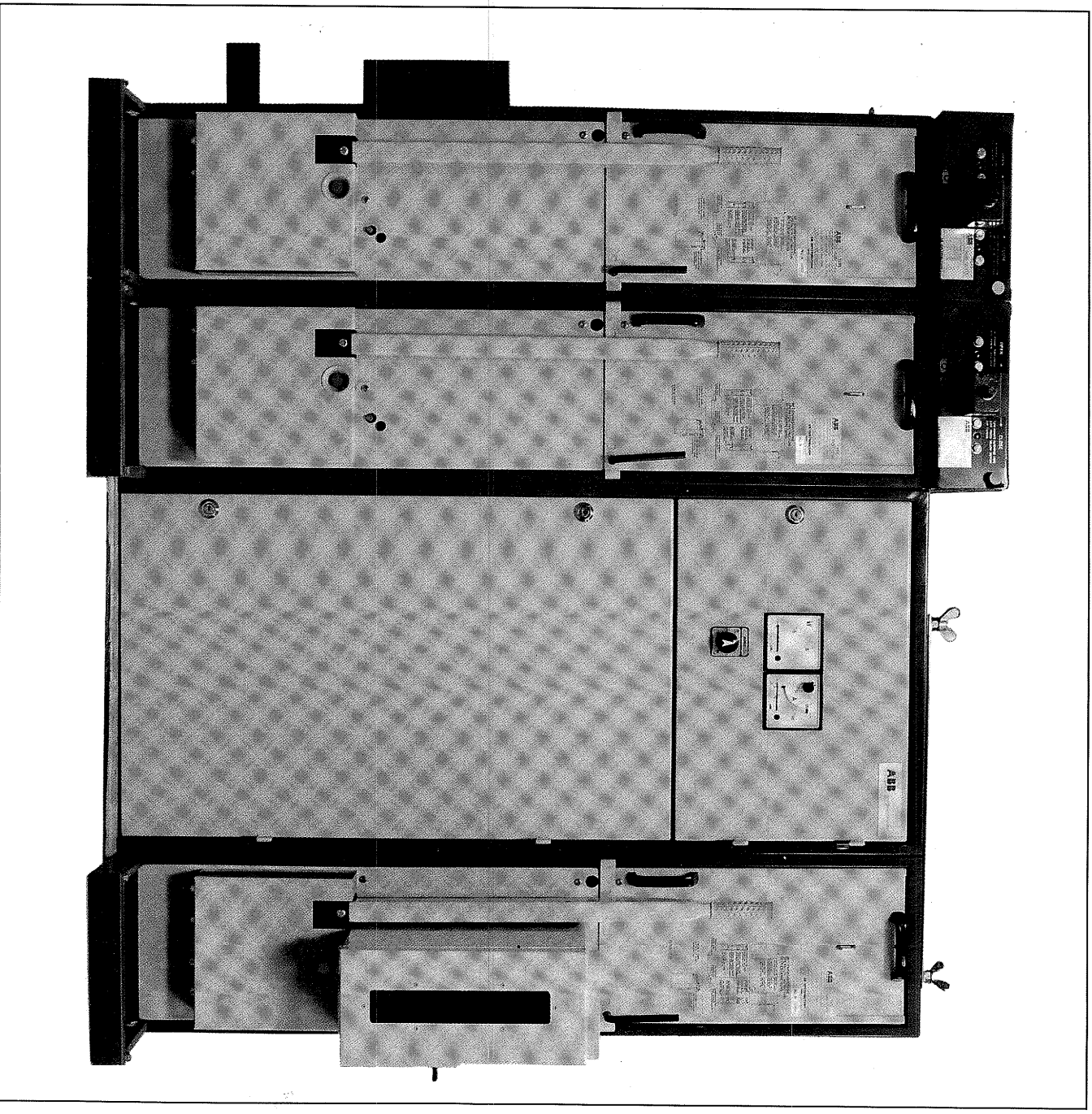


Operating Instructions

Type tested metal-enclosed Compact Switchgear cubicle Type RGB 12/13,8 for 12 and 13,8 kV

With withdrawable triple pole
general purpose
switches 400 A, for indoor use.



Medium Voltage

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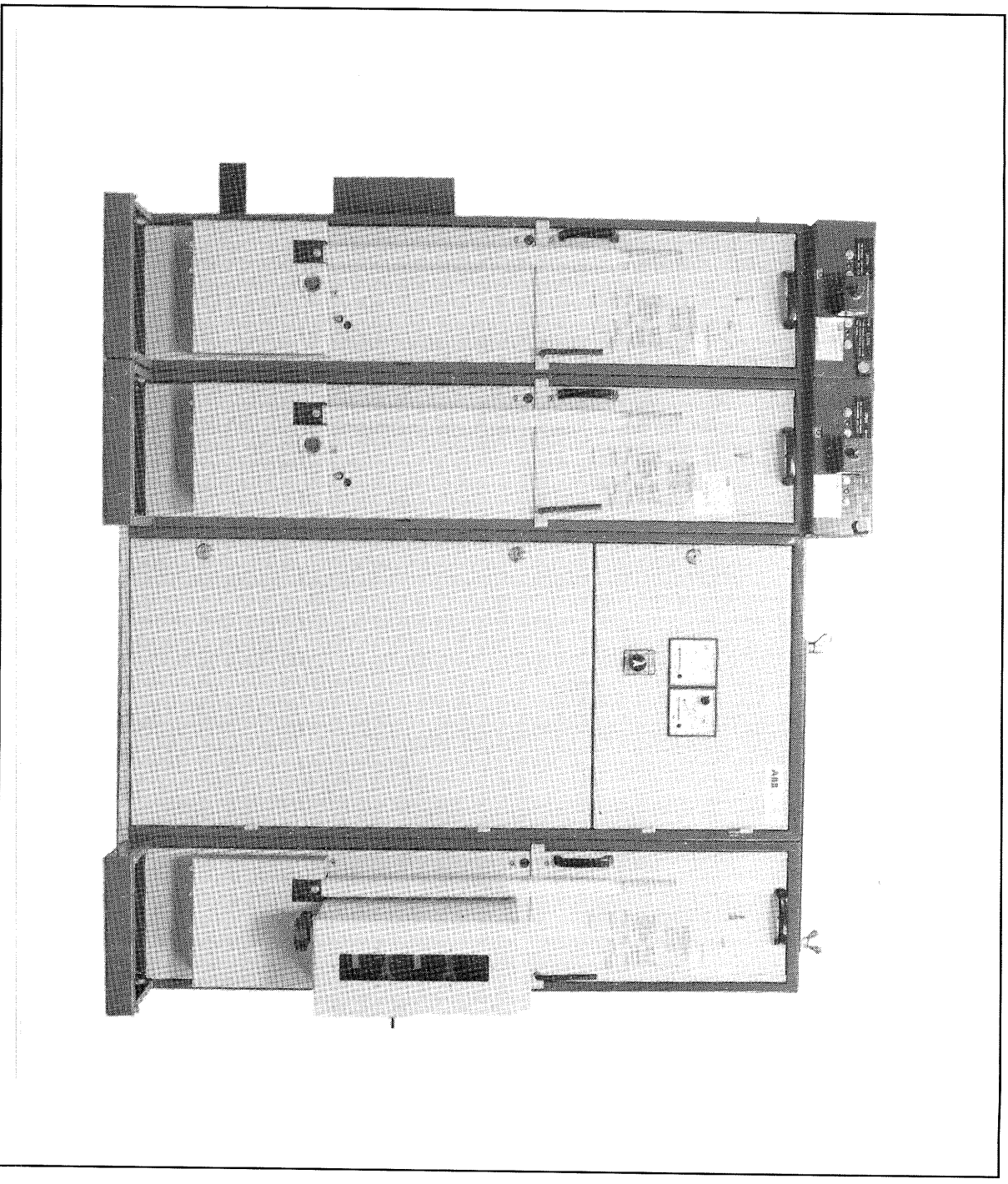


Fig. 1

1. GENERAL

The compact switchgear cubicle type RGB 12/13,8 is a type tested, factory assembled, spacesaving switchgear unit for 12 and 13,8 kV with withdrawable general purpose switches intended for indoor use. The space requirement is very small, and consequently the switchgear cubicle is especially suitable for distribution installations where spacings are limited. The switchgear cubicles are delivered as factory assembled units either separate or built together. The switchgear unit is in accordance with the requirements of IEC Publications 265, 298 and 420.

2. DIMENSIONS, Fig 2 and TECHNICAL SPECIFICATIONS

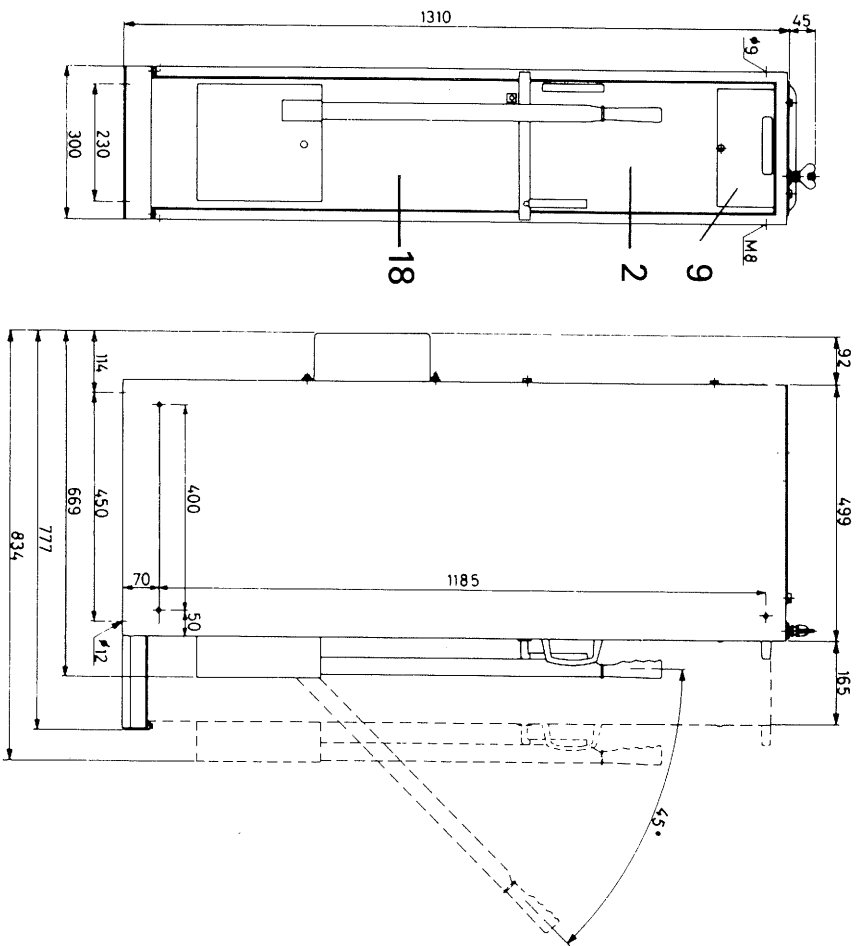


Fig. 2

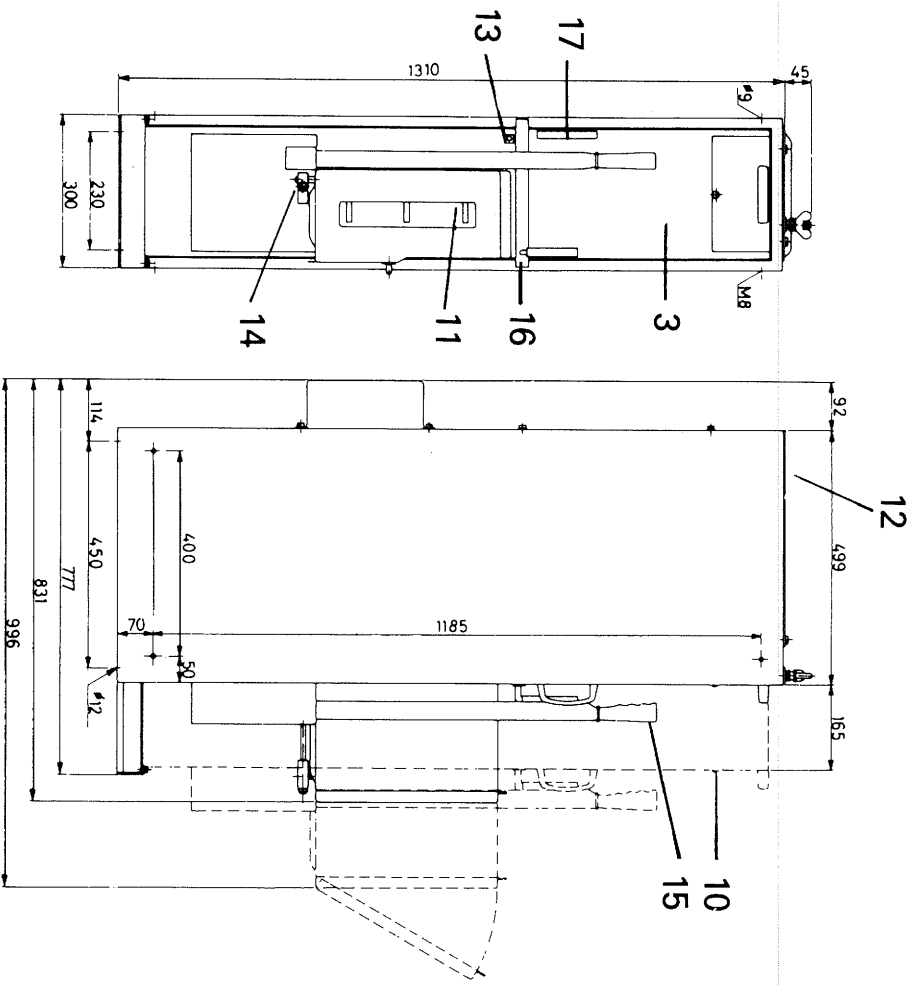


Fig. 3

9. TECHNICAL SPECIFICATIONS

**Designation and type: General purpose switch having increased operating frequency.
Type RGB 12/13.8. Test acc. to IEC 265 and 694**

Rated voltage	U_n		
Rated normal current***)	I_n		
Rated current of bus-bars	A	12 400 500	13,8 400 500
HBC fuse links according to DIN 43625, August 1971.	A		
Dimensions e	mm	292 100 83	292 63 53
Max. rated current of HBC fuse-links type CEF*)	A	63	45
Max. load current	A	70	70
Max. rated current of transformer connected	kA peak	25	25
Rated peak withstand current	kA rms	50**)	50
Rated short-time current 1 s	kA peak	1250	1250
Rated short-circuit making capacity	A	800	800
Max. load breaking capacity $\cos \varnothing=0,3$	A		
Max. mainly active load breaking capacity	A		
Rated mainly active load breaking capacity	A	400	400
breaking capacity	A	400	400
Rated closed loop breaking capacity	A	16	16
Rated transformer off-load breaking capacity	A	25	25
Rated single capacitor bank breaking capacity	A	25	25
Rated cable-charging breaking capacity	A	105	105
Earth fault breaking capacity:	A	60	60
Earth fault breaking current	A		
Cable charging breaking current	A		
Power frequency withstand voltage:	kV/rms	45	45
To earth and between poles	kV/rms	60	60
Across the isolating distance	kV	75	95
Impulse withstand voltage:	kV		
To earth and between poles	kV	85	110
Across the isolating distance	kV		

*) The right coordination between switch and fuses is tested in accordance with IEC-Publication 420.

***) 70 kA at 10,5 kV.

****) The switch-fuse has $I_n = 100$ A, and when current-limiting fuse-links type CEF (Publication No. N-H 5114 E) are applied, the I_{th} , I_{dyn} and I_{ma} are only limited by the max. breaking current of the HBC fuse-links.

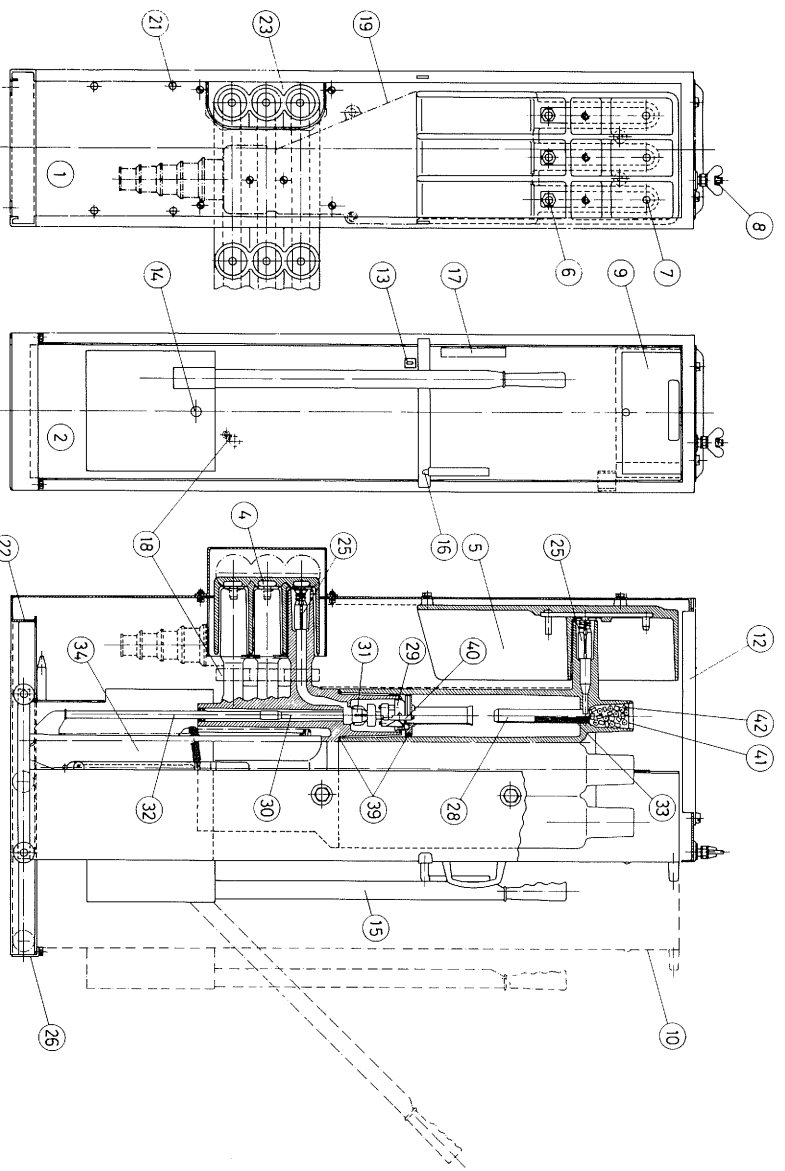


Fig. 4

3. DESIGN AND MODE OF OPERATION, Fig. 4

Each individual compact switchgear cubicle consists of two sub-assemblies, the stationary metal-enclosure with cable termination and busbar, and the truck with an epoxy-insulated general purpose switch without (2) or with (3) fuses. The cubicles can be put next to another in any arbitrary way and are connected together by means of the metal-enclosed, wpoxy-insulated busbars. The stationary metal-enclosures (1) are identical for both types of switchgear cubicles (with or without fuses).

The base frame of the cubicle serves as rails for the switch truck, which closes the front of the cubicle.

The top of the cubicle has a device for pressure relief (12). The busbar block is placed in the lower, rear part of the enclosure. The busbar block may be supplied with tulip contacts at the ends, thereby making it possible to fit the cubicles together in any number and to extend the switchgear without interrupting the energy supply. The cable connection is in the upper, rear part of the enclosure, either by using an open cable termination board (5) or a cable terminal box (19) having a withstand pressure of 2 kp/mm². Plastic insulated or paper insulated cables of crosssection including 240 mm² can be connected.

When making use of the open cable termination board, it is necessary to apply a normal cable sealing end in addition, for which there are provided fixing holes in

the lower, rear part of the enclosure (21). The cable is clamped to the rear part of the frame (22) of the enclosure. As protection to prevent touching of live parts and insulation surfaces when working in the enclosure with tension on the busbar, a sheet cover can be supplied to cover up the branch-off-contacts (23) of the busbars.

The upper part of the cable termination is fitted with earthing terminals (7), which is made accessible through the earthing shutter on the front cover.

The epoxy insulated general purpose switch is mounted on the truck and is equipped with the following interlocks:

1. To prevent the switch truck from being withdrawn or plugged in with the switch in the closed position (16).
2. To prevent access to the fuses with the switch in the service position (24).

By means of the upper and lower tulip contacts (25) the switch is plugged into the fixed contacts of the cable termination and the busbar block respectively.

The epoxy insulation is totally enclosed by an earthen sheet steel enclosure which eliminates any dangerous approach.

The switches are equipped with independent spring energy operation for rapid closing and stored spring energy operation for rapid opening of the switches.

The operating lever (15) for charging the operating

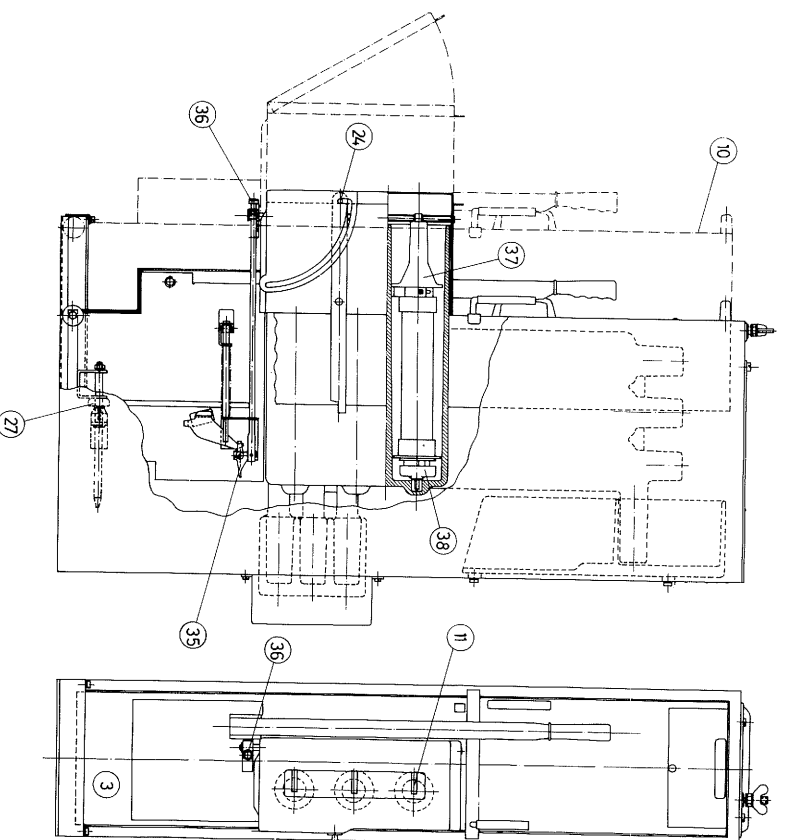


Fig. 5

springs and for closing the switch, the release-button (14) for opening the switch and the position indicator (13) are placed on the front of the switch.

When withdrawing the truck to the disconnected position, the travel is limited by the cross link (26). With the truck in the disconnected position (10) and interlocked from being run into the enclosure, it is possible to operate the switch for testing purposes.

By removing the cross link, (26), the truck can be completely removed from the enclosure. Earthing of the truck is done automatically by means of the contact pin fixed to the truck and the sliding contact fixed to the enclosure (27).

The arc-extinguishing chamber is fitted with a contact system consisting of a main fixed tube (28) and a movable main tulip contact (29) fitted with a gas evolving nozzle. Both main contacts are fitted with copper-wolfram tips. The main tulip contact with nozzle is fixed to the end of the movable contact rod (30) which is guided by the fixed sliding contact (31) and is attached to the operating mechanism through the insulating rod (32). The length of travel is 200 mm.

When interrupting the current, the arc is drawn through the gas evolving nozzle which combined with a safe interruption of the current. During the opening movement of the switch, the piston part of the nozzle compresses the air in the lower part of the switch chamber. The air blast escapes through the movable main con-

tact, the gas evolving nozzle and the fixed main contact tube to the top of the switch. The ionized exhaust from the arc quenching is cooled down by means of a cooling system (33) in the switch outlets before it is let out in open-air at the top of the cubicle.

The operating mechanism (34) has separate operating springs for opening and closing of the switch. Both operating springs are charged at the same time by the operating lever which is pulled four times. When the lever is pushed back again after the last pull, the switch closes. Opening the switch is done by pushing the release button (14), which releases a spring operated tripping device (35). The operating mechanism is interlocked from being charged while a tripping command exists and when the interlocking device of the truck is disengaged.

Both types of switches (without and with fuses) have identical arc-extinguishing chambers and operating mechanisms. The switch-fuse has in addition a fuse-box (11). The switch-fuse can be fitted with HBC-fuses having striker pins. The fuses must be in accordance with DIN 43625. The switch-fuse is equipped with an automatic tripping device (36) which will trip the switch when one or more of the fuses are blowing.

The fuse handle with the clamp contact (37) is fixed to the end of the fuse link equipped with the striker pin. The other end of the fuse links fits into the tulip contact (38) at the bottom of the switch fuse-box.

4. EARTHING SWITCH Mounting instructions

1. Drill the 4 9 mm holes marked "A" through the top of the RGB cubicle. See drawing no. 42688, Fig. 6.
NOTE: Take care that no chips fall down on or into the switch.

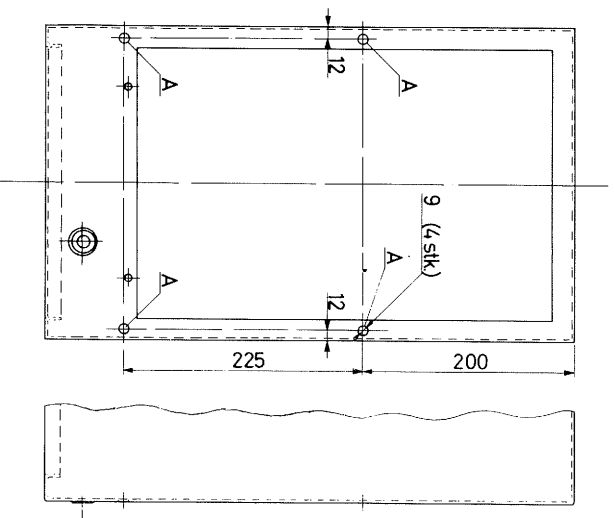


Fig. 6

3. Attach the interlock plate to the interlock arm by means of the two hex. screws M 8 x 12. See fig. 8.

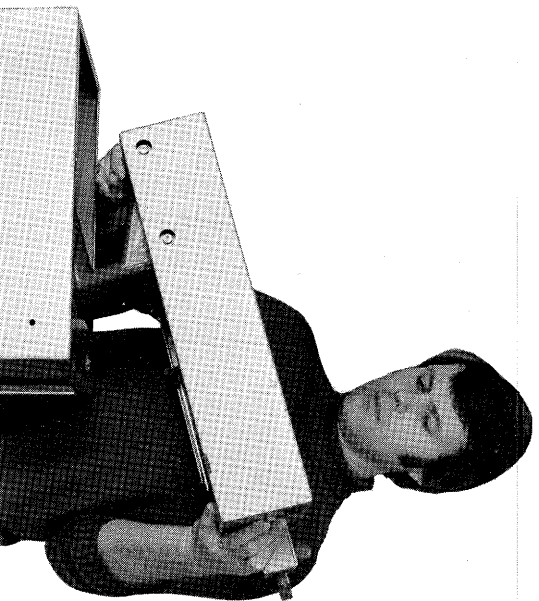


Fig. 8

2. Place the earth switch on top of the cubicle and move it backwards until the tulip contacts have full contact with the corresponding contacts in the cable board. Fig. 7.
Secure the earth switch with 4 hex. screws M 8 x 12.

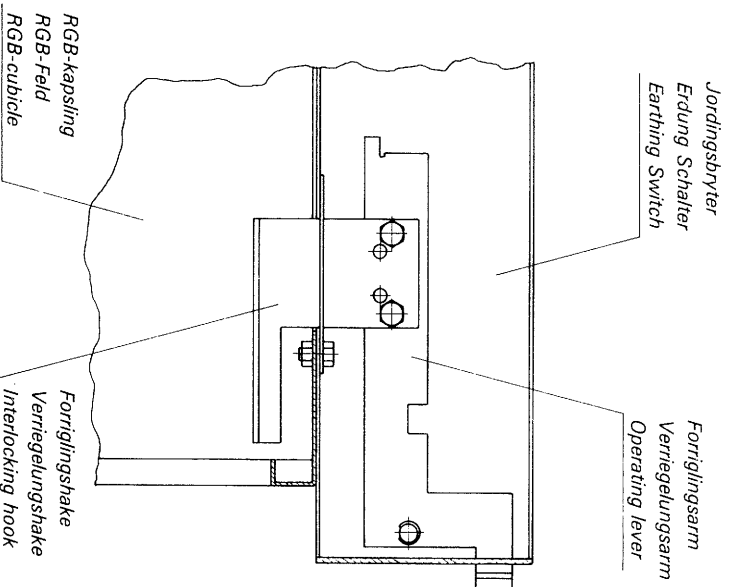


Fig. 7

5. Fit the top cover in place by means of 2 screws M 6 x 10 with nuts. To hold the nut, use a 10 mm box spanner with a long shaft. See fig. 9.
The top cover is the same as on the RGB cubicles.

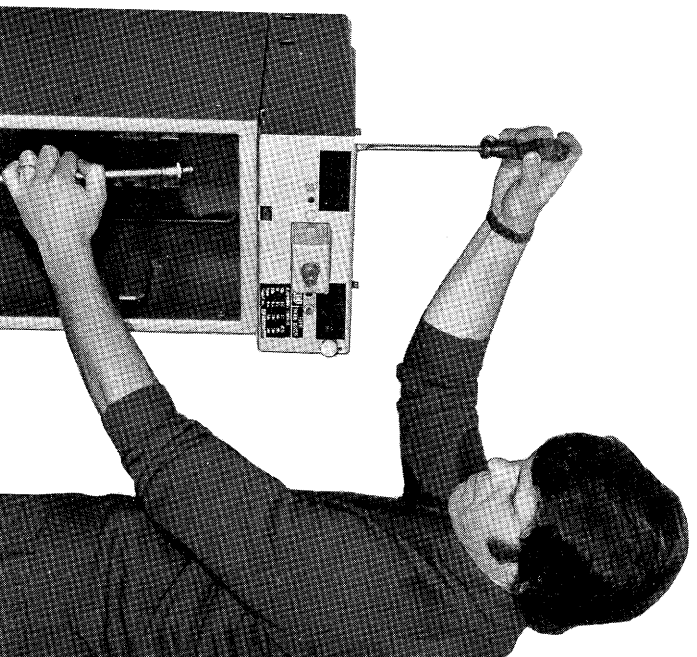


Fig. 9

4. Connecting the earth bar.

The earth bar of the earth switch must be bent to fit the earthing screw of the RGB cubicle.

NOTE: Change the original screw and thumb nut against a hex. screw M 12 x 20 and nut. Turn the screw so that the nut is mounted on the underside.

5. ACCESSORIES

Earthing device (Fig. 10)

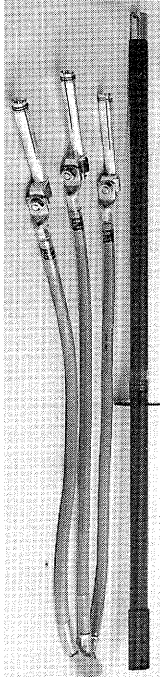


Fig. 10

Earthing of the cable is done by means of a special earthing device which is connected to the earthing terminals, Fig. 4 (7), on the cable termination. A conventional high-voltage tester may be used to control that the earthing terminals and consequently the cable are dead.

Busbar cover plate (Fig. 11) to cover the branch-off contacts of the busbars when working in the enclosure with tension on the busbars.



Fig. 11

Short-circuit indicator (Fig. 12) with a operating current of 1000 A. The short-circuit indicator is of the 3-pole type and operates on 1-, 2- or 3-phase fault currents. A common visual indicator with re-setting mechanism is placed on the front cover of the switch, Fig. 4 (18).

A micro-switch for remote short-circuit indication may be supplied on request, Fig. 12-A.

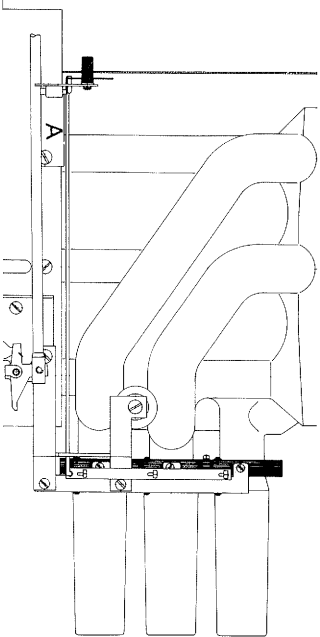


Fig. 12

Magnetic release (Fig. 13) for work current may be supplied for all prevalent d.c. and a.c. voltages, and is connected to the spring operated tripping device, Fig. 5 (35).

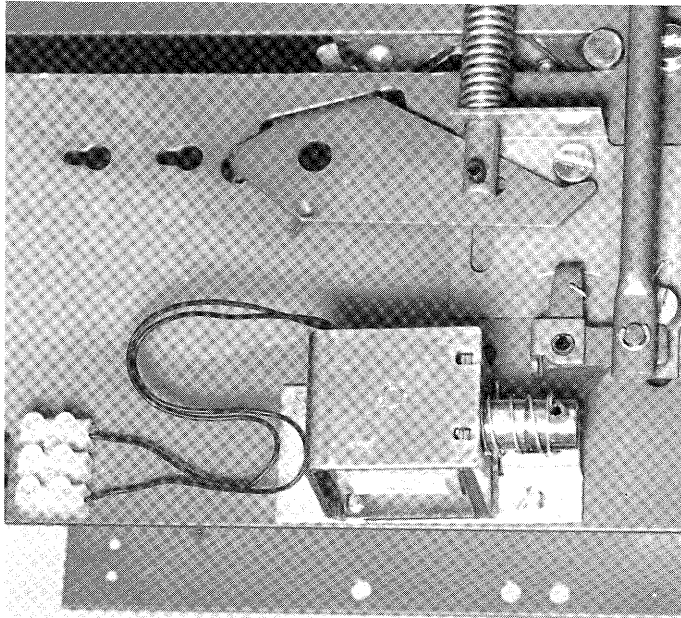


Fig. 13

Auxiliary switch (Fig. 14) with max. 4 NO + 4 NC may be supplied for d.c. and a.c. voltages.

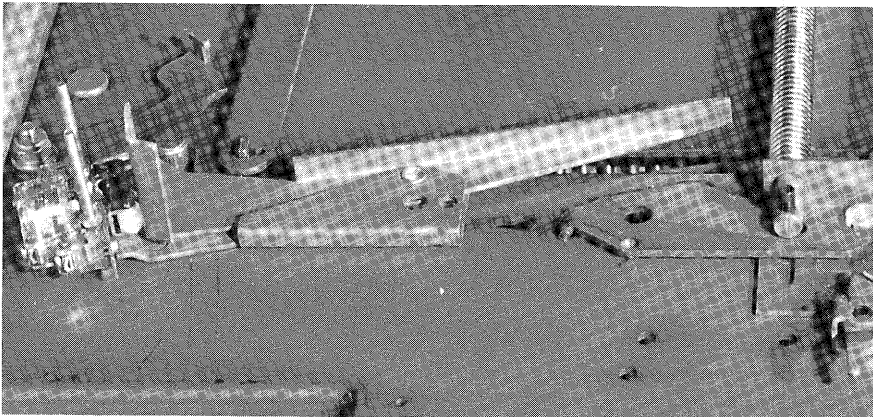


Fig. 14

Plug (Fig. 15) for the control circuit.

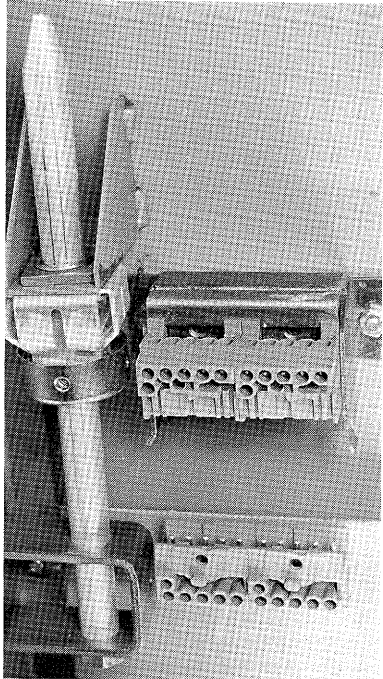


Fig. 15

Motor operated remote control (Fig. 18) may be supplied and must be fitted at the factory. In an emergency case the motor drive can be uncoupled, and the operating mechanism can be operated by hand.

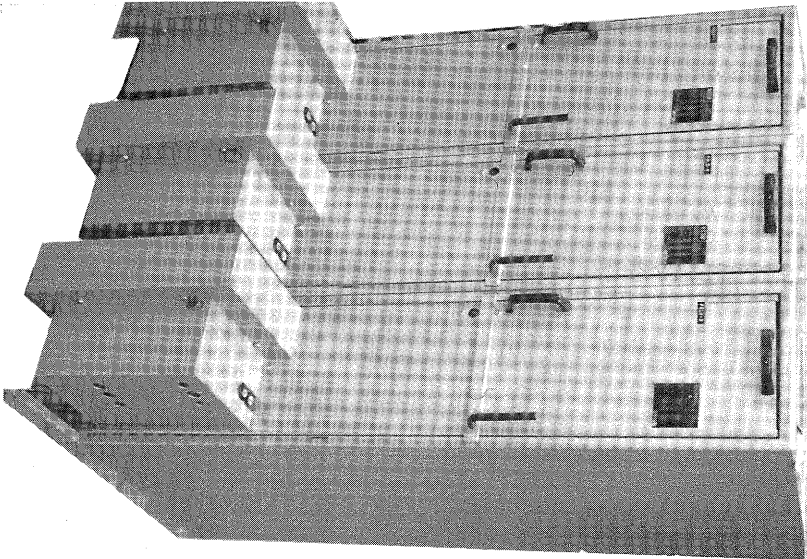


Fig. 18

Front blind cover (Fig. 16)

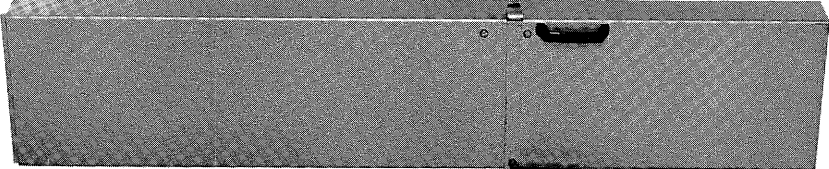


Fig. 16

Locking device (Fig. 17) to prevent the switch from being opened or closed.

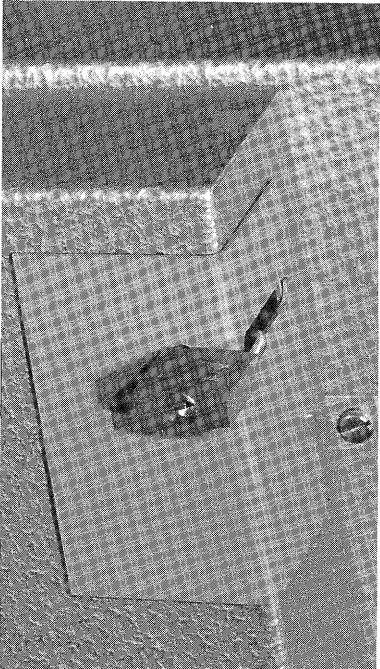


Fig. 17

S-mechanism (Fig. 19) for manually prepared remote operation by means of magnetic coil and/or air piston.

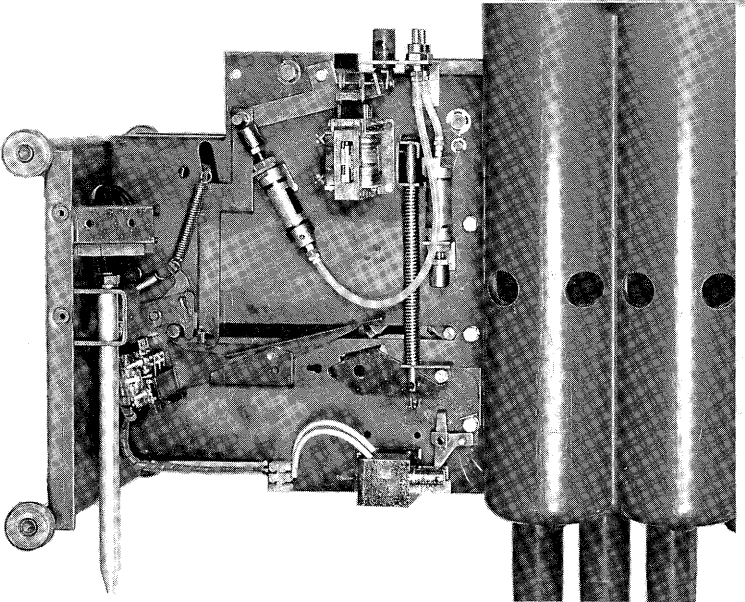
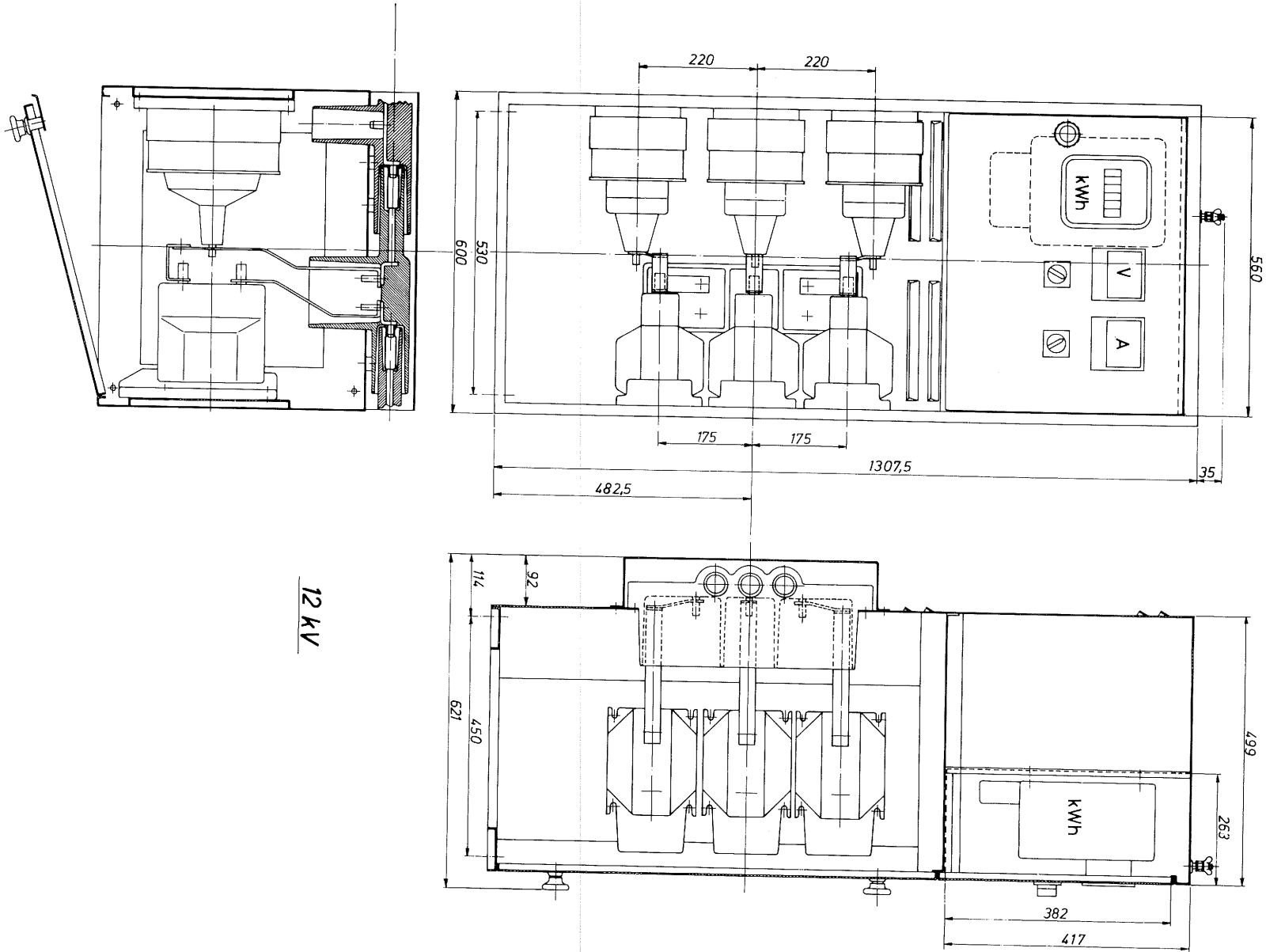


Fig. 19

Metal-enclosed metering unit (Fig. 20) with room for 3 current transformers and 3 voltage transformers. With twice the width of a switchgear cubicle, it can be fitted directly into the module system.



12 kV

Fig. 20

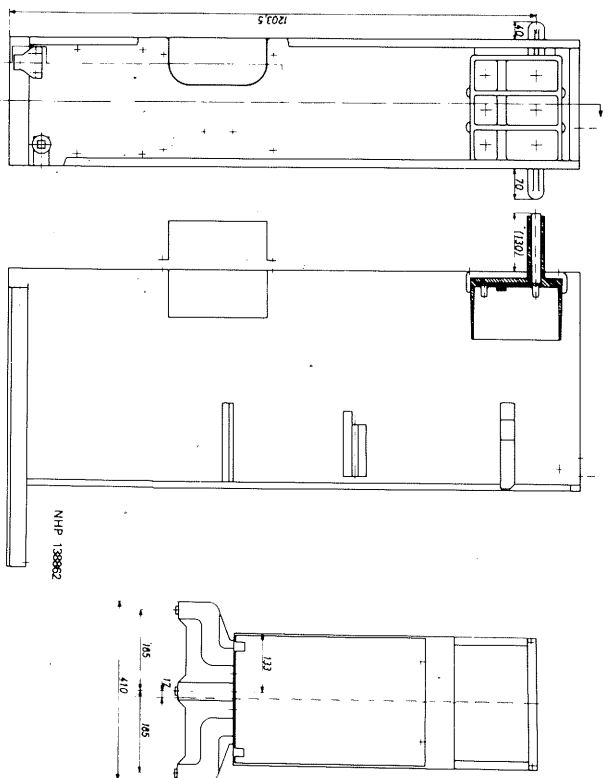


Fig. 21. Cubicle with special transformer connecting block.

Cubicle with special transformer connection block. Fig. 21.
The special transformer connecting block substitutes the normal cable terminal block. Thus it is possible for instance to feed the transformer through uninsulated cables, without using cable sealing ends.
This cubicle should be placed in the middle of a rung main unit.

Cable termination unit RGBD 12/13,8, Fig. 22
without switch for connecting the cable directly to the busbar. The cables are connected to the same cable termination used in the sectionalizing cubicle.
The cable termination unit can only be placed as cubicle No. 1 (to the left) in connection with other cubicle.

The busbar section unit RGBL 12/13,8, Fig. 23
contains a switch and a special epoxy insulated block for connection to the busbar.
The dimensions of the busbar section unit and the cable termination unit are identical to a normal switch.

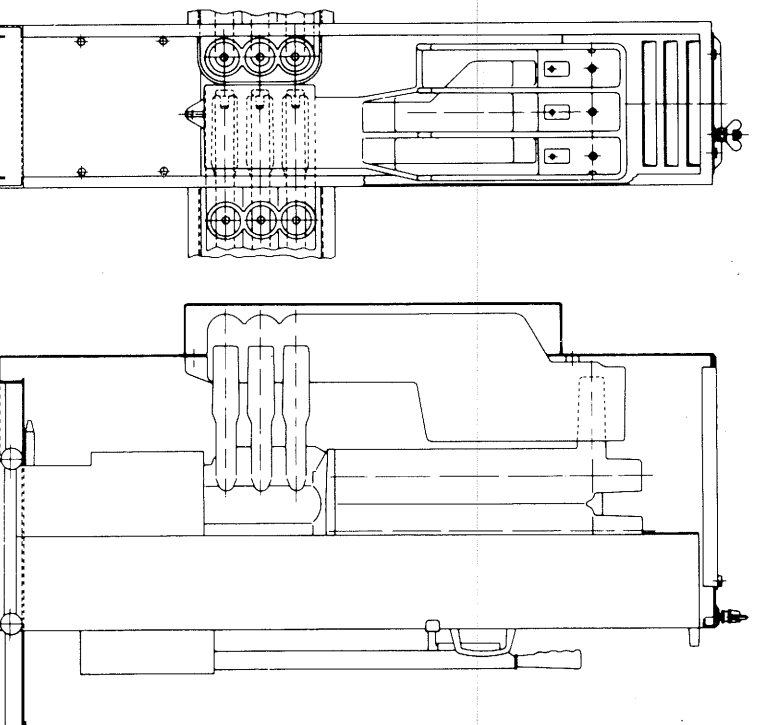


Fig. 22

Fig. 23

6. INSPECTION, STORING AND TRANSPORTATION

On receipt of the switchgear cubicles the customers should make a visual examination to look for any damage on the cubicle or the insulation caused by transportation. An inspection of the switches, the trucks and the interlocks should be carried out to see if they operate properly. This examination is carried out without removing the switchgear cubicles from the transportation pallet.

Any storing of the switchgear cubicles take place indoors or only.
By retransportation to the place of erection the switchgear cubicles must be attached to the transportation pallet to avoid any damage on the switchgear cubicles.

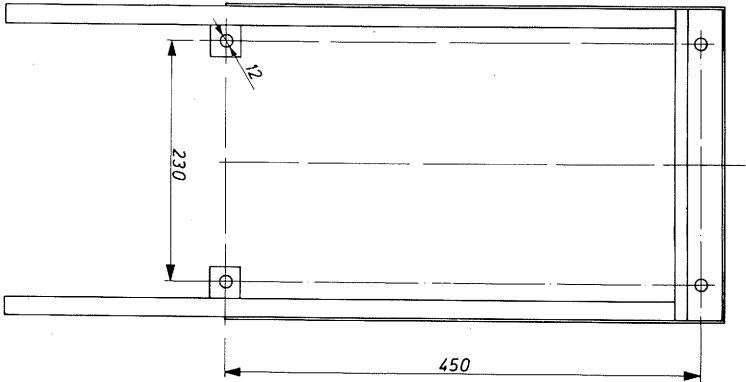
7. INSTALLATION

The base for the switchgear cubicles can be arranged in either two ways as shown in Fig. 24. The base must be well levelled to avoid teisting of the switchgear cubicle, which could cause incorrect operation.

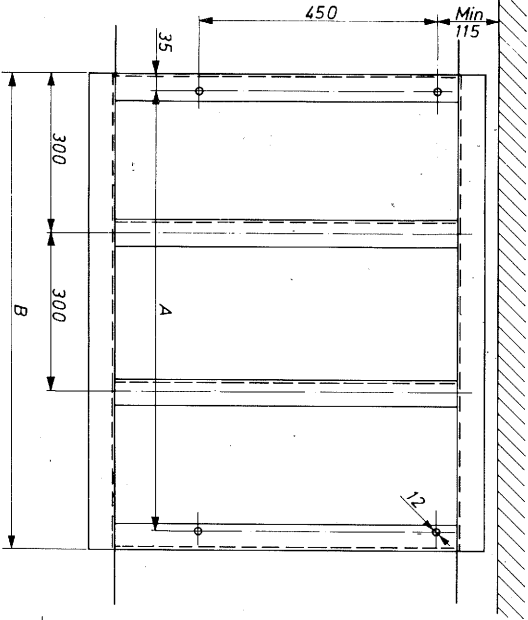
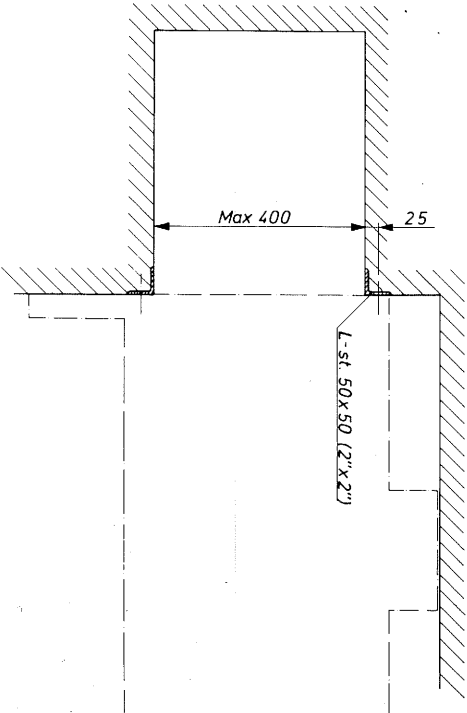
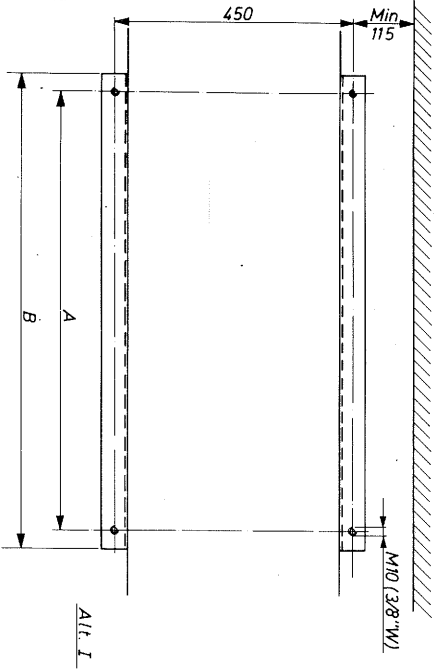
After the truck is removed from the cubicle, the enclosure is fixed to the base by means of screws M 10 or 3/8" W. The truck is then run into the cubicle to control if it runs easily in the rails, and that no twisting of the cubicle takes place. When the truck runs properly, it is once more removed from the cubicle to give room for the cable termination work.

When terminating a plastic insulated cable or a non-draining solid paper insulated cable, the open cable termination board together with a conventional cable sealing end is recommended. The installation of the cable sealing end (Fig. 25, 26) must be in accordance with the

Numbers of cubicles	2	3	4	etc.
Dimensions A	530	830	1130	etc.
Dimensions B	600	900	1200	etc



Grundrahmen des Schaltfeldes



Alt. II

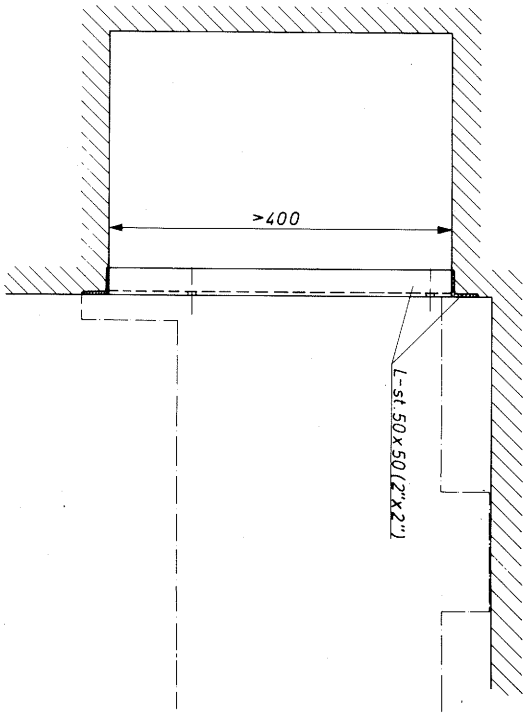


Fig. 24

installation instructions specified by the producer of the particular cable sealing end. The silver coated copper-washers must always lie under the lugs to ensure good contact. When terminating a paper insulated cable, either the open cable termination board together with a conventional pressure tight cable sealing end (mini-type) may be applied, or the switchgear cubicle may be supplied with a pressure tight, epoxy insulated cable box (Fig. 27). The installation of the pressure tight cable sealing end must be in accordance with the installation instructions specified by the producer of this particular cable sealing end.

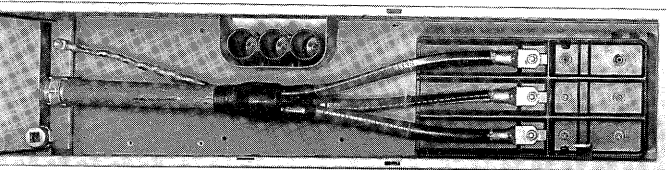


Fig. 25

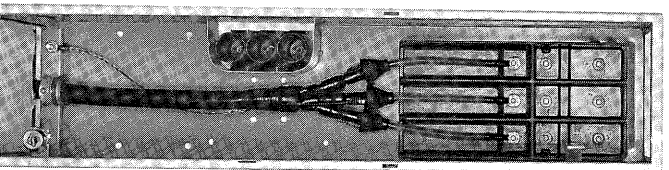


Fig. 26

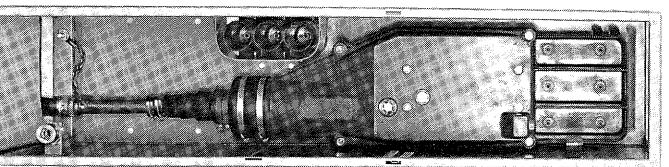


Fig. 27

In the lower rear part of the enclosure there are four holes for securing the cable sealing end. (Fig. 25, 26). The cable is secured by a cable clamp (i.e. "Phol-clamp") to the rear part of the base frame of the enclosure (Fig. 25, 26, 27)

Installation instructions for paper insulated cable using the epoxy insulated cable box (Fig. 28):

1. The rubber entry sleeve and the cover of the cable box are removed. The cable is pulled up and put in correct location.

A marking is put on the cable corresponding to the bottom edge of the cable box.

2. The cable is cut to a length of 625 mm above the marking.
3. A seizing of wire is put around the cable 290 mm below the marking.
4. The serving is removed above the seizing of wire.
5. The armouring is cut at a length of 20 mm above the serving and removed.
6. The protection layer is removed and the lead sheath is cleaned.
7. The earth conductor is connected to the lead sheath and the armouring by means of a seizing of copper wire. The seizing is then soldered.
8. The lead sheath is cut at a length of 300 mm above the serving and removed.
9. The belt insulation is cut at a length of 20 mm above the lead sheath and secured with a seizing of linen thread. The belt insulation is then removed.
10. The whole length of the paper insulation of each core is then protected with a layer of insulating tape.
11. The rubber entry sleeve is cut to a diameter step corresponding to the diameter of the lead sheath and is then pulled onto the lead sheath.
12. Train the cores of the cable into correct position and cut to correct length. The lugs are then soldered or pressed onto the conductors.
13. The insulation of the cores is secured with a seizing of linen thread.
14. The lugs are then connected to the cable box terminals.

The silver coated copper-washers, thickness 2.5 mm must always lie between the lugs and the cable box terminals to keep the lugs from lying on to the cable box insulation.

15. The cover is put in position and fixed. Beware that the rubber packing and the four O-rings are in correct position.
16. The rubber entry sleeve is pulled over the cylindrical part of the cable box and clamped with two hose clamps.
17. The other end of the rubber entry sleeve is sealed to the lead sheath of the cable with two smaller hose clamps.
17. The cable is fixed to the rear part of the base frame by a cable clamp (f. ex. "Phol-clamp").
18. The earth conductor, which shall be provided with a lug, is now connected to the earthing screw in the rear part of the enclosure.
19. The cable box is filled with 3-4 litres of cable oil (compound) through the filler hole at the top of the cover.

The cable oil top level must be such that any mutual contact between the cores can not take place in air. The filling temperature of the cable oil must not exceed 120° C.

Vax filling compounds must **not** be used.

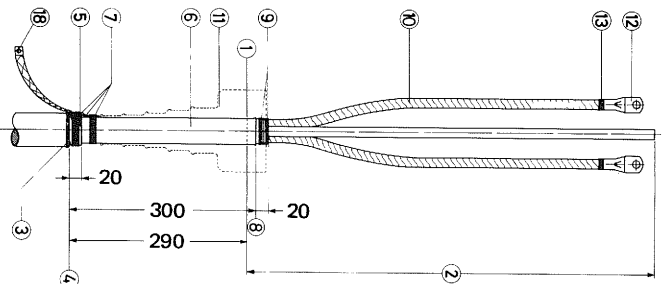


Fig. 28

8. PREPARATION FOR SERVICE, OPERATION, VOLTAGE TESTING AND EARTHING

8.1 Preparation for Service and Operation

The truckcarrying the switch is entered in the rails and is then run into the cubicle until the interlocking hook touches the front edge of the enclosure.

When entering of the switch-fuse, beware that the interlocking lever of the fuse box enters the slot in the front edge of the enclosure, Fig. 4 (24).

The cross link is then attached to the rails.

In this position (the disconnected position) the switch shall be operated mechanically. After lifting the knob of the interlocking device on the right hand side of the fuse box, Fig. 4 (24), the cover of the fuse box is opened and the releasing levers are swung out. The fuse handles are then pulled out.

The fuse handle with the clamp contact is attached to the end of the fuse link equipped with the striker pin. The clamp contact shall lie onto the shoulder of the fuse link and is finally clamped by the screw, Fig. 29.

The thermoplastic guide ring, Fig. 29 (A), is put out to the shoulder of the fuse. The guide ring secures a correct entry of the fuse link into the tulip contact at the bottom of the fuse box, Fig. 4 (38).

When the fuse links are in the correct position, the releasing levers are swung back to their initial positions.

Beware that they lie properly onto the strikers and **not**

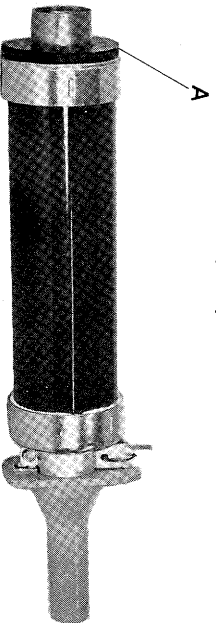


Fig. 29

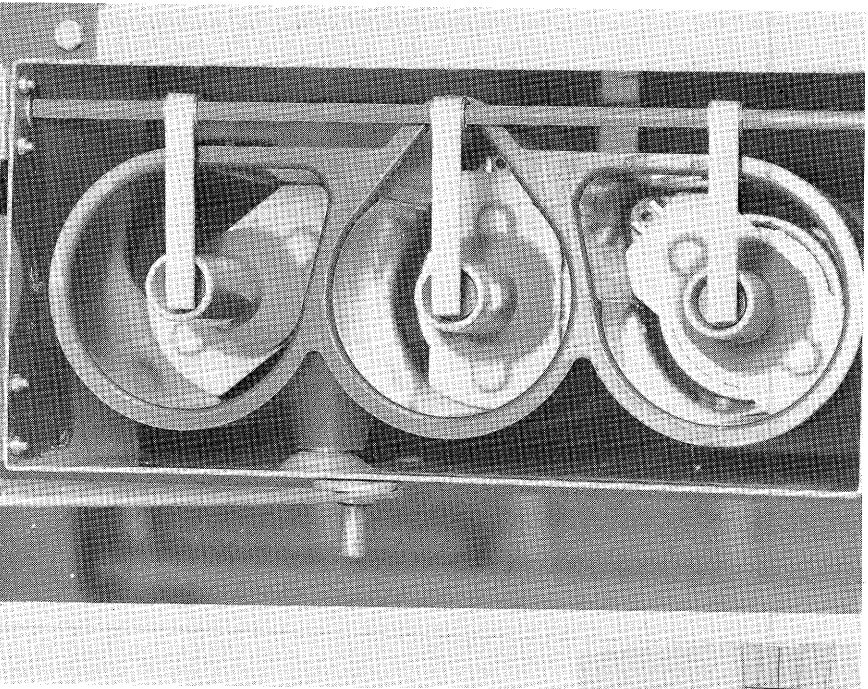


Fig. 30

onto the edge of the fuse handles, in which case the fuse tripping device will not operate, Fig. 30.

The fuse box cover is now closed and the knob on the right hand side is pushed back to lock the cover, Fig. 4 (24).

The interlocking handle, Fig. 4 (16), is rotated anticlockwise through 90°, which is only possible when the switch is in the open position, and the switch truck can be run into the cubicle.

At the last 20 mm of travel the switch is plugged onto the busbars and the cable termination simultaneously. As the entry of the contacts will cause some friction, the truck must have a definite velocity to bring it into the correct service position.

The interlocking handle, Fig. 4 (16), is now returned to lock the switch truck. The switch is now ready for being operated.

Closing of the switch is done by pulling the operating lever, Fig. 4 (5), four times, and when pushing the lever back again after the last pull, the switch closes momentarily. The lever can be removed for locking purpose. A locking device, Fig. 00, equipped with padlock, can be fitted in the jack socket to prevent the switch from being operated.

Opening of the switch is done by pushing the release button, Fig. 4 (14).

To establish an isolating distance according to the IEC Publication 129 the truck must be withdrawn with the switch in the open position into the disconnected position, Fig. 4 (10), limited by the cross link. The truck is locked in this position by the interlocking handle on the front cover.

The fuse links can only be changed with the truck in the disconnected position.

On an existing tripping command, i.e. if one or more of the fuses have blown, the operation mechanism can not be charged.

8.2 Voltage testing and Earthing

When the truck is in the disconnected position, the earthing shutter, Fig. 4 (9), on the front cover is pushed down, and the earthing terminals, Fig. 4 (7), at the cable termination are then accessible through the earthing shutter. After checking that the earthing terminals are dead, which is done with a high-voltage tester, the earthing tulip contacts are then fixed to the earthing terminals at the cable termination by the operating rod, Fig. 22. When the earthing device is connected to the cable termination, the switch-truck can be removed from the enclosure. When the earthing shutter is in the open position, the switch-truck is prevented from being run into the cubicle.

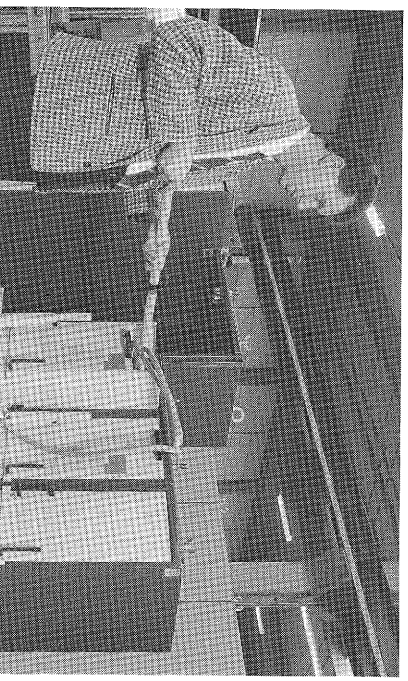


Fig. 31

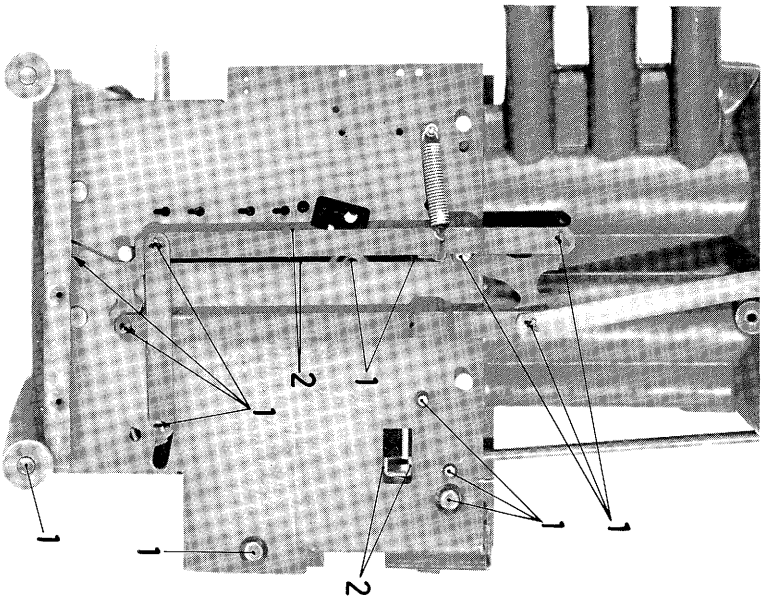
9. MAINTENANCE

9.1 Control of operation, and Lubrication specification

The compact switchgear cubicle is guaranteed for 1000 mechanical operations without maintenance.

After the first year in service it is recommended to make an inspection of the switchgear to establish the correct maintenance intervals.

The frequency of maintenance must be considered individually and depends upon the local atmospheric conditions. The points of lubrication are shown in Fig. 32.



9.2 Cleaning

The cleaning of the insulation surfaces depends upon the local atmospheric conditions, however, in case of heavy dusty conditions combined with moisture special care of cleaning the insulation must be considered. The cleaning is done with a dry cloth. Any kind of strong solutions must **not** be used on the insulation surface.

9.3 Revision and Replacement of spare parts

After 100 load break operations, or after closing onto a short-circuit, or after a total of 1000 operations of the switch a revision of the switchgear shall be carried out. If the switch by some reason or other can not be opened, or if the interlocking device/position indicator is damaged or does not work properly, the interlocking device must be dismantled by unscrewing the two screws M6, Fig. 33. OBS: In this case the current must be interrupted otherwise before withdrawing the truck.

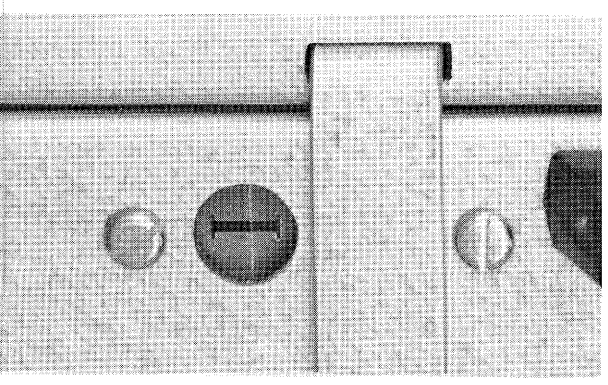


Fig. 33

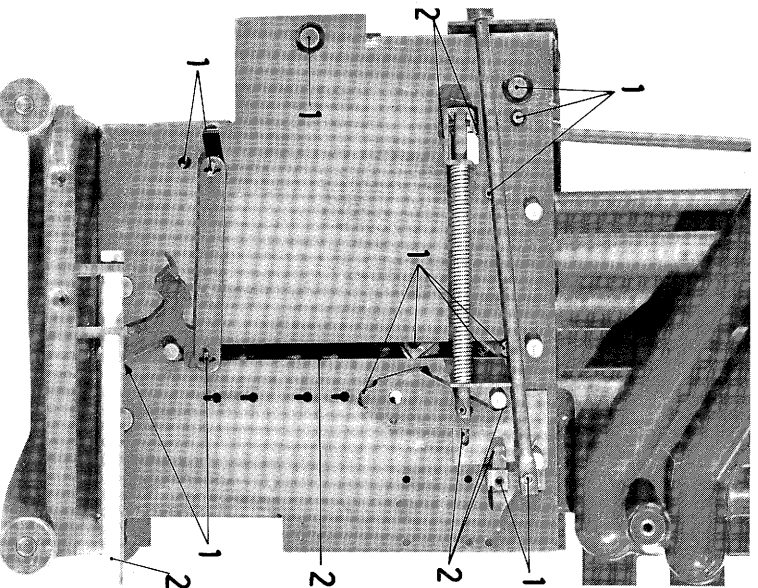


Fig. 32

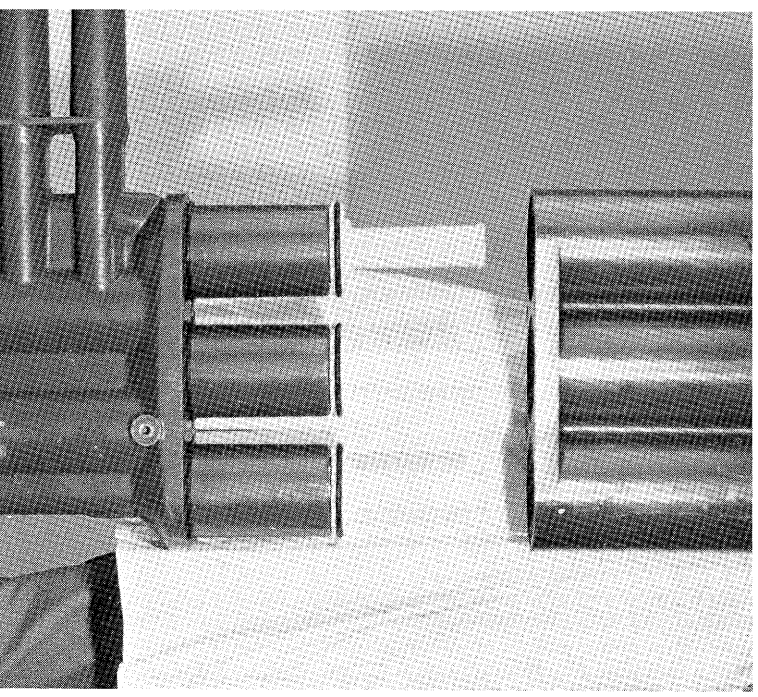


Fig. 34

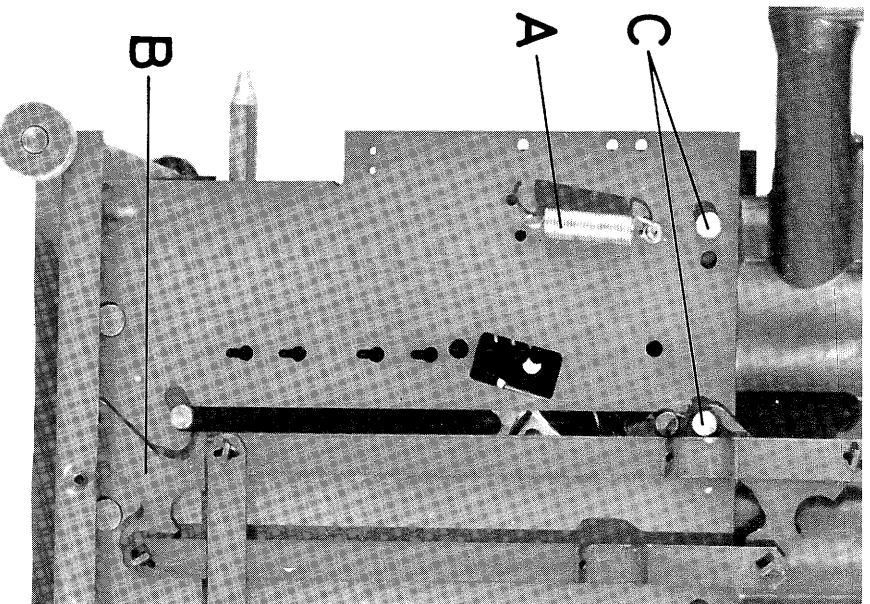


Fig. 35

After the truck has been removed from the enclosure, the front cover is dismantled.

The switch shall remain on the truck. The upper insulation block (switch chamber) of the switch is separated from the lower insulation block, Fig. 34. The main tulip contacts with nozzles are now accessible. The centre pin, Fig. 4 (40), within the main tulip contact is unscrewed and removed (use a wire or the like). After removing the positioning spring, Fig 34 (A) and withdrawing the latch, Fig. 34 (B) the main contacts are pulled up and the contact rod is held firmly by means of a pair of tongs, Fig. 35. The hexagon nut at the bottom of the main tulip contact is now unscrewed by a box spanner 17 mm and the main tulip contact with nozzle is removed.

The lower insulation block of the switch is detached from the operating mechanism by removing of the fixing screws Fig. 34 (C).

Without further dismantling an inspection and lubrication of the operating mechanism can be carried out. Lubrication is carried out in accordance with the instruction., Fig. 00. If serious irregularities or brake-downs are discovered, the operating mechanism is opened by removing the locking washers on the bearing studs, and any broken parts can be replaced.

The contact rods, Fig. 4 (30) are lightly greased with pure grease (e.g. vaselin). Conducting grease must **not** be applied.

The sliding contacts, Fig. 4 (31), the tulip contacts, Fig. 4 (25) and the fuse contacts, Fig. 4 (38) shall be inspected of any damages and their fixing screws should be

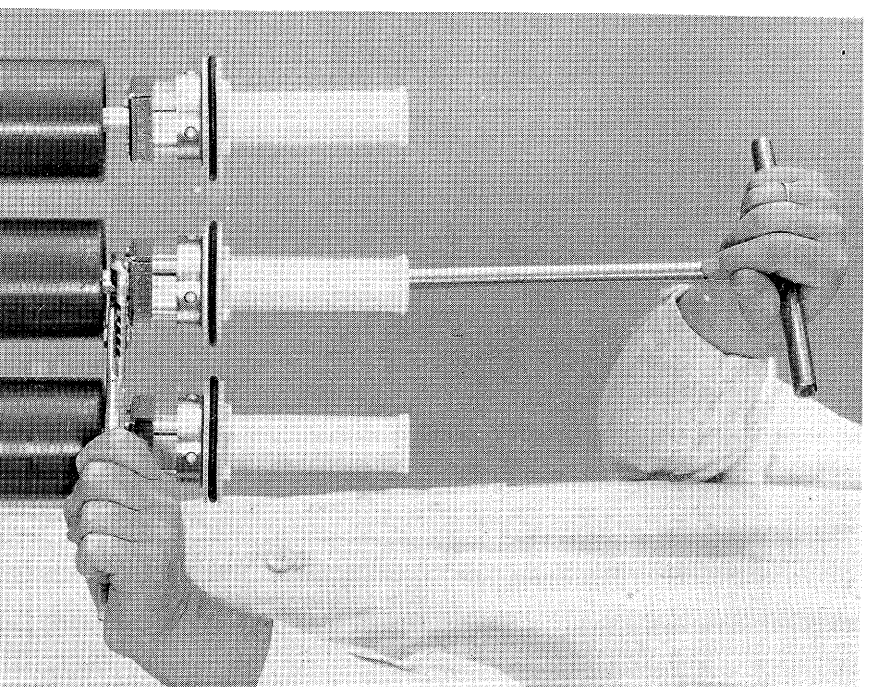


Fig. 36

retightened. For retightening or replacing of the sliding contact a special spanner is necessary, Fig. 37. The tulip contacts, Fig. 4 (25) are fixed with hexagon socket head cap screws M10.

After cleaning of the insulations and the tulip contacts the contact faces are lightly greased.

The main tulip contacts with nozzles, Fig. 4 (29) should be cleaned and inspected of any exhaust deposit and metal particles. If heavy damage has been done to the main contact faces, it is necessary to replace the main contact with nozzle. The main tulip contact and the nozzle shall **not** be lubricated. The upper insulation block is cleaned and the tulip contacts are treated as above. The fixed main contact tubes inside the switch chamber are cleaned and inspected of any damages. If there is heavy damage on the main contact faces, the upper insulation block must be replaced. The main contact tubes are sparingly greased with pure grease (e.g. vaseline) over a length of approx. 30 mm from its end. After removing the perforated washer, Fig. 4 (41), and

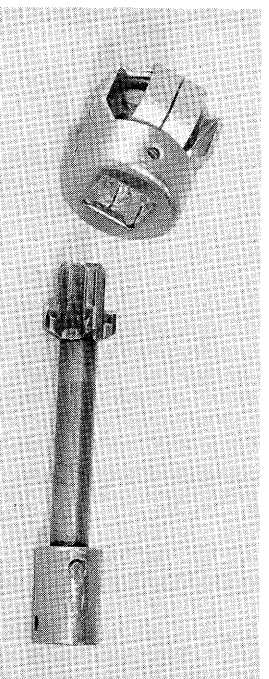


Fig. 37

the steatite coolers, Fig. 4 (42), the helical gas cooler can be inspected. If the openings of the gas cooler are melted together, the gas cooler must be replaced. This is done by ejecting it from inside the switch chamber. A new gas cooler is put into the main contact tube from above and it must have a tight fit in the contact tube. The switch can now be reassembled, and the following observations are necessary:

The O-rings, Fig. 4 (39) on the lower insulation block, and the O-rings on the piston must be in correct position.

The screws for fixing the operating mechanism to the lower insulation block must be well tightened and preferably secured with "Locktite".

When mounting of the main tulip contact with nozzle, the hexagon nut and the spring washer are put into the box spanner in the upside-down position, and it is then pressed against the bottom of the main tulip contact as shown in Fig. 38, until the nut has interlocked on the contact rod.

While tightening the nut, the contact rod has to be held firmly by a pair of tongs (as in Fig. 36). The centre pin, Fig. 4 (40), is then screwed in position.

The fixing screws between the upper and lower insulation blocks are tightened with a maximum torque of 1 kpm, which is normally achieved by using an ordinary hand screwdriver.

All the bearing points of the interlocking devices, the position indicator and the truck shall be lubricated

10. WIRING DIAGRAM OF MOTOR OPERATED RGB 12/13,8

10. 1

Motoroperation for RGB 12/13,8 with common motor- and driving voltage. The switch operates automatically when the motor has charged the springs.

Wiring diagram

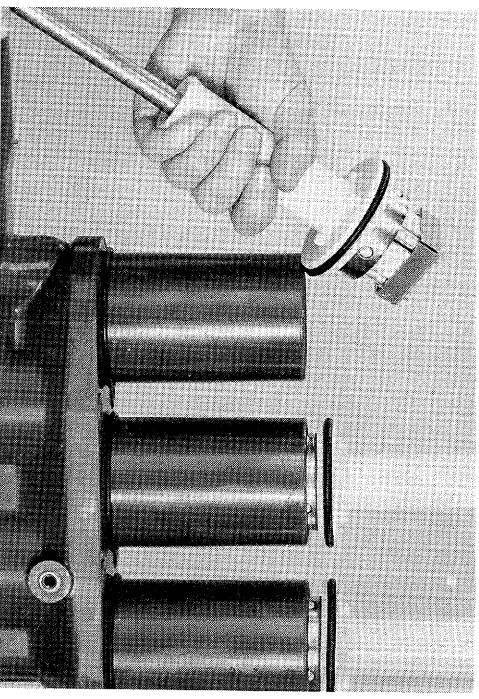
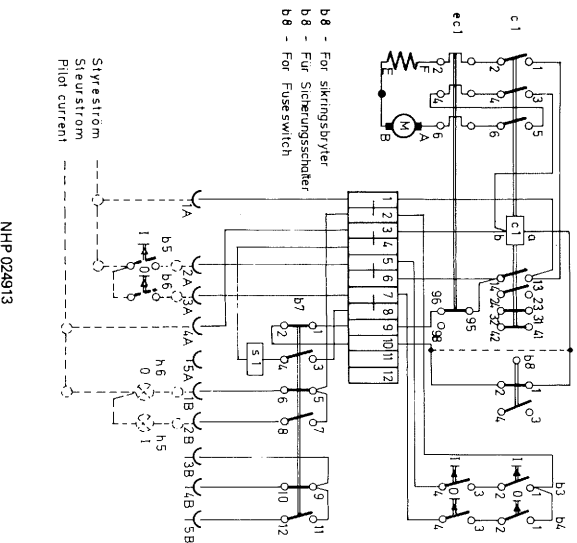


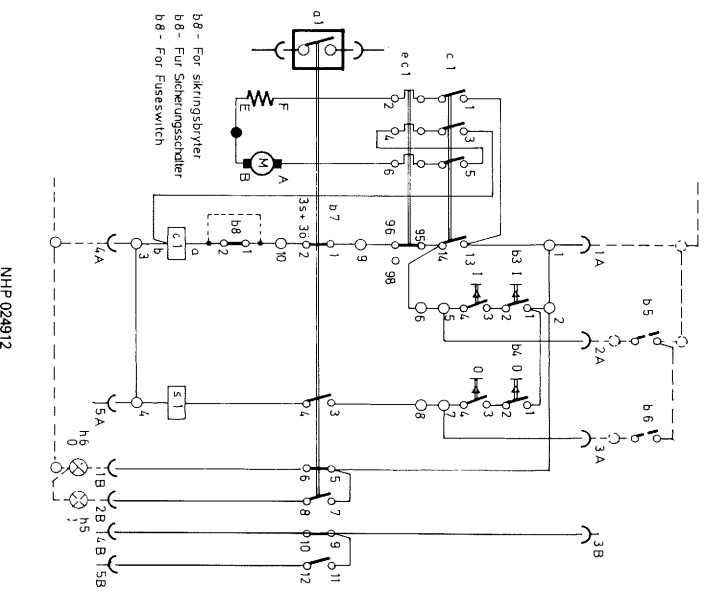
Fig. 38

before assembling (lubrication see Fig. 32).

The insulation surfaces of the cable termination and the busbare shall be cleaned from dust and dirt using a dry cloth. All live parts must be dead.

When working in the enclosure with tension on the busbars, the busbar branch-off contacts must be covered with an earthed cover plate, Fig. 6.

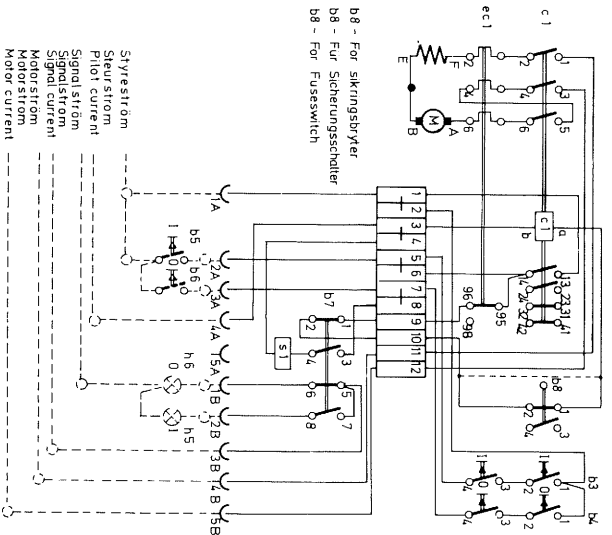
Circuit diagram



10.2.

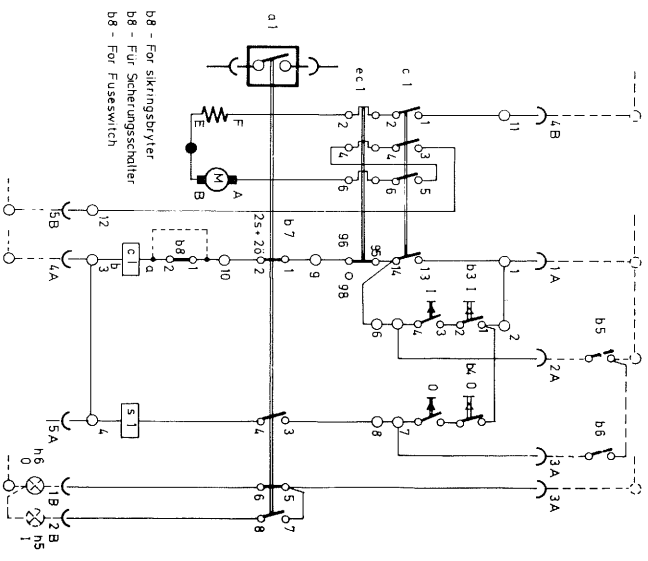
Motor operation for RGB 12/13,8 with separate motor voltage. (The switch operates automatically when the motor has charged the springs.)

Wiring diagram



NHP 024919

Circuit diagram

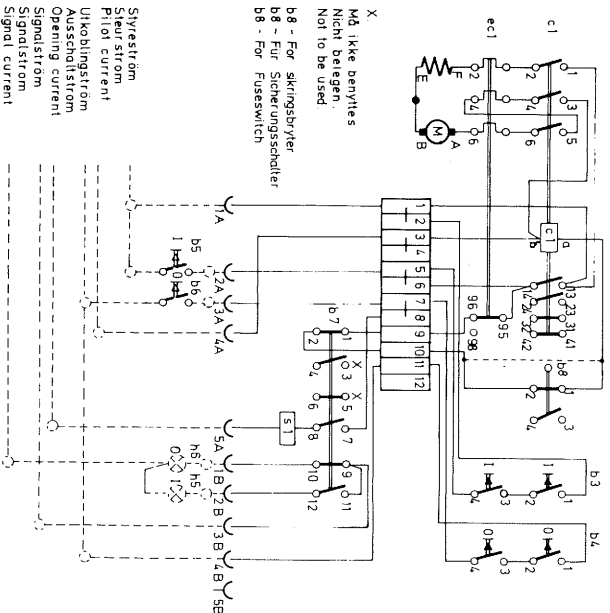


NHP 024918

10.3.

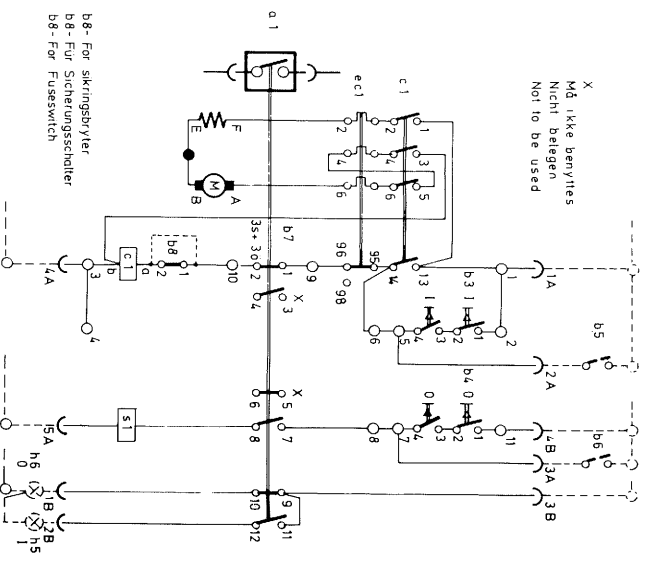
Motor operation for RGB 12/13,8 with separated switch off voltage. The switch operates automatically when the motor has charged the springs.

Wiring diagram



NHP 050043

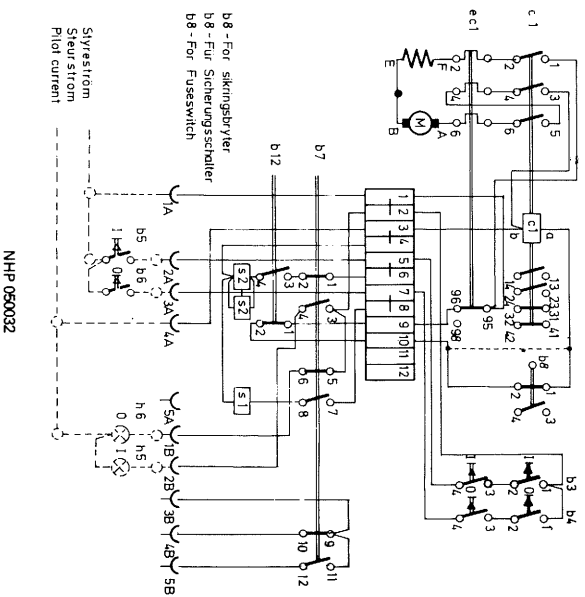
Circuit diagram



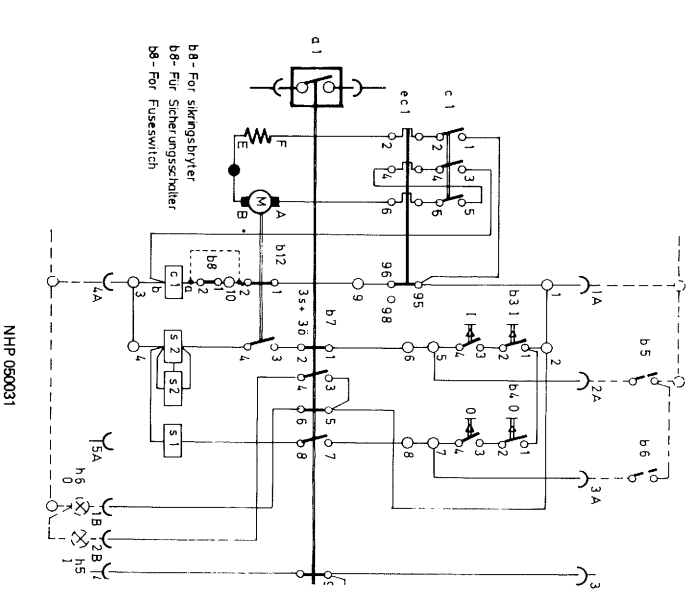
NHP 050042

10.5.
Motor operation for RGB 12/13,8 with S-mechanism with common motor- and driving voltage. The motor operation charged automatically the springs to enable immediate switching when pushing the closing button.

Wiring diagram

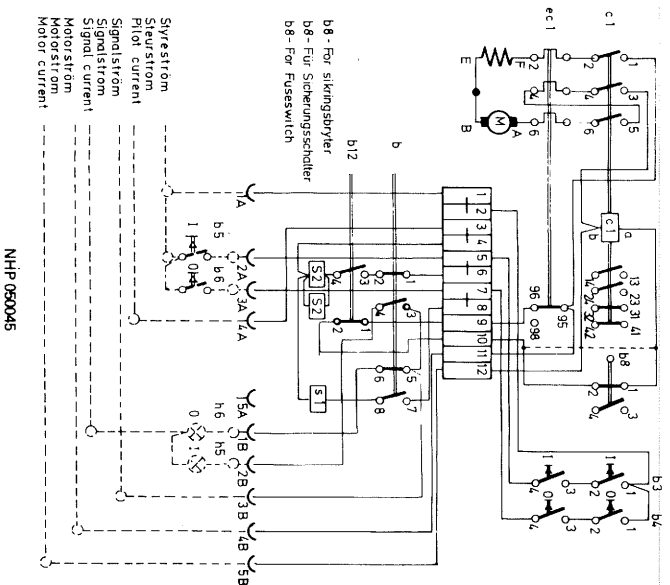


Circuit diagram

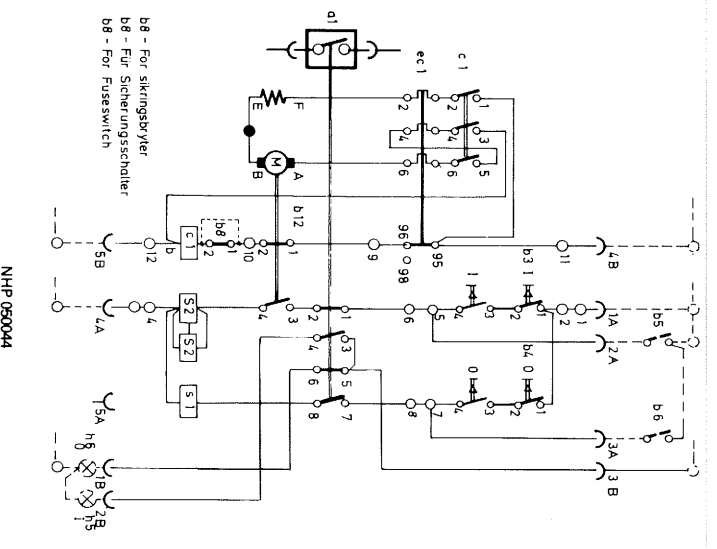


10.5.
Motor operation for RGB 12/13,8 with S-mechanism as 10.4, but with separate motor voltage.

Wiring diagram



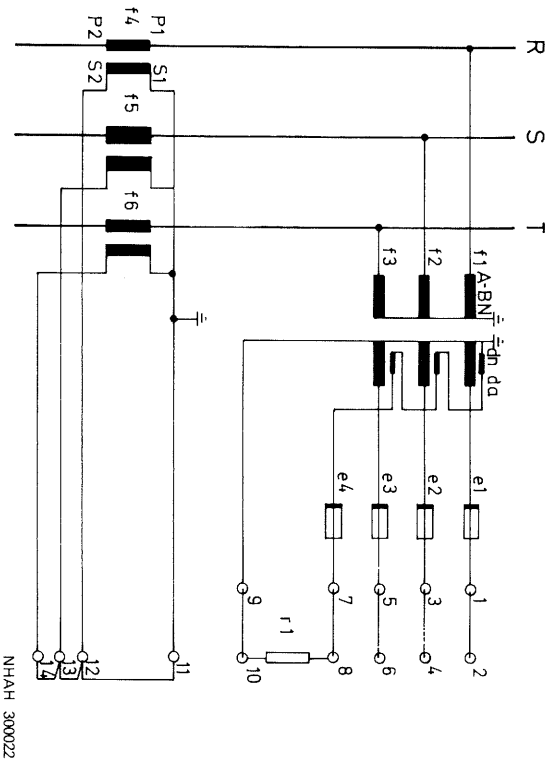
Circuit diagram



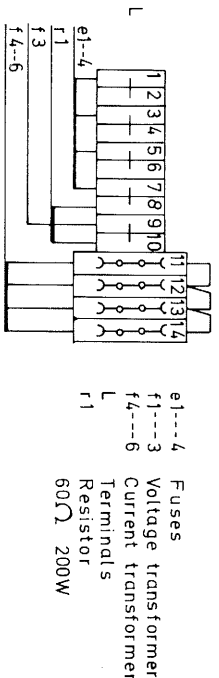
11. CIRCUIT DIAGRAM FOR METERING CUBICLE RGBM 12/13,8

Terminals

Short circuit is to be removed when instruments are connected.



Short circuit is to be removed when instruments are connected.



12. SPARE PARTS

Terms	Item (ref. Fig. 4)	Drawing No.
Common parts for the switch and the switch fuse:		
Main tulip with nozzle, centre pin and O-ring	40 - 29 - 39	24375 R2, 29445 P1
Contact rod	30	24375 R2, 29445 P1
Sliding contact	31	18814 R1
Tulip contact	25	29346 R1
Helical gas cooler	33	29376 P1
Perforated washer	41	24376 P1
Steatie bushings	42	NTP 60204
Upper insulation block, complete		38334 R1
Operating mechanism, complete	34	38336 R1
Special parts for the switch:		
Lower insulation block, complete		38333 R1
Special parts for the switch-fuse:		
Fuse contact	38	29361 R1
3 pcs. fuse handles with clamp contact and fuse guide rings	37	P 401240 R1
Lower insulation block with fuse box, complete		38342 R1
Thermoplastic guide ring, Fig. 29 (A)		NHP 400906

Information given in this publication is generally applicable to equipment described. Changes may be made in future without notice.

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