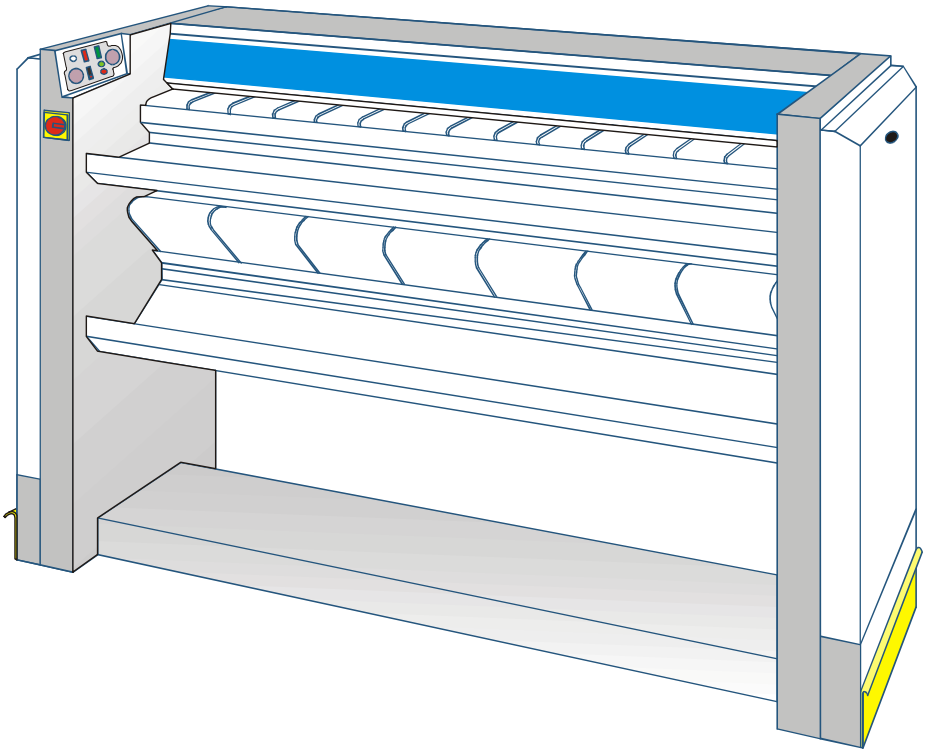
INSTRUCTION HANDBOOK

IRONERS

IC3 3316
IC3 3320



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Pages/Chapters

The manufacturer reserves the right to modify construction and equipment characteristics.

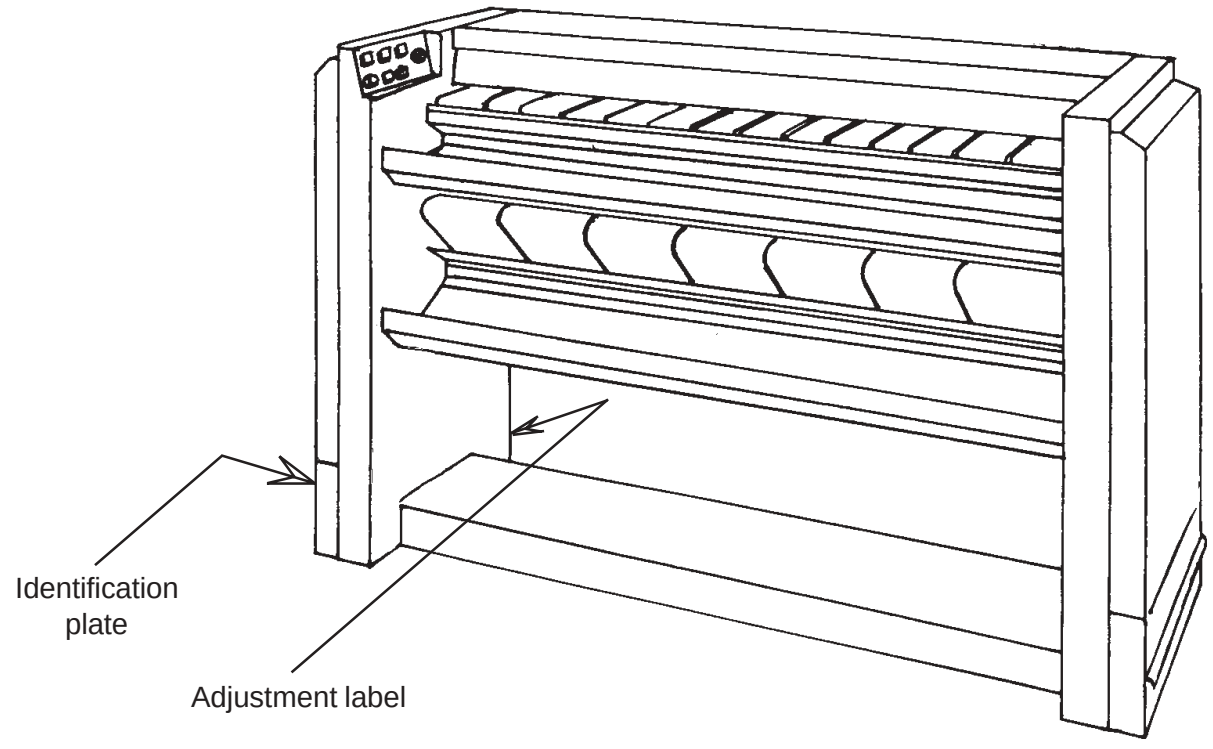
Generalities

The machines described in this handbook have an ironing capacity of 1.650 m (65") or 2.065 m (81"$^{1}/_{3}$) wide according to their type.

The ironing speed can be adjusted according to the linen texture and its degree of moisture.

The temperature of the ironing cylinder can also be adjusted by a thermostat.

The parameters are displayed by a control panel.



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Warning

Before any use, it is advised to read the instruction handbook.

The identification plate is situated on the bottom left hand corner of the caisson.

For safety reasons, never remove the protective casing while the machine is functioning.

Installation and putting into service must be carried out by trained staff.

The machine should not be used by children.

Any repairing or maintenance operation should be carried out by a specialist.

Disconnect all sources of energy and let the ironing cylinder cool down before any intervention on the machine.

The high temperature of the ironing cylinder may cause serious burns; avoid touching the hot surfaces.

Never iron if the finger protection does not function.

In order to avoid any danger of fire or explosion, never use flammable products to clean the machine.

If you detect gas smells, turn off the gas, open the windows, do not activate any switch and warn the maintenance service.

The evacuation from a gas heated ironer may under no circumstances be connected to the same evacuation as a dry-cleaning machine or dry- cleaning presses.

N.B. This machine has no part made of asbestos.

Locking and tagging procedure

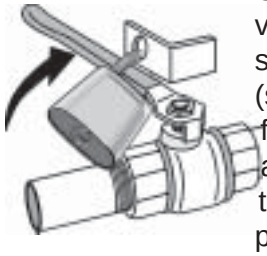
A red insert at the beginning of this instruction handbook schematically shows the locking and tagging procedure described below. If you wish, you can detach this insert and display it close to the machine to remind maintenance personnel of the safety instructions.

1

Always respect items 2, 3 and 4 carefully before doing any repair or maintenance work on the machine.

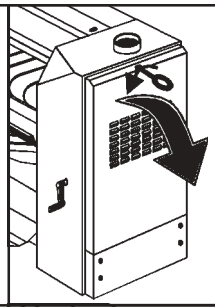
2

Put the main switch to Off and lock the handle with a padlock in one of the three holes provided for this purpose.



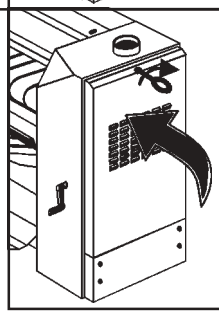
Close the stop valves for the other supplies (steam,gas, thermal fluid, compressed air) to stop and lock their handle with a padlock.

3



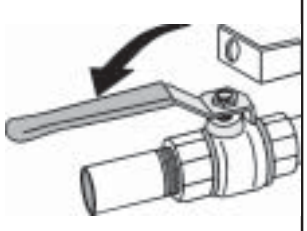
Open the fixed protectors (casings, doors) with the key provided or a special tool.

Do the maintenance.



Close and carefully lock the fixed protectors.

4



Unlock the stop valves and the main switch.

Recall

All these operations must be carried out by handling specialist.

1 - Lifting with a fork-lift truck

This should be carried out at the centre of the machine (A).

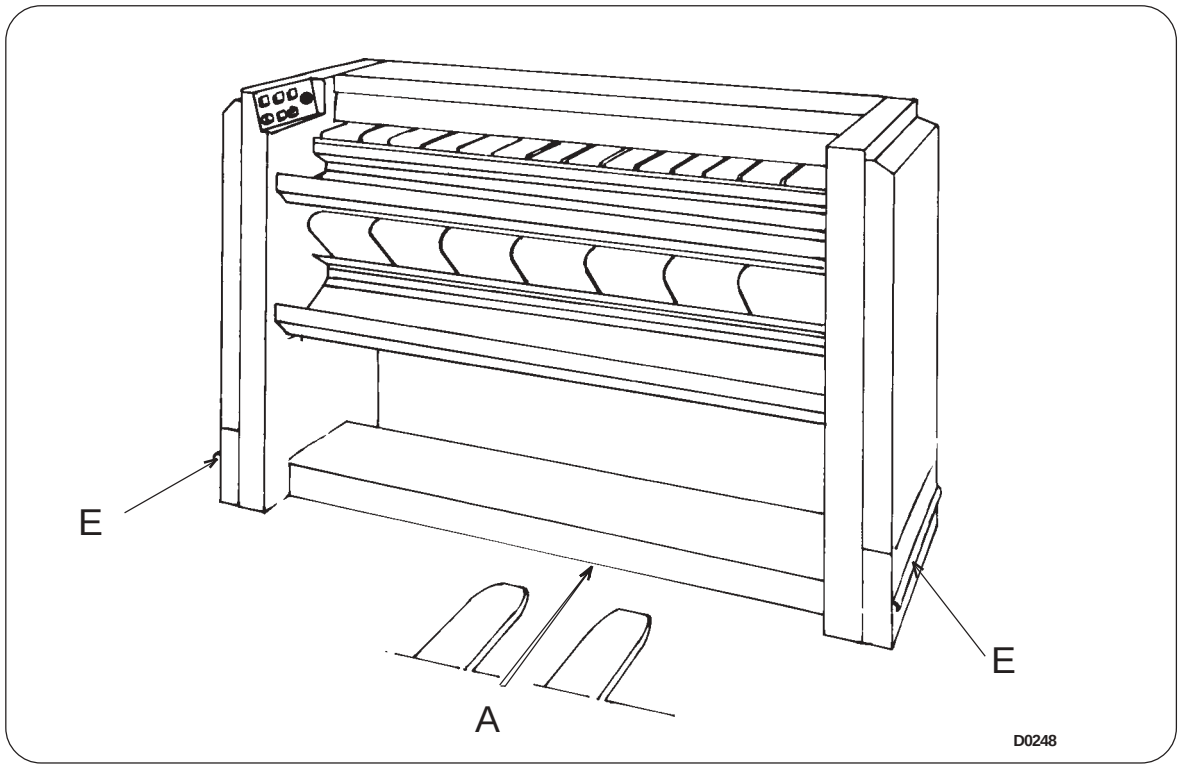
2 - Groud moving

As the base of the machine is constituted by a sole, the machine can be handled on the ground with rollers, grinding tracks or trolley.

The two yellow handling angles (E) are designed to lift the machine with hydraulic jacks or drawbars in order to slide the rollers under the spars.

These two handling angles are also designed to lift up the machine with handling straps.

WEIGHT OF MACHINE		
Model	**Gas**	**Electric**
3316	295 kg / 650 lb	290 kg / 640 lb
3320	325 kg / 716 lb	315 kg / 694 lb



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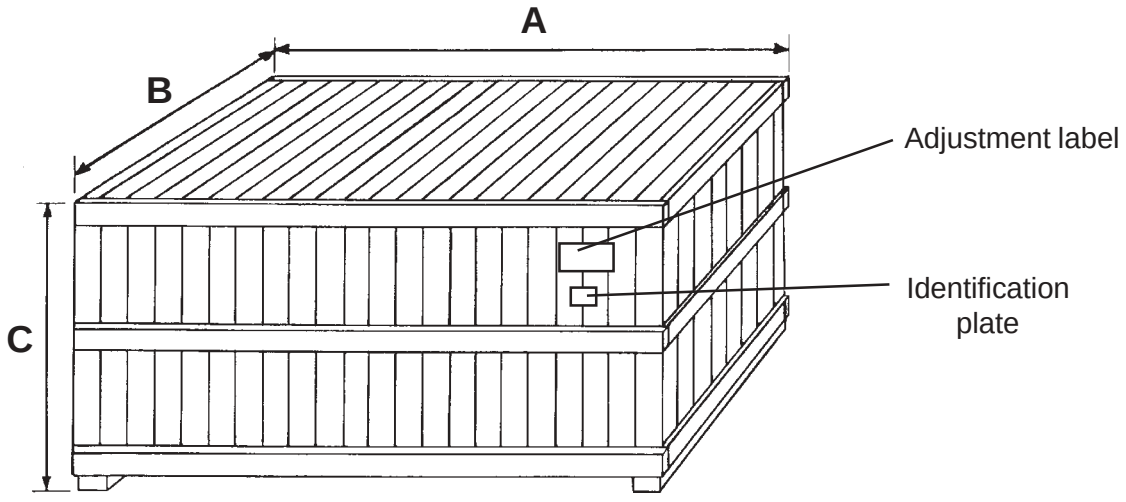
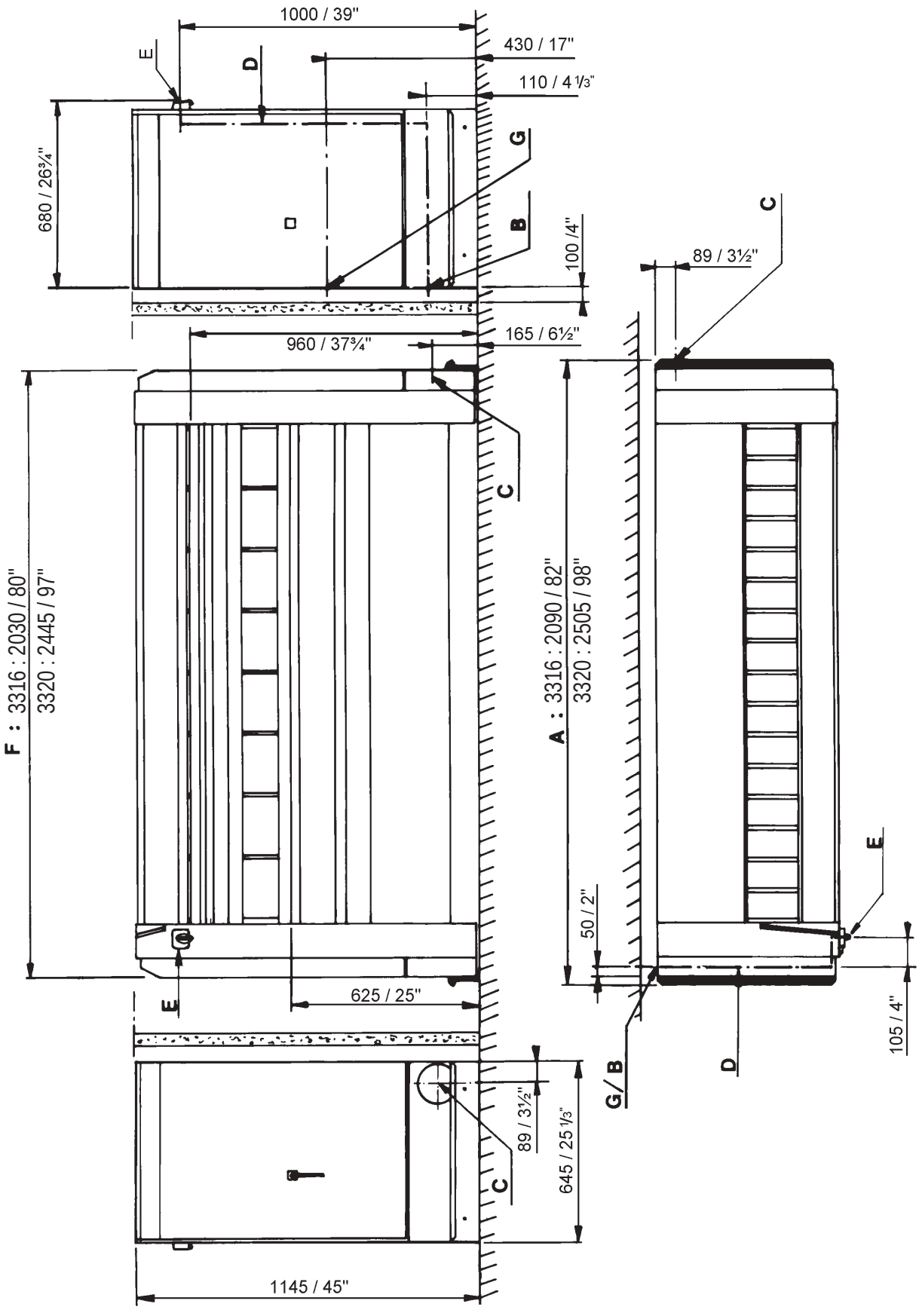
OUTER DIMENSIONS FOR FREIGHT				
	length A		width B	height C
Model	**3316**	**3320**	**3316 / 3320**	**3316 / 3320**
Pallet and film	2.17 m / 85½"	2.585 m / 102"	0.72 m / 28 1/3"	1.31 m / 51½"
Crate box	2.23 m / 88"	2.63 m / 103½"	0.77 m / 30 1/3"	1.43 m / 56¼"
Full box	2.28 m / 90"	2.695 m / 106"	0.83 m / 32 2/3"	1.43 m / 56¼"

Model	weight with full box		weight with crate		weight with pallet + plastic	
	Gas	Electric	Gas	Electric	Gas	Electric
3316	480 kg / 1058 lb	470 kg / 1036 lb	450 kg / 992 lb	440 kg / 970 lb	350 kg / 771 lb	340 kg / 750 lb
3320	525 kg / 1057 lb	510 kg / 1124 lb	485 kg / 1069 lb	470 kg / 1036 lb	380 kg / 837 lb	365 kg / 805 lb




1000 / 39"
430 / 17"
110 / 4 1/3"
680 / 26¾"
100 /4"
960 / 37¾"
165 / 6½"
89 / 3½"
F : 3316 : 2030 / 80"
3320 : 2445 / 97"
A : 3316 : 2090 / 82"
3320 : 2505 / 98"
625 / 25"
50 / 2"
105 / 4"
89 / 3½"
645 / 25 1/3"
1145 / 45"
07100009

A / Overall length with transport angles.

B / Electric power supply.

C / Drain of vapour or products of combustion direct to outside (diameter 125 mm / 5").

D / Feeding cable (section)

- gas heating (230 V tri or 400 V tri fed machine) 4 x 2.5 mm²
- gas heating (230 V mono fed machine) 3 x 2.5 mm²
- electric heating (400 V tri fed machine) for 3316 4 x 6 mm²
- electric heating (400 V tri fed machine) for 3320 4 x 10 mm²

E / General switch and electrical connection

- gas heating (230 V tri or 400 V tri fed machine) 12 A (15 USA)
- gas heating (230 V mono fed machine) 12 A (15 USA)
- electric heating (400 V tri fed machine) for 3316 32 A (35 USA)
- electric heating (400 V tri fed machine) for 3320 40 A (40 USA)

F / Overall length without transport angles

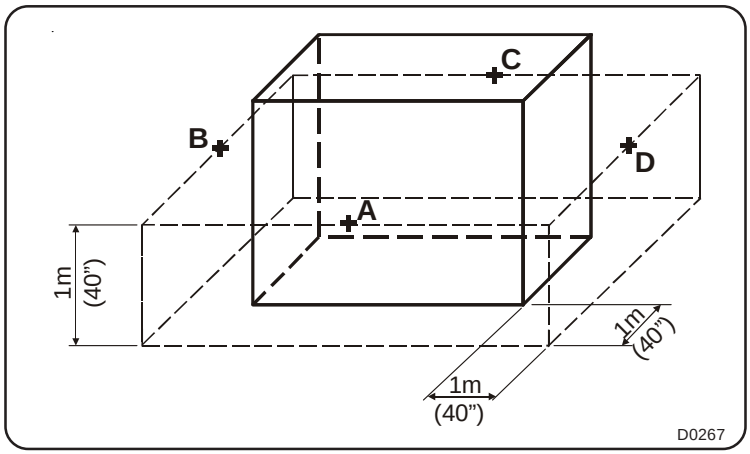
G / Gas admission port (diameter DN 20 / ¾" BSP)

ELECTRIC HEATING		
Model	**3316**	**3320**
Power installed	18.5 kW	23 kW
Maximum consumption for 1 hour use	18.5 kW	22.5 kWh

GAS HEATING		
Model	**3316**	**3320**
Electric power installed	0.5 kW	0.5 kW
Electric consumption for 1 hour use	0.5 kWh	0.5 kWh
Nominal calorific capacity (ICP)	20 kW 68240 Btu	25 kW 85300 Btu

Sound level

Airborne noise given out by machine (values based upon the measurements made on machine at A, B, C, and D.)



WEIGHTTED SOUND PRESSURE LEVEL (A)				
	A	B	C	D
3316	63 db(A)	62 db(A)	63 db(A)	65 db(A)
3320	63 db(A)	62 db(A)	63 db(A)	65 db(A)

You must have found with this handbook, a crank for the manual drive of the cylinder.

Depending on its destination, the ironer is delivered bare or placed on a transport pallet and packed with a transparent plastic film.

In certain cases, it may be packed for ocean shipment. For any handling operation, see the handling chapter, page 2 chapter 3 of this handbook.

Take off the protection paper, and remove the transport flanges with an appropriately designed key in order to lift the machine from the transport pallet.

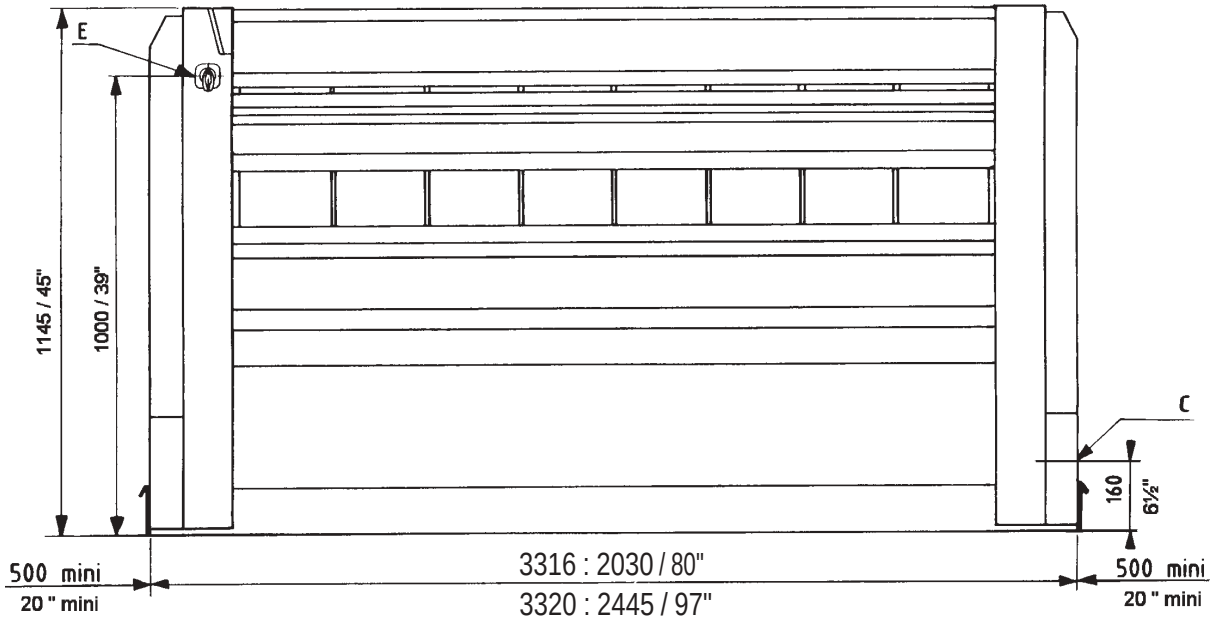
Check for damage caused during transport.

Leave at least 0.5 m (20") between the machine and the wall or another machine on the right side in order to be able to carry out the necessary interventions in the caisson.

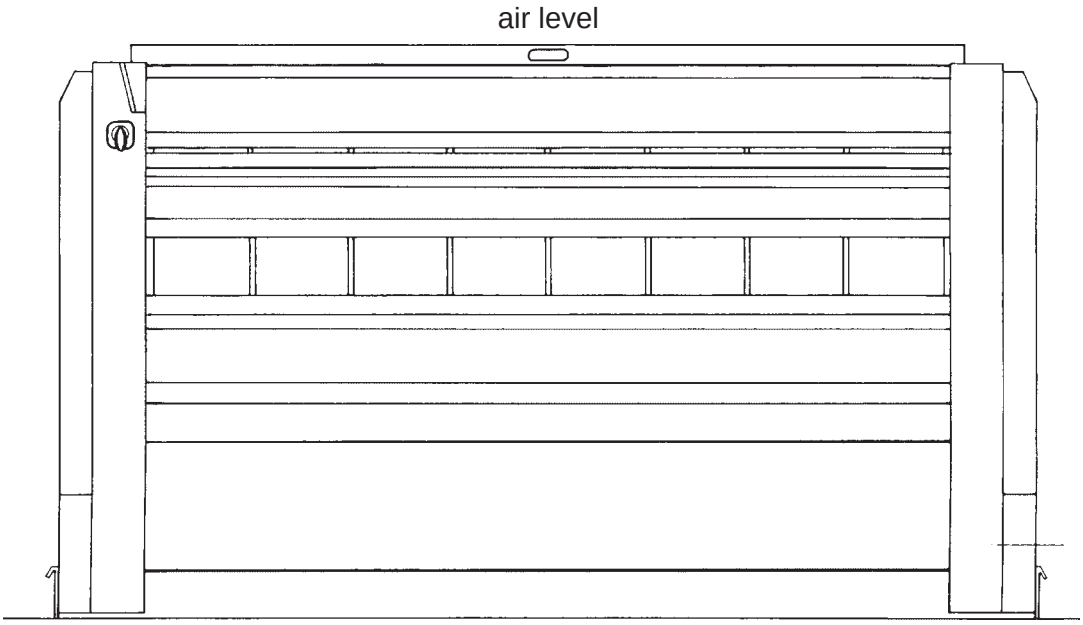
In case of intervention on the heating box, it is advised, if possible, to provide sufficient space on the left side : 1.65 m (65") for a 3316 machine and 2 m (80") m for a 3320 machine.

Leave at least 0.1 m (4") between the machine and the wall against which it is placed.

Leave at least 0.5 m (20") between the machine and a wall or another machine on the left side in order to be able to carry out an intervention on the caisson.



The ironer should be put on a perfectly plain and level ground. Check this using to an air level placed on the upper hood of the machine (see photo).



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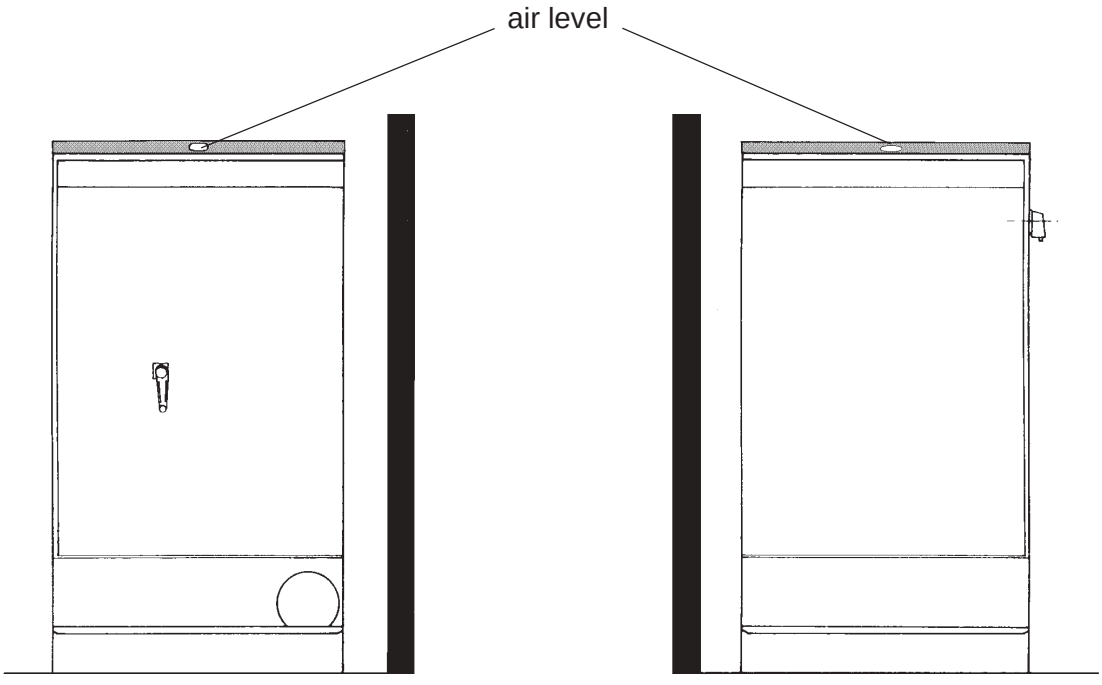


D0251

The static electricity may hinder the good working of the machine.
Earthing is compulsory.
It is specially advised not to install the machine on a synthetic floor covering.
The warranty might be cancelled if these instructions are not complied with.

WORKING PLACE LIGHTING

The lighting should be designed so as to avoid the visual stain for the operator; it should be even and no dazzling, and make it possible to detect hazards.

The average lighting value advised by European lighting engineers associations is **300** lux.

The working place should as far as possible have enough daylight.

Screw off the screws to remove the yellow transport angles (benchmark E) with a key for hexagon socket screws.

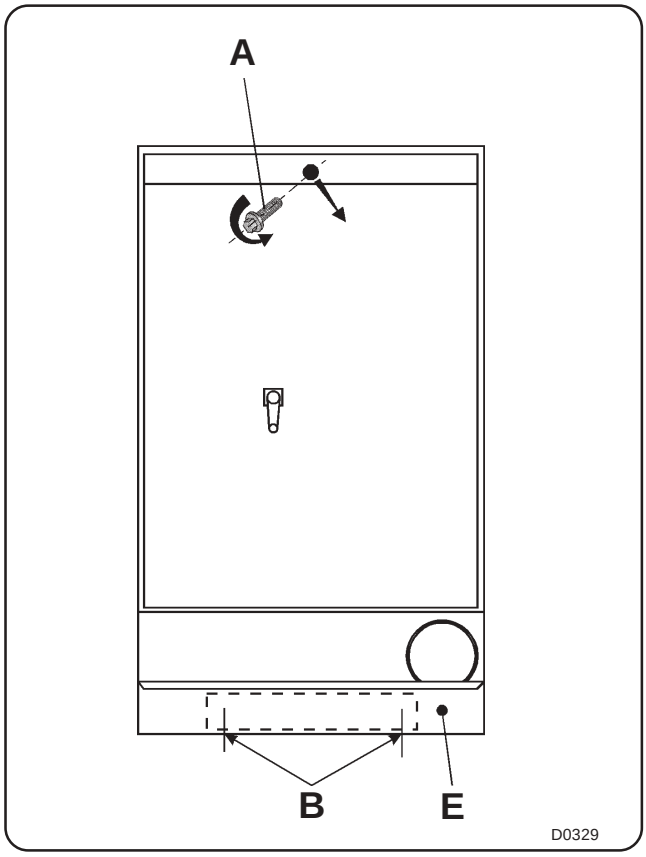
CAUTION : do not remove these screws.

Keep these angles to eventually lift the machine.

Block the screws which maintained these angles.

Dismantling of the casing :

Remove the black shutter and then the screw (A).

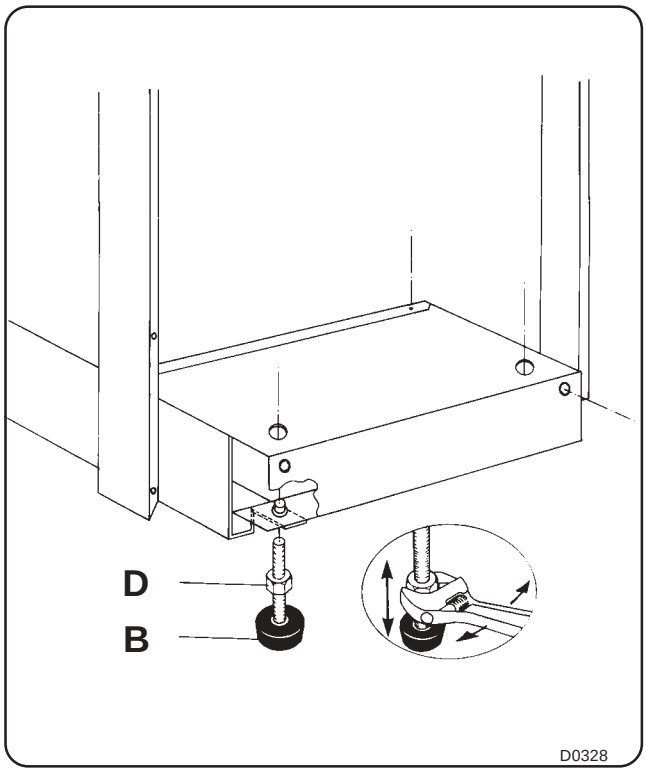


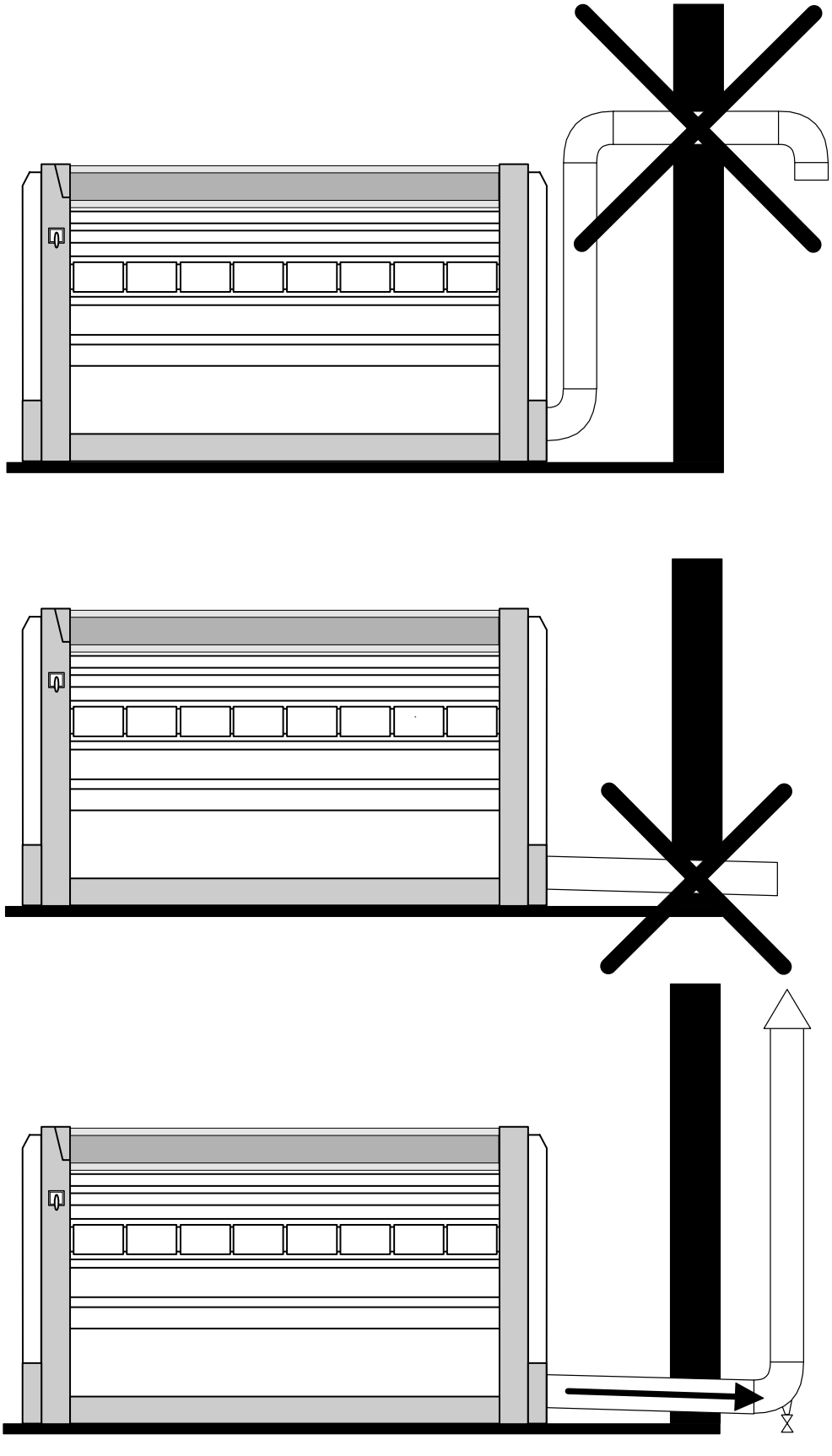
Levelling the machine :

Assemble the four adjustment feet (B) to make the levelling possible.

They are to be fitted on each side of the machine and can be reached from outside underneath.

Act on the adjusting feet (B), and level the machine (see diagrams D0250/D0251 and D0328) and then fix by the locknut (D).





D0252

CAUTION
The machine should be installed in conformity with the regulations and standards enforced and situated in a correctly ventilated room.

Connect the vapour exhaust nozzle with the flexible pipe (Ø 125 mm / 5") and the two collars to your flue.

The vapour exhaust must be separated from any other shaft, as direct as possible and installated according to diagram D0252 (see previous page).

Provide an **upper ventilation of 7 dm² (108 sq. in)** and a **lower one of 14 dm² (217 sq. in)** in your laundry.

Check that the shaft flow is at least twice that of the exhaust fan.

These conditions are absolutely essential for the correct working of the machine.

Fan maximum flow rate with no pressure :

- 426 m³/h (250 cfm) for a 3316 machine.
- 515 m³/h (303 cfm) for a 3320 machine.

Maximum pressure available with no flow : 54 mm H_2O (2.2 inH_2O).

Maximum admissible head loss on evacuation : 20 mm H_2O (0.8 inH_2O).

WARNING : the diameter of the vapour, gas or electrical exhaust pipe must be calculated for each installation in order to avoid pressure drop higher than 20 mm H_2O (0.8 inH_2O).

Average temperature of exhaust coming out of machine : 64 °C (150 °F) for electric heating.
Average temperature of exhaust and products of combustion coming out of machine : 95 °C (200 °F) for gas heating.

The fresh air supply area should be five times that of the vent pipe.

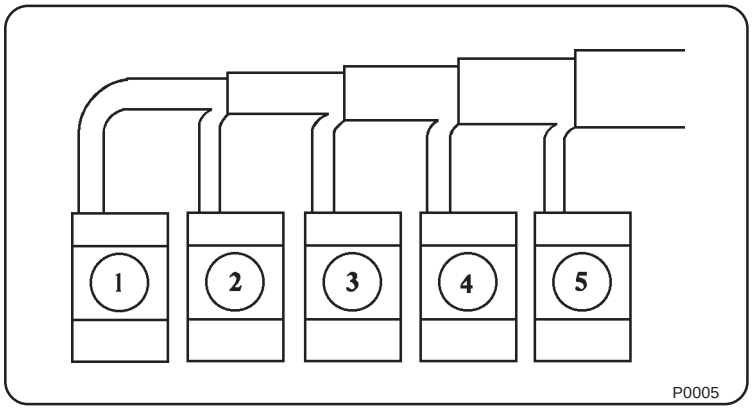
In case of gas heating, the fresh air rate requested for the combustion air supply should be not less than 2 m³/h (1.2 cfm) per kW,

- either 40 m³/h (24 cfm) minimum for a 3316 machine.
- or 50 m³/h (30 cfm) minimum for a 3320 machine.

If several ironers are installed with a single exhaust pipe in common, (figure P0005) the latter should be of the growing section type according to the number of machines installed so that each of them can work with the same value of resistance of air.

The figure and table below show in a simplified way the skeleton diagram of the exhaust pipe, its outlet diameters and the required section for the ventilation aperture of the premises.

If in doubt regarding the exhaust device planning in case of modification of an existing device, please get in touch with our services.



Shape of the exhaust pipe if several ironers are installed						
Number of ironers		**1**	**2**	**3**	**4**	**5**
Outlet diameter of the exhaust pipe	**in inches**	**10"**	**14"**	**18"**	**20"**	**22"**
	in mm	**250**	**355**	**450**	**500**	**560**
Ventilation aperture required section in m²		**0.3**	**0.5**	**0.8**	**1.0**	**1.3**

Power supply

IMPORTANT : Check that the mains voltage is correct and that your installation is powerful enough before connecting the machine (see chapter 5 page 2 for the cross sectional areas of cables).

Insert the feeding cable in the designed port (letter B on the foundation plan on the rear left side of the caisson).

Dismantle (following the pattern) the general switch (E) by activating the red lever (M) downward or push the red button (K) to separate the body from the head of the switch, and then pull it backward following arrow (F).

Connect this cable on the general switch (E) diagram D0180 observing the location of the threads.

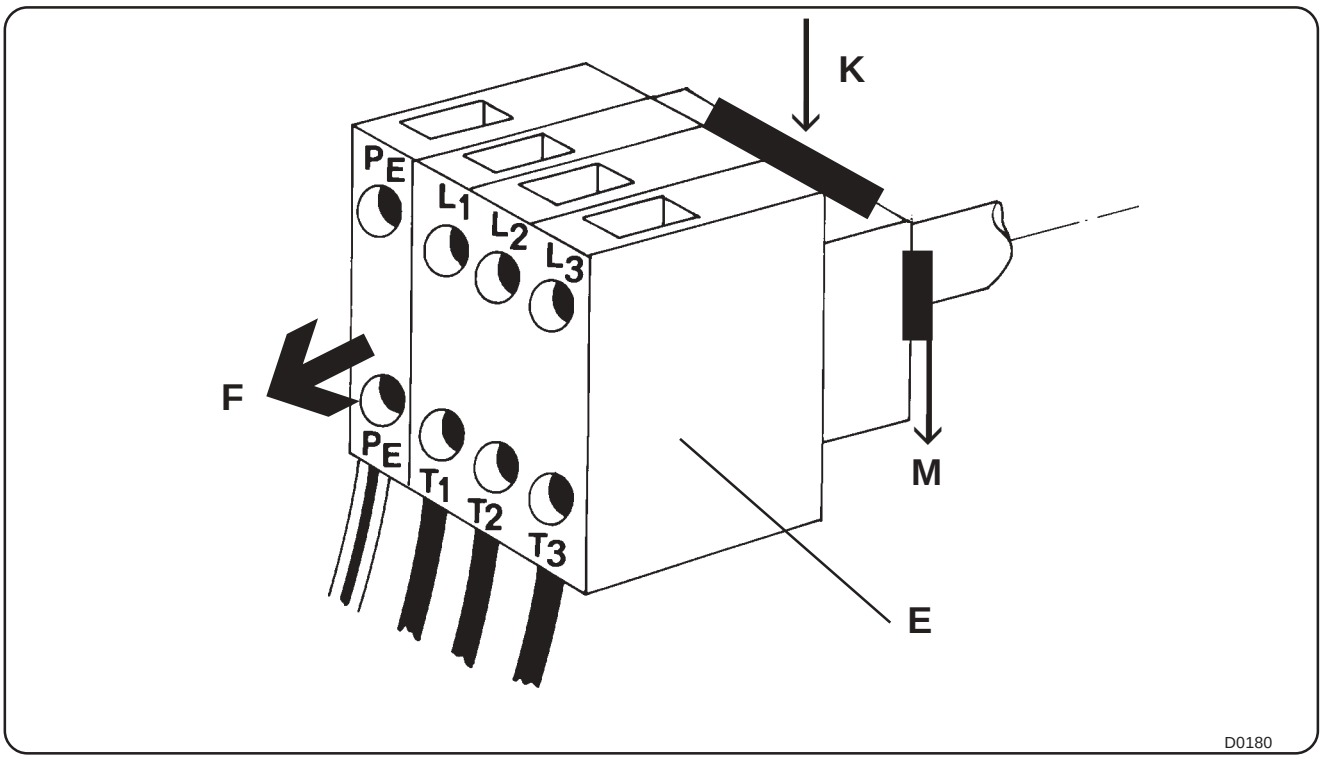
L1 Phase no 1

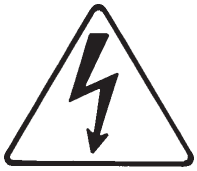
L2 Phase no 2

L3 Phase no 3

PE Earth connection

To reassemble the body of the switch, reverse the operation (activate (M) upward to lock).





CAUTION

Prior to use, the ironer should be plugged into a correctly earthed power socket complying with the standards in force.

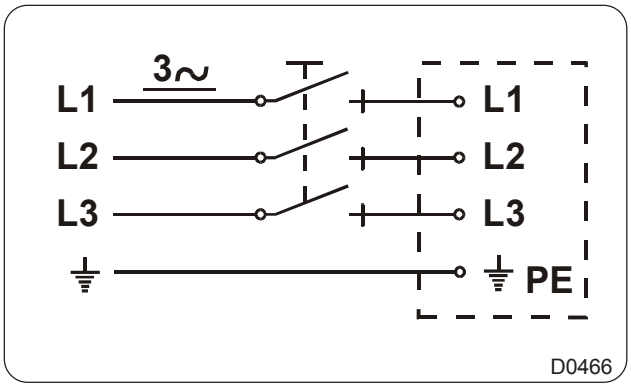
SAFETY

The electrical installation of the machine must be undertaken by qualified personnel.

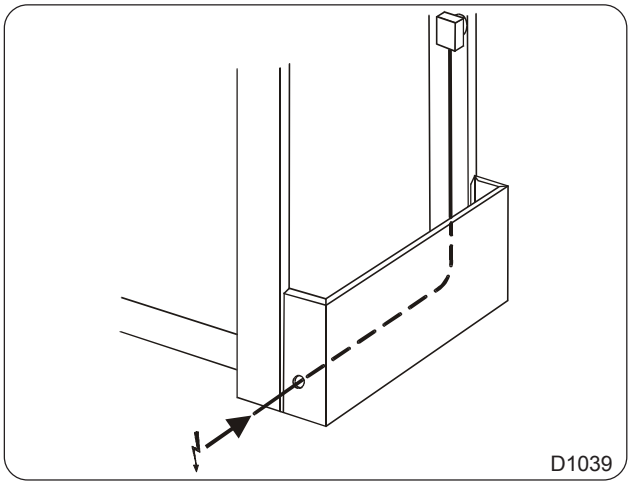
CAUTION

Ensure that the electrical voltage is correct and that the power of your supply is sufficient, before connecting the machine.

For each machine, install a fixed multipole circuit breaker (or fuses protector) in the laundry main cabinet.



Pass the machine power supply cable through the orifice (see sketch).

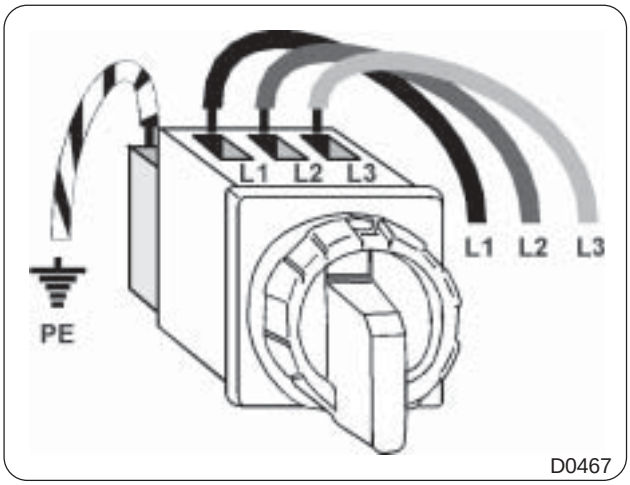


Connect the power supply cable on the machine main switch.

Check the order of phases on the switch terminals (see marks L1, L2, L3 and PE on the switch).

(Check operation, see chapter No.10).

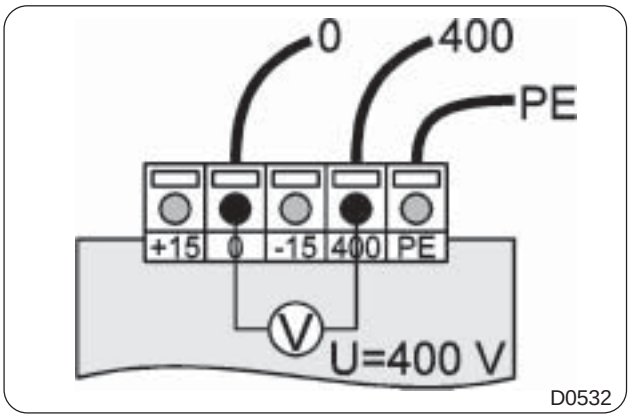
NOTE : you must respect the fan rotation direction.



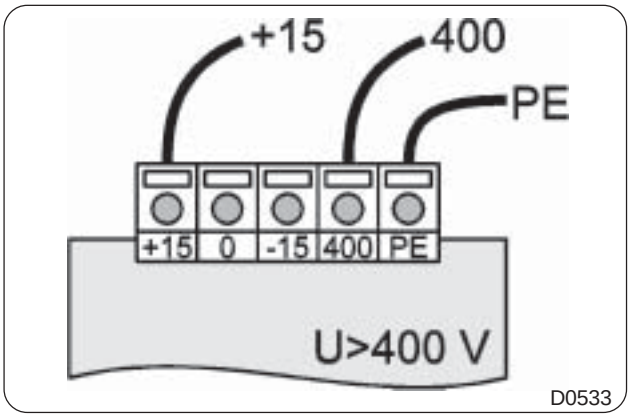
Connection diagrams for the control circuit power supply transformer (T1) as a function of the various customer power supply voltages.
400 volt power supply.

Measure the power supply voltage at the transformer primary with a voltmeter between the transformer 0 and 400 volt terminals.

- If the voltage is equal to 400 volts, do not touch the transformer connection which must be as shown in the adjacent figure.

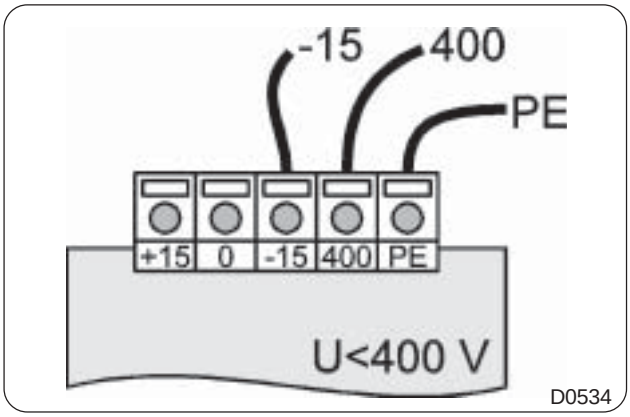


- If the voltage is > 400 volts (for example: 420 or 430 volts), connect the wires to the transformer as shown in the adjacent figure.



Note : we recommend that you should adopt this solution even if the voltage is normally equal to 400 volts but may be subjected to temporary variations, so that you do not apply an overvoltage to the electrical equipment in your machine.

- If the voltage is significantly < 400 volts (for example: 370 or 380 volts), connect the wires to the transformer as shown in the adjacent figure.



The feeder cable sections mentioned in our literature are given **only as a guide.**

To obtain a value perfectly suited to your own application and which takes account of the different correction factors in respect of your plant, refer to the tables below.

Table 1 (in accordance with EN Standard 60204-1-1992)

Values given for :

- Cable with copper conductors
- Cable with PVC insulation (for other insulants see Table 3)
- Ambient temperature 40 °C max. (for others see Table 2)
- Three-phase cable under load without including starting currents
- BT / C/ E cable layout.

Cable Section (mm²)	Maximum Admissible Current (amperes) Seated in Cable Duct or Cable Trough	Wall Fixing	Cable Tray
	B2	C	E
3 x 1.5	12.2	15.2	16.1
3 x 2.5	16.5	21	22
3 x 4	23	28	30
3 x 6	29	36	37
3 x 10	40	50	52
3 x 16	53	66	70
3 x 25	67	84	88
3 x 35	83	104	114
3 x 50	-	123	123
3 x 70	-	155	155

Table 2

(Correction factors for different ambient temperatures)

Ambient Temperature	Correction Factor
30 °C	1.15
35 °C	1.08
40 °C	1.00
45 °C	0.91
50 °C	0.82
55 °C	0.71
60 °C	0.58

Table 3

(correction factor for different cable insulating materials)

Insulating material	Max. Working Temperature range	Correction Factor
PVC	70 °C	1.00
Natural or Synthetic Rubber	60 °C	0.92
Silicone Rubber	120 °C	1.60

Table 4

(B2, C and E correction factors for cable grouping)

Number of Cables	B2 Seated in Cable Duct	C Wall Fixing or Cable Trough	E Cable Tray
1	1.00	1.00	1.00
2	0.80	0.85	0.87
4	0.65	0.75	0.78
6	0.57	0.72	0.75
9	0.50	0.70	0.73

The total current included for using Table 1 should be the maximum rated current for the machine divided by the product of the different correction factors. Other correction factors may also be applied ; consult the cable manufacturers.

Calculation : Example

- The machine has a rated current of 60 A.
- The ambient temperature is 45 °C ; Table 2 gives a correction factor of 0.91.
- Rubber cable insulant : Table 3 gives a correction factor of 0.92.
- The cable is fixed directly to the wall (Column C), with 2 cables side by side. Table 4 gives a correction factor of 0.85.

$$\text{Total current : } \frac{60\ \text{A}}{0.91 \times 0.92 \times 0.85} = 84\ \text{A}$$

Taking Column C in Table 1 (wall fixing), we obtain a minimum cable section of : **3 x 25 mm².**

Type	Machine Voltage	Supply Power	Installed Heating	Rated intensity	Main Switch	Main cable section	Fuse
1,6 m	380/415 V 3+T ~ 50/60 Hz	0,5 kW	Gaz	1 A	3 x 12 A	AWG13 4 x 2,5 mm²	3x12 A
1,6 m	380/415 V 3+T ~ 50/60 Hz	18,5 kW	Electrique	26,7 A	3 x 32 A	AWG 9 4 x 6 mm²	3x32 A
2 m	380/415 V 3+T ~ 50/60 Hz	0,5 kW	Gaz	1 A	3 x 12 A	AWG13 4 x 2,5 mm²	3x12 A
2 m	380/415 V 3+T ~ 50/60 Hz	23 kW	Electrique	32,5 A	3 x 40 A	AWG7 4 x 10 mm²	3x40 A

Gas heating (for gas heated machine only)

CAUTION

The installation of the gas supply should be carried out by stained staff.

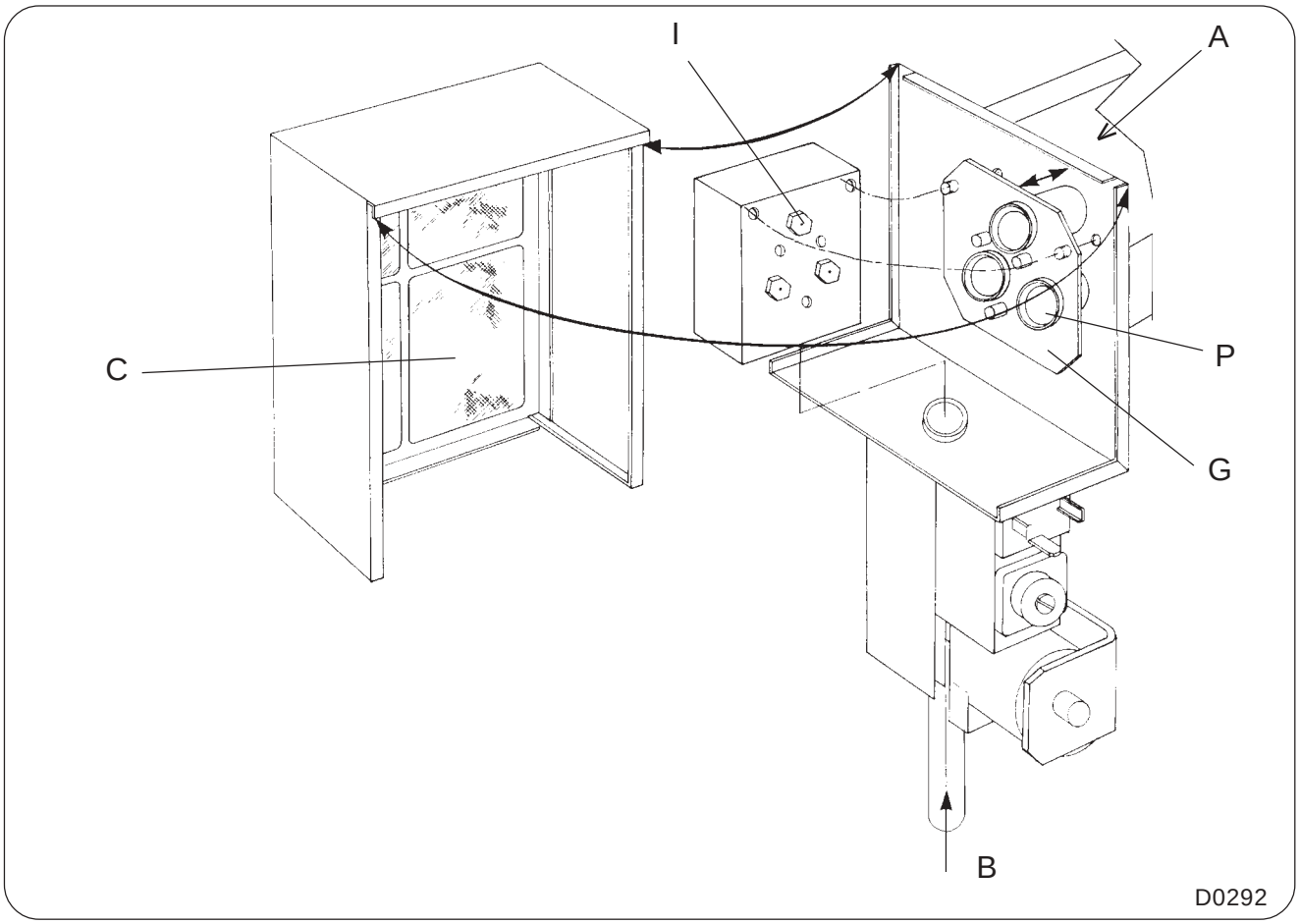
To be provided by the customer a filter, a manual stop valve and a pressure reducing valve BUTANE 29 gr., PROPANE 37 or 50 gr. or NATURAL GAS according to the kind of gas used.

Check that the diameter of injectors (I) is adequate for the kind of gas of your installation (see table t0134gb).

The machine is delivered with extra injectors in a plastic envelope. There is also a sheet metal plate with a cork joint or an adjusting head to feed the machine with another gas.

Connect the installation at the back of the machine
(B on the foundation plan) to diameter DN 20 (¾" BSP).

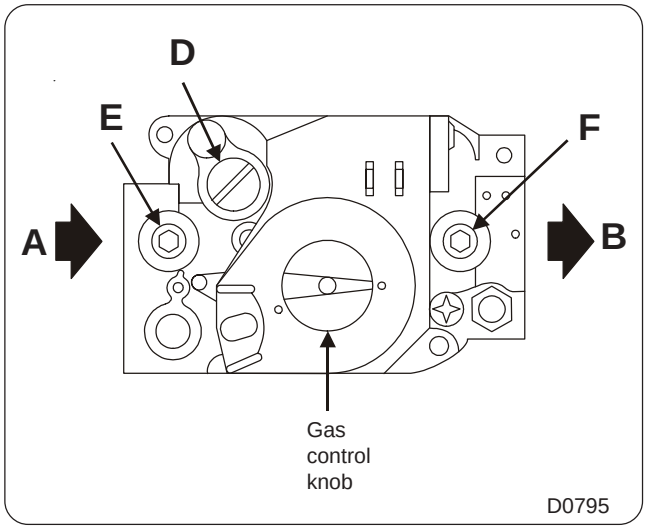
A	Gas burner	**I**	Injectors
B	Gas admission	**P**	Venturis
C	Filter	**G**	Venturis support plate



The machine is adjusted at the plant according to the kind of gas specified on the order. If you have to feed your machine with a gas of another family than delivered with the machine, do as follows.

Changing to a gas in the same family (type H or L)

- Adjust the gas outlet pressure (see correspondence in the tables).



Changing to a gas in a different family (from type H or L to butane or propane)

- Change the 3 injectors with joints (see correspondence in the tables).
- Remove regulator cap screw and pressure regulator adjusting screw.
- Remove the existing spring.
- Insert the replacement spring.
- Screw until the pressure regulator adjustment and block.

Changing to a gas in a different family (from butane or propane to type H or L)

- Change the 3 injectors with joints (see correspondence on the tables).
- Remove regulator cap screw and pressure regulator adjusting screw.
- Remove the existing spring.
- Insert the replacement spring (conversion kit 393691).
- Adjust the outlet gas pressure (pressure regulator adjustment).

IMPORTANT
Adjustments should be made by qualified personnel only.

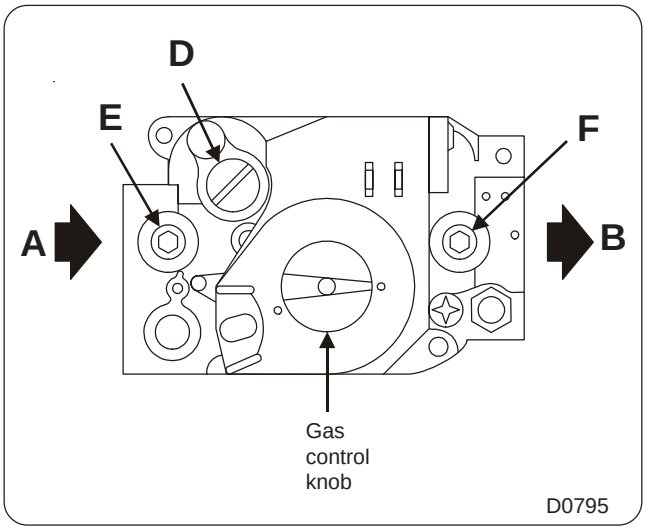
A Inlet

B Outlet

D Pressure regulator adjustment (under cap screw)

E Inlet pressure tap

F Outlet pressure tap



TESTING PRESSURES

According to the EN 437 standard, the values of the testing pressures mentioned in our various documents are values for static pressures taken at the gas inlet connection of the machine ; the heating of the machine being on.

ADJUSTMENTS AND CHECKING OF THE OUTLET PRESSURE

The gas outlet pressure of the electrovalve is adjusted at the factory. If you have to make another adjustment, proced as follows :

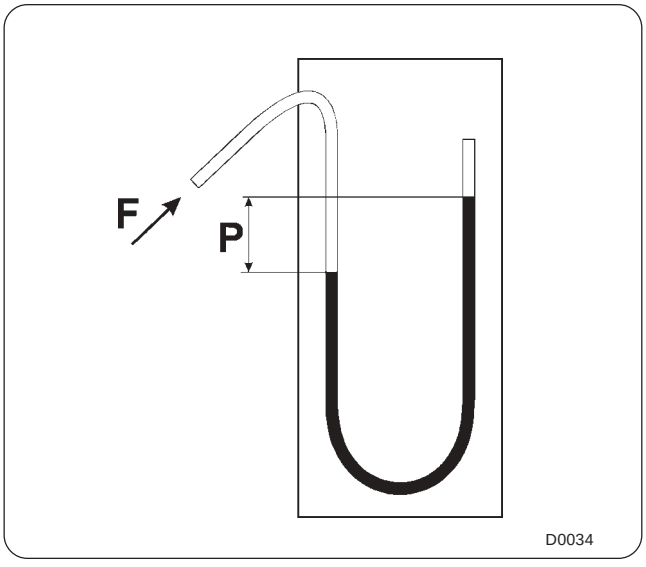
1 - Shut off the gas admission and remove the binding screw from the pressure tapping (F) and connect the manometer tube.
2 - Electrical operator must be energized in order to have gas input to burner.

3 - Open and check the gas admission to main burner using the manometer on pressure tapping (F).

4 - Remove pressure regulator cap (D).

5- Using a screw driver, slowly turn the adjustment screw until the required pressure (P) is indicated on manometer (see tables).

Turn the adjustment screw clockwise to increase and counter-clockwise to decrease gas pressure.



6- Reset the pressure regulator cap, shut off the gas admission, remove the manometer tube and put the binding screw back in (F).

TABLE OF CORRESPONDENCES - Ironer 3316

Category index	Type of gas	Working supply pressure in mbar (inH_2O)	Hi	Ø of injectors in mm	Pressure at injectors in mm H_2O (inH_2O)	Heat emission Qn in kW	Consumption Mn in kg/h (Hi)	Consumption Vn in m^3/h (cfm)
2H	**G 20**	15 to 30 (6 to 12)	34.02 MJ/m^3	2.30	112 (4.4)	20	-	2.12 (1.25)
-	-	-	-	-	-	-	-	-
-	- -	- -	- -	- -	- -	- -	- -	- -
-	- -	- -	- -	- -	- -	- -	- -	- -
-	- -	- -	- -	- -	- -	- -	- -	- -
3 P	**G31**	27 (10)	46.34 MJ/kg	1.40	-	20	1.55	-

* For Belgium, no work is allowed between G20 and G25.

TABLE OF CORRESPONDENCES - Ironer 3320

Category index	Type of gas	Working supply pressure in mbar (inH_2O)	Hi	Ø of injectors in mm	Pressure at injectors in mm H_2O (inH_2O)	Heat emission Qn in kW	Consumption Mn in kg/h (Hi)	Consumption Vn in m^3/h (cfm)
2H	**G 20**	15 to 30 (6 to 12)	34.02 MJ/m^3	2.70	97 (3.8)	25	-	2.64 (1.554)
-	-	-	-	-	-	-	-	-
-	- -	- -	- -	- -	- -	- -	- -	- -
-	- -	- -	- -	- -	- -	- -	- -	- -
-	- -	- -	- -	- -	- -	- -	- -	- -
3 P	**G31**	27 (10)	46.34 MJ/kg	1.60	-	25	1.94	-

* For Belgium, no work is allowed between G20 and G25.

Note : **G20 = natural gas, Lacq type** **G25 = natural gas, Groningue type**

G30 = butane gas **G31 = propane gas**

IMPORTANT

Tightness test after installation
The gas leak test is performed as follows :

1. **Paint pipe joints, pilot gas tubing connection and control in and outlet with rich soap and water solution.**
2. **Put the machine into service. The bubbles indicates gas leak.**
3. **Eliminate this leak and do not use an agressive saop.**

NOTE : After all intervention, re-seal (red varnish) the following adjustment organs :
- **regulator of pressure**
- **air adjustment (venturi ring or screw of the venturi plate)**

In case of changing of gas, the stick of the adjustment has to be modified.

Check-out

Before leaving, set appliance in operation and observe through a complete cycle to ensure that burner system components function correctly.

IMPORTANT

When the system goes into safety lockout, power to the spark generator is interrupted, the gas control circuit is interrupted and the alarm circuit is completed. The system will stay locked out until it is reset by shutting off the heating switch and waiting for 30 seconds before shutting on the heating switch.

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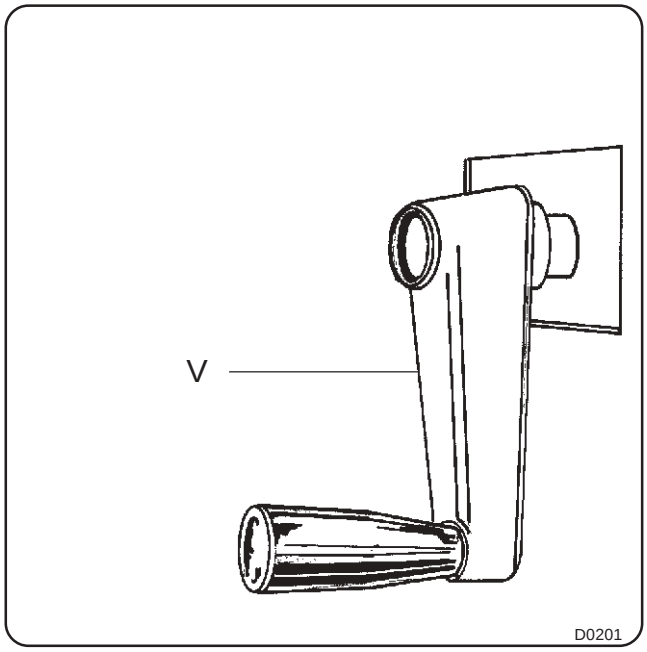
Before the very first starting operation, it is necessary to take off the protective paper rolled round the heating cylinder (for steel cylinder only).

To do so, you have to install the crank (V) that you have found in the caisson together with this instruction handbook (see photo).

Turn the crank to make the cylinder rotate and remove the protective paper.

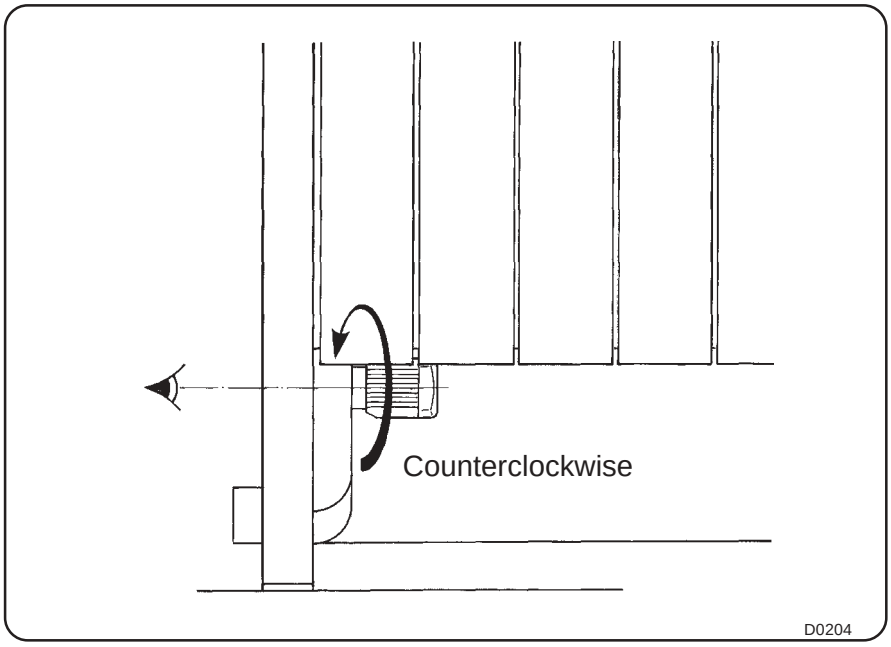


IMPORTANT

The ironing cylinder always rotates in the right direction thanks to the converter, but the fan may rotate in the wrong direction.

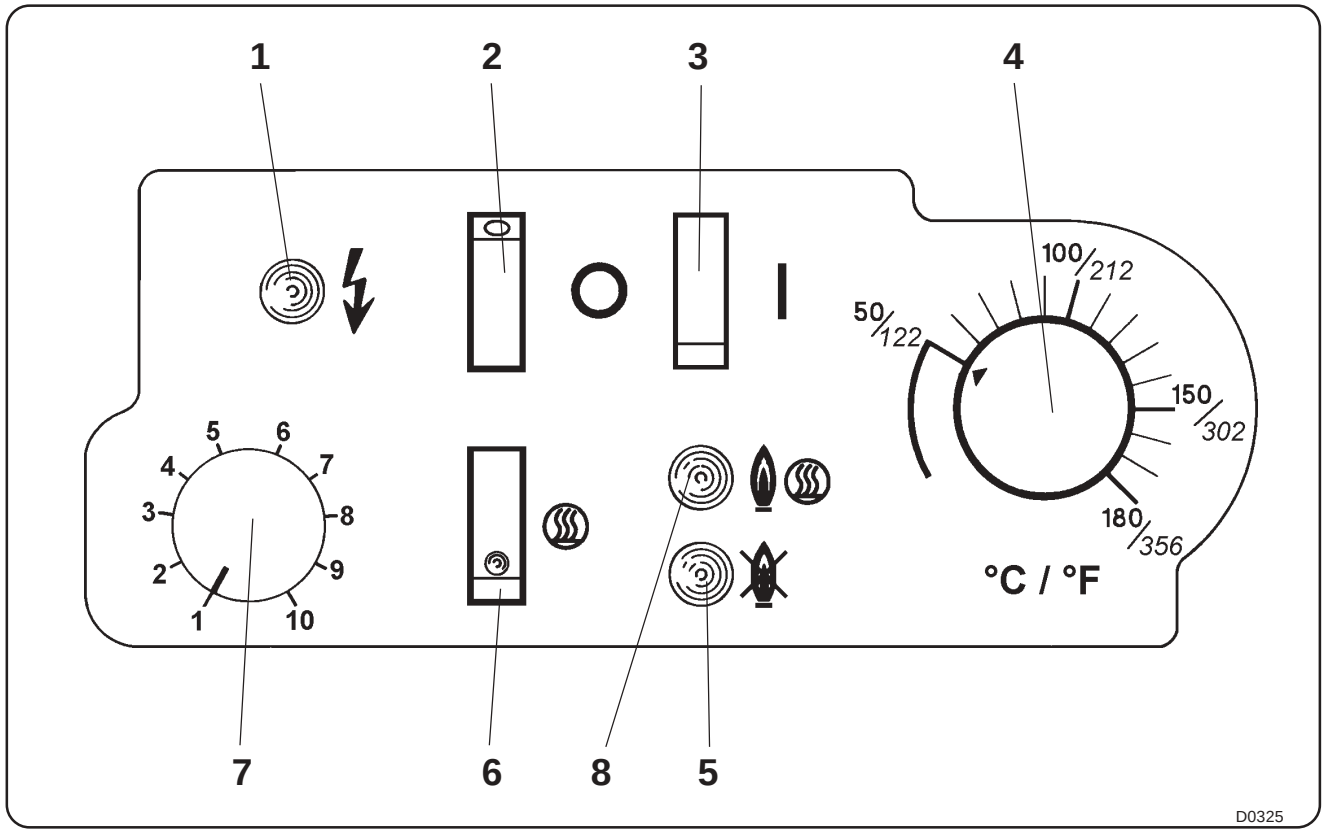
Check the direction of rotation of the fan (see photo D0204) and the arrow indicating the direction of rotation on the fan.

If the fan of the ironer rotates in the wrong direction when the machine is three-phase, two of the three phases must be inverted on the supply section switch in order to change the direction of rotation of the fan.



Scheduler legend

1. **"Voltage"** indicator
2. **"Stop"** switch
3. **"On"** switch
4. **"Ironing temperature selection"** thermostat
5. Gas heating **"ignitor failure"** indicator
6. **"On / off"** heating switch
7. **"Ironing speed adjustment"** potentiometer
8. **"Heating"** indicator on



IMPORTANT
The machine should be installed in conformity with the regulations and standards enforced and situated in a correctly ventilated room.
The machine is designed for occupational use and should only be used by trained staff.
If the machine is used with another gas than the one is ahas been adjusted for, call for a trained fitter.

Puttting into service

- Turn main section switch to I (ON), the indicator (1) "voltage" lights.

- Turn the potentiometer (7) to the minimum speed.

- Press button (3) "ON".

The cylinder and the guiding bands rotate.

The fan works and draws the air out of the machine to outside the building.

- Press switch (6) "heating on".

- Adjust thermostat (4) on required temperature. Usual ironing temperature is around 180 °C (355 °F) for cotton. The heating indicator (8) lights. The temperature rise is reached after approximately 12 minutes for a temperature of 180 °C (355 °F). The heating indicator (8) switches off as soon as the required ironing temperature is reached.

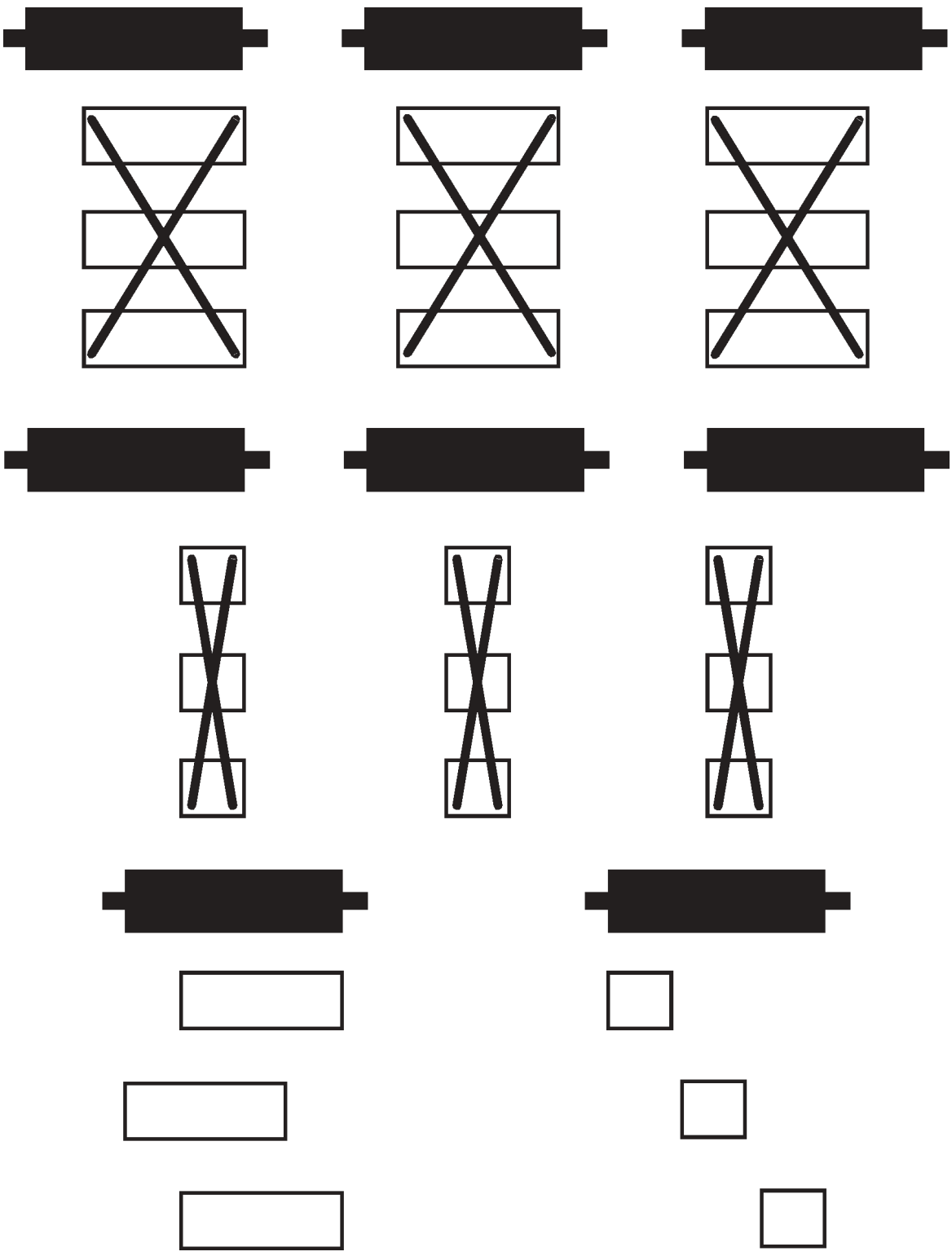
- Check that the finger protection is working. The finger protection must stop the machine when it is touched.

Press button (3) "on" to restart the machine.

- Adjust potentiometer (7) on an average speed and start ironing.

- Ajust the ironing speed depending on the textile processed and the moisture rate of the linen.

- If the pipe burner is secured, the indicator (8) switches off and the indicator (5) lights ; (to restart the machine, press "STOP HEATING" and then "HEATING ON" (6).



P0b10

- The linen should be well-rinsed to avoid it from becoming discoloured and also to prevent any soiling of the drum.

- Proceed ironing when the temperature has reached 160 °C (320 °F).

- Blankets should not be ironed.

- Check that the linen tolerates ironing, and at which temperature.

- Be careful with synthetic linen and also with linen having prints on. They can melt and stick on the cylinder.

- In order to obtain the highest ironing quality, we advise that you feed the flat items (towels,sheets, etc), starting by the hem.

- If the linen must be ironed twice to get dry, there is a risk of yellowing and likewise if the speed is too reduced.

- If the linen is not dry after one ironing, it may be due to :

    - your washing machine having a low extraction capacity (below 300 G) ; if this is so, a short pre-drying (5-10 min) in a tumble dryer is advised.

    - the thickness of the linen.
    - a too high ironing speed.

- Carefully feed the item to be ironed, because it is impossible to release an item which has not been correctly fed.

- Check that the items ironed are not wider than the feeding bands (maximum ironing widths : 1.65 m (65") for a 3316 machine and 2.05 m (81") for a 3320 machine).

- Do not iron pieces of linen folded in 4 given in this precise case and due to the considerable thickness, it is impossible to get the quality of drying/ironing you may expect from your machine.

- If possible, use the whole cylinder width.

- If small sheets or other small items are to be ironed, these should be fed alternately left and right of the heating cylinder (see fig. P0010).

- If linen coming out of the ironer is still damp, the ironing speed should be reduced (turn potentiometer on the control panel) until a proper quality of ironing is achieved.

- If the linen is starched, there is a risk of deposit on the cylinder because the linen sticks on the cylinder.

- Check the quality of the main wash water (TH/TAC).

- Check the washing and rinsing cycles (see running incidents "phenolphthalein").

- Check the fur up in the linen (quantity of ash).

Productivity and quality of the ironing depend on the quality of the washing. Make sure that all these condition are met.

Linen should not be too much extracted to allow a correct running of the machine.

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How to stop the machine

In order to extend the lifetime of your machine and its components, observe the following instructions to stop the heating.

Press switch (6) "heating stop", its indicator switches off. The "heating" indicator (8) switches off too.

Keep on feeding damp linen to lower the cylinder temperature during approximately 10 min.

The cylinder temperature is about 70 °C (160 °F) now.

Press key (2) "General stop" to stop the machine.

Turn the general switch situated on the left casing to O (off).

At any time, it is possible to stop the machine by pressing key (2) "General stop".

CAREFUL, a high temperature of the ironing cylinder may damage the ironing strips.

Safety devices

Safety feeding device

It is not possible for hands to be inserted into the space between the safety feeding flap and the conveyor strips. The machine stops immediately when the flap is pushed-down.

After any service operation, it is imperative to respect the dimensions of 8 mm (1/3") maximum betwen the feeding strips, and the safety feeding device (mobile guard) in compliance with the regulation (EN 294 chart IV). The adjustment cam screws must be sealed with an adequate varnish.

Motor protection

Motors are protected by magnetothermal breakers.

Re-starting of the machine

After any interruption of the machine, power failure, emergency stop, action on the safety feeding device, the machine can only be re-started by pushing the "ON" button (key 3).

Accessibility

All protective casing can be dismantled with a specially designed tool.

Heating safety device

In all cases, a safety thermostat prevents the cylinder from over-heating. This thermostat can be automatically reset.

In case of power failure, the piece of linen should be removed with the crank.

If the temperature is too high, it is possible to feed a piece of damp linen to protect the ironing strips.

Gas heating

The lighting of the pipe burner and the control of the flame are achieved by an electronic box providing a full safetyin case of bad draught of the chimney or cutoff in the gas admission for instance.

An indicator on the control panel shows that the safety device is working.

A safety pressure switch stops the heating device in case of bad working of the products of combustion suction device.

If the linen gets stuck on the cylinder :

* Check the rinsing result with a 1 % phenolphtalein solution diluted in alcohol. If this colourless liquid turns pink on the linen coming out of the machine, your linen is not properly rinsed and detergents remain.
* Check the doses of detergent, starch etc. The linen has not been properly rinsed. Increase the number of rinses if necessary or decrease the doses of products.
* Check that the proper temperature is correct.
* The linen is not properly extracted.

The linen is not dry when it comes out of the ironer : (risk of important condensation under the feeding vat).

* Reduce the ironing speed.
* Check the direction of rotation of the fan.
* Check the extracting speed of your washer-extractor. The residual moisture ratio should be approximately 50 %.
* Check that the heating works properly.
* Check that the suction device is not clogged.
* Check the condition of the ironing strips (calcareous fibers).

Discoloration :

* The brown coloration arises from washing powder slurries; it will disappear in the following wash.
* The coloration caused by a too high temperature cannot be removed.

The heating does not work or does not work propperly :

* Check the preset temperature.
* Check the regulation termostat.
* Check the safety thermostat.

a) Gas heating

* Check the gas admission.
* Clean the filters of the pressure reducing valves.
* Check the electronic ignitor.
* Check the position of the ignition electrodes and of the flame control.
* Check the gas electrovalve.
* Check the pressostat of the products of combustion.

If the flame is yellow.

* Check that the vapour exhaust fan works and rotates in the right direction (see chater installation).
* Check that the air admissions are not sealed.
* Check the vapour extraction chimney.
* Check the calibration ot the injectors.
* Clean the air admission filters.

b) Electric heating

* Check the heating contactors.
* Check the breakers.
* Check the heating resistors.
* Check the connections of the resistors.
* Check the phases.

The machine suddenly stops :

* Check the power supply.
* Check the switch of the finger protection flap.
* Check the motion and fan motors.
* Check the breakers.
* Check the vaiator :
  - The red led blinks in case of faulty working.
  - the green led is lit when the working is correct.

The ironer is overheated :

* Check the accuracy of the thermostat by measuring the temperature of the cylinder with a thermometer.
* Check that the adjustment shoe is in contact with the cylinder.

The feeding strips do not turn :

* That kind of malfunction is normal when it only affects some strips.
* When the pieces of linen can not be fed into the machine anymore, it is necessary to change the tension of every strip in acting on the adjustment of the satellite feeding bearings.
* Take care that you do not tighten the strips too much. The strip must stop turning with the pressure of one finger. It must restart when the finger stops the pressure.

Check of the detaching cords or pressure roller

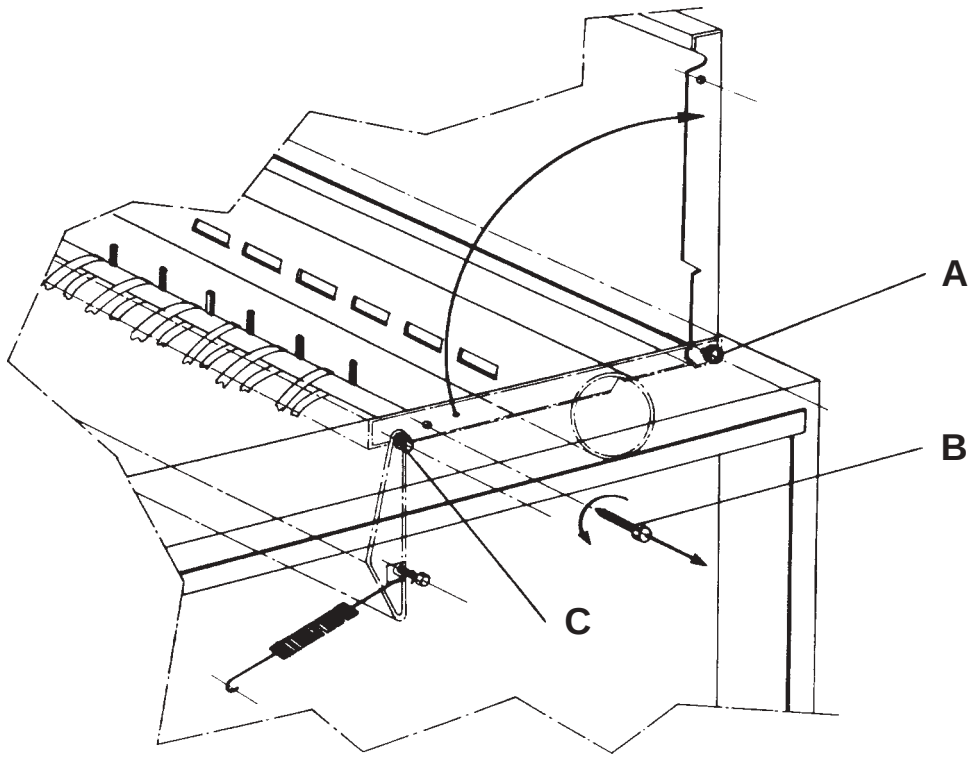
It is necessary to lift up the upper casing of the machine

Proceed as follows :

- Stop the machine.
- Dismantle the side casing with the key.
- Do not touch the screws (A) which serve as a link with the casing, a screw in each caisson.
- Unscrew and remove the scews (B). **Careful**, do not touch the screws (C) which are used for the joint of the finger protection device.

Now you can lift up the upper casing in order to access to the detaching cords.

After the intervention, hinge the upper casing down, reset and tighten the screws, then reassemble the side casings.



D0207

CAREFUL

Shut off the power supply of the machine before any maintenance or repair intervention is carried out and make sure that the cylinder is cold.

Daily

1 Check that the finger protection is working and check that the emergency stop button stops the machine.

Weekly

2 Clean the fan grates of motors.

3 Clean the stripper fingers and the thermostat attachment.

4 Clean the ironer external, from dust.

Monthly

5 Check that the parting straps are intact and replace if necessary.

Every six month

6 Slightly grease the chains (see lubrication table in the handbook).

7 Clean and check the support rollers of the cylinder.

8 Check that the crank is working.

9 Check that the electrical connections are shut off on the supply terminal.

10 Clean the whole suction device.

11 Check the heating elements, wires and connections (only for electric heated machines).

12 Clean the gas filters (only for gas heated machines).

13 Check the condition and tension of the ironing straps and of the clips.

14 Check the feeding bands, their drive and the clamps.

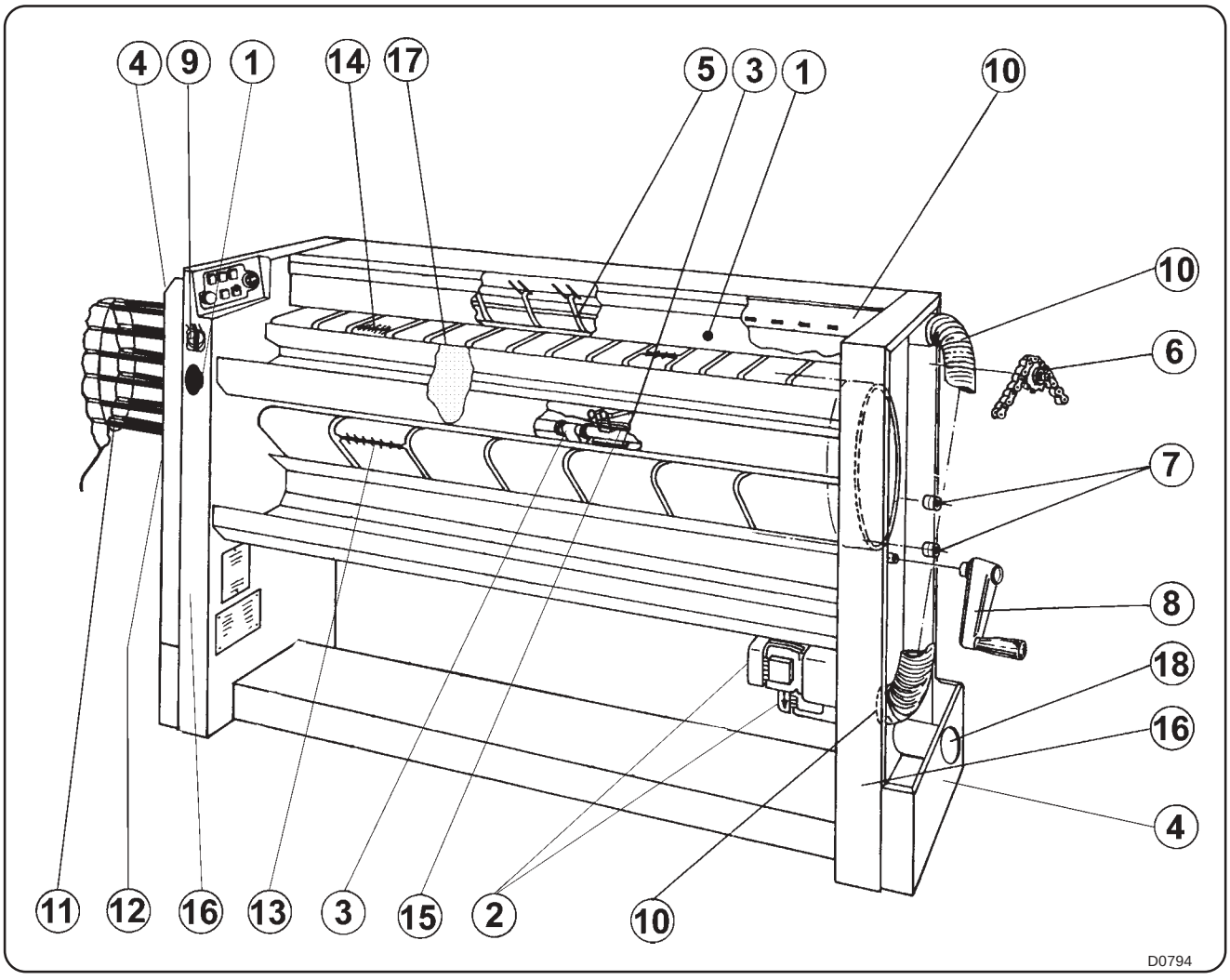
15 Check that the thermostat is working.

16 Clean the ironer internal, from dust.

Once a year

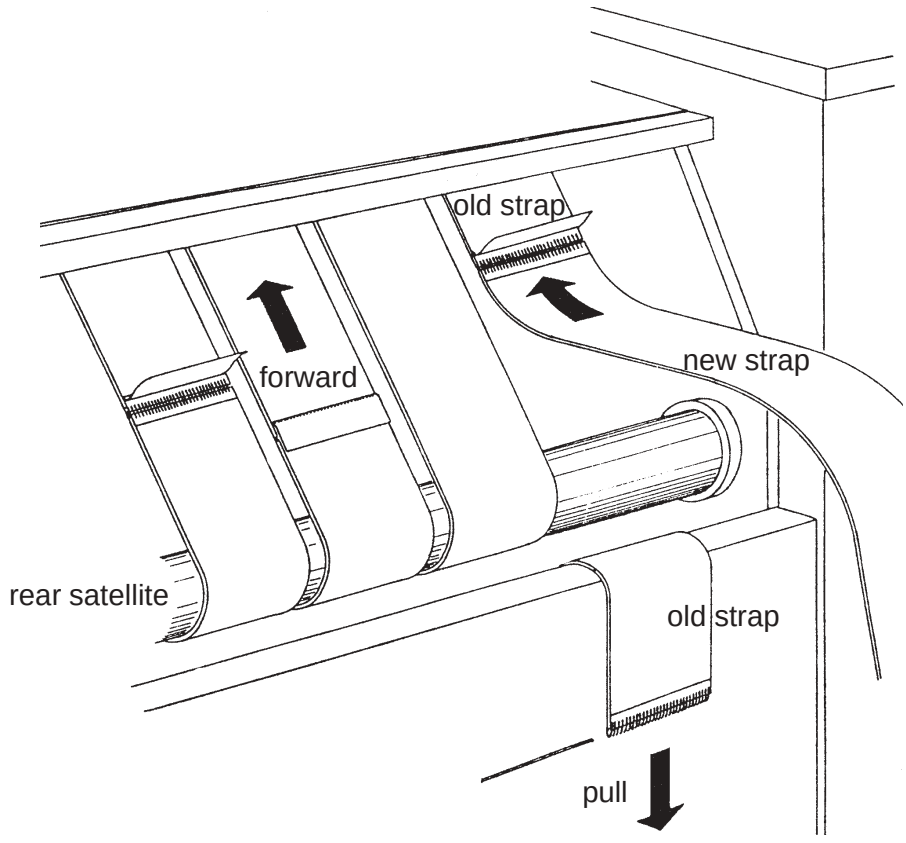
17 Check if the cylinder has any deposits of detergent or lime. Clean if necessary.

18 Check and clean the outer pipes.



CAUTION
To ensure that your machine gives the very best service, please take care that maintenance is carried out in strict accordance with the instructions above mentioned.

Replacement of straps



The tensin of the ironing straps is automatic.

Motors :

The fan motor is permanently lubricated.

The movement motor is permanently lubricated.

Bearings :

Permanently lubricated.

Heat control :

Make sure that the shoe of the thermostatic control and the safety control devices are always clean and in cylinder contact.

Gas heating :

Check annually the good working of the burner (removal and blowing).

Check and clean the lint filter regulary.

Cylinder :

The cylinder must be kept very clean to make ironing easier and must be of a very high quality.

Deposits of washing powder or lime must be removed as soon as they start to affect the quality of the ironing.

The use of VERY FINE saddle grinder ONLY is recommended (grain 180 or Scotch Brite 3M BFB-AM).

This should be rubbed in the same direction as the linen is passed through the machine.

Should the machine be stopped for a long period, in order to avoid any oxidation of the cylinder, a sheet impregnated with paraffin wax should be fed through the machine.

Using an old sheet, grate a little paraffin wax onto half of the unfolded sheet, fold in half and then run it through the flatwork-ironer while it is still hot enough.

If the machine is to be left unused for a longer period, it is advisable to oil the cylinder slightly (anti-rust oil ref. 96010012).

t0130gb

LUBRICATION TABLE

USES	Rolling bearings Bearings	Rolling bearings Bearings high temperature	Assembly paste (fretting corrosion)	Bare gears Chains shafts Thread Slides	Flange joints Union pipes Steam circuits	Reducers with wheels and screws	Reducers with gears	Circuits and pneumatic devices
TYPES OF LUBRICANTS AND STANDARDIZATION	Lithium soap grease	Lithium soap grease + silicone oil	Lithium soap paste + mineral oil + mineral solid greases	Lithium soap grease with MO SE additive	Graphite grease mini 60% graphite special leakproof	Extreme high pressure oil	Extreme high pressure oil	Inhibited oil SAE5
	Grade ISO NLGI 2	Grade ISO NLGI 3	Grade ISO NLGI 1	Grade ISO NLGI 2	Grade ISO NLGI 2	Grade ISO VG 150	Grade ISO VG 220	Grade ISO VG 22
TEMPERATURE LIMIT RANGE	- 20°C + 140°C	- 40°C + 200°C	- 20°C + 150°C	- 20°C + 135°C	- 30°C + 700°C	0°C + 100°C	0°C + 120°C	- 10°C + 65°C
RECOMMENDED	ALVANIA R2	NTN SH 44 M	ALTEMP Q.NB.50	MI-SETRAL 43N	GRACO AF 309	REDUCTELF SP150	REDUCTELF SP220	LUBRA K ATL SAE5W
CODE PRODUCT	96011008	-	96011014	96011000	96011004	96010001	96010004	96010030
CORRESPONDENCE ANTAR	ROLEXA 2			EPOXA MO 2		EPONA Z 150	EPONA Z 220	MISOLA AH
BP	LS EP2					ENERGOL CRXP 150	ENERGOL CRXP 220	SHF 22
CASTROL	SPEEROL EP 2					ALPHA SP 150	ALPHA SP 220	
ELF	EP2			STATERMA MO 10		REDUCTELF SP 150	REDUCTELF SP 220	SPINEF 22
ESSO	BEACON EP2			MULTI PURPOSE GREASE MOLY		SPARTAN EP 150	SPARTAN EP 220	SPINESSO 22
FINA	MARSON EP2					GIRAN SR 150	GIRAN SP 220	
GBSA					BELLEVILLE N			
GRAFOIL					GRACO AF 309			
KLUBER	CENTOPLEX 2	UNISILKON L50Z	ALTEMP Q.NB.50	UNIMOLY GL 82	WOLFRACOAT C	LAMORA 150	LAMORA 220	CRUCOLAN 22
MOBIL	MOBILUX					MOBILGEAR 629	MOBILGEAR 630	DTE 24
KERNITE	LUBRA K LC			LUBRA K MP		TOP BLENB ISO 80W90	TOP BLEND ISO 220	LUBRA K ATL SAE 5W
SETRAL				MI-SETRAL 43N				
SHELL	ALVANIA R2			RETINA AM		OMALA 150	OMALA 220	TELLUS 22
TOTAL	MULTISS EP2					CARTER EP 150	CARTER EP 220	EQUIVIS 22
MOLYKOTE		MOLYCOTE 44	PATE DX					
OPAL	GEVAIR SP			SUPER MOS 2		GEAROPAL GM 65 ISO 150	GEAROPAL GM75 ISO 220	HYDROPAL HO 110 HM ++22
ITECMA	GRL-ULTRA	VULCAIN		GMO	LHT-C	DURAGEAR 80 W 140		AEROSYN

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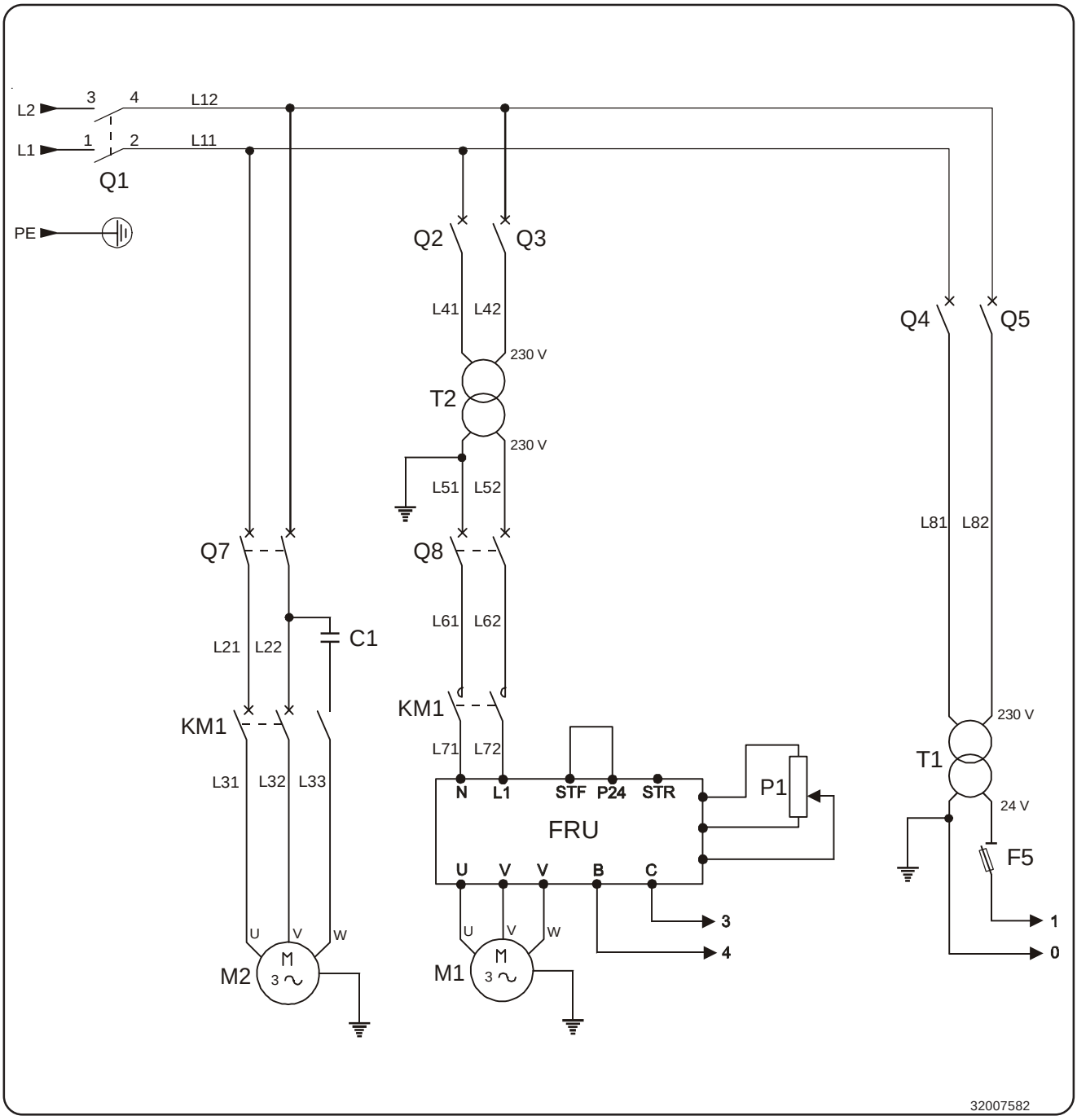
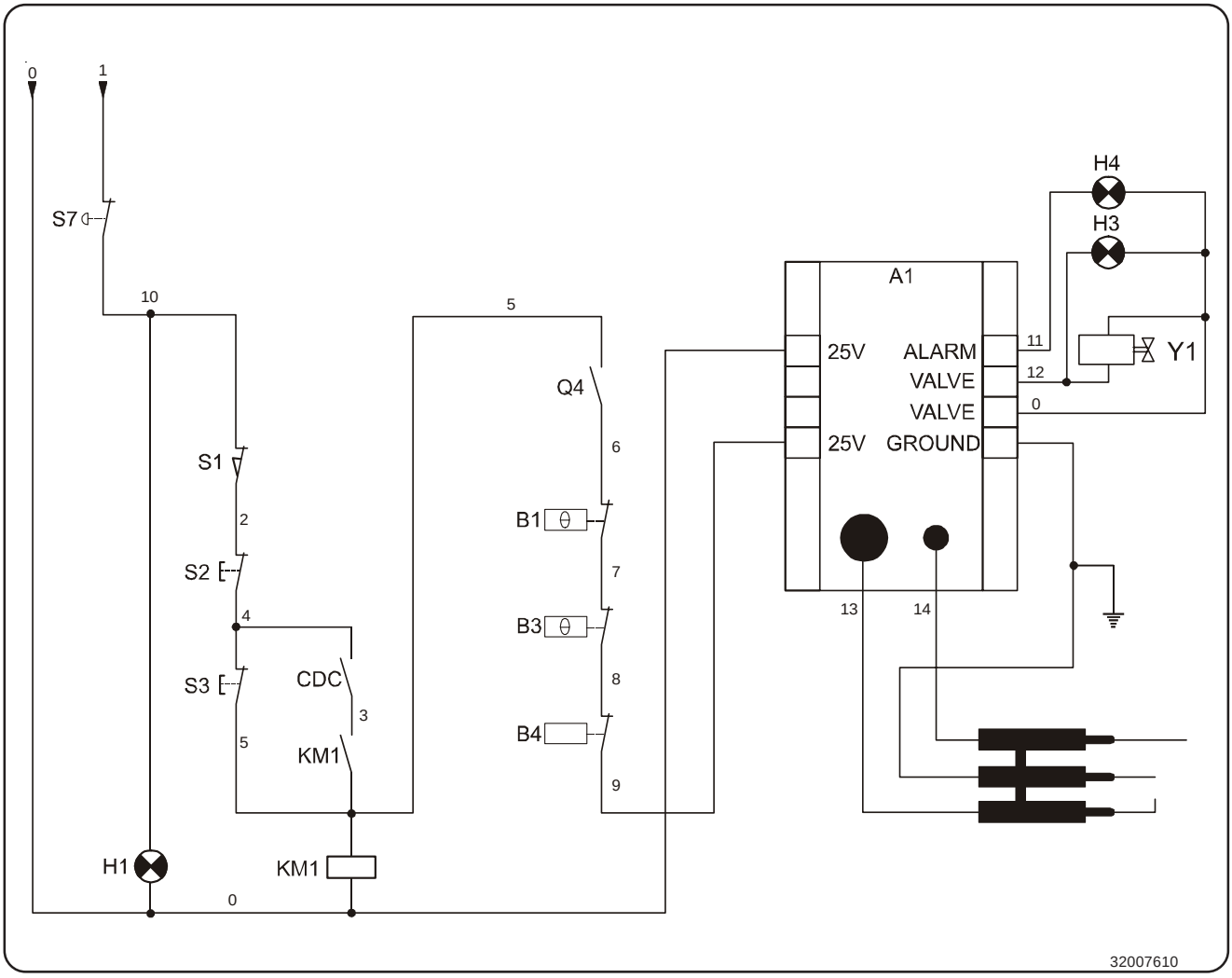

L2
3
4
L12
L1
1
2
L11
Q1
PE
Q2
Q3
L41
L42
230 V
T2
230 V
L51
L52
Q4
Q5
L81
L82
Q7
Q8
L21
L22
C1
L61
L62
KM1
KM1
L31
L32
L33
L71
L72
N
L1
STF
P24
STR
P1
FRU
U
V
V
B
C
3
4
U
V
W
M
3 ~
M2
U
V
W
M
3 ~
M1
T1
230 V
24 V
F5
1
0
32007582

POWER CIRCUIT
GAS HEATING
230 V mono
key to drawing 32007582

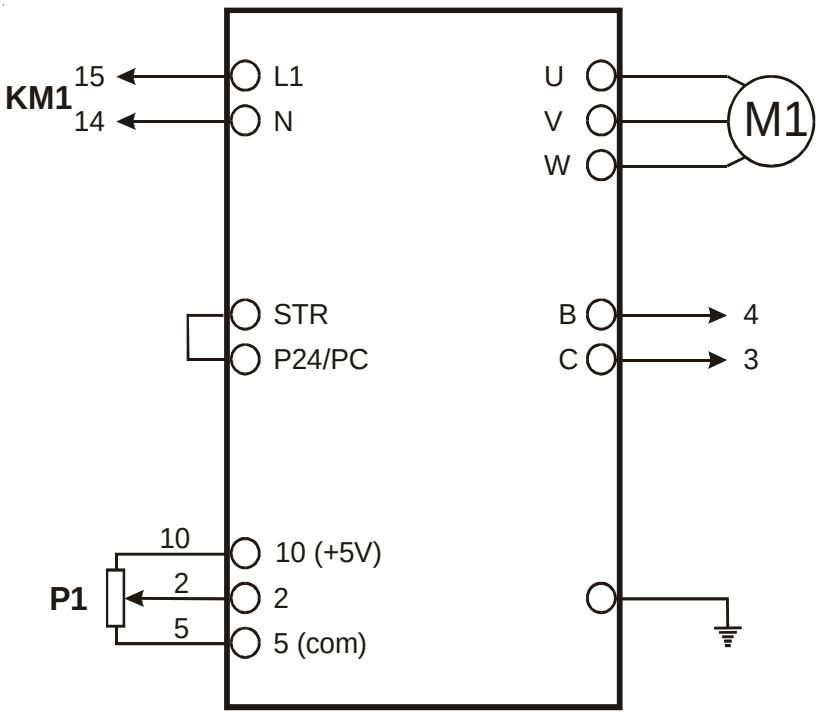
FRU	Frequency converter (0.4 kW)
C1	Capacitor 10 μF 450 V
F5	Fuse
P1	Potentiometer
Q1	Two-pole general switch
Q2	Primary breaker transformer
Q3	Primary breaker transformer
Q4	Primary breaker transformer
Q5	Primary breaker transformer
Q7	Fan motor breaker
Q8	Converter breaker
T1	Transformer 250 VA - 230 V/24 V
T2	Isolating transformer
KM1	Fan motors contactor and motion motor variator contactor
M1	Motion motor 230 V three-phase
M2	Fan motor 230 V mono-phase


0
1
S7
10
S1
2
S2
4
S3
5
CDC
3
KM1
H1
KM1
0
5
Q4
6
B1
7
B3
8
B4
9
A1
25V
ALARM
VALVE
VALVE
25V
GROUND
11
12
0
13
14
H4
H3
Y1
32007610

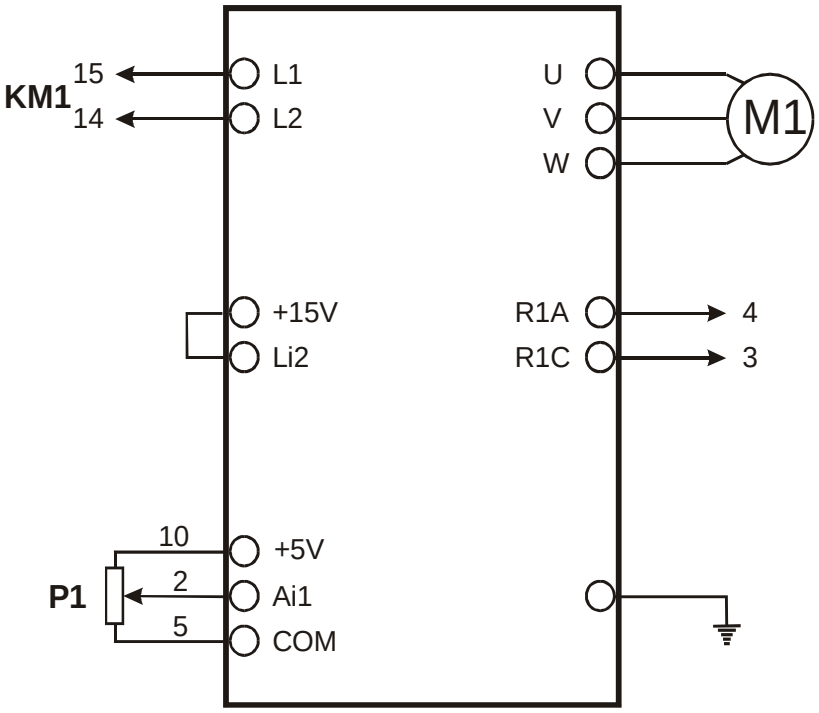
CONTROL CIRCUIT
GAS HEATING
key to drawing 32007610

A1	Gas ignitor
CDC	Frequency converter failure safety contact
B1	Overheating safety switch
B3	Adjustment thermostat 180 °C (355 °F)
B4	Products of combustion pressure switch (do not change the adjustments)
H1	"On" indicator
H3	"Heating on" indicator
H4	"Heating security" indicator
KM1	Fan motors contactor and motion motor variator contactor
Q4	Heating switch
S1	Finger protection flap position switch
S2	"Off" push-button
S3	"On" push-button
S7	Emergency stop button
Y1	Electrovalve

CONVERTER MITSUBISHI
FRU - 120S & FRS - 520S



CONVERTER TELEMECANIQUE
ALTIVAR 08 & 11



32007114

WIRING DIAGRAM
OF THE FREQUENCY CONVERTER
key to drawing 32007114

KM1	Motors contactor
M1	Motion motor
P1	Potentiometer

Conversion of measurement units

To following is a list of correspondences of the main frequently used units, to avoid the need to use measurement unit conversion tables.

bar :
1 bar = 100 000 Pa
1 bar = 1.019 7 kg/cm²
1 bar = 750.06 mm Hg
1 bar = 10 197 mm H_2O
1 bar = 14.504 psi

British Thermal Unit : 1 Btu = 1 055.06 J
1 Btu = 0.252 1 kcal

calorie :
1 cal = 4.185 5 J
1 cal = 10^{-6} th
1 kcal = 3.967 Btu
1 cal/h = 0.001 163 W
1 kcal/h = 1.163 W

continental horse-power : 1 ch = 0.735 5 kW
1 ch = 0.987 0 HP

cubic foot :
1 cu ft = 28.316 8 dm³
1 cu ft = 1 728 cu in

cubic inch : 1 cu in = 16.387 1 dm³

foot :
1 ft = 304.8 mm
1 ft = 12 in

gallon (U.K.) :
1 gal = 4.545 96 dm³ or l
1 gal = 277.41 cu in

gallon (U.S.A.) : 1 gal = 3.785 33 dm³ or l
1 gal = 231 cu in

Horsepower :
1 HP = 0.745 7 kW
1 HP = 1.013 9 ch

inch : 1 in = 25.4 mm

joule :
1 J = 0.000 277 8 Wh
1 J = 0.238 92 cal

kilogram : 1 kg = 2.205 62 lb

kilogram per square centimeter :
1 kg/cm² = 98 066.5 Pa
1 kg/cm² = 0.980 665 bars
1 kg/cm² = 10 000 mm H_2O
1 kg/cm² = 735.557 6 mm Hg

livre : 1 lb = 453.592 37 g

meter :
1 m = 1.093 61 yd
1 m = 3.280 83 ft
1 m = 39.37 in

cubic meter :
1 m³ = 1 000 dm³
1 m³ = 35.314 7 cu ft
1 dm³ = 61.024 cu in
1 dm³ = 0.035 3 cu ft

pascal :
1 Pa = 1 N/m²
1 Pa = 0.007 500 6 mm Hg
1 Pa = 0.101 97 mm H_2O
1 Pa = 0.010 197 g/cm²
1 Pa = 0.000 145 psi
1 MPa = 10 bar

psi : 1 psi = 0.068 947 6 bar

thermie :
1 th = 1 000 kcal
1 th = 10^6 cal
1 th = 4.185 5 x 10^6 J
1 th = 1.162 6 kWh
1 th = 3 967 Btu

watt :
1 W = 1 J/s
1 W = 0.860 11 kcal/h

watt-hour : 1 Wh = 3600 J
1 kWh = 860 kcal

yard :
1 yd = 0.914 4 m
1 yd = 3 ft
1 yd = 36 in

temperature degrees :
0° K = -273.16 °C
0° C = 273.16 °K
t° C = 5/9 (t° F-32)
t° F = 1.8 t° C + 32

Washing symbols

To overcome language barriers, the following are symbols used internationally to give you guidance and recommendations when washing different textiles.

Washing Symbol	Max. washing temperature in °C	Cycle	Load	Spin
	95	normal	1/1	normal
	95	normal	1/2	short
	60	normal	1/1	normal
	60	normal	1/2	short
	40	normal	1/1	normal
	40	normal	1/2	short
	30	mild	1/2	short
	Do not wash in machine.	Wash by hand.		Do not spin
	Do not wash in water.			

Ironing The number of dots indicates the maximum recommended temperature.

	Max. 200 °C.
	Max. 150 °C.
	Max. 110 °C.
	Do not iron.

Dry cleaning The circle symbolizes dry cleaning.

	Articles to be dry cleaned with any solvent.
	Articles to be dry cleaned with perchloroethylene, white spirit, 113 and 11 solvents.
	Articles to be dry cleaned with fluocarbon 113 or white spirit.
	Do not dry clean.

Bleaching The triangle symbolizes bleaching.

	Bleacheable (chlorine or oxygen).
	Do not bleach.

Drying The square symbolizes drying.

	Can be put in a dryer.
	Do not put in a dryer.

Wool  If clothing is marked IWS or Superwash, it can be washed in the machine.
Use only the mild cycle at temperature not exceeding 40 °C.