


fig. 13

H0.1 Manoeuvres to unfold the crane into a working condition

- Engage the power take off.
- Stabilize the vehicle as described on Chapter IX.
- Before lifting the inner boom, be sure that the outer ram is completely open.
- Lift the inner boom over the horizontal line, close the outer boom and eventually extend the booms of the crane.
- Operate on the crane rotation to position the pallet-fork on the vertical line above the load, operate on the pallet-fork rotation control (rotator) for the correct orientation of the fork.

H0.2 Manoeuvres to fold the crane into the rest condition

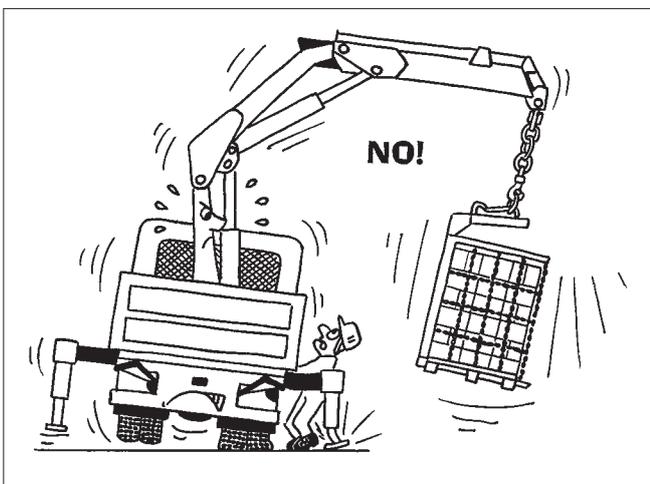
- Open the outer boom to its stroke end.
- Re-enter the extension boom sections.
- Operate the rotation control of the crane and fold the inner boom, paying attention to the crane boom position on the body. It is necessary during this operation to orientate the pallet-fork position to avoid obstacles on the body or the load.
- Lift and re-enter the outriggers as described.
- Disengage the power take off.

(!) In case of implements on the load or the truck body it is necessary to check they are locked to assure the impossibility of accidental movements.

(!) THE FORK MUST BE TIED DOWN AT ALL TIMES DURING TRANSPORT

Load manoeuvres

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



The lifting curves of the capacity chart indicate the maximum load that the crane can lift at a certain radius and at a certain height.

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

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 lifting moment limiting device, allowing all manoeuvres, which reduce the

lifted load within the permitted reach limits and forbid all other manoeuvres, will be immediately activated.

(!) The presence of the lifting moment limiting device does not release the user from the observance of the capacity chart.

H1 MANOEUVRES OF THE CRANE LOADS

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 **lbs**) by its distance (in **ft**) from the centerline of the crane rotation.

The device called "lifting moment limiting device" preserves the crane structure from overloads, as it prevents any movement which increases the value of the moment up to the maximum established value.

H1.1 "Electronic" lifting moment limiting device

This device utilises an electro-hydraulic system managed by an electronic logic that prevents any operation tending to cause an increase in the pressure induced by the load in the lifting rams (inner, outer rams of the crane and of the hydraulic extension, if fitted), up to the critical values. These values, which are not exceedable, determine the intervention levels and provide the data for setting the device.

The pressure values detected in the lifting rams are turned into electric signals by the transducers, and sent to the electronic logic of the device which determines the locking or unlocking of the controls concerned, according to the horizontal position of the crane outer boom (mercury level switch); only the controls allowing a reduction of the overload are enabled, while those increasing it are disabled.

The device features an electro-hydraulic control that does not allow the set value to be exceeded, by deactivating the controls (levers in neutral position) commanded by the limiting device. When the controls are released (levers in neutral position) it's this electronic logic that handles which manoeuvres are disabled, according to the position of the crane outer boom and in overload condition, by sending electric signals to special micro-switches placed on the elements of the distributor.

(!) 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.

H1.2 Control panel

The electric control panel is placed next to the distributor of the crane.

Layout of the control panel (fig. 15)

A - green, yellow and red led band signalling the load percentage as compared to the capacity plate

Green light load between 0 and 90%
Yellow light load between 90 and 100%
Red light load higher than 100%

fig. 15

B - Display

C - Control buttons (4 control buttons)

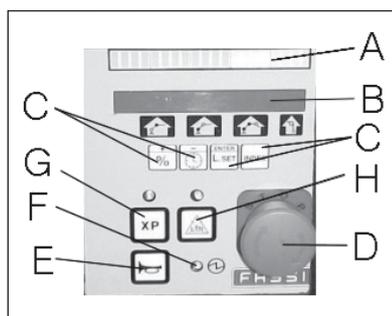
D - Stop button "STOP"

E - Audible alarm push button (danger)

F - Green warning light (electric on)

G - Control button for XP

H - Control button for the temporary exclusion of the lifting moment limiting device



If the **green warning light F** comes on, it confirms that the electric circuit is active.

!NOTE! In the absence of electric power all crane functions will be deactivated.

If the **yellow led A** comes on during load handling, 90% of the capacity (lifting moment) has been reached.

If during operation the **red led B** comes on, the activation value of the lifting moment limiting device has been reached.

Any hidden danger situation for persons must be audibly alarmed by pressing the push button **E**.

When there are serious, imminent and dangerous conditions for persons and things during load handling, operate on the **STOP** button, which isolates all crane functions.

Manoeuvres of the crane

Fig. 16a-b illustrate the configurations of the crane (and of the eventual hydraulic extension) with the manoeuvres allowed and not allowed by the device, in connection with the horizontal position of the crane and extension outer booms.

(!) ATTENTION (!)

During load handling with the crane and with the crane and hydraulic jib, in vertical configuration or close, the operator must strictly refer to the loads indicated on the capacity plates since the limiting device shows to be not particularly sensitive with vertical lifts.

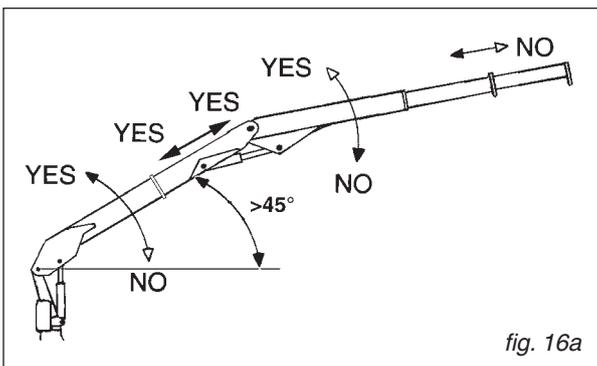


fig. 16a

Crane in overload condition and with outer boom of the crane over the horizontal line fig. 16

Manoeuvres not allowed:

- Inner boom descent
- Outer boom descent
- Extension of the crane extension boom sections
- movement of the hydraulic accessories

Manoeuvres allowed: all the manoeuvres that bring the load closer to the column and therefore the overload

- Rotation in both directions
- Inner boom lift
- Outer boom lift
- Re-entry of the crane extension boom sections

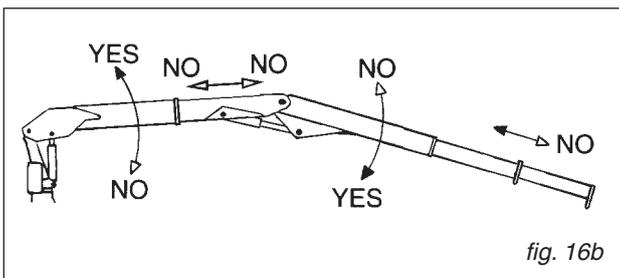


fig. 16b

Crane in overload condition and with outer boom of the crane under the horizontal line fig. 16a

Manoeuvres not allowed:

- Outer boom lift
- Extension of the crane extension boom sections

- Movement of the hydraulic accessories (if fitted)

Manoeuvres allowed: all the manoeuvres that bring the load closer to the column and therefore the overload

- Rotation from both directions
- Inner boom lift: the inner boom lift is controlled by the general main pressure valve of the distributor
- Inner boom descent
- Outer boom descent
- Re-entry of the crane extension boom sections

Crane without load applied and activated limiting device

The limiting device may intervene also during loadless crane operation following a pressure peak provoked by the attainment of the stroke end of the lifting ram at high speed. In this condition, reactivation of the crane commands by performing one of the manoeuvres is allowed by the system.

If the limiting device intervenes when both the lifting rams are open and at stroke end, and the crane extension booms are fully folded, it is not possible to reactivate the commands, since the permitted manoeuvres (arm lifting and extension fully retracted) cannot be carried out, because of the actual configuration of the crane (outer boom above the horizontal).

The device, in this case, allows the descent manoeuvres since it verifies that it was a peak pressure inside the lifting rams; the crane being loadless, thus these manoeuvres will be allowed.

Temporised exclusion device of the lifting moment limiting device

The activation of the exclusion device is permitted when the limiting device is activated and only in the case when it is impossible to carry out any of the allowed manoeuvres. This generally occurs when handling heavy and bulky loads, with the outer boom above the horizontal and the extension boom sections almost retracted.

(!) ATTENTION (!)

The activation of the exclusion system for the lifting moment limiting device can ONLY be operated when the extension booms are fully retracted.

The activation button of the excluding device are to be activated as follows fig. 17:

- retract the crane extension booms until stroke end and momentarily pressurise;
- maintain the command for the **extension boom of the crane** until the mark LMI displays on the control panel;
- continue to keep the command for the extension booms of the crane press the **exclusion device button**, the mark ELMI displays;
- release the lever commanding the extension booms.

The permitted manoeuvre is the descent of the outer boom of the crane in order to bring it under the horizontal line; remember that you have at your disposal **five (5)** seconds from the command operation to carry out the descent.

After such period of time, wait at least **one (1)** minute in order to be allowed to carry out the manoeuvre once again.

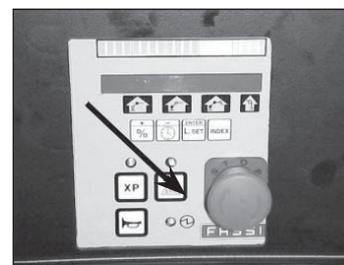


fig. 17

(!) ATTENTION (!)

Activation of the exclusion device of the lifting moment limiting device.

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 maximum level, but involve an overload condition. In such an emergency condition (where the lifting moment limiting device has been disabled), the operator, who is the main responsible for the machine safety, must:

- 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.

H1.3 Lifting moment limiting device for two working sectors (optional)

In case of one sector of the working area with reduced stability of the vehicle (e.g. sector in front of vehicle cab) the limiting device can be provided with a special function which allows to operate with a reduction of the intervention level. The reduction of the intervention level reduces the crane capacity values and this reduction value is defined in the vehicle stability calculation. Consequently the working area is divided in one sector (e.g. body side) where the crane works according to the capacity plate values and another sector (e.g. cab side) where it works with reduced capacity values. The device has consequently two intervention levels which are activated in relation to the sector of the crane working area always securing the vehicle stability.

(!) ATTENTION (!)

If the rotation stops by going through the working zone where the crane can operate according to the capacity plate values to the one where it can operate according to the reduced values, it means that one of the following conditions is reached:

- rotation of a load bigger than the one admitted in the reduced sector defined in the vehicle stability calculation;
- rotation without load applied but with (at least) one of the inner, outer rams of the crane or the jib (if fitted) extended and pressurised at the stroke end.

The following manoeuvres are allowed:

- the opposite rotation
- the manoeuvres allowed by the limiting device in relation to the position of the outer boom (positioned over or under the horizontal line).

H1.4 Rotation limiting device

When a sector of the working area exists in which the stability is insufficient (for example in the area in front of the cab) the permitted arc of rotation is limited by means of an adjustable electro-hydraulic device which only allows operation within the safe area. (Warning: persist in the operation!)

When exceeding the "safe area" the rotation limiting device only allowing:

- the opposite rotation
- the manoeuvres allowed by the limiting device in relation to the position of the outer boom (positioned over or under the horizontal line).

If a reduction of capacity is necessary because of insufficient stability of the complete unit, new capacity plates must be fixed giving the derated capacity in accordance with the final stability test.

(!) ATTENTION (!)

Always check carefully that the vehicle is perfectly stable, paying special attention to the area immediately in front of the driver's cabin as this is usually less stable.

H1.5 OVERRIDE - REACTIVATION button for the crane functions with 2 DANFOSS distributors in case of an electrical failure or of the appearance of the signal “ALARM” on the display B

Under the protection guard of the two distributors it has been installed an electro-valve with a manual locking function (fig. 19) which allows to reactivate all the crane functions in case of absence of the electric power. Only in these conditions it is permitted to remove the lead seal which protects the device. Push the button and turn it into the clockwise sense (fig. 18 pos. 1-2); the button stays in stable and closed position.

- (!) **When the electric power is reestablished, remember to put the button in its original position, turning it into the anti-clockwise sense. (fig. 18 pos. 3-4)**

(!) ATTENTION (!)

Activation of the reactivation button.

This activation prevents the operation of the lifting moment limiting device, consequently, the operation under such conditions can involve an overload condition. In such an emergency condition (where the lifting moment limiting device has been disabled), the operator, who is responsible for the machine safety, must:

- carefully consider the manoeuvres required to return to normal working conditions;
- 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 seal release the FASSI GRU IDRAULICHE 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.

(!) 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.

(!) ATTENTION (!)

**Do not walk on the lever guards of the lifting moment limiting device positioned on the distributors or electric control panels. DE1679
Do not use water to extinguish fire! DE1680**

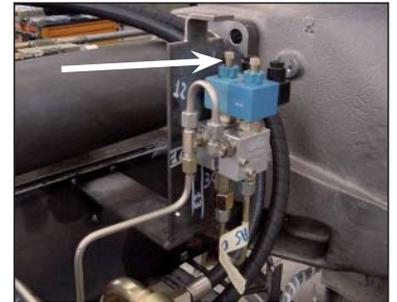


fig. 19

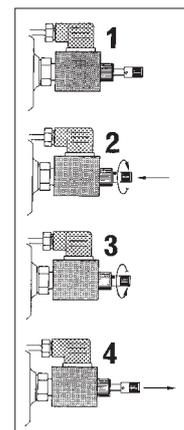


fig. 18



DE1679



DE1680

L0 USE OF IMPLEMENTS

OIL COOLER (HEAT EXCHANGER)

The crane can be equipped with an oil cooler (air-oil heat exchanger) to prevent damage caused by an excessive increase of the oil temperature.

NOTE

When working in a low temperature climate, we recommend to bring the hydraulic oil up to working temperature prior to starting work, This is best done by operating the crane thru all its functions ram stroke end.

(!) WARNING (!)

The heat exchanger openings must be kept clear and clean. At no time should it be covered.

HYDRAULIC ACCESSORIES

The crane can be provided with implements such as:

- Fork rotator
- Pallet-fork

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

Hydraulic connections between implements and hoses fitted on the extension boom section of the crane.

- (!) 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.

(!) 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.

MO MAINTENANCE INSTRUCTIONS

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

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

Spare parts must be original.

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

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

(!) Before disconnecting any hydraulic hoses, ensure that there is no pressure in the hydraulic circuit.

After removing hoses always mark them and their respective ports on the crane. Faulty replacement can cause damage to the rams and to the hydraulic circuit.

Respect the information supplied for maintenance and technical assistance.

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

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

fig. 17

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

Do not weld the fixing rods of the crane (DE1574 fig. 17)



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 high pressure washers on the controls (deviators, distributors, double controls, hand cable controls), on the electronic components (boxes, control panels), on the oil cooler (if fitted), on the tank.

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

When cleaning the exchanger (if fitted) direct the jet of water or air parallelly to the fins in order not to damage them; protect the electric motor adequately. Where needed use a cleaning product which does not eat into the alluminium of the radiant group.

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

M0.0 Timer fig. 17a

The control panel of the "electronic" lifting moment limiting device, placed next to the distributor of the crane, features an alphanumeric readout for displaying the date, the activation time expressed in hours-minutes of the electric control panel ("Partial Time" and "Total time") or the working time of the crane whilst being operated via the control levers ("Work Time").

How to view the date

Press button **C2** (clock/-) to have the current date visualized on display **B**. Fig 29.

Partial time

How to view the partial time of the electric panel; which can be reset.

- Keep button **C2** (-) pressed until you read "**Time**" on display **B**.
- Press button **C1** (+) until you see "**Partial time**".
- Press button **C3** (enter) to view the time.

How to reset the "Partial time".

To start a new count perform the following:

- Keep button **C2** (-) pressed until you read "**Time**" on display **B**.
- Press button **C1** (+) to read "**Partial time**" on the display.
- Press button **C1** (+) again to read "**Total time**" on the display. fig. 29a.
- Press button **C1** (+) again to read "**Work time**" on the display.
- Press button **C1** (+) again to read "**Reset partial**" on the display.
- Press button **C3** (enter) to read "**Enter to confirm**" on the display.
- Press button **C3** (enter) again; the timer is reset and it will start recording again.

Total time

How to view the total activation time of the electric panel; this cannot be reset.

- Keep button **C2** (-) pressed until you read "**Time**" on display **B**.
- Press button **C1** (+) to read "**Partial time**" on the display.
- Press button **C1** (+) again to read "**Total time**" on the display.
- Press button **C3** (enter) to visualize, for about 5 seconds, the total time expressed in hours and minutes.

Work time

How to view the work time which is the actual time recorded whilst a crane operating lever/function is being activated.

- Keep button **C2** (-) pressed until you read "**Time**" on display **B**.
- Press button **C1** (+) to read "**Partial time**" on the display.
- Press button **C1** (+) again to read "**Total time**" on the display.
- Press button **C1** (+) again to read "**Work time**" on the display.
- Press button **C3** (enter) to view, for about 5 seconds the work time of the crane expressed in hours and minutes.

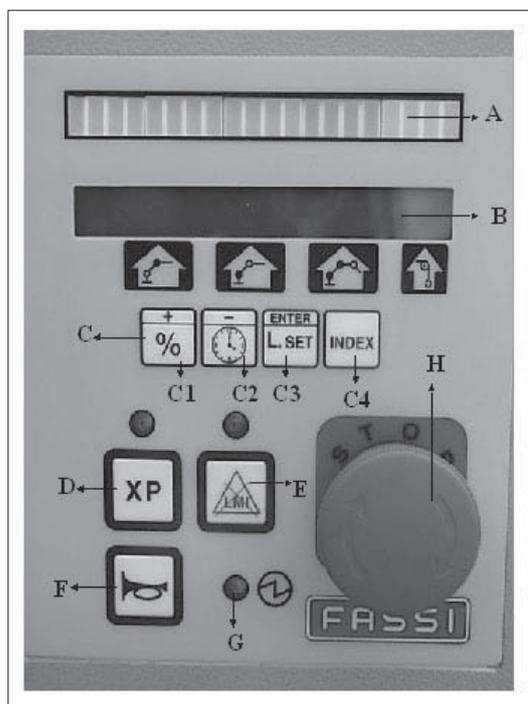


fig. 17a

M0.1 After every 8 working hours or 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  - **E/S** lever can be moved easily.
- Check that the crane controls (levers and foot) and the outrigger controls (levers) can be moved easily and return freely to neutral position.
- Check the condition of shackles, hooks, wire ropes and every eventually used equipment.

M0.2 After every 40 working hours or after every working week

Check the tightening torque of the fixing rods of the crane. (fig. 18)

Tightening torque for the rods M33x2 = 1200 Nm

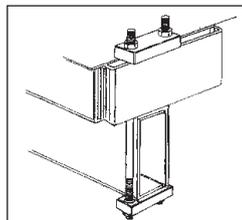


fig. 18

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

NOTE The filters of fibre or paper can not be cleaned, they must be replaced.

Cleaning of the wire mesh filter on the tank (oil return to the oil-tank) fig. 19.

- Unscrew the security bolts of the filter cover 1 and remove it.
- Extract the cartridge, clean by flushing with a non flammable, non corrosive and non toxic solvent (gas oil or other). Thoroughly dry the filter inside and out (do not use compressed air).
- Check if the cartridge has collapsed; if so, replace it!
- Remove the filter body 3 and clean it
- Re-assemble the filter body and the cartridge: check the sealing of the 'O' ring 4-5-6; in case, replace it!

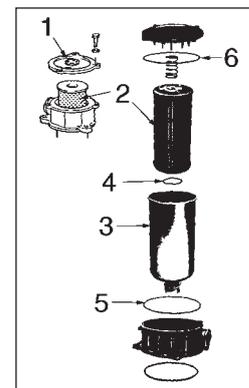


fig. 19

NOTE Take care that no contaminated material passes into the tank.

Replacement of the filter on the delivery line (before the distributor) fig. 20

- When the visual indicator becomes red, replace the cartridge.
- Unscrew with a suitable spanner the filter body (1) from the head (2).
- Remove the cartridge (3) and clean inside the filter body (1).
- Insert a new cartridge and re-assemble the filter body into the head (check the sealing (4)).

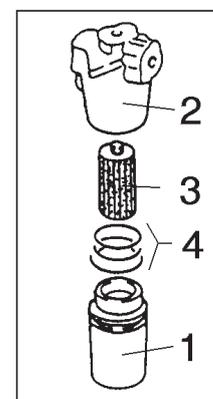


fig. 20

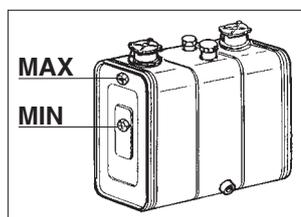


fig. 21

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. 21).

Top up using hydraulic oil with the same characteristics as those indicated in the table at page 33.

Note! The following lubricators have been centralized and gathered in a case positioned on the base (crane distributor side):

- rack guide shoe - rotation;
- upper and lower bush of the column - column support;
- rack group - column gear;
- column support group - pendulum beam.

(!) WARNING (!)

At low temperatures, the grease shall not crystallize or, to be more precise, shall not change its characteristics.

At the effective operative temperature, the grease we recommend shall have a fluidity at least equal to rating **NLGI 0** or max. 1.

(!) WARNING (!)

Centralized lubrication shall not be used when room temperature is below -10°C / -20°C.

For the sliding sections of the outrigger supports and of the extension booms 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 outrigger supports and inner and extension booms are free from impurities such as sand etc. For the sliding sections of the carter of the outer ram and ease their movement it is recommended to smear a light film of grease on the guide-shoes.

Use a grease with the same characteristics indicated in the table at page 33.

M0.3 After every 500 working hours

Check the tightening torque

- of the fixing rods of the crane; consult the following table in order to find it's value according to the bolt diameter

*Table of the tightening torques of the fixing rods of the crane on the vehicle
From "C0404 Kit for crane fixing"*

D. Fixing rods	Tightening torque = Nm
M22x1,5	300
M24x2,0	400
M27x2,0	600
M30x2,0	471
M33x2,0	1200
M39x3,0	1800

- 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 - ASSEMBLAGES 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.

(!) 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.



M0.4 After every 1000 working hours or after every working year

Perform: Washing, Function Testing, Testing according to the
capacity plates

Check: Identification plates, Capacity plates

Checklist in accordance with ISO 9927-1

Element	Checks to be carried out:
Subframe Structure and fixing rods	Tightening torque of the fixing rods, wear and any deformation, actions
Base Rack group, compensator	Lubrication, tightening torque of the rods, wear and any deformation, actions
Outriggers Supports, rams, base plates safety catches, hoses	Greasing of extension supports, oil-leaks, wear, actions, inspection of hoses
Rotation cylinders Cylinders, pistons, seals,	Oil-leaks, chromium plating, any deformation, inspection of hoses
Column Inner boom connection, outrigger connection, pins, bushes	Lubrication, wear and any deformation, actions
Inner boom Pins, outrigger connections	Lubrication, wear and any deformation, actions
Inner ram Cylinder, rod, piston, seals, hoses	Oil-leaks, chromium plating, any deformation, inspection of hoses
Outer boom Pins, outrigger connections	Lubrication, wear and any deformation, actions
Outer ram Cylinder, rod, piston, seals, hoses	Oil-leaks, chromium plating, strains, inspection of hoses
Extension booms Guide shoes, pins, outrigger connections	Lubrication, wear and any deformation, actions
Extension rams Cylinder, rod, piston, seals, hoses	Oil-leaks, chromium plating, any deformation, inspection of hoses
Hydraulic jib Booms, pins, outrigger connections	Lubrication, wear and any deformation, actions
Rams (hydraulic jib): Cylinder, rod, piston, seals, hoses	Oil-leaks, chromium plating, any deformation, inspection of hoses
Winch Torque limiter, brake, rope slide guide, cable, stroke end, pulleis	Lubrication, wear and any deformation, actions

Distributors, deviators, valves Control levers, forks, joints, fixing screws, lead seals	Checking of the pressure, oil-leaks, wear and any deformation, actions,
Lifting moment limiting device Valves, pressure switches, electrovalves	Checking of the pressure, oil-leaks
Power take-off, pump, oil-tank Filters, hoses	Pump capacity, checking of the pressure, oil change, replacement of filters, inspection of hoses
Oil-pressure system Hoses, hose protection devices	Checking of the pressure, oil-leaks, inspection of hoses
Implements for lifting Hooks, chains, cables, slings	Safety check, wear and any deformation, actions,
Implements Wallboard forks, buckets, rotators	Oil-leaks, wear and any deformation, actions, inspection of hoses
Seat, third control station Frame, fixing screws	Access inspection, wear and any deformation, strains
Tele(radio)remote control	Test

M0.5 Complete overhaul of the crane is required when 10.000 working hours or 10 years' life are reached - i.e.:

When one of the limits indicated hereunder is reached:

10.000 working hours, (i.e.: 10 years, 50 weeks a year, 20 hours a week, or 5 years, 50 weeks a year, 40 hours a week)

or

10 years' life of the crane,

a complete overhaul with in-depth structural inspection of the crane must be carried out by the Manufacturer or by an authorised service centre.

TABLE OF HYDRAULIC OIL AND LUBRICANTS CHARACTERISTICS

HYDRAULIC OIL WITH HIGH VISCOSITY: ISO-L-HV		
Minimal external temperature: -35°C -20°C	maximal oil temperature: +45°C +75°C	Gradation ISO VG 32 ISO VG 46

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

GREASE (for centralized system)
Use only GREASE NILEX EP1 of the firm NILS. NOTE: Do not ABSOLUTELY mix different types of grease.

GREASE (for slew ring, extension booms, outrigger supports...)
-30°C up to +130°C EP1 Gradation (cold climate) EP2 Gradation (warm climate)
All grease used must be free from acid and resin, not hygroscopic and long-life such as BP GREASE LTX-EP1\EP2 or ELF EPEXA 1\2 ESSO BEACON EP1\EP2 or TEXACO EP1\EP2 MOBIL EP1\EP2 or SIMILAR.

HYDRAULIC OIL FOR MOTOREDUCER
Classification ISO-L-CC Gradation EP ISO-VG 150

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)

(!) WARNING (!)

Don't use greases with solid particles as "Bisulphide of Molybdenum" (not compatible with eventual teflon bushes).

P0 POSSIBLE FAULTS

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

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

P0.1 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
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 with the operator at the control station	<i>Lack of electric energy</i>	Check the fuse, the battery and electric circuit
Vibrations in crane operations	<i>Shortage of oil Obstructed filters</i>	Check the level and top up if necessary Clean or replace the filter cartridge
Noteable decrease in movement speed	<i>Obstructed filters</i>	Clean or replace the filter cartridge

P0.2 Operations to be carried out by an authorized service center.

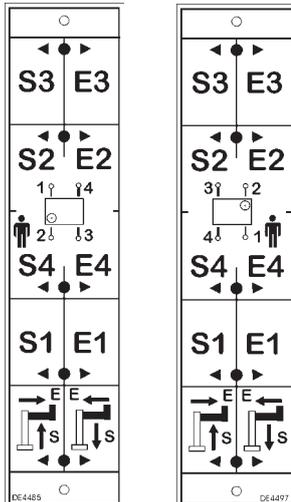
Faults	Cause	Remedies
The crane does not lift the loads indicated on the capacity plate	<i>Non efficiency of the pump (main pressure or auxiliary) valves not properly adjusted, or worn Ram seals are not properly fitted</i>	Replace the pump Check the pressure, adjust the valves Replace the seals
A boom of the crane does not hold up the load and visually lowers	<i>The safety check valve of the ram is open Oil leaks inside the ram</i>	Replace the valve Defective seals, replace them
The crane does not rotate properly	<i>Valves controlling the rotation not adjusted Wear of the seals of the rotation cylinder</i>	Adjust the valves 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

	FASSI GRU IDRAULICHE SpA 24021 ALBINO (BG) ITALY - Via dei Carmelitani, 2 Tel. + 39 35 77.64.00 - Fax + 39 35 75.50.20	INSTRUCTIONS FOR SAFE USE OF THE CRANE	DE2676
<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; <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 and the crane is in the folded position.</p>			

DE 2676
Instruction plate and safety norms

FASSI
<p>ATTENZIONE: PRIMA DI AZIONARE LA GRU È OBBLIGATORIO METTERE IN OPERA GLI STABILIZZATORI.</p> <p>WARNING: BEFORE OPERATING THE CRANE IT IS COMPULSORY TO EXTEND THE OUTRIGGERS.</p> <p>ATTENTION: AVANT D'UTILISER LA GRUE IL EST OBLIGATOIRE DE METTRE EN FONCTION LES STABILISATEURS.</p> <p>ACHTUNG: VOR DER INBETRIEBNAHME DES KRANS MÜSSEN DIE ABSTÜTZUNGEN AUSGEFAHREN WERDEN</p> <p>ATENCIÓN: ANTES DE ACCIONAR LA GRUÁ ES OBLIGATORIO ESTABILIZAR EL VEHICULO.</p> <p>ATENÇÃO: ANTES DE UTILIZAR A GRUJA É OBRIGATORIO COLOCAR EM FUNCIONAMENTO OS ESTABILIZADORES.</p>
DE6723

DE 6723
Warning plate to stabilize the vehicle before using the crane



DE 4485 **DE 4497**

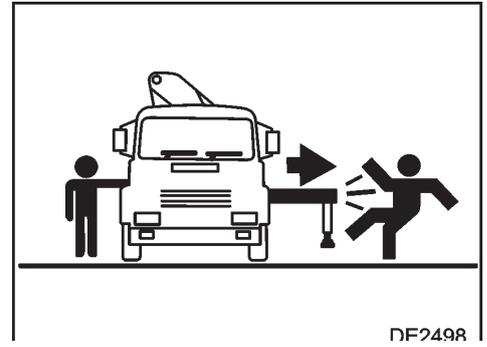
Instruction plates
to stabilize the vehicle



DE 4491
Do not operate from the frontal position, to extend the outrigger supports



DE 2497



DE 2498

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



DE 1067

Do not walk or stay under a suspended load and for unauthorized persons to be within the working area.



DE 1686

Do not walk or stop under a suspended load



DE 1683

Do not operate in proximity of electric high-tension lines



DE 2361

Do not operate in proximity of electric high-tension lines



DE 2100
Danger plate for crushing of lower limbs



DE 1679
Do not walk on...



DE 1680
Do not use water to estinguish fire



DE 1681
Greasing points with brush



DE 1682
Greasing points at pressure

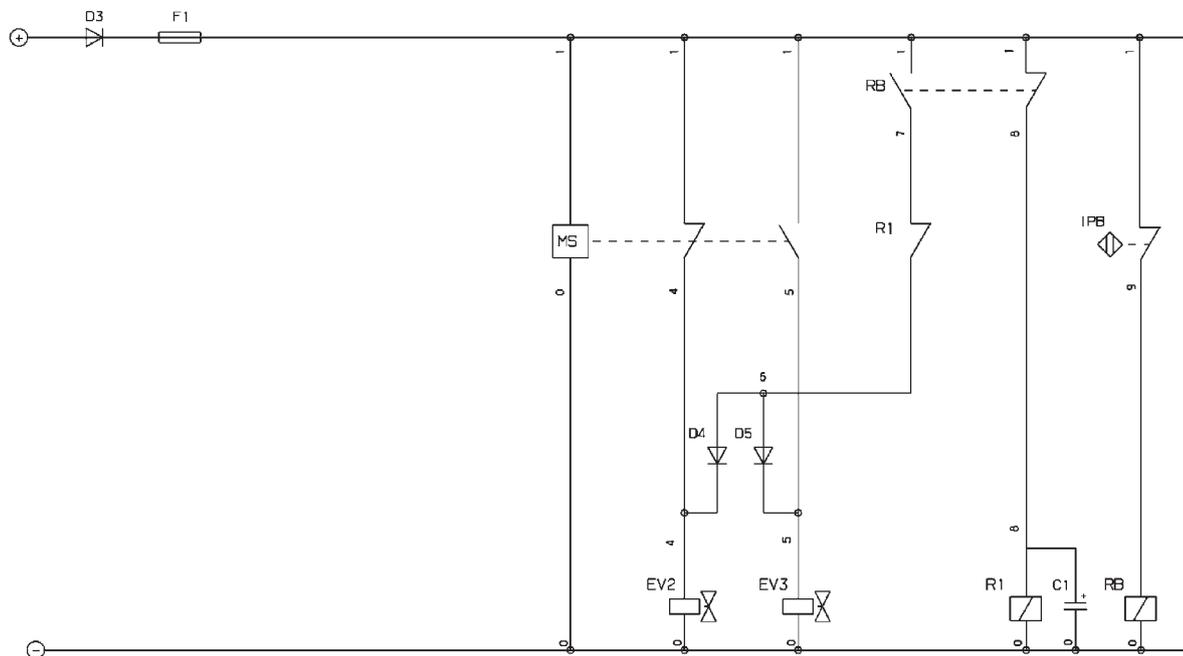


TIRANTI:	NON SILDARE!
FIXING ROD:	DO NOT WELD!
TIRANTS:	NE PAS SOUDER!
ZUGSCHRAUBEN:	NICHT SCHWEISSEN!

DE 1574

Do not weld the fixing rods

Electric schematic for crane - two Danfoss distributors - free rotation



CODE	DESCRIPTION
ALIM	FEED MAIN CONTROL PANEL
C1	CONDENSATOR FOR BLOCK DELAY
D3	POLARITY PROTECTION DIODE
D4	DIODE FOR LIFTING MOMENT LIMITING DEVICE
D5	DIODE FOR LIFTING MOMENT LIMITING DEVICE
EV2	ELECTROVALVE FOR CRANE LIFTING BLOCK
EV3	ELECTROVALVE FOR CRANE DESCENT BLOCK
F1	PROTECTION FUSE 5A
IPB	SENSOR VALVE PROXIMITY
MS	MERCURY SLOPE SENSOR ON OUTER BOOM
R1	BLOCK LATE RELAY
RB	OVERLOAD SIGNAL RELAY

V0 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.

