Installation manual

T4250 / T4350

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GB

Tumble dryer

Safety instructions

This machine is only intended for drying water-washed garments.

Clothes that have been cleaned with chemicals/inflammable liquids, must NOT be dried in the machine.

Remove clothes from the tumble dryer as soon as they are dry. This prevents them from becoming creased, and reduces the risk of spontaneous ignition.

The machine must not be used for drying foam rubber or foam-like materials.

The machine must not be used for drying floor mops*.

The machine must not be used by minors.

The machine must not be hosed down with water.

Mechanical, electrical and gas installations must only be carried out by authorised personnel.

If the machine has a fault, this must be reported as soon as possible to the person in charge. This is important for your own safety and for the safety of others.

Gas dryers only:

The machine is not to be installed in rooms containing cleaning machines with perchloroethylene, TRICHLOROETHYLENE or CHLOROFLUOROCONTAINING HYDROCARBONS as cleaning agents.

What to do if you smell gas:

Do not try to light any appliance.

Do not touch any electrical switch; do not use any phone in your building.

Evacuate the room, building or area.

Contact the laundry manager.

*Applies only to floor mops containing polypropylene.

Contents

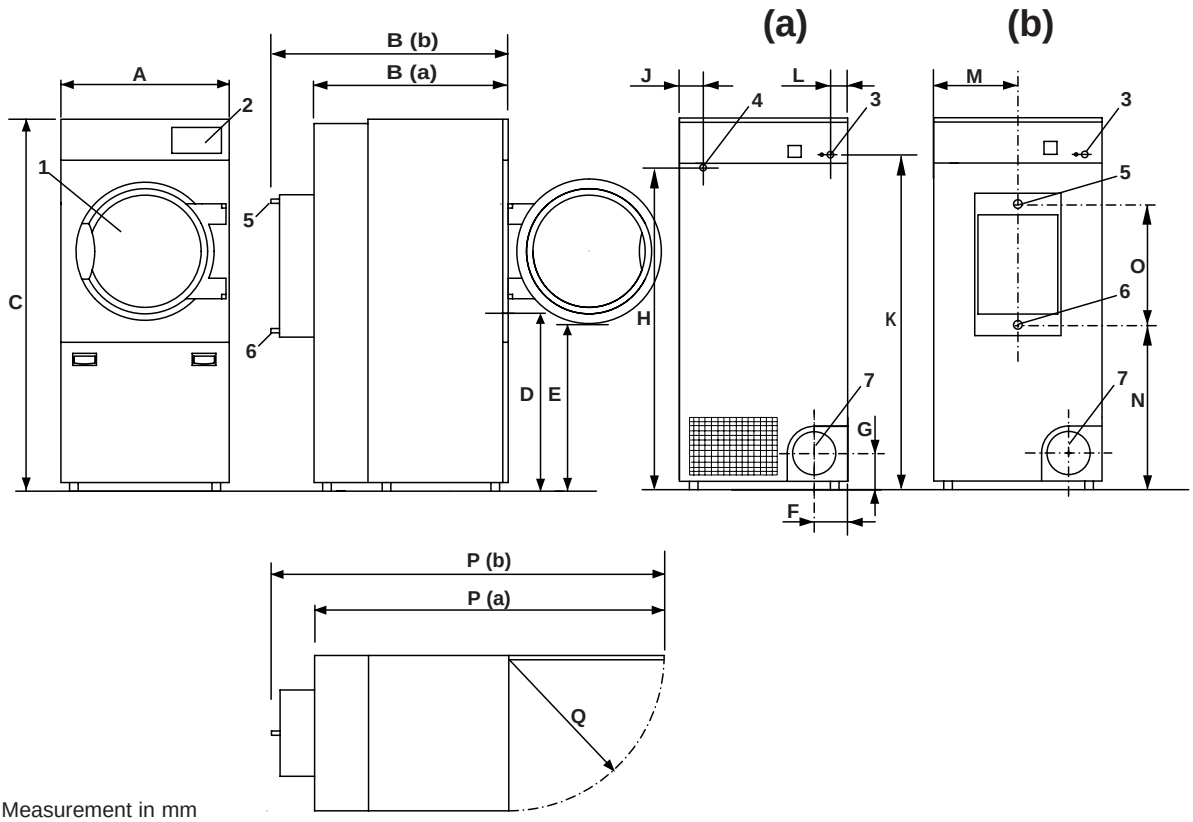
Contents:

The manufacturer reserves the right to modify design and material specifications without notice.

Dimension sketch

(a)	Electric and gas heating	**5**	Steam: in
(b)	Steam heating	**6**	Steam: out
1	Door opening = Ø 580	**7**	Pipe connection, evacuation
2	Operating panel		
3	Electric connection		
4	Gas connection		

	A	B (a)	B (b)	C	D	E	F	G	H	J
4250	**790**	**900**	**1100**	**1740**	**860**	**790**	**155**	**170**	**1505**	**100**
4350	**790**	**1120**	**1320**	**1740**	**860**	**790**	**155**	**170**	**1505**	**100**
	K	**L**	**M**	**N**	**O**	**P (a)**	**P (b)**	**Q**		
4250	**1565**	**80**	**395**	**755**	**585**	**1620**	**1820**	**740**		
4350	**1565**	**80**	**395**	**755**	**585**	**1860**	**2040**	**740**		



Measurement in mm

Technical data - type 4250

Heating		Electric	Gas	Steam
Drum volume:		250 litres	250 litres	250 litres
Weight net:		161 kg	161 kg	176 kg
Drum:	Diameter	760 mm	760 mm	760 mm
	Depth	550 mm	550 mm	550 mm
	Revolutions per minute	45 rpm	45 rpm	45 rpm
Capacity:		12,5 kg	12,5 kg	12,5 kg
Heat effect:	Electric heating:	9 kW/13.5 kW		
	Gas heating:		13.5 kW	
	Steam heating:			Depending upon steam pressure
Air consumption:	Heat effect 9 kW	360 m³/h		
	Heat effect 13.5 kW	600 m³/h	600 m³/h	
	Steam heating			1000 m³/h
Piping evacuation:		Ø 200	Ø 200	Ø 200
Piping steam:	Steam in			ISO 7/1-R1
	Steam out			ISO 7/1-R1
Max. counter-pressure:				
	Heat effect 9 kW	650 Pa		
	Heat effect13.5 kW	520 Pa	520 Pa	
	Steam heating			270 Pa
Gas piping:			ISO 7/1-R1/2	
Gas pressure:	See page regarding pressure			
Sound pressure level:		< 70 dB (A)	< 70 dB (A)	< 70 dB (A)

Technical data - type 4350

Heating		Electric	Gas	Steam
Drum volume:		349 litres	349 litres	349 litres
Weight net:		169 kg	169 kg	184kg
Drum:	Diameter	760 mm	760 mm	760 mm
	Depth	770 mm	770 mm	77 mm
	Revolutions per minute	45 rpm	45 rpm	45 rpm
Capacity:		17,5 kg	17,5 kg	17,5 kg
Heat effect:	Electric heating:	13.5 kW/18 kW		
	Gas heating:		21 kW	
	Steam heating:			Depending upon steam pressure
Air consumption:	Heat effect 13.5 kW	600 m^3/h		
	Heat effect 18 kW	1000 m^3/h		
	Heat effect 21 kW		1000 m^3/h	
	Steam heating			1000 m^3/h
Piping evacuation:		Ø 200	Ø 200	Ø 200
Piping steam:	Steam in			ISO 7/1-R1
	Steam out			ISO 7/1-R1
Max. counter-pressure:				
	Heat effect 13.5 kW	520 Pa		
	Heat effect 18 kW	270 Pa		
	Heat effect 21 kW		270 Pa	
	Steam heating			270 Pa
Gas piping:			ISO 7/1-R1/2	
Gas pressure: See page regarding pressure.				
Sound pressure level:		< 70 dB (A)	< 70 dB (A)	< 70 dB (A)

Technical data - motor specifications

Dryer with reversal:		
Blower motor 3-phase:		
	Effect	0.75 kW
	Revolutions per minute: 50 Hz	2700 rpm
	60 Hz	3200 rpm
Drum motor 3-phase:		
	Effect	0.25 kW
	Revolutions per minute: 50 Hz	2700 rpm
	60 Hz	3200 rpm
Dryer without reversal:		
Drum / blower motor 1-phase:		
	Effect	1.0 kW
	Revolutions per minute: 50 Hz	2700 rpm
	60 Hz	3200 rpm
Drum / blower motor 3-phase:		
	Effect	0.75 kW
	Revolutions per minute: 50 Hz	2700 rpm
	60 Hz	3200 rpm

Setup

Unpacking

When unpacking the machine, handle it with care.
The drum has no transport clamps.

Fastened to the pallet

The dryer is fastened to the pallet by 2 screws.

Open the filter drawer and then remove the front screw.

Remove the back plate and then remove the back screw.

Tumbler type 4250

Fig. 1 From factory the dryer is equipped with 4 supporting feet (**a**).

Dryer type 4250 **must** be installed with all 6 supporting feet mounted (**a**+**b**).
The last 2 feet (**b**) are temporarely mounted at the bottom on the back of the back cover.
Unscrew the feet and carefully tilt the dryer forward and then demount the 2 feet (**b**).
The last 2 feet are monted in order to stabilize the machine.

Tumbler type 4350

Fig. 1 From factory the dryer is equipped with 4 supporting feet (**a**).

Positioning

Fig. 1 Place the tumble dryer in such a way that work can be done as easily as possible by the user and the service technician alike.

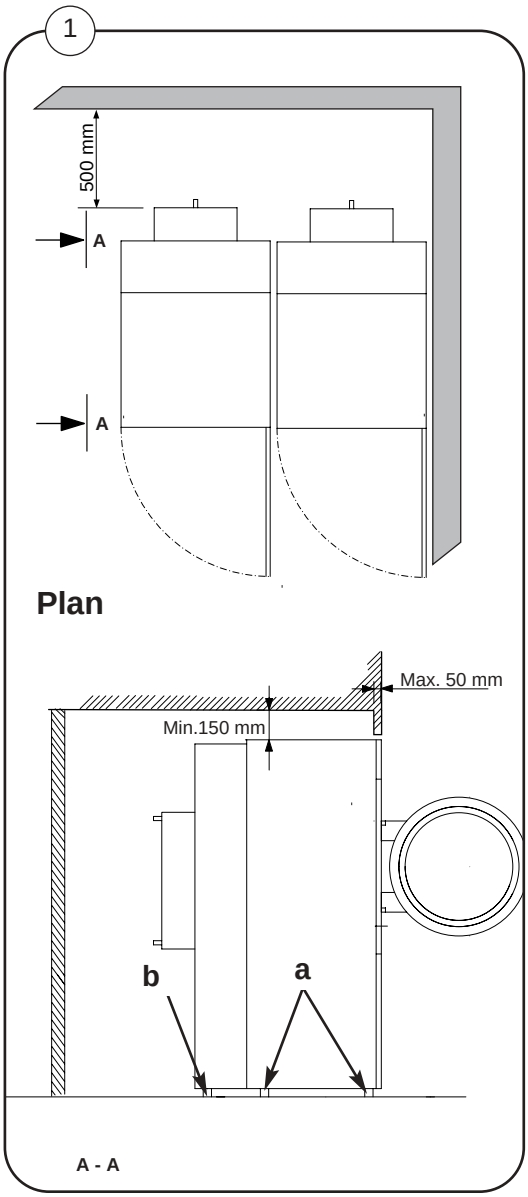
The distance to the wall or other equipment behind the dryer should be min. 500 mm.

Apart from the minimum distances shown on fig. 1 there are no further requirements to the distance around the dryer.

However, there should be free access to the back of the dryer for the purpose of servicing it.

The door hanging can be changed.

1



Mechanical installation

Dryer type 4250

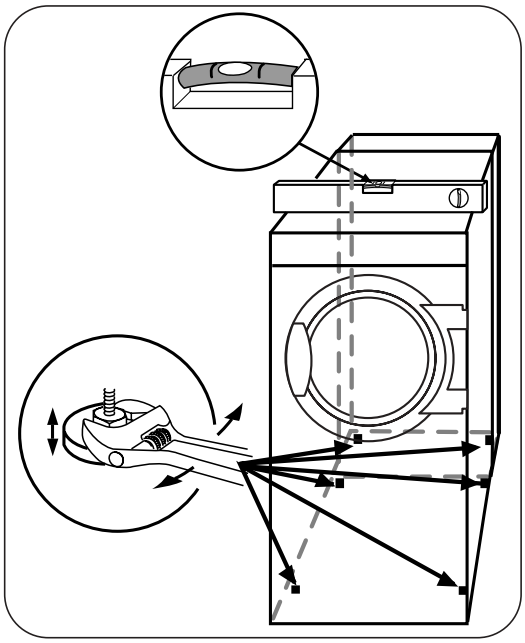
Adjust the dryer to ensure that it is horizontal and stands firmly on all six feet.

The maximum height adjustment of the feet is 15 mm.

Dryer type 4350

Adjust the dryer to ensure that it is horizontal and stands firmly on all four feet.

The maximum height adjustment of the feet is 15 mm.



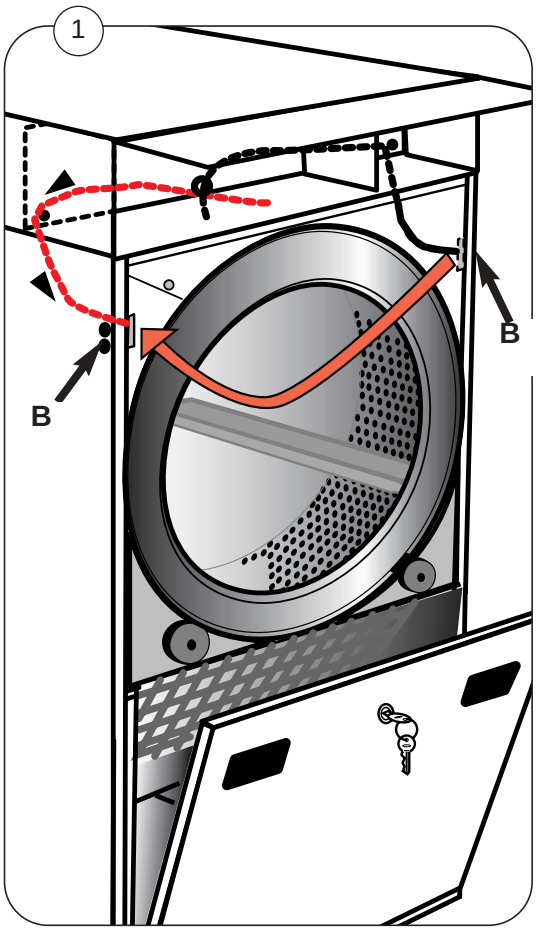
Reversing door

The tumble dryer is usually delivered with a right hinged door but the door can be changed to left hinged position.

Reversing

1. Disconnect the power supply to the dryer.
2. Open the operating panel.
3. Demount the filter door.
4. Unscrew the door and the front panel.
5. Unscrew the cover plate.
6. Demount the micro switch with fittings.
7. Squeeze out the black strip which is mounted in the back plate of the component unit
8. Run the cables including the black strip behind the back plate and across the drum.
9. Fig. 1 The black strip **must** be mounted in the hole on the opposite side.

To be continued on the following page.



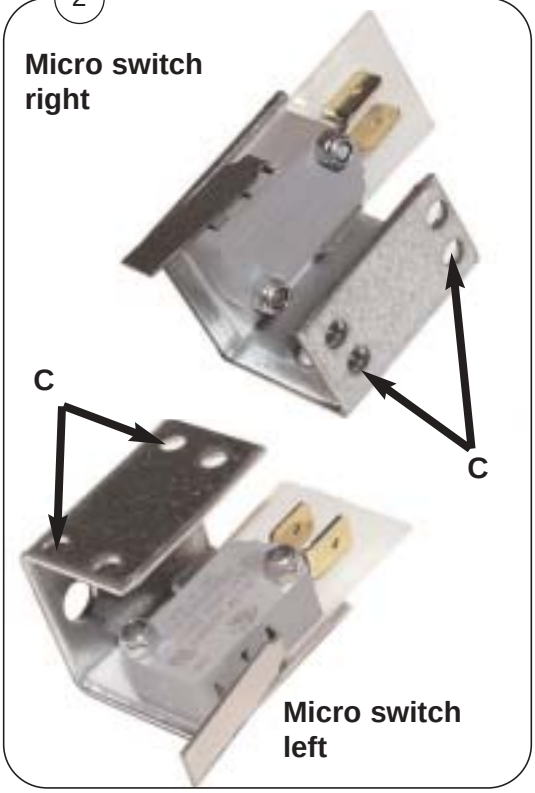
Reversing door, continued

10. Fig. 2 Unscrew the micro switch holder. Unscrew the micro switch from the holder, reverse it and mount it in the holder in the same order as before.
11. Move dummy plugs **B** in the side panel to the opposite side.
12. Mount holder with micro switch on the opposite side, use holes **C**.
13. Move speed nuts to the opposite side.
14. Mount the cover plate.
15. Check that all 4 terminal strips are mounted on the casing.
16. Reverse the front panel and the door and then mount them.
    Check that the felt joint is in good condition.
17. Close the operating panel and mount the filter door.
18. Unscrew the door pin and move it to position **A**.

Test the door

1. Connect the power supply.
2. Start the tumble dryer.
3. Fig. 3 If the dryer does not start when the door is closed, adjust the door pin **A**.
4. Check that the micro switch on the door works correctly:
   The drum, ventilator and heat should stop when the front door is opened max. 40 mm.

2



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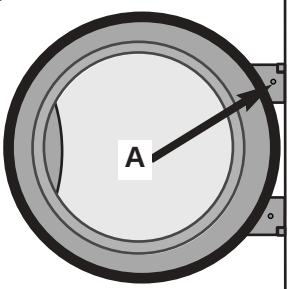
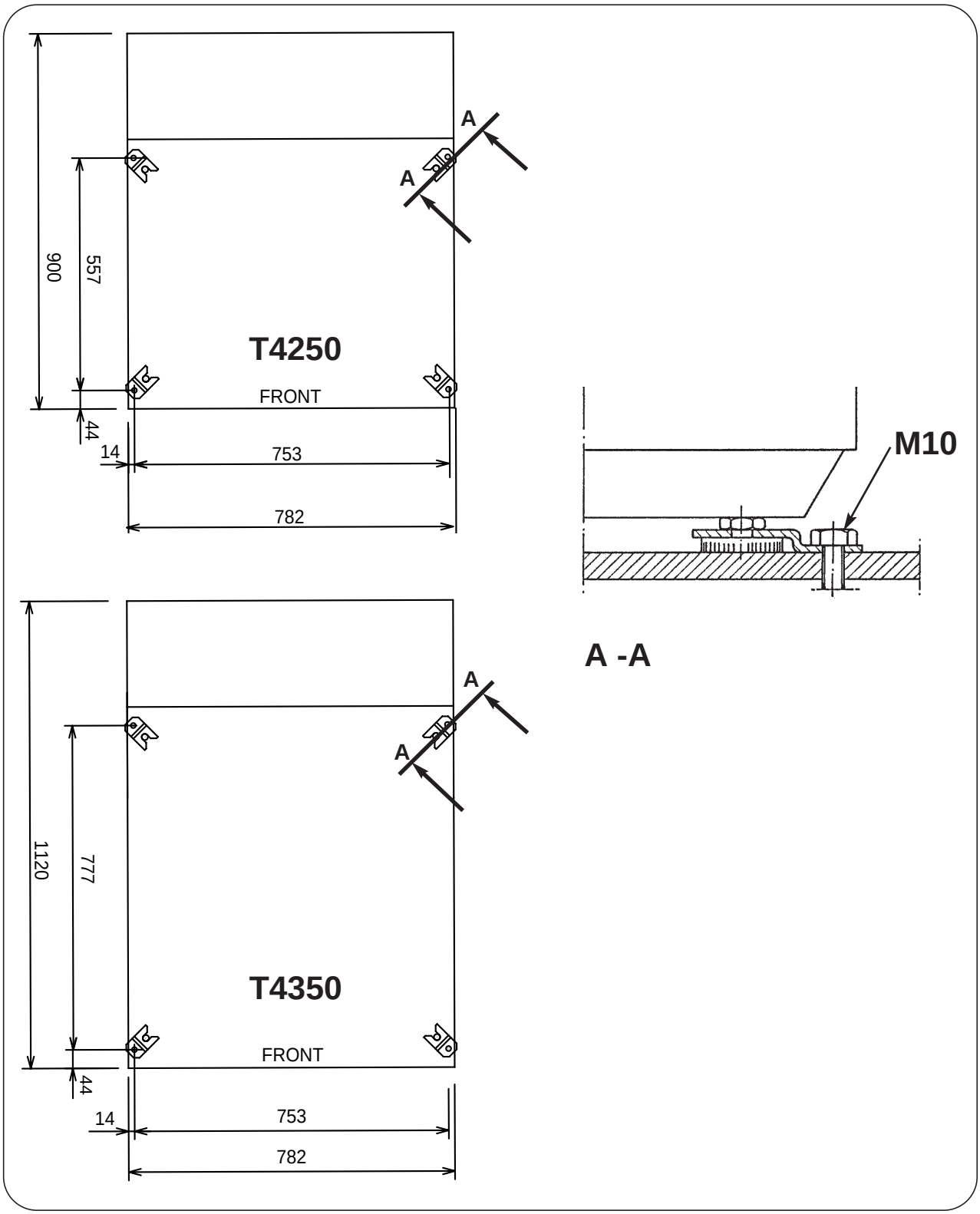


Installation on board a ship

The four accompanying fittings are fastened to the foundation by means of 4 x M10 set screws.

Drilling plan



Evacuation system

Air principle

Fig. 1 The ventilator creates low pressure in the dryer, drawing air into the drum via the heating unit.

The heated air passes through the garments and the drum vents.

Then the air flows out through a lint filter positioned immediately in front of the ventilator. After this, the air is evacuated through the ventilator and evacuation system.

It is very important that the dryer gets enough fresh air, see next section.

Fresh-air

Fig.2 For maximum efficiency and the shortest possible drying time, it is important to ensure that fresh air is able to enter the room from the outside in the same volume as that blown out of the room.
Fig. 3 To avoid a draught in the room, it is advisable to place the air inlet behind the dryer. The area* of the air inlet opening must be 5 times the size of the vent pipe area.

The resistance in the grating/slats on the air inlet cover plate should not exceed 10 Pa (0.1 mbar).

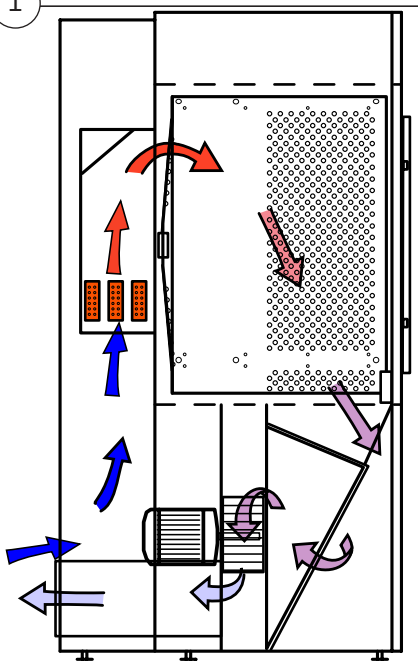
4250: The air consumption is max. 1300 m³/h.

4350: The air consumption is max. 1300 m³/h.

*The area of the inlet opening is the area through which the air can flow without resistance from grating/slatted cover.

Note that gratings/slatted covers often block half of the total fresh air vent area. Remember to take this into account.

1



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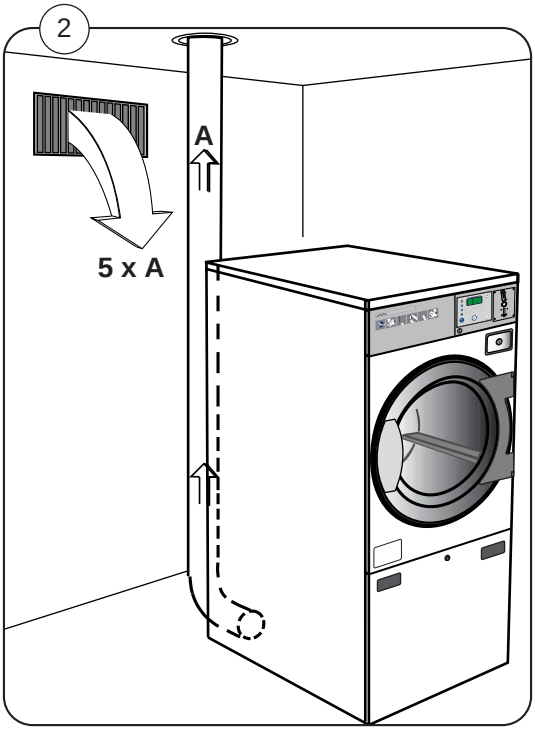

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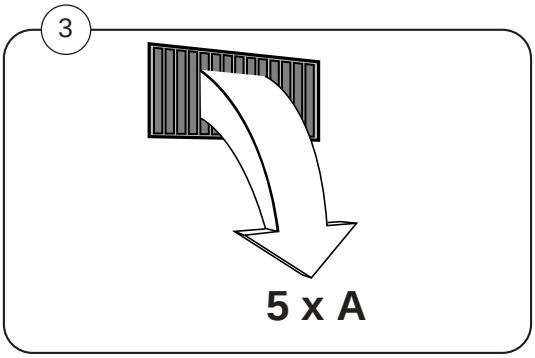


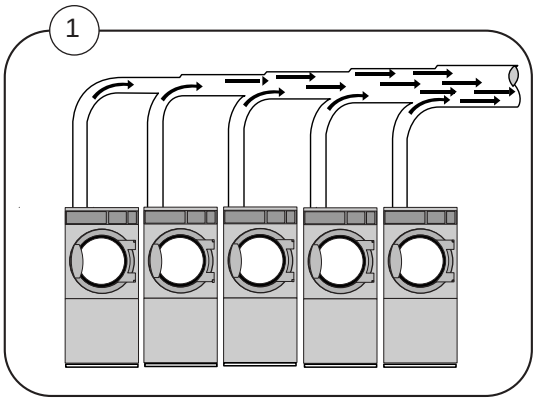
Evacuation system for installation of several machines with a shared evacuation pipe

Evacuation pipe

Fig. 1 It is recommended that each dryer be connected separately to a smooth air outlet pipe with the lowest possible friction.

For safety reasons it is important that the dryer is connected to a smooth evacuation pipe with a 200 mm diameter.

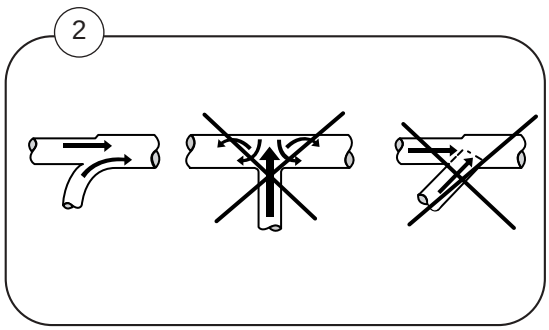
When installing several machines on shared evacuation pipe, increase the area of the pipe with each additional machine so that each dryer will be working at the same air resistance. Fig 1 and the below table show in simplified form how the evacuation pipe should look.



The outlet

The pipe must end outside in the open.
The outlet must be protected against rain and foreign objects.

Note! In cold areas, condensation may cause frost damage to the building.



Installation in frigid laundries

In frigid laundries and where the air resistance is very low it can be a problem to reach 12°C within the given time (Error code E18 will be displayed). In this case it will be necessary to throttle the outlet air on the damper in the evacuation pipe.

Gentle bends

Fig. 2. To keep the air flowing, ensure proper dryer operation, and minimize lint build-up in the exhaust system, never connect ducts at right angles, always use gentle bends.

The evacuation pipe diameter must not be reduced.

No. of dryers	1	2	3	4	5	6	7	8	9	10
Air outlet pipe diameter in mm	200	280	315	355	400	450	475	500	535	560
Required area of fresh-air inlet m^2	0.15	0.30	0.45	0.60	0.75	0.90	1.05	1.20	1.35	1.50

Each dryer requires a 400 x 400 mm fresh-air inlet opening.

Outlet dimensioning

It is important that the dryer has the correct air volume compared to each dryer's effect.
If the air volume is smaller or larger this will result in a longer drying period.

Table with air volume and dryer effect

Minimum air volume
If the outlet air volume gets below the minimum air volume the microprocessor will report an error and error code **E15** will be displayed.

Type	Effect kW	Minimum air volume m^3/h	Optimum air volume m^3/h
4250	9	260	360
4250	13,5	260	600
4350	13,5	260	600
4350	18	620	1000
4350	21	620	1000
4250/4350	**	---	1000

**** = Steam heated**

Air volume control

Example:

A dryer type 4350 with a 13.5 kW effect must have an optimum air volume of 600 m^3/h.

1. The specified air volume of 600 m^3/h from column 2 is marked on the x-axis in the diagram on the following page.

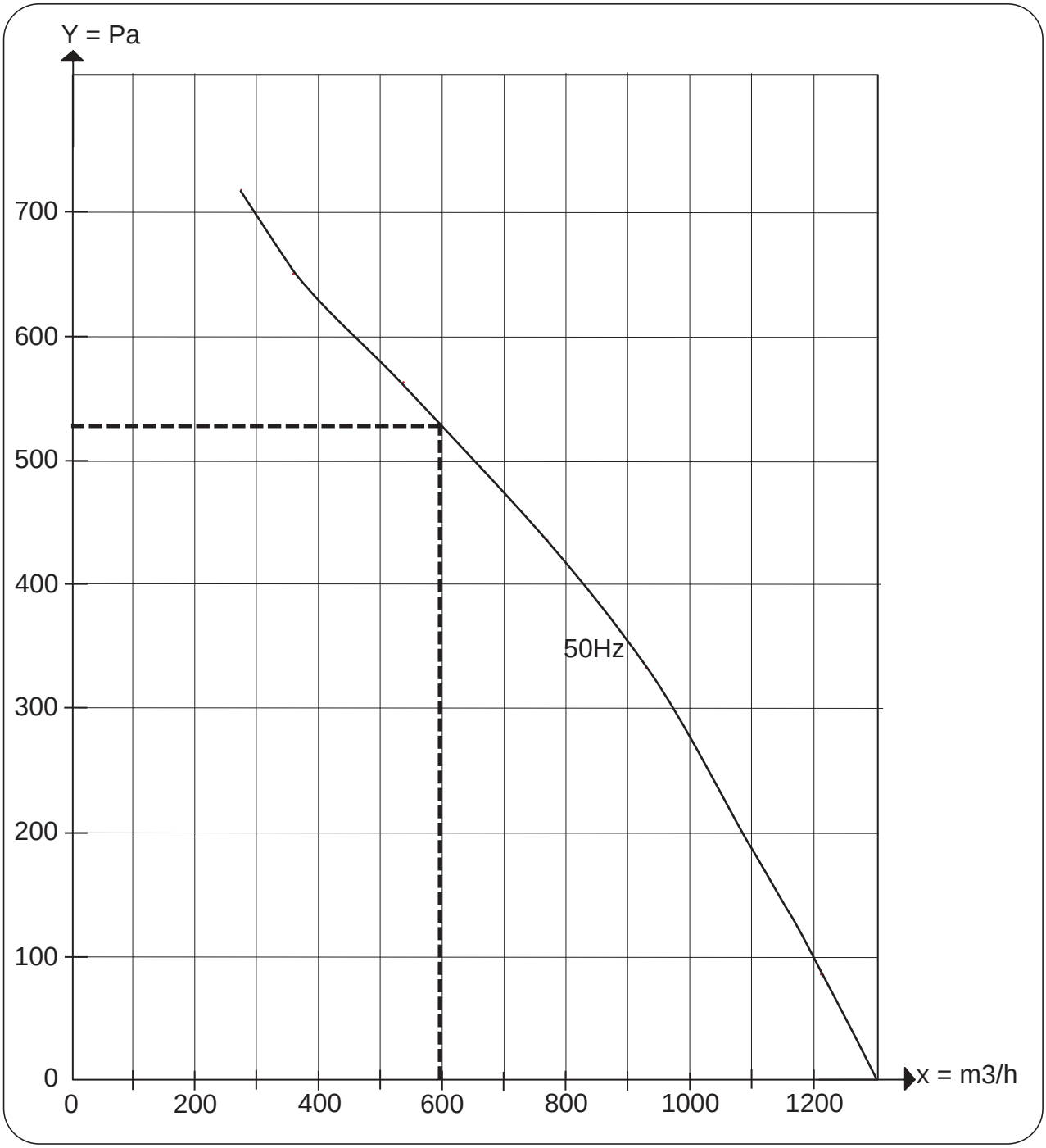
2. Draw a vertical line from this point on the x-axis till it intersects the pressure drop curve.

3. From this point draw a horizontal line till it intersects the y-axis.

4. On the y-axis read the corresponding counter-pressure measured in Pa .

By means of this pressure and the specified air volume the vent pipe can now be dimensioned.

Diagram with pressure drop curve type T4250 / T4350

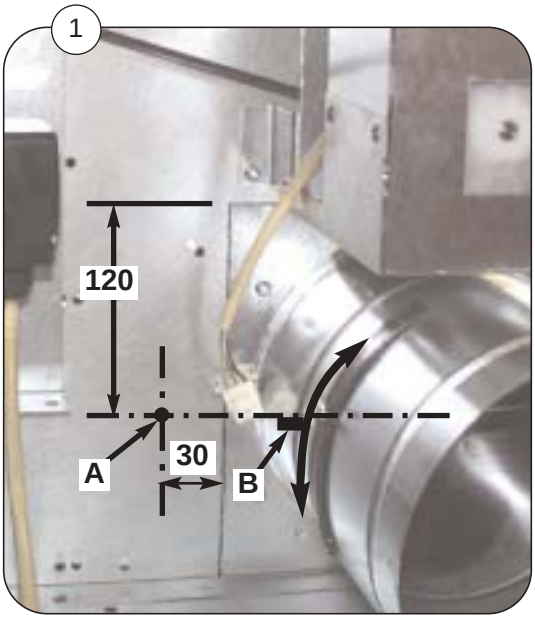


X = Air consumption
Y = Counter-pressure

Service organisation/dealer

If you have questions relating to the design of the exhaust system, please contact your local dealer or service organisation.

Adjusting the dryer



The dryer is adjusted by dismounting the back plate and measuring the static pressure behind the fan.

Fig. 1. Drill a ø3.3mm hole **A** if there is not already one .

The measuring is done on a no-heat program, without clothes in the dryer and with the back plate being dismounted.

By opening / closing the damper **B** the static pressure at **A** is either lowered or raised.

Table with static pressure

The optimum air volume is achieved if the pressure is adjusted according to the table below.

After the measuring is done screw the screw into the hole.

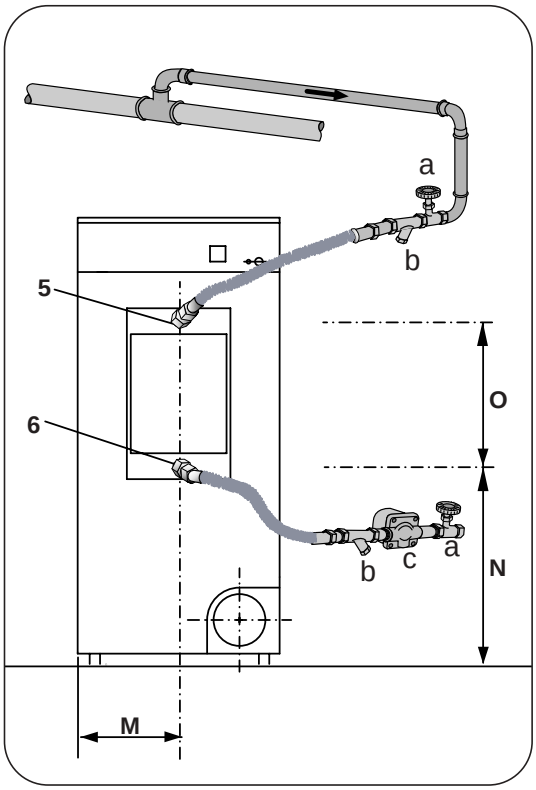
Type	Effect kW	Static pressure Pa
4250	9	760*
4250	13,5	660
4350	13,5	660
4350	18	435
4350	21	435
4250/4350	**	435

**** = Steam heated**

* It can be difficult to obtain a static pressure of 760 Pa if the vent pipes are very short. In these cases the damper must be closed as much as possible.

Note! The static pressures in this table are not to be mistaken for the counter-pressure from the pressure drop curve.

Steam installation



Before start

The steam pipe must be cut off and must not be under pressure.

Steam

Steam 3-10 bar absolute pressure (130-180°C).

Steam forward

1. The branch pipe's branch must be located at the top of the main steam pipe to prevent condensation in the steam.
2. The branch pipe must have a descending gradient and must end at a height above the inlet connecting branch (5). For measurements M, N and O, please see dimension sketch page 6.
3. Mount a plug valve (a) and a dirt collector (b) in the branch pipe.

Condensation return

1. It is important that the branch pipe for condensed water on return to the main condensate pipe has a descending gradient and is lower than the outlet connecting branch (6).
2. Mount a dirt collector (b) in the return pipe.
3. Mount a mechanical water discharger behind the dirt collector (c).
4. Then mount a plug valve (a).
5. Mount pressure hoses between branch pipes and dryer (hoses are not supplied).

Steam-heated dryer

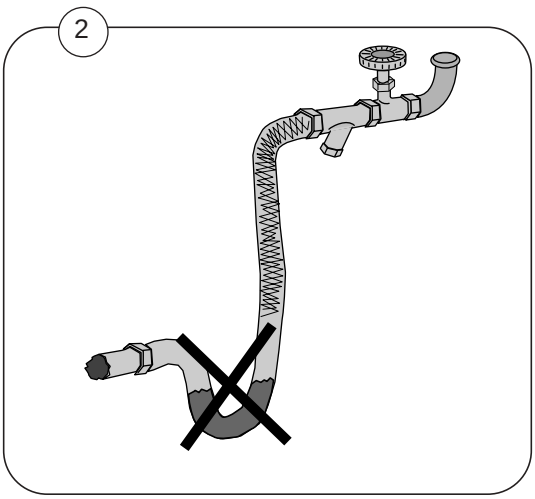
Mounting steam calorifier on dryer

Dryer type 4250:
The steam calorifier is on the pallet.

Dryer type 4350:
The steam calorifier is in the drum.

1. Unpack the calorifier.
2. Demount top back plate on the dryer, fig. 1.
3. Demount supporting rail on the dryer, see arrow (note which way the supporting rail turns as it has to be remounted the same way, see step 5).
4. Hang the calorifier on the bottom supporting rail on the dryer.
5. Hold the calorifier towards the dryer and remount the supporting rail as before making sure that it grasps the calorifier.
6. Screw the screws into the supporting rail. During the tightening process it is important to keep the dryer and the calorifier together. Note! After mounting the calorifier there must be no space between the dryer and the calorifier.
7. Mount back plate.
8. Attatch the pressure hoses to the dryer's inlet and outlet connecting branches. It is important to support the inlet and the outlet connecting brances in order to prevent deformation.

   The pressure hoses must not hang down, fig 2.



Leak test

1. Leak test the system.
2. Clean the dirt collectors (b), see the previous page.

Function check

The function check is described in the back of this manual.

Pipe insulation

All pipes must be insulated in order to reduce risk of burning. Insulation also reduces loss of heat to the surroundings.

Gas installation

To be carried out by qualified personnel

Mount a shut-off valve upstream from the dryer.

The gas connection to the dryer should be dimensioned to an output of 13.5 kW / 21 kW dependent upon the kW-rating of the dryer.

The factory nozzle pressure setting corresponds to the fuel value given on the name plate.

Check that the nozzle pressure and fuel value agree with the values given in the table. If not, contact the supplier.

Bleed the pipe system before connecting the dryer.

After connection, test all joints for leaks.

Test run

Loosen the measuring branch screw (2) 1/4 of a turn. (See page regarding gas valve).

Connect a manometer to the measuring branch (2).

Select a programme that uses heat.

Start the dryer.

Check the nozzle pressure, see table.

If necessary, adjust the setting screw (4) of the regulator under the cover screw (3).

Check that the gas is burning evenly and with a bluish flame.

Function check

The function check is described in the back of this manual.

Gas installation

Converting to bottled gas / natural gas

If the machine is to be converted to another type of gas, the gas nozzle must be replaced.

The conversion kit (supplied) contains the nozzle as well as instructions.

Affixing the sign

Following conversion, the enclosed sign with the new gas type printed on it must be affixed to the dryer data plate.

Dryer type 4250

Country	Heat effect	Gas type	Conversion kit no.
England and Ireland	**13.5 kW**	LPG GN	487 19 72 94 487 19 72 95
Australia and New Zealand			
The rest of the world		LPG GN	487 19 72 94 487 19 72 95

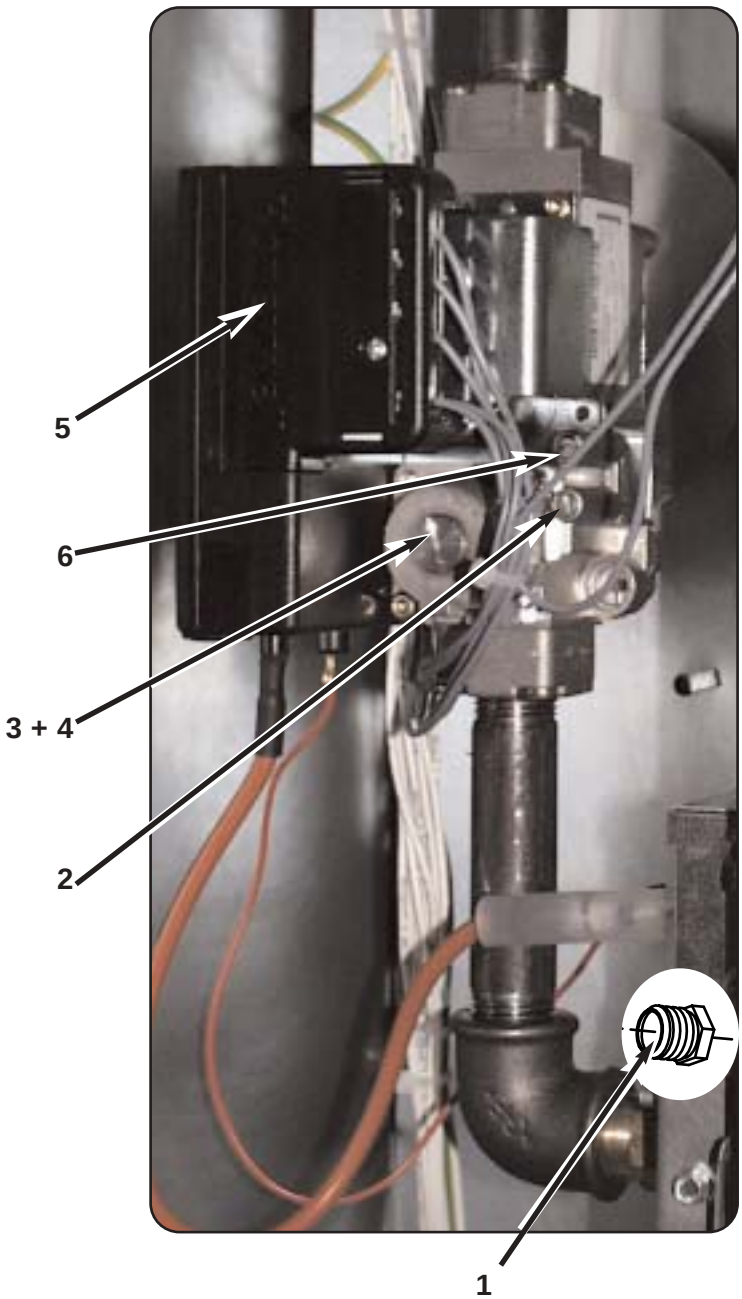
Dryer type 4350

Country	Heat effect	Gas type	Conversion kit no.
England and Ireland	**21 kW**	LPG GN	487 19 72 90 487 19 72 91
Australia and New Zealand			
The rest of the world		LPG GNH GNL	487 19 72 90 487 19 72 91 487 19 72 92

Gas installation

Gas valve

1. Nozzle
2. Measuring branch, nozzle pressure
3. Cover screw
4. Adjusting screw
5. Controlbox, gas valve
6. Measuring branch, supply pressure



Gas installation

Tables of pressure and adjustments

Heat effect: Type 4250 = 13.5 kW
Heat effect: Type 4350 = 21 kW

Note
Because of the differences in gasinstallation regulations in European Union it is important to use the Italian-language manual in Italy and the French-language manual in France ect.

Countries	Heat effect kW	Gas type	Upper calorific value MJ/m3	Gas pressure Inlet mbar	Gas pressure Nozzle pressure (Measuring branch 2) mbar	Ø Nozzle
Great Britain and Ireland	**13.5**	LPG	126.4	28/37	28/37	1.8
		GNH	37.4	20	10.0	3.1
	21	LPG	126.4	28/37	28/37	2.2
		GNH	37.4	20	10.5	3.8
English speaking countries except: Great Britain, Ireland, Australia, New Zealand	**13.5**	LPG	126.4	30	30	1.8
		GNH	37.4	18	10.0	3.1
		GNL	33.4	18	15.0	3.1
	21	LPG	126.4	30	30	2.2
		GNH	37.4	18	10.5	3.8
		GNL	33.4	18	15.2	3.8

Electric installation

To be carried out by qualified personnel

The tumble dryer must be connected to its own fuse group and pulti-pole main switch according to IEC 60947.

Connecting the cable

Demount the cover plate from the supply unit.

The cable is led through the cable gland to the terminal block and connected as illustrated. If there is a neutral conductor in the power supply line this must be connected to terminal N:

Fig. 1 Gas and steam heating 3/3N connections.

Fig. 2 Gas and steam heating 1 connection.

Fig. 3 Electric heating.

Cable dimension

For calculation of the connection cable dimension, please refer to local guidelines.

Fuse group and effect

The sizes of the fuse group and the effect are shown on the following page.

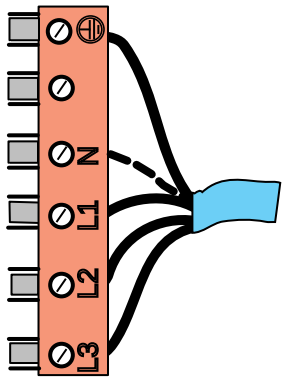
Function check

The function check is described in the back of this manual.

NB: Correct direction of rotation is important!

The tumble dryer must be equipped with supplementary protection in accordance with heavy current regulations.

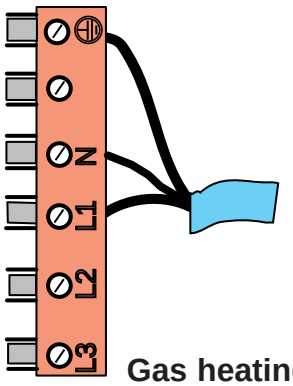
1



Gas heating

Steam heating

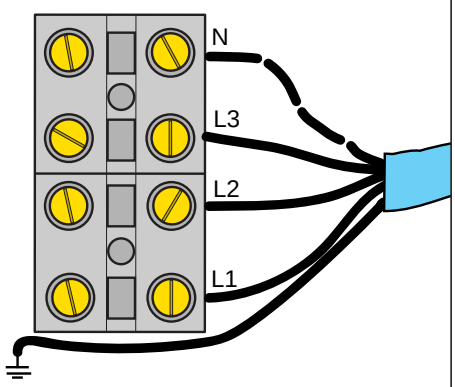
2



Gas heating

Steam heating

3



Electric heating

Electric installation

Heat effect: Type 4250 = 9 kW and 13.5 kW
Heat effect: Type 4350 = 13.5 kW and 18 kW

	Voltage		Heat effect kW	Motor effect kW	Max. effect kW	Fuse
Electric heating	200-240V	3AC 50/60 Hz	9	1.0	10.3	35A
	200-240V	3AC 50/60 Hz	13.5	1.0	14.5	50A
	230-240V	3AC 50/60Hz	18	1.0	19.3	50A
	200V	3AC 50/60Hz	18	1.0	19.3	63A
	400-415V	3AC 50Hz	9	1.0	10.3	16A
	400-480V	3AC 60Hz	9	1.0	10.3	16A
	400-415V	3AC 50Hz	13.5	1.0	14.5	25A
	400-480V	3AC 60Hz	13.5	1.0	14.5	25A
	400-415V	3AC 50Hz	18	1.0	19.3	35A
	400-480V	3AC 60Hz	18	1.0	19.3	35A
Gas heating Steam heating	200-240V	3AC 50/60Hz	--	1.0	1.1	10A
	400-415V	3AC 50Hz	--	1.0	1.1	10A
	400-480V	3AC 60Hz	--	1.0	1.1	10A
	230-240V	1AC 50Hz	--	1.0	1.1	10A

Electric installation

To be carried out by qualified personnel

External connection - 100 mA

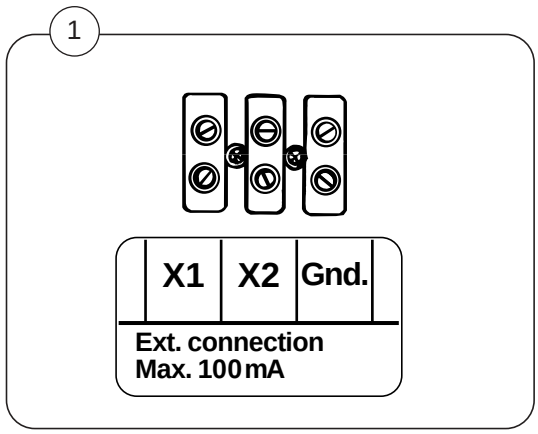
Fig. 1 A special connection terminal is located on the connection console.

The terminal for external control is equipped with 210V/max.100mA and is intended solely for the operation of a contactor (external control of a fan).

Max. connection 100mA.

Gnd. must not be used for earthing of external board.

1



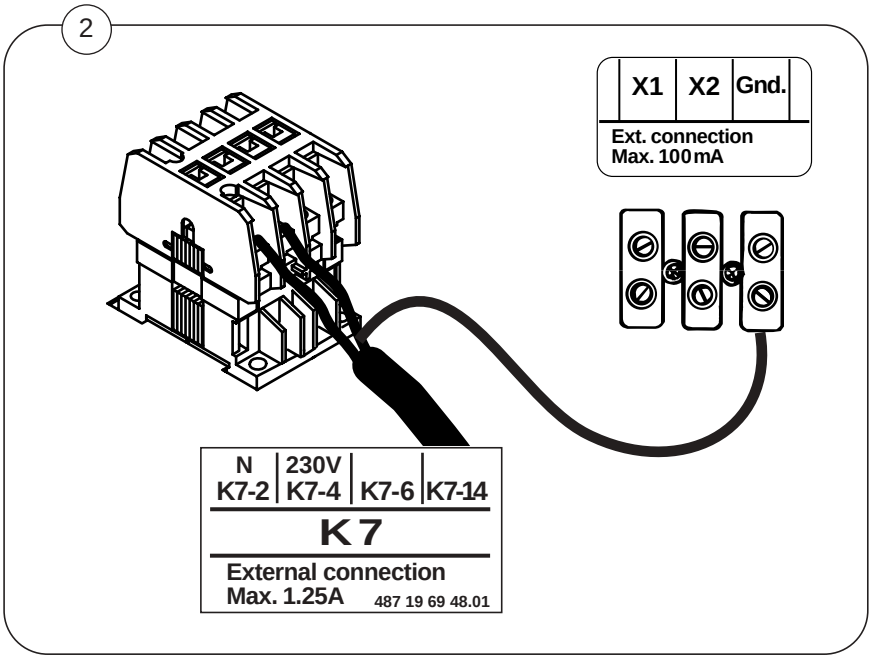
External connection - 1.25 A

Fig. 2 If the dryer, from factory, is equipped with an external control with a max. 1.25A connection this connection (1.25A) can be used as connection of an external fan.

Mount cable for external connection on contactor K7 in K7-2 and K7-4. Connect earth conductor to earth terminal in terminal for external connection.

Max. connection 1.25A.

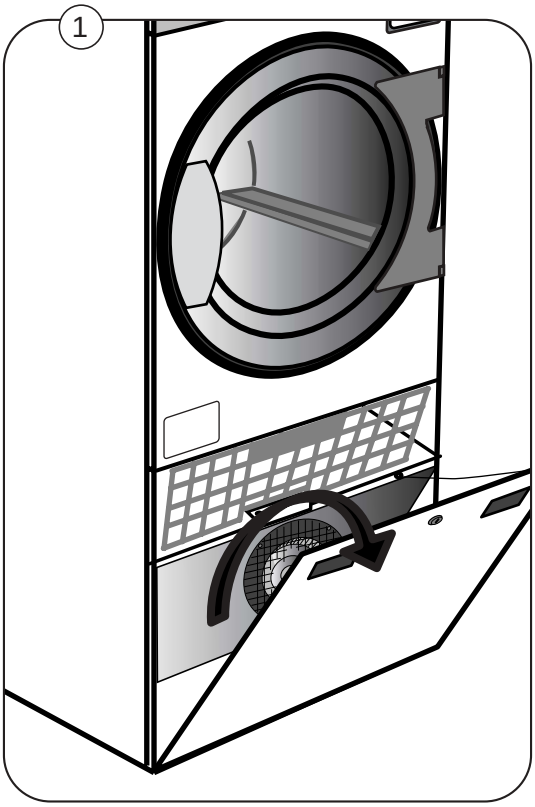
2



To be carried out by qualified personnel

Function check

Check whether the drum is empty and the door has been closed.



Start the machine

Check whether the door lock is working:

The drum must stop if the front door is opened.

Correct direction of rotation

Fig. 1 Correct direction of rotation on fan wheel: **clockwise.**

For dryers with a 3-phase motor the direction of rotation must be checked.

If the direction of rotation is not correct, swop two phases on the connection terminal.

Final test

Let the dryer work for 5 minutes on a program that requires heat.

Then check whether the heating is working by opening the front door and feel the heat.

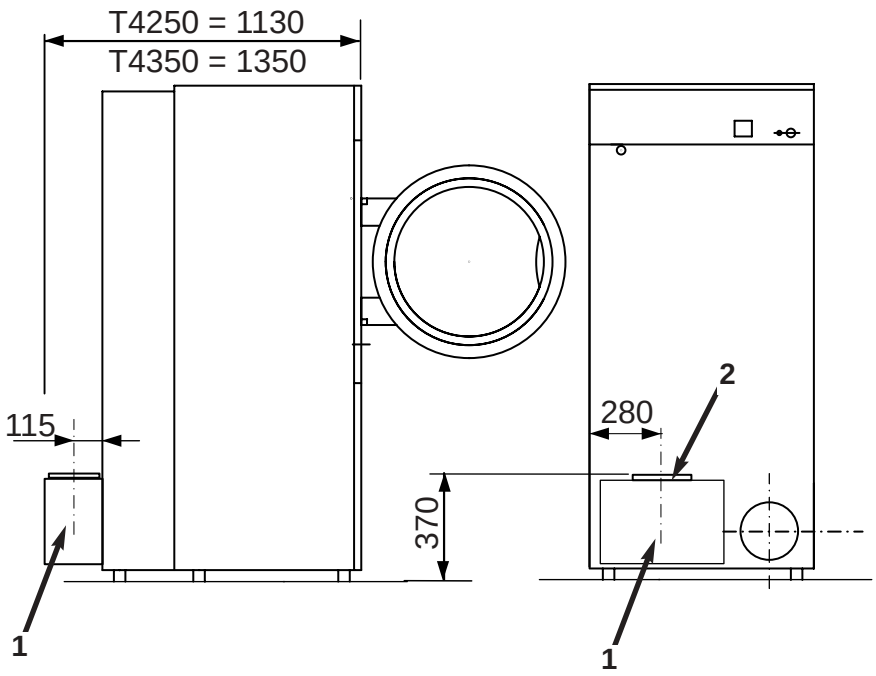
If the above tests-points are in order, the dryer is ready for use.

Service organisation / dealer

If deficiencies or errors are detected, please contact your local service organisation / dealer.

Dimension sketch - Adapter for direct fresh-air intake

1	Adapter kit no. 988 800 442 - Gas- and electric heated dryer.
2	Diameter Ø200.



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