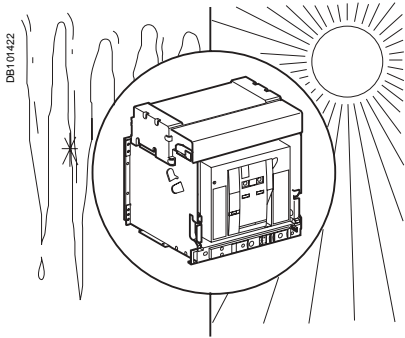

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Ambient temperature

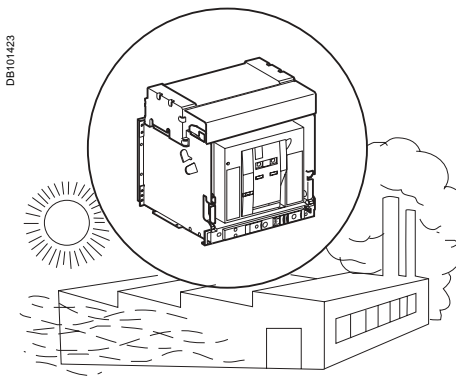
Masterpact devices can operate under the following temperature conditions:

- the electrical and mechanical characteristics are stipulated for an ambient temperature of -5 °C to +70 °C

- circuit-breaker closing is guaranteed down to -35 °C.

Storage conditions are as follows:

- -40 to +85 °C for a Masterpact device without its control unit
- -25 °C to +85 °C for the control unit.



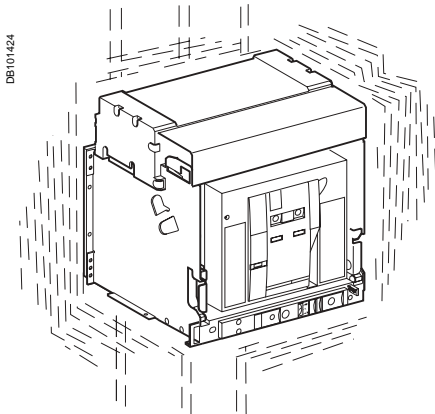
Extreme atmospheric conditions

Masterpact devices have successfully passed the tests defined by the following standards for extreme atmospheric conditions:

- IEC 68-2-1: dry cold at -55 °C
- IEC 68-2-2: dry heat at +85 °C
- IEC 68-2-30: damp heat (temperature +55 °C, relative humidity 95 %)
- IEC 68-2-52 level 2: salt mist.

Masterpact devices can operate in the industrial environments defined by standard IEC 947 (pollution degree up to 4).

It is nonetheless advised to check that the devices are installed in suitably cooled switchboards without excessive dust.



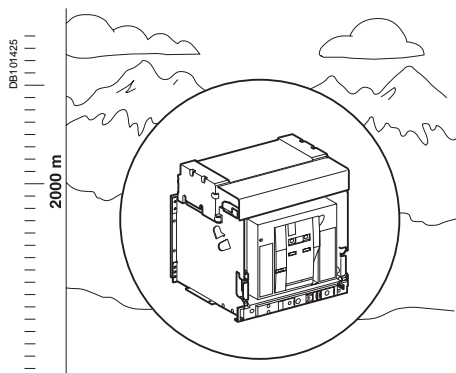
Vibrations

Masterpact devices are guaranteed against electromagnetic or mechanical vibrations.

Tests are carried out in compliance with standard IEC 68-2-6 for the levels required by merchant-marine inspection organisations (Veritas, Lloyd's, etc.):

- 2 to 13.2 Hz: amplitude ± 1 mm
- 13.2 to 100 Hz: constant acceleration 0.7 g.

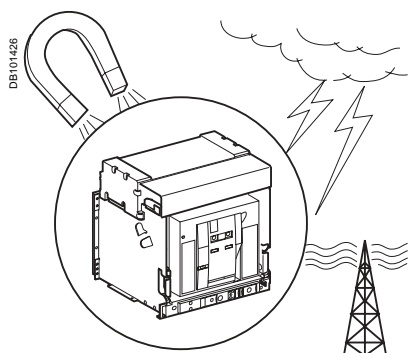
Excessive vibration may cause tripping, breaks in connections or damage to mechanical parts.



Altitude

At altitudes higher than 2000 metres, the modifications in the ambient air (electrical resistance, cooling capacity) lower the following characteristics as follows:

Altitude (m)	2000	3000	4000	5000
Dielectric resistance voltage (V)	3500	3150	2500	2100
Average insulation level (V)	1000	900	700	600
Maximum utilisation voltage (V)	690	590	520	460
Average thermal current (A) at 40 °C	1 x I _n	0.99 x I _n	0.96 x I _n	0.94 x I _n



Electromagnetic disturbances

Masterpact devices are protected against:

- overvoltages caused by devices that generate electromagnetic disturbances
- overvoltages caused by atmospheric disturbances or by a distribution-system outage (e.g. failure of a lighting system)
- devices emitting radio waves (radios, walkie-talkies, radar, etc.)
- electrostatic discharges produced by users.

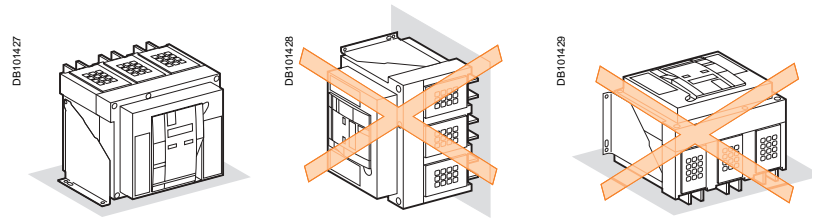
Masterpact devices have successfully passed the electromagnetic-compatibility tests (EMC) defined by the following international standards:

- IEC 60947-2, appendix F
- IEC 60947-2, appendix B (trip units with earth-leakage function).

The above tests guarantee that:

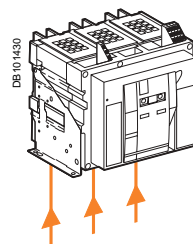
- no nuisance tripping occurs
- tripping times are respected.

Possible positions



Power supply

Masterpact devices can be supplied either from the top or from the bottom without reduction in performance, in order to facilitate connection when installed in a switchboard.

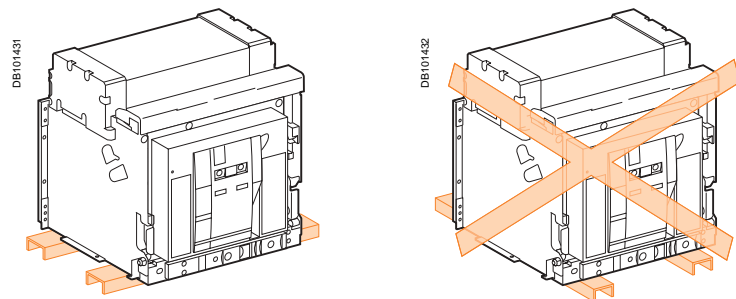


Mounting the circuit-breaker

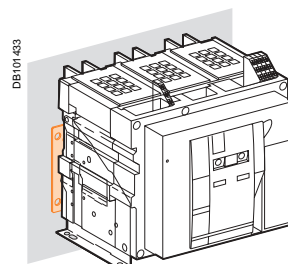
It is important to distribute the weight of the device uniformly over a rigid mounting surface such as rails or a base plate.

This mounting plane should be perfectly flat (tolerance on support flatness: 2 mm). This eliminates any risk of deformation which could interfere with correct operation of the circuit breaker.

Masterpact devices can also be mounted on a vertical plane using the special brackets.



Mounting on rails.

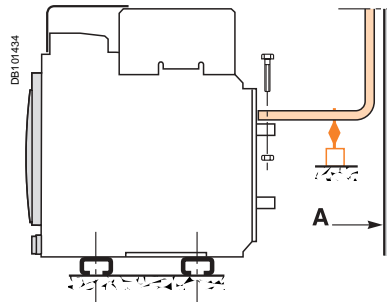


Mounting with vertical brackets.

Partitions

Sufficient openings must be provided in partitions to ensure good air circulation around the circuit breaker; Any partition between upstream and downstream connections of the device must be made of non-magnetic material.

For high currents, of 2500 A and upwards, the metal supports or barriers in the immediate vicinity of a conductor must be made of non-magnetic material **A**. Metal barriers through which a conductor passes must not form a magnetic loop.

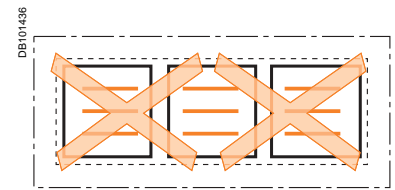
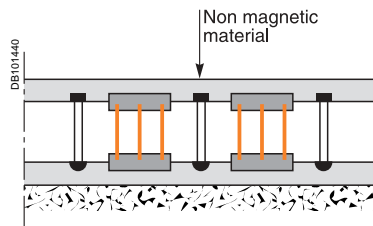


A : non magnetic material.



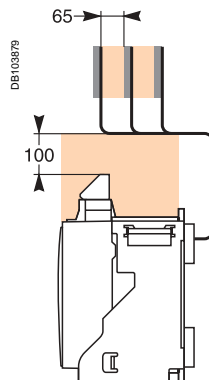
Busbars (NT, NW)

The mechanical connection must exclude the possibility of formation of a magnetic loop around a conductor.



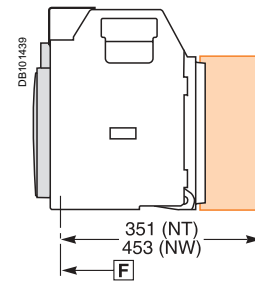
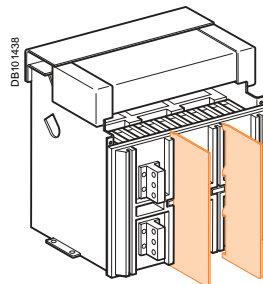
Busbars (NT)

For live busbars installed immediately above the circuit breaker (respecting the 100 mm safety clearance), the distance between bars must be 65 mm minimum. In a 1000 V system, the bars must be insulated.



Interphase barrier

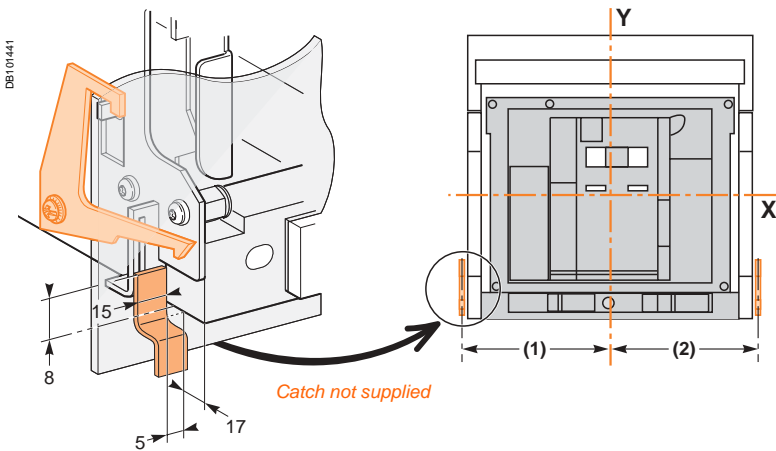
If the insulation distance between phases is not sufficient (≤ 14 mm), it is advised to install phase barriers (taking into account the safety clearances). Mandatory for a Masterpact NT > 500 V.



Door interlock

Mounted on the right or left-hand side of the chassis, this device inhibits opening of the cubicle door when the circuit breaker is in "connected" or "test" position. If the breaker is put in the "connected" position with the door open, the door may be closed without having to disconnect the circuit breaker.

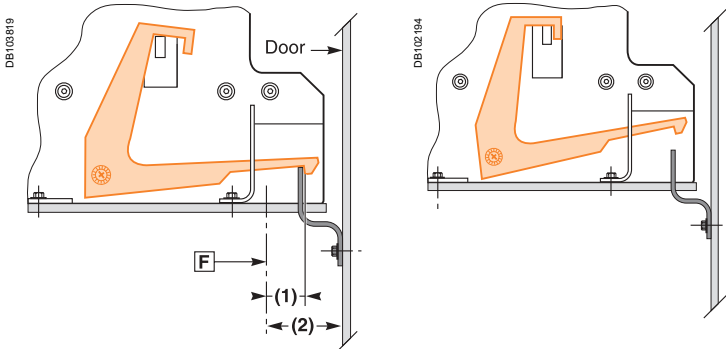
Dimensions (mm)		
Type	(1)	(2)
NT08-16 (3P)	135	168
NT08-16 (4P)	205	168
NW08-40 (3P)	215	215
NW08-40 (4P)	330	215
NW40b-63 (3P)	660	215
NW40b-63 (4P)	775	215



Breaker in "connected"
or "test" position
Door cannot be opened

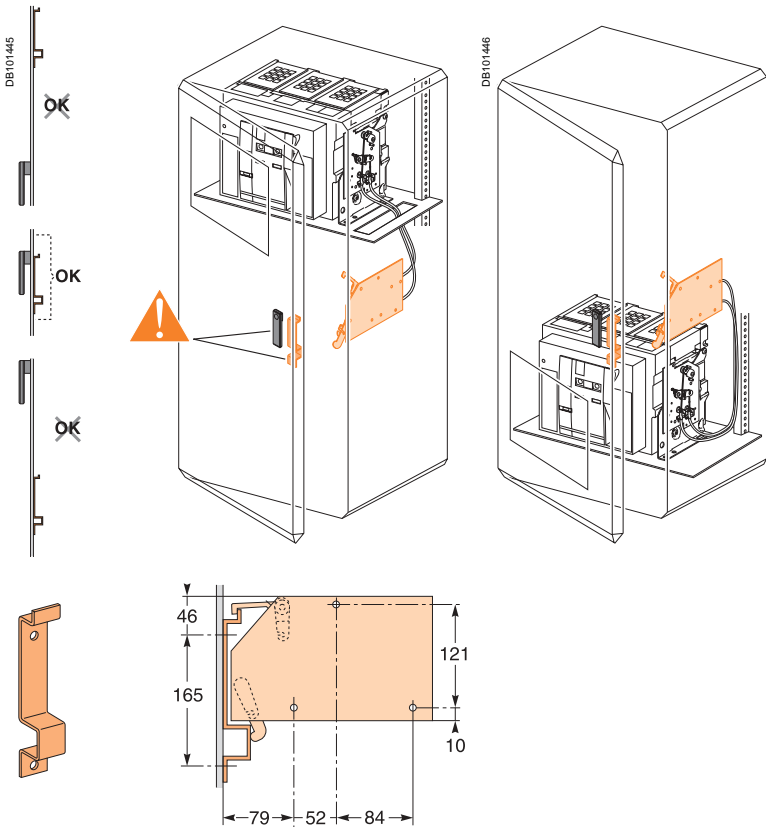
Breaker in "disconnected"
position
Door can be opened

Dimensions (mm)		
Type	(1)	(2)
NT	5	23
NW	83	103



Cable-type door interlock

This option prevents door opening when the circuit breaker is closed and prevents circuit breaker closing when the door is open. For this, a special plate associated with a lock and a cable is mounted on the right side of the circuit breaker. With this interlock installed, the source changeover function cannot be implemented.



Note: the door interlock can either be mounted on the right side or the left side of the breaker.
[F] : datum.

Wiring of voltage releases

During pick-up, the power consumed is approximately 150 to 200 VA. For low control voltages (12, 24, 48 V), maximum cable lengths are imposed by the voltage and the cross-sectional area of cables.

Recommended maximum cable lengths (meter).

		12 V		24 V		48 V	
		2,5 mm ²	1,5 mm ²	2,5 mm ²	1,5 mm ²	2,5 mm ²	1,5 mm ²
MN	U source 100 %	—	—	58	35	280	165
	U source 85 %	—	—	16	10	75	45
MX-XF	U source 100 %	21	12	115	70	550	330
	U source 85 %	10	6	75	44	350	210

Note: the indicated length is that of each of the two wires.

24 V DC power-supply module

External 24 V DC power-supply module for Micrologic (F1-, F2+)

- do not connect the positive terminal (F2+) to earth
- the negative terminal (F1-) can be connected to earth, except in IT systems
- a number of Micrologic control units and M6C modules can be connected to the same 24 V DC power supply (the consumption of a Micrologic control unit or an M6C module is approximately 100 mA)
- do not connect any devices other than a Micrologic control unit or an M6C module
- the maximum length for each conductor is ten metres. For greater distances, it is advised to twist the supply wires together
- the 24 V DC supply wires must cross the power cables perpendicularly. If this is difficult, it is advised to twist the supply wires together
- the technical characteristics of the external 24 V DC power-supply module for Micrologic control units are indicated on page 207E2200_Ver6.0.fm/12

Communication bus

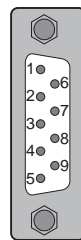
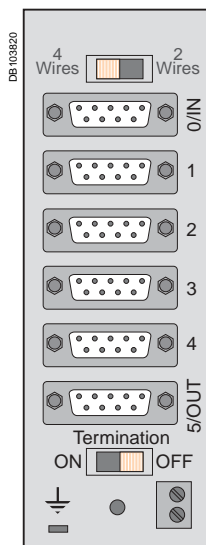
- do not connect the positive terminal (E1) to earth
- the negative terminal (E2) can be connected to earth
- a number of "device" or "chassis" communication modules can be connected to the same 24 V DC power supply (the consumption of each module is approximately 30 mA)
- the 24 V DC (E1, E2) power supply for the communication bus must be separate from the external 24 V DC power-supply module for Micrologic control units (F1-, F2+).

E1	E2	E3	E4	E5	E6
+	-	A/Tx ⁻	B/Tx ⁺	A'/Rx ⁻	B'/Rx ⁺

To create a two-wire Modbus communication bus, simply connect Tx⁻ with Rx⁻ and Tx⁺ with Rx⁺.

To connect a Modbus slave (Micrologic) to a Modbus master (PLC), connect:
the slave Tx⁻ to the master Rx⁻ the slave Rx⁻ to the master Tx⁻
the slave Tx⁺ to the master Rx⁺ the slave Rx⁺ to the master Tx⁺.

RS485 Modbus Junction Block



Pins	Signal	Color
1	0 V	Black
2	24 V	Red
3	NC	
4	B' / Rx ⁺	Blue
5	B / Tx ⁺	Yellow
6	0 V	Black
7	24 V	Red
8	A' / Rx ⁻	White
9	A / Tx ⁻	Brown

Cables connections

If cables are used for the power connections, make sure that they do not apply excessive mechanical forces to the circuit breaker terminals.

For this, make the connections as follows:

- extend the circuit breaker terminals using short bars designed and installed according to the recommendations for bar-type power connections:

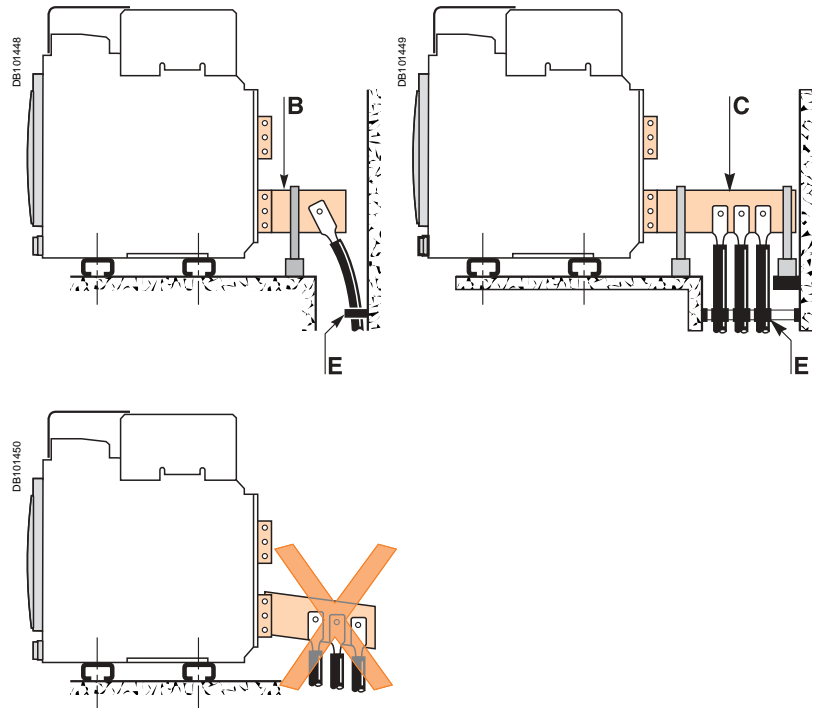
- for a single cable, use solution **B** opposite

- for multiple cables, use solution **C** opposite

- in all cases, follow the general rules for connections to busbars:

- position the cable lugs before inserting the bolts

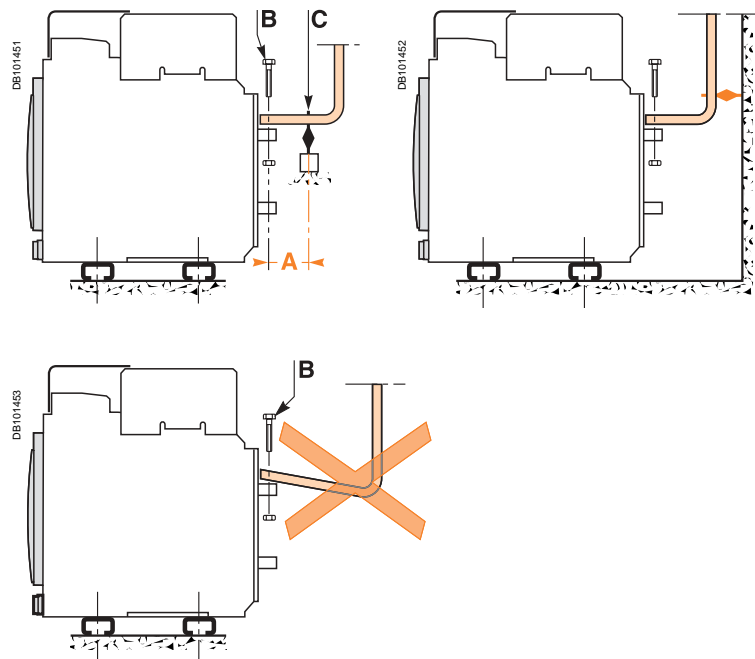
- the cables should firmly secured to the framework **E**.



Busbars connections

The busbars should be suitably adjusted to ensure that the connection points are positioned on the terminals before the bolts are inserted **B**.

The connections are held by the support which is solidly fixed to the framework of the switchboard, such that the circuit breaker terminals do not have to support its weight **C**. (This support should be placed close to the terminals).

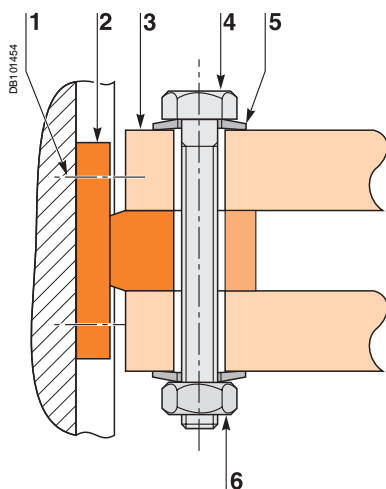


Electrodynamic stresses

The first busbar support or spacer shall be situated within a maximum distance from the connection point of the breaker (see table below). This distance must be respected so that the connection can withstand the electrodynamic stresses between phases in the event of a short circuit.

Maximum distance A between busbar to circuit breaker connection and the first busbar support or spacer with respect to the value of the prospective short-circuit current.

Isc (kA)	30	50	65	80	100	150
Distance A (mm)	350	300	250	150	150	150



- 1 Terminal screw factory-tightened to 16 Nm (NW), 13 Nm (NT).
- 2 Breaker terminal.
- 3 Busbar.
- 4 Bolt.
- 5 Washer.
- 6 Nut.

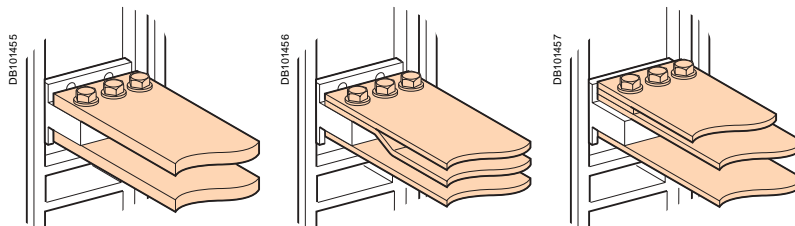
Clamping

Correct clamping of busbars depends amongst other things, on the tightening torques used for the nuts and bolts. Over-tightening may have the same consequences as under-tightening.

For connecting busbars (Cu ETP-NFA51-100) to the circuit breaker, the tightening torques to be used are shown in the table below.

These values are for use with copper busbars and steel nuts and bolts, class 8.8. The same torques can be used with AGS-T52 quality aluminium bars (French standard NFA 02-104 or American National Standard H-35-1).

Examples

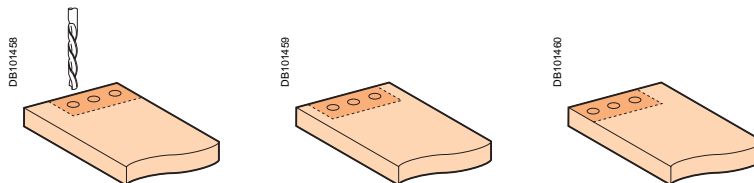


Tightening torques

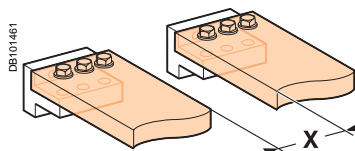
Ø (mm) Nominal	Ø (mm) Drilling	Tightening torques (Nm) with grower or flat washers	Tightening torques (Nm) with contact or corrugatec washers
10	11	37.5	50

Busbar drilling

Examples



Isolation distance

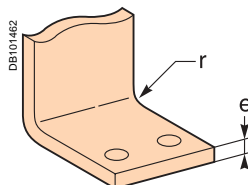


Dimensions (mm)

Ui	X min
600 V	8 mm
1000 V	14 mm

Busbar bending

When bending busbars maintain the radius indicated below(a smaller radius would cause cracks).

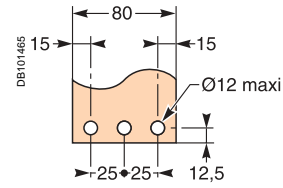
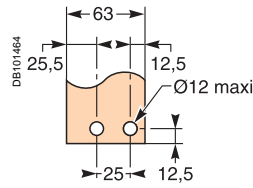
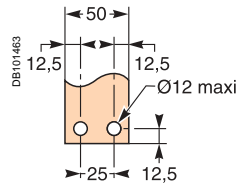
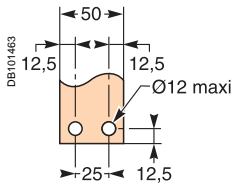


Dimensions (mm)

e	Radius of curvature r Min	Recommended
5	5	7.5
10	15	18 to 20

Rear connection

Rear connection with spreaders

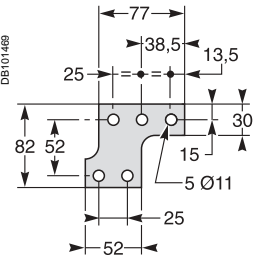
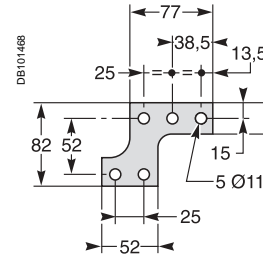
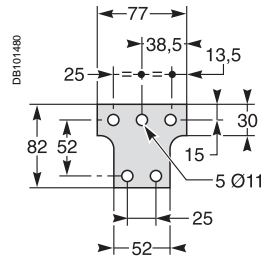
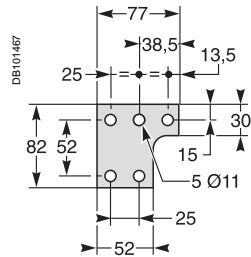
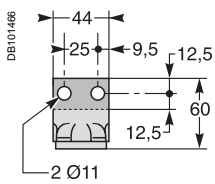


Middle left or middle
right spreader for 4P

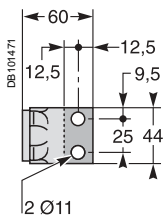
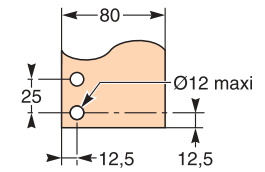
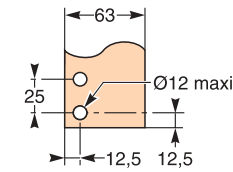
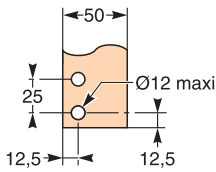
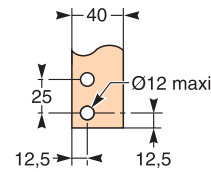
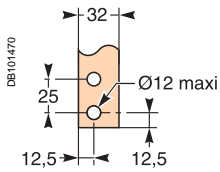
Middle spreader for 3P

Left or right spreader
for 4P

Left or right spreader
for 3P

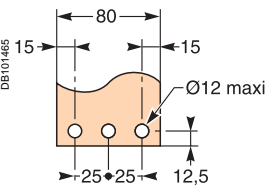
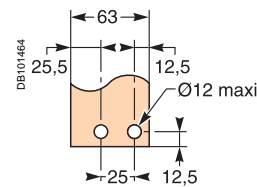
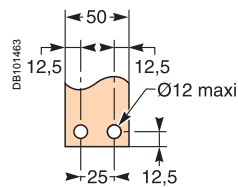
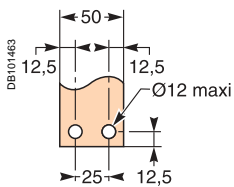


Vertical rear connection



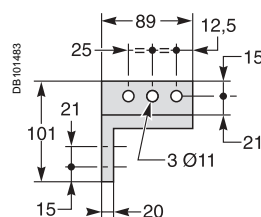
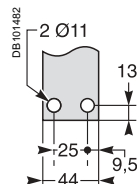
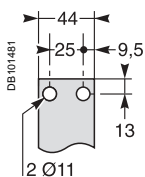
Front connection

Front connection via vertical connection adapters

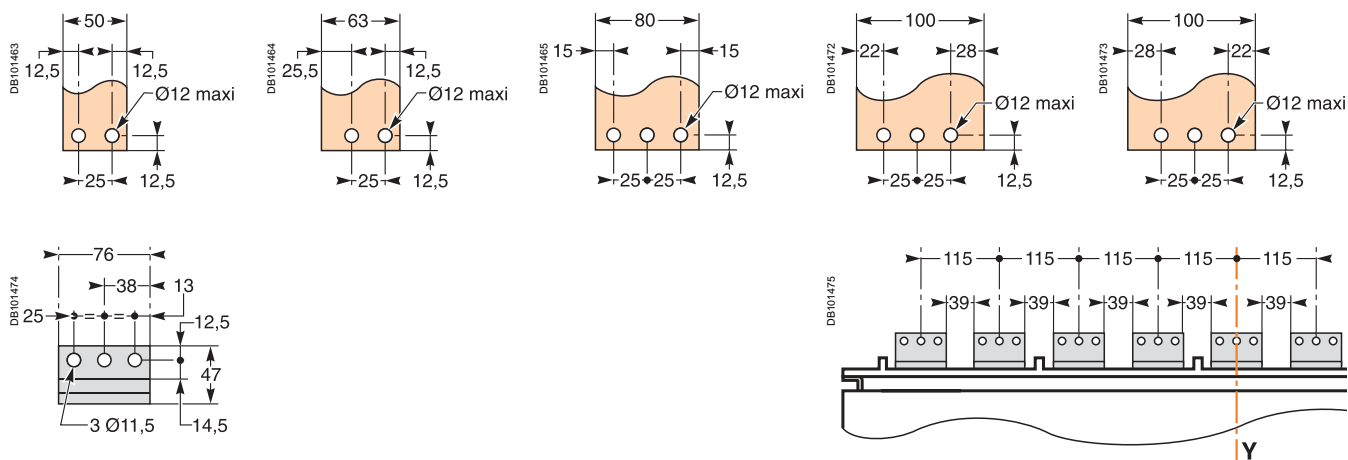


Top connection

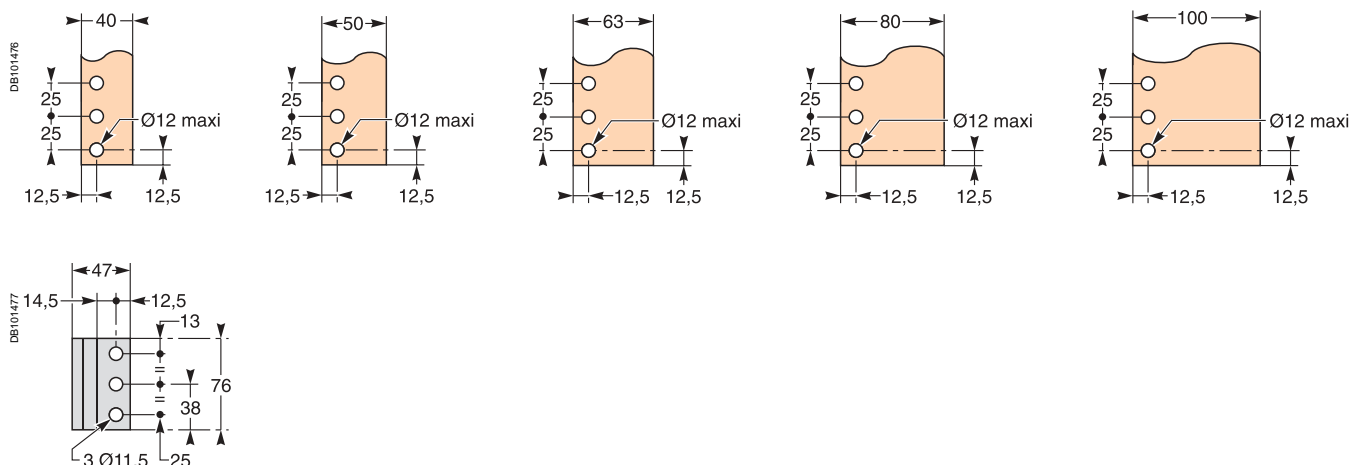
Bottom connection



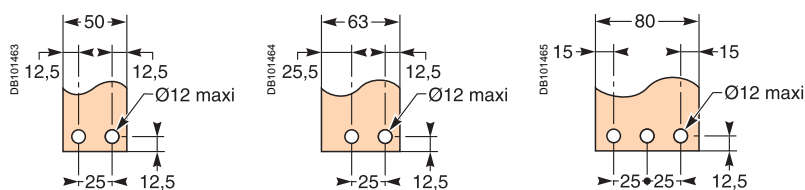
NW40b to NW50



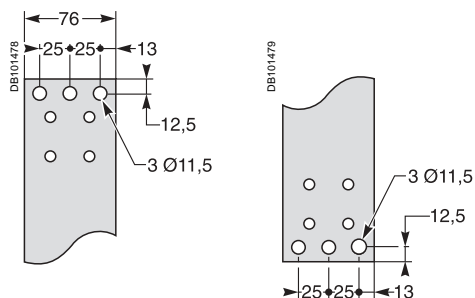
Vertical rear connection NW08 to NW32, NW40b to NW50



Front connection NW08 to NW32



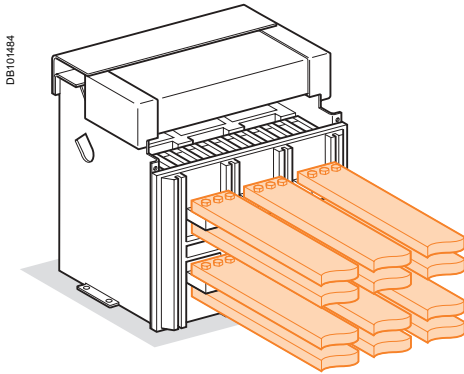
Bottom connection



Basis of tables:

- maximum permissible busbars temperature: 100 °C
- T_i : temperature around the circuit breaker and its connection
- busbar material is unpainted copper.

Front or rear horizontal connection



Masterpact	Maximum service current	T_i : 40 °C No. of 5 mm thick bars	No. of 10 mm thick bars	T_i : 50 °C No. of 5 mm thick bars	No. of 10 mm thick bars	T_i : 60 °C No. of 5 mm thick bars	No. of 10 mm thick bars
NT06	400	2b.30 x 5	1b.30 x 10	2b.30 x 5	1b.30 x 10	2b.30 x 5	1b.30 x 10
NT06	630	2b.40 x 5	1b.40 x 10	2b.40 x 5	1b.40 x 10	2b.40 x 5	1b.40 x 10
NT08 ou NW08	800	2b.50 x 5	1b.50 x 10	2b.50 x 5	1b.50 x 10	2b.50 x 5	1b.63 x 10
NT10 ou NW10	1000	3b.50 x 5	1b.63 x 10	3b.50 x 5	2b.50 x 10	3b.63 x 5	2b.50 x 10
NT12 ou NW12	1250	3b.50 x 5	2b.40 x 10	3b.50 x 5	2b.50 x 10	3b.63 x 5	2b.50 x 10
		2b.80 x 5	2b.40 x 10	2b.80 x 5			
NT16 ou NW16	1400	2b.80 x 5	2b.40 x 10	2b.80 x 5	2b.50 x 10	3b.80 x 5	2b.63 x 10
NT16 ou NW16	1600	3b.80 x 5	2b.63 x 10	3b.80 x 5	2b.63 x 10	3b.80 x 5	3b.50 x 10
	NW20	1800	3b.80 x 5	3b.80 x 5	2b.63 x 10	3b.100 x 5	2b.80 x 10
NW20	2000	3b.100 x 5	2b.80 x 10	3b.100 x 5	2b.80 x 10	3b.100 x 5	3b.63 x 10
NW25	2200	3b.100 x 5	2b.80 x 10	3b.100 x 5	2b.80 x 10	4b.80 x 5	2b.100 x 10
NW25	2500	4b.100 x 5	2b.100 x 10	4b.100 x 5	2b.100 x 10	4b.100 x 5	3b.80 x 10
NW32	2800	4b.100 x 5	3b.80 x 10	4b.100 x 5	3b.80 x 10	5b.100 x 5	3b.100 x 10
NW32	3000	5b.100 x 5	3b.80 x 10	6b.100 x 5	3b.100 x 10	8b.100 x 5	4b.80 x 10
NW32	3200	6b.100 x 5	3b.100 x 10	8b.100 x 5	3b.100 x 10		4b.100 x 10
NW40	3800		4b.100 x 10		5b.100 x 10		5b.100 x 10
NW40	4000		5b.100 x 10		5b.100 x 10		6b.100 x 10
NW50	4500		6b.100 x 10		6b.100 x 10		7b.100 x 10
NW50	5000		7b.100 x 10		7b.100 x 10		

With Masterpact NT, it is recommended to use 50 mm wideness bars (see "Recommended busbars drilling").

Example

Conditions:

- drawout version
- horizontal busbars
- T_i : 50 °C
- service current: 1800 A.

Solution:

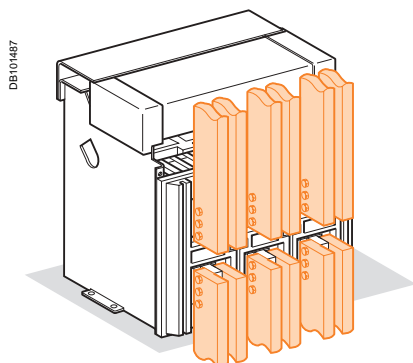
For $T_i = 50$ °C, use an NW20 which can be connected with three 80 x 5 mm bars or two 63 x 10 mm bars.

Note: the values indicated in these tables have been extrapolated from test data and theoretical calculations. These tables are only intended as a guide and cannot replace industrial experience or a temperature rise test.

Basis of tables:

- maximum permissible busbars temperature: 100 °C
- T_i : temperature around the circuit breaker and its connection
- busbar material is unpainted copper.

Rear vertical connection



Masterpact	Maximum service current	T_i : 40 °C No. of 5 mm thick bars	No. of 10 mm thick bars	T_i : 50 °C No. of 5 mm thick bars	No. of 10 mm thick bars	T_i : 60 °C No. of 5 mm thick bars	No. of 10 mm thick bars
NT06	400	2b.30 x 5	1b.30 x 10	2b.30 x 5	1b.30 x 10	2b.30 x 5	1b.30 x 10
NT06	630	2b.40 x 5	1b.40 x 10	2b.40 x 5	1b.40 x 10	2b.40 x 5	1b.40 x 10
NT08 ou NW08	800	2b.50 x 5	1b.50 x 10	2b.50 x 5	1b.50 x 10	2b.50 x 5	1b.50 x 10
NT10 ou NW10	1000	2b.50 x 5	1b.50 x 10	2b.50 x 5	1b.50 x 10	2b.63 x 5	1b.63 x 10
NT12 ou NW12	1250	2b.63 x 5	1b.63 x 10	3b.50 x 5	2b.40 x 10	3b.50 x 5	2b.40 x 10
NT16 ou NW16	1400	2b.80 x 5	1b.80 x 10	2b.80 x 5	2b.50 x 10	3b.63 x 5	2b.50 x 10
NT16 ou NW16	1600	3b.63 x 5	2b.50 x 10	3b.63 x 5	2b.50 x 10	3b.80 x 5	2b.63 x 10
NW20	1800	2b.80 x 5	1b.80 x 10	2b.80 x 5	2b.50 x 10	3b.80 x 5	2b.63 x 10
NW20	2000	2b.100 x 5	2b.63 x 10	2b.100 x 5	2b.63 x 10	3b.100 x 5	2b.80 x 10
NW25	2200	2b.100 x 5	2b.63 x 10	2b.100 x 5	2b.63 x 10	3b.100 x 5	2b.80 x 10
NW25	2500	4b.80 x 5	2b.80 x 10	4b.80 x 5	2b.80 x 10	4b.100 x 5	3b.80 x 10
NW32	2800	4b.100 x 5	2b.100 x 10	4b.100 x 5	2b.100 x 10	4b.100 x 5	3b.80 x 10
NW32	3000	5b.100 x 5	3b.80 x 10	6b.100 x 5	3b.100 x 10	5b.100 x 5	4b.80 x 10
NW32	3200	6b.100 x 5	3b.100 x 10	6b.100 x 5	3b.100 x 10		4b.100 x 10
NW40	3800		4b.100 x 10		4b.100 x 10		4b.100 x 10
NW40	4000		4b.100 x 10		4b.100 x 10		4b.100 x 10
NW50	4500		5b.100 x 10		5b.100 x 10		6b.100 x 10
NW50	5000		5b.100 x 10		6b.100 x 10		7b.100 x 10
NW63	5700		7b.100 x 10		7b.100 x 10		8b.100 x 10
NW63	6300		8b.100 x 10		8b.100 x 10		

Example

Conditions:

- drawout version
- vertical connections
- T_i : 40 °C
- service current: 1100 A.

Solution :

For $T_i = 40$ °C use an NT12 or NW12 which can be connected with two 63 x 5 mm bars or with one 63 x 10 mm bar.

Note: the values indicated in these tables have been extrapolated from test data and theoretical calculations. These tables are only intended as a guide and cannot replace industrial experience or a temperature rise test.

Temperature derating

The table below indicates the maximum current rating, for each connection type, as a function of T_i around the circuit breaker and the busbars.

Circuit breakers with mixed connections have the same derating as horizontally connected breakers.

For T_i greater than 60 °C, consult us.

T_i : temperature around the circuit breaker and its connection.

Version	Drawout										Fixed									
Connection	Front or rear horizontal					Rear vertical					Front or rear horizontal					Rear vertical				
Temp. T_i	40	45	50	55	60	40	45	50	55	60	40	45	50	55	60	40	45	50	55	60
NT06 H1/L1	630					630					630					630				
NT08 H1/L1	800					800					800					800				
NT10 H1/L1	1000					1000					1000					1000				
NT12 H1	1250					1250					1250					1250				
NT16 H1	1600		1520	1480	1430	1600			1560	1510	1600				1550	1600				
NW08 N/H/L	800					800					800					800				
NW10 N/H/L	1000					1000					1000					1000				
NW12 N/H/L	1250					1250					1250					1250				
NW16 N/H/L	1600					1600					1600					1600				
NW20 H1/H2/H3	2000			1980	1890	2000					2000				1920	2000				
NW20 L1	2000		1900	1850	1800	2000					–	–	–	–	–	–	–	–	–	–
NW25 H1/H2/H3	2500					2500					2500					2500				
NW32 H1/H2/H3	3200		3100	3000	2900	3200					3200					3200				
NW40 H1/H2/H3	4000		3900	3750	3650	4000				3850	4000			3900	3800	4000				
NW40b H1/H2	4000					4000					4000					4000				
NW50 H1/H2	5000					5000					5000					5000				
NW63 H1/H2	–	–	–	–	–	6300				6200	–	–	–	–	–	6300				

Power dissipation and input / output resistance

Total power dissipation is the value measured at I_N , 50/60 Hz, for a 3 pole or 4 pole breaker (values above the power $P = 3RI^2$).

The resistance between input / output is the value measured per pole (cold state).

Version	Drawout		Fixed	
	Power dissipation (Watts)	Input/output resistance (μohm)	Power dissipation (Watts)	Input/output resistance (μohm)
NT06 H1/L1	55/115 (H1/L1)	38/72	30/45	26/39
NT08 H1/L1	90/140 (H1/L1)	38/72	50/80	26/39
NT10 H1/L1	150/230 (H1/L1)	38/72	80/110	26/39
NT12 H1	250	36	130	26
NT16 H1	460	36	220	26
NW08 N1	137	42	62	19
NW08 H/L	100	30	42	13
NW10 N1	220	42	100	19
NW10 H/L	150	30	70	13
NW12 N1	330	42	150	19
NW12 H/L	230	27	100	13
NW16 N1	480	37	220	19
NW16 H/L	390	27	170	13
NW20 H/L	470	27	250	13
NW25 H1/H2/H3	600	19	260	8
NW32 H1/H2/H3	670	13	420	8
NW40 H1/H2/H3	900	11	650	8
NW40b H1/H2	550	7	390	5
NW50 H1/H2	950	7	660	5
NW63 H1/H2	1200	7	1050	5

Factors affecting switchboard design

The temperature around the circuit breaker and its connections:

This is used to define the type of circuit breaker to be used and its connection arrangement.

Vents at the top and bottom of the cubicles:

Vents considerably reduce the temperature inside the switchboard, but must be designed so as to respect the degree of protection provided by the enclosure. For weatherproof heavy-duty cubicles, a forced ventilation system may be required.

The heat dissipated by the devices installed in the switchboard:

This is the heat dissipated by the circuit breakers under normal conditions (service current).

The size of the enclosure:

This determines the volume for cooling calculations.

Switchboard installation mode:

Free-standing, against a wall, etc.

Horizontal partitions:

Partitions can obstruct air circulation within the enclosure.

Basis of tables

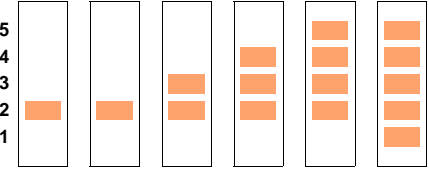
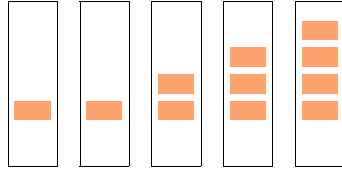
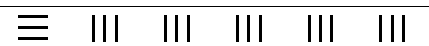

- switchboard dimensions
- number of circuit-breakers installed
- type of breaker connections
- drawout versions
- ambient temperature outside of the switchboard: T_a (IEC 60439-1).

Masterpact NT06-16 H1/L1 (switchboard 2000 x 400 x 400)

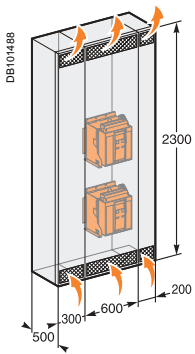
Type	NT06 H1/L1		NT08 H1/L1		NT10 H1/L1		NT12 H1		NT16 H1		
Switchboard composition											
Connection type											
Busbar dimensions (mm)	2b. 40 x 5		2b. 50 x 5		3b. 63 x 5		3b. 63 x 5		3b. 80 x 5		
Ventilated switchboard (⇒ IP31) 	4					H1/L1	H1/L1				
	3	630	630	800	800	1000/1000	1000/1000	1250	1250	1400	1520
	2										
	1										
	4										
	3	630	630	800	800	1000/950	1000/1000	1250	1250	1330	1440
	2										
	1										
	4										
	3	630	630	800	800	1000/890	1000/960	1200	1250	1250	1340
	2										
	1										
Non ventilated switchboard (⇒ IP54) 	4										
	3	630	630	800	800	1000/960	1000/1000	1250	1250	1330	1400
	2										
	1										
	4										
	3	630	630	800	800	1000/910	1000/980	1220	1250	1260	1330
	2										
	1										
	4										
	3	630	630	800	800	1000/860	1000/930	1150	1230	1200	1260
	2										
	1										

Note: the values indicated in these tables have been extrapolated from test data and theoretical calculations. These tables are only intended as a guide and cannot replace industrial experience or a temperature rise test.

Masterpact NT06-08 H1/L1 (switchboard 2300 x 1100 x 500)

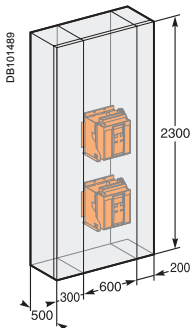
Type	NT06 H1/L1						NT08 H1/L1				
Switchboard composition											
Connection type											
Busbar dimensions (mm)	2b. 40 x 5						2b. 50 x 5				

Ventilated switchboard (⇒ IP31)



$T_a = 35\text{ °C}$	5				630	630					800
	4				630	630	630				800
	3				630	630	630	630			800
	2	630	630	630	630	630	630	630		800	800
	1										800
$T_a = 45\text{ °C}$	5				630	630					800
	4				630	630	630				800
	3				630	630	630	630		800	800
	2	630	630	630	630	630	630	630		800	800
	1										800
$T_a = 55\text{ °C}$	5				630	630					800
	4				630	630	630				800
	3				630	630	630	630		800	800
	2	630	630	630	630	630	630	630		800	800
	1										800

Non ventilated switchboard (⇒ IP54)



$T_a = 35\text{ °C}$	5				630	630					800
	4				630	630	630				800
	3				630	630	630	630		800	800
	2	630	630	630	630	630	630	630		800	800
	1										800
$T_a = 45\text{ °C}$	5				630	630					800
	4				630	630	630				800
	3				630	630	630	630		800	800
	2	630	630	630	630	630	630	630		800	800
	1										800
$T_a = 55\text{ °C}$	5				630	630					800
	4				630	630	630				800
	3				630	630	630	630		800	800
	2	630	630	630	630	630	630	630		800	800
	1										800

Note: the values indicated in these tables have been extrapolated from test data and theoretical calculations. These tables are only intended as a guide and cannot replace industrial experience or a temperature rise test.

Disjoncteurs Masterpack NT10-16 H1/L1 (switchboard 2300 x 1100 x 500)

Type	NT10 H1/L1				NT12 H1				NT16 H1			
Switchboard composition												
Connection type	≡	≡	≡	≡	≡	≡	≡	≡	≡	≡	≡	
Busbar dimensions (mm)	3b. 63 x 5				3b. 63 x 5				3b. 80 x 5			
	2b. 63 x 5				3b. 50 x 5				3b. 63 x 5			
Ventilated switchboard (⇒ IP31)	5 H1/L1	H1/L1	H1/L1	H1/L1								
$T_a = 35\text{ °C}$	4			1000/1000				1250				
	3			1000/1000	1000/1000			1250	1250		1500	
	2	1000/1000	1000/1000	1000/1000	1000/1000	1000/1000		1250	1250	1460	1550	
	1											
	5											
$T_a = 45\text{ °C}$	4			1000/1000				1250				
	3			1000/1000	1000/1000			1250	1250		1420	
	2	1000/960	1000/1000	1000/1000	1000/1000	1000/1000		1250	1250	1400	1500	1480
	1											
	5											
$T_a = 55\text{ °C}$	4			1000/920				1250				
	3			1000/950	1000/930			1250	1250		1330	
	2	1000/900	1000/1000	1000/970	1000/950		1250	1250	1250	1300	1400	1370
	1											
	5											
Non ventilated switchboard (⇒ IP54)	5											
$T_a = 35\text{ °C}$	4			1000/950				1250				
	3			1000/1000	1000/960			1250	1250		1370	
	2	1000/1000	1000/1000	1000/1000	1000/970		1250	1250	1250	1400	1500	1400
	1											
	5											
$T_a = 45\text{ °C}$	4			1000/900				1180				
	3			1000/950	1000/910			1250	1190		1300	
	2	1000/950	1000/1000	1000/960	1000/930		1250	1250	1250	1350	1430	1320
	1											
	5											
$T_a = 55\text{ °C}$	4			1000/850				1120				
	3			1000/900	1000/860			1200	1130		1210	
	2	1000/880	1000/970	1000/910	1000/870		1210	1250	1210	1150	1250	1250
	1											
	5											

Note: the values indicated in these tables have been extrapolated from test data and theoretical calculations. These tables are only intended as a guide and cannot replace industrial experience or a temperature rise test.

Masterpact NW08-10 N/H/L (switchboard 2300 x 800 x 900)

Type	NW08 N/H/L					NW10 N/H/L			
Switchboard composition									
Connection type									
Busbar dimensions (mm)	2b. 50 x 5					3b. 63 x 5			
						2b. 63 x 5			
	Ventilated switchboard (⇒ IP31)								
	4				800				
	3			800	800				1000
	2			800	800	800			1000
	1	800	800	800	800	800	1000	1000	1000
	4				800				
	3			800	800				1000
	2			800	800	800			1000
	1	800	800	800	800	800	1000	1000	1000
	4				800				
	3			800	800				1000
	2			800	800	800			1000
	1	800	800	800	800	800	1000	1000	1000
	Non ventilated switchboard (⇒ IP54)								
	4				800				
	3			800	800				1000
	2			800	800	800			1000
	1	800	800	800	800	800	1000	1000	1000
	4				800				
	3			800	800				1000
	2			800	800	800			1000
	1	800	800	800	800	800	1000	1000	1000
	4				800				
	3			800	800				1000
	2			800	800	800			1000
	1	800	800	800	800	800	1000	1000	1000

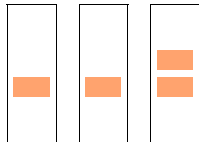
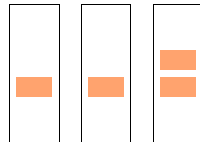
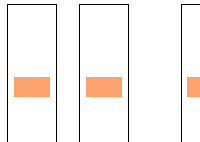
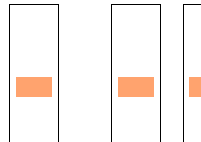




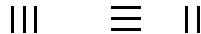

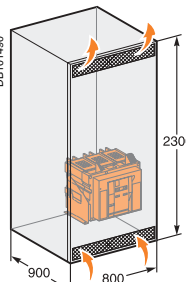
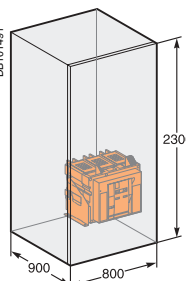
Note: the values indicated in these tables have been extrapolated from test data and theoretical calculations. These tables are only intended as a guide and cannot replace industrial experience or a temperature rise test.

Masterpact NW12-16 N/H/L (switchboard 2300 x 800 x 900)

Type	NW12 N1				NW12 H/L				NW16 N1			NW16 H/L			
Switchboard composition															
Connection type															
Busbar dimensions (mm)	3b. 63 x 5 3b. 50 x 5				3b. 63 x 5 3b. 50 x 5				3b. 80 x 5 3b. 63 x 5			3b. 80 x 5 3b. 63 x 5			
Ventilated switchboard (⇒ IP31)															
	$T_a = 35\text{ °C}$	4													
		3			1250				1250						
		2			1250	1250			1250	1250		1600			1600
		1	1250	1250	1250	1250		1250	1250	1250	1250	1550	1600	1600	1600
$T_a = 45\text{ °C}$	4														
	3			1250				1250							
	2			1250	1250			1250	1250		1500			1600	
	1	1250	1250	1250	1250		1250	1250	1250	1250	1470	1600	1600	1600	
$T_a = 55\text{ °C}$	4														
	3			1250				1250							
	2			1250	1250			1250	1250		1380			1470	
	1	1250	1250	1250	1250		1250	1250	1250	1250	1380	1500	1500	1520	
Non ventilated switchboard (⇒ IP54)															
	$T_a = 35\text{ °C}$	4													
		3			1240				1250						
		2			1250	1250			1250	1250		1425			1600
		1	1250	1250	1250	1250		1250	1250	1250	1250	1440	1550	1550	1600
$T_a = 45\text{ °C}$	4														
	3			1170				1250							
	2			1210	1210			1250	1250		1360			1500	
	1	1200	1250	1250	1250		1250	1250	1250	1250	1360	1470	1470	1500	
$T_a = 55\text{ °C}$	4														
	3			1100				1250							
	2			1140	1170			1250	1250		1280			1400	
	1	1130	1200	1200	1200		1250	1250	1250	1250	1280	1380	1380	1400	

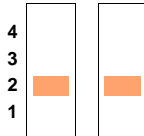
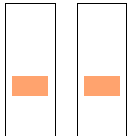

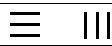
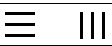

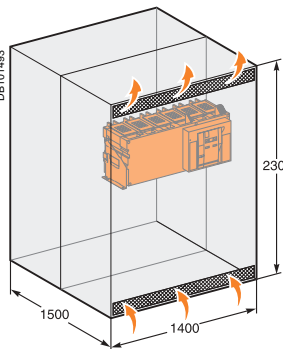
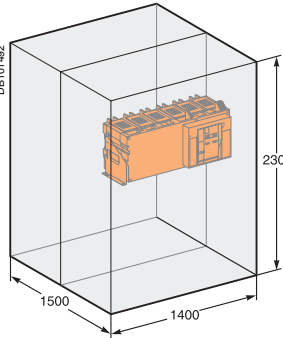
Note: the values indicated in these tables have been extrapolated from test data and theoretical calculations. These tables are only intended as a guide and cannot replace industrial experience or a temperature rise test.

Masterpact NW20-40 N/H/L (switchboard 2300 x 800 x 900)

Type	NW20 H1/H2/H3			NW20 L1			NW25 H1/2/3		NW32 H1/2/3		NW40 H1/2/3	
Switchboard composition												
Connection type												
Busbar dimensions (mm)	3b. 100 x 5			3b. 100 x 5			4b. 100 x 5		3b. 100 x 10		4b. 100 x 10	
Ventilated switchboard (⇒ IP31)												
	$T_a = 35\text{ °C}$	4										
		3			2000				1830			
		2	2000	2000	2000	2000	2000	2000	2375	2500	3040	3200
		1									3320	3700
$T_a = 45\text{ °C}$	4											
	3			2000				1750				
	2	2000	2000	2000	1810	1960	1920	2250	2380	2880	3100	
	1									3160	3500	
$T_a = 55\text{ °C}$	4											
	3			2000				1640				
	2	2000	2000	2000	1700	1850	1800	2100	2250	2690	2900	
	1									2960	3280	
Non ventilated switchboard (⇒ IP54)												
	$T_a = 35\text{ °C}$	4										
		3			2000				1750			
		2	2000	2000	2000	1800	1900	1890	2125	2275	2650	2850
		1									3040	3320
$T_a = 45\text{ °C}$	4											
	3			1900				1660				
	2	1900	1960	1960	1680	1810	1800	2000	2150	2550	2700	
	1									2880	3120	
$T_a = 55\text{ °C}$	4											
	3			1780				1550				
	2	1800	1920	1920	1590	1700	1700	1900	2020	2370	2530	
	1									2720	2960	

Note: the values indicated in these tables have been extrapolated from test data and theoretical calculations. These tables are only intended as a guide and cannot replace industrial experience or a temperature rise test.

Masterpact NW40b-63 H1/H2 (switchboard 2300 x 1400 x 1500)

Type	NW40b H1/H2		NW50 H1/H2		NW63 H1/H2
Switchboard composition					
Connection type					
Busbar dimensions (mm)	5b. 100 x 10		7b. 100 x 10		8b. 100 x 10
Ventilated switchboard (⇒ IP31)					
	4				
	3				
	2	4000	4000	4700	5000
	1				5850
	4				
	3				
	2	4000	4000	4450	4850
	1				5670
	4				
	3				
$T_a = 55\text{ °C}$	2	4000	4000	4200	4600
	1				5350
	4				
	3				
	1				
Non ventilated switchboard (⇒ IP54)					
	4				
	3				
	2	4000	4000	4350	4650
	1				5000
	4				
	3				
	2	4000	4000	4100	4400
	1				5040
	4				
	3				
$T_a = 55\text{ °C}$	2	3840	3840	3850	4150
	1				4730
	4				
	3				
	1				

Note: the values indicated in these tables have been extrapolated from test data and theoretical calculations. These tables are only intended as a guide and cannot replace industrial experience or a temperature rise test.

Substitution kit

Fixed / drawout devices

800 to 3200 A

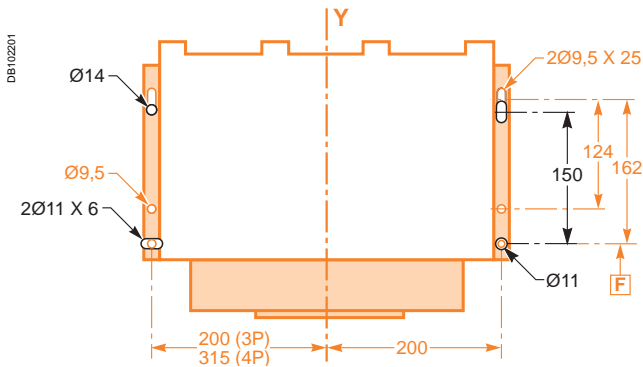
It is possible to replace a **Masterpact (M08 to M32)** with a new **Masterpact (NW08 to NW32)** with the same power rating.

Substitution is possible for the following types of circuit breakers:

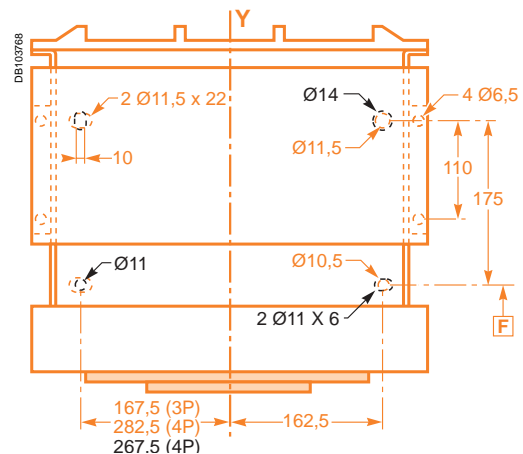
- N1, H1, H2 for both fixed and drawout versions
- L1 for drawout versions up to 2000 A.

Mounting diagram

Fixed version



Drawout version



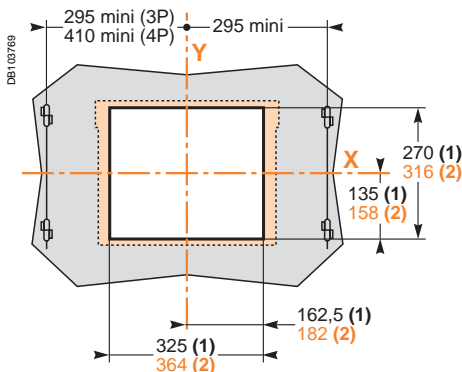
— : Masterpact NW
— : Masterpact M

Fixing points are identical for Masterpact (M08 to M32) and Masterpact (NW08 to NW32), except for the four-pole chassis.

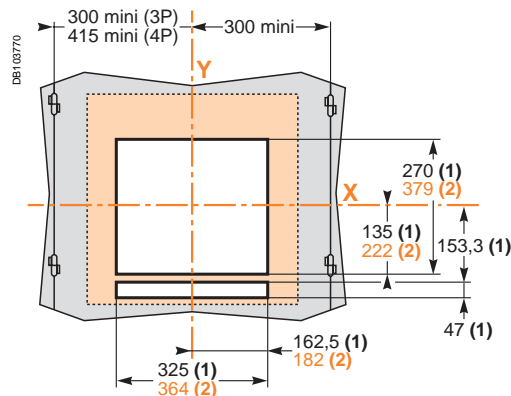
Door cut-out

- without an escutcheon, the cut-out is identical (270 x 325 mm)
- with the former escutcheon, the cut-out is identical (270 x 325 mm)
- with the new escutcheon, the cut-out is different.

Fixed version



Drawout version



Raccordement de puissance

Select a set of retrofit connectors to replace the standard connectors and avoid any modifications to the busbars (see the retrofit section in "orders and quotations").

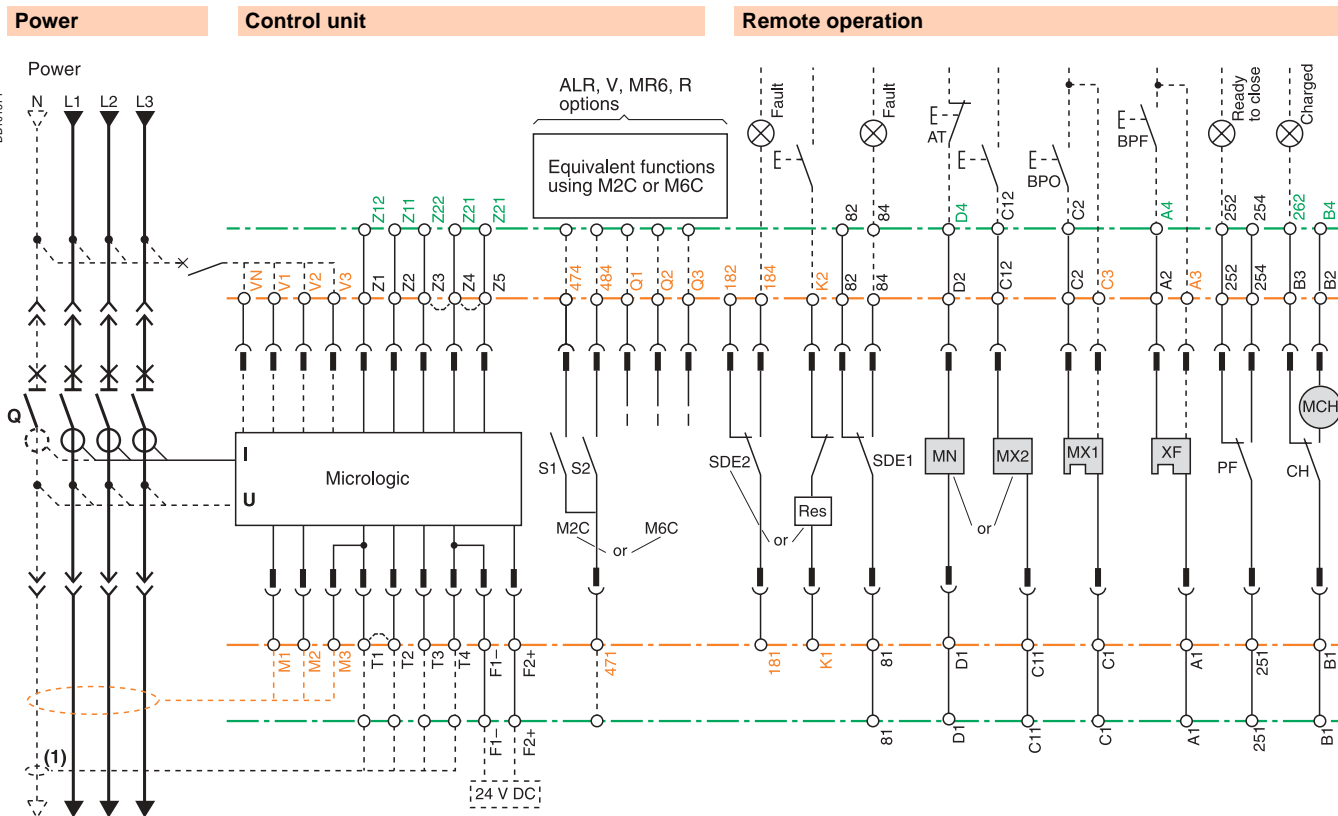
Note:

- (1) Without escutcheon.
(2) With escutcheon.

References X and Y represent the symmetry planes for three-pole devices.

Electrical diagrams

Correspondences between Masterpact NW and Masterpact M terminal blocks.



Indication contacts

Chassis contacts

