



PRO H CL



**INSTRUCTION FOR USE AND MAINTENANCE
COMPREHENSIVE CATALOGUE & SPARE PARTS**

CT. 200.411

Serial number

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USE AND MAINTENANCE

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SYMBOL KEY

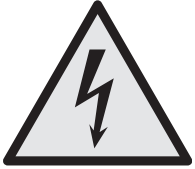
DESCRIPTION



It is compulsory to read this maintenance booklet prior to operating the machine



It is compulsory to read this maintenance booklet for what regards ordinary and general maintenance.



Danger:
electrical shock hazard.

CAUTION !

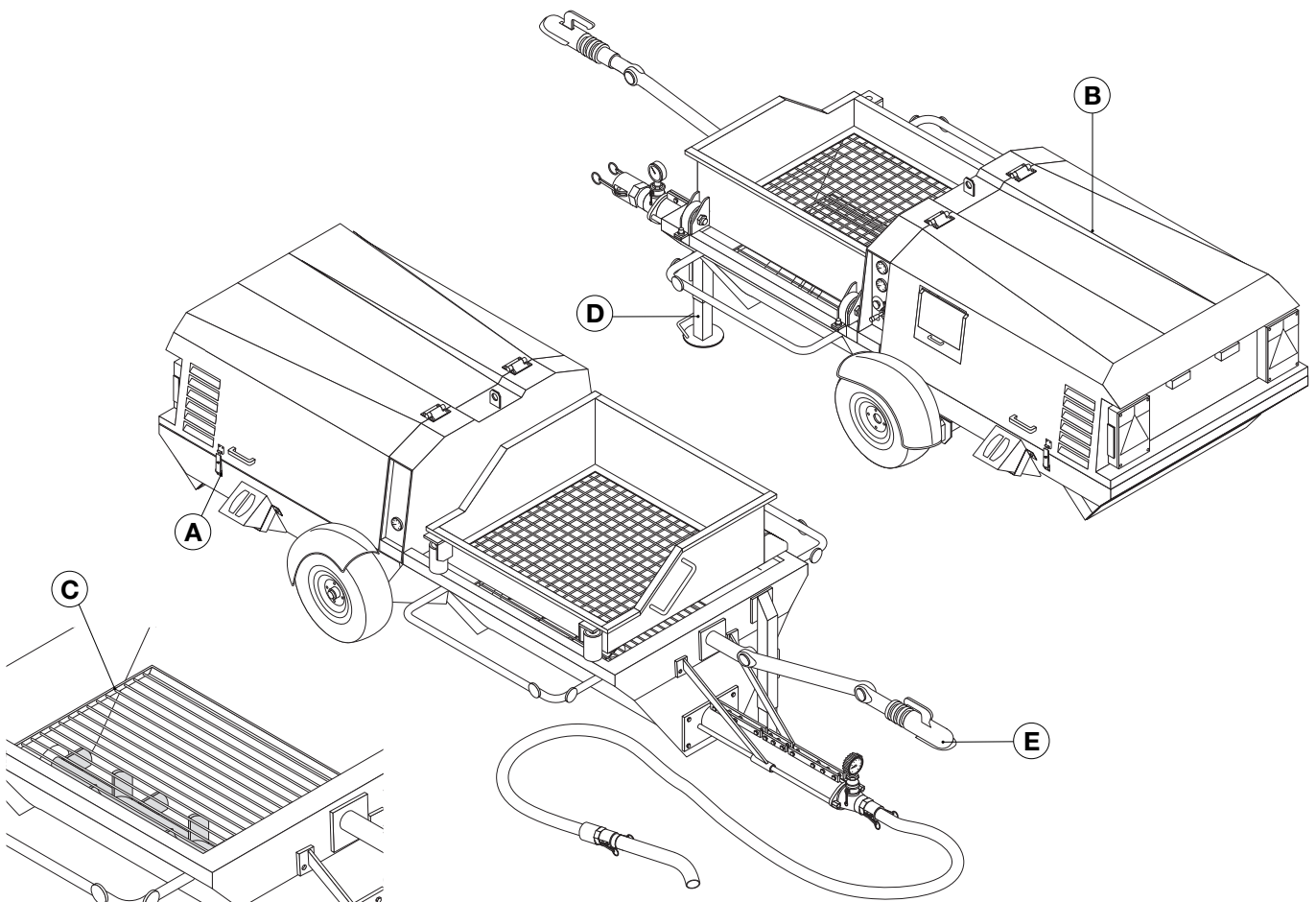
A- The canopy must remain closed when working with the machine.

B- Within the motor compartment there are moving parts, heat fonts, accumulator acid.

C- The hopper is fitted with a safety device. The agitator stops when opening the safety grill.

D- During work lock the stabiliser crutch.

E- When towing connect the safety cable and the tail lights cable.



1 - GENERAL INFORMATION

1.1 - INTRODUCTION

The machine for self levelling materials PRO H CL can be supplied with a number of different accessories. As a result, some of the components and parts described in this booklet may not be included with your own equipment.

We have taken special care to clearly illustrate the different variations in order to make it easier for you to distinguish the use and maintenance instructions applicable to your own machine.

Please read these instructions carefully prior to turning on your equipment and follow the instructions carefully.

For whatever other information you might require, TURBOSOL PRODUZIONE S.P.A.'s customer service is at your complete service.

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1.2 - GENERAL INFORMATION

Turbosol Machinery

This machinery is the product of our lengthy experience and continuous development. The know-how thus acquired, together with our stringent requirements for high quality, constitutes the basic guarantee for manufacturing low-wearing machinery which offers total reliability at low servicing costs.

Precautions to take when the machine is operating

Maintenance or repair work must be carried out only when the machine is turned off. Whatever safety devices that have been removed in order to complete such work must be mounted again after maintenance has been carried out.

Care and maintenance

Care and maintenance are vitally important in making it possible for the machinery to operate as expected. It is therefore essential that all maintenance be performed on schedule and that all required maintenance be carried out with extreme care.

Safety



This symbol marks every reference to safety in this booklet, and it must be scrupulously observed.

The personnel in charge must be fully informed about all safety regulations. Safety and accident-prevention regulations currently in effect in your area or country must likewise be observed.

Training



This symbol indicates that the personnel operating this machinery must have received special training in regard to the correct manner in which such operation must take place.

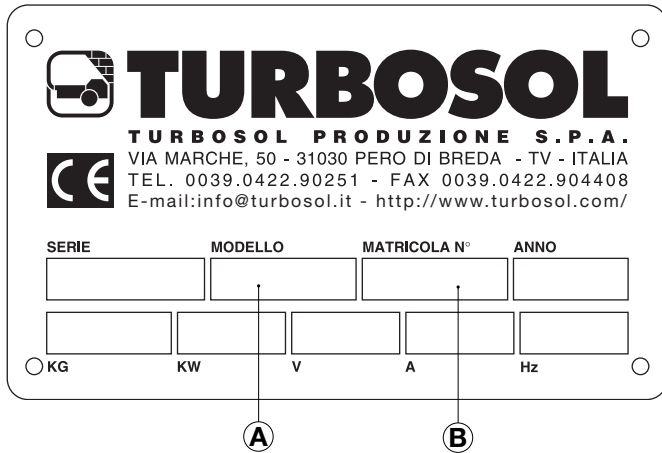
TURBOSOL SERVICE

For any problem related to trouble with this machinery or when you need spare parts, contact your local TURBOSOL dealer.

2 - DESCRIPTION OF THE MACHINE

2.1 - TYPE OF MACHINE

Manufacturer's registration plate



The type of machine **(A)**, the serial number **(B)**, and information on the machine's operating power are printed on the manufacturer's registration plate.

The following is the meaning of the letters and numbers used:

(A) = Tipo di macchina: **PRO H CL**

PRO H CL = *Machine for self levelling materials.*

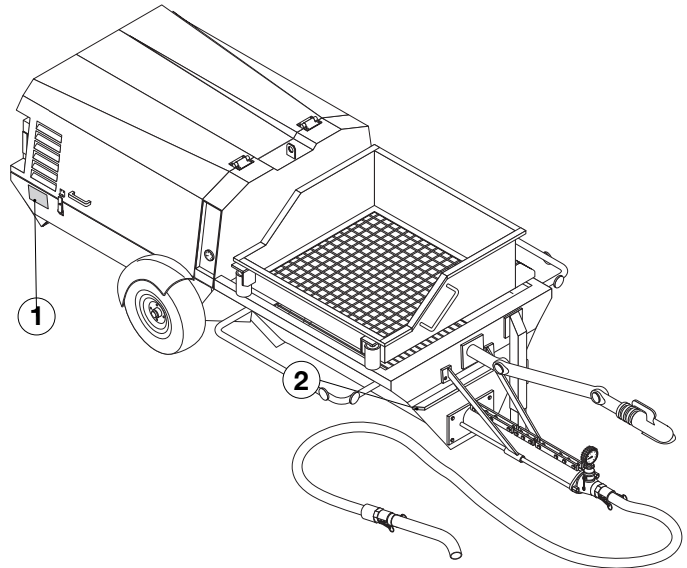
(B) = The machine's serial number: **NNNNNN/AA**

NNNNNN = *The machine's serial number.*

/AA = *The manufacturing year.*

Position of the manufacturer's plate

The manufacturer's plate **(1)** is riveted on the machine canopy.

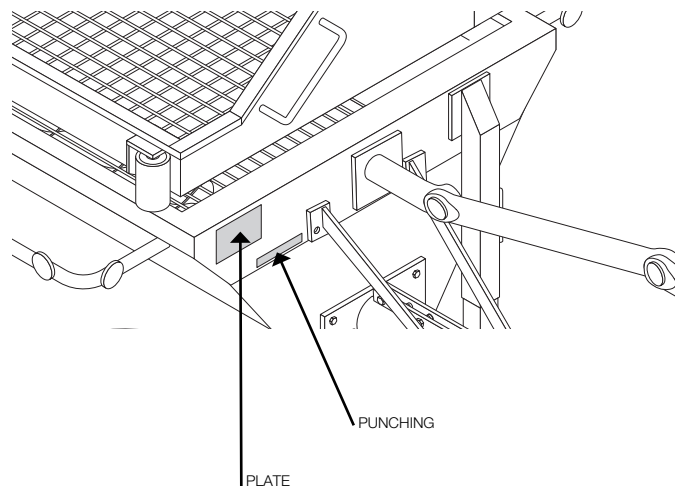


Position of the serial number of the machine

The serial number of the machine **(2)** is punched on the chassis and also on the manufacturer's plate

On road towing

With certified on-road towing you have a double punching and a plate with the identification and certification data



2.2 - DESCRIPTION OF THE MACHINE

Standard equipment:

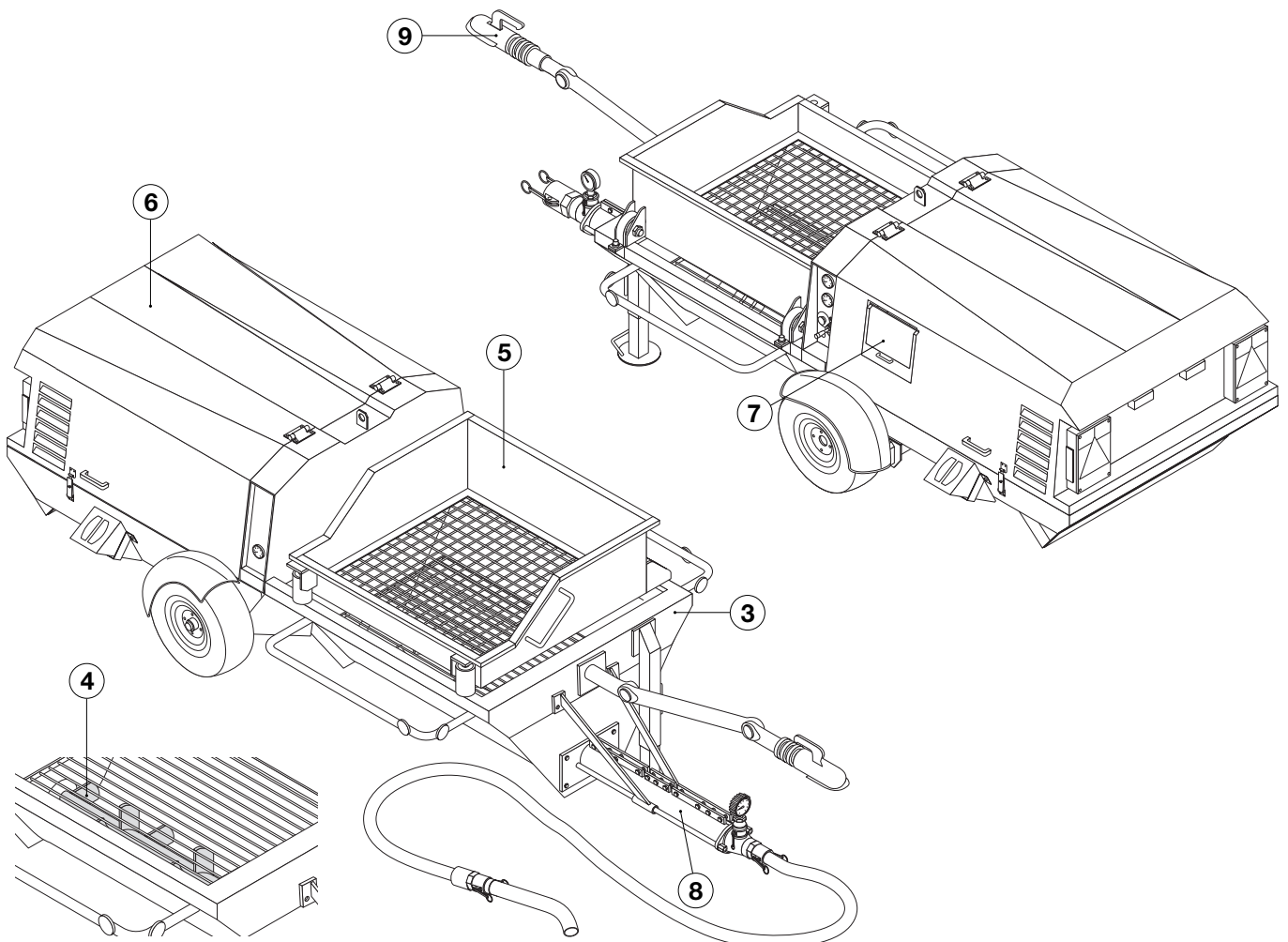
- Self-bearing chassis frame and canopy.
- 200 l hopper with built-in agitator.
- Sieve with mesh of 15 mm.
- Hydraulic pump with variable output.
- Diesel engine.
- Control panel.
- Sound proofing.
- Safety device against overpressure.
- 30 m (20 + 10) of mortar hose \varnothing 50 with cam-lock couplings.
- Torsion axle, tow bar with ball type hook.
- Worm gear pump type 60.12 for self-levelling materials.
- Gasoil tank of 25 l capacity.
- Hydraulic oil tank of 15 l capacity.
- Hydraulic oil cooling radiator.
- Safety lock with customised code.
- Cable remote control.
- Accessory box with spray gun and deflectors.
- Technical literature.

Accessories upon request

- Vibrator for sieve.
- High pressure water pump.
- Radio control with 5 functions.
- Worm gear pump type 60.12 Plus

Main components:

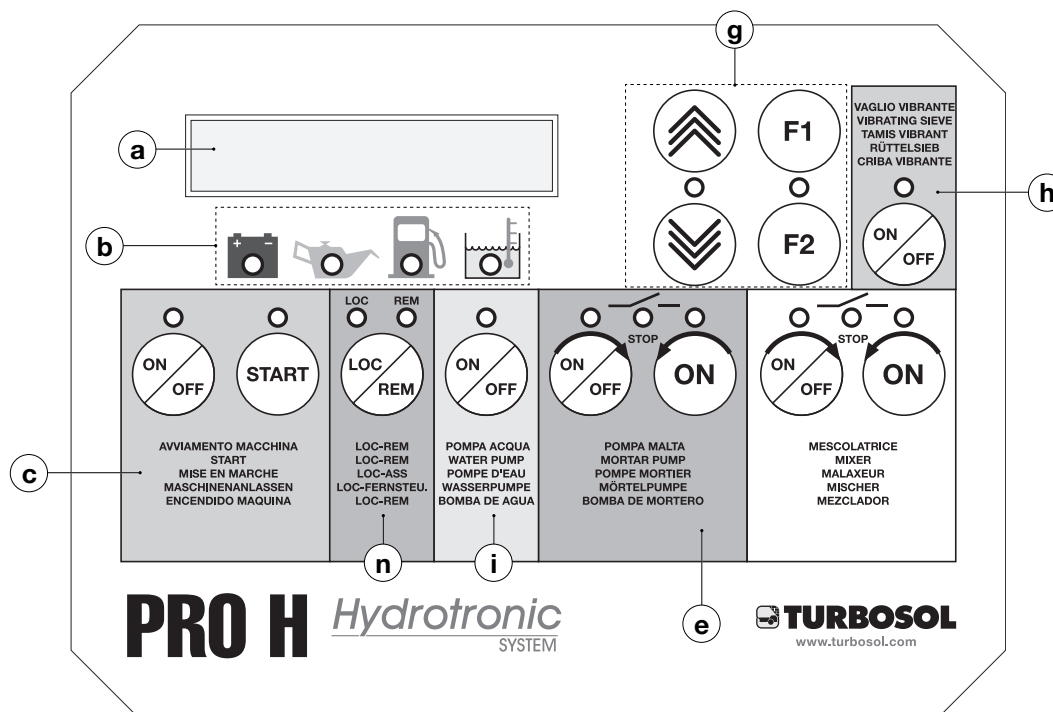
The machine consists basically of:
an hopper **(3)** with re-mixer **(4)**,
a vibrating sieve **(5)**,
an engine **(6)**,
a control panel **(7)**,
a pump assembly **(8)**,
an on road towing frame **(9)**.



2.3 - DESCRIPTION OF CONTROL PANEL

Control panel

Some indications are given below regarding the controls and indicator lights to be found on the control panel.



- The following may appear on the display (a):
 - the time of machine operation given in hours
 - the battery voltage (charge control)
 - the reference value (from 1 to 100) of the mortar flow control, in bar form and numerical value
 - access code setting
 - alarm: engine off
 - request for servicing.
- Alarms (b)
The machine is fitted with various sensors to avoid conditions of malfunction that could cause damage.
- Machine start (c)
Using control switching on and off buttons (ON/OFF), engine start button (START).
- Mortar pump (e)
The left-hand button (ON/OFF) starts and stops the agitator in its normal direction of rotation. The right-hand button (ON) reverses the direction of rotation of the agitator as long as the key is kept pressed; when the key is released the agitator returns to the normal direction of rotation.

The indicator light (STOP) shows that the hopper safety grid is open or activation of the pneumatic remote control. The agitator stops when the indicator light is on. The controls are automatically enabled again when the indicator light goes out.

- Controls (g) Multifunction buttons, used to:
 - adjust the pump flow rate
 - insert the access code
 - initialise the machine after maintenance or servicing.
- Vibrating sieve (h)
Button for switching the vibrating sieve on and off (optional).
- Water pump (i)
Button for switching the water pump on and off.
- Local/remote controls (n)
The button (LOC/REM) is used to select the controls from the control panel keypad (local) or from a remote device (remote control or radio control- optional).

DESCRIPTION OF ALARM INDICATOR LIGHTS



Battery charge alarm

It is possible to work with the machine for up to 180 minutes (approx. 3 hours) after this alarm has been given so that the work in progress may be completed.

It is impossible to work after this time has elapsed because the engine automatically cuts out after it has been started.

It is important to start recharging operations to prevent the battery from becoming totally discharged. (Request the help of an authorised after-sales service centre.)



Engine oil pressure alarm

This alarm automatically cuts out the engine after a variable time of approx. 10 seconds.

Top up the oil level and check for leaks.



Diesel fuel level alarm

This alarm is given when the level in the tank falls below the minimum mark.

The engine automatically cuts out after 10 minutes. The engine may be restarted with the risk of finishing the diesel completely, which would lead to subsequent difficulty in restarting even after having filled up with fuel.



Hydraulic fluid temperature alarm

This alarm automatically cuts out the engine after a variable time of approx. 8 seconds.

If the engine cuts out due to an alarm, the situation is shown on the display as follows:



The engine is switched off through the diesel solenoid valve. All the other functions remain active and the LED (indicator light) relating to the alarm that has caused the engine to stop remains lit.

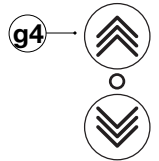
Press the machine start button **(c1) ON/OFF** to return to the original display page.

•Maintenance work

The machine is programmed to request periodic maintenance: the first servicing is scheduled after 50 hours of operation while subsequent maintenance is scheduled at specified intervals (see page 30).

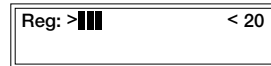
•Operating test

The machine has an operating test mode in which the various devices may be controlled and the input status displayed with the engine switched off.



To enter this operating mode press the button **(g4)** when the writing Start Engine: Start appears on the display.

The start engine phase is thus jumped to enter directly into the operating phase with normal indication on the display.



It is then possible:

- to control the various devices (mixer, mortar pump, vibrating sieve) using the buttons on the control panel and to check that the relative solenoid valves activate;
- to check the status of the inputs (micros and alarms), observing the red indicator lights on the control panel.

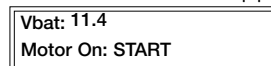
•Enabling and disabling the ACCESS CODE

The access code may be disabled and then enabled again directly by the operator.

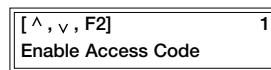
! The operator is responsible for all the consequences of disabling the access code (use of the machine by any other person).

The enabling/disabling procedure is as follows:

- Enter the operating section, specifying the access code. The display appears as follows
- Press key **F1**.
- The message for changing the parameter related to the Access Code now appears on the display.



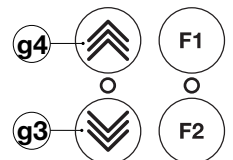
Proceed in sequence using the keys **(g3-g4)**.



To change the parameter value:

- 0 = disabled access code
- 1 = enabled access code

Save the parameter value and exit.



2.4 - SIZE OF THE MACHINE

Here the size and gross weight of the equipment (ready to work).

VERSION PRO H CL

LENGHT	WIDTH	HEIGHT	WEIGHT
3.397 mm	1.410 mm	1.150 mm	690 kg

2.5 - TECHNICAL DATA

Power of diesel engine	22 kW	
Engine r.p.m.	minimum	2.050 RPM
	maximum	3.000 RPM
Electric system	12 V	
Engine cooling	liquid	-
Gasoil tank capacity	25 l	
Pump hydraulic circuit pressure	250 bar	
Engine oil change (ELF TURBO DIESEL 15W40)	every 125 hours	
Hydraulic oil circuit oil change (ELF OLNA DS 46 - 15 l)	every 1.000 hours	
Hopper capacity	200 l	
Working temperature	to -5° from + 35° C	
LwA warrantied (90% confidence level, direttiva 2000/14/CE), tested by ISET, Notified Body n° 0865	104 dB(A)#	

PUMPS	60.12 (standard)	60.12 PLUS (option)
Material theoretical output	0 ÷ 180 l/m'	0 ÷ 300 l/m'
Maximum pressure of the mortar pump	20 bar	15 bar
Pumpable granulometry	8 ÷ 10 mm	14 ÷ 16 mm
Delivery height (indicative)*	40 - 50 m	30 - 40 m
Delivery distance (indicative)*	80 - 100 m	80 - 100 m
Mortar rubber delivery hose **	Ø 50 x 66 mm	Ø 50 x 66 mm

Note: * Maximum distance and height can not be achieved simultaneously.
These data are not absolute but they depend on the quality of the materials to be pumped, their consistency, the pumps output, the diameter of the hoses used.
Delivery heights and distances cannot be added.

** Use only specific hoses for this machine.

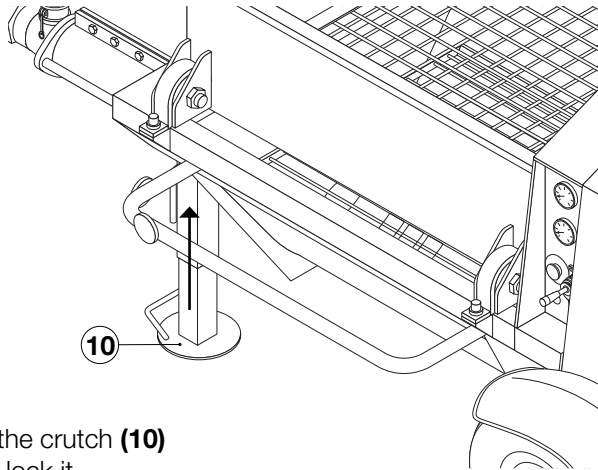
The operator must wear acoustic protection earplugs
which guarantee a reduction of at least 20 dB(A).

3 - TRANSPORT

3.1 - WHEN TOWING ON ROAD

Before towing the machine:

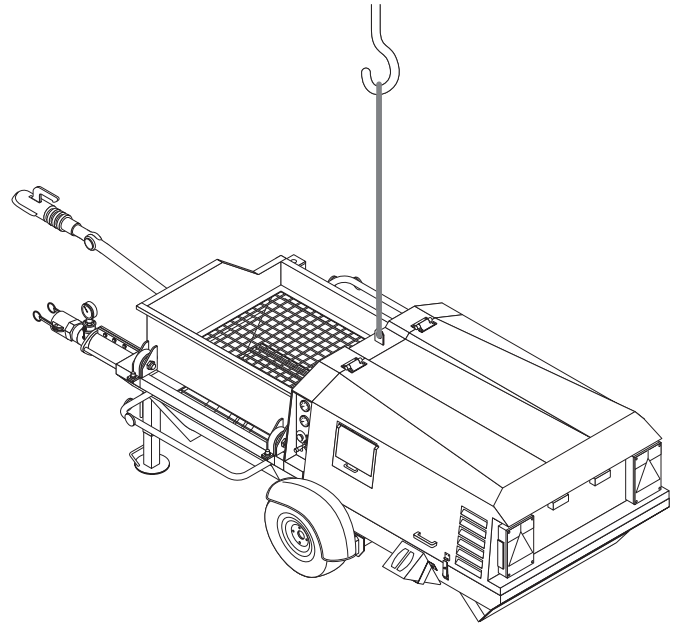
- Check that the canopy is properly locked;
- Check the tow bar, the hook on the towing vehicle and the towing hook;



- Lift the crutch **(10)** and lock it.
- Check that the wheels bolts are properly tight, that the tyres are in good state and at the correct pressure (4,5 Atm);
- Connect the tail light cable and check that the lights work properly;
- Hook the safety cable to the towing vehicle.

3.2 - HOISTING

Hook the cable on the lifting eye placed above the chassis.



Use: a hook and a cable certified for lifting 1000 kg.



Before lifting the machine make sure that nobody is standing too close to it.

4 - USE OF THE MACHINE

4.1 - WORKING PRINCIPLE

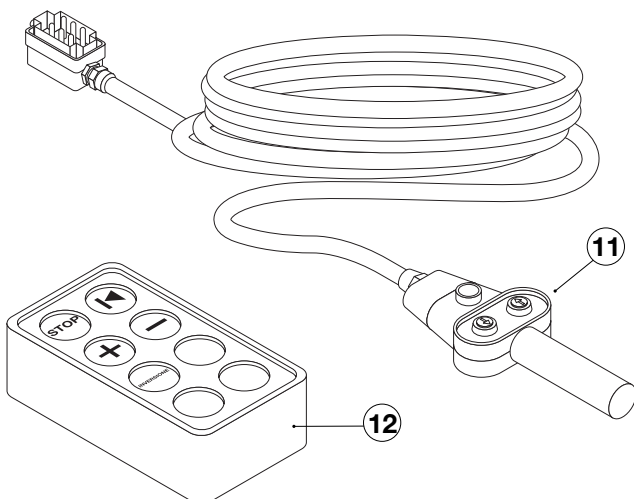
The PRO H CL consists basically of an hopper with built-in agitator which receives the mix and a worm gear pump for pumping the material.

The mix is unloading into the hopper, hence it is pumped by the worm gear pump to the place of use.

The pump output can be set by the buttons **(g3 - g4)** on the control panel.



The start/stop functions of the machine are controlled by the operator by means of a cable remote control **(11)** (standard) or by a radio remote control **(12)** (optional).



4.2 - PUMPABLE MATERIALS

Applications:

The PRO H CL pumps various materials such as:

- Cement slurries and bentonite mud.
- Self-leveling screeds.

Choice of the pump

2 different kind of pumps are available. Each one is suitable for a certain kind of materials:

STANDARD CONFIGURATION:

- 60.12 pump
(screw ref. 250.136, stator ref. 263.366)
for self leveling screeds, with granulometry 8÷10 mm.

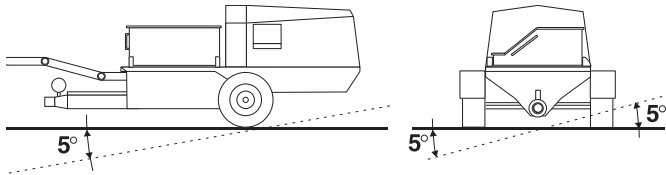
OPTION:

- 60.12 Plus pump
(screw ref. 250.168, stator ref. 263.416)
for self leveling screeds, with granulometry 14÷16 mm.

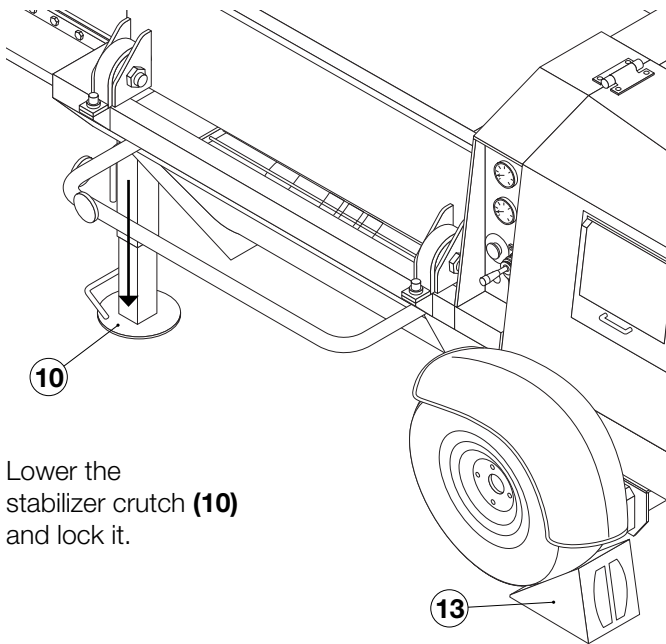
4.3 - PRELIMINARY OPERATIONS

Placing the machine

The machine must be placed in the most possible horizontal position. The maximum gradient allowed is 5° both sidewise and lengthwise.



The machine must be placed at a spot in the building site where you can better use the action radius of the mortar hoses.



Lower the stabilizer crutch **(10)** and lock it.

Block the wheels as indicated **(13)**.

Prepare all the material for cleaning the machine (water hose, washing sponge balls, etc.).



Make sure that you have at least 80 cm free space around the machine. This space must be free of holes and objects or dangerous protuberance

Hoses

Lay the hose and limit their length as much as possible (you reduce wear and tear), and check at the same time that they are in good order.

The first 10 m. of hoses oscillate a few cm. when pumping; it is better to keep these 10 m. above ground or in any case to make sure that they are not rubbing against corners or abrasive objects in order to prevent a premature wear of the hoses.



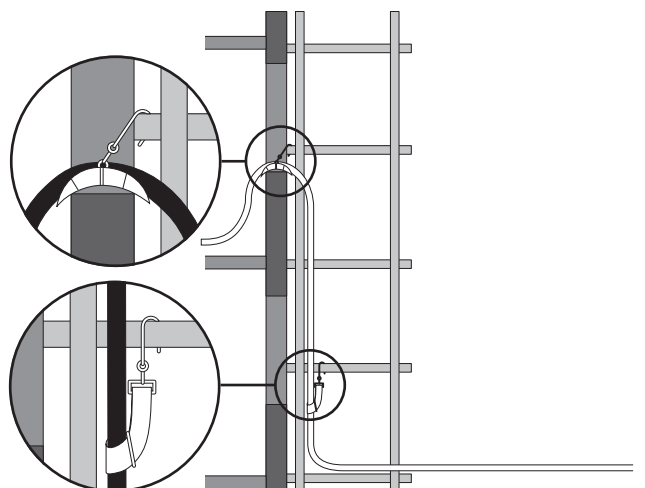
Use only original hoses and couplings.

The couplings must be mounted only by TURBOSOL PRODUZIONE S.p.A. or by authorized companies.

Under no circumstance shall TURBOSOL PRODUZIONE S.p.A. be held responsible for damages to persons and things deriving from the use of non original hoses and couplings.

Anchoring the hoses

The hose line must be properly anchored: use the hose-belts which come with the machine to anchor the vertical portions and eventually the appropriate hose-bend at the floor (optional - code 234.049 + 266.148 + 266.103 / two pieces).

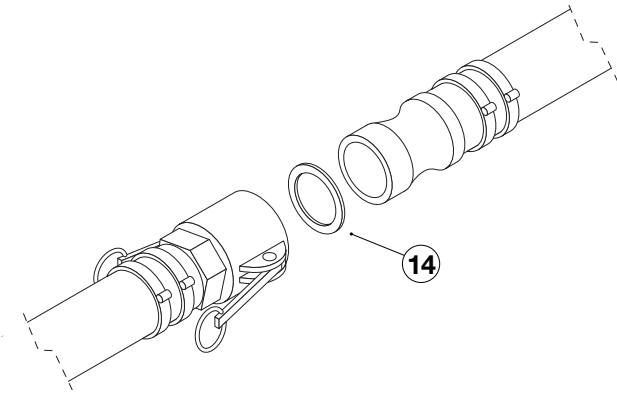


Coupling Devices

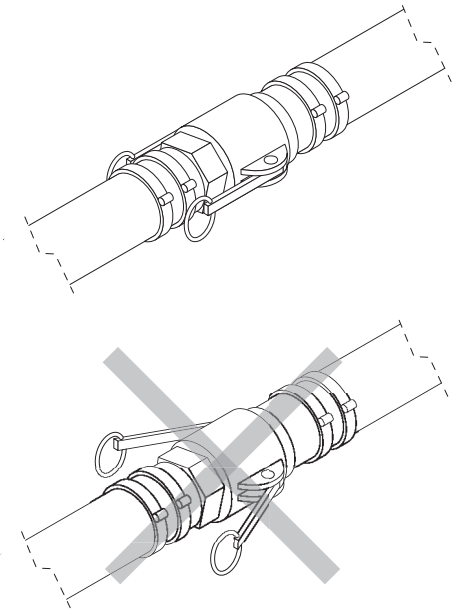
Check to be certain that the coupling devices are clean and in good working order.

•Cam-locks

When connecting the hoses together make sure that the rubber gaskets are mounted **(14)**.



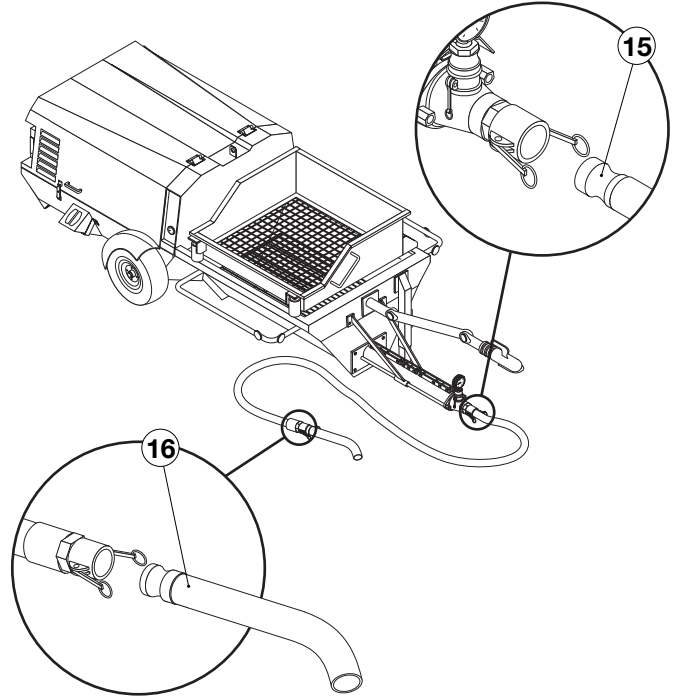
Lock the levers completely.



Hoses \varnothing 50 x 66 - lengths of 10 or 20 meters for a maximum pumpable granulometry of 0 to 16 mm.

Connections

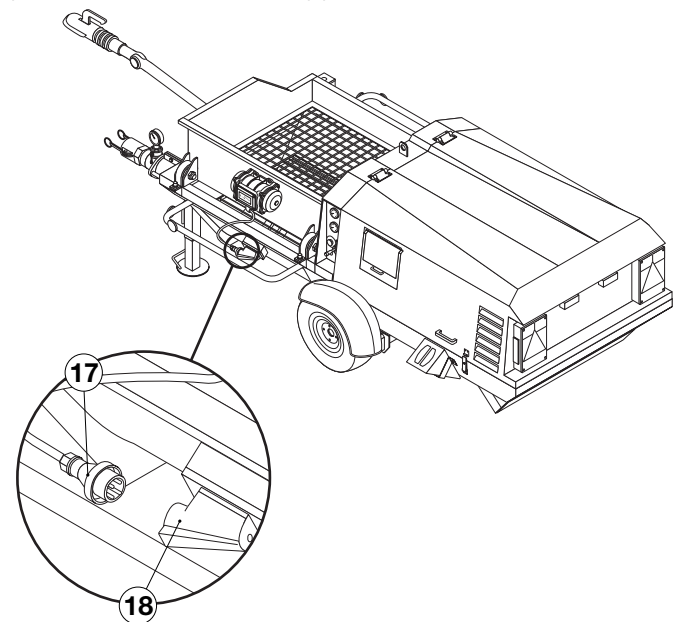
Connect the material hose **(15)** to the worm pump.



Then connect the delivery tube **(16)** at the end of the mortar hose.

Motor-vibrator kit (optional)

In case the machine is fixed with vibrating sieve connect the plug **(17)** of the electric vibrator to the socket **(18)** placed underneath the hopper.

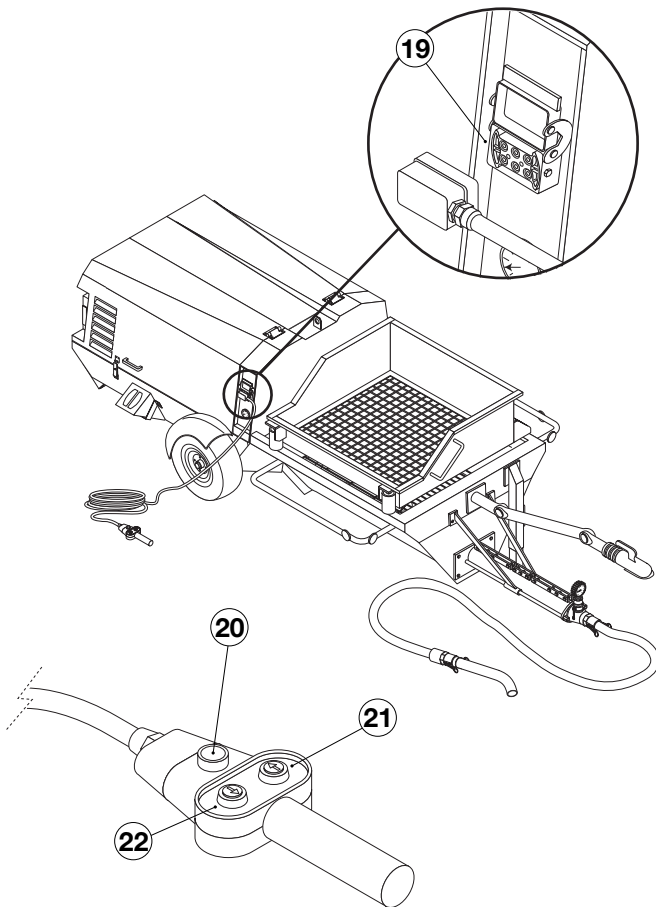


Cable remote control (standard)

In order to use the cable remote control is necessary to fix it to the connector **(19)** placed on the right side of the machine.

The start/stop button of the remote control **(20)** operates the machine.

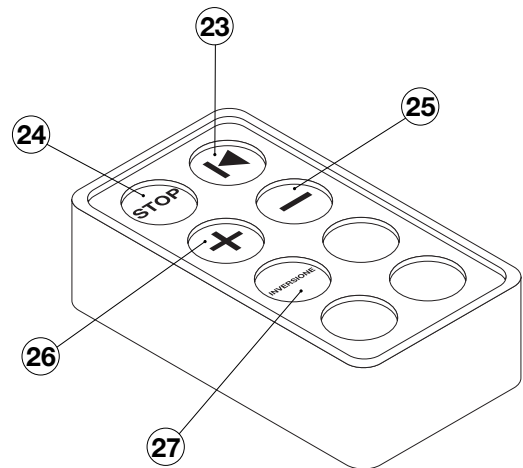
Regulate the output of the pump using the button **(21)** to increase it and the button **(22)** to decrease it.



RadioreMOTE control (optional)

If the machine is fixed with radioreMOTE control you should act as follows:

- on the button **(23)** in order to start the mortar pump,
- on the button **(24)** in order to stop it,
- on the buttons “-” **(25)** and “+” **(26)** in order to change the output,
- on the button **(27)** in order to reverse the sense of rotation of the mortar pump.



4.4 - OPERATION

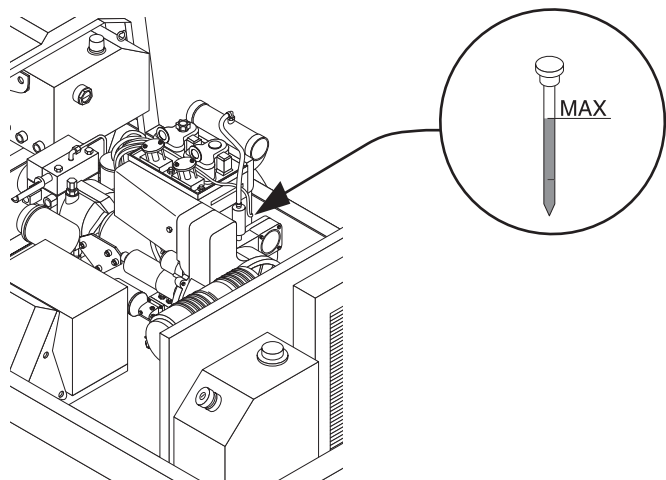
PRELIMINARY CONTROLS

Carry out the following controls:

• Engine oil level

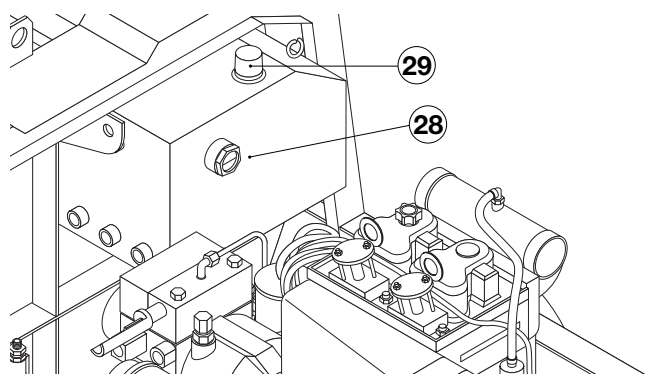
The level must be almost at the maximum.

Eventually refill with **ELF TURBO DIESEL 15W40**.



• Hydraulic circuit oil level (28).

For refilling (29) use **ELF OLNA DS46**



• Gasoil level

It is a good habit to refill the gasoil tank at the end of the shift in order to prevent condensation inside the tank.



After any maintenance or repair job make sure that every safety device (belt shield, fan grill) are mounted back and that you have forgotten nothing inside the engine compartment or in the hopper.

If you forget tools and rags inside the motor compartment this might cause the cooling fan to break-down.

• Check that the canopy is closed.



Make sure that the protection grill on the mixer and on the hopper is mounted and closed properly.

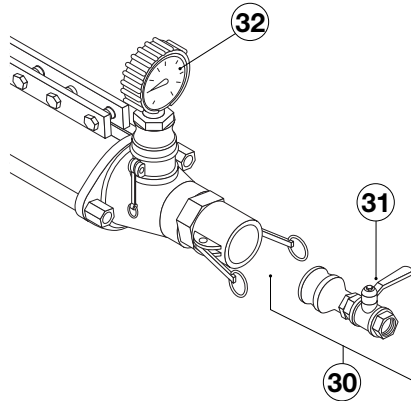


Before starting the machine make sure that nobody stands too close to it, t.i. within 1 meter.

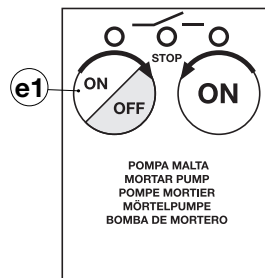
• Pump setting

If you have installed a new pump, and in any before starting a new shift it is advisable to check the setting of the pump by carrying out the following procedure:


- Mount the pump setting device **(30)** with the valve open;
- Fill-up the hopper with water;
- Close the valve on the pressure setting device **(31)**.



- Start the pump by pressing the **ON/OFF (e1)** button on the control panel;



- Read the pumping pressure shown on the pressure gauge mounted on the outlet collector of the mortar pump **(32)**.

 *The values must correspond, indicatively to the ones shown in the chart.*

- After a few seconds (ab. 10 seconds) stop the pump: you can now read the pump sealing pressure on the pressure gauge. This figure must be at least half of the pressure that you read previously when working with material.

CORRECT PRESSURE VALUES (indicative)

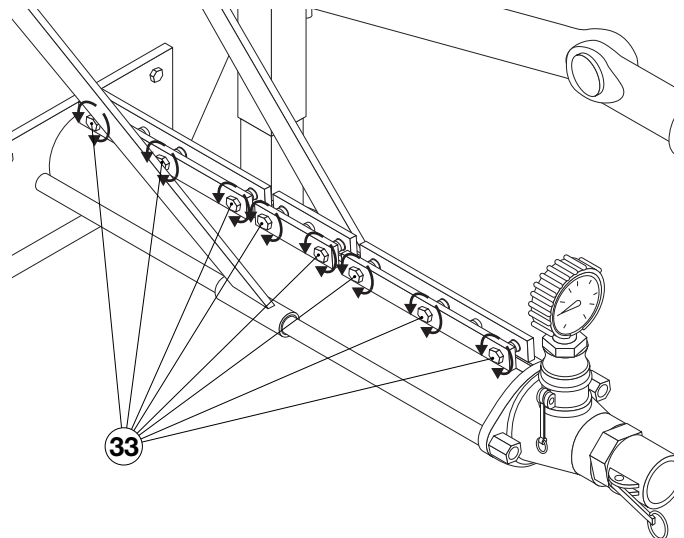
PUMP	HOSE LENGHT UP TO		
	40 m	50 m	60 m
60.12*	8 bar	10 bar	12 bar

* setting value.

For the pump 60.12 Plus (optional) check that the pressure reaches 8 ÷ 0 bars, in case you can not reach the before mentioned pressure you need to change the rotor and stator pump.

If the setting pressure values are different than the ones shown on this chart you must act on the nuts placed on the pump clamp **(33)**

- Clockwise: the setting pressure increases;
- Counter clockwise: the setting pressure decreases.



Repeat the setting operation until you get the regular pressure values.

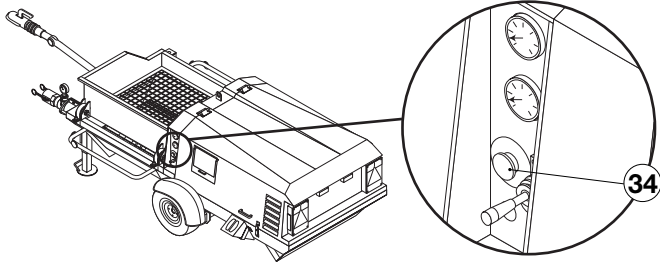
Remove the pump setting device **(30)** and connect the delivery hose.

If you cannot set the pump it is necessary to change the stator and eventual the screw as well.

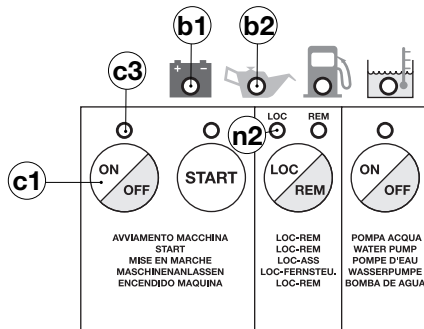
Starting machines

Fill-up the hopper with water in order to avoid that the screw turns dry.

Check that the emergency (**34**) button is not on.



- Start the machine by pressing the **ON/OFF (c1)** button for machine start located on the control panel.



The following indicator lights come on:

- ON/OFF machine start (**c3**) and LOC/REM (**n2**).

ProH x.x
READY

[T: 0175]
[-TEST-]

The Access Code

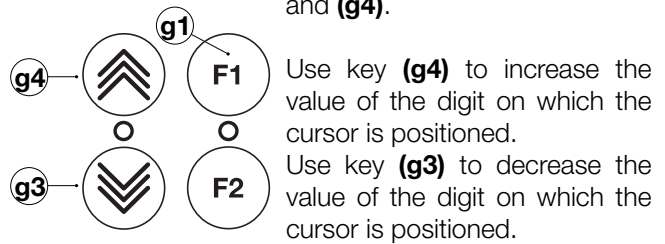
A request for the access code appears on the display as follows.

0000
Access Code

The four-digit access code, which is given to the user when the machine is delivered, must be specified in order to operate the machine. Once the code has been keyed in correctly it is valid for a certain time (3 hours) if the machine is not used.

To insert the code (e.g.: 5678), proceed as follows:

- Insert the first number of the code "5" using the keys (**g3**) and (**g4**).



Use key (**g4**) to increase the value of the digit on which the cursor is positioned.

Use key (**g3**) to decrease the value of the digit on which the cursor is positioned.

- Use key (**g1**) to store the number and shift the cursor to the right onto the next digit.
- Repeat the operation for the other digits.

After the last digit the code is automatically entered and the machine checks if it is correct.

If the code is incorrect, the procedure must be repeated from the beginning with a new start.

If the code is correct, proceed with starting the machine.

The following indications appear on the display:

Vbat: 12.5
Glow plugs heating

The battery voltage value is shown at the top, so that its charge can be checked.

Dopo un tempo di circa 15 secondi sul display appaiono le seguenti indicazioni:

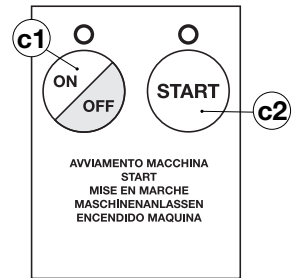
Vbat: 12.5
Motor On: START

The following indicator lights come on:

- engine oil **(b2)**
- and battery **(b1)**

- Press the **START (c2)** button and keep it pressed until the engine has started.

In any case do not keep the button **(c2)** pressed for longer than 15 seconds.




The engine oil and battery indicator lights go out and the display shows the value (from 1 to 100) of the reference voltage of the mortar flow control, in bar form and numerical value.

Reg: >||| < 20

If the machine does not start at the first attempt, wait 30-40 seconds, press the **ON/OFF (c1)** button and then press the **START (c2)** button again.


Attempt restarting 4-5 times at the most.

 *Too many attempts at starting should be avoided.*

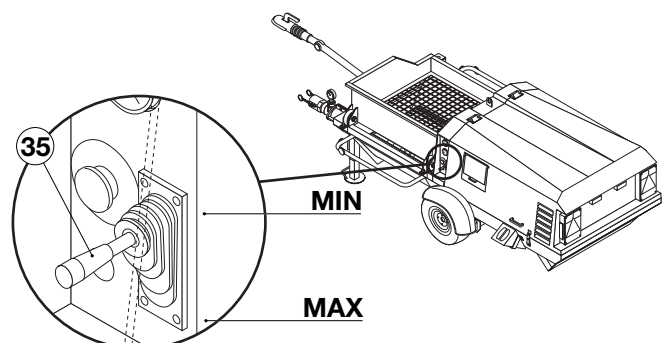
When the machine is ready to operate, the following indications appear on the display:

ProH x.x [T: 0175]
READY [xxxxxx]

The total time of operation of the machine, given in hours, is displayed top right.


 *This total time is used to indicate that "Maintenance" work should be carried out when the scheduled intervals have elapsed.*


Leave the machine idling for a few minutes in order to warm up **(35)**.



Transporting the mix

Empty the water left in the hopper by opening the plug at the bottom of the hopper.

 Use Nitrile gloves to protect yourself against cuts and abrasions. Preferably use models certified CE 940072.

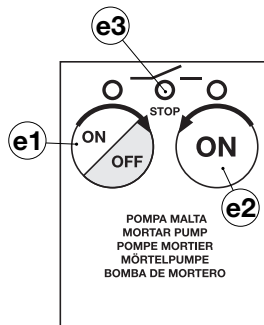
 Use goggles, possibly with polycarbonate break-proof lenses, to protect your eyes.


Place the mix into the hopper:

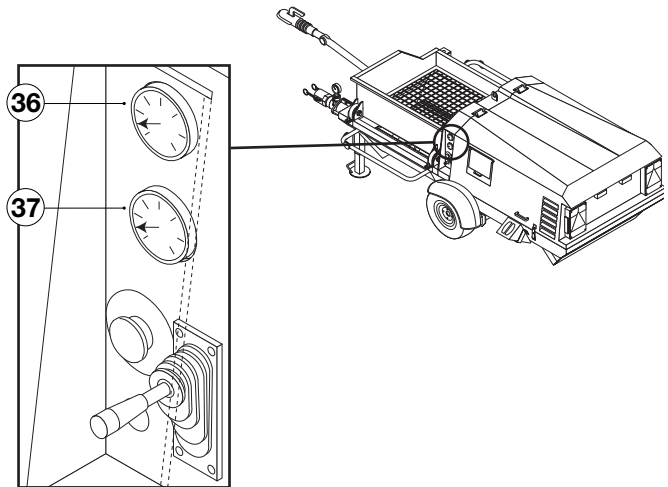
- Start the pump by pressing the **ON/OFF** button (**e1**): the pump starts pumping the material slurry previously poured into the hopper.

The direction of rotation of the mortar pump may be reversed.

With the button (**e1**) **ON/OFF** pressed, press the key (**e2**) **ON**, which maintains the reverse direction of rotation as long as it is held.



 The red light (**e3**) goes on when the safety grill in the hopper is open. When the red warning light is on the agitator stops.



The pressure gauge (**36**) indicates the pressure of the auxiliary pump that has to be of 20 bar, in case that the machine is without the high pressure water cleaner (optional).

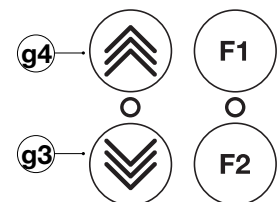
When equipped with high pressure water cleaner, the pressure gauge (**36**) indicates its hydraulic pressure.

On the pressure gauge of the mortar pump (**37**) you can read the working pressure of the hydraulic system. The pressure can vary from 60 a 120 bars depending on the material used.

- Adjust the pump flow rate to the required value using the “arrow” buttons (**g3-g4**) located on the control panel.

Button (**g4**) increases the flow rate.

Button (**g3**) decreases the flow rate.



The flow rate is indicated on the display with a value from 0 to 100 and with a 10-segment bar.

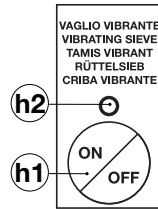


Keep the buttons (**g3**) or (**g4**) pressed for fast increase or decrease of the value.

Vibrating sieve

Start the electric vibrator (optional) of the vibrating sieve by pressing the relative button **(h1) ON/OFF**.

If the indicator light **(h2)** is on, this means that the electric vibrator is in operation.



The vibrating sieve cannot be operated continuously but for just one and a half minutes at the most every five minutes (it stops automatically after one and a half minutes).

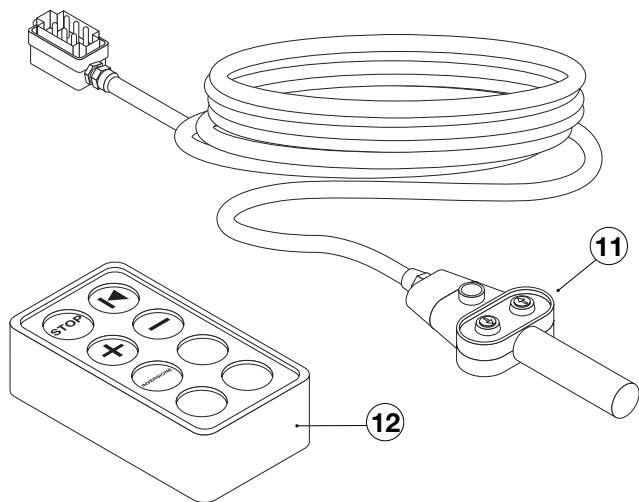
- **STAND-BY**

If the machine is left idle for more than 15 minutes, it automatically goes into stand-by.

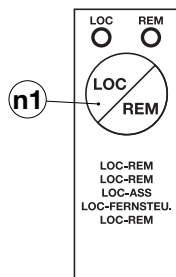
In this mode the liquid crystal display and all the LEDs are shut down to minimise consumption.

To exit from stand-by just press any key on the control keyboard.

The remote control of the machine is done by means of a cable remote control **(11)** with 4 functions or radio remote control **(12)** with 5 functions. *(optional)*.



To operate with the electric remote control or radio control, the button **LOC/REM (n1)** must be put to the **REM** position.

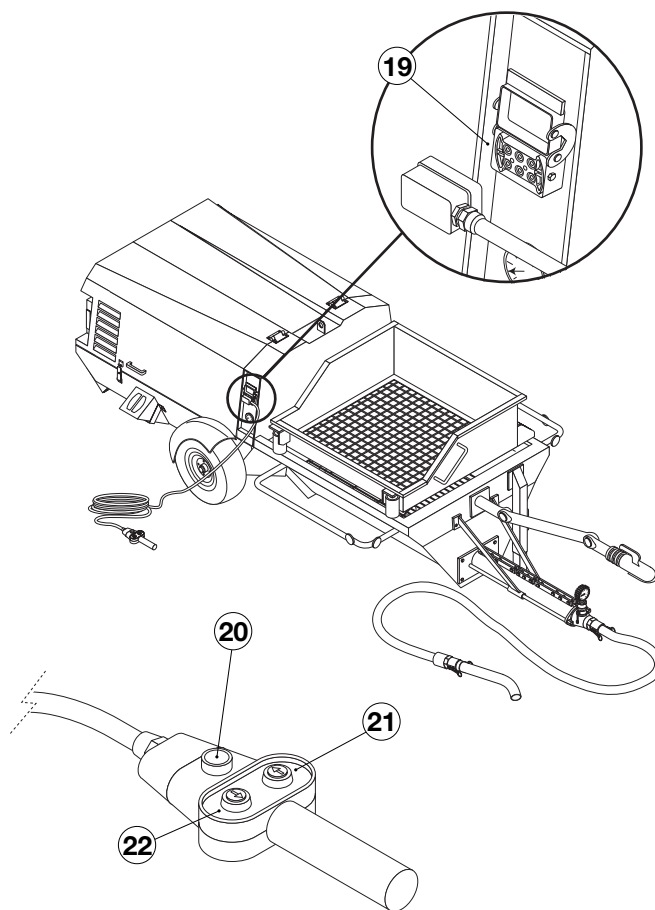


Electric remote control (standard)

To operate with the electric remote control, it must be connected to the connector socket **(19)** located on the right side of the machine.

The remote control start/stop button **(20)** activates the mortar pump.

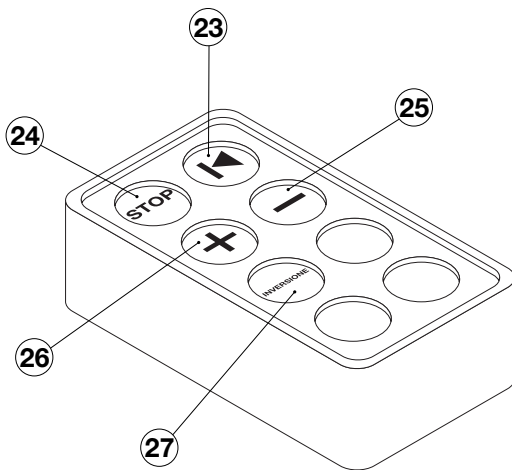
Adjust the pump flow rate with button **(21)** to increase it or **(22)** to decrease it.



RadioreMOTE control (optional)

If the machine is fixed with radioreMOTE control you should act as follows:

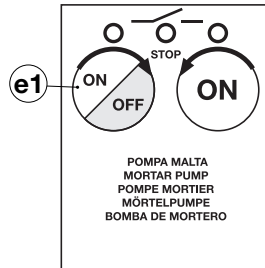
- on the button **(23)** in order to start the mortar pump,
- on the button **(24)** in order to stop it,
- on the buttons “-” **(25)** and “+” **(26)** in order to change the output,
- on the button **(27)** in order to reverse the sense of rotation of the mortar pump.





4.5 - CLEANING AT THE END OF THE WORK

Pump the last mix and once you start seeing the agitator shaft stop the pump.

Shut down the pump by pressing their respective **OFF** buttons (**e1**).

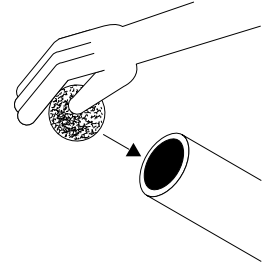


 *Before loosening a joint on the material delivery hose or disconnecting the delivery tube, ensure that the pressure gauge shows 0 (zero) pressure and that there is no residual pressure in the hose.*

 *The operator must be carefully trained before doing this operation. Before the opening of a coupling, check that there is no pressure inside the hoses and that no one stands too close to the hoses. This operation, that could be dangerous, must be carefully carried on by qualified personnel.*

Disconnect the delivery hopper and clean it properly.

Disconnect the mortar hose from the mortar pump and insert a cleaning sponge ball at the beginning of it.



Open the hopper plug. With a jet of water you must first clean the mixer and later the vibrating sieve.

Close the hopper plug and fill it with water. Start the pump and pump water until it comes out clean. Stop the pump.

Connect the hoses to the pump. Start the machine and pump water until the washing sponge balls come out from the other end of the hoses,

If the sponge ball does not come out it means that the pressure given by the pump is not sufficient.

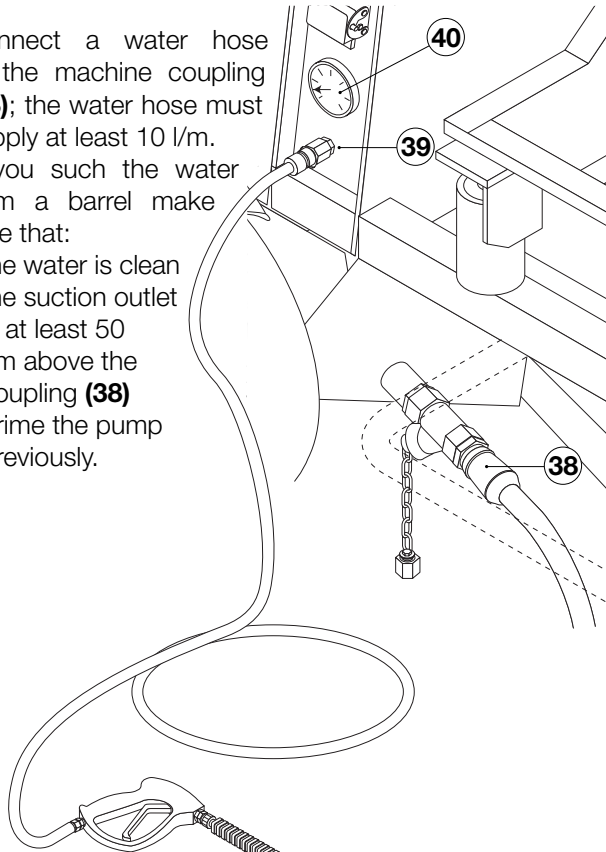
A worm gear pump develops much more pressure with mortar than with water, therefore you should tighten the stator clamp until you achieve the necessary pressure to push out the washing sponge balls.

Hence reset the stator clamp to its original position. If the hoses are not yet clean, repeat this operation.

The machine can be fitted with a **high pressure water pump** (optional).

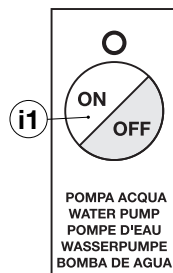
By using it for washing the machine:


- Connect a water hose to the machine coupling **(38)**; the water hose must supply at least 10 l/m. If you such the water from a barrel make sure that:
 - the water is clean
 - the suction outlet is at least 50 cm above the coupling **(38)**
 - prime the pump previously.



- Connect the lance with its delivery hose to the coupling **(39)**. The lance can be used in short or long version. It is supplied with a normal straight nozzle and with a Turbo nozzle (the latter is very useful to clean surfaces).

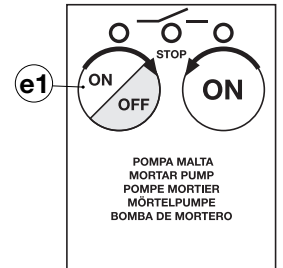
- Start the pump **(i1)** by pressing the **ON** button at the control panel. You will read a pressure of 100 bar on the pressure gauge **(40)**.
- Clean the machine as instructed.



 Do not ever point the water jet at people. Use suitable protections, especially for hands and eyes. Do not ever point the water jet at electrical components.

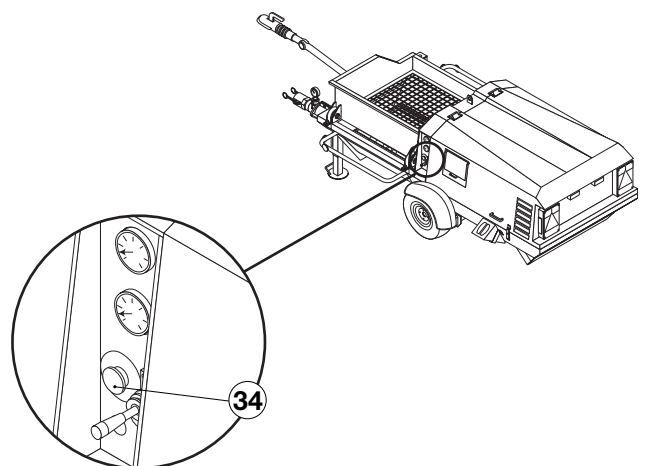
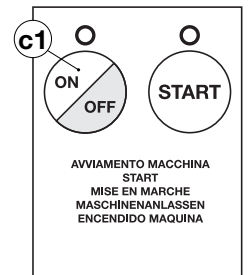
Before stopping the machine it is necessary to:

- Shut-down the mortar pump **(e1)** by pressing **ON/OFF** button.



- Let the machine run at idle speed for a few minutes.


At this point turn off the machine by pressing the starting button **ON/OFF (c1)** on the control panel.




 In case an **emergency stop** gets necessary press the red on yellow background button **(34)**.

4.6 - CHANGING THE PUMPING GROUP

In order to replace the pump group proceed as follows:

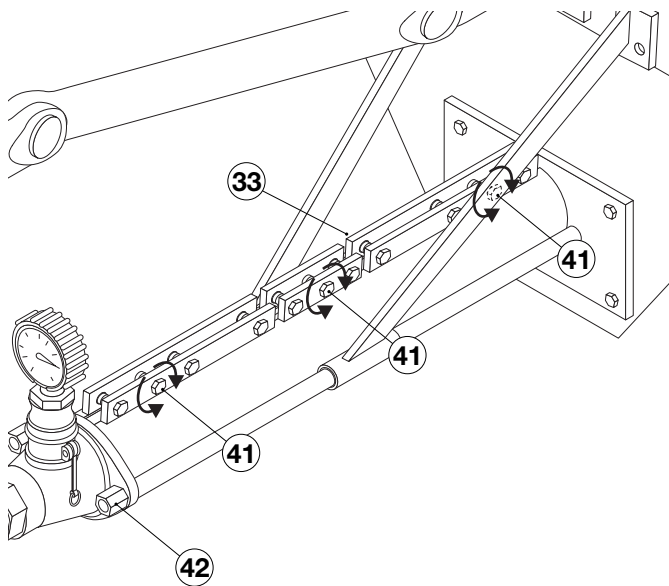
 **Before performing this operation stop the pump and than shut-down the engine.**

 *The operator must be carefully trained before doing this operation.*


Before the opening of a coupling, check that there is no pressure inside the hoses and that no one stands too close to the hoses.

This operation, that could be dangerous, must be carefully carried on by qualified personnel.

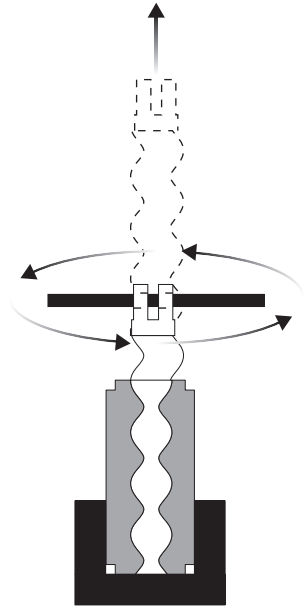
- Raise the vibrating sieve, the protection grill in the hopper and lock it by using the hook.
- Remove the fixing screw between the worm and the agitator shaft.
- Fully loosen the clamp regulation bolts **(33)** and then enlarge the clamp using the two relative screws **(41)**.



- Remove the material outlet collector by loosening the nuts **(42)** on the two rods.

 Take the stator / rotor assembly and put it in a vice, block the stator and with a 12 mm rod of suitable length (80 cm) threaded into the worm fixing eye to the cardan coupling of the agitator shaft unscrew the worm until removing it.

Check if the be worm is still usable (there must not more than 3 mm wear) and if necessary change the rotor together with the stator.



You may check this data by laying the rotor on an horizontal plane and by checking that the edges of the screw **(43)** are not further than:

- 78 mm for the 60.12 worms.

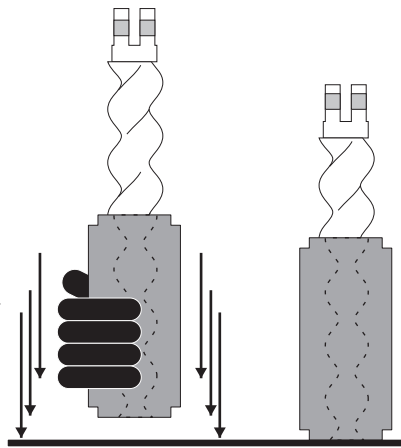


For mounting the worm smear it well with Vaseline or tire grease (do not absolutely use mineral oil or grease).

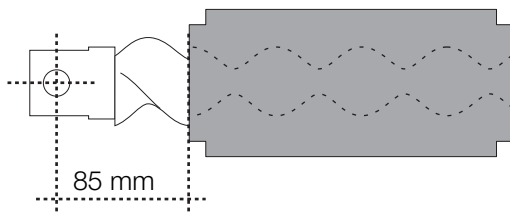
The stator would be damaged beyond repair and than with the same procedure that use to disassemble the lot refit the worm inside the stator.

The stator must be mounted with the embrasure side towards the hopper.

If the assembly is impossible with this procedure, take the group with the worm partially inserted and bang it on the floor several times.



Check that the distance between the worm bolt orifice and the rotor is of at least 85 mm.




- Remount the stator clamp.
- Remount the outlet collector and fix it strongly with the two rods.
- Unhook and lower the protection grill in the hopper.
- Start the engine.

Set the pump pressure as described at page 17.

5 - MAINTENANCE OF THE MACHINE

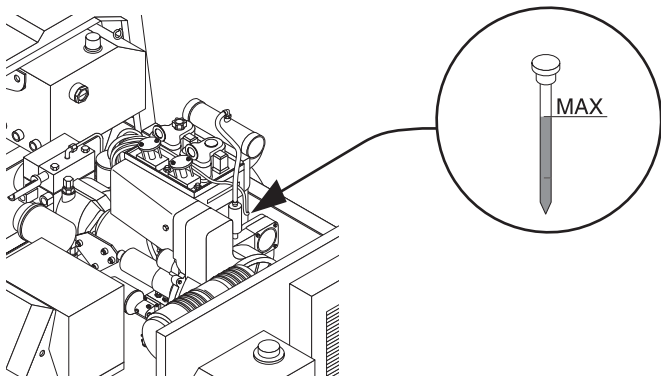
5.1 - OPERATIONS FOR WHICH THE OPERATOR IS RESPONSIBLE

 The essential data for a correct maintenance of the machine are listed hereunder. More detailed indications regarding the maintenance of the diesel engine are listed in its use and maintenance booklet. This booklet must be read carefully by the machine operator, together with this manual before starting to operate the machine.

Daily maintenance operations

Before starting work

- **Check the engine oil level,** and eventually refill with “multigrade”



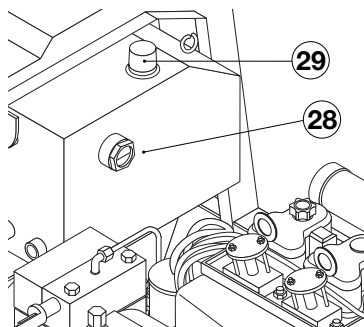
ELF TURBO DIESEL SAE 15W/40 oil.

- **Check the hydraulic oil tank level (28)**

if the level is not constant the leaks must be found and eliminated:

Have some qualified mechanic do this operation.

For the refill (29) use **ELF ONDA DS 46** oil.



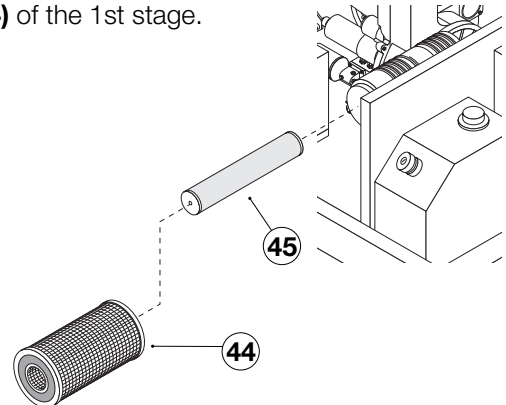
- **Gasoil level check**

Check the gasoil level.

It is a good habit to refill the gasoil tank at the end of the shift in order to prevent condensation inside the tank.

- **Check engine air filter**

This filter is composed of two cartridges (1st and 2nd stage). Unscrew the bolt to check them and take off the cartridge (44) of the 1st stage.



In case of dust on the 2nd stage cartridge (45), take it off too by unscrewing the bolt.

Beat lightly and repeatedly the 1st stage element on a hard surface to take off the dirt.

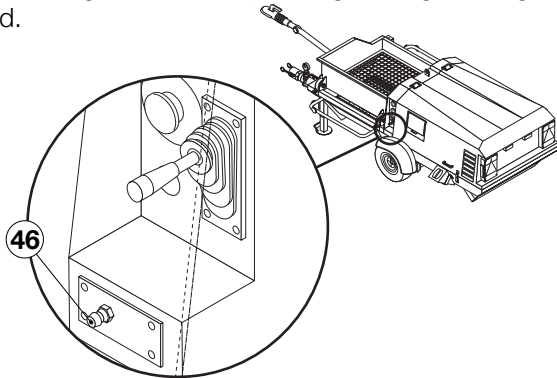
Do not clean the filtering element of paper with compressed air.

The 2nd stage cartridge can be cleaned many times with compressed air but never washed.

Clean the lid and the filter support.

At the end of the work

- Grease the agitator **(46)** by using the grease gun delivered.



For a successful result of this operation the grease must come out from the seals. In you forget to run this operation the seals and the support will deteriorate quickly (within a few days).

The operator must also ensure that authorized personnel carry out the programmed maintenance tasks listed hereafter.

The manufacturer declines every responsibility for consequences deriving from failing to respect the maintenance chart or for any operations that are carried out by the operator instead of by authorized personnel.

5.2 - MAINTENANCE TO BE PERFORMED BY AUTHORIZED PERSONNEL

SERVICING

The machine is programmed to indicate when periodic maintenance is required:

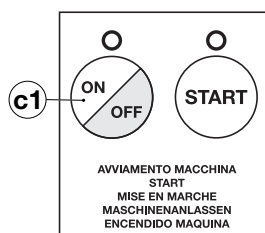
- the first work is scheduled after 50 hours of operation,
- subsequent work is envisaged at specified intervals (normally 125 hours).

When the maintenance interval has elapsed the machine indicates the need for work with the message "MAINTENANCE" on the display.

ProH [T: 0175]
MAINTENANCE

This message remains active for 8 hours, after which it disappears automatically.

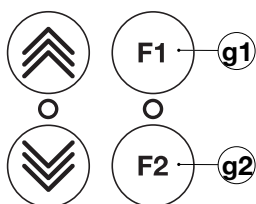
To delete the warning after having carried out the maintenance work, proceed as follows:



- press the **(c1) ON/OFF** start button
- insert the access code (see page 18)
- press the button **F2 (g2)** before starting the engine, the following warning appears:

Vbat: 11.4
F1 = Maintenance OK

Press the key **F1 (g1)** to initialise maintenance again, thereby making the message disappear.
Press any other key to return to the original display page.



MAINTENANCE OPERATIONS AFTER 50 HOURS

After 50 hours you must run a first control on the machine.

READ ALSO THE USE AND MAINTENANCE BOOKLET OF THE ENGINE.

- Change the engine oil
- Change the engine oil filter
- Change the gasoline filter
- Change the hydraulic oil filter
- Change the compressor oil
- Check the seal of the motor (eventual leaks)
- Check the tightening of the safety and stop bulbs.
- Check the valve adjustment and if necessary regulate them (see instruction on the engine manual)
- Check the motor support and if necessary tighten them (see instructions on the engine manual)
- Check the V belts and if necessary tighten them.

Operations to be carried out MONTHLY or at EVERY 125 HOURS

- Change the engine oil.
- Change the gasoil filter.
- Change the engine oil filter.
- Check the accumulator: tighten the brackets, check the level and density of the electrolyte (see instruction on the engine manual).



The gases emanated by the accumulator are explosives! Avoid provoking sparks near the battery! Make sure that the electrolyte does not come in contact with the skin or the clothes.

- Check the accumulator charge
- Check the seals
- Check the elastic coupling of the agitator shaft
- Check the safety devices on the hopper grill
- Check the setting of the pressure switch and of the air system max. exhaust valve
- Check the efficiency of the material pressure gauge
- Check the efficiency of the emergency stop
- Check and if necessary clean the radiator of the engine oil (see instructions on the engine manual);
- Check and if necessary clean the hydraulic oil radiator: the radiating surface of the radiator must be cleaned with compressed air mixed, if possible, with a non flammable solvent, sprayed through the cooling wings.

Operations to be carried out EVERY 2 MONTHS or at EVERY 250 HOURS.

- Change the air filter.
- Check the tensioning of the alternator belt.
- Check the injectors.
- Check the efficiency of the safety devices.
- Check the hydraulic system.

Operations to be carried out EVERY 6 MONTHS or at EVERY 500 HOURS.

- General check of the machine.
- Clean and set the injectors.
- Check the flexible gasoil and oil pipes.
- Check the efficiency of the material pressure gauge.
- Check the pipes of the hydraulic system.
- Check the efficiency of the control panel.
- Change the hydraulic oil filter.

Operations to be carried out YEARLY or at 1000 HOURS

- Change the hydraulic oil.

6 - TROUBLE SHOOTING

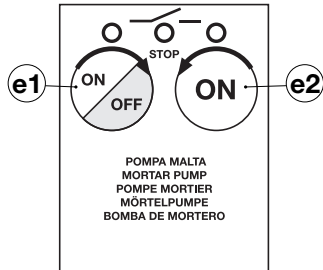
6.1 - FAULTY MIX

A wrong mix or a very long pause can cause a blockage inside the material hose; no mortar comes out from the spray gun and the material pressure gauges shows a pressure that is superior to the normal working pressure.

The “normal working pressure” depends on the material and on the hoses that you are using; it is advisable to read regularly this data on the material pressure gauge in order to be able to promptly point out eventual anomalies.

In this case stop the pump by pressing the button **ON/OFF (e1)**.

Release the pressure in the material delivery hose by running the pump at reverse for a few seconds: reverse the rotation of the pump by pressing the button **ON (e2)**.



Try to re-start.

Keep the working pressure under control and stop the machine instantly if the pressure goes beyond the normal value.

This would mean that the hose is still blocked.

Stop the pump and release the pressure in the material delivery hose by running the pump at reverse (**e2**) for a few seconds.



Always release the pressure from the hoses by running the pump at reverse for a few seconds (5 ÷ 10) before disconnecting them.

The material pressure gauge pointer must show a pressure of 0 bar.



The operator must be carefully trained before doing this operation.

Before the opening of a coupling, check that there is no pressure inside the hoses and that no one stands too close to the hoses.

This operation, that could be dangerous, must be carefully carried on by qualified personnel.

Stop the pump.

Find out where the material hose line is plugged; in this point the hose is hard and rigid. The most critical points are near the couplings.



Disconnect the plugged hose, hit with an hammer near the extremity of the plug to break the “plug” until the hardened material comes out.

Start the pump for a few moments and make sure that the hose is free from “plugs”; the material comes out normally.

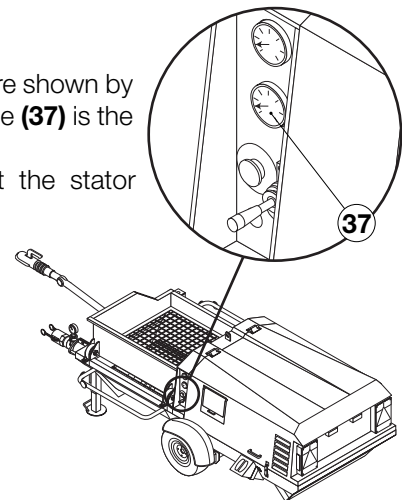
Pour some cement slurry inside the hose before the point where you had found the “plug”, connect the hoses and start working again. If the material left inside the hopper is not pumpable you must empty it.

Stop the pump by pressing the button (**e1**), open the grill in the hopper and fix it with its hook; empty the hopper with a trowel.

Open the hopper tap and with a water jet wash all the material out. Hence close the tap, lower and fix the grill in the hopper, make the correct mix and start again. A stator that is not properly might not push the material to the gun or it might create a blockage at the beginning of the hose by overheating the material.

In this case the pressure shown by material pressure gauge (**37**) is the working pressure.

It is necessary to set the stator (page 17).



If during work the material surges at the delivery hopper, check that there is material inside the hopper.

6.2 - OPERATOR INTERVENTION

PROBLEMS	CAUSES	REMEDIES
Mortar pump blocked (oil pressure gauge shows 210 bar)	Stator clamp too tight.	• Allentare strettore.
	Working pressure too high.	• Modificare l'impasto o ridurre la lunghezza delle tubazioni o utilizzare tubazioni di diametro maggiore.
No material comes out from the delivery hopper	Hose plugged.	• Impasto non corretto, modificare l'impasto. • Sosta troppo prolungata, ridurre i tempi di sosta. • Statore non registrato correttamente, registrare strettore.
	Stator wrongly set.	• Registrare strettore

6.3 - INTERVENTION BY AUTHORIZED PERSONNEL

For anomalies that are different from the ones previously mentioned, contact the authorized after sales service.

7 - RESPONSIBILITY OF THE OPERATOR

The **PERSON IN CHARGE** of the machinery is responsible for assuring that whoever operates such machinery is well aware of the instructions contained in this use and maintenance manual, and in particular that said operator has received special training in the proper execution of those operations marked in the manual by the following symbol:



The warranty offered by the manufacturer becomes null and void if this machinery is not used in accordance with the instructions in this manual. In addition, this manual must always accompany the machine.

The machine's operator must be thoroughly taught and trained in regard to the operation and use of the machine itself and must sign this use and maintenance manual on the line reading "read and approved". If this procedure is not complied with, the operator is prohibited from using this machine.

Signature of the **PERSON IN CHARGE**

read and approved _____

read and approved _____

read and approved _____

Signature of the **OPERATOR**

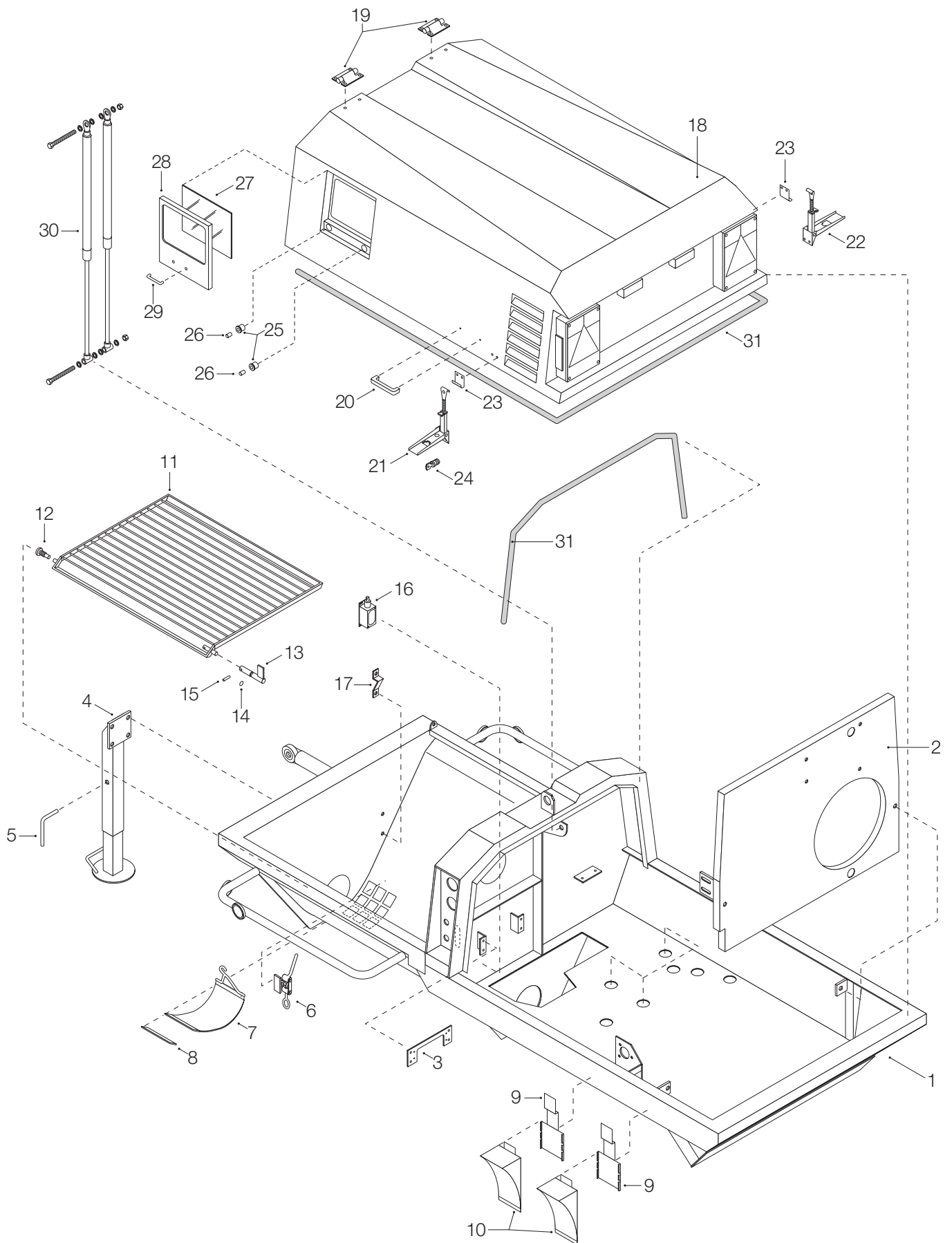
read and approved _____

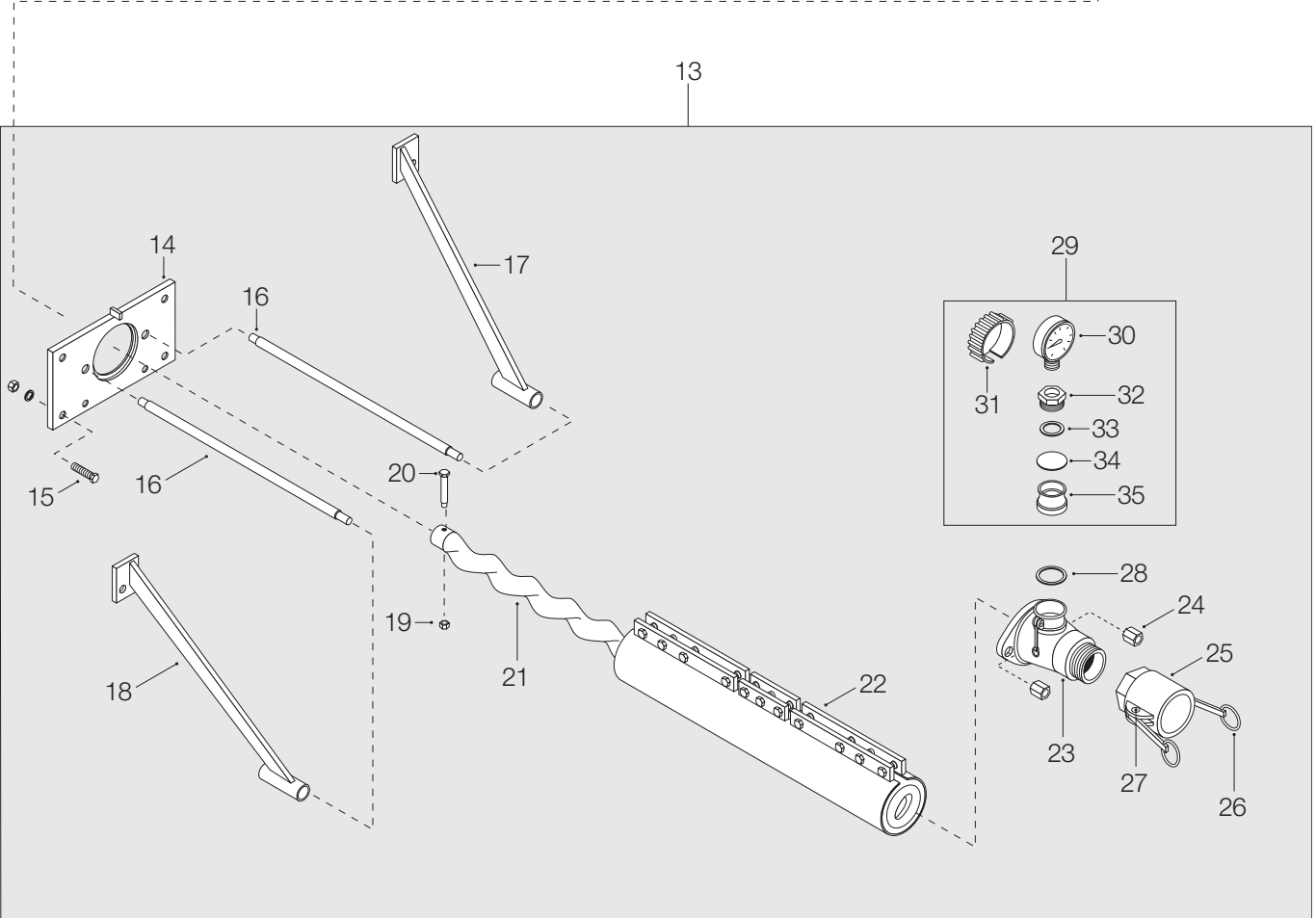
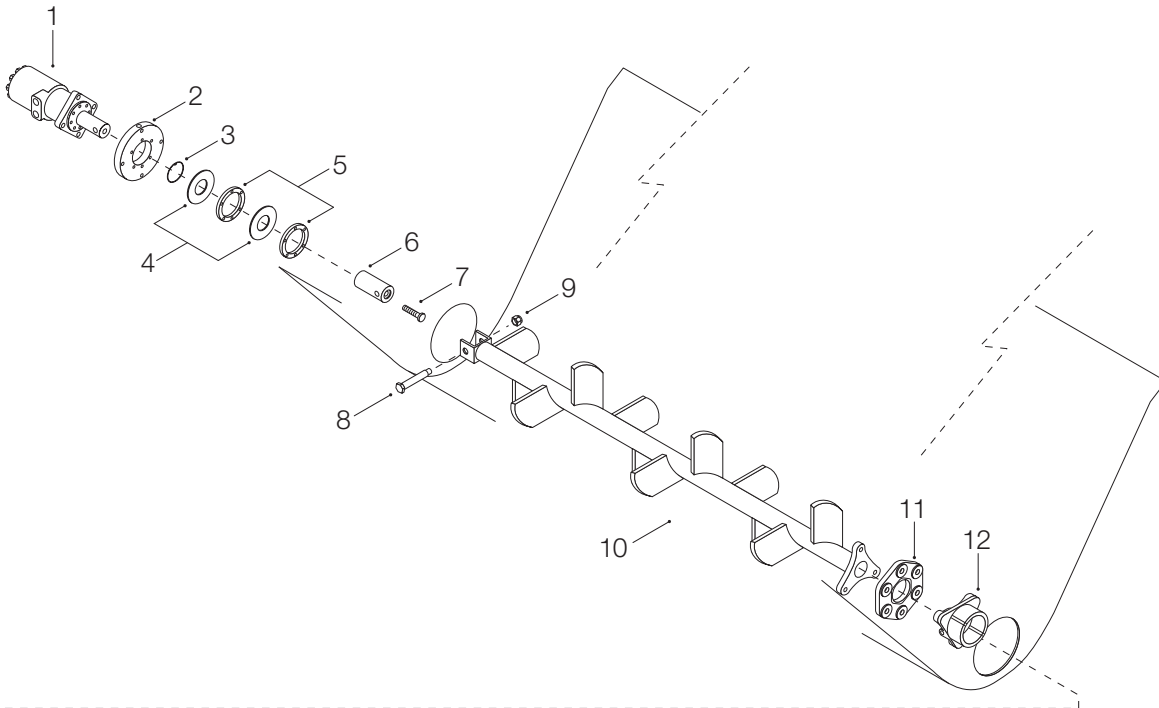
read and approved _____

read and approved _____

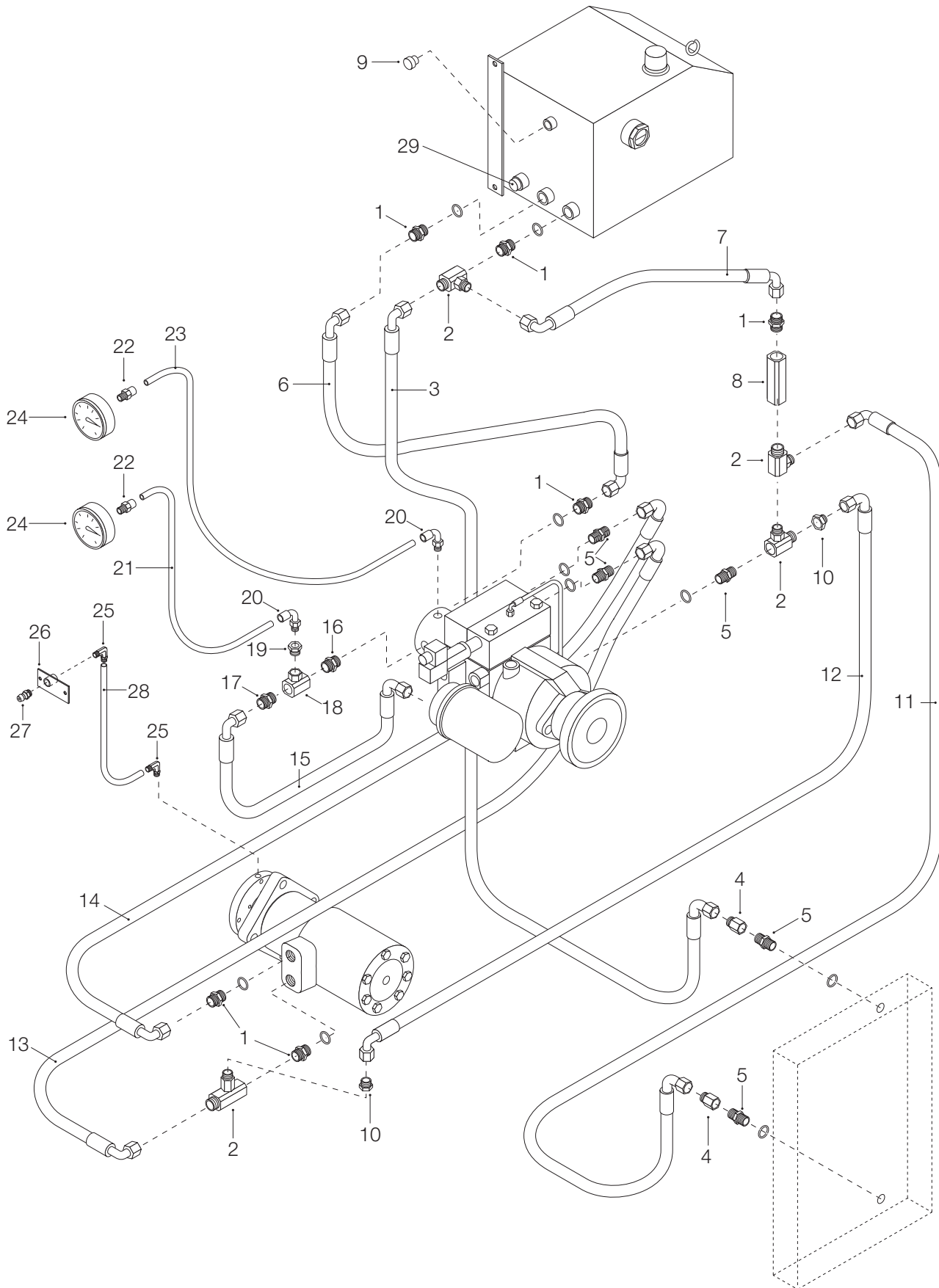
SPARE PARTS GENERAL CATALOGUE



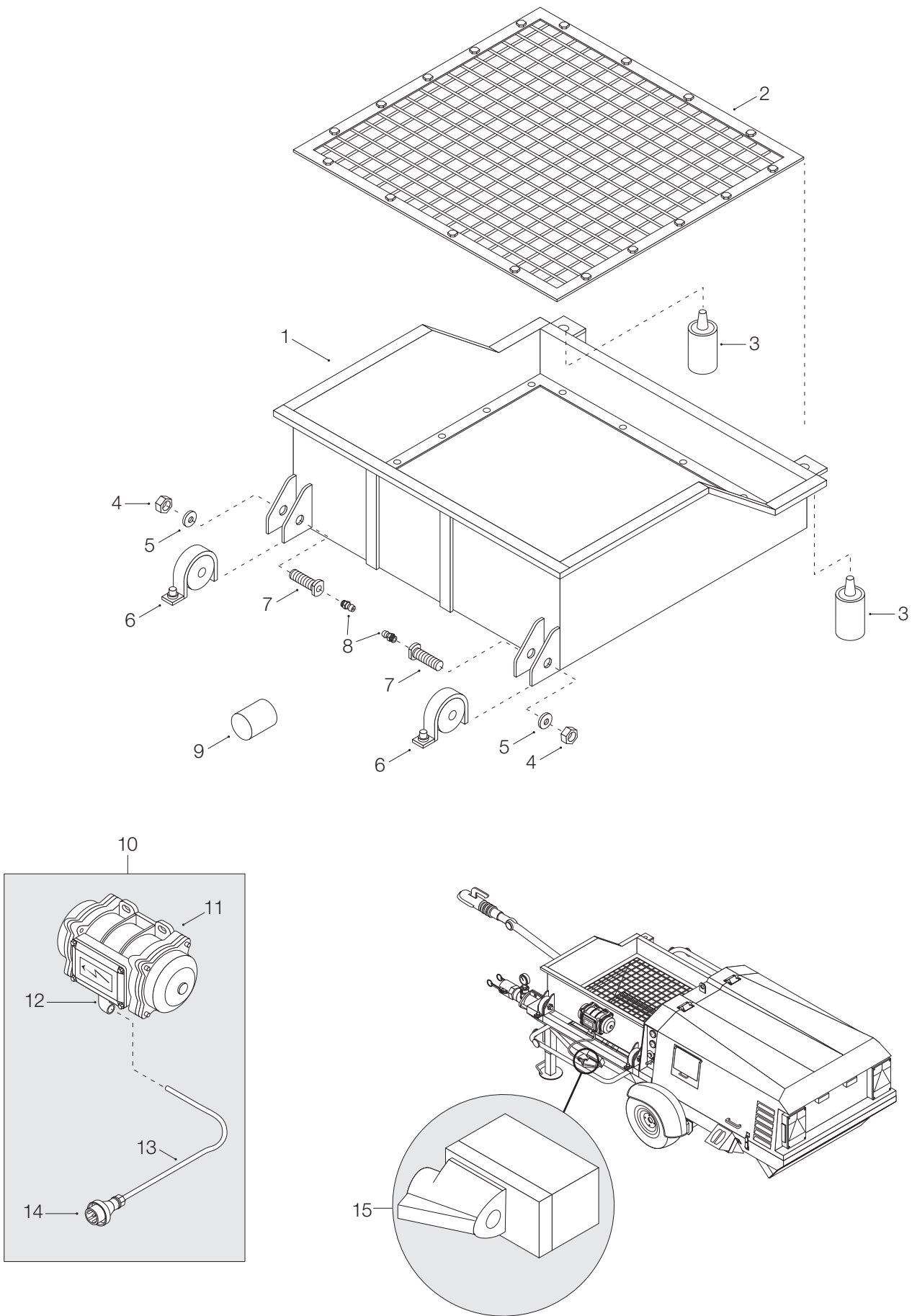


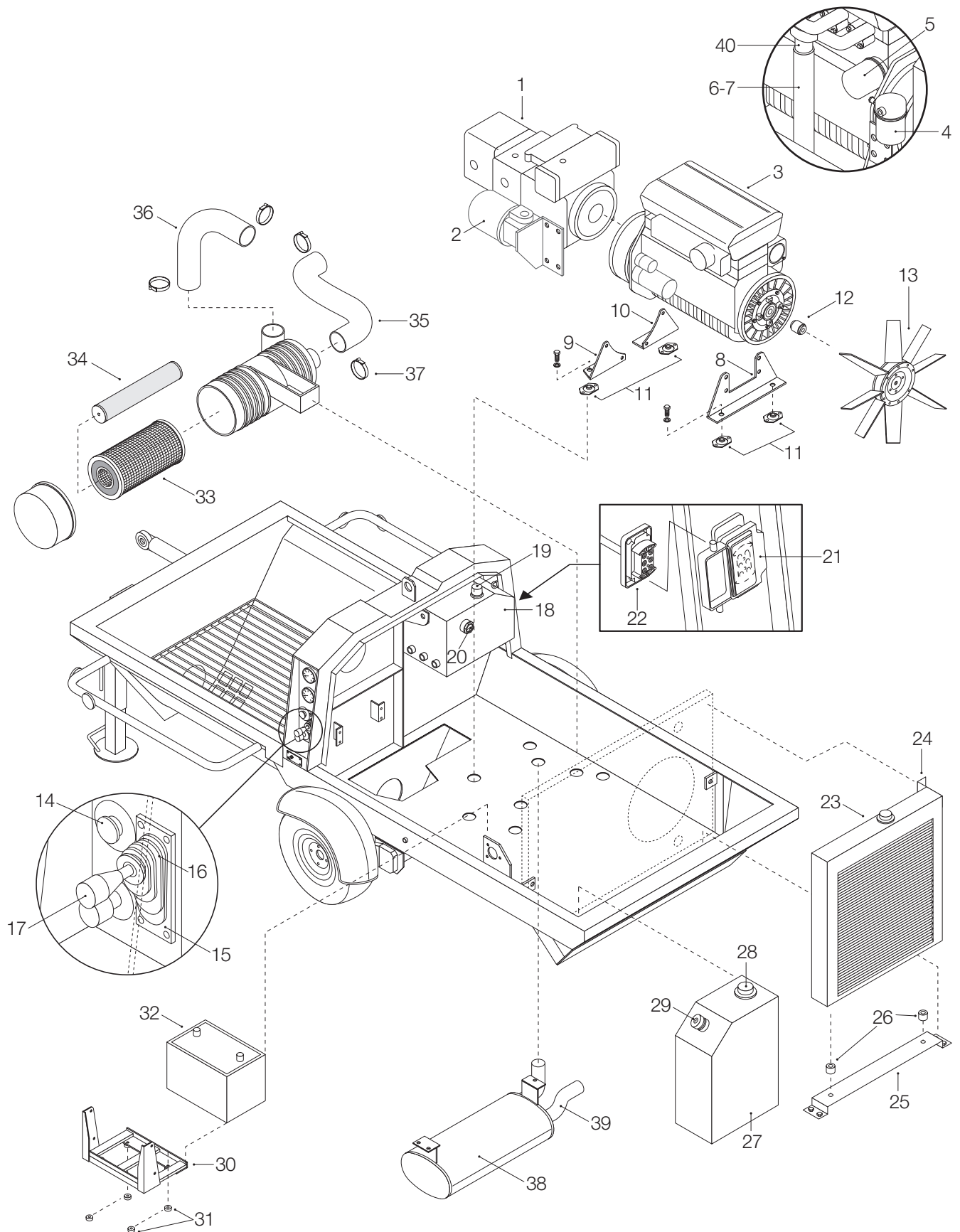


NP	N° REF	Q.TY	DESCRIPTION
1	212.879	1	Motor for cylindrical shaft
2	241.386	1	Hopper coupling flange
3	263.104	1	Seal ring 55 x 72 x 10
4	248.065	2	Seal gasket
5	245.106	2	Galvanized gasket stopper
6	251.294	1	Hopper agitator hub
7	540.090	1	Screw TCEI M8 x 30
8	266.289	1	Agitator screw TE M18 x 100
9	542.024	1	Self-locking nut M18
10	220.139	1	Agitator command worm gear
11	264.101	1	Elastic joint
12	264.102	1	Cardan joint
13	216.523	1	Pump for self levelling floors 60.12 - complete
14	242.087	1	Flange for pump 60.12
15	540.060	4	Screw TE M14 x 40
16	251.395	2	Pump rod M16 x 713
17	227.506	1	Support for right pump rod
18	227.505	1	Support for left pump rod
19	542.021	1	Self-locking nut
20	266.223	1	Fixing screw for worm gear TE M12 x 94
21	250.136	1	Worm gear 60.12
22	263.366	1	Stator 60.12
23	223.279	1	Delivery collector
24	542.051	2	Exagonal nut M16
25	266.165	1	Coupling F - DN50 - 2"
26	251.178	2	Lever for cam-lock coupling
27	543.002	2	Elastic pin Ø 6 x 35
28	237.078	1	Gasket DN50
29	216.411	1	Gauge pressure group DN25
			(30) code 212.109 n° 1 Gauger Ø 63
			(31) code 263.158 n° 1 Gauger - cover Ø 60
			(32) code 251.250 n° 1 Galvanized reduction 1" 1/2 - 1/4"
			(33) code 245.110 n° 1 Ring for diaphragm
			(34) code 247.110 n° 1 Gauge diaphragm
			(35) code 245.109 n° 1 Quick coupling head

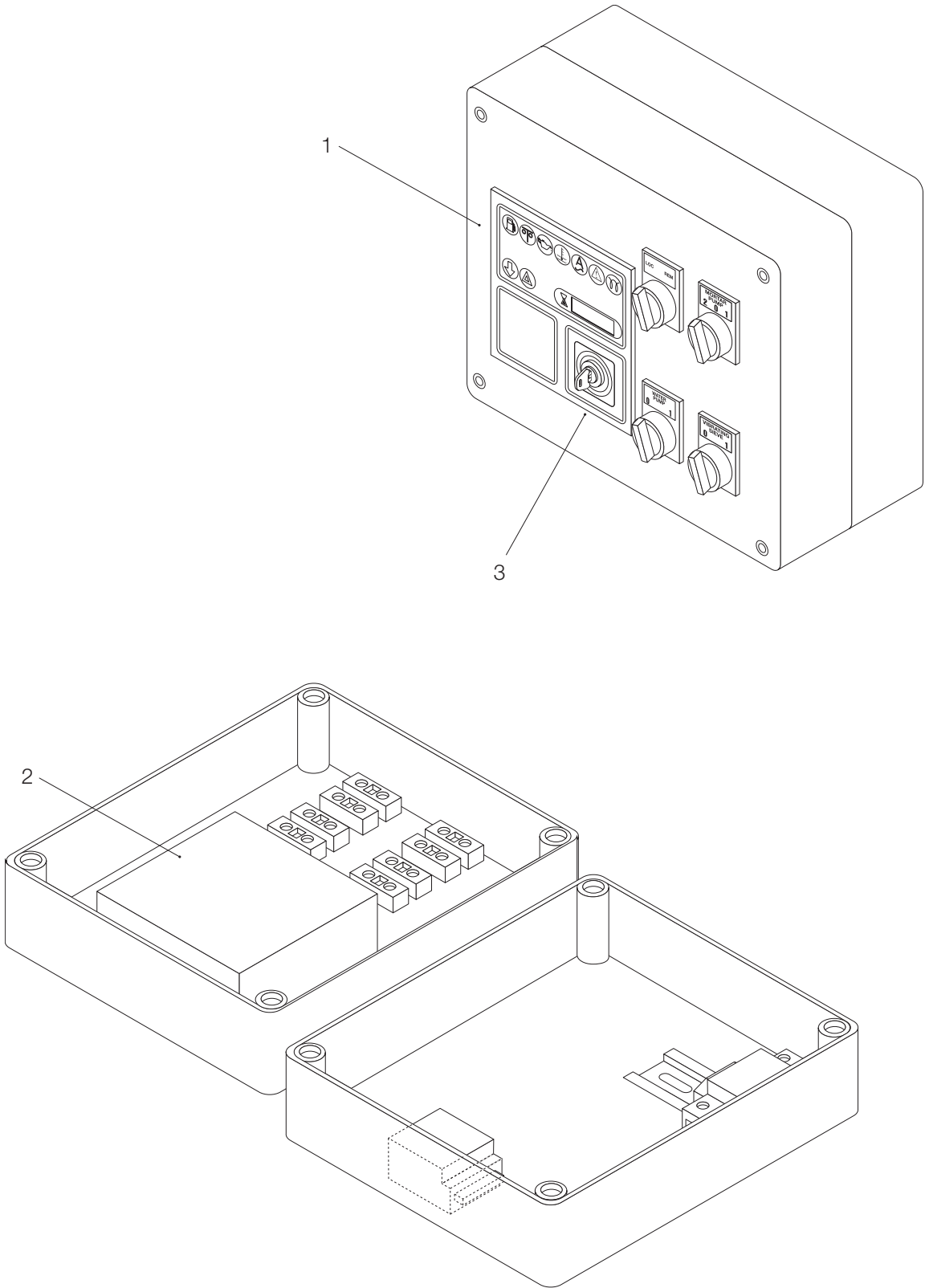


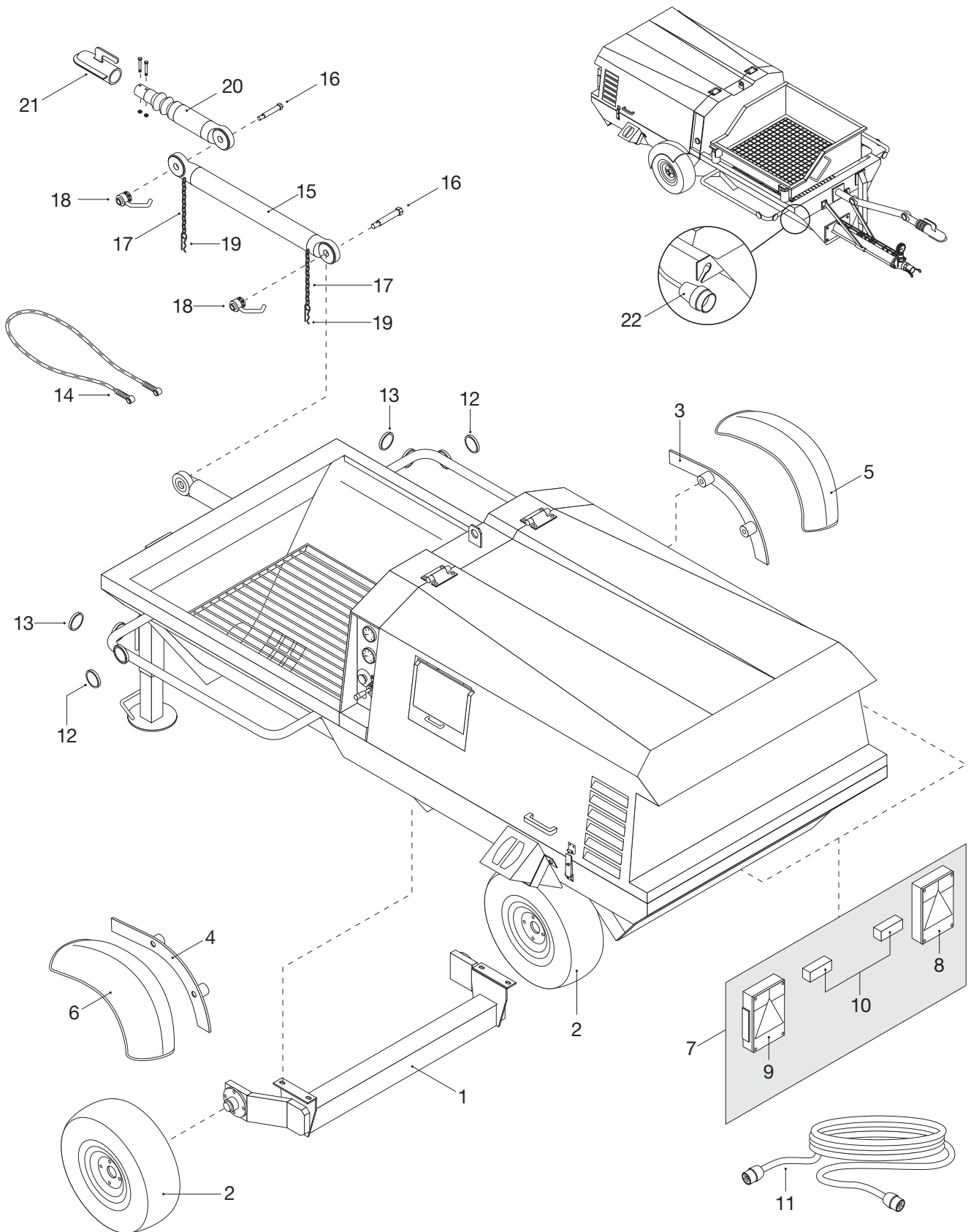
NP	N° REF	Q.TY	DESCRIPTION
1	261.079	6	Nipples oleo 1/2"
2	261.297	4	Oleo T coupling MMF 1/2" revolving
3	215.056	1	Oleo-dynamic duct F90° - F90° 1/2"
4	261.582	2	Oleo extension MF 1/2" x 40
5	261.093	5	Nipples oleo 3/4" - 1/2"
6	215.013	1	Oleo-dynamic duct F90° - F90° 1/2"
7	215.084	1	Oleo-dynamic duct F90° - F90° 1/2"
8	212.998	1	Non-return valve FF - 1/2"
9	261.474	1	Plug M 1/4"
10	261.486	2	Oleo reduction MF 1/4" - 1/2"
11	215.010	1	Oleo-dynamic duct F90° - F90° 1/2"
12	212.862	1	Oleo-dynamic duct F90° - F90° 1/4"
13	215.058	1	Oleo-dynamic duct F90° - F90° 1/2"
14	215.057	1	Oleo-dynamic duct F90° - F90° 1/2"
15	212.861	1	Oleo-dynamic duct F90° - F90° 3/8"
16	261.083	1	Nipples oleo 1/2" - 3/8"
17	261.078	1	Nipples oleo 3/8"
18	261.490	1	Oleo T coupling FFF 3/8" revolving
19	261.430	1	Oleo reduction 3/8" - 1/4"
20	261.460	2	Orientable coupling 1/4"
21	212.867	1	Mini power-point (L 700 mm)
22	261.237	2	Oleo coupling
23	212.868	1	Mini power-point (L 1000 mm)
24	215.121	2	Gaugers Ø 63 0-400 bar
25	261.259	2	Quick coupling at 90° - 1/4"
26	227.483	1	Greasers support
27	261.023	1	Straight greaser hydraulic 1/4"
28	640.066	m	Rilsan hose Ø 6 x 3
29	214.288	1	Thermo-switch

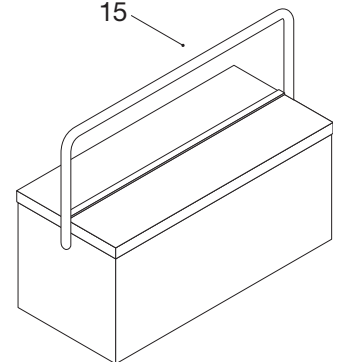
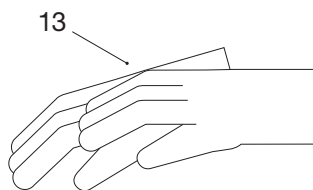
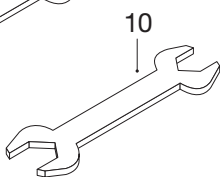
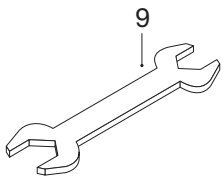
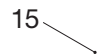
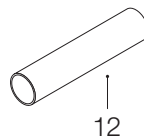
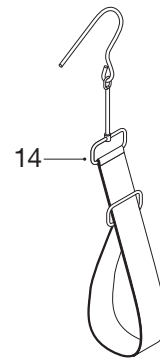
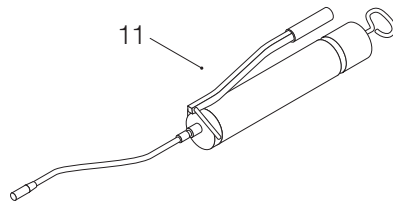
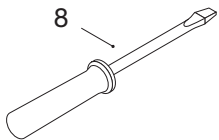
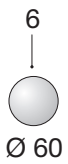
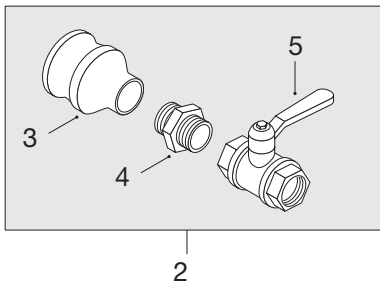
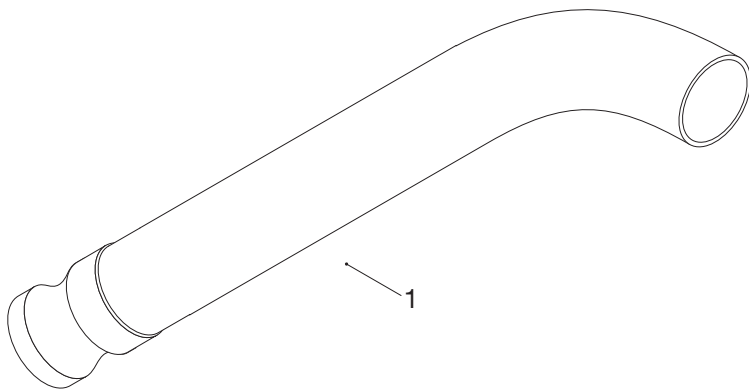




NP	N° REF	Q.TY	DESCRIPTION
1	215.177	1	Pump with variable output
2	215.184	1	Filter
3	216.539	1	Diesel engine
4	274.186	1	Filter gasoil
5	-----	1	Filter
6	266.455	1	Flexible pipe
7	266.456	1	Fiber of glass
8	227.538	1	Motor support
9	227.536	1	Motor support
10	227.537	1	Motor support
11	265.007	4	Damper
12	241.358	1	Fan spacer
13	263.378	1	Fan
14	214.282	1	Push-button with contact
15	221.739	1	Fixed flange
16	263.364	1	Bellows
17	266.184	1	Lever for accelerator control
18	227.470	1	Oil tank (17,5 l) with level control
19	261.255	1	Oil tank tap
20	261.030	1	Oil level
21	552.050	1	Fixed protection for connector
22	552.052	1	Socket part for connector 6P+T
23	212.625	1	Exchanger
24	227.534	1	Stirrup of block Exchanger
25	227.535	1	Exchanger support
26	238.019	2	Shock absorber 40 x 30
27	227.533	1	Gasoil tank (20 l)
28	214.464	1	Float for gasoil storage
29	261.248	1	Tank cap with key
30	229.137	1	Battery frame
31	263.069	4	Shock absorber
32	260.046	1	Storage battery
33	274.037	1	Air motor cartridge
34	274.034	1	Air filter cartridge
35	-----	1	Motor suction hose
36	-----	1	Motor suction hose
37	-----	4	Hose clamp
38	225.114	1	Silencer
39	225.869	1	Extension for silencer
40	221.435	1	Connection for silencer









NP	N° REF	Q.TY	DESCRIPTION
201.114 - Accessory box for self-levelling floors			
1	251.193	1	Delivery hose DN50 for shotcrete
2	216.195	1	Setting group DN50
3	266.201	1	Plug for setting DN50
4	261.110	1	Nipples
5	212.054	1	Ball cock FF 3/4"
6	237.017	3	Washing sponge Ø 60
7	543.018	1	Pin
8	268.018	1	Screwdriver
9	268.008	2	Fixed key 17 - 19
10	268.035	1	Fixed key 22 - 24
11	268.048	1	Grease pump of 600 g. with head
12	268.049	1	Grease cartridge 600 g.
13	521.001	1	Rubber gloves
14	221.018	2	Hose clamp
15	220.028	1	Rectangular tool box

WIRING DIAGRAMS





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