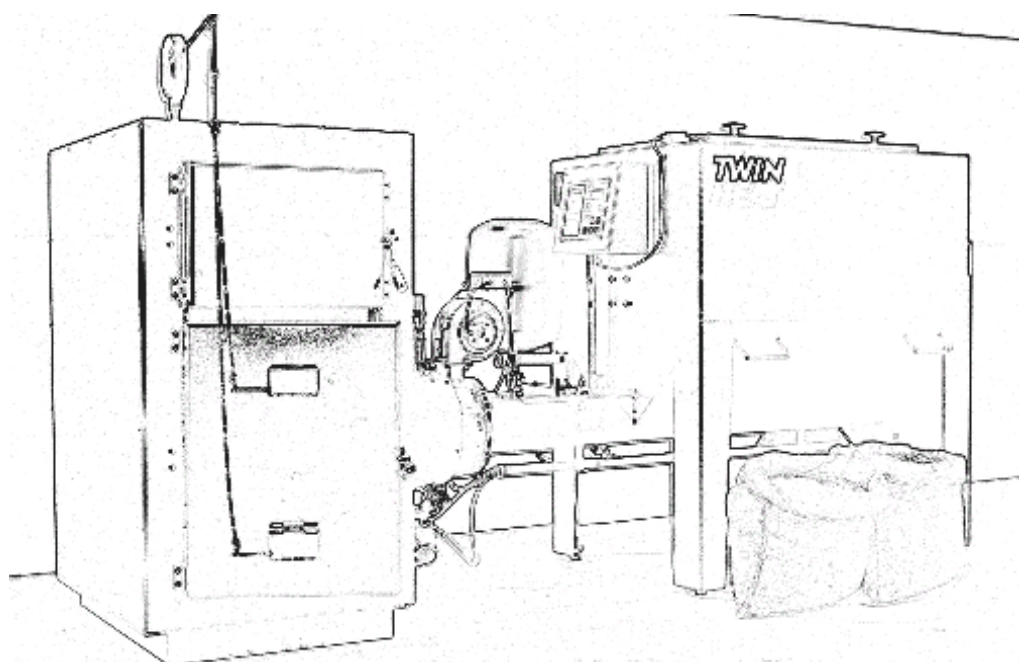


Manual for installation of a M- stoker plant

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This manual should be read carefully before the installation commences !



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Table of contents

<i>How to assemble the plant</i>	<i>page 2</i>
<i>The connection to a heating system</i>	<i>page 3</i>
<i>The connection of the sprinkler.....</i>	<i>page 3</i>
<i>The connection to a chimney.....</i>	<i>page 4</i>
<i>How to connect the external auger</i> <i>(only for plants provided with automatic fill in)</i>	<i>page 4</i>
<i>The connection to electrical net.....</i>	<i>page 4</i>
<i>Diagram 1 – How to fit the water cooled burner tube</i>	<i>page 6</i>
<i>Diagram 2 – How to connect to the heating system</i>	<i>page 7</i>
<i>Diagram 3 – How to connect to the chimney</i>	<i>page 8</i>
<i>Diagram 4 – How to connect the external auger</i> <i>(only for plants provided with automatic fill in)</i>	<i>page 9</i>
<i>Diagram 5 – Electrical diagram 400V – 3 phase</i>	<i>page 10</i>
<i>Diagram 5.1 – Electrical diagram 230V – 1 phase</i>	<i>page 11</i>
<i>Diagram 6 – Electrical diagram, start-stop signal for external auger</i> <i>(only for plants provided with automatic fill in)</i>	<i>page 12</i>

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

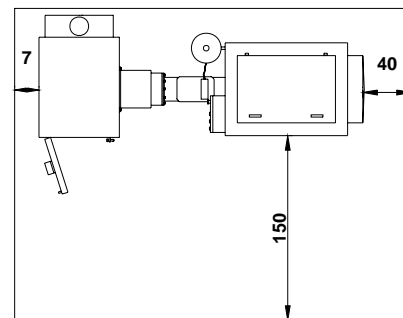
You should not fit any parts of the permanent buildings installations onto this plant, as this inconveniences later service and repair work.

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

1. The water cooled burner tube is fixed on the fuel store by means of bolts included. The gasket for the flange is under the fuel store lid.
2. The fuel store with the now fitted burner tube is pushed into the pre made hole with flange in the boiler.
3. Before you fixate the fuel store and burner tube to the boiler (with 2 bolts and nuts) you must adjust the height of the fuel store by means of 4 adjustment screws on the legs, 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**. 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 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.
7. 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.
8. If you want to use a fuel is likely to build bridges* in the fuel store you must fit the included chain and the stirrer wings (according to demand). See enclosure 1 (* wood chips, sawdust, wood shavings and the like .)

The sketch indicates the recommended minimum distances in the boiler room.

The boiler 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. (measures in cm.)

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 [m ³ /h]
M 20i	29	2,5
M 40i	48	4,1
M 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 or wood chips
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

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!

By an extended auger channel (750 mm) we deliver the sprinkler system separately. The sprinkler including pressure tank must the be fitted on the wall next to the auger channel.

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 heater to a suitable chimney. The heater should be placed as close to the chimney as possible.

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

Cleaning doors and 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 stabilizer valve in the flue pipe.

It is in general recommended to install a draft stabilizer (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
M20i	34 kW.	Ø 155 mm	Ø 160-180 mm	5-6 metre
M40i	55 kW.	Ø 187 mm	Ø 180-200 mm	5-8 metre
M80i	92 kW.	Ø 215 mm	Ø 200-250 mm	6-8 metre

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

How to connect the external auger

(only for plants provided with automatic fill in)

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 a 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.

Extended auger channel

If you request an extended auger channel, we supply the control as a separate unit to be fitted on the wall above the auger channel, in the boiler room.

Check cable length before you decide where to place the control

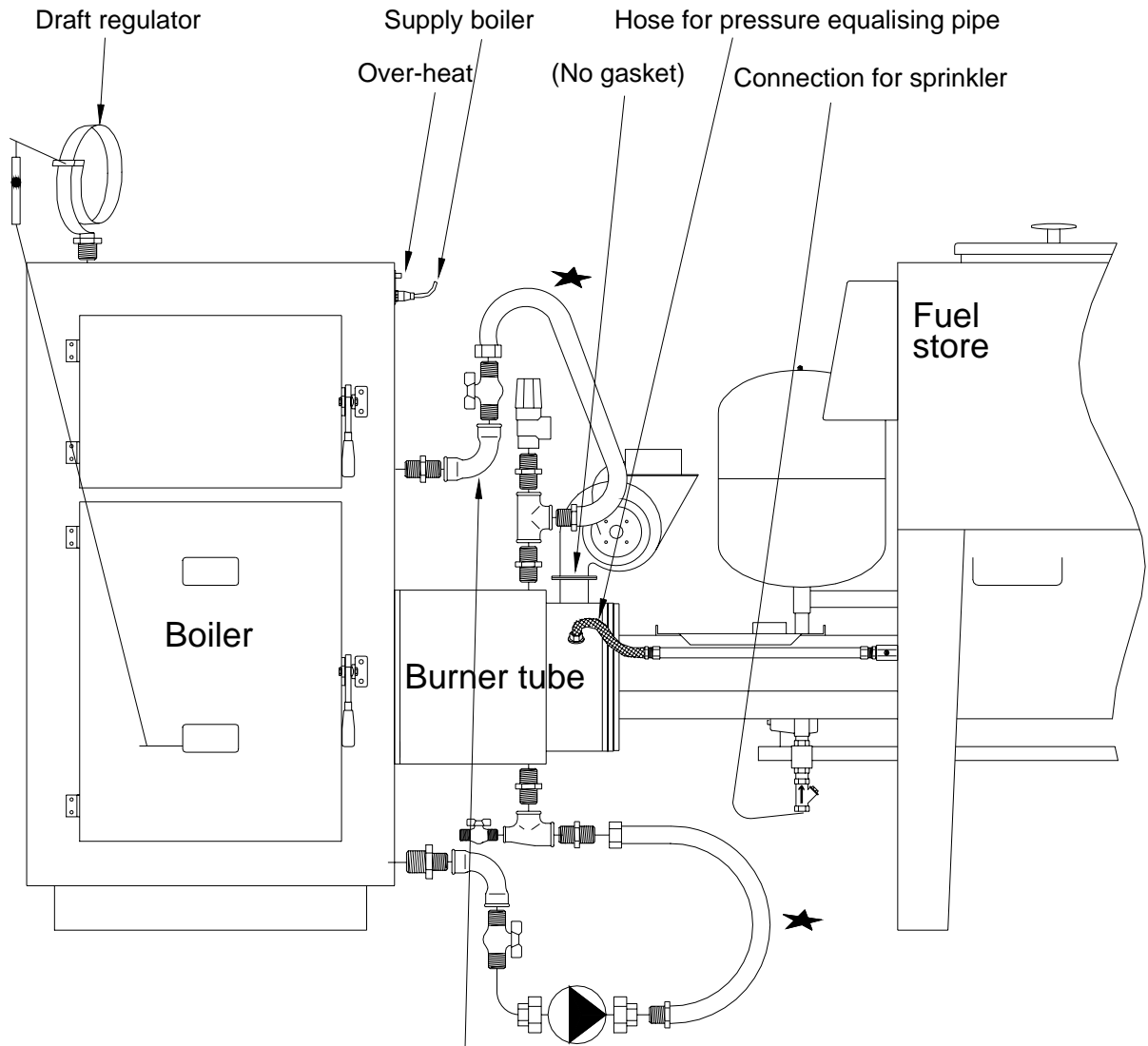
The connection of start – stop signal for external auger:

(only for plants provided with automatic fill in)

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 top of the fuel store.

Diagram 1 - How to fit the water cooled burner tube

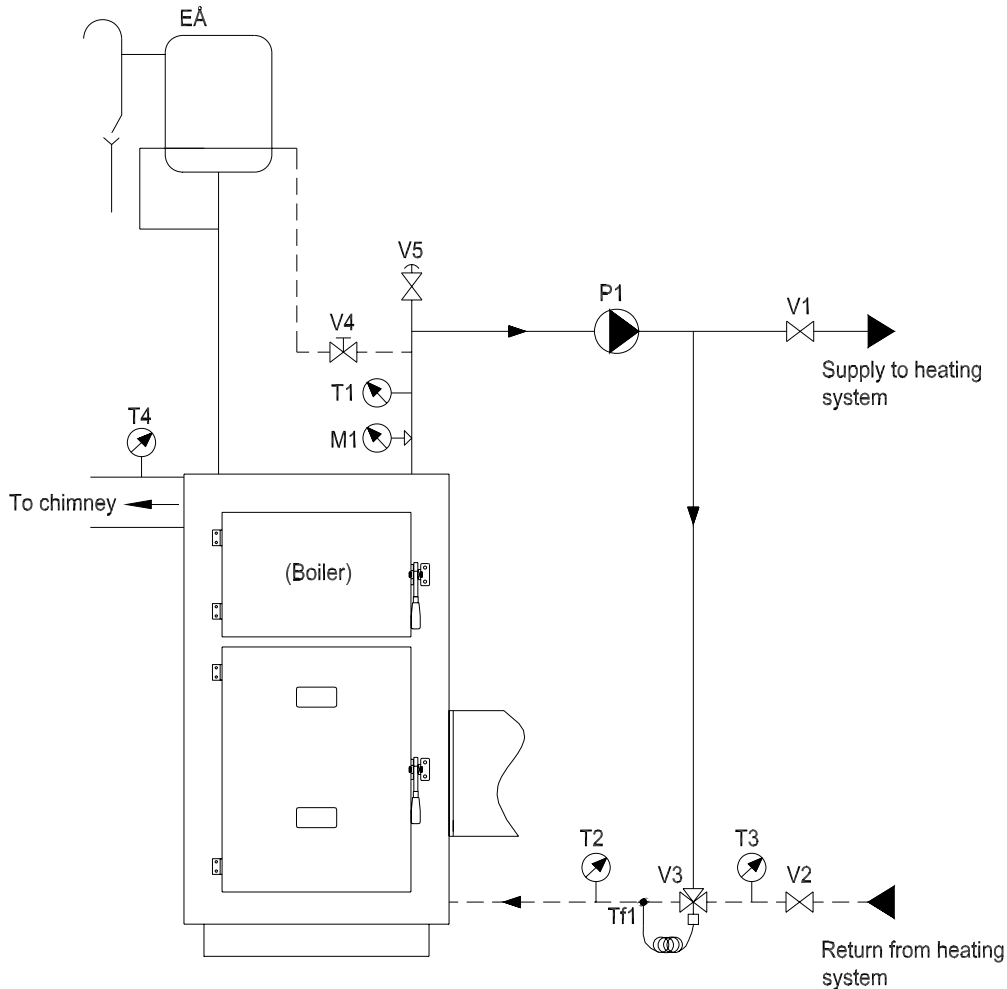


- 2 pcs. 3/4" Hose
- 1 pcs. 3/4" Safety valve
- 2 pcs. 3/4" Shutoff valve
- 1 pcs. 1/2" Shutoff valve
- 1 pcs. Circulation pump
- 5 pcs 3/4" Hexagon nipple
- 1 pcs. 3/4"x 3/4"x 1/2" Tee
- 1 pcs. 1"x 3/4" Hexagon nipple
- 1 pcs. 3/4" Tee
- 2 pcs. 3/4" Elbow
- 2 pcs. 3/4" Union joint, for pump

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

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

Diagram 2 – How to connect to the heating system



	Open expansion vessel	EÅ	
	shutoff valve	V1-V2	shutoff valves on supply and return, in the boiler room. More can be installed if needed.
	3 way thermostat controlled mixing valve (shunt valve)	V3	Boiler shunt valve secure that the return water to the boiler always is over 60°C.
	Manuel 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.
	Thermometer	T1-T4	Thermometer for supply, 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 heating system

Diagram 3 – How to connect to the chimney

*** Prefab chimney 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 !!**

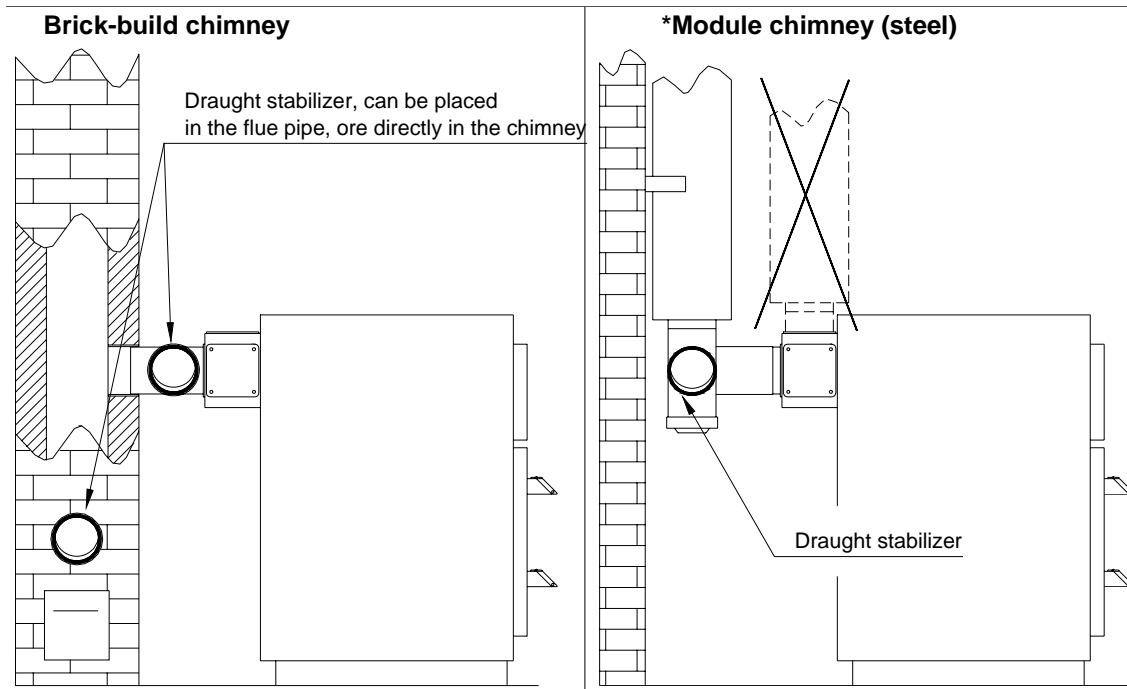
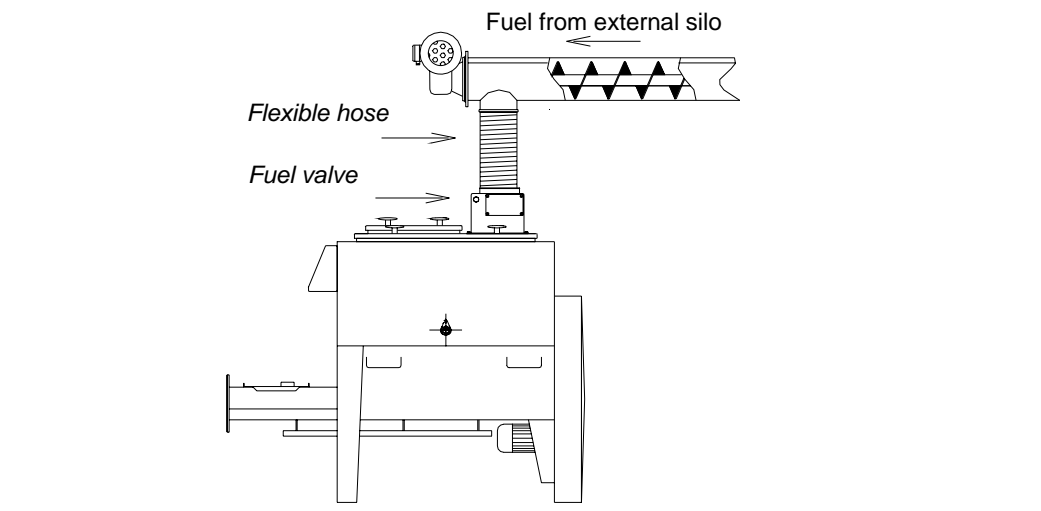
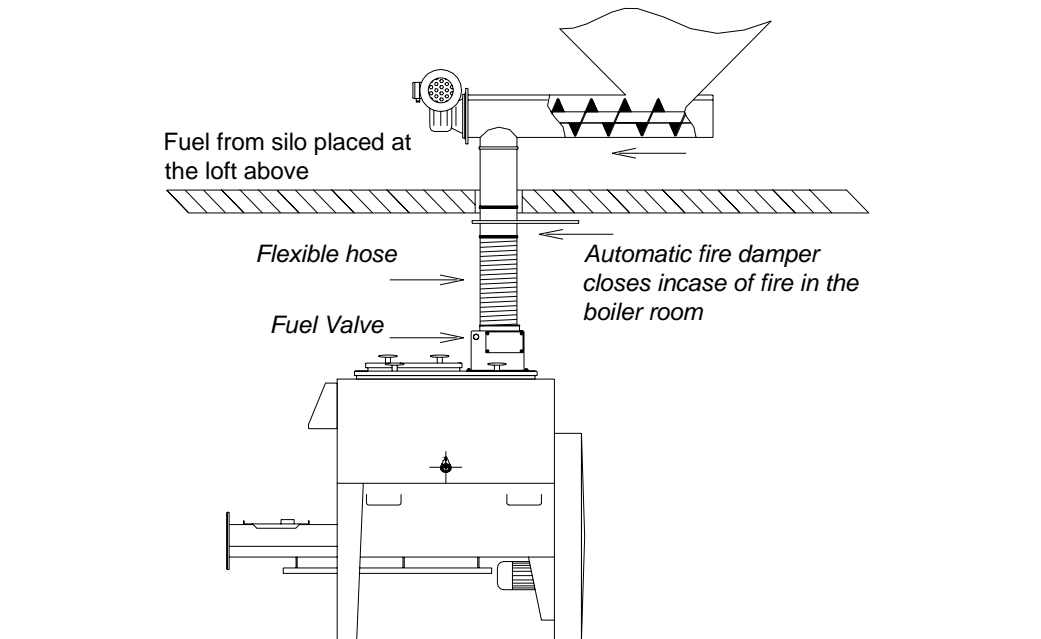


Diagram 4 – How to connect the external auger
(only for plants provided with automatic fill in)



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

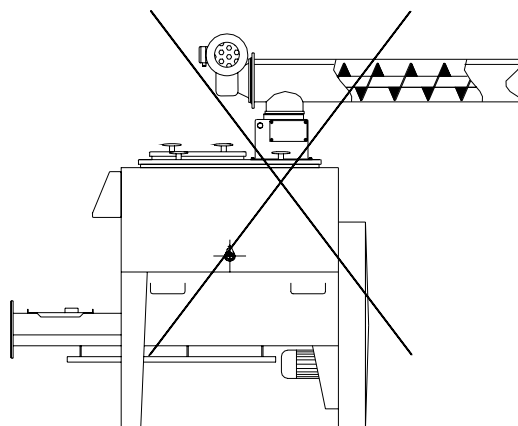


Diagram 5 – Electrical diagram 400V – 3 phase

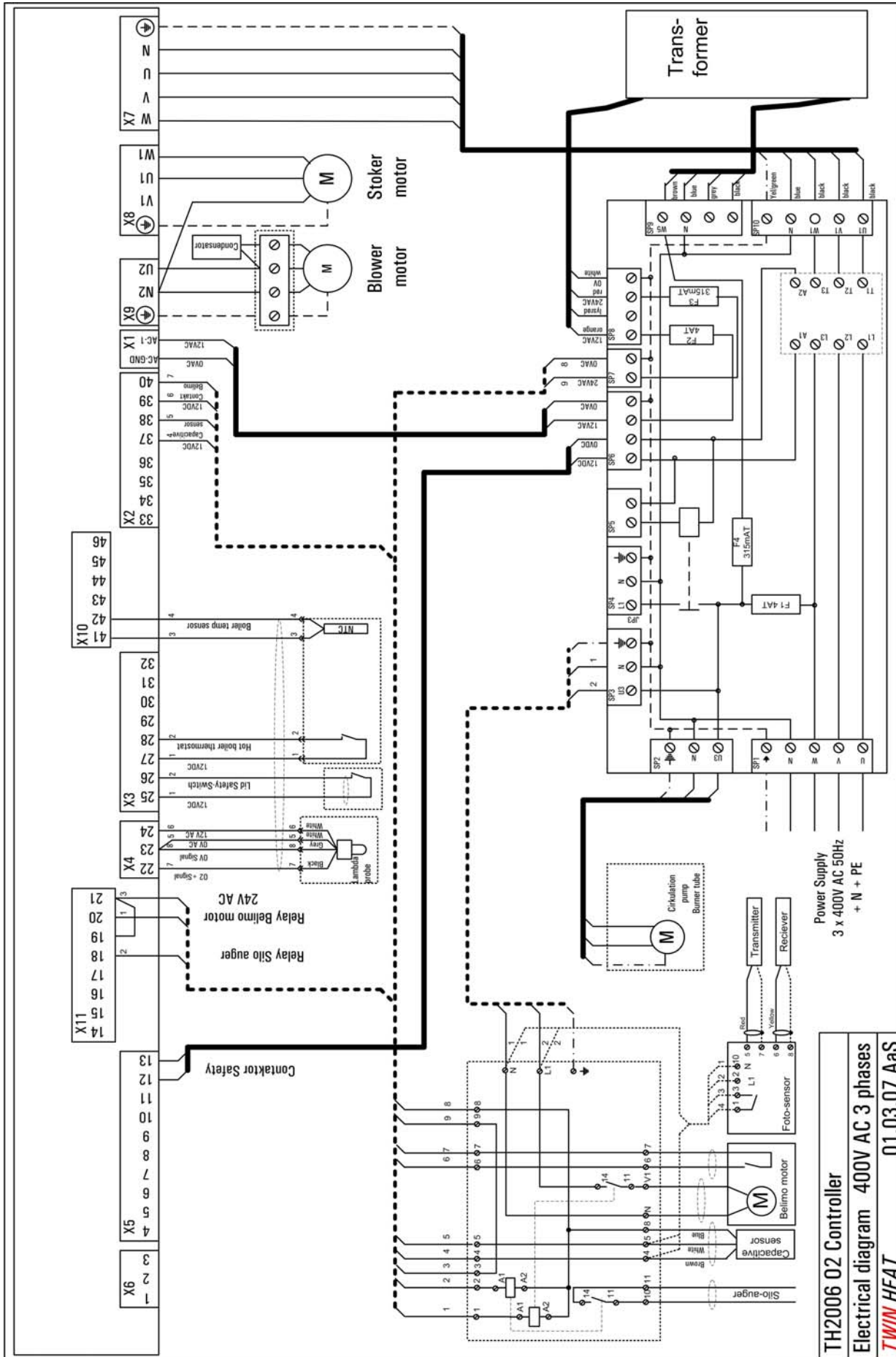


DIAGRAM 5

Diagram 5.1 – Electrical diagram 230V – 1 phase

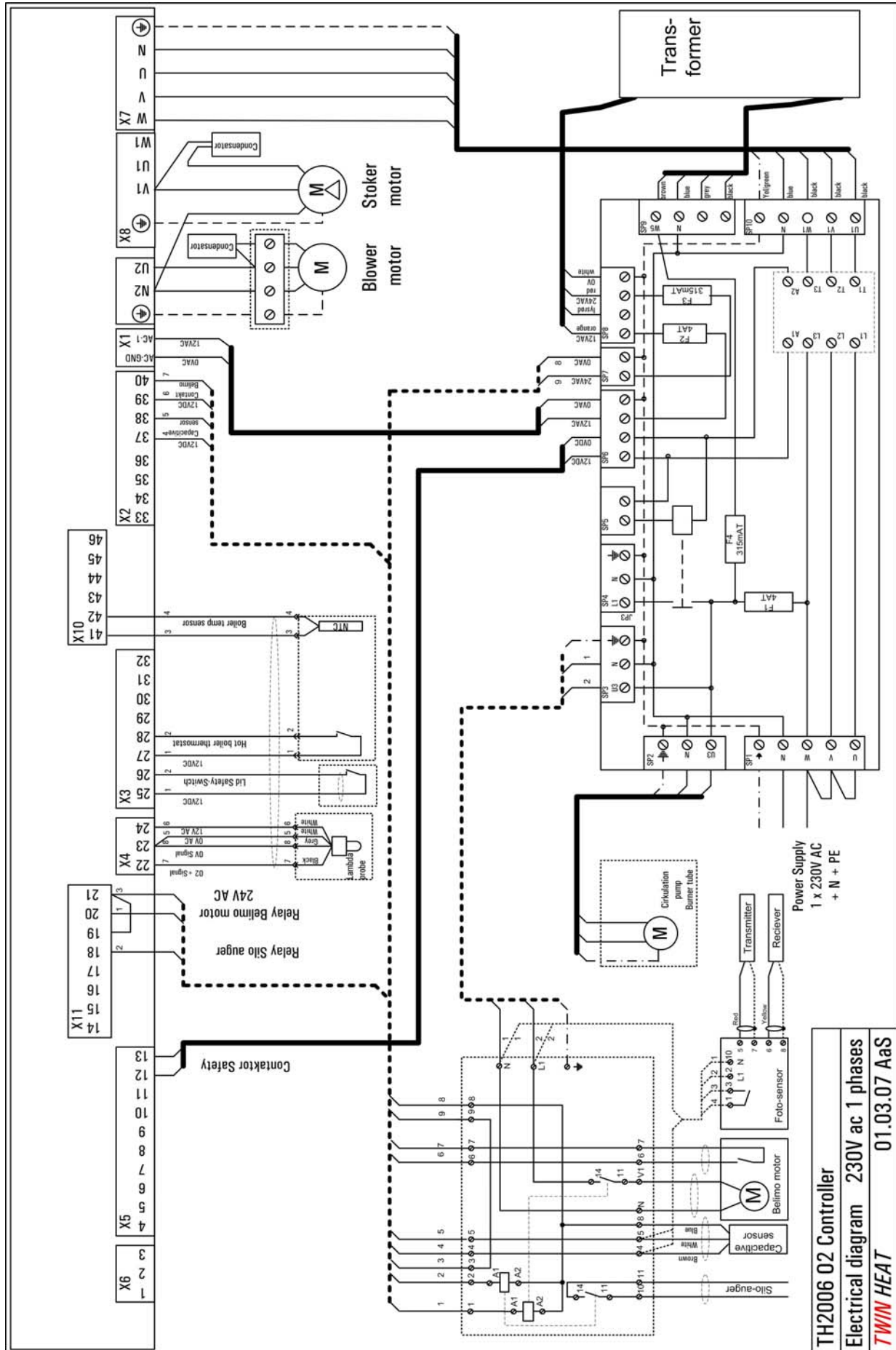


DIAGRAM 5.1

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

(only for plants provided with automatic fill in)

