A300

MAINTENANCE AND OPERATOR'S MANUAL

MSA

L 20440-89

92-3

A 300

CARRIER AND POWERTRAIN

● **Self-propelled rough-terrain 4 x 4 x 4.**

Structure :
- Electrically welded box-section type in high tensile steel.
- Lifting and towing points located over front and rear of carrier.

Outriggers :
- Telescopic outrigger beams extend horizontally to 5.4 m.
- Distance between centreline of front and rear double-box housings : 5.8 m.
- Maximum wheel clearance on outriggers : 150 mm.
- Independent outrigger controls from the cab.
- Check valve on each outrigger jack.

Engine :
- **Iveco AIFO 8061 SI Turbo diesel, 6 cylinders in line.**
- Maximum power output : 147 HP (DIN) (108 KW) at 2 500 r.p.m.
- Maximum torque : 525 Nm at 1500 r.p.m.
- Maximum speed : 35 kph.
- Water cooled.
- 720 W alternator, 160 cc compressor.
- Diesel tank : 240 litres.

Transmission :
- Torque convertor and Clark powershift gearbox with splitter unit providing six forward gears and six reverse gears.
- 4-wheel drive on the lower gear range - 2-rear wheel drive on the upper range.
- Torque converter cooled by a system integrated into the engine radiator.
- Disengageable PTO for the hydraulic pumps.

Axles :
- Front axle : drive / steer axle with planetary reductions. Axle rigidly mounted on the chassis.

- Rear axle : drive / steer axle with planetary reductions, mounted to the frame with oscillation. Equipped with oscillation lockout.

Steering :
- Hydrostatic steering, orbital type, controlled from the steering wheel and acting on each axle.
- Choice of three steering modes : 2-front-wheel steer, 4-wheel coordinated steer and crab steer.

Braking :
Main brake :
- Hydropneumatically operated with twin circuit applied to each wheel.

Parking brake :
- Pneumatically operated, spring applied to the transmission shaft.

Tyres :
- Basic tyres 14.00 X 24 with all-terrain profile.

CIRCUITS

Hydraulic circuit :
- The three main circuits are supplied by a 2-stage vane pump and a gear pump.
- The first stage of the vane pump drives the lifting gear (main and auxiliary winch).
- Slewing and outriggers are powered by the second stage of this pump.
- The gear pump drives derricking and telescoping operations.
- A further gear pump drives the steering circuit.
- Hydraulic oil tank : 405 litres.

Electrical system :
- 24 V circuit with 132 Ah battery.

Full set of road lights complies with road regulations.

Air circuit :
- 160 cm^3 compressor.
- Tyre inflater.
- Compressed air tanks : 2 x 45 litres.

SAFETY FEATURES

- Upper and lower stroke cut-outs.
- Check valves on outrigger jacks, telescoping and derricking rams.
- Brake valve for slewing.
- Counter-balancing valve on winches.
- Relief valves on all hydraulic functions.
- Load indicator.

OPTIONAL

❍ Swing away extension on 7.6 folding on side boom.
❍ Fly jib 4 m inclinable (0° - 25°).
❍ 5-tonne, one-sheave hook block.
❍ Auxiliary winch.
❍ Tyres 1600 x 25 (tubeless).

NOTE : MSA reserves the right to modify the above specifications which are given as a guide only (figures in accordance with metric system).

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ماشین سازی اراک
چهار کیلومتری اراک ، جادهٔ تهران ، صندوق پستی : ۲۳ اراک
جمهوری اسلامی ایران
شمارهٔ تلفن : ۳۰۰۳۹ تا ۳۰۰۳۱ (۰۲۶۳۱)
شمارهٔ تلکس : ۳۱۲٤۵۵ MSA IR ، کابل : ماشین اراک
شمارهٔ فکس : ۳۶۱۰۳ (۰۷۵۳۱)

ماشین سازی اراک ، بخش فروش و بازاریابی خارجی
صندوق پستی : ۱٤۱۵۵/۳۱٤۸
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شمارهٔ تلفن : ۹۳۳۰٤۰ ، ۳ - ۹۲۵۰۰۱ ، ۹۳۶۵۰۰ (۰۲۱)
۹۲۳۰٤۰
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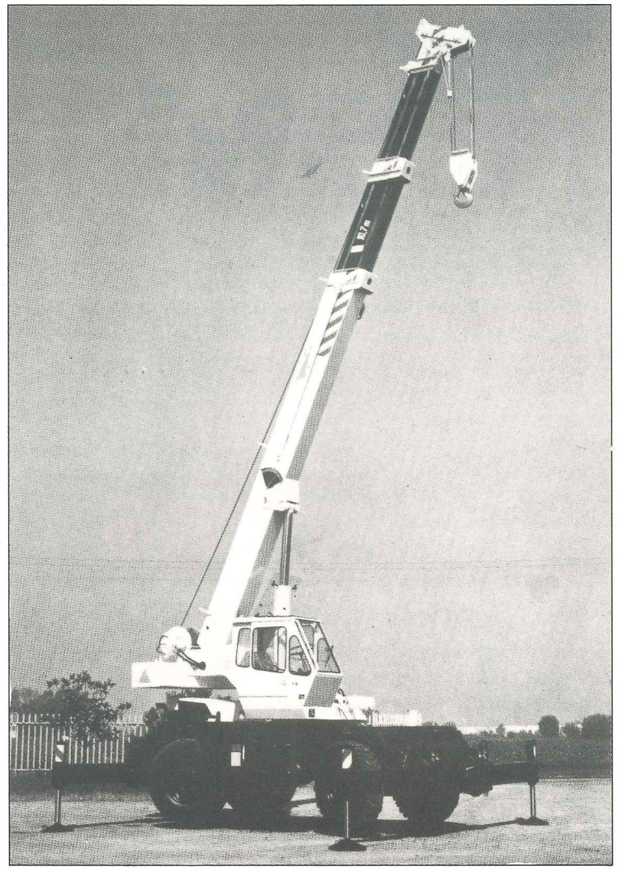
A STANDARD YOU CAN TRUST

A 300



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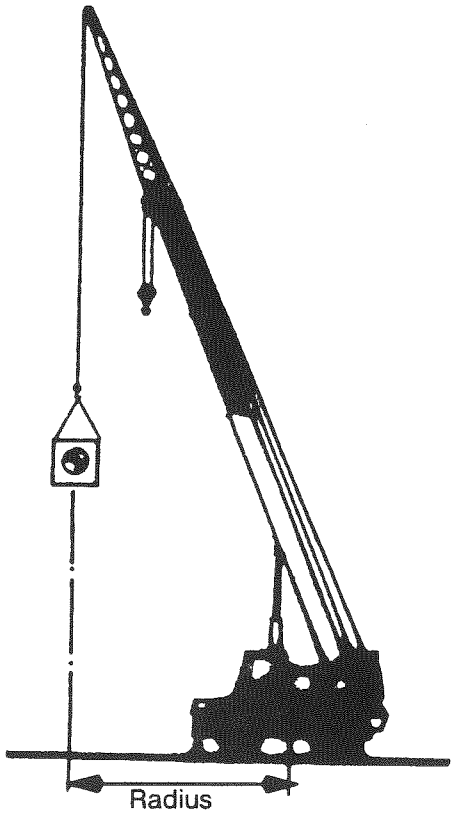
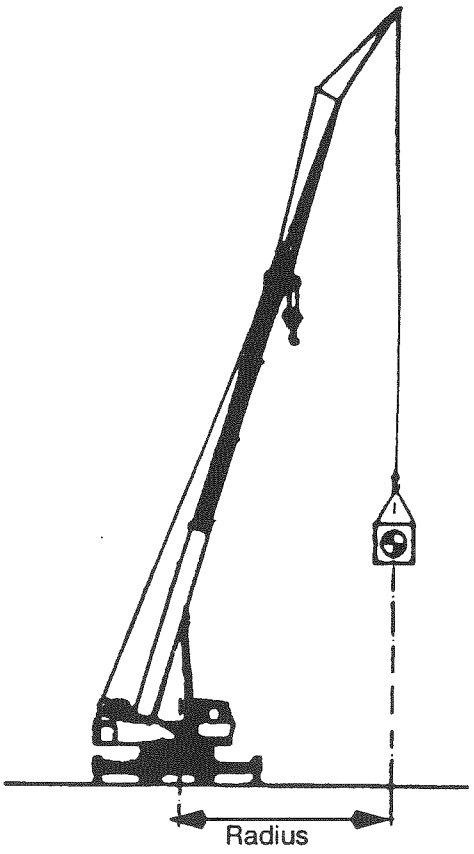
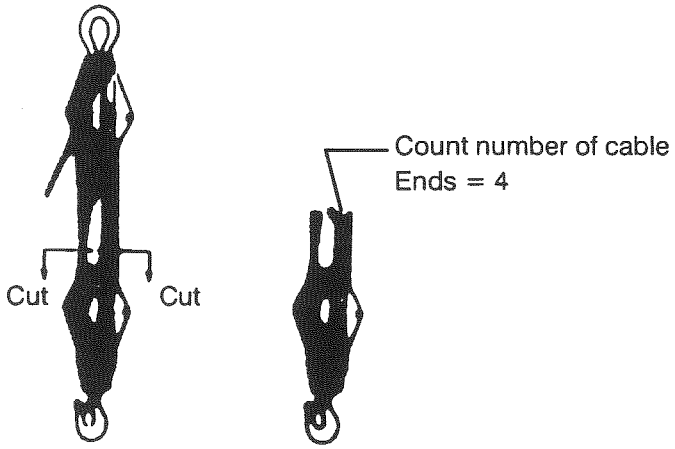
Working radius

– Must be measured with load.





– Reeves.



Operating position – Instrument use

1/ General light switch is used to switch on road lights, headlights, and pushing it works the horn.

2/ Engine coolant thermometer, in normal function, the temperature is between 75°C and 90°C.

3/ Engine oil manometer, indicates lubricant oil pressure of engine. The correct oil pressure is 0,7 kg/mn at min. turn over, 3 kg/mn at max. turn over.

4/ Thermometer for converter oil, indicates temperature of converter oil. The perfect functioning temperature is between 82°C and 93°C, max. temperature is 120°C.

5/ Air brake manometer, front and rear axle, indicates pressure value in brake circuit, when the pressure is below 5,5 bar the red light appears "14" to signal that the pressure value is insufficient for safe operation.

6/ Fuel level indicator, tank capacity is 240 l.

7/ Hour counter indicates hours of function of crane.

8/ Parking brake light, lights up when brake "20" is inserted.

9/ Brake liquid level light, lights up when the brake oil level is insufficient.

10/ Hydraulic oil filter blockage light, lights up when the oil filter is clogged up.

11/ Turning flashing light switch, this actuates the flashing light. This flashing light is obligatory for road use. (optional)

12/ Emergency light switch, this is used to switch on all the indicators together indicating danger, the intermittance light in switch "12" is switched on.

13/ Alternator light, lights up when the alternator does not charge the batteries sufficientlty.

14/ Fullbeam warning light.

Precautions

– Avoid if possible the following types of grounds :
irregular, rocky, soft or with too many obstacles, the crane may be put under conditions which will lead to it tipping over.

– When moving the crane avoid keeping the derricking ram in the fully extended position.

– Only use 4 wheels drive when absolutely necessary.

– Only use the appropriate towing bar attachement or transport fixation attachements previewed for this purpose.

– In case of getting bogged in ask for the aid of another machine as there may be a risk of damage to transmission components and axles.

– Every crane has two towing and lifting hook attachements at the rear of the machine (these should be used at the same time).

Use of crane commands

NB – The command levers are protected with a metal frame to avoid accidental movements.

Turret rotation

– Before slewing, check that the blocking device is taken out.
– To rotate to the left, actuate manipulator lever in "1" direction, to rotate to the right actuate in position "3".
It is possible to combine rotation with extension and retraction of boom, actuating manipulator in oblique direction between the two single actions "5–6–7–8".
– To avoid danderous oscillation do not move or brake suddenly.
– It is against regulations to invert movement before the complete stop of load movement.
Knob "26" (page 18) is slewing speed regulator that acts by adjusting the oil flow that action movement. Turning it to the left reduces speed up to min. value, turning to the right raises speed up max. value.

IMPORTANT – When rotating respect working area and relative capacities foreseen on the chart.

Raising and lowering boom (see page 44)

– To raise boom, put manipulator lever in "3" direction, to lower boom, put the same lever in "1" direction.
– It is possible to combine raising and lowering of boom with that of raising and lowering of hook putting lever in oblique direction "5–6–7–8"

IMPORTANT – Lifting and lowering boom, you must respect working radius min. + max. relative to various chart loads and relative to unloaded boom. Do not use radius where capacity is not foreseen, in these conditions the crane could tip over even without a load.

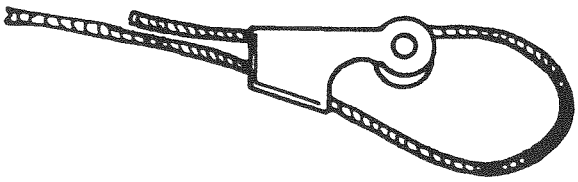
Actuation of telescopic boom (see page 44)

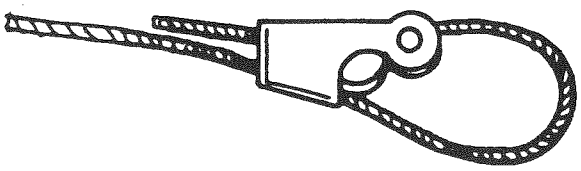
– To extend hydraulic portion of boom, put manipulator lever in "2" direction.
– To retract hydraulic portion of boom, put the same lever in "4" direction.
– It is possible to combine extension or retraction of boom with turret rotation, putting manipulator in oblique position between the 2 single movements "5–6–7–8".

IMPORTANT – When out derricking telescopic extensions, respect boom length and radius relative to chart loads and to boom without load.

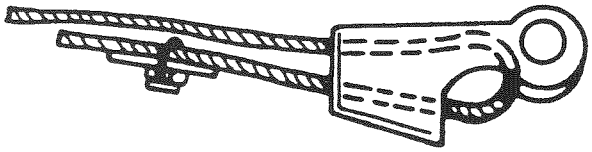
Supplementary indications for reeving

– Adapt cable to cable head, in such a way that the part of cable that goes to pulley block, is on verticle side with fixing pin, whilst the free end of cable is on inclined side.





– Fix a round piece of metal to end of rope, using a clamp. This device prevents the cable from coming out of wedge box.



– Do not fix the cable in cable head as in following diagram.

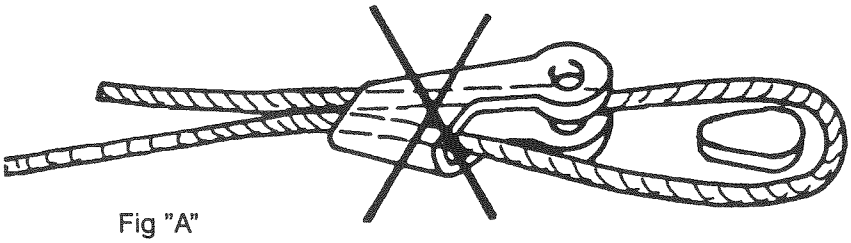


Fig "A"

– Do not fix cable end with clamp to reeved line, it would prevent pulley from working and the full load would be exerted on clamp.

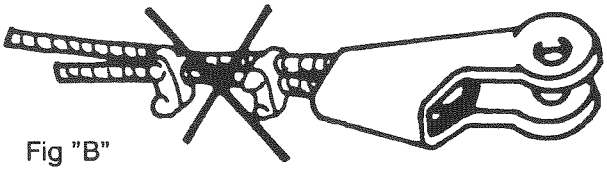


Fig "B"

Lattice extension (see page 67)

In it's working position, the lattice extension is used in line with telescopic boom to obtain major height or working radius, when not in use it is stowed at the side of base boom appropriate support.

The lattice extension must be put in working position before extending the mechanical element of telescopic boom. The mechanical element must be closed before folding the lattice extension.

To mount lattice extension proceed as follows :

1/ With boom completely retracted and horizontal, stabilize crane. To make the operation easier, lower the head of boom down to a negative angle and raising in differentiated manner, the stabilizer cylinders.

2/ Detach fixing pin "A".

3/ Pull lattice extension head up to make fixing forks enter into head pins on the boom head.

4/ Insert the 2 pins into upper and lower fork of lattice "D".

5/ Detach fixing pins "B".

6/ Put telescopic boom in horizontal position.

7/ Attach cable to extreme end of extension pull until complete rotation of 180°. Fix the remaining 2 pins that fix the lattice extension to head pins of telescopic boom "C".

IMPORTANT – The checking of lattice extension with cable is necessary to avoid dangerous uncontrolled oscillation.

8/ Remove cable guide to pass cable onto lattice extension pulleys and block and winch–up stop device.

9/ Hook electric cable of winch–up stop device to head of boom.

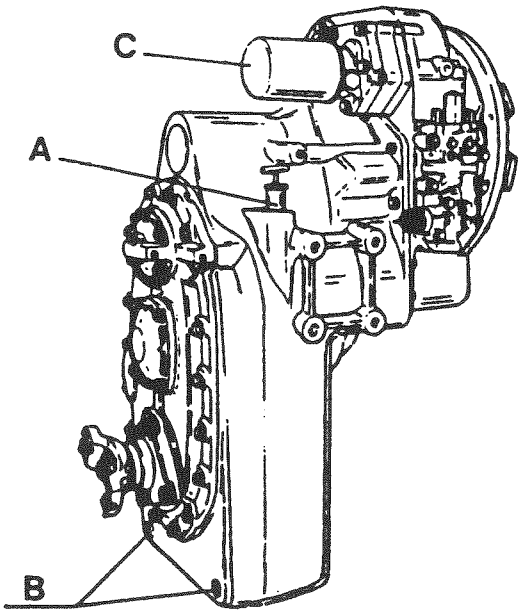
IMPORTANT – For the capacities of lattice extension and for capacity reduction read carefully the instructions and examples on page 5–6–7–8–9.

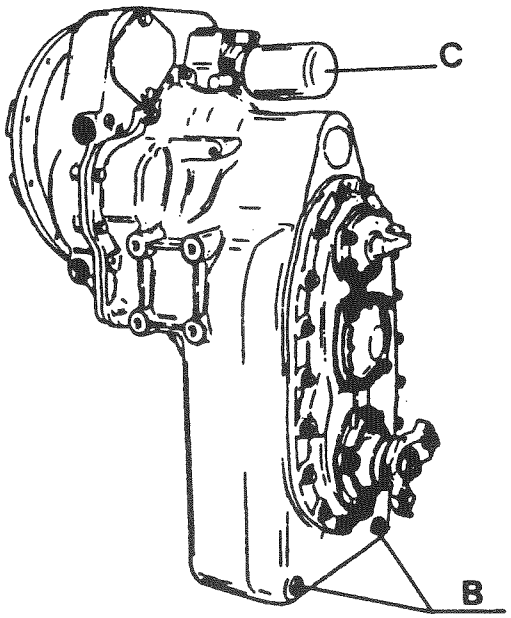
4/ Retightn draining plugs being careful that they are tightened correctly there fore consult lubrification charts in second part of manual, refill with new oil up "low" indication on dipstick.

5/ Start engine 500/600 rpm. to fill the transmission circuit.

6/ With engine running at 500/600 rpm. recheck oil level and fill up to "low" level on dipstick. When oil temp. is 85/90°C, give final check of oil and fill up to "full" indication on dipstick.

NOTE : with new machine or revised transmission, it is adviseable to change filtering elements after first 60 hours of operation.





Filling up chart

Part to fill	fill up quality	quantity 1
Fuel tank	Diesel oil	240
Engine sump filter and tubes	Essolube XD3 15w/40	15
Radiator and engine	Water and antifreeze	24
Axle central reducers	gear oil CX 85W/140	13
Axle wheel reducers	Gear oil GX 85W/140	2,5
1/ Gearbox and converter	ATF DEXRON II	2,5
2/ Hydraulic system tank	NUTO H 46	405
Brake converter	Brake fluid	As required
Slewing ring	SPARTAN EP 150	4,6
Batteries	Distilled water	As required
Slewing ring teeth	Grease BEACON EP 2	As required
Winch reducer	Grease BEACON 3	As required
Grease for pulley	Grease BEACON EP 2	As required
Boom articulation and guide pads	Grease MOLY	As required
Greasers for universal joints	Grease BEACON EP 2	As required
Boom rope	Grease BEACON EP 2	As required

1/ Check level with engine running.

2/ The capacity of complete circuit is 555 l.

Monthly maintenance (200/250 hrs)

1/ Change oil in engine sump. Every two oil changes, change respective filter cartridges.

2/ Check tension and conditions of engine belts (see maintenance of engine constructor).

3/ Clean fuel filters or change fuel filter.
NOTE : for good quality fuel the max. period for replacement of fuel filters is 400 hours.

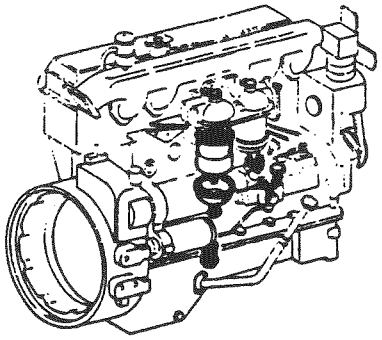
4/ Substitute cartridges in hydraulic oil filter of power–shift gear.

Check oil level with engine running at min. r.p.m.

5/ Change hydraulic oil filter cartridge.

6/ Change filler cap of hydraulic oil tank.

7/ Clean cartridges of engine filter.



8/ Check for wear of road brakes and adjust if necessary.