

FILLMARK 3000

**AUTOMATIC FILLING MACHINE
FOR CUPS/CONES**

INSTRUCTIONS SPARE PARTS

NNN
MACHINERY WORLD

INTRODUCTION

Thank you for choosing our product. This manual contains important instructions regarding installation, service checks and maintenance to keep your machine perfectly efficient and running trouble-free. We suggest you read it carefully. It also contains tables, drawings, and diagrams to help you thoroughly familiarize yourself with the machine in all its details.

Our service Department is at your disposal for information and assistance on maintenance and servicing procedures not discussed in the manual, or for any other technical problem you may encounter.

When you call please refer to the data printed on your machine's ID plate reproduced below:

MARK	
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52, VIA MONFERRATO SAN GIULIANO MILANESE (Italia) (02) 9680201	
MODELLO	<input type="text"/>
MATRICOLA	<input type="text"/>
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PRIMA DELL'INSTALLAZIONE SI RACCOMANDA DI CONSULTARE IL MANUALE DI ISTRUZIONI	
OLIO COMPRESSORE: USARE ESCLUSIVAMENTE SUNISO 4G	

Should you find any of the explanations in this manual to be missing or unclear please let us know: we will give your suggestions the utmost attention in our effort to make it better.

The Fillmark 3000 is an extremely versatile automatic filling machine, suited to packaging ice-cream, yogurt, and ices using different size cones and cups.

Warning

As with all automatic machines proper running depends on the quality of the packaging product used.

It is very important that container size be consistent.

Note

Every machine comes with an emergency set of spare parts.

Mark reserves the right to change the measurements and data given in this manual without prior notice.

MANUAL GUIDE

This manual is divided into the following 5 sections:

- Section 0 Technical characteristics
- Section 1 Installation
- Section 2 Description of controls, settings, and start-up
- Section 3 Maintenance
- Section 4 Spare parts

Section 0 gives the technical data on the machine.

In *Section 1* you will find all the information required for correct installation: connection to the compressed air line and electrical power supply.

Section 2 illustrates and explains the functions of the various devices and how to use the controls.

Section 3 includes all the information and servicing instructions required to insure proper running of the machine and its components over time.

Section 4 includes a series of diagrams for identifying spare parts.

For an illustration of the start-up and servicing procedures discussed in Sections 1-2-3 please refer to the drawings and illustrations in this section.

Note

This manual includes all the options which can be installed on the basic machine. The machine you purchased will be supplied with the ordered options only.

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- Manual guide

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SECTION 0 - TECHNICAL DATA

0.1 TECHNICAL DATA

- Power supply voltage
As requested - 220 V }
 - 380 V } 50/60 Hz., 3 phase
 - 415 V }

- Demand rate : 0.5 Kw
- Required air
 pressure : 7 ÷ 10 Bar
- Working pressure : 5 ÷ 6 Bar
- Average air
 consumption : 550 NI

- Net weight : 200 Kg (approx.)
- Production
 capacity : up to 3000 pieces/hour

Warning

The Fillmark 3000 comes equipped with a drying filter to de-humidify the compressed air fed to the machine's pneumatic system.

Nonetheless for use in very humid climates a technician should be consulted to equip the machine with a de-humidifying device suited to local conditions.

We recommend daily draining of condensation from your compressor and weekly cleaning of the air filters. **To safeguard the pneumatic components and to insure trouble free running of the machine it is essential that the compressed air used be clean and dry.**

SECTION 0 - TECHNICAL DATA

0.2 MEASUREMENTS AND HOOKUP POINTS

Fig. 1A

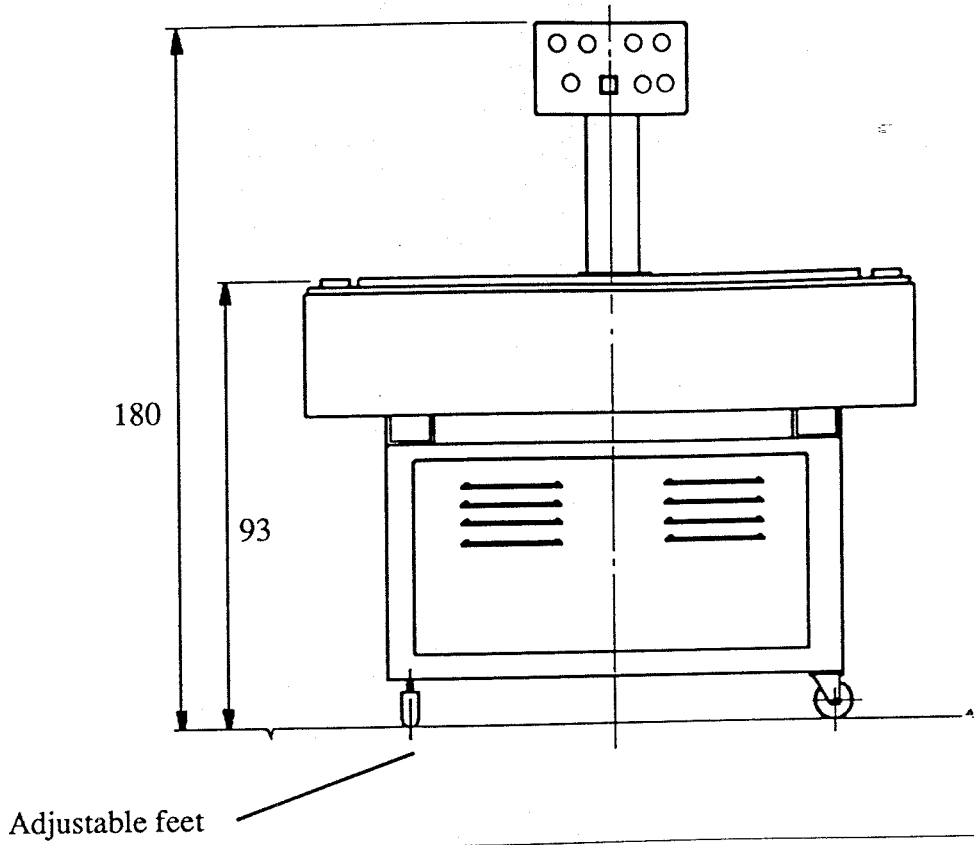
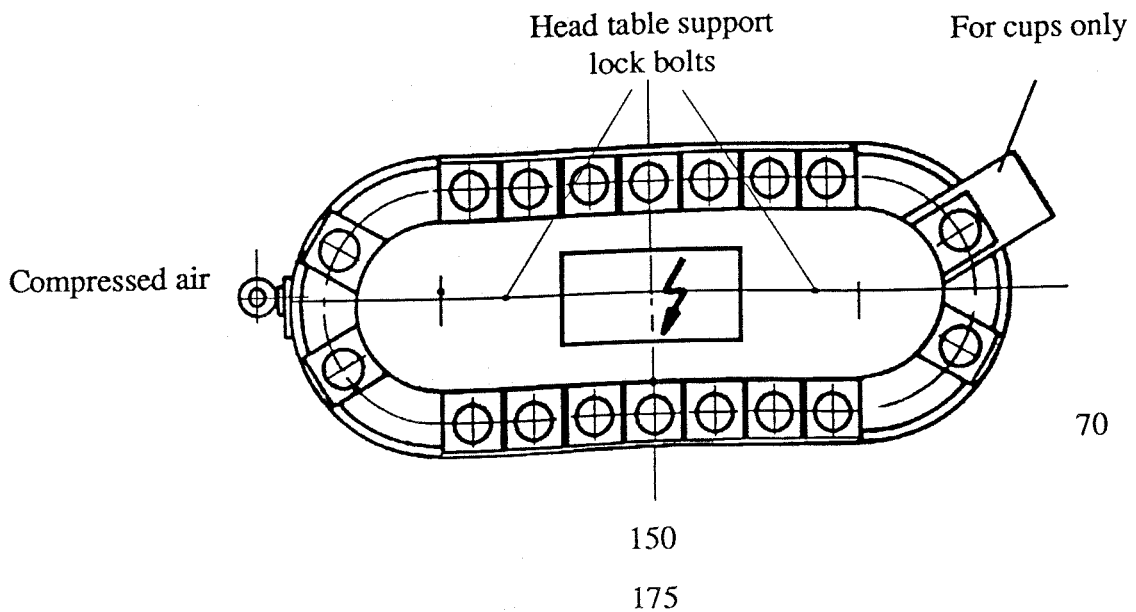


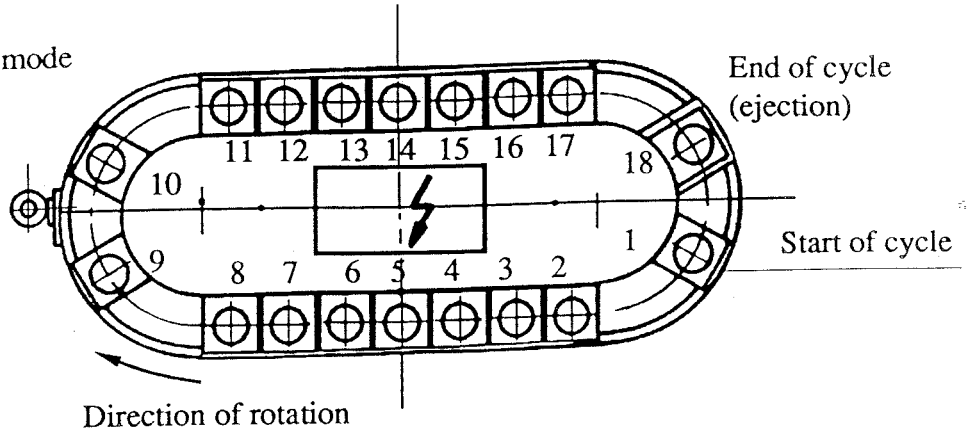
Fig. 1B



SECTION 0 - TECHNICAL DATA

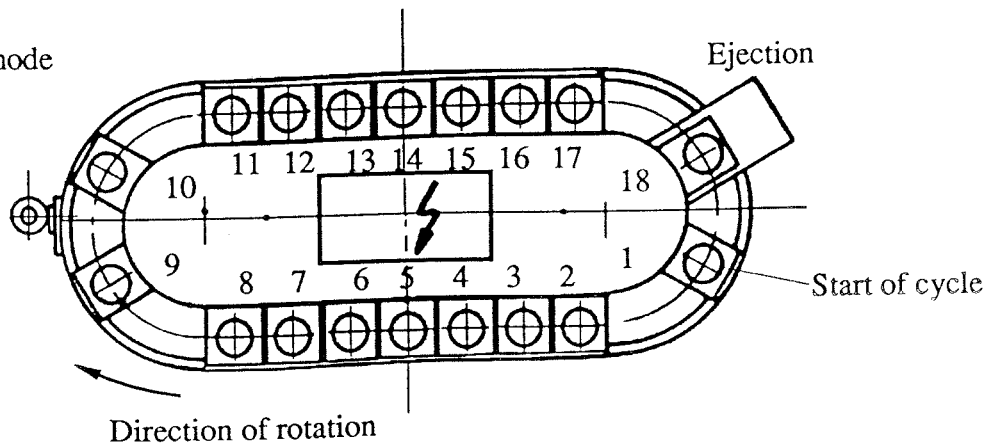
0.3 AVAILABLE SETUPS

Fig. 2A - Cone filling mode



POSITION	STATION	POSITION	STATION
2	cone ejector	11	hazelnut dispenser
5	cone sizing	15	cone lidding unit
6	chocolate sprayer	17	crimping unit
7	icecream filler	18	cone ejector
8	chocolate topper		

Fig. 2B - Cup filling mode

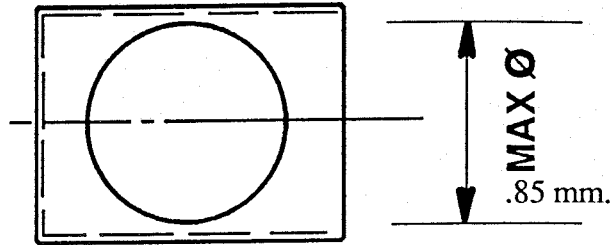


POSITION	STATION
1	cup ejector
7	icecream filler
15	cup lidding unit
17	lid pressing unit
19	ejector/cup aligner

SECTION 0 - TECHNICAL DATA

0.4 CONTAINER SIZE

The machine will process containers up to 85 mm in diameter with a maximum capacity of 200 cc.



SECTION 1 - INSTALLATION

1.1 COMPRESSED AIR CONNECTION FIG. 2

Connect the compressed air line to the connector (12) using a flexible hose with a minimum internal diameter of 12 mm. Mount an air check cock on the machine air feed hose.

1.2 Power connection

- Check the ID plate to verify that your machine is compatible with local voltage.
- First remove the front base cover and then the drive belt (see Par. 3.7.5).
- Connect the power supply cable to the cable coming from the electrical panel.
- Turn on the circuit switch (Fig. 1, 1) and start the motor with the start switch (Fig. 1, 2).
- Check the belt pulley (Fig. 14, 303) to insure that the direction of rotation is the same as indicated by the arrow (if no arrow is visible the rotation should be clockwise looking at the pulley).
- Reverse the polarity of the electrical connection if necessary.

SECTION 2 - CONTROLS - SETTINGS - START-UP

2.1 ELECTRICAL SWITCHES AND CONTROL DEVICES

FIG. 1

1. Circuit switch
2. Start button
3. Stop switch
4. Circuit pilot light
lit = power on
off = power off
5. Motor overload relay light
lit = overload tripped
6. Low air pressure warning light
7. Resistor heat regulator knob for chocolate tank
8. Resistor heat regulator light
lit = regulator on
off = regulator off

2.2 PNEUMATIC CONTROLS AND DEVICES

FIG. 2

- 11) Filter - reducer
- 11a) Pressure controller
- 11b) Pressure gauge
- 11c) Automatic condenser drain filter
- 11d) Condensation discharge
- 11e) Cup
- 12) Air hose nipple
- 13) Slider air stop valve

2.3 PRODUCTION SPEED REGULATION

Production speed can be varied by turning the handwheel on the left of the machine (Fig. 2, 14): turning clockwise diminishes the speed whereas turning counterclockwise increases it. This handwheel controls the rear slide on which the motor itself is mounted, causing a change in transmission speed through the variable speed pulley (Fig. 14, 289).

2.4 CONTROL VALVE TIMING FIG.14

Pneumatic movement of the various heads mounted on the Fillmark 3000 machines is governed as follows.

Two cams (293) are mounted on the lower part of the speed reducer's slow shaft.

Each of the said cams governs a pneumatic shuttle valve (292 - 294).

Valve 292 governs the cup ejector cycle.

Valve 294 governs all the other heads.

The cams should be timed with the machine turned off, by loosening the lock screw and rotating the cam on its axis until the proper timing position is reached.

This procedure should be carried out carefully to avoid causing the machine to go further out-of-phase.

The following can be used as a basic reference: Timing operations should be carried out with the electric motor turned off and rotating the pulleys by hand. ROTATE CLOCKWISE ONLY, as indicated by the arrow.

Make sure the operating heads are mounted according to drawings 2A and 2B, for cones and cups respectively (see Par. 0.3).

All filler and topping units should start the downward stroke once the container conveyor belt has stopped and the fixed pulley (303) has gone on for approx. 1/2 turn more.

The same heads should begin upward movement three turns of the fixed pulley before the conveyor belt starts up again.

This standard timing can be modified according to the type of product to be packaged.

After completion of the timing procedures make sure that all the screws are tightened and everything is in order before starting up the machine.

In any case turn the reduction unit or motor pulley clockwise by hand a few times to check that the machine is operating normally.

SECTION 2 - CONTROLS - SETTINGS - START-UP

2.5 DRY RUN

- Turn the pressure control knob (Fig. 2, 11a) until the pressure gauge (Fig. 2, 11b) reads 6 Kg/cm (BAR). During the run make sure that the pressure stays around 5/6 Kg/cm (BAR). A pressure safety switch is mounted inside the machine (Fig. 15, 311) to stop operation should pressure drop too low (below 3.5 Kg/cm or BAR). A pilot light (Fig. 1, 6) on the control panel signals this event.
- After having checked the machine as described in the preceding paragraphs conduct a dry run with the packaging containers only (no product), and verify proper functioning of every single head starting from the feeding station (start of cycle).
To regulate pneumatic cylinder speed gradually turn the adjusting screw (ex. Fig. 4, 64).
- If necessary adjust as described in the following paragraphs.

Note

After the dry run and all adjusting procedures have been completed carefully wash the machine according to the instructions given in the section on servicing.

2.6 CONE PROCESSING HEADS

2.6.1 Cone feeder Fig. 4

The first machine station dispenses the cones to be filled.

The unit is essentially composed of:

- a vertical storage chamber for the empty cones;
- four rocker levers below the chamber, (46, 47, 48, 49) the alternating movement of which causes the cones to drop one at a time;
- a plunger (56) to push the cone down once the rocker levers free it.

For proper functioning it is essential that the rocker

levers hold the containers without compressing them too much and that the plunger be correctly positioned above the edge of the container to be ejected.

Rocker lever positions are adjusted by the regulator screw (63) and the two plates (50, 51). Feeding cylinder position is adjusted by a regulator screw (59).

After making adjustments carefully tighten the lock screws.

If the downward plunger speed is too high gradually tighten screw (64) until the desired speed is reached.

Make sure the cone storage chamber is well stocked at all times during operation of the machine.

Compressed air to the unit is controlled by a valve (62) which allows the ejector to be started and stopped.

2.6.2 Cone gauging Fig. 5

A plastic plunger (76), governed by the filler unit, serves to size cone paper mouth.

2.6.3 Chocolate sprayer Fig. 5/6

The chocolate spraying procedure takes place immediately before the icecream is metered out, and normally applies to cone filling only.

- Fill the tank (Fig. 6, 121) approximately 3/4 full with chocolate at the right temperature.
- Open the cock (Fig. 6, 133)
- A screw (Fig. 5, 96) regulates the spray and a cam (Fig. 5, 109) regulates the quantity of chocolate.

Note

Dismantle and thoroughly wash the spray nozzle (Fig. 5, 78) at the end of the process after having emptied the tank (Fig. 6, 121).

SECTION 2 - CONTROLS - SETTINGS - START-UP

2.6.4 Icecream filler Fig. 5/6

Connect the continuous freezer outlet to the ice-cream input connector using a flexible hose. If twin flavor production is required mount a "double entry connector" on the connector.

Note

The Fillmark 3000 metering unit works on a time basis.

For proper functioning it is therefore essential that the continuous freezer hooked up to the machine dispense ice-cream regularly.

Before starting production it is important to run the unit a little in order to achieve a constant flow from the freezer.

Dosage can be regulated as follows:

- by increasing or diminishing filler speed;
- by regulating freezer production capacity.

- The two ring nuts (Fig. 5, 84 and 85) do not serve to regulate icecream dosage, but to modify the "shape" of the dose.
- Position 139 in Fig. 6 indicates the safety valve.
- The metering nozzle (Fig. 5, 80) is of different shape according to use.

Warning

Always allow the filler tie rod (Fig. 5, 83) at least 1 cm. of travel.

2.6.5 Chocolate topping unit Fig. 6

This device serves to dispense a small dose of chocolate or semi-liquid syrup on the icecream and is the next station after the icecream metering unit. It is activated by the filler as it drops.

Fill the tank (121) to 3/4 with the desired syrup or chocolate product, and check tank temperature to insure proper fluidity.

The Fillmark 3000 machine comes equipped with a heated chocolate holding tank.

Tank temperature is controlled by a knob on the control panel (Fig. 1, 7). See description of electrical controls as well.

Turning the knob from 1 to 4 progressively lengthens the amount of time the heating resistor remains on, thereby increasing temperature.

Maximum temperature is reached when the knob is at the "full" position, in which case the resistor remains on constantly.

With the machine operating grasp knob 135 and rotate plate 124 so that screw shaft 125 presses on the release button.

Adjustment of this screw permits dosing of the chocolate. Never allow the product to dry in the metering nozzle.

Warning

Before dismantling the nozzle to clean it remove all the remaining product from the tank.

2.6.6 Hazelnut dispenser Fig. 7

This operation takes place after the chocolate or syrup is dispensed.

Fill the container with the desired dry product (151) up to about 3/4 capacity.

Turn the ring nuts (155, 154) to change the amount of product dispensed. After each setting tighten the nuts against one another to avoid loosening during running.

The product container can be removed by loosening screw 158 and disconnecting the two pipes which bring compressed air to the cylinder.

SECTION 2 - CONTROLS - SETTINGS - START-UP

2.6.7 Cone lidding unit Fig. 8

The unit is composed of a vertical lid stacker (166), of a rotating suction cup (191), and of a rack device (171).

The lids should be stacked between the four holding rods (170), which are screw (192) adjustable, making sure that they are properly held by the rods and centered on the suction cup.

The suction cup fastens on the lids one at a time and with a rotating motion sets them on the containers below.

Vacuum in the cup is obtained through a Venturi meter injector (190).

When the suction cup sets the lid on the container, the vacuostat (187) is closed by exchange of the main valve.

The vacuostat is equipped with a vacuum control system so that if the suction cup does not fasten on to the lid (or if the lid holder is empty) the suction cup unit will not rotate downwards, thereby avoiding contact with the icecream.

2.6.8 Cone crimping unit Fig. 9

After the lid is in place the cone passes under the crimping station where it is sealed by a plunger (211).

The plunger can be disassembled by loosening knob (208).

2.6.9 Cone ejector Fig. 11

The completely packaged product now passes above an ejector (259) which ejects it to the chute and on its way to secondary packaging. The ejector is governed by a pneumatic cylinder (260), the speed of which is screw (267) adjustable.

2.7 CUP PROCESSING HEADS

2.7.1 Cup feeder Fig. 3/10/11/14

The cup feeder should be installed in position No. 1 (see Par. 03 Table 2B).

Install the suction cup under the filler (Fig. 11, 265) and connect the generator vacuum tube (Fig. 11, 264).

Open the cock (Fig. 11, 266) to create a vacuum in the suction cup.

Adjust the stacking rods (Fig. 3, 31) so that they grip the edge of the lowest cup and hold it in place.

The mobile suction cup must not meet excessive resistance when it fastens on to the cup to place it in its container.

The stacking rods are adjusted by loosening the adjusting screws (Fig. 3, 36).

Suction cup vacuum must be interrupted as soon as the cup is in its place. Adjust cam setting (Fig. 11, 256) to insure proper timing.

Two pincers (Fig. 3, 30), governed by opposing pneumatic cylinders (Fig. 3, 32), acting in synchronism with the suction cup dispense the cups one at a time.

The position of these pincers is adjustable according to cup size.

Loosen screws (Fig. 10, 240) and turn the ring nuts (Fig. 3, 24) to adjust for diameter.

Tighten once adjustment is completed.

To adjust for height loosen the lock nut (Fig. 3, 35) and turn the ring nut (fig. 3, 20).

Proper pincer timing is important.

If the pincers stay open too long more than one cup will drop down, if they stay open too little the cups will not drop.

If necessary adjust cam timing (Fig. 14, 293).

SECTION 2 - CONTROLS - SETTINGS - START-UP

2.7.2 Icecream filler Fig. 5/6

Connect the continuous freezer outlet to the icecream input connector using a flexible hose. If twin flavor production is required mount a "double entry connector" on the connector.

Note

The Fillmark 3000 metering unit works on a time basis.

For proper functioning it is therefore essential that the continuous freezer hooked up to the machine dispense ice-cream regularly.

Before starting production it is important to run the unit a little in order to achieve a constant flow from the freezer.

Dosage can be regulated as follows:

- by increasing or diminishing filler speed;
- by regulating freezer production capacity.

- The two ring nuts (Fig. 5, 84 and 85) do not serve to regulate icecream dosage, but to modify the "shape" of the dose.
- Position 139 in Fig. 6 indicates the safety valve.
- The metering nozzle (Fig. 5, 80) is of different shape according to use.

Warning

Always allow the filler tie rod (Fig. 5, 83) at least 1 cm. of travel.

2.7.3 Cup lidding unit Fig. 8

The unit is composed of a vertical lid stacker (166), of a rotating suction cup (191), and of a rack device (171). The lids should be stacked between the four holding rods (170), which are screw (192) adjustable, making sure that they are

properly held by the rods and centered on the suction cup.

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Vacuum in the cup is obtained through a Venturi meter injector (190).

When the suction cup sets the lid on the container, the vacuostat (187) is closed by exchange of the main valve.

The vacuostat is equipped with a vacuum control system so that if the suction cup does not fasten on to the lid (or if the lid holder is empty) the suction cup unit will not rotate downwards, thereby avoiding contact with the icecream.

2.7.4 Cup lid pressing device Fig. 9

After the lid is in place the cup passes under the sealing station where it is pressed by a plunger (209).

The plunger can be disassembled by loosening knob (208).

2.7.5 Cone ejector/aligner Fig. 10/11

The completely packaged product now passes above an ejector (259) governed by a pneumatic cylinder (Fig. 11, 260).

Cylinder speed is screw adjustable. (Fig. 11, 267). A small horizontal cylinder (Fig. 10, 239) works in synchronism with the ejector.

To keep the cups from overturning use the ring nut (Fig. 10, 236) which serves to adjust the height of the chute's top-plate (Fig. 10, 224). Place a board under the chute (Fig. 10, 234) at a convenient height and/or properly position the chutes themselves.

SECTION 2 - CONTROLS - SETTINGS - START-UP

2.8 CHANGE FROM CUP TO CONE SETUP

FIG. 5/6/8/9/10/11 - Tab. 2A and 2B

To mount and unmount the various operating heads work on the various lock nuts and screws and pneumatic connections.

The heads must be placed as per Tables 2A and 2B (see Par. 0.3).

- Remove the ejection plunger for cups and mount the one for cones (Fig. 11, 259).
- Substitute cup containers with cone containers.
- To change containers the container holder must be on one of the curved portions of the machine, where the spring jaws that keep the containers in place can be opened.
- Substitute the cup feeder with the cone feeder.
- Close the cup vacuum valve cutoff cock (Fig. 11, 266).
- Mount the chocolate sprayer unit (Fig. 5, 77/78/79) and attach it to the chocolate holding tank (Fig. 6, 121).
- Mount the cone-widener plunger (Fig. 5, 76).
- Mount the chocolate topper (Fig. 6, 126). Remove the cup lid presser and mount the spring crimper (Fig. 9, 211). Substitute the cup lid stacker with the cone lid one (Fig. 8, 166).
- Dismantle the cup aligner and chute (Fig. 10) and substitute it with the cone chute.

When switching from the cup to cone mode and viceversa it is not necessary to disassemble the chocolate holding tank and the hazelnut container.

2.9 SAFETY COUPLING FIG. 14

The machine is equipped with a factory tested safety coupling (296).

If for any reason during operation of the machine the container conveyor chain meets excessive resistance, the safety coupling opens and trips a microswitch (Fig. 14, 300) which stops the main motor.

If this should happen turn off the compressed air and eliminate the cause of the shutdown, and then proceed as follows: keep the fixed pulley (303) from turning with one hand and with the other rotate plates (d) and (e) together until the poppet balls (f) are back in place, thereby allowing the two plates to come together.

SECTION 2 - CONTROLS - SETTINGS - START-UP

Cont.d.

PROBLEM	PROBABLE CAUSE	SOLUTION
6) No chocolate from metering unit, (Fig. 6,118) and/or from sprayer (Fig. 5, 78)	<ul style="list-style-type: none"> - tank (Fig. 6,121) chocolate piping, filler and sprayer 	<ul style="list-style-type: none"> - verify that chocolate is liquid - check for presence of hardened chocolate and wash
7) Lids won't drop or are improperly positioned	<ul style="list-style-type: none"> - guide rods (Fig. 8, 170) - suction cups (Fig. 8, 191) - manifold (Fig. 8,180) piping and suction cup (Fig. 8, 191) - venturimeter valve (Fig. 8, 190) 	<ul style="list-style-type: none"> - check position - check that the positioned suction cup group is perfectly vertical at top and bottom dead center - check for leakage and replace where necessary - clean valve and/or silencer (see MAINTENANCE section)
8) The cups won't fall into the containers, or fall more than one at a time	<ul style="list-style-type: none"> - cup storage unit (Fig. 3) - guide rods (Fig. 3,31) selector pincers (Fig. 3,30) - piping and suction cup (Fig. 11,265) - silencer (Fig. 11,331) 	<ul style="list-style-type: none"> - Check height (see Par. 2.7.1 in the START-UP section) - check position: they must hold the stack of cups without dropping or ruining them - check for leakage - check that it is not clogged with dirt
9) The cup feeder pincers won't open	<ul style="list-style-type: none"> - cams (Fig. 14,293) - valves (Fig. 14,292) 	<ul style="list-style-type: none"> - check timing (see Par. 2.5 in START-UP section) - check function (see MAINTENANCE section)

SECTION 2 - CONTROLS - SETTINGS - START-UP

2.10 TROUBLE SHOOTING

PROBLEM	PROBABLE CAUSE	SOLUTION
1) Machine won't start	<ul style="list-style-type: none"> - power supply - insufficient air - safety coupling open (Fig. 14, 296) - motor thermal relay (Fig. 15, 316) 	<ul style="list-style-type: none"> - check connections and voltage - check connections and pressure - reset - open control panel and reset relay - check that relay is set to absorb motor + 10%; replace if damaged
2) All operating heads are blocked	<ul style="list-style-type: none"> - cams (Fig. 14, 293) - control valve (Fig. 14, 294) - pneumatic shuttle valve (Fig. 16, 331) 	<ul style="list-style-type: none"> - check cam timing (see START-UP section) - check function (see section on MAINTENANCE) - check function (see section on MAINTENANCE)
3) One or more of the stations hit the containers in the downward movement	<ul style="list-style-type: none"> - ratchet gear cam (Fig. 13, 277, 280) - cams (Fig. 14, 293) relating to valve (Fig. 14, 294) - sprocket wheel (Fig. 12, 270) 	<ul style="list-style-type: none"> - check play (see section on MAINTENANCE) - check timing (see section MAINTENANCE) - adjust position (see EJECTOR UNIT Par. in the MAINTENANCE section)
4) The machine does not reach maximum operating speed	<ul style="list-style-type: none"> - drive belt (Fig. 14, 291) - motor slide stop (Fig. 14, 302) - motor slide guide (Fig. 14, 301) 	<ul style="list-style-type: none"> - check wear - adjust position - clean and lubricate (parag. 3.4 on SCHEDULED MAINTENANCE)
5) The cones won't drop or drop more than one at a time, are crushed	<ul style="list-style-type: none"> - cams (Fig. 14, 293) relating to valve (Fig. 14, 294) - pneumatic cylinder (Fig. 4, 61) - levers (Fig. 4, 46/47/48/49) 	<ul style="list-style-type: none"> - check timing (see properly START-UP section) - check position of air tubes (red and red, blue and blue) - adjust position with regulating screw (Fig. 4, 63)

SECTION 3 - MAINTENANCE

3.1 REQUIRED MATERIALS

The following materials are required for machine maintenance:

MATERIAL	CAN BE FOUND
1 Common ball bearing grease	Commercially
2 Vaseline oil or equivalent	Commercially
3 Neutral detergent	Commercially
4 Disinfectant non-corrosive detergent	Commercially
5 Thinner (gasoline or other petroleum distillate)	Commercially

3.2 TOOLS AND EQUIPMENT

No particular tools or equipment are needed for start-up and maintenance.

The machine comes with a wrench set for ordinary maintenance.

3.3 WASHING

Remove the following components from the machine:

- Chocolate sprayer (Fig. 5)
- Icecream filler (Fig. 5)
- Chocolate filler (Fig. 6)
- Chocolate holding tank (Fig. 6)
- Crumb container (Fig. 7)

These components will be washed separately.

Carefully clean all the machine's devices and external surfaces using hot water and detergent. Dry with compressed air. To clean in-depth remove all the containers (Fig. 3, 34) and clean separately. **DO NOT USE caustic soda (sodium hydroxide) or other corrosive agents.**

To clean metering units, tanks, and the hazelnut container use a disinfectant detergent (remove as per Fig. 5, 6, 7). Before remounting lubricate the spindles (Fig. 5, 81 and Fig. 6, 128) with vaseline. Once washing is completed lubricate the operating heads' vertical guides as indicated in the paragraph on the subject.

Warning

- Avoid spraying the control panel with the water hose so as not to cause water infiltration.
- Take care not to lose filler components during washing, and reassemble carefully according to instructions.

SECTION 3 - MAINTENANCE

3.4 SCHEDULED MAINTENANCE

OPERATION/MACHINE PART INVOLVED	MATERIAL REQUIRED
<p>1) Start of season:</p> <ul style="list-style-type: none"> • Wash/lubricate all external surfaces and moving parts (see Par. 3.3) 	<p>water - detergent disinfectant - oil</p>
<p>2) Daily (before starting production)</p> <ul style="list-style-type: none"> • Check for leakage in compressed air lines • Wash/lubricate all external surfaces and moving parts (see Par. 3.3) 	<p>water - detergent disinfectant - oil-</p>
<p>3) Monthly</p> <ul style="list-style-type: none"> • Clean: <ul style="list-style-type: none"> - silencers (see Par. 3.6.2) - drying filter (see Par. 3.6.1) - lidding unit vacuum manifold (see Par. 3.6.3) • Clean and lubricate: <ul style="list-style-type: none"> - motor slide guides (Fig. 14, 301) - seaming device (see Par. 3.7.2) • Lubricate: <ul style="list-style-type: none"> - conveyor chain (Fig. 12, 304) - variable pulley (see Par. 3.7.7) - crank lever (see Par. 3.7.9) - articulated joint and pawl for chain motion (Fig. 13) • Check wear: <ul style="list-style-type: none"> - operating head sleeves (see Par. 3.7.1) - drive belt (see Par. 3.7.5) • Check tension: <ul style="list-style-type: none"> - conveyor chain (see Par. 3.7.4) • Check play: <ul style="list-style-type: none"> - ratchet cam and pawl (see Par. 3.7.8) 	<p>water - comp. air water - comp. air water - comp. air</p> <p>thinner - grease thinner - grease</p> <p>oil grease grease oil</p>
<p>4) End of season</p> <ul style="list-style-type: none"> • Clean and lubricate: <ul style="list-style-type: none"> - safety coupling (see Par. 3.7.6) • Lubricate (only when changing gaskets): <ul style="list-style-type: none"> - pneumatic cylinders (see Par. 3.6.4) 	<p>thinner - grease</p> <p>vaseline</p>

SECTION 3 - MAINTENANCE

3.5 RECOMMENDED REPLACEMENTS AND SERVICING

MACHINE PART	OPERATION
1) Every 1200 hours: - drive belt (see Par. 3.7.5)	replace
2) Every 1500/2000 hours: - pneumatic cylinders if necessary (see Par. 3.6.4)	check and replace gaskets, if necessary
3) Every 3000 hours: - operating head sleeves (see Par. 3.7.1)	replace
- control cams (see Par. 3.6.6)	replace
- lidding unit vacuum manifold o-ring (see Par. 3.6.3)	replace
- suction cups (Fig. 8, 191) (Fig. 11, 265)	replace
- pneumatic valves (see Par. 3.6.5)	replace

3.6 PNEUMATIC SYSTEM

3.6.1 De-humidifying filter Fig. 2

To clean:

- unscrew cup (e)
- remove float (d) by unscrewing lock nut
- remove the internal float
- clean all parts with water and detergent, dry with compressed air

Warning

DO NOT USE ALCOHOL OR SOLVENTS to clean.

3.6.2 Silencers Fig. 16, 333

Unscrew by hand and clean with warm water. Dry with compressed air.

3.6.3 Lidding unit suction cup shaft vacuum manifold Fig. 8, 180

To clean:

- unscrew the head nut
- disconnect vacuum tube
- blow compressed air into the head

SECTION 3 - MAINTENANCE

To replace o-rings:

- disassemble the suction cup attachment (181/182) to the shaft (167)
- remove the seeger ring fastening the manifold and replace the 2 o-rings (189).

3.6.4 Pneumatic cylinders

Fig.3, 32 Fig.4, 60/61 Fig.6, 111
Fig.7, 157 Fig.8, 186 Fig.9, 207
Fig.10, 239 Fig.11, 260

- unscrew lock screws and nuts
- unscrew cylinder head
- unscrew cylinder body
- check condition of gaskets and replace if necessary (lubricate new gaskets before mounting)

3.6.5 Pneumatic valves

Fig. 3/14/16

To check condition of the pneumatic control valves (Fig. 14, 292/294):

- stop the machine with the operating heads at bottom dead center
- disconnect air tube from valve: an escape of air will be noticed
- if pressing the needle halts the escape of air it means that the valve is in good condition
- otherwise it must be replaced.

To check the condition of the pneumatic shuttle valves (Fig. 3, 33 and Fig. 16, 331):

- stop the machine with the head down
- upon detaching the feeding tubes to the heads, air will be released through one of the holes in the valve itself
- manually operate the control valve (Fig. 14, 294/292) air should be released through the other vent
- if does not occur the pneumatic valve must be substituted by unscrewing the locking screws/bolts.

3.6.6 Control cams

Fig. 14, 293

Lubrication:

- apply a thin film of grease on the contact surfaces of the two cam units

Replacement:

- loosen the holding screws and remove cams from shaft
- mount the new cam series and time as described in the start-up section.

Note

when replacing cams we recommend replacing both series together.

3.6.7 Venturi meter valve

Fig. 8, 190

To clean disconnect pneumatic connectors and clean air passages with water and compressed air.

3.7 MECHANICAL COMPONENTS

3.7.1 Vertical guides and operating head sleeves

Fig. 3, 18 Fig.5, 95 Fig.6, 104
Fig.8, 172 Fig.9, 205 Fig.10, 229
Fig.11, 252

To lubricate:

- shut off compressed air intake
- put a few drops of oil on the guide rods
- lift and lower the heads manually: this procedure should not require any effort.

In case of marked wear of the teflon sleeves, excessive play and irregular movement of the heads will be noticed. If so:

- Remove the heads and replace sleeves. With the exception of the sleeves in Fig. 10, 229 and Fig. 11, 252, which are held by a ring nut, all the others are pressure fit into their seats.

SECTION 3 - MAINTENANCE

3.7.2 Crimping device Fig. 9, 211

Regards the cone filling mode

To lubricate:

- unscrew knob (208) and remove the crimper
- remove the spring holder after having loosened screws - remove plunger (d) and clean thoroughly
- lubricate plunger stem (d)
- reassemble and remount

3.7.3 Ejector unit Fig. 11

Should the ejector unit come in contact with containers (Fig. 3, 34) in the course of its movement, it will be necessary to adjust as follows the sprocket wheel (Fig. 12, 270) situated on the same side of the machine as the ejector:

- turn the fixed pulley by hand (Fig. 14, 303) in the sense indicated by the arrow until both the container conveyor chain and all the operating heads have stopped
- check that the ratchet cam (Fig. 13, 277) is blocked between the two pawls (Fig. 13, 280) and that the ejector plunger is perfectly centered with respect to the container. Otherwise loosen the lock screws of the above mentioned sprocket wheel and manually move the chain until the ejector plunger is centered
- make sure to tighten the lock screws before restarting the machine.

3.7.4 Conveyor chain (for containers) Fig. 12, 304

If chain tension is correct no appreciable deviation of the containers should be noticed.

Otherwise proceed as follows:

- loosen the 2 bolts (see Table 1B, Par. 0.2), carefully lift the machine's head carrying plate by 5-6 cm. at most, keeping it in place with wooden spacers.

Note

- this procedure should be carried out by at least two people.
- pay attention not to damage the wiring.
- loosen the left sprocket wheel (270) lock screws-loosen the bolts (272a)
- tighten the pulley bolt to pull the sprocket wheel outwards until proper chain tension has been reached
- tighten screws and bolts.

3.7.5 Drive belt Fig. 14, 291

Check for wear and tear. To replace bring the variable pulley (289) as close as possible to the fixed pulley (303).

3.7.6 Safety coupling Fig. 14, 296

To lubricate:

- loosen the nut lock screw (a)
- remove nut, spring (b), spacer (c), plates (D and E), and poppet balls (f)
- clean these components and plate surface (g) with thinner - lubricate surface (g) with grease and reassemble.

3.7.7 Variable pulley Fig. 14, 289

Lubricate through nipple (289-a) using an ordinary grease pump

SECTION 3 - MAINTENANCE

3.7.8 Ratchet cam and pawls Fig. 13, 277 and 280

Check pawl position with respect to cam:
Optimum play is approx. 1 mm. To obtain this value adjust the length of the crank connecting rod (Fig. 13, 298).

3.7.9 Crank lever Fig. 13, 288

Lubricate contact points between the lever and:
- eccentric flange (Fig. 13, 299)
- Connecting rod joint (Fig. 13, 287).

SECTION 4 - SPARE PARTS

4.1 ORDERING SPARE PARTS

All orders for replacement parts must include the data stamped on the machine's ID plate. Furthermore please furnish the following information when ordering:

- 1) serial number of the machine
- 2) part number as given in the illustrations
- 3) a description of the part

Warning

- only those parts listed in Figures 1 to 16 are available. Replacement parts may change without notice following improvements and/or modifications made by Mark to its machines
- the same figures show other components to illustrate procedures described in sections 1/2/3 not available as spare parts
- fastening bolts, nuts, screws, washers etc. are not available as replacements
- the following parts are supplied in kits:
 - 1 Springs (2 sets for cone feeder and one set for cover feeder)
 - 2 Springs (1 set for the rest of the machine)
 - 3 O-rings (1 set)
 - 4 T connectors (1set)
 - 5 Elbow connectors (1 set)
 - 6 Straight connectors (1 set)
 - 7 Rapid connectors (2+1 pieces)
 - 8 Silencers (1+1 piece)
 - 9 Suction cups
 - 10 Sleeves (1 set for each moving head)
 - 11 Fuses (1 set)
 - 12 Pneumatic cylinder gaskets (1 set per cylinder)
 - 13 Flow regulators (1+1 piece)
 - 14 Rilsan pipe (4m \varnothing 4-4m \varnothing 6)

EXAMPLE FOR ORDERING SPARE PARTS

For Fillmark 3000

Serial No. 0001

1 piece Fig.3 - position 33:

Pneumatic valve

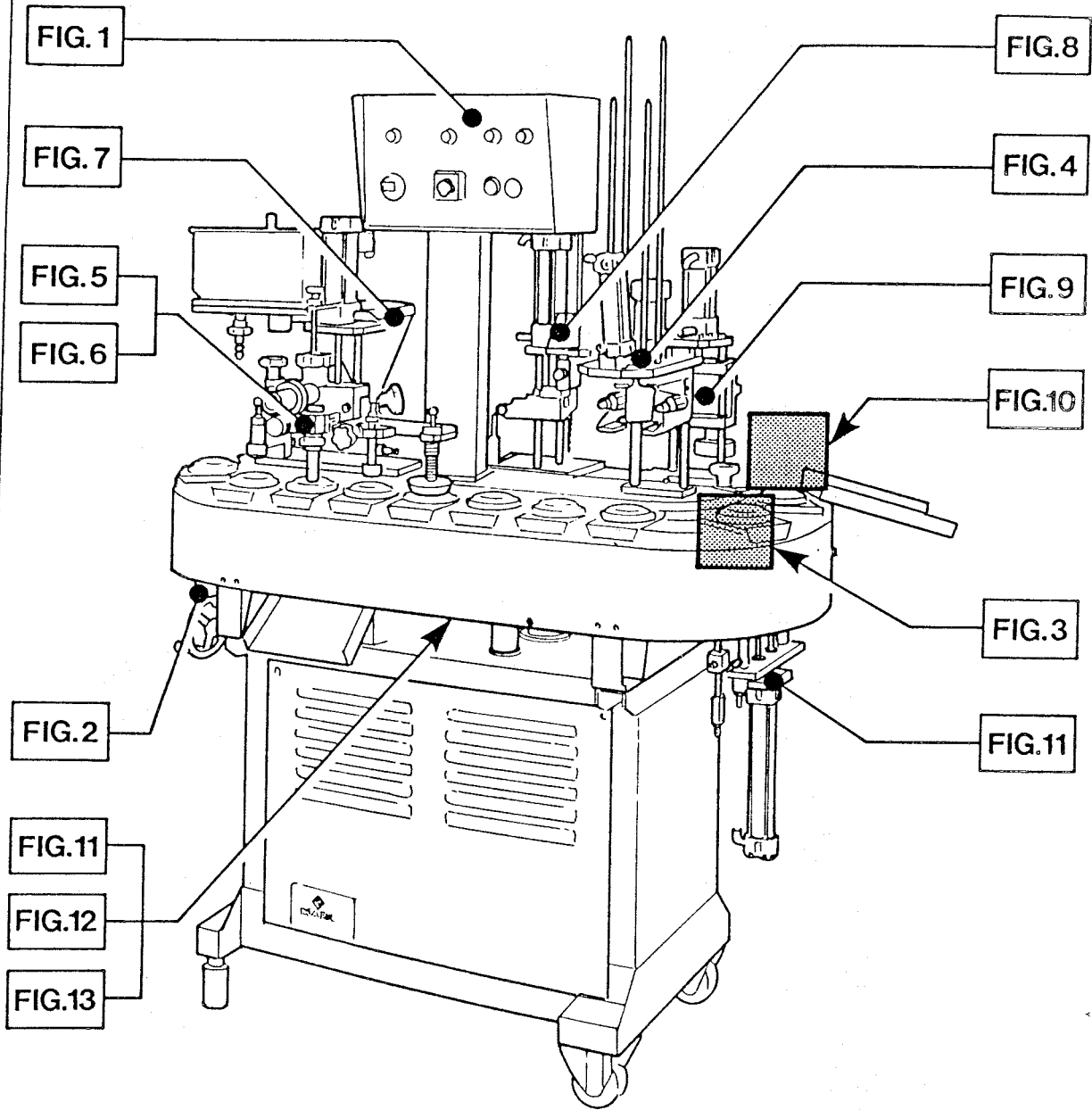


Fig. 1

QUADRO COMANDO

- 1 Interruttore Generale
- 2 Interruttore di Marcia
- 3 Interruttore di Arresto
- 4 Spia Presenza Tensione
- 5 Spia Termica Motore
- 6 Spia Insufficiente Pressione Aria
- 7 Regolatore Riscaldamento Resistenza
- 8 Spia Regolatore Resistenza

CONTROL PANEL

- 1 Circuit switch
- 2 Start button
- 3 Stop switch
- 4 Circuit pilot light
- 5 Motor overload relay light
- 6 Low air pressure warning light
- 7 Resistor heat regulator knob
- 8 Resistor heat regulator light

Fig. 2

COMANDI E DISPOSITIVI PNEUMATICI

- 11 Filtro - Riduttore
 - a) Regolatore di Pressione
 - b) Manometro
 - c) Filtro scaricatore di condensa automatico
 - d) Scarico condensa
 - e) Ampolla
- 12 Portagomma per tubo aria compressa
- 13 Valvola a Corsoio
- 14 Volantino Regolazione Velocità

PNEUMATIC CONTROLS AND DEVICES

- 11 Filter - Regulator
 - a) Pressure regulator
 - b) Pressure gauge
 - c) Automatic condensation discharge filter
 - d) Condensation discharge
 - e) Cup
- 12 Compressed air hose nipple
- 13 Slider valve
- 14 Speed regulator handwheel

Fig. 3

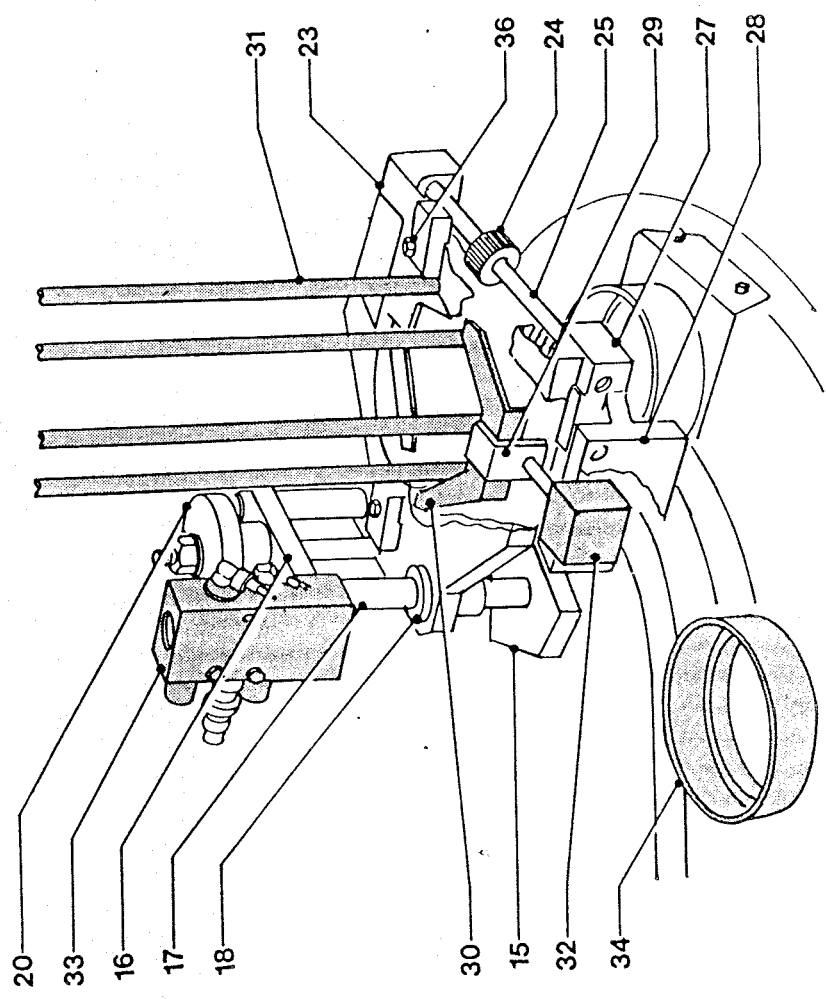
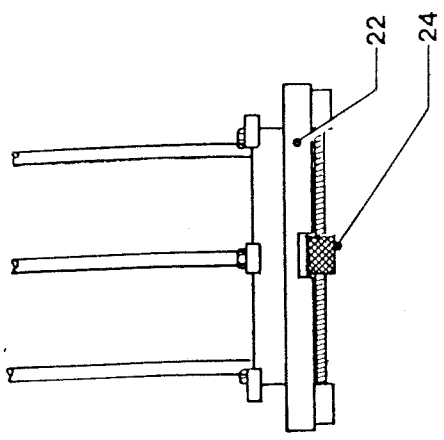
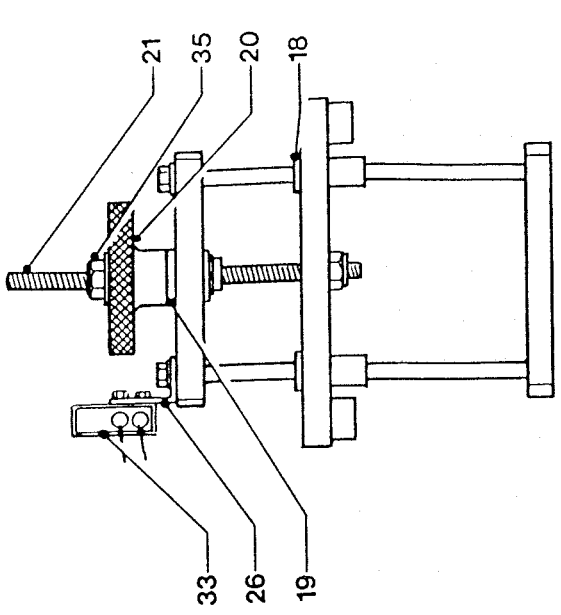
CUP FEEDER

- 15 Base plate
- 16 Support arm
- 17 Guide rod
- 18 Sleeve
- 19 Sleeve
- 20 Ring knob
- 21 Adjustment bolt
- 22 Flange
- 23 Upper plate
- 24 Registering ring nut
- 25 Stud bolt
- 26 Valve support plate
- 27 Adjustable support (Right + left)
- 28 Cylinder support (Right + left)
- 29 Pincer support
- 30 Pincer
- 31 Rod
- 32 Double-acting cylinder ADV. 20/10
- 33 Pneumatic valve

ALIMENTATORE COPPE

- 15 Piastra di Base
- 16 Traversa di Sostegno
- 17 Asta di Guida
- 18 Bussola
- 19 Bussola
- 20 Manopola
- 21 Filettato per Regolazione
- 22 Flangia
- 23 Piastra Superiore
- 24 Ghiera di Registro
- 25 Frigioniere
- 26 Piastra Supporto Valvole
- 27 Supporto Regolabile (Destro + Sinistro)
- 28 Supporto Cilindro (Destro + Sinistro)
- 29 Porta Pinze
- 30 Pinza
- 31 Asta
- 32 Cilindro Doppio Effetto ADV. 20/10
- 33 Valvola Pneumatica

FIG. 3



FILLMARK 3000

Fig. 4

CONE FEEDER

- 40 Base plate
- 41 Rods
- 42 Cone support plate
- 43 Vertical plate
- 44 Rocker lever support pivot
- 45 Striker pivots
- 46 Lower left rocker lever
- 47 Lower right rocker lever
- 48 Upper left rocker lever
- 49 Upper right rocker lever
- 50 Lower plate
- 51 Upper plate
- 52 Sleeve
- 53 Left spring
- 54 Right spring
- 55 Double washer for lever
- 56 Cone ejector
- 57 Cone guide rods
- 58 Counter plate
- 59 Cylinder support bracket
- 60 Cylinder 166-70 25x80
- 61 Cylinder 167 40x25
- 62 Slide cock

ALIMENTATORE CONI

- 40 Piastra Base
- 41 Aste
- 42 Piastra Portaconi
- 43 Piastra Verticale
- 44 Pemi Sostegno Leve
- 45 Pemi di Riconiro
- 46 Leva Inferiore Sinistra
- 47 Leva Inferiore Destra
- 48 Leva Superiore Sinistra
- 49 Leva Superiore Destra
- 50 Piastrina Inferiore
- 51 Piastrina Superiore
- 52 Bussola
- 53 Molla Sinistra
- 54 Molla Destra
- 55 Doppia Rondella per Leve
- 56 Spintore Coni
- 57 Aste Guida Coni
- 58 Piattina di Contrasto
- 59 Staffetta Porta-Cilindro
- 60 Cilindro 166-70 25x80
- 61 Cilindro 167 40x25
- 62 Rubinetto Corsoio

FIG. 4

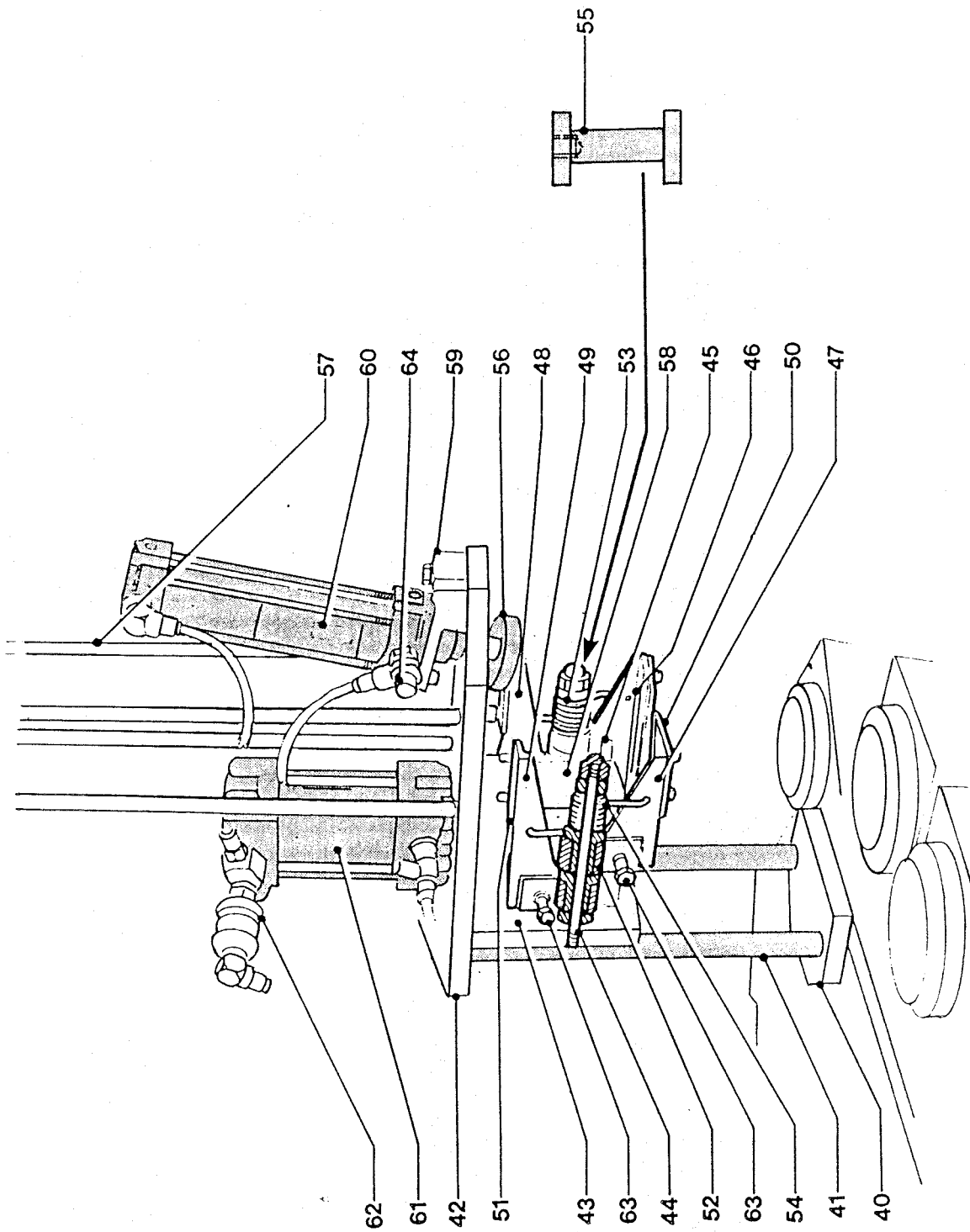


Fig. 5

CONE GAUGING UNIT
CHOCOLATE SPRAYER
ICECREAM FILLER

- 70 Support bracket
- 71 Support
- 72 Resistor brace
- 73 Sleeve
- 74 Tightening bolt
- 75 Spring
- 76 Cone-widener plunger
 - Standard
 - Maxi
- 77 Resistor
- 78 Spray pistol
- 79 Flow regulator
- 80 Dispenser head
 - Decorator
 - Straight
- 81 Filler stem
- 82 Spring
- 83 Filler tightening bolt
- 84 Adjustment ring nut
- 85 Adjustment lock nut
- 86 Filler shutoff washer
- 87 Tee filler
- 88 Tee filler union
- 89 Tee filler ring
 - a) Plunger
 - b) Spring
 - c) Casing
- 90 Filler rod guide
- 91 Discharge ring
- 92 Tri-clamp ring
- 93 Filler hose connector
- 94 Tri-clamp grip
- 95 Sleeve
- 109 Cam
- 112 Pneumatic valve

CALIBRATORE CONI
SPRUZZATORE CIOCCOLATO
DOSATORE GELATO

- 70 Staffa di Sostegno
- 71 Supporto
- 72 Morsetto Porta-Resistenza
- 73 Bussola
- 74 Tirante
- 75 Molla
- 76 Estrusore Allarga-Coni
 - Standard
 - Maxi
- 77 Resistenza Monotubo
- 78 Pistola per Spruzzo
- 79 Regolatore di Flusso
- 80 Canotto Dosatore
 - Decoratore
 - Liscio
- 81 Stelo Dosatore
- 82 Molla
- 83 Tirante Dosatore
- 84 Ghiera di Registro
- 85 Controghiera di Registro
- 86 Rondella per Chiusura Dosatore
- 87 Tee Dosatore
- 88 Bocchettone per Tee Dosatore
- 89 Valvola di Sicurezza
 - a) Tampono
 - b) Molla
 - c) Bicchierino
- 90 Guida Asta Dosatore
- 91 Ghiera di Scarico
- 92 Ghiera Tri-clamp
- 93 Portagomma Dosatore
- 94 Chiusure Tri-Clamp
- 95 Bussola
- 109 Camma
- 112 Valvola Pneumatica a Rotella

FIG. 5

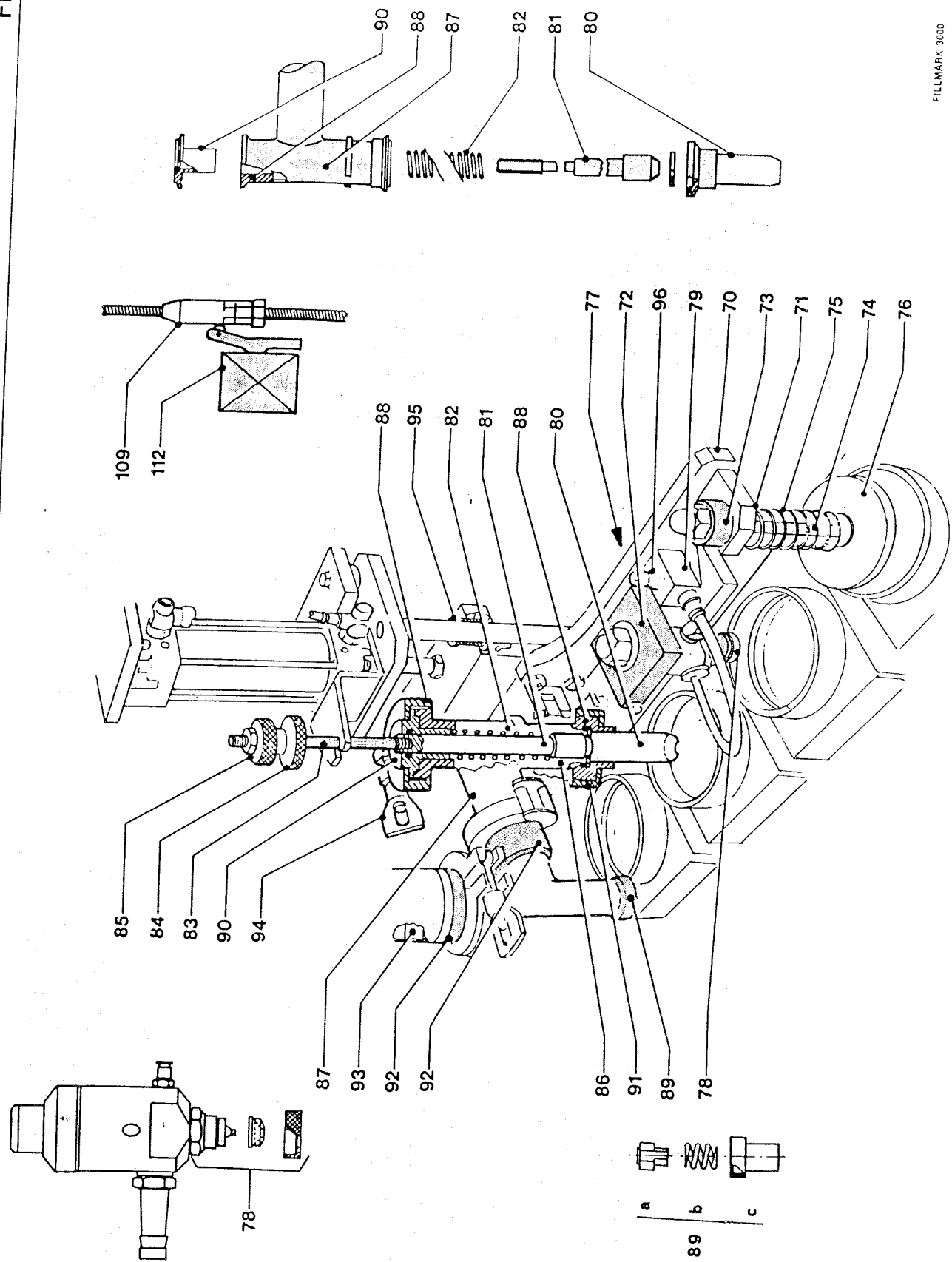


Fig. 6

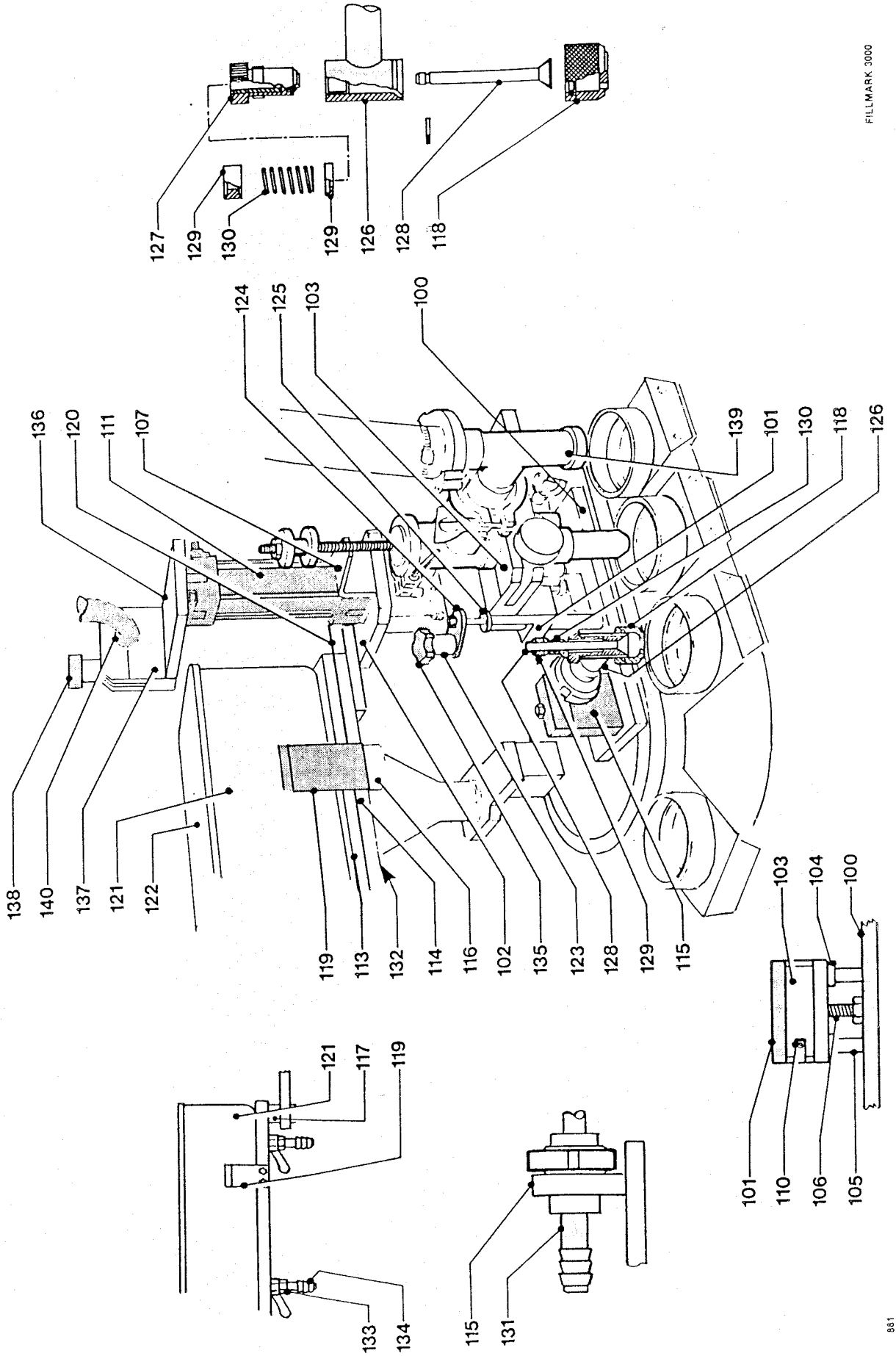
ICECREAM FILLER
CHOCOLATE TOPPING UNIT

100 Base plate	123 Feeler stick bracket
101 Sliding plate	124 Feeler stick plate
102 Plate	125 Feeler stick
103 Dispenser support	126 Doser tee-piece
104 Sleeve	127 Bushing sleeve
105 Columns	128 Shutoff stem
106 Adjusting bolt	129 Dispenser part
107 Dispenser bracket	130 Spring
110 Dispenser mouth tightening bolt	131 Hose nipple
111 Cylinder 167 40x80	132 Flat resistor with bolts (48V 150W)
113 Tank support plate	133 Miminball ball valve
114 Lower tank plate	134 Hose nipple
115 Rod grip	135 Knob
116 Cable protector	136 Support plate
117 Guide spacer	137 Dispenser support
118 Dispenser cap	138 Knob
119 Tank plate	139 Safety valve
120 Tank brace plate	140 DN 25 Elbow
121 Tank and connectors	
122 Tank cover	

DOSATORE GELATO
DOSATORE CIOCCOLATO

100 Piastra di base	123 Staffa per Tastatore
101 Piastra Scorrevole	124 Piastrina per Tastatore
102 Piastra	125 Tastatore
103 Supporto Dosatore	126 Tee Dosatore
104 Bussola	127 Bussola Porta-Bronzina
105 Colonne	128 Stelo di Chiusura
106 Filettato di Regolazione	129 Particolare per Dosatore
107 Staffa Dosatore	130 Molla
110 Tirante Bocca Dosatore	131 Canotto Attacco Canna
111 Cilindro 167 40x80	132 Resistenza Piatra 48V 150W con Bulloncini
113 Piastra Supporto Vaschetta	133 Valvola a Sfera Miminball
114 Piastra Inferiore Vaschetta	134 Portagomma
115 Morsetto per Asia	135 Pomello
116 Calotta Proteggi Cavo	136 Piastra di Supporto
117 Distanziale per Guida	137 Supporto Dosatore
118 Cappuccio per Dosatore	138 Pomolo
119 Piatina per Vaschetta	139 Tee per Sicurezza
120 Piatina Sostegno Vaschetta	140 Curva DN 25
121 Vaschetta e Raccordi	
122 Coperchio Vaschetta	

FIG. 6



FILLMARK 3000

Fig. 7

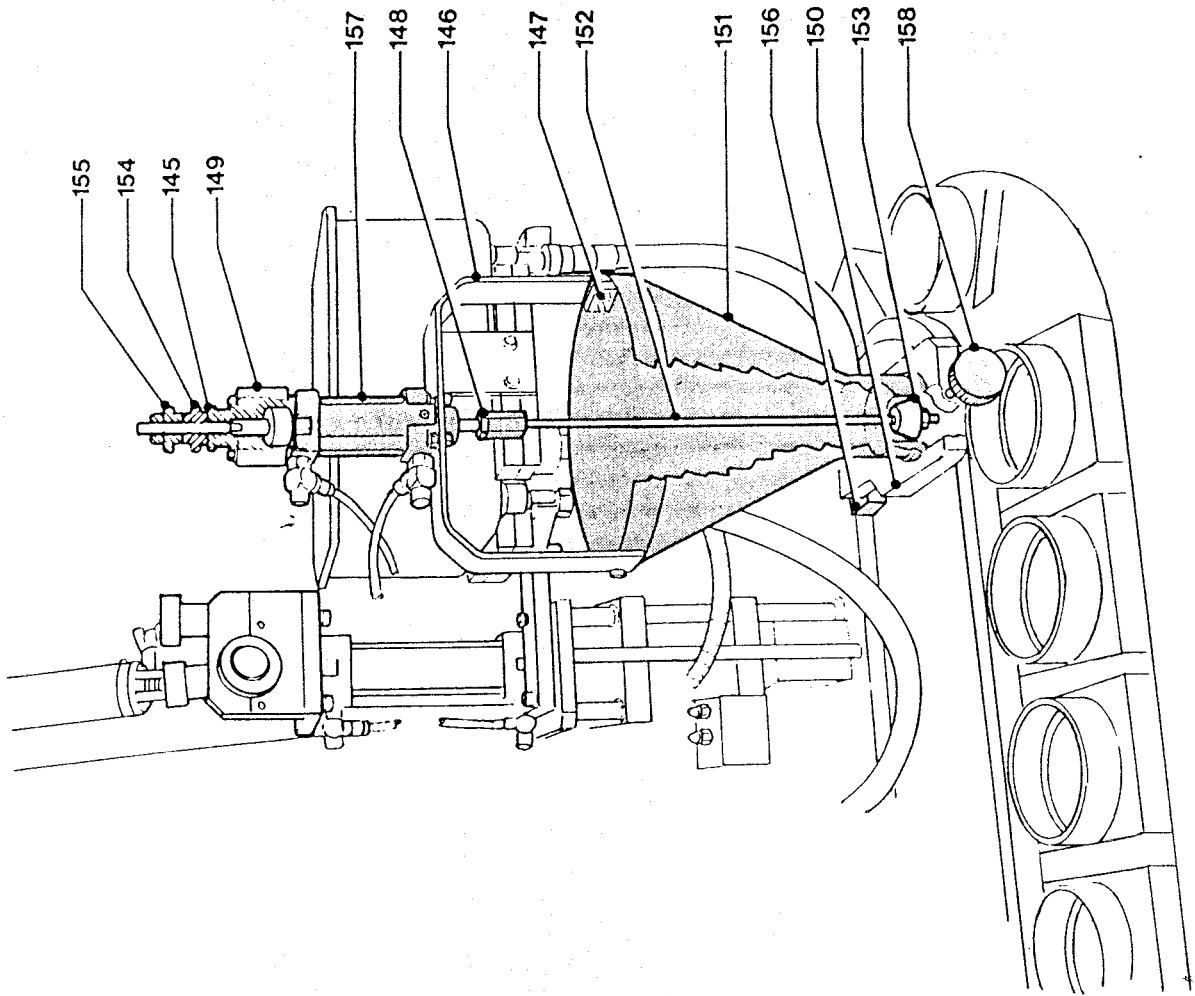
HAZELNUT DISPENSER

- 145 Washer
- 146 Piston bracket
- 147 Tightening plate
- 148 Pipe coupling
- 149 Piston cap
- 150 Funnel support
- 151 Hazelnut container (hopper)
- 152 Tightening bolt
- 153 Shutoff piece
- 154 Lock ring
- 155 Ring nut
- 156 Spacer block
- 157 Cylinder 166-71 25x20
- 158 Tightening knob

DOSATORE GRANELLA SECCA

- 145 Rondella
- 146 Staffa Pistone
- 147 Piatina Fissaggio
- 148 Manicotto di Giunzione
- 149 Calotta per Pistone
- 150 Supporto Imbuto
- 151 Tramoggia
- 152 Tirante
- 153 Tassello di Chiusura
- 154 Contro-Ghiera
- 155 Ghiera
- 156 Blochetto Distanziale
- 157 Cilindro 166-71 25x20
- 158 Vite di Bloccaggio

FIG. 7



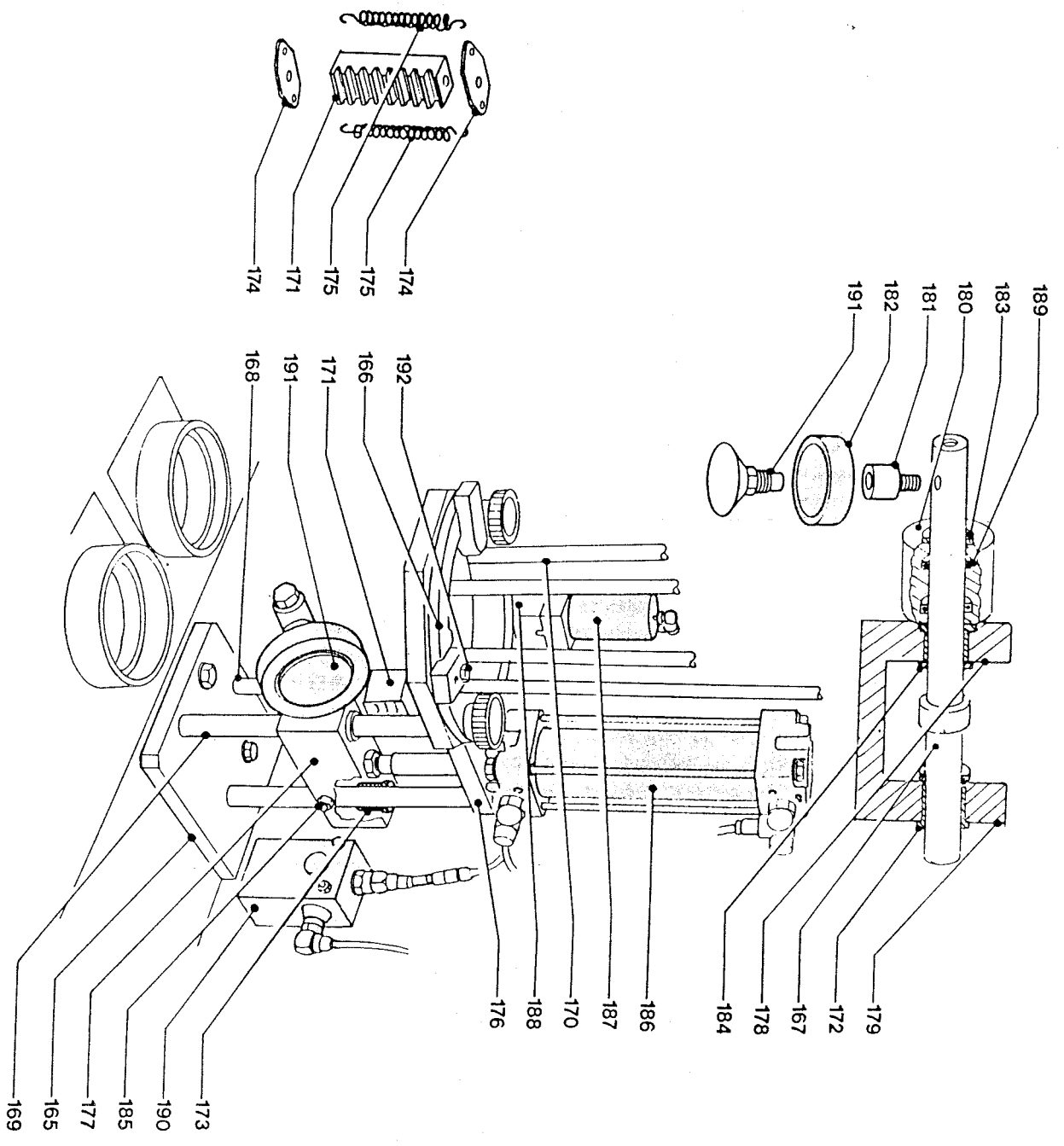
POSACOPERCHI

165 Piastra Inferiore
 166 Flangia per Coperchi
 167 Albero Posa-Coperchi
 168 Albero di Guida
 169 Colonnina
 170 Asta
 171 Cremagliera
 172 Bussola
 173 Bussola
 174 Piastrina
 175 Molla
 176 Piastra Superiore
 177 Slittino
 178 Blocchetto
 179 Blocchetto
 180 Collettore
 181 Niplo Attacco Ventosa
 182 Riduzione per Ventosa
 183 Rondella
 184 Bussola
 185 Filettato di Scontro
 186 Cilindro 167 40x100
 187 Pilotina Vuoto (Vacuostato)
 188 Copribase Valvola
 189 O-Ring
 190 Generatore di Vuoto
 191 Ventosa

LIDDING UNIT

165 Lower plate
 166 Cover flange
 167 Cover layer shaft
 168 Guide rod
 169 Column
 170 Rod
 171 Rack
 172 Sleeve
 173 Sleeve
 174 Plate
 175 Spring
 176 Upper plate
 177 Slide
 178 Block
 179 Block
 180 Manifold
 181 Suction cup attachment
 182 Suction cup cover
 183 Washer
 184 Sleeve
 185 Lock nut
 186 Cylinder 167 40x100
 187 Vacuostat
 188 Valve base cover
 189 O-Ring
 190 Vacuum generator
 191 Suction cup

FIG. 8



AGGRAFFATORE
CHIUDICOPERCHI

- 200 Piastra di Base
- 201 Colonnine
- 202 Slittino
- 203 Piastra Superiore
- 204 Staffa Porta-Aggraffatore
- 205 Bussola
- 206 Rondella
- 207 Cilindro 167 40x50
- 208 Pomello
- 209 Chiudicoperchi per coppe
- 210 Molla
- 211 Aggraffatore per Coni

CONE CRIMPING UNIT
LID PRESSING UNIT

- 200 Base plate
- 201 Column
- 202 Slide
- 203 Upper plate
- 204 Crimper support bracket
- 205 Sleeve
- 206 Washer
- 207 Cylinder 167 40x50
- 208 Knob
- 209 Cup lid presser
- 210 Spring
- 211 Cone crimping unit

Fig. 9

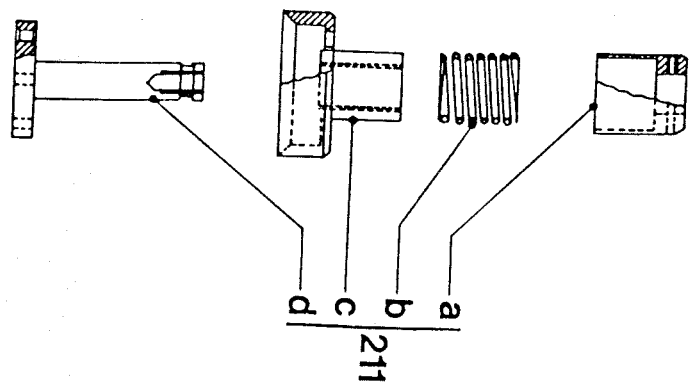
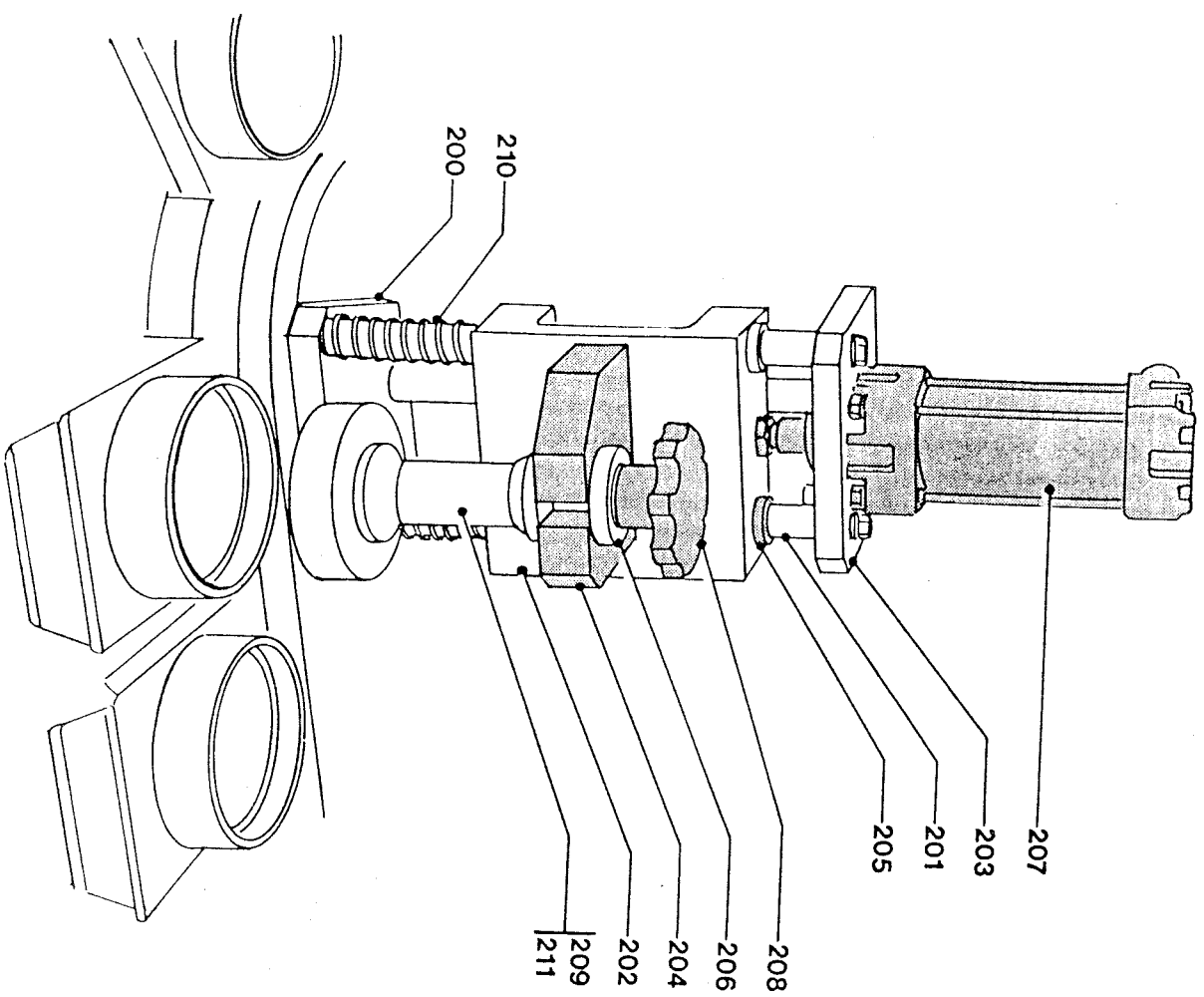


FIG. 9

Fig. 10

ALLINEATORE COPPE		CUP ALIGNER	
220	Cerniera per Scontro Superiore	220	Upper plate pivot
222	Molla	222	Spring
223	Piastra Regolabile	223	Adjustable plate
224	Scontro Superiore	224	Upper plate
225	Traversa di Sostegno	225	Support arm
226	Supporto Cilindro	226	Cylinder support
227	Asta Guida	227	Guide rod
228	Supporto Spintore	228	Ejector support
229	Bussola di Guida	229	Guide sleeve
230	Spintore	230	Ejector
231	Guida	231	Guide
232	Carter	232	Case
233	Scivolo	233	Slide
234	Scivolo Mobile	234	Movable slide
235	Aste Guida	235	Guide rods
236	Manopola Comano	236	Control knob
237	Filettato di Regolazione	237	Adjusting screw
238	Guida Molla	238	Guide spring
239	Cilindro 166 25x100	239	Cylinder 166 25x100

FIG. 10

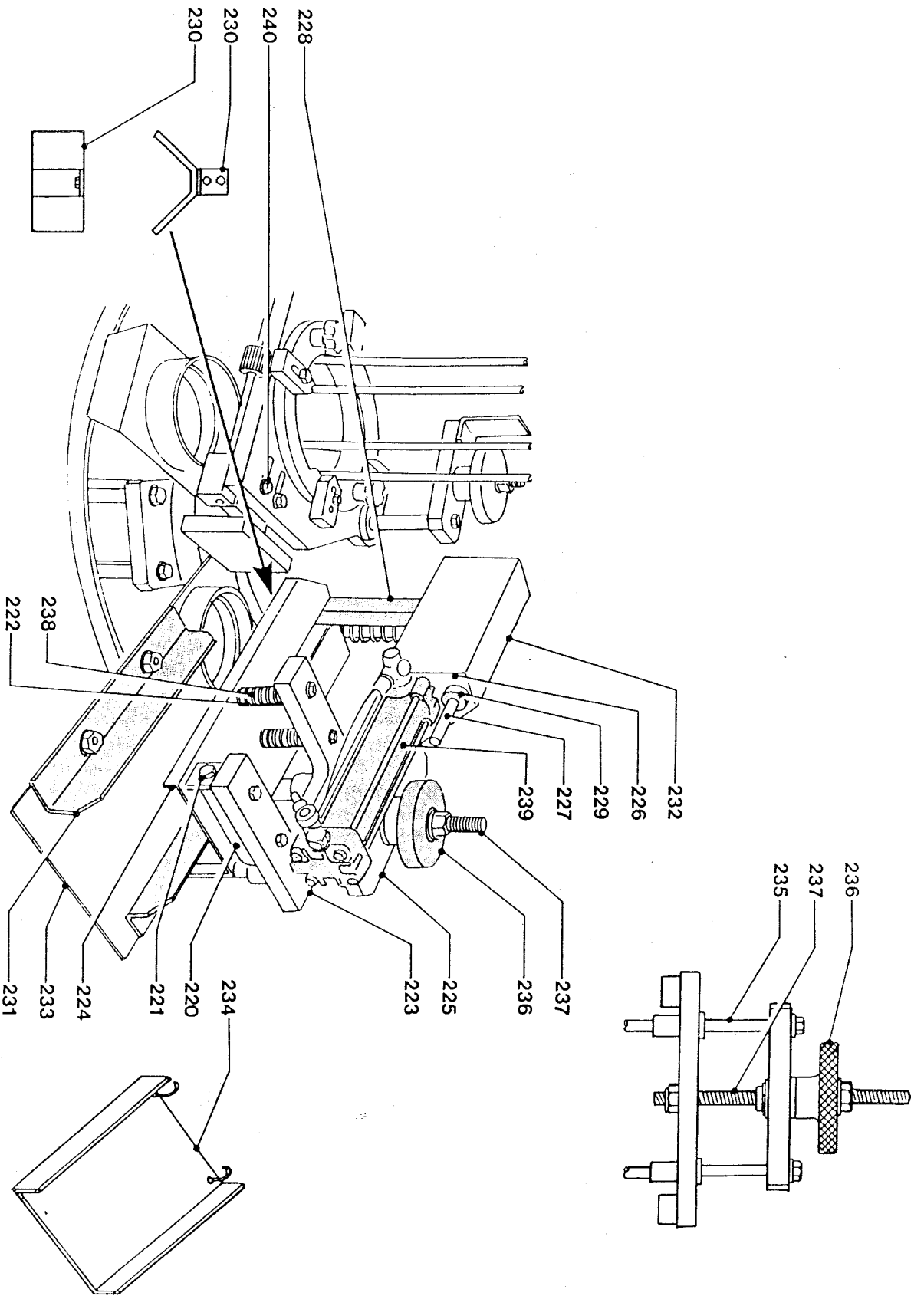


Fig. 11

ESPULSORE CONI/COPPE

- 245 Piastra di Sostegno
- 246 Piastra Inferiore
- 247 Staffa Scorrevole
- 248 Colonnine Guida
- 249 Supporto Valvola
- 250 Supporto
- 251 Piastra Superiore
- 252 Bussola di ascorrimento
- 253 Ghiere per Bussole
- 254 Camma
- 255 Asia Filettata
- 256 Camma per Soffio
- 257 Supporto Valvola
- 258 Supporto Espulsore: - Coni
- Coppe
- 259 Tampone Espulsore: - Coni
- Coppe
- 260 Cilindro 167 32x200
- 261 Scarico Rapido
- 262 Valvola a Camma
- 264 Generatore Vuoto
- 265 Ventosa
- 266 Rubinetto a Sfera
- 268 Supporto Porta-ventosa
- 333 Silenziatore

CONE/CUP EJECTOR

- 245 Support plate
- 246 Lower plate
- 247 Sliding bracket
- 248 Guide column
- 249 Valve support
- 250 Support
- 251 Upper plate
- 252 Guide sleeve
- 253 Sleeve ring
- 254 Cam
- 255 Screw rod
- 256 Blow cam
- 257 Valve support
- 258 Ejector support - Cones
- Cups
- 259 Ejector plunger - Cones
- Cups
- 260 Cylinder 167 32x200
- 261 Rapid discharge
- 262 Cam valve
- 264 Vacuum generator
- 265 Suction cup
- 266 Ball cock
- 268 Suction cup support
- 333 Silencer

FIG. 11

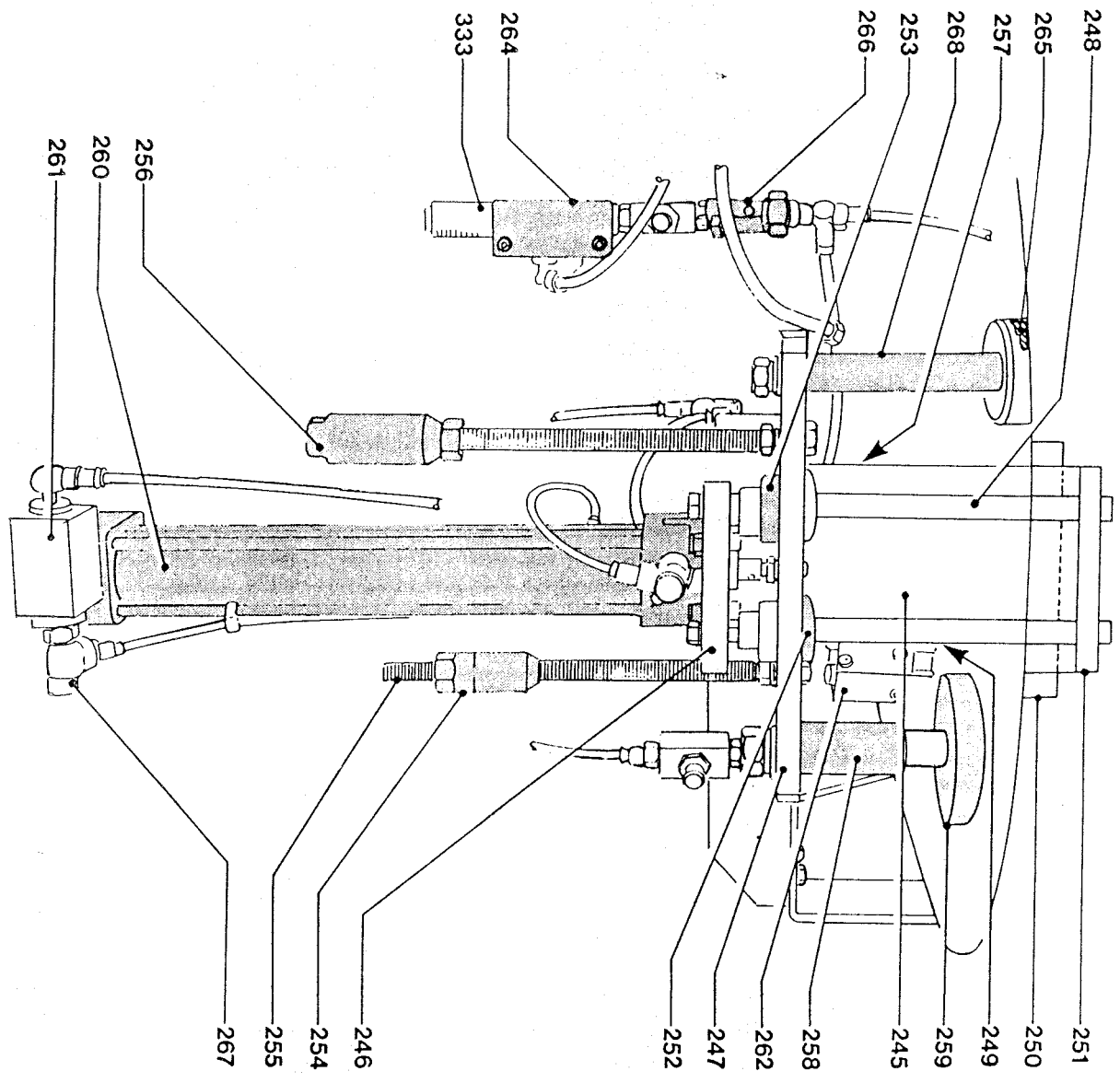


Fig. 12

GRUPPO MECCANICO : CATENA DI TRAZIONE	MECHANICAL UNIT: CONVEYOR CHAIN
270 Ruota Dentata	270 Sprocket wheel
270a Ruota Dentata	270A Sprocket wheel
272 Flangia Posteriore Portacuscinetto	272 Rear ball bearing flange
272A Bullone Fissaggio	272A Fastening nut
273 Albero Rinvio Catena	273 Axle shaft
274 Albero di Traino	274 Drive shaft
282 Coperchio Protezione Cuscinetti	282 Ball bearing cover
283 Rosetta per Coperchio	283 Cover washer
304 Catena di Trazione	304 Conveyor chain

FIG. 12

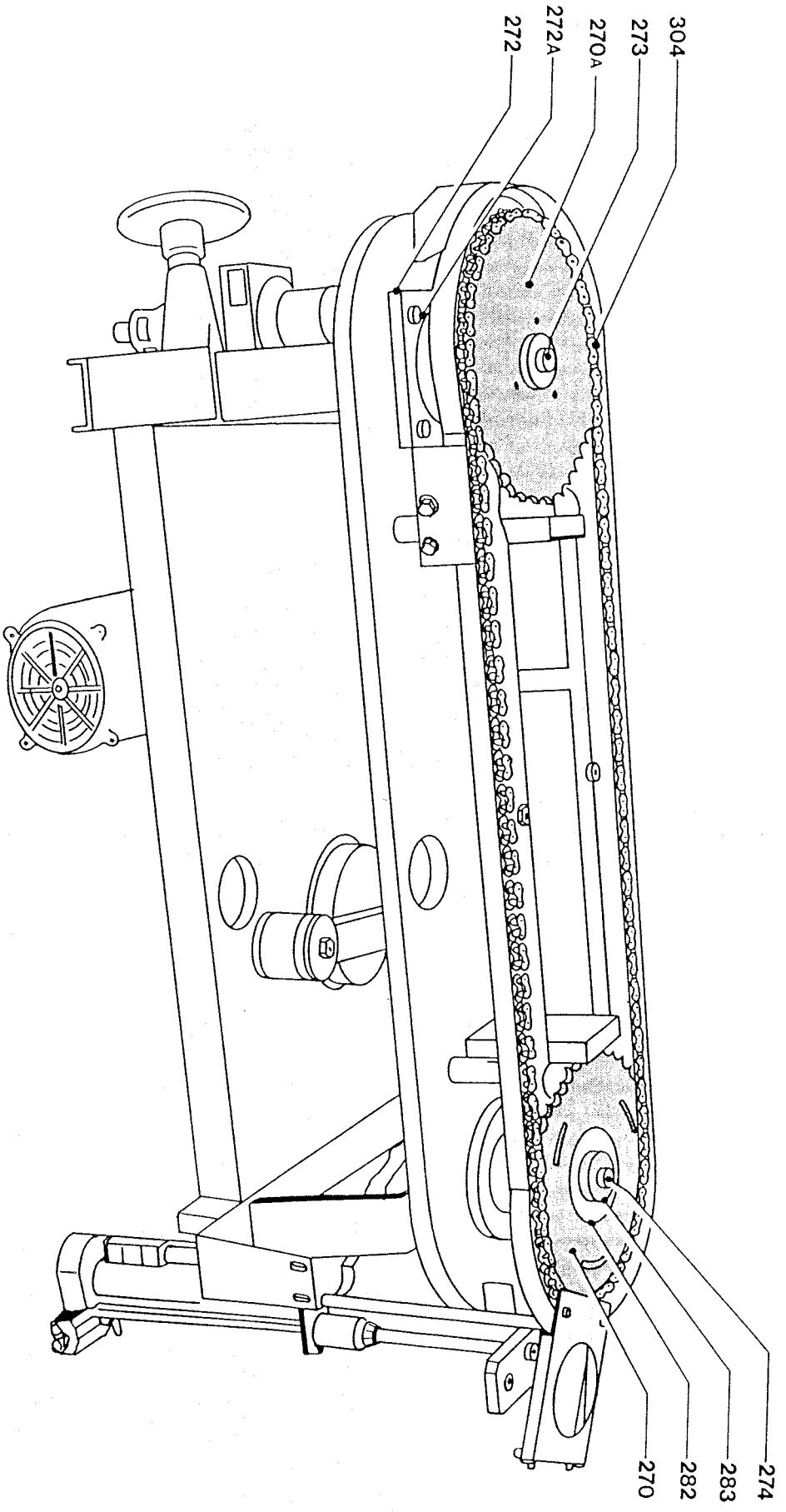


Fig. 13

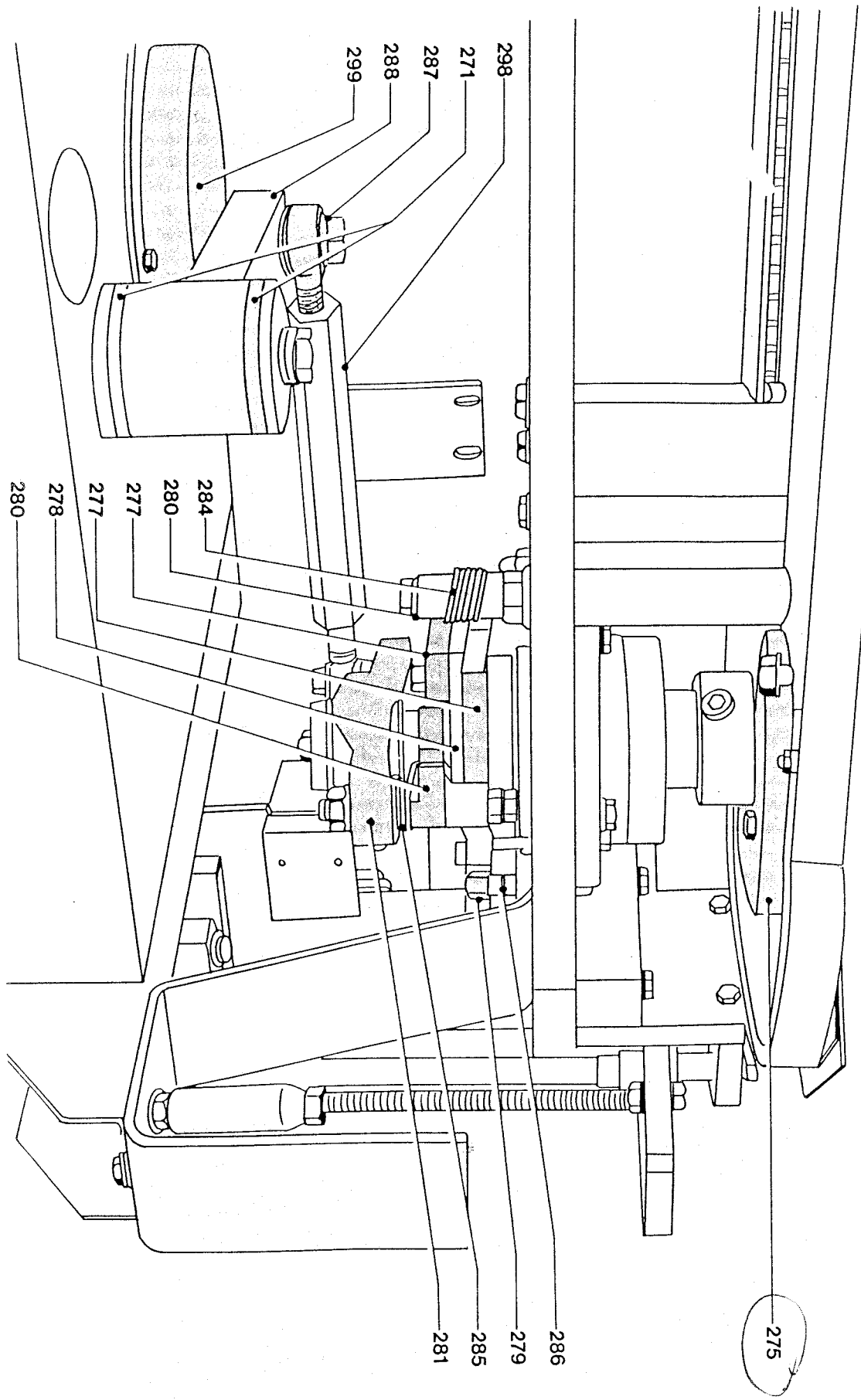
**GRUPPO MECCANICO :
AVANZAMENTO**

- 271 Bussola Glifo
- 275 Mozzo Ruota Dentata
- 277 Camme per Arpionismo
- 278 Distanziale per Camme
- 279 Saltarello Ruota Dentata
- 280 Saltarello
- 281 Leva Comando Saltarelli
- 284 Molla Saltarello Lungo Antiriorio
- 285 Molla Saltarello Antiriorio
- 286 Molla Saltarello Avanzamento
- 287 Perno Collegamento Leva/Biella
- 288 Leva del Glifo
- 298 Biella del Glifo
- 299 Flangia per Eccentrico

**MECHANICAL UNIT:
ADVANCEMENT**

- 271 Crank cover
- 275 Sprocket wheel hub
- 277 Ratchet cam
- 278 Cam spacer
- 279 Sprocket wheel pawl
- 280 Pawl
- 281 Pawl control lever
- 284 Anti-return long pawl spring
- 285 Anti-return pawl spring
- 286 Transmission pawl spring
- 287 Arm/connecting rod joint
- 288 Crank arm
- 298 Crank connecting rod
- 299 Eccentric flange

FIG. 13



**GRUPPO MECCANICO :
TRASMISSIONE**

- 289 Puleggia Variabile
- 289A Testina Ingrassio
- 290 Motore HP 0,5
- 291 Cinghia di Trazione
- 292 Valvola Comando Coppe
- 293 Camme di Comando
- 294 Valvola Comando Macchina
- 295 Deviatore
- 296 Giunto di Sicurezza
- 297 Riduttore Velocità
- 300 Microinterruttore di Sicurezza
- 301 Guida Slitta Motore
- 302 Fermo Slitta Motore
- 303 Puleggia Fissa

**MECHANICAL UNIT:
TRANSMISSION**

- 289 Variable pulley
- 289A Lubricating nipple
- 290 0.5 HP motor
- 291 Drive belt
- 292 Control valve
- 293 Control cam
- 294 Control valve
- 295 Deviator
- 296 Safety coupling
- 297 Speed reducer
- 300 Safety microswitch
- 301 Motor slide guide
- 302 Motor slide stop
- 303 Fixed pulley

Fig. 14

FIG. 14

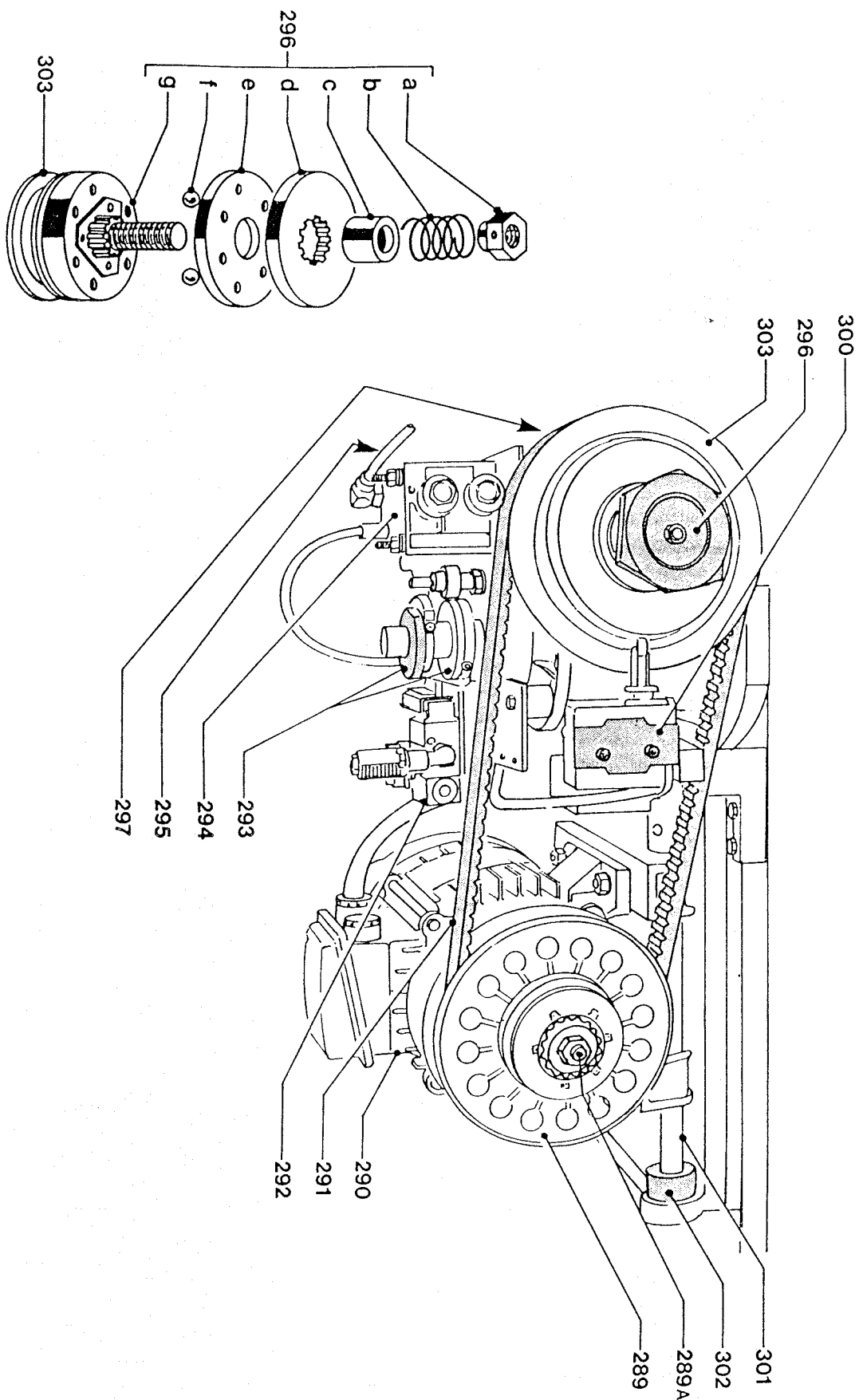


Fig. 15

SCHEMA ELETTRICO

- 1 Interruttore Generale
- 2 Interruttore di Marcia
- 3 Interruttore di Arresto
- 4 Spia Presenza Tensione
- 5 Spia Termica Motore
- 6 Spia Mancanza pressione Aria
- 7 Regolatore Riscaldamento Resistenza
- 8 Spia Regolatore Resistenza
- 311 Pressostato
- 312 Fusibili
- 313 Fusibili
- 314 Fusibili
- 315 Fusibili
- 316 Relé Termico
- 317 Teleruttore

WIRING DIAGRAM

- 1 Circuit switch
- 2 Start button
- 3 Stop switch
- 4 Circuit pilot light
- 5 Motor overload relay indicator
- 6 Low air pressure warning light
- 7 Resistor heat regulator knob
- 8 Resistor heat regulator light
- 311 Pressure switch
- 312 Fuses
- 313 Fuses
- 314 Fuses
- 315 Fuses
- 316 Thermal relay
- 317 Contactor

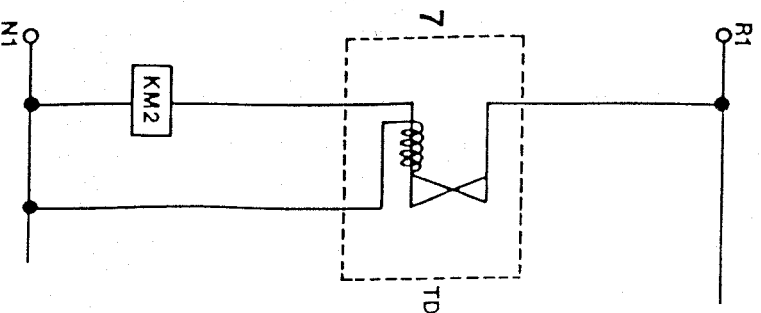
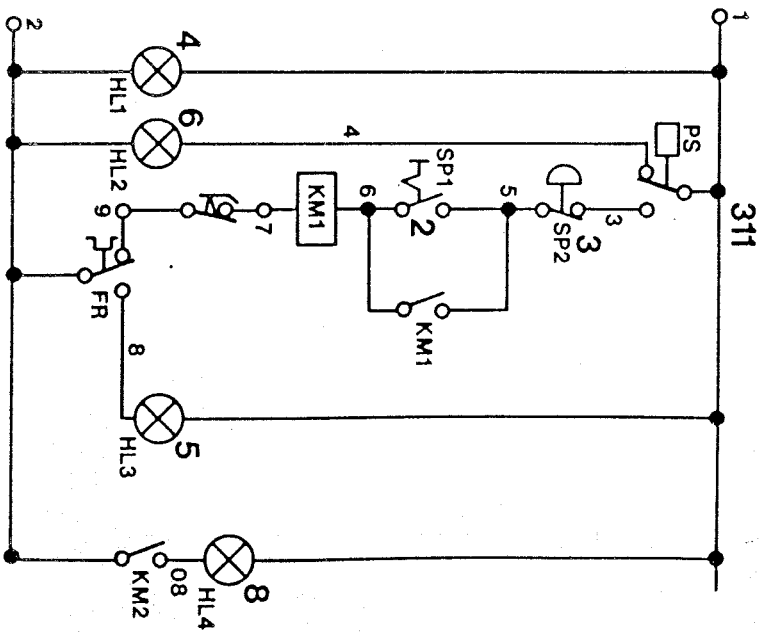
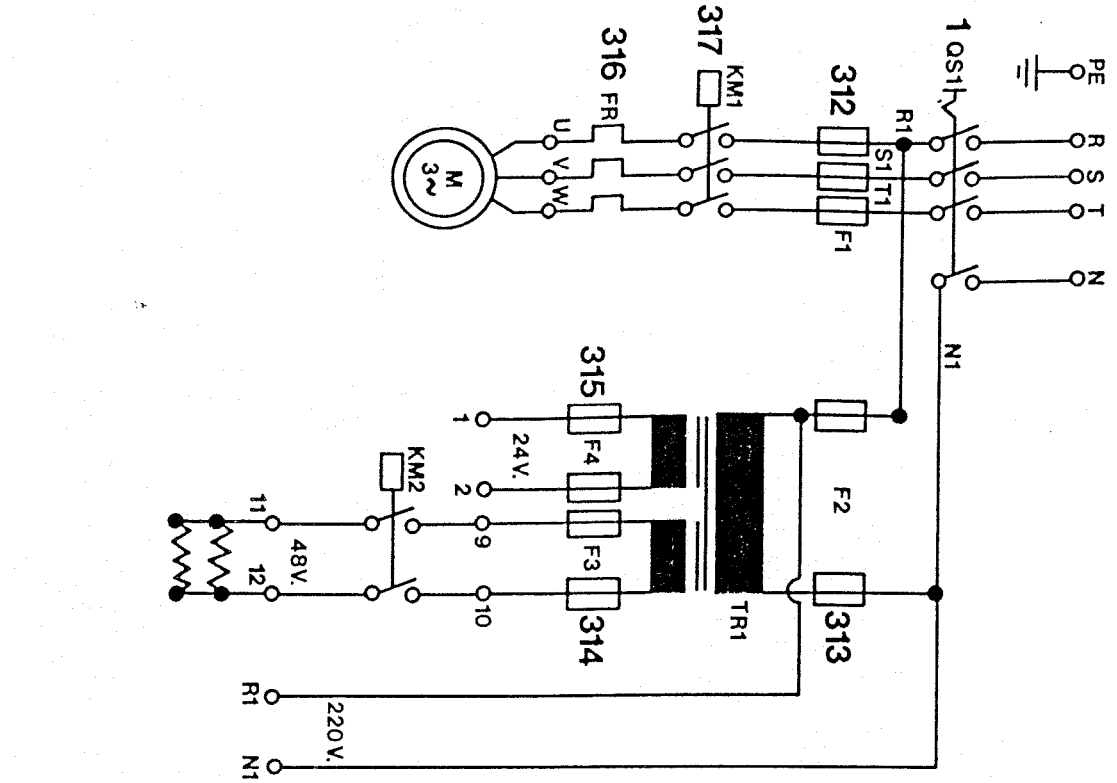


FIG. 15

Fig. 16

SCHEMA PNEUMATICO

157	Cilindro D. E. 166-71	25x20	331	Valvola Pneumatica
111	" " " 167	40x80	294	Valvola Pneumatica
207	" " " 167	40x50	292	Valvola Pneumatica
61	" " " 167	40x25	339	Valvola Pneumatica
60	" " " 166-70	25x80	33	Valvola Pneumatica
186	" " " 167	40x25	340	Innesto Rapido
260	" " " 167	32x200	333	Silenziatore
32	" " " ADV. 20-10		12	Innesto Rapido Ingresso con Portatubo
239	" " " 166	25x100	109	Camma
332	Regolatore di Portata		254	Camma
334	Regolatore di Portata		256	Camma
335	Regolatore di Portata		293	Camma Comando
62	Rubinetto a Corsoio 2 Vie		A	Dosatore Granella
336	Rubinetto a Sfera		B	Dosatore gelato
266	Rubinetto a Sfera		C	Aggraffatore -
190	Generatore di Vuoto		D	Alimentatore Coni
264	Generatore di Vuoto		E	Posacoperchi
187	Pilotina Vuoto - (Vacuostat)		F	Espulsore
191	Ventosa		G	Alimentatore Coppe
265	Ventosa		H	Allineatore Coppe
337	Ripartitore		I	Spruzzatore
13	Valvola a corsoio		L	Vuoto Coperchi
11	Filtro - Riduttore - Lubrificatore		M	Vuoto Coppe
311	Pressostato		N	Soffio
261	Scarico Rapido			
262	Valvola Pneumatica			
112	Valvola Pneumatica			

PNEUMATIC SYSTEM DIAGRAM

157	D.E. Cylinder	40x80	112	Pneumatic valve
111	" " " 167	40x50	331	Pneumatic valve
207	" " " 167	40x25	294	Pneumatic valve
61	" " " 167	25x80	292	Pneumatic valve
60	" " " 166-70	40x25	339	Pneumatic valve
186	" " " 167	40x25	33	Pneumatic valve
260	" " " 167	32x200	340	Rapid connector
32	" " " ADV. 20-10		333	Silencer
239	" " " 166	25x100	12	Rapid entry connector with hose nipple
332	Flow regulator		109	Cam
334	Flow regulator		254	Cam
335	Flow regulator		256	Cam
62	2-Way slide cock		293	Control Cam
336	Ball cock		A	Hazelnut dispenser
266	Ball cock		B	Icecream filler
190	Vacuum generator		C	Crimper - Lid pressing unit
264	Vacuum generator		D	Cone feeder
187	Vacuostat		E	Lidding unit
191	Suction cup		F	Ejector
265	Suction cup		G	Cup feeder
337	Divider		H	Cup aligner
13	Slide valve		I	Sprayer
11	Filter - Reducer - Lubricator		L	Lid vacuum
311	Pressure switch		M	Cup vacuum
261	Rapid discharge		N	Blow cam
262	Pneumatic valve			

FIG. 16

