

ATLAS



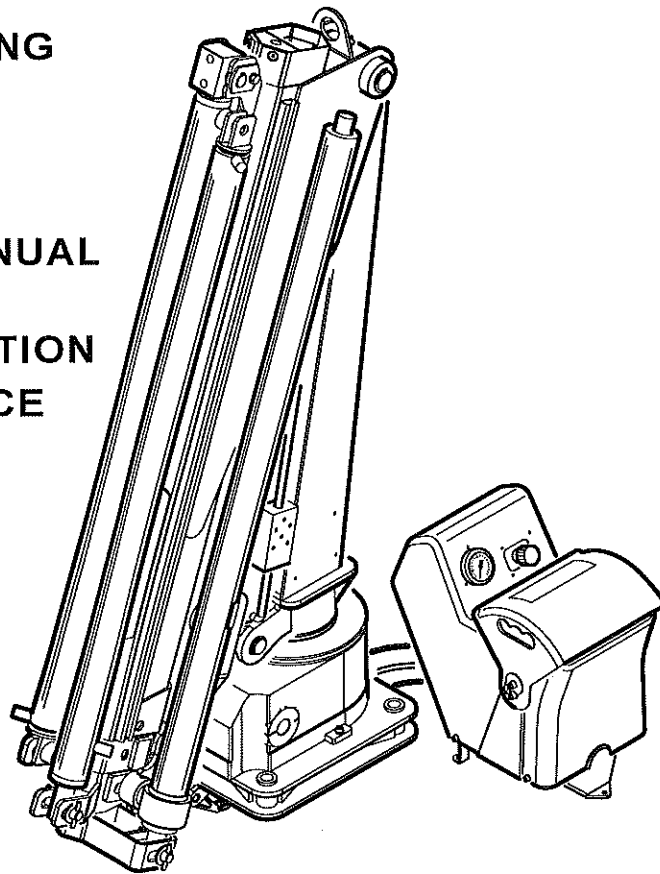
BETRIEBSANLEITUNG



USE AND
MAINTENANCE MANUAL



MANUEL D'UTILISATION
ET DE MAINTENANCE



HYDRAULISCHER LADEKRAN HYDRAULIC CRANE - GRUE HYDRAULIQUE

TC23C

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KRANNUMMER -
CRANE NUMBER -
NUMÉRO DE GRUE

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1**SAFETY INSTRUCTIONS****1.1 — AN OVERVIEW OF THE DANGERS****1.1.1 — RULES FOR THE AVOIDANCE OF DANGERS****1. GENERAL SAFETY INSTRUCTIONS.**

Operation only by trained personnel.
Safety devices not to be tampered with.
Prescribed safe distances to be maintained.
Safe distances from electric power lines to be maintained.
Be alert to faults during crane operation.

2. PRIOR TO CRANE OPERATION.

Pay attention to effluent hydraulic oil.
Make a visual inspection.
Check the safety devices before startup.

3. ON STARTUP.

Use the right hydraulic fluid for the temperatures.
The slope of the vehicle must not exceed 5° in any direction.
Outriggers must be fully extended.
When extending outriggers and support cylinders observe the safety distances.
If necessary, enlarge the support surface according to the condition of the ground.
The vehicle must not be raised using the support.
Lock manually extendable outriggers properly.
Prevent the support from sinking into the ground.
Adjust the support when loading and unloading.
Before unfold the crane mechanical extensions have be secured properly.
Cranes with floor control stand unfold from side **A**.

4. DURING CRANE OPERATION.

Ensure the crane is used according to the specifications.
Keep an eye on the working area.
Do not stay in the danger area of the crane.
Safeguard the working area.
Select the right control stand.
Pick up and secure loads in the due and proper manner.
Use of load lifting gear and ancillary equipment supplied by ATLAS.
Secure attachment of ancillary equipment.
Adherence to the max. lifting capacity of the crane, ancillary equipment and load lifting gear.
No load moment increase when lowering the load.

5. AFTER CRANE OPERATION.

- Secure crane in transport position.
- Observe safety distances when retracting the outriggers and support cylinders.
- Lock the manually retractable outriggers in the retracted position.
- Check the outrigger locking device before every trip.
- Switch off hydraulic pump.
- Observe maximum head room on bridges and tunnels.

6. ON MAINTENANCE AND LUBRICATION.

- Carry out maintenance work only when the machine is inoperative.
- Keep steps, standing areas and handles clean.

1.2 — PREREQUISITES

1.2.1 - CE SYMBOL

If your crane is marked with a CE symbol it meets the requirements of the machine directive of the EEA (European Economic Area).

This symbol is only valid in connection with a conformity declaration issued for your crane.

The firm mounting the crane on the truck must issue a conformity declaration. If constructional changes are made to the crane (e.g. mounting of a rope winch, remote control, raised stand or raised seat, etc.) the CE symbol must be reissued by the firm mounting the equipment (new conformity declaration).

If the crane bears a CE symbol, it must be fitted with an overload safety device. Ancillary equipment must bear its own CE symbol. In the EEA and certain other countries the crane may only be operated if it has a valid CE symbol and valid conformity declaration.

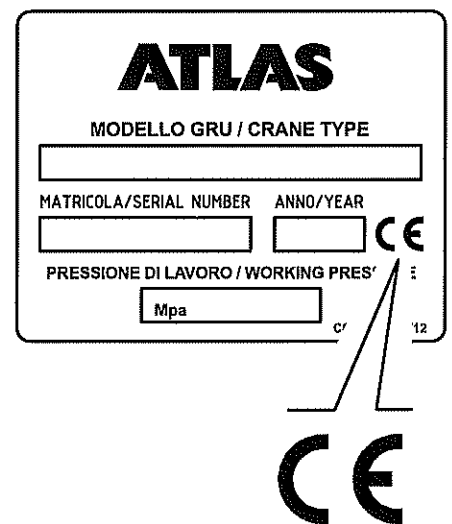


Fig. 01

1.2.2 - ASSEMBLY, ACCEPTANCE AND REGULAR INSPECTION OF THE CRANE UNIT

- The crane must be assembled according to the valid assembly rules of ATLAS.
- The valid Installation Instructions may be obtained from the responsible general representative.
- After successful crane mounting the vehicle still has to be stable throughout the entire working area of the crane.
- In addition, country specific assembly regulations, provisions and rules as well as provisions and rules of the truck manufacturer are to be observed.
- The acceptance procedure required by law must be carried out.
- The firm responsible for assembly must on handing over the crane instruct the crane operator in the operation of the crane and point out to the crane operator all possible dangers and risks of injury.
- On handover of the crane the customer is to be given the maintenance manual, operating instructions (including assembly related additions), and the conformity declaration for the EEA.
- The firm operating the crane is responsible for ensuring that the regular inspections required by law are carried out.

Approval from the ATLAS company is required:

- If the crane is used for other operations than those intended by the ATLAS company.
- In case of structural modifications to all loadbearing components.
- In case of structural modifications which affect the stability.
- In case of structural modifications which obstruct the accessibility of the operating elements.
- In case of structural modifications which do no longer ensure a safe crane operation.

1.2.3 – REQUIREMENTS FOR THE OPERATING PERSONNEL

Operation of the crane requires skill, ability and experience.

Therefore only entrust persons with the operation of the crane,

- who are physically and mentally suitable for this (not tired, and not under the influence of alcohol, drugs or medication).
- who handle the crane responsibly and reliably.
- who have the right qualifications (training, crane operator's license).
- who can prove that they have been instructed on how to operate the unit described here and who are familiar with the content of these operating instructions. This also applies to the operating instructions for ancillary equipment used on the crane.



If the crane is used by persons without training or crane operator's license there is a high danger of injury.

Observe the regulations valid in your country!

1.2.4 – SAFETY DEVICES NOT TO BE TAMPERED WITH

Safety devices serve to protect you and were developed to avoid accidents and make your work safer.

On delivery safety devices such as Emergency Off, load holding valve, pressure relief valve, etc. are adjusted to ensure safe crane operation (5.2).

They must on no account be interfered with or rendered inoperative.

CAUTION: If safety devices are tampered with or if lead seals are damaged, any warranty on the part of the manufacturer will cease to apply!



If safety devices are tampered with you put yourself and other persons at risk of fatal injury.

1.2.5 - CRANE OPERATION IN ADVERSE OPERATING CONDITIONS

Safe operation of the crane can no longer be assured if winds are in excess of 50 km/h. If the wind exceeds this speed, the crane must not be put into operation or operation must stop.

If a thunderstorm is approaching, the crane must not be put into operation or operation must stop. Our cranes may be used at ambient temperatures ranging from -30°C to $+50^{\circ}\text{C}$. If the temperature drops below or exceeds these limits, operation must be discontinued as it can lead to damage to the hydraulic components.

1.2.6 - INTENDED USE

Use the crane only for handling loads; mechanical interventions (pushing or driving against obstacles), fastening of loads at points other than those provided for this purpose, pulling of loads, etc. are prohibited. Manufacturer will accept no liability for damage caused by doing so.

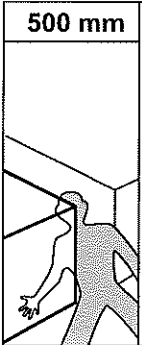
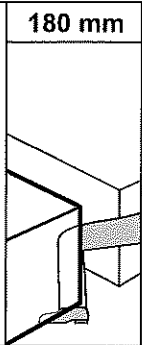
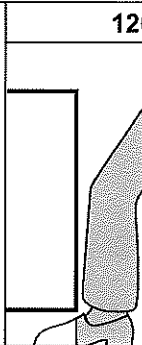
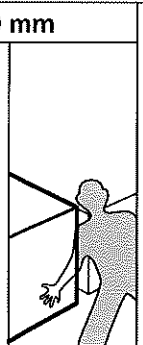
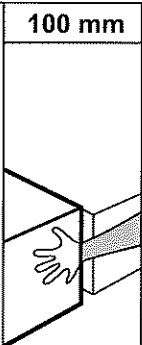
1.3 — DURING CRANE OPERATION

1.3.1 — AVOID DANGER OF CRUSHING

Avoid operating situations in which there is a risk of you or bystanders being crushed by the crane, the support system or load.

The crush point is not regarded as a danger point for the body parts stated if the safety distances highlighted below are complied with and it is ensured that the next biggest body part cannot penetrate.

REQUIRED MINIMUM DISTANCES:

BODY	LEG	FOOT	ARM	HAND	FINGER
500 mm	180 mm	120 mm		100 mm	25 mm
					



If the distances are not complied with there is danger of injury and even death.

1.3.2 — DANGER OF BURN INJURIES

Through the flow of oil in the hydraulic unit the hydraulic oil and therefore all components in the hydraulic unit are heated. The control valve, all other valves, hydraulic lines and hoses, hose couplings, hydraulic cylinders etc. can become so hot that they can cause burns if touched.

Always therefore be careful of their temperature before touching hydraulic components.

1.3.3 — NOISE EMISSION

Main source of noise: the vehicle motor.

Protective measures: wear ear protectors.

High noise pollution puts health at risk.

The crane operator is obliged to observe the noise protection standards applicable in the specific country.

1.3.4 — KEEP DISTANCE FROM POWER LINES

Keep the required minimum distances away from power lines. If this is not possible because of the particular work being carried out the lines must be disconnected (switched off).

The appearance and height of electric power lines gives no indication of their voltage.

In the case of lines where the voltage is not known a distance of at least 5 meters between the crane and the line must be maintained. This also applies to all load lifting gear and ancillary equipment attached to the crane. This also applies to all load fixing tools, accessories and for the load mounted on the crane.

In addition, always observe national standards because they may differ from those distances given in this operating instruction.

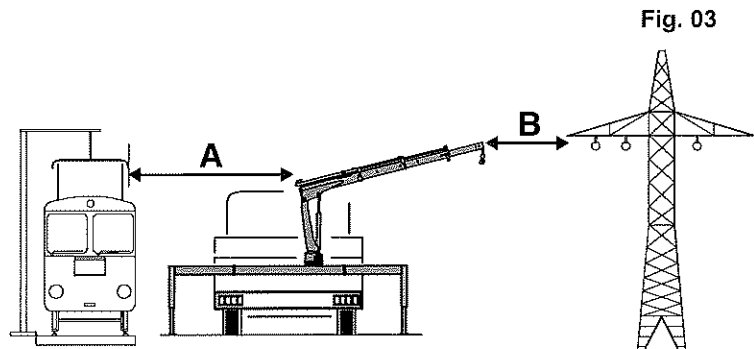
Take into account that in a wind a power line can sway out or the load arm of the crane can be caused to swing by sudden movements (also upwards). Even unintentional approaching can lead to flashover.



Flashover can occur even on just approaching a power line. This entails the risk of fatal injury for the crane operator and auxiliary personnel.

For overhead power lines and contact lines of electric railways the following minimum distances apply:

	-A-	Up to 1500V.....1,0 mt
		Up to 1500V.....1,5 mt
		Up to 1000V.....1,0 mt
		Over 1000V.....1,5 mt
<hr/>		
	-B-	Up to 1000V.....1,0 mt
		1000V – 10000V.....3,0 mt
		110000V – 220000V.....4,0 mt
		220000V – 380000V.....5,0 mt
		Unknown tension5,0 mt



The crane operator is obliged to observe any additional national standards, yet country specific minimum distances to circuit lines may differ from those given here.

1.3.5 – ACTION IN THE EVENT OF FLASHOVER

If the crane touches a power line only your correct reaction can prevent a serious accident.

If you touch the crane, vehicle or load or if you try to leave your location you will put yourself in acute danger of fatal injury.

- Stay calm.
- Persons in the vicinity must keep a distance of at least 10 meters from the vehicle, crane and load (resistance area).
- If the power line has been cut and is touching the ground a distance of at least 10 meters must likewise be maintained (resistance area).
- If there is a person within this 10 meter area this person may leave the danger area only by hopping with legs tight together (step voltage).
- Do not touch the crane, vehicle or load.
- Warn bystanders not to touch the vehicle, crane or load and not to approach.
- Do not attempt to leave the operating stand; and do not touch any metal parts there.

- Indicate that the power lines must be disconnected.
- If you are on the loading area or in the operator's cab of the vehicle, do not leave this location. It is essential you remain where you are.
- If someone is in the electric circuit the power line must be disconnected before this person can be removed; if you approach the person before the power is switched off you will put yourself in danger of fatal injury.

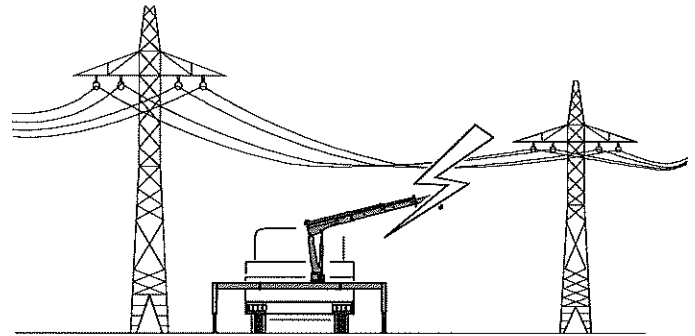


Fig. 04

1.3.6 - ACTION IN THE EVENT OF DEFECTS

Observe the crane during operation for any sudden signs of any defects.

If you discover the following damage or defects to the crane, ancillary equipment, load lifting gear or the carrier vehicle you must stop crane operation immediately:

- Defects, damage or cracks on loadbearing parts.
- Defect bearings.
- Defects in the hydraulic unit or safety devices.
- Loose screwed connections
- Inadequately secured bolt connections.
- Leaks on hydraulic components or connections.
- Unusual noises.
- Unusually quick or slow working movements.
- Functional errors in the control system.
- Unusually high temperature of hydraulic components



In the case of the abovementioned damage or defects safe crane operation is no longer ensured. There is acute danger of accident and thus of fatal injury.

The crane may only return to service when the defects have been removed and safe working is once again assured.

2 TECHNICAL DESCRIPTION

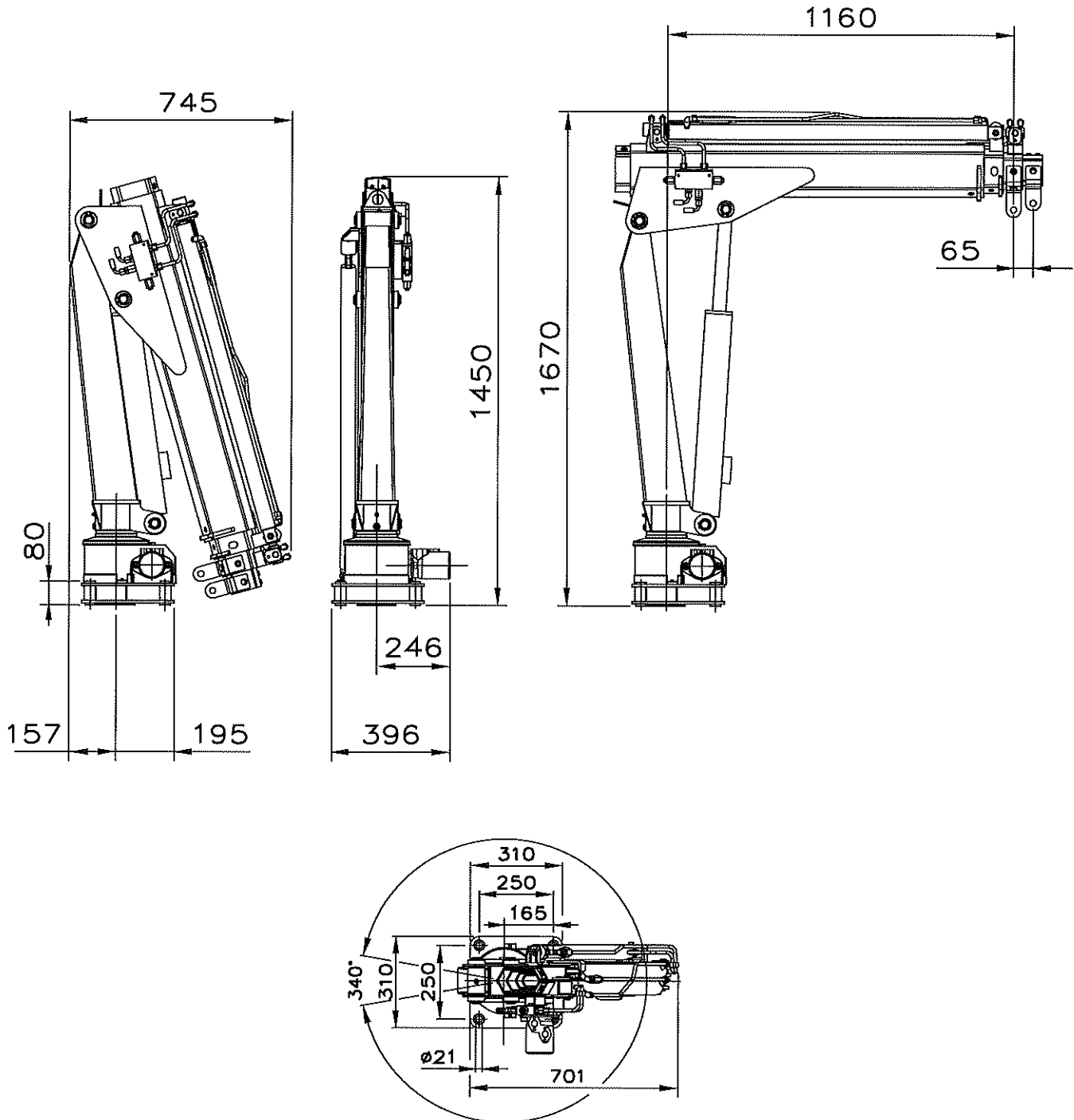
2.1 — SPECIFICATIONS

TC23C	SF2	SF3
LIFTING MOMENT	23.48 kNm (1.29m) 16635 ft.lbs	23.48 kNm (1.29m) 16635 ft.lbs
MAX. LIFTING CAPACITY	1820 kg 5530 lbs	1700 kg 3748 lbs
MAX. HYDRAULIC OUTREACH	3.03 m 9.94 ft	4.03 m 13.22 ft
SLEWING ANGLE	340°	340°
SLEWING TORQUE	3.2 kNm (0.33 m) 2390 ft.lbs	3.2 kNm (0.33 m) 2390 ft.lbs
OPERATING PRESSURE	19.0 Mpa (190 bar) 2755 psi	19.0 Mpa (190 bar) 2755 psi
RECOMMENDED PUMP CAPACITY	6 l/min 1.3 imp. gal/min 1.6 US gal/min	6 l/min 1.3 imp. gal/min 1.6 US gal/min

Subject to change, production tolerances have to be taken into account.

2.2 — DIMENSIONS

Fig. 05



Subject to change, production tolerances have to be taken into account.

2.3 — WEIGHTS AND CENTERS OF GRAVITY

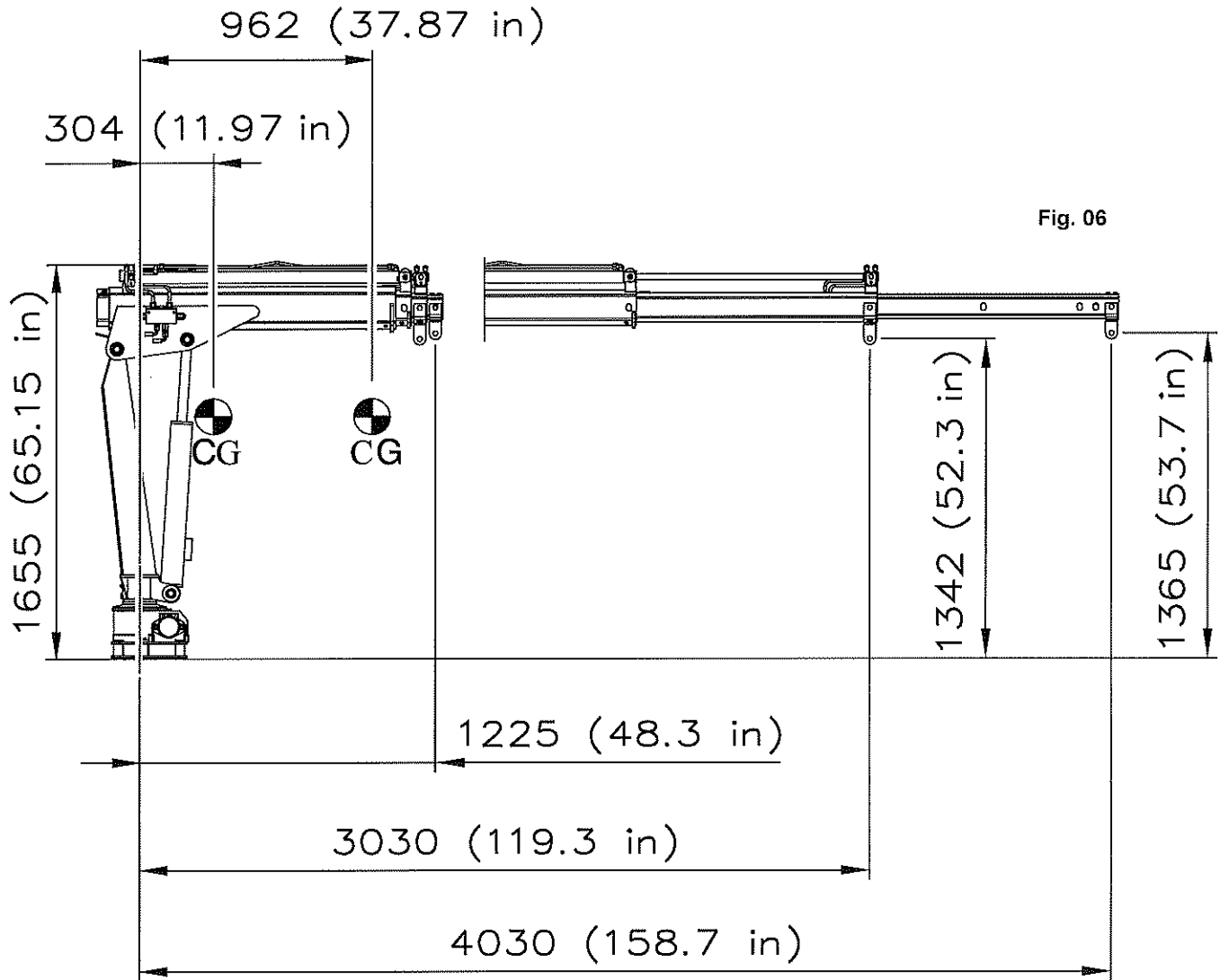


Fig. 06

Subject to change, production tolerances have to be taken into account.

2.4 — OPTIONAL BASAMENT “CE” VERSION

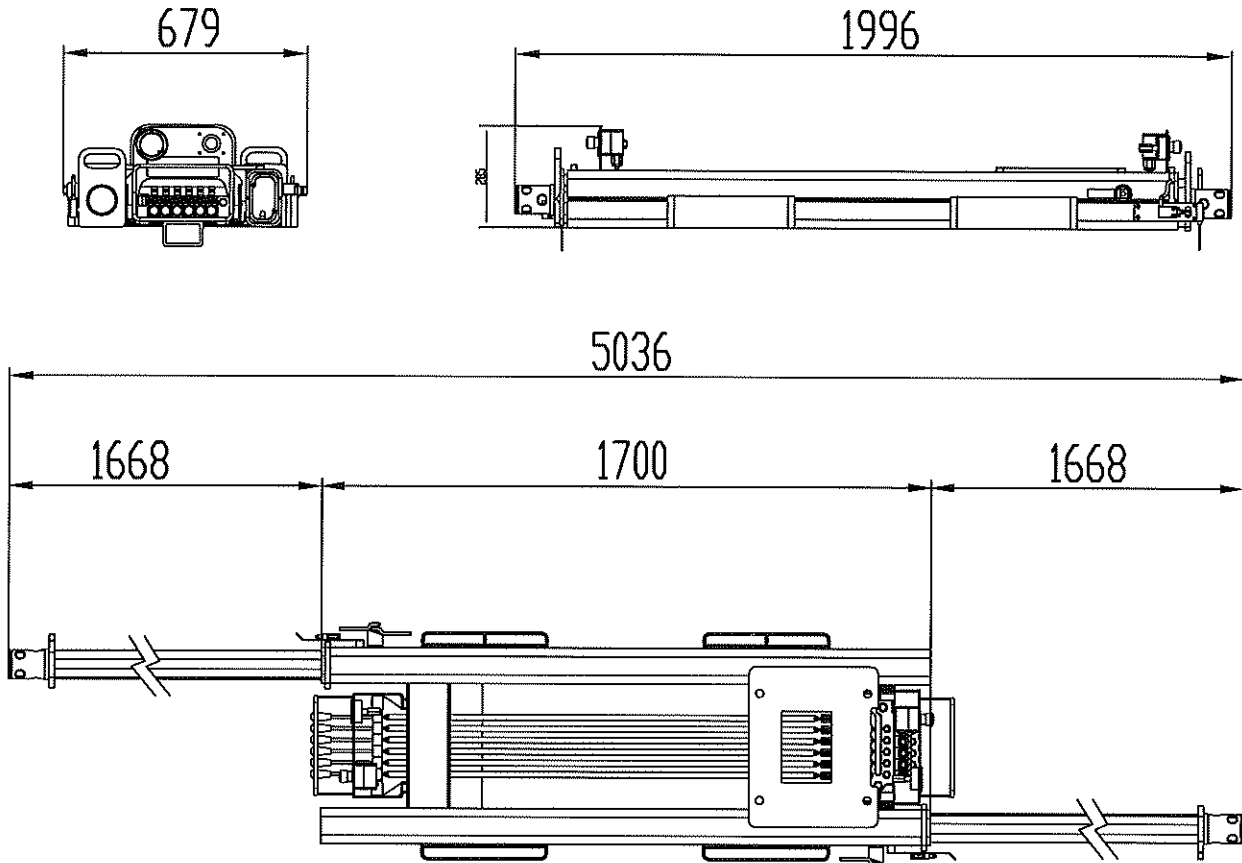


Fig. 07

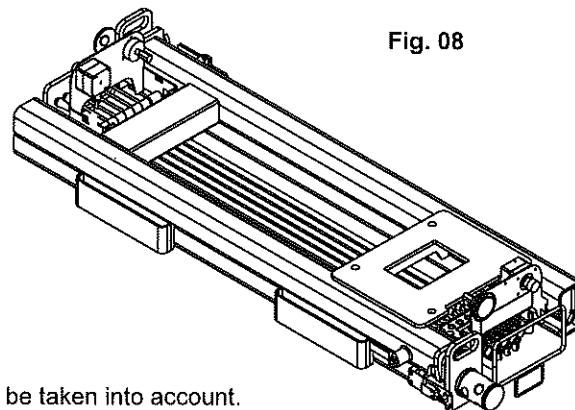


Fig. 08

Subject to change, production tolerances have to be taken into account.

2.5 — LIFTING CAPACITY DIAGRAM

TC23C - SF2

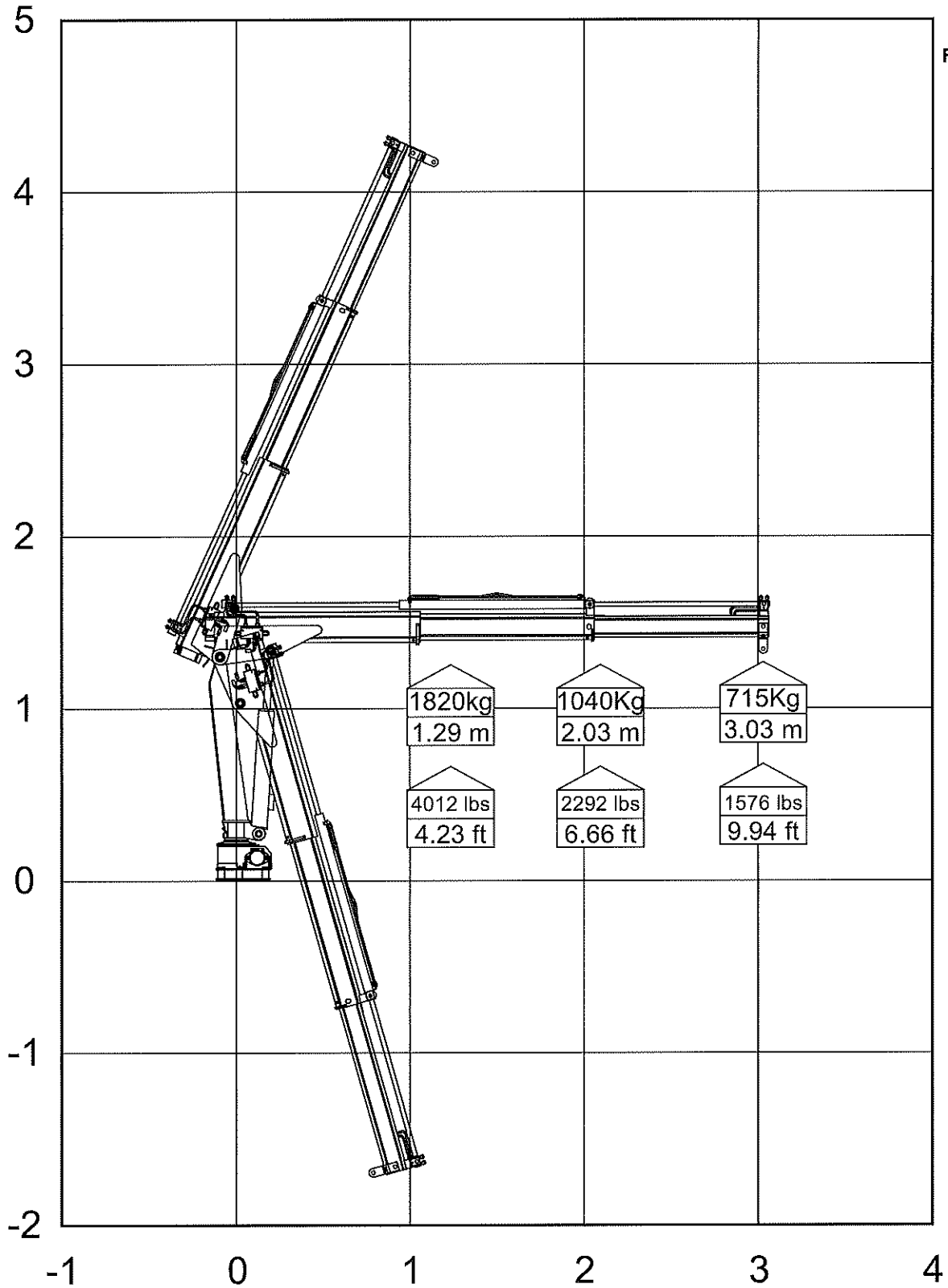
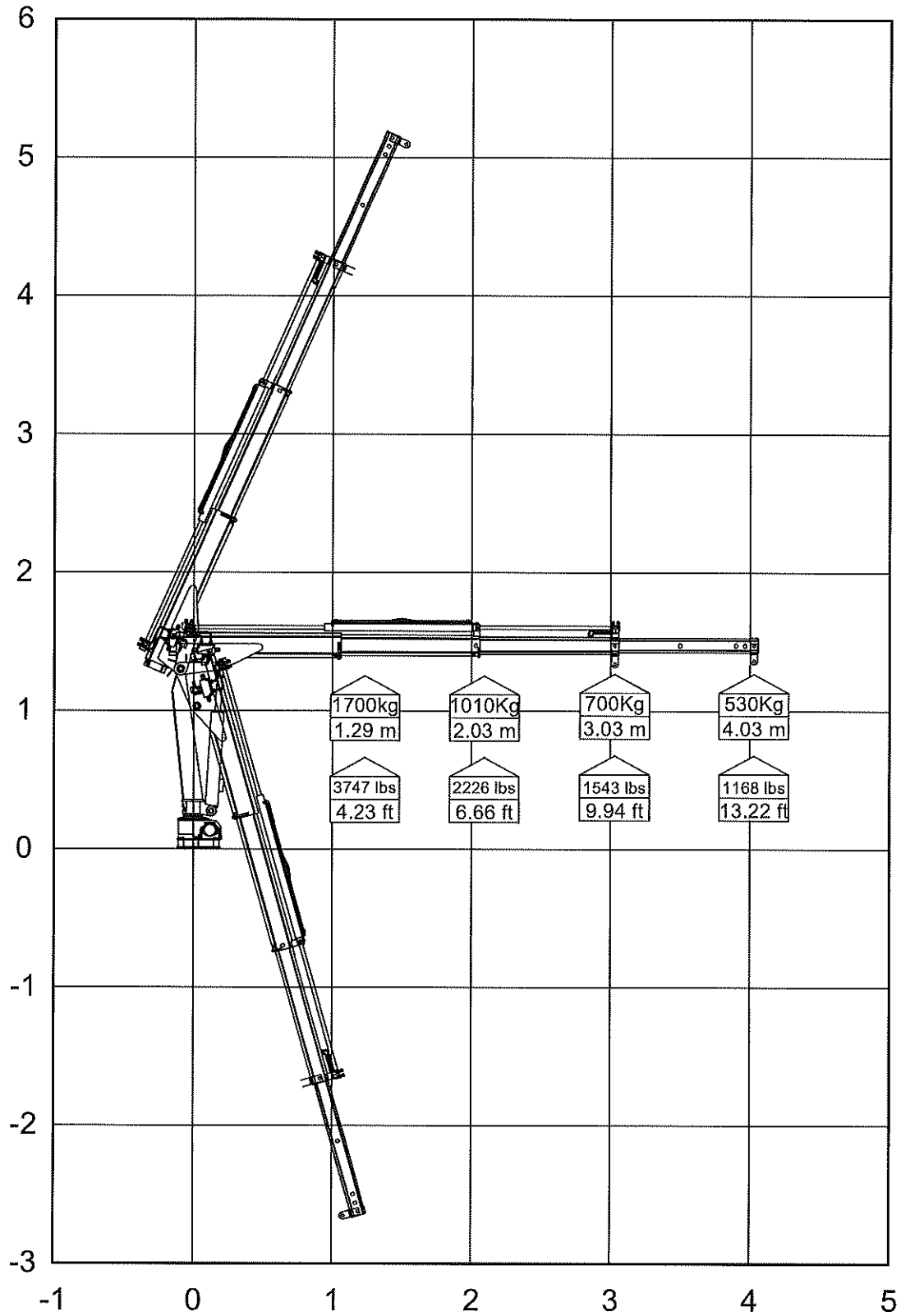


Fig. 09

Subject to change, production tolerances have to be taken into account. — CLASSIFICATION: H1/B3 in DIN15018

TC23C – SF3

Fig. 10



Subject to change, production tolerances have to be taken into account. — CLASSIFICATION: H1/B3 in DIN15018

2.6 — HYDRAULIC DIAGRAM

TC23C - SF2

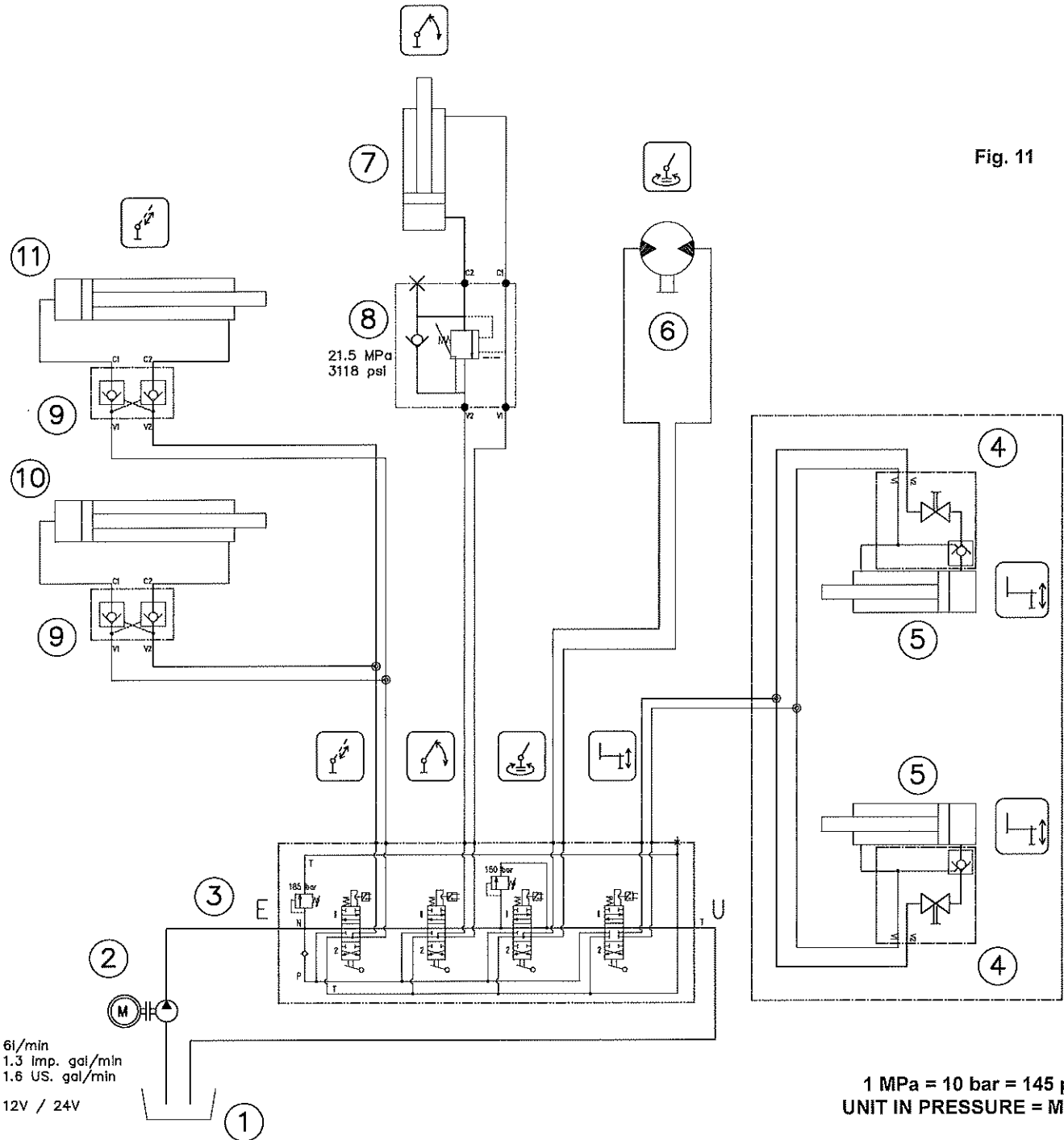


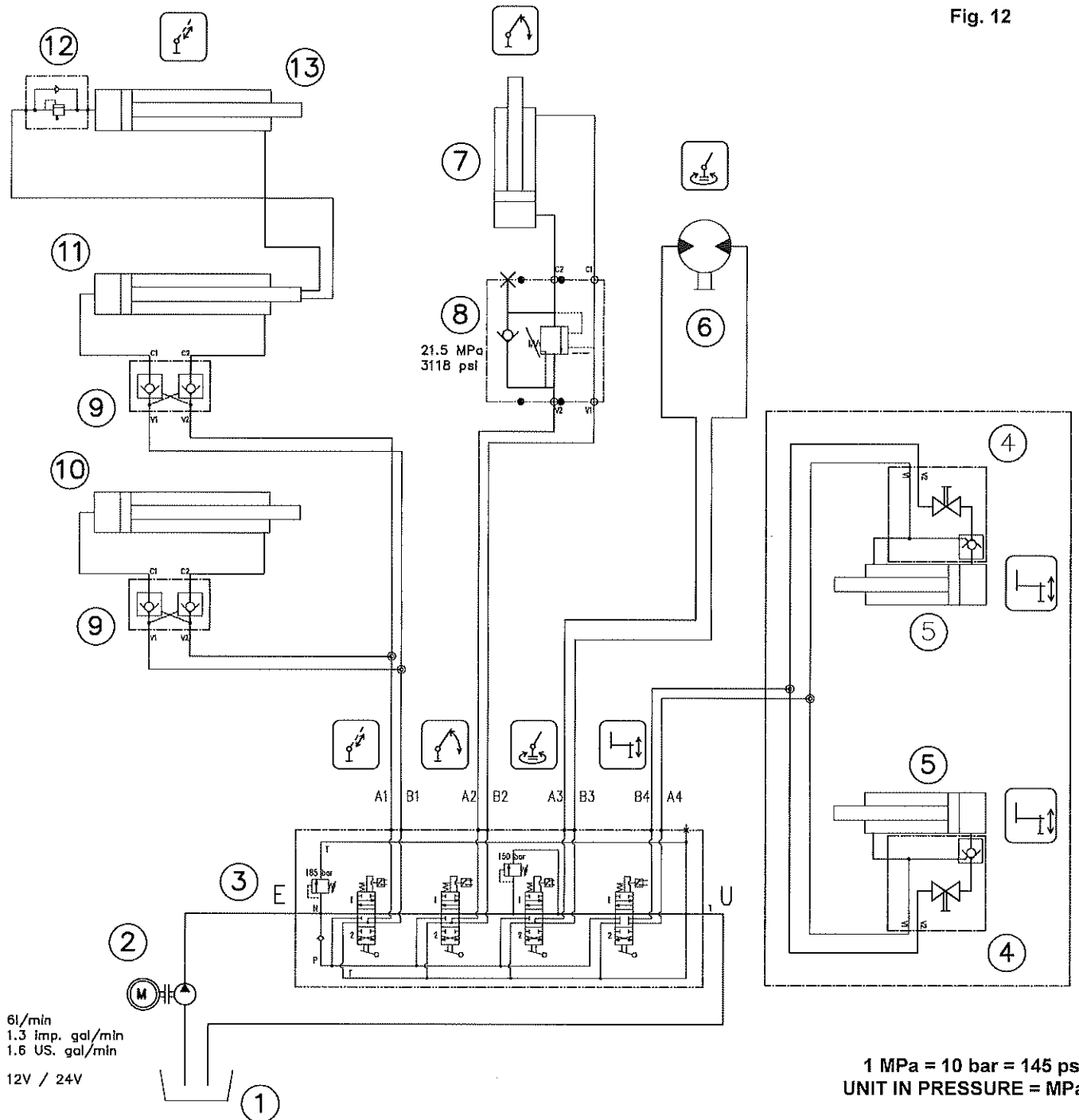
Fig. 11

Subject to change, production tolerances have to be taken into account

- | | | |
|---------------------------------|---------------------------------|---------------------------|
| 1. Oil Tank | 5. Stabilizer ram | 9. Overcenter valve |
| 2. Oil Pump | 6. Oil engine | 10. Boom extension ram I |
| 3. Control valve – Crane | 7. Main boom cylinder | 11. Boom extension ram II |
| 4. Pilot controlled check valve | 8. Pilot controlled check valve | |

TC23C - SF3

Fig. 12



Subject to change, production tolerances have to be taken into account

- | | | |
|--|--|-----------------------------------|
| 1. Oil Tank | 6. Oil engine | 10. Boom extension ram I |
| 2. Oil Pump | 7. Main boom cylinder | 11. Boom extension ram II |
| 3. Control valve – Crane | 8. Pilot controlled check valve | 12. Sequence valve |
| 4. Pilot controlled check valve | 9. Overcenter valve | 13. Boom extension ram III |
| 5. Stabilizer ram | | |

2.7 — HYDRAULIC DIAGRAM - LM

TC23C – (LM)

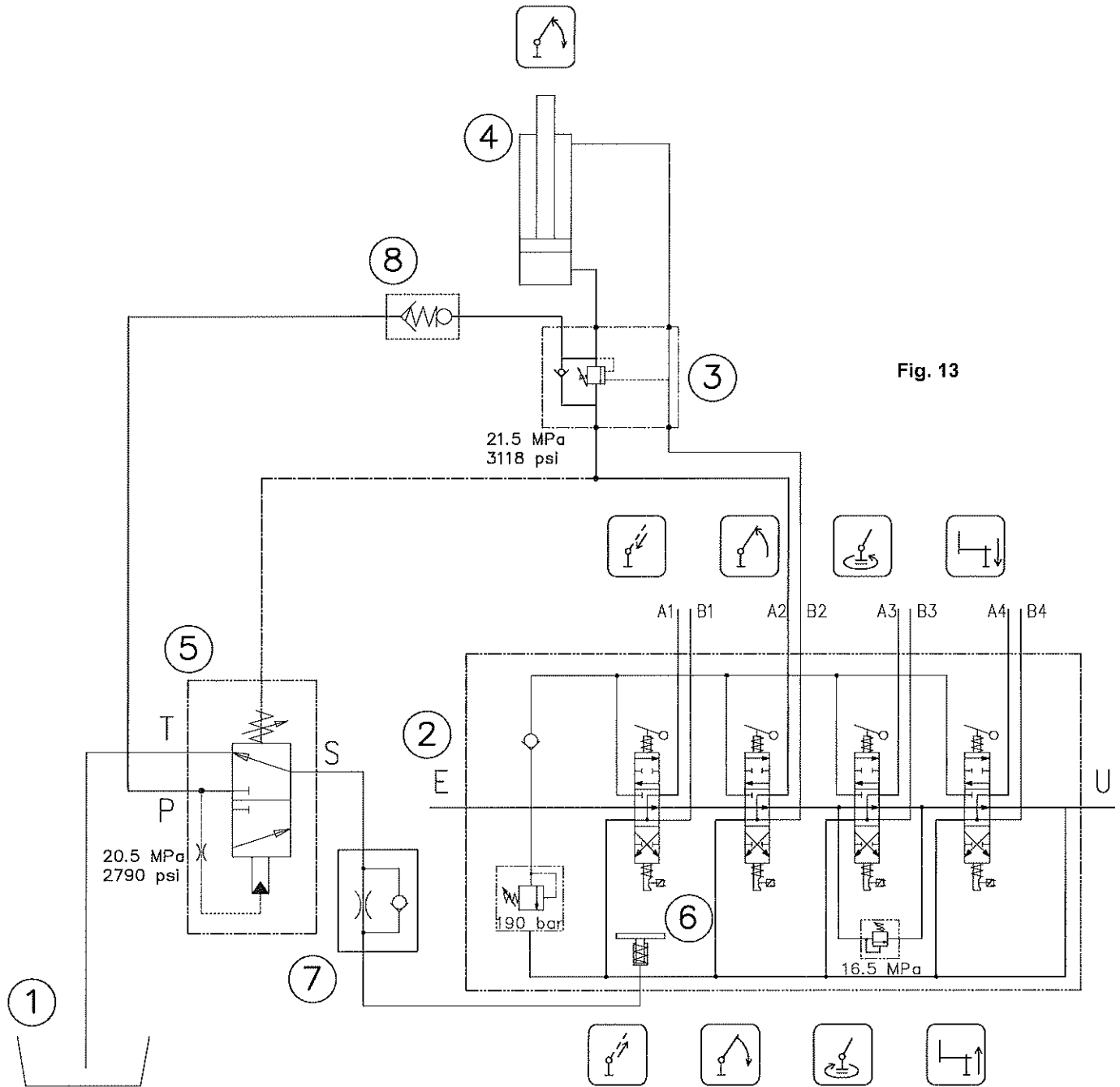


Fig. 13

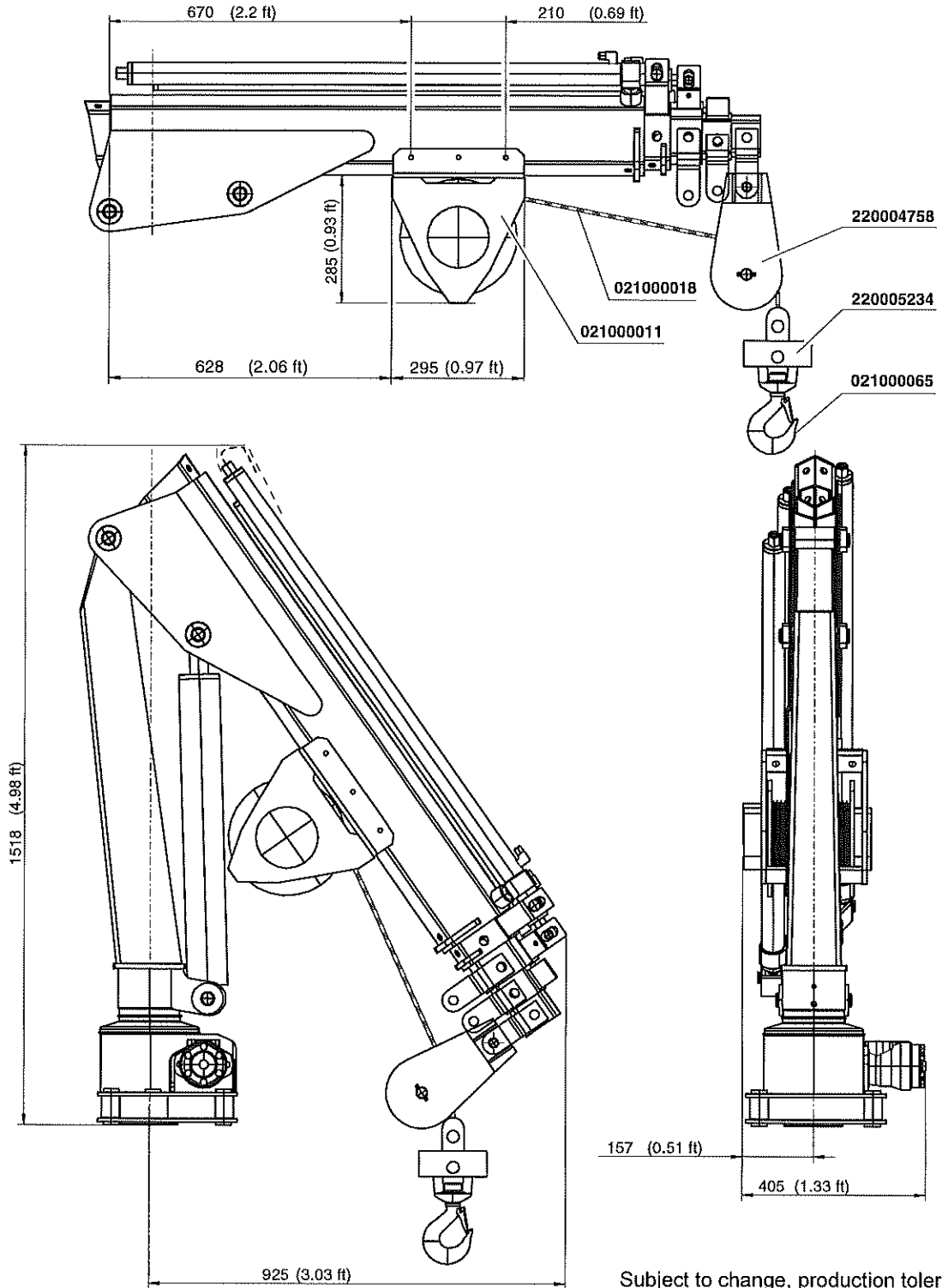
1 MPa = 10 bar = 145 psi
UNIT IN PRESSURE = MPa

Subject to change, production tolerances
 have to be taken into account

- | | |
|--------------------------|-------------------|
| 1. Oil tank | 5. Overload valve |
| 2. Control valve – Crane | 6. Lock cylinder |
| 3. Load holding valve | 7. Throttle valve |
| 4. Lifting cylinder | 8. Overload valve |

2.8 — CABLE WINCH ASSEMBLY

Fig. 14



021000011 27 kg — 60 lbs
220004758 8.65 kg — 19 lbs

220005234 4.34 kg — 10 lbs
021000018 D = 6 mm ; l = 25 m

3**BEFORE CRANE OPERATION****3.1 — CHECKS****3.1.1 — DAILY VISUAL INSPECTION AND
FUNCTION CHECK**

Check the crane and its assembly daily for externally visible defects, damage and changes. Conduct this inspection carefully each time; routine and habit represent a major source of danger because changes are difficult to recognize.

Check:

- Bolted connections, hose connections and elements of the hydraulic unit for damage or escaping hydraulic fluid.



Escaping hydraulic fluid means the danger of accidents and causes serious and costly environmental damage.

- Easy movement and self-return of the controls.
- Loadbearing parts, ancillary equipment, lifting hooks, hook securing devices, load lifting gear (ropes etc.) for any cracks, damage and for easy movement.



If such defects occur the crane must not be started up.

If your crane is fitted with safety devices such as Emergency Off, overload safety device, etc. check that they are functioning every time before starting work.

Proceed as described in Chapter 5.

Follow any safety instructions!

If the safety equipment fails to respond the crane must not be started up.

Carry out this inspection carefully every time; as already mentioned routine and habit represent a major source of danger here.

After repair works and additions inspect the crane as described above.

4 STARTING UP THE CRANE

4.1 — AN OVERVIEW OF THE CRANE

4.1.1 - SET-UP

The crane displayed in the following is an example and shows crane components that can optionally be on your crane depending on model and crane type.

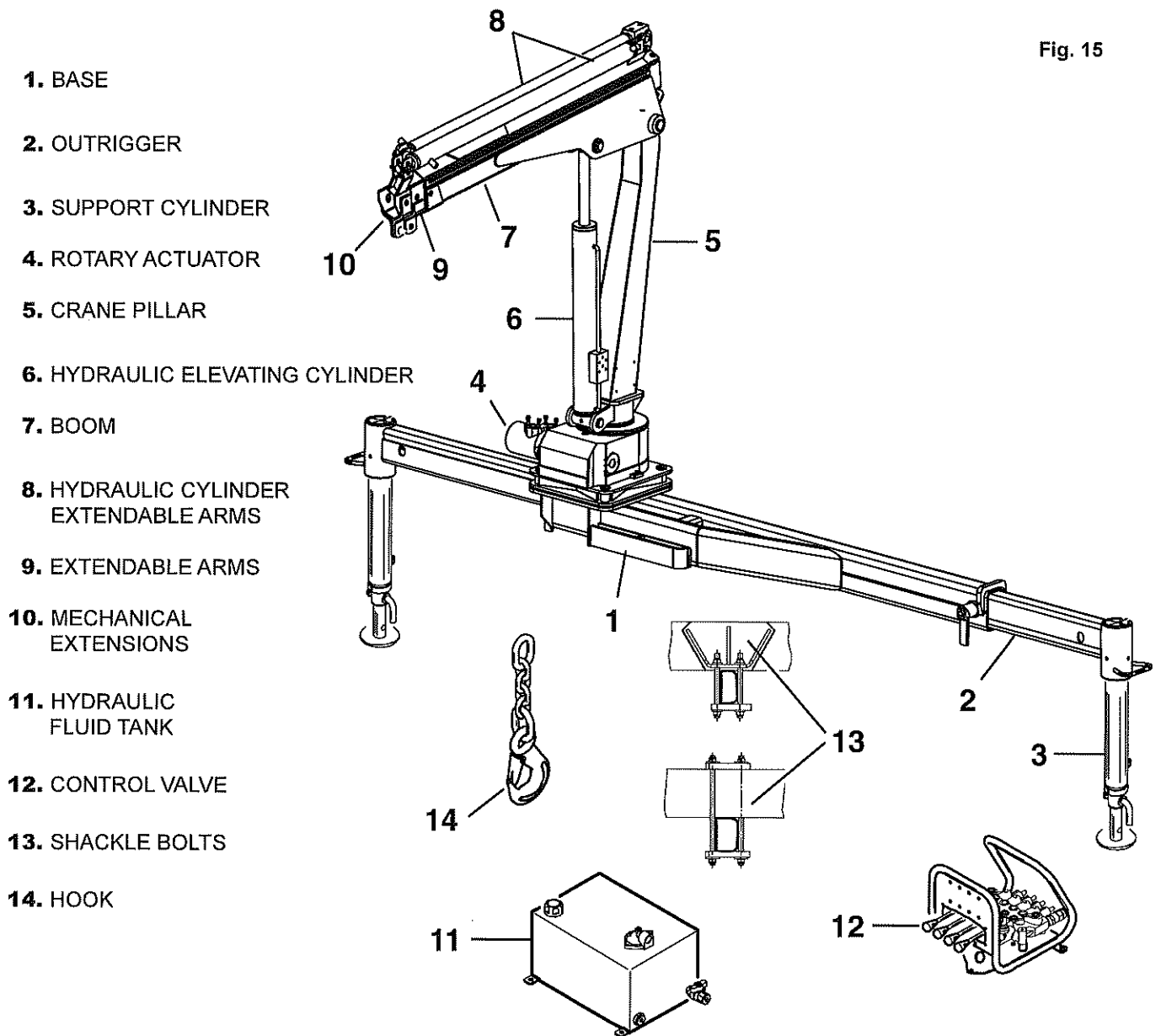


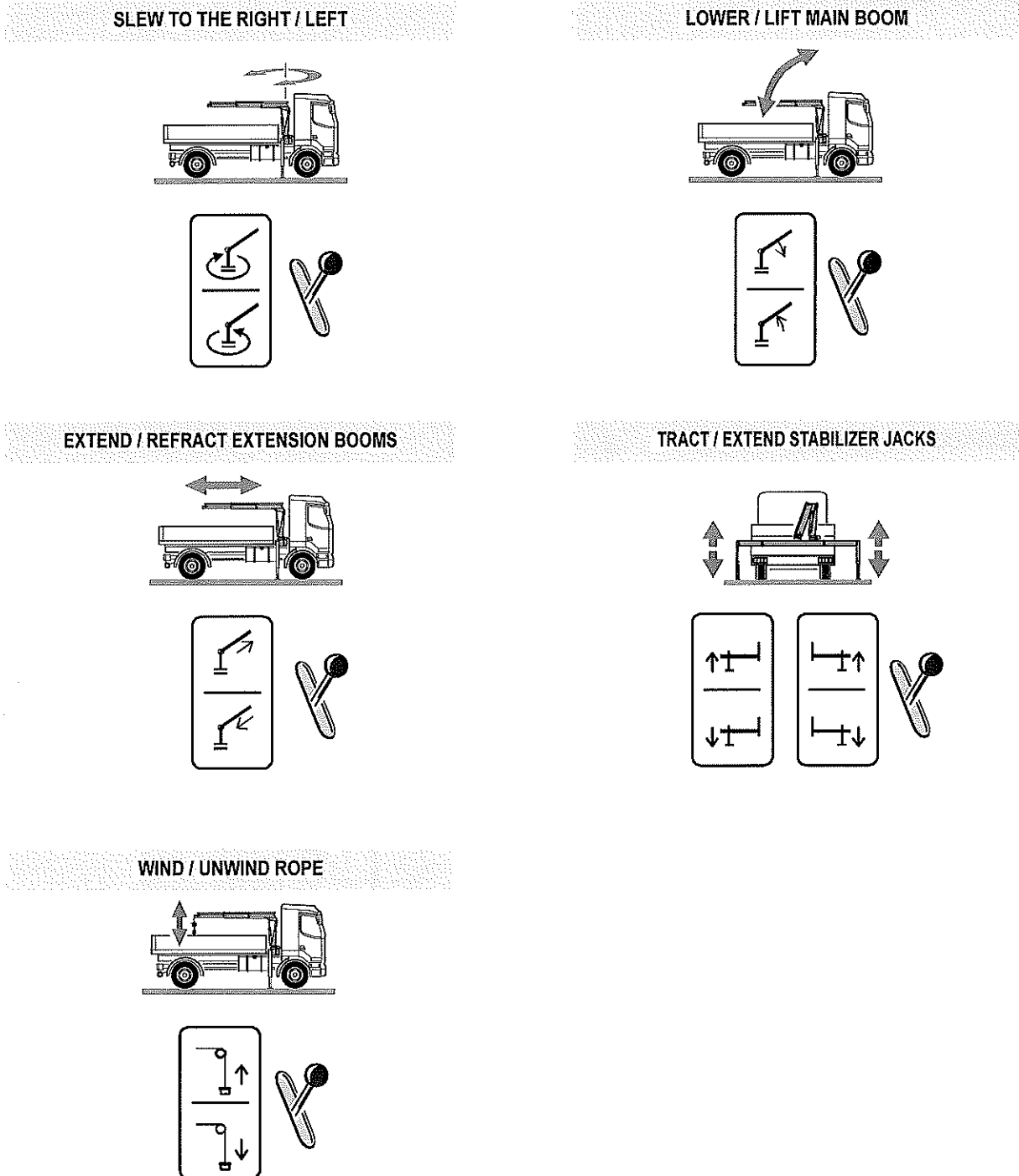
Fig. 15

4.1.2 - CONTROLS

The symbols for the controls are explained below.

The sequence of crane functions (symbols) may deviate on your control stand from the example presented below. Observe, therefore, the symbol arrangement (crane functions) on the control stand of your crane.

Fig. 16



4.2 — PREPARINGS FOR CRANE OPERATION

4.2.1 — COLD START IN LOW OUTSIDE TEMPERATURES

In outside temperatures below freezing.

Appearances, operating stations (spaces occupied) and all mobile crane construction units are to be cleaned if necessary before beginning of the work from ice and snow to.

- Switch on the pump unit at lowest motor speed
- Let the oil pump around without pressure for a few minutes so that it warms up a little
- You can accelerate warming up of the oil by moving a hydraulic cylinder to the end stop

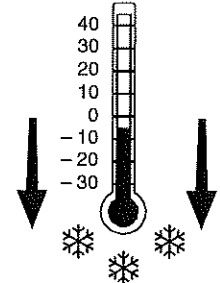


Fig. 17



At temperatures below 0° C make sure that your crane is being operated with a hydraulic fluid which is suitable for such temperatures.

The crane may only be operated by one person (operator) and from a control stand.

4.2.2 — SUPPORTING THE VEHICLE PROPERLY

- The crane must only be operated in properly supported condition.
- Park the vehicle properly and apply the handbrake.

SPIRIT LEVEL.

Every crane control stand has a bubble where you can read the inclination of the lorry.

With the bubble in the middle of the gauge the crane is in horizontal position.

If the bubble is between the two circles the crane's inclination is between 0° and 5°.

After the crane has been mounted on the lorry the mounting company has to adjust the spirit level.

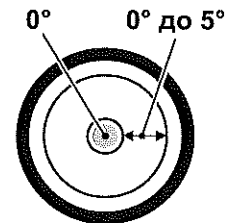


Fig. 18

WORKING IN ARM POSITIONS UP 60°.

Level the vehicle so that the inclination is maximum 5° in every direction.



When the vehicle stands in a maximum inclination of 5° then the angle of 60° must not be exceeded with the loadbearing arm. Due to the reduced guiding function of the hexagon profile of the extendable arm this may cause the loadbearing arm swinging to the side and the load being dropped.

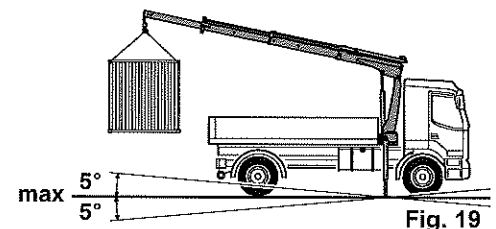


Fig. 19

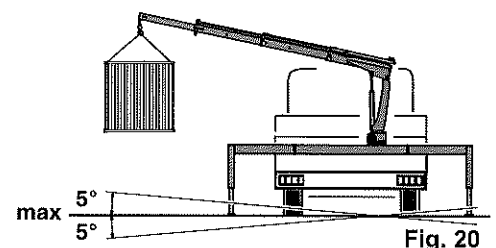


Fig. 20

WORKING IN ARM POSITIONS BEYOND 60° (Near vertical arm position, rope winch operation, fly jib operation)

When working crane position beyond 60° the vehicle has to be completely leveled.
The bubble must be within the inner circle.



When the vehicle is more than 1,5° inclined during loading works in near vertical position this may cause the load arm swinging to the side and the load being dropped because of the reduced guiding function of the hexagon profile of the extendable arms.

- Switch on the pump and, if the rotational speed of the vehicle is manually adjustable, select the correct rotational speed. Engage, if necessary, the specified gear (for values see maintenance manual or instruction plate in the operator's cab). If necessary, switch on the power supply for the crane. For temperatures below 0° see Chapter 4.2.1.

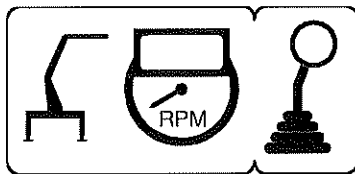


Fig. 21

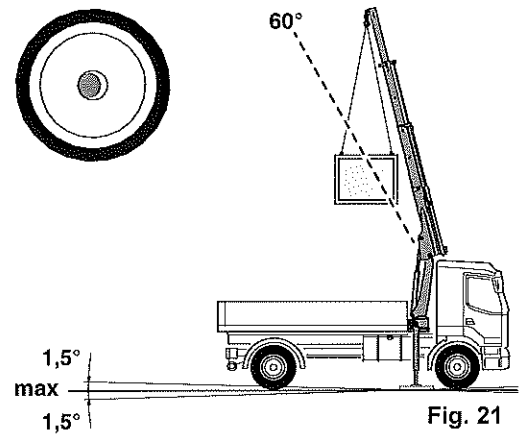


Fig. 21

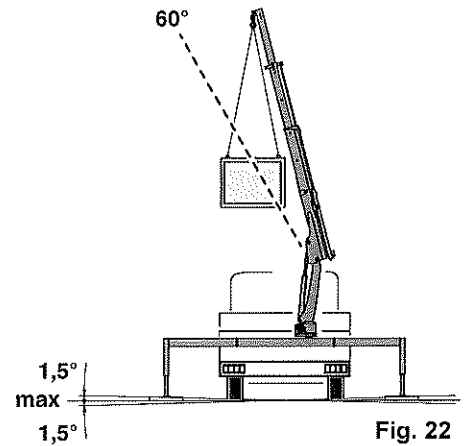


Fig. 22

- Extend all outriggers always to the full width before supporting and, if present, place swivel supports in the supporting position and lock them properly. Always observe the minimum distances stated in Chapter 1.3.1.



When extending the outrigger and support cylinder always ensure that the area in which you are moving them is always in your field of vision.
If that is not possible for both sides at the same time this operation must only be available for the side which you can see (please consult your service workshop).

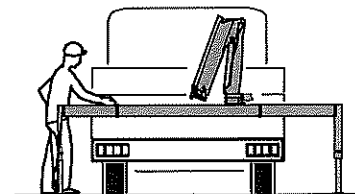


Fig. 23

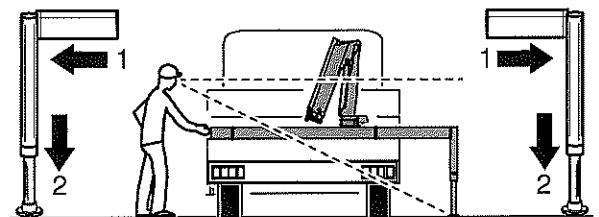


Fig. 24

Before supporting the vehicle on asphalt surfaces ensure that there are no hollow spaces under them such as manhole covers.

Before supporting the vehicle examine the condition of the ground in order if necessary to enlarge the area of support. This will prevent the crane from sinking into the ground during loading or unloading work. Suitable supports can be obtained from ATLAS. Other supports used by you must not break or sink under the loadings that occur when working with the crane.

Supporting the vehicle on manhole covers is prohibited.

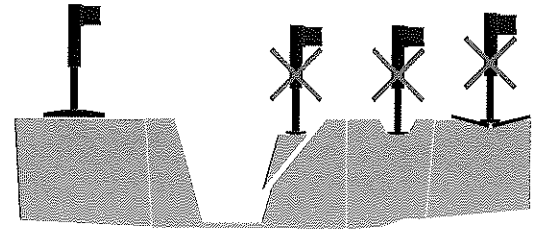


Fig. 25

HIGH QUALITY STABILIZER PLATES ARE OBTAINABLE FROM OUR COMPANY AS OPTION.

The necessary support area can be roughly calculated as follows.
The values for the supporting force can be found in the Technical Sheets of the respective crane.

$$\text{Support A (cm}^2\text{)} = \frac{\text{Supporting force F (N)}}{\text{Loadbearing capacity of the ground (N/cm}^2\text{)}}$$

PERMISSIBLE PRESSURE ON THE GROUND (loadbearing capacity of the ground) TO DIN 1054

A – Filled ground, not artificially compacted	0-10 N/cm²
B – ESTABLISHED, EVIDENTLY UNDISTURBED GROUND:	
1. Mud, peat, marshy ground	0 N/cm²
2. NONCOHESIVE, ADEQUATELY, IRMLY ESTABLISHED GROUND:	
Fine to medium sand	15 N/cm²
Coarse sand to gravel	20 N/cm²
Crushed stone compacted	25 N/cm²
3. COHESIVE GROUND:	
Mushy	0 N/cm²
Soft	4 N/cm²
Firm	10 N/cm²
Half-solid	20 N/cm²
Hard (solid)	30 N/cm²
4. ROCK: Weathered	100 N/cm²
C - Asphalt	20 N/cm²



If the support width is inadequate or if the support sinks into the ground the danger of the vehicle tipping over is acute.

In order not to add to the load on the support when loading the vehicle the support cylinders must be retracted as required. During unloading the support cylinders may lift and they must be readjusted accordingly.

When being supported the vehicle must not be lifted out of the springs in order not to overload the support and not to reduce the braking effect.

On vehicles with air suspension ensure that the airsprung axles are not automatically adjusted during crane operation.

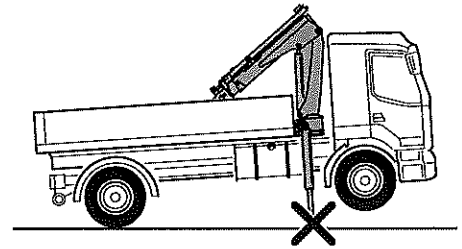


Fig. 26



The crane support is only designed for accommodating the load moment! Therefore never raise the vehicle with the support.

4.2.3 - MANUALLY EXTENDABLE OUTRIGGERS

- Remove the cotter pin out of the locking pin.
- Take the locking pin to free the outrigger beam
- Pull the outrigger out to its full extent
- Insert the locking pin back into place
- Check that the locking pin is properly inserted.

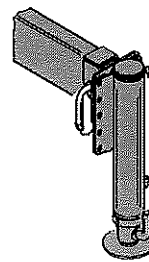


Fig. 27

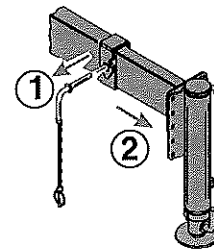


Fig. 28

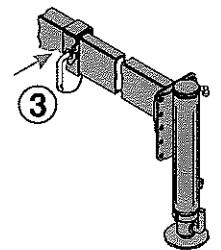


Fig. 29

- Lock the stabilizer extensions in right position with the rig pin and the linch pin.
- Lower both stabilizer jacks in sequence so that you can always keep an eye on the danger zone.

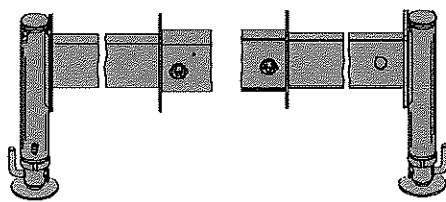


Fig. 30

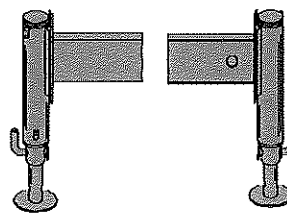


Fig. 31

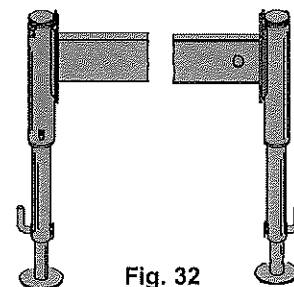


Fig. 32

If your crane is equipped with stabilizers with a crank handle, rotate the crankshaft until the stabilizers are firmly supported on the ground.

In case your crane is equipped with auxiliary outriggers, follow the above procedure.

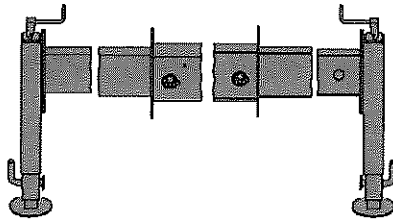


Fig. 33

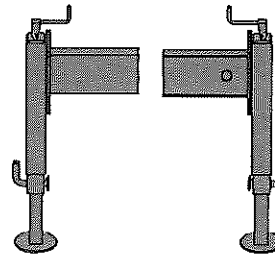


Fig. 34

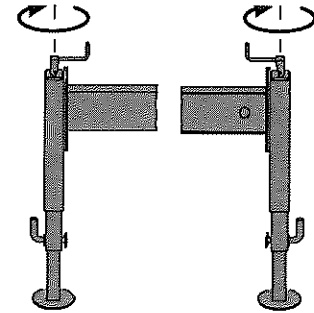


Fig. 35

4.2.4 - PUTTING CRANE INTO OPERATING POSITION

- Observe every safety instruction mentioned in chapter 1.
- The preconditions for extending the crane are: the vehicle is properly supported and the mechanical extensions are retracted and secured.



Carefully check that the mechanical extensions are properly secured when unfolding the crane. These should not endanger the operator or any other person.

- Lift the main boom off its resting position into working position.
- Ensure that manual operations are carried out safely and that each part is afterwards secured with a pin and a cotter pin.



Crane components if not secured represent a major risk of injury.

Fig. 36

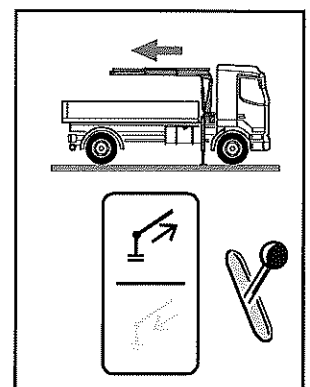
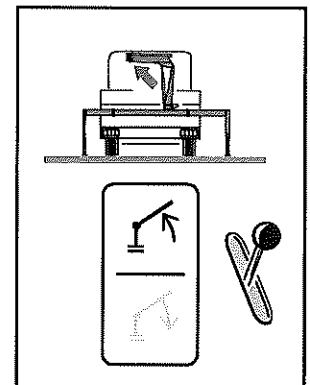
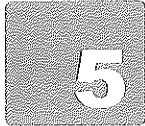


Fig. 37



CRANE OPERATION

5.1 — DURING CRANE OPERATION

5.1.1 — WORKING AREA

Select your working area so that:

- You can make the crane movements without being hindered by trees, masts, lines or other objects.
- That not other works are carried out in the movement area which you need for your work or that you endanger other people with the crane.
- That the crane and you are on the nearest possible place of use.
- That roads or walkways which cross the working area are blocked during the entire use of the crane. Stepping in the working area is strictly forbidden for everybody (except the crane operator and the instructing person). Staying under hanging load is forbidden for everyone (including crane operator and instructing person).



It is prohibited to be in the danger area of the crane, especially under the suspended load or under or near moving crane parts. Therefore always select the control stand with which you can best see the working area and do not endanger yourself and other persons.

THERE IS DANGER OF FATAL INJURY.

- All crane movements and the loading and unloading point are in your field of vision and you can keep the load constantly in sight.

If it is not possible to see the entire working area the crane operator is obliged to follow the instructions of a person qualified for this. The country-specific crane operator signs are to be used.

The crane operator and the person giving the instructions must both be fully conversant with the crane operator signs; the person giving the instructions must be informed of the operation before starting.

Only one person may give instructions.

In the case of a work group the person giving instructions must be distinctly identified (flag, different colour hard hat, ..).

In semidarkness or darkness the entire working area must be lit so that safe working is guaranteed.

If there is a danger that parts of the load might drop during working with the crane the entire working area must be closed off and secured by a warning post.

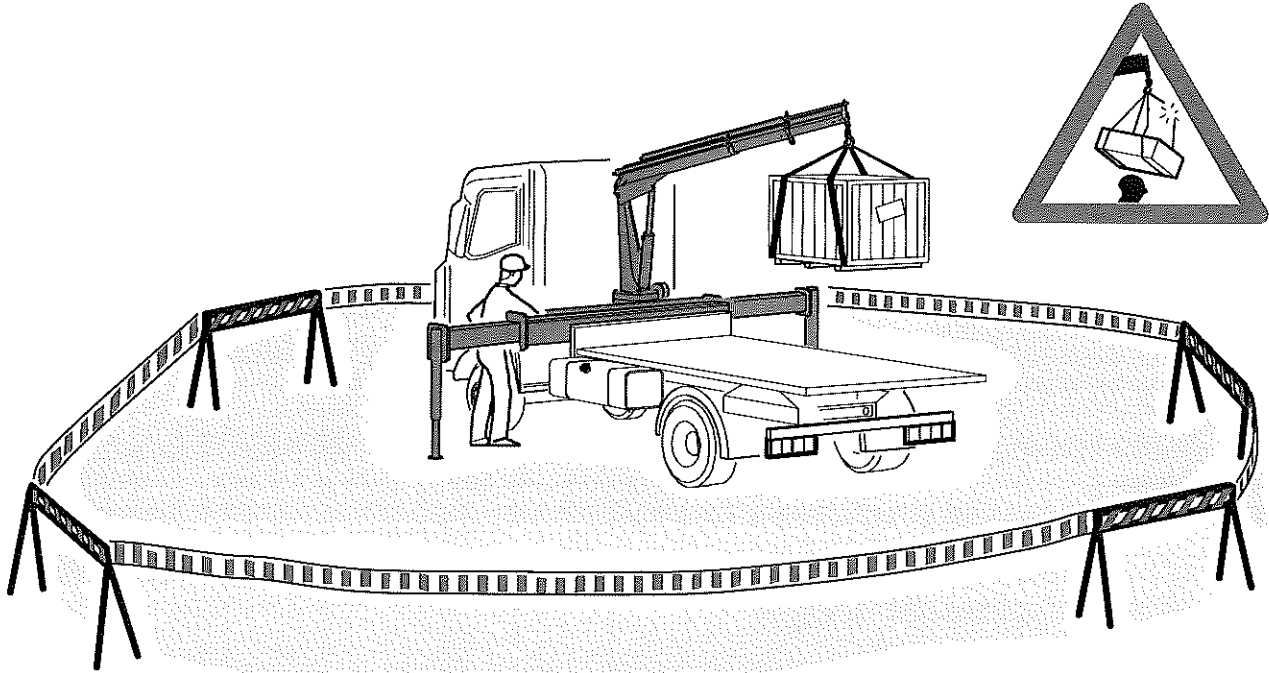


Fig. 38

5.1.2 - LOADING ACTIVITY

Only use the crane for lifting loads and never for freeing, hitting, pulling (dragging) loads, pressing or driving against solid obstacles or for towing vehicles. Any angled hoisting is prohibited.

Further, the country-specific regulations for truck loading crane operation are to be observed.

In a deviation from the setup as a truck loading crane (e.g. stationary mounting) the load values change (please consult your service workshop).

During the loading or unloading process the crane operator may not leave the crane operation stand or put the remote control from the hand.

Only raise loads above the center of gravity. Secure the load against slipping.



**Handle wet or icy loads with caution, there is danger of them slipping!
If there is so much ice or snow on the load which is to be lifted that safe lifting cannot be guaranteed, the ice or snow must be removed from the load before it is lifted.**

When you activate a crane function grip the operating lever completely and press it until the crane responds. You can then increase the speed of the crane function by further slow and even pressing of the operating lever.

Likewise stop the crane movements slowly and evenly.

Operate the crane so that it performs gentle movements.



Abrupt crane movements, such as quick pressing through or momentary stopping of a crane function can cause the load to swing and drop. There is danger of an accident.

Move the raised load so that it does not hit against the crane or other obstacles.

During crane operation the crane operator must not be executing any other jobs.

When the crane operator himself removes the load he has to press the emergency off switch first (on the crane control panel, on the remote control).

The emergency off switch may only be released when the crane operator is out of the danger zone.

Loads must only be attached and removed when the crane is completely at a standstill.

Before moving the load arm ensure that the person who has attached or removed the load is no longer in the danger area of the crane.



If persons are in the area of the moving load arm (danger area) they are in acute accident danger

Do not move the crane at full working speed to the stop, this increases wear and shortens service life.

You can operate several functions at the same time, i.e. carry out several movements at the same time.



If the crane is operated with several functions at the same time it must be ensured that if one function is switched off the working speed of the other functions can increase.

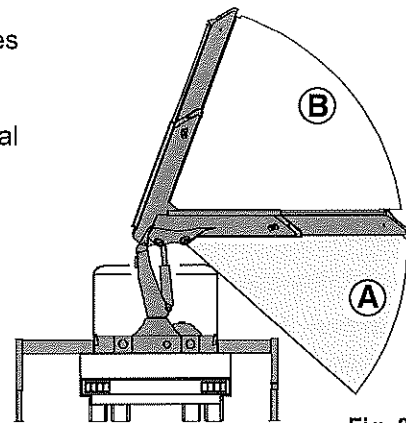


Fig. 39

As in movements below horizontal the maximum lifting moment is not reached, this arm position should be avoided. Therefore work in this loading area with the hinged arm.



When working with loads the boom must not be moved to the end stop as in this position the overload safety device is not operational.

If the loading activity is interrupted the load arm is to be retracted, the hydraulic pump switched off and the crane secured against unauthorized operation.

In order to continue working safely after an interruption of loading activity, check whether the crane has been tampered with before resuming operation.

Warning: Overheating of the engine. The start-up times of electro pump must be limited to prevent its overheating. The continuous operation of the electro pump must be maximum 5 minutes. There must be always a break from at least 20 minutes.

Attention: The unit is equipped with thermal protection against overheating. In case of operation of the thermal protection, you must wait for the operation reset, that depending on the ambient temperature can take between 1 and 30 minutes.

5.1.3 – MAINTAIN LOAD LIMITS

Never exceed the load moment permissible for the crane. This can lead to uncontrolled sinking of the load and to failure (fracture) of components or to tipping over.

The permissible lifting capacities and the maximum load can be found on the lifting capacity plate.

By working with the smallest possible radius you will increase the safety and service life of your crane.



When lowering the load from a steep position the outreach must not be increased as this can cause the maximum permissible load moment to be exceeded.

If this happens on cranes without an overload safety device or with an overload indicator uncontrolled lowering of the load occurs. On cranes with an overload safety device the stopping of the descending movement can cause the load to slip, and the crane is subjected to an unnecessary loading. For a description of safety devices see Chapter 5.2.

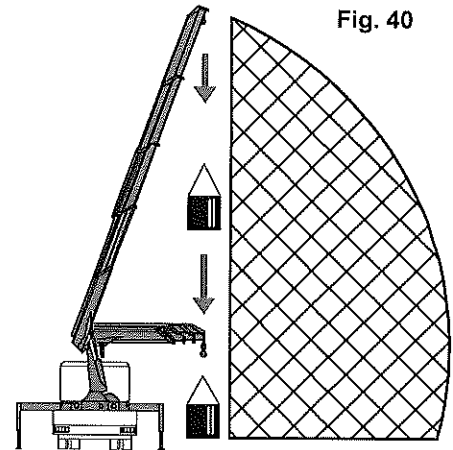


Fig. 40

Load lifting material (hook, lifting slings, chains, etc.) and attachments such as mechanical extensions must be accounted for when calculating the overall load.

Never exceed the load limit indicated on accessories or lifting material.

Pay attention to and observe the load charts of the manufacturer when using slings, ropes, chains or any other lifting material.



In working with mechanical extensions the permissible lifting capacity of the extension used determines the maximum permissible lifting capacity. This must be stated clearly on the side of the respective extension (see DA 069).

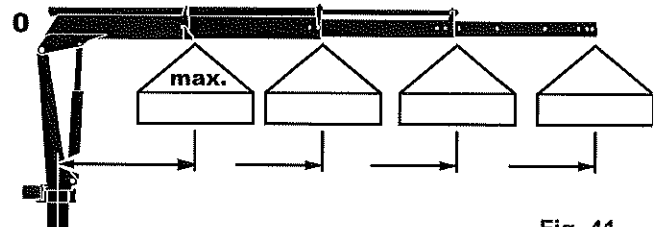


Fig. 41

Therefore fasten your load only on the mechanical extension suitable for such or on a hydraulic extension arm.

5.2 — SAFETY DEVICES

Using safety devices can avoid accidents.

They are for your protection therefore you should make sure which of the below safety devices are available on your crane.

5.2.1 — EMERGENCY OFF BUTTON

The Emergency Off switch is a safety device which when operated immediately brings the crane to a standstill.



If an unexpected hazardous situation occurs during crane operation, release all of the operating levers immediately and press the emergency off switch until it clicks. All of the crane functions will then be blocked. If the emergency off switch was pressed because of an emergency situation, it must not be released until safe crane operation has been guaranteed.

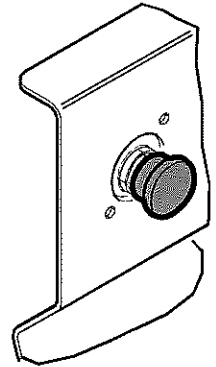


Fig. 42

Every time before starting work a check of the Emergency Off function must be carried out:

- Operate a crane function and press the Emergency Off switch. The crane must immediately come to a standstill
- No further crane movements must be possible.



If the crane's movement is not interrupted, crane operation must be ceased immediately and a service workshop visited!

5.2.2 — OVERLOAD INDICATORS

A manometer with a three-colour scale is provided which indicates the load moment.

During work, the manometer's needle should therefore always be in the green range of the scale.

The yellow scale section of the moment gauge corresponds with conditions near 90% of the maximum load permissible.

Deflections of the needle in the red section of the three-colour scale are indicative of overload.

The load moment must be reduced immediately under such conditions (e.g., by pulling in the extension arms).

It is essential to keep an eye on the load moment indicator during work so that dangerous overloading of the crane can be avoided.

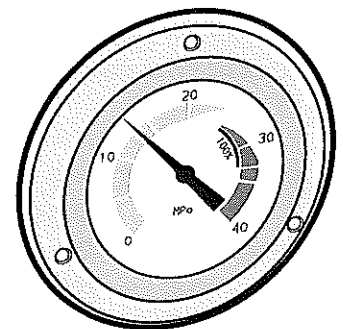


Fig. 43



When the manometer needle is seen in the red section of the scale, the load moment must be reduced immediately to prevent dangerous overloading of the crane.

5.2.3 - OVERLOAD PROTECTION SYSTEM

LM. (Hydraulic overload protection system).

If you come into the overload range, the hand levers controlling moment increasing functions become blocked; by means of block cylinders, in the neutral position.

The following crane movements are no longer possible:

BOOM	LOWER
EXTENSION	EXTEND

The hand levers can be actuated again once the load moment has been reduced.

Carry out a function test without load each time before working with the crane:

Extend the main boom to its full extent at full speed.

The overload protection should respond when the cylinder reaches its full extent (avoid this boom configuration whilst working).

- The abovementioned functions should now be locked.

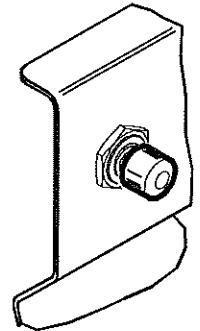


Fig. 44



If the overload protection does not respond, IMMEDIATELY cease operation of the crane.

- Briefly press the release valve and lower the main boom.

5.2.4 - LOAD MOMENT LIMIT SYSTEMS

LM.
Floor control / raised seat control (overload protection hydraulically with hinged arm locked on both sides).

If you should enter the overload range with your crane, the hand levers for all functions which increase the load moment will be pushed into neutral position by blocking cylinders.

The following movements are no longer possible:

BOOM	LOWERING
HINGED ARM	LOWERING / RAISING
EXTENDABLE ARM	EXTENDING

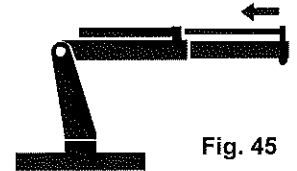


Fig. 45

If fitted:

ROPE WINCH	RAISING
2ND HINGED SYSTEM	LOWERING / RAISING
2ND HINGED SYSTEM	EXTENDING EXTENDABLE ARM

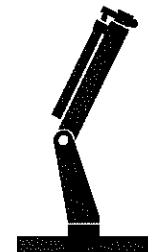


Fig. 46

If possible you should reduce the load moment by retracting the extendable arms. After this all crane functions are possible again.

If owing to the crane position (boom extended to stop and all extendable arms retracted) no further load moment reducing crane movements are possible proceed as follows to unblock the crane functions.

- Activate the function "retract extendable arm", this releases the function "lower boom".
- While you are activating the function "retract extendable arms", lower the boom.



Note that when lowering the hinged arm above horizontal the load moment is increased.

Before starting work a function check (without load) of the load moment limiting system must be carried out:

Extend the boom at maximum speed to the stop.

The load moment limiting system must respond when the stop is reached (Avoid this test position when working)

The movements previously listed must be blocked.



If the overload protection does not respond crane operation is to be discontinued IMMEDIATELY and a service workshop visited.

After the function check of the load moment limiting system activate, with floor control as described above, the function "retract extendable arms" and lower the boom.

5.2.5 — EMERGENCY CONTROL

Putting crane with screwing bridging bolt on the emergency off switch into emergency operation status:

- Turn the key-operated switch to manual operation.
- Turn the bridging bolt until the seal (plastic tip) breaks off.
- Now put the crane into transport position as described in Chapter 6.

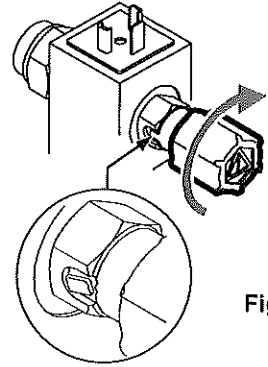


Fig. 47

Putting crane with screwing bridging bolt on the control valve into emergency operation status:

- Turn the key-operated switch to manual operation.
- Turn the bridging bolt until the plastic tip (seal) breaks off.
- Then turn the bridging bolt until it hits the stop.
- Now try to run in the hydraulic extendable arm.
If this is still not possible, screw out the bridging bolt one turn (360°) and try to run in the extendable arm again.
- Once the extendable arms have been run in, put the crane into transport position as described in Chapter 6.

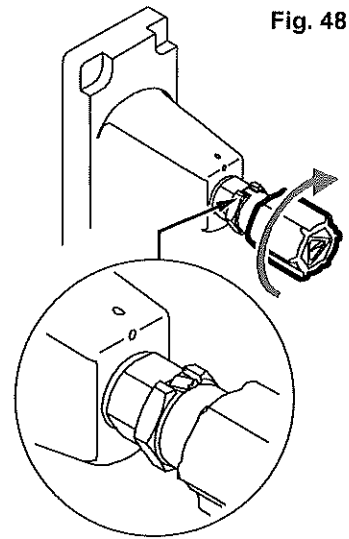


Fig. 48



Once crane movements are possible again the load moment must be immediately reduced.

- Visit an ATLAS service workshop immediately to have the fault repaired.

IT IS NOT PERMISSIBLE TO CONTINUE TO OPERATE THE CRANE!



Putting the crane into emergency operation status as described above deactivates all safety devices such as Emergency Off, load limiting systems and SHB. Loading and unloading work must not be continued, there is a danger of tipping over and therefore of fatal injury.



5.3 — ADDITIONAL EQUIPMENT

5.3.1 — LOAD HOLDING ATTACHMENTS AND ACCESSORIES

You can operate your crane with a variety of attachments such as mechanical extensions, special suspension, pallet fork, nylon straps, ropes, etc.

For more details, simply ask your ATLAS service workshop.

Pay attention to the following:

- The capacity and dimensions of the attachment must be compatible with the crane.
- There must be, on the attachment, a symbol plate indicating: name of manufacturer, model, serial number, dead weight, operating pressure, volumetric capacity, admissible load and year of production.
- Carefully read the content of the operator's manual for the respective accessory.
- Before operating, ensure the attachment is always properly fixed on the crane.
- The overall max. admissible load is determined by the lowest max. admissible load of either the crane or the attachment.



Fig. 49

WORKING WITH MECHANICAL EXTENSIONS.

- Put the load arm in horizontal position.
- Extend the extendable arms.
- Lower the crane arm so far that the spring cotter and the locking bolt with which the mechanical extensions are secured can be removed. Never stand in front of the crane arm when doing so but always to the side.

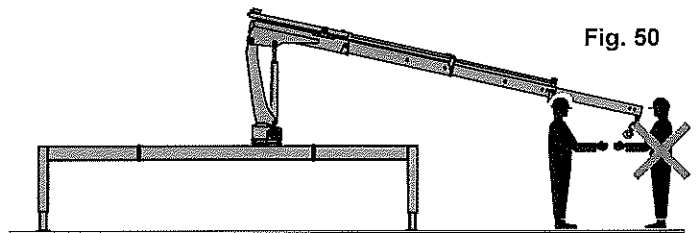


Fig. 50



Mechanical extensions can slide out of the extendable arms after removal of the securing bolt owing to the inclined position of the crane arm.

Therefore always take up a position to the side of the crane arm, otherwise there is a danger of fatal injury.

- Remove the spring cotter from the securing bolt and pull the bolt out.
- Pull out the mechanical extensions so far until you can secure them with the bolt again in the extendable arm.



It is prohibited to let the mechanical extensions fall out in vertical position of the outer boom!

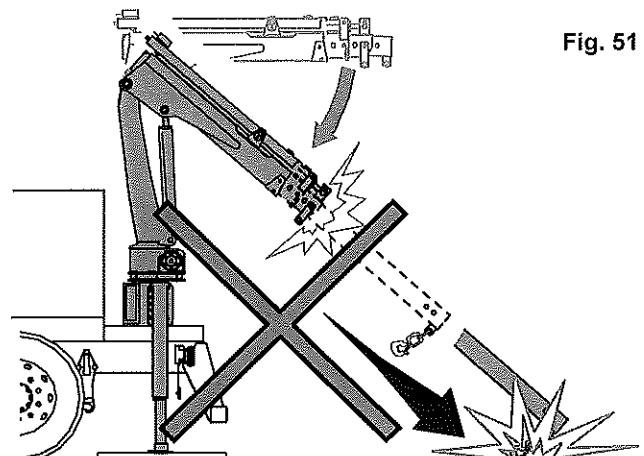


Fig. 51

- Secure the bolt again with the spring cotter.
- The maximum permissible load capacity of the used extension (see model label or side label on the extension) must not be exceeded. This is even applicable when the extension is completely retracted and secured.



Inadequately secured mechanical extensions represent a danger of fatal injury for you and other people.

Always use the bolts and spring cotters provided by ATLAS.

The maximum load capacity of the crane is always determined by the weakest load taking element. Therefore, always observe the load carrying capacities specified on the load taking elements.

OVERLOAD PROTECTION DEVICE FOR EXTENSIONS.

The overload protection device for extensions allows you to operate the mechanical extensions (two maximum) with the overload protection.

Working with overload protection device for extensions:

- Disassemble the load hook
- Assemble the overload hook (secure with bolt)
- Plug in the cable
- Set the operation mode selection switch in the required position
- For extension 1 set the switch on 1
- For extension 2 set the switch on 2 (see figure)

Modes of operations:

A = Without extension.

B = With 1 extension.

C = With 2 extension.

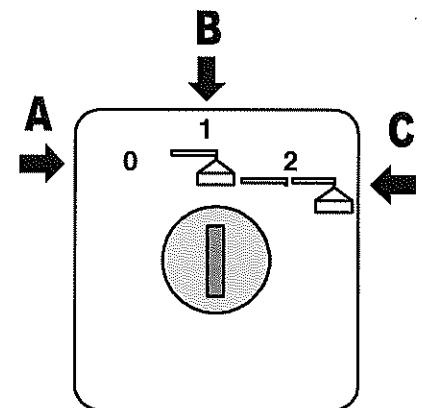


Fig. 52



If the operation mode selection switch is incorrectly set the overload protection for extensions will not work!

Working without overload protection device for extensions:

- Set the operation mode selection switch to 0.
- Unplug the cable.
- Disassemble the overload hook.
- Assemble the load hook (secure with bolt).



When operating the crane without over load protection device for extensions it is not allowed to use the overload hook! When working with overload protection device for extensions loads of maximum 2,000 kg can be lifted!

5.3.2 – ROPE WINCH

Whenever you use the crane in rope winch operation, the vehicle must be secured horizontally.

For rope winch operation only use ATLAS rope winches, pulleys, pulley heads, etc.

Before starting work check all winch components (pulleys, pulley head, etc.) to see whether they are mounted as shown in the Technical Information Sheet for the rope winch and the rope is positioned properly on the pulleys.

When working with the rope winch it has to be ensured that:

- The rope winch is not overloaded with the lifting capacity of the crane.
- Crane components such as hydraulic extendable arms, mechanical extensions and pulleys etc. are not overloaded with the lifting capacity of the rope winch.

When extending the extendable arms make sure that this will not shorten the rope as much that it breaks. Therefore such movements you have to unwind enough rope.



If during working with the rope winch the rope is wound off to less than three full turns the rope may be pulled out of its fastening in the rope drum. This will cause the load to drop, which means an acute accident danger for you and other persons.

- On a rope winch with safety device it is ensured that when the rope is wound off at least 3 turns remain on the drum and that the rope is not snapped by unintentional shortening (extending the extendable arms).
- Use of damaged, worn or weak ropes is prohibited.
- The pulley heads, pulleys and intermediate pulleys are to be mounted and used in accordance with the technical information sheets.
- To prevent slack the rope must be kept tight when being wound onto the rope drum (not with the hands).
- If the lower rope layers on the drum are hardly used or not used at all they are to be wound off the drum from time to time and rewound with pre-tensioning.
- During travel winch components or load lifting gear must not stick out beyond the width of the vehicle and must be removed before setting off so that nobody is endangered.

6

ENDING CRANE OPERATION

6.1 — ENDING CRANE OPERATION

6.1.1 — PUTTING CRANE IN TRANSPORT POSITION

In your activity observe all the safety instructions in Chapter 1.

- Before you put the crane in transport position retract the mechanical extensions and lock them properly into place with the locking and the cotter pin.
- Retract the hydraulic extension booms.
- Fold the main boom in travelling position.
- If your crane has a mechanical lift boom, secure it with the provided locking pin and cotter pin.

When retracting the crane please ensure to have all crane movements within your field of vision.

If, during transport, the crane booms are not folded in this position but rest on the platform or on the driver's cabin, ensure that they are properly secured against sideways motions.



If the load arm folded down onto the loading surface is not secured adequately against moving out sideways or maximum headroom heights are not observed serious accidents can occur. There is a danger of injury and death for you and other road users.

Fig. 53

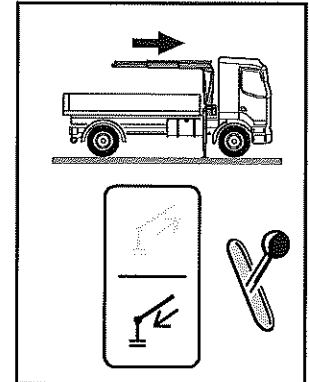
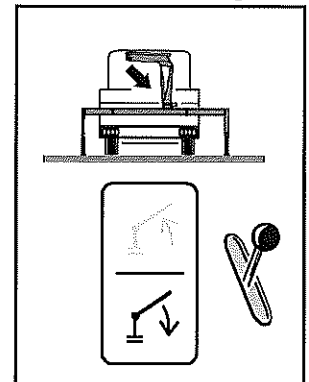


Fig. 54



6.1.2 — RETRACT STABILIZERS

Retract the support cylinders individually so that you always have the danger area in view.

Lift any swivel supports and bolt and secure them properly.

When retracting the outriggers keep the minimum distances listed under 1.3.1.

Fig. 55

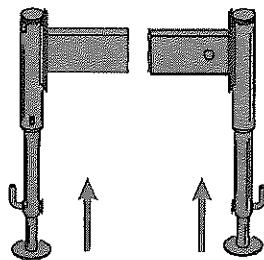


Fig. 56

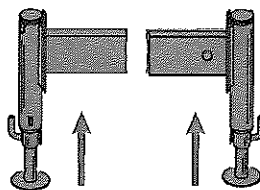
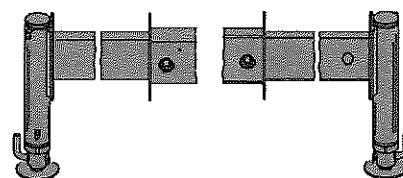


Fig. 57





When retracting the outrigger and support cylinder on the other side you must always have them in your field of vision, otherwise you must change the operating side.

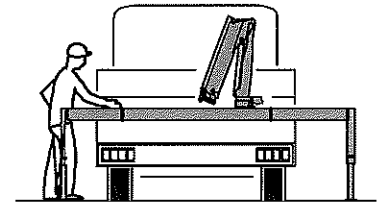


Fig. 58

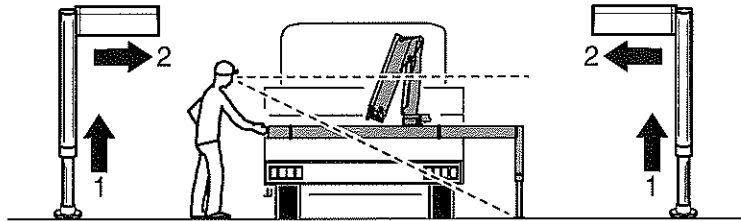


Fig. 59

If your crane has stabilizers with a crank handle, rotate it until the stabilizer is totally retracted.

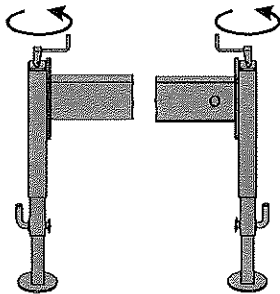


Fig. 60

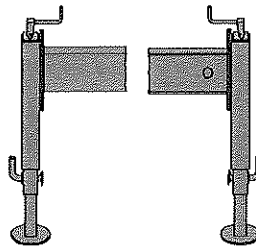


Fig. 61

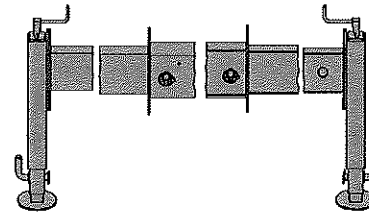


Fig. 62

6.1.3 - MANUALLY RETRACTABLE OUTRIGGERS

Before you are allowed to retract the support cylinders the crane must be in transport position.

- Take out the locking of the outrigger.
- Retract the outriggers.
- Insert the locking pin back into place.
- Check that the locking pin is properly inserted.
- Secure the locking pin with the cotter pin.



Outrigger beams if not fully retracted may extend during transport creating a major risk of accident for other road users.

- If the vehicle is equipped with auxiliary outriggers, these must be retracted as well.
- Disengage the hydraulic pump or switch off the power pack. Ensure that the crane can not be operated by unauthorized persons.

If your crane is equipped with swivel supports these must be lifted after retraction and properly secured.

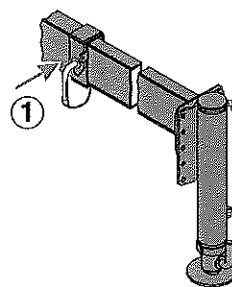


Fig. 63

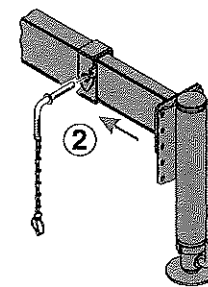


Fig. 64

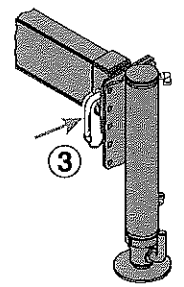


Fig. 65

6.2 — AFTER CRANE OPERATION

6.2.1 — SECURING AND TRANSPORTING THE LOAD

Secure the load in accordance with the regulations before starting the trip.

Before starting to drive check:

- If the hydraulic pump is off.
- That the load is securely fixed and doesn't protrude over the vehicle.
- That the crane is in transport position.
- Height and width of the vehicle including crane.



During travel observe the maximum headroom of bridges, tunnels, underpasses and power lines, the permissible total weight and the permissible axle loads of the carrier vehicle.

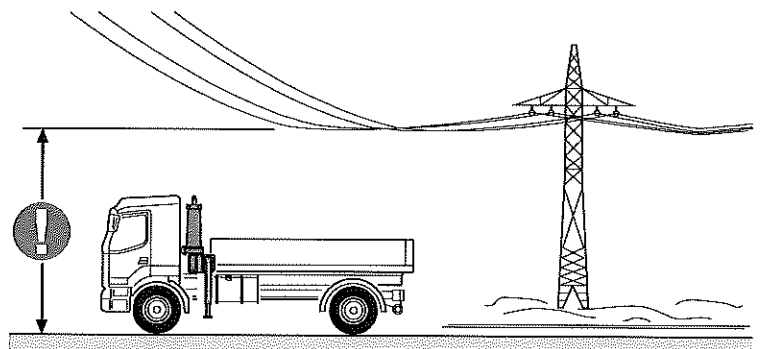


Fig. 66

- That neither crane components nor accessories protrude over the width of the vehicle.



Before every trip ensure that the outriggers and support cylinders have been properly retracted and secured.

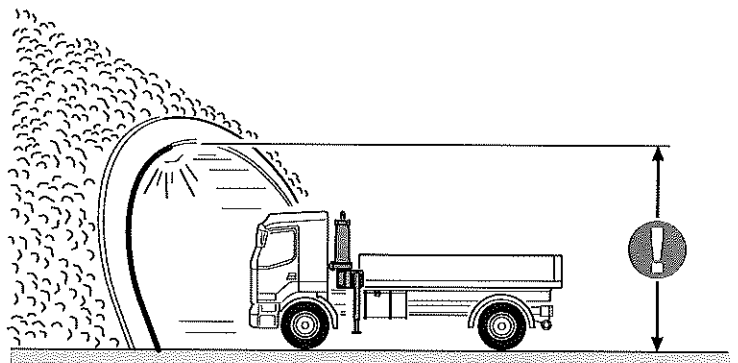


Fig. 67

7**MAINTENANCE AND SERVICE****7.1 — MAINTENANCE****7.1.1 - WARRANTY PROVISIONS**

During servicing work we have repeatedly found that our recommendations for maintenance and lubrication of the crane are neglected.

We bear no costs for consequential damage attributable to deficient maintenance and lubrication. It is therefore in your interest for the maintenance of your crane to be carried out regularly and in compliance with the regulations.

Only use lubricants and hydraulic fluids which are of the proper quality.

Using low quality products is a false economy.

Warranty and servicing work must only be carried out by one of our authorized customer service centers.

7.1.2 - CHECKING BOLTED CONNECTIONS

Loose bolts may fracture under load.

Tightening torques in Nm for the following ISO standards:

BOLTS	4762	
	4014	
NUTS	4032	
WASHERS	7090	
Lightly oiled condition		
	STRENGHT	CLASS
THREAD DIAMETER	8.8	10.9
M8	23	34
M10	46	68
M12	79	117
M14	125	185
M16	195	280
M18	280	390
M20	390	560

Tightening torques for shackle bolts in Nm

THREAD DIAMETER	STRENGTH CLASS
M16 x 1.5	8.8 105
THREAD DIAMETER	BOLT MATERIAL
M24 x 1.5	42 Cr Mo 4V 600
M30 x 1.5	1200
M36 x 1.5	2000
M42 x 1.5	2400
M48 x 1.5	2800

Lightly oiled condition










7.1.3 - MAINTENANCE SCHEDULE

AFTER THE FIRST 50 HOURS:

1st SERVICE

- | | | | |
|----------|------------|---------------|--|
| 1 | OIL FILTER | CHANGE | |
|----------|------------|---------------|--|

EVERY 50 HOURS:

1	BOLTS OF THE STABILIZER CYLINDERS	TIGHTEN BOLTS	
2	CATCH PINS ON OUTRIGGER BOXES	GREASE	
3	RING GEAR (SLEW 360 DEGREES)	GREASE	
4	COLUMN BEARING (SLEW 360 DEGREES)	GREASE	
5	CYLINDER PIVOTS	GREASE	
6	MAIN BOOM PIVOT	GREASE	
7	BOOM EXT. RAMS - GUIDE PARTS	GREASE	
8	EXTENSION BOOMS - GUIDE BLOCKS	GREASE	
9	CONTROL LEVERS AND - RODS	MACHINERY OIL	
10	FIXATION OF CRANE BASE	TIGHTEN BOLTS	
11	HYDRAULIC OIL LEVEL (UNSUPPORTED)	VISUAL CHECK	
12	LOADER HOOK WITH CHAIN	MACHINERY OIL	
13	STABILISATION - MANUAL	GREASE	

EVERY 1000 HOURS / AT LEAST 1 X YEARLY:

- | | | | |
|-----------|--------------------------|---------------|--|
| 14 | OIL FILTER HYDRAULIC OIL | CHANGE | |
|-----------|--------------------------|---------------|--|
- See Cap. 7.1.6

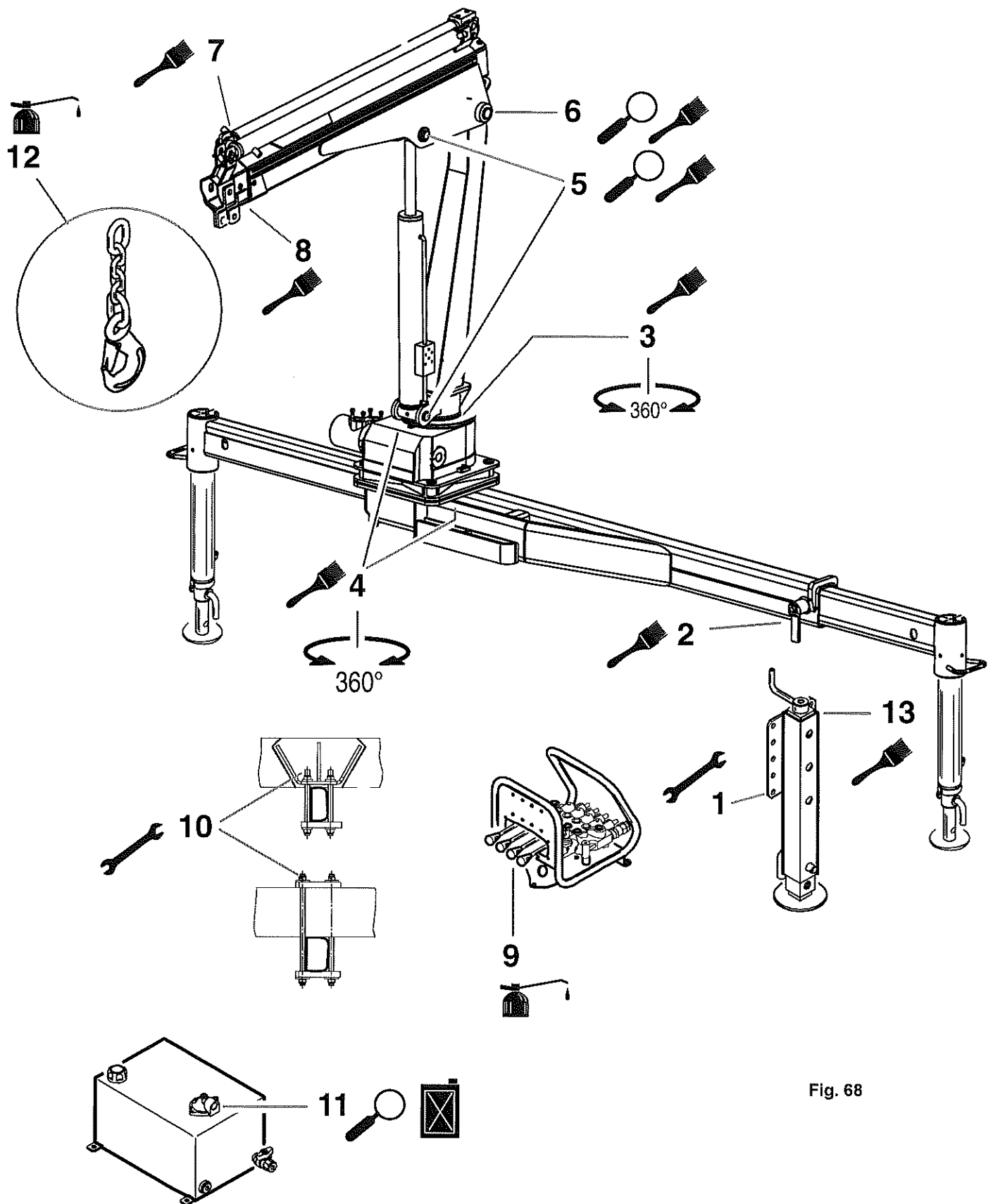


Fig. 68

7.1.4 - LUBRICATION

The following maintenance and care instructions apply to all ATLAS cranes. In this Chapter you will therefore find instructions which do not relate to your crane.

Inadequate or incorrect lubrication leads to increased wear and therefore to unnecessary repairs (idle time) to the crane.

Therefore always ensure that bearings, hydraulic extendable arms, mechanical extensions and outriggers are always sufficiently lubricated and that only lubricants are used which correspond to the specification included below.

LUBRICANT TO BE USED



Only solid-free greases without graphite, MoS₂, etc. may be used for lubrication. The use of other greases will quickly lead to damage to the bearings on the crane.

BEARINGS

TECHNICAL DATA		TESTED TO:
Structure	Smooth	
Consistency (NLGI)	2	DIN 51818
Code	KP2K-35	DIN 51502
Dripping point °C	150	DIN ISO 2176
Walk penetration	265/295 1/10mm	DIN ISO 2137
Oxidation resistance 100 h / 100 °C	max. 0,2 bar	DIN 51808
Basic oil viscosity at 40°	>80mm ² /s	
Behaviour in contact with water	Evaluation phase 0/90	DIN 51807-1

EXTENDABLE ARMS, MECHANICAL EXTENSIONS, OUTRIGGER ETC.

TECHNICAL DATA		TESTED TO:
Structure	Smooth	
Soap basis	Ca-Komplex	
Consistency (NLGI)	2	DIN 51818
Code	KP2K-35	DIN 51502
Dripping point °C	150	DIN ISO 2176
Walk penetration	265/295 1/10 mm	DIN ISO 2137
Oxidation resistance 100 h / 100 °C	max. 0,2 bar	DIN 51808
Basic oil viscosity at 40°	>80 mm ² /s	
Behaviour in contact with water	Evaluation phase 0/90	DIN 51807-1

CORRECT LUBRICATION OF THE CRANE BEARINGS.

- Before lubricating clean the area to be lubricated thoroughly because dirt injected into the bearing with the new lubricant will lead to rapid wear of the bearings.
- Inject fresh grease into the bearing at the lubrication points provided (lubrication nipples etc.) until it flows out of the bearing.

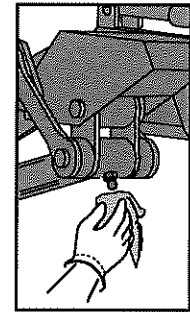


Fig. 69

CORRECT LUBRICATION OF THE PILLAR BEARING (GEAR RACK, STOP RING).

- Before lubricating the pillar bearing raise the boom to its full height so that the lubrication grease can spread evenly in the bearings. The pillar bearing should be lubricated via the lubrication points provided by ATLAS. If you lubricate by means of central lubrication ensure that adequate lubrication takes place.
- After you have injected grease into all lubrication points for the first time slew the crane through the full slewing range. Then repeat this process as often as necessary until grease comes out between the crane pillar and crane base.

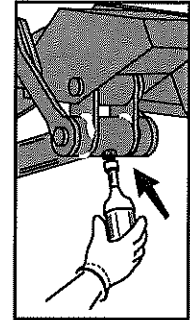


Fig. 70

Example:

- After lubrication excess grease must be cleaned off the bearings.

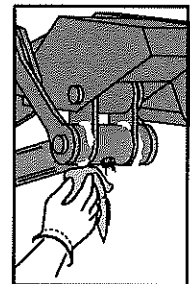


Fig. 71

CORRECT LUBRICATION OF THE CRANE'S HYDRAULIC EXTENDABLE ARMS.

- Extend the hydraulic extendable arms completely and then rest the load arm on a piece of wood.
- Before lubrication clean the lubrication points to remove old dirty grease and other dirt.
- Then apply grease to the underside of the hydraulic extendable arms with a suitable aid (brush etc.).
- Now retract the hydraulic extendable arms under slight pressure (lower boom).
- Next remove any excess grease.

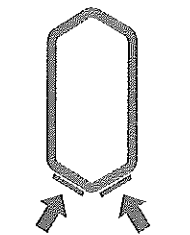


Fig. 72



Surplus grease is a source of accidents caused by slipping and also contaminates the environment.

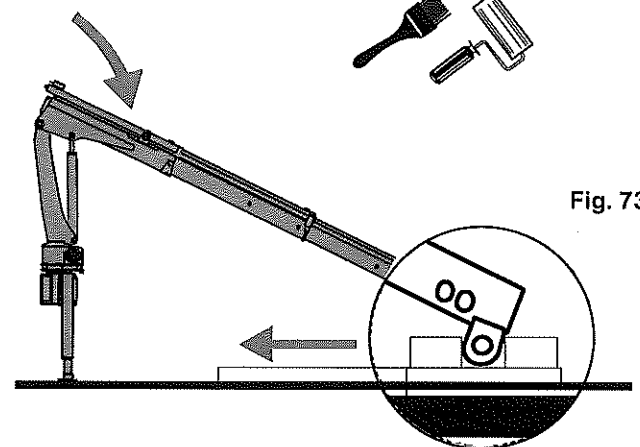


Fig. 73

As most of the lubrication points on the crane involve lubrication loss (grease is consumed or enters the environment), we recommend the use of biodegradable greases.

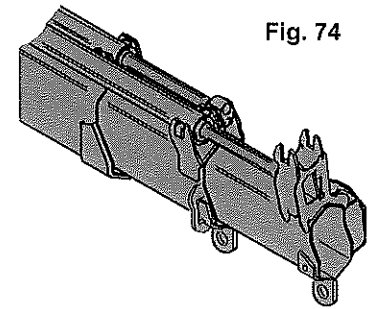


Fig. 74

CARE OF EXTENDABLE CYLINDER PISTON RODS.

If the extendable arms are never completely retracted to the transport position the extendable cylinder piston rods may suffer oxidation.

The extendable cylinders (extendable arms) must therefore be completely retracted once a month.

7.1.5 - OPERATING HOURS COUNTER

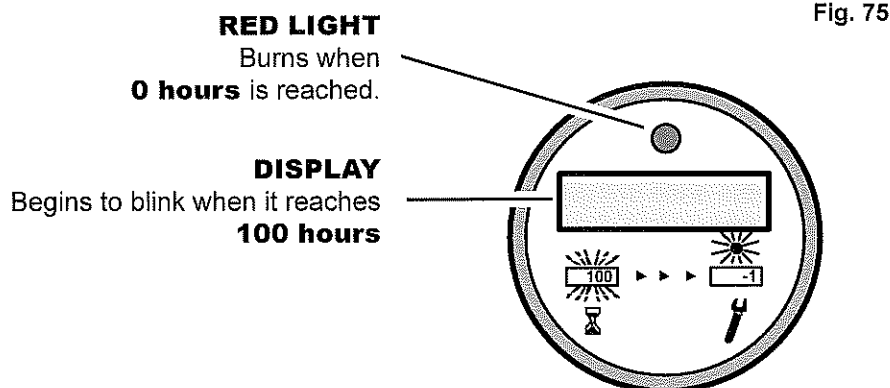
The operating hours counter shows you the total number of operating hours, the hours remaining until the next servicing, and the hours until the next maintenance. The operating hours counter begins at 1000 and counts backwards to 0. Then it counts upward from 0 with a minus sign in front (1, 2, 3, etc.).

When you turn on the crane (power), the total operating hours of the crane will be shown on the display for 10 seconds.

After 10 seconds, the display shows you the number of operating hours remaining until the next service. The maintenance must be performed by the crane operator every 50 hours (950, 900, 850, etc.).

When the counter reaches 100 hours before the next service, the display begins to blink and continues to blink until it reaches 0 hours. The service should be performed at about 0 hours.

If you operate your crane for fewer than 1000 hours annually, you must have the service performed by the service center at least once a year.



7.1.6 – HYDRAULIC FLUIDS

For the selection of hydraulic fluids you should get in touch with your service partner
HLP / ISO hydraulic fluids with the following properties should be used:

- favourable viscosity/temperature behaviour.
- good thermal and mechanical loading properties
- extensive resistance to ageing.
- good corrosion protection.
- adequate cold flowability.
- adequate lubrication effect in the marginal lubrication area.
- good air release properties.
- excellent foam behaviour.
- neutrality in contact with seals and hydraulic hoses.

As the viscosity of hydraulic fluids changes considerably through fluctuations in temperature, compromises cannot be avoided in their selection. For your ATLAS crane the following limit values apply:

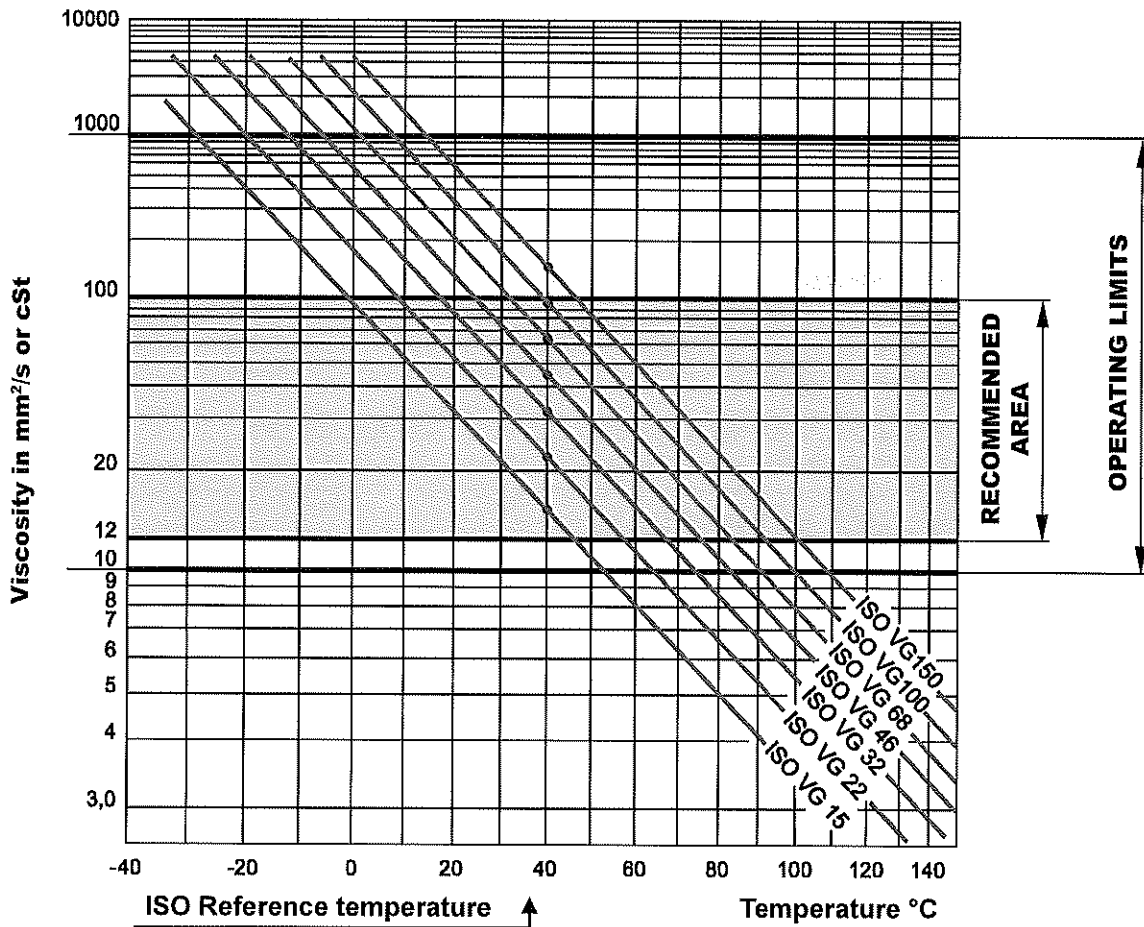


Fig. 76

HIGH TEMPERATUR RANGE	10 cSt
COLD START LIMIT	1000 cSt
PURITY CLASS	15/12 (ISO 4406)

Owing to different basic products different service temperatures apply:

FLUIDS BASED ON MINERAL OIL		-30 a +80°C (approx.)
BIODEGRADABLE FLUIDS	FULLY SYNTHETIC ESTER	-30 a +80°C (approx.)
	NATIVE ESTER	-20 a +80°C (approx.)
	FLUID BASED ON RAPE OIL	-20 a +65°C (approx.)

The ideal operating temperature of the hydraulic fluid is between 30°C and 60°C.

If this temperature is frequently exceeded in your crane work, please consult your service partner for the purpose of having a hydraulic fluid cooler or a larger hydraulic fluid tank fitted.

Biodegradable fluids are more environmental-friendly than conventional hydraulic fluids.

However, these fluids must still not be discharged into the environment.

The hydraulic fluids stated in our recommendation can be mixed with each other, but must not be mixed with other fluids.

Note the following disadvantages:

- Reduction in service life,
- No biodegradability for mineral oil mixtures,
- Restrictions in permissible operating temperature for mixtures with rape oil or native ester.

7.1.7 – OIL CHANGE / OIL MAINTENANCE

If annual oil maintenance is carried out the life of the oil used can be considerably increased.

Apart from saving costs this also means a considerable reduction in the amount of old oil to be disposed of and therefore a reduction in the burden on the environment.

Oil maintenance means:

Filtration, dewatering and testing of the oil purity, which you have carried out in an authorized workshop.

7.2 — CARE OF THE CRANE

7.2.1 — CLEANING AGENTS AND EQUIPMENT

Regular expert care will serve to preserve the value of your crane. How often the crane needs to be washed depends on how frequently it is used, the season, weather influences, etc. Road salt, oils, dust, etc. attack the paintwork of your crane and an increased corrosion of the crane components can occur.



Only wash the crane when the electrical unit is switched off.

CLEANING AGENTS.

For the care of your crane use only pH-neutral cleaning agents to avoid oxidation on chrome parts. When selecting cleaning agents please ensure that you only use environmental-friendly products.



Some cleaning agents are harmful to the skin. Be informed about your cleaning agent and protect yourself accordingly before starting the cleaning work.

CLEANING EQUIPMENT.

When using high pressure cleaning equipment there must always be enough distance between the nozzle and the crane being cleaned as otherwise damage can be caused by the high water pressure.

Electrical components, plastic components, signs and bearings must not be cleaned using high pressure cleaning equipment.

Therefore ensure that:

- Lubricant is washed out of the bearings.
- Adhesive signs are not loosened from the crane by sideways or excessively long spraying.
- Plastic parts are not damaged by excessively high water temperature or high pressure.
- Never directly spray electrical parts with high-pressure water blasting. Water can enter the crane and cause malfunctions or short circuits in the electrical equipment.

Areas which have been marked with the warning sign **“HIGHPRESSURE CLEANING PROHIBITED”** must also not be cleaned with high-pressure cleaning equipment.



When using high-pressure cleaning equipment, the water (cleaning agent) must not exceed a temperature of 60° C.

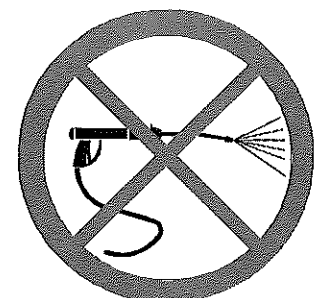


Fig. 77

7.2.2 - REPAIRING PAINT DAMAGE

If you discover paint damage on your crane, you must take care of it immediately. Damaged places must be sanded off and coated with a primer before painting.

7.2.3 - REMOVAL FROM SERVICE AND DISPOSAL

If the crane is taken out of service and dismantled from the vehicle its parts must be disposed of properly.

Bear in mind that many crane components are contaminated with grease and oil which on no account must be allowed to discharge into the environment.

Biodegradable oils and greases should not be allowed to discharge into the environment either.

Therefore dispose of the parts separately according to their nature (steel, plastic, electrical components, oils, greases, etc.) and in accordance with the respective statutory regulations in your country.

8 STICKERS

ATLAS

ATLAS

Fig. 78



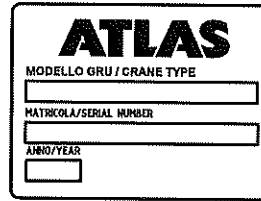
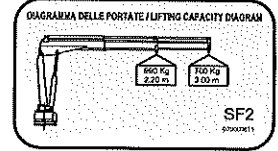
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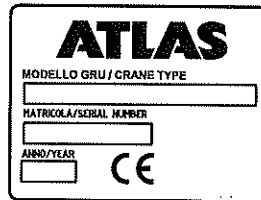
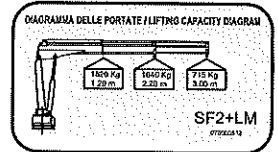
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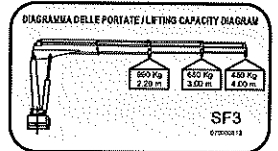
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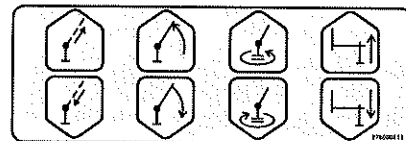
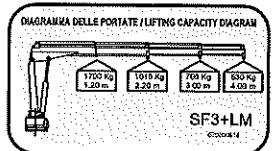
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