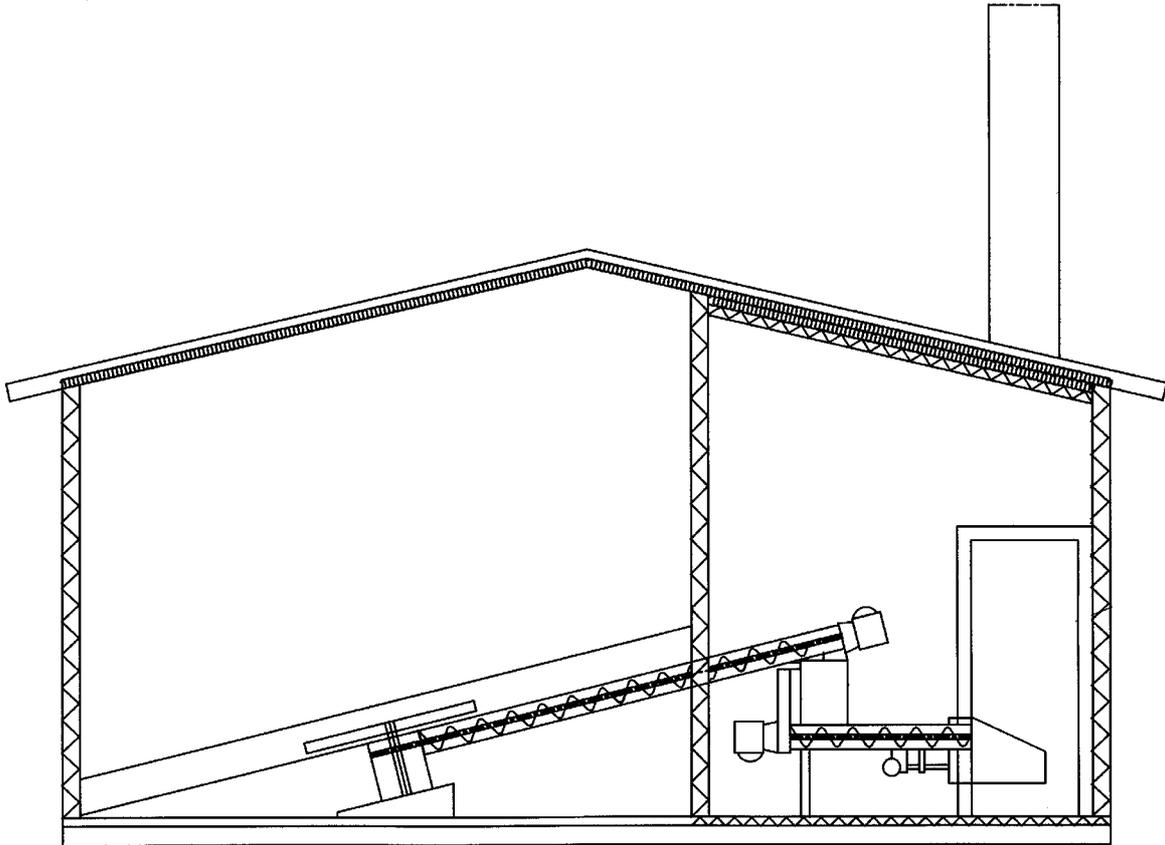


7.2004/2

Enclosure for Veto Chip Matic/ Veto Chip Matic Maxi instruction manual.

Veto spring agitator / 160 – 640 kW burner heads



Instruction manual

Manufacturer

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1. General

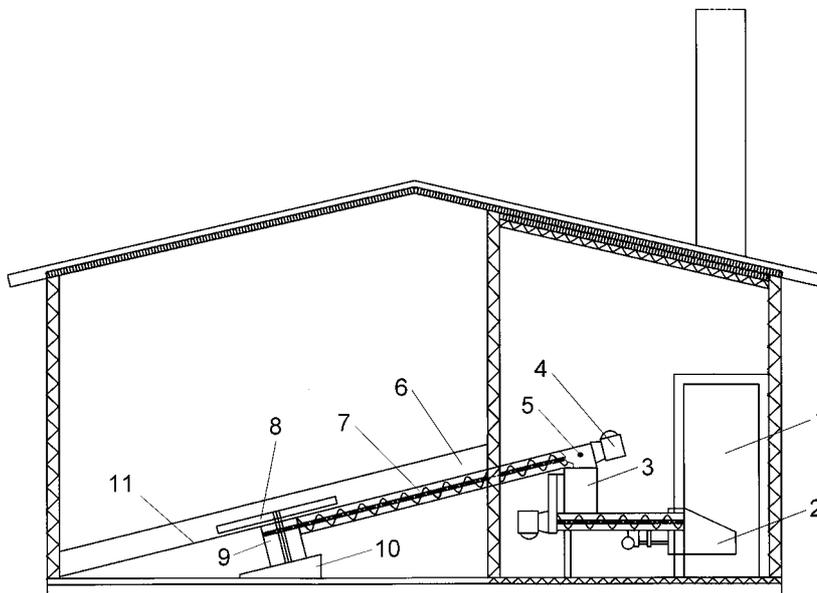
These instructions are an addition to the actual VETO-burner manual. These instructions cover the assembly of spring unloaders.

Always use a torque wrench when assembling spring unloaders!

Diameter mm	Strength class 8.8	Strength class 10.9
8	24 Nm	34 Nm
10	48 Nm	67 Nm
12	83 Nm	117 Nm
16	115 Nm	200 Nm

Table 1. Screw torque.

1.1 Introduction



Picture1. Introduction

- | | | |
|----------------------------|--------------------------|-------------------------|
| 1. Boiler | 5. Capacitive sensor | 9. Spring unloader gear |
| 2. Burner | 6. Wall protective board | 10. Gear rack |
| 3. Rotary vane feeder | 7. Feed screw and chute | 11. Unloader base |
| 4. Gear and electric motor | 8. Tray | |

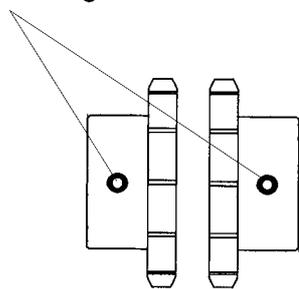
1.2 Boiler room

- Install burner collar sealing according to separate instructions found in the manual or in an appendix (160, 360, 480, and 640 kW burner manual).
- Install burner in boiler and tighten with nuts.
- Then mount rotary vane feeder in place. Tighten brace carefully so that it remains correctly aligned.

1.3 Building the fuel supply

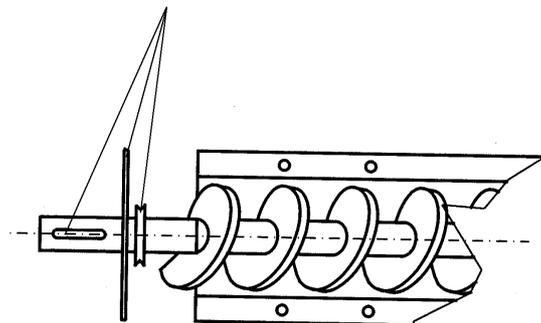
- Install the intermediary pipe that goes through boiler room wall and connect the pipe's boiler room end to the rotary vane feeder. The fuel chute must be in alignment with the rotary vane feeder when viewed both from side and above. Misalignment causes abnormal rapid wear to machinery. Hold the chute in place so that it will not be misaligned during installation procedures. Be careful not to lift the chute too much.
- Place the feed screw in chute, the short "empty" shaft end (approx. 120 mm) facing the chip container. Place rubber seal and shim on the fuel tank face end of the shaft and put key in keyway. Picture 3.

Retaining screws



Picture 2. Chain coupling

Seal, end plate and key

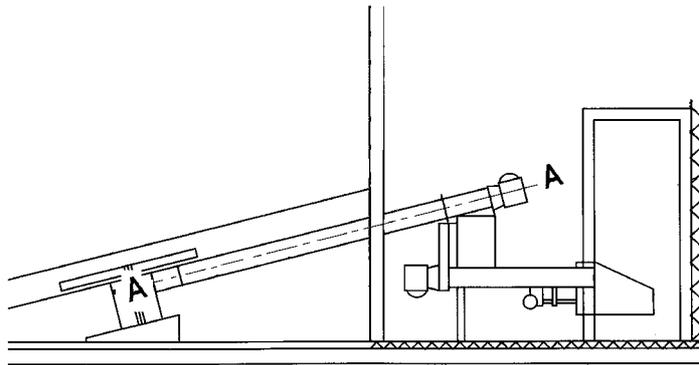


Picture 3.

- Install assembled chain coupling on feed screw. Do not tighten lock screw all the way.
- Place gear and rack in container. Align gear shaft with feed screw, line A – A, by adjusting gear rack angle and height. Insert shaft in chain coupling. Alignment is correct when chute, pipe, feeder, and gear are assembled so that nothing clinches or clamps. An assistant is required here to support the gear from under the rack. Use a sturdy plank, for example. Picture 4. **IMPORTANT!** If feed screw angle is more than 15°, fuel will condense on the back wall of the container.
- Tighten all screws when installation is complete and alignment checked.

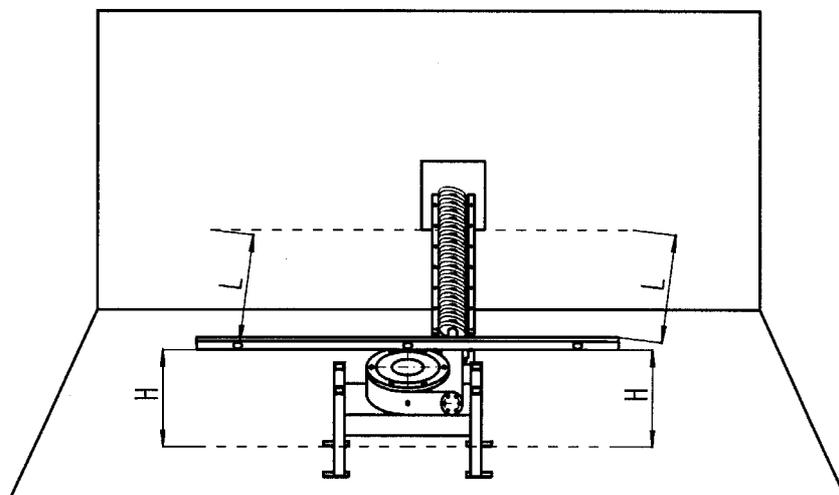
Mount the capacitive sensor frame in the rotary vane feeder and place sensor tip level with the retaining nut on the inside. Do not install the sensor before this or it might be damaged when the screw is installed.

- Install upper end gear, picture 1 part 4, on screw shaft in boiler room using a threaded spindle. Tighten operating gear on place and lock shaft to gear.
- Loosen chain gear locking with feed screw and tighten the chain gear on gear shaft so that it is level with shaft end.
- Place a plate as lid for the boiler room end of the chute.



Picture 4.

- For connecting the plate, remove the shaft which may be installed to the gear. Place a long spirit level, for example, on the machined surface of the gear. Measure distance to container floor (measure H) from both ends of the spirit level. Measurement must be the same from both ends. The spirit level must be aligned with the wall facing the boiler room before height is measured, measurement L. Picture 5.

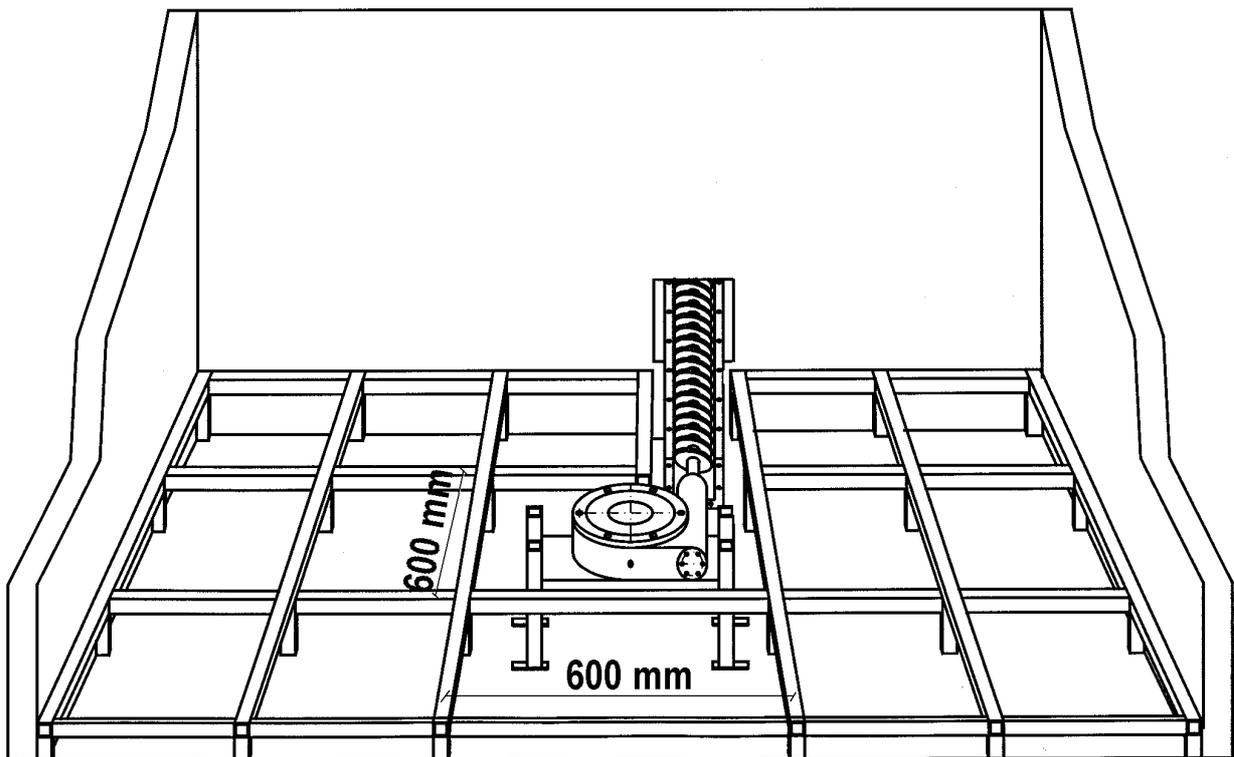


Picture 5.

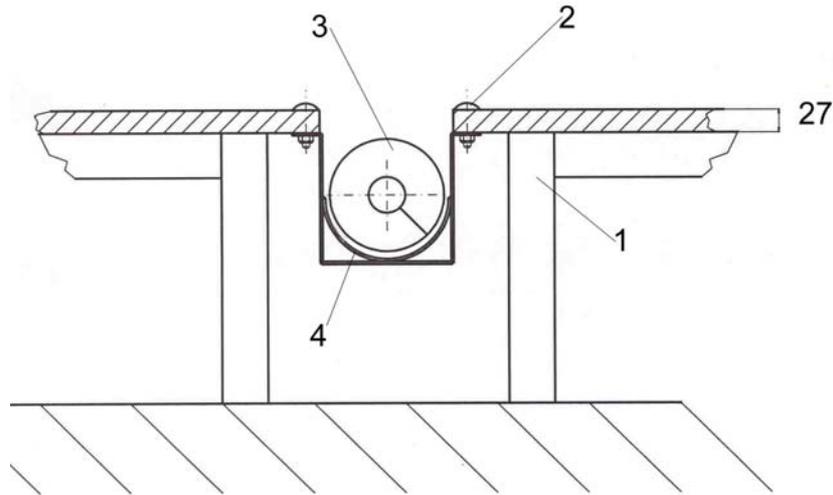
- Secure the height adjustment of gear base by welding short welds on bench legs. Bolt or weld bench legs to the floor.

1.4 Chip storage. Assembling intermediate bottom and mounting spring unloader

- Build necessary supporting structures for intermediate bottom. See picture 6 for example. Bottom plate should be made of hard plywood (at least 27 mm thick) or other corresponding material. The lower surface of the plate will be on top of the upper surface of the feed chute. Picture 7. Supporting structures must be close to the chute in order to provide required support for the bottom plate. Feed screw chute does thus not have to bear fuel load when the bottom plate bends. **Leave room for maintenance in supporting structures**, so that even the chain coupling can be reached easily. Only round-head lock screws can be used in mounting the bottom plate in place.



Picture 6.

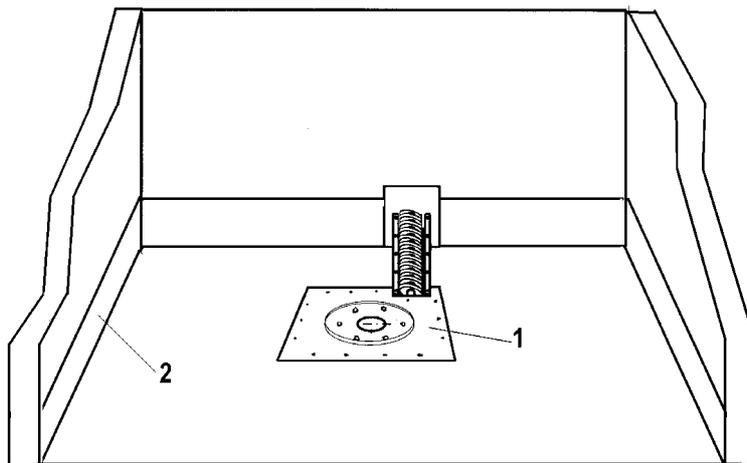


Picture 7.

- | | |
|-------------------------------|--|
| 1. Base supporting structures | 4. Rounded bottom on the container side. |
| 2. Round-head screws | |
| 3. Conveyor screw | |

When mounting the bottom plate, place 20 – 24 mm thick plywood, for example, around the walls from the bottom upwards approx. 250 mm as wear plate to prevent springs from damaging the walls. Picture 8.

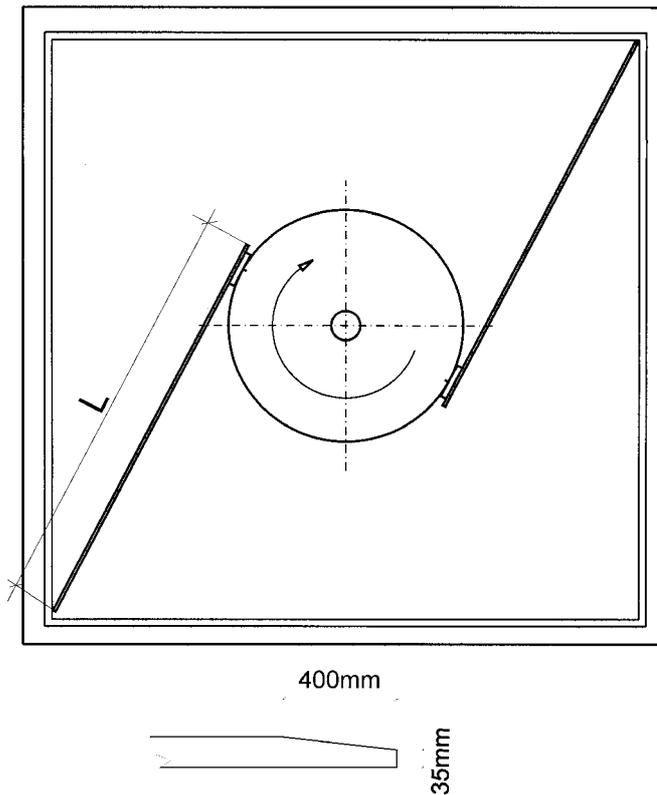
- When bottom plate assembly is ready, collar/sealing band is fitted to gear with screws to prevent fuel from leaking under floor structures. Picture 8.



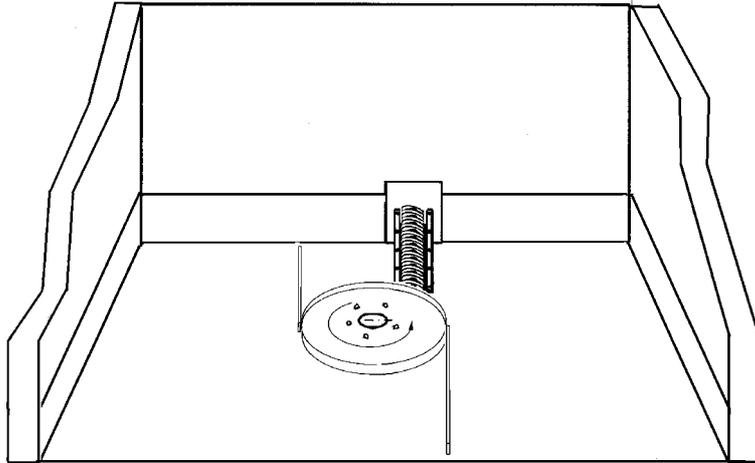
Picture 8.

- | |
|-----------------------------|
| 1. Collar and sealing band |
| 2. Wear plates on the walls |

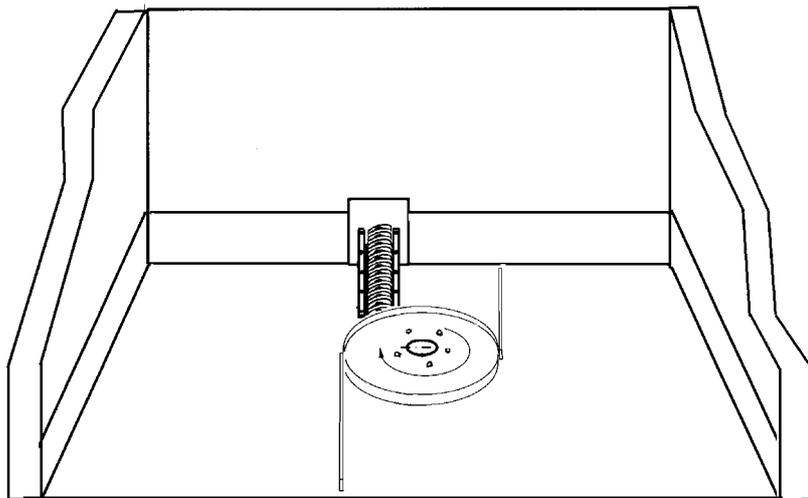
- Next, flange shaft is installed for the tray. The shaft is tightened from under the base structure.
- The tray is fitted in place using six 8.8 M 16 screws. The tray must be rotated to ensure that electric motor spins in the correct direction. Wrong spinning direction when springs are mounted may cause damage to the system. Correct spring measurement, picture 9. Springs in relation to spinning direction, pictures 10 and 11.



Picture 9. Correct measurement of springs L in container and canted spring end after cutting. Canted surface is placed upwards.

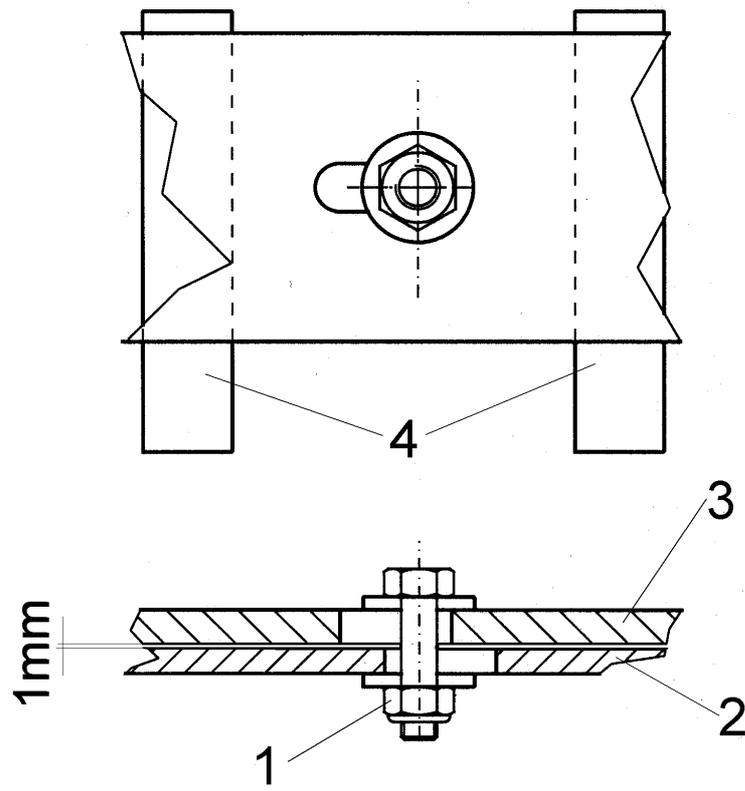


Picture 10. Spring mounting direction when the feed screw is on the right side of the tray.



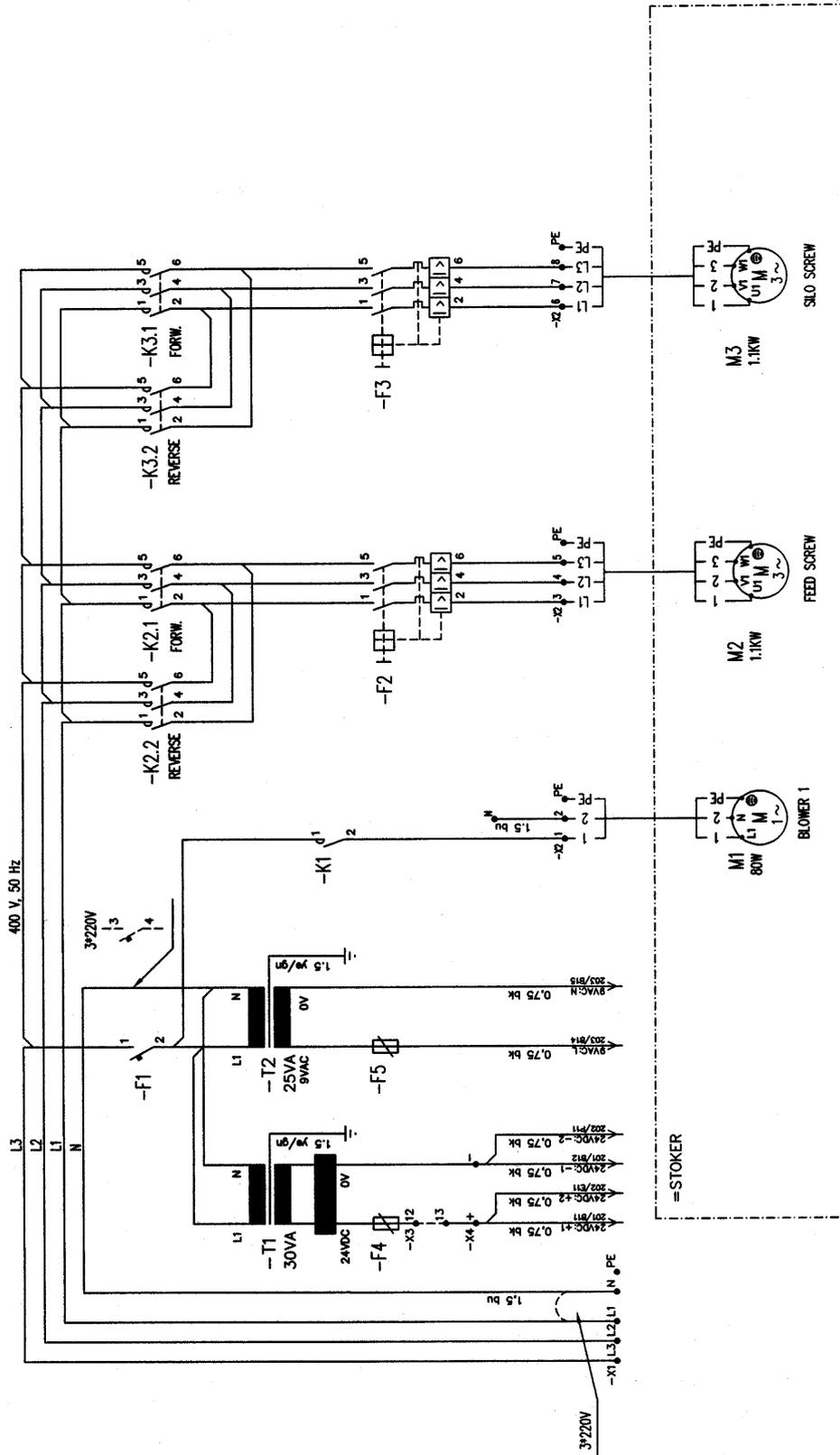
Picture 11. Spring mounting direction when the feed screw is on the left side of the tray.

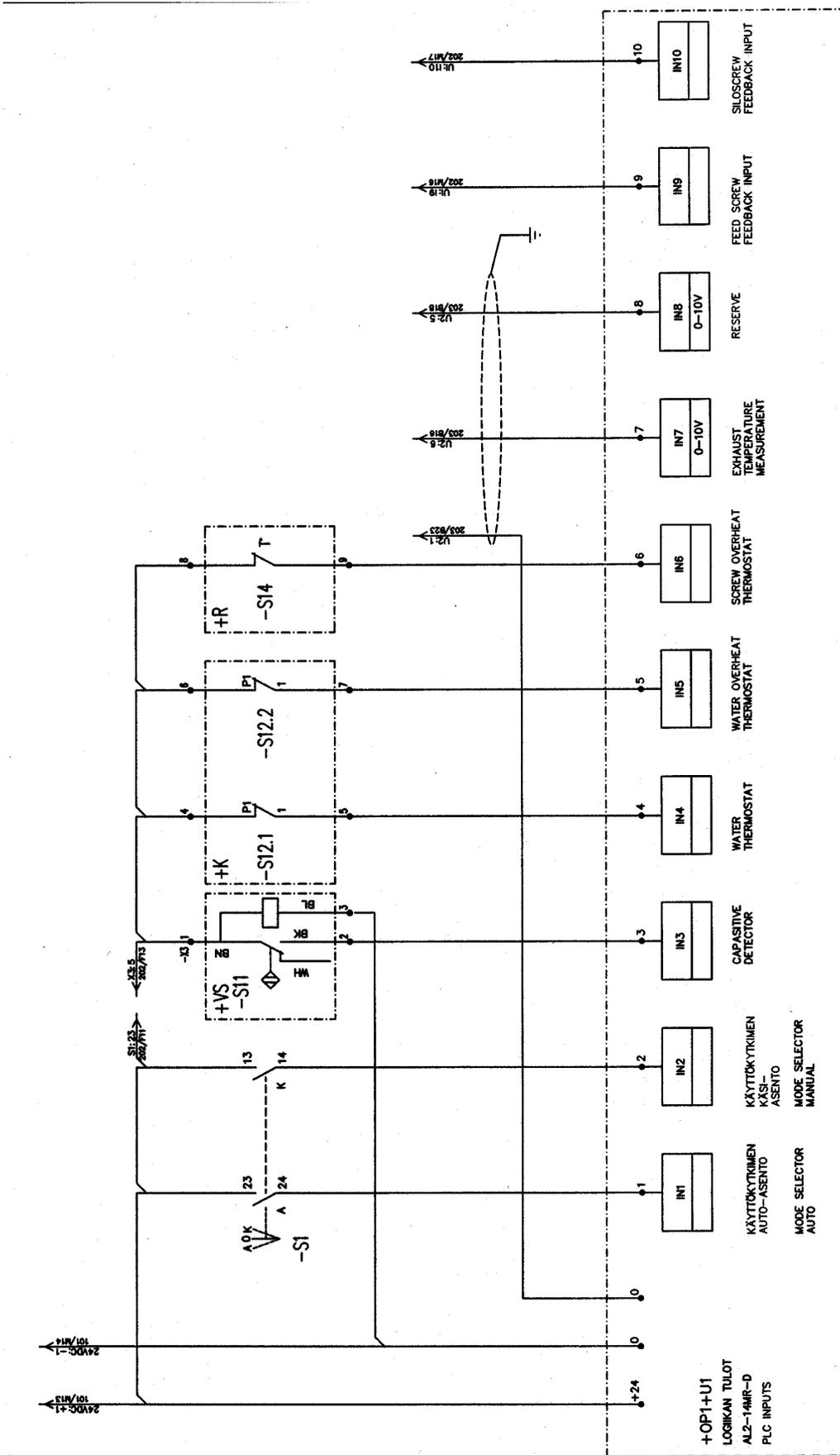
- Two sets of springs (of different strengths) are included in the assembly. Picture 12. Stronger spring, spring 3, is installed on the inside circumference. Two 1 mm thick plates (parts 4) of metal or other corresponding material can be used when tightening the springs together. Metal plates are placed between springs and bolt 1 is tightened only so much that the plates can be pulled away with pliers. Springs 2 and 3 are now properly assembled and slide against each other.
- The assembly is now ready for fuel.

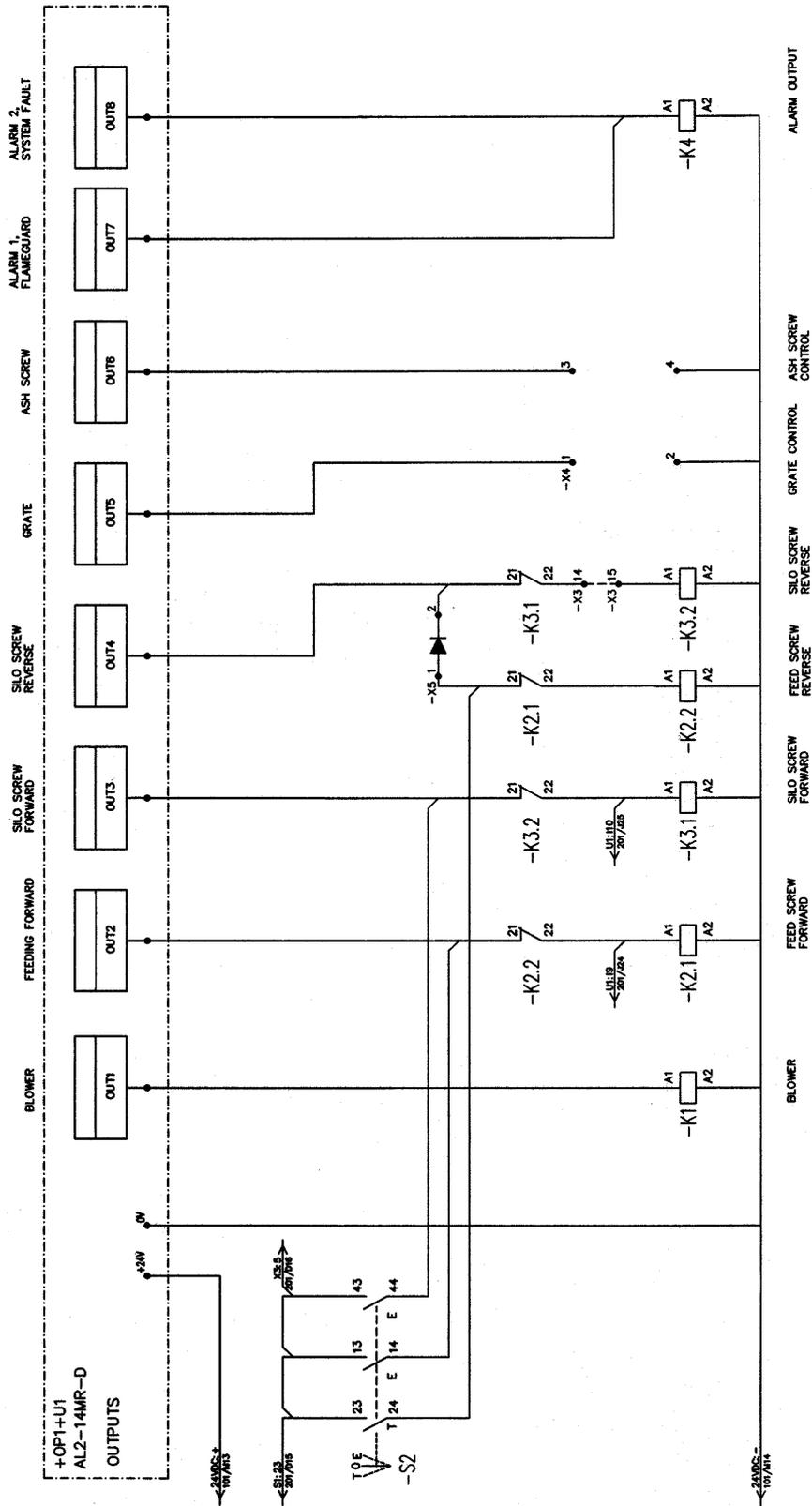


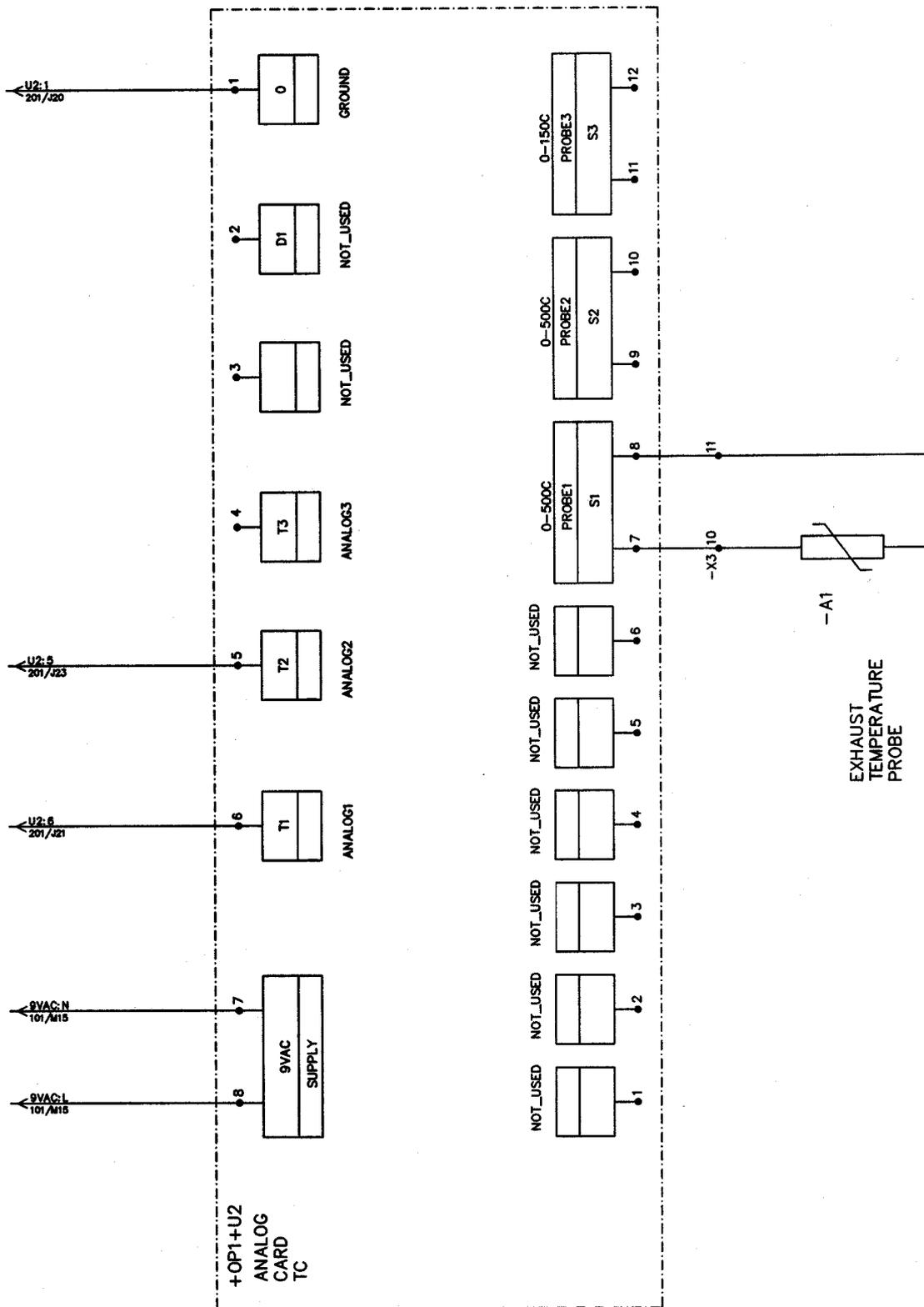
Picture 12.

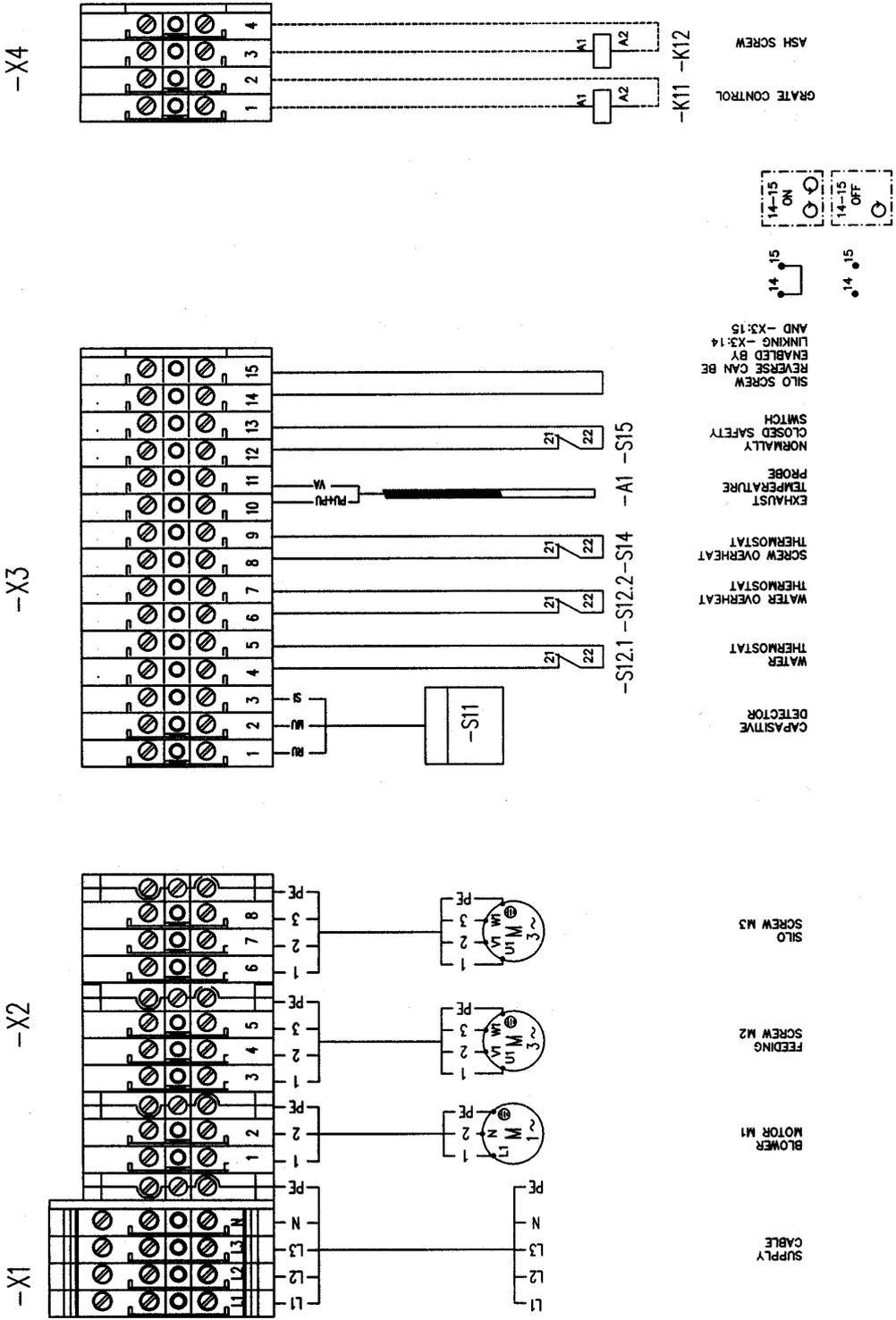
2. Circuit diagrams











3. Solid fuel burners 160-640 kW

Assembly-, use-, and maintenance instructions

3.1 General

These instructions are an addition to the actual VETO-burner manual. These instructions are specified for 160-640 kW burners.

3.2 Delivery

Burner is delivered fully assembled. Auxiliary devices are delivered in a separate sub-assembly.

The delivery includes burner, blower, and discharger operating rod. Intermediate pipe with gear motor and guard with base assembled is delivered as a sub-assembly. Delivery also includes gear engine control centre and required seals, screws, and nuts.

4. Installation

4.1 Assembly

Assembly is carried out as shown in picture 1. References to part numbers in this chapter refer to parts in picture 1.

Assembly begins by cutting seals for burner seal slot (part 16) from 50 mm thick batting. The burner is placed tightly against the opening in the boiler. The burner is fitted in place on the boiler frame using screws located on both sides of the burner. Nuts are tightened carefully. Avoid cutting the sealing.

Connect the intermediate pipe (part 4) to burner. Sealing (part 17) is placed between the intermediate pipe and burner pipe flanges.

Fit discharger operating rod holder (part 9) in place on the hole in the guard base. At the same time, ensure that the loop on the operating rod is placed on the gear stud as shown in picture 1.

The burner's cooling water circulation has to be implemented using a separate pump (picture 3-0367).

Feeder assembly in burner is carried out according to instructions in the burner manual.

4.2 Electric assembly

Gear motor control centre is delivered with burner.

The control centre is connected according to the circuit diagram included in the delivery. Default settings for grate motor timer are as follows: Pulse 1s and Pause 6 min.

Discharger gear motor makes one cycle every six minutes. One second pulse in timer is the time required for surpassing the guard when cycle begins.

The guard (picture 1, part 6) is tuned so that discharger operating rod remains in back-position when cycle ends (as shown in picture 1).

4.3 Implementation

Burner implementation is done as shown in chapter 4 of operating instructions.

Operation default settings in control centre are referential. Burner power is tuned as explained in chapter 4 in burner manual.

One should, however, observe that burning fuel may only cover a maximum of $\frac{3}{4}$ of burner grate. This ensures that all fuel is burnt on the grate and only ash comes out of burner when dischargers operate.

5. Maintenance

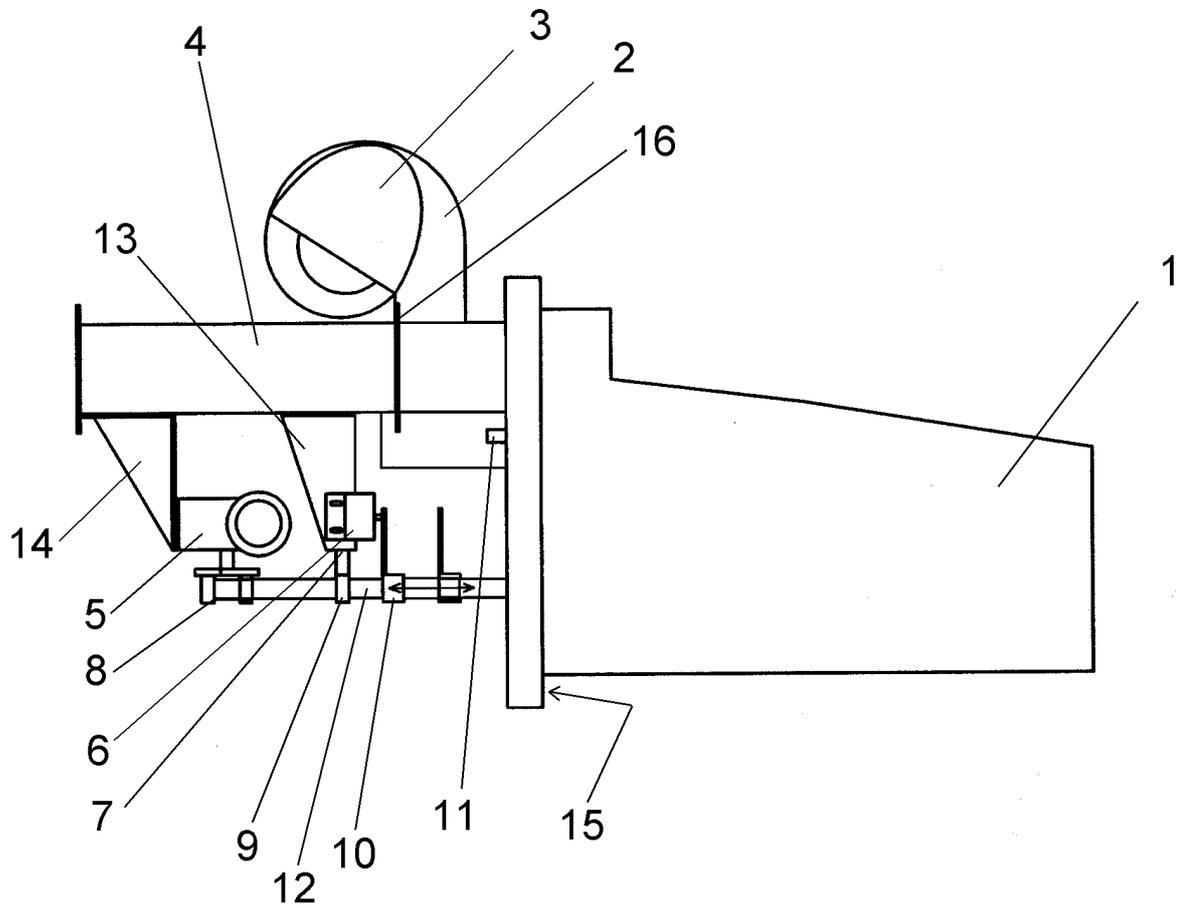
The burner does not require daily maintenance. Ash must at times be removed from inside the burner through the ash hatch (picture 3-0367). At the same time one should check grate condition and ensure that all air holes are open.

Discharger gear is RMI 50 (picture 1, part 5). Gear oil must be checked monthly and changed every two years. Gear oil is Mobilgear 627 or corresponding oil (alternatives are listed in the burner manual). Fill amount 0.2 l.

Appendices:

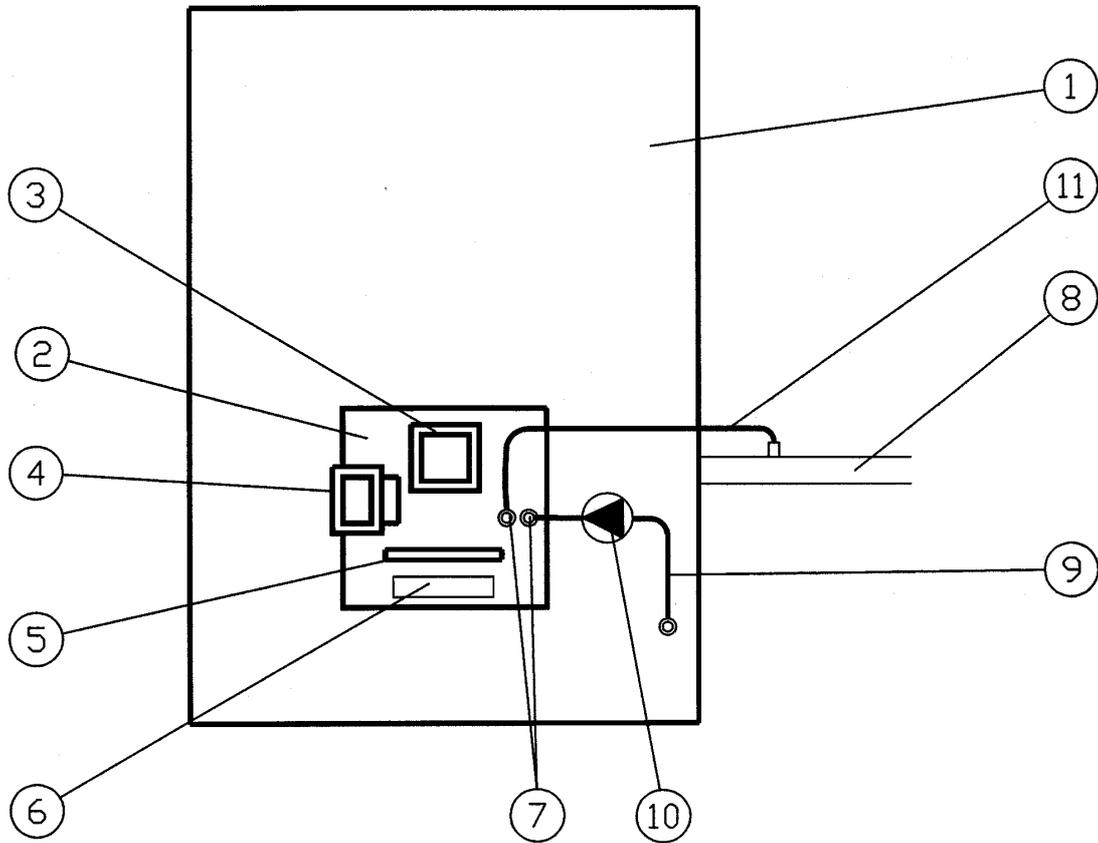
1. movable grate 160kW and 240 kW burner head.
2. Water cooled burner head.
3. Circuit diagram of grate distribution board.
4. Cell feeders sealing subjects

App. 1.



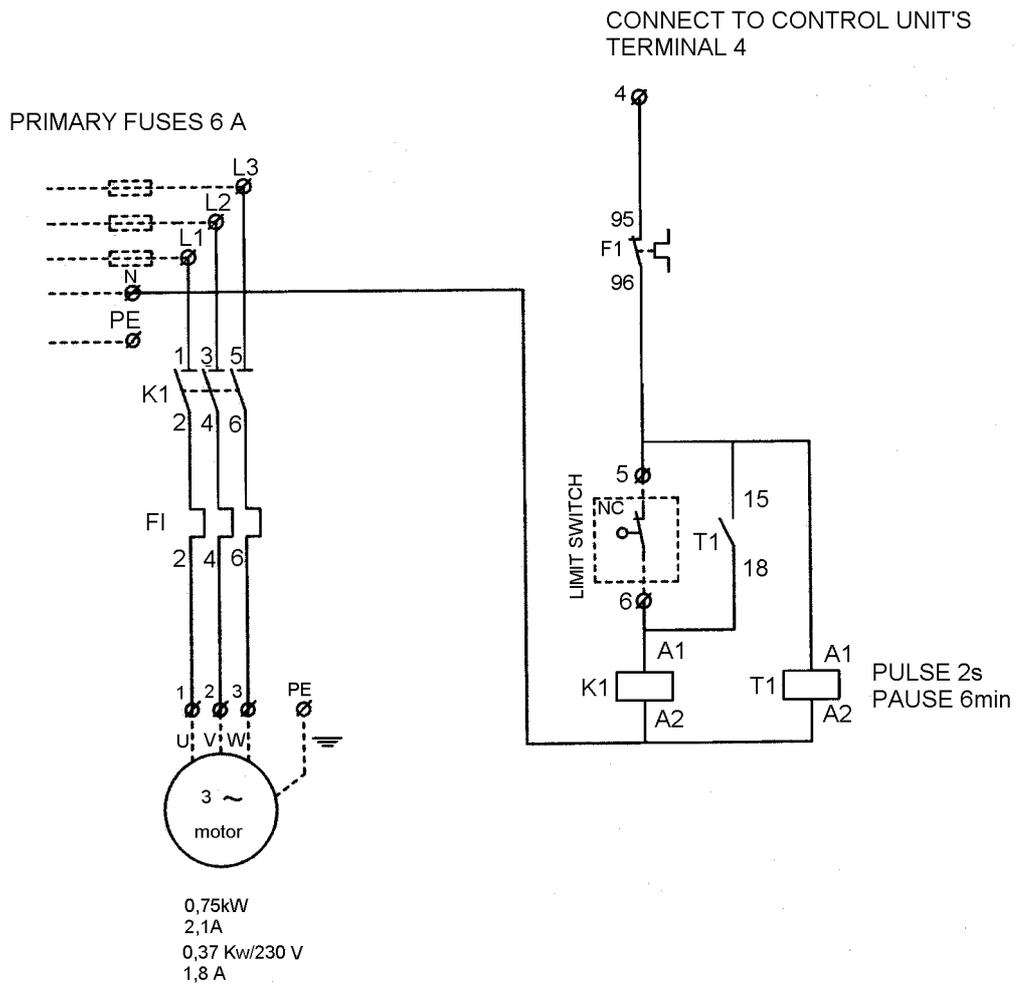
1. Burner head
2. Blower
3. Air regulating plate
4. Feeding pipe
5. Electric motor and gear
6. Microswitch
7. Screw, nut and washer M10
8. Pin for gear
9. Bracket
10. Stop for microswitch
11. Water aggregate of burner head 1"
12. Operating arm of shaker
13. Pallet of microswitch
14. Pallet of gear
15. Seal
16. Seal of feeding pipe

App. 2



1. Varm water boiler
2. Water-cooling burner head
3. Aggregate of feeding screw
4. Aggregate of blower
5. Fire grates shaker pins
6. Outlet of burner heads ash
7. Water-cooling aggregates of fire grates
8. Inlet of boiler
9. Inlet of fire grates cooling water
10. Cirkulating water pump of fire grates
11. Outlet of fire grates cooling water

App. 3



App. 4

The following joints will be seal with including seal.

