



UNI 30 D



INSTRUCTIONS FOR USE AND MAINTENANCE
COMPREHENSIVE CATALOGUE & SPARE PARTS

CT. 200.359

Serial number

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INSTRUCTIONS FOR USE AND MAINTENANCE

IMPORTANT

Read and carefully follow the instructions contained in this booklet. You will thus help prevent accidents, be fully covered by the manufacturer's warranty, and will always have available an equipment that is perfectly efficient and ready to use.

Operations and maintenance of this equipment must be performed only by skilled personnel who are well aware of the dangers inherent to the machinery itself.

You must follow the regulations concerning the prevention of work accidents as well current laws regarding safety in the work place.

The manufacturer shall not be liable in any manner whatsoever for injury or damage to persons and things, resulting from unauthorized changes or modifications of this equipment.

MACHINE FOR CONVEYING AND SPRAYING
TRADITIONAL, STRUCTURAL AND SPECIAL
MORTARS

UNI 30 D

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

The unit's serial number:

You are strongly advised to enter your equipment's serial number in the space above, which must always be referred to in order to facilitate the work of the personnel in charge, and it must likewise be mentioned when requesting service assistance or spare parts.

We reserve the right to make whatsoever technical modifications in the interests of improving this machinery, even if such modifications are not mentioned in this booklet.

Written authorization from Turbosol must be obtained for any and all full or partially reprinting or reproduction, of the information contained in this booklet.



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1 - GENERAL INFORMATIONS

1.1 - INTRODUCTION

The UNI 30 mortar conveyor and sprayer machine can be supplied with a variety of accessories. As a result, some of the components and spare 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 prior to starting up your equipment and follow the instructions carefully.

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

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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 be taken when the machine is operating
Maintenance or repair works must be carried out only when the machine is turned off. Whatever safety devices have been removed in order to complete such work, they 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 will be performed on schedule and will be carried out with extreme care.



Safety

This symbol marks each reference to safety in this booklet, and it must be scrupulously observed. The personnel in charge must be fully informed about any 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 - SYMBOL KEY

OBLIGATION



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



It is compulsory to read this maintenance booklet with regard to regular and general maintenance



Lifting point



It is compulsory to grease the indicated point

PROHIBITION

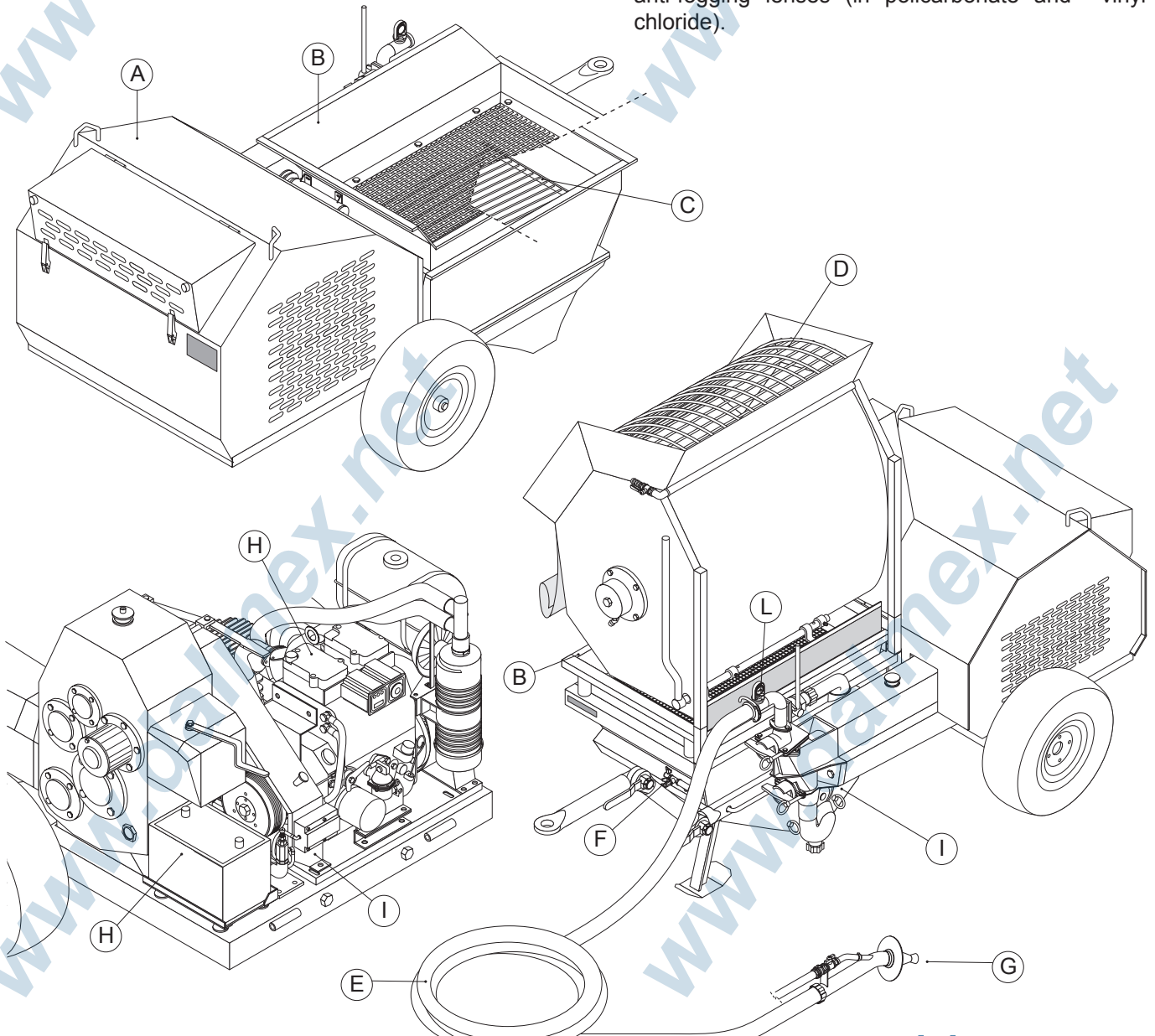


Warning:
machinery in operation

3 - CAUTION AND OTHER HAZARDS

3.1 - CAUTION AND OTHER HAZARDS



- A - Operate the unit only with the bonnet properly closed.
- B - Operate the unit only with the vibrating sieve properly positioned.
- C - Check that the grill on the hopper is properly fixed. For no reason the machine has to work without this safety device.
- D - The mixer is fixed with safety grill on top. The opening of the above mentioned grill will determine the immediate block of the mixer.
- E - The machine must never pump material when not connected to the hoses and to the spray gun.
- F - Warning, check that no one is standing too close to the air group valve.
- G - The spray gun should not be directed towards people. In case of blockage of the gun, no one should look directly into the hose of the deflector. The sudden exit of the blocked part or of mortar under pressure, may cause problems to the sight.
- H - Moving parts and hot parts are present inside the canopy as well as battery acids.
- I - Do not remove any protection.
- L - Before disconnecting the material hose couplings or the spraygun, make sure that the pressure on the pressure gauge is equal to 0 (zero) and that no pressure is still present in the hoses.
- M - Use gloves in nitrile for protection against cuts and abrasions, preferably models with CE 940072 certificate and goggles that can provide a total protection to the eyes, with infrangible and anti-fogging lenses (in polycarbonate and vinyl chloride).



4 - DESCRIPTION OF THE MACHINE

4.1 - TYPE OF MACHINE

Manufacturer's registration plate

 TURBOSOL TURBOSOL PRODUZIONE S.P.A. VIA MARCHE, 50 - 31030 PERÒ DI BREDA - TV - ITALIA TEL. 0039.0422.90251 - FAX 0039.0422.904408 E-mail: info@turbosol.it - http://www.turbosol.com/				
				
SERIE	MODELLO	MATRICOLA N°	ANNO	
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<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
KG	KW	V	A	Hz
(A)			(B)	

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

The meaning of the various symbols used is as follows.

(A) = Type of machine: UNI 30 D (S) (MF)

UNI 30 D = Machine with piston pump for pumping, conveying and spraying traditional, structural, and special mortars.

S = Standard version.

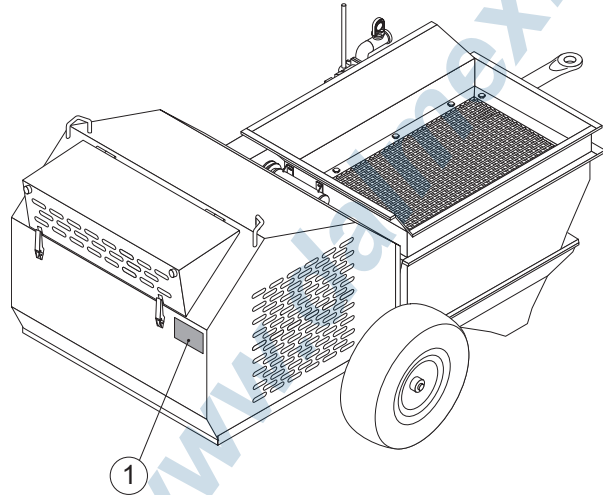
MF = Version with fixed mixer.

(B) = Machine's serial number: NNNNNN/AA

NNNNNN = The unit serial number.

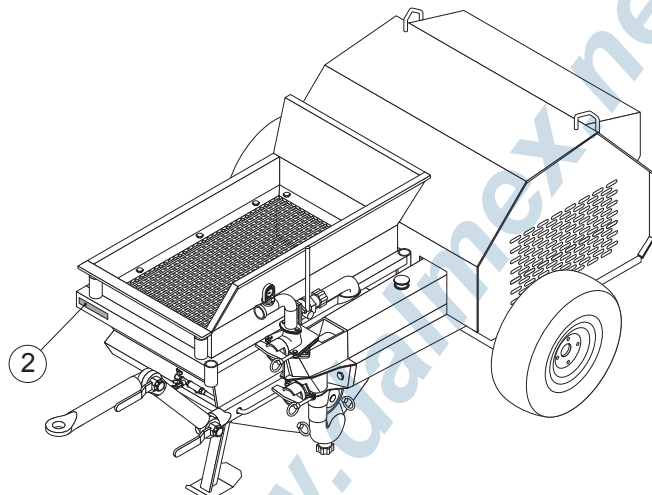
/AA = Year of manufacture.

Manufacturer's registration plate location



The manufacturer's registration plate (1) is attached to the chassis of the machine.

Machine's serial number location



The machine's serial number (2) is printed on the chassis as well as on the manufacturer's registration plate.

4.2 - DESCRIPTION OF THE MACHINE

Standard equipment:

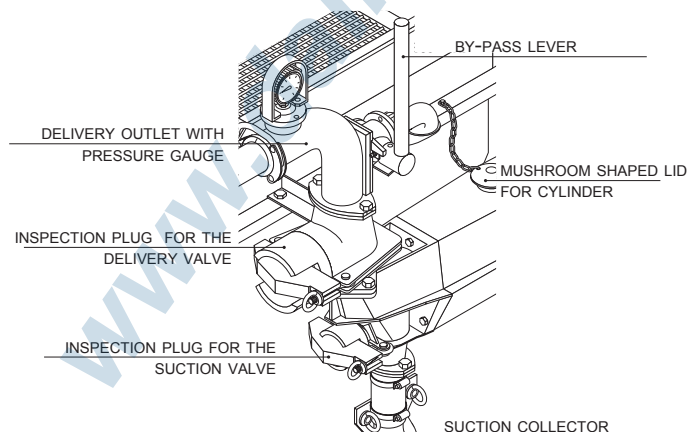
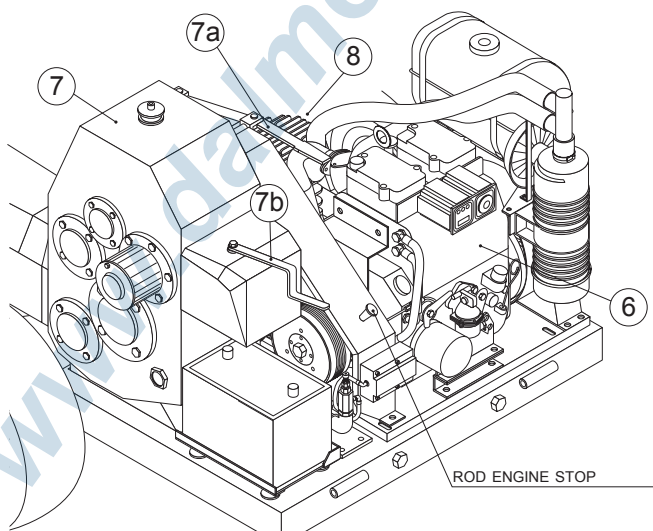
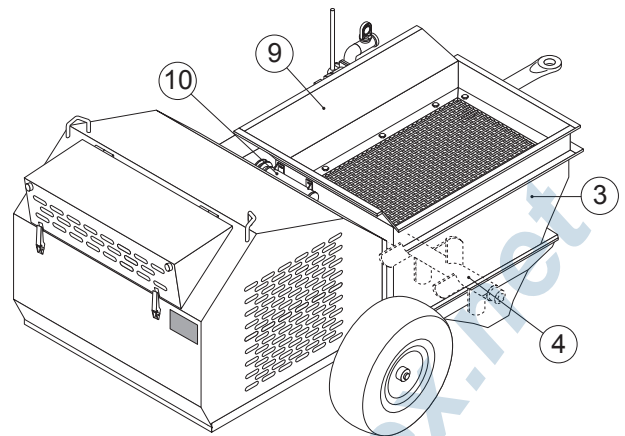
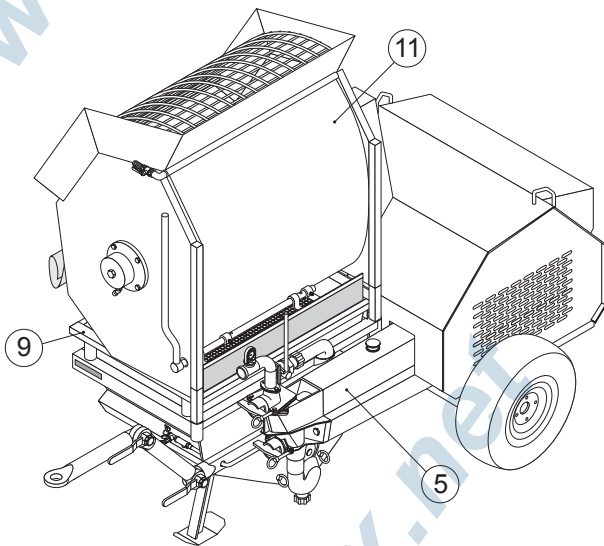
- Protection frame for mechanical parts.
- Self-bearing frame with pneumatic wheels and articulated draw-bar.
- Vibrating sieve with 8 mm mesh.
- Switch board built in accordance to EC norms.
- Piston pump with gravity ball valves.
- Mechanical gearbox with 2 speeds.
- Automatic mechanical safety device against overpressure.
- Material recycling device
- Built-in air compressor of 270 l/m' output.
- Positive action mixer of 180 l. (version MF).
- 40 m (20+10 Ø 50 +10 Ø 40) of mortar rubber hoses with cam-lock couplings.
- 41 m (31 + 10) of air hose Ø 13 with quick couplings.
- Accessory box with spray gun and a series of nozzles.
- Technical literature.

Accessories upon request:

- On line pressure gauge for hoses Ø 50.
- Pumping nozzle for hoses Ø 40.
- Pumping nozzle for hoses Ø 50.
- Cement slurry injection device.
- Hose extensions:
- Hose extensions of 10 m mortar/air (Ø 50 x 66 e Ø 13 x 19).
- Hose extensions of 20 m mortar/air (Ø 50 x 66 e Ø 13 x 19).

Main components:

The machine is made up primarily of: a hopper (3) an agitator (4), a piston pump group (5), a diesel engine (6) that operates a gearbox (7) with 2 speeds (7a) a safety device (7b) against overpressure, a compressor (8), a vibrating sieve (9) operated by a mechanical gearbox (10) and for the MF version: a fixed mixer (11).



4.3 - SIZE OF THE MACHINE

Here are the size of the machine and its gross weight (ready for use).

Version DS

LENGTH	WIDTH	HEIGHT	WEIGHT
2150 mm	1500 mm	110 mm	810 kg

Version DMF

LENGTH	WIDTH	HEIGHT	WEIGHT
2150 mm	1500 mm	1600 mm	1020 kg

4.4 - TECHNICAL DATA

Mortar pump pressure (indicative)	30 bar	
Auxiliary circuits voltage	12 V	
Engine power	14 kW	
R.P.M.	max	2.600 R.P.M.
	min	1.200 R.P.M.
Pilot valve fixed pressure	max	4,5 bar
Compressor relief valve fixed pressure	6,5 bar	
Compressor maximum valve pressure	6,5 bar	
Compressor oil change (SHELL RIMULA EXTRA D 15W40)	every 100 hours	
Gearbox oil change (ELF POLYTELIS 100)	every 500 hours	
Engine oil change (diesel engine oil 15W40)	check engine book	
Mixer gearbox oil change (ELF Reductelf SP220)	every 500 hours	
Hopper capacity	200 l	
Mixer capacity	180 l	
Delivery distance (indicative)	200* m	
Delivery height (indicative)	60* m	
Delivery hoses	1° Part	special Ø 50 x 69** mm
	Extensions	normal Ø 50 x 66 mm
	Final	Ø 40 x 53 mm
Maximum pumpable granulometry	8 mm	
Temperature in the work environment	from 5° to + 40° C	
Sound power level (84/533/EEC)	<100 dB(A)	

N.B.: * Maximum distance and height cannot be reached at the same time.

** Use only hoses made specially for this machine.

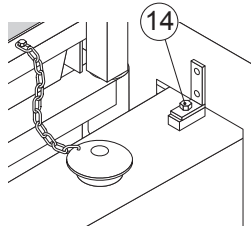
For other data regarding the diesel engine please refer also to the attached engine booklet.

5 - TRANSPORT

5.1 - HOISTING

In order to lift the machine hook the cables up to the handles (12) of the bonnet (make sure first that the hooks are closed) and to the tow bar (13).

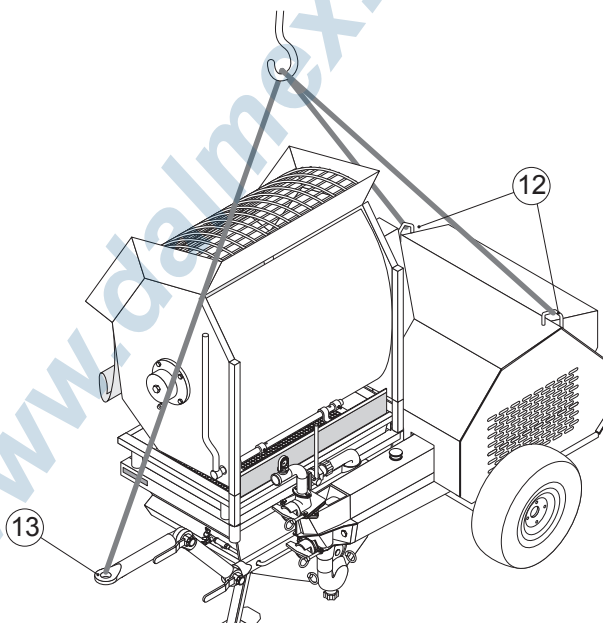
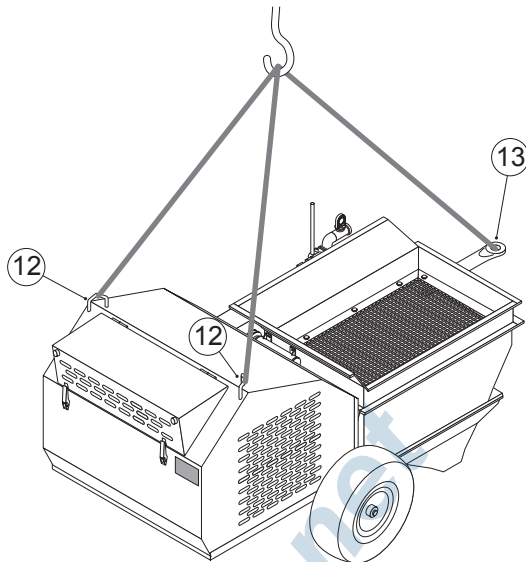
- Make sure that the safety screw (14) that blocks the bonnet is correctly fixed.



Avoid hoisting the machine with a fork-lift.

Minimum length of the ropes:

- 1,00 m. for the ropes to be connected to the handles.
- 1,30 m. for the ropes to be connected to the tow bar.



Use only hoisting equipment, hooks and ropes that have been tested and approved for lifting at least 1000 kg.

Before lifting up the machine, make sure that no one is standing too close to it.



The mortar mixed separately with whatever kind of mixer or prepared with the built-in mixer (MF version), will be discharged on the vibrating sieve of the machine.

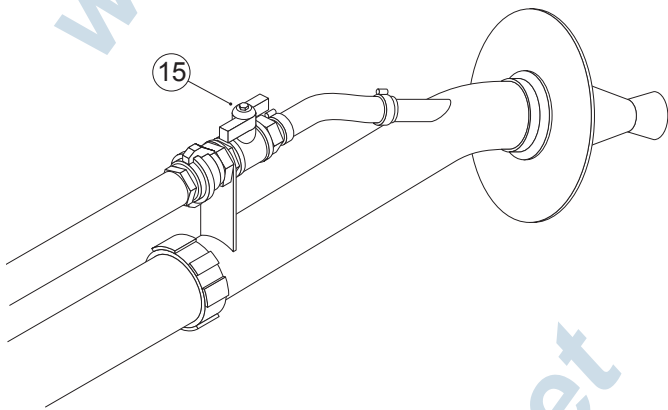
6 - USE OF THE MACHINE

6.1 - OPERATING PRINCIPLES

The sieved mortar falls into the hopper. From here it is pumped by means of a gravity ball valve pump up to the place where it is need through rubber hoses and sprayed with a spraygun (or various type depending of the materials used) where material is finally pushed by the air coming from the built-in the machine.

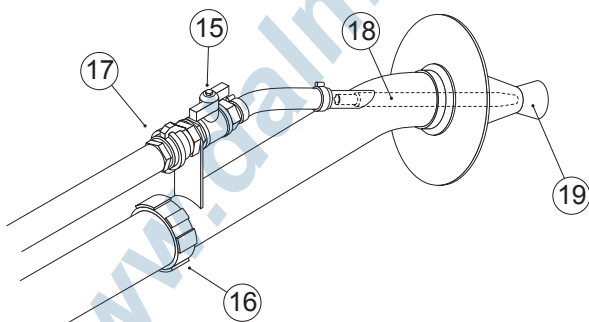
The start and stop of the machine are controlled directly by the operator at the spraygun, opening and closing the air cock of the gun itself (15).

Every spraygun is made of:
 a material coupling (16),
 an air coupling (17),
 an air cock (15),
 an air nozzle (18),
 a deflector (19).



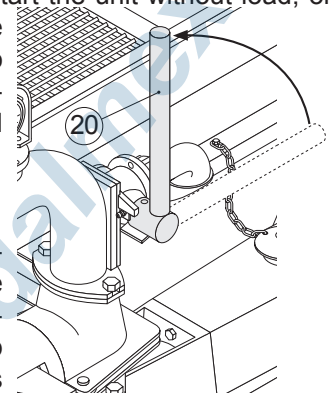
Generally with smaller size deflectors material is sprayed with a wider spray pattern and vice versa.

Through the by-pass lever (20) it is possible to pump the material into the hoses (horizontal position) or to recycle it into the hopper (vertical position).



Therefore it is possible to start the unit without load, or in case of a blockage in the hoses or in the spraygun, to discharge the pressure present in the hoses (vertical position).

The safety device, a torque limiter, disengage the trasmission between the engine and the pumping group in order to avoid dangerous overpressures on the hoses and on the pumping group.

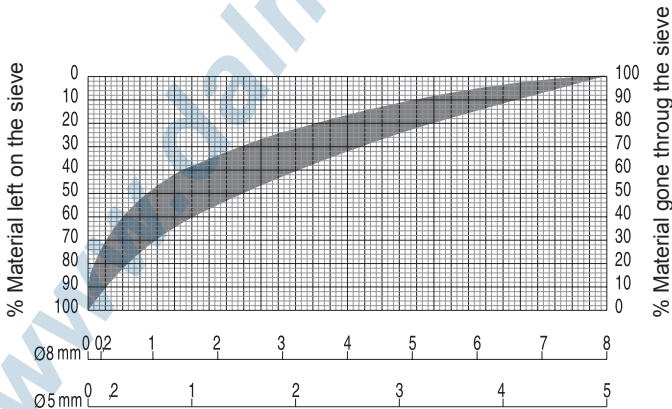


6.2 - PUMPABLE MATERIALS

Please find some basic concepts on how to make a pumpable mix-design for the UNI 30:



•the aggregates must have a good proportional gradient on the granulometric curve: mixed sand with a grain size of 0-6 mm;



• There must be a sufficient amount of binding agent (about 350-400 kg/mc) and the proportions must be as follows:

2/3 hydraulic lime, 1/3 slaked lime;
 1/3 hydraulic lime, 2/3 slaked lime;
 1/3 cement, 2/3 slaked lime;
 2/3 cement, 1/3 slaked lime.

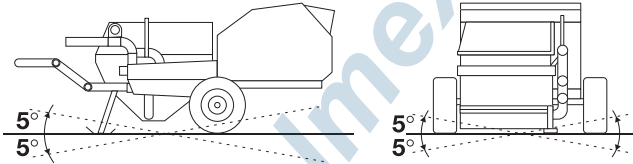
• Do not use plasticized (aerated) lime and, whatever the case, not in a percentage greater than one-third of the binding agent. Otherwise the machine's output will decline noticeably.

• The mix must have a plastic consistency (i.e. neither too dry nor too wet).

6.3 - PRELIMINARY OPERATIONS

Positioning of the machine

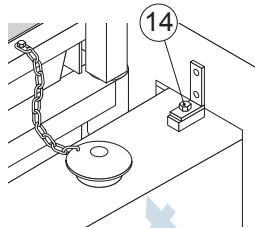
Place the machine in the most horizontal possible position: the maximum gradient allowed is 5° both lengthwise and sidewise.



The machine must be placed at that point on the jobsite where you can take best advantage of the hoses operating range.

Leave at least 80 cm. of clear space around the machine and set up a working area free of hoses and dangerously protruding edges.

Make sure that the bonnet is tightly closed with the safety screw (14).



After completing maintenance or repair work, make sure that all the safety devices have been put back in place and that no tools have been left inside the canopy, the mixer or the hopper.

Hoses

Lay the hoses down and at the same time check them to make sure they are in good conditions.

While pumping is in progress, the first 10 m of hose will swing back and forth some centimetres. It is better to keep that section of hose raised above the floor in order to avoid the rubbing of the hose on edges or abrasive surfaces and not to increase the wear and tear on the hoses themselves.

The following hoses have to be used:

- for the first 20 m special hose Ø 50 x 69 mm.
- for the extension standard hoses Ø 50 x 66 mm.
- terminal of 10 m Ø 40 x 53 mm.

Use always the complete hose length (20 + 10 + 10) even if exceeding the working needs.

Shorter hose lengths will cause discontinuous spraying.

Use only original hoses and couplings. The connection between hoses and couplings must be done by TURBOSOL PRODUZIONE S.P.A. or by companies directly authorized.

For no reason TURBOSOL PRODUZIONE S.P.A. shall be liable for whatsoever injury or damage to persons and things resulting from the use of non-original hoses and couplings.

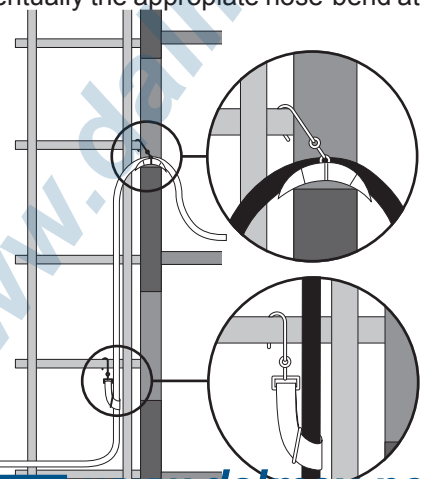
Use only hoses supplied by TURBOSOL PRODUZIONE S.P.A., specific for this type of machine. With non-original hoses the unit will not perform correctly.

Anchoring the hoses

The hose line must be properly anchored: use the hoses-belts which are supplied with the machine to anchor the vertical parts and eventually the appropriate hose-bend at the floor.

Make sure that the air hose is not bent at anchoring point. The before mentioned hose has to be anchored separately from the mortar hose.

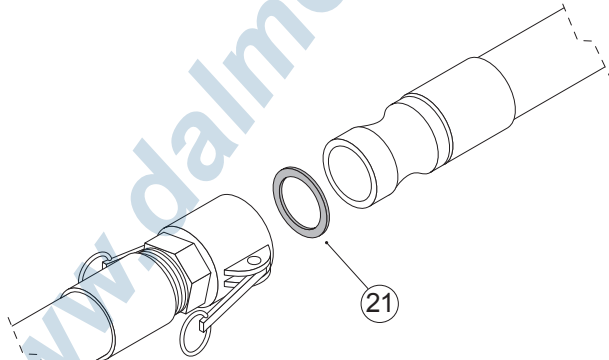
Make sure that the coupling of the mortar and air hose are locked tightly.



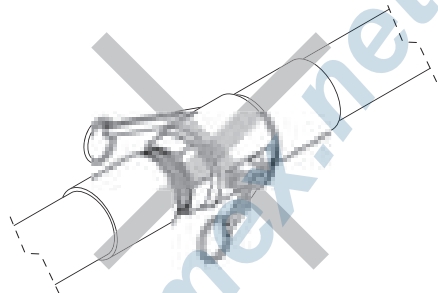
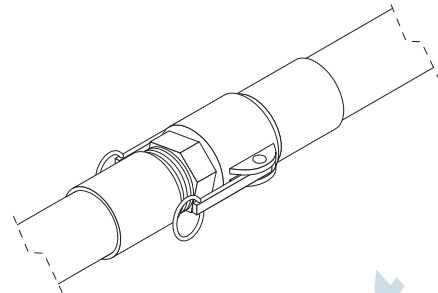
Make sure that the mortar hoses are correctly anchored at the building in order to avoid dangerous shaking due to the strokes.

Couplings

Check that couplings are clean and in good working conditions.



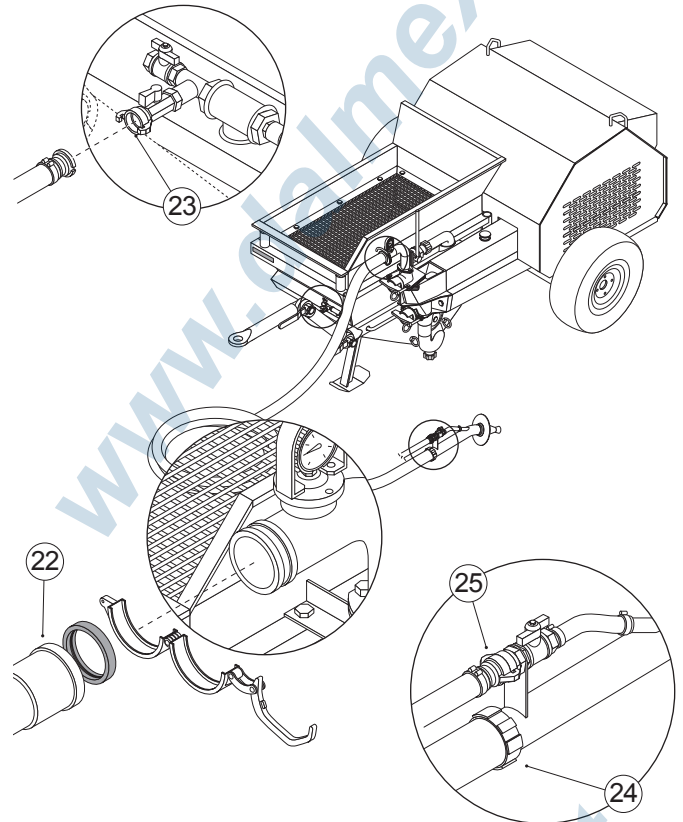
- Cam-lock couplings



When you connect the hoses, check that there is the rubber gasket (21), lock the levers of the cam-lock coupling tightly;

The longer hoses (20 m) are always connected together to the machine and then the shorter hoses until the connection to the gun.

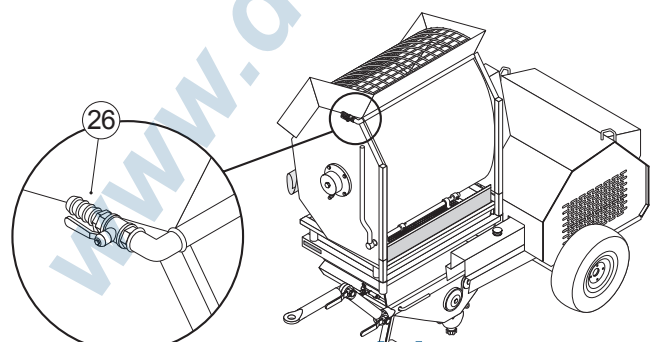
Connections



Connect the mortar hoses to the pump group (22) and the air hose to the quick coupling of the air group (23).

Then connect the spraygun to the final material hose (24), and to the air hose (25), locking the couplings tightly.

In the version with mixer (MF) connect the water hose to the rubber holder (26).



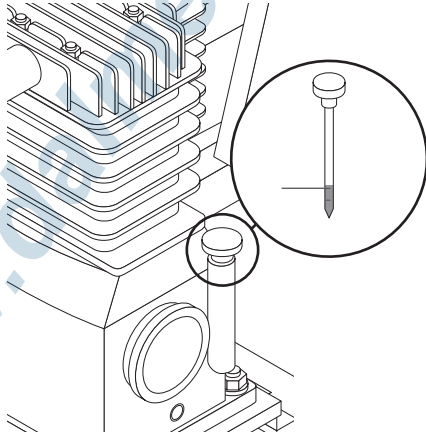
6.4 - STARTING THE MACHINE

Preliminary controls

Make the following checking:

- Compressor oil level:

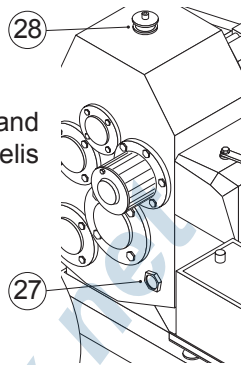
The level must be on MAX notch printed on the dip stick.



Eventually add some oil with SHELL RIMULA EXTRA D 15W40

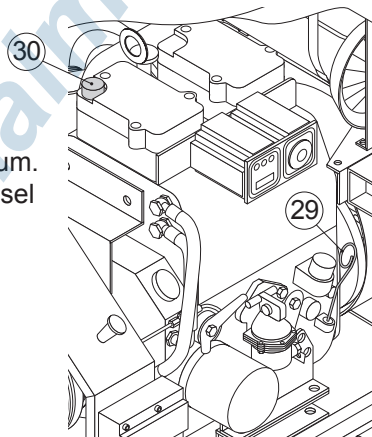
- Gearbox oil level:

Check the level observatory (27) and eventually add (28) oil - ELF Polytelis 100

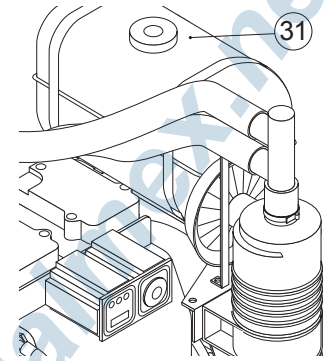


- Engine oil level:

Remove the dip stick (29) and check that the level is close to maximum. Eventually add (30) diesel engine oil 15W40

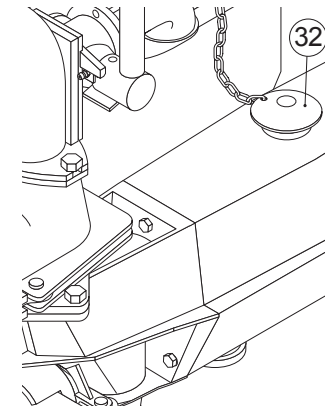


- Diesel level: Remove the tank tap (31), pour in clean diesel and close tightly.



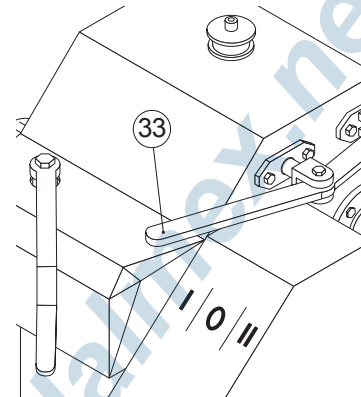
- Lubrication water Check that piston by lubrication tank is full with water. Restore the level adding clean water in the proper opening (32) situated on top of the cylinder. In winter add anti-freeze in order to avoid the forming of ice or discharge the water whenever the machine is not working.

In any case, the water has to be changed every 5 working days.



- Gear lever Check that the gear lever (33) is placed in even position (the machine features a gearbox with 2 speeds).

- Grill on hopper Check that the grill on the hopper is properly fixed. For no reason whatsoever the machine has to work without this safety device.



- Safety screw

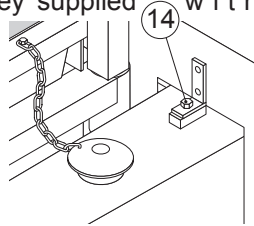


Check that the safety screw (14) that blocks the bonnet is properly fixed.

• Inspection plugs

Make sure that the inspection plugs (34) on the machine are tightly closed.

Make sure to use the proper key supplied with the machine (35) in order to close the ring nuts tightly.



Version with mixer (MF version)

• Grill on mixer

Check that the grill on the mixer is properly positioned.

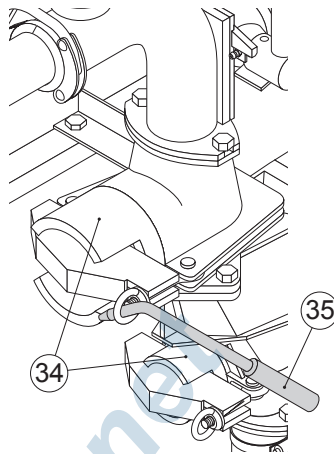
While lifting the grill on the mixer, the machine stops automatically. This is due to a device that switches off the diesel engine.

In order to start the machine again set back the grill in the right position and start again the engine.

• Control lever

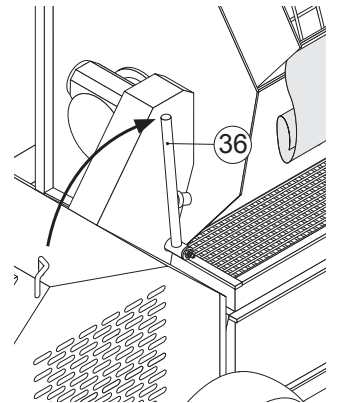
Stop the motion of the mixer using the indicated control lever (36).

After eventual repair or maintenance works make sure that all the safety devices are mounted back and that no tool is left inside the engine compartment or the material hopper.



Tools or wipers left in the engine compartment may as well cause the brake down of the cooling fan.

Before starting the machine, prepare the desired mix in a site or built-in mixer and separately prepare 15 ÷ 20 liters of slurry (50% water + 50% cement or hydrated lime) and pour it into the hopper.



Before starting the machine make sure that no one apart from the authorized personnel is standing close to it.

Use gloves in nitrile for protection against cuts and abrasions, preferably models with CE 940072 certificate and goggles that can provide a total protection to the eyes, with infrangible and anti-fogging lenses (in polycarbonate, and vinyl chloride).

Starting up

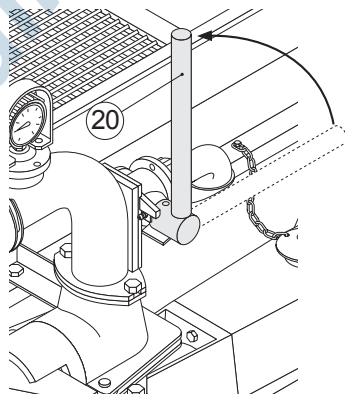
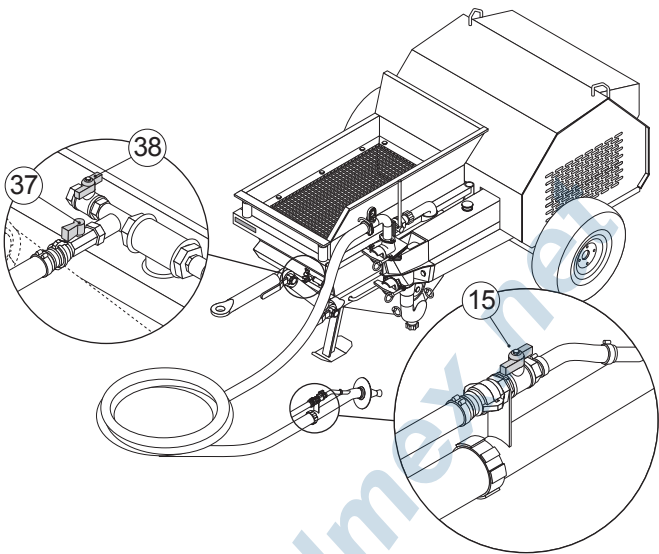
Check that the air delivery cock (37) is open, that the discharge cock (38) is closed and that the air cock to the gun (15) is open.

Make sure that the by-pass lever (20) is in vertical position (recycle of material into the hopper).

Caution: the machine must always work with material or water in the hopper. Failing to do so the wear and tear of the piston will increase dramatically.

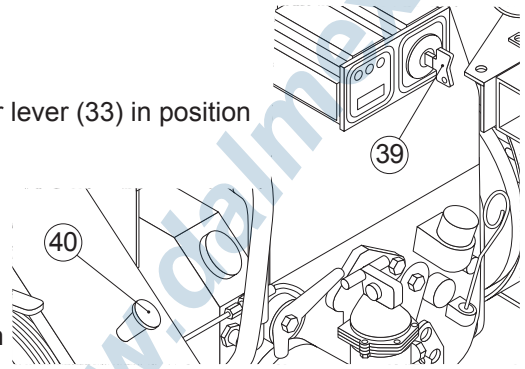
In order to start the engine turn the key (39) in position 1.

As soon as the engine has started close the air delivery cock (37): the machine engine will set at minimum rpm.



When the engine has warmed up for some minutes, switch it off pulling the indicated head (40).

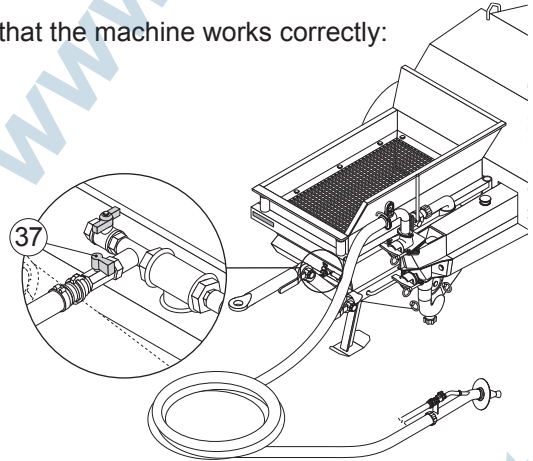
Set the gear lever (33) in position 1 or 2.



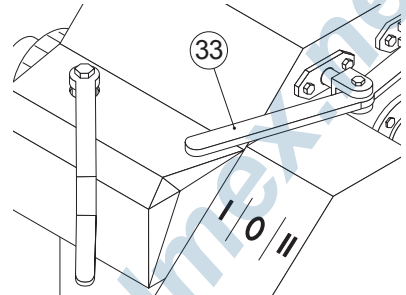
Start again the engine.

Make sure that the machine works correctly:

- Open and close two or three times the delivery air cock (37), to make sure that the pneumatic remote control works properly. The engine goes to a minimum revolution and the centrifuge joint cuts the transmission to the pumping group.



The engine goes to a minimum revolution and the centrifuge joint cuts the transmission to the pumping group.



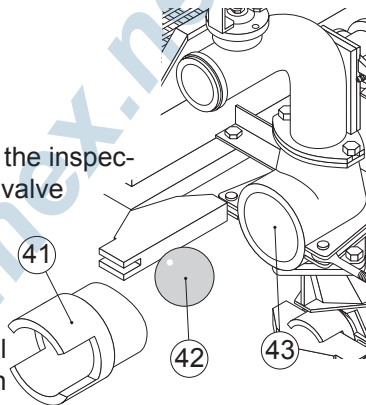
Start the machine opening the delivery air cock (37): the pump starts to push the slurry previously poured in the hopper.

With the by-pass lever (20) always in vertical position (recycle of material into the hopper), check that the pump is engaged.

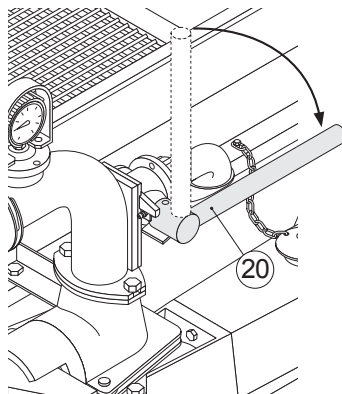
If this does not happen switch off the machine.

open the tie-rod, remove the inspection plugs of the delivery valve (41), remove the rubber ball valve (42), and pour some slurry in the valve body (43).

Then place back the ball valve and the inspection plug, finally close tight the tie-rod and start again.



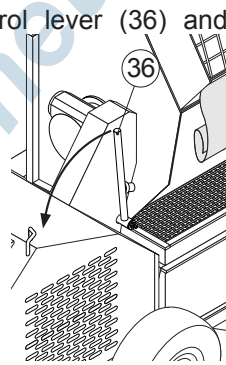
Put the by-pass lever (20) in horizontal position: the machine starts to pump slurry into the hoses.



Before the slurry is over pour some prepared mortar from the mixer to the vibrating sieve. (S version)

Version with fixed mixer (MF)

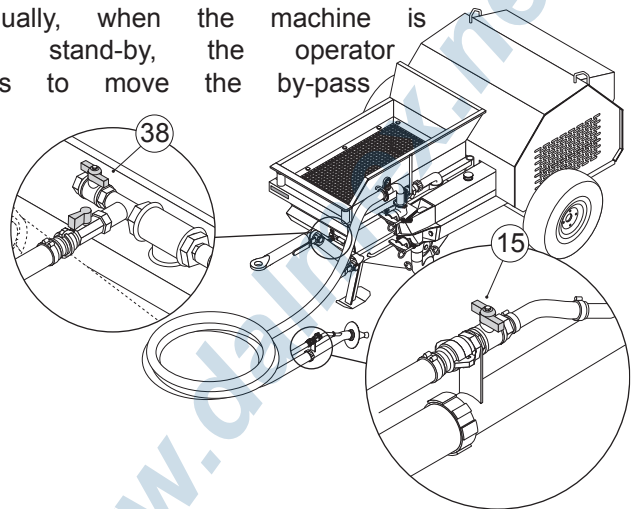
Activate the mixer using the control lever (36) and prepare the mortar. Load the mixer with sand, cement/ lime and water.



Discharge the mix on the vibrating sieve opening the discharge door with the indicated lever (44).
The slurry starts coming out of the spraygun and soon after the mortar will follow.

Now the machine is in working conditions and can be stopped using the air cock on the spraygun (15).

Usually, when the machine is on stand-by, the operator has to move the by-pass



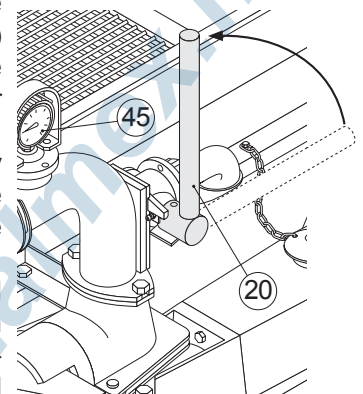
lever (20) in recycling position (vertical). At the next start up the before mentioned lever has to be placed in pumping position (horizontal).

In case of long stops, open the discharge cock (38) and place the by-pass lever in vertical position so that the mortar can be recycled into the hopper.

Make sure that the mortar in the hopper is always at such a level to cover the agitator. If the level is not sufficient the pumping piston (rubber) will suffer a very fast wear and tear due to the lack of lubrication.

The operator on the spraygun does not have to point the spraygun towards other people.

During pumping operations the operator at the machine should check that the pressure gauge (45) (positioned on top of the pumping group) never exceeds 20 ÷ 25 bar. A higher pressure may indicate a blockage in the mortar hoses or in the spraygun. If this happens, stop the machine and discharge the pressure in the hoses turning the by-pass lever (20) in vertical position then remove the blockage (page 28).



In case of blockage of the spraygun, for no reason whatsoever you should look directly in the hole of the deflector. The sudden exit of the blocked part or of mortar under pressure may cause problems to the sight.

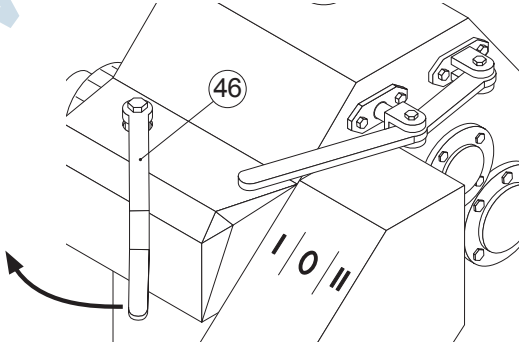
6.5 - WASHING AND STOPPING THE MACHINE

During all these operations the air cocks must remain completely closed or open. The partial opening will cause the stop of the machine.

In the event of an overpressure in the pumping pressure the safety device will intervene inside the gearbox.

Take the by-pass lever (20) in recycle position (vertical) and verify that the pressure gauge (45) shows a pressure of 0 (zero) bar.

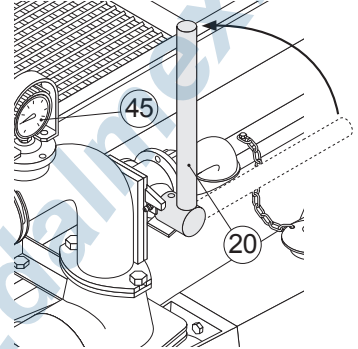
Stop the machine (move the key to position 0), remove the cause of the blockage (improper mix, blockage of the hoses or of the spraygun), and then insert again the safety device using the proper lever (46).



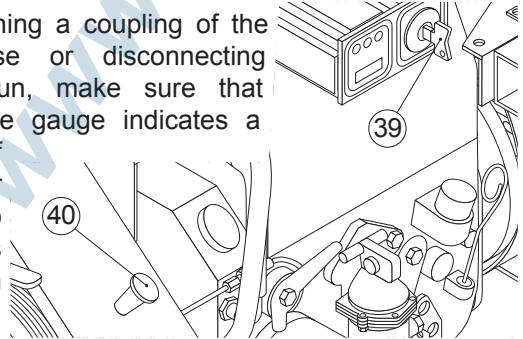
Stopping the machine

While pumping the last mix, which should be more fluid, the machine should be stopped only when the agitator can be seen in the hopper.

At this stage close the delivery air cock, move the by-pass lever to a vertical position (20) and make sure that the pressure gauge (45) shows 0 bar. Switch off the engine by pulling the indicated head (40) then turn the key (39) to position 0.



Before opening a coupling of the mortar hose or disconnecting the spraygun, make sure that the pressure gauge indicates a pressure of 0 (zero) bar and that no pressure is remaining in the hoses.



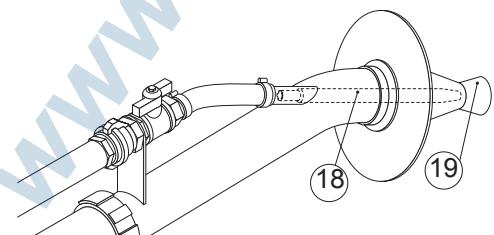
The operator must be properly trained in order to perform this operation.

Before opening any couplings, make sure that there is no remaining pressure in the hoses and that people are not standing close to the machine.

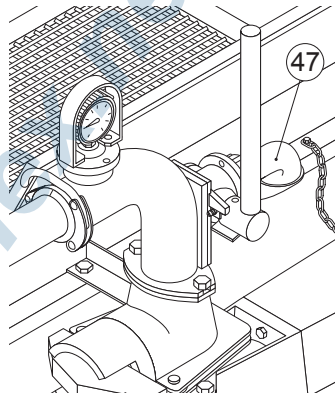
Only trained people can carry out the above procedure, which may be dangerous at times.

Cleaning

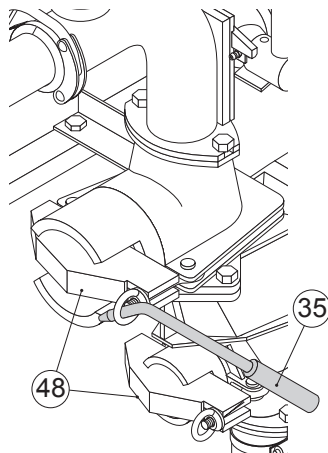
- Remove the spraygun and wash it carefully, taking the deflector apart (19).
- Make sure that the hose on the nozzle (18) is free (if necessary clean it)



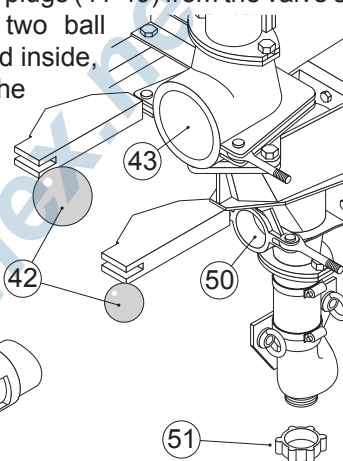
- Remove the vibrating sieve and wash it.



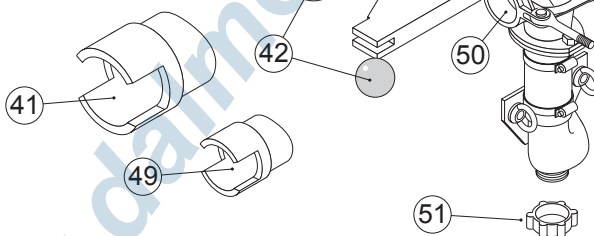
- Disconnect and wash properly the discharge by-pass curve (47) and the by-pass itself.



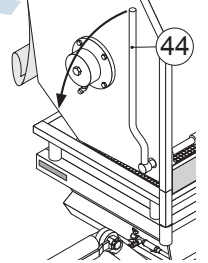
- Open the tie rods (48) with the proper key (35) standard supplied.



- Disconnect the inspection plugs (41-49) from the valve's group and remove the two ball valves (42) that are placed inside, and wash properly both the suction valve (43) and the delivery valve (50).

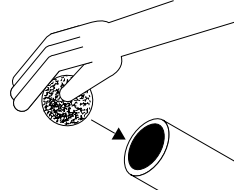


- Disconnect the drain plug (51) from the suction group.
- Wash (possibly with high pressure water) the internal part of the plastering machine and precisely: the hopper, the mortar deviator group, the valves and all the parts which are dirty.
In the plastering machines with incorporated mixer (MF version), you will have to wash the mixer first taking care of opening the material discharge door with the lever (44).



- ⚠ During all the cleaning operations, make sure that the bonnet is closed in order to protect the engine and all the other mechanisms which could be damaged.


- When the plastering machine has been completely washed, you will then start with the cleaning of the mortar hose. Insert the washing sponge in the hose.
Re-connect the hose to the machine, then re-install the rubber ball valves, the various plugs and the vibrating sieve, so that the machine is ready to work again.
Make sure that the inspection plugs and the coupling between mortar hose and machine are closed tightly.



- Fill up the hopper of the machine with water, and make sure it full with water until the cleaning operation is completed.
Start the machine.
Move the by-pass lever to a horizontal position, the water will push the washing sponge out of the hose, together with the mortar remaining in it; the sponge will wash the internal part of the hose itself at the same time (make sure that the discharge air cock is open).
Repeat the operation until clear water comes out of the hoses.
- Switch off the machine.
- Remove the water left in the hopper opening the drain plug.
- Disconnect the hoses.
- At the end of the working day, it is raccomandable to spray the machine with some protection agent.

7 - MAINTENANCE OF THE MACHINE

7.1 - TO BE PERFORMED BY THE OPERATOR

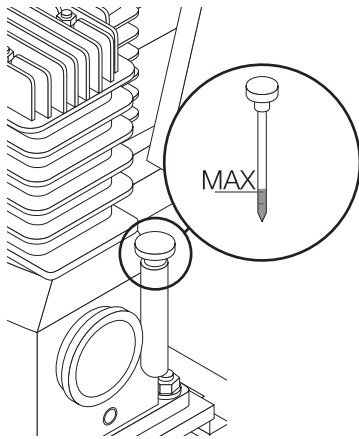
 Here below you can find the essential information on how to perform the maintenance of the machine. More detailed information in connection to the diesel engine are then indicated in the use and maintenance booklet, which has to be carefully read, together with the present manual, by the operator of the machine, before he can start working with the machine.

Operations to be performed daily

At start

- Check the level of the compressor's oil:

Make sure that the level is always corresponding to the maximum level indicated on the deep stick.

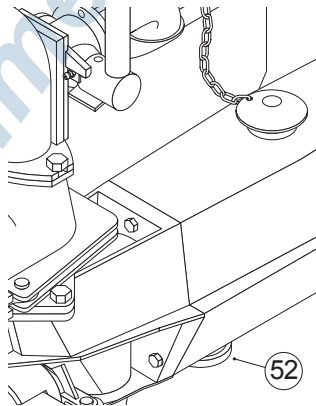


In a building site the compressor seldom works in perfect horizontal position as suggested by Turbosol, therefore in order to obtain a correct lubrication it is important to follow the above described operations.

Pour in only oil SHELL RIMULA EXTRA D 15W40.

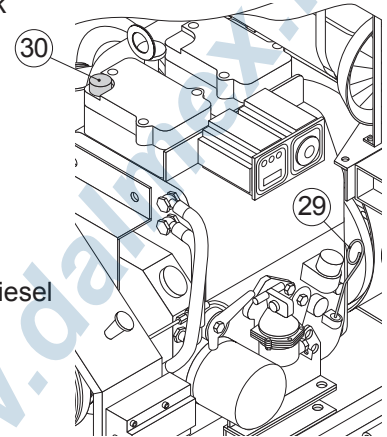
- Check the level of water in the cylinder, make sure to empty it or to add the right proportion of antifreeze in winter in order to avoid the formation of ice during the stops.

In order to empty the cylinder remove the drain plug (52).



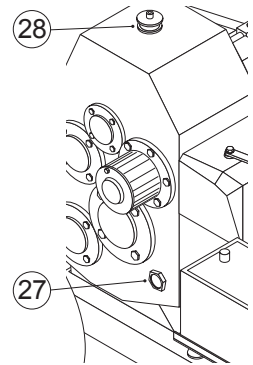
In any case, the water will have to be changed every 5 working days.

- Engine oil level:
Remove the deep stick (29) and check that the level is close to maximum.



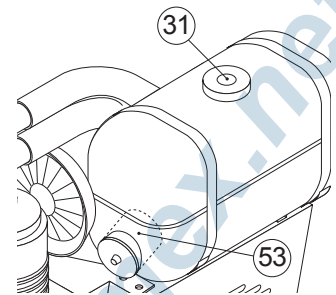
Eventually pour in diesel engine oil (30) 15W40

- Gearbox oil level:
Check the level indicator (27) and eventually pour in some ELF Polytelis 100 (28).




- Diesel level:
Remove the tap of the tank (31) insert the diesel and then close the tap. It is important to use clean fuel.

It is as well advisable to refuel completely the machine at the end of the working day in order to avoid condensation in the tank.



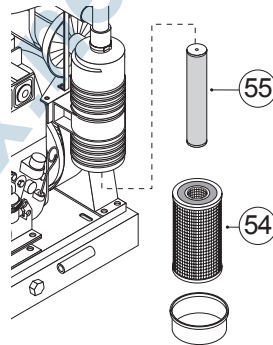
- Diesel filter

 The diesel filter (53) needs to be changed every 200 working hours.

• Engine air filter check

The engine air filter is made of 2 filtering cartridges (1° and 2° stage). In order to check, unscrew the nut and remove the cartridge (54) 1° stage.

In case traces of dust could be seen on the cartridge (55) 2° stage, remove it unscrewing the nut.



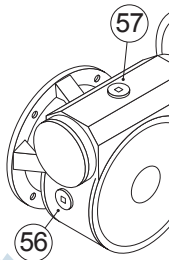
Hit, gently various times the air filter element 1° (54) on a hard surface in order to remove the dirt. It is not advisable to blow with compressed air the paper element.

The air filter cartridge 2° (55) can be cleaned a few times with compressed air, but it should never be washed.

Clean properly the cover and the support of the filter.

• Check mixer gearbox oil

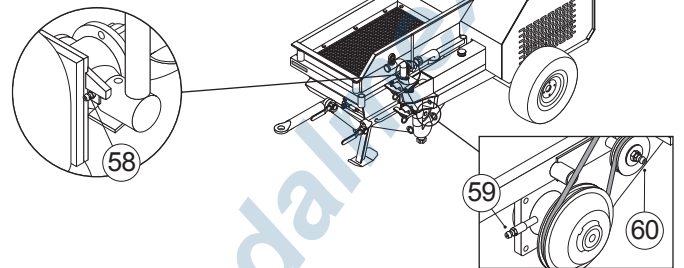
The mixer gearbox oil level should exceed the level of the tap (56). Eventually add some oil ELF Reductelf SP220 (57)



at the end of the working day

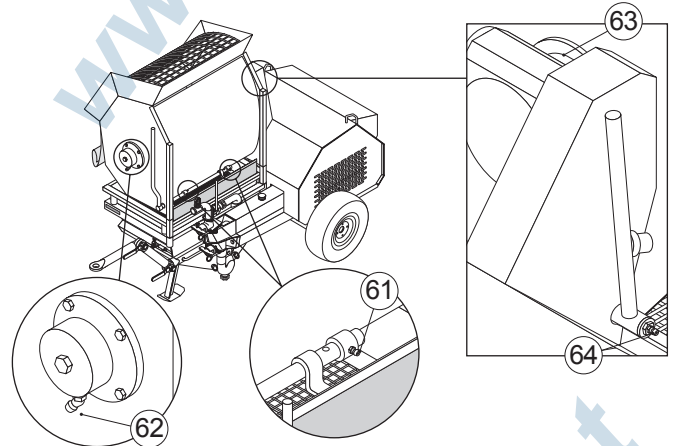
- Grease: the by-pass lever (58), the agitator support (59), belt tensioner lever (60).

- In the version with built-in mixer (MF) grease: the mixer door lever (61), the blind mixer support body (62), the washer flange (63), the tilting drive



lever and the tilting drive pulley (64).

In order to perform a correct operation, the grease should come out of the seal.



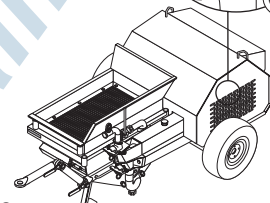
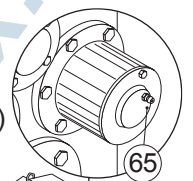
In case you forget to grease, the seal gaskets and the supports will wear in short time (some days).

every week

- Grease the gearbox (65)



Do not over-grease the gearbox (65) as it may cause inconvenients.



The operator has to make sure that the procedures of programmed maintenance will be followed by the qualified personnel, as described here below.

The manufacturer has no responsibility for any consequence due to the lack of maintenance or for the execution of operations by the operator, which are responsibility of the qualified personnel only.




Machine not at work for long time

If the machine is going to be placed in the warehouse for long time the following controls and procedures will have to be followed:

- Discharge the cooling water from drain plug of the cylinder.
- Remove the drain plug placed on suction collector.
- Disconnect the various length of hose and then roll each piece up in order to avoid dangerous bents.
- Protect the painted parts of the machine from rust spraying a layer of diesel or oil. Avoid to spray directly on the rubber elements.
- Lift the machine avoiding having the wheel touching the ground.
- Check that the last wash up of the machine has been done following the instructions given; that all the couplings have been greased and that all the tools and accessories have been placed back in the tool box.

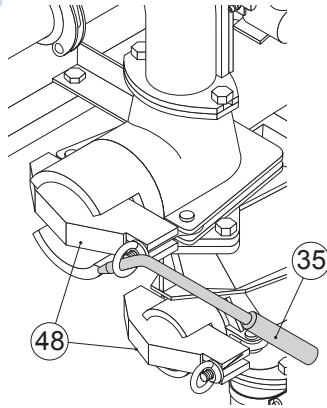
7.2 - CHANGE OF WEAR AND TEAR PARTS BY QUALIFIED PERSONNEL

Change of the worn ball valves

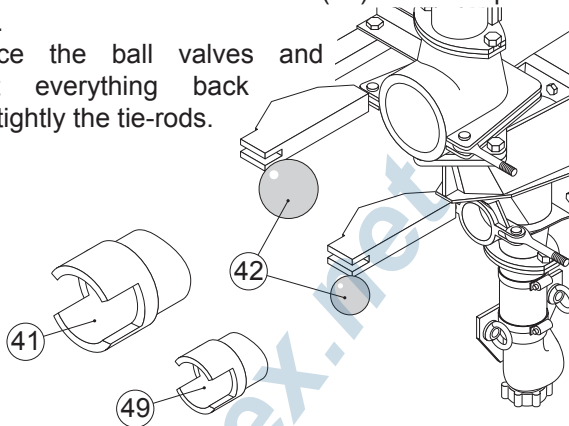
 All the described operations will have to be done with the engine switched off.

In order to change the damaged ball valves please follow this procedure:

- Open the tie-rod (48) working on the ring nuts with the key (35) standard supplied.



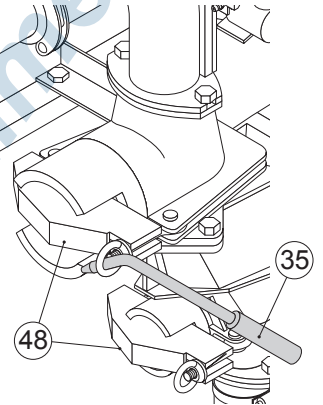
- Remove the inspection plugs (41-49) of the valve groups and the rubber ball valves (42) which are placed inside. Replace the ball valves and mount everything back fixing tightly the tie-rods.



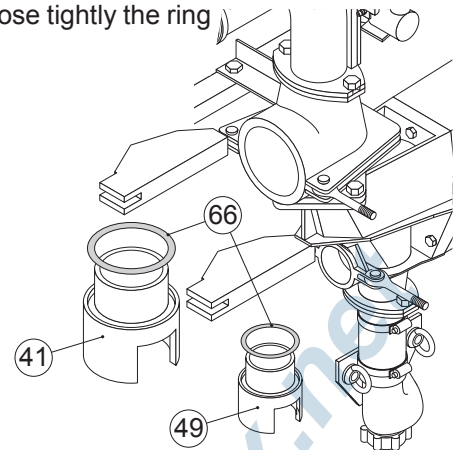
Replace the gaskets of the inspection plugs

In order to change the damaged valve's seat please follow this procedure:

- Open the tie-rods (48) working on the ring nuts with the standard key supplied (35).



- Remove the inspection plugs (41-49) from the valve's group and remove the gaskets (66). Change the gaskets and mount back all the parts having care to close tightly the ring nuts.

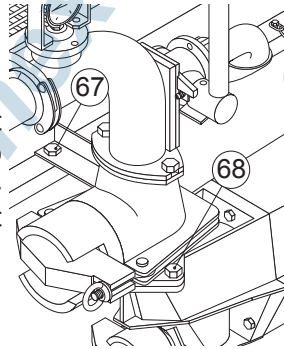


Changing of the damaged valve's seats

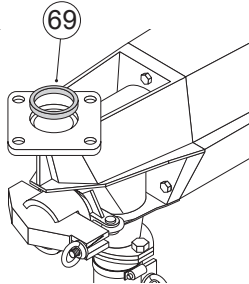
In order to change the worn valve's seats proceed following the instructions given below:

Delivery valve's seat

- Remove the screw (67) that fixes the delivery valve's group on to the hopper and the 4 screws (68) that are blocking it on to the suction valve group.



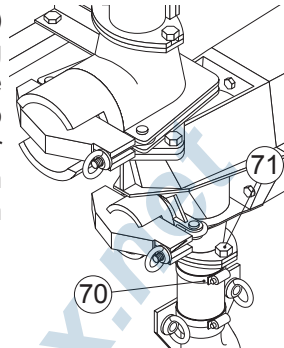
- Remove the worn delivery valve's seat (69) and change it with a new one.



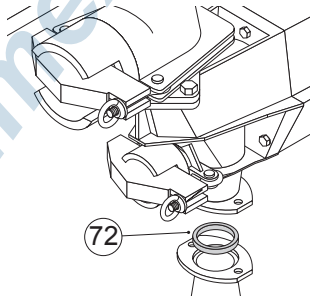
- Mount back the valve's group fixing it with the given screws.

Suction valve's seat

- Remove the hose clamp (70) that fixes the rubber coupling to the suction collector flange and then remove the two screws (71) that on the other side are fixing the suction collector flange to the suction valve casting.



- Remove the worn delivery valve's seat (72) and change it.

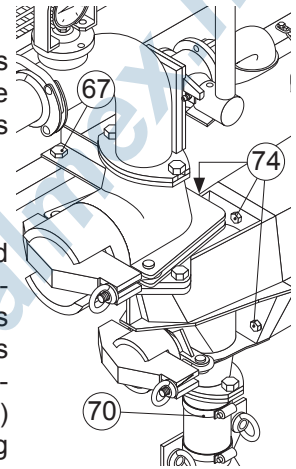


- Re-mount the suction flange.

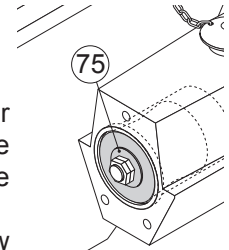
Change of the worn piston

Make sure that the piston is stopped in the front part of the cylinder, close to the valve's group.

- Disassemble the suction and delivery valve's group removing the screw (67) that fixes it to the hopper, the 3 screws (74) that connect it to the cylinder and the hose clamp (70) that fixes the rubber coupling to the suction group.



- In order to change the worn rubber piston, remove the nuts (75), move back the driving shaft using the compressor pulley. In order to remove the piston, screw in it a threaded bar, and then pull it.



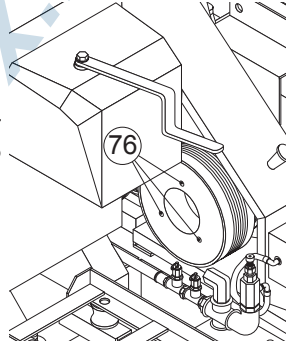
- Put the piston back, take care of putting the shaft in the correct position and fix it with the nuts (75).
- Once the piston has been changed, re-mount all the parts following the procedure above described.

7.3 - TO BE PERFORMED BY THE QUALIFIED PERSONNEL

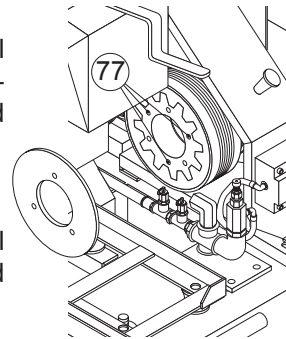
Change of the teathed wheel and the rubber ring of the centrifugal joint

- Remove the accumulator.

- Remove the cover of the centrifugal joint removing the 3 hexagon head screws (76).

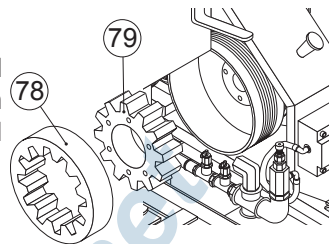


- Remove the teathed wheel and the rubber ring removing the three hexagon head screws (77).



- Remove the teathed wheel (79), the rubber ring (78) and replace them.

- Fix the teathed wheel and the rubber ring with the three hexagon head screws (77).



- Mount back the rubber clutch protection lid of the centrifugal joint fixing the three hexagon head screws (76) and place back the accumulator.

Operations to be performed every year or every 100 hours

- Change the compressor oil.

Operations to be performed every 200 hours

- Change the diesel filter.

Operations to be performed every 6 months or 500 hours

Check:

- Check the air hoses.
- Check and eventually change the belts.
- Check the piston, the ball valves, the seals, the pressure gauge, the by-pass, and generally that no anomalies are present.
- Change the compressor oil
- Change the gearbox oil.
- Change the gearbox mixer oil.
- Follow the instructions indicated on the diesel engine use and maintenance booklet.

8 - TROUBLE SHOOTING

8.1 - THE MORTAR DOES NOT COME OUT OF THE GUN

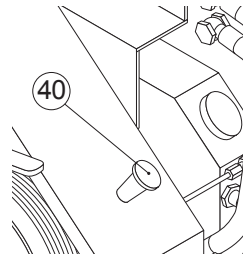
Blockage of the spraygun.

A mix that is too poor, a hardened crust of material or a pebble or a deflector of small size for the material being used may cause a blockage of the spraygun.

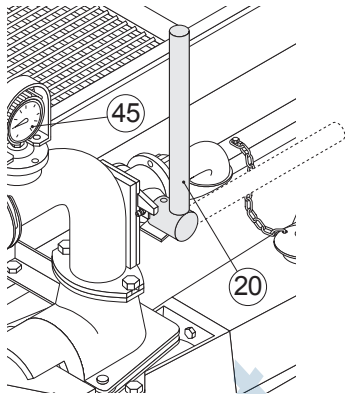
- NO MATERIAL COMES OUT OF THE SPRAYGUN AND THE MORTAR PRESSURE GAUGE INDICATES A PRESSURE ABOVE THE NORMAL 20÷25 BAR.


In this case:

- stop the machine pulling the engine stop rod (40), discharge the pressure in the mortar delivery hoses by moving the by-pass lever in vertical position (20); wait that the pressure shown in the pressure gauge (45) goes down to zero.



Make sure that gauge which indicates the mortar hose pressure shows a pressure of 0 (zero) bar and that there is no pressure left into the hoses before opening a coupling on the mortar delivery hoses or disconnecting the spraygun.



 The operator needs to be specially trained on the operation on this procedure.

Make sure that people are not standing close to the machine and before opening a coupling check that there is no pressure left into the mortar hoses.

This operation, which is potentially dangerous, has to be always performed by qualified personnel with the maximum caution.



- Disassemble the deflector and if necessary, the spraygun and remove the cause of the blockage.
- Before re-mounting the deflector and spraygun make sure that the nozzle is free (and, if necessary, clean it with a piece of wire).
- Turn the machine on in order to make sure that the material is flowing freely from the hoses.

Blockage of the mortar hose.

An improper mix design (see 6.2.) or a long break could determine the blockage of the mortar delivery hose.

- MATERIAL IS NOT FLOWING OUT OF THE SPRAYGUN AND THE MORTAR HOSE PRESSURE GAUGE SHOWS A HIGHER PRESSURE THAN THE NORMAL MAXIMUM WORKING PRESSURE OF 12 BAR.

In this case:

- Close the air cock on the spraygun, the machine stops.
- Release the pressure on the mortar delivery hoses turning the by-pass lever in vertical position (20); wait until the pressure shown on mortar pressure gauge falls to zero.

Before opening a coupling of the mortar delivery hoses or disconnecting the spraygun, make sure that the pressure gauge shows a pressure of 0 (zero) and that there is no remaining pressure in the hoses.



The operator needs to be specially trained in order to perform this operation.

Make sure that people are not standing close to the machine and before opening a coupling check that there is no pressure left into the mortar hoses.



This operation, which is potentially dangerous, has to be always performed by qualified personnel with the maximum caution.

Determine just where the mortar delivery hose is blocked: the hose will be hard and stiff at this point;

Disconnect the blocked hose, hit it with a hammer at the clogged point so as to break up the "plug" formed, and let the hardened mix flow out.



- Turn the machine on for several seconds and make sure that the hose has been freed of the "plug": the material will flow normally from the hose.

Pour some slurry into the hose before the point where the blocking occurred (gun direction), connect the hose line once again, and start over again.

8.2 - OTHER INCONVENIENTS

Blockage of the valves.

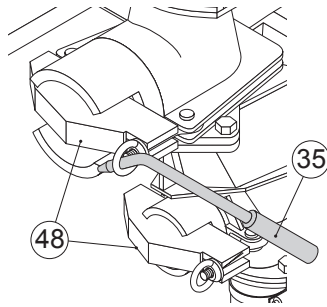
A mix too poor (check 6.2.) can cause the valve's blockage.

• THE MATERIAL IS NOT FLOWING OUT OR THE HOSES AND THE MORTAR PRESSURE GAUGE SHOWS A PRESSURE OF 0 BAR.

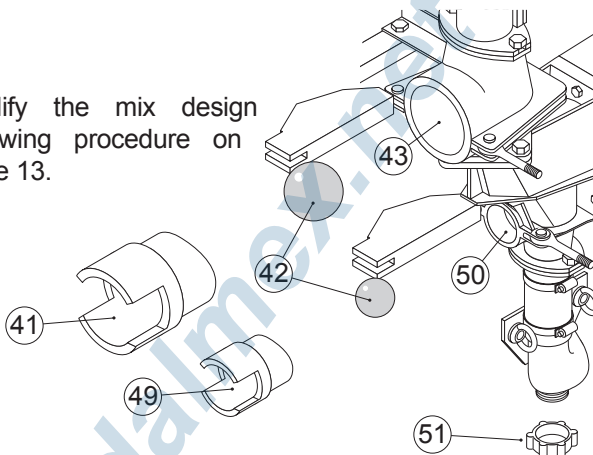
In this case:

- stop the machine pulling the engine stop rod (40), discharge the pressure by turning the by-pass lever (20) in vertical position; then wait for the pressure shown on the gauge (45) to drop to zero.

- Open the tie rods (48) with the proper key (35) supplied with the machine.



- Remove the inspection plugs (41-49) from the valve's group and then remove the rubber ball valves (42) placed inside and wash properly the suction (43) and delivery (50) valves.
- Remove the drain plug (51) of the suction collector.

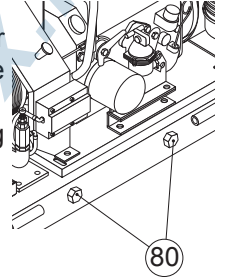


- Modify the mix design following procedure on page 13.

- Empty the hopper, eventually using a strong flow of water.
- Re-mount all the parts back and make the new batch of material correctly.

Loose belt

- The belt slides and the mortar pressure gauge shows a pressure lower than 20 bar. In this case tighten the belt using the register screws (80).



8.3 - WORKS TO BE PERFORMED BY THE OPERATOR

INCONVENIENTS	CAUSES	REMEDIES
<p>The mortar does not come out of the spraygun</p>	Obstruction in the spraygun	<ul style="list-style-type: none"> Disassemble the sprygun and clean it (page 28).
	Mortar hose blocked	<ul style="list-style-type: none"> Find the blockage and remove it (page 28).
	Blockage in the ball valves	<ul style="list-style-type: none"> Remove the inspection plugs and wash the valves (pag. 29).
	Safety device not activated	<ul style="list-style-type: none"> Activate the safety device (page 20).
	The mortar hose is bent	<ul style="list-style-type: none"> Find the bent part and make it straight.
	Gear not inserted, lever in idle position	<ul style="list-style-type: none"> Stop the engine and insert the desired gear.
	The mortar is too dry	<ul style="list-style-type: none"> Make it more fluid by adding water.
	Not enough mortar is in the hopper	<ul style="list-style-type: none"> Pour mortar in the hopper.
	<p>The mortar comes out discontinuously</p>	There is a blockage in the valves group
Insufficient air supply		<ul style="list-style-type: none"> Check the efficiency of the compressor, being sure that the filters are clean (page 23) and that belt is properly tightened. Check that there are no losses of air in the air system and in the spraygun. Make sure that the air delivery cock is totally open and the air discharge cock is properly closed (page 18). Dirty nozzle. Remove it and clean it.
Improper hoses or insufficient hose length.		<ul style="list-style-type: none"> Use the mortar hoses indicated on page 14. Use original hoses for the machine and the hoses suggested depending on the distance to reach.
The mortar is too reach		<ul style="list-style-type: none"> Check the mix design of the mortar and eventually modify it (page 13).

INCONVENIENTS	CAUSES	REMEDIES
The safety device activates frequently	The mortar is too dry	<ul style="list-style-type: none"> • Make it more fluid by adding water.
	The delivery valve is blocked because of faulty mix	<ul style="list-style-type: none"> • Wash the delivery valve (page 21) and modify the mix (page 13).
	Blocked mortar hose	<ul style="list-style-type: none"> • Find the blockage and remove it (page 28).
	Blocked mortar by-pass	<ul style="list-style-type: none"> • Clean the mortar by-pass.
	Mortar too poor in cement or lime	<ul style="list-style-type: none"> • Check the mix design and eventually modify it (page 13).
	Dirty valve's group	<ul style="list-style-type: none"> • Clean the suction and delivery valve's group (page 29).
	Bent mortar hose	<ul style="list-style-type: none"> • Find the place where it is bent and make it straight.
The spraygun blocks continuously	Too small deflector	<ul style="list-style-type: none"> • Change the deflector with a larger size one.
	Sand with aggregate size too large	<ul style="list-style-type: none"> • Use sand finer granulometry curve.
	Mortar too poor in cement or lime	<ul style="list-style-type: none"> • Increase the q.ty of binder. Refer to the mix design (page 13).
The pump does not engage	Suction valve's group dirty or blocked	<ul style="list-style-type: none"> • Wash the suction valve's group. Make sure that there are no hard material on the valve or on the inspection plug (page 26).
	Dirty or worn ball valve's	<ul style="list-style-type: none"> • Clean the ball valves (page 21). If the are worn, please replace them (page 25).
	Dirty or worn valve's seats	<ul style="list-style-type: none"> • Clean them and eventually replace them (page 26).
		<ul style="list-style-type: none"> • Replace the piston (page 26).

INCONVENIENTS	CAUSES	REMEDIES
The mortar is dropping from the deflector of spraygun	Worn piston Deflector of too large size	<ul style="list-style-type: none"> • Change the large deflector with a deflector of smaller size.
	The mortar is too fat	<ul style="list-style-type: none"> • Check the mix design following what indicate on page 13
	Insufficient air supply	<ul style="list-style-type: none"> • Make sure that the filters of the compressor are clean (page 23). If necessary change them. • Make sure that the cock of the spraygun is completely open. • Make sure that there are no air losses in the air system or in the spraygun. • Make sure that the delivery air cock is fully open and the discharge air cock is properly closed.
The pressure gauge does not show any pressure	Safety device disconnected	<ul style="list-style-type: none"> • Activate the safety device with the indicated lever (page 20).
	Delivery valve's group blocked because of an improper mix	<ul style="list-style-type: none"> • Wash the delivery valve's group (page 26) and modify the mix (page 13).
	Gear not inserted, lever in idle position	<ul style="list-style-type: none"> • Stop the engine and insert the requested gear.
	Not enough mortar in the hopper	<ul style="list-style-type: none"> • Pour mortar in the hopper.
The plastering machine does not start	Safety device disengaged	<ul style="list-style-type: none"> • Insert the safety device with the indicated lever (page 20).
	Fuel tank empty	<ul style="list-style-type: none"> • Re-fuel diesel in the fuel tank.
	Low battery	<ul style="list-style-type: none"> • Check the efficiency of the battery.
	Centrifuge joint disengaged	<ul style="list-style-type: none"> • Check the centrifuge joint (internal part should turn while external part and the belt should remain blocked). In case worn off you need to change it (page 27)
	Air cock of the spraygun closed	<ul style="list-style-type: none"> • Check it and eventually open it.
	Tapped air nozzle	<ul style="list-style-type: none"> • Clean the nozzle.
	Air cock closed	<ul style="list-style-type: none"> • Check it and eventually open it.
Air hose tapped	<ul style="list-style-type: none"> • Check the whole length of hose and make sure that air flows freely. 	

INCONVENIENTS	CAUSES	REMEDIES
The plastering machine starts alone while not engaged	Loss of air from the hoses	<ul style="list-style-type: none"> • Check the air hoses and air couplings in order to identify the origin of the loss.
The plastering machine stops alone while engaged	Air circuit partially blocked	<ul style="list-style-type: none"> • Check that the air cock at the machine is not partially closed, that the air hose is not bent or that the nozzle in the spraygun is not partially blocked.
	The safety device activates	<ul style="list-style-type: none"> • Check that the working pressure indicated on the mortar pressure gauge is not exceeding the maximum data shown on page 19, if this happens please modify the mix accordingly to what is indicated on page 13 and the hoses accordingly to page 14.

8.4 - WORKS TO BE PERFORMED BY THE QUALIFIED PERSONNEL

For whatever inconvenient not mentioned before, please contact our authorised assistance service.

9 - RESPONSIBILITY OF THE OPERATOR

The PERSON IN CHARGE of the machine 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 operator at the machine must be thoroughly taught and trained with 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 _____