

MOD : DEC-12

Production code : 9996ZP450

INSTALLATION MAINTINANCE AND USE MANUAL

ZP 450

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01 - SUMMARY OF THE MACHINE

- BRAND – LOGO – COMPANY:

M.S.L. MECCANICA S.r.l.

Via Forrenera, 2

51019 PONTE BUGGIANESE (PT)

- MANUFACTURER: **M.S.L. Meccanica S.r.l.**

- EEC MARKING: **MARKING**



- MACHINE: **CENTRIFUGAL HYDRO-EXTRACTOR**
- MODELLO: **ZP/450**
- SERIAL NUMBER: _____
- YEAR OF CONSTRUCTION: _____
- RPM: **1450(50Hz) – 1740(60Hz)**
- MAXIMUM CENTRIFUGABLE WET LOAD: **12 Kg**
- DRUM DIAMETRE: **450 mm**
- INSTALLED POWER: **2,2 KW**

02 – HOW TO USE THE MAINTENANCE MANUAL

This technical manual has been issued for the operators in charge of the use, installation, maintenance and failure repairs.

It is necessary to read the specific sections very carefully, in order to use, install, and carry out the maintenance and failure repairs of the hydro-extractor under the best safety conditions.

The manufacturer reserves the right to update the manual without a “retrofit” obligation.

The manufacturer has no responsibility if:

- ⇒ the loading of the machine is not carried out according to the directions in this manual;
- ⇒ the direction for the installation are not followed;
- ⇒ the maintenance is not carried out according to the directions in this manual;
- ⇒ the safety devices that prevent the machine from rotating when the cover is partially or totally opened are not used or checked at the suggested intervals;
- ⇒ non authorized modifications or operations are carried out;
- ⇒ materials thicker than recommended are centrifuged;
- ⇒ volumes greater than the ones shown on the plate are centrifuged.

03 – RECOMMENDED USE – GENERAL DATA

03.1 RECOMMENDED USE

The centrifugal hydro-extractor ZP 450 is mainly used to dewater linen, products of the textile industry or other products, provided that their volume does not exceed 1.3 Kg/dm³.

The maximum load which can be dewatered at the maximum number of revolutions is: 12 Kg, wet, at 1450 rev/min.

03.2 GENERAL SPECIFICATIONS

The centrifugal hydro-extractor ZP 450 is oscillating. In this type of machine the oscillations of the drum which are due to the centrifugal force produced by a possible unbalanced load are reduced by a device that resets the driving shaft while the machine is in motion, owing to the reaction of the elastic rings.

03.3 KINDS OF RISK

All risks related to the use of the hydro-extractor are mainly due to the rotation of the machine with its cover even partially open:

- ⇒ handling the cover while the machine is in motion
- ⇒ accidental, even partial opening, of the cover while the machine is in motion
- ⇒ switching on the machine with the cover even partially open.

Other risks can be caused by use with an unbalanced load.

A load which is excessively unbalanced may cause such a centrifugal force on the drum that the driving shaft and the resetting device are irregularly stressed.

04 – TECHNICAL DESCRIPTION OF THE MACHINE

04.1 STRUCTURAL PARTS AND MAIN COMPONENTS OF THE MACHINE

CENTRIFUGAL HYDRO-EXTRACTOR MOD. ZP 450

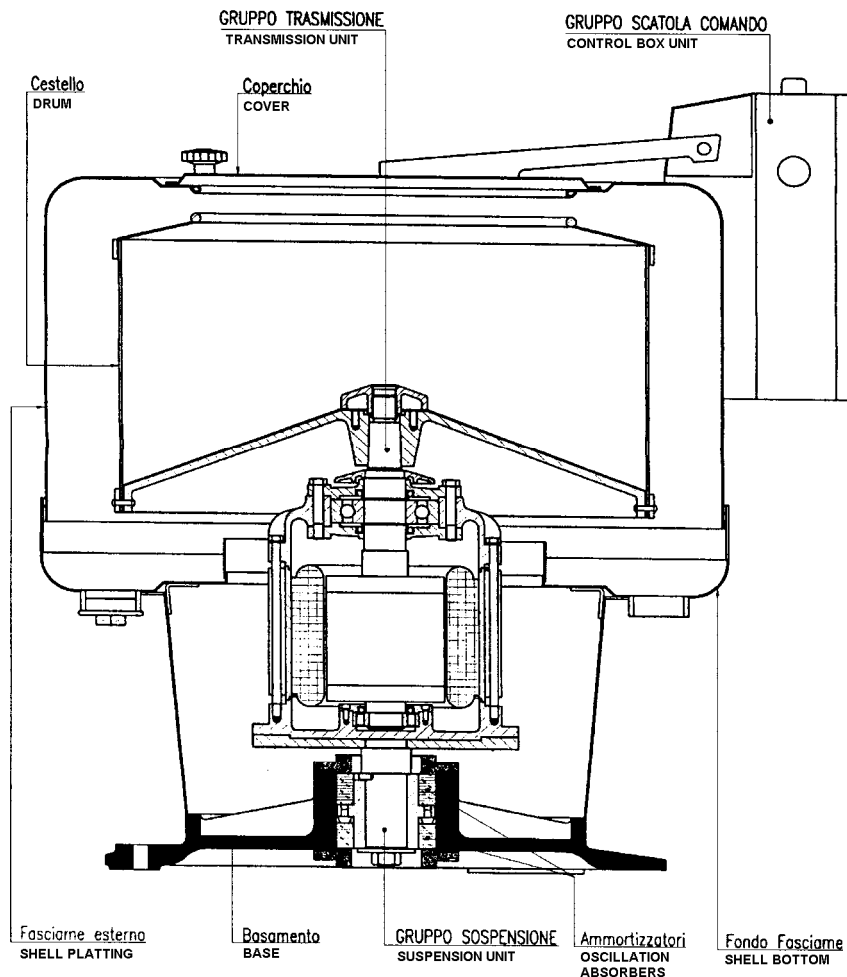


TABLE I

04.1.1 SHELL PLATING

The shell plating has the double function of protecting the drum and containing the centrifuged liquid, is built in sheet of stainless steel and is connected to the bottom with 6 M6 screws.

04.1.2 SHELL BOTTOM

The shell bottom will collect the centrifuged liquid and convey it towards the outside

through a draining pipe which is connected to an oval receiving tank located underneath the drum.

04.1.3 BASE

The base is built in a strong cast iron fusion. It houses the device for resetting the driving shaft while the machine is in motion and enables you to anchor the machine to the ground. The base is anchored to the foundation by three anchoring bolts duly calculated to withstand strong stress due to a highly unbalanced load.

04.1.4 DRUM

The drum is mainly constituted by two parts: the bottom and the shell.

The bottom, made in a strong cast iron fusion and completely coated with a sheet of stainless steel, houses the conical seat of the coupling with the driving shaft.

The shell is made from a perforated stainless steel sheet and is reinforced by two bands, a higher band and a lower band. The connection between shell and bottom is to be riveted with nr.8 6 mm diameter nails.

04.1.5 COVER

The machine has the cover which, when it is in use, prevents the material to be centrifuged from escaping from the hydro-extractor and any operation in the drum.

The cover is hinged to the control box, its opening is manual and is regulated by safety device.

04.2 UNITS

04.2.1 TRANSMISSION

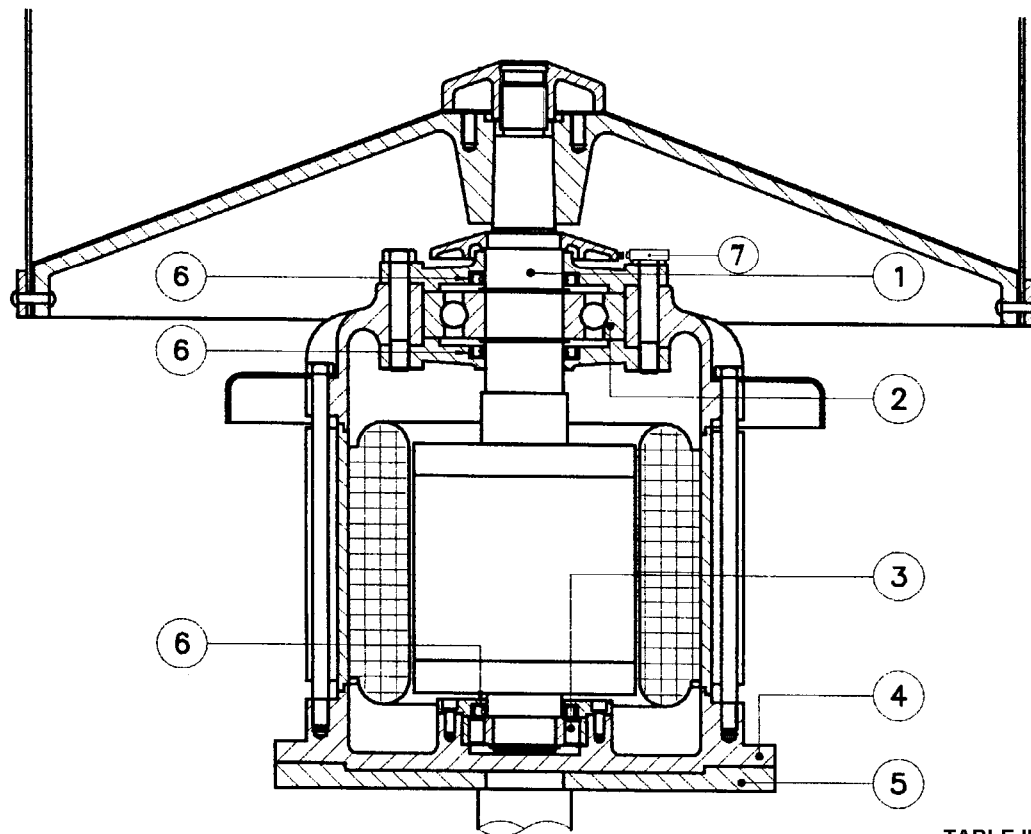


TABLE II

The transmission of the movement from the electrical motor to the drum occurs directly as the drum is directly coupled to the driving shaft of the electrical motor.

The electrical motor is built to measure and its driving shaft (Particular 1) is supported by two bearings: the higher one is a radial rigid ball bearing (Particular 2), the lower one is a cylindrical roll bearing (Particular 3).

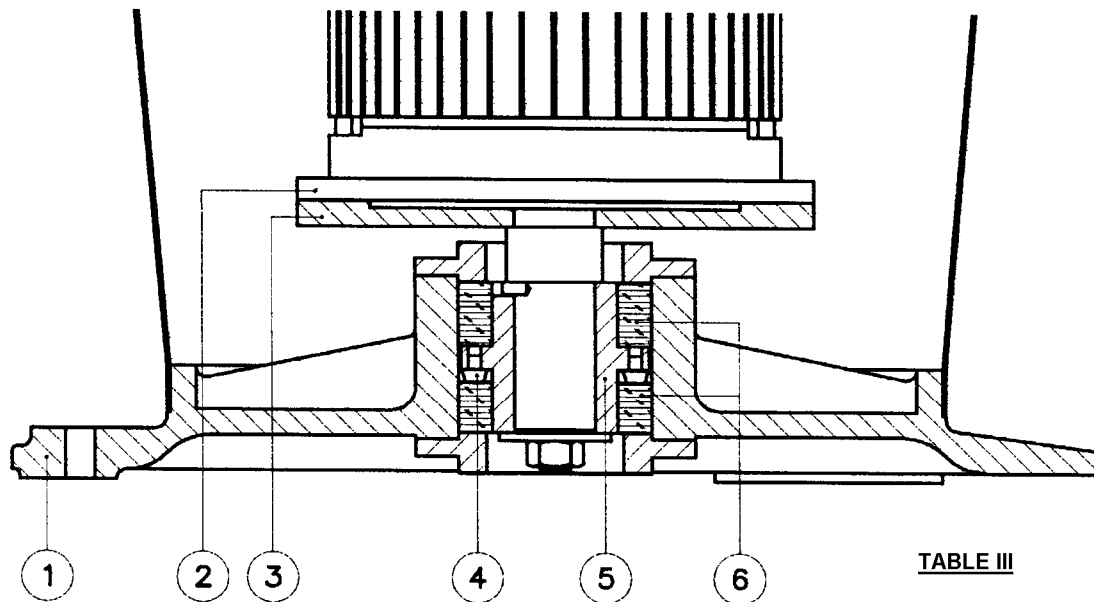
Being leakproof, these housings protect the bearings from any seepage due to the action of the seal rings (Particular 6) for containing the lubricating grease, which is eternal.

The electrical motor has a collar (Particular 4) on the back to anchor the device for resetting the driving shaft while the machine is in motion (Particular 5) to the collar itself.

The flexible shaft, made from special steel, is oversized so that it can guarantee mechanical resistance even under full strain caused by highly unbalanced loads.

04.2.2 DEVICE FOR RESETTING THE DRIVING SHAFT WHILE THE MACHINE IS IN MOTION

During switching on ,or when in motion, the driving shaft leans to the side describing a conical surface, because of the centrifugal force generated by the unbalanced mass contained in the drum.

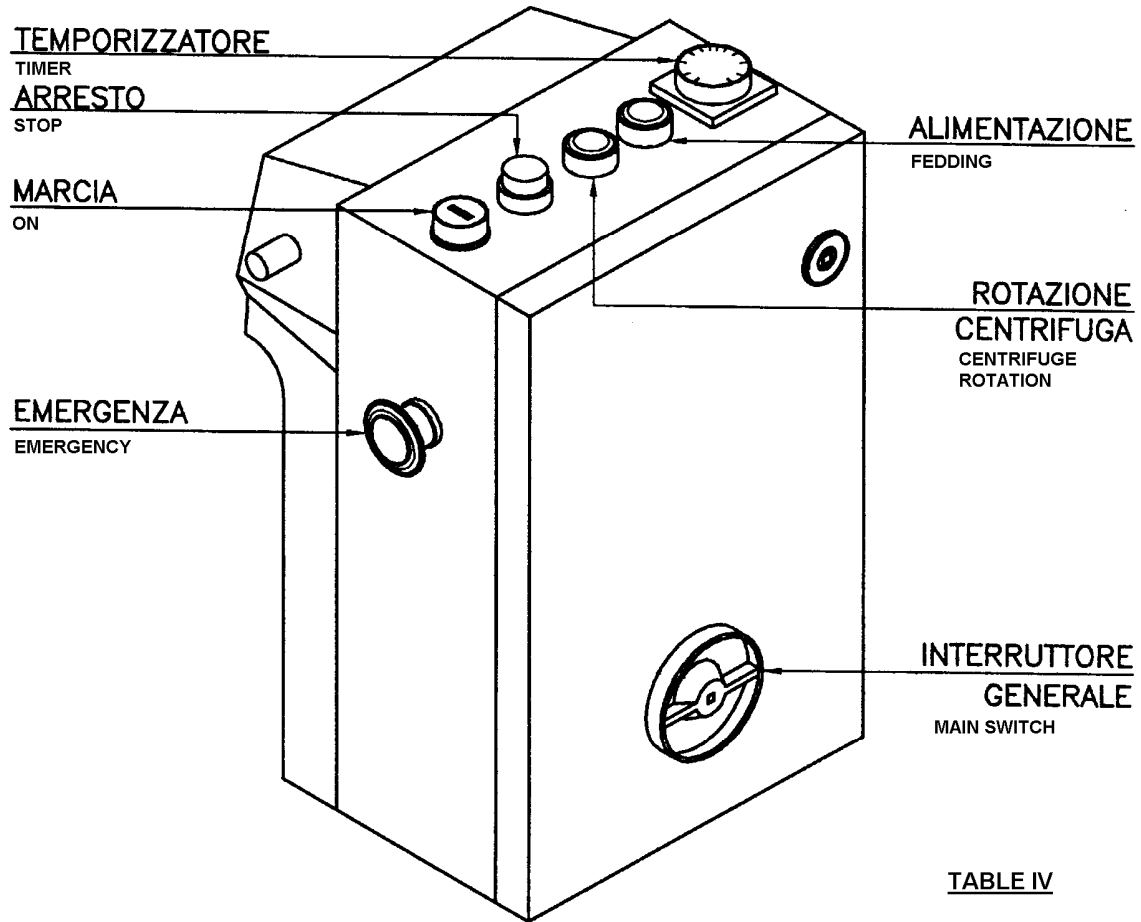


When the shaft leans, the motor with its collar (Particular 2), the collar of the resetting device (Particular 3) and the absorber-holding boss (Particular 5) are also leaning. The absorber-holding boss with its ring-tongue presses the two elastic rings (Particular 6) which buckle and cause the reaction that brings the shaft back to its original position, i.e. with the axis perfectly vertical.

The rotation of the boss, due to the couple transmitted by the motor during the starting and braking phases, is prevented by the elements (Particular 4) which are part of the boss itself and engage in the traces of the elastic rings.

The device for resetting the driving shaft is housed in a special part of the base (Particular 1).

04.2.3 CONTROL BOX



The control box is in the machine itself and can control the following operations:

1. Starting-up the machine by pushing the knob "MARCIA" (ON). The machine will not start if the cover is even partially open.
2. Switching off the machine by pushing the knob "ARRESTO" (STOP): by pressing this, the machine immediately stops its cycle.
3. Stopping the machine by pushing the knob "EMERGENZA" (EMERGENCY). In order to re-start the machine after operating the EMERGENCY knob, it is necessary to pull the knob back to its original position. This can be done by rotating the knob in the direction indicated by the arrow.

4. Setting the centrifuge time on the timer which is placed outside the control box: the timer scale is in minutes and you can set times up to 15 minutes; by rotating the timer screw, you can set times up to one hour.

The centrifuge time is calculated from the start to the beginning of braking.

5. Setting the release time of the cover by operating the timer inside the control box. When calculating the release time, you should consider a good safety margin with regard to the braking time in order to allow the drum to stop completely.

On the control board there are two warning lights which, if on, indicate the following:

WHITE LAMP: FEEDING - that the electrical box is being fed.

RED LAMP: CENTRIFUGAL ROTATION - that the machine is functioning.

The control devices are made in such a way as to withstand the strain they undergo during the functioning and when the machine is switched on.

Logical errors in the controls are not possible because moment by moment the machine only accepts controls which are in congruence with the operation sequence.

When the electric power is restored after an interruption, the machine continues its cycle for the remaining time. When the centrifugation time is over, the machine stops and gets ready for a further cycle, as in a normal cycle.

04.1.6 BRAKE

The machine is braked directly on the electrical motor with a countercurrent system. The brake feeding is in direct current deriving from a transformer located in the control box.

04.3 NOISE

As far as the emission of air noise is concerned, the value of the continuous sound pressure emitted by the same model of this machine under normal working conditions never exceeds 60 dB(A).

05 – INSTALLATION

05.1 UNPACKING AND LEVELLING – Table V – VI – VII

After unpacking the machine, put it in place.

The machine is anchored to the wooden palette to enable the fork-lift to move it.

The capacity of the fork-lift should correspond to the machine weight which is 145 Kg.

After transporting the machine to its installation place, the palette can be removed and the machine can be positioned on the foundation previously prepared in reinforced concrete as indicated in the foundation drawing (see Table V) with the anchoring points of its tension bars in correspondence with the relative wells and its drain in correspondence with the drain built into the foundation.

Regarding the machine dimensions, please refer to Table VI and VII.

After checking that positioning is correct and levelling the hydro-extractor, you can pour liquid concrete into the wells with the foundation tension bars in position.

After waiting long enough to enable final consolidation of the concrete (ten days), the tension bars can be blocked.

After finally blocking the tension bars, check the level, which can refer to the shell plating.

A non-correct levelling of the hydro-extractor may cause dangerous vibrations during the operation.

The foundation tension bars with their relative nuts and washers are supplied with the machine; you can find them packed in the drum.

05.2 WATER OUTLET

The water outlet can be connected, if planned, to the foundation water pit by a tube with a diameter of at least the same size of the drain collector of the hydro-extractor.

The machine has two opposite drain points, made points, made with a G 1 e 1/2" F threaded collector; it is enough to connect just one drain point.

If the water pit is not provided for, make sure that the drain point of the connecting tube is at a lower level than the drain collector of the machine.

05.3 ELECTRICAL CONNECTIONS

The electrical connections must only be carried out by connecting the feeding cables and the earth cable to the terminal block housed in the control box, at the points indicated with R S T.

The section of the cables can be over-dimensioned according to the installed power and the length of the feeding cable.

All electric connections are indicated in the electric diagram enclosed in the present manual.

All service signals are at safety low voltage: 24 volts.

The machine must be fed with 380/400 - 440 volts three-phase current and 50 Hz.

The installed power is 2,2 KW.

After carrying out all the operations described in the Sections 05.1, 05.2, 05.3, the installation is complete.

06 – SWITCHING ON PROCEDURE

After finishing the installation of the machine as indicated at point 05.1, 05.2, 05.3, you have to carry out the following operations before starting the machine.

06.1 RELEASE OF THE COVER SECURITY BOLT

The hydro-extractor is supplied with an electro-mechanical device positioned on the machine itself to prevent the following:

- 1) Opening the cover while the machine is rotating
- 2) *Rotation of the drum with the cover even partially open*
- 3) Switching on the machine with the cover even partially open
- 4) Opening the cover during a power black-out.

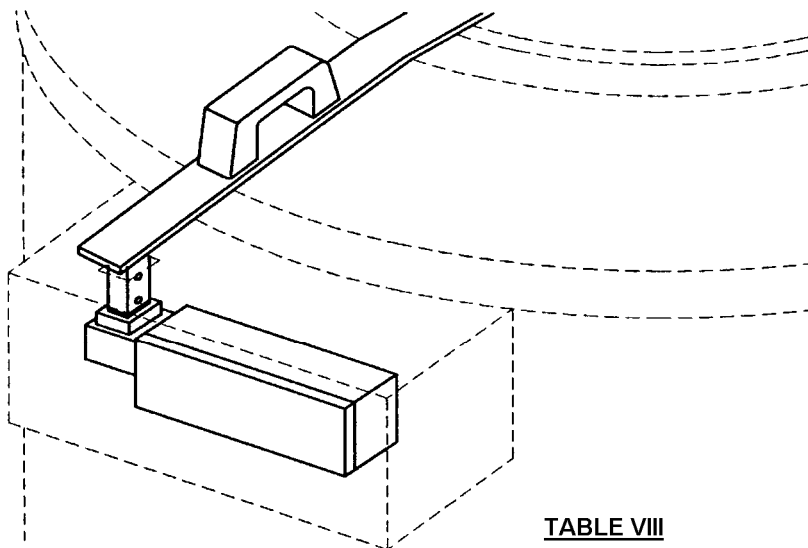


TABLE VIII

1. It is not possible to open the cover while the machine is rotating because during this phase the proximity sensor “still shaft” (Table II – Particular 7), connected to the relay inside the electric board that controls the revolutions, deactivates the electro-

mechanical device. As this device is deactivated, also the cover cannot open. The electro-mechanical device holds mechanically an appendix integral with the cover.

The magnetic sensor “still shaft” notes the passage of a metallic element placed on the driving shaft.

Only if the driving shaft is still (absence of passage of the metallic element), the relay that controls the revolutions activates the electro-magnet which allows the cover to open.

2. The drum cannot rotate when the machine cover is even partially open because in this case the opening causes the deactivation of the electro-mechanical device of the appendix integral with the cover; the contacts open and stop the machine.
3. It is not possible to start the hydro-extractor while its cover is even partially open because the partial introduction of the appendix integral with the cover into the electro-mechanical device does not allow to close the electric contacts; it is, therefore, impossible to start the machine.
4. It is not possible to open the cover when the electrical power is off because in this case the electro-mechanical device is not driven and holds the appendix integral with the cover: its opening is impossible.

It is necessary to check the integrity and the functioning of the cover opening device by simulating the operating conditions at intervals, once every thirty days.

06.2 TURNING ON

To turn on, operate on the control box by switching the main switch: rotate the main switch to position “1”.

06.3 CONTROL OF THE ROTATING DIRECTION

It is important to control the rotating direction of the machine.

In order to control the rotating direction, just push the “MARCIA” (START) knob and then the “ARRESTO” (STOP) knob: once the braking time is over, you can open the cover. The drum, which is not yet completely still, will enable you to verify the right rotating direction, which has to be clockwise.

If the rotating direction is not clockwise, reserve the feeding electric phase of the motor.

After carrying out the operations under Point 06.1, 06.2, 06.3, the machine is ready for use.

07 – DIRECTIONS FOR USE

No particular qualification is requested for the operators.

07.1 NORMAL OPERATION

The normal operating cycle of the machine is carried out as follows:

- 1. Set the centrifuge time on the timer housed on the control box (see Table IV); the centrifuge time is calculated from the start to when braking begins**
2. Lift the cover, load the machine as indicated under Point 03.4 and close the cover again
3. Push the “MARCIA” knob: the machine will automatically start rotating and once the set centrifuge time is over it will brake; only when the drum is perfectly still will it be possible to lift the cover to unload the machine and start another cycle.

07.2 MACHINE STOPPING

- The machine can be stopped at any moment of the operative cycle by activating the knob “ARRESTO” placed on the control box (see Table IV).
- If situation which can be judged dangerous occur (excessive oscillations, vibrations or abnormal noises), requiring to stop the machine in the shortest possible time, press the knob “EMERGENZA” placed on the control box (see Table IV).

07.3 MACHINE LOADING

In order to eliminate the risks connected to the machine functioning with an unbalanced load, you must be very careful during the loading operation, distributing the material into the drum as uniformly as possible. It is a good rule to place the heaviest materials on the bottom.

It is necessary to be present when the machine is working, at least from the switching on to the steady state, in order to control its regular functioning. If situation which can be judged dangerous occur (noises, abnormal vibrations) push the stop or emergency knob.

08 – MAINTENANCE

08.1 LUBRICATION

A. Bearings of the driving shaft:

they are lubricated for life; check the efficiency of the seals every 3000 hours of functioning.

B. Cover hinges:

lubricate with a grease like ROL OIL LITEX / EP2

Check intervals: 1000 hours

08.2 OSCILLATION ABSORBERS

The substitution of the rubber oscillation absorbers should be carried out every 6000 hours of functioning.

08.3 BEARINGS

The control of the bearings is recommended every 3000 hours of operation.

In order to carry out this control, disconnect the electrical board, lift the cover, manually rotate the drum: if there are noises or abnormal vibrations, substitute the bearings according to the section "Repairs".

09 – REPAIRS

09.1 REMOVAL OF THE DRUM – Table X

- Remove the screws which connect the shell plating to the shell bottom
- Remove the shell plating
- Remove the cap
- Release the cone with the help of a puller. To make it easy, hit the head of the puller with a hammer, after stretching it.
- Remove the drum.

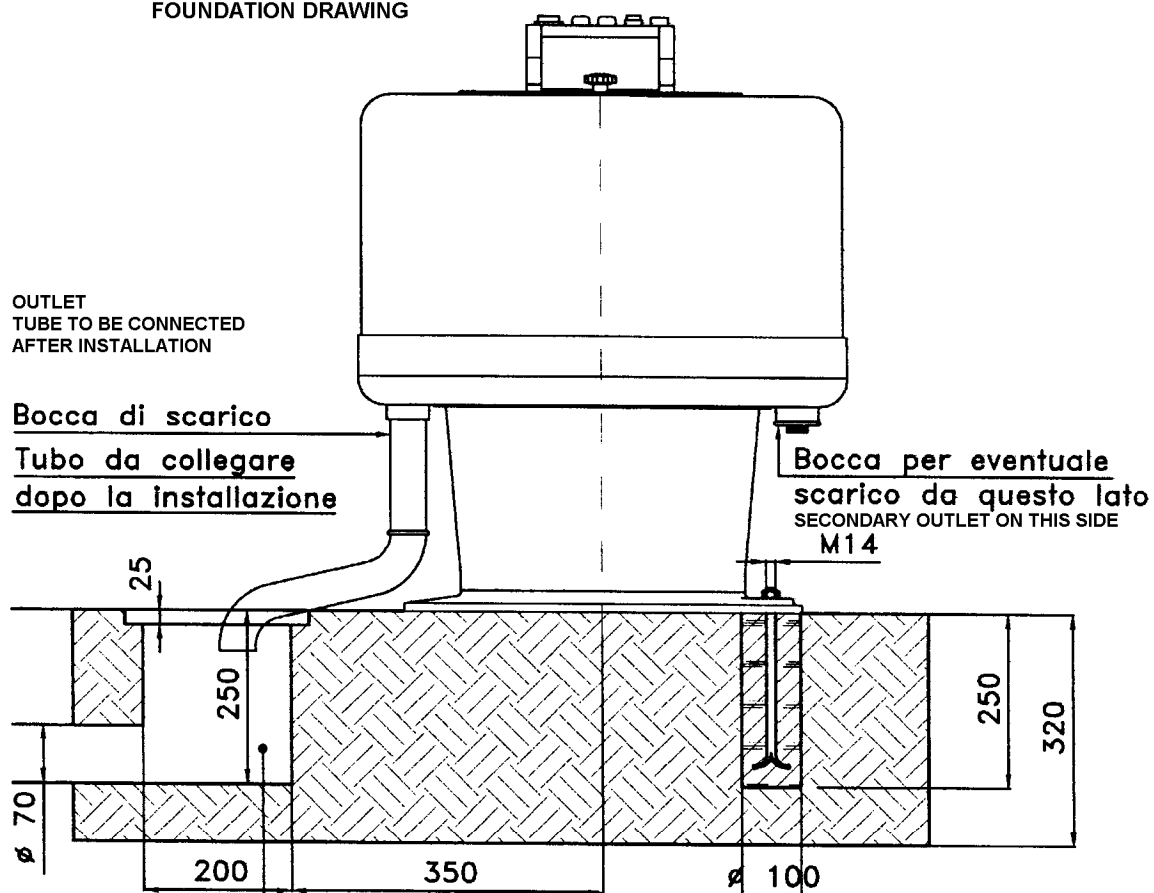
09.2 REMOVAL OF THE OSCILLATION ABSORBER RINGS – Table XI-XII-XIII

- Remove the cap (see Point 10.1)
- Release the cone with the help of a puller (see Point 10.1)
- Remove the screws which connect the shell bottom to the bottom
- Remove the drum, the shell driving, the bottom, the shell (see Table XI)
- Remove the nuts anchoring to the foundation
- Lift motor + base and position them on supports (see Table XII)
- Remove the blocking nuts of the motor-holding collar (see Table XII)
- Remove motor and collar (see Table XIII)
- Remove locking nut (see Table XIII)
- Remove lower collar (see Table XIII)
- Remove oscillation absorbing rings

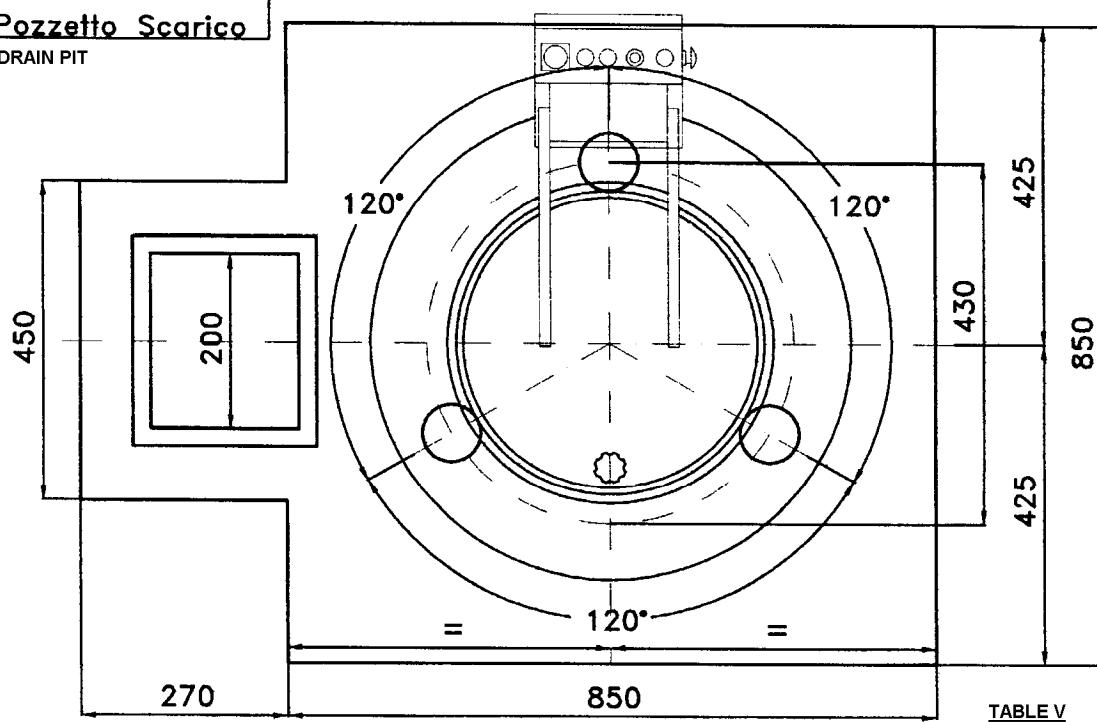
10 – SUMMARY OF THE MACHINE DATA

<i>Maximum number of revolution</i>	: 1450(50Hz) – 1740(60Hz)rpm.
<i>Maximum centrifugable wet load</i>	: 12 Kg
<i>Maximum centrifugable mass</i>	: 1.3 Kg/dm ³
<i>Installed power</i>	: 2.2 KW
<i>Tension</i>	: 380-400 V – 440 V
<i>Frequency</i>	: 50 Hz – 60 Hz
<i>Starting-up time</i>	: 30 sec.
<i>Braking time</i>	: 30 sec.
<i>Drum diameter</i>	: 450 mm
<i>Usable drum height</i>	: 300 mm
<i>Total weight</i>	: 145 Kg

FOUNDATION DRAWING



Pozzetto Scarico DRAIN PIT



DIMENSIONS

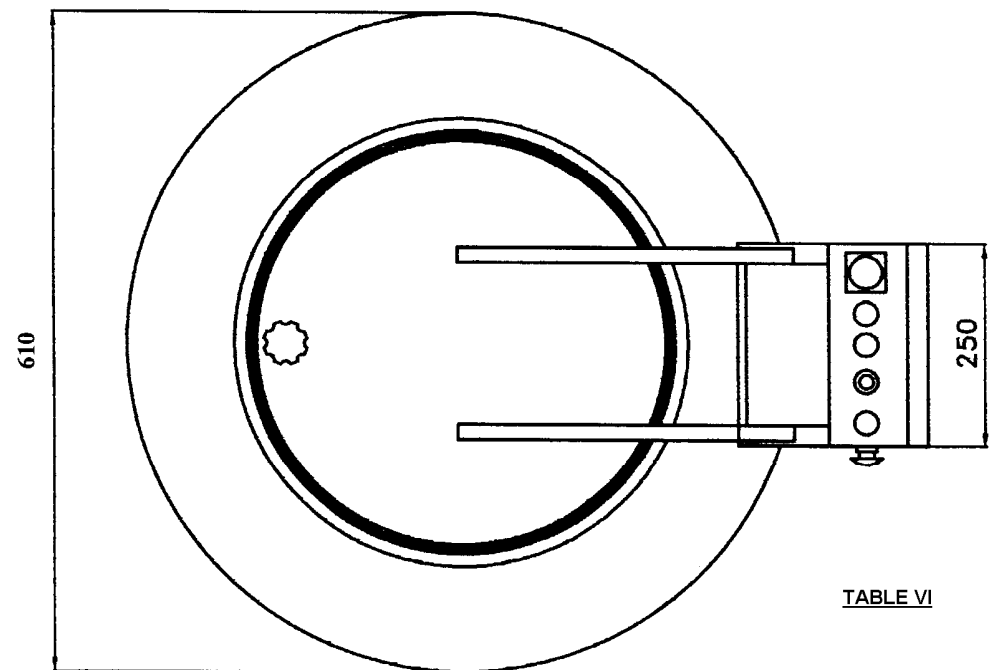
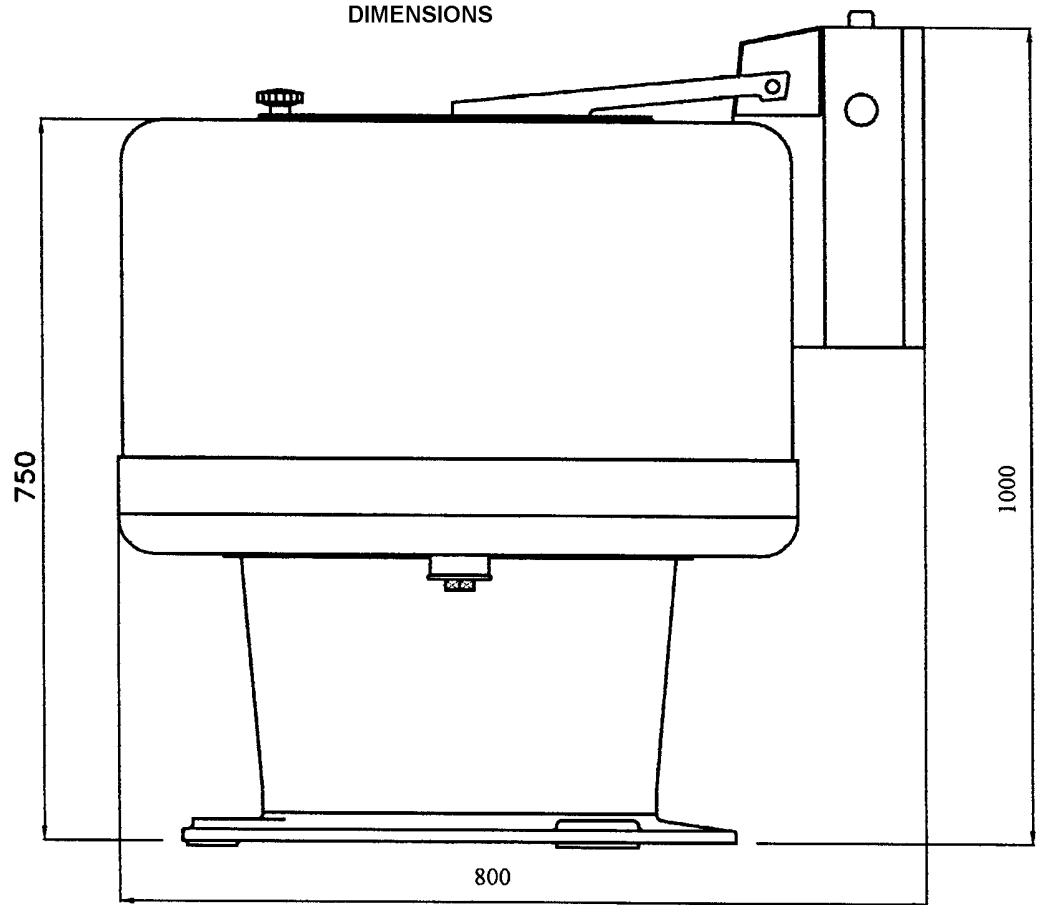


TABLE VI

DIMENSIONS WITH RAISED COVER

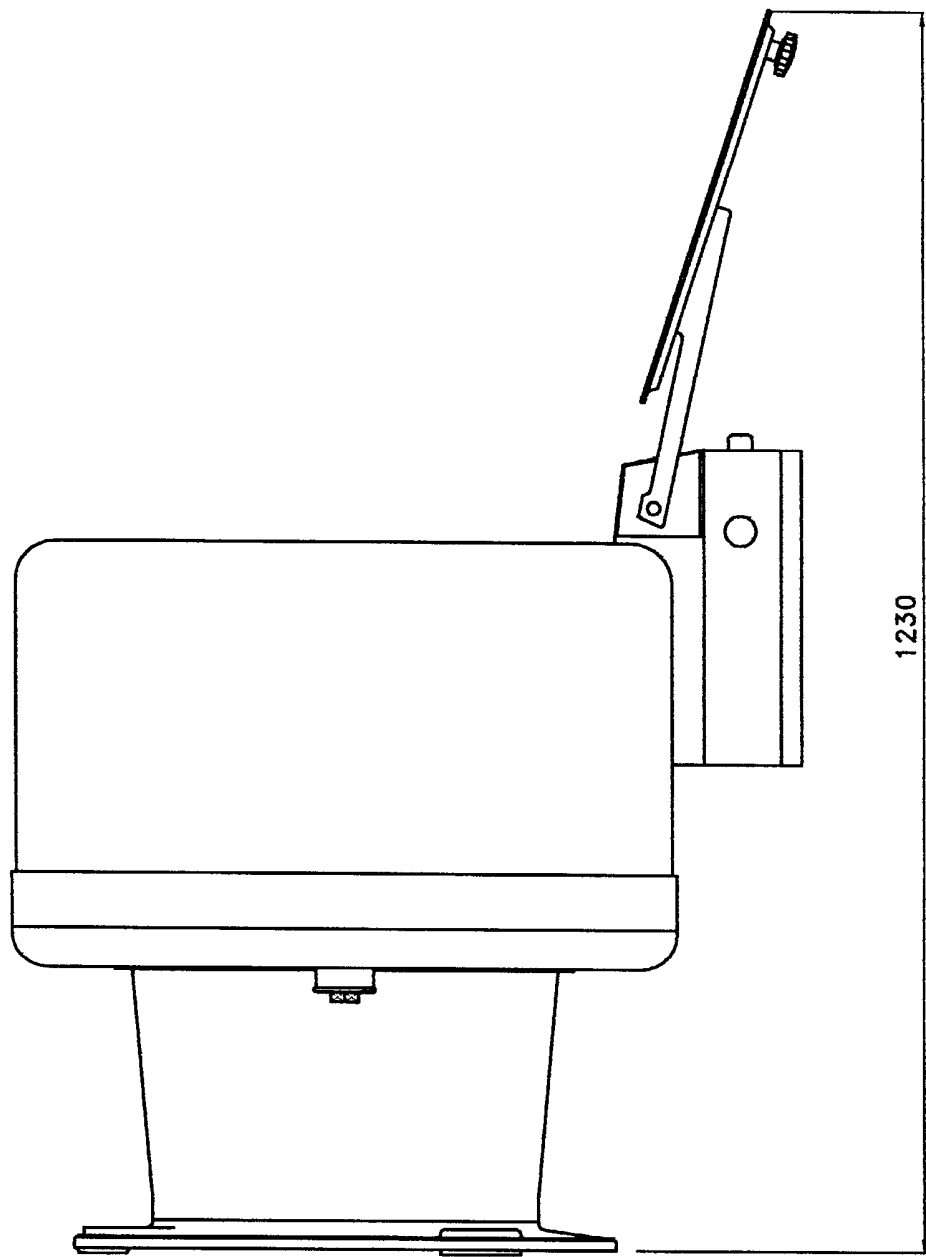
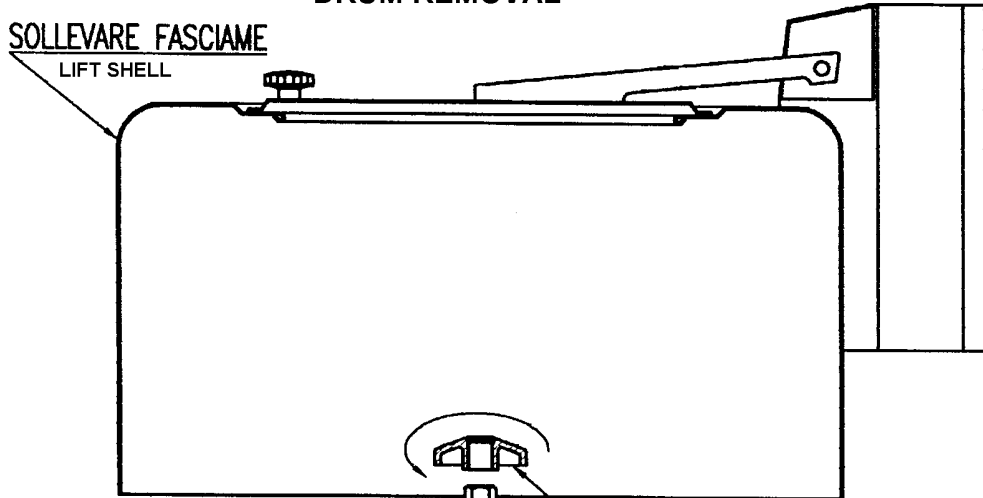


TABLE VII

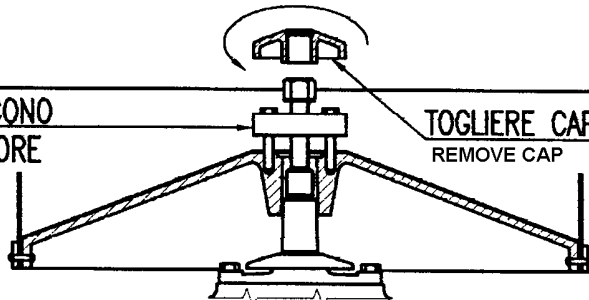
DRUM REMOVAL

SOLLEVARE FASCIAME
LIFT SHELL



SBLOCCARE CONO
CON ESTRATTORE
RELEASE CONE
WITH THE HELP
OF A PULLER

TOGLIERE CAPPELLOTTA
REMOVE CAP



RIMUOVERE CESTELLO
REMOVE DRUM

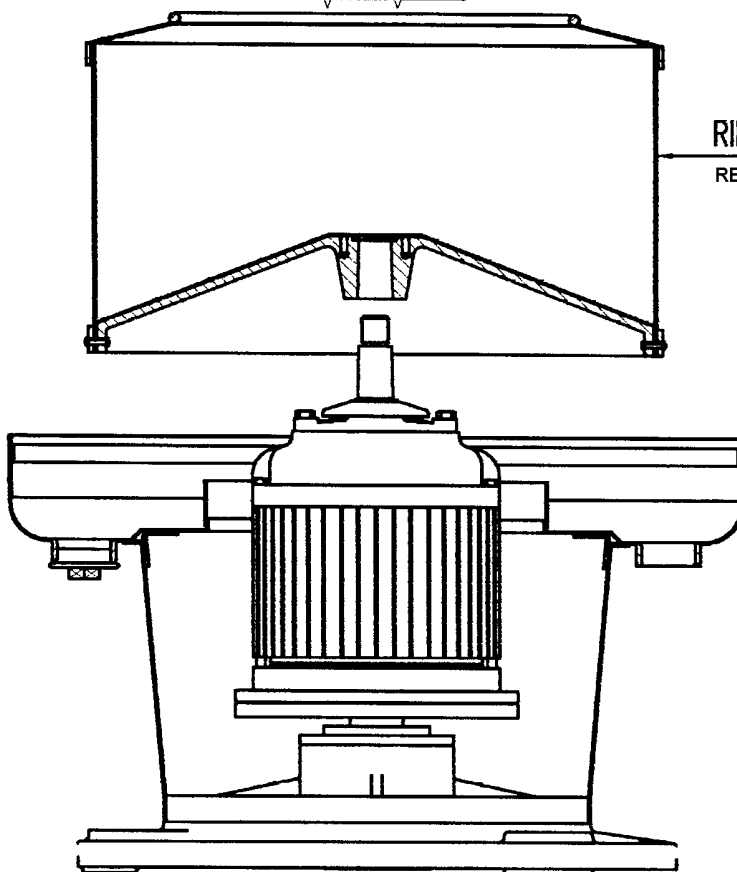


TABLE X

REMOVAL OF OSCILLATION ABSORBER RINGS

SOLLEVAMENTO CESTELLO-FASCIAME ESTERNO-FONDO
LIFTING DRUM - SHELL PLATING - SHELL BOTTOM

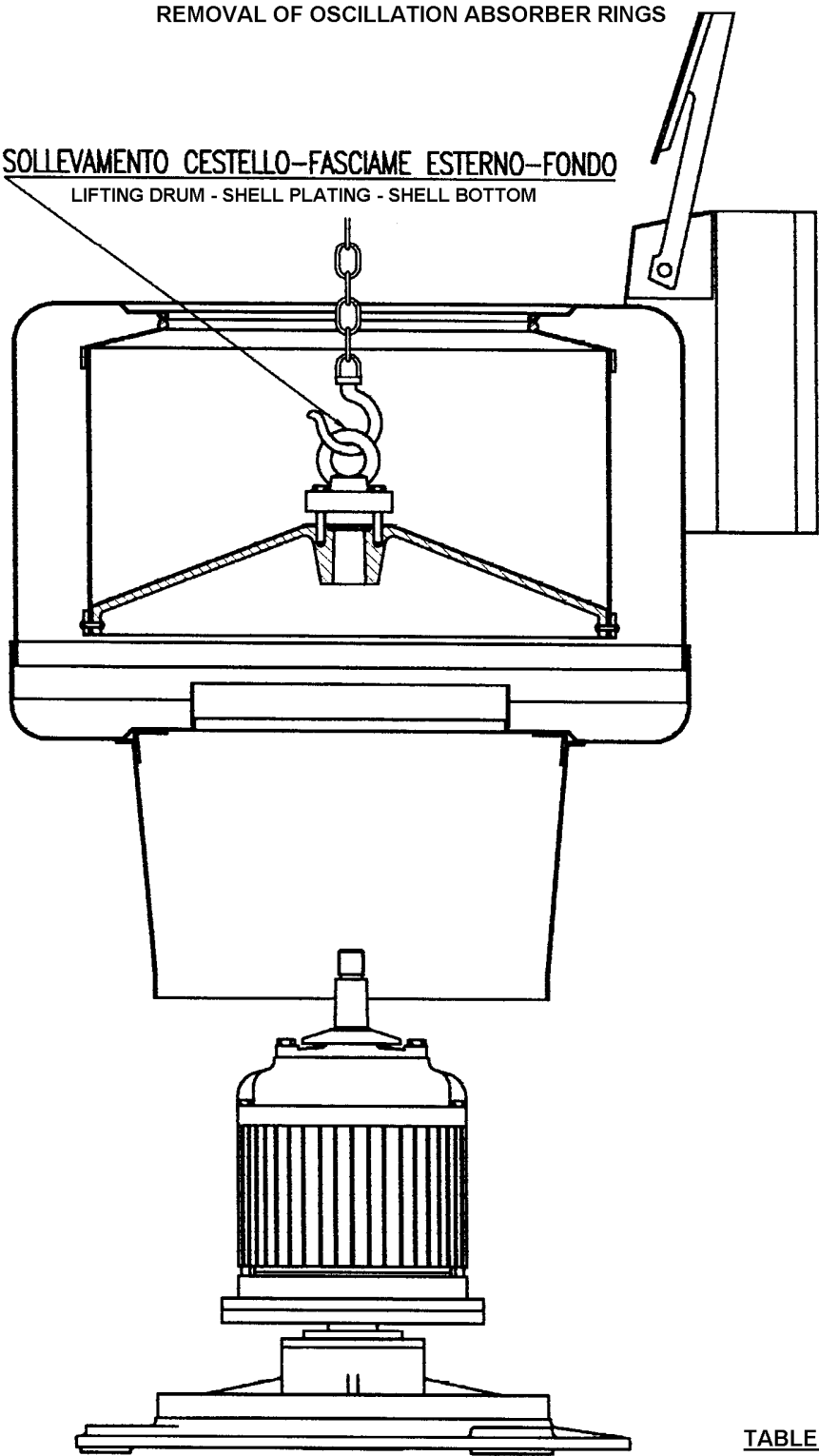
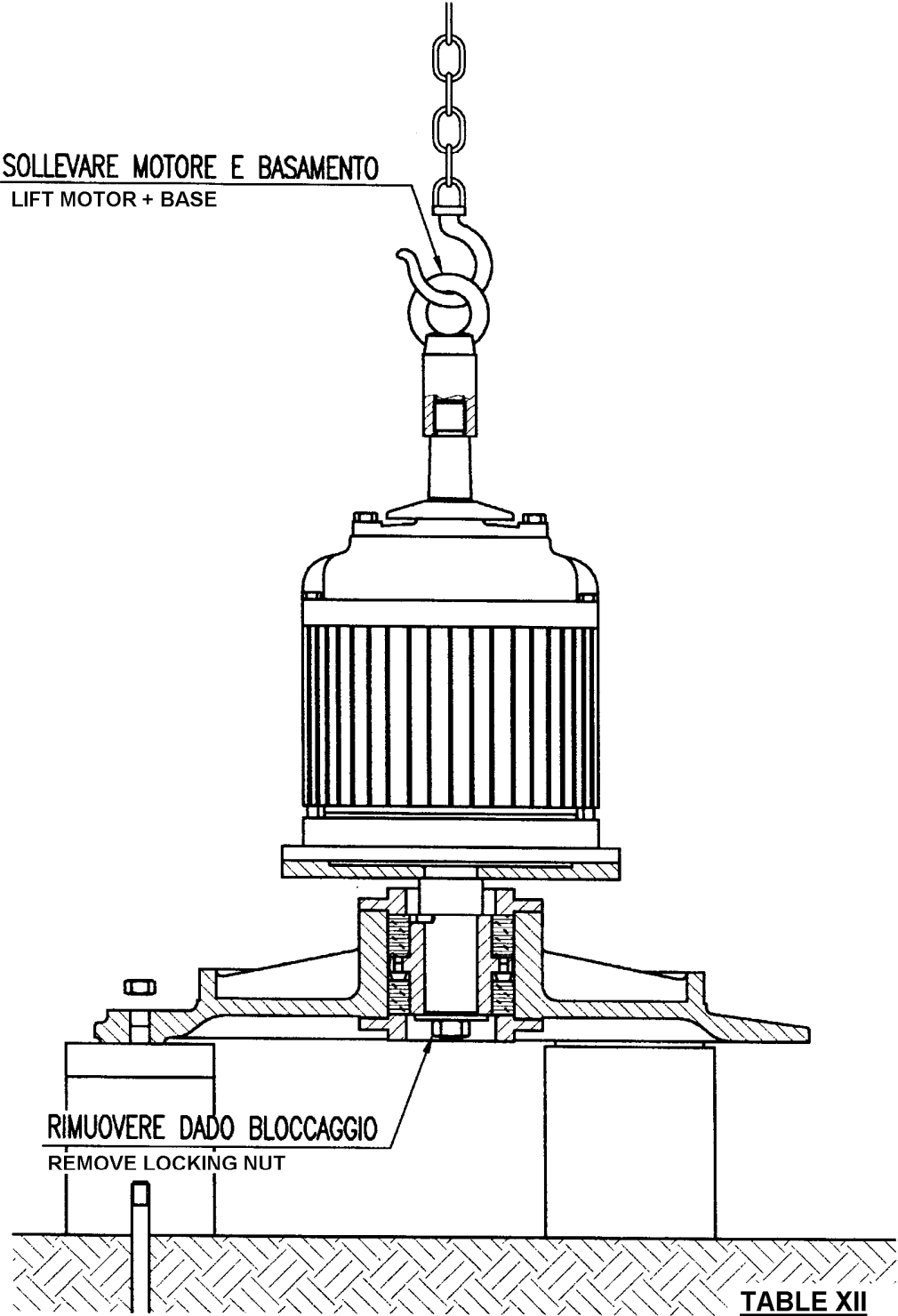


TABLE XII

REMOVAL OF OSCILLATION ABSORBER RINGS



REMOVAL OF OSCILLATION ABSORBER RINGS

