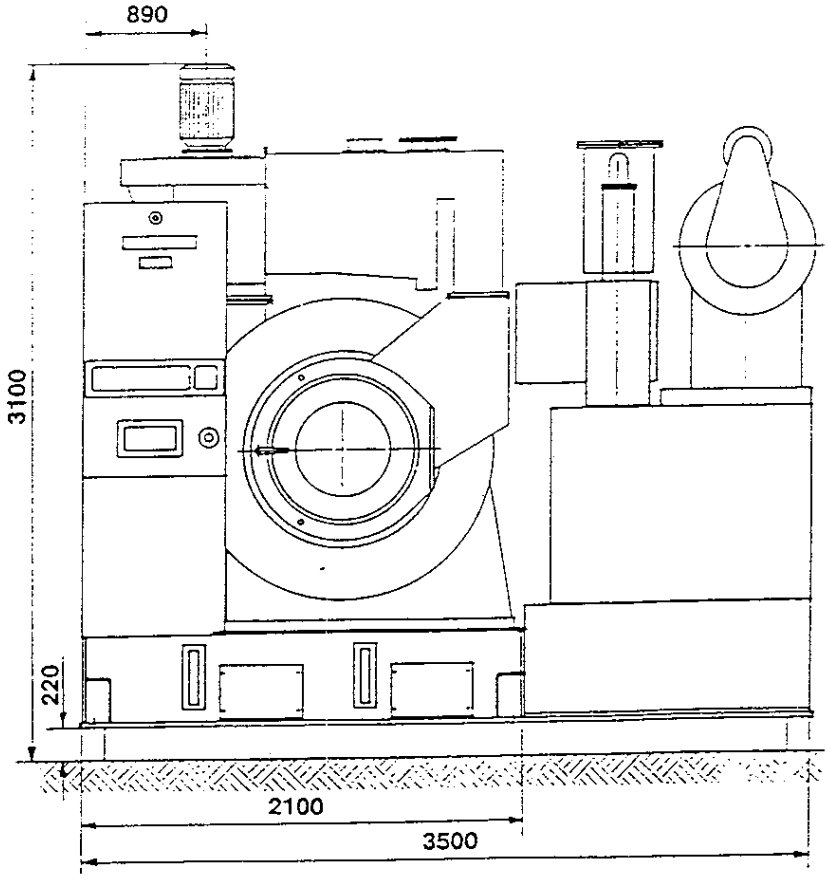
BÖWE
Textile Cleaning

Installation Instructions



SI 70

IA. SI 70 /350 /01.93/E

BÖWE

Safety hints

Each person who is in charge of installing, commissioning, operating, servicing or repairing of the textile drycleaning machine, must have read and understood the operating and installation manual. We explicitly refer to the observance of the respective laws and regulations of the countries in question.

The drycleaning machine was built according to the latest state of engineering and may only be assembled, installed, operated, served and repaired by persons familiar with the machine and informed about possible dangers. The relevant safety regulations as well as other safety and industrial medicine rules are to be strictly obeyed.

Installation and commissioning

When installing the drycleaning machine the enclosed installation instructions should be obeyed. A sufficient room ventilation system must be available. In rooms that require pressure colling, it must be ascertained that the drycleaning machine can be turned on only, when the ventilation system is in operation.

The machine should not be installed in rooms with danger of explosion.

The first start-up is carried out by the service department of the BÖWE-PASSAT Organization.

Authorized use

This textile drycleaning machine is exclusively designed for operation with Perchlorethylene (Tetrachlorethen C_2Cl_4). The direct handling with these solvents should be reduced to absolutely necessary work, whereby safety gloves and -goggles should be worn.

Inflammable, poisonous or radiactive textiles should not be treated.

It is relevant that the prescribed BÖWE-PASSAT operating, service and maintenance regulations are maintained.

Unauthorized changes and alterations of the equipment exclude liability of the manufacturer from resulting damages.

Operation and Maintenance

Operation and maintenance of the BÖWE-textile drycleaning machine is reserved for qualified and trained specialist staff. Take system into operation only after all safety devices are installed and in function. During operation and maintenance all safety regulations are to be obeyed.

Check machine daily for operational safety before turning on (for leakages) and control feed readings. Dispose of lint and distillation residue according to the operating manual.

Do not carry out any maintenance work while machine is running. Please pay attention to the recommended quality of solvents, lubricants, and additives!

Repairs

Repairs may only be carried out by skilled workers with tools and protection of labour that is destined for it. Avoid solvent emissions.

When carrying out repairs and cleaning work always turn off main switch and protect equipment from being turned on unauthorized. (Sign: Don't turn on - Repair Work!). When work is being done on the electrical system - always remove the master fuse.

Only use original fuses when exchanging defective ones. Work carried out on pneumatic control parts has to be done without pressure. Check compressed air indicator for pressure. Repairs on the refrigerating aggregate may only be done by a refrigeration engineer specially trained for this.

All spare parts used must comply with the technical standards set by the manufacturer.

Setting machine out of operation and disassembly

Setting machine out of operation and disassembly is only reserved for qualified and trained specialists, with tools and protection of labour that is destined for it.

- Setting machine out of operation and disassembly solvent must be completely drained off from the machine including pipes and armatures. Residues which can produce work shop or environmental handicaps must be removed.

- Machine pipes and electric wires for providing and waste disposal must be separated from network and must be guard against incompetent turn on.

- Cooling solvent from refrigeration unit must be removed by trained service people.

Dear customer,

It gives us great pleasure to supply you with your **BÖWE-PASSAT** machine.
In designing and building it we have attached great importance to quality. It is up to the latest level of research and technology, particularly concerning environmental protection.

Please do not put this installation instructions aside unread!

These instructions contain important informations on installation details of your drycleaning machine.

If specified measurements and installation information are disregarded, we cannot meet the warranty obligations contained in our General Terms of Delivery.

Measurements and other values are as at printing date.

We reserve the right to make technical changes without prior notice in the interest of further development or required constructional modifications.

BÖWE
Textile Cleaning

Contents

Contents

Page

7. Connection

1. General information

Technical literature

We make reference to the publications and leaflets by the trade and professional associations as well as research institutes.

Laws and regulations

All regulations concerning the industry, particularly with regard to proper handling of halogen hydrocarbons, have to be met absolutely in order to avoid health risks and environmental damage.

In any case please observe applicable laws and regulations in your country.

The following applies to the Federal Republic of Germany:

Safety rules/Drycleaning (VBG 66);
2nd Federal Emission Protection Law (2.BImSchV)
Water conservation Law (WHG § 19)
Disposal law
Technical rules for dangerous substances (TRGS 402)
VDI guide lines
DIN Standards
VDE regulations

Repair work

Please consult the BÖWE-PASSAT customer service organization for all maintenance and repair work as well as operating safety aspects of this high-quality drycleaning machine.
If necessary, the BÖWE-PASSAT customer service organization will use original spare parts.

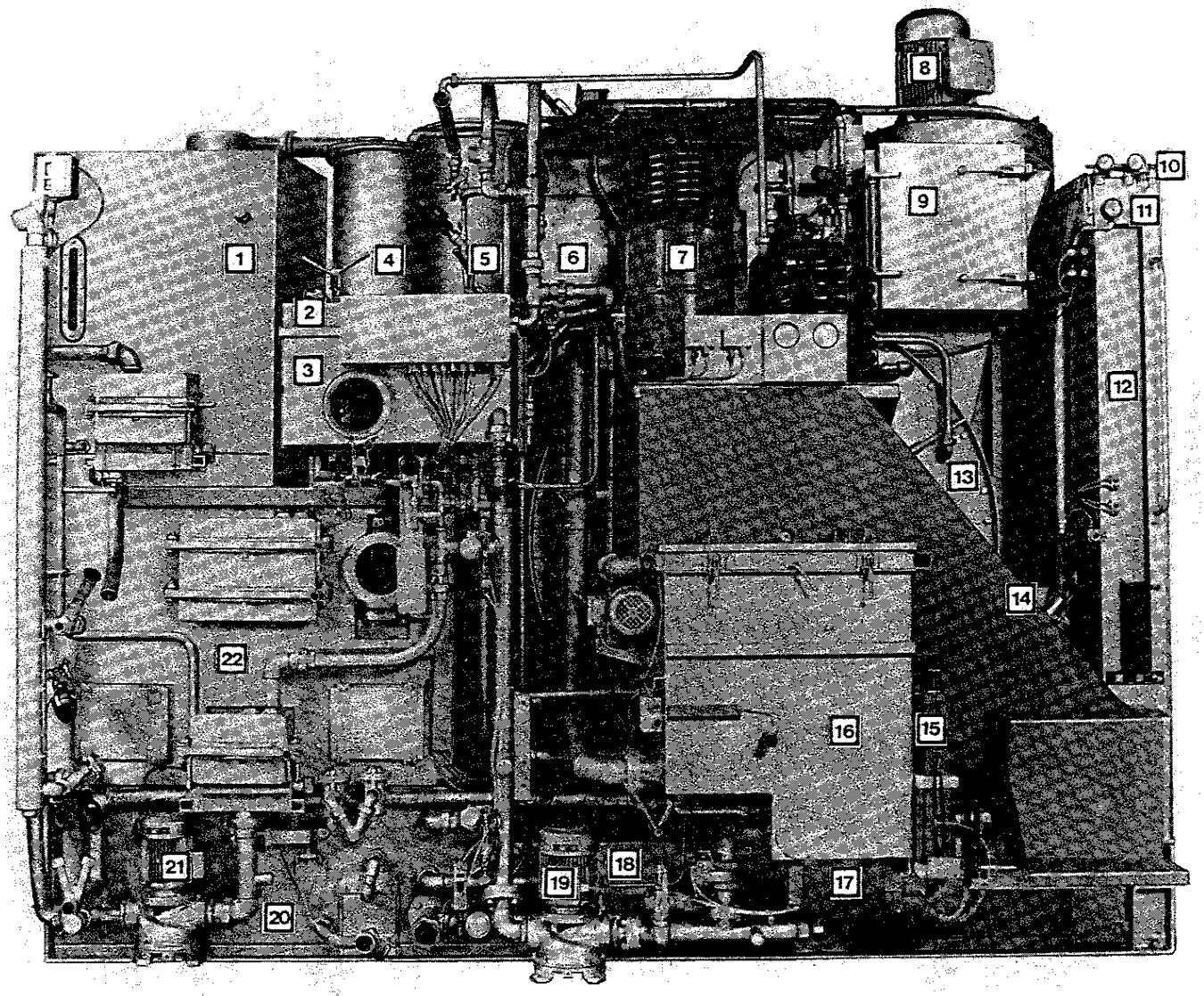
Safety

Safety devices may not be bypassed, switched off or otherwise be made inoperative. In case of repair work please observe applicable industrial safety rules.

Disposal of still residues, processing water, lint etc. must be carried out properly.

The installation instruction is part of the instruction manual and must be observed.

2. SI 70 Machine rear



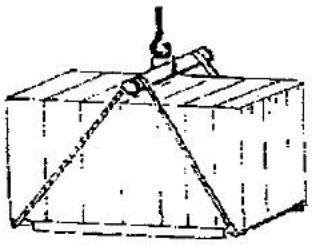
1	Still II	12	Control box
2	Water separator	13	Cage housing
3	Safety separator	14	Cage drive
4	Condenser II	15	Dosing unit
5	Condenser I	16	Button trap
6	Air heater	17	Work tank
7	Refrigeration unit	18	Rinse- /aftertreatment tank
8	Fan	19	Solvent pump
9	Lint filter	20	Clean tank
10	Compressed air unit	21	Sludge pump
11	Manometer machine-pressure	22	Still I

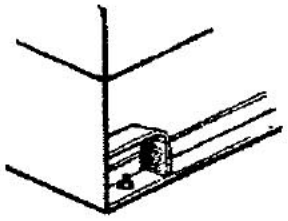
3. Transportation

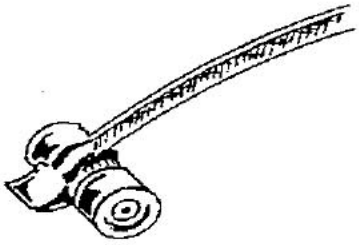
For proper transportation, installation and connection it is recommended to consult the appropriate experts.

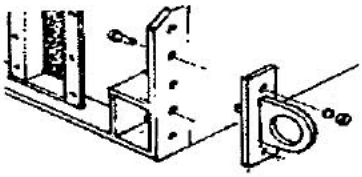
For unloading, transportation, machine entry and installation it is necessary to use suitable tools and devices such as a crane, forklift, elevating truck, pulley block, ropes, winch, crowbars, rollers, wooden blocks, wedges.

Transportation equipment for entering the machine can be leased from BÖWE-PASSAT.









The machine is on all 4 edges equipped with unscrew transport-eye hooks for crane- or rope transport.

3.1 Entry

Normally the machine is transported and entered in upright position in a wooden crate or box.

Packing dimensions (box dim.)		c-machine	o-machine	i-machine
Length	mm	3750	2380	3750
Width	mm	1970	1970	1970
Height	mm	3000	3000	3000

Disassembled are button trap and fan.

There are alternatives if the entry is too small:
Normal dimensions after unpacking (machine dim.)

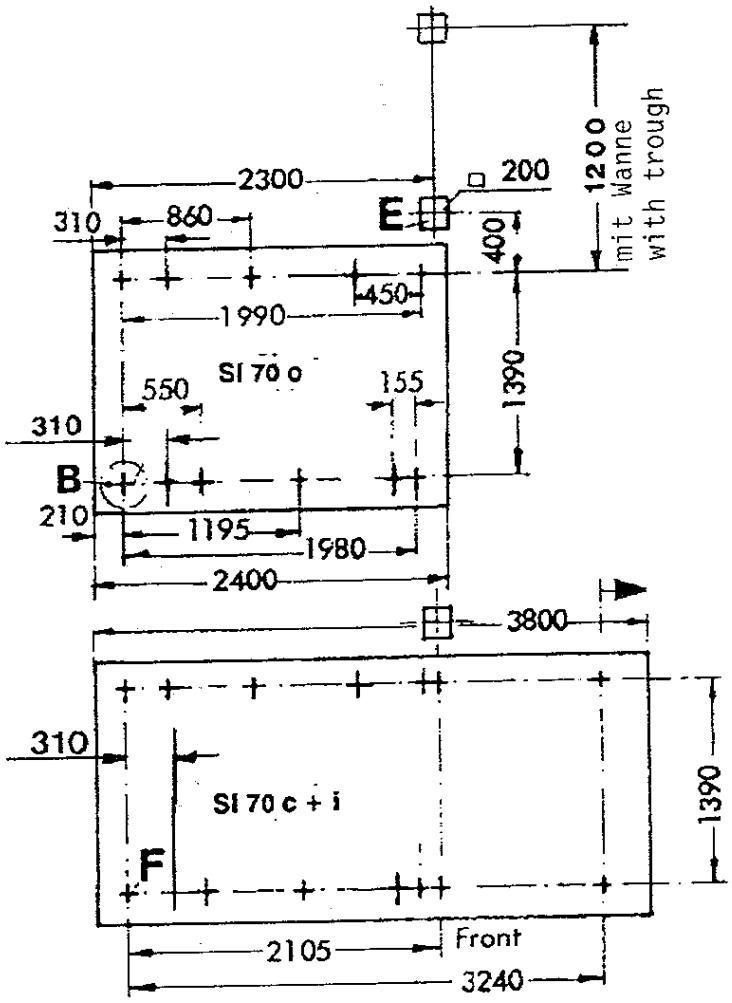
Width	mm	1900	1900	1900
Height	mm	2840	2840	2875

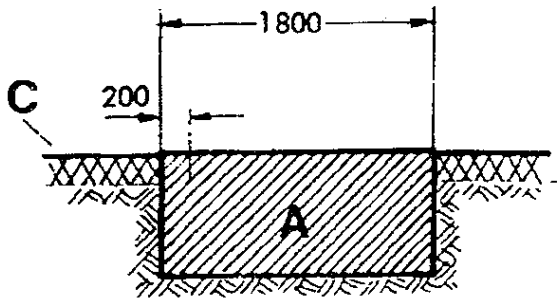
After disassembly work
(fan, steam pressure shortage control switch, blow-out connection pipe, profile strip, pump, safety separator, steam and condensate pipes, condenser lid)

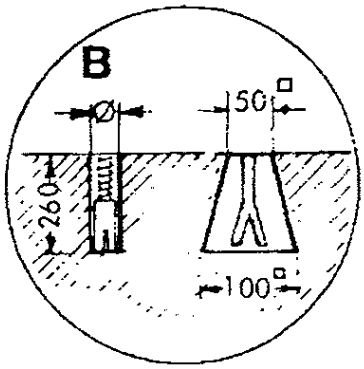
Width	mm	1840	1750	1840
Height	mm	2790	2790	2790

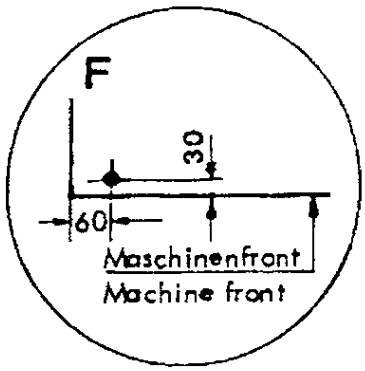
4. Foundation

4.1 Foundation measurements









A Reinforced concrete: [redacted]

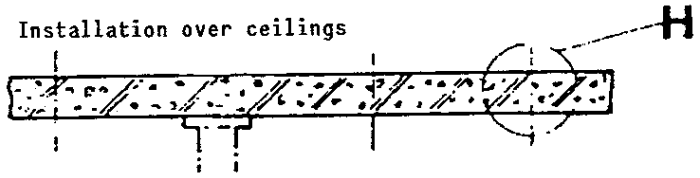
B Hole for stone bolt or expanding anchor depending on make

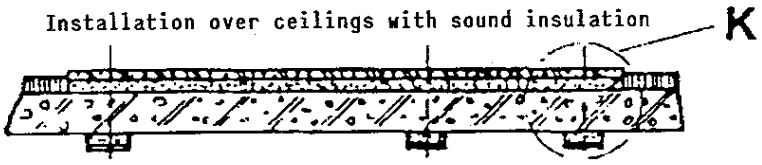
C Room floor - concrete slab

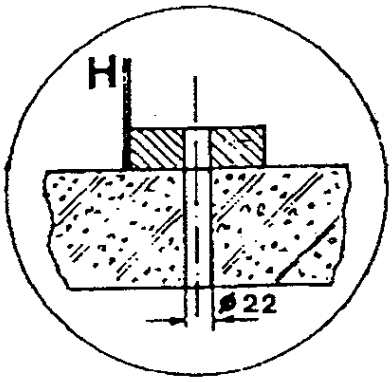
E (If necessary) ceiling breakthrough for supply lines

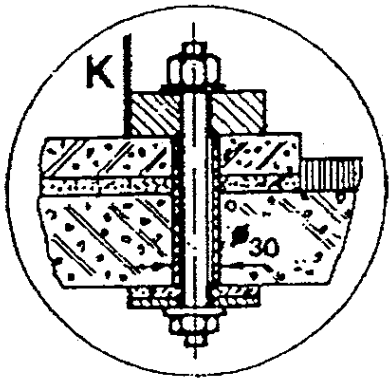
F Machine front

4. Foundation









H Ceiling borehole 22 mm ø for through-bolts, length depending on thickness of ceiling.
Support if necessary.

K Machine on reinforced concrete slab 100 - 200 mm and pressed foundation cork 12 - 15 mm with 1 - 3 kp/cm^2.
Below the ceiling pressed cork and steel plate 10 mm.
Ceiling borehole 30 mm diameter (if necessary PVC hose inset).

4.2 Anchoring

Correct anchoring is very important for low-noise, fault-free operation. For installation on foundation it is preferable to use stone bolts!

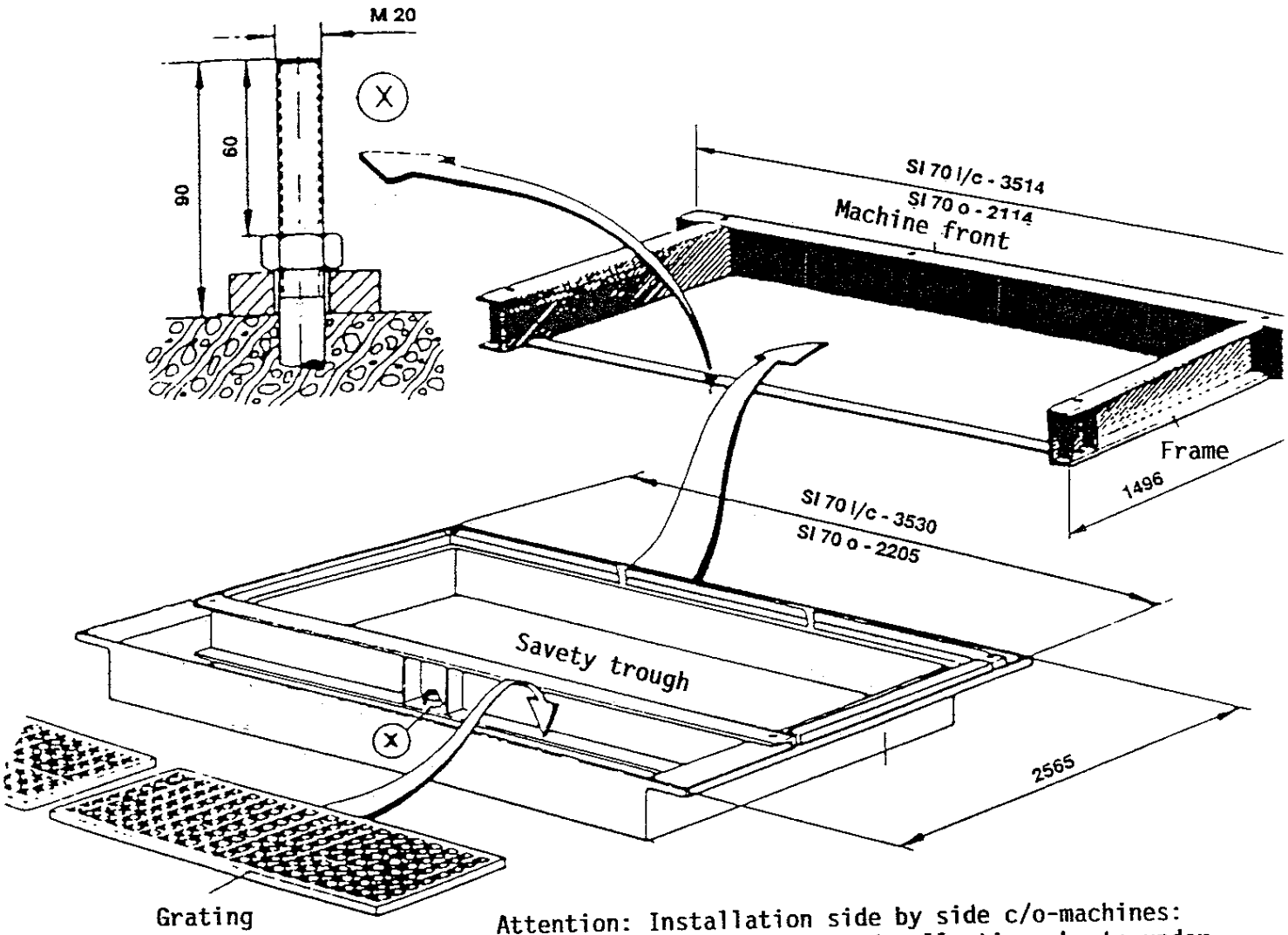
Seating must be horizontal and level. Do not place machine directly on tiles, felt, bituminous coatings, rubber or cork.

With uneven concrete floors it is necessary to level the machine or trough frame with wedges and fill the spaces with cement.

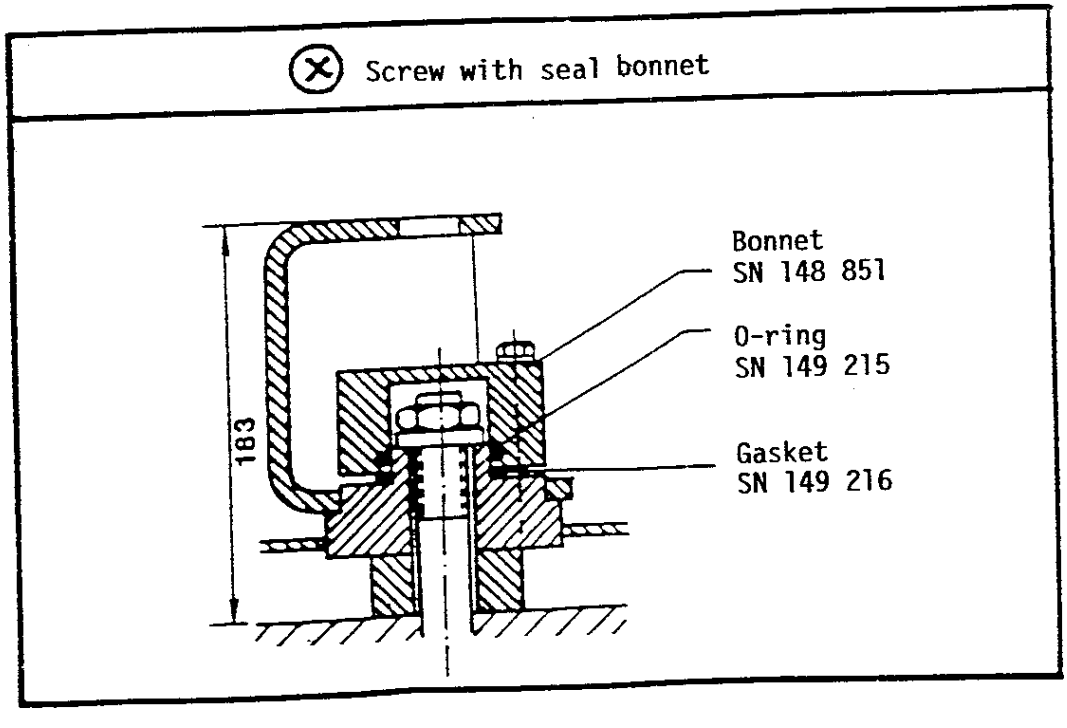
4.3 Noise or vibration insulation

For special vibration insulation special foundations, dampers etc. can be used in collaboration with building and insulation specialists.

5. Solvent safety trough



Attention: Installation side by side c/o-machines:
Install delivered collecting sheets under connection pipes.

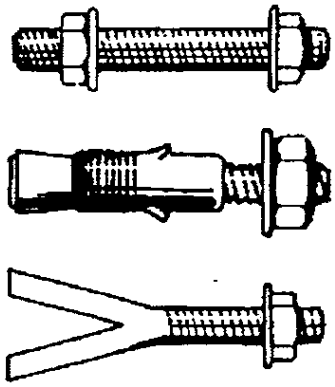


5. Solvent safety trough

5.1 First installation of trough

Trough anchoring:

There are 3 alternative anchoring methods:



- Threaded rods
  for through-holes in case of installation over ceilings

- Safety expanding anchors
  for inserting in bored holes

- Stone bolts for cementing in
  (use preferably; M 20 x 500 mm)

Thread for all anchoring methods: M 20

5.2 Cemented-in stone bolts

Work sequences:

Separate trough and frame, insert stone bolts into frame holes with plain washers, spring washers and nuts.

Stone bolt with seal bonnet (X) must project 90 mm over concrete (please see page 9 for details).

Level the frame (watch the front). If floor is uneven, level frame with wedges and fill spaces with cement.

Fill anchoring holes with quick-taking cement.

After cementation tighten nuts evenly. Remove stone bolt nut (X).

Unscrew brass seal bonnet from trough, do not damage the gasket.

Put trough into frame.

Tighten nut and washer of the stone bolt (X).

5.3 Safety expanding anchors

Work sequences:

Separate frame from trough.

Install frame at intended location.
Caution: Please watch the front (see drawing on page 9).

5. Solvent safety trough

Use frame as drilling template.

Pilot-drill with rock drill 16 mm.
Minimum drilling depth 130 mm.
Remove frame.
Using the template drill 130 mm deep with 25 mm rock drill.

Remove nuts and washers of expanding anchors.
Put anchors into drilled holes.
Caution: Long expanding anchor into bore (X) screw with seal bonnet.

Put the frame on and level. If floor is uneven, level with wedges and fill spaces with cement.

Tighten anchor nuts evenly.
Put trough into frame.

Tighten nut and washer of screw with seal bonnet (X).

Caution: In tightened condition the threaded bolt may not project more than a maximum of 5 mm over the nut (grind off if longer).

Safety expanding anchors can be obtained from BÖWE-PASSAT.

Safety expanding anchors (componend) SN 155 915 consits of:

SI 70 c/i	6 pieces long	SN 149 467
	8 pieces short	SN 149 468
SI 70 o	3 pieces long	SN 149 467
	7 pieces short	SN 149 468

5.4 Threaded rods (bored-through ceiling)

Work sequences:

Separate frame from trough.

Install frame in intended location.

Caution: Please watch front (see drawing on page 9).

Use frame as drilling template.

Pilot-drill with rock drill 16 mm.

Remove frame.

In case of normal installation over a ceiling drill 22 mm deep with rock drill (see foundation drawing).

In case of vibration-insulated installation over a ceiling (see foundation drawing) drill 30 mm deep with rock drill.

5. Solvent safety trough

The frame must be completely level on the floor.
If not, level with wedges and fill spaces with cement.

With both floor installations (normal and vibration-insulated), the screw with seal bonnet (X) must freely project 90 mm.

5.5 Machine installation

Work sequences:
Using rollers and other tools bring machine 10 mm over the trough. It is preferable to push the machine into the trough from the narrow side. If the machine has to be pushed on from the front, BÖWE supports SN 139516 are available. For mounting instructions please see the label on the supports.
Screw machine to frame by means of hexagon screws M 20 (included in delivery).
Retighten foundation screw nut with seal bonnet (X).
Put on copper gasket according to drawing.
Screw on seal bonnet and tighten.
Insert gratings.

6. Installation

6.1 Surrounding conditions

6.1.1 Regulations

Applicable regulations for room ventilation and size, odour and noise emissions, accident prevention etc. must be met.

The control box contains contacts to control the room air (see page 24).

Noise level at a distance of 1 meter from the machine and 1.6 meters over the ground: 84 dB (A)

Higher noise level depends on distance from walls or ceiling. In this case local arrangements are necessary.

6.1.2 Temperature

Machine should not be exposed to direct sunlight. Adequate air supply is to be ensured due to heat exchange (heat build-up!) Room temperature should not drop below 1 °C owing to the risk of water in the system freezing, and not exceed 40 °C in continuous operation owing to increased solvent consumption.

Heat radiation:	SI 70	28100 kJ/h

6.1.3 Machine surroundings

Partitions, screens, intermediate ceilings and similar near the machine are to be fitted in such a way that they do not hinder operation and are easily and quickly removed for maintenance and repair.

NOTE!

Do not operate appliances with open flames, e.g. gas-fired flatwork ironers, tumblers, in the same room, because they lead to solvent decomposition and toxical and corrosive gases arise.

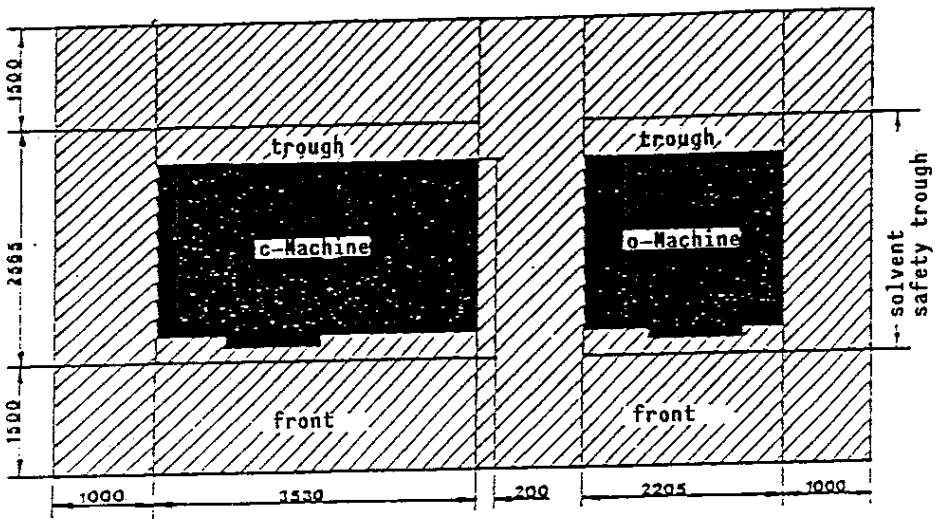
Please ensure that no air from the machine can escape into a possibly existing heating plant room.

6. Installation

6.2 Place of installation

6.2.1 Required space

Front and rear of the machine should be accessible for operation, maintenance and repair. For van removal you need 300 mm in heigt minimum. Installation side by side there must be a distance of 640 mm minimum.



6.2.2 Machine dimensions SI 70

		o	c	i
Lenght	mm	2100	3500	3500
Width	mm	2290	2290	2290
Height	mm	3135	3135	3135

6.3 Floor load

The place of installation must conform to the floor load which is composed of:

- static load = machine weight + max. solvent filling and
- dynamic load = centrifugal cage force with normally distributed, extraction-damp garments.

The force created during extraction must also be taken into account (floor, supporting walls etc.). Resonances are not permissible.

Please consult building specialists.

6. Installation

6.3.1 Dimensions

		o	c	i
Length	mm	2100	3500	3500
Width	mm	1430	1430	1430
Floor space	m^2	3,0	5,0	5,0
Weight without solvent	kg	3300	4480	4980
Weight with solvent (stat. load)	kg	4440	7270	7770
Centrifugal cage force (dyn. load)	N	32400	32400	32400
Floor load (stat. + dyn. load) - Standard drive	N/m^2	29800	21000	22000

Regarding the foundation work please consult building experts. They will take machine-related as well as local particulars into account and find the best solution.

Please use a load distributor if the permissible floor load is inadequate. We also recommend to install a solvent safety trough (a must in Germany). Please see page 9.

6.3.2 Anchoring methods

- For installation over ceilings
  Through-bolts (threaded rod) with washers and nuts M 20
- For installation on foundation
  Stone bolts for cementing in recessed or opened holes.

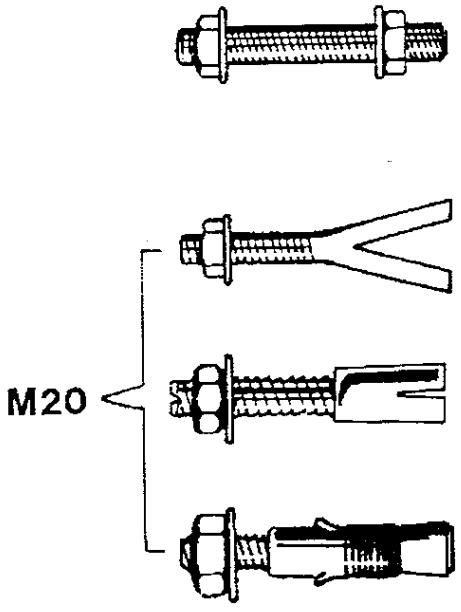
or

Heavy-load plugs with threaded rod

or

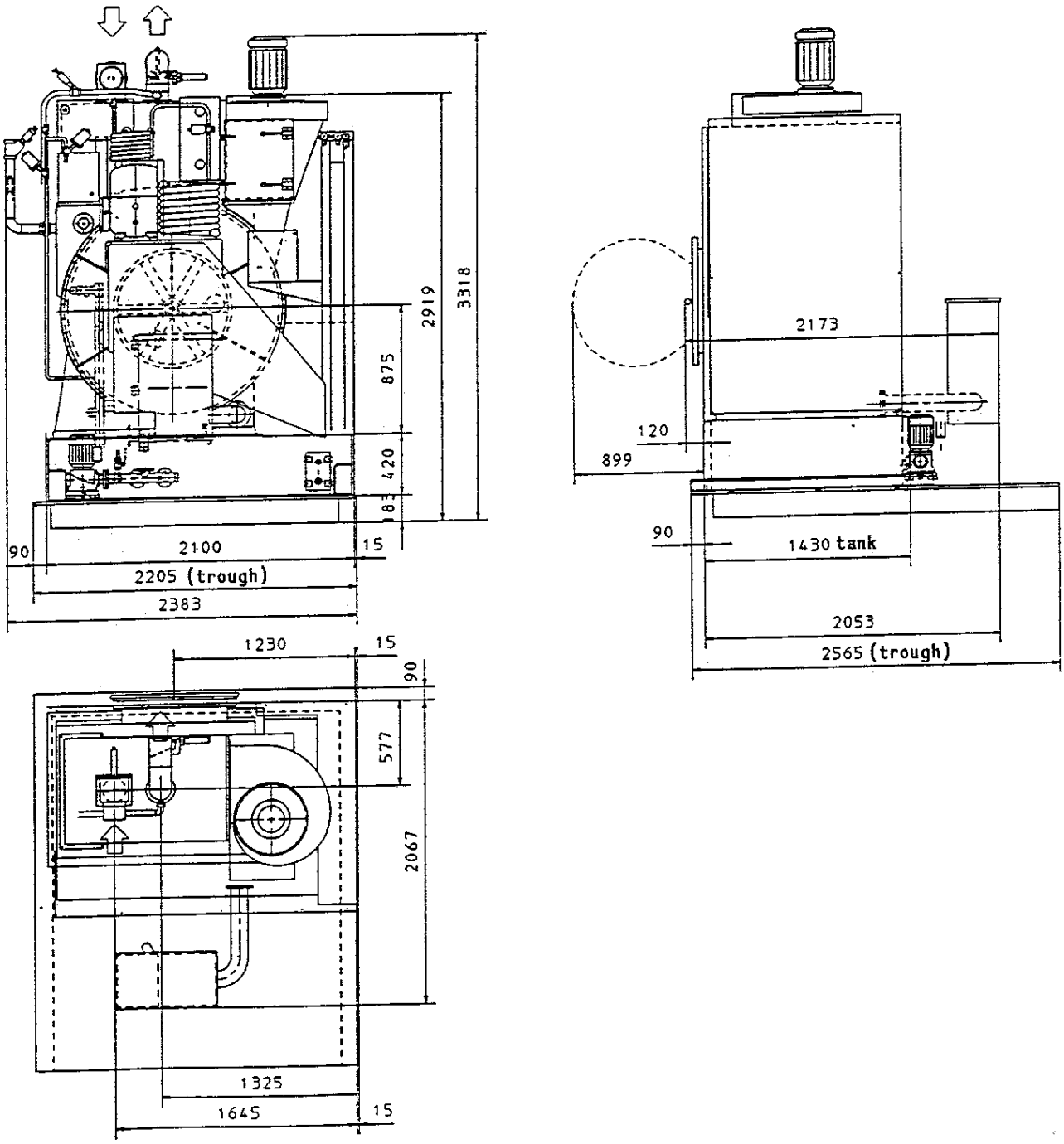
Safety expanding anchors for inserting in bored holes (not recommendable by "o"-models).

We will not be liable for any damage caused by disregard for our recommendations and information.



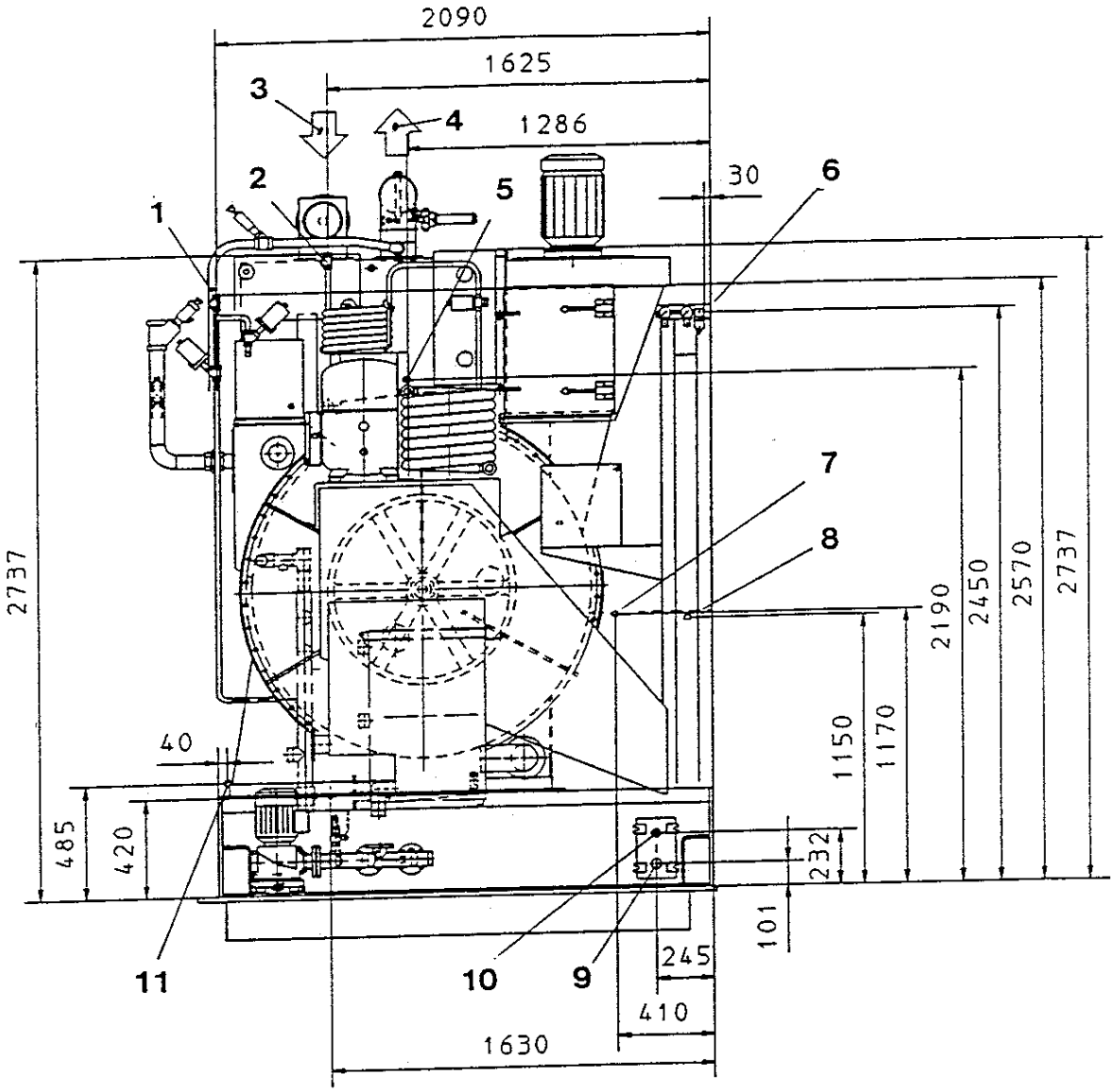
7. Connection

7.1 Machine dimensions specification SI 70 o



7. Connection

7.2 Machine connections specification SI 70 o

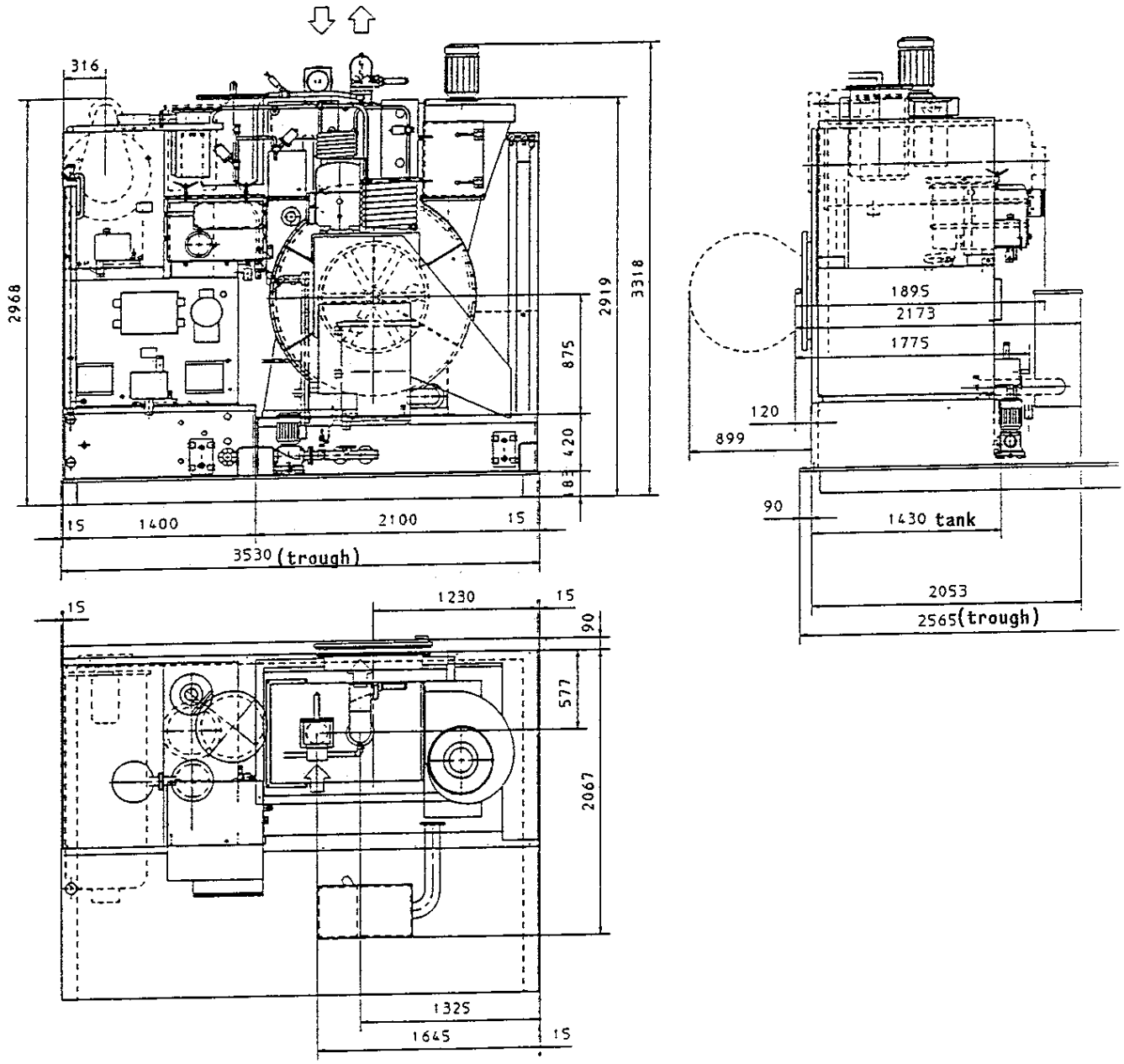


We reserve the right to change measurements!

Pos.	Medium		NW mm	Zoll inch
1	Steam connection		25	3/4
2	Cooling water refrigeration unit inlet		25	3/4
3	Air inlet		150 ø	
4	Air outlet		150 ø	
5	Colling water refrigeration unit outlet		25	3/4
6	Compressed air		8	1/4
7	Processing water outlet		25	3/4
8	Elec. connection			
9	Cooling water inlet tank	)	32	1 1/4
10	Cooling water outlet tank	) option	25	1
11	Condensate		32	1 1/4

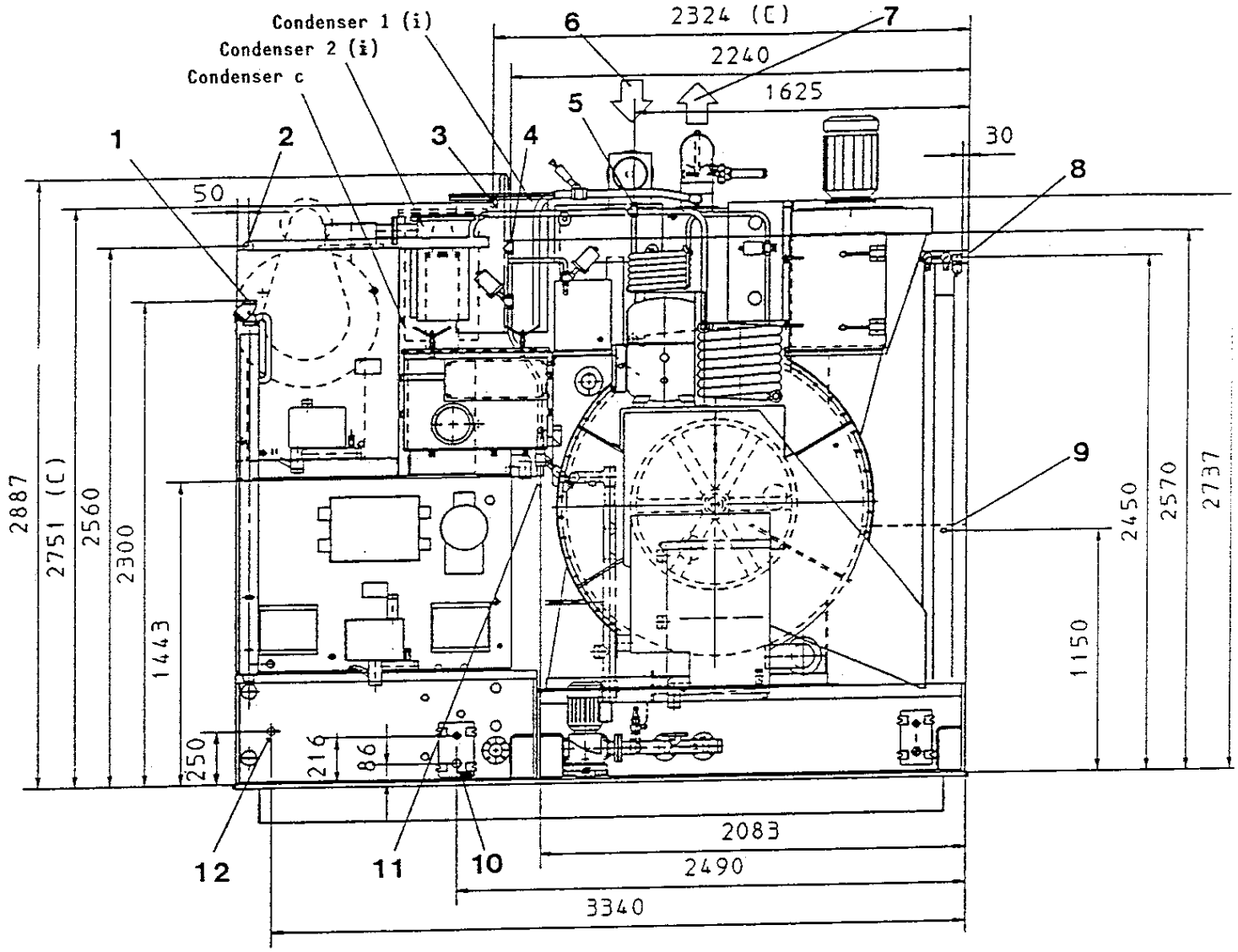
7. Connection

7.3 Machine dimensions specification SI 70 i/c



7. Connection

7.4 Machine connections specification SI 70 i/c



We reserve the right to change measurements!

Pos.	Medium	NW mm	Zoll inch
1	Steam connection	32	1 1/4
2	Cooling water outlet (i)	40	1 1/2
3	Cooling water outlet (c)	40	1 1/2
4	Steam connection	25	3/4
5	Cooling water refrigeration unit inlet	25	3/4
6	Air inlet	150 ø	
7	Air outlet	150 ø	
8	Compressed air	8	1/4
9	Elec. connection		
10	Cooling water inlet tank	32	1 1/4
11	Processing water outlet	25	1
12	Condensate	32	1 1/4

7. Connection

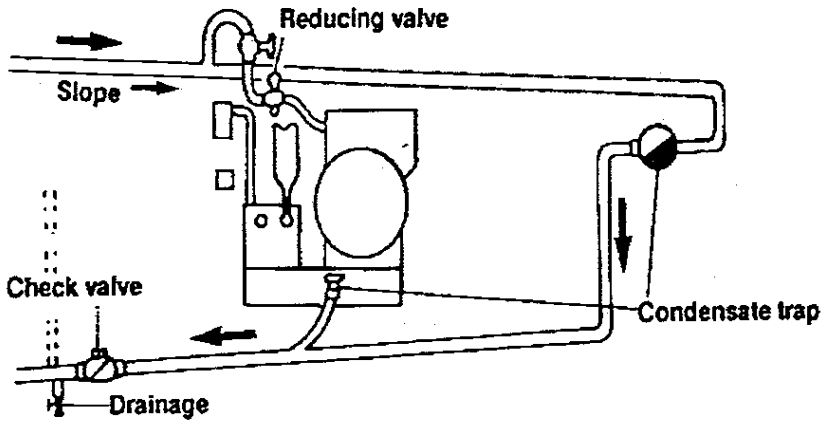
7.5 Piping

Connect the supply and drain pipes (supplied by customer) in accordance with the installation details. Steam, compressed air and water must receive stop valves. Water connection must be according to DIN 1988. To avoid sound conduction through solids, an intermediate piece - made of flexible metal hose - can be connected and the pipe supports insulated.

7.5.1 Steam

Installaton and connection should be insulated
Avoid the use of asbestos!

Operating pressure 4 - 5 bar saturated steam.
At a pre-pressure of more than 5 bar a reducing valve with pressure gauge must be installed and set so that the admissible maximum Perc temperature of 150 °C (please measure!) is not exceeded. (Danger of solvent decomposition and machine damage!).



Steam requirement (steam generator size) 4.0 kg/min.

7.5.2 Condensate

Install insulated condensation line with a slope, away from machine.

In case of an ascending slope check valve and drainage must be at the lowest point.

Each condensate line (still, air heater machine) must have a check valve behind the condensate trap.

Important: Condensate counter-pressure must be at least 1.5 bar below the steam inlet pressure.

7.5.3 Cooling water supply

Fit the line to the machine without reduction of cross section and if possible without bends. The heat balance of the machine is optimally set to 12 °C cooling water inlet temperature and a uniform pressure of 2 - 4 bar.

7. Connection

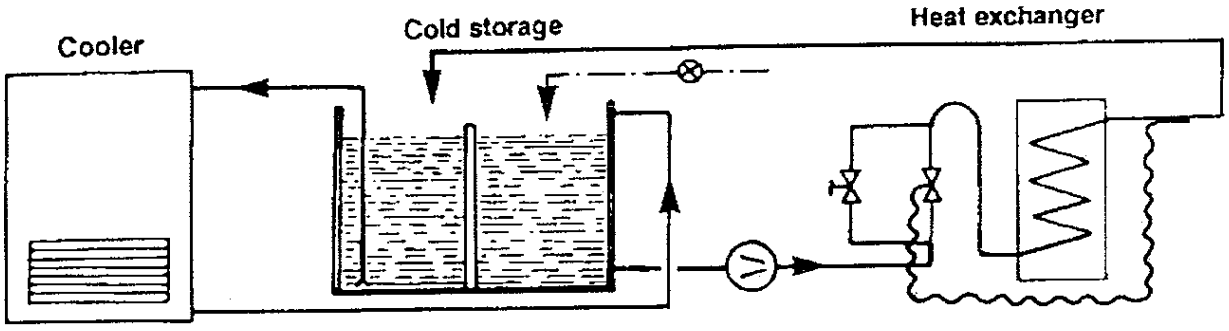
For safety reasons a water flowback stop and venting device should be installed.

With a pressure drop in the cooling water supply or higher cooling water temperatures (e.g. re-chilling operation), the supply line must be at least one nominal size larger. Inlet temperatures should not exceed 22 °C as otherwise stains would be caused on the garments, solvent consumption would increase and the drying time would be longer.
Water pressure must be adapted to the higher inlet temperature up to double the max. requirement.

With re-chilling the correct installation is especially important. Among other things, the following must be taken into account: cooler performance, switch-over to public city water supply, low temperature storage, pump size, cooling water valve by-pass. Pump pressure 4 - 6 bar.

Cooling water peak demand 2 - 3 bar /12 °C:

1100 l /2-bath-process	75 l/min.



Heat to be elminated:

2-bath-process (1-bath low level to still)	SI 70	kg/h	135000

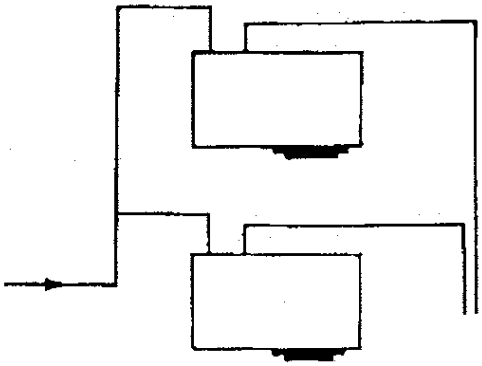
With re-chiller approx. 50 % safety addition.

Attention:
With re-chiller you must have a pump pressure of 5 bar for still unit.

7. Connection

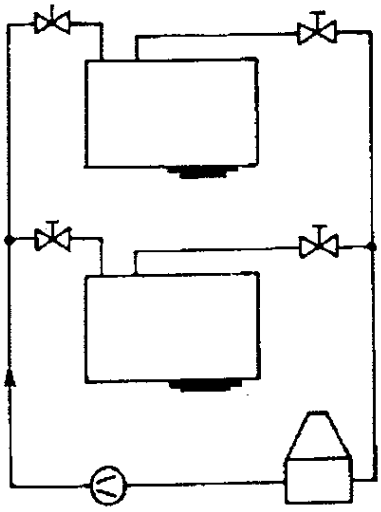
Installation examples for cooling water supply

Connection for city water supply



Cooling water drains
must be separate.

Connection with water recirculation (refrigeration unit or cooling tower)



When supply and drain lines are fitted with hand valves, both valves must be opened before starting the machine, so that cooling is ensured and the sensor in the condensate drain line of the still responds in case of cooling water shortage.

7.5.4 Cooling water drain

Cooling water leaving the machine can be passed to the drains, re-used or re-chilled as it flows in closed circuit within the machine and has no contact with solvent.

Cooling water re-use is preferable.

7. Connection

7.5.5 Processing water

Processing water should be prepared in a processing water purification unit.

7.5.6 Compressed air

Air pressure should be at least 6.0 bar. The machine is equipped with a compressed air reducing valve, pressure gauge and compressed air water separator.

7.5.7 Electric connection

Note mains voltage (data-plate). Make connections L1/L2/L3, establish neutral and protective conductor with corresponding cross-section and fusing. Pass cable through existing PG-union into the control box and connect at terminal.

		o	i/c
	Operating load	25.2 kW	26.7 kW
230 V	Nominal current	80.4 A	86.5 A
	Fuse	100 A	100 A
400 V	Nominal current	46.3 A	49.4 A
	Fuse	63 A	63 A

7. Connection

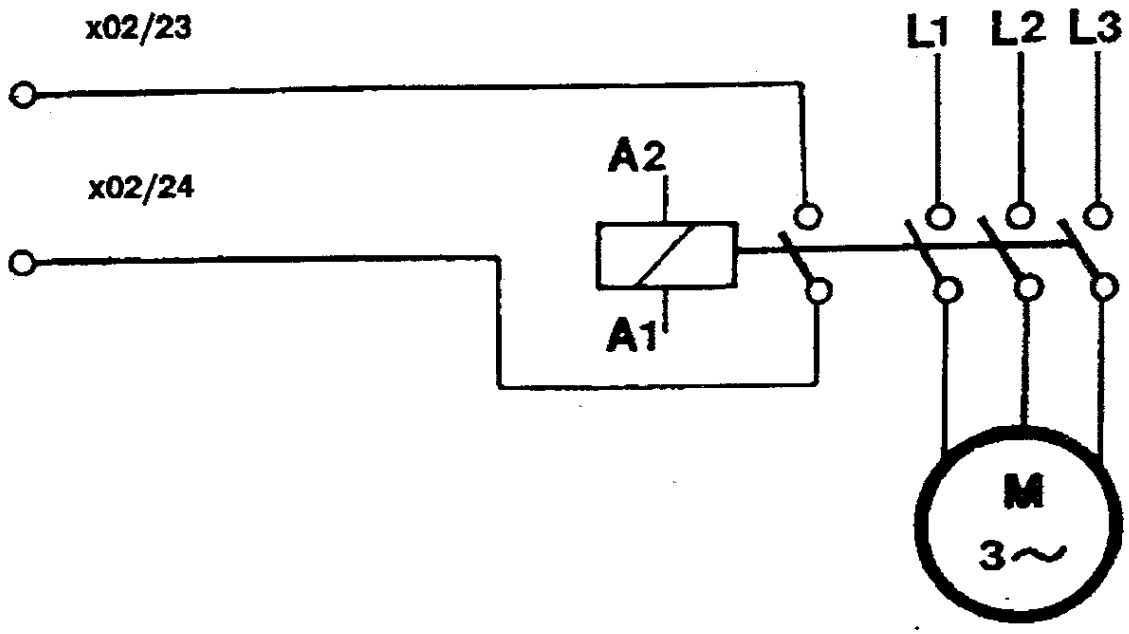
7.5.8 Actuation of room ventilation

Regulations permit to couple the machine's automatic controls to a room ventilation fan. The machine cannot be started before room ventilation has been switched on.

Room air intake inlet 70 (in 70)
x02/23
x02/24

The contacts are connected with the fan controls.

Room ventilation fan



BÖWE
Textile Cleaning

Printed in West Germany by BÖWE