

Operator's manual

Edition 01/11

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1. Introduction

Dear customer,
we compliment and thank you for having chosen our company.
We have prepared this manual as a guide for the correct and safe use of the machine and its rational maintenance.
Constant observance of the standards contained in this manual guarantees the best performance, low running costs, long machine life and prevents the most common causes of accidents which may arise during working or maintenance.
We therefore recommend that you to read all parts of this manual carefully and scrupulously observe the instructions indicated on the following pages.
All of our spare parts are exclusively available from our distributors or our headquarters. We ask you to please always kindly specify the serial number of your excavator and the model and spare part code which you will find in the "spare parts" catalogue supplied enclosed here; in this way we will be able to satisfy all of your requests rapidly.
For answers to any other questions, curiosities, information concerning old models, suggestions or ideas to improve our products, our Customer service is always at your disposal on the following telephone number:

A copy of this manual is supplied with every machine.
The descriptions and illustrations in this publication are in no way binding.

2. Identification data

At the moment of a spare parts / service request, you have always to specify the serial number of your excavator (that you can easily find inside the cabin).

TIPO	TYPE	TIP	TYP	
NUMERO	NUMMER	NUMERO	NUMMER	
ANNO	YEAR	ANNEE	BAUJAHR	
POTENZA	POWER	PUISSANCE	LEISTUNG	
PESO	WEIGHT	POIDS	GEWICHT	

2.TAB.1

3. Technical Characteristics

3.1 Structures

- Load bearing structure made of high mechanical strength steel.
- Joints equipped with bushes made of tempered and ground steel.
- Tempered and ground pins
- Basic bearing type, with hardened, tempered toothing corrected at 10 ton/m (external diameter 490mm).

3.2 Engine

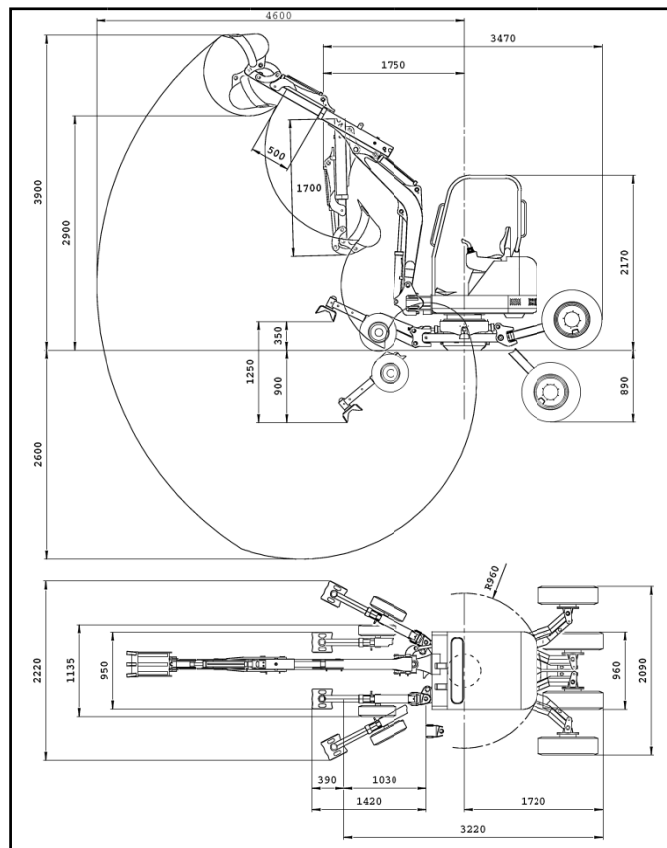
See the enclosed Use & Maintenance handbook

3.3 Noise level

- Acoustic level in compliance whit the following standards
European directive 2000/14/CE

3.4 Performance

- Maximum speed: 2.6 Km/h
- Maximum gradient possible: 26%



3 Fig.1

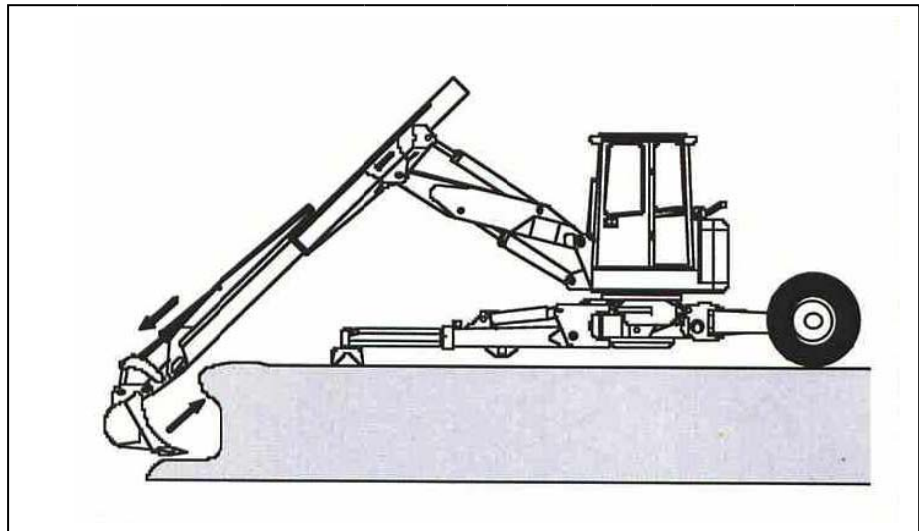
3.5 Traction

- Rear wheel drive through two wheel reducers, complete with negative brake and mechanical release commanded by a hydraulic pedal.

3.6 Hydraulic work circuit

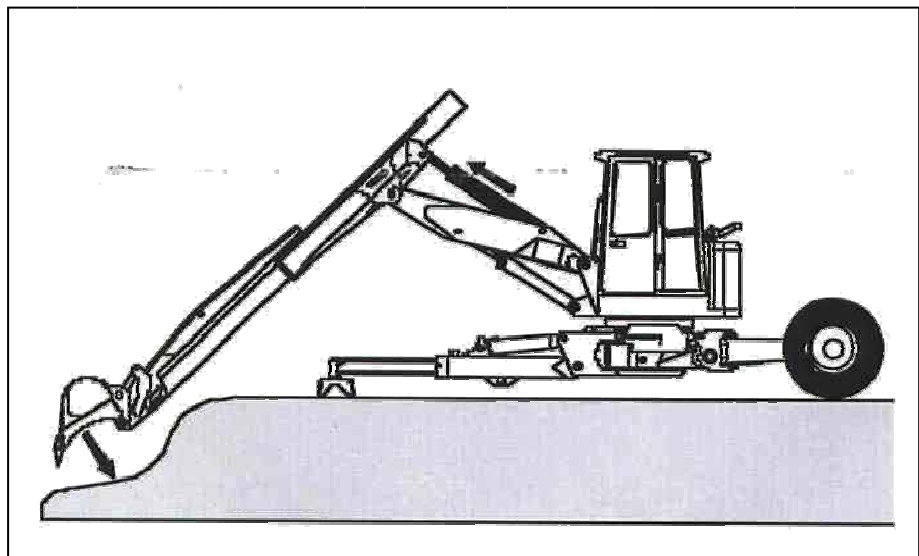
- Triple main fixed engine capacity pump.
- Delivery capacity 66 *lit/min* (Maximum delivery at 2400 RPM).
- Hydraulically driven triple distribution valve for the control of boom, translation and auxiliary accessory at the end of the arm.
- Hydraulically driven triple distribution valve.
- Anti-shock, anti-cavitation and pressure limitation valve on every element.
- Calibration of the general work circuit: 180 *bar*
- Rotary hydraulic motor with axial pistons coupled to an epicycloid reducer with a negative brake safety device.
- Rotation speed: 8 *rpm*
- Hydraulic cylinders with case hardened rods and travel limit brakes.
- Oil heat exchanger coupled to a water radiator.
- Hydraulic oil tank capacity: 38 *lt*
- Hydraulic oil circuit capacity: 50 *lt*.

Tearing force (Iso 6015): 1740 Kg (3.6 Fig. 1)



3.6 Fig.1

Penetration force (Iso 6015): 1070 Kg (3.6 Fig. 2)



3.6 Fig. 2

3.7 Positioning hydraulic circuit

- Self-compensated pump with gears

Delivery capacity: 9.5 lit/min at 2400 RPM

- 7 section distribution valve composed of electrical valves.
- Maximum calibration of the distribution valve: 170 bar
- Positioning cylinders equipped with case hardened rods and safety valve.

3.8 Electrical system

- Power supply voltage. 12 V - 60 A/h

3.9 Weights *

- Working mass 1900 Kg (without bucket, foot; oil-full; fuel tank at the minimum level) it is possible a tolerance of (+-) 3%

* NOTE:

The weights refer to the version without non-standard accessories.

Maximum working temperature: +40°C

Minimum working temperature: -15°C

4. Standard equipment and accessories

- Roll-over protection, easy to tip hydraulically, work light and acoustic warning device.
- Work commands/hydraulic remote commands grouped onto two levers and two hydraulic pedals.
- Accelerator command by lever.
- Positioning commands by electrical buttons.
- Specific clawed wheels for hydraulic rotations.
- 70015 driven wheels.
- Adjustable seat with safety bell.
- Predisposed to take hydraulic hammer.



Lighting

The excavator is equipped with proper lights to operate where the ambient temperature is not sufficient. If the operator requires more light, inform the manufacturer who will supply lights of the capacity required.

5. Supplies

- Main fuel tank (including reserve): *30 Lt.*
- Radiator water: *07 Lt.*
- Motor lubrication system (engine sump, filter etc..) see enclosed handbook.
- Rotation reducer oil: *0.5 Lt.*
- Towing reducer oil: *0.2 Lt.*
- Hydraulic system oil: *38 Lt.*

5.1 Front and rear tyre pressures:

Front (idle): *5 Bar*

Rear (driven): *6 Bar*

5.2 Recommended fuels and products

All types of fuels or oils which correspond to the characteristics shown in Table 1 on the left here.

The list of lubricants is purely indicative and refers to products of equivalent quality.

A=lubricant;

B=reducer oil;

C=hydraulic oil;

D =motor oil.

TYPE	A	B	C	D
AGIP	AUTOL TOP 2000	ROTRA MP 80W90	OSO 46	SIGMA FEO 10W40
ASEOL	CALLIT EP 10/42	TOPRESS 11/118	HYDRO HVI 16 - 705	PERLA LD 15 - 75
BP	ENERGREASE L21	ENERGREAR 80/90	BARTRAN SHFS46	BP VANELLUS FE 10/40
ESSO	MULTI PURPOSE GREASE MOLY	GEAR OIL GX80 W90	NUTO H 46	UNIFARM 10/30
MOBIL	MOBILREASE HP	MOBILUBE HD85W - 90A	MOBIL DTE 25 M	DELVAC SUPER FL 10W/40
ROLOIL	FILCAR 2	VARIAX 140	GAVIA	GAVIA HD30
AG	228	GL5 80W/90	ISO 46	10W/40
PANOLIN	MOLYGREASE 23	SUPERDUTY G1 - 5 90	HLP UNIVERSAL 37	UNIVERSAL FE 10W/40
SHELL	RETINAX AM	SPIRAX HD 90	SHELL HYDROL HV46	MULITCHANTI ER 10W/40
STRUB	GRASSO A LUNGA DURATA	UNIVERSAL	VULVOLUBE	SUPERMULTI
VALVOLINE	MULTILUBE MO - 2	X - 18/MD 80W/90	ULTAMAX AW 46 HVI	HDS TOPFILE 10W/40

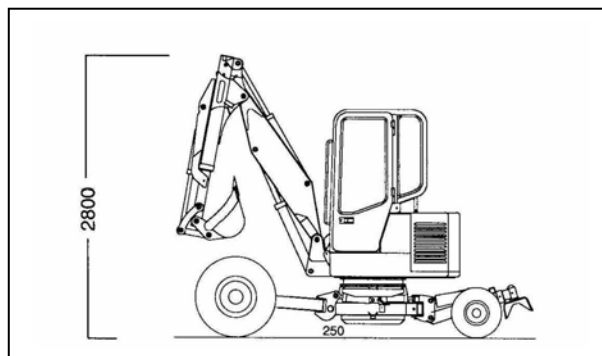
Tab 1: Lubrificants

6. Running the excavator

6.1 Running direction

The correct running position for mobile spider type excavators is the following:

- Position the arm towards the driven wheels in the collection position (6.1 Fig. 1).
- Align the brackets of the front "idle" wheels so that they remain parallel to allow the machine to steer.



6.1 Fig. 1



Fix the magnetic flasher (standard equipment) to the upper part of the cabin, and connect the plug (6.1 Fig. 2) to the socket on the cabin (6.1 Fig. 3)



6.1 Fig 2



6.1 Fig.3

- The excavator must not exceed 25 cm from the ground (6.1 Fig.1).



- The arm must not exceed 2.80 m in height.



Emergency and parking brake; in case of any failure to the excavator hydraulic system, use the machine emergency boom as a brake. When the excavator stops, always rest the boom on the ground as a parking brake.



ATTENTION:

The mobile excavators are not type tested for circulation on the road.

6.2 Releasing the driven wheels

For special requirements, it is possible to convert the drive wheels to idle.

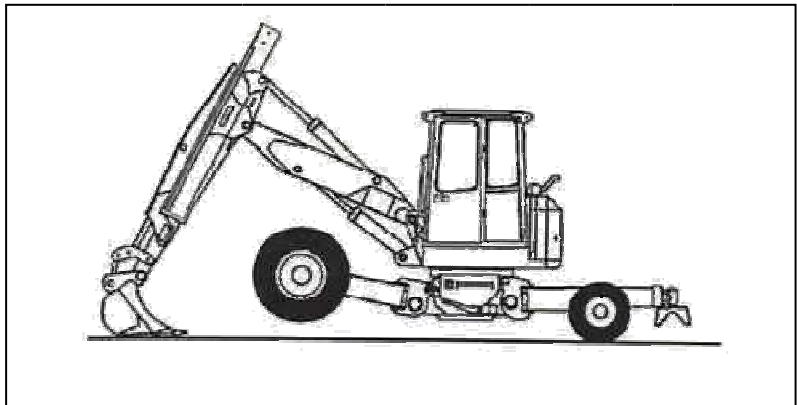
To do this, proceed as follows:

6.2.1 Releasing the gearmotor

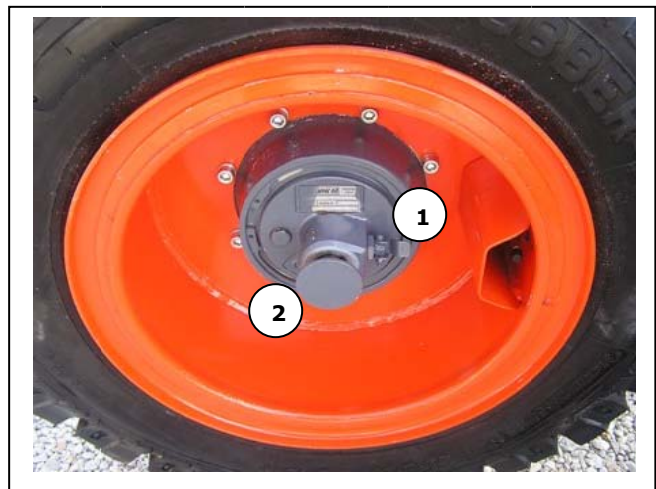
- Rotate the boom towards the rear wheels and apply a force to raise them (6.2 Fig.1).
- Hold the part and pull firmly (1 - 6.2 Fig. 2) on the gearmotor and in the same time unscrew the part (2 - 6.2 Fig. 2) from its original position. The wheel is now idle

6.2.2 Locking the gearmotor

- Rotate the boom towards the rear wheels and apply a force to raise them (6.2 Fig.1).
- Hold the part and pull firmly (1 - 6.2 Fig. 2) on the gearmotor and in the same time screw the part (2 - 6.2 Fig. 2) in its original position. The drive wheel is now locked.



6.2 Fig. 1



6.2 Fig. 2



ATTENTION:

Do not use the reducer release for towing the excavator, so as to avoid exceeding the speed of 7 km./h.

permitted by the two reducers in the idle position.

The EUROMACH company is not responsible for damage to objects and/or to persons if the warnings above are not followed.

7. Vehicle transport

7.1 Loading the excavator onto a transportation trolley

Only use special transport trolleys (min. length 4 m.) equipped with ramps (7.1 Fig. 1).

- The arm must be in the collection position towards the rear side.
- Align the machine to the trolley.
- Start up the excavator and proceed with care until the operation is complete.
- Rest the arm in the rest position on the flat-bed (7.1 Fig. 1).

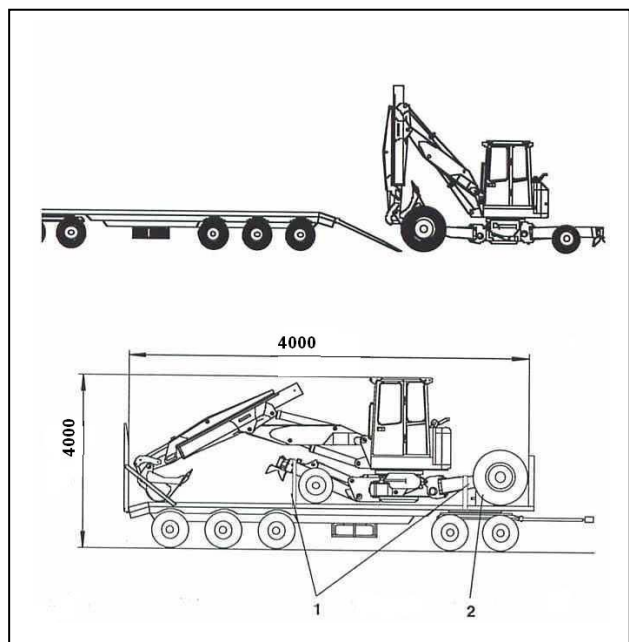


Block the wheels with the special wedges (not standard equipment) (1- 7.1 Fig.1).

- Switch off the engine



Tie the machine with bands or safety cables (2- 7.1 Fig.1).



7.1 Fig 1

The operator have the responsibility to find the correct fixing points on the machine and to assure that it is not a danger for the circulation during the transport.



ATTENZIONE:

Never exceed an overall height of 4 m. when the machine is on the trolley.

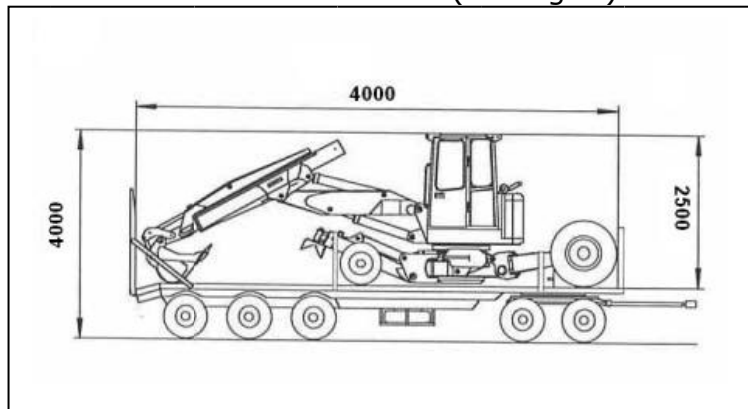
7.2 Loading onto flat-beds or trailers without ramps



The machine can be positioned on trailers or lorry flat-beds only by lifting with a crane.

- It is dangerous to remain inside the cabin during lifting.
- The flat-bed must have a minimum width of 2.5 m. and a minimum length of 6 m. to accommodate the machine (7.2 Fig. 1).

- Once the excavator has been positioned on the lorry, fix the wheels with the special wedges (not standard equipment), to prevent any movement (7.2 Fig. 1).
- Hook the cables to the front and rear brackets of the excavator (7.2 Fig. 1)



7.2 Fig. 1



ATTENZIONE:

- **The crane must have a minimum load capacity of 2500 Kg (in each case a weight major of the excavator and eventual accessories mounted during the loading).**
- **It is dangerous to remain within the working radius of the trailer lifting machine.**



7.2 Fig 2 e 3



For the loading with the crane consider the following points:

1. Rotate the arm toward the front legs
2. Open the first boom at end of stroke and close the second boom as in the picture (7.2 Fig. 2)
3. Hook to the 3 anchored points (2 on the legs and 1 on the arm) and use the hook adapted to the weight of the machine and the eventual accessories (7.2 Fig 2 e 3). The 3 anchored points are optional (not standard equipment!).

7.3 Transport by helicopter

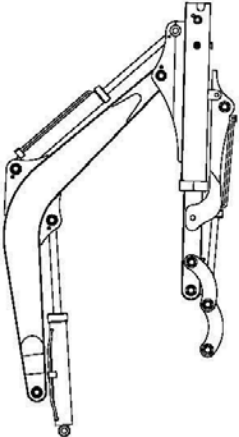
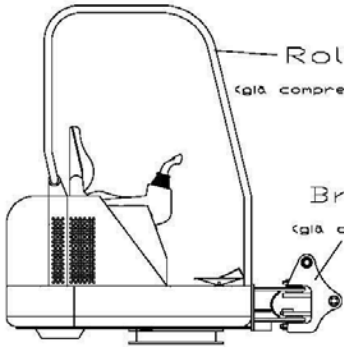
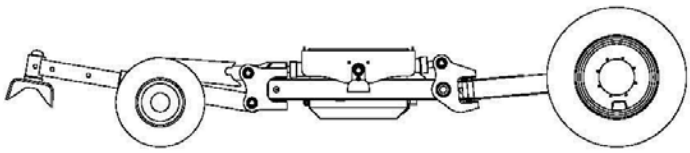
FOR ANY TRANSPORTATION BY HELICOPTER ASK MENZI MUCK FOR THE WEIGHT REFERENCE TABLE.

ATTENTION:



Do not risk hazardous transportation. The EUROMACH company is not responsible for damage to persons or objects deriving from transportation performed without its approval.

WEIGHTS

 TABELLA PESI PER TRASPORTO IN ELICOTTERO	
PESO TOTALE ESCAVATORE	1950 Kg (cucchiaio escluso)
 GRUPPO BRACCI peso Kg 250	
 Rollbar peso Kg 68 (già compreso nel peso totale del gruppo torretta) Brandeggio peso Kg 42 (già compreso nel peso totale del gruppo torretta) GRUPPO TORRETTA peso Kg 960	
 GRUPPO TELAIØ peso Kg 740	

8. Lifting weights

ATTENTION:



The standard machine is not arranged for lifting weights and therefore the EUROMACH company is not responsible for any damage to objects and/or persons caused by such operations without the use of the special kit.

- **Have the special kit mounted, which includes the load capacity safety valves (in option 8 Fig. A - B).**



8 Fig. A – B



Although the excavator is fitted with these safety valves on the boom cylinder, it is not equipped with safety systems and has not received the same test approvals as a crane: it is **merely** an excavator.

The EUROMACH company is not responsible for damage to objects and/or persons deriving from operations which do not conform to those described.

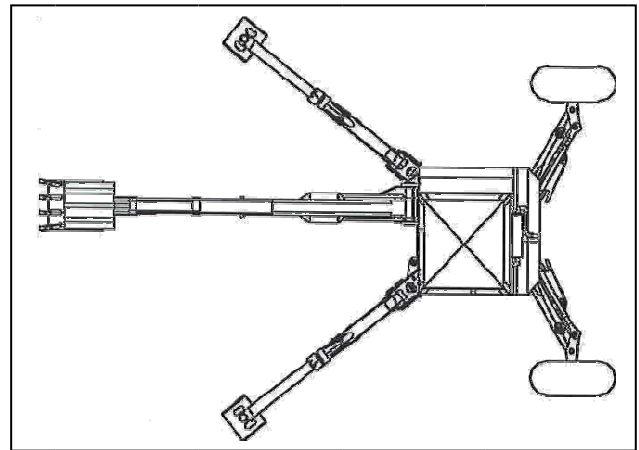
Proceed as follows when using the excavator with the special safety valves:

- Press the button on the control dashboard (8 Fig.1)



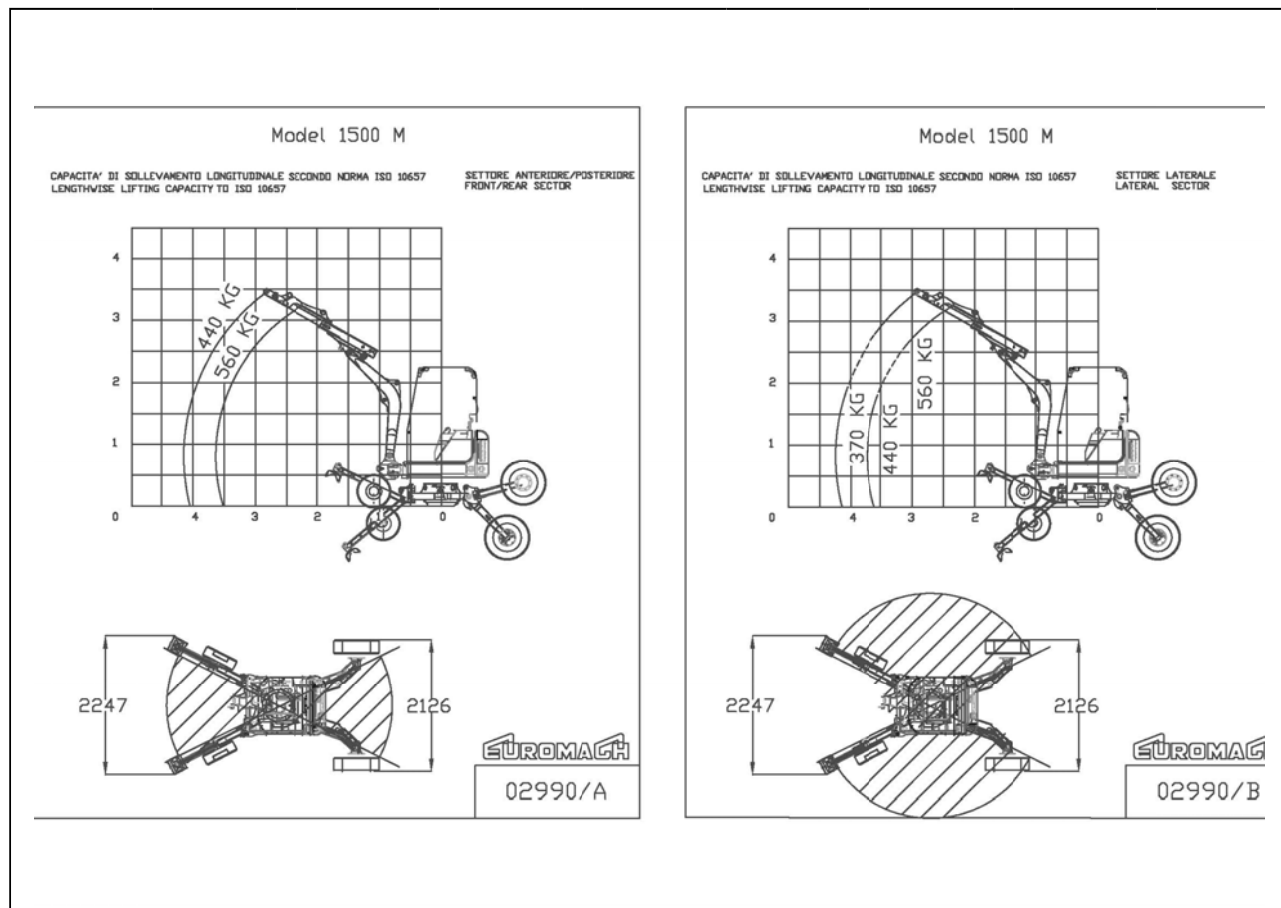
8 Fig. 1

- The machine must have the four brackets positioned to the widest position, so that the four support points are as in figure, so as to avoid problems of instability of the excavator (Fig.8 Fig. 2).



8 Fig. 2

- Lower the feet to the ground and check that they are well anchored.
- The height of the machine from the ground must not exceed 30 cm. (8 Fig.3).
- Verify the ground solidity under the anchored points.



8 Fig. 3



ATTENTION:

- **If the brackets cannot be positioned as described above, do not perform any kinds of lifting operation in any event.**
- **Make all of the calculations necessary to ascertain the type of cables to use and the maximum foreseen weight.**

When the maximum admissible weight is exceeded on the machine, this condition will be indicated by an acoustic signal.



The buzzer is only an auxiliary device for the operator and he have to verify that the weight loaded is correct in relationship to the weight indicated on the loading tables.

The maximum admissible weights are shown in the longitudinal lifting table and the traverse lifting table (8 Fig. 3). Do not try to lift or hold any weight exceeding the values at the specified load radii and heights.

The diagrams shown here have been prepared in compliance with **ISO 10657**.



Weights are considered without bucket or other accessories onto the machine. So the weight for the loading or lifting device must be subtracted from the nominal loading to have the net loading that can be lifted.

The lifting point is situated on the boom at the point where the shovel is fixed.
Ask for the apposite hook homologated for the loading (option).

9. Advice and regulations for the use of the excavator

9.1 Special requirements for operators of construction machines



- The excavator may only be driven by persons possessing good working experience of "spider" type operating machines.
- The ordinary maintenance can be performed by the owner of the machine without any difficulty; for more complicated operations we advise contacting the Service Centers listed at the beginning of this manual.
- It is necessary to follow the procedures advised in this manual carefully for the use, maintenance and transport of the excavator.
- Always use original spare parts and the lubricants recommended by the same company (see table).



- **Variations or alterations to the functions of the excavator even by the authorized Service Centers are not permitted. (should this happen, the guarantee is no longer valid).**



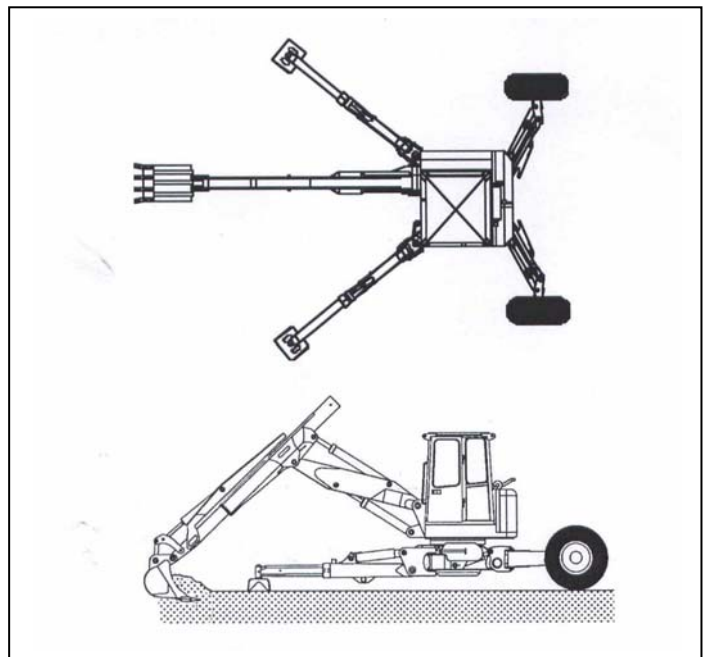
- **Do not try to be an expert. Consult one of the Service Centers for any mechanical operations not foreseen by this manual.**

9.2 Advice for new operators of "spider" type machines



These machines are very particular and are completely different to any other type of mobile excavator given that they do not have stabilizers (three point machines, track driven etc.). We therefore advise a brief trial period at the headquarters or at your building sites so as to learn the particular notions which distinguish the above mentioned machines. Generally, however, follow the following procedure:

- Initially, work only on flat ground.
- Position the machine with the four stabilizer brackets very wide so as to prevent the excavator from over-balancing and tipping itself over (Fig. 12).



9.2 Fig. 1

- Always keep the machine close to the ground.

- Move the commands carefully, paying attention to avoid obstacles (objects or persons) present in the working radius of the machine.

9.3 Advice and regulations for the use of the excavator



9.3.1 Use regulations

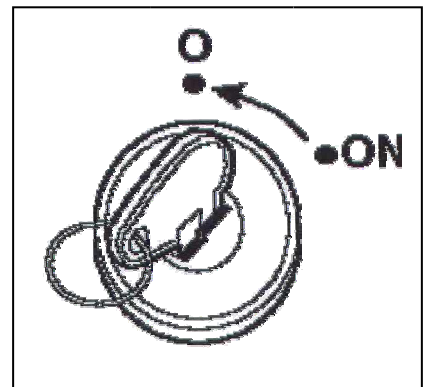
The regular checking and servicing of your excavator are the indispensable conditions for its long life.

When the machine is delivered, the sales office personnel supply the customer with the main instructions inherent to the use and maintenance. These instructions are summarized in the list which follows:

- Make certain that there are no persons in the maneuver zone before starting the machine.
- Keep persons far away from the elevated tools so as to avoid damage (see 9.3.1 fig.1).
- Mobile type excavators are not type tested to circulate on the roads (See transportation on vehicles).
- Constantly check the work zone to avoid the points of most danger.
- Pay maximum attention to unsafe walls, falling objects and unforeseen landslides.
- Never try to make the machine work or to use its tools in unsuitable positions, or better, always sit in the driving seat. In all circumstances, keep your head, body and limbs inside the cabin to reduce the risk of exposure to any external dangers to a minimum.
- Do not start up, use, re-supply or perform interventions on the machine without having examined this manual.
- Do not run the engine in enclosed places or where there is a lack of air.
- Never leave the machine with the engine running.
- Do not leave the keys in the dashboard.
- Before performing any maintenance operation it is necessary to switch off the engine. Make sure also that no one can start it without permission (9.3.1 Fig.2).



9.3.1 Fig 1



9.3.1 Fig. 2



ATTENTION:

Always fasten the security bells applied on the seat, before operating with the excavator.

- Damaged parts must be substituted in good time so as to prevent greater damage (always use original spare parts).
- Clean the excavator after each time it is used.
- To avoid damage from corrosion after long periods of disuse, grease the cylinder rods.

- If there are any loose screws contact the Service Centre.
- If any hydraulic joints become loose, tighten them carefully (or contact the Service Centre).
- Immediately substitute any damaged hydraulic pipe work not concerning the engine.
- Clean the greaser thoroughly before using it.
- Avoid climbing on the excavator when it is being moved by persons other than the operator.
- When the hydraulic hammer is being used avoid opening the front window.
- Do not mix different types of lubricants (see the lubricant table); lubricate according to the prescribed maintenance program.
- Make sure to eliminate, collect and dispose of degraded oils through specialized bodies. This is important in conserving the environment and in the fight against pollution.

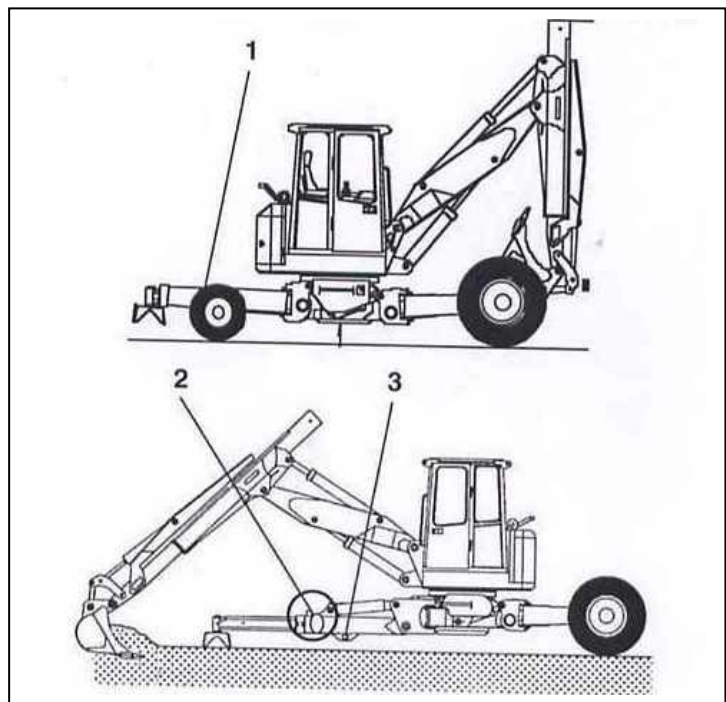


When using the hydraulic hammer we advise against extracting the rod of the second hydraulic arm so as to avoid dangerous stress to the machine. **Ask the for the characteristics of the most suitable hammer for your machine (see accessories).**

9.3.2 Dismounting the front idle wheels

Whenever the excavation work is obstructed by the front wheels (9.3.2 Fig. 1) proceed as follows:

- Remove the two split pins of the wheel pins.
- Slide out the lock pin from the wheel pins.
- Slide the two wheel pins out of the hole (9.3.2 Fig. 1).
- Position the wheels above the brackets in the support.



9.3.2 Fig. 1



ATTENTION:

Only experienced persons must use the machine. The EUROMACH company is not responsible for damage to persons or things consequent on the improper use of the machine. Follow the advice in this manual scrupulously.



At the end of the digging operation, if necessary, re-place the idle wheels to move the machine. Don't forget to lock the pin using the security split pins.

10. The cabin and the commands

10.1 *Descrizione generale:*

This is constructed in compliance to the tipping prevention ROPS standard according to the DIN ISO 3471 standard.

The rollbar can be tipped forward by using a manual hydraulic pump for maintenance and repair work.

- The driver's seat is equipped with a safety belt.



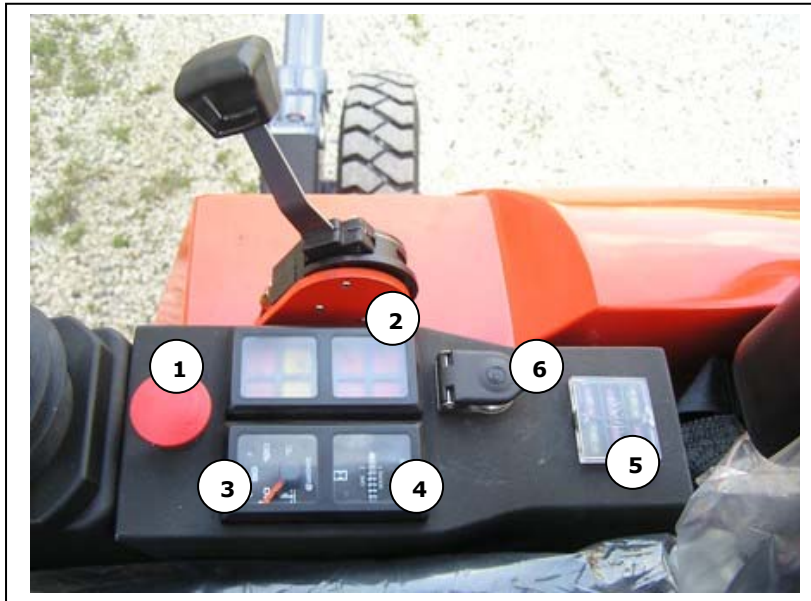
ATTENTION:

When the left arm-rest is in the raised position all of the excavator commands are disabled.

The commands can be divided into:

- The right hand servo command and the left hand servo command for arm movements and rotation of the machine.
- Two hydraulic pedals which command the extension of the arm, the traction of the machine and the various optional accessories (demolition hammer, directional bucket, etc..)
- The electrical buttons positioned on the two servo commands permit the adjustment of the front and rear brackets of the machine.

10.2 Dashboard



10.2 Fig. 1

1. Emergency button;
2. Pilot lights panel (fuel reserve pilot light, glow plugs, alternator, engine oil pressure, air filter blockage pilot light)
3. Engine liquid cooling thermometer
4. Hour counter
5. Fuse box
6. Engine starting button



10.2 Fig. 2

1. Lighting starting button
2. Adjustable bucket / hammer starting (pushing this button with the right pedal the traction of the machine stops and the arm pipes are active)
3. Electric horn button



Manual Accelerator. The engine ignition should be always in the min. rpm. Wait some minutes before accelerating in case of very cold temperatures.

10.2 Fig. 3

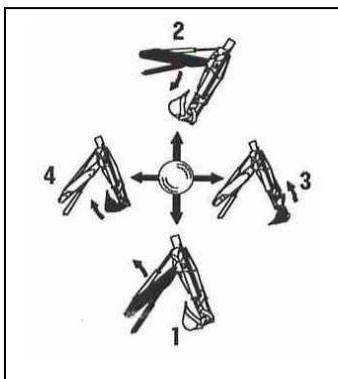
10.3 Servo commands

Right hand servo command:

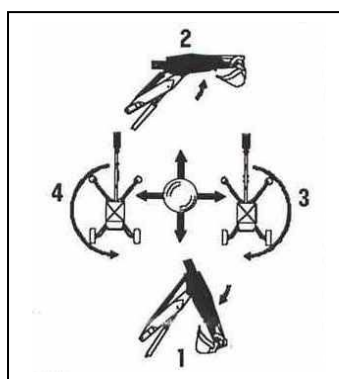
- When the lever is pulled the first arm is raised (1 – 10.3 Fig.1).
- When the lever is pushed (2 – 10.3 Fig. 1) the arm is lowered.
- When the lever is turned to the right (3 - 10.3 Fig. 1) the bucket opens.
- When the lever is turned to the left (4 - 10.3 Fig. 1) the bucket closes.

Left hand servo command:

- When the lever is pulled (1 - 10.3 Fig.2) the second arm closes.
- When the lever is pushed (2 - 10.3 Fig.2) the second arm opens.
- When the lever is turned to the right (3 - 10.3 Fig.2) the turret and the arm rotate clockwise through 360°.
- When the lever is turned to the left (4 - 10.3 Fig.2) the turret and the arm rotate in an anti-clockwise direction.



10.3 Fig. 1



10.3 Fig.2

10.4 Pedals

Left hand pedal (10.4 Fig.2):

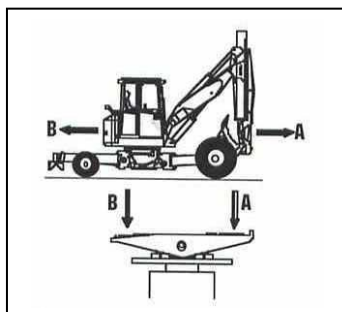
- When pressure is applied to the front of the pedal (A), the rod of the second arm extends.
- When pressure is applied (B) to the pedal the rod of the second arm reenters.

Right hand pedal (10.4 Fig. 1):

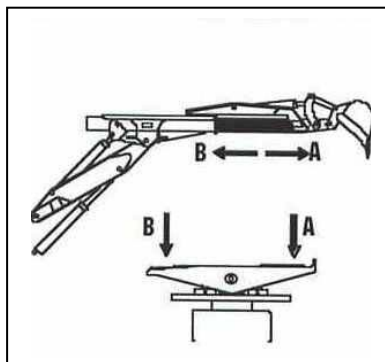
- When pressure is applied to the front (A) the machine advances.*
- When pressure is applied to the rear (B) the machine reverses. *

*The drive direction is considered with the machine position with the arm towards the driving wheels.

When the adjustable bucket / hammer function is (button, see figure cap.10.2) the oil is deviate from the traction to the pipes at the end of the boom.



10.4 Fig. 1



ATTENTION:

When the excavator is pulled or pushed with its own arm, the pedal must always be lightly pressed in the direction in which you wish to proceed, to release the reducer locking brake.

10.5 Steering

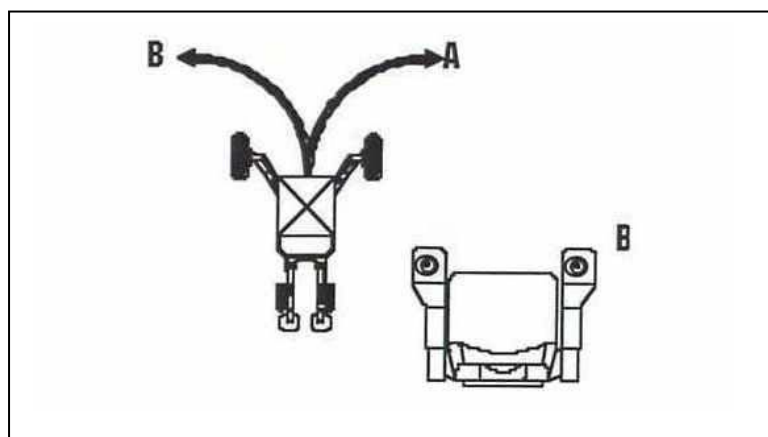
Servo command with the steering function



ATTENTION:

Before towing and using the steering function, position the machine for driving (with the arm towards the driven wheels to have more adhesion)

- When you press the external buttons of the left manipulator (see maneuver scheme, 3 e 4 – 10.6 Fig. 1) the excavator steers left and right.



10.5 Fig. 1

10.6 Bracket movements

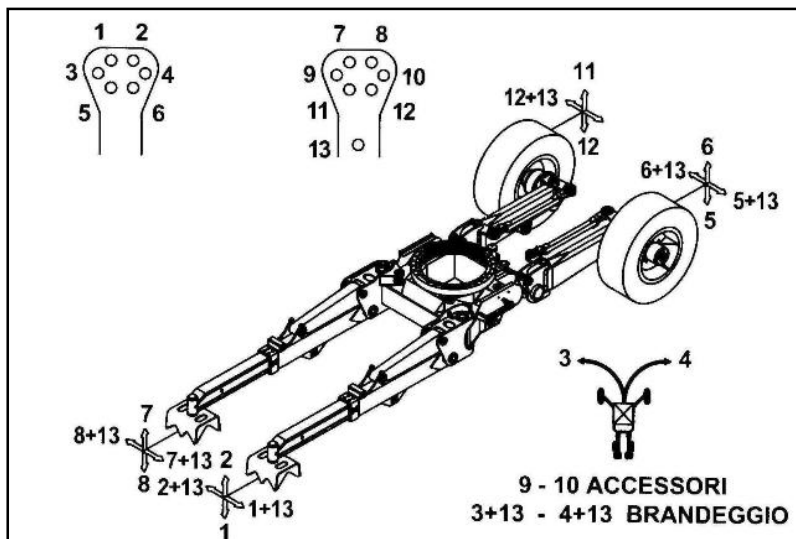
ATTENTION:



The description of the functions must always be considered with the arm turned towards the front brackets.



DO NOT INVERT THE COMMANDS OF THE BUTTONS. ANY TAMPERING, EVEN BY THE SERVICE CENTRES CAUSES IRREPARABLE DAMAGE TO THE ELECTRICAL CIRCUIT AND INVALIDATES ANY GUARANTEES.



In the figure (10.6 Fig. 1) there is the correspondence between electrical buttons and the movement effectuated; The button n. 13 near the manipulator have the function of deviator; Pushing it with another electrical button, it is possible to effectuate other manoeuvres (es. 11+13)

10.6 Fig.1

10.7 Movement of the boom articulation

Pushing the button 3 or 4 with the button 13 (see maneuver scheme) the left / right articulation of the boom is activated.



• Once done the boom articulation, we suggest to push again the button 13 (deviator button) to discharge the pressure in the pipes; if you don't use this function, the seal valve on the cylinder can stay open and will cause more elasticity on the boom.



10.8 Using accessories to mounting on the arm.

At the end of the arm there are n. 2 pipes (10.8 Fig.1) that can be activated by the right pedal in the cab.



With this 2 pipes it is possible to feed an accessory mounted at the end of the arm.

A deviator (10.8 Fig.2) in the front of the machine permit to deviate the return flow direct on the tank without passing through the distributor (this function is very important in case of use of an hammer)

To activate the pipes at the end of the boom it is necessary to deviate the traction oil using the button like explained (button 2 – 10.2 Fig. 2).

10.8 Fig.1



10.8 Fig. 2

10.9 Fuse box:

If a fusion don't work correctly, verify the correspondent fuse (10.9 Fig.1).

Description:

- 1 – Solenoid valves
- 2 – Working lights
- 3 – Alternator / Accumulator
- 4 – Klaxon / emergency
- 5 – Instruments / blinker
- 6 – Engine stop

Yellow fuses are 20 A, Red fuses are 10 A.



10.9 Fig.1

10.10 Driver seat (Fig.43)

The machine can be supplied by different types of seats. See in the specific the possible regulations.



Before descending or mounting on the cabin, the arm rest must be lifted (use the apposite lever, see fig. 10.10 Fig.1), in this case the machine commands are activated thanks an apposite micro. This operation exclude the ranger of involuntary maneuvers.



10.10 Fig.1



ATTENTION:

Before operating the excavator, always put on the seat belts attached to the seat.

11. Engine bonnet opening and access to the internal parts of the excavator

11.1 Engine bonnet opening



The opening of the bonnets should be effectuated only for maintenance operations, switch off always the engine before the operation and lock the bonnets in opening position using the lock hook supplied.

Position the excavator with the boom lowered to the ground and switch off the engine. Unlock (1 11.1 Fig. 1) using the key provided and press firmly, lifting the bonnet upwards.

Then check that the safety rod (2 11.1 Fig. 1) locks in position.



Caution – The bonnet is very heavy to provide maximum protection for the mechanical and hydraulic parts, so be very careful when opening and closing it.

To close the bonnet, raise it, pull firmly, and gently lower the bonnet into the original position.



11.1 Fig.1

11.2 Accessing internal parts of the excavator

Position the machine with the boom lowered and the engine switched off. Release the cab safety lock (11.2 Fig.1).

Position the hand pump lever as shown in the diagram (11.2 Fig. 2) and raise the cab slowly by means of the rod (1 – 11.2 Fig. 2).

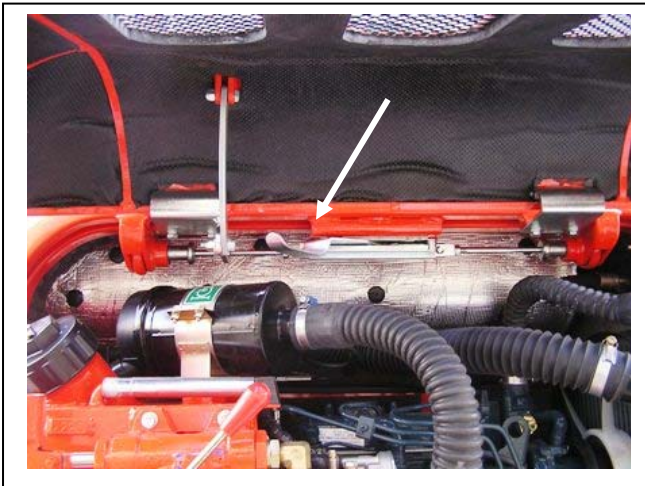
When the cab is fully raised, insert the stay (11.2 Fig. 3) in the slot and lower the cab slowly using the lever (2 - 11.2 Fig. 2) so that the stay is positioned correctly (11.2 Fig. 4).



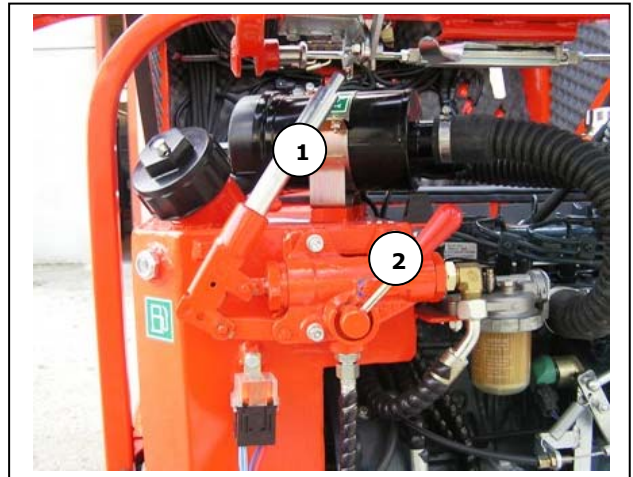
VERY IMPORTANT

Before carrying out any maintenance work, make sure the lever is in position (11.2 Fig. 4) and the stay is in the slot.

Raise the bonnet for easy access when servicing all the hydraulic and mechanical components.



11.2 Fig. 1



11.2 Fig. 2



11.2 Fig. 3



11.2 Fig. 4

11.3 Closing the rollbar

Effectuate the maneuvers of the last paragraph in the opposite sense.



NOTE:

The EUROMACH company is not responsible for damage to objects and/or to persons if the warnings above are not followed.



To close the rollbar rotate the lever 2-11.2 Fig. 2, to the left. Control that the speed of closing were slow and that it cause any danger.

12. Filling the main tank with fuel

CAUTION – Always switch off the excavator before filling with fuel. Never smoke while filling the tank and always keep well away from sources of heat.

Unscrew the cap (12 Fig. 1) and fill the tank.

Notes

The tanks holds 30 lit.

Only use fuels recommended .



12 Fig. 1

13. Starting up the excavator



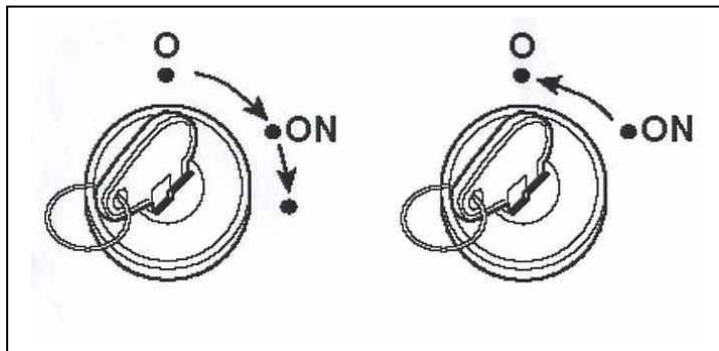
Before starting up the excavator always check the level of the engine oil, hydraulic oil, reducer oil and the level of the cooling circuit.

13.1 Starting up

- Insert the key into the switch and turn it towards the right to the ON position (13.1 Fig. 1)..

The oil pressure control and battery charge lights should now come on. In this position the heating of the injectors takes place automatically. Wait until the yellow pilot light goes out.

- Turn the key towards the right: the engine will start (13.1 Fig. 1).
- As soon as the engine begins to turn over, release the key. If the engine does not start immediately, we advise against insisting with the key for more than 10 seconds.



13.1 Fig.1

NOTES:

If the engine does not start, wait at least a minute between each attempt to prevent the battery from becoming flat after a few tries.

When the engine is running, let it turn over at intermediate rpm for several minutes to permit good warming up: a guarantee of long life.



When the engine is running smoothly, the oil pressure and battery charge lights must be out. If the oil pressure light does not go out, **stop the engine immediately** and telephone a Service Centre immediately.

13.2 Operations at the end of work

Before a break in the work, or at the end of the day the operator must park the excavator: the arm is lowered to the ground so that no accidental movements may take place (rest position).

- With the accelerator lever, lower the rpm: we advise letting the engine idle for three minutes to stabilise the engine temperature before stopping.
- Turn the ignition key to 0 and the engine will stop (13.1 Fig 1).

14. Maintenance

14.1 General information



Remove always the pressure before every machine maintenance. Attention: remove the current from the battery before every electrical or mechanical maintenance.

14.2 Daily maintenance operations

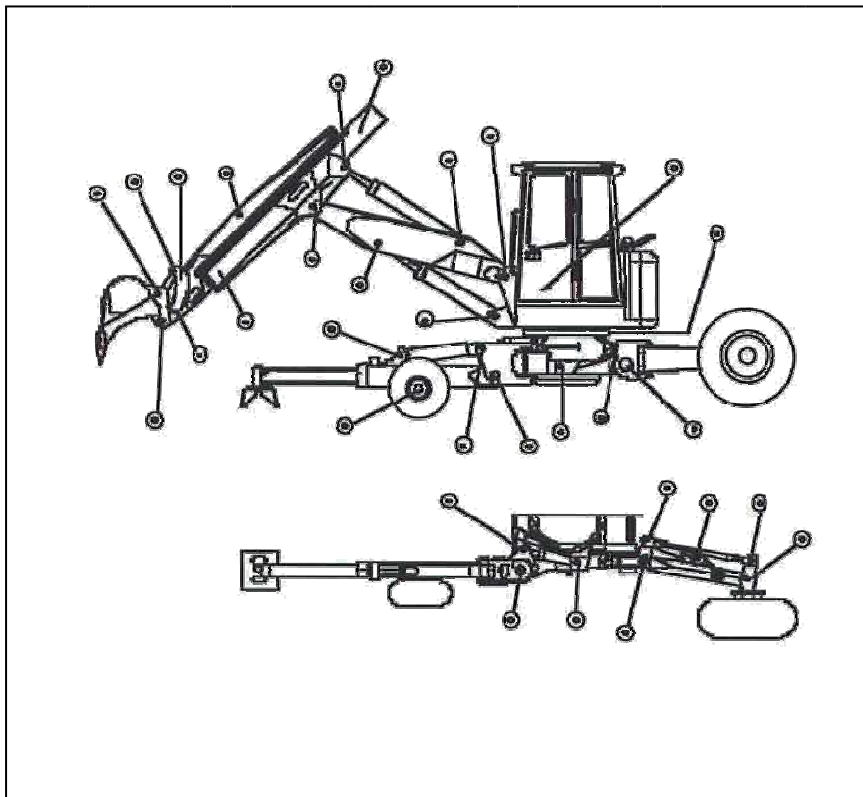


ATTENTION:

For engine maintenance see the enclosed handbook.

Greasing

- Grease the points defined in 14.2 Fig. 1, after each time the machine is used.
- Use only the type A greases recommended (see table).
- Check the oil levels in the engine, reducer, rotation, tow, and hydraulic circuit and the cooling water level.
- Check for any leaks and top up the tank.
- Check that the air filter is not blocked (pilot light on the dashboard).



14.2 Fig.1

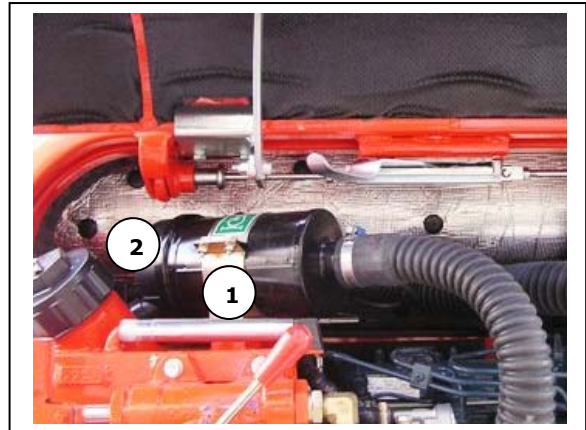
14.3 Periodical maintenance operations (every 200 hours of work)

NOTE:

- For maintenance of the engine see the handbook enclosed.
- Perform the first programmed service (new machine) within the first 100 hours of work or the first month.
- Have the successive programmed services performed at a Service Centre every 200 working hours or every month.



- Change the engine oil (see Engine handbook).
- Change the engine oil filter (see enclosed engine handbook).
- Change the fuel filter on the tank and clean the container.
- Clean the air filter (14.3 Fig 1) change every 200 hours or once a year).
- Check the tension of the fan belt.
- Check if the fan belt has any visible damage.
- Check that the water / oil radiator is always clean.

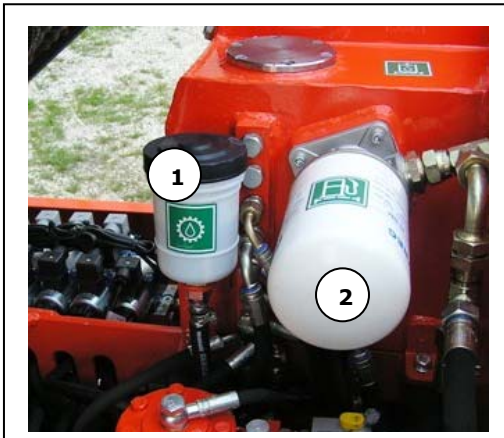


14.3 Fig.1

- Check that the pipes of the cooling circuit.
- Check and if necessary refill the radiator (14.3 Fig. 2) with the special cooling liquid (water + anti-freeze).



14.3 Fig. 3
14.3 Fig. 2



- Check the engine rpm: when running the engine can reach a maximum of 2400 rpm; the minimum rpm for idling must be 750 rpm.
- Check the working of the electrical system (pilot lights, lights, etc.).
- Check that the screws in the motor bearings

and connected assemblies are tight.

- Check the air filter blockage light.
- Check the rotation reducer oil (1 - 14.3 Fig. 3).
- Check the driver reducer oil.
- Check the hydraulic oil filter (2 - 14.3 Fig 3).



ATTENTION:

Lubrication, maintenance and adjustments must never be performed with the engine running, except where specified in the Use and Maintenance

Manual. This is to avoid injury caused by accidental contact with the moving parts.

14.4 Periodical maintenance operations (every 1000 hours of work)

Replacing the hydraulic oil

This must be done at a Service Centre.

Replacing the hydraulic oil filter

- Switch off the excavator engine.
- Rest the boom on the ground as shown in 14.4 Fig. 1
- Tip up the cab and position the stay.
- Unscrew the cap (1 - 14.4 Fig. 1) on the tank slowly to allow the air out.



14.4 Fig. 1



ATTENTION:

The oil tank is under pressure. Pay great attention to vent before unscrewing the filter closing cover.

- Replacing the hydraulic oil filter screwing in anti-clockwise sense (2 - 14.3 Fig. 3)
- After the replacing of the filter, pull the security rod and close the cabin blocking the position.
- The engine must rotate at the minimum for few minutes.

Replacing the engine oil

Refer to the engine handbook

Replacing worn pin bushes

Any pin bushes found to be worn must be replaced at a Service Centre.

Replacing cooling water

Cooling water must be replaced at a Service Centre.

Replacing cylinder gaskets

This must be done at a Service Centre.

Checking reducer oil

- Tip up the cab forwards
- Unscrew the plug in the low part of reducer and empty completely the oil.



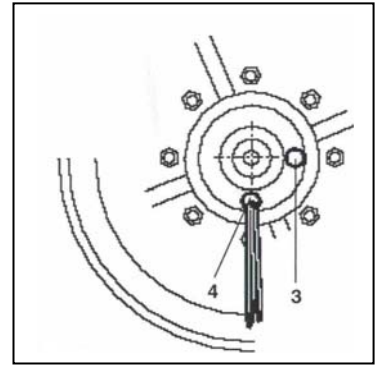
ATTENTION:

Used oil must always be taken to a specialised waste disposal centre.

- Close the plug (1 - 14.4 Fig. 2)
- Refill through the upper tank and wait few minutes that the oil refill completely the tank
- Refill only to half tank

Changing the tow oil

- Rotate the wheel as in figure 5.
- Remove the two plugs (3 and 4 14.4 Fig. 2) and wait until the oil finishes draining. (For refilling see the paragraph 14.4 above).



14.4 Fig. 2

Changing the air filter (14.4 Fig.3)

- Open the rear bonnet.
- Unscrew the wing nut and dismount the closing cover.
- Remove the filter and change it after cleaning the filter container with compressed air.
- Close the cover and remount.



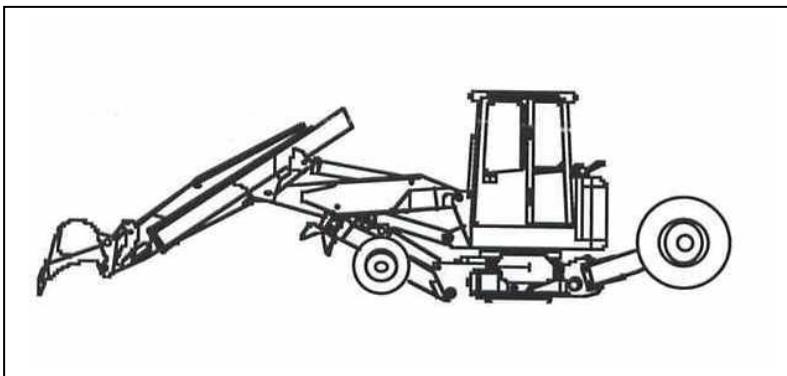
14.4 Fig.3

14.5 Information about maintenance operations

Hydraulic oil top-up

NOTE:

Before performing this operation, lie the arm down and completely open the bucket, lower the machine completely so that all of the cylinder rods re-enter their cylinders (14.4 Fig. 1).



14.5 Fig. 1

- Check the oil level with the external tube (14.4 Fig. 2) located on the right side
- of the tank. The level should be around half way up the tube. If this is not the
- case, top-up by unscrewing the tank plug (14.4 Fig.3).
- Replace the plug when the operation is finished.



14.5 Fig. 2



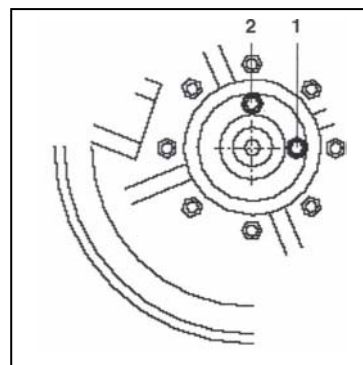
14.5 Fig. 3

Checking the gearmotor oil

- Open the rear bonnet.
- Daily check the oil level, which must be about halfway up the tank Fig. 14.5 Fig.3).
- Refill with type B lubricant if necessary (see tableCap. 5.2).

Topping-up the tow oil

- Position the two Allen key screws of the reducer of the rear wheel as in figure 10 (90°).
- Unscrew the right lateral screws (1 - 14.5 Fig.5) to check the level: if oil comes out the level is correct. If not, unscrew also the upper screw (2 - 14.5 Fig. 5) and top-up until oil comes out of the right hand screw.
- When the operation is complete, close the two plugs.



14.5 Fig. 4

Topping-up the cooling liquid

- Open the rear door.



ATTENTION:

The cooling liquid must only be topped-up with the engine cold because the circuit is under pressure and the liquid could come out in a violent manner causing burns to the operator.

- Unscrew the plug (14.5 Fig.5) on the radiator.
- Top-up through until the liquid comes out of the plug hole.
- Re-close the radiator plug.
- Close the rollbar and close the rear bonnet.



14.5 Fig. 5