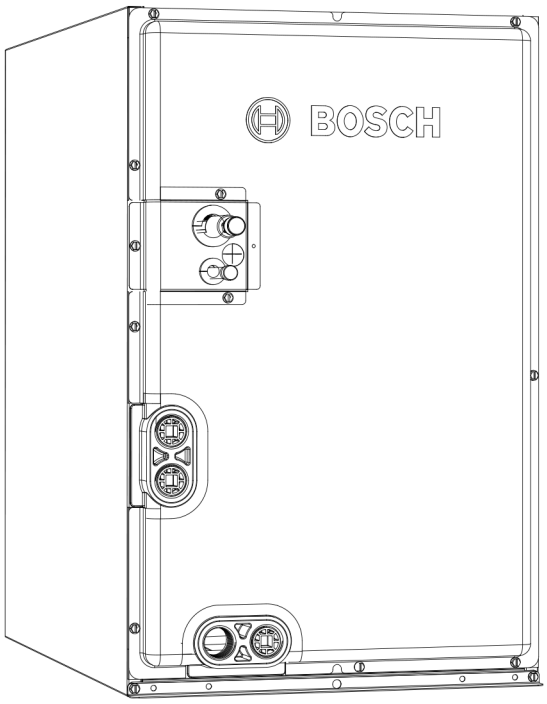
Technical Guide: BMAT Series - Add-On Coils for Use with Split-System Cooling and Heat Pumps

600 CFM to 2,000 CFM - 1.5 ton to 5 ton



Bosch Thermotechnology Corp. 65 Grove St.
Watertown, MA 02472

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Supersedes: Nothing

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Description

MaxAlloy™ aluminum indoor coils are specially designed for installation with our residential furnaces or modular air handlers as part of a matched air conditioning or heat pump system.

Our residential indoor coils come with a factory-installed TXV.

BMAT series full-cased multi-position coils are designed for horizontal left, horizontal right, upflow, or downflow applications.

Due to continuous product improvement, specifications are subject to change without notice. Visit us on the web at www.bosch-homecomfort.com.

Additional rating information can be found at www.ahridirectory.org.

This document is only for distribution use - it is not to be used at point of retail sale.

Certification

UL CERTIFIED SAFETY US·CA SA11777

AHRI CERTIFIED® www.ahridirectory.org Unitary Small AC AHRI Standard 210/240 Certification applies only when the complete system is listed with AHRI.

AHRI CERTIFIED® www.ahridirectory.org Unitary Small HP AHRI Standard 210/240 Certification applies only when the complete system is listed with AHRI.

Assembled at a facility with an ISO 9001:2015-certified Quality Management System

Features

Rigid case construction

The rigid case construction provides structural support and eliminates screw heads protruding from the side of the cabinet that could damage property during installation.

Cabinet

The cabinet is constructed of heavy gauge galvanized steel with a primer and finish coat that provides a high-quality corrosion resistant finish.

MaxAlloy™ coil

These long-life aluminum coils are built to deliver lasting performance, efficiency, and reliability.

Foil-faced insulation

The cabinet is insulated with a single piece of cleanable foil-faced insulation. The cabinet is designed so that all edges of the insulation are contained.

Compact cabinet

With the coil and access doors removed, the cabinet has a 20.5 in. casing depth in all models, allowing ease of access in attics and applications where space is constrained.

Thermoset drain pan

The drain pan is corrosion and UV resistant with a positive slope for proper drainage. The low water retention design maximizes indoor air quality and consumer comfort.

Low leakage cabinet design

Fully gasketed doors minimize air leakage to no more than 2% when measured at 1.0 in. W.C. external static pressure, minimizing conditioned air leakage and infiltration.

Duct flange

An integral duct flange is part of the coil casing for easy installation.

TXV

These residential indoor coils come with a factory-installed TXV.

Accessories

Refer to the *Price Manual* for specific model numbers.

A2L refrigerant detection system (RDS) kit

The A2L RDS kit for Maxalloy coils detects any A2L leakage and ensures the safe operation of the equipment. Use the A2L RDS kit with BMAT coil models that do not have a factory-installed RDS.

A2L safety considerations



⚠ CAUTION

Risk of fire

This unit uses a mildly flammable (A2L) refrigerant. The unit must only be repaired or serviced by trained service personnel. Before attempting to repair or service the unit, consult the *Installation Manual*. Follow all safety precautions.

⚠ WARNING

If the unit must be installed in a residence with a minimum room area less than what is determined to be the minimum from Table 1, then that room must also not have any continuously operating open flames or other potential ignition sources. A flame-producing device may be present if that device is provided with an effective flame arrest.

ⓘ **Note:** Minimum installation height (X and W) is not applicable to this model series.

Table 1: Minimum room area

System charge (lb -oz)	Minimum total conditioned room area (ft^2) (Z)	Minimum total conditioned room area (m^2) (Y)	Minimum airflow (CFM)
4-0	120	11.14	216
5-0	150	13.93	271
6-0	180	16.72	325
7-0	210	19.50	379
8-0	240	22.29	433
9-0	270	25.08	487
10-0	300	27.86	541
11-0	330	30.65	595
12-0	360	33.43	649
13-0	390	36.22	704
14-0	420	39.01	758
15-0	450	41.79	812
16-0	480	44.58	866
17-0	510	47.37	920

Table 1: Minimum room area

System charge (lb -oz)	Minimum total conditioned room area (ft^2) (Z)	Minimum total conditioned room area (m^2) (Y)	Minimum airflow (CFM)
18-0	540	50.15	974
19-0	570	52.94	1028
20-0	600	55.72	1082
21-0	630	58.51	1136

Note:

- Minimum total conditioned room area refers to the combined area of all air conditioned rooms in the residence.

If the system charge is not listed in the above table, use the formulas below to calculate the respective values:

- Minimum conditioned room area (ft^2) = system charge x 29.9903
- Minimum conditioned room area (m^2) = system charge x 2.786
- Minimum system airflow (CFM) = system charge x 54.117

Altitude adjustment factors

If the unit is being installed at an elevation or altitude of 2600 ft (800 m) or higher, adjust the total conditioned room area (TA_{min}) in the minimum room area table by multiplying it by the altitude adjustment factor in Table 2 below:

Table 2: Altitude adjustment factor (feet and meters)

H_{alt}(ft)	H_{alt}(m)	Altitude adjustment factor
0-2600	0-800	1.00
2600	800	1.02
3300	1000	1.05
4000	1200	1.07
4600	1400	1.10
5200	1600	1.12
5900	1800	1.15
6600	2000	1.18
7200	2200	1.21
7900	2400	1.25
8500	2600	1.28
9200	2800	1.32
9800	3000	1.36
10500+	3200+	1.40

Nomenclature

Table 3: Nomenclature

Number	Category	Option	Description
1	Brand	B	Bosch
2	Application	F	Full case, upflow/downflow
		H	Horizontal cased
		U	Uncased, upflow/downflow
		D	Horizontal duct
		M	Multi-poise
3	Coil material	A	Aluminum
4	Product series	C	A coil (IDS only)
		T	A coil
		X	MCHX
5,6	Nominal capacity	18	1.5 ton capacity (18,000 Btu/h)
		24	2 ton capacity (24,000 Btu/h)
		30	2.5 ton capacity (30,000 Btu/h)
		36	3 ton capacity (36,000 Btu/h)
		42	3.5 ton capacity (42,000 Btu/h)
		48	4 ton capacity (48,000 Btu/h)
		60	5 ton capacity (60,000 Btu/h)
7	Cabinet frame width	A	14 1/2 in.
		B	17 1/2 in.
		C	21 in.
		D	24 1/2 in.
8	Refrigerant	5	R-454B
		X	Flexible refrigerant
9	Metering device	A-W	TXV
		1-9	EEV
		X	None
10	Slab size	A	2R-14-18
		B	2R-16-18
		C	2R-20-18
		D	3R-20-14
		E	3R-22-14
		F	3R-24-12
		G	3R-28-12
		H	3R-32-12
		J	4R-28-12
		Z	3R-16-14
		1	MCHX, 1.5T 20MM-20FPI-8.1FH
		2	MCHX, 2T 20MM-20FPI-6.5FH
		3	MCHX, 2.5T 20MM-20FPI-6.5FH
		4	MCHX, 3T 25MM-18FPI-8.1FH
		5	MCHX, 3.5T 25MM-18FPI-8.1FH
		6	MCHX, 4T 25MM-18FPI-8.1FH
		7	MCHX, 5T 25MM-16FPI-8.1FH
11	Accessories	S	A2L sensor
		N	None
12	Revision level	A	Revision A

Table 4: Model nomenclature example

Number	1	2	3	4	5,6	7	8	9	10	11	12
Option	B	M	A	T	18	A	5	A	A	S	A

Dimensions: BMAT coils

Figure 1: Dimensions - BMAT full-cased upflow, downflow, horizontal left, or horizontal right

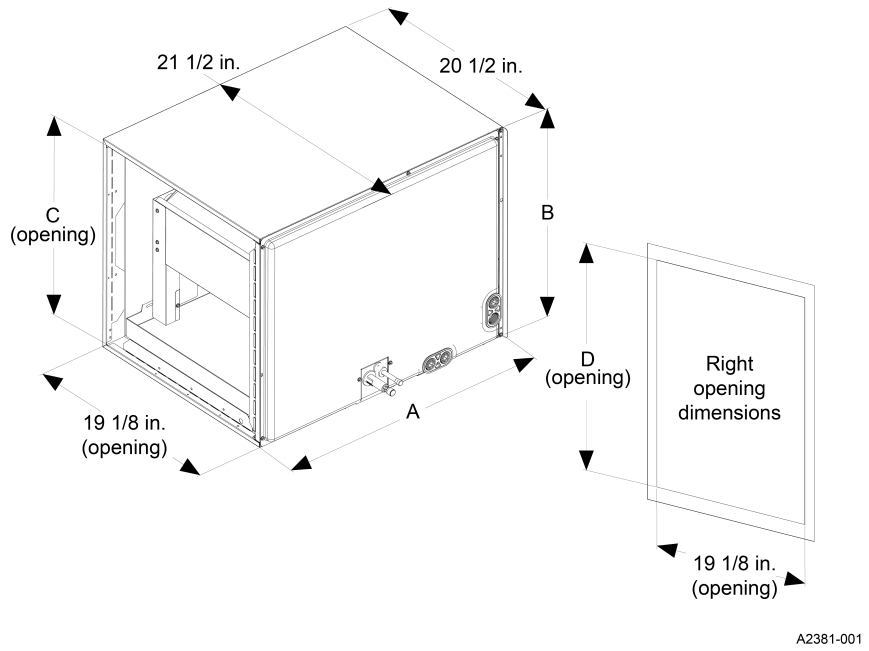


Table 5: Dimensions - BMAT full-cased upflow, downflow, horizontal left, or horizontal right

Model	Dimensions				Weight		Metering device	Refrigerant connections line size	
	Height	Width	Opening widths						
	A (in.)	B (in.)	C (in.)	D (in.)	Shipping (lb)	Operating (lb)		Liquid	Vapor
BMAT18A5AASA	23	14 1/2	13 1/2	13 1/2	39	38	TXV	3/8	3/4
BMAT24A5ABSA	23	14 1/2	13 1/2	13 1/2	41	40	TXV		
BMAT24B5ABSA	23	17 1/2	16 1/2	16 1/2	39	38	TXV		
BMAT30B5ACSA	25 5/8	17 1/2	16 1/2	16 1/2	45	44	TXV		
BMAT30C5ACSA	27	21	20	20	54	53	TXV		
BMAT30B5AZSA	27	17 1/2	16 1/2	16 1/2	54	53	TXV		
BMAT36B5ADSA	25 5/8	17 1/2	16 1/2	16 1/2	52	50	TXV		
BMAT36B5CDSA	25 5/8	17 1/2	16 1/2	16 1/2	52	50	TXV		
BMAT36C5ADSA	27	21	20	20	60	58	TXV		
BMAT36C5CDSA	27	21	20	20	60	58	TXV		
BMAT42C5CESA	28 3/4	21	20	20	64	62	TXV		7/8
BMAT48C5CFSA	33	21	20	20	75	73	TXV		
BMAT60C5CGSA	37 1/4	21	20	20	70	68	TXV		
BMAT60C5CHSA	39	21	20	20	80	78	TXV		

Note: For refrigerant connections, note the following:

- Refrigerant line sizes may require larger lines for extended line lengths. Contact our Technical Support team by phone at 1-800-282 3797, or via email at ac.techsupport@us.bosch.com.
- A field-supplied adapter fitting must be field installed for any refrigeration piping sizes not shown in the table.
- Refer to the *Technical Guide* for the outdoor unit for the correct refrigeration piping size.

Cooling capacity: BMAT coils

Table 6: Cooling capacity - BMAT coil (coil only)

Model	Rated CFM	Entering air dry bulb/wet bulb (°F)	MBH at evaporation temperature and corresponding R-454B pressure (°F/ psig)			
			35/107.9	40/118.9	45/130.7	50/143.3
BMAT18A5*A	600	85/72	43.1	38.6	33.4	27.9
		80/67	35.0	30.3	25.2	19.6
		75/62	27.5	22.8	17.8	11.9
		70/57	20.8	16.1	11.0	8.5
BMAT24A5*B	800	85/72	56.0	50.0	43.3	35.9
		80/67	45.5	39.5	32.6	25.2
		75/62	36.0	29.8	23.0	15.4
		70/57	27.3	21.0	14.8	11.4
BMAT24B5*B	800	85/72	56.0	50.0	43.3	35.9
		80/67	45.5	39.5	32.6	25.2
		75/62	36.0	29.8	23.0	15.4
		70/57	27.3	21.0	14.8	11.4
BMAT30B5*C	1000	85/72	66.1	60.1	52.9	44.6
		80/67	54.6	48.2	40.2	31.9
		75/62	43.9	36.9	29.1	19.0
		70/57	33.8	26.6	19.0	14.8
BMAT30C5*C	1000	85/72	66.1	60.1	52.9	44.6
		80/67	54.6	48.2	40.2	31.9
		75/62	43.9	36.9	29.1	19.0
		70/57	33.8	26.6	19.0	14.8
BMAT30B5*Z	1000	85/72	65.7	58.4	50.5	41.6
		80/67	52.9	45.5	37.5	28.6
		75/62	41.3	34.0	25.9	16.8
		70/57	30.8	23.5	15.8	11.9
BMAT36B5*D	1200	85/72	86.0	77.6	68.0	57.1
		80/67	70.6	61.7	52.0	40.7
		75/62	56.4	47.2	37.2	24.7
		70/57	43.1	33.8	23.9	18.6
BMAT36C5*D	1200	85/72	86.0	77.6	68.0	57.1
		80/67	70.6	61.7	52.0	40.7
		75/62	56.4	47.2	37.2	24.7
		70/57	43.1	33.8	23.9	18.6
BMAT42C5*E	1400	85/72	93.5	84.6	74.6	62.9
		80/67	77.1	67.8	57.4	45.4
		75/62	62.0	52.2	41.5	27.3
		70/57	47.8	37.8	27.1	21.3
BMAT48C5*F	1600	85/72	95.4	86.1	75.5	63.0
		80/67	78.5	68.7	57.7	45.0
		75/62	62.9	44.6	41.5	27.7
		70/57	48.4	38.1	27.5	21.0
BMAT60C5*G	1800	85/72	115.6	104.2	91.0	76.2
		80/67	94.9	82.8	67.4	54.3
		75/62	75.6	63.1	49.4	33.6
		70/57	57.9	45.1	32.1	24.8

Table 6: Cooling capacity - BMAT coil (coil only)

Model	Rated CFM	Entering air dry bulb/wet bulb (°F)	MBH at evaporation temperature and corresponding R-454B pressure (°F/psig)			
			35/107.9	40/118.9	45/130.7	50/143.3
BMAT60C5*H	1800	85/72	113.0	102.6	90.1	75.7
		80/67	93.2	82.1	68.8	54.3
		75/62	74.7	62.9	49.4	33.4
		70/57	57.5	45.1	32.2	25.1

ⓘ **Note:** The table shows coil only data. Refer to the condensing unit or heat pump *Technical Guide* for the total cooling capacity and sensible capacity.

Application factors

Table 7: Application factors - rated CFM versus actual CFM - BMAT coils

Percentage of rated airflow (CFM)	80%	90%	100%	110%	120%
Capacity factor	0.96	0.98	1	1.02	1.03

ⓘ **Note:** Do not exceed the minimum and maximum CFM limits shown in Airflow data: BMAT coil.

Application limitations

Adhere to the following:

- These units must be installed in accordance with all national and local safety codes.
- Airflow must be within the minimum and maximum limits approved for electric heat, indoor coils, and outdoor units.

Static pressure versus airflow based on wet coil: BMAT coils

Table 8: Static pressure versus airflow based on wet coil - BMAT coil - upflow A type

Model	Airflow	Static
	Upflow A type	
BMAT18A5*A	525	0.15
	600	0.17
	675	0.20
	700	0.22
BMAT24A5*B	800	0.27
	900	0.31
	700	0.17
	800	0.20
BMAT24B5*B	900	0.23
	875	0.22
	1000	0.25
	1125	0.30
BMAT30B5*C	875	0.18
	1000	0.21
	1125	0.24
	875	0.21
BMAT30C5*C	1000	0.27
	1125	0.33
	1050	0.36
	1200	0.45

Table 8: Static pressure versus airflow based on wet coil - BMAT coil - upflow A type

Model	Airflow	Static
	Upflow A type	
BMAT30B5*Z	1350	0.54
	1050	0.26
	1200	0.31
	1350	0.37
BMAT36B5*D	1225	0.32
	1400	0.39
	1575	0.46
	1400	0.34
BMAT36C5*D	1600	0.41
	1800	0.49
	1400	0.25
	1600	0.29
BMAT42C5*E	1800	0.34
	1550	0.24
	1800	0.33
	2050	0.43
BMAT48C5*F	1550	0.29
	1800	0.35
	2050	0.42
	1550	0.22
BMAT60C5*G	1800	0.31
	2050	0.41
	1550	0.29
	1800	0.37
BMAT60C5*H	2050	0.48
	1550	0.37
	1800	0.50
	2050	0.64

Coil technical data: BMAT coil

Table 9: Coil technical data - BMAT coil

Model	Application	Refrig. conn. types	Face area (sq. ft.)	Rows deep	Fins per in.	Coil size	Tube geometry	Tube diameter (in.)	Fin type	Shipping weight (lb)	Installed weight (lb)
BMAT18A5AASAA	Cooling /Heat Pump	Sweat	3.3	2	18	(2) 14 x 17	1 x 0.675	3/8	Lanced	39	38
BMAT24A5ABSAA	Cooling /Heat Pump	Sweat	3.8	2	18	(2) 16 x 17	1 x 0.675	3/8	Lanced	41	40
BMAT24B5ABSAA	Cooling /Heat Pump	Sweat	3.8	2	18	(2) 16 x 17	1 x 0.675	3/8	Lanced	39	38
BMAT30B5ACSAA	Cooling /Heat Pump	Sweat	4.7	2	18	(2) 20 x 17	1 x 0.675	3/8	Lanced	45	44
BMAT30C5ACSAA	Cooling /Heat Pump	Sweat	4.7	2	18	(2) 20 x 17	1 x 0.675	3/8	Lanced	54	53
BMAT30B5AZSAA	Cooling /Heat Pump	Sweat	3.8	3	18	(2) 16 x 17	1 x 0.675	3/8	Lanced	54	53
BMAT36B5ADSAA	Cooling /Heat Pump	Sweat	4.7	3	14	(2) 20 x 17	1 x 0.675	3/8	Lanced	52	50
BMAT36B5CDSAA	Cooling /Heat Pump	Sweat	4.7	3	14	(2) 20 x 17	1 x 0.675	3/8	Lanced	52	50
BMAT36C5ADSAA	Cooling /Heat Pump	Sweat	4.7	3	14	(2) 20 x 17	1 x 0.675	3/8	Lanced	60	58
BMAT36C5CDSAA	Cooling /Heat Pump	Sweat	4.7	3	14	(2) 20 x 17	1 x 0.675	3/8	Lanced	60	58
BMAT42C5CESAA	Cooling /Heat Pump	Sweat	5.2	3	14	(2) 22 x 17	1 x 0.675	3/8	Lanced	64	62
BMAT48C5CFSAA	Cooling /Heat Pump	Sweat	5.7	3	12	(2) 24 x 17	1 x 0.675	3/8	Lanced	75	73
BMAT60C5CGSAA	Cooling /Heat Pump	Sweat	6.6	3	12	(2) 28 x 17	1 x 0.675	3/8	Lanced	70	68
BMAT60C5CHSAA	Cooling /Heat Pump	Sweat	7.6	3	12	(2) 32 x 17	1 x 0.675	3/8	Lanced	80	78

Airflow data: BMAT coil

Table 10: BMAT Airflow data (CFM) - horizontal left and upflow

Model	CFM								
	400	600	800	1000	1200	1400	1600	1800	2000
	Coil pressure drop (in. W.C.)								
BMAT18A5*A	0.07	0.14	0.21	—	—	—	—	—	—
BMAT24A5*B	0.06	0.13	0.21	0.30	—	—	—	—	—
BMAT24B5*B	0.05	0.09	0.14	0.20	—	—	—	—	—
BMAT30B5*C	0.04	0.08	0.13	0.19	0.26	—	—	—	—
BMAT30C5*C	0.04	0.07	0.11	0.14	0.20	—	—	—	—
BMAT30B5*Z	0.04	0.08	0.13	0.20	0.28	—	—	—	—
BMAT36B5*D	0.05	0.11	0.18	0.25	0.36	0.49	—	—	—
BMAT36C5*D	0.04	0.07	0.12	0.16	0.23	0.31	—	—	—
BMAT42C5*E	0.03	0.07	0.11	0.15	0.22	0.28	0.37	—	—
BMAT48C5*F	0.03	0.06	0.09	0.13	0.19	0.25	0.32	0.40	—
BMAT60C5*G	0.02	0.05	0.08	0.12	0.17	0.23	0.30	0.37	0.45
BMAT60C5*H	0.02	0.05	0.08	0.12	0.17	0.23	0.30	0.37	0.46

ⓘ **Note:**

- Airflow data is for dry coil conditions only, tested without filters.
- For optimal performance, external static pressures of 0.2 in. W.C. to 0.6 in. W.C. are recommended. Applications above 0.6 in. W.C. are not recommended.

Table 11: CTM airflow data (CFM) - horizontal right and downflow

Model	CFM								
	400	600	800	1000	1200	1400	1600	1800	2000
	Coil pressure drop (in. W.C.)								
BMAT18A5*A	0.07	0.14	0.23	—	—	—	—	—	—
BMAT24A5*B	0.06	0.13	0.21	0.31	—	—	—	—	—
BMAT24B5*B	0.05	0.09	0.15	0.20	—	—	—	—	—
BMAT30B5*C	0.04	0.08	0.13	0.18	0.25	—	—	—	—
BMAT30C5*C	0.04	0.07	0.11	0.15	0.20	—	—	—	—
BMAT30B5*Z	0.04	0.10	0.17	0.26	0.37	—	—	—	—
BMAT36B5*D	0.05	0.11	0.17	0.25	0.35	0.48	—	—	—
BMAT36C5*D	0.04	0.07	0.12	0.16	0.23	0.30	—	—	—
BMAT42C5*E	0.03	0.07	0.11	0.15	0.21	0.28	0.37	—	—
BMAT48C5*F	0.03	0.06	0.10	0.14	0.20	0.26	0.34	0.43	—
BMAT60C5*G	0.03	0.06	0.09	0.13	0.19	0.25	0.33	0.41	0.50
BMAT60C5*H	0.03	0.06	0.09	0.13	0.19	0.25	0.33	0.40	0.49

ⓘ **Note:**

- Airflow data is for dry coil conditions only, tested without filters.
- For optimal performance, external static pressures of 0.2 in. W.C. to 0.6 in. W.C. are recommended. Applications above 0.6 in. W.C. are not recommended.

Third-party trademarks

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