COSTRUZIONI MECCANICHE

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USE THIS MANUAL BEFORE USING THE MACHINE

FBR-108S

PALLETISER

Operating instructions
Manuale istruzioni
Mode d'emploi
Manual de instrucciones

Date of this edition	Identification code	Notes
06/00	FBRS/-01 GBR	

PALLETISER
mod. FBR- 108S

1.1 FOREWORD

This manual defines the purpose for which the machine has been constructed and contains information on performance, technical characteristics, how to use the machine and effect maintenance so as to ensure correct, problem-free running.
This manual is an important part of the machine and should therefore be kept in a safe place where it can be consulted at will.
It is recommended that the user read the manual carefully and observe the described standards and procedures, as they give important information regarding operative safety and maintenance.

1.2 MANUFACTURER

SORMA S.P.A.
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1.3 CONFIDENTIALITY

The technical information contained in this manual is the property of SORMA S.P.A. and is strictly confidential: disclosure or copying (even partial) of such information is therefore forbidden unless written authorization has been obtained from SORMA S.P.A. Using the manual for any purpose not strictly connected to machine installation, operation and maintenance is also forbidden.
SORMA reserves the right, at any time and without prior notice, to carry out any modifications it believes necessary, without any obligation to update the manual each time such a modification is made.

1.4 WARNINGS

The warnings, with instructions on risk-identification procedures, are highlighted by the symbols shown below. Do not underestimate their importance: machine damage and operator injury are real possibilities.

⚠ WARNING

Shows that inobservance of the relevant instructions may compromise personnel safety, causing injury or risk of death.

⚠ CAUTION

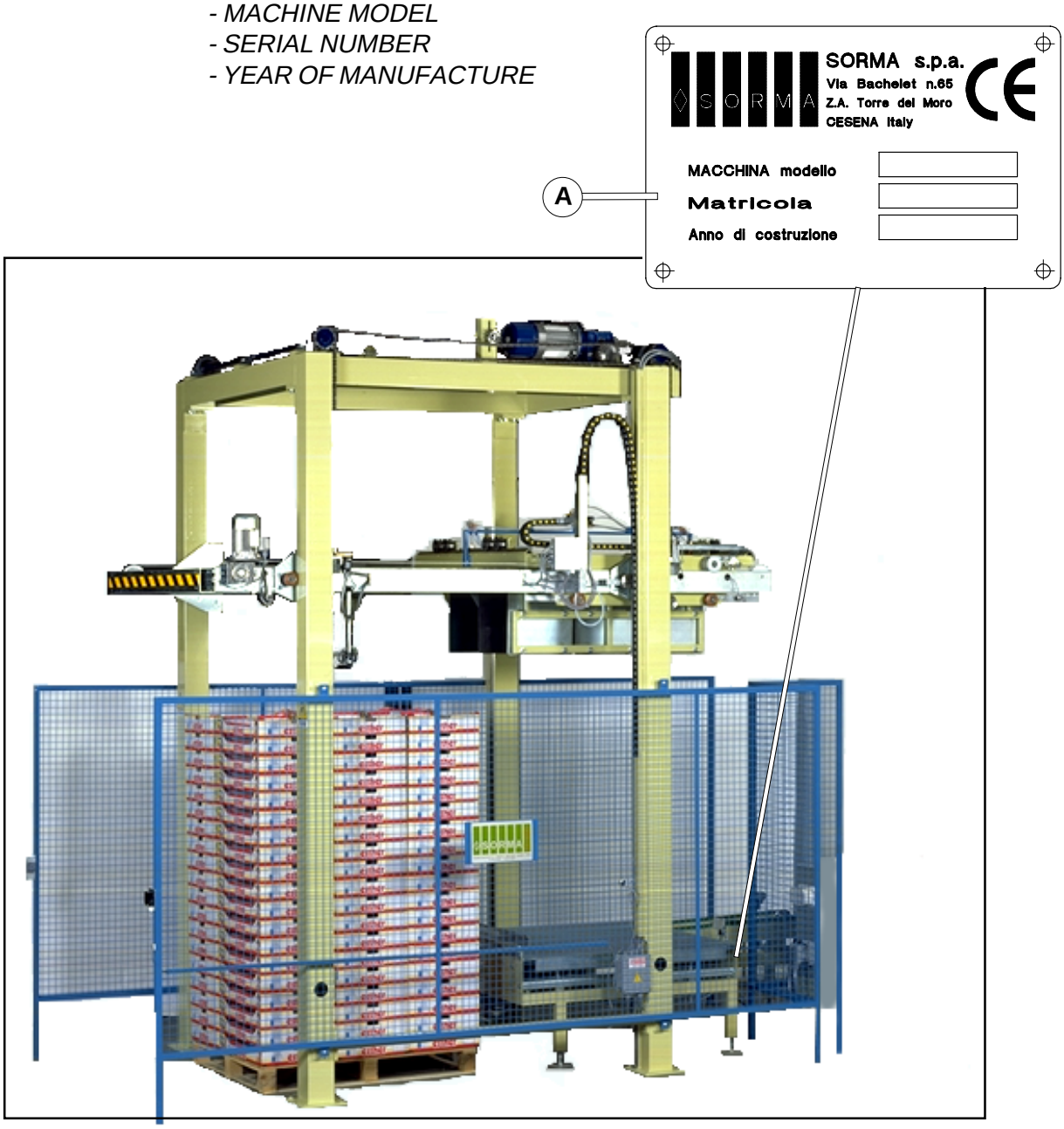
Shows that inobservance of the relevant instructions may damage the equipment.

Examine the on-machine safety plaques carefully and observe the relevant information.

1.5 MACHINE IDENTIFICATION

The identification plate **[A]** contains the following information:

- *MACHINE MODEL*
- *SERIAL NUMBER*
- *YEAR OF MANUFACTURE*



⚠ CAUTION

All the information on the plate must be legible at all times.
Use the identification data in all correspondence with the manufacturer (e.g. when requesting spare parts, information, assistance).

2.1 ATTACHMENTS

Enclosed you will find the following documents:

- *WIRING DIAGRAM*
- *SPARE PARTS CATALOGUE*

2.2 TECHNICAL PRESENTATION

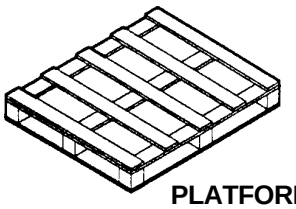
The FBR-108S palletiser is an automatic machine for processing wooden, plastic or carton boxes of many different sizes.
It is usually used as an end-of-line machine.
It collects the boxes delivered by a conveyor belt, then puts them together in organized layers and finally palletises the various layers until a full pallet has been set up.
The palletiser can be used individually, loading and unloading the platforms by hand; or it can be an integrated part of automatic lines provided with conveyors for automatic pallet feeding.
The FBR-108S should be used only for the purpose it was expressly designed for.
Any other use is improper and hence unreasonable.
The company shall not be liable for any damage due to improper, mistaken or unreasonable use.

2.3 TYPES OF PLATFORMS

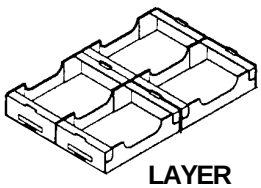
The FBR-108S can palletise on two different types of platforms, measuring respectively:

- 800 x 1200
- 1000 x 1200

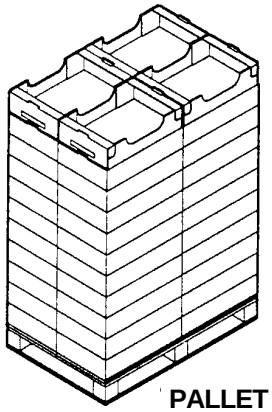
DEFINITIONS:



PLATFORM



LAYER



PALLET

2.4 FORMA DELLA MACCHINA

La macchina è costituita da 5 distinte parti fondamentali :

1) -GRUPPO TRASPORTATORE DI ALIMENTAZIONE CASSE- CHE PROVVEDE AL DISTANZIAMENTO DELLE CASSE ED EVENTUALMENTE ALLA LORO ROTAZIONE, QUINDI AL LORO INVIO ALLA PIATTAFORMA A RULLI, ESSO E' COSTITUITO DA:

[A] LANCIATORE DI CASSE

[B] TRASPORTATORE A CATENA CON DISPOSITIVO GIRACASSE
(CHE PROVVEDE A COMPATTARE UNA FILA DI CASSE SULLA PIATTAFORMA A RULLI, QUANDO HA COMPATTATO LE CASSE , O 2 O 3 O 4 A SECONDA DEL FORMATO , LE CATENE SCENDONO ED ENTRA IN FUNZIONE LA MOVIMENTAZIONE DELLA PIATTAFORMA A RULLI).

2) - GRUPPO TELAIO [C] - È LA STRUTTURA PORTANTE DELLA MACCHINA, INTERAMENTE ELETTROSALDATO SU CUI E' MONTATATO IL GRUPPO ARCO E PINZA.

3) - GRUPPO RULLIERA - È UNA PIATTAFORMA A RULLI SULLA QUALE, A SECONDA DEL PROGRAMMA SCELTO (RELATIVO AL FORMATO CASSE DA PALETTIZZARE) SPOSTA LE CASSE PERMETTENDONE L'ENTRATA DI ALTRE. COSTITUITO DA:

[D] PIATTAFORMA A RULLI
(COMPRESA DI PALETTA DI APPOGGIO, MOBILE CHE SI ABBASSA QUANDO AVVIENE LA PINZATURA)

4) - GRUPPO PINZATURA - PROVVISTO DI ARCO CON PINZE MOBILI PER LA PRESA DEGLI STRATI SULLA RULLIERA ED IL LORO TRASPORTO SULL' AREA DI PALETTIZZAZIONE CHE PROVVEDE ALLA SOVRAPPOSIZIONE DEI DISTINTI STRATI UNO SULL'ALTRO FINO AL COMPLETAMENTO DEL PALLET ; E' COSTITUITO DA:

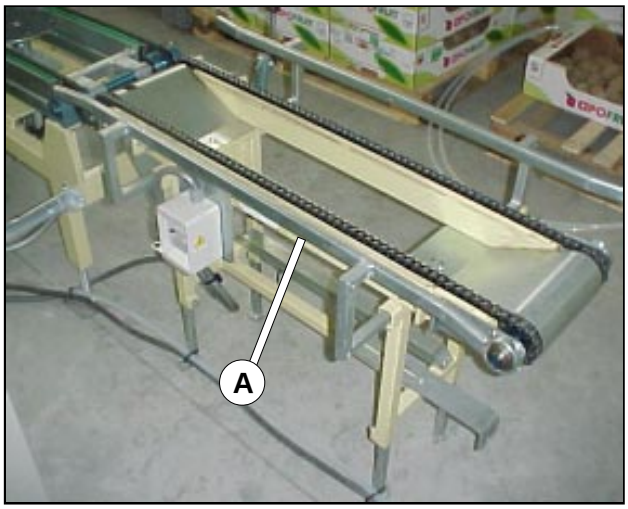
[E] ARCO DI TRANSLAZIONE

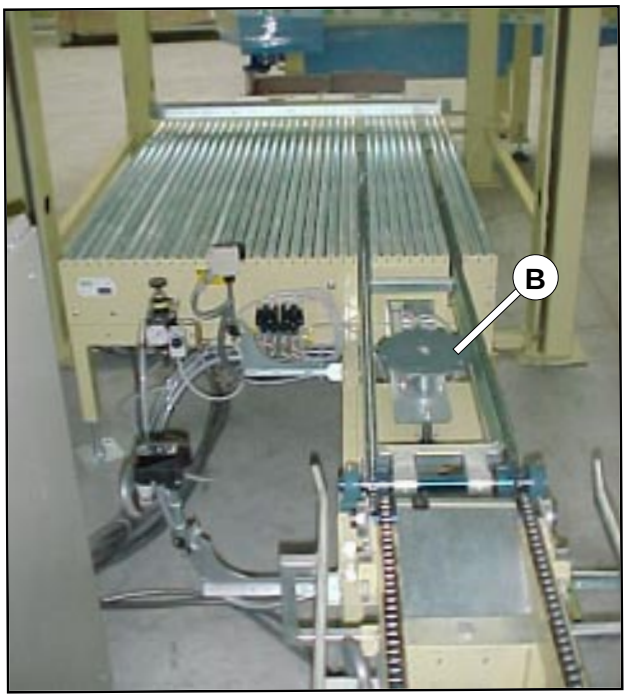
[F] ASCENSORE MOVIMENTAZ. PINZA

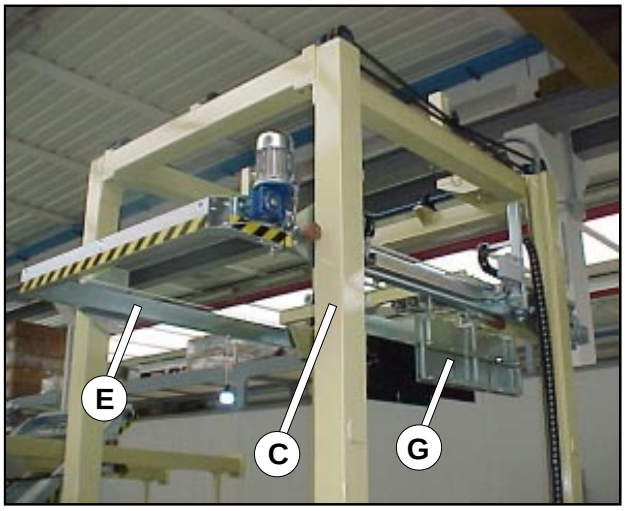
[G] GRUPPO DI PRESA E PINZATURA

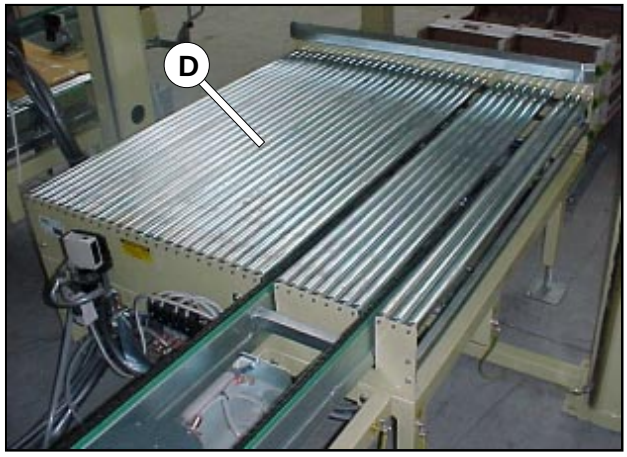
5) - QUADRO ELETTRICO DI COMANDO [H] -CHE ATTRAVERSO SINGOLI PULSANTI E SELETTORI PERMETTE IL FUNZIONAMENTO DELLA MACCHINA IN AUTOMATICO O IN MANUALE, PROVVISTO DI PLC E DELL'INVERTER **[I].**

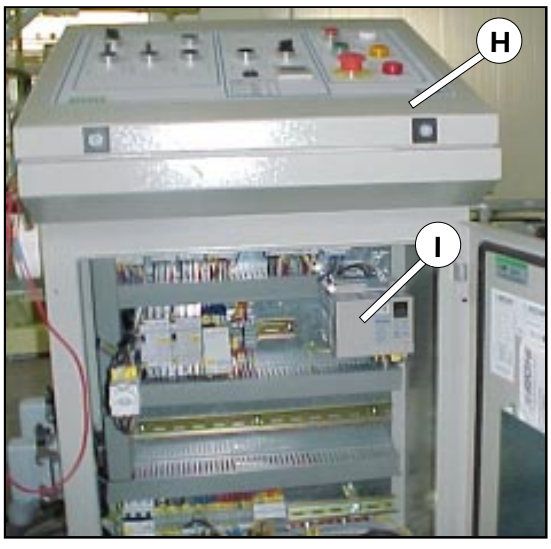
VEDI FIG. PAG.5

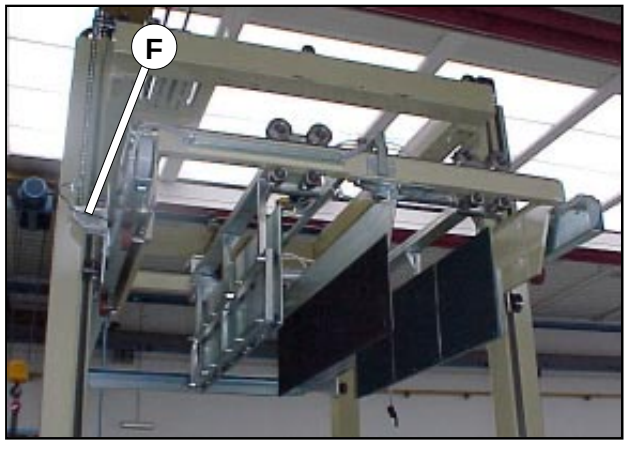

A


B


E
C
G


D


H
I

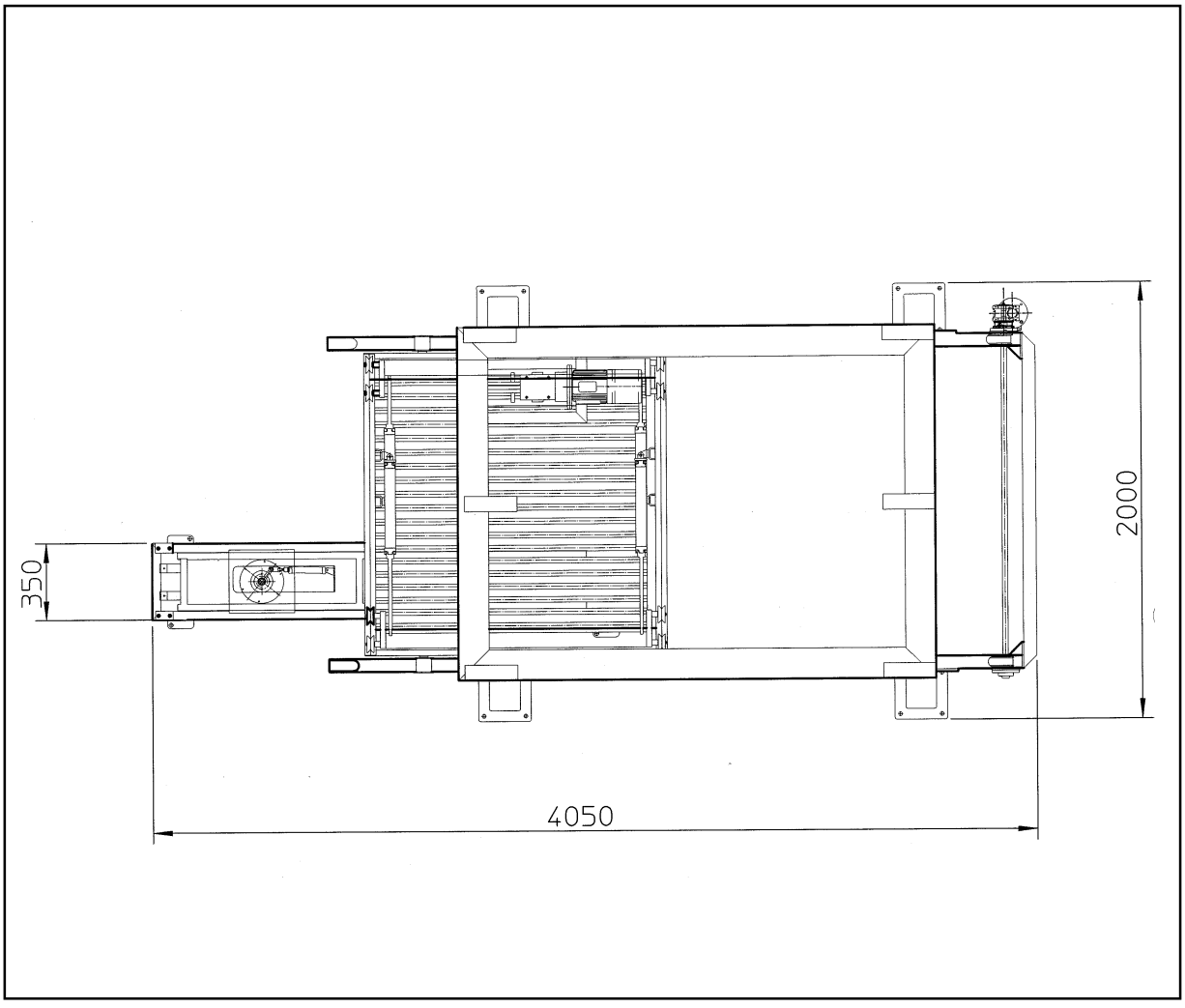

F

2.5 TECHNICAL DATA

- Machine weight ..... 1600 Kg
- Installed electrical power..... 4 Kw
- Feeding voltage .....400V/50Hz(unless otherwise specified)
- Compressed air working pressure.....6 Bar
- Compressed air connection .....1/2"G
- Compressed air consumption..... 230 Nl/min
- Sound pressure.....70 Db
- Maximum weight each level of containers .....150 Kg
- Maximum palletisable elevation..... 2400mm
- Working temperature ..... Between +5°C and +40°C
- Throughput.....

FORMAT: 30x40	palet:	**80x120**	ENTERING SIDE 30 = 900 boxes/hour
FORMAT : 30x40	palet:	**80x120**	ENTERING SIDE 40 = 1320 boxes/hour
FORMAT : 30x50	palet:	**80x120**	ENTERING SIDE 30 = 850 boxes/hour
FORMAT: 30x50	palet:	**80x120**	ENTERING SIDE 50 = 920 boxes/hour
FORMAT: 40x60	palet:	**80x120**	ENTERING SIDE 40 = 840 boxes/hour
FORMAT: 40x60	palet:	**80x120**	ENTERING SIDE 60 = 780 boxes/hour
FORMAT: 30x40	palet:	**100x120**	ENTERING SIDE 30 = 1130 boxes/hour
FORMAT: 30x40	palet:	**100x120**	ENTERING SIDE 40 = 1080 boxes/hour
FORMAT: 30x50	palet:	**100x120**	ENTERING SIDE 30 = 900 boxes/hour
FORMAT: 30x50	palet:	**100x120**	ENTERING SIDE 50 = 1320 boxes/hour
FORMAT: 40x60	palet:	**100x120**	ENTERING SIDE 40 = 930 boxes/hour
FORMAT: 40x60	palet:	**100x120**	ENTERING SIDE 60 = 950 boxes/hour

2.6 DIMENSIONS



3.1 SHIPPING AND LIFTING

Shipping may be done with or without packaging. When shipped by road, the machine is generally not packaged. When shipped by rail or by sea, it is usually packaged inside a wooden case. When handling, pay attention to any wording on the outside of the package.

⚠ WARNING

When lifting or moving the machine, pay great attention in order to avoid any dangerous movements liable to cause accidents or damage to people or things.
WHILE HANDLING, THE MACHINE MUST ALWAYS BE IN A STEADY AND SAFE POSITION

⚠ CAUTION

Before starting to handle the machine or any part of it, make sure that:
- **the area is well lit (Fig. 1)**
- **the operator and the people accessing the area of movement must wear gloves, safety shoes and safety helmets (Fig. 2)**
- **check the efficiency of the lifting media.**
- **check the capacity of the lifting media.**

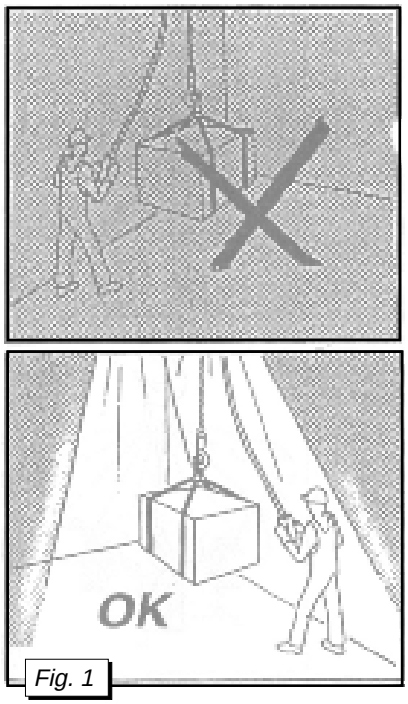


Fig. 1

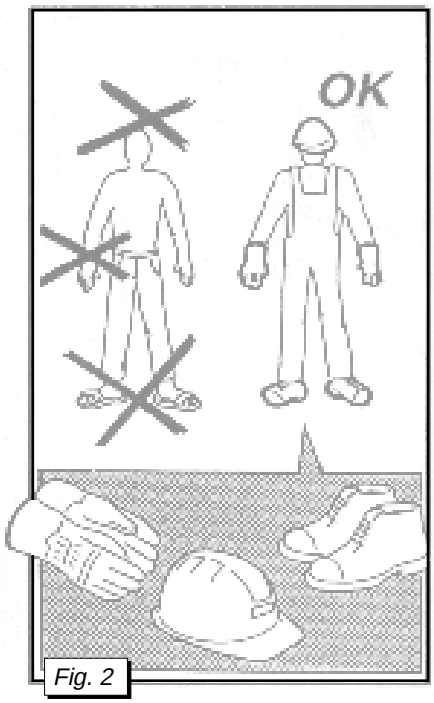


Fig. 2

- Lifting and transport operations must be performed by people possessing the necessary technical skills.

- The presence of an assistant is very important, for signalling while the machine is being moved for installation.

- Avoid any sudden movements which could damage the machine.
  The FBR-108S or its parts must be moved only using the most suitable means: self-moving fork lift or bridge crane, having a suitable capacity depending on the actual weight of the machine.

- There must be nobody near the hanging load, within the working range of the crane, the lift truck or any other lifting or transport means.

When delivered by SORMA, and in order to reduce shipping size, the FBR-108S comes partly dismantled and separated into 3 different packs:

- The MAIN BODY is loaded horizontally for transportation (see Fig. 1).
  Move the MAIN BODY using a lift truck with the right capacity for the actual weight of the main body. Drive the forks in by at least 2.5 m, as shown by the arrows on Fig. 1.

- The ROLLER TABLE - with the FEEDER CONVEYOR and the ELECTRIC CONTROL PANEL assembled on it - should be moved using a fork lift truck of suitable capacity, placing the forks under the frame as shown on Figure 2. Pay attention to the cables and pipes under the roller table.

- The GUARDS are bound together to make a single package.

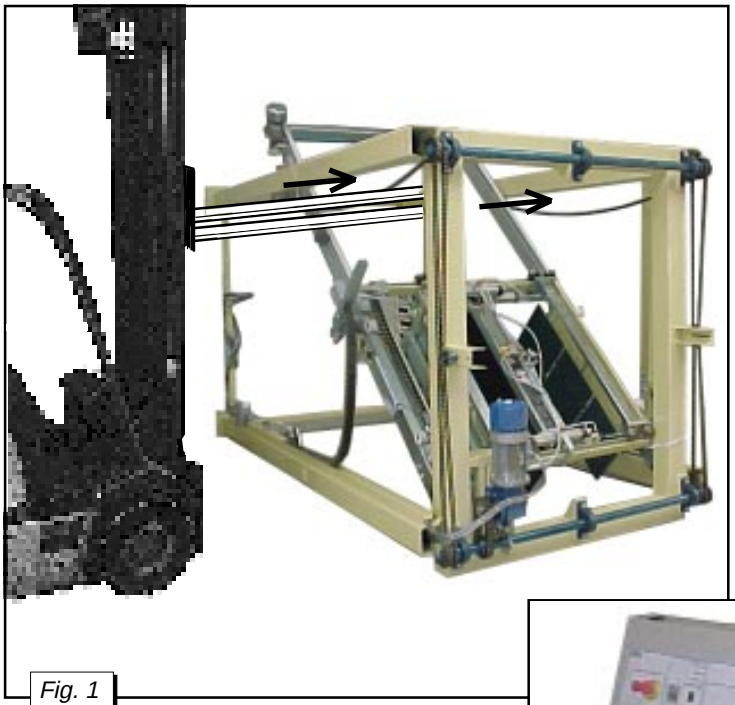


Fig. 1

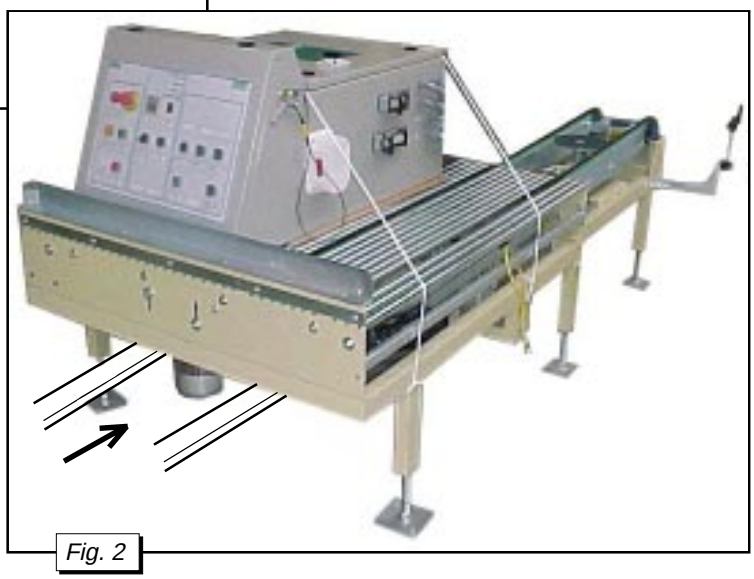


Fig. 2

4.1 PUTTING AT WORK

Prepare a suitably large work area, depending on the kind of use.
The floor where you intend to place the machine must be suitably levelled, flat, solid an strong enough to hold up an accidental load of at least 2,500 Kg, and able to afford a solid hold for the anchors.
The working area must be marked off in such a way as to avoid collisions between the operator and any means of transport or movement working in the vicinity of the machine.
The various parts of the machine must be placed accurately in the expected area, on line with the conveyor belt feeding the boxes to be palletised.
Position the following machine parts one after the other:

1) MAIN BODY FRAME
2) ROLLER UNIT WITH CONVEYOR
3) BOX LAUNCHER
4) ELECTRIC CONTROL BOARD
5) GUARDS AND SAFETY SYSTEMS

(1) Prepare a lifting belt or chain (suited to the weight of the machine) and sling the palletiser at point **[A]**. Then use the fork lift truck or the crane to raise the MAIN BODY FRAME following the direction of the arrow shown on Fig. 1

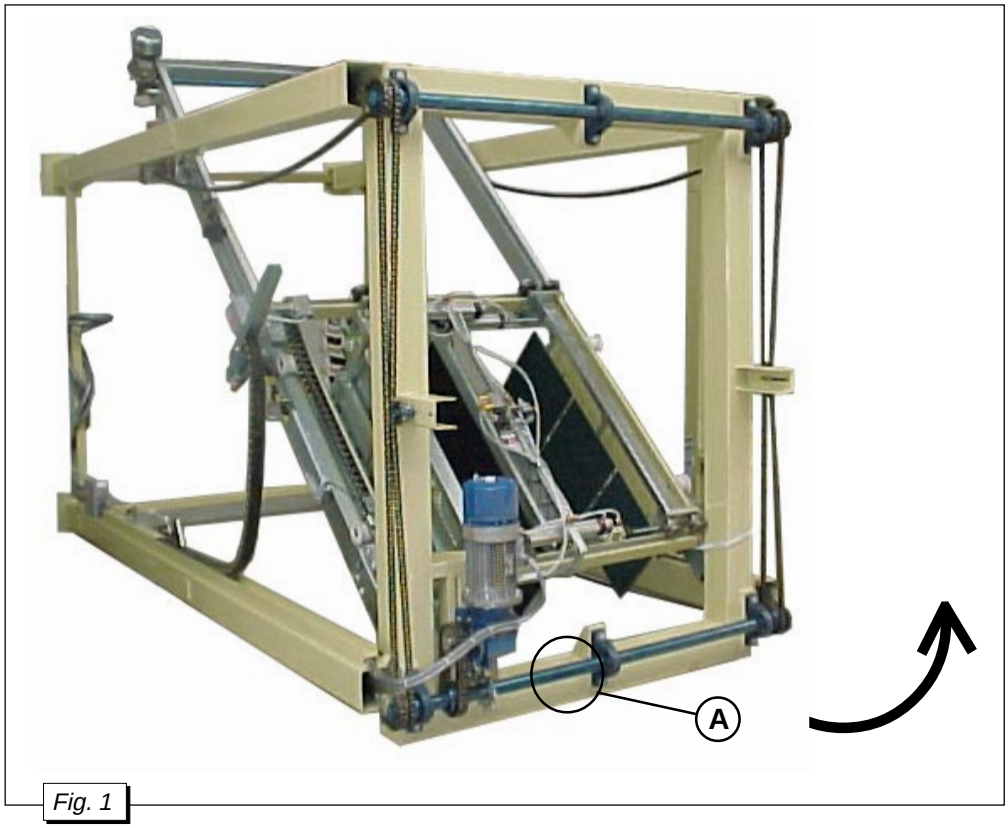


Fig. 1

- Lift the palletiser very slowly. Use the utmost attention and concentration, until the machine is vertical.

⚠ WARNING

Lifting operations must be performed by people possessing the necessary technical skills. The presence of an assistant is very important, for signalling while the machine is being moved. Nobody must be near the hanging load, within the working range of the crane, the fork lift or of any other lifting means.

(2) Position the forks of the fork lift truck (at least 2.2 m long) under the transfer arc in the grasping flap area, at the points **[B]** shown on Fig. 2.

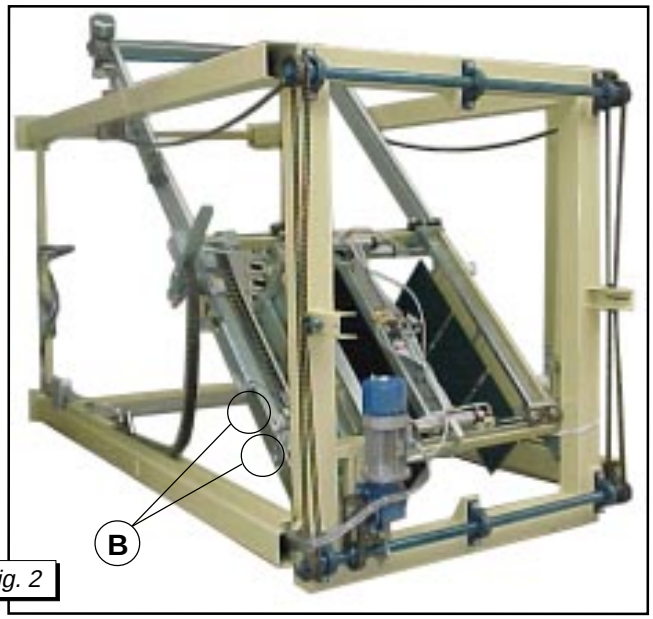


Fig. 2

(3) Untie the various items of the arc and gripping unit previously bound together for transport (see Figures below). Let the forks of the fork lift very slowly down until the holes of the arc fastening plate **[C]** Fig. 3 coincide with the holes of the truck plate **[D]** Fig. 4, on the frame. Then bolt the plates so the gripping arc is in its working position and levelled. Now take the forks of the lift truck out from the gripping arc.



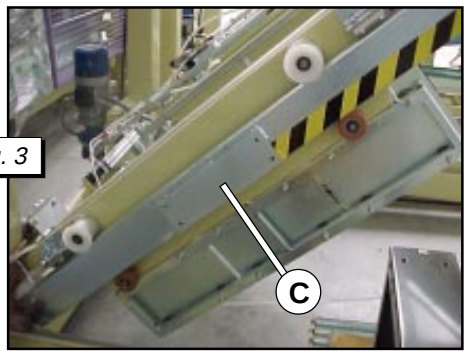


Fig. 3

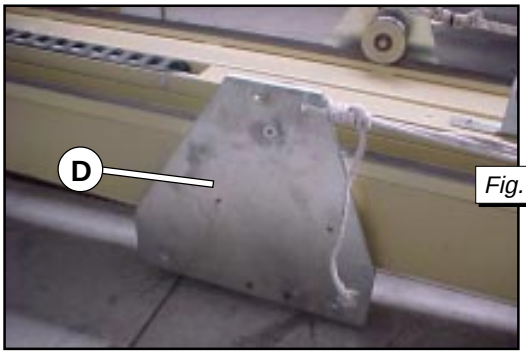


Fig. 4

(4) Untie the chains **[E]** and remove the various transport packings and bindings.
(5) Reassemble all the parts which were disassembled for transport.

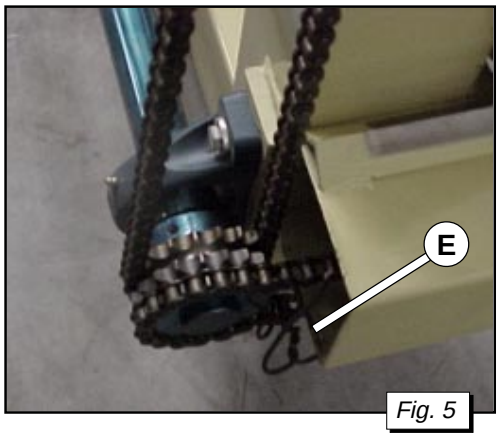


Fig. 5

- Assemble the platform support bracket **[F]** and the photocell **[G]** as shown on Fig. 6.

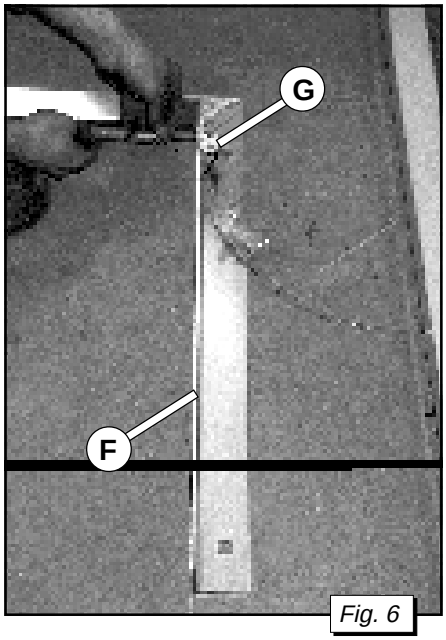


Fig. 6

- Remove the tube-shaped structurals **[H]** and tensioners Fig. 7.

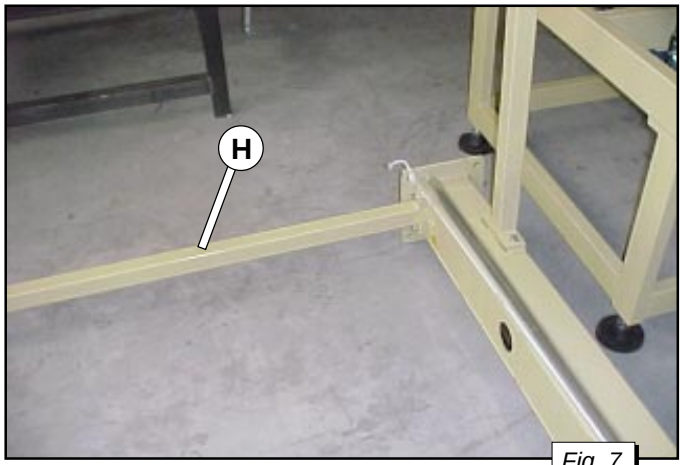


Fig. 7

(6) Put the roller unit in place see Fig. 8



Fig. 8

- Fasten the feet of the ROLLER PLATFORM FRAME and of the CHAIN LAUNCHER FRAME to the ground, using the expansion dowels and after making sure the floor to which the machine should be attached is sufficiently compact and strong.
- Remove the bindings, releasing the electrical control board and place it next to the CHAIN CONVEYOR WITH BOX TURNING DEVICE.

(7) Assemble the guards and fasten them properly to the ground using suitable expansion dowels.

An expert electrician will be needed to perform wiring connections on the machine, according to the enclosed wiring diagram.

4.2 ASSEMBLING THE GUARDS

After commissioning and positioning the FBR-108S palletiser, assemble the guards, with the photocell **[A]** and the reflector **[B]** as shown on Fig. 1.

Once the guards have been assembled, make sure that the photocell is aligned with the reflector.

4.3 OPERATION OF THE SAFETY SYSTEM

⚠ WARNING

Unauthorised people are strictly forbidden access to the machine.
Access to authorised people will be granted only after the machine has been cut off from its power source in one of the ways shown below.

Any authorised person who wants to enter the machine work area from entrance **[D]** must deactivate the automatic drive of the palletiser.
Turn the reflector-holder bracket **[B]** in the direction shown by the arrow.
This way, the machine will move into emergency stop state and the red light on the electric board will light up, with all the controls locked.
To start the machine up again, put the reflector **[B]** back in position, release the red mushroom push-button and - if you want - press the green AUTOMATIC DRIVE push-button.
Nobody may press either the automatic drive push-button or the manual drive one as long as anybody is inside the machine working area, after this has been deactivated using the photocell safety system described above.

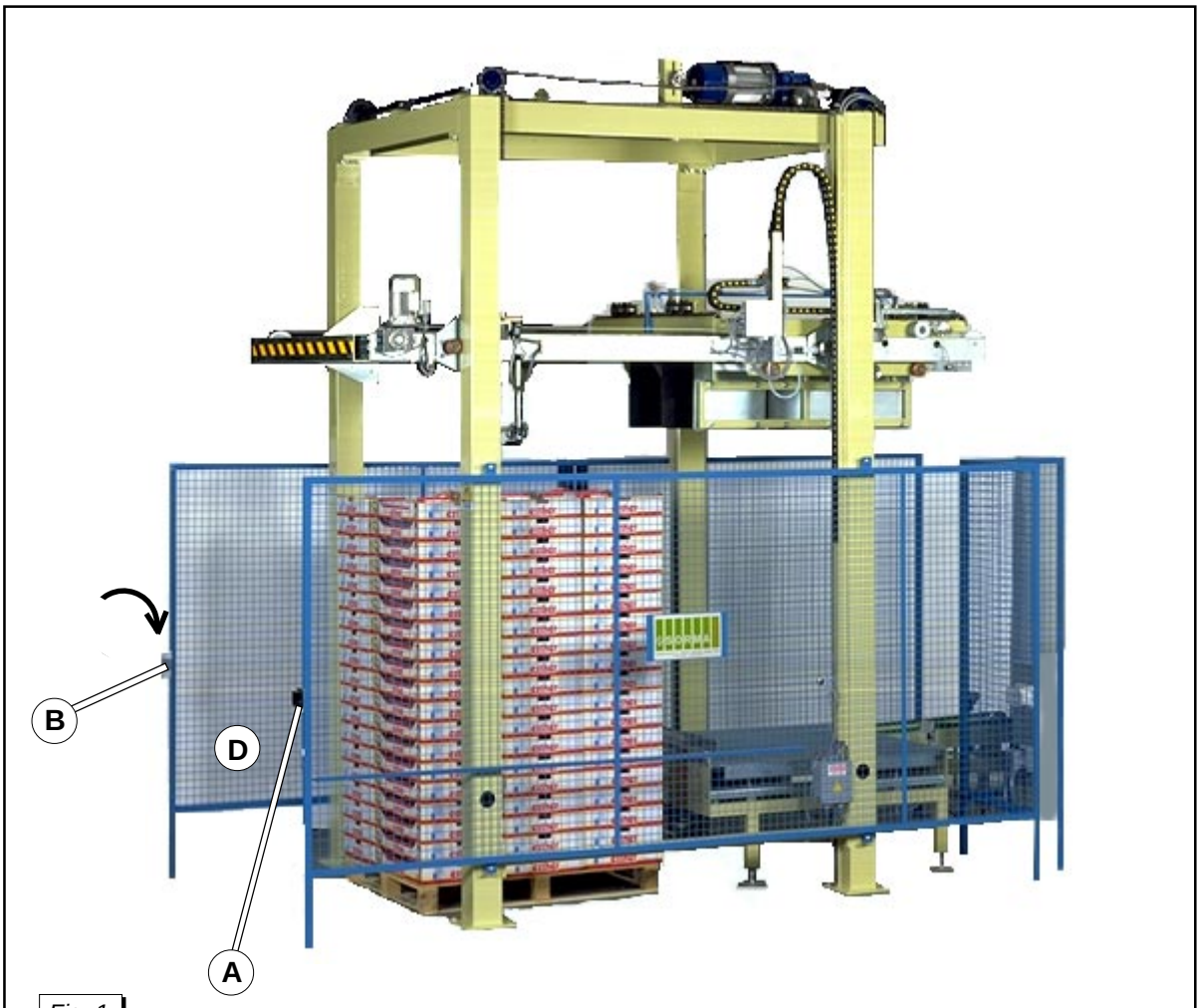


Fig. 1

4.4 WIRING AND AIR CONNECTIONS

Wiring connections of the machine to the power supply and testing of the same must be performed by specialised technical staff who must make sure that the local power supply is the same as the feeding voltage of the machine (+/-10%) and is not affected by noise (harmonic distortions and voltage peaks due to overabsorption, due to asynchronous motors being started up directly).

⚠ WARNING

Connections to the power supply must be performed by specialised people. The line feeding our machine must be protected by a HIGH SENSITIVITY thermomagnetic cut-off switch.

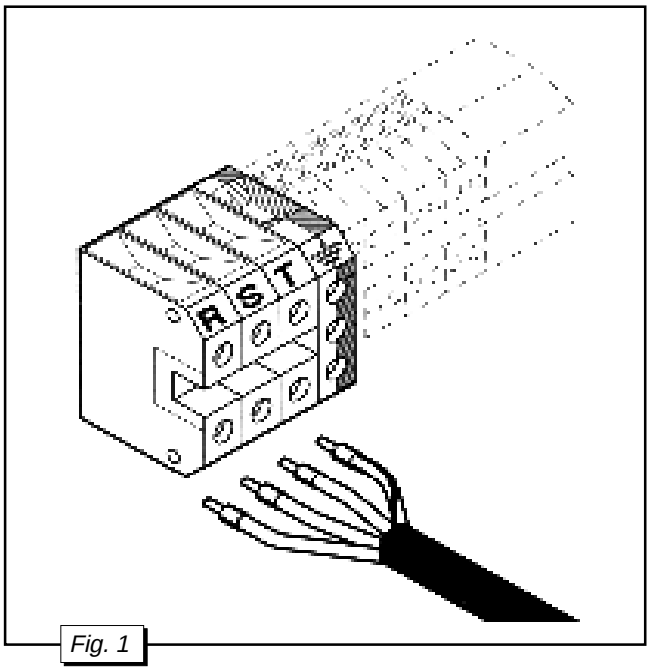


Fig. 1

For connections shorter than 20 metres, use a four-pole cable with a cross-section of at least 2.5 mm2 and connect it to terminals **R S T** as shown on Figure 1. For longer distances, adapt the cross-section to the length of the cable.
Make sure that the motors of the roller platform turn in the right direction.

Fit the air supply into the filter unit located next to the roller platform, as shown on Figure 2, and check that the pressure is not less than 6 Bar on the pressure gauge **[A]**.

When connecting to another, upstream machine in order to provide consent for the input of boxes, use the terminals inside the FBRS electric board (see enclosed wiring diagram).



Fig. 2

⚠ WARNING

The power and compressed air supply cables must be led into the machine using suitable sheaths or raceways so as not to get in the way of the operators and in order to afford suitable protection.

4.5 CHECKING THE PROPER DIRECTION OF ROTATION OF THE MACHINE

After connecting the power and air supply, proceed as follows:

1) - Set the main switch **[1]** at ON position.

2) - Press the red MANUAL DRIVE **[7]** push-button.

3) - Turn the FORWARD-BACKWARD selector switch **[3]** to its FORWARD position and make sure that the BOX LAUNCHER (see p. 4 item [A]) moves forward towards the FBRS grippers.

4.6 COMBINATIONS

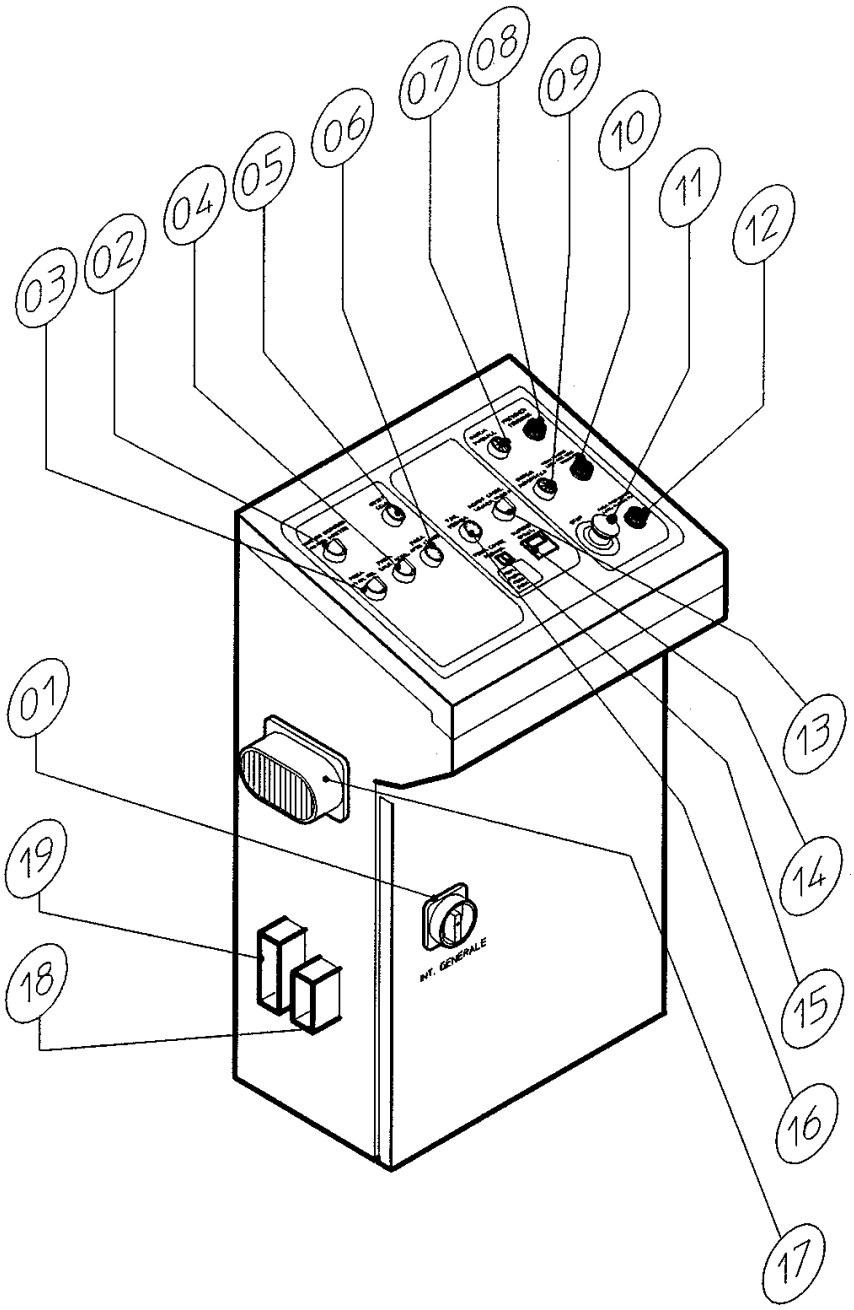
Any combination with other machines or conveyor belts must be taken care of by the installer completing the plant. Special attention must be paid to mechanical levelling among the machines, and suitable guards for the processing line must be provided if necessary. Therefore, if the machine is to be used in line with other machines, an expert electrician must connect the various machines, according to the enclosed wiring diagram.

5.1 SAFETY WARNINGS

The manufacturer cannot be held responsible for any damage or personal injury resulting from inobservance of safety regulations. Any attempt to dismantle, modify or tamper with any part of the machine shall render the warranty null and void and absolve SORMA S.p.a. from any responsibility regarding damage to objects or personal injury caused by such tampering.

- The operator must meet the psycho-physical and aptitude standards required for machine use.
- Ensure that all precautions have been strictly observed before using the machine.
- The work area must be suitably marked out so as to prevent collisions between the operator and any handling vehicles passing nearby the machine.
- The work area in front of the machine must be kept clean and obstacle-free so as to allow immediate access to the MAIN ELECTRICAL BOARD in case of emergency.
- Carry out the work cycle start sequence exactly as described.
- Do not, for any reason whatsoever, open machine doors or guard panels unless expressly authorized to do so.
- Do not use the machine with safety devices disabled or damaged.
- Do not place hands (or anything else) near or inside moving or live machine parts or inside the electrical cabinet.
- Do not alter program parameters to obtain performance levels different from those established during the design and final testing stages.
- Ensure that lighting is always sufficient to allow a clear view of the maneuvering/work areas. Ensure suitable ambient conditions (temperature, humidity) are maintained.
- Do not stand on the machine. Certain components are unable to withstand the weight of a person.
- Never abandon the plant or machine, leaving it unmanned, when in it is running.
- Inform maintenance staff should any machine devices function improperly.
- Do not, if working close to the machine, wear items such as watches, ties, bracelets, rings etc, as these may cause accidents.
- Ensure that the sleeves of work garments are properly tightened around the wrist and securely buttoned.
- Do not introduce any material into the machine other than that which it has been designed to process.
- Do not start the machine if there are members of personnel near the work area.
- Before starting the machine make sure that nothing has been left in or on the machine.
- Operator access to the electrical and electronic board is strictly forbidden, unless he/she is in possession of authorization which guarantees proven experience in work of this type.

6.1 ELECTRICAL CONTROL BOARD



- **[1] MAIN SWITCH -** Turns the electrical part of the machine ON or OFF

- **[2] GRIPPER FORWARD BACKWARD** - When the machine is in MANUAL DRIVE, this control allows you to send the gripper (in its current condition) forward towards the pallet to be set up, by turning the selector switch to FORWARD.
  On the other hand, if you turn the selector BACKWARD, the gripper will be sent back towards the box launcher:
  N.B. when set on FORWARD with the machine in AUTOMATIC DRIVE, this control is inhibited;
  if you select BACKWARD with the machine in AUTOMATIC DRIVE, the machine will make a timed stop with the gripper unit in its home position; the machine will then leave its AUTOMATIC state to go into a TIMED STOP state.
  To position the gripper exactly either full forward or full back, turn the selector switch until the gripper has come to the end of its stroke (this is very important to prevent improper grasping of the layer).

[3] INPUT BELT FORWARD BACKWARD - When the machine is in MANUAL DRIVE, set the selector switch on FORWARD in order to move the chains of the box launcher forward and - if you want - in order to provide feeding consent on the upstream machine (until a box reaches the input photocell; this will stop both the box launcher and the upstream machine movement).
The BACKWARD function is not provided on the standard machines (in order to avoid trouble), if it is enabled, the box launcher will move backward.
When the machine is in AUTOMATIC DRIVE, set the selector on FORWARD. The box launcher and the upstream machine will be managed by the PLC (inside the electrical board). Set the selector to BACKWARD or to the central resting position, and the box launcher will stop.

-**[4] GRIPPER UP - DOWN -** When the machine is MANUAL DRIVE, turn the selector switch to UP for the gripper to rise to the top;
on the other hand, select DOWN for the gripper to go back to its home position.
If you want to put the gripper unit down, at its home position, without it going beyond the position where it picks up boxes on the roller table, the gripper unit must be near the backward limit proximity switch.
To bring the gripper unit down to its home position without going beyond the layer resting position on the platform, the gripper unit must be near the forward limit proximity switch.

-**[5] BLUE CYCLE RESET PUSH-BUTTON** - When the machine is in MANUAL DRIVE, this control resets the box counter for the roller table. Use it after setting a palletisation format changeover on the CONTRAVES switch, or after any problem on the roller platform.
After using this control, **YOU ABSOLUTELY MUST REMOVE ALL THE BOXES ON THE ROLLER PLATFORM.**

-**[6] BLACK GRIPPER OPEN-CLOSE PUSH-BUTTON -** When the machine is in MANUAL DRIVE, this control allows you to reverse the gripper state: if closed, it will open; if open, it will close.

-**[7] LUMINOUS RED MANUAL DRIVE PUSH-BUTTON -** This enables the use of manual controls. The red light, if lit, means manual operations are enabled.

-**[8] WHITE "LIVE" LIGHT -** When lit, this means that the machine is connected to the power supply and that the main switch 1 is in its ON position.

- **[9] LUMINOUS GREEN AUTOMATIC DRIVE PUSH-BUTTON** - This puts the machine into automatic drive. The green light on the push-button says the machine has been put in automatic drive. Keep this push-button pressed for at least one-half a second. When the machine enters automatic state, an acoustic alarm will sound for 1 second.

- **[10] LUMINOUS YELLOW PUSH-BUTTON** - **FIXED** = When lit, this means that one of the thermomagnetic safety switches on the electric motors has tripped; if it lights up at the same time as the red pilot lamp is flashing, it means there is a fault on the INVERTER.
  FLASHING = this means that the machine has finished the pallet or that the platform is missing.
- **[11] RED MUSHROOM PUSH-BUTTON** - this stops the machine at once.

-[12] RED PILOT LAMP - FIXED = this means the machine has stopped because the door of the electrical board is open, or because the STOP mushroom push-button [11], or an emergency microswitch or the pressure switch has tripped.
FLASHING = this means that a box has stayed for a long time in front of a photocell. If this happens with the machine in AUTOMATIC DRIVE, the palletiser will stop at the same time (just press the AUTOMATIC DRIVE push-button to deactivate this emergency stop). Or else, when the PLC battery has run out, or when someone enters the dangerous area darkening the safety photocell or at the same time as the fixed yellow light indicating a fault on the INVERTER.
FLASHING QUICKLY = this means CYCLE RESETTING has been approved.

- **[13] CROSS-OR-TIP BOX INFEED SELECTOR** - This control tells the PLC (located inside the electric board) the direction the boxes should be fed into the machine. The CROSS or TIP selection can be performed only when the machine is in MANUAL DRIVE followed by a CYCLE RESET operation.

- **[14] LAYER NUMBER COUNTER** - this counter sets the number of layers you want to palletise and shows the number of layers already palletised (for instructions, see SETTINGS chapter on page).

- **[15] CONTRAVES - PLATFORM BOX FORMAT** - this sets the palletisation format (size of boxes and platforms to be palletised - for instructions, see SETTINGS chapter on page 25).

- **[16] BLACK END-OF-PLATFORM PUSH-BUTTON** - Press with the machine in AUTOMATIC DRIVE so the palletiser can complete and lay down the last layer of boxes on the platform, and then stop to await platform change.

- **[17] ACOUSTIC ALARM** - this lets out a signal lasting about:
- 1 sec. every time the machine enters automatic state, and every time a pallet has been completed.
- 2 sec. every time the line is full.
- 5 sec. every time the pallet has been completed and needs to be replaced by a new platform.

- **[18] SMALL CONNECTOR** - this is the connector for the sensors (or the inputs)

- **[19] BIG CONNECTOR** - this is the connector for the power cables to the electrical motors (or the outputs).

7.1 STARTING UP THE MACHINE

- Set the main switch **[1]** at the ON position (the white pilot **8** will light up)
- Make sure the red mushroom push-button **[11]** has been released.
- Press the red MANUAL DRIVE push-button **[7]**.
- Make sure you have set the right work programme on the BOX FORMAT CONTRAVES **[15]**. Choose the number of layers you want to palletise on the LAYER NUMBER COUNTER **[14]**. Then press the CYCLE RESET push-buttn **[5]** to reset the previous members and remove any boxes on the ROLLER PLATFORM or on the BOX CONVEYOR AND FEEDER UNIT.
- Use the relevant manual controls (described in chapter 6) to lead the gripper unit to its home position (see note * at the bottom of this page) above the roller platform.

⚠ WARNING

The machine may be in automatic drive yet not appear to be running unless it receives boxes to be palletised. Therefore the green lamp shows that the machine is in automatic state and can start up at any moment.

7.2 STOPPING THE MACHINE AT THE END OF THE DAY

- To stop the machine when you have finished working: if possible, wait until a pallet has been completed, otherwise set the selector **[3]** on BACKWARD to bring the pallet to a timed stop.
- Set the MAIN SWITCH **[1]** in OFF position.

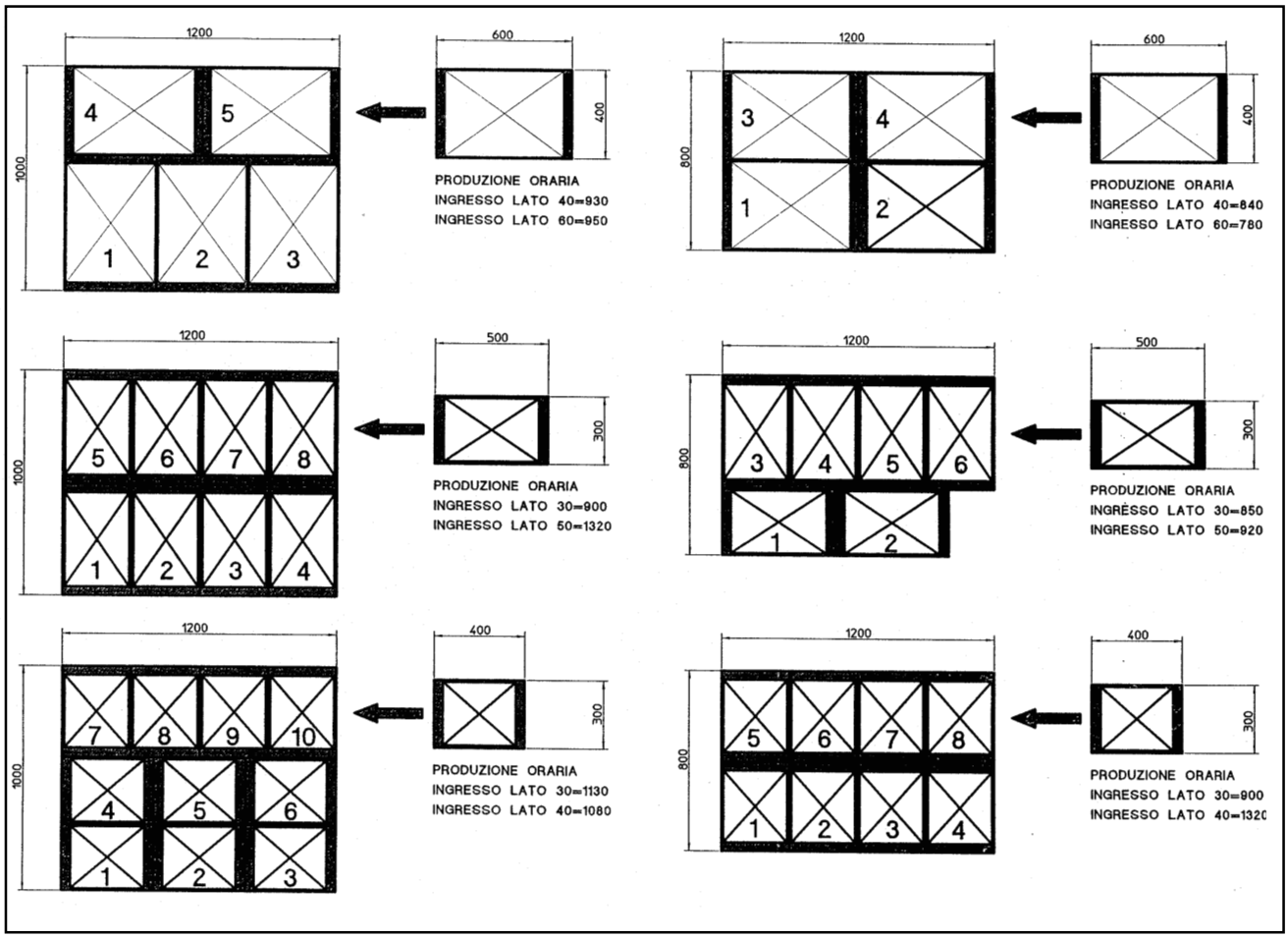
7.3 STOPPING THE MACHINE IN AN EMERGENCY

- Press the RED MUSHROOM PUSH-BUTTON **[11]**. This will stop the machine at once.
- Set the MAIN SWITCH **[1]** at OFF position.

* HOME POSITION: This is the repositioning height of the gripper unit above the roller platform. To reach it, bring the gripper unit over the roller platform using the relevant manual control (described in chap. 6). Then use the GRIPPER UP-DOWN **[4]** selector to obtain the home position. When this selector is set at UP or DOWN, the gripper unit will come to a stop.
To change the height of the home position, place the GRIPPER UNIT at the height you want, press the STOP MUSHROOM PUSH-BUTTON **[11]** and then press the CYCLE RESET **[5]** and OPEN-CLOSE GRIPPER **[6]** push-buttons simultaneously. The red EMERGENCY lamp **[12]** will flash quickly, confirming the new home position: **N.B. THIS POSITION MUST BE ABLE**

8.1 MACHINE OPERATION

Use the CONTRAVES switch **[15]** on the electrical board to choose the programme according to the dimensions of the boxes you intend to palletise and the platform where you intend to do the palletising, as shown on Fig. 1 (as can be seen, the boxes are numbered so as to show the order they enter in; these configurations are the only ones possible for palletising).
Pay attention to the direction the boxes come, it must comply with the choice made on the BOX



- Set the number of box layers you want to palletise using the LAYER NUMBER COUNTER **[14]**. Then press the CYCLE RESET push-button **[5]** in order to reset the previous memories and remove any boxes on the ROLLER PLATFORM or on the BOX CONVEYOR AND FEEDER UNIT.

- Lay the platform in its compartment. Place both sides against the check corner, where a photoelectric sensor enabling the palletising cycle will intercept it.
  Make sure the GRASPING AND GRIPPING UNIT is stopped in its home position, i.e. above the roller platform.
  Now press the AUTOMATIC DRIVE push-button **[9]**. The green lamp will light up.

- The boxes start coming into the infeed conveyor belt, spacing out. If called for by the work programme, they will be turned by 90°, then will move on along the infeed conveyor until they make a complete and compact row. The infeed conveyor will now descend, and the roller platform will activate (unless the row of boxes is the last one of the programmed format) and will move the row across to form a complete layer according to the programme.

- The GRASPING AND GRIPPING UNIT starts to come down, open. It waits for the layer to be complete and compact. It grips the layer, rises up and moves forward until it has laid it down on the platform, at the same time other boxes start coming in to make a new row.-

- The processing cycle continues in the same fashion, until the programmed number of layers has been completed. Once the pallet is complete, the GRASPING AND GRIPPING UNIT rises as high as possible, the acoustic alarm first lets out a 1 minute signal, then a 5 second one, the machine comes to a stop (the yellow lamp **[10]** starts to flash) while waiting for the last pallet to be evacuated and a new platform introduced into the compartment. You can now start the machine up again in automatic mode pressing the green AUTOMATIC DRIVE push-button **[9]**.

⚠ WARNING

The machine may be in automatic drive yet not appear to be running unless it receives boxes to be palletised. Therefore the green lamp shows that the machine is in automatic state and can start up at any moment.

- During operation, a light box may not be picked up properly by the GRIPPER, or it may not be positioned properly.

- In such cases, the operator must stop the machine and then restore normal working conditions, putting the box back in the right position or else replacing it. If he takes the whole layer off, to restart the machine, he will have to reset the programme using the CYCLE RESET push-button **[5]**.

⚠ WARNING

Any restart operation must be performed only after having cut power off on the main switch [1] on the electrical board, putting it in the OFF position and locking it in place with a pad-lock (see Fig. 1).

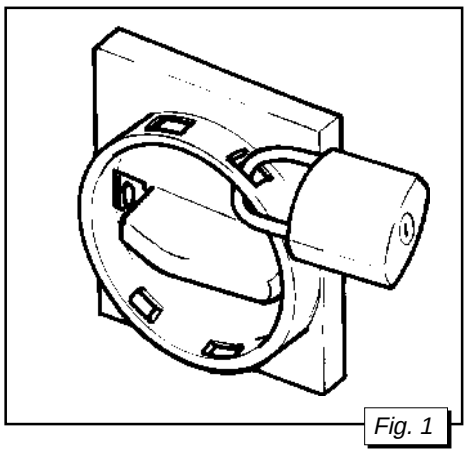


Fig. 1

8.2 TYPES OF BOXES WHICH CAN BE USED

In the various sizes, the size of each box must be between 80 mm and 350 mm.
No layer of boxes must weigh more than 150 Kg.
The boxes may be made of different materials, i.e.: wood, plastic, carton, as long as they are strong and stiff enough, so the machine can grasp them without destroying their shape.
Of course, during a single palletisation programme, the machine can only process one kind of box, and every box must be of the same size and shape, and there must be a certain leeway between any fitting parts.

9.1 SETTINGS

Machine settings are absolutely necessary for proper operation and greater safety. Do not allow any unauthorised people to adjust the machine.
Do not set the machine while it is running, so as not to be caught up in any moving part.

⚠ WARNING

Before adjusting any part, always cut power off on the main switch [1] on the electrical board, putting it in the OFF position and locking it in place with a padlock (see Fig. 1). Then disconnect the power and air supply cables. When working in manual mode, pay special attention to the operations you intend to perform.

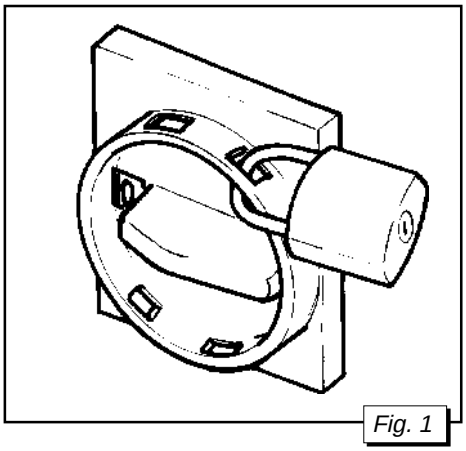


Fig. 1

9.2 SETTING AND CHECKING THE REFLECTOR PHOTOCELLS (Fig. 2)

When the machine is live, make sure that when nothing blocks the beam the red pilot lamp **[A]**, see Fig. 2, is lit. If not, adjust the reflector or the photocell so the beam reflects. You can do this by hand, pressing lightly on the brackets. If this is not enough, loosen the supporting screws and adjust properly.



Fig. 2

9.3 SETTING THE FEELER PHOTOCELLS (Fig. 3)

On the FBRS, the feeler photocells (Fig. 3) are the box counter photocell, between the chain conveyor and the roller platform, and the platform presence photocell on the platform check.
Should you have counter problems due to the settings of the box infeed photocell, adjust the trimmer **[B]** turning it counter-clockwise starting from the FAR position, until the LED's **[C]** turn off; then mark the position shown by the trimmer.
Now position a box - with the short side coming in - in front of the photocell. Now adjust the trimmer **[B]** turning it clockwise starting from the NEAR position, until the LED's **[C]** turn on. Now shift the trimmer **[B]** to halfway between the positions marked.
Proceed in the same manner with the platform presence photocell, darkening the photocell with an empty platform.

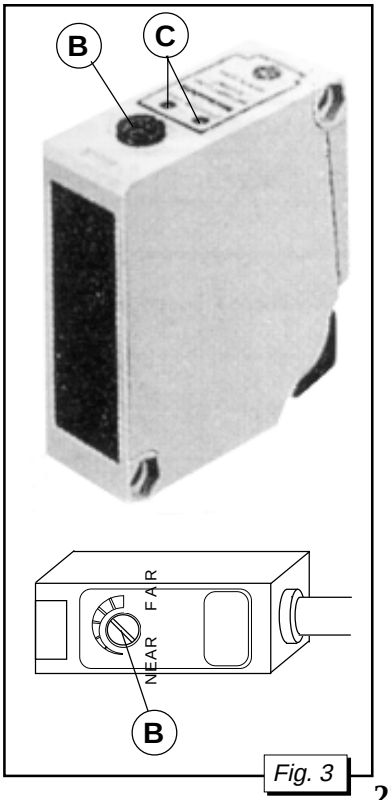


Fig. 3

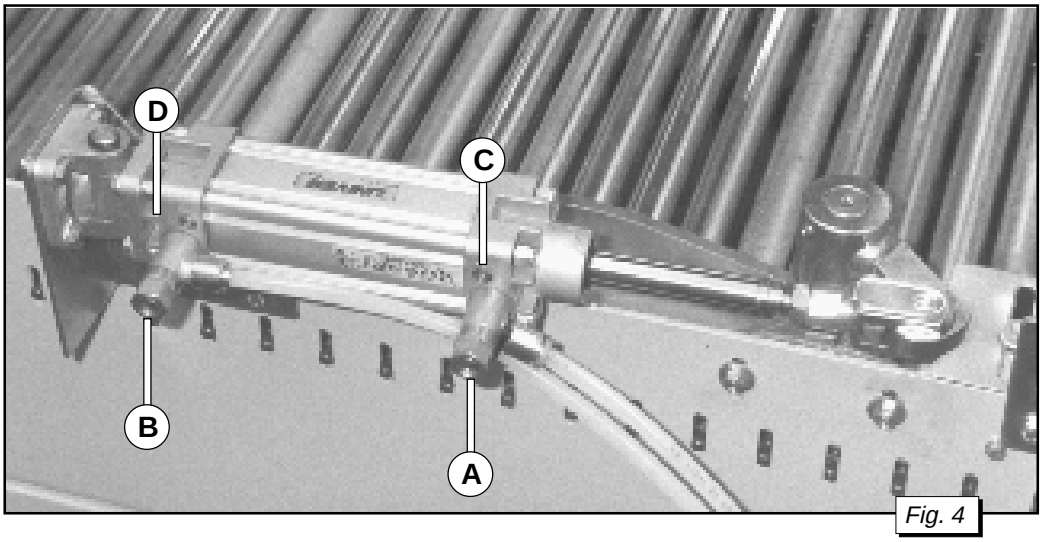


Fig. 4

9.4 PNEUMATIC PISTONS - Speed setting (Fig. 4)

To adjust the activation speed of each piston on the machine, use the screw of the regulator **A** (the picture above is by way of example).
To adjust the deactivation speed, use the screw of the regulator **B**.
Unscrew to increase speed, screw to reduce it**.**

9.5 PNEUMATIC PISTONS - Deceleration setting (Fig. 4)

To adjust the deceleration intensity during the activation of each piston on the machine, use the screw **C** (the picture above is by way of example).
To adjust the deceleration intensity during the deactivation, use the screw **D**.
Unscrew to diminish braking intensity, screw to increase it.

9.6 SETTING THE CONTRAVES SWITCH

Start the machine up in manual mode. Set the programme number PRG according to the format of the boxes and platform you want. On the right-hand of the Contraves, press the top key **[C]** to raise the figure, use the bottom key **[D]** to reduce it.
The left-hand of the Contraves switch is used only in case of a fault in the right-hand one.

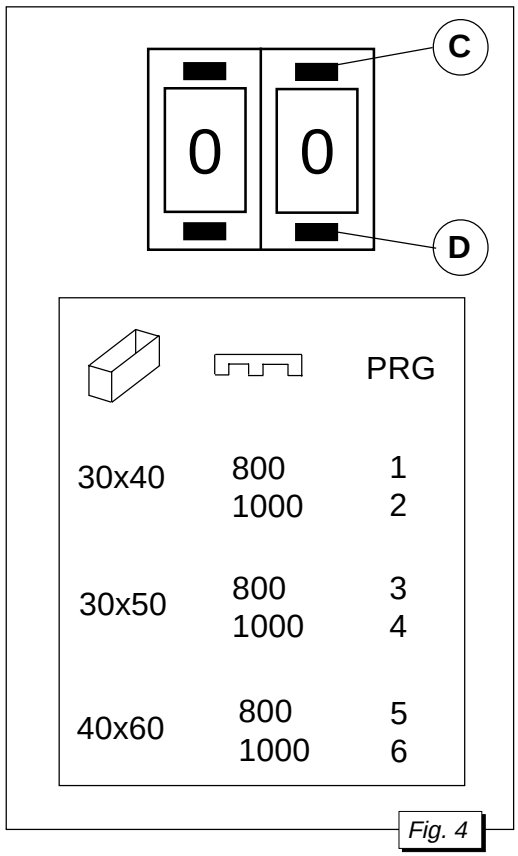


Fig. 4

9.7 SETTING THE COUNTER

The counter programmes the layers of boxes to be palletised onto the platform.
Set the number of layers you want, using the first two keys 5 which increase the number of the set value 4.
During palletisation, when the current value 3 reaches the set value 4, the indicator 2 goes on, advising that counting is over. After the finished pallet has been removed and the operator has started up the automatic drive again, the current value 3 resets automatically and starts counting the layers which the machine is palletising.
Should the pallet be removed before the end of the platform, you must reset the counter manually pressing the RESET key 7.

DESCRIPTION OF THE FRONT PANEL

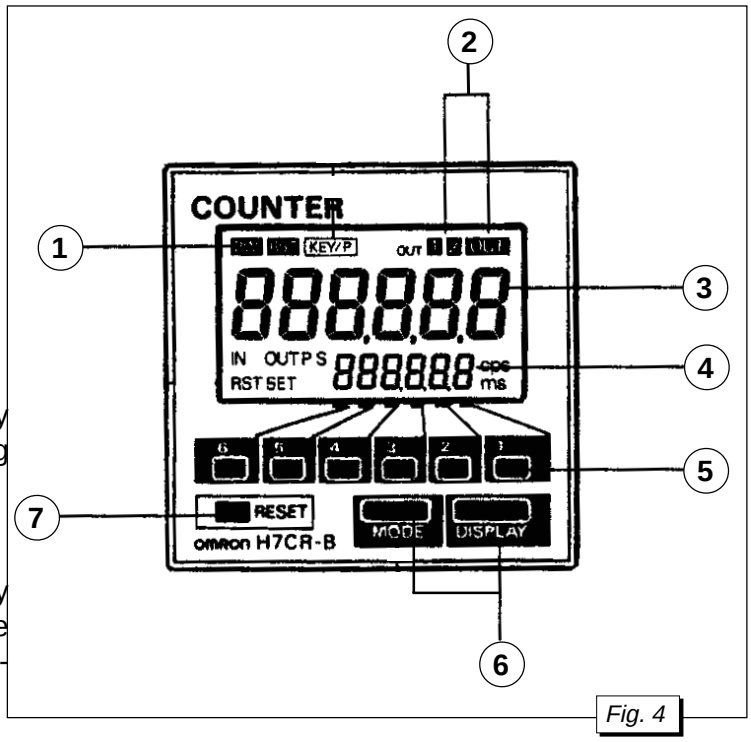


Fig. 4

1= FEEDING PILOT LAMP

2= INDICATES PLATFORM LAYER COUNTING OVER

3= CURRENT VALUE

4= SET VALUE

5= SETTING KEY (from 1 to 6, each key changes the value of the corresponding digit)

6= MODE and DISPLAY KEY =
N.B. In order to avoid unnecessary problems, never use these keys since they do not affect this kind of programming.

7= RESET KEY = this resets the current

10.1 MAINTENANCE

Machine cleaning and maintenance are absolutely necessary for better operation, greater operator safety and long machine life. However, although this is true, the **FBR-108S** requires limited and easy maintenance. Of course, maintenance operations should be performed at the end of seasonal processing, whenever long machine standby time can be expected. Also maintenance operations should be performed ahead of time whenever the residue deposits or staining become more obvious than usual.

⚠ WARNING

Before performing any work involving maintenance, lubrication, repair of parts, replacement of spare parts or cleaning of parts of the machine, always cut power off on the main switch on the electrical board, putting it in the OFF position and locking it in place with a padlock (see Fig. 1). Then disconnect the power and air supply cables.

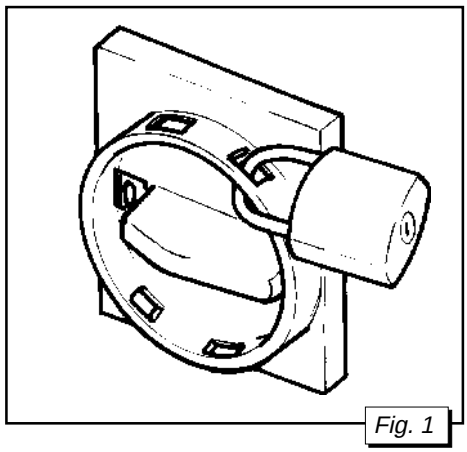


Fig. 1

10.2 ROUTINE MAINTENANCE TABLE

DESCRIPTION	KIND OF OPERATION	SCHEDULE
PHOTOCELLS AND REFLECTORS	Surface cleaning	End of the job
BEARING SUPPORTS	Greasing	Once a week
IDLE PINS, BEARINGS AND SLIDING GUIDES, GREASERS	Greasing	Once a week or end of the job
ROLLER PLATFORM	Surface cleaning	Once a week or end of the job
ELECTRIC BOARD	Surface cleaning	Once a week
ELECTRIC MOTORS	Surface cleaning, blow with compressed air near the air vents.	Once a week
BELT CONVEYORS	Check the state of the surface of the belts. Replace them should they no longer be able to ensure proper operation.	Once a week
CHAIN CONVEYORS	Check and adjust the chains using the relevant tensioners, and grease them.	Once a week
AIR FILTER UNIT	Clean the filter	Once a week
PNEUMATIC CYLINDER FITTINGS AND THROTTLES	Dismantle and clean the couplings and the throttles using dry air.	Once a week
PNEUMATIC CYLINDERS	Make sure the throttles adjusting the activation speed and the brakes work properly. Operate on them in order to optimise their efficiency and functionality.	Once a week

11.1 TROUBLESHOOTING

The following table shows the main problems leading to machine stoppage and how to solve them. Of course, this table cannot show every possible reason for the machine stopping, but it does offer a guide.

SORMA and its TECHNICAL AFTER-SALES SERVICE is ready to provide the users with any suggestions or information necessary to make any faulty machine start up again quickly.

TROUBLE	PROBABLE REASON	REMEDY
THE MACHINE DOES NOT GO INTO AUTOMATIC DRIVE	1) The red mushroom push-button is pressed all the way down. 2) The pressure gauge detects a value which is too low. 3) The yellow lamp is flashing (showing that one palletisation cycle has been completed) 4) The red EMERGENCY pilot lamp is lit.	Turn and lift the mushroom push-button. Check the air supply line. Remove the completed pallet and put a new platform into the compartment. Check the emergency micro-switches and deactivate them.
ONE MORE BOX THAN EXPECTED BY THE PROGRAMME GOES INTO THE PLATFORM	The box inlet photocell before the roller table has moved or is not working.	Reposition the photocell and its reflector or replace the photocell.
THE BOX TURNER DOES NOT CENTRE THE BOXES ON THE BELT CONVEYOR AFTER HAVING TURNED THEM..	The box detection photocell on the inlet of the box turner belt is not positioned properly.	Move the photocell forward or backward so the boxes stop at the centre of the box turner.
THE GRASPING AND GRIPPING UNIT DOES NOT PICK UP ALL THE BOXES FROM THE ROLLER TABLE	Air pressure is not sufficient to provide a good grip; or else the boxes are not strong enough. Gripping time is too short.	Choose the right grasping and gripping pressure using the selector switch [18]; or else stop processing, since the boxes are not strong enough. Using the relevant trimmer on the PLC (see wiring diagram) increase the gripping time.
THE ROLLERS OF THE ROLLER TABLE ARE UNABLE TO MOVE THE BOXES	The photocell located at the check-corner of the platforms does not detect the presence of a platform. The obstacle sensor photocell on the arc is not aligned with its reflector is broken.	Bring the platform close to the check-corner so the photocell can see it properly. Align the photocell with its reflector or replace the photocell or the reflector.

TROUBLE	PROBABLE REASON	REMEDY
THE GRIPPERS DO NOT GRIP THE LAYER OF BOXES ON THE ROLLER TABLE IN TIME	A notch has come loose on the roller conveyor belt. The roller compressing pusher has come loose.	Pull the notch. Position the roller compressing pusher and screw it in place properly.
THE GRIPPER UNIT DOES NOT STOP AT ITS HOME POSITION	Increased friction. Insufficient air flow.	Use air to clean the gripper slide guides. Increase the air flow.
THE CENTRAL BLADE CRUSHES THE BOXES BEFORE PICKING THEM UP FROM THE ROLLER TABLE	Tooth counter reading proximity switch, up-down, is in the wrong position or is broken. Home position counter lost its memory.	Adjust or replace the proximity switch. Restore the home position memory (see chap. 7.3 page 20)