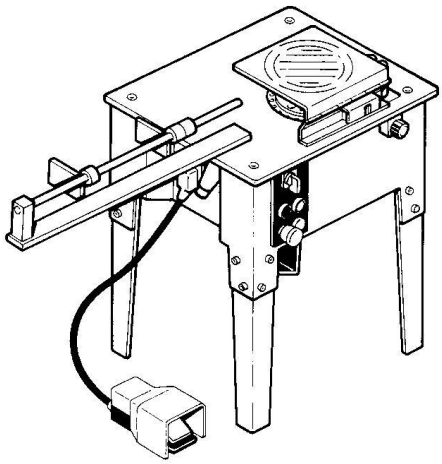
stirrups bending machine

1716

OPERATION AND MAINTENANCE HANDBOOK - SPARE PARTS LIST



MACHINE DESCRIPTION

Intended uses
The stirrups bending machine has been designed to bend with high production re-bar stirrups for concrete industry application.

Machine model, serial number and construction year are showed on the identification plate fixed on the machine

Table with size of bars in mm. which it's possible to bend in the same time, according the hardness of the bars, technical features of the machines, Hp/KW.

Steel re-bar	85 Kg/mm2						Rpm 1'	Motor	
Number of re-bars	1	2	3	4	7	10		HP (KW)	
1716	16	12	10	8	6	4	22	2 (1,5)	

Not allowed uses
Not allowed uses are all the uses not explicitly written in intended uses i.e. :
Use of material different to those specified
Use of materials of different diameter to those intended
Use of machine in explosive atmosphere

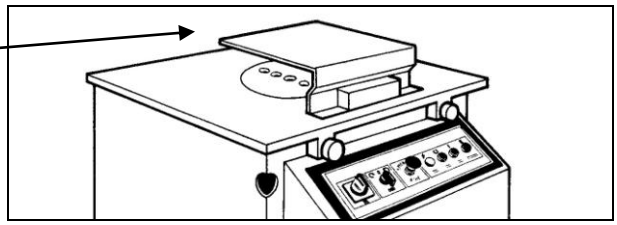
SAFETY INFORMATION

Safety criteria
In the designed and machine construction we have adopted criteria and technology to meet the safety requirements forecast by Machine Directive 93/87/CEE (for machines delivered to CE countries only).

Protections
Frame structure prevents access to gears, belts and moving parts
The safety moving guard hinged to the upper frame of the machine has a limit switch which stops the bending operation whilst the guard is open. (CE machines only)
Continuously pressed safety control (dead man) to allow the bending of re-bars:
- a push button on the control panel
- a protected pedal to prevent accidental operations

Fuses and thermal relay for the electric motor
Two red emergency stop push button.

CE Safety moving guard



Operator protection devices

Use gloves to handle the steel re-bars and prevent any risk of abrasion and cuts

Use protective footwear to prevent feet being crushed by the falling of heavy steel re-bars

Noise
Continuous equivalent sound pressure level: **75 dB (A)**
Average level at one metre distance from the machine

Outstanding risks and precautions
It is forbidden to reach bending area with hands
Keep the steel re-bars in position using the adjustable striker.
Don't insert a great number of re-bar into the machine according to the different diameter in the previous table
To bend several stirrups, don't hold with your hands but use tongs ort other gripping instruments
Do not remove the CE safety moving guard or its efficacy will be compromise.
Only work on the machine and perform maintenance operations when the machine is shut off, with power socket disengaged.

***Danger** of fingers being crushed or cut off*

Danger ! *Tampering with the machine or removal of guards or machine parts can cause risks for the machine operators and closer persons.*

The electric shock protection is based on the correct connection to the earth lead: the power system to which the machine is connected must comply with applicable legislation.
The socket to which the machine is connected must be protected upstream by customer using a residual current circuit breaker (tripping threshold not above 30mA)
Do not use extensions cables
Make sure the cables between the plug and the machine are not in transit areas, or subject to damage or mechanical stress.

Danger ! *Electric shock*

TRANSPORT

Dimensions and weight	1716
Kg.	150
cm.	80x70x96

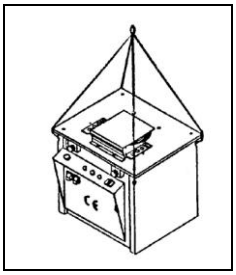
The machine is usually delivered on a wooden pallet and wrapped up in cellophane.

Remove all accessories on rotating plate, control pedal, bushes and measurer device before moving the machine.

Legs are to be removed during transport

Use ropes or chains of enough strength according to the weight of the machine.

Before lifting the machine, check that the lifting is barycentric.
To do it, lift the machine of a few centimetres and verify that the plate of the machine is horizontal.



Danger
Check that the fittings are inside the drawer and close it to avoid falling out.

INSTALLATION

Description of the supply

Bush Ø	Bush holder pivot	Stirrups bend pivot	Square pivot	Striker	Hexagonal key	Stirrups measuring	Pedal remote control
50 60	3	2	1	1	2	1	1

Before positioning and after transporting, make sure the machine structure has not been damaged by knocks or falling during transport that could affect machine operation reliability

Positioning

During positioning follow these instructions:

- Power sources must be provided near the area where the machine will be placed.
- The supporting surface must be such as to withstand the weight of the machine and must be flat and smooth so the machine is stable.
- The working environment must be adequately lit so the machine can be operated and serviced in total safety.
- The area must be sufficient for the machine and the material which is to be processed. To safely operate and service the machine, this must be placed at a distance of at least 1 metre from walls. It must always be possible to easily reach the bending area with the material to be worked and the control switchboard.

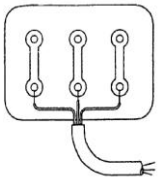
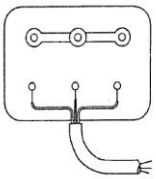
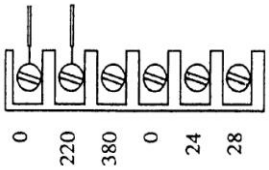
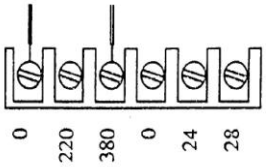
- Acceptable operating temperatures: **from -5°C to +40°C.**
- Acceptable relative humidity: **from 30% to 90%(at 20°C).**

- The working area must be protected from atmospheric agents, such as rain and snow.

- Place the machine on the 4 legs fixing them with supplied screws and bolts
- If it's possible place by side to the machine 2 tables as long as the longest of the shaped foreseen. In such a way the operator can work the whole material without having needed to turn the re-bars. The 2 tables must be horizontal, lined up to the machine plate.

Checking the electrical specification

The machine is delivered with electrical system already connected for the requested tension (Volts and Hertz).
Before starting the machine, it is always advisable to verify that the motor is preset for the current really existing in the site of use.

Terminal board wired to	Volt 220	Volt 380
		
Transformer terminal		

Electric connections

The power cable and power plug provide connection to a protective hearth

Earthing the machine

- connect one end of a copper plate (section **16 mm2**) to the screw inside of the frame machine.
- connect the other end to an earth pipe deeply driven in a rather wet and conductive area, or connect it, by a terminal, to a corner plate, deeply laid underground.

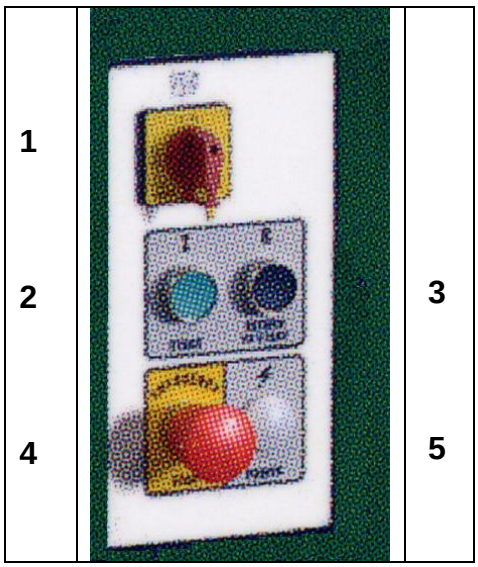
Danger ! *Electrical machine safety is based on correct connection to the earth lead*	

For the connection to electrical system of the machine use a cable with following characteristic:
With a plug of a correct type to fit socket to be used
Of adequate capacity (each lead should have a minimum section of 2,5 **mm2**)
With a suitable isolation from the surrounding environment

Connect the control pedal to the correct socket on the control side.

USE

Control panel



1	Main switch	0 = OFF I = ON
2	Start push button	Green start push button Continuously pressure safety push button must be constantly pressed to allow the rotation action. The rotation stops immediately if the push button is released. When reversing rotation point is reached the return movement is automatic. The control pedal operates in the same way as start push button
3	Reset push button	The push button controls the return of the rotating plate to the zero point of the rotation.
4	Emergency stop	Red push button for emergency stop
5	Tension pilot light	When the indicator is lighting there is power in the electrical circuit

Starting the machine

Turn the **main switch** to **I**
Tension pilot light is lighting

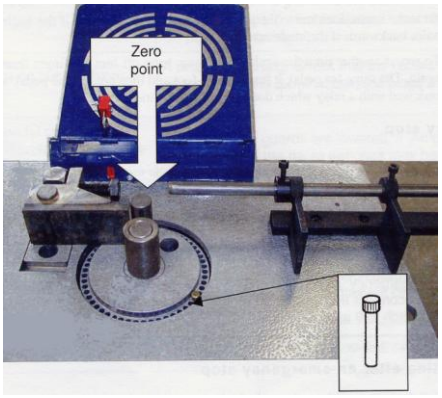
Checking the direction of the rotating plate

THE PLATE MUST TURN ONLY CLOCKWISE ***As seen from the working place***	

Check the work surface is clear and the surface safety cover plate is lowered.
If the cover plate isn't in placed it isn't possible to carry out the actions.
Press the START button briefly to check the direction of the rotation of the central plate.
If the sense of rotation is wrong, it is necessary to change the phases on the plug.
If the sense of rotation is right, press the RESET button to return the central plate to the zero point.

Bending operation

Check the rotating plate is at zero point. If necessary return it to zero point by pressing reset pushbutton



1 Lift the safety cover of the plate
2 Insert the striker in the pair of holes of the saddle
3 Insert the pivot and bush in the central hole of the rotating plate
4 Insert the pivot and bush in the required eccentric hole, in relation of the required radius.
5 Always leave at least 2 mm more than the diameter of the stell bar to be bent between the central pivot and the eccentric pivot
6 Insert the reversing pin in a peripheral hole of the rotating plate, chosen according to the required bending angle.
7 Insert the stell bar between the two pivots
8 Lower the safety cover of the plate. If the cover is not lowered the machine will not function.
9 To operate the machine : press and hold down the starts button or press and hold down the remote control pedal
10 If the button or pedal is released the machine is stopped
11 When the pin actives the reverse micro switch, the direction of the rotation reverse and it automatically returns to the zero point.
12 To make **corrections** move the pin one or more holes **forward if the angle is too large**, or one or more **backwards if the angle is too small.**
13 To repeat another time the cycle of bending, tears off him the finger from the button and presses it again. The same for pedal, it tears off the foot and then presses the pedal again. The electric panel is endowed with a relay which does not allow repetition.

Danger of crushing hands! Do not try to operate during the automatic return movement

Emergency stop

There are two red emergency stop buttons to stop the machine in case of emergency,
one on the control panel and
one the opposite side of the machine.

*Emergency stop buttons allow to stop the moving parts of the machine only. They don't disconnect the electric current. To electrically isolate the machine, turn the general switch to **0** and remove the plug.*

Restarting after emergency stop

Pull the **emergency stop button** out by twisting it clockwise
If necessary, return the rotating plate to the zero by pressing **the reset** pushbutton

Switching off

Switch off the motor by turning the motor rotation switch to **0**
Remove the plug to electrically isolate the machine

At the end of each working day, disconnect the machine from the site's electrically supply. If the machine is out side located, protect it from the elements with a waterproof sheet.

DIAGNOSTIC

Problems	Suggestions
Machine doesn't operate and the tension pilot lamp doesn't lit.	Check that none of emergency stop buttons have been pressed Check there is power to the site Check that the cables are connected to the terminal box, the plugs and sockets Check fuses in electrical panel.
Machine doesn't operate but the tension pilot lamp is lit.	Check that a phase has been missing. Check there is power to the site Check that the cables are connected to the terminal box, the plugs and sockets
The machine doesn't work when the start push button or control pedal are pressed. The tension pilot lamp is lit.	Check that the guard (CE machines) is lowered. If the guard is lowered one of the micro switches may be faulty.
Lack of power in the bending operation.	Check the tension of the belts. If they are slack, unscrew the motor retaining nuts slightly, tighten the belts and tighten the nuts.
The rotating plate turns but it doesn't return and stops when the reversing pin reaches the micro switch reverse point	Check the reverse micro switch from the bottom of the machine, the contacts may not be good or there is no voltage
The rotating plate does stop exactly at zero point	Check the position of the stop limit switch.
Machine connected at Volt 220 single-phase. The current feed is regular, but the machine power is low.	Check the voltage if lower than Volt.220, there is not enough current for low tension. A voltage stabilizer is advisable.

MAINTENANCE

Maintenance operations must be made by qualified personnel in accordance with local rules.

Daily	Keep cutting area clean
Every 200 hours	Unscrew the four screws fitted to the frame and the four screws on the gear box using Allen Key Lift and move away the frame plate Checking the condition of the limit switches and removes the calamine. At the end of the work put back the plate frame and screw the eight screws.

Carry out work on the machine and maintenance only when the machine is off, with the power plug removed

Switch off the machine and disconnect the power plug before changing a fuse or resetting of the magneto-thermal safety plug

Decommissioning the machine

Once the machine has reached the end of its technical and operating life, it will have to be decommissioned.
Decommissioning and placing the machine in such conditions as to be no longer usable for the purposes for which it was originally designed and built must nonetheless make possible recycling of raw materials making up the machine.

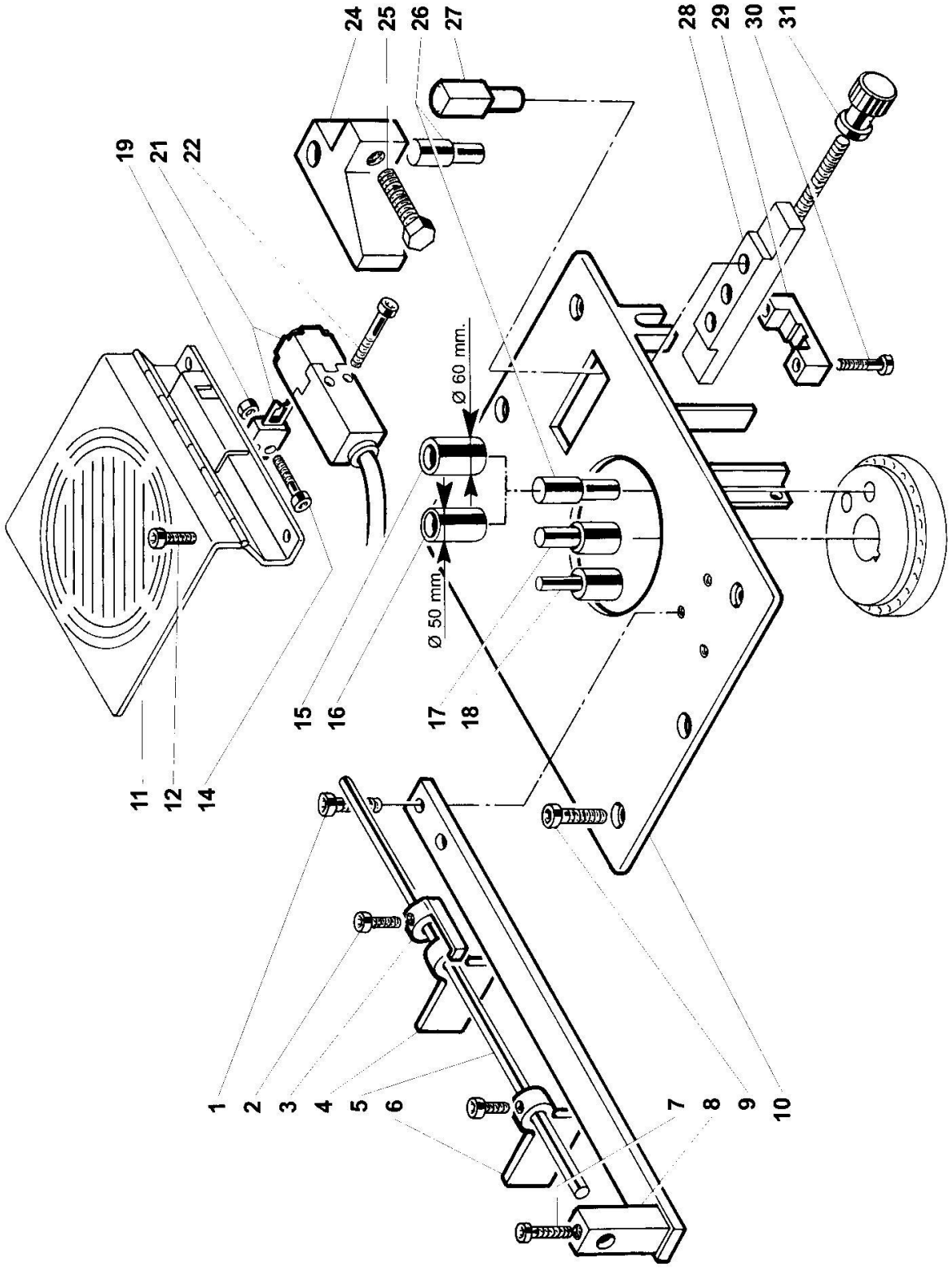
To decommission the machine without outstanding risks, follow this procedure:
* Turn off the machine.
* Cut the plug from the power cable.
* If transport is required, follow the procedure in the **Transport** chapter.
* Disposal of the machine through an approved waste collection centre.

Do not dispose of oils and greases into environment.
Deliver to authorised corporation for disposal through approved channel

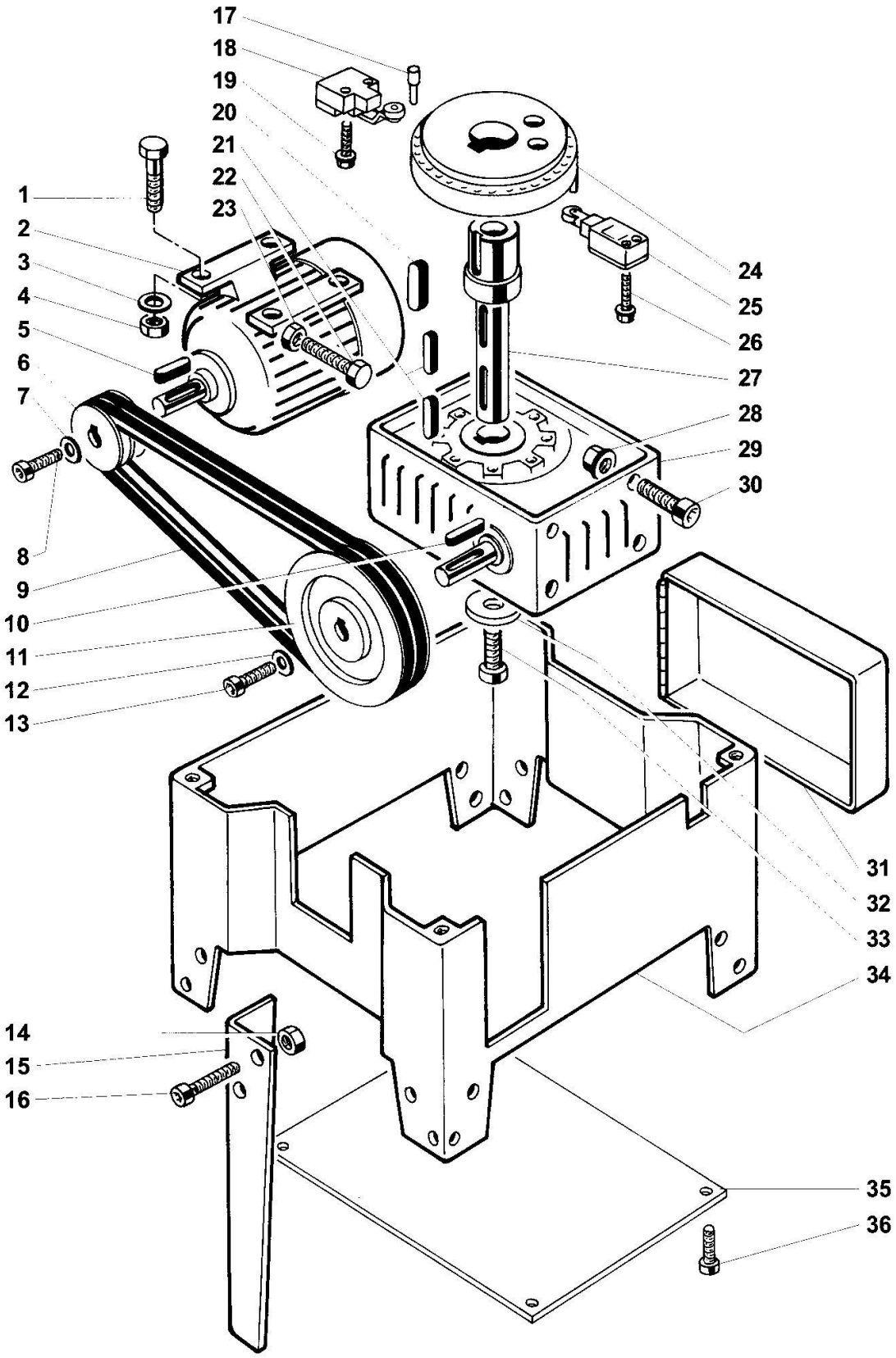
Guarantee bond

FEAL PROGETTI guarantees for working of new machines, in condition of normal use, for a period of 12 (twelve) months from delivery date.
The guarantee is limited to the repair or replacement of those parts which, for working or material defects, would be of no use and this without any responsibility of **FEAL PROGETTI**.
The parts recognized faulty must reach address of **FEAL PROGETTI**, free of charge, for replacement. Transport and labour costs are at Client's charge.
Any damage resulting from unexpected uses (voltage drop mistake, blows, knocks, un-correct installation) or other reasons not directly attributable to the machine are excluded from the guarantee.
Electric motors, electronic cards, inverter and wear parts like blades, springs, "V" belt, coupling tooth, pivot and bushes are excluded from the guarantee.

1716 Drawing n. 1

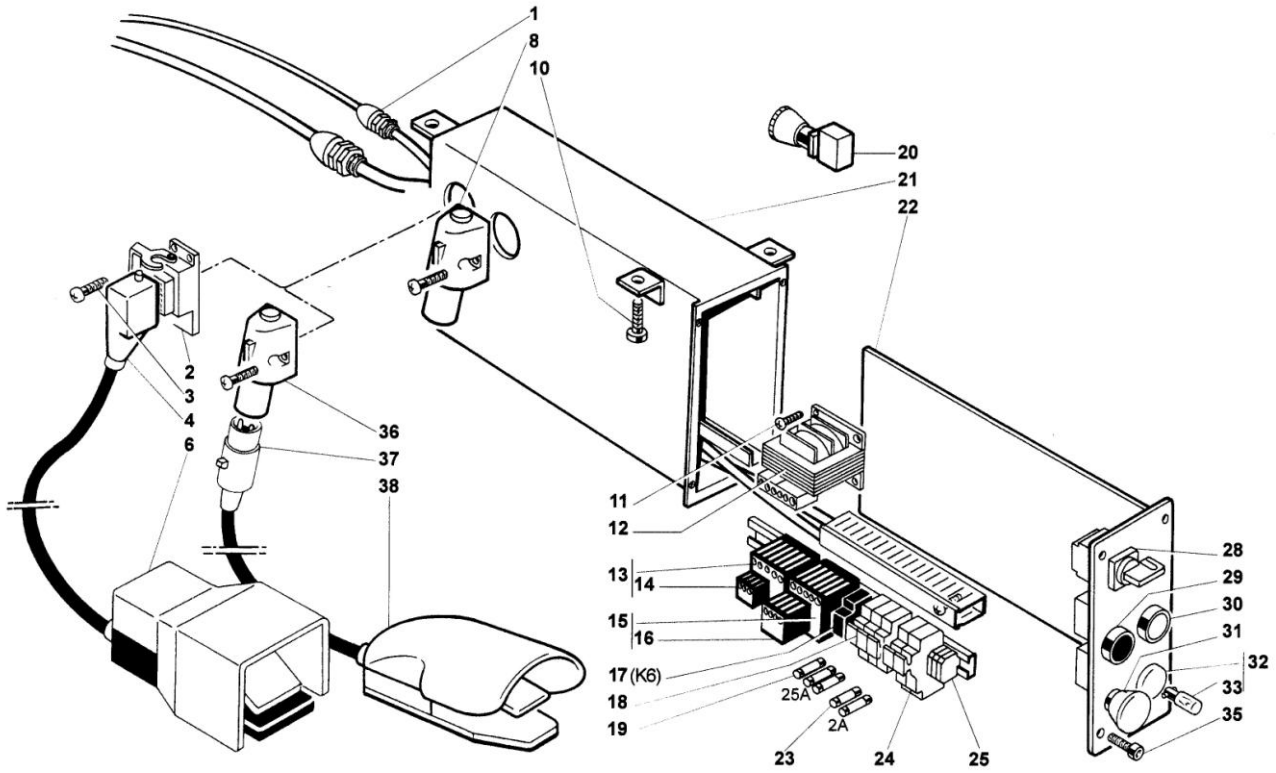


1716 Drawing n. 2



1716 Drawing n.3 Three-phase control board

Pos. 2 / 3 / 4 / 6 for CE machine only



1716 Drawing n.3a Single-phase control board

Pos. 2 / 3 / 4 / 6 for CE machine only