PRODUCT NOTE

Emax 2
Aluminum busbars

This application note contains information on the use of aluminum busbars with ABB SACE Emax 2 air circuit breakers.

Circuit breakers, via power connection terminals, can be connected to the main distribution system using different types of busbars: copper, silver-plated copper and tinned aluminum.
For correct usage in an aluminum system, please refer to the following instructions.

Selection of material
The recommended aluminum alloy to be used is the 6000 series, with T5 tempering or higher.

Here are some common grade variants:
EN AW-6060 T5
EN AW-6101 T6
63401 WP
91E WP

Dimensioning of busbar and continuous current carrying capacity
The following table shows the continuous current carrying capacity for circuit breakers installed in switchgear where aluminum busbars are used.

Horizontal Terminal (Al)

N	Current	Circuit-braker	Terminals type	Busbars 40°C	50° C
1	800	E1.2, 1250A	HR-HR	50x10x1	50x10x1
2	1000	E1.2, 1250A	HR-HR	50x10x2	50x10x2
3	1250	E1.2, 1250A	HR-HR	50x10x2	50x10x3
4	1350	E1.2, 1600A	HR-HR	50x10x4	50x10x4
5	1600	E2.2, 2500A	HR-HR	60x10x3	60x10x3
6	2000	E2.2, 2500A	SHR-SHR	60x10x5	60x10x5

Vertical Terminal (Al)

N	Current	Circuit-braker	Terminals type	Busbars 40°C	50°C
1	800	E1.2, 1250A	VR-VR	50x10x1	50x10x1
2	1250	E1.2, 1250A	VR-VR	50x10x2	50x10x2
3	1600	E1.2, 1600A	VR-VR	50x10x3	60x10x3
4	1600	E2.2, 2000A	VR-VR	50x10x3	60x10x3
5	2000	E2.2, 2000A	VR-VR	80x10x3	100x10x3*
7	2500	E2.2, 2500A	SVR-SVR	100x10x4	100x10x4
9	2500	E4.2, 3200A	VR-VR	100x10x5	100x10x5
10	3200	E4.2, 3200A	VR-VR	150x10x5	150x10x5
11	3800	E4.2, 4000A	SVR-SVR	150x10x4	150x10x5
12	4000	E4.2, 4000A	SVR-SVR	150x10x5	150x10x5**

*with SVR terminals
**derating: 3800A

These values refer to withdrawable version circuit breaker installed in non-segregated switchgear with degree of protection up to IP31, and the following dimensions:

Circuit-braker	Dimensions (mm) H	W	D
Emax E1.2	2200	400	600
Emax E2.2	2200	600	900
Emax E4.2	2200	800	900

The values refer to maximum terminal temperatures of 120°C and to an ambient temperature of 40°C and 50° C. The usage of phase separators is recommended.

Note: The tables should be used solely as a general guideline for selecting products.
Due to the extensive variety of switchgear construction shapes and conditions that can affect the behavior of the apparatus, the solutions used must always be verified.

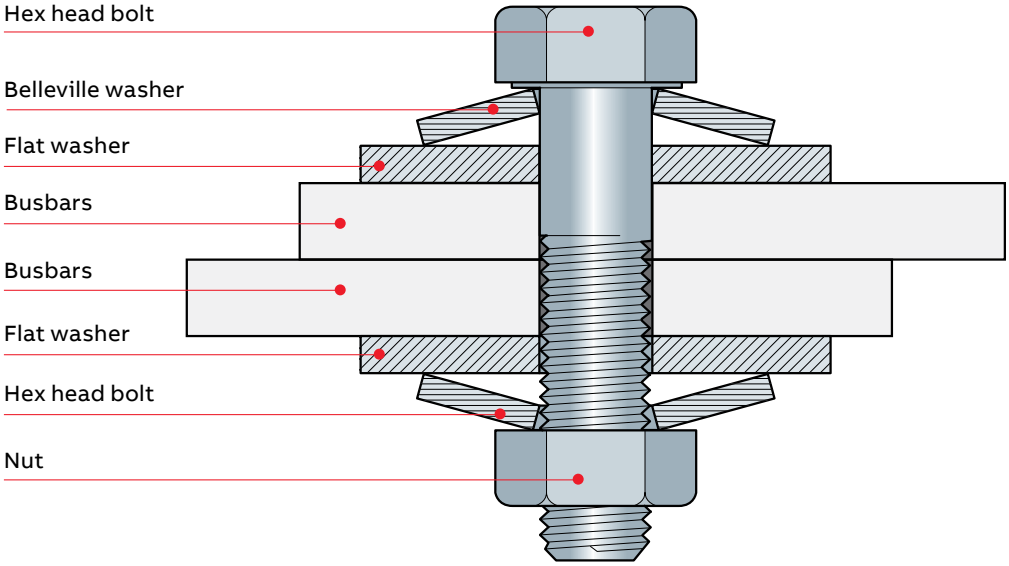
Surface preparation
The terminal part of the busbar that connects to the circuit breaker terminals must be tin or silver plated. The application of lubricant for electrical contacts is also recommended.

Installation and connections
Tightening screws shall be tightened with torque higher than the one used for copper busbars. Please refer to Emax 2 Operation Manual (1SDH000999R0002, 1SDH001000R0002).

Belleville washers are strongly suggested, together with flat washers with height at least double the height of the Belleville washer itself.

High-grade bolts for high tensile strength shall be used.

Where possible, restore the tightening torque some hours after installation, when the busbars have reached the service temperature.



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