

ТОМ 2

**Открита процедура за сключване на рамково
споразумение с предмет: „Доставка на комплектни
комутационни устройства” Реф№ РРД 16-049**

Възложител: „ЧЕЗ Разпределение България” ЕАД

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Уебсайт: www.cee.bg, www.cee.com, www.cee.com

Съставител: **ЧЕЗ Разпределение България** ЕАД

**Предложение за изпълнение
на поръчката**

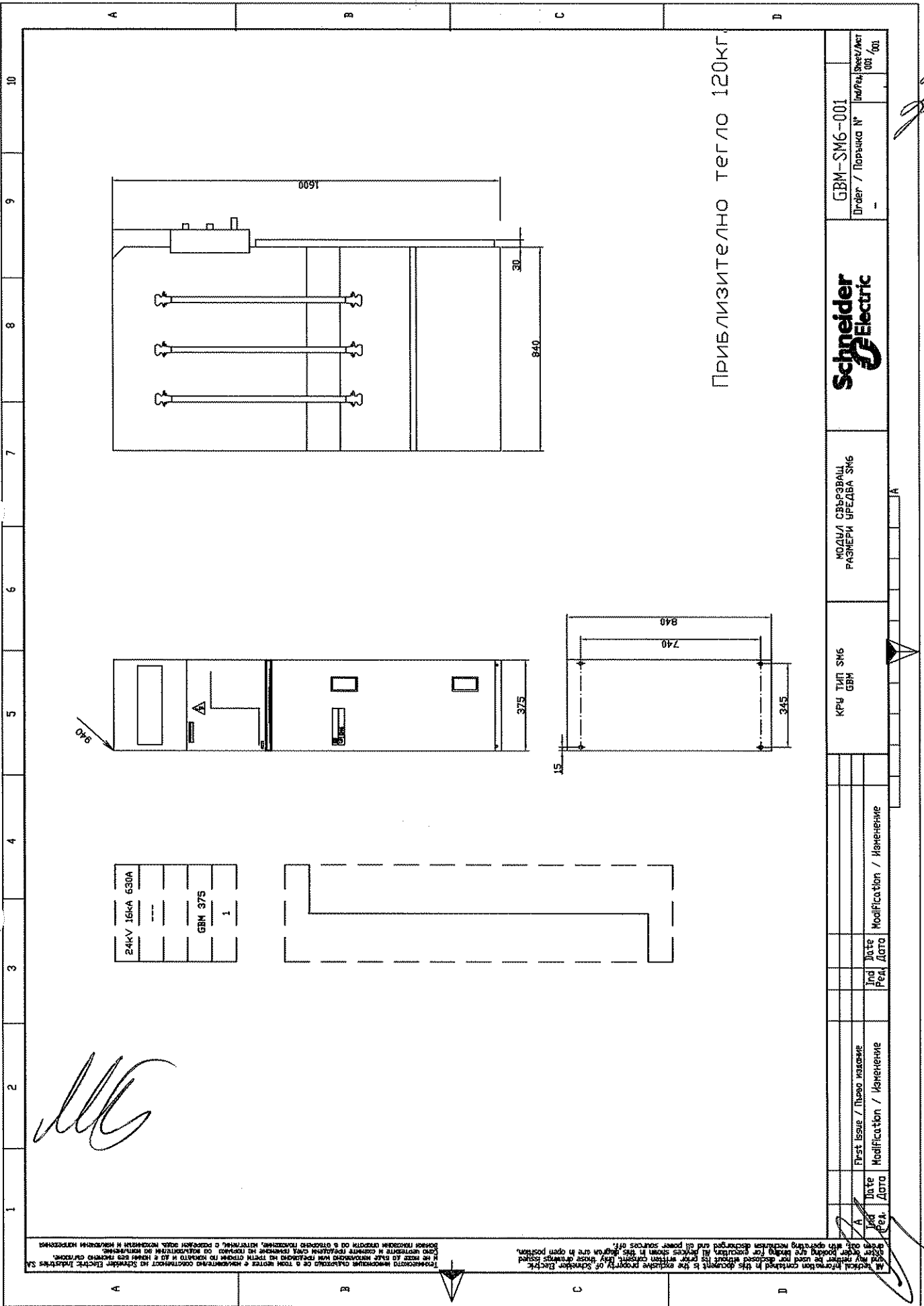
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ПРИЛОЖЕНИЕ 3

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ПРИБЛИЗИТЕЛНО ТЕГЛО 120КГ.

GBM-SM6-001
Договор / Паричка №



МОДУЛ СВЪРЗАЩ
РАЗМЕРИ ПРЕДВА SM6

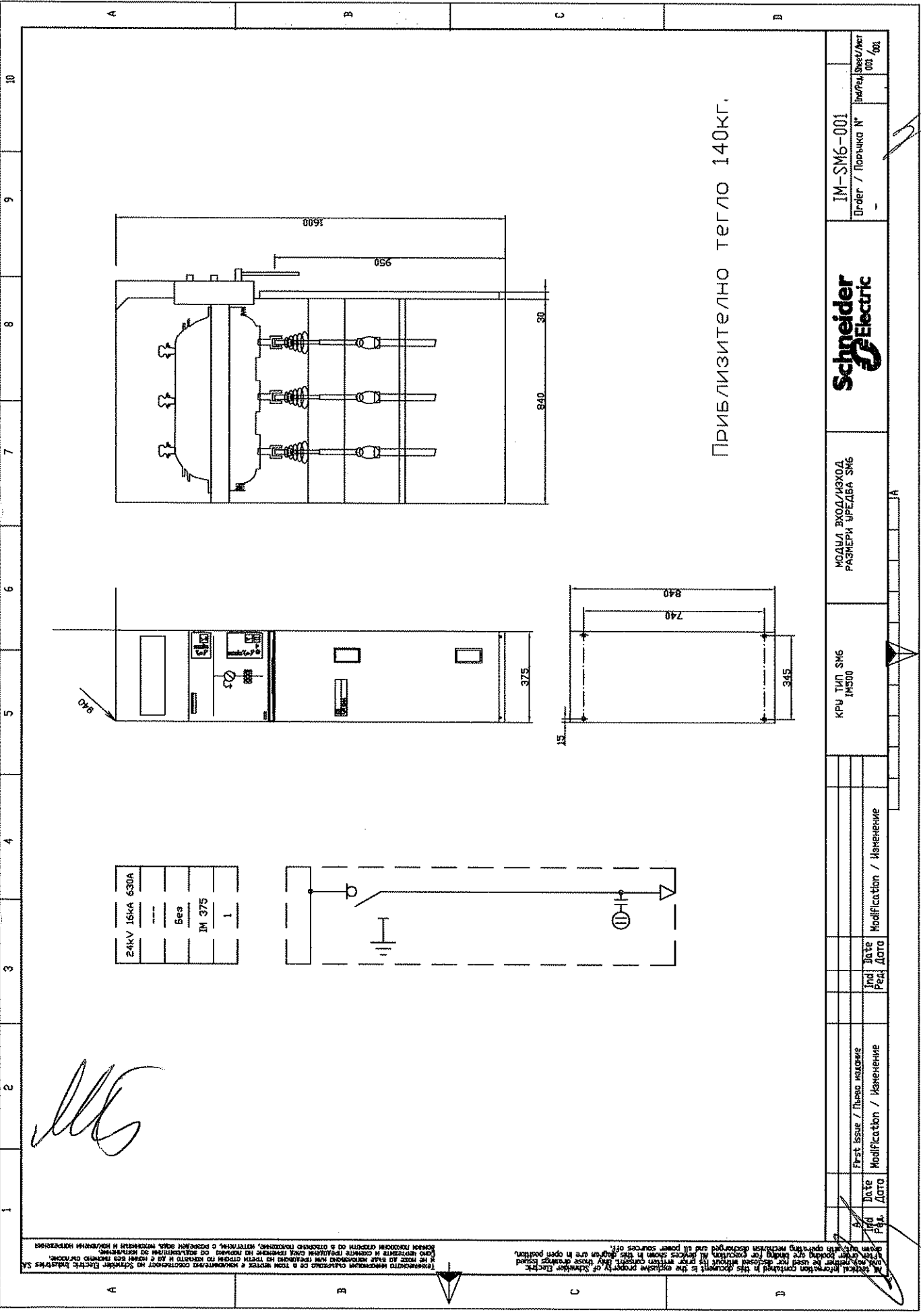
КРЪТ ТИП SM6
GBM

№	Дата	История	История
1	Дата	История	История
2	Дата	История	История
3	Дата	История	История
4	Дата	История	История
5	Дата	История	История
6	Дата	История	История
7	Дата	История	История
8	Дата	История	История
9	Дата	История	История
10	Дата	История	История

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ВЯРНО С
ОРИГИНАЛА

550



ПРИБЛИЗИТЕЛНО ТЕГЛО 140КГ.

IM-SM6-001
Order / Порядка №



МОДЕЛ ВХОД/ИЗХОД
РАЗМЕРИ УРЕДБА SM6

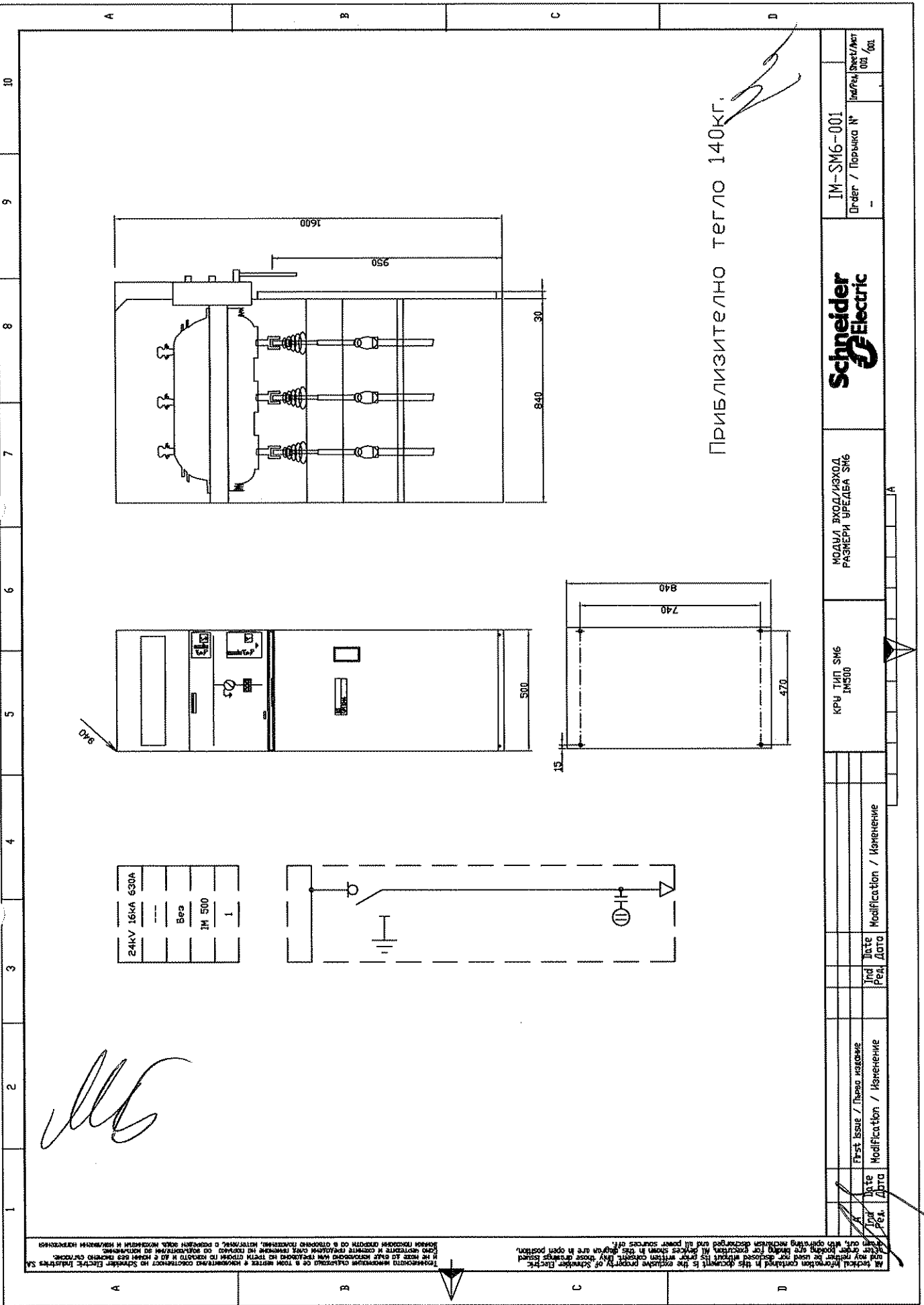
КРУ ТИП SM6
IM300

Инд	Дата	Именение / Изменение

Инд	Дата	Именение / Изменение

Техническото описание съдържа съвкупност от всички подробности, изчисления, изпитания, измервания и необходимите пояснения.
 (The description contains a complete set of details, calculations, tests, measurements and necessary explanations.)
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ВЯРНО С
ОРИГИНАЛА



Приблизително тегло 140кг.

IM-SM6-001
Order / Порядка №



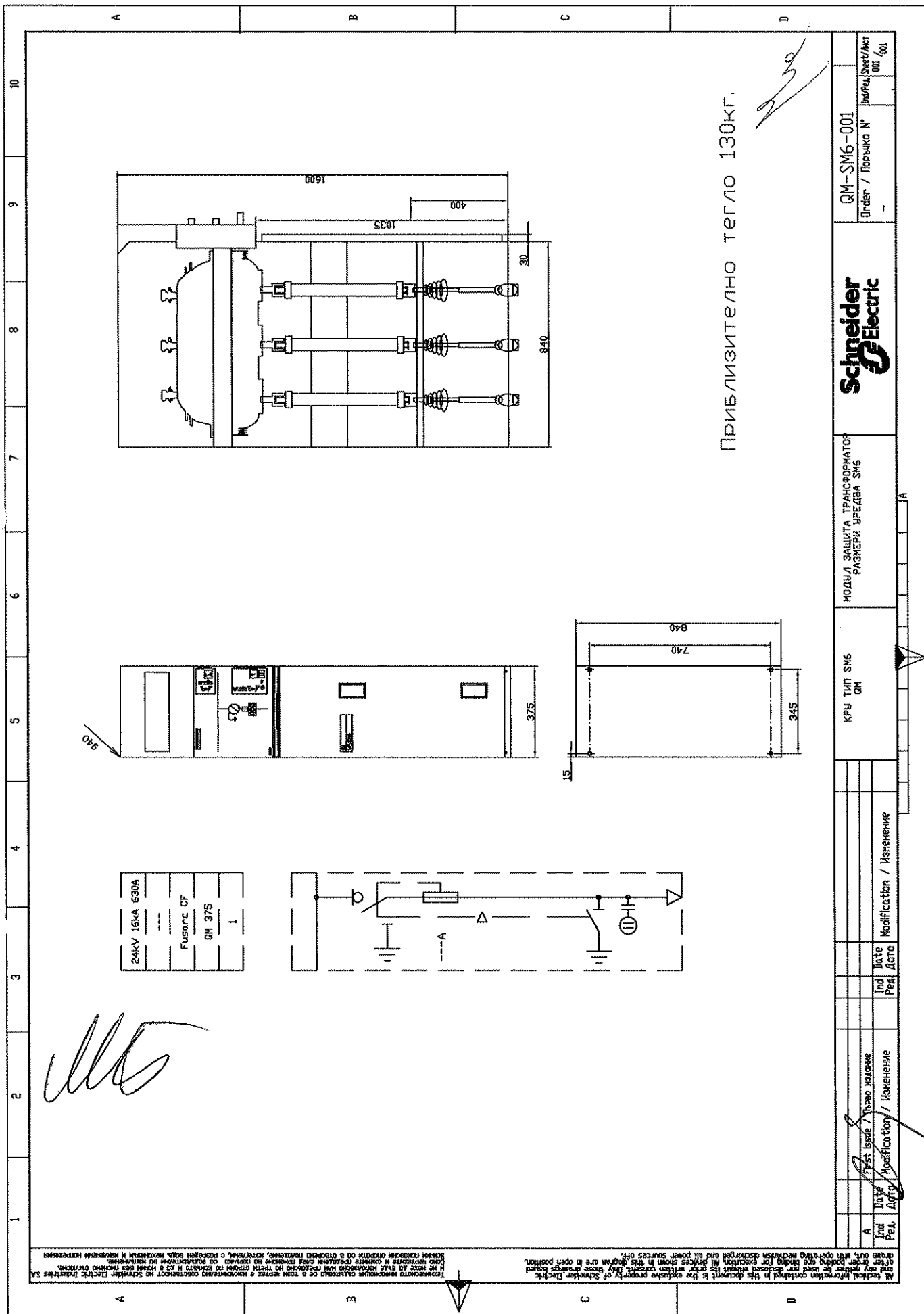
МОДУЛ ВХОД/ИЗХОД
РАЗМЕРИ БРЕДБА SM6

КРЪ ТИП SM6
IM500

ВЯРНО С
ОРИГИНАЛ

8
552

ВЯРНО С
ОРИГИНАЛА

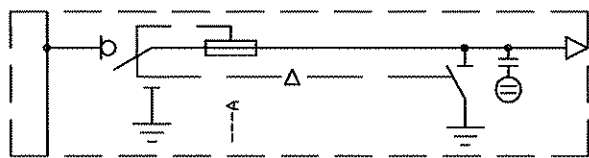


ПРИБЛИЗИТЕЛНО ТЕГЛО 130КГ.

230

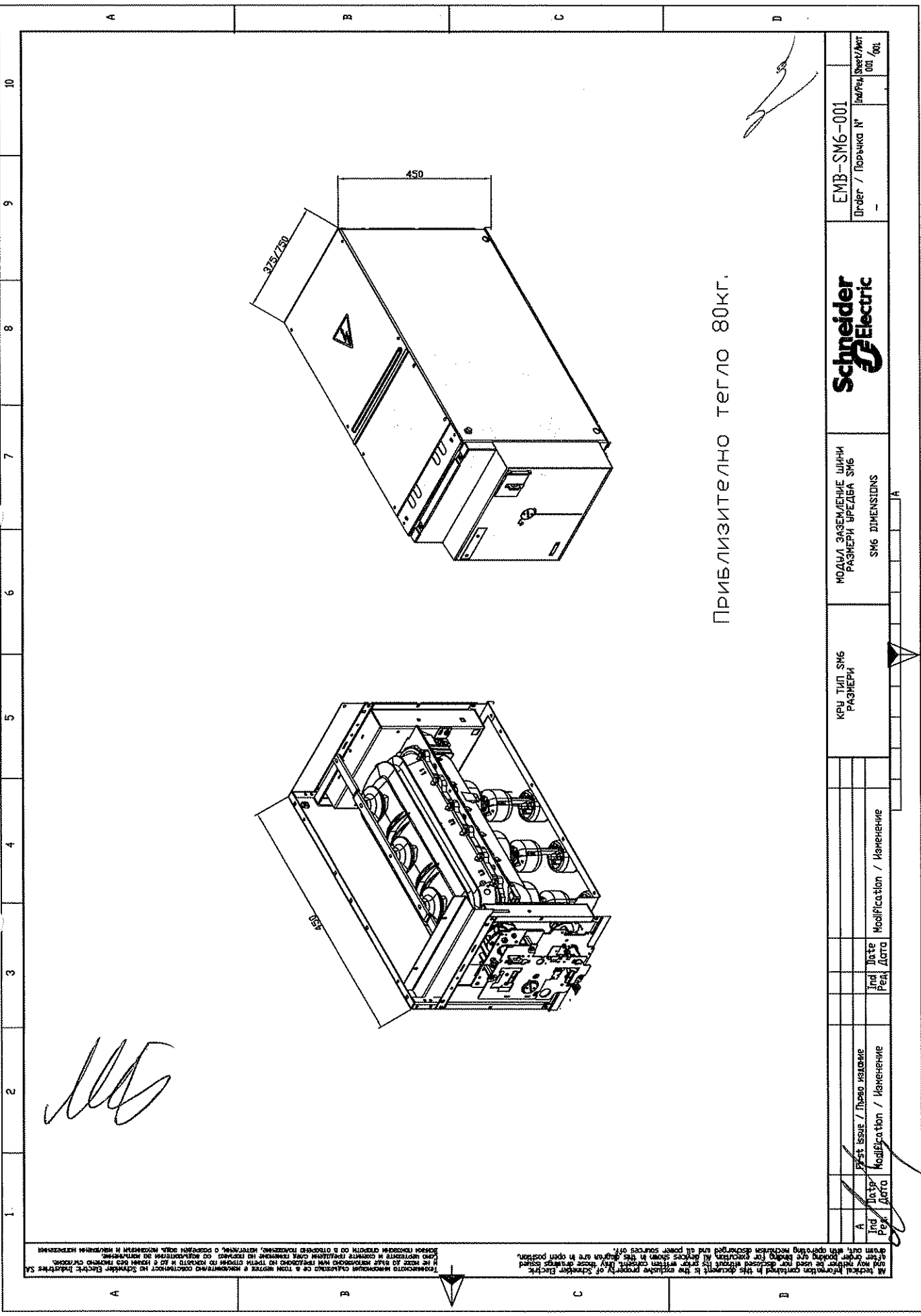
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24KV 16KA 630A
Fusarc CF
GM 375
1



A		B		C		D	
Order / Поръчка №	QM-SM6-001	Schneider Electric		МОДУЛ ЗАЩИТА ТРАНСФОРМАТОР РАЗМЕРИ УРЕДЕЛА SM6		КРЪ ТИП SM6 GM	
Order / Поръчка №	001 / 001	Schneider Electric		МОДУЛ ЗАЩИТА ТРАНСФОРМАТОР РАЗМЕРИ УРЕДЕЛА SM6		КРЪ ТИП SM6 GM	
Date / Дата		Date / Дата		Date / Дата		Date / Дата	
Mod / Изм.		Mod / Изм.		Mod / Изм.		Mod / Изм.	
Rev / Вер.		Rev / Вер.		Rev / Вер.		Rev / Вер.	

554



ПРИБЛИЗИТЕЛНО ТЕГЛО 80КГ.

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ВЯРНО С
ОРИГИНАЛА

EMB-SM6-001 Order / Порядък №		Schneider Electric		МОДУЛ ЗА ЗАЗЕМЛЕНИЕ ИЛИ НИ РАЗМЕРИ БРЕДБА SM6 SM6 DIMENSIONS		КЪМ ТИП SM6 РАЗМЕРИ		ИМЕНЕНИЕ / ИМЕНЕНИЕ	
Ind Ред	Date Дата	Ind Ред	Date Дата	Ind Ред	Date Дата	Ind Ред	Date Дата	Ind Ред	Date Дата

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555

2

ПРИЛОЖЕНИЕ 4

MT

2

2

552

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Дизайн на табелката за обявените данни / Example of engraving on the various plates

SM6- IM		Съдържа флуорирани парникови газове, обхванати от Протокола от Киото				затворена система под налягане	
Ur	17,5 kV	Ud	38 kV	Up	95 Kv	IAC	12,5 kA/1s
Ik	12,5 kV	tk	1 s	Ip	31,5/32,5	kA	A-FL R
Ir	○ 630 A	Un	15 kV	fr	50/60Hz	↗	○ 7896682EN
SF6	0,210 kg	Paе	14 kPa	година	2013	S/N	0826327L
Pre	40 kPa	Pme	9 kPa	HN64S41-IEC 62271-200			

Notice / Leaflet

Лоро Schneider

SM6- QM		Съдържа флуорирани парникови газове, обхванати от Протокола от Киото				затворена система под налягане	
Ur	17,5 kV	Ud	38 kV	Up	95 Kv	IAC	12,5 kA/1s
Ik	12,5 kV	tk	1 s	Ip	31,5/32,5	kA	A-FL R
Ir	○ 630 A	Un	15 kV	fr	50/60Hz	↗	○ 7896682EN
SF6	0,210 kg	Paе	14 kPa	година	2013	S/N	0826327L
Pre	40 kPa	Pme	9 kPa	HN64S41-IEC 62271-200			

Notice / Leaflet

Лоро Schneider

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**ВЯРНО С
ОРИГИНАЛА**

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557

3/2

ПРИЛОЖЕНИЕ 5

MS

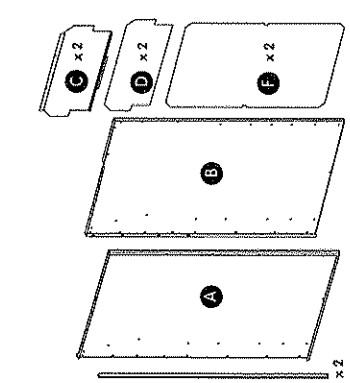
07

7

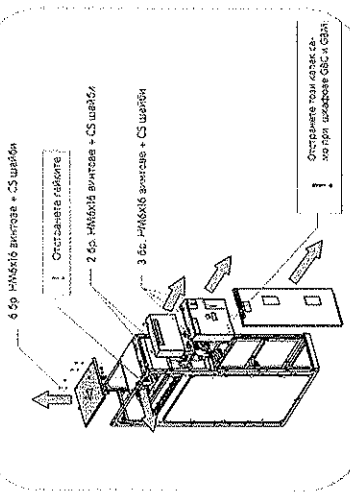
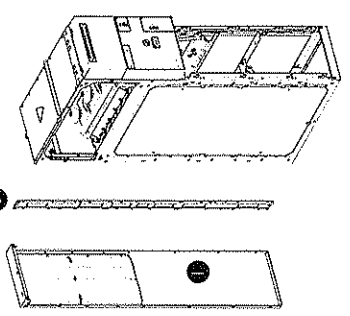
558

ПОДГОТОВКА НА КОМПОНЕНТИ

- Съдържание на опаковката на таблото
- A. Ляв връщач (свърз)
 - B. Дясно връщач (панел)
 - C. Зашита на щиповото отделение
 - D. Зашитен вентил - в шинното отделение
 - E. Лост за управление
 - F. Зашитен вентил на шинното отделение
 - G. Подсилване
 - H. Комплект винтове

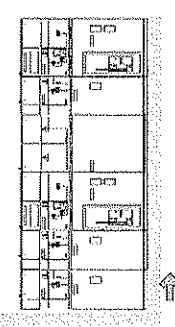


- Разположение на шедфа
- J. Страници
 - K. Комплект на шедфа
- ↓-↑-ч, разпределятел, автоматична шина, комплект винтове, сачка, лаболен щипец, дъвка, тригери

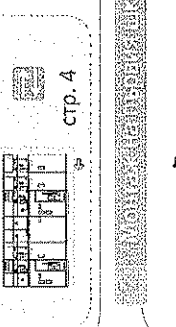


ПОДГОТОВКА НА ШЕДФА

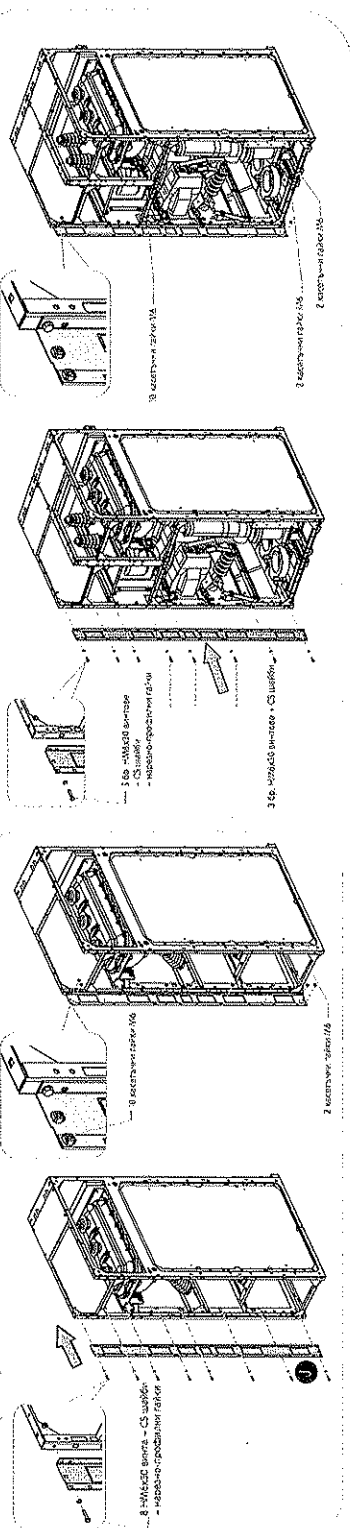
Сглобяване на уредба отляво надясно



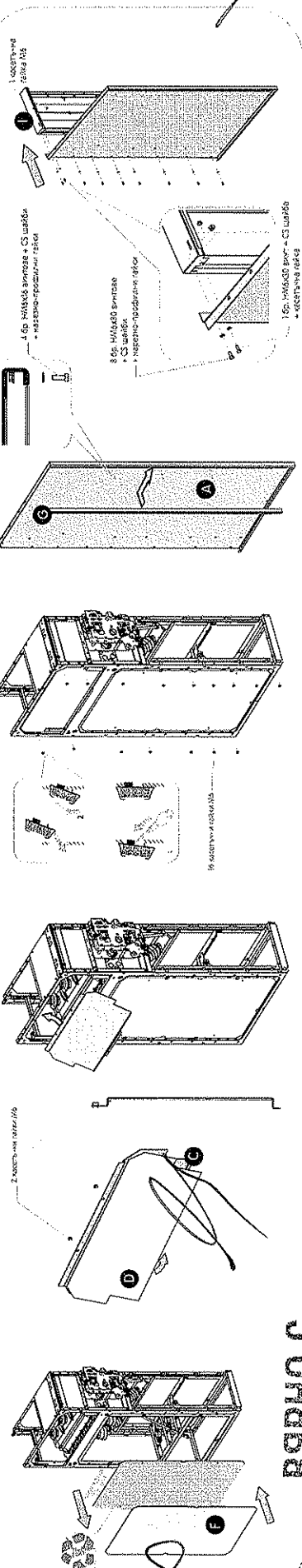
Сглобяване на уредба отдясно наляво



Шкаф 375, 500 & 625 mm



ПОДГОТОВКА НА ШЕДФА



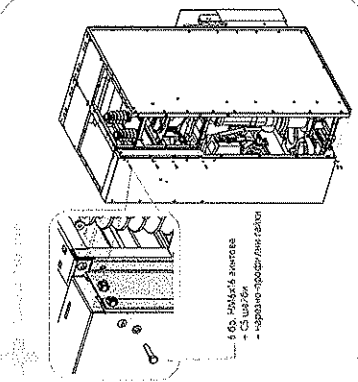
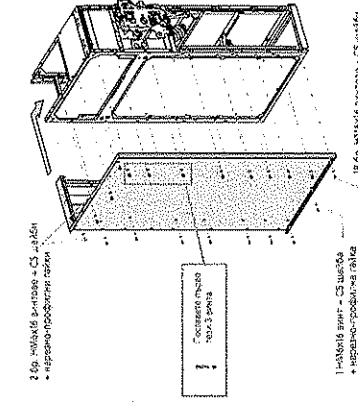
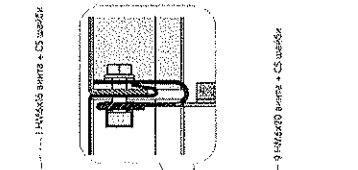
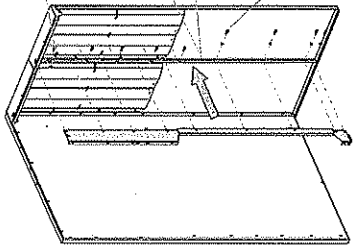
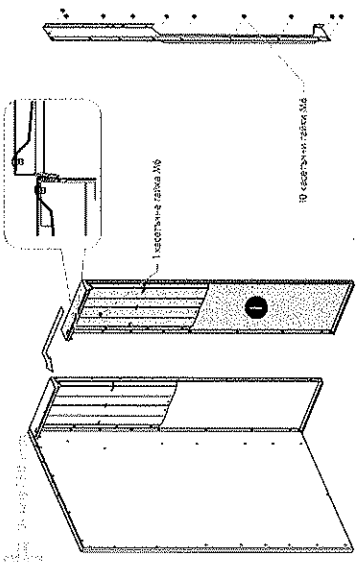
Уплътняване за сплъбяване на уредба
SM6

Schneider
Electric

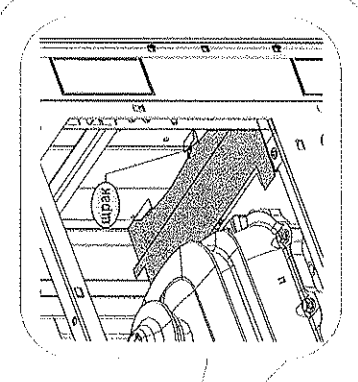
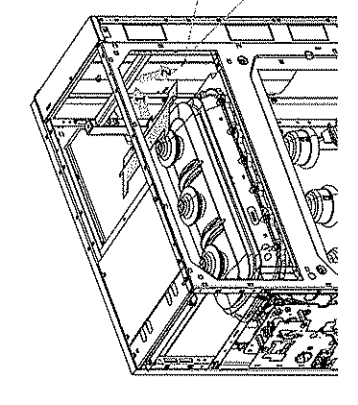
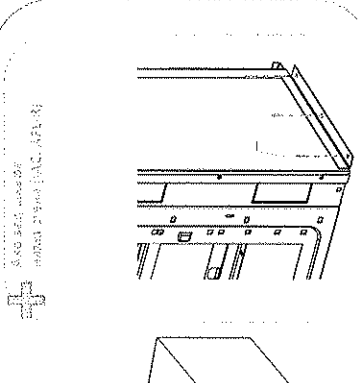
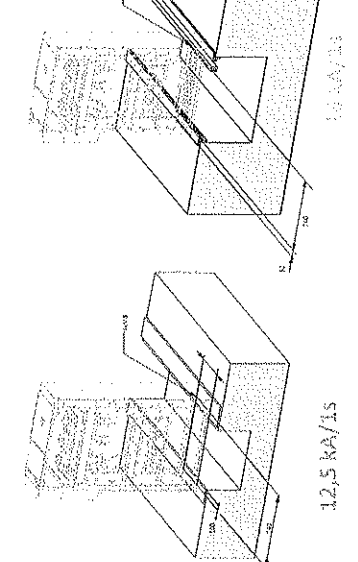
SM6-24 12,5 & 16 kA/1s
IAC : AFL & AFL-R

2/4

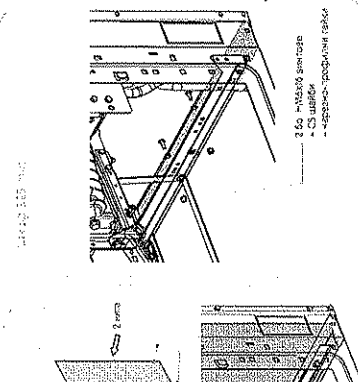
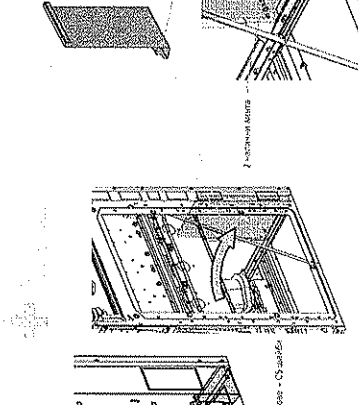
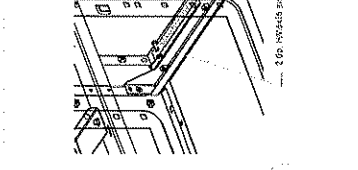
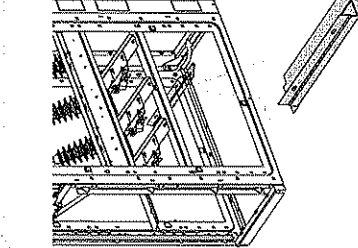
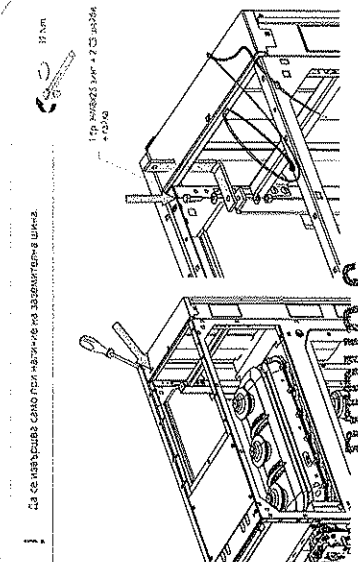
МОДИФИКАЦИЯ НА КОМПОНЕНТИ



ПРЕИМЕНОВАНИЕ НА КОМПОНЕНТИ



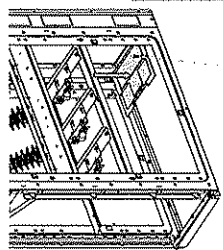
МОДИФИКАЦИЯ НА КОМПОНЕНТИ



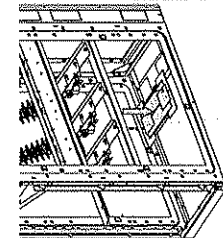
ВЪПРОС
ОРИГИНАЛНА

Разполовяване на цолу

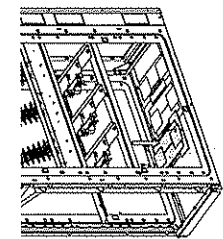
Кабелни връзки (виж Инструкция за монтаж и инсталация, глава "кабелни връзки")



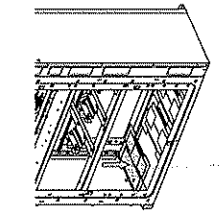
2 броя H1xMx16 винтове
 + CS шайби



2 броя H1xMx16 винтове + CS шайби

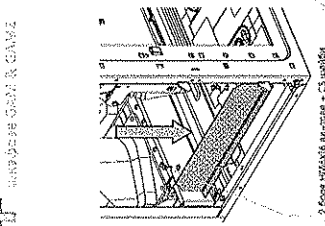


2 броя H1xMx16 винтове + CS шайби

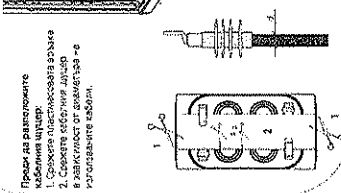


2 броя H1xMx16 винтове + CS шайби

Монтаж на кабелни цолу



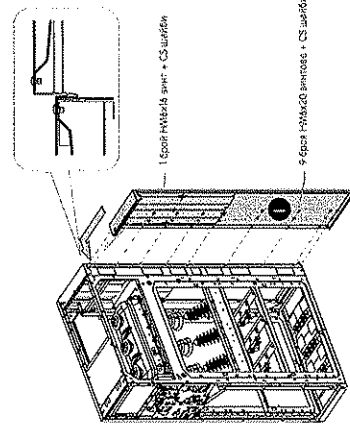
2 броя H1xMx16 винтове + CS шайби



Преди да разполовяте кабелния цолу:

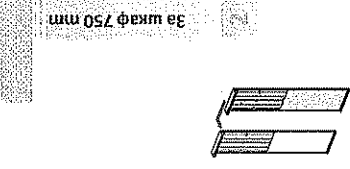
1. Свържете пластмасовата връзка до кабелния цолу.
2. Свържете кабелния цолу до кабелите.

Монтаж на вентилатори (H1xMx16)

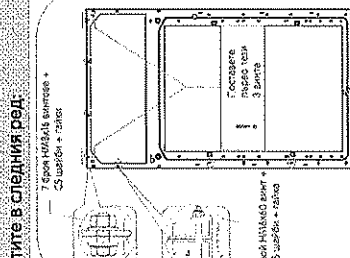


1 броя H1xMx16 винт + CS шайби

2 броя H1xMx16 винтове + CS шайби



За шкаф 750 mm



Извършете дейностите в следния ред:

7 броя H1xMx16 винтове + CS шайби + гайки

1 броя H1xMx16 винт + CS шайби

2 броя CS шайби + гайки

3 винта

1 броя H1xMx16 винт + CS шайби

2 броя CS шайби + гайки

3 винта

1 броя H1xMx16 винт + CS шайби

2 броя CS шайби + гайки

3 винта

1 броя H1xMx16 винт + CS шайби

2 броя CS шайби + гайки

3 винта

1 броя H1xMx16 винт + CS шайби

2 броя CS шайби + гайки

3 винта

1 броя H1xMx16 винт + CS шайби

2 броя CS шайби + гайки

3 винта

1 броя H1xMx16 винт + CS шайби

2 броя CS шайби + гайки

3 винта

1 броя H1xMx16 винт + CS шайби

2 броя CS шайби + гайки

3 винта

1 броя H1xMx16 винт + CS шайби

2 броя CS шайби + гайки

3 винта

1 броя H1xMx16 винт + CS шайби

2 броя CS шайби + гайки

3 винта

1 броя H1xMx16 винт + CS шайби

2 броя CS шайби + гайки

3 винта

1 броя H1xMx16 винт + CS шайби

2 броя CS шайби + гайки

3 винта

1 броя H1xMx16 винт + CS шайби

2 броя CS шайби + гайки

3 винта

1 броя H1xMx16 винт + CS шайби

2 броя CS шайби + гайки

3 винта

1 броя H1xMx16 винт + CS шайби

2 броя CS шайби + гайки

3 винта

1 броя H1xMx16 винт + CS шайби

2 броя CS шайби + гайки

3 винта

1 броя H1xMx16 винт + CS шайби

2 броя CS шайби + гайки

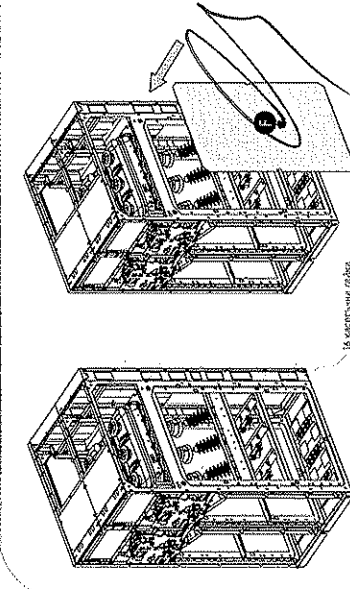
3 винта

1 броя H1xMx16 винт + CS шайби

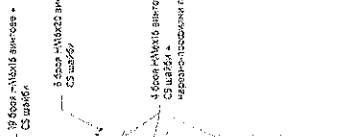
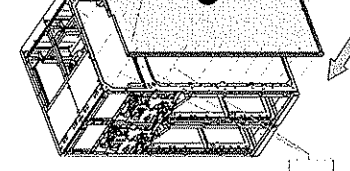
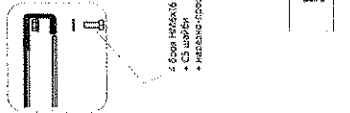
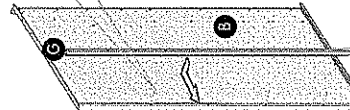
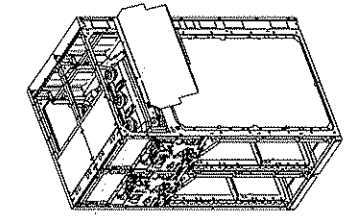
2 броя CS шайби + гайки

3 винта

Монтаж на вентилатори (H1xMx16)



2 броя H1xMx16 винтове



Упътване за сглобяване на уредовете SM6
Schneider Electric

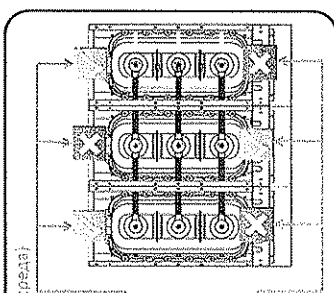
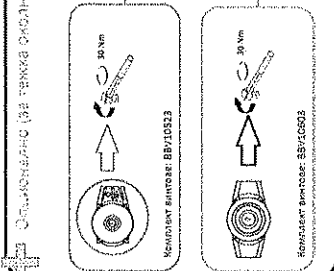
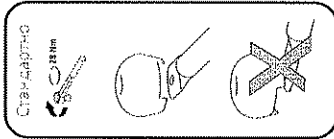
SM6-24 12.5 & 16 kA/1s
 IAC : AFL & AFL-R

4/4

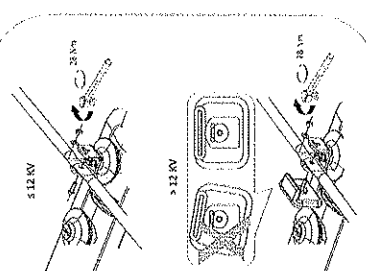
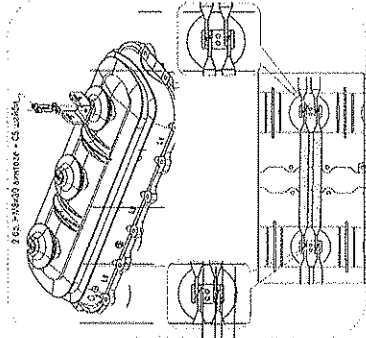
МОНТАЖНАТА ПЪТНИЦА

630A

Полеви разпределител

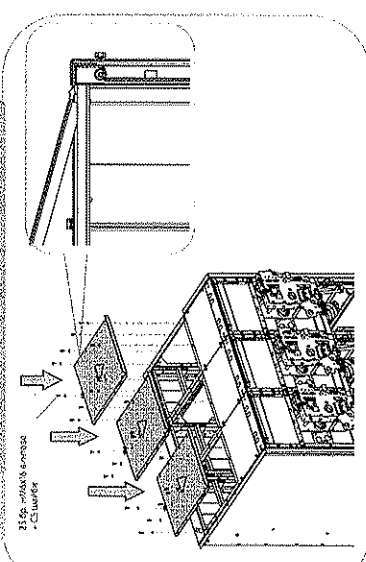


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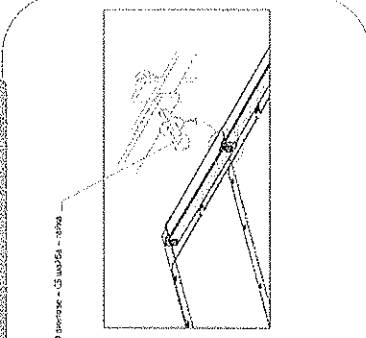
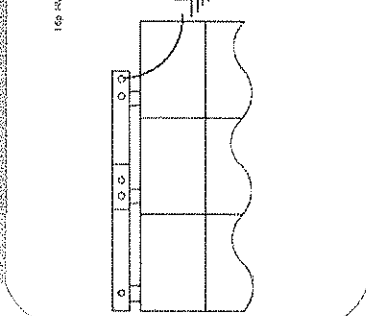


МОНТАЖНАТА ПЪТНИЦА

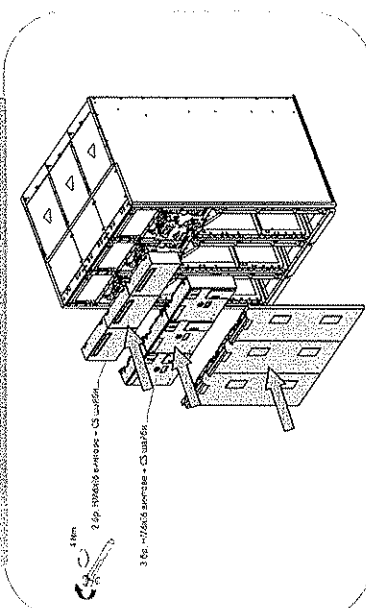
2.6g - 10kVA версия
 - C1 шифър



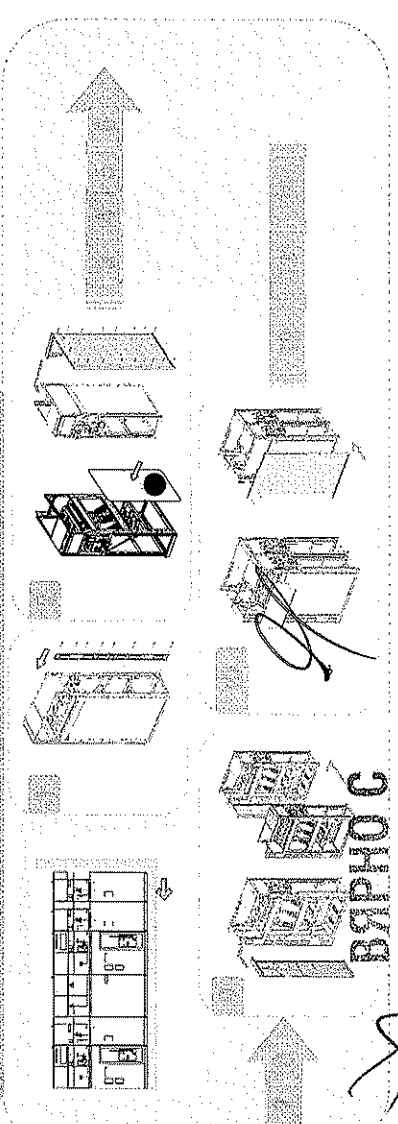
МОНТАЖНАТА ПЪТНИЦА



МОНТАЖНАТА ПЪТНИЦА



МОНТАЖНАТА ПЪТНИЦА



562

ВЪРНИТЕ С
 ОРЪЖИЯТА

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SM6

distribution MT
ensembles préfabriqués
à votre service

**notice
d'installation
installation
instructions**

**installation de capteur
de courant TLP130 et
des tôles de fond**

**installation of current
transformer TLP130
and back plates**

**NOTICE A USAGE DES
INSTALLATEURS
THIS MANUAL IS INTENDED FOR
INSTALLERS**

Schneider
Electric

Released for Manufacturing
Printed on 2009/03/09

OPERA
CUM
BYPHOC
OPERA

563

**symboles et
conventions**
**symbols and
conventions**

Attention :
vous trouvez l'ensemble
de ces symboles
ci-dessous durant
l'intégralité du document,
vous indiquant les degrés
des dangers selon les
différentes mises en
situation.

Caution:
you will find all the symbols
below throughout the
document, indicating
the hazard levels
depending on the
different types of situation.



DANGER

suivant iso 3864-2
as per iso 3864-2

DANGER : si cette directive n'est pas respectée,
cela entraînera la mort ou blessures graves.

DANGER: failure to follow this instruction will result in death or
serious injury.



AVERTISSEMENT
WARNING

suivant iso 3864-2
as per iso 3864-2

AVERTISSEMENT : si cette directive n'est pas respectée,
cela peut entraîner la mort ou blessures graves.

WARNING: failure to follow this instruction may result in death or
serious injury.



ATTENTION
CAUTION

suivant iso 3864-2
as per iso 3864-2

ATTENTION : si cette directive n'est pas respectée,
cela peut entraîner des blessures.

Ce signal d'alerte peut également être utilisé pour signaler
des pratiques pouvant entraîner des dommages pour le matériel
SM6.

CAUTION: failure to follow this instruction may result in
injuries.

This alert signal can also be used to indicate practices that could
damage the SM6 unit.



INFORMATION-CONSEIL

Nous attirons votre attention sur ce point particulier

INFORMATION-ADVICE

We draw your attention to this specific point.



contacter l'unité service de
Schneider Electric pour
diagnostics et conseils

contact the Schneider
Electric service unit for
diagnosis and advice

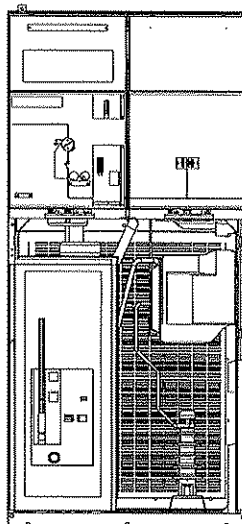


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qui vous mettra en relation avec le
centre de services du groupe
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le plus proche.

vous pouvez vous connecter
sur : www.schneider-electric.com

Call your sales representative who
will put you in contact with the closest
SCHNEIDER ELECTRIC group service
centre.

You can log on to:
www.schneider-electric.com



règles de diffusion
distribution rules



ATTENTION
CAUTION

Le but de cette publication
est de permettre l'installation
correcte du matériel SM6.
*The aim of this publication
is to enable the SM6 unit
to be installed correctly.*



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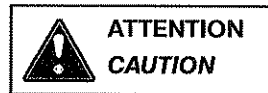


ВЕРНОЕ
СОПРОВОЖДАЮЩАЯ

566

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règles de sécurité
safety rules



Toutes les opérations décrites ci-après doivent être effectuées en respectant les normes de sécurité en vigueur, **sous la responsabilité d'une autorité compétente.**

All the operations described below must be performed in compliance with applicable safety standards, under the responsibility of a competent authority.

N'entreprenez le travail qu'après avoir lu et compris toutes les explications contenues dans ce document.

Si la moindre difficulté à respecter ces règles se présentait, veuillez vous adresser à **Schneider Electric.**

*Only undertake the work after having read and understood all the explanations given in this document. If you have any difficulty complying with these rules, please contact **Schneider Electric.***



L'installateur doit être habilité et autorisé pour intervenir et manipuler le matériel SM6.

The contractor must be certified and authorised to manipulate and perform work on the SM6 unit.

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**БЯРНОС
КОМПА
ОПТИМАТА**

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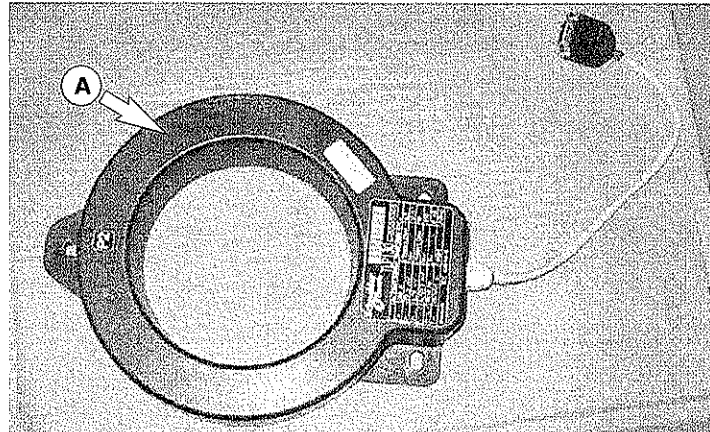
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ВЯРНО С
ОПРАВНАТА

description générale general description

accessoire pour montage tore toroid installation accessory

3 TLP :
A : tore TLP130
3TLP:
A: toroid TLP130



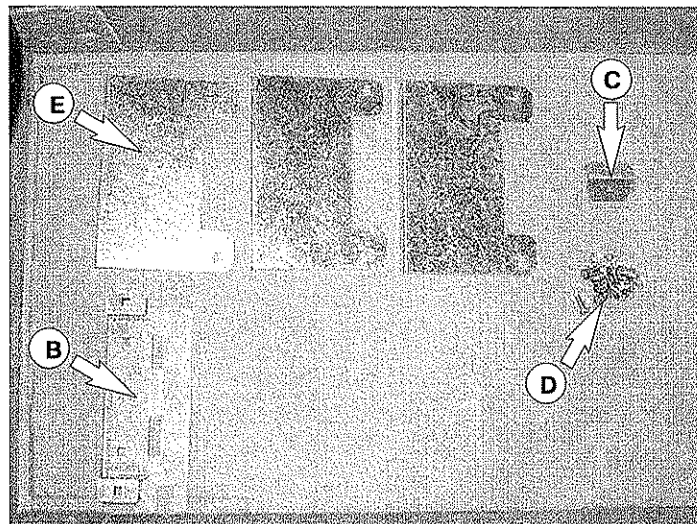
constitution du kit :
B : support TLP130
C : appui TLP130
D : sachet visserie
Réf. : BBV19795
E : cache-câbles

Remarque : le câblage, depuis le compartiment câble jusqu'au SEPAM20/40 est déjà réalisé par Schneider.

kit contents:

B : support TLP130
C : base TLP130
D : screw bag,
Ref. : BBV19795
E : cable shield

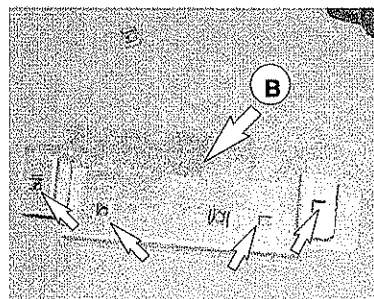
Comment: the wiring from the cable compartment to the SEPAM20/40 is already installed by Schneider.



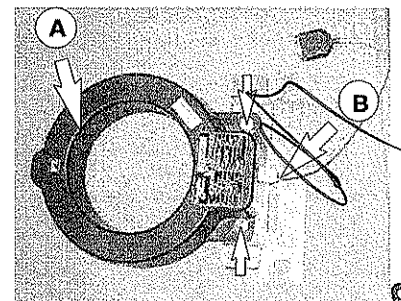
préparation des tores avant montage sur cellules

preparation of toroids prior to installation in the cubicles

Rappel: visserie livrée dans le kit
Reminder: threaded fasteners provided in the kit



Monter les 4 écrous cages sur le support (B) de TLP130.
Fit the 4 captive nuts on the TLP130 support (B).



Fixer le tore TLP130 (A) sur le support (B) (2 vis HM6 x 16 + 2 rondelles plates Ø 6 mm).

Couple de serrage : 6 N.m

Secure the TLP130 toroid (A) to the support (B) (2 HM6 x 16 hex screws + 2 Ø 6 mm flat washers).

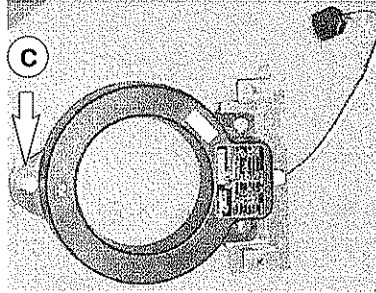
Tightening torque: 6 N.m



ATTENTION
CAUTION

Respecter le sens de montage des pièces.

Respect the order of mounting the parts.

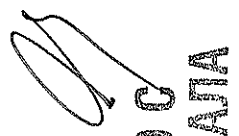


Monter ensuite l'appui (C) avec 1 vis HM6 x 16 + 1 rondelle plate Ø 6 mm + 1 écrou M6.

Couple de serrage : 6 N.m

Fit the base (C) with 1 HM6 x 16 hex screw + 1 Ø 6 mm flat washer + 1 M6 nut.

Tightening torque: 6 N.m


BRP/HC
OP/MAIA

570

3

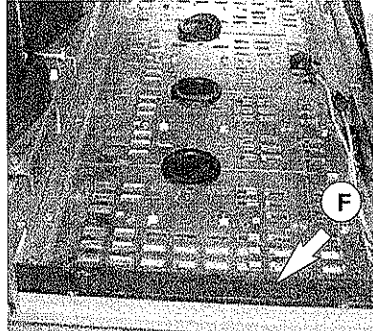
montage de tores sur cellules DM1-A et CRM installation of toroids on DM1-A cubicles and CRM

tôles de fond

back plates

Démonter la plinthe en face avant (F).

Remove the front skirting (F).



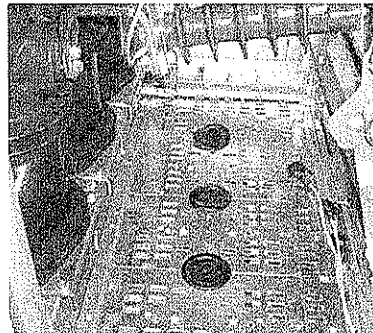
Afin de faire passer les câbles, retirer les tôles de fond (x3), laisser la dernière tôle en place.
In order to route the cables, remove the back plates (x3), leaving the last plate in place.



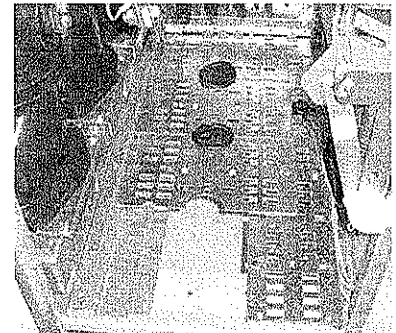
ATTENTION
CAUTION

Vérifier que les brides câbles soient bien montées en dessous des tôles de fond.

Check that the cable clamps are correctly in place below the back plates.



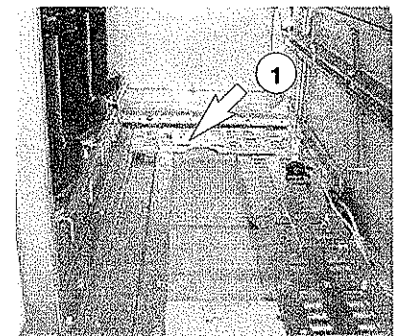
Vue d'ensemble
General view



ATTENTION
CAUTION

Le support bride doit être positionné sur la tôle de fond pour des facilités d'accessibilité.

The support flange must be positioned on the back plate for accessibility reasons.



Configuration finale avant montage des tores. La tôle (1) reste en place.

Final configuration prior to mounting the toroids. The plate (1) remains in place.

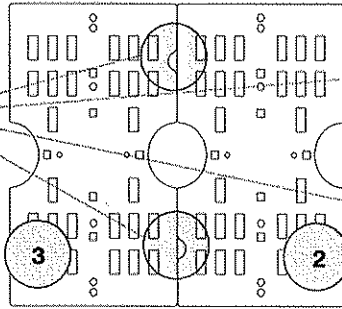
2/3



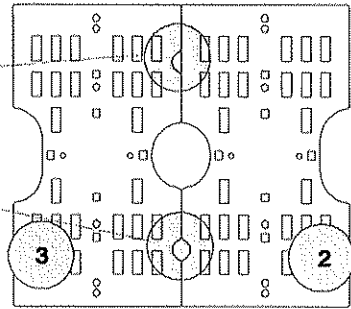
**ATTENTION
CAUTION**

Les 2 tôles centrales ont une encoche, les tôles des extrémités n'en ont pas. Les tôles (2) et (3) sont à fixer comme indiqué.

The 2 centre plates have a notch, while the end plates do not. Plates (2) and (3) are to be mounted as shown.



Tôles de fond 1 câble
1-cable back plates



Tôles de fond 2 câbles
2-cable back plates

positionnement des câbles

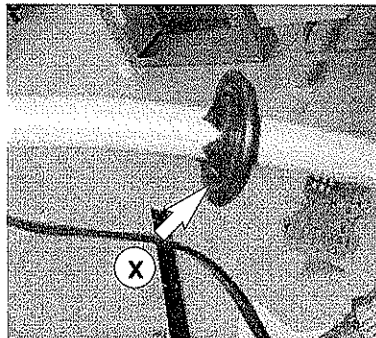
positioning of cables



**ATTENTION
CAUTION**

Retirer la vis de la tôle de fond pour pouvoir fixer le tore.

Remove the screw from the back plate to secure the toroid.



Prédécouper le passe-fil (X) puis le glisser sur le câble.

Pre-cut the bushing (X) then slide it onto the cable.

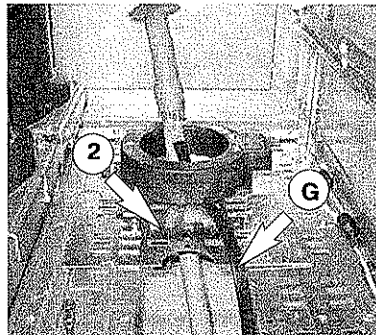
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**ATTENTION
CAUTION**

La tresse de masse (G) passe entre la tôle et le tore pour pouvoir être raccordé par la suite.

The grounding braid (G) passes between the plate and the toroid for subsequent connection.



Positionner le tore autour du câble. Raccorder le câble.

Positionner le bride câble, puis le serrer.

Positionner ensuite la tôle (2).

Put the toroid around the cable.

Connect the cable.

Position the clamp, then tighten it.

Position then the plate (2).

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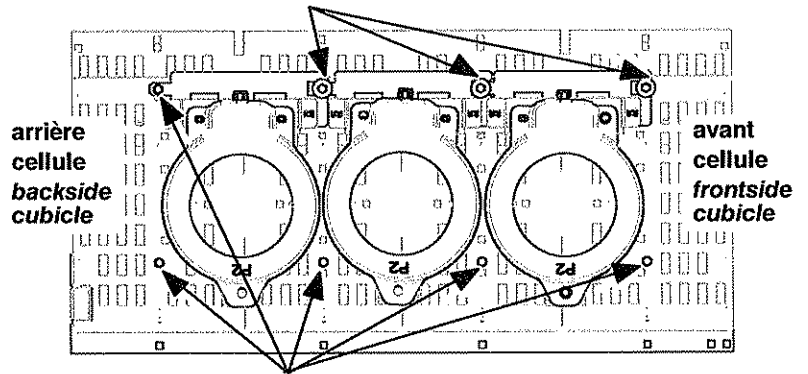
ЭЛЕКТРОН
ОПТИКА

Une fois, le 1^{er} tore en place, procéder à l'identique pour l'installation des tores (2) et (3).

Once the 1st toroid is in place, perform the same procedure to install toroids (2) and (3).

vue générale des vis de fixations pour les tores TLP130
overview of fixation screw for TLP130

3 vis HM6 x 16 + rondelles CS6 à réutiliser + rondelles (larges) LL6 incluses dans le kit
3 HM6 x 16 screws + CS6 washers to re-use + LL6 washers (big), supplied in the kit



5 vis HM6 x 16 + rondelles CS6 à réutiliser
5 HM6 x 16 screws + CS6 washers to re-use



Visser les tôles (1) et (2) avec 3 vis HM6 x 16 + 3 rondelles spécifiques (larges), livrées dans le kit.

Secure plates (1) and (2) with 3 HM6 x 16 hex screw + specific washer (big), supplied in the kit.

OPINWATA
BSPHOC

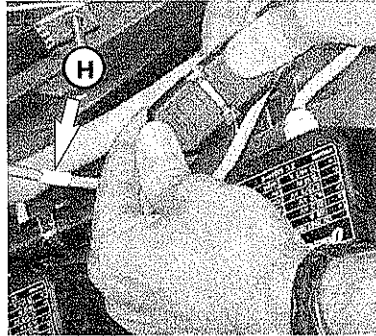
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connection des tores connecting the toroids



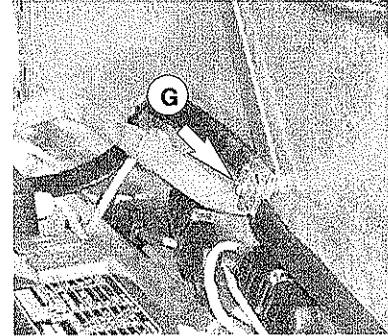
Les repères (H) sur les fils des cellules indiquent les numéros de phase. Le tore connecté doit se trouver sur le câble de phase correspondant.

The identification marks (H) on the cubicle wires indicate the phase numbers. The toroid connected must be located on the corresponding phase cable.



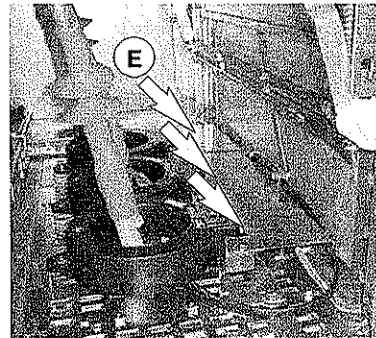
Connecter les tores en fonction de leur repérage.

Connect the toroids based on their position and the length of the cables.



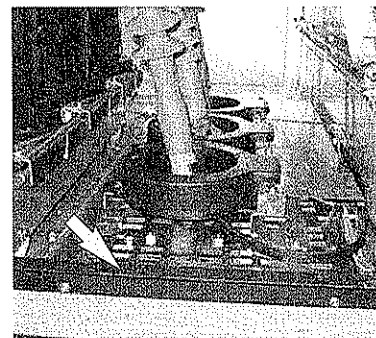
Connecter les tresses de masse (G) à la terre.

Connect the ground braids (G) to the ground.



Mettre les tôles de protection câbles (x3) (E) et les visser HM6 x 16 + rondelles plates.

Fit the cable protection panels (x3) (E) and screw it HM6 x 16 + flat washers.



Remettre la plinthe en face avant.
Replace the front skirting.

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ВАРФОС
ОПАКОВАНА

579

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**contrôle final avant
mise en exploitation**
*final control prior to
energising*

**raccordement
connection**

- 1 – Capteur LPCT, équipé d'un câble blindé terminé par connecteur RJ45 pour raccordement direct sur le connecteur CCA670.
- 2 – Unité de protection Sepam série 20, série 40.
- 3 – Connecteur CCA670, interface d'adaption de la tension délivrée par les capteurs LPCT, avec paramétrage du courant nominal par micro-interrupteurs.

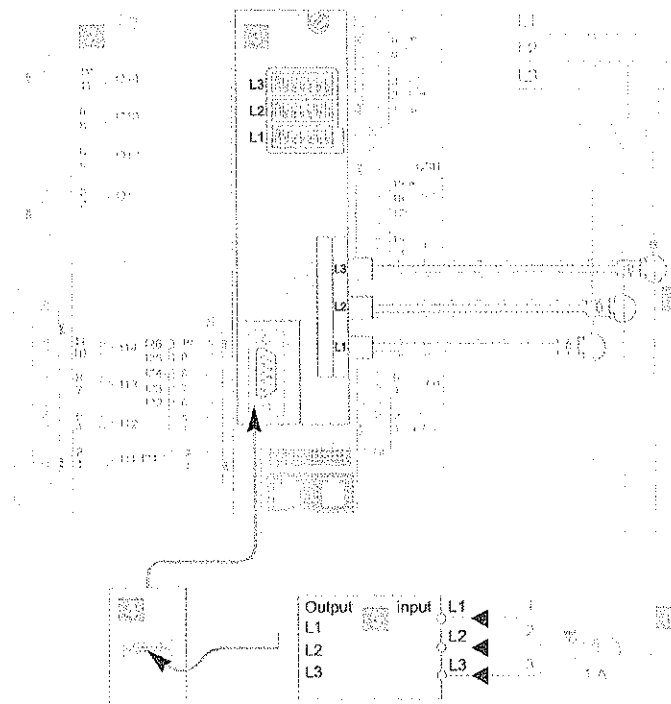
- 1 – LPCT sensor, equipped with a shielded cable fitted with an RJ45 connector to be connected directly to the CCA670 connector.
- 2 – Sepam series 20, series 40 protection unit.
- 3 – CCA670 connector, interface that adapts the voltage delivered by the LPCT sensors, with microswitch setting of rated current.

**test et injection
testing and injection**

- 4 – Prise de test déportée CCA613, encastrée en face avant de la cellule équipée d'un câble de 3 m à raccorder sur la prise de test du connecteur CCA670 (sub-D9 broches).
- 5 – Adaptateur d'injection ACE917, interface permettant le teste de la chaîne de protection LPCT avec une boîte d'injection standard.
- 6 – Boîte d'injection standard 1 A.

- 4 – CCA613 remote test plug, flush-mounted in front panel of cubicle, equipped with a 3-m cord to be connected to the CCA670 connector test socket (9-pin Sub D).
- 5 – ACE917 injection interface, used, to test the LPCT protection chain with a standard injection box.
- 6 – Standard 1A injection box.

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**ВЫПОЛНО
ОПРЕДЕЛЕНА**

3

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SOPHIA

576

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BBV1984501 revision : 01

As standards, specifications and designs change from time to time, please ask for confirmation of the information given in this publication.

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Technique T&D

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Edition du : 15/12/2008

577

SM6



MV distribution
factory built assemblies
at your service

Anglais

**instructions for
use**

IM 500mm cubicle



BYEPIOC
OPINAHATA

 **MERLIN GERIN**
mastering electrical power

GROUPE SCHNEIDER

578

Pour :pdm

Imprimé :mer, 15 déc, 2004, 18:16:27

Du livre :7896923en

Document :TdM

Dernier enregistrement :mer, 15 déc, 2004, 09:10:10

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С ОГРАНИЧЕННОЙ
ОТВЕТСТВЕННОСТЬЮ**

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ВЕРИФИКАЦИЯ
КОМПАНИИ

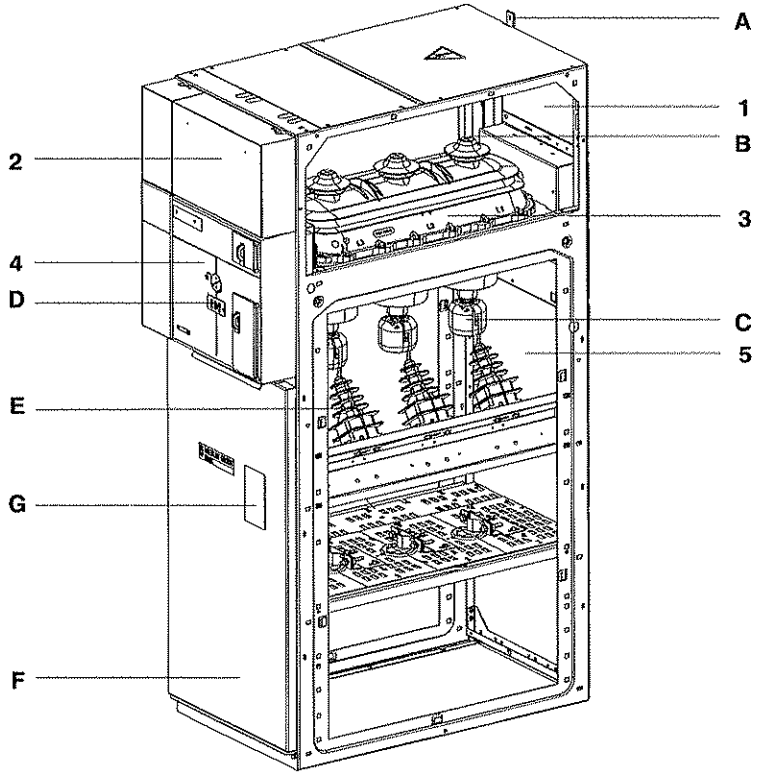


general description

IM : switch cubicle

cablings for single core cables

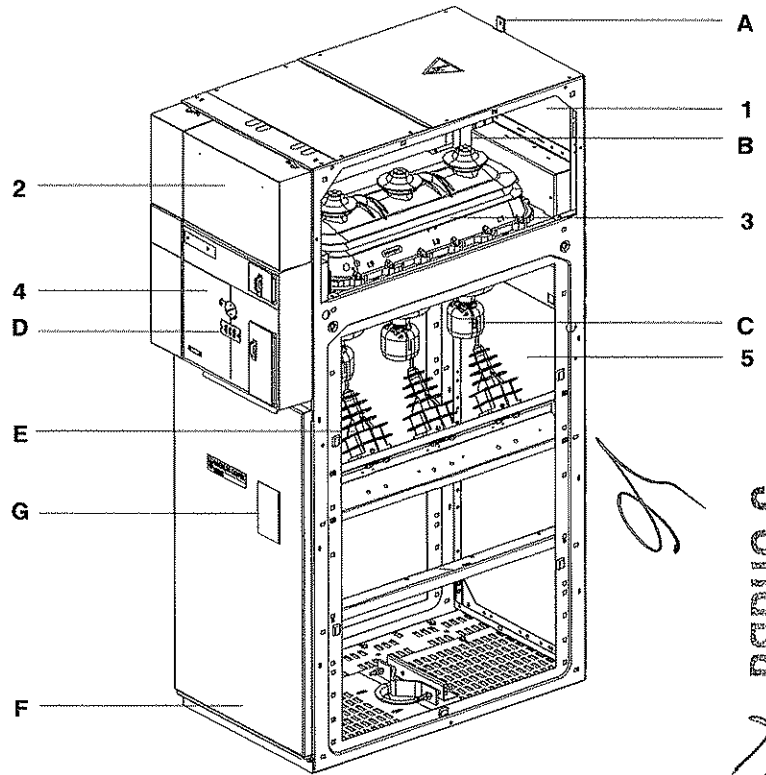
- 1 : busbar compartment
- 2 : low voltage compartment
- 3 : switchgear compartment
switch and earthing switch
- 4 : operating mechanism
compartment
- 5 : cable connection
compartment
- A : earth bar connection pad
- B : busbar connection pads
- C : lower field distributor and
cable connection
- D : voltage indicator
- E : capacitive divider
- F : front panel
- G : cable connection inspection
window



IM : switch cubicle

cablings for three core cables

- 1 : busbar compartment
- 2 : low voltage compartment
- 3 : switchgear compartment
switch and earthing switch
- 4 : operating mechanism
compartment
- 5 : cable connection
compartment
- A : earth bar connection pad
- B : busbar connection pads
- C : lower field distributor and
cable connection
- D : voltage indicator
- E : capacitive divider
- F : front panel
- G : cable connection inspection
window



BSPHOC
OPINATA

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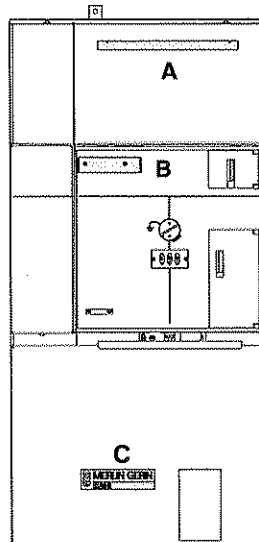
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БРАНОС
ОПТИКА
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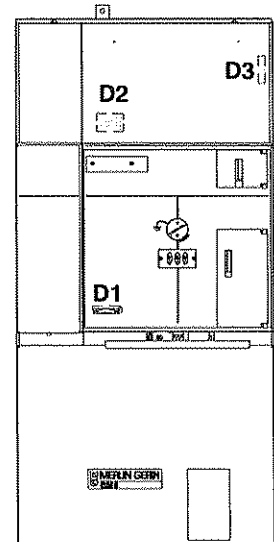
handling instructions



cubicle identification



- A** : indicator plate (option)
(for customer use)
- B** : characteristics and
designation
- C** : manufacturer's name plate



- serial number**
- D1** : riveted to the front plate of the
operating mechanism
compartment
- D2** : glued to the back of the front
plate of the low voltage
compartment
- D3** : glued to the upright of the
frame

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accessories list switchboard accessories:

(may vary depending on the
cubicles making up the
switchboard)

- 1 wall clearance angle-iron
- 2 end panels
- 1 operating lever
- 1 bag of nuts and bolts for the end
panels **S4 : 3730427**

IM accessories:

- 1 bag of intercubicle connection
accessories bag **S1: 3729745**
- 1 bag of field distributors for
busbars > 12 kV bag **S2: 3729742**
- 1 bag of field distributors for
busbars ≤ 12 kV **S6 : 3729746**
- 2 bottom plates
- 1 set of busbars
- 1 earth bar

single core bottom

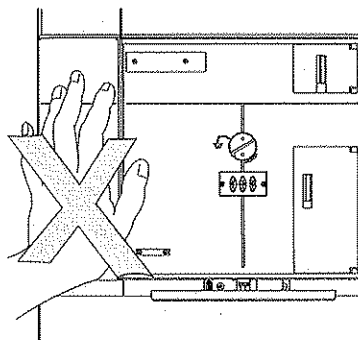
- 1 bag **3729741**
- 4 bottom plates
- 3 cable bushings
- 3 clamps
- 3 clamp supports

three core bottom

- 1 cable bushing
- 1 bag **3731747**
- 2 bottom plates
- 1 clamps
- 1 clamp supports

weight

IM : 150 Kg



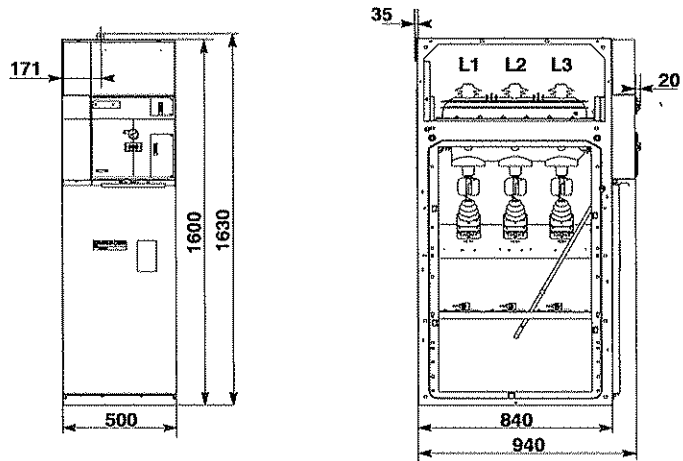
Never attempt to move the cubicle
by exerting force on the control
panel.

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OPINAWA

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dimensions



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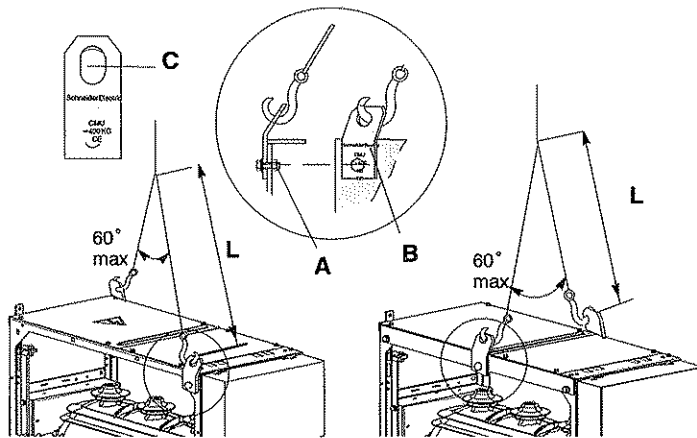
handling by sling

the handling lugs are reserved solely for handling SM6 cubicles.

- A : HM12 nuts and screws
- B : Schneider Electric CMU =400 KG CE



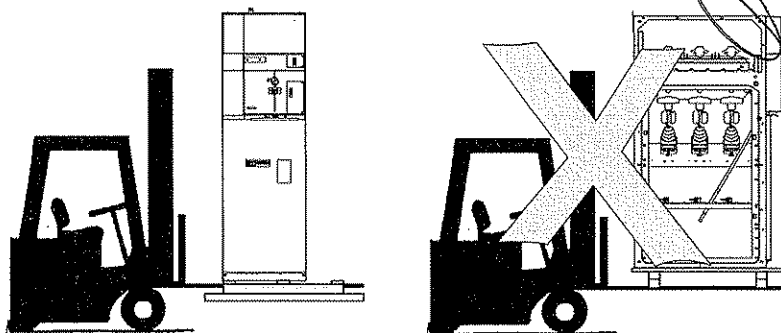
C : should the holes be deformed (ovalisation), replace the lugs, to propose you if required.



L = 977 mm mini.
Without low voltage case or wiring duct.

L = 500 mm mini.
With low voltage case or wiring duct.

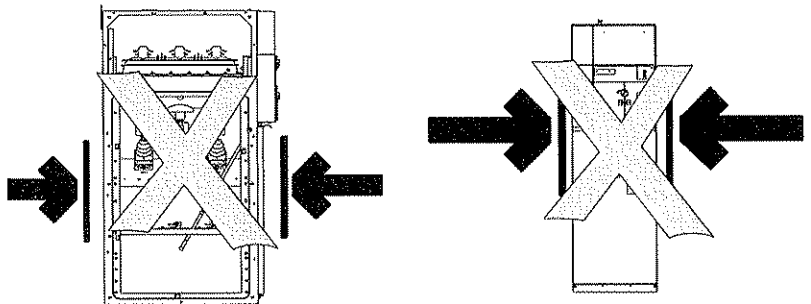
handling using a forklift



**ВЫПОЛНО
ОПРЕДЕЛЕНАТА**

Handwritten number 585

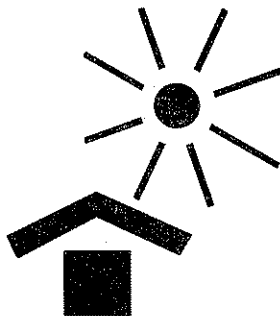
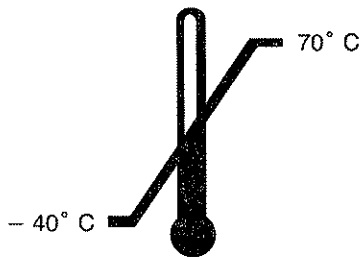
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storage



**ВЕРНОЕ
ОПИСАНИЕ**
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MS

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ORIENTAL

K

installation and operation recommendation



switchgear ageing withstand in an MV substation depends on 3 main factors

☒ **The need for proper implementation of connections:**
the new cold slip-on and retractable technologies offer ease of installation, thereby promoting withstand over time.
Their design enables operation in polluted environments with harsh atmospheres.

☒ **The influence of the relative humidity factor:**
installation of heating resistors is essential in climates with high relative humidity and large temperature differences.

☒ **Ventilation control:**
the grids must be sized according to power loss in the substation.
These grids must only be placed near the transformer, so as to prevent air circulating on the MV switchboard.

operation



We strongly recommend that you carry out at regular intervals (at least roughly every 2 years) a few operating cycles on the switching devices.

Outside normal operating conditions (between -5°C and 40°C , absence of dust, corrosive gas, etc.), we recommend that you contact our Groupe Schneider service centre in order to examine the measures to be taken to ensure proper installation operation.

Our service centre is at your disposal at all times:

- To conduct an installation diagnosis.
- To suggest the appropriate maintenance operations.
- To offer you maintenance contracts.
- To suggest adaptations.



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BRPIOC
OPINION

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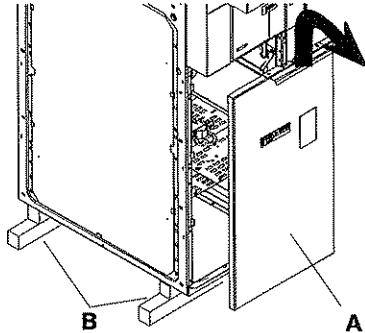
589

installation instructions

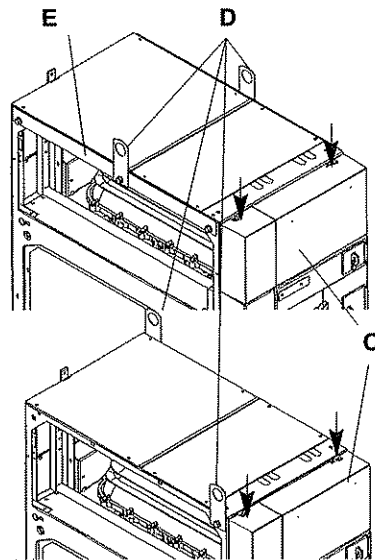
preparing the cubicles for switchboard assembly

Delivery state:
earthing switch in the **closed** position.

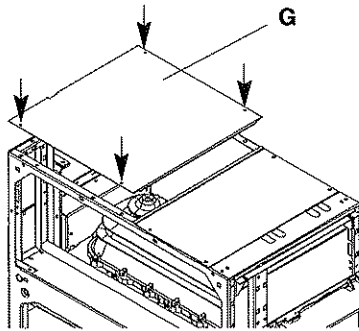
- ➔ : bolt + washer
- : bolt + washer + nylstop nut



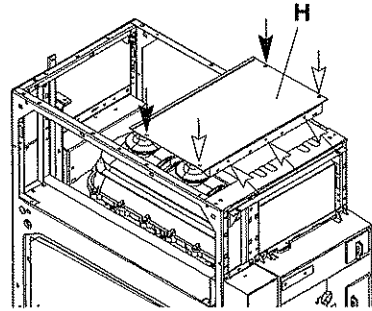
Remove the front panel **A** and then the skids **B**.



Remove the low voltage compartment front plate **C** and the lifting rings **D** and **E**.



Remove top plate **G**. (4 bolts)

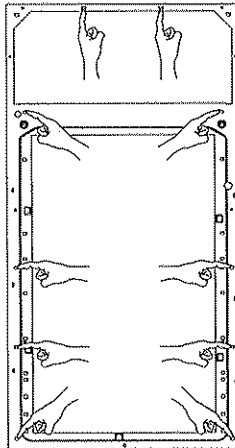


Remove top plate **H**. (7 bolts)

fitting the end panels preparations

(only if the cubicle is on the end of the switchboard)

Nuts and bolts in bag
S4: 3729744
(HM6 x 12 bolts only)

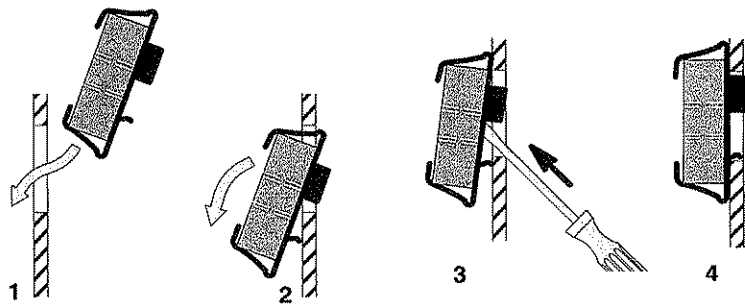


Fit 10 cage nuts on the wall side of the cubicle.

In the case of extension with equipment manufactured before the 02/02/95, you must replace the end plate of the existing substation.

BAPHO C
OPATIHADA

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1 from the outside of the cubicle, insert the cage nut in the square hole.
2 rotate the cage nut so that it sits nearly vertically within the cubicle.

3 push the cage nut in the direction of the arrow so that the top of the cage clips behind the panel.
4 the nut is correctly positioned.

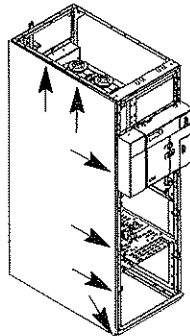
securing the end panel

Explication gave for left switchboard extremity, do the same for opposite side.

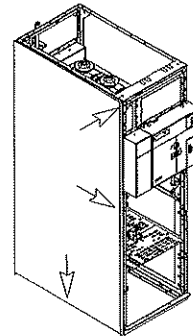
→ : bolt + washer

→ : bolt + washers + nylstop nut

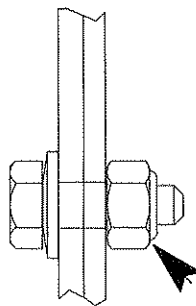
[Handwritten signature]



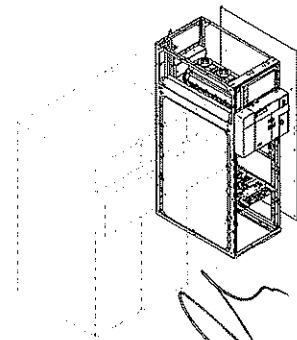
Position the end panel.
Fit the bolts in the nylstop nuts.



Fit the bolts with the nylstop nuts.



ScREW and nylstop nut mounting direction. (nut into the cubicle)



Mount the other end panel in the same manner.
(but without a wall clearance angle-iron)

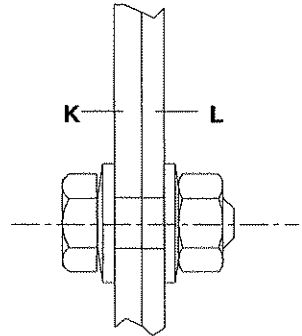
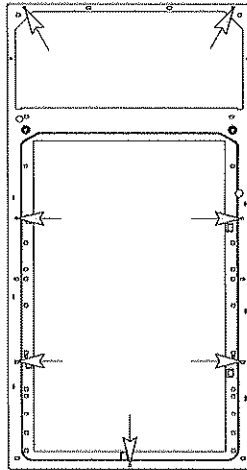
ALPHACOM
OMNIA

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assembling the switchboard

nuts and bolts in bag
S1: 3729745
(HM6 x 16 bolts only)

→ : bolt + washers + nut



Bolt mounting direction.

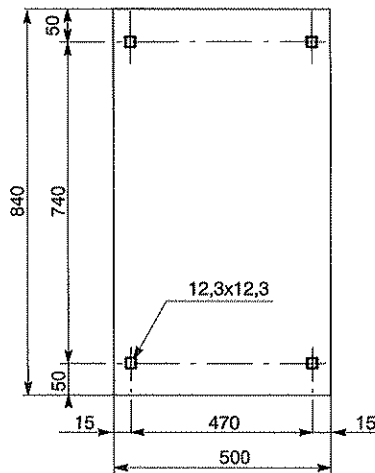
K : left cubicle

L : right cubicle

Join the various cubicles.
(the remaining nuts and bolts are for the earth bars)

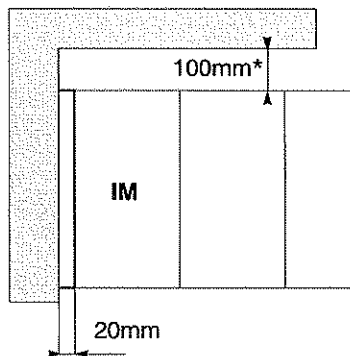
securing to the floor

(nuts and bolts not included)



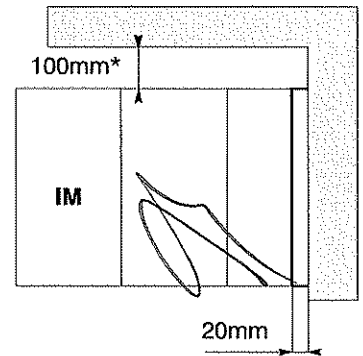
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layout in the substation



Switchboard installed to the right of a wall.

*(minimum clearance for trouble-free operation)



Switchboard installed to the left of a wall.

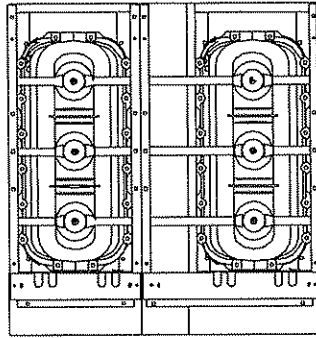
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592

БЭПРОС
ОПТИМАЛА

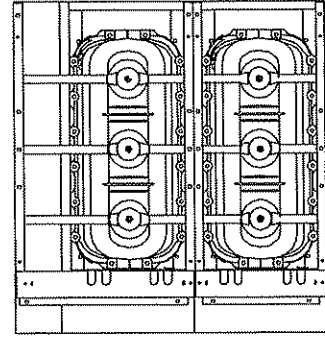
fitting the busbars after installing the cubicles in their operating location

accessories bag
S2 : 3729742 or S6 : 3729746.

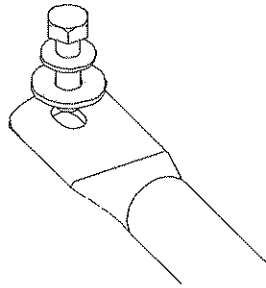
- tools :**
 1 : torque wrench (1 to 50 Nm.)
 1 : 1/4-3/8 adapter
 1 : 6 mm extension fitting
 1 : 6 mm male hexagonal (Allan)



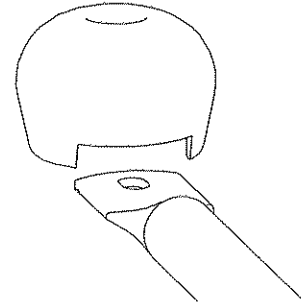
Busbar connection with cubicle on the left.
Tightening torque: 28 Nm.



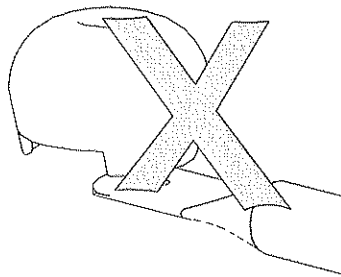
Busbar connection with cubicle on the right.
Tightening torque: 28 Nm.



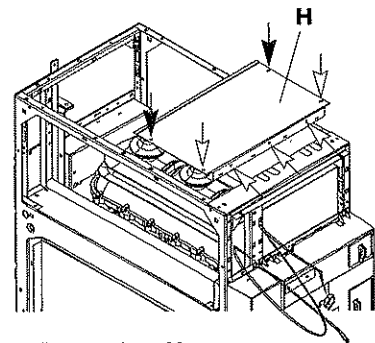
Version \leq 12 kV
 (bag **S6 : 3729746**)
 mounted without field distributors.



Version $>$ 12 kV
 (bag **S2 : 3729742**)
 Field distributor positioned correctly.

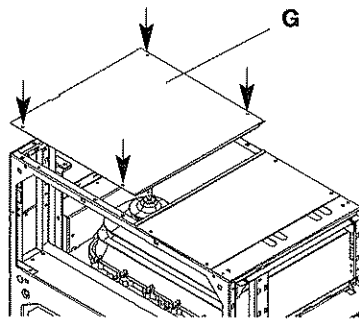


Field distributor positioned incorrectly.
 (risk of damage)



Refit top plate **H**.
 (nuts inside the cubicle)

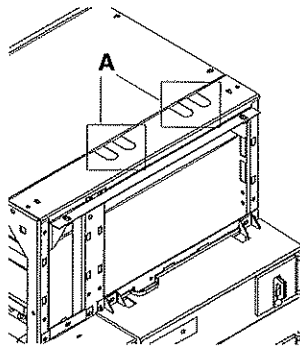
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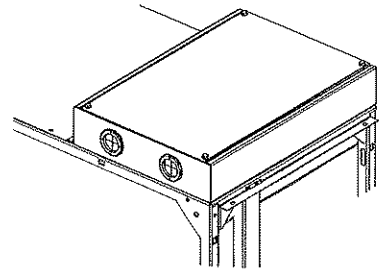
Refit top plate **G**.

cable entry for connection of low voltage auxiliaries

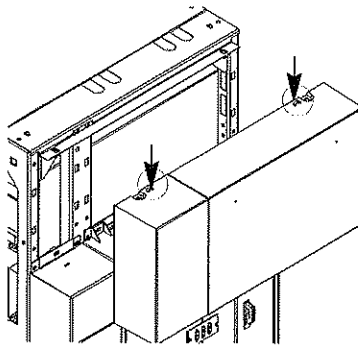
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Cable entry to the auxiliary terminal block is via holes **A** on top.



Cubicle equipped with a wiring duct. (option)
Proceed in the same manner after removing the trough top plate.



Refit the LV compartment front plate, respecting the indications.

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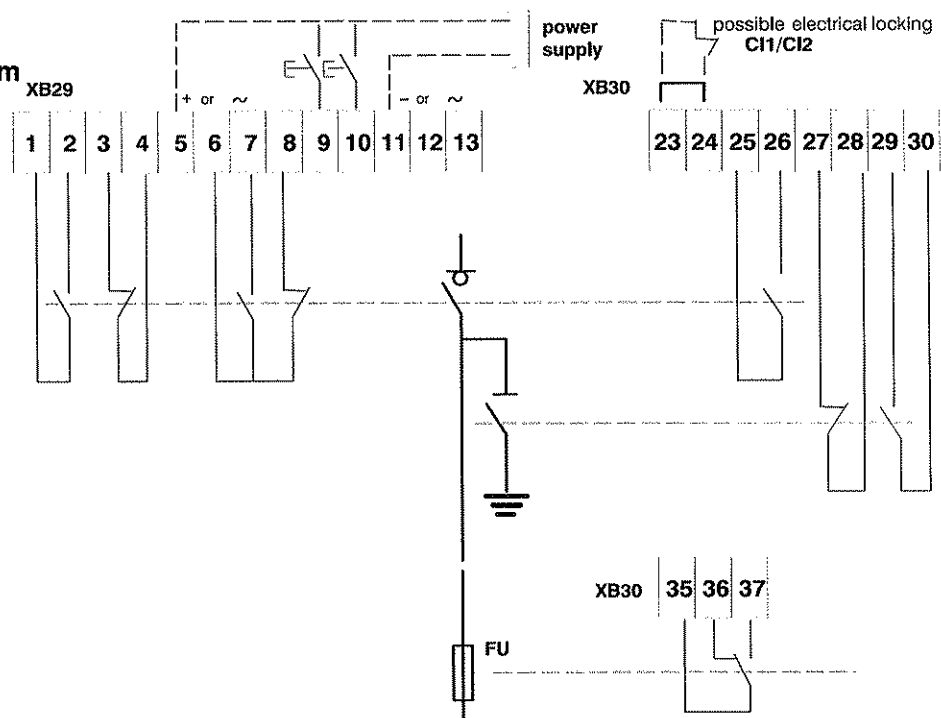
**БРИОС
ОПТИМА**

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cable entry for connection of low voltage standard auxiliaries in optional supply

Nota : for connection of LV auxiliaries, refer to the wiring diagrams of the cubicle with need other than standard.

terminal block of LV auxiliaries with motorized mechanism



marking of terminal block

4 auxiliary contacts :

position of the closed MV switch : terminals 1-2 and 6-7.

Position of the open MV switch terminals 3-4 and 6-8.

3 additional auxiliary contacts (optional supply)

Position of the closed MV switch : terminals 25-26.

Position of the open MV earthing switch : terminals 27-28.

Position of the closed MV earthing switch : terminals 29-30.

Motorization :

Power supply : terminals 5-11.

Opening order : terminal 9.

Closing order : terminal 10.

Possible electrical locking for motorization : terminals 23-24.

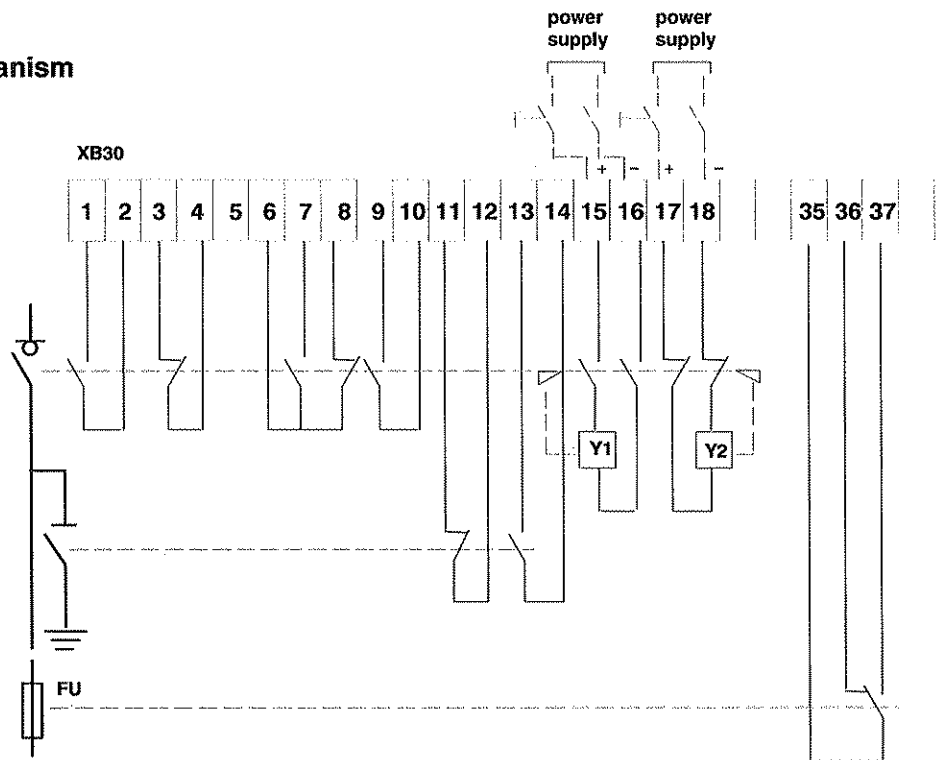
Fuse blowing indication.

only for QM cubicle terminals 35-36-37.

BRIJOC OPV/MA

595

**terminal block of LV
auxiliaries with
no-motorized mechanism**



marking of terminal block

4 auxiliary contacts :

position of the closed MV switch :
terminals 1-2 and 6-7.

Position of the open MV switch :
terminals 3-4 and 6-8.

3 additional auxiliary contacts :
(optional supply)

position of the closed MV switch :
terminals 9-10.

Position of the open MV earthing
switch : terminals 11-12.

Position of the closed MV earthing
switch : terminals 13-14.

Opening release :

opening order : terminals 15-16.

Closing release

closing order : terminals 17-18.

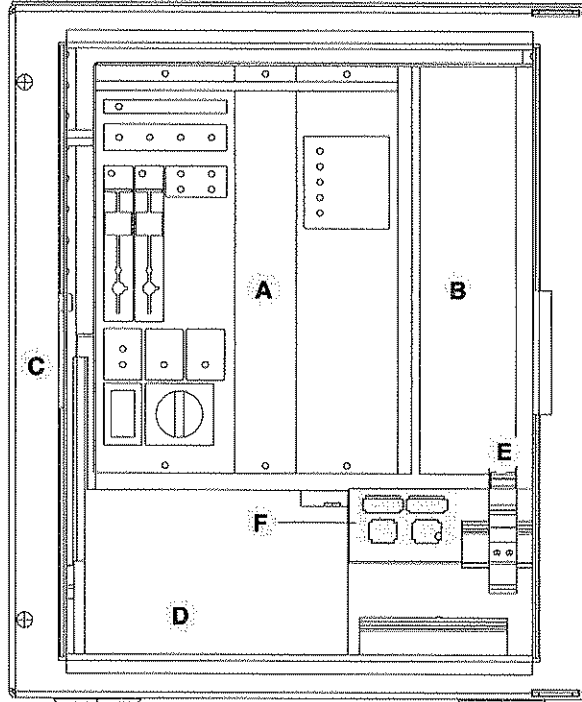
Fuse blowing indication

only for **QM cubicle** : terminals
35-36-37.

БЭПНОС
ОПТИМАЛНА

raccordement BT pour Talus 200

- A : T200S "relais"
- B : emplacement radio
"si téléconduite"
- C : caisson BT (L : 375 mm)
- D : batterie pour alimentation
autonome
- E : coupe-circuit à fusible pour
branchement de l'alimentation
du chargeur batterie 230VCA
- F ; connecteur male/femelle, info
SW1, SW2



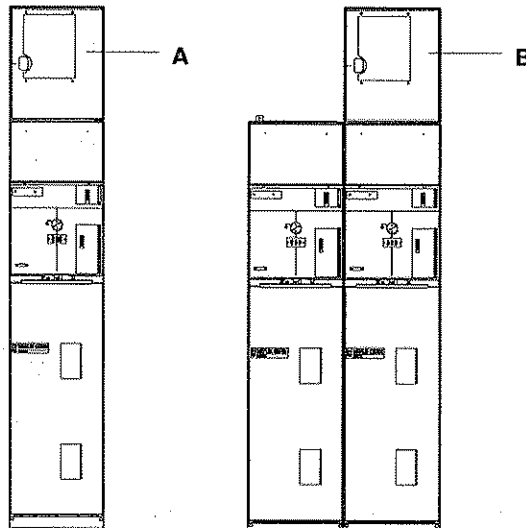
- 1 : brancher l'alimentation
230 VCA sur le coupe-circuit
en (E), et fermé le CC
- 2 : brancher la batterie
- 3 : l'automatisme sera pleinement
opérationnel au bout d'une
heure.

mise en service de l'automatisme

- Vérifier la position des boutons
sur la commande. bouton K
en position **exploitation normale**
bouton D en position **ON**.
- pour configurer l'automatisme,
se reporter au manuel de
l'utilisateur du T200S n° NT00044
et N° T00045 en Anglais.

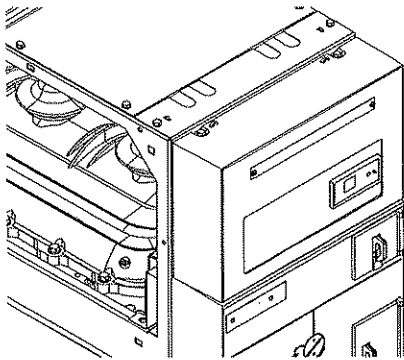
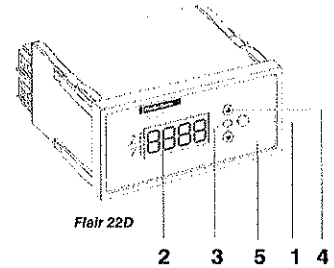
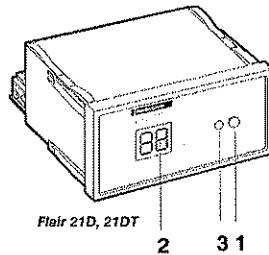
téléconduite pour cellule 1 interrupteur (A)

téléconduite pour cellule 2 interrupteur (B)



96
 ВЪРХО С
 ОПИТАНА

LV connection indicator
Flair Din SORHODEL
operating



Indicators **Flair 21D, 21DT, 22D** and **23D** are self-powered from the measurement.

A minimum 3A current is required in the MV cable to start up the **Flair 21D** and **21DT** LCD display, an energy storage guarantees a 4 hours minimum autonomy.

The indicators provide an output SCADA contact (except **Flair 21D** : transistor output).

Flair 22D included a lithium battery for a permanent display operating (in case of a load current less than 3A during 4 hours) and for the outdoor lamp supply.

Flair 23D has to be supplied from 12 Vdc to 48Vdc (whith a single zero sequence CT self powering is not possible).

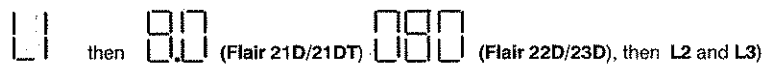
detector waiting for fault
ammeter function :

In idle mode (no fault detected), a rough load current value is displayed (**2**).

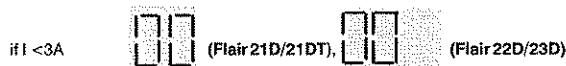
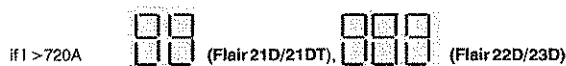
Each phase load current is successively displayed after its reference : **L1-L2-L3**.

Displayed values must be multiplied by 10 for **Flair 21D** and **21DT**.

Example for a 80A load current :



should **Flair 22D** and **Flair 23D** being fitting with zero sequence CT, L1 currents is replaced by the unbalanced, tagged with :



BRP/ROC
 OP/IN/HA/VA



maxmeter function

(Flair 22D et 23D only :)

Press once the (1) button to get access to the maxmeter function.

For each phase, the maximum load current since the last reset is displayed.

Example for a 500A maximum in phase 1:



The maximeter values are scrolled only once.

The 3 maximeters are reset all together by pushing the (4) and (5) buttons during the scrolling.

Should Flair 22D and Flair 23D fitted with zero sequence CT, M2 and M3 only are displayed.

detector in fault indication mode

when the current exceeds one the configured thresholds and becomes lower than 3A within 70s the led (3) blinks, the output contact is closed and the faulty phase is shown on the LCD display (2) :

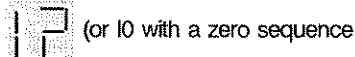


■ I>threshold exceed

steady with blinking LED (3) (2 flashed every 6s).

The display remains until an automatic reset (if configured), or a time out (4 hours for Flair 21D/21DT, configurable for Flair 22D/23D or pulse on external reset input, a manual action on (1) button.

■ I0> threshold exceed on phase 2 :



LED (3) blinks (1 flash every 3s).

The display remains until an automatic reset (>70s) (if configured), or a time out (4 hours for Flair 21D/21DT, configurable for Flair 22D/23D, or a pulse on external reset input, a manual action on (1) button.

maintenance

■ detectors Flair 21D,21DT and 23D require no maintenance (no periodic battery replacement)

■ Flair 22D lithium battery has be changed once every 15 years approximatively.

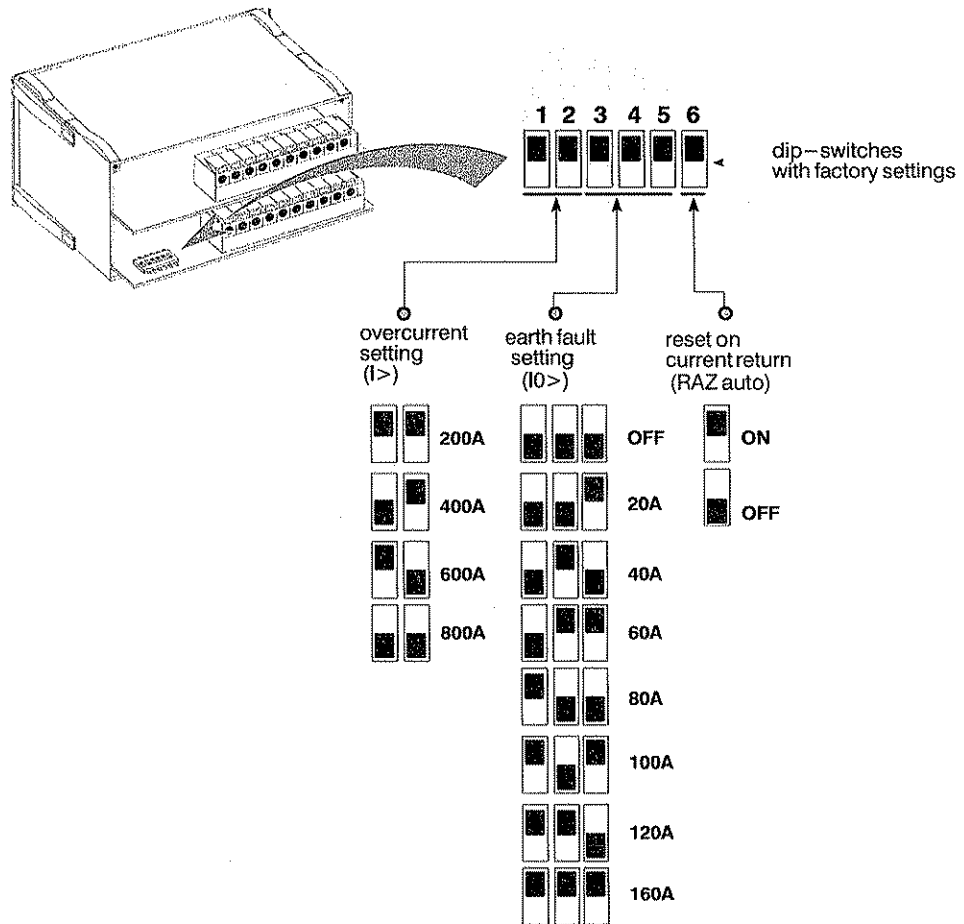
■ option BVP (external light indicator with battery) : battery life time 15 years approximatively.



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settings



Settings are performed using dip-switches (all version) : press the (1) button to validate and front panel push buttons (**Flair 22D** and **Flair 23D** only), these settings replacing those of the dip-switches.

test/setting mode activation

In order to display the settings (all version) or to modify the settings (Flair 22D and Flair 23D), enter the test/settings mode.

The test mode is activated followed by the setting display mode, act as follow :

- **Flair 21D and Flair 21DT :** press the (1) button
- **Flair 22D and Flair 23D :** press twice (1) button (the first impulse activates the maximeter display mode)
- the led (3) blinks, up to the test completion.
- the display shows successively

Flair 21D : 21 then d then xx (version)

Flair 21DT : 21 then dt then xx (version)

Flair 22D : 22D then Vxx (version)

Flair 23D : 23D then Vxx (version)

- the whole settings are scrolled and 10 s after the last one, is displayed, the indicators returns to ammeter display mode.

With a single press on the (1) button during the scrolling returns to the ammeter display mode.

settings mode (Flair 22D and Flair 23D)

Note : the impulses on the buttons are only valided if they last between 1 and 3 seconds.

By pressing simultaneously the (4) or (5) buttons during the setting scrolling, the scrolling becomes manual.

It becomes possible then, using these buttons, to switch the settings and to define new more accurate settings values which replace those defined with the dip-switches :

- when the setting to be modified is selected, push simultaneously (4) and (5) buttons
- displayed value blinks (5s max)

- select a new value using buttons + (4) or - (5)
- confirm by pushing simultaneously on (4) and (5) buttons.

If the new value not is validated within 5s, the old value is displayed again.

After 10s without action on the (4) or (5) buttons, the indicator return to ammeter display mode.

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2/9

setting scrolling

- CTs mouting (Flair 22D and Flair 23D only)

□□□ or □□□ or (23D only) --□ (□ =phase CT and □ =zero sequence CT)

- network frequency (example 50 HZ)

Flair 21D/21DT : Fr then 50 Flair 22D/23D Fr.50

- I> threshold (example 600A)

Flair 21D/21DT : 00 then 60 Flair 22D/23D 600

- I0> threshold (example 80A)

Flair 21D/21DT : EF then 8 Flair 22D/23D 80

If the dip-switches 3,4 and 5 are on OFF position, no earth fault detection, display :

Flair 21D/21DT : EF then 0F Flair 22D/23D 0FF

- reset timer (example 2 hours)

Flair 22D and Flair 23D only E.02H

- automatic reset

Flair 21D/21DT : Ar then 0F or 0N Flair 22D/23D : Ar.0F or Ar.0N

ALVIMARO
CORRISA
OPINATA

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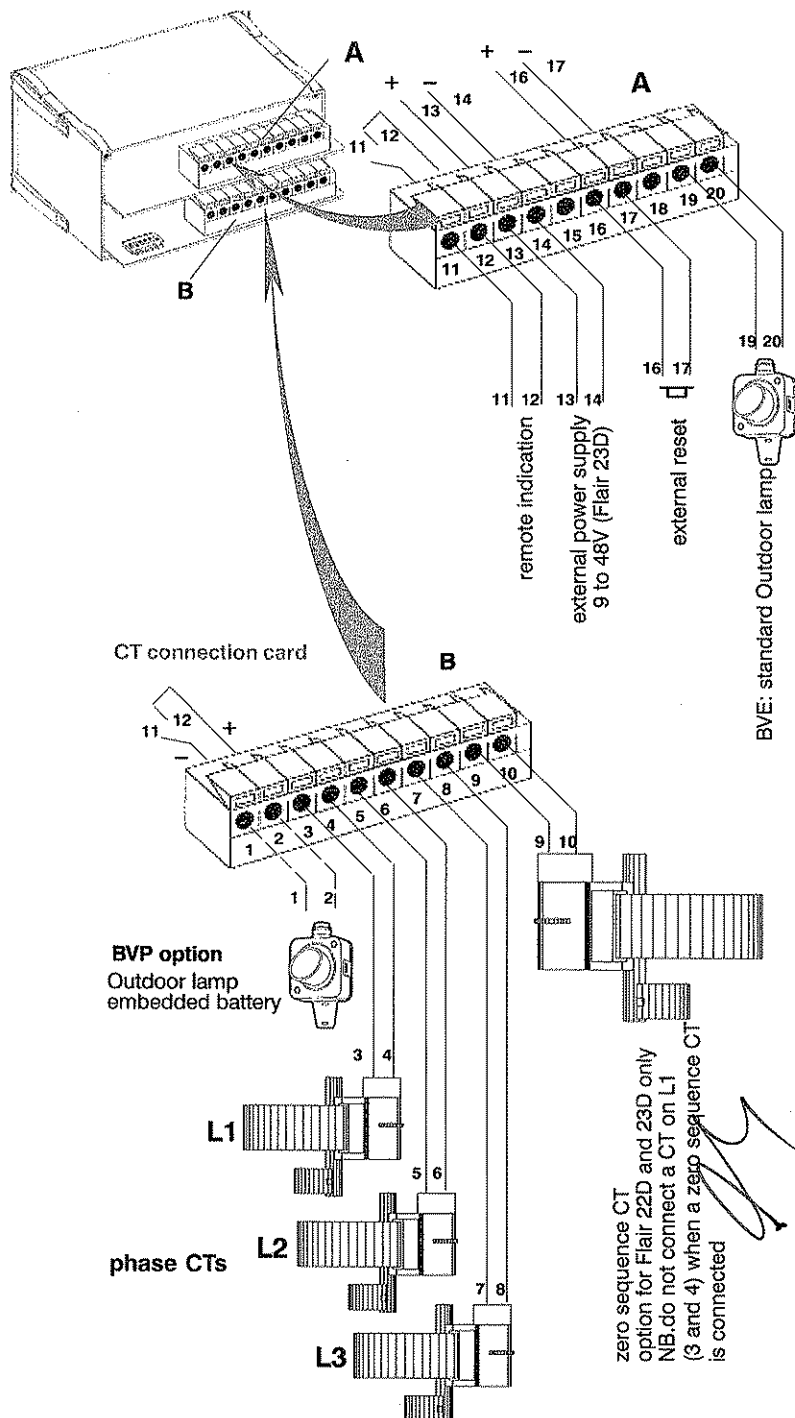
connection

Should the Medium Voltage switchgear being supplied without the CTs installed, the 3 CTs must be mounted the same side up to the busbar.



Important :the MV cable earthing braid must be fitted back trough the CT.

remote control interface



zero sequence CT option for Flair 22D and 23D only NB. do not connect a CT on L1 (3 and 4) when a zero sequence CT is connected

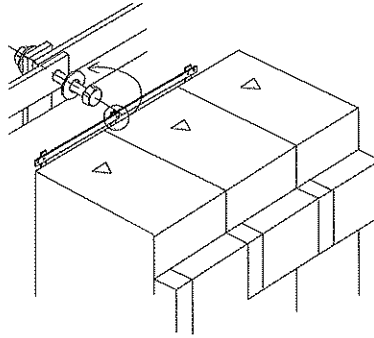
BENTON & BOWLES
 OPTIMIZING
 COMMUNICATION

603

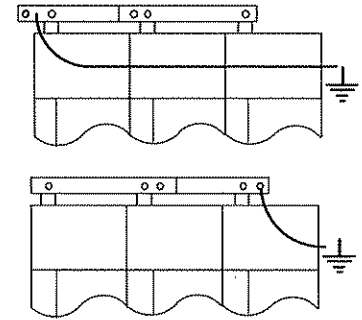


fitting the earth bars

nuts and bolts in bag S1 : 3729745

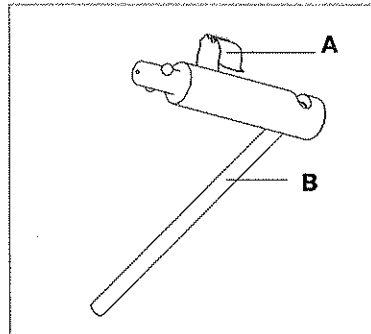


Connect the earth bars together. (HMB x 30 bolts)



Earth the substation frames in either of these two ways.

storing the operating lever

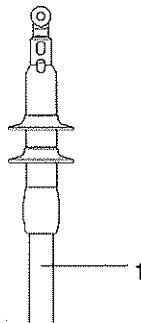


Fix the hook (A) and the wall.(screws not supplied)
The operating lever has to be hooked (B).

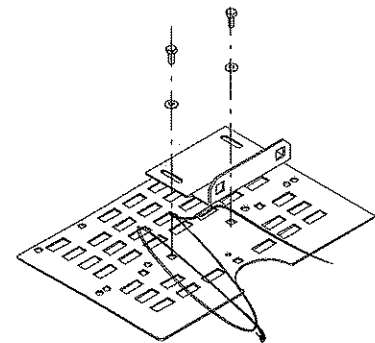
MV cable connection for an IM cubicle

To limit the effort on the cable connection you have to adjust the length at the bending radius of the cable.

1 :copper cable or aluminium cable



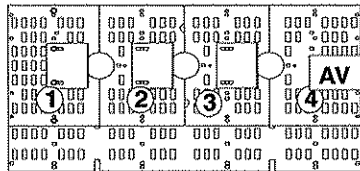
EUIC (short inner end, cold fitted). They must be manufactured according to the standard : **IEC.60.502**



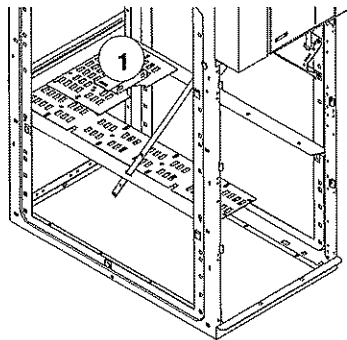
Mount the cable clamp supports.
Nuts and bolts in bag S3 : 3729741 (HM6 x 16 bolts)
The remaining nuts and bolts are for cable clamping.

BSPHOC
COMPTON
OPTECH
804

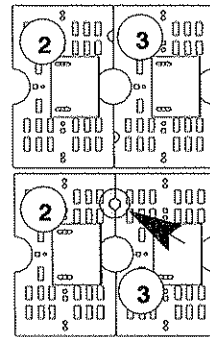
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Mount the bottom plates using 1 to 4 chronologie.



Mount the first bottom plate.

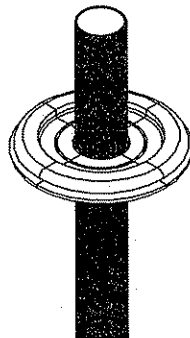


mounting 1

mounting 2

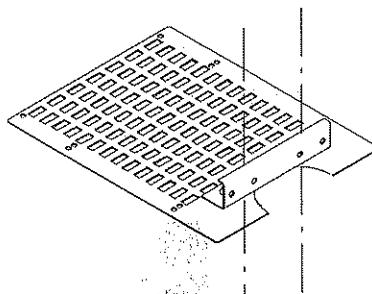
Reverse the bottom plate no 3 to create a way for wiring. (mounting 2)

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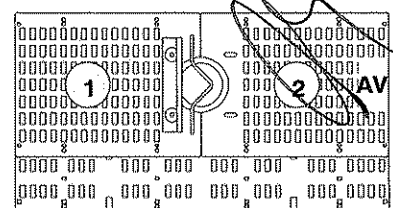


Fit the cable bushing.

mounting of three core cables



Mount the cable clamp.
Supports.nuts and bolts in bag S3 : 3729747 (HM6 x 16 bolts)
 The remaining nuts and bolts are for cable clamping.

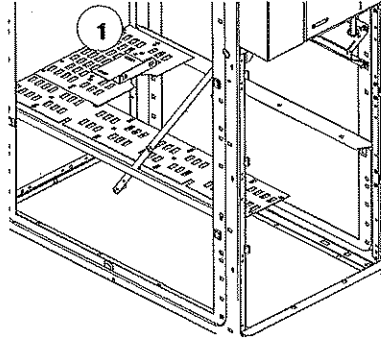


Mount the bottom plates using 1 to 2 chronology.

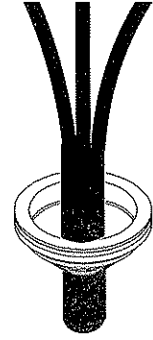
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Mount the first bottom plate.

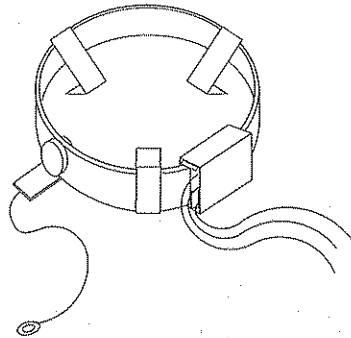


Install the cable bushing.

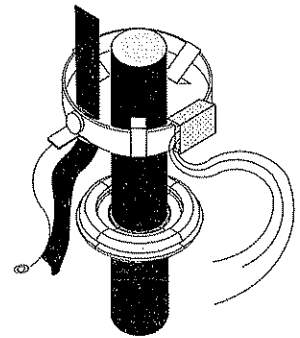
installing the fault detection toroids

(instructions suggested by Schneider Electric)

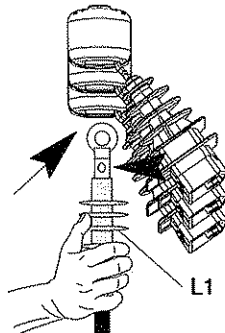
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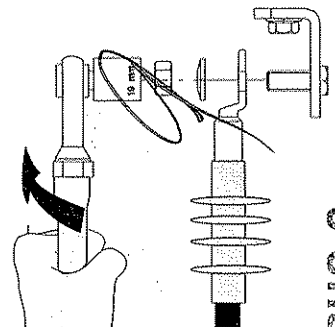
Prepare the toroids outside the cubicle.



Position and fix the toroid on the cable.
Make the LV connection.



Connect the cable and toroid together to the bolt provided on the phase L1 connector.

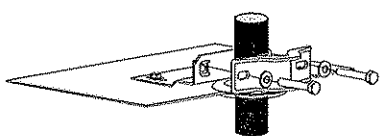


Use a torque wrench and a 19 mm socket to tighten the cable to this bolt.
Tightening torque: 50 Nm.

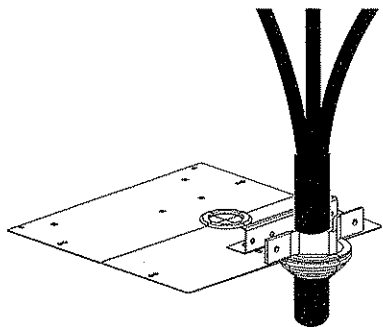
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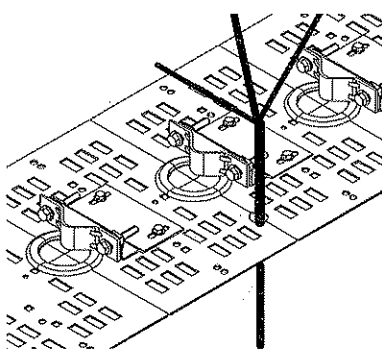


Clamp the cable to the clamp support on the second bottom plate. Mount phases L2 and L3 using the same procedure as for phase L1.

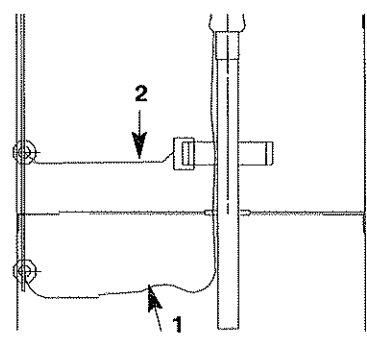


For three core cables **clamp** and mount the following bottom plates

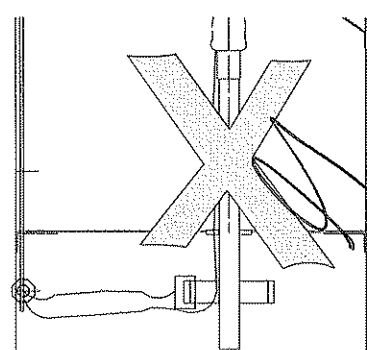
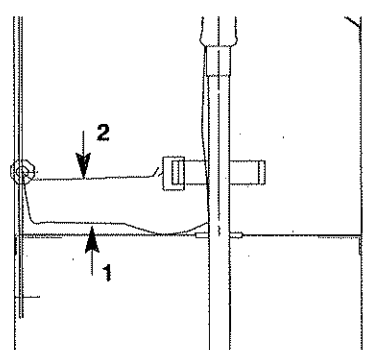
MS



Example of how the LV wiring can be routed. LV wiring routed through the hole.



Connect the cable 1 and toroid earthing braids 2 in either of these 2 ways. (the bolts are already installed)



BRUC
607

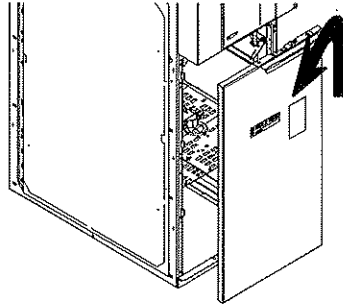
start-up instructions

checks before energizing

Check that nothing has been left in the connection compartment.

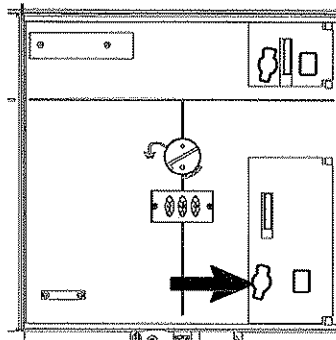
For all phases:

- check that the field distributor covers have been properly closed on all phases.
- check that the fault detector has been properly connected.

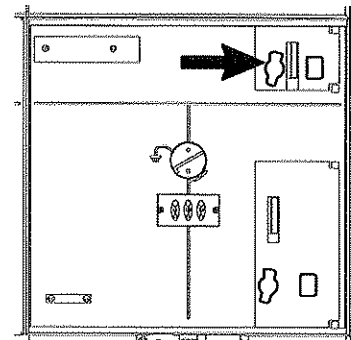


Refit the front panel.

operating test before energizing

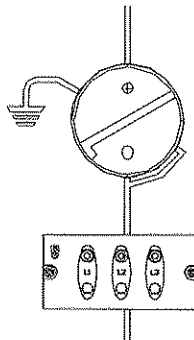


Operate the switch several times.



Operate the earthing switch several times.

energizing the incoming MV cables

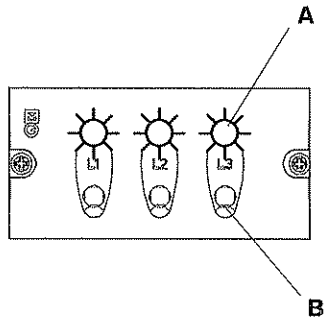


The switchgear must be in open position.
(see: **operating instructions**)

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voltage indicators



As soon as the cables have been energized, the voltage indicator lamps should go on.

A : voltage presence indicator lamp (1 for each phase).

B : connection point used to connect a phase concordance unit.

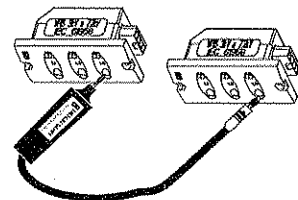
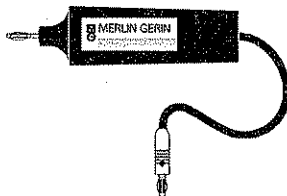
characteristics

The voltage presence indication is ensured in the voltage range defined by **IEC 61958**

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phase concordance test

Remack:
the control unit is similar to the concordance unit used for RM6.



Phase concordance unit of the simplified **Merlin Gerin** type.

If the phases concord, the concordance unit lamp remains off.
If the phases do no concord, the concordance unit lamp goes on.

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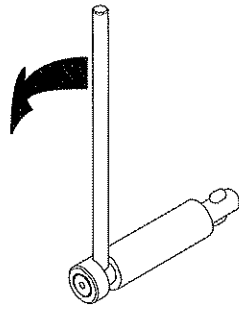
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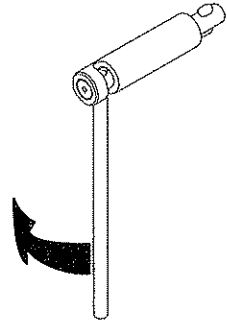
operating instructions

MS

cubicle operation and position indication

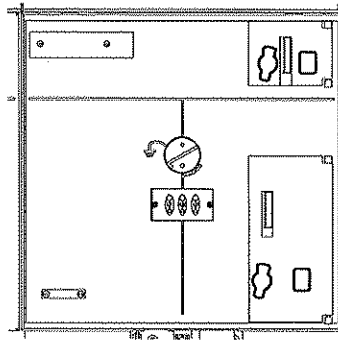


Position the lever as indicated for downward **opening** operations.

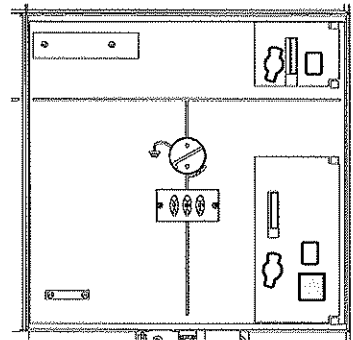


Position the lever as indicated for upward **closing** operations.

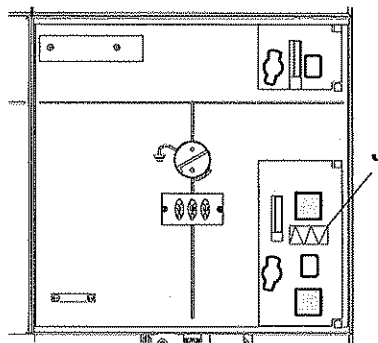
MS



CIT operating mechanism front plate.



CI1 operating mechanism front plate.

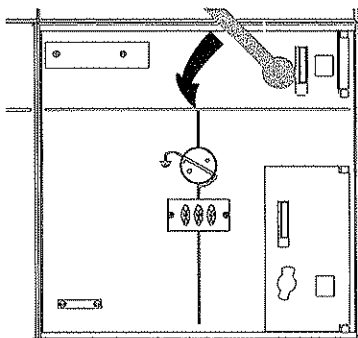


CI2 operating mechanism front plate.
J : charged/uncharged indication.

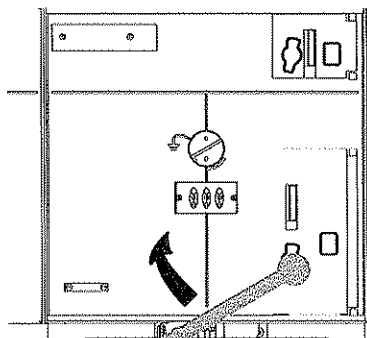
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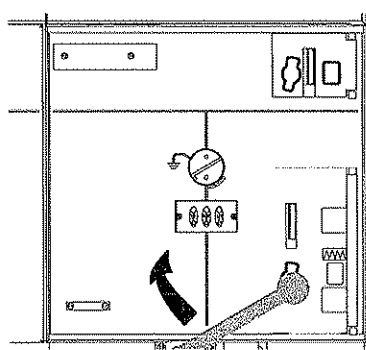
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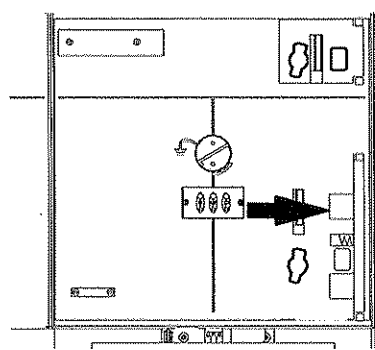
Opening the earthing switch.
(CIT, CI1 and CI2 operating mechanisms)



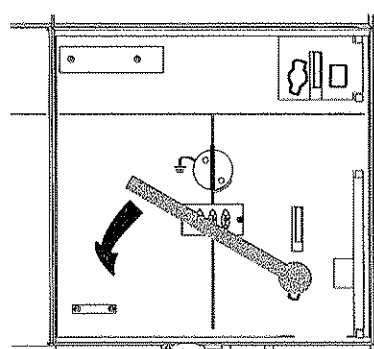
Closing the switch.
(CIT and CI1 operating mechanisms)



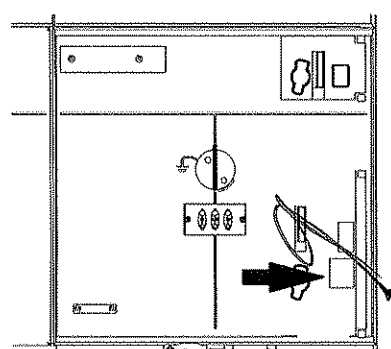
Charging the spring.
(CI2 operating mechanism)



Closing the switch.
(CI2 operating mechanism)



Opening the switch.
(CIT operating mechanism)



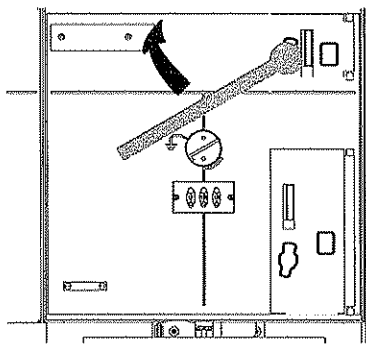
Opening the switch.
(CI1 and CI2 operating mechanisms)

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OPERAZIONE
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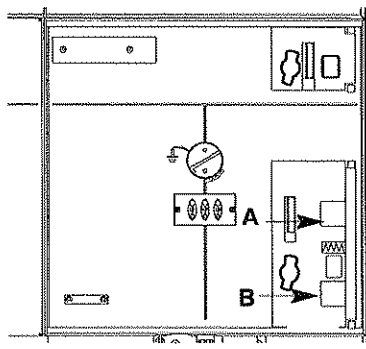
2/2



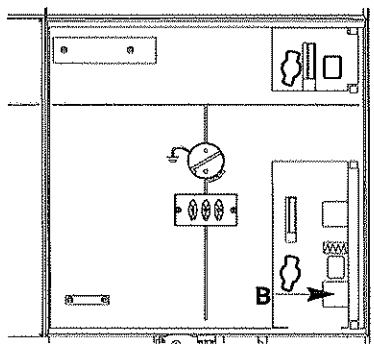
Closing the earthing switch (for **CIT, C11** or **C12** operating mechanisms) after checking the voltage status.
(see **voltage indicators**)

discharging a C12 operating mechanism

MS

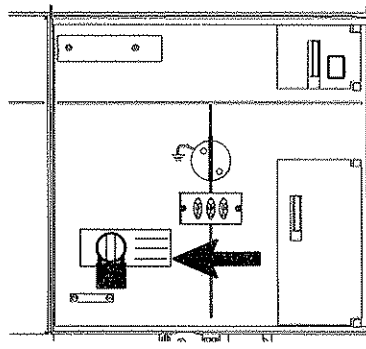


Cubicle **de-energised** :
Close the switch: button **A**
then **open**: button **B**.

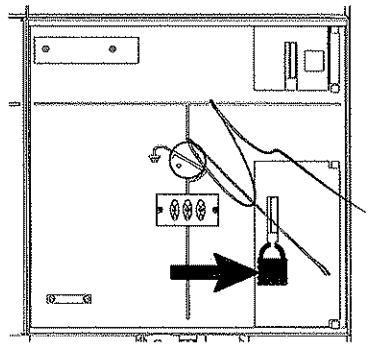


Cubicle **energised** :
Press the open button **B**.
Attention : this operation can damage the operating mechanism.
Perform only when strictly necessary.

padlocking



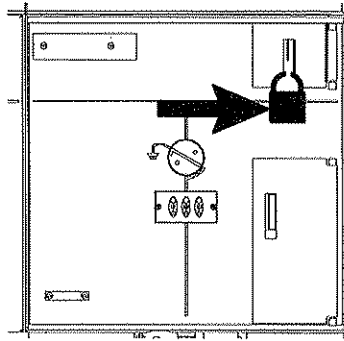
Padlocking of motor mechanism. (option)
Lock out the motor mechanism using a padlock before **opening** the switch.
The motor mechanism can be **locked** in or out using the padlocks.



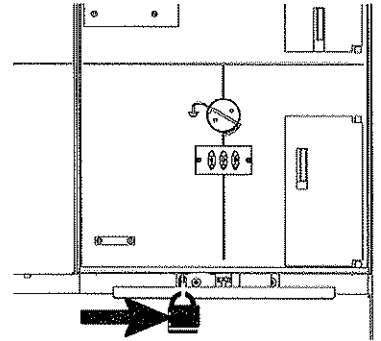
Padlock the switch in **open** or **closed** position using 1, 2 or 3 padlocks. (dia. 8 mm)

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Padlock the earthing switch in **open** or **closed** position using 1, 2 or 3 padlocks. (dia. 8 mm)



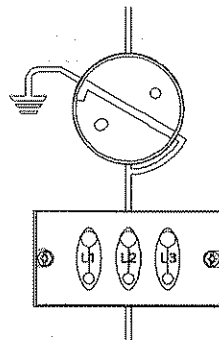
Padlocking the front panel.

keyed interlocks

See the keyed interlock installation and operating instructions **7896785**.

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operating safety



The front panel can only be removed or fitted if the earthing switch is closed.

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maintenance instructions

preventive maintenance

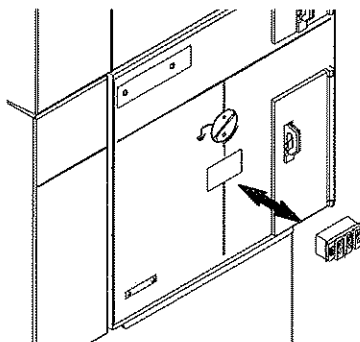
for problems:
see **Schneider service centers**.

Never lubricate the operating mechanism.

No particular maintenance is required under normal operating conditions.
(temperature between -5°C and 40°C)

For severe operating conditions (aggressive environments, dust, temperatures below -5°C or above 40°C , etc.) consult your nearest **Schneider service centers**.

replacing a voltage indicator block on a cubicle prior to 0040001U



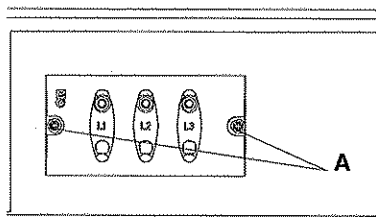
Pull out the voltage indicator block.
(the switchboard can remain energized)

replacing a voltage indicator block

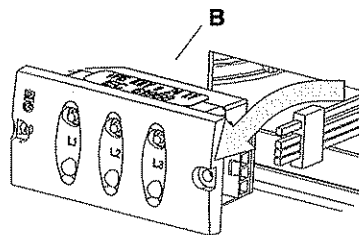
VIPS type on a cubicle
after 0040001U

removal

This operation can be conducted
with an energised switch.



remove the 2 fixing screws from
the voltage indicator block (A).



Remove the voltage indicator block
and unplug the incoming
connector from it.

install

On the electrical data label (B),
make sure that the new block
correctly corresponds to the rated
network voltage

- 1,7 kV à 3 kV
- 3 kV à 7,2 kV
- 10 kV à 24 kV

Install the new voltage indicator
block in the reverse order for
removal.

Tightening torque 0,1 mdaN.

trouble-shooting chart

■ voltage indicator not illuminated	■ check that the incoming cables are live
■ front panel cannot be opened or closed	■ check the voltage indicator block
■ earthing switch cannot be operated	■ check that the earthing switch is closed
■ switch cannot be operated	■ check that the switch is open
	■ check that the earthing switch is open

motor mechanism (option)

■ electrical operation impossible	■ check the LV fuses HA21 (CIP2)
	■ check electrical interlocks S13-14 (lever insertion)
	■ check that the earthing switch operating shaft has reached its end position
	■ check that contact S14 has not disabled the power supply and re-adjust if necessary
	■ check the configuration of the CIP1 subassembly (see diagram)
S13 = switch lever input S14 = earth switch lever input	■ use the operating lever to apply a torque in the closing direction until the end position is reached; manual operation should now be possible
■ (*) manual operation impossible following an electrical closing cycle for a voltage level less than -15% rated value	■ if possible, carry out an electrical operation, using a backup power source if necessary
■ (*) insertion of lever impossible following an electrical closing cycle for a voltage level greater than +15% rated value	■ to allow insertion of the operating lever, push the back of the switch shaft in the closing direction using a large screwdriver; (for safety reasons, remember to first lock out the electrical operating mechanism; if necessary, push up and hold the locking blade that actuates contact S13)

(*) Operation is guaranteed for rated voltage $\pm 15\%$

options

(please consult us)

- motor mechanism
- auxiliary contacts
- phase concordance tester
- keyed interlocks
- enlarged LV compartment
- 50 W heating element
- LV compartment or incoming cables compartment from top
- extra height plinth

spare parts

- voltage indicator
- (for other parts, please consult us : see **Schneider services centers**)

MWH
CIP1
S13
S14
S15
S16
S17
S18
S19
S20
S21
S22
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S24
S25
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7896923EN indice : H

Edition du : 15-Dec-2004

SM6



MV distribution
factory built assemblies
at your service

Anglais

**instructions for
use**

SM6. Germany

cubicles
(IM, IMB, QM, QMB,
GBM, GAM,
DM1-C, DM1-D,
DM1-CW, DM1-CS)

MS

MS

OPERA
OPERA

MERLIN GERIN
mastering electrical power

GRUPE SCHNEIDER

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БРОС
ОПРАВКА

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	cable connection	21
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	closing the switchboard	22
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	installation in the substation	23
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	busbar kit for cubicle	24
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	final mounting	25
	mounting the end plates	25
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	padlocking	34
	operating safety	34
maintenance instructions		35
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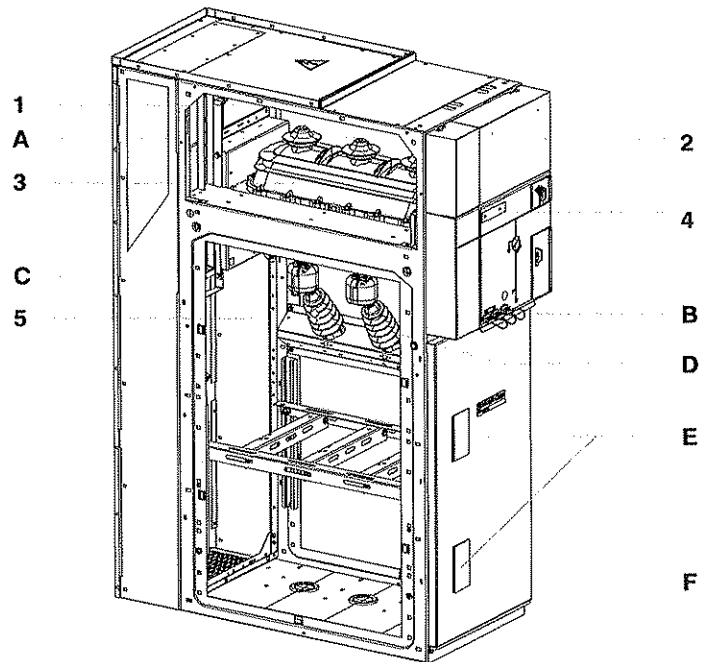
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OFFICE OF THE
COMPTROLLER
OF THE
TREASURY

general description

IM: switch cubicle

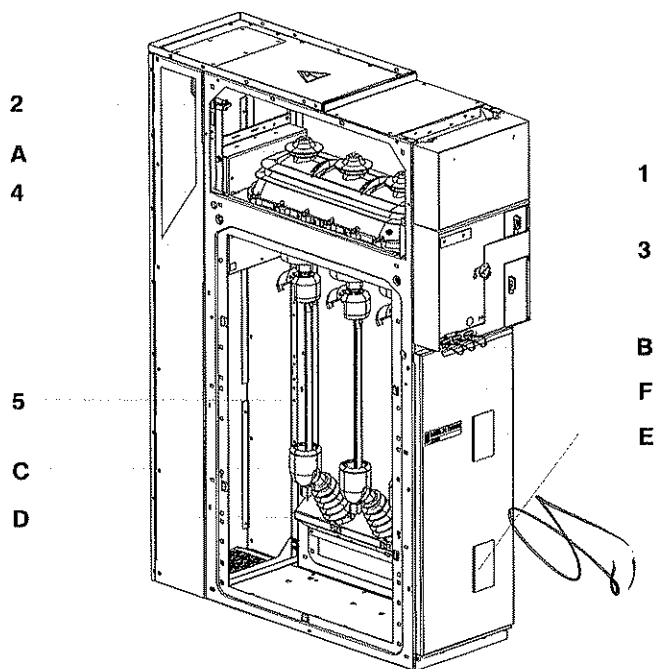
- 1 : busbar compartment
- 2 : low voltage compartment
- 3 : switchgear compartment:
switch and earthing switch
- 4 : operating mechanism
compartment
- 5 : cable connection
compartment
- A : busbar connection pads
- B : voltage presence detector
- C : lower field distributor and
cable connection
- D : capacitive divider
- E : cable connection inspection
windows
- F : front panel



24 kV.630 A
dimension 500 mm

IMB: switch cubicle for bottom left connection

- 1 : low voltage compartment
- 2 : top busbar compartment
- 3 : operating mechanism
compartment
- 4 : switchgear compartment:
switch and earthing switch
- 5 : bottom busbar connection
compartment
- A : top busbar connection pads
- B : voltage presence detector
- C : bottom field distributor and
busbar connection
- D : capacitive divider
- E : inspection windows
- F : front panel

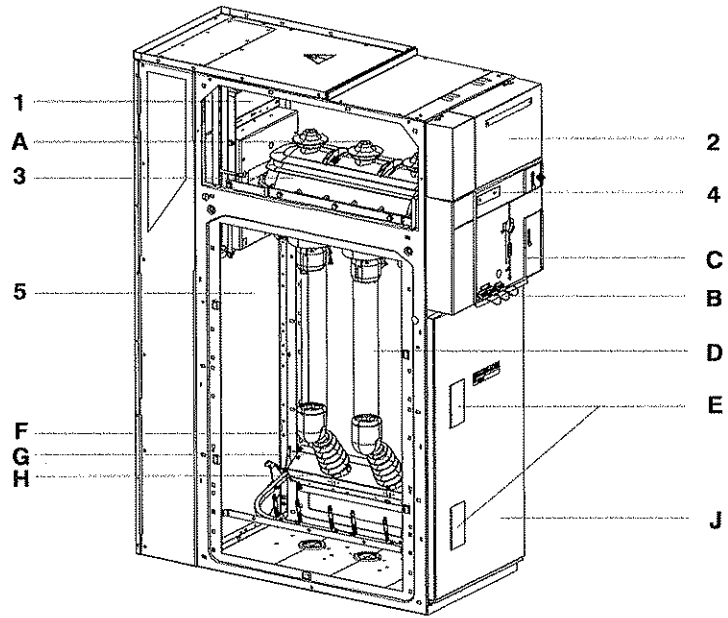


24 kV.630 A
dimension 375 mm



QM: fuse-switch combination cubicle

- 1 : busbar compartment
- 2 : low voltage compartment
- 3 : switchgear compartment: switch and earthing switch
- 4 : operating mechanism compartment
- 5 : cable connection compartment and fuse installation
- A : busbar connection pads
- B : voltage presence detector
- C : fuse blowing tripping indication
- D : fuses
- E : inspection windows for fuses and downstream earthing switch
- F : lower field distributors
- G : capacitive divider
- H : downstream earthing switch
- J : front panel

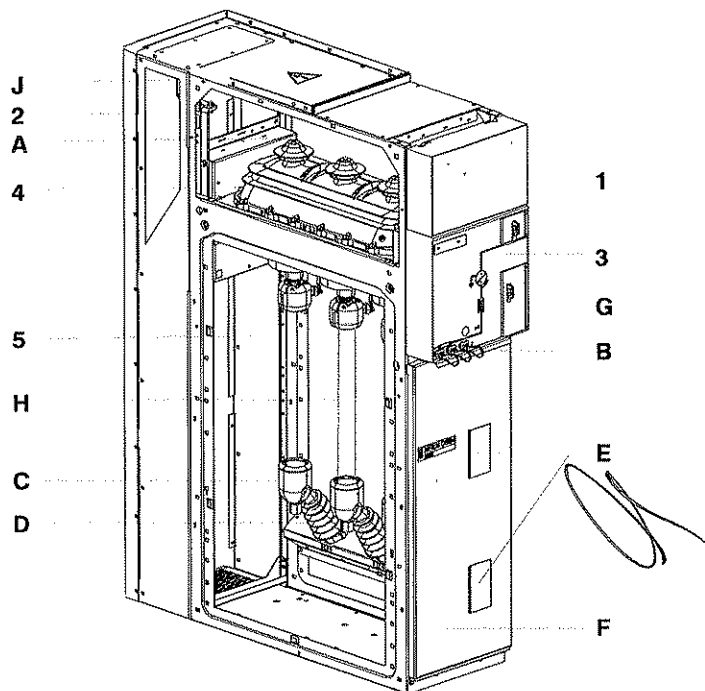


24 kV.200 A
dimension 500 mm

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QMB: fuse-switch combination cubicle for bottom left connection

- 1 : low voltage compartment
- 2 : upper busbar compartment
- 3 : operating mechanism compartment
- 4 : switchgear compartment: switch and earthing switch
- 5 : lower busbar connection and fuse compartment
- A : upper busbar connection pads
- B : voltage presence detector
- C : lower busbar connection and lower field distributors
- D : capacitive divider
- E : inspection windows
- F : front panel
- G : indication of switch opening by blown fuse
- H : fuses
- J : earth bar connection pad

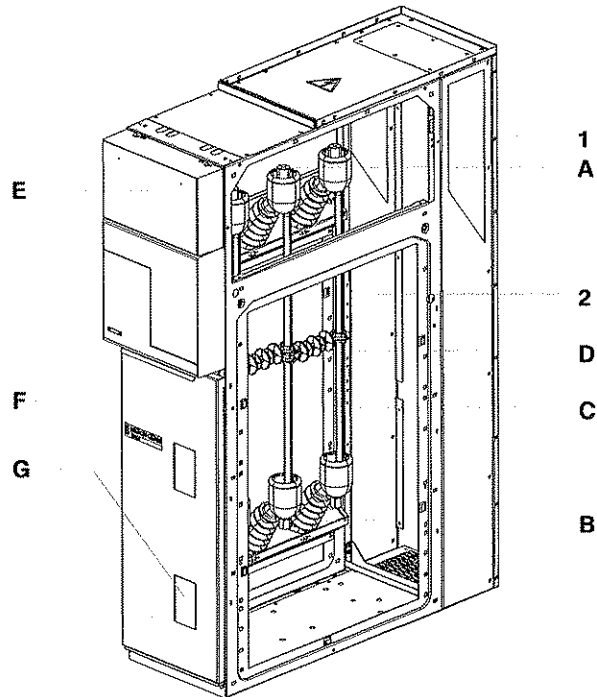


24 kV.200 A
dimension 375 mm

БРИОС
КОРПОРАЦИЯ
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GBM: delivery duct cubicle

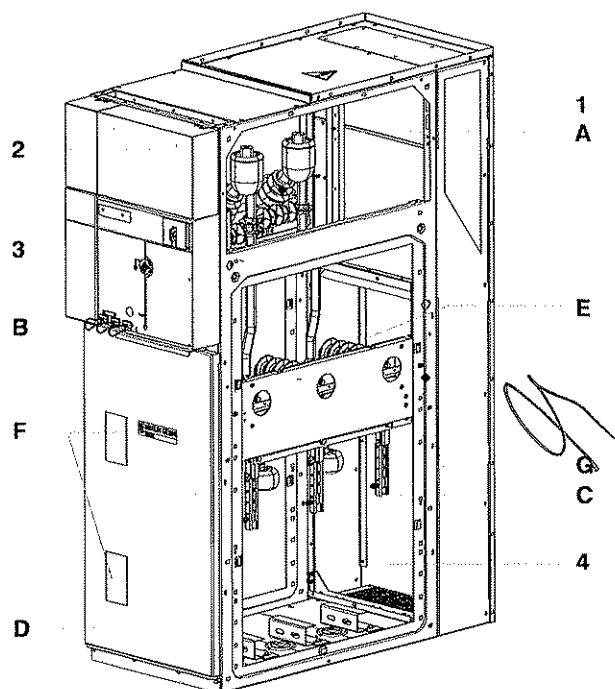
- 1 : upper busbar compartment
- 2 : lower busbar connection compartment
- A : upper busbar connection pads
- B : lower busbar connection pads
- C : connection busbar
- D : spacers
- E Low voltage compartment
- F : front panel
- G : inspection windows



24 kV.630 A
dimension 375 mm

GAM: incoming cable connection cubicle

- 1 : busbar compartment
- 2 : low voltage compartment
- 3 : operating mechanism compartment
- 4 : cable connection compartment
- A : busbar connection pads
- B : voltage presence detector
- C : earthing switch
- D : front panel
- E : capacitive divider
- F : inspection windows for cable connection and earthing switch
- G : cable connection pads

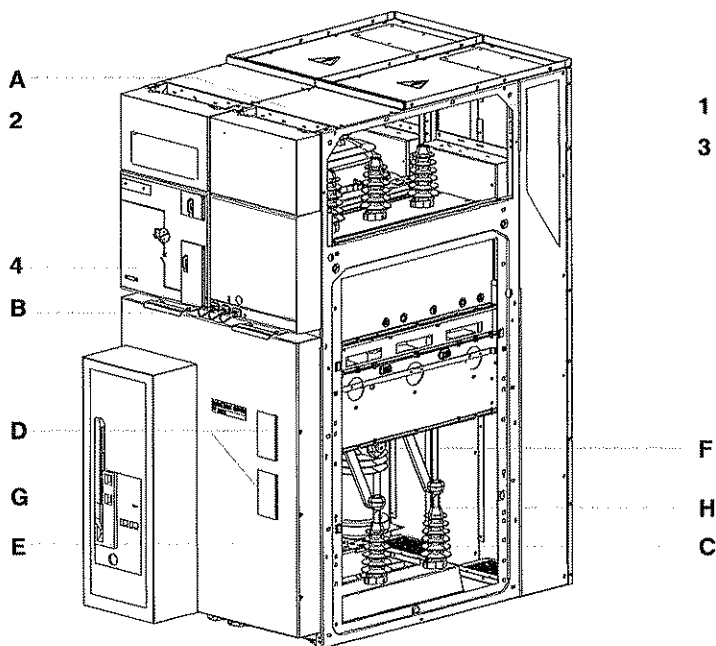


24 kV.630 A
dimension 500 mm

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DM1 D: coupling circuit-breaker cubicle

- 1 : busbar compartment
- 2 : low voltage compartment
- 3 : switchgear compartment : switch and earthing switch
- 4 : operating mechanism compartment
- A : upper busbar connection pads
- B : voltage presence detector
- C : capacitive divider
- D : inspection windows
- E : front panel
- F : circuit-breaker
- G : circuit-breaker operating mechanism front plate
- F : circuit-breaker
- H : lower busbar connection pads

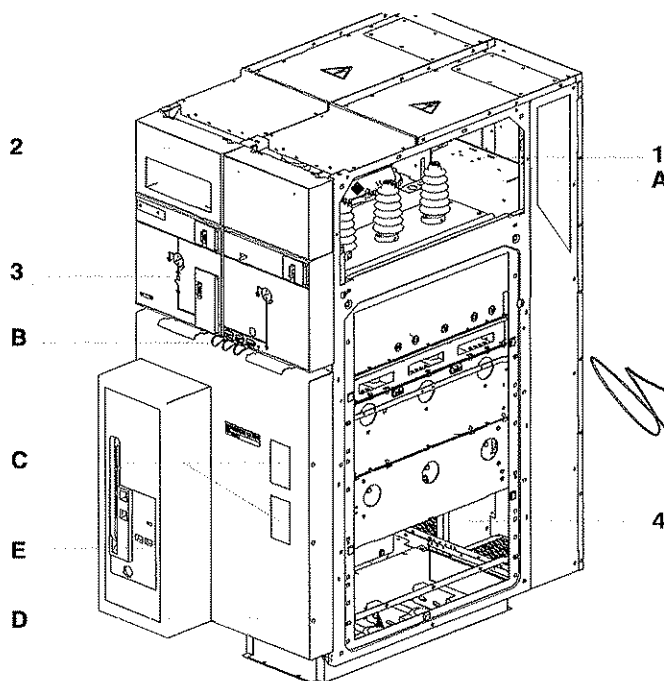


24 kV.630 A
dimension 750 mm

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DM1 C: incoming/outgoing circuit-breaker cubicle

- 1 : busbar compartment
- 2 : low voltage compartment
- 3 : operating mechanism compartment
- 4 : cable connection compartment
- A : busbar connection pads
- B : voltage presence detector
- C : inspection windows
- D : front panel
- E : circuit-breaker



24 kV.630 A
dimension 750 mm

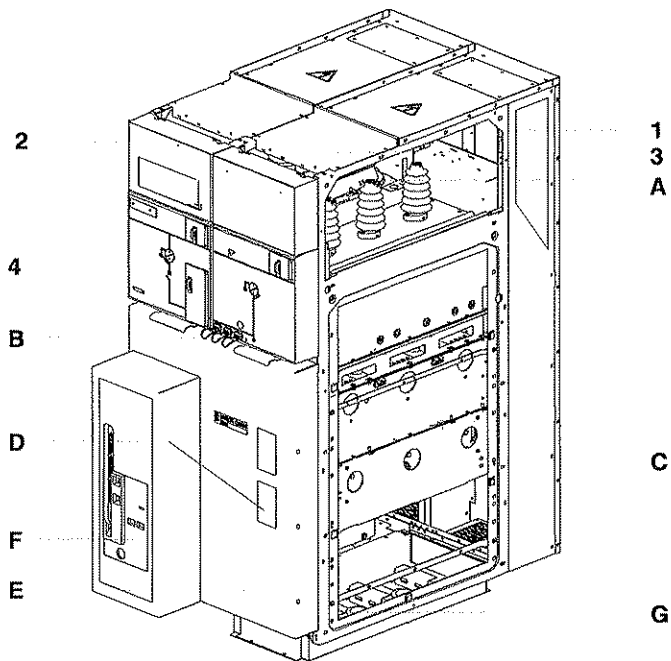
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628

**DM1-C W:
withdrawable
circuit-breaker cubicle**

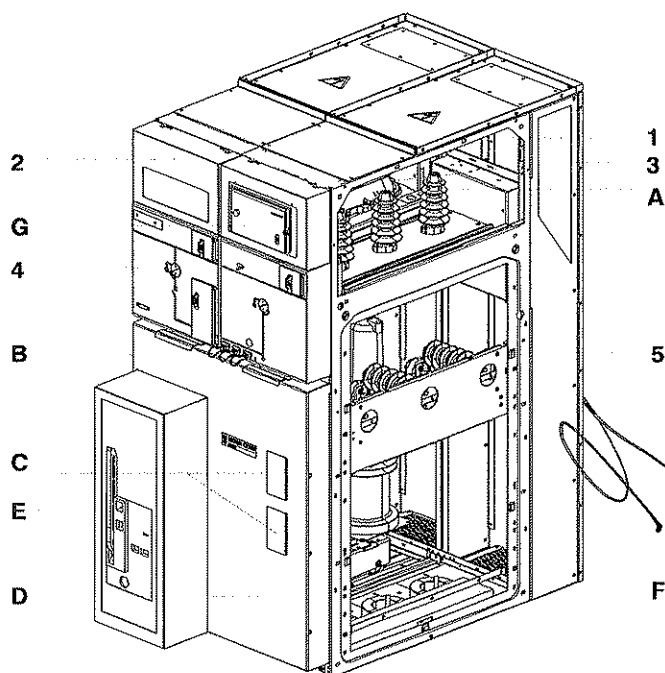
- 1 : busbar compartment
- 2 : low voltage compartment
- 3 : switchgear compartment:
switch and earthing switch
- 4 : operating mechanism
compartment
- 5 : cable connection
compartment
- A : busbar connection pads
- B : voltage presence detector
- C : capacitive divider
- D : inspection windows
- E : front panel
- F : circuit-breaker



24 kV.630 A
dimension 750 mm

**DM1-CS:
circuit-breaker cubicle**

- 1 : busbar compartment
- 2 : low voltage compartment
- 3 : switchgear compartment:
switch and earthing switch
- 4 : operating mechanism
compartment
- 5 : capacitice divider
- A : busbar connection pads
- B : voltage presence detector
- C : inspection windows
- D : front panel
- E : circuit-breaker
- F : toroids
- G : protection relay



dimension 750 mm

ВЪВЕДЕНИЕ
 ОПИШОВА



single-line diagrams

connection to the networks

IM (500 mm):
switch cubicle

IMB (375 mm):
right or left feeder switch cubicle

protection by fuse-switch

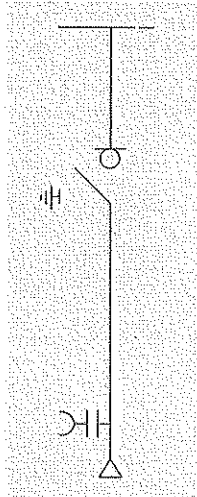
QM (500 mm):
fuse-switch combination unit cubicle

QMB (375 mm):
right or left feeder fuse-switch combination unit cubicle

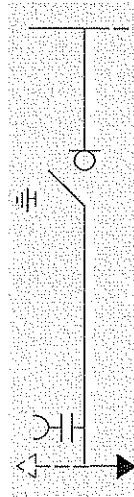
duct

GBM (375 mm):
right or left feeder delivery duct

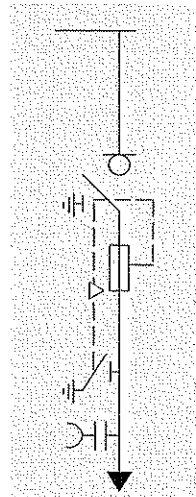
GAM (500 mm):
incoming duct



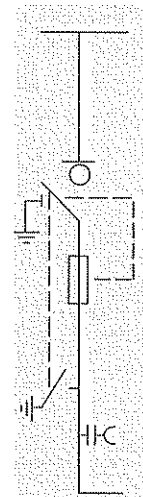
IM



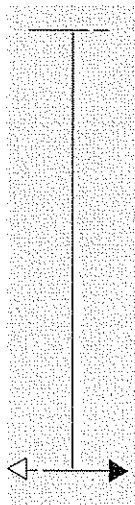
IMB



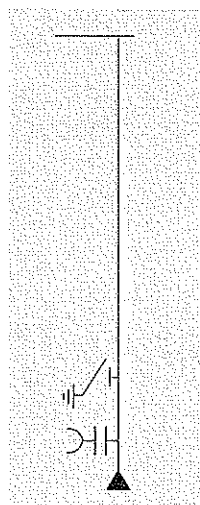
QM



QMB



GBM

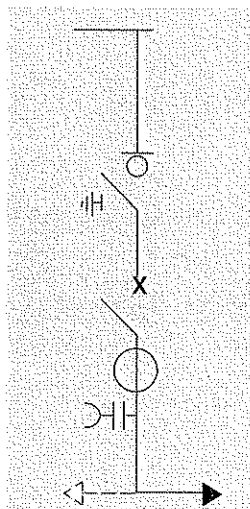


GAM



protection by circuit-breaker

DM1-D (750 mm):
right or left feeder disconnection circuit-breaker



DM1-D



BRITOC
CORPORATION



G30

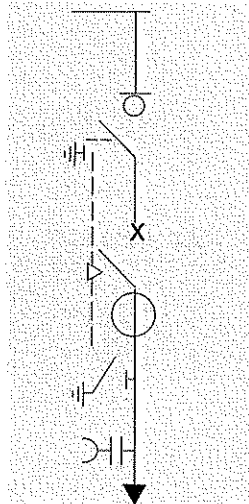
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**protection by
circuit-breaker**

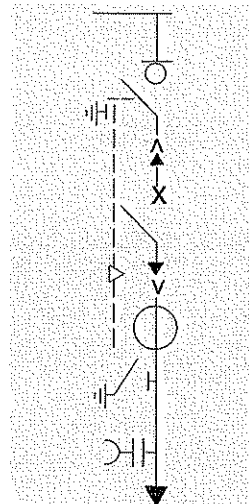
DM1-C (750 mm):
circuit-breaker

DM1-CW (750 mm):
draw-out circuit-breaker

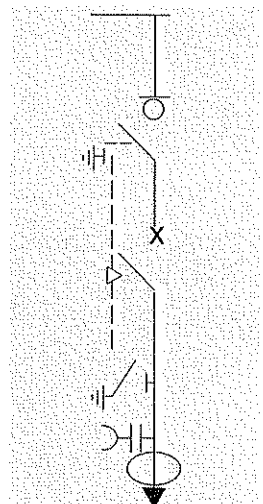
DM1-CS (750mm):
circuit-breaker with independent
protection



DM1-C



DM1-CW



DM1-CS

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CORTELLA**

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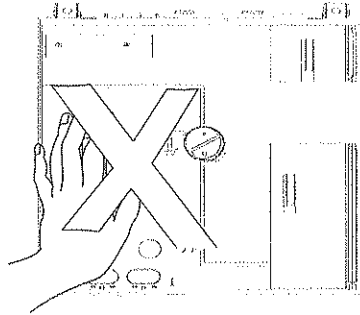
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handling instructions

weights



Do not handle the cubicle using the operating mechanism front plate.



list and number of additional bags and accessories

discharge from the top :

- Cubicle package
- 1 inter-cubicle bag:
S1: 51238084FA
- switchboard packing list :
(51238490FA)
- 1 operating lever
- 2 Internal Arc end plates
- 1 cubicle separation plate
- 2 Internal Arc stress-relief compartment top plates
- 1 bag of end plate screws
S4: 51238077FA
- 2 earth bars

- 1 manual 7897365
- internal arc compartment kit
- width: 375 = 51238476FA
- width: 500 = 51238477FA
- width: 750 = (2X) 51238476FA

discharge from the bottom:

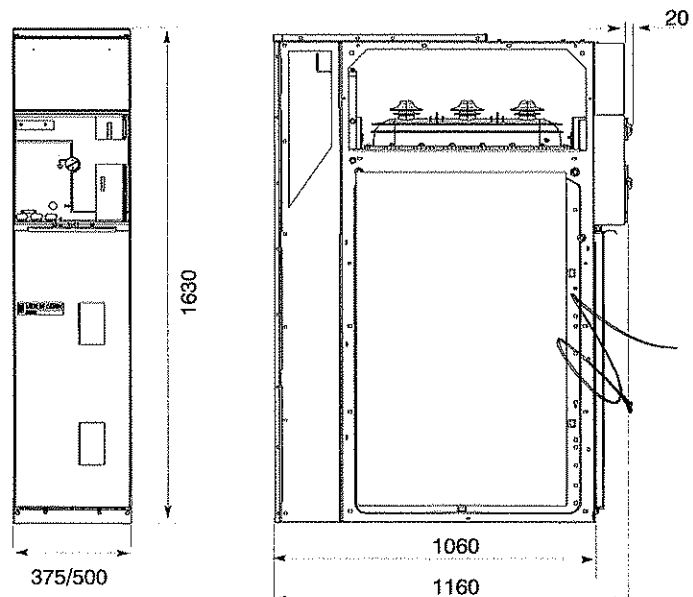
- Cubicle package
- 1 inter-cubicle bag:
S1: 51238084FA
- switchboard packing list
(51238039FA)
- operating lever
- 2 Internal Arc end plates
- 1 cubicle separation plate
- 1 bag of end plate screws
S4: 51238077FA
- reinforcement angle brackets
- earth bars
- 1 manual 7897365

overall dimensions

Width = 375 mm
weight: 150 to 210 kg *(maxi)

Width = 500 mm
weight: 230 kg *(maxi)

*according to the cubicle type



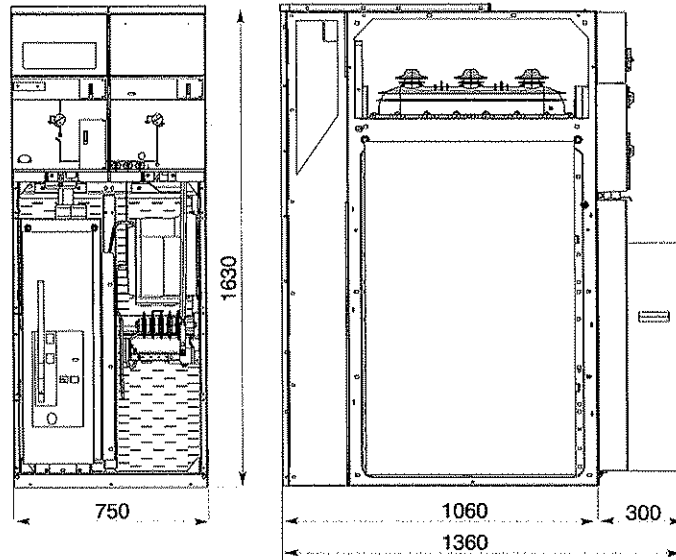
БЭРНОС
ОПЕННА

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633

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Width = 750 mm
weight: 300 to 440 kg * (maxi)

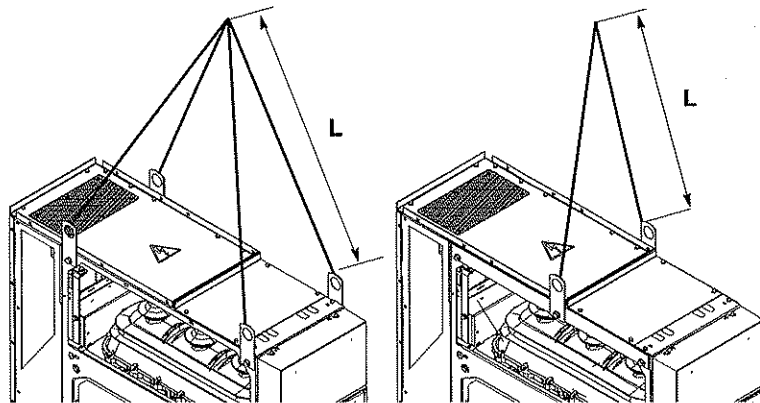
* according to the cubicle type



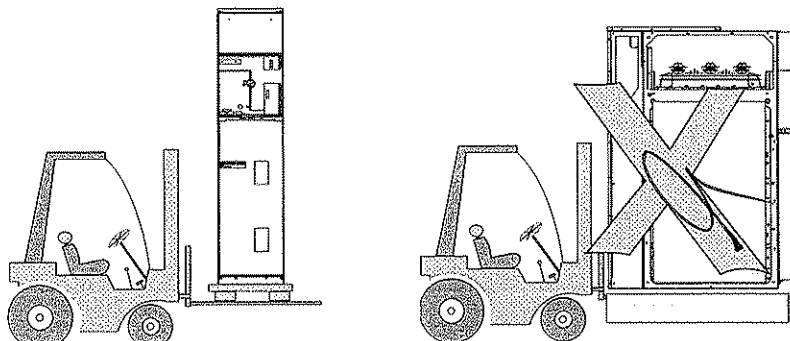
handling by slings

W : 750 mm

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handling by forks



ВАРНОЕ
ОПТИКАЛА
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637

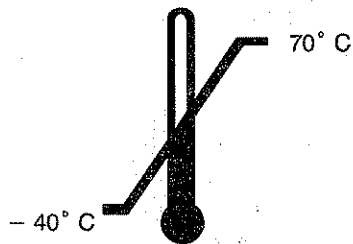
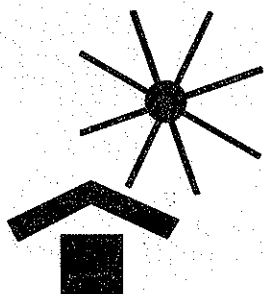
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handling



storage

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ALFA ROMEO
CORSE
S.p.A.

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636
BYPHO C
OPHTHALMIA

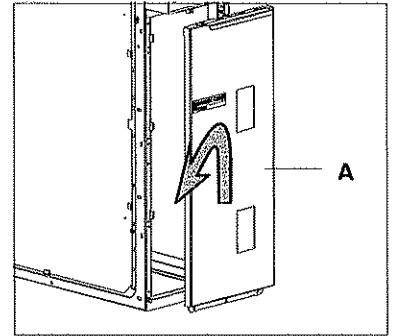
commissioning instructions

checks prior to energisation

Do not leave anything in the connection compartment.

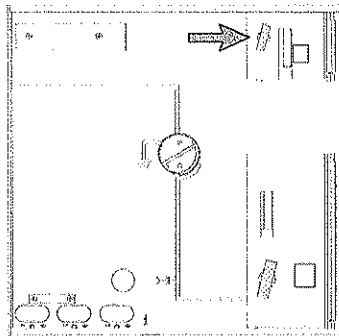
Check on all phases that:

- the fuse is positioned correctly
- the field splitter block cover is properly closed
- the fault detector is properly connected

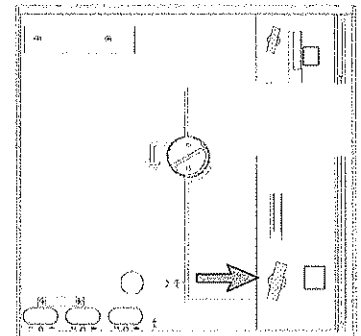


Put back panel A.

operating the device with power off



Complete a few operations of the earthing switch.



Complete a few operations of the switch.

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OPINION
COMMISSION
OF THE EUROPEAN
COMMUNITIES

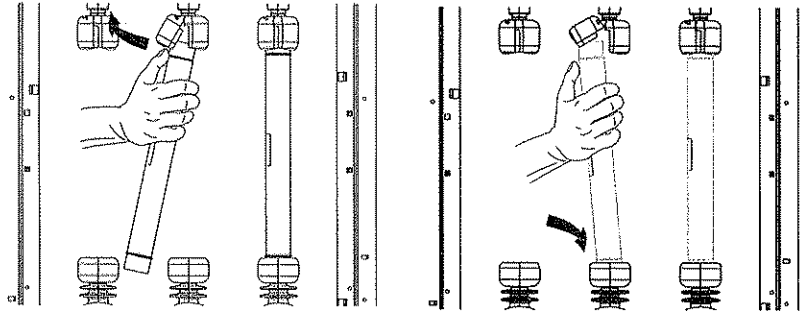
638

operating instructions

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fitting the fuses in a QM cubicle

Reminder: Check fuse condition before installing the fuses.

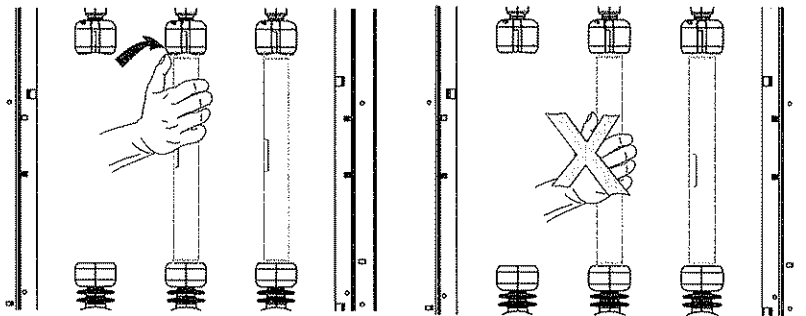


Lift the cover of the top field splitter block using the fuse.

Fit the bottom part of the fuse into the bottom tulip contact.

Note:

- If you need to replace a fuse, replace all 3 fuses.
- Do not re-use fuses that are already worn.



Then fit the top part of the fuse into the top contact and check that the field splitter block covers properly closed.

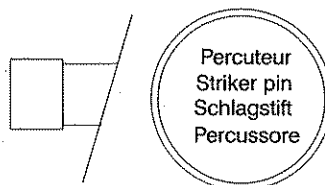
Placing your hand in the middle of the fuse is inadvisable.

Direct the label towards the front face.

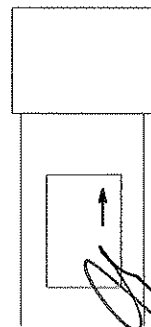
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in a QM cubicle

Install the fuses with striker pin, blowing of which causes the switch to trip.



The end of the fuse equipped with the striker pin is marked



The characteristics and the mounting direction of the fuse are printed on the body. Direct the label on the front face. (striker pin at the top)

371106
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3/2

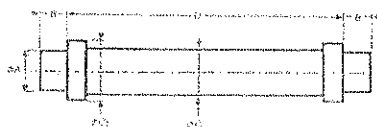
protection of the transformers

The rating of the fuses to be installed in the **SM6** protection cubicles of the **QM** type depends, among other factors, on the following :

- operating voltage
- transformer power
- fuse technology (manufacturer)

dimensions

(dimensions in mm)
as per DIN VDE 0670 Teil 4



U _N	B	U _{C2}	U _{C1} und C ₂	C ₂ ¹⁾
45 kV	33 ¹⁾	50	30	292
				442

If the transformer is protected by a system combining a disconnector and fuses, the disconnection mode corresponds to **Standard IEC 420**.

The following selection table gives the correspondence between fuse nominal current and the current nominal powers of the transformer as well as the high voltages.

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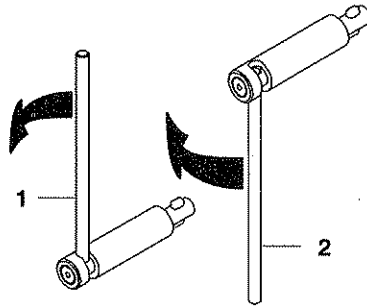
fuse table as per VDE 0670 T402

Nennspannungsbereich für Sicherung des Transformators	Absicherungsart in Sicherung in A	Trafo-Nennleistung in kVA														
		UK = 4%										UK = 5%				
		70	100	125	160	200	250	315	400	500	630	800	1000			
3,6/2,7 6	Tafelstrom	4,8	6,6	9	15,4	19,2	24,1	30,3	38,5	48,1	60,6	77,1	98,3			
	ohne NH-Sich	10	16	16	20	25	25	31,5	40	50	63	80	100	125	160	
	mit NH-gL NH-gTr			20	25	25	31,5	31,5	40	40	50	63	80	100	125	160
12,1/12 15	Tafelstrom	2,9	3,8	7,2	9,2	11,5	14,4	18,2	23,1	28,9	36,4	46,2	57,7			
	ohne NH-Sich	10	16	16	20	20	25	25	31,5	40	50	63	80	100	125	160
	mit NH-gL NH-gTr		10	16	16	20	20	25	25	31,5	40	50	63	80	100	125
17,1/17,5 15	Tafelstrom	1,9	3,8	4,8	6,2	7,7	9,6	12,1	15,4	19,2	24,2	30,6	38,5			
	ohne NH-Sich	6,3	10	16	16	20	16	20	25	25	31,5	40	50	63	80	100
	mit NH-gL NH-gTr	(6,3)	10	16	16	20	16	20	25	25	31,5	40	50	63	80	100
31,2/4 20	Tafelstrom	1,5	2,9	3,6	4,5	5,8	7,2	9,1	11,5	14,4	18,2	23,1	28,9			
	ohne NH-Sich	6,3	10	10	10	16	16	20	25	25	31,5	40	50	63	80	100
	mit NH-gL NH-gTr	6,3	10	10	10	16	16	20	25	25	31,5	40	50	63	80	100
0,1/0,5 0,4	Tafelstrom	72	144	160	231	289	361	465	577	722	909	1155	1443			
	NH-gL	60	125	160	200	250	315	400	500	630	800	1000	1250			
	NH-gTr	72	144	160	231	289	361	465	577	722	909	1155	1443			

БИЛГОС
 ОПТИМА
 640

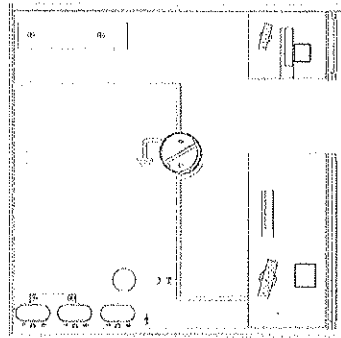
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**manual operations and
visualisation of cubicle
status**

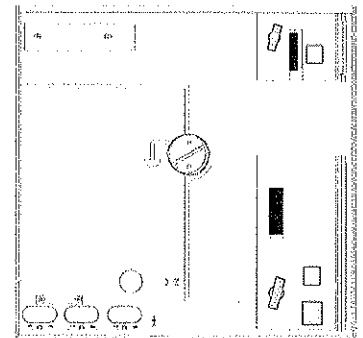


- 1 : position the lever as shown for the **downward opening operations.**
- 2 : position the lever as shown for the upward closing operations.

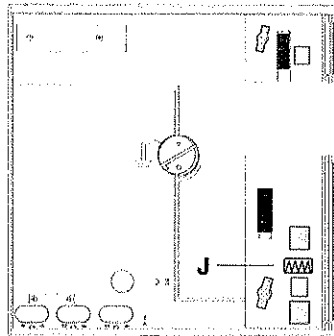
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CIT operating mechanism front face.



CI1 operating mechanism front face.



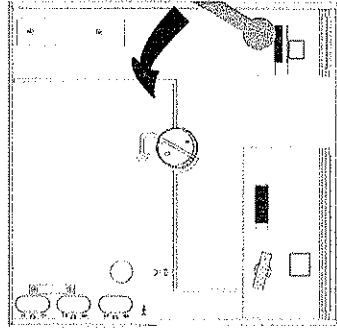
CI2 operating mechanism front face.

- J : identification of charging status.

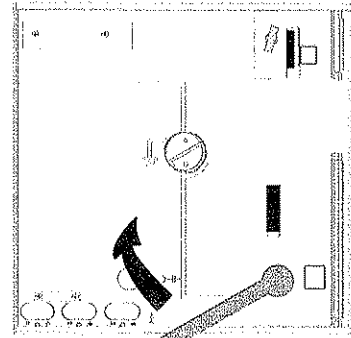
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OPINIA
OPINIA

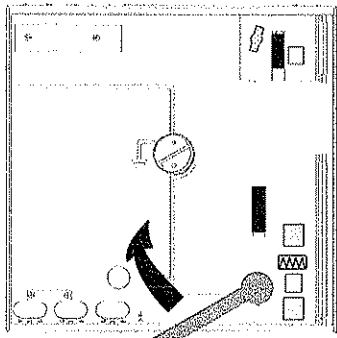
2



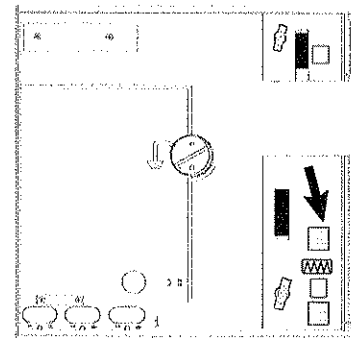
Opening the earthing switch.
(operating mechanisms
CIT / C11 / C12)



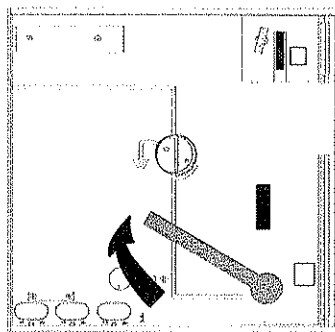
Closing the switch.
(operating mechanisms CIT / C11)



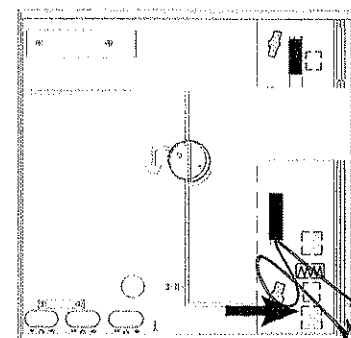
Charging the spring.
(operating mechanism C12)



Closing the switch. (operating
mechanism C12)



Opening the switch.
(operating mechanism CIT)



Opening the switch.
(operating mechanisms C11 / C12)

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ОПТИМАЛ
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