

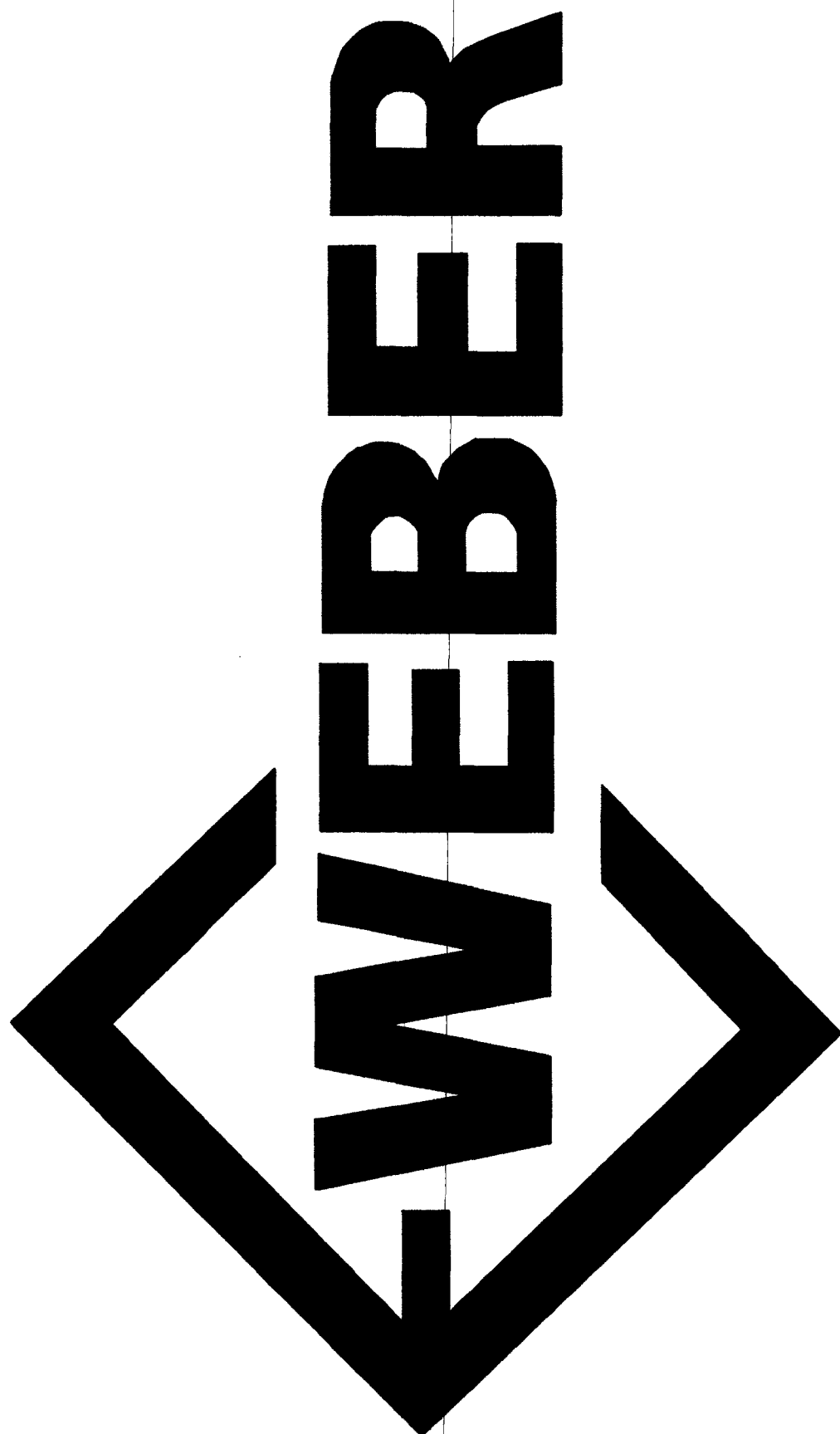


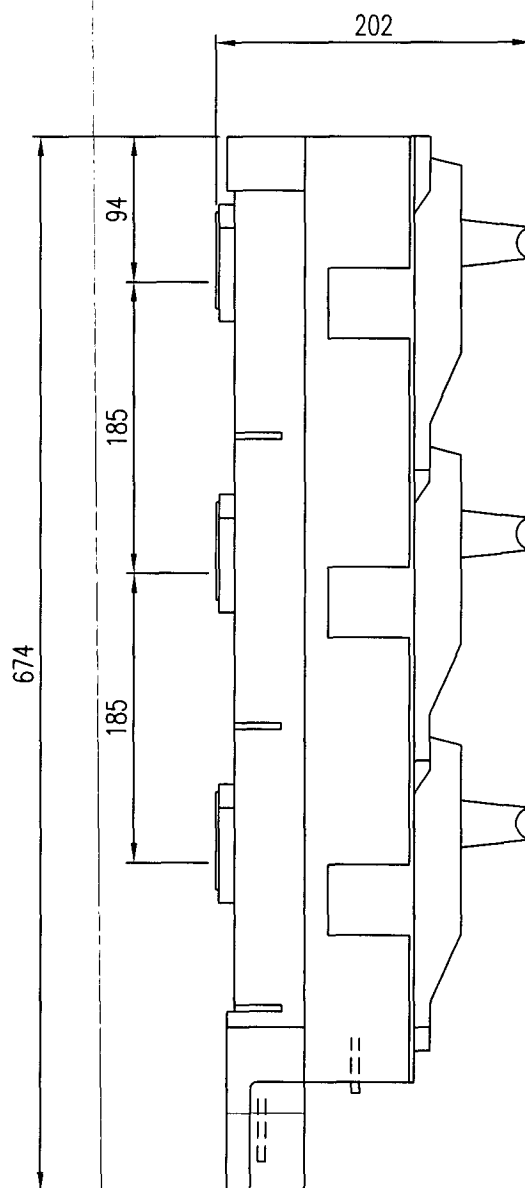
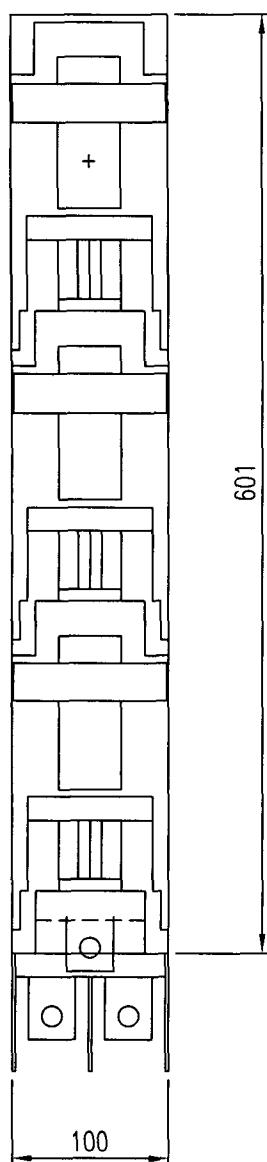
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Low Voltage Fused Distribution
Board

Category 1

GENERATOR STRIP



IP20 in open position
* Fuses not included

Notes: DIN size 3 fuses
Removeable solid links

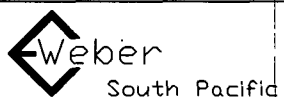
VOCAB No
1548684

STUART PLATTS

09-07-2003

1:5

GENERATOR STRIP CATEGORY 1



Weber South Pacific Pty Ltd
PO Box 4264 Eight Mile Plains
Queensland Australia

Tel. 07 3841 6899
Fax. 07 3841 6877

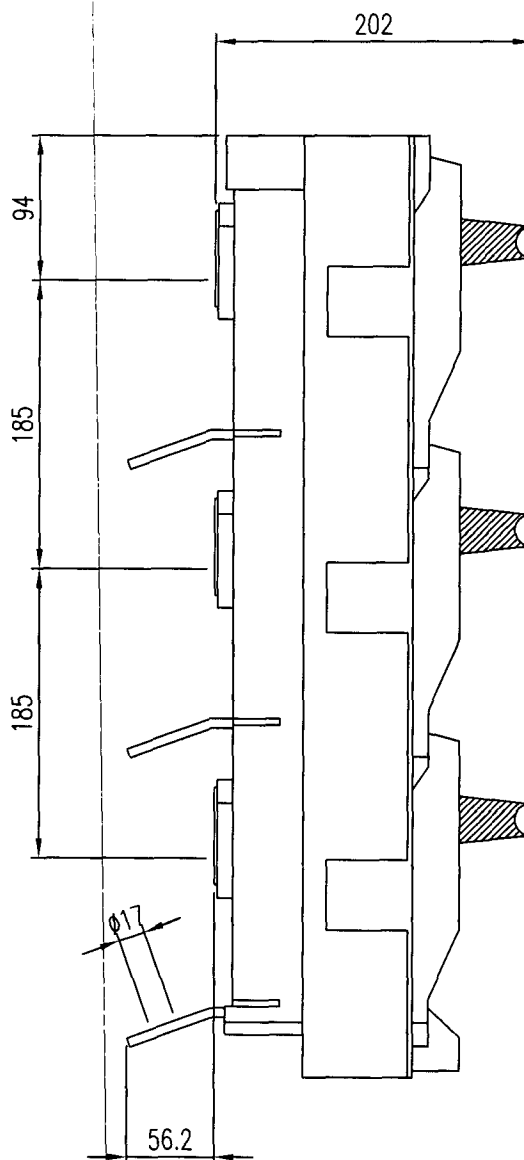
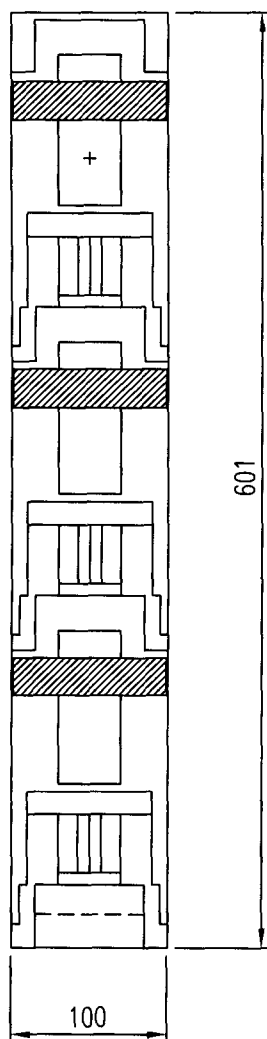
SINGLE PHASE SWITCHING
BASIC SWITCH

WEBER

VER3-L-E-CATI

1

DISCONNECTOR STRIP



IP20 in open position

Notes: Fixed solid links
Manually dependent operation
SS terminal bolts supplied

VOCAB No
1548692

STUART PLATTS

09-07-2003

1:5

DISCONNECTOR STRIP

Weber
South Pacific

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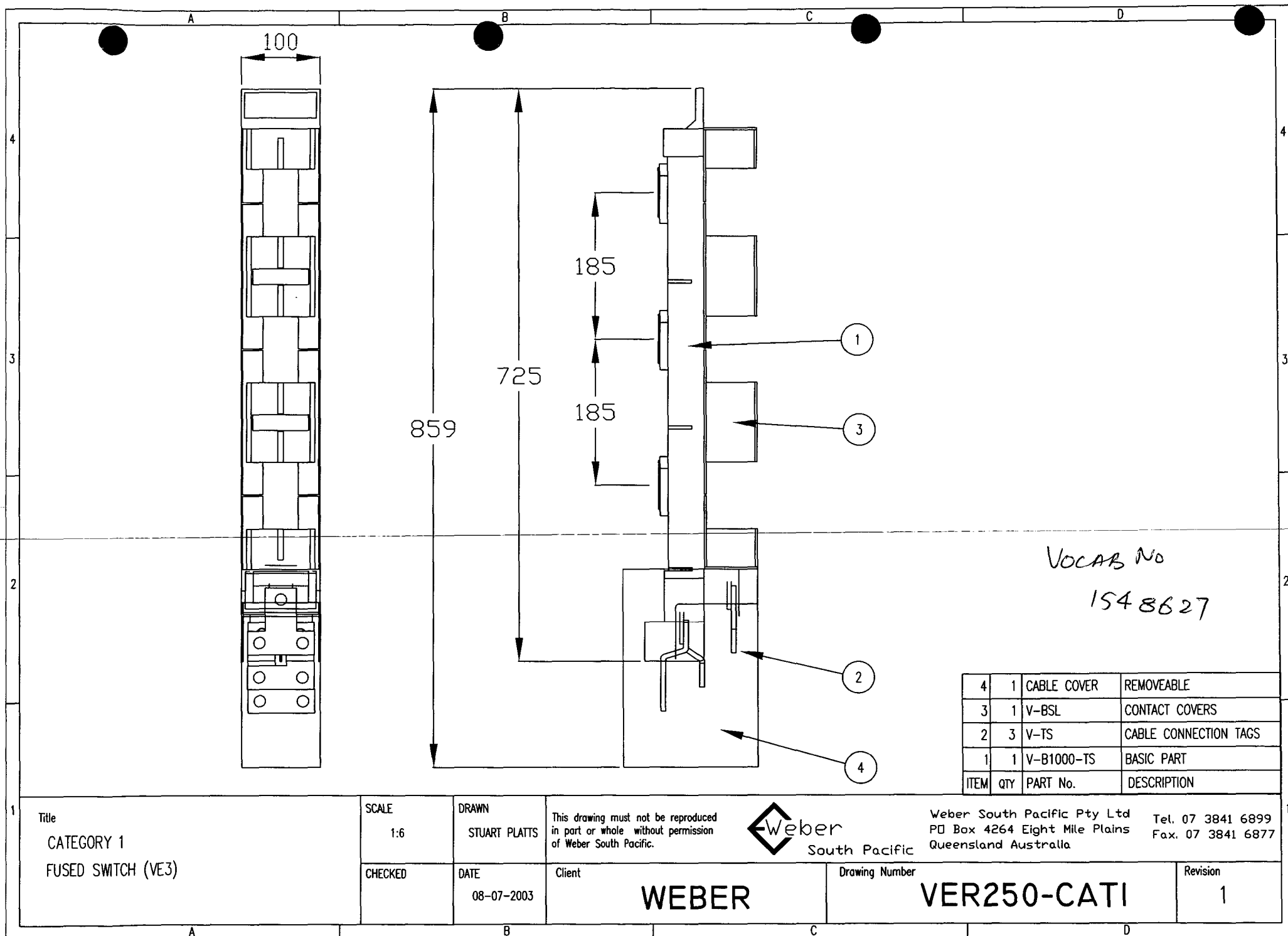
REAR CONNECTION
SINGLE PHASE SWITCHING

WEBER

VERI000-ARCATI

1

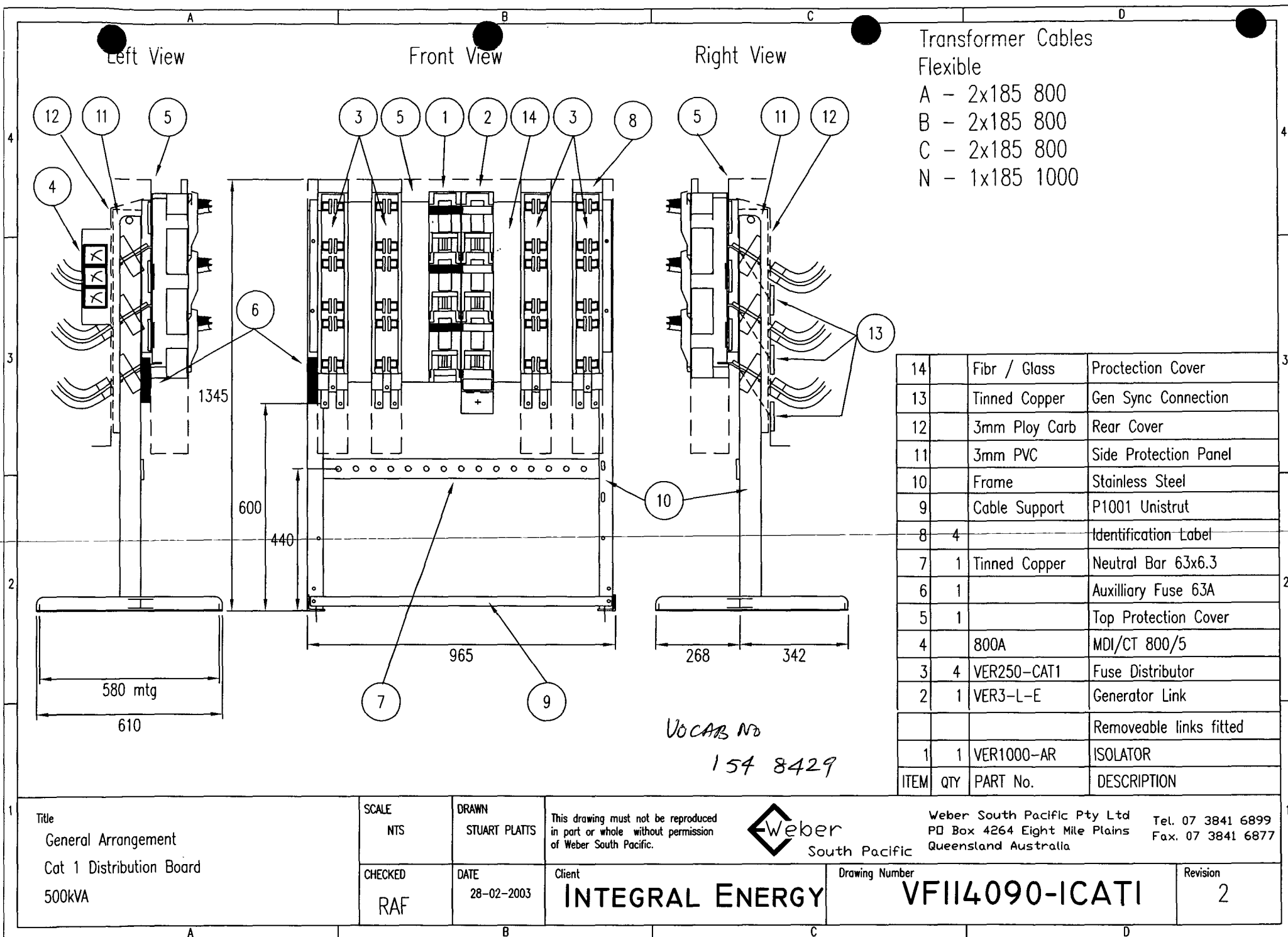
FUSE STRIP



CATEGORY 1

FUSE FUSE DISCONNECTOR GEN FUSE FUSE

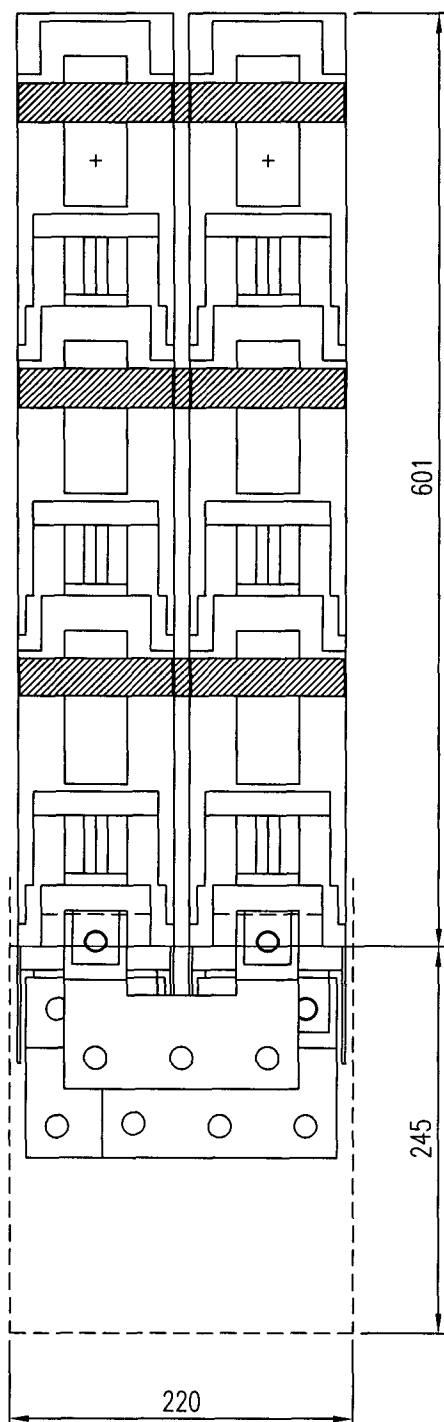
VF114090-1CAT1



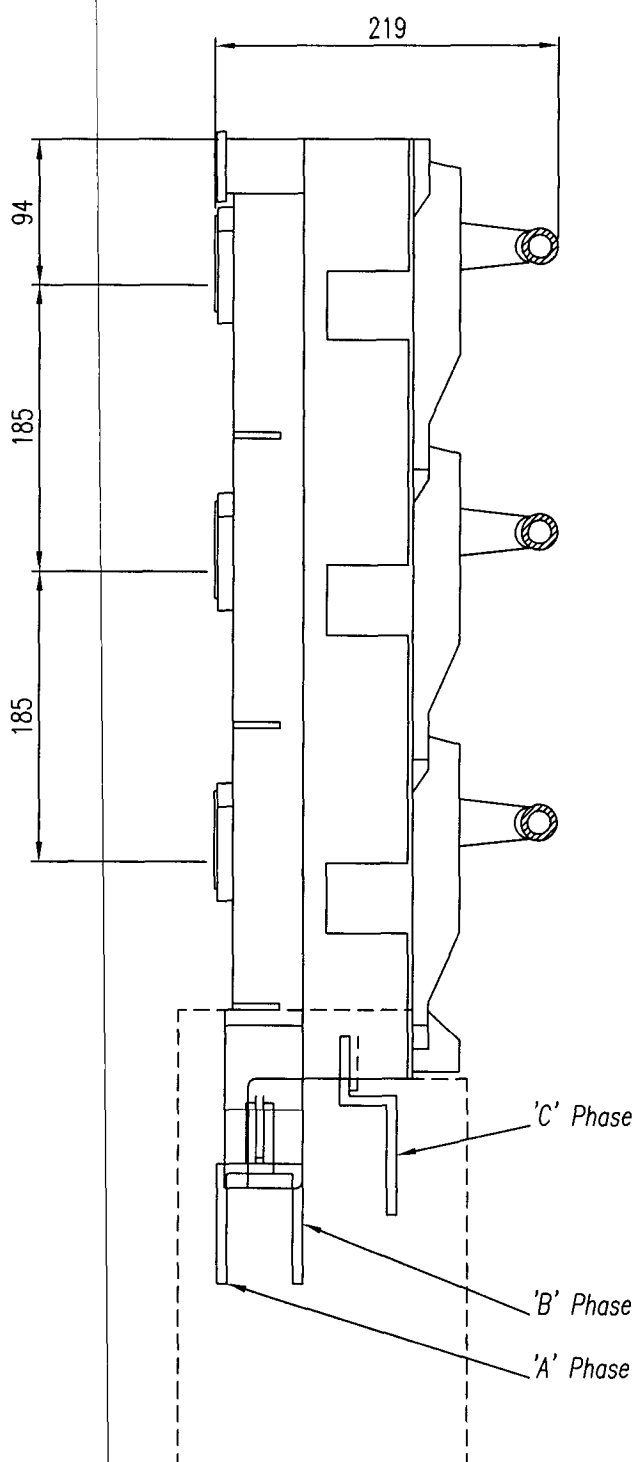
Low Voltage Fused Distribution
Board

Category 2

GENERATOR STRIP



IP20 in open position



Notes: 2 parallel phase
DIN size 3 removeable solid links
Manually dependent operation
Bottom cable cover removeable
SS terminal bolts supplied

VOCAB No
1548635

STUART PLATTS

09-07-2003

1:5

Weber
South Pacific

GENERATOR STRIP CATEGORY 2

Weber South Pacific Pty Ltd
PO Box 4264 Eight Mile Plains
Queensland Australia

Tel. 07 3841 6899
Fax. 07 3841 6877

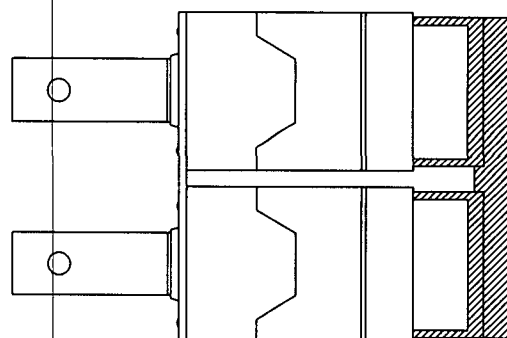
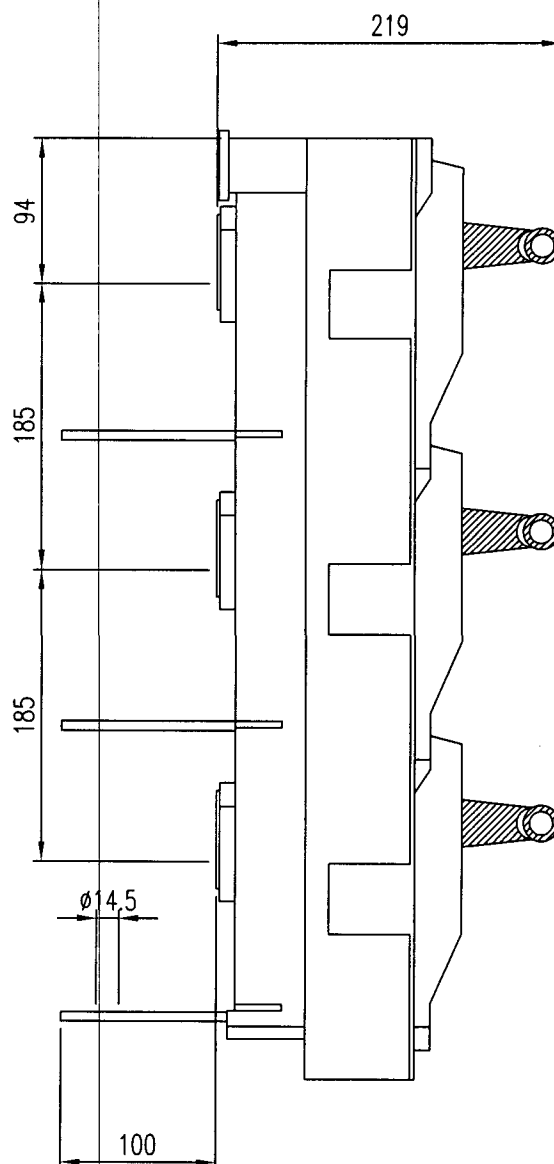
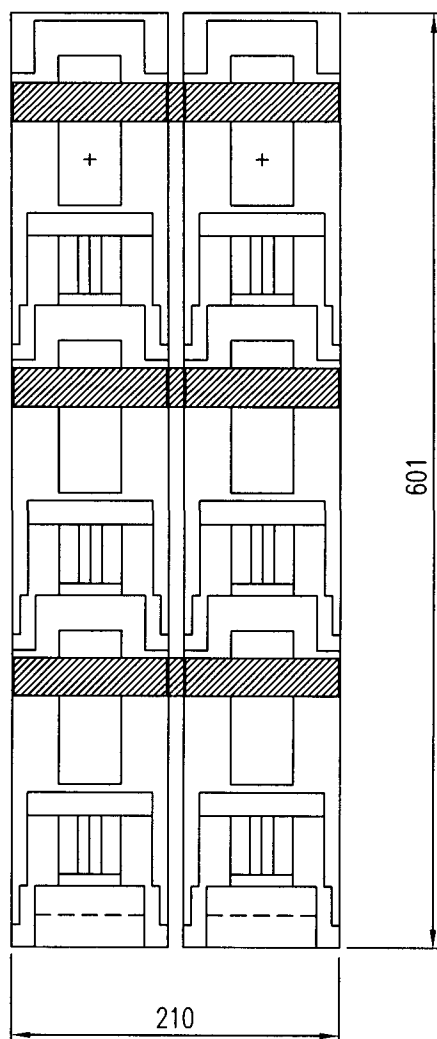
SINGLE PHASE SWITCHING

WEBER

VERD3-AU-CAT2

1

DISCONNECTOR STRIP



VOCAB M6
154 86 43

IP20 in open position

Notes: Fixed solid links
Manually dependent operation

STUART PLATTS

09-07-2003

1:5



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DISCONNECTOR STRIP CATEGORY 2

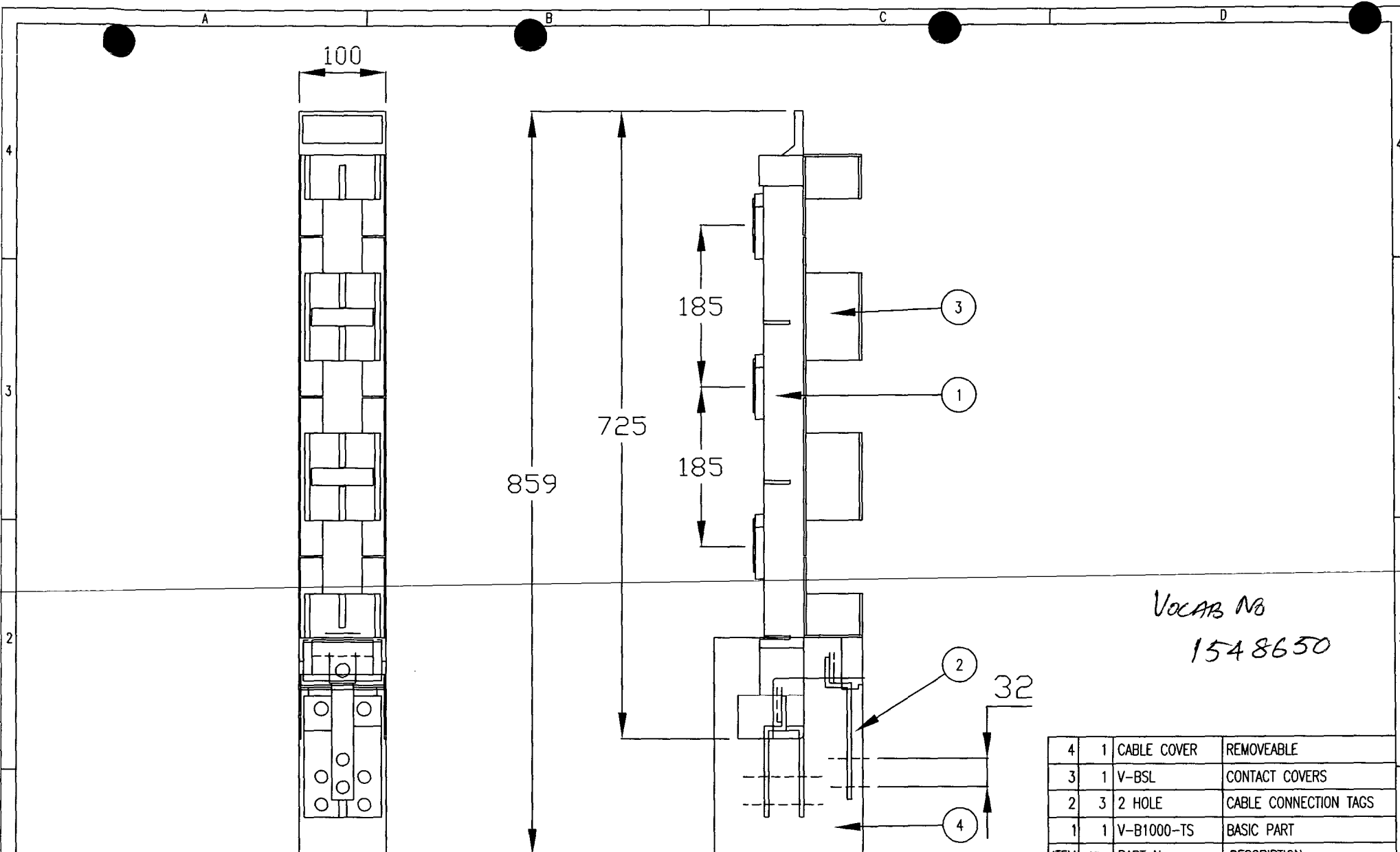
REAR CONNECTION
SINGLE PHASE SWITCHING (BASIC SWITCH)

WEBER

VER2000-AR-CAT2

1

FUSE STRIP



ITEM	QTY	PART No.	DESCRIPTION
4	1	CABLE COVER	REMOVEABLE
3	1	V-BSL	CONTACT COVERS
2	3	2 HOLE	CABLE CONNECTION TAGS
1	1	V-B1000-TS	BASIC PART

Title CATEGORY 2 FUSED SWITCH (VER1000)	SCALE 1:6	DRAWN STUART PLATTS	This drawing must not be reproduced in part or whole without permission of Weber South Pacific.	 Weber South Pacific	Weber South Pacific Pty Ltd PO Box 4264 Eight Mile Plains Queensland Australia		Tel. 07 3841 6899 Fax. 07 3841 6877	
	CHECKED	DATE 08-07-2003			Client	Drawing Number VER400-CAT2	Revision 1	

CATEGORY 2

FUSE DISCONNECTOR GEN FUSE

VF124120-2CAT2

Left View

Front View

Right View

Transformer Cables

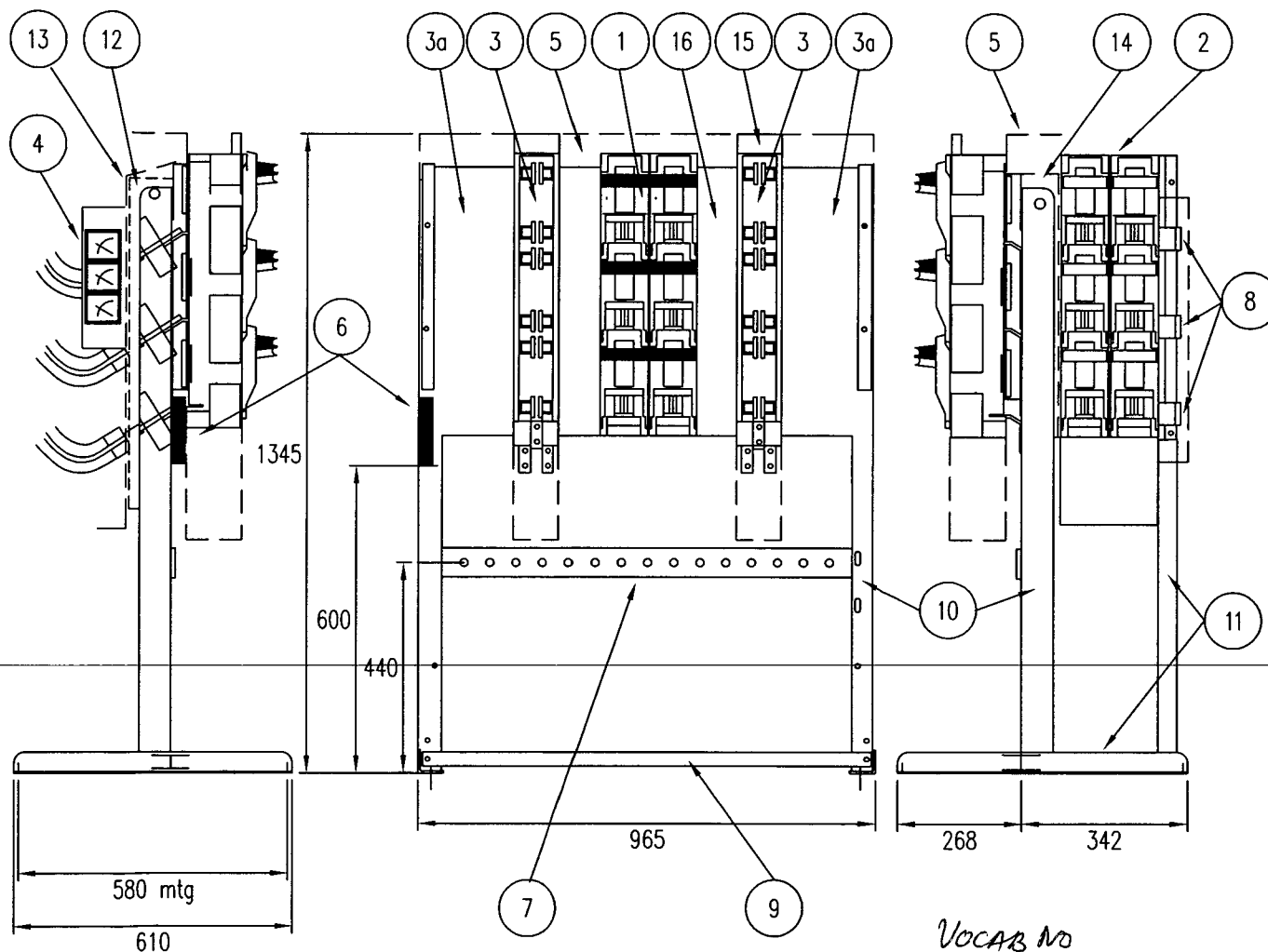
Flexible

A - 4x185 800

B - 4x185 800

C - 4x185 800

N - 2x185 1000



Vocab No

154 8437

16		Fibr/Glass	Protection Cover
15	4		Identification Label
14		3mm Poly Carb	Side Protection Cover
13		3mm Ploy Carb	Rear Cover
12		3mm PVC	Side Protection Panel
11	2	Support Bar	1265mm, 230mm
			Unistrut P3301
10		Frame	Stainless Steel
9		Cable Support	P1001 Unistrut
8	1	Tinned Copper	Gen Sync Connection
			+ Protection Cover
7	1	Tinned Copper	Neutral Bar 63x6.3
6	1		Auxiliary Fuse 63A
5	1		Top Protection Cover
4		1600A	MDI/CT 1600/5
3	2		VER-CAT2 Fuse Distributor
3a	2	PROVISION	VER-CAT2 Fuse Distributor
2	1	VERD3-AU-E01	Removeable links fitted
			Generator Link
1	1	VER2000-AR	ISOLATOR
ITEM	QTY	PART No.	DESCRIPTION

Title
General Arrangement
Cat 2 Distribution Board
1000kVA

SCALE
NTS

DRAWN
STUART PLATTS

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INTEGRAL ENERGY

Drawing Number

VF124I20-2CAT2

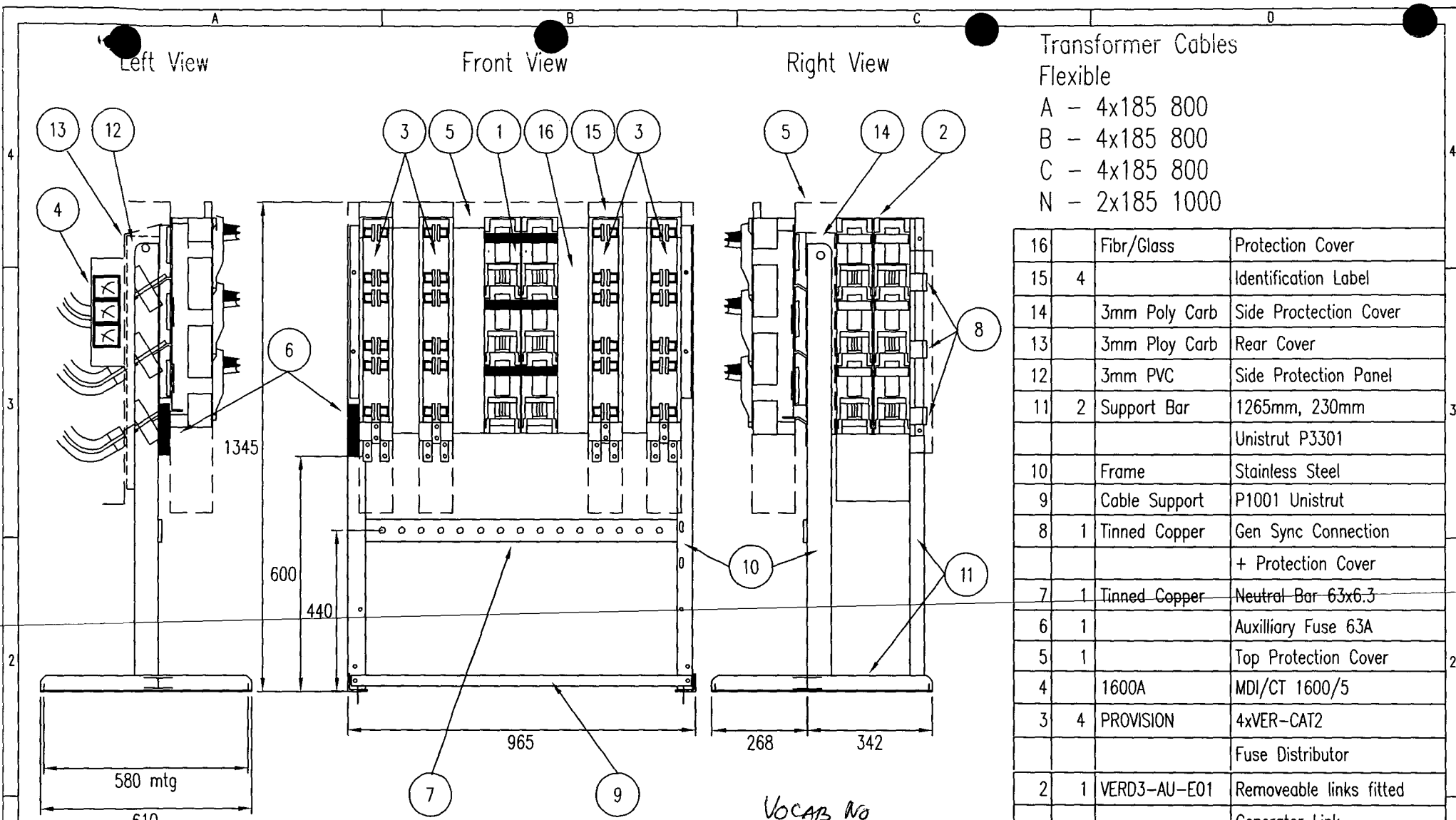
Revision

1

CATEGORY 2

FUSE FUSE DISCONNECTOR GEN FUSE FUSE

VF124120-1CAT2



Transformer Cables
Flexible

- A - 4x185 800
- B - 4x185 800
- C - 4x185 800
- N - 2x185 1000

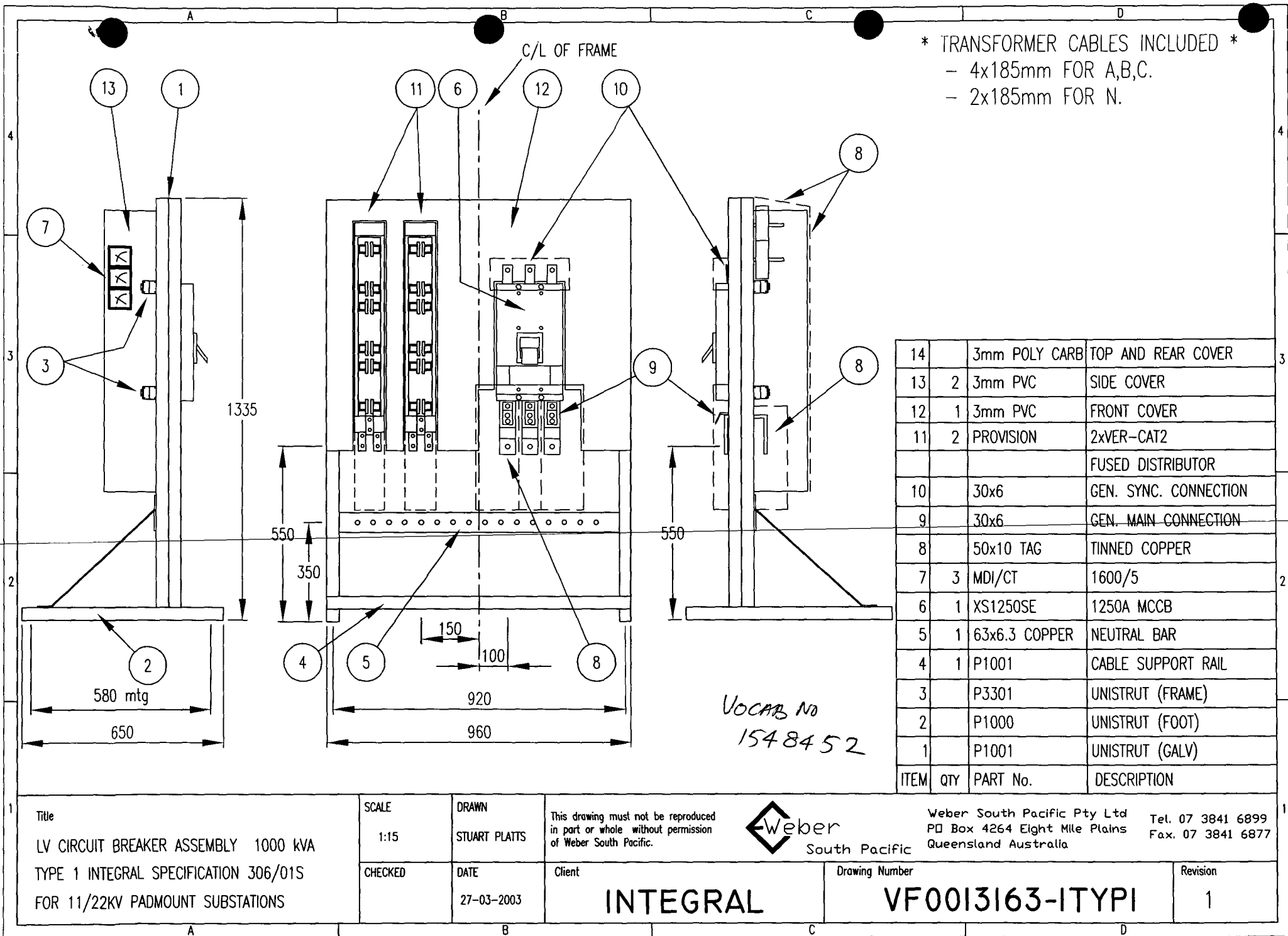
16		Fibr/Glass	Protection Cover
15	4		Identification Label
14		3mm Poly Carb	Side Protection Cover
13		3mm Ploy Carb	Rear Cover
12		3mm PVC	Side Protection Panel
11	2	Support Bar	1265mm, 230mm
			Unistrut P3301
10		Frame	Stainless Steel
9		Cable Support	P1001 Unistrut
8	1	Tinned Copper	Gen Sync Connection
			+ Protection Cover
7	1	Tinned Copper	Neutral Bar 63x6.3
6	1		Auxilliary Fuse 63A
5	1		Top Protection Cover
4		1600A	MDI/CT 1600/5
3	4	PROVISION	4xVER-CAT2
			Fuse Distributor
2	1	VERD3-AU-E01	Removeable links fitted
			Generator Link
1	1	VER2000-AR	ISOLATOR
ITEM	QTY	PART No.	DESCRIPTION

VOCAB No
1548445

Title General Arrangement Cat 2 Distribution Board 1000kVA	SCALE NTS	DRAWN STUART PLATTS	This drawing must not be reproduced in part or whole without permission of Weber South Pacific.	 Weber South Pacific Weber South Pacific Pty Ltd PO Box 4264 Eight Mile Plains Queensland Australia	Tel. 07 3841 6899 Fax. 07 3841 6877
	CHECKED RAF	DATE 26-02-2003			
A	B		C	D	

Low Voltage Circuit Breaker
Distribution Board

TYPE 1



Title

LV CIRCUIT BREAKER ASSEMBLY 1000 kVA
TYPE 1 INTEGRAL SPECIFICATION 306/015
FOR 11/22KV PADMOUNT SUBSTATIONS

SCALE

1:15

DRAWN

STUART PLATTS

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DATE

27-03-2003

Client

INTEGRAL

Drawing Number

VF0013163-ITYPI

Revision

1

4

Characteristics and Outline Dimensions

TemBreak

Standard Series

XS1250NE

Electronic type

(1250A Frame)



number of poles

RATED CURRENT: (In)

Calibrated at 40°C or 45°C

NRC: Nominal Rated Current

ASR: Adjustable Setting Range

A.C. RATED INSULATION VOLTAGE (Ui)

A. C. RATED BREAKING CAPACITY · sym r. m. s. [kA]

IEC 947-2(Icu) / IEC 947-2(Ics) 690V

BS 4752-1(P-1) / 660V

CEI 17-5(P-1) / 500V

440V

415V

400V

380V

240V

AS 2184 440V

415V

NEIMA AB-1 600V

480V

240V

without inst 240V-690V

D.C. RATED

BREAKING CAPACITY [kA]

RATED SHORT TIME CURRENT (I_{ns}) [kA] [sec]

Weight (kg) (marked standard type)

CONNECTIONS & MOUNTINGS

front terminal screw

connected[FC] attached flat bar

solderless terminal[PWC]

rear bolt stud

connected[RC] flat bar stud

plug-in[PM] for switchboard

for distribution board

draw-out[DO]

STANDARD FEATURES

contact indicator

trip button

PROTECTIVE FUNCTIONS (Electronic type)

Adjustable LTD, STD & INST

Adjustable GFT or Adjustable PTA (option)

trip indicators(option)

ACCESSORIES(option)

externally mounted

motor operator MOT

external panel mounted type OHE

operating beaker mounted type OHG

handle variable depth type OHH

extension handle EHA

mechanical front type MIF

interlock rear type MIB

handle holder HH

handle lock HL

terminal front-connected type TCF

cover rear-connected type

plug-in type TCR

interpole barrier TBA

accessory lead terminal LTF

door flange D · F

Ratings and Specifications

	3	4
NRC	ASR	
min.	max.	
1000	500	1000
1250	630	1250

690

25/19

25/19

45/34

65/49

65/49

65/49

85/64

100/75

65

65

42

65

85

15

—

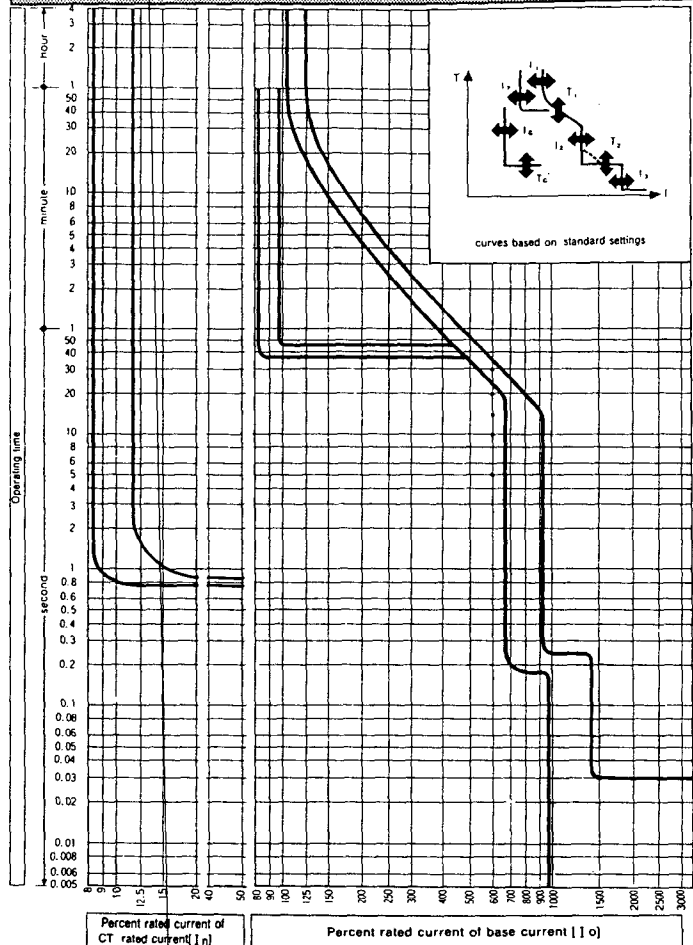
—

15 (0.3 sec)

22.6

28.0

Time/Current characteristic curves



Over-current tripping characteristics

CT rated current (A): [In]	1000	1250
Base current setting (A): [Io]	[In] X (0.63-0.8-1.0)	
Long time delay pickup current (A): [I ₁]	[I ₁] X (0.8-0.85-0.9-0.95-1.0)	
	Non-tripping at [I ₁] setting X105% and below.	
	Tripping at 125% and above.	
Long time delay time setting (S): [T ₁]	(5-10-15-20-30) at [I ₁] X600% current	
	Setting tolerance: ±20%	
Short time delay pickup current (A): [I ₂]	[I ₂] X (2.4-6-8-10) Setting tolerance: ±15%	
Short time delay time setting (S): [T ₂]	Opening time (0.1-0.15-0.2-0.25-0.3) in the definite time-delay. Total clearing time is +50ms and resettable time is -20ms for the time delay setting.	
Instantaneous trip pickup current (A): [I ₃]	Continuously adjustable from [I ₃] X (3 to 12)	
	Setting tolerance: ±20%	
* Pre-trip alarm pickup current (A): [I _p]	[I _p] X (0.7-0.8-0.9-1.0) Setting tolerance: ±10%	
* Pre-trip alarm time setting (S): [T _p]	40 fixed definite time-delay. Setting tolerance: ±10%	
* Ground fault trip pickup current (A): [I _g]	Continuously adjustable from [I _g] X (0.1 to 0.4)	
	Setting tolerance: ±15%	
* Ground fault trip time setting (S): [T _g]	Opening time (0.1-0.2-0.3-0.4-0.8) in the definite time-delay. Total clearing time is +50ms and resettable time is -20ms for the time-delay setting.	

*: Option

*: The underlined values will be applied as standard rating unless otherwise specified when ordering.

Combination of internally mounted accessories

	AX	AL	SHT	UVT	AX	AX	AX	AL	AL	AX	AX
	auxiliary switch	alarm switch	shunt trip *1	undervoltage trip *2	AX	SHT	UVT	SHT	UVT	AX	AX
3											
4											

Handle Left pole Right pole

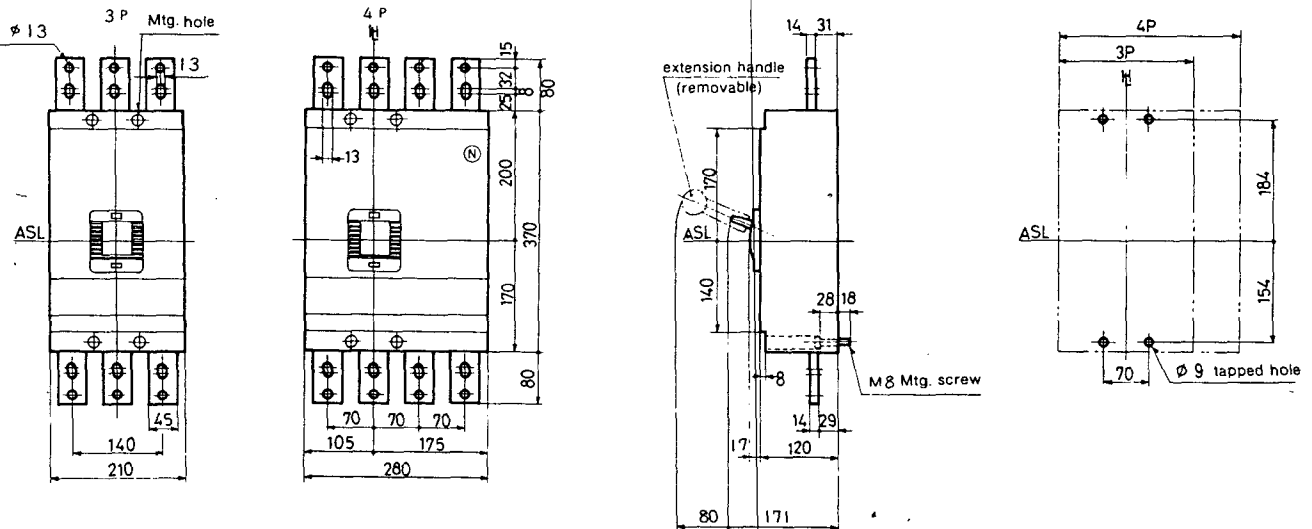
Note: *1: Shunt trip is provided with anti-burnout switch.

*2: The UVT controller is installed externally, when provided with a. c. UVT.

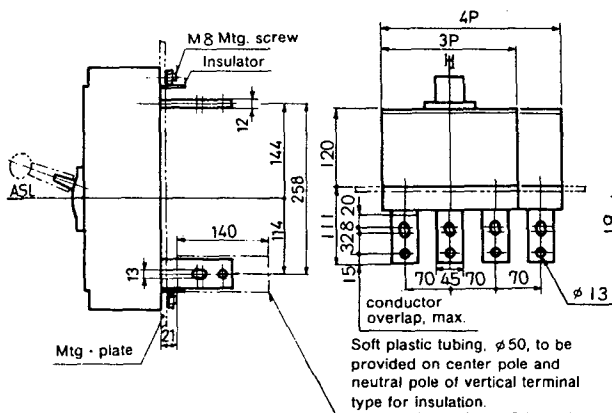
Outline dimensions (mm)

XS1250NE

Front-connected

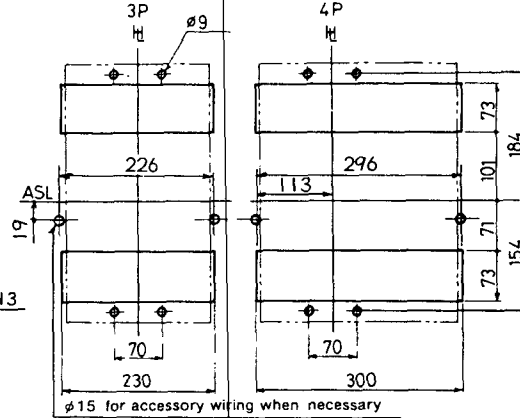


Rear-connected

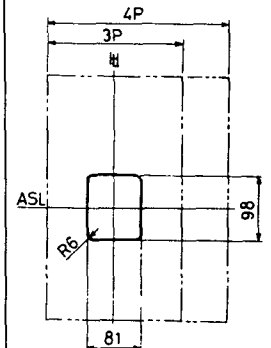


Note: In the standard shipment mode, both terminals on the line side and the load side are in horizontal direction.

Drilling plan

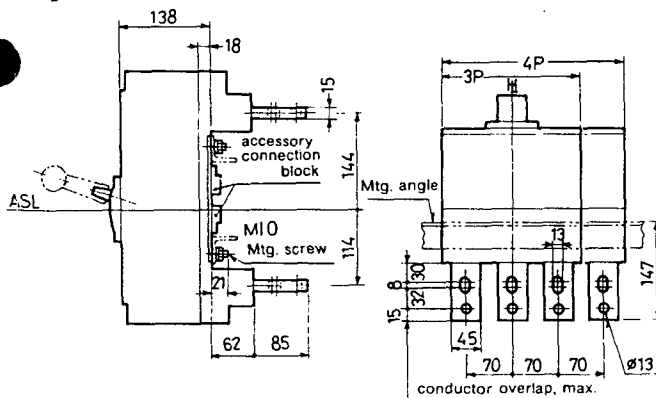


Panel cutout

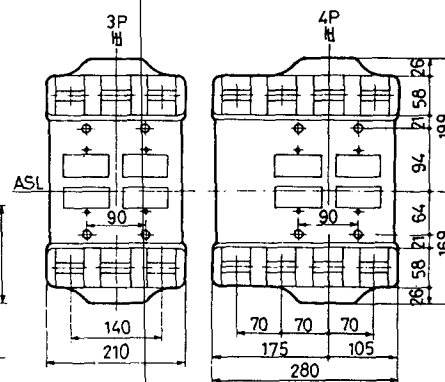


- Panel cutout dimensions shown give an allowance of 1.5 mm around the handle escutcheon.

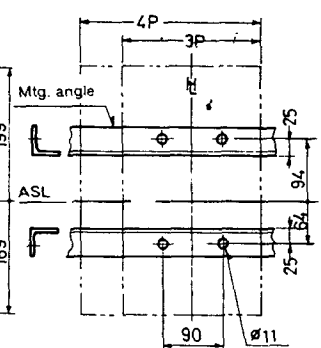
Plug-in



Mounting block



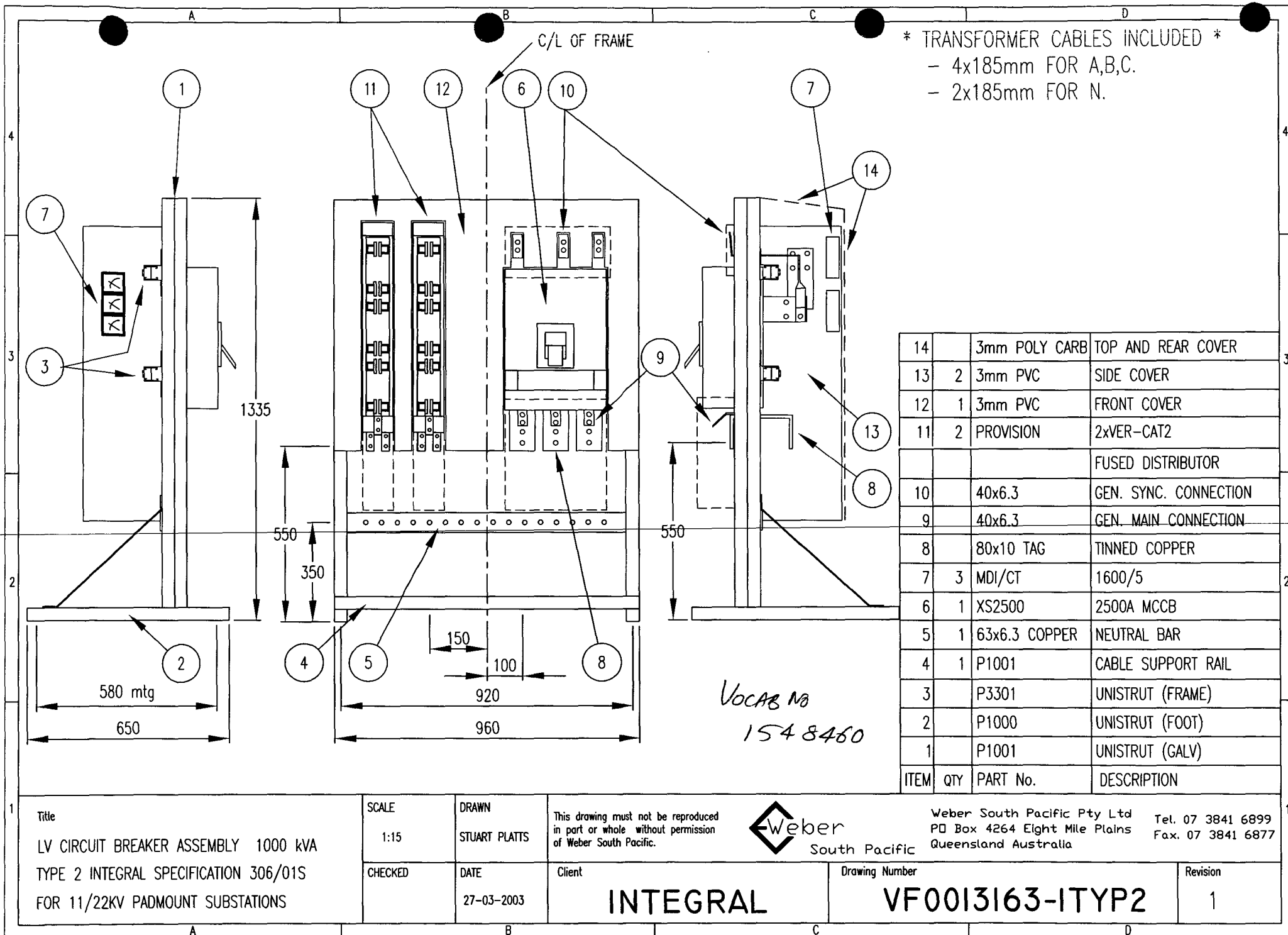
Drilling plan



NOTES: ○ Standard. This configuration is used unless otherwise specified.
○ Optional standard. Specify when ordering.
● "yes" or "available".
— "no" or "not available".

Low Voltage Circuit Breaker
Distribution Board

TYPE 2



Title
LV CIRCUIT BREAKER ASSEMBLY 1000 kVA
TYPE 2 INTEGRAL SPECIFICATION 306/01S
FOR 11/22KV PADMOUNT SUBSTATIONS

SCALE
1:15

DRAWN
STUART PLATTS

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DATE

27-03-2003

Client

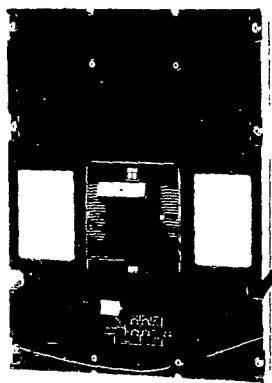
INTEGRAL

Drawing Number

VF0013163-ITYP2

Revision

1



Ratings and Specifications

number of poles

3 4

RATED CURRENT: (In)

NRC ASR

Calibrated at 40°C or 45°C

min. max.

2500 1250 2500

NRC: Nominal Rated Current

ASR: Adjustable Setting Range

A.C. RATED INSULATION VOLTAGE (Ui)

690

A.C. RATED BREAKING CAPACITY sym r.m.s. [kA]

IEC 947-2(Icu) / IEC 947-2(Ics) 690V 45/42

BS 4752-1(P-1) / 660V 45/42

CEI 17-5(P-1) / 500V 65/49

440V 85/64

415V 85/64

400V 85/64

380V 100/75

240V 125/94

AS 2184 440V 85

415V 100

NEMA AB-1 600V 65

480V 85

240V 125

without inst 240V-690V 42

D.C. RATED 250V —

BREAKING CAPACITY [kA] 125V —

RATED SHORT TIME CURRENT r.m.s. [kA] [low]

Weight (kg) marked standard type 42 (0.3 sec)

62.5 78.2

CONNECTIONS & MOUNTINGS

front terminal screw —

connected[FC] attached flat bar —

solderless terminal[PWC] —

rear bolt stud —

connected[RC] flat bar stud —

plng-in[PM] for switchboard —

for distribution board —

draw-out[DO] —

STANDARD FEATURES

contact indicator —

trip button —

PROTECTIVE FUNCTIONS (Electronic type)

Adjustable LTD, STD & INST —

Adjustable GFT or Adjustable PTA (option) —

Trip indicators(option) —

ACCESSORIES(option) CODE

externally motor operator MOT —

mounted external panel mounted type OHE —

operating beaker mounted type OHG —

handle variable depth type OHH —

extension handle EHA —

mechanical front type MIF —

interlock rear type MIB —

handle holder HH —

handle lock HL —

terminal front-connected type TCF —

cover rear-connected type —

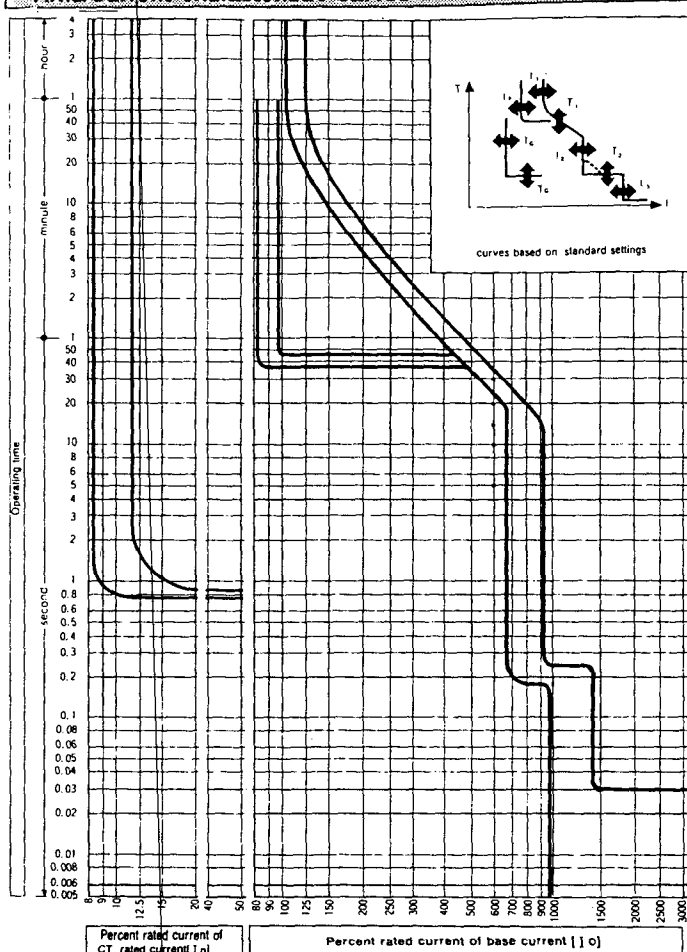
plug-in type TCR —

interpole barrier TBA —

accessory lead terminal LTF —

door flange D F —

Time/Current characteristic curves



Over-current tripping characteristics

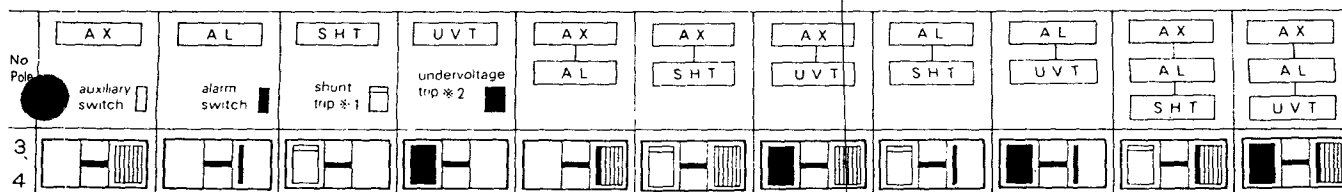
CT rated current (A): [In]	2500
Base current setting (A): [Io]	[In] × (0.63-0.8-1.0)
Long time delay pickup current (A): [I ₁]	[Io] × (0.8-0.85-0.9-0.95-1.0)
	Non-tripping at [I ₁] setting ×105% and below.
	Tripping at 125% and above.
Long time delay time setting (S): [T ₁]	(5-10-15-20-30) at [I ₁] × 600% current
	Setting tolerance: ±20%
Short time delay pickup current (A): [I ₂]	[Io] × (2-4-6-8-10) Setting tolerance: ±15%
Short time delay time setting (S): [T ₂]	Opening time (0.1-0.15-0.2-0.25-0.3) in the definite time-delay. Total clearing time is +50ms and resettable time is -20ms for the time delay setting.
Instantaneous trip pickup current (A): [I ₃]	Continuously adjustable from [Io] × (3 to 12)
	Setting tolerance: ±20%
* Pre-trip alarm pickup current (A): [I _P]	[Io] × (0.7-0.8-0.9-1.0) Setting tolerance: ±10%
* Pre-trip alarm time setting (S): [T _P]	40 fixed definite time-delay. Setting tolerance: ±10%
* Ground fault trip pickup current (A): [I _G]	Continuously adjustable from [In] × (0.1 to 0.4)
	Setting tolerance: ±15%
* Ground fault trip time setting (S): [T _G]	Opening time (0.1-0.2-0.3-0.4-0.8) in the definite time-delay. Total clearing time is +50ms and resettable time is -20ms for the time-delay setting.

*: Option

*: The underlined values will be applied as standard rating unless otherwise specified when ordering.

(Refer to Notes, opposite page)

Combination of internally mounted accessories



Handle Left pole Right pole

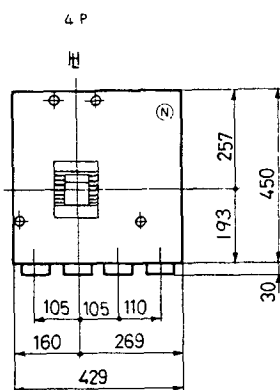
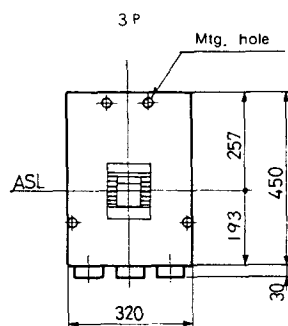
Note: *1: Shunt trip is provided with anti-burnout switch.

*2: The UVT controller is installed externally, when provided with a. c. UVT.

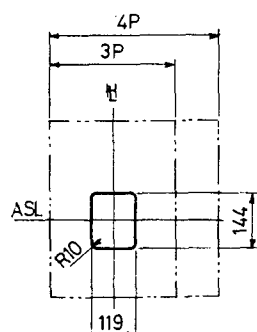
Outline dimensions(mm)

XS2500NE

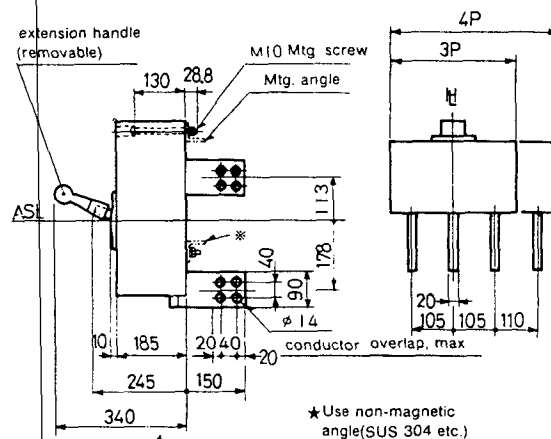
Rear-connected



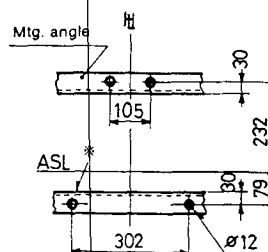
Panel cutout



• Panel cutout dimensions shown give an allowance of 2mm around the handle escutcheon.



Drilling plan



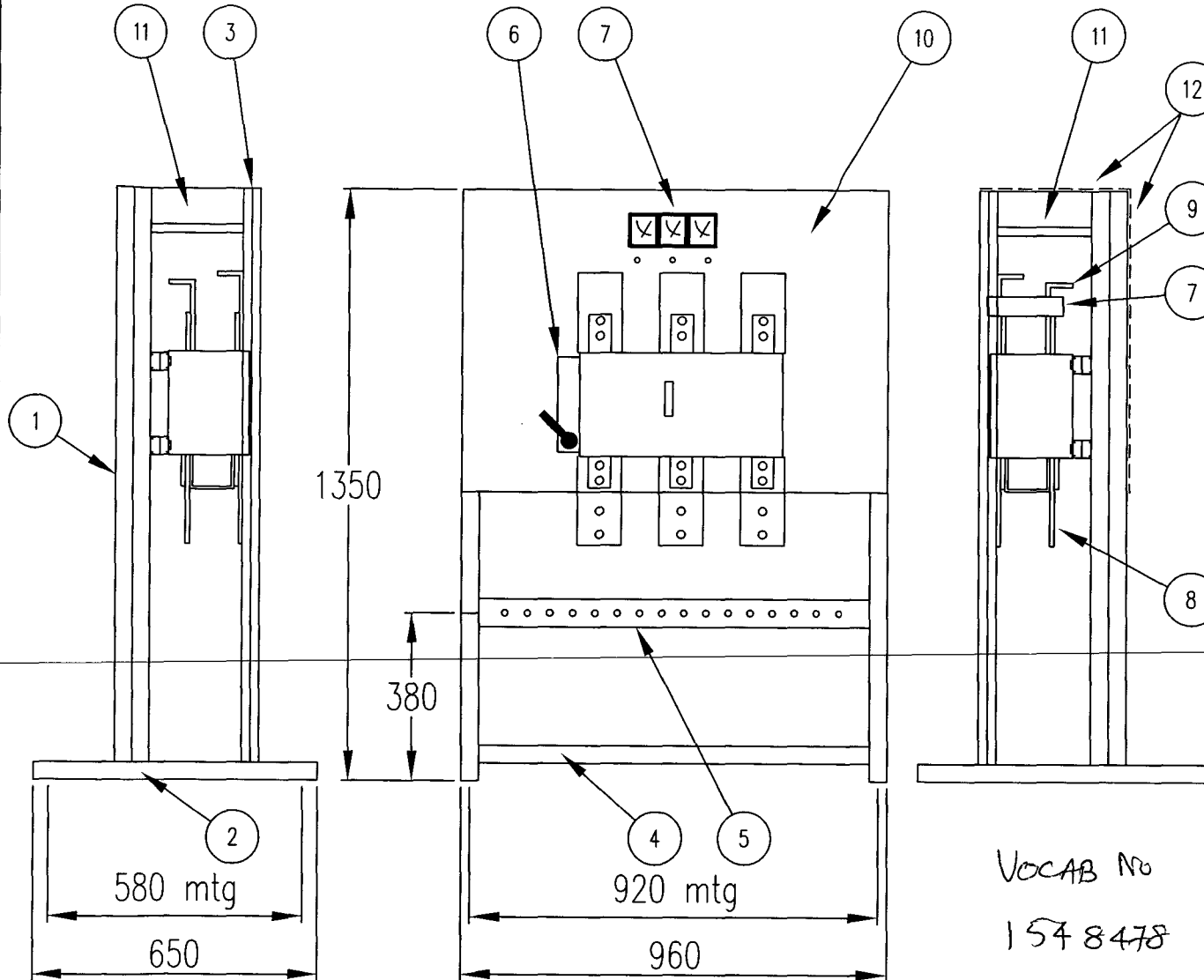
★ Use non-magnetic angle(SUS 304 etc.)

- NOTES: ○ Standard. This configuration is used unless otherwise specified.
○ Optional standard. Specify when ordering.
• "yes" or "available".
— "no" or "not available".

Low Voltage Low Break Switch
(L.B.S.)

TRANSFORMER CABLES INCLUDED *

- 4x240mm FOR A,B,C.
- 2x240mm FOR N.



12	1	3mm POLY CARB	TOP AND REAR COVER
11	2	3mm PVC	SIDE COVER
10	1	6mm X-PANEL	FRONT COVER
9		100x10 Cu	GEN. MAIN CONNECTION
8		100x10 Cu	TAKE OFF TAGS
7	3	MDI/CT	2500A
6	1	L.B.S.	OETL 3150
5	1	63x6.3 COPPER	NEUTRAL BAR
4	1	P1001	CABLE SUPPORT
3		P3301	UNISTRUT (FRAME)
2		P1000	UNISTRUT (FOOT)
1		P1001	UNISTRUT (FRAME)
ITEM	QTY	PART No.	DESCRIPTION

Vocab No
1548478

Title
LV LOAD BREAK SWITCH
TYPE 3 INTEGRAL SPECIFICATION
FOR 11/22KV PADMOUNT SUBSTATIONS

SCALE

1:15

DRAWN

STUART PLATTS

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South Pacific

Weber South Pacific Pty Ltd
PO Box 4264 Eight Mile Plains
Queensland Australia

Tel. 07 3841 6899
Fax. 07 3841 6877

CHECKED

DATE

30-06-2003

Client

INTEGRAL

Drawing Number

VF130253-LBS3

Revision

1

MAINTENANCE
&
ACCESSORIES



VERTIGROUP

SERVICE AND MAINTENANCE

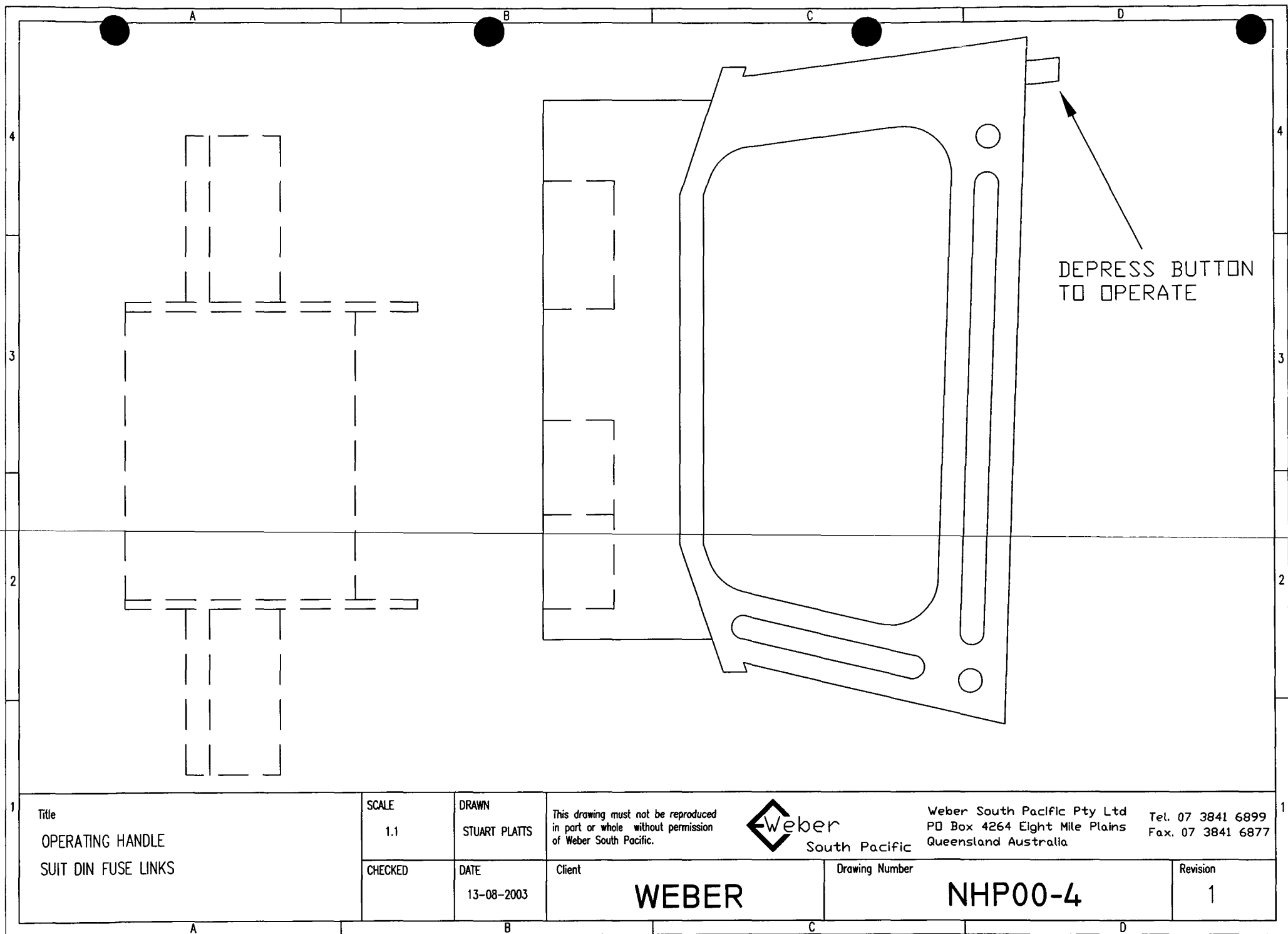
All Weber "Vertigroup" low voltage switchgear used by Supply Authorities Australia wide is the standard rustproof version fitted with non-ferrous components. When correctly installed with stainless steel Gr "304" terminal bolts, appropriate pressure washers, and torqued to the recommended levels, no additional maintenance is required during the life of the equipment.

Regular service and maintenance should only require a visual inspection of the equipment to check for any effects of vermin and undue dust contamination. A simple blow down is all that should be necessary.

Movement of cables may reduce contact pressure. If suspected a retightening to the correct torque may be deemed appropriate. NOTE * LIVE VOLTAGE MAY EXIST. Ensure correct safety procedures are in place.

For Fuse switches/Disconnectors used for frequent switching, an application of conducting grease/vaseline to the Fuse/Isolator blades will improve the switch action.

For more detailed product information or applications, Please contact your nearest Weber office.



Title
OPERATING HANDLE
SUIT DIN FUSE LINKS

SCALE
1:1

DRAWN
STUART PLATTS

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 Weber
South Pacific

Weber South Pacific Pty Ltd
PO Box 4264 Eight Mile Plains
Queensland Australia

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DATE
13-08-2003

Client

WEBER

Drawing Number

NHP00-4

Revision

1



CONTROLS & SWITCHGEAR

CATALOGUE

Switch Disconnectors

Sizes 25 to 200A, 250 to 1000A, 1250 to 3150A

Switch Disconnectors (Sizes 1250A, 1600A, 1800A, 2500A &

3500A)

ASTA Certified to
IEC 947-3

Tested by TCA
Lane Cove, Sydney

Switch Sizes	Size 1250	Sizes 1600 and 1800	Sizes 2500 and 3150
Switch Size	1250	1600	1800 2500 3150
3-Pole Catalog No.	CSSD1250K3	CSSD1600K3	CSSD1800K3 CSSD2500K3 CSSD3150K3
4-Pole Catalog No.	CSSD1250K4	CSSD1600K4	CSSD1800K4 CSSD2500K4 CSSD3150K4
Rated Insulation Voltage	1000V	1000V	1000V 1000V 1000V
Rated Operational Voltage	660V	660V	660V 660V 660V
Rated Thermal Current (AC21 at 660V AC)			
Open 40°C Ambient	1250A	1600A	1800A 2500A 3150A
Encl 40°C Ambient	1250A	1600A	1600A 2300A 2700A
Encl 60°C Ambient	1000A	1250A	1250A - -
(D21 at 220V)			
Open 40°C Ambient	1250A	1600A	1600A 1600A 1600A
Rated Operational Current			
AC22/AC23 at 415V	1250/800A	1600/800A	1600/800A 1600/-A 1000/-A
AC22/AC23 at 660V			-
DC22/DC23 at 220V			-
Rated Operational Power			
AC23 at 415V	400kW	400kW	400kW 400kW 400kW
Fused Short Circuit Current	50kA	50kA*	50kA* 50kA* 50kA*
With Back Up Fuse Rating	1000A	1250A	1250A 1250A 1250A
Maximum Peak Let Through (protected with back up fuses)	-	-	- - -
Short Circuit Making (peak)	105kA	105kA	105kA 105kA 105kA
Short Time Withstand			
0.1 second	60kA	60kA	60kA 110kA 110kA
1.0 second	50kA	50kA	50kA 80kA 80kA

AC Breaking Capacity					
p.f. 0.35/415V	6400A	6400A	6400A	6400A	6400A
DC Breaking Capacity 220V (3p in series L/R=15mS)	1900A**	2600A**	2600A**	2600A**	2600A**
Capacitor Rating 415V	-	-	-	-	-
Rated Capacitor Duty Ic	-	-	-	-	-
Mechanical/Electrical Endurance (at rated operational Current p.f.0.65)	10k/0.5k operations	10k/0.5k operations	10k/0.5k operations	6k/0.5k operations	6k/0.5k operations
Weight					
3-Pole	11.5kg	15.6kg	15.6kg	36.2kg	36.2kg
4-Pole	15.0kg	20.0kg	20.0kg	45.4kg	45.4kg
Notes:					
* With back up circuit breaker time delayed 0.5 second maximum			** Two poles in series		

Switch Disconnectors Drawing Diagrams 1

Switch Disconnectors: Dimensions (mm)

CSSD25,40 D1/D4 CSSD25, 40 D1/C1 CSSD25, 40 D4/C4 CSSD25, 40 C1/C4

Handle CSSDZX104

CSSD63K3

CSSD63K3/C3

CSSD63C3

Handle CSSDZX104

CSSD125D1

CSSD63D3, 125D4

CSSD125D1/C1

CSSD63D4, 125D4/C4

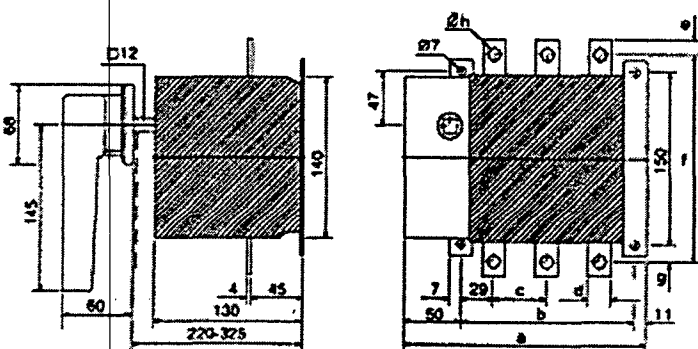
CSSD125C1/C4

Handle CSSDZX104

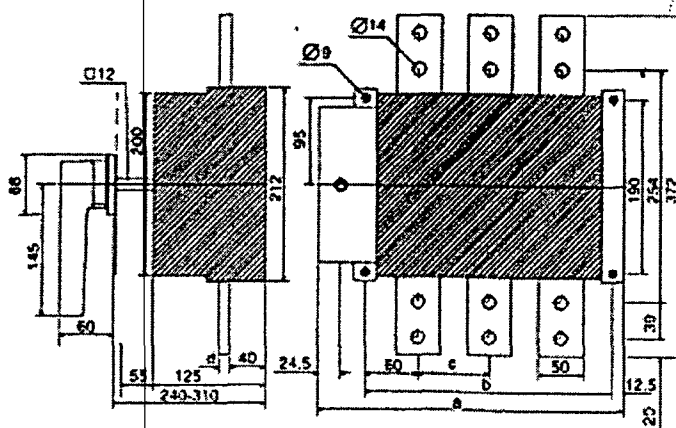
Switch Disconnectors Drawing Diagrams 2

Switch Disconnectors Dimensions (mm)

TYPE	a	b	c	d	e	f	g	h
CSSD200D1	211	151	46	25	12.5	180	15.0	11.0
CSSD200D4	257	197	46	25	12.5	180	15.0	11.0
CSSD250D1	211	151	46	25	12.5	180	15.0	11.0
CSSD250D4	257	197	46	25	12.5	180	15.0	11.0
CSSD400D1	211	151	46	25	12.5	180	15.0	11.0
CSSD400D4	257	197	46	25	12.5	180	15.0	11.0
CSSD630K3	244	183	62	40	19.0	185	17.5	13.5
CSSD630K4	306	245	62	40	19.0	185	17.5	13.5
CSSD800K3	260	199	70	40	19.0	185	17.5	13.5
CSSD800K4	330	269	70	40	19.0	185	17.5	13.5
Handle:								
YASDB16								
Shaft :								
CSSFZK9								
L = 255mm								



TYPE	a	b	c	d
CSSD1000K3	343	278	80	12
CSSD1000K4	423	358	80	12
CSSD1250K3	343	278	80	12
CSSD1250K4	423	358	80	12
CSSD1600K3	461	396	139	16
CSSD1600K4	600	535	139	16
CSSD1800K3	461	396	139	16
CSSD1800K4	600	535	139	16
Handle:				
YASDB16				
Shaft :				
CSSFZK9				
L = 255mm				



TYPE	a	b
CSSD2500K3	468	403
CSSD2500K4	607	542
CSSD3150K3	468	403
CSSD3150K4	607	542
Handle: YASDA8		
Shaft : CSSFZK41		
L = 325mm		

Switch Disconnecter Accessories

EXTENDED SHAFTS

Shaft Dimension	Switch Size	Length (mm)	Catalog No.
5 mm square	CSSD25 125	150	CSSDZS37
12 mm square	CSSD200 1600	250	CSSDFZK41
12 mm square	CSSD200 3150	465	CSSDFZK44

AUXILLIARY CONTACTS

	Switch Size	No. Poles	Catalog No.
CSSD25	D1	3-pole	CSSDZX49

CSSD40	D1	3-pole	CSSDZX49
CSSD63	D4	4-pole	CSSDZX87
CSSD63	K3	3-pole	CSSDZX79
CSSD125	D1	3-pole	CSSDZX52
CSSD25	D1	3-pole	CSSDZX50
CSSD40	D1	3-pole	CSSDZX50
CSSD63	D4	4-pole	CSSDZX88
CSSD63	K3	3-pole	CSSDZX80
CSSD125	D1	3-pole	CSSDZX53
CSSD200 to	CSSD400	3-pole	CSSDZX34
CSSD630 to	CSSD3150	3-pole	CSSDZX35
CSSD630 to	CSSD3150	3-pole	CSSDZX36

Terminal Shrouds

CSSD125	D1	3-pole	CSSDZX9
CSSD200	D1	3-pole	CSSDZX11
CSSD250	D1	3-pole	CSSDZX31
CSSD400	D1	3-pole	CSSDZX31
CSSD630	K3	3-pole	CSSDZX93
CSSD800	K3	3-pole	CSSDZX112
CSSD1000	K3	3-pole	CSSDZX102
CSSD1250	K3	3-pole	CSSDZX102
CSSD125	D4	4-pole	CSSDZX59
CSSD200	D4	4-pole	CSSDZX64
CSSD250	D4	4-pole	CSSDZX32
CSSD400	D4	4-pole	CSSDZX32
CSSD630	K4	4-pole	CSSDZX94
CSSD800	K4	4-pole	CSSDZX112
CSSD1000	K4	4-pole	CSSDZX102
CSSD1250	K4	4-pole	CSSDZX102

Changeover Mechanisms

CSSD25	to	CSSD125	CSSDZW6
CSSD200	to	CSSD800	CSSDZW11
CSSD1000	to	CSSD3150	CSSDZW12

Locking Attachment

CSSD25 to CSSD125	CSSDZW16
CSSD200 to CSSD3150	CSSDZW5

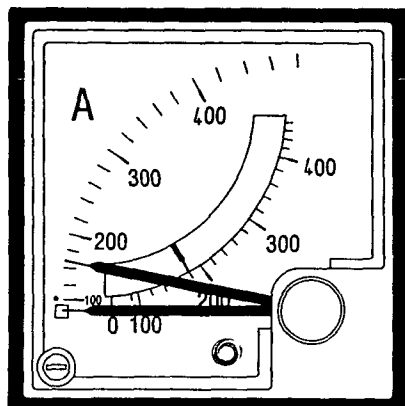
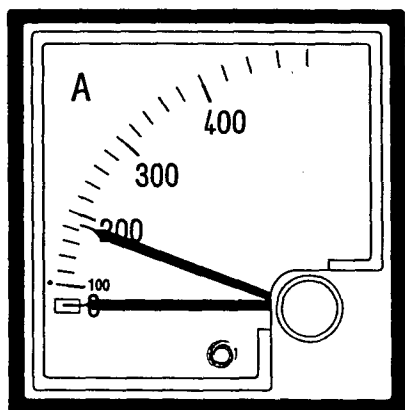
Handles

ON - OFF	CSSD25 to CSSD125	CSSDZX104
ON - OFF	CSSD200 to CSSD800	YASDB16
ON - OFF	CSSD1000 to CSSD3150	YASDA8
ON - OFF - ON	CSSD25 to CSSD125	YASDB37
ON - OFF - ON	CSSD200 to CSSD3150	YASDA6

Maximum demand ammeters

The standard thermal demand ammeter displays the maximum sustained load for the time lag specified on all types of electrical equipment. Units with 8, 15 or 20 minutes time lag have a red slave pointer which shows highest value reached and has a wire-sealable reset knob. Operated on the bi-metal strip principle, the instrument is robust, reliable and sustains accuracy under extremes of ambient temperature. Due to an inherent time lag, the instrument is unaffected by momentary or short duration overloads.

A dual purpose version capable of both thermal and instantaneous indication is available. This comprises a thermal ammeter plus an instantaneous moving iron ammeter combined in a common case. Both versions offered can be supplied with or without a saturable current limit transformer accommodated within the instrument case.



Instrument	Type reference		
	72mm	96mm	144mm
Thermal unit only Time lag 8, 15, or 20 mins Time lag 30 mins	M72D	M96D M96Q	M14D
Combined unit Time lag 8, 15 or 20 mins Time lag 30 mins	M72DA	M96DA M96QA	M14DA

Current

5A standard, 1A available on request

Overload ratings

Designs with saturable CT, 40 x rated current for 0.5 second. This can be repeated 3 times at intervals not less than 1.5 seconds. Directly connected designs,
4 x rated current for 10 seconds.

Ambient temperature compensation range

-10°C to +60°C

Burdens

These are calculated at nominal current where scaling is 0 to 120% of the nominal value. That is, nominal current 5A and scaling 0 to 6A.

Item	Burden (VA)
Thermal movement	4.4
Thermal movement with current limit transformer	6
Moving iron movement	0.6 (additional)

Accuracy

Movement	Class index
Thermal	3.0
Moving iron	1.5

Information required with order

Type reference

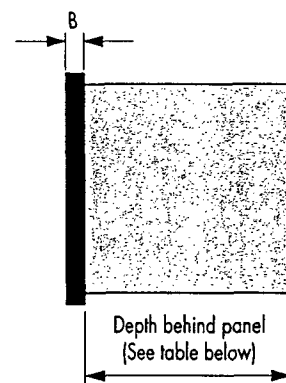
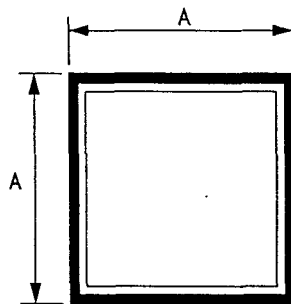
CT ratio and frequency

Time lag

Example: Type reference M96DA
CT ratio 200/5 A, 50Hz
Time lag 20 mins

Outline and dimensions

(All dimensions in mm)



Instrument size	Bezel A x A	Panel hole (square cut out)	Max. panel thickness	Bezel thickness B
48mm	48 x 48	45 $\begin{smallmatrix} +0.6 \\ -0 \end{smallmatrix}$	3	5
72mm	72 x 72	68 $\begin{smallmatrix} +0.7 \\ -0 \end{smallmatrix}$	3	5
96mm	96 x 96	92 $\begin{smallmatrix} +0.6 \\ -0 \end{smallmatrix}$	3	5
144mm	144 x 144	138 $\begin{smallmatrix} +1.0 \\ -0 \end{smallmatrix}$	10	8

Instrument type	Maximum depth behind panel							
	48mm		72mm		96mm		144mm	
	90°	240°	90°	240°	90°	240°/360°	90°	240°/360°
Moving iron ammeter & voltmeter	81	81	86	81	86	81	128	137
Moving coil ammeter & voltmeter	84	108	89	103	89	103	103	137
Rectified moving coil ammeter & voltmeter	63	121	69	88	69	88	69	137
Frequency meter	-	-	76	122	122	122	91	137
Maximum demand ammeter	-	-	69	-	98	-	103	-
Wattmeter and varmeter	-	-	-	-	120	120	103	137
Synchroscope (electromechanical)	-	-	-	-	-	120	-	137
Synchroscope (LED)	-	-	-	-	-	91	-	-
Power factor indicator	-	-	-	-	120	120*	-	137
Time elapsed meter (digital)	-	60	-	60	-	60	-	-
Tap position indicator	-	-	-	-	-	120	-	137
Meter relay	-	-	-	-	77	-	-	-
Double voltmeter (2 x 90°)	-	-	-	-	51	-	76	-
Double frequency meter (2 x 90°)	-	-	-	-	51	-	76	-
Double frequency meter (Reed type)	-	-	-	-	73	-	82	-
Differential voltmeter	-	-	-	-	-	73	-	82
Differential frequency meter	-	-	-	-	-	111	-	110
Phase sequence indicator	-	-	-	-	73	-	82	-

* denotes 360° circular scale

Terminals

Moving iron ammeters and voltmeters

Sizes 48mm, 72mm, 96mm

Size 144mm

M5 on voltmeters up to 650V and on ammeters up to 15A.

M6 on ammeters from 16A to 50A.

M5 on voltmeters up to 650V and on ammeters up to 7.4A.

M6 on ammeters from 7.5A to 59A.

M8 from 60A to 119A.

M16 from 120A to 250A.

All other instruments

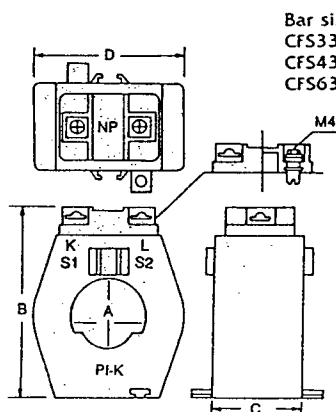
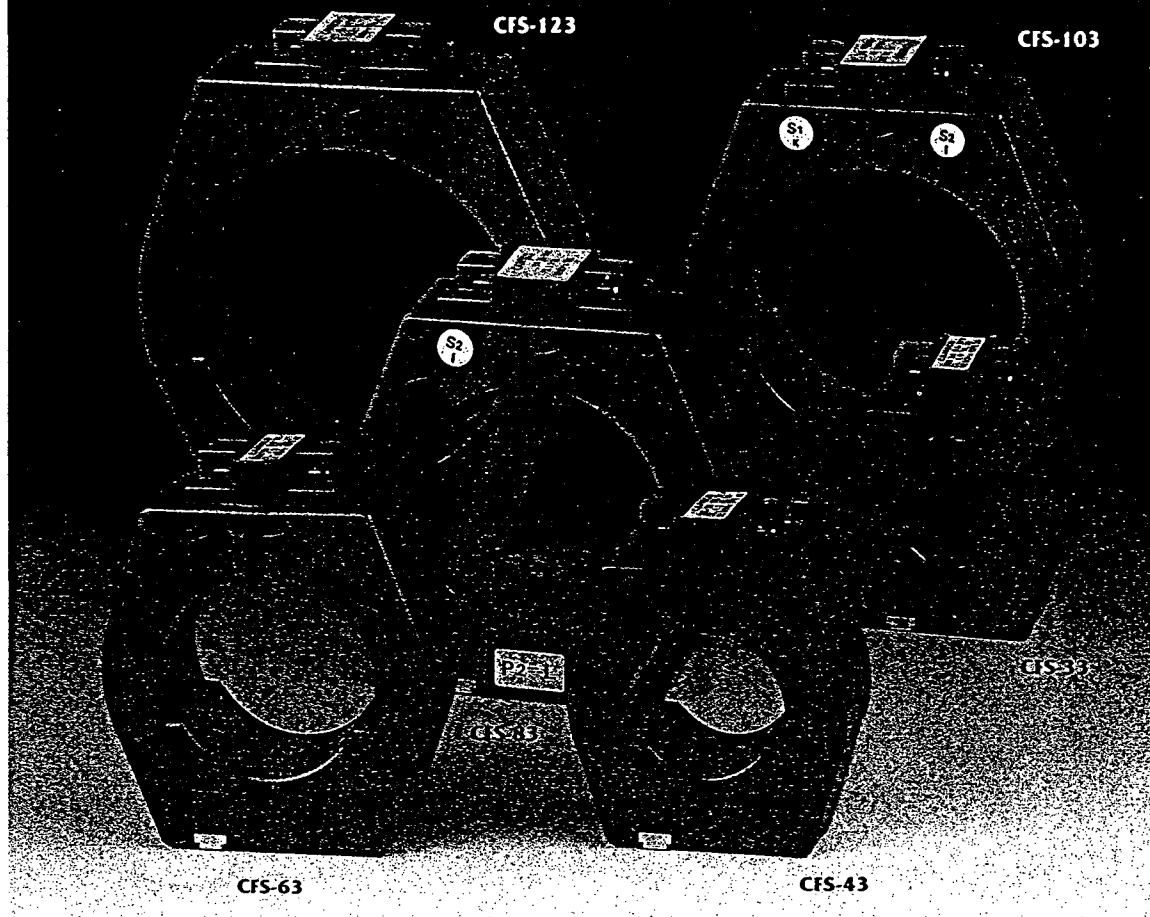
M5 on dc voltmeters up to 1000V and on ammeters up to 15A.

Ammeters from 16A to 40A have M6 terminals and M8 terminals from 50A to 60A.

M5 on ac voltmeters and M5 clamp screws are fitted on ac ammeters up to 60A.

MULTI-MOUNT CURRENT COIL

- This is a special design can use simply to connect with bus bar and cable.
- Special design of Mounting brackets can shrink into its body.
- Rated Load: 2.5VA, 5VA, 15VA
- Maximum Voltage: 600V
- Frequency: 50/60Hz



Bar sizes

CFS33-30mm CFS83-80mm
CFS43-40mm CFS103-100mm
CFS63-60mm CFS123-120mm

RATIO	CAPACITY
30/5 ~ 100/5	2.5VA
150/5 ~ 300/5	5VA
400/5 ~ 600/5	10VA
800/5 ~ 4000/5	15VA

FORM OF CURRENT COIL						m.m.
DIM	CFS33	CFS43	CFS63	CS83	CFS103	CFS123
A	33	43	63	83	103	123
B	96	104	124	147	156	192
C	44	44	44	44	44	44
D	75	82	101	125	141	161

MODEL: CFS-33 MODEL: CFS-83
RATIO: 30/5 ~ 150/5 RATIO: 1000/5 ~ 1500/5
MODEL: CFS-43 MODEL: CFS-103
RATIO: 200/5 ~ 400/5 RATIO: 2000/5 ~ 3000/5
MODEL: CFS-63 MODEL: CFS-123
RATIO: 500/5 ~ 800/5 RATIO: 3000/5 ~ 4000/5

CAMSCO

CURRENT TRANSFORMERS

TECHNICAL FEATURES

- ABS self-extinguishing case
- Current: to the secondary 5A (1A and other on request)
Working frequency: 50/60Hz
- Dynamic nominal current of short circuit (Idin): 2,5 1 ter during 1 sec.
Max peak value the C.T. can bear having the secondary in short circuit.
- Thermal nominal current of short circuit (Itr): 40-80 IpN during 1sec.
Max effective value with secondary in short circuit.
- Standing overcurrent: 1,2 In.
- Voltage insulating reference: 0,72KV (1,2KV) max voltage value.
- Testing voltage: 3KV (6KV) at 50/60 HZ during 1 min.
Max voltage value, between primary and secondary.
- Saturation factor (SF) or ratio between primary current value (that cause the magnetic core saturation), and the nominal current value.

The lower is the N value and the higher is the instrument protection.

- Working Temperature: -25+50C
 - Storage Temperature: -40+80C
 - Max temperature of the passing cable: 70C
 - Relative Humidity: 90% without condensing
 - Insulation : on air , E class
 - Protection degree: IP30 (CEIOEN 60529)
 - Construction: according to CEI 38-1, IEC 185, VDE 0414
 - ✓ TAB, TAP series are with sealing terming terminal covers
 - ✓ TAF series is with protected faston caps & din rail fixing
 - ✓ MFO series is with protected terminals
 - ✓ RCT series is with insulated wires output.
- P.S: *other values on request

• CONNECTIONS

PRIMARY P1(K) input-P2(L) output

SECONDARY s1 (4) INPUT - s2(4) output.

TABLE OF THE VOLTAGE DROP BETWEEN C.T. AND READING INSTRUMENT CABLES

Wire section In mm²	For secondary 5A						For secondary 1A					
VOLT												
	1m	2m	4m	6m	8m	10m	10m	20m	40m	60m	80m	100m
1,5	0,58	1,15	2,31	3,46	4,62	5,77	0,23	0,46	0,92	1,39	1,85	2,31
2,5	0,36	0,71	1,43	2,14	2,86	3,57	0,14	0,29	0,57	0,86	1,14	1,43
4	0,22	0,45	0,89	1,89	1,79	2,24	0,09	0,18	0,36	0,54	0,71	0,89
6	0,15	0,30	0,60	1,34	1,19	1,49	0,06	0,12	0,24	0,36	0,48	0,60
10	0,09	0,18	0,36	0,54	0,7	0,89	0,04	0,07	0,14	0,21	0,29	0,36

For high voltage drop we suggest the use of current transducers (see our catalogue).

GENERAL FEATURES

The current transformers (C.T.) are used for reducing the line current to a secondary value of 5A or 1A

For applications on electronic cards we made C.T. having secondary values:

✓ n A.C. current, 50mA- 60mA-100mA-200mA

✓ in A.C. voltage, 2V-5V-10V

✓ in D.C. voltage, 10V

The C.T. are composed by iron cores at oriented grains and -

-they can be toroidal or rectangular, the number of turns has been calculated according to the secondary current.

Insulation between core and winding has been made by thermoplastic insulating materials.

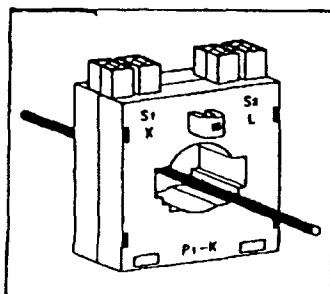
Testing of technical features of our production is made singularly by S.I.T. certificated equipments.

• Wound primary executions: for primary current low values or when it is necessary an high power with C.T. low dimensions.

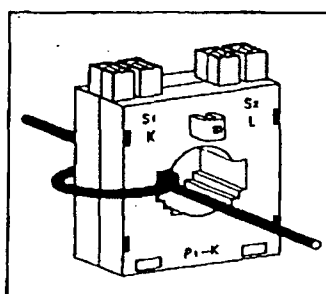
• Primary passing executions: for other primary current values.

CURRENT TRANSFORMERS EXAMPLE OF USE

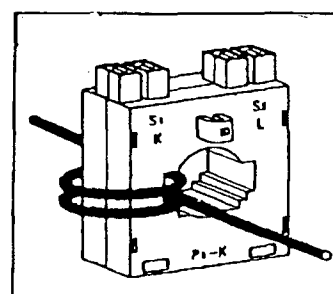
The number of passages of the primary cable does not modify the technical features or the precision class, but it reduces the primary current value at a parity of secondary current.



300/5A standard

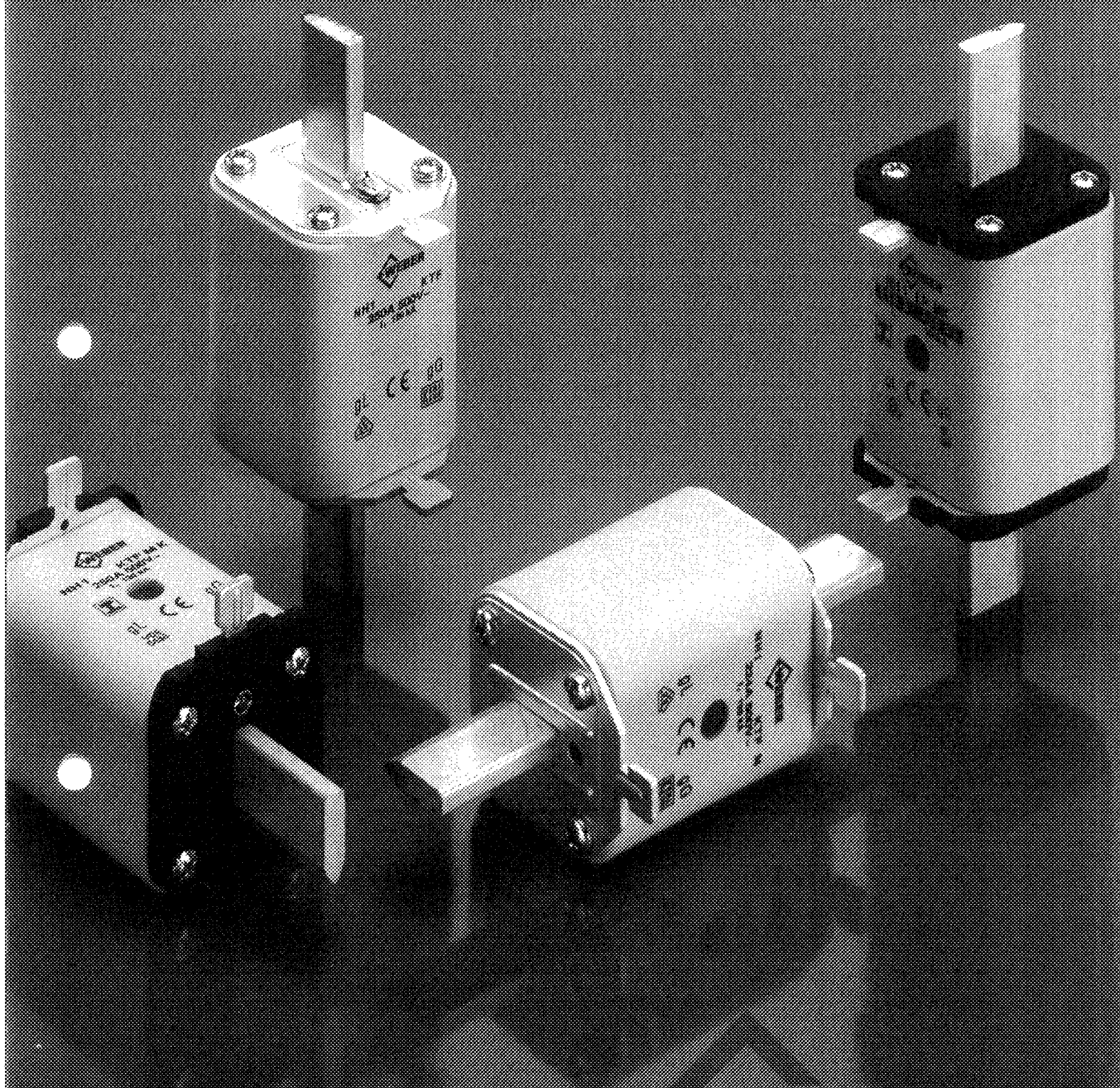


300/5A 2 Loops=150/5A



300/5A 3 Loops=100/5A

NH-fuse links



WEBER

Why Four Types of WEBER NH Fuses?

The history

As early as 1926 a standard was drawn up for "Fuses for general application purposes for the protection of electrical lines and equipment"; they should be 'of a closed type' with two contacts and a ceramic body. Up to 1945 a fusible cut-out was usually used for higher currents, consisting of a ceramic body - often tubular - containing a replaceable fuse wire. In 1944 the NH fuse was registered in a DIN standard. A fuse of this type had to consist of a ceramic body, metal retainer plate, brass knife links and an indicator device on top of the retainer plate. The manufacturer could determine the fusing characteristics. The developments, however, went on.

NH KTF fuses

In the mid-sixties the fusing characteristics of the quick and the slow fuses were combined within one fusing range and standardised. In 1976 this was registered in the VDE 0636 standard. Thus, the NH KTF fuse became official. The market, however, demanded increasingly smaller fuses. For that reason compact

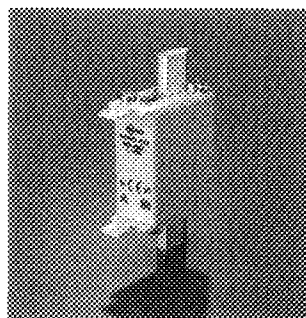
KTF fuses were marketed in the following years, in addition to normal KTF fuses. The dimensions were registered in DIN standard 43 620 (May 1984).

NH KTF MK fuses

In electric control rooms, however, this led to unsafe situations. Components that could safely be touched were used alongside components with live parts. The logical result was a demand for fuses that were protected against accidental shock hazards. WEBER reacted to this with the production of the NH KTF MK fuses with insulated gripping-lugs.

NH KTF M fuses

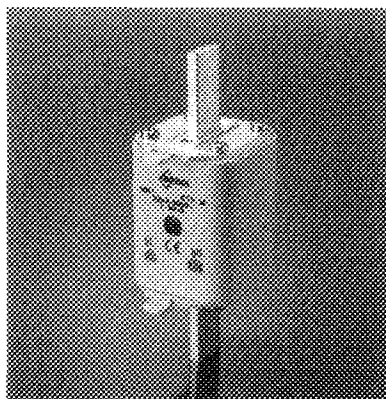
Apart from electrical safety and security, contact safety also became a major aspect of fuses. Increasingly, fuses were applied in closed fuseholders, isolation barriers, and load switches. The result was, that the indicator on top of the fuse



NH00 C KTF

Top indicator

Application: general

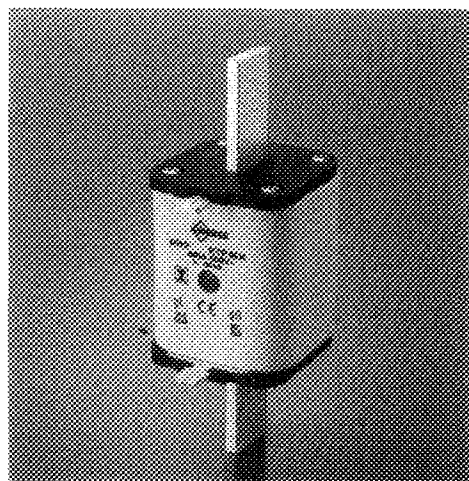


NH1 C KTF M

Middle indicator

Application: in closed fuseholders such as:

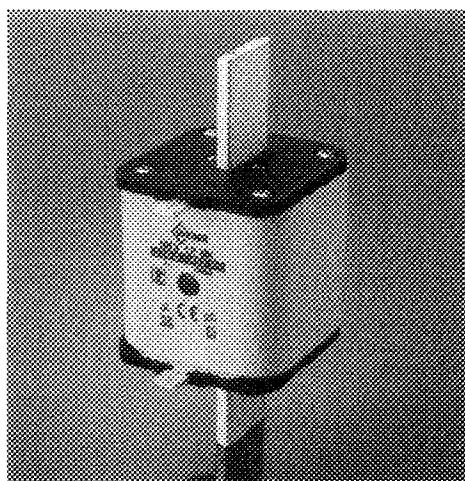
Veri Group NH Fuse switch disconnectors
SILAS Fuse switch disconnectors
SILAMAT Load-break disconnectors



NH2 KTF MK

Middle indicator, insulated metal gripping-lugs

Application: wherever protection against accidental shock hazards is mandatory



NH3 LP MK

Middle indicator, insulated metal gripping-lugs, reduced wattage losses

Application: wherever protection against accidental shock hazards is mandatory and lower wattage losses are required

could no longer be read. WEBER, however, had a middle indicator (the 1960 DIN standard also mentions a middle indicator). WEBER decided to start the production of a fuse with a middle indicator, the NH KTF M.

The KTF, KTF M and KTF MK all have the same fusing characteristics.

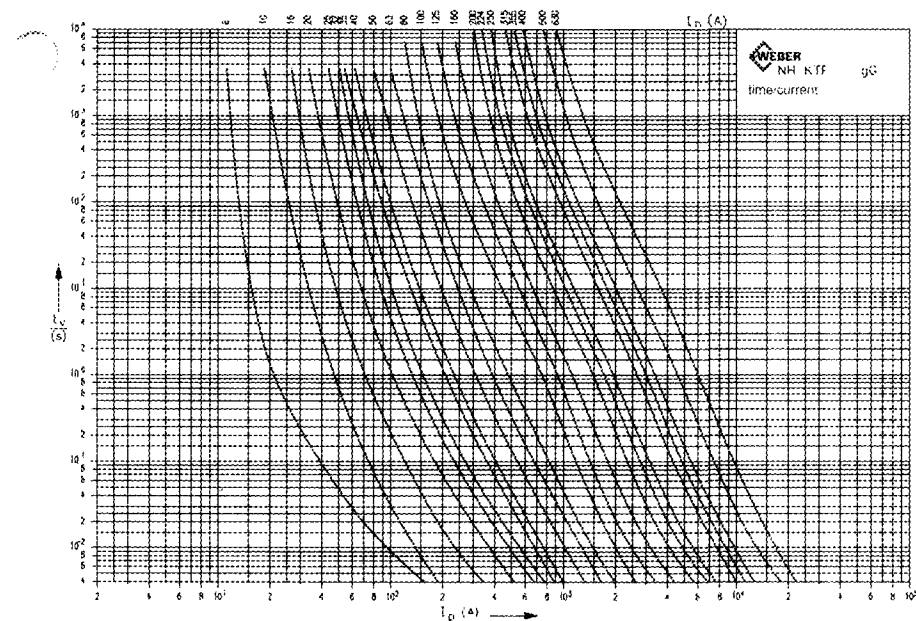
NH LP MK fuses

In the middle eighties the market indicates the need for fuses with lower wattage losses than specified in VDE 0636. In order to meet these demands WEBER develops a "Low Power" fuse, with a rated voltage of 400V, the NH LP MK. Its fusing characteristics lie within the fusing range of VDE 0636.

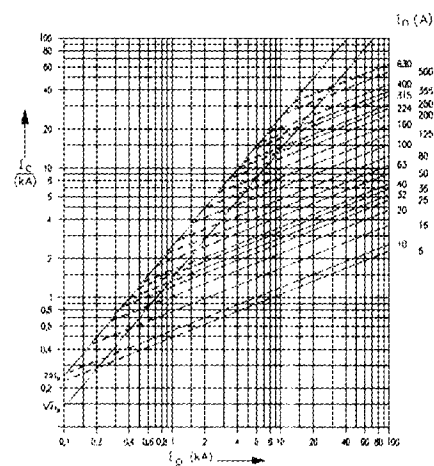
NH-fuse links

- DIN 43620, VDE 0636/T21, IEC 269
- KTF $U_n = 500V$ $I_k = 120kA$
- LP $U_n = 400V$ $I_k = 100kA$
- VDE, KEMA

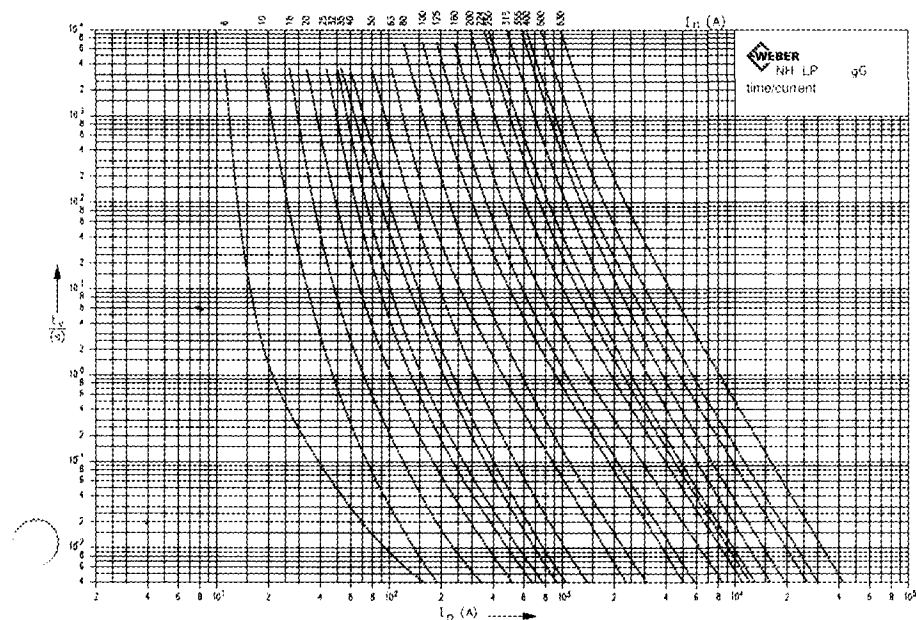
Rated voltage			500V	500V	500V	400V
Wattage losses size	00C	100A	7.2W	7.2W	7.2W	5.5W
	00	160A	11.3W	11.3W	11.3W	9.1W
	1	250A	20.0W	20.0W	20.0W	16.5W
	2	400A	33.7W	33.7W	33.7W	26.6W
	3	630A	44.0W	44.0W	44.0W	39.1W



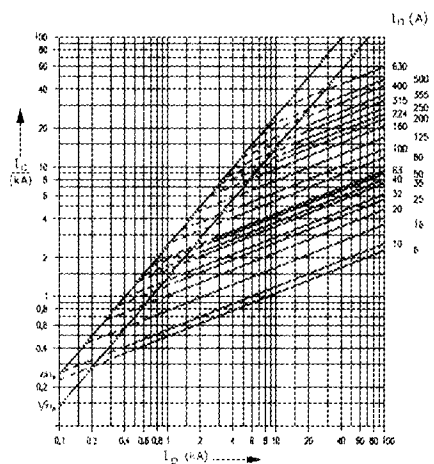
time/current characteristics NH-KTF gG



cutoff diagram NH-KTF gG



time/current characteristics NH-LP gG



cutoff diagram NH-LP gG

WEBER now has companies in Switzerland, Germany, Italy, the Netherlands, and Hungary, and authorized agencies in many other countries. WEBER components are recognized all over the world for their innovative high quality and good value for money; two major keys to WEBER's success.

	nominal current																							
type	2	4	6	10	16	20	25	32	35	40	50	63	80	100	125	160	200	224	250	315	355	400	500	630
NH 00 C KTF	•	•	•	•	•	•	•	•	•	•	•	•	•	•										
NH 00 KTF															•	•								
NH 00 C KTF M				•	•	•	•	•	•	•	•	•	•	•										
NH 00 KTF M															•	•								
NH 00 C KTF MK				•	•	•	•	•	•	•	•	•	•	•										
NH 00 KTF MK															•	•								
NH 00 C LP MK				•	•	•	•	•	•	•	•	•	•	•										
NH 00 LP MK															•	•								
NH 0 KTF					•	•	•	•	•	•	•	•	•	•	•	•								
NH 1 C KTF							•	•	•	•	•	•	•	•	•	•								
NH 1 KTF																	•	•	•					
NH 1 C KTF M							•	•	•	•	•	•	•	•	•	•								
NH 1 KTF M																	•	•	•					
NH 1 KTF MK							•	•	•	•	•	•	•	•	•	•	•	•	•					
NH 1 LP MK							•	•	•	•	•	•	•	•	•	•	•	•	•					
NH 2 C KTF							•	•	•	•	•	•	•	•	•	•	•	•	•					
NH 2 KTF																				•	•	•		
NH 2 C KTF M							•	•	•	•	•	•	•	•	•	•	•	•	•					
NH 2 KTF M																				•	•	•		
NH 2 KTF MK													•	•	•	•	•	•	•	•	•	•		
NH 2 LP MK													•	•	•	•	•	•	•	•	•	•		
NH 3 C KTF													•	•	•	•	•	•	•	•	•	•		
NH 3 KTF																							•	•
NH 3 C KTF M													•	•	•	•	•	•	•	•	•	•		
NH 3 KTF M																							•	•
NH 3 KTF MK																				•	•	•	•	•
NH 3 LP MK																				•	•	•	•	•

NH	system
00	DIN-size
C	compact
KTF	KTF = class gG; LP = low power loss gG
M	M = indicating device in front;
K	K = insulated gripping-lugs (Other options available)
80	nominal current

NH 00 C { KTF LP	MK 80
---------------------	-------

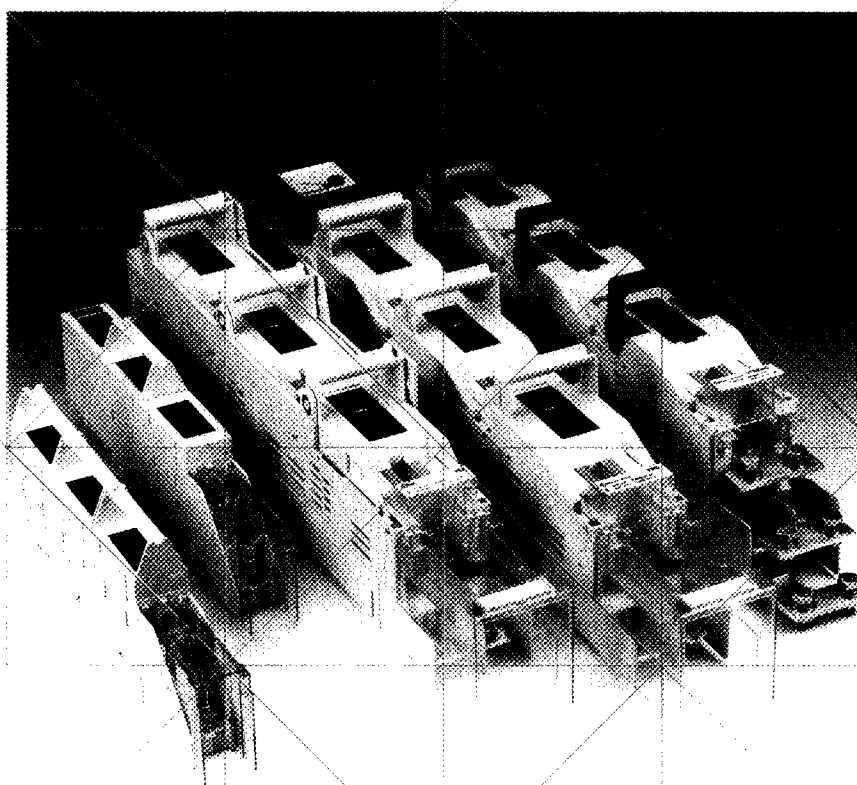


WEBER

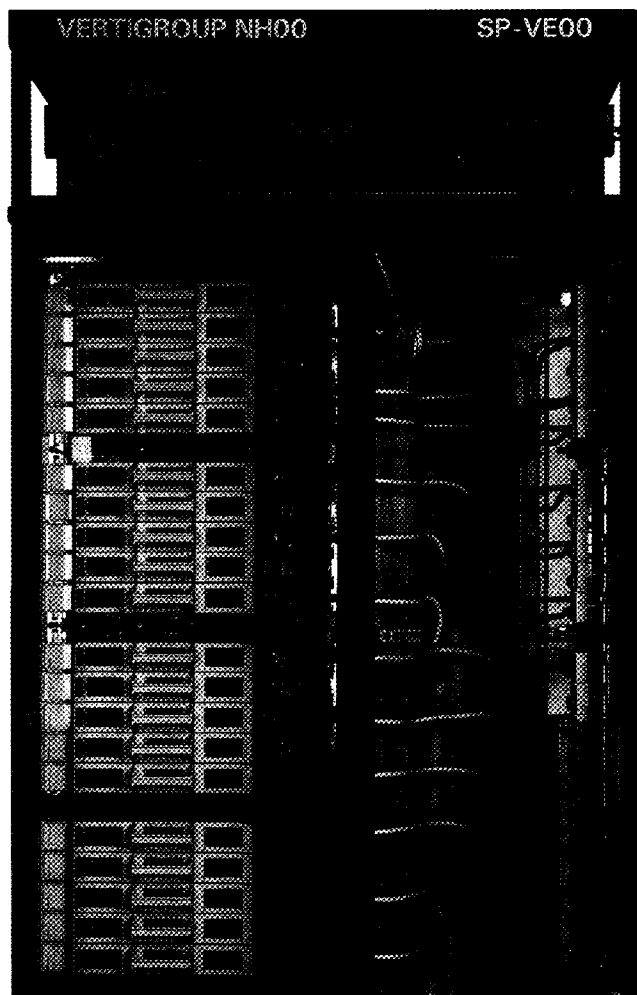
Weber Nederland B.V.
tel. (+int.) 31 524 51 11

Weber Nederland B.V., P.O. box 30, 7740 AA Coevorden, the Netherlands
tel. (+int.) 31 524 59 58 00, fax (+int.) 31 524 51 22 49

VERTIGROUP 160 - 2000 A



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VERTIGROUP DIN 00 160 A 100 mm product description	3
VERTIGROUP DIN 00 160 A 185 mm product description	4
VERTIGROUP 250 - 2000 A product description	5
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Special designs and current transformer (order details)	20 - 23
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Dimensions	29 - 35



The above version saves space and connections are made easily and quickly.

«Simply tops»

The VERTIGROUP Size 00 series designed for 100 mm busbar mounting was developed as a modular system to achieve maximum space efficiency. Large numbers of VERTIGROUP devices fit within the smallest space.

The narrow 50 mm width allows direct substitution of two size 00 units to fit in place of the larger VERTIGROUP size 1-3. Both single and double adapters for 185 mm busbar mounting further diversity the use of size 00.

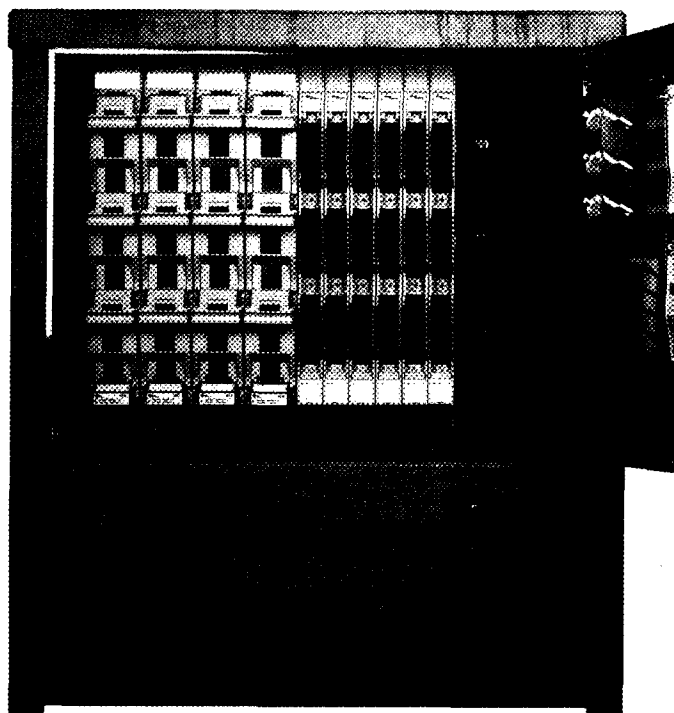
Both single phase switching and three phase switching versions exist with options for an electronic fuse monitor with no additional wiring.

Product advantages

- Optimum operator safety
 - Protection against accidental touching
 - IP20 in all switch position
 - Cable covers for maximum security
 - Sliding windows for voltage testing
 - «Live» installation possible
 - Both single phase and 3 phase switching available
- Time saving assembly
 - Output connection top/bottom or side
 - Simply rotate base
 - Inbuilt solutions for current transformers
 - No additional space requirements
 - Input clamps for busbar mounting
 - No drilling required
 - Max available terminal connection space
 - unbreakable space barriers
 - All connection materials rustproof or stainless steel

Features

- Output terminal M8 screws.
 - * Stainless steel or rustproof.
 - * Universal connections available on request.
- Special low switch cover for reduced height. (reduction 26 mm)
- Clear precise switching action.
- Silver plated contacts.
- Locking for switch cover in the park position.
- Mechanical mounting to earthed support rails possible.



Product advantages

- Mounting «live» is possible
- Stainless and rustproof version available
- Installation-friendly terminal space
- Universal terminal connections
- Suitable for 185 mm busbar systems
- Cable connection top or bottom selected by reversing the base
- Optimum operator protection in all switch positions
- Easy to assemble double adapters for multiple mounting

Further product features

The VERTIGROUP DIN 00 160 A is suitable for 185 mm busbar spacing and therefore an ideal combination with switches of sizes 250 - 2000 A.

LV-HRC Fuse-Switches can be fitted on the busbar directly or via an adapter. Through installation on double adapters a 100 mm template and M12 screw connection can be used. A single adapter can be used when fitting a fuse switch of size 00.

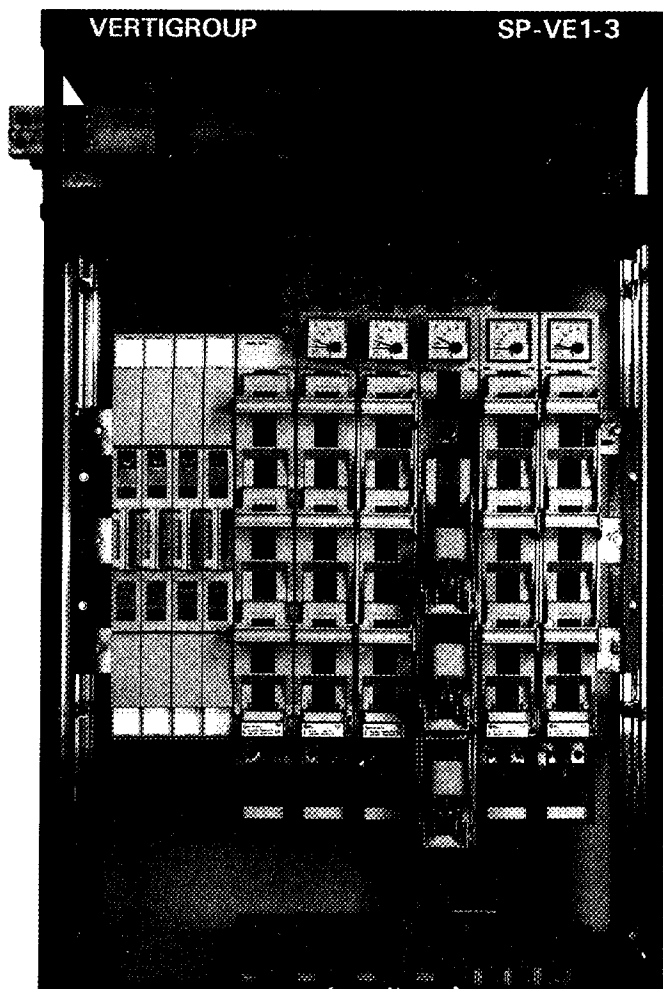
The width of size 00 is 50 mm, half a VERTIGROUP of size 250 - 630 A. The length with or without cable cover is the same as for size 1-3.

User-friendly solutions from planning through to installation are the main benefits of this VERTIGROUP range of products.

The range is only available with single phase switching.

Standard design

- Includes mounted cable cover.
- Label holder in connection area.
- Single-pole switching only.
- Silver-plated contacts with additional stainless spring.
- Ready for installation of cover panel mountings.
- Input terminal for M8 screws.
- Terminal bolts available in stainless or rustproofed.



Product advantages

- Easy installation of current transformer with no additional space required
- Inputs and outputs can be connected with top section in position. Assembly when «live» is possible
- Top or bottom entry, as desired. Easy conversion by the user
- Safe switching with removable user friendly handles
- Easy to install owing to the optimally designed terminal space
- Unbreakable phase barriers between the connections
- Reliable, silver-plated Cu contact heads with rustproof separate springing
- Voltage test facility through moving contact cover or sliding window

«Top quality products»

VERTIGROUP is the result of many years experience with switchgear. The latest development and production methods guarantee the high technical quality of this range of products.

The program is characterised by its modern design and colour as well as easy handling.

The most stringent safety requirements are fulfilled and user-friendly operation guaranteed through close cooperation with specialists in practical applications.

The program covers:

- LV-HRC Fuse-Switch
- LV-HRC double Fuse-Switch
- LV-HRC Fuse-Rail
- Disconnectors 1000 and 2000 A
- Busbars, sectionalised
- Side connections
- Connections at rear
- Busbar systems

In addition, practical accessories help users solve problems quickly and easily.

Further product features

- LV-HRC Fuse-Switch can be connected for single or 3-pole switching.
- Park positions correspond to clearly isolated positions.
- Cover easily removed.
- Good touch protection against live parts.
- Clear, durable and universal phase references.
- On request, completely rustproof switch strips for extreme conditions.
- Mechanical mounting of VERTIGROUP units on earthed support rails is possible.
- Ready for installation of cover panel mountings.

VERTIGROUP DIN 00

160 A 100 mm



V00-S
V00-SR*
Cable lug
max. 95 mm²
12 Nm



V00-C
V00-CR*
Cu 6 - 95 mm²
3 Nm



V00-A
V00-AR*
Cu 10 - 95 mm²
Al 50 - 120 mm²
3 Nm

Type

*rustproof

Cable size

Tightening torque

VERTIGROUP DIN 00

160 A 185 mm



V00-S
V00-SR*
Cable lug
max. 95 mm²
12 Nm



V00-B
Cu 4 - 95 mm²
3 Nm



V00-A
V00-AR*
Cu 10 - 95 mm²
Al 50 - 120 mm²
3 Nm

Type

*rustproof

Cable size

Tightening torque

VERTIGROUP

250 - 630 A

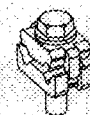
«C» connection



V-S
V-SR*
Cable lug
max. 240 mm²



V-B
V-BR*
Cu 16 - 240 mm²



V-D Single core
V-FZ Twin core
Al sm 35 - 150 mm²
Al se 50 - 185 mm²
Cu rm 35 - 70 mm²
Cu re 35 - 50 mm²
V-D 35 Nm
V-FZ 20 Nm

Type

*rustproof

Cable size

Tightening torque



V-AFR 1000
max. 2 x 300 mm²

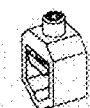
Type

Clamp area

VERTIGROUP

250 - 630 A

«V» connection



V-V
Al sm 50 - 185 mm²
Al se 70 - 240 mm²
22 Nm

Type

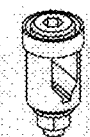
Cable size

Tightening torque

VERTIGROUP

250 - 630 A

«L» connection



V-A
Al sm 50 - 150 mm²
Al sm 25 - 120 mm²
25 Nm

Type

Cable size

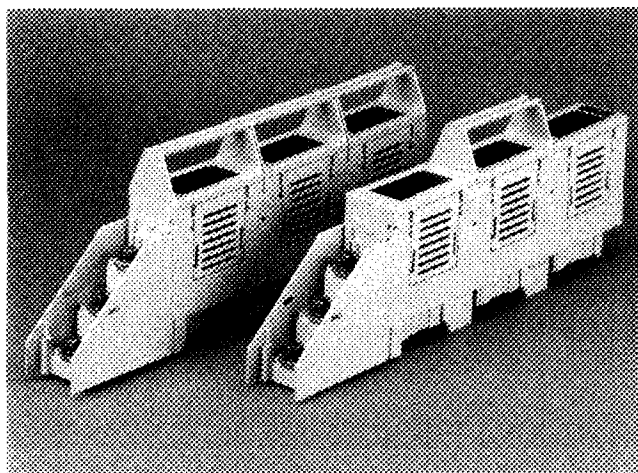
Tightening torque

Tightening torque, input:
Order details

160 A 100 mm
page 27
page 14/15

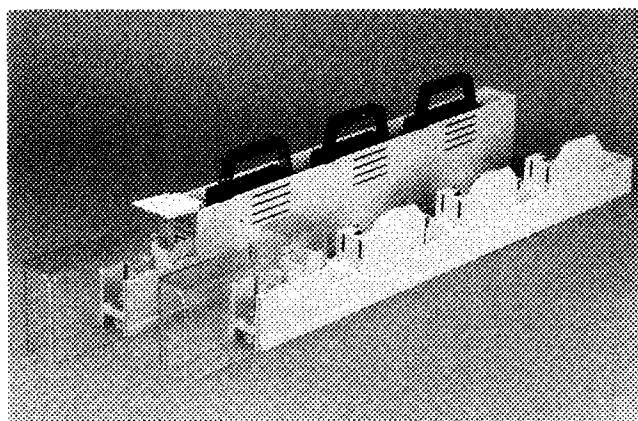
160 A 185 mm
page 27
page 16/17

250 - 630 A
page 28
page 24-25



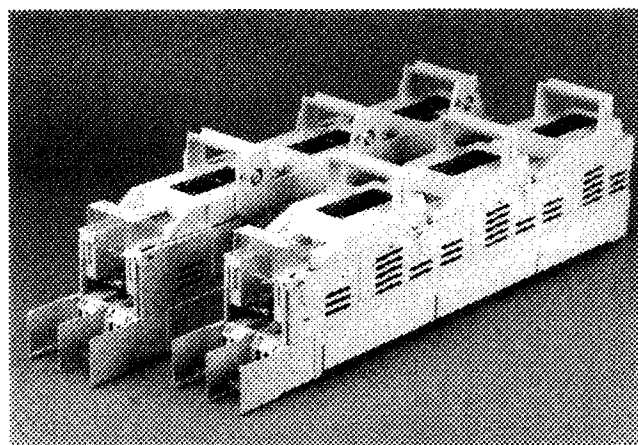
VERTIGROUP DIN 00 160 A 100 mm

- 1- or 3-pole switching
- Busbar mounting 100 mm (185 mm with adapter)
- Also available as fuse-rail
- Current transformer installation
- Electronic fuse monitoring
- Rustproof terminal screws fitted



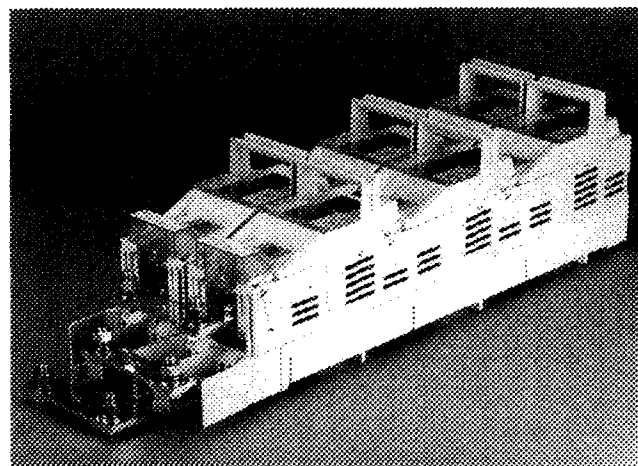
VERTIGROUP DIN 00 160 A 185 mm

- 1-pole switching only
- Busbar mounting 185 mm
- Also available as fuse-rail
- Outgoing cable connections not included (order separately)



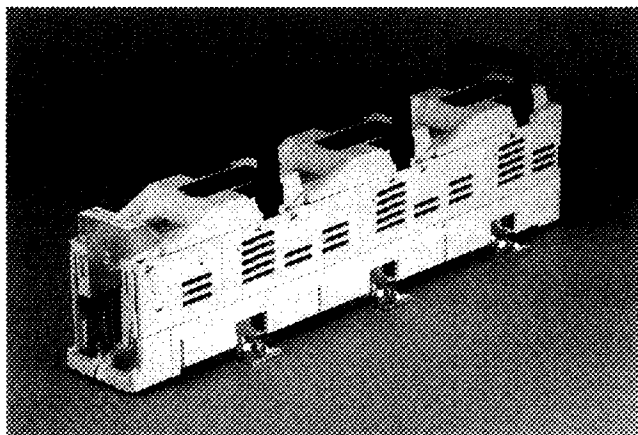
VERTIGROUP 250 - 630 A

- 1- or 3-pole switching
- Standard busbar mounting 185 mm
- Outgoing C, V and L connections
- Also available as fuse-rail
- Current transformer installation
- Outgoing screw connections
- Cable cover available



LV-HRC double Fuse-Switch

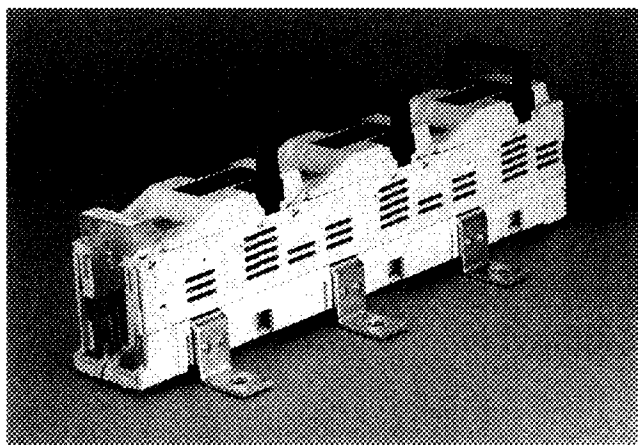
- Switchable single pole for 800 and 1260 A
- 100 mm spacing (120 mm on request)
- Connection up to 3 x 300 mm²
- Connection at bottom or top, reversible on site
- Terminal bolts fitted
- Cable cover available



Busbar sectionalization

- Installation spacing 100 mm
- Switchable single or 3-pole up to 630 A
- Connection at left or right, reversible on site

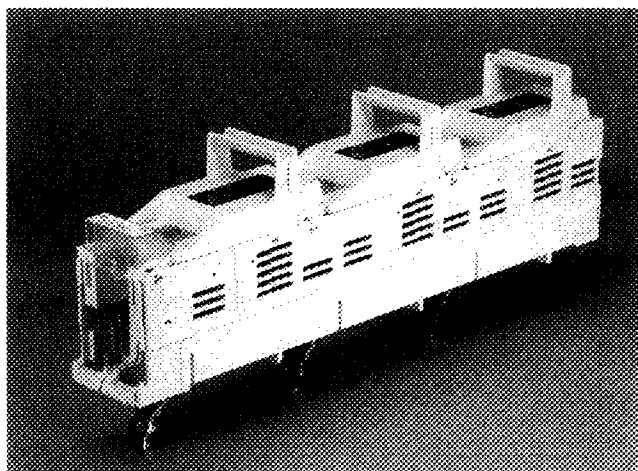
Fig.: Disconnecter 1000 A



Connection at side

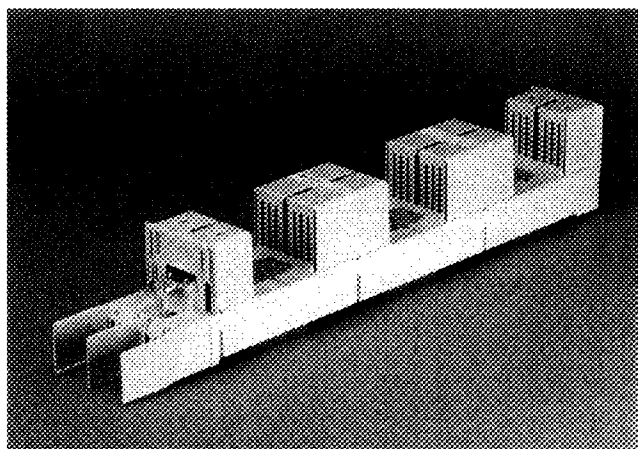
- 1-pole switching
 - Connection at left or right, reversible on site
 - The design is available for 630 A as well as disconnecter 1000 A
- Special designs with off-load contacts at bottom available on request

Fig.: Disconnecter 1000 A



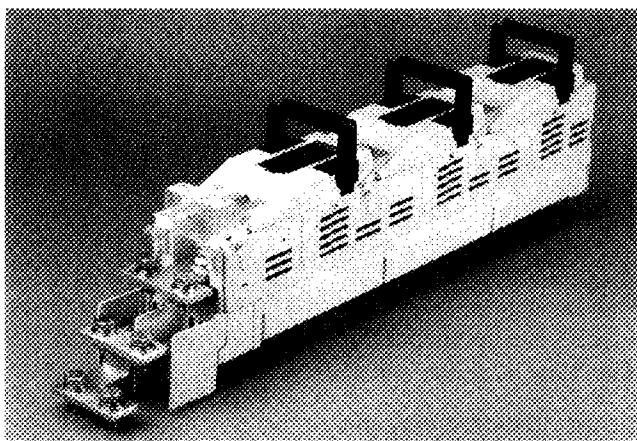
Rear connection

- Available for outputs at rear or also inputs at rear
- Switchable single or 3-pole 400 and 630 A
- Switchable single pole fuse isolator 1000 A
- Output connections:
Size 2 and 3 with M12 hole
1000 A with M16 hole



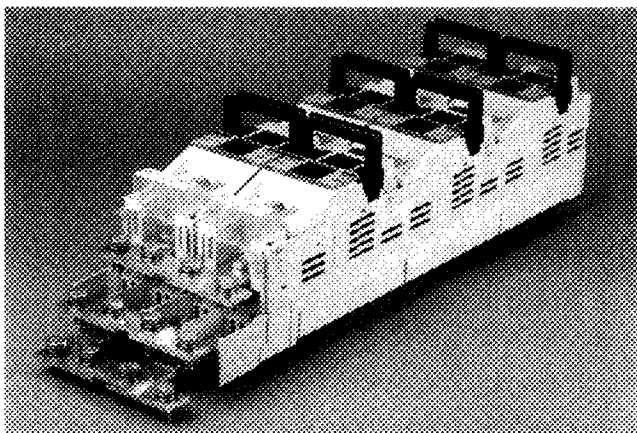
LV-HRC Fuse-Rail

- Unit width and contact system are the same as the LV-HRC Fuse-Switch
- Methods of connection as for LV-HRC Fuse-Switch
- Snap-on cable covers and labels
- Covers for fuse-links



Disconnector 1000 A

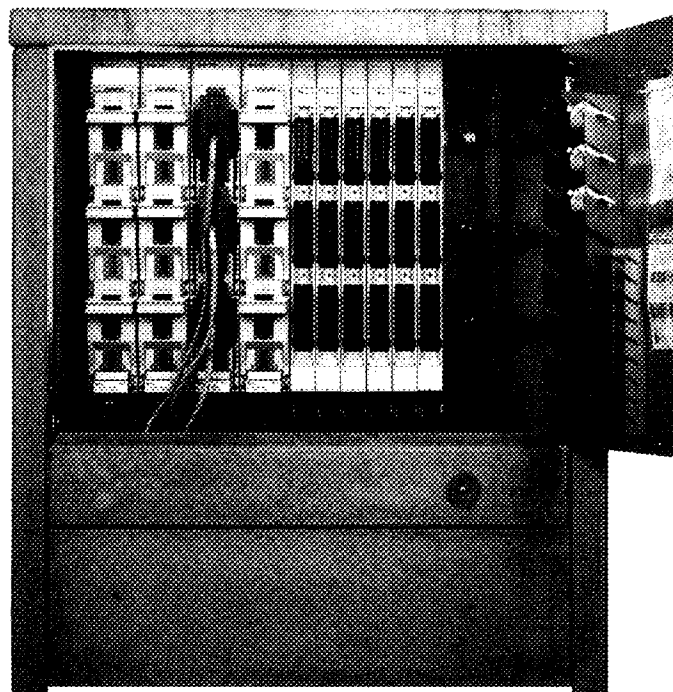
- Outputs at top or bottom, reversible on site
- Width 100 mm
- Connections 2 x 300 mm²
- Also available with current transformers
- Alternatives:
 - Busbar coupler
 - Side connection
 - Rear connection
- Terminal bolts fitted
- Cable cover available



Disconnector 2000 A

- One design each with output at bottom or top
- Spacing 100 mm
- Connection 4 x 240 mm²
- As version for busbar coupler
- Terminal bolts fitted
- Cable cover available

Earthing and short-circuit devices



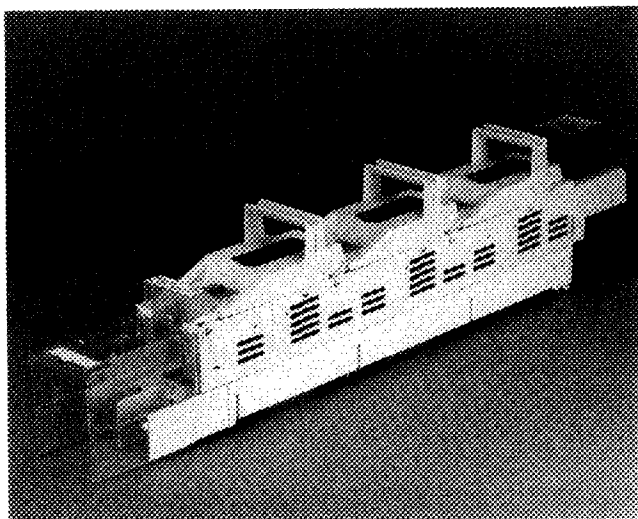
Product advantages

- **Reliable connections through multi-contact system**
- **Easy installation instructions**
- **Quick installation through plug-in fittings**
- **Easiest possible installation of fixed point earth socket with screws on PEN rails for even faster safer earthing**
- **Universal use for:**
 - DIN sizes 00 - 3
 - SEV sizes 2, 4, 6 and 6S**for LV-HRC Fuse-Rail, VERTIGROUP in-line switches, as well as SILAS and LV-HRC Fuse-Base**

A few turns of the hand for optimum safety

The 3-pole earthing device is suitable for use in open and sealed low voltage distribution systems, cable distribution booths etc. up to 1000 VAC. It is also used for earthing and short circuiting all three outputs on

LV-HRC Fuse-Switch, LV-HRC Fuse-Rail and LV-HRC Fuse-Base etc. No risk of voltage transfer or feedback through earthing or short circuit. This ensures the safety of personnel working on the system.



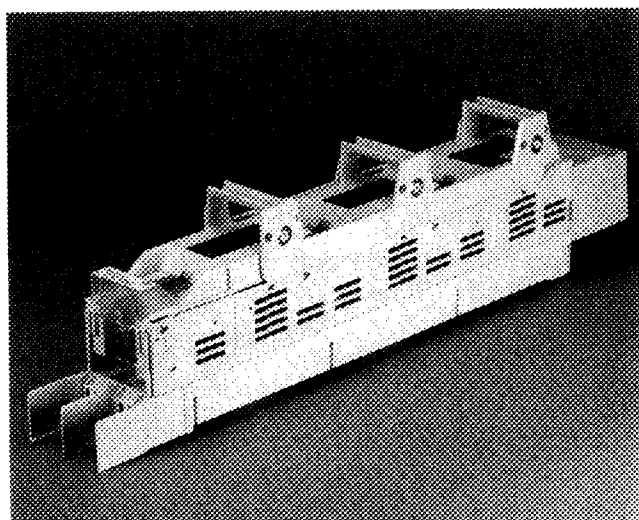
Current transformers

The super solution for:

- Internal industry measurements
- Power measurement with test meters or recorders
- Power optimisation for shutting off consumers under peak load conditions

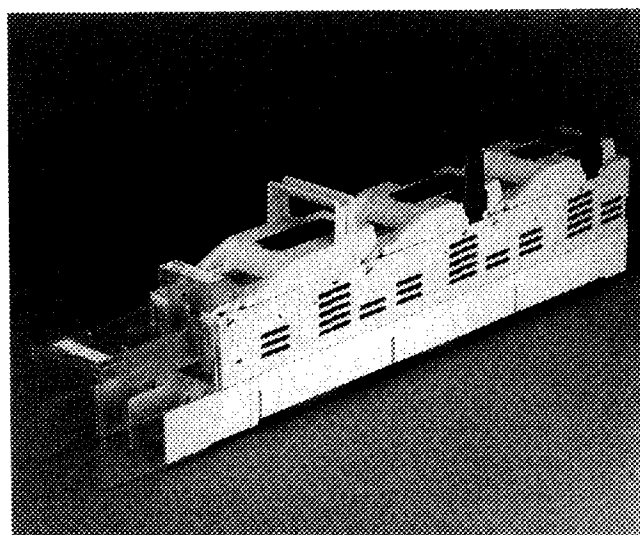
Measurements possible on one or three phases without power interruption. Inherently-safe current transformers now available in Class 0.5.

Current transformers can also be fitted directly to C profiles or upright busbars. Various brackets for test equipment and ordering information are shown on page 22.



Fuse monitors

- No wiring or wires in switch cover; fitted directly on VERTIGROUP
- Indicator lamp flashes on failure of one or two fuses
- Function test at any time through built-in test button
- Function test through remote test connections
- Label holder on front of fuse monitor
- No auxiliary power required

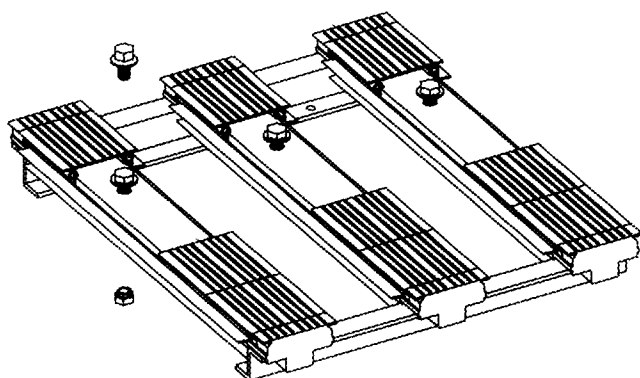


Coloured handles

Other colours are available for the handles in addition to the new light grey for switch covers and green for windows.

Red or black handles can now be ordered through the appropriate reference on page 21.

Refer to pages 20 and 21 for further special designs.



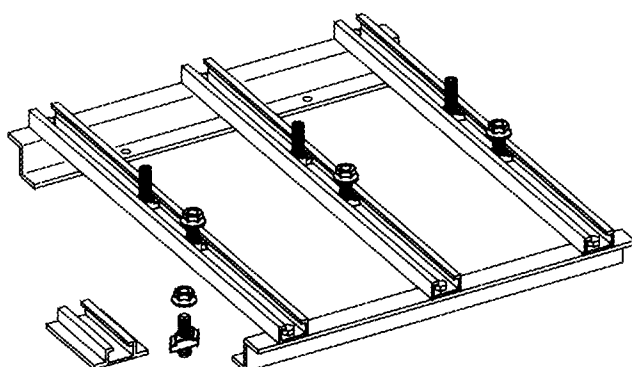
Flat busbars

- Commercially-available busbars
- M12 busbar insert nuts
- M12 screws with pressure washer
- Busbar protection cover
- Tested by KEMA

Further details: See price list

Test data:

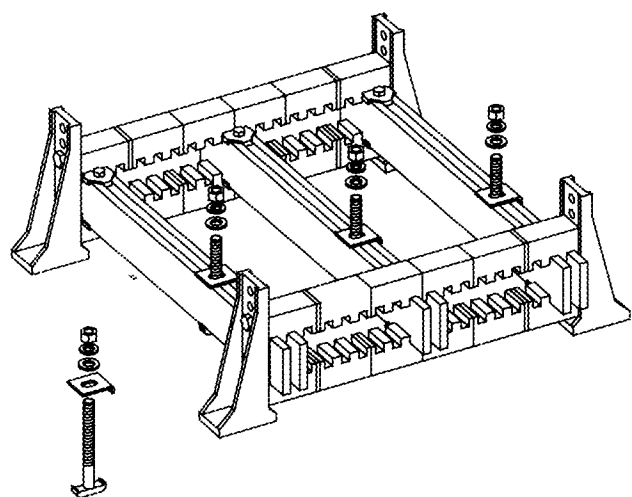
Rated operational current I_g	1000 A
Short-time r.m.s. current	35 kA - 1s
Peak current	73 kA



C profile

- Assembly without drilling
- Practical connection components
- Strong Cu profile, two sizes
- Easy to install

Further details: See price list



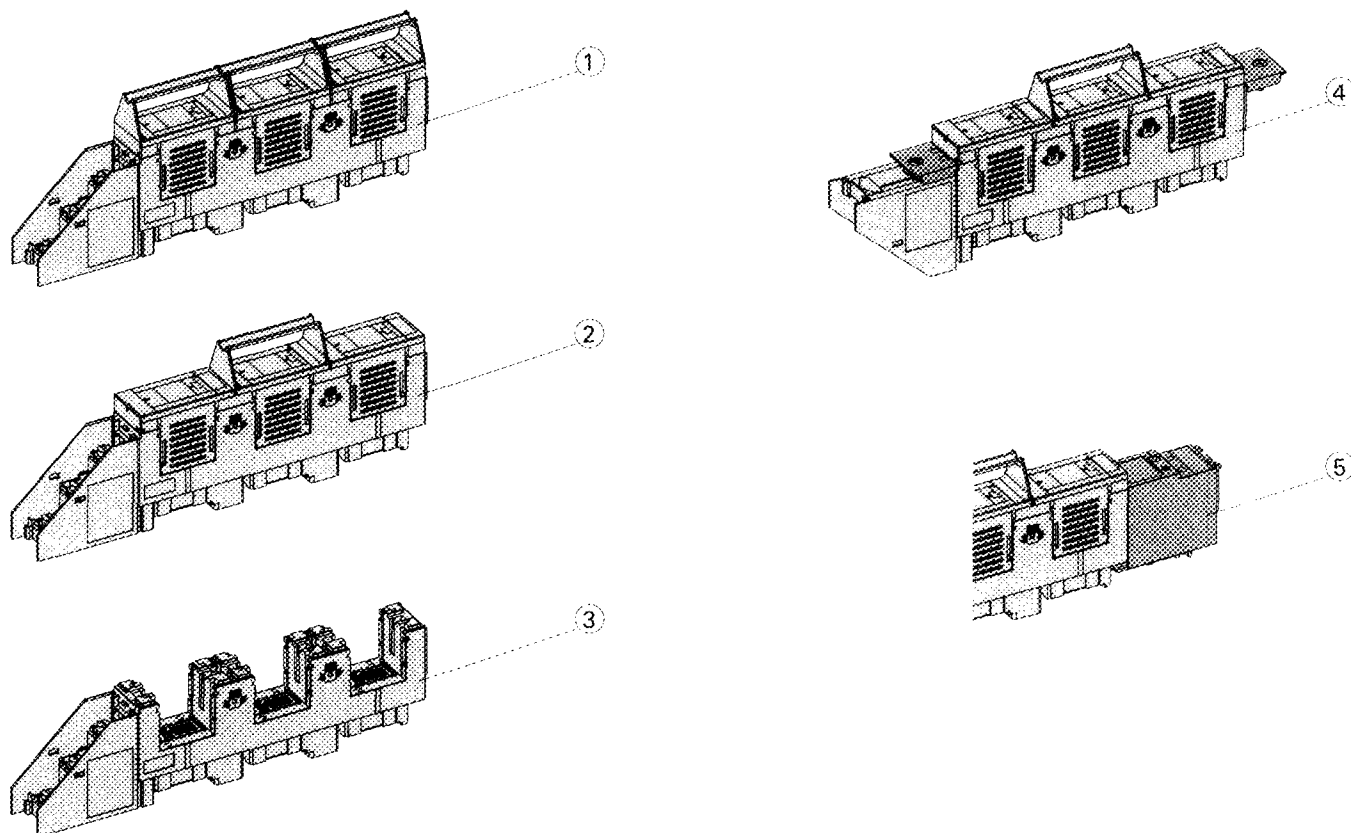
High current busbar systems

- Assembly without drilling
- Solution with hook head screws
- Up to 3000 A
- Tested by KEMA

Further details: See brochure E5.1

Test data	2000 A	2500 A	3000 A
Copper bus	2x60x10	2x80x10	2x100x10
Short-time rms current	70 kA-1s	70 kA-1s	70 kA-1s
Peak current	154 kA	154 kA	154 kA

Basic types



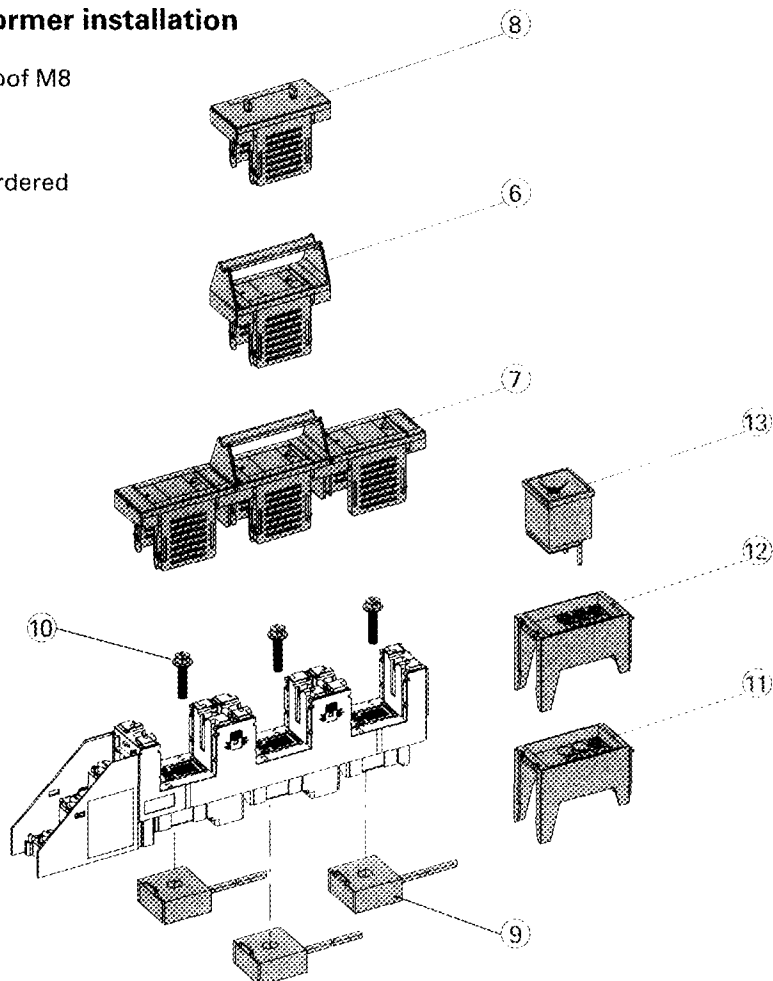
Accessories and current transformer installation

VERTIGROUP 00 are fitted with rustproof M8 screw connections.

Stainless or other connections to be ordered as follows:

Example: VE00-E / SR
VE00-E / CR
VE00-E / AR

See pages 14 and 15



Basic types

Description	I _e A	Size	Item No	Type	Pack	Weight
① LV-HRC Fuse-Switch 1-pole switching, stainless with M8 rustproof, terminal screws	160	DIN 00	708.101.010	VE00-E	1	
② 3-pole switching , stainless with M8 rustproof, terminal screws	160	DIN 00	708.102.010	VE00-P	1	
③ LV-HRC Fuse-Rail with touchproof, stainless with M8 rustproof, terminal screws	160	DIN 00	708.100.010	VE00-L	1	
④ LV-HRC Fuse-Switch for front mounting 3-pole switching with M8 rustproof, terminal screws	160	DIN 00	708.112.010	VE00F-P	1	
⑤ Fuse monitor electronic fuse monitor for VE00-E and VE00-P	160	DIN 00	708.701.010	*/SU	1	
⑥ Switch cover separate 1-pole switching	160	DIN 00	708.152.020	VE00-SE	3	
⑦ Switch cover separate 3-pole switching	160	DIN 00	708.153.020	VE00-SP	1	
⑧ Switch cover for low height Order with: VE00-L	160	DIN 00	708.154.020	VE00-SET	3	

Current transformer installation

⑨ Ratio	Power	Installed					
75/5 Class 3	1,5 VA	on L1	75	DIN 00	708.702.050	*/SE 75	1
		on L2	75	DIN 00	708.703.050	*/SZ 75	1
		on L1, L2, L3	75	DIN 00	708.704.050	*/SD 75	1
100/5 Class 1	2 VA	on L1	100	DIN 00	708.702.030	*/SE 100	1
		on L2	100	DIN 00	708.703.030	*/SZ 100	1
		on L1, L2, L3	100	DIN 00	708.704.030	*/SD 100	1
160/5 Class 1	3,75 VA	on L1	160	DIN 00	708.702.010	*/SE 160	1
		on L2	160	DIN 00	708.703.010	*/SZ 160	1
		on L1, L2, L3	160	DIN 00	708.704.010	*/SD 160	1
⑩ Screw connection for CT M8x40					708.123.010	V00-SW	3
⑪ Ammeter holder		single phase		DIN 00	708.139.010	V00-AHE	1
⑫ Ammeter holder		3-phase		DIN 00	708.139.020	V00-AHD	1
⑬ Ammeter Plug-in type (with time delay)			75	DIN 00	708.140.040	V00-A75	1
			100	DIN 00	708.140.030	V00-A100	1
			160	DIN 00	708.140.010	V00-A160	1

* = Basic type

Accessories

Extension cover to match
• VERTIGROUP 250 - 2000 A

• fuse monitor and ammeter
design

for flat busbars
5 - 10 mm

Standard M8
rustproof

Cable connections
see page 6

for sealing

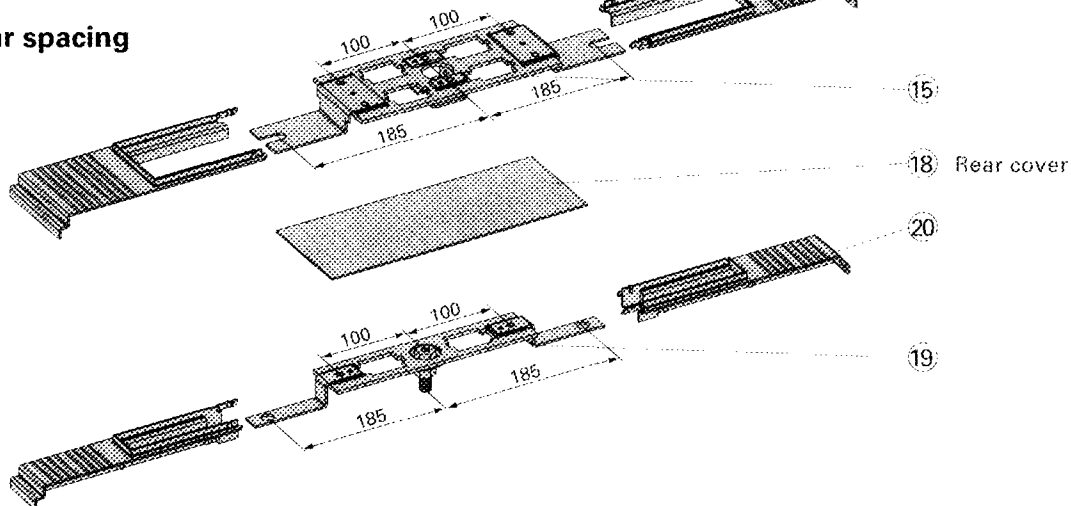
Hole $\varnothing$ 10,25

Busbar system 100 mm

14

for 20 x 5
20 x 10
30 x 5
30 x 10

Adapter for busbar spacing 185 mm



Accessories

Description	Item No	Type	Pack	Weight
① Screw connection M8 with pressure washer, rustproof stainless	708.121.010 708.121.020	V00-S V00-SR	3 3	
② Clamp connector for Cu-conductor, rustproof stainless	708.120.010 708.120.020	V00-C V00-CR	3 3	
③ Clamp connector for Al- and Cu-conductor, rustproof stainless	708.122.010 708.122.020	V00-A V00-AR	3 3	
④ Input clamp for flat bars (max 40x10 mm busbar)	708.125.010	V00-EK	3	
⑤ Cabel cover	708.138.010	V00-KU	1	
⑥ Label holder with nameplate	708.137.010	V00-BT	1	
⑦ Engraving plate	708.144.010	V00-GST	10	
⑧ Side protection cover	708.151.010	V00-AB	2	
⑨ Mounting clamp	706.914.010	V-AW	4	
⑩ Lead seal holder (for position 5)	708.147.010	V00-PT	4	

Busbar system, 100 mm spacing

⑪ Insulated profile , length 1.8 m	206.001.010	V-ITP	1	
⑫ Insulated support , spacing 100 mm, 3-pole	708.180.010	00-IT	1	
⑬ M8 insert nut for insulated carrier	706.933.010	V-M8		
⑭ Busbar support, 3phase (max 30x10 mm busbar)	908.161.010	TN630/3-R10	2	

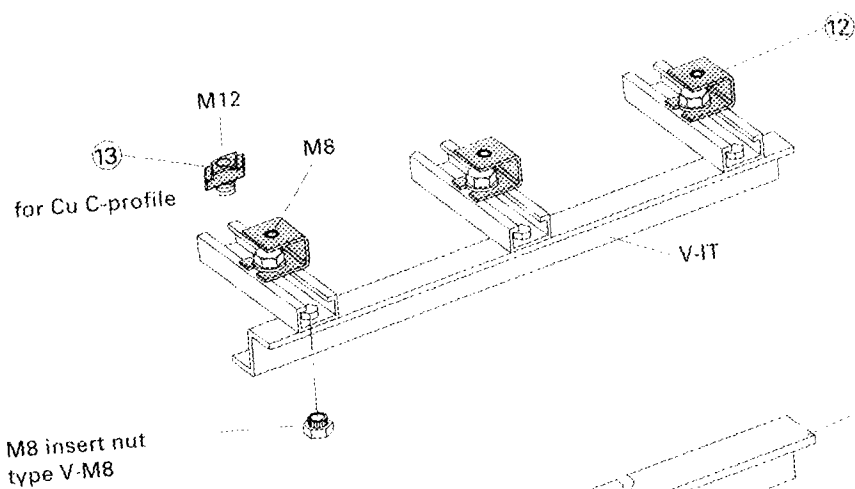
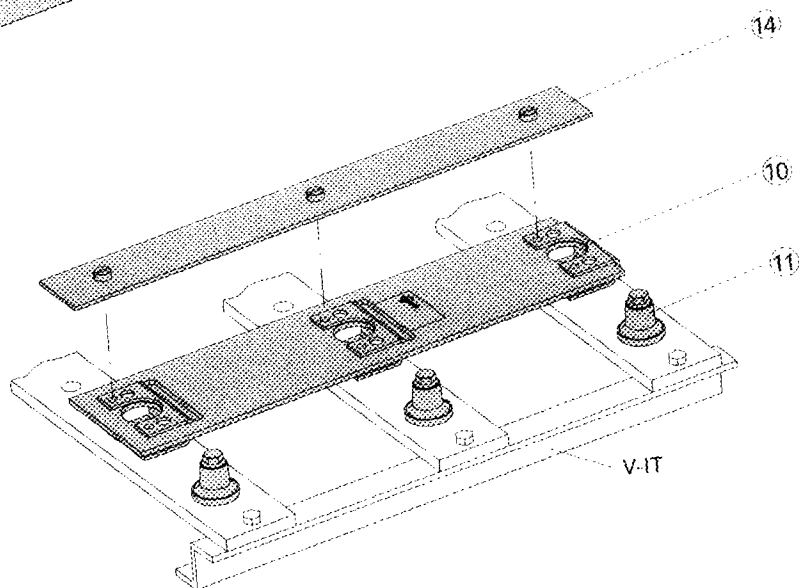
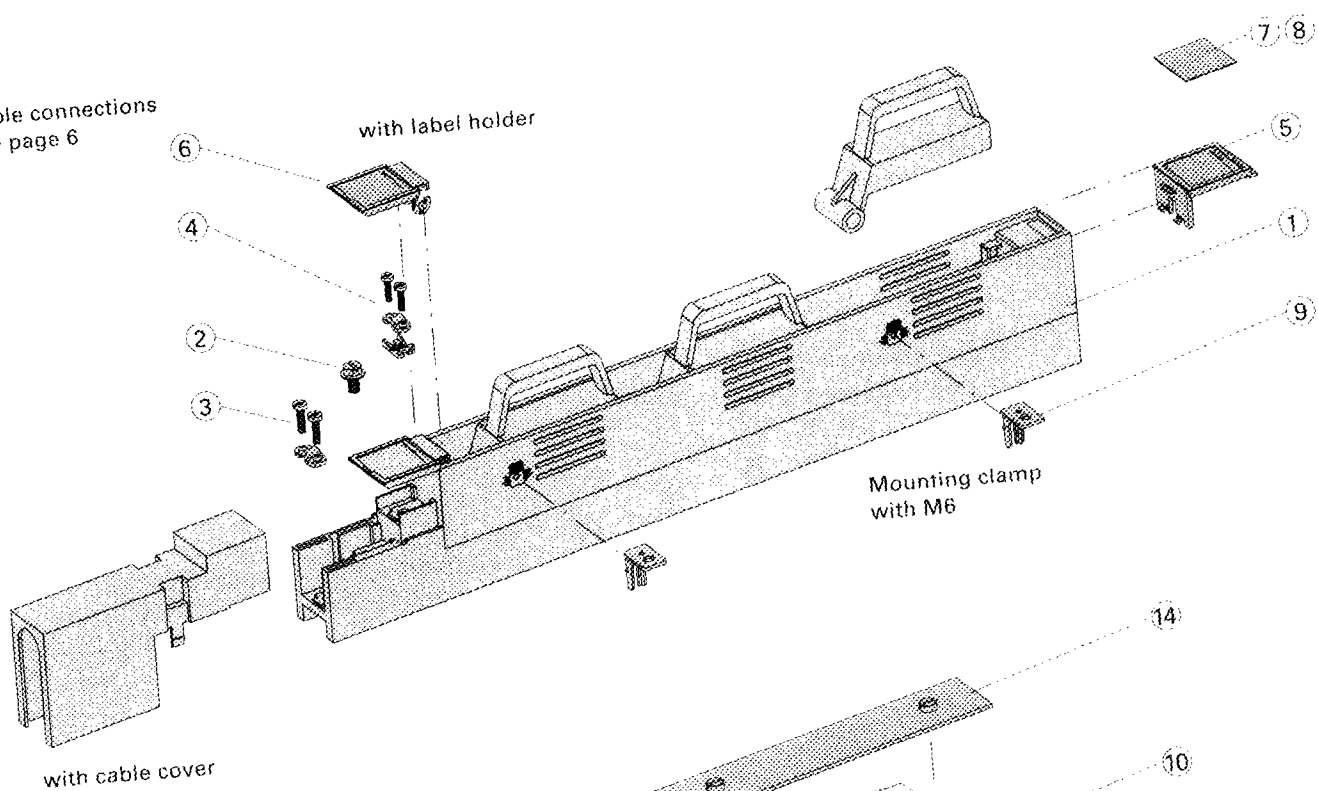
Adapters for 185 mm busbar mounting

⑮ Double adapter stainless with M8 thread, without fixing screws	708.130.010	V00-DAG	1	
⑯ Protection cover for double adapter	708.134.010	V00-BDA	Set	
⑰ Single cover for double adapter, width 50 mm	708.146.010	V00-BEG	2	
⑱ Rear cover panel for double adapter	708.135.010	V00-RA	2	
⑲ Single adapter stainless with thread M8, without fixing screws	708.131.010	V00-EAG	1	
⑳ Protection cover for single adapter	708.133.010	V00-BEA	Set	

Extension covers to match 250 to 2000 A

⑲ Extension cover to match VERTIGROUP 250 to 2000 A	708.136.010	V00-AOU	1P	
⑳ Extension cover to match fuse monitor and ammeter mounting	708.150.010	V00-POU	1P	

Cable connections
see page 6



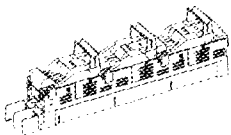
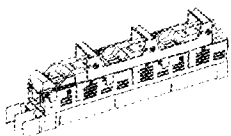
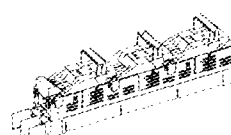
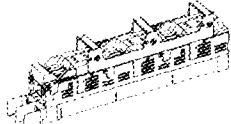
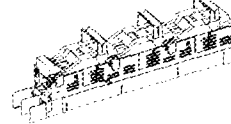
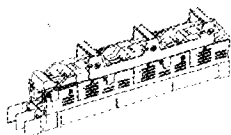
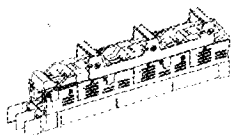
Insulated profile
V-ITP 1,8 m

LV-HRC Fuse-Switch DIN 160 A 185 mm

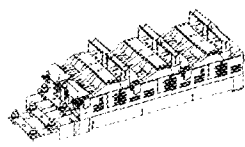
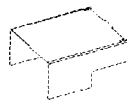
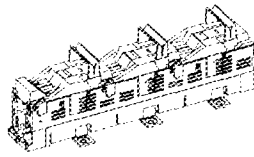
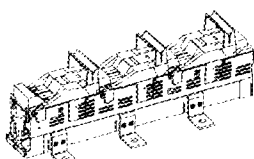
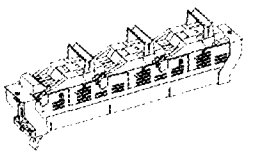
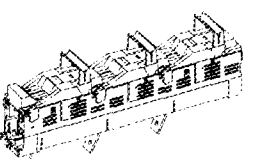
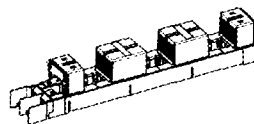
Description	I _e A	Size	Item No	Type	Pack	Weight
For busbar system 185 mm						
① LV-HRC Fuse-Switch						
1-pole switching with cable cover						
stainless	160	DIN 00	908.170.010	VER00-E185	1	
rustproof	160	DIN 00	908.171.010	VE00-E185	1	
Connection materials packed separately						
② Screw connection M8						
with spring washer, rustproof			708.121.010	V00-S	3	
stainless			708.121.020	V00-SR	3	
③ Clamp connector						
for Cu-conductor			708.175.010	V00-B	3	
④ Clamp connector						
for Al- and Cu-conductor, rustproof			708.122.010	V00-A	3	
stainless			708.122.020	V00-AR	3	
Accessories						
⑤ Label holder, top mounting			708.173.010	V00-BT185	5	
⑥ Label holder, bottom mounting			908.900.002	V00-BF185	5	
⑦ Label			708.143.010	V00-BST	10	
⑧ Engraving plate			708.144.010	V00-GST	10	
⑨ Mounting clamp			706.914.010	V-AW	4	
Adapter						
⑩ Double adapter						
stainless, with M8 thread,			708.171.010	V00-DR185	1	
without fixing screws						
⑪ Single adapter						
for flat bar, with M8 thread,			708.172.010	V00-ER185	Set	
with fixing screw, set of 3						
⑫ Single adapter						
for C-rails with M12 thread,			708.181.010	V00-EA185	Set	
with fixing screw, set of 3						
⑬ Sliding nut						
for CU C-profile with M12 thread			706.990.040	V00-GM12R	3	
⑭ Single protection cover						
for double adapter			708.174.010	V00-BE185	2	

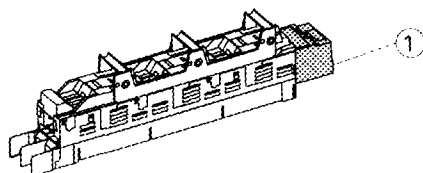
LV-HRC Fuse-Switch 250 - 630 A

«Basic types»

	Description	I _e A	Size	Item No	Type	Pack	Weight
	C-connection						
	LV-HRC Fuse-Switch						
	1-pole switching,						
	with C-connection and M12	250	DIN 1	706.110.000	VE1-C-E	1	
	terminal screws	400	DIN 2	706.210.000	VE2-C-E	1	
		630	DIN 3	706.310.000	VE3-C-E	1	
	LV-HRC Fuse-Switch						
	1-pole switching, stainless						
	with C-connection and M12	400	DIN 2	706.210.010	VER2-C-E	1	
	terminal screws	630	DIN 3	706.310.010	VER3-C-E	1	
		400	SEV 4	706.410.010	VER4-C-E	1	
		600	SEV 6S	706.510.010	VER6-C-E	1	
	LV-HRC Fuse-Switch						
	3-pole switching,						
	with C-connection and M12	250	DIN 1	706.120.000	VE1-C-P	1	
	terminal screws	400	DIN 2	706.220.000	VE2-C-P	1	
		630	DIN 3	706.320.000	VE3-C-P	1	
	LV-HRC Fuse-Switch						
	3-pole switching, stainless						
	with C-connection and M12	400	DIN 2	706.220.010	VER2-C-P	1	
	terminal screws	630	DIN 3	706.320.010	VER3-C-P	1	
		400	SEV 4	706.420.010	VER4-C-P	1	
		600	SEV 6S	706.520.010	VER6-C-P	1	
	L-connection						
	LV-HRC Fuse-Switch						
	1-pole switching,						
	with L-connection	400	DIN 2	706.210.100	VE2-L-E	1	
		630	DIN 3	706.310.100	VE3-L-E	1	
	LV-HRC Fuse-Switch						
	3-pole switching,						
	with L-connection	400	DIN 2	706.220.100	VE2-L-P	1	
		630	DIN 3	706.320.100	VE3-L-P	1	
	V-connection						
	LV-HRC Fuse-Switch						
	1-pole switching,						
	with V-connection	400	DIN 2	706.210.200	VE2-V-E	1	
		630	DIN 3	706.310.200	VE3-V-E	1	
	LV-HRC Fuse-Switch						
	1-pole switching, stainless						
	with V-connection	400	DIN 2	706.210.210	VER2-V-E	1	
		630	DIN 3	706.310.210	VER3-V-E	1	
	LV-HRC Fuse-Switch						
	3-pole switching,						
	with V-connection	400	DIN 2	706.220.200	VE2-V-P	1	
		630	DIN 3	706.320.200	VE3-V-P	1	

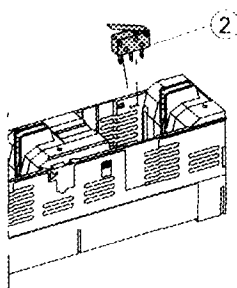
LV-HRC Fuse-Switch 250 - 1260 A
«Basic types»

	Description	I _e A	Size	Item No	Type	Pack	Weight
	LV-HRC double Fuse-Switch						
	1-pole switching, stainless						
	Output at bottom	800	DIN 2	706.250.010	VERD2	1	
	Output at bottom	1260	DIN 3	706.350.010	VERD3	1	
	(can be reversed for output at top)						
	Cable cover						
	for outputs at bottom			706.917.040	V-KU 1260	1	
	for outputs at top			706.917.050	V-KO 1260	1	
	Busbar sectionalization						
	Width 100 mm						
	1-pole switching, stainless	630	DIN 3	706.310.910	VER3-SL-E	1	
	3-pole switching, stainless	630	DIN 3	706.320.910	VER3-SL-P	1	
	Connection at side						
	not at busbar height						
	1-pole switching, stainless	630	DIN 3	706.610.818	VER3-SA-E	1	
	Front mounting						
	LV-HRC Fuse-Switch						
	for front mounting, 1-pole switching	400	DIN 2	706.260.000	VE2-FE-E	1	
		630	DIN 3	706.360.100	VE3-FE-E	1	
	LV-HRC Fuse-Switch						
	for front mounting, 3-pole switching	400	DIN 2	706.270.100	VE2-FE-P	1	
		630	DIN 3	706.370.100	VE3-FE-P	1	
	Connection at rear						
	Busbar connection, with through hole,	400	DIN 2	706.210.710	VER2-AR-E	1	
	1-pole switching, stainless	630	DIN 3	706.310.710	VER3-AR-E	1	
	3-pole switching, stainless						
	Output: Through hole for M12 or	400	DIN 2	706.220.210	VER2-AR-P	1	
	V-B clamp connection	630	DIN 3	706.320.710	VER3-AR-P	1	
	LV-HRC Fuse-Rail with C-connection	400	DIN 2	706.240.000	VL2-C	1	
		630	DIN 3	706.340.000	VL3-C	1	



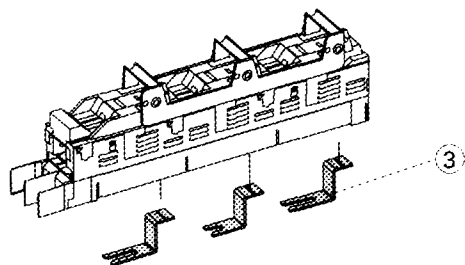
Fuse monitor

No wiring and switch cover clear of wires; installed directly onto VERTIGROUP.
Label holder on fuse monitor.



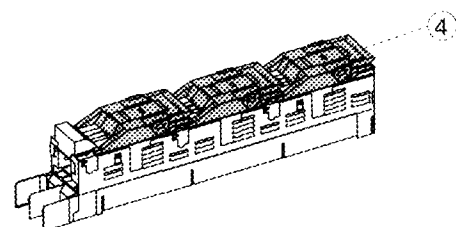
Position indicator

Position indicator for switch cover, can be fitted to single and 3-pole fuse switches. Switch cover operates the built-in microswitch. With open and normally closed contact.



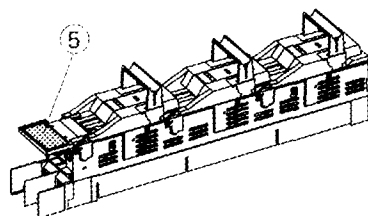
Spacing 178 - 210 mm

For systems not matching the standard busbar spacing 185 mm. This type fits busbar spacings of 178 to 210 mm.



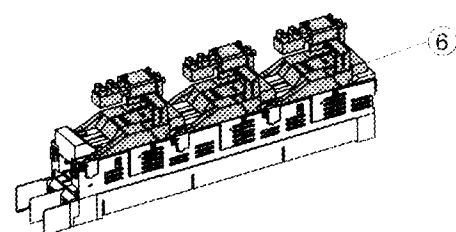
Folding handle for low installed height

This hinged handle was developed for limited installation heights often encountered in practical applications. The height can be reduced by 43 mm in comparison to standard unit.



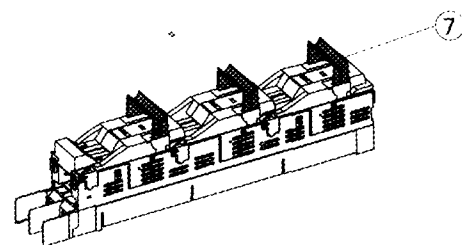
Label holder

A large flat label holder is fitted on this design in place of the label cover. It is the same size as the V-BT.



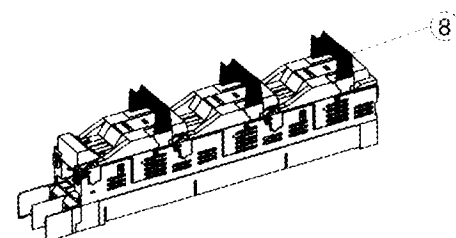
Piggyback

The VERTIGROUP is designed so that piggyback fuses can be inserted in the switch cover. Ideal when connection space is tight.



Red handle

The VERTIGROUP is fitted with a red handle, e.g. at emergency points.



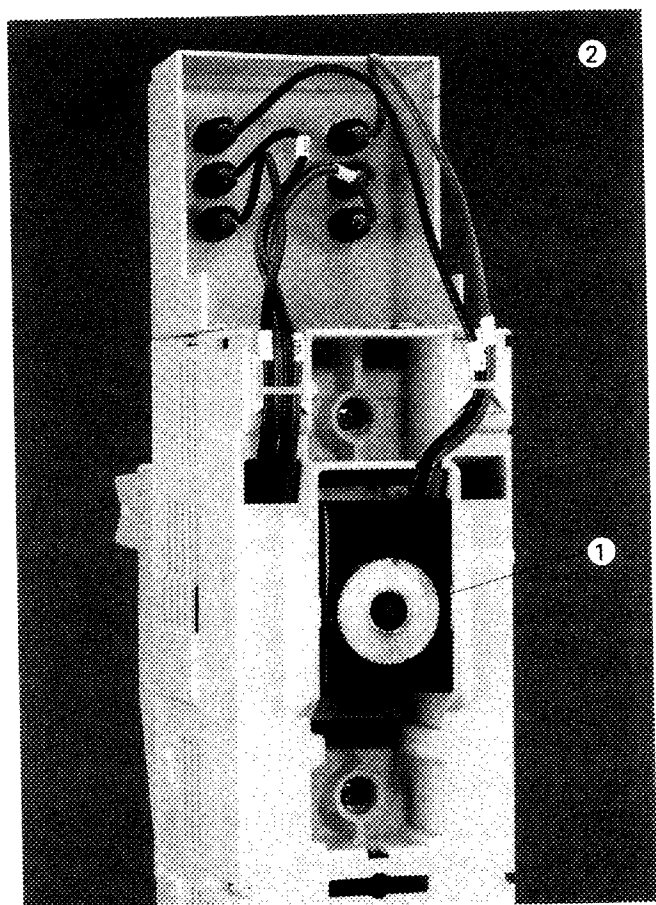
Black handle

The VERTIGROUP is fitted with a black handle, e.g. with isolating blades.

VERTIGROUP 250 - 630 A special designs

Description	I _e A	Size	Item No	Type	Pack	Weight
① Fuse monitor Electronic fuse monitor	250-630	DIN 1, 2, 3 SEV 4, 6S	706.804.010	*/SU		
② Position indicator Switch cover position indicator with built-in microswitch, rated current max. 5 A 250 V~ Connection 2,8 x 0,5						
1-pole switching (3 pieces)	250-630	DIN 1, 2, 3 SEV 4, 6S	706.805.010	*/SA1		
3-pole switching (1 piece)	250-630	DIN 1, 2, 3 SEV 4, 6S	706.805.030	*/SA3		
③ Spacing 178-210 mm LV-HRC Fuse-Switch for busbar spacing 178-210 mm	400/630	DIN 2, 3	706.803.010	*/US		
④ Folding handle for low installed height 3 hinged handles fitted on LV-HRC Fuse-Switch	250-630	DIN 1, 2, 3 SEV 4, 6S	706.806.010	*/K		
⑤ Label holder Large label holder in connection area instead of label cover	250-630	DIN 1, 2, 3 SEV 4, 6S	706.816.010	*/BA		
⑥ Piggyback LV-HRC Fuse-Switch with switch cover for piggyback fuses	400/630	DIN 2, 3	706.809.010	*/HR		
⑦ Red handle LV-HRC Fuse-Switch fitted with red handles Price for 3 handles			706.807.010	*/RG		
⑧ Black handle LV-HRC Fuse-Switch fitted with black handles Price for 3 handles			706.808.010	*/SG		

* = Basic type



Current transformer installed from the rear

Proven Design

- Installation with no additional space required
- Easy to install
- Phase selection with no power interruption
- Patented solution

Further product features

Ammeters can be Fixed or Plug-in type using the various mountings available.

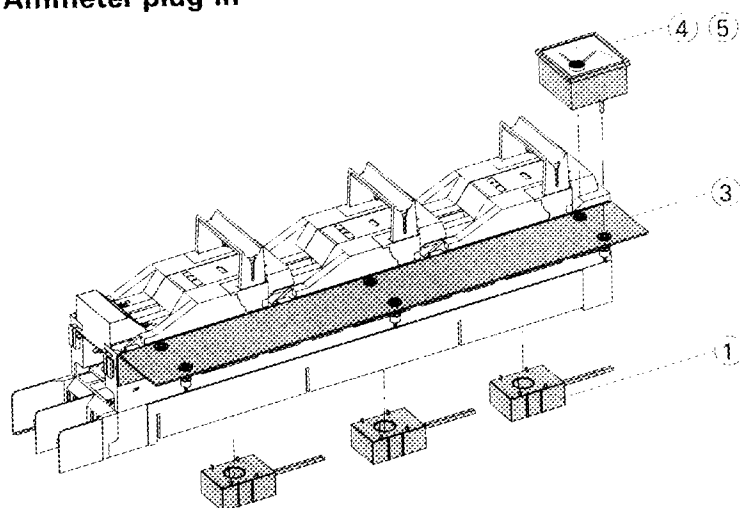
Current transformers can be installed on one (L1 or L2) or three phases. Transformers are inherently-safe, i.e. made for open circuit.

New: Ammeters now available with lower measurement ranges. See item 5.

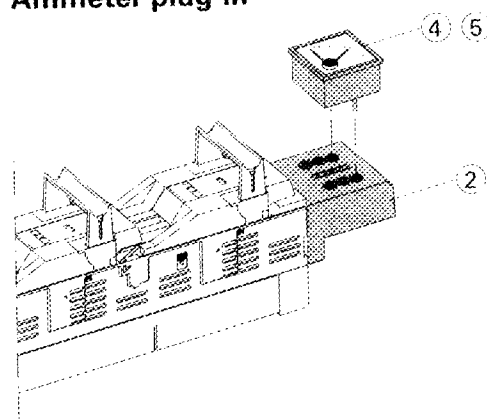
When these special ammeters are used the transformer can be fitted for the rated current of the fuse switch while the ammeters matches the actual current required.

Current transformers in class 0.5 available on request.

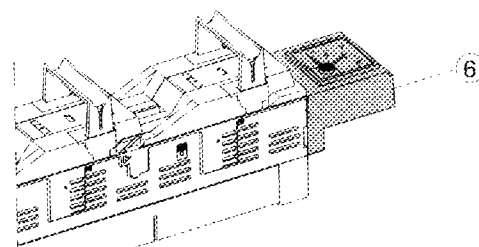
Ammeter plug-in



Ammeter plug-in



Ammeter fixed



Current transformer installation with LV-HRC Fuse-Switch

Description	I _e A	Size	Item No	Type	Pack	Weight
① Ratio Power Installed	100/5 Class 1 2 VA on L1 on L2 on L1, L2, L3	100	706.813.010	*/SE 100	1	
		100	706.814.010	*/SZ 100	1	
		100	706.815.010	*/SD 100	1	
	160/5 Class 1 2,5 VA on L1 on L2 on L1, L2, L3	160	706.813.030	*/SE 160	1	
		160	706.814.030	*/SZ 160	1	
		160	706.815.030	*/SD 160	1	
	250/5 Class 1 3,75 VA on L1 on L2 on L1, L2, L3	250	706.801.010	*/SE 250	1	
		250	706.812.010	*/SZ 250	1	
		250	706.802.010	*/SD 250	1	
	400/5 Class 1 3,75 VA on L1 on L2 on L1, L2, L3	400	706.801.020	*/SE 400	1	
		400	706.812.020	*/SZ 400	1	
		400	706.802.020	*/SD 400	1	
	600/5 Class 1 5 VA on L1 on L2 on L1, L2, L3	600	706.801.030	*/SE 600	1	
		600	706.812.030	*/SZ 600	1	
		600	706.802.030	*/SD 600	1	

current transformer.../1 A on request

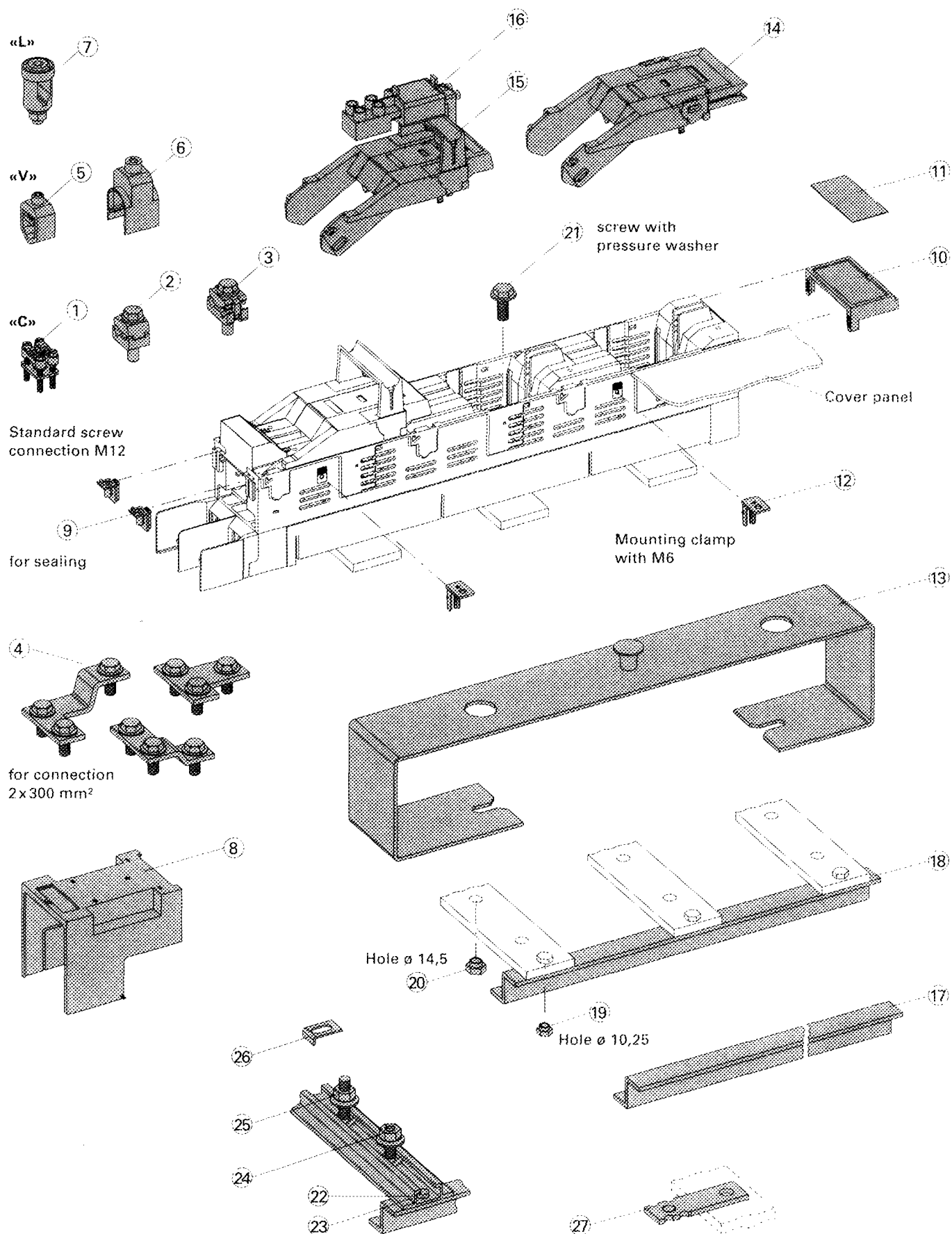
Ammeters and mountings

② Plug-in ammeter cover for LV-HRC Fuse-Switch and Disconnecter	single phase		706.940.010	V-AHE	1	
	3-phase		706.940.020	V-AHD	1	
③ Ammeter cover for three ammeters, side mounting			706.964.010	V-ADH	1	
④ Ammeter Bimetallic ammeter (15 min delay) with a maximum demand indicator, Plug-in type	100		706.945.060	V-MA 100	1	
	160		706.945.070	V-MA 160	1	
	250		706.945.010	V-MA 250	1	
	400		706.945.020	V-MA 400	1	
	600		706.945.030	V-MA 600	1	
	1000		706.945.040	V-MA 1000	1	
⑤ Ammeter «NEW» As above but for lower measurement ranges Measurement range Current transformer	160 A 250 A		706.960.050	V-MA 160-250	1	
	250 A 400 A		706.960.040	V-MA 250-400	1	
	250 A 600 A		706.960.010	V-MA 250-600	1	
	400 A 600 A		706.960.020	V-MA 400-600	1	
	600 A 1000 A		706.960.030	V-MA 600-1000	1	
⑥ Ammeter Bimetallic ammeter with time delay and a maximum demand indicator, recessed in the ammeter mounting	100		706.985.060	V-M 100	1	
	160		706.985.070	V-M 160	1	
	250		706.985.010	V-M 250	1	
	400		706.985.020	V-M 400	1	
	600		706.985.030	V-M 600	1	
	1000		706.985.040	V-M 1000	1	

* = Basic type

Terminal arrangements and accessories

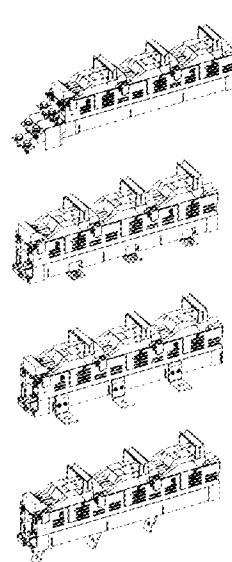
Cable connections
see page 6



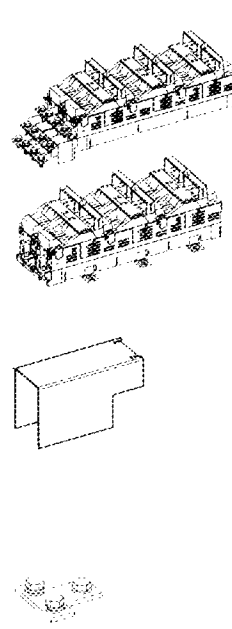
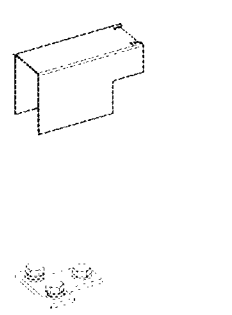
Terminal arrangements and accessories

Description	I _e A	Size	Item No	Type	Pack	Weight
① Clamp connector, rustproof			706.921.010	V-B	3	
Clamp connector, stainless			706.921.020	V-BR	3	
Flat terminal for direct connection						
② Single wire connection for Al sm se, Cu rm re			706.923.010	V-FD	3	
③ Two wire connection for Al sm se, Cu rm re			706.924.010	V-FZ	3	
④ Connection kit for 2x300 mm ² , stainless			706.993.020	V-AFR 1000	Set	
⑤ V terminal for direct connection			706.927.010	V-V	3	
⑥ Protective cap to suit the V terminal			706.928.010	V-SD	3	
⑦ Cable entry terminal for L-connection			706.925.010	V-A	3	
⑧ Cable cover for cable connection at bottom for cable connection at top			706.905.010 706.906.010	V-KU V-KO	1 1	
⑨ Lead seal holder for cable cover (position 8)			706.907.010	V-PT	4	
⑩ Label holder with label			706.908.010	V-BT	2	
⑪ Engraved plate to V-BT			706.911.010	V-GST	10	
⑫ Mounting clamp			706.914.010	V-AW	4	
⑬ Circuit cover			706.949.010	V-BER	1	
⑭ Folding handle (separate)	250 400 630	DIN1 DIN2 DIN3	706.901.050 706.901.060 706.902.030	V-K1 V-K2 V-K3	1 1 1	
⑮ Piggyback switch handle (separate)		DIN3/2	706.968.010	V-HR3/2	1	
⑯ Piggyback fuse (see price list)		DIN00	706.971.010	V-HP...	1	
⑰ Insulated profile , length 1,8 m			206.001.010	V-ITP	1	
⑱ Insulated support , spacing 185 mm, 3-pole (V-M8 nuts fitted)			706.989.010	V-IT	1	
⑲ M8 insert nut to V-ITP, ø10,25 mm			706.933.010	V-M8	12	
⑳ M12 insert nut for Cu-busbars, ø14,5 mm			706.934.010	V-M12	12	
㉑ M12 screw with pressure washer, min. clamp thickness 2,5 mm			706.920.010	V-SAR	3	
㉒ Cu-profile length 3 m, 250 mm ²			906.003.010	CUC 6	1	
㉓ Cu-profile length 3 m, 410 mm ²			906.001.010	CUC 10	1	
㉔ Connector rustproof, for Cu-profile	M8 M12		706.990.030 706.990.010	V-AE 8R V-AE 12R	3 3	
㉕ Connector rustproof	M12		706.990.020	V-AES 12R	3	
㉖ Cu-Square for direct connection or holder	for M12 for M8		706.936.010 706.936.020	V-AK 12 V-AK 8	3 3	
㉗ Connection for cable shoe and clamp			706.935.010	V-AS	3	

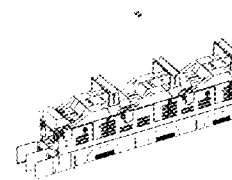
Disconnector 1000 A

	Description	I _e A	Size	Item No	Type	Pack	Weight
	1-pole switching, stainless Width 100 mm Output bottom/top with screws	1000		706.610.620	VTSR 1000	1	
	Busbar sectionalization 1-pole switching, stainless	1000		706.610.910	VTSR 1000-SL	1	
	Connection at side 1-pole switching, stainless	1000		706.310.818	VTSR 1000-SA	1	
	Connection at rear 1-pole switching, stainless	1000		706.610.710	VTSR 1000-AR	1	

Disconnector 2000 A

	Output bottom, stainless	2000		706.650.110	VTSR 2000-AU	1	
	Output top, stainless with screws	2000		706.650.410	VTSR 2000-AO	1	
	Busbar sectionalization 1-pole switching, stainless	2000		706.650.910	VTSR 2000-SL	1	
	Accessories						
	Cable cover for output bottom	to VTSR 1000		706.994.020	V-KUS 1000	1	
		to VTSR 2000		706.995.010	V-KUD	1	
	Cable cover for output top	to VTSR 1000		706.994.010	V-KOS 1000	1	
		to VTSR 2000		706.995.020	V-KOD	1	
	Terminal plate for several cables, e.g. for VTSR 2000 SL			706.996.010	V-ALR	3	

Current transformer installation in Disconnector 1000 A

	Ratio	Power	Installed				
	600/5 Class 1	5 VA	on L1				
			on L2	600	706.801.030	*/SE 600	1
			on L1, L2, L3	600	706.812.030	*/SZ 600	1
				600	706.802.030	*/SD 600	1
	1000/5 Class 1	2,5 VA	on L1				
			on L2	1000	706.801.060	*/SE 1000	1
			on L1, L2, L3	1000	706.812.060	*/SZ 1000	1
				1000	706.802.060	*/SD 1000	1

* = Basic type

See page 23 for ammeters and brackets

VERTIGROUP DIN 00 160 A

	Unit	DIN 00 100mm	DIN 00 185mm
Rated operational currents I_e	A	160	160
Rated operational voltage U_e	Vac	500	500
Rated insulation voltage U_i	Vac	800	1000
Rated frequency	Hz	50	50
Category of use according to EN 60947-3 at 500 V		AC 22 B	AC 22 B
Rated conditional short-circuit current I_{cf} with fuse protection	kA	50	50
Rated short-circuit making capacity I_{cm} with fuse	kA	50	50
Mechanical life number of switching cycles		>1400	>1400
Electrical life number of switching cycles		>200	>200
Protection classification to DIN 40 050 Front		IP30	IP30
Tightening torque levels:			
M8 screw, busbar	Nm	12	12
Input terminal, busbar	Nm	7	—
Cable connections: See page 6			
Approved by		KEMA KEUR	SEV

Corresponding to: **EN 60947-3**
IEC 947-3
VDE0660 Part 107

The materials used for VERTIGROUP do not contain asbestos or ceramic fibres. They also contain no CFCs, PCBs or their isomers, radioactive materials or mercury. All plastic parts are flame-retardant and do not release hydrochloric acid when affected by fire.

VERTIGROUP size 1-3

	Unit	DIN 1	DIN 2	DIN 3
Rated operational currents I_e	A	250	400	630
Rated operational voltage U_e	Vac	500	500	500
Rated insulation voltage U_i	Vac	1000	1000	1000
Rated frequency	Hz	50	50	50
Category of use according to EN 60947-3 at 500V				
		AC 22 B	AC 22 B	AC 21 B
Rated short-time withstand current I_{cw} (1 sec)	kA	10	13	14
Rated conditional short-circuit current I_{cf} with fuse protection	kA	50	50	50
Rated short-circuit making capacity I_{cm} with fuse	kA	50	50	50
Mechanical life				
number of switching cycles		>1400	>1000	>1000
Electrical life				
number of switching cycles		>200	>200	>200
Protection classification to DIN 40 050				
Front		IP30	IP30	IP30
Tightening torque levels:				
M12 screw, busbar	Nm	40	40	40
Cable connections: See page 6				
Approved by		SEV KEMA KEUR	SEV KEMA KEUR	SEV KEMA KEUR

Corresponding to: EN 60947-3
IEC 947-3
VDE0660 Part 107

Earthing and short-circuit device

Test: EN 61230
Approval: SEV 

Cable cross-section:
25 mm² highly flexible stranded cable

Rate operational voltage U_e : 1000Vac

Cable lengths:
Individual phases: 300, 500, 700 mm. Total: 1600 mm

Short circuit resistance:

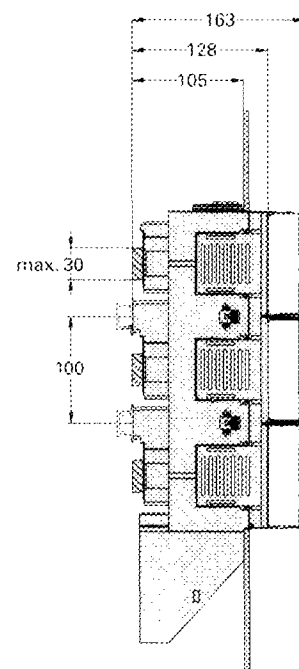
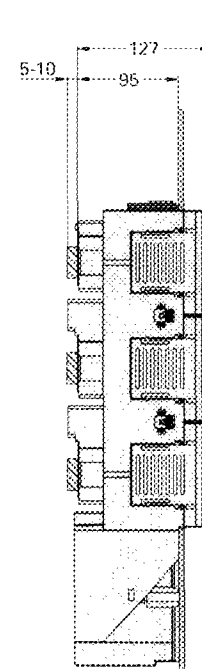
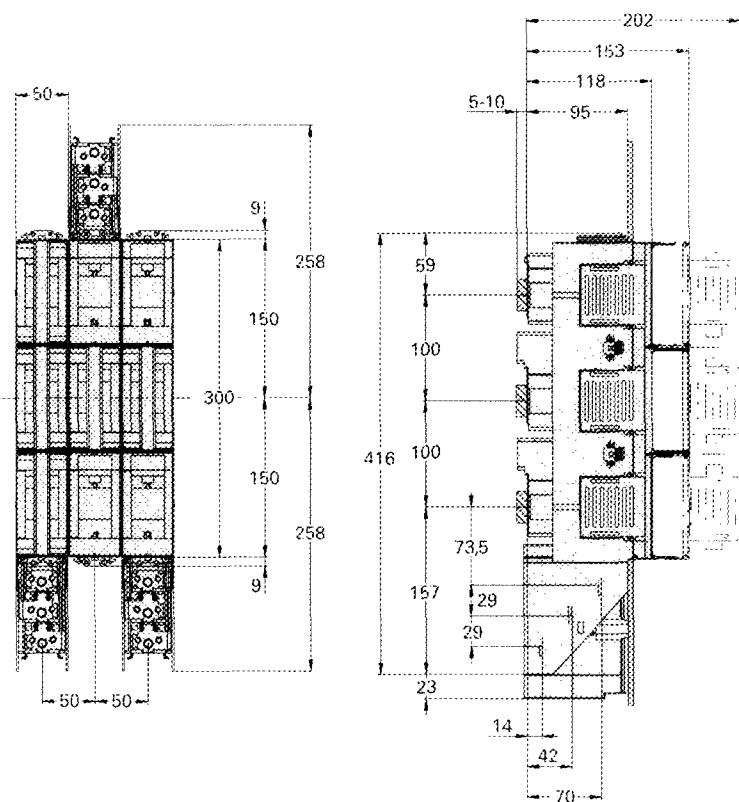
Rated operational current I_e	Size	Short-time current	Peak current
160 A - 250 A	DIN 00, 1 SEV 2	5kA _{eff} for 1,0s	12kA peak
400 A - 630 A	DIN 2, 3 SEV 4, 6, 6S	7kA _{eff} for 0,5s	16kA peak

VERTIGROUP DIN 00 160 A 100 mm

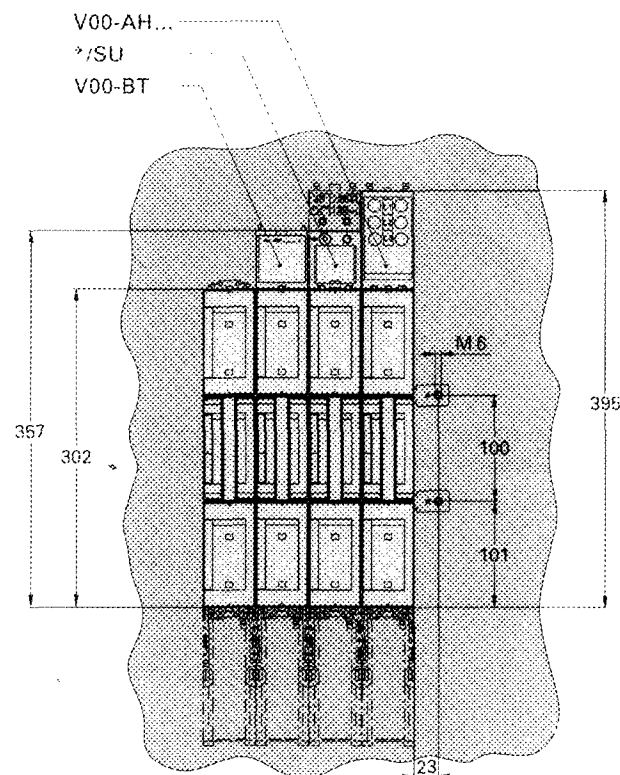
Single and 3-pole switching

Lower switch cover

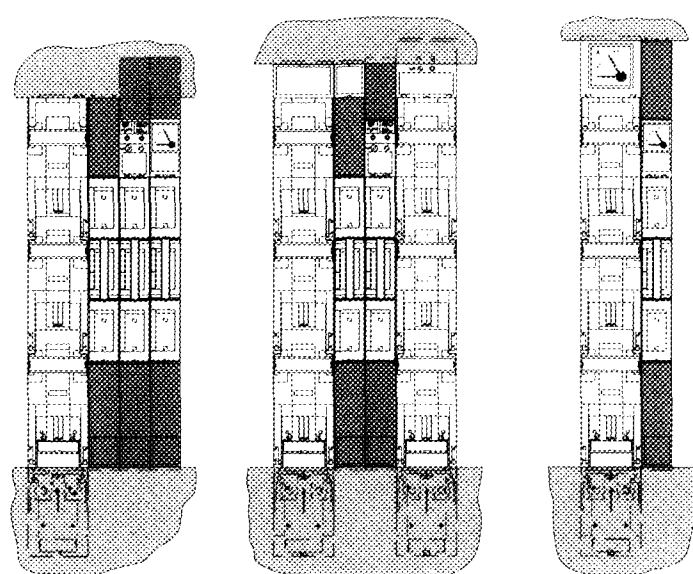
Mounting on support rail



Cut-outs in cover plate



Adapter for busbar spacing 185 mm

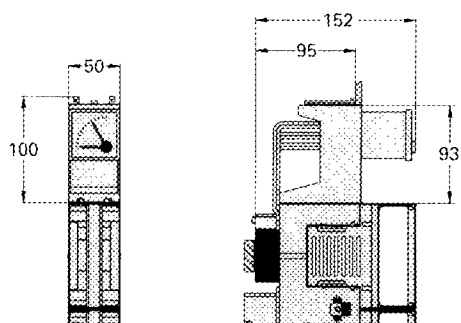


Type **V00-AOU** adapter covers (top - bottom) compensate for the difference in length between size 00 and sizes 1-3

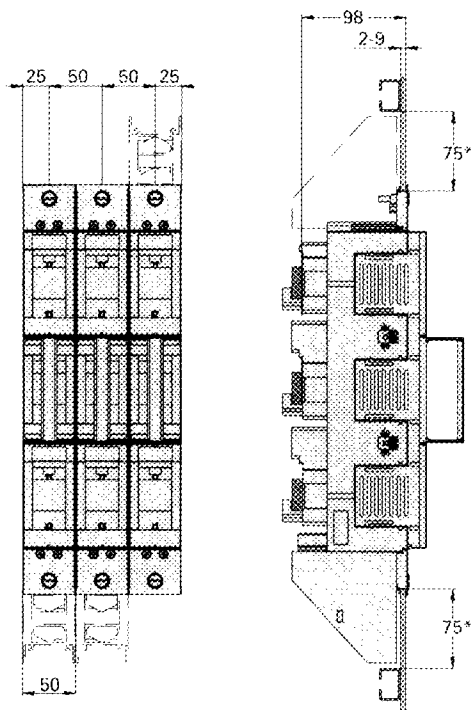
Type **V00-POU** adapter plates (top - bottom) compensate for the difference in length between ammeter holders or electric fuse monitors.

VERTIGROUP DIN 00 160 A 100 mm

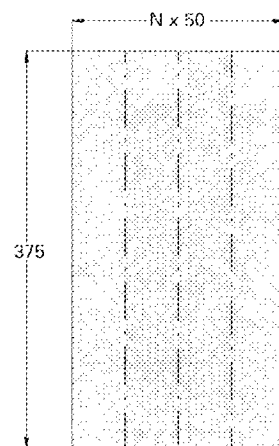
Ammeter mountings



Front mounting

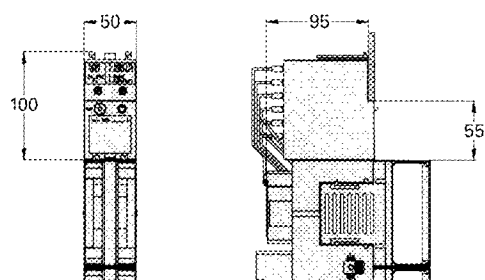


* = Size can be reduced to 10 mm if outputs are on opposite side.

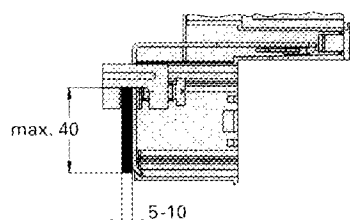


Cut-out in panel

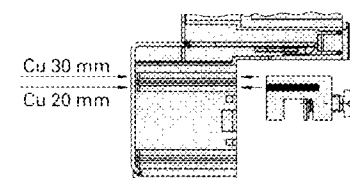
Fuse monitor



Input clamp

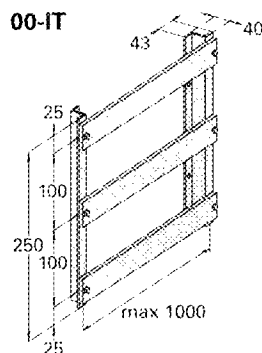


Flat busbar up to 40 mm wide permits clamping without drilling



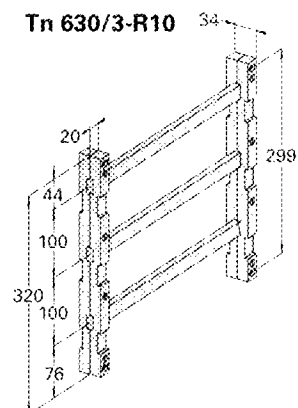
If 20 mm or 30 mm wide busbars are used and the input clamps are positioned accordingly, the symmetry of the cut-out in the cover plate (150 mm from centre) is fully retained.

Busbar system spacing



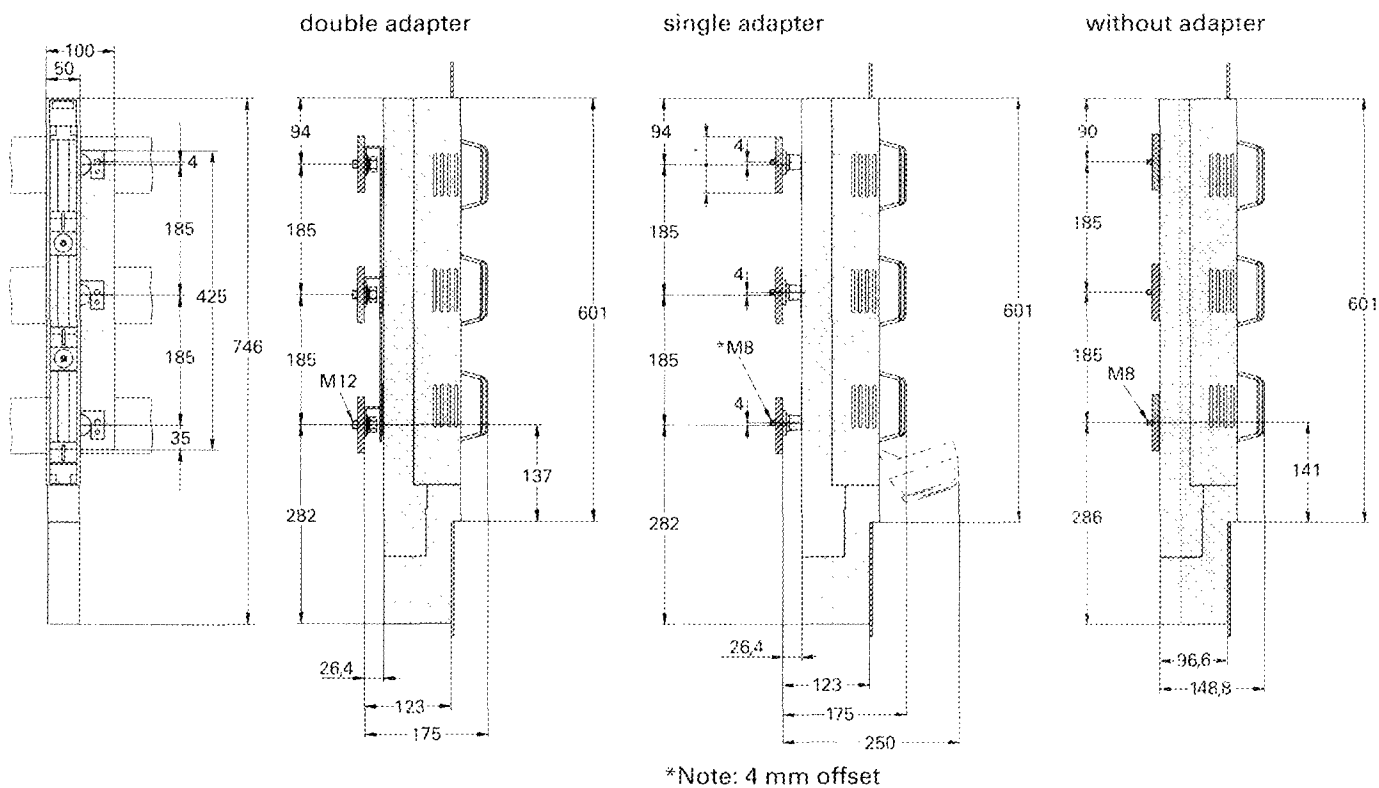
Copper
Width up to 50 mm
Thickness up to 10 mm

Tn 630/3-R10

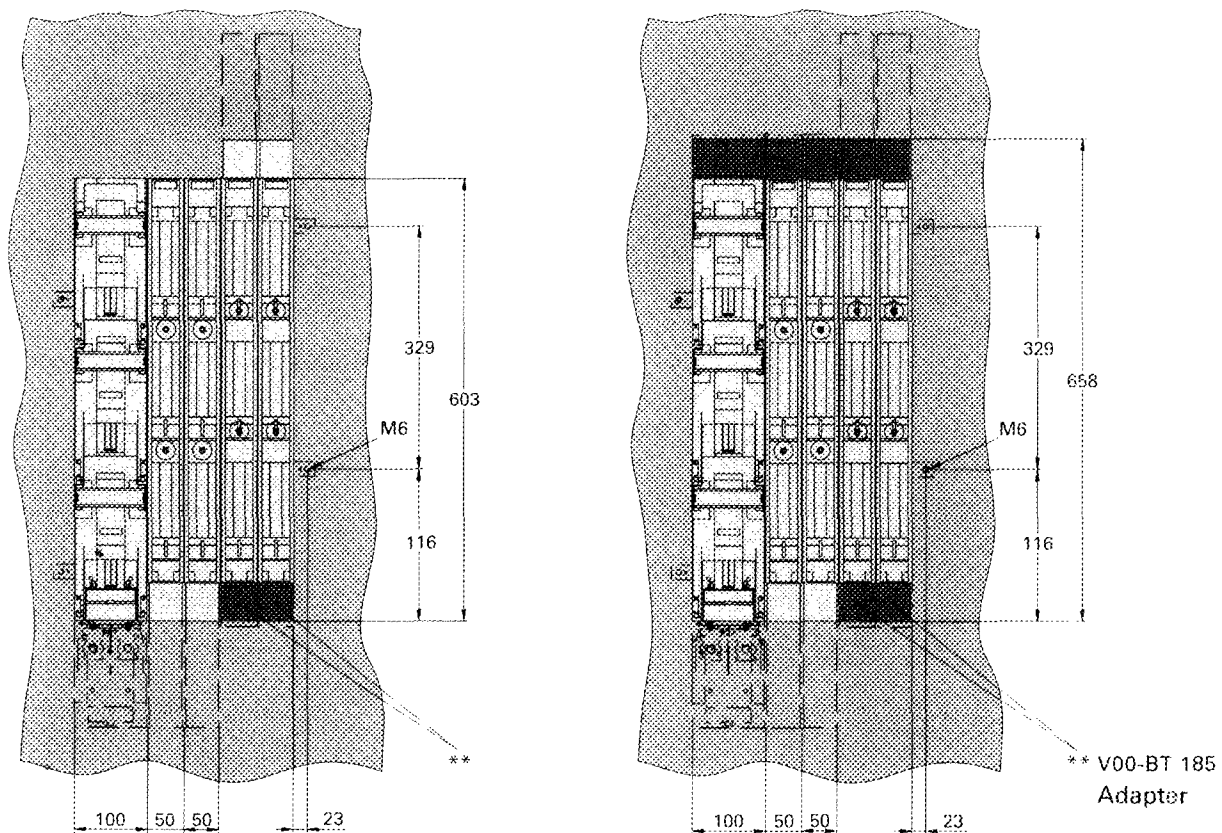


Copper 5 x 20 mm
Copper 5 x 30 mm
Copper 10 x 20 mm
Copper 10 x 30 mm

VERTIGROUP DIN 00 160 A 185 mm mounted with VERTIGROUP ≥ 250 A



Cut-outs in cover plate with VERTIGROUP ≥ 250 A



Without label holder

With label holder

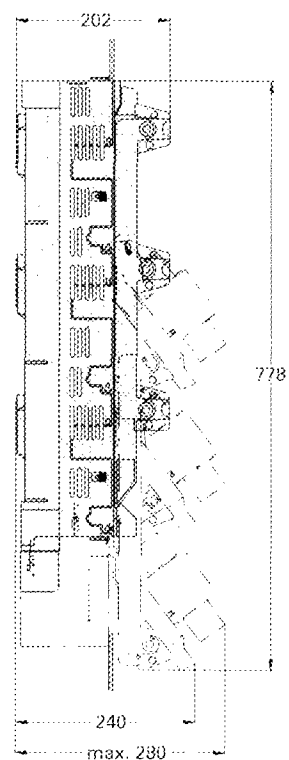
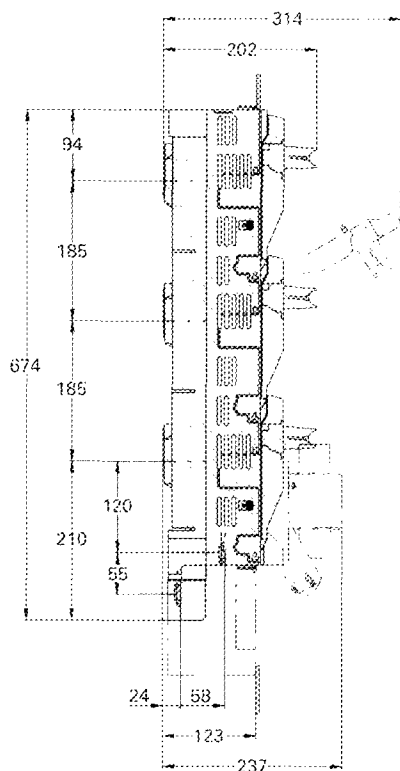
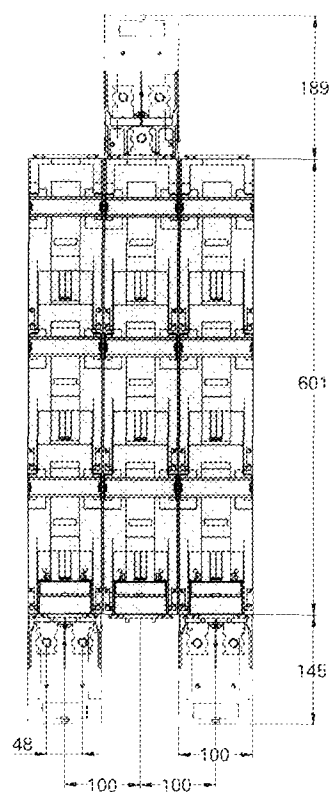
VERTIGROUP 250 - 630 A

Single or 3-pole switching

Single switching

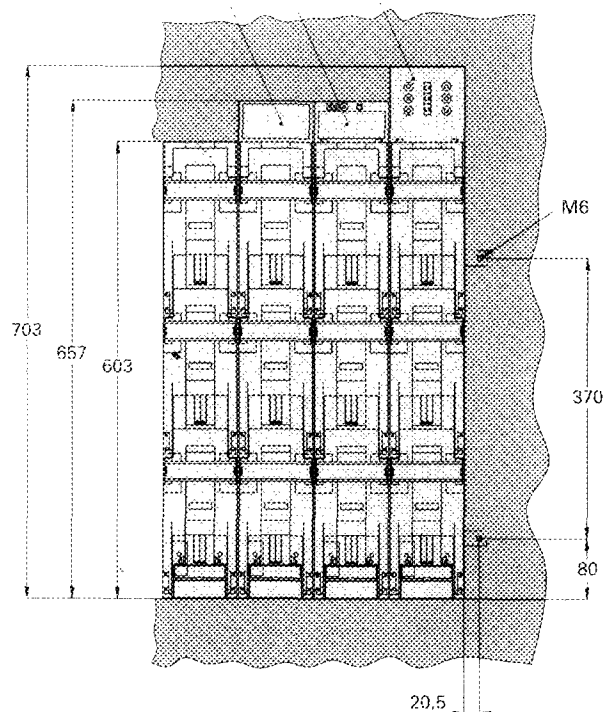
3-pole switching

Folding handle

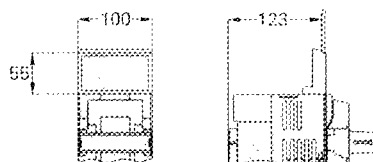


Cut-outs in cover plate

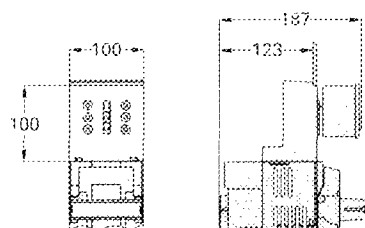
V-AH...
*/SU
V-BT



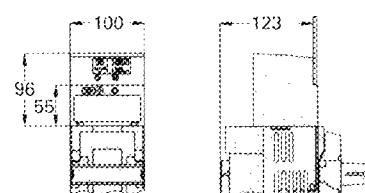
Label holder



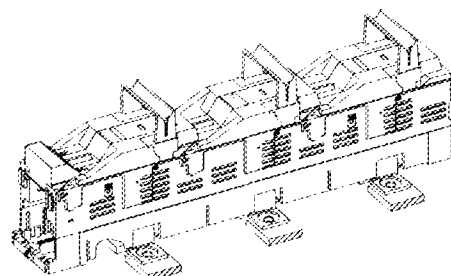
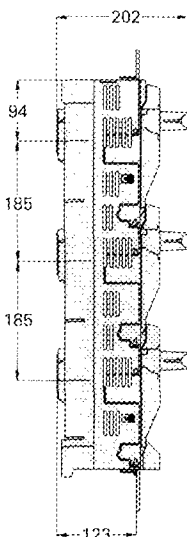
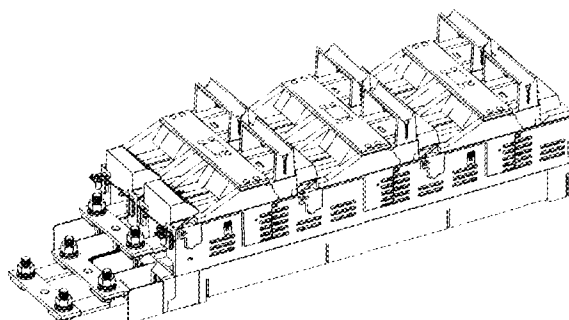
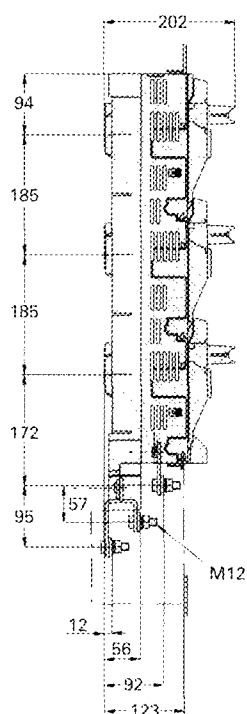
Ammeter mountings



Fuse monitor

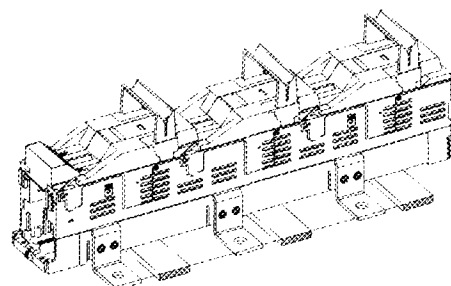
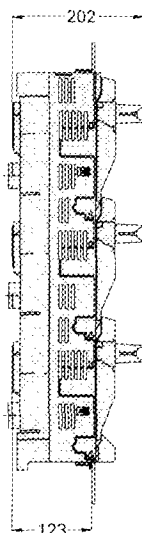


Technical drawing of a building section showing a symmetrical layout with a central corridor and rooms. Dimensions are provided: overall width 200, room width 100, total height 601, and room height 217. A detail view at the bottom shows a 24x24 section with a 50 dimension.

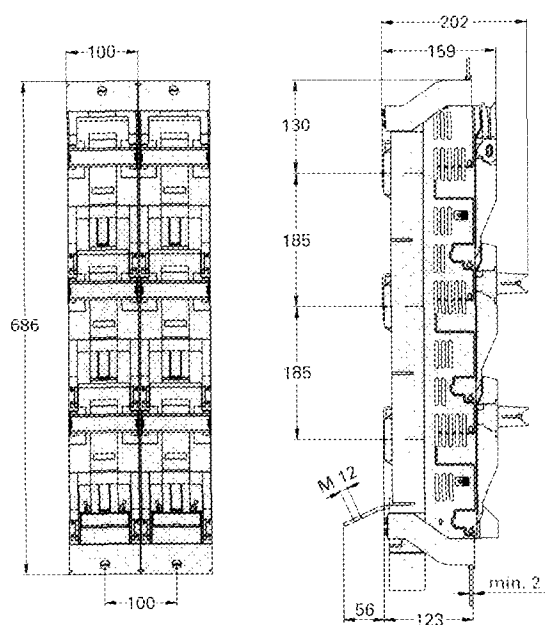


Technical drawing of a vertical assembly, likely a pump or valve, showing a cross-section. The drawing includes the following dimensions:

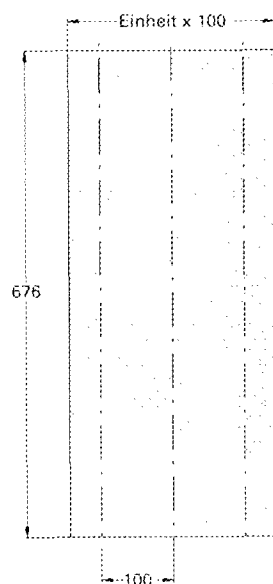
- Overall height: 601
- Top section height: 94
- Section height below top: 64,5
- Section height below that: 185
- Section height below that: 185
- Section height below that: 185
- Bottom section height: 87
- Bottom flange diameter: 112
- Top flange diameter: 100



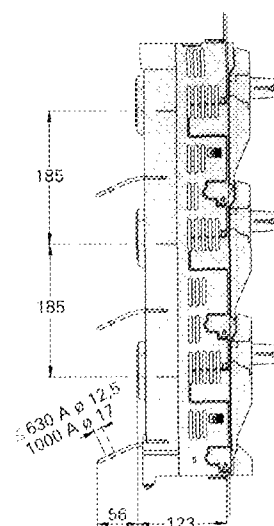
Front mounting 250 - 630 A



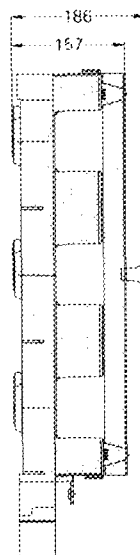
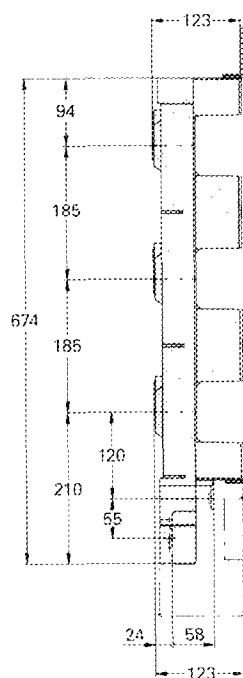
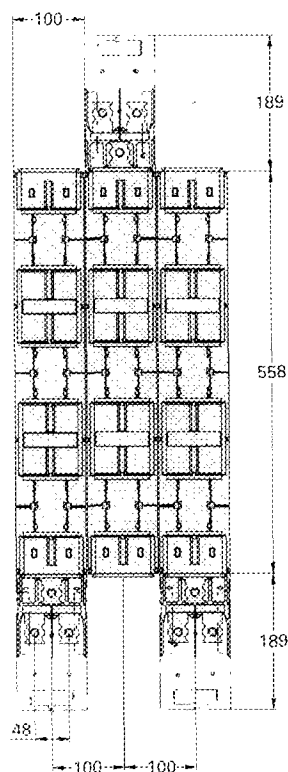
Cut-out for front mounting



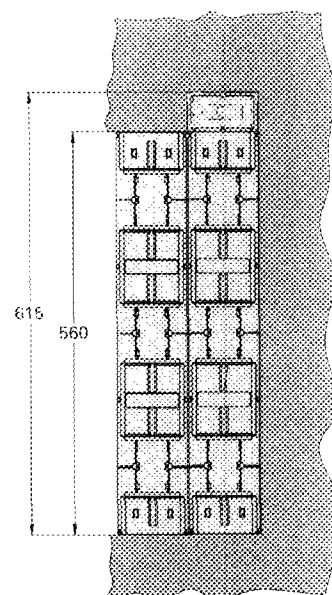
Connection at rear



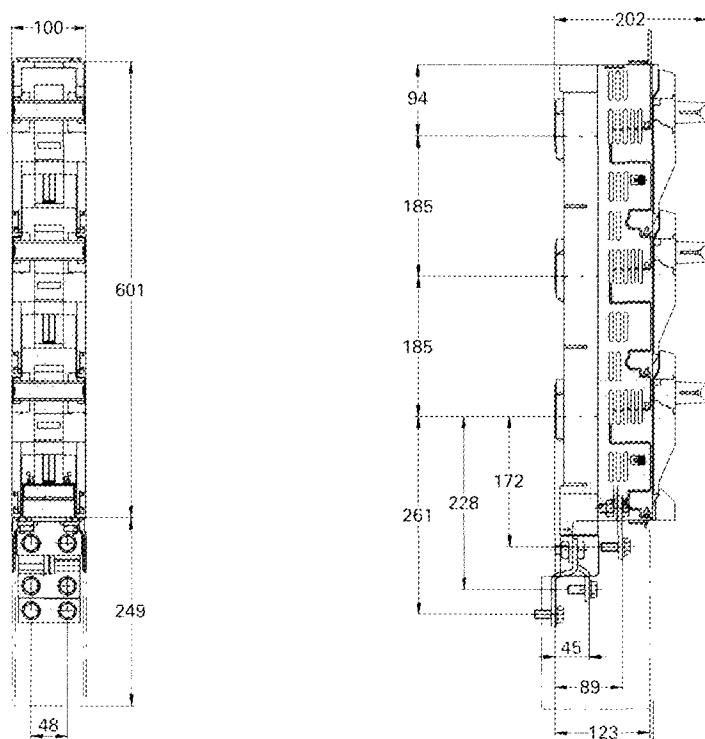
LV-HRC Fuse-Rail



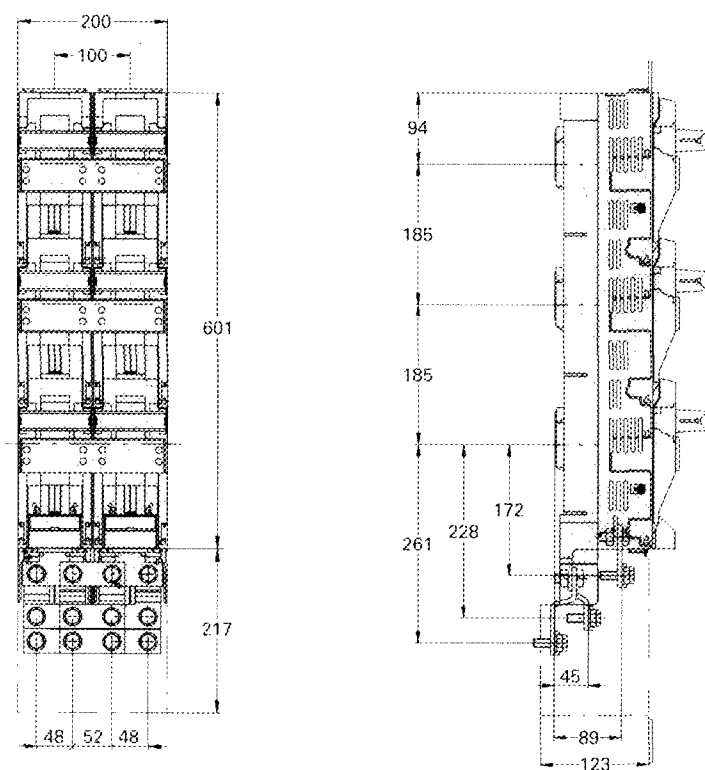
Cut-outs in cover plate



Disconnecter 1000 A

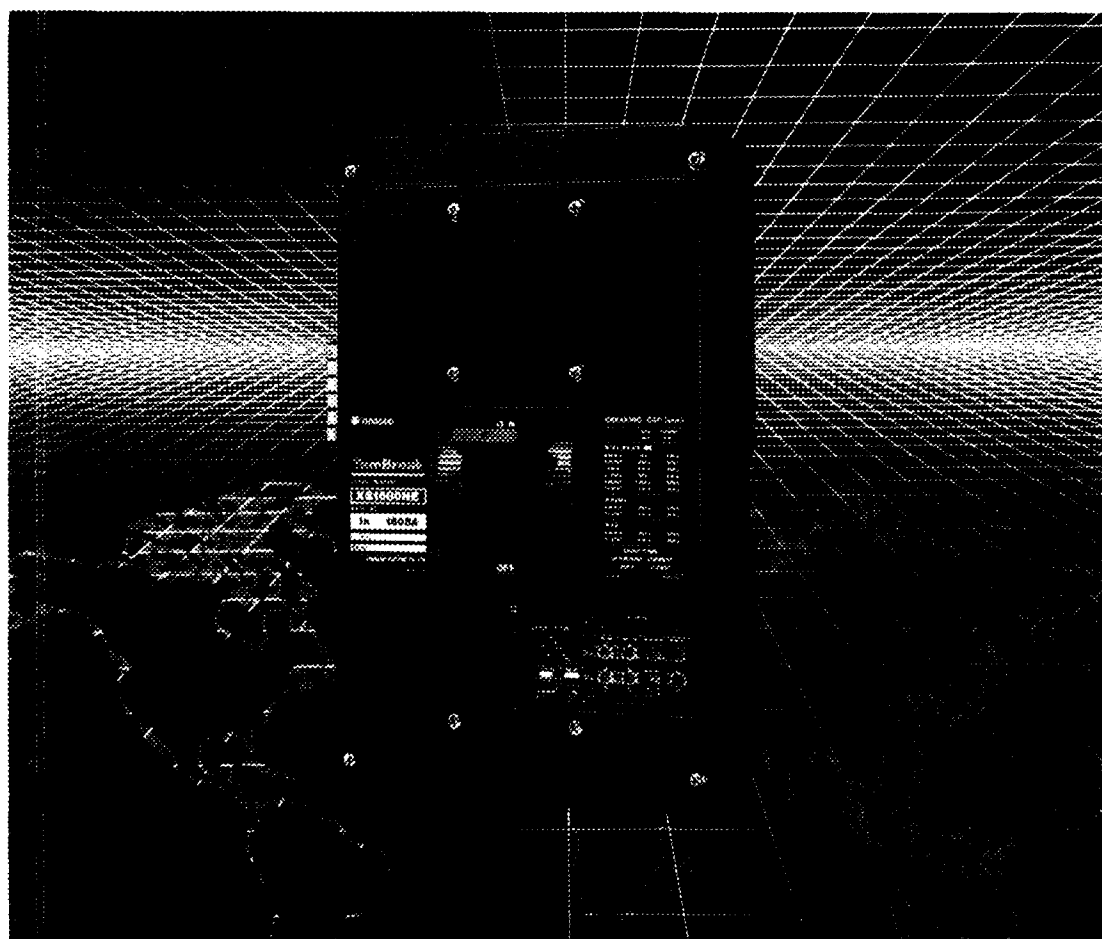


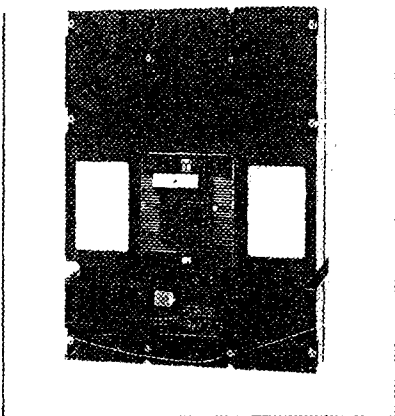
Disconnecter 2000 A





INSTRUCTION MANUAL FOR XS1250SE and XS2500NE MCCB'S





Ratings and Specifications

number of poles

RATED CURRENT (In)

Calibrated at 40°C or 45°C

NRC: Nominal Rated Current

ASR: Adjustable Setting Range

A.C. RATED INSULATION VOLTAGE (Ui)

A.C. RATED BREAKING CAPACITY (Sym. I_{bn}) (kA)

IEC 947-2(Icu) / IEC 947-2(Ics)

BS 4752-1(P-1) /

CEI 17-S(P-1) /

AS 2184

NEMA AB-1

without inst

D.C. RATED

BREAKING CAPACITY (kA)

RATED SHORT TIME CURRENT (I_{st}) (kA) (1 sec)

Weight (kg) (marked standard type)

CONNECTIONS & MOUNTINGS

front terminal screw

connected (FC) attached flat bar

solderless terminal (PWC)

rear bolt stud

connected (RC) flat bar stud

plug-in (PM) for switchboard

for distribution board

draw-out (DO)

STANDARD FEATURES

contact indicator

trip button

PROTECTIVE FUNCTIONS (Electronic type)

Adjustable LTD, STD & INST

Adjustable GFT or Adjustable PTA (option)

trip indicators (option)

ACCESSORIES (option)

externally mounted

motor operator

external panel mounted type

operating beaker mounted type

handle variable depth type

extension handle

mechanical front type

interlock rear type

handle holder

handle lock

terminal front-connected type

cover rear-connected type

plug-in type

interpole barrier

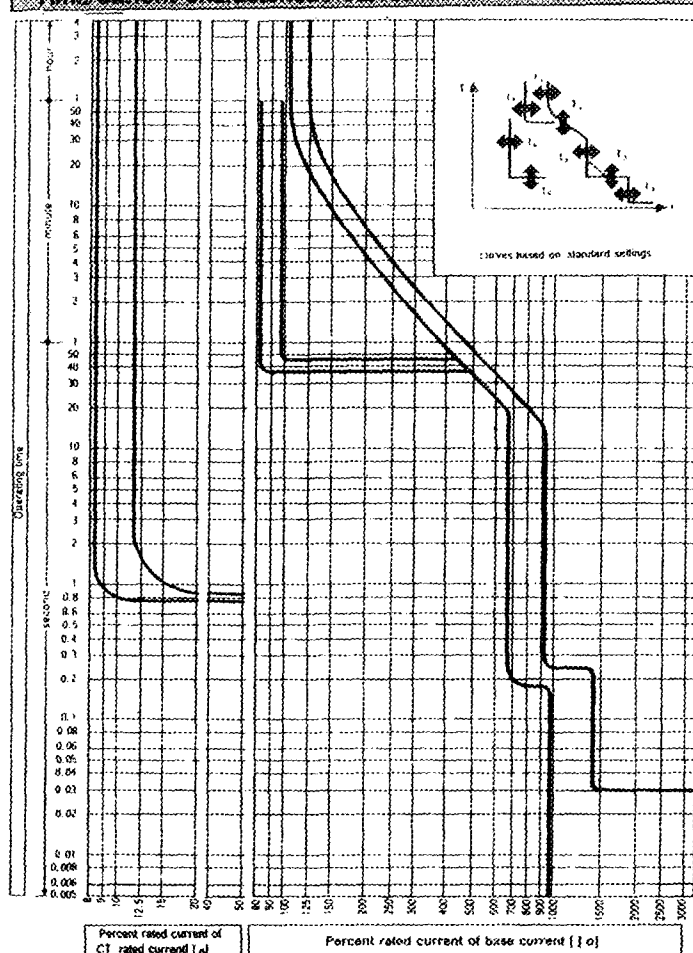
accessory lead terminal

door flange

D-F

(Refer to Notes, opposite page)

Time/Current characteristic curves



Over current tripping characteristics

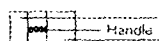
CT rated current (A): (I _n)	2500
Base current setting (A): (I _o)	(I _n) × (0.63-0.8-1.0)
Long time delay pickup current (A): (I ₁)	(I _o) × (0.8-0.85-0.9-0.95-1.0)
	Non-tripping at (I ₁) setting × 105% and below.
	Tripping at 125% and above
Long time delay time setting (S): (T ₁)	(5-10-15-20-30) at (I ₁) × 600% current
	Setting tolerance: ±20%
Short time delay pickup current (A): (I ₂)	(I _o) × (2-4-6-8-10) Setting tolerance: ±15%
Short time delay time setting (S): (T ₂)	Opening time (0.1-0.15-0.2-0.25-0.3) in the definite time delay. Total clearing time is +50ms and resettable time is -20ms for the time delay setting
Instantaneous trip pickup current (A): (I ₃)	Continuously adjustable from (I _o) × (3 to 12)
	Setting tolerance: ±20%
* Pre-trip alarm pickup current (A): (I ₄)	(I _o) × (0.7-0.8-0.9-1.0) Setting tolerance: ±10%
* Pre-trip alarm time setting (S): (T ₄)	40 fixed definite time delay. Setting tolerance: ±10%
* Ground fault trip pickup current (A): (I _g)	Continuously adjustable from (I _n) × (0.1 to 0.4)
	Setting tolerance: ±15%
* Ground fault trip time setting (S): (T _g)	Opening time (0.1-0.2-0.3-0.4-0.8) in the definite time delay. Total clearing time is +50ms and resettable time is -20ms for the time delay setting

* Option

* The underlined values will be applied as standard rating unless otherwise specified when ordering

Combination of internally mounted accessories

No. Pole	AX	AL	SHT	UVT	AX	AX	AX	AL	AL	AX	AX
	auxiliary switch	alarm switch	shunt trip #1	undervoltage trip #2	AX	SHI	UVI	SHT	UVI	AX	AL

Left pole
Right pole

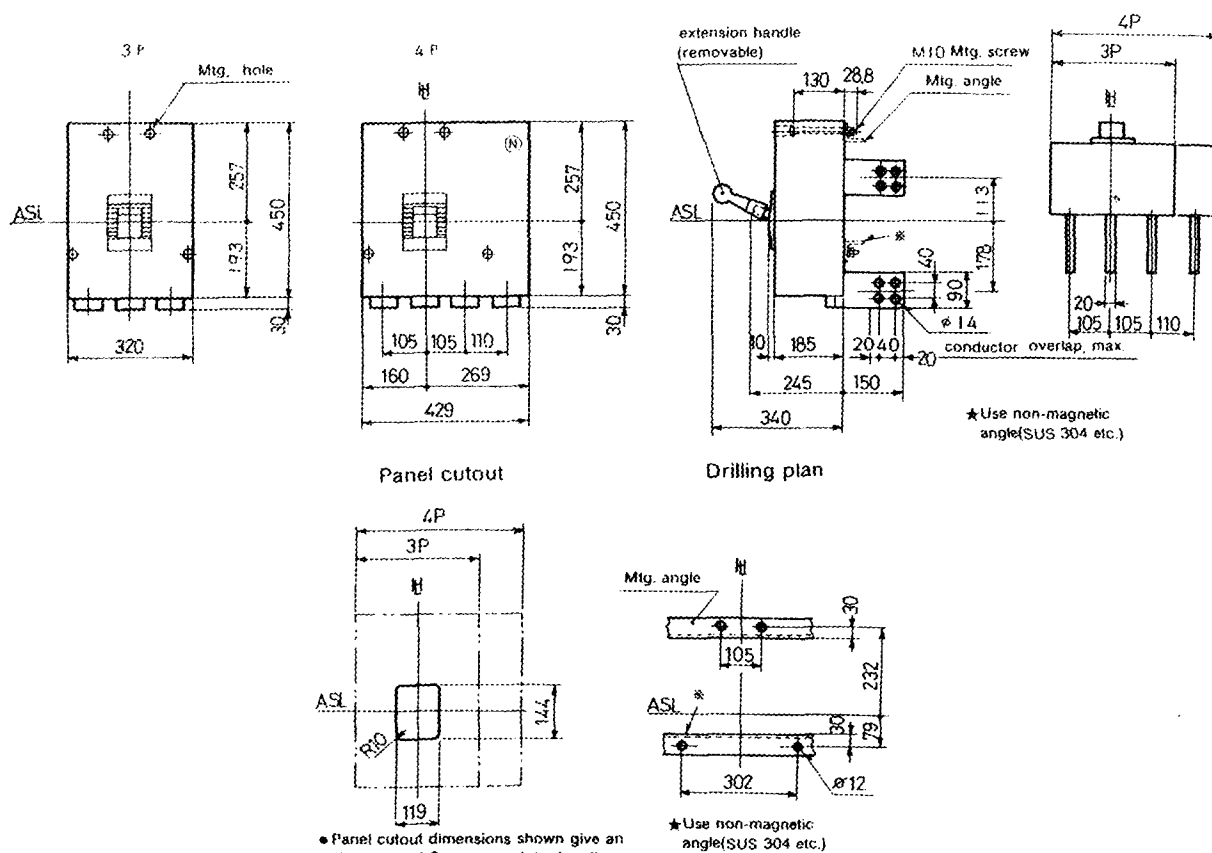
Note *1: Shunt trip is provided with anti-burnout switch.

*2: The UVT controller is installed externally, when provided with a.c. UVT.

Outline dimensions(mm)

XS2500NE

Rear-connected



- NOTES:
- Standard. This configuration is used unless otherwise specified.
 - Optional standard. Specify when ordering.
 - "yes" or "available".
 - "no" or "not available".



Rating and Specifications

number of poles

RATED CURRENT (In)

Calibrated at 40°C or 45°C

NRC: Nominal Rated Current

ASR: Adjustable Setting Range

A.C. RATED INSULATION VOLTAGE (Ui)

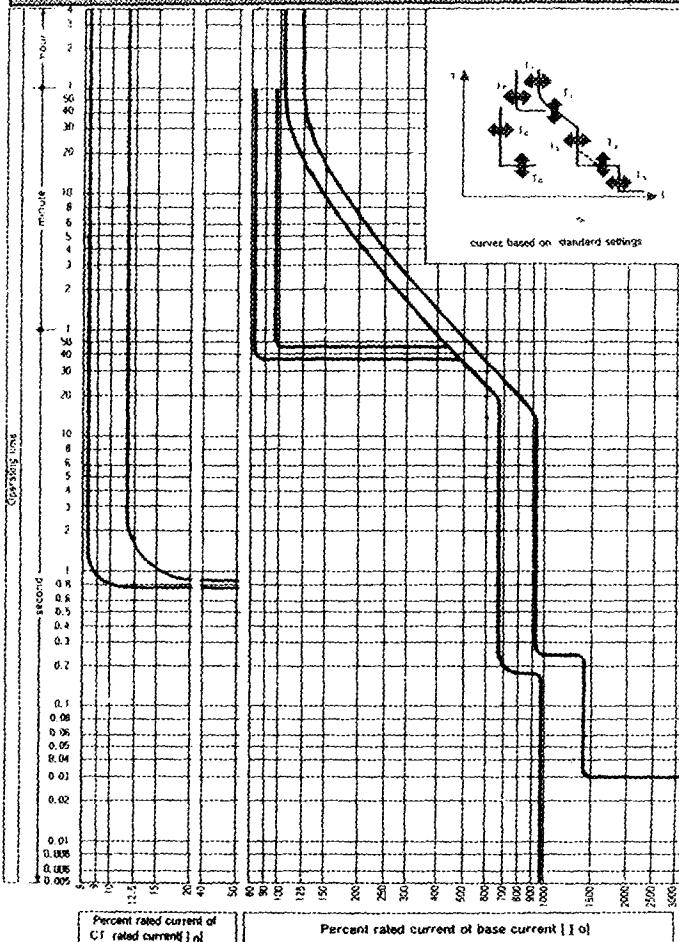
A.C. RATED BREAKING CAPACITY sym f. m. s. [KA]

IEC 947-2(Icu) / IEC 947-2(Ics)

BS 4752-1(P-1) /

CEI 17-5(P-1) /

Time-Current characteristic curves



Over-current tripping characteristics

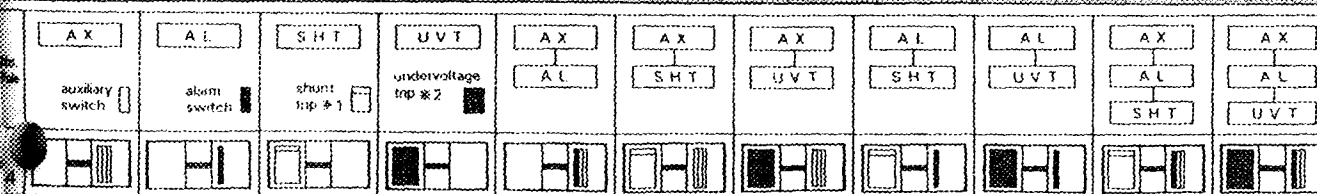
CT rated current (A): (In)	1000	1250
Base current setting (A): (Io)	(In) X (0.63-0.8-1.0)	
Long time delay pickup current (A): (I _l)	(I _l) X (0.8-0.85-0.9-0.95-1.0)	
	Non-tripping at (I _l) setting X 105% and below.	
	Tripping at 125% and above.	
Long time delay time setting (S): (T _l)	(5-10-15-20-30) at (I _l) X 600% current	
	Setting tolerance: ±20%	
Short time delay pickup current (A): (I _s)	(I _s) X (2-4-6-8-10) Setting tolerance: ±15%	
Short time delay time setting (S): (T _s)	Opening time (0.1-0.15-0.2-0.25-0.3) in the definite time-delay. Total clearing time is +50ms and resettable time is -20ms for the time delay setting	
Instantaneous trip pickup current (A): (I _a)	Continuously adjustable from (I _a) X (3 to 12)	
	Setting tolerance: ±20%	
* Pre-trip alarm pickup current (A): (I _p)	(I _p) X (0.7-0.8-0.9-1.0) Setting tolerance: ±10%	
* Pre-trip alarm time setting (S): (T _p)	40 fixed definite time delay. Setting tolerance: ±10%	
* Ground fault trip pickup current (A): (I _g)	Continuously adjustable from (I _g) X (0.1 to 0.4)	
	Setting tolerance: ±15%	
* Ground fault trip time setting (S): (T _g)	Opening time (0.1-0.2-0.3-0.4-0.8) in the definite time-delay. Total clearing time is +50ms and resettable time is -20ms for the time-delay setting	

* Option

* The underlined values will be applied as standard rating unless otherwise specified when ordering

(Refer to Notes, opposite page)

Combination of internally mounted accessories



Handle Left pole Right pole

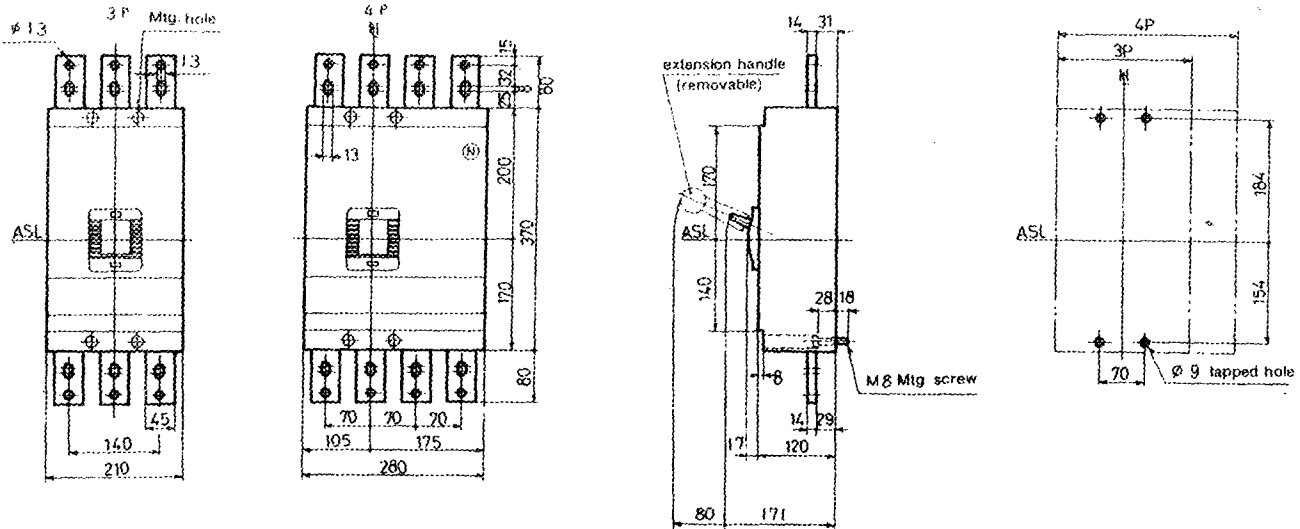
Note: * 1: Shunt trip is provided with anti-burnout switch.

* 2: The UVT controller is installed externally, when provided with a. c. UVT.

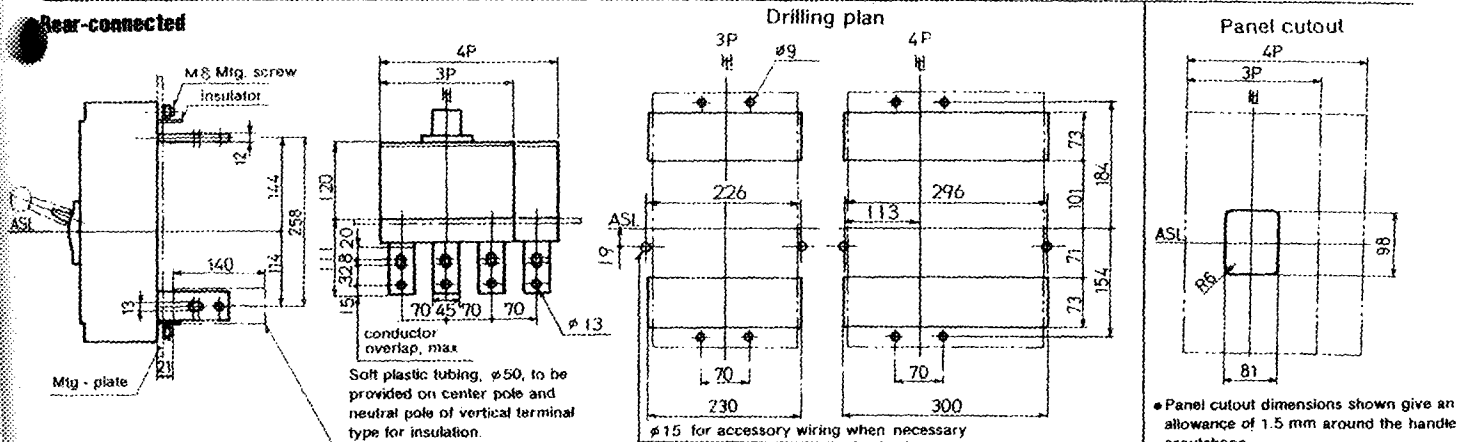
Outline dimensions (mm)

XS1250NE

Front-connected

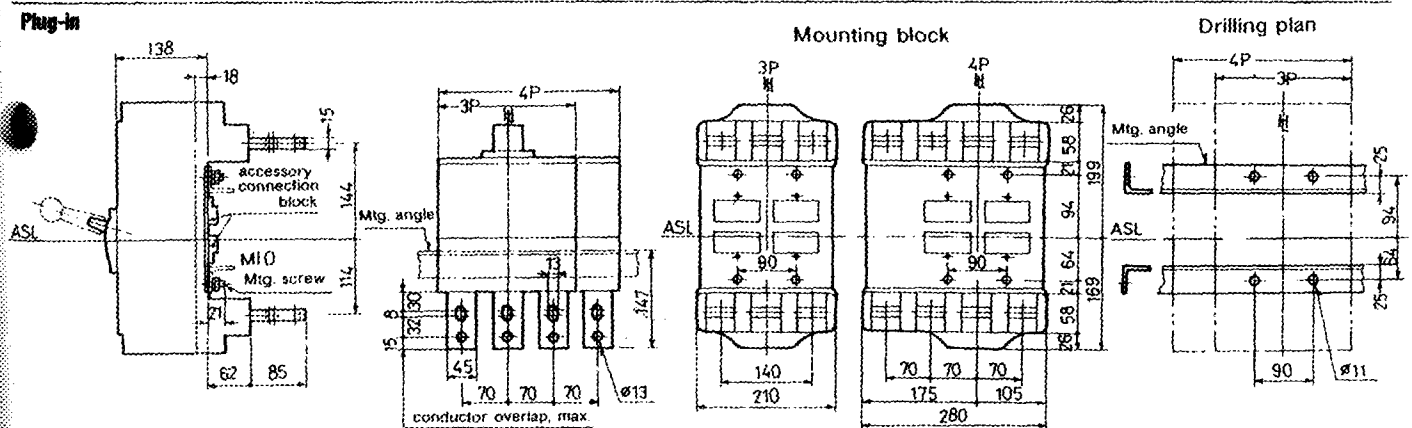


Rear-connected



Note: In the standard shipment mode, both terminals on the line side and the load side are in horizontal direction.

Plug-in



NOTES: ○ Standard. This configuration is used unless otherwise specified.

○ Optional standard. Specify when ordering.

• "yes" or "available".

— "no" or "not available".

TYPE TNS-1 OCR CHEKER

INSTRUCTION MANUAL

KRB-5149

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1. OUTLINE

The electronic type TemBreak, which incorporates an 8-bit CPU, is the latest circuit breaker provided with multi-protective functions.

The long time delay trip employs the true r.m.s. value control system, and taking advantage of the electronic OCR features to the maximum, the pick-up current and tripping time values of each trip function can be adjusted widely.

Consequently, if the rated current is not fixed in planning or the rated current is changed due to future load extension, this electronic type TemBreak is the most suitable.

Type TNS-1 OCR checker is a instrument intended for field testing the multi-protective functions of electronic type TemBreak circuit breakers.

2. SPECIFICATIONS

Rated Voltage:	100 or 110 V AC, single phase, 50 or 60 Hz; or 220 or 240 V AC, single phase, 50 or 60 Hz.
Power Consumption:	30 VA
Output Current Measurement:	Digital display in 3 digits. Range: 0 to 900 mA (Maximum value is changed in some degree due to supply voltage.)
Time Measurement:	Digital display in 3 digits. Range: 0.00 to 99.9
Circuit Breaker Covered:	Electronic type TemBreak
Functions:	Testing of the following: . LTD (Long Time Delay Trip) pick-up current and time delay settings; . STD (Short Time Delay Trip) pick-up current and time delay settings; . INST (Instantaneous Trip) pick-up current setting; . GFT (Ground Fault Trip) pick-up current and time delay settings.
Outside Dimensions:	200(W) x 84(H) x 130(D) mm
Weight:	2.7 kg
Accessories:	One power supply cord, 2.4m long (3-conductor PVC covered cable with one conductor for earthing); One connection cable, 3m long.

3. GENERAL APPEARANCE AND NAMES OF VARIOUS PARTS

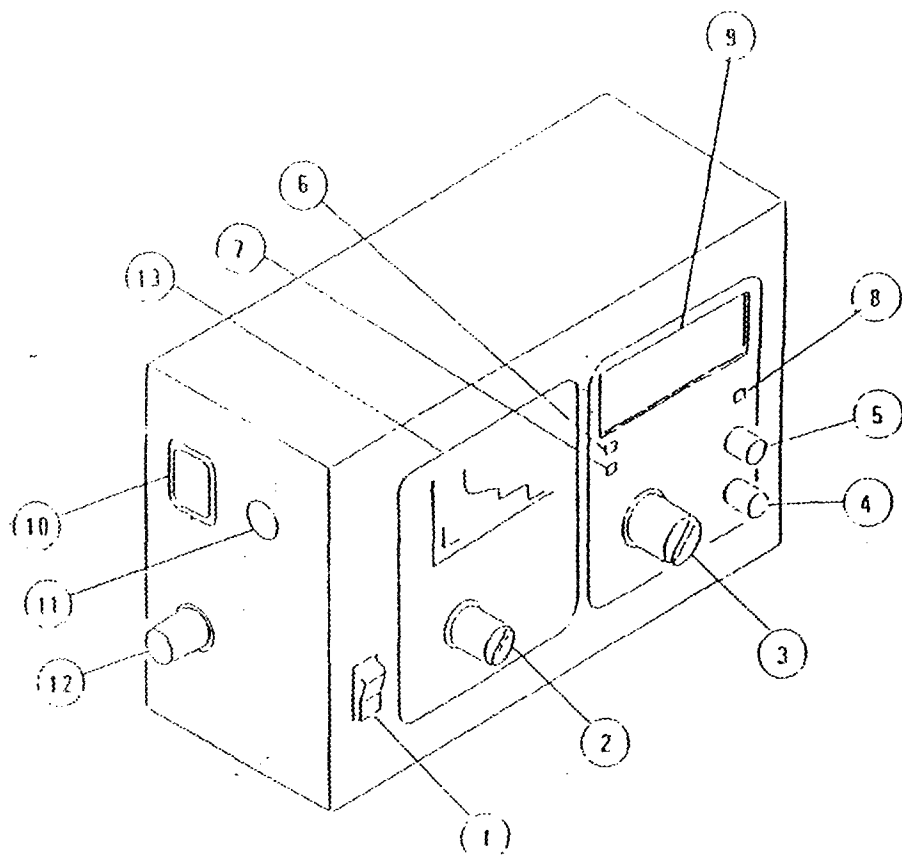


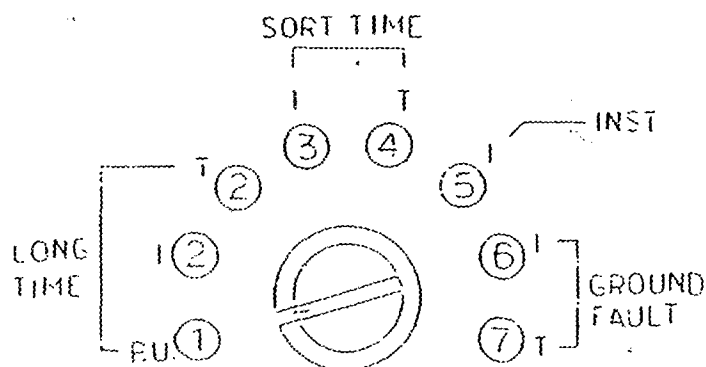
Fig. 1 General Appearance

(1) POWER switch:

This is the OCR checker's power switch.
Set this switch to ON when starting the test.

(2) ELEMENT SELECT switch:

Change this switch to set it to the desired position according to the particular test purpose.
Change the switch and set it to the number for test purpose on the protective characteristics curve ((13) in Fig.1) shown on the OCR checker front panel.



Note:

P.U. for checking the LTD pick-up current value.
I for checking the pick-up current value of a selected function.
T for checking the tripping time value of a selected function.

ELEMENT SELECT Switch

Fig. 2 ELEMENT SELECT Switch Positions

(3) CURRENT ADJUST knob:

This knob regulates the output level of test current.

(4) RESET switch:

This switch is pressed on completion of a test or to interrupt a test.

Pressing this switch resets the value indicated on the display to "0"(zero).

(5) START switch:

This switch is pressed to start a checker's operation. The test current is supplied immediately by a push on this switch.

(6) NORMAL light (green):

This light is lit on completion of a trip function test to indicate that the tested trip function is normal.

(7) ABNORMAL light (red):

This light is lit on completion of a test to indicate that the checker internal protective circuit has operated due to TemBreak abnormality.

(8) WAIT light (red):

This light is lit to indicate that no test can be continued since the protective circuit is actuated due to checker internal overheat. Stop the test until the light turns off.

(9) Display

This display indicates the current or time value according to the set position with ELEMENT SELECT switch ((2) in Fig. 1) changed.

(10) Power Connector:

Power Inlet of TNS-1. The connector (3-contact type, one contact for ground) of the accessory power supply cord is connected here.

(11) Test Connector:

The plug connector of the accessory test cable is connected here, with the other end connected to the test terminal connector of the TemBreak.

(12) Fuse 1A:

Power fuse for the checker.

(13) Protective Characteristics Curve:

The number for test purpose is entered on the protective characteristics curve.

4. CONNECTIONS

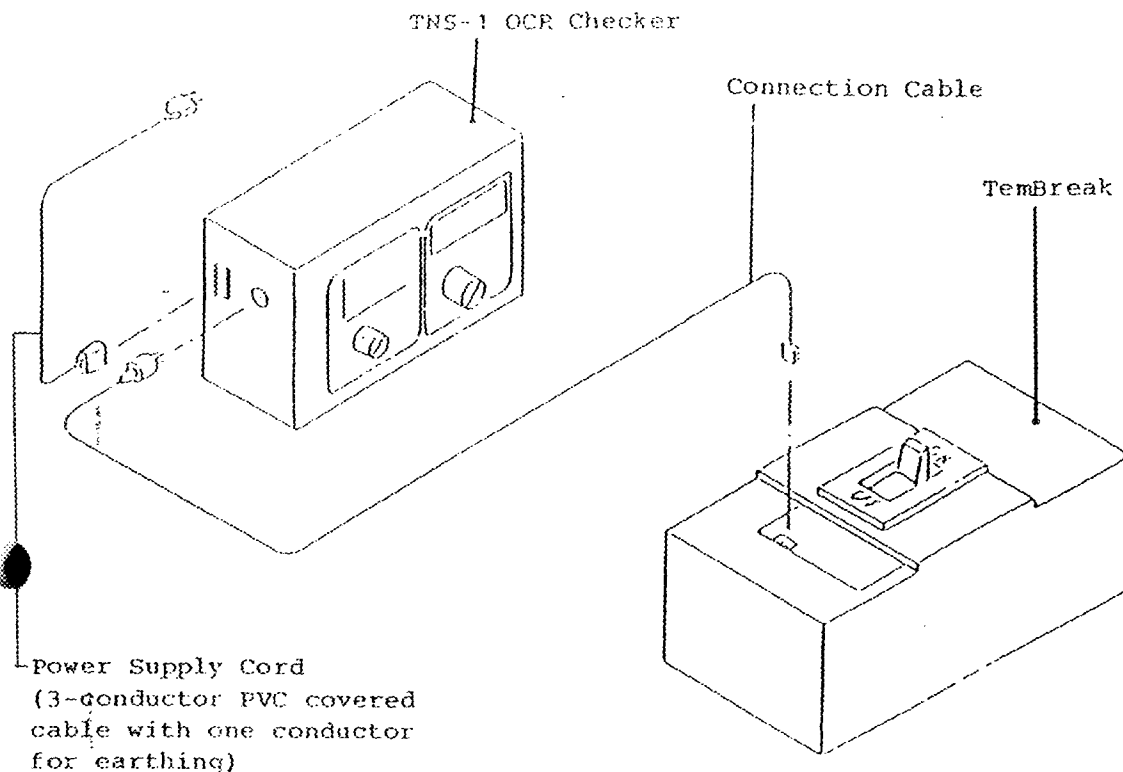


Fig. 3 Connection Diagram

4-1 Connections Between TNS-1 and TemBreak

Check the following items:

- (1) The POWER switch ((1) in Fig.1) is OFF.
- (2) The CURRENT ADJUST knob ((3) in Fig.1) is set to MIN.

After checking the items (1) and (2) above.
Proceed with the following items:

- (3) Insert a round connector of the connection cable end into the test connector of the TNS-1 ((11) in Fig.1).
- (4) Peel off the seal printed as SEALED which seals the OCR at the front lower part of TemBreak, and loosen the OCR cover mounting screw under the seal to remove the OCR cover.
- (5) Insert the square connector of the connection cable end into the TEST IN connector of the TemBreak.

NOTE: After checking the insertion direction, do this carefully.

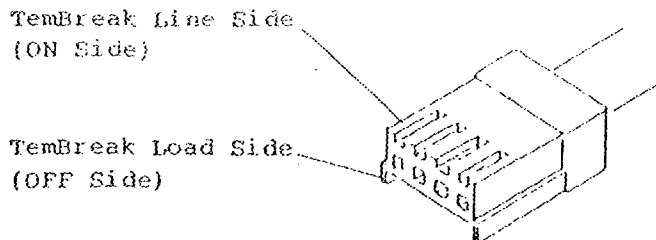


Fig. 4 Connector

NOTE: On completion of the test, be sure to seal the OCR cover mounting screw section. (The spare seal is accommodated in the OCR cover rear pocket.)

4-2 Power Connection to TNS-1

- (1) Check that the POWER switch ((1) in Fig.1) is OFF.
- (2) Check that the CURRENT ADJUST knob ((3) in Fig.1) is set to MIN.
- (3) Carefully check the supply voltage value printed on the TNS-1 power connector ((10) in Fig.1) section.

After checking the items (1), (2) and (3) above,

- (4) Insert the connector of the power supply cord into the power connector of the TNS-1 ((10) in Fig.1).
- (5) Plug the power supply cord to a nearby power outlet.

5. TEST

5-1 Test Conditions

- (1) Method for testing with TemBreak turned OFF

No test can be conducted if the TemBreak is provided in the system and load current is applied with TemBreak turned ON. Always test with TemBreak turned OFF. In this case, the NORMAL light turns on when the output for tripping the TemBreak is transmitted.

- (2) Method for unit testing with TemBreak removed from system or with the system blacked out:

This test is performed with TemBreak actually tripped. In this case, the NORMAL light also turns on.

5-2 Preparation for Testing

Operation tests on an OCR are performed by applying various levels of the current transformer (CT) secondary equivalent current from the TNS-1 to the OCR used in TemBreak. These test current levels are overcurrent conditions for the OCR under test. Therefore, in order to minimize the duration of test current application, make it a practice to determine the necessary test current level in advance and quickly adjust the TNS-1's output current to this level.

Make the TNS-1 ready for a test as follows:

- (1) Set the POWER switch ((1) in Fig. 1) to ON.
- (2) Press the RESET switch ((4) in Fig. 1). The display ((8) in Fig. 1) is reset to zero.

The individual test procedures are described in the following subsections.

5-3 Verification of LTD Pick-up Current Setting

The LTD function is required to pick up at $I_1 \times 1.25$ and higher, but not at $I_1 \times 1.05$ and below.

Therefore, the LTD function is adjusted to pick up at a value somewhere between these requirement values. Use the indicator light (red) on the TemBreak OCR for operation indication.

- (1) Calculate the acceptable range of test current level I_T :

$$\left[\frac{I_1}{I_{CT}} \times 50 \times 1.05 \right] < I_T \leq \left[\frac{I_1}{I_{CT}} \times 50 \times 1.25 \right] \text{ (mA)}$$

where: I_1 : LTD pick-up current setting in A;

$I_{CT}(=I_n)$: rated CT primary current in A.

- o The rated CT secondary current is 50 mA.
- o The value of $I_{CT}(=I_n)$ are marked on the TemBreak OCR.

- (2) Set the ELEMENT SELECT switch ((2) in Fig. 1) to LTD-P.U.(1).
- (3) Press the START switch ((5) in Fig. 1) to turn on the test current.
- (4) Turn the CURRENT ADJUST knob in clockwise direction to increase the test current level until the indicator light on the TemBreak is lit.
- (5) When the indicator light is lit, turn the CURRENT ADJUST knob in counterclockwise direction to reduce the test current level until the indicator light on the TemBreak is turned off.

- (6) Slowly turn the CURRENT ADJUST knob in clockwise and counterclockwise directions for 2 or 3 cycles to determine the critical test current level at which the indicator light turns on-off.

NOTE: When the OCR under test has a PTA function, the indicator light on the TemBreak will blink if the OCR exceeds a PTA set value. The current level at which the indicator light blinks is PTA pick-up current setting (I_p).

NOTE: If a test current higher than the pick-up setting continues to flow, the LTD function will operate after a set time delay.

- (7) Compare the result (= the value indicated on the display) obtained in step (6) with the acceptable test current level range calculated in step 1). The result is acceptable if it is within the calculated range.
- (8) On checking the result, quickly return the CURRENT ADJUST knob to MIN position.
- (9) Press the RESET switch ((4) in Fig. 1). The test current is turned off, and the display is reset to zero.

5-4 Verification of LTD Time Delay Setting

The LTD time delay setting is adjusted and checked at 600% of the I_1 setting.

NOTE: When STD and INST pick-up current settings are 600% or less, set the STD and INST settings at maximum value and after checking the LTD time delay setting, reset them to the original settings.

- (1) Calculate the test current level I_T :

$$I_T = \frac{I_1}{I_{CT}} \times 50 \times 6 \text{ (mA)}$$

where, I_1 : LTD pick-up current setting in A
 $I_{CT}(=I_n)$: Rated CT primary current in A.

The rated CT secondary current is 50 mA.

- (2) Set the ELEMENT SELECT switch to LTD-I(2).
- (3) Press the START switch to turn on the test current.
- (4) Quickly turn the CURRENT ADJUST knob in clockwise direction to set the test current to the test current level I_T .
- (5) Press the RESET switch to turn off the test current. The indicated value on the display is reset to zero.

- (6) Set the ELEMENT SELECT switch to LTD-T(2).
- (7) Press the START switch to turn on the test current.
- (8) When the preset time on the TemBreak OCR under test is elapsed, then the TemBreak trips open and the NORMAL light turns ON and remains ON. The display holds and indicates the tripping time value.

NOTE: The test current is automatically turned OFF on operation of the OCR under test.

- (9) Compare the time value indicated on the display with the T_1 value marked on the OCR front panel. The result is acceptable when the displayed time value is within $\pm 20\%$ of the T_1 value.
- (10) Return the CURRENT ADJUST knob to the MIN position.
- (11) Press the RESET switch.
The displayed value is reset to zero.

Verification of STD Pick-up Current Setting (Definite Time-delay Characteristic)

The following describes the test procedure in the case where the SHORT TIME I^2t switch provided on the TemBreak's OCR is OFF.

- (1) Calculate the test current level I_T :

$$I_T = \frac{I_2}{I_{CT}} \times 50 \text{ (mA)}$$

Where: I_2 : STD pick-up current setting in A;
 $I_{CT}(=I_n)$: Rated CT primary current in A.

The rated CT secondary current is 50 mA.

- (2) Set the ELEMENT SELECT switch to STD-I(3).
- (3) Turn the CURRENT ADJUST knob in clockwise direction to a position that is lightly apart from the MIN position.
- (4) Press the START switch to turn on the test current.

NOTE: The test current is applied only for a short duration of 850 ms, then automatically turned OFF. The display holds and indicates the test current value applied to the OCR under test. To adjust the test current level, repeat the following procedure:

- 1) Press the RESET switch.
- 2) Turn the CURRENT ADJUST knob to adjust the test current level.

3) Press the START switch.

4) Check the test current value on the display.

NOTE: Adjustment of the test current can be easily done by turning the TemBreak. (If its adjustment is performed with the TemBreak turned OFF, the START or RESET switch should be pressed whenever tripping the TemBreak.)

- (5) When the current exceeding the pick-up current setting is applied to the OCR on the TemBreak, the TemBreak is tripped and the NORMAL light is lit. The display holds and indicates the test current value applied to the OCR under test.
- (6) Compare the value indicated on the display with the I_T value calculated in step 1).
The result is acceptable when the value indicated on the display is within $\pm 15\%$ of the I_T value.

5-6 Verification of STD Time Delay Setting (Definite Time Delay Characteristic)

This test is carried out when the SHORT TIME I^2t switch provided at the OCR on the TemBreak is OFF.

The STD function has a definite time delay characteristic that it will operate with a set time delay when the current is not less than its pick-up current setting.

Use a test current level of about 120% the STD pick-up current setting for this verification test.

- (1) Turn the CURRENT ADJUST knob in clockwise direction to a slightly higher position than the position determined in the verification of the STD pick-up setting in 5-5 above.

NOTE: When setting, take care not to exceed the INST pick-up current setting (I_3).
However, if STD pick-up current setting (I_2) and INST pick-up current setting (I_3) get close to each other, and this adjustment is difficult, set the INST pick-up current setting to the maximum once, and after checking the STD time delay setting, return it to the initial setting.

- (2) Set the ELEMENT SELECT switch to STD-T 4 .
- (3) Press the START switch to turn on the test current.

NOTE: The test current is applied for a duration of approx. 850 ms, then automatically turned OFF.

- (4) When the time preset to the TemBreak OCR elapses, the TemBreak is tripped, and the NORMAL light also turns ON and remains ON. The display holds and indicates the time value. Compare the displayed time value with the T_2 value marked on the OCR front panel. The result is acceptable when the displayed value is within ± 20 ms of T_2 .
- (5) Return the CURRENT ADJUST knob to MIN.
- (6) Press the RESET switch. The displayed value is reset to zero.

5-8 Verification of STD Time Delay Setting (I^2t Characteristic)

This test is performed when the SHORT TIME I^2t switch provided at the OCR on the TemBreak is ON.

The time delay setting at I^2t characteristic is adjusted to $T_2 = 0.1$ to 0.3 s at $I_2 = 10$ and verified. It is, therefore, expressed by means of $10^2 \times T_2 = \text{constant}$. Consequently, T_x at any pick-up current setting I_2 is expressed by the following formula.

$$T_x = \frac{10^2 \times T_2}{I_2^2}$$

For example, when T_2 is set to 0.2 s, each time delay setting is as follows when $I_2 = 2$ or $I_2 = 6$:

$$T_{x1} = \frac{10^2 \times 0.2}{2^2} = \frac{50}{2} = 25 \text{ s}$$

$$T_{x2} = \frac{10^2 \times 0.2}{6^2} = 0.56 \text{ s}$$

The relationship between the time delay setting (T_2) and each pick-up current setting (I_2) is shown in Table 1 below.

- (1) Adjust the test current in the same manner as in the verification of pick-up current setting in 5.5 above, and set so that I_T value is $I_2 = 6$ to 8 or equivalent.

NOTE: The test current is applied for a duration of approx. 850 ms, then automatically turned OFF. Therefore, if the test current is small, not tripping the TemBreak, no test can be performed.

NOTE: Set the INST pick-up current setting (I_3) to the maximum, and after verification of STD time delay setting, reset it to the initial setting.

- (2) Set the ELEMENT SELECT switch to STD-T 4 .
- (3) Press the START switch to turn on the test current.
- (4) The test current corresponding to $I_2 = 6$ to 8 is applied, and the TemBreak is tripped.
At the same time, the NORMAL light is turned ON. The display holds and indicates the time value.
Compare the displayed value with the calculated value (Refer to Table 1 below). The result is acceptable when the displayed time within $\pm 20\%$ of the calculated value.
- (5) Return the CURRENT ADJUST knob to MIN.
- (6) Press the RESET switch. The displayed value is reset to zero.

Table 1

STD Pick-up Current Setting I_2 ($\times I_1$)					
2	4	6	8	10	
7.50	1.88	0.83	0.47	0.30	STD Time
6.25	1.56	0.69	0.39	0.25	Delay
5.00	1.25	0.56	0.31	0.20	Setting
3.75	0.94	0.42	0.23	0.15	
2.50	0.63	0.28	0.16	0.10	T_2 s

6-9 Verification of INST Pick-up Current Setting

- (1) Calculate the test current level I_T :

$$I_T = \frac{I_3}{I_{CT}} \times 50 \text{ (mA)}$$

Where: I_3 : STD pick-up current setting in A;
 $I_{CT}(=I_n)$: rated CT primary current in A.

The rated CT secondary current is 50 mA.

- (2) Set the ELEMENT SELECT switch to INST-I 3 .
- (3) Turn the CURRENT ADJUST knob in clockwise direction to a position that is slightly apart from the MIN position.
- (4) Press the START switch to turn on the test current.

NOTE: The test current is applied only for a short duration of about 30 ms, then automatically turned OFF. The display holds and indicates the test current value applied to the OCR under test. To adjust the test current level, repeat the following procedure:

- 1) Press the RESET switch.
- 2) Turn the CURRENT ADJUST knob to adjust the test current level.
- 3) Press the START switch to turn on the test current.
- 4) Check the test current value on the display.

NOTE: Adjustment of the test current can be easily done by turning the TemBreak. (If its adjustment is performed with the TemBreak turned OFF, the START or RESET switch should be pressed whenever tripping the TemBreak.)

- (5) When the current exceeding the pick-up current setting is applied to the OCR of the TemBreak, the TemBreak is tripped and the NORMAL light is lit. The display holds and indicates the test current value applied to the OCR under test.
- (6) Compare the value indicated on the display with the I_T value calculated in step 1).
The result is acceptable when the value indicated on the display is within $\pm 20\%$ of the I_T value.
- (7) Return the CURRENT ADJUST knob to MIN position.

NOTE: When the INST pick-up current setting (I_3) is set at the maximum, the error will become slightly large according to the saturation characteristic of the built-in CT.

- (8) Press the RESET switch. The displayed value is reset to zero.

5-10 Verification of GFT Pick-up Current Setting

- (1) Calculate the test current level I_T :

$$I_T = \frac{I_G}{I_{CT}} \times 50 \text{ (mA)}$$

Where: I_G : GFT pick-up current setting in A;

$I_{CT}(=I_n)$: Rated CT primary current in A.

The rated CT secondary current is 50 mA.

- (2) Set the ELEMENT SELECT switch to GFT-I 6 .
(3) Press the START switch to turn on the test current.

NOTE: The test current is applied for a duration of about 850 ms, then automatically turned OFF.

- (4) Slowly turn the CURRENT ADJUST knob in clockwise direction to trip the TemBreak.
- (5) When the TemBreak is tripped, the NORMAL light turns ON and remains ON.
The display holds and indicates the current value at which the GFT function operated. Compare the result obtained in step (5) with the test current level I_T calculated in step (1). The result is acceptable if it is within $\pm 20\%$ of the I_T value.
- (6) Leave the CURRENT ADJUST knob as it is when the verification of the GFT time delay setting in 5-11 below is made following this test. Otherwise, return the CURRENT ADJUST knob to the MIN position.
- (7) Press the RESET switch.
The display value is reset to zero.

5-11 Verification of GFT Time Delay Setting

The GFT function has a definite time delay characteristic that it will operate with a set time delay when the current is not less than its pick-up current setting.

Use a test current level of about 120% the GFT pick-up current setting for this verification test.

- (1) Turn the CURRENT ADJUST knob in clockwise direction to a slightly higher position than the position determined in the verification of the GFT pick-up setting in 5-10 above.
- (2) Set the ELEMENT SELECT switch to GFT-T 7 .
- (3) Press the START switch to turn on the test current.

NOTE: The test current is applied for a duration of about 850 ms, then automatically turned OFF.

When the time preset to the OCR on the TemBreak elapses, the TemBreak is tripped. At the same time, NORMAL light turns ON and remains ON. The display holds and indicates the time value. Compare the time value indicated on the display with the T_G value marked on the OCR front panel. The result is acceptable when the "displayed time is within ± 20 ms of the T_G value.

- (4) Return the CURRENT ADJUST knob to MIN.
- (5) Press the RESET switch. The displayed value is reset to zero.



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Catalogue

TBP

May 2000

TemBreak *Plus*

For High Demand
Selectivity Applications

NEW



- Powerful interrupting capacities
- Lasting reliability
- Unique contact structure
- Selectivity enhanced MCCBs

NHP

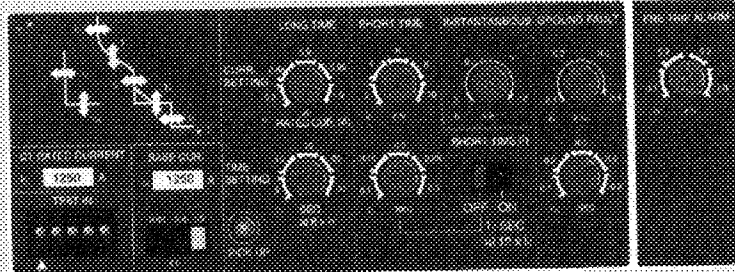
ELECTRICAL ENGINEERING PRODUCTS PTY LTD

A.C.N. 004 304 612



TemBreak Plus Selectivity MCCBs

- Electronic MCCBs
- 400 to 1600 A
- Compliments the standard TemBreak range
- Common accessories with standard TemBreak MCCBs



The need for a continuous and reliable power supply places increased emphasis on selectivity requirements in today's electrical distribution system. The TemBreak Plus SE series of MCCBs utilises microprocessor based protection, providing high levels of selectivity.

Selectivity Series

Cat. No.	XS400SE	XH400SE	XS630SE	XH630SE	XS800SE	XH800SE	XS1250SE	XS1600SE
No. of poles	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Ampere frame	400	400	630	630	800	800	1250	1600
Rated current in (Ampere)	250/400	250/400	630	630	800	800	1000 / 1250	1600
Rated AC breaking capacity 690 V	18/9	20/10	20/10	20/10	20/10	20/10	25/19	45/34
IEC 60947-2 500 V	30/15	42/21	35/18	42/21	35/18	42/21	45/34	65/49
low/ks kA 440 V	42/21	65/33	50/25	65/33	50/25	65/33	65/49	65/64
415 V	50/25	65/33	50/25	65/33	50/25	65/33	65/49	85/64
400 V	50/25	65/33	50/25	65/33	50/25	65/33	85/64	100/75
Microprocessor	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dimensions 4 P	260x185x103	260x185x103	273x280x103	273x280x103	273x280x103	273x280x103	370x280x120	370x280x140
HxWxD (mm) 3 P	260x140x103	260x140x103	273x210x103	273x210x103	273x210x103	273x210x103	370x210x120	370x210x140
Reference MCCB for accessories	XS400NE	XH400NE	XS630NE	XH630NE	XS800NE	XH800NE	XS1250NE	XS1600NE

Selectivity

The most basic form of Selectivity is where two circuit breakers are connected in series.

A higher amperage breaker is installed upstream, and a lower amperage breaker downstream. Should an overload or short circuit occur downstream, the downstream breaker will trip, but the upstream breaker will not, hence, feeding parts of the system which are fault free. This is the concept of selectivity.

Selectivity is generally used in critical applications feeding

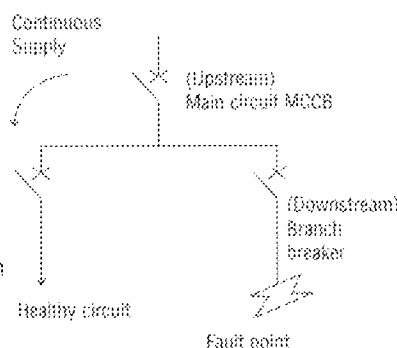
essential loads. It is important to ensure total installation power is not lost due to a small or minor fault in a sub-part of the overall electrical system, for example, in a local distribution board.

Selectivity can be "enhanced" beyond the breaking capacity of the downstream device, provided it is backed up by an appropriately selected upstream device, which will not trip (unlatch) under stated conditions.



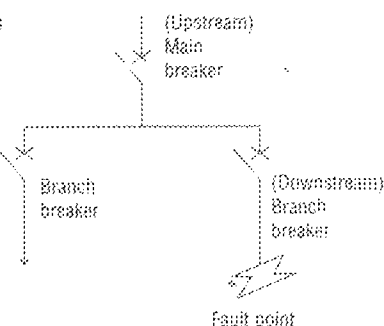
Selectivity

By co-ordination of two circuit breakers connected in series, it is possible to ensure that if a downstream fault occurs, then only the downstream breaker will trip, rather than both the upstream and downstream breakers.



Cascade

Back-up combinations are where two short circuit protection devices may open together to ensure that a downstream fault is safely interrupted.



Cascading (Back-up)

Cascading is achieved by using an upstream device to assist (back-up) a downstream device in clearing a fault current which happens to be greater than the breaking capacity of the downstream device.

In Cascading applications, the upstream device may have to trip (unlatch) in order to give sufficient protection to the downstream device, thus interrupting supply of power to all devices downstream. Therefore, Cascading is generally used

in applications involving the supply of non-essential loads, such as basic lighting.

The main benefit of Cascading is that in certain circumstances, circuit breakers with breaking capacities lower than the prospective fault level, can be safely used downstream provided they are backed up by the recommended upstream breaker. This provides for a lower cost solution.

TemBreak Plus Selectivity/Cascade table for 415 V AC

Downstream MCCB	kA (rms)	Upstream MCCB							
		XS400SE	XH400SE	XS630SE	XH630SE	XS800SE	XH800SE	XS1250SE	XS1600SE
		50	65	50	65	50	65	65	85
XS125CJ	18	15 / 50	15 / 50	18 / 30	18 / 30	18 / 30	18 / 30	18 / 18	18 / 18
XS125NJ	30	25 / 50	25 / 50	30 / 30	30 / 30	30 / 30	30 / 30	30 / 30	30 / 30
XH125NJ	50	35 / 50	35 / 65	50 / 50	50 / 65	50 / 50	50 / 65	50 / 50	50 / 50
XE225NC	18	15 / 30	15 / 30	18 / 30	18 / 30	18 / 30	18 / 30	18 / 18	18 / 18
XS250NJ	35	15 / 50	15 / 65	35 / 50	35 / 65	35 / 50	35 / 65	35 / 35	35 / 35
XH250NJ	50	25 / 50	25 / 65	50 / 50	50 / 65	50 / 50	50 / 65	50 / 50	50 / 50
XS400CJ	35		- / 50	10 / 50	10 / 65	25 / 50	25 / 65	35 / 42	35 / 42
XS400NJ	50		- / 65	10 / 50	10 / 65	25 / 50	25 / 65	50 / 65	50 / 65
XS400SE	50		- / 65	10 / 50	10 / 65	25 / 50	25 / 65	50 / 65	50 / 65
XH400SE	65			10 / 50	10 / 65	25 / 50	25 / 65	50 / 65	50 / 65
XSE30CJ	45			- / 50	- / 50	10 / 50	10 / 50	30 / 45	30 / 45
XS630NJ	65					10 / 50	10 / 65	30 / 65	30 / 85
XS630SE	50				- / 65	10 / 50	10 / 65	30 / 65	30 / 85
XH630SE	65					10 / 50	10 / 65	30 / 65	30 / 85
XS800NJ	65							15 / 65	20 / 85
XS800SE	50						- / 65	15 / 65	20 / 85
XS1250SE	65								20 / 65

Note: Selectivity and Cascade to AS 3947-2

Selection key for the above table



For example, the level of selectivity that can be obtained between an XS400SE MCCB and a thermal magnetic XH250NJ MCCB is 25 kA. This represents the level of short circuit that the downstream breaker (XH250NJ) can safely interrupt without the upstream breaker unlatching.

Terasaki Din-T/Safe-T Selectivity/Cascade table for 415 V AC

Downstream MCB			Upstream MCCB						
			XS125CJ	XS125NJ	XH125NJ	XS250NJ	XH250NJ	XS400CJ	XS400SE
Type	Rating	kA (rms)	18	30	50	35	50	35	50
Din-T6	2-25 A	6	18/18	25/25	25/25	25/25	25/25	-	-
	32-63 A	6	18/18	20/25	20/25	25/25	25/25	-	-
Din-T10	0.5-25 A	10	18/18	25/30	30/50	35/35	35/50	35/35	35/50
	32-63 A	10	18/18	20/25	20/25	25/25	25/25	25/25	25/25
DRCBH	10-25 A	10	18/18	25/30	30/50	35/35	35/50	35/35	35/50
	32 A	10	18/18	20/25	20/25	25/25	25/25	25/25	25/25
Din-T10H	80-125 A	10	4/18	4/25	4/25	15/15	15/15	10/10	10/10
Din-T15	6-16 A	25	18/25	25/30	30/50	35/35	35/50	35/35	35/50
	20 A	20-25 *)	18/20	25/30	30/50	35/35	35/50	35/35	35/50
	32 A	15-25 *)	18/18	25/30	30/50	35/35	35/50	35/35	35/50
	40, 50, 63 A	10-12.5 *)	18/18	20/25	20/25	25/25	25/25	25/25	25/25
Safe-T	16-63 A	6	3/10	3/10	3/10	-	-	-	-
SRCB	16-20 A	6	3/10	3/10	3/10	-	-	-	-

Note: *) Dependent on the number of poles. Refer NHP.

TemCurve on CD

TemCurve is an exciting new generation of selectivity software now available from NHP. Our objective is to provide you with the tools necessary to ensure your time is managed as effectively and efficiently as possible.

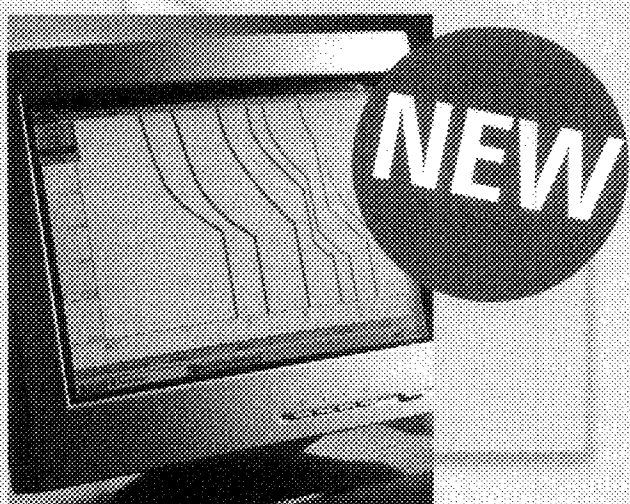
TemCurve has been developed by NHP for the Australian market, but will also be used by the Terasaki organisation worldwide.

TemCurve, version 3.0 takes all the features presently available in version 2.2 and adds to them.

This ensures that TemCurve 3.0 will remain one of the most versatile engineering tools available on the market today.

Circuit breaker selection and set-up can be a laborious and time-consuming task. NHP has ensured that TemCurve 3.0 is now even simpler to operate. Hence, accurate results can be gained in a matter of minutes.

The database within TemCurve holds the characteristics curves for all Terasaki devices presently available from NHP. In addition to



this, the extensive database of non-Terasaki devices allows you to produce accurate grading from the transformer primary side to the point of final distribution.

High quality outputs can be printed, including the characteristic curves for each chosen device, as well as individual device settings.

For further information, please contact your local NHP office or agent.

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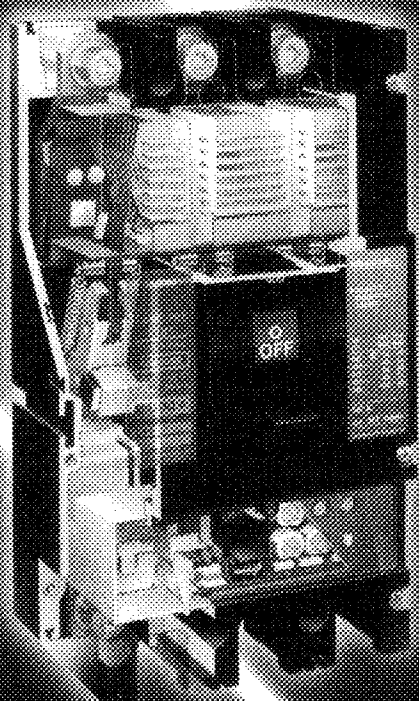
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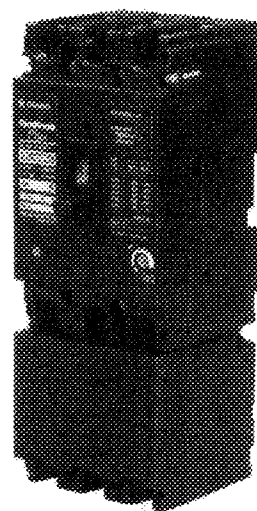


PowerBreaker Series Ics = 50 kA

Type		XH125PJ	XH160PJ	XH250PJ	XH400PJ	XH400PE	XH630PJ	XH630PE	XH800PJ	XH800PE
No. of poles		3,4	3,4	3,4	3,4	3,4	3,4	3,4	3,4	3,4
Ampere frame		125	160	250	400	400	630	630	800	800
Rated current In (Amp)		20,32,50,63 100,125	160	160,250	250,400	250,400	400,630	630	800	800
Rated AC breaking capacity										
690 V		8/4	15/7.5	18/9	18/9	20/10	45/23	20/10	45/23	20/10
AS 3947-2	500 V	25/13	25/13	42/21	42/21	42/21	65/33	42/21	65/33	42/21
Icu /Ics kA	440 V	42/21	42/21	65/50	65/50	65/50	85/43	65/50	85/43	65/50
	415 V	50/50	50/50	65/50	65/50	65/50	85/50	65/50	85/50	65/50
	400 V	50/50	50/50	65/50	65/50	65/50	100/50	65/50	100/50	65/50
Thermal magnetic		Yes	Yes	Yes	Yes		Yes		Yes	
Microprocessor						Yes		Yes		Yes
Dimensions	4 P	120x155x86	140x165x103	185x260x103	185x260x103	185x260x103	280x273x103	280x273x103	280x273x103	280x273x103
W-H-D mm	3 P	90x155x86	105x165x103	140x260x103	140x260x103	140x260x103	210x273x103	210x273x103	210x273x103	210x273x103
Reference MCCB for accessories		XH125NJ	XH250NJ	XS400NJ	XS400NJ	XH400NE	XS630NJ	XH630NE	XS800NJ	XH800NE

LimitorBreaker Series Ics = 65 - 85 kA

Type	TL100NJ	TL250NJ	TL400NE	TL630NE	TL800NE	TL1250NE
No. of poles	3/4	3/4	3/4	3/4	3/4	3/4
Ampere frame	100	250	400	630	800	1250
Rated current In (Amp)	20,32,50,63,100	160,250	400	630	800	1000
Rated AC breaking capacity						
690 V	---	25/25	25/25	45/34	45/34	45/34
AS 3947-2	500 V	70/70	70/70	75/57	75/57	75/57
Icu /Ics kA	440 V	85/85	85/85	125/70	125/70	125/65
	415 V	85/85	85/85	125/70	125/70	125/65
	400 V	85/85	100/100	125/70	125/70	125/65
Thermal magnetic	Yes	Yes				
Microprocessor			Yes	Yes	Yes	Yes
Dimensions	4 P	120x235x86	185x360x103	185x360x103	280x370x140	280x370x140
W-H-D mm	3 P	90x235x86	140x360x103	140x360x103	210x370x140	210x370x140
Reference MCCB for accessories		XH125NJ	XS400NJ	XH400NE	XS1600NE	XS1600NE



TL100NJ

Selectivity Series SE

Type		XS400SE	XH400SE	XS630SE	XH630SE	XS800SE	XH800SE	XS1250SE	XS1600SE
No. of poles		3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Ampere frame		400	400	630	630	800	800	1250	1600
Rated current In (Amp)		250,400	250,400	630	630	800	800	1000 1250	1600
Rated AC breaking capacity									
690 V		18/9	20/10	20/10	20/10	20/10	20/10	25/19	45/34
AS 3947-2	500 V	30/15	42/21	35/18	42/21	35/18	42/21	45/34	65/49
Icu /Ics kA	440 V	42/21	65/33	50/25	65/33	50/25	65/33	65/49	85/64
	415 V	50/25	65/33	50/25	65/33	50/25	65/33	65/49	85/64
	400 V	50/25	65/33	50/25	65/33	50/25	65/33	85/64	100/75
Microprocessor		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dimensions	4 P	185x260x103	185x260x103	280x273x103	280x273x103	280x273x103	280x273x103	280x370x120	280x370x140
W-H-D mm	3 P	140x260x103	140x260x103	210x273x103	210x273x103	210x273x103	210x273x103	210x370x120	210x370x140
Reference MCCB for accessories		XS400NE	XH400NE	XS630NE	XH630NE	XS800NE	XH800NE	XS1250NE	XS1600NE

- Note: 1. All thermal magnetic MCCBs are adjustable from 63 % - 100 % of In.
2. All microprocessor MCCBs are adjustable from 50 % - 100 % of In

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