

Manual for installation of a ME- stoker plant

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This manual should be read carefully before the installation commences !



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The installation of this plant must be made in accordance with the local rules and regulations on the place of installation

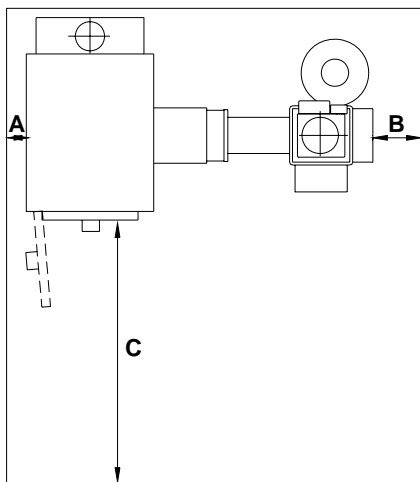
Before the plant is placed on its final place it should be inspected carefully for transport damages. Possible damages should be reported to the forwarder.

How to assemble the plant

The plant is delivered on 2 Euro pallets and consists of a boiler, a stoker and a burner tube which must be assembled before installation.

1. The water cooled burner tube is fixed on the stoker unit by means of bolts included. The gasket plus bolts for the fixation are included.
2. The stoker unit with the now fitted burner tube is pushed into the pre made hole with flange in the boiler.
3. Before you fixate the stoker and burner tube to the boiler (with 2 bolts) you must adjust the height of the stoker by means of 2 adjustment screws on the leg, that it is placed horizontal and in a 90 ° angle to the boiler. It is absolutely important, that the water cooled burner tube is horizontal as you otherwise might experience air pockets in the system.
4. The water cooling of the burner tube can now be installed as shown on **diagram 1 and diagram 1.1** All parts included fittings and circulation pump are in the accessories box included. *(Please note, that the circulation pump is for circulation between boiler and burner tube **only**)*
5. The combustion fan is fitted on the square stud of the burner tube, no gasket needed.
6. The hose for pressure equalising in the stoker is fitted on the stud on the burner tube
7. The draft regulator, needed by manual heating, is fixed on the top of the boiler in the same side as the door hinges for the combustion room door. The chain is connected to the lower air inlet on the boiler.
8. The plug for power to the boiler is pushed in and secured by a screw. The cable is placed in the tray underneath the plug.

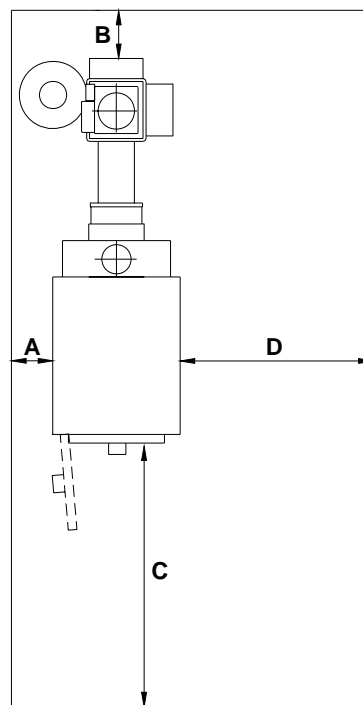
The sketch indicates the recommended minimum distances in the boiler room. According to Danish fire rules the room must be equipped with a ½ to ¾ inch high pressure water tap and a ventilation opening, either as a window or as a ventilation grill



Recommended minimum distances in the boiler room (the stoker is placed at the right ore left side of the boiler)

Measures in cm

	A	B	C
ME 20i	7	20	120
ME 40i	10	20	160
ME 80i	10	20	160



Recommended minimum distances in the boiler room (the stoker is placed at the rear side of the boiler)

Measures in cm

	A	B	C	D
ME 20i	12	20	120	80
ME 40i	12	20	160	80
ME 80i	10	20	160	80

The connection to a heating system

See diagram 2

The boiler must be connected as shown in diagram 2 or as demanded by local statutes.

Further information is in the manual, section. 7

The minimum amount of water passing through the boiler must be (see table)

Plant type	Nom. effect [kW]	Min. Amount of water [m³/h]
ME 20i	29	2,5
ME 40i	48	4,1
ME 80i	80	6,9

Water returning to the boiler must always be **min. 60 – 65°C** when heating with wood pellets or **min. 65 – 70 °C** when heating with grains.

If the above is not adhered to you will risk increased tear of the steel in the boiler, resulting in a shorter life expectation for the plant.

According to Danish laws and regulations this boiler must be connected to a system with “open” expansion tank. Please check you local regulations

Plants, where you are prevented from heating by hand (no draft valves in the door to the combustion) may be connected to a closed system under low pressure.

In both cases local laws and regulations must be adhered to.

General

The expansion tank must be able to contain at least 4 % of the total amount of water in the heating system. Should the plant be installed with an accumulation tank, then the expansion tank must be able to contain at least 8 % of the total amount of water in the heating system.

The boiler must be in non blockage connection to the expansion tank (You must not be able to block the pipe between)

Should the open expansion tank be placed in a not frost safe place, that tank itself must be protected against frost. The circulation to the tank may be controlled by a thermostatic valve or similar in order to secure, that the boiler water is getting minimum access to oxygen.

The connection of the sprinkler

The sprinkler system for the boiler must be under constant water pressure from a ½ inch tap with a safety faucet and be connected to the dirt collector under the pressure tank.

Please make sure, that pipes / hoses are free of dirt or metal shavings.

You must test the system, when it has come under pressure.

The easiest way to test the sprinkler system is to unscrew the hose from the thermostatic valve to the auger channel. Then press the red cap under the valve to activate it

Be sure to check, that the thermostatic valve is tight after the test. It must not be dripping!

The connection to a chimney

See diagram 3

Further information is in the manual, section. 7

In order to get a good heating economy and to avoid smoke problems you must connect the plant to a suitable chimney. The plant should be placed as close to the chimney as possible.

An easy accessible cleaning door should placed between boiler and chimney.

Cleaning doors an the like must be absolutely tight to avoid false draft and smoke problems in the boiler room.

The flue pipe should be insulated with a 30 – 50 mm fire resistant mat, to avoid that the flue gasses are condensing in it.

Should the chimney be too unsuitable or under difficult draft conditions you might have to install a flue fan. Should the draft exceed the value mentioned, you might have to install a draft equaliser valve in the flue pipe.

It is in general recommended to install a draft equaliser (See diagram 3)
A chimney with unstable draft can cause unstable running conditions of the plant

Recommended chimney dimensions.

Plant type	max. Effect, input	Flue outlet on boiler	Free opening in chimney	Height of chimney
ME20i	34 kW.	Ø 155 mm	Ø 160-180 mm	5-6 metre
ME40i	55 kW.	Ø 187 mm	Ø 180-200 mm	5-8 metre
ME80i	92 kW.	Ø 215 mm	Ø 200-250 mm	6-8 metre

In Denmark one has to let the installation approve by a chimney swipe regarding connection to chimney and more. Please check your local regulations

How to connect the external auger

See diagram no 4

The connection must be made with a flexible hose. The auger must not support on the stoker unit and vibrations from the auger must not be transmitted to the stoker unit.

In case the plant is connected to a silo placed at the loft above you should also use a flexible hose, which must be emptied after each filling. The hole through the ceiling must be made fire-proof.

The connection to electrical net

See diagram no 5 / 5.1

In Denmark the installation must be made by an authorised electrician. Here too we ask you to check your local regulations

Electrical supply for the stoker plant:

There should be specific switch for this plant only

Electrical supply for the internal circulation pump:

The internal circulation pump (placed under the burner tube) needs 230V+G
 This pump must be connected separately from the main circulation pump and connected in a way, that you do not interrupt it involuntary.

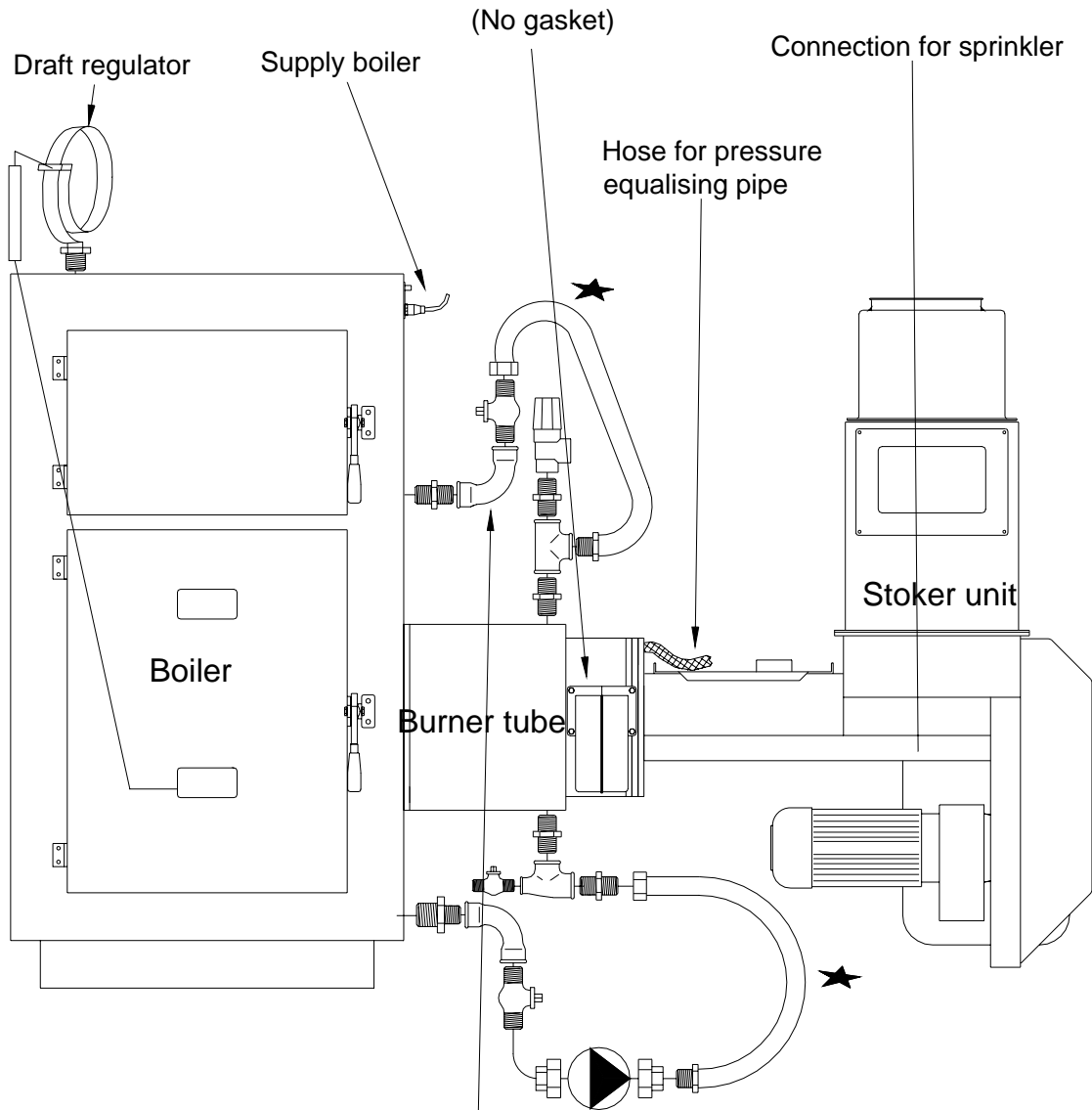
The pump must not be started before filled with water, as this might damage it.

The connection of start – stop signal for external auger:

See diagram no 6

The motor protection relay (contact) for the external auger must be supplied with a start – stop signal from the controlling unit of the plant, which is placed in a plastic box at the side of the fuel valve, on the rear of the stoker.

Diagram 1 - How to fit the water cooled burner tube by plants with stoker placed at the side of the boiler



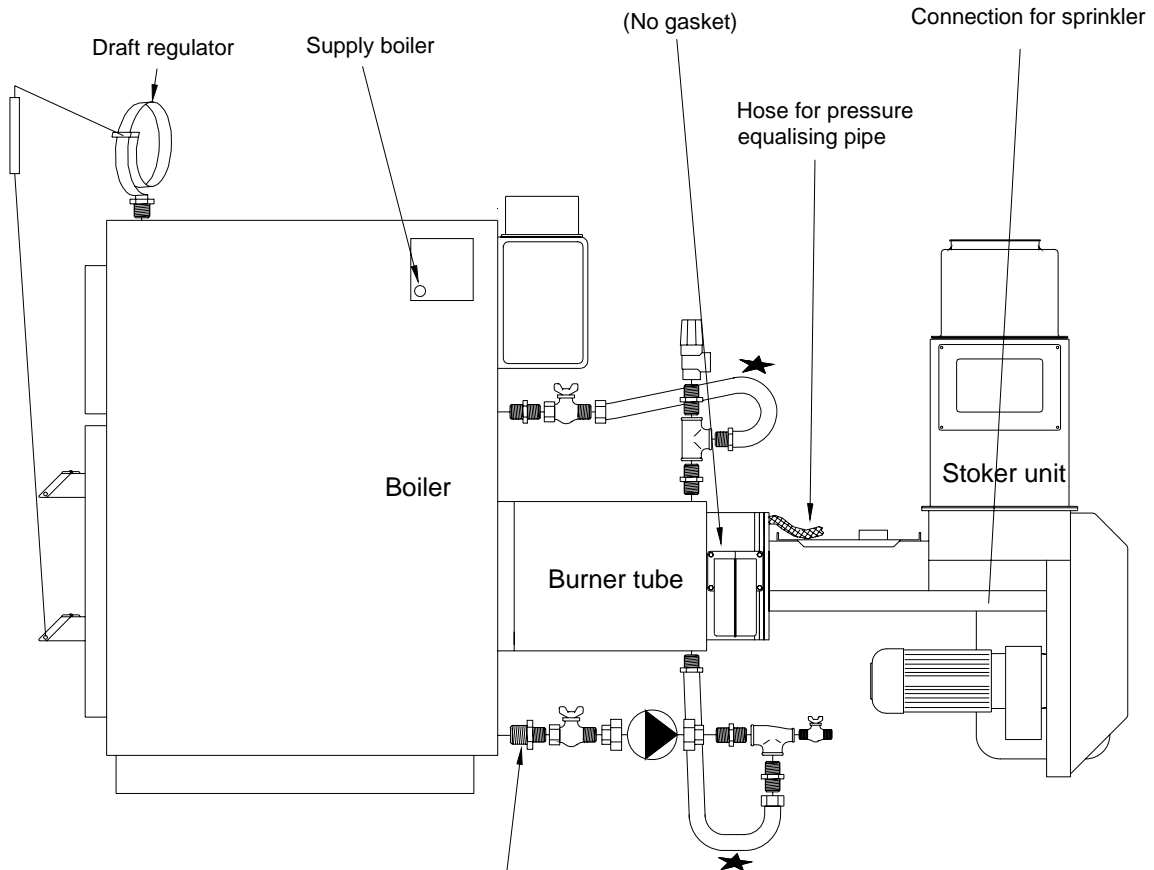
Included fittings

- 2 pcs. 3/4" Hose
- 1 pcs. 3/4" Safety valve
- 2 pcs. 3/4" Shutoff valve
- 1 pcs. 1/2" Shutoff valve
- 1 pcs. Circulation pump
- 5 pcs 3/4" Hexagon nipple
- 1 pcs. 3/4"x 3/4"x 1/2" Tee
- 1 pcs. 1"x 3/4" Hexagon nipple
- 1 pcs. 3/4" Tee
- 2 pcs. 3/4" Elbow
- 2 pcs. 3/4" Union joint, for pump

★ **Elbows and valves are to be placed horizontal, to avoid airpockets in the hoses!**

By M40 is included a 3/4" connection sleeve !

Diagram 1.1 - How to fit the water cooled burner tube by plants with stoker placed at the rear end of the boiler

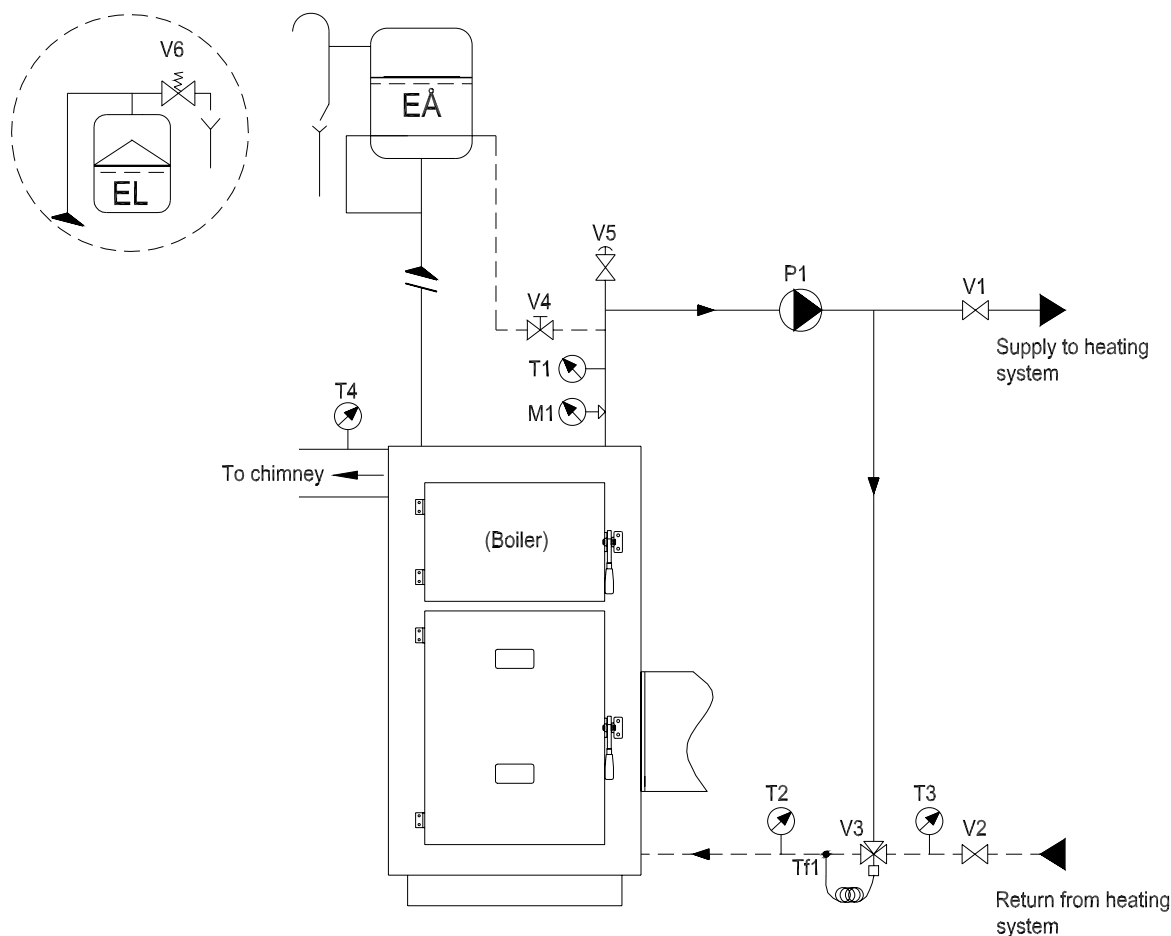


Included fittings

- 2 pcs. 3/4" hose
- 1 pcs. 3/4" safety valve
- 1 pcs. circulation pump
- 2 pcs. 3/4" union joint, for pump
- 2 pcs. 3/4" shutoff valve
- 1 pcs. 1/2" shutoff valve
- 5 pcs. 3/4" hexagon nipple
- 1 pcs. 3/4" tee
- 1 pcs. 3/4" x 3/4" x 1/2" tee
- 1 pcs. 3/4" plug

- ME20: 3/4" x 1" hexagon nipple
- ME40: 3/4" x 1 1/2" hexagon nipple
- ME80: 3/4" x 2" connection nipple + 3/4" hexagon nipple

Diagram 2 – How to connect to the heating system












	Open expansion vessel	EÅ	
	Closed expansion vessel	EL	
	shutoff valve	V1-V2	Shutoff valves on forward and return, in the boiler room. More can be installed if needed.
	3 way thermostatic controlled mixing valve (shunt valve)	V3	Boiler shunt valve secure that the return water to the boiler always is over 60°C.
	Manual regulation valve (return valve)	V4	To protect open expansion vessel against frost can be thermostatic return valve
	Airing	V5	Airing, possible automatic, placed where needed.
	Safety valve 2,5 bar	V6	Safety valve to be used by plants connected to water under pressure (closed system)
	Thermometer	T1-T4	Thermometer for water forward, water return before and after shunt valve and for flue temperature
	Temperature sensor	TF1	Temperature sensor to regulate shunt valve.
	Manometer	M1	Manometer for boiler pressure.
	Pump	P1	Circulation pump for the heating system

Diagram 3 – How to connect to the chimney

*** Prefab chimney (fig 3) should not be placed on top of the flue outlet, as this allows rainwater or condense water to run directly down into the heat exchanger of the boiler, where it will cause corrosion !!**

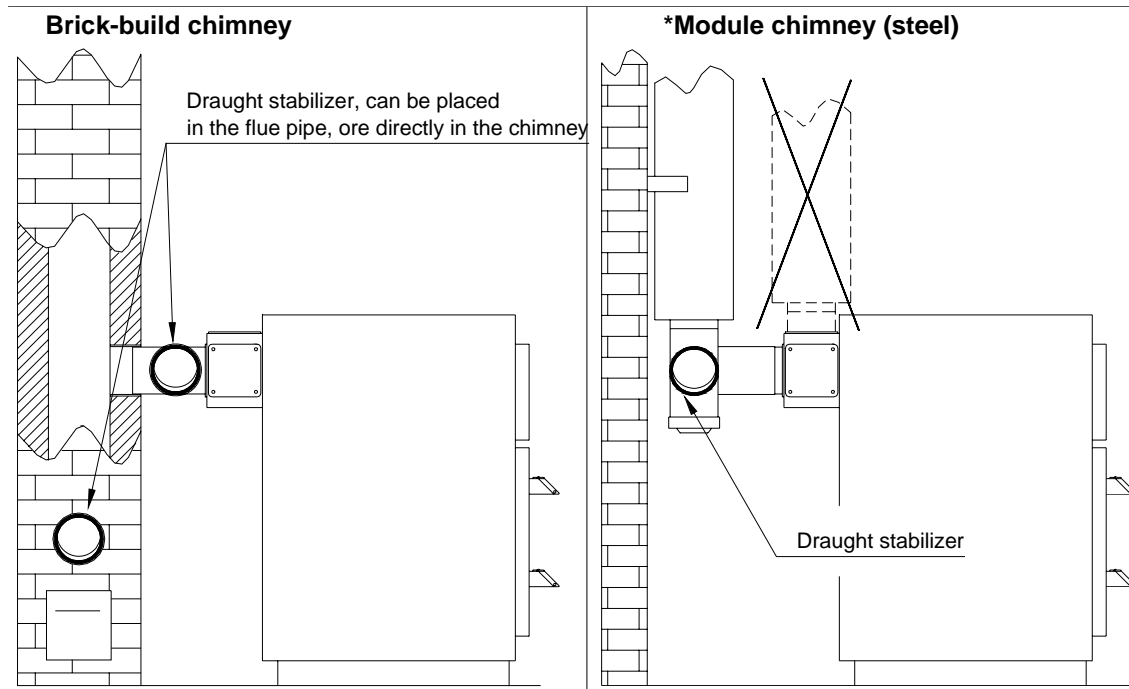
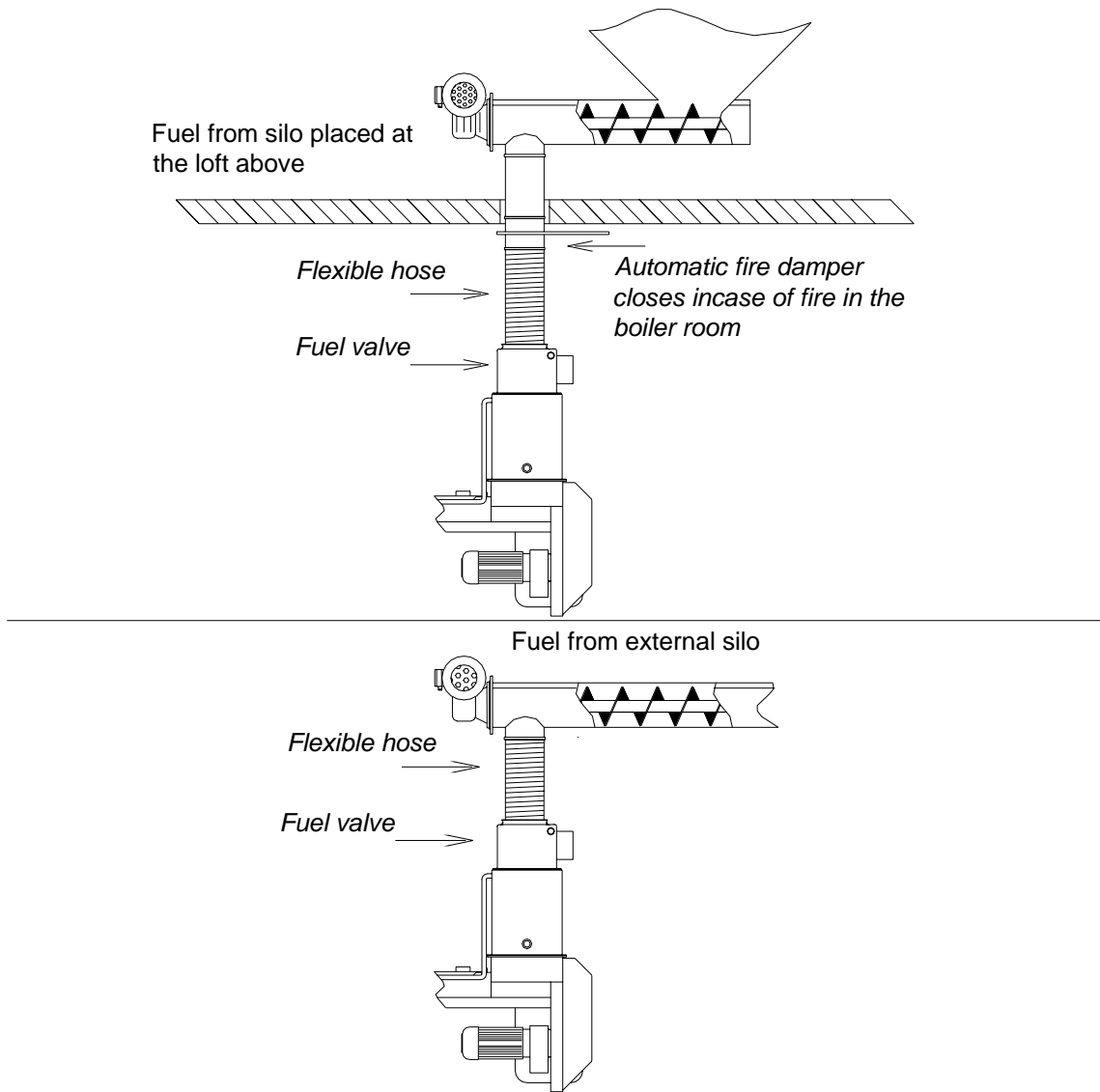


Diagram 4 – How to connect the external auger



The auger must not support on the stoker unit and vibrations from the auger must not be transmitted to the stoker unit.

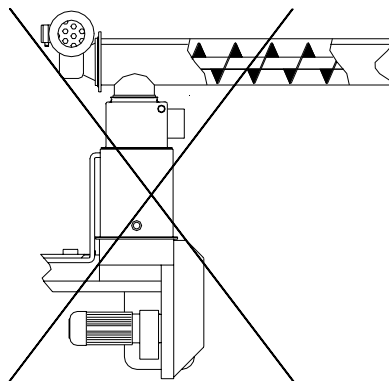
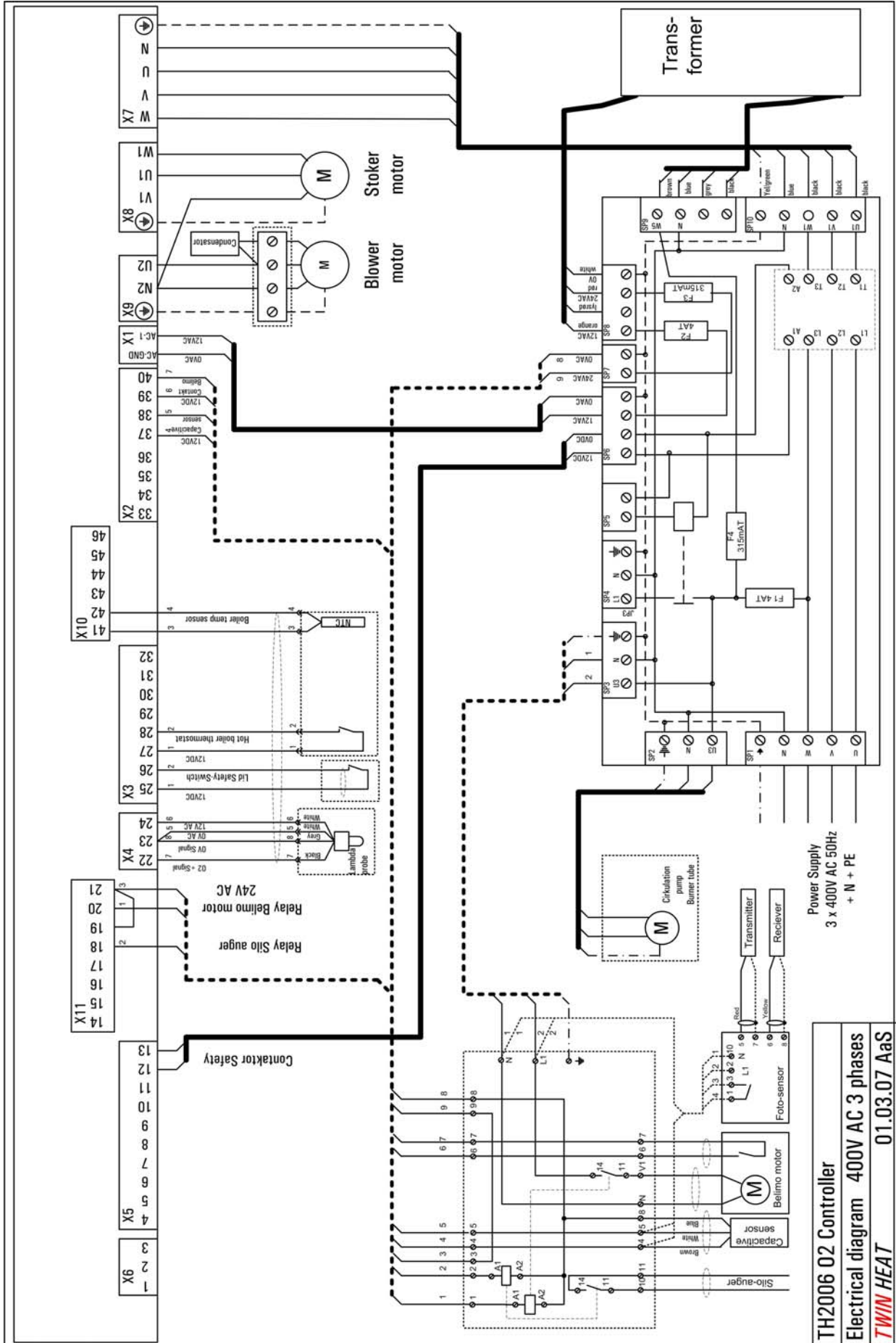


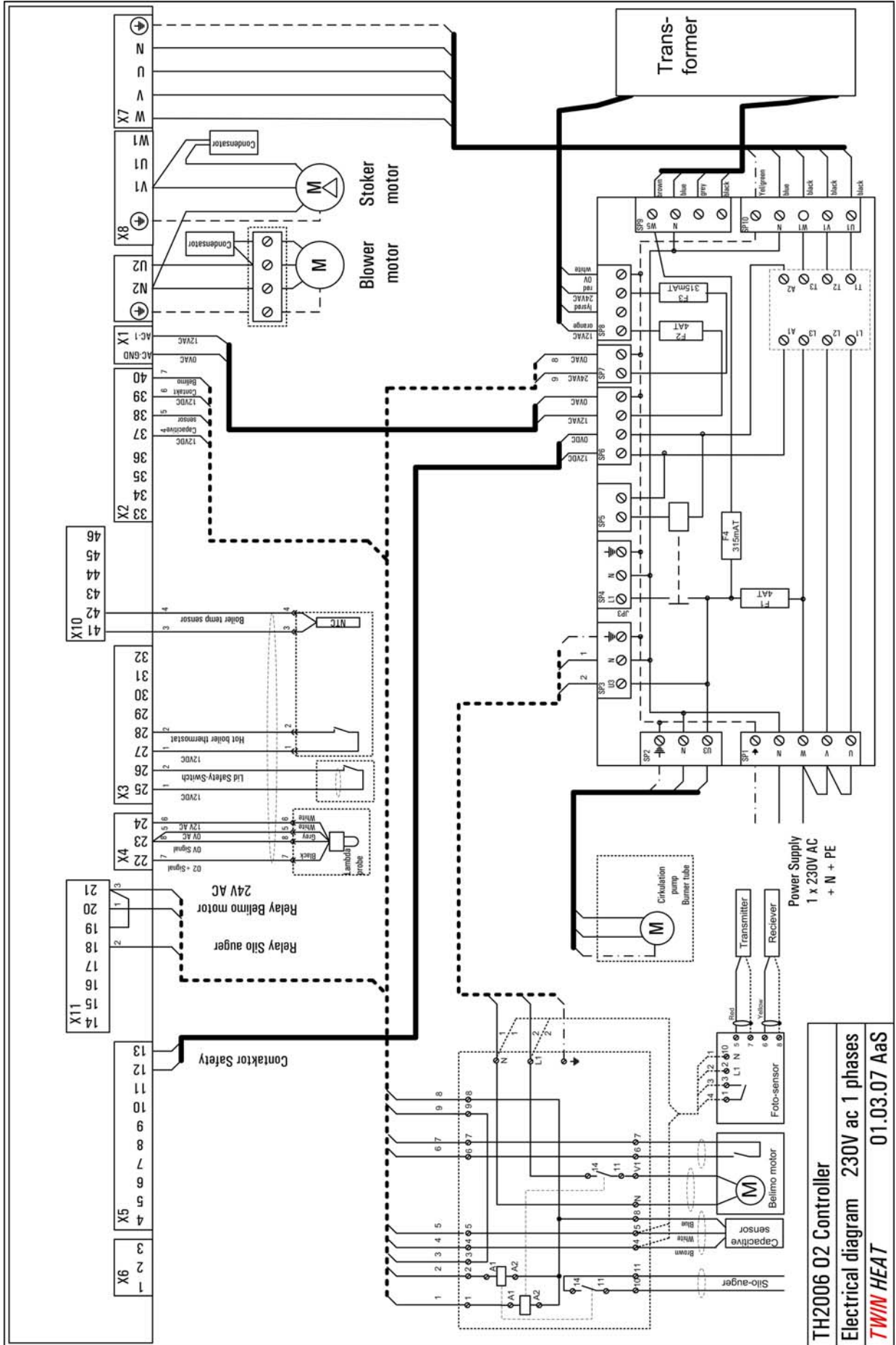
Diagram 5 – Electrical diagram 400V – 3 phase



TH2006 O2 Controller
Electrical diagram 400V AC 3 phases
TWIN HEAT 01.03.07 AaS

DIAGRAM 5

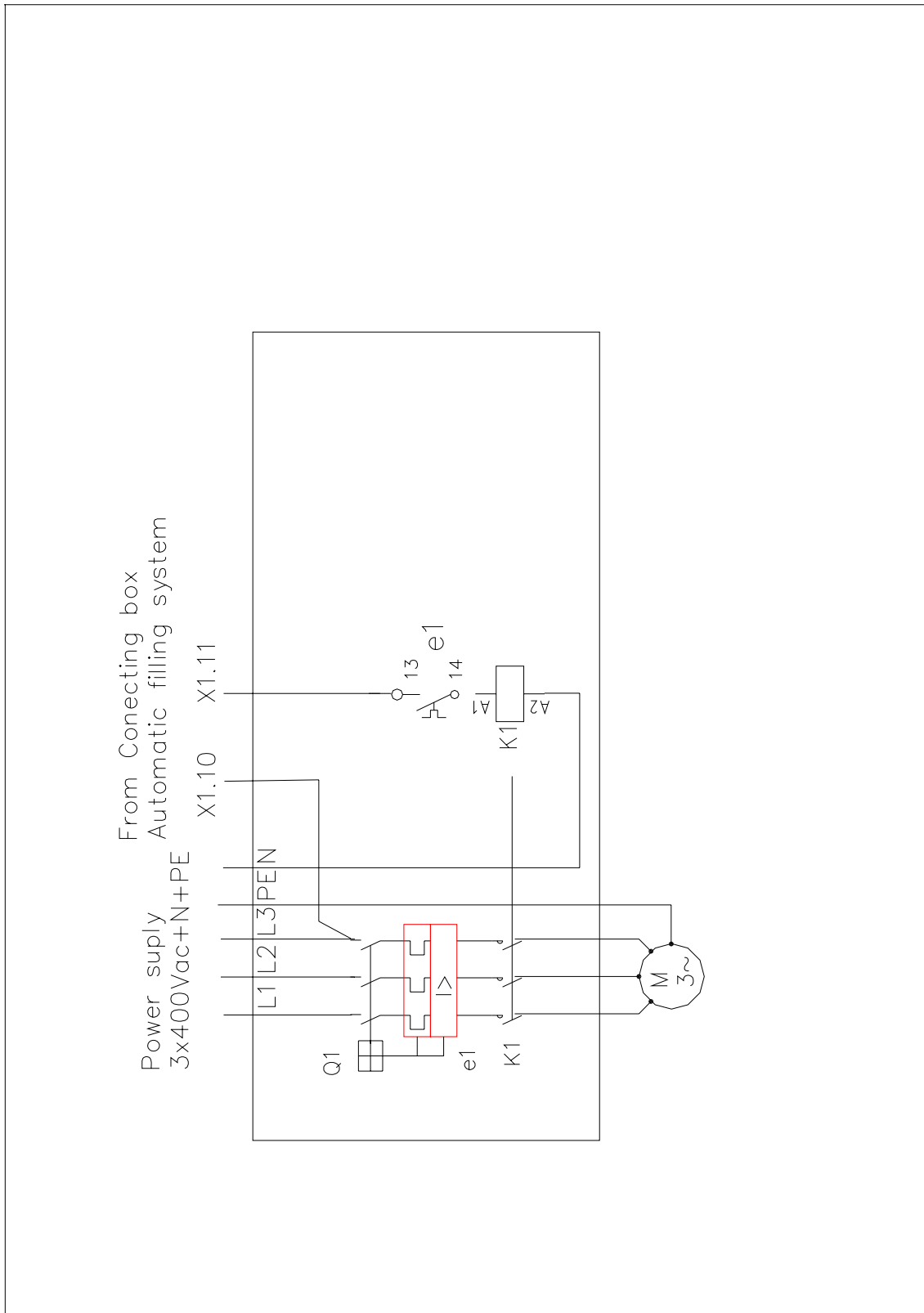
Diagram 5.1 – Electrical diagram 230V – 1 phase



TH2006 O2 Controller
Electrical diagram 230V ac 1 phases
TWIN HEAT 01.03.07 AaS

DIAGRAM 5.1

Diagram 6 – Electrical diagram, Start – stop signal for external auger



Automatic filling system	 Nørrevangen 7. DK-9631 Gedsted. Tlf. 98 64 52 22	Electrical diagram Automatic filling system Contactor siloauger
Dato: 02.08.2006		
Init: AaS		